

TITLE <h1 style="margin: 0;">Vertex RF Troubleshooting Guide</h1>	MODEL <h1 style="margin: 0;">Vertex</h1>
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Introduction:

This document covers the Board Test RF sections for all variants of VERTEX. It includes the schematic and layout of each block to help troubleshoot factory failures and analysis.

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Supported Bands per SKU

Mode	Band	SKU1 (VZW)	SKU2 (ROW)	SKU3 (China)
GSM	G850	Yes	Yes	Yes
		Yes	Yes	Yes
	G900	Yes	Yes	Yes
		Yes	Yes	Yes
	G1800	Yes	Yes	Yes
		Yes	Yes	Yes
G1900	Yes	Yes	Yes	
	Yes	Yes	Yes	
WCDMA	B1	Yes	Yes	Yes
	B2	Yes	Yes	Yes
	B4		Yes	Yes
	B5	Yes	Yes	Yes
	B6		Yes	
	B8	Yes	Yes	Yes
	B19		Yes	
CDMA	BC0	Yes		Yes
	BC1	Yes		
FDD LTE	B1		Yes	Yes
	B2	Yes	Yes	
	B3	Yes	Yes	Yes
	B4	Yes	Yes	
	B5	Yes	Yes	
	B7	Yes	Yes	Yes
	B8		Yes	
	B12		Yes	
	B13	Yes		
	B17		Yes	
	B19		Yes	
	B20		Yes	
	B25			
B26			Yes	
B28		Yes		
TD LTE	B38			Yes
	B39			Yes
	B40		Yes	Yes
	B41		Yes	Yes
TD-SCDMA	B34			Yes
	B39			Yes
GPS		Yes	Yes	Yes
BT/WLAN (2.4G)		Yes	Yes	Yes
WLAN (5G)		Yes	Yes	Yes

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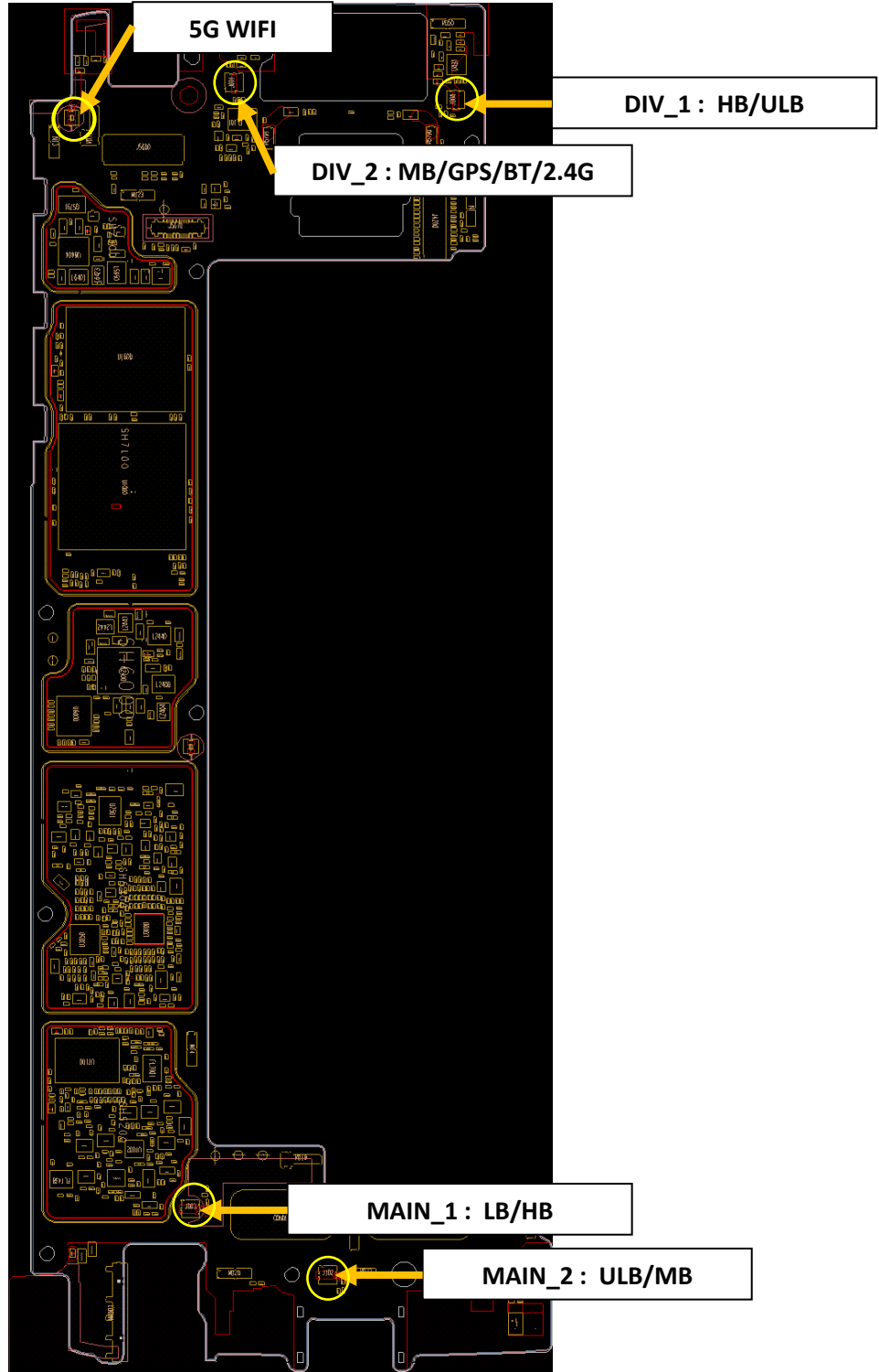
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RF Connector Mapping



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Addison RF connector mapping

Mode	Band	Band	SKU1 (VZW)			SKU2(ROW)			SKU3 (CHINA)			
			RF Port	CA	WTR	RF Port	CA	WTR	RF Port	CA	WTR	
GSM	G850	G850_Tx/Rx	Main_1	No	WTR0	Main_1	No	WTR0	Main_1	No	WTR0	
		G850_DivRx	NA	No	N/C	NA	No	N/C	NA	No	N/C	
	G900	G900_Tx/Rx	Main_1	No	WTR0	Main_1	No	WTR0	Main_1	No	WTR0	
		G900_DivRx	NA	No	N/C	Div_1	No	WTR0	Div_1	No	WTR0	
	G1800	G1800_Tx/Rx	Main_2	No	WTR0	Main_2	No	WTR0	Main_2	No	WTR0	
		G1800_DivRx	NA	No	N/C	NA	No	N/C	Div_2	No	WTR0	
	G1900	G1900_Tx/Rx	Main_2	No	WTR0	Main_2	No	WTR0	Main_2	No	WTR0	
		G1900_DivRx	NA	No	N/C	NA	No	N/C	NA	No	N/C	
	WCDMA	B1	W2100_Tx	Main_2	No	WTR0	Main_2	No	WTR0	Main_2	No	WTR0
			W2100_Rx	Main_2	No	WTR0	Main_2	No	WTR1	Main_2	No	WTR1
			W2100_DivRx	Div_2	No	WTR0	Div_2	No	WTR1	Div_2	No	WTR1
		B2	W1900_Tx	Main_2	No	WTR0	Main_2	No	WTR0	Main_2	No	WTR0
W1900_Rx			Main_2	No	WTR0	Main_2	No	WTR1	Main_2	No	WTR1	
W1900_DivRx			Div_2	No	WTR0	Div_2	No	WTR1	NA	No	N/C	
B4		W1700_Tx	NA	No	N/C	Main_2	No	WTR0	NA	No	N/C	
		W1700_Rx	NA	No	N/C	Main_2	No	WTR1	NA	No	N/C	
		W1700_DivRx	NA	No	N/C	Div_2	No	WTR1	NA	No	N/C	
B5		W850_Tx/Rx	Main_1	No	WTR0	Main_1	No	WTR0	Main_1	No	WTR0	
		W850_DivRx	Div_1	No	WTR0	Div_1	No	WTR0	Div_1	No	WTR0	
B6		W850_Tx/Rx	NA	No	N/C	Main_1	No	WTR0	NA	No	N/C	
		W850_DivRx	NA	No	N/C	Div_1	No	WTR0	NA	No	N/C	
B8		W900_Tx/Rx	Main_1	No	WTR0	Main_1	No	WTR0	Main_1	No	WTR0	
		W900_DivRx	NA	No	N/C	Div_1	No	WTR0	Div_1	No	WTR0	
B19		W850_Tx/Rx	NA	No	N/C	Main_1	No	WTR0	NA	No	N/C	
		W850_DivRx	NA	No	N/C	Div_1	No	WTR0	NA	No	N/C	
CDMA		BC0	C800_Tx/Rx	Main_1	No	WTR0	NA	No	N/C	Main_1	No	WTR0
	C800_DivRx		Div_1	No	WTR0	NA	No	N/C	Div_1	No	WTR0	
	BC1	C1900_Tx	Main_2	No	WTR0	NA	No	N/C	NA	No	N/C	
		C1900_Rx	Main_2	No	WTR0	NA	No	N/C	NA	No	N/C	
BC1	C1900_DivRx	Div_2	No	WTR0	NA	No	N/C	NA	No	N/C		
	B1	B1_Tx	NA	No	N/C	Main_2	Yes	WTR0	Main_2	Yes	WTR0	
B1_Rx		NA	No	N/C	Main_2	Yes	WTR1	Main_2	Yes	WTR1		
B1_DivRx		NA	No	N/C	Div_2	Yes	WTR1	Div_2	Yes	WTR1		
B2	B2_Tx	Main_2	No	WTR0	Main_2	No	WTR0	NA	No	N/C		
	B2_Rx	Main_2	No	WTR0	Main_2	No	WTR1	NA	No	N/C		
	B2_DivRx	Div_2	No	WTR0	Div_2	Yes	WTR1	NA	No	N/C		
B3	B3_Tx	Main_2	No	WTR0	Main_2	Yes	WTR0	Main_2	Yes	WTR0		
	B3_Rx	Main_2	No	WTR0	Main_2	Yes	WTR1	Main_2	Yes	WTR1		
	B3_DivRx	Div_2	No	WTR0	Div_2	Yes	WTR1	Div_2	Yes	WTR1		
B4	B4_Tx	Main_2	No	WTR0	Main_2	Yes	WTR0	NA	No	N/C		
	B4_Rx	Main_2	No	WTR0	Main_2	Yes	WTR1	NA	No	N/C		
	B4_DivRx	Div_2	No	WTR0	Div_2	Yes	WTR1	NA	No	N/C		
B5	B5_Tx/Rx	Main_1	No	WTR0	Main_1	Yes	WTR0	NA	No	N/C		
	B5_DivRx	Div_1	No	WTR0	Div_1	Yes	WTR0	NA	No	N/C		

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<p>TD-LTE</p>	B7	B7_Tx	Main_1		WTR0	Main_1		WTR0	Main_1		WTR0	
		B7_Rx	Main_1	No	WTR0	Main_1	Yes	WTR1	Main_1	No	WTR1	
		B7_DivRx	Div_1		WTR0	Div_1		WTR1	Div_1		WTR1	
	B8	B8_Tx/Rx	NA		N/C	Main_1	Yes	WTR0	NA	No	N/C	
		B8_DivRx	NA		N/C	Div_1		WTR0	NA	No	N/C	
	B12	B12_Tx	NA		N/C	Main_2		WTR0	NA	No	N/C	
		B12_Rx	NA	No	N/C	Main_2	No	WTR1	NA	No	N/C	
		B12_DivRx	NA		N/C	Div_1		WTR1	NA		N/C	
	B13	B13_Tx/Rx	Main_2	No	WTR0	NA	No	N/C	NA	No	N/C	
		B13_DivRx	Div_1		WTR0	NA		N/C	NA	No	N/C	
	B17	B17_Tx	NA		N/C	Main_2		WTR0	NA		N/C	
		B17_Rx	NA	No	N/C	Main_2	No	WTR1	NA	No	N/C	
		B17_DivRx	NA		N/C	Div_1		WTR1	NA		N/C	
	B19	B5_Tx/Rx	NA	No	N/C	Main_1	No	WTR0	NA	No	N/C	
		B5_DivRx	NA		N/C	Div_1		WTR0	NA	No	N/C	
	B20	B20_Tx/Rx	NA	No	N/C	Main_1	Yes	WTR0	NA	No	N/C	
		B20_DivRx	NA		N/C	Div_1		WTR0	NA	No	N/C	
	B25	B25_Tx	NA		N/C	NA		N/C	NA		N/C	
		B25_Rx	NA	No	N/C	NA	No	N/C	NA	No	N/C	
		B25_DivRx	NA		N/C	NA		N/C	NA		N/C	
	B26	B26_Tx/Rx	NA	No	N/C	NA	No	N/C	Main_1	No	WTR0	
		B26_DivRx	NA		N/C	NA		N/C	Div_1	No	WTR0	
	B28	B28_Tx/Rx	NA	No	N/C	Main_2	Yes	WTR0	NA	No	N/C	
		B28_DivRx	NA		N/C	Div_1		WTR0	NA	No	N/C	
	<p>TD-LTE</p>	B38	B38_Tx/Rx	NA	No	N/C	Main_1	No	WTR0	Main_1	Yes	WTR0
			B38_DivRx	NA		N/C	Div_1		WTR0	Div_1		WTR0
		B39	B39_Tx/Rx	NA	No	N/C	NA	No	N/C	Main_2	Yes	WTR0
			B39_DivRx	NA		N/C	NA		N/C	Div_2	Yes	WTR0
B40		B40_Tx/Rx	NA	No	N/C	Main_1	Yes	WTR0	Main_1	Yes	WTR0	
		B40_DivRx	NA		N/C	Div_1		WTR0	Div_1		WTR0	
B41		B41_Tx/Rx	NA	No	N/C	Main_1	No	WTR0	Main_1	Yes	WTR0	
		B41_DivRx	NA		N/C	Div_1		WTR0	Div_1		WTR0	
<p>TD-SCDMA</p>	B34	B34_Tx/Rx	NA	No	N/C	NA	No	N/C	Main_2	No	WTR0	
		B34_DivRx	NA		N/C	NA		N/C	NA		N/C	
	B39	B39_Tx/Rx	NA	No	N/C	NA	No	N/C	Main_2	No	WTR0	
		B39_DivRx	NA		N/C	NA		N/C	NA		N/C	
GPS			Div_2	No	WTR0	Div_2	No	WTR0	Div_2	No	WTR0	
BT/WLAN (2.4G)			Div_2	No		Div_2	No		Div_2	No		
WLAN (5G)			WiFi_5G	No		WiFi_5G	No		WiFi_5G	No		

Caution											
- VZW SKU : B8 diversity is not supported.											
- CHINA SKU : B2 diversity is not supported.											
- For CA SKU : PRx/DRx for B7 and mid bands are assigned to WTR1											
- For Non CA SKU : All PRx/DRx are assigned to WTR0											
- All Tx path are assigned to WTR0											
- Div_2 Antenna can cover mid band diversity & GPS & 2.4G WiFi											

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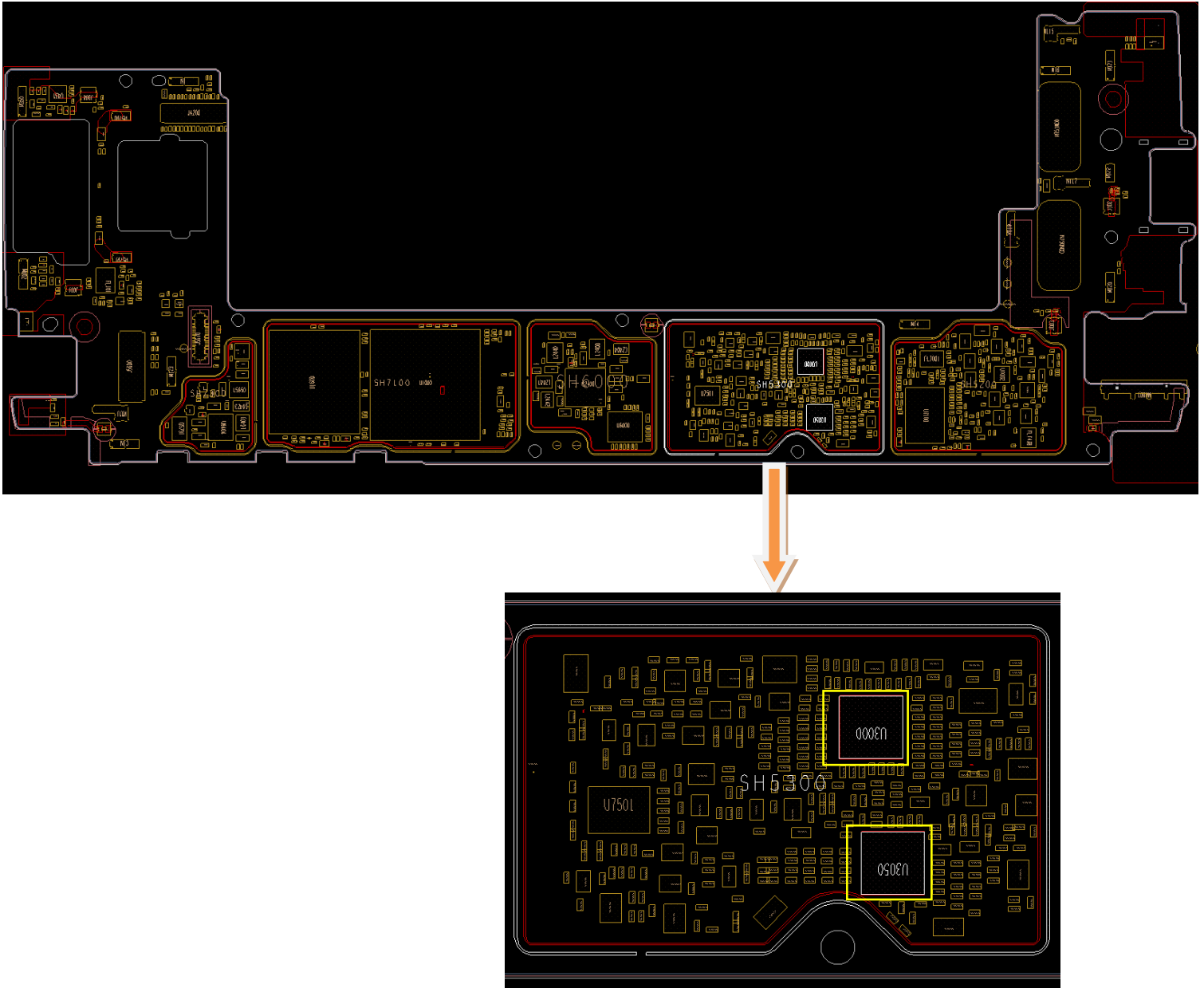
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**PCB major component placement
WTR - Layout**

ROW/China SKU will have Two WTRs, VZW will have One WTR.



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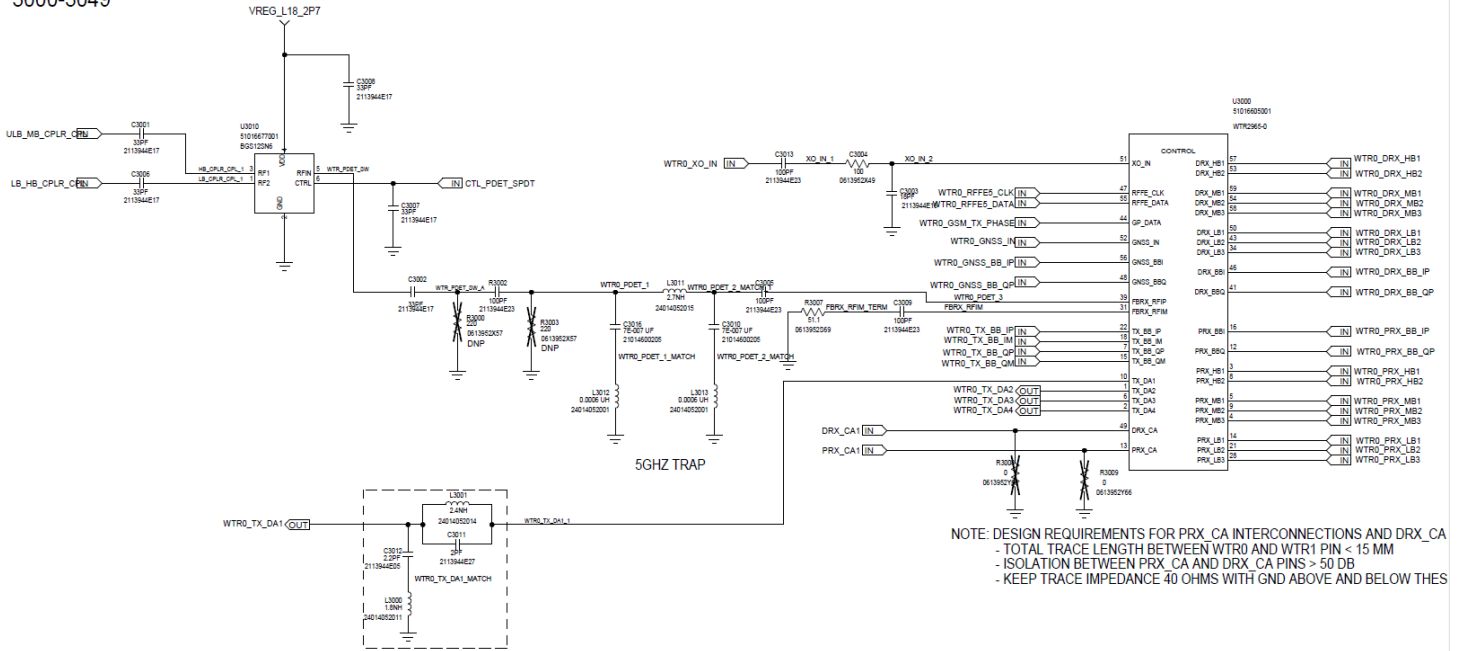
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WTR-Schematics

WTR2965 BB RF

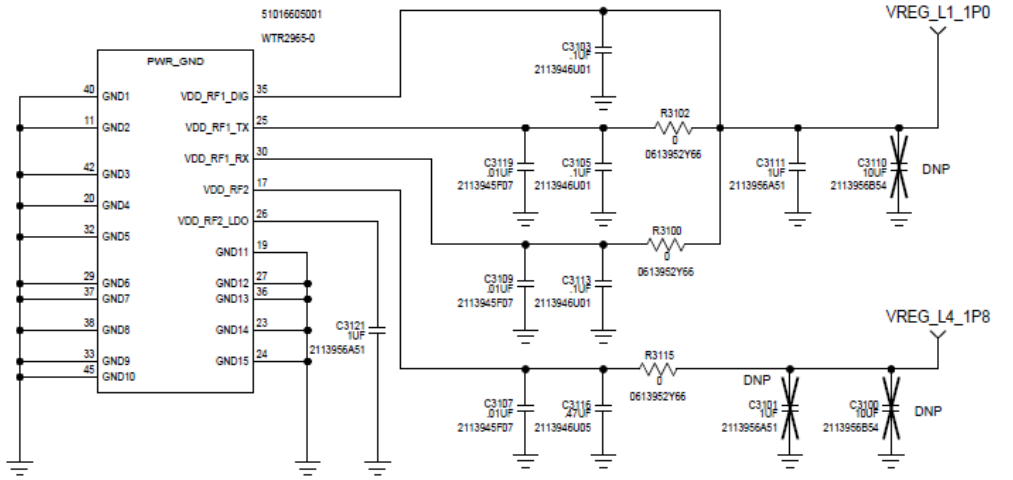
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NOTE: THIS LC NOTCH IS REQUIRED TO MEET 4FMOD SPECS IN B13 BAND.

NOTE: DESIGN REQUIREMENTS FOR PRX_CA INTERCONNECTIONS AND DRX_CA
 - TOTAL TRACE LENGTH BETWEEN WTR0 AND WTR1 PIN < 15 MM
 - ISOLATION BETWEEN PRX_CA AND DRX_CA PINS > 50 DB
 - KEEP TRACE IMPEDANCE 40 OHMS WITH GND ABOVE AND BELOW THES

U3000



NOTE: C3119, C3109, C3107 ARE PRIORITY 1 AND SHOULD BE PLACED CLOSEST TO VDD PINS.

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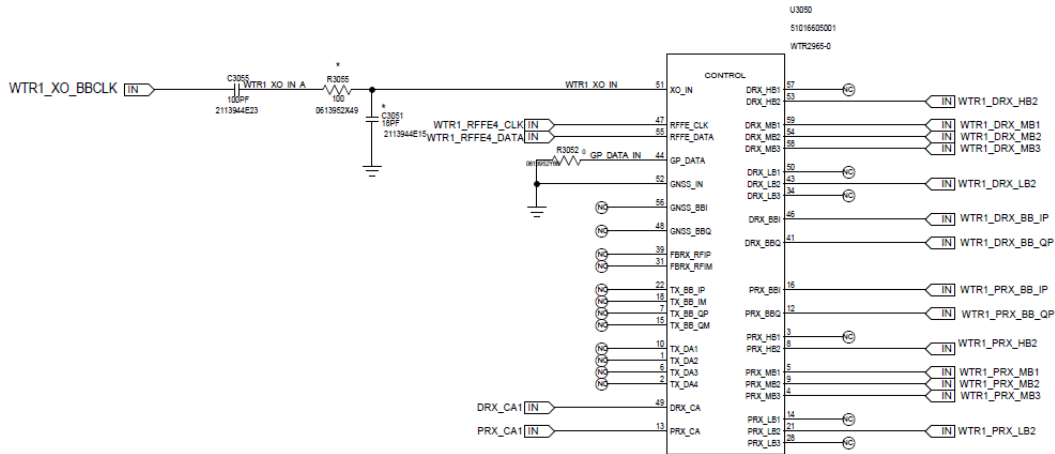
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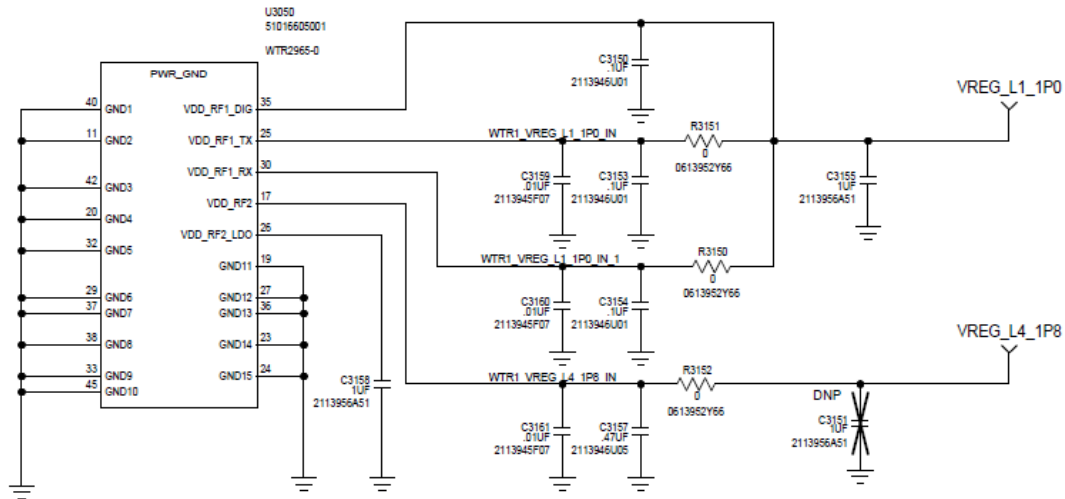
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CA_WTR2965 BB RF

REF 3050-3099



NOTE: DESIGN REQUIREMENTS FOR PRX_CA INTERCONNECTIONS AND DRX_CA INTERCONNECTIONS:
 - TOTAL TRACE LENGTH BETWEEN WTR0 AND WTR1 PIN < 15 MM
 - ISOLATION BETWEEN PRX_CA AND DRX_CA PINS > 50 DB
 - KEEP TRACE IMPEDANCE 40 OHMS WITH GND ABOVE AND BELOW THESE TRACES



NOTE: C3159, C3160, C3161 ARE PRIORITY 1 AND SHOULD BE PLACED CLOSEST TO VDD PINS.

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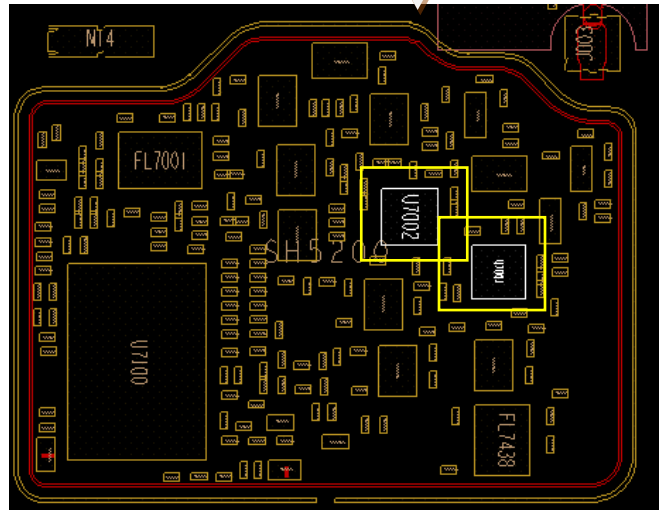
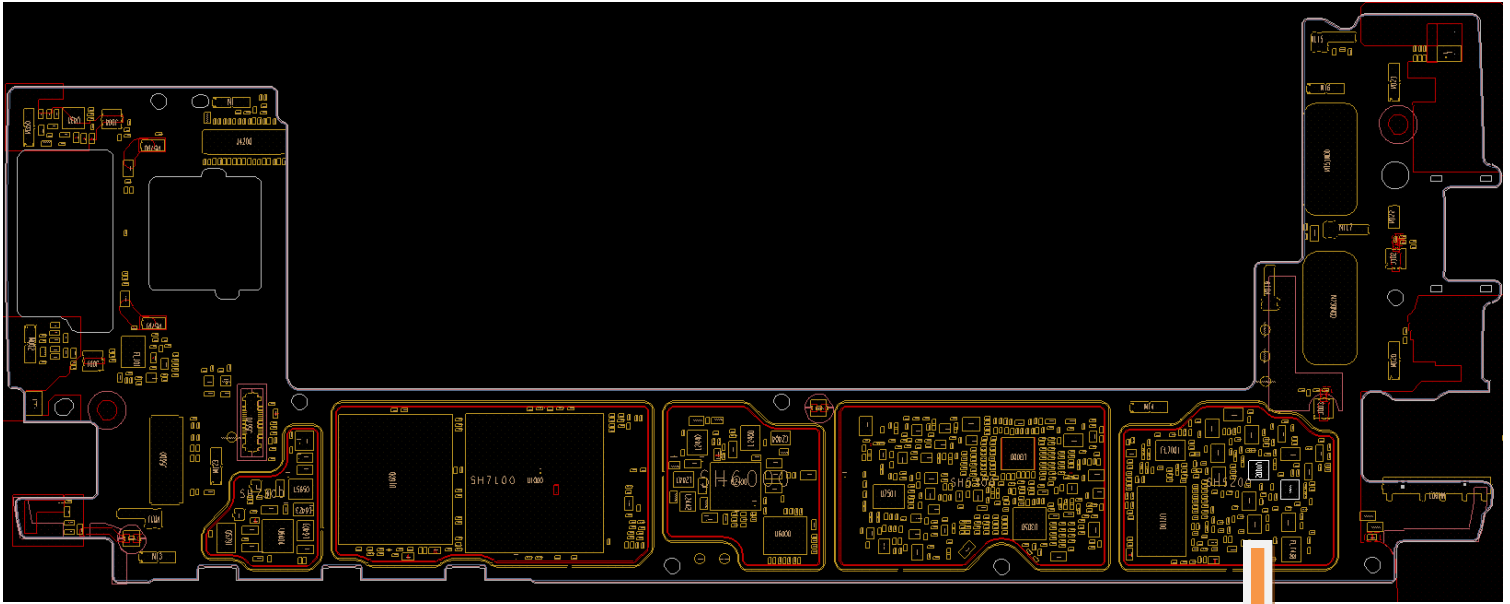
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Main ASM

ULB & MB - Layout



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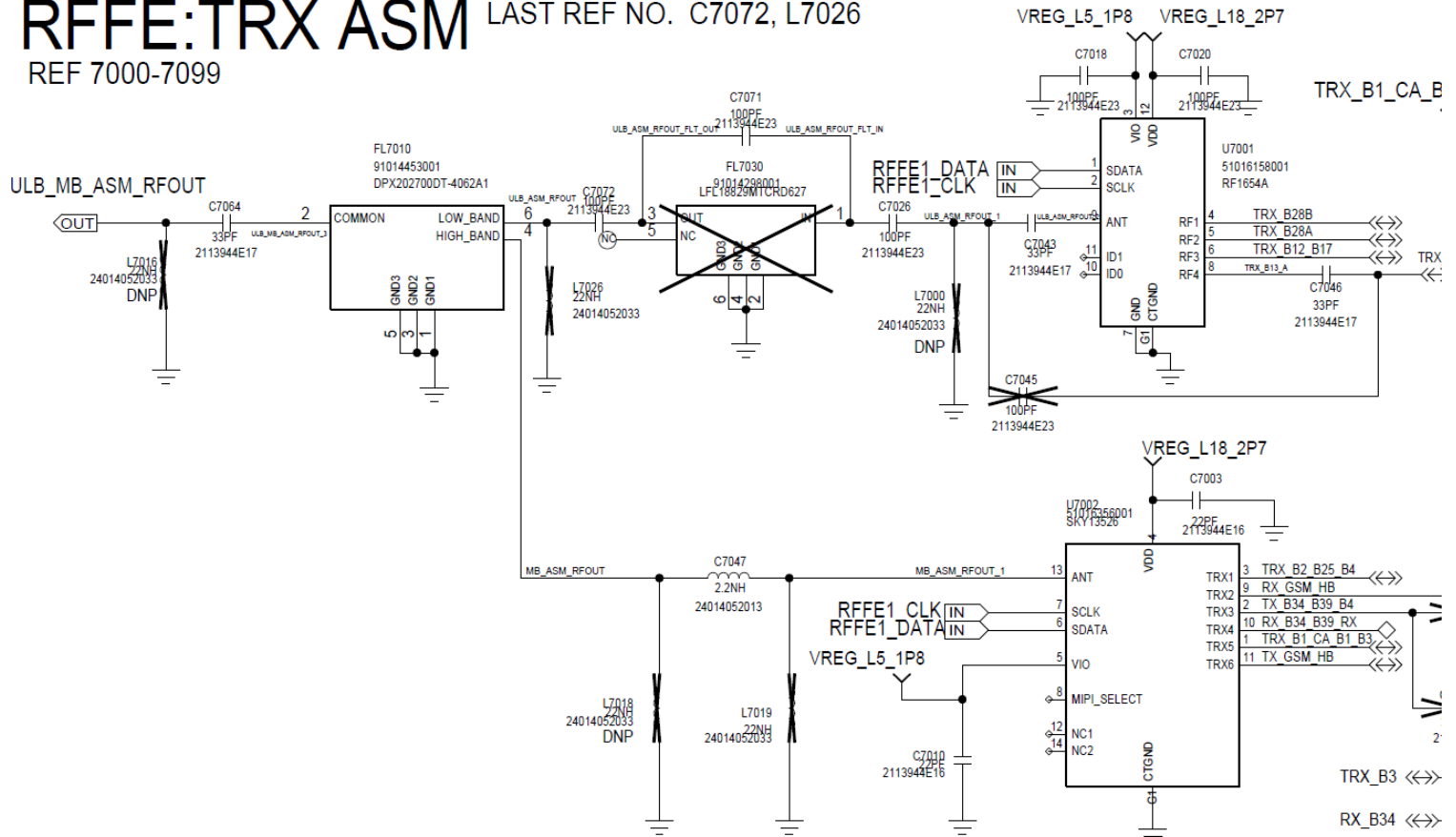
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ULB & MB - Schematics

RFFE:TRX ASM

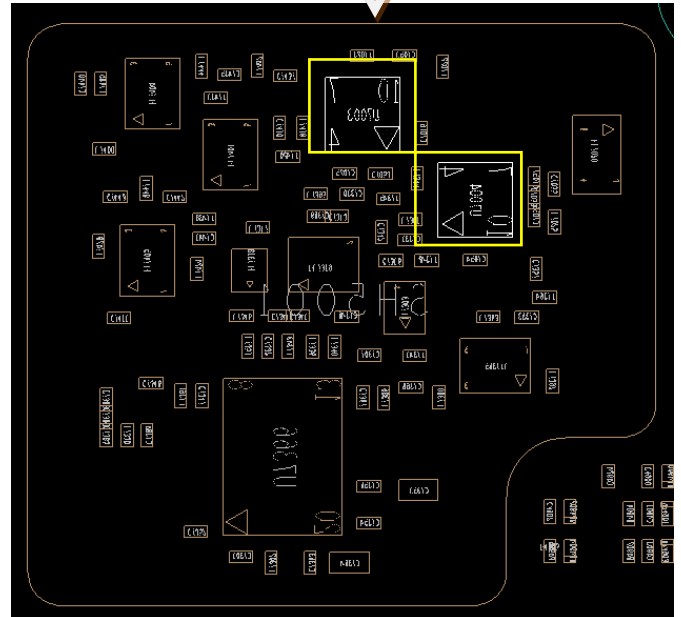
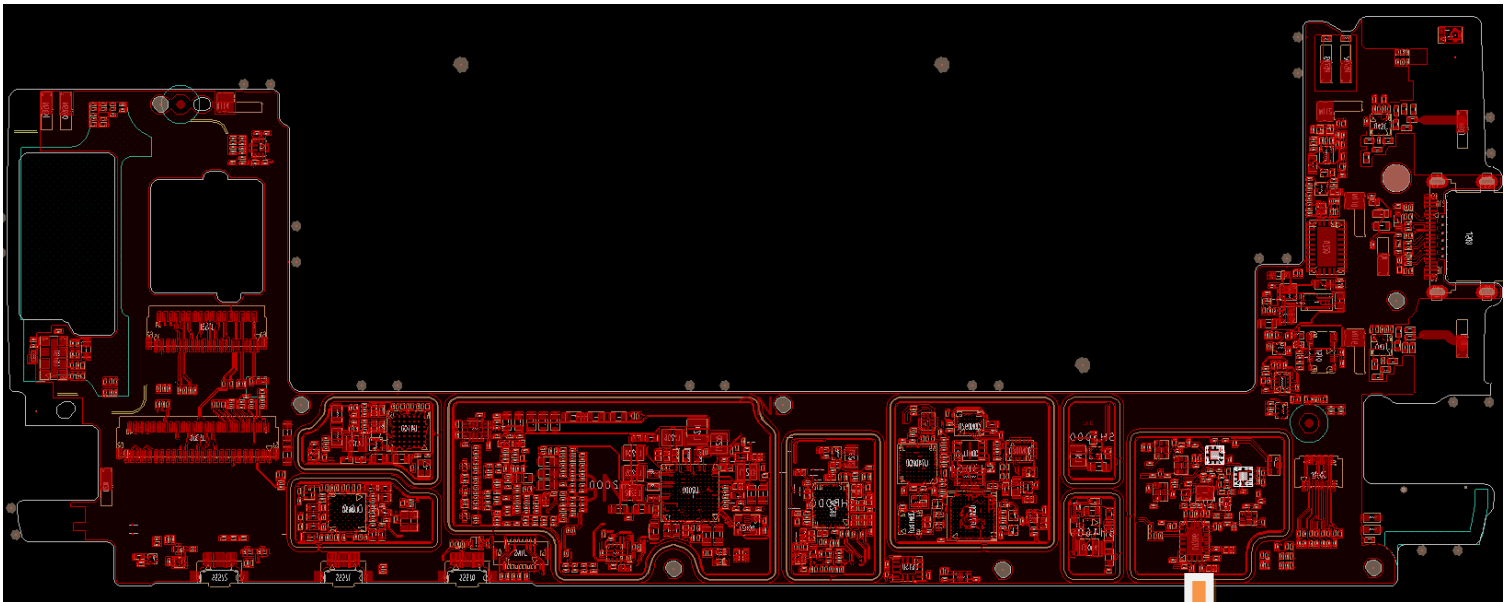
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REF 7000-7099



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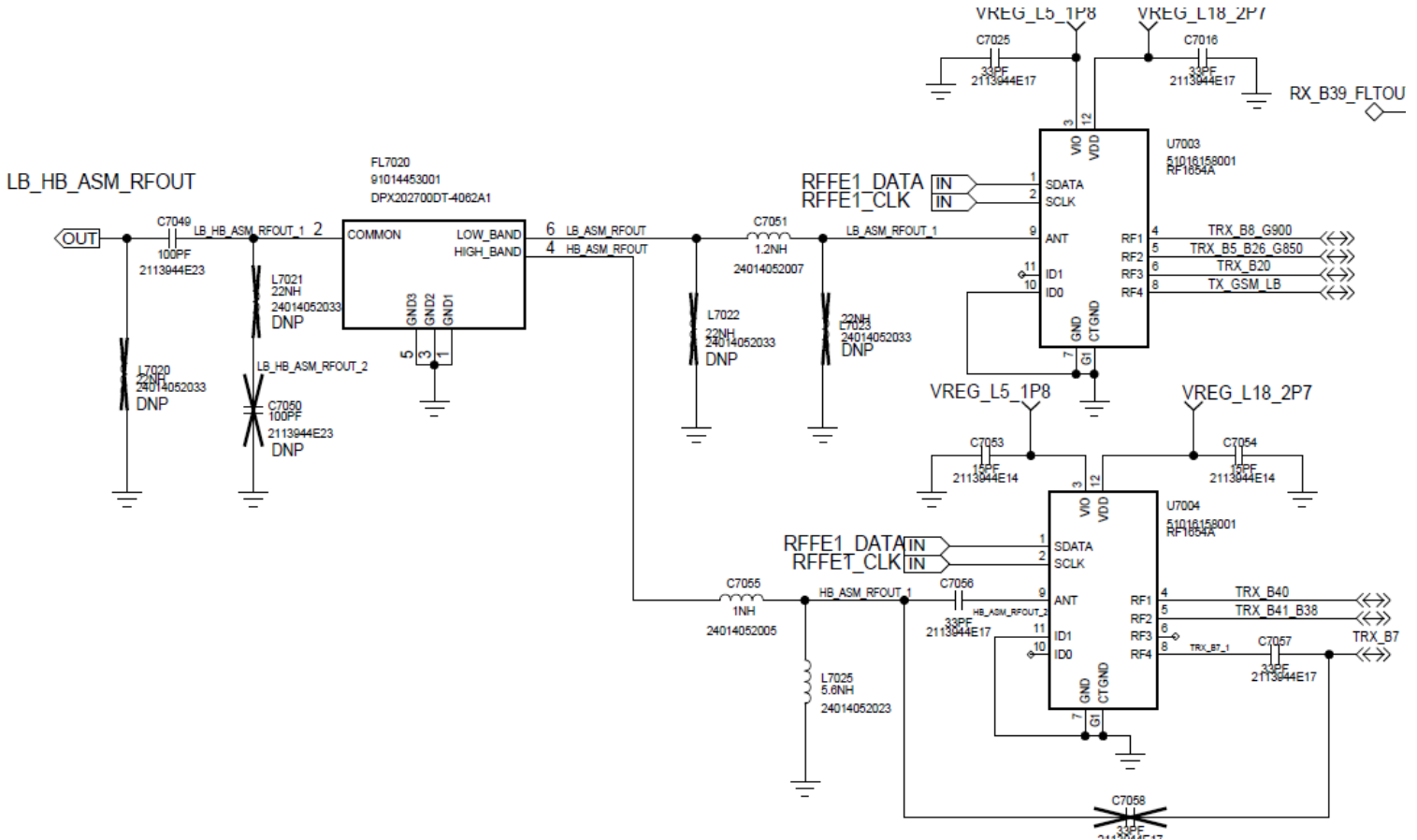
LB & HB - Layout



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LB & HB - Schematics

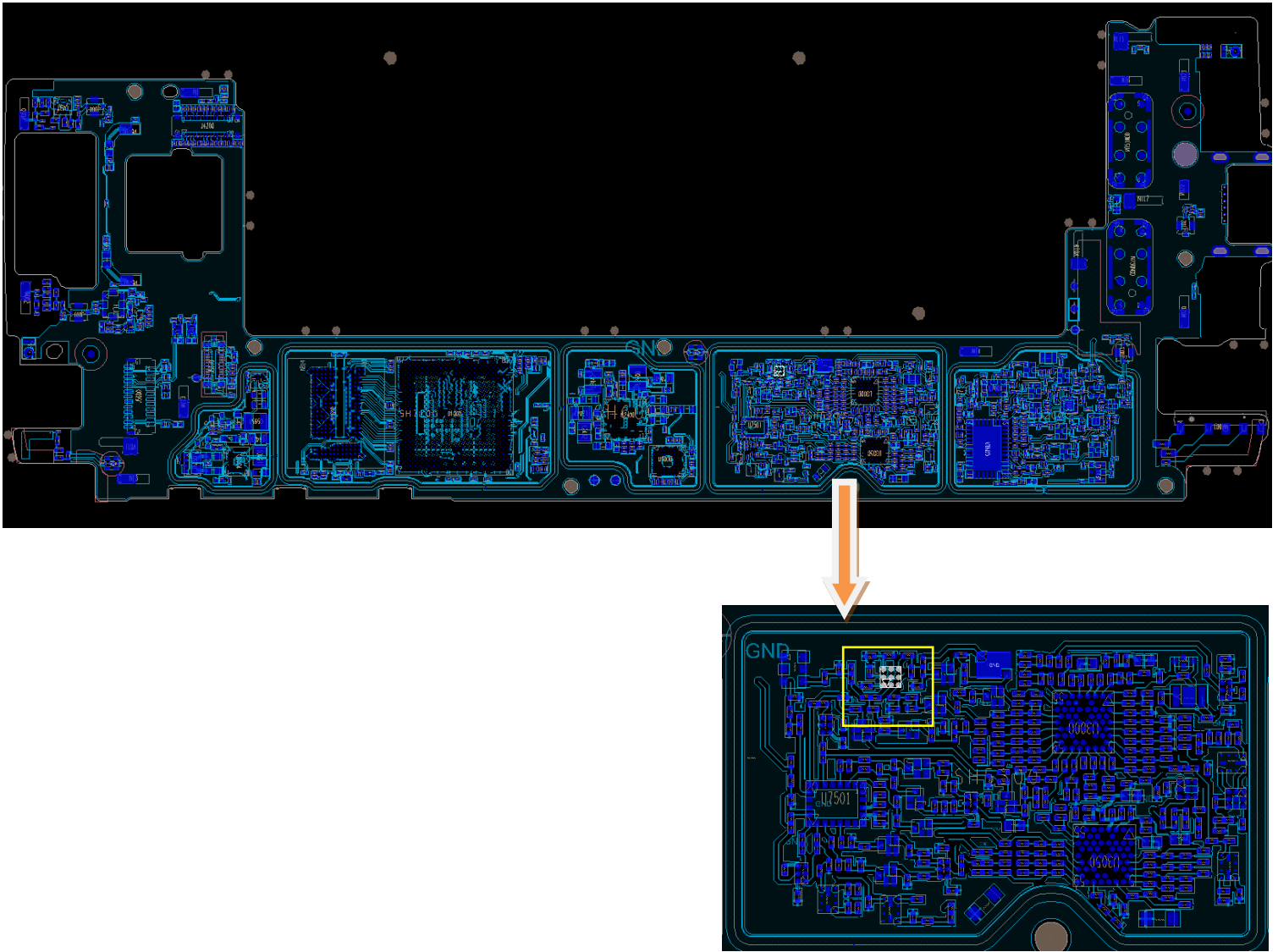


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DIV ASM

HB - Layout

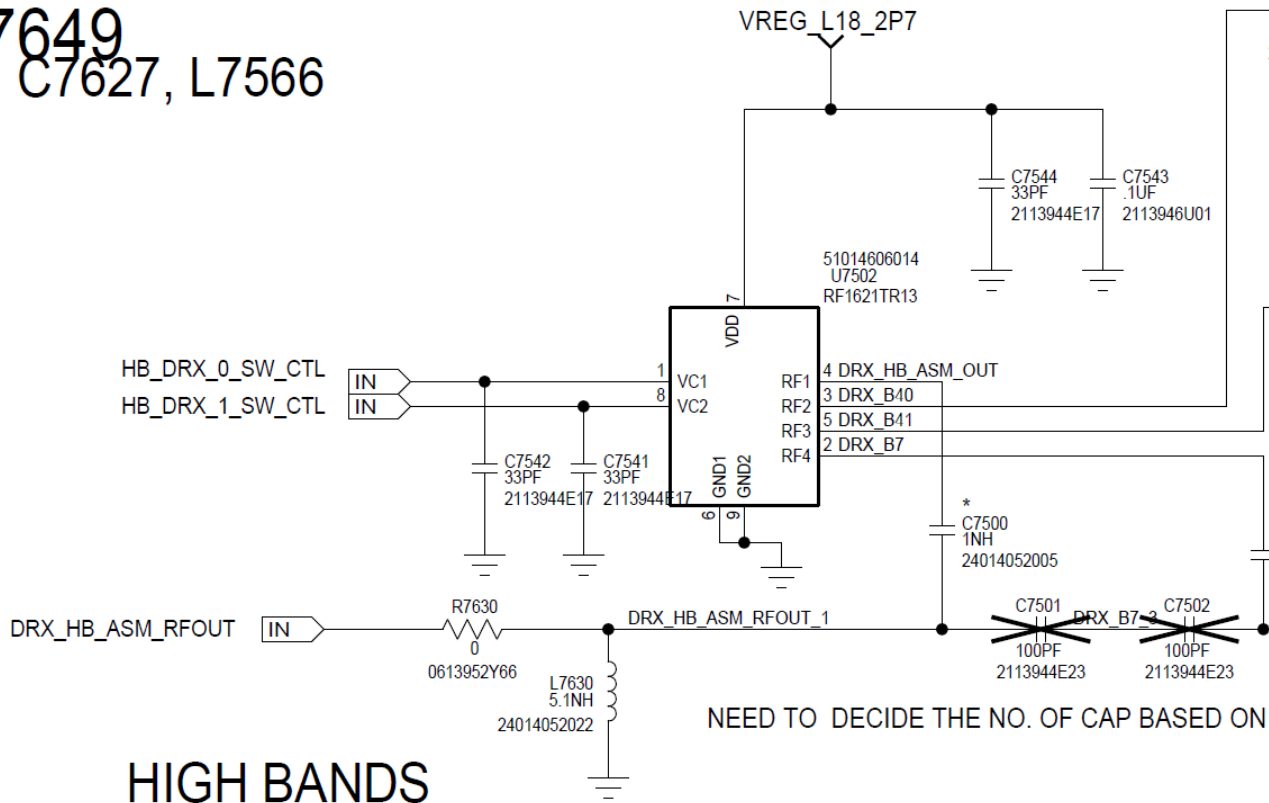


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HB - Schematics

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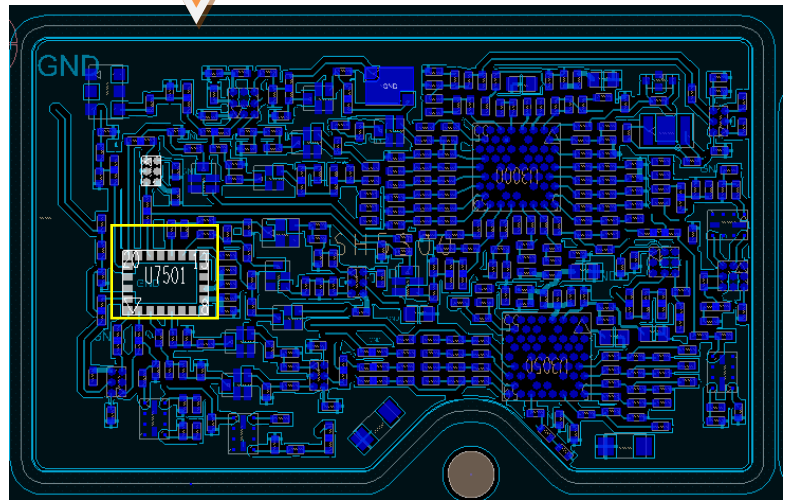
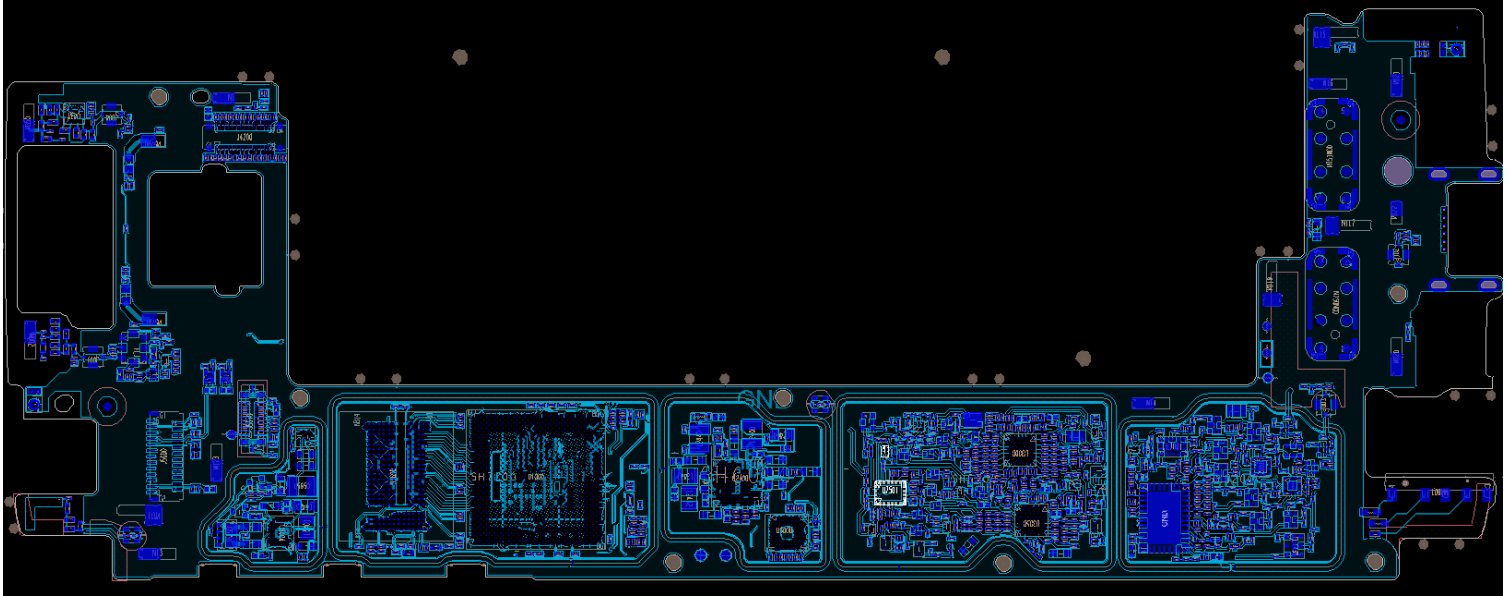


HIGH BANDS

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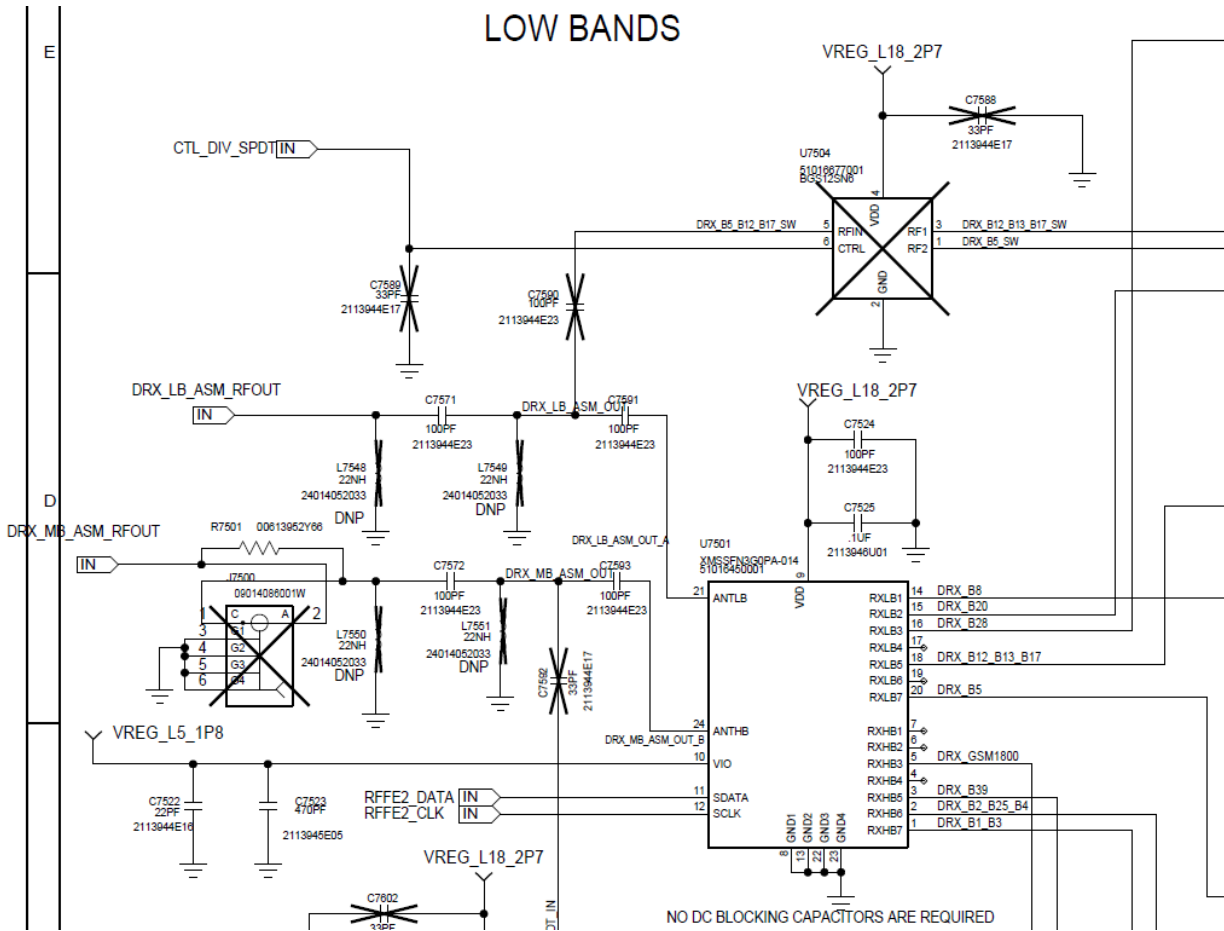
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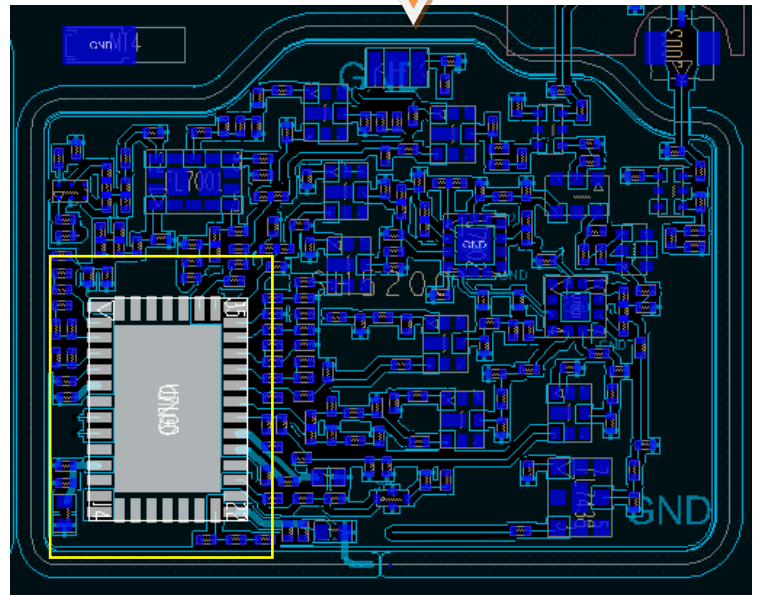
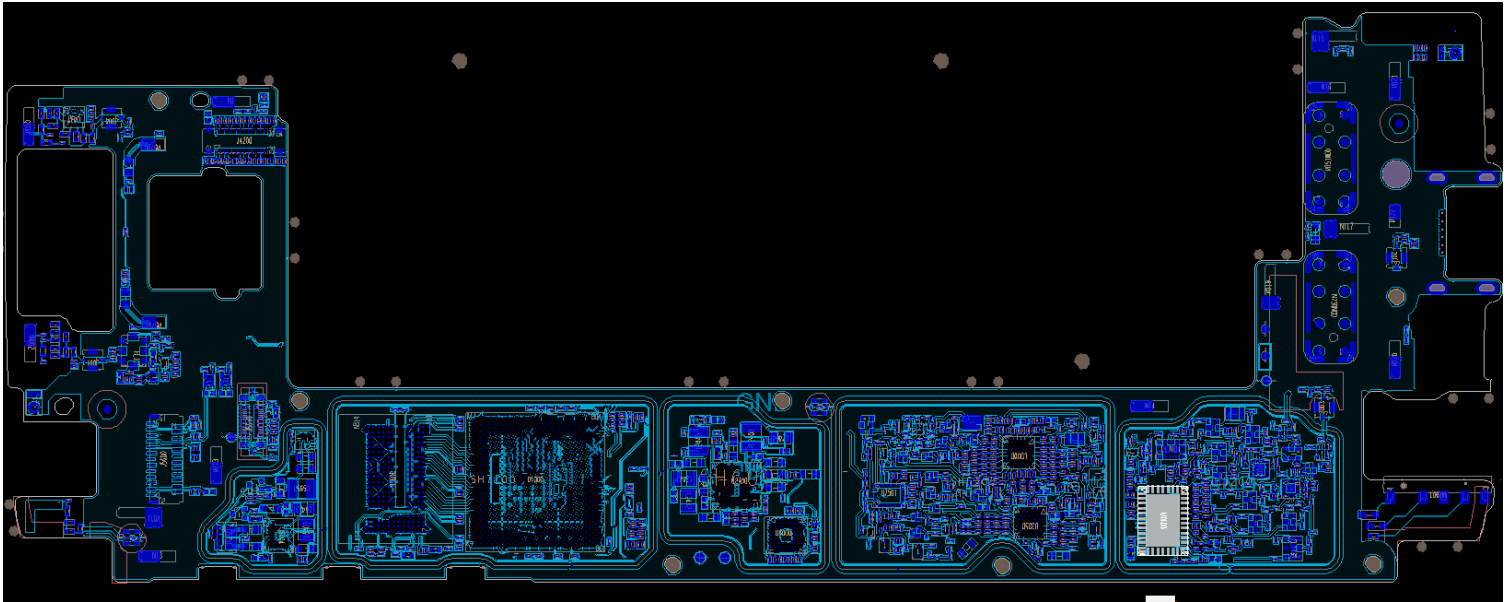


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PA Blocks

PA ULB, LB & MB - Layout



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TITLE

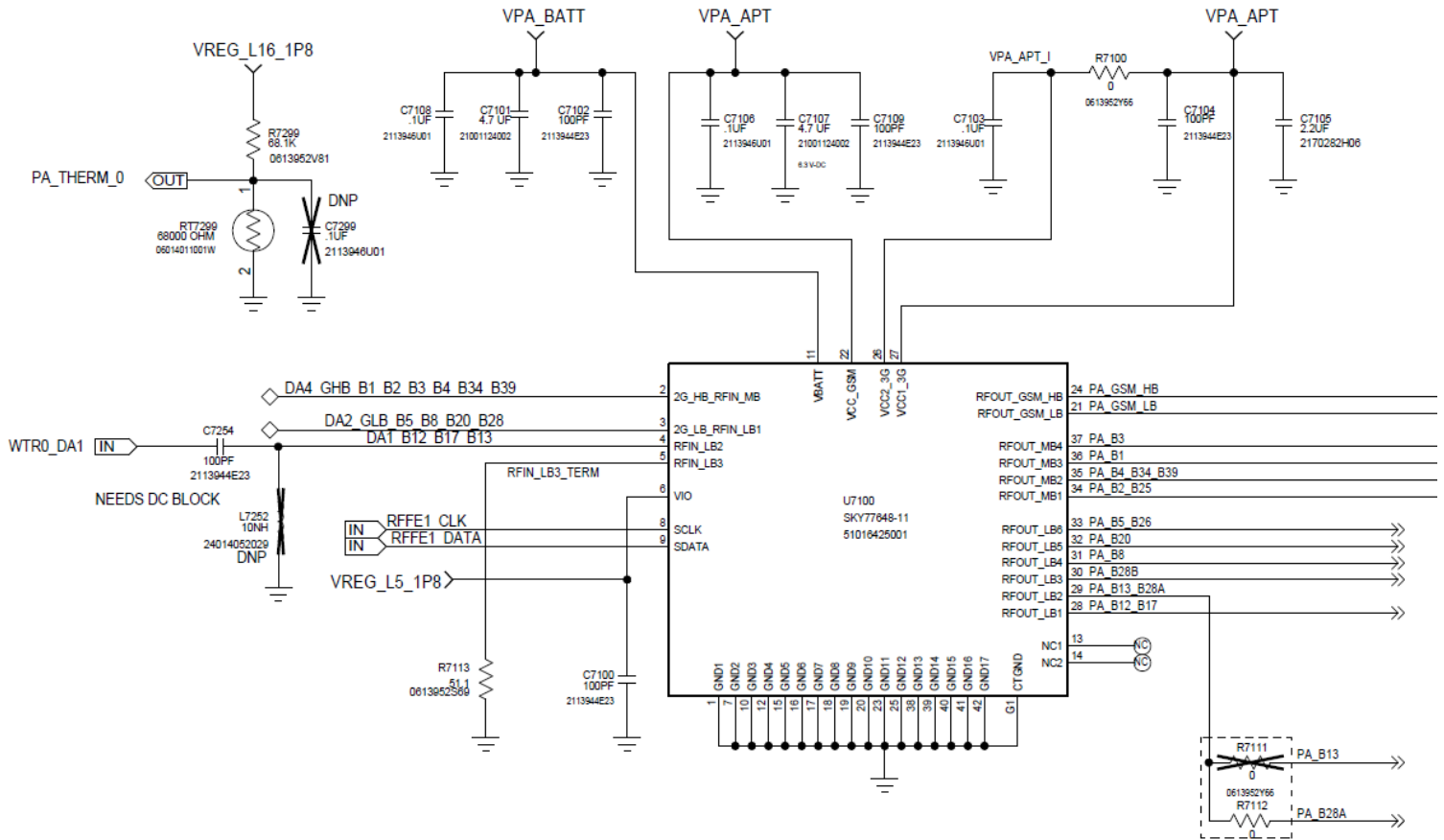
Vertex RF Troubleshooting Guide

MODEL

Vertex

PA ULB, LB & MB - Schematics

REF 1100-1299



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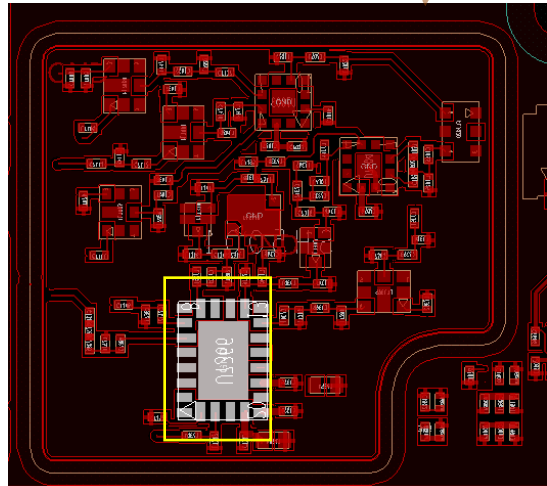
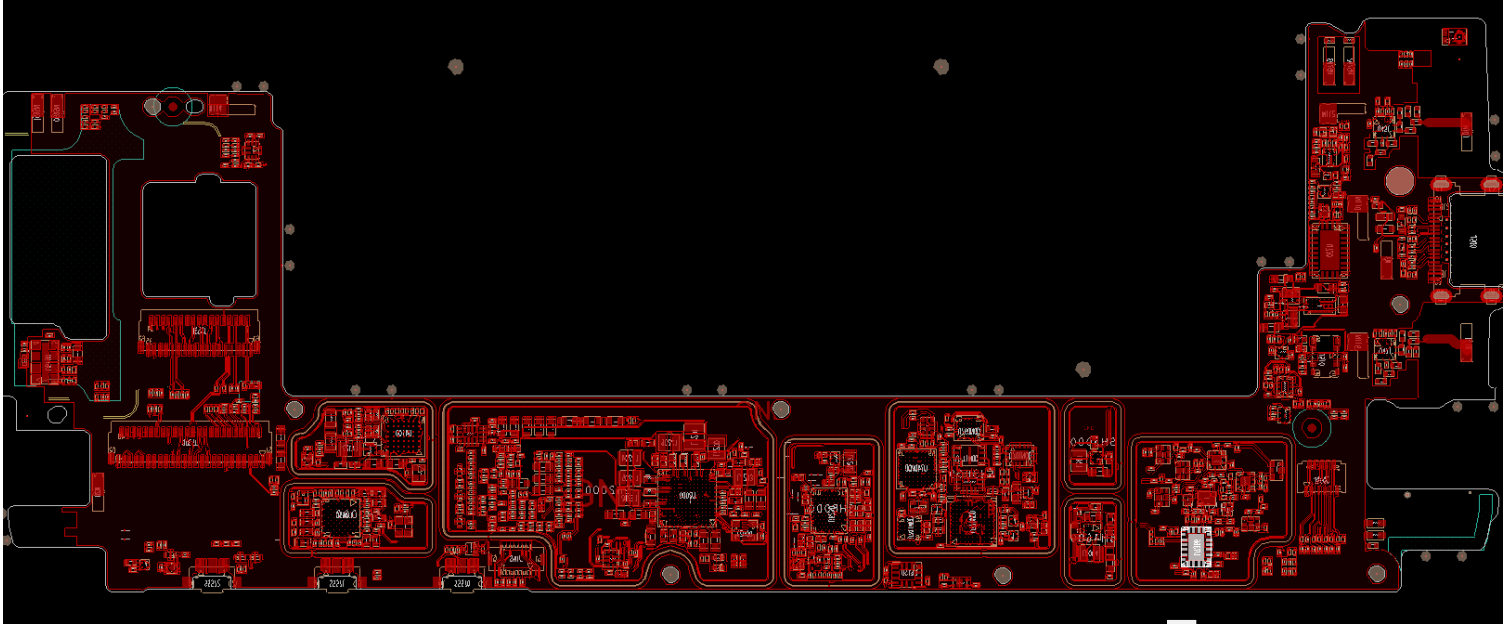
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Vertex RF Troubleshooting Guide

MODEL

Vertex

PA HB - Layout



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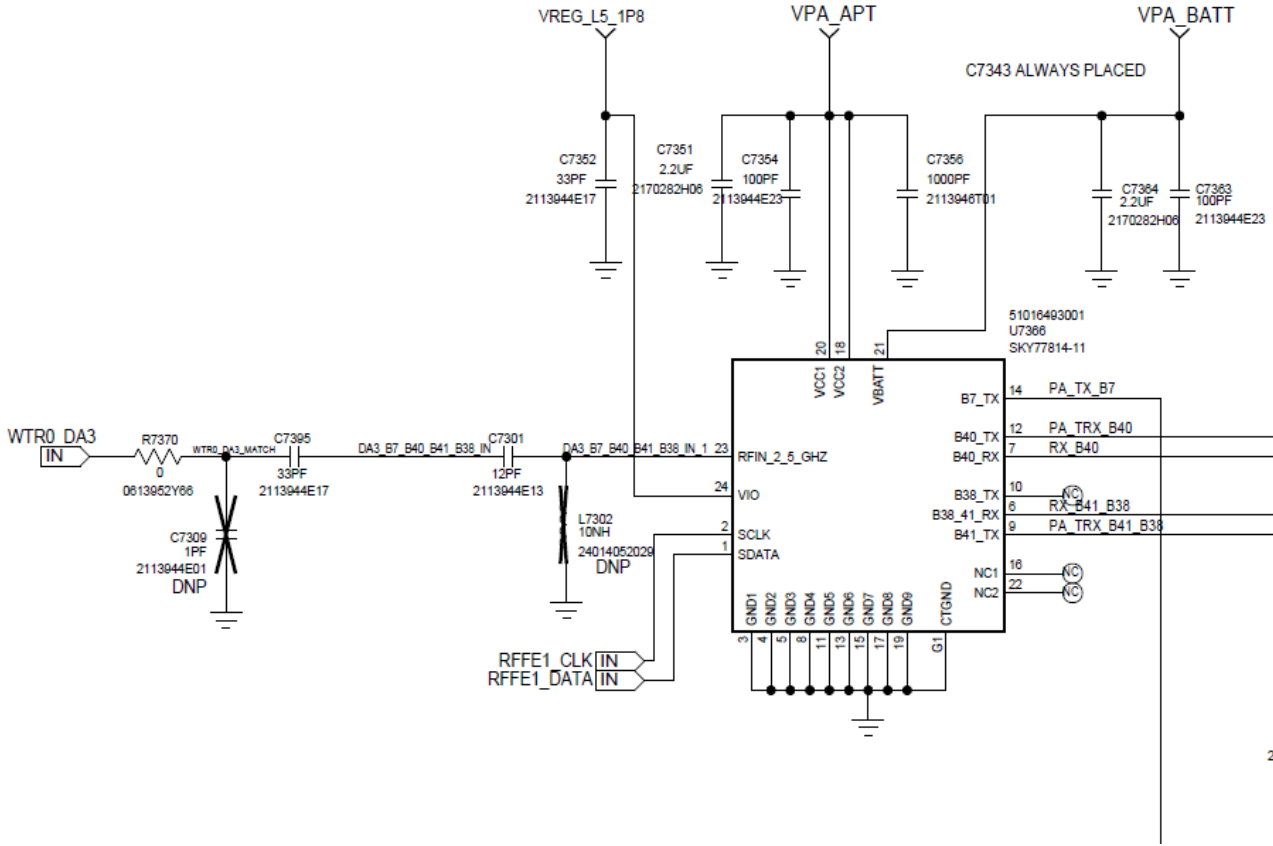
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Vertex RF Troubleshooting Guide

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PA HB - Schematics

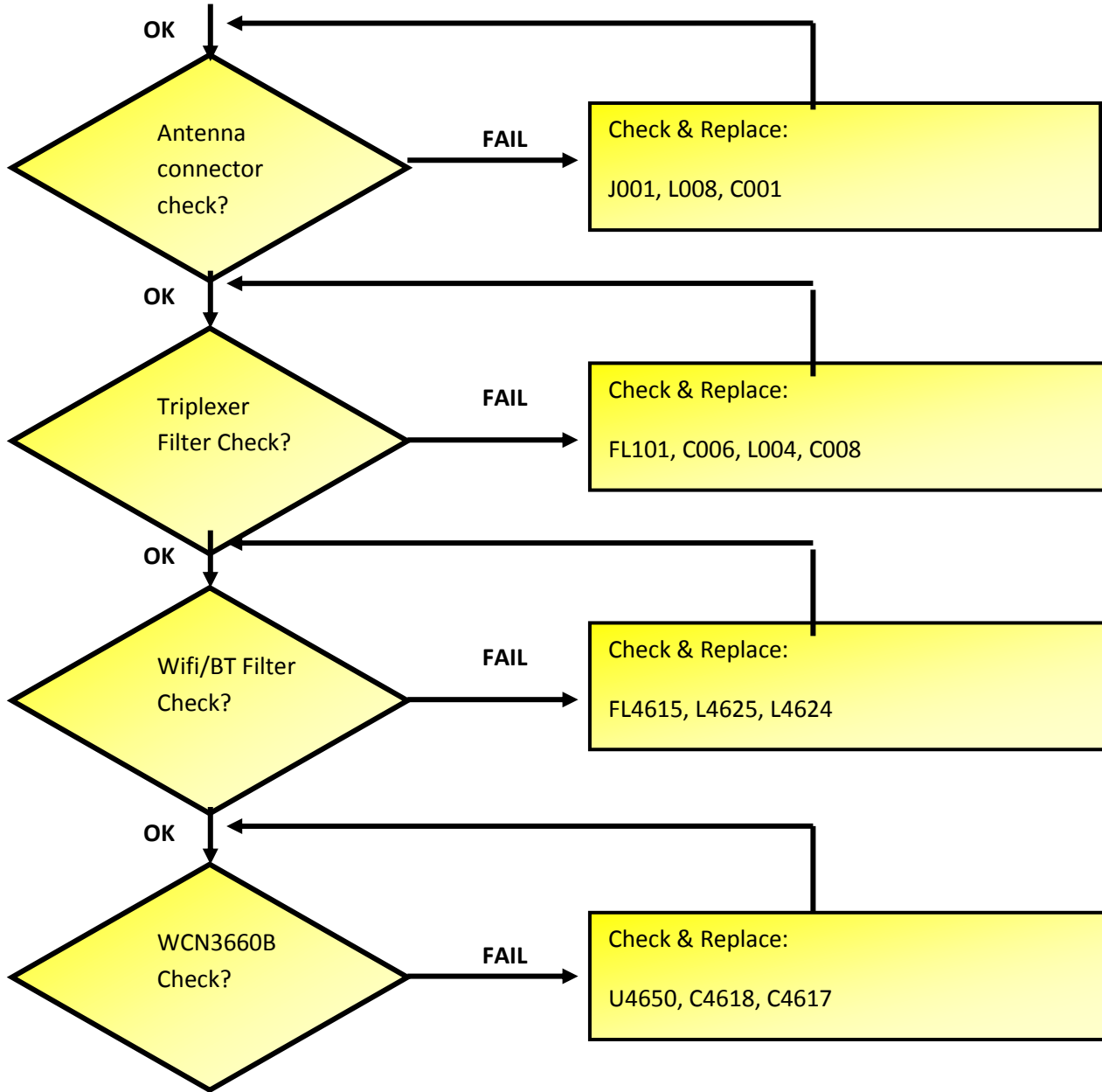


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<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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Bluetooth & WLAN 2.4GHz

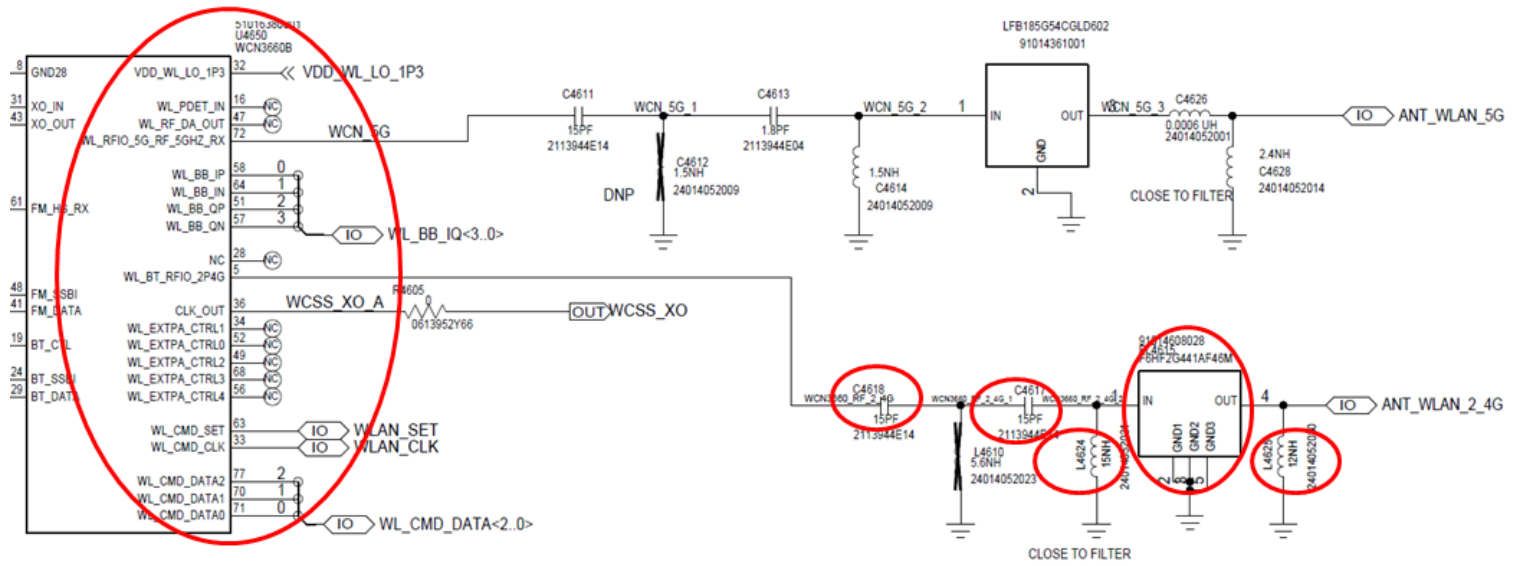
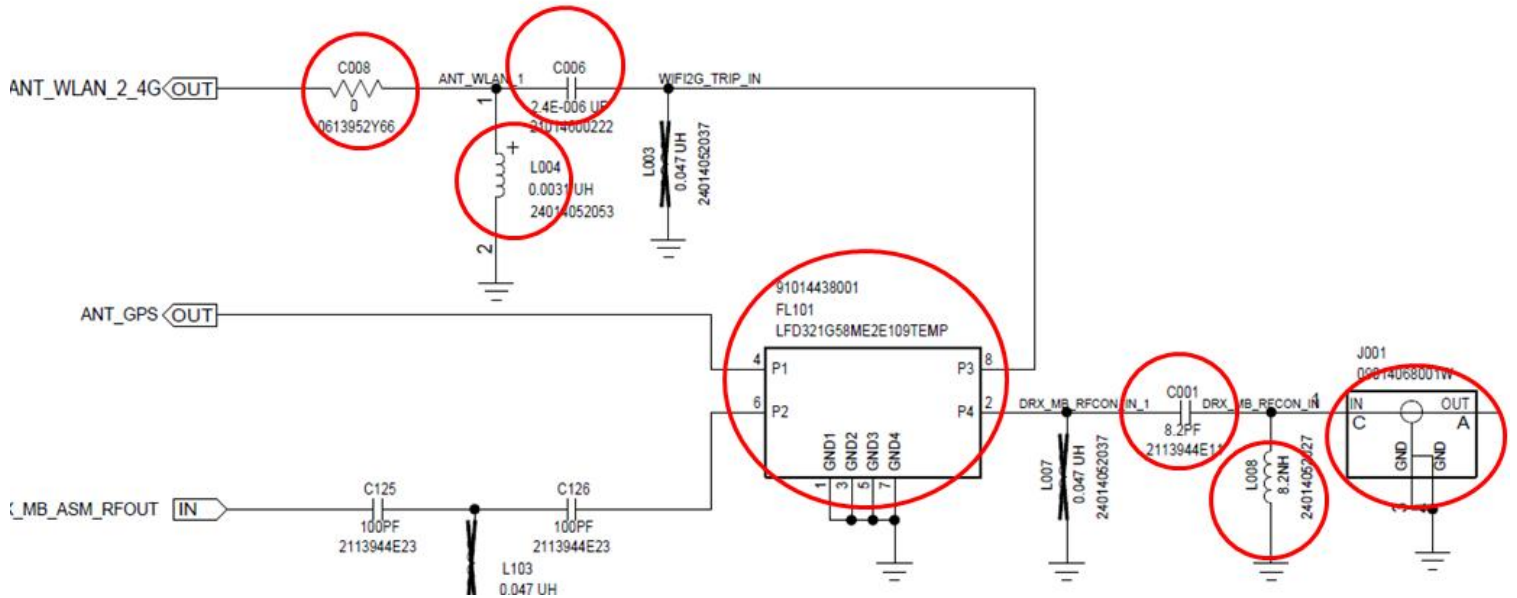


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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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PA HB - Schematics

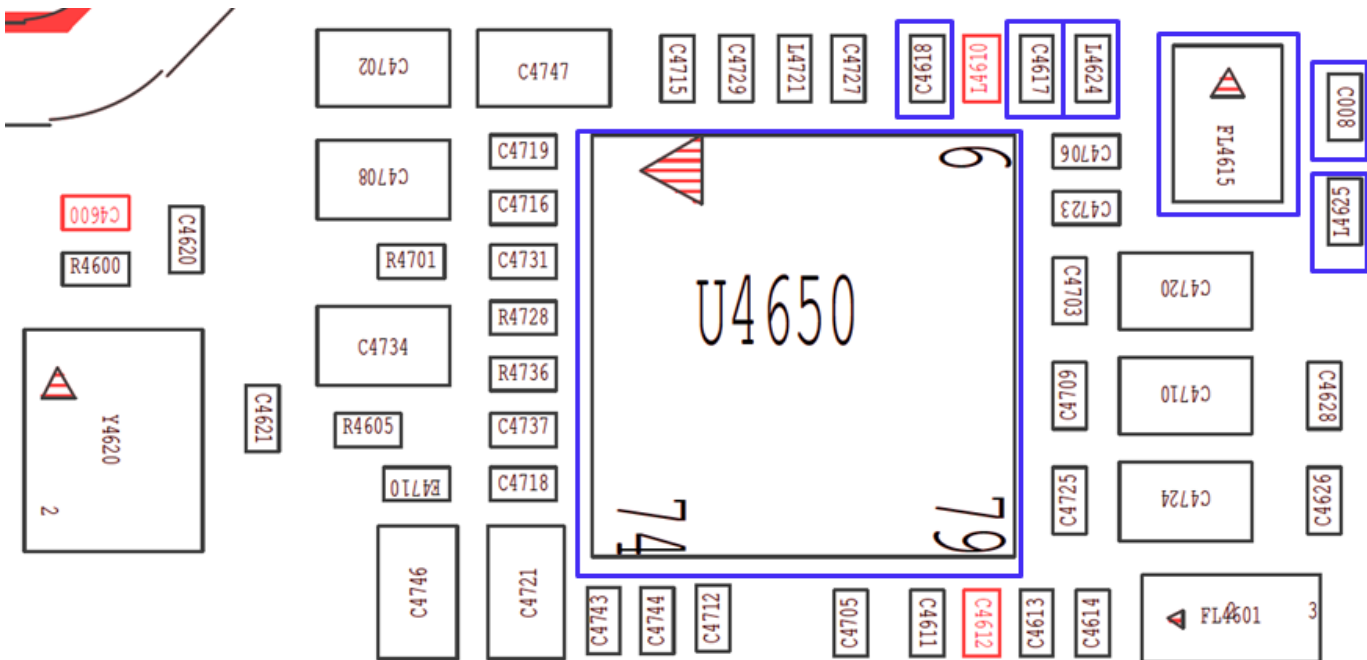
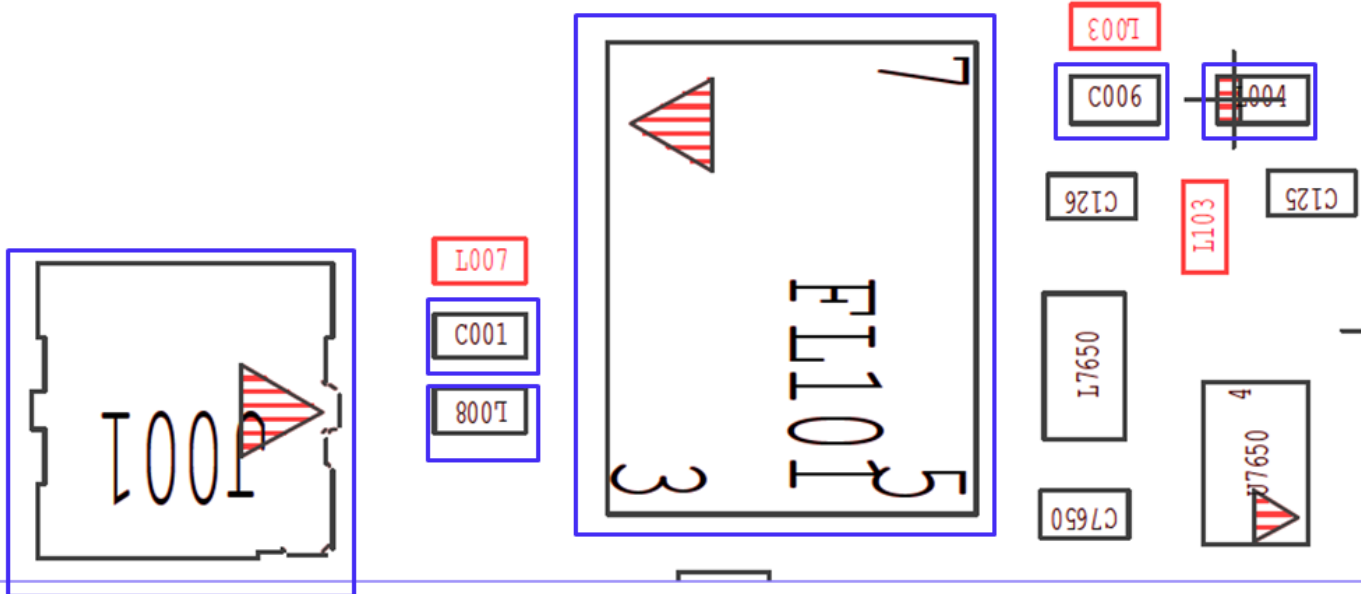
Bluetooth & WLAN 2.4GHz schematic and components;



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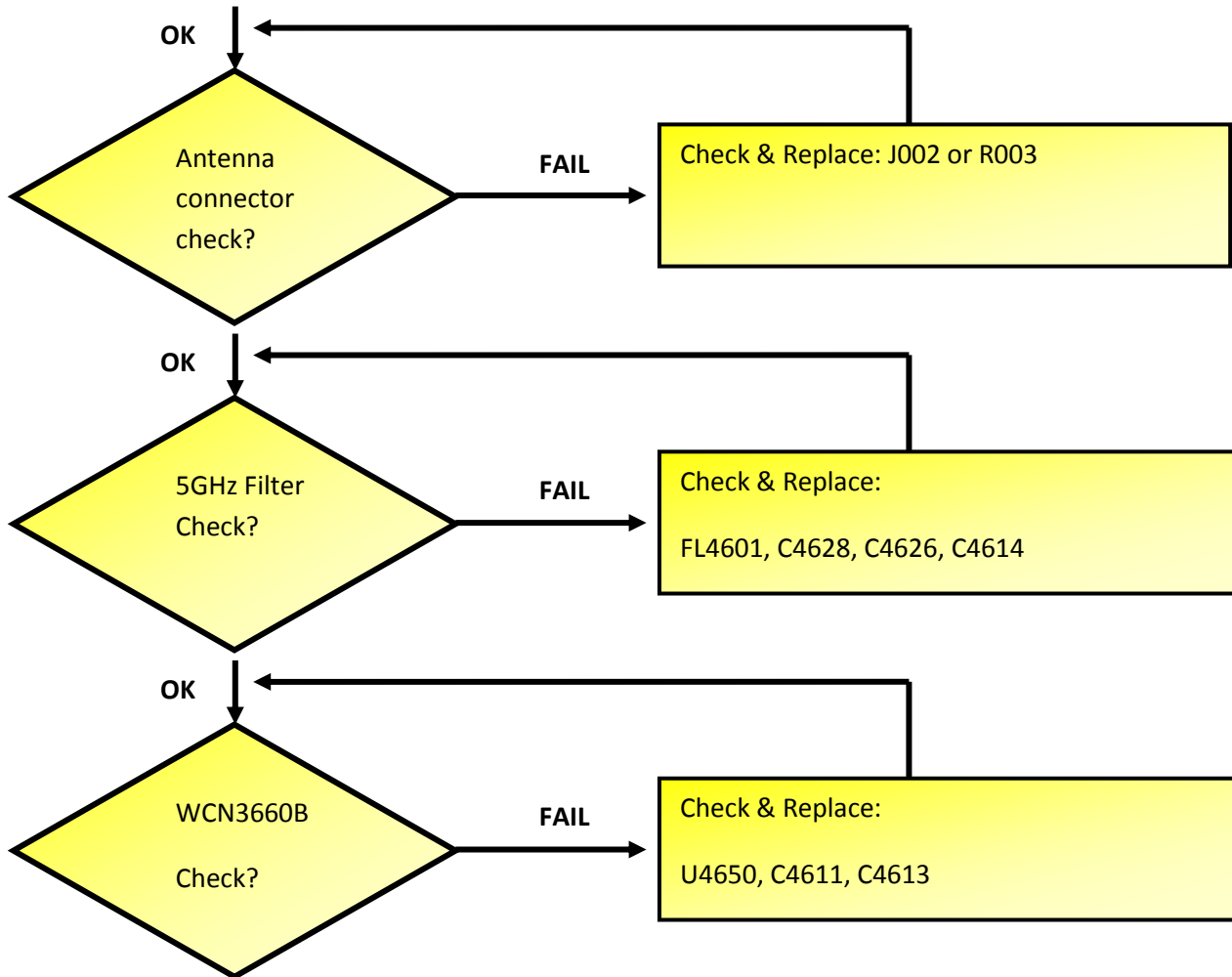
Bluetooth & WLAN 2.4GHz component overlay



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<p>TITLE</p> <p>Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p>Vertex</p>
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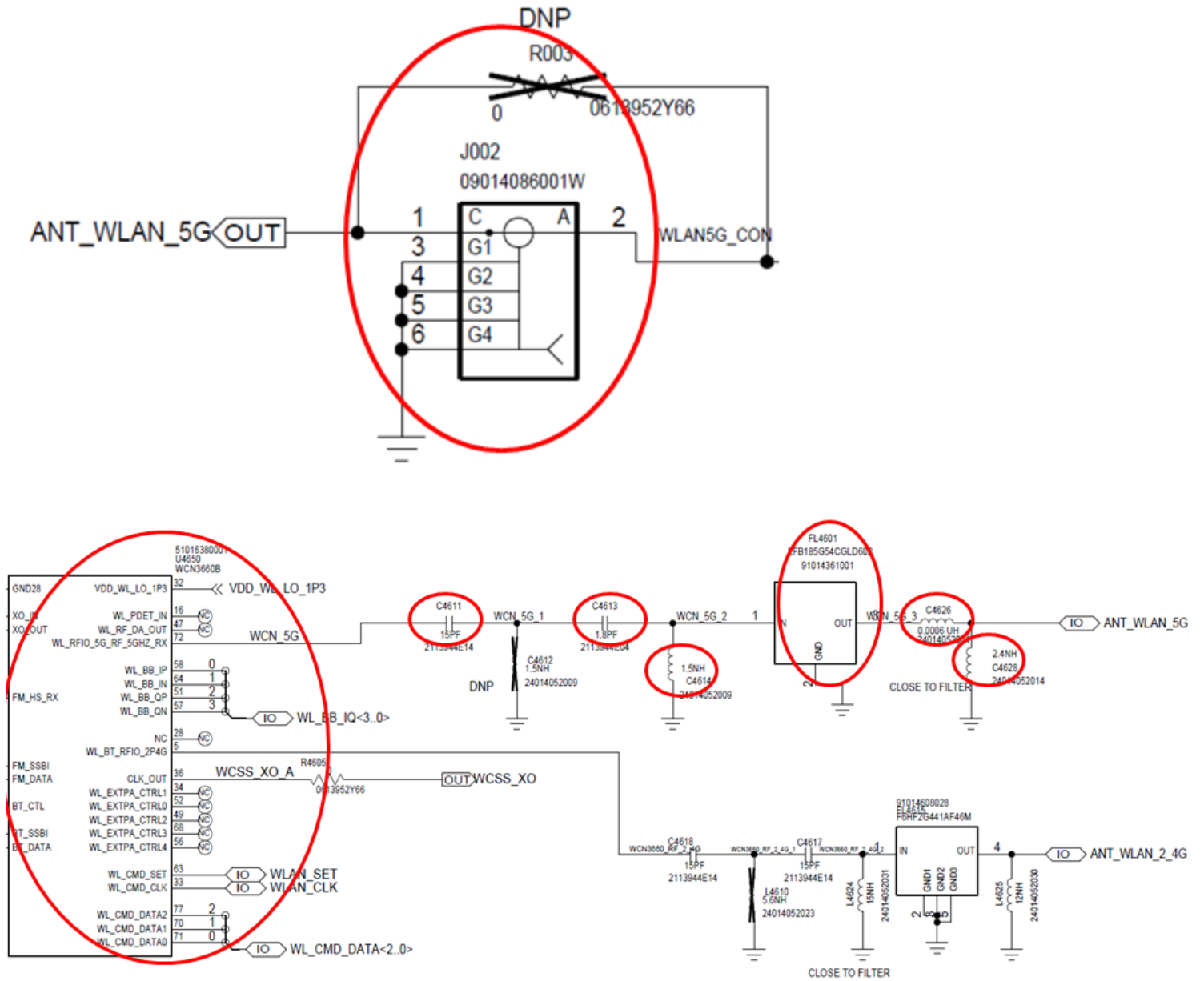
WLAN 5GHz:



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WLAN 5GHz schematic:



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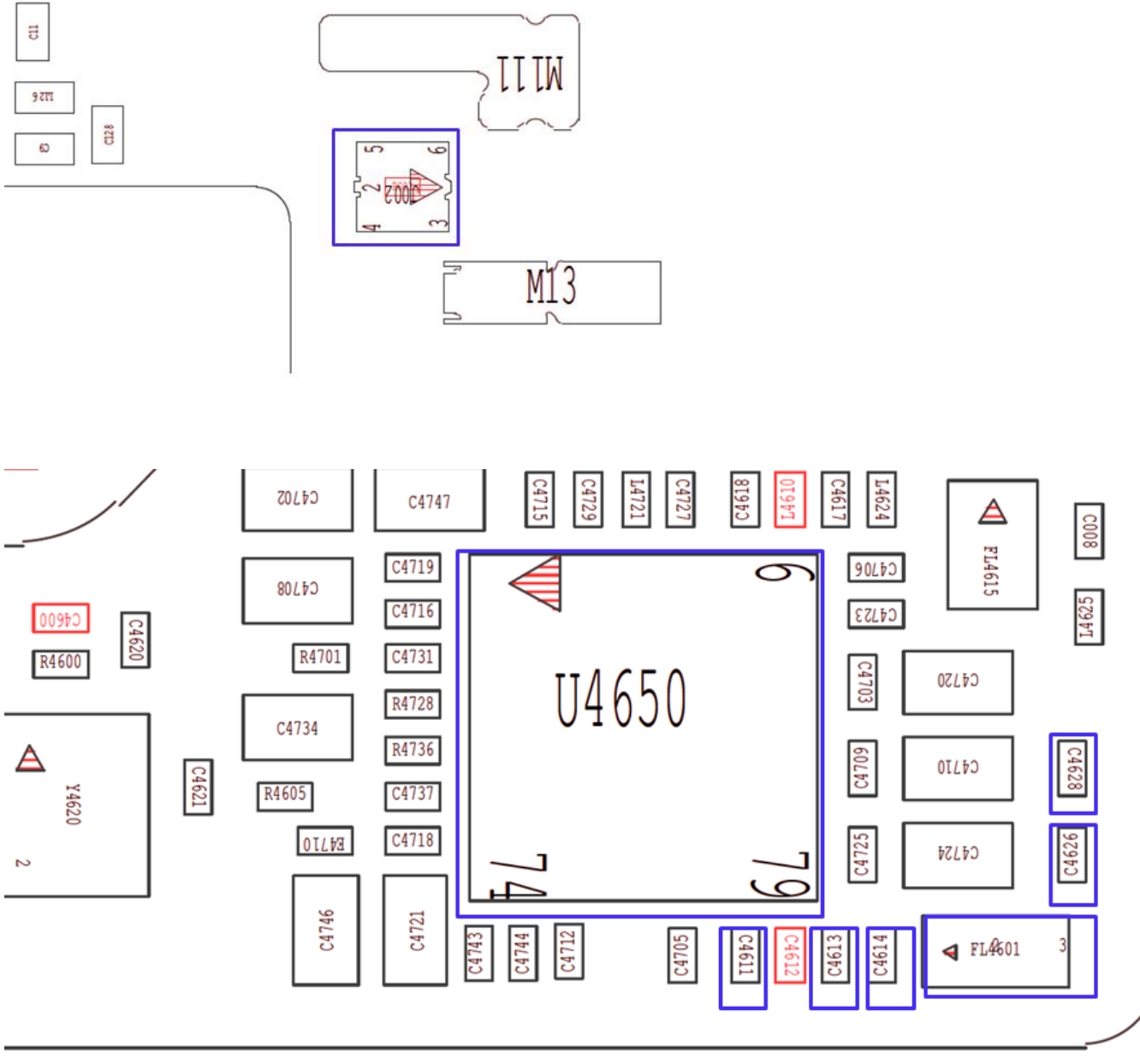
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WLAN 5GHz Overlay:



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GPS

A description of Vertex GPS system

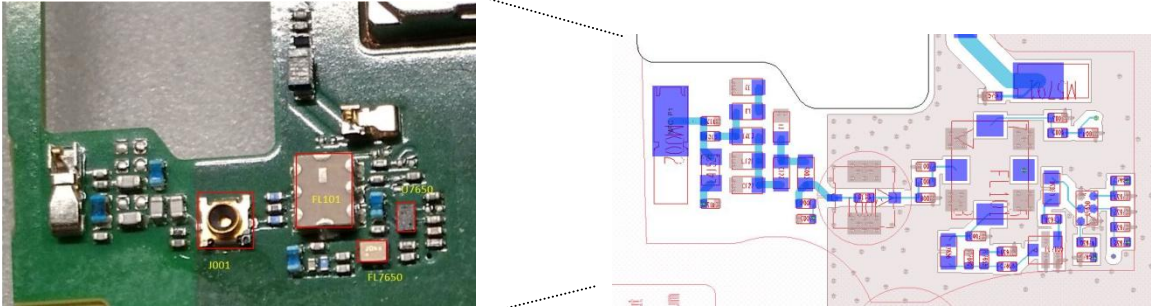


Figure 1 GPS receiver for Vertex location top of pcb

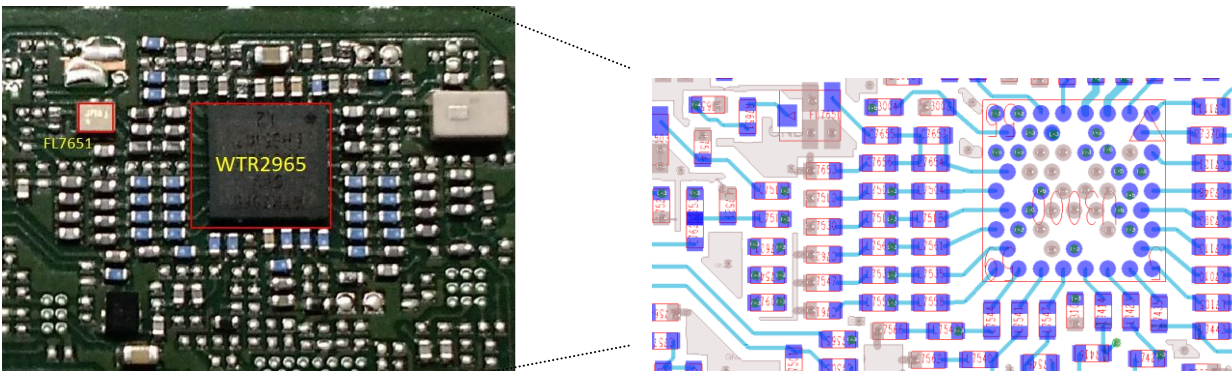


Figure 2 GPS receiver for Vertex location near to WTR2965

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TITLE Vertex RF Troubleshooting Guide	MODEL Vertex
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GPS Check up to 50Ω test connector for All SKUs

For factory GPS test failure on all SKUs, please do the following:

Step 1: Retest

Step 2: If retest does not pass, check if feed pin (M002) on the PCB is damaged. Make sure that it is touching the antenna pad. If the contact pin is defected or not making contact, it needs to be replaced.

Step 3: If step 2 does not pass, inspect PCB Ref Des J001, VR120, C124, L3, C1, C121, L121, C122, C123, L1, C005, R001, C007 check connectivity and defect.

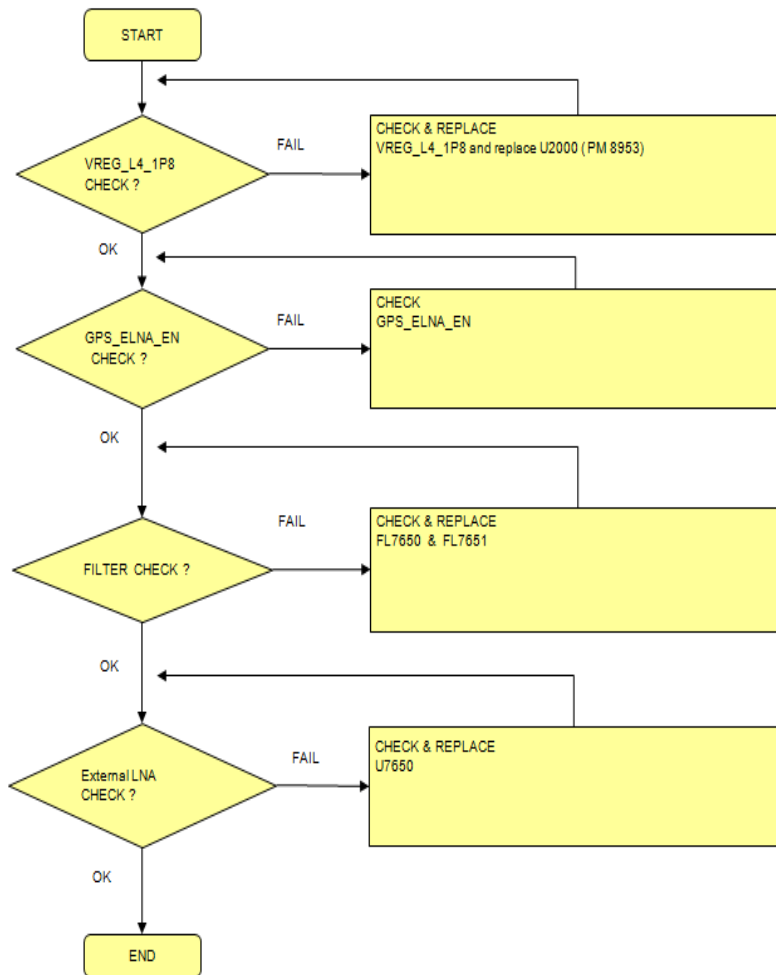
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<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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GPS Check beyond 50Ω test connector for All SKUs

Use following flowchart and schematic for GPS Check

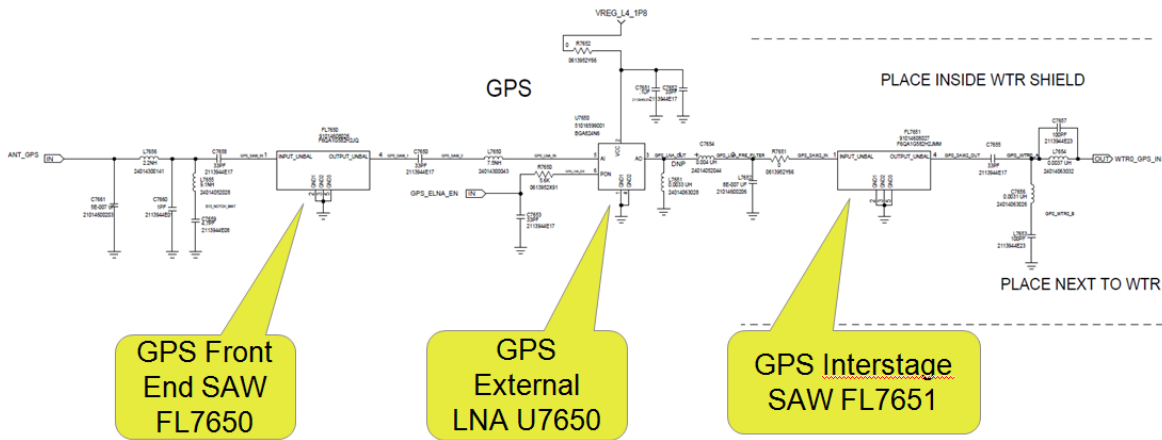
GPS Check Chart



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<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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GPS Front End Block



If there are still factory failures check the following PCB Ref Des L008, C001, L007, FL101, C7661, L7656, C7660, L7655, C7659, C7658, C7650, L7650R7650, C7653, R7652, C7651, C7652, L7651, C7654, L7652, R7651, C7655, C7656, L7653, C7657, L7654 check for connectivity and defect.

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<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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NFC

A description of Vertex NFC system

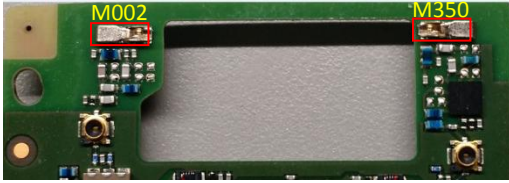


Figure 1 NFC for Vertex location top of pcb

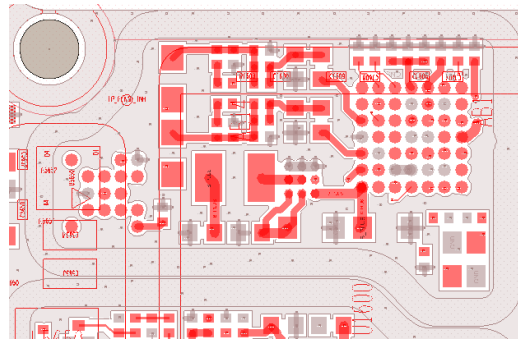
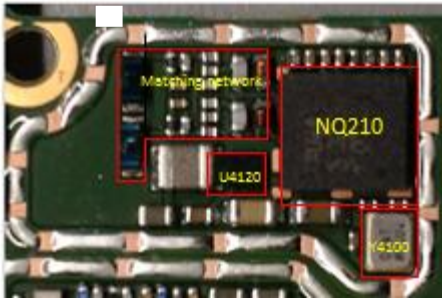


Figure 2 NFC for Vertex

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TITLE <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	MODEL <h2 style="text-align: center;">Vertex</h2>
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NFC Check All SKUs

For factory NFC test failure on all SKUs, please do the following:

Step 1: Retest

Step 2: If retest does not pass, check if feed pins M002 and M350 on the PCB are damaged. Make sure that it is touching the antenna pad. If the contact pin is defected or not making contact, it needs to be replaced.

Step 3: If step 2 does not pass, inspect PCB Ref Des VR120, C124, L4152, C4157, C471, L8, C471, L4172, C4171 check connectivity and defect.

Step 4: If step 3 does not pass, check alignment of shield SH1, if misaligned, then take an Xray and check that the PCB RefDes

Matching network:

L4151, C4155, C4154, C4152, C4151, L4150, R4151, C4150,

L4171, C4165, C4164, C4163, C4161, L4160, R4161, C4160

XTAL:

C4130, C4131

BOOST:

C4121, L4122, C4125, C4126

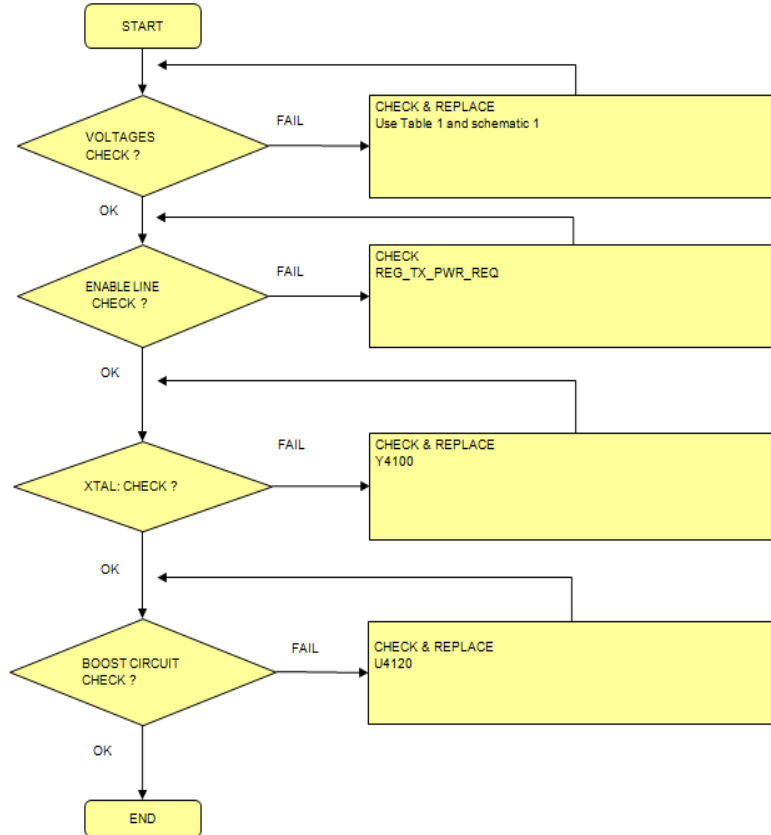
Check for connectivity and defect make sure no components have been shorted to the Shield.

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<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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Use following flowchart, table 1 and schematic 1 for NFC Check

NFC Check Chart



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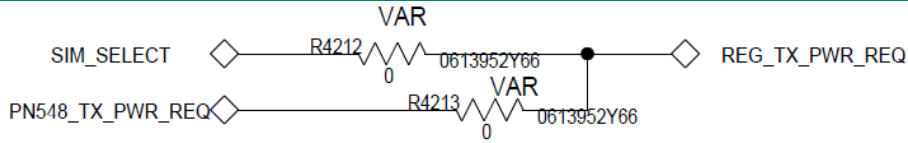
TITLE Vertex RF Troubleshooting Guide	MODEL Vertex
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	Phone ON		Voltages (V)
	SIM_Select (LOW = SIM 1)	SIM_Select (High = SIM 2)	
VDD_SIM_PMU	Vreg_L14_UIM1 Com4-NC4	Vreg_L15_UIM2 Com4-NO4	1.8
VDD_SIM	No connect Com3-NC3-NC1-open	No connect Com3-NO3-NC2-open	1.8
SIM_VCC_1	Vreg_L14_UIM1 Com1-NO1	Vreg_L14_UIM1 Com1-NO1	1.8
SIM_VCC_2	Vreg_L15_UIM2 Com2-NO2	Vreg_L15_UIM2 Com2-NO2	1.8
UIM1_SWP	SIM_SWP	Not connected	
UIM2_SWP	Not connected	SIM_SWP	

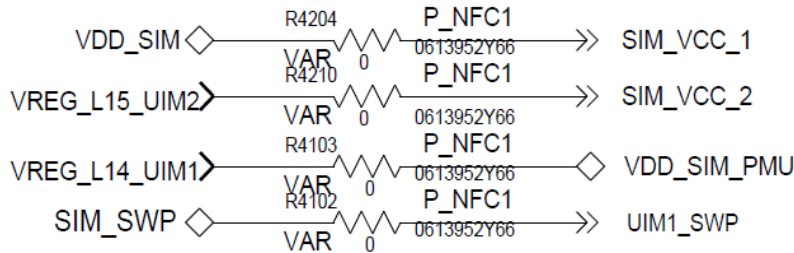
Table 1 NFC voltages for USIM

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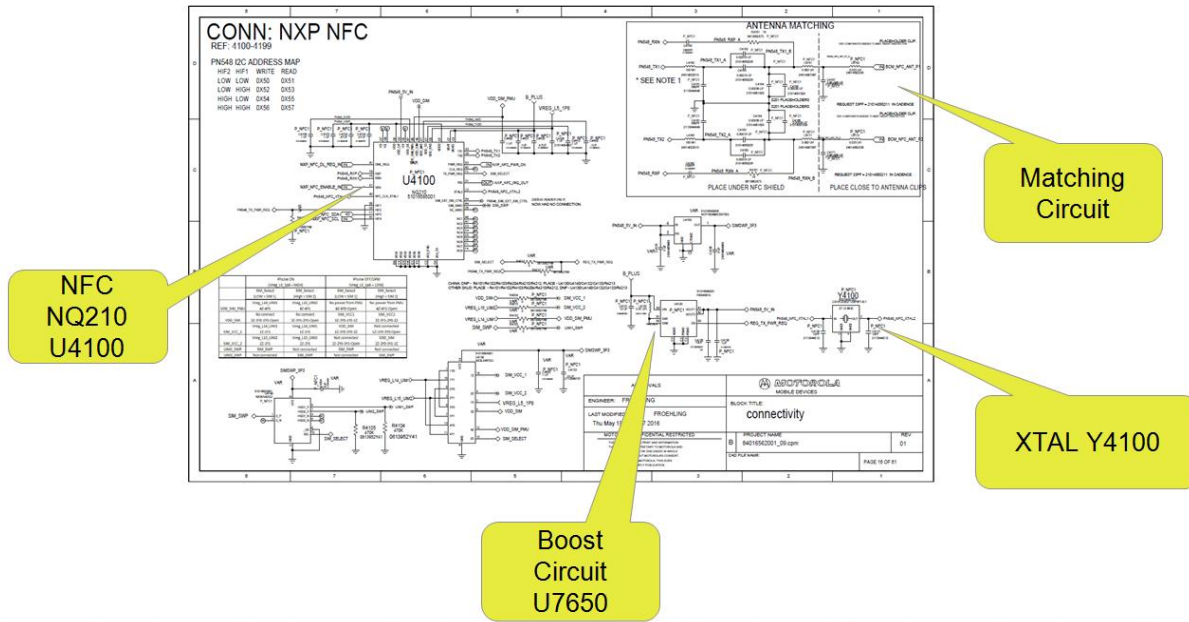


CHINA: DNP - R4101/R4102/R4103/R4204/R4210/R4212, PLACE - U4130/U4140/C4132/C4133/R4213
 OTHER SKUS: PLACE - R4101/R4102/R4103/R4204/R4210/R4212, DNP - U4130/U4140/C4132/C4133/R4213



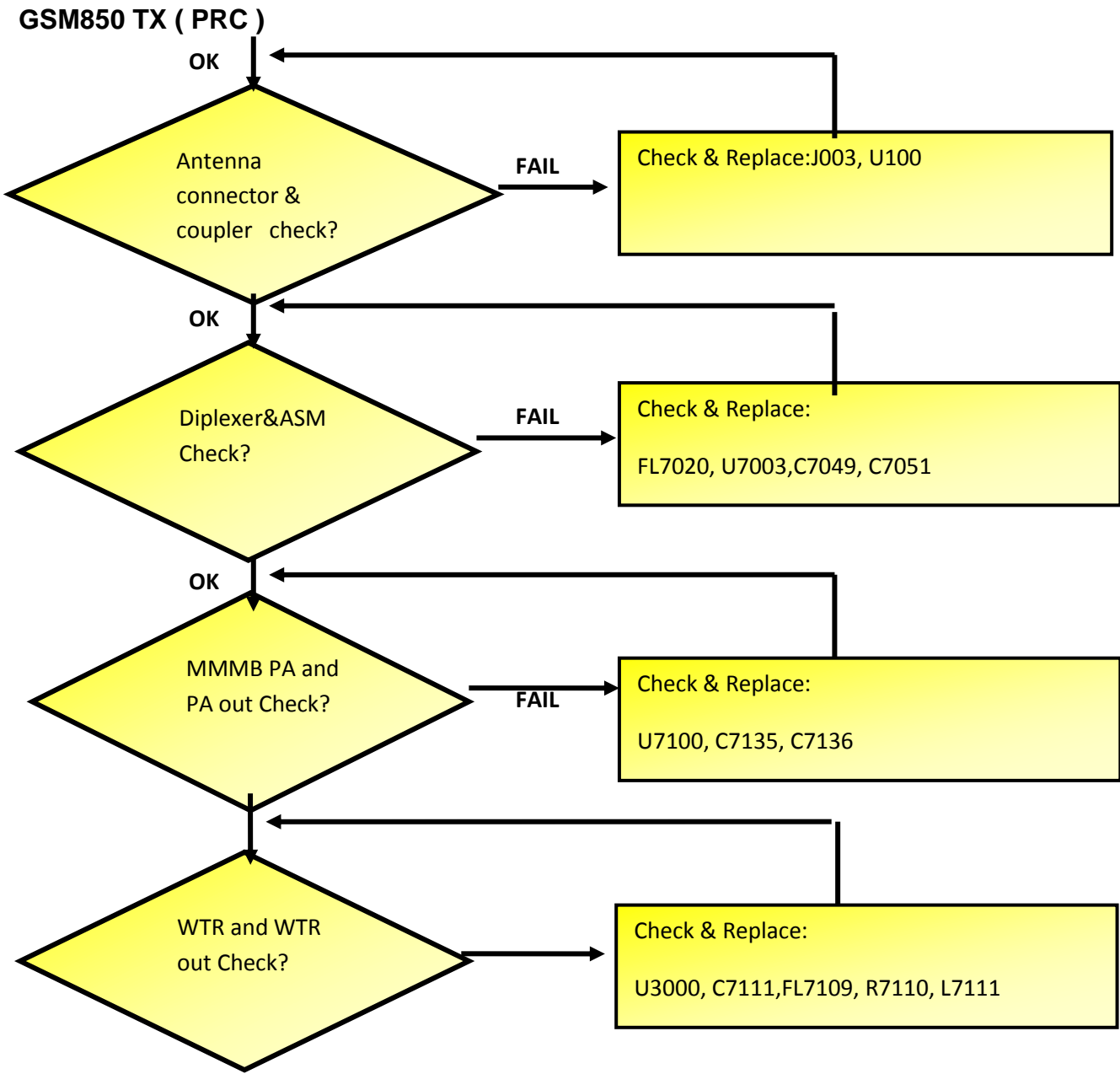
Schematic 1 Voltage measurement locations

NFC Block



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<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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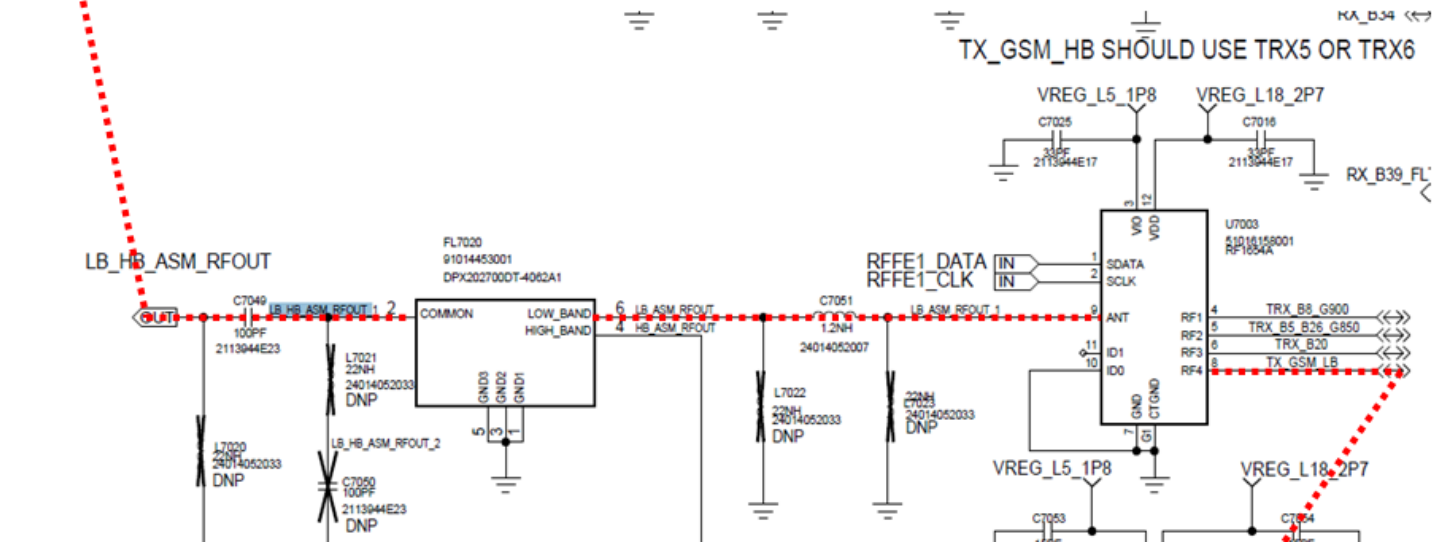
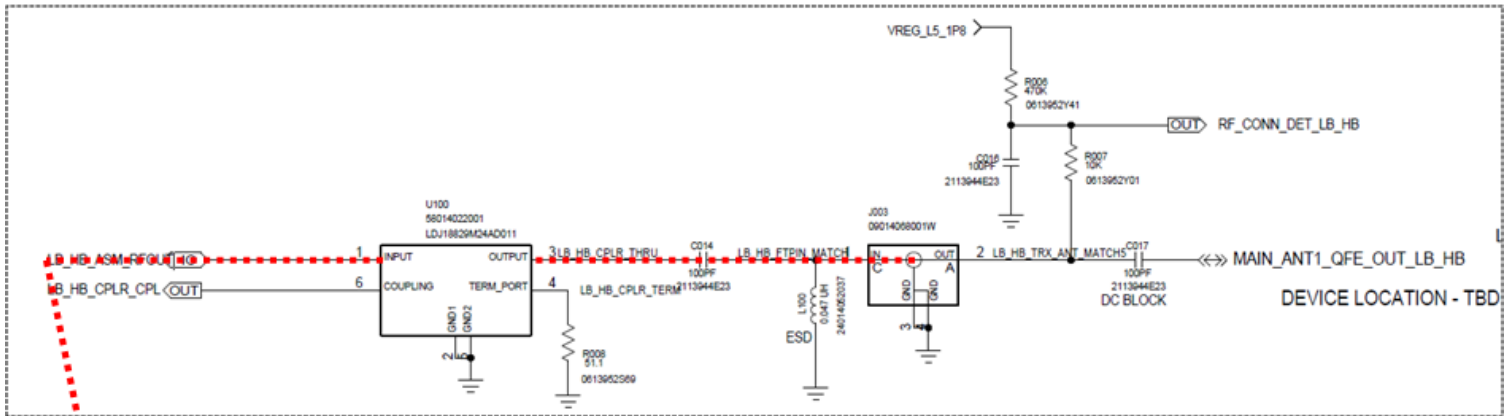
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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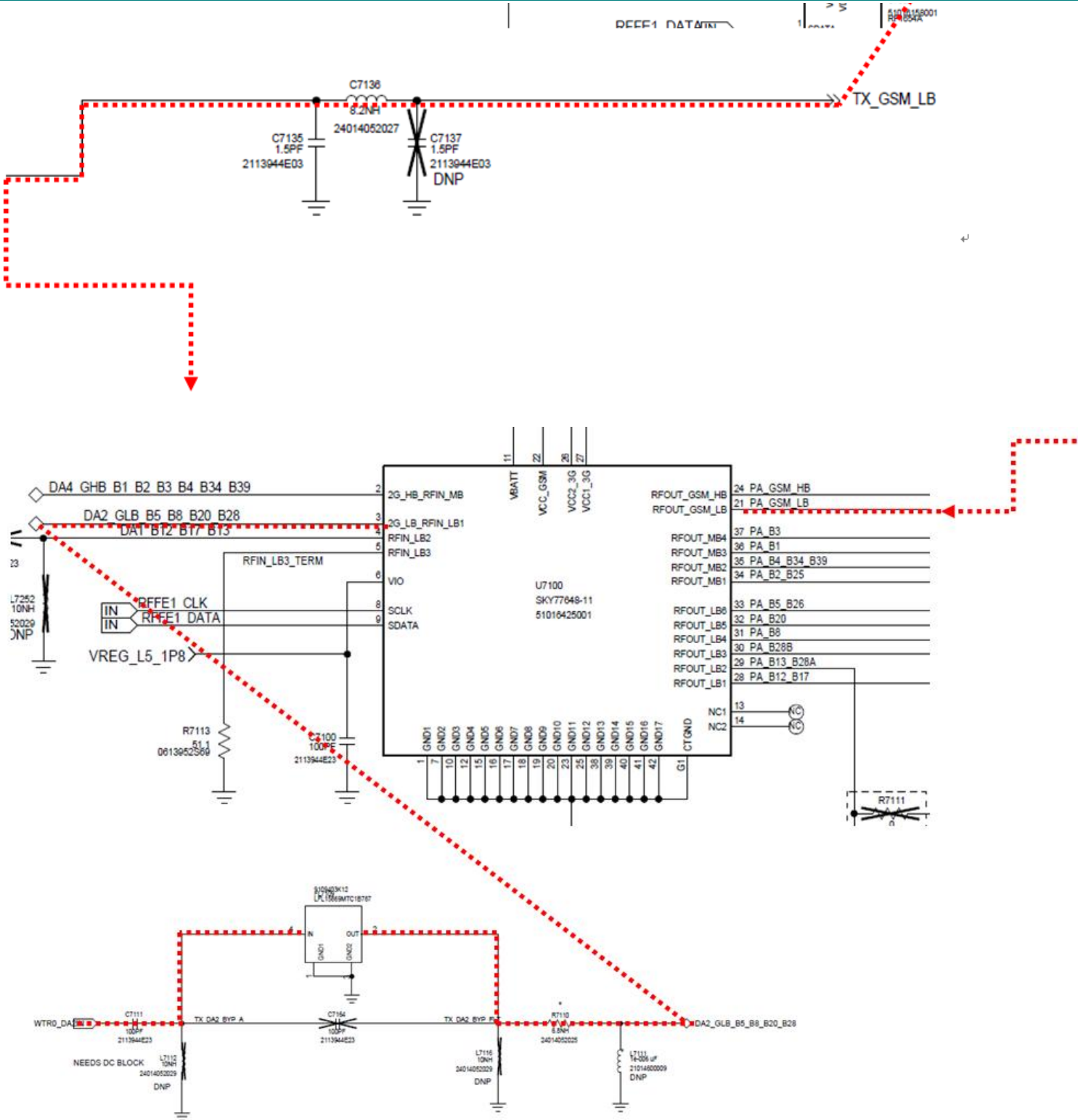
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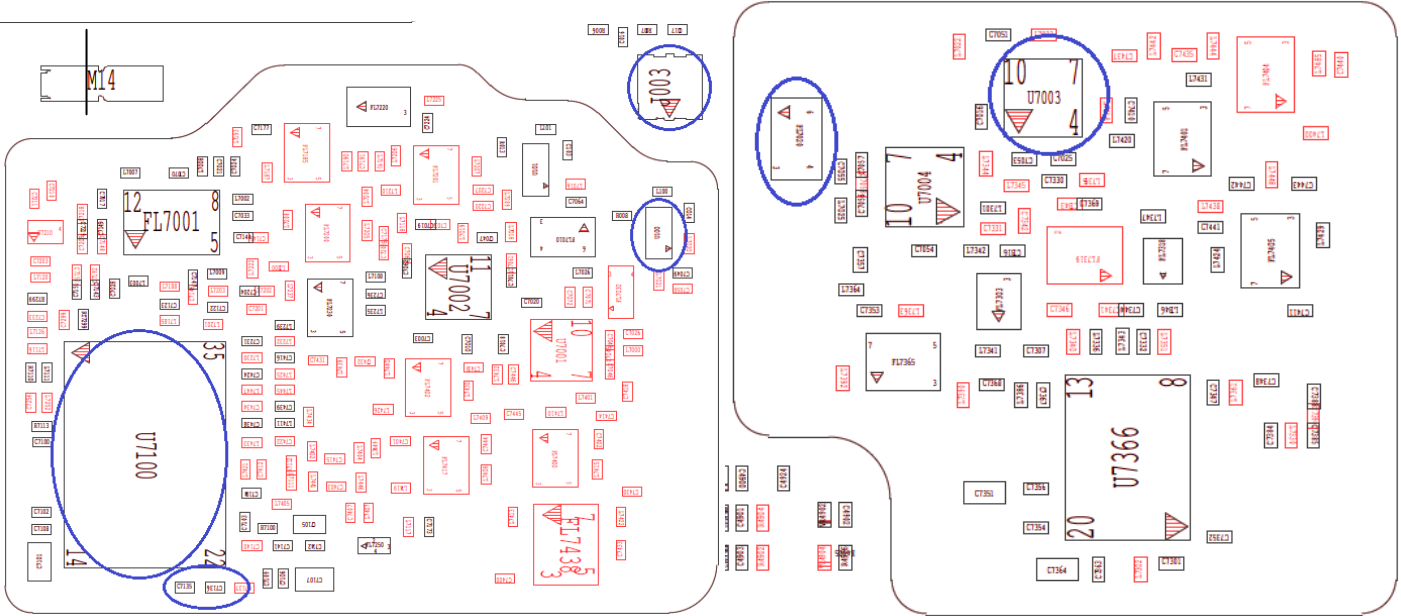
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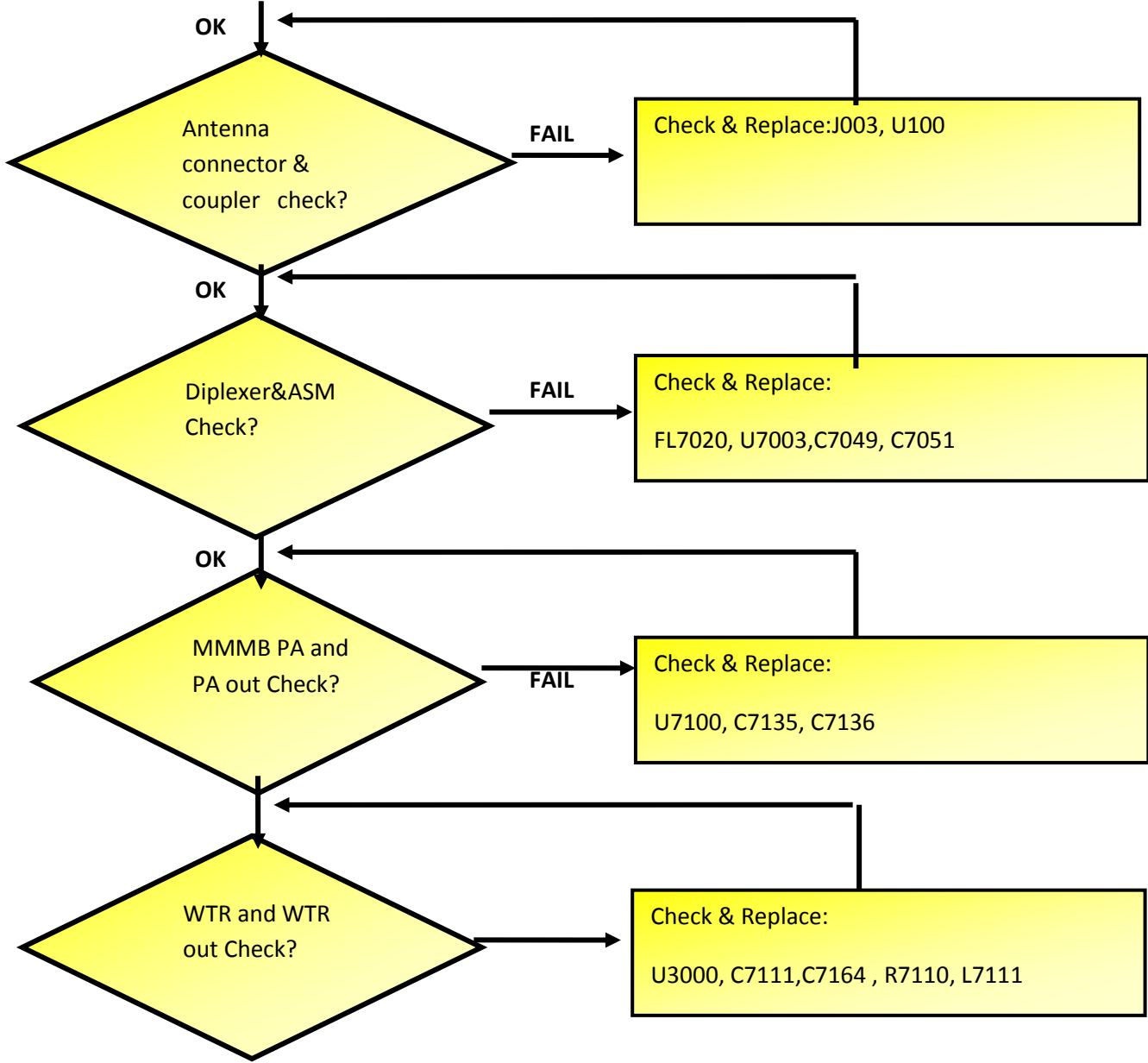
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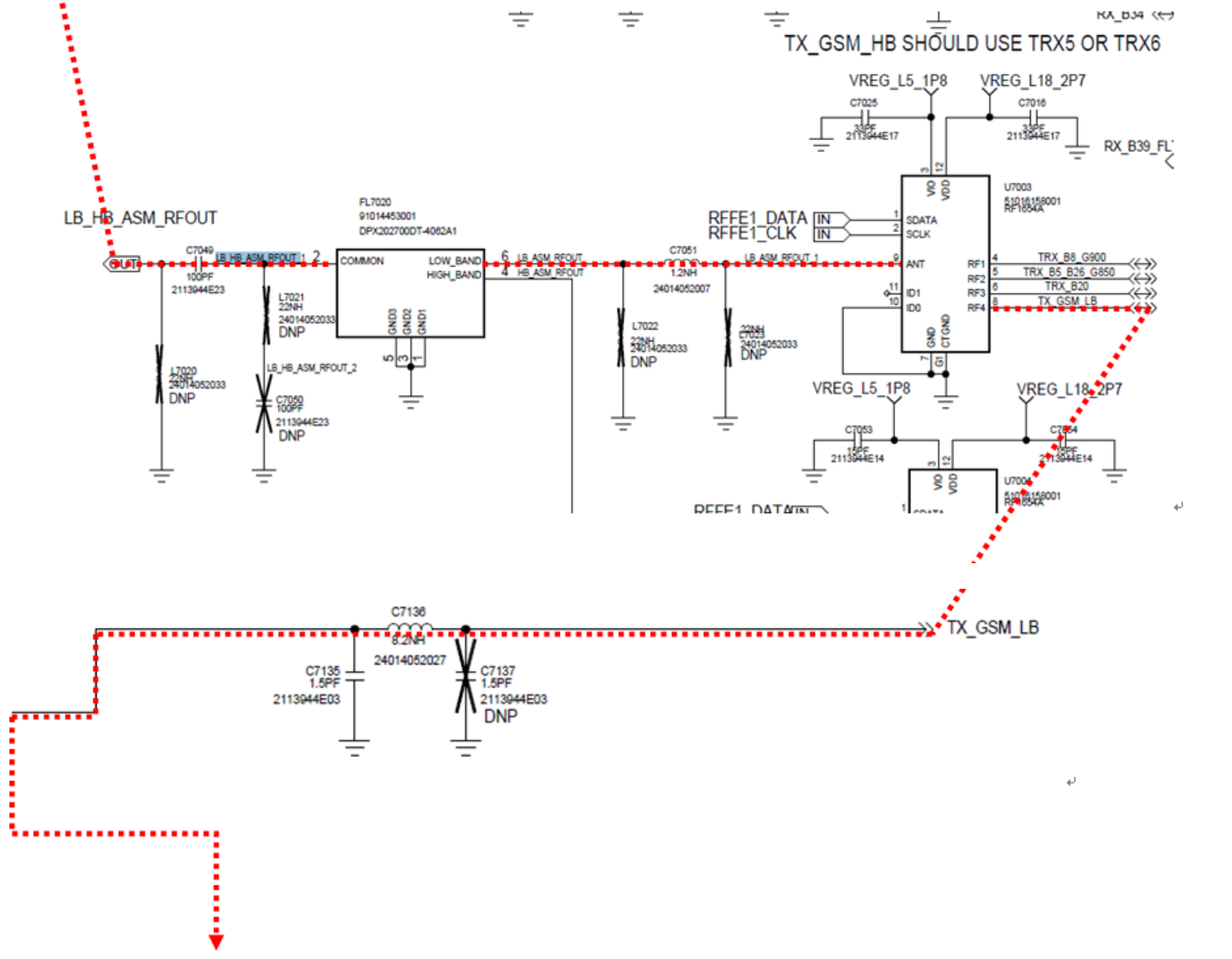
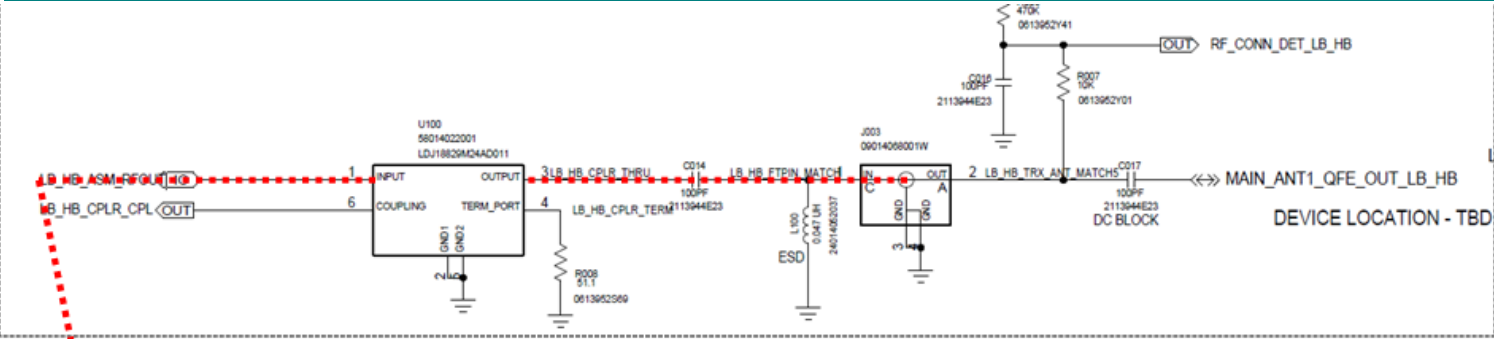
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GSM850 TX (ROW&VZW)



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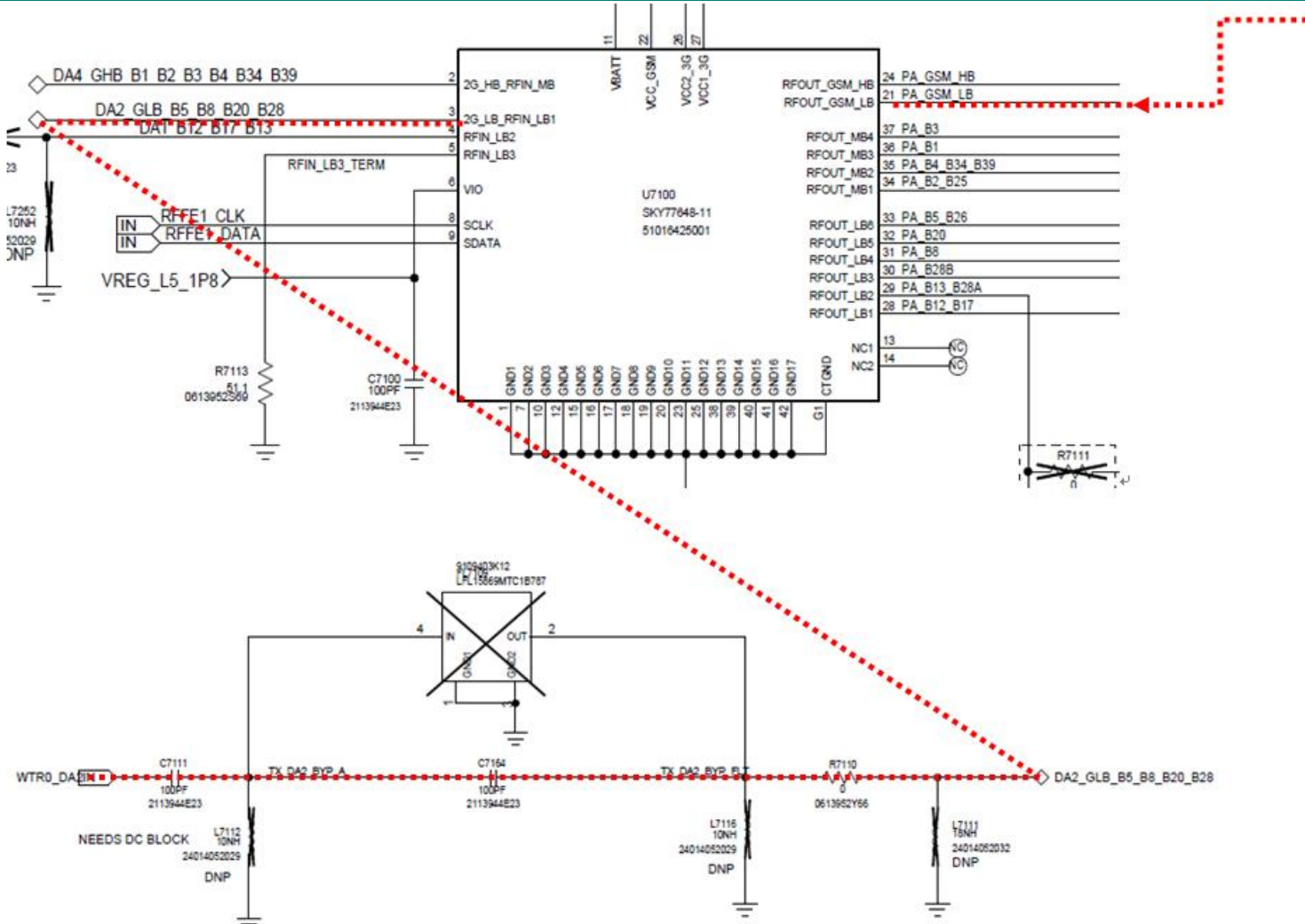
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Vertex RF Troubleshooting Guide

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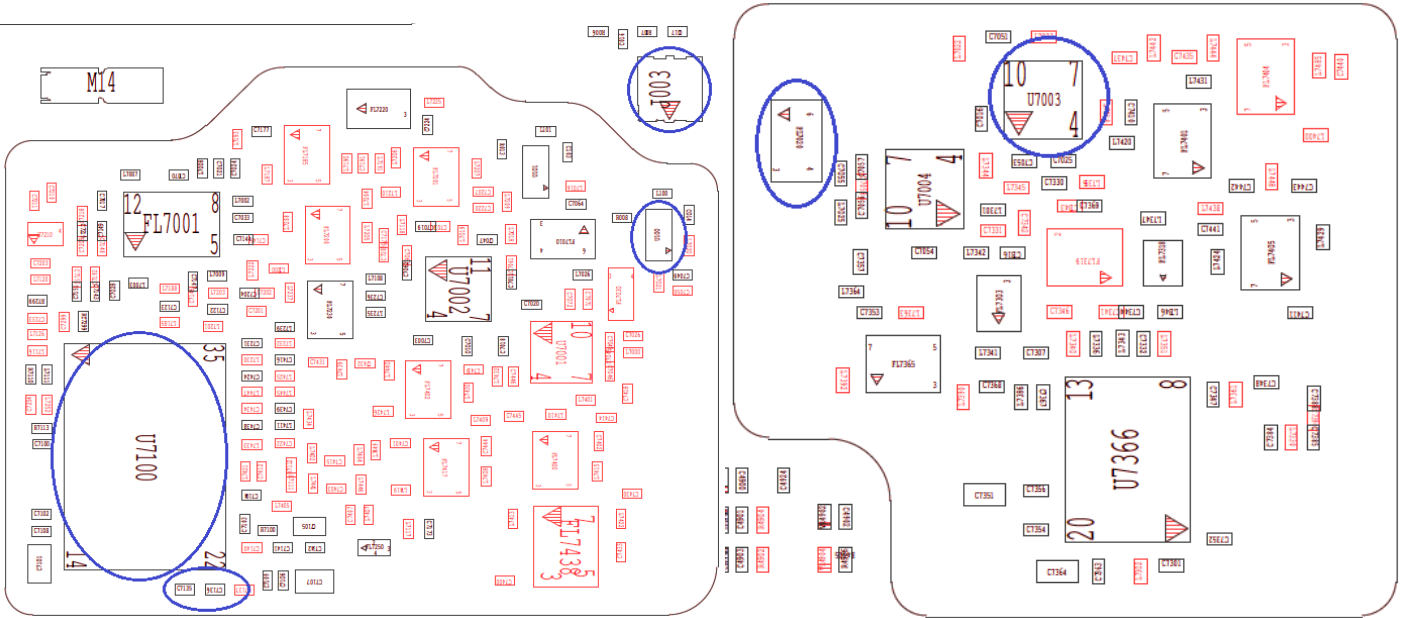
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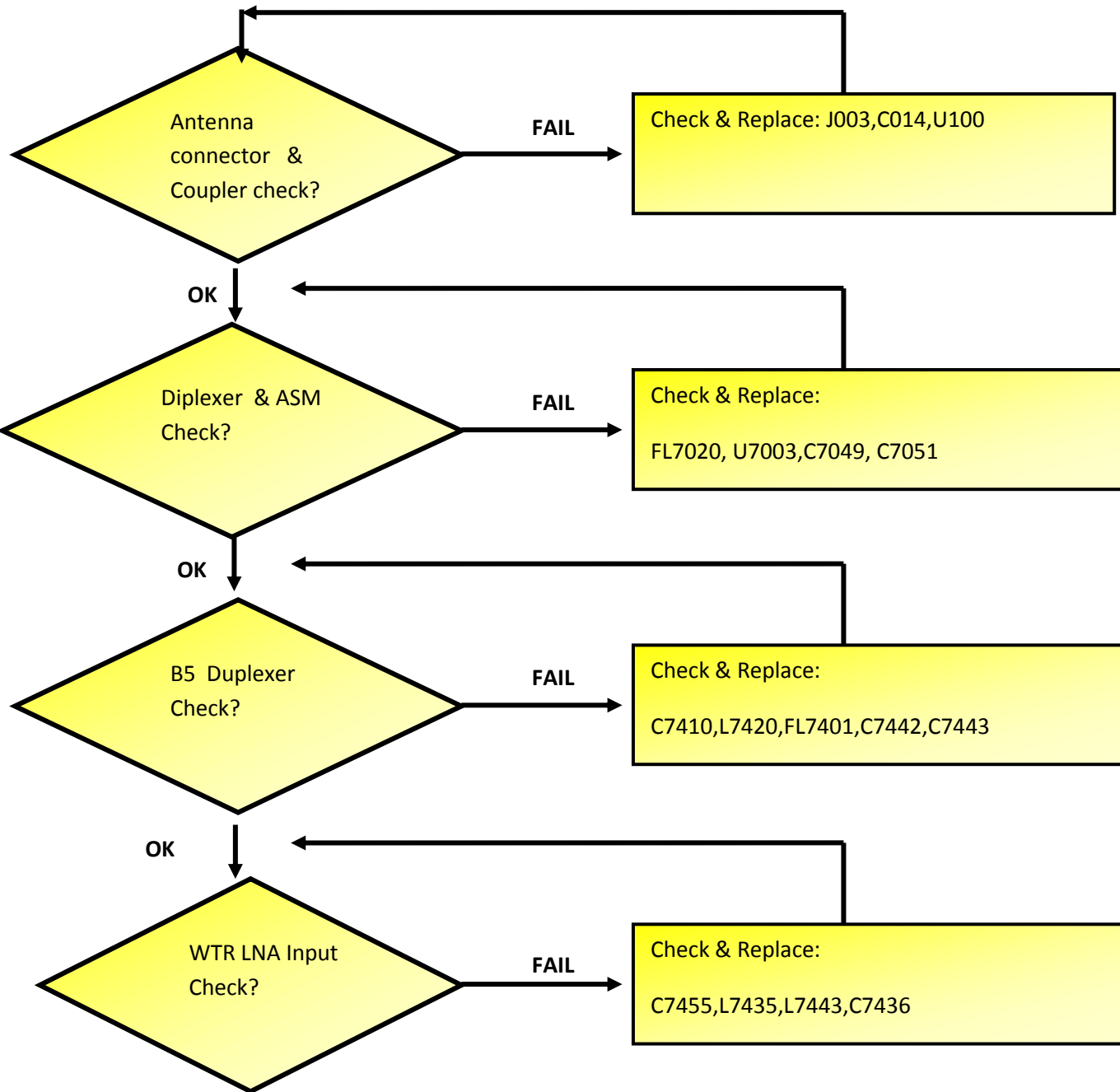
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<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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GSM850 PRX (PRC&ROW&VZW)



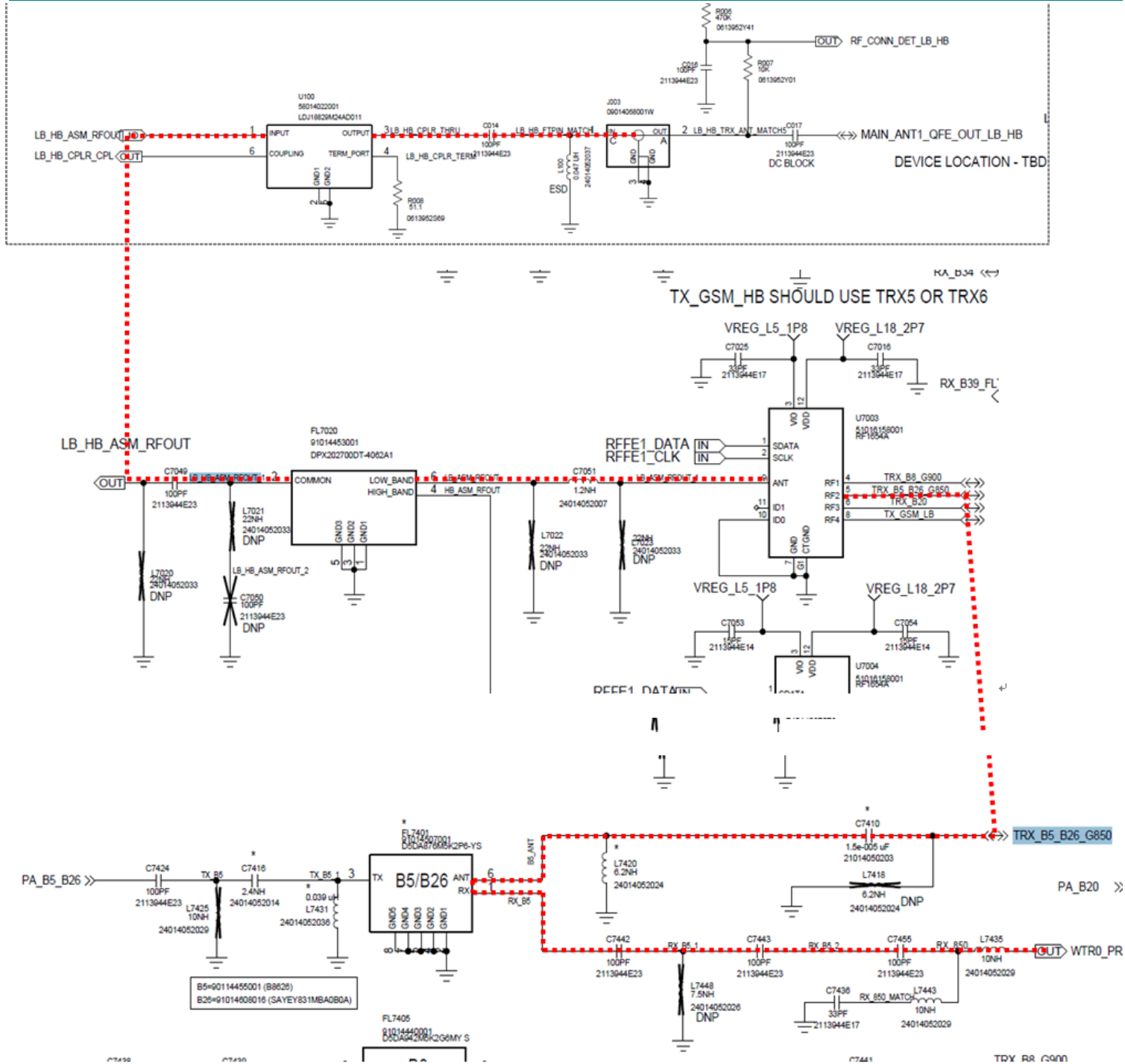
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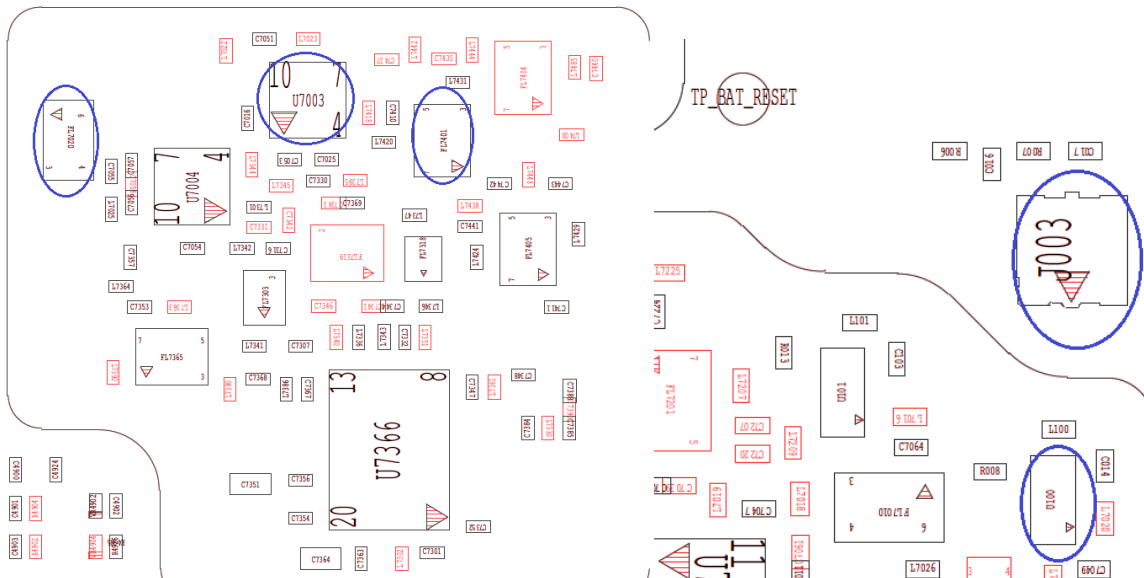
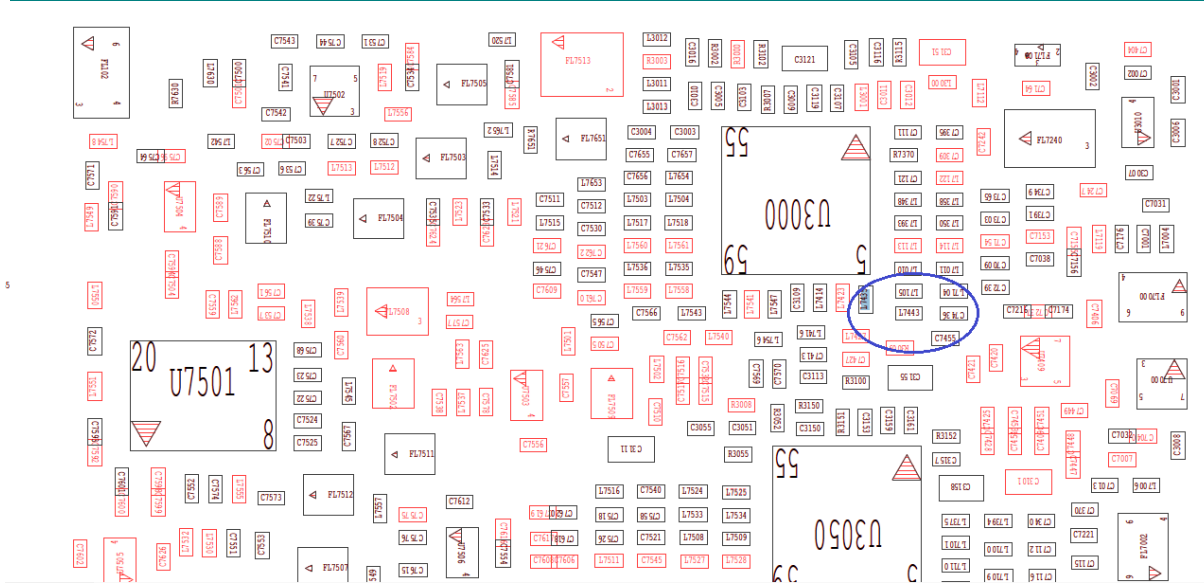
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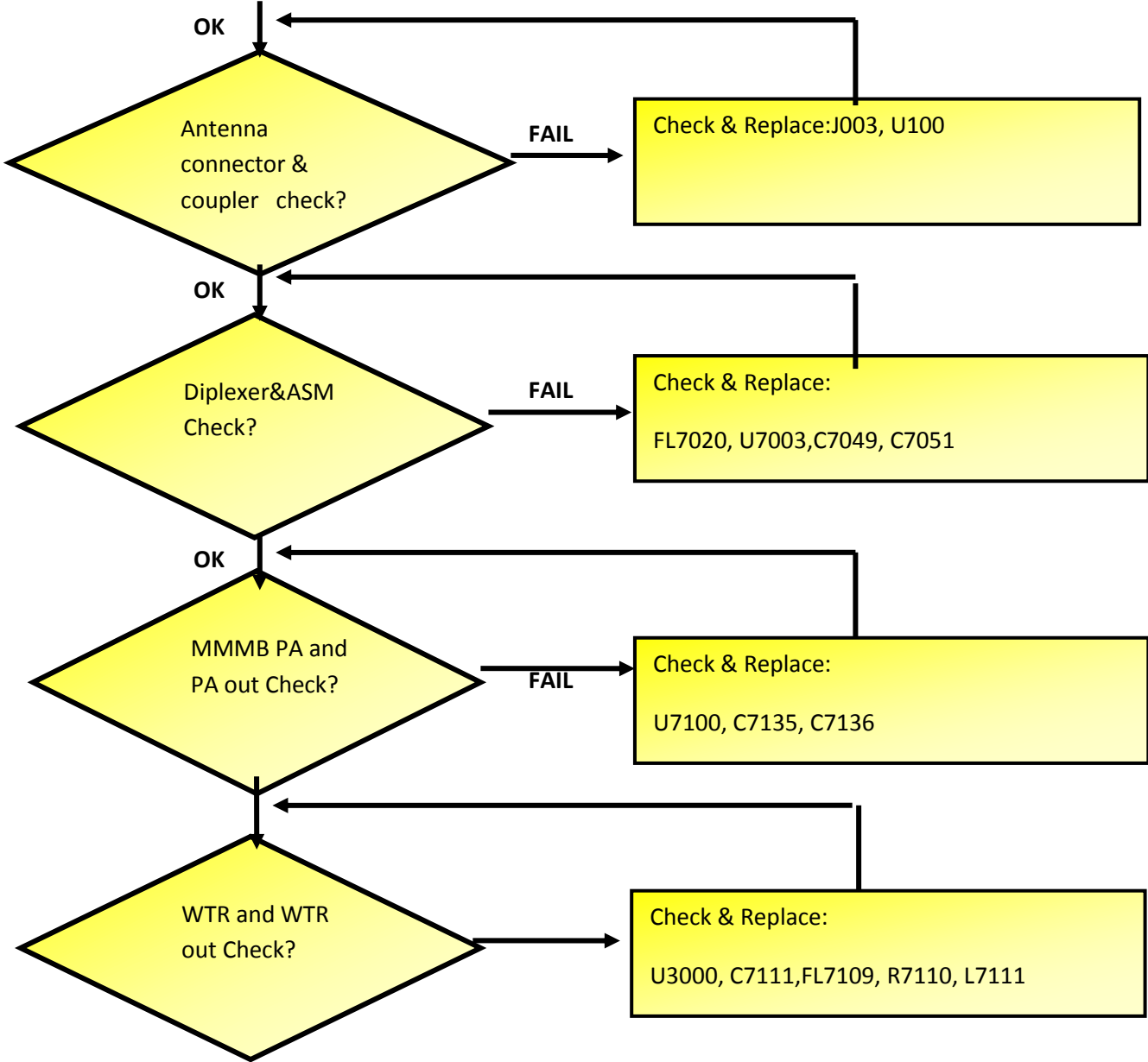
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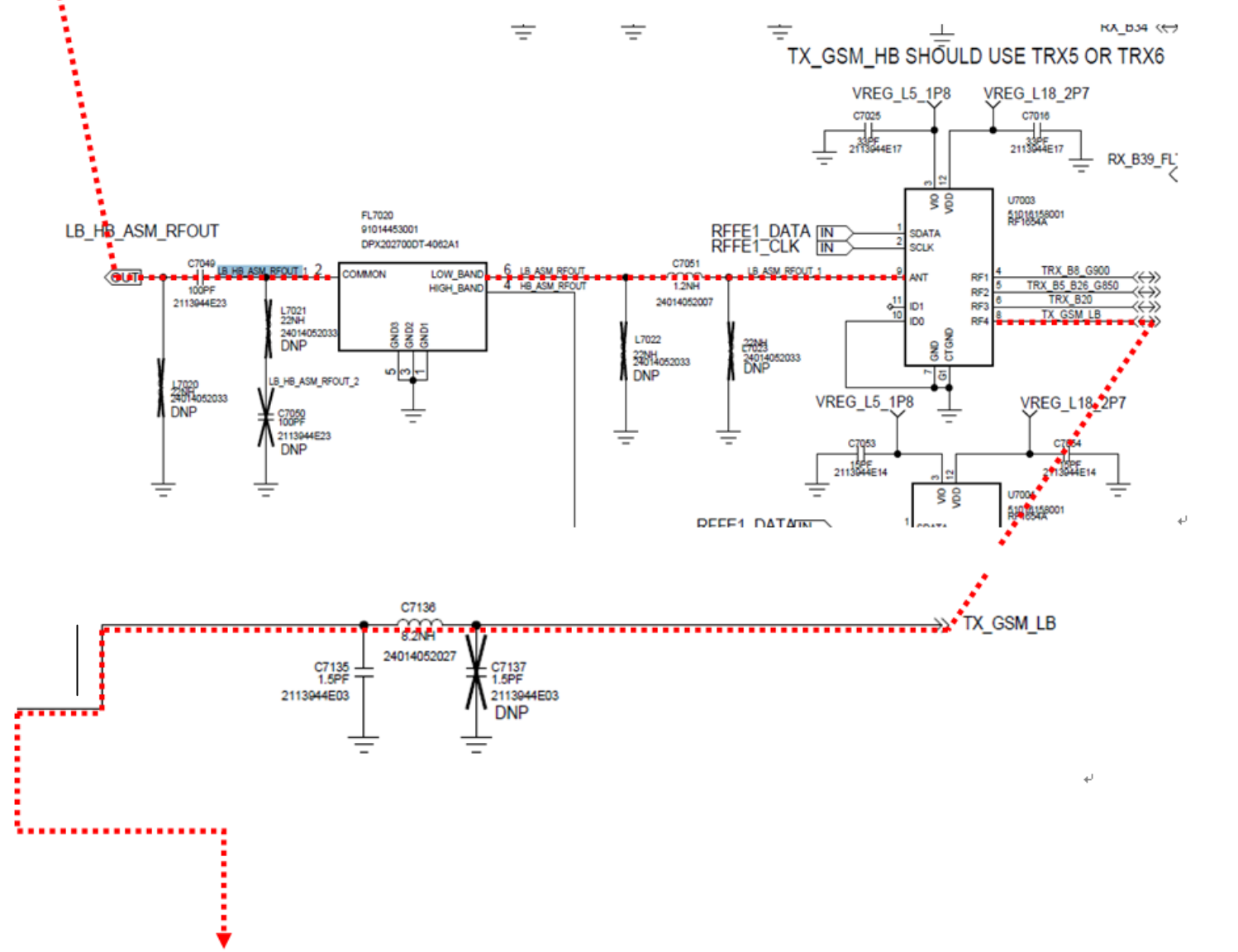
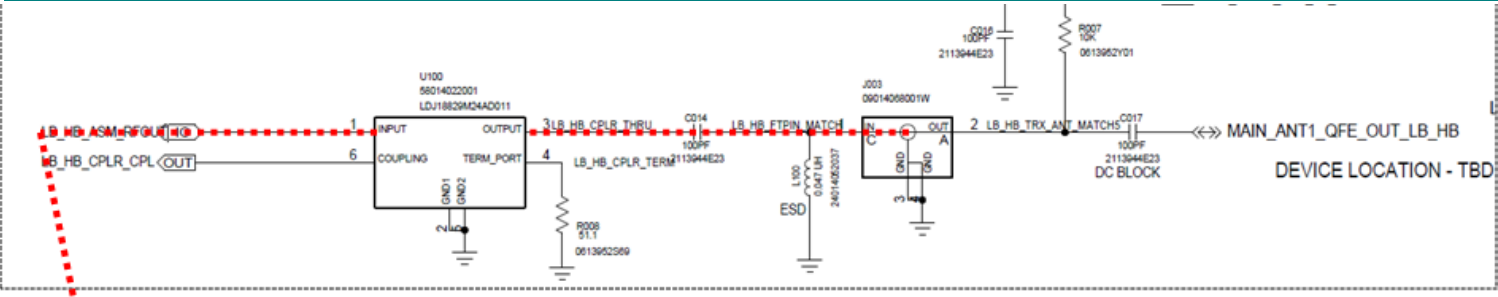
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GSM900 TX (PRC)



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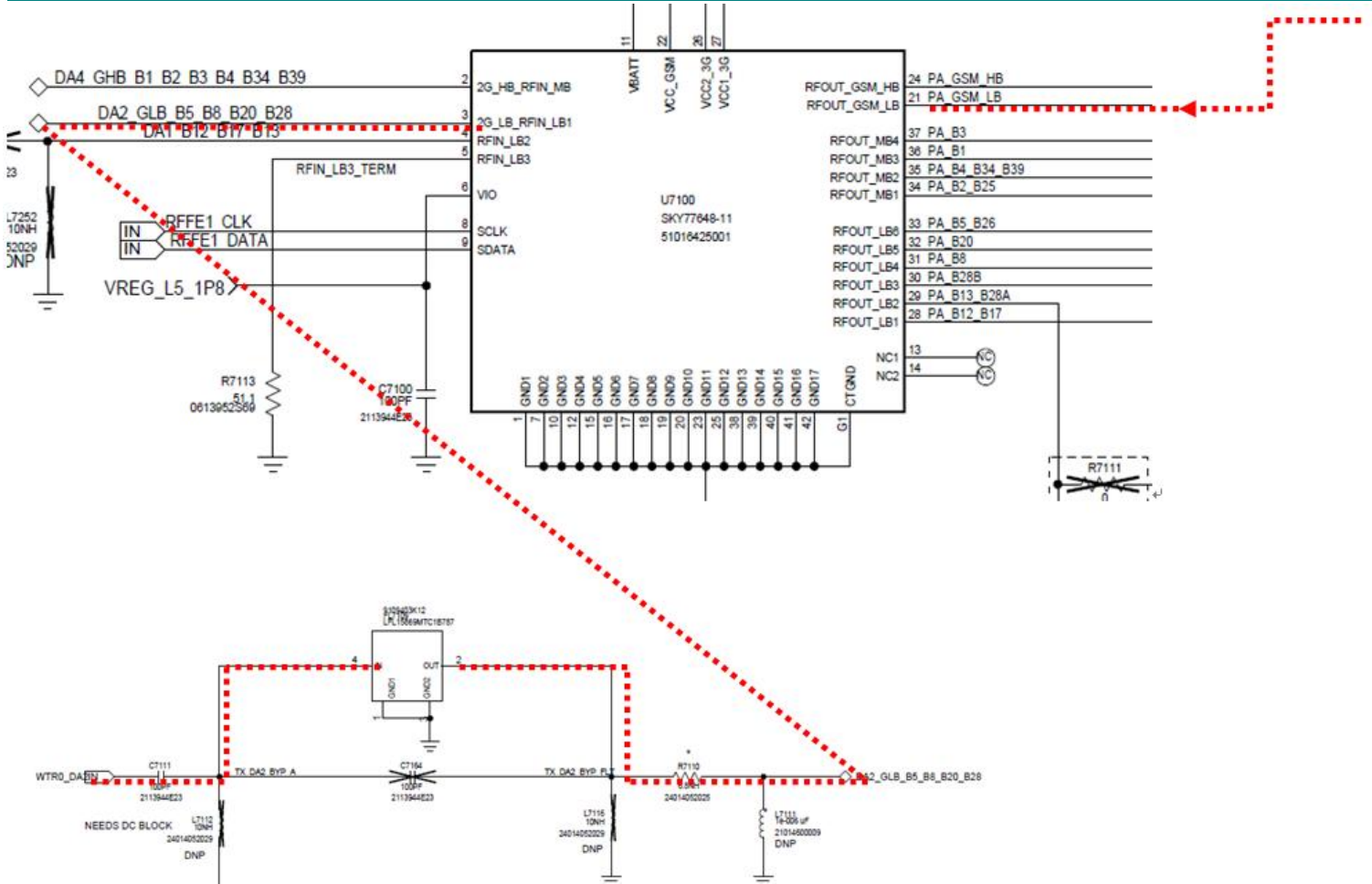
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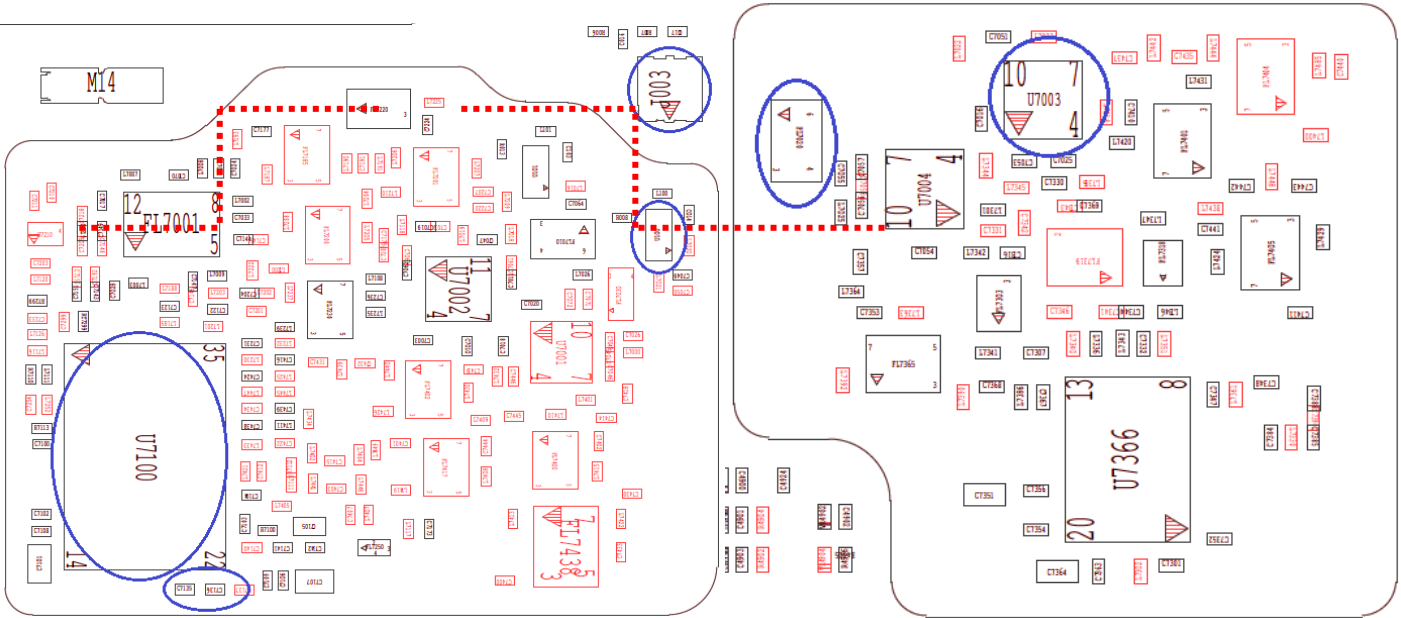
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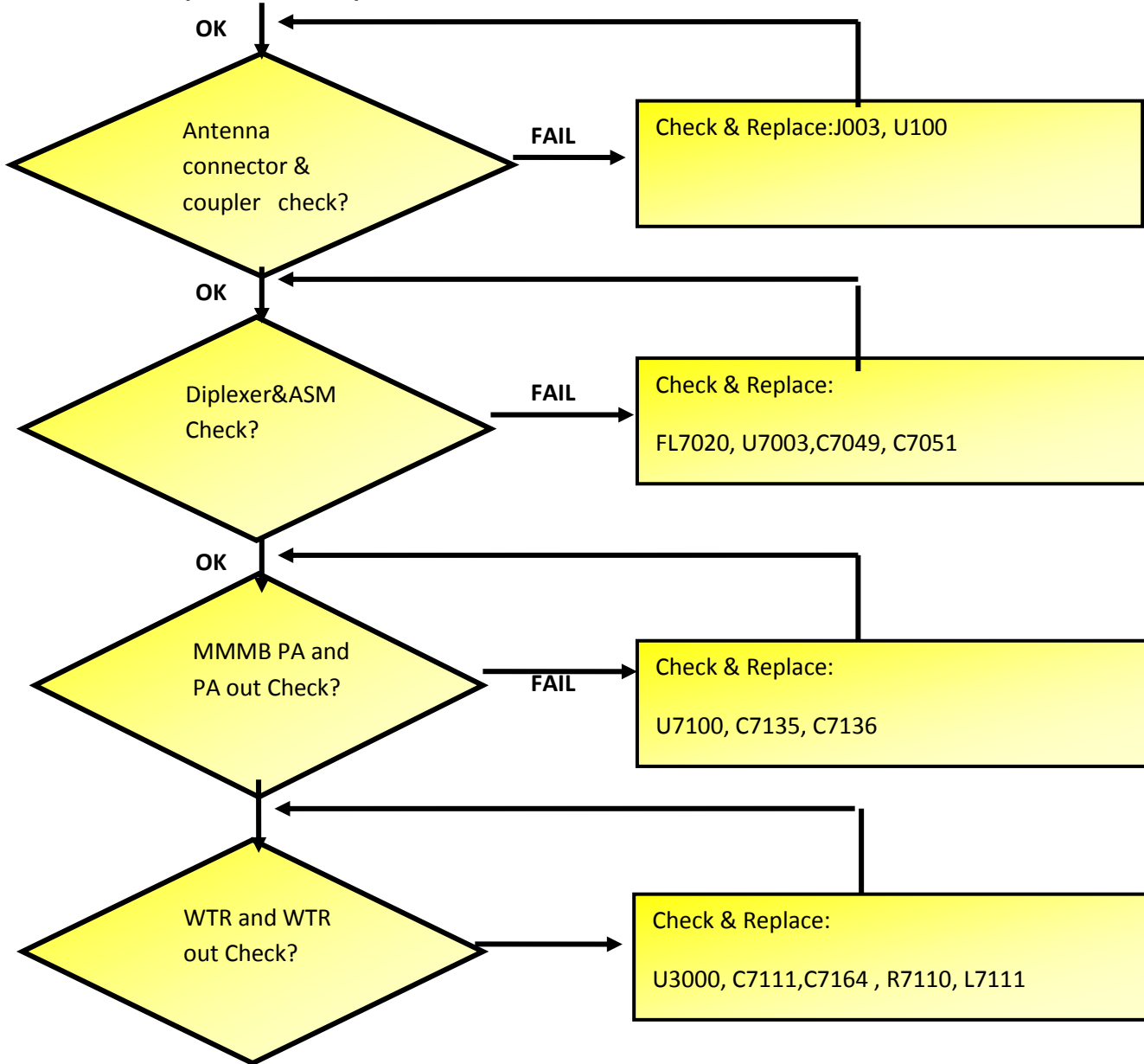
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<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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GSM900 TX (ROW&VZW)



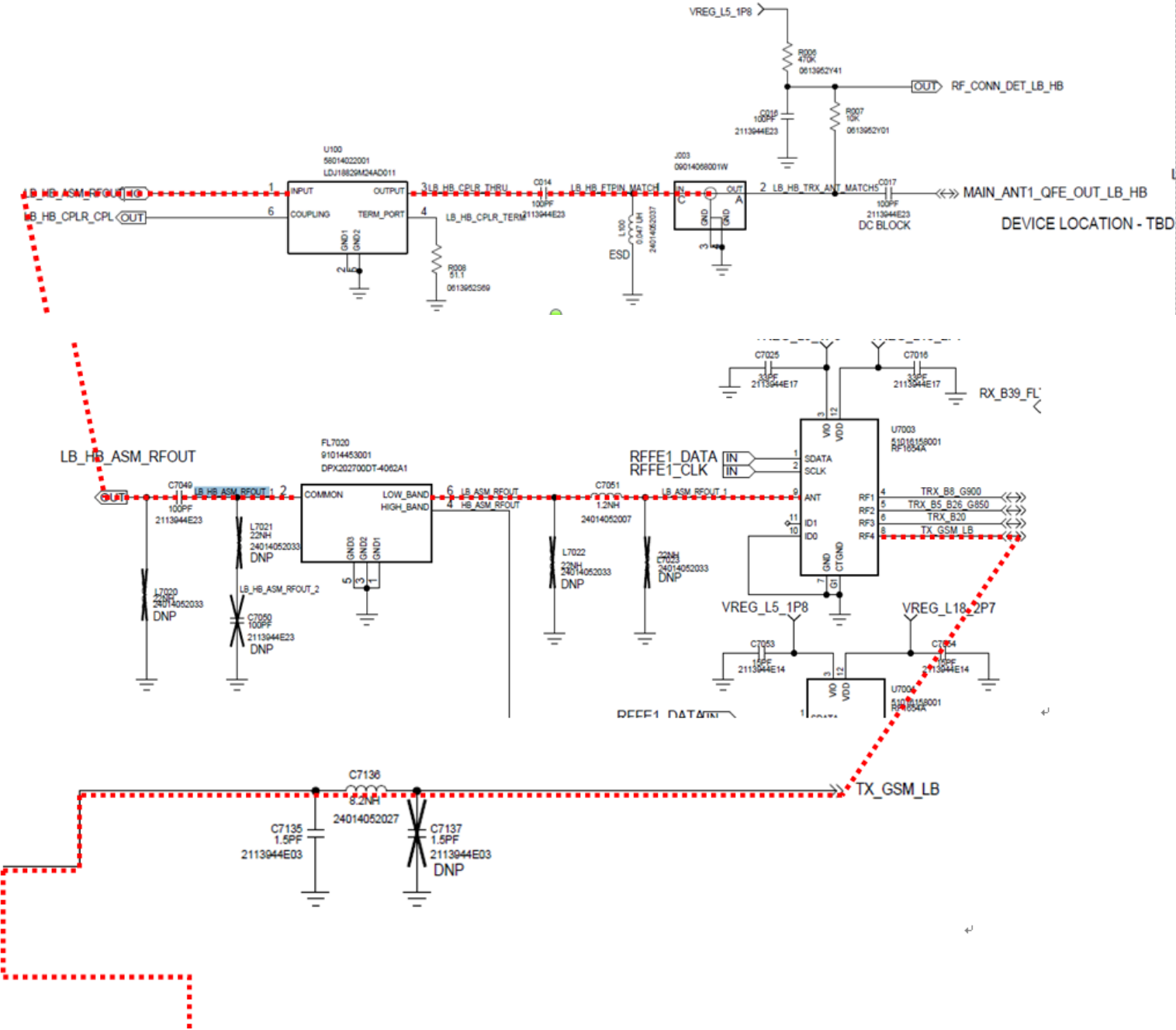
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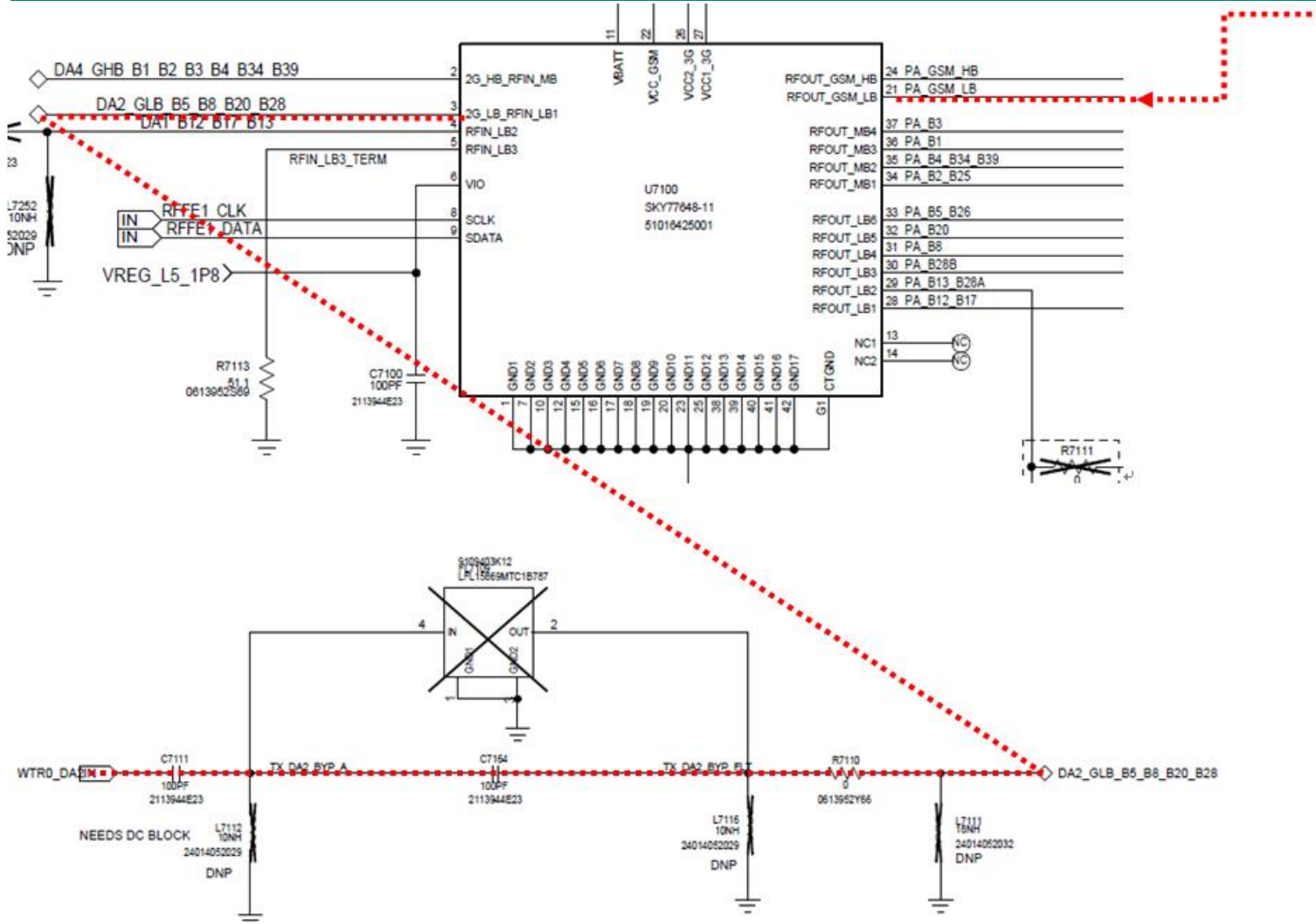
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

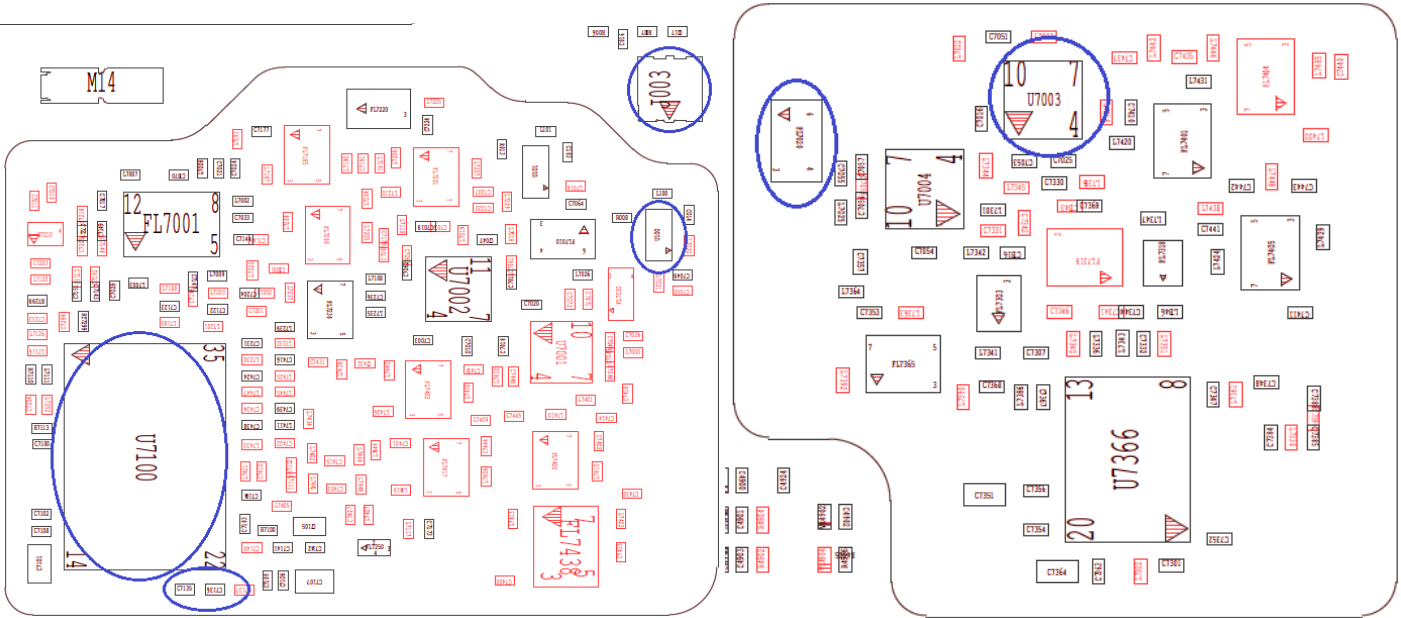
DATE

TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

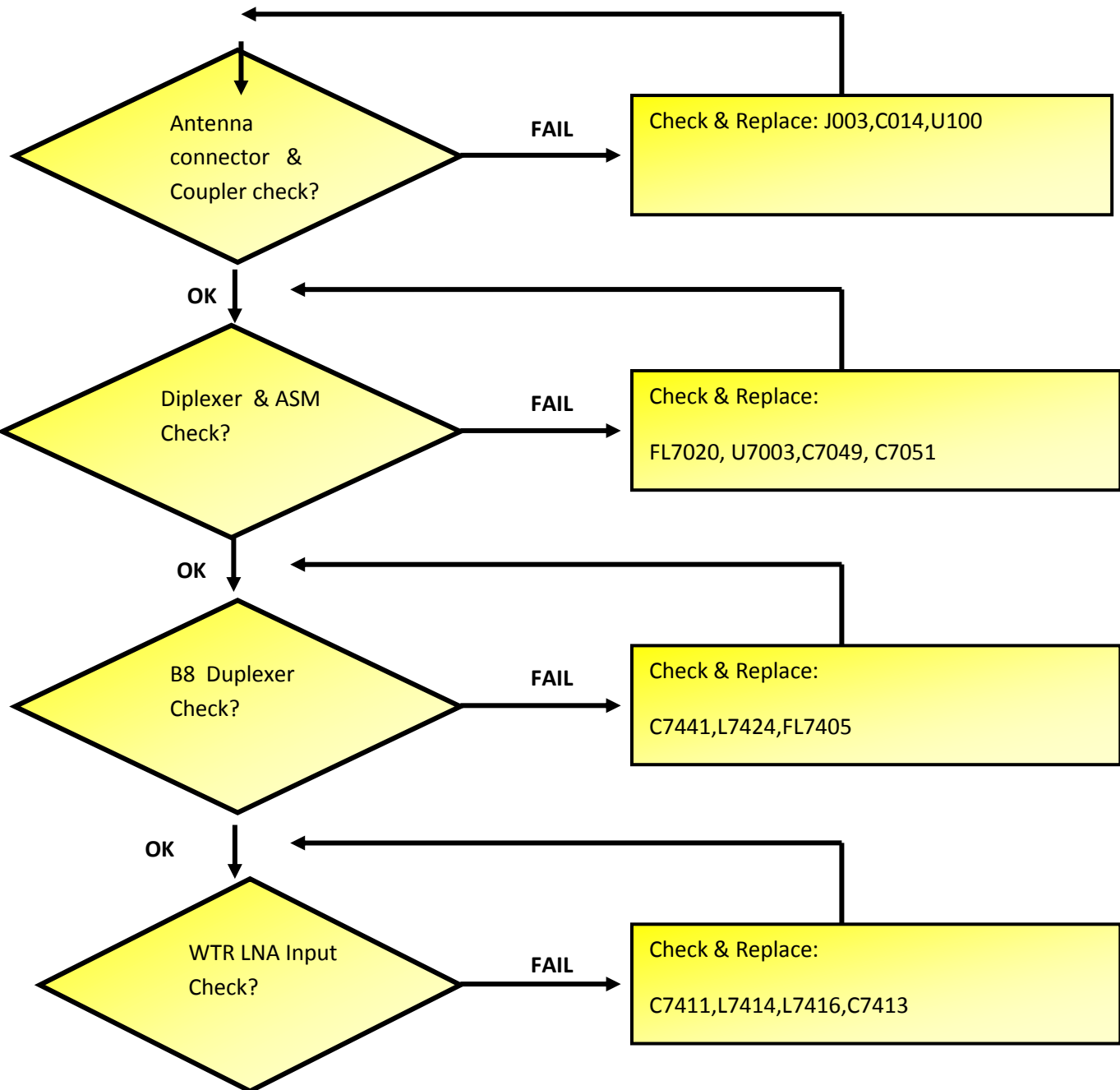
6/1/2016

WITNESS

DATE

<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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GSM900 PRX (PRC&ROW&VZW)



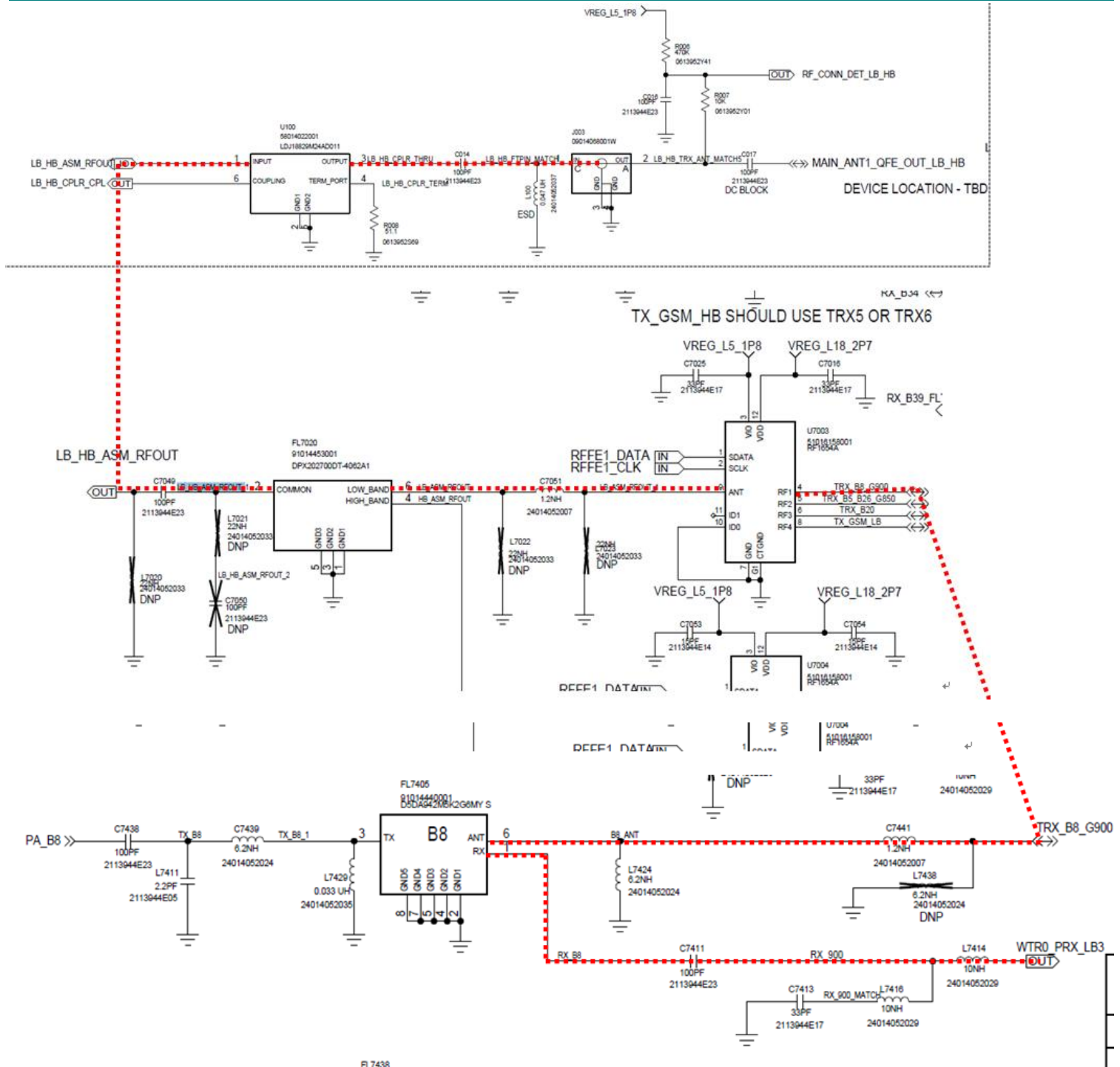
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

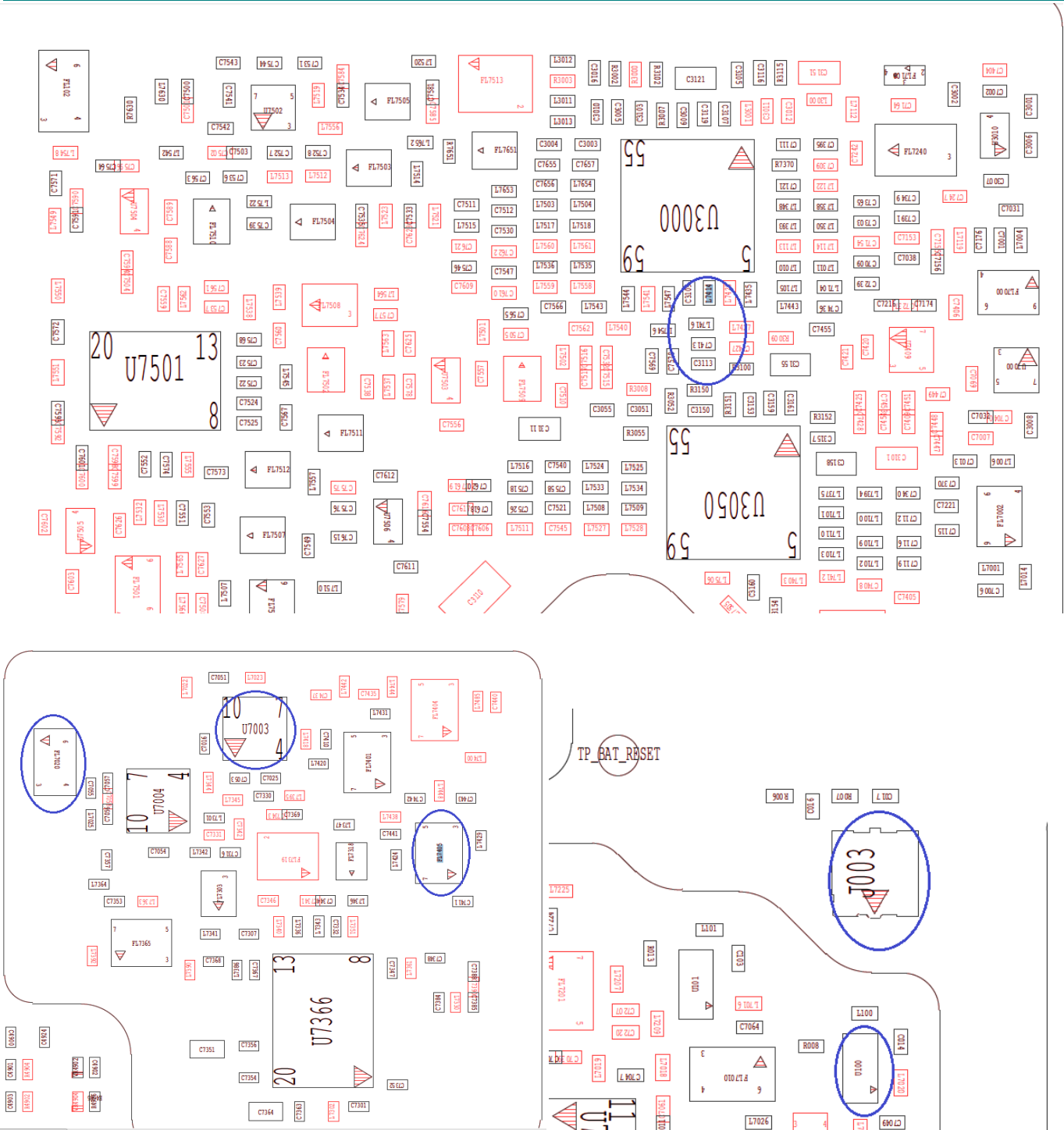
MODEL

Vertex



WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

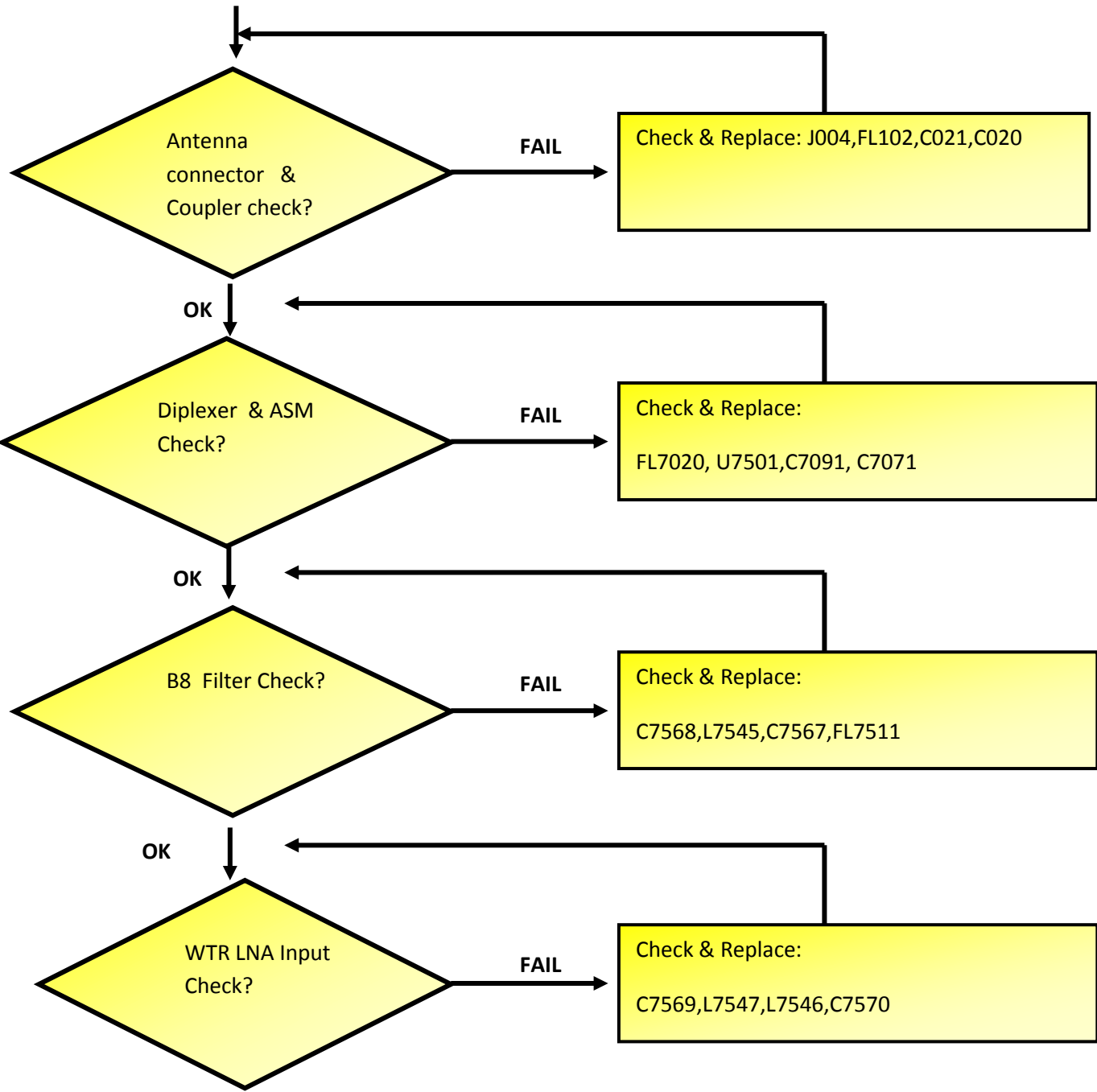
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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GSM900 DRX (PRC&ROW)



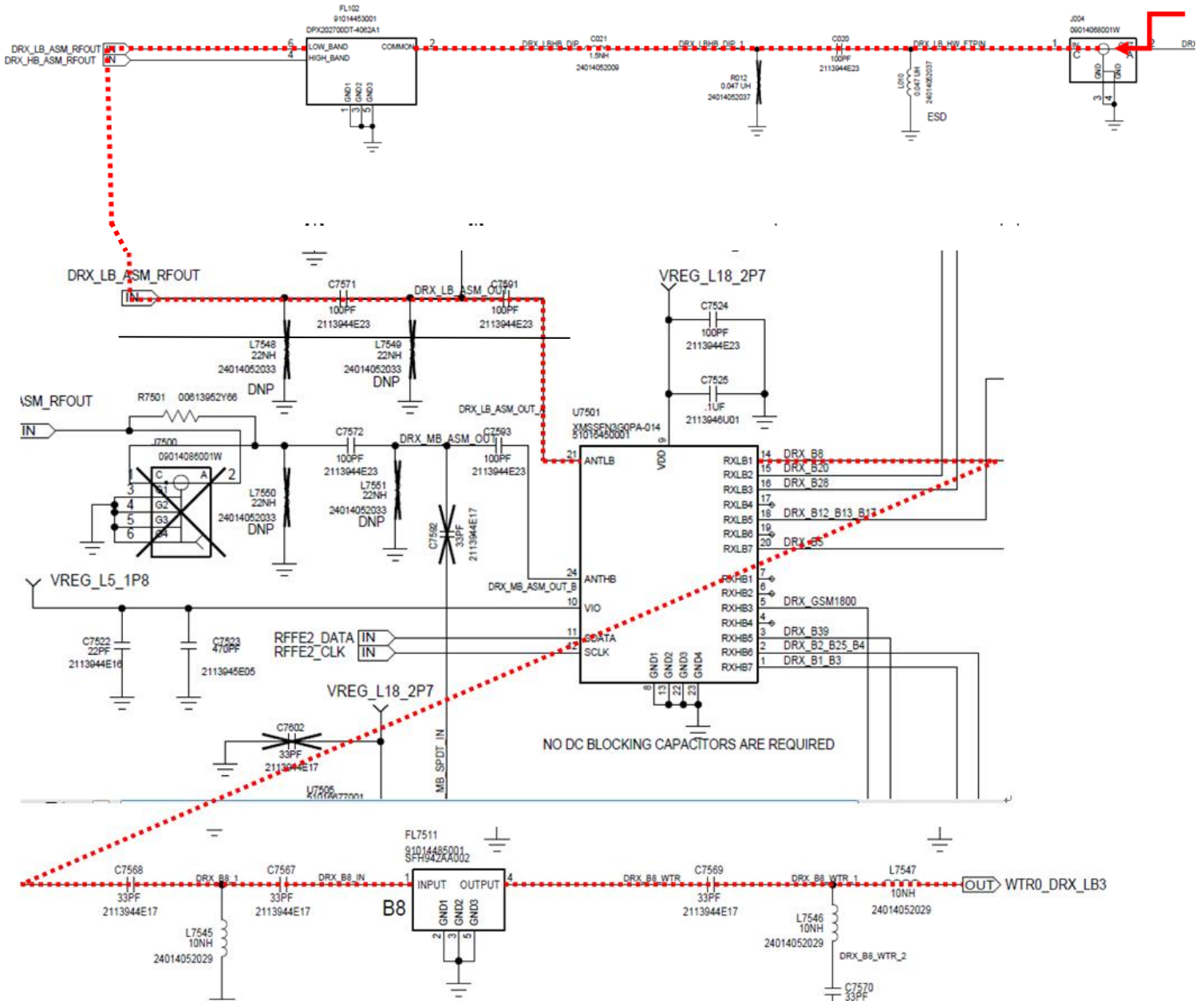
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

TITLE

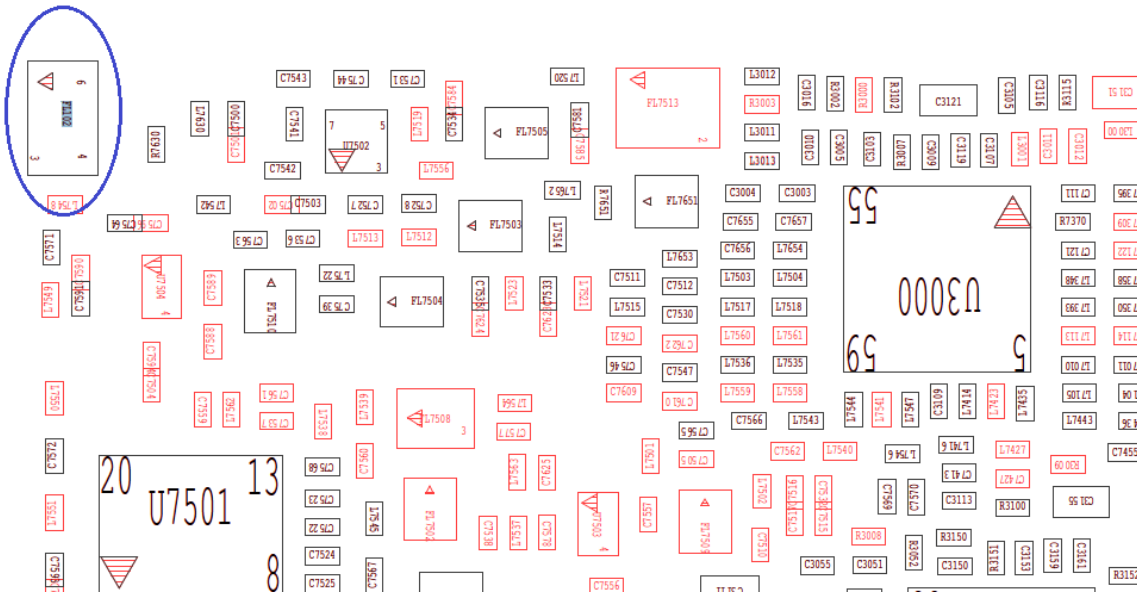
Vertex RF Troubleshooting Guide

MODEL

Vertex



86485



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

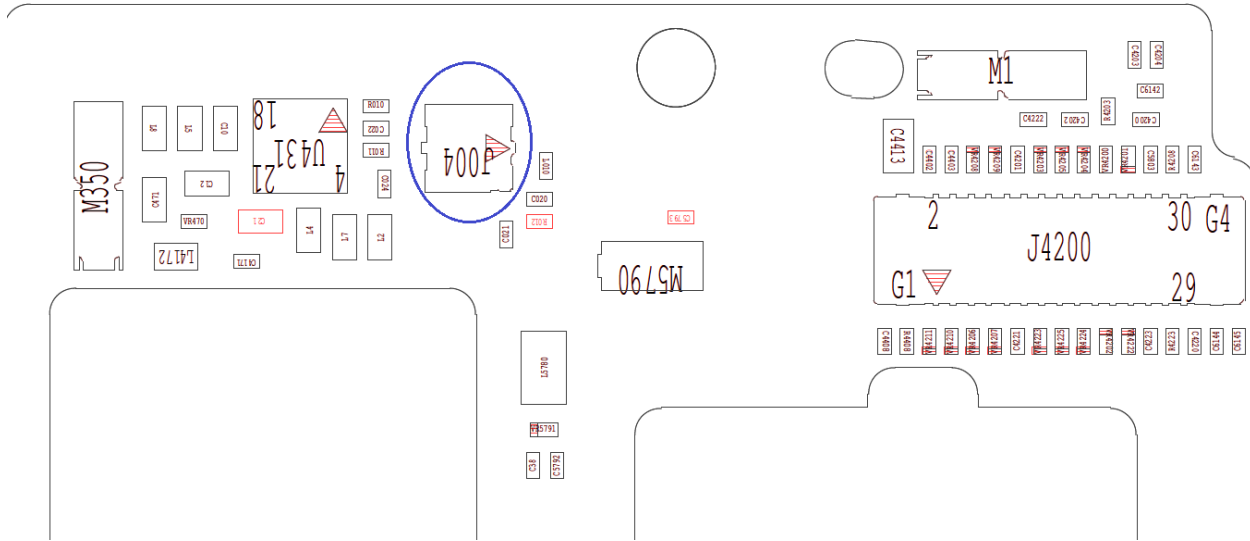
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

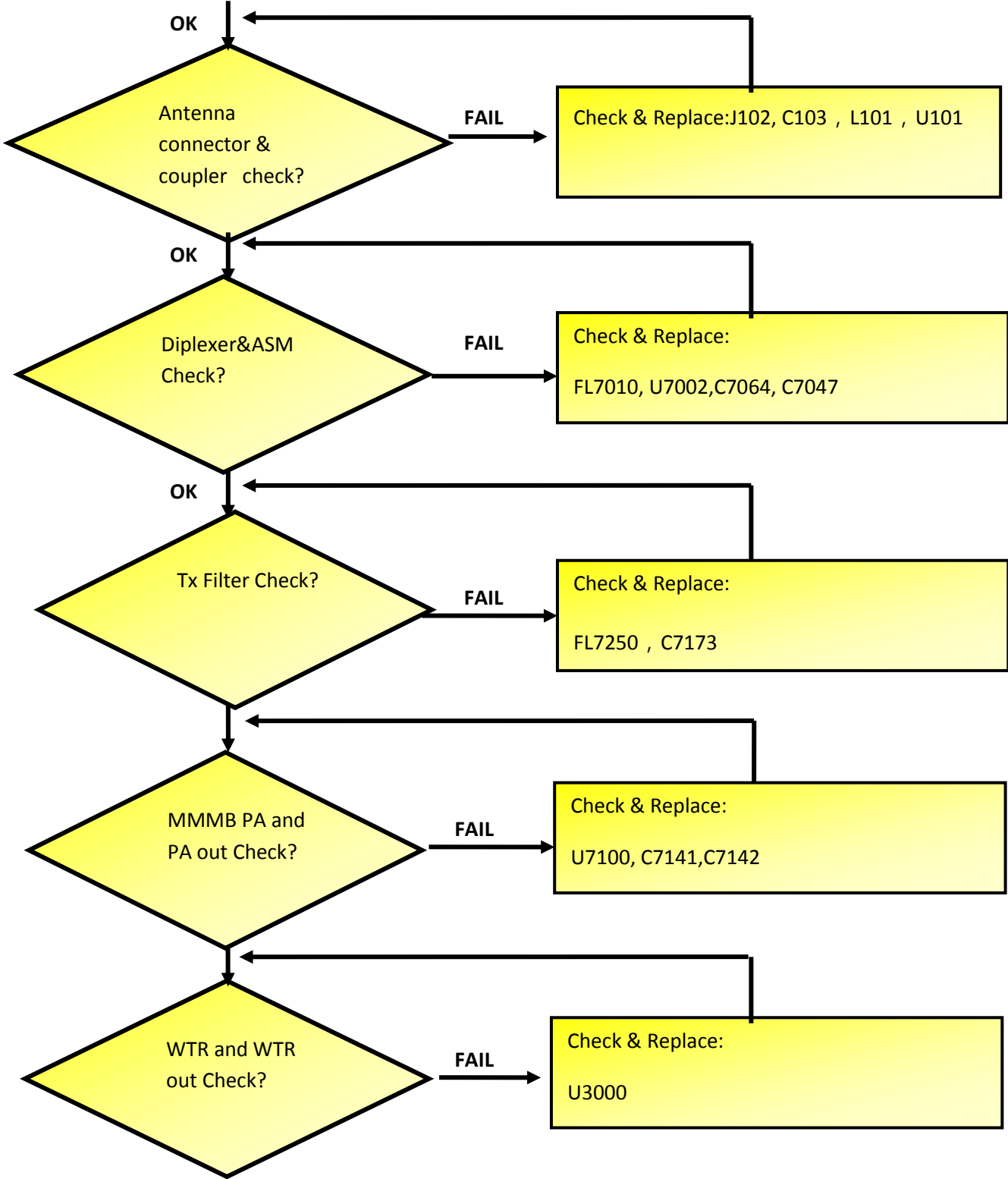
6/1/2016

WITNESS

DATE

<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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GSM1800 TX (PRC&ROW&VZW)



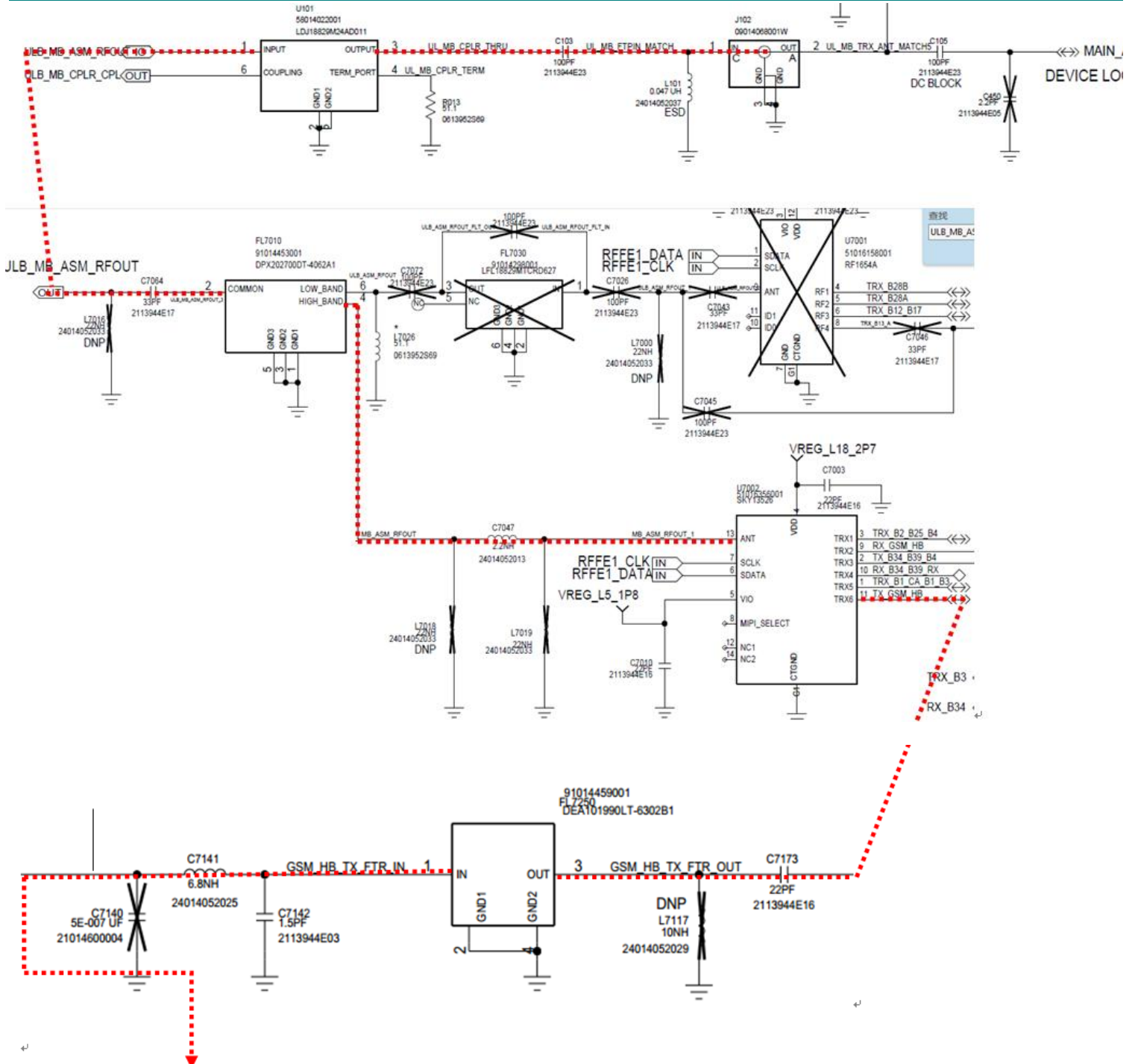
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

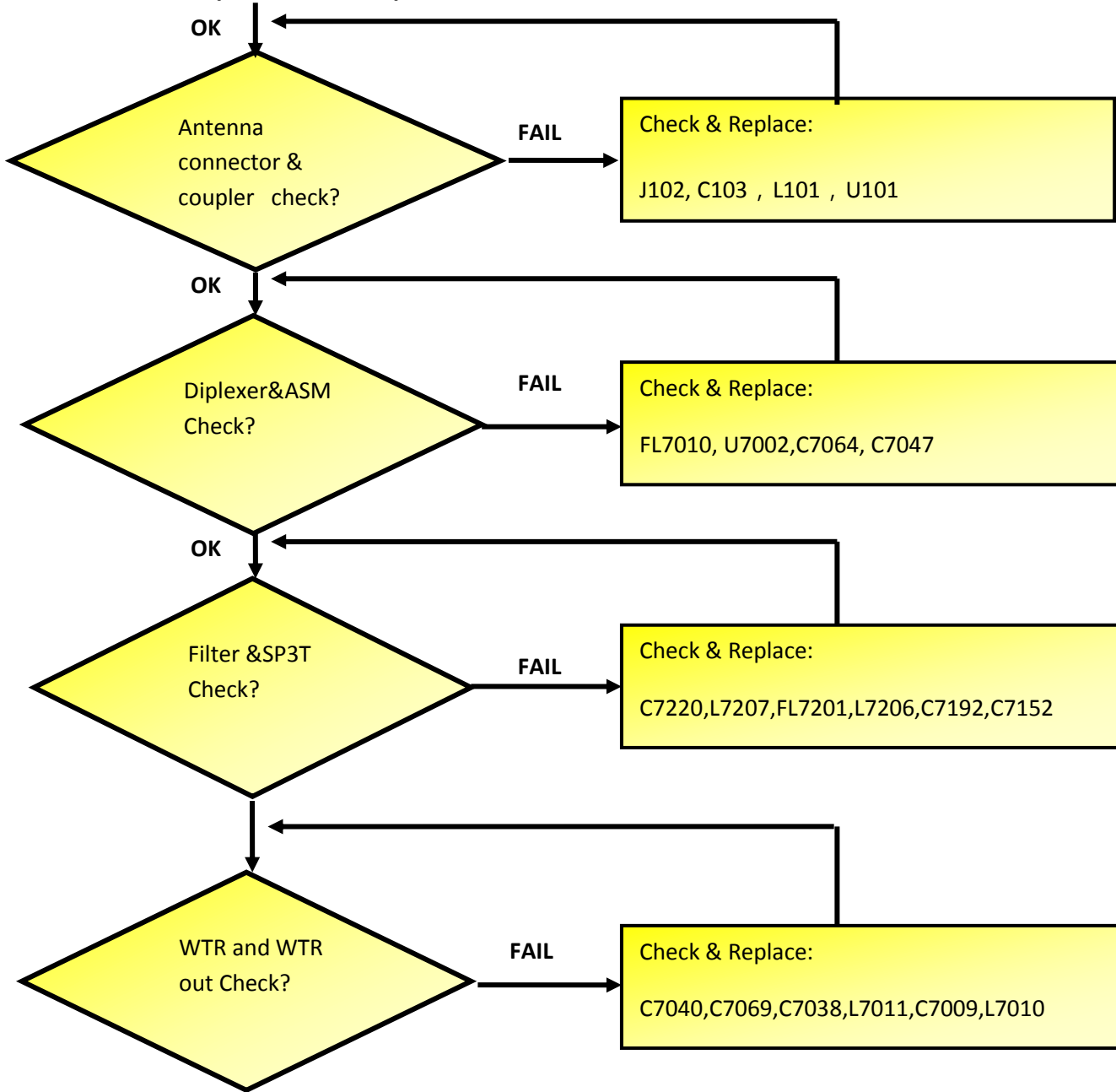
6/1/2016

WITNESS

DATE

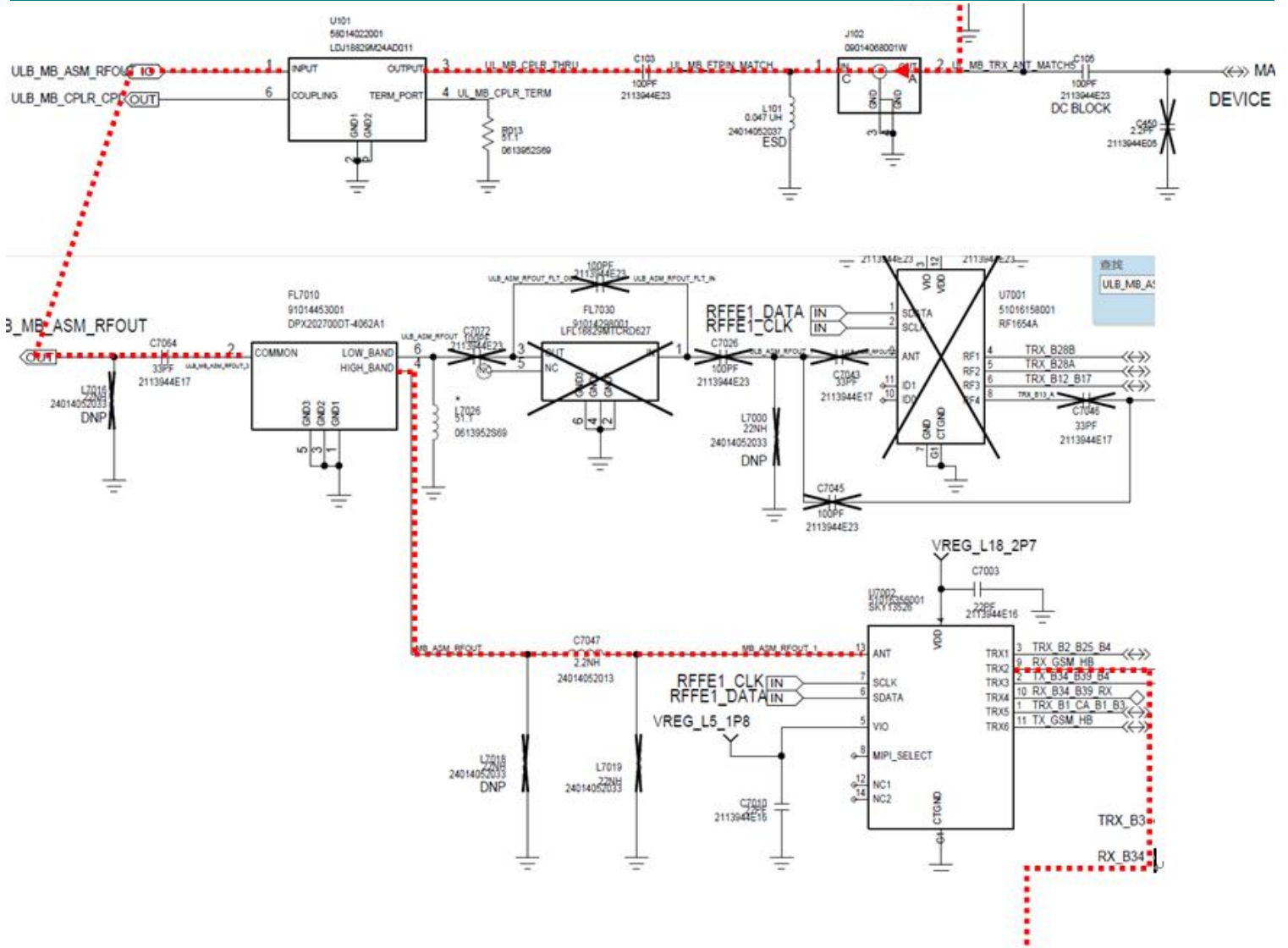
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GSM1800 PRX (PRC & ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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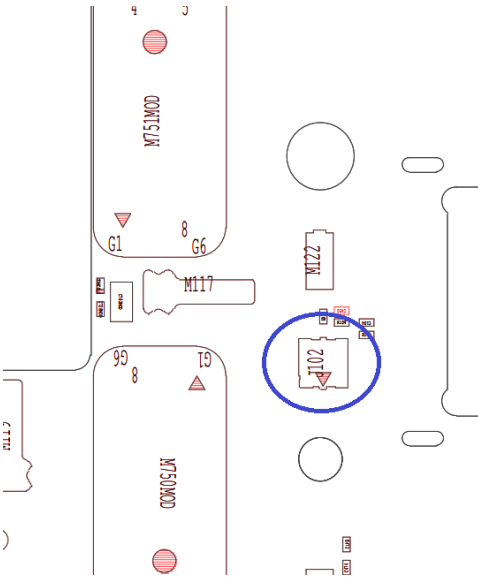
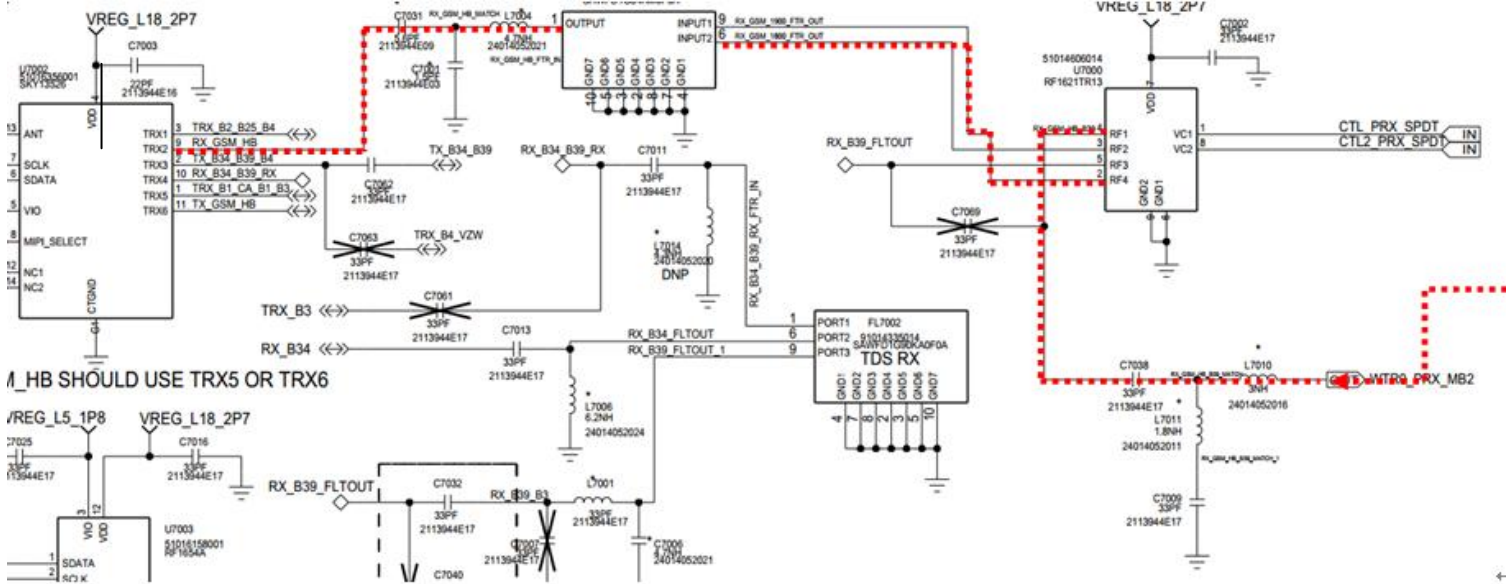
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



<p>WRITER Vertex RF HW Development Team</p>	<p>DATE 6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

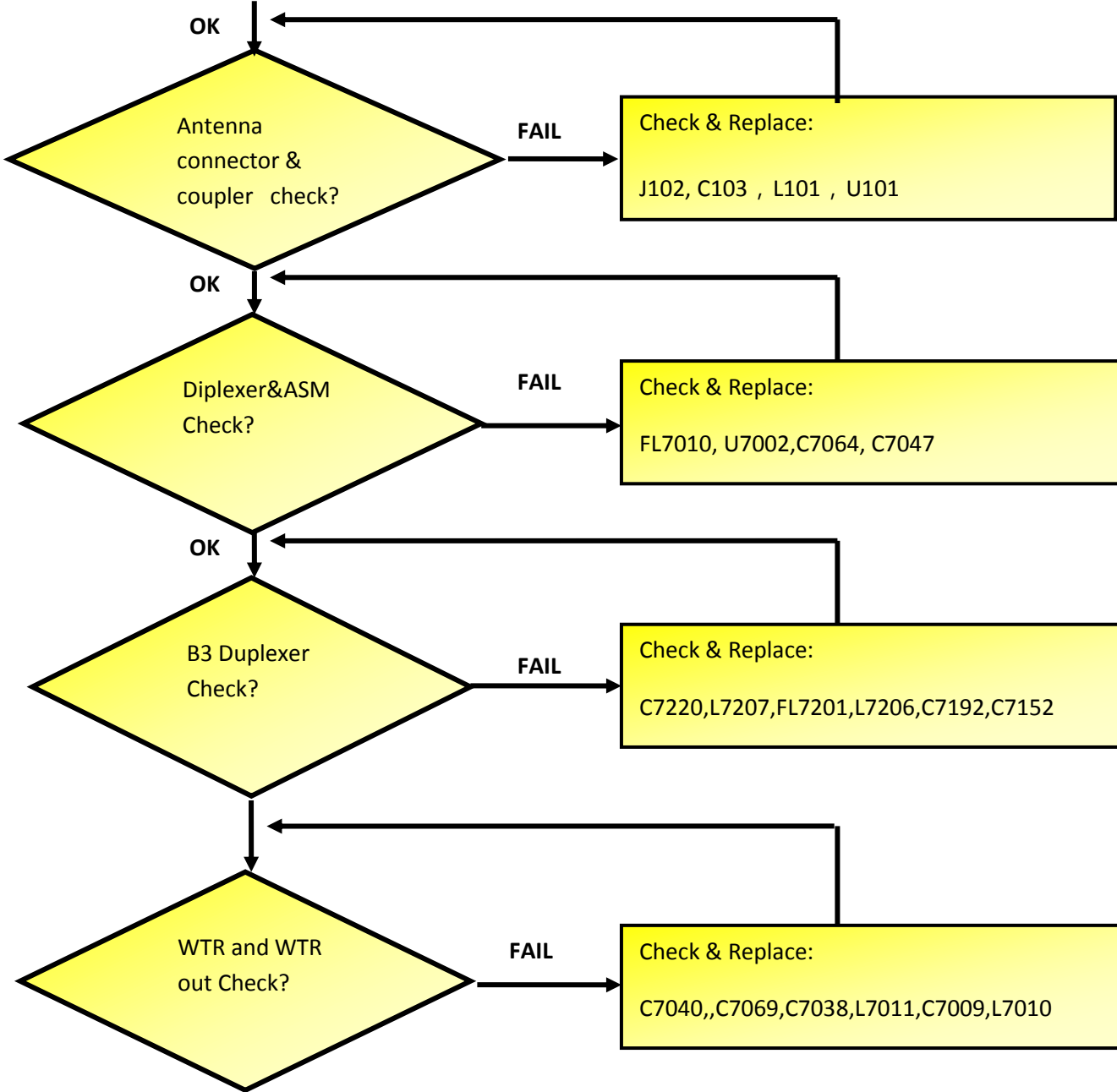
6/1/2016

WITNESS

DATE

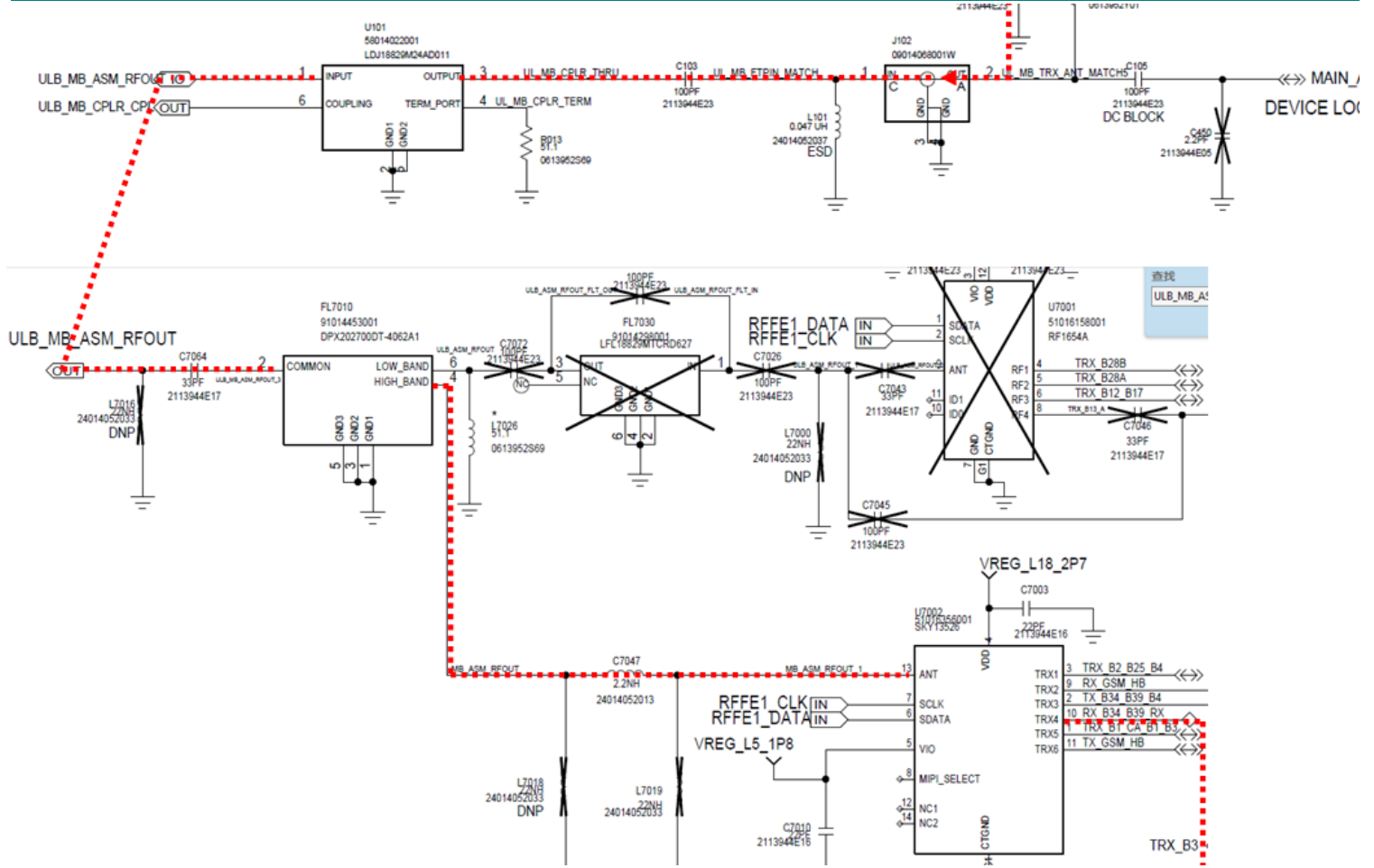
<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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GSM1800 PRX (VZW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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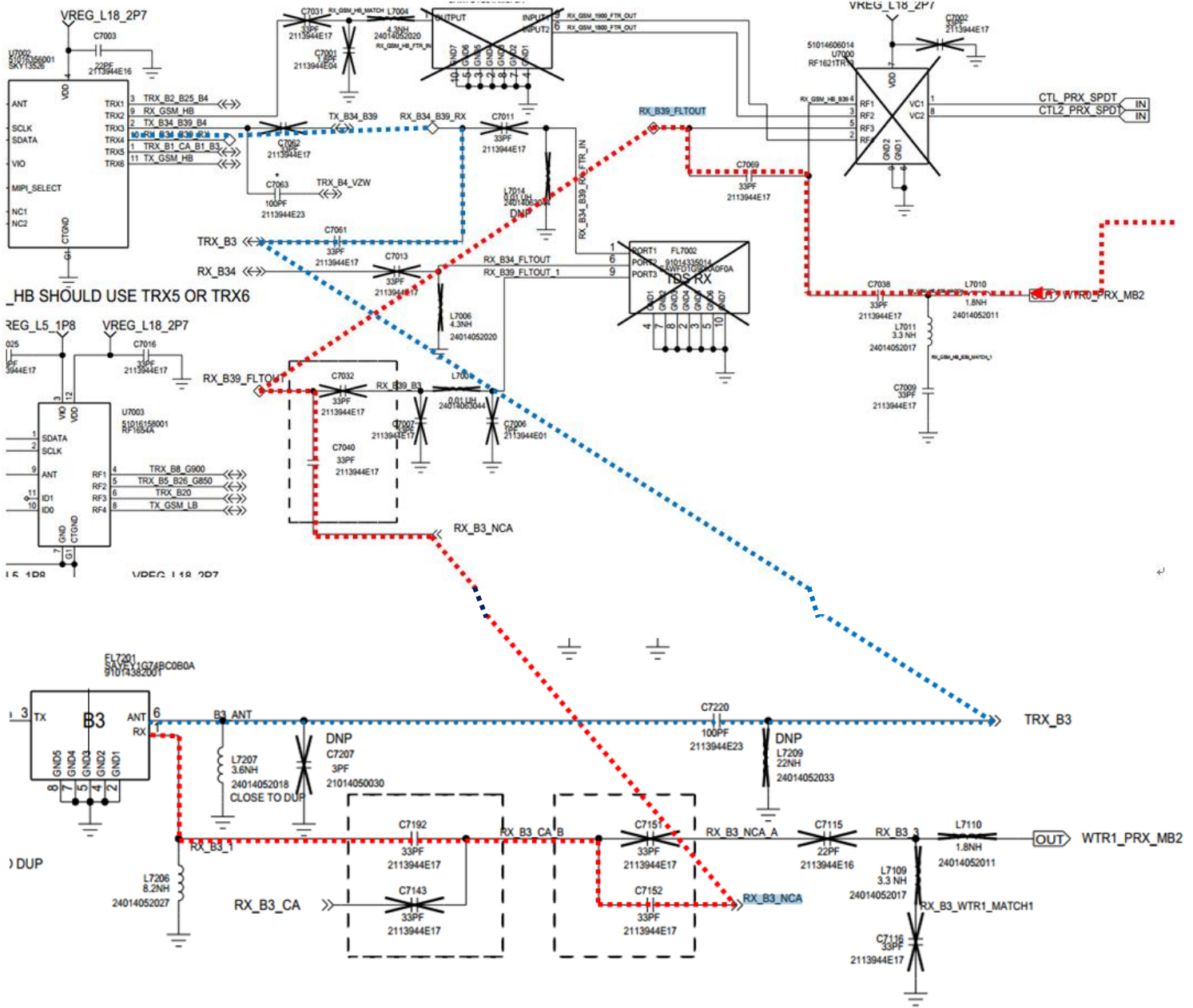
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

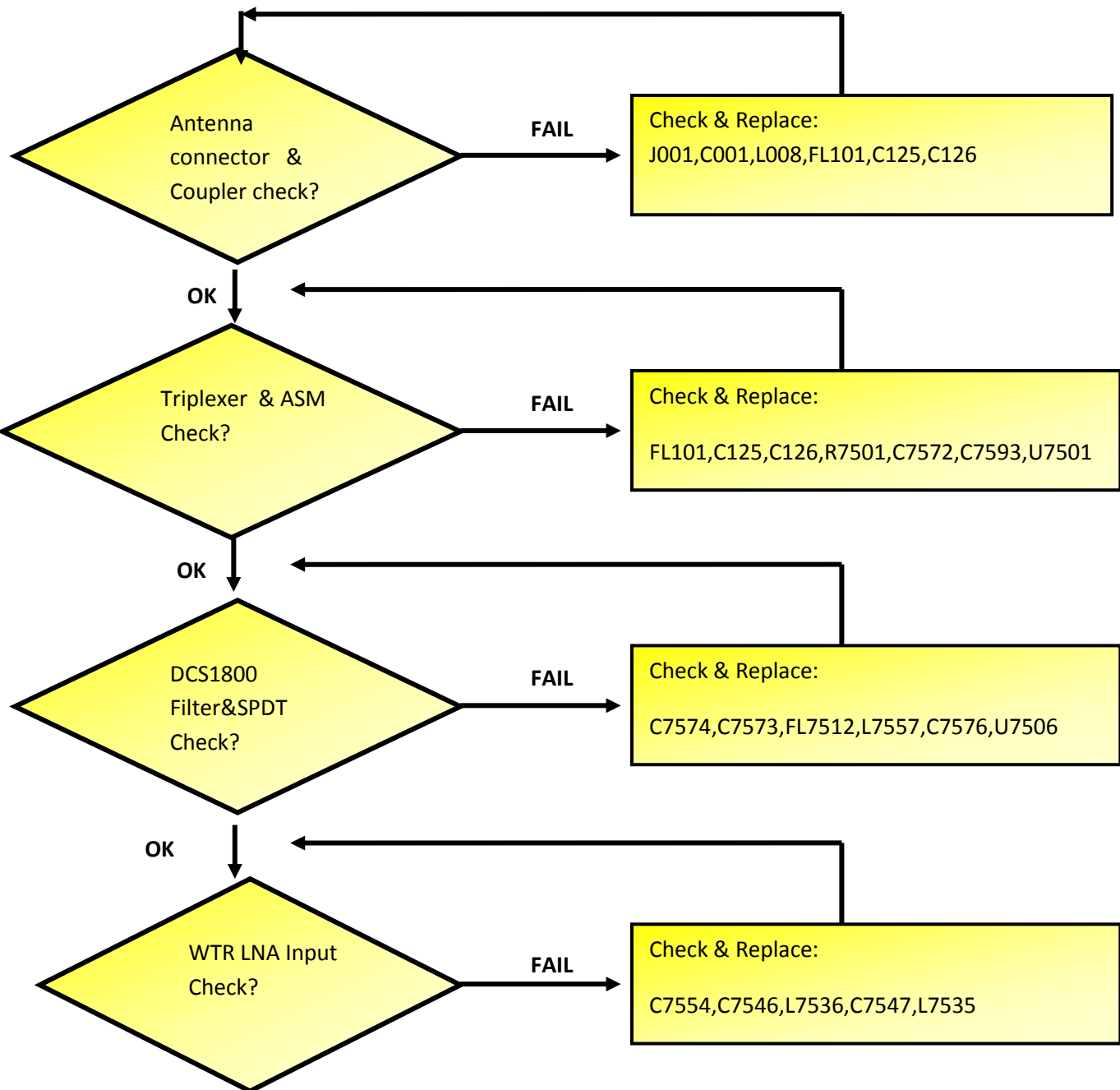
6/1/2016

WITNESS

DATE

<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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DCS1800 DRX (PRC)



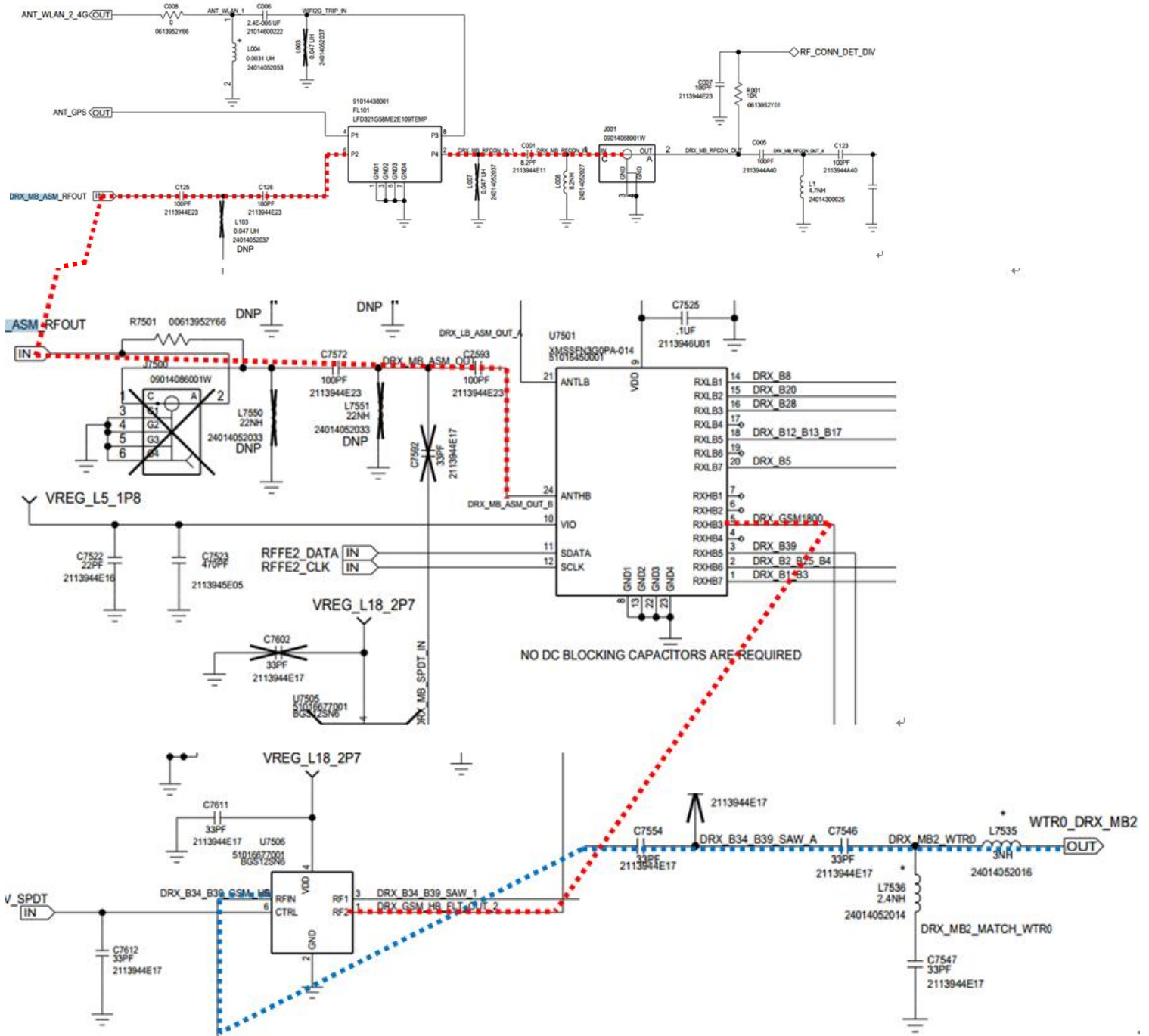
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

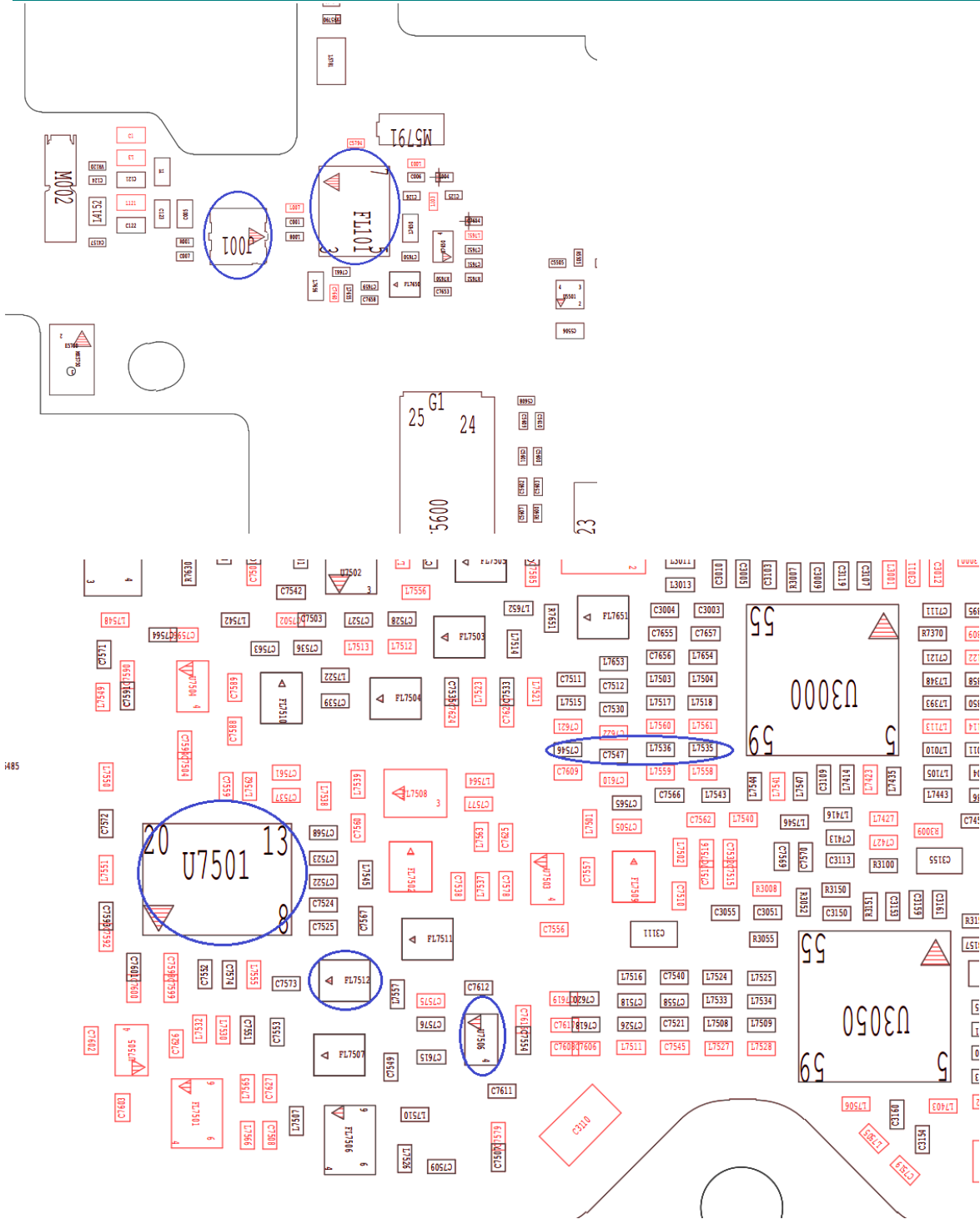
DATE

TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

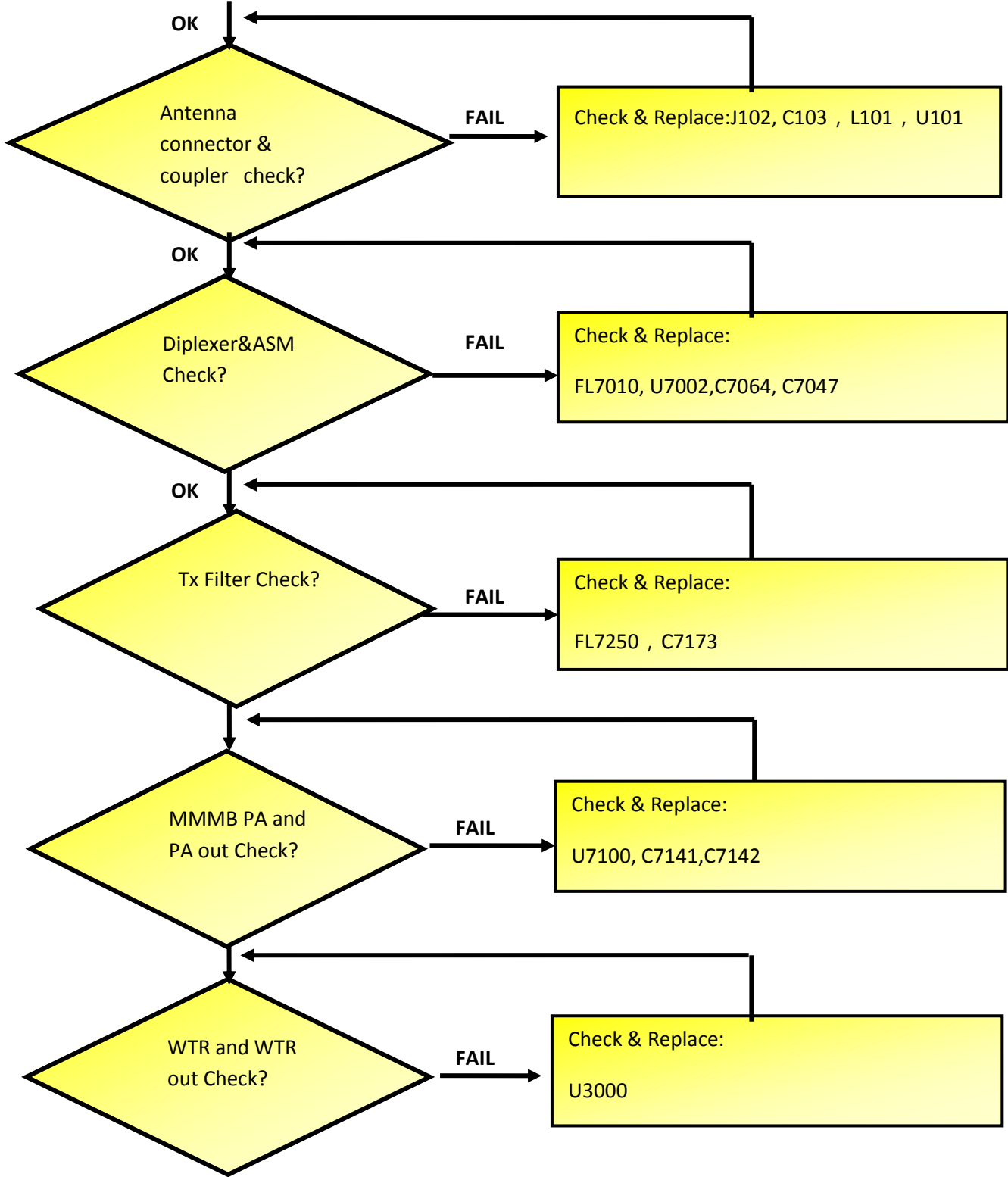
6/1/2016

WITNESS

DATE

<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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GSM1900 TX (PRC&ROW&VZW)



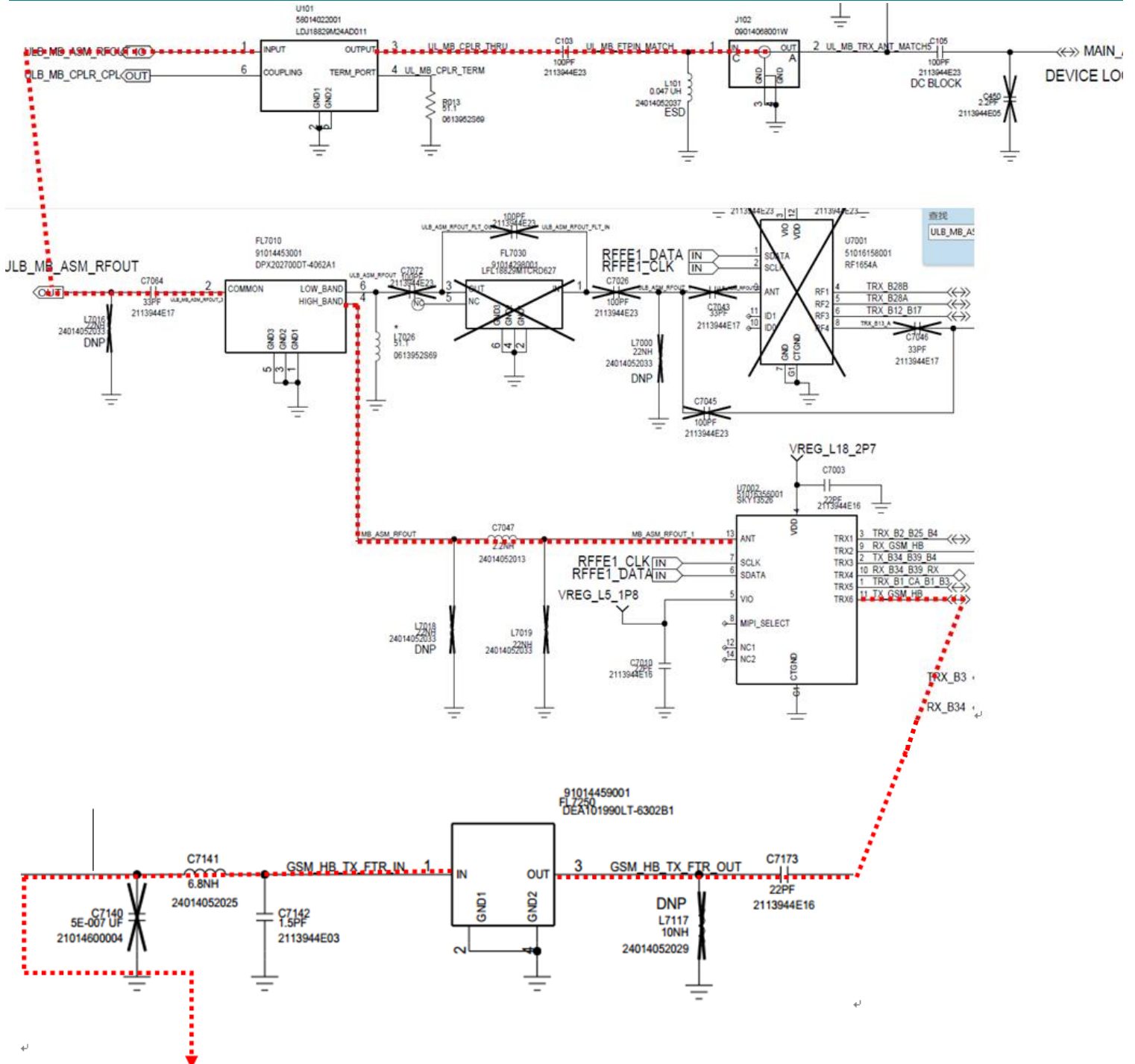
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



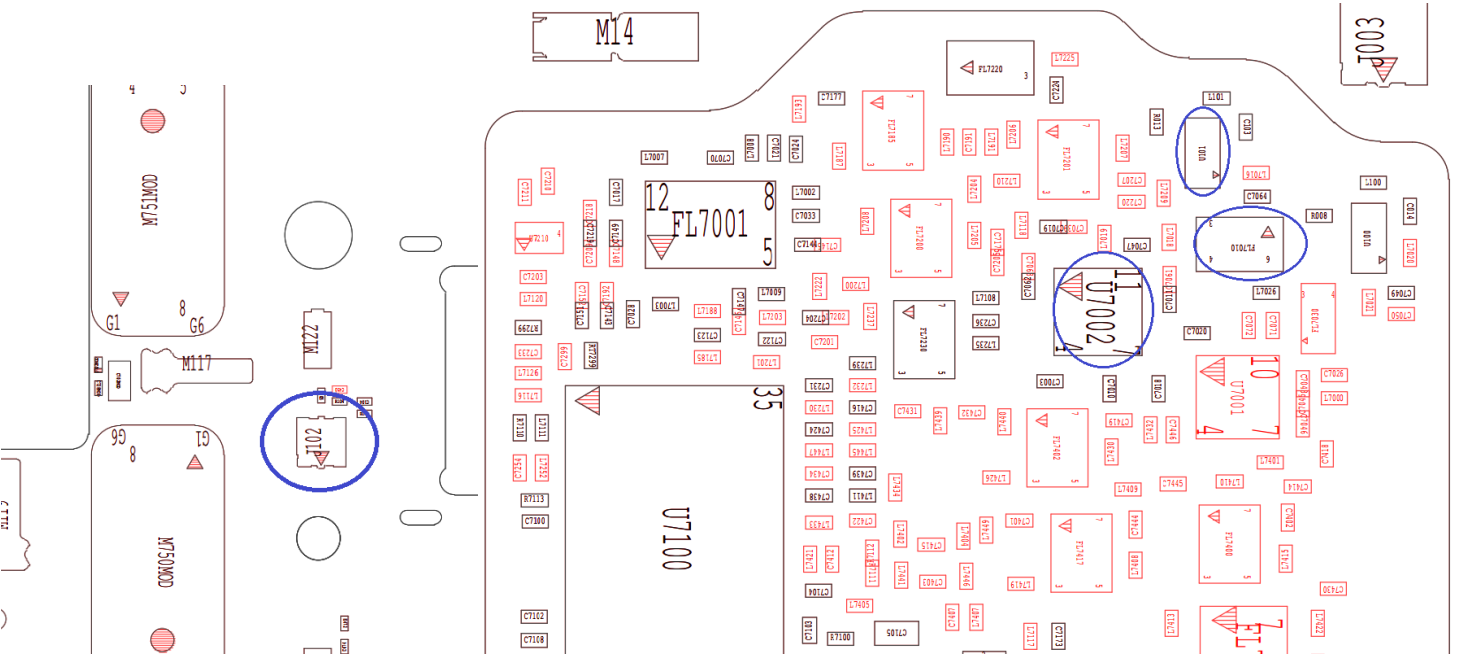
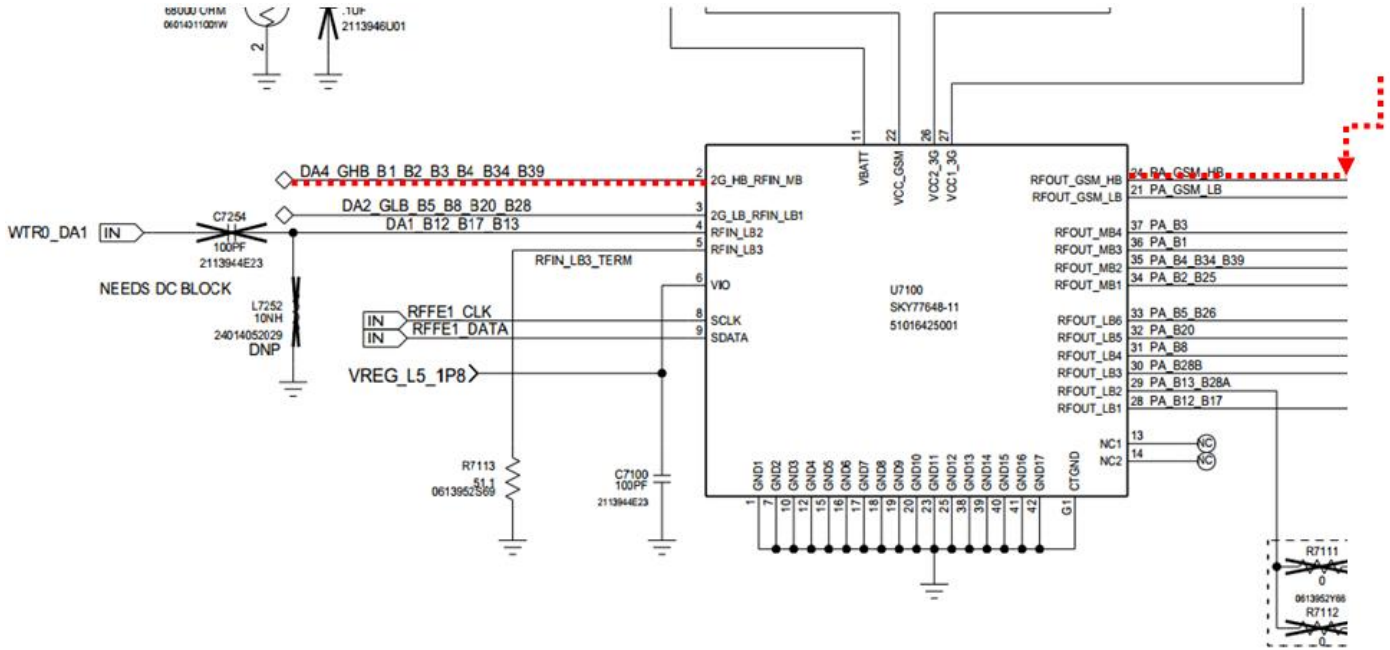
WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

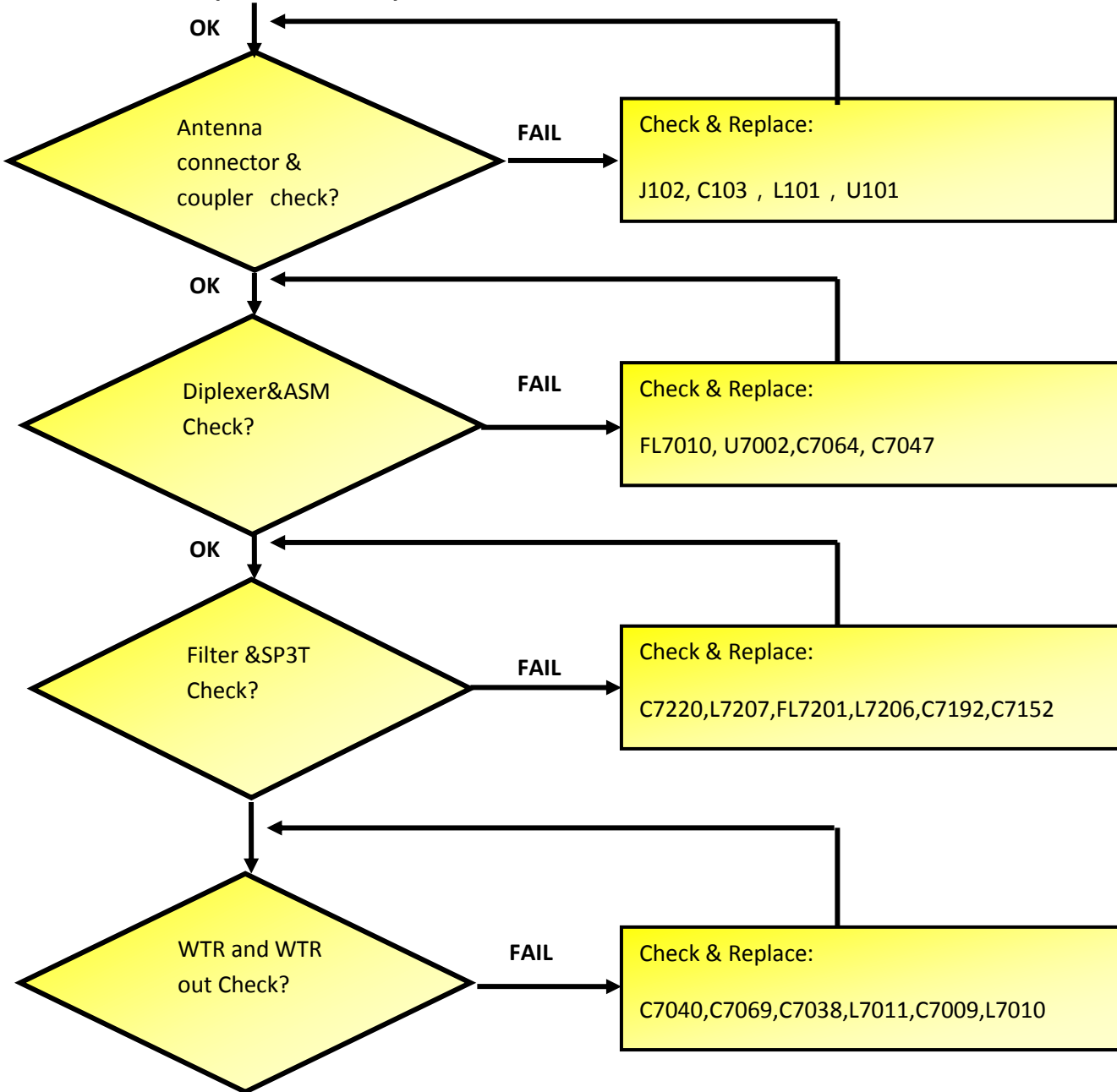
6/1/2016

WITNESS

DATE

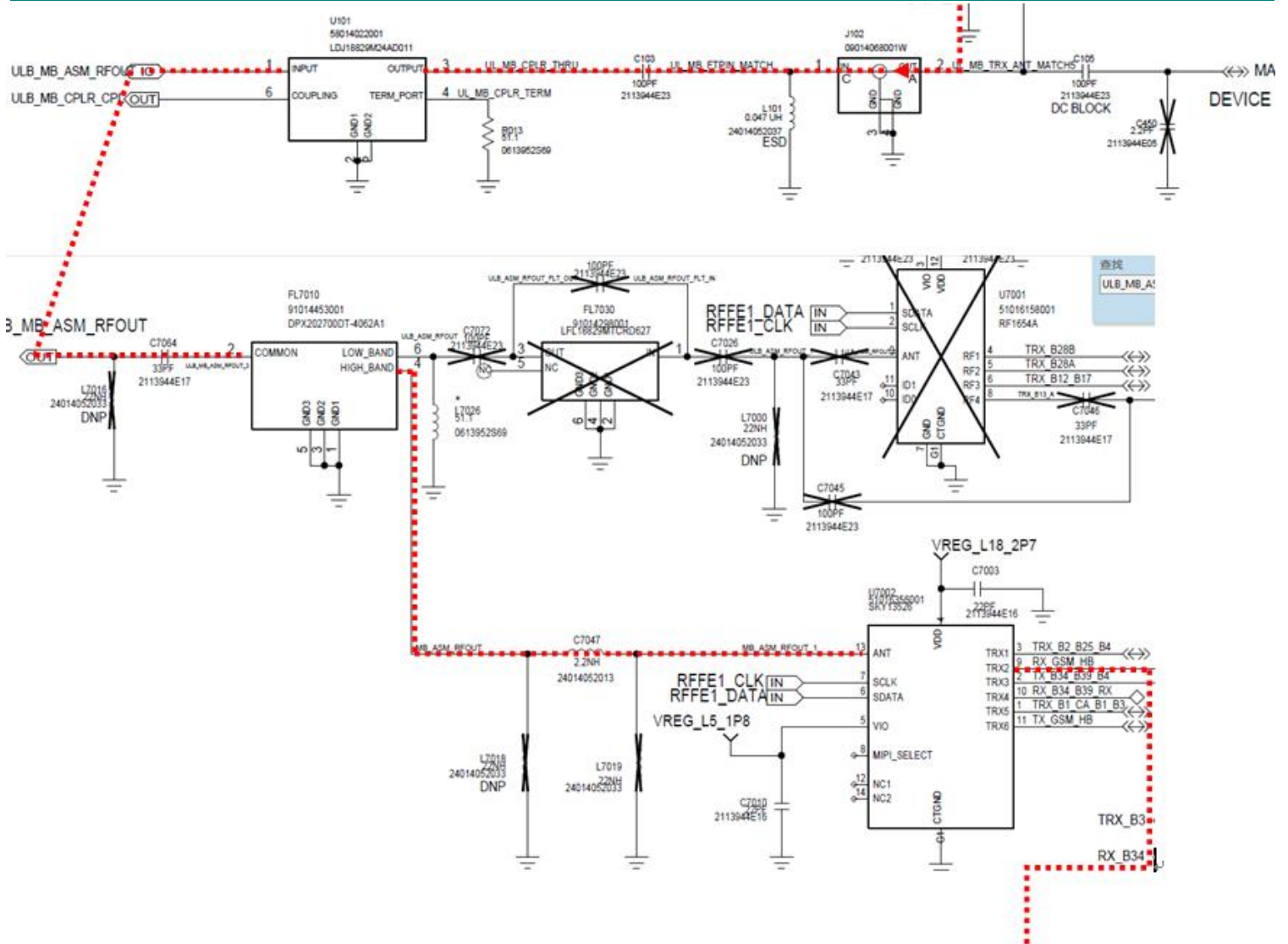
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GSM1900 PRX (PRC & ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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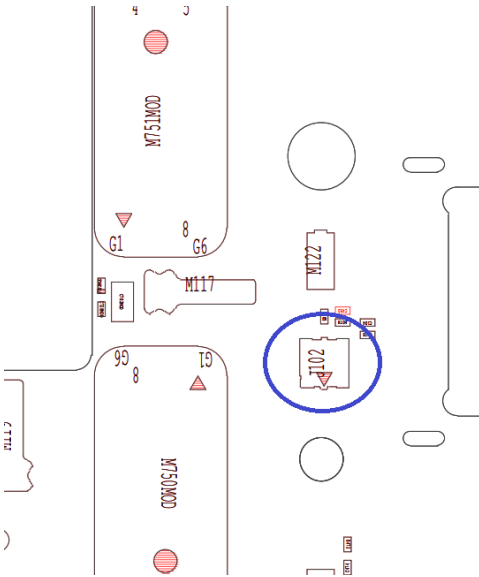
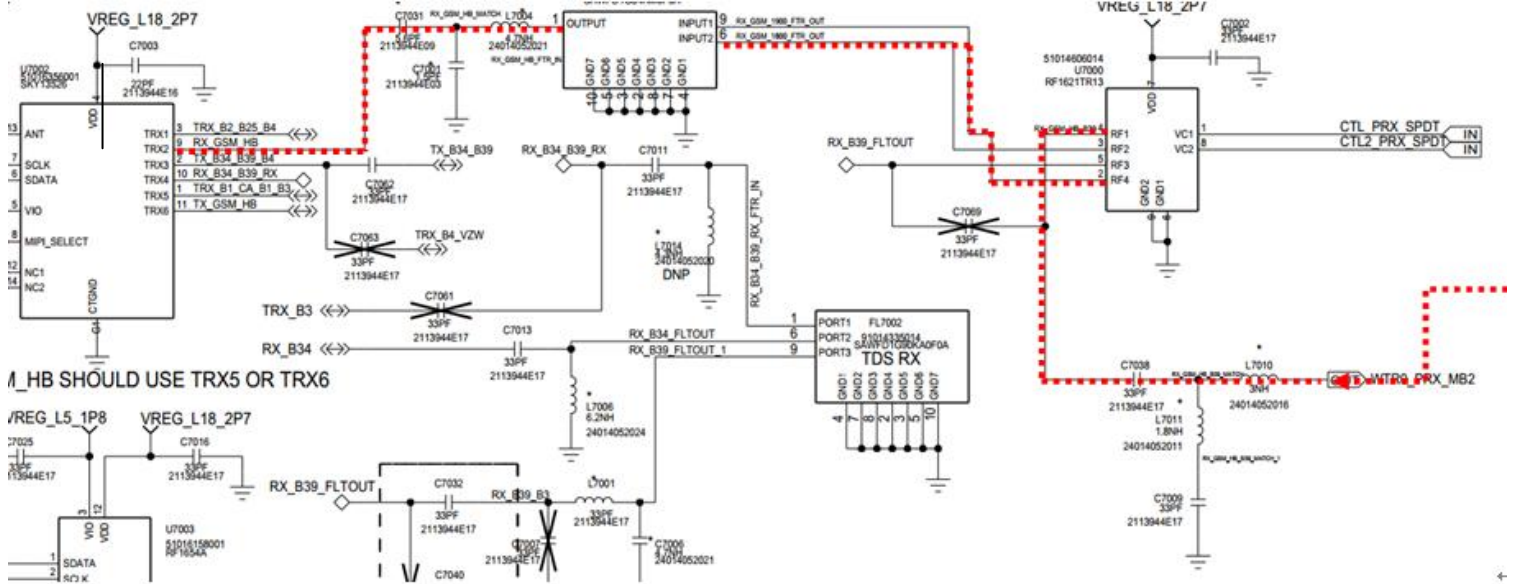
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



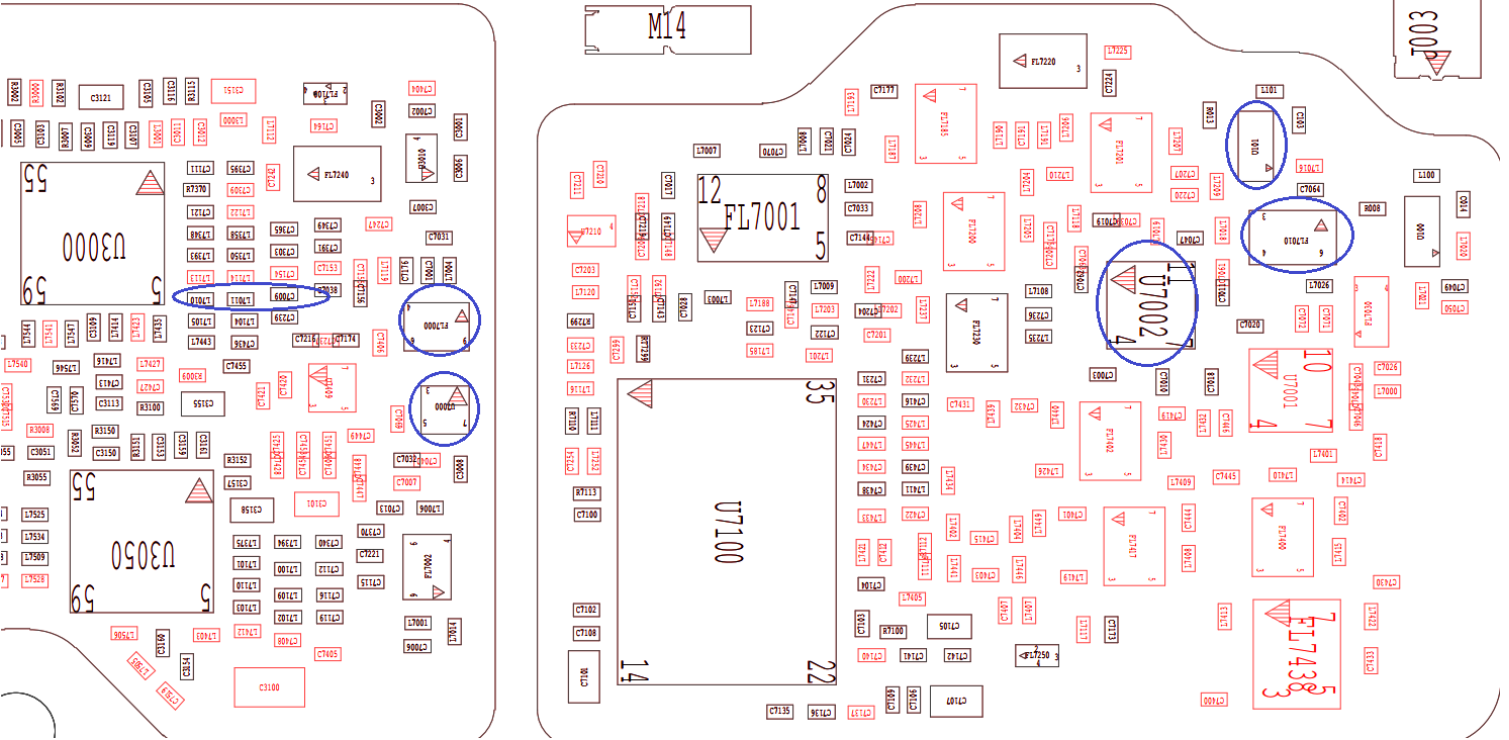
WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

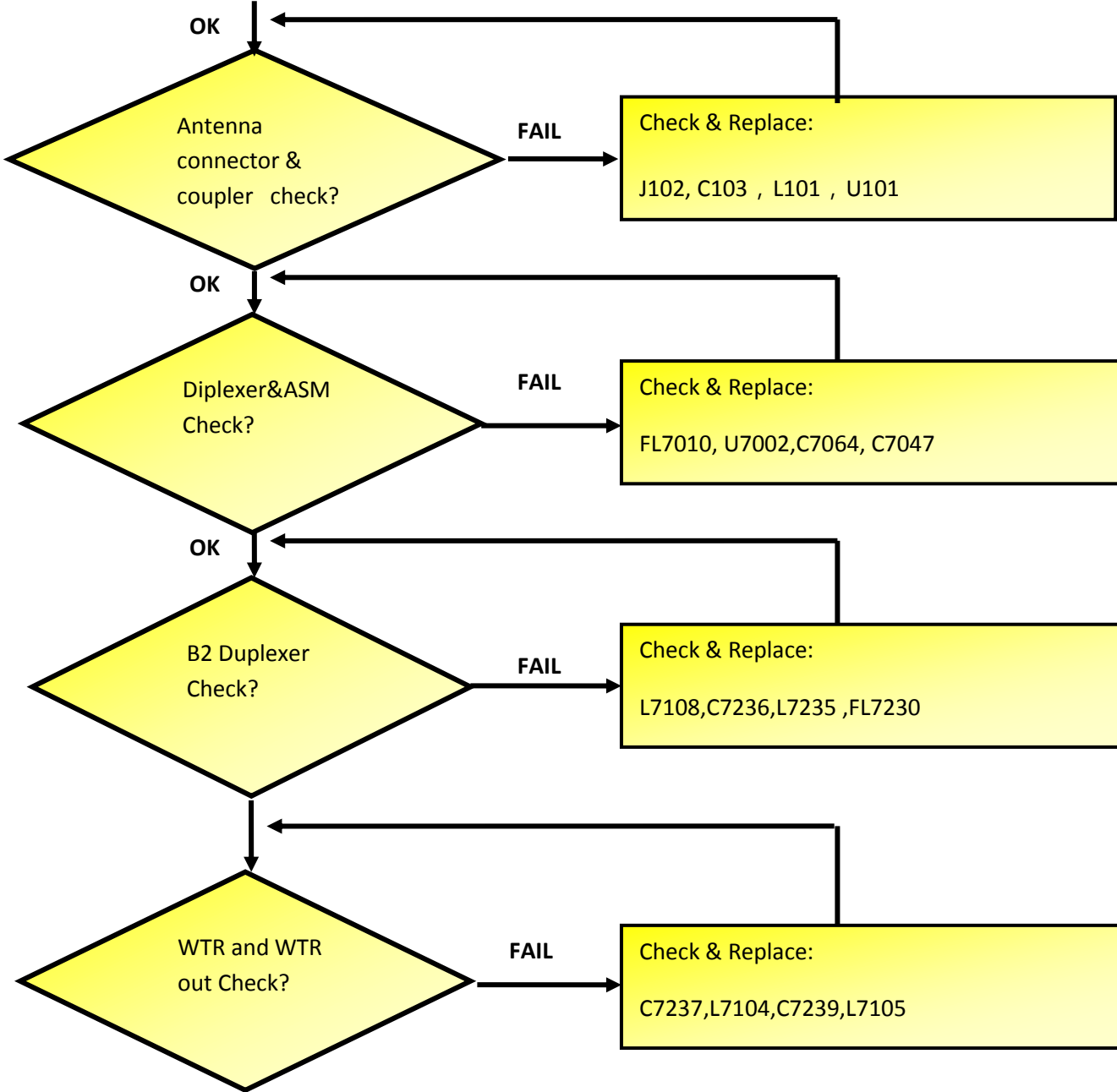
6/1/2016

WITNESS

DATE

<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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GSM1900 PRX (VZW)



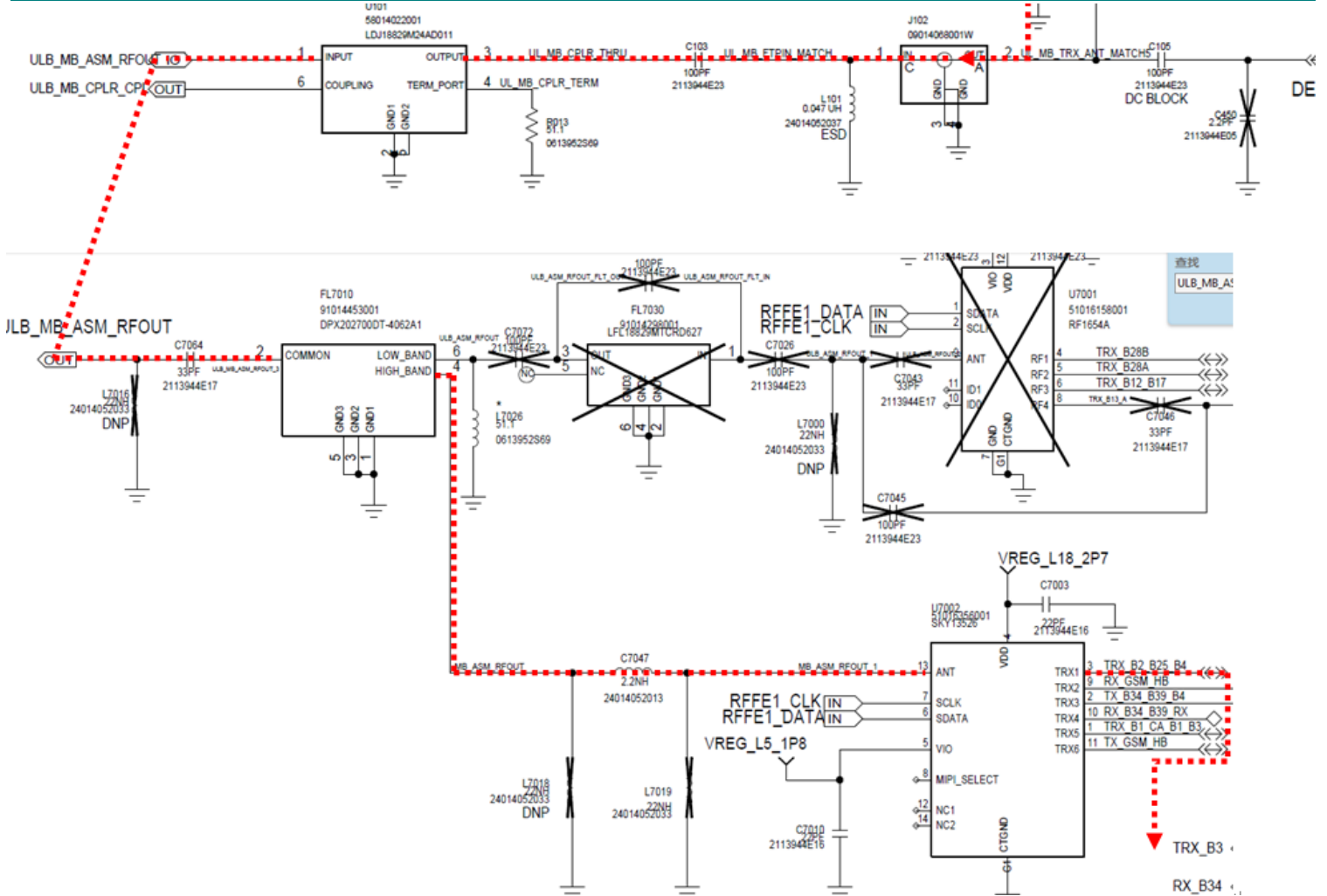
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

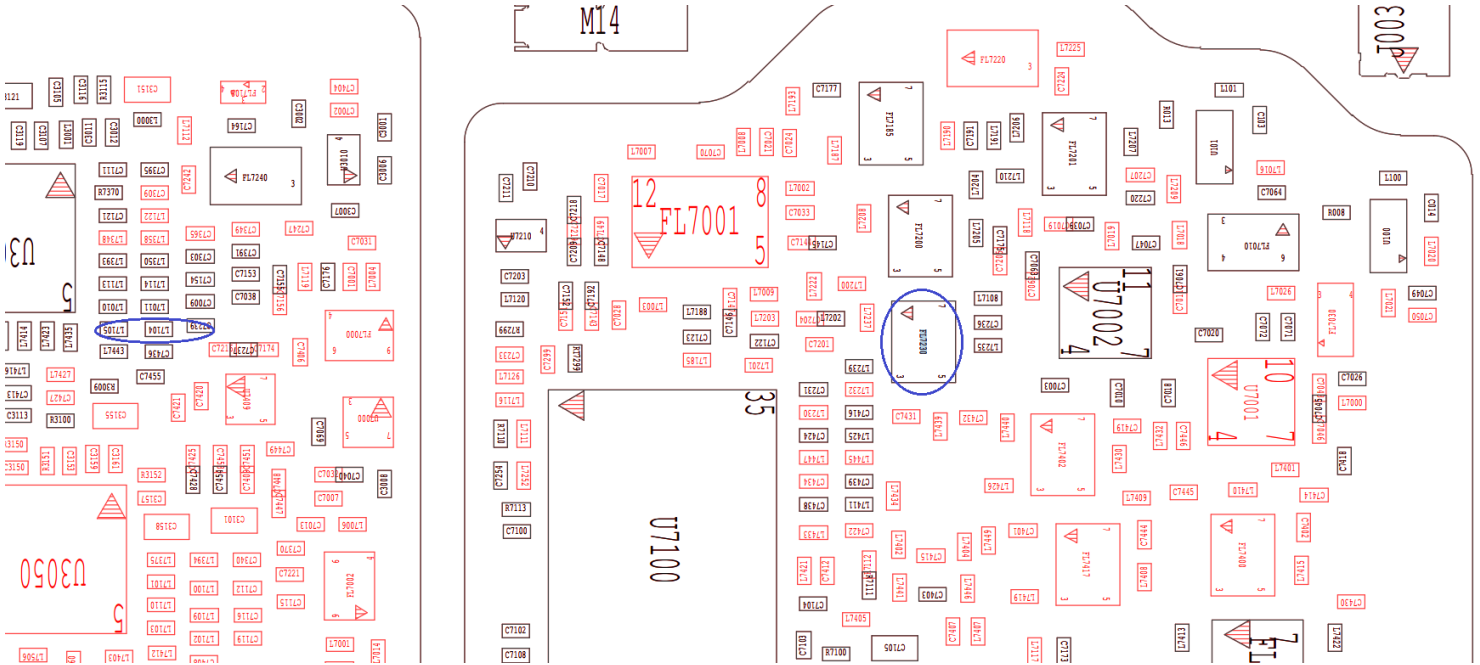
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TITLE

Vertex RF Troubleshooting Guide

MODEL

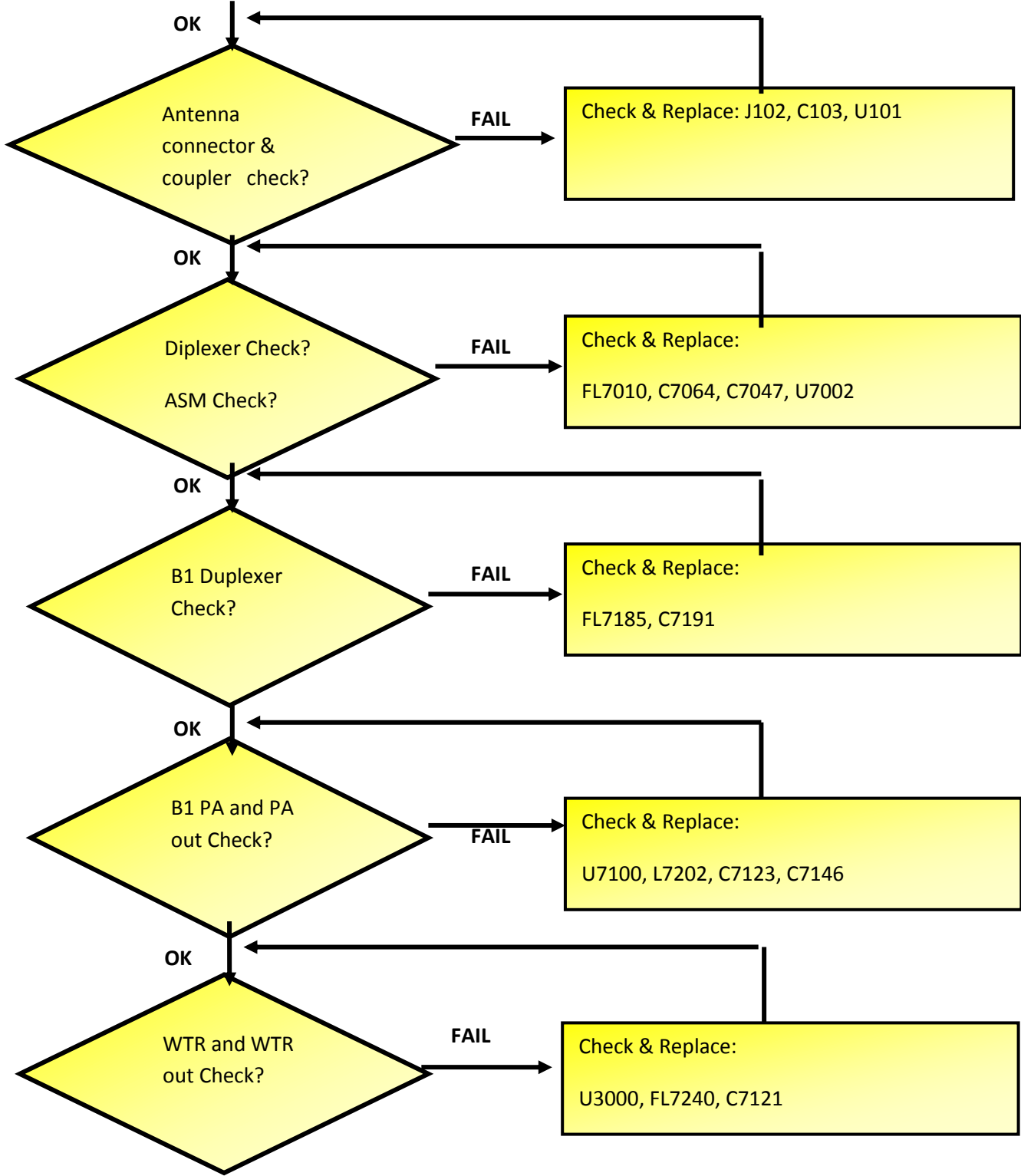
Vertex



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <p>Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p>Vertex</p>
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LTE/WCDMA B1 TX (ROW)

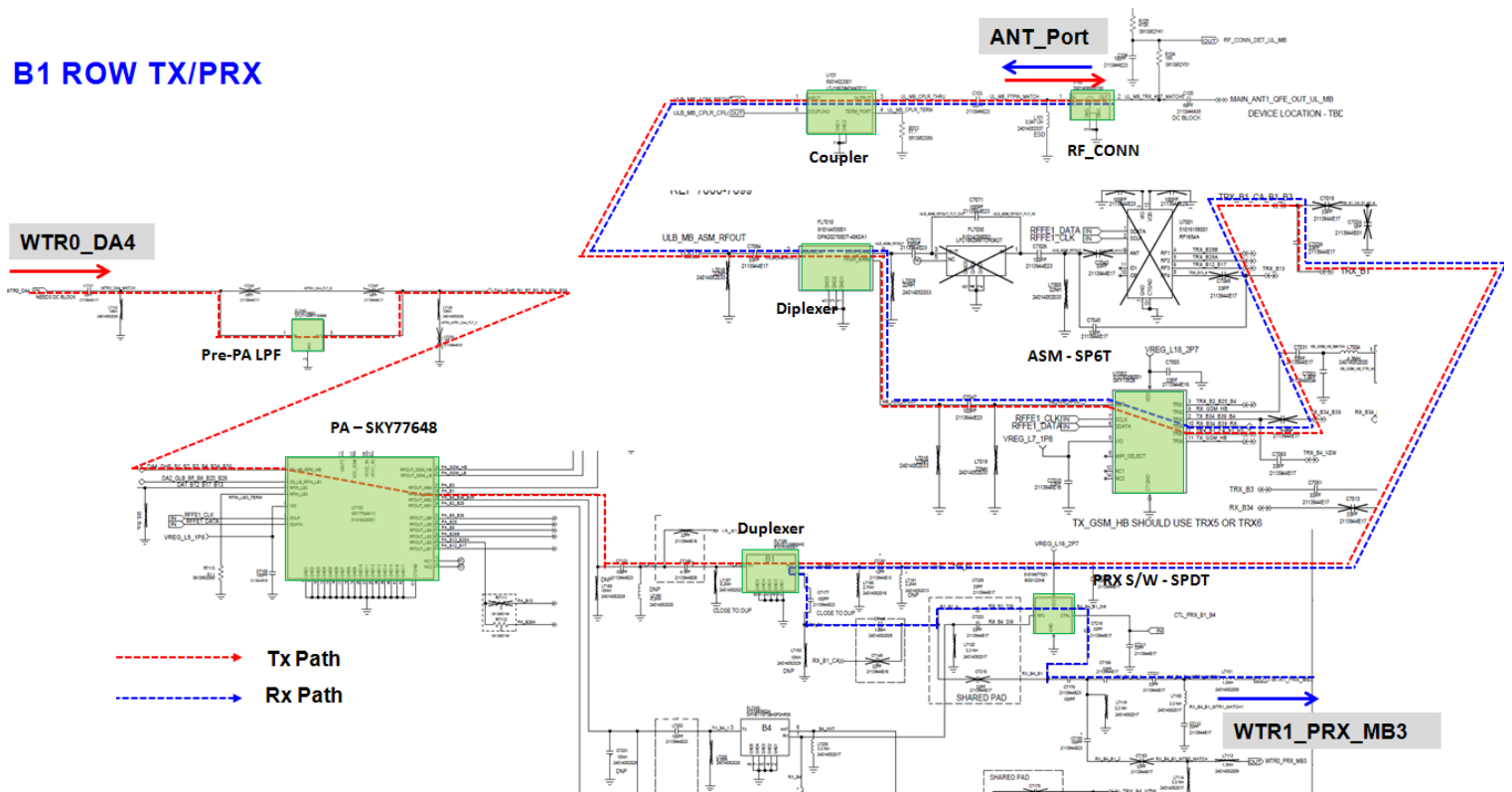


<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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Schematic

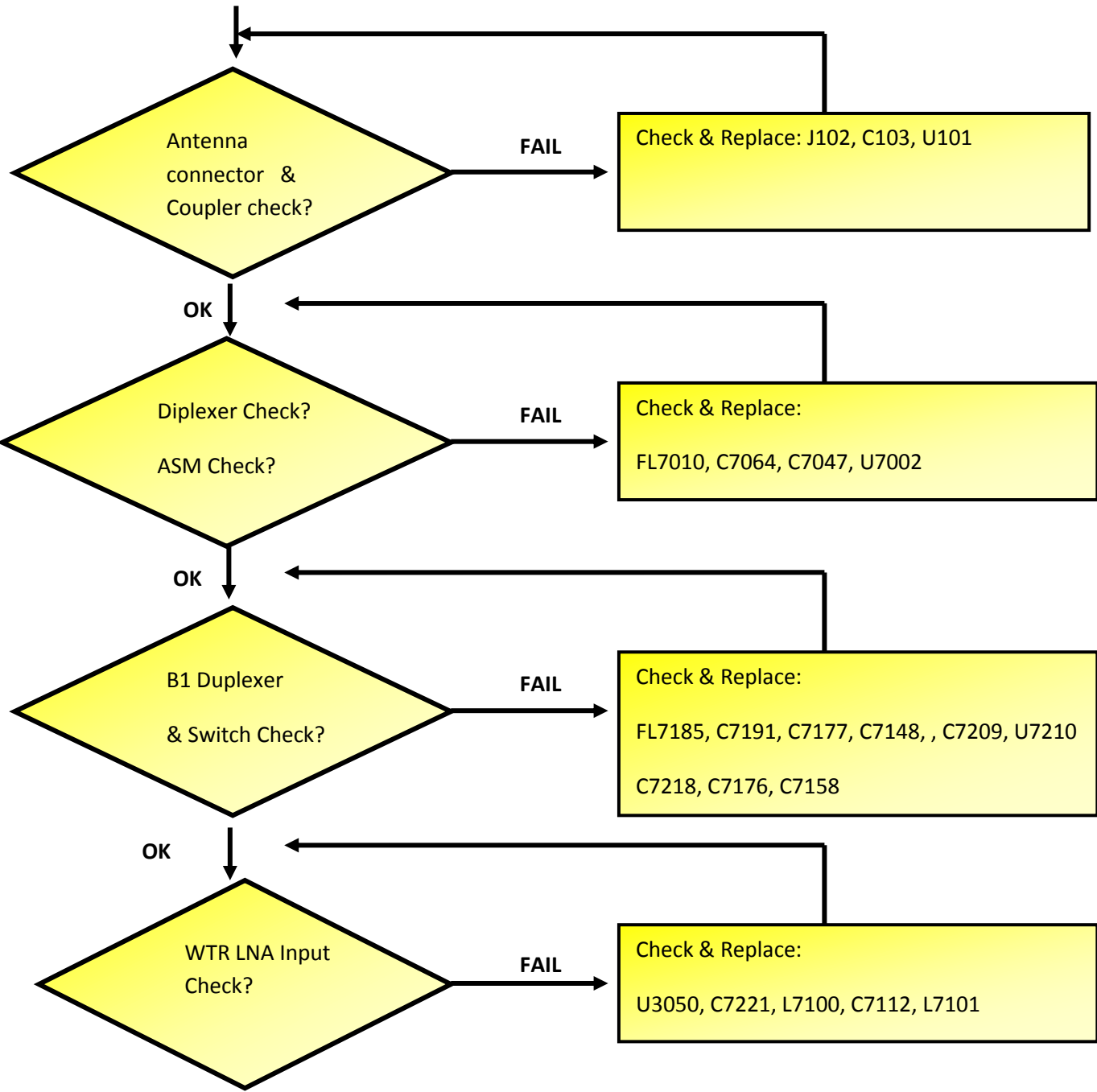
B1 ROW TX/PRX



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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LTE/WCDMA B1 PRX (ROW)

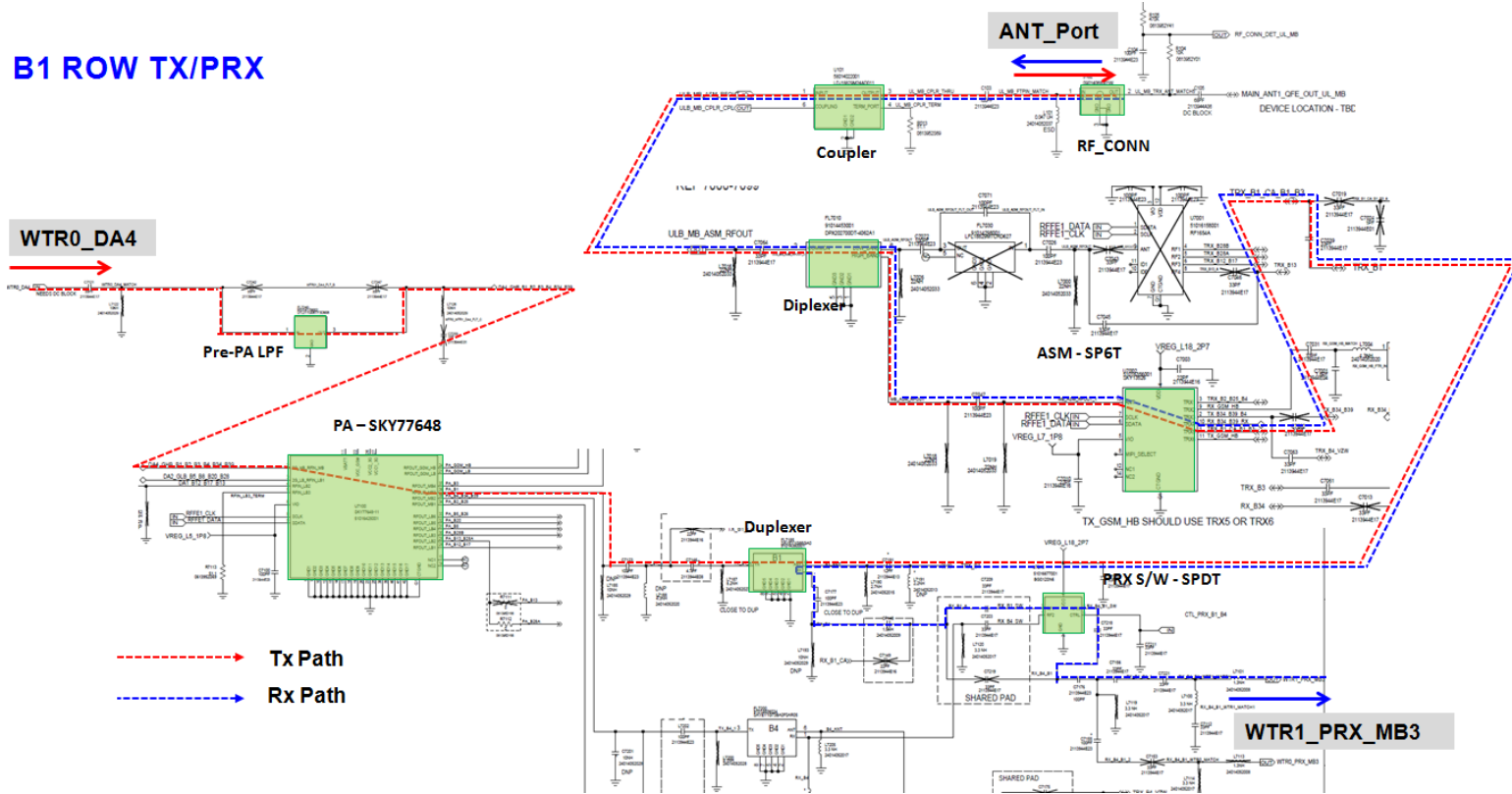


<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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Schematic

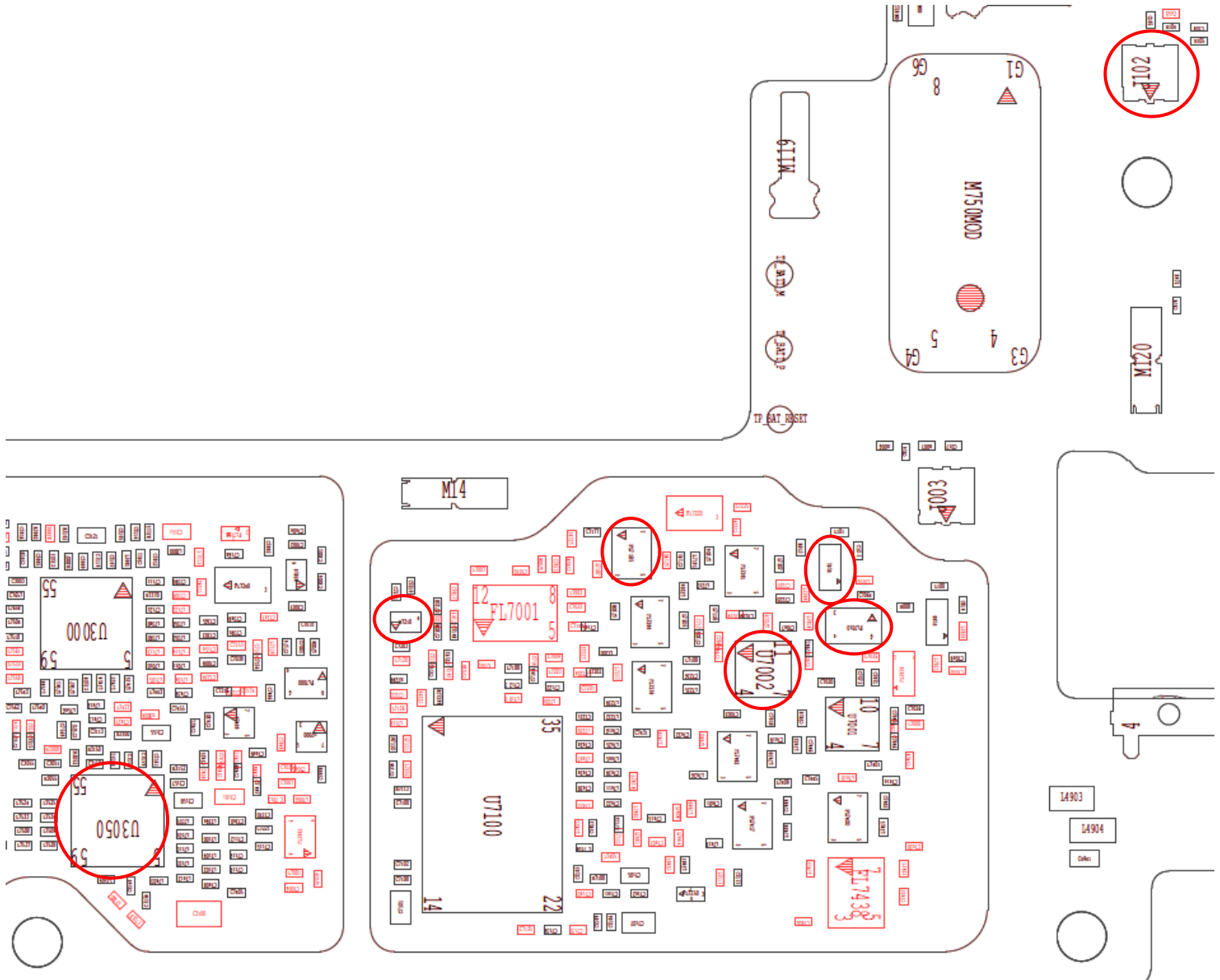
B1 ROW TX/PRX



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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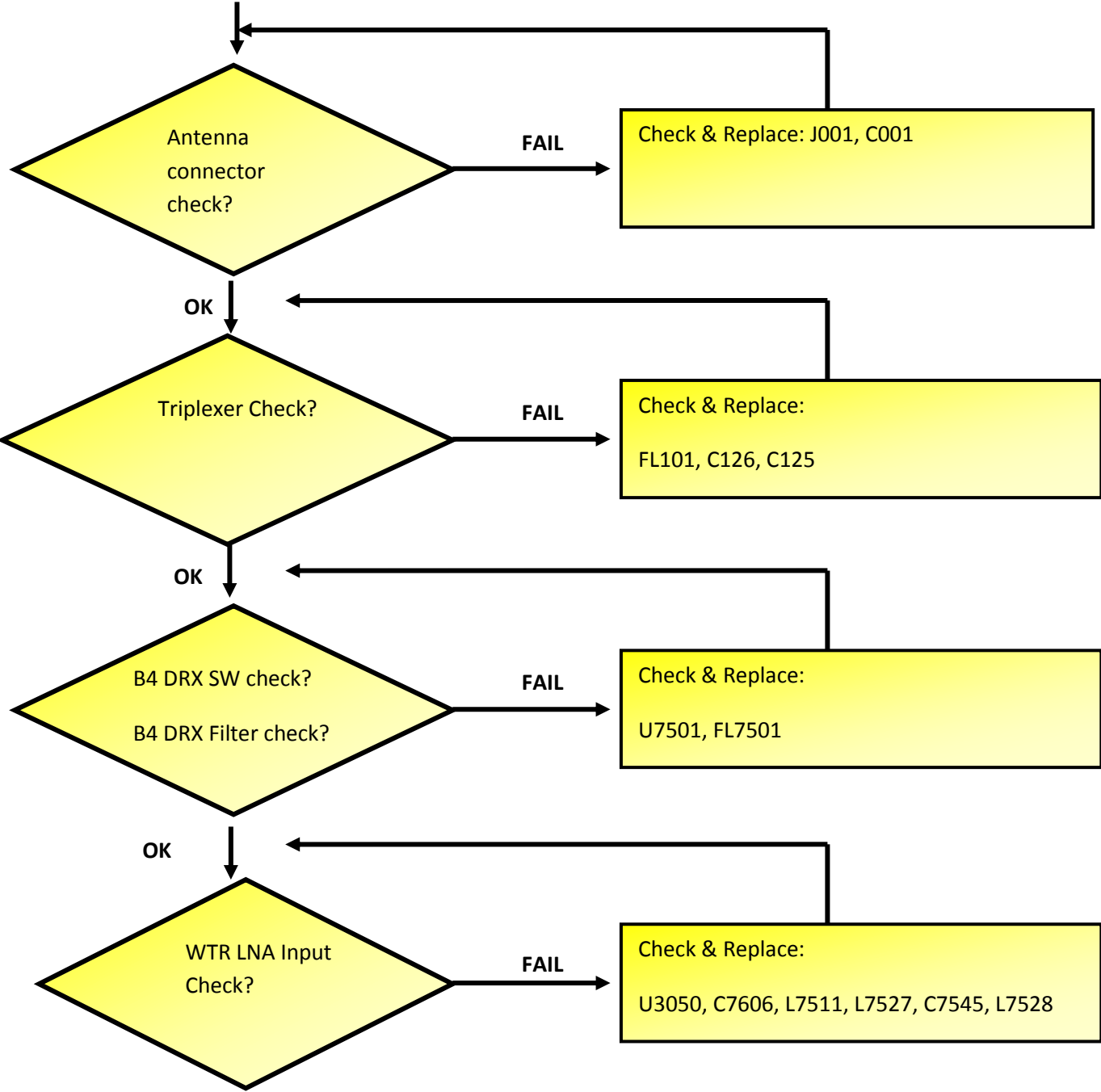
Overlay



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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LTE / WCDMA B1 DRX (ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

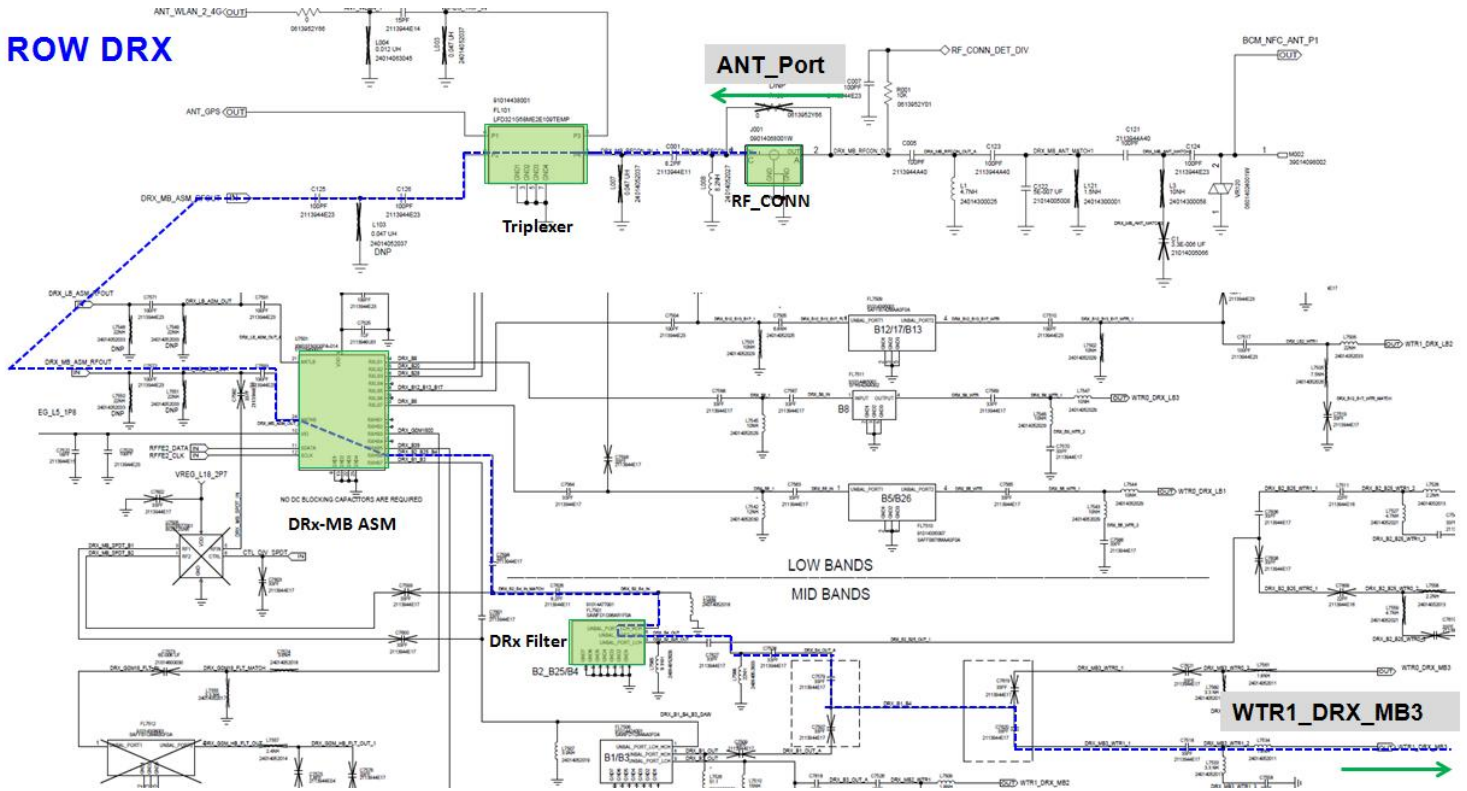
Vertex RF Troubleshooting Guide

MODEL

Vertex

Schematic

B1 ROW DRX



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

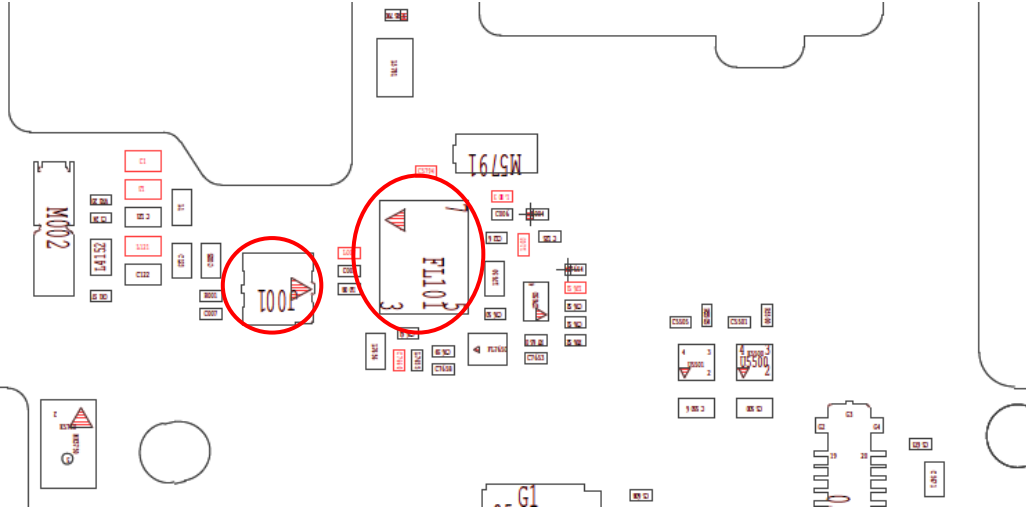
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Vertex RF Troubleshooting Guide

MODEL

Vertex

Overlay



WRITER

Vertex RF HW Development Team

DATE

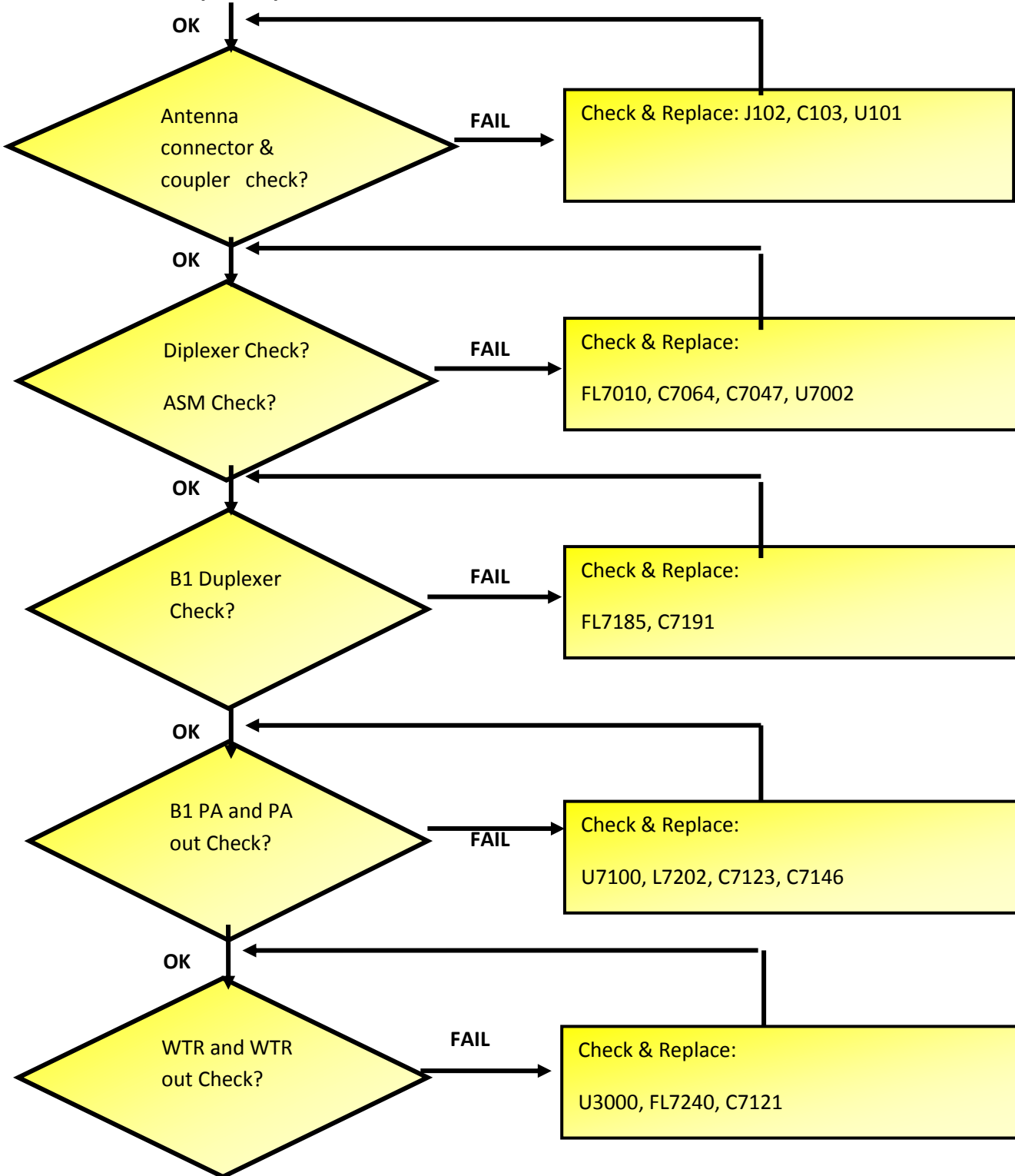
6/1/2016

WITNESS

DATE

<p>TITLE</p> <p>Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p>Vertex</p>
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WCDMA B1 TX (VZW)

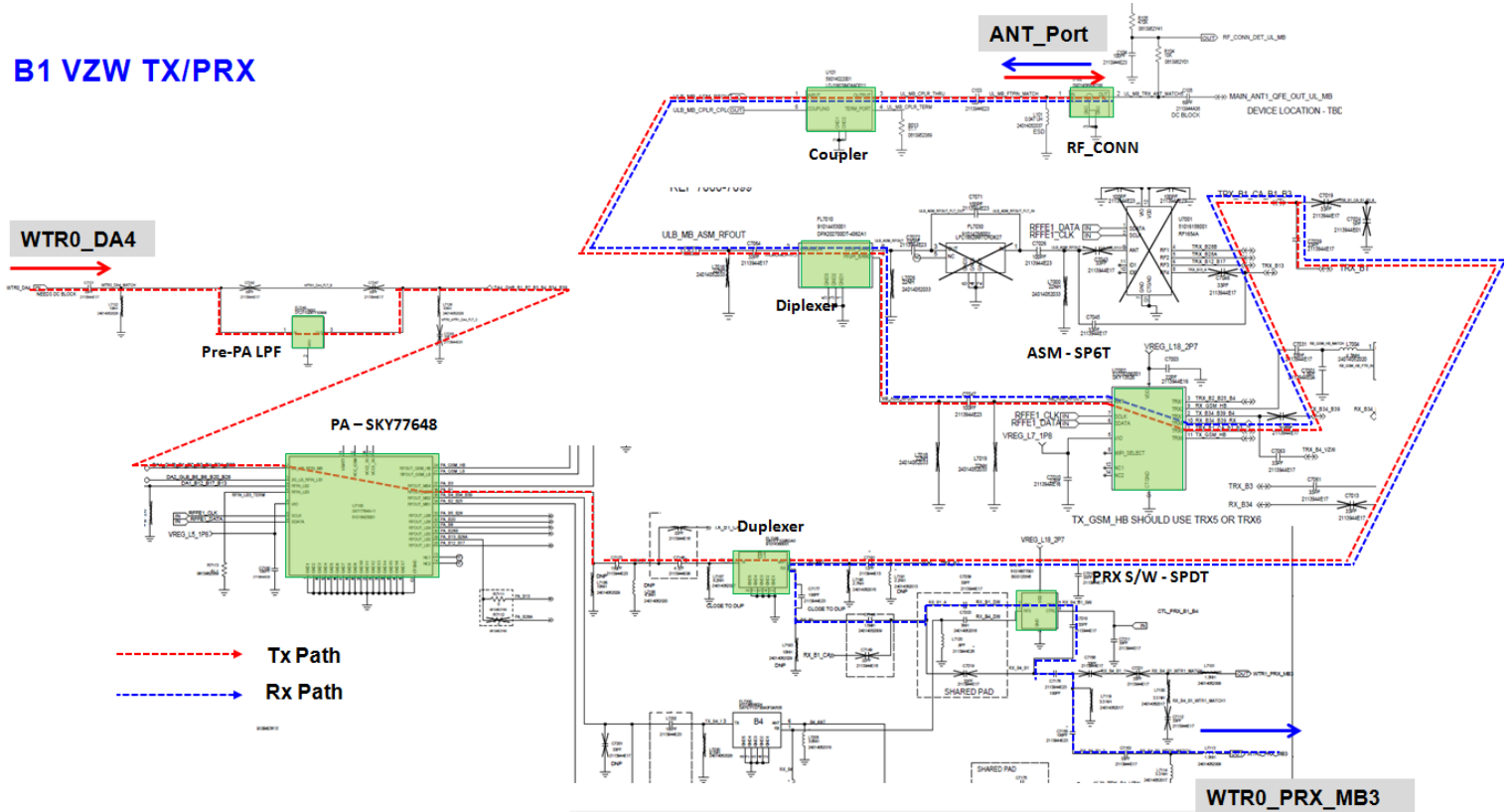


<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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Schematic

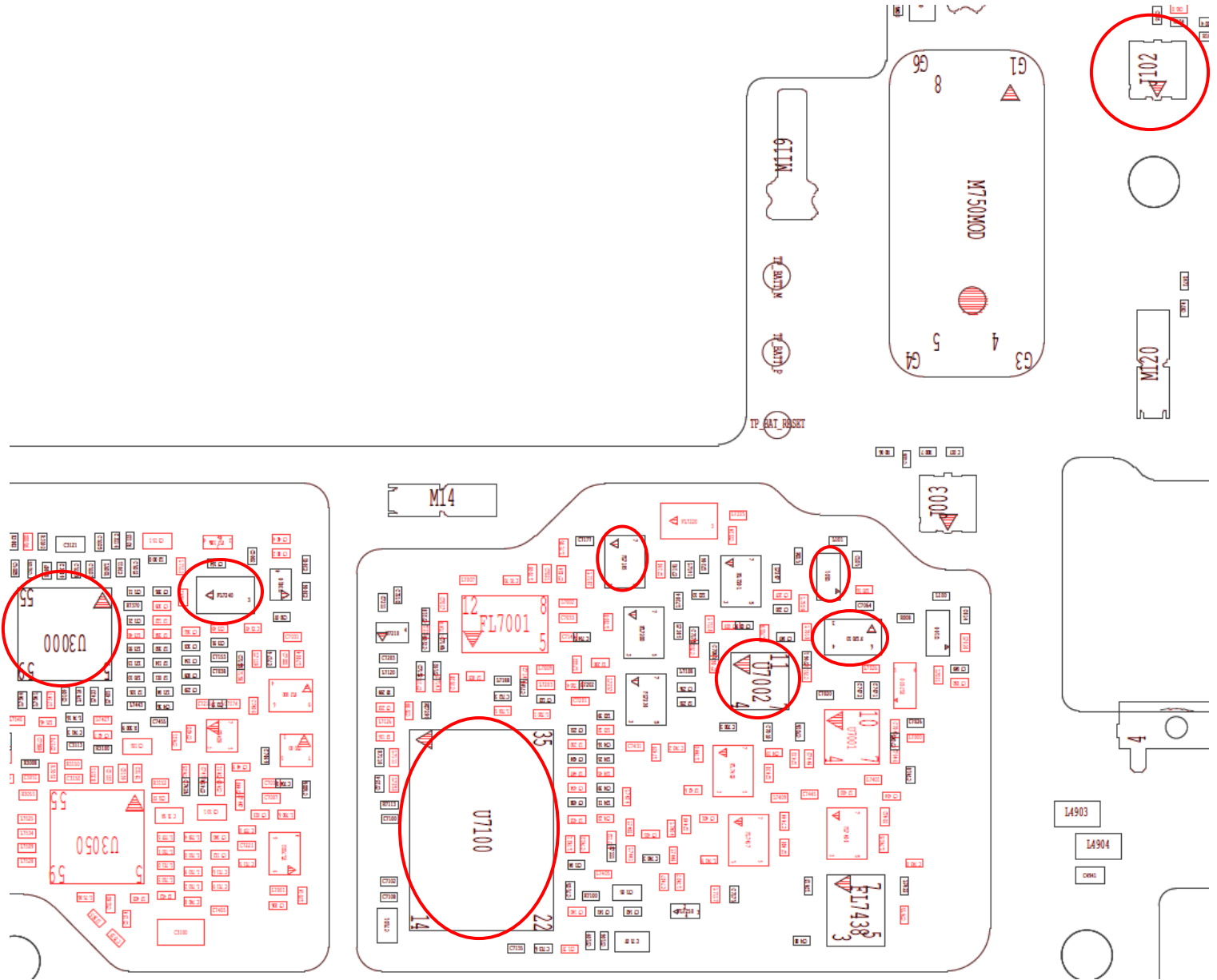
B1 VZW TX/PRX



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE	MODEL
Vertex RF Troubleshooting Guide	Vertex

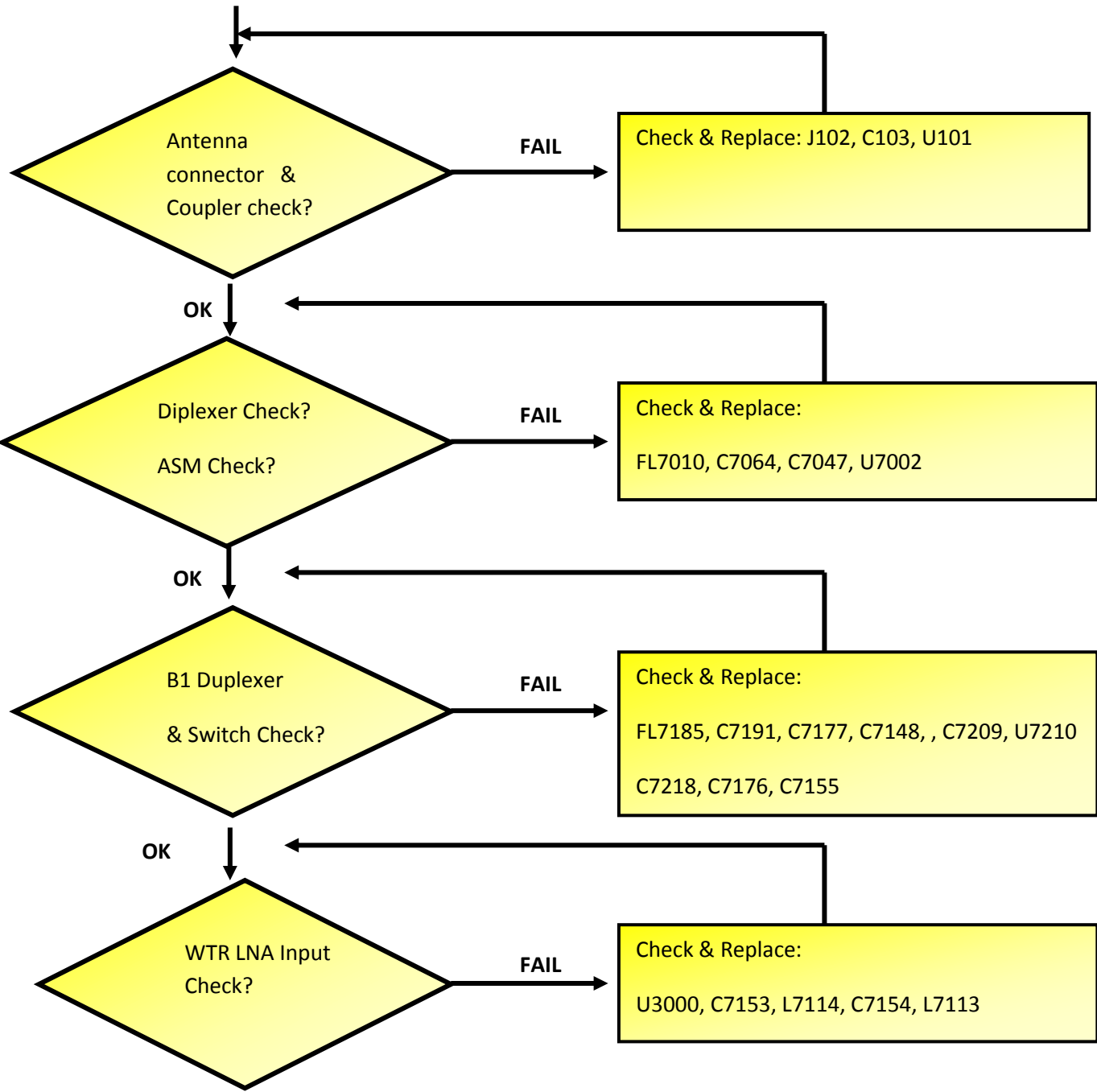
Overlay



WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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WCDMA B1 PRX (VZW)

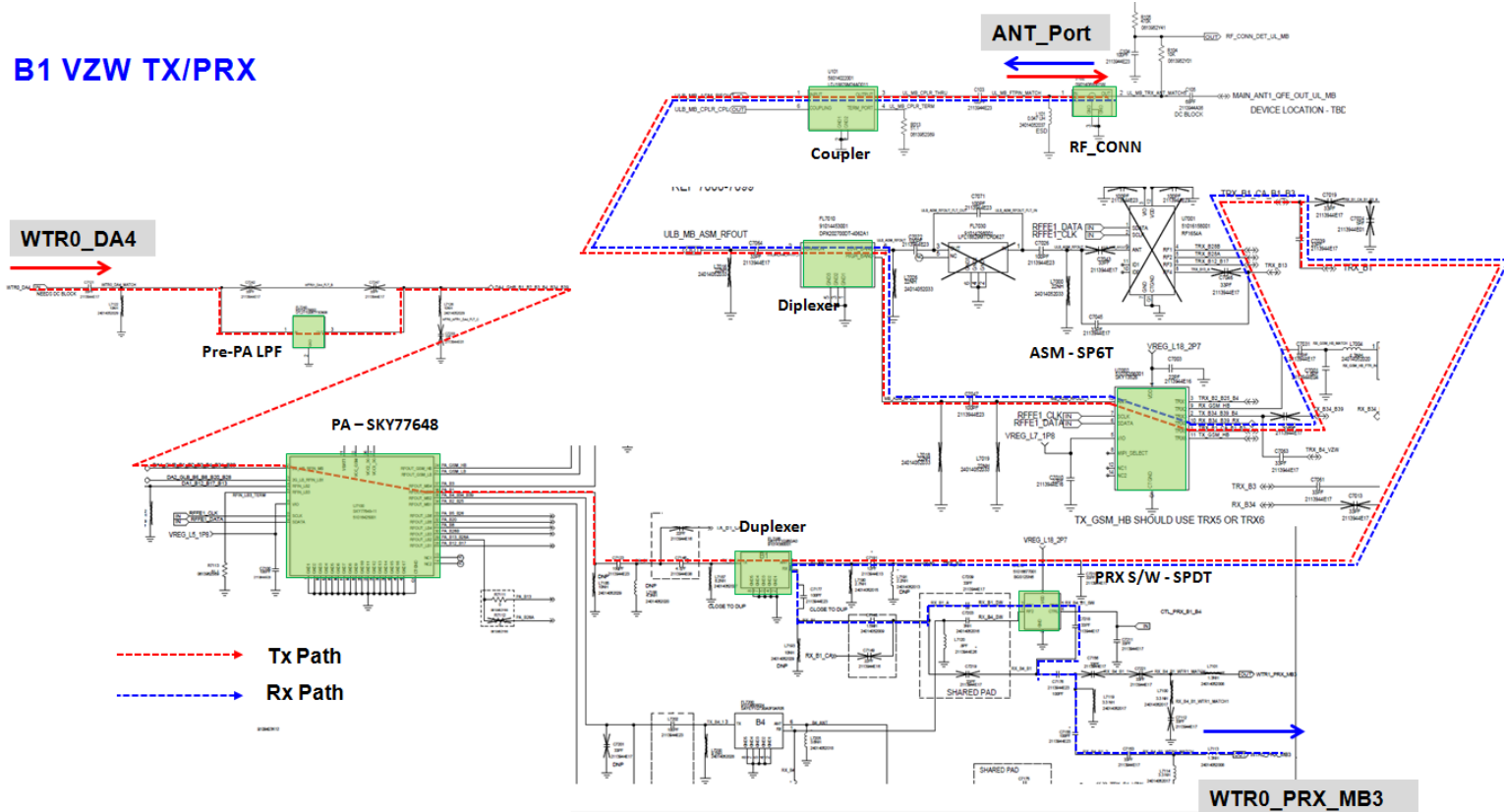


<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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Schematic

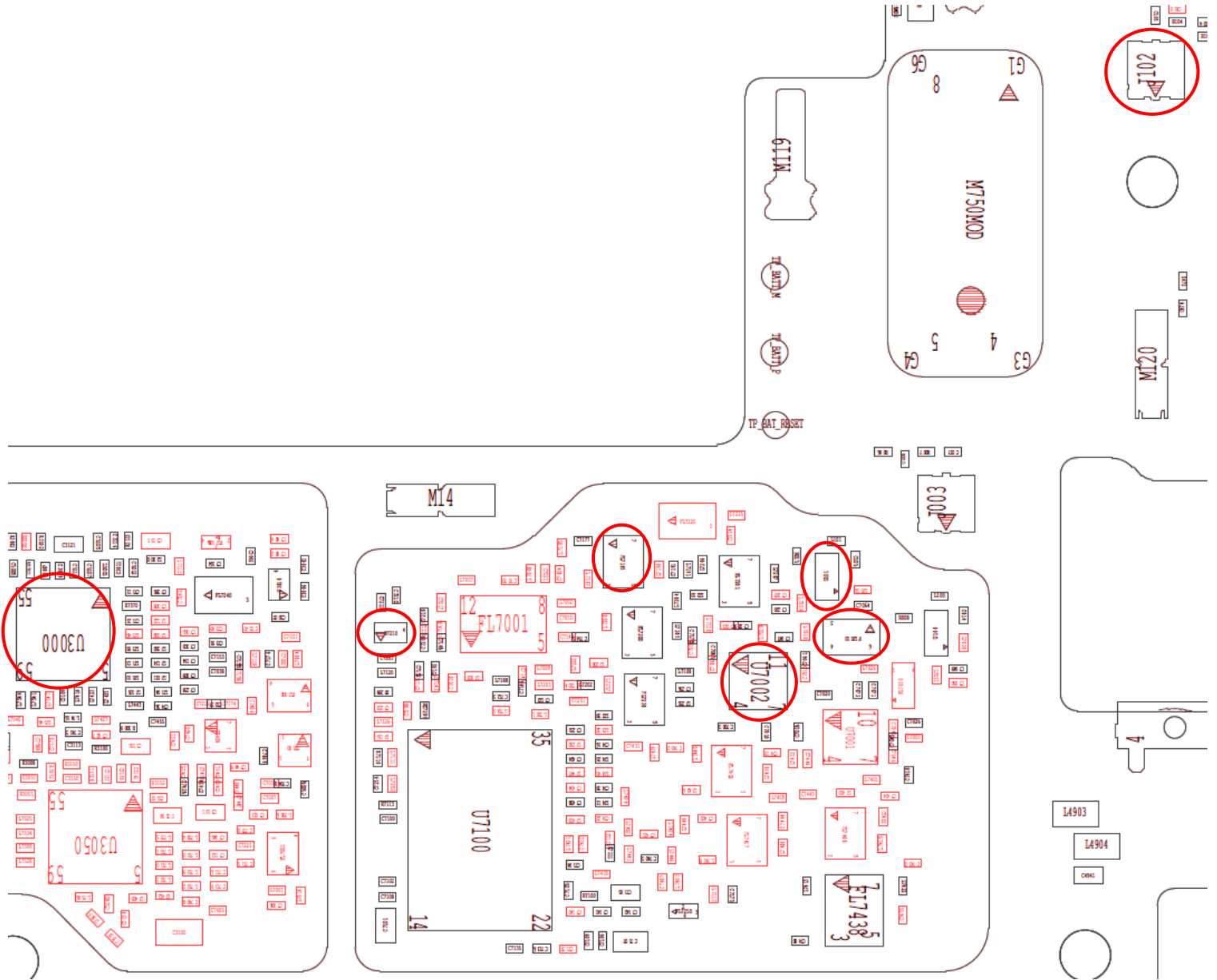
B1 VZW TX/PRX



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE Vertex RF Troubleshooting Guide	MODEL Vertex
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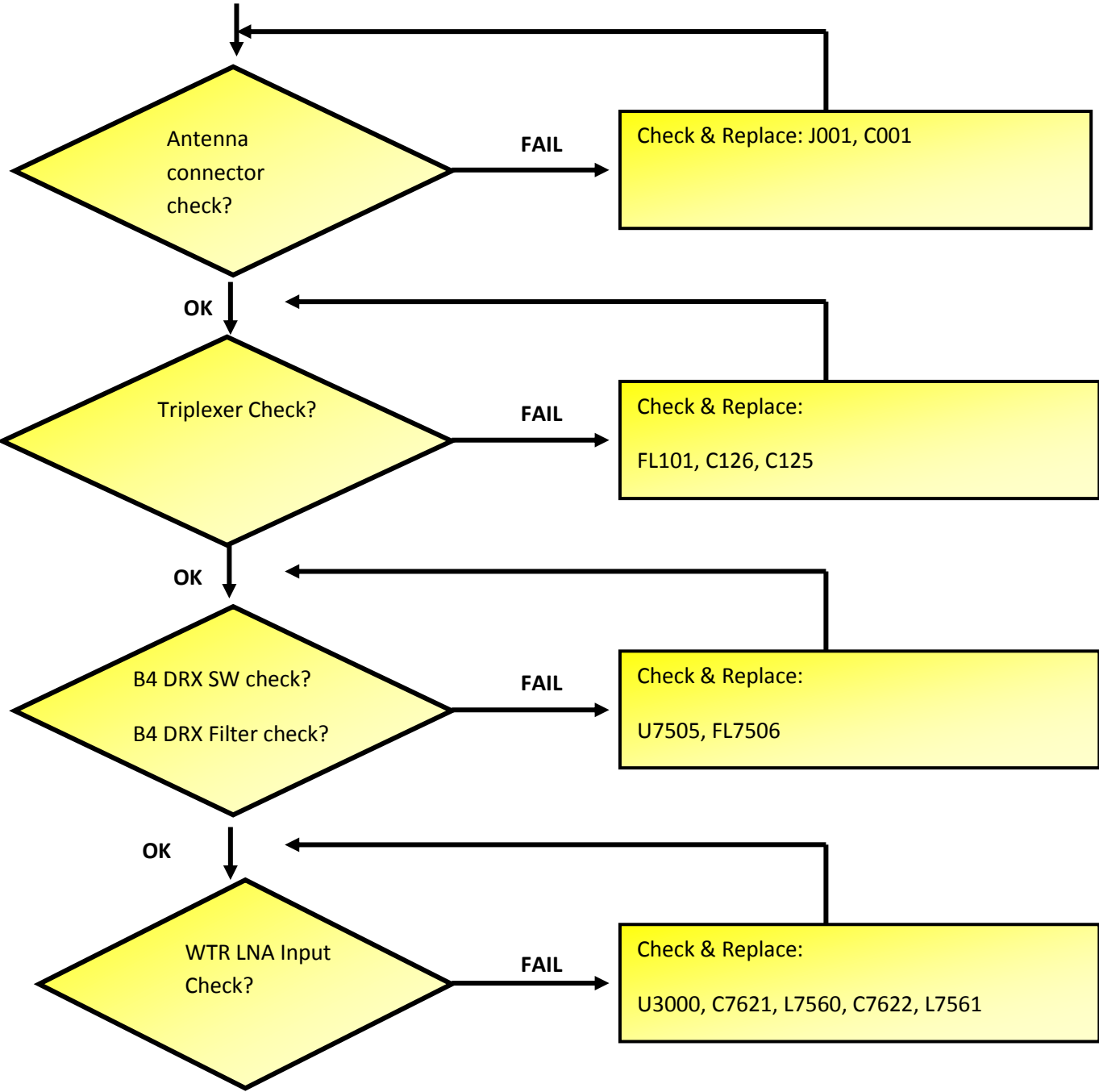
Overlay



WRITER Vertex RF HW Development Team	DATE 6/1/2016	WITNESS	DATE
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<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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WCDMA B1 DRX (VZW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

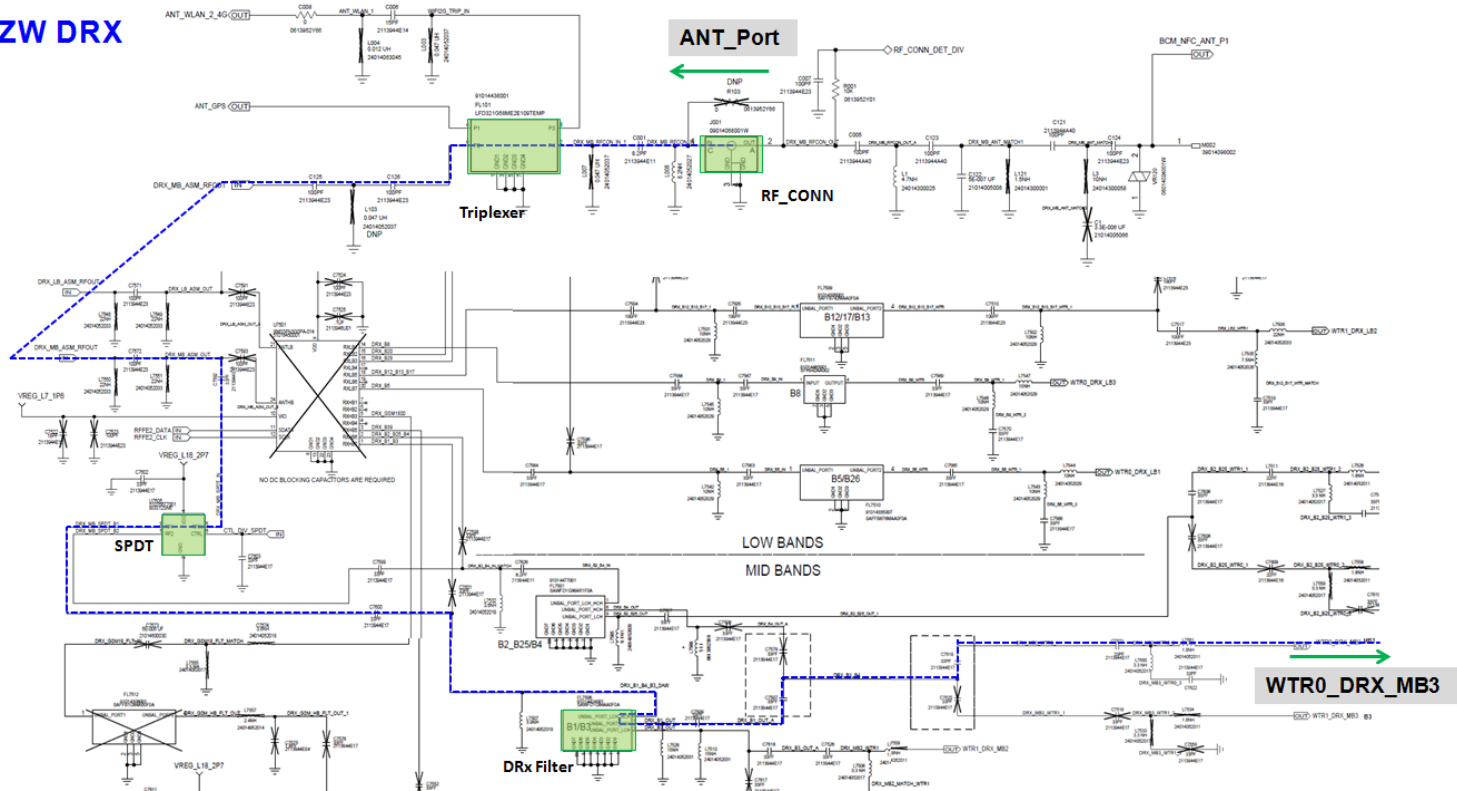
Vertex RF Troubleshooting Guide

MODEL

Vertex

Schematic

B4 VZW DRX



WRITER

Vertex RF HW Development Team

DATE

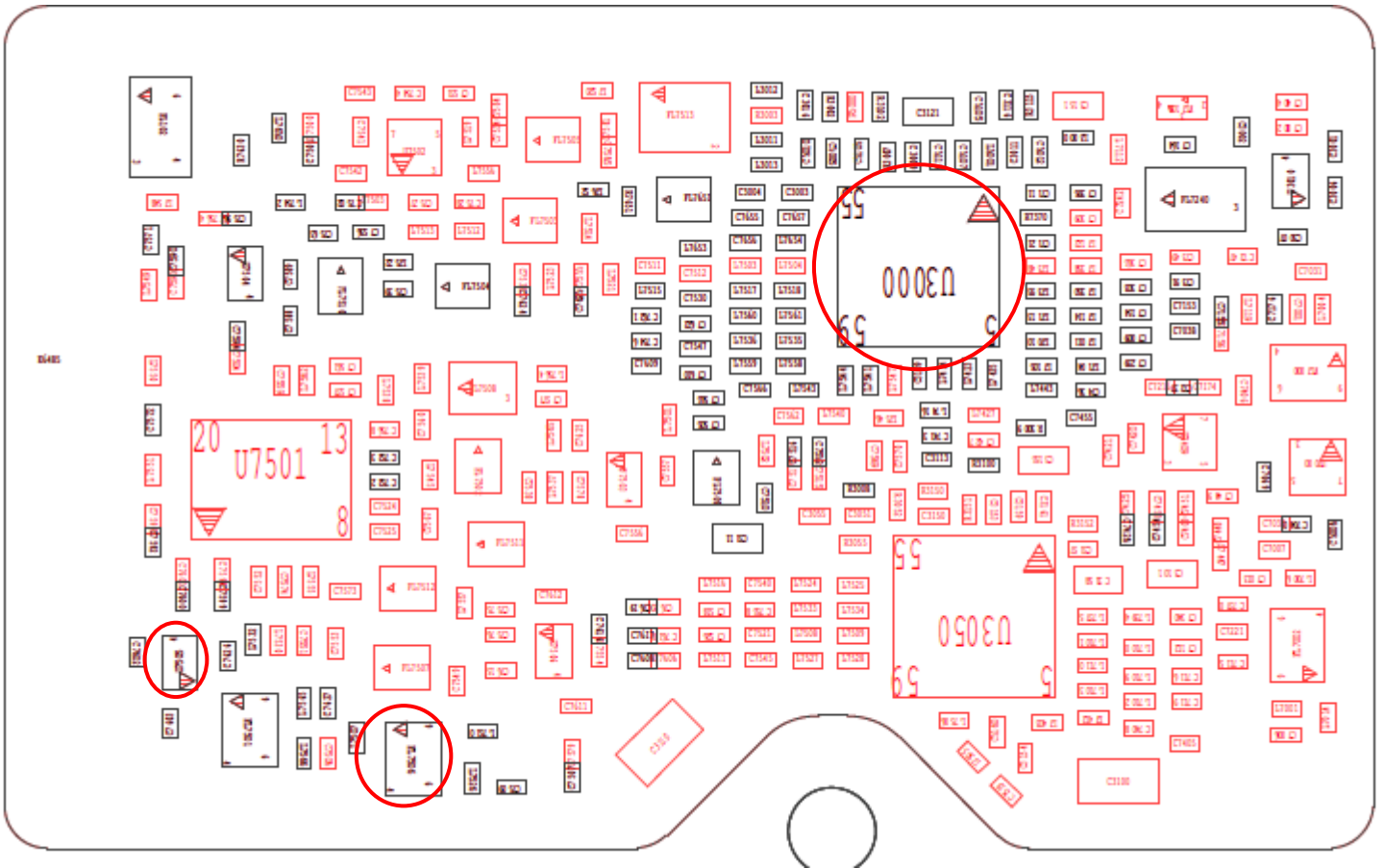
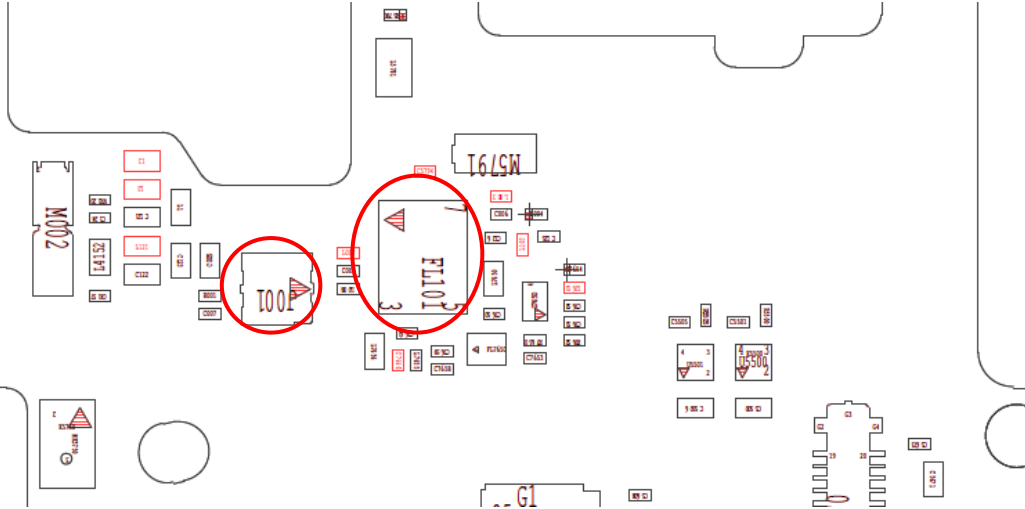
6/1/2016

WITNESS

DATE

TITLE Vertex RF Troubleshooting Guide	MODEL Vertex
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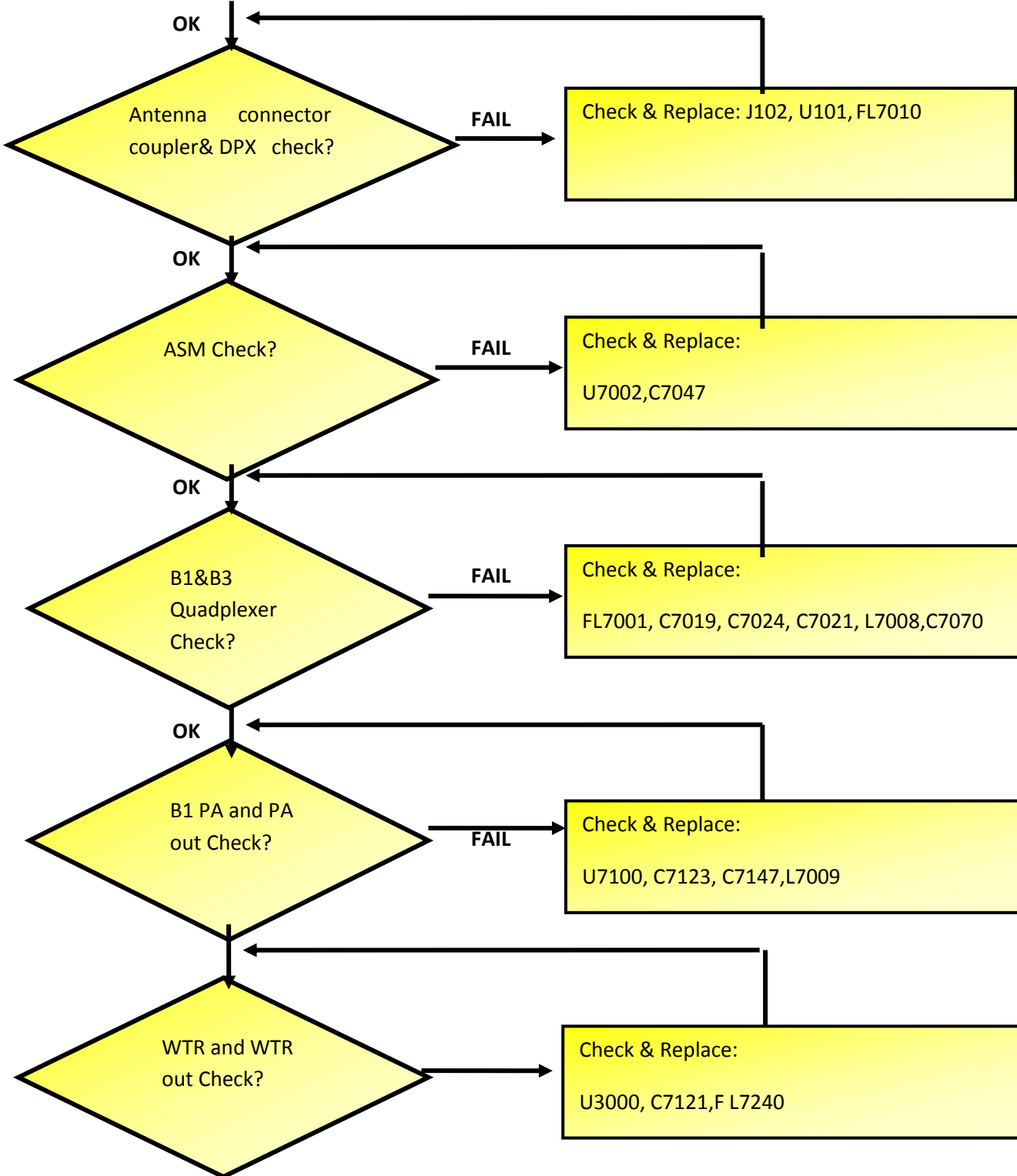
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WRITER Vertex RF HW Development Team	DATE 6/1/2016	WITNESS	DATE
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B1 LTE & WCDMA TX (PRC)



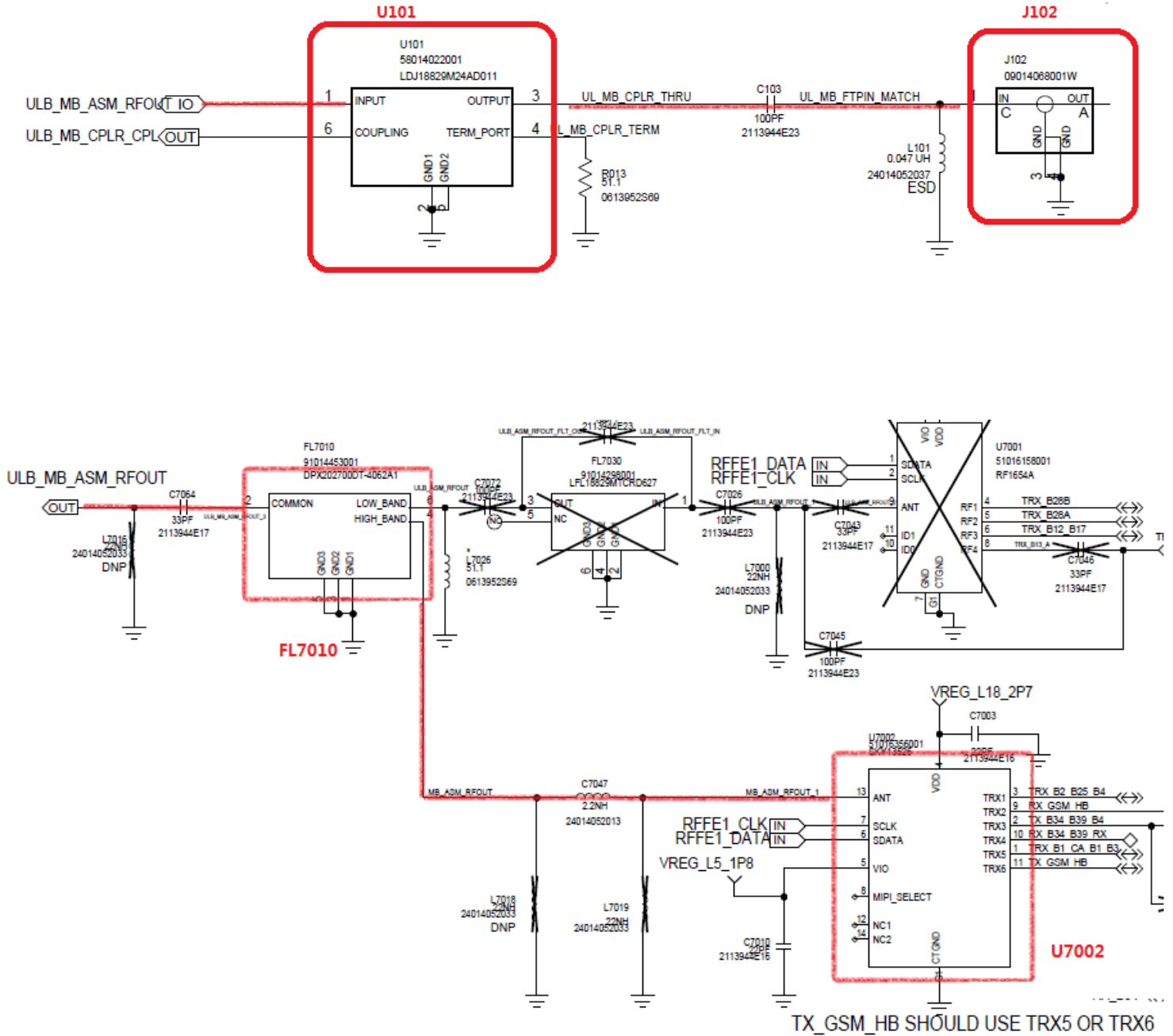
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

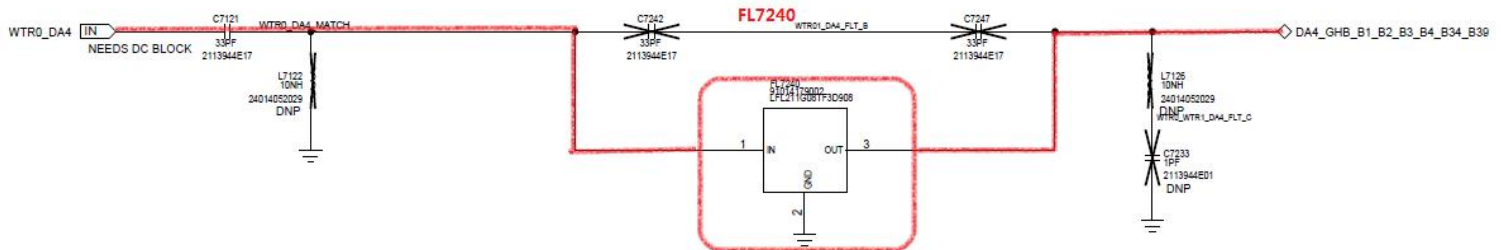
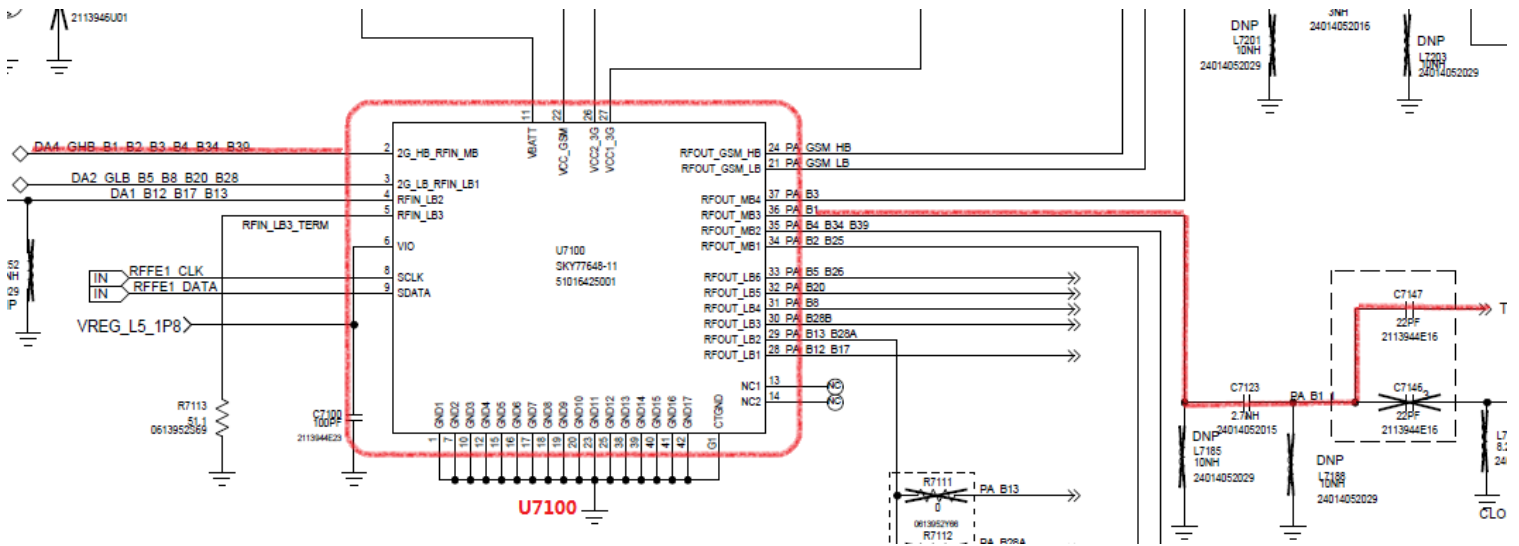
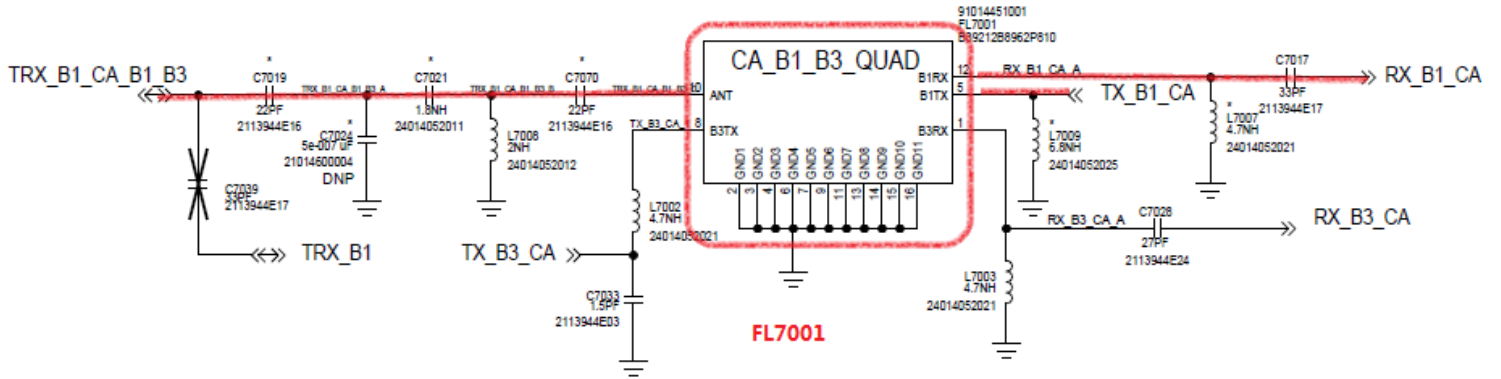
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Vertex RF Troubleshooting Guide

MODEL

Vertex



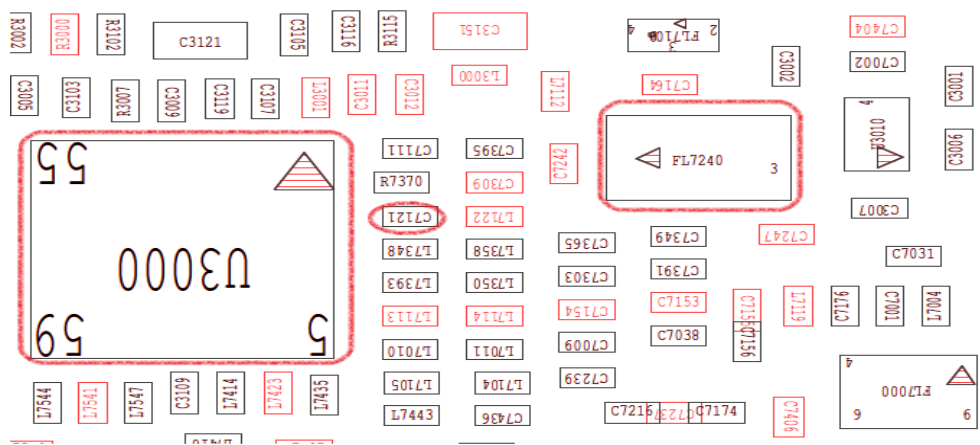
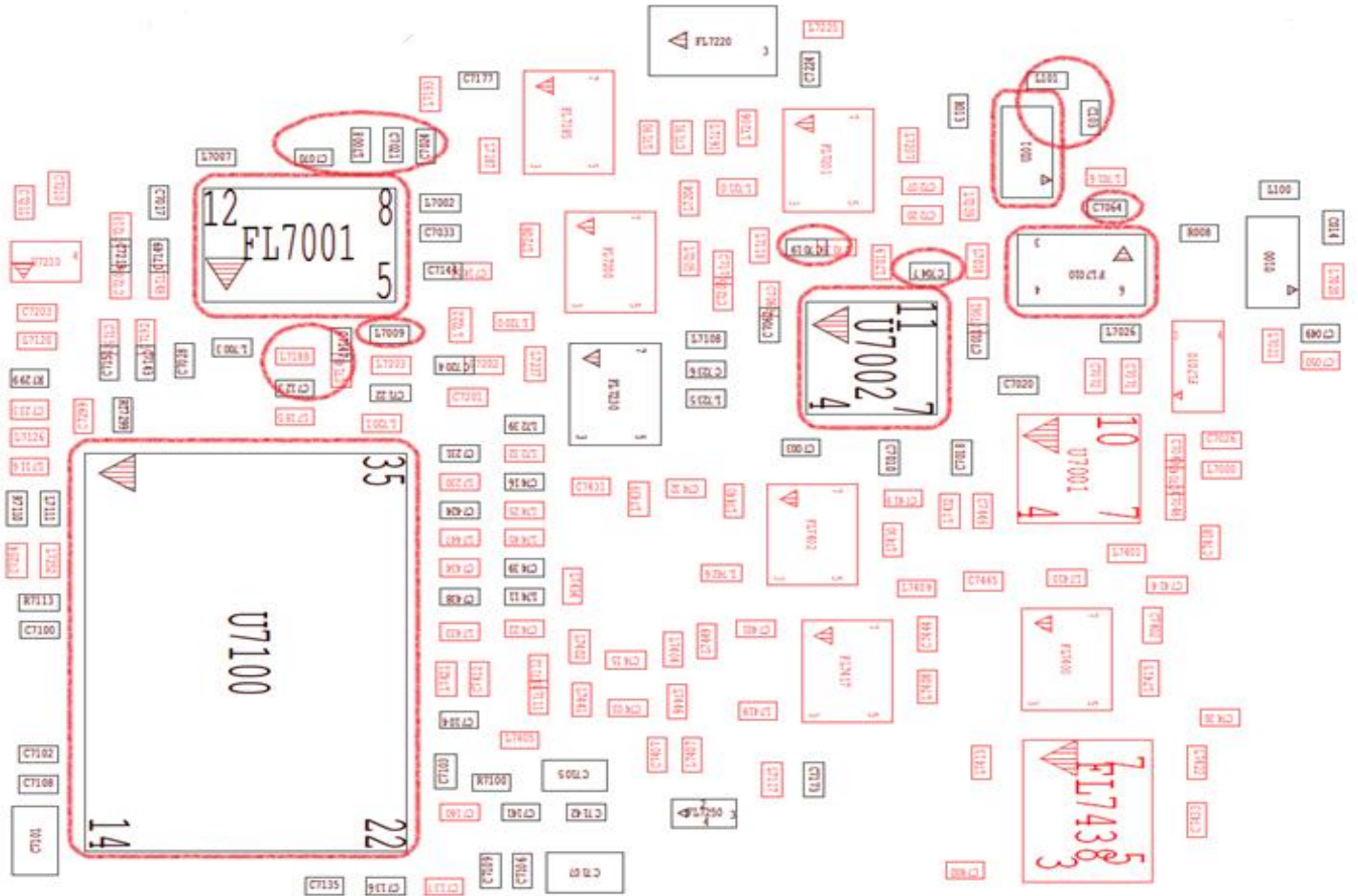
WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

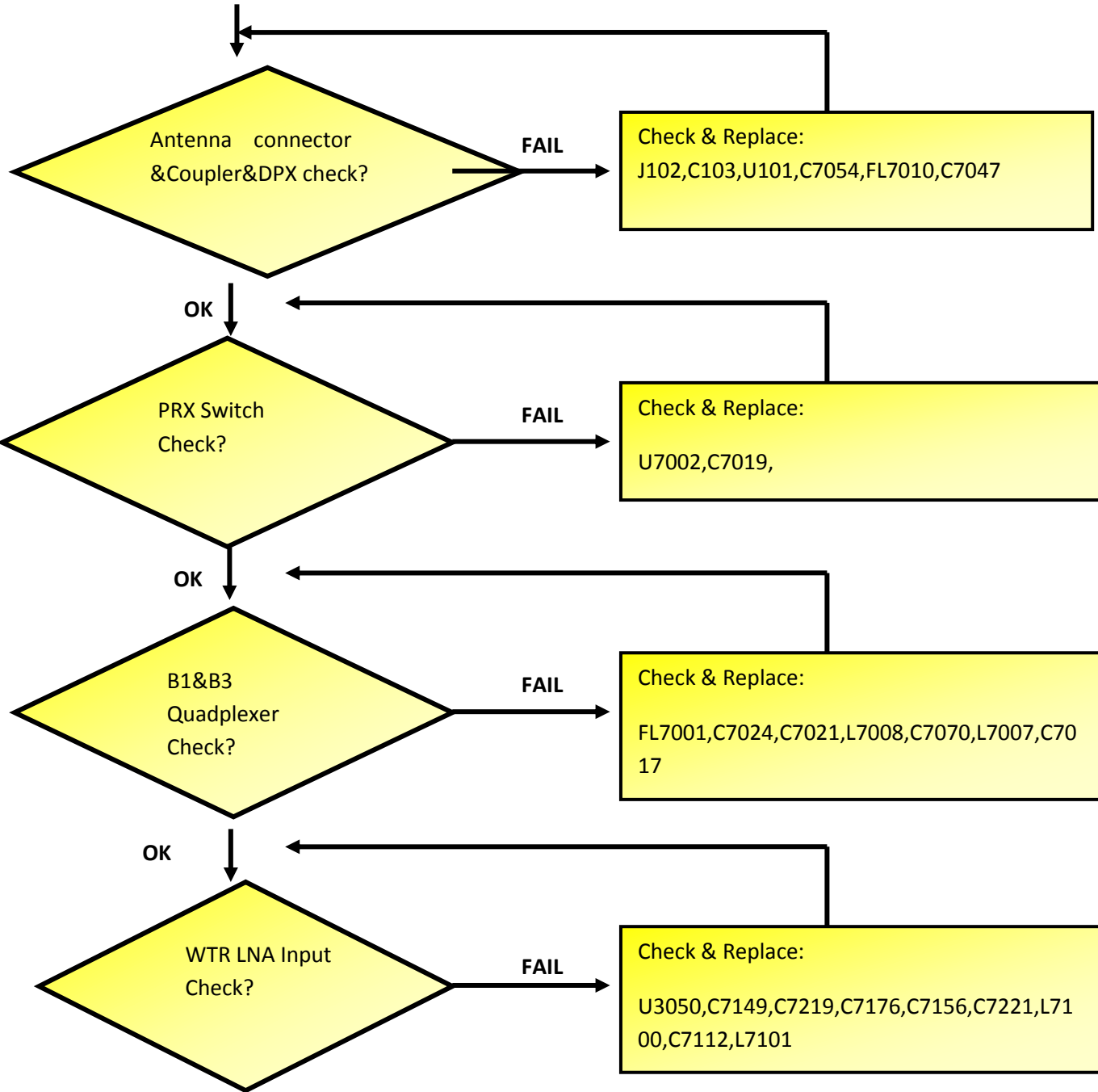
6/1/2016

WITNESS

DATE

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B1 LTE & WCDMA PRX (PRC)



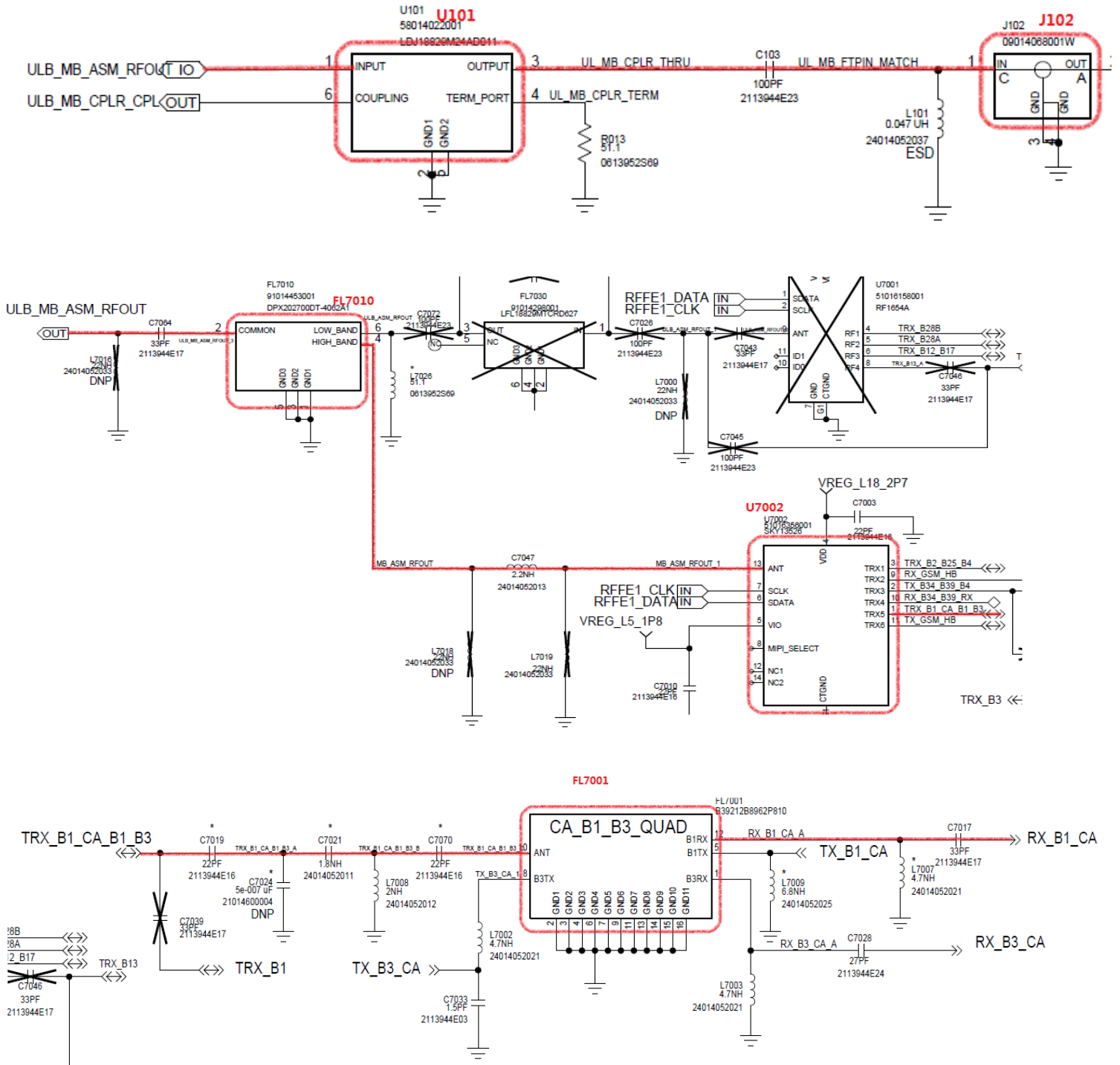
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

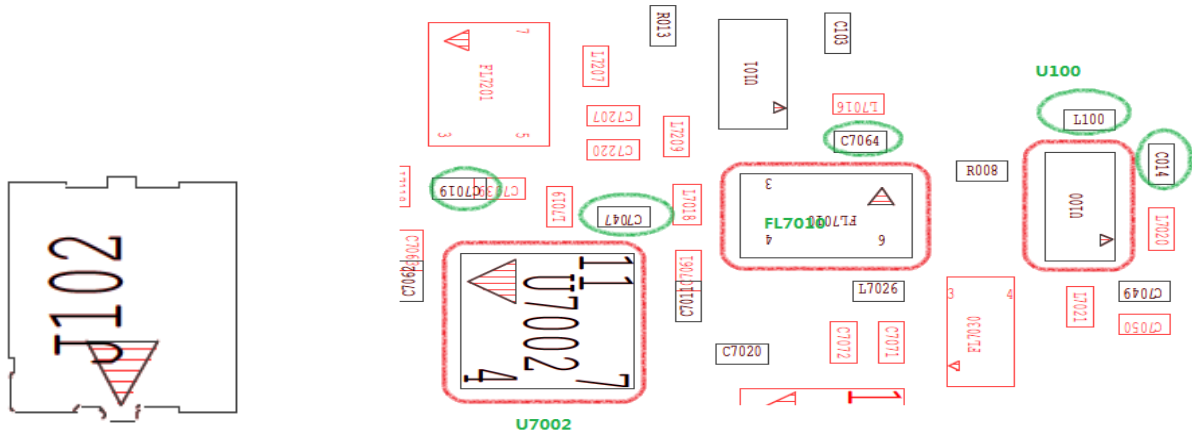
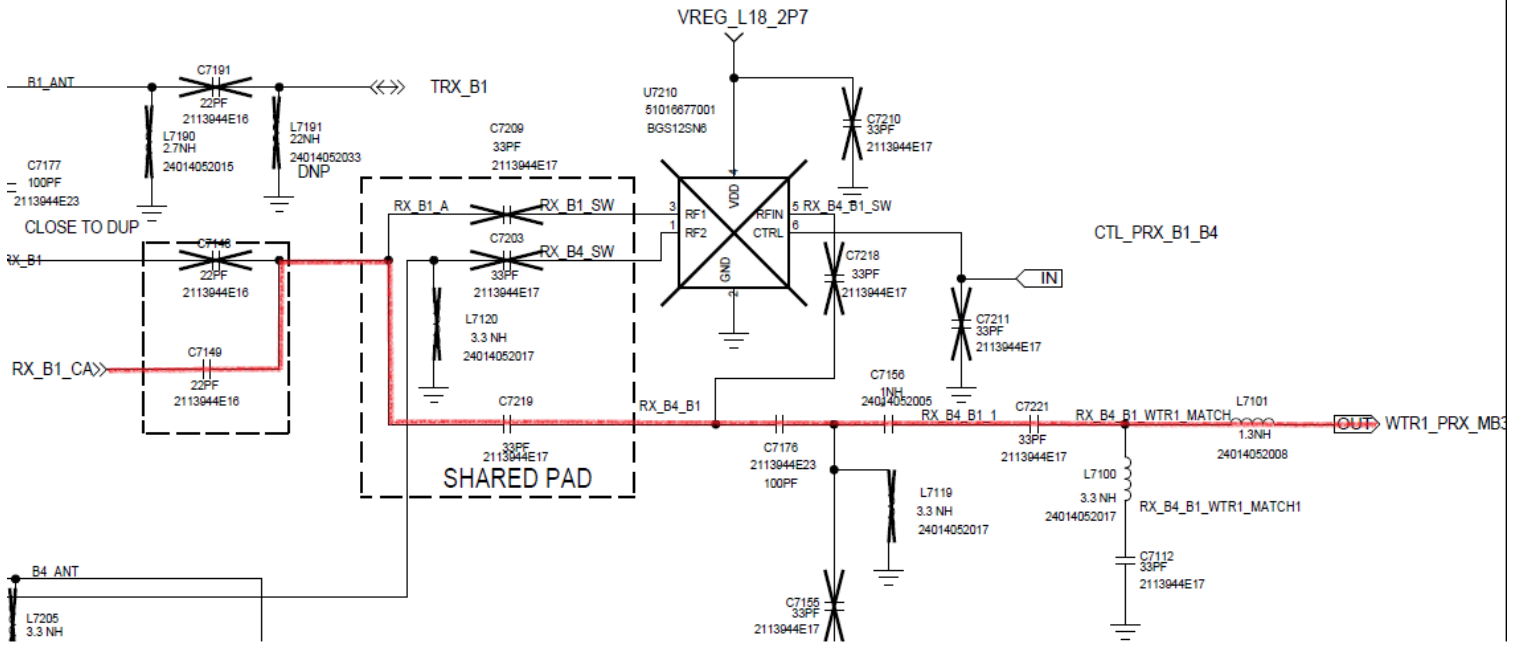
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6/1/2016

WITNESS

DATE

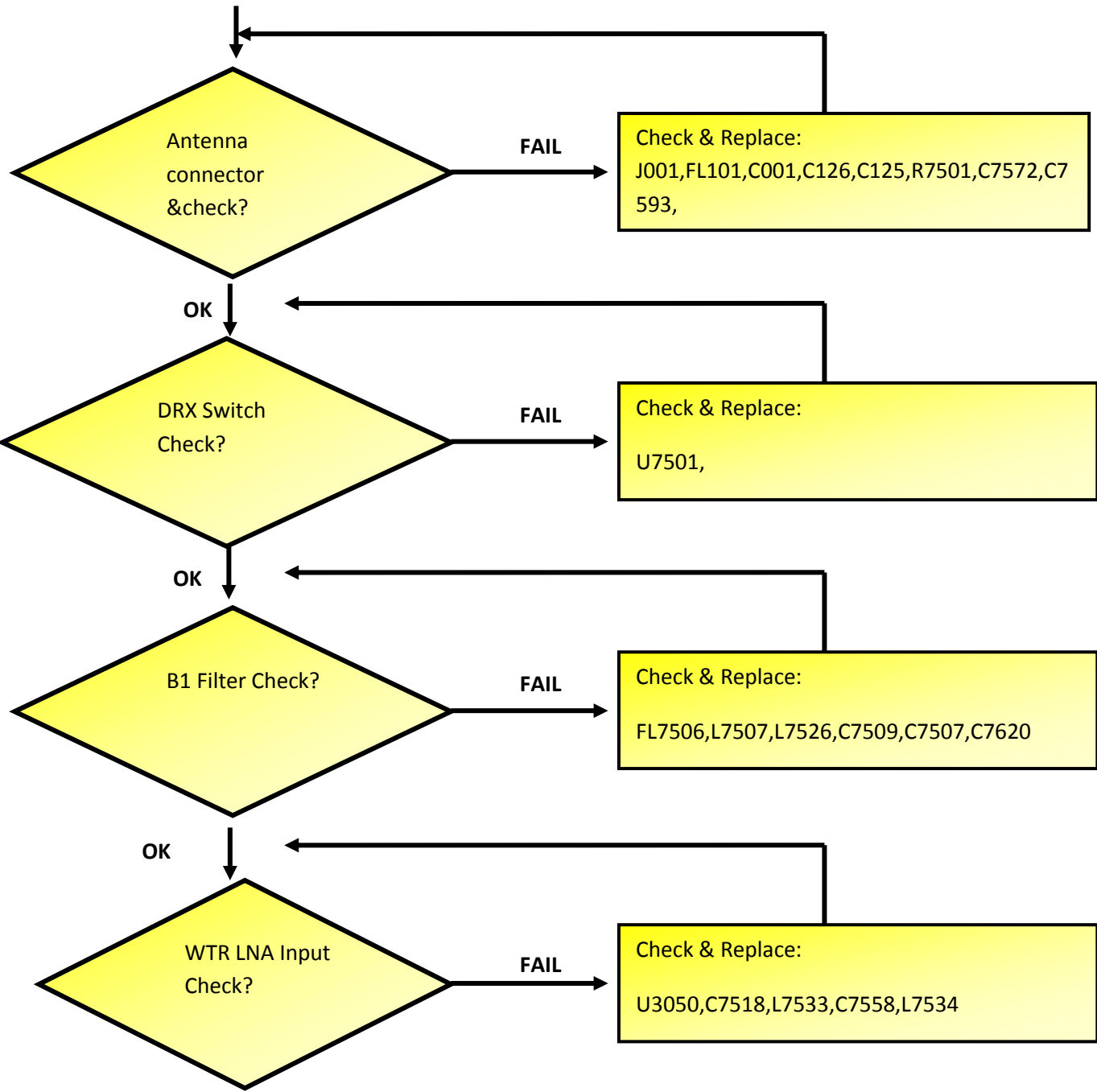
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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B1 LTE & WCDMA DRX (PRC)



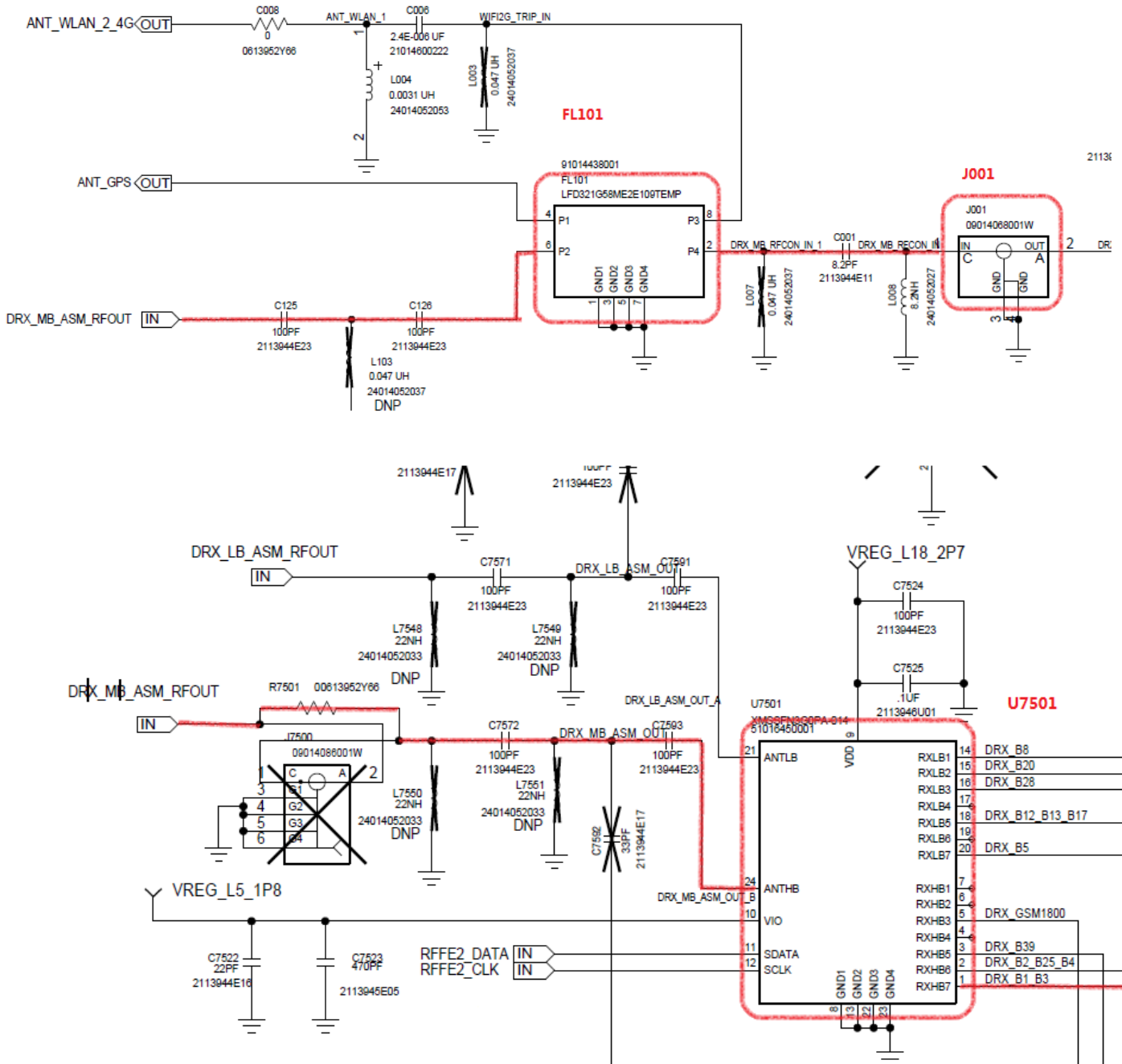
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

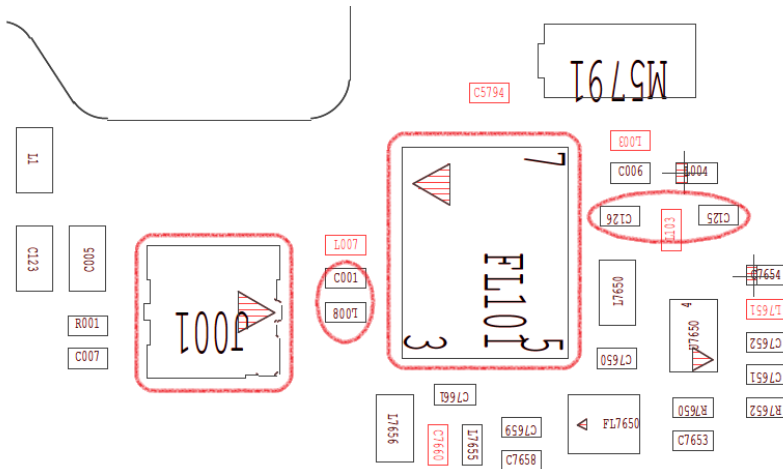
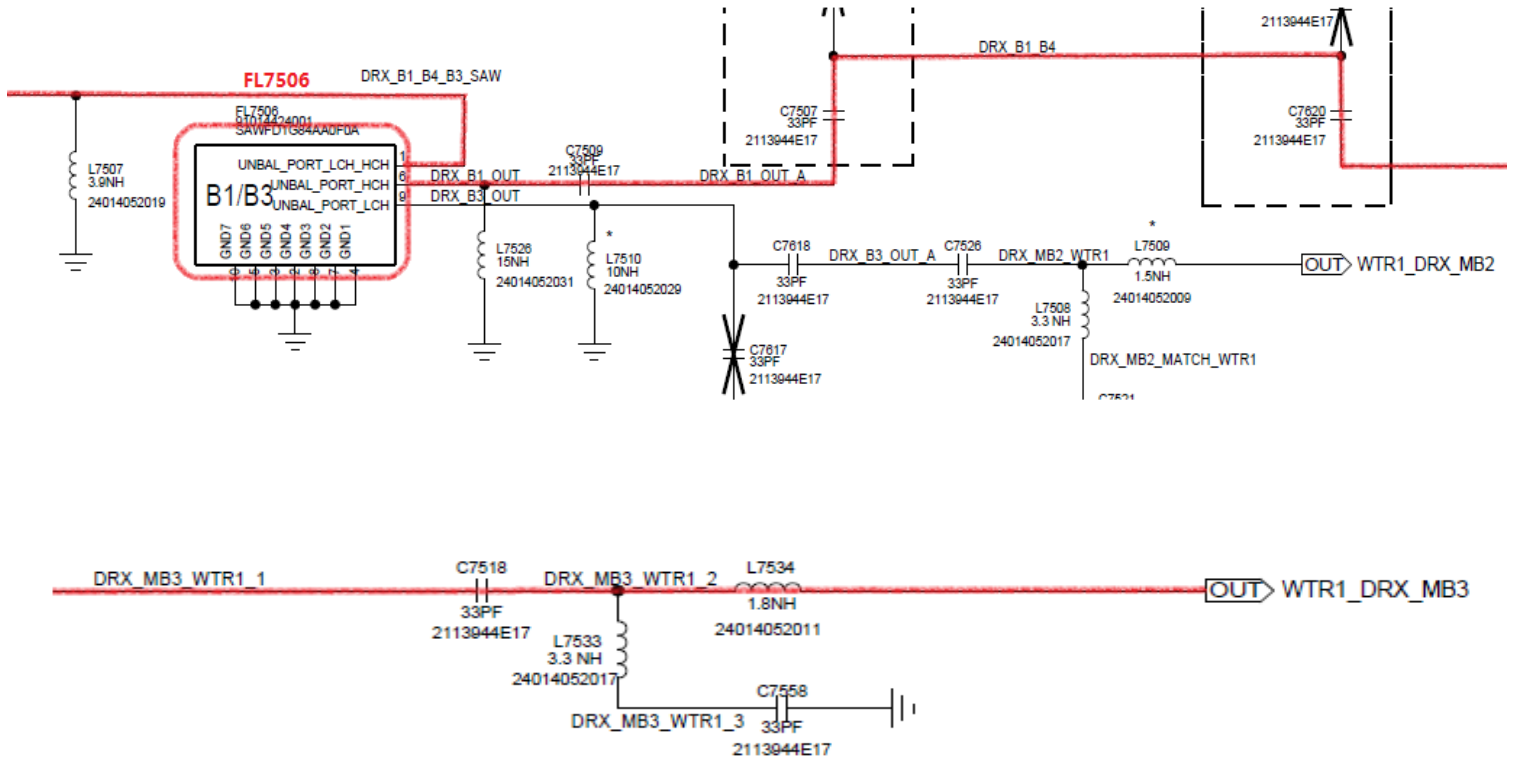
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

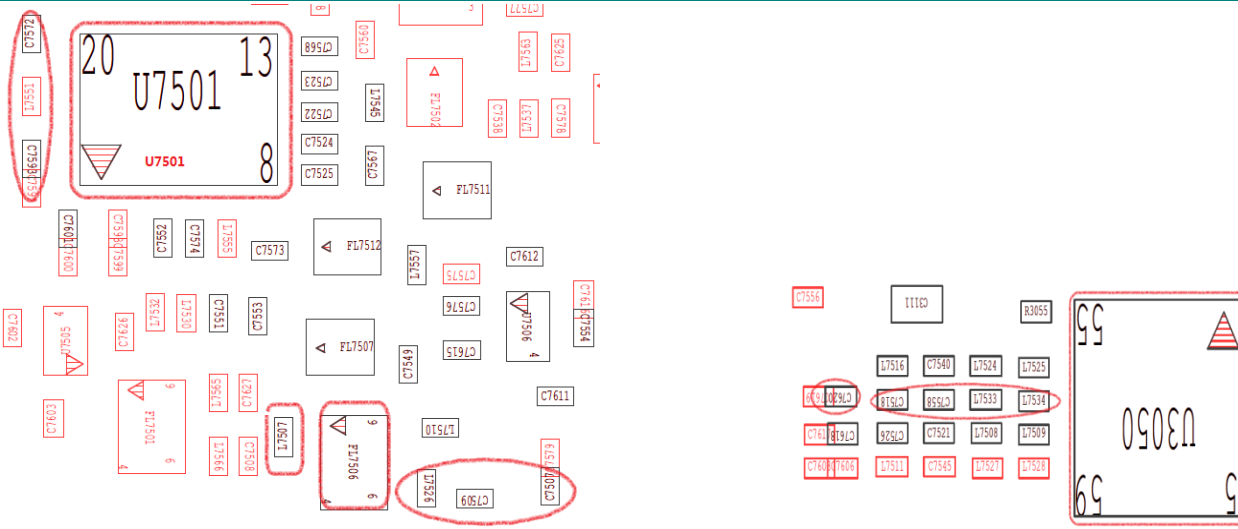
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6/1/2016

WITNESS

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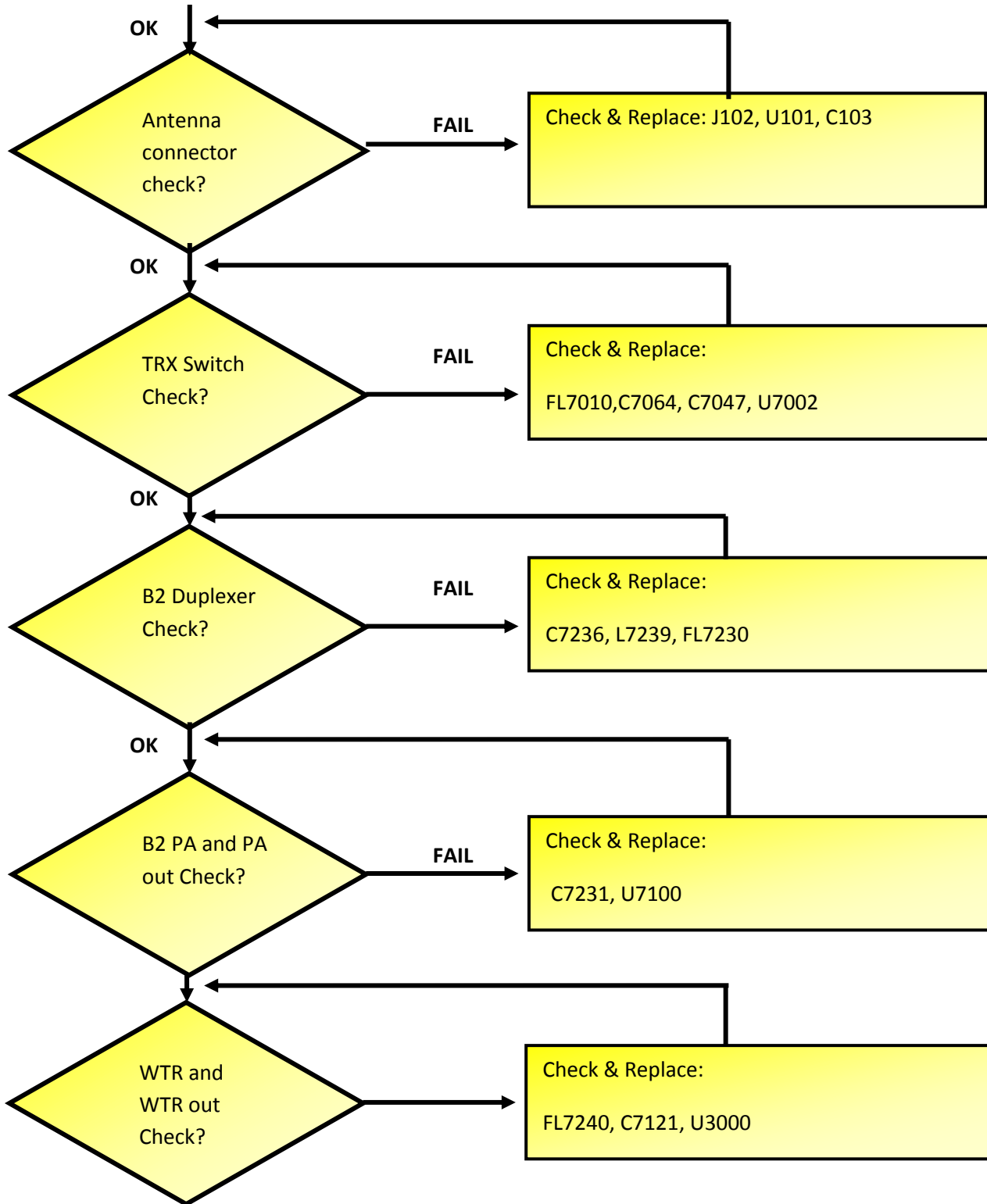
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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WCDMA B2, LTE B2, CDMA BC1 – TX (VZW, ROW and CHINA)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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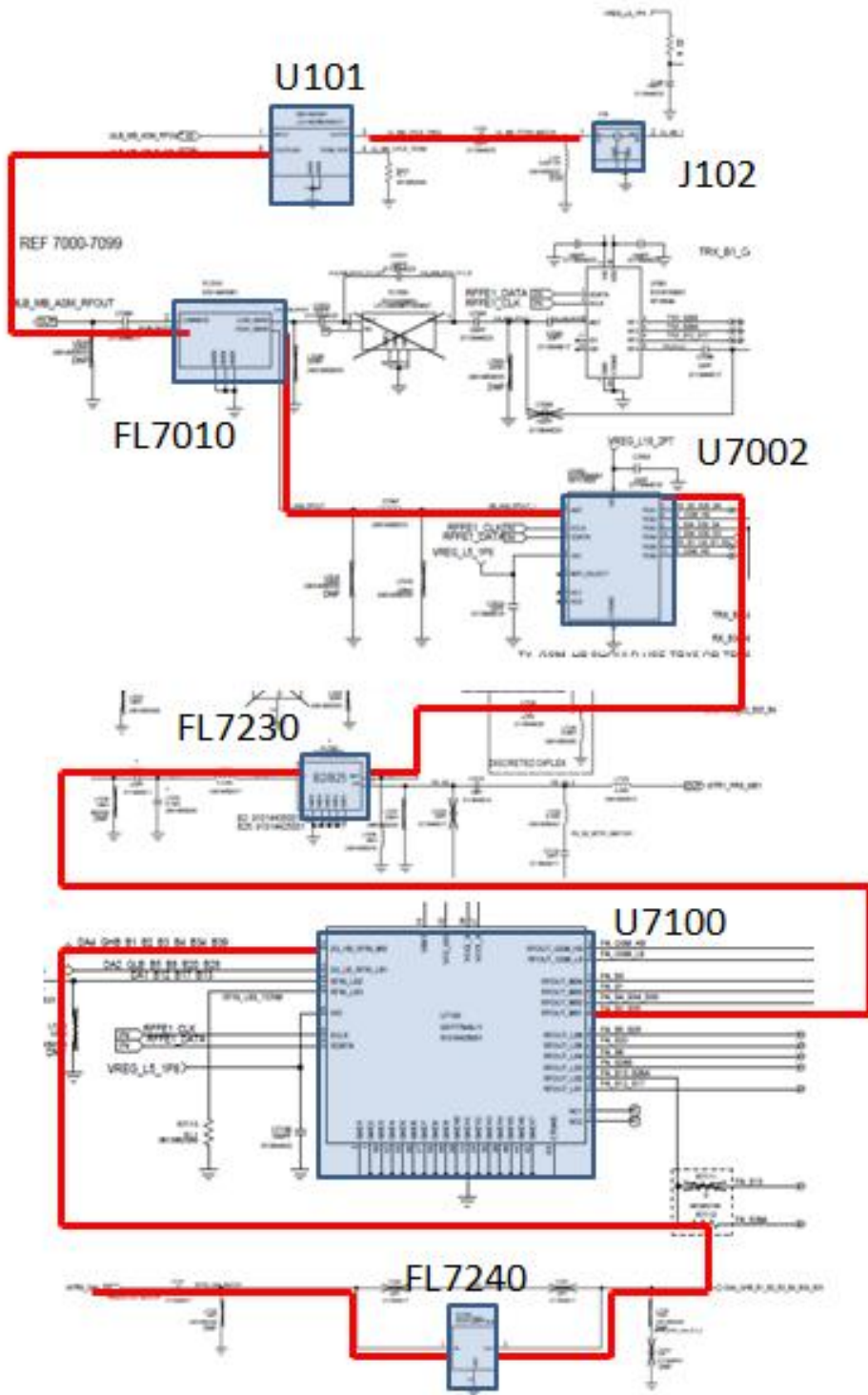
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Vertex RF Troubleshooting Guide

MODEL

Vertex

WCDMA B2, LTE B2, CDMA BC1 – TX Schematic (VZW, ROW and CHINA)



WRITER

Vertex RF HW Development Team

DATE

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WITNESS

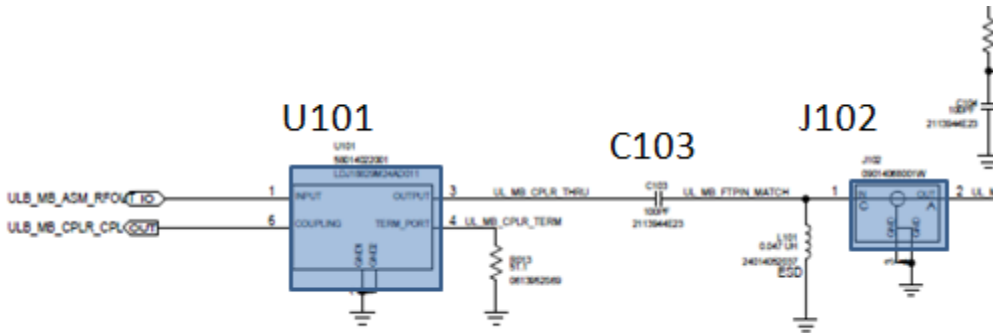
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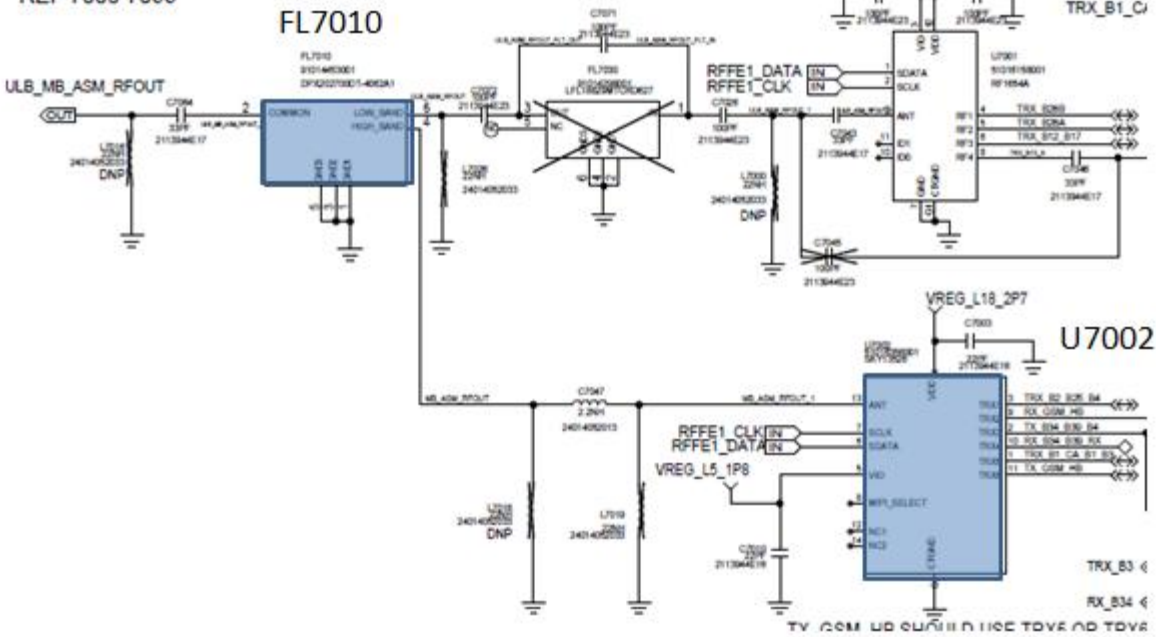
Vertex RF Troubleshooting Guide

MODEL

Vertex



REF 7000-7099



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

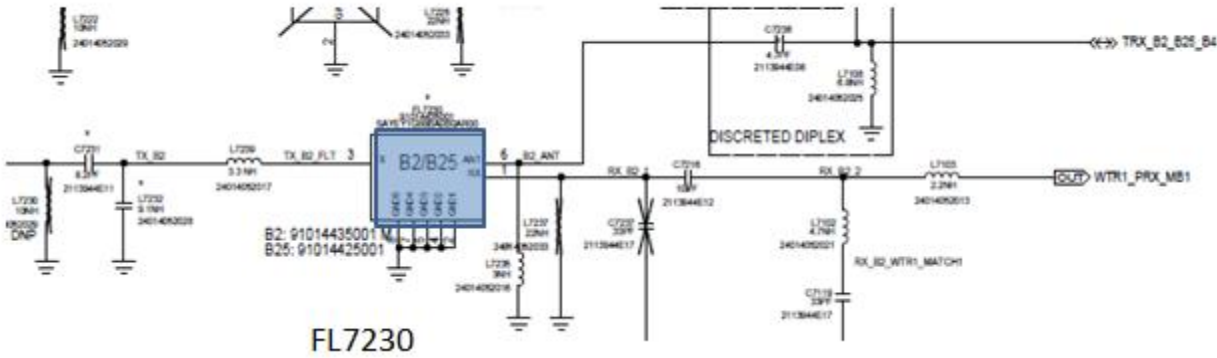
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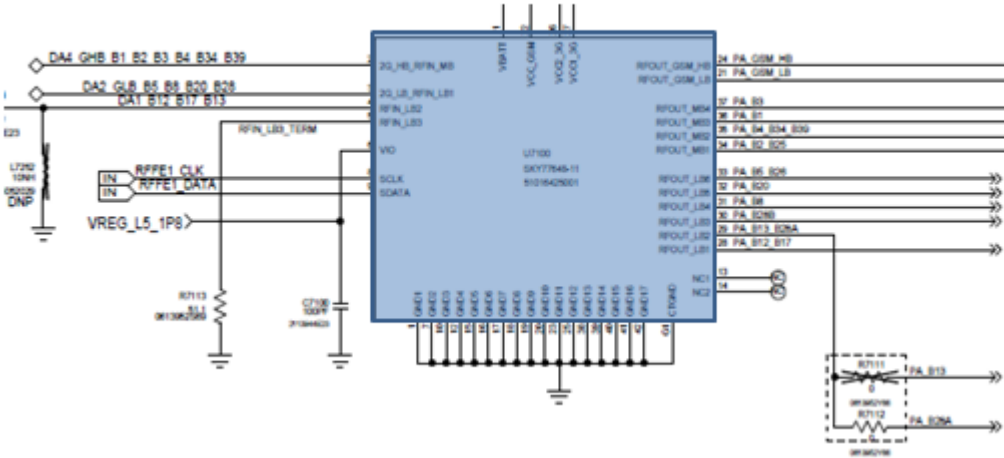
Vertex RF Troubleshooting Guide

MODEL

Vertex



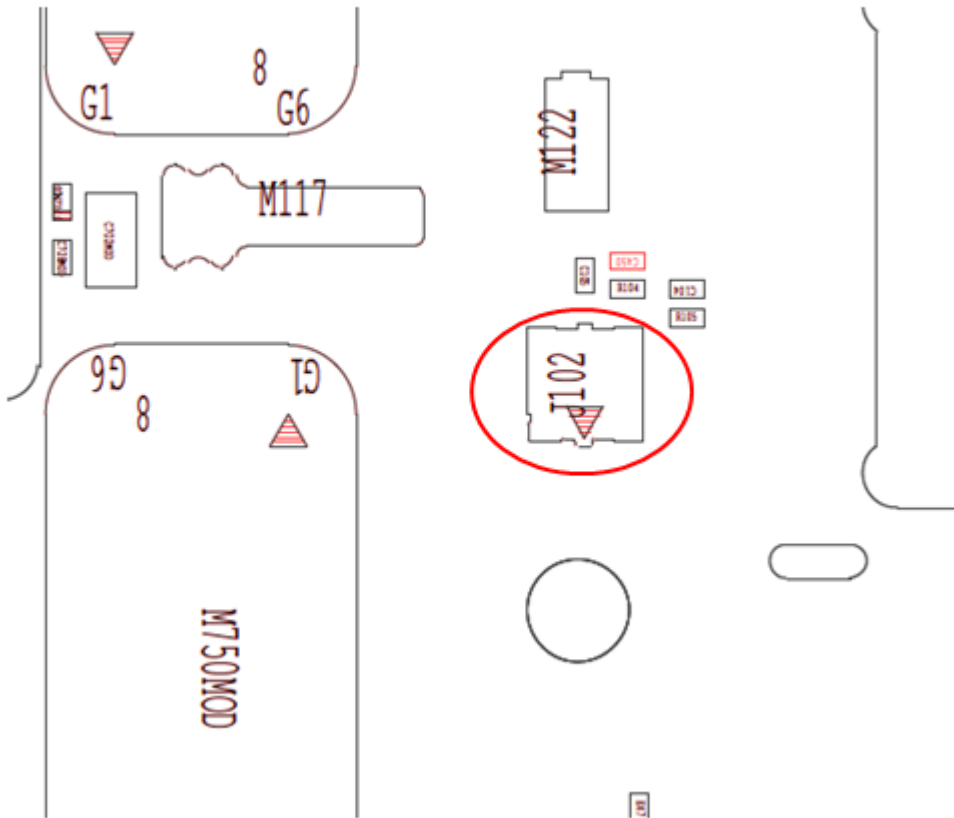
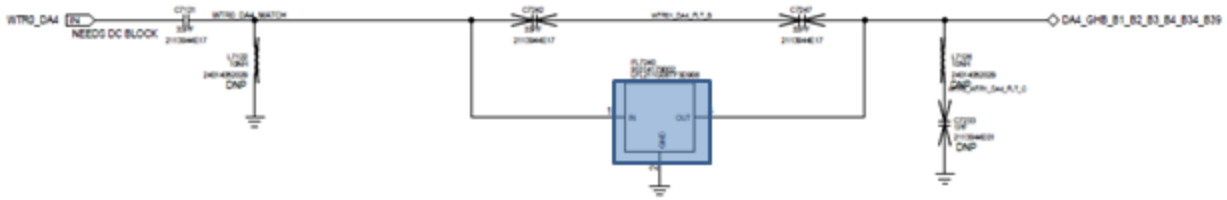
U7100



WRITER	DATE	WITNESS	DATE
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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FL7240



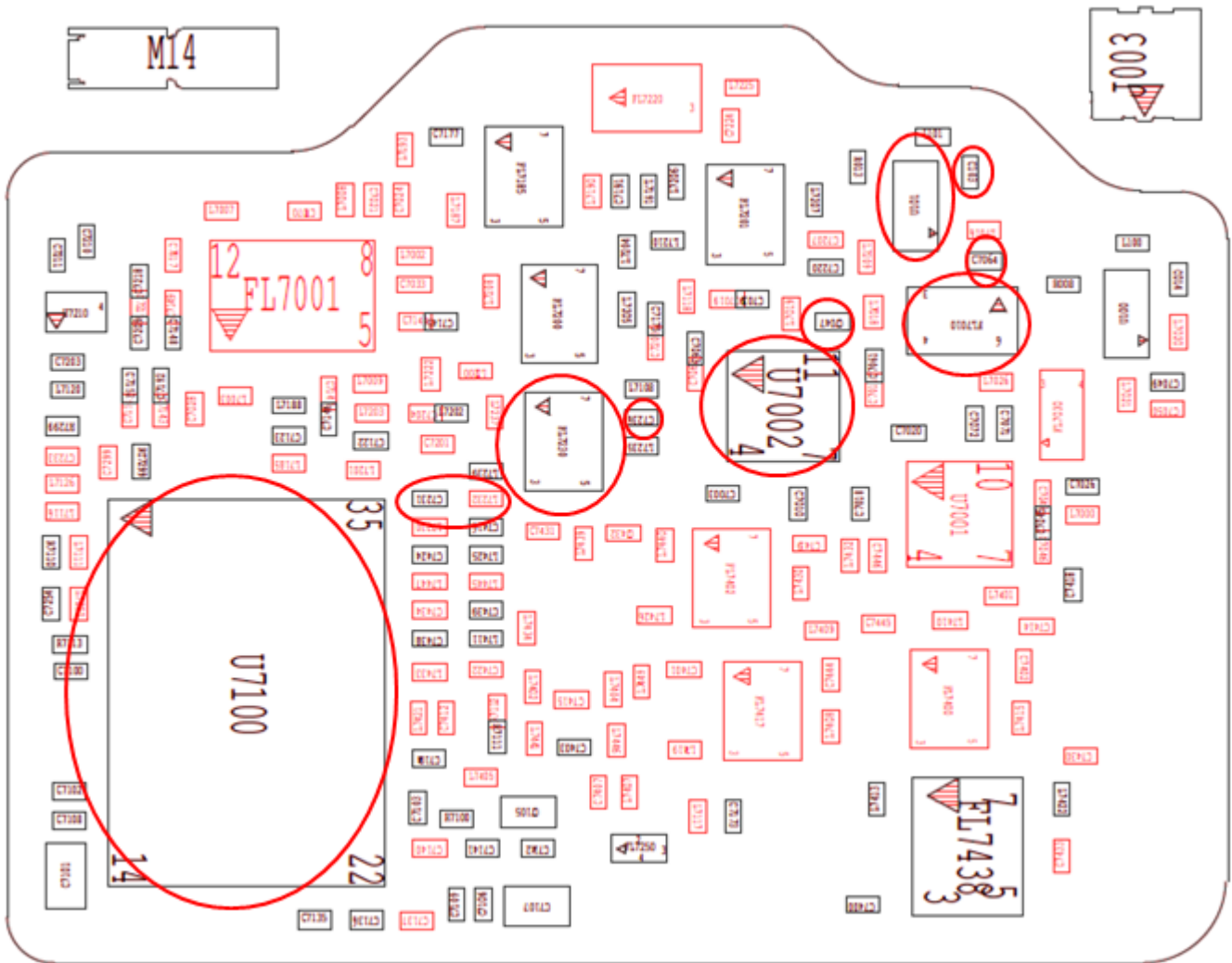
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

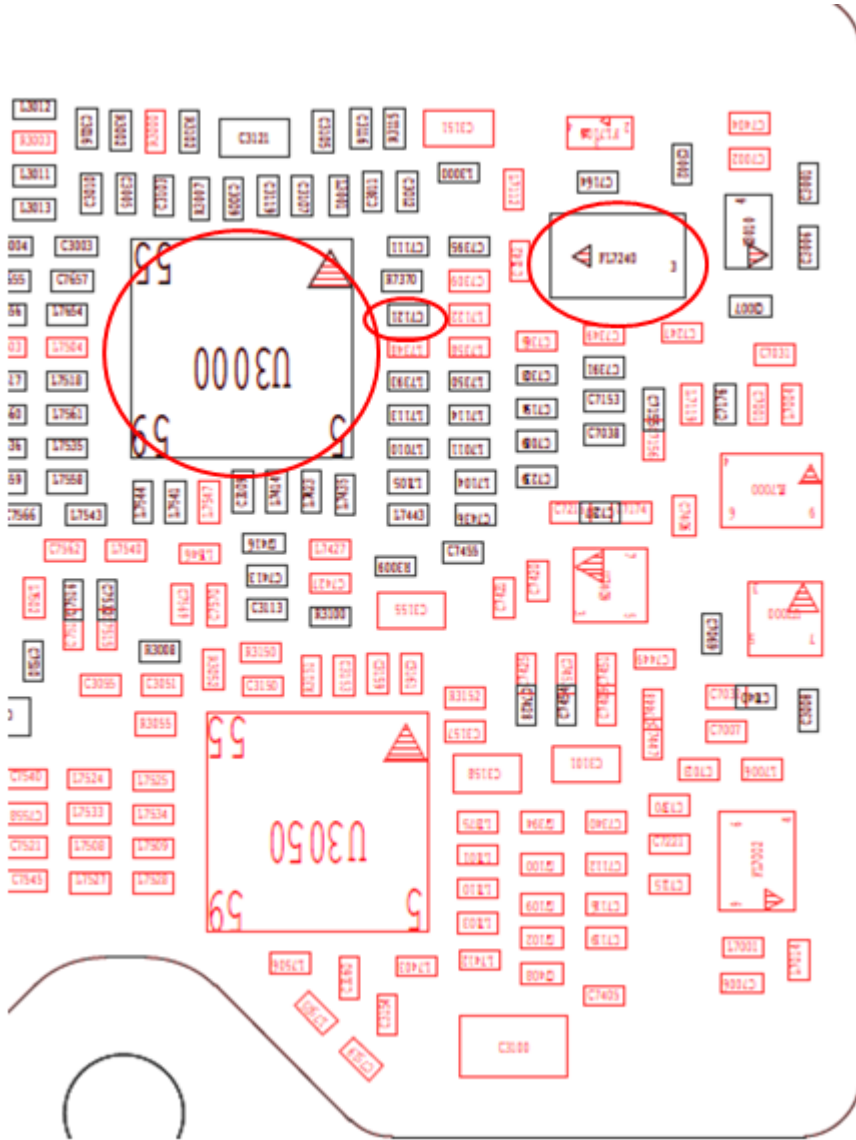
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Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

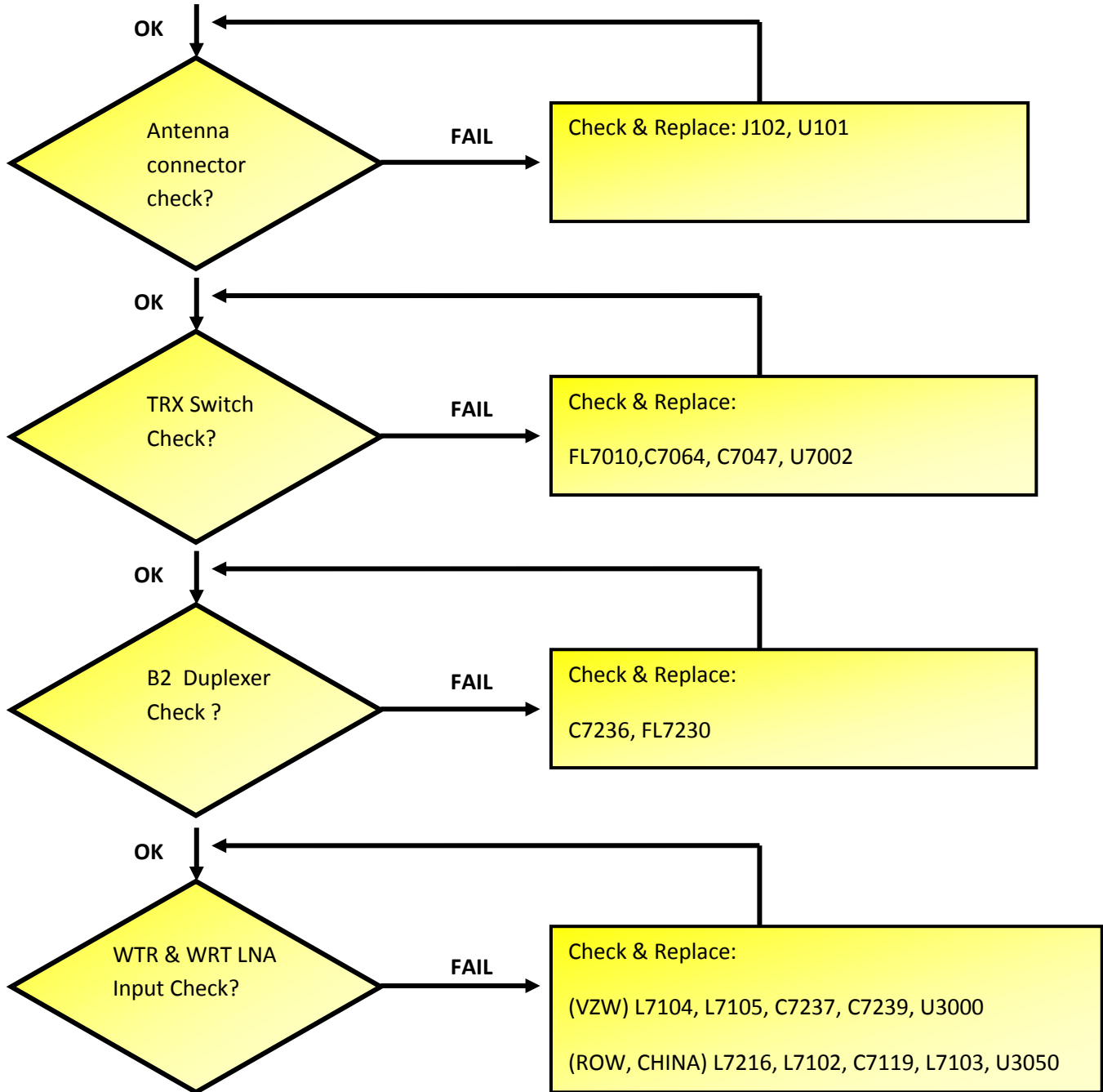
6/1/2016

WITNESS

DATE

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WCDMA B2, LTE B2, CDMA BC1 – PRX (VZW, ROW, CHINA)



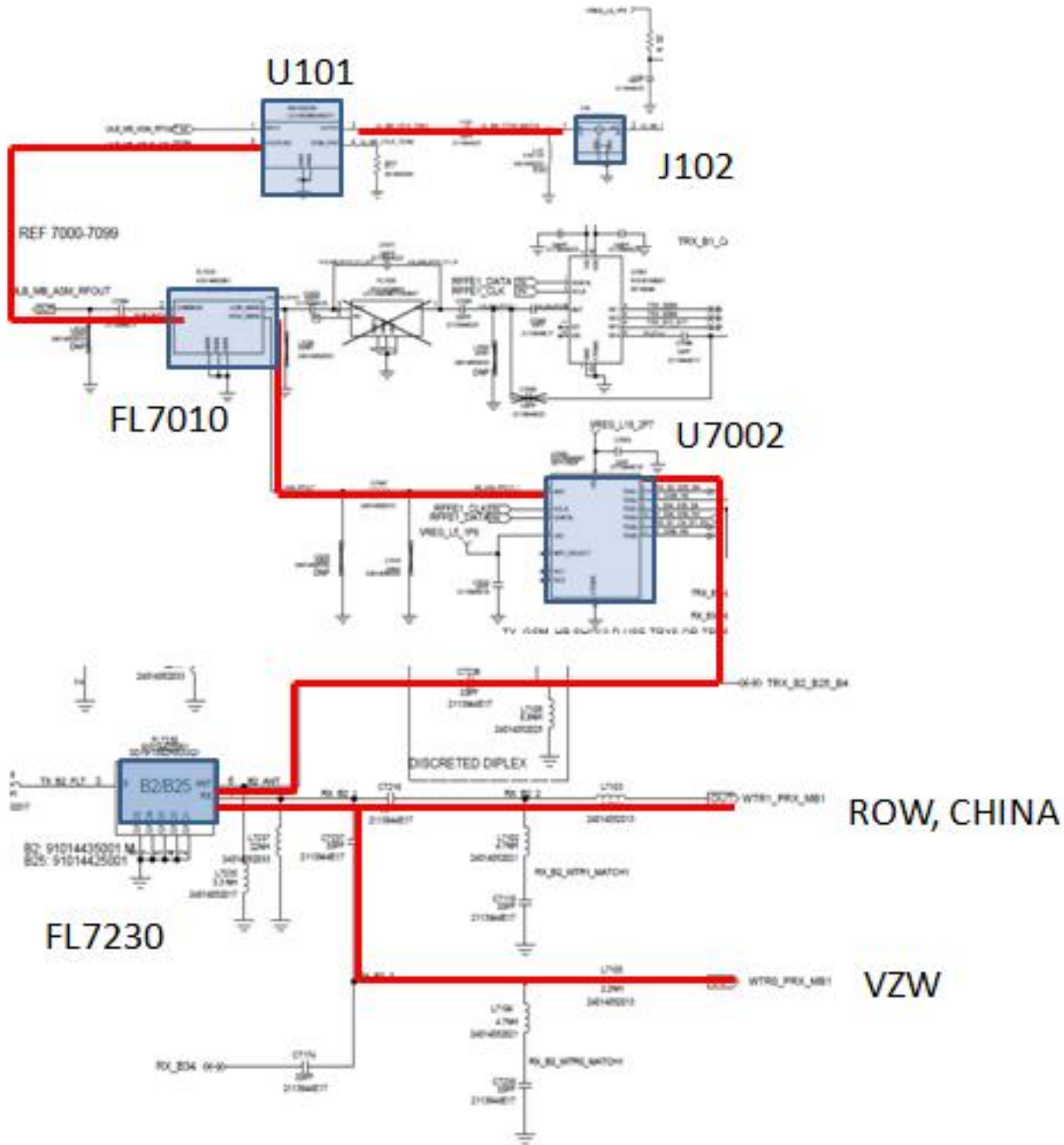
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



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Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

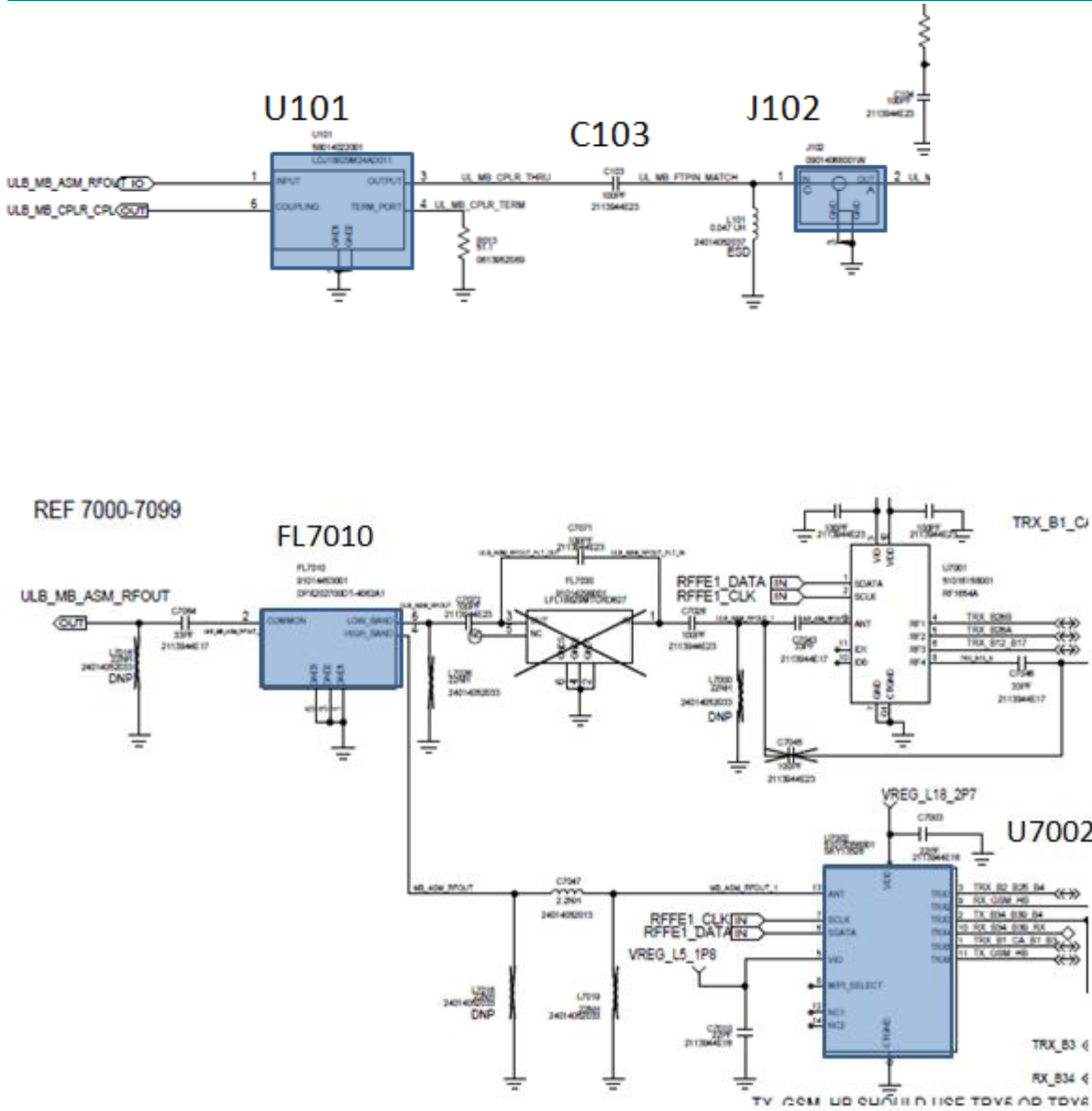
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

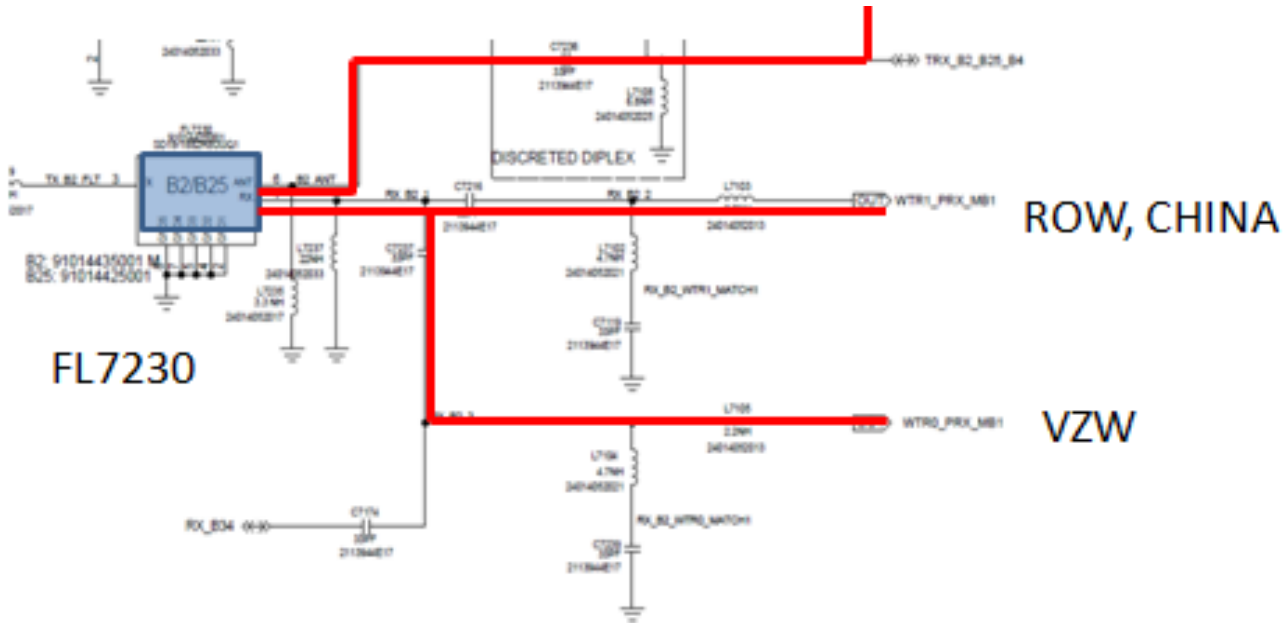
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6/1/2016

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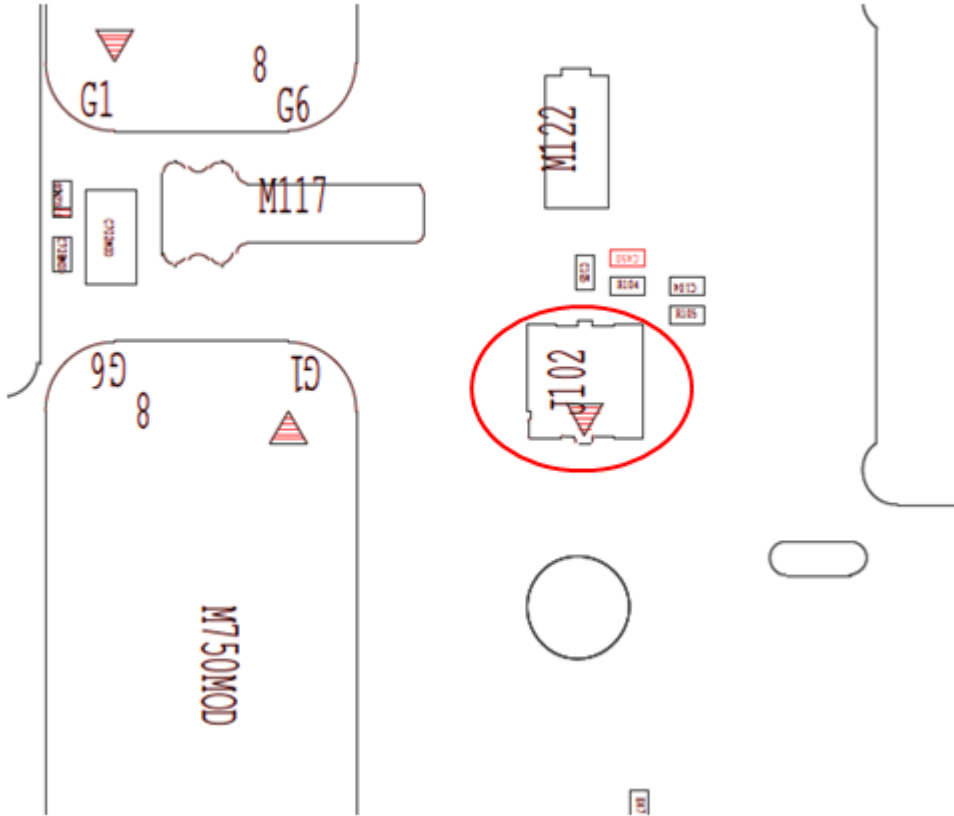
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE	MODEL
Vertex RF Troubleshooting Guide	Vertex



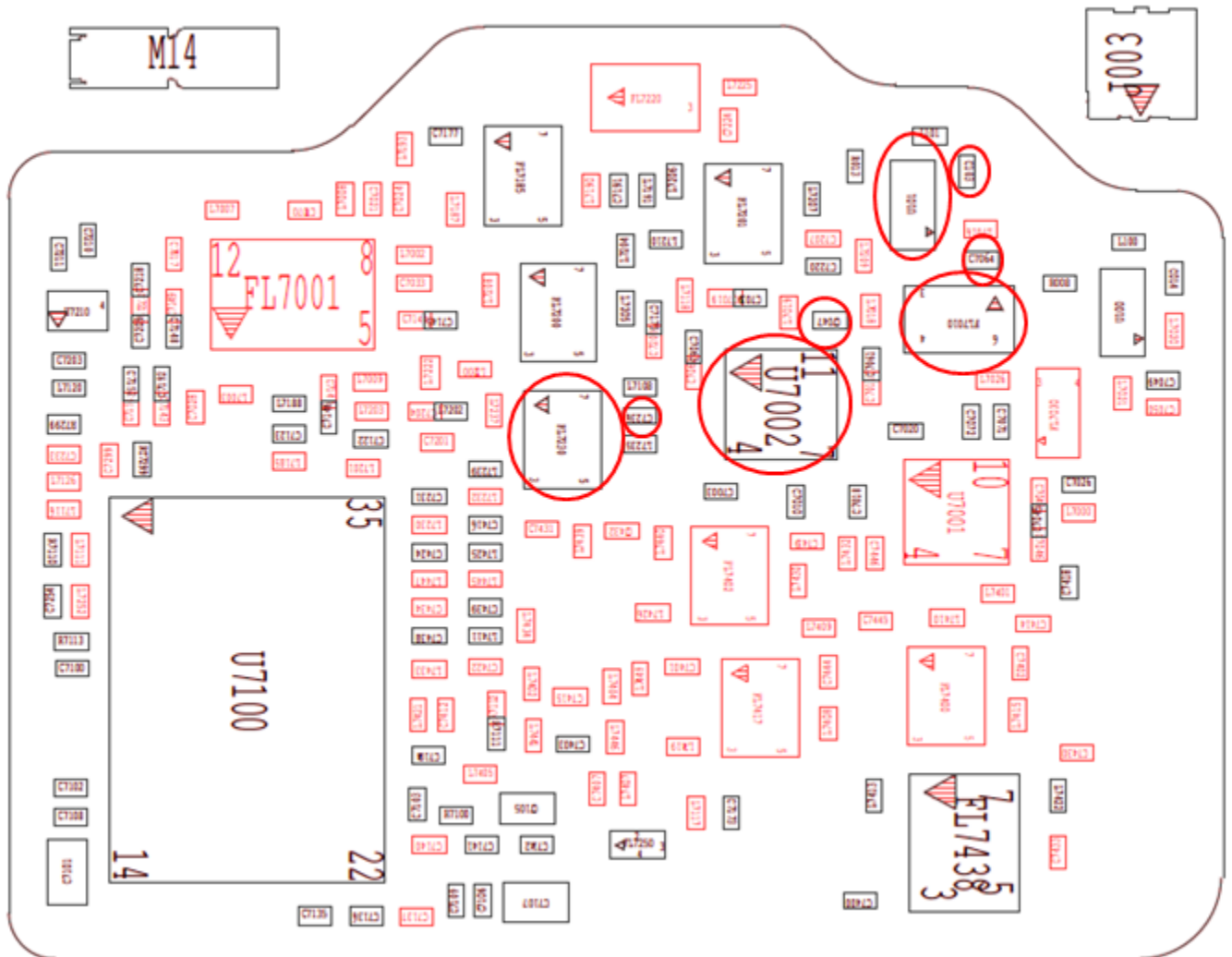
WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

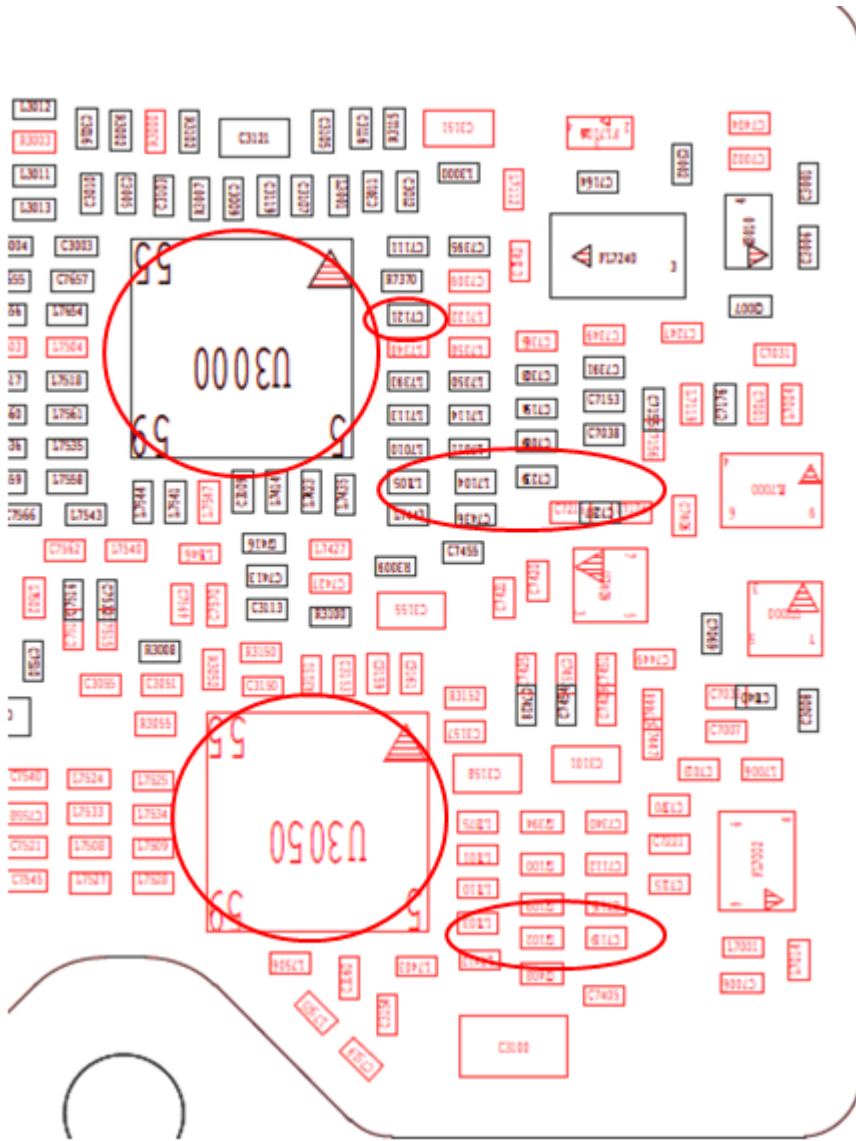
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Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

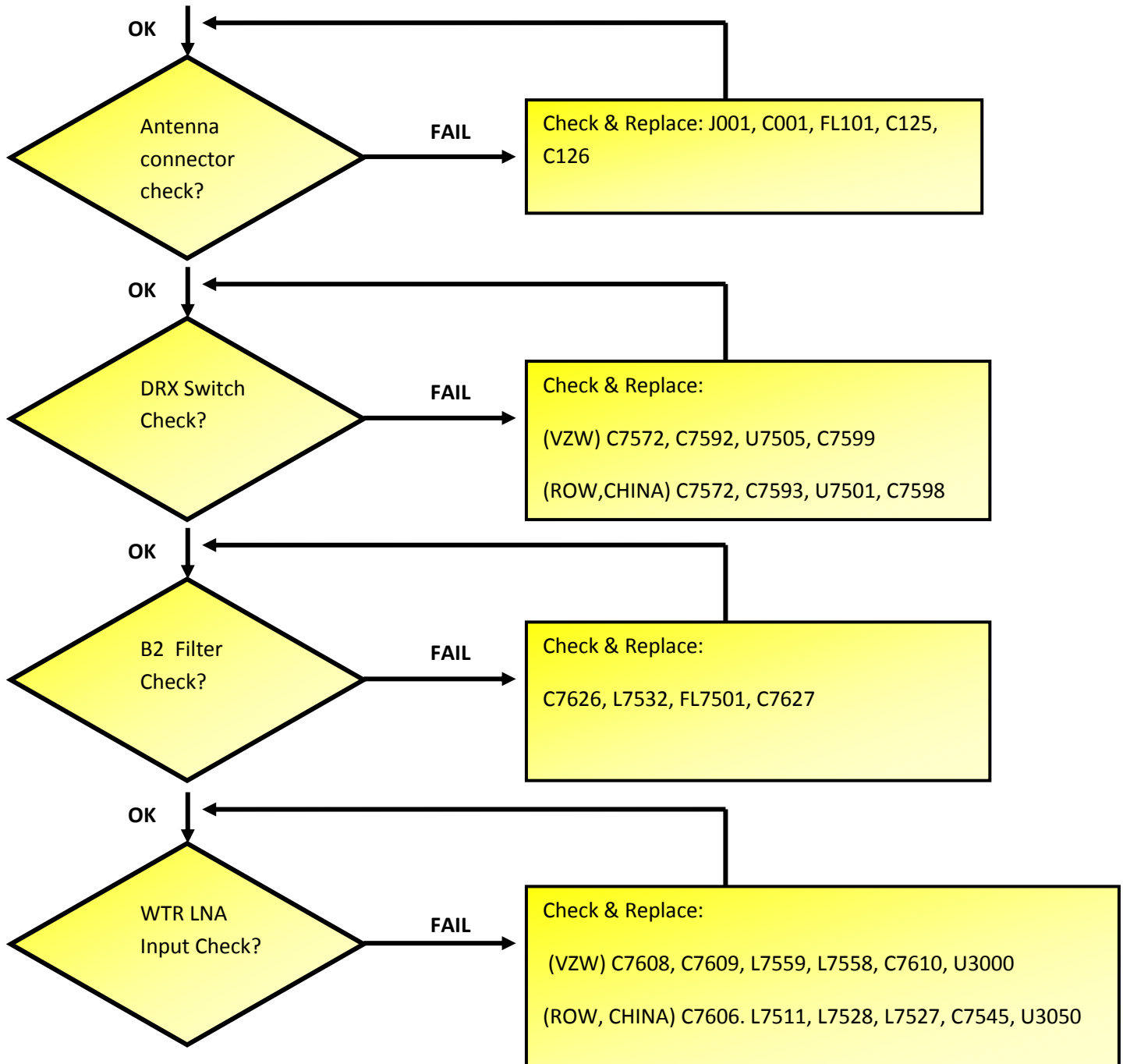
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WITNESS

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WCDMA B2, LTE B2, CDMA BC1 – DRX



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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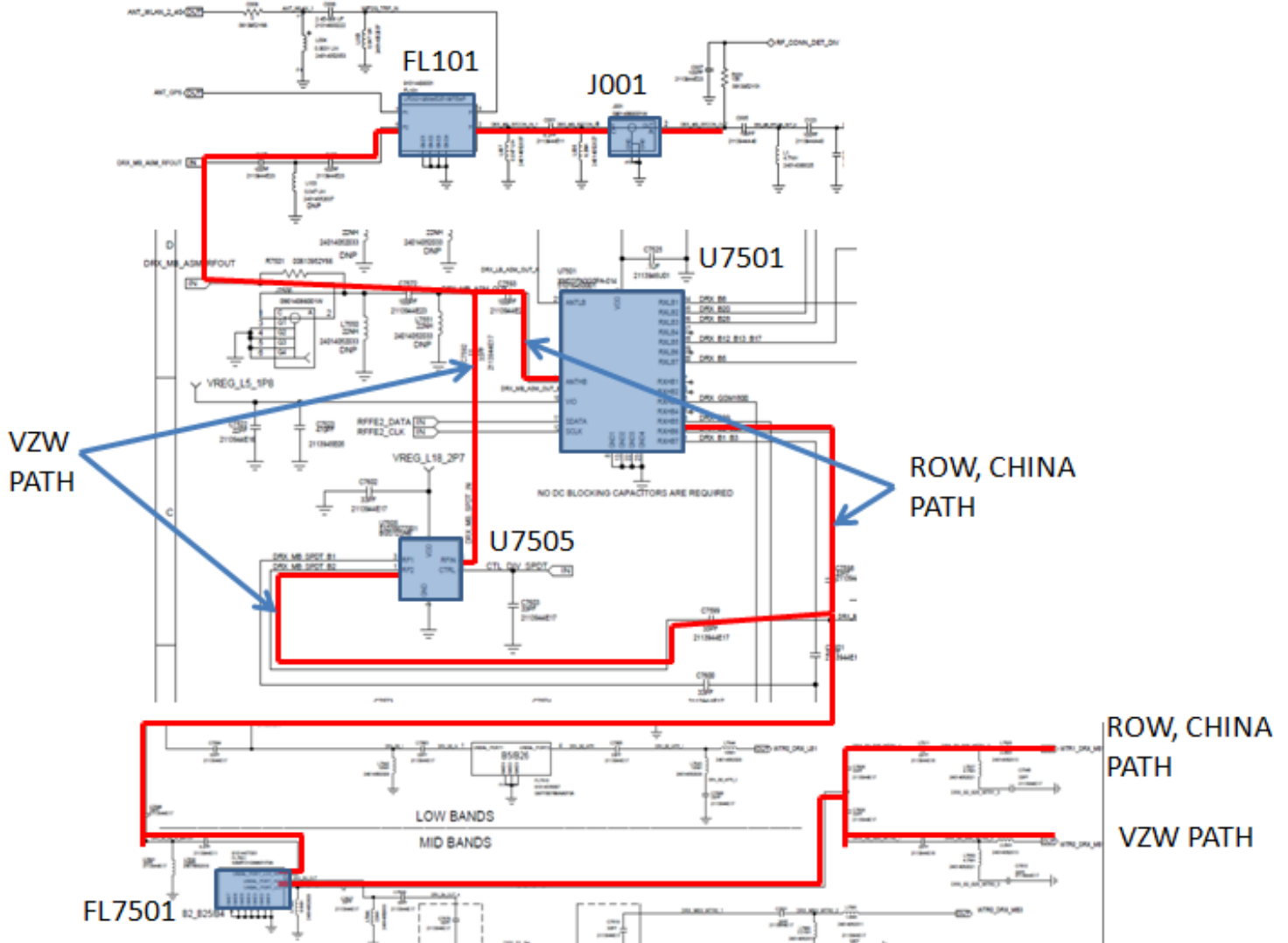
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Vertex RF Troubleshooting Guide

MODEL

Vertex

DRX MID BAND/GPS/BT/WLAN ANTENNA



WRITER

Vertex RF HW Development Team

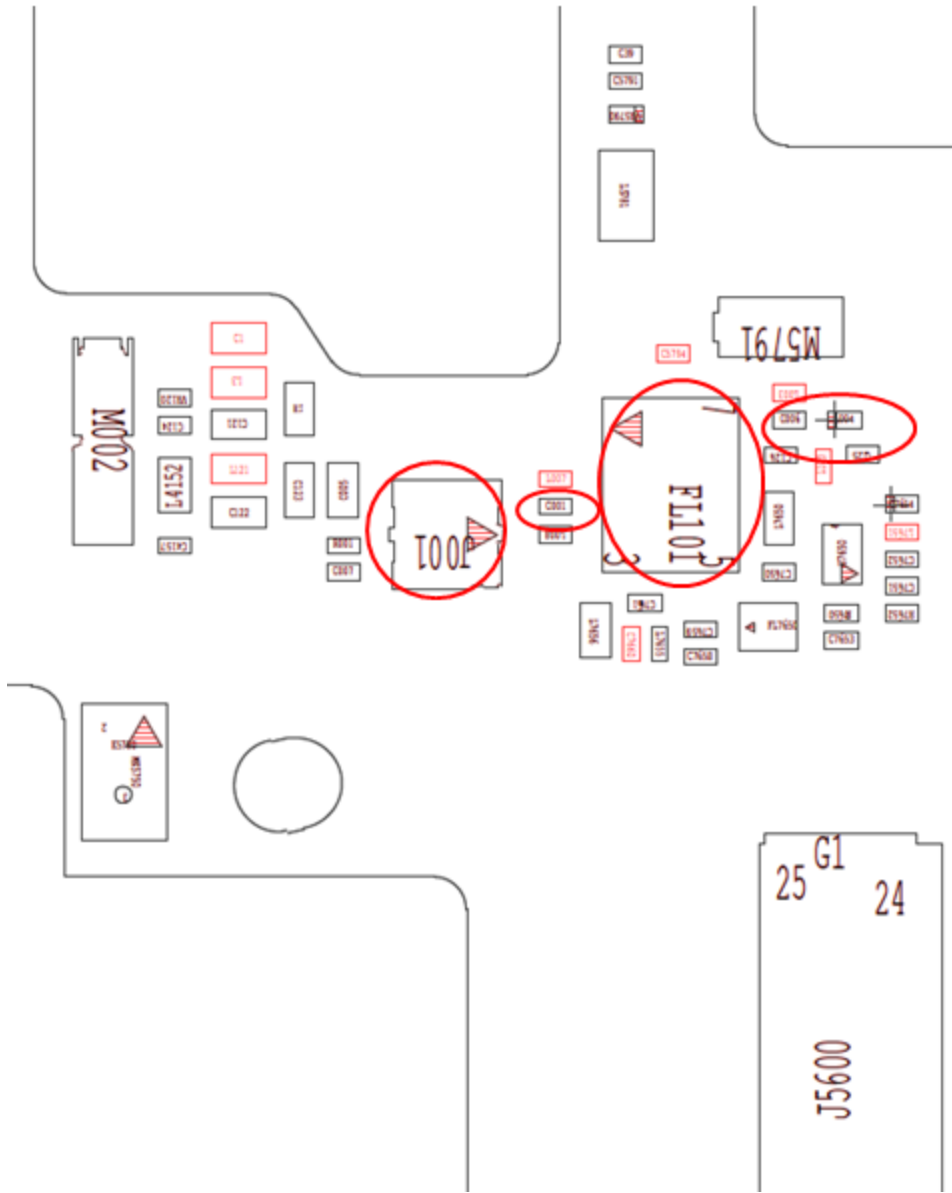
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6/1/2016

WITNESS

DATE

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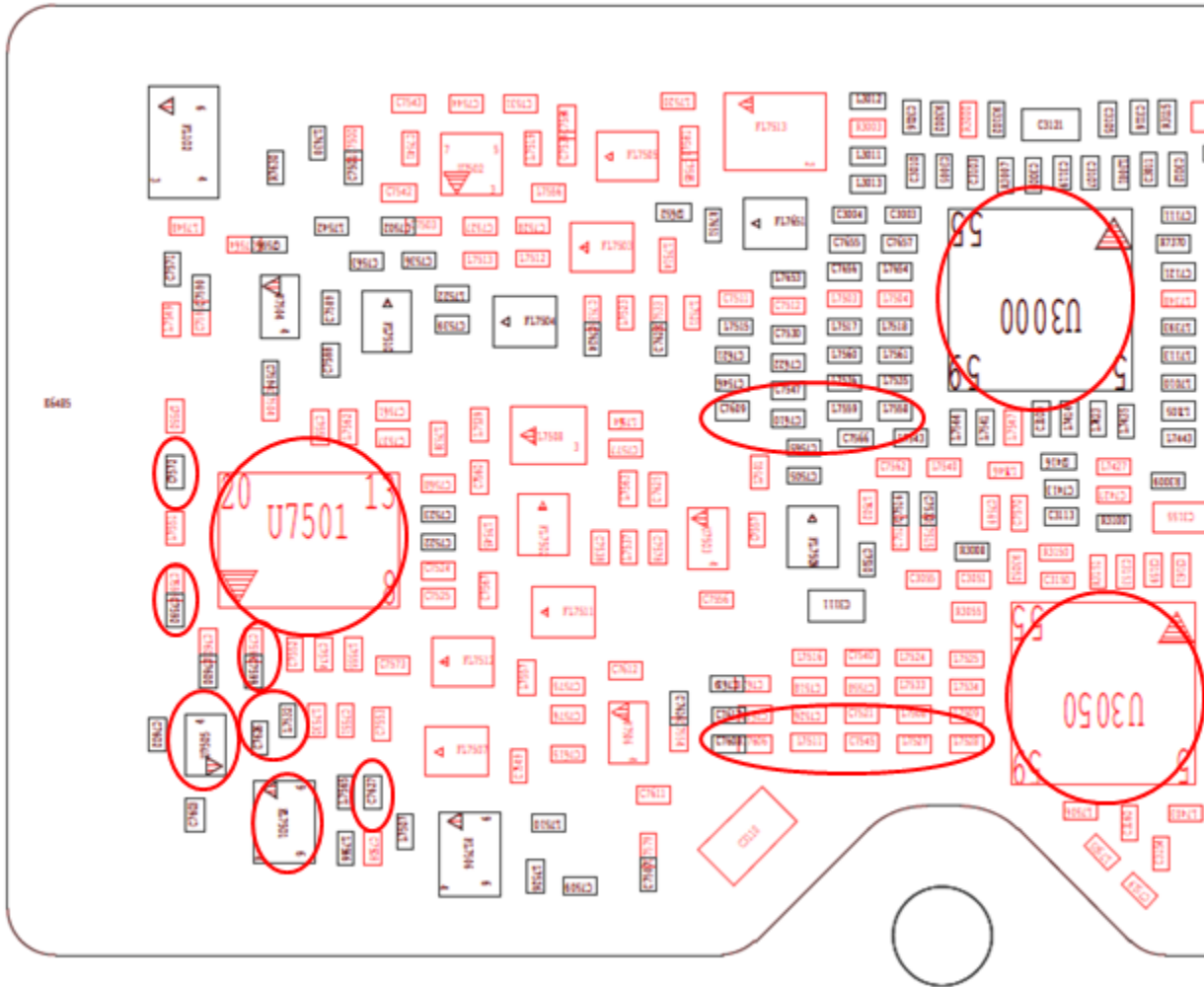
WRITER Vertex RF HW Development Team	DATE 6/1/2016	WITNESS	DATE
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

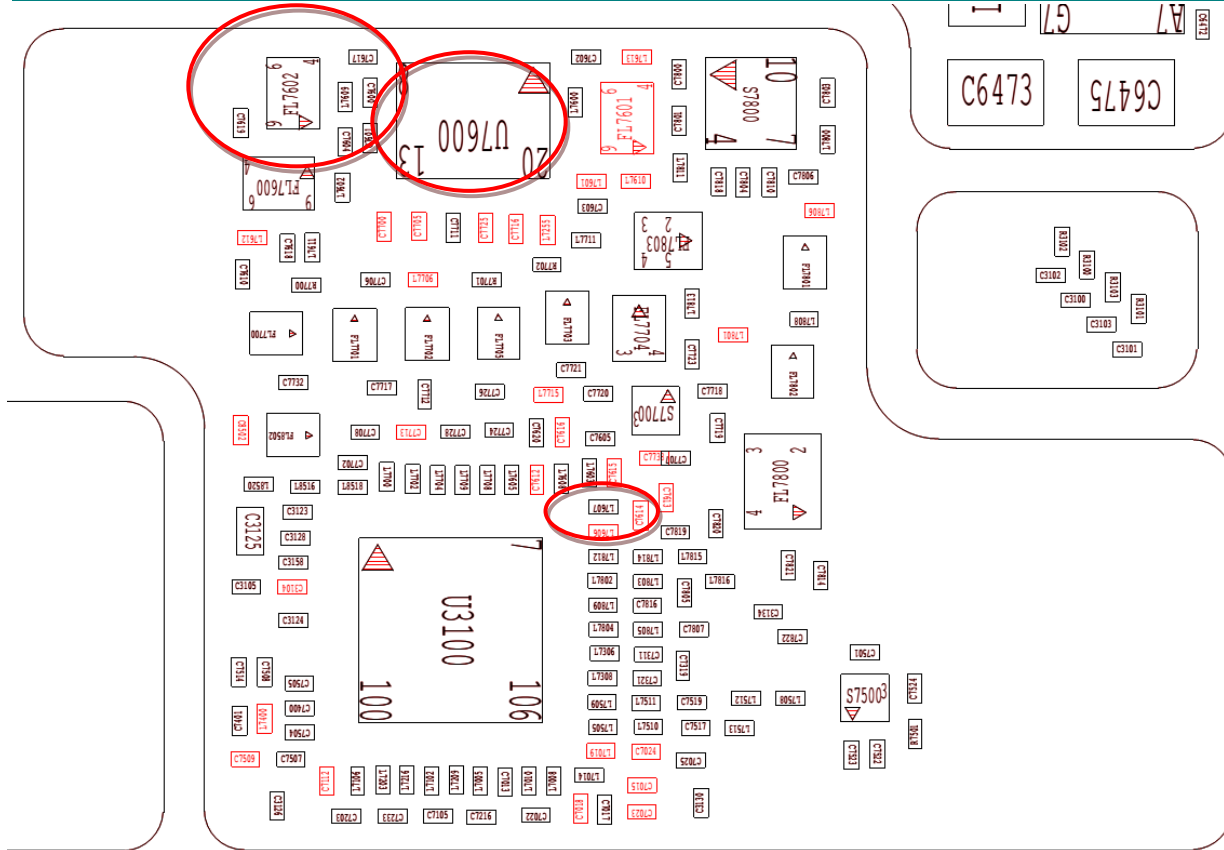
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

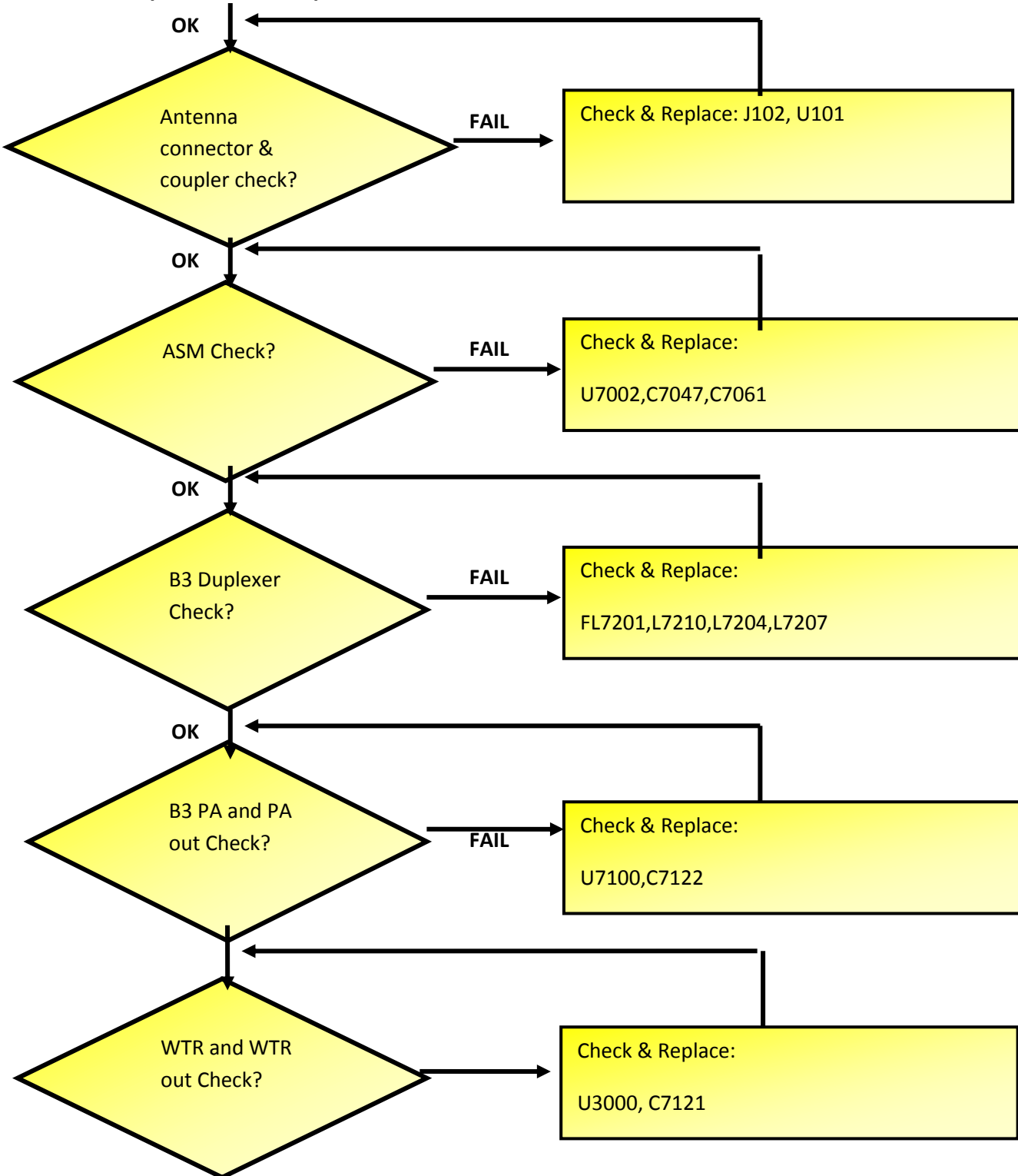
6/1/2016

WITNESS

DATE

<p>TITLE</p> <p>Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p>Vertex</p>
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B3 LTE TRX
B3 LTE TX (VZW & ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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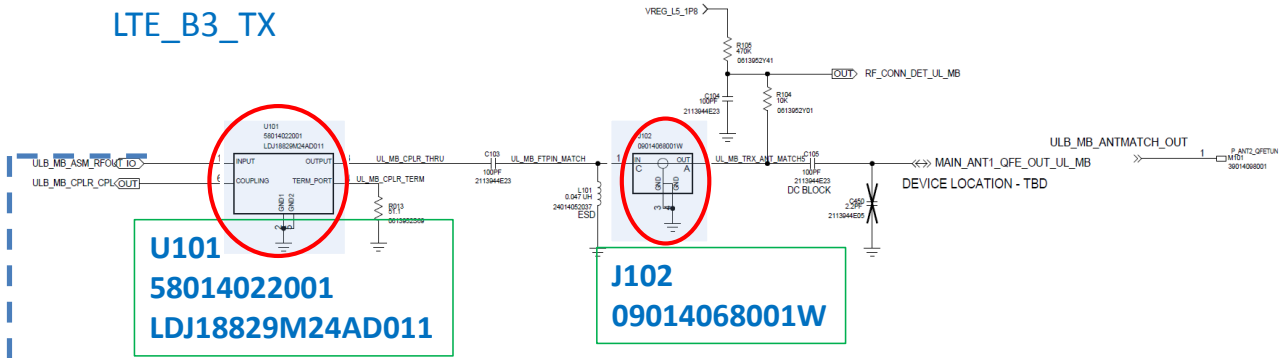
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Vertex RF Troubleshooting Guide

MODEL

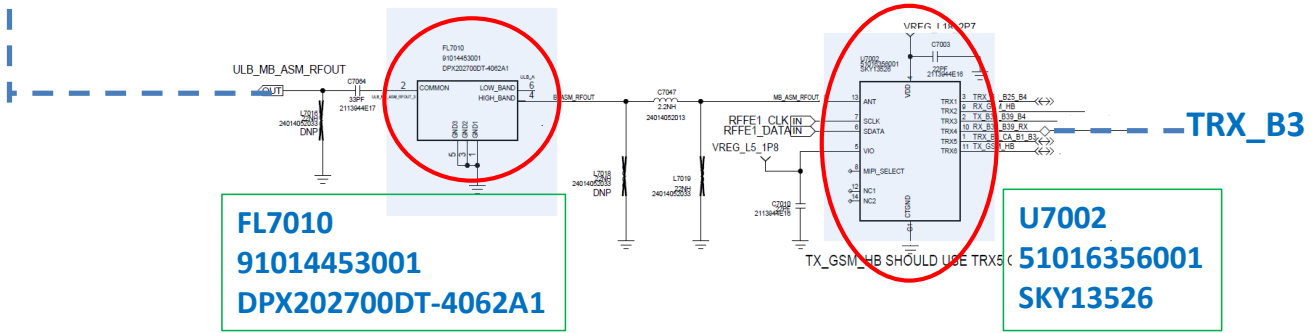
Vertex

LTE_B3_TX



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J102
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FL7010
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U7002
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SKY13526

WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

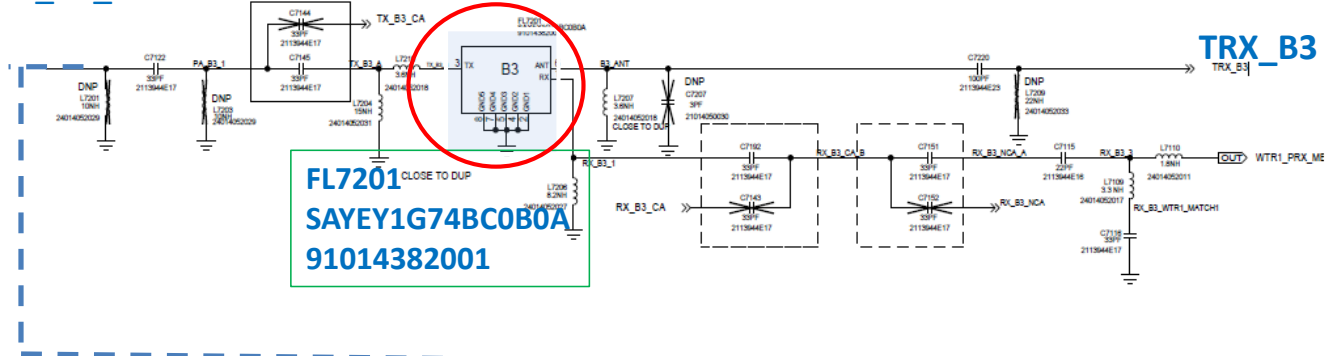
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Vertex RF Troubleshooting Guide

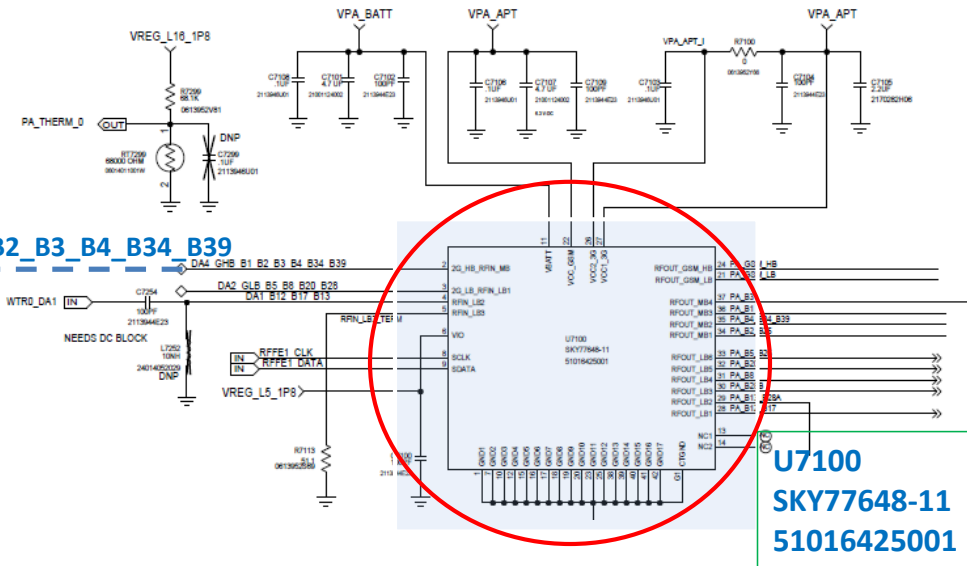
MODEL

Vertex

LTE_B3_TX

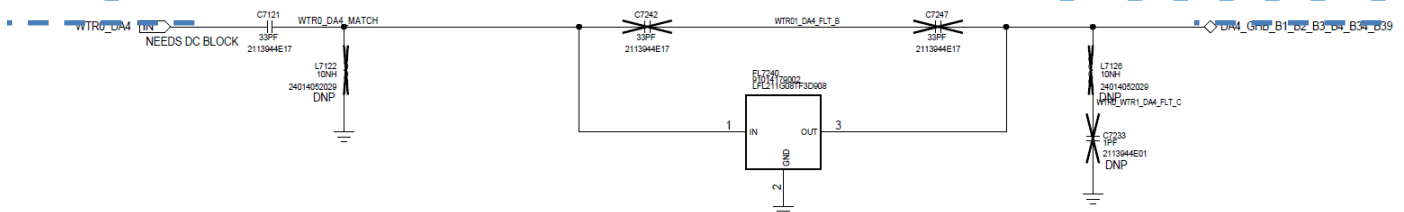


DA4_GHB_B1_B2_B3_B4_B34_B39



WTR_0

DA4_GHB_B1_B2_B3_B4_B34_B39



WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

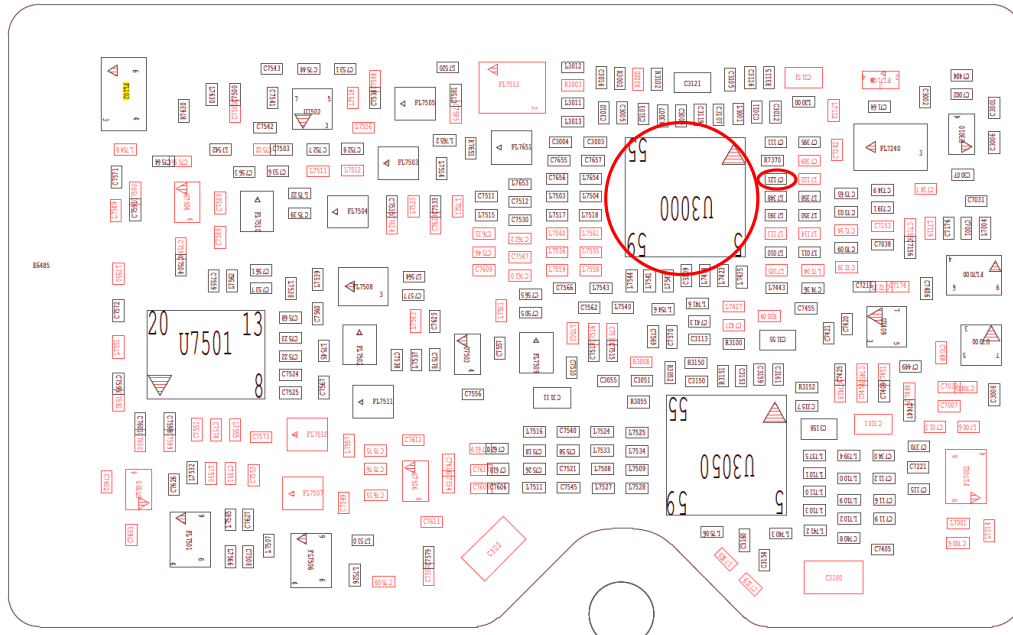
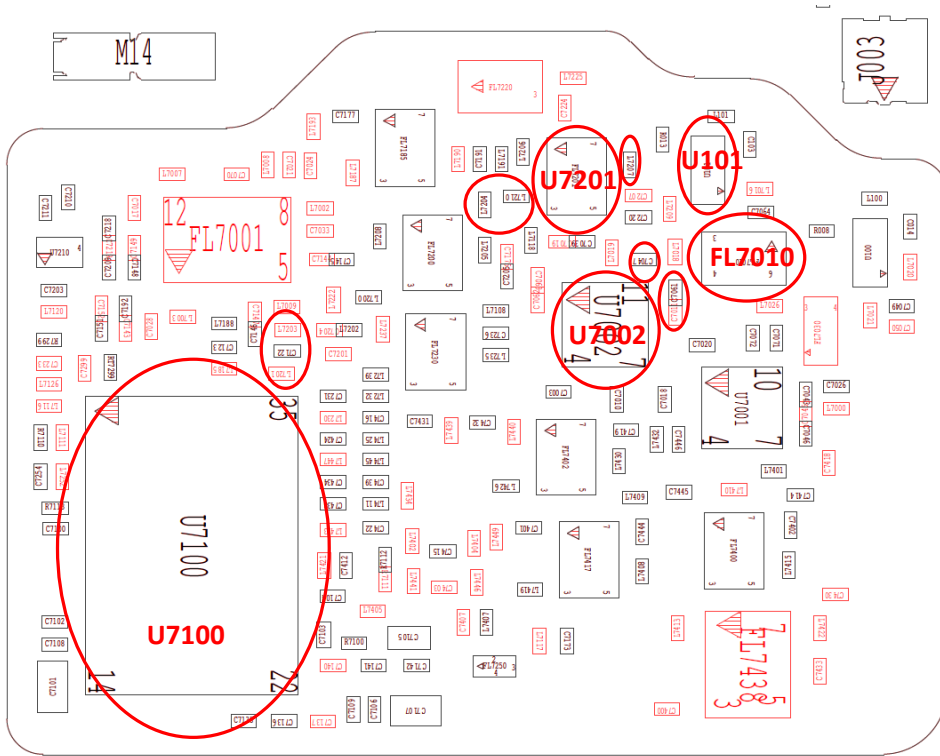
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Vertex RF Troubleshooting Guide

MODEL

Vertex

LTE B3 TX (VZW and ROW)



WRITER

Vertex RF HW Development Team

DATE

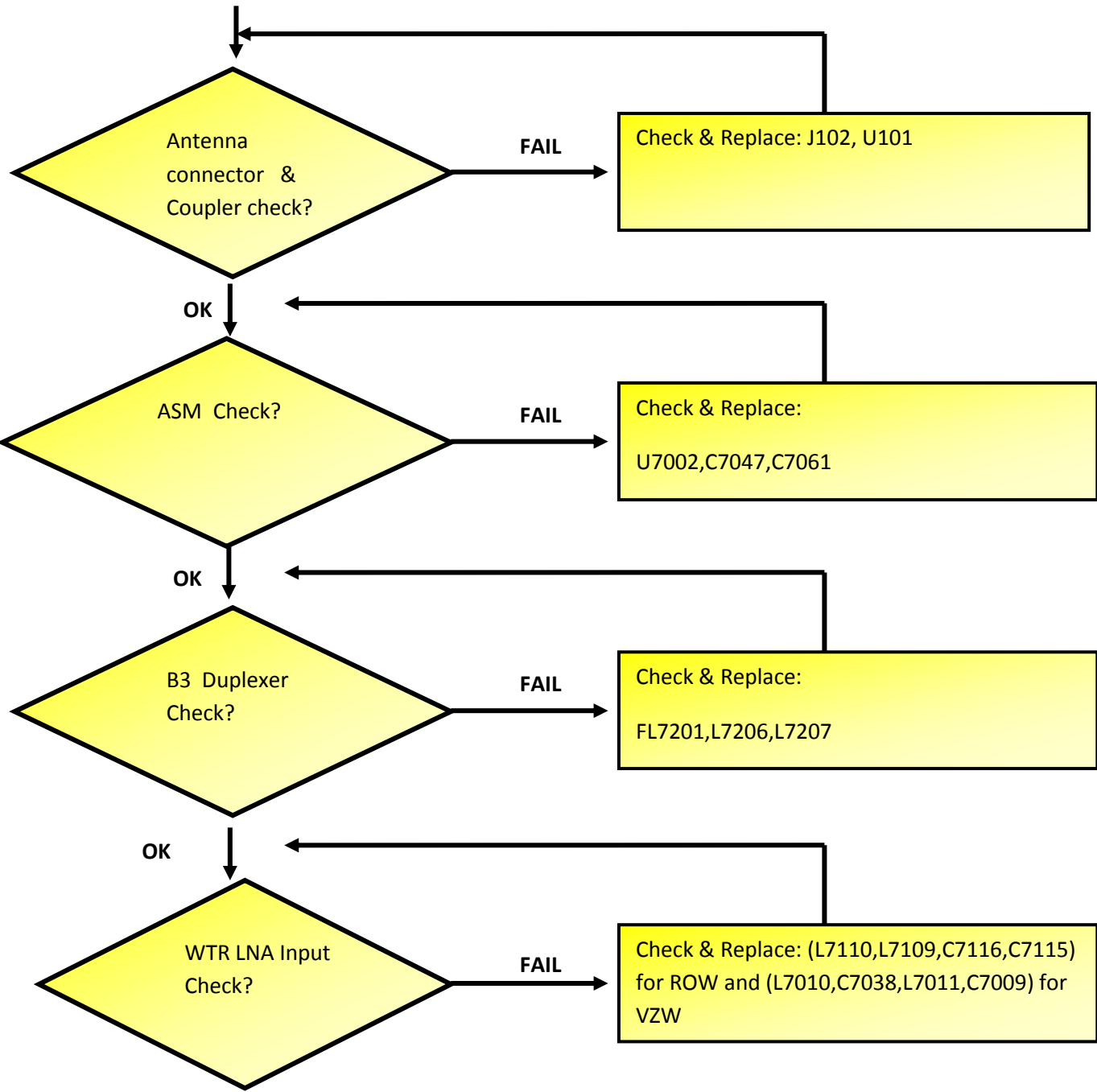
6/1/2016

WITNESS

DATE

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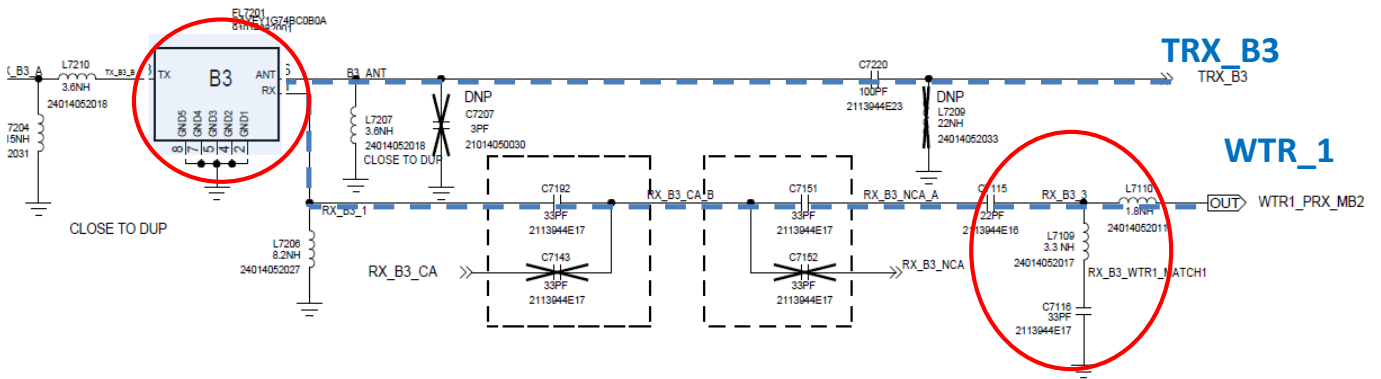
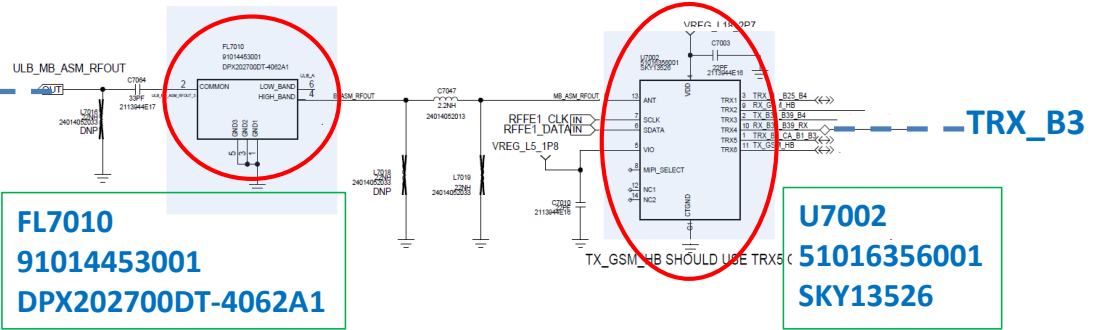
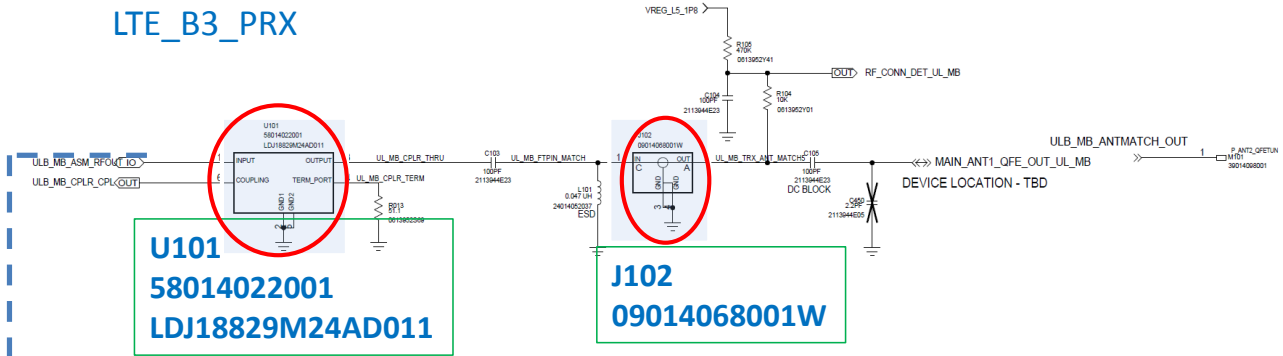
B3 LTE PRX (VZW and ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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LTE_B3_PRX



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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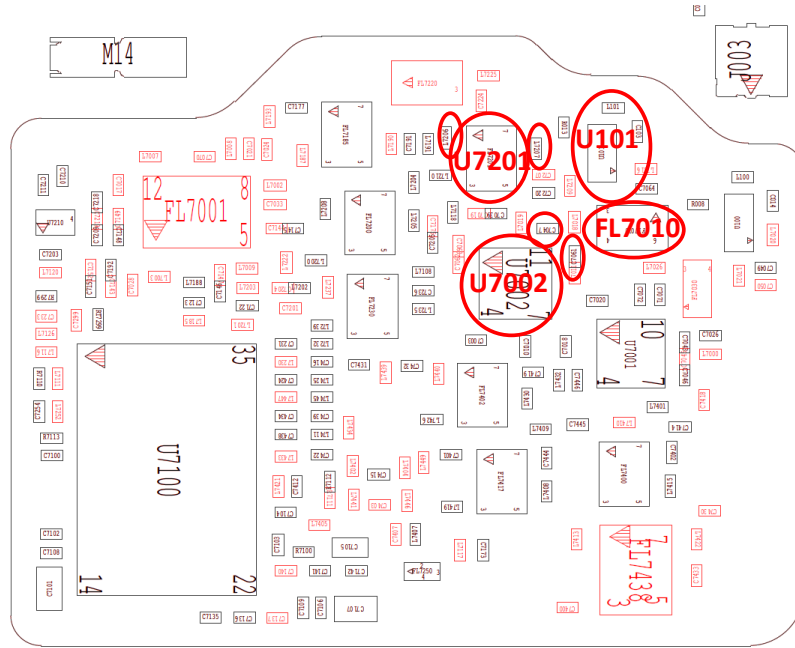
TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex

LTE B3 PRX ROW



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

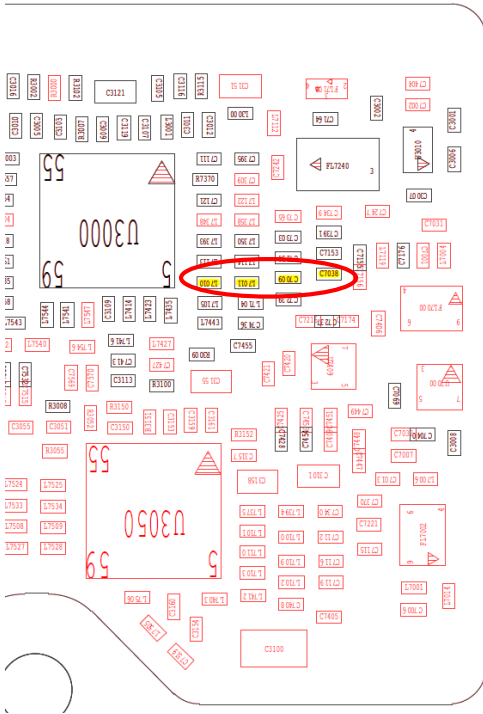
TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex

LTE B3 PRX VZW



WRITER

Vertex RF HW Development Team

DATE

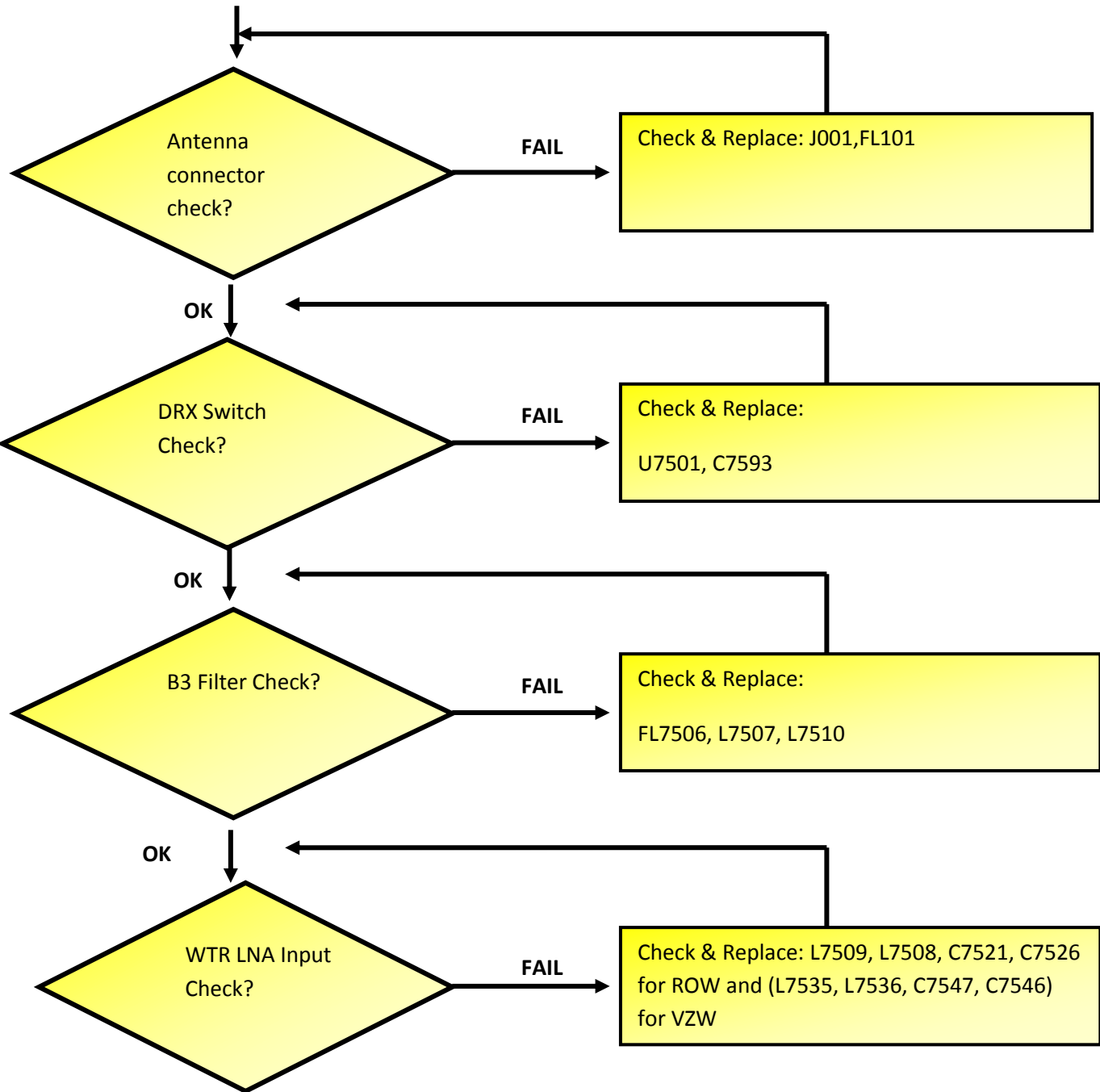
6/1/2016

WITNESS

DATE

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B3 LTE DRX (VZW and ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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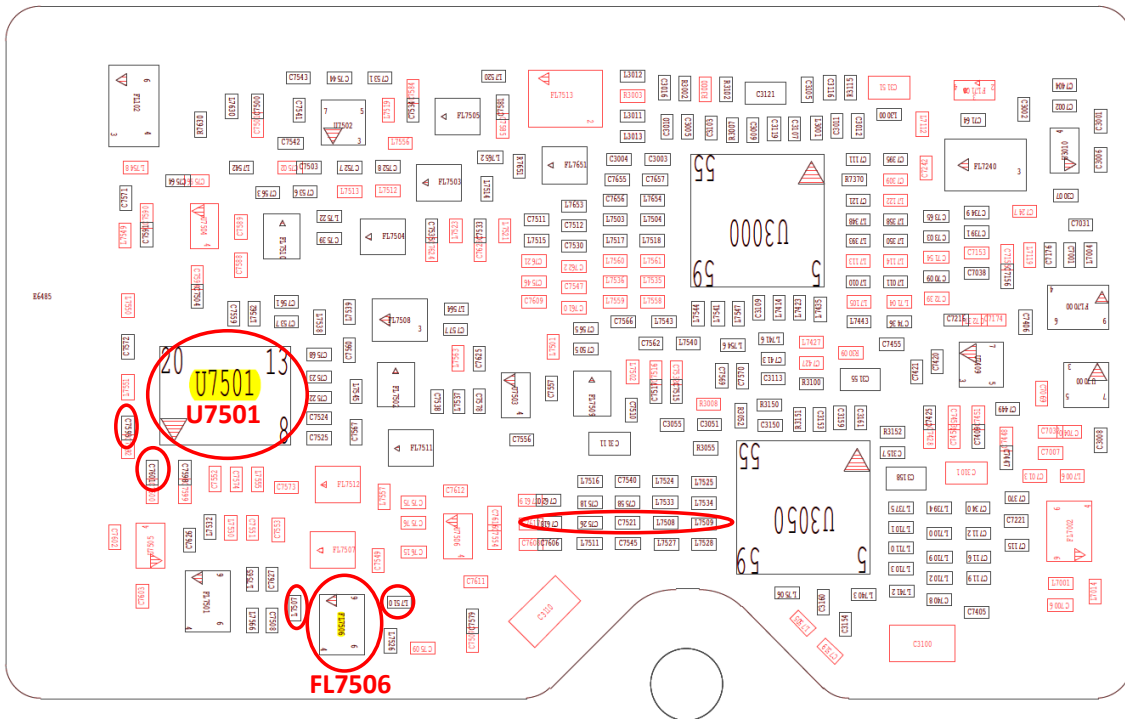
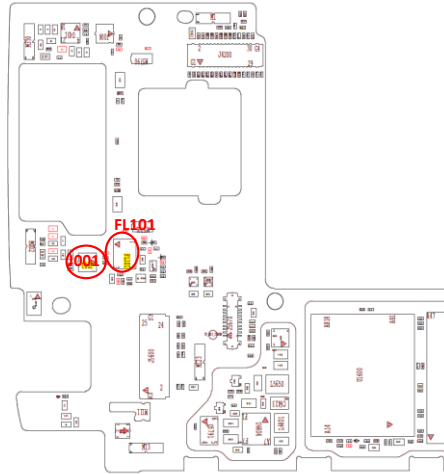
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Vertex RF Troubleshooting Guide

MODEL

Vertex

LTE B3 DRX for ROW



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

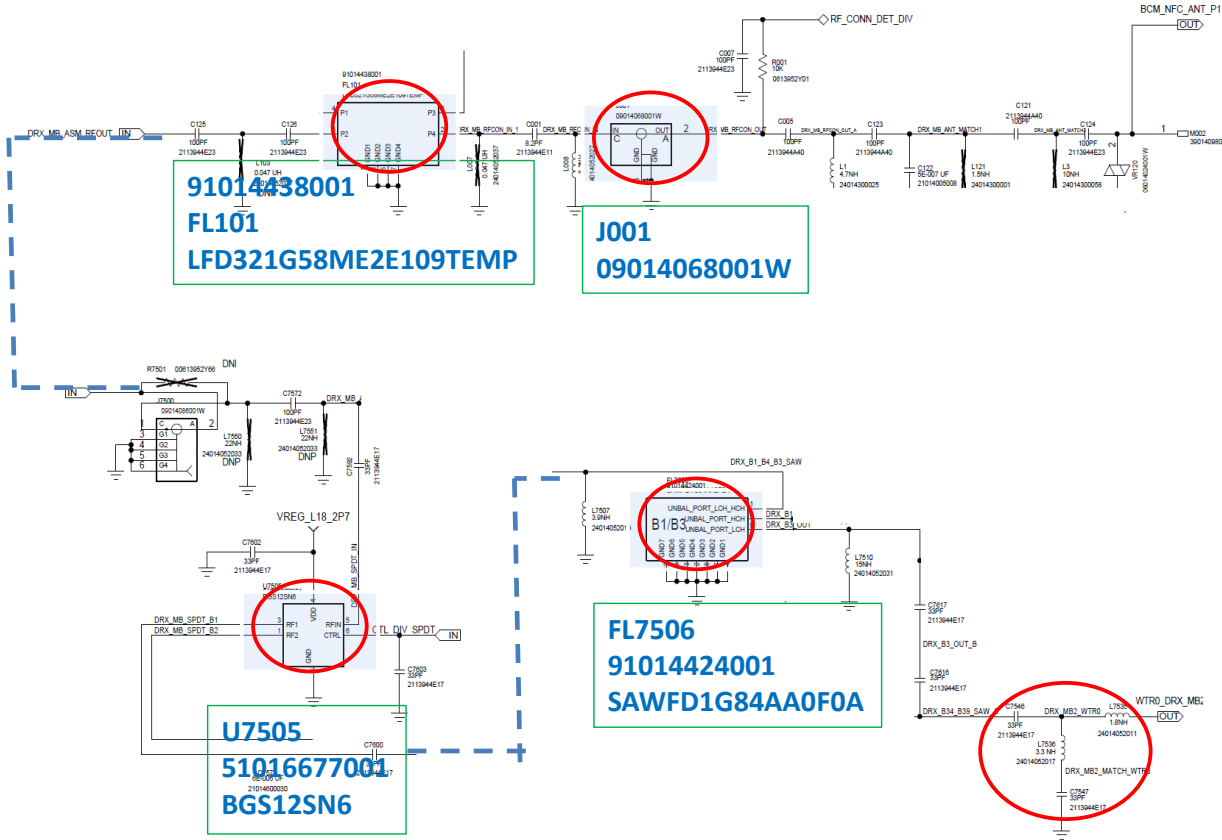
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Vertex RF Troubleshooting Guide

MODEL

Vertex

LTE B3 DRX for VZW



WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

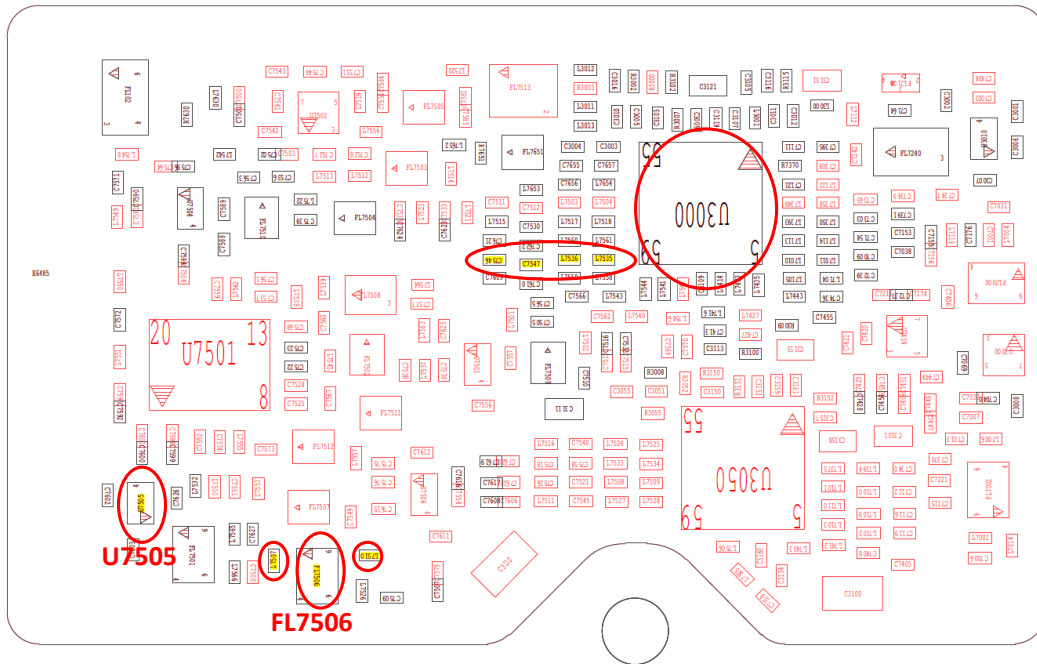
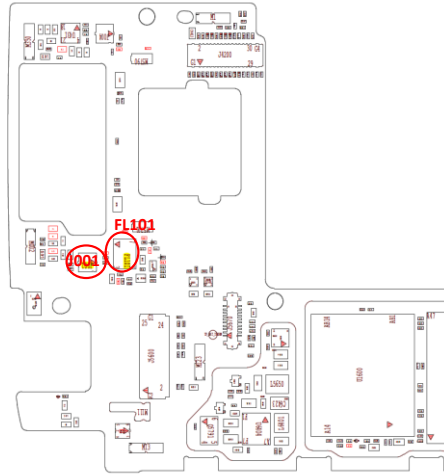
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Vertex RF Troubleshooting Guide

MODEL

Vertex

LTE B3 DRX for VZW



WRITER

Vertex RF HW Development Team

DATE

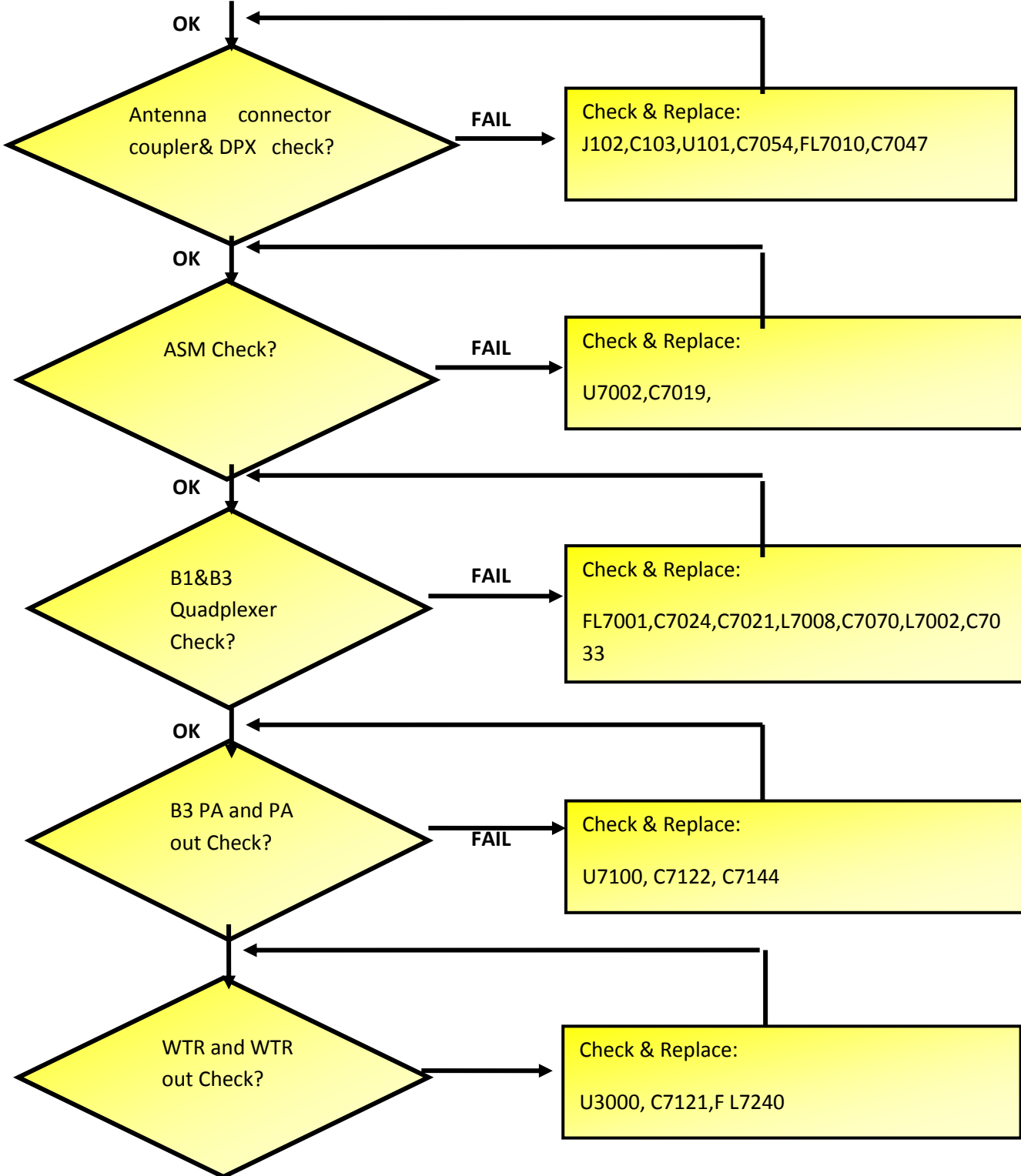
6/1/2016

WITNESS

DATE

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B3 LTE TX (PRC)



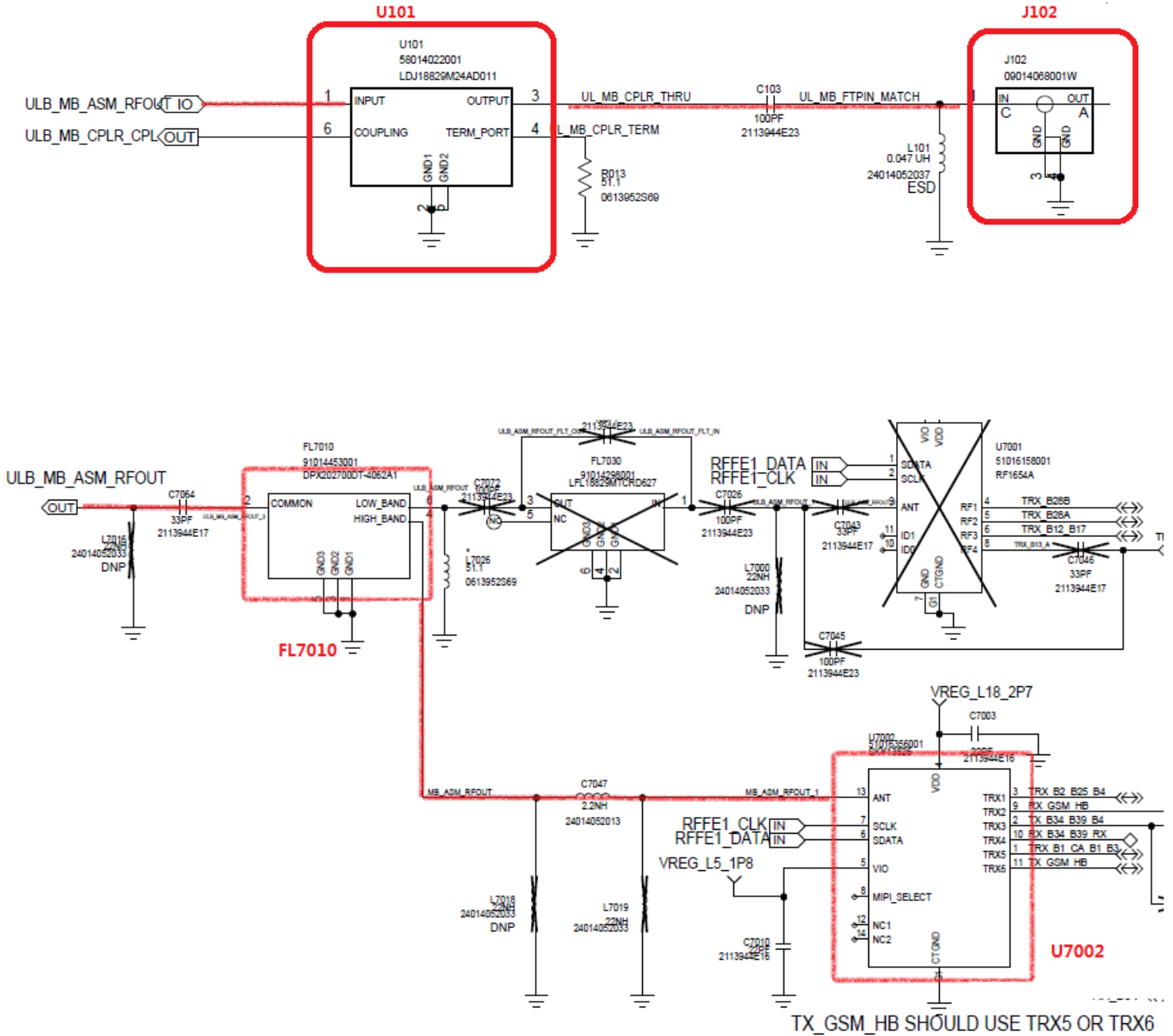
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

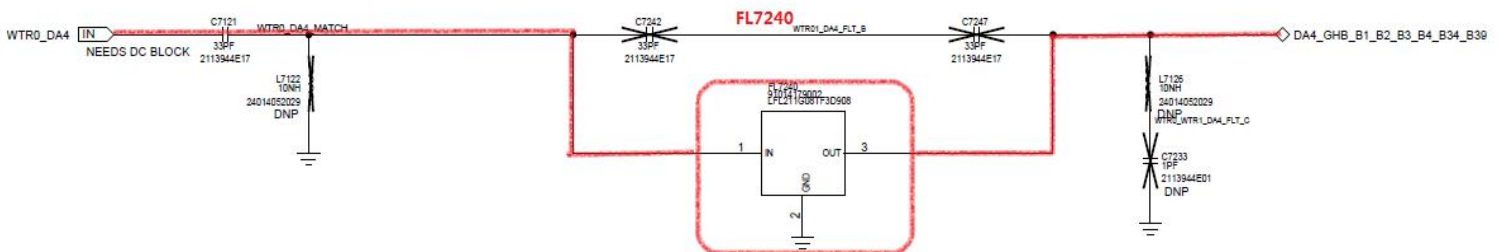
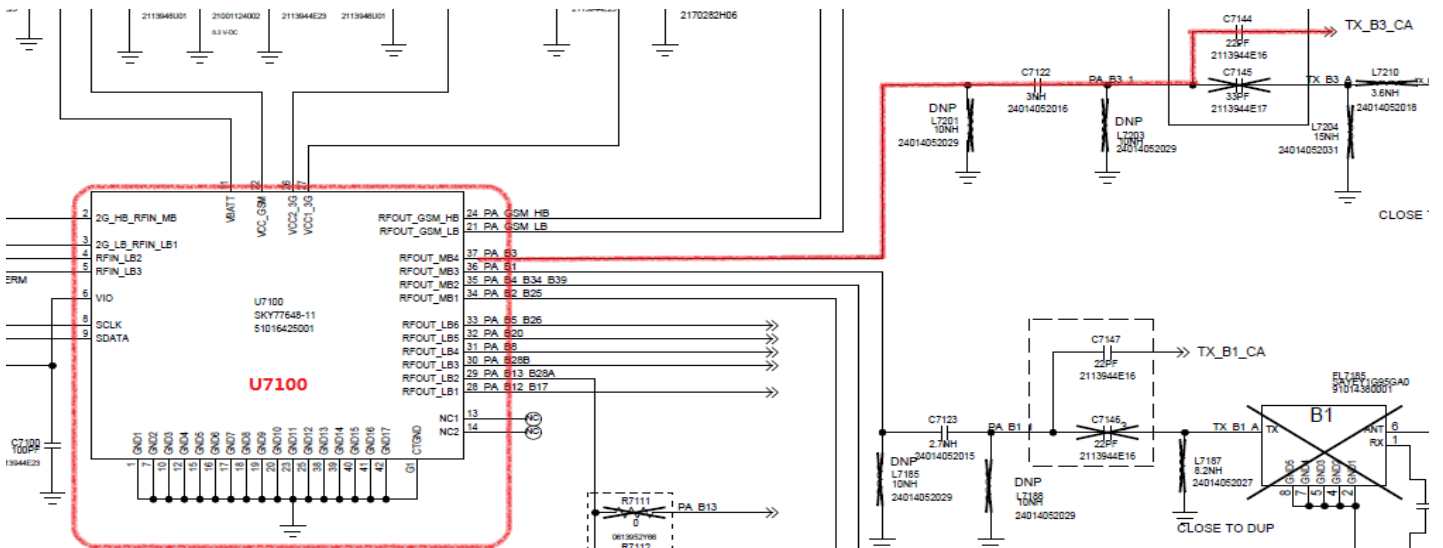
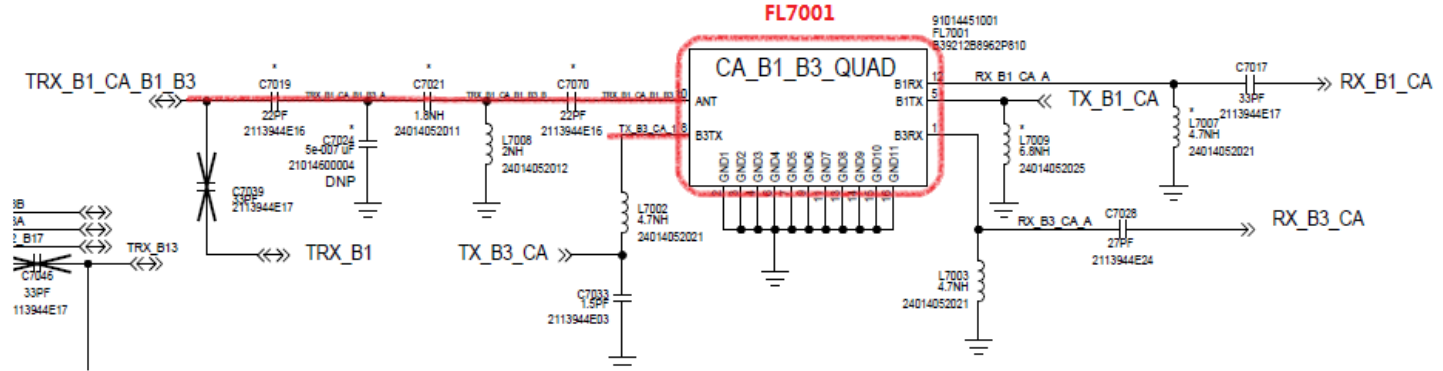
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

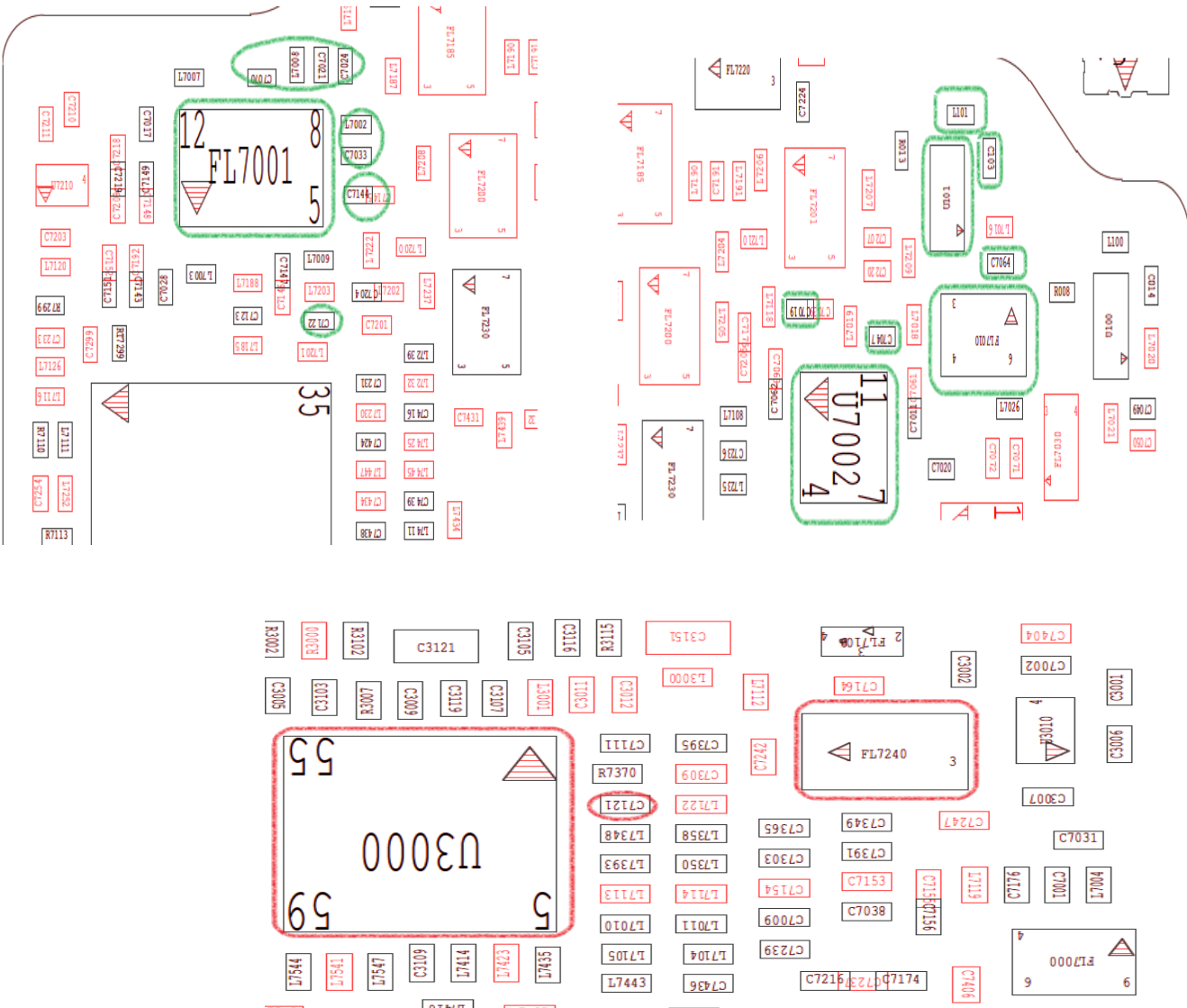
DATE

6/1/2016

WITNESS

DATE

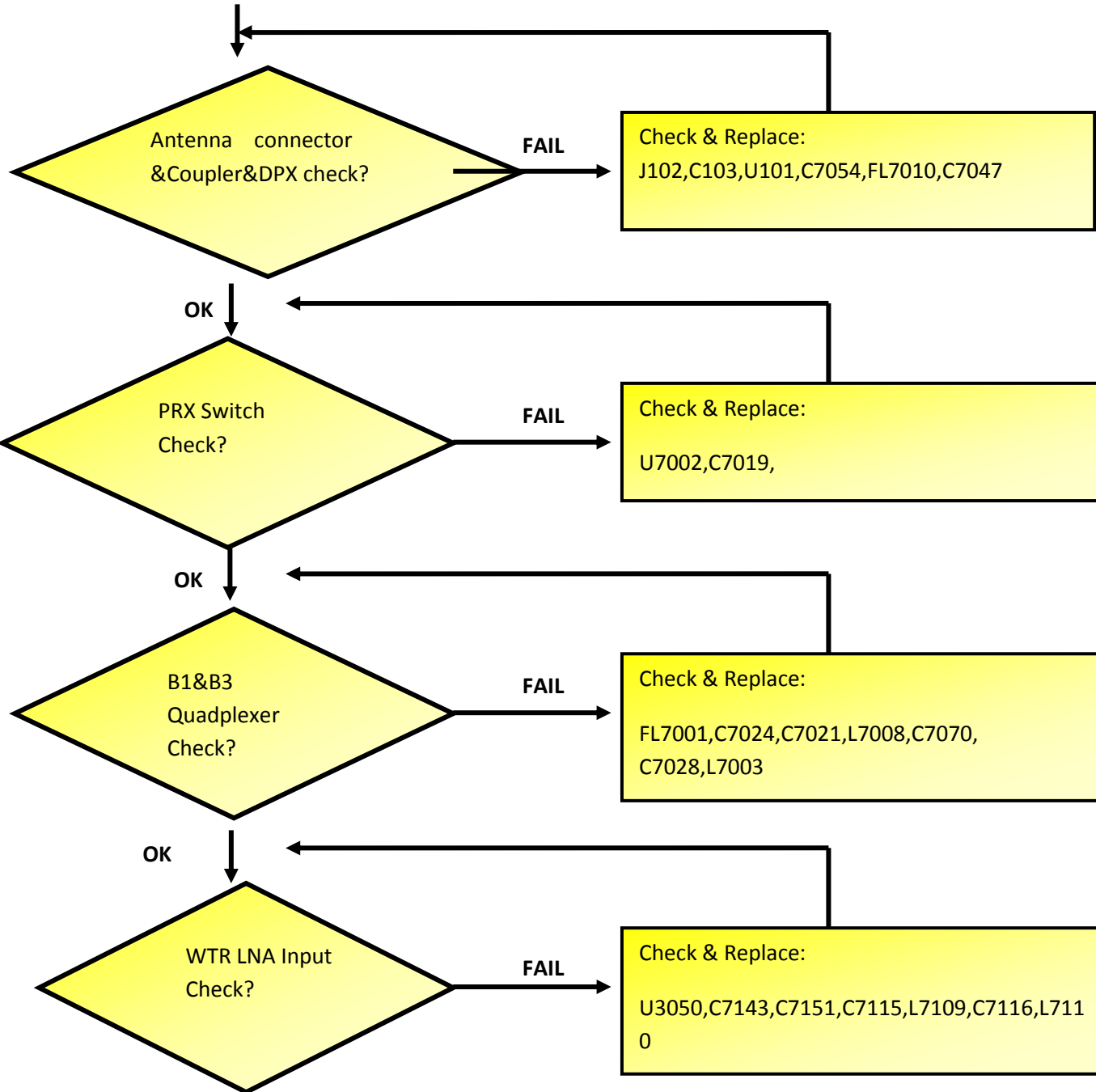
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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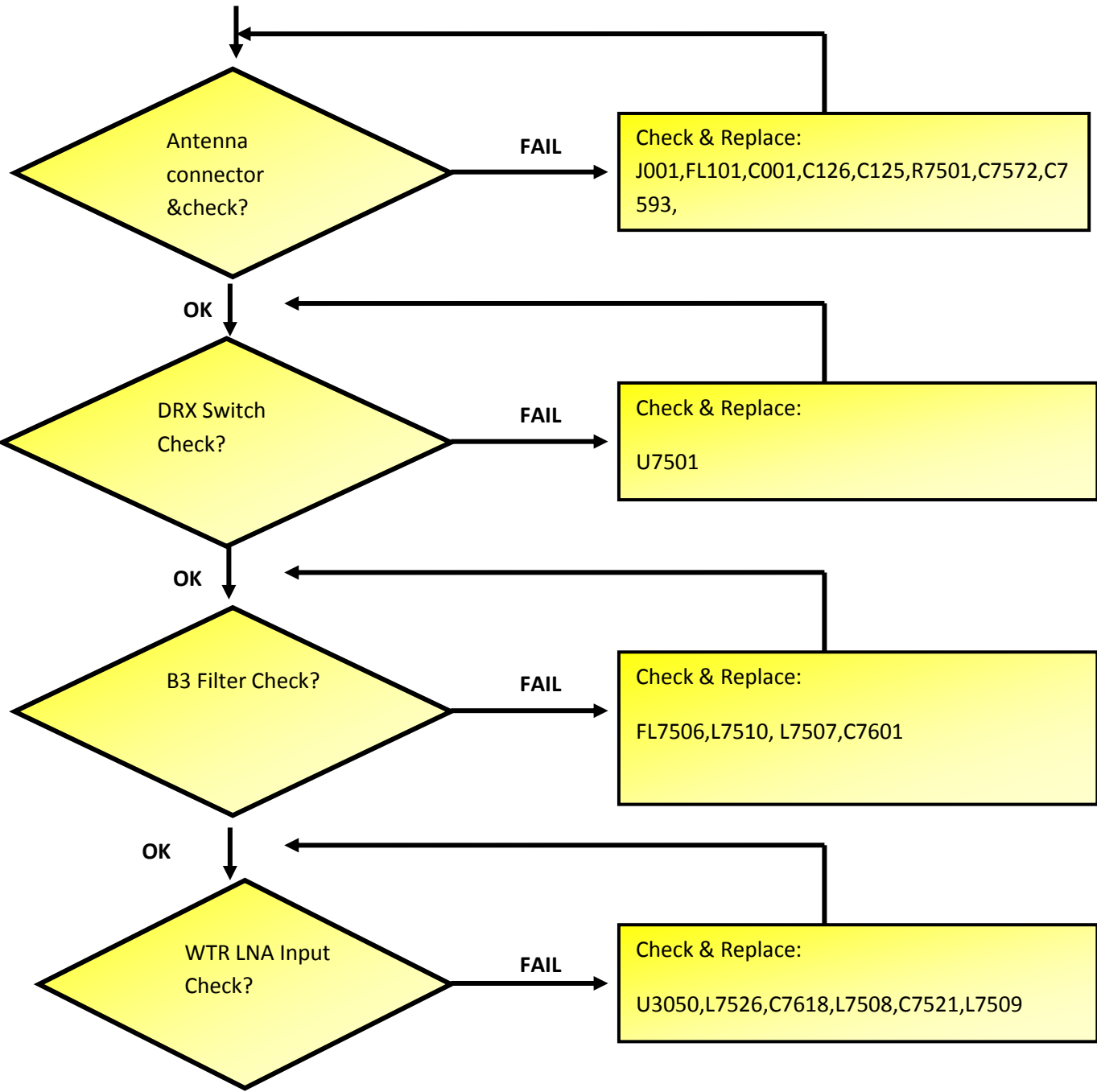
B3 LTE PRX (PRC)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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B3 LTE DRX (PRC)



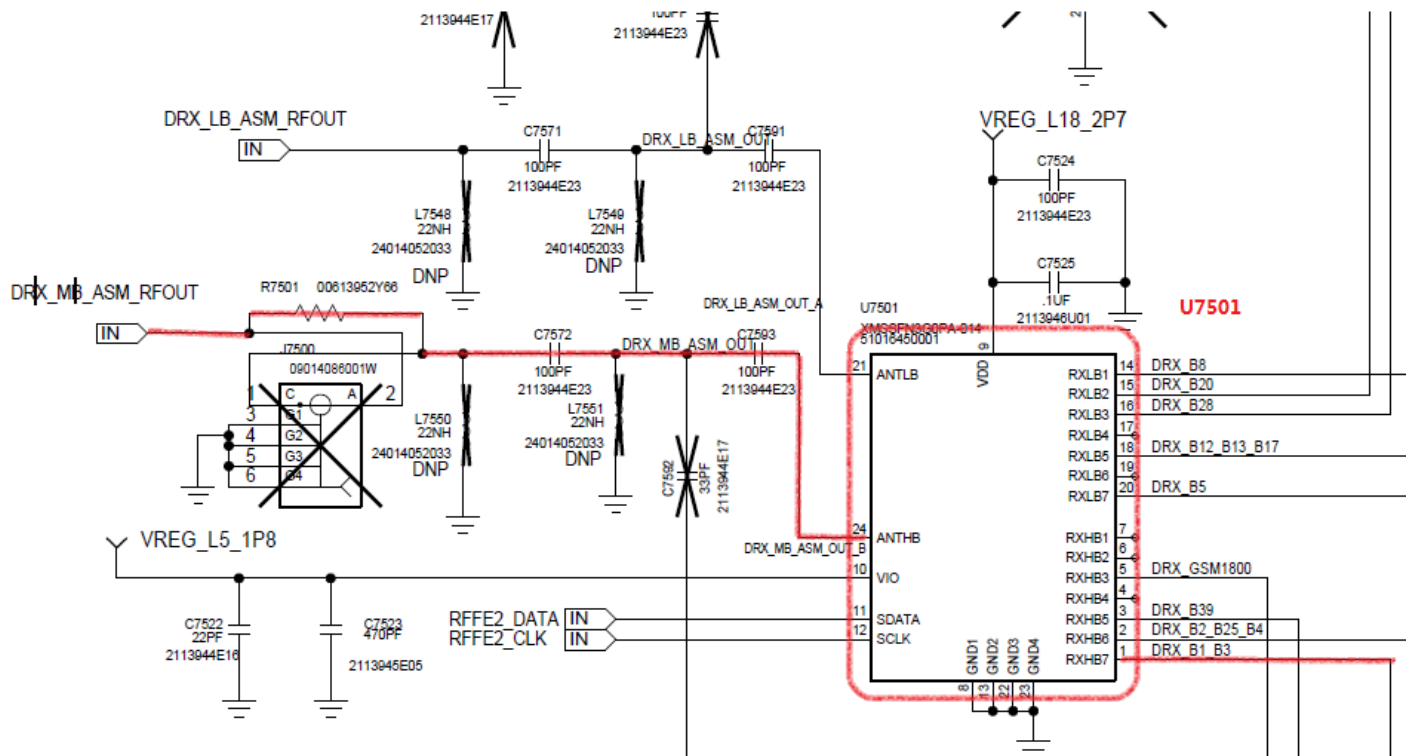
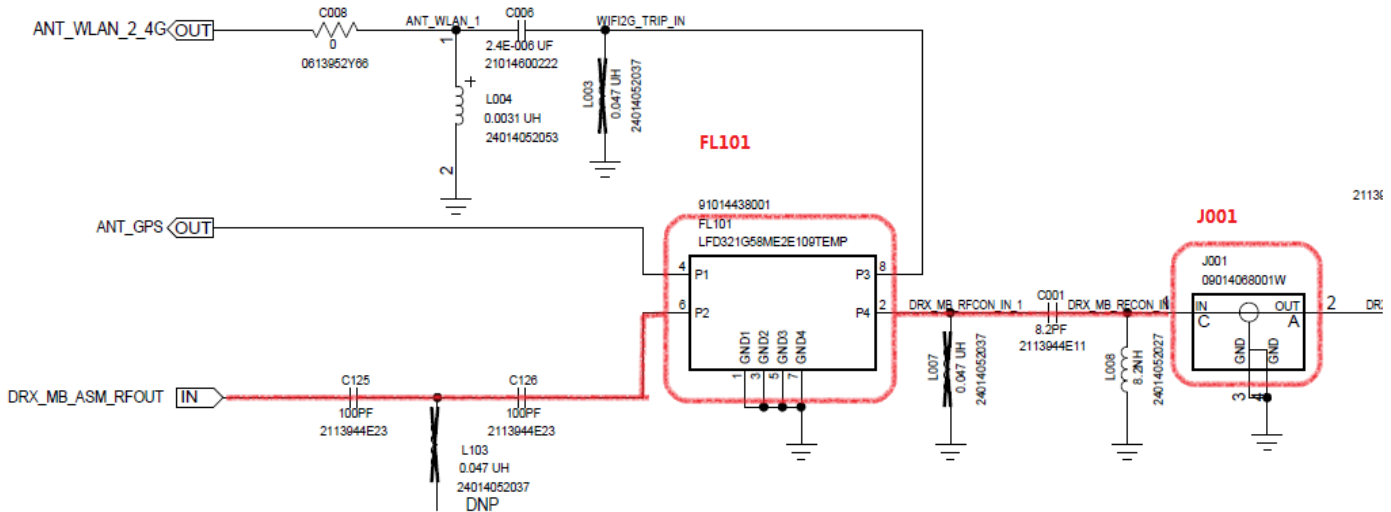
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

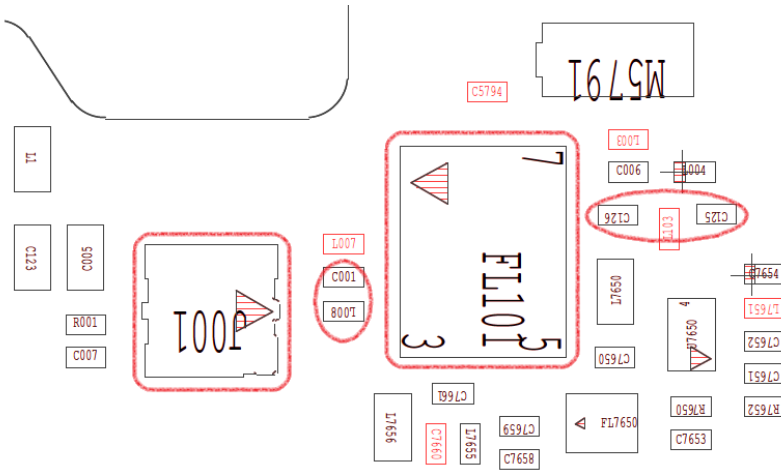
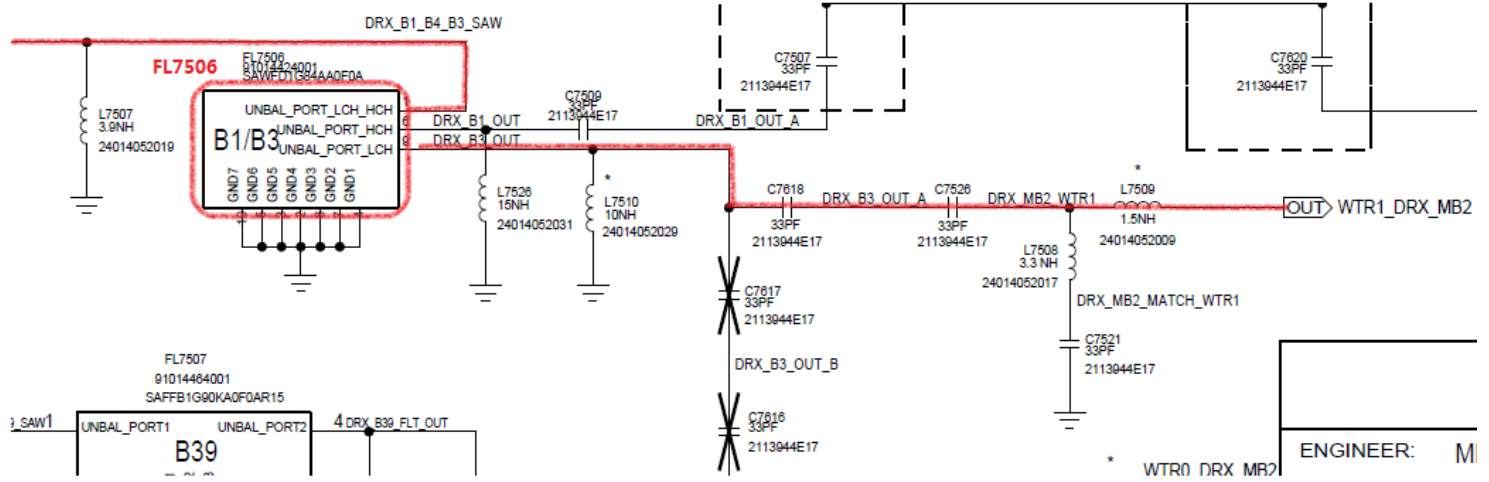
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

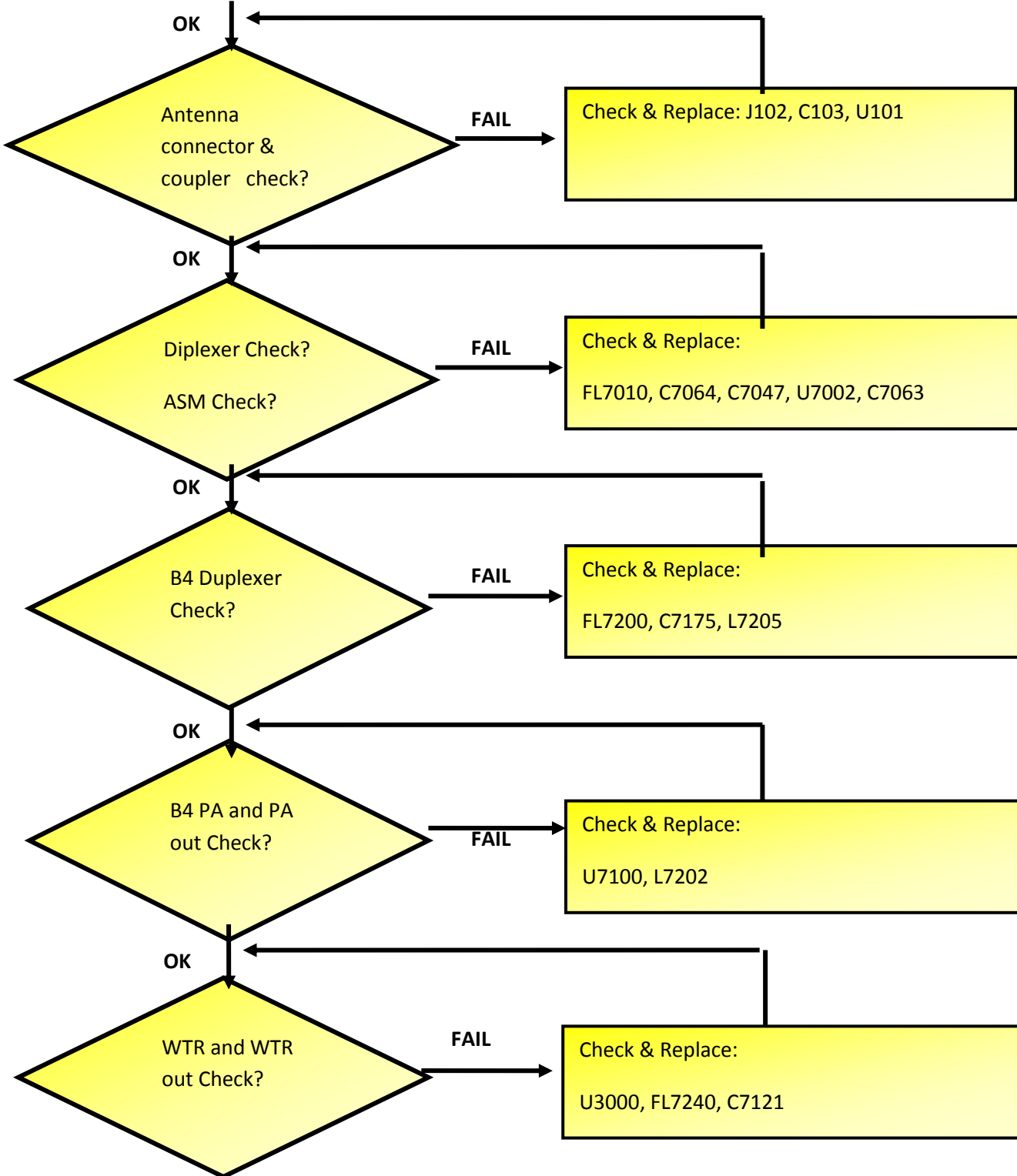
6/1/2016

WITNESS

DATE

<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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B4 LTE TX (VZW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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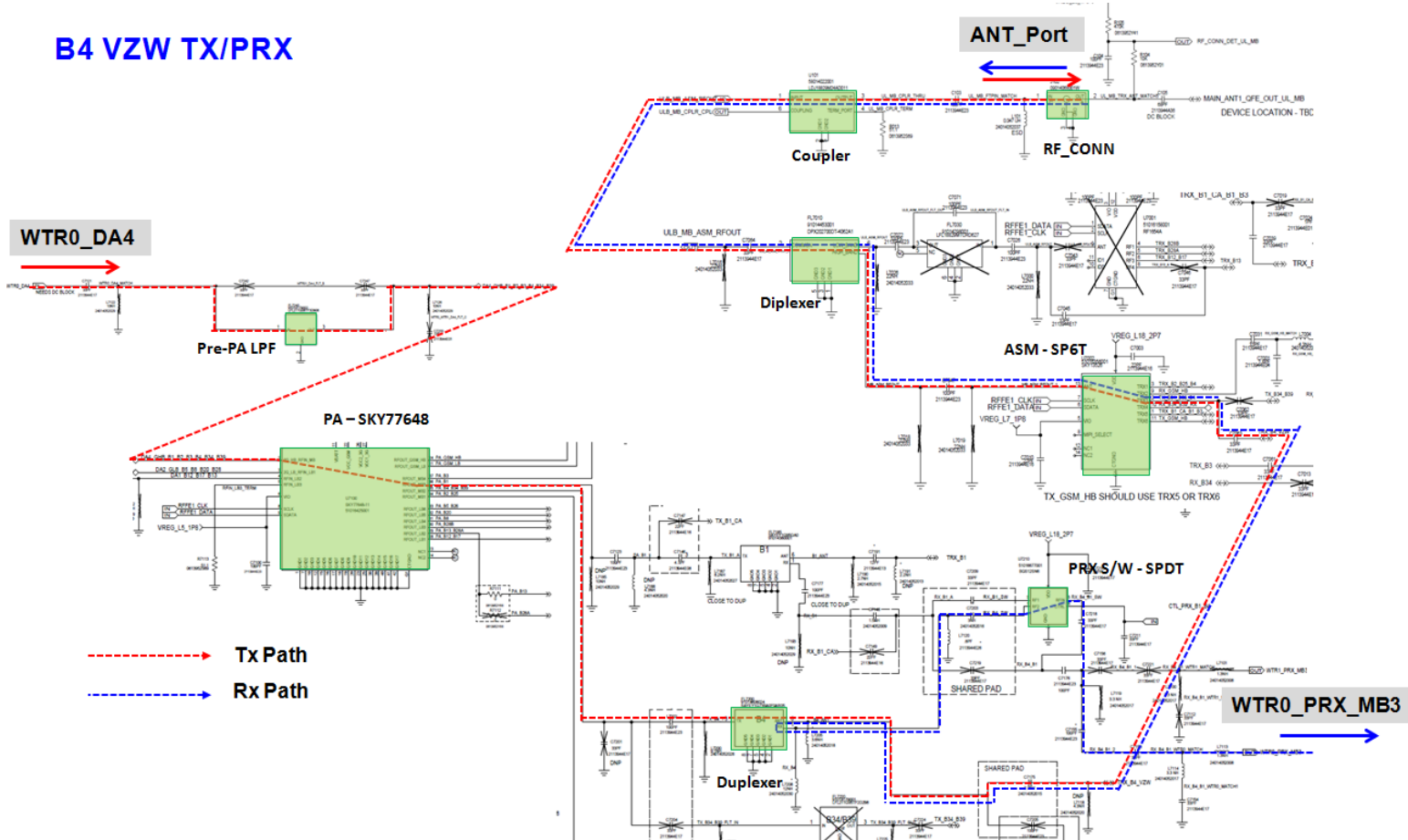
Vertex RF Troubleshooting Guide

MODEL

Vertex

Schematic

B4 VZW TX/PRX



WRITER

Vertex RF HW Development Team

DATE

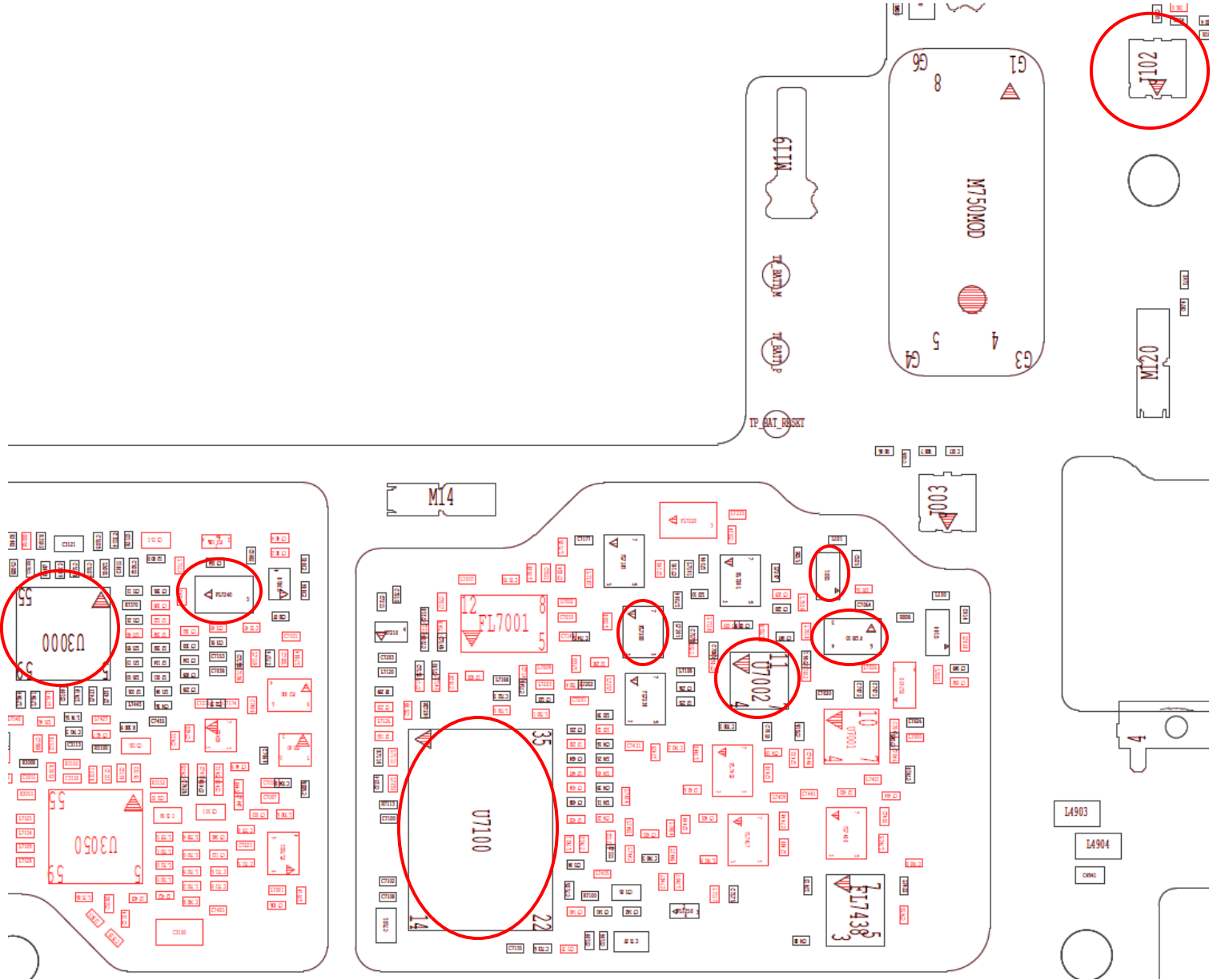
6/1/2016

WITNESS

DATE

TITLE Vertex RF Troubleshooting Guide	MODEL Vertex
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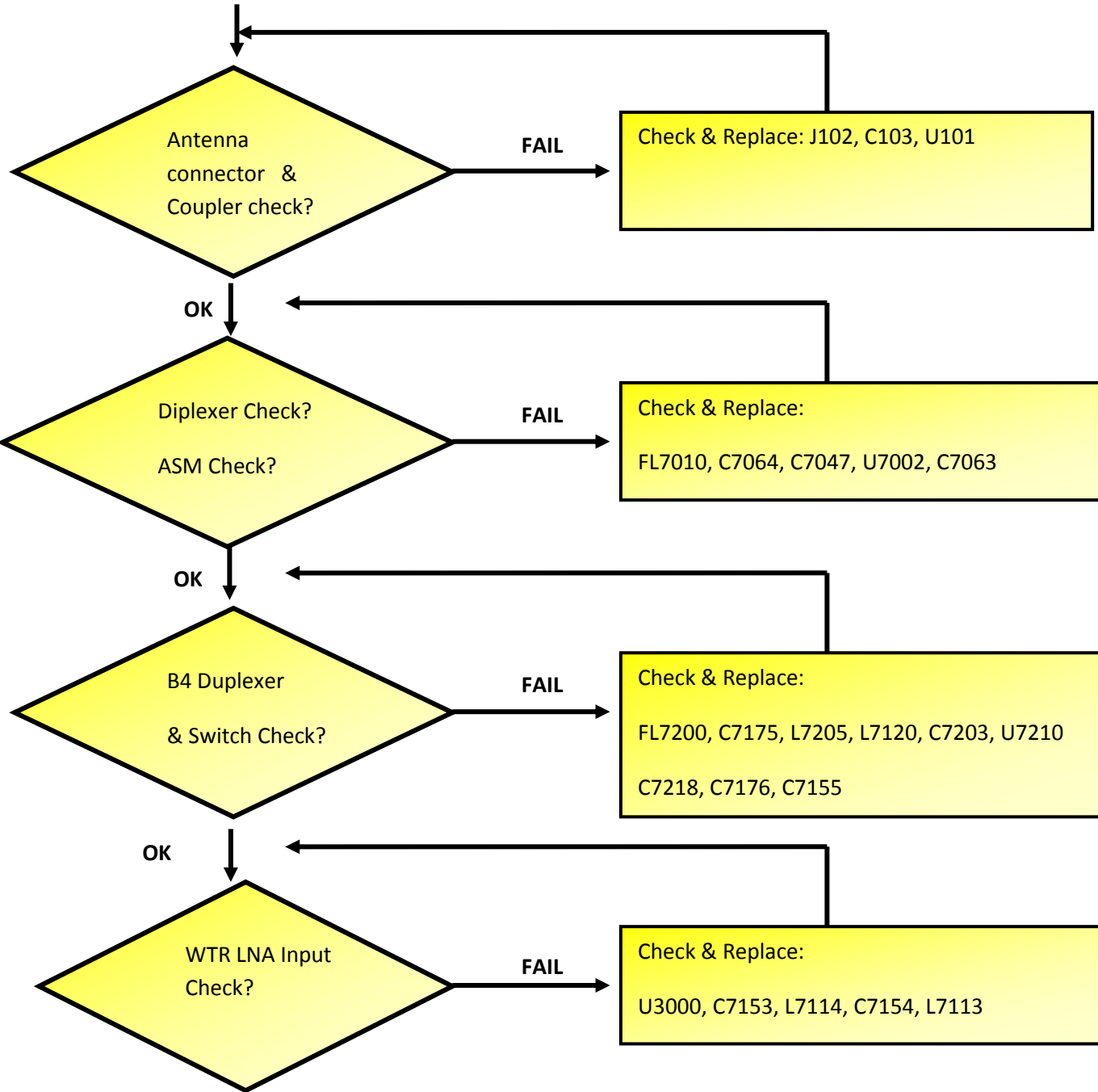
Overlay



WRITER Vertex RF HW Development Team	DATE 6/1/2016	WITNESS	DATE
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<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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B4 LTE PRX (VZW)

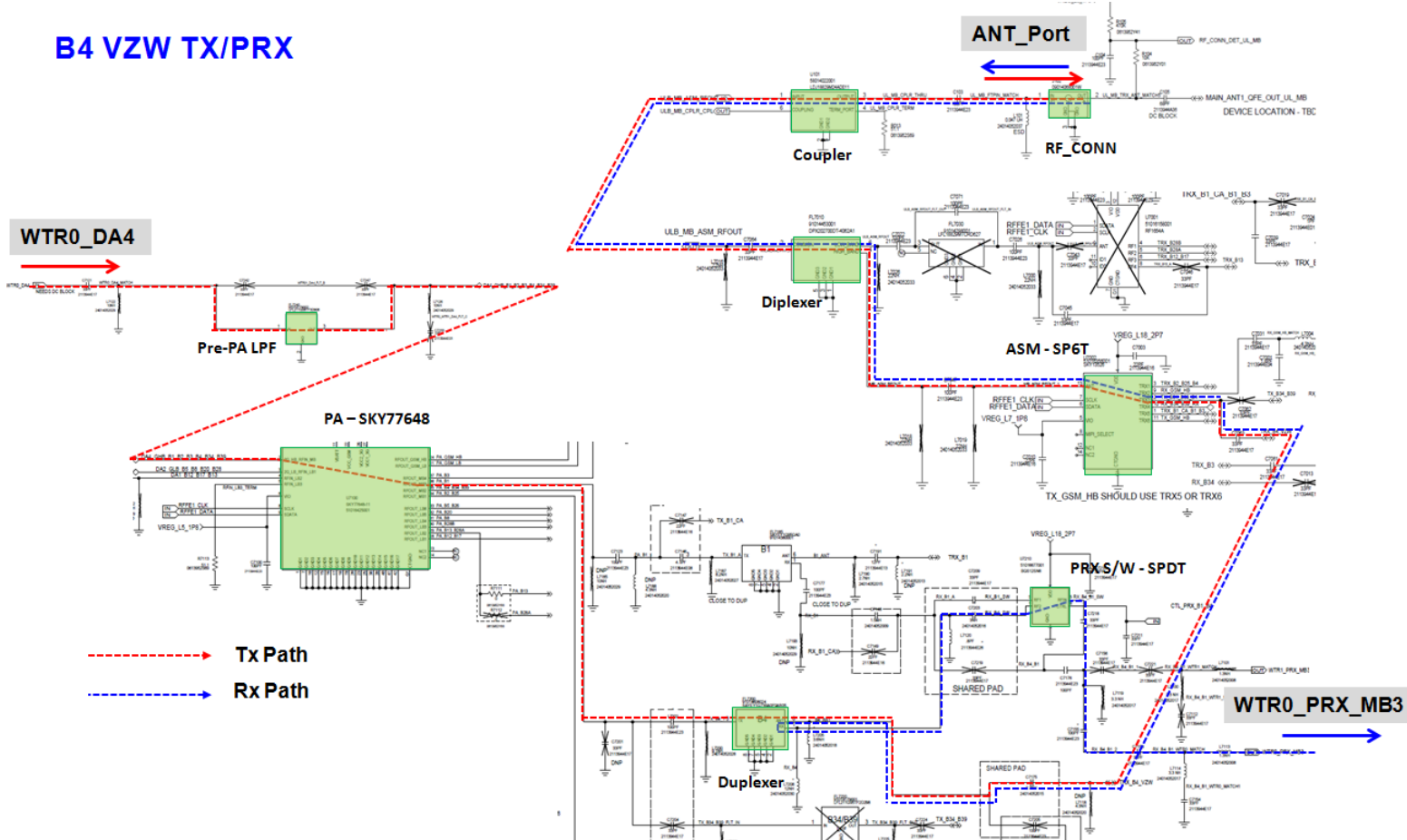


<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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Schematic

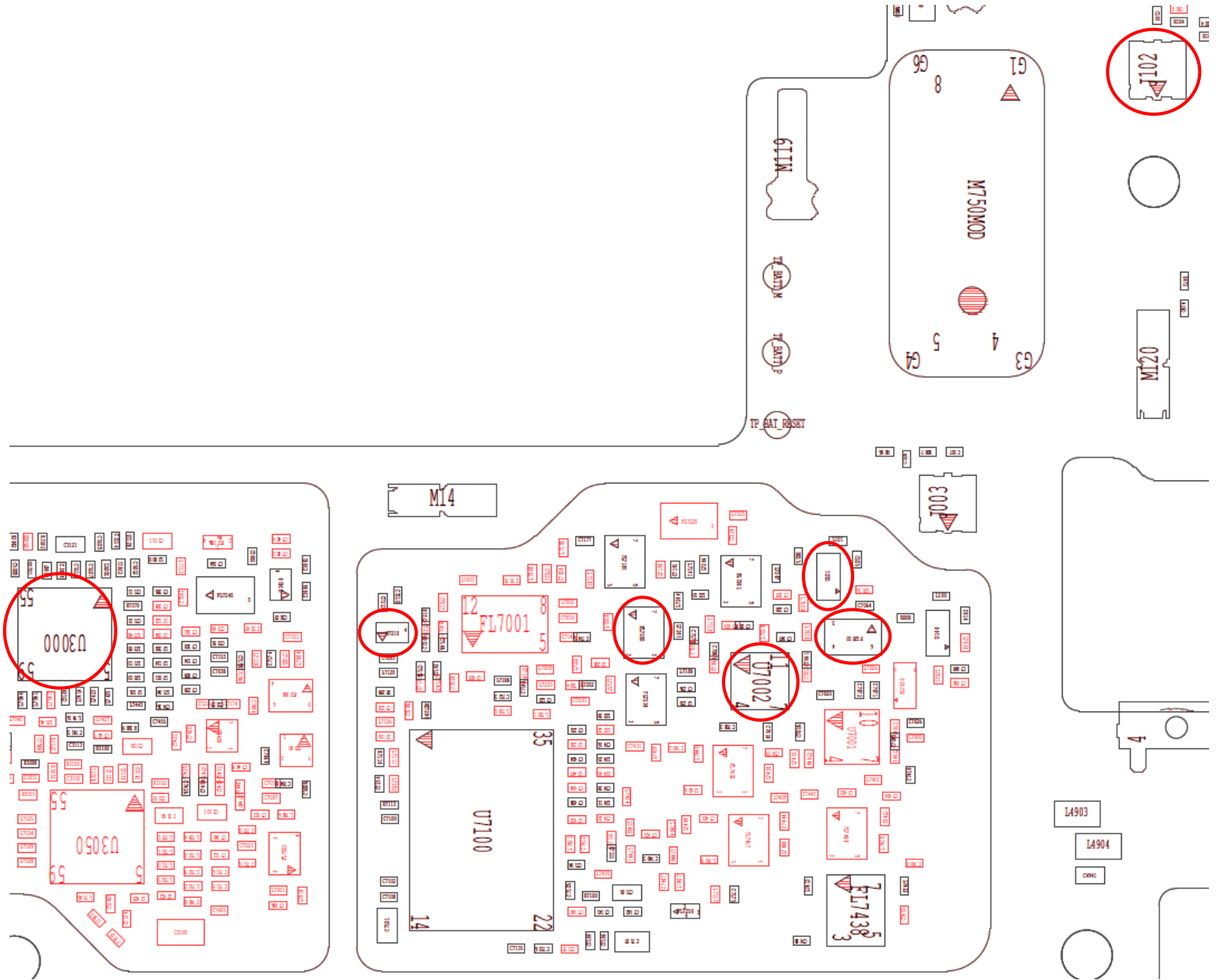
B4 VZW TX/PRX



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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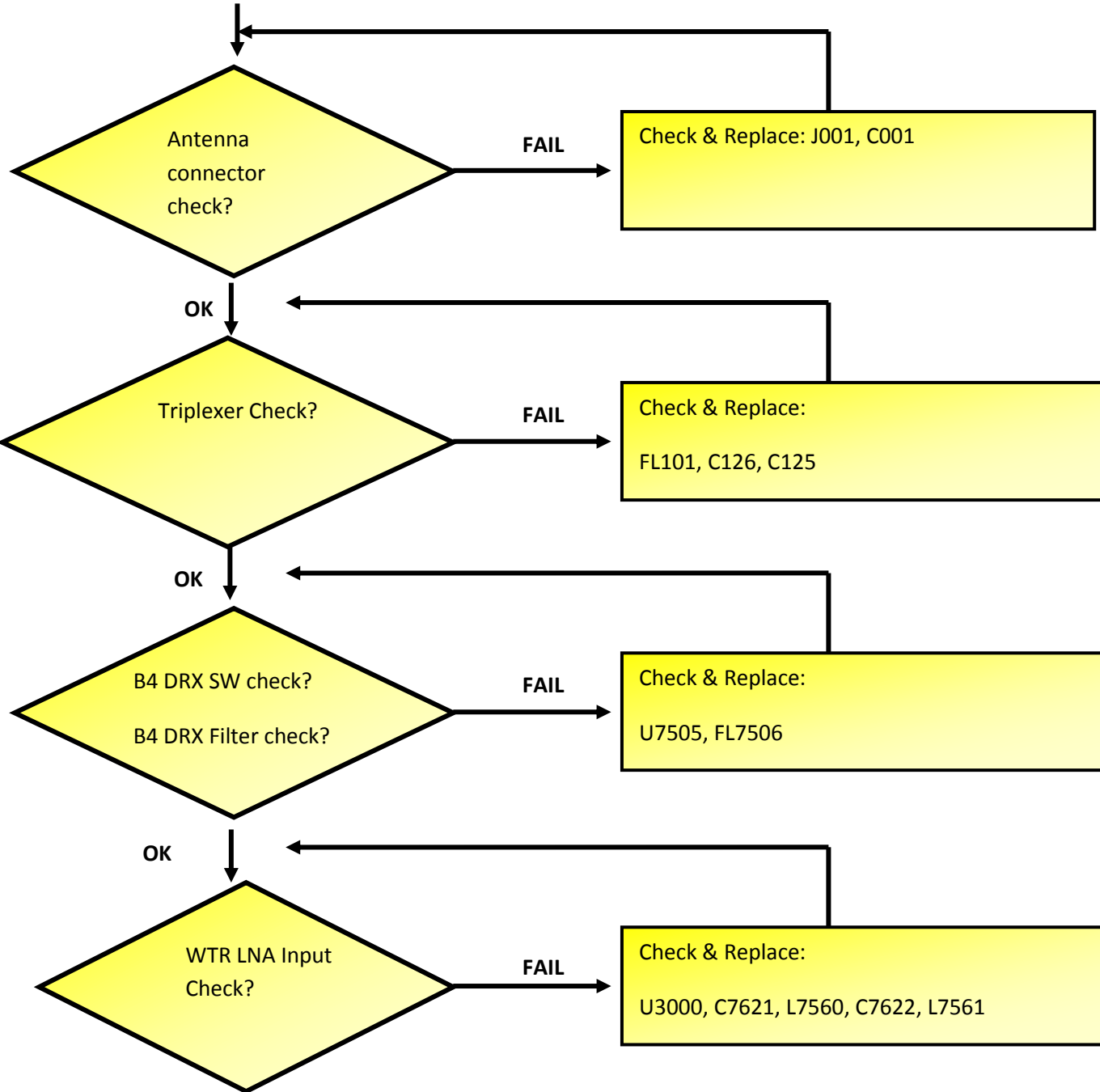
Overlay



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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B4 LTE DRX (VZW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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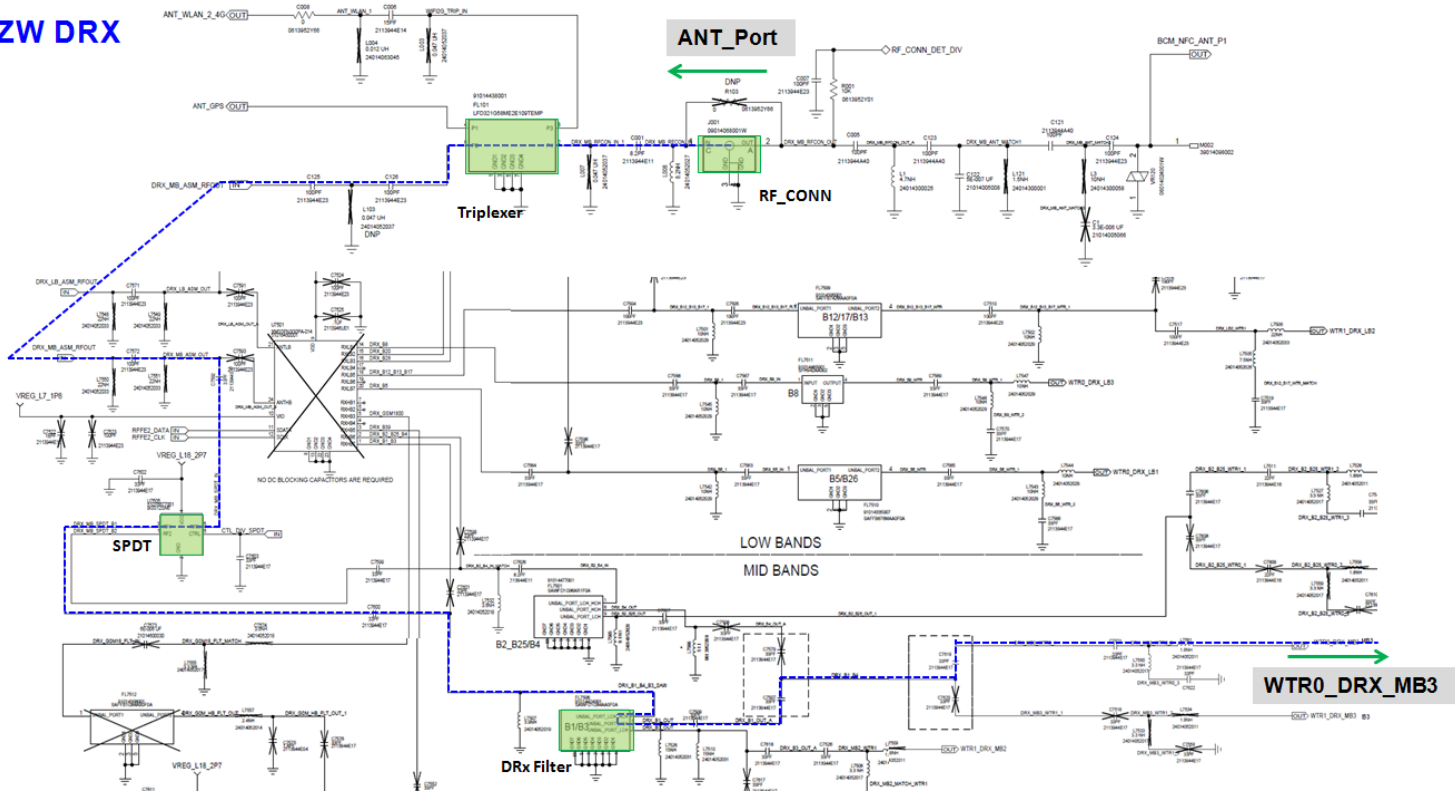
Vertex RF Troubleshooting Guide

MODEL

Vertex

Schematic

B4 VZW DRX



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

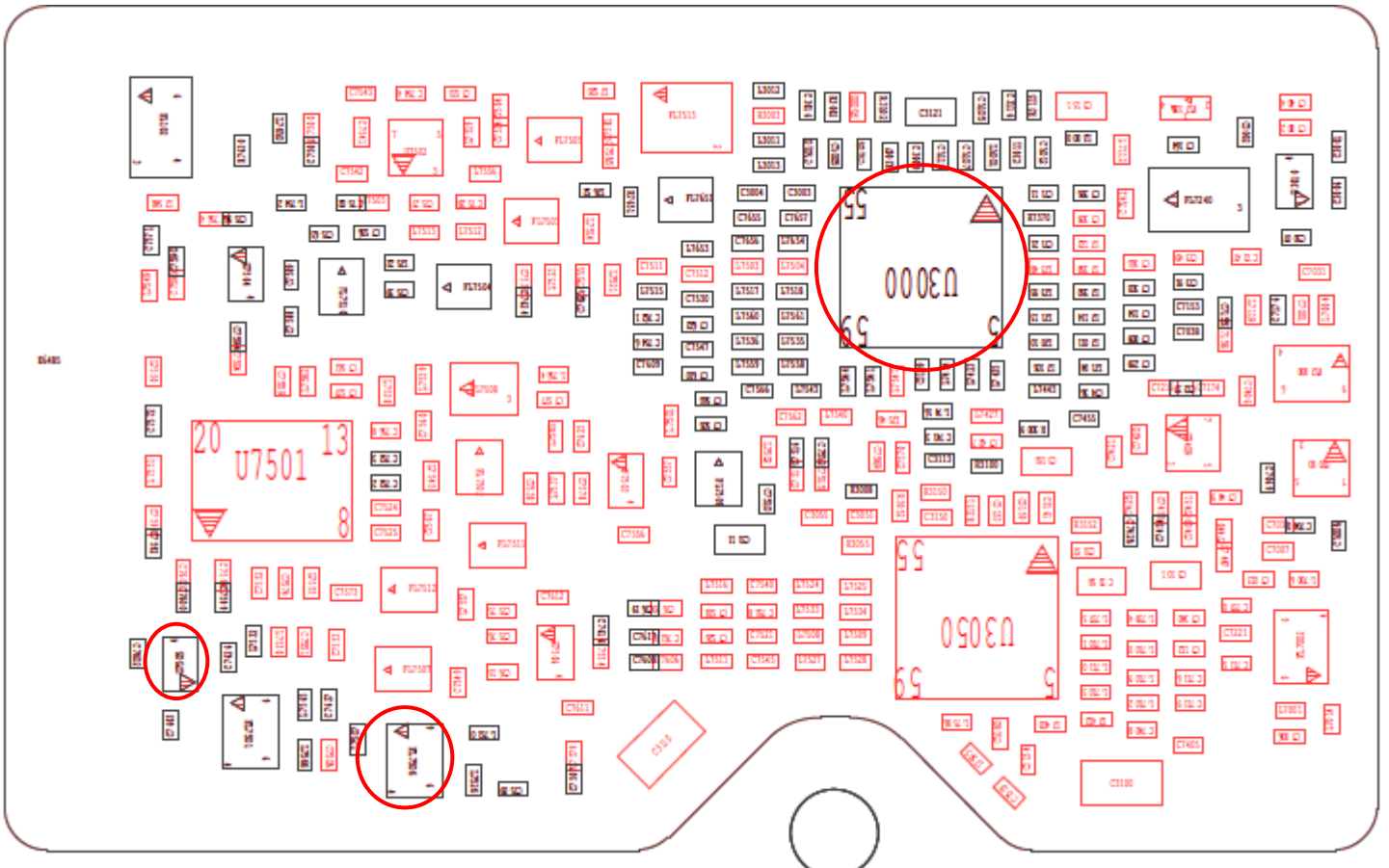
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Vertex RF Troubleshooting Guide

MODEL

Vertex

Overlay



WRITER

Vertex RF HW Development Team

DATE

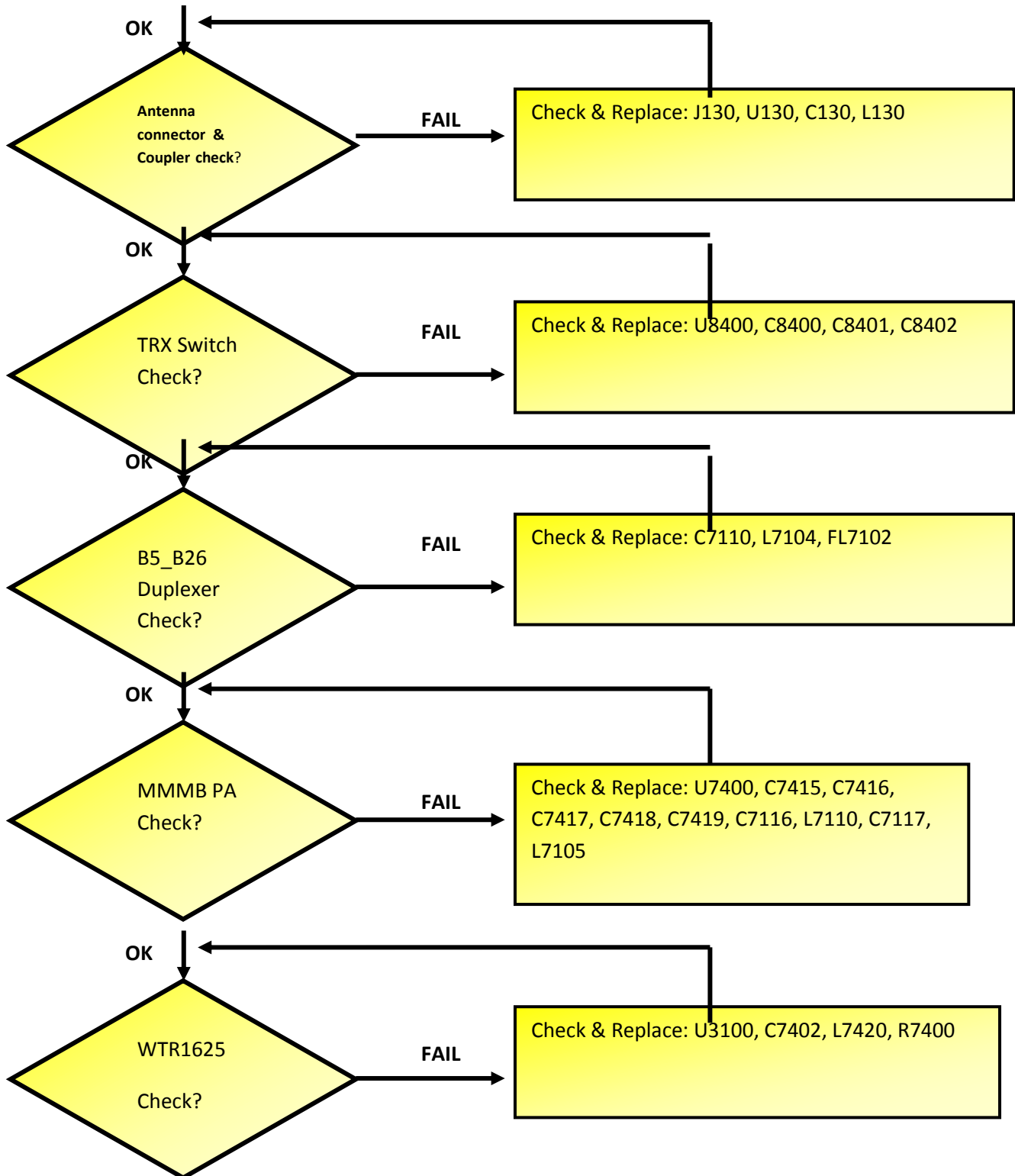
6/1/2016

WITNESS

DATE

<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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LTE B5/26, CDMA BC0/10, WCDMA B5/19, TX



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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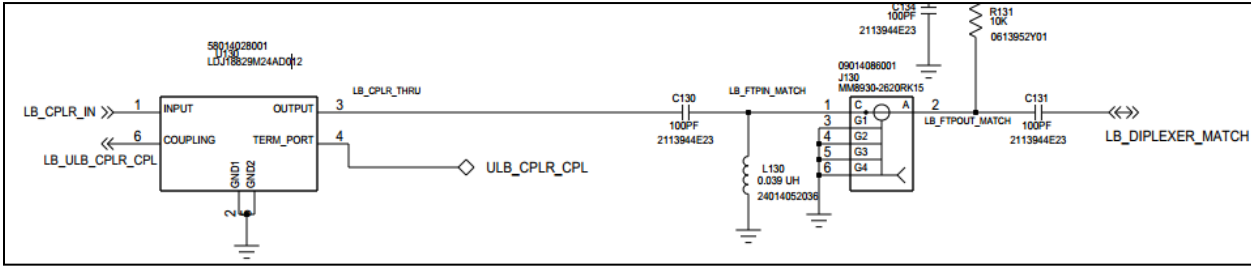
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Vertex RF Troubleshooting Guide

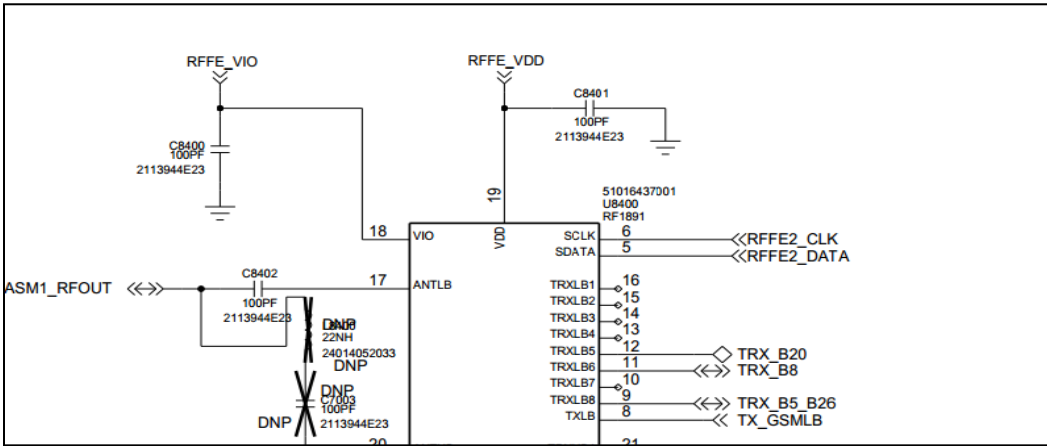
MODEL

Vertex

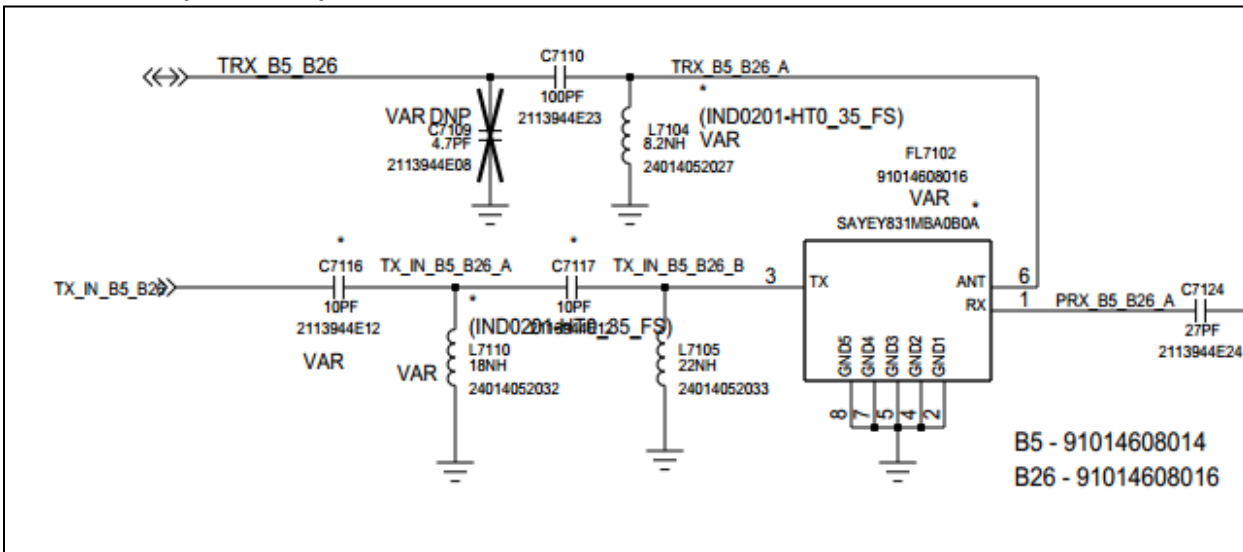
RF coupler and Connector:



TRX switch (Antenna Switch Module) ASM:



MMMB PA output and Duplexer:



WRITER

Vertex RF HW Development Team

DATE

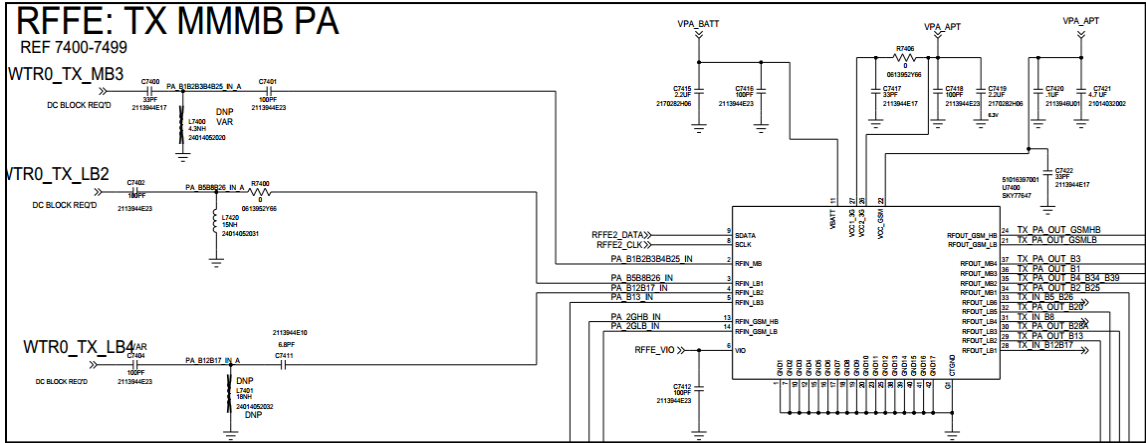
6/1/2016

WITNESS

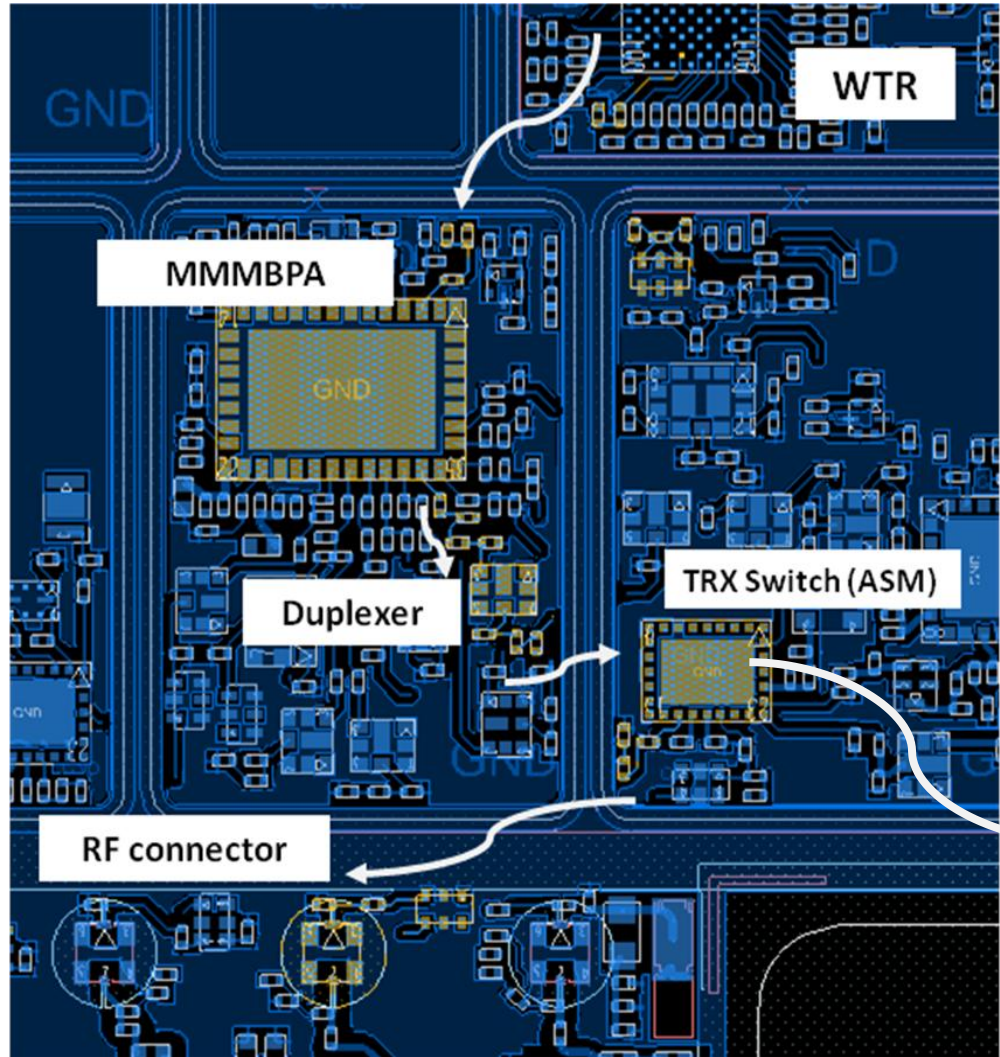
DATE

<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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WTR TX Output and RF MMBB PA:



RF Path for TX signal:



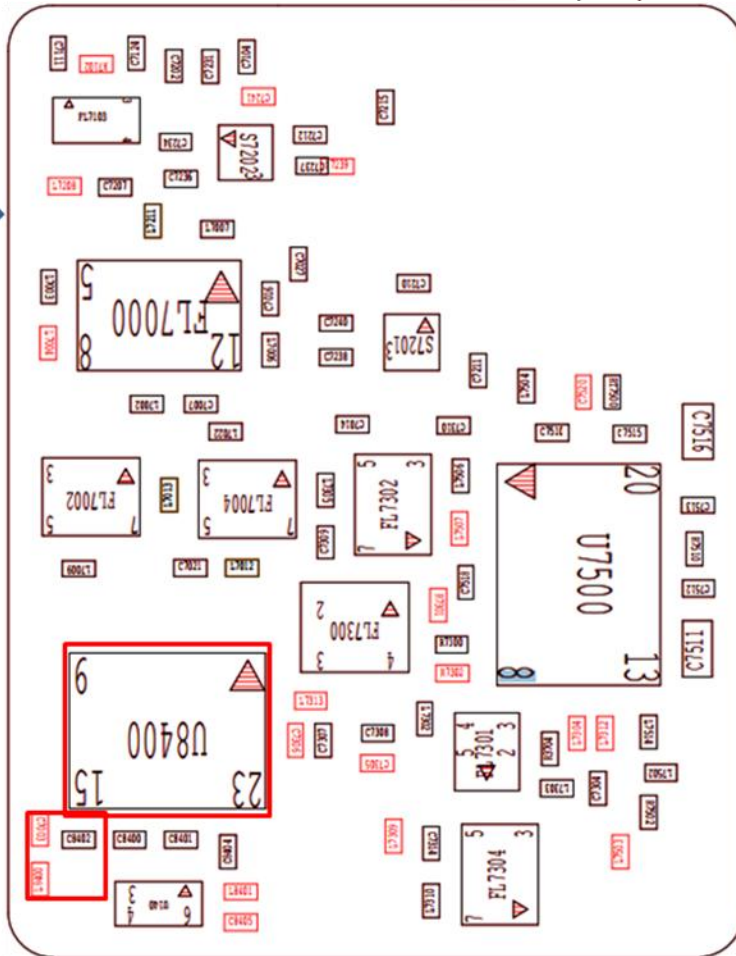
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

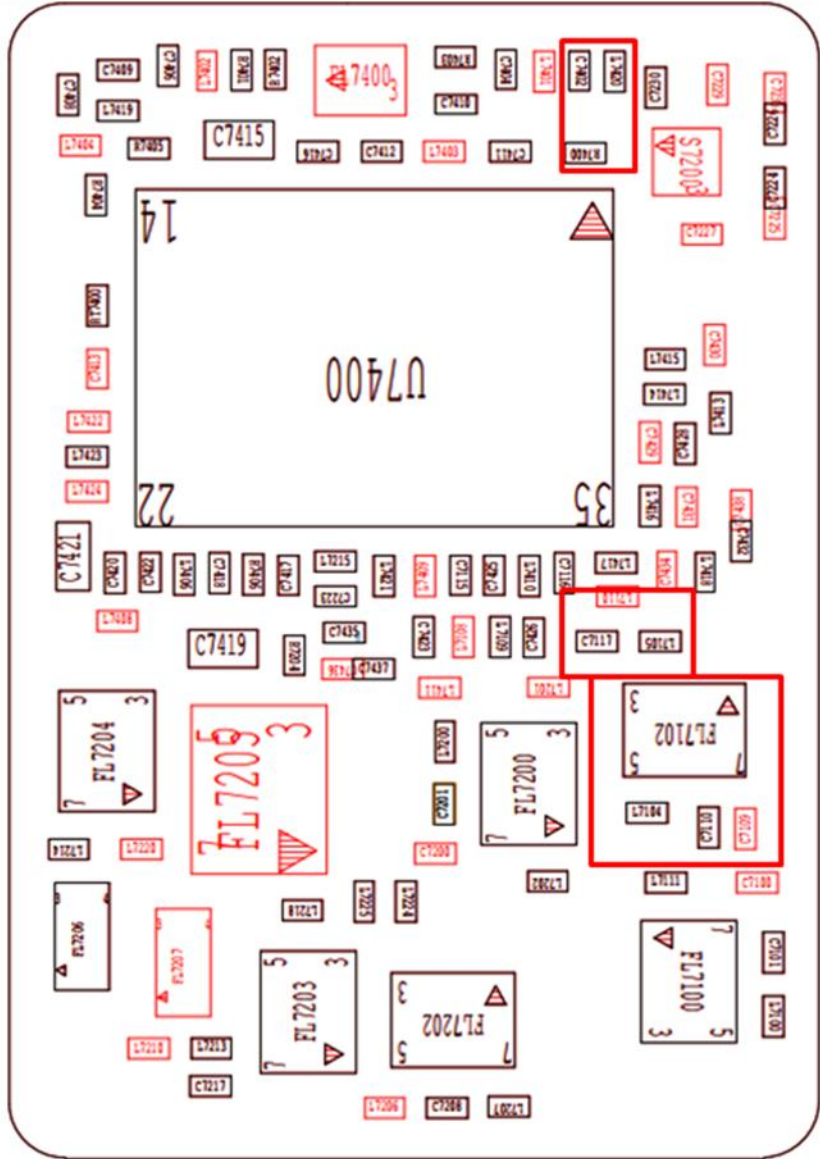
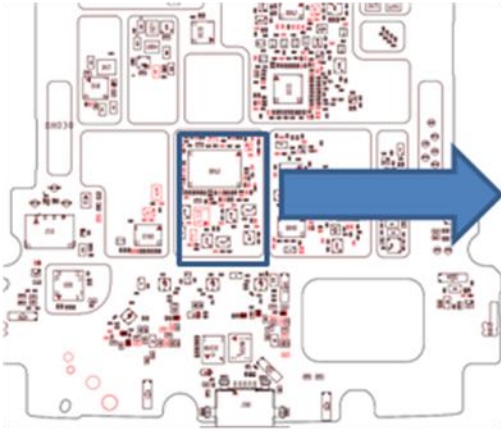
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

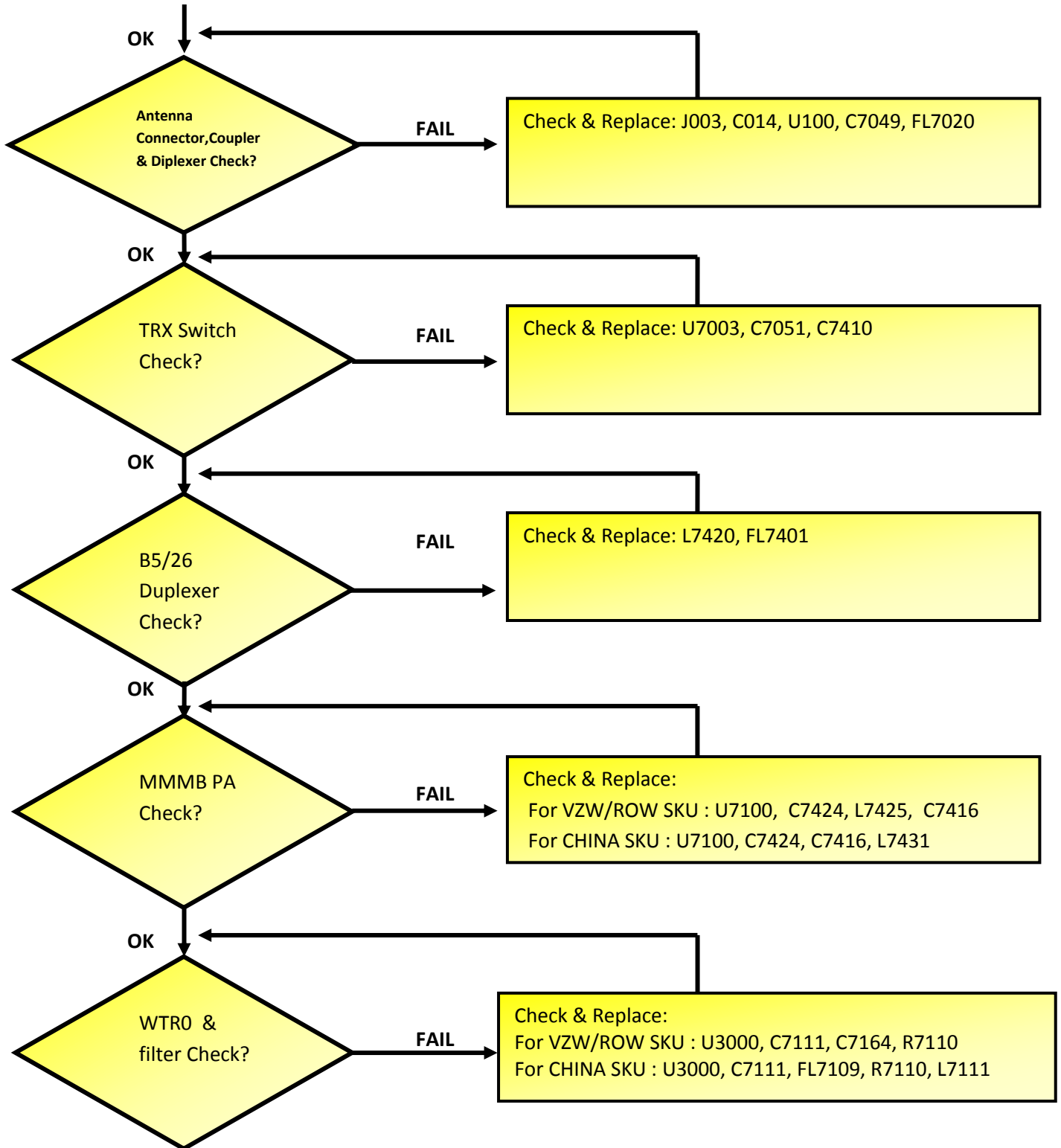
6/1/2016

WITNESS

DATE

<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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LTE B5/B19/26, CDMA BC0, WCDMA B5/B6/19, TX



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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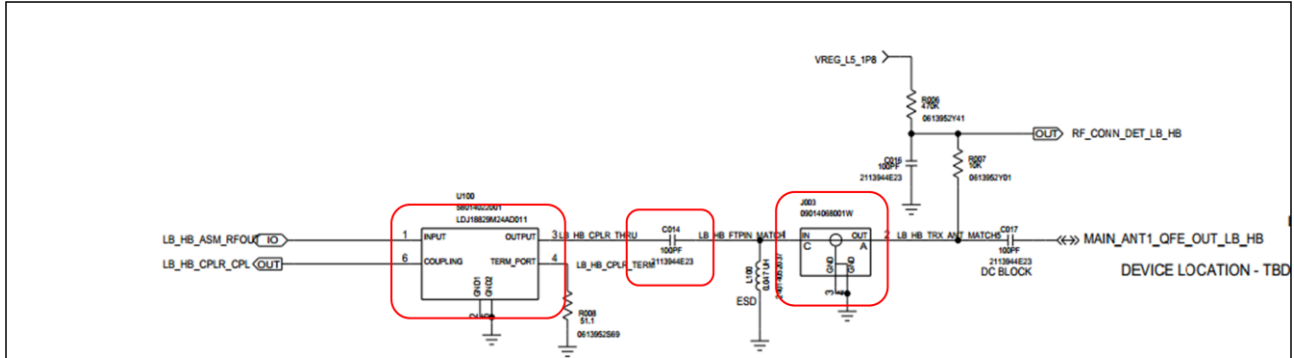
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Vertex RF Troubleshooting Guide

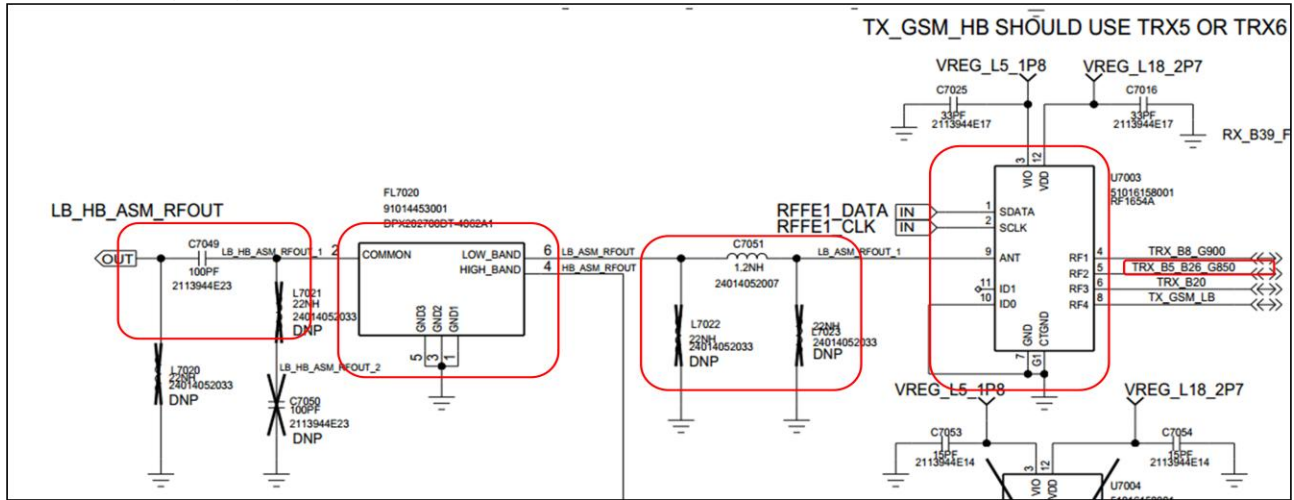
MODEL

Vertex

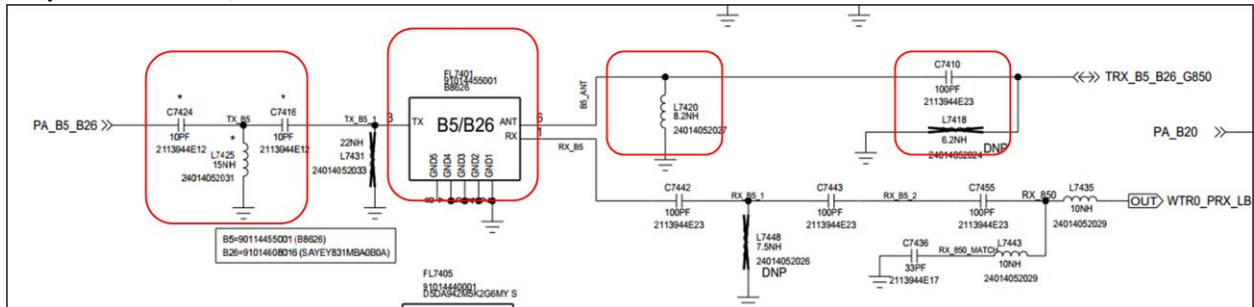
- RF coupler and Connector:



- LB TRX switch (ASM) :



- B5 Duplexer for VZW/ROW SKU:



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

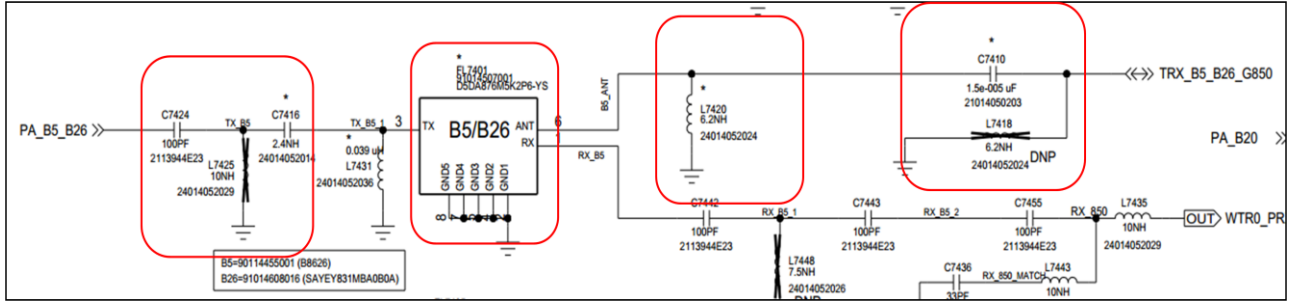
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Vertex RF Troubleshooting Guide

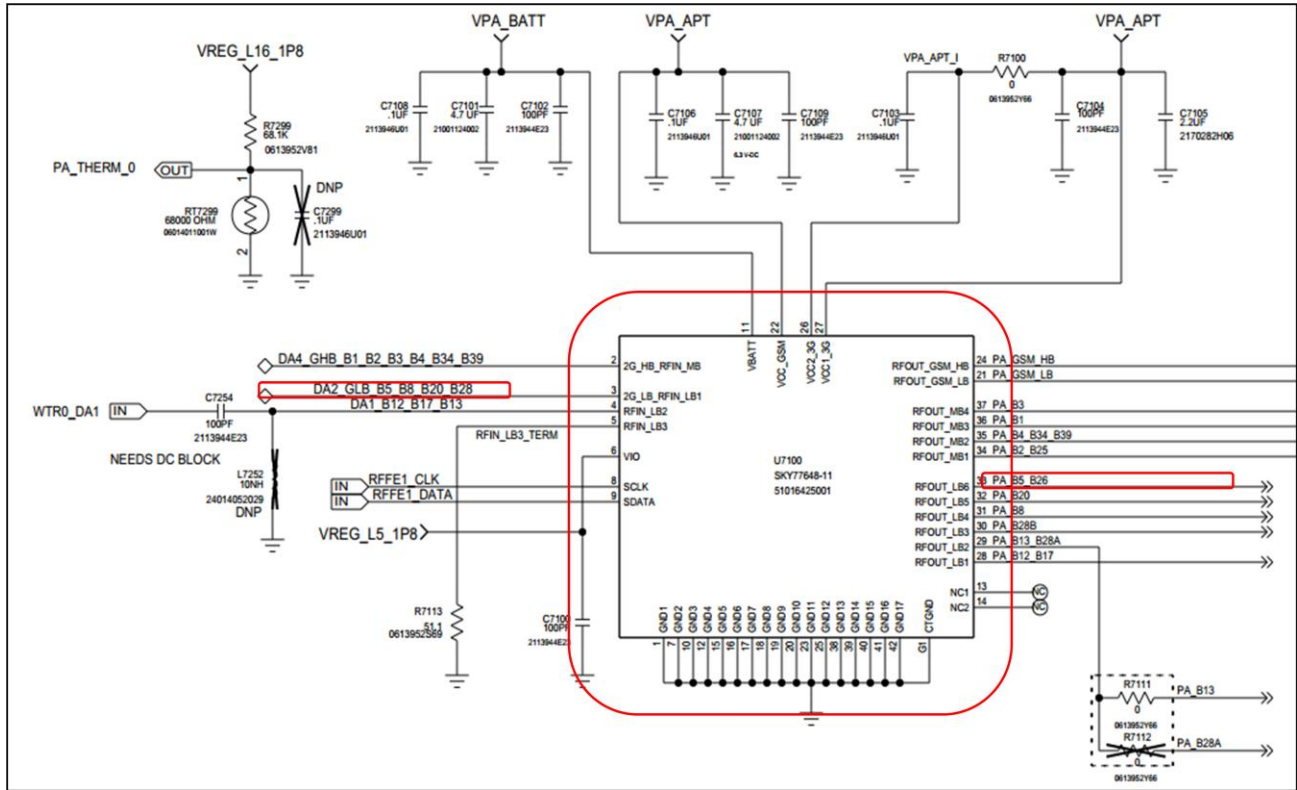
MODEL

Vertex

B26 Duplexer for PRC SKU:



MMMB PA:



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

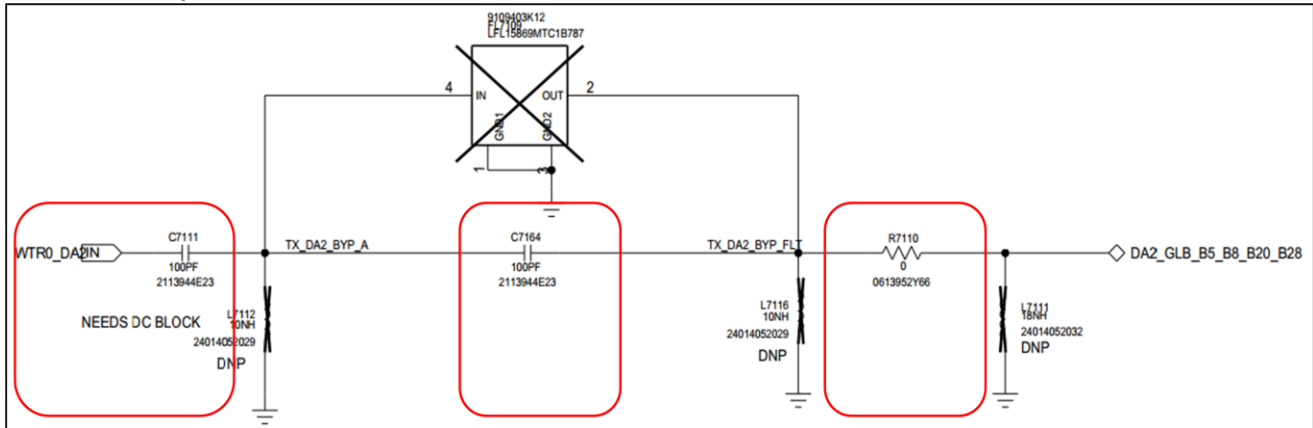
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MODEL

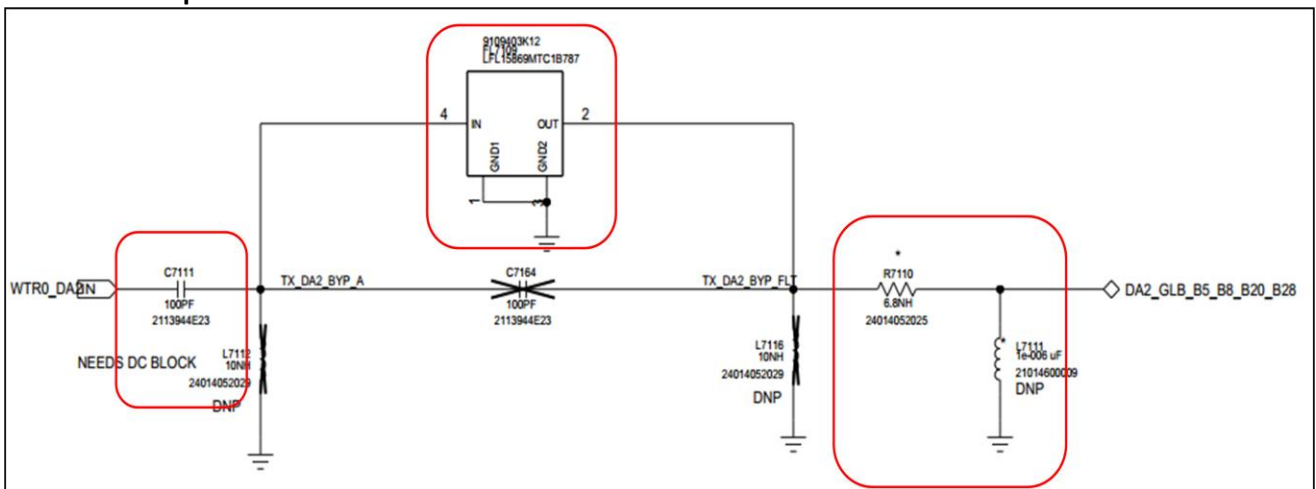
Vertex RF Troubleshooting Guide

Vertex

- WTR0 DA2 output for VZW/ROW:



- WTR0 DA2 output for PRC SKU:



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

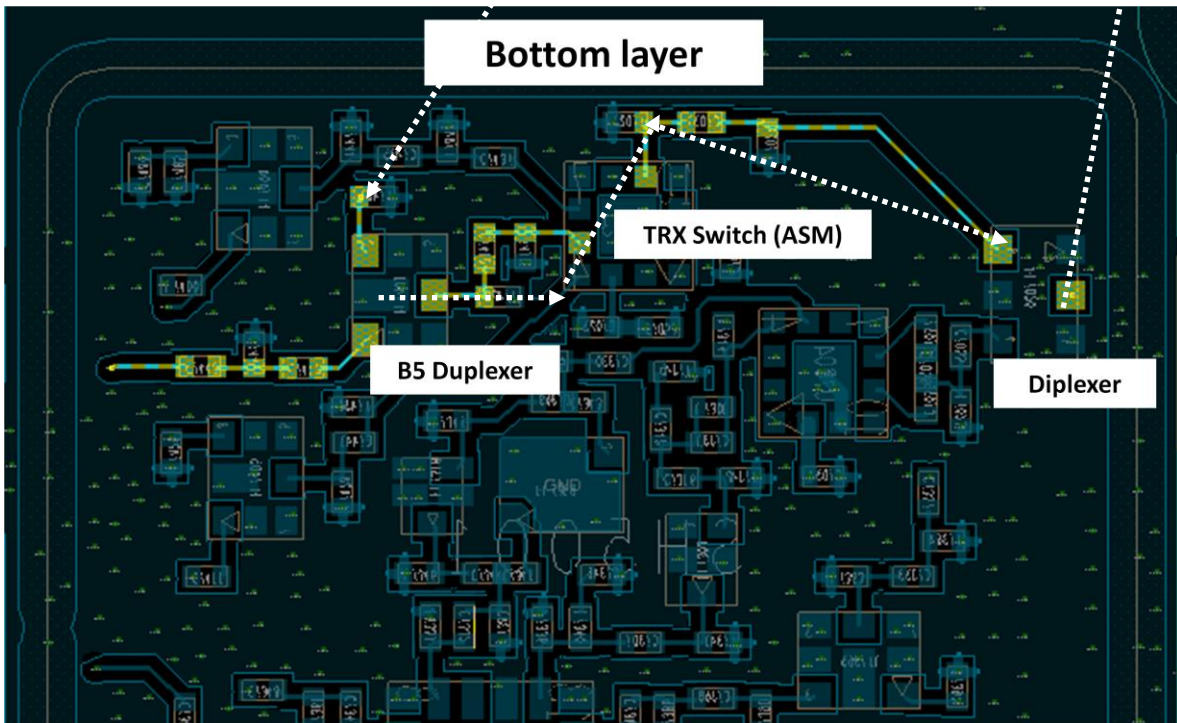
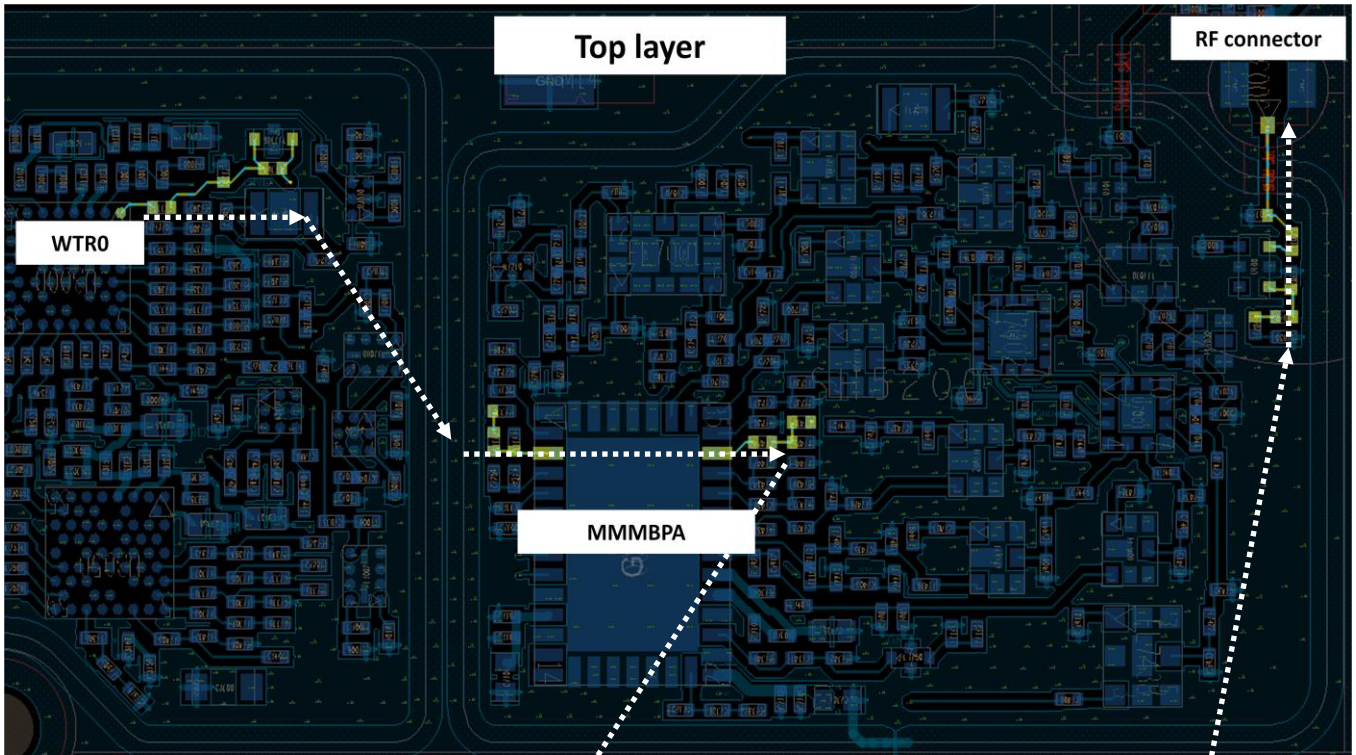
TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex

- LTE B5/B19/26, CDMA BC0, WCDMA B5/B6/19, TX Signal Path



WRITER

Vertex RF HW Development Team

DATE

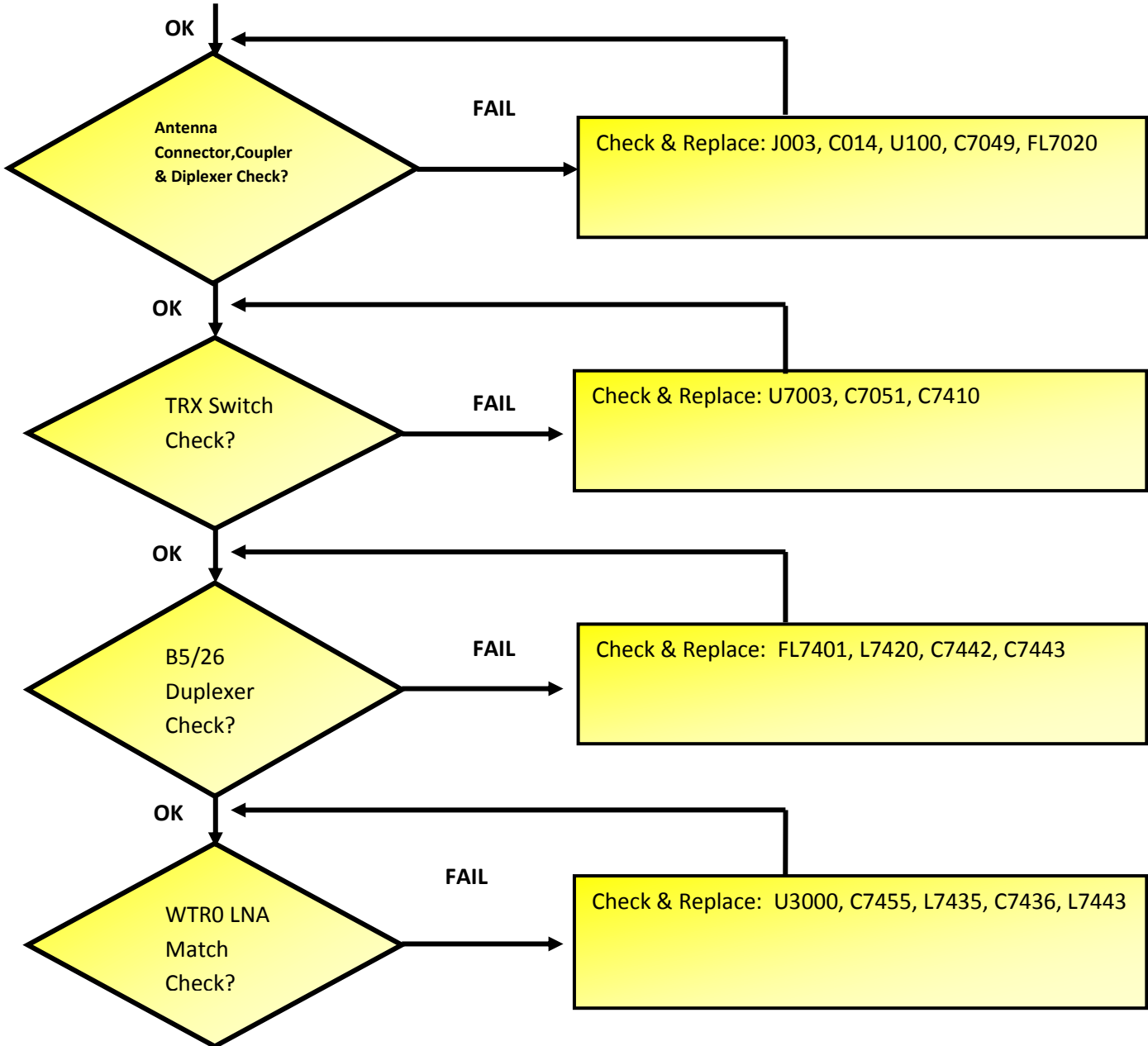
6/1/2016

WITNESS

DATE

<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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LTE B5/19/26, CDMA BC0, WCDMA B5/6/19, PRX



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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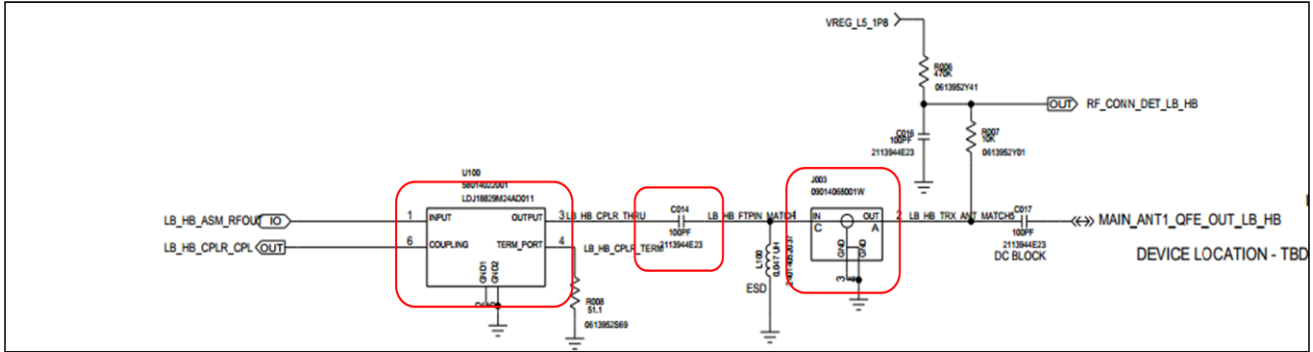
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Vertex RF Troubleshooting Guide

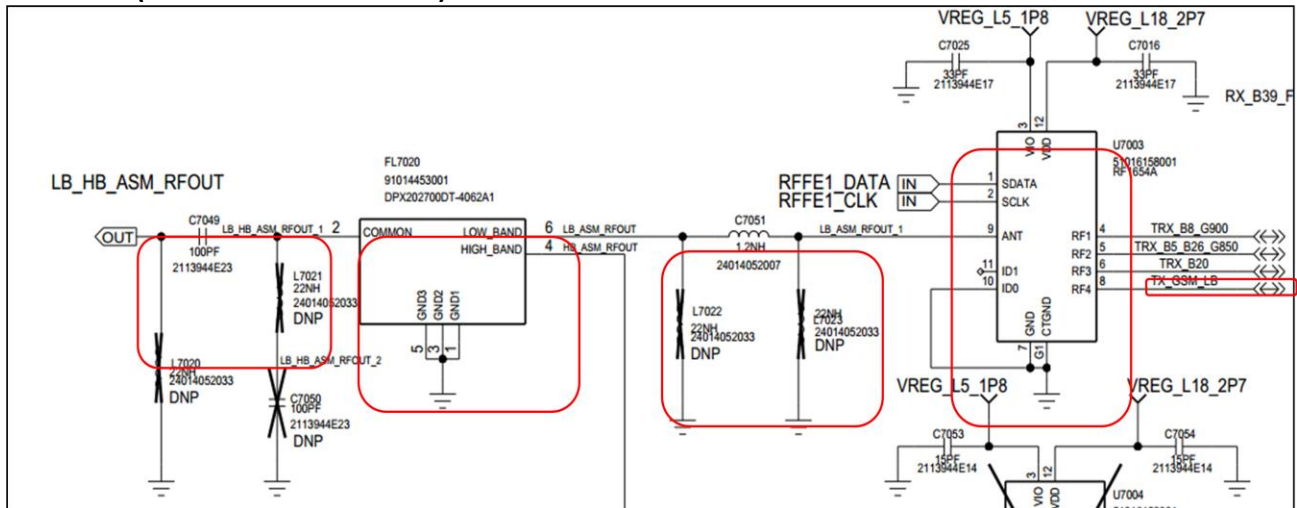
MODEL

Vertex

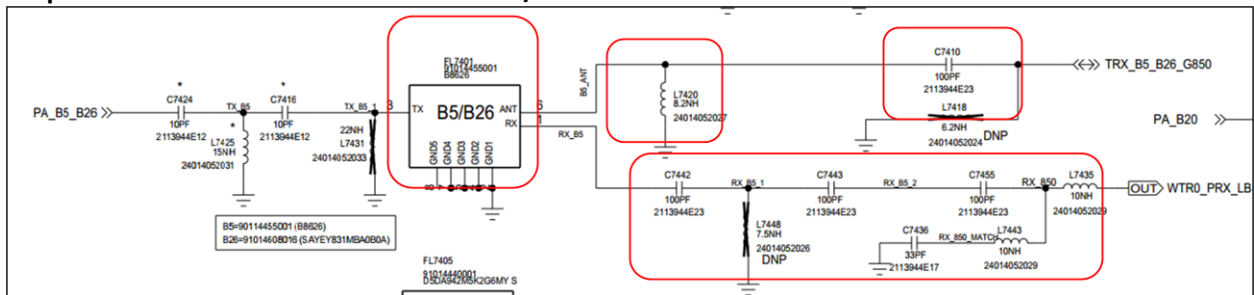
- RF coupler and Connector:



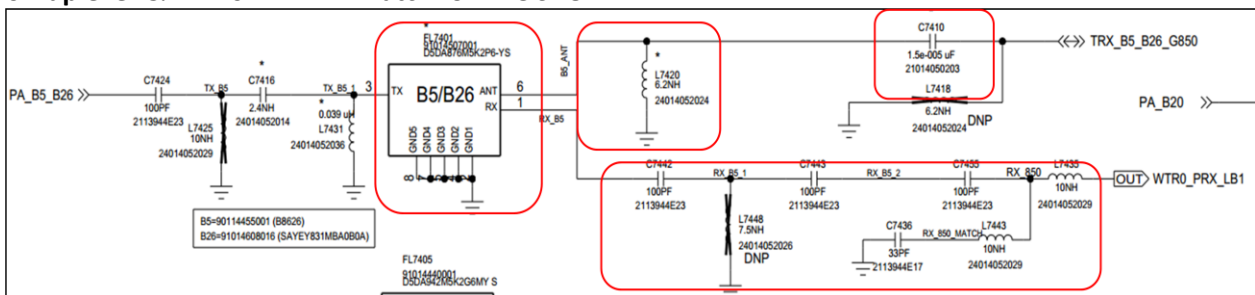
- TRX switch (Antenna Switch Module) ASM:



- B5 Duplexer & WTR0 PRX LB1 match for VZW/ROW SKU:



- B26 Duplexer & WTR0 PRX LB1 match for PRC SKU:



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

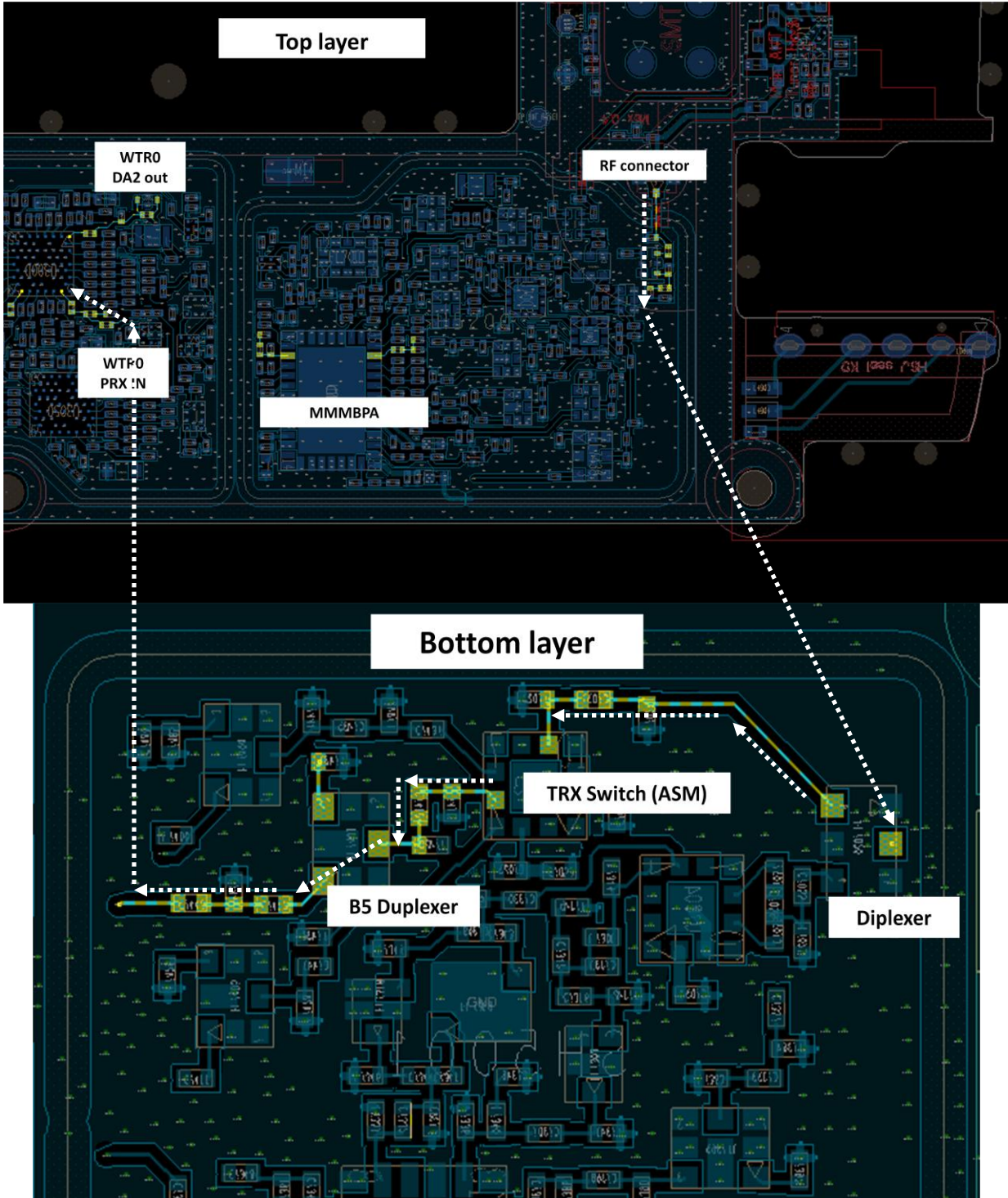
TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex

- LTE B5/B19/26, CDMA BC0, WCDMA B5/B6/19, PRX Signal Path



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

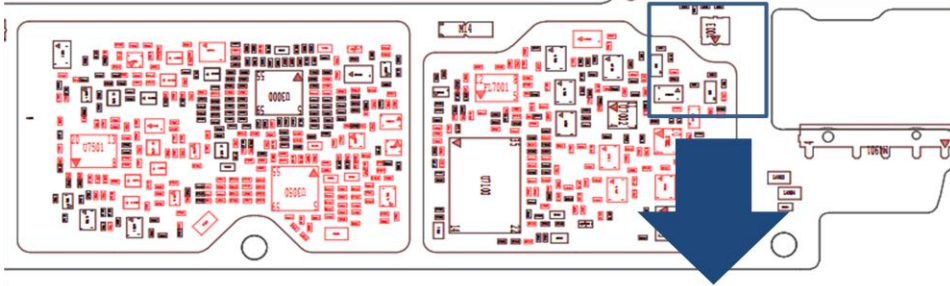
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Vertex RF Troubleshooting Guide

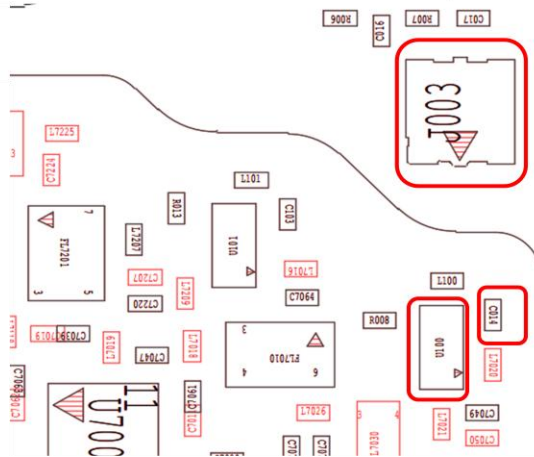
MODEL

Vertex

RF Connector and Coupler



Top Layer



WRITER

Vertex RF HW Development Team

DATE

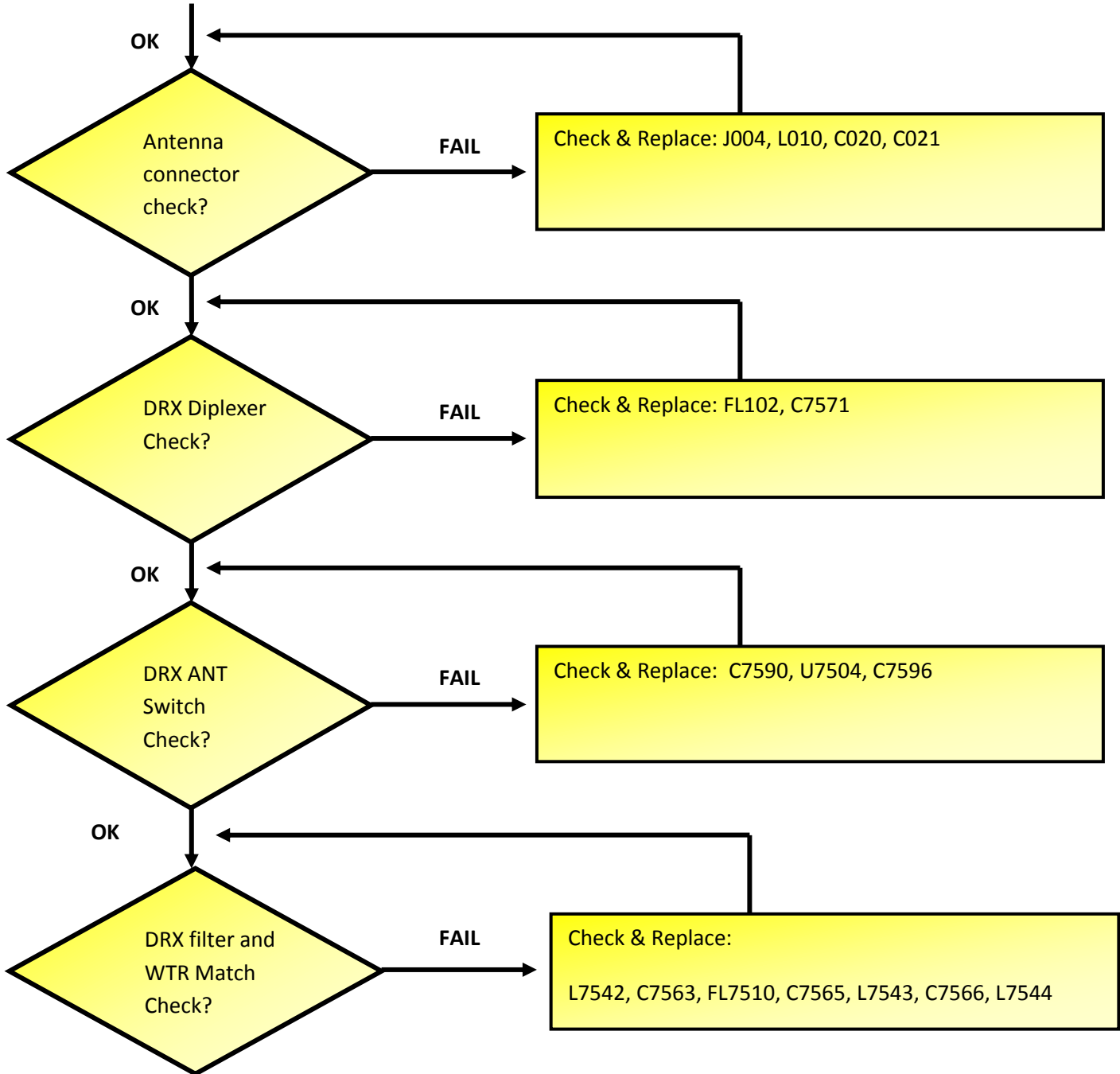
6/1/2016

WITNESS

DATE

<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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LTE B5, CDMA BC0, WCDMA B5 DRX (VZW SKU only)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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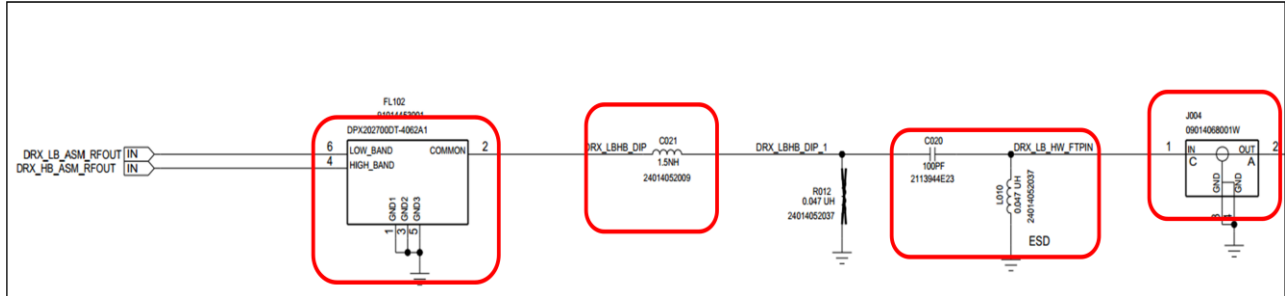
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Vertex RF Troubleshooting Guide

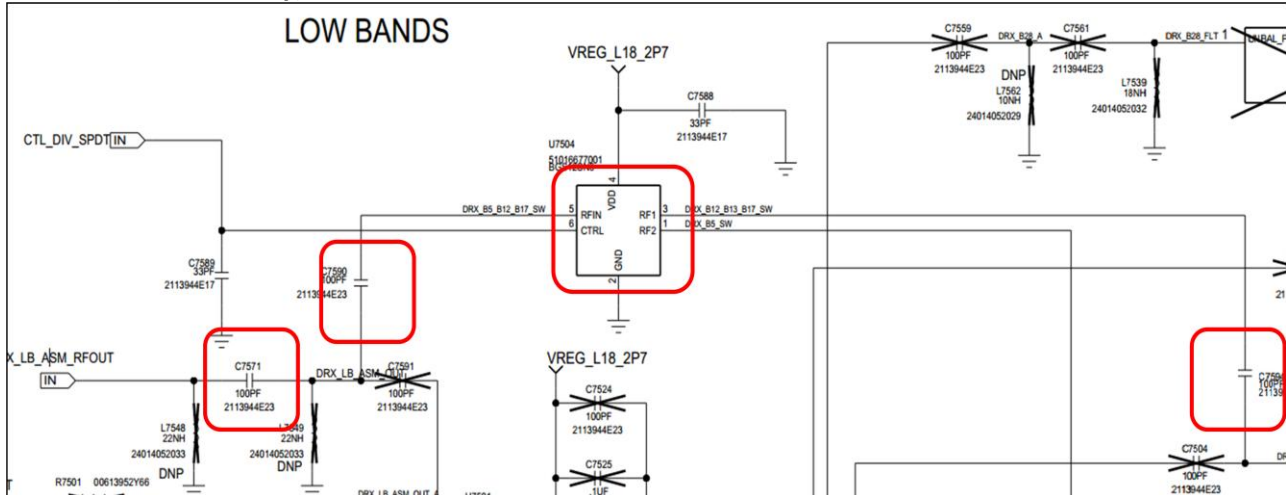
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Vertex

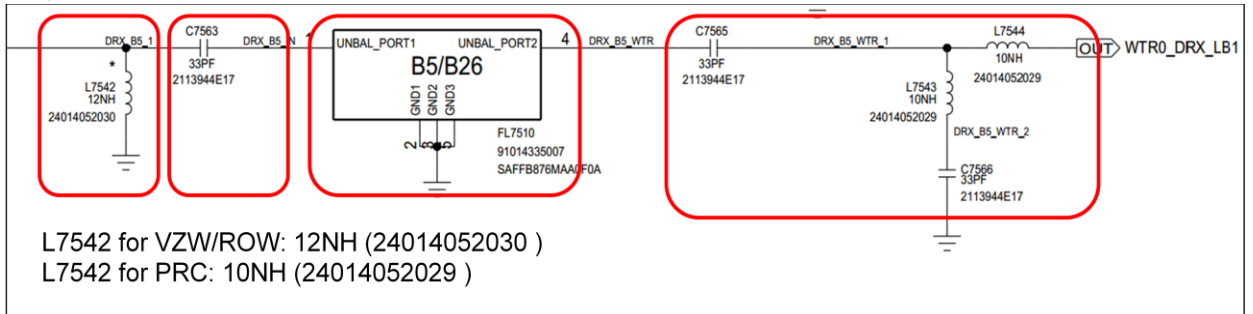
• DRX RF Connector and Diplexer:



• DRX ASM (VZW SKU only) :



• DRX B5/26 Filter and WTR match:



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

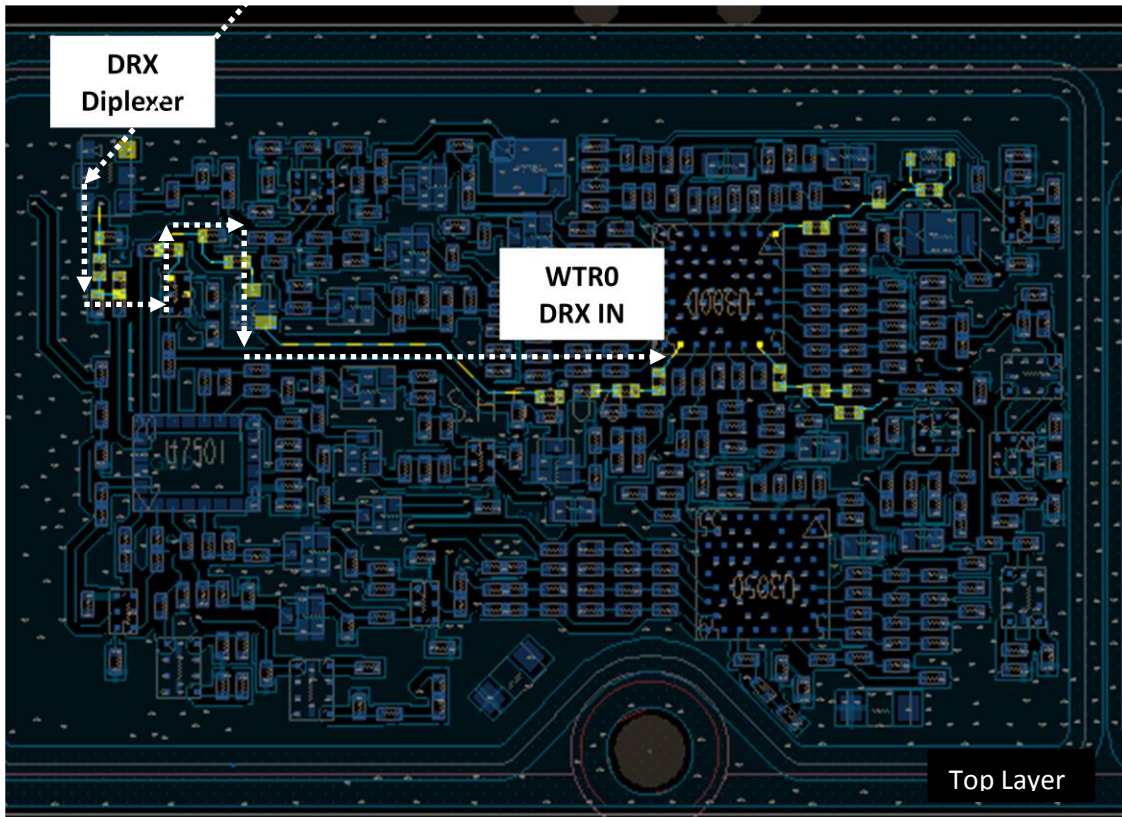
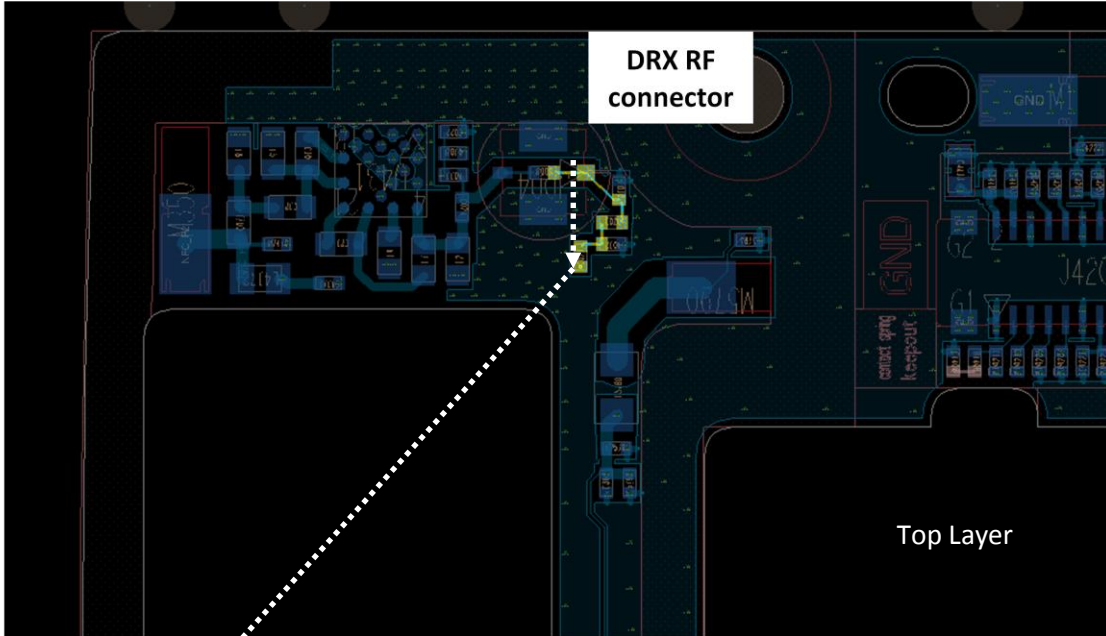
TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex

- LTE B5, CDMA BC0, WCDMA B5 DRX signal path (VZW SKU only)



WRITER

Vertex RF HW Development Team

DATE

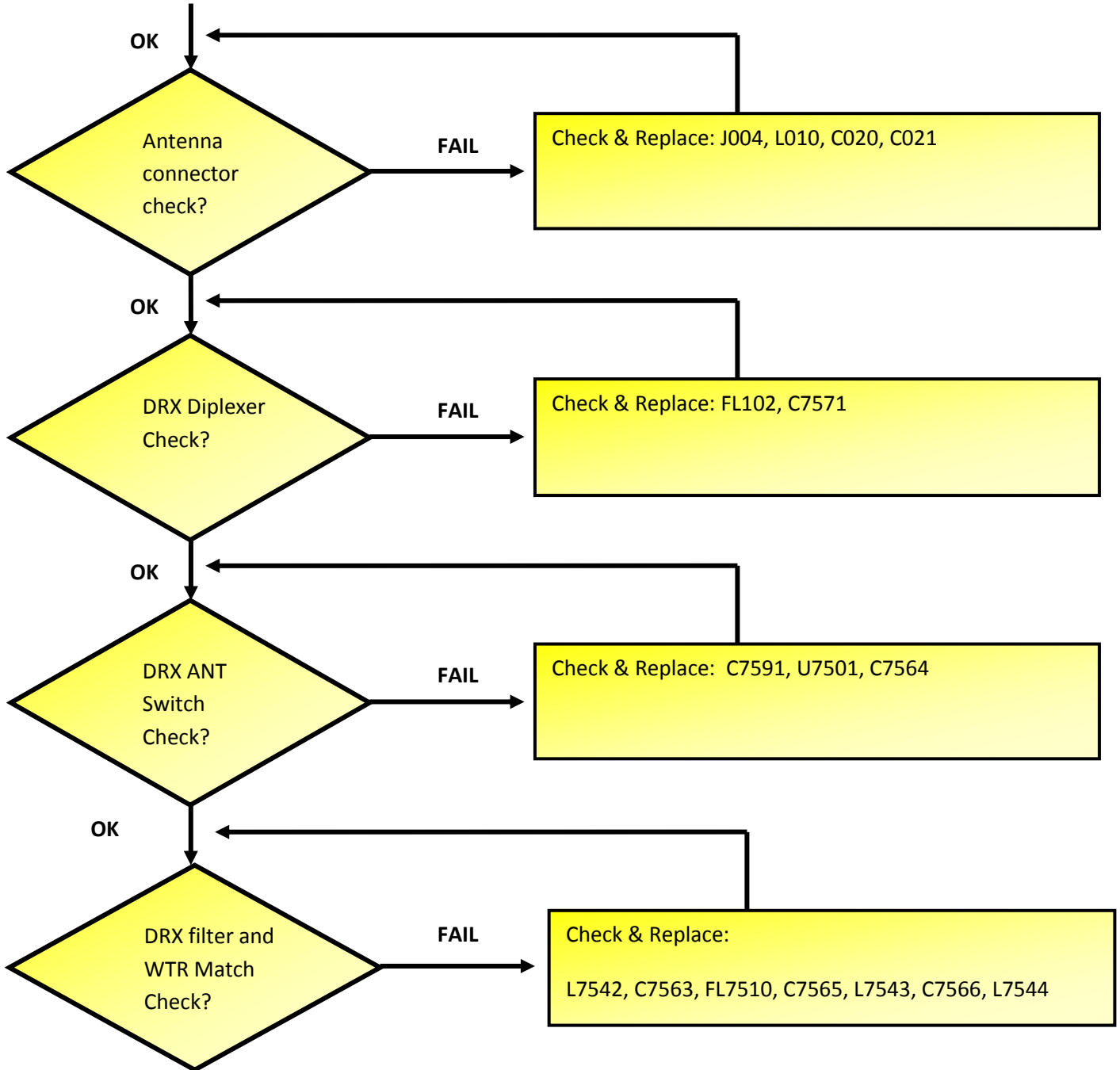
6/1/2016

WITNESS

DATE

<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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LTE B5/B19/26, CDMA BC0, WCDMA B5 DRX (ROW/CHINA SKU)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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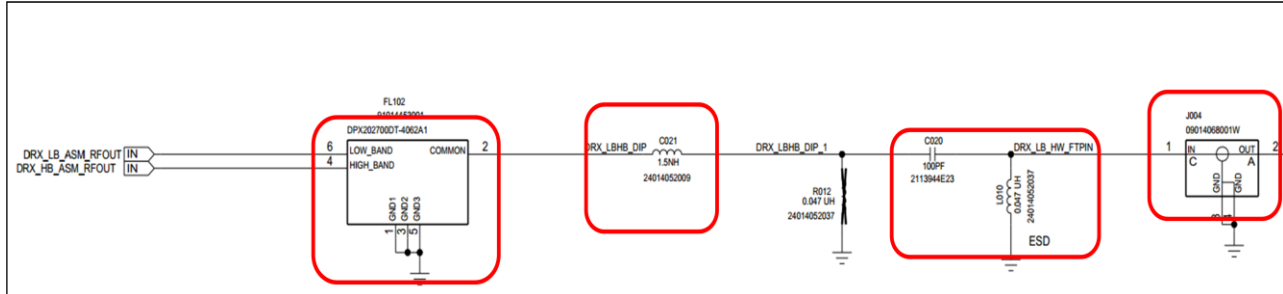
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Vertex RF Troubleshooting Guide

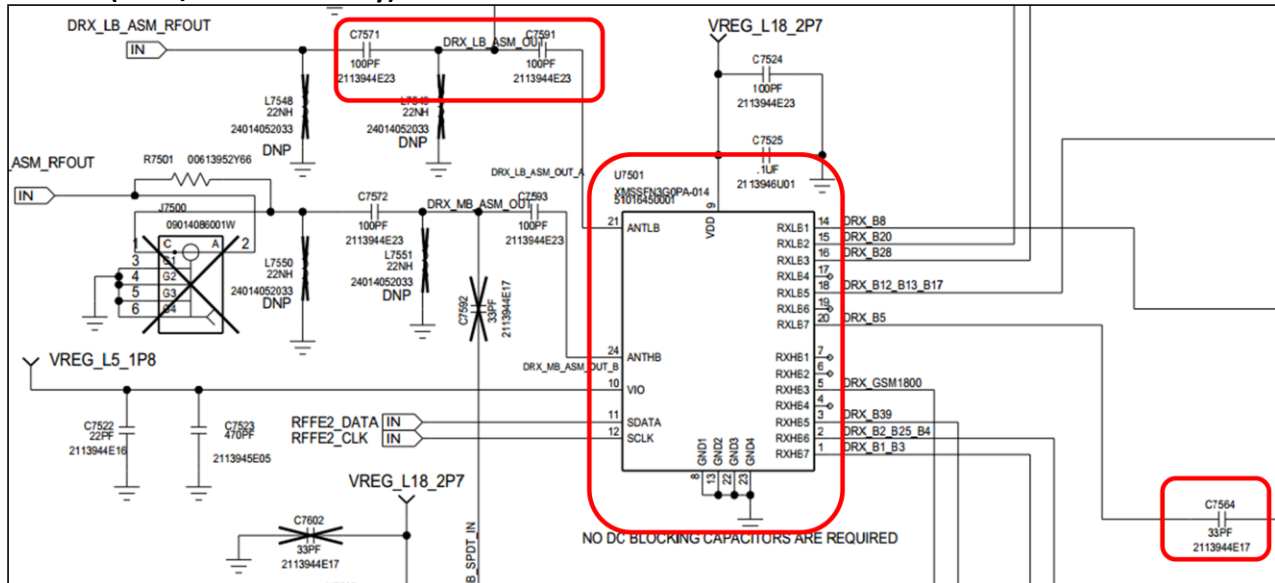
MODEL

Vertex

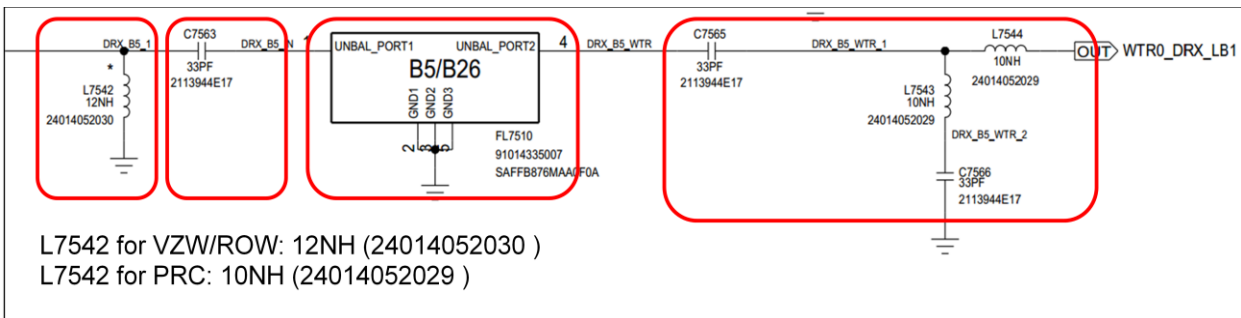
• DRX RF Connector and Diplexer:



• DRX ASM (ROW/CHINA SKU only):



• DRX Filter and WTR match:



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

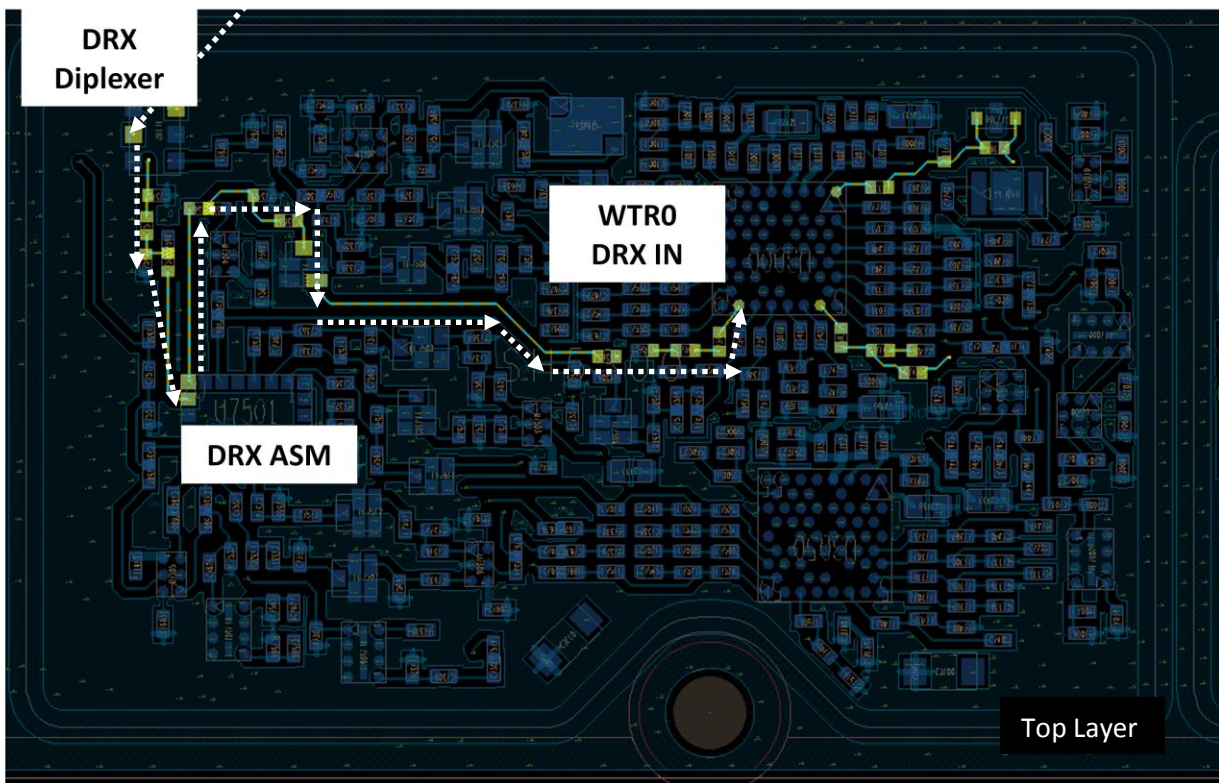
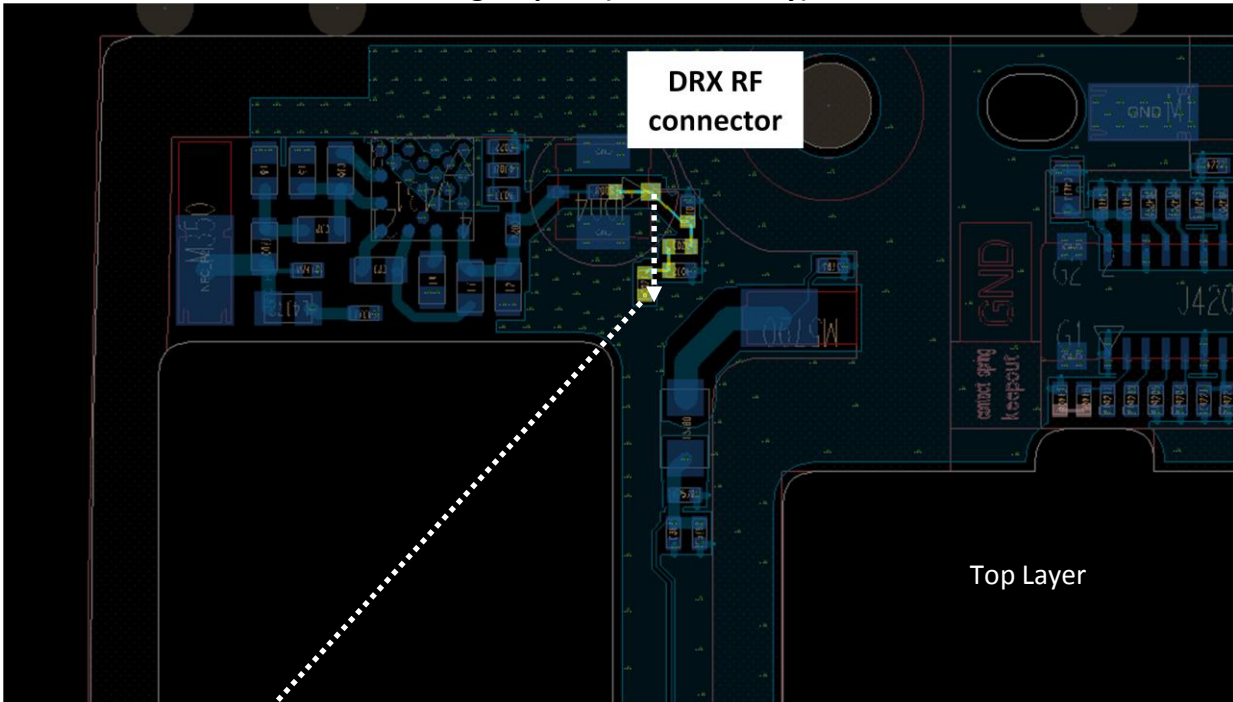
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Vertex RF Troubleshooting Guide

MODEL

Vertex

- LTE B5, CDMA BC0, WCDMA B5 DRX signal path (VZW SKU only)



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

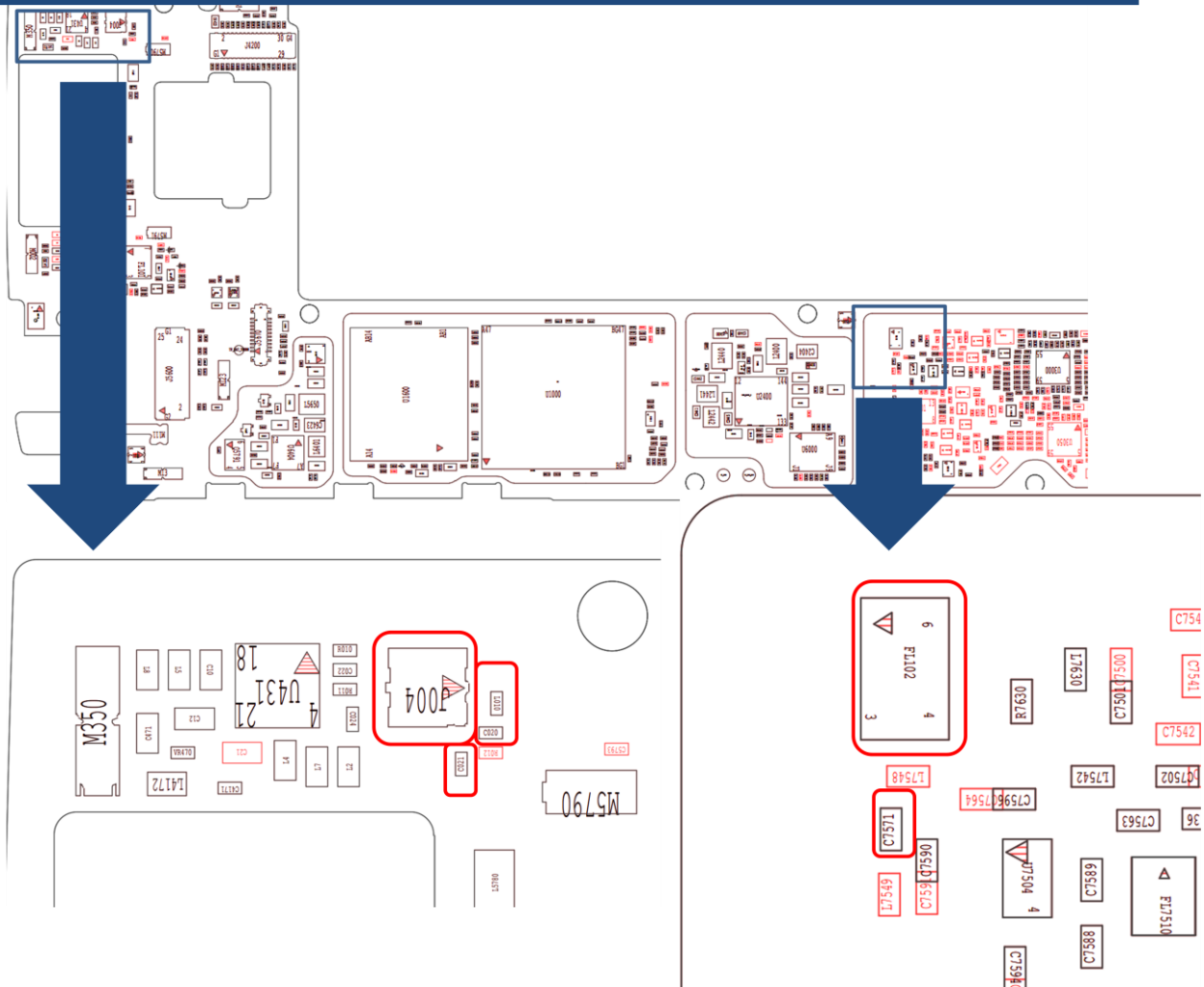
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Vertex RF Troubleshooting Guide

MODEL

Vertex

DRX RF connector and Diplexer



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

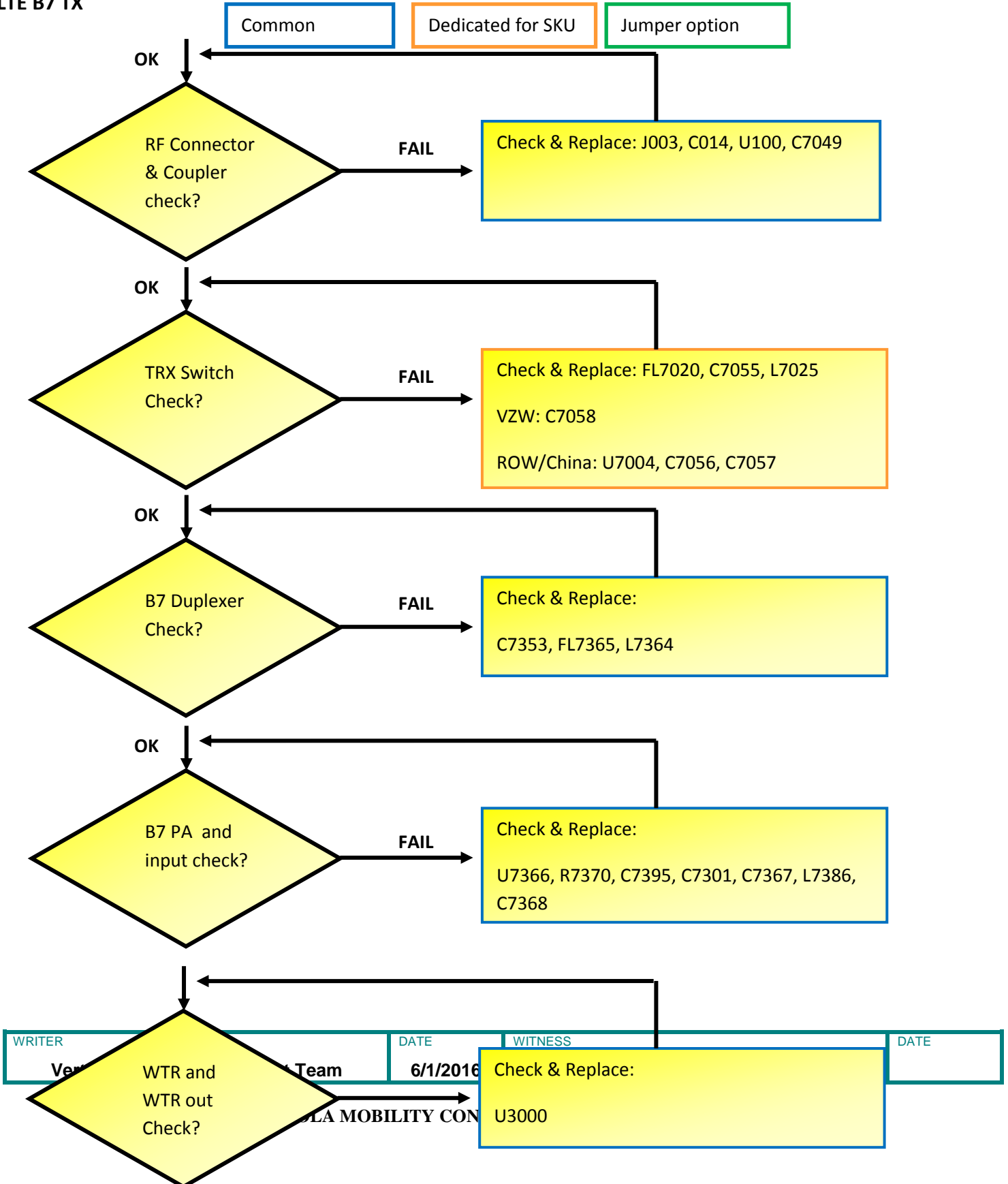
WITNESS

DATE

<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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LTE B7 TRX

LTE B7 TX



<p>WRITER</p> <p>Ver... Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p> <p>Check & Replace:</p>	<p>DATE</p>
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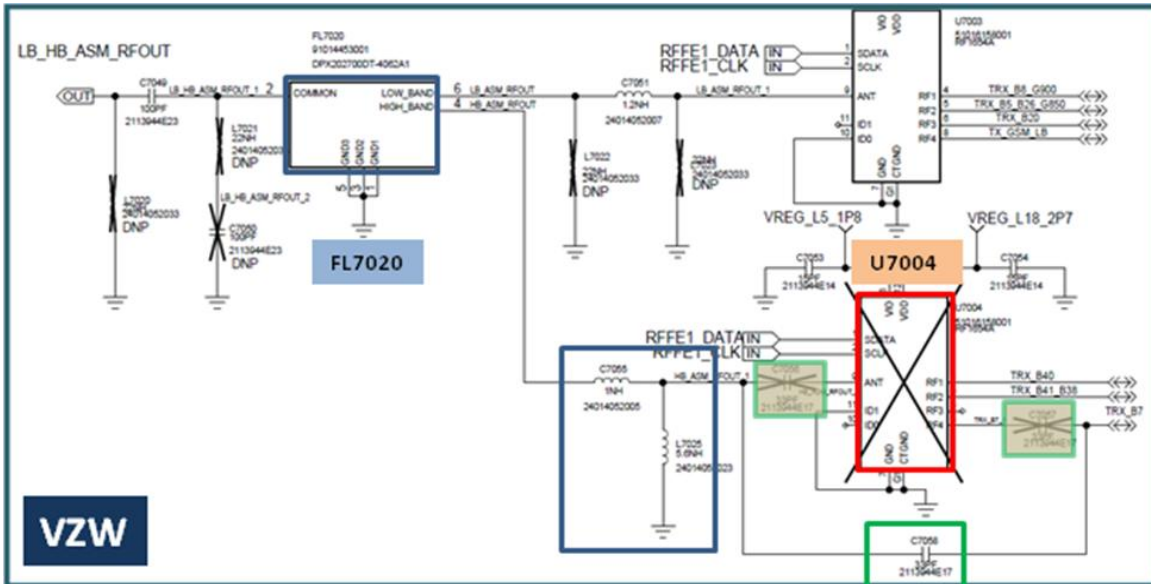
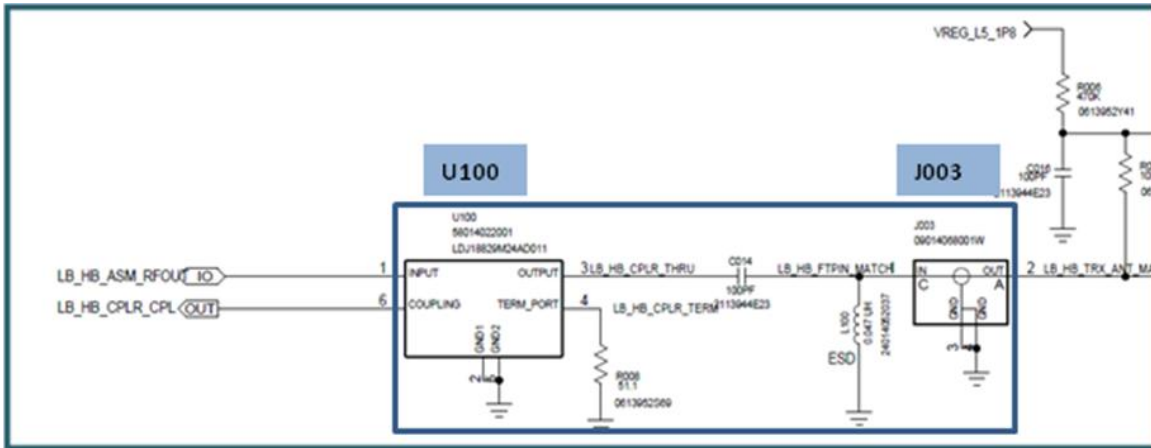
TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex

B7 TX Schematic



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

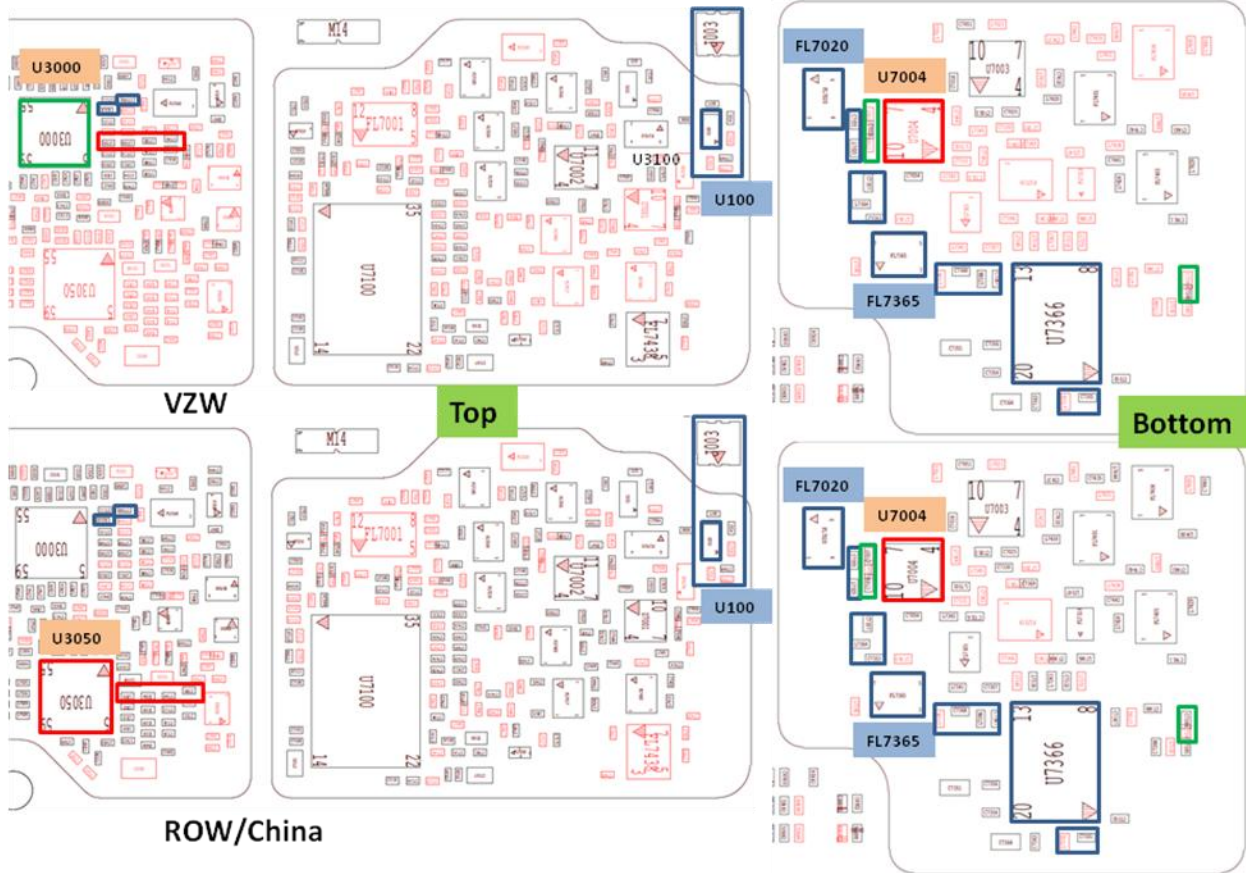
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Vertex RF Troubleshooting Guide

MODEL

Vertex

B7 TX Layout



WRITER

Vertex RF HW Development Team

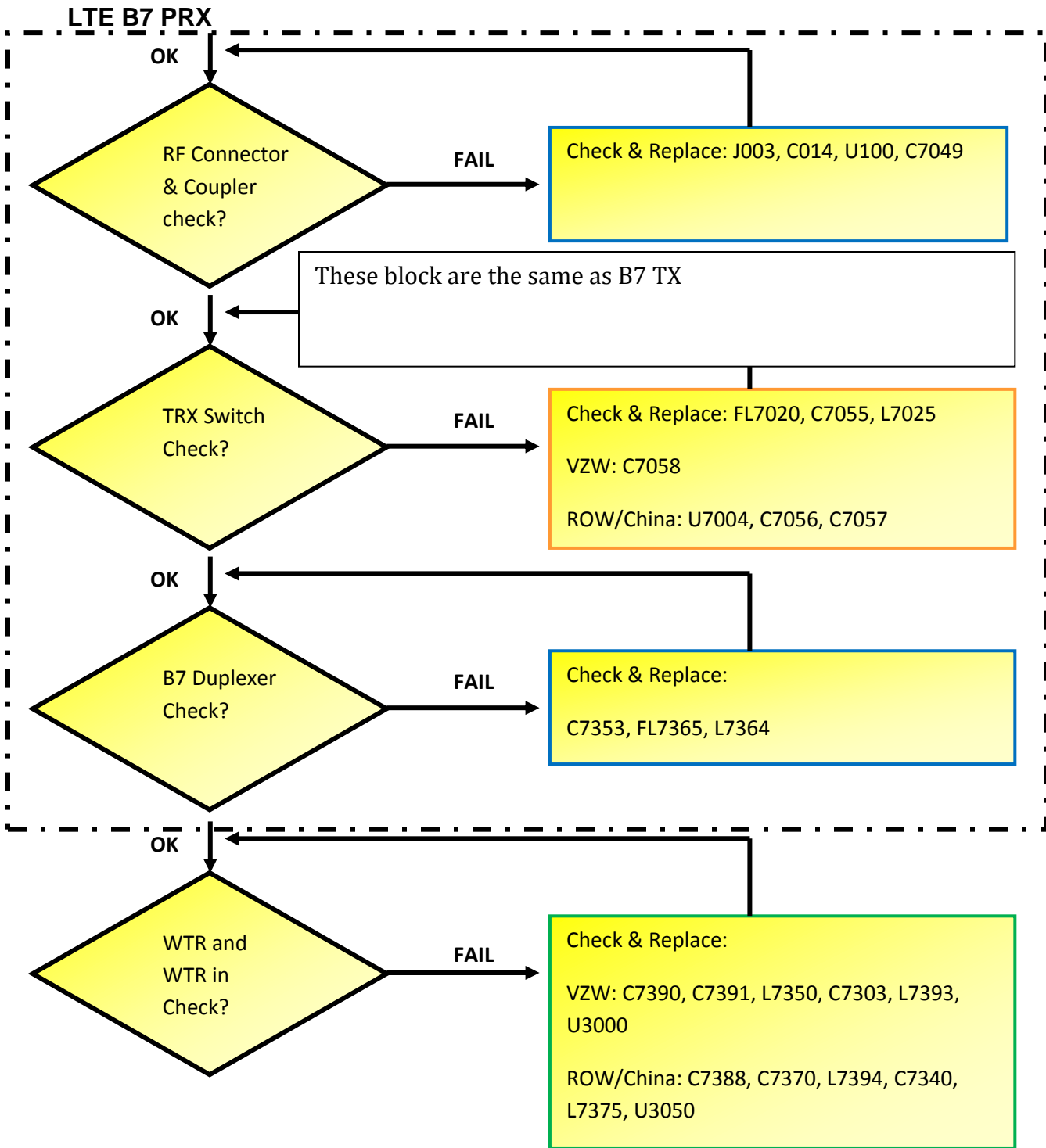
DATE

6/1/2016

WITNESS

DATE

TITLE Vertex RF Troubleshooting Guide	MODEL Vertex
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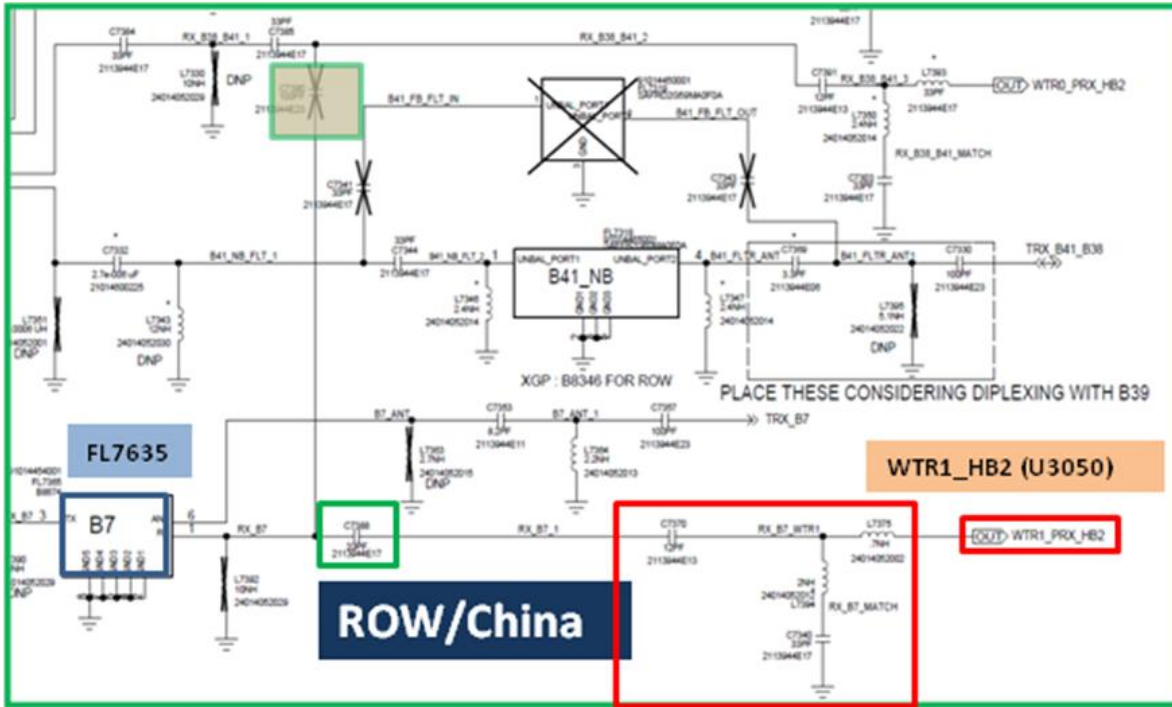
WRITER Vertex RF HW Development Team	DATE 6/1/2016	WITNESS	DATE
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

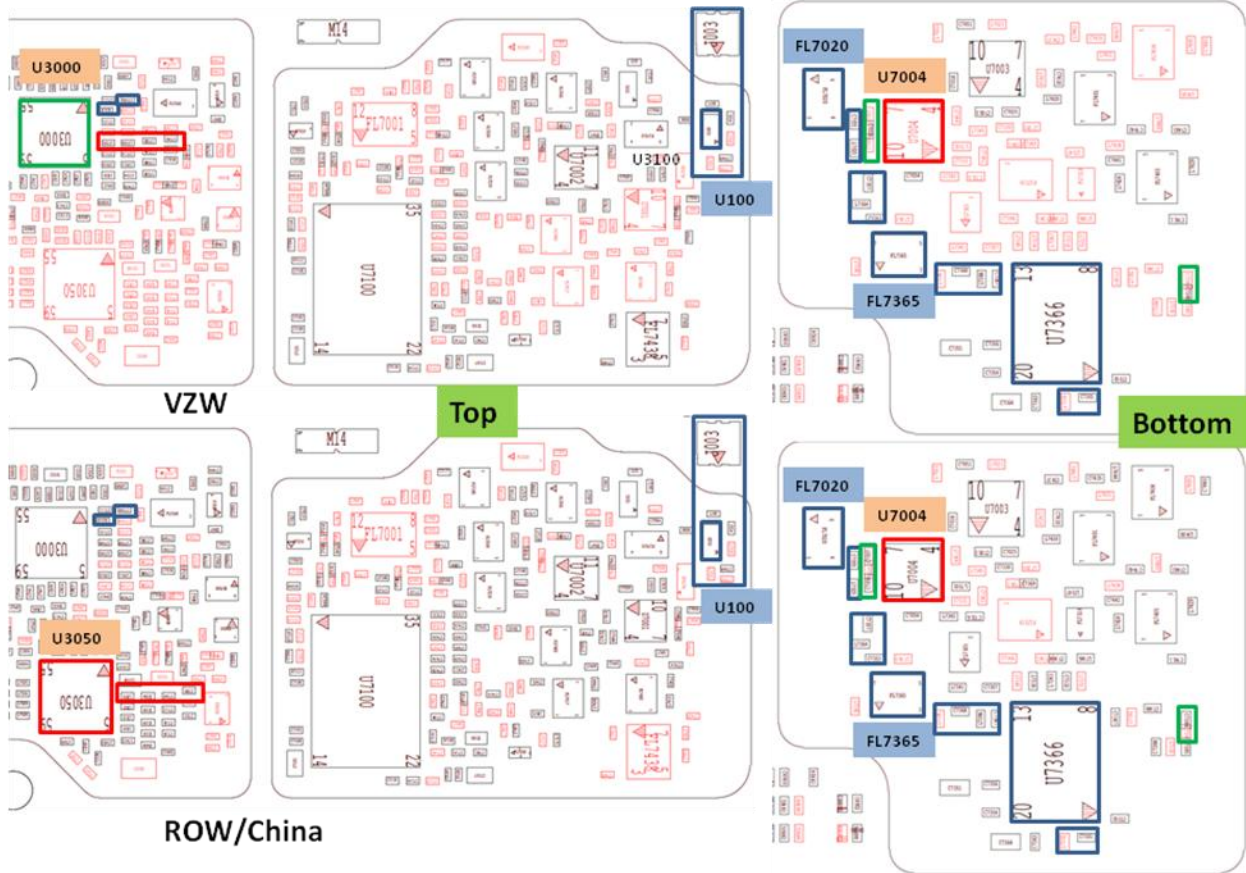
TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex

B7 PRX Layout



WRITER

Vertex RF HW Development Team

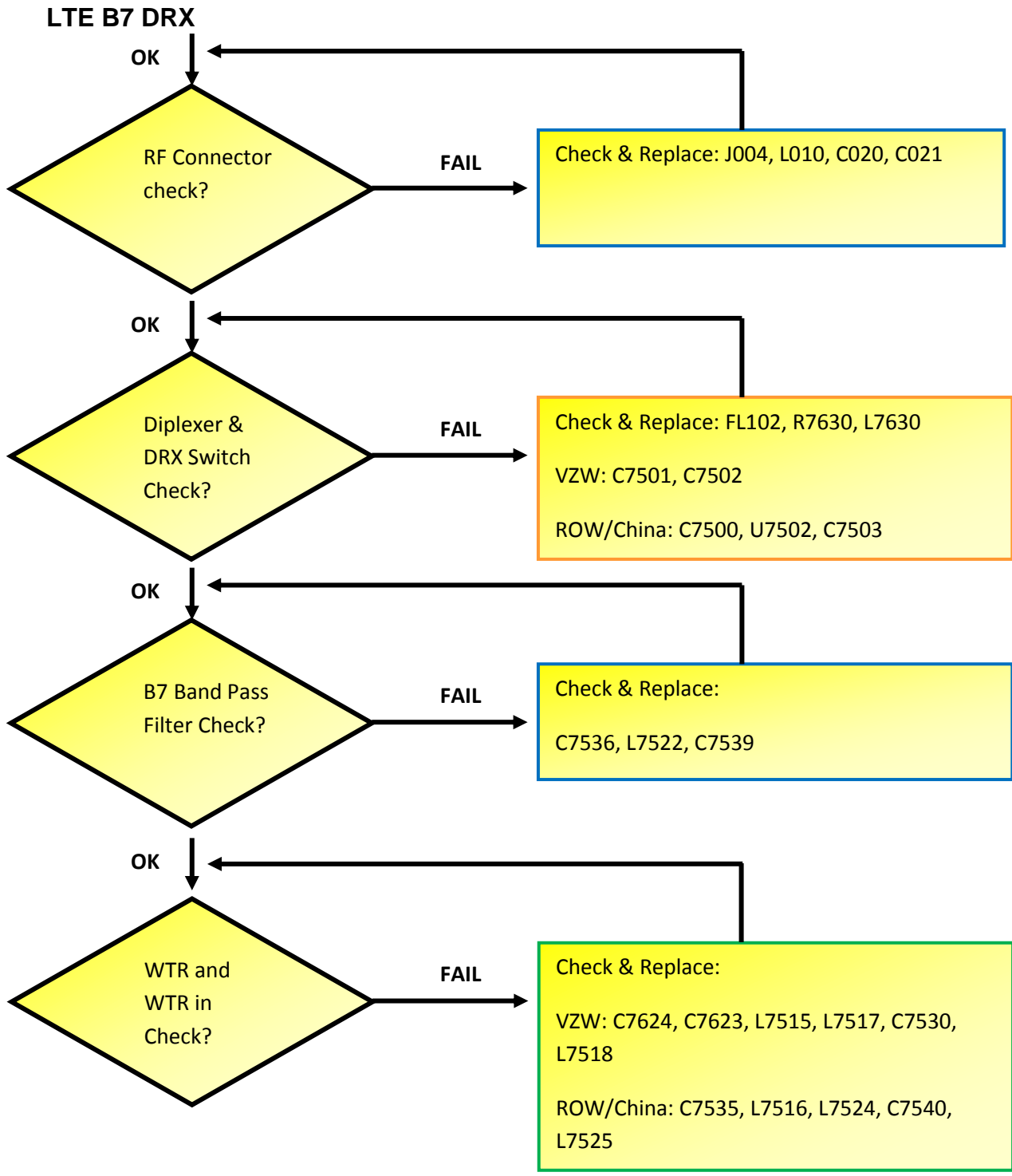
DATE

6/1/2016

WITNESS

DATE

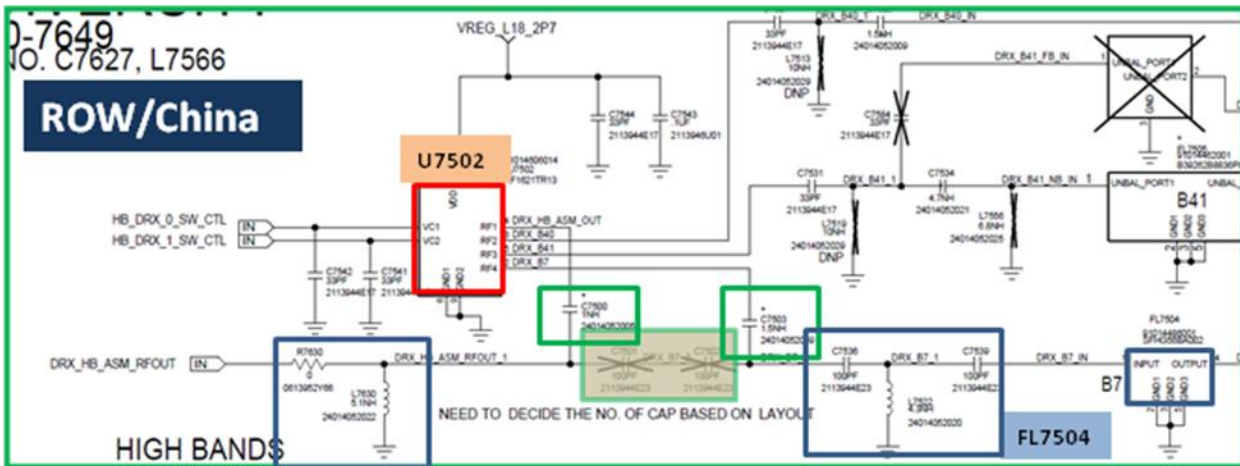
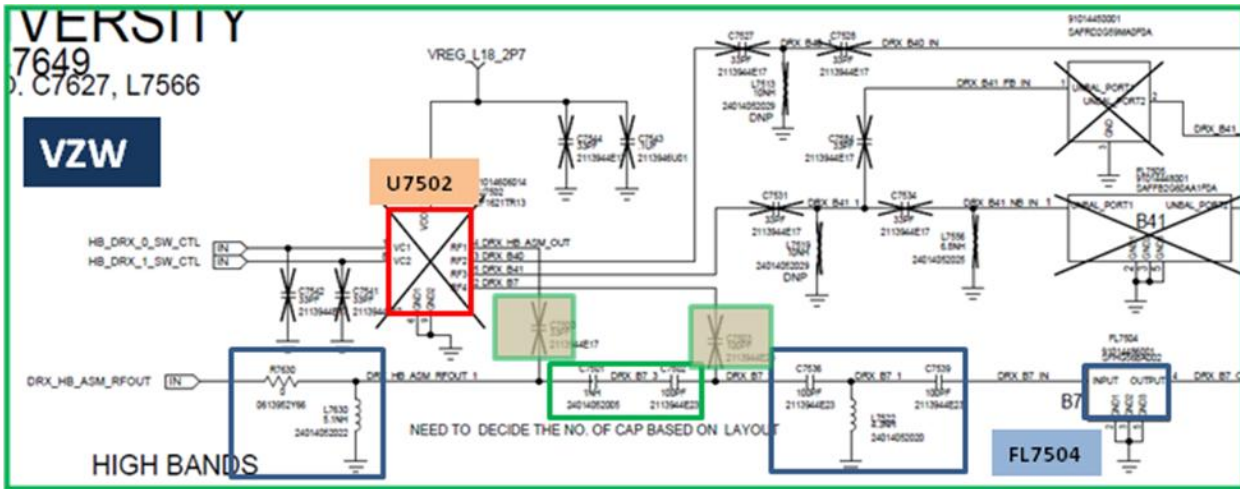
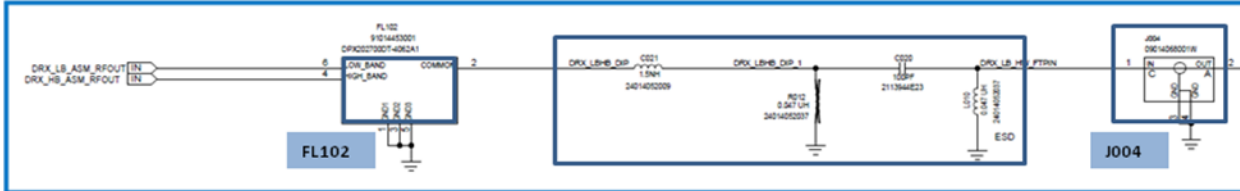
TITLE Vertex RF Troubleshooting Guide	MODEL Vertex
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WRITER Vertex RF HW Development Team	DATE 6/1/2016	WITNESS	DATE
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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B7 DRX Schematic



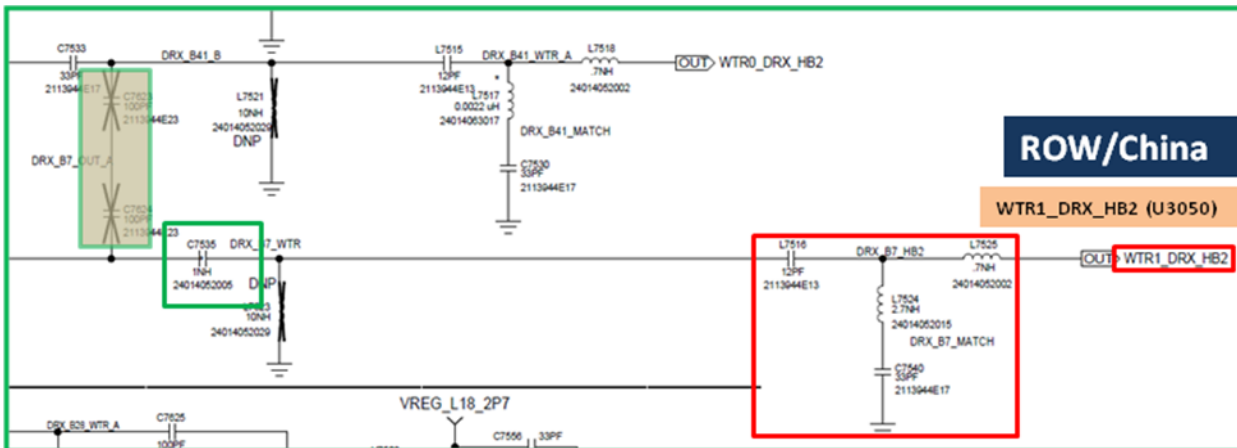
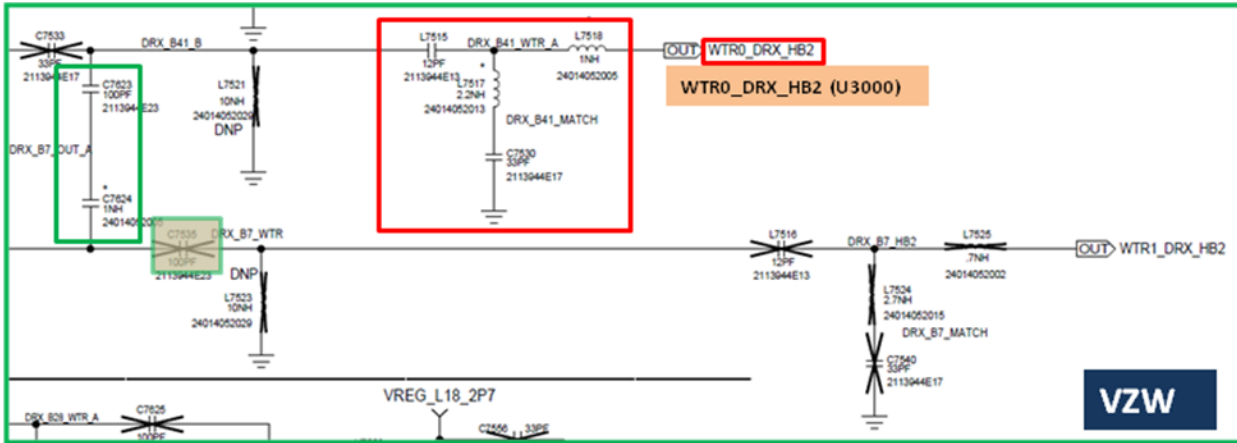
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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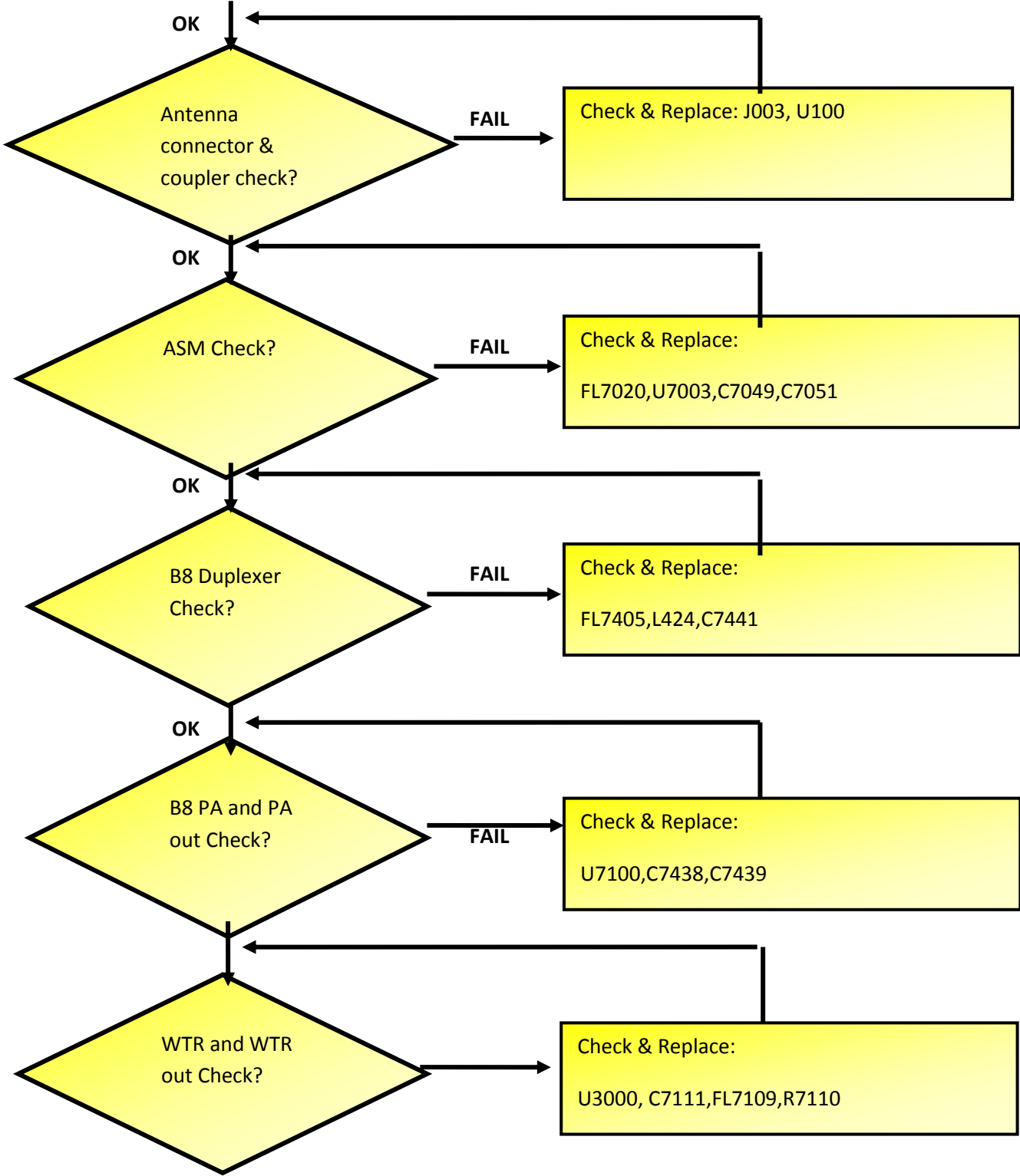
B7 DRX Layout



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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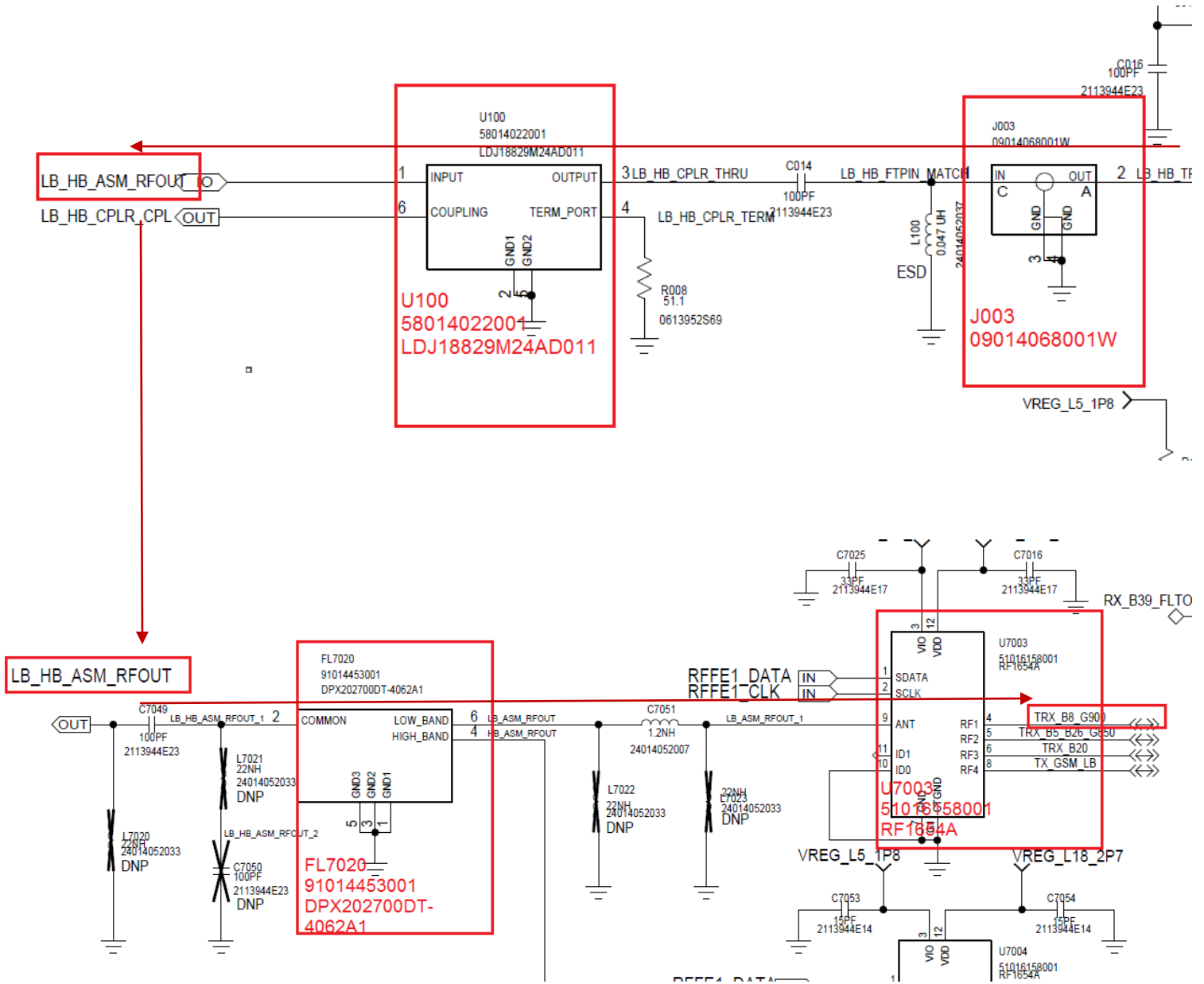
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LTE_B8/WCDMA_B8 TX (ROW/China)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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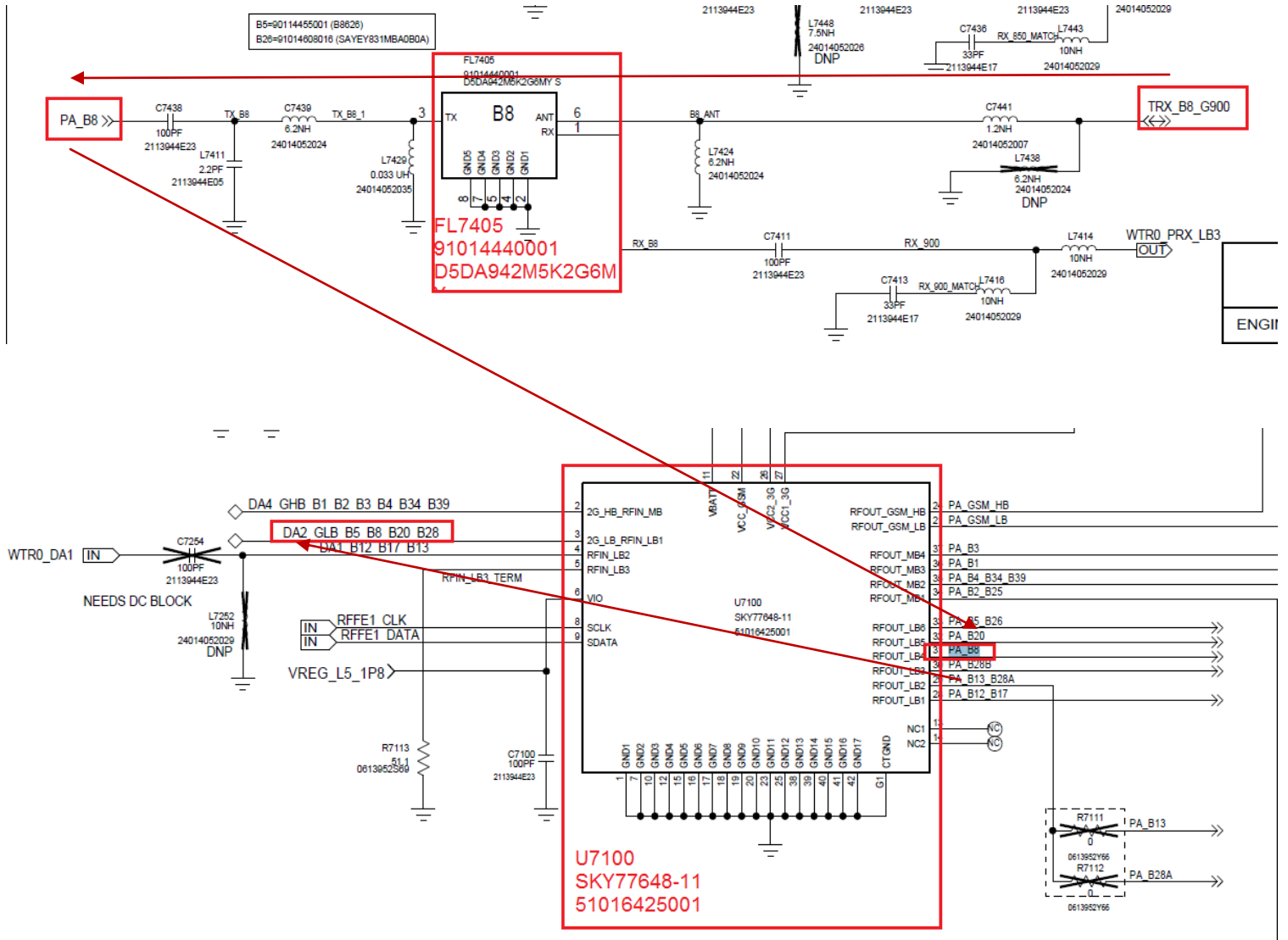
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

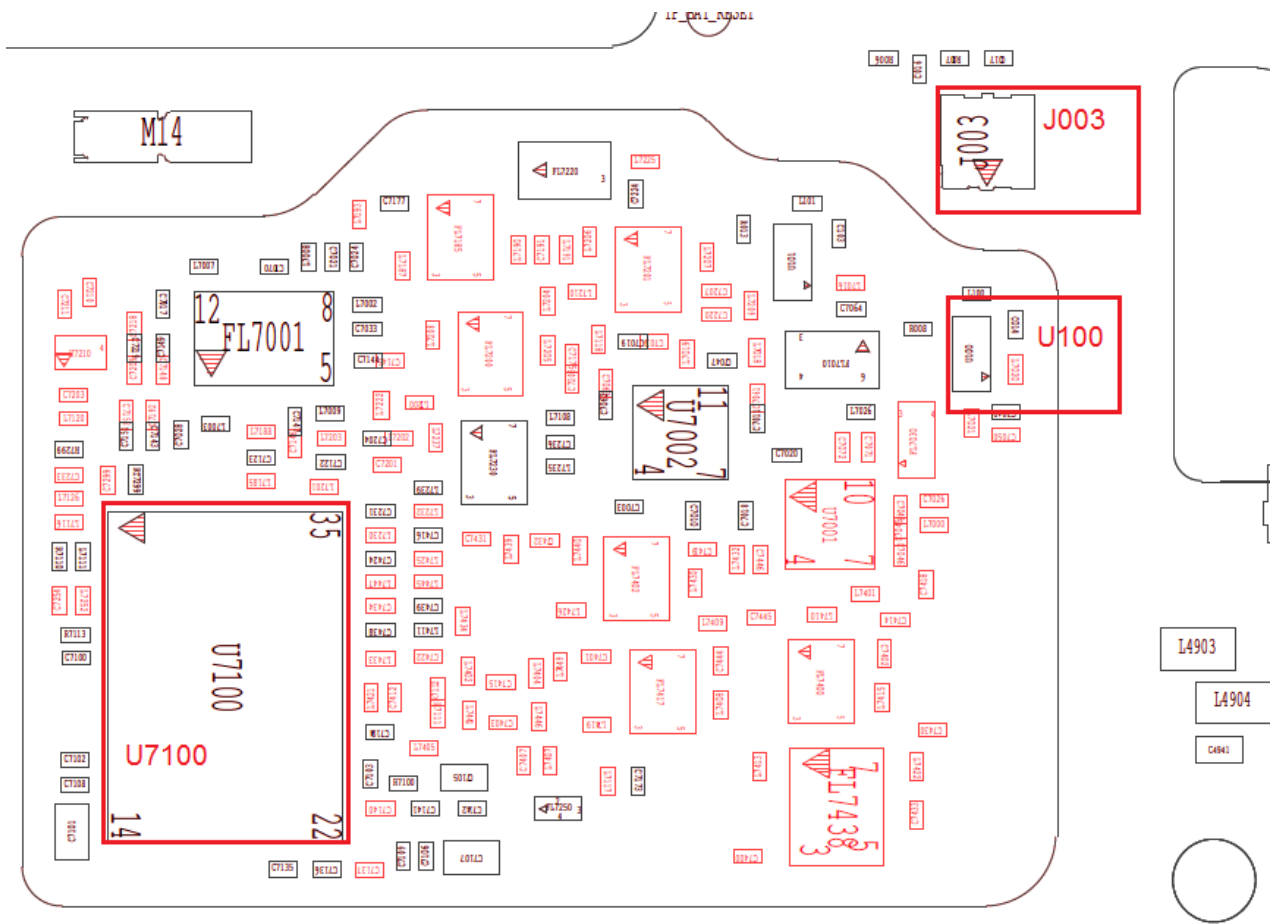
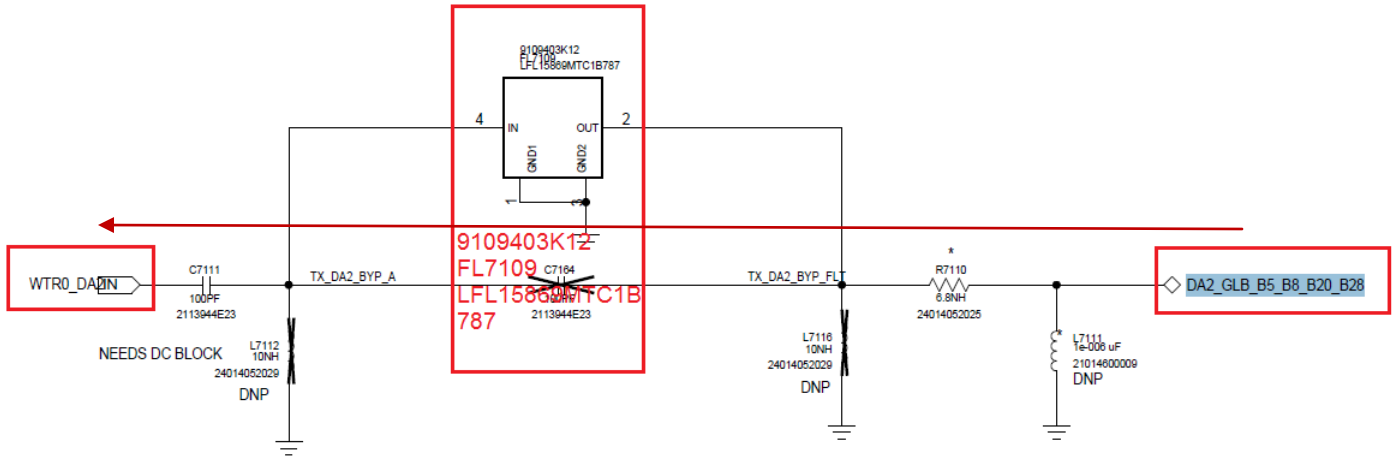
MODEL

Vertex

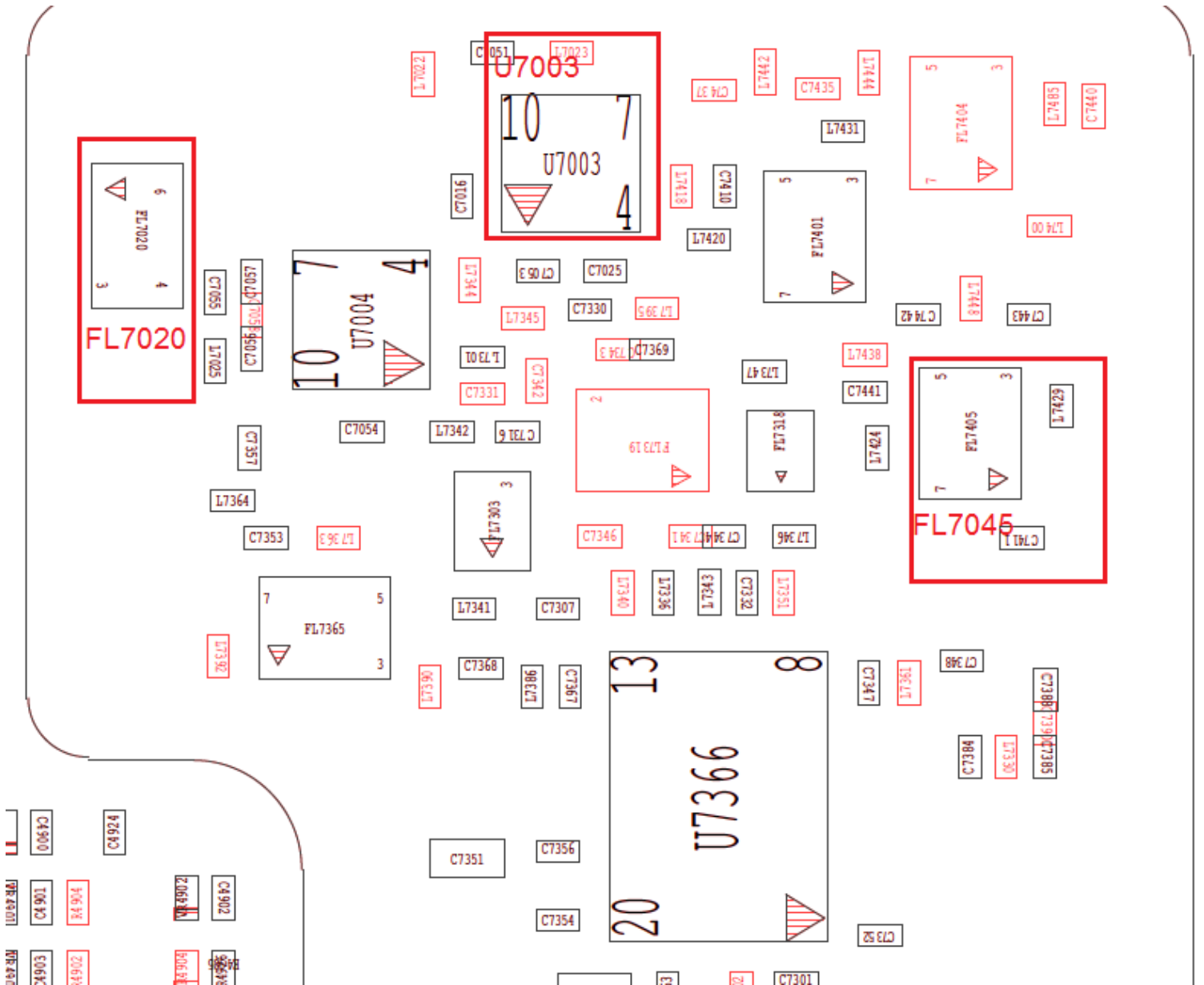


WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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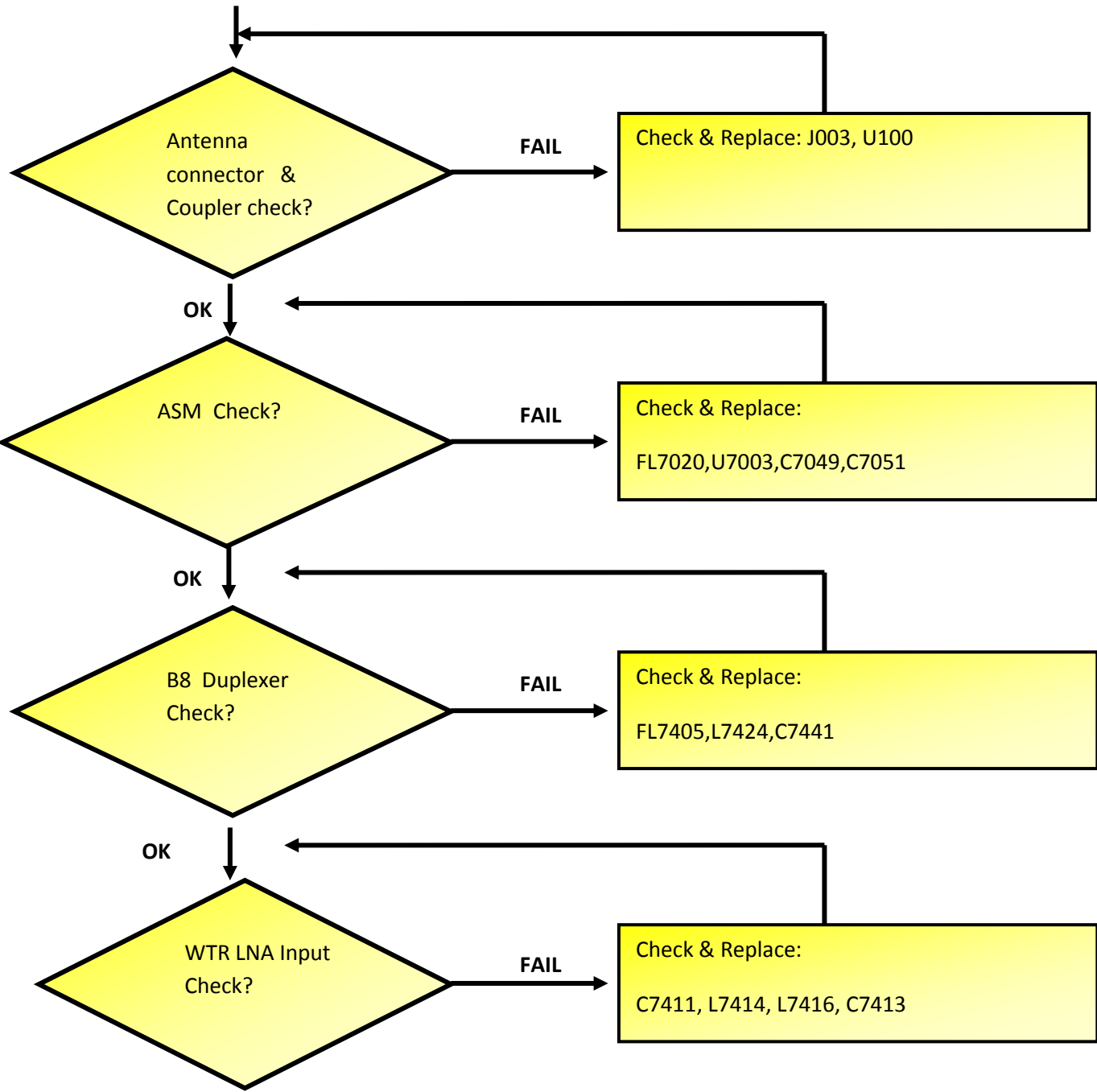
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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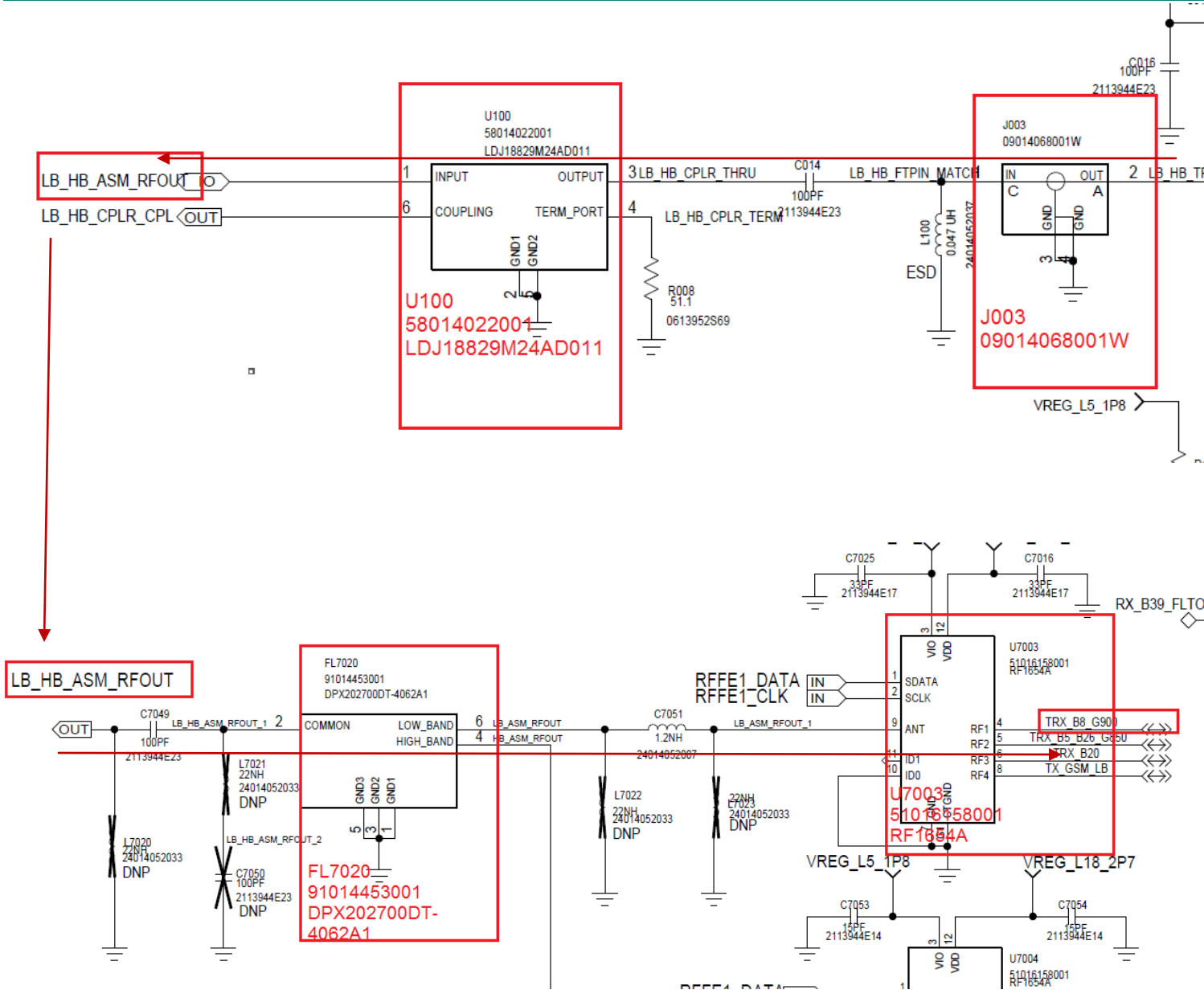
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LTE_B8/WCDMA_B8 PRX (ROW/China)



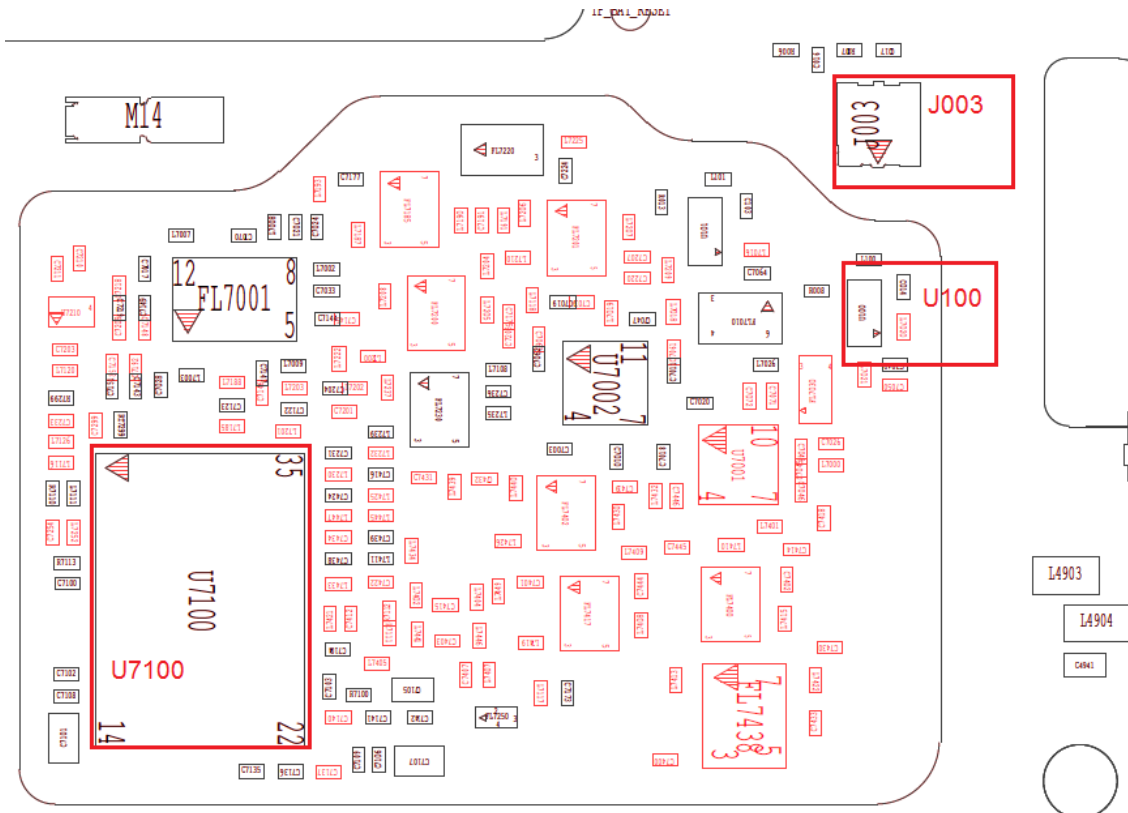
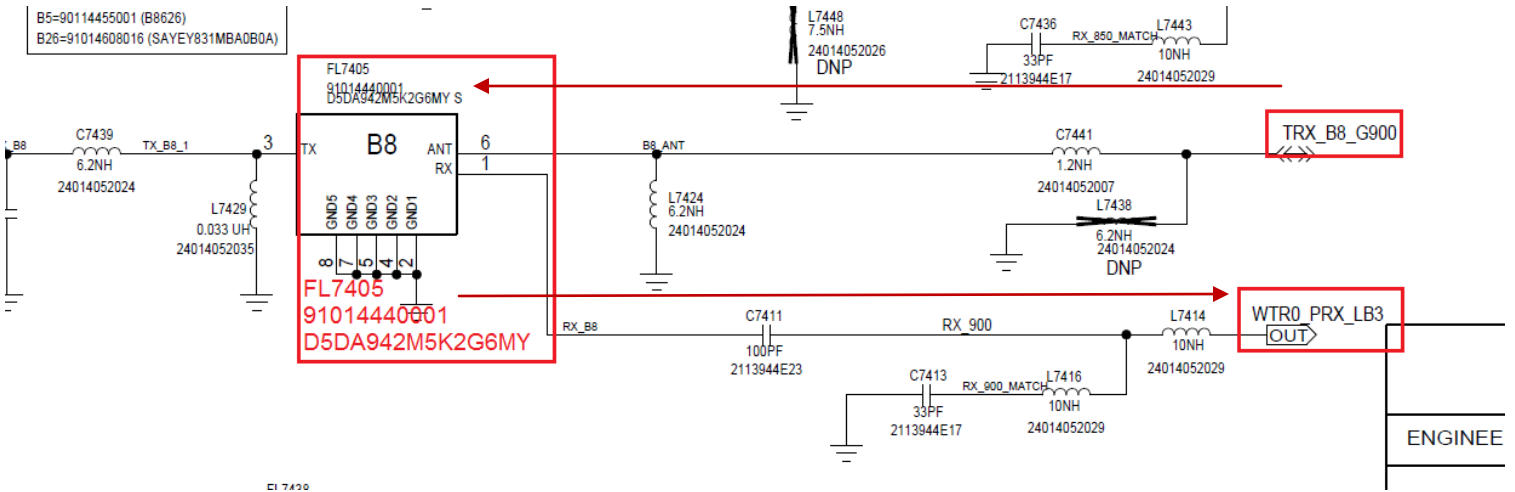
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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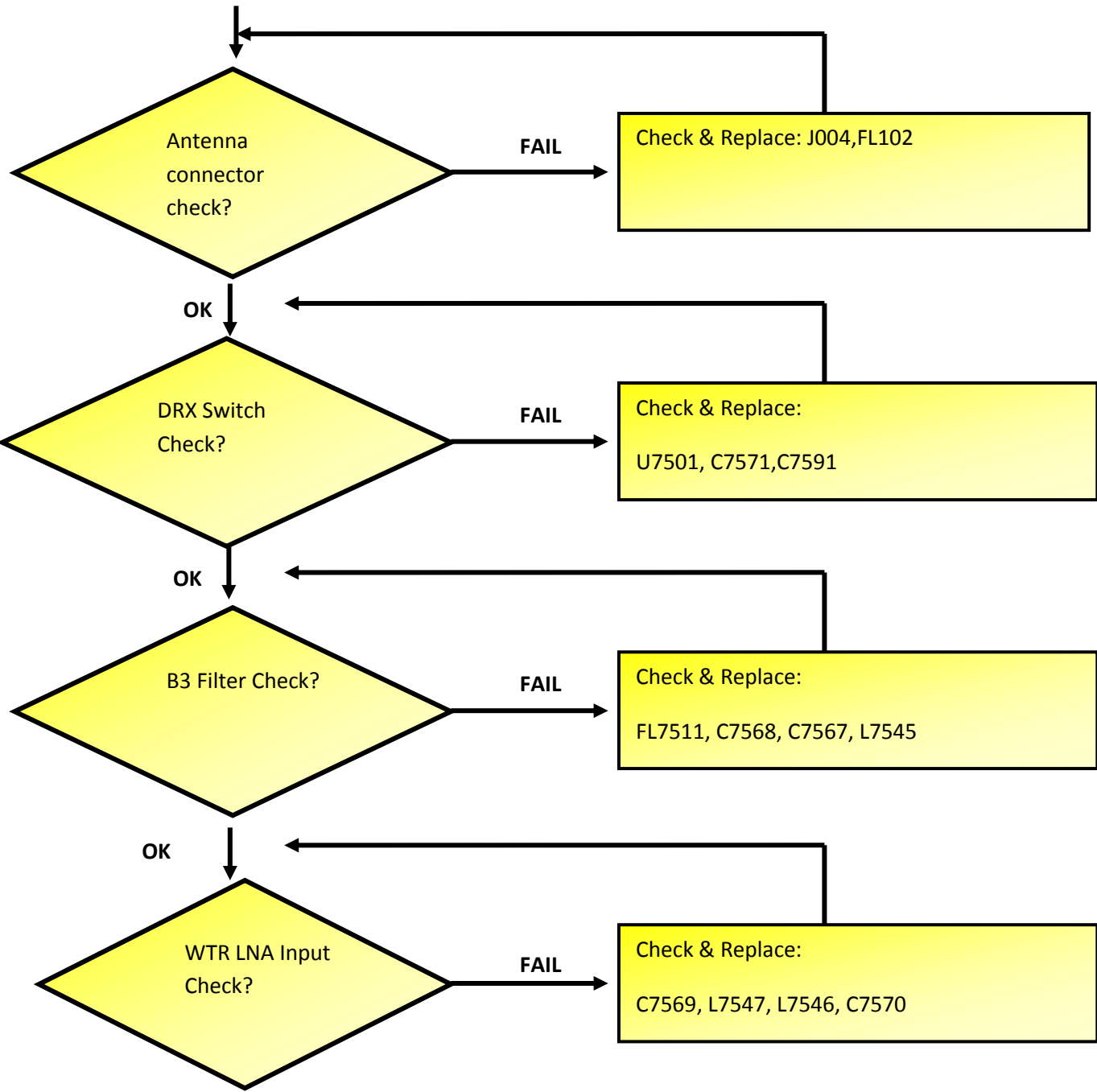
<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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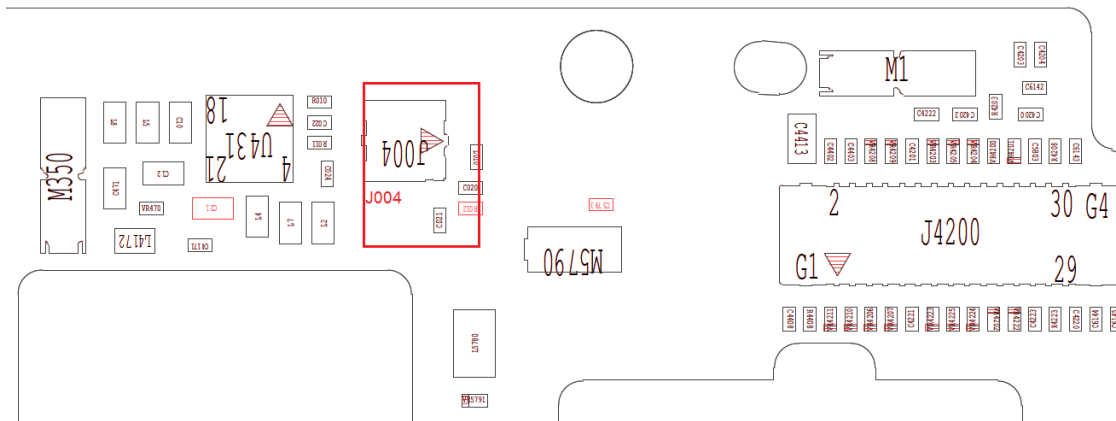
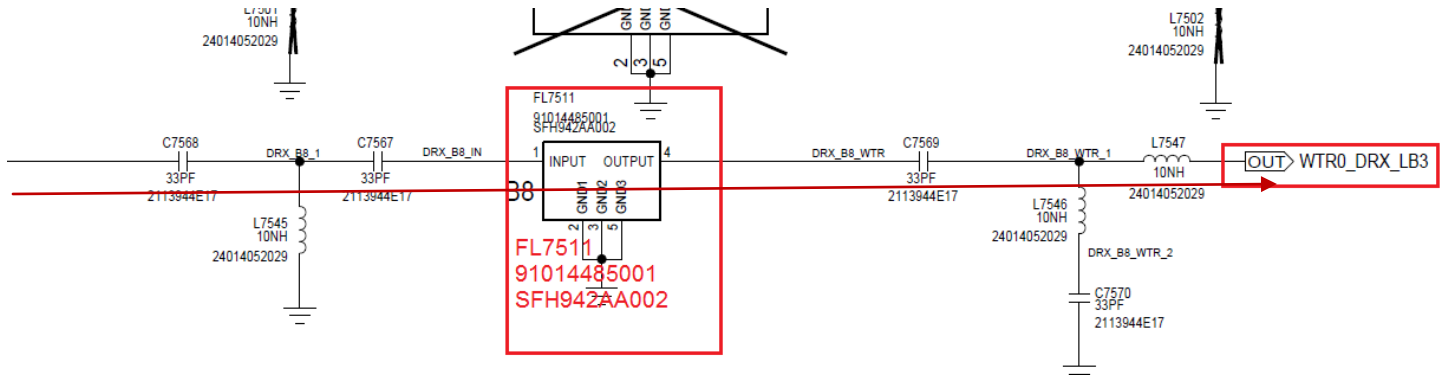
<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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LTE_B8/WCDMA_B8 DRX (ROW/China)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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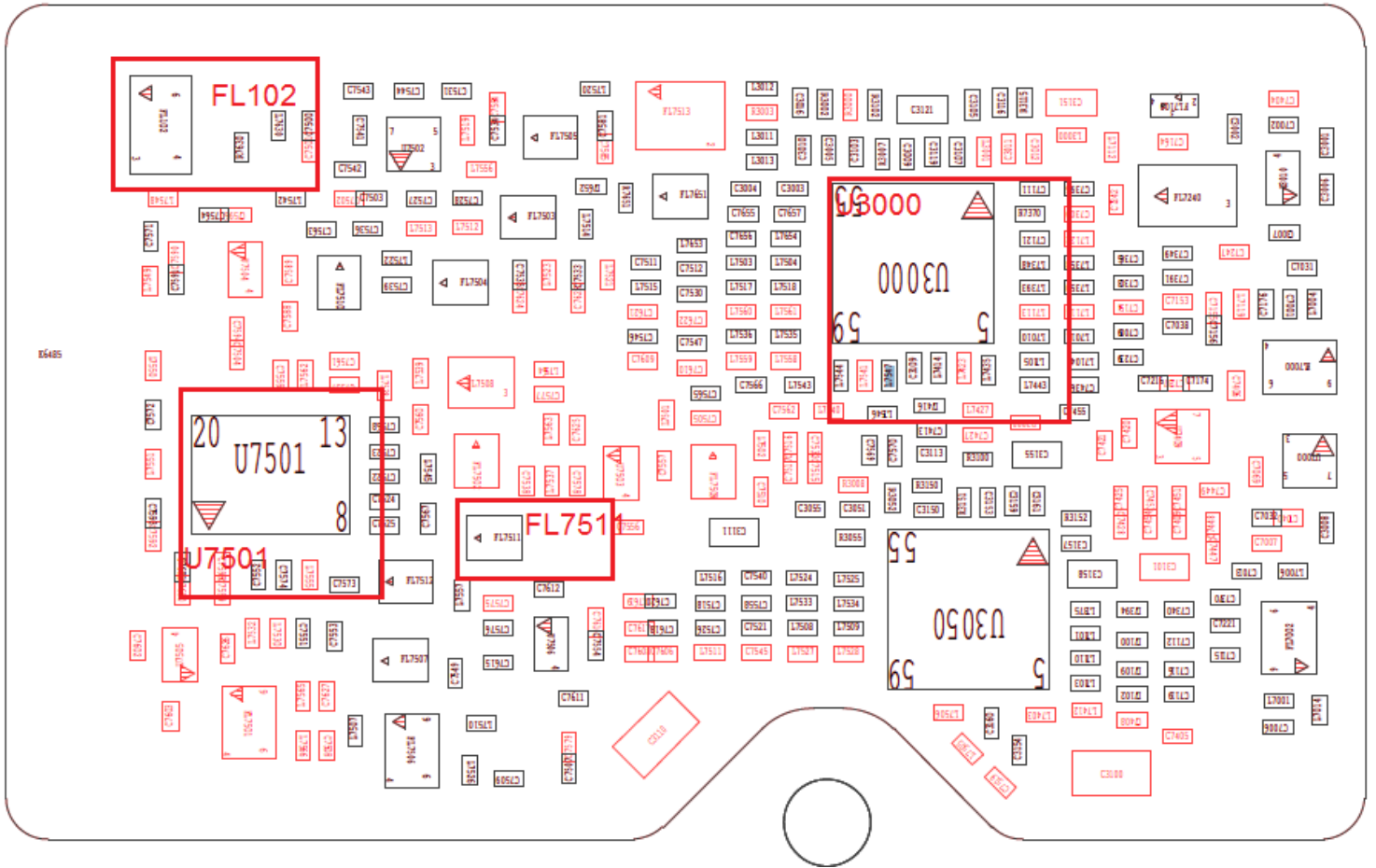
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

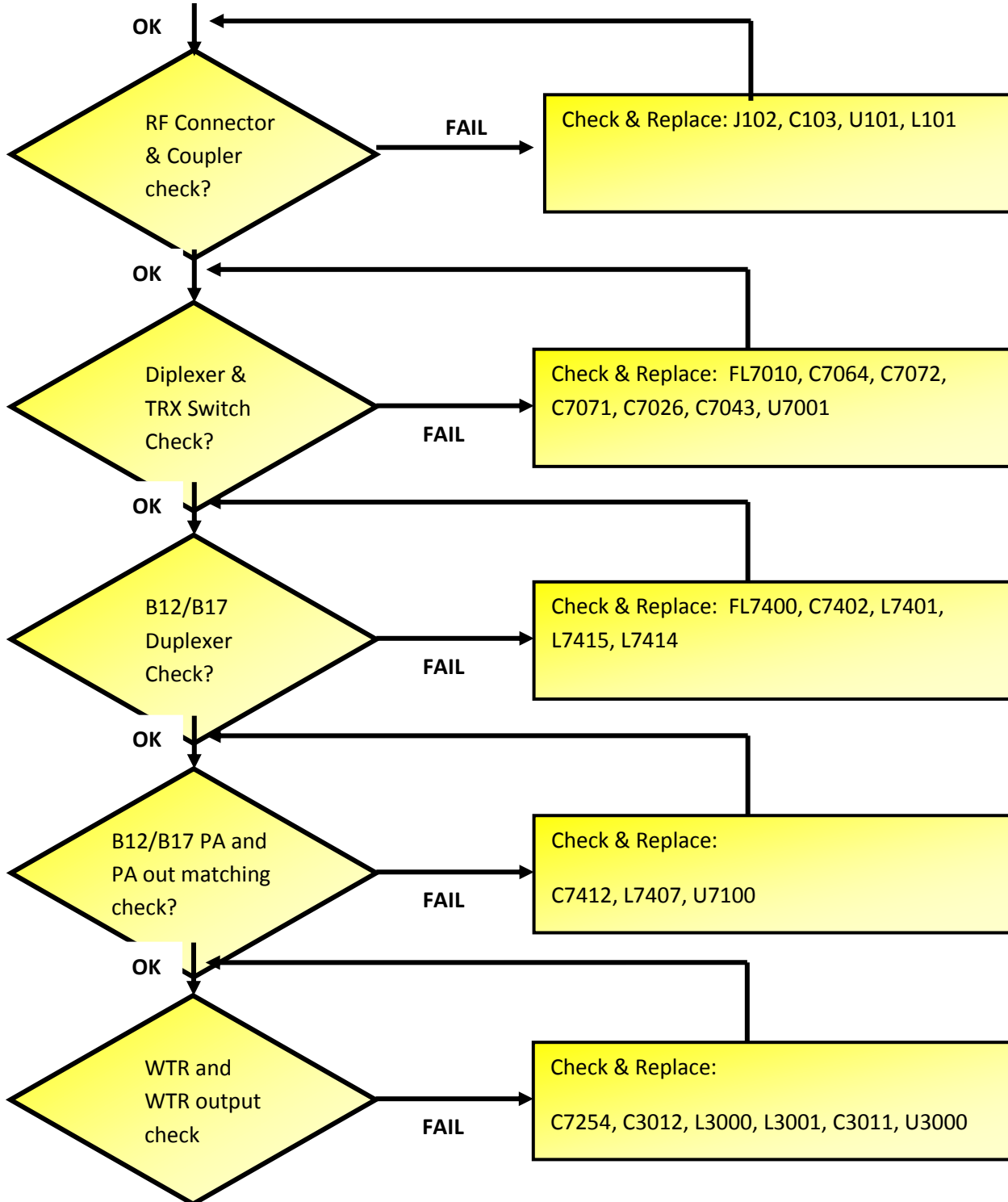
WITNESS

DATE

<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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LTE B12 & B17 TRX(ROW)

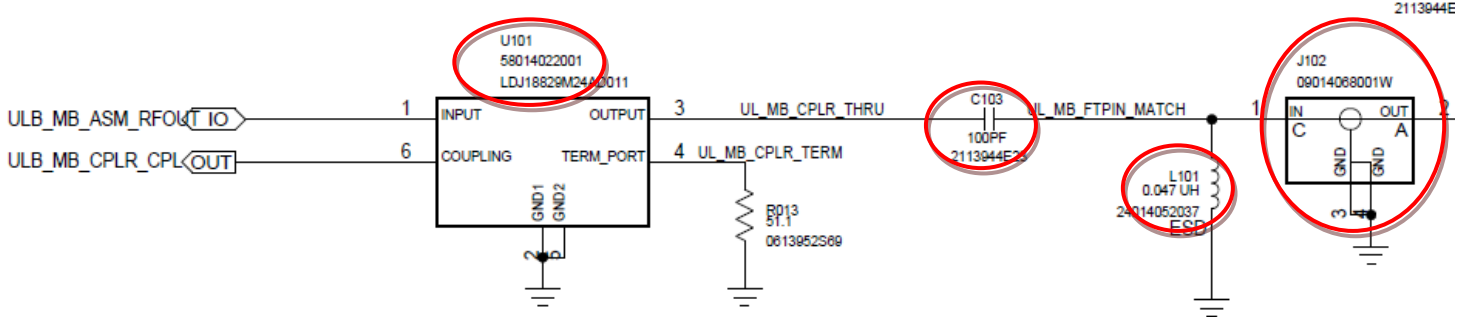
LTE B12 & B17 TX (ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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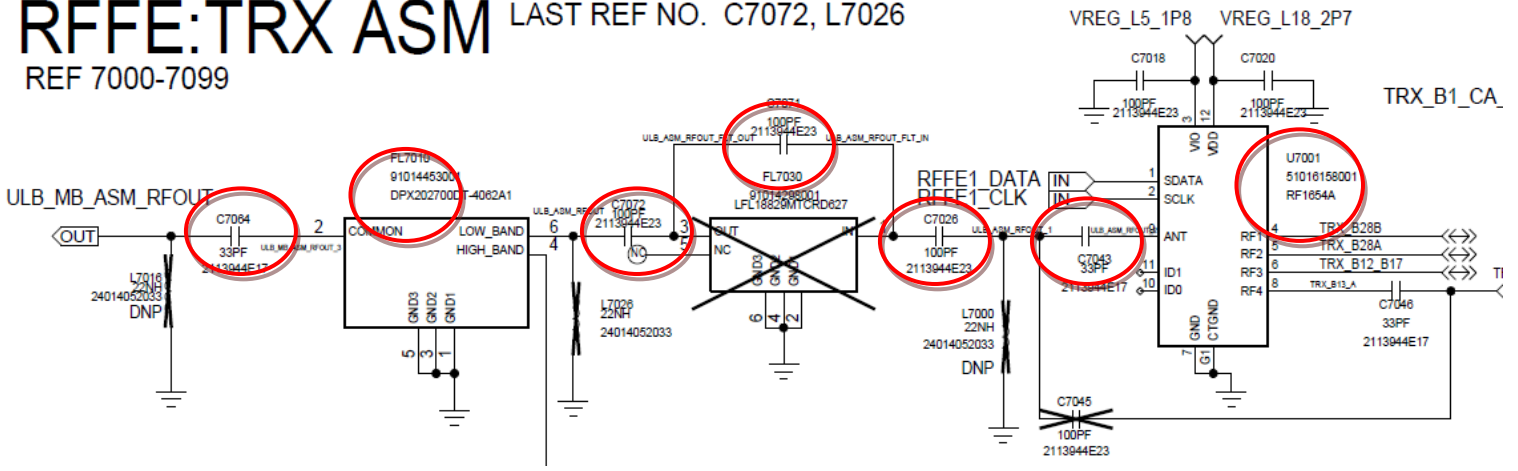
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B12/17 TX Schematic



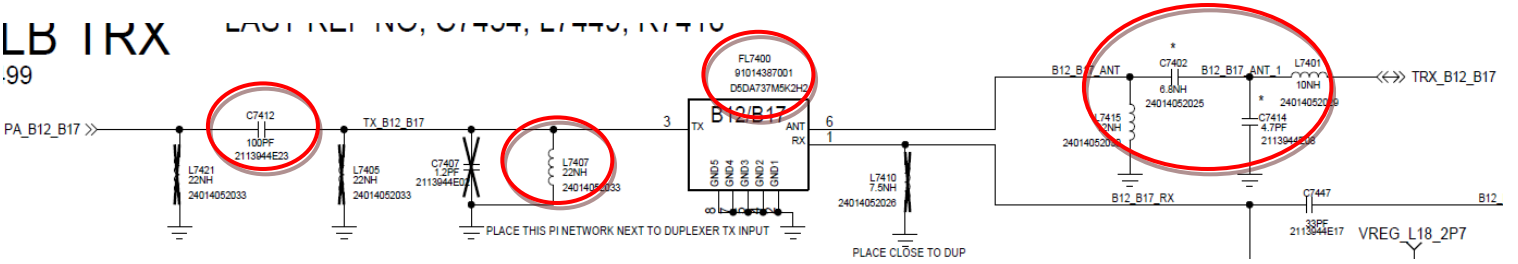
RFFE:TRX ASM

LAST REF NO. C7072, L7026
 REF 7000-7099



LB TRX

LAST REF NO. C7407, L7410, L7411, L7412



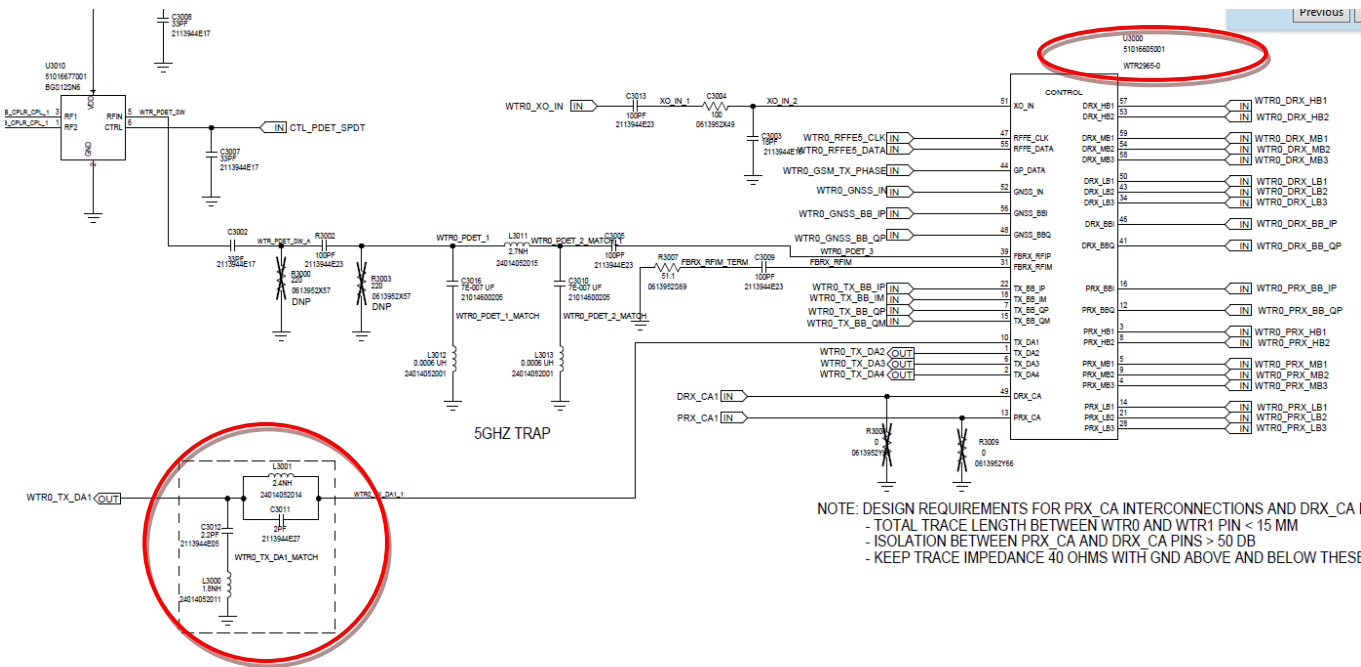
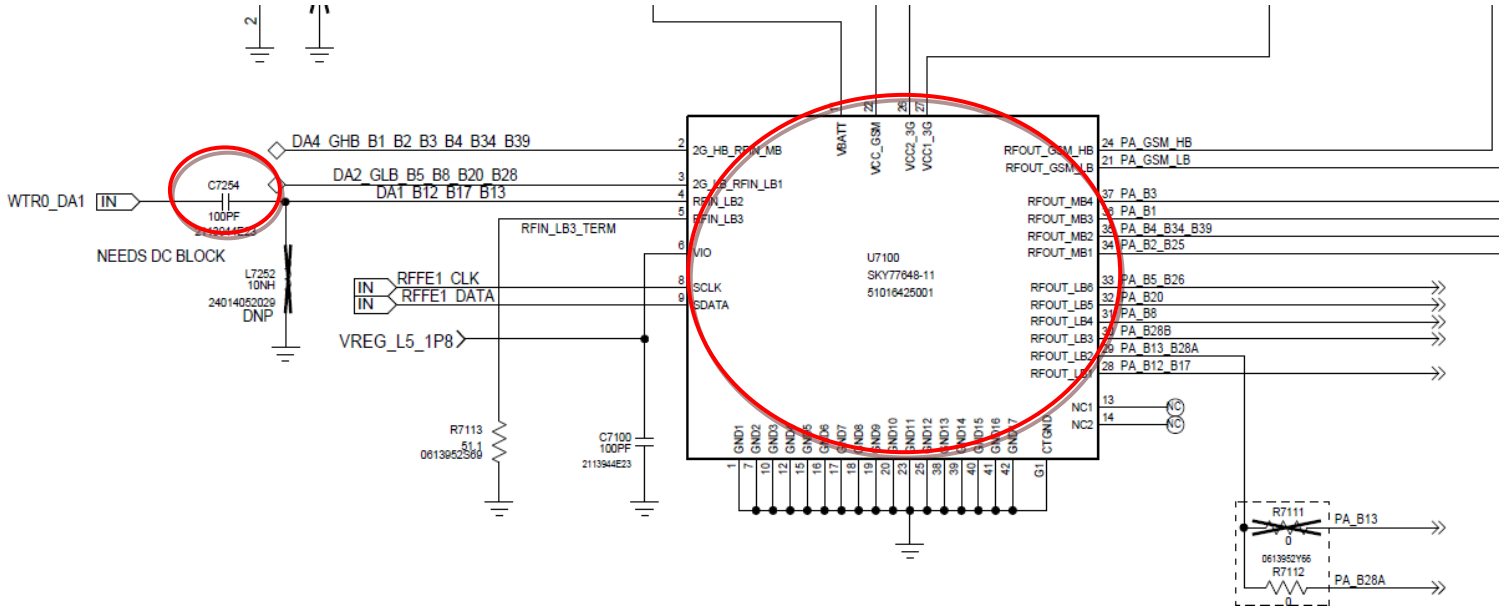
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

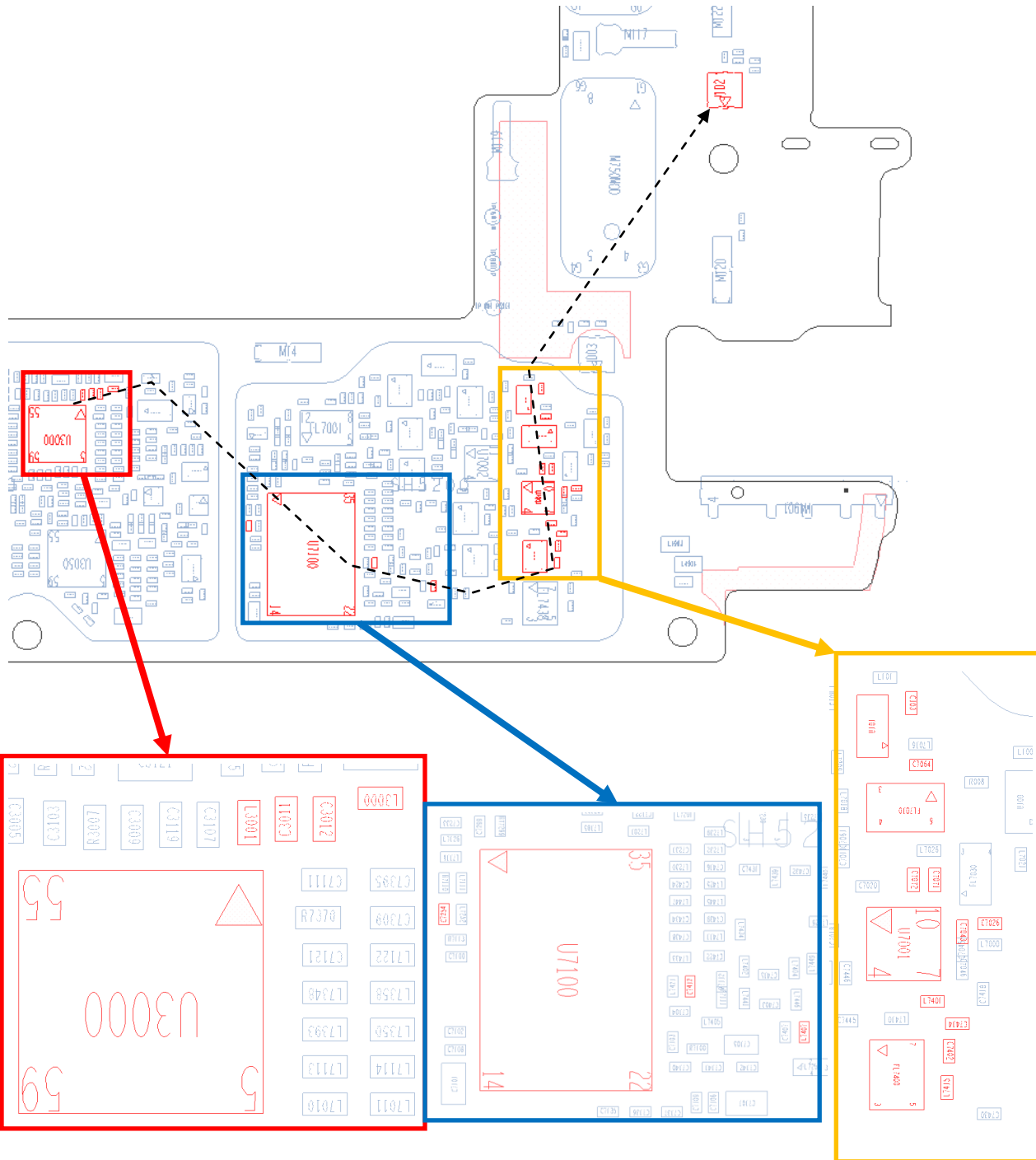
6/1/2016

WITNESS

DATE

<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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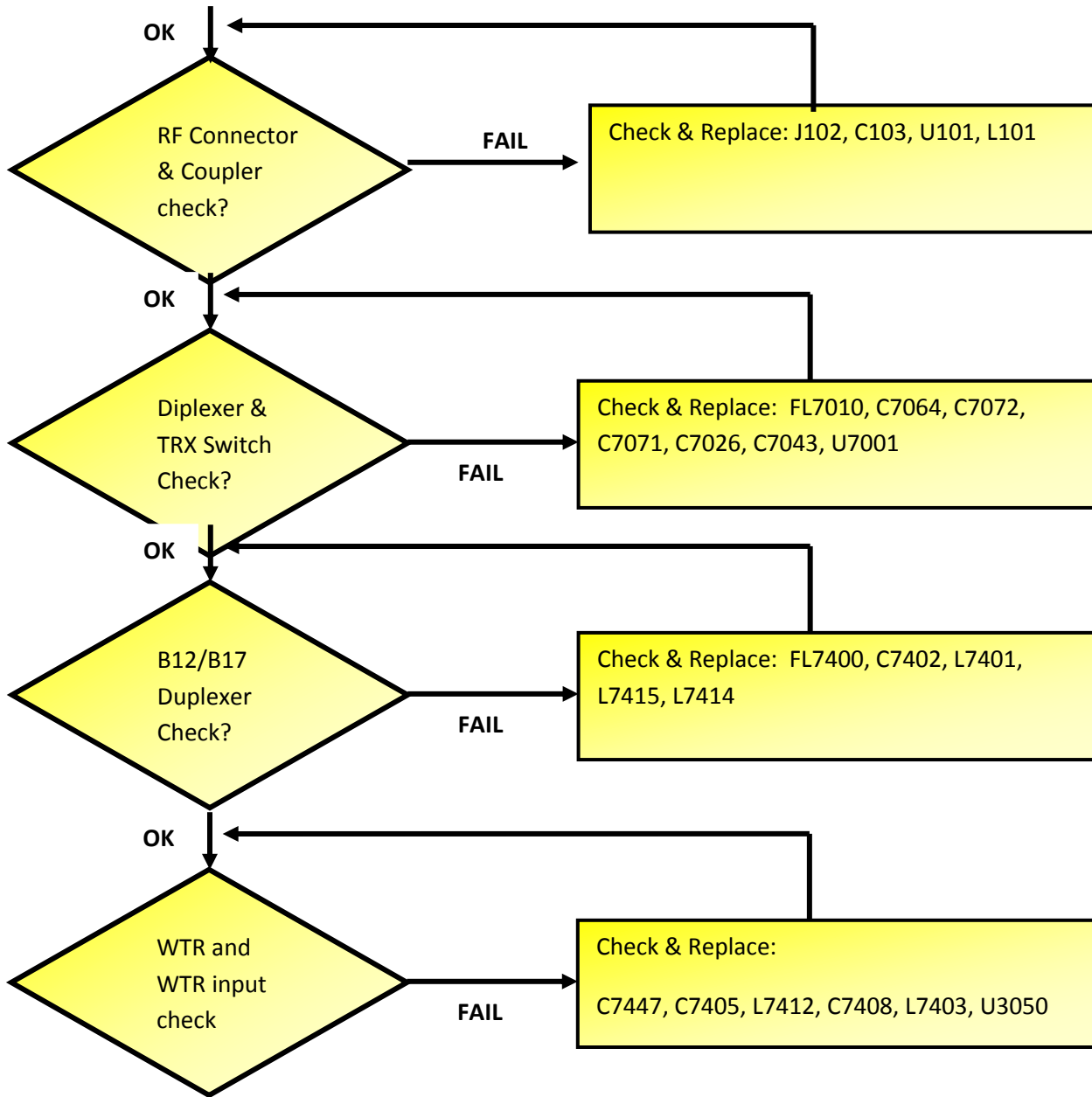
B12/B17 TX Layout



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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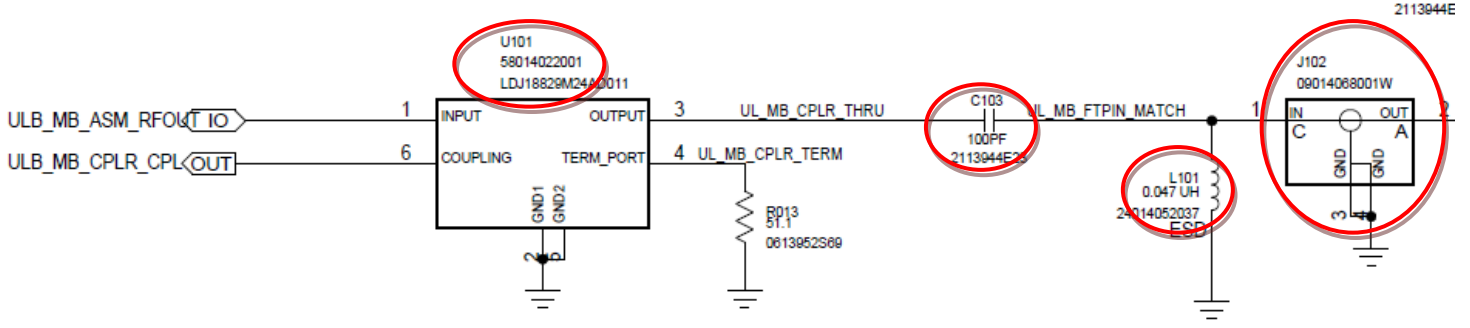
LTE B12 & B17 PRX (ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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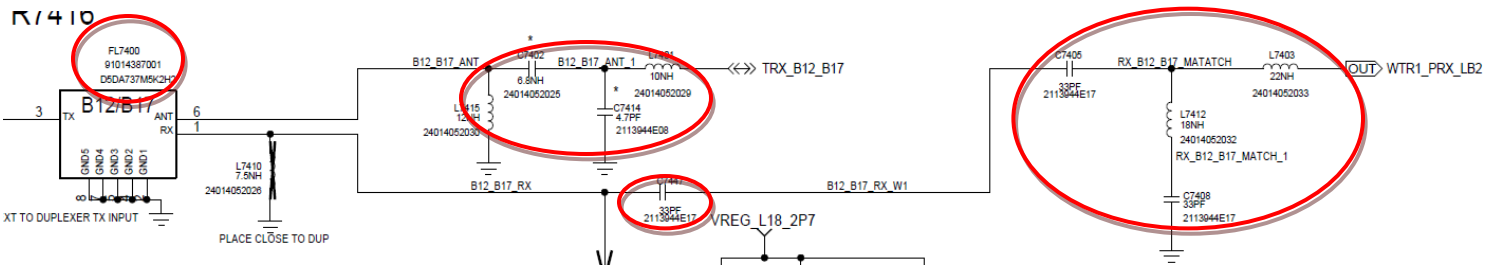
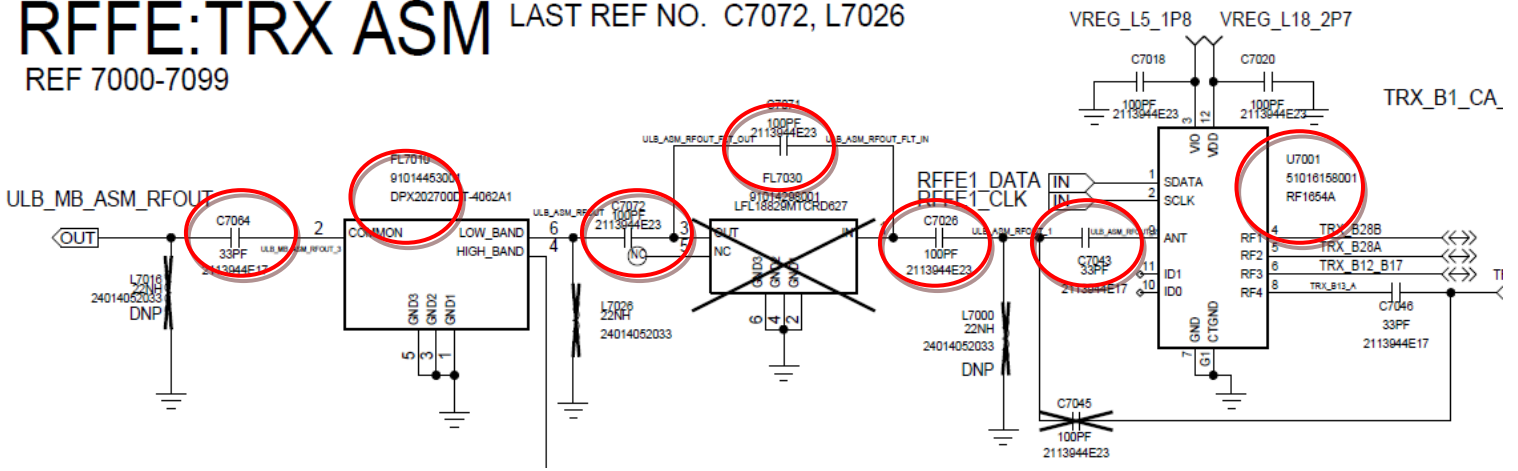
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LTE B12 & B17 PRX Schematics (ROW)



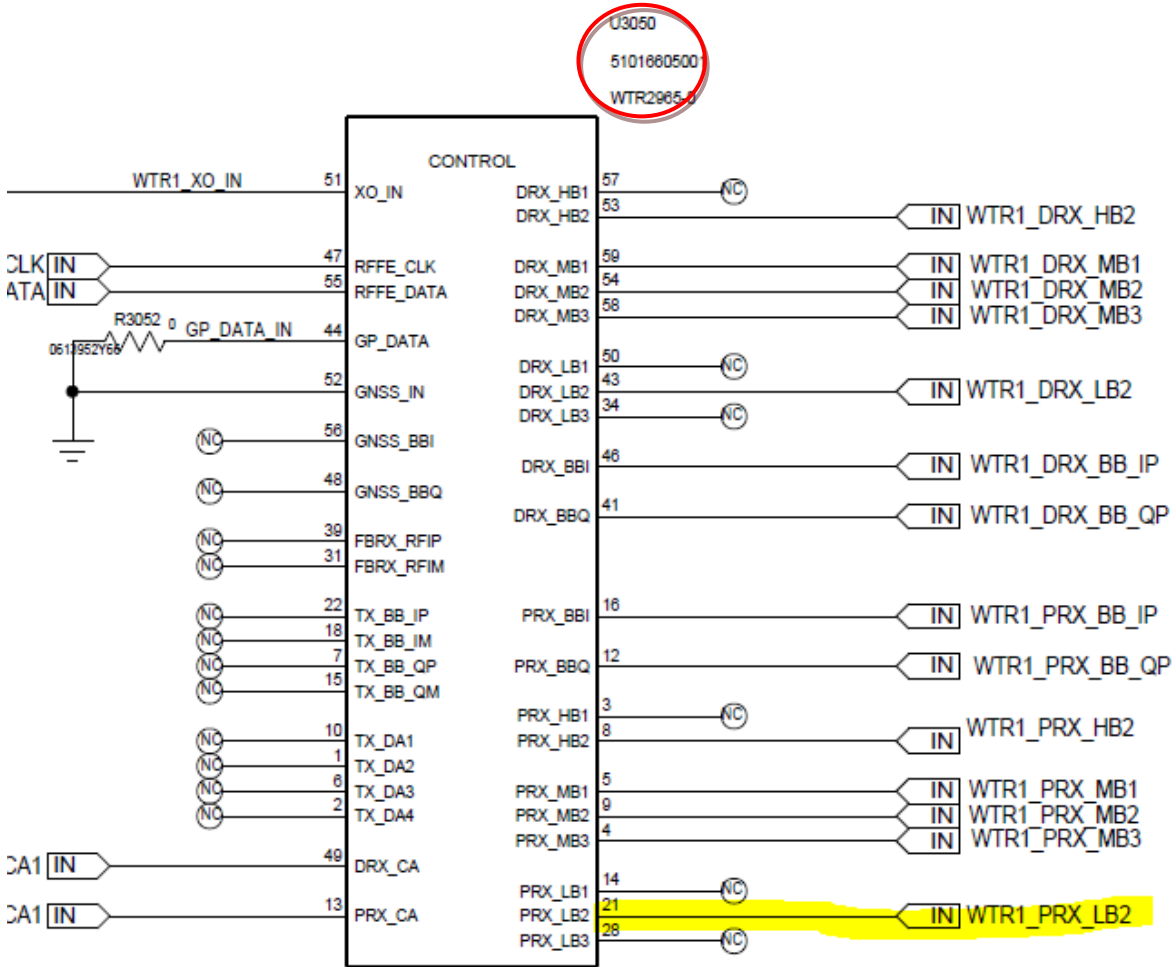
RFFE:TRX ASM

LAST REF NO. C7072, L7026
REF 7000-7099



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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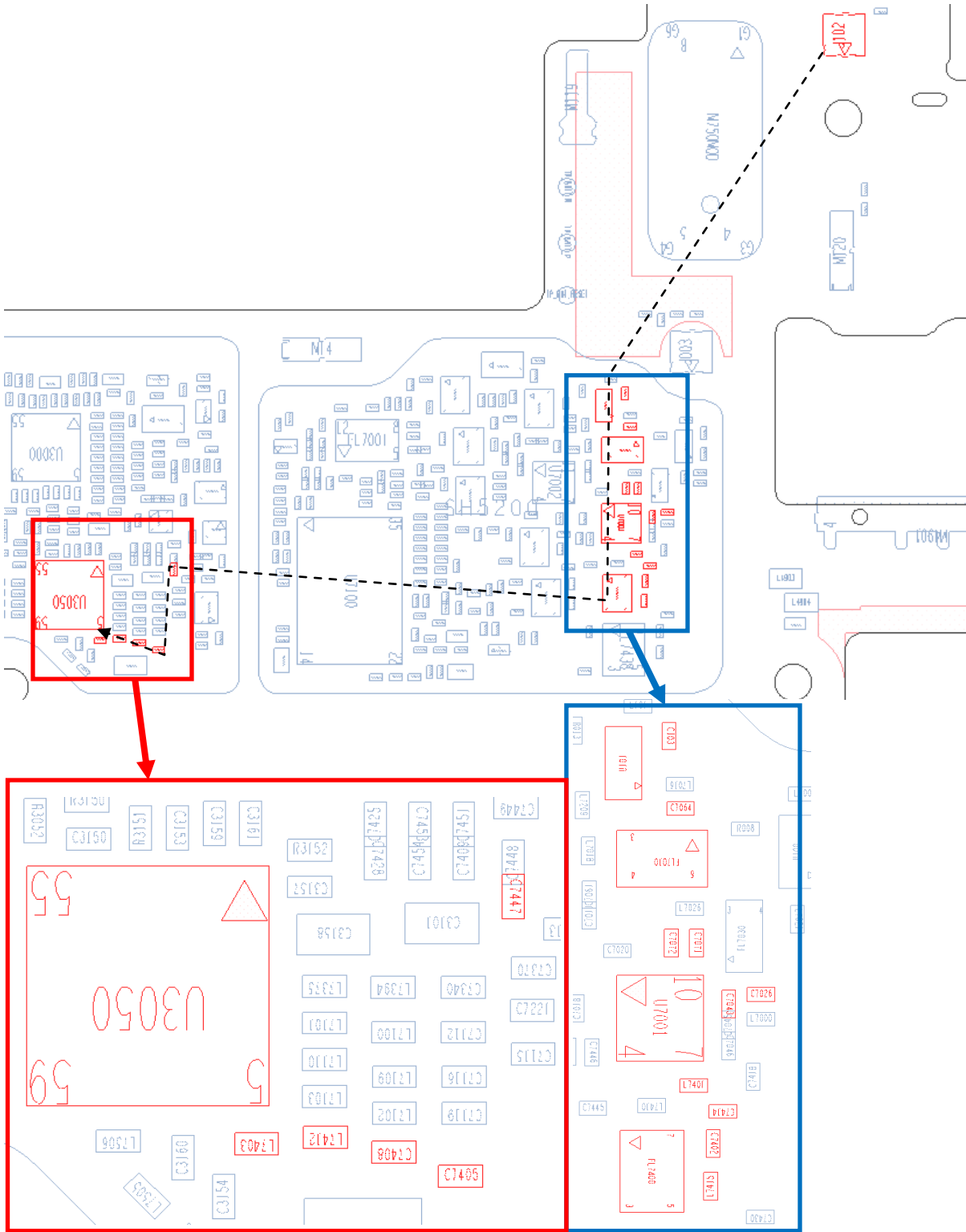
<p>TITLE</p> <h2 style="margin: 0;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="margin: 0;">Vertex</h2>
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<p>WRITER</p> <p style="text-align: center;">Vertex RF HW Development Team</p>	<p>DATE</p> <p style="text-align: center;">6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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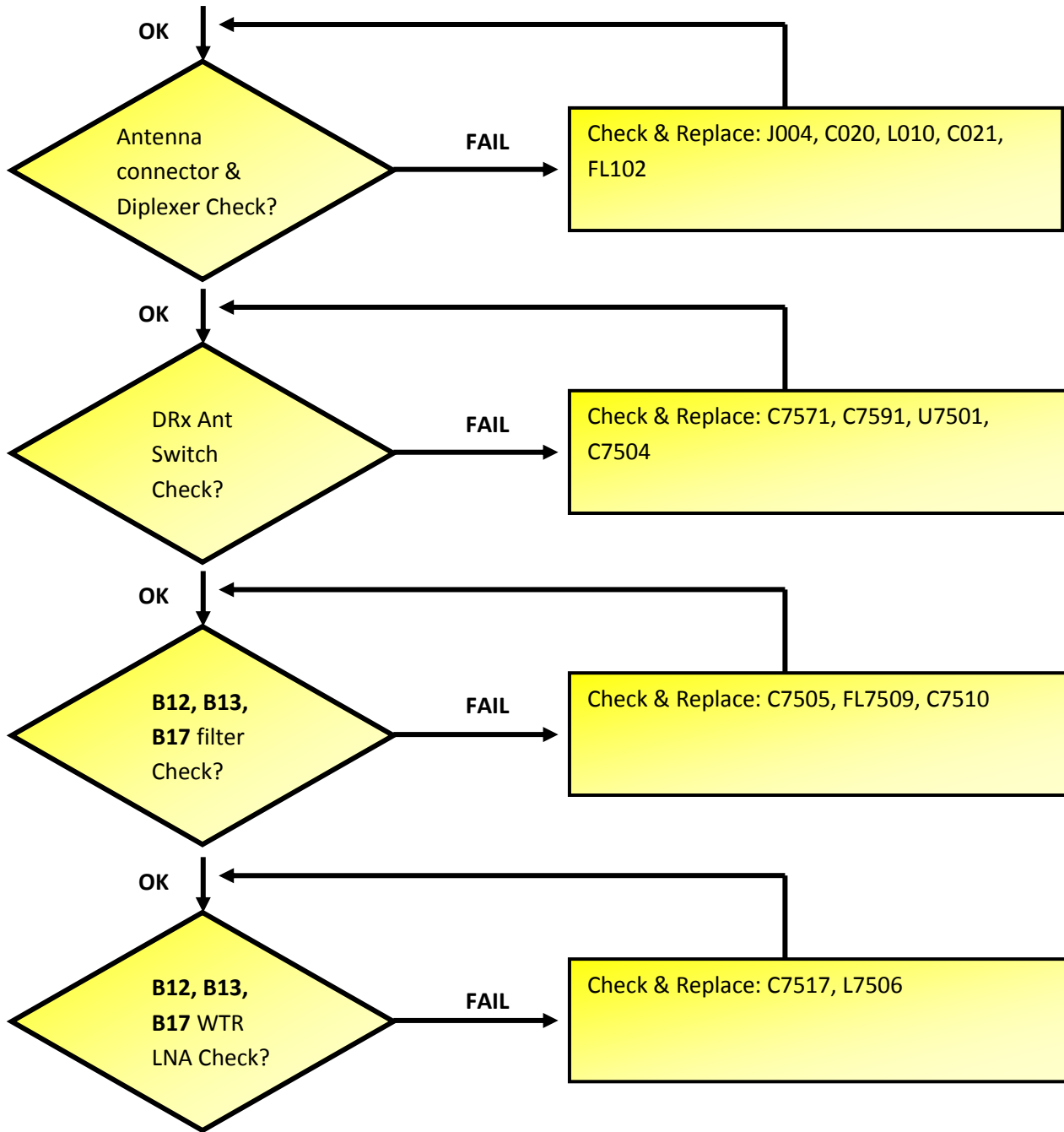
12/B17 PRX Layout (ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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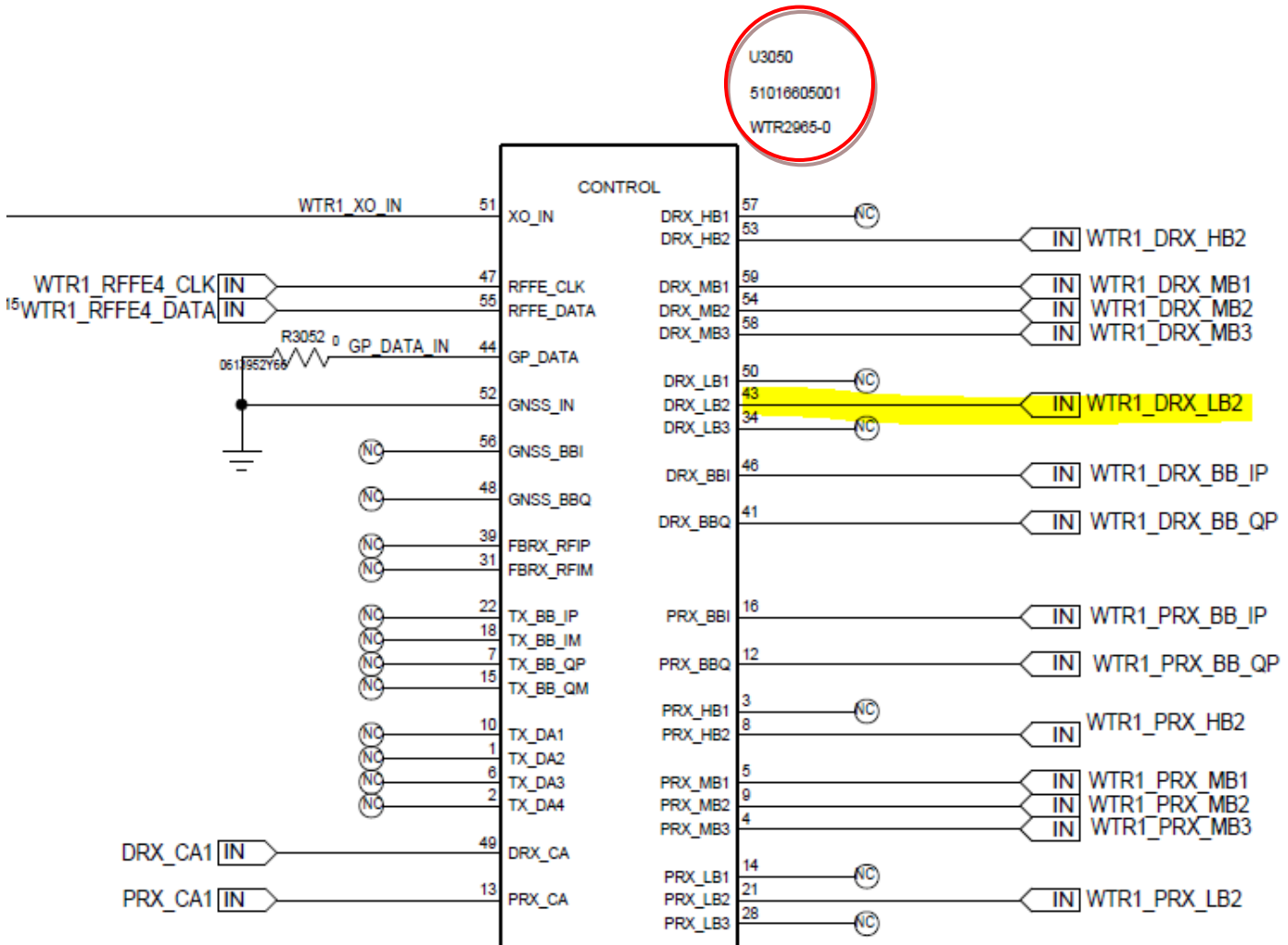
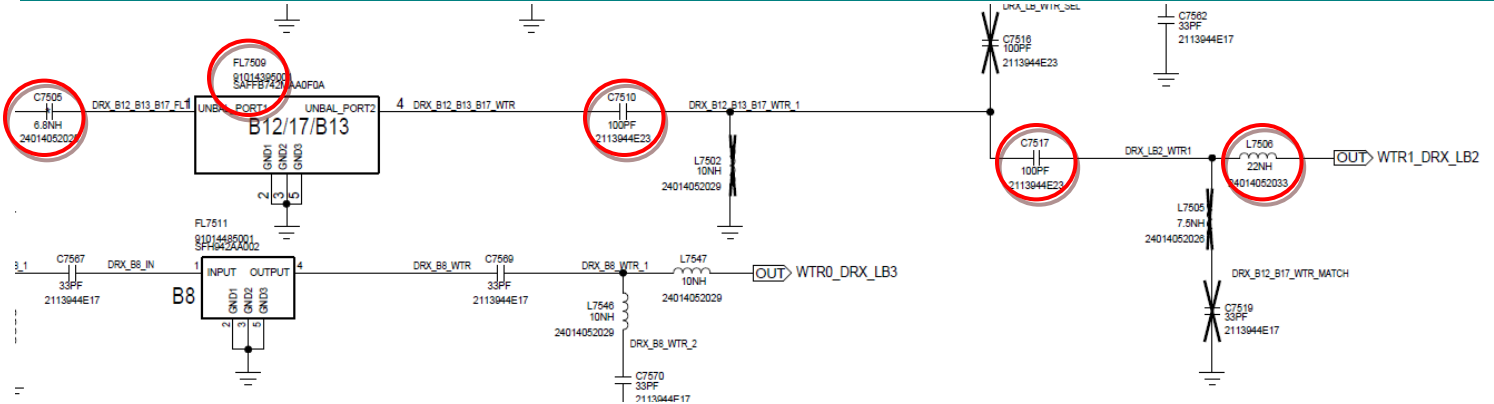
<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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LTE B12/B17 DRX(ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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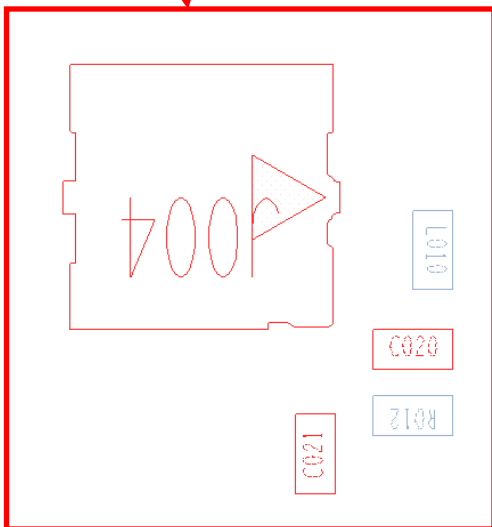
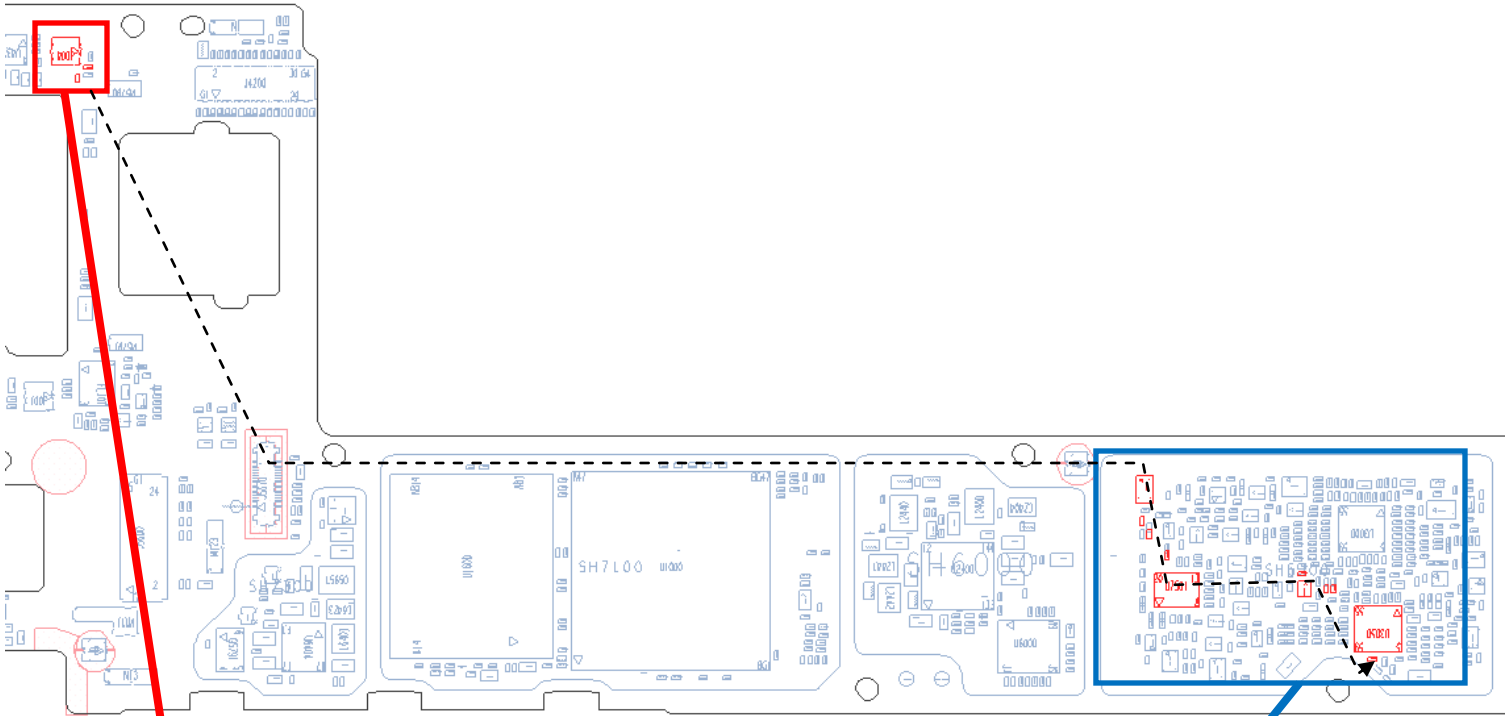
<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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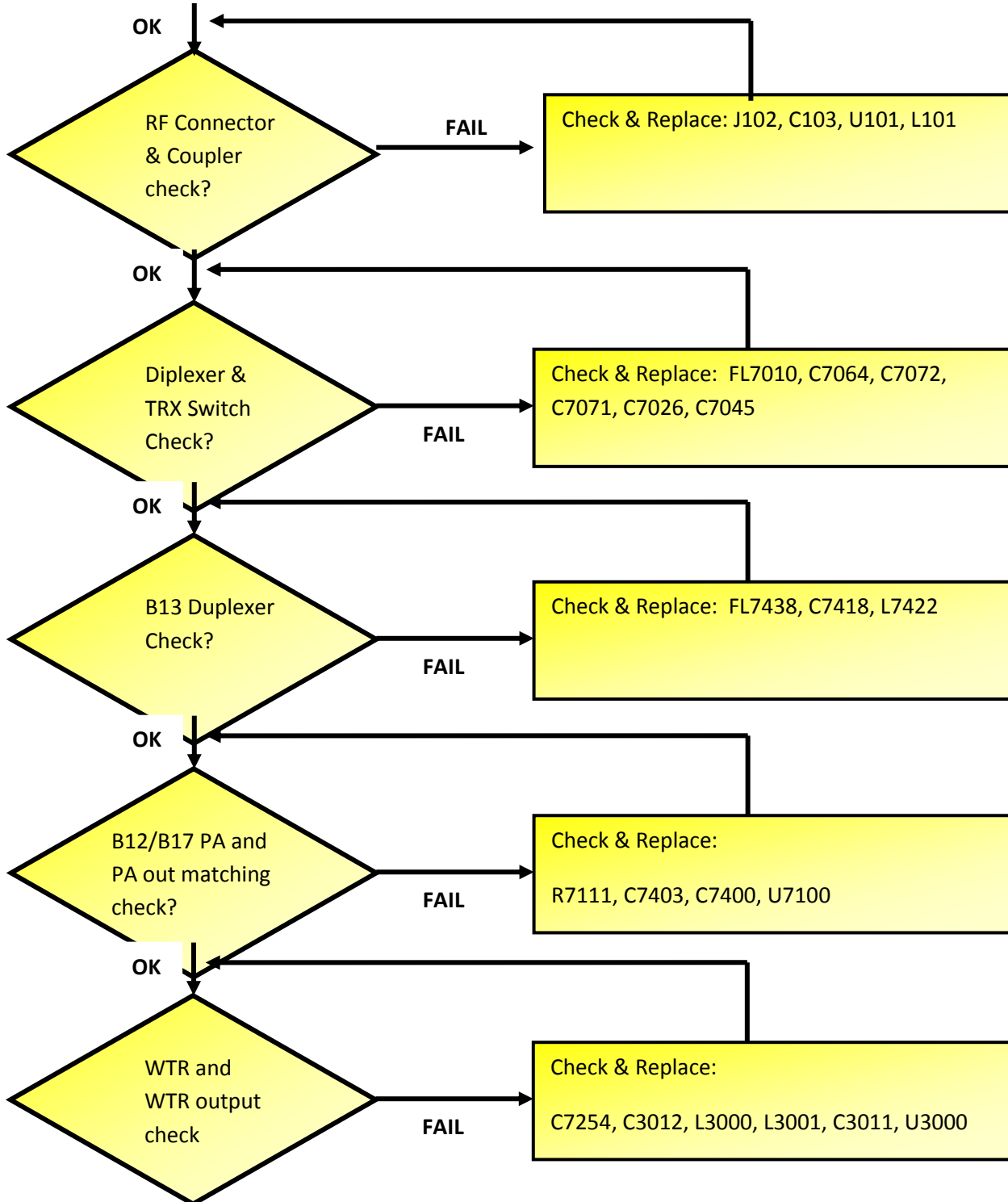
12/B17 DRX Layout (ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE Vertex RF Troubleshooting Guide	MODEL Vertex
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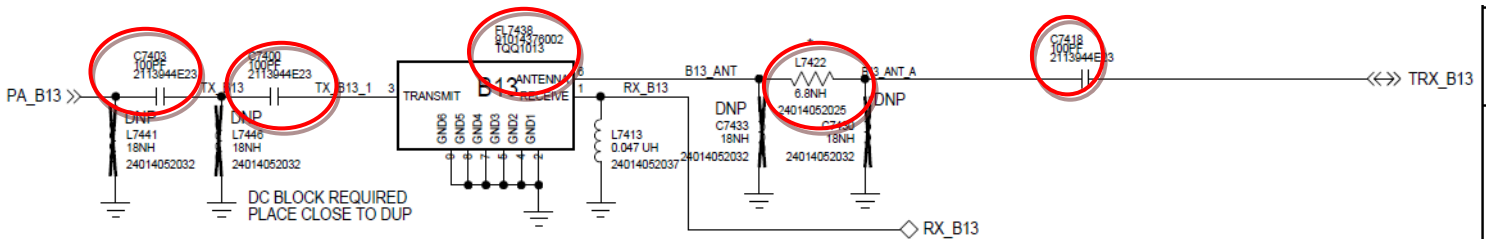
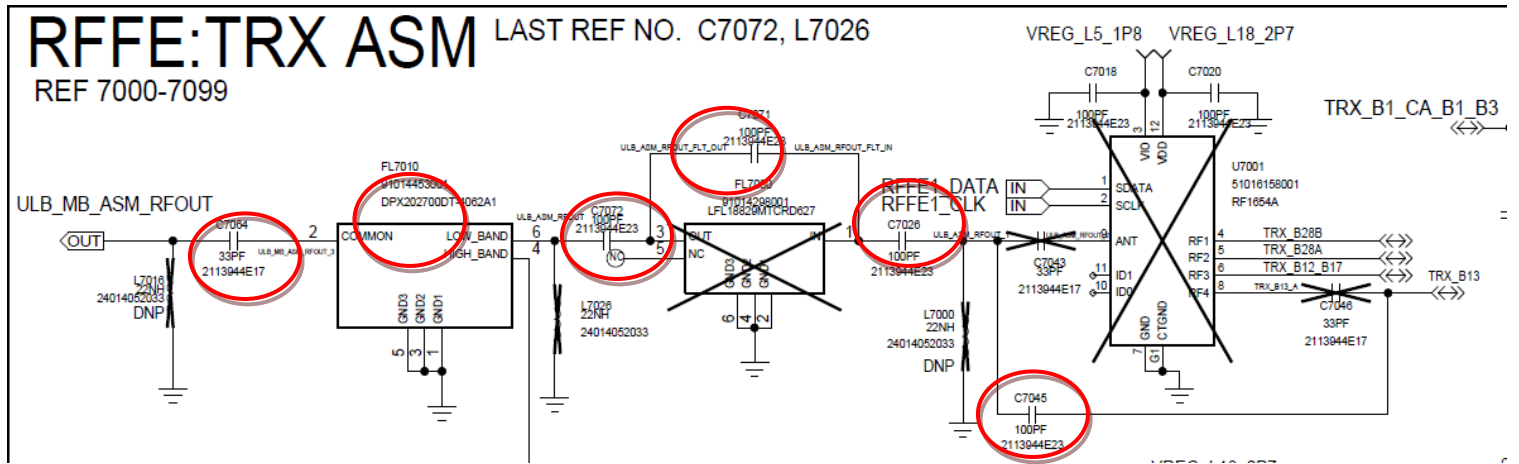
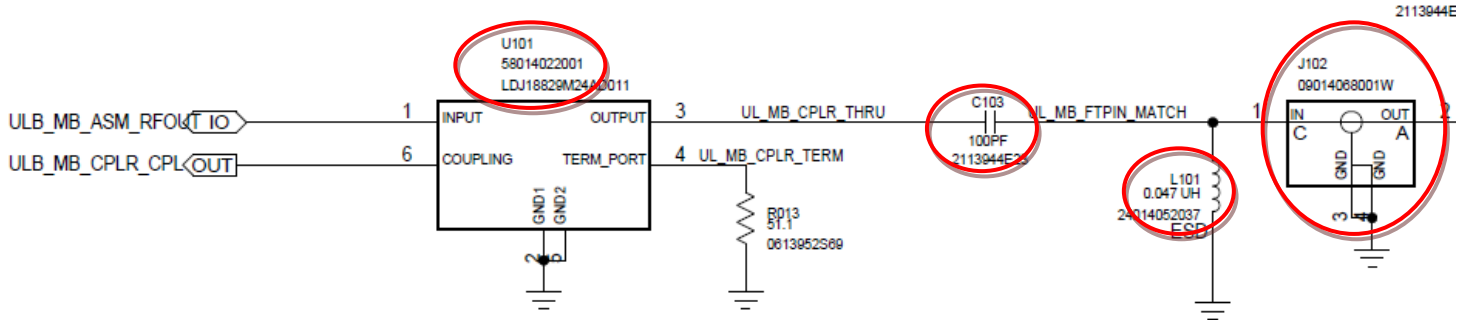
LTE B13 TRX(VZW)
LTE B13 TX (VZW)



WRITER Vertex RF HW Development Team	DATE 6/1/2016	WITNESS	DATE
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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B12/17 TX Schematic



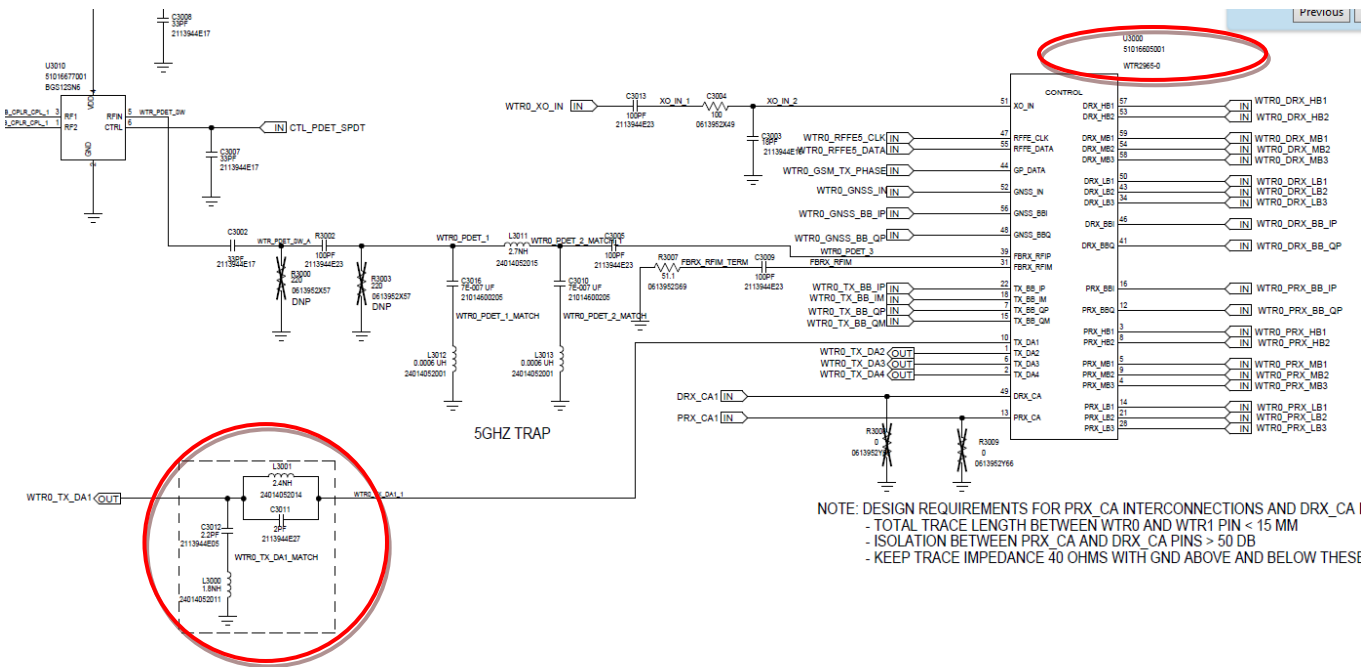
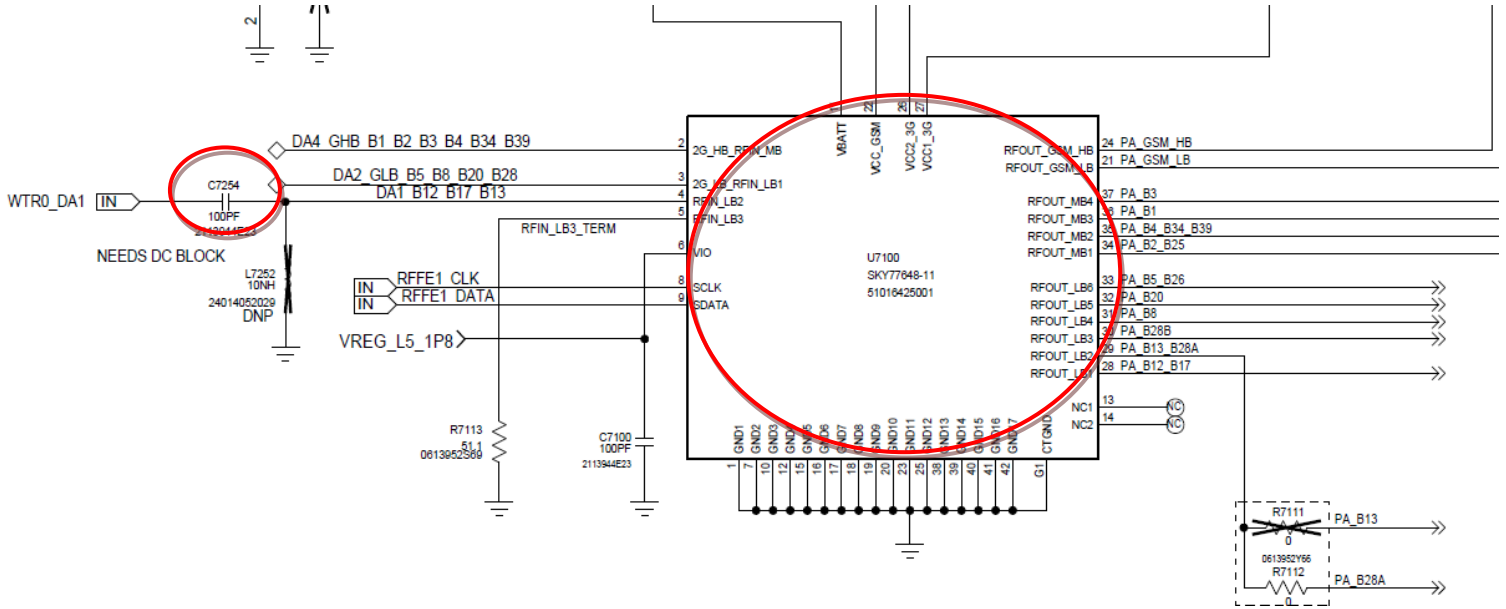
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



NOTE: DESIGN REQUIREMENTS FOR PRX_CA INTERCONNECTIONS AND DRX_CA 1
 - TOTAL TRACE LENGTH BETWEEN WTR0 AND WTR1 PIN < 15 MM
 - ISOLATION BETWEEN PRX_CA AND DRX_CA PINS > 50 DB
 - KEEP TRACE IMPEDANCE 40 OHMS WITH GND ABOVE AND BELOW THESE

WRITER

Vertex RF HW Development Team

DATE

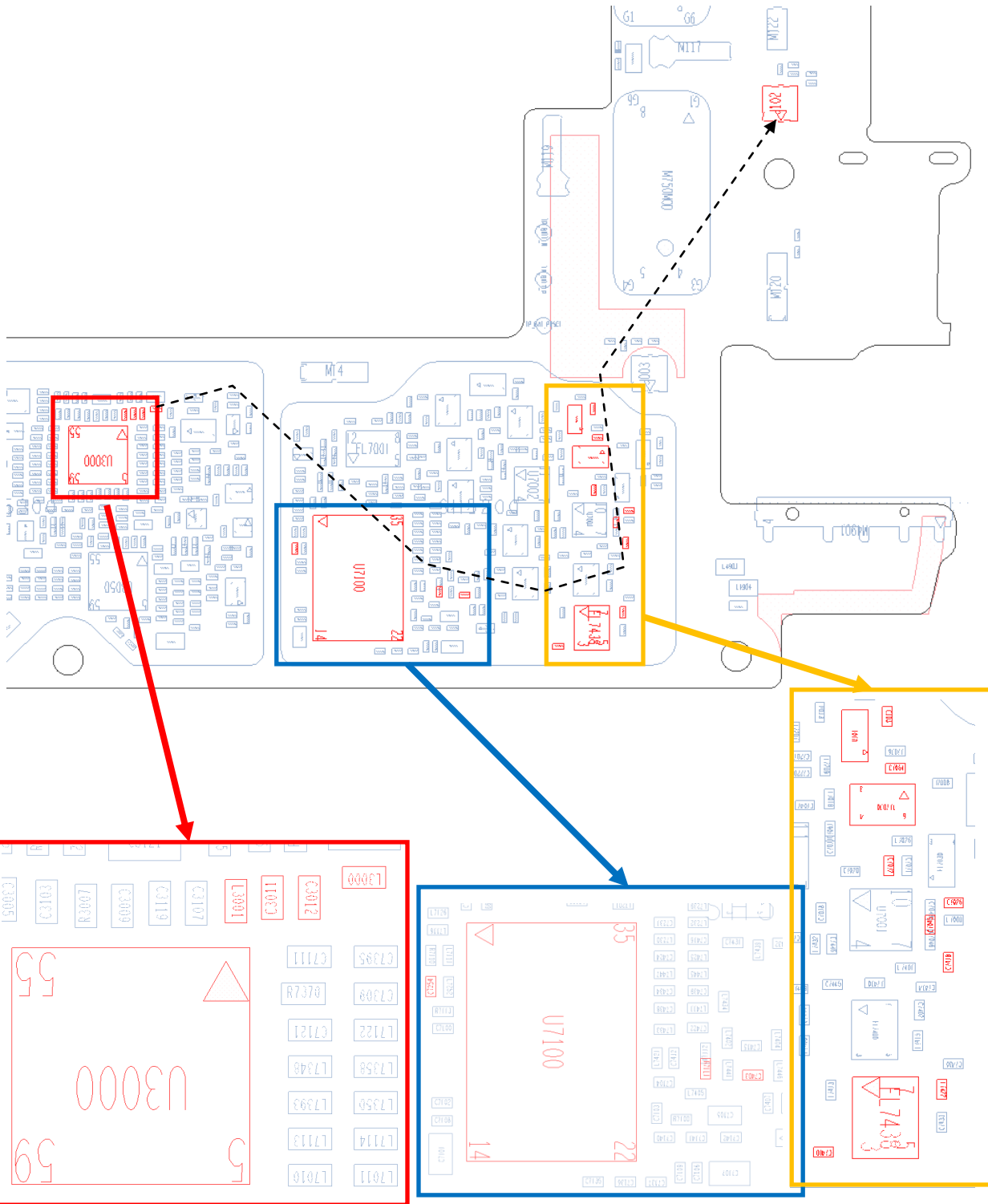
6/1/2016

WITNESS

DATE

<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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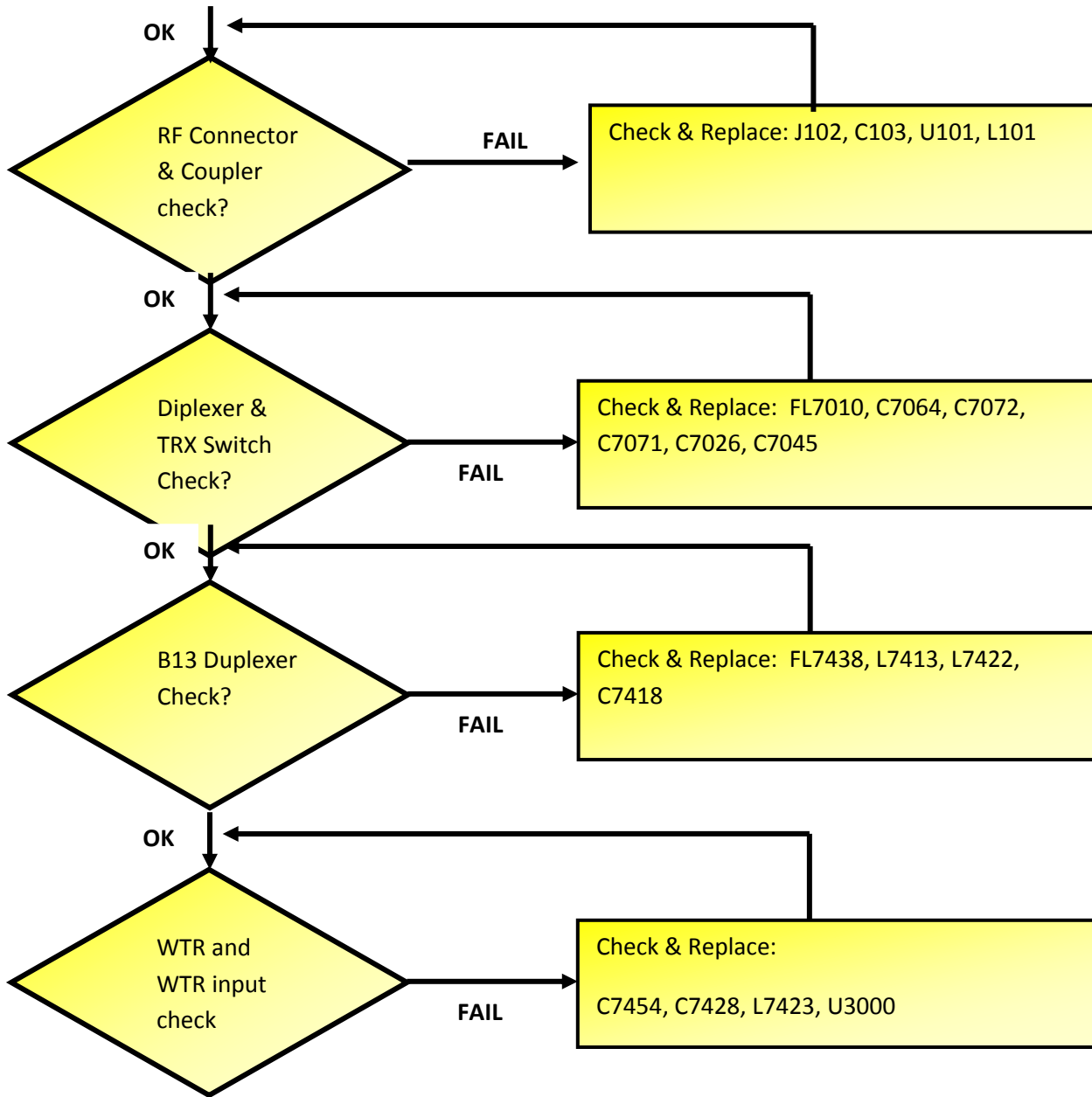
B12/B17 TX Layout



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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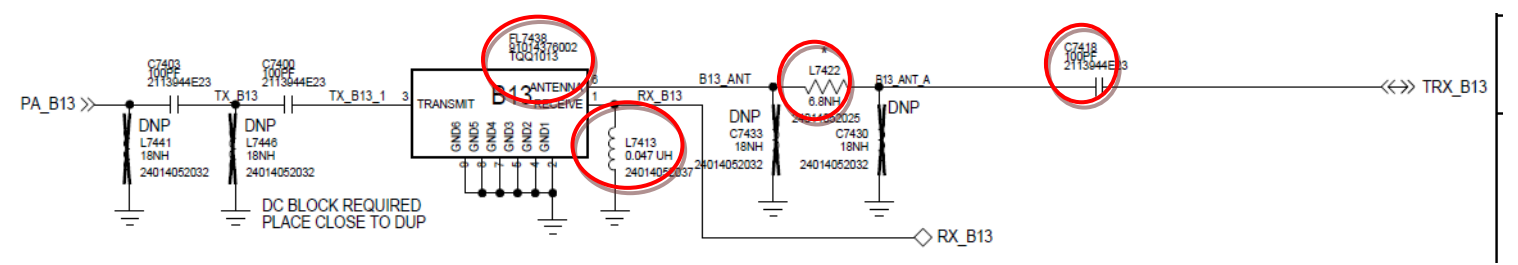
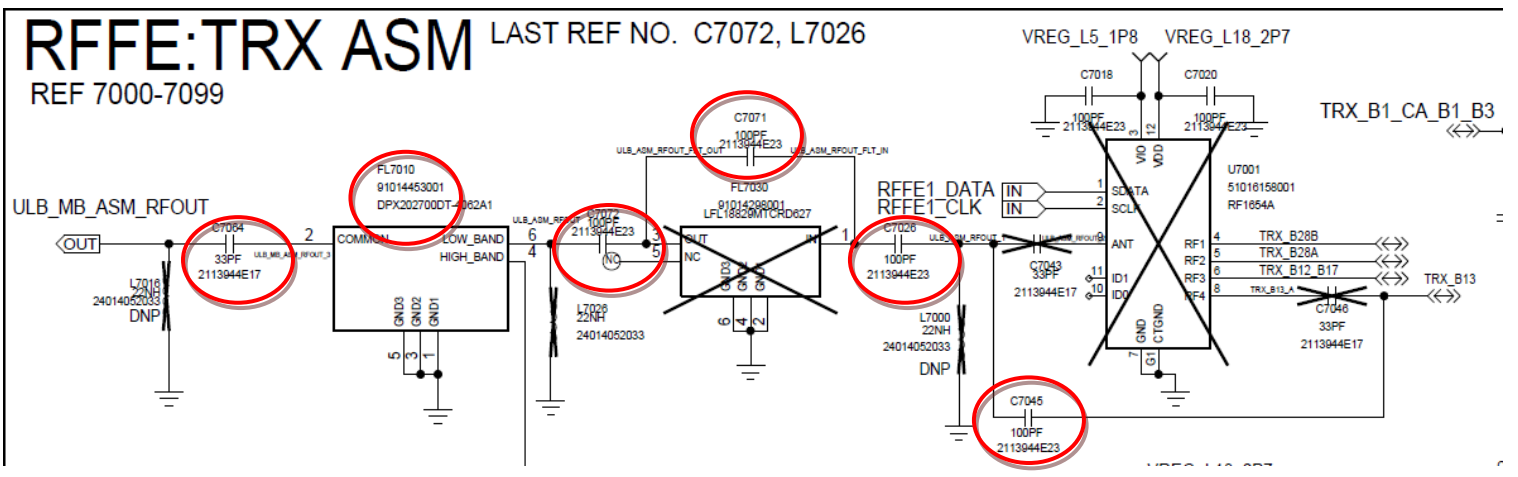
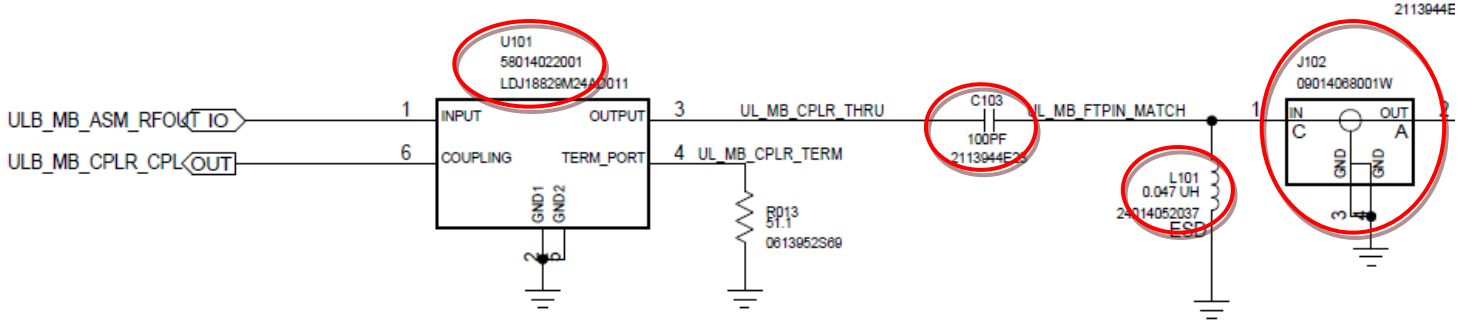
LTE B13 PRX (VZW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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LTE B13 Schematics (VZW)



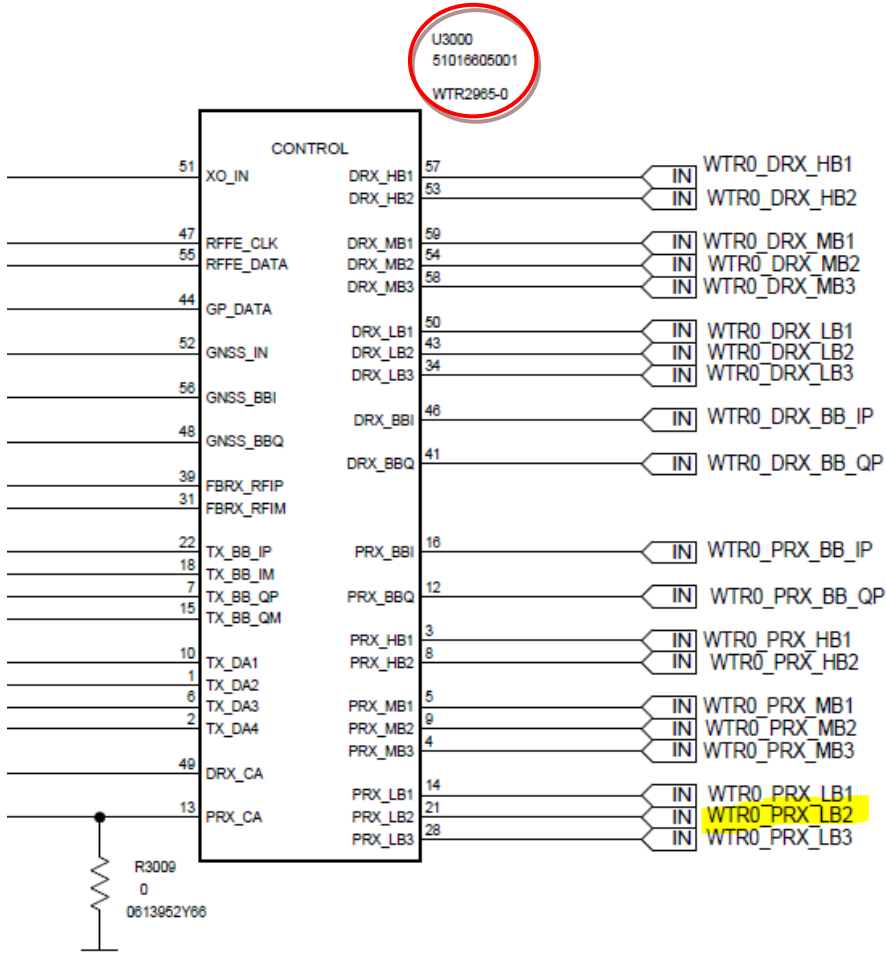
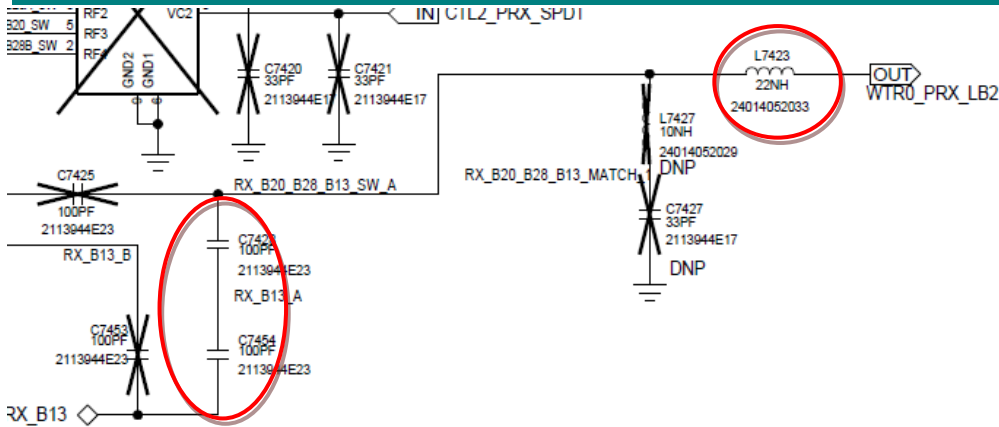
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

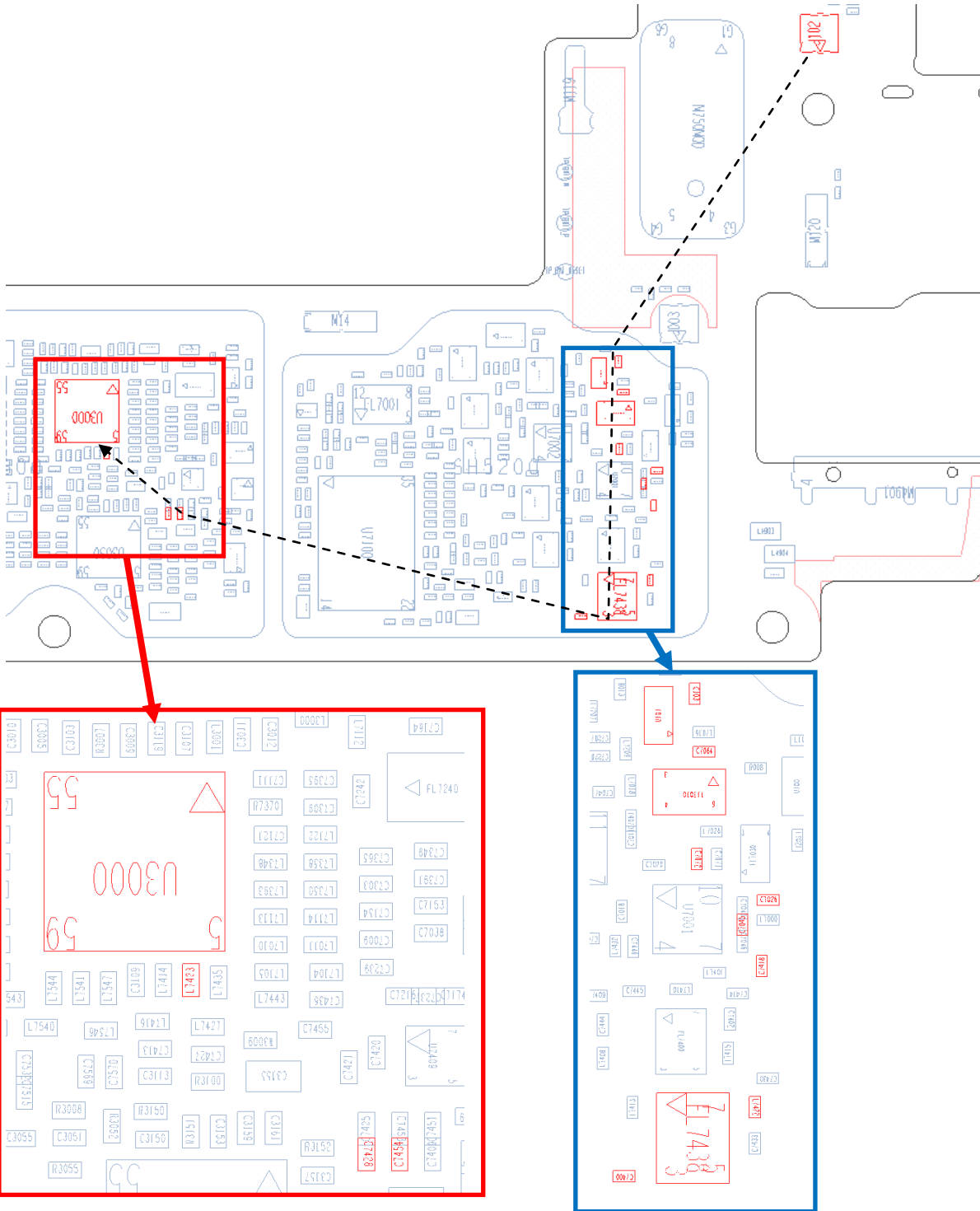
6/1/2016

WITNESS

DATE

<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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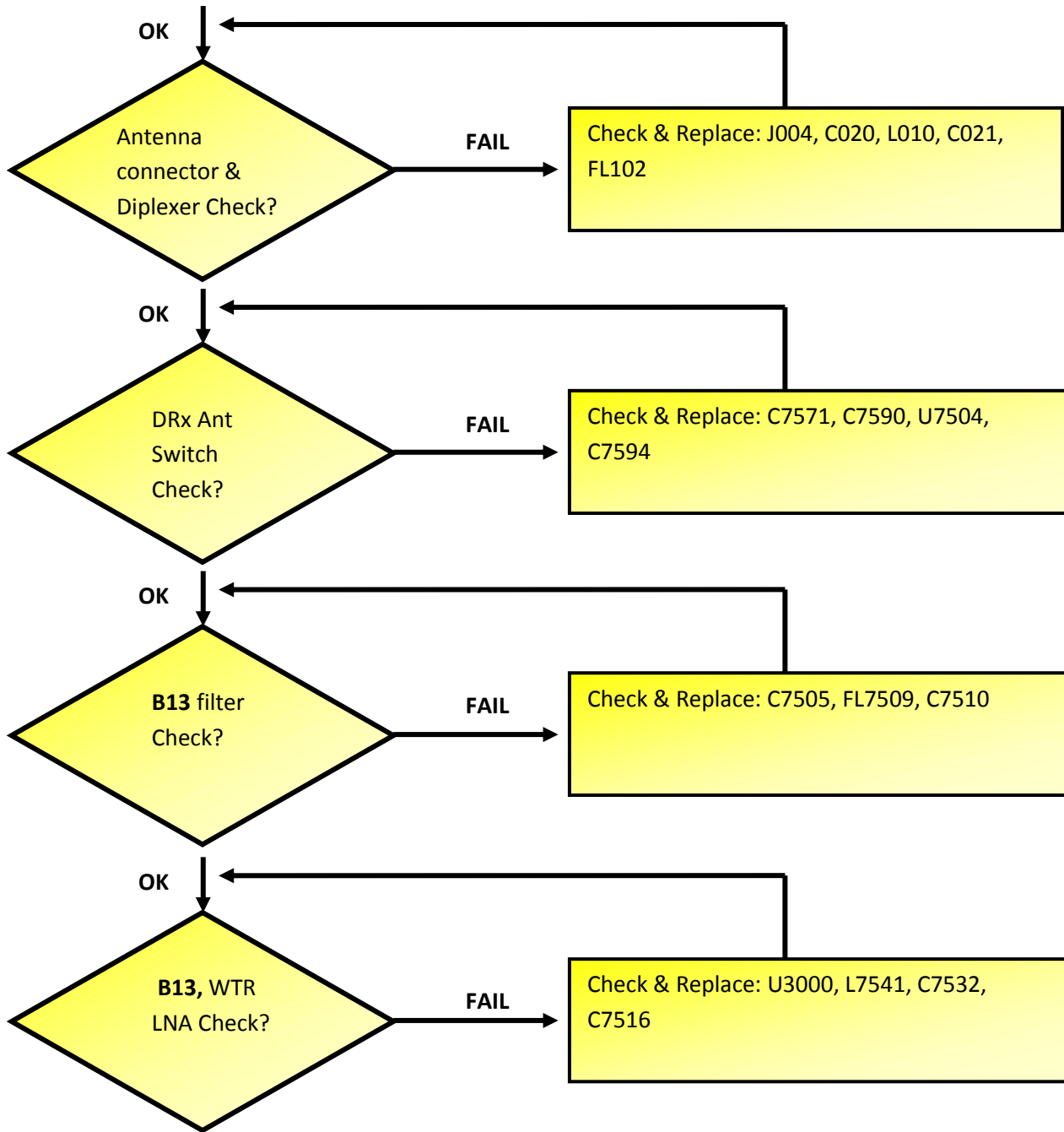
B13 PRX Layout (VZW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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LTE B13 DRX(VZW)



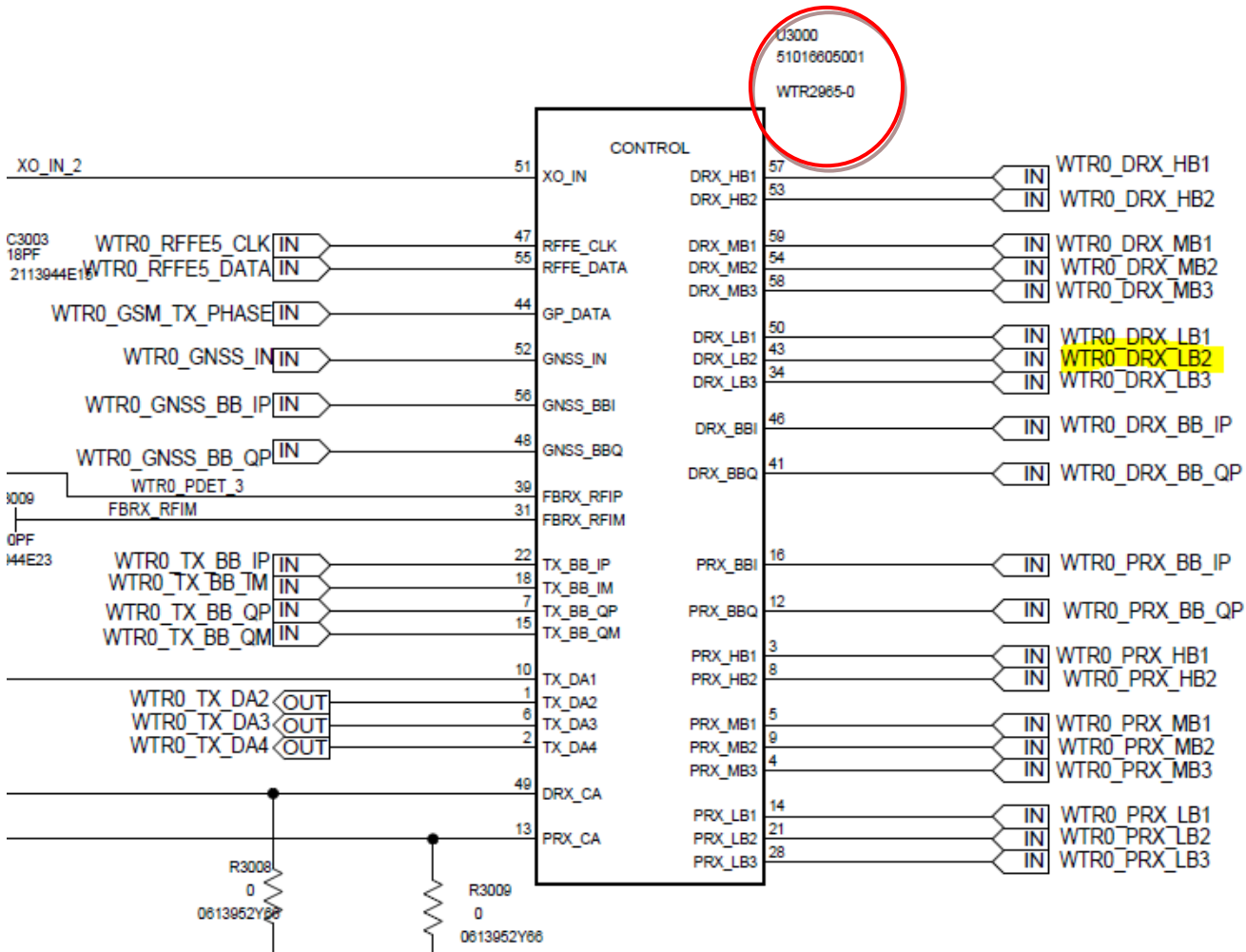
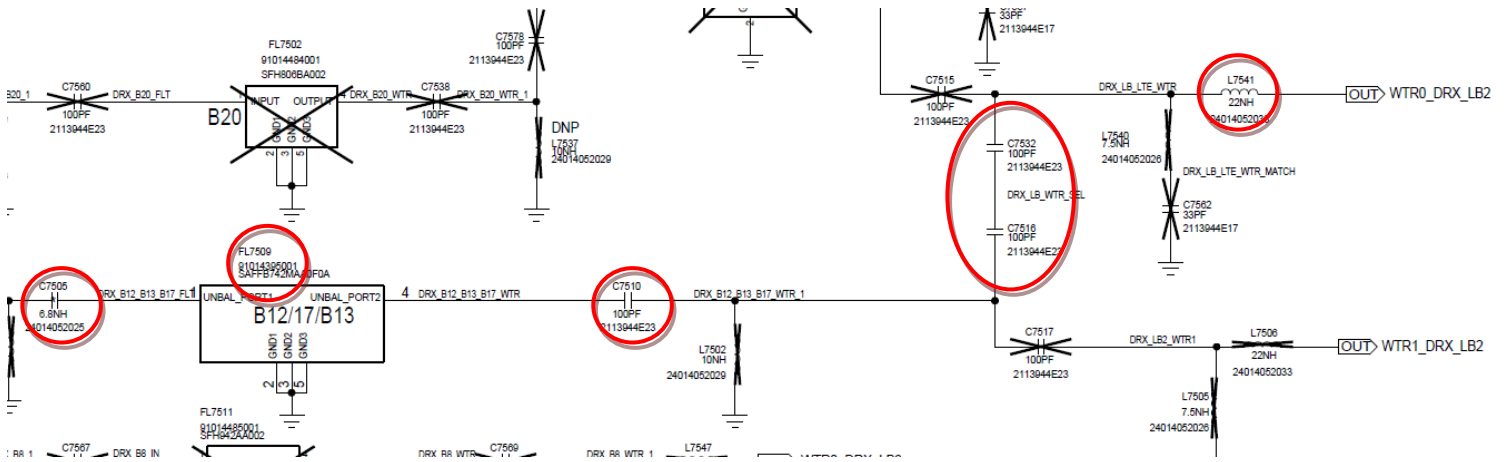
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

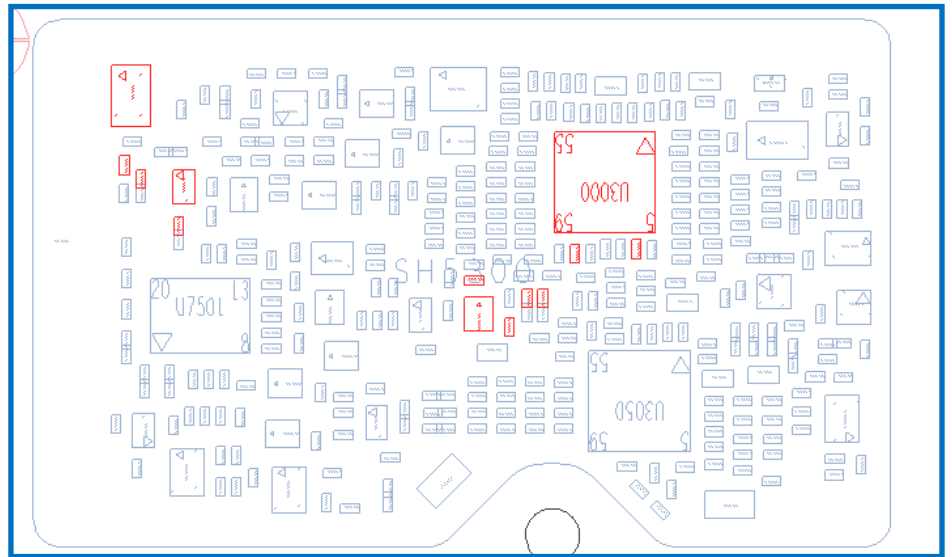
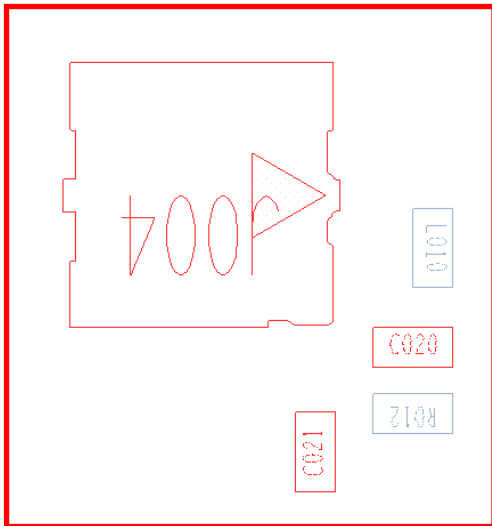
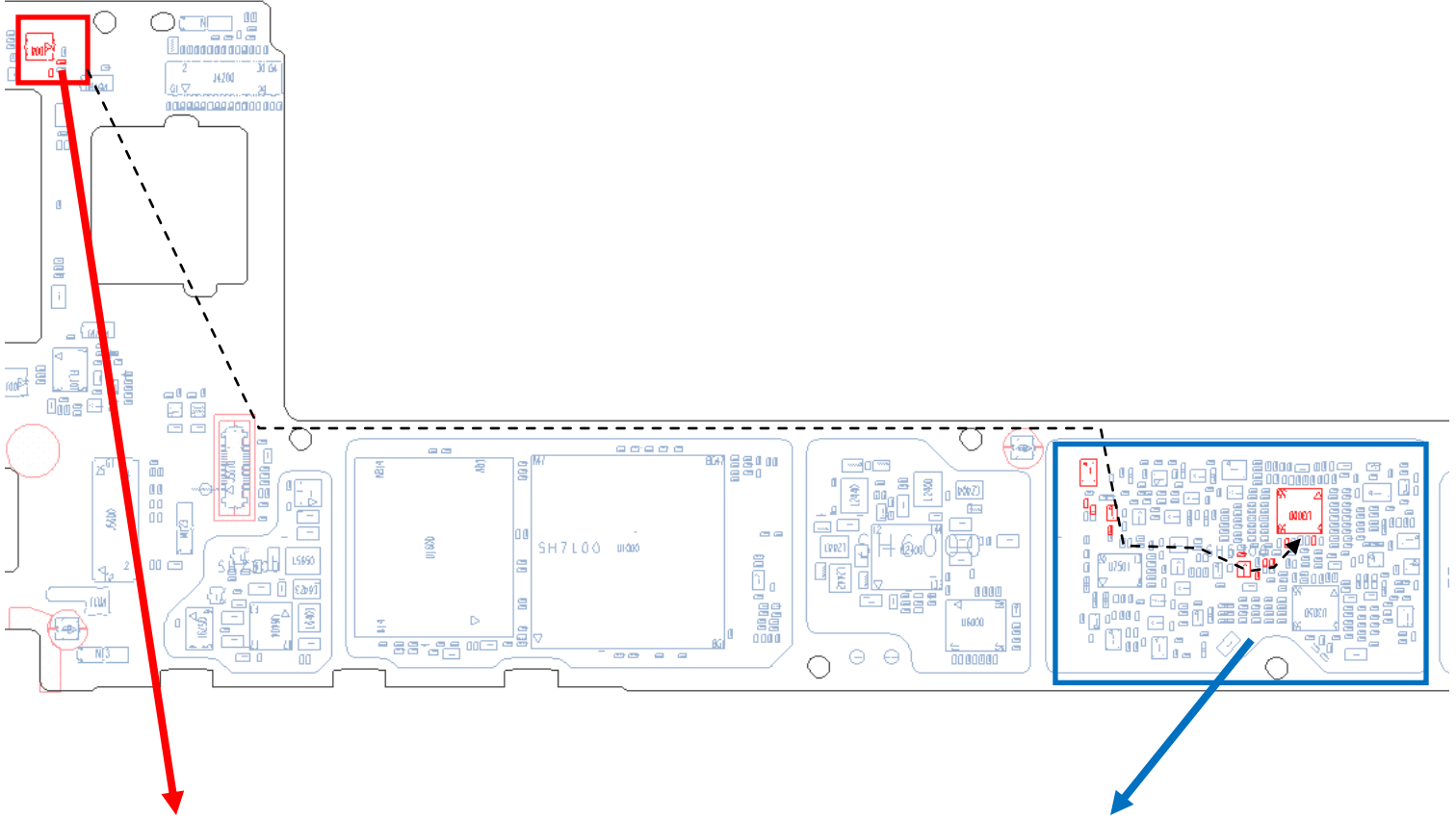
Vertex



WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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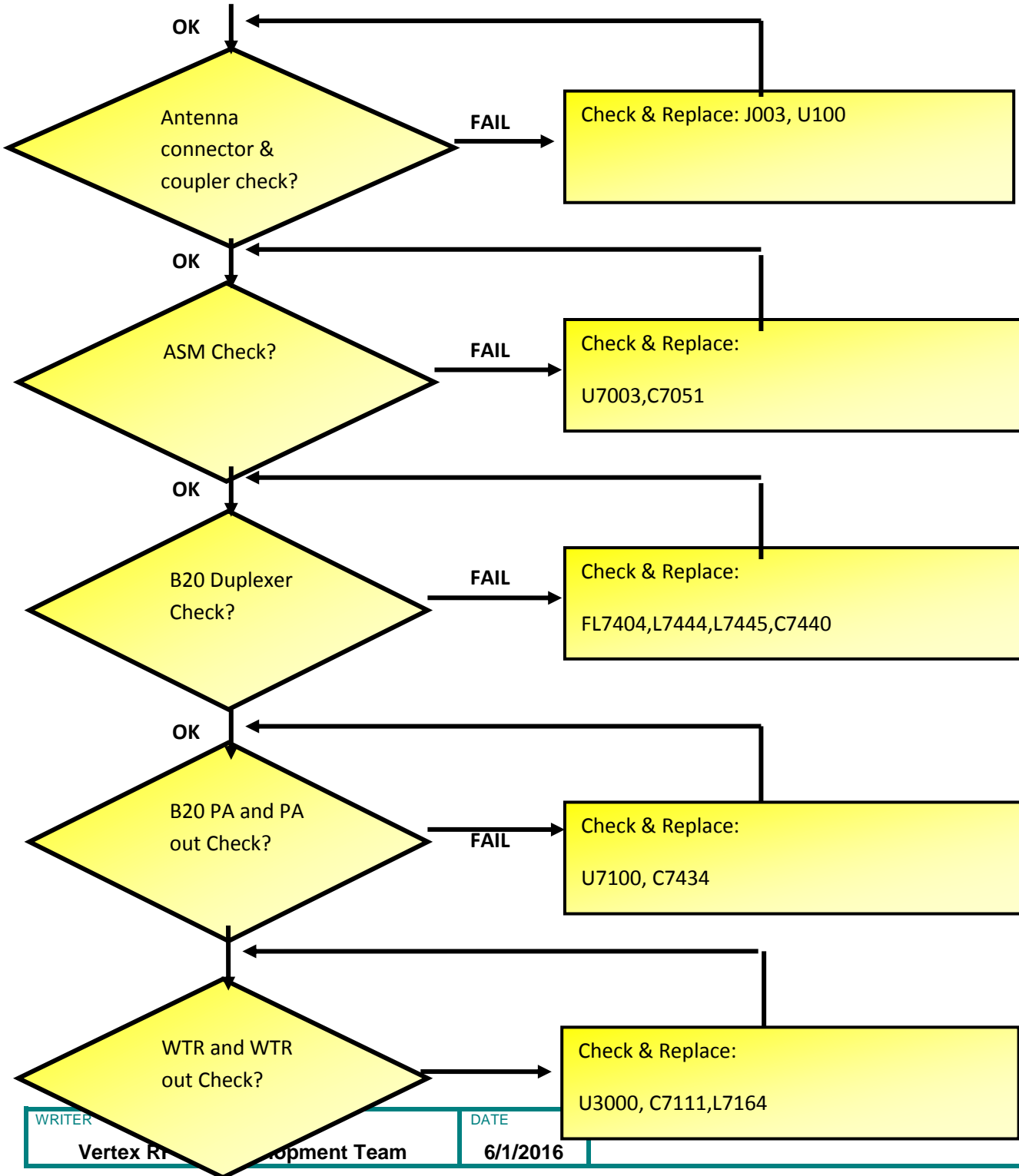
13 DRX Layout (VZW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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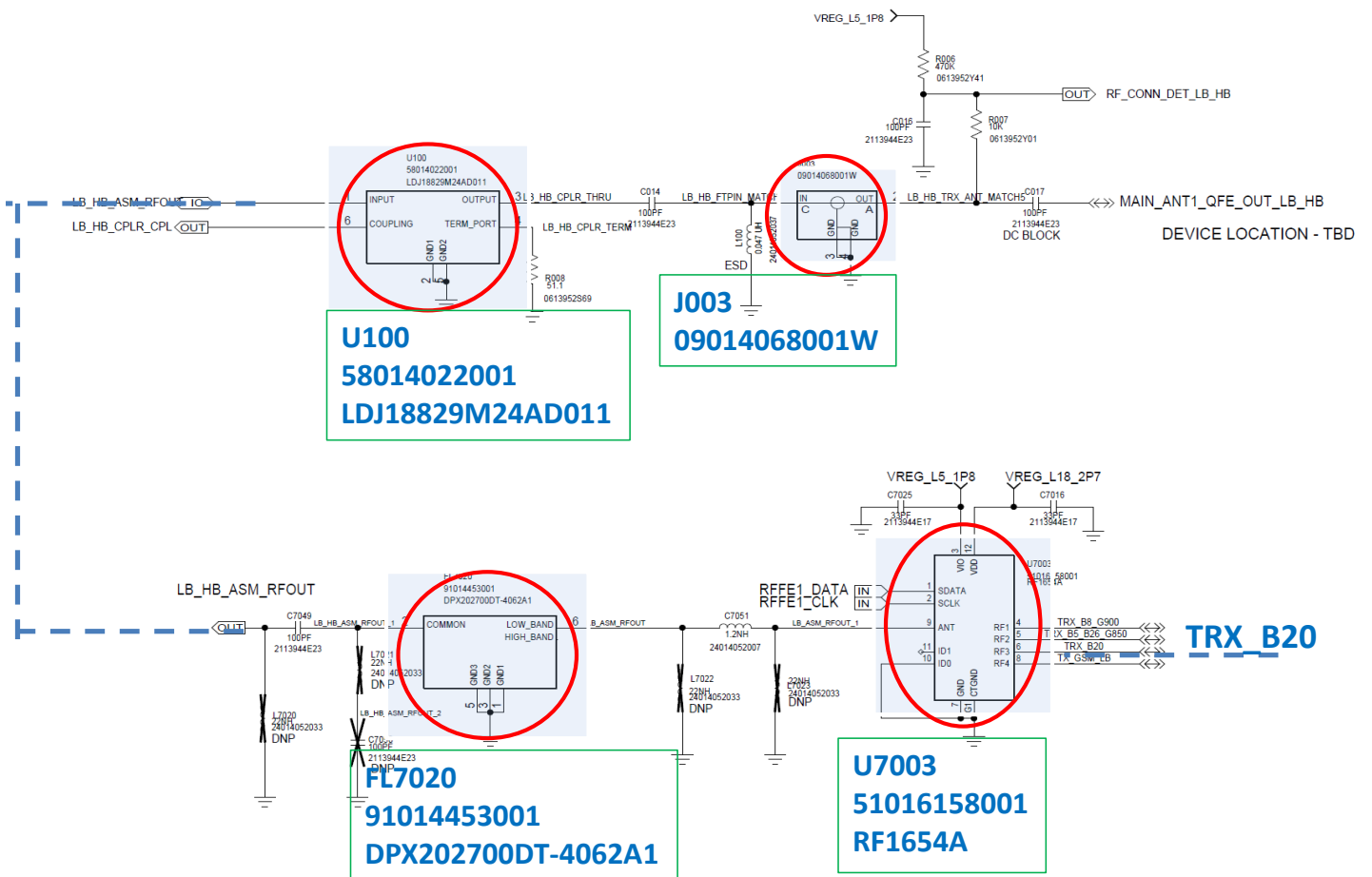
<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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B20 LTE TRX (ROW)
LTE B20 TX(ROW)



<p>WRITER</p> <p>Vertex RF Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>DATE</p>
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<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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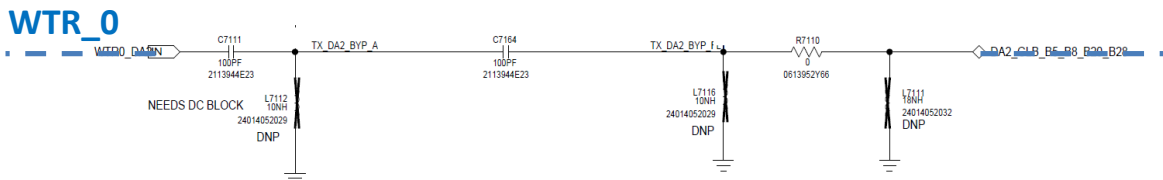
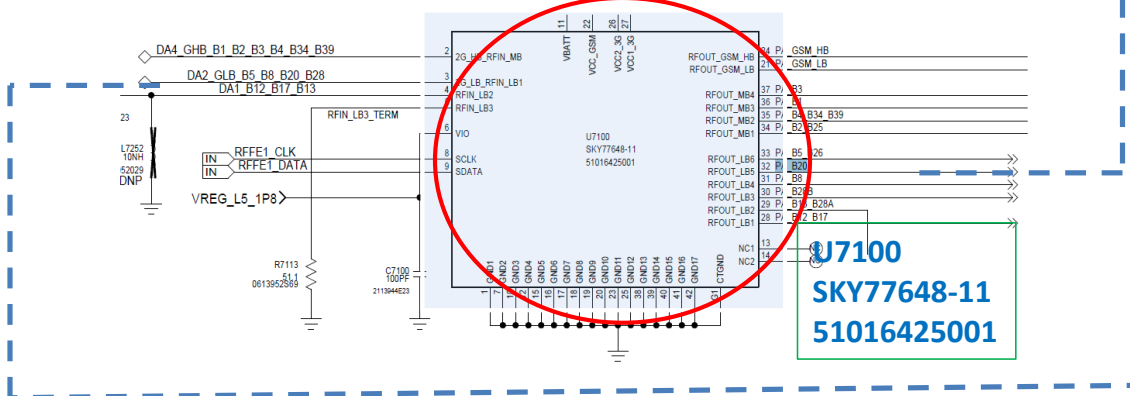
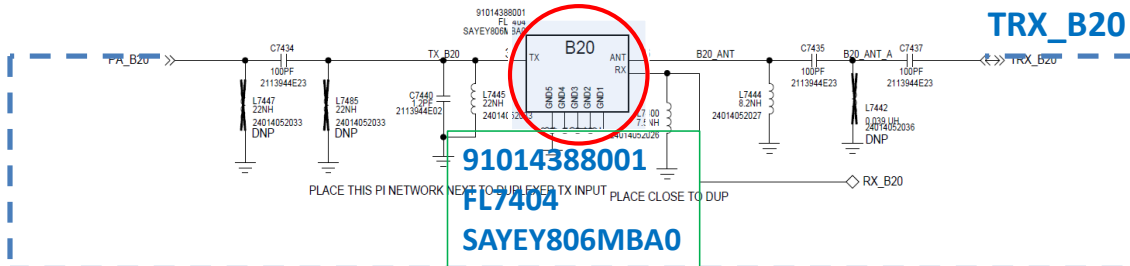


TITLE

Vertex RF Troubleshooting Guide

MODEL

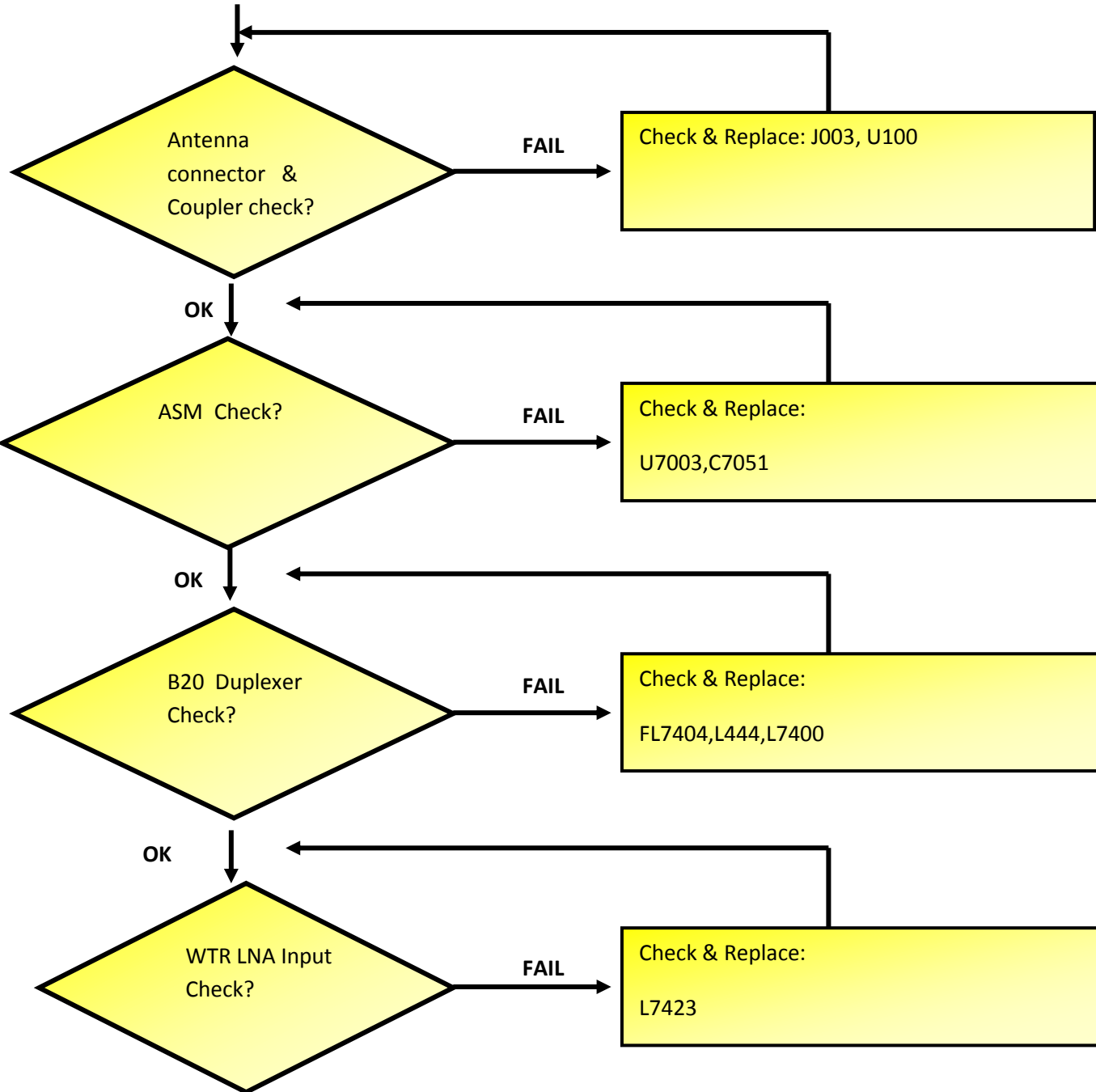
Vertex



WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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B20 LTE & WCDMA PRX



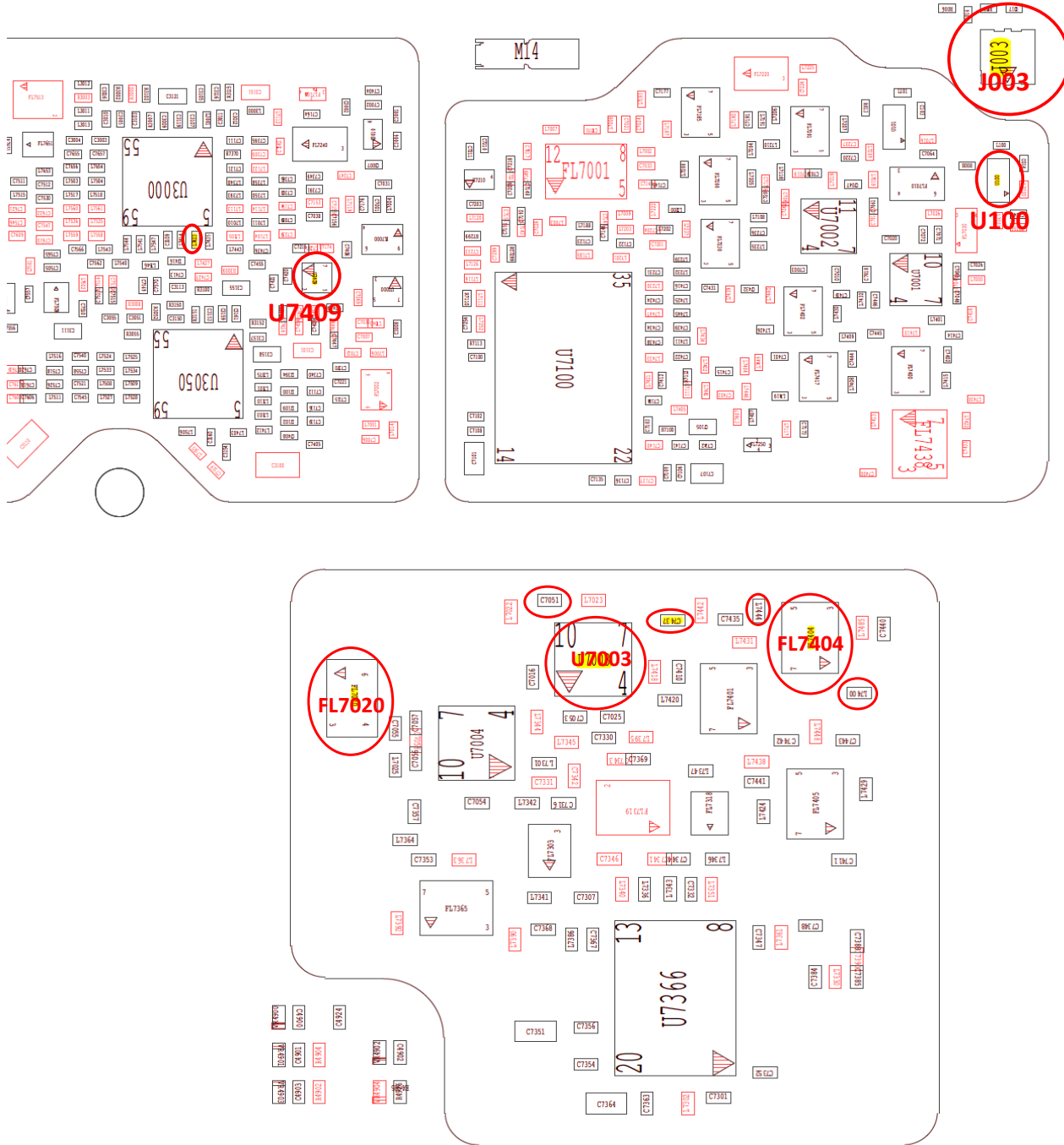
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

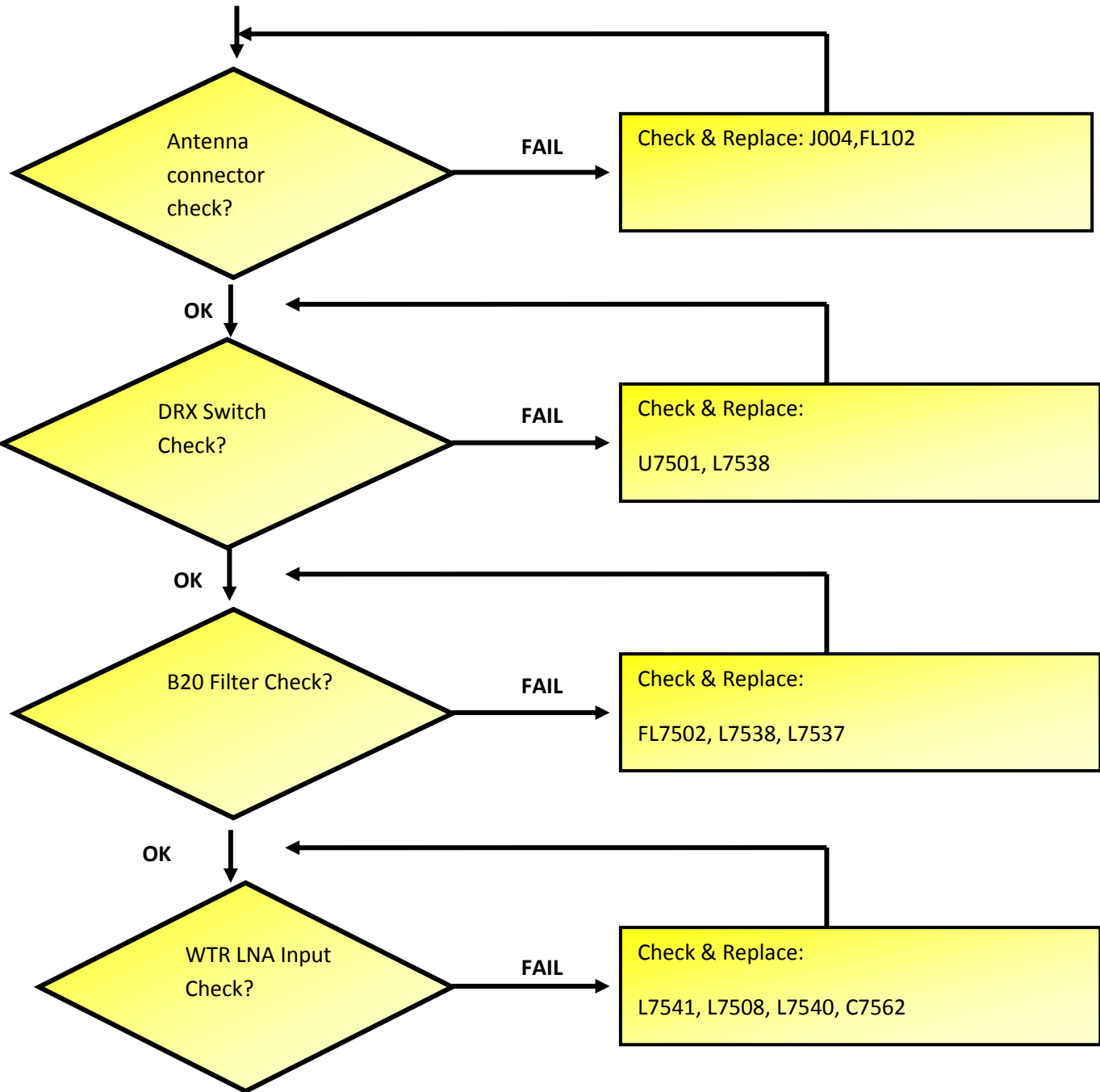
6/1/2016

WITNESS

DATE

<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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B20 LTE & WCDMA DRX



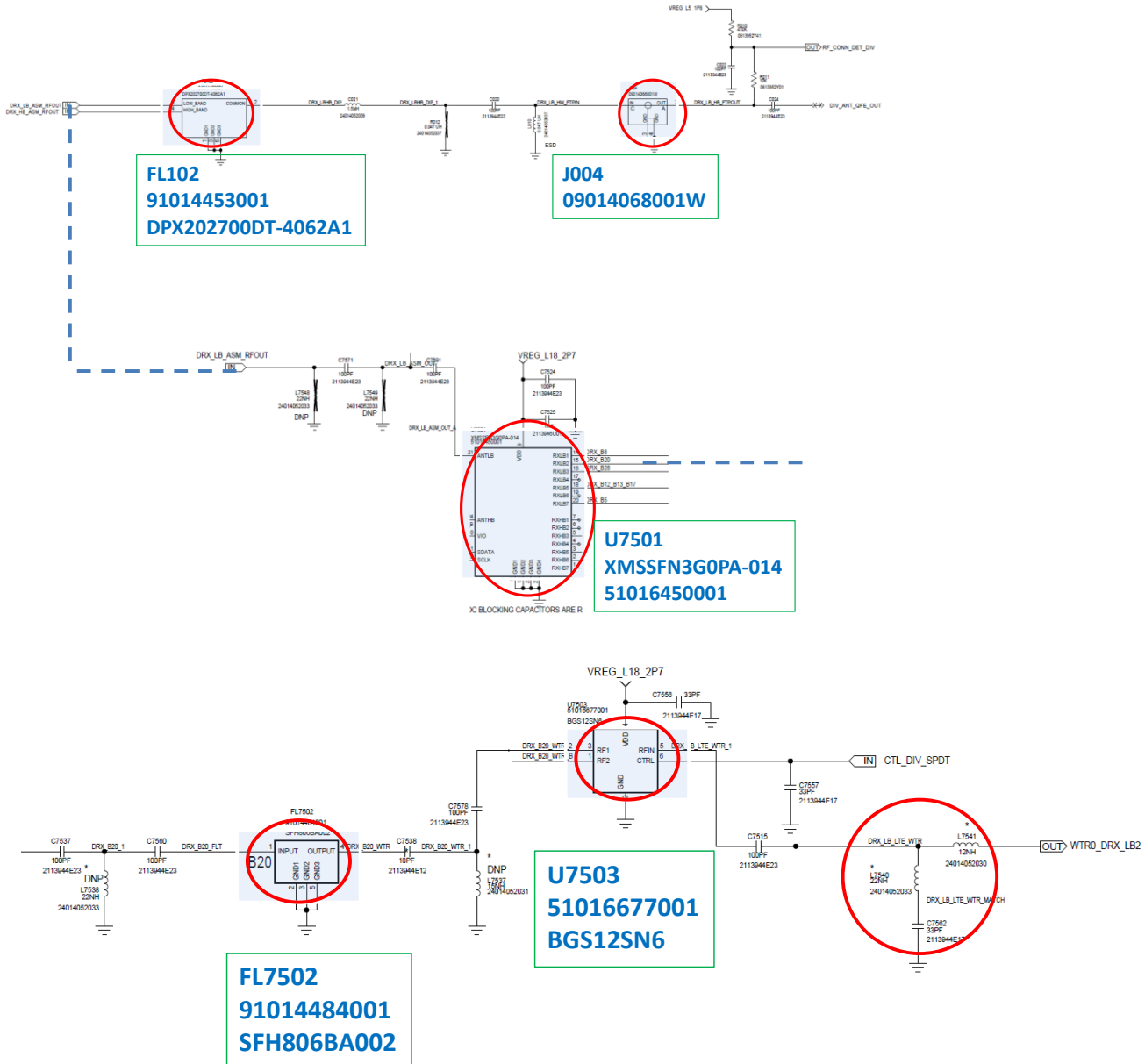
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



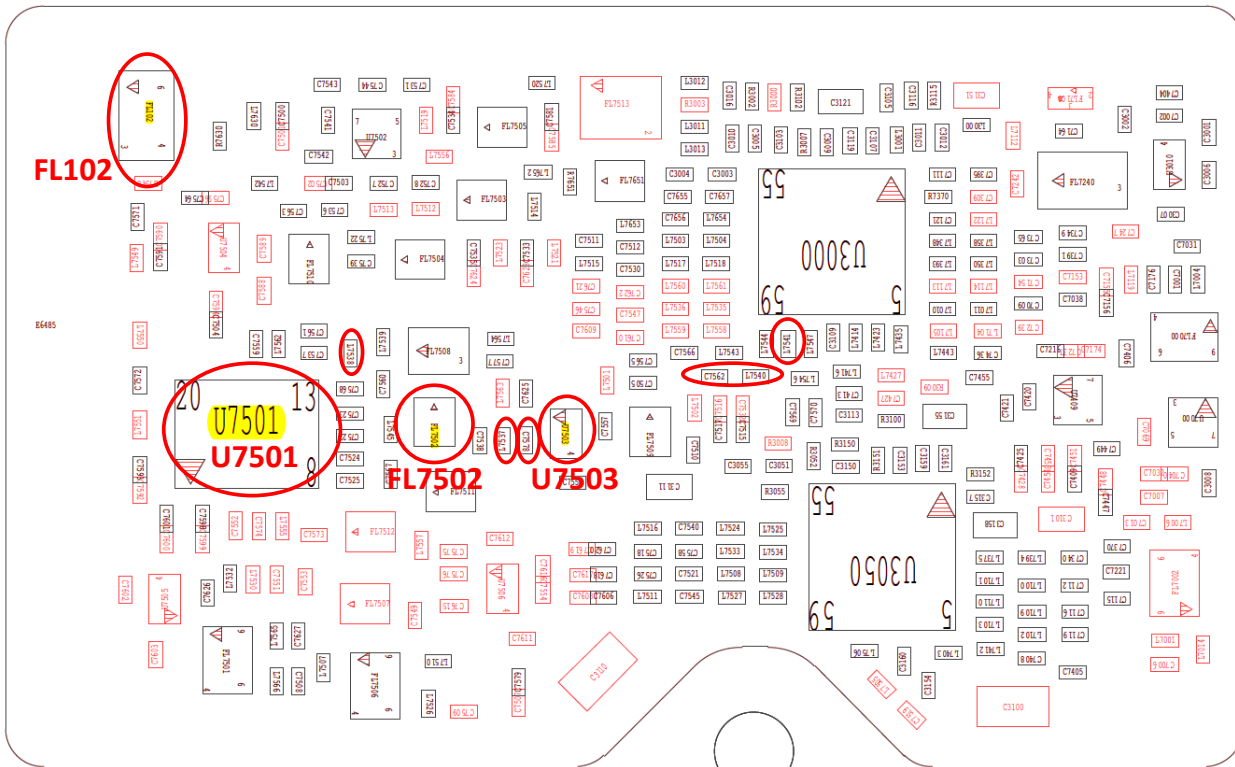
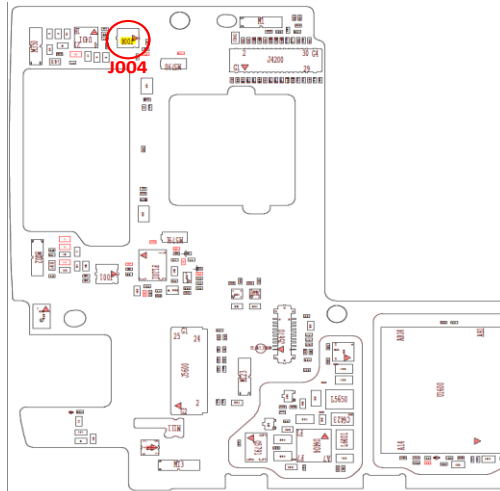
WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

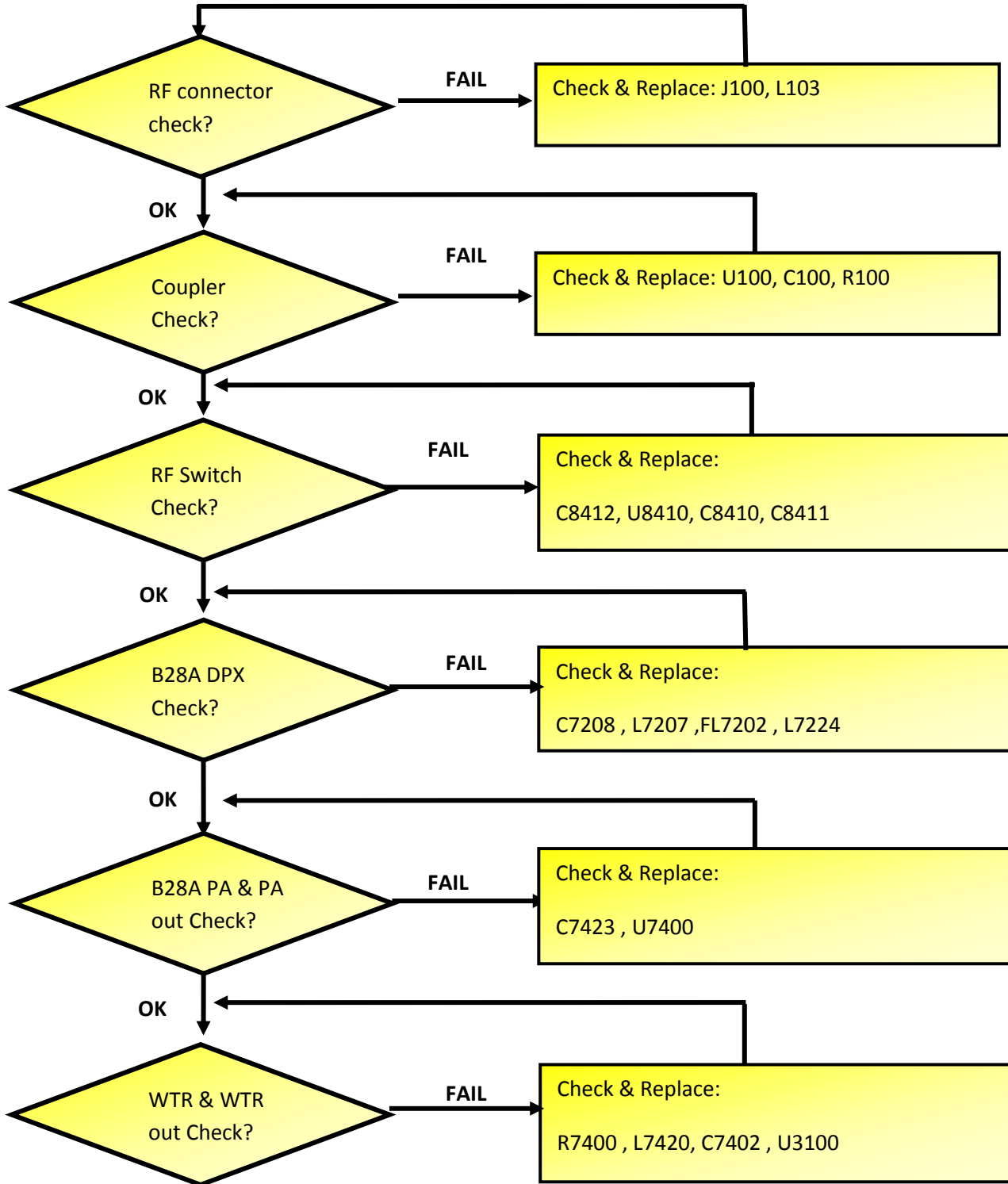
6/1/2016

WITNESS

DATE

TITLE Vertex RF Troubleshooting Guide	MODEL Vertex
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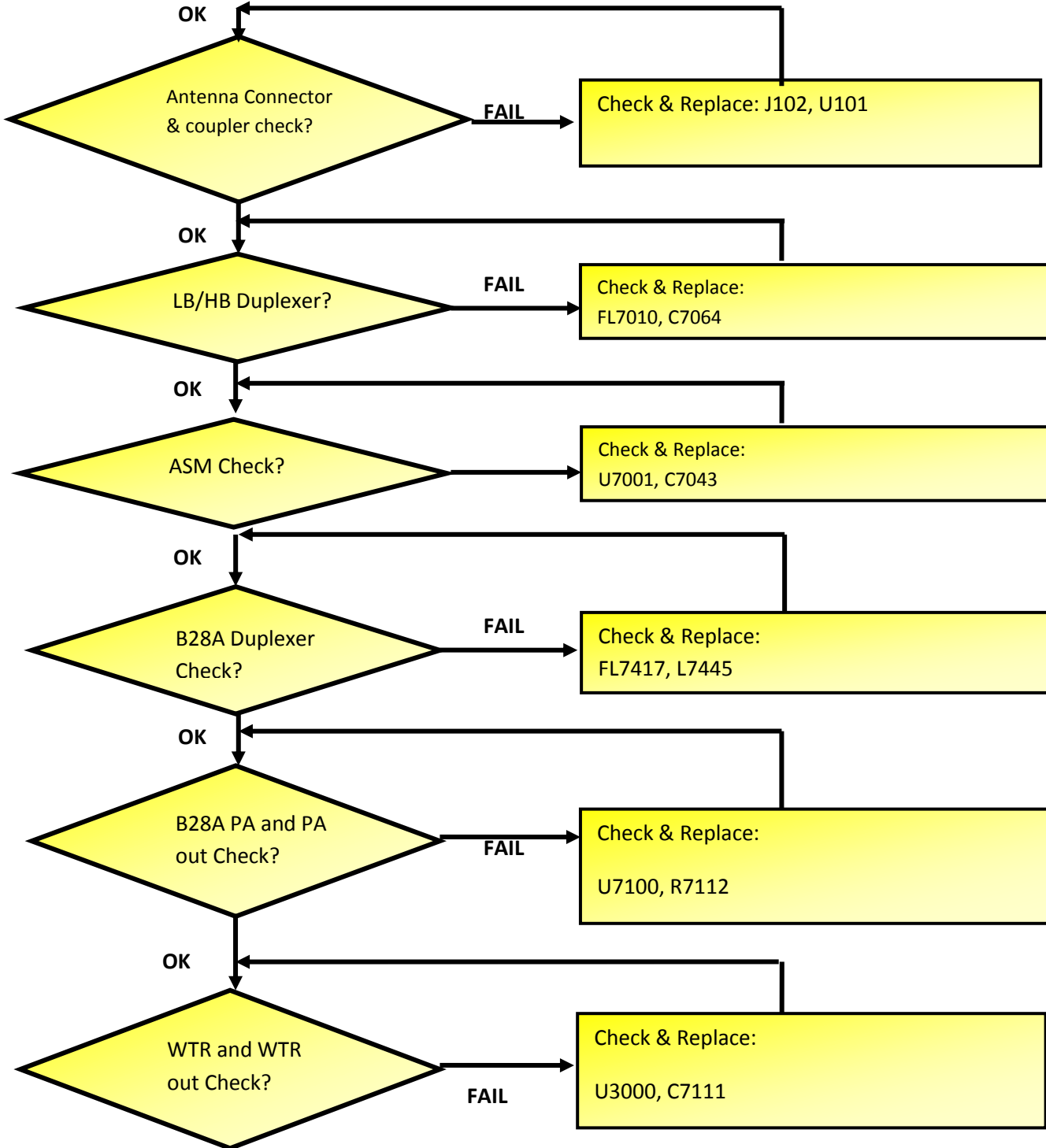
**B28 TRX
B28A TX - LTE**



WRITER Vertex RF HW Development Team	DATE 6/1/2016	WITNESS	DATE
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<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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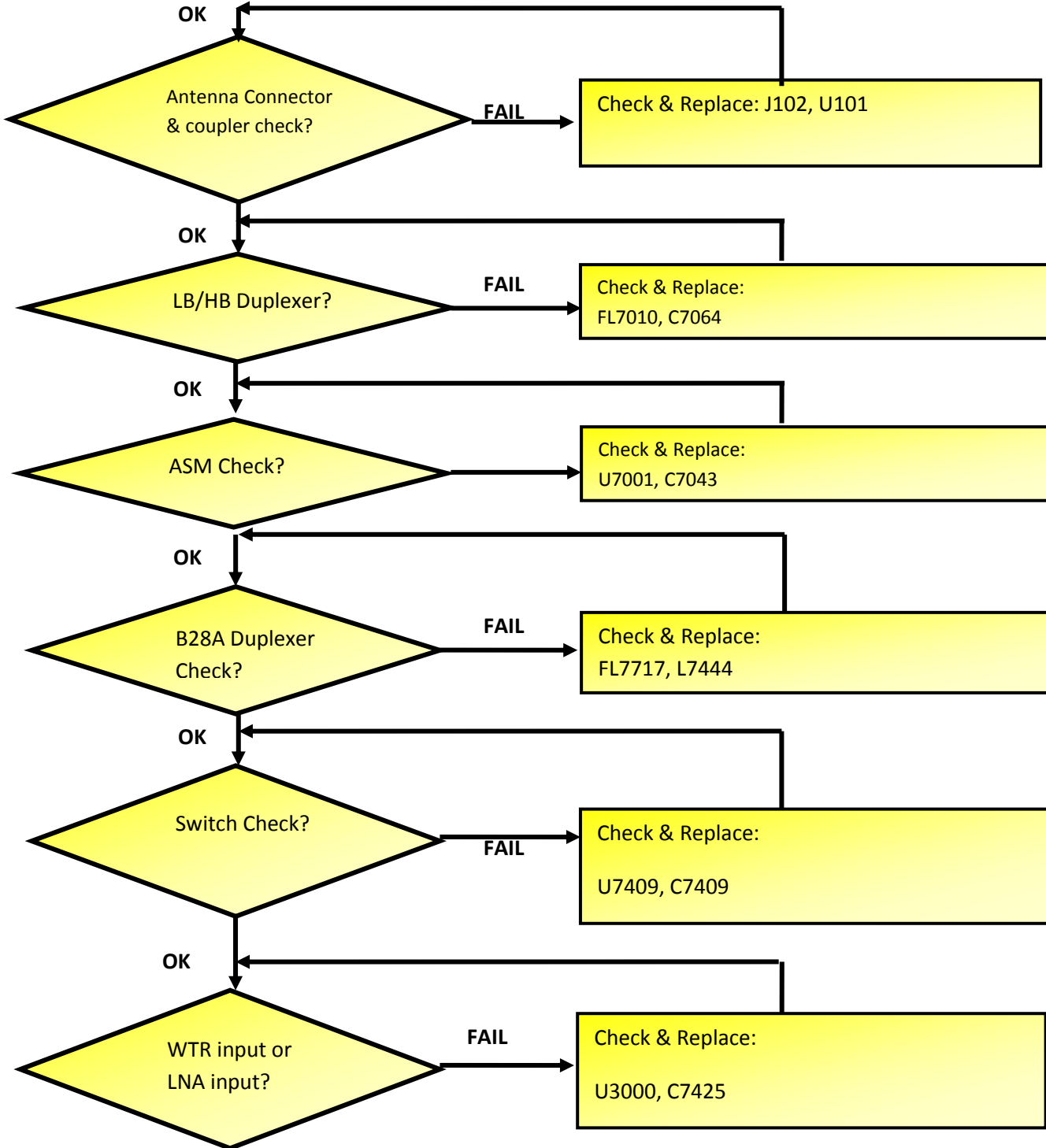
B28A LTE TX (ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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B28A LTE PRX (ROW)



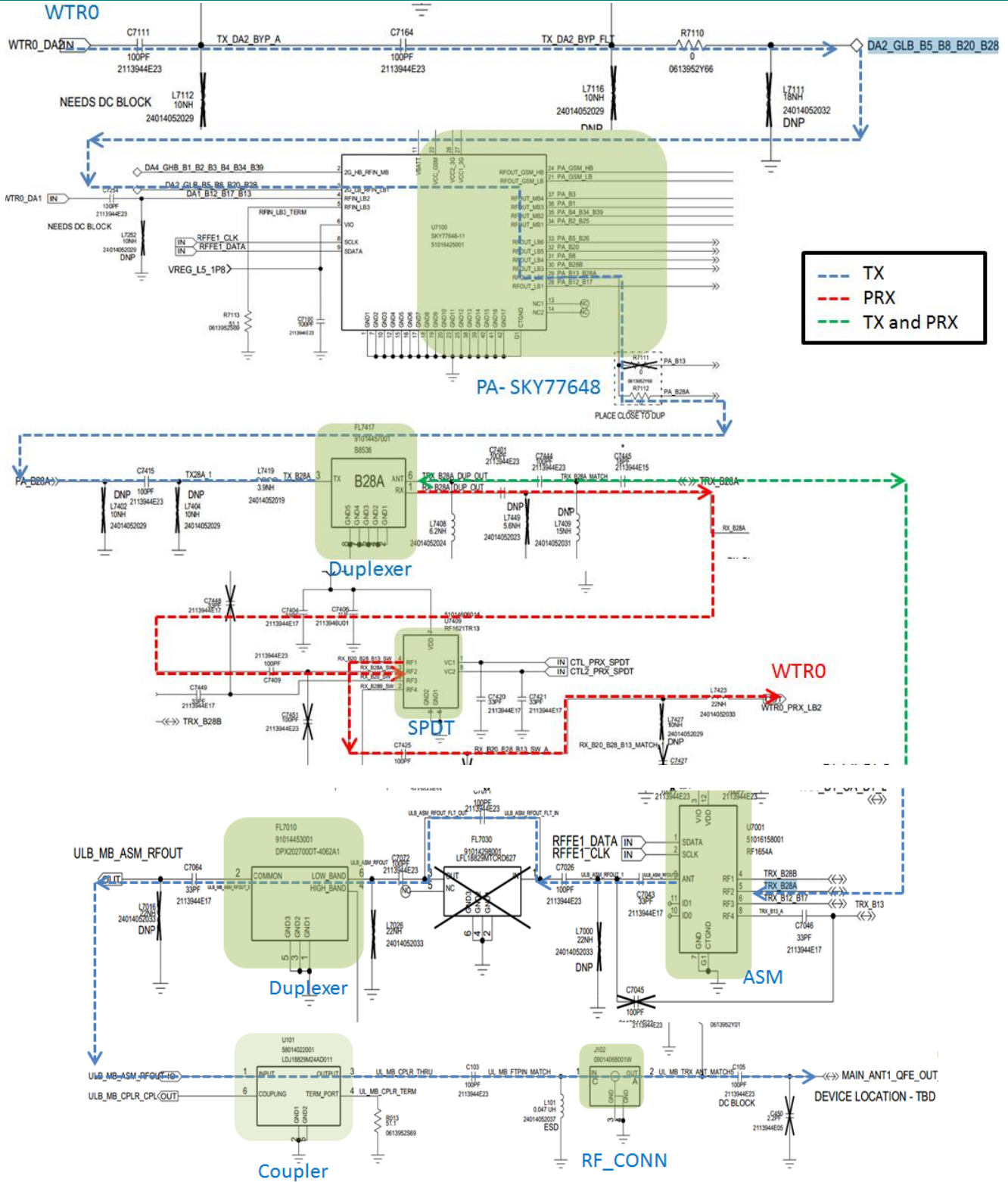
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

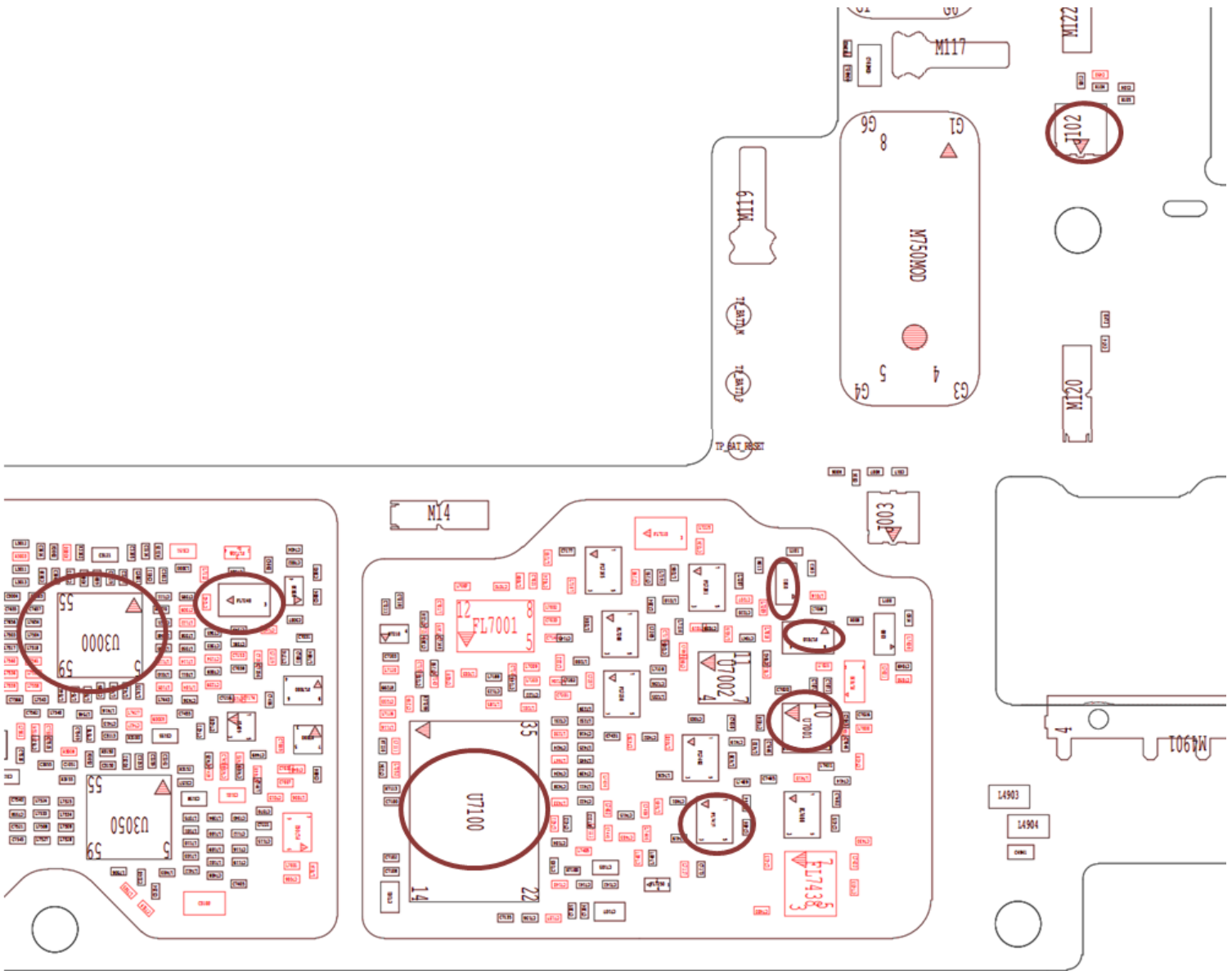
Vertex



WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

<p>TITLE</p> <h1 style="text-align: center;">Vertex RF Troubleshooting Guide</h1>	<p>MODEL</p> <h1 style="text-align: center;">Vertex</h1>
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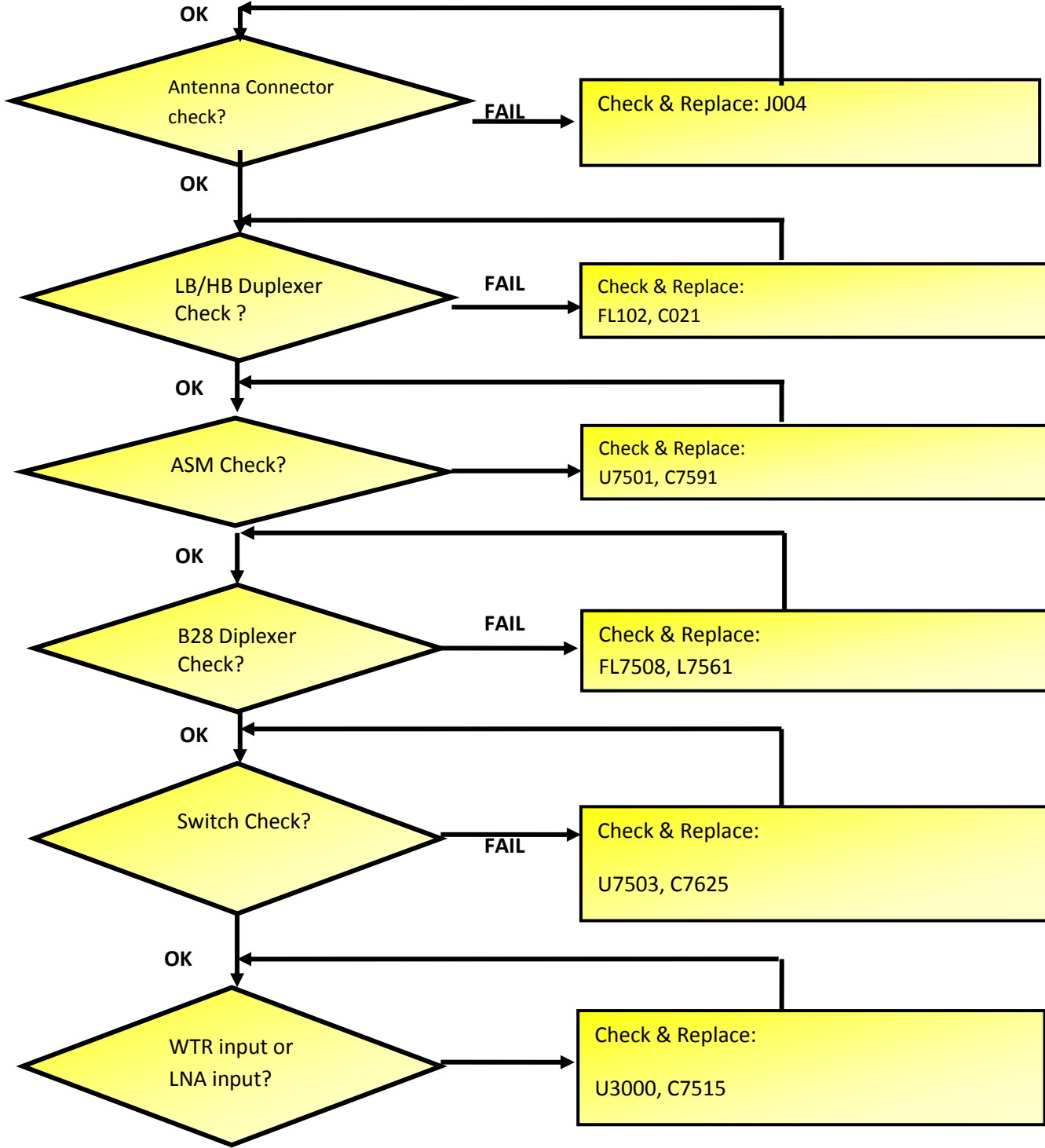
B28A Tx and PRx



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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B28AB LTE DRX (ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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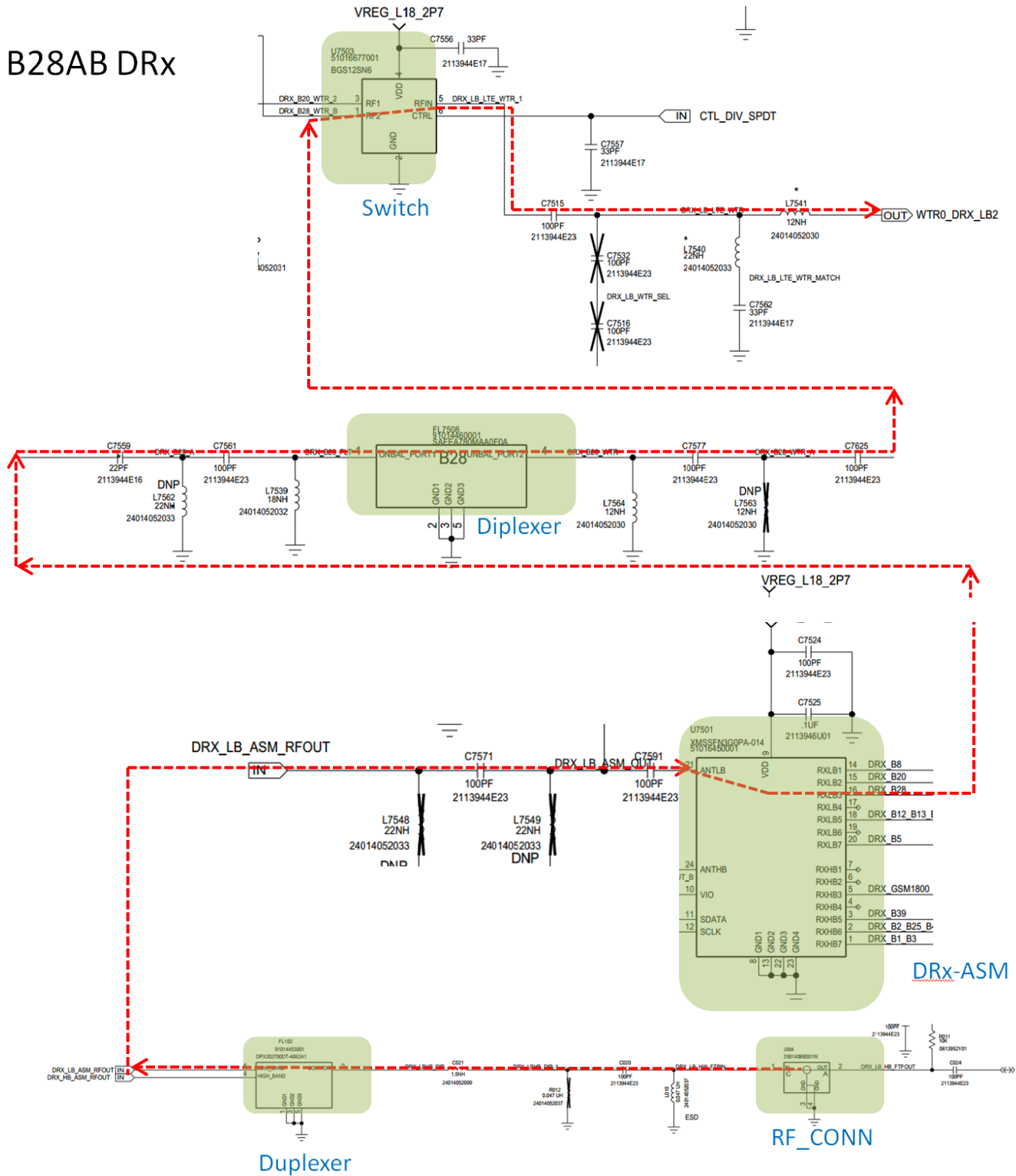
TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex

B28AB DRx



WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

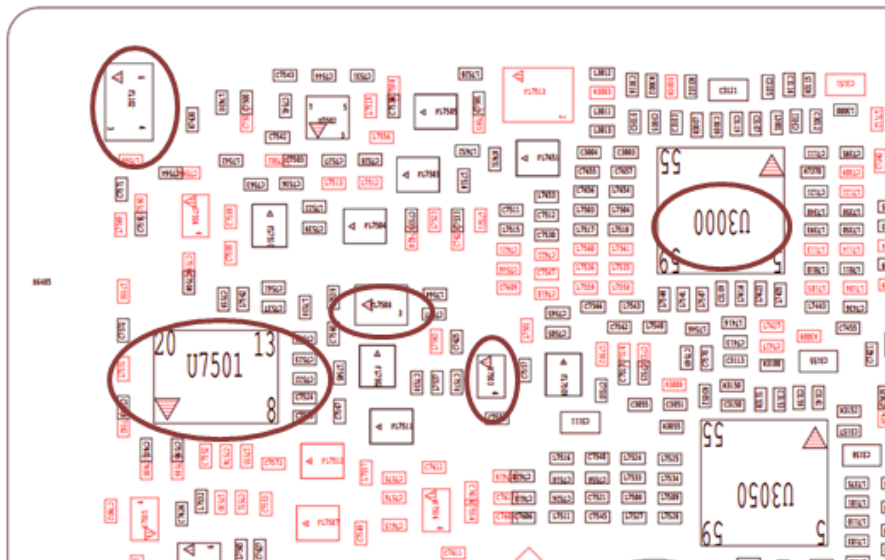
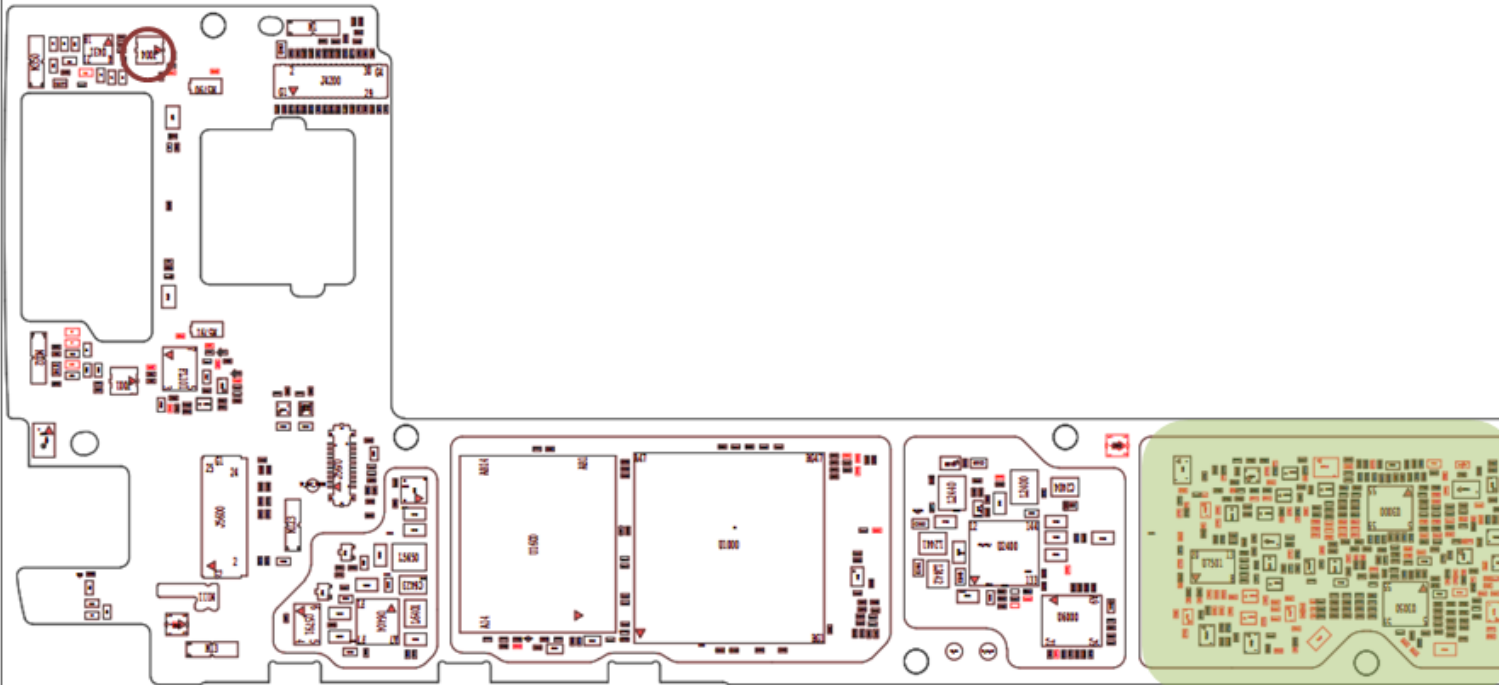
TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex

B28AB Diversity



WRITER

Vertex RF HW Development Team

DATE

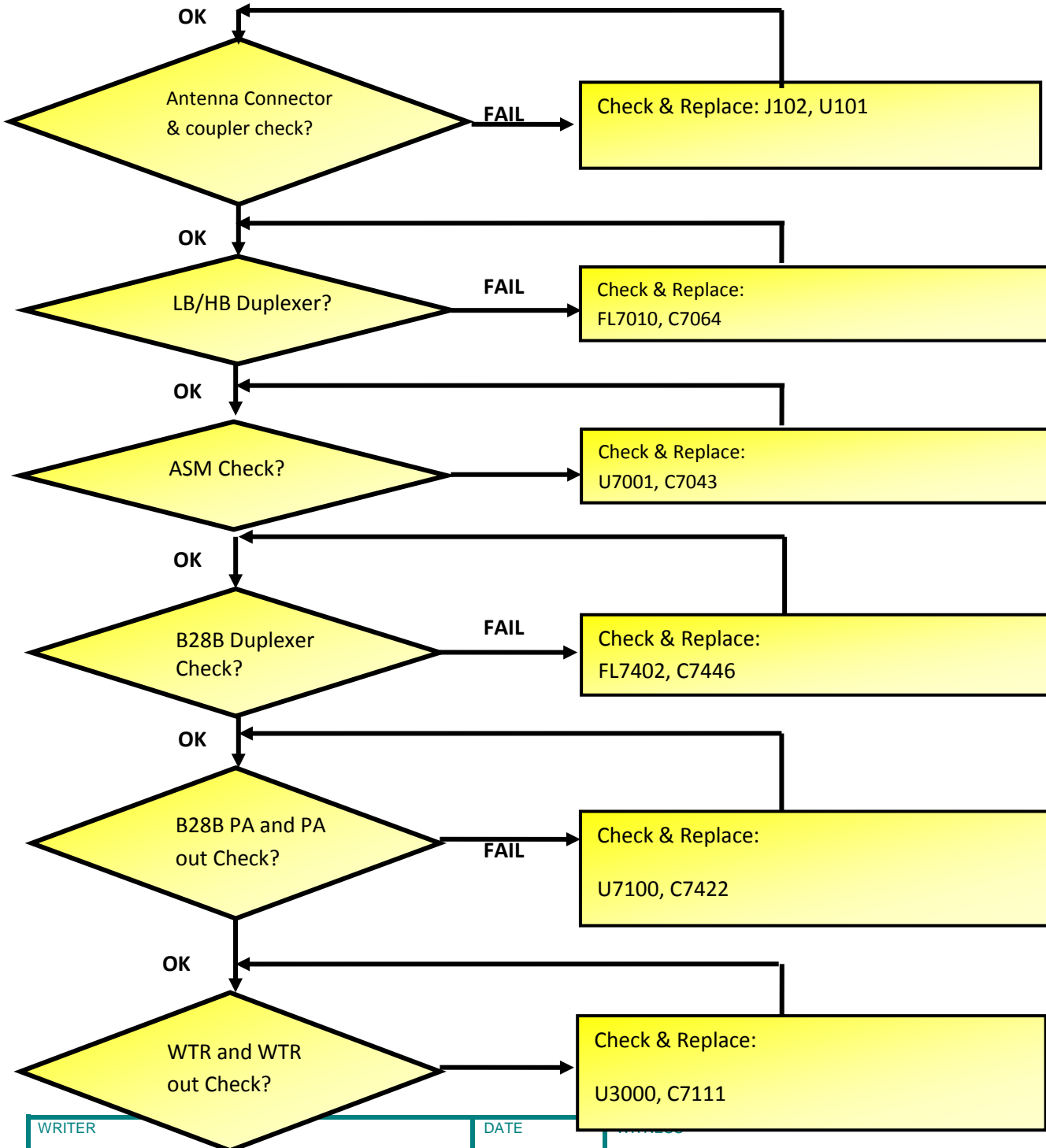
6/1/2016

WITNESS

DATE

<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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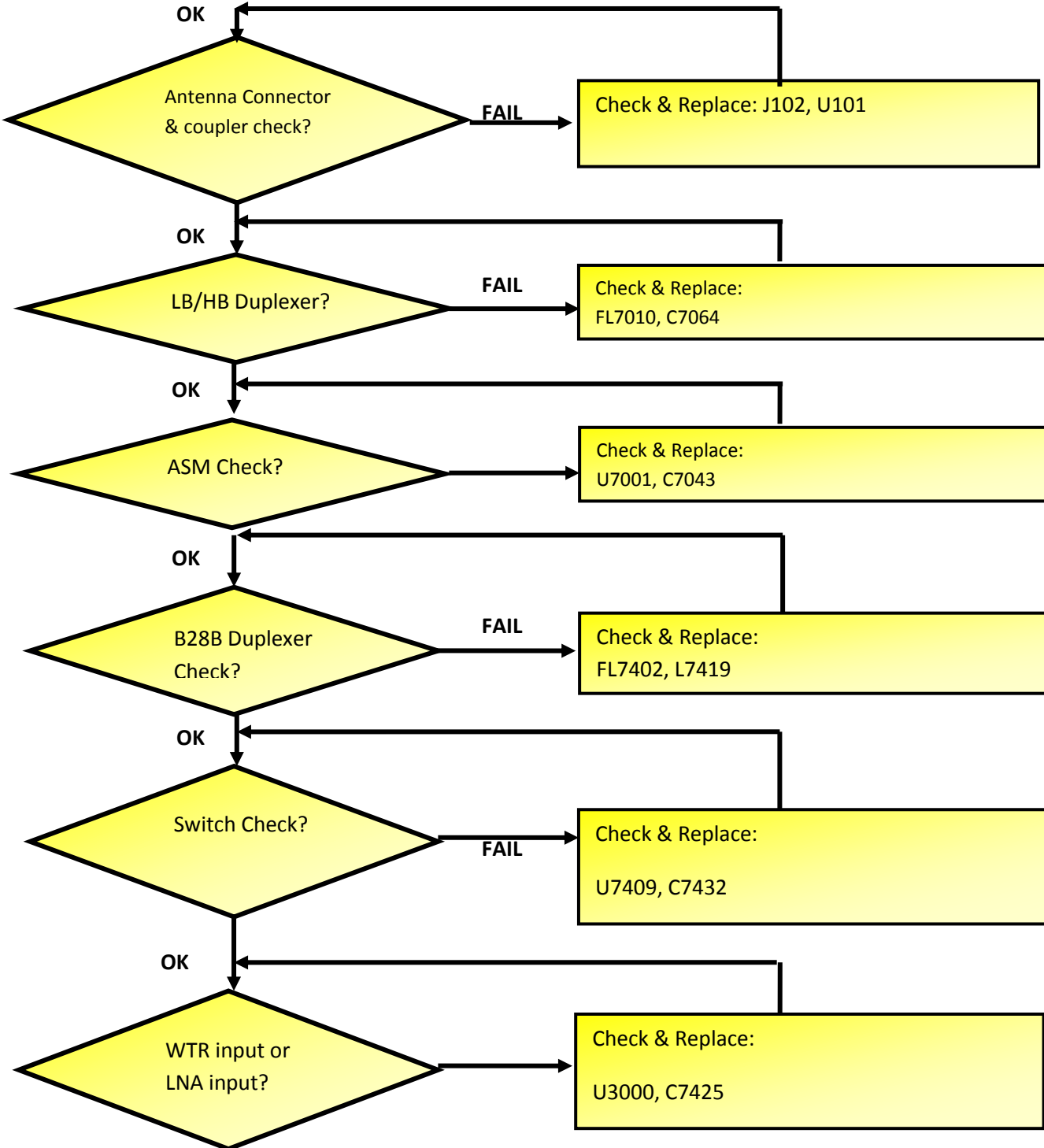
B28B LTE TX (ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>DATE</p>	<p>DATE</p>
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<p>TITLE</p> <p>Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p>Vertex</p>
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B28B LTE PRX (ROW)



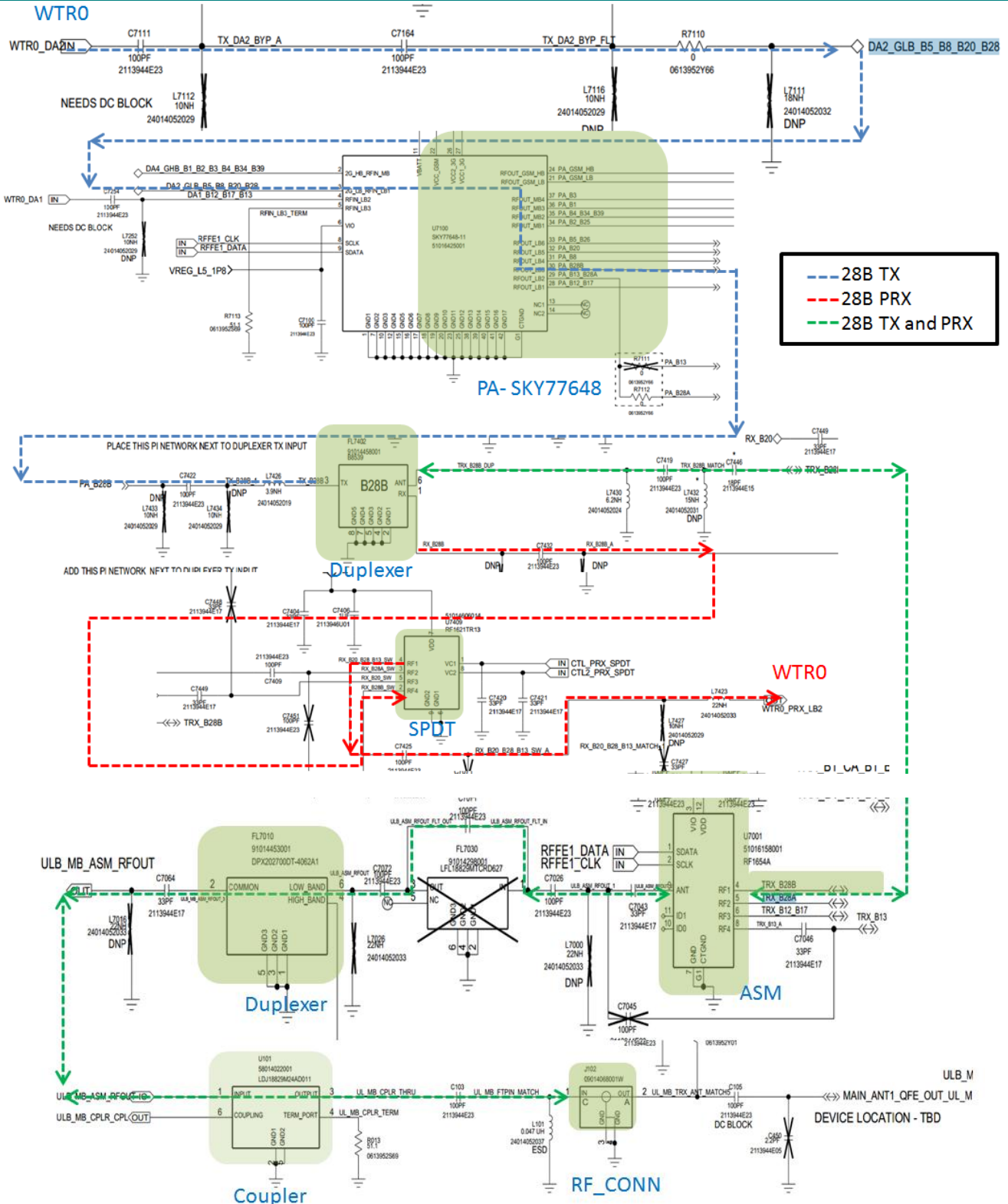
<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

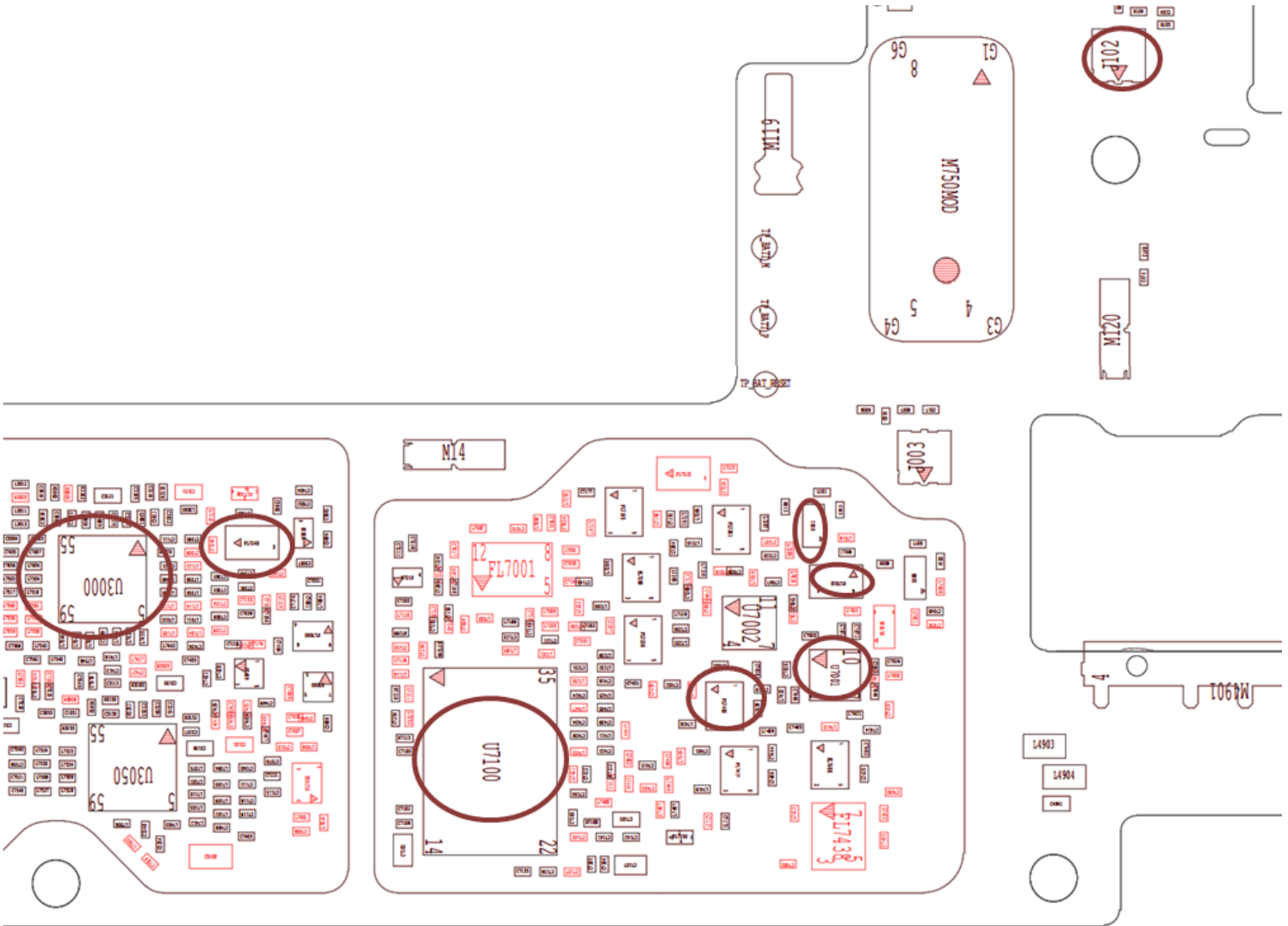
Vertex



WRITER	DATE	WITNESS	DATE
Vertex RF HW Development Team	6/1/2016		

<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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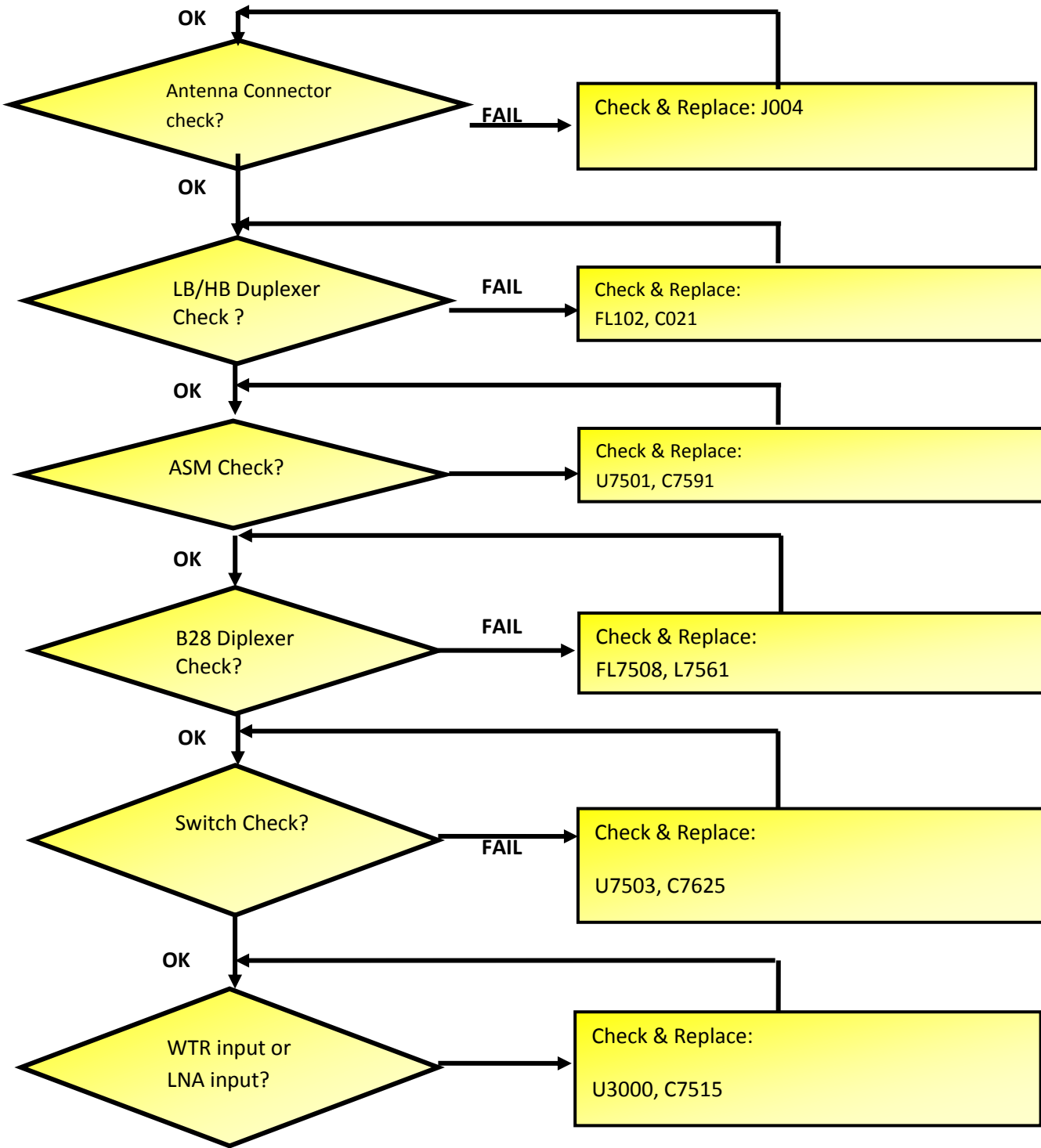
B28B Tx and PRx



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <h2 style="text-align: center;">Vertex RF Troubleshooting Guide</h2>	<p>MODEL</p> <h2 style="text-align: center;">Vertex</h2>
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B28AB LTE DRX (ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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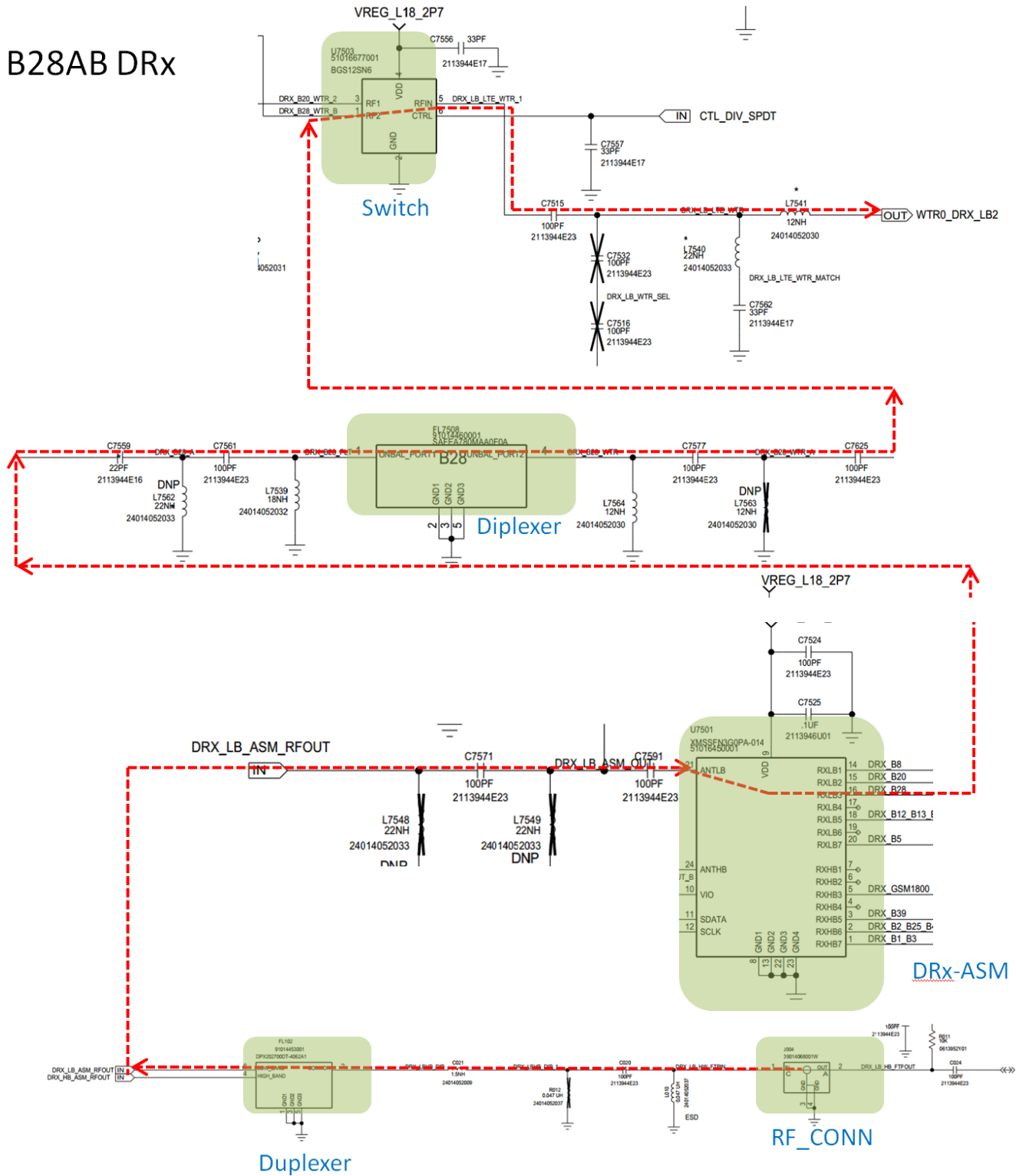
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Vertex RF Troubleshooting Guide

MODEL

Vertex

B28AB DRx



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

DATE

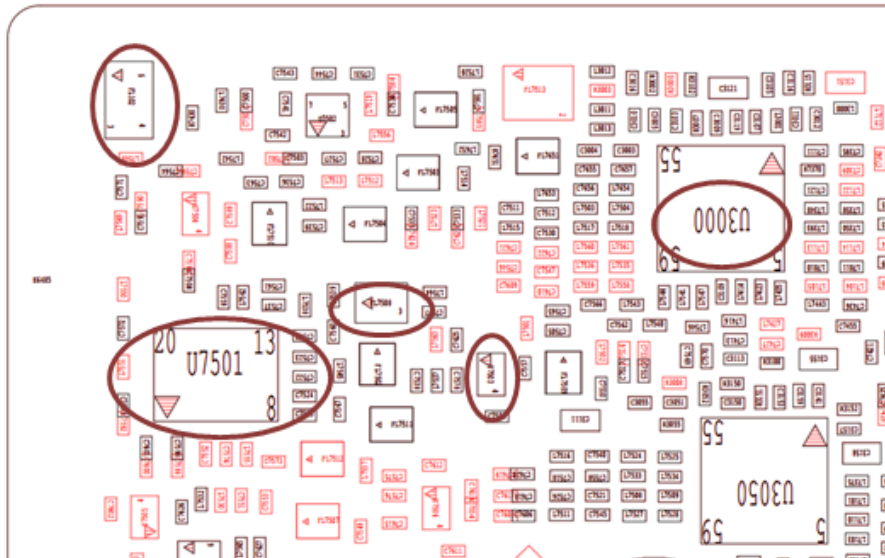
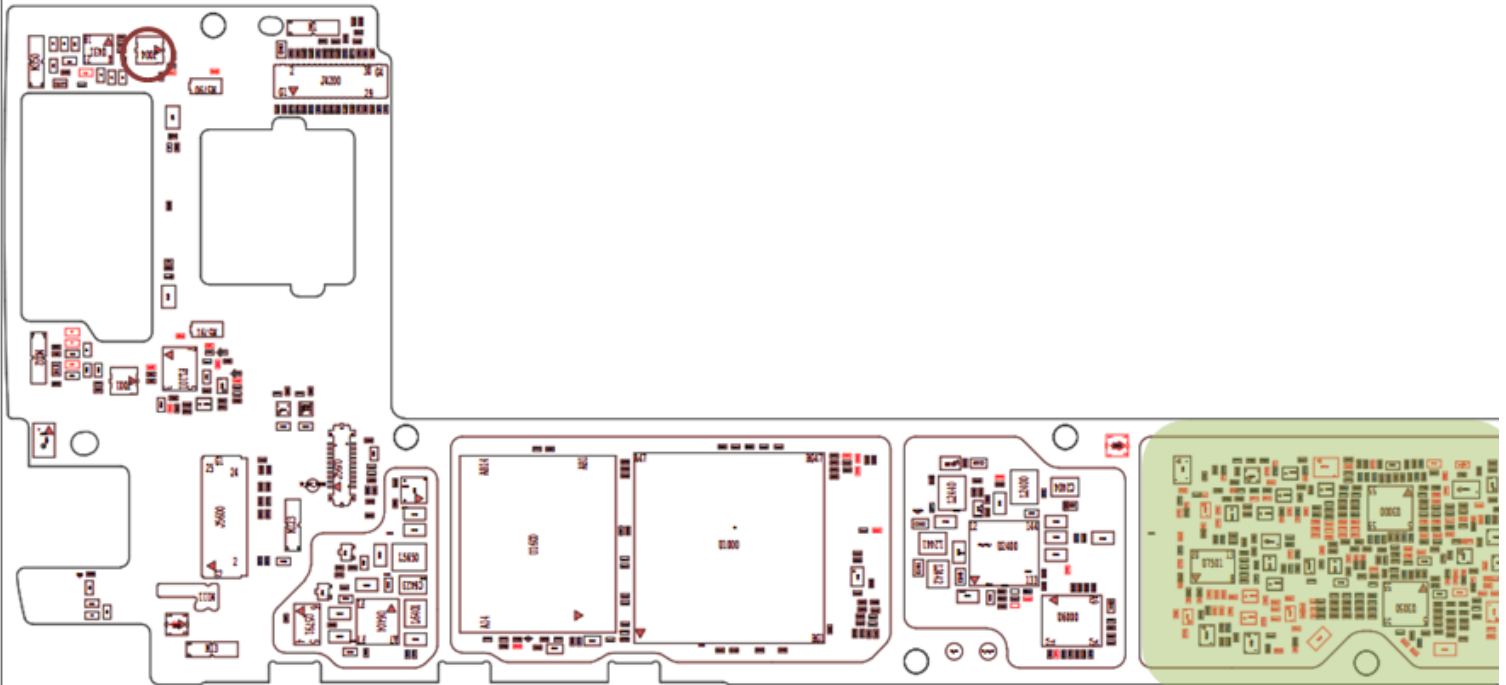
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Vertex RF Troubleshooting Guide

MODEL

Vertex

B28AB Diversity



WRITER

Vertex RF HW Development Team

DATE

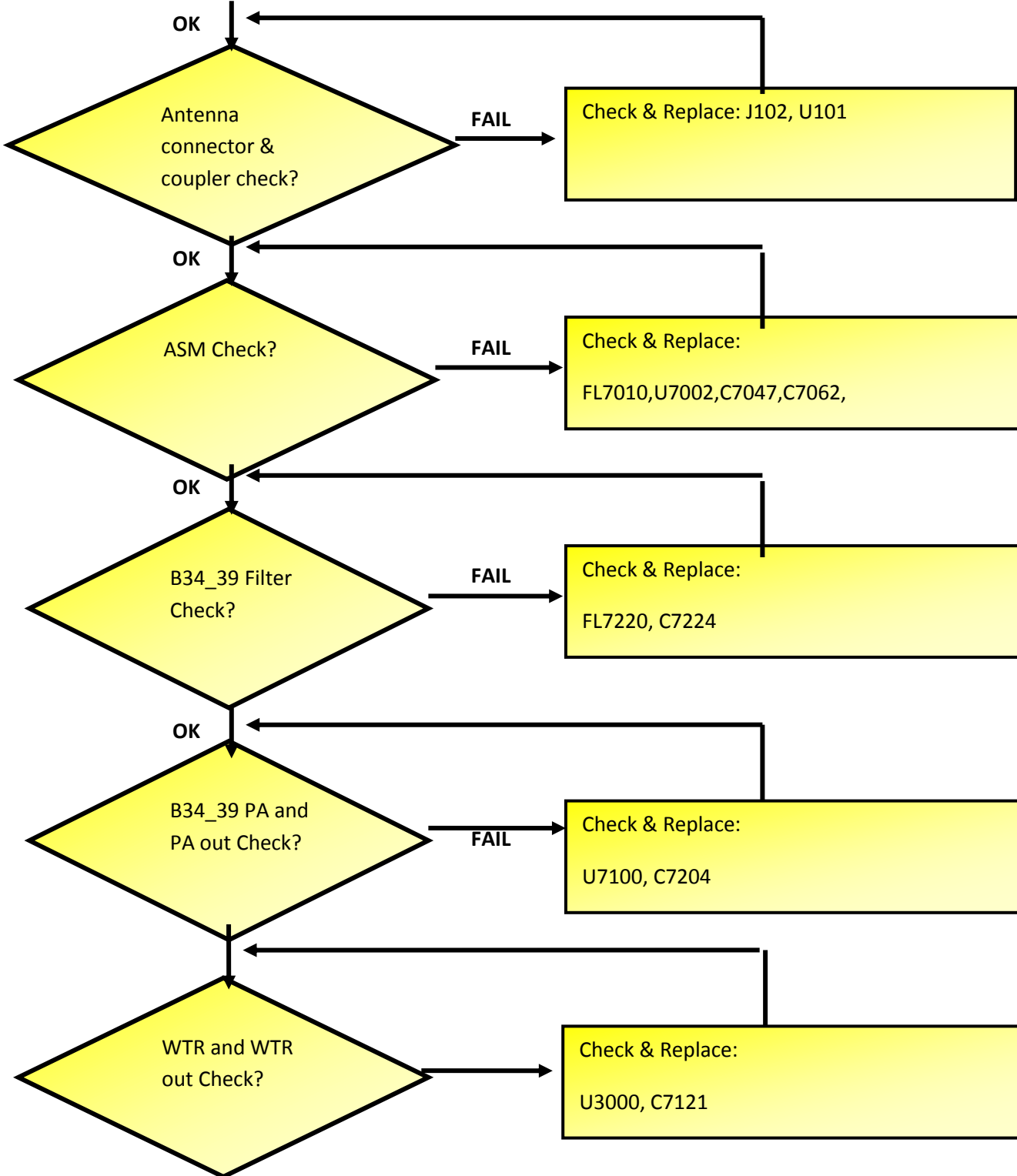
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WITNESS

DATE

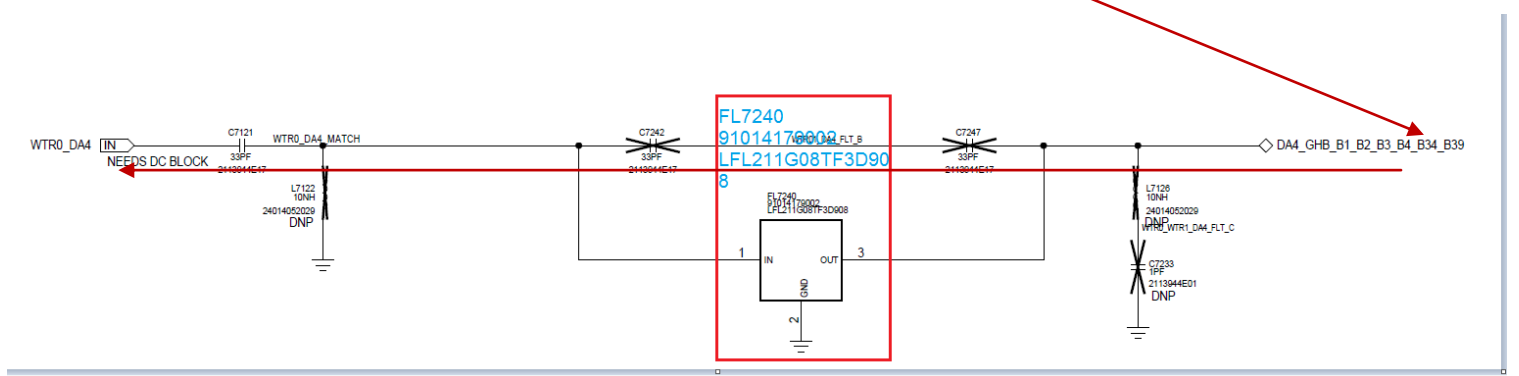
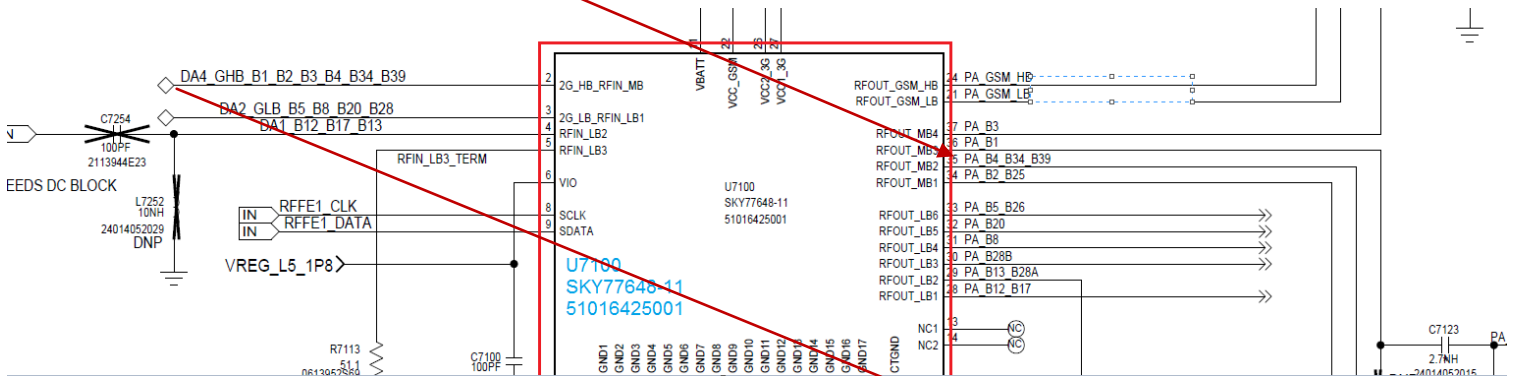
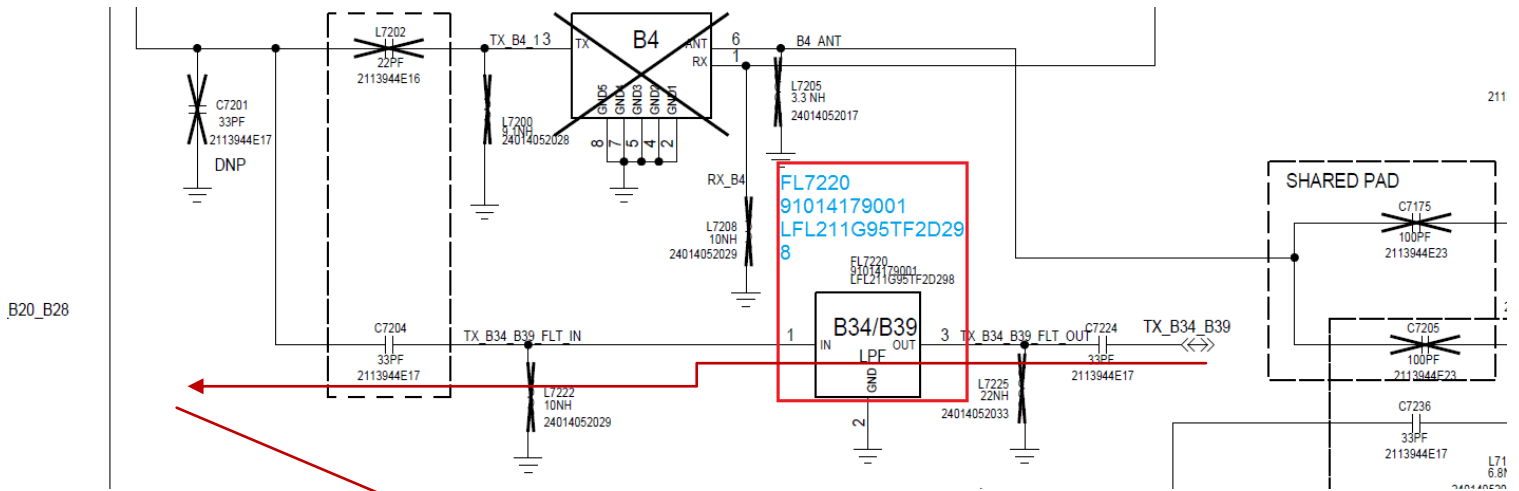
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TDSCDMA_B34_39_LTEB39 TX (China)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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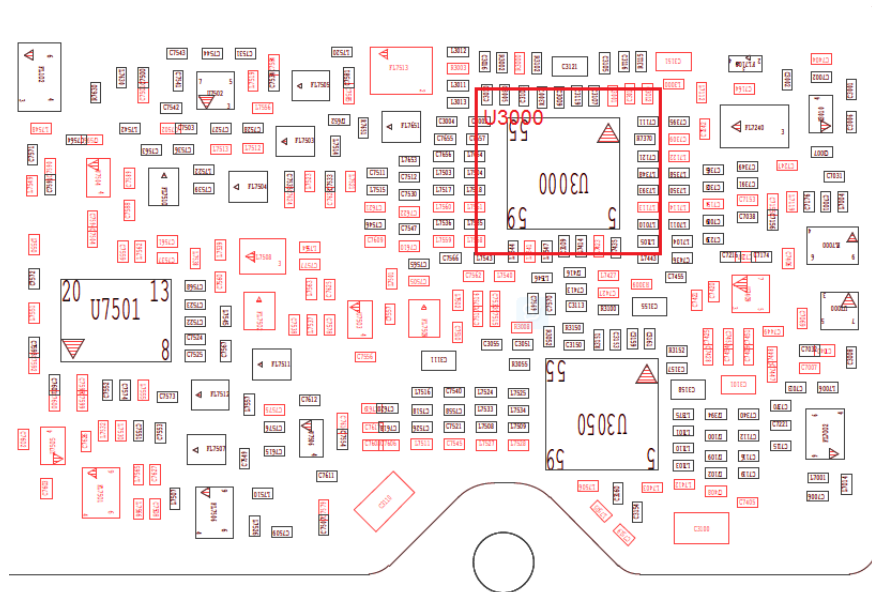
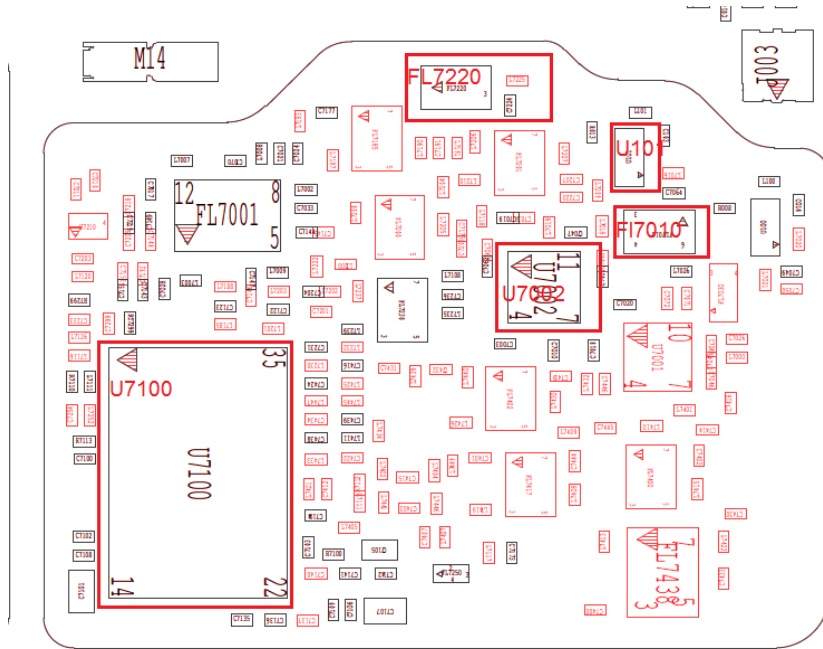
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

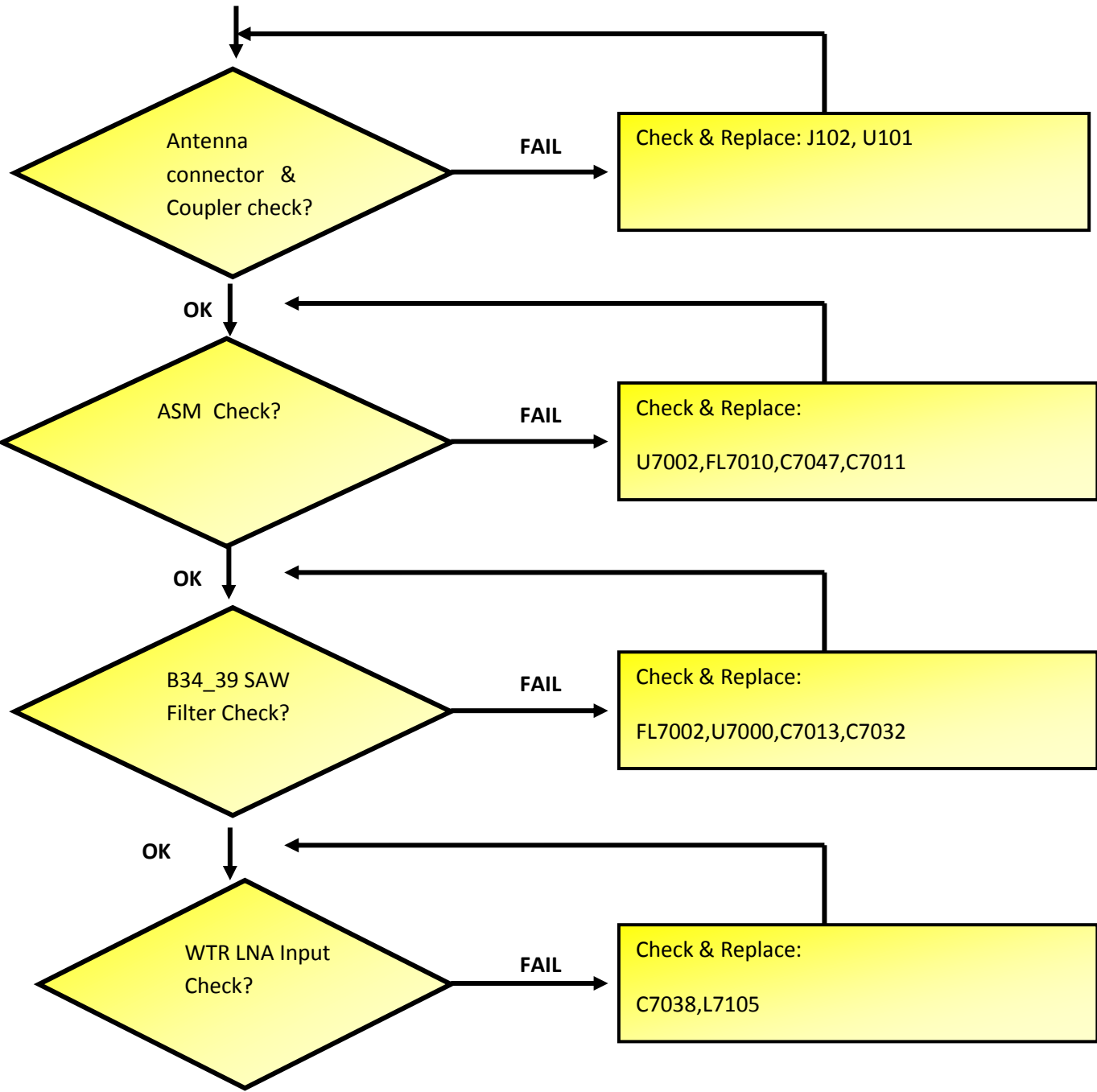
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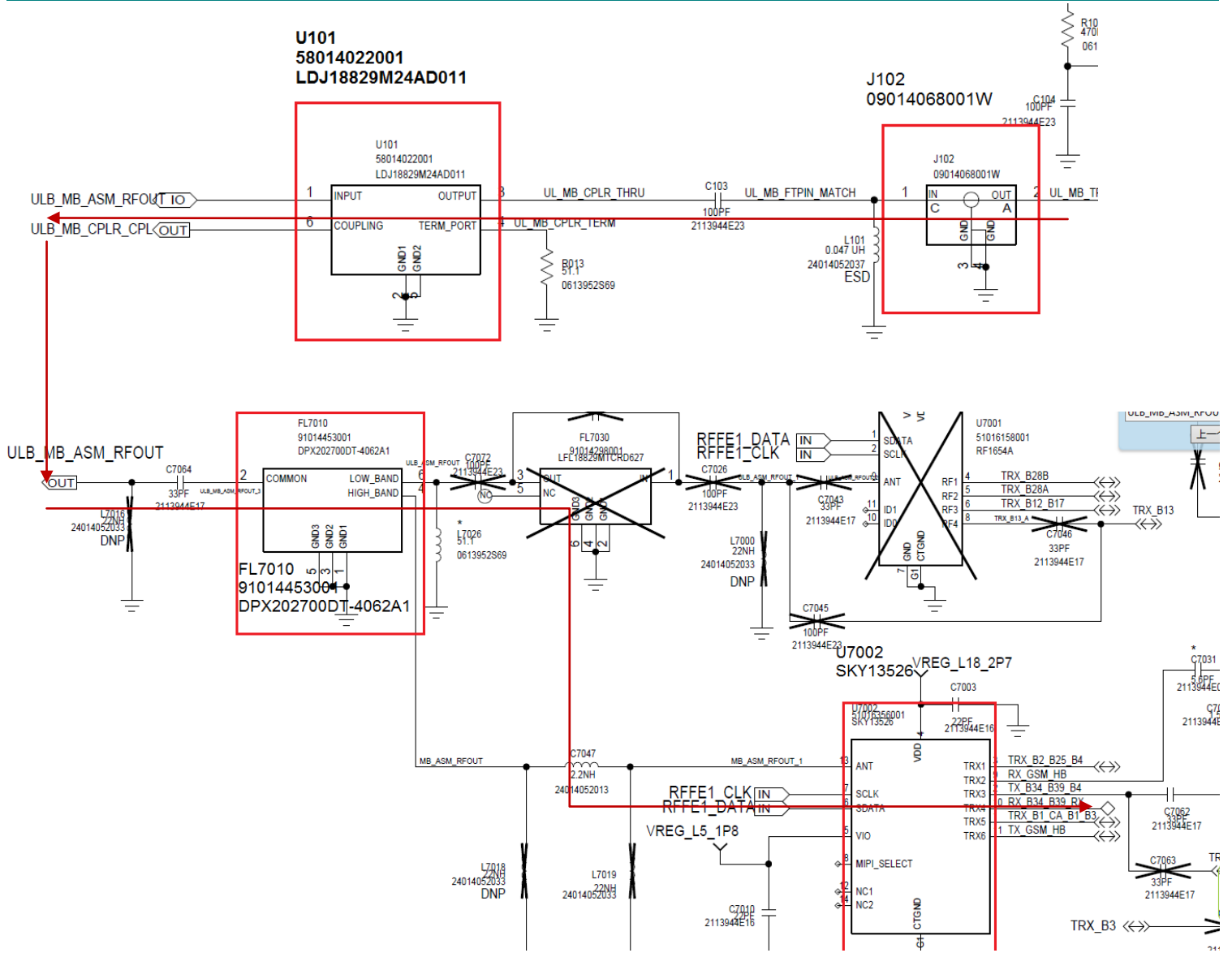
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TDSCDMA_B34_39_LTEB39 PRX (China)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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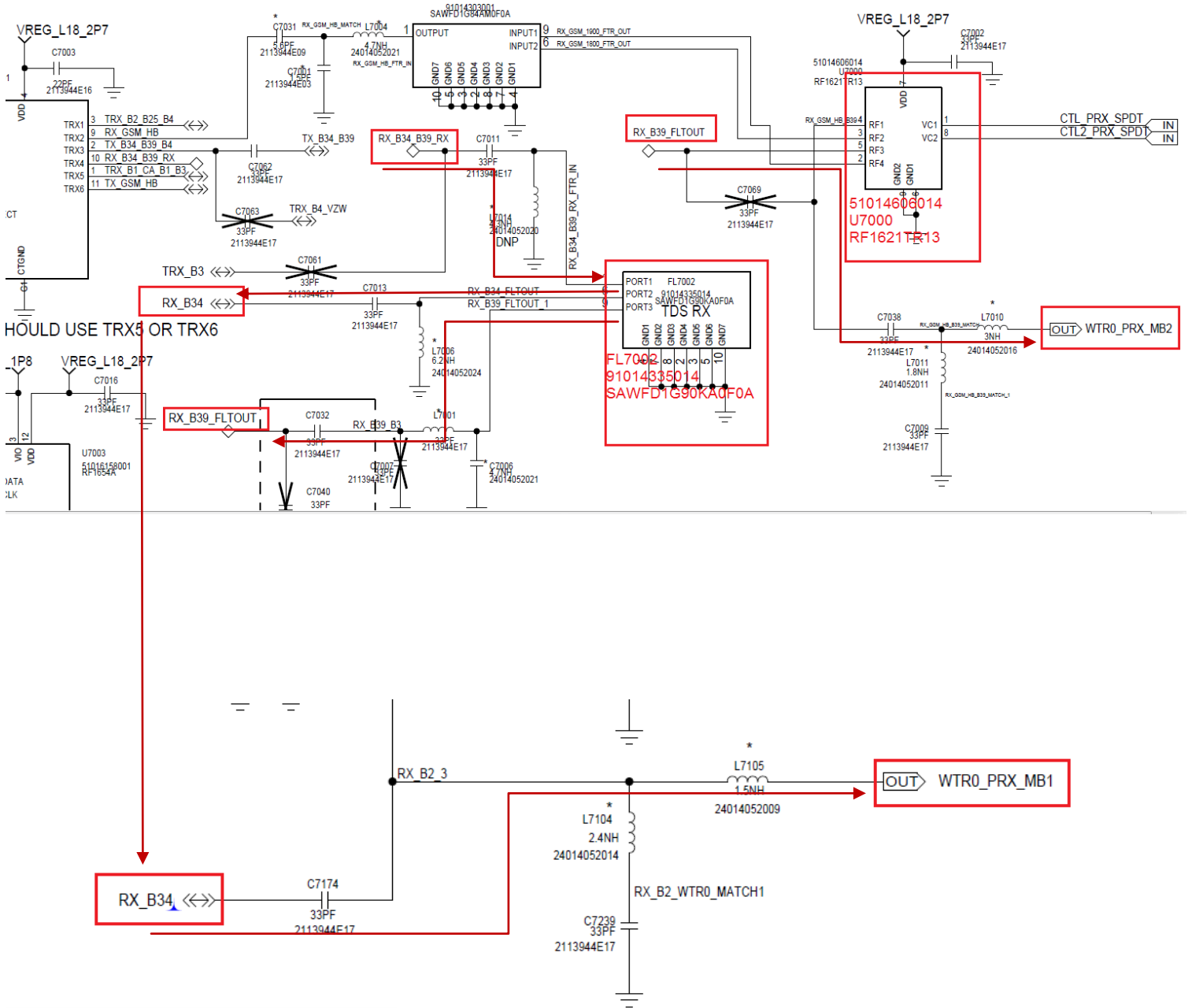
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



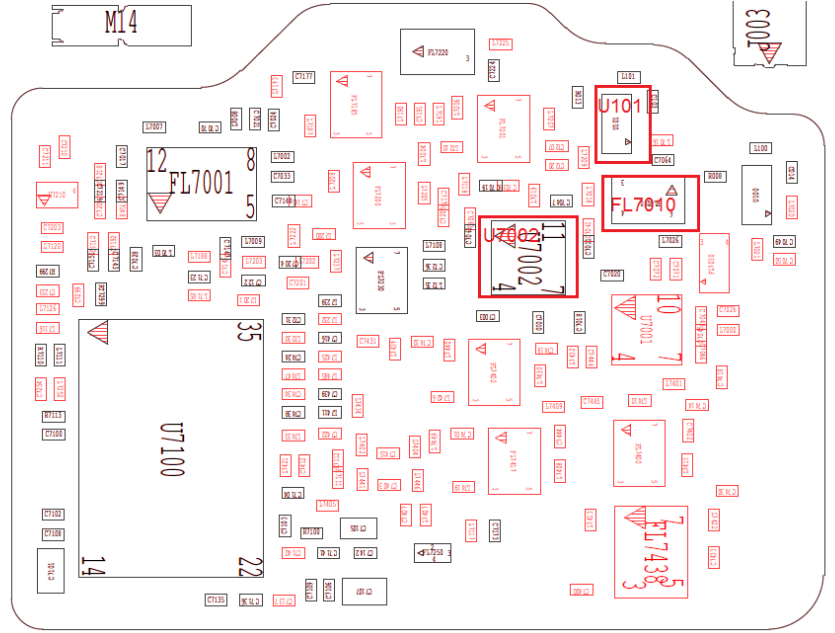
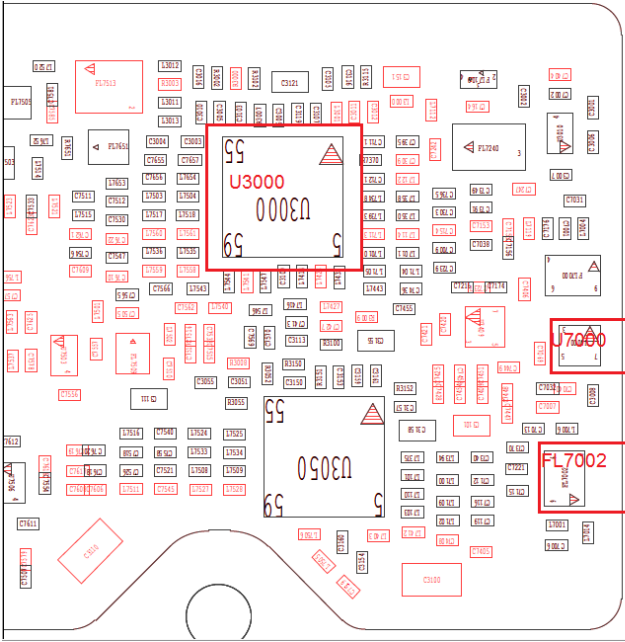
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Vertex RF HW Development Team	6/1/2016		

TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

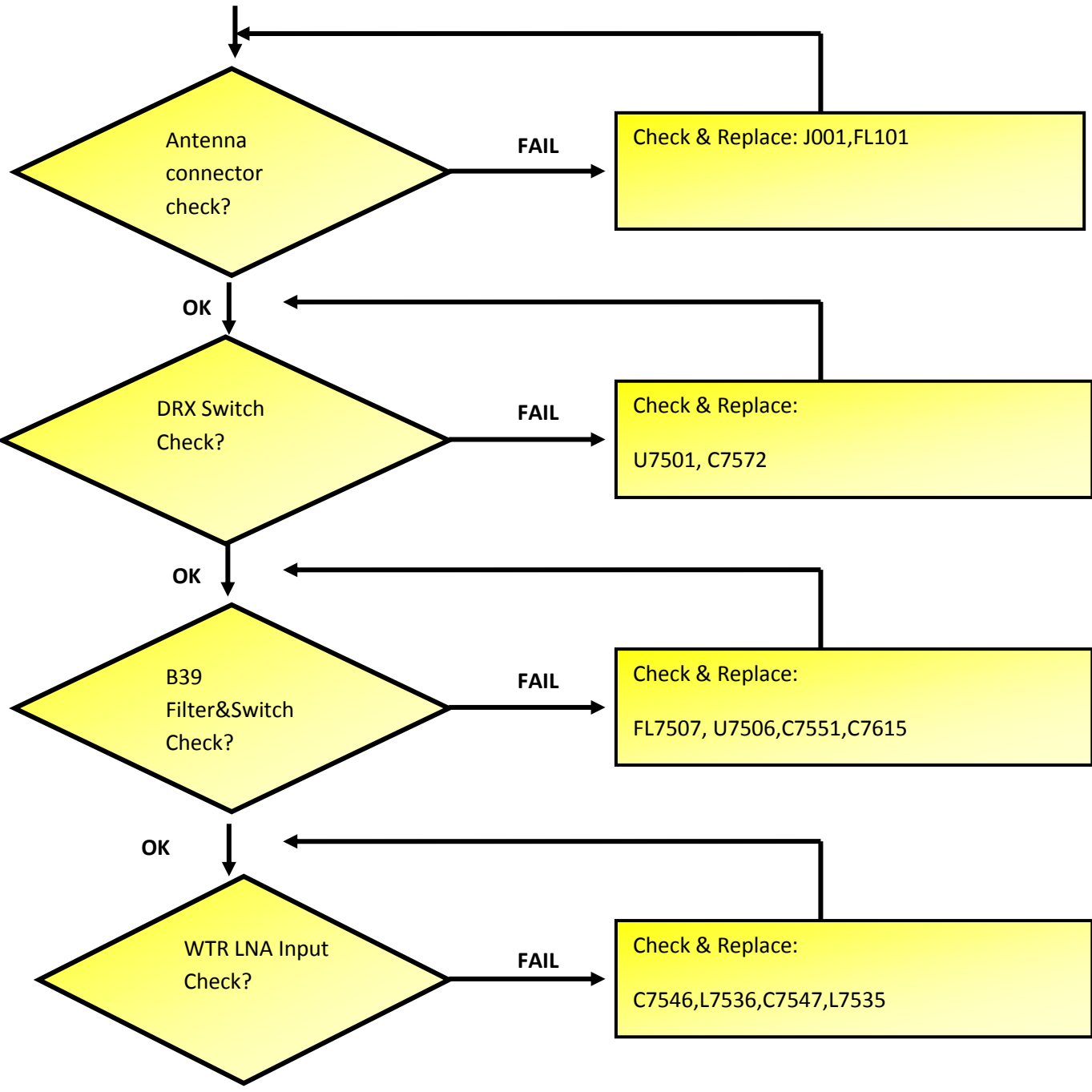
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LTEB39 DRX (China)



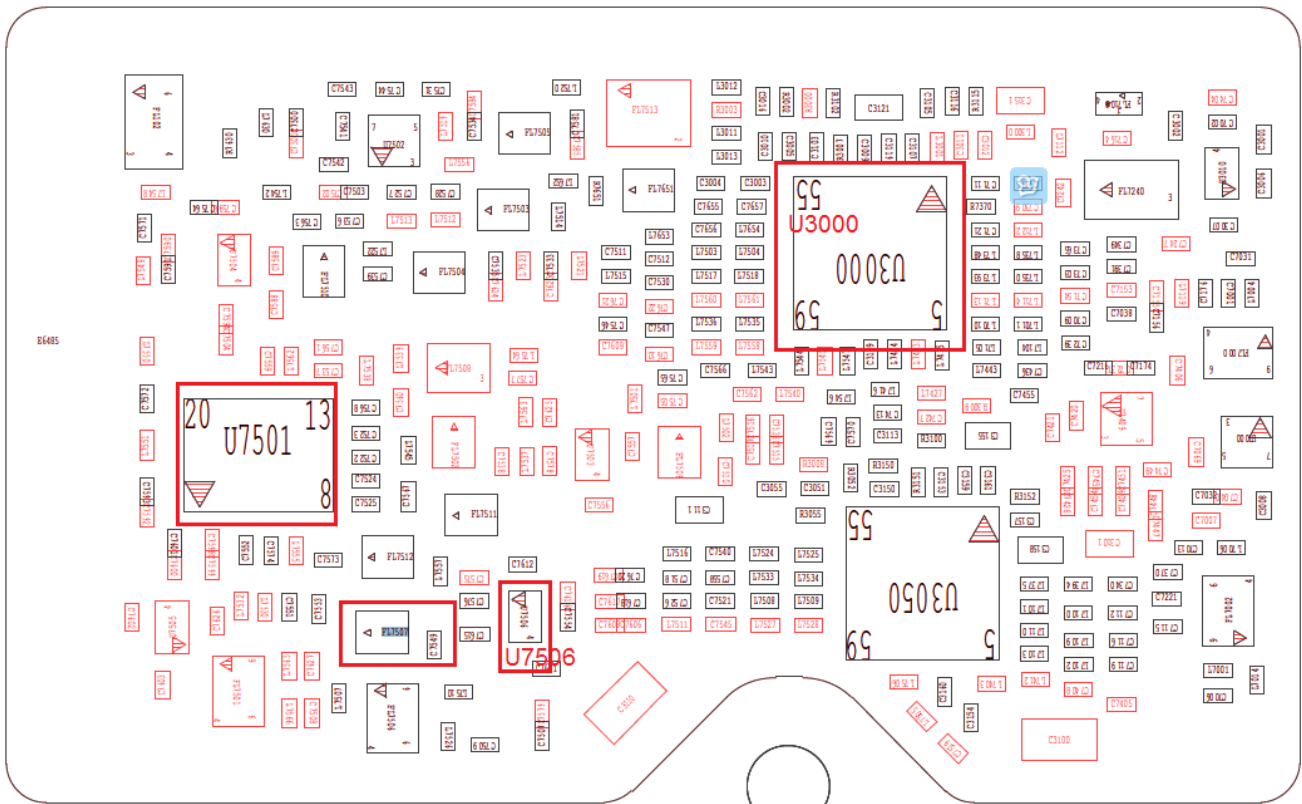
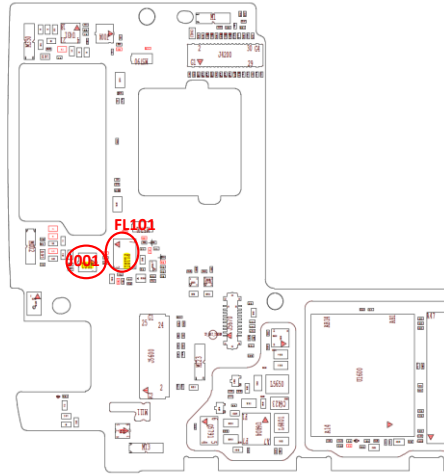
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

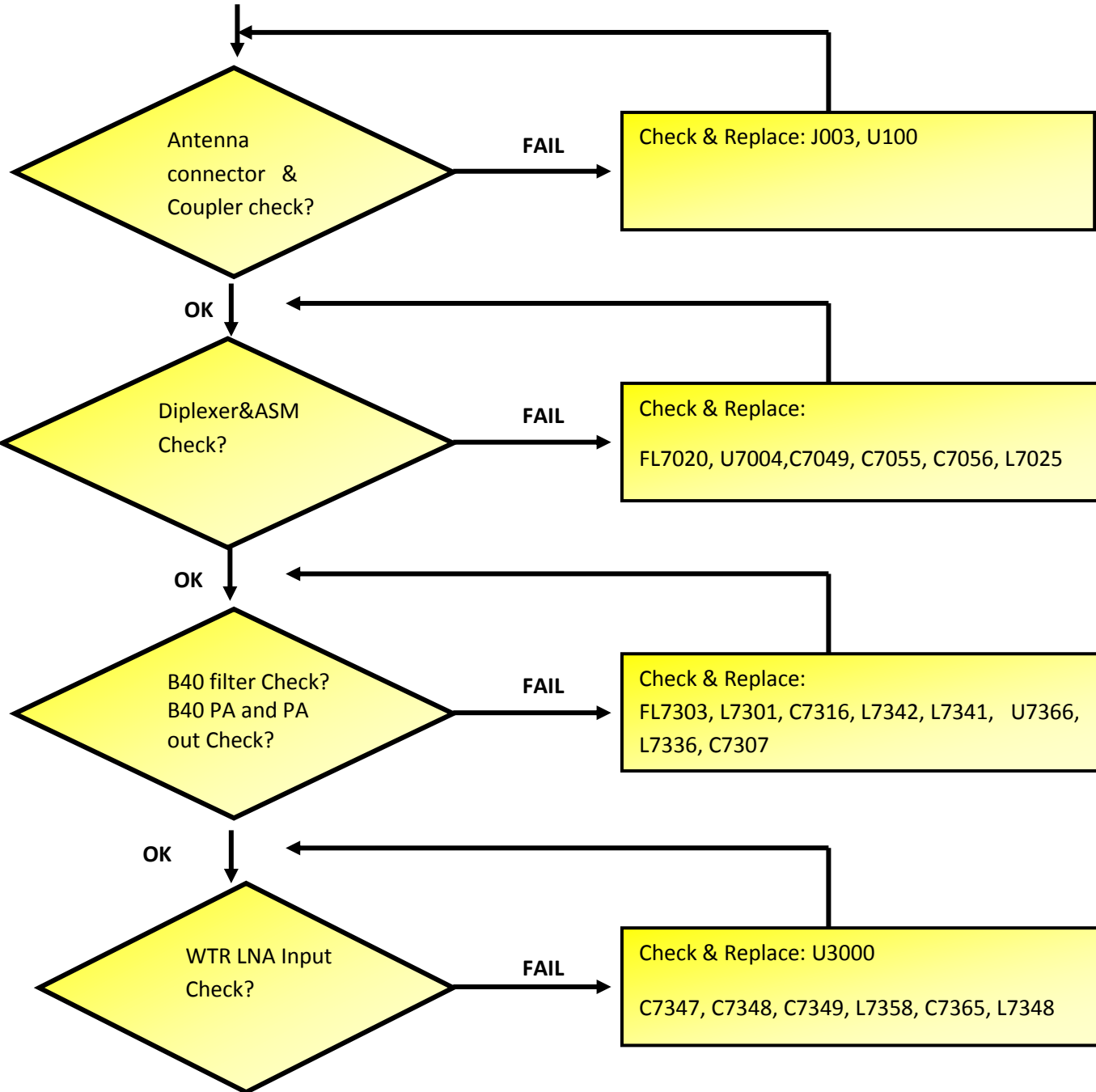
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WITNESS

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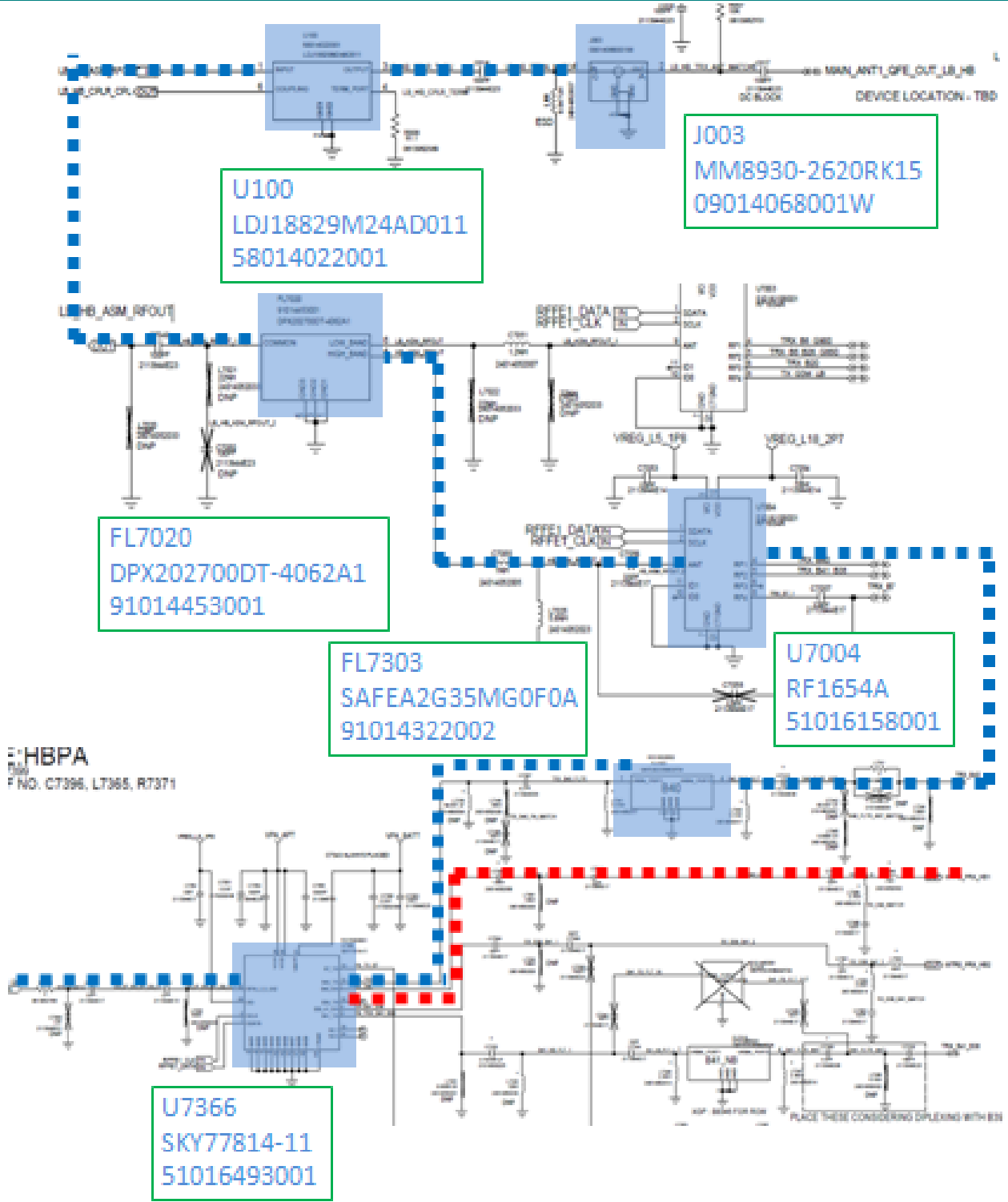
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B40 LTE PRX (China & ROW)



<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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HBPA
 No. C7396, L7365, R7371

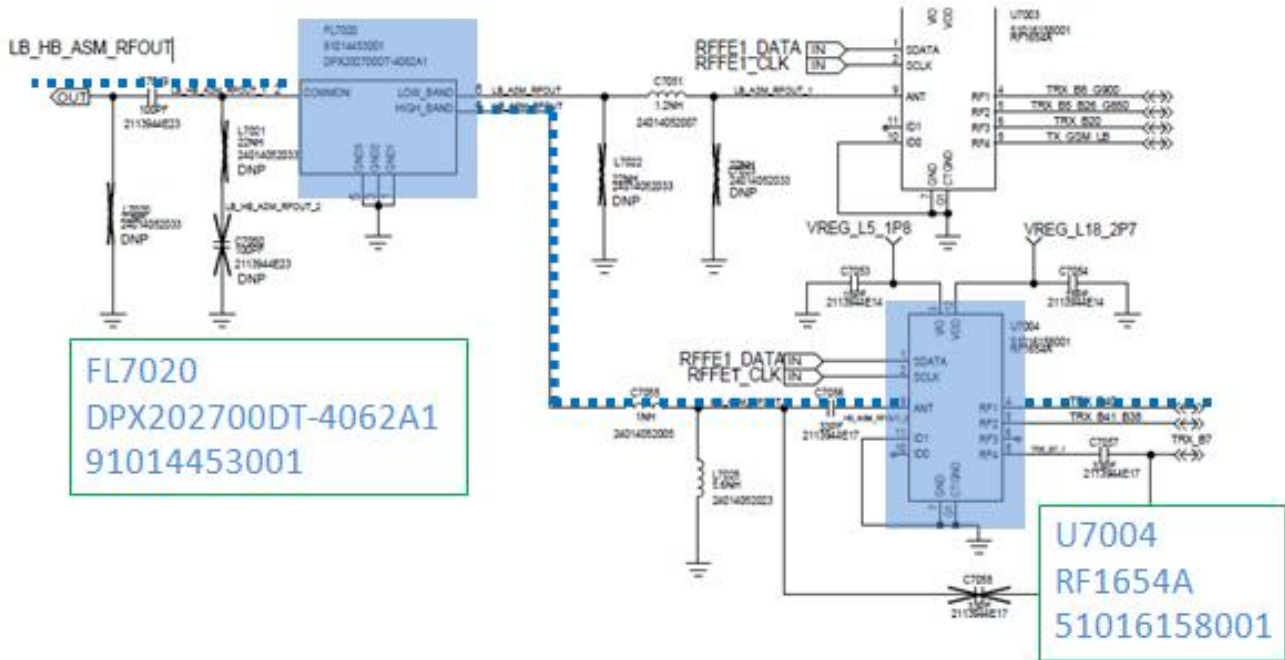
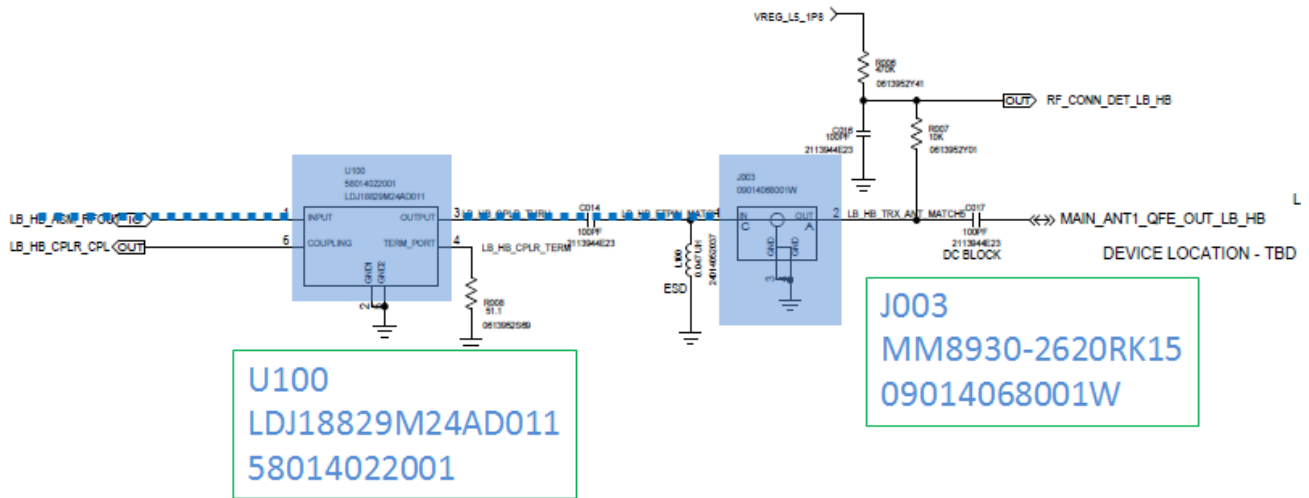
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

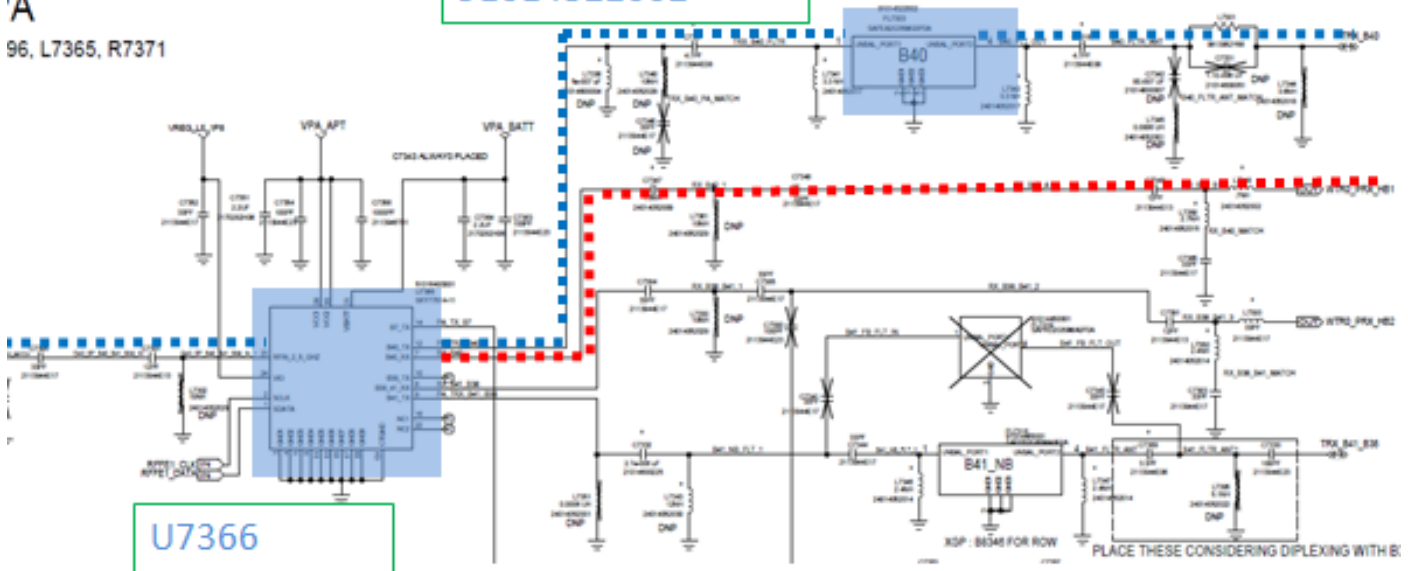
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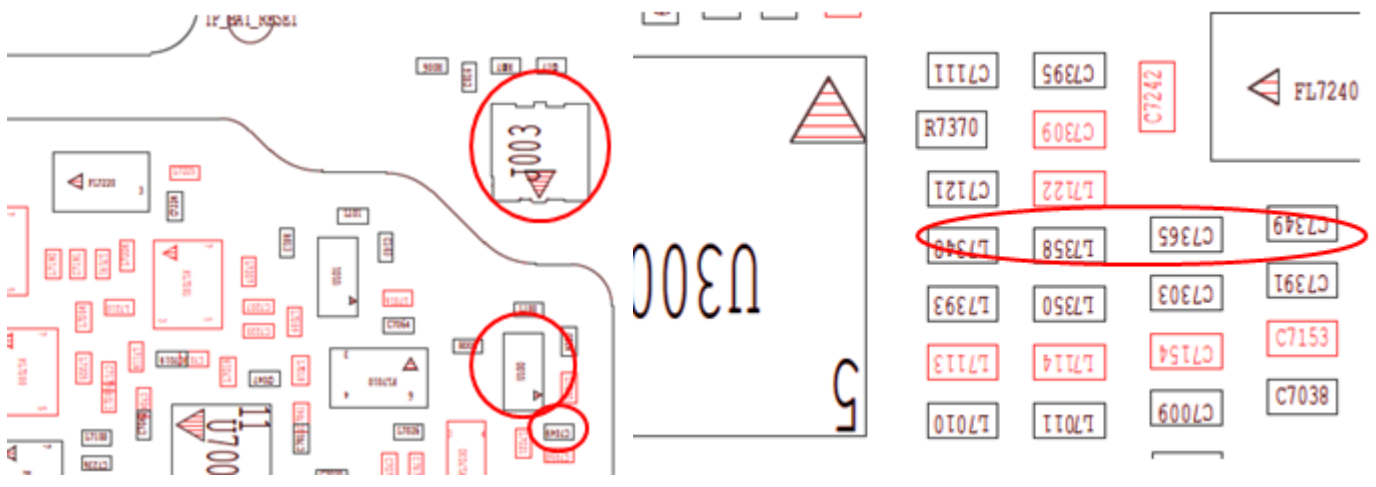
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 91014322002

'A
96, L7365, R7371



U7366
 SKY77814-11
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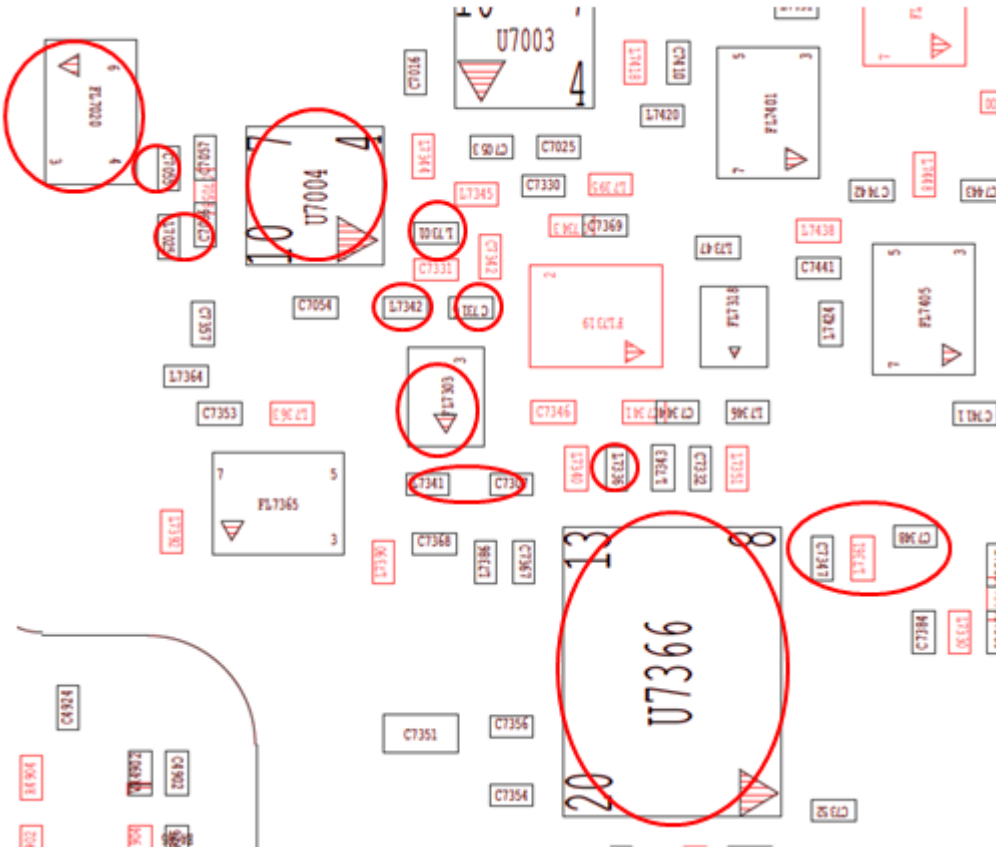
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

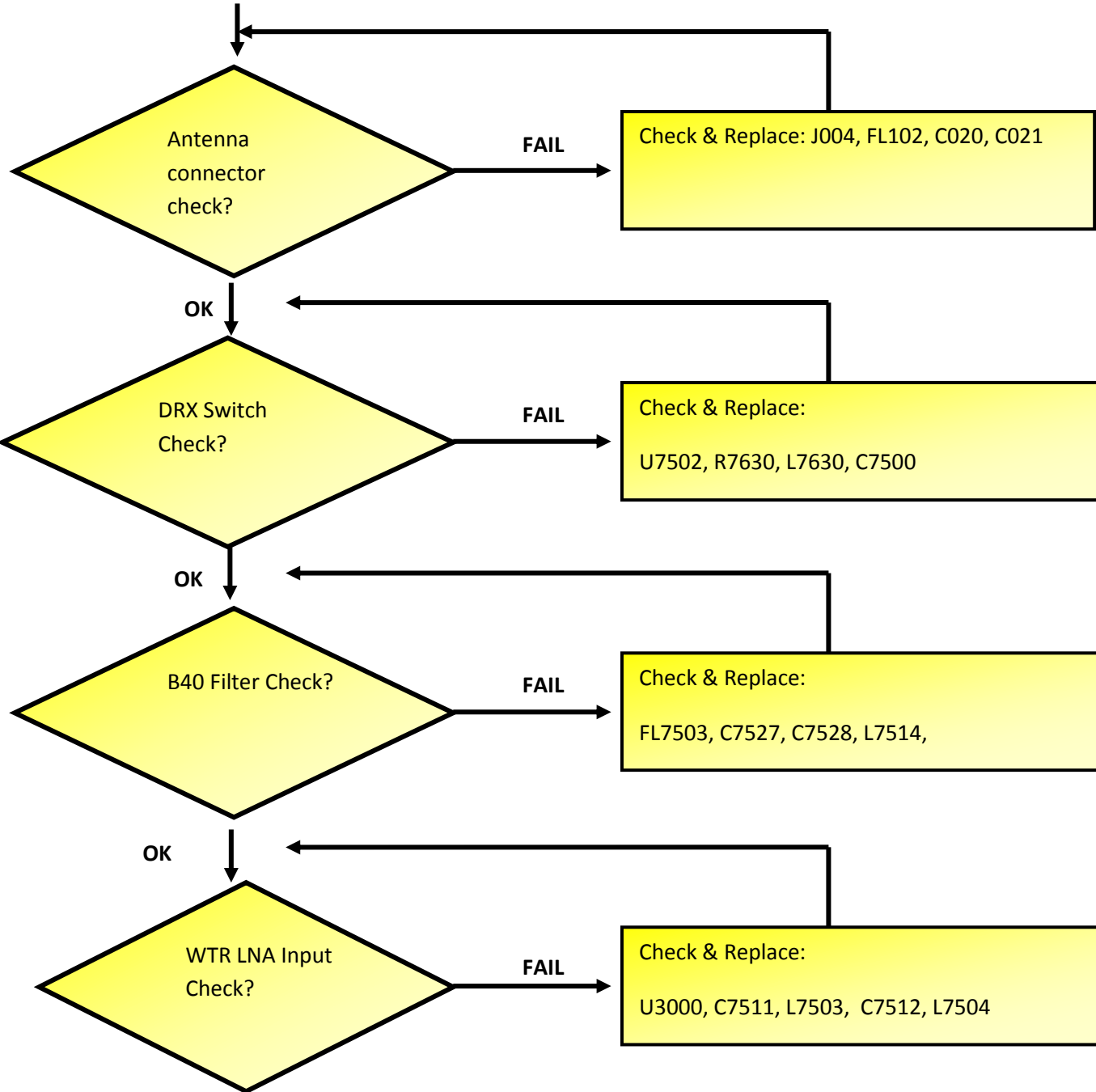
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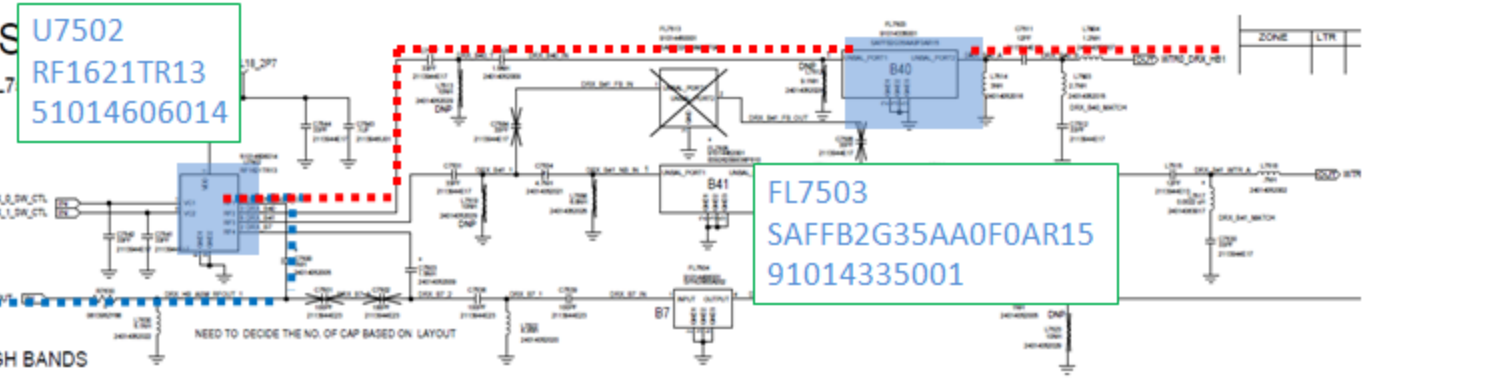
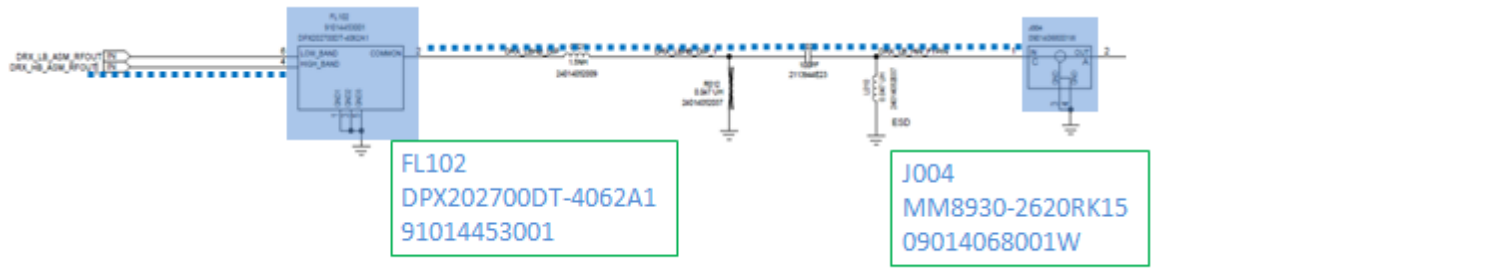
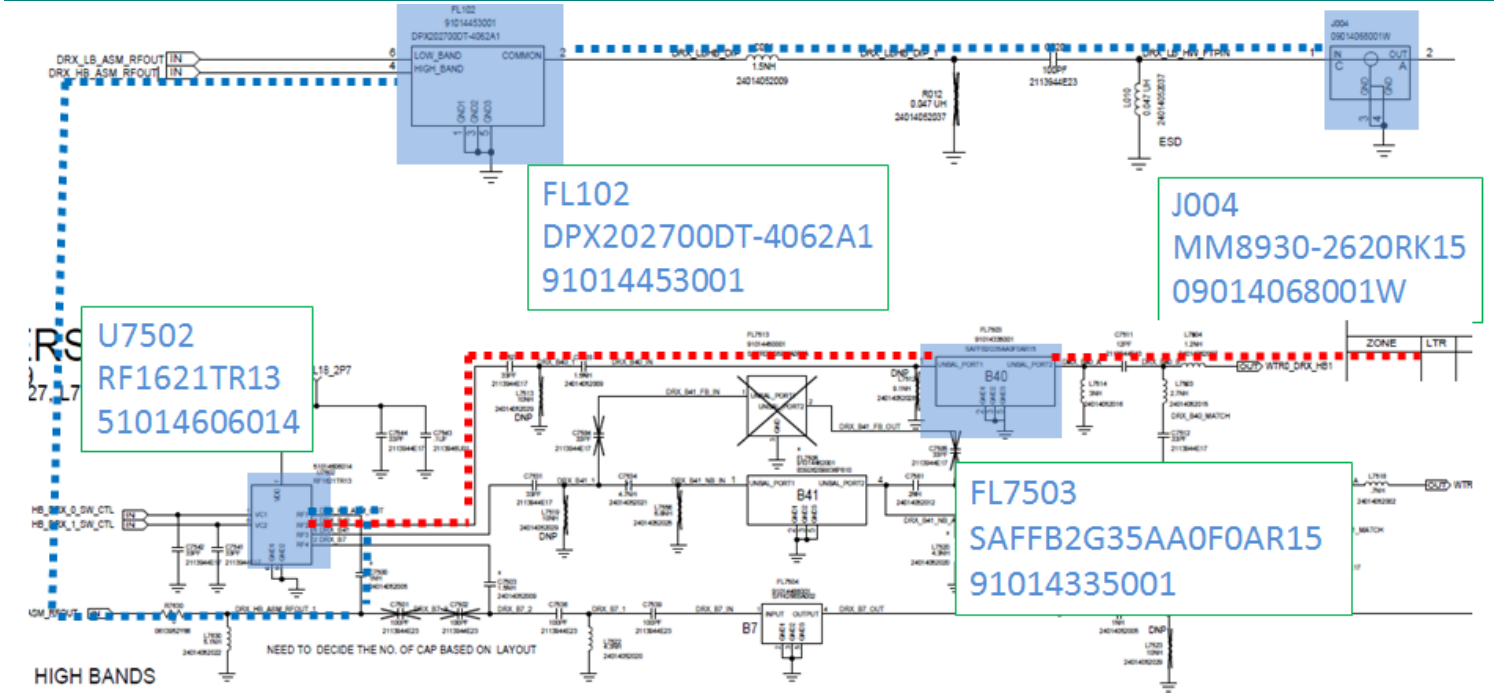
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B40 LTE DRX (China & ROW)



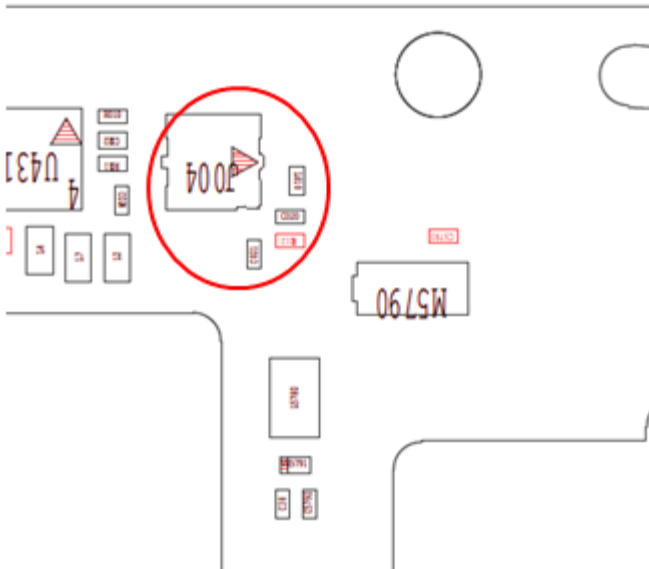
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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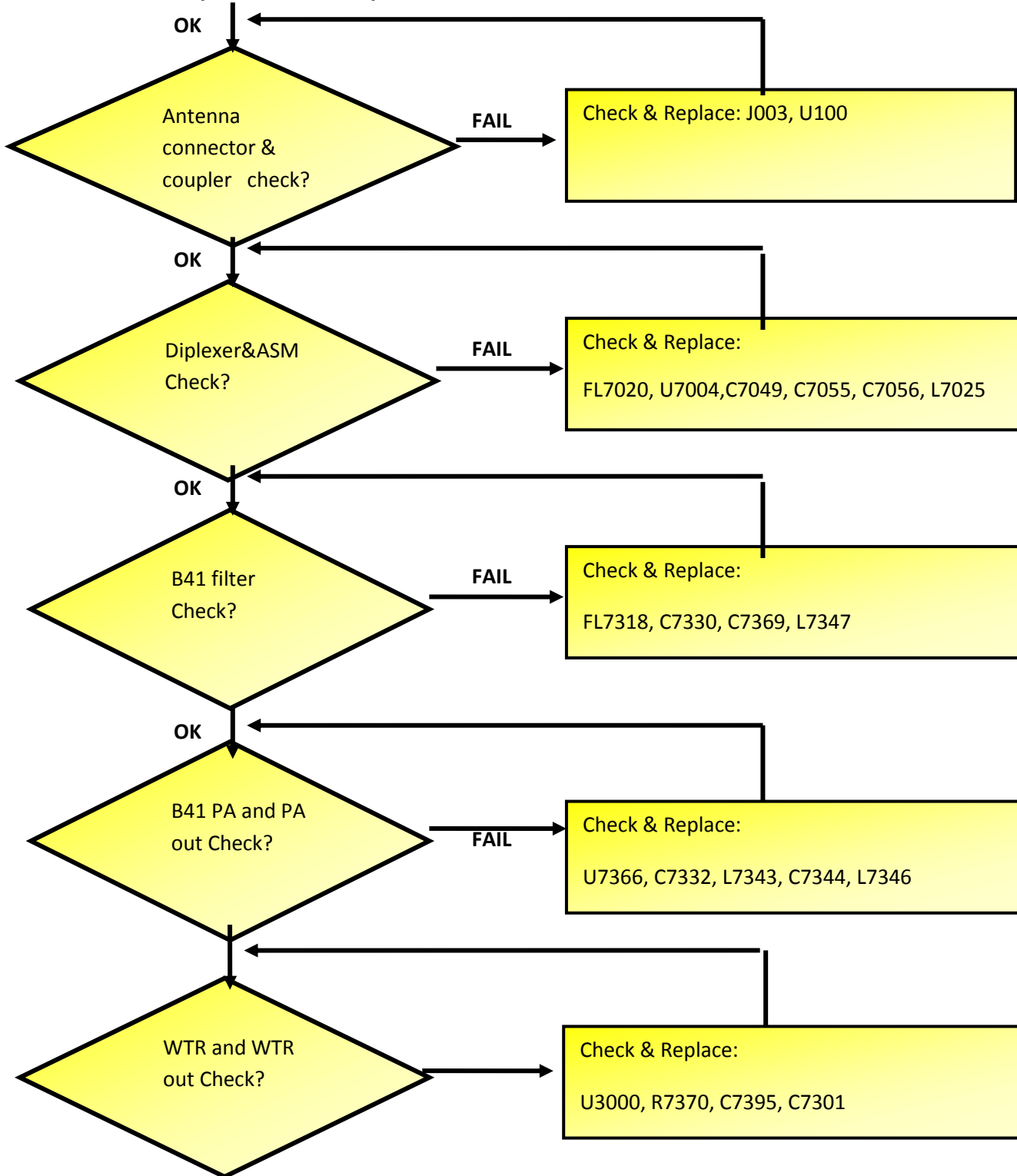
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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B38/41 LTE TX (China & ROW)



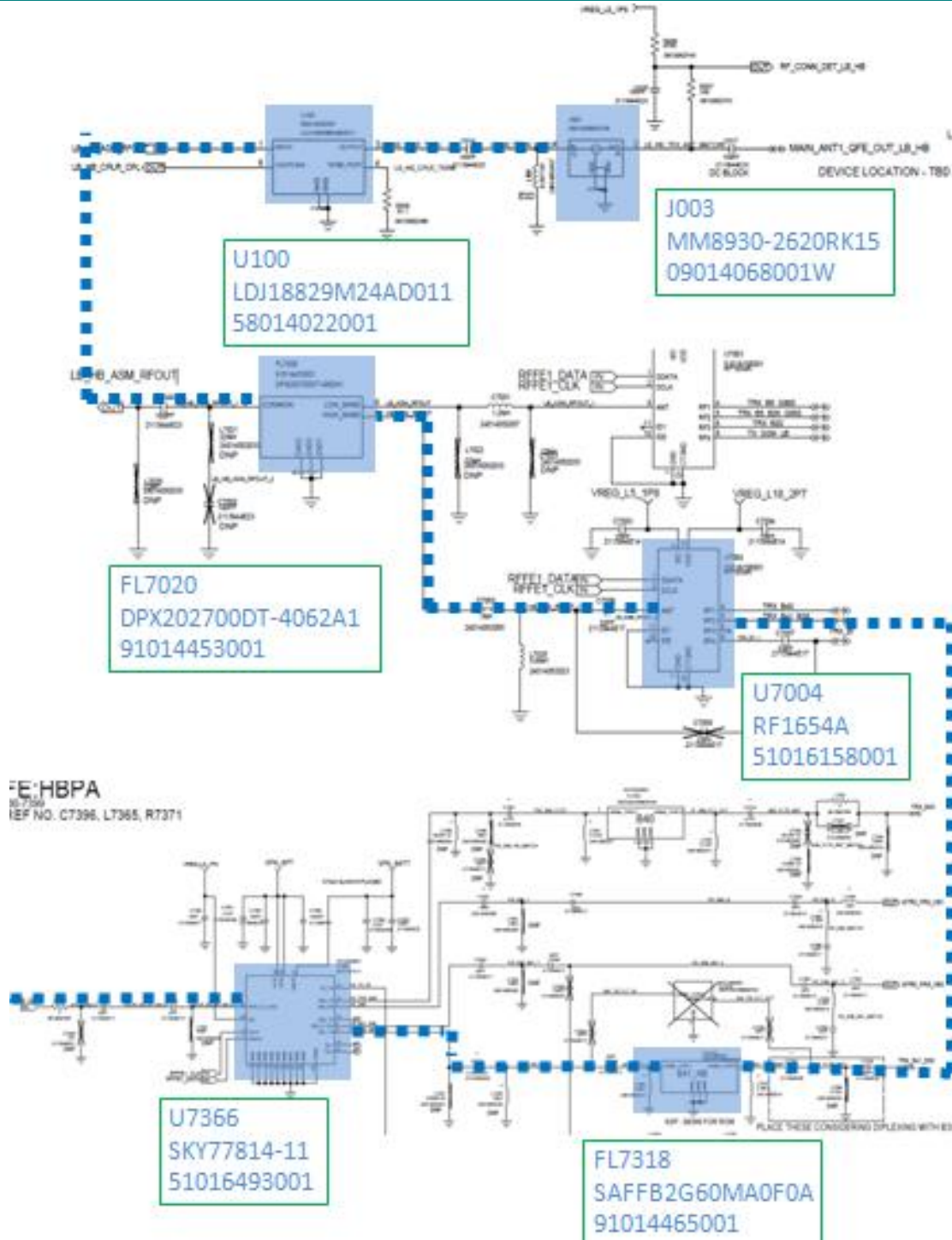
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

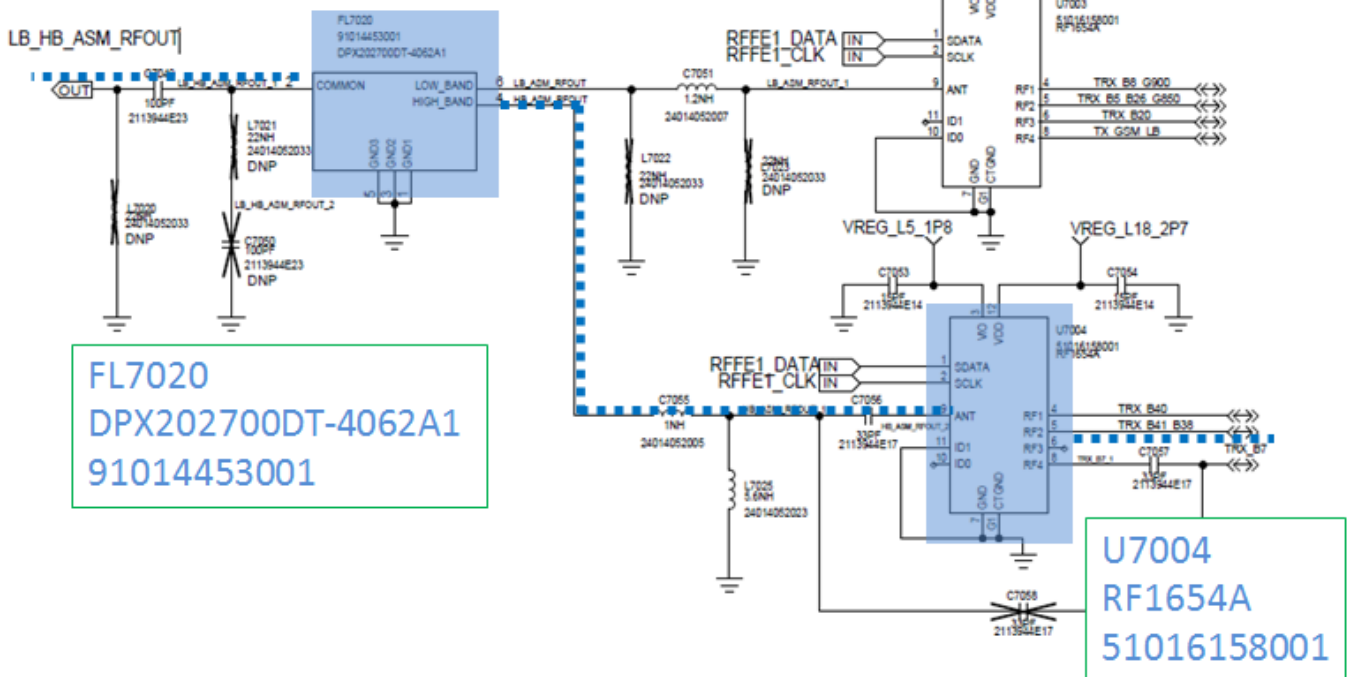
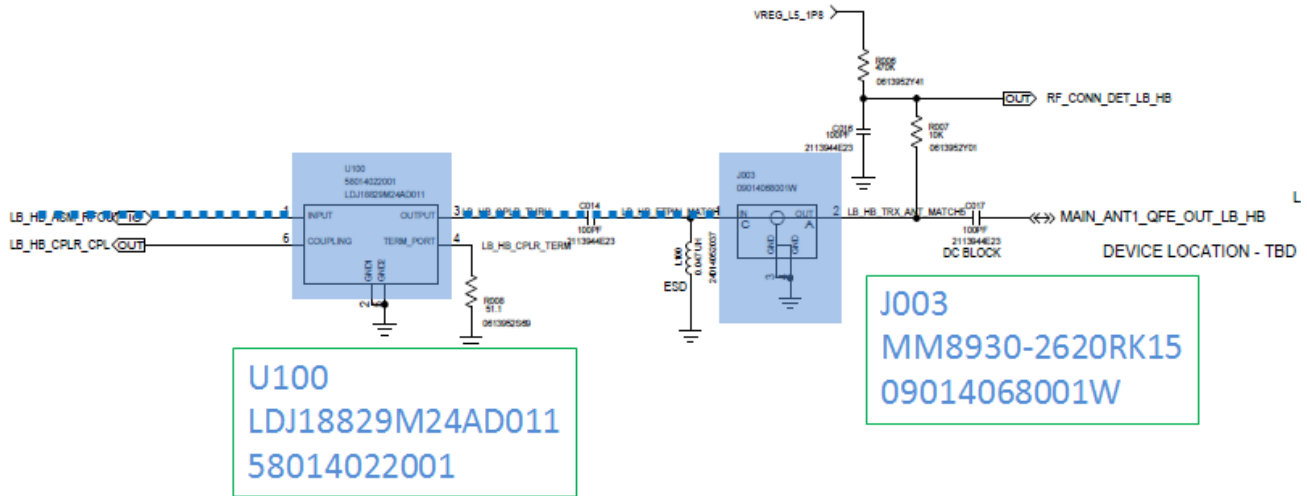
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Vertex RF Troubleshooting Guide

MODEL

Vertex



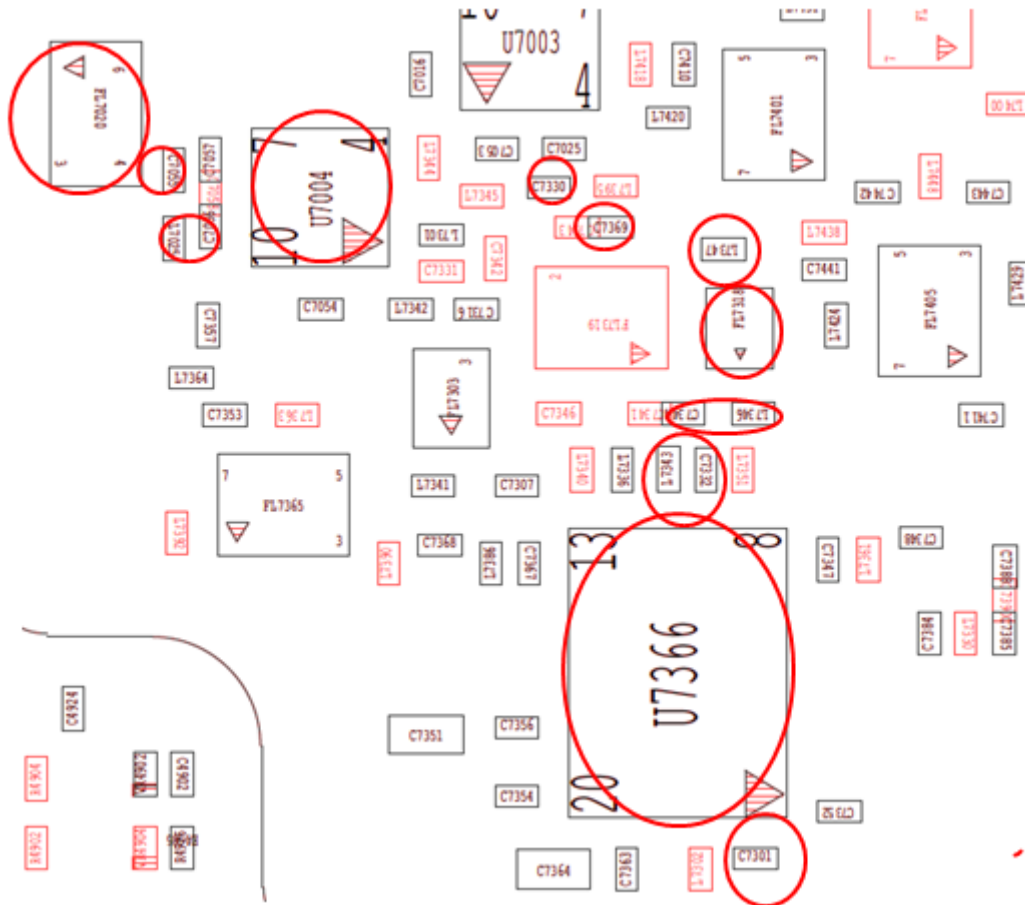
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Vertex RF HW Development Team	6/1/2016		

TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

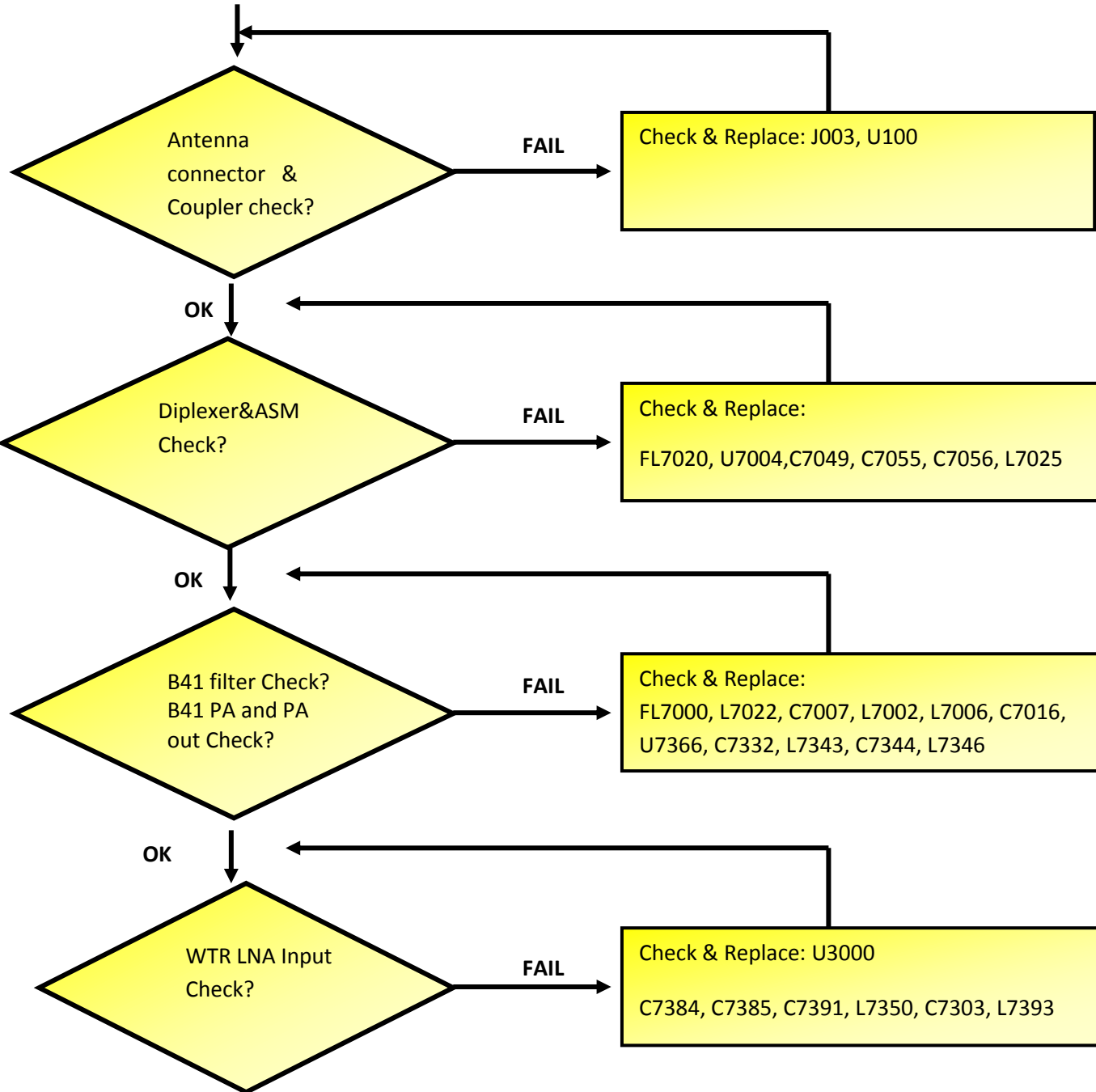
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WITNESS

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B38/41 LTE PRX (China & ROW)



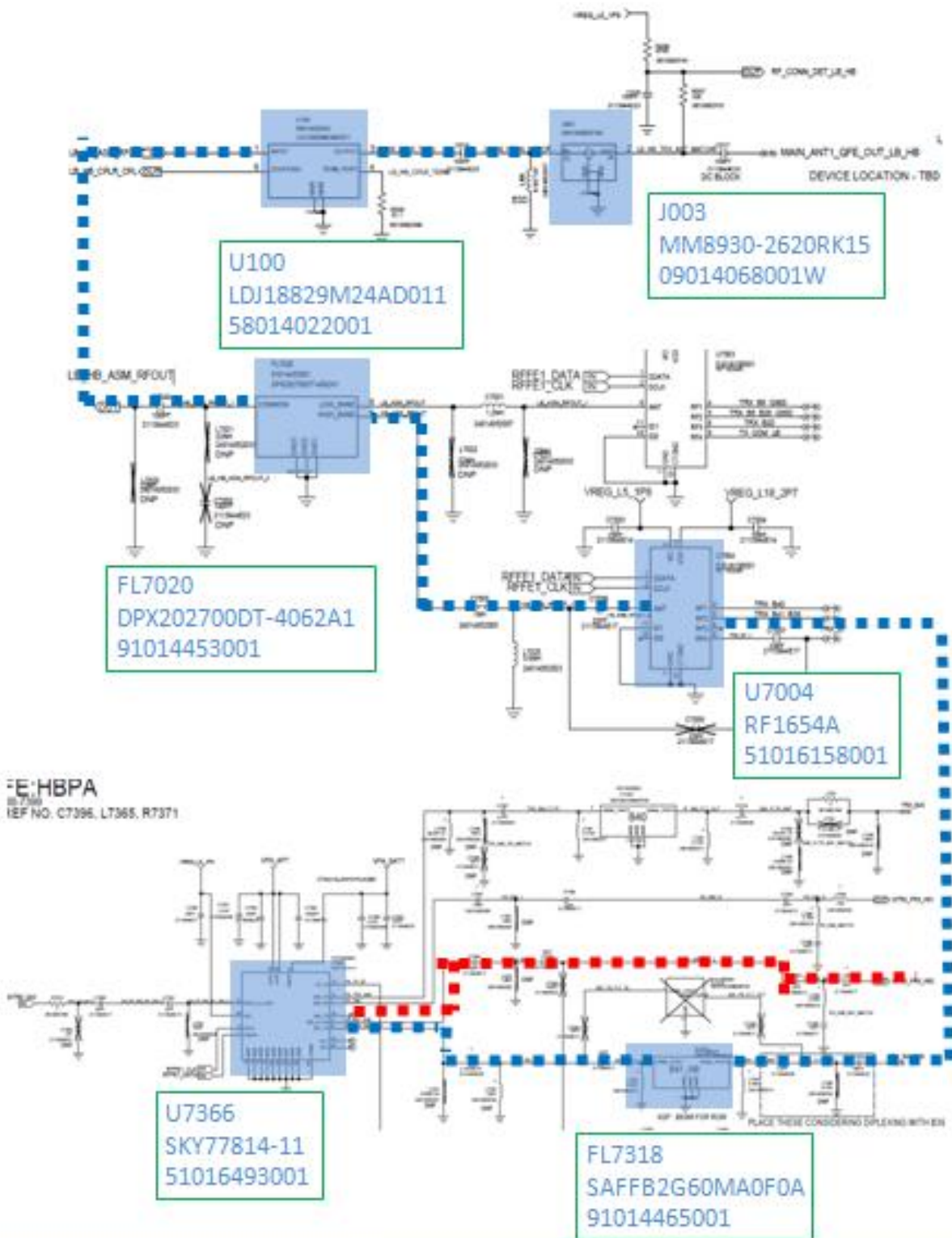
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

DATE

6/1/2016

WITNESS

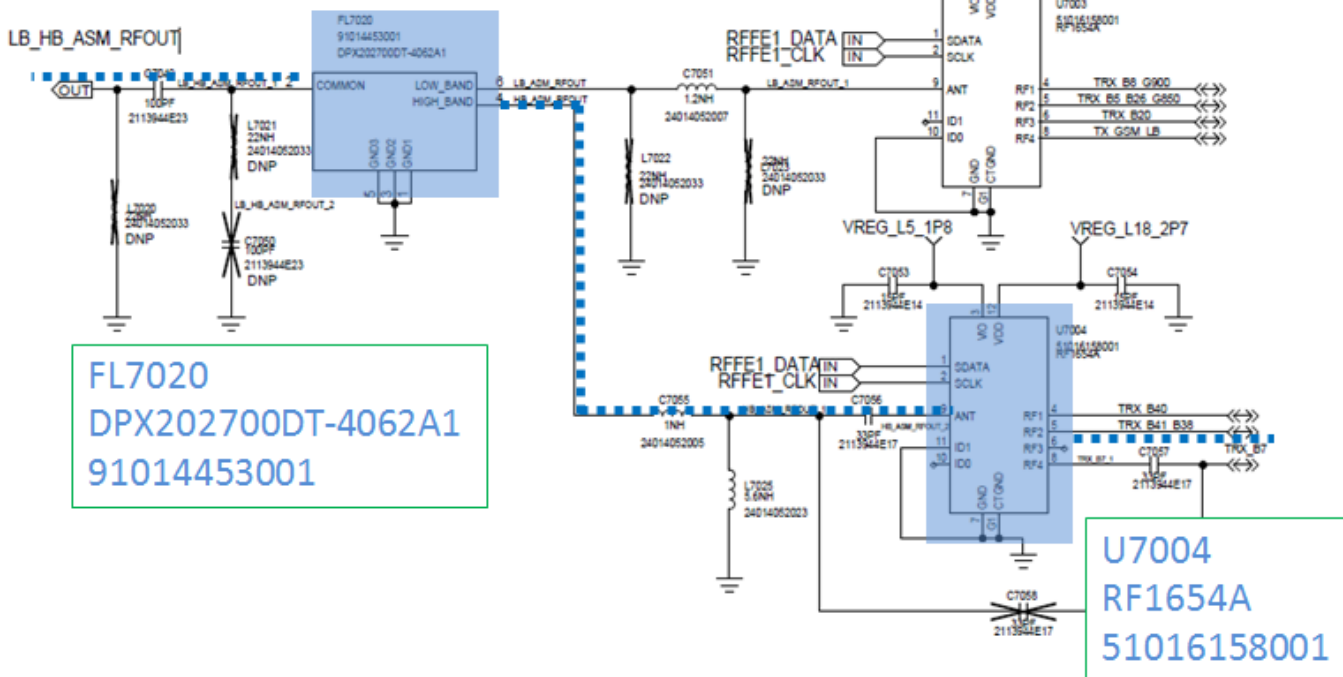
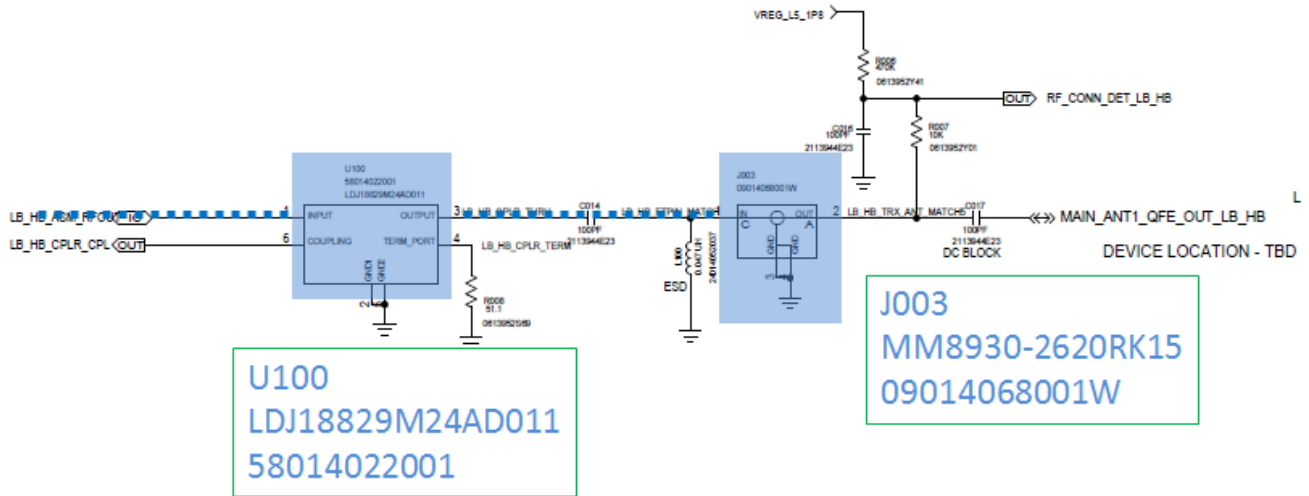
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Vertex RF Troubleshooting Guide

MODEL

Vertex



WRITER

Vertex RF HW Development Team

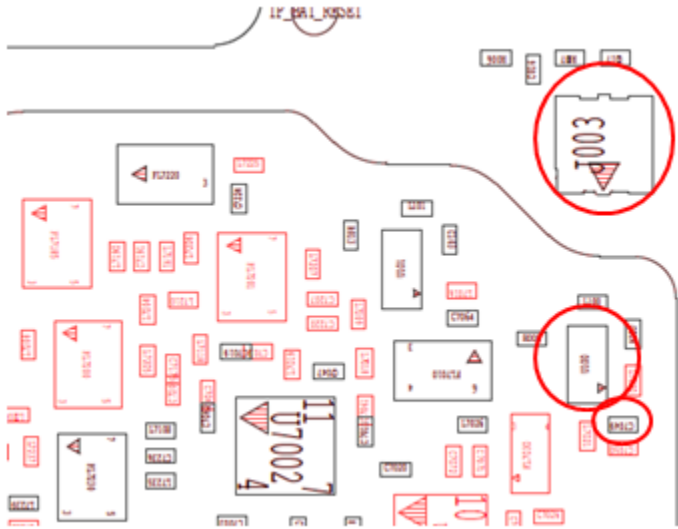
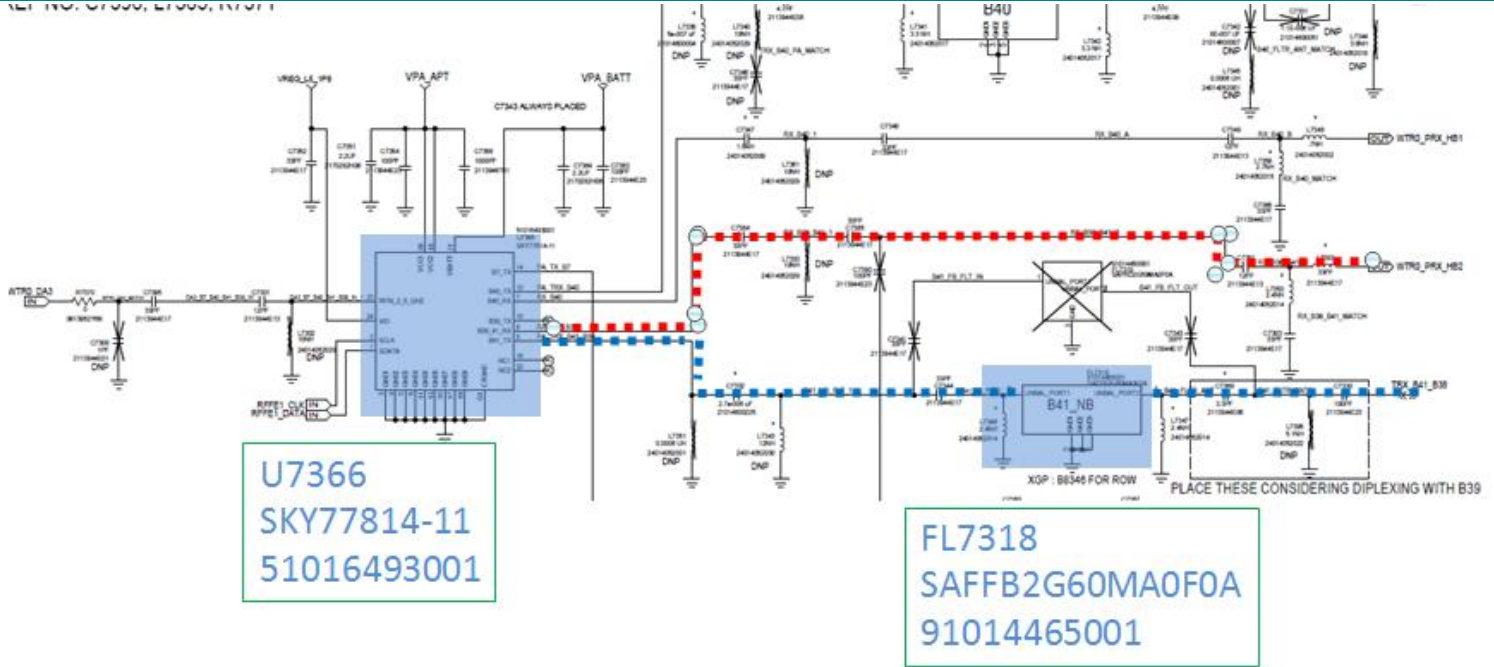
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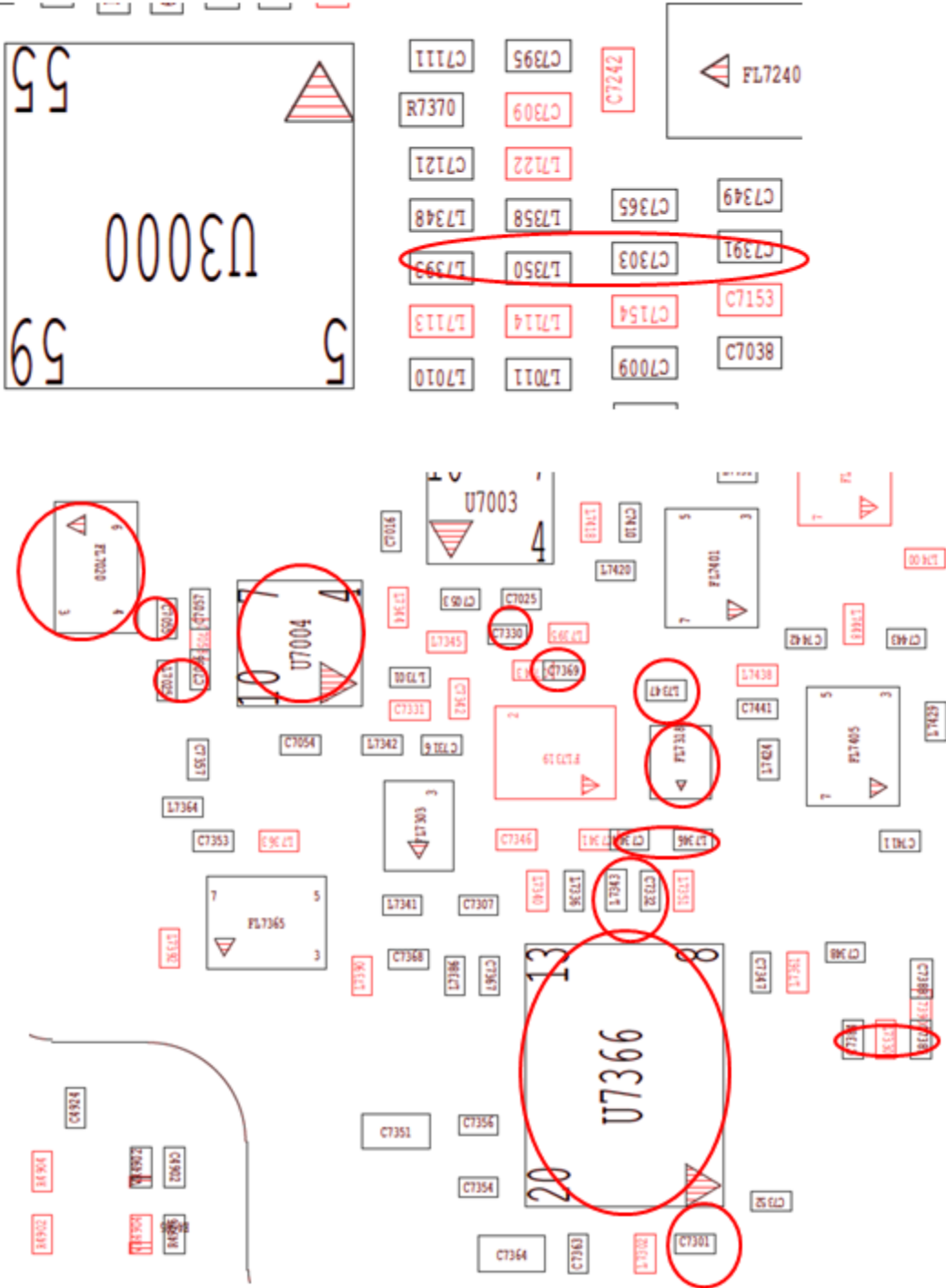
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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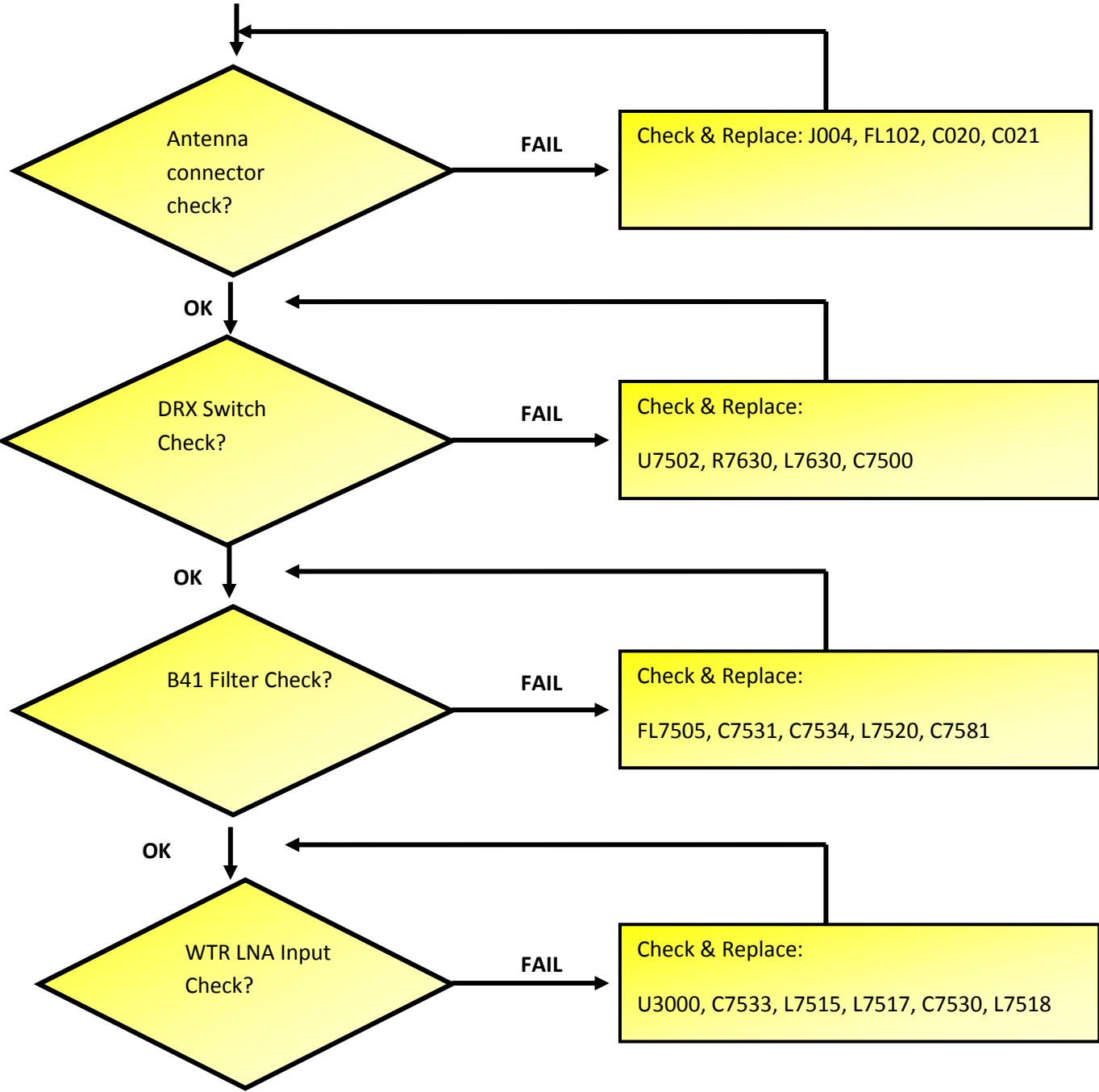
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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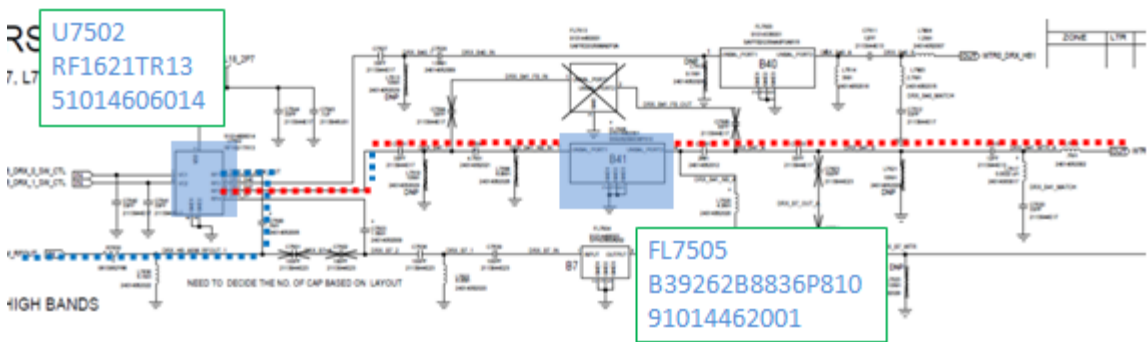
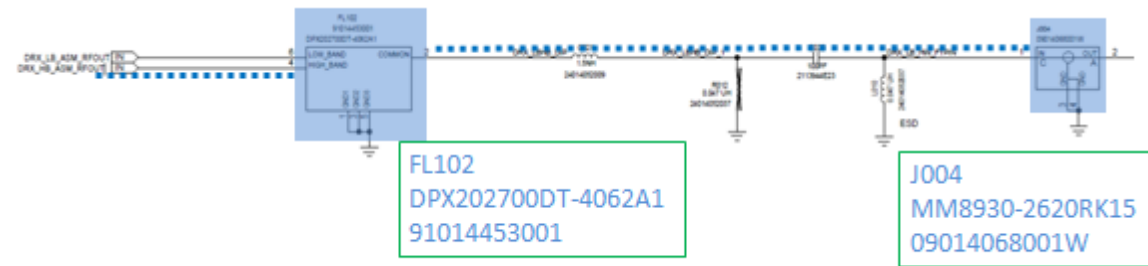
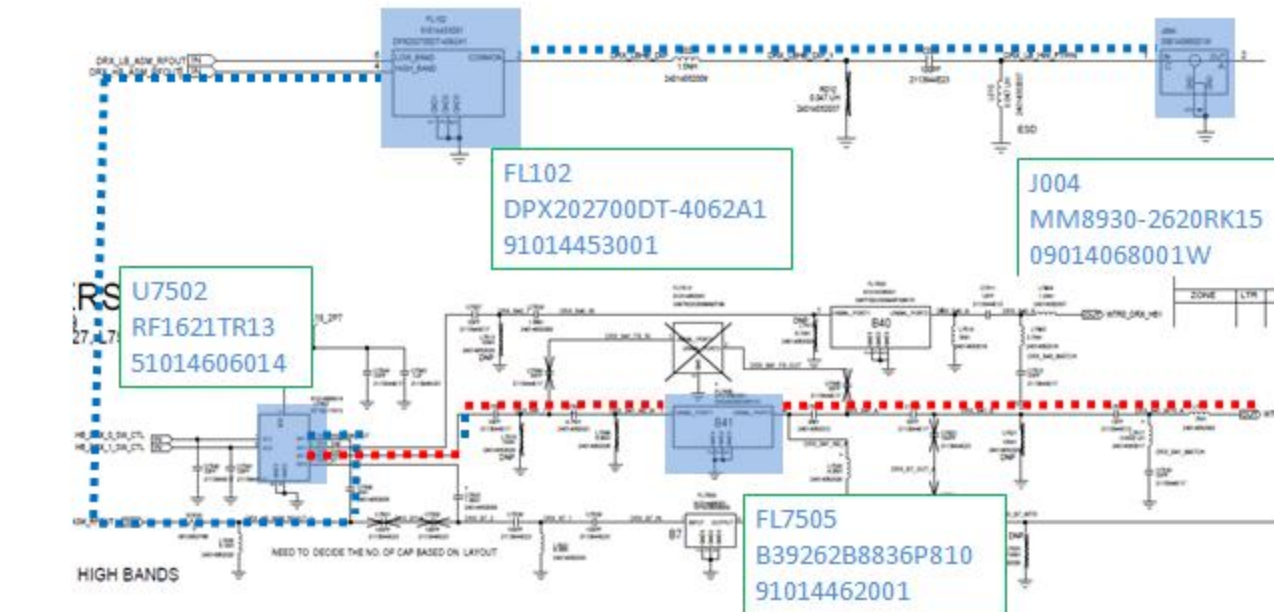
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B38/41 LTE DRX (China & ROW)



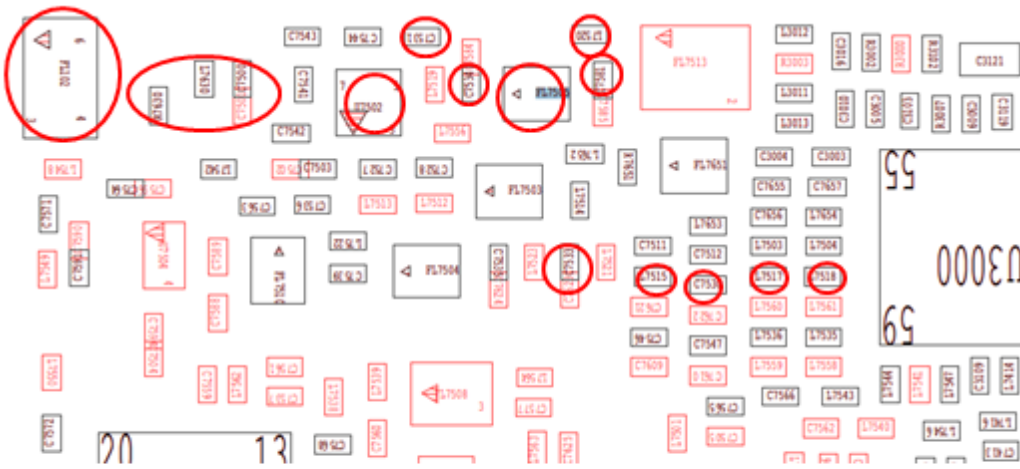
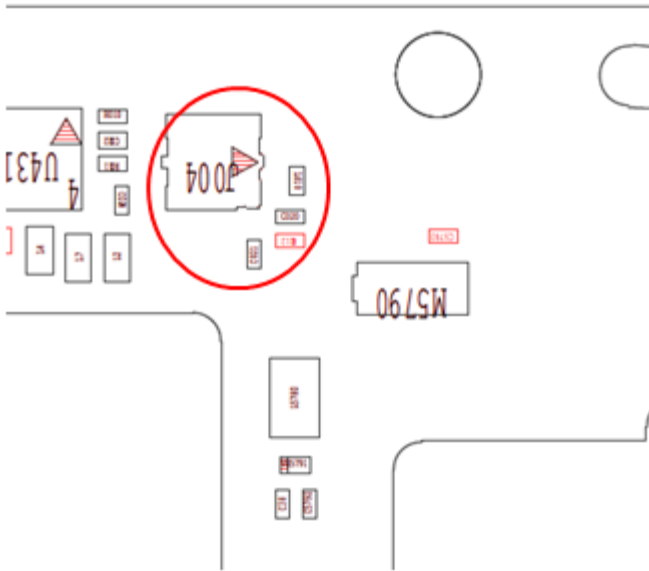
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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<p>TITLE</p> <p style="text-align: center;">Vertex RF Troubleshooting Guide</p>	<p>MODEL</p> <p style="text-align: center;">Vertex</p>
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Radiated Antenna

A description of Vertex (Addison) antenna system

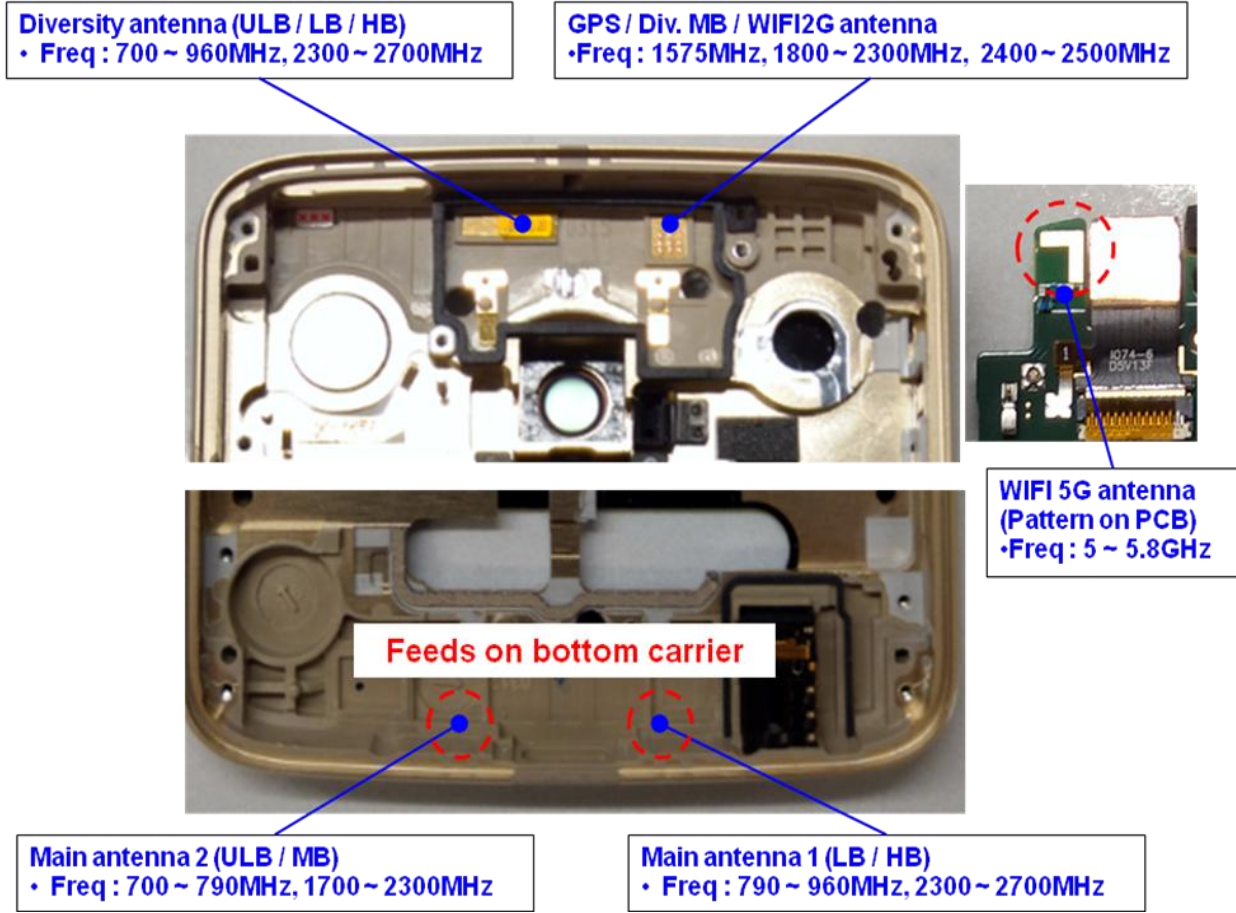


Figure: Antenna diagram and description for Vertex

Main Antenna 1 for All SKUs (VZW, ROW and China)

For factory radiated test failure on all SKUs at main antenna 1, please do the following:

Step 1: Retest

Step 2: If retest does not pass, check if feed pin (M131) and ground (Screw contact) on the PCB are damaged. Check if feed pin touches the pad on carrier and ground contacts well by screw as shown in the figure.

<p>WRITER</p> <p>Vertex RF HW Development Team</p>	<p>DATE</p> <p>6/1/2016</p>	<p>WITNESS</p>	<p>DATE</p>
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TITLE

Vertex RF Troubleshooting Guide

MODEL

Vertex

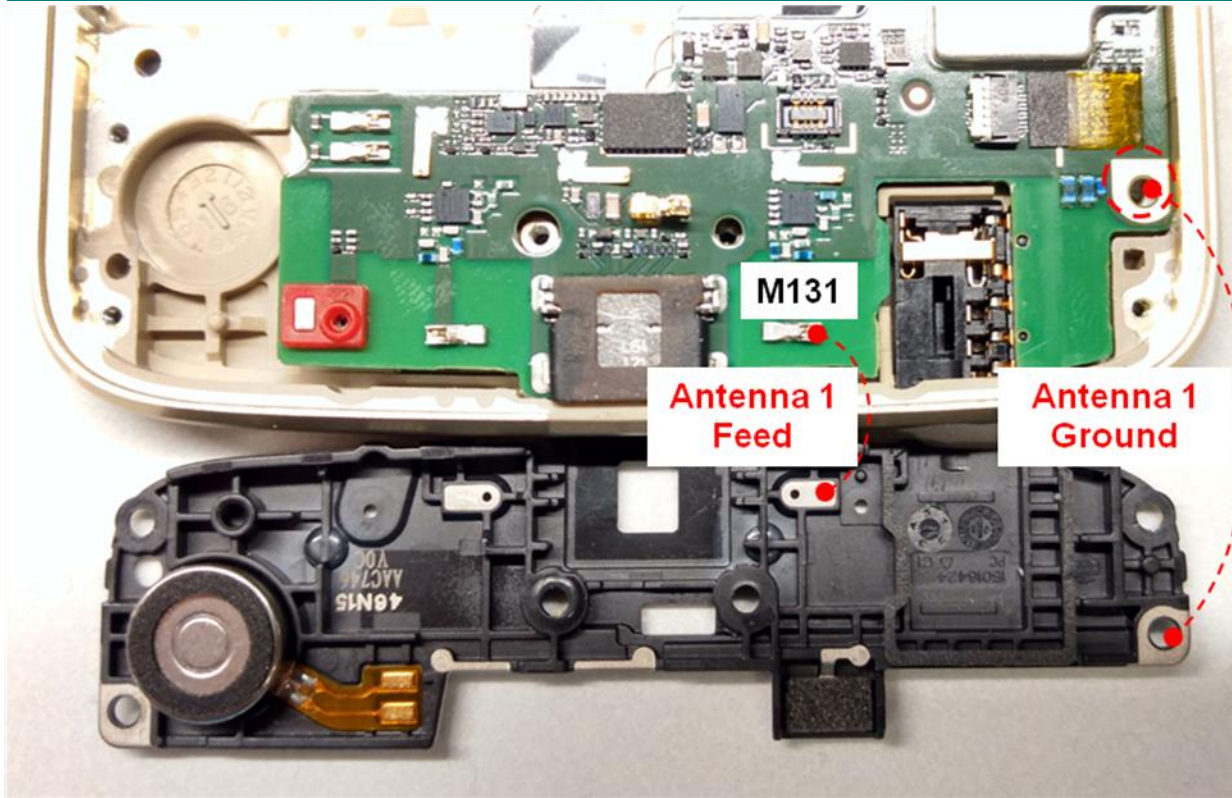


Figure: Feed and ground connection for main antenna 1

Step 3: If Step 2 does not resolve the problem, check if components RefDes = C017, C480, L476, L472, C479 and U471 are placed correctly on PCB.

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Vertex RF HW Development Team

DATE

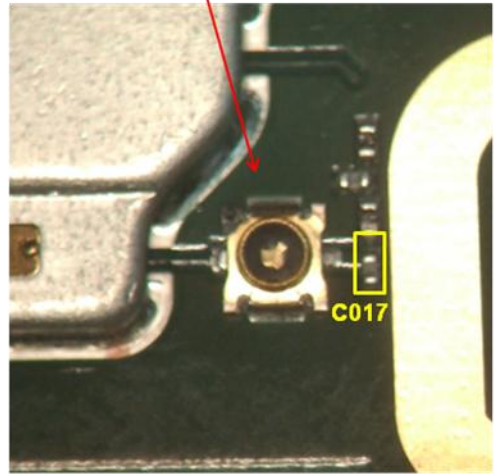
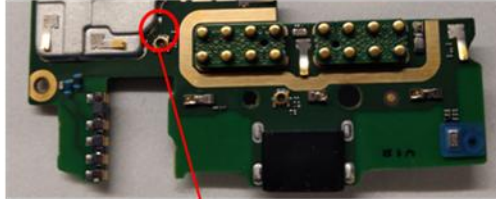
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WITNESS

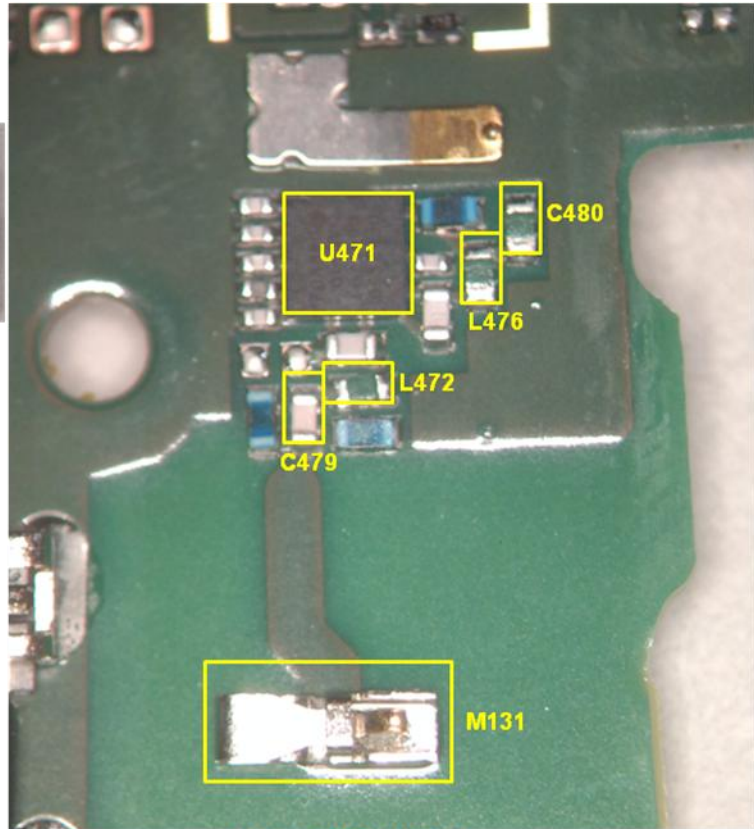
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TITLE Vertex RF Troubleshooting Guide	MODEL Vertex
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Main antenna 1



< Layer Top >



< Layer Bottom >

Figure: Main Antenna 1 Contacts and Matching Components

Main Antenna 2 for All SKUs (VZW, ROW and China)

For factory radiated test failure on all SKUs at main antenna 2, please do the following:

Step 1: Retest

Step 2: If retest does not pass, check if feed pin (M101) and ground (Screw contact) on the PCB are damaged. Check if feed pin touches the pad on carrier and ground contacts well by screw as shown in the following figure.

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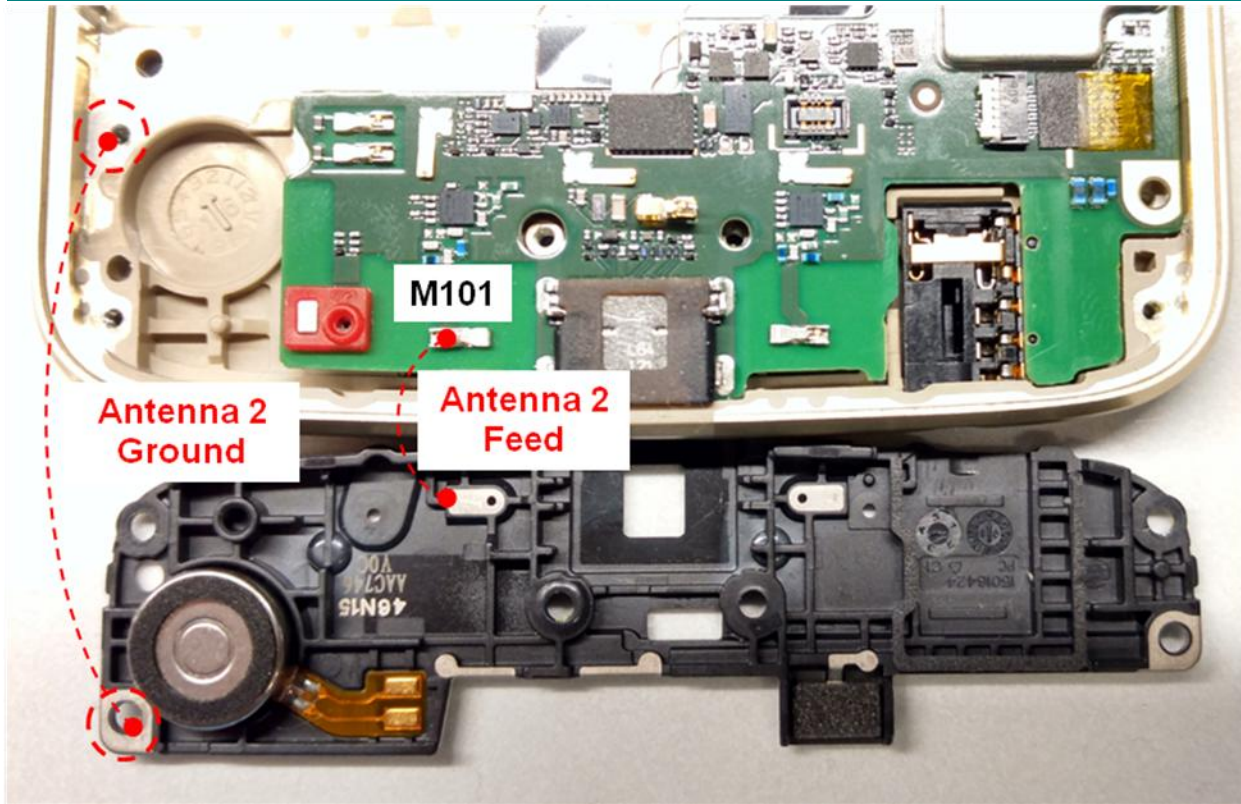


Figure: Feed and ground connection for main antenna 2

Step 3: If Step 2 does not resolve the problem, check if components RefDes = L352, C345, L329, C318, R327, L325, C329, C340, L340, L338, L335 and Variable Capacitors U326 and U336 are placed correctly on PCB.

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Main antenna 2

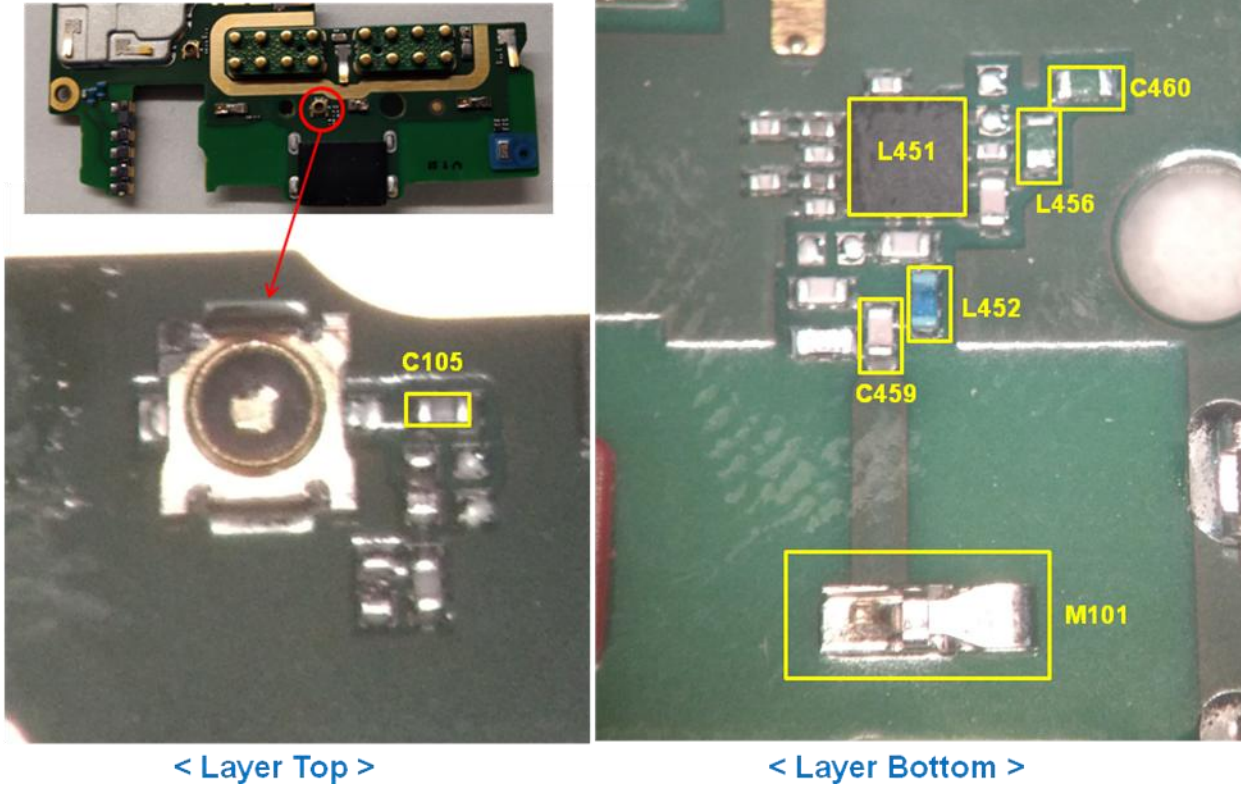


Figure: Main Antenna 2 Contacts and Matching Components

Diversity Antenna for All SKUs (VZW, ROW and China)

For factory radiated test failures on all SKUs for Diversity antenna, please do the following:

Step 1: Retest the unit.

Step 2: If the failure persists, check if feed pin (M350) and ground (Screw contact) on the PCB are damaged. Check if feed pin touches the pad on rear housing by universal contact and ground contacts on rear housing well by screw as shown in the following figure.

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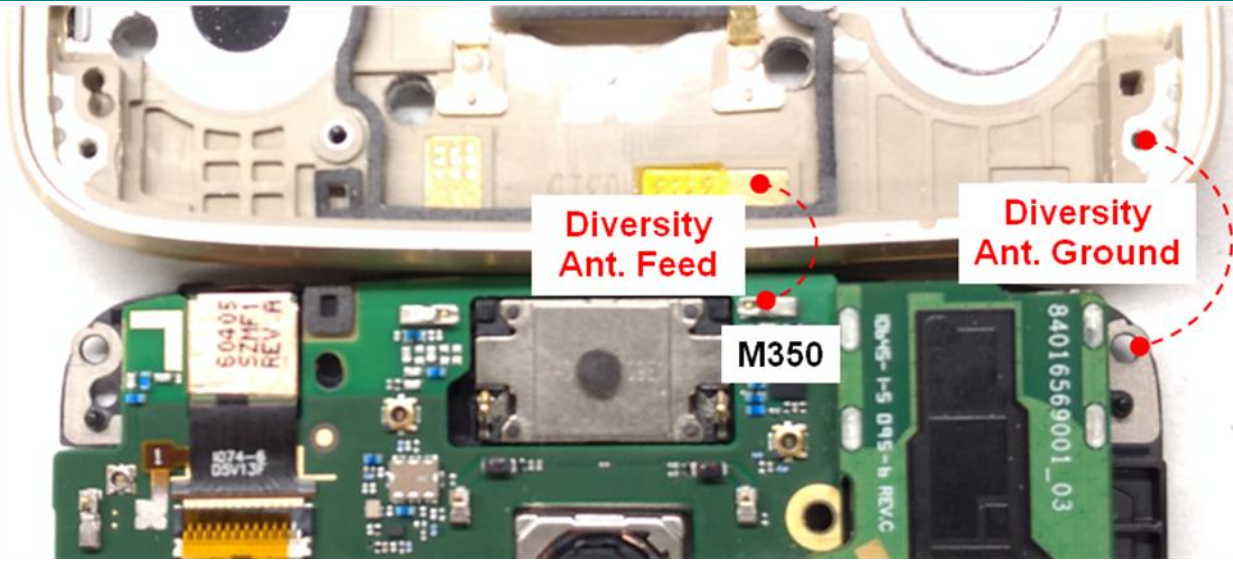
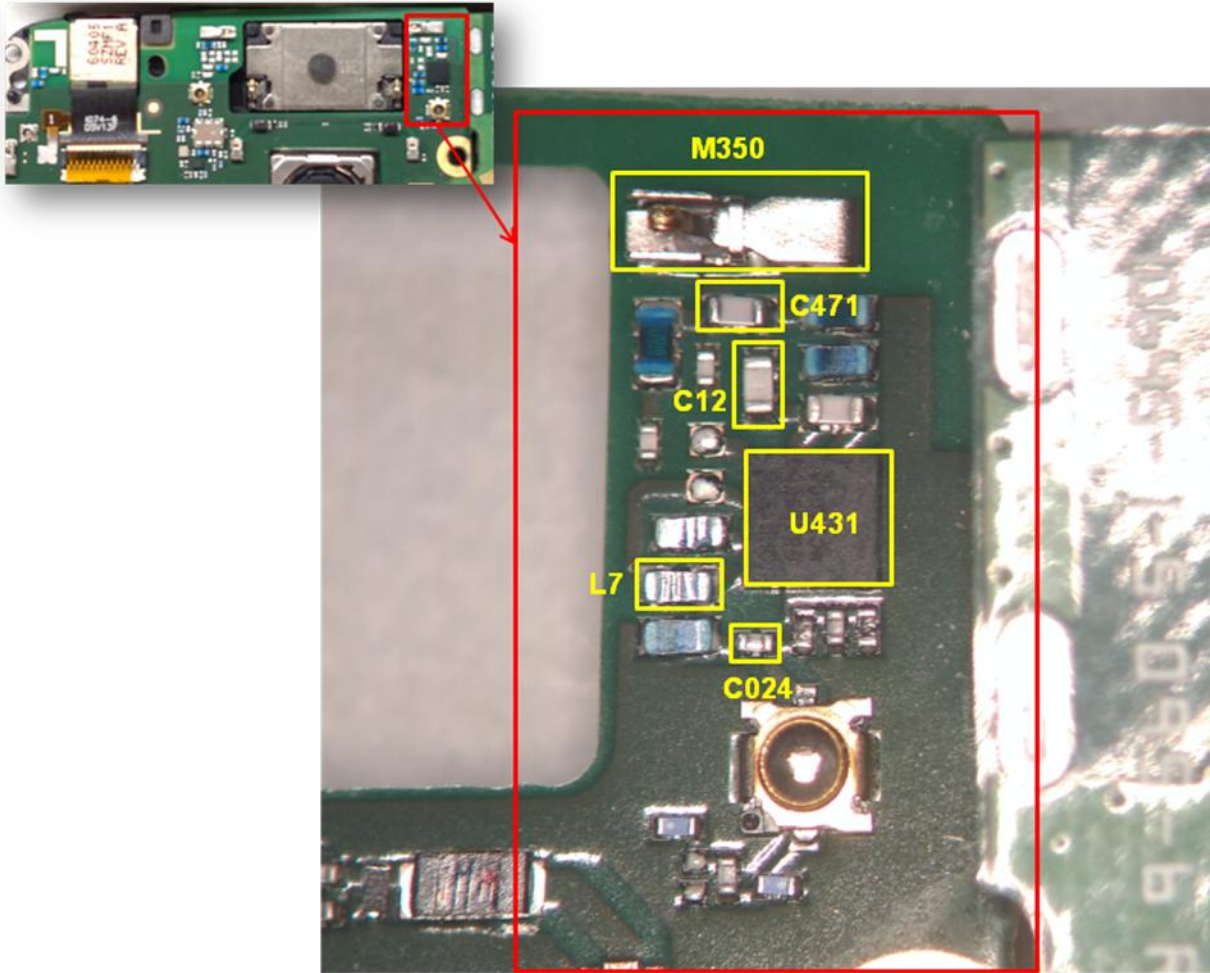


Figure: Feed and ground connection for diversity antenna

Step 3: If Step 2 does not resolve the issue, check the diversity antenna matching components: C024, L7, C12, C471 and U431. If any component is missing, misplaced, or damaged, place/replace the part and retest.

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Figure: Antenna feed contact and matching components for Diversity Antenna

GPS/Div. MB/WIFI2G antenna for All SKUs (VZW, ROW and China)

For factory radiated test failures on all SKUs for GPS/MB/WIFI2G antenna, please do the following:

Step 1: Retest the unit.

Step 2: If the failure persists, check if feed pin (M002) and ground (Screw contact) on the PCB are damaged. Check if feed pin touches the pad on rear housing by universal contact and ground contacts on rear housing well by screw as shown in the following figure.

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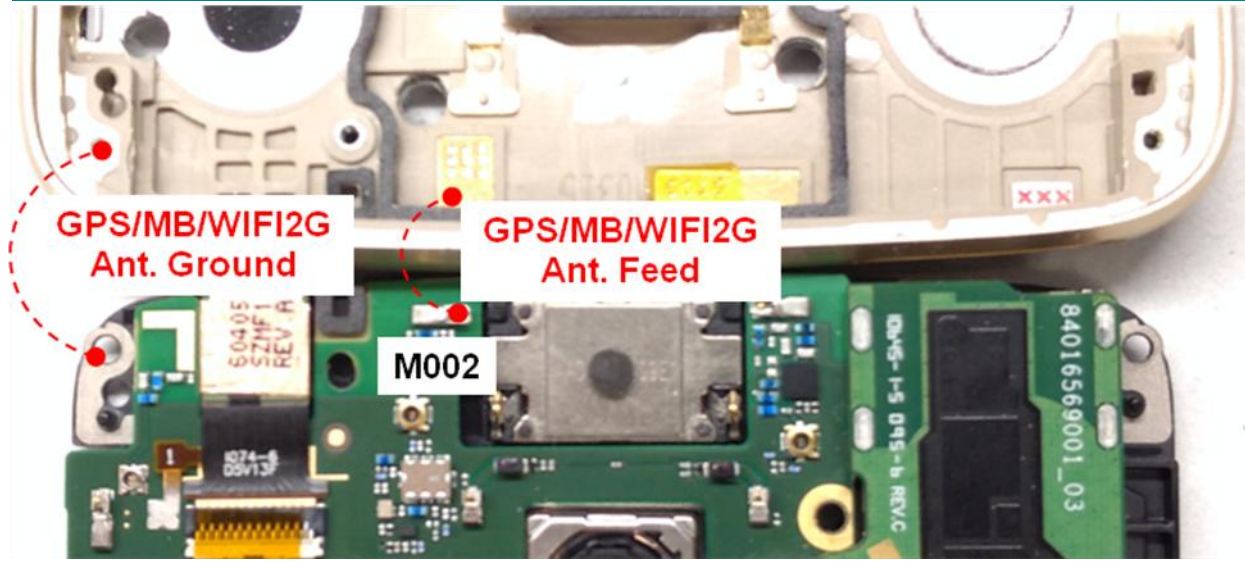


Figure: Feed and ground connection for GPS/Div.MB/WIFI2G antenna

Step 3: If Step 2 does not resolve the issue, check GPS/MB/WIFI2G antenna matching components: C005, C123, C121 and C124. If any component is missing, misplaced, or damaged, place/replace the part and retest.

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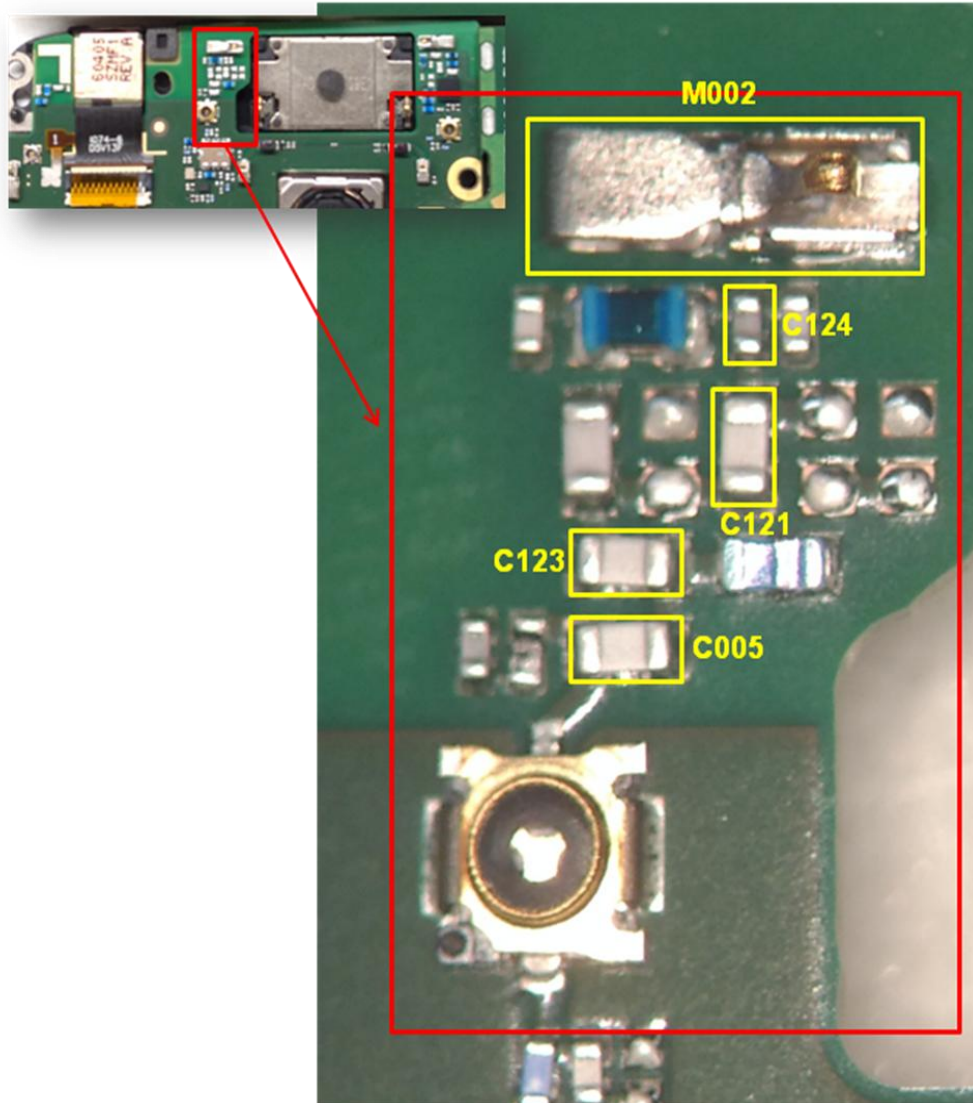


Figure: Antenna matching and universal contact for GPS/MB/WIFI2G Antenna

WIFI5G Antenna for All SKUs (VZW, ROW and China)

For factory radiated test failures on all SKUs for WIFI5G antenna, please do the following:

Step 1: Retest the unit.

Step 2: If the failure persists, check WIFI5G antenna pattern. If it's damaged, replace the PCB.

Step 3: If Step 2 does not resolve the issue, check WIFI5G antenna matching components: C9 and C11. If any component is missing, misplaced, or damaged, place/replace the part and retest.

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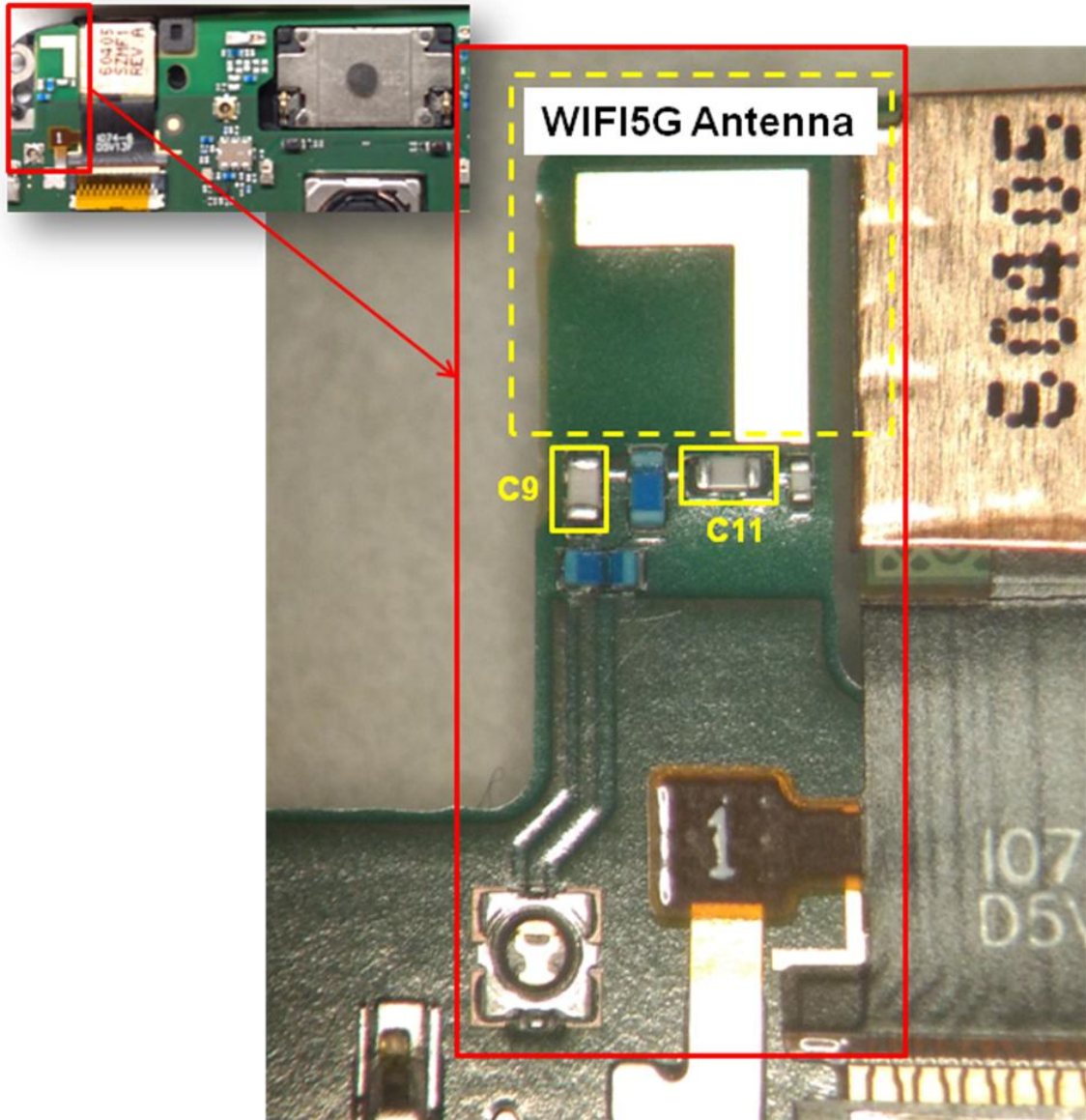


Figure: Antenna matching components for WIFI5G Antenna

NFC Antenna for All SKUs (VZW, ROW and China)

For factory radiated test failures on all SKUs for NFC antenna, please do the following:

Step 1: Retest the unit.

Step 2: If the failure persists, check if 2feed pins M350 and M002 on the PCB are damaged. Check if feed pin touches the pad well on rear housing by universal contact as shown in the following figure.

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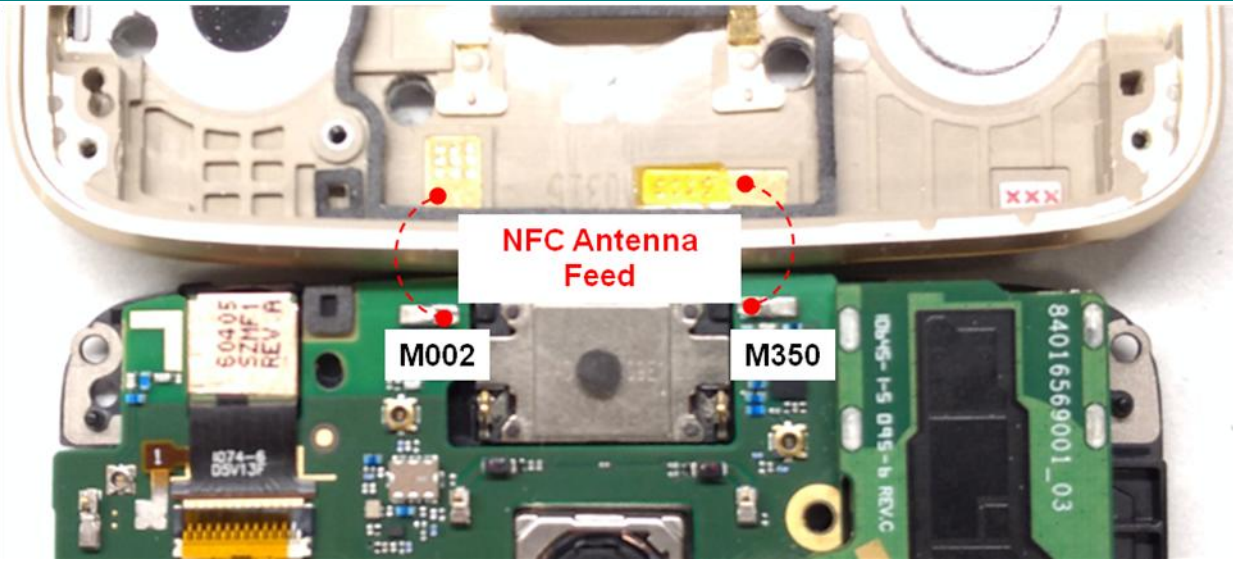


Figure: Feed and ground connection for NFC antenna

Step 3: If Step 2 does not resolve the issue, check the diversity antenna matching components: L4152 and L4172. If any component is missing, misplaced, or damaged, place/replace the part and retest.

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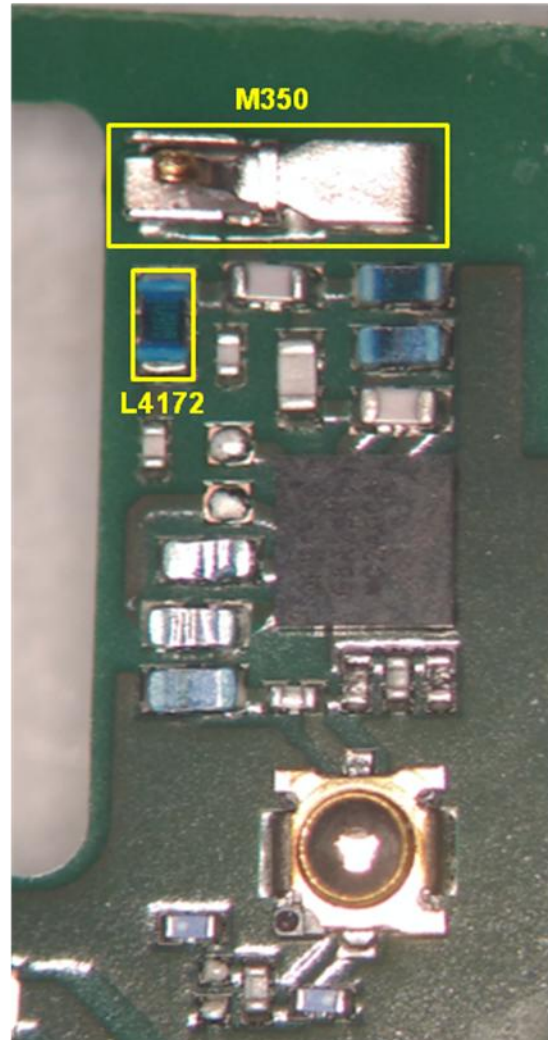
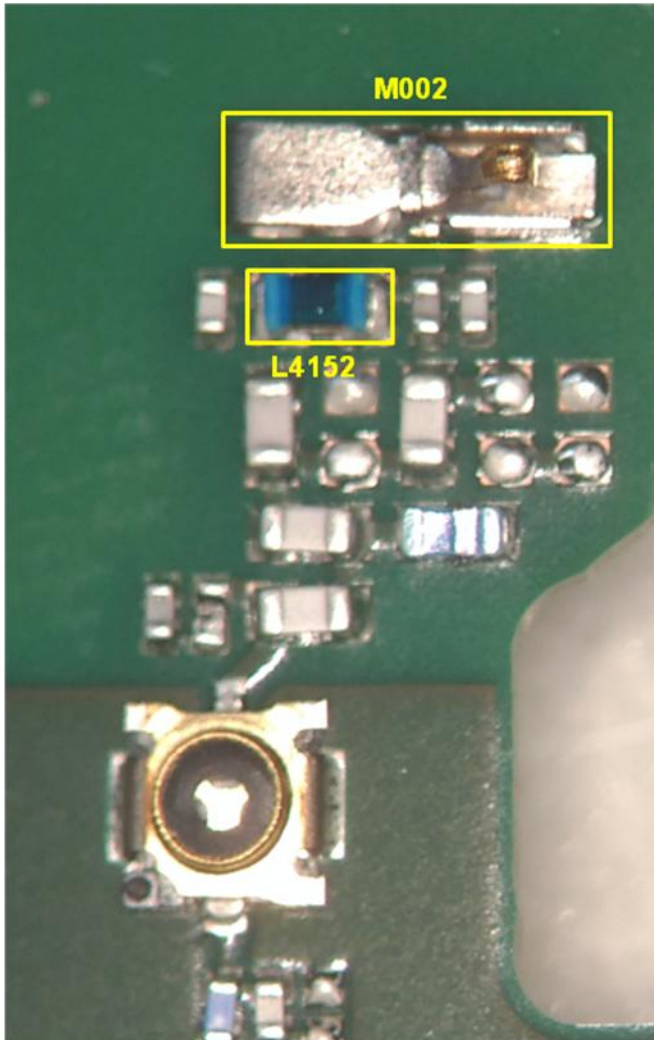


Figure: Antenna matching and universal contact for NFC Antenna

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