

Troubleshooting Manual

Satio - U1



ABOUT

General information

The purpose of this document is to provide enhanced technical information for Sony Ericsson repair technicians in order to assist during service, repair and troubleshooting operations on Sony Ericsson mobile phones. It should be used as a complement to other repair instructions and tools as notified by the local Sony Ericsson representative.

To search for components throughout the entire document use the “search” function in Adobe Acrobat Reader 7.0 (or later version) and enter the component name or other word. Use zoom to enlarge.

For easier navigation of the document you can use the bookmarks that appear in the Bookmarks tab on the left side of the Adobe Acrobat Reader window. Each bookmark jumps to a page in the document.

Disclaimer

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Note

When disassembling and reassembling the phone the instructions and processes described in the Mechanical Working Instructions, the Generic Repair Manual and the Repair Center Handbook must be followed.

Revision History

Rev.	Date	Changes / Comments
1	10/10/2009	Initial revision.

Table of Contents

ABOUT	2	Vibrator Problems	27
General Information	2	Alert and Real Time Clock Problems	28
Table of Contents	2	TV Out Problems	28
Equipment List	3	System Connector Protection Test	29
TROUBLESHOOTING	5	Backup Capacitor Test	29
Dead Phone Problems	5	Display Filter Test	30
Display Problems	7	ASIC Revision Test	30
Display Illumination Problems	7	Measurement Points Pictures	31
Proximity Sensor Problems	8	MEASUREMENT POINTS	42
Light Sensor Problems	8	Primary Side	42
On/Off Key Problems	9	Secondary Side	43
Lock Key Problems	9	FPC Receiver	44
Volume Up and Down Key Problems	10	FPC Side Key	45
Play/View Key Problems	10	Top Schematic & Interface	46
Mode Select Key Problems	11	Access Top	47
Key Center, End and Send Problems	11	Access Bluetooth + FM Radio	48
Key Center, Key End and Key Send		Access GSM_UMTS	49
Illumination Problems	12	Access WLAN	50
Red and Green LED Problems	12	Access A-GPS	51
Tally LED Problems	13	Audio Top	52
Trickle Charge LED Problems	13	Audio Digital	53
Camera Cover Blue LED Problems	14	Audio Analog	54
Camera Key Blue LED Problems	14	Baseband Top	55
Torch (White) LED Problems	15	Baseband System	56
Xenon Flash Problems	15	Baseband UARTS_SIM	57
Camera Cover Detect Problems	16	Baseband Memories	58
Auto Focus and Camera Shutter		Baseband Kajsa PoP Interface	59
Problems	16	PDA Top	60
Main Camera Problems	17	PDA Debug	61
VT Camera Problems	17	PDA Memories	62
Charging Problems	18	PDA Com	63
USB Charging Problems	18	PDA Camera	64
Data Communication Problems	19	PDA LCD_TS	65
SIM Problems	19	PDA System Connector	66
Memory Card Problems	20	PDA Key Interface	67
Microphone Problems	20	PDA OMAP PoP Interface	68
Ear Speaker Problems	21	Power Top	69
Loudspeaker Problems	21	Power Baseband	70
Handsfree (PHF) Problems	22	Power PDA	71
FM Radio Problems	23	Power Decoupling PDA	72
WLAN Problems	23	Power Decoupling	73
Bluetooth Problems	24	FPC Receiver	74
GSM Network Problems	25	FPC Side Key	75
WCDMA Network Problems	25	APPENDIX	76
A-GPS Problems	26	Troubleshooting Fixture	
Accelerometer Problems	27	Setup Instructions	76

Satio, U1a, U1i Equipment List

Info: Additional information about the equipment used for TRS can be found in the following location:
CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf or matrix.xls – U Model Tab.

Troubleshooting Fixture

Location: CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf Part number: 1230-8339

Note! *Additional information about the TRS Fixture Kit can be found in the Trouble Shooting Fixtures Setup Instructions document which is included at the end this TRS Manual.*

Dummy Battery

Location: CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf Part number: NTZ 112 533

Note! *The resistance between GND and BDATA should be approximately 120 KOhm.*

Instruments

Power Supply Channel 1 (VBATT)

Agilent 6632B or similar
Location: CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf

Instrument Settings:
Voltage: **3.8 Volt**
Limiter: **2.0 A**

Note! *The cable length between the Power Supply Channel 1 VBATT and the dummy battery must **not** exceed 1 m. The cable must have a capacity for at least 16A.*

Oscilloscope

Agilent DSO7052A or similar
Location: CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf

Digital Multimeter (DMM)

Fluke 83 or similar
Location: CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf

Note! *The 0, 64 mm Test Probes is recommended by Sony Ericsson when the DMM is in use. See Picture 1.*

Picture 1



Spectrum Analyzer

R&S FSL 9 kHz – 3 GHz or similar
Location: CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf

RF probe

HP 85024A or similar
Location: CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf

FM Signal Generator

R&S SMC100A or similar
Location: -

PC Package & PC Software

PC Package (Computer)

Location: CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf

Urquell Fault Trace SW with project file

Location: CSPN – Repair Instructions – Electrical – **Product:** *Satio, U1a, U1i* – Trouble Shooting Application (Project File: Satio_U1a_U1i_Project_R1A)

Note! *Additional information can be found in the Help menu included in the Fault Trace SW.*

Cables

DSU-65/USB Cable

Location: CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf
Part number: RPM 131 12.
See picture 2.

Picture 2



RF Test Cable Flexible

Location: CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf
Part number: RPM 119 885
See Picture 3.

Picture 3



Power Cable RED to Power Supply Channel 1 (VBATT)

Maximum Length: 1 metre
Location: CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf

Power Cable BLACK to Power Supply Channel 1 (VBATT)

Maximum Length: 1 metre
Location: CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf

Connection Instructions for the Dummy Battery

This is the correct setup when the Dummy Battery is in use.
See Pictures 4 and 5.

Picture 4



Picture 5



Test Cards

Test SIM GSM/UMTS

One Test SIM GSM/UMTS is needed to perform the Current Consumption Test, see Picture 6.
Location: CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf

Note! To buy a Test SIM GSM/UMTS, please contact your supplier of test equipment.

Picture 6



Memory Card

SanDisk microSD™
See picture 7.

Picture 7



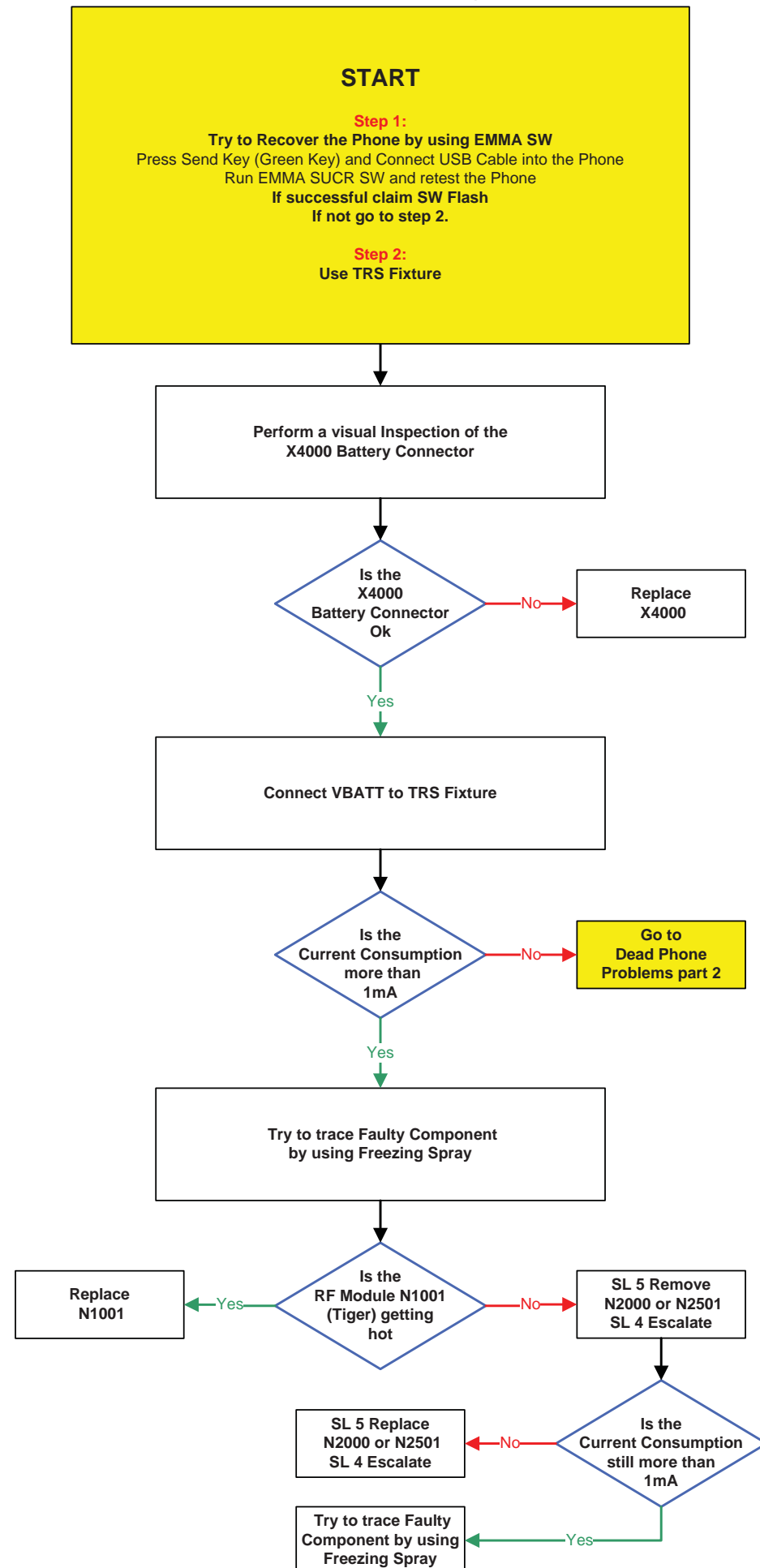
SMK RF Probe

Location: CSPN – Repair Instructions – Mechanical – Tool Catalogue – RepairToolsCatalogue.pdf
Part number: SXA 109 6356
See Picture 8.

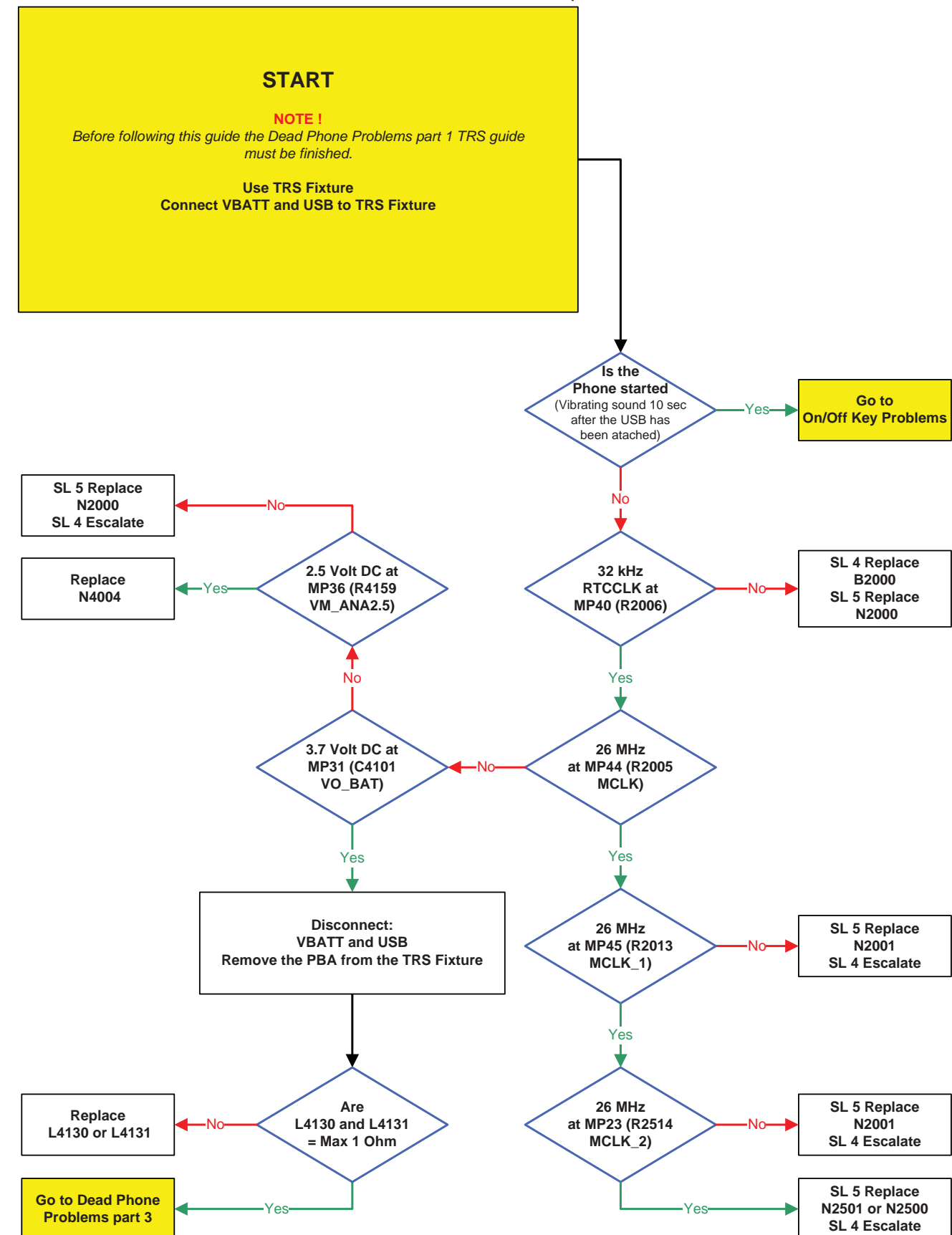
Picture 8



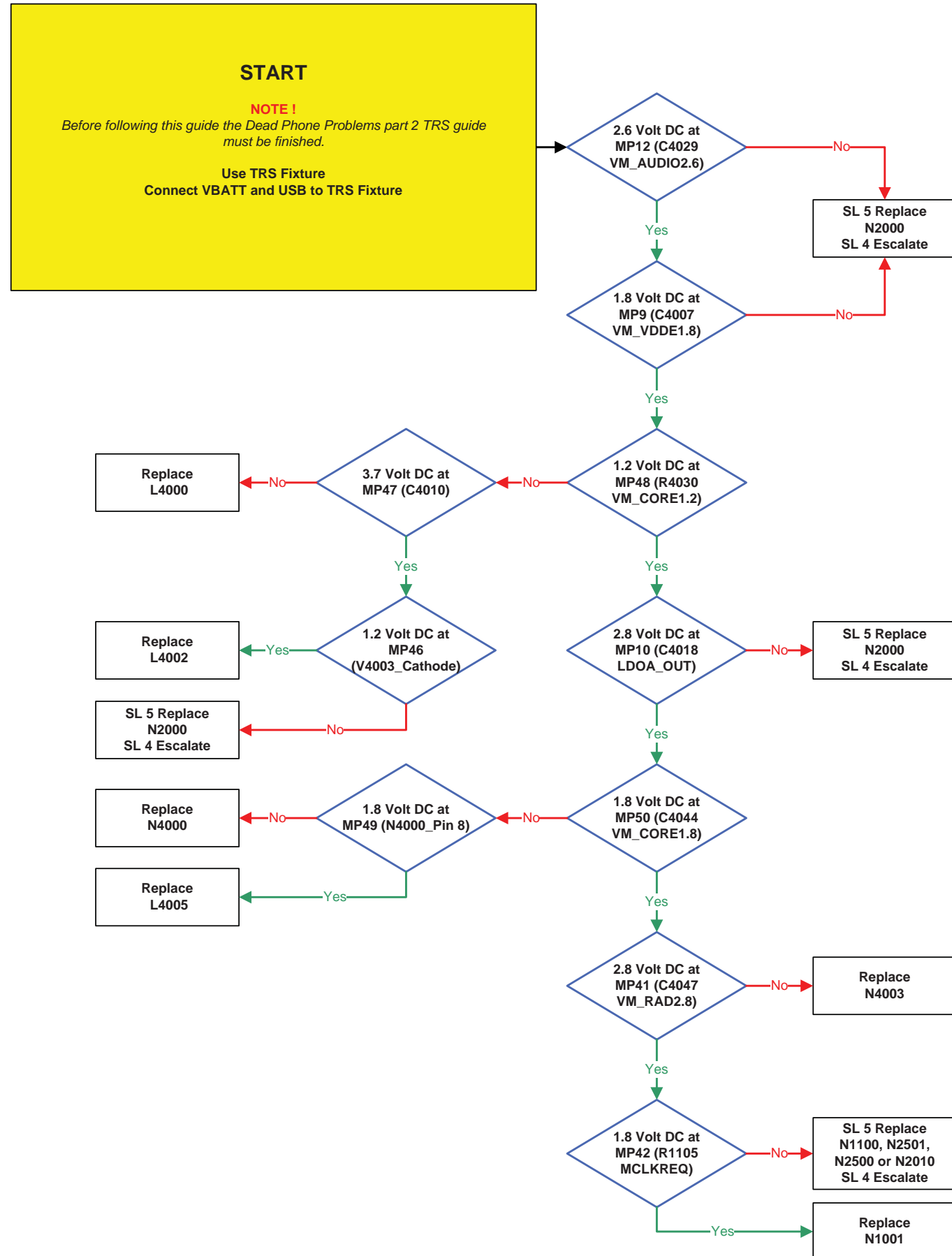
Dead Phone Problems part 1



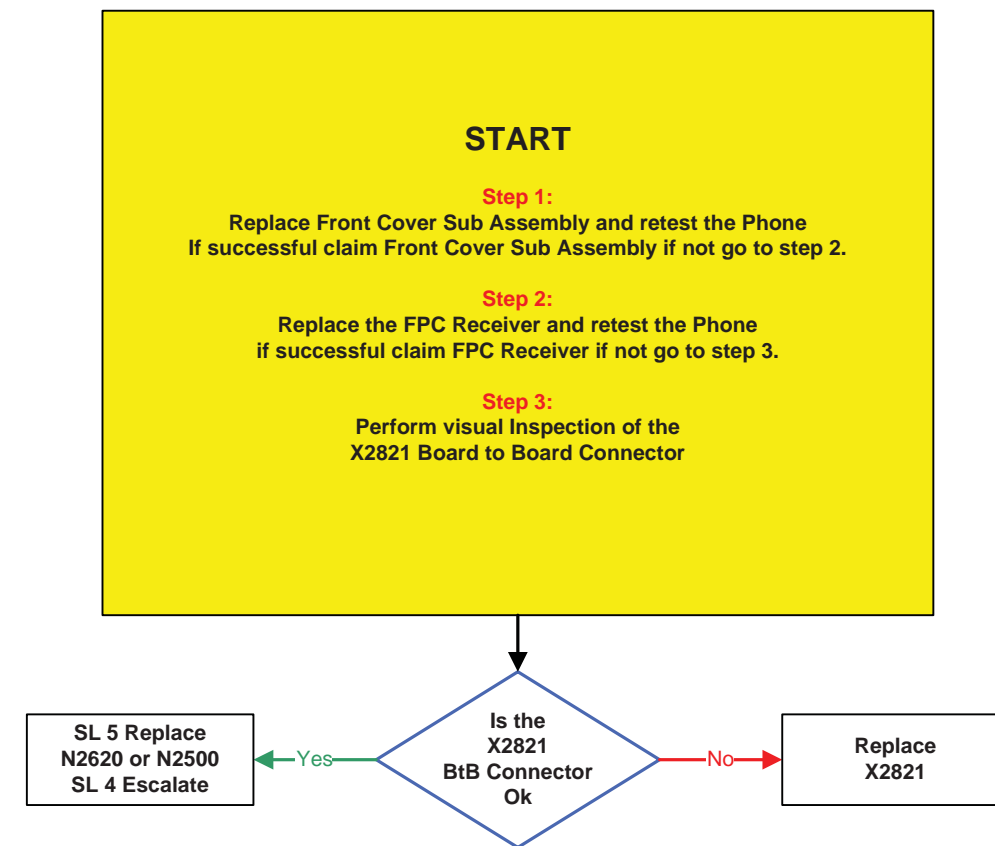
Dead Phone Problems part 2



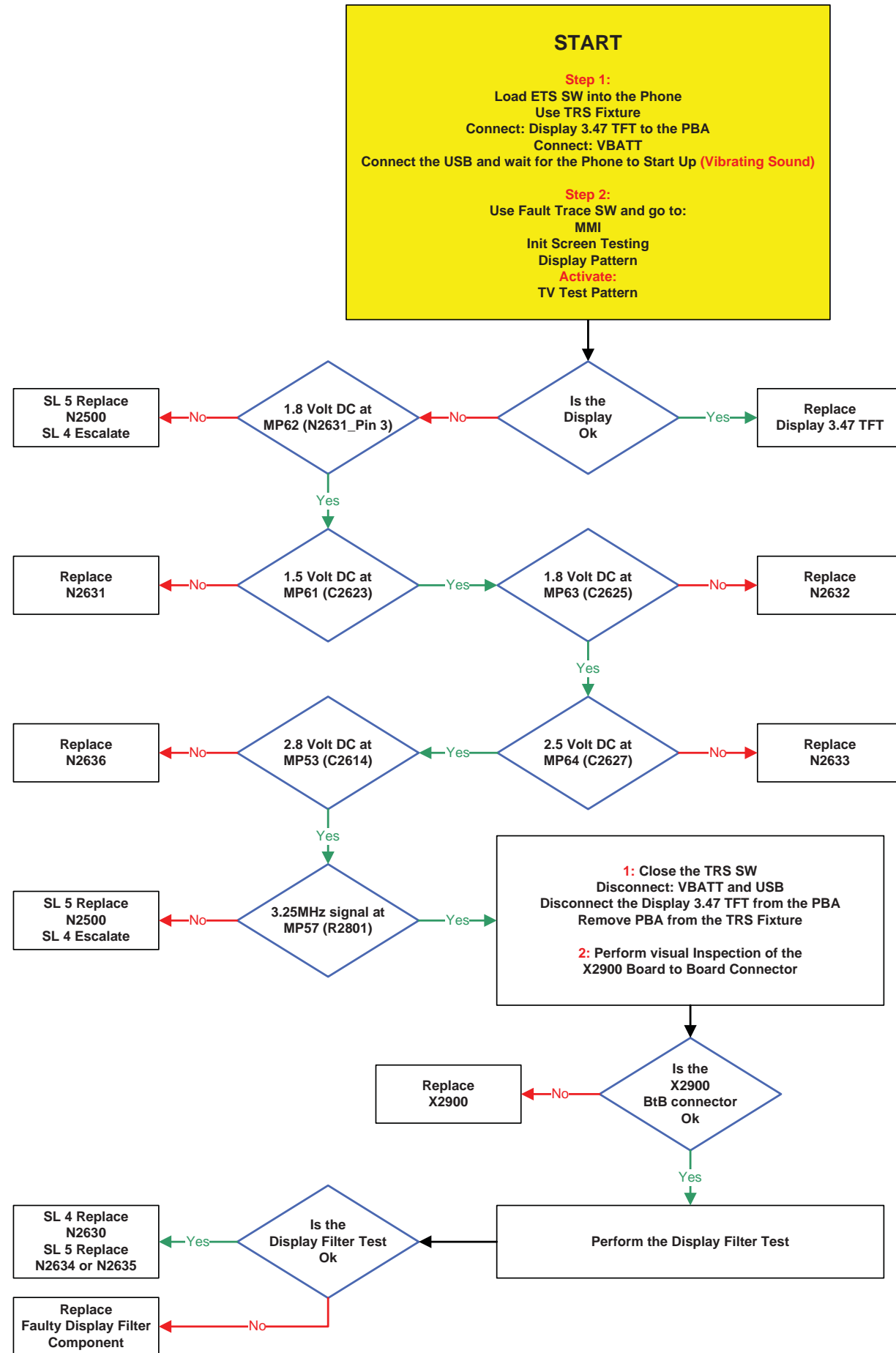
Dead Phone Problems part 3



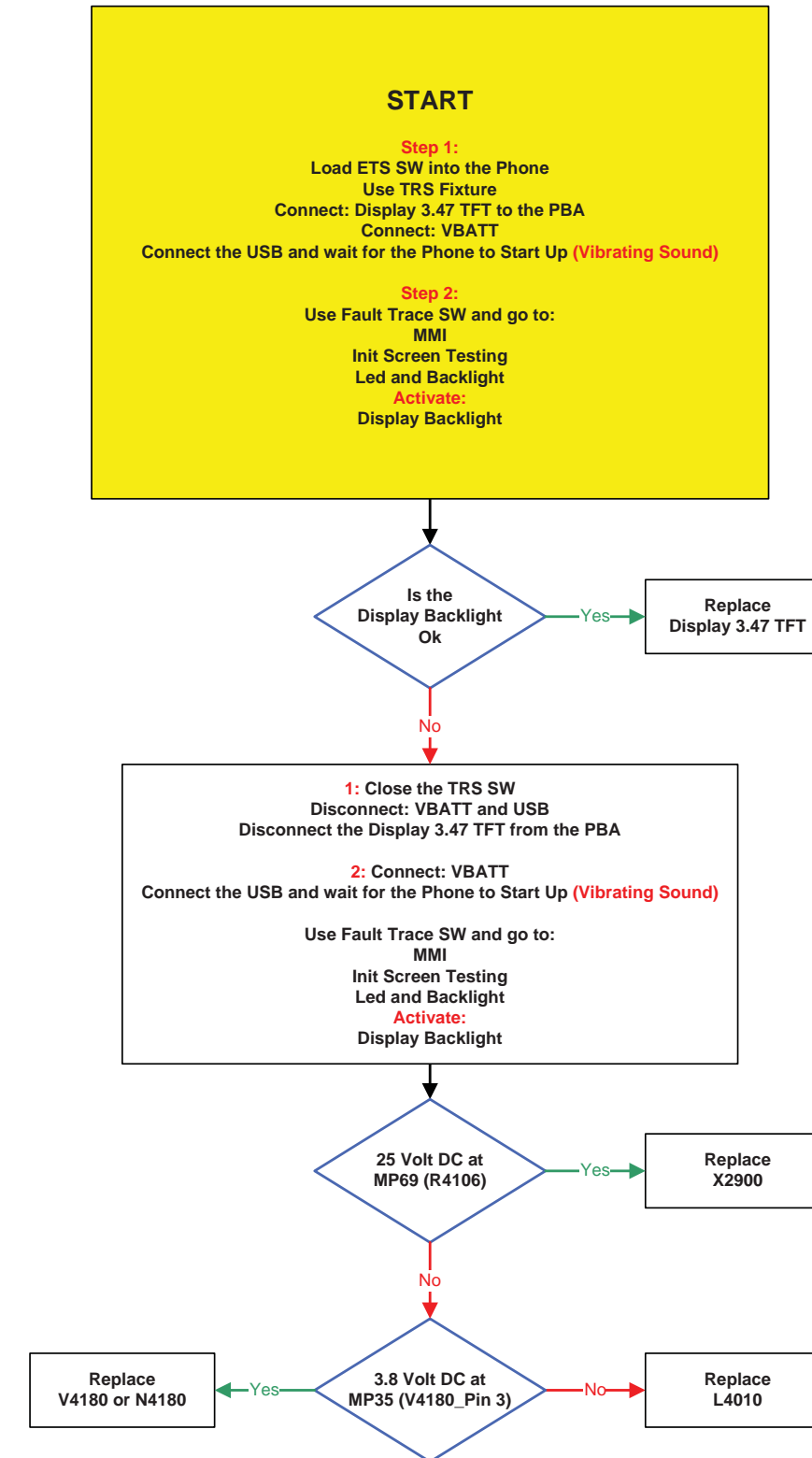
Touch Screen Problems



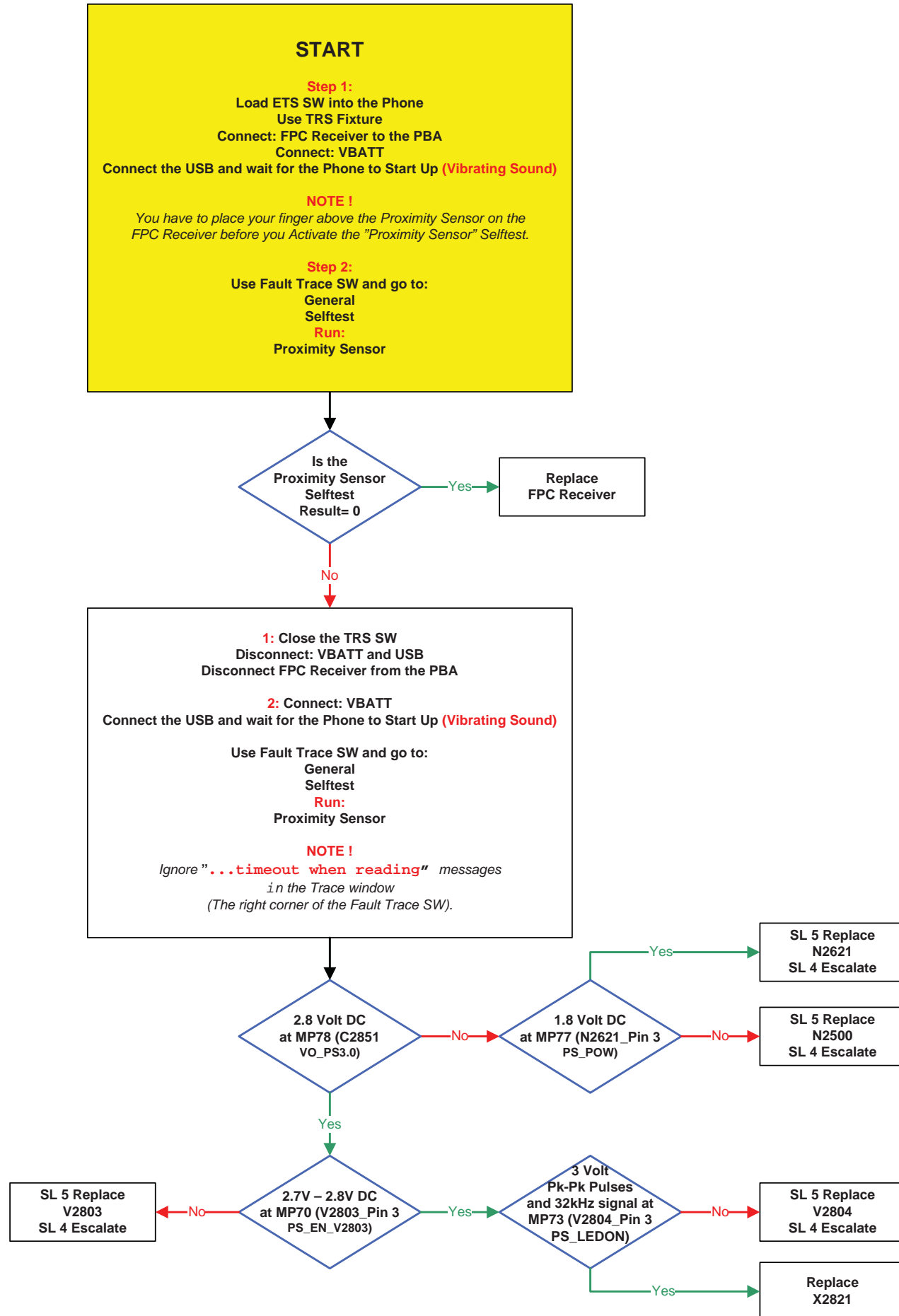
Display Problems



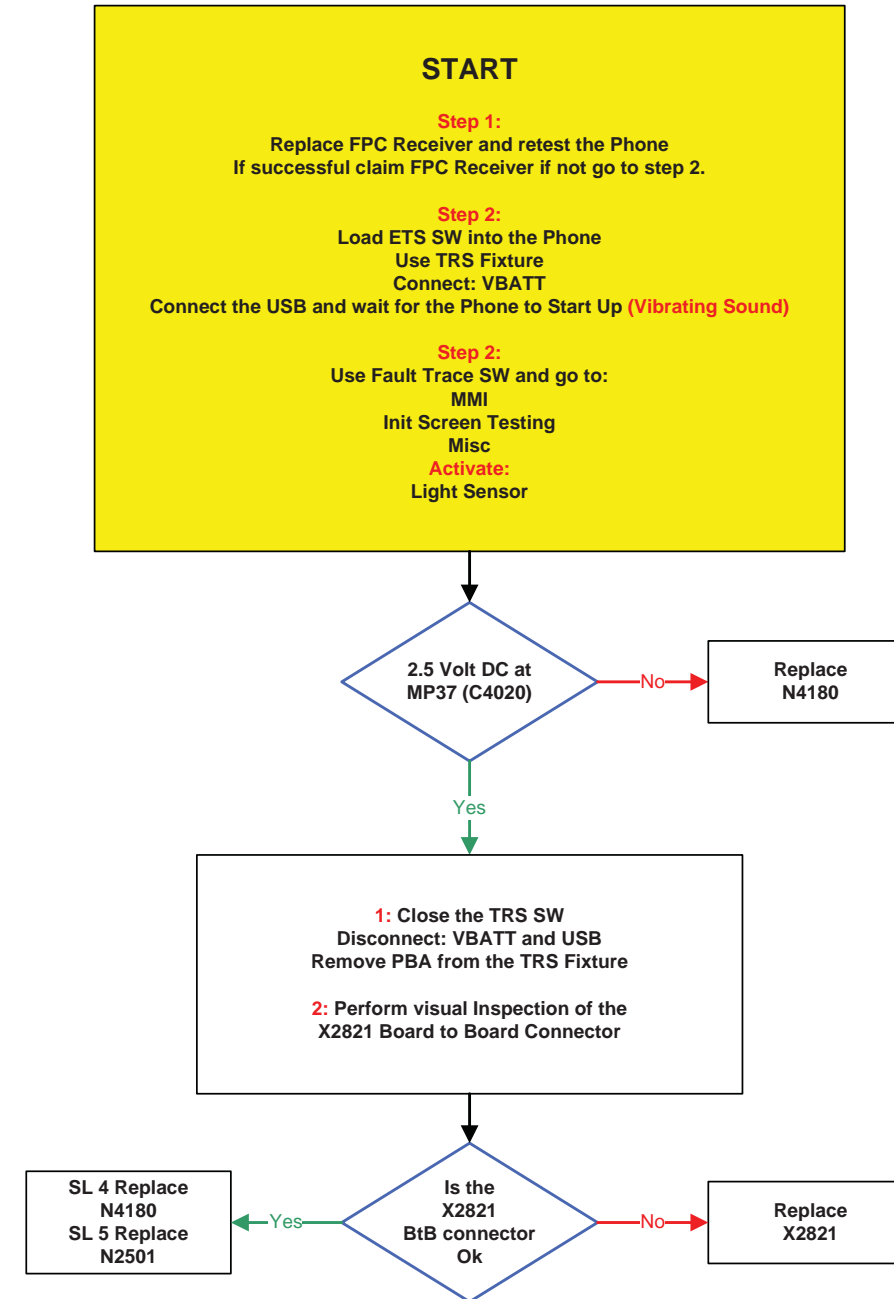
Display illumination Problems



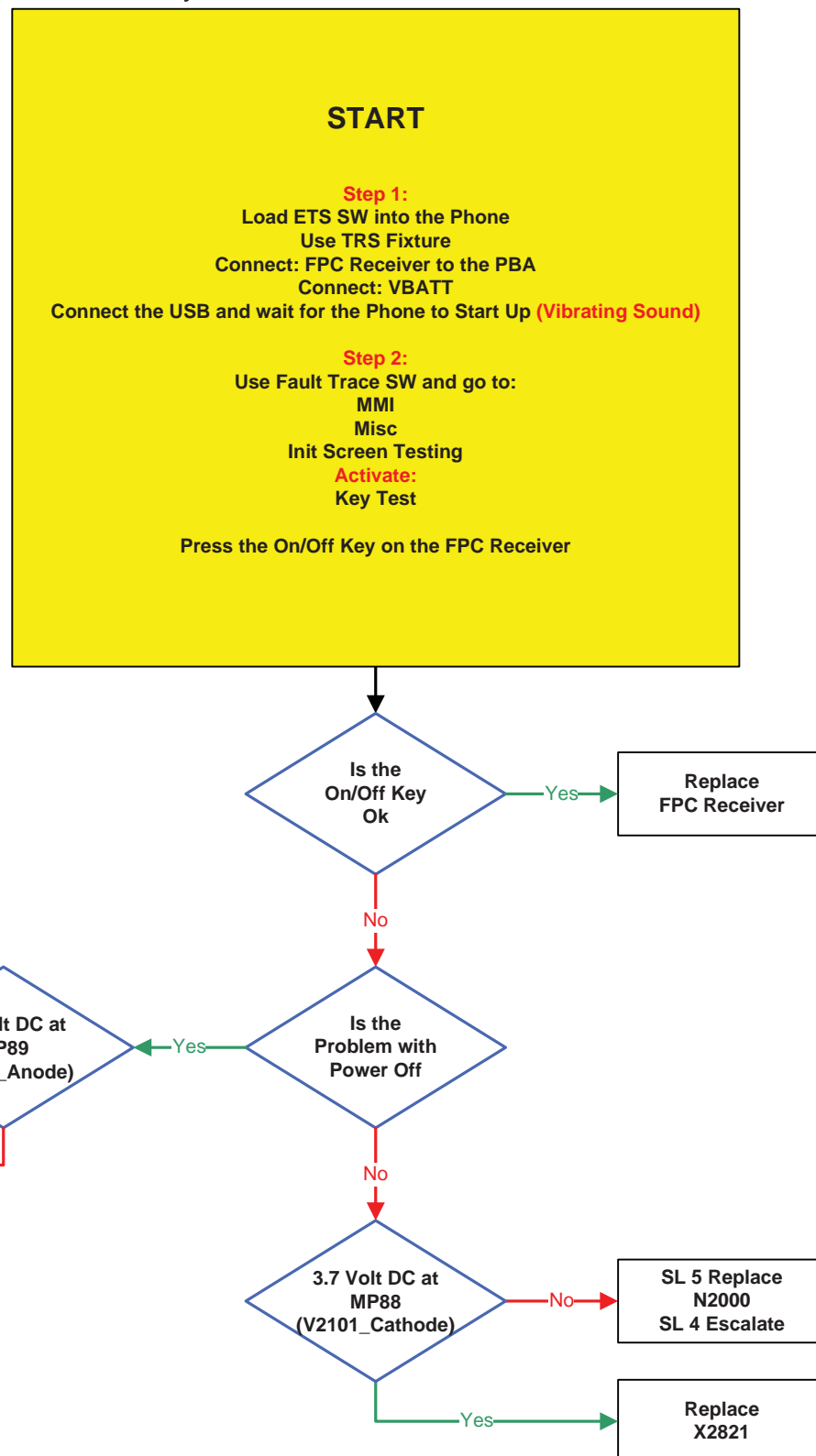
Proximity Sensor Problems



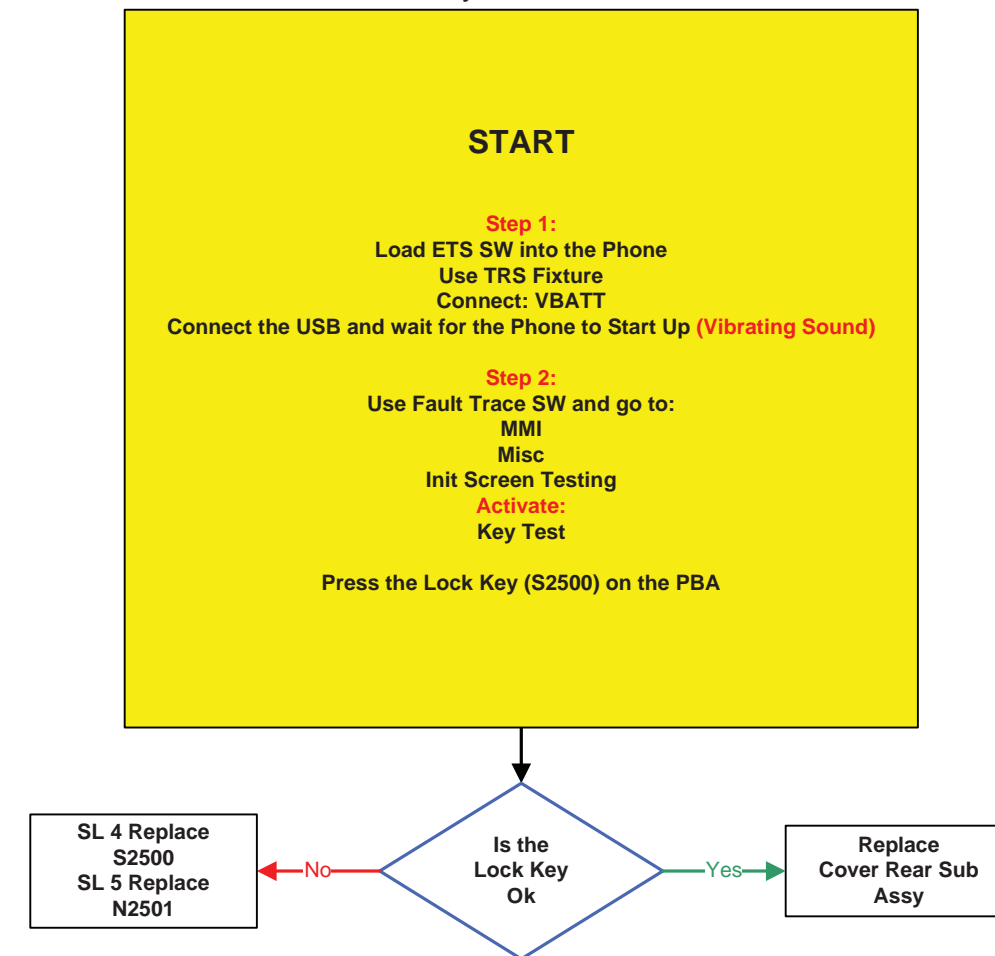
Light Sensor Problems



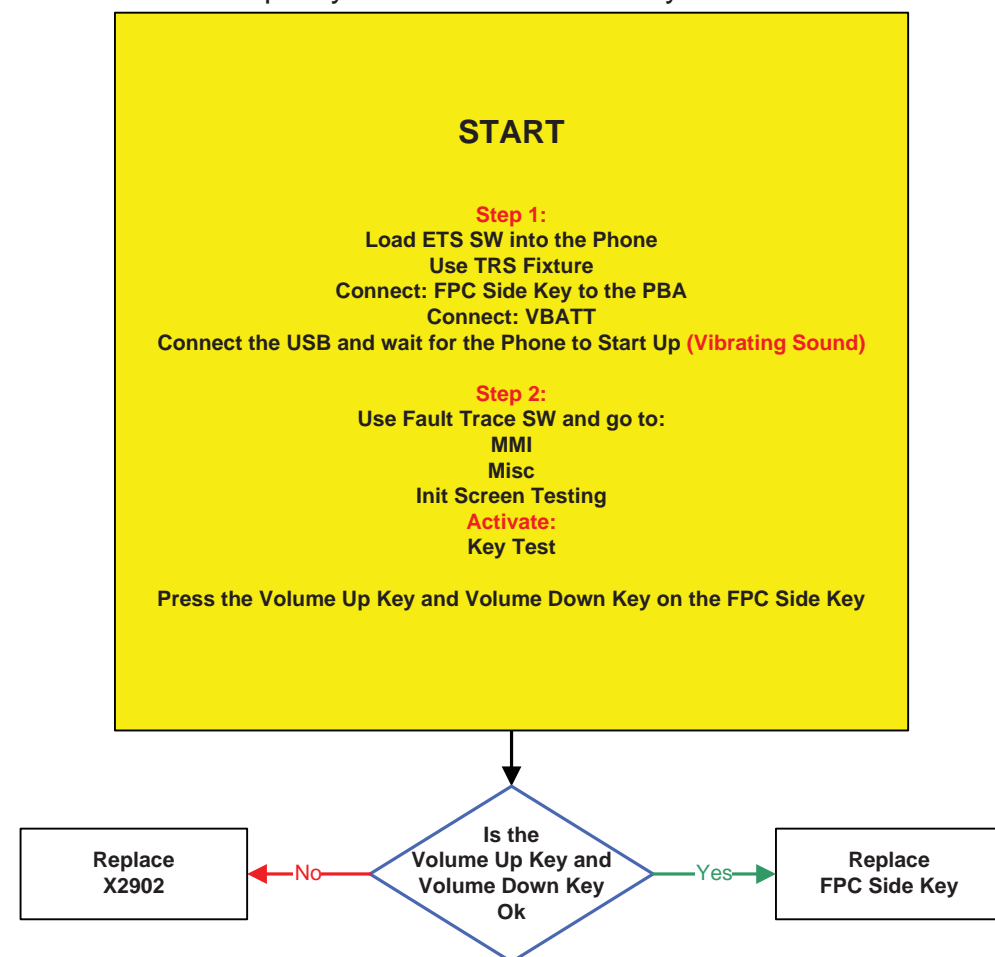
On/Off Key Problems



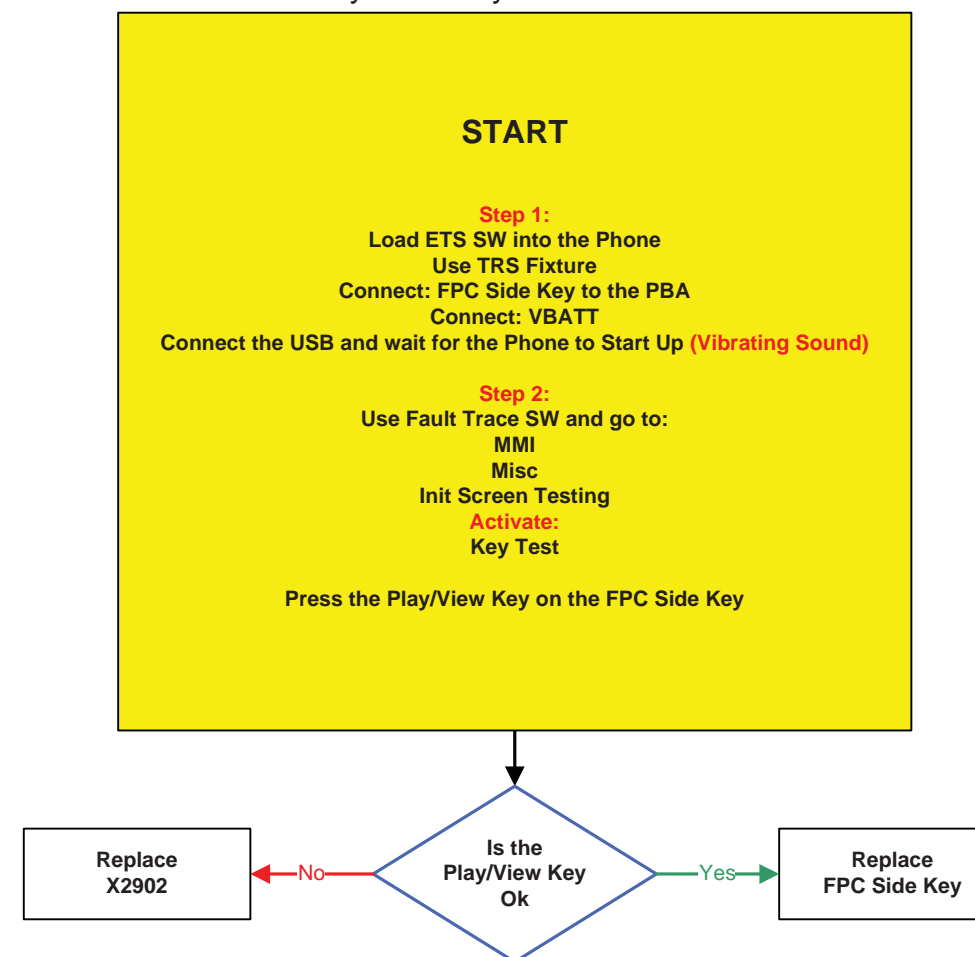
Lock Key Problems



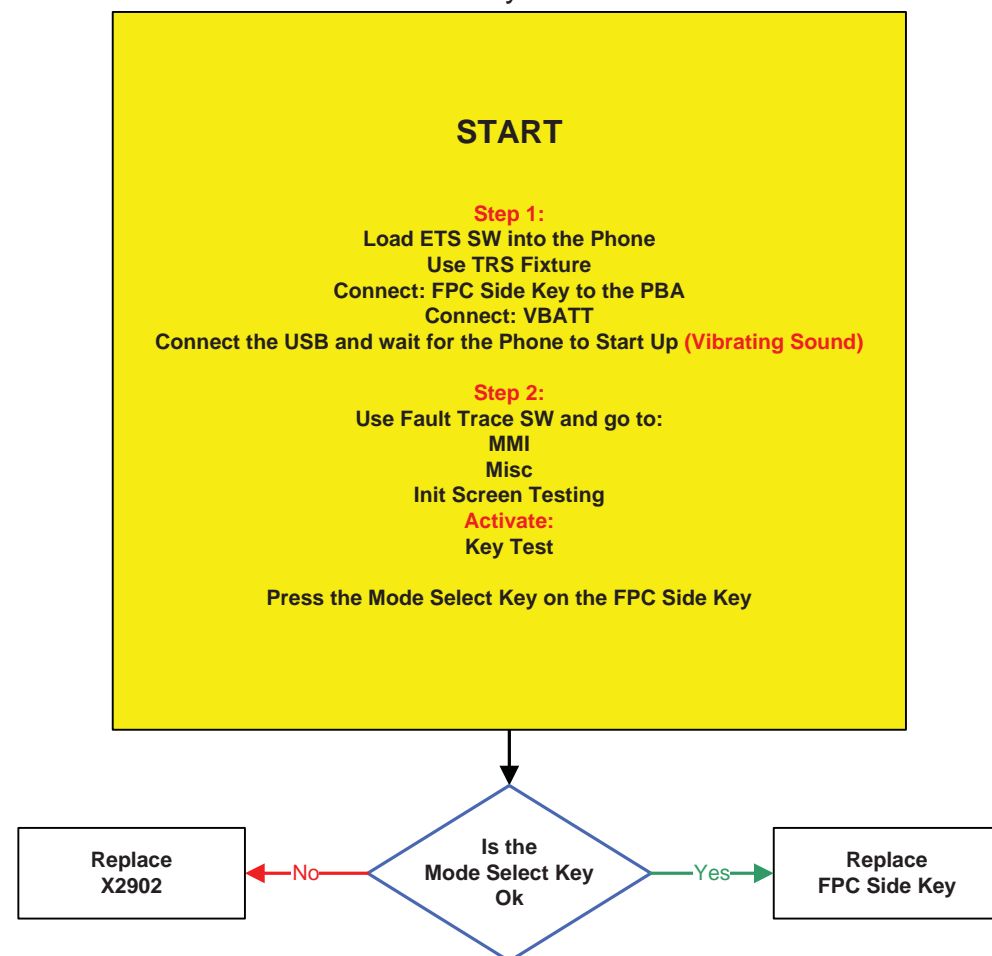
Volume Up Key and Volume Down Key Problems



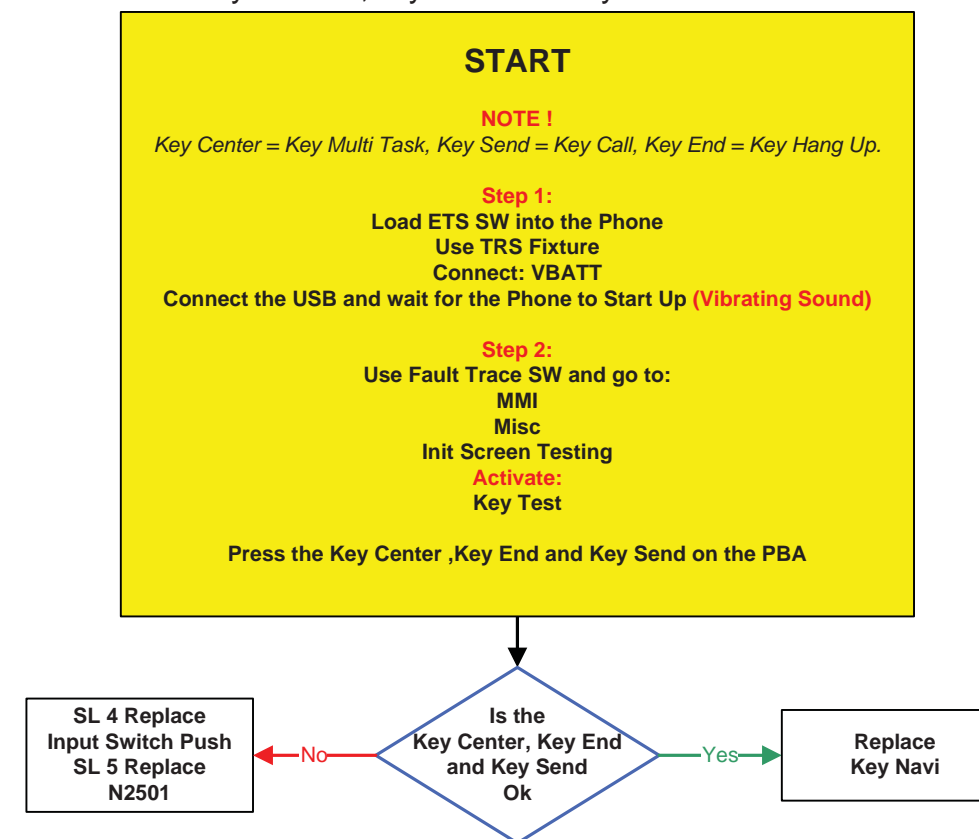
Play/View Key Problems



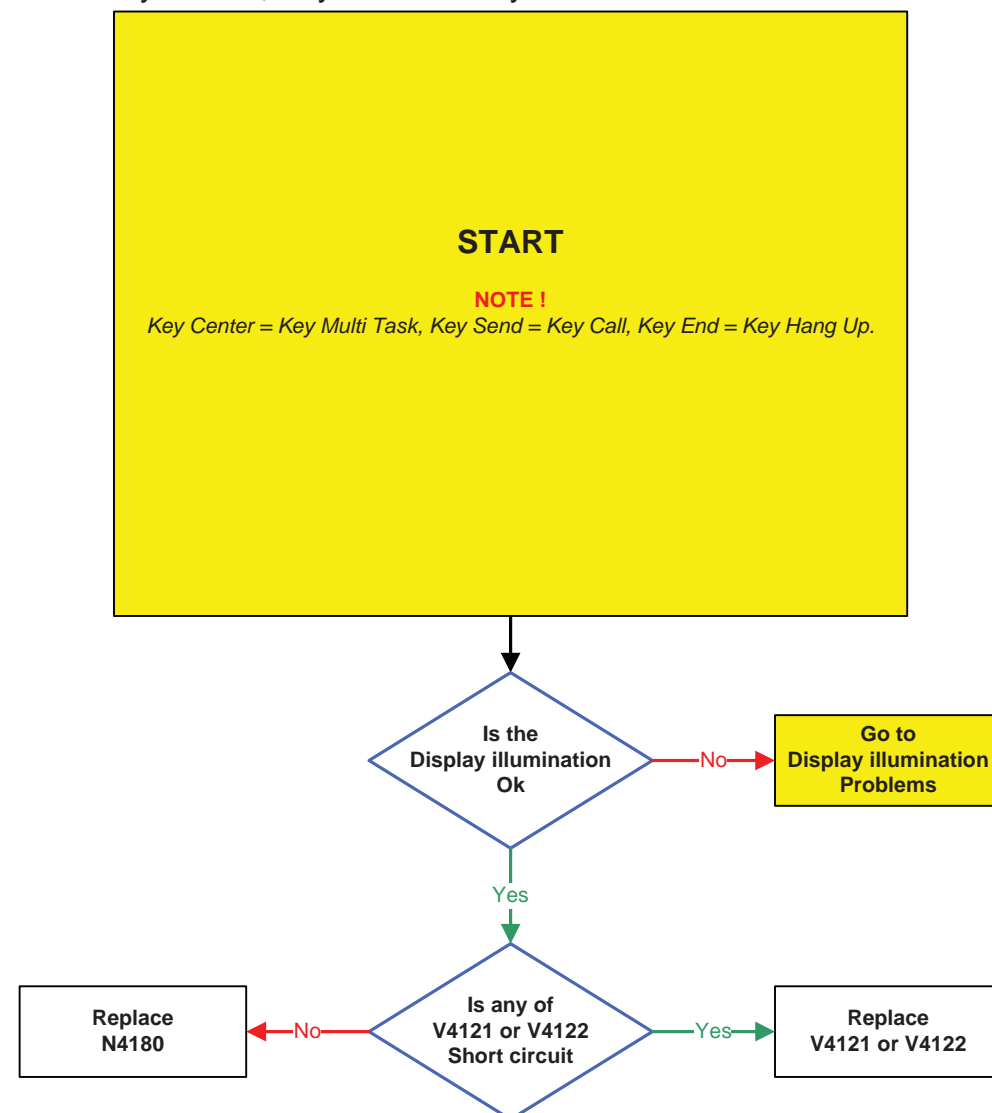
Mode Select Key Problems



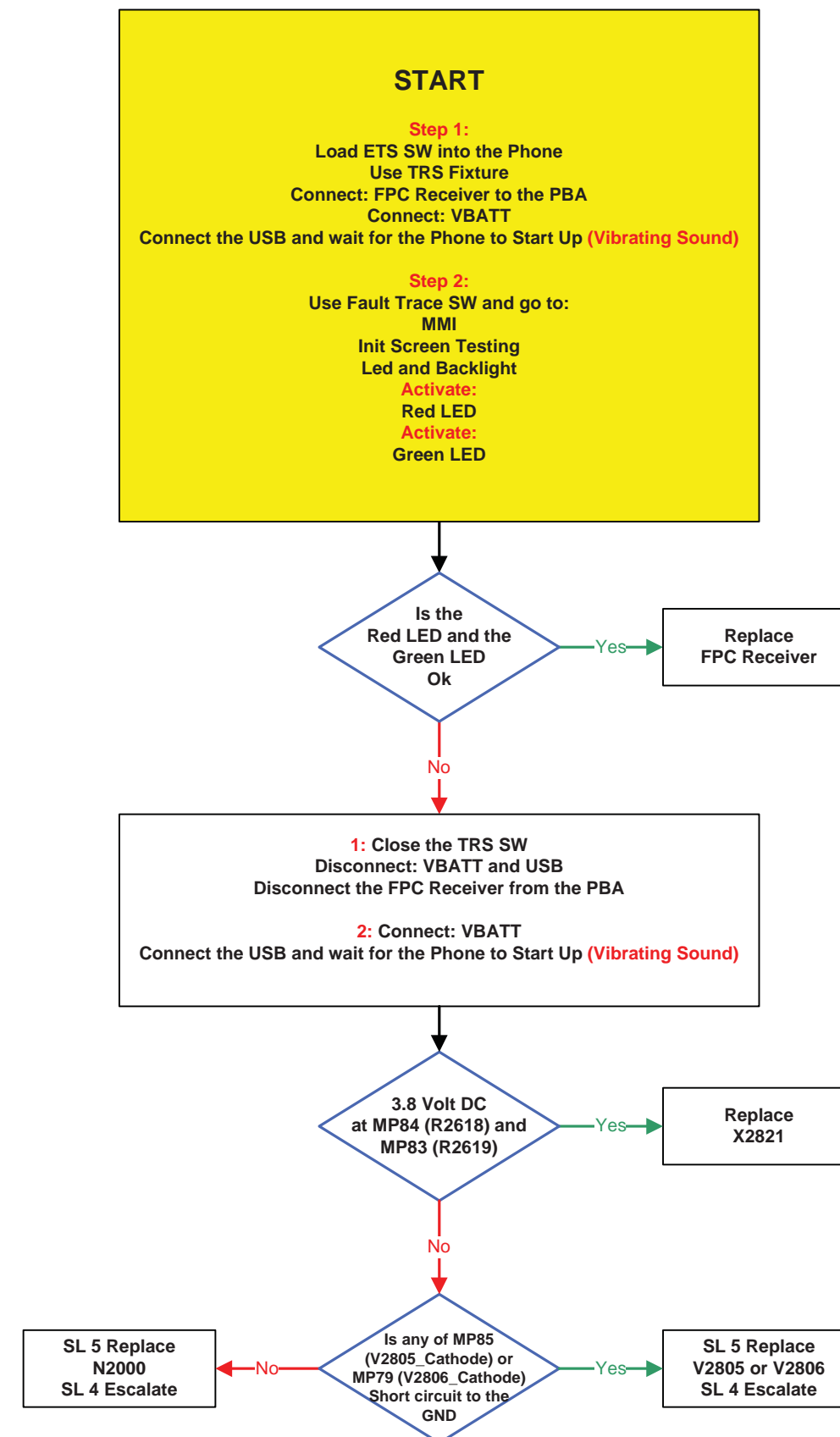
Key Center ,Key End and Key Send Problems



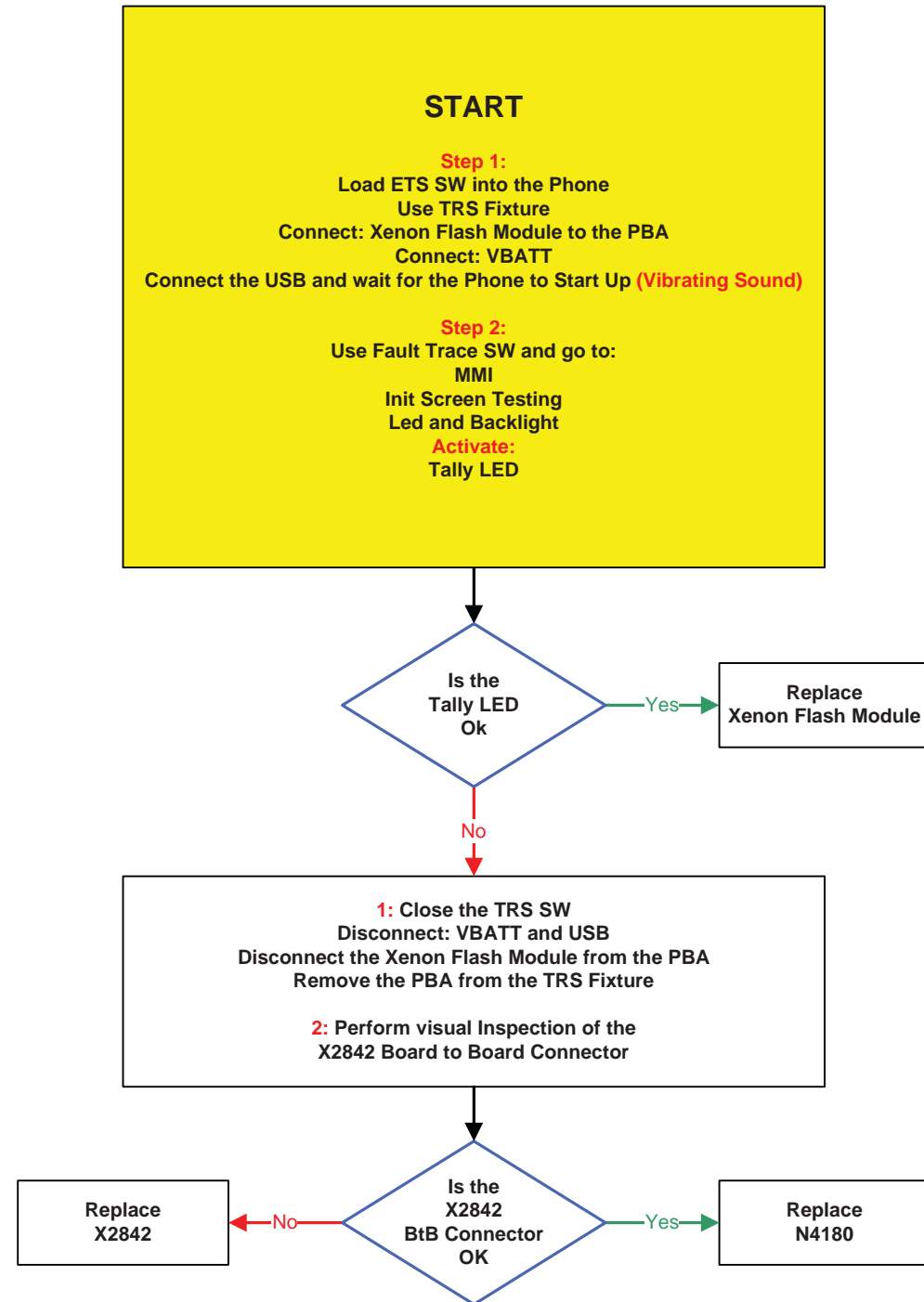
Key Center, Key End and Key Send illumination Problems



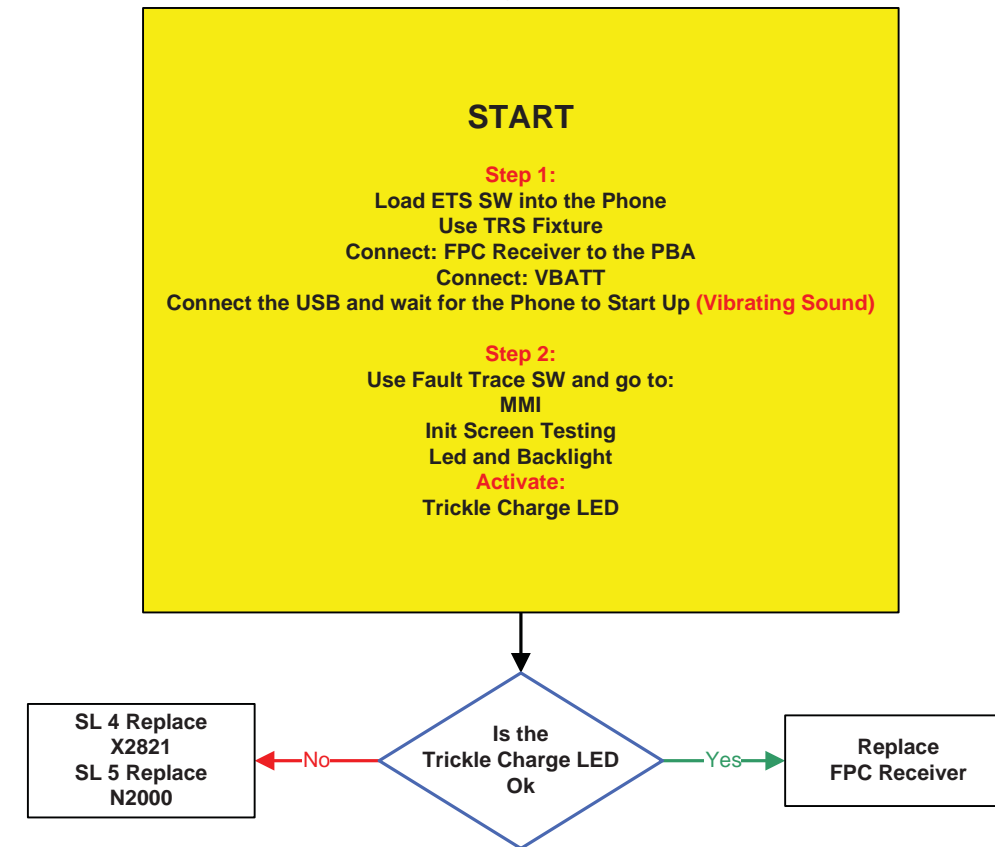
Red and Green LED Problems



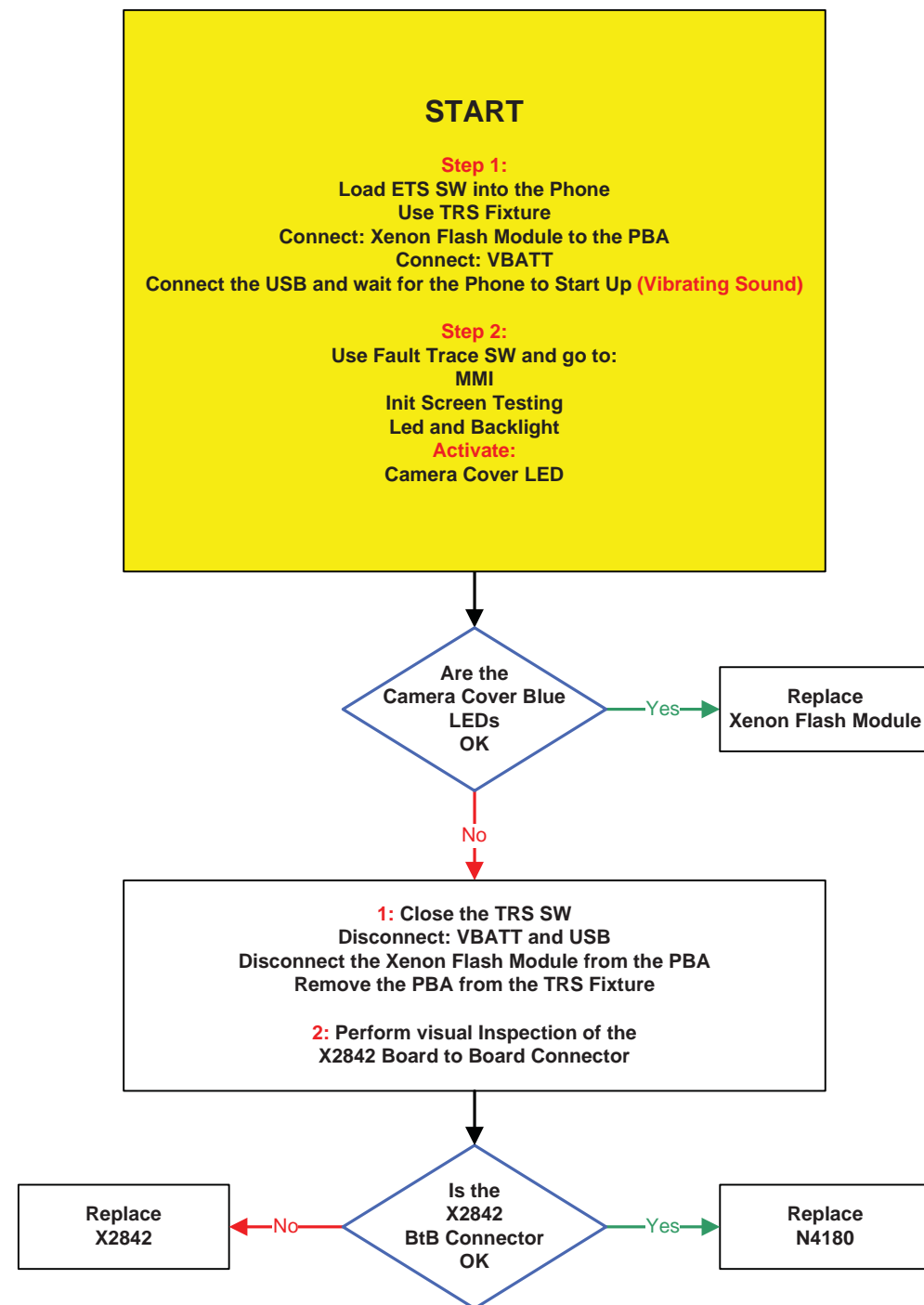
Tally LED Problems



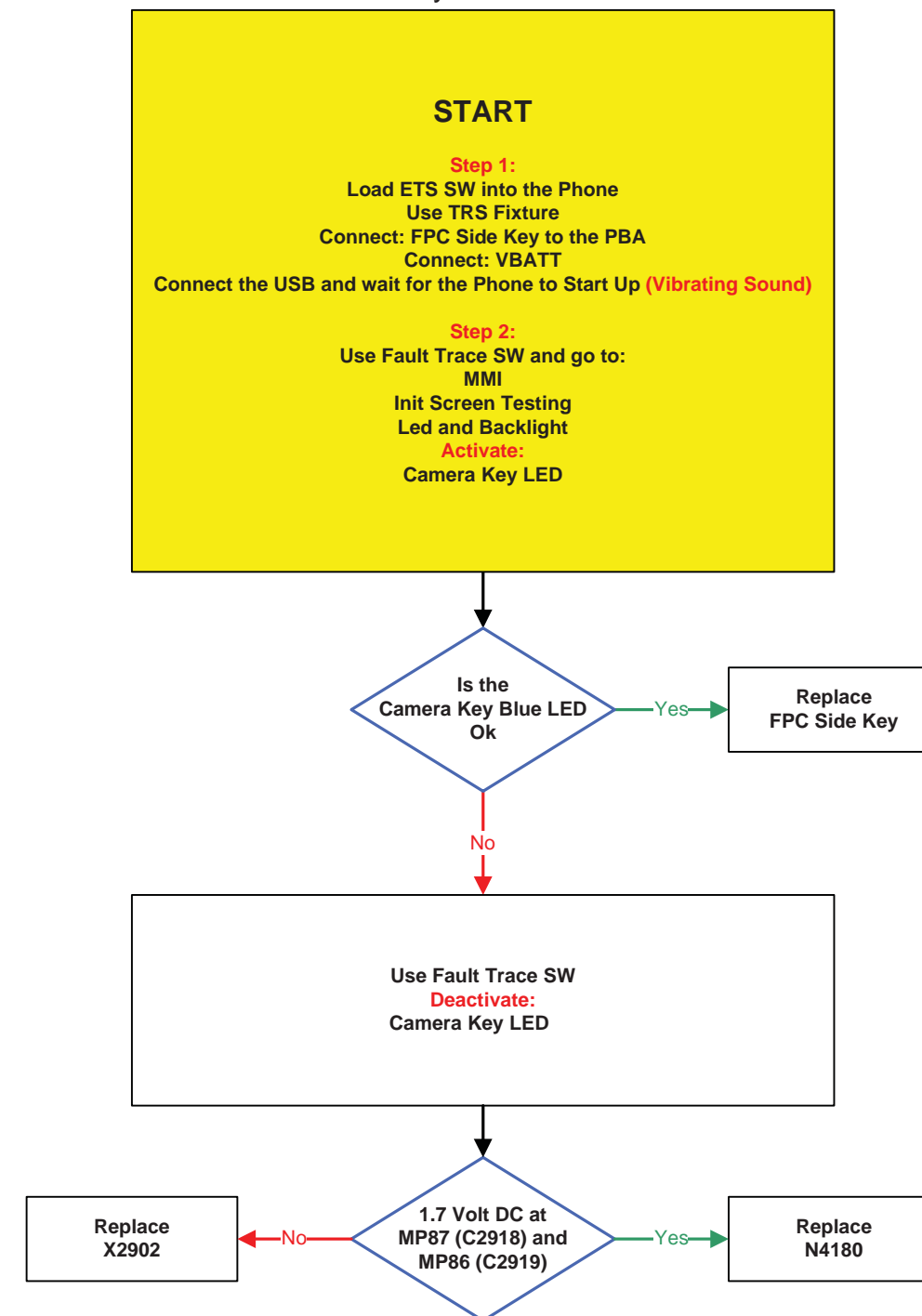
Trickle Charge LED Problems



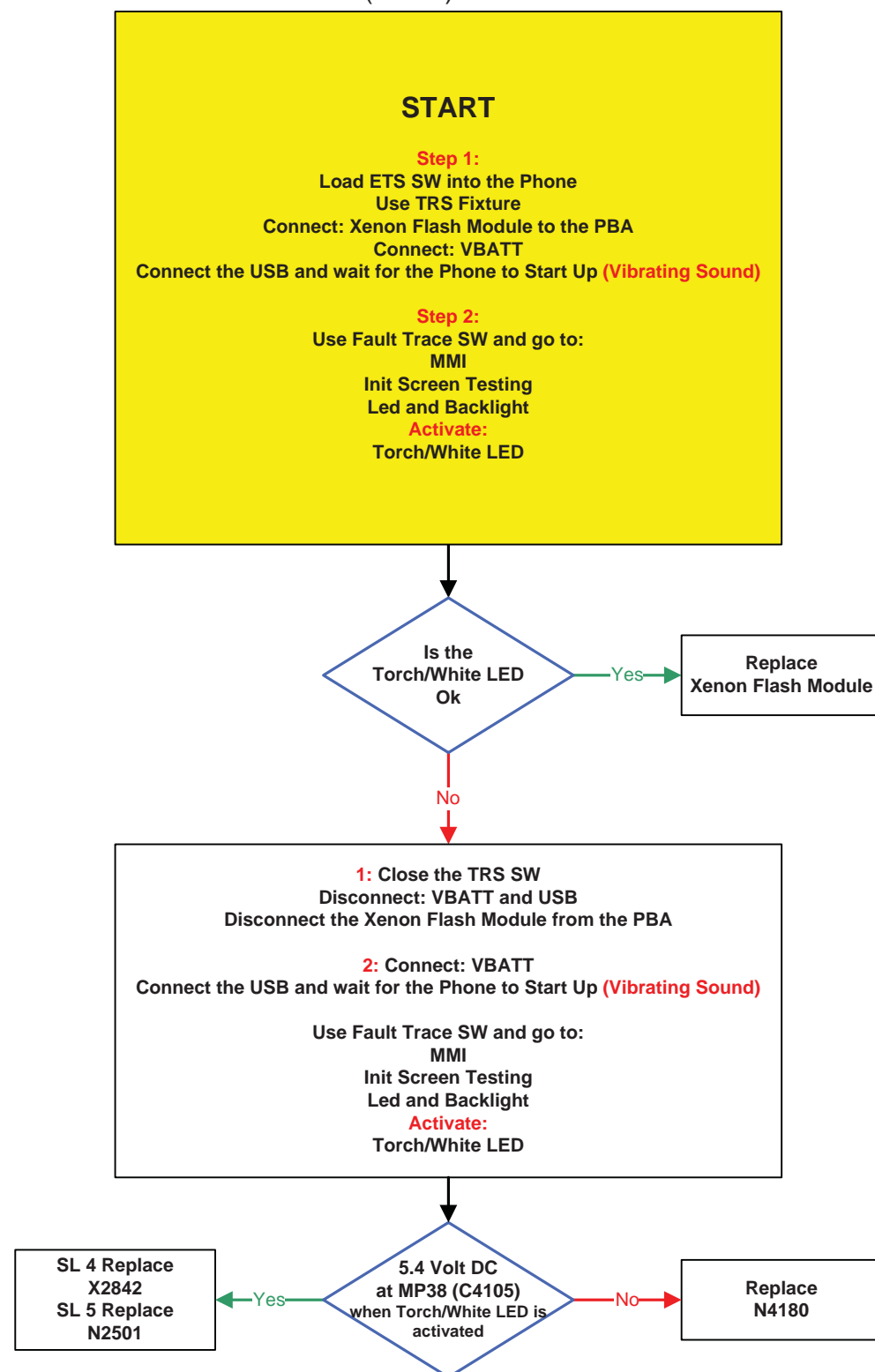
Camera Cover Blue LED Problems



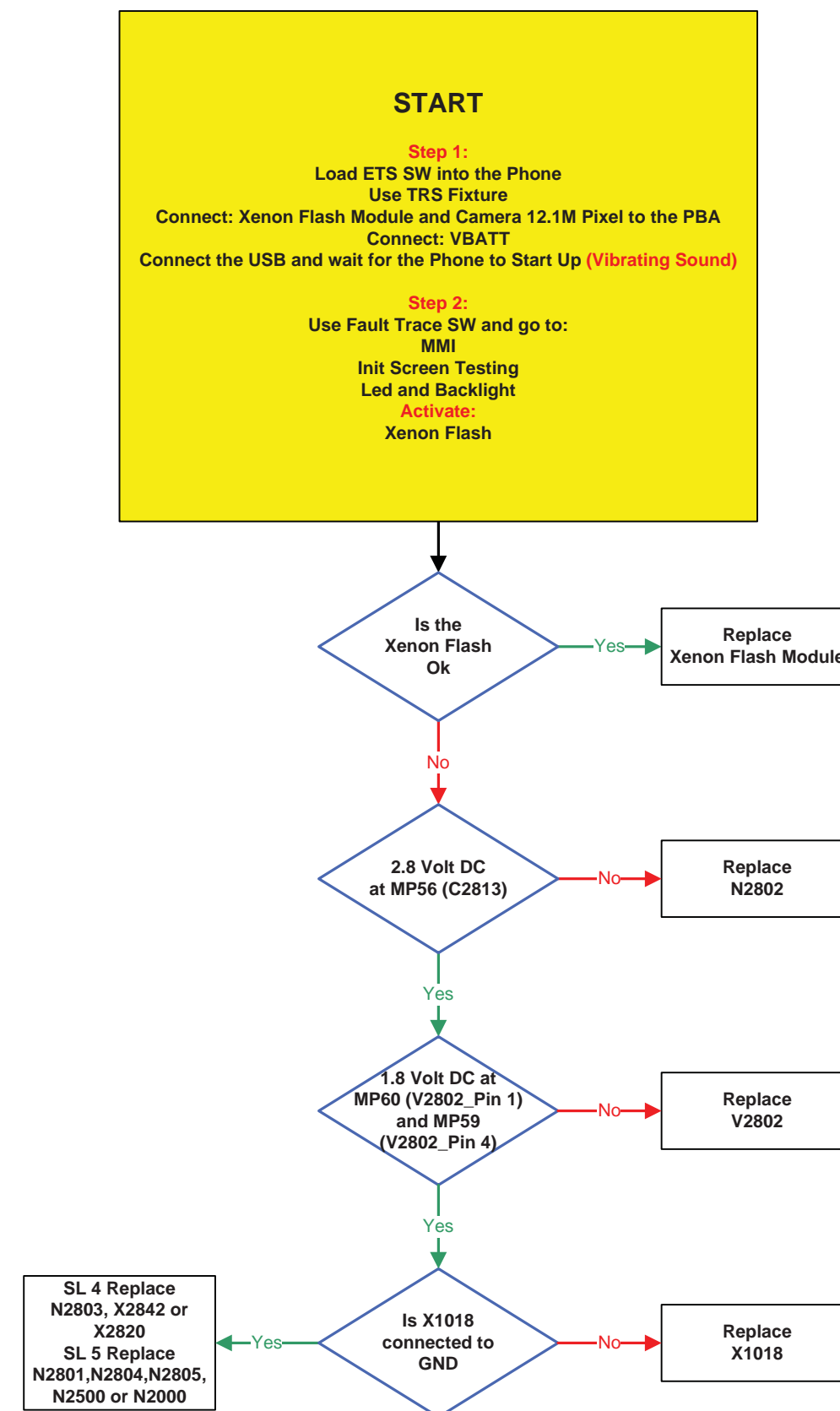
Camera Key Blue LED Problems



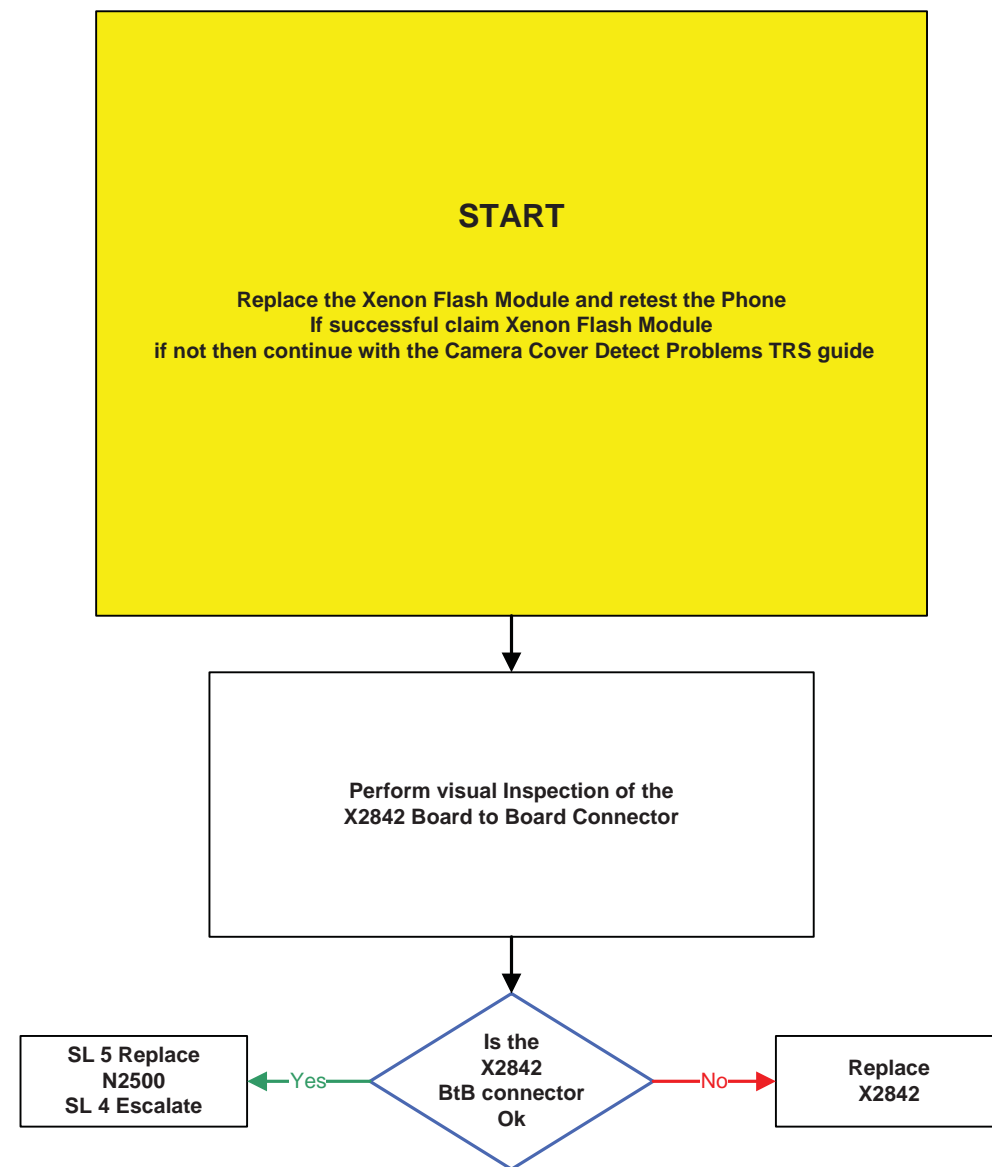
Torch (White) LED Problems



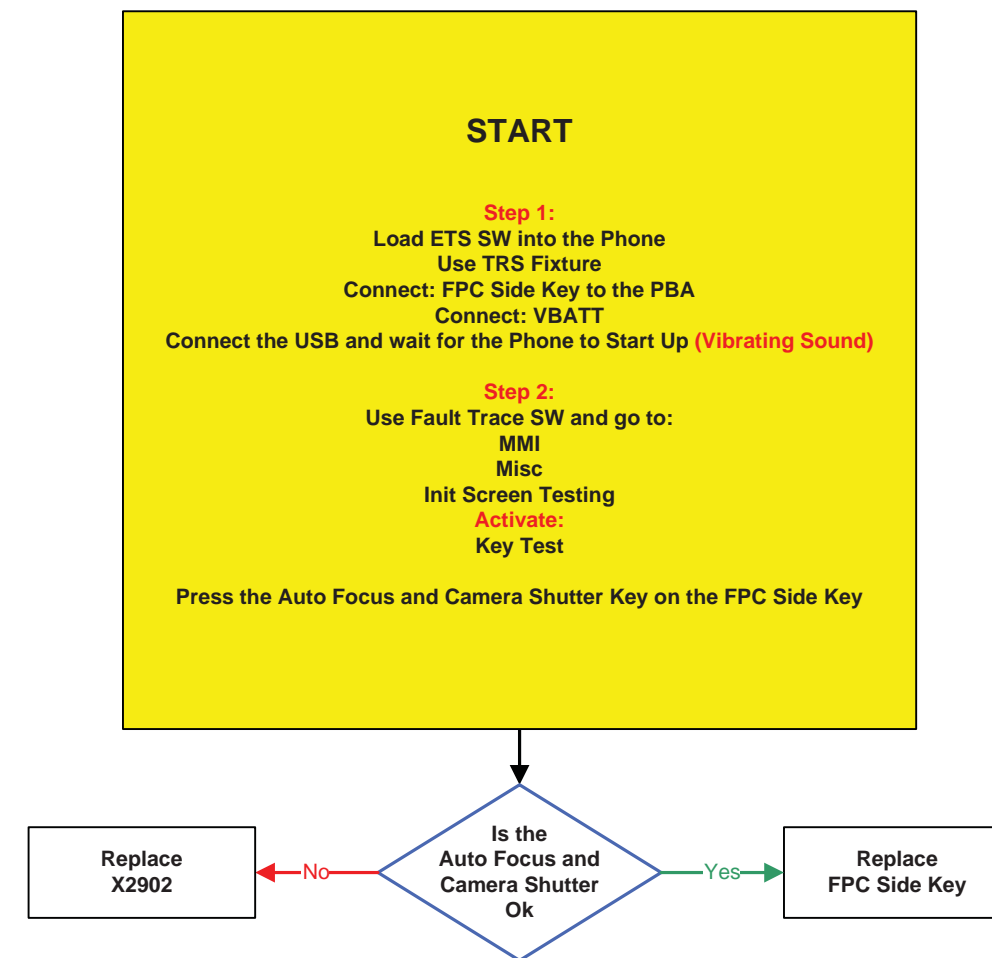
Xenon Flash Problems



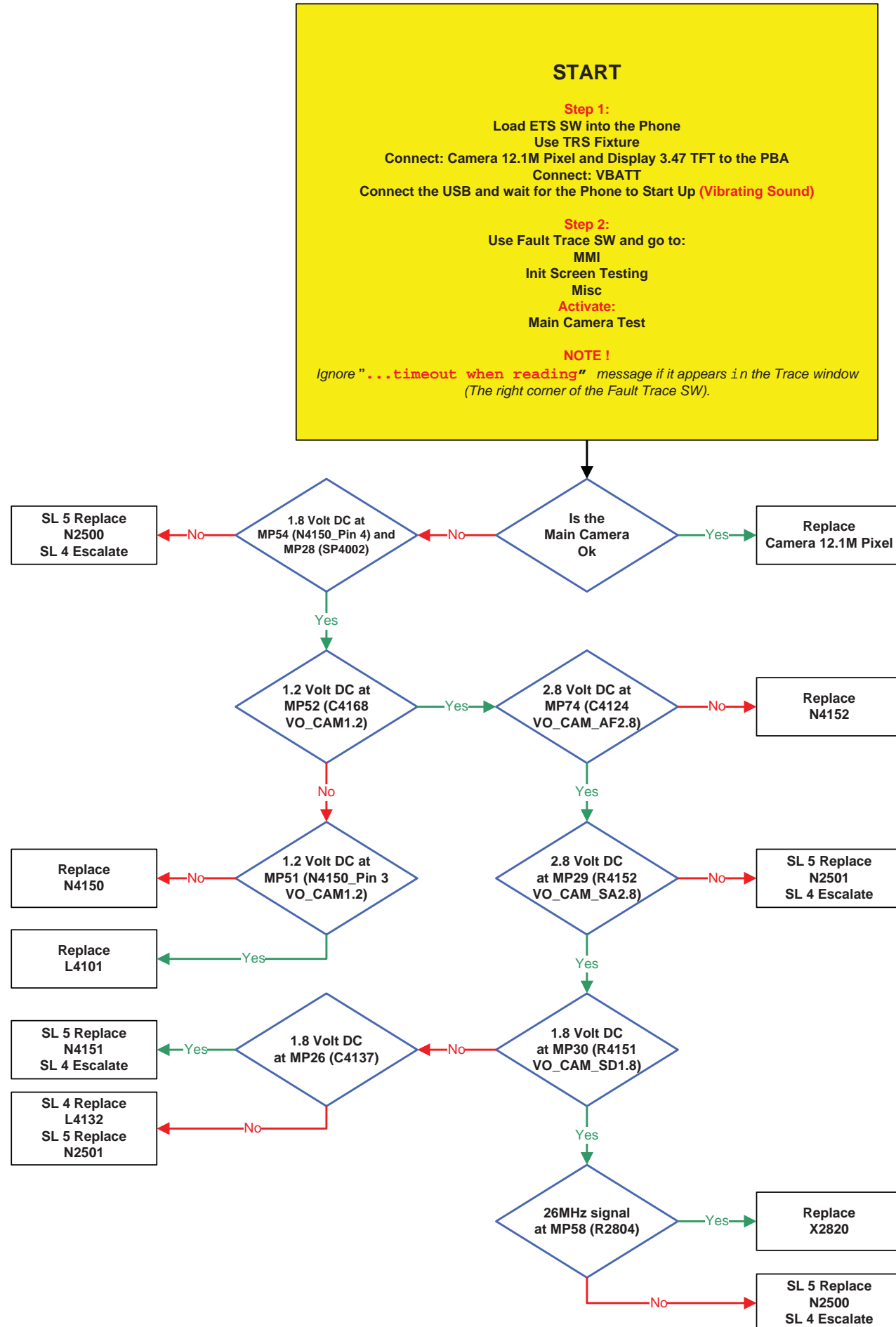
Camera Cover Detect Problems



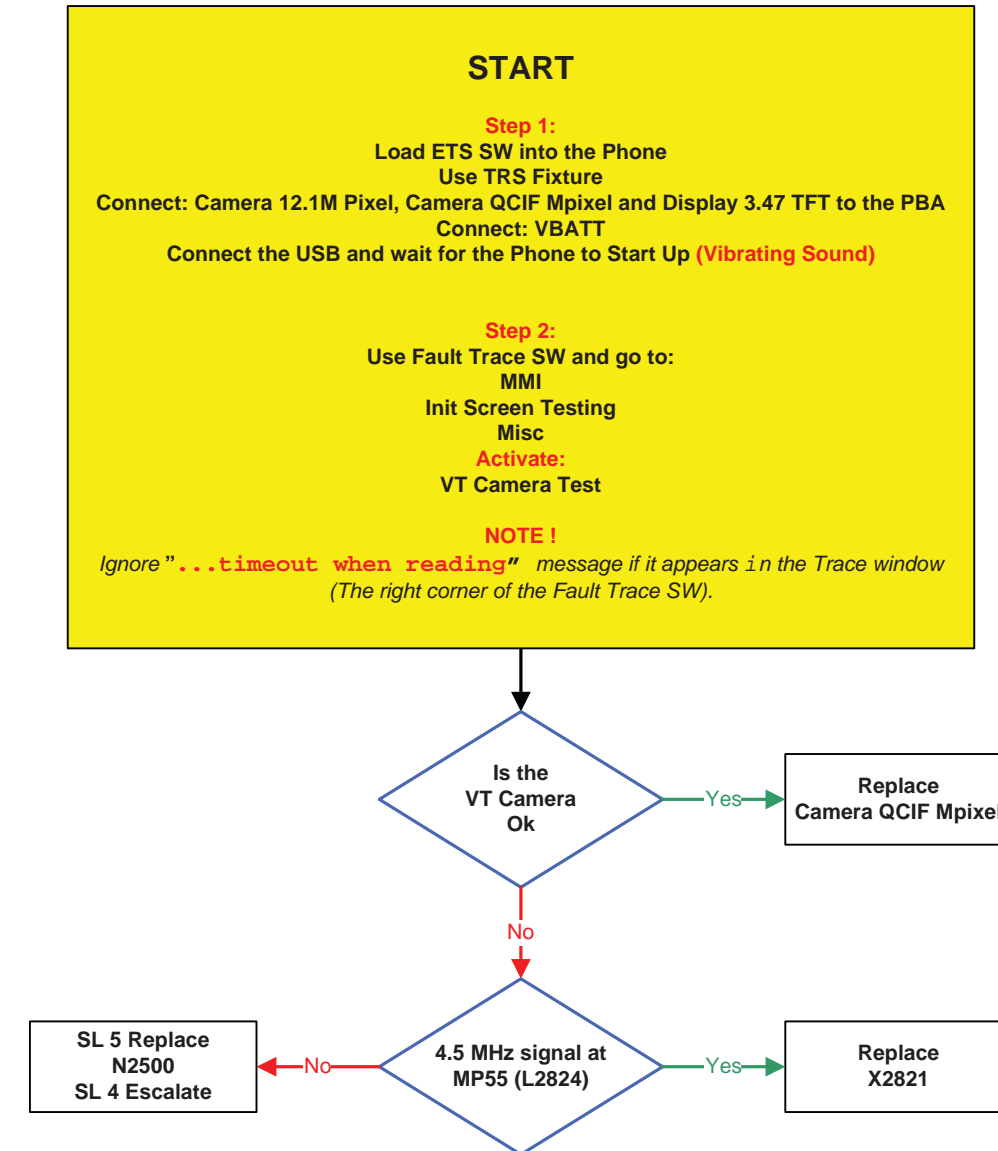
Auto Focus and Camera Shutter Problems



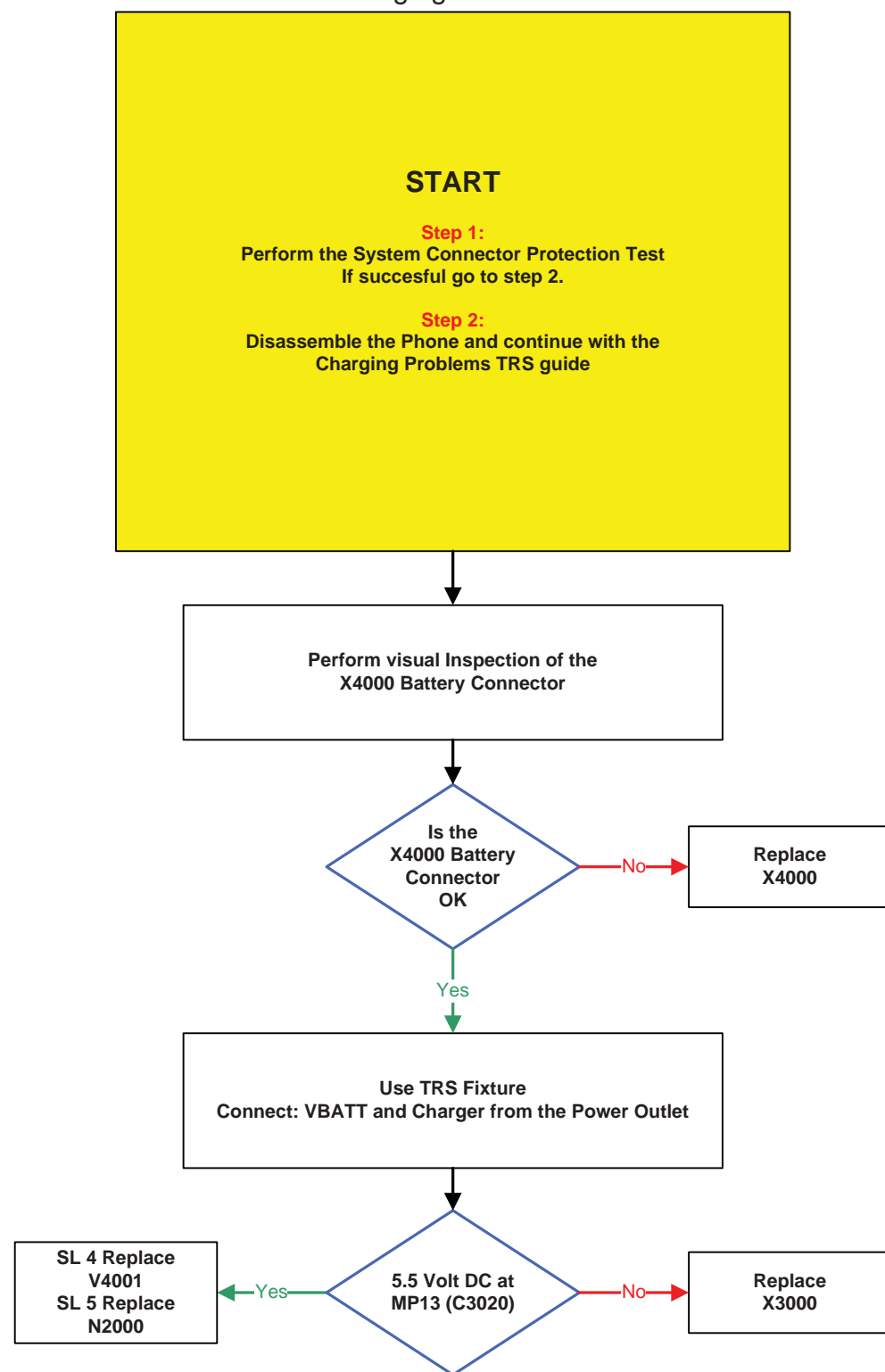
Main Camera Problems



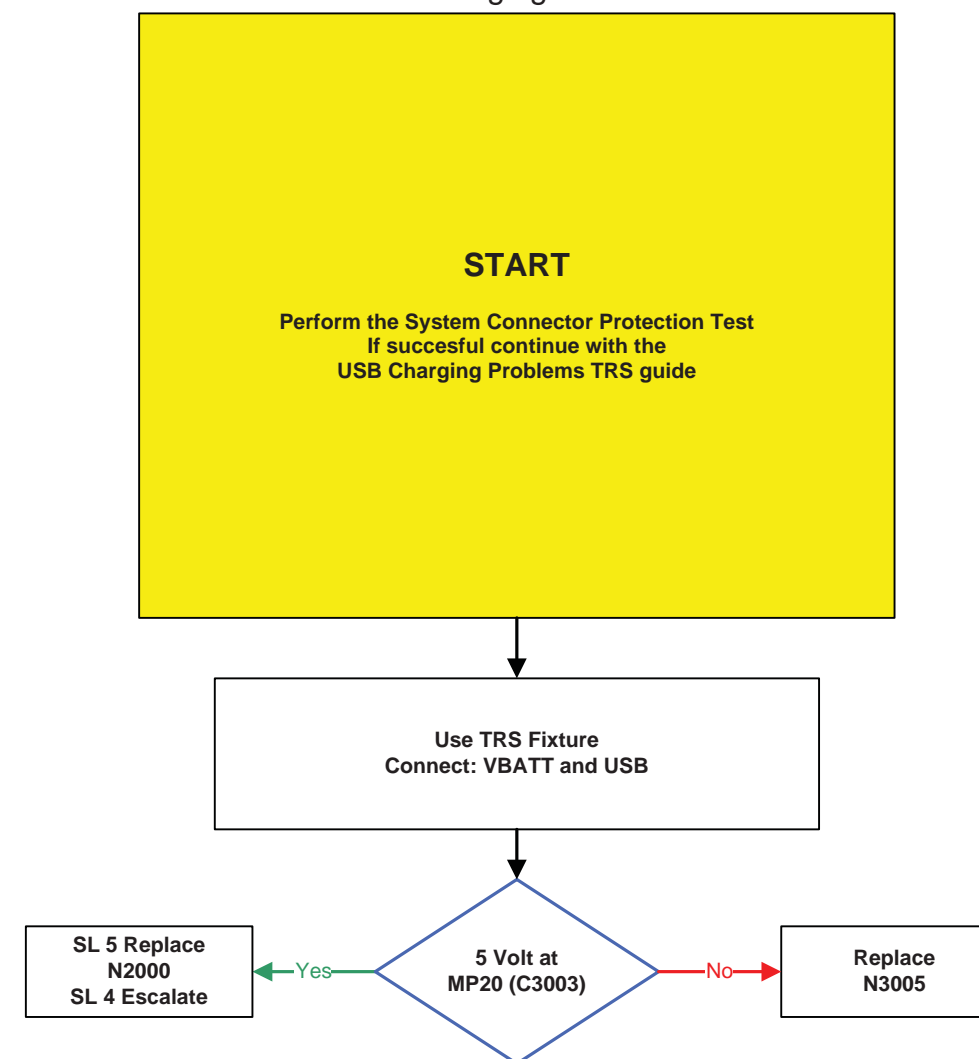
VT Camera Problems



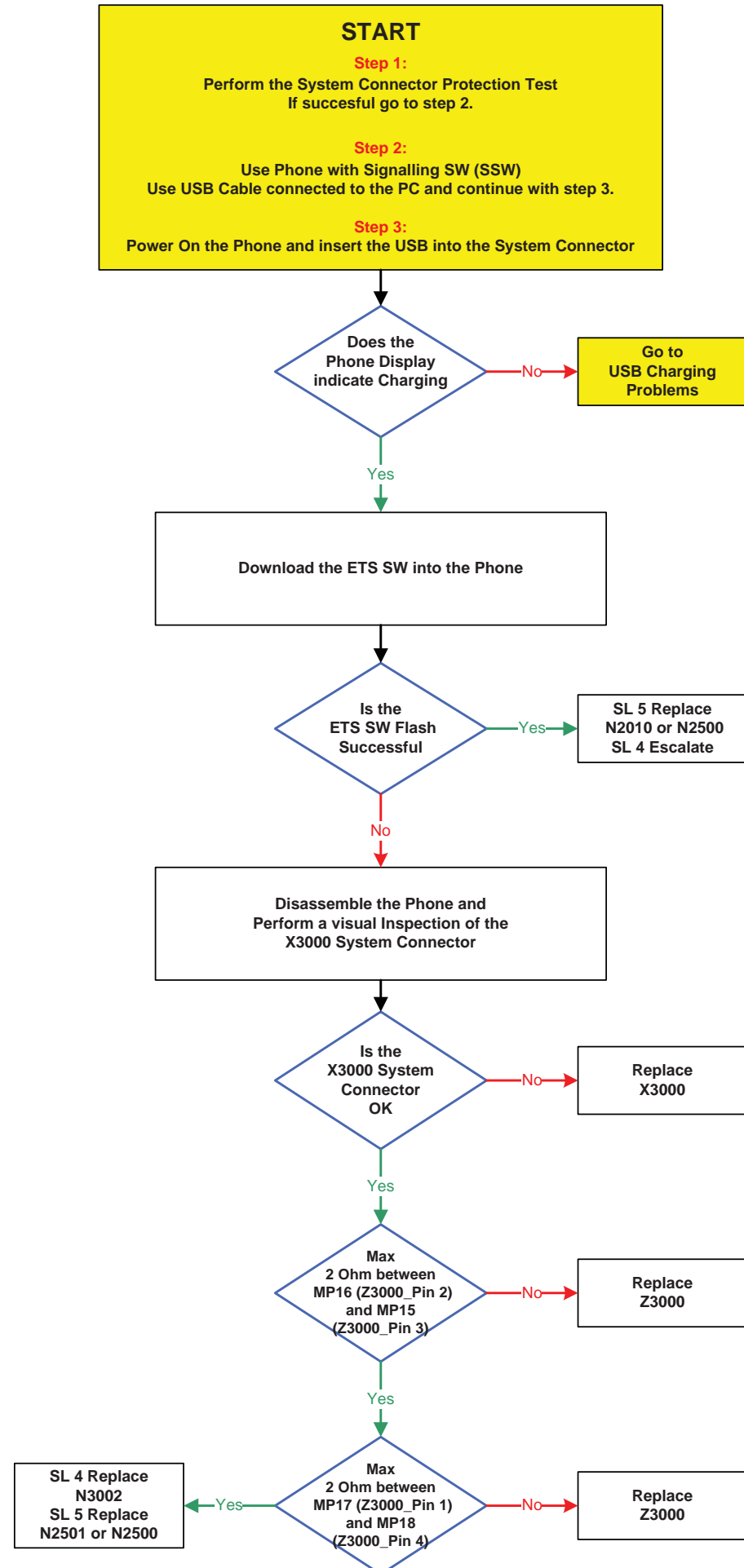
Charging Problems



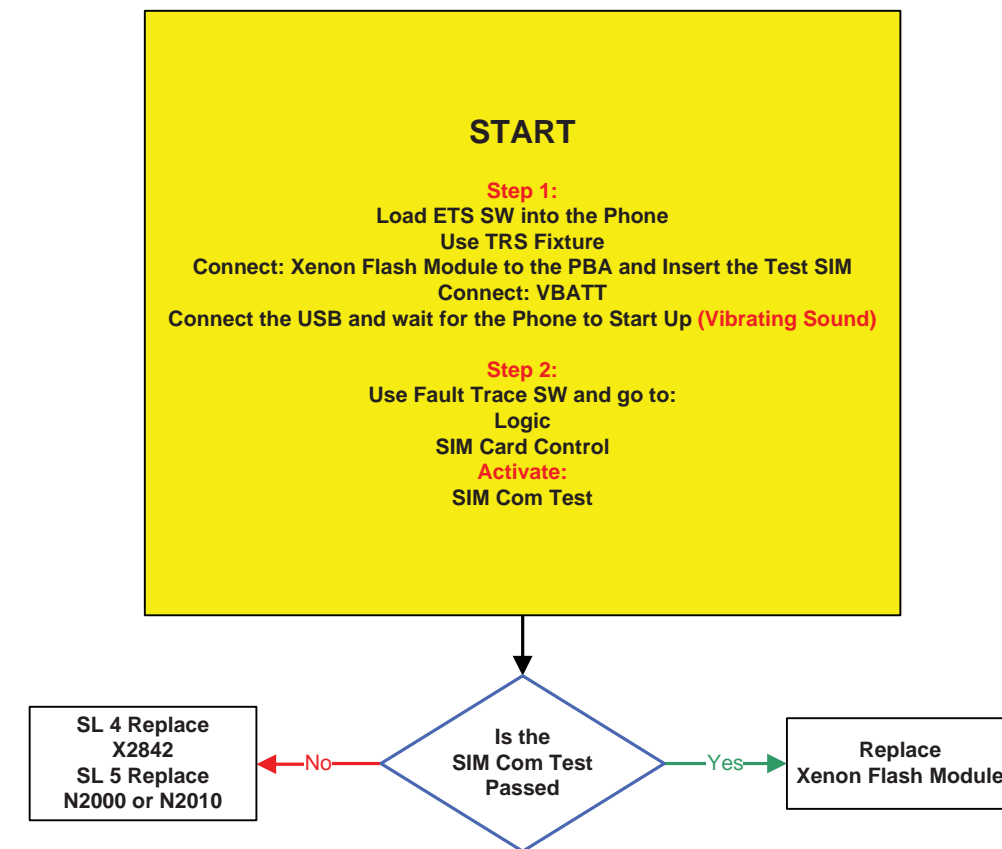
USB Charging Problems



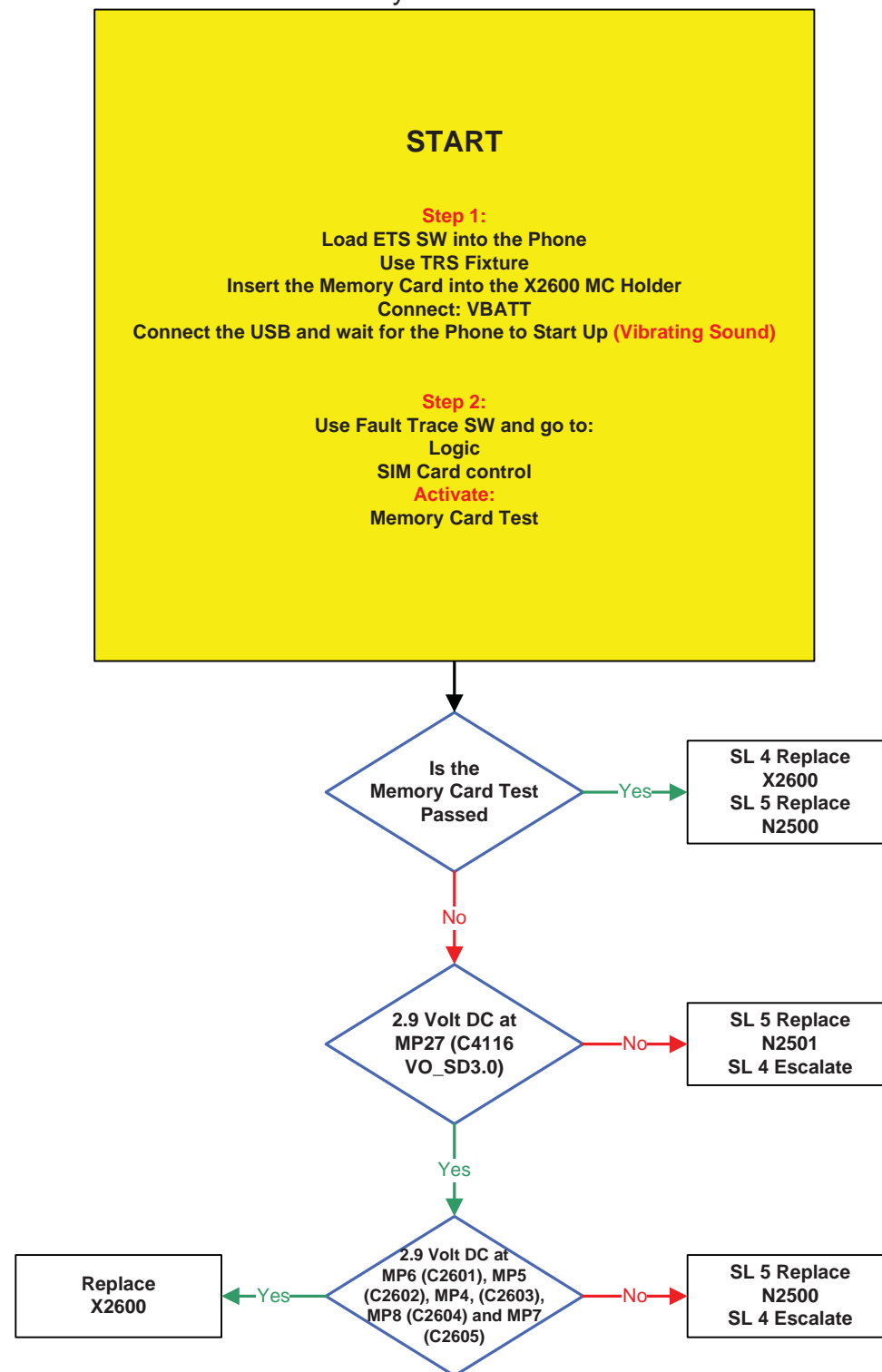
Data Communication Problems



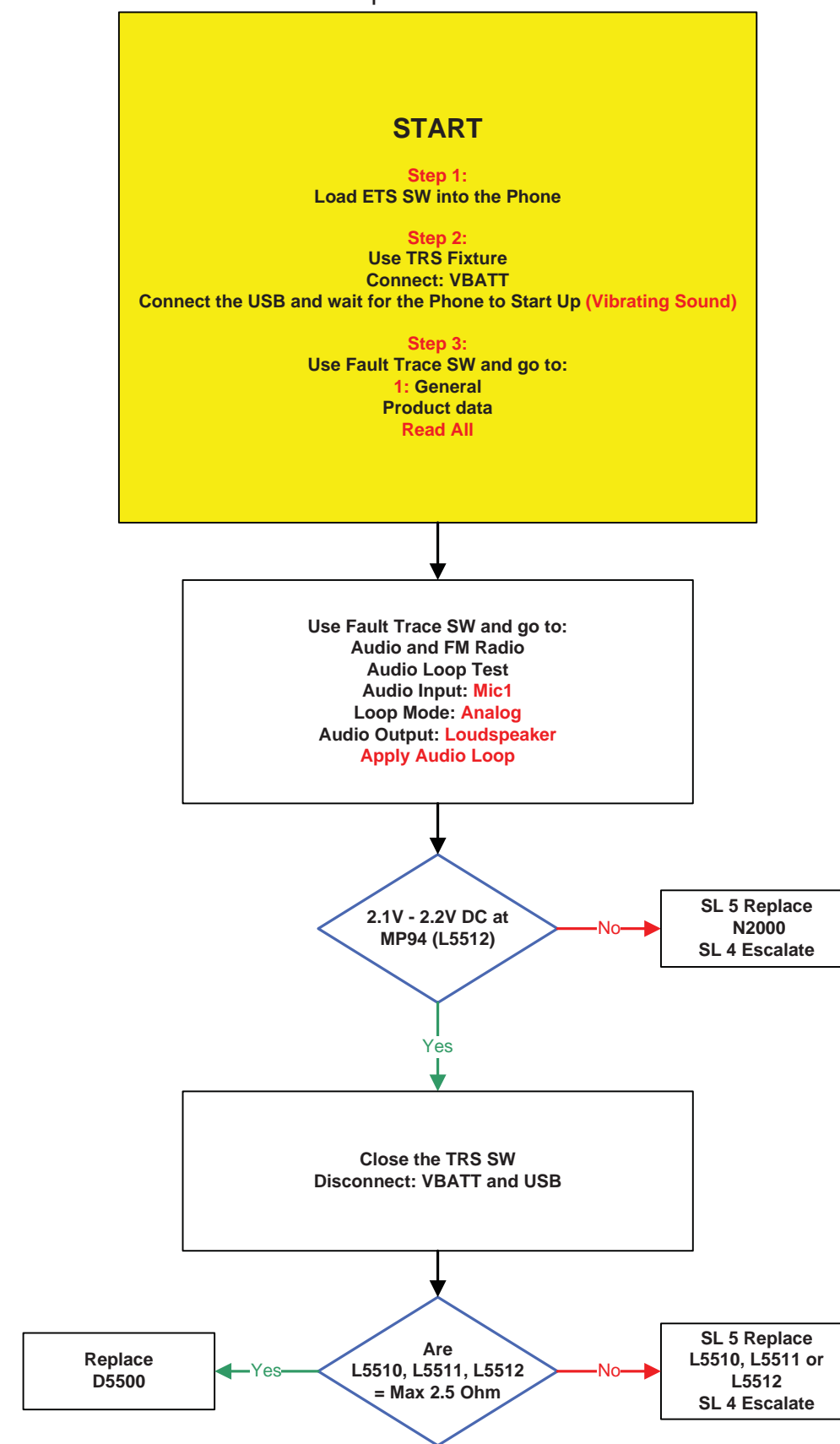
SIM Problems



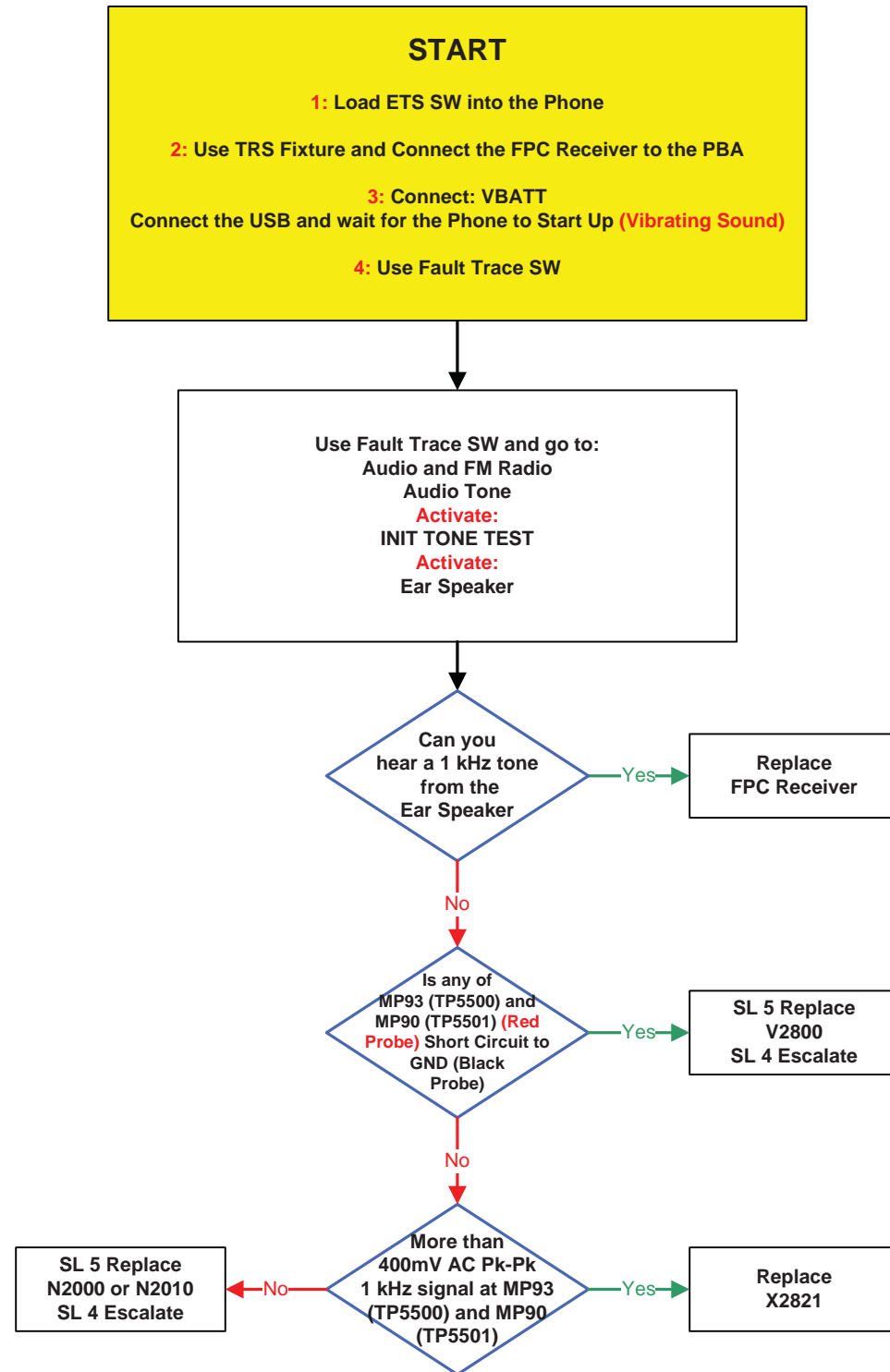
Memory Card Problems



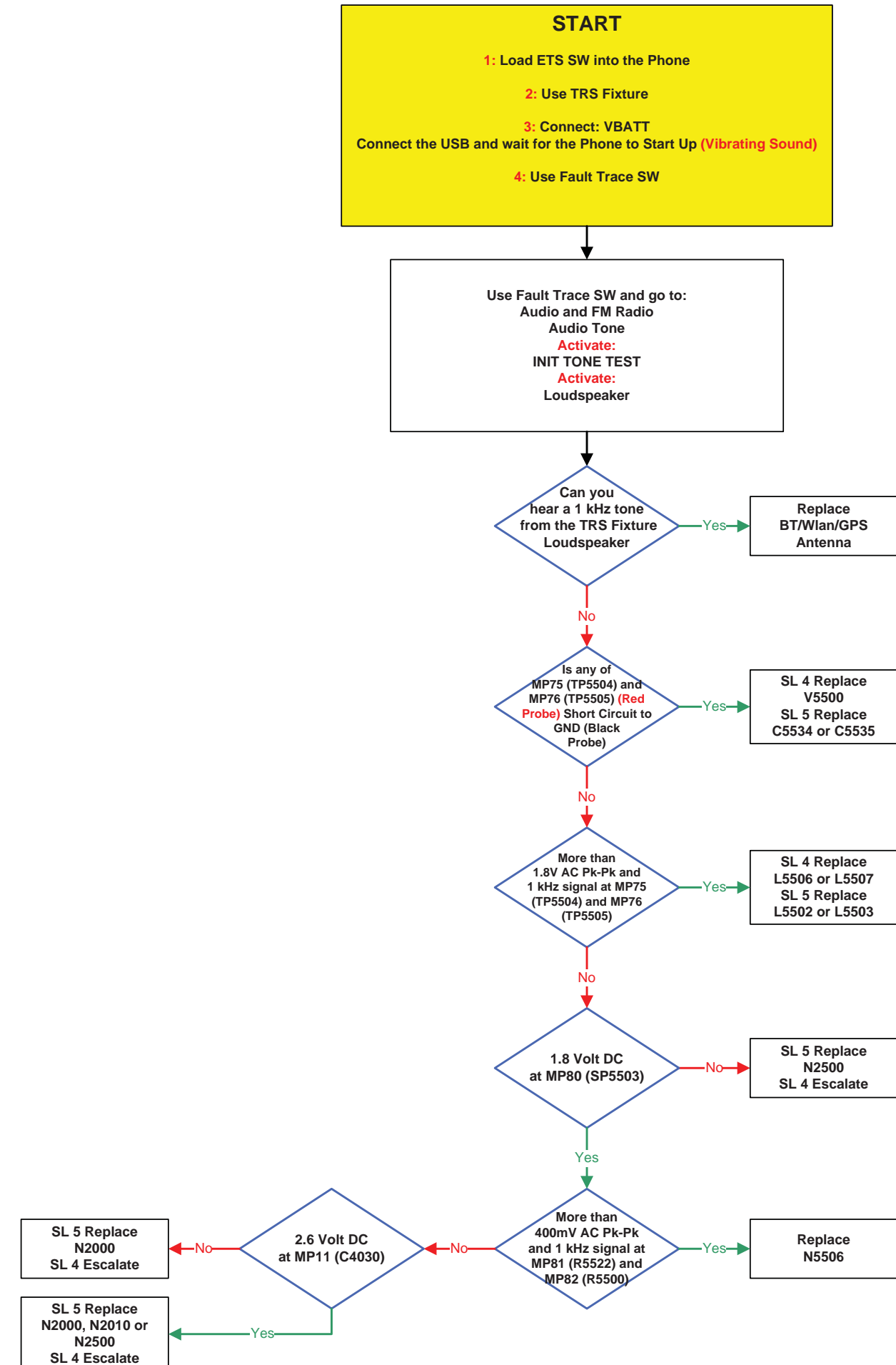
Microphone Problems



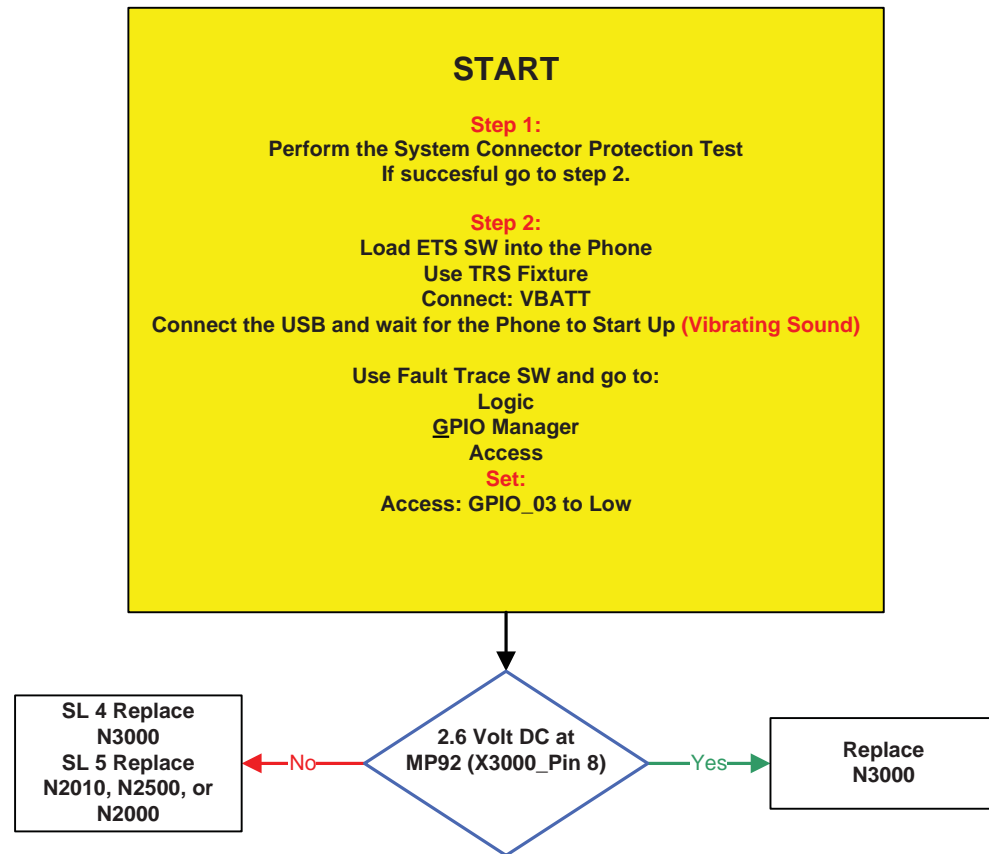
Ear Speaker Problems



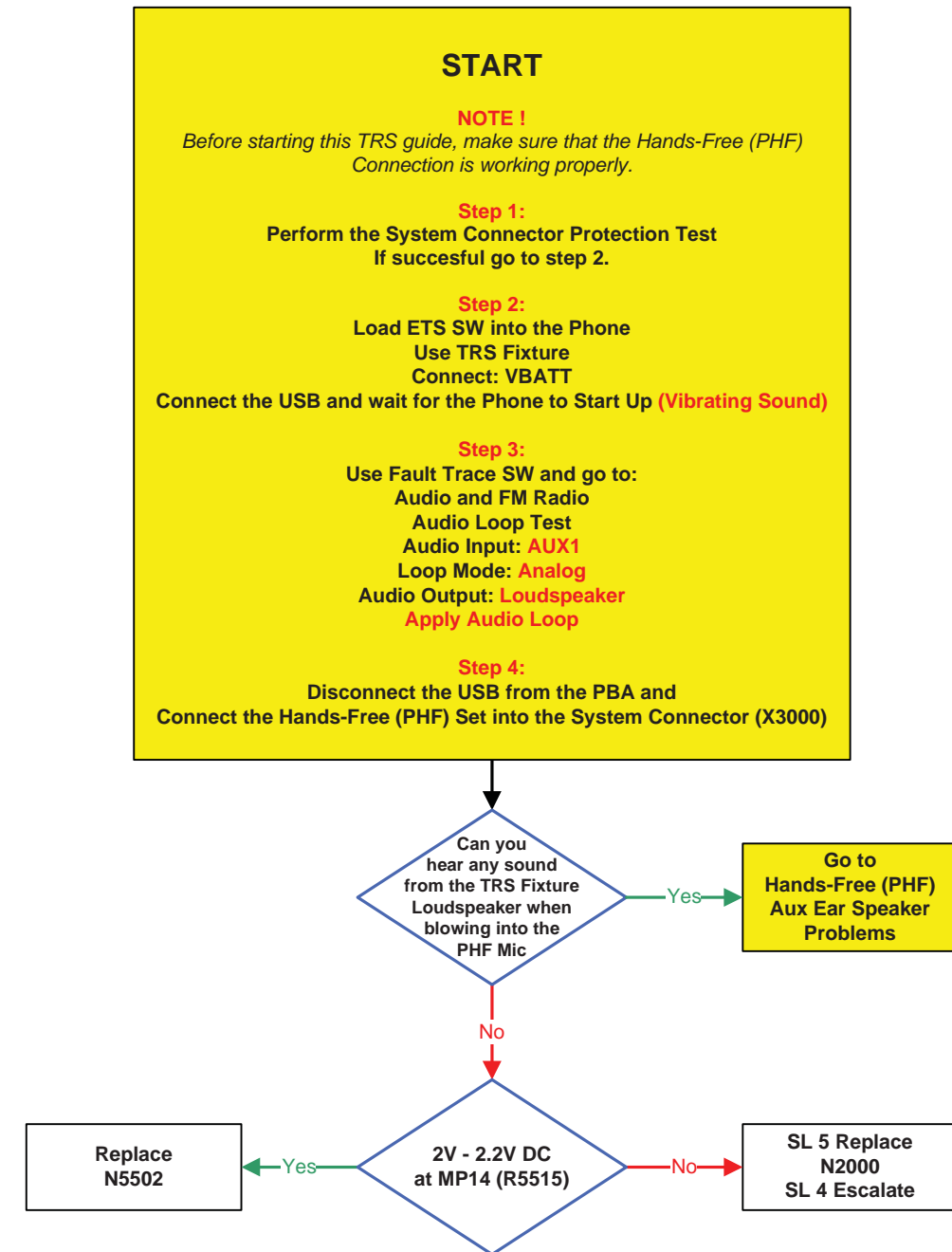
Loudspeaker Problems



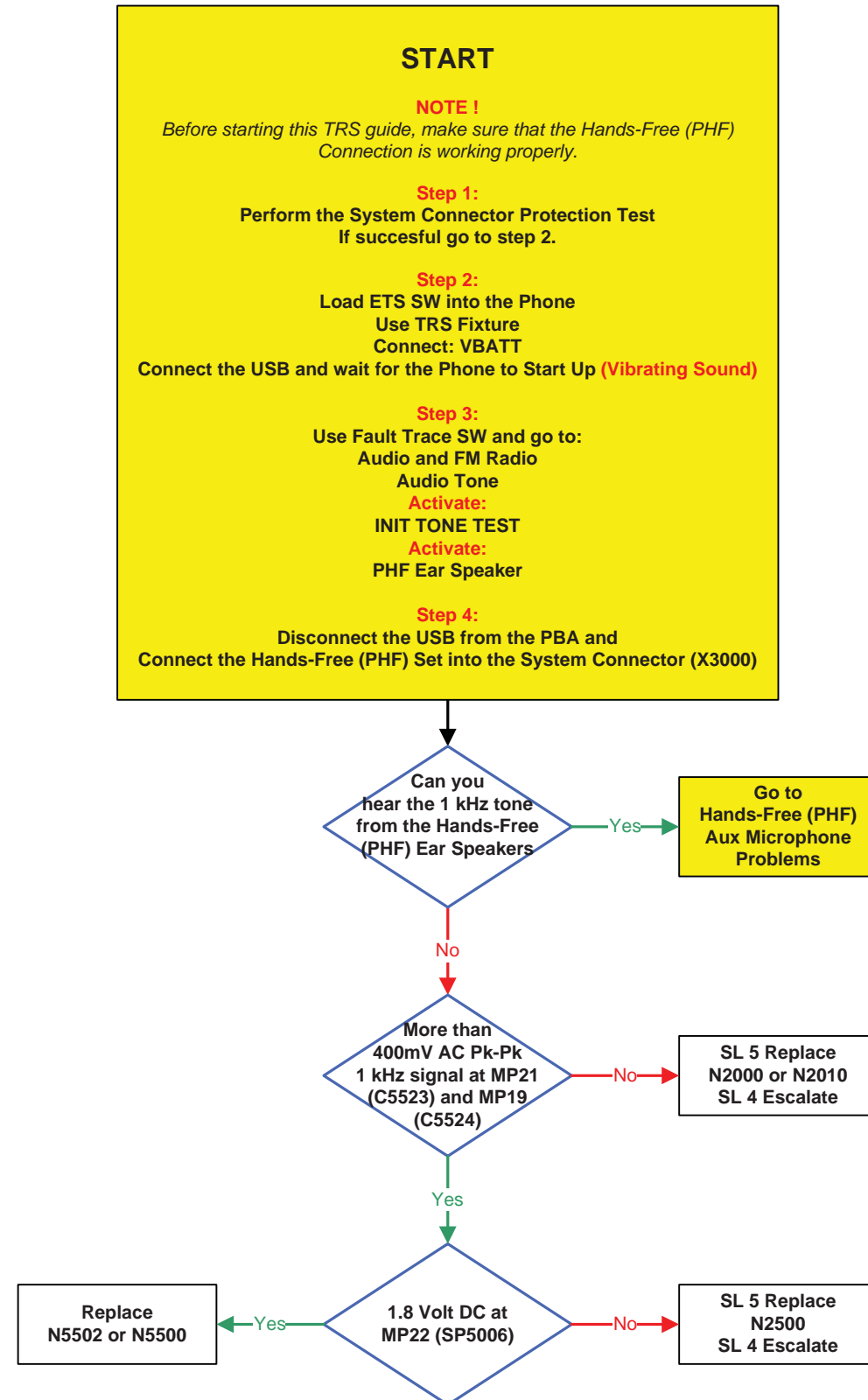
Hands-Free (PHF) Connection Problems



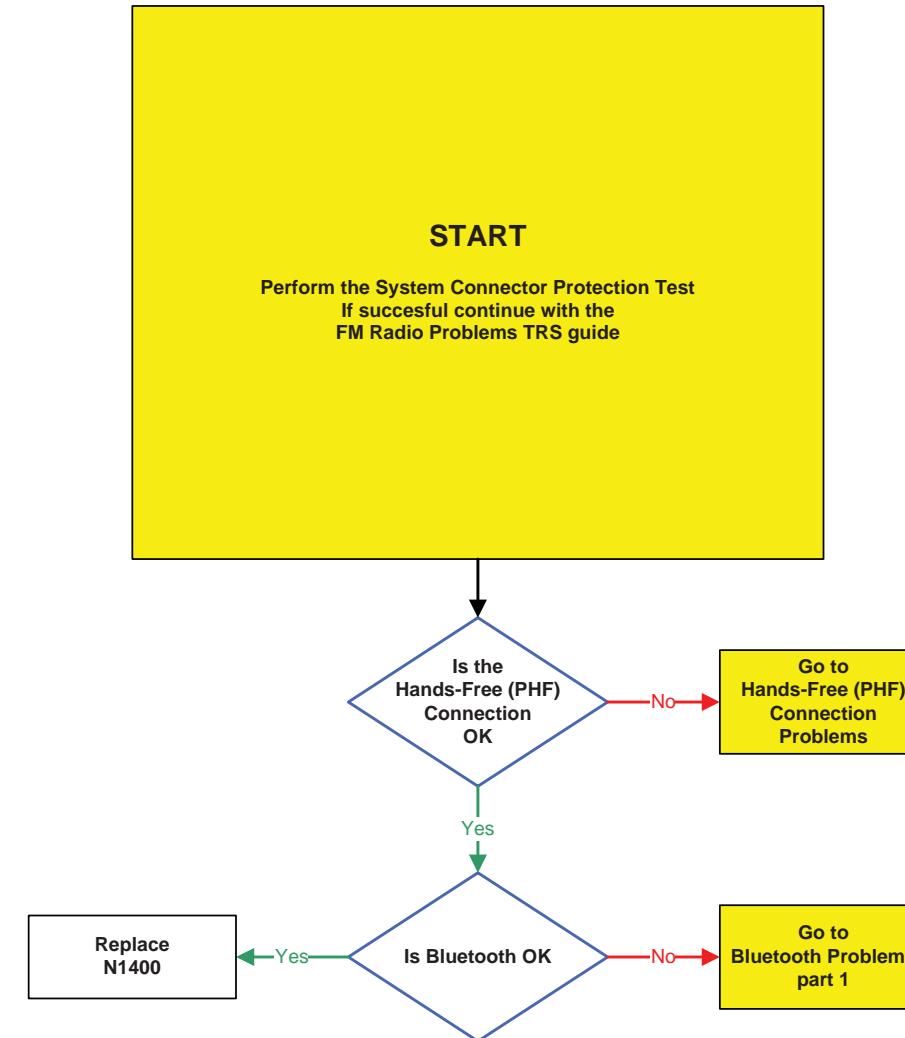
Hands-Free (PHF) Aux Microphone Problems



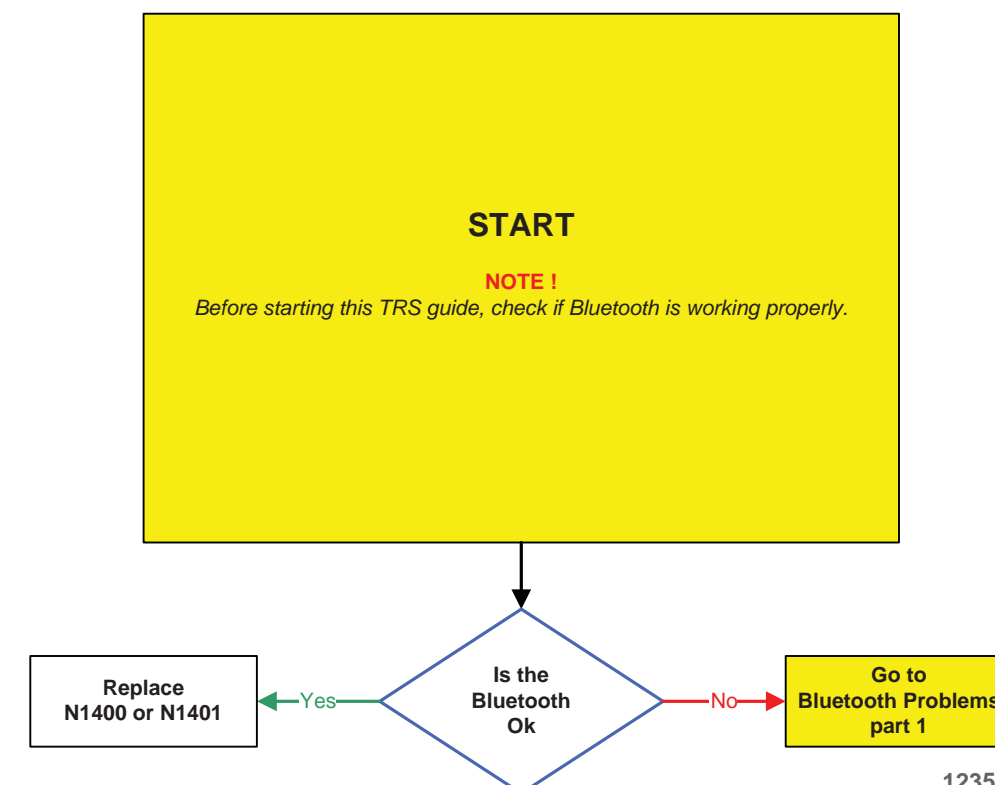
Hands-Free (PHF) Aux Ear Speaker Problems



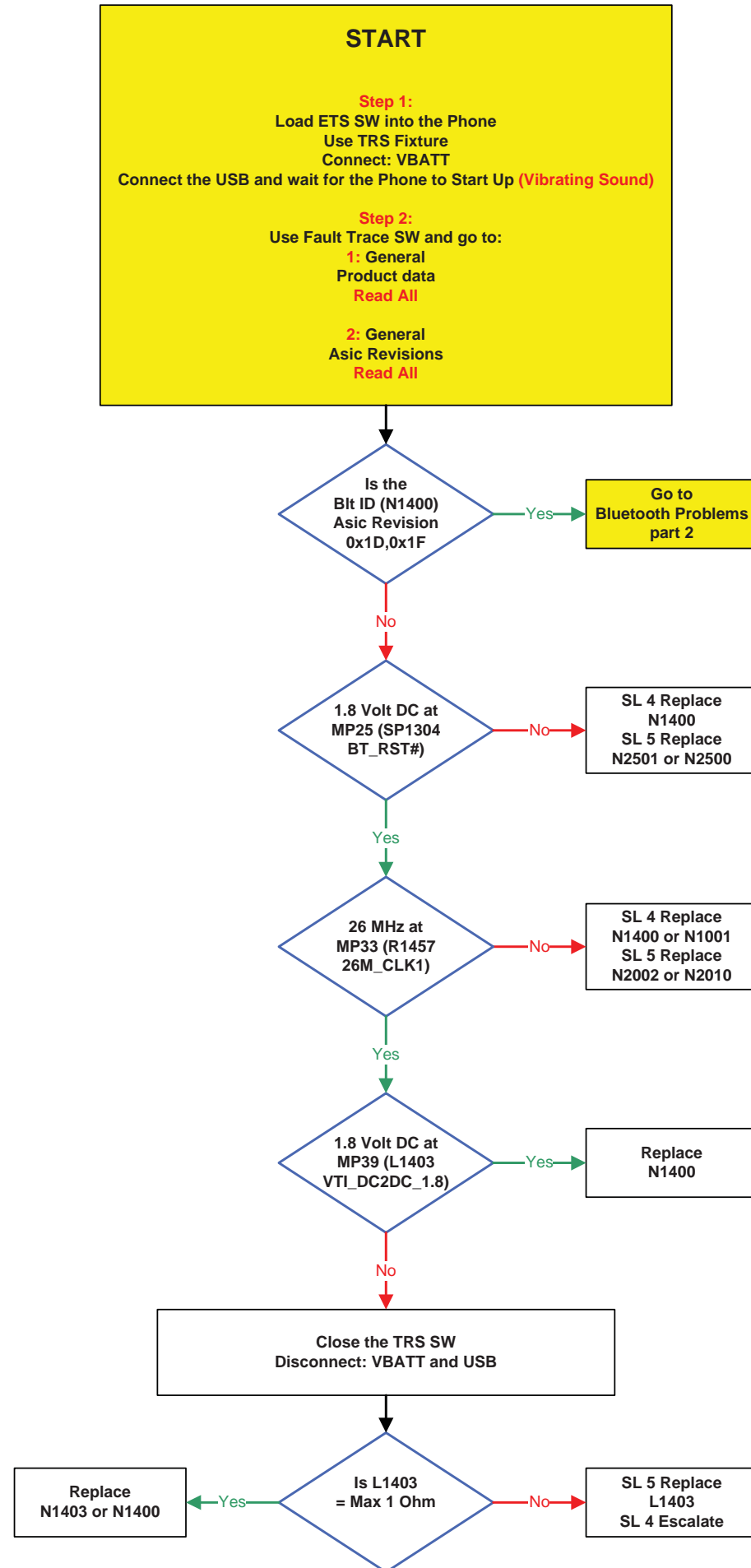
FM Radio Problems



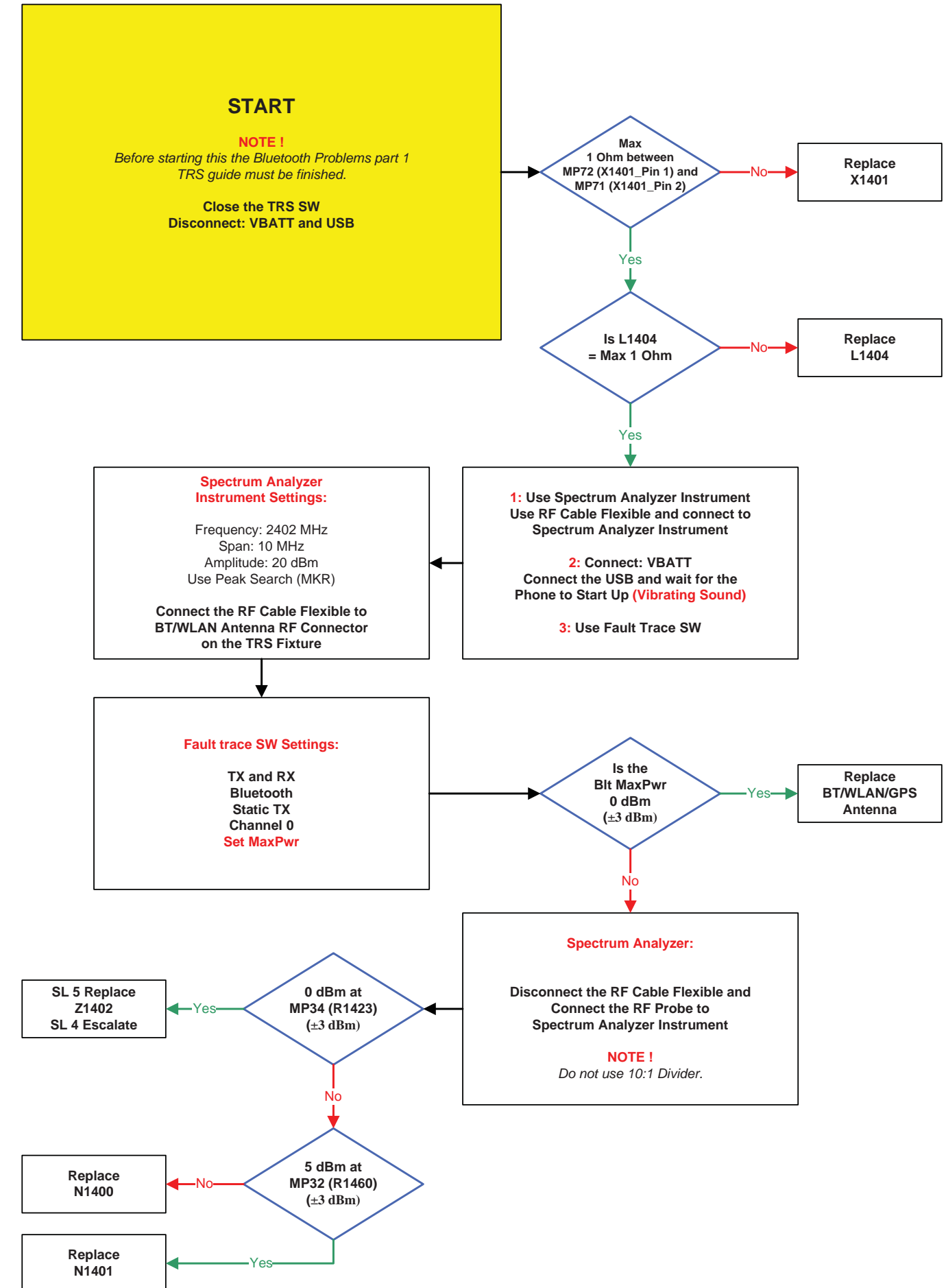
WLAN Problems



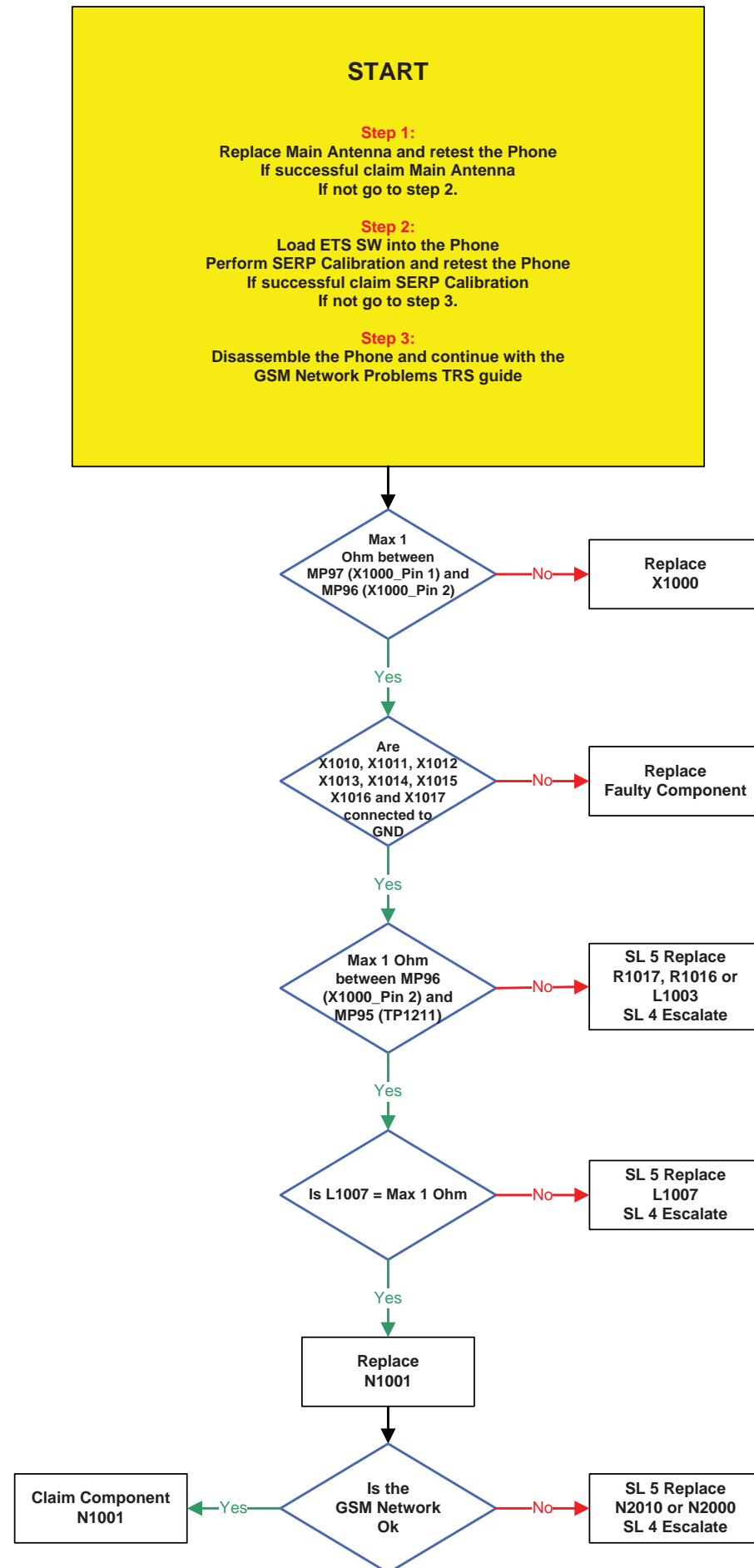
Bluetooth Problems part 1



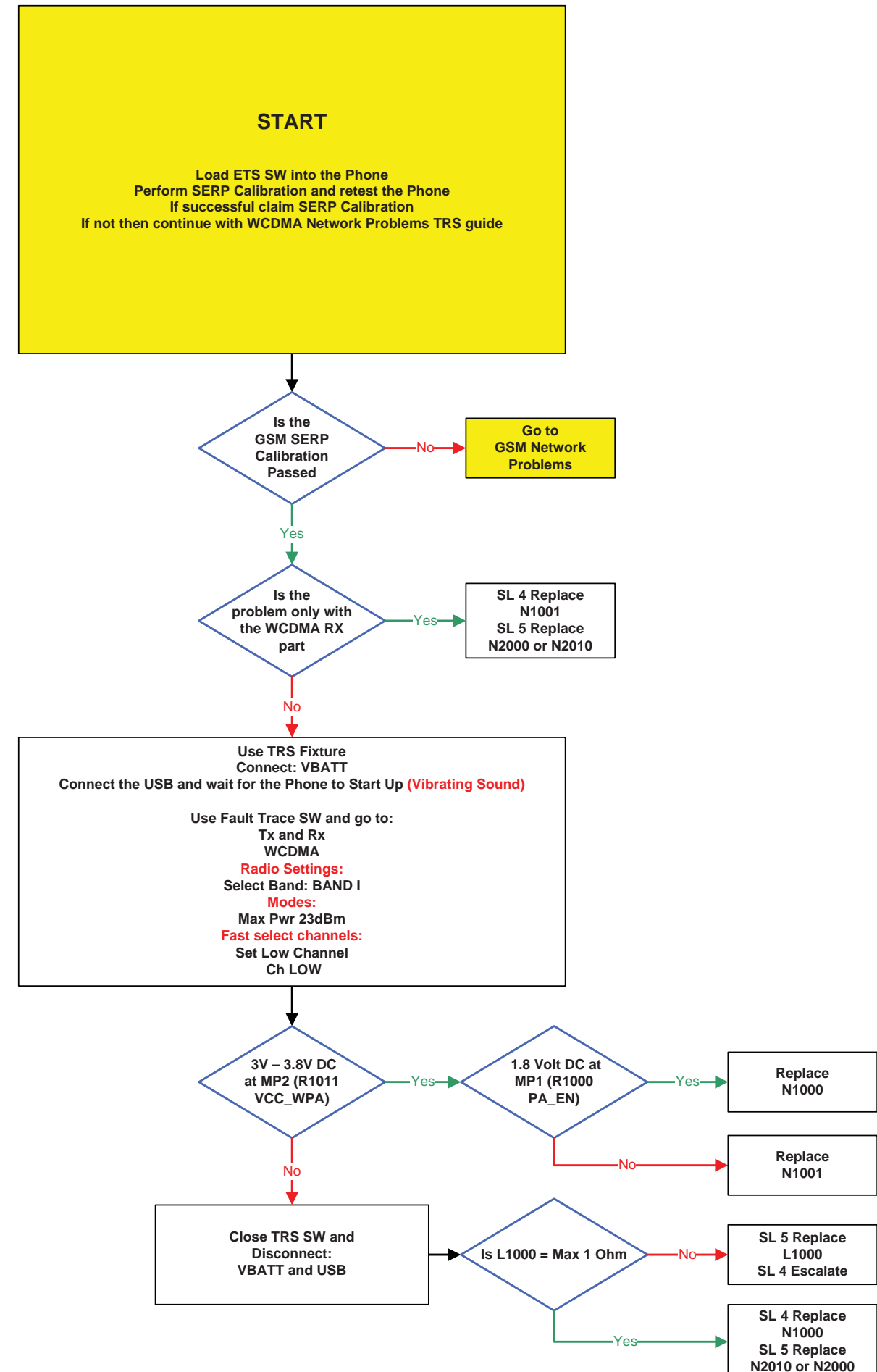
Bluetooth Problems part 2



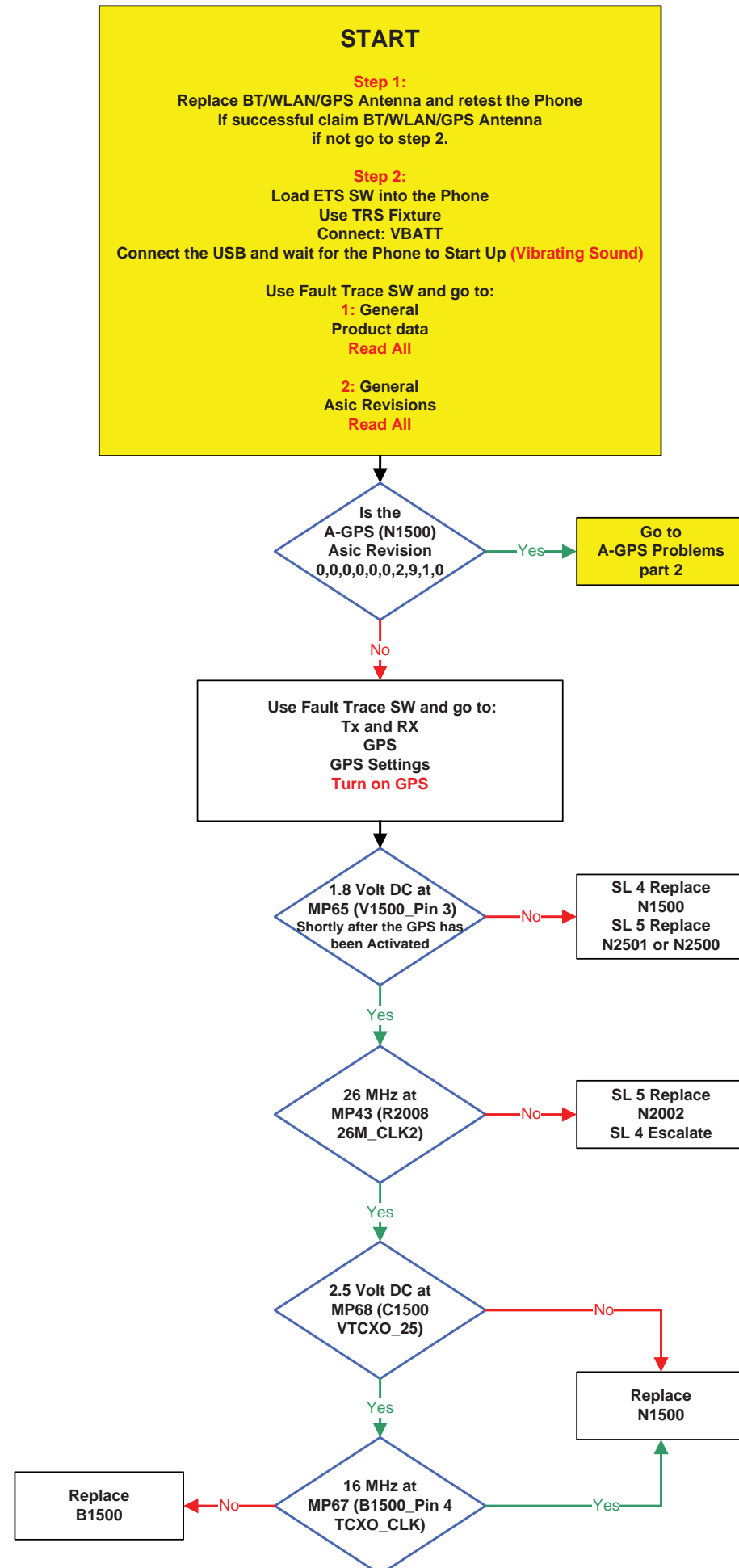
GSM Network Problems



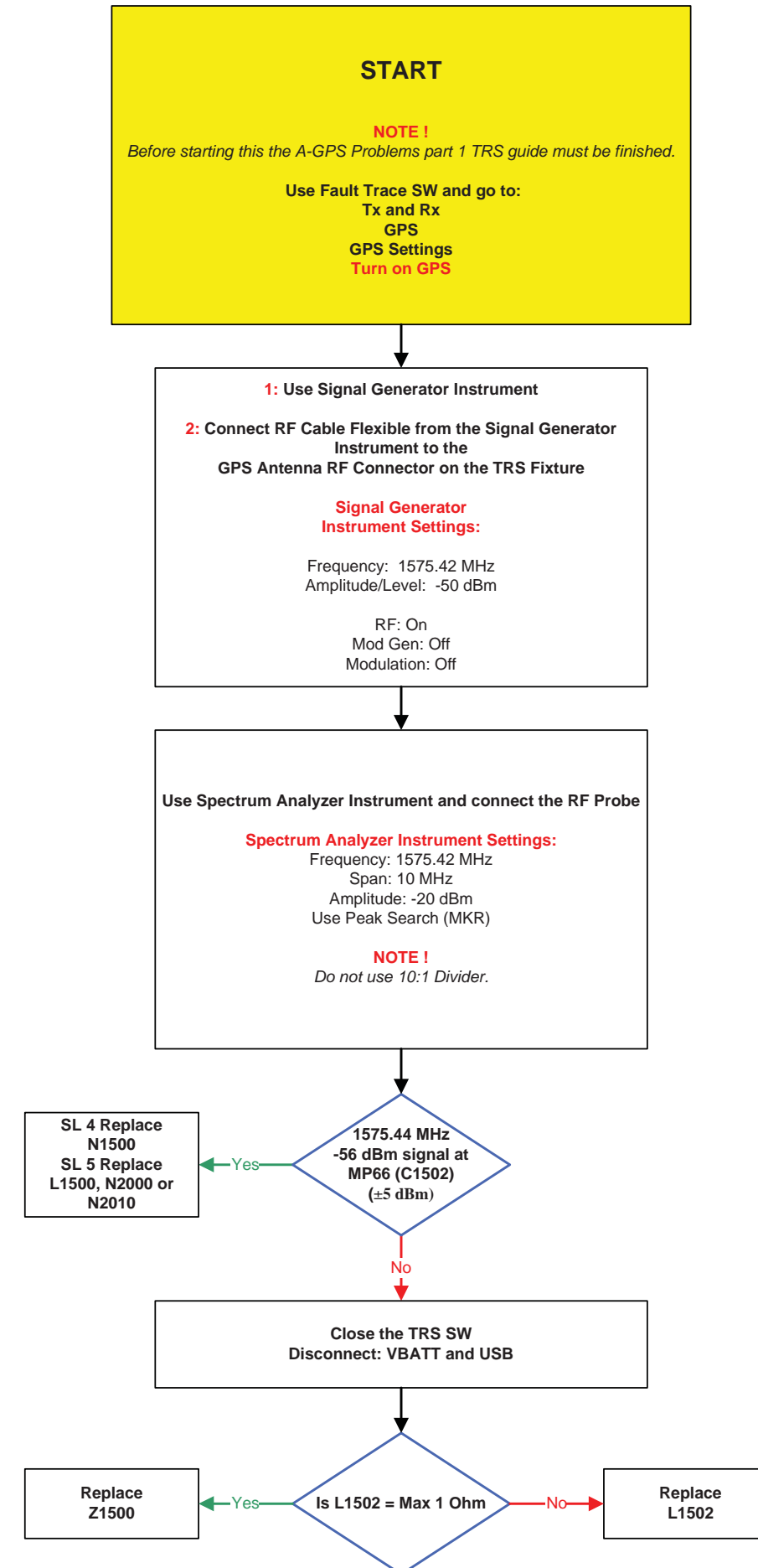
WCDMA Network Problems



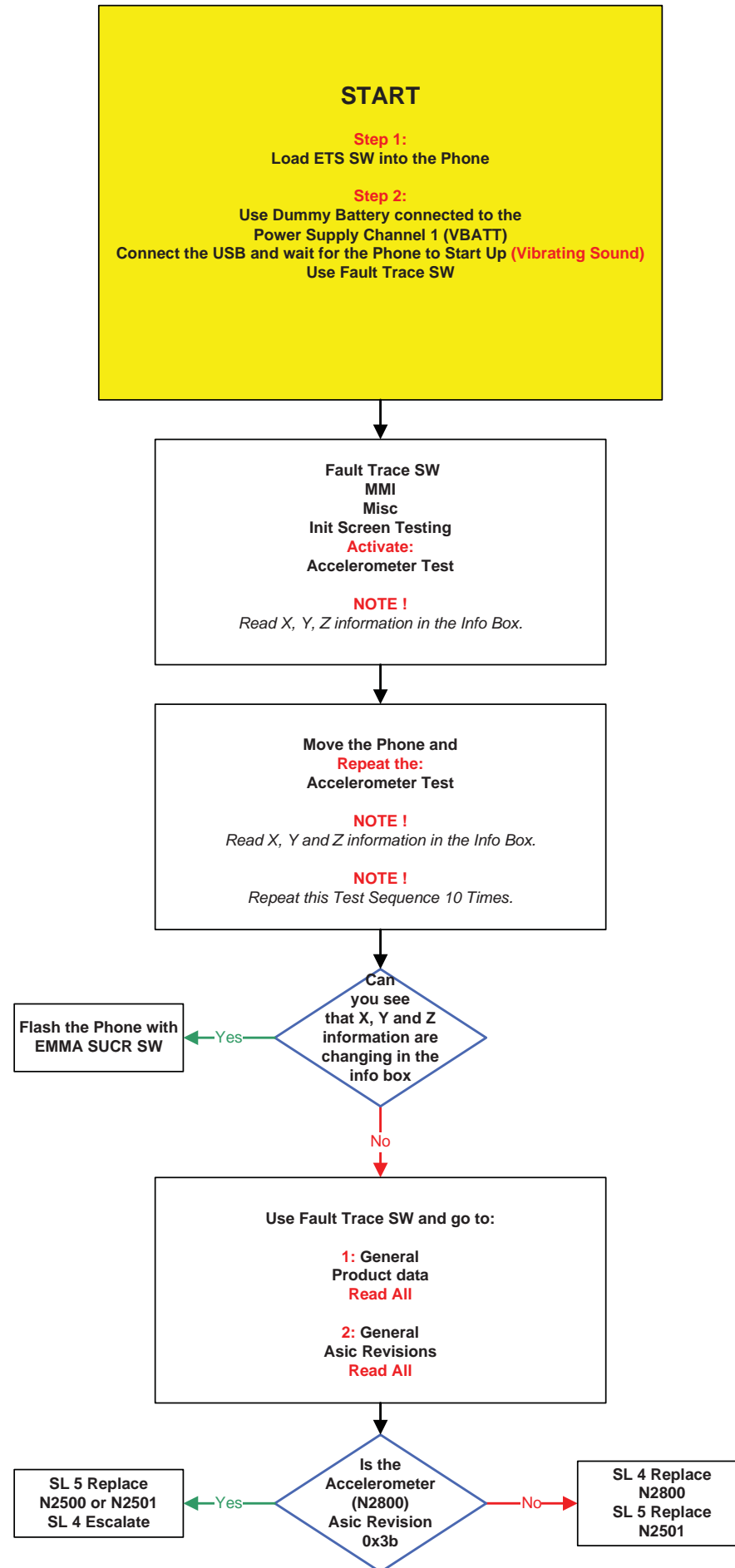
A-GPS Problems part 1



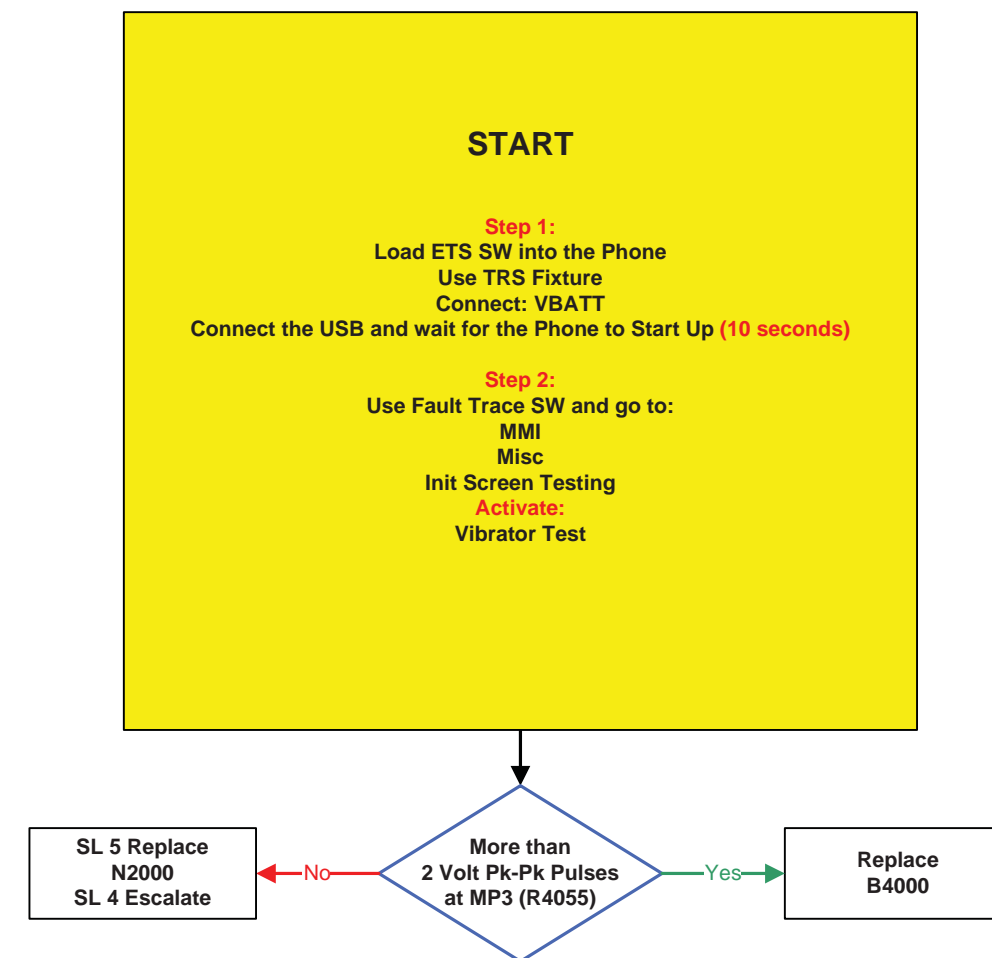
A-GPS Problems part 2



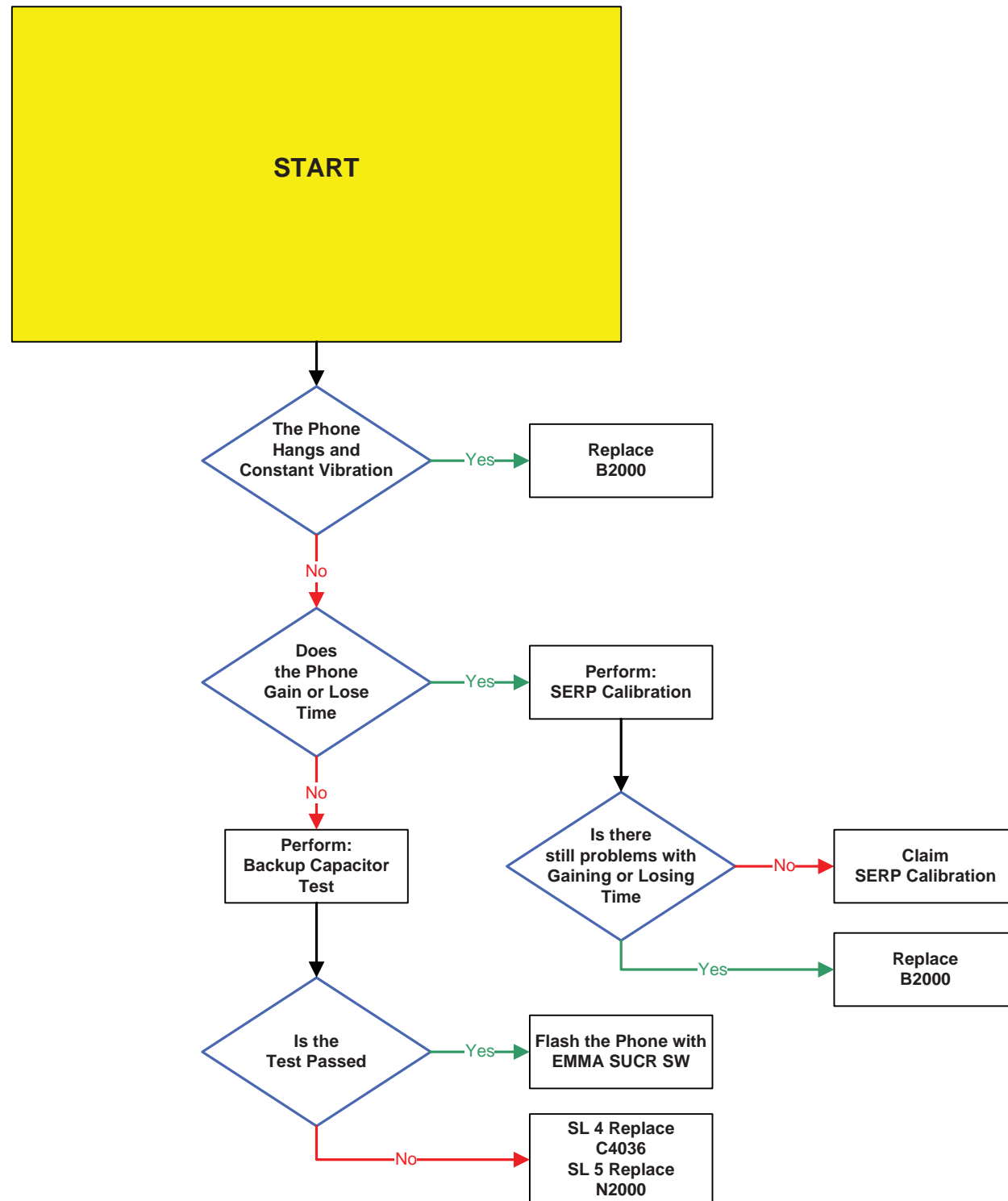
Accelerometer Problems



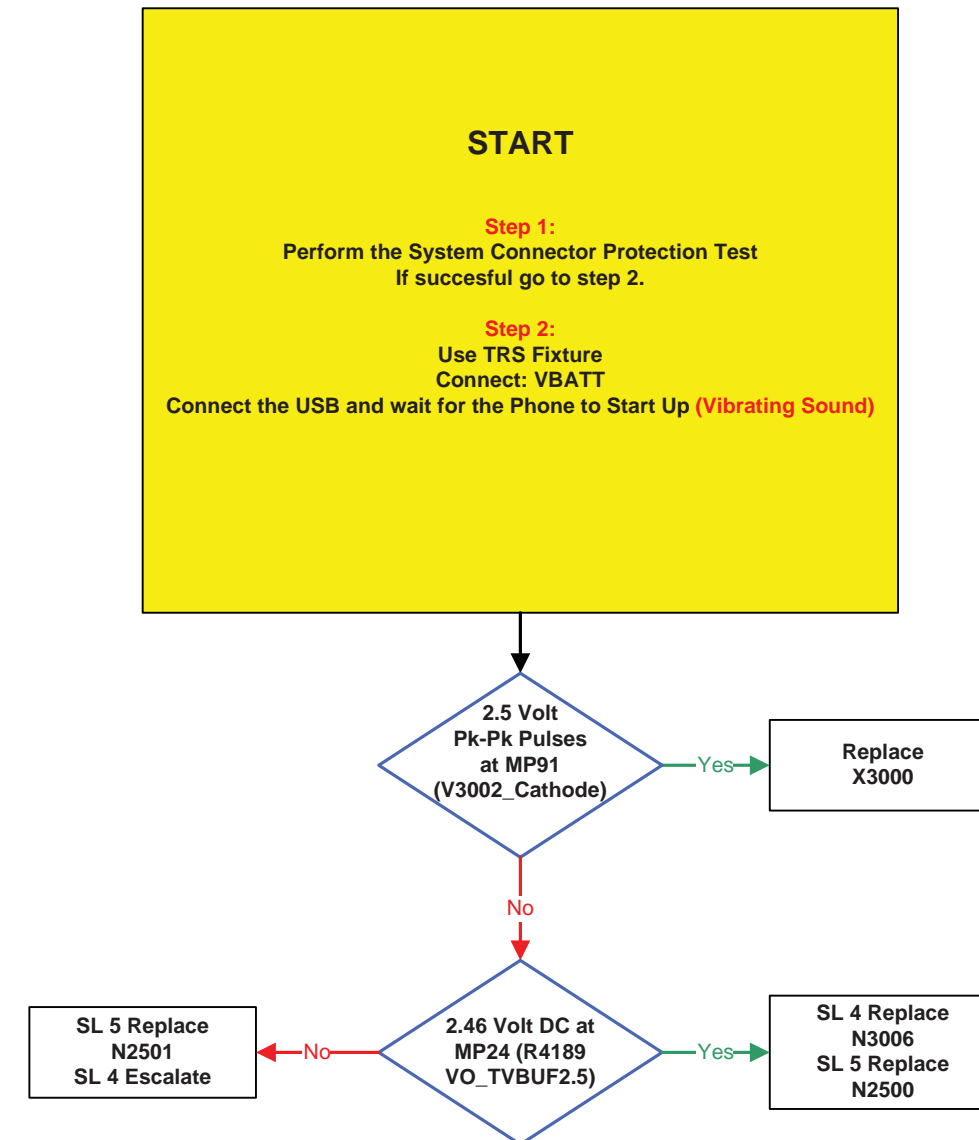
Vibrator Problems



Alert and Real Time Clock Problems



TV Out Problems

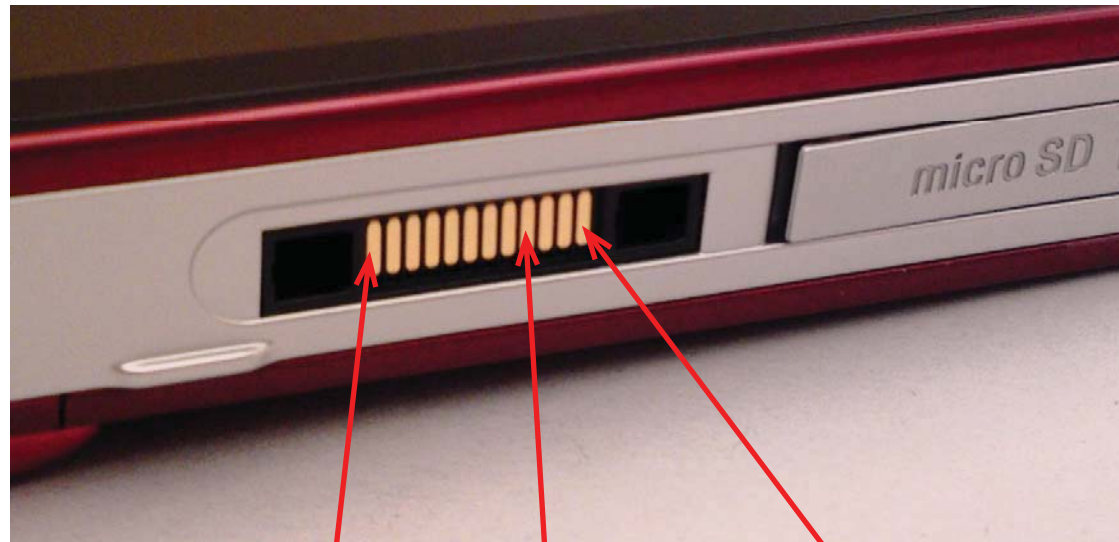


System Connector Protection Test

Perform the Ohm measurements by using the DMM instrument (Fluke).

Note! The Battery must be removed from the Phone during this test.

Note! Connect the Black probe to the X3000_PIN 9 (GND).



PIN_1 PIN_9 (GND) PIN_12

System Conn. X3000 (PIN Position)	Ohm Measurements (Ohm)	SL 4 (Repair Action)	SL 5 (Repair Action)
1	1.2M	X3000 if higher C3011 if lower N3005 if lower	No Action
2	0	X3000 if higher L3001 if higher	No Action
3	12k – 15k	X3000 if higher L3000 if higher N5502 if lower or higher	C3006 if lower
4	950 – 1.2k	X3000 if higher L3002 if higher N5502 if lower or higher	C3007 if lower
5	450k - 515k	X3000 if higher L3003 if higher C3004 if lower N5502 if lower or higher	C3004 if lower C3022 if lower
6	450k - 515k	X3000 if higher L3004 if higher N5502 if lower or higher	C3005 if lower C3021 if lower
7	500k – 1M	X3000 if higher V3002 if lower N3006 if higher or lower	R3035 if higher
8	500k – 560k	X3000 if higher V3001 if lower N3000 if lower or higher	R3007 if higher R3009 if higher
9	GND	X3000 if higher	No Action
10	600k – 1.3M	X3000 if higher Z3000 if higher N3002 if higher or lower	C3009 if lower
11	600k – 0L	X3000 if higher Z3000 if higher N3002 if higher or lower	C3009 if lower
12	70k – 110k	X3000 if higher C3013 if lower V4001 if lower	C3020 if lower C4041 if lower N2000 if lower or higher

Backup Capacitor Test

To perform this test use:

- Phone with the ETS SW
- Power Supply Channel 1 VBATT: Instrument settings: Voltage: 3.8V, Limiter: 2A
- USB
- Fault Trace SW

This test should be performed in 3 steps:

Step1:

Use Fault Trace SW and go to: Logic - ADC Values – Read ADC Value (**Reading 1**).

Step2:

This step should be made **30 seconds** after Step 1.

Use Fault Trace SW and go to: Logic - ADC Values – Read ADC Value (**Reading 2**).

Step3:

Compare the difference between **Reading 1** and **Reading 2** with the reference table below. If the Reading 1 value is between 50 and 680 go to Interval 1, if between 681 and 800 go to Interval 2, if between 801 and 880 go to Interval 3 and compare with the **Reading 2 – Reading 1** Min and Max Limits.

Reference Table:

	Min	Max	Unit
Absolute readout Reading 1	50	880	Dec

Reading 1 (Dec)	Reading 2 – Reading 1 (Dec)	
	Min	Max
Interval 1 (50 – 680)	20	210
Interval 2 (681 – 800)	5	30
Interval 3 (801 – 880)	0	15

Note! The upper table contains the absolute limits for the readouts. The lower table contains the allowed delta between the first and the second readout, separated in time with 30 seconds.

Note! If the readings is out of limits then **Replace C4036** (Backup Capacitor). If still problems then **SL 5 Replace N2000 SL 4 Escalate**.

Display Filter Test

This Test must be made for all Display Filters below:

Z2500, Z2501, Z2502, Z2503, Z2504, Z2505, Z2506 and Z2507

To perform this test use:

- Digital Multimeter instrument (DMM) and Microscope
- Use the Measurement Points Drawing to find the locations of the Display Filter components.

Display Filter Test 1:

Check if the any of the Pins: 1, 2, 3, 4, 5, 6, 7, 8 is short circuit to **GND**:

If Yes Replace the Faulty Display Filter Component.

If No go to Display Filter Test 2.

Display Filter Test 2:

Is the resistance max 12 Ohm between the following pins:

Pin 1 and 5

Pin 2 and 6

Pin 3 and 7

Pin 4 and 8

If No Replace the Faulty Display Filter Component.

If Yes go back to the Display Problems TRS Guide.

ASIC Revision Test

Note! *The Key Test must be deactivated during this test.*

The purpose of this test is to verify:

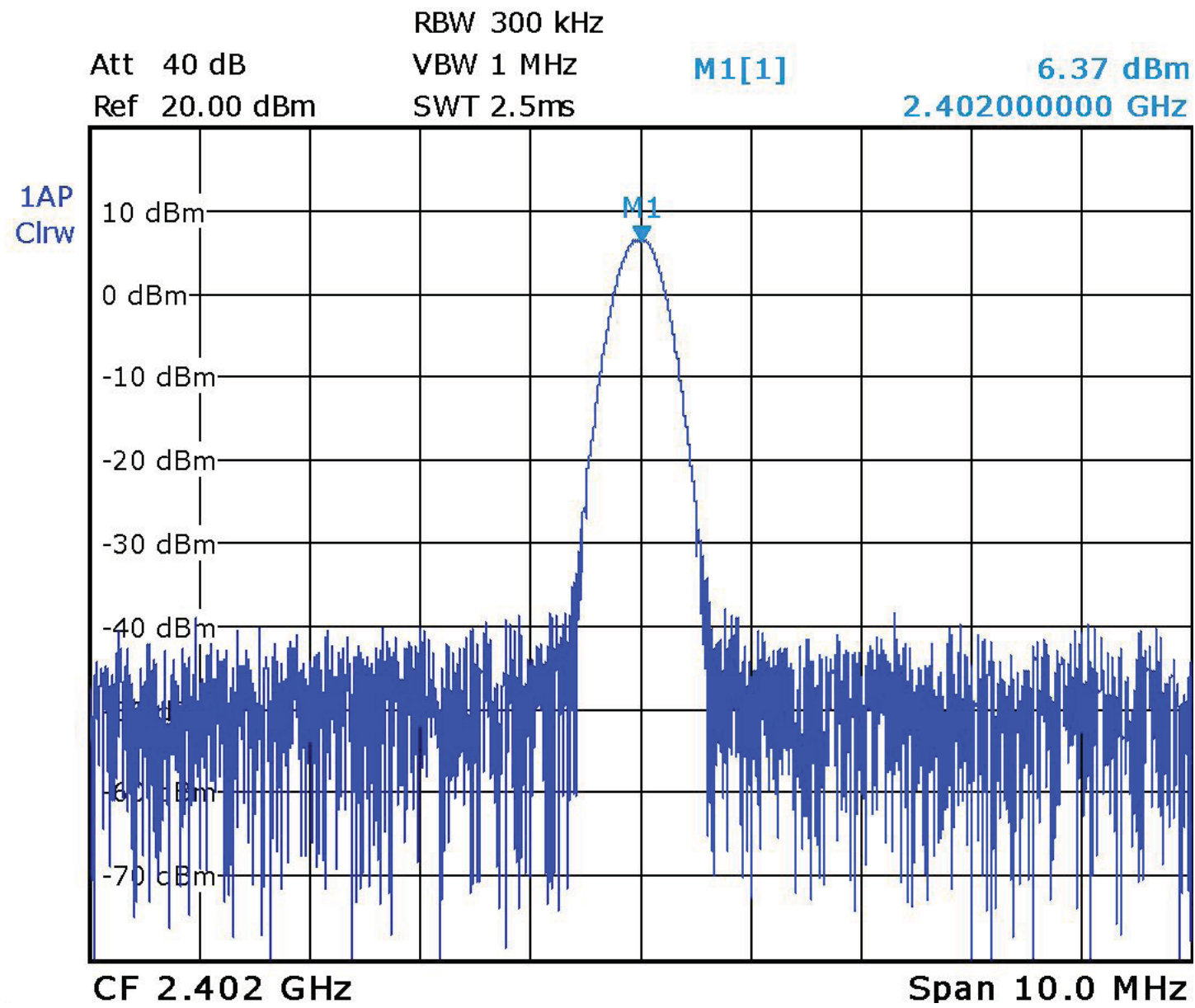
- That the ASIC is correctly mounted,
- That communication is ok,
- That the ASIC revision is correct.

To perform this test use:

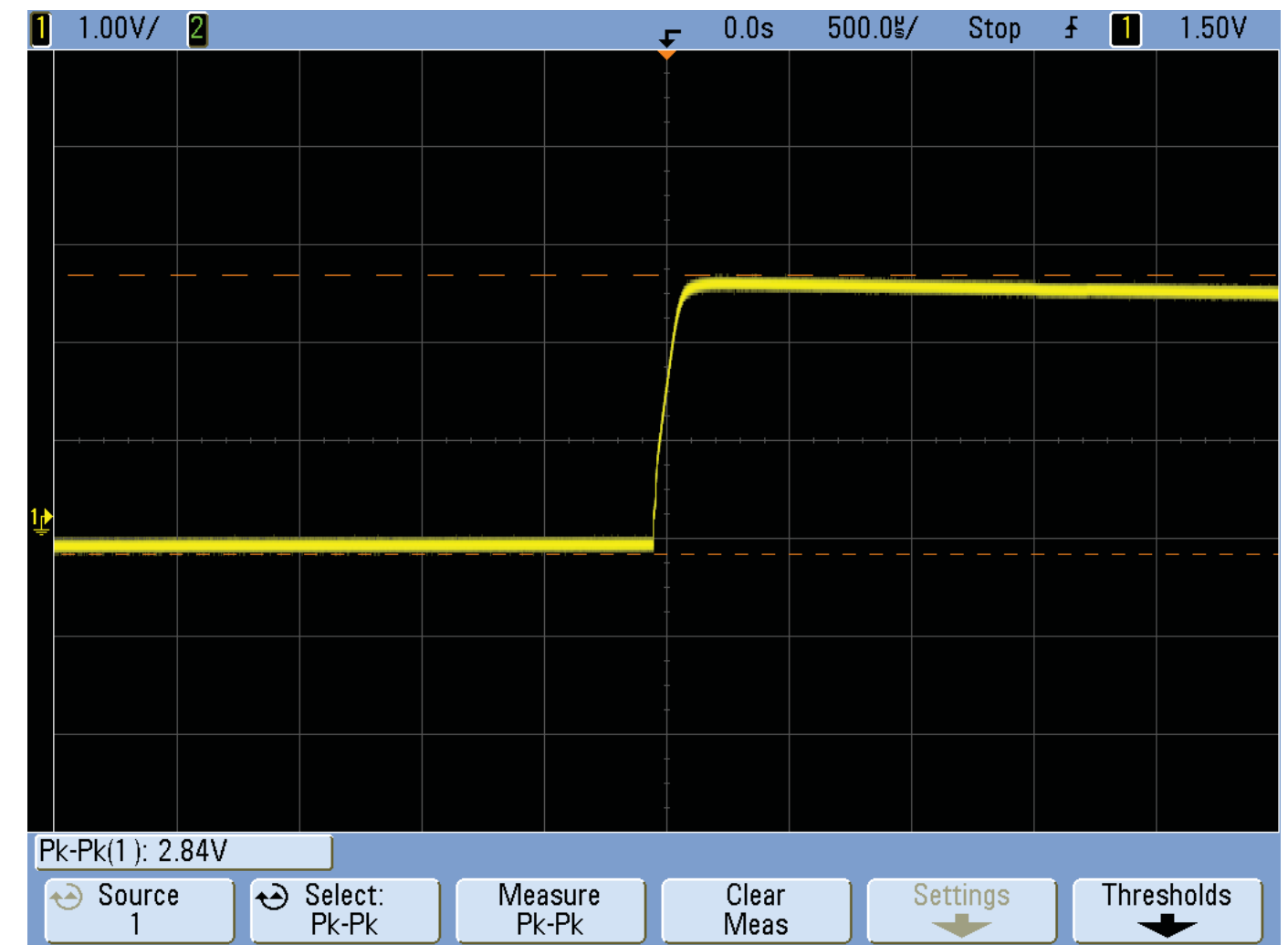
- Phone with the ETS SW
- TRS Fixture
- Power Supply Channel 1 VBATT (Voltage: 3.8V, Limiter: 2A)
- USB
- Use Fault Trace SW and go to: General – Asic Revisions – Read All

Reference Table:

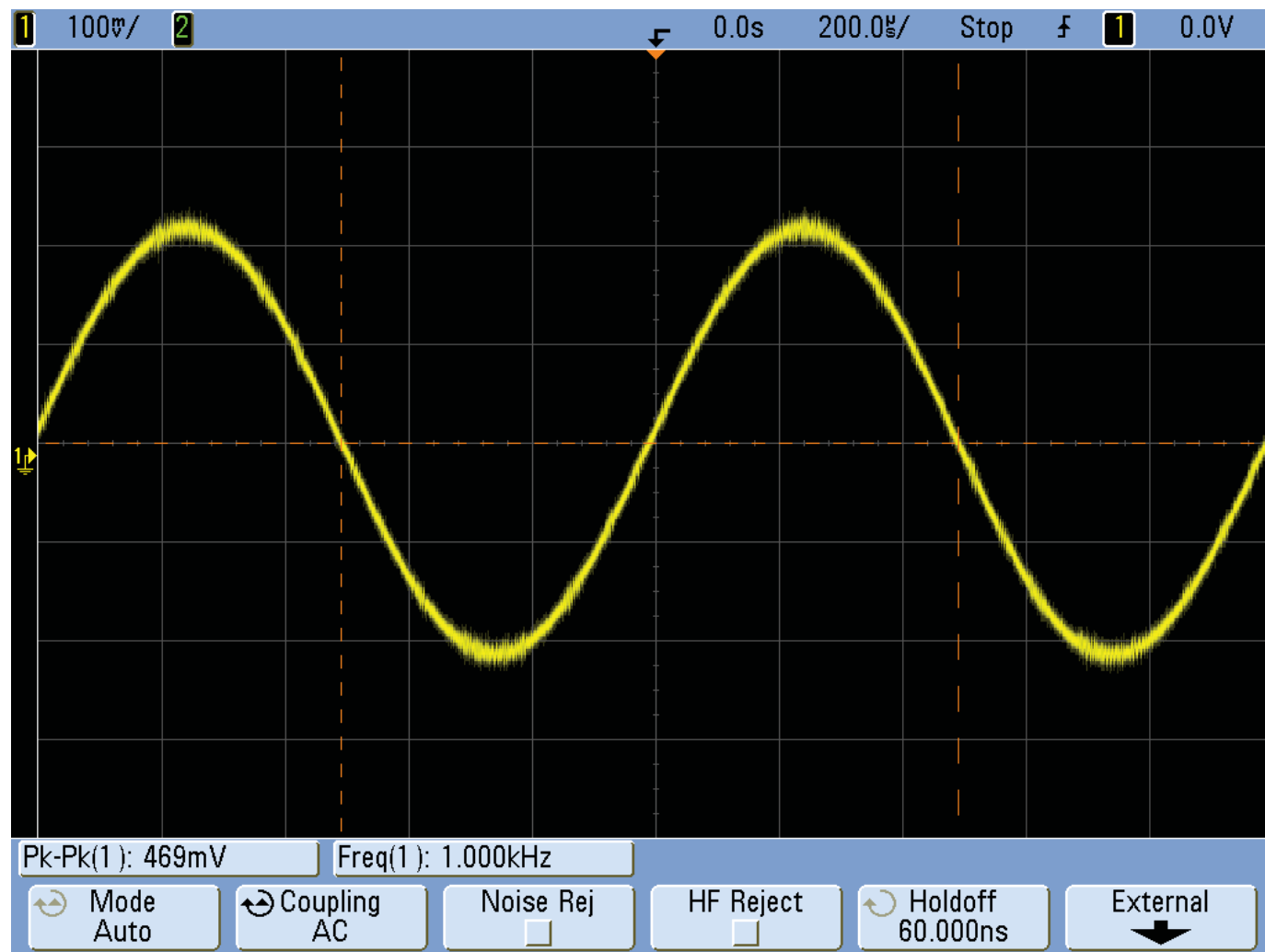
ASIC	Part Number	Description	Return Value
N2010	1223-3567	Kajsa	0xE9
N2000	1208-9490	Vera	0xC8
N2500	1203-8903	OMAP	OMAP3430 ES 3.1
N2501	1209-9654	Gaia	TWL5030 ES 1.1
N1400	1219-6481	Bluetooth	0x1D,0x1F
N2800	1202-1676	Accelerometer	0x3b
N1500	1201-7557	A-GPS	0,0,0,0,0,2,9,1,0
N1400	1219-6481	FM Radio	0x1273



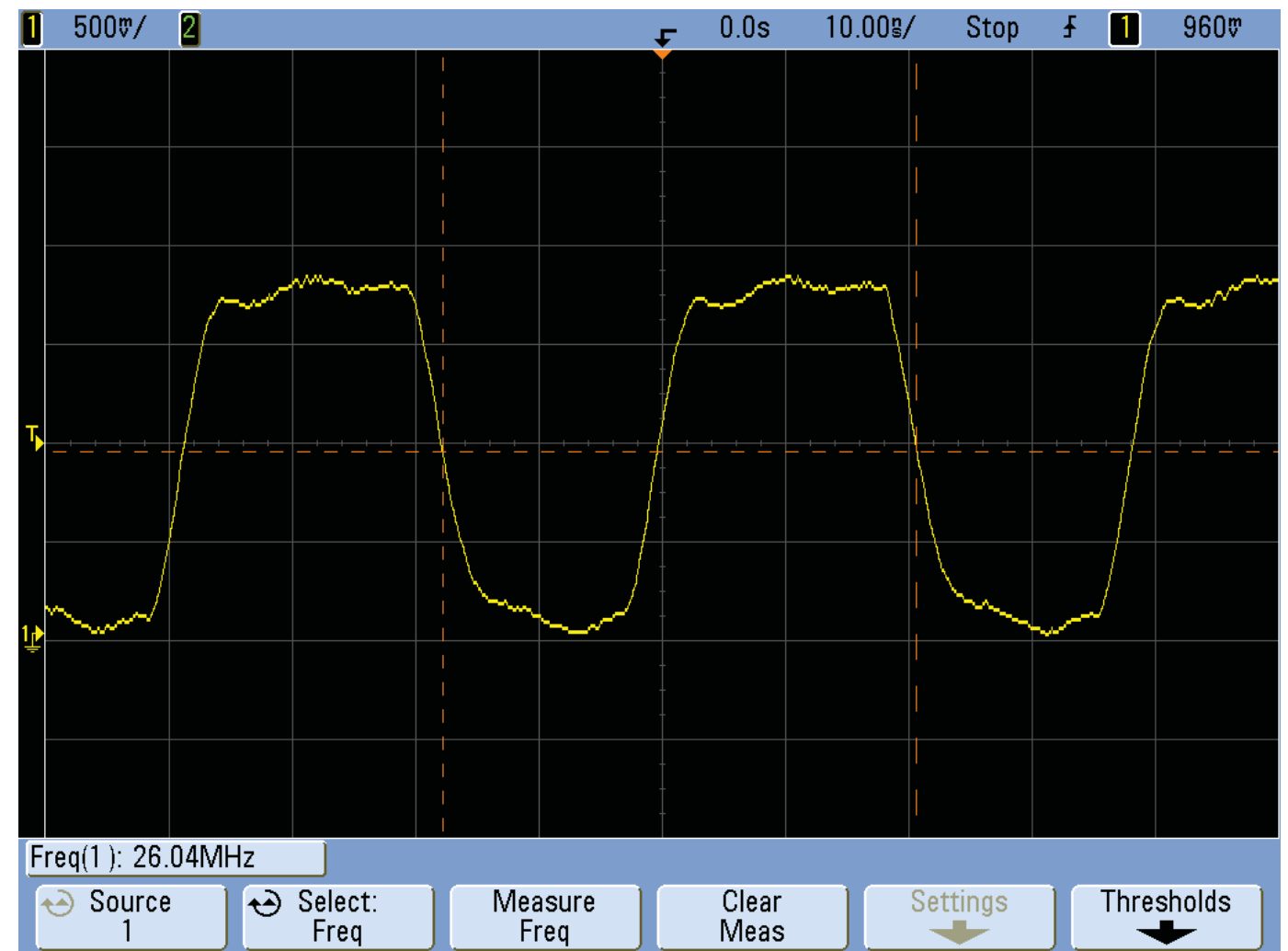
Blt MaxPwr



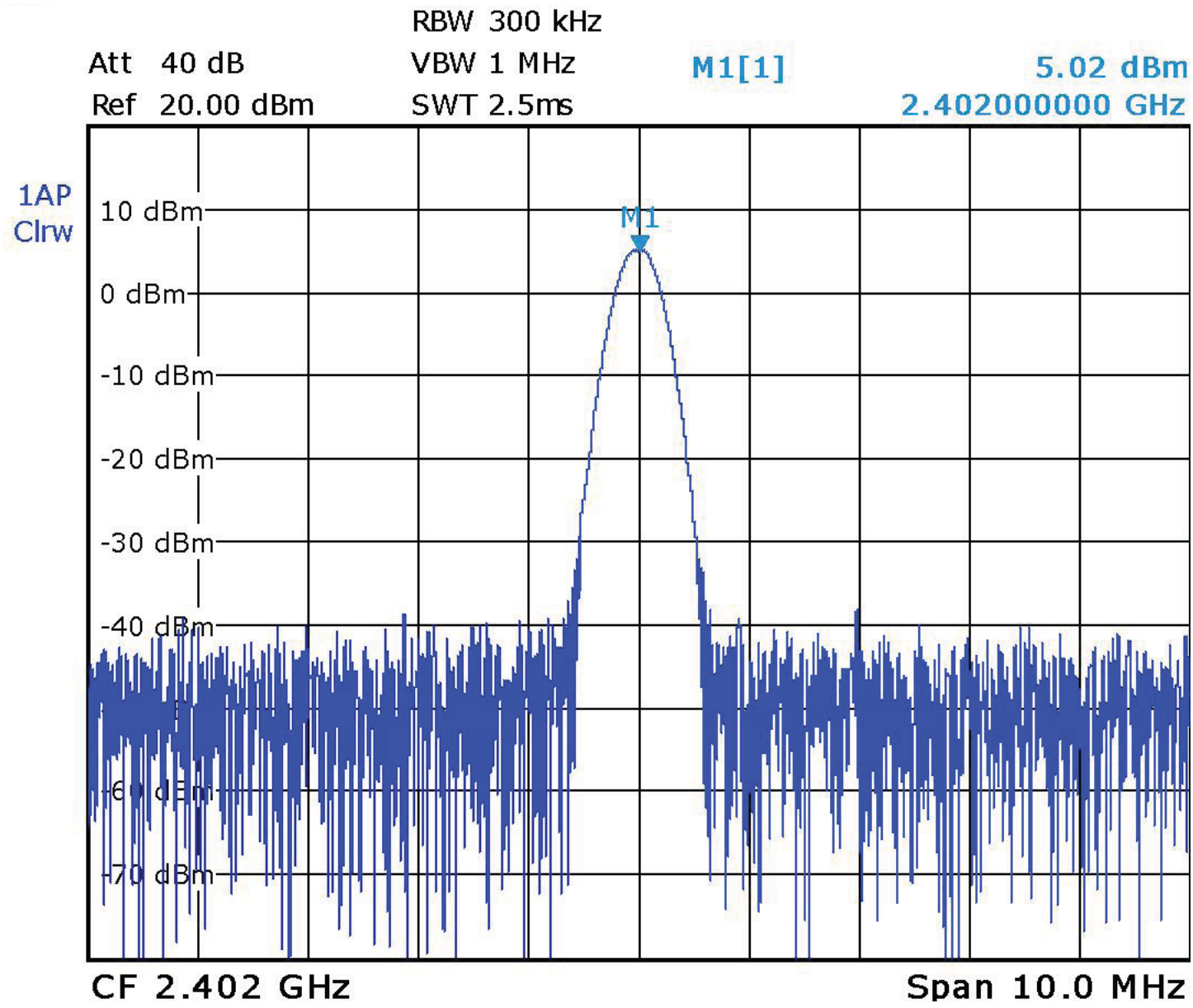
MP R4048 (VIBR_OUT)



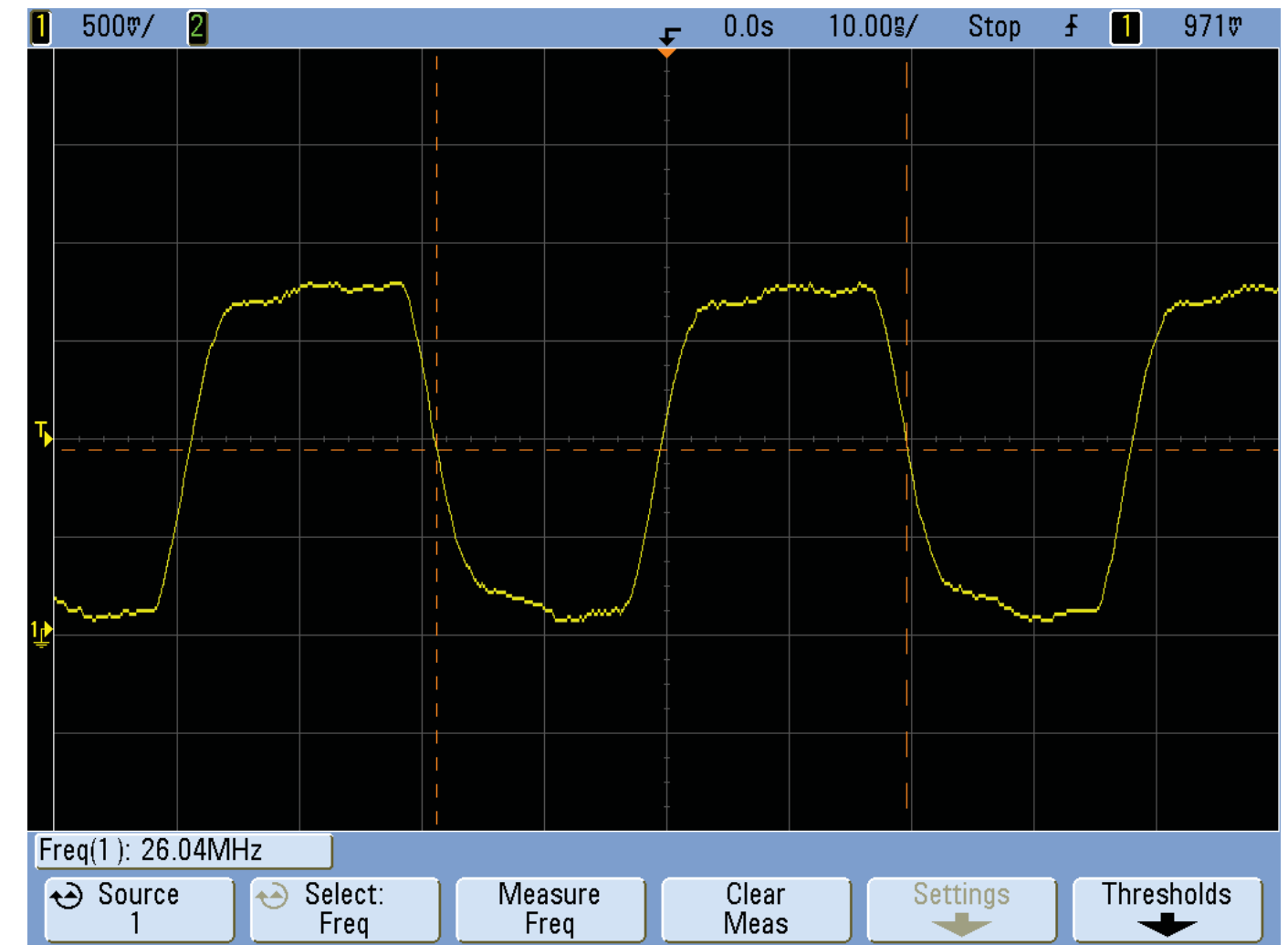
MP19 C5524 and MP 21 C5523



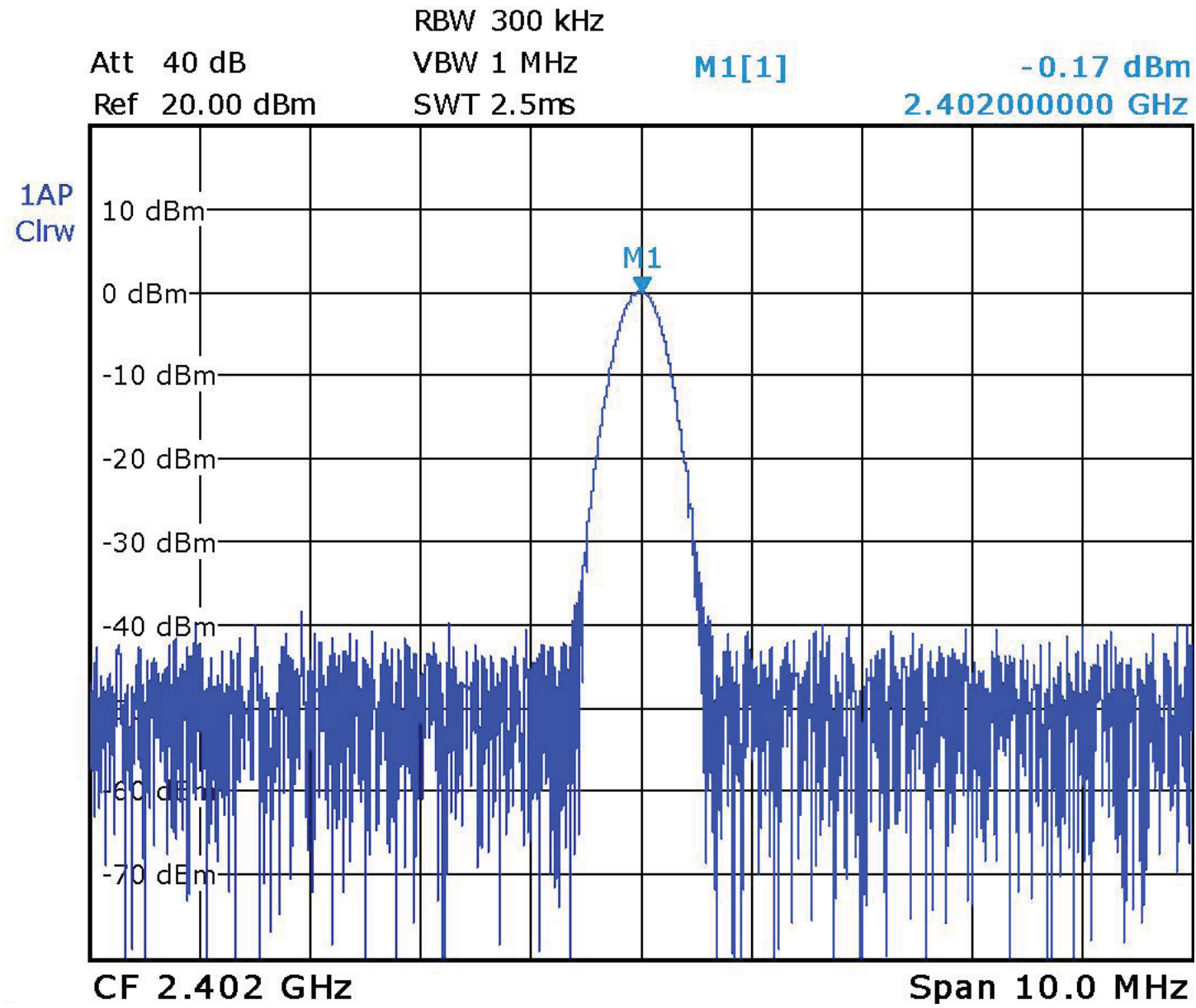
MP23 R2514 (26MHz MCLK_2)



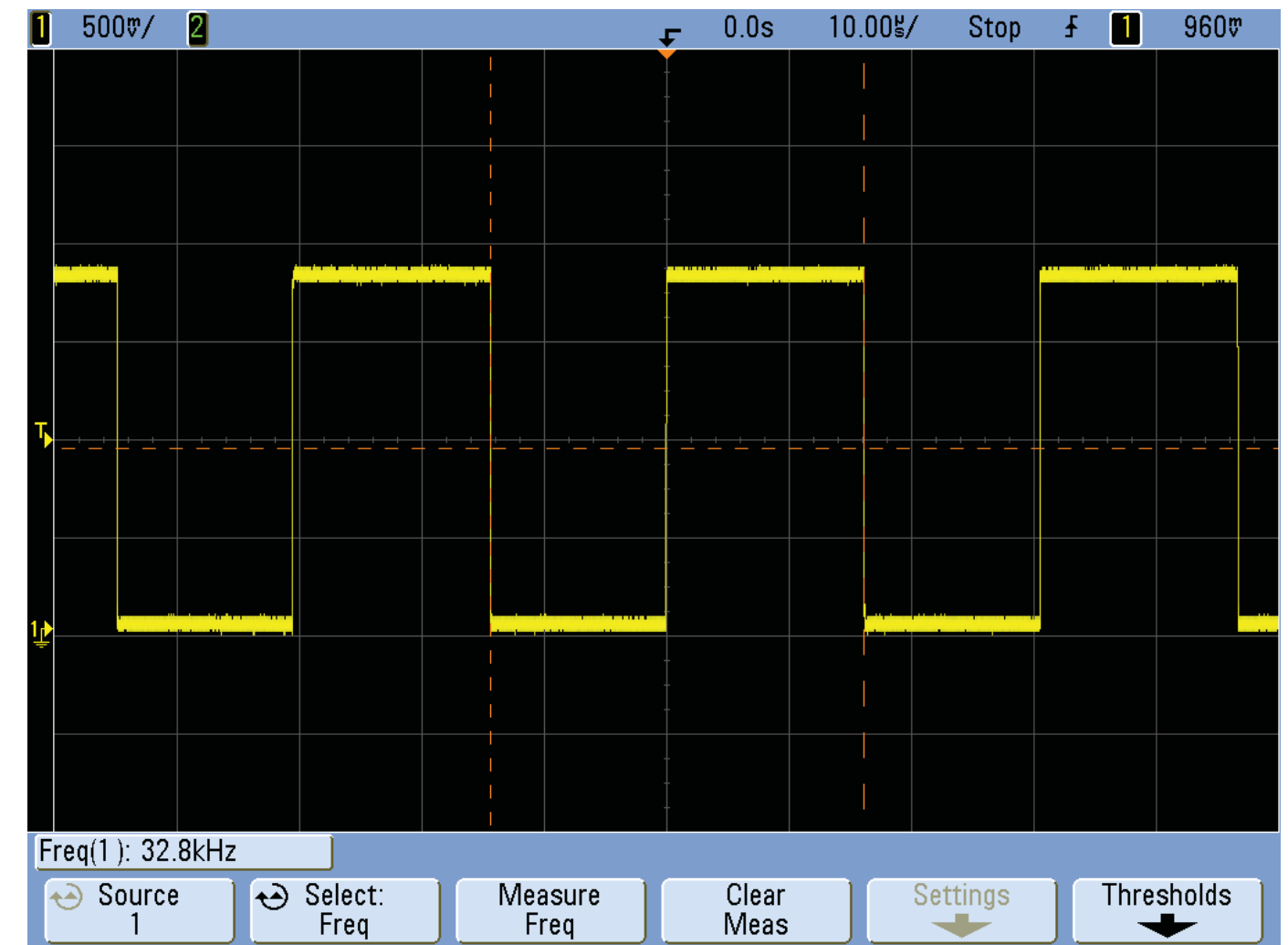
MP32 R1460



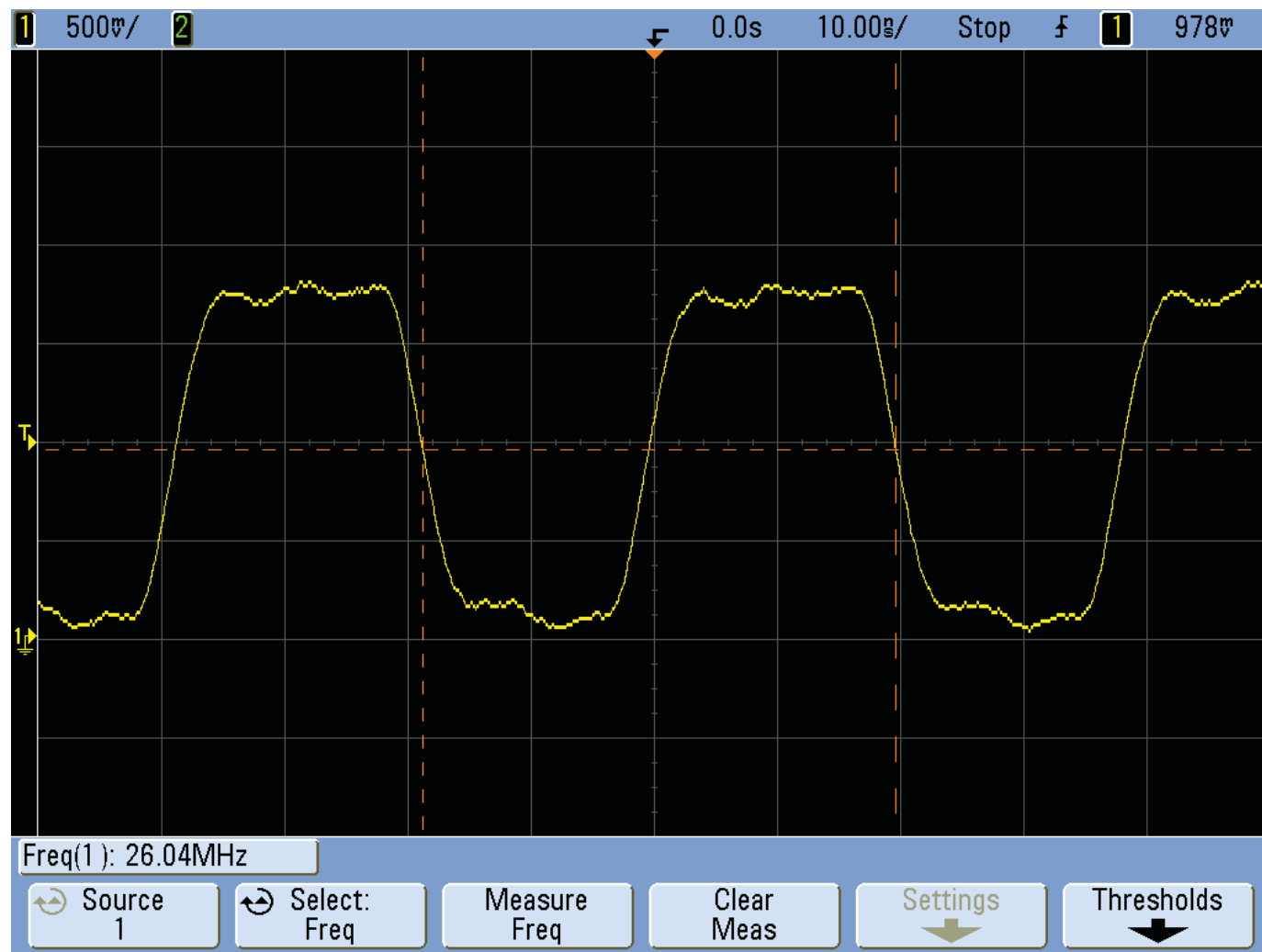
MP33 R1457 (26M_CLK1)



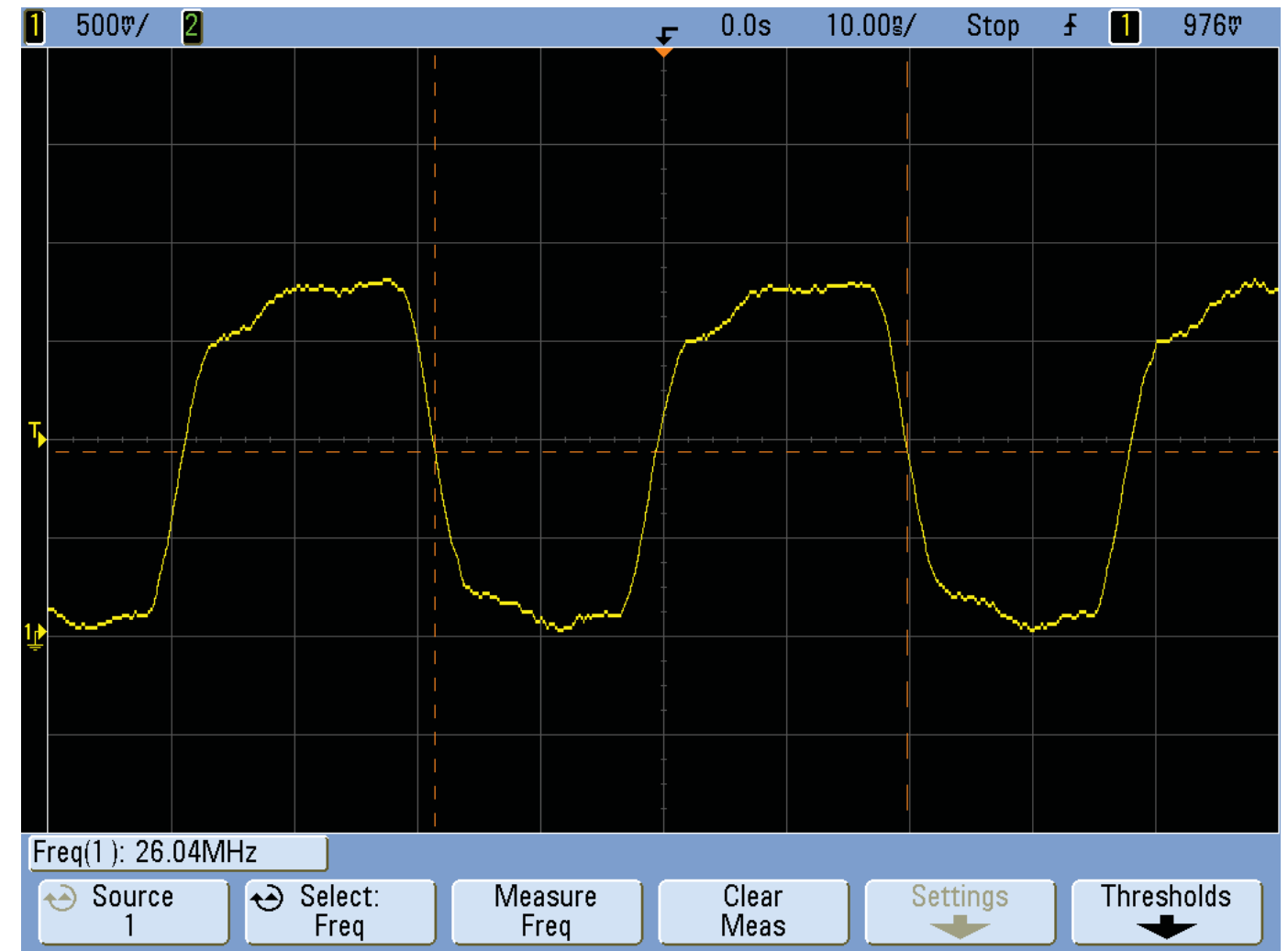
MP34 R1423



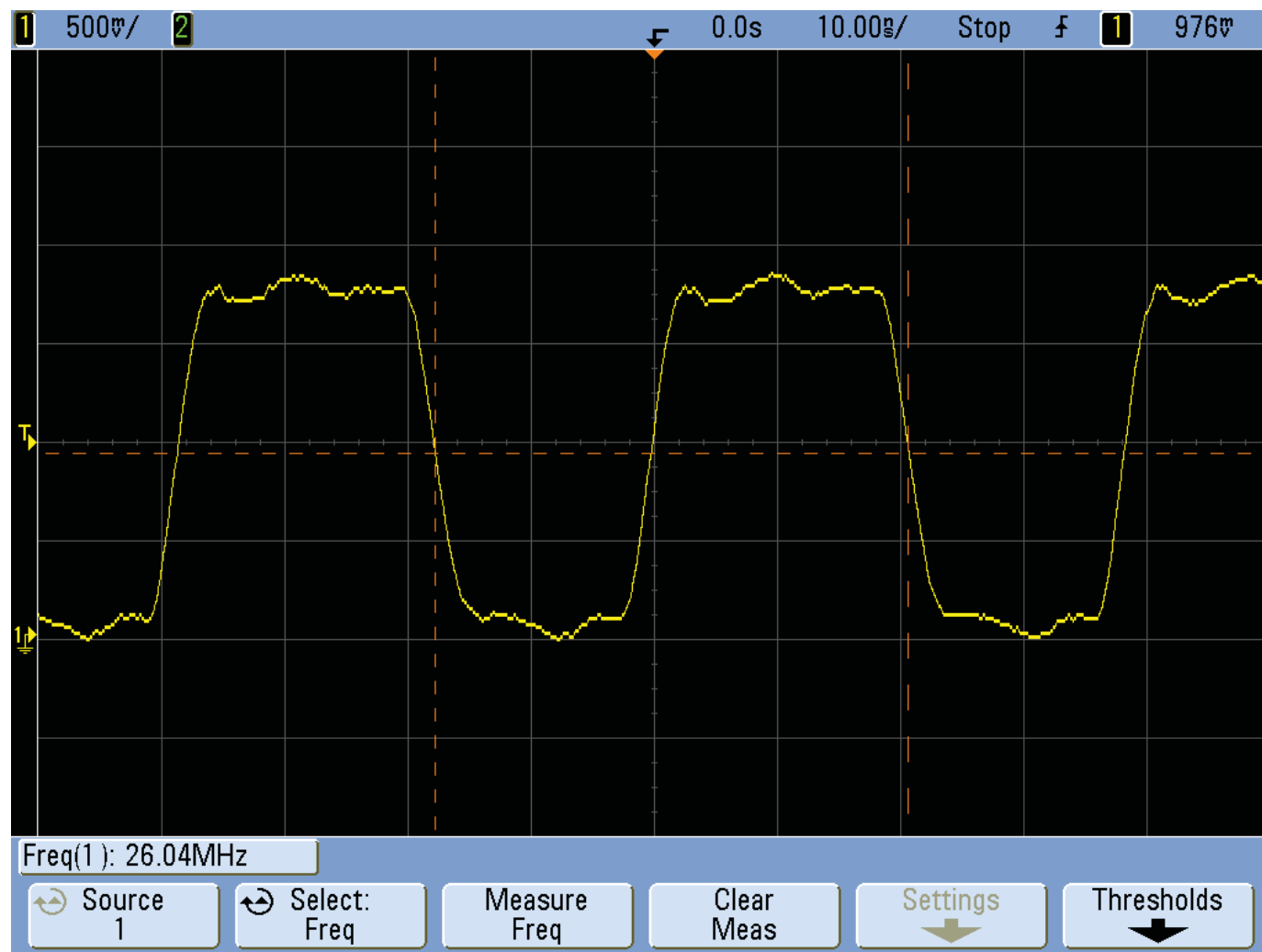
MP40 R2006 (32kHz RTCCLK)



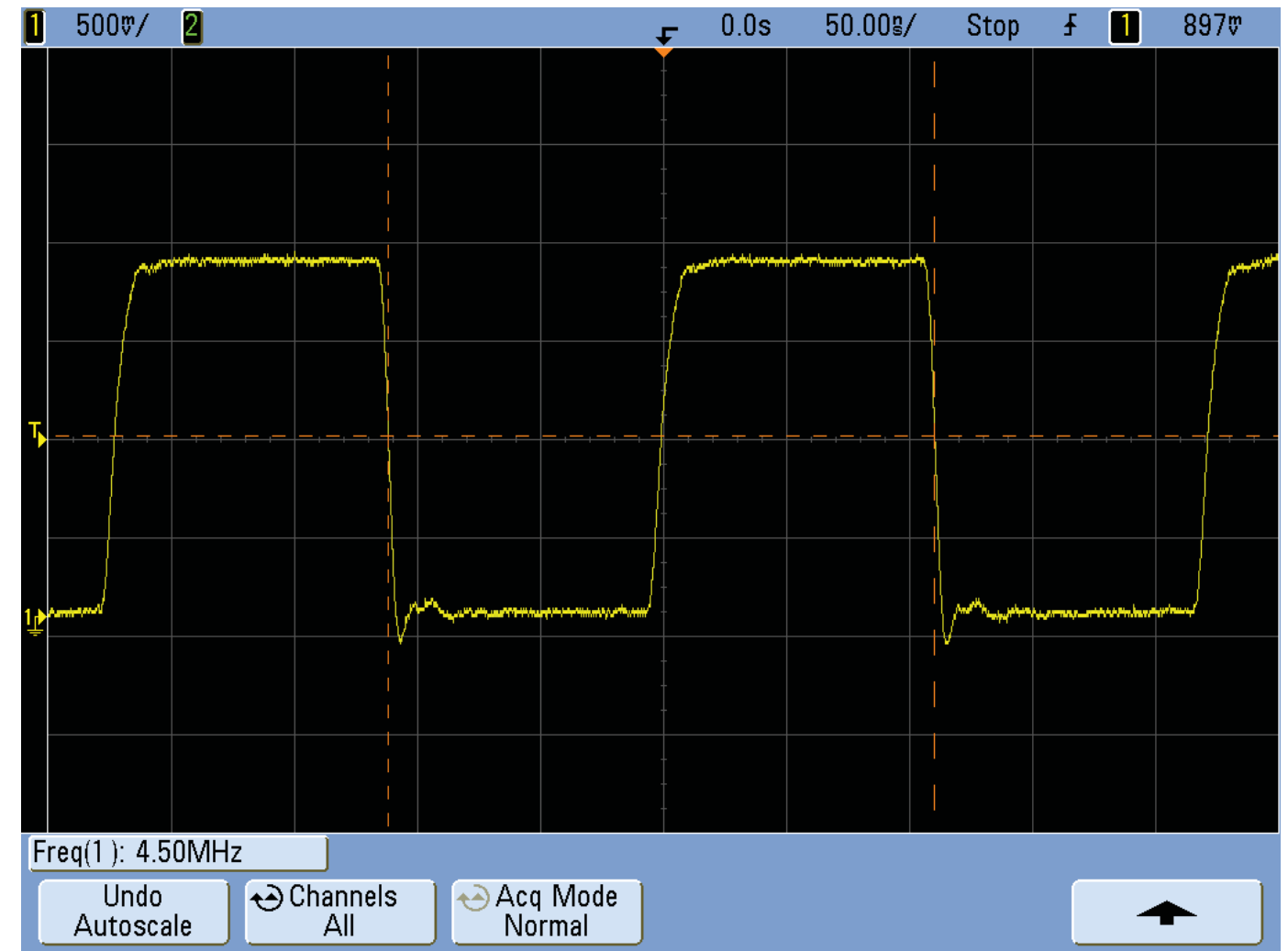
MP43 R2008 (26M_CLK2)



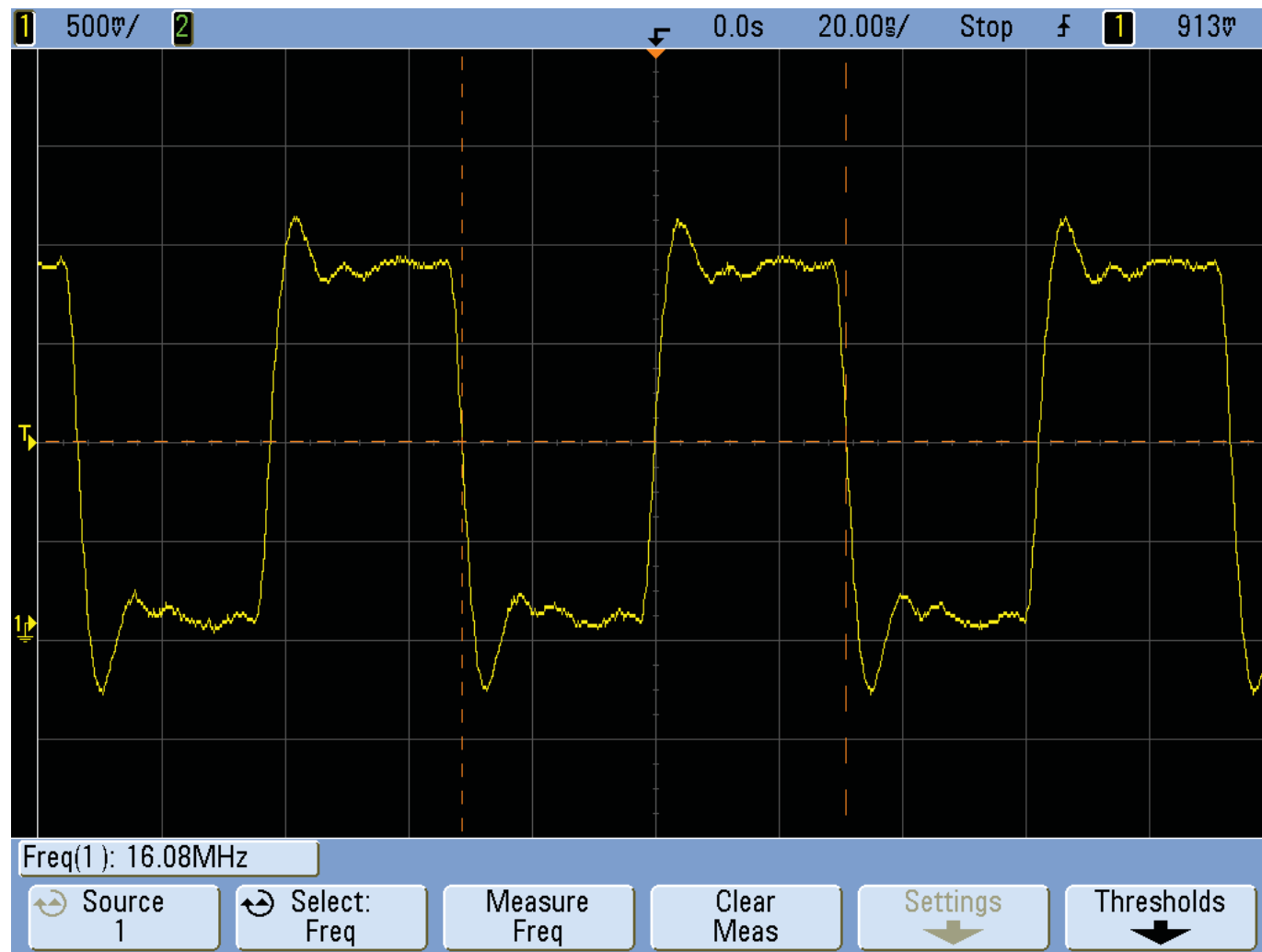
MP44 R2005 (26MHz MCLK)



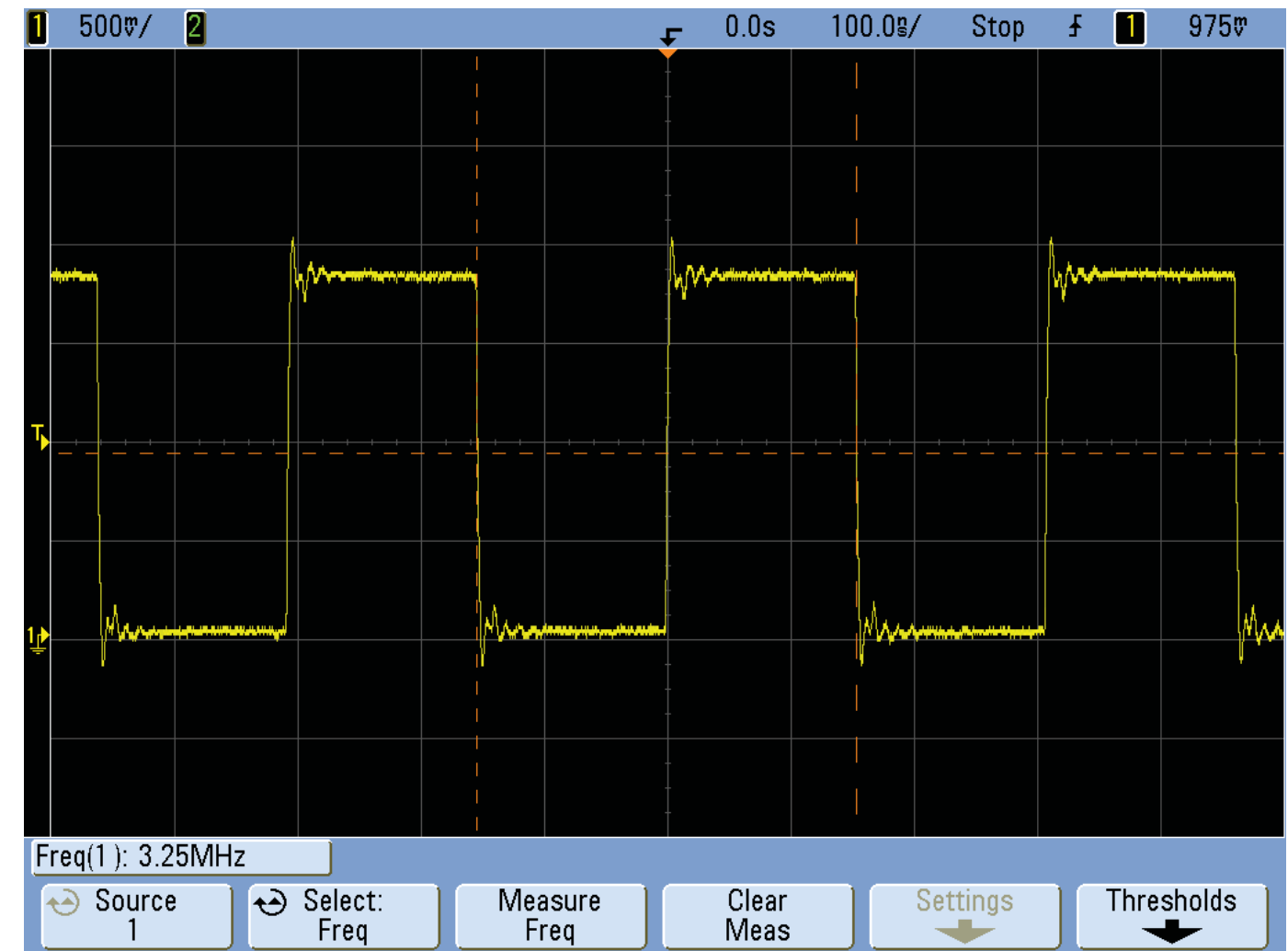
MP45 R2013 (26MHz MCLK_1)



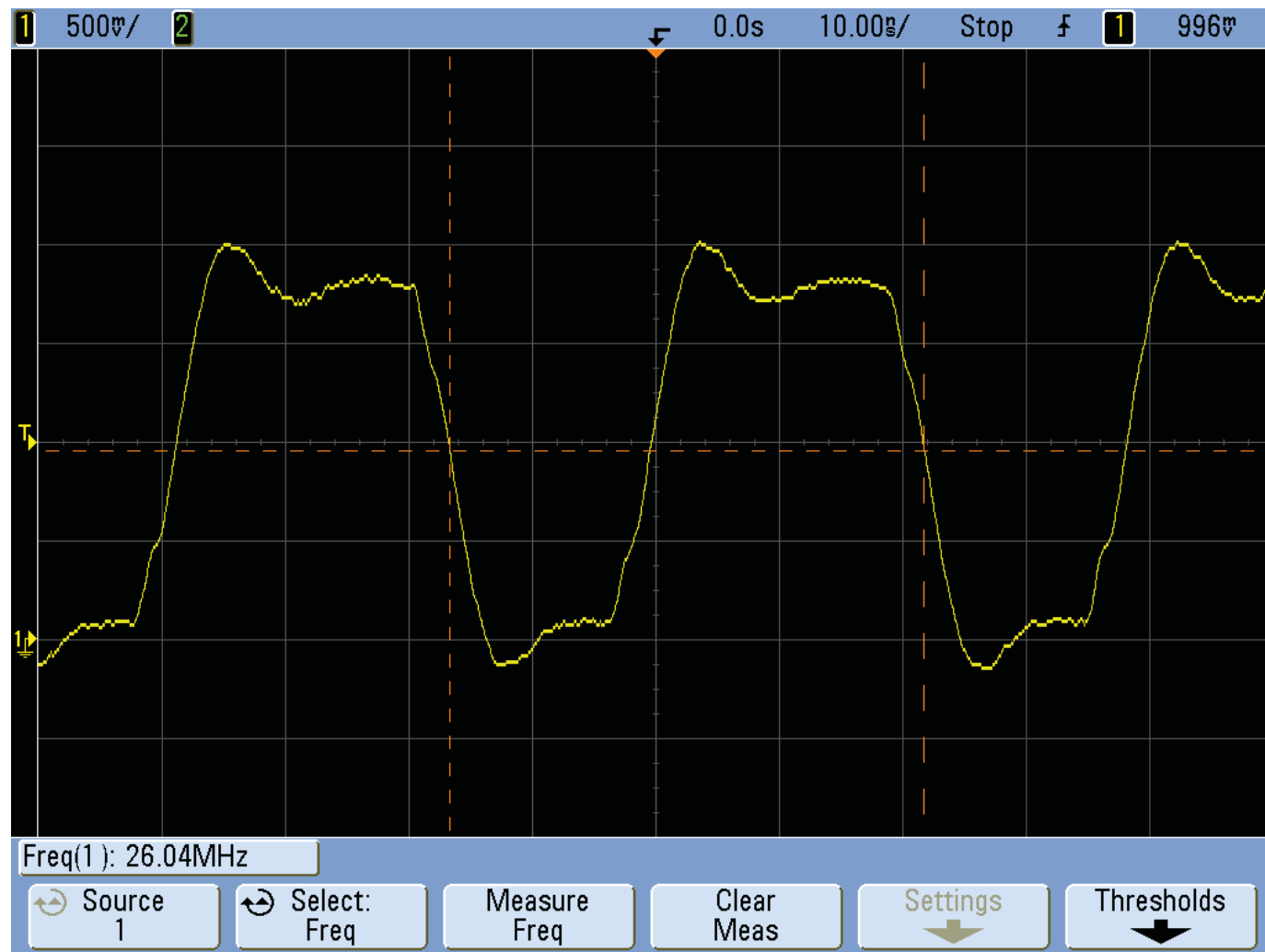
MP55 L2824 (4.5MHz CAM_CLKI)



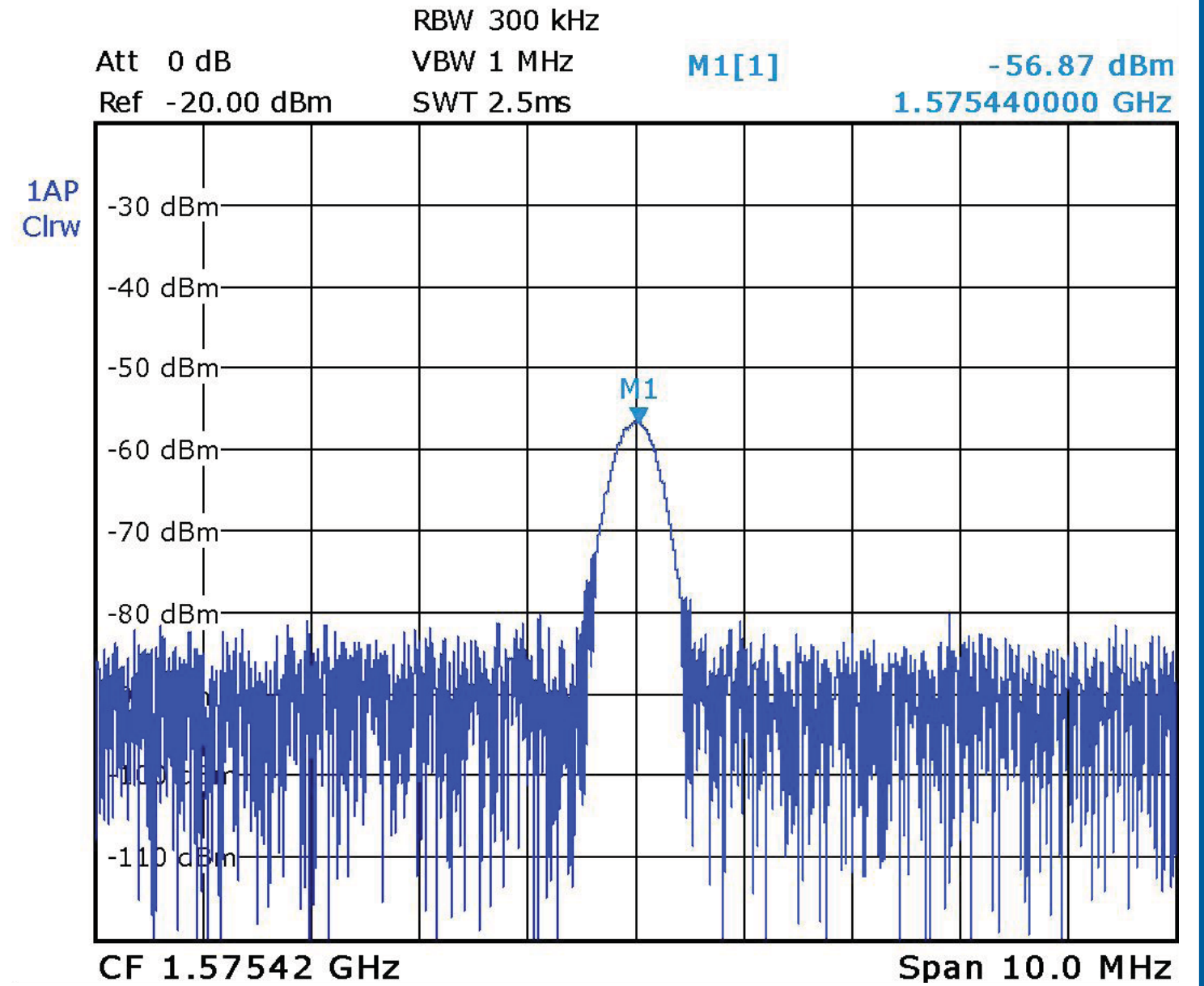
MP55 L2824 (CAM_CLKI)



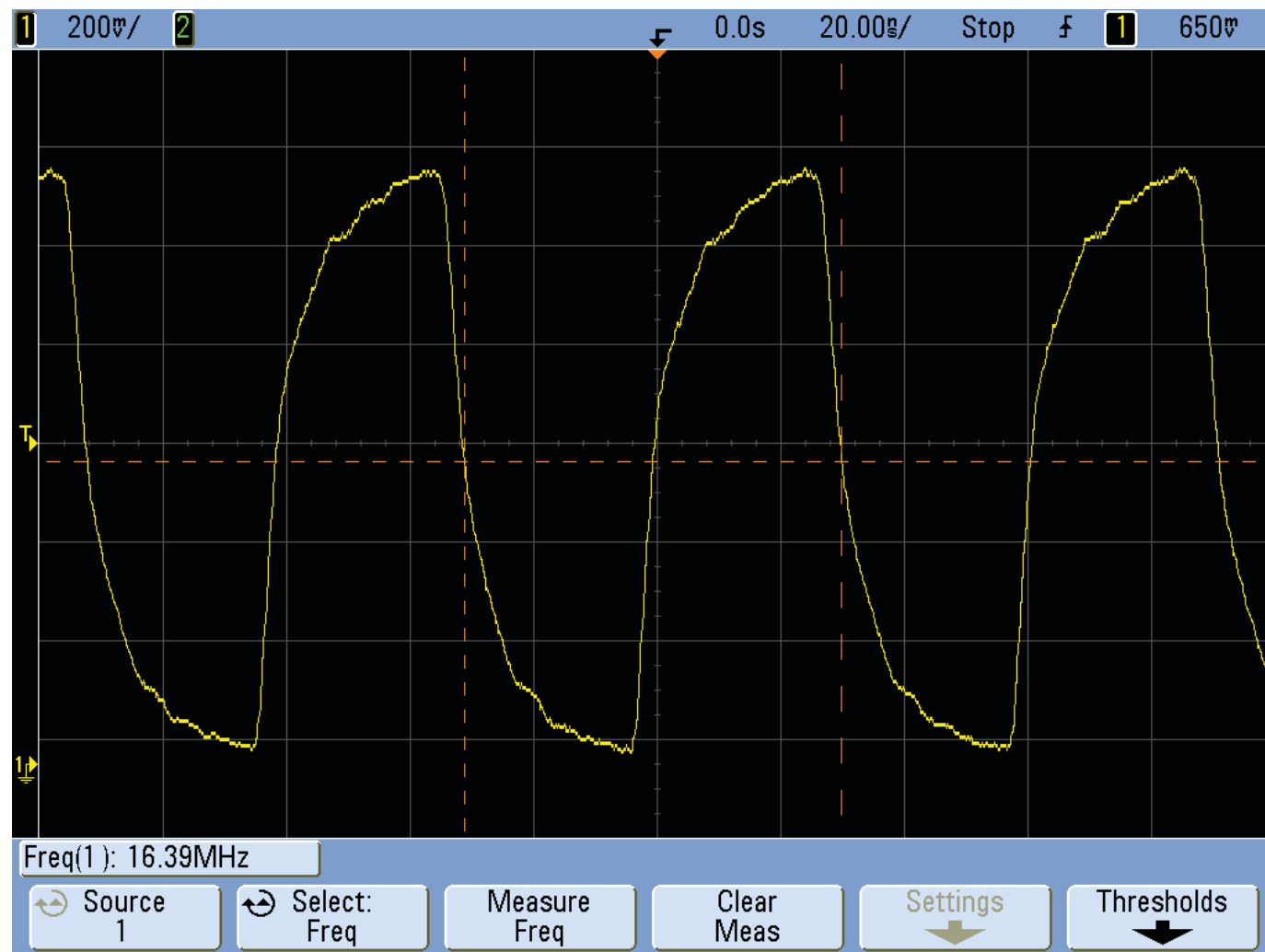
MP57 R2801 (3.2MHz LCDC_CLKO)



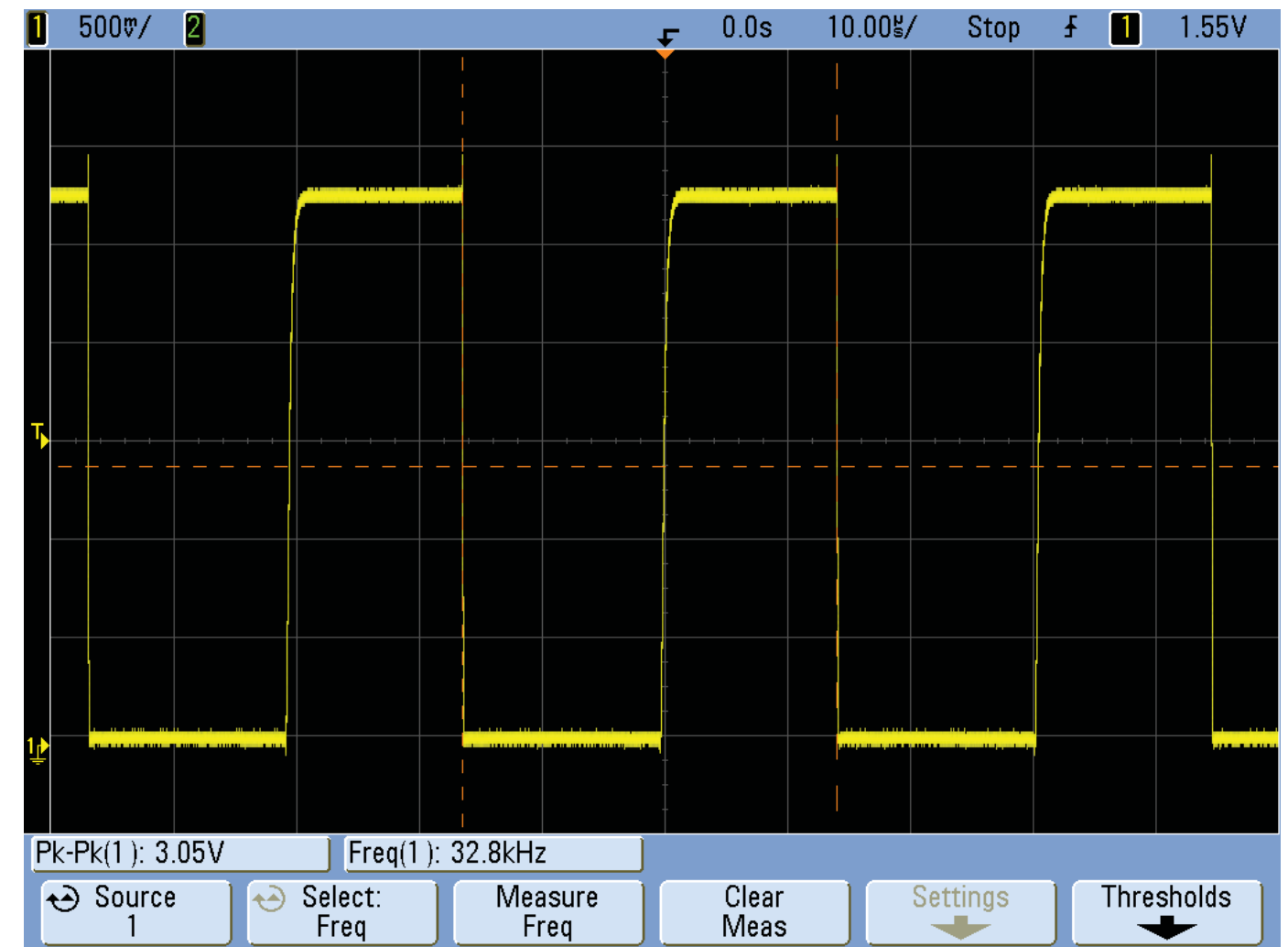
MP58 R2804 (MAIN_CAM_CLKO)



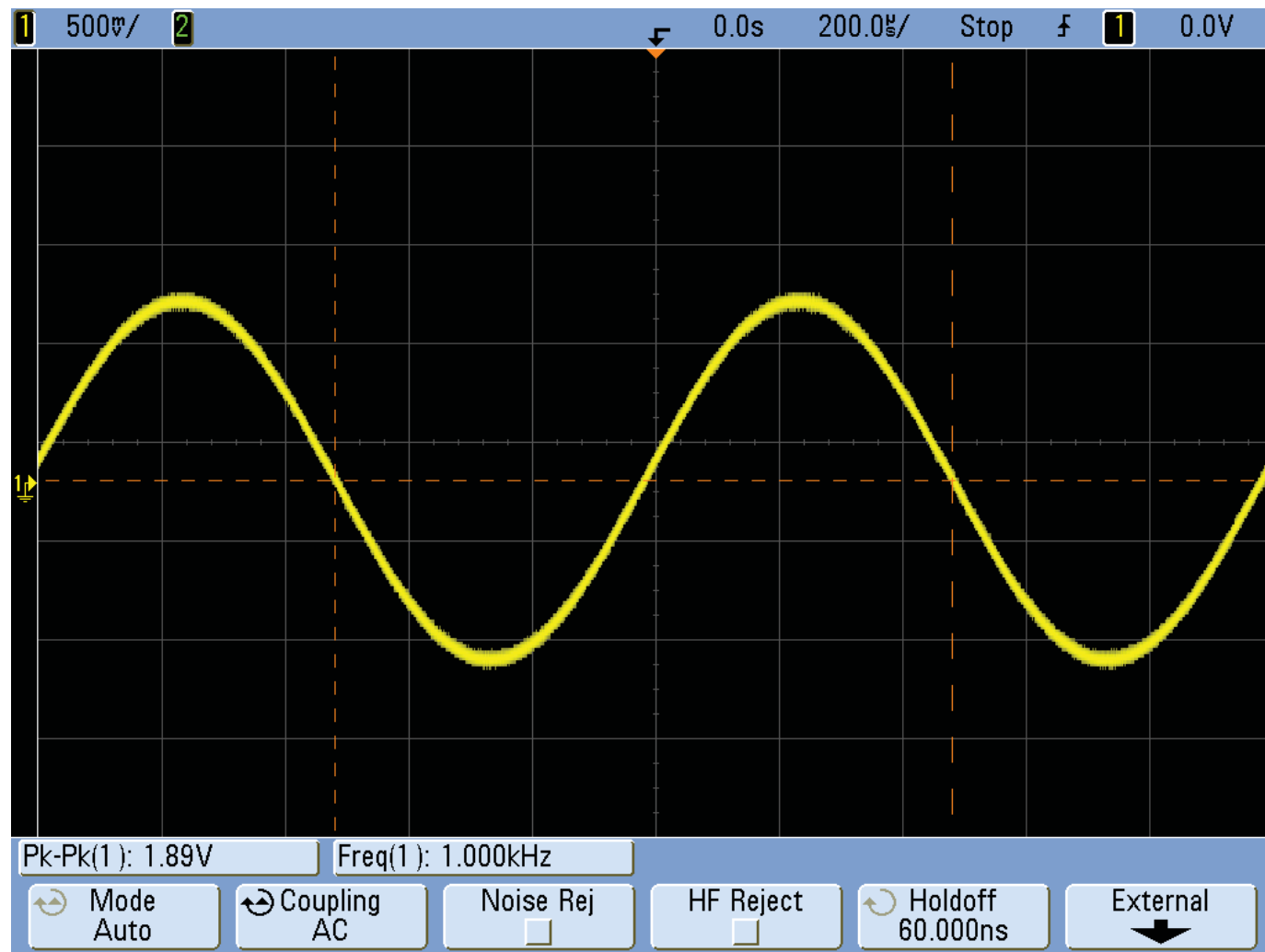
MP66 C1502



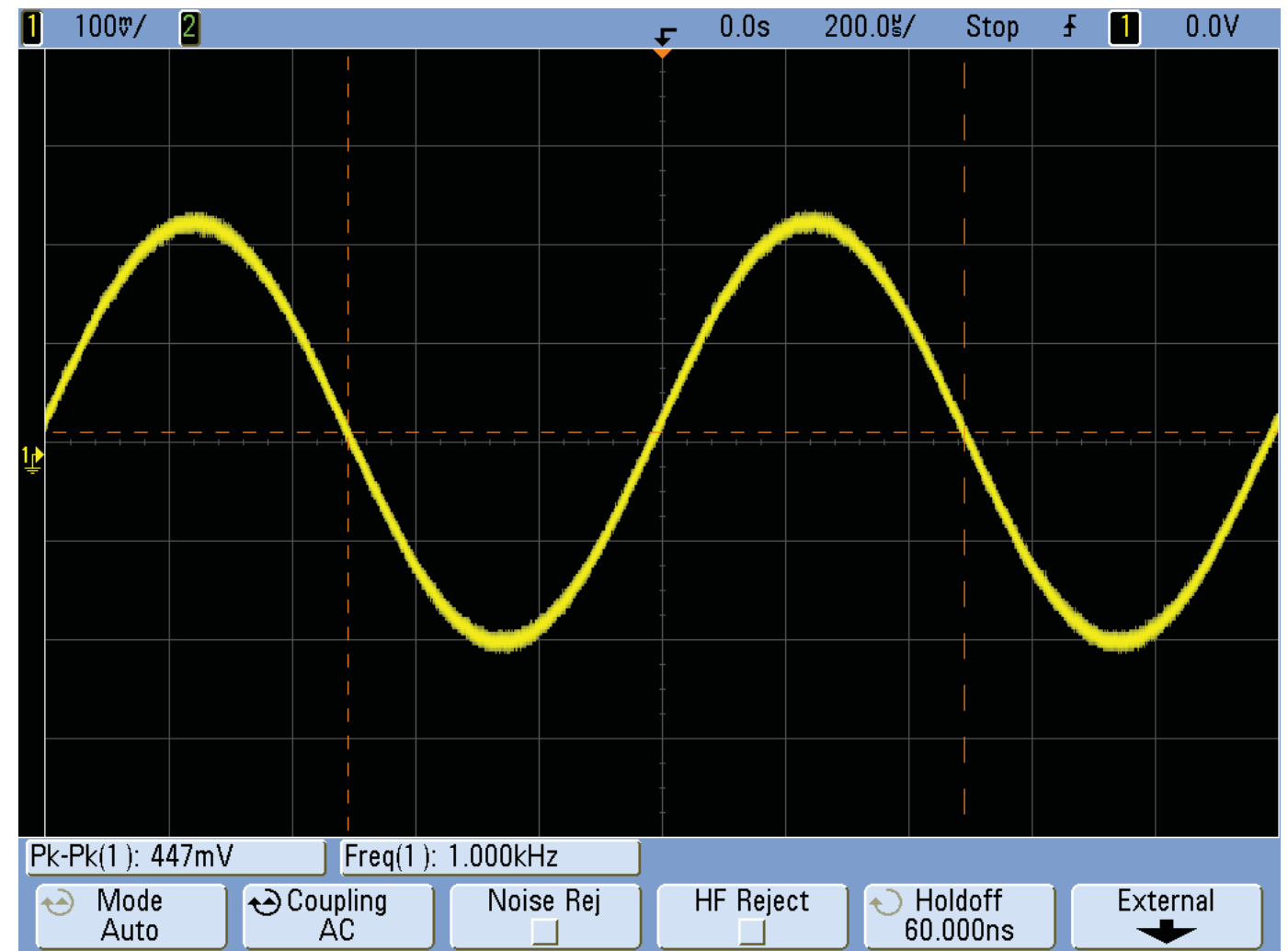
MP67 B1500_Pin 4 (TCXO_CLK)



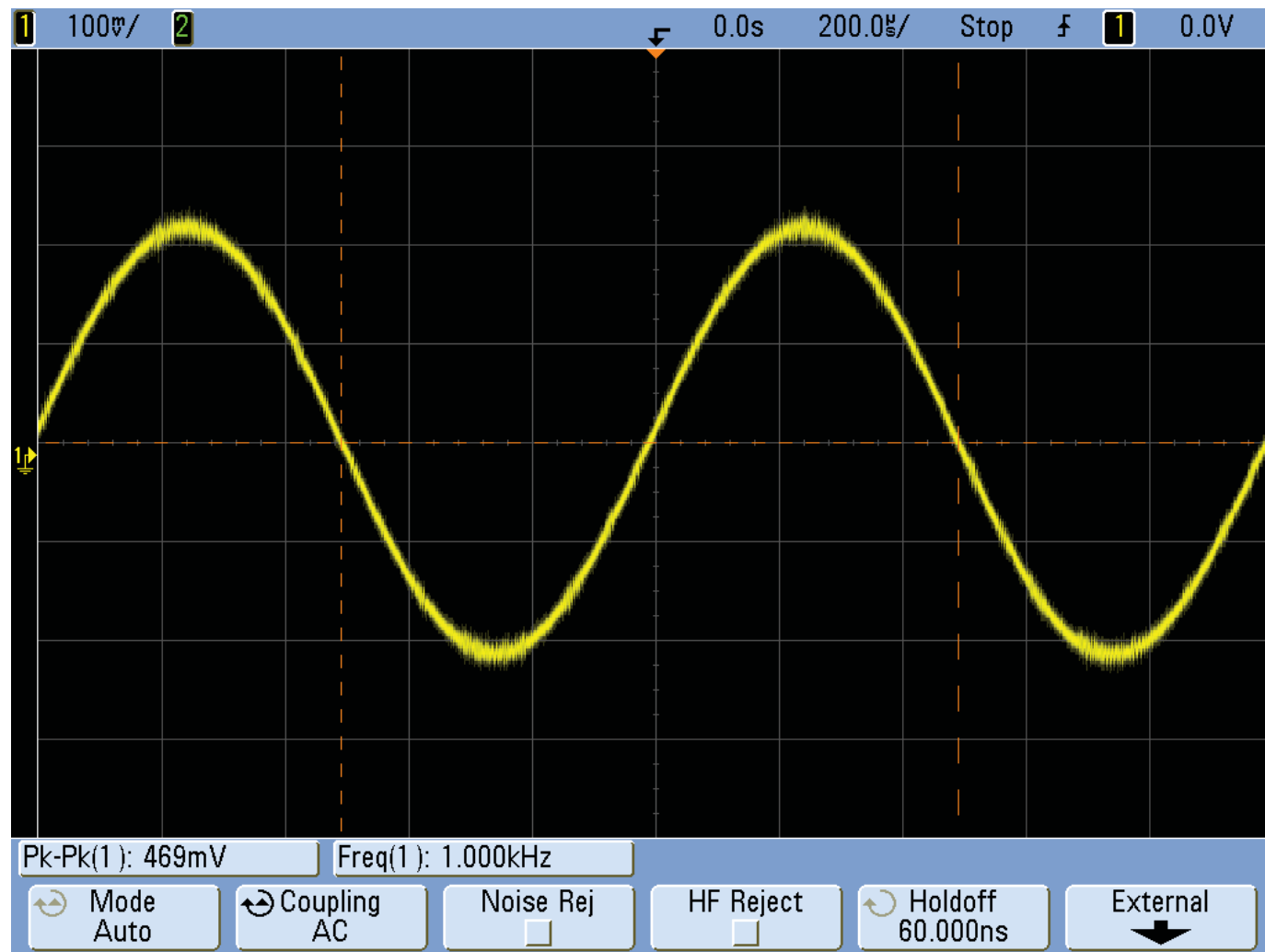
MP73 V2804 (PS_LEDON)



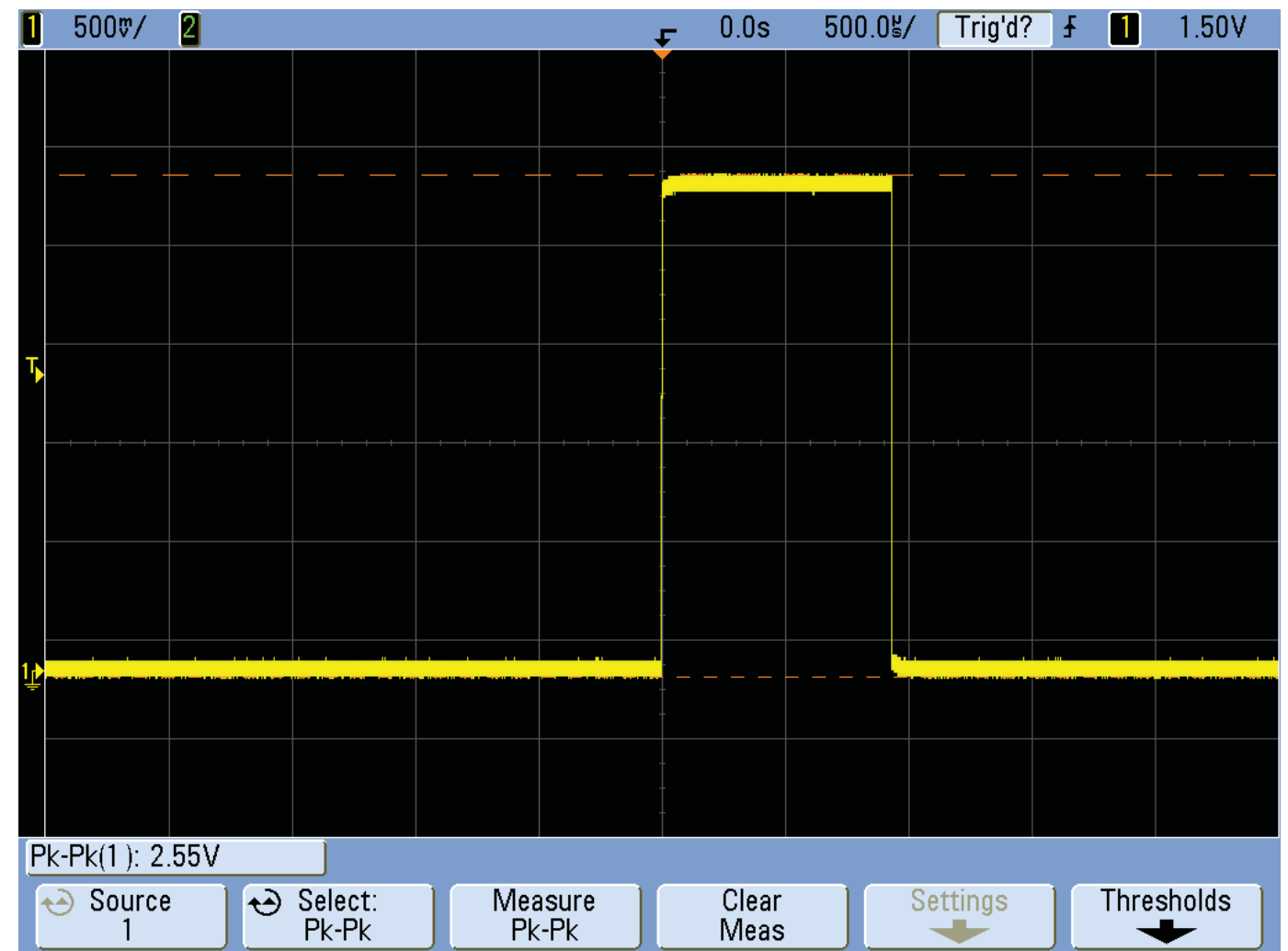
MP75 TP5504 and MP76 TP5505



MP81 R5522 and MP82 R5500



MP90 TP5501 and MP93 TP5500

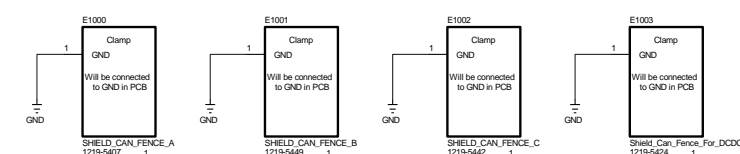


MP91 V3002_Cathode (TV_OUT_BUF)

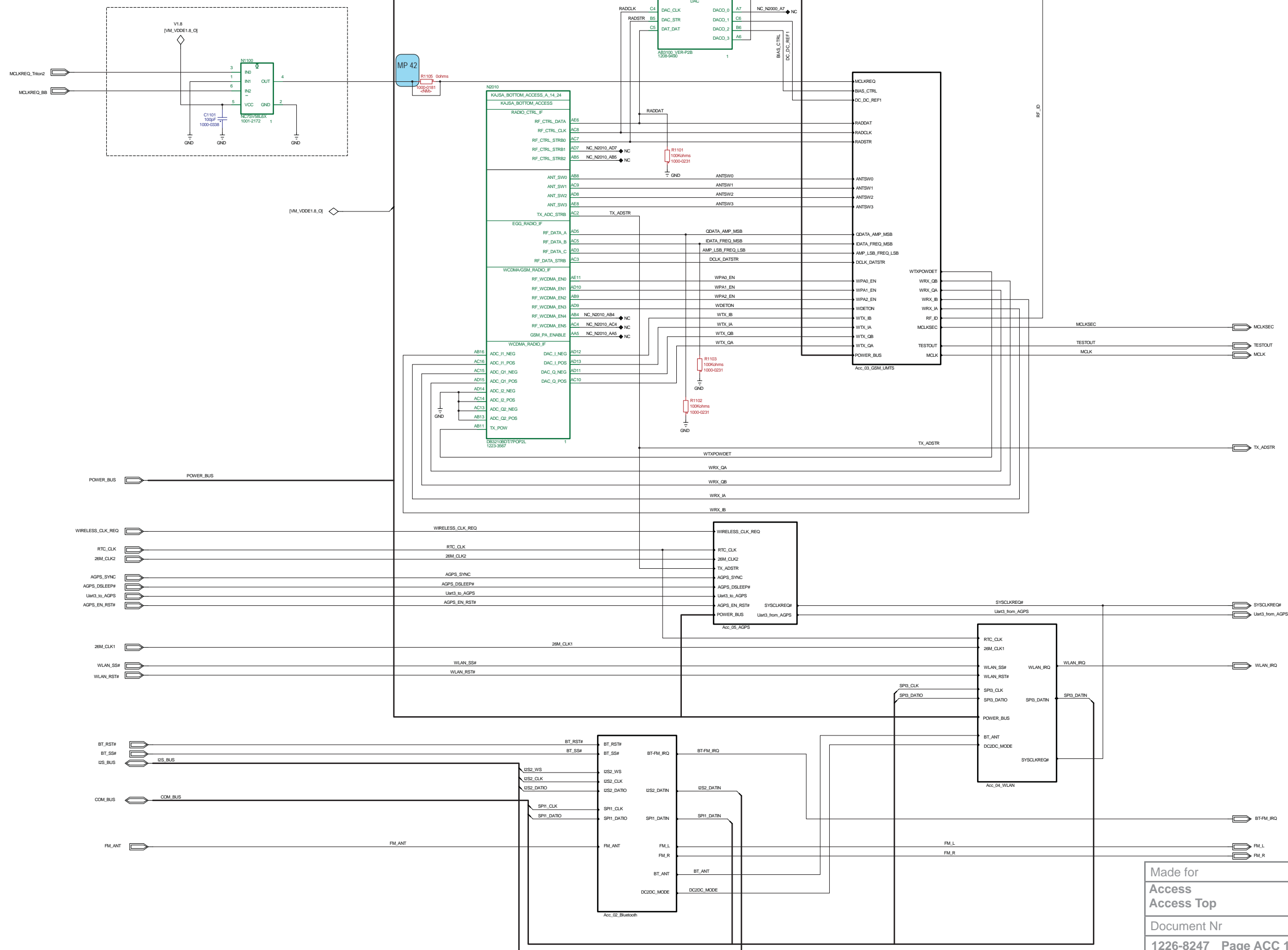








1235-2354 rev. 1 46 (80)

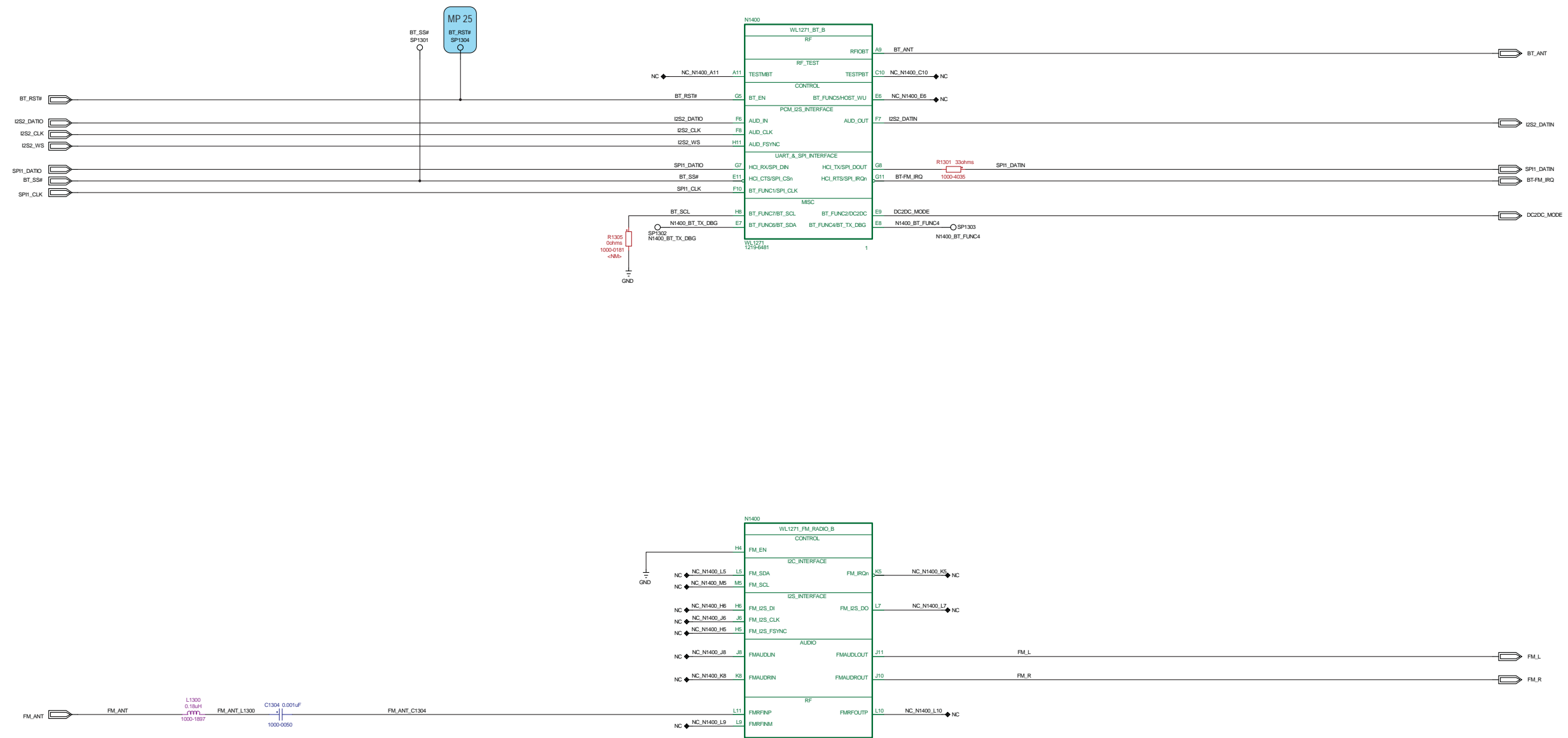


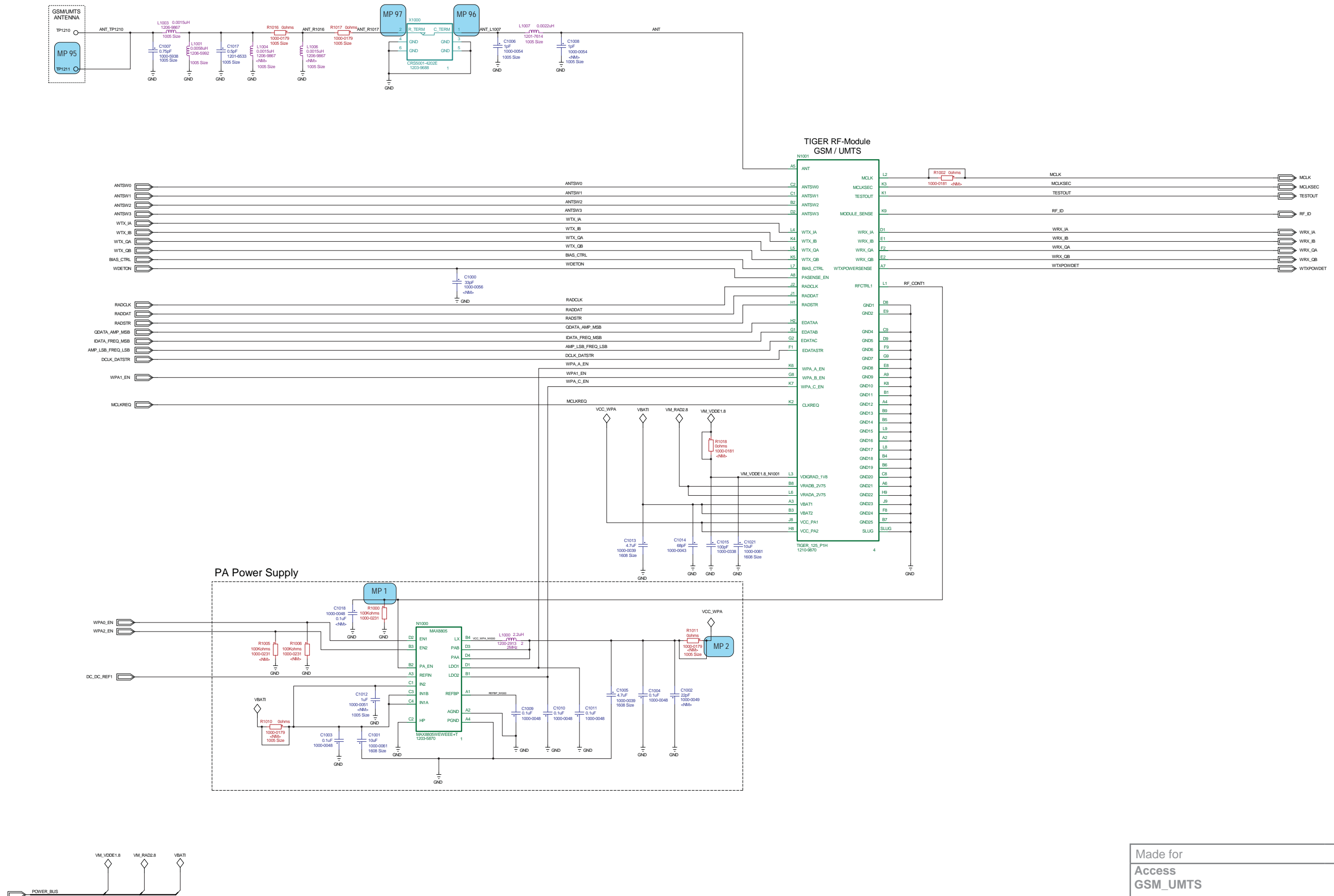
Made for
Access
Access Top

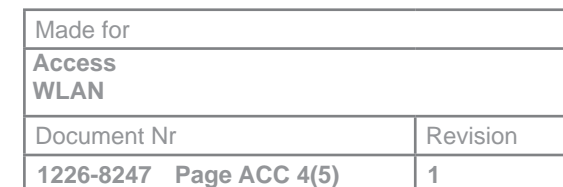
Document Nr
1226-8247 Page ACC 1(5)

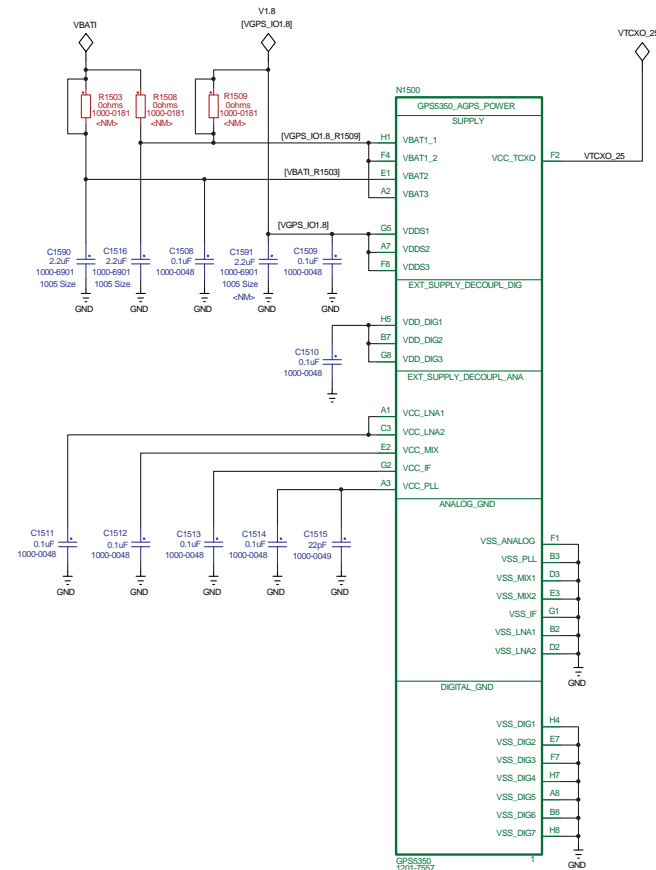
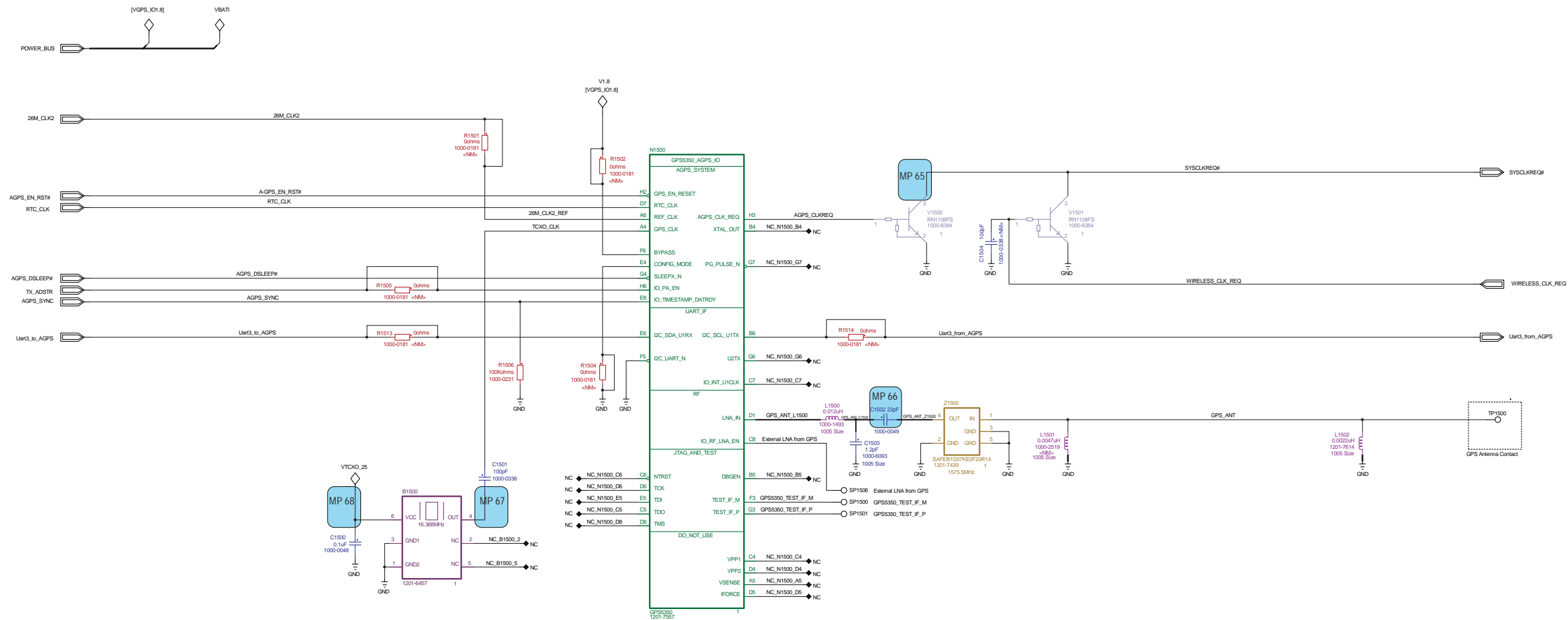
Revision

[illegible]

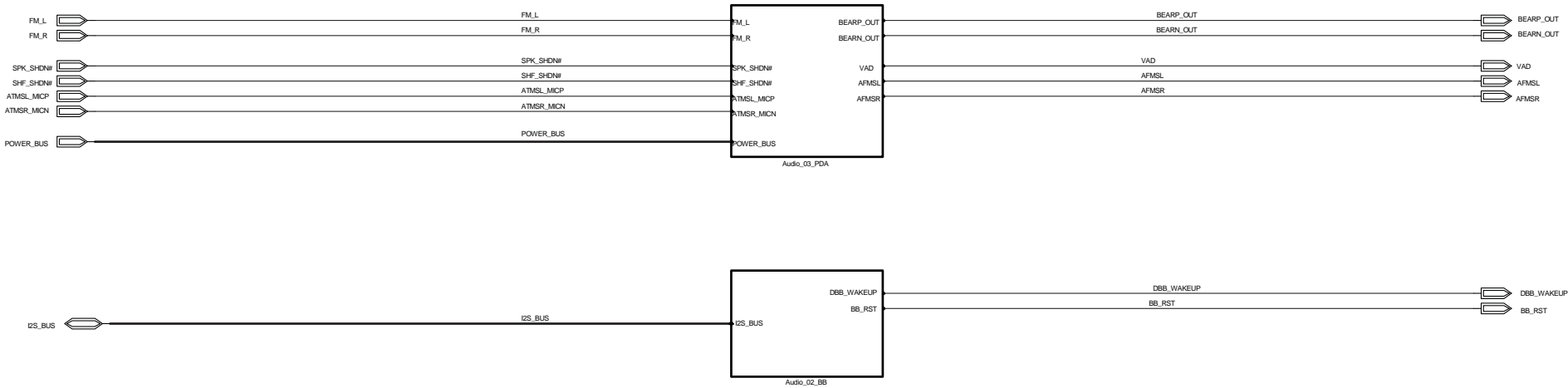




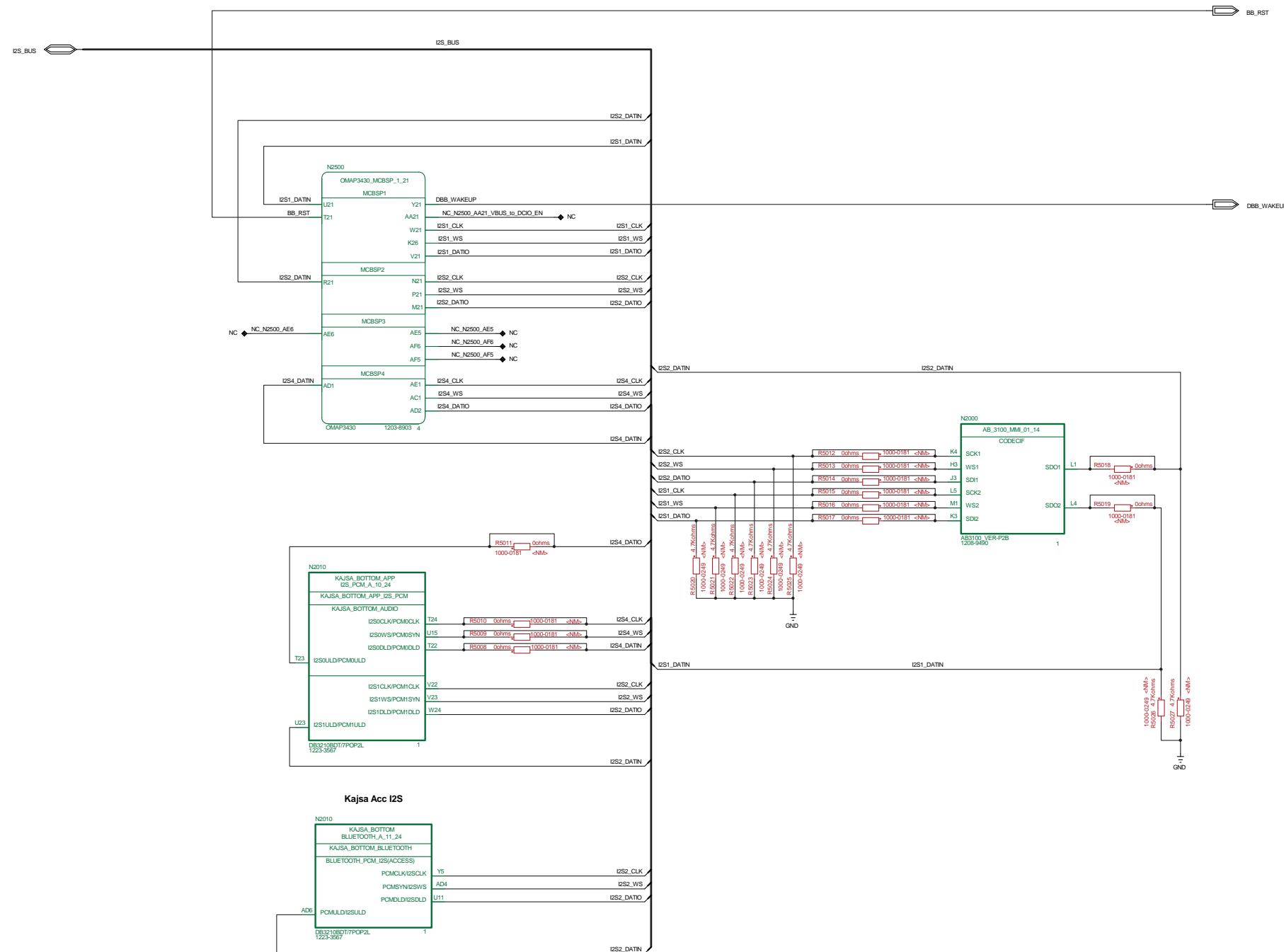




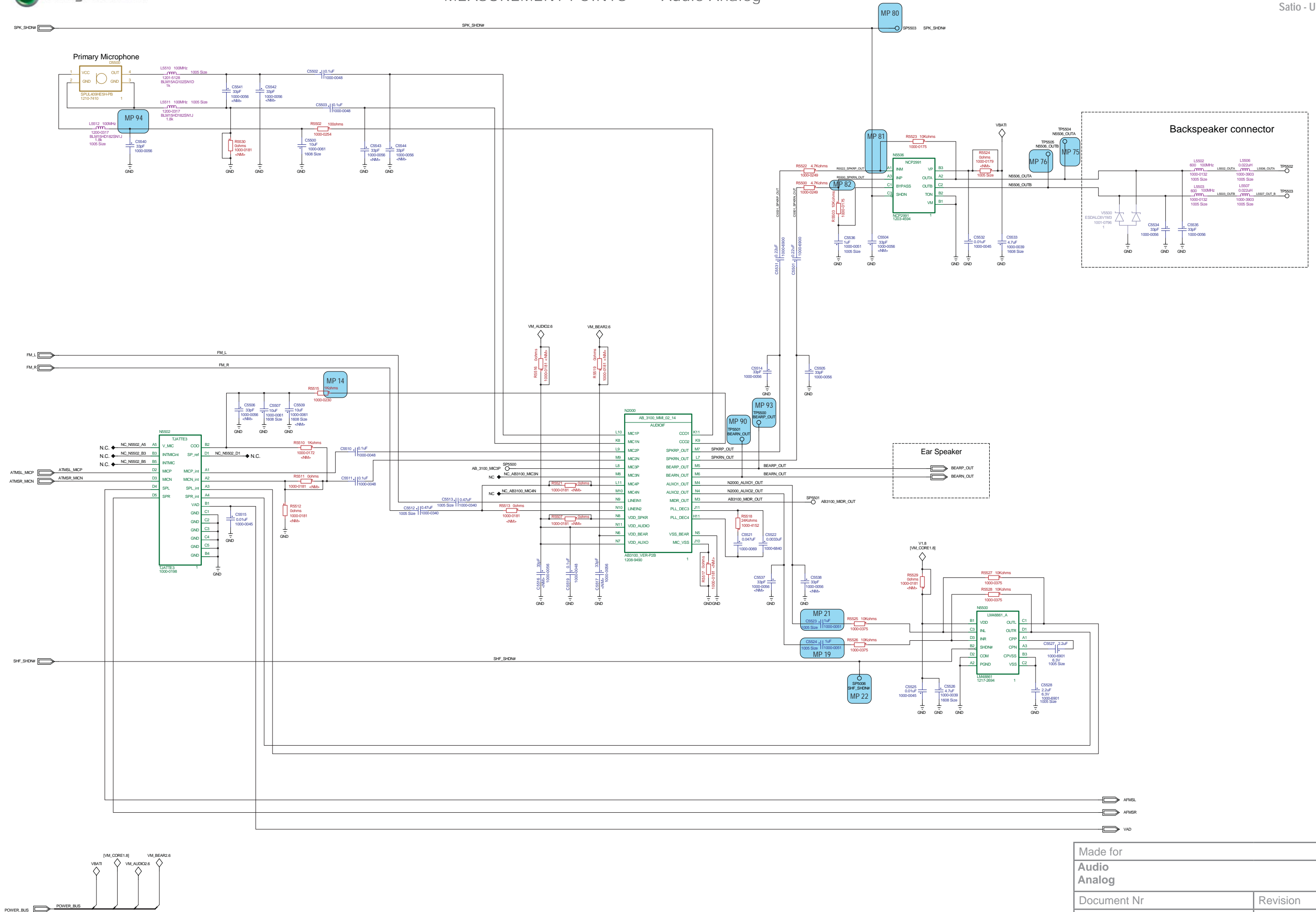
Made for	
Access A-GPS	
Document Nr	Revision
1226-8247 Page ACC 5(5)	1



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Audio		
Audio Top		
Document Nr		Revision
1226-8247	Page Audio 1(3)	1



Made for	
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Document Nr	Revision
1226-8247 Page Audio 2(3)	1

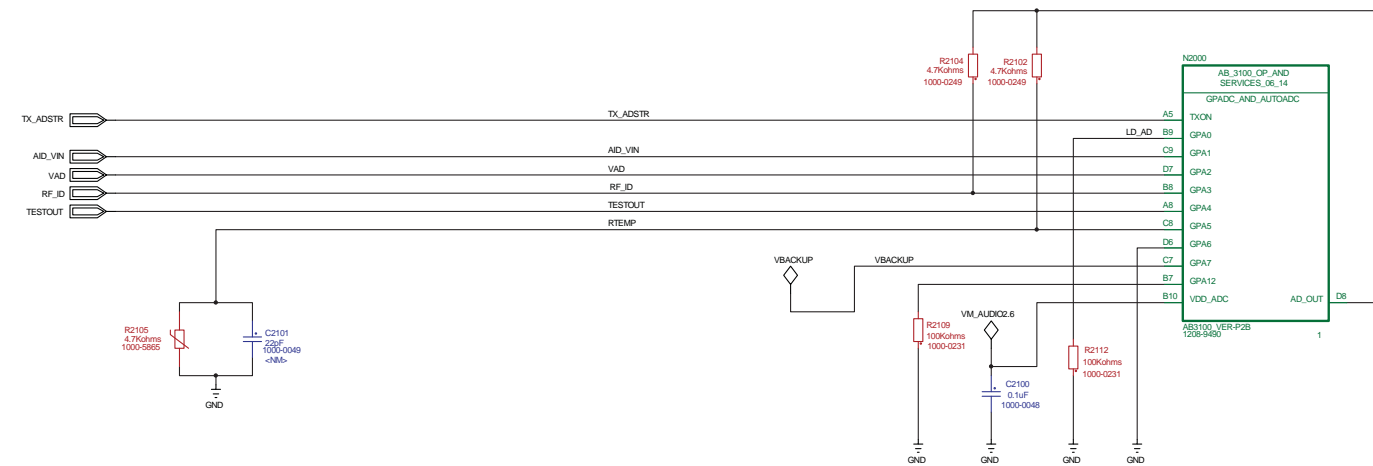
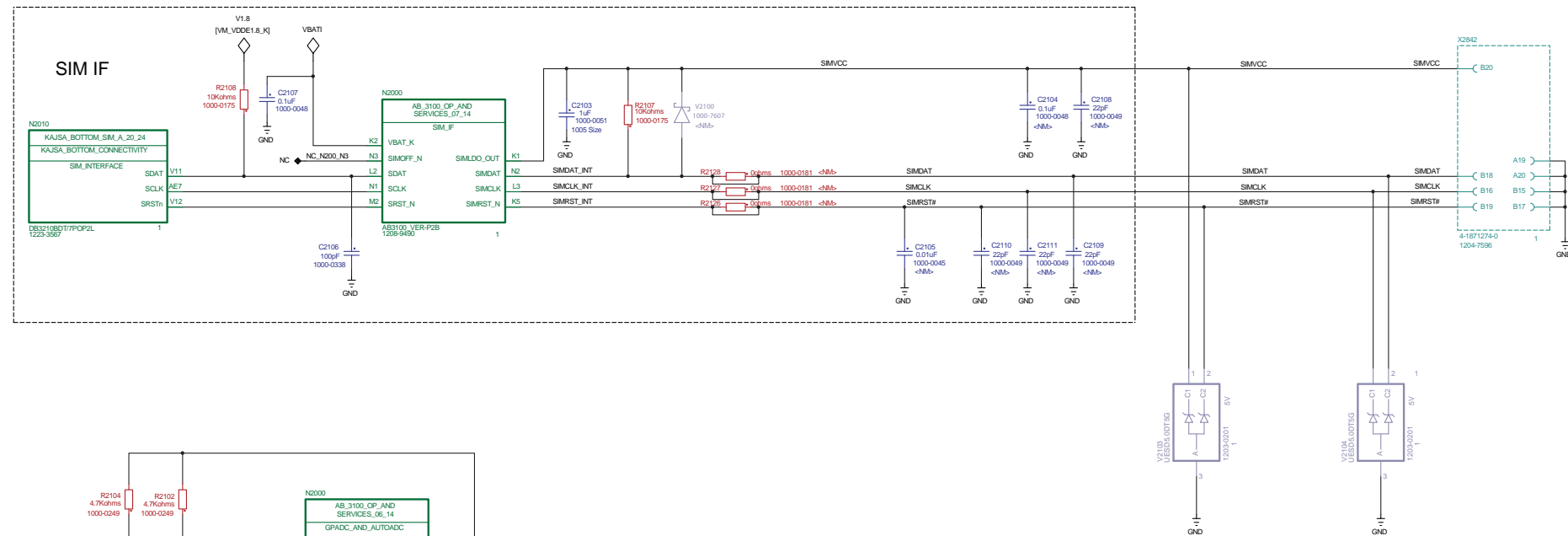
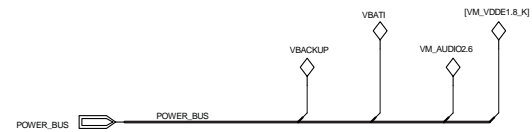


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Document Nr	Revision
1226-8247 Page Audio 3(3)	1

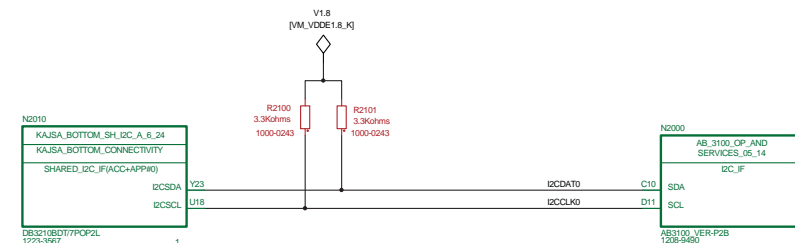
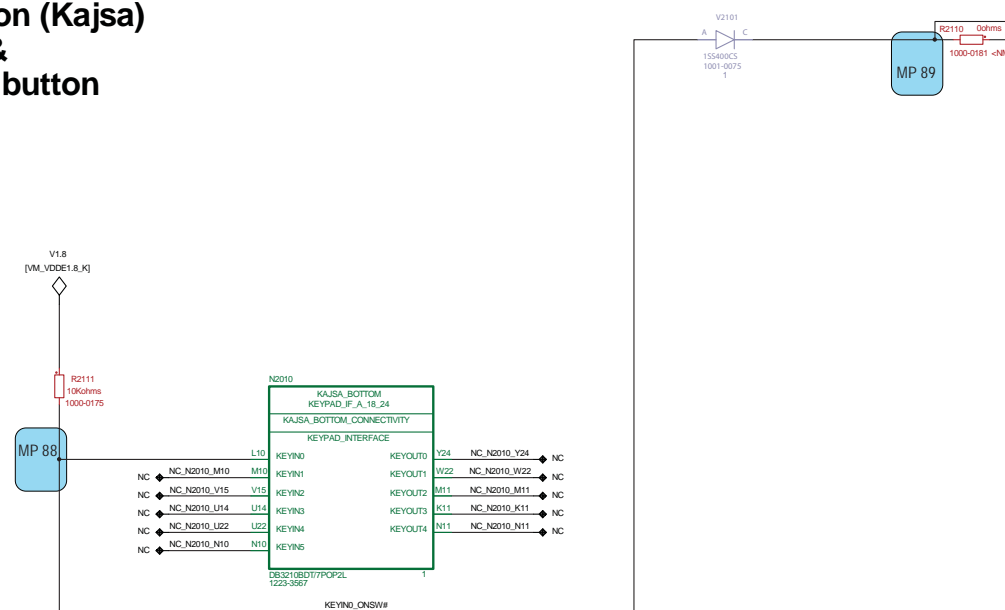


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Baseband Top	
Document Nr	Revision
1226-8247 Page BB 1(5)	1

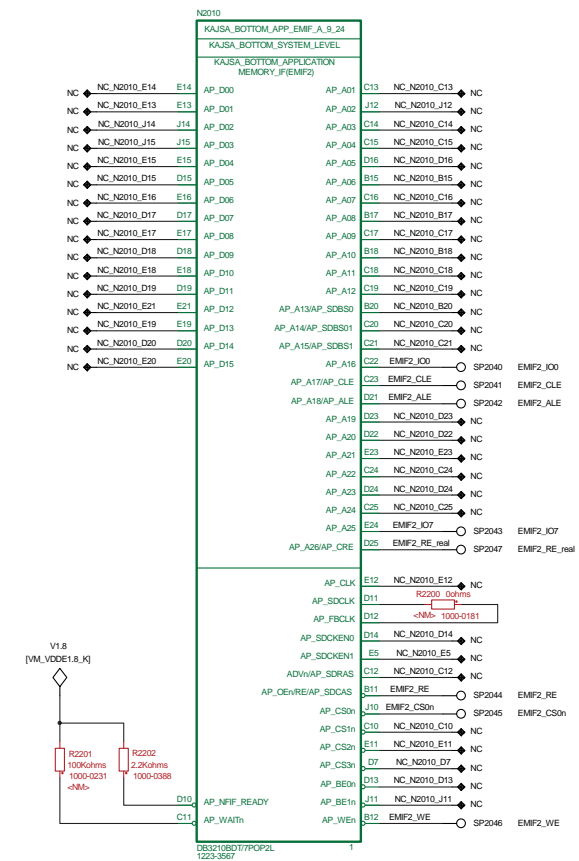
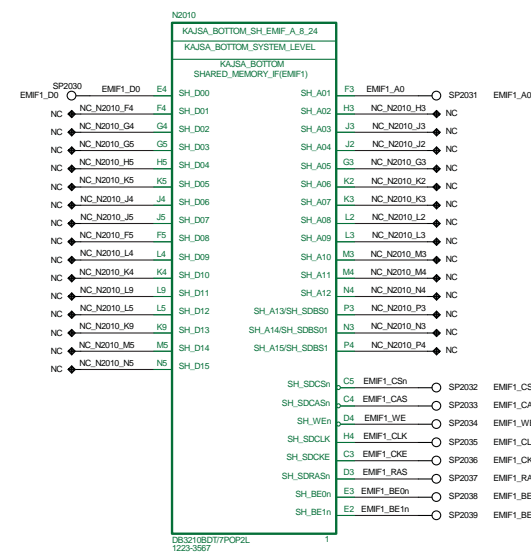
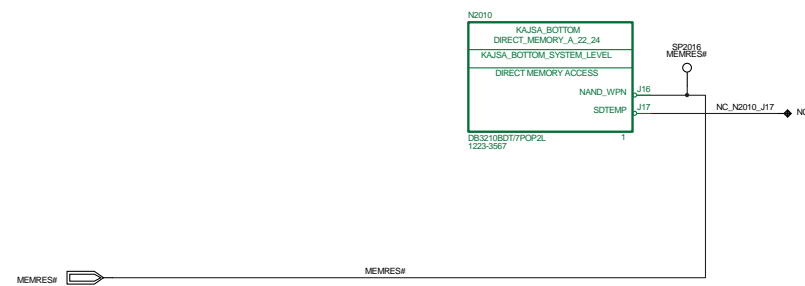
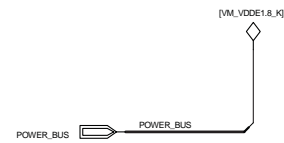


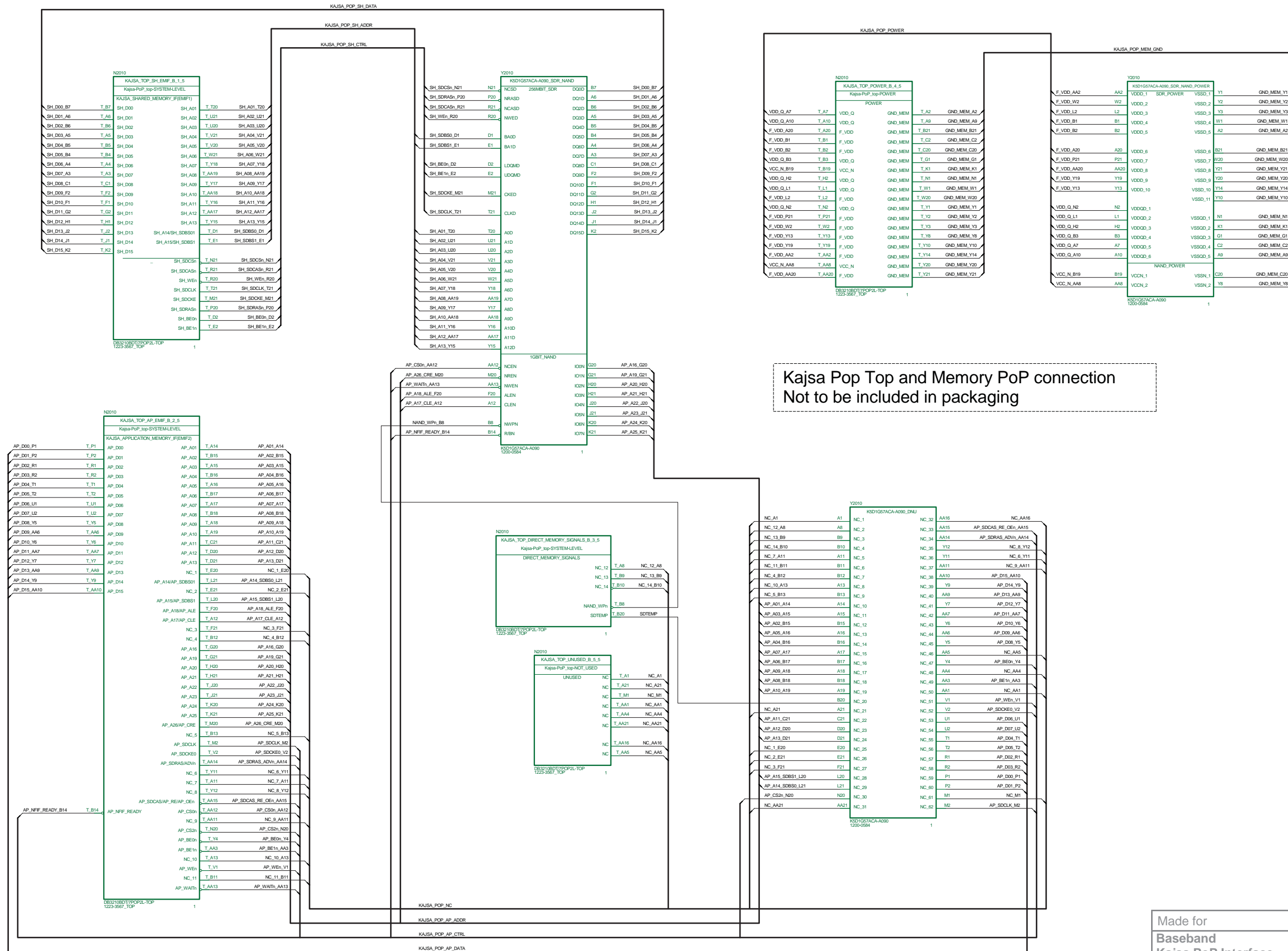


Boot button (Kajsa) & On/Off button

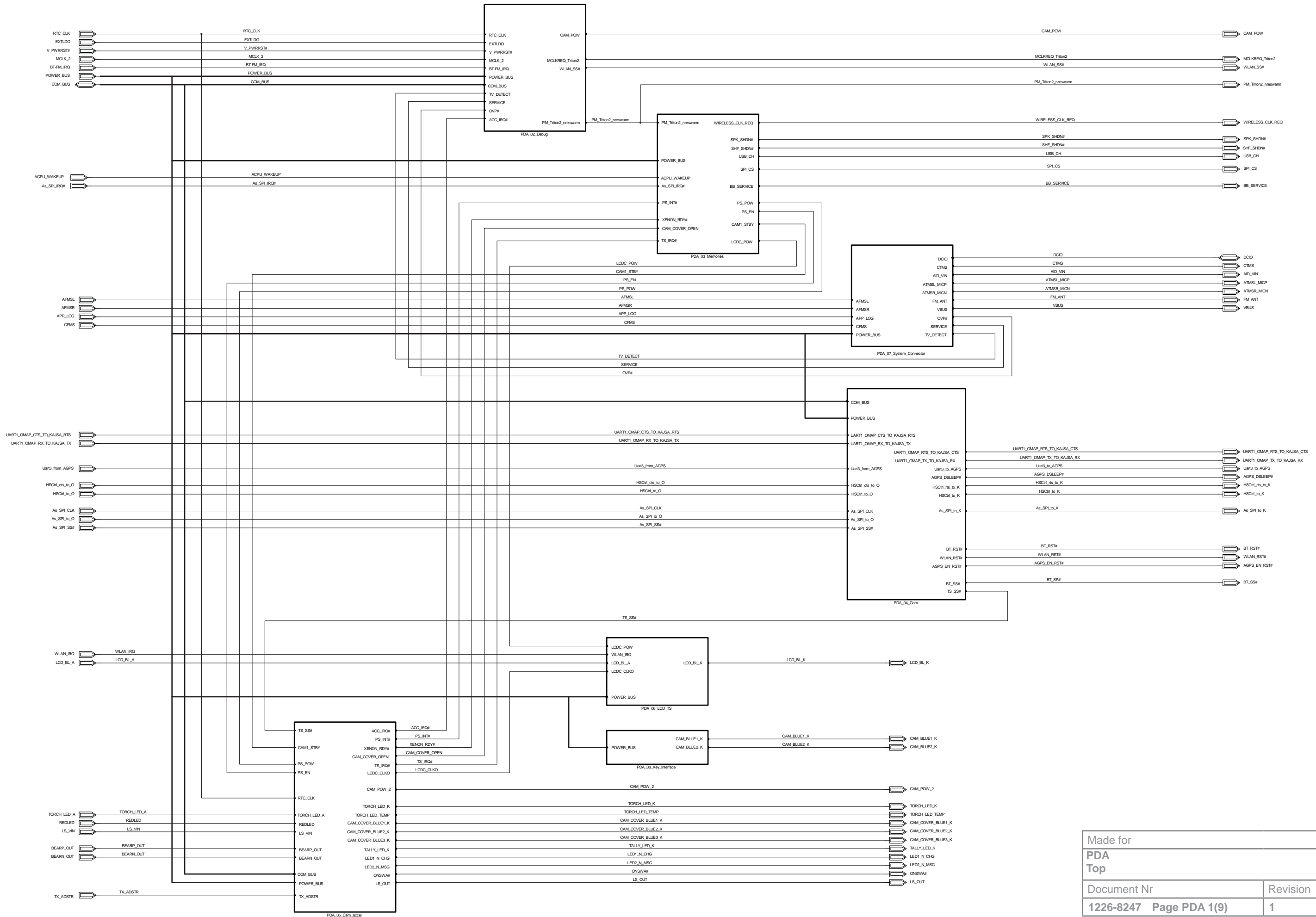


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Baseband	
UARTS_SIM	
Document Nr	Revision
1226-8247 Page BB 3(5)	1

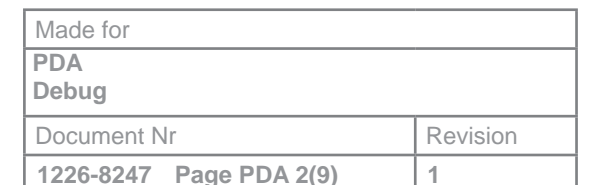


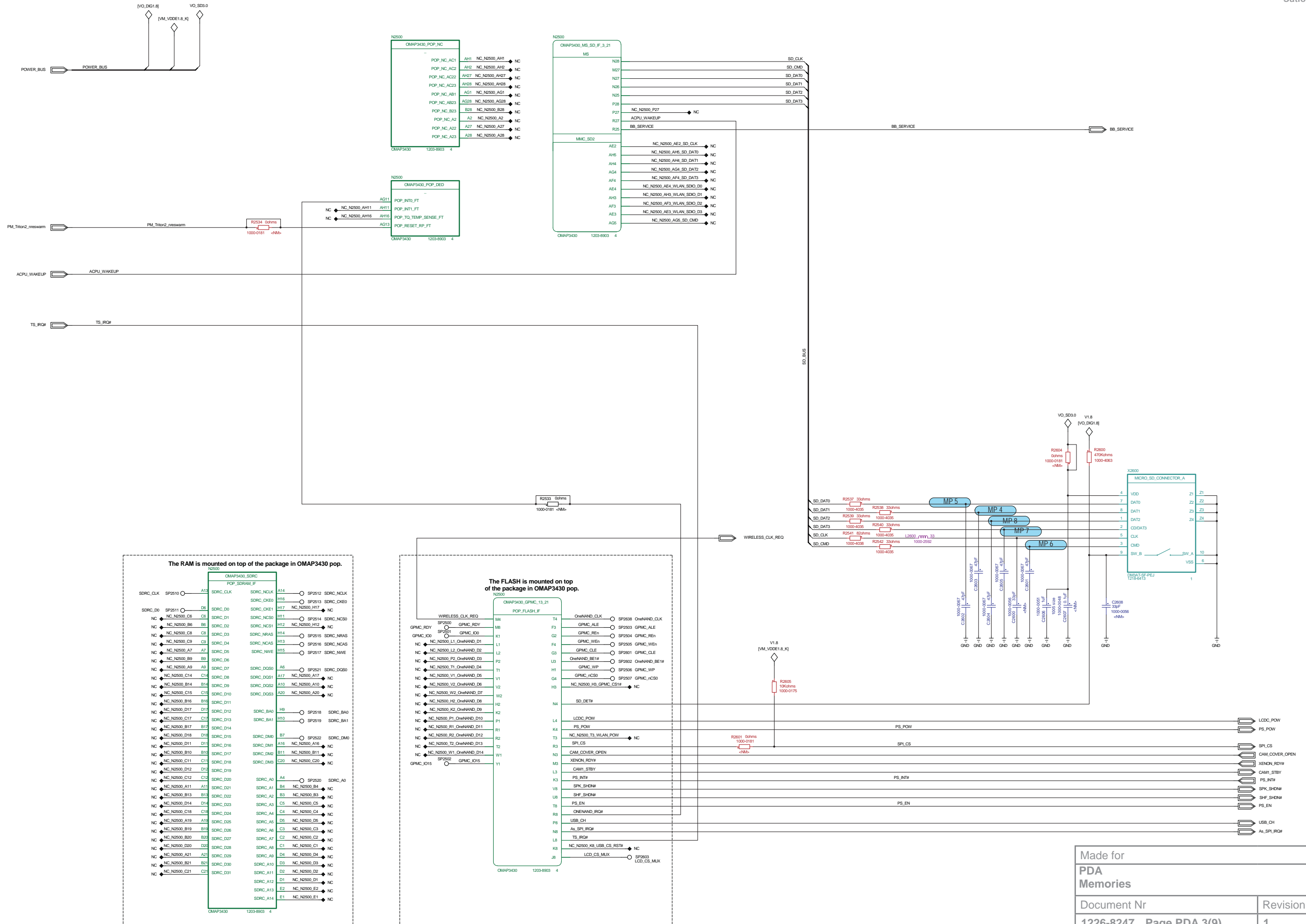


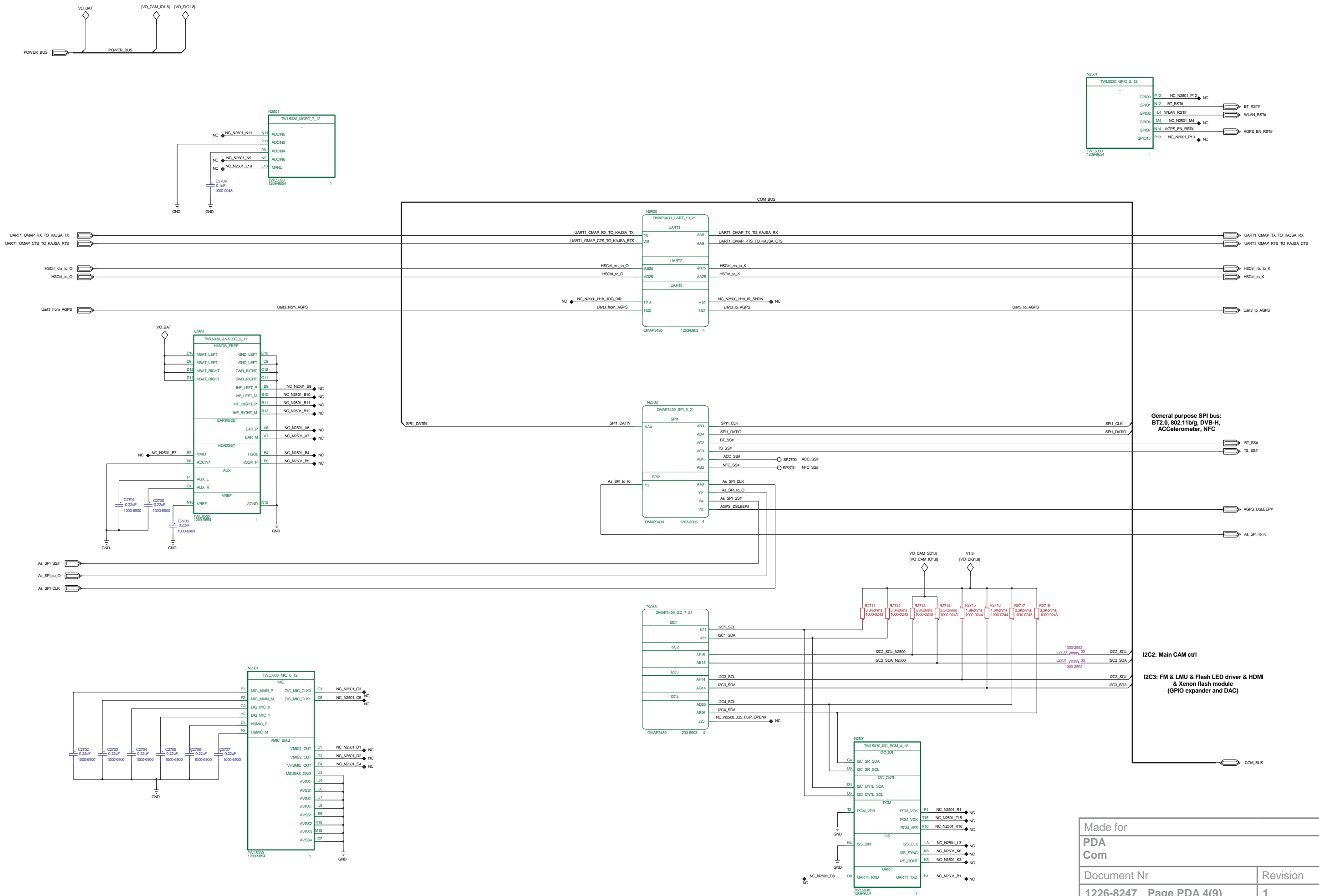
Kajsa Pop Top and Memory PoP connection
Not to be included in packaging

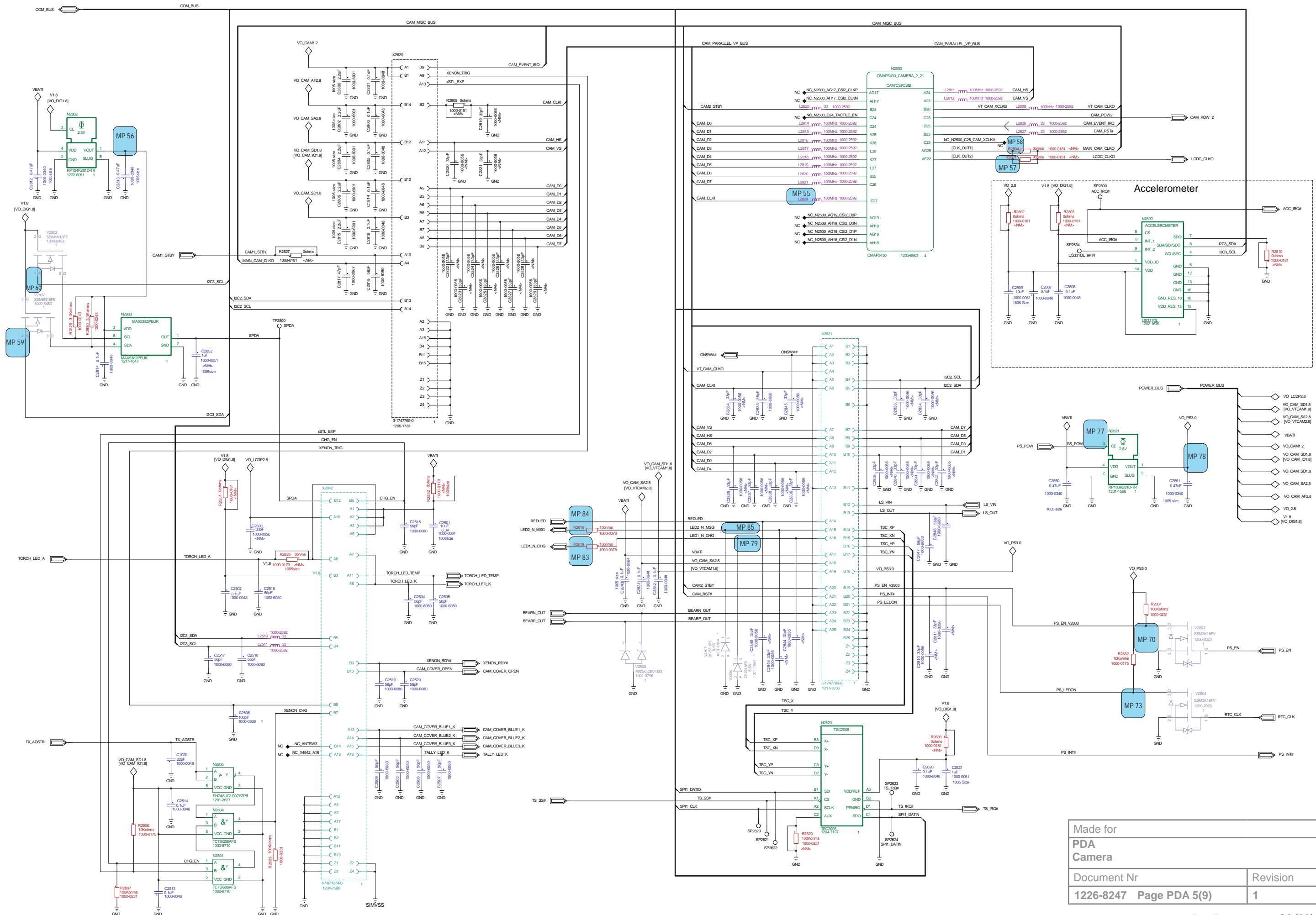


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Document Nr	Revision
1226-8247 Page PDA 1(9)	1









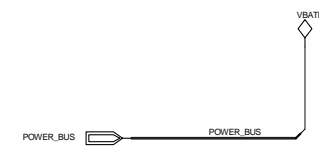
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Document Nr	Revision
1226-8247 Page PDA 5(9)	1

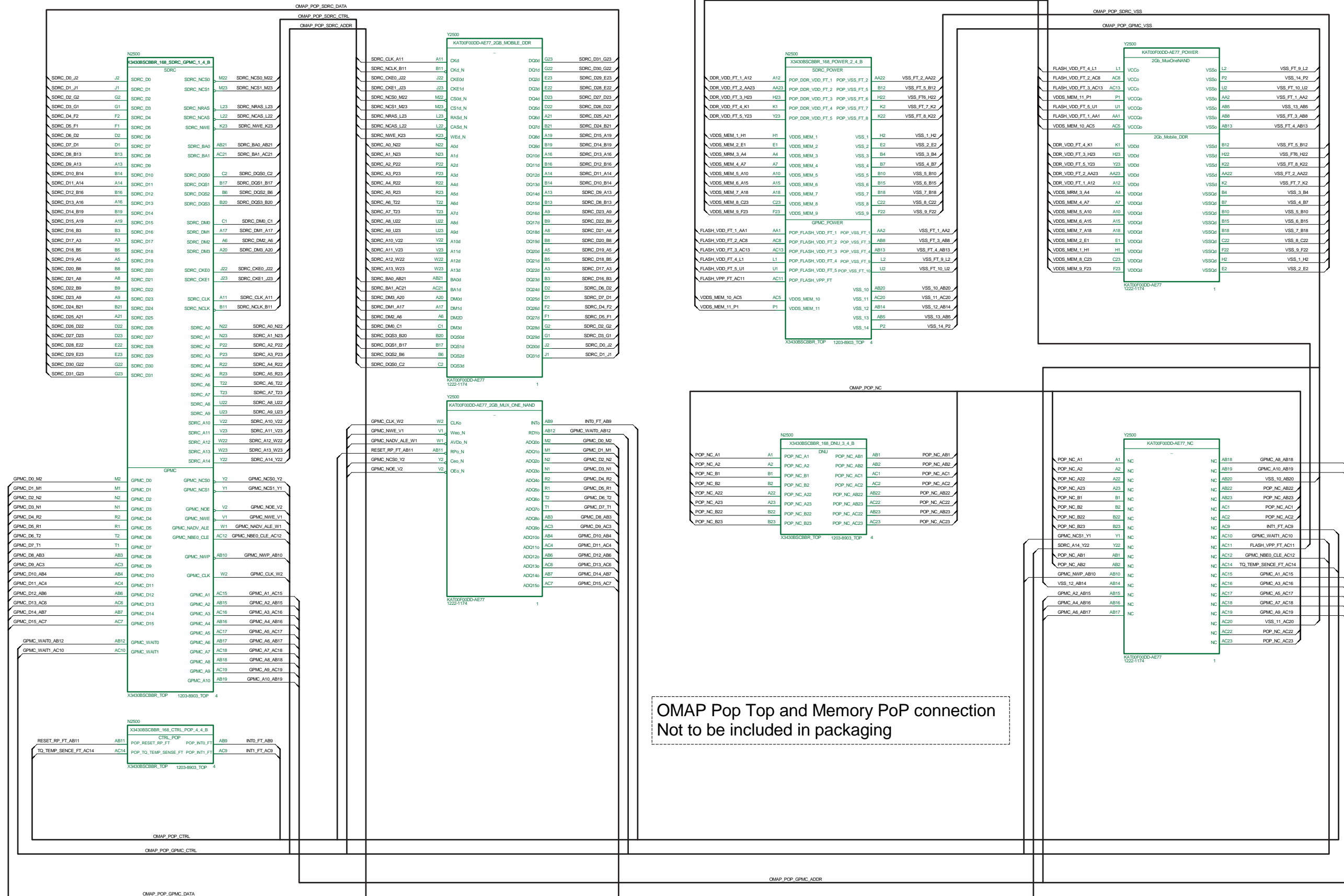


Made for	
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Document Nr	Revision
1226-8247 Page PDA 6(9)	1

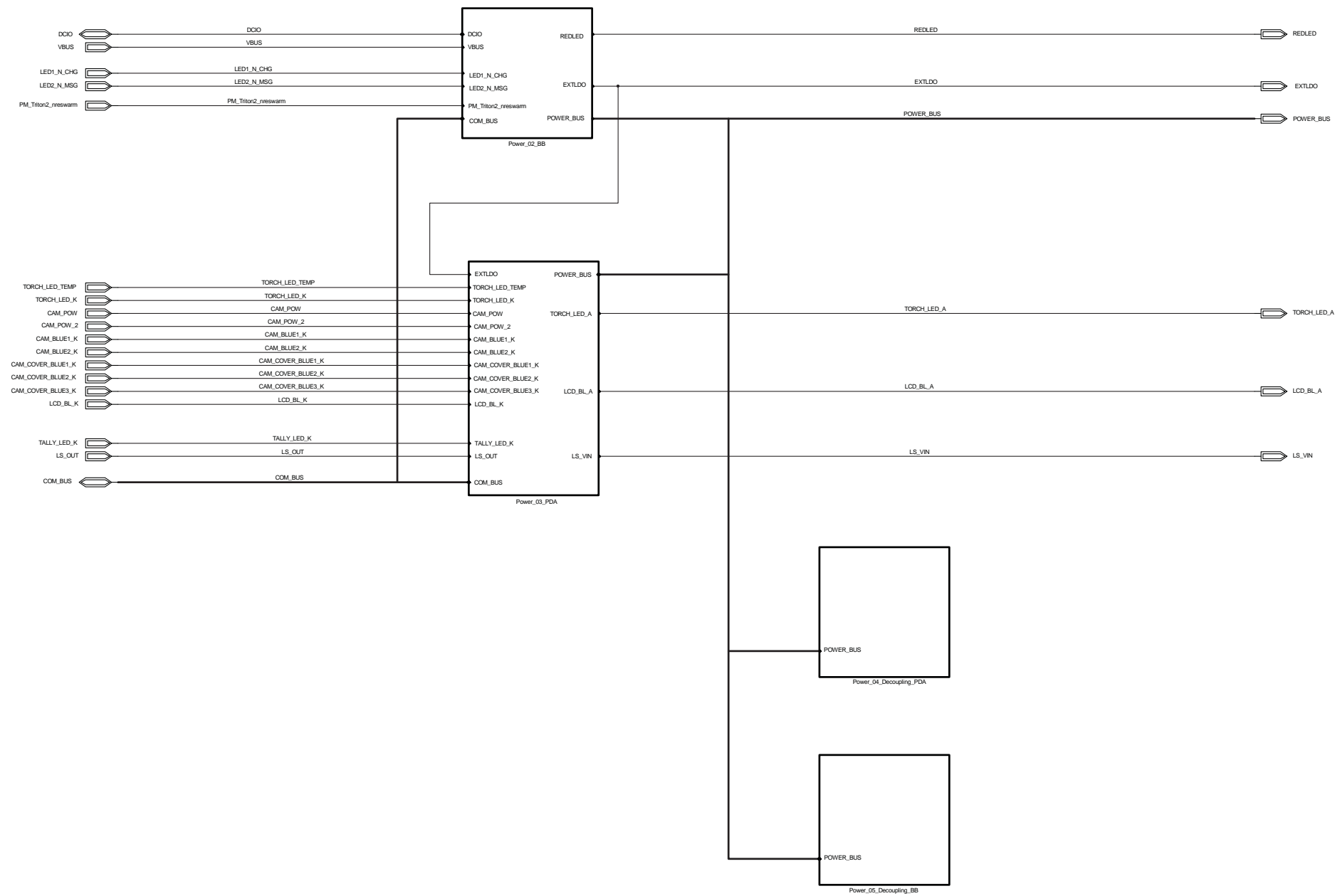


Made for	
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Document Nr	Revision
1226-8247 Page PDA 7(9)	1

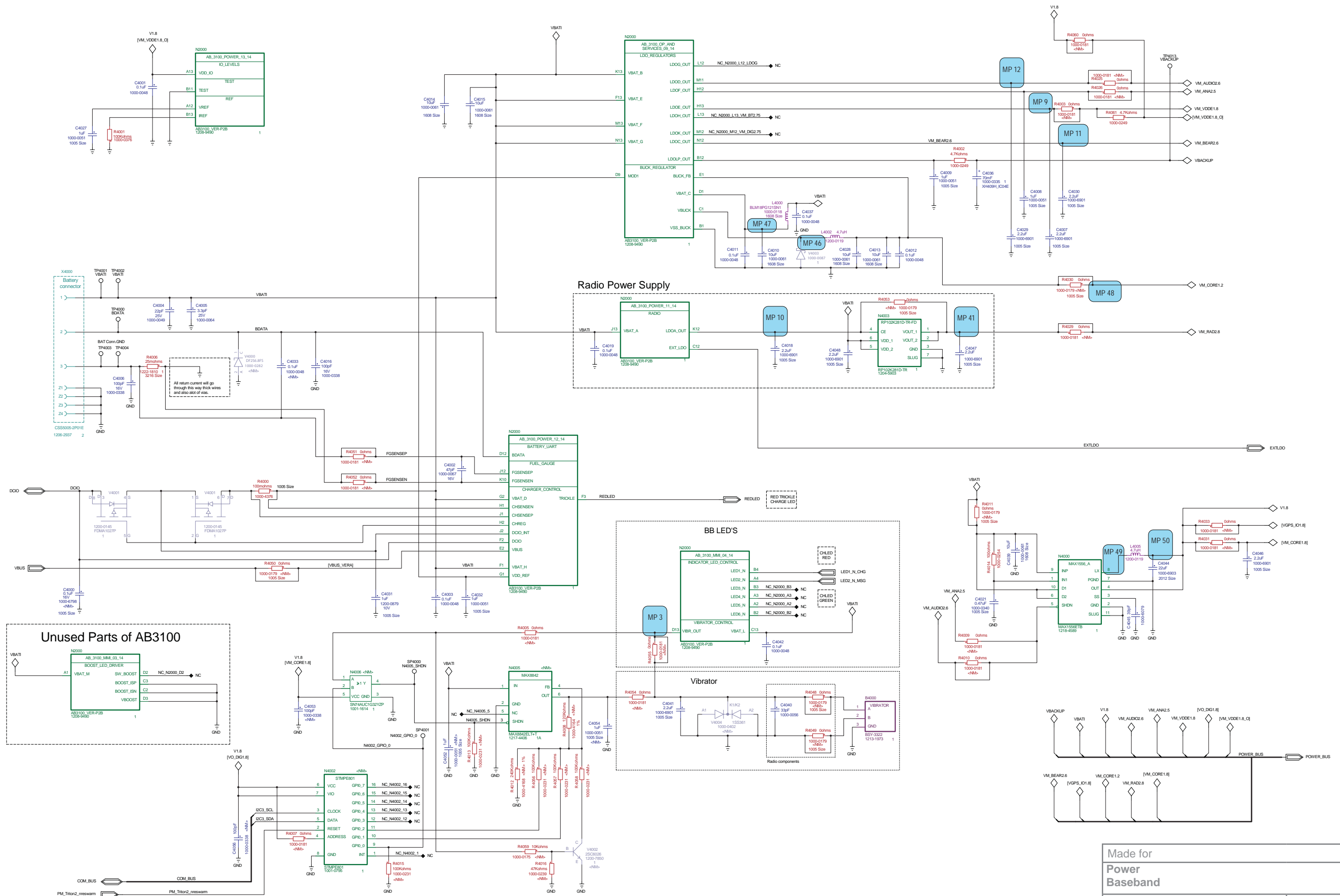




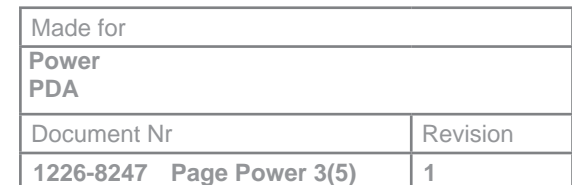
Made for	
PDA OMAP PoP Interface	
Document Nr	Revision
1226-8247 Page PDA 9(9)	1

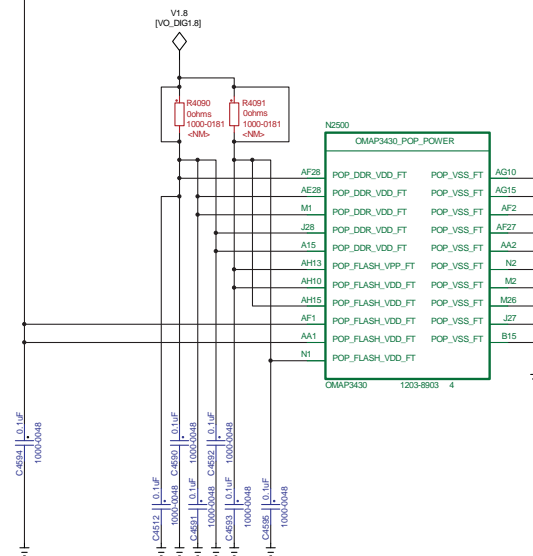
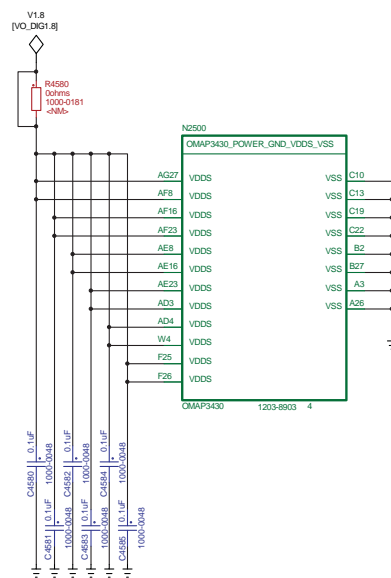
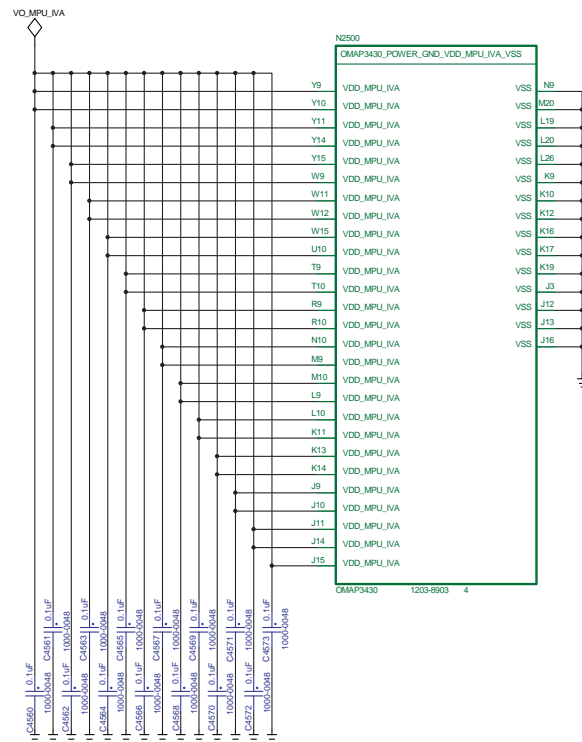
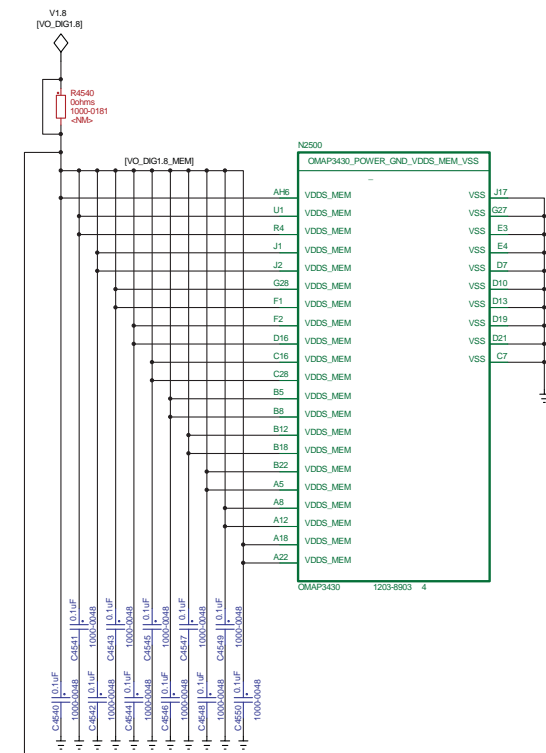
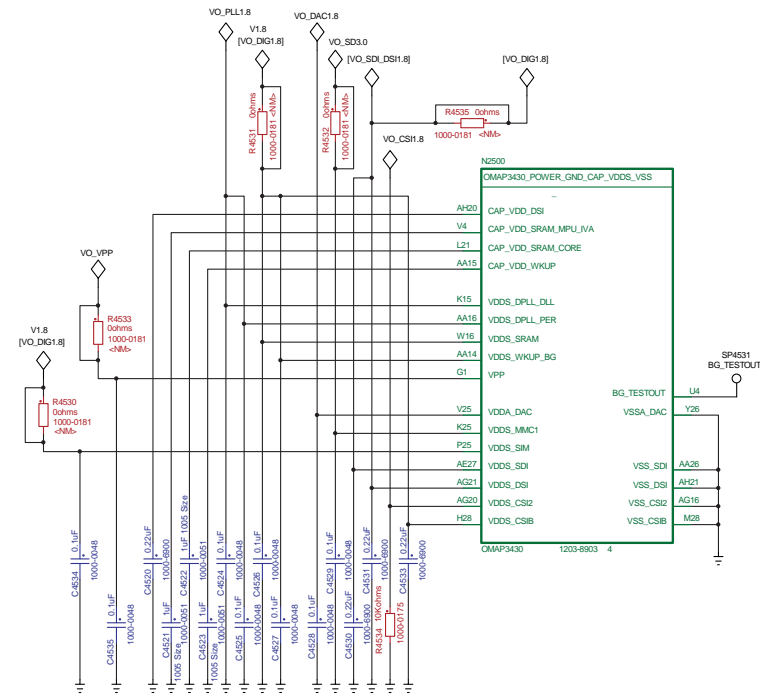
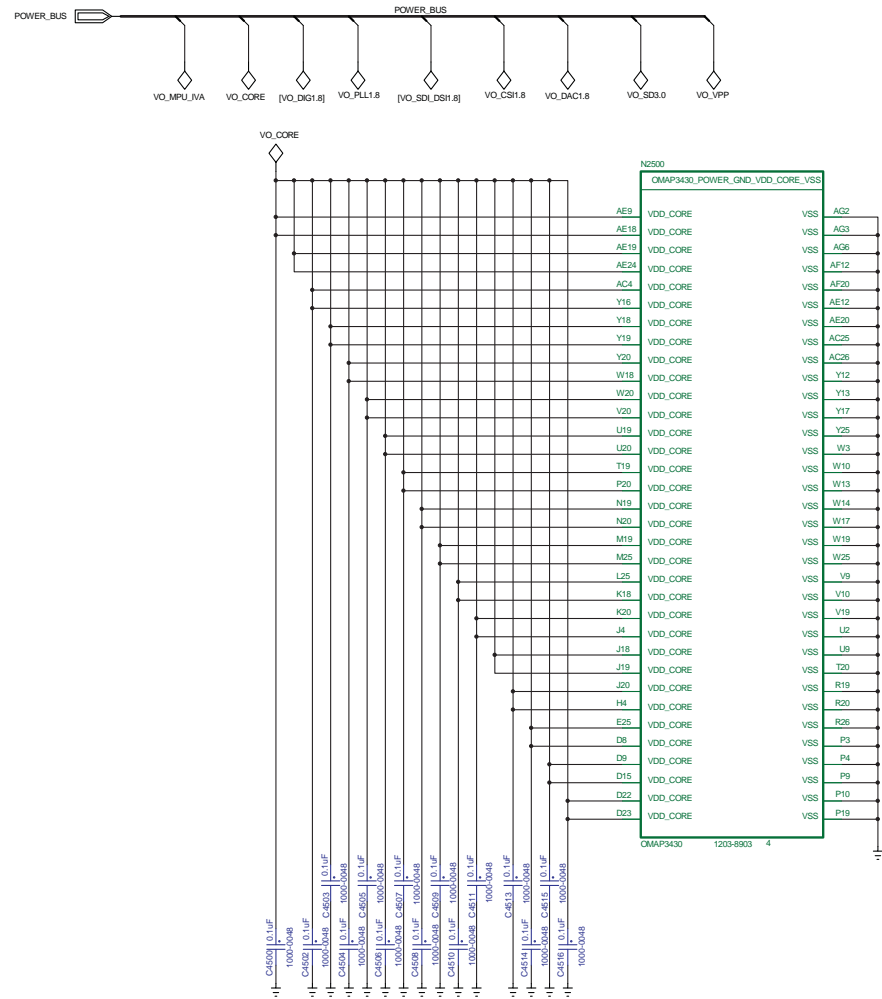


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Power Top		
Document Nr		Revision
1226-8247 Page Power 1(5)		1

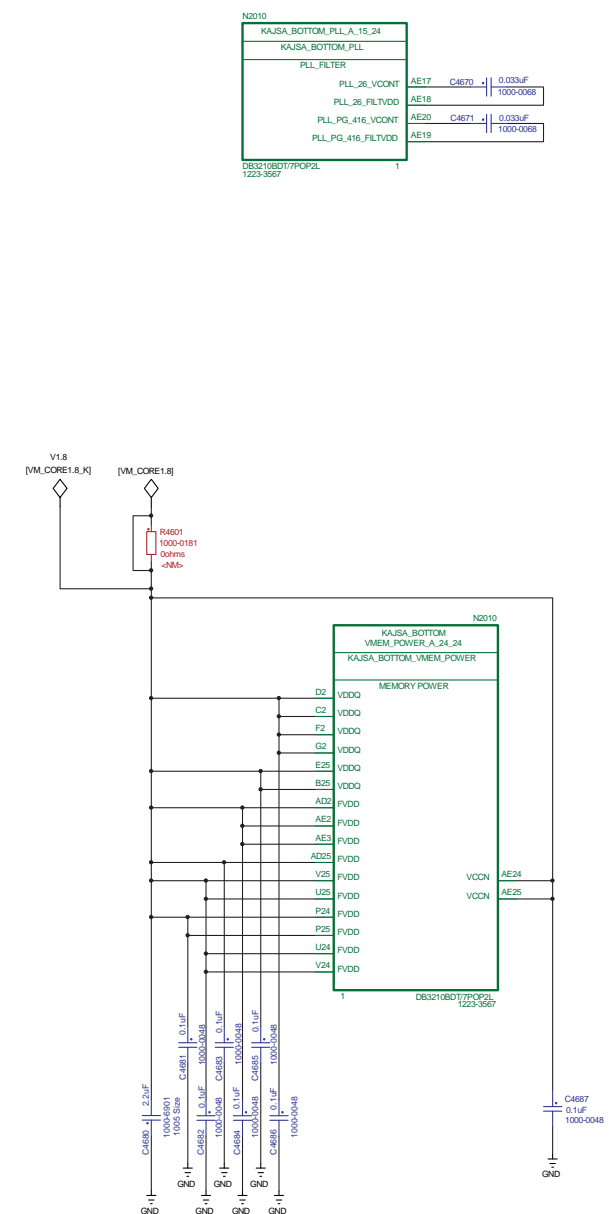
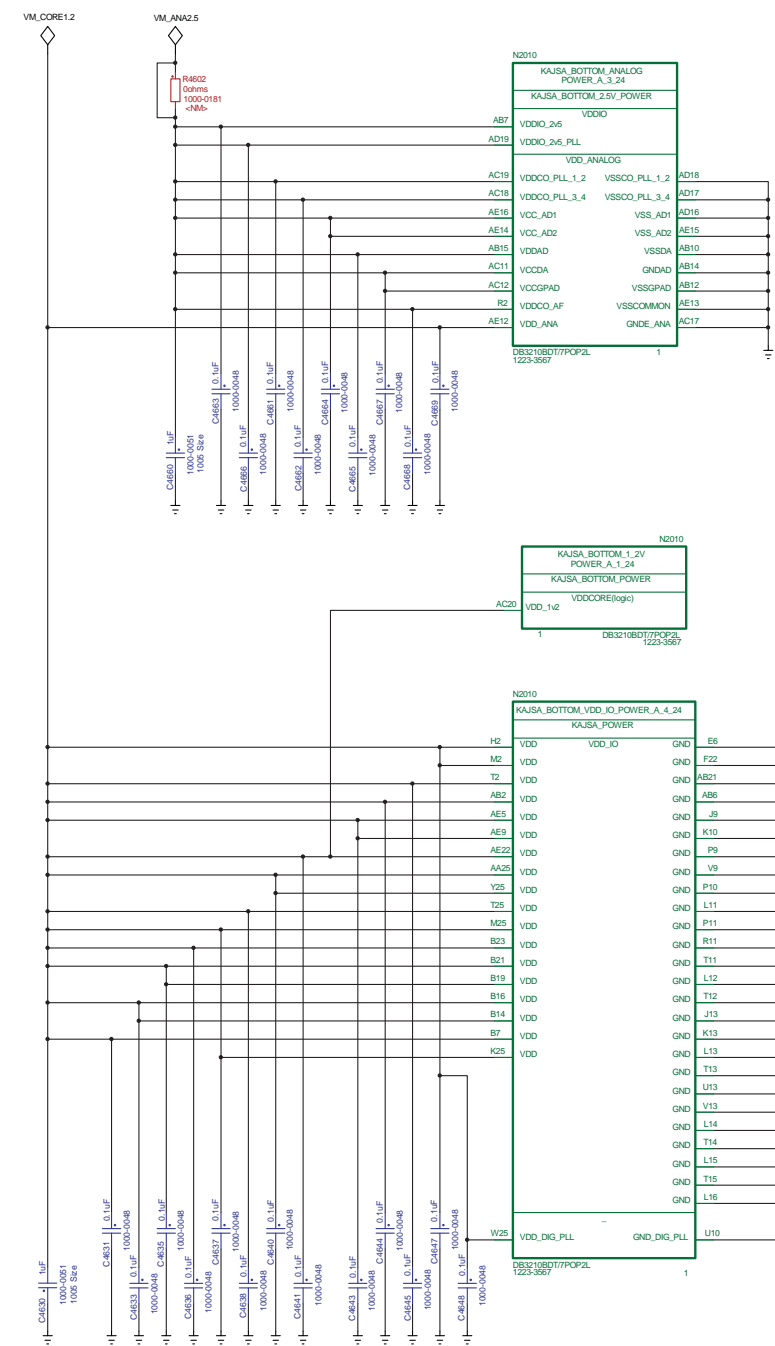
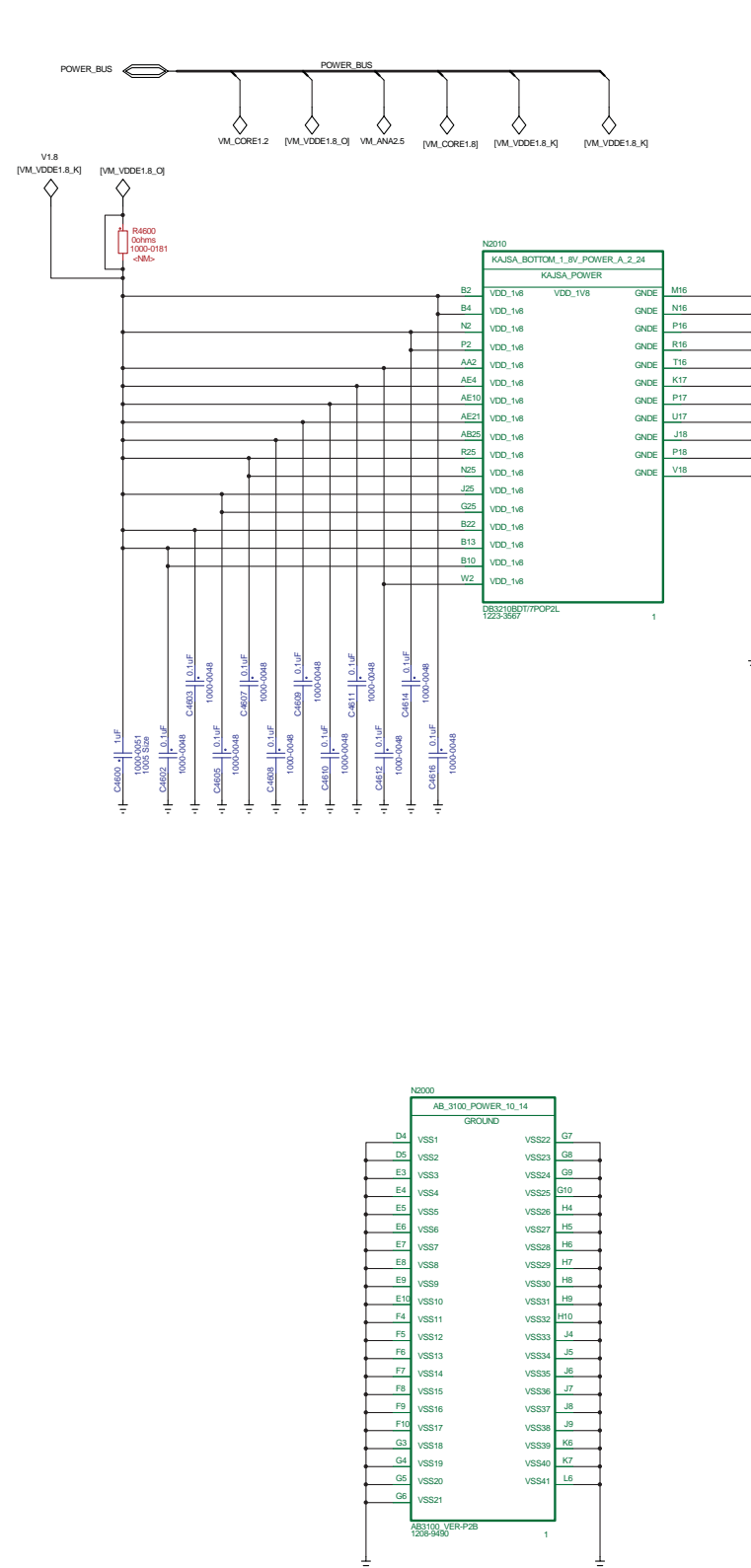


Made for	
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Document Nr	Revision
1226-8247 Page Power 2(5)	1



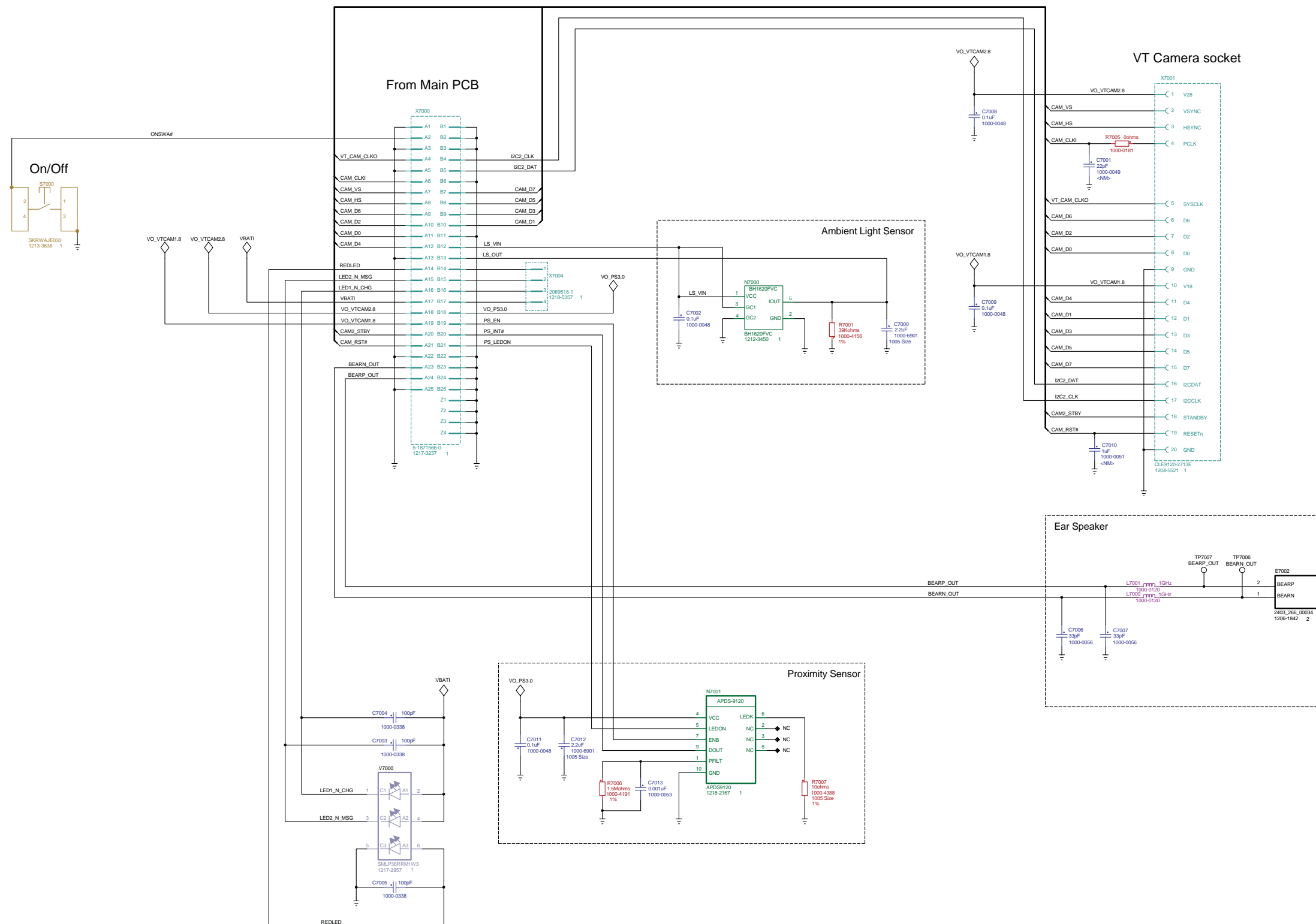


Made for	
Power Decoupling PDA	
Document Nr	Revision
1226-8247 Page PDA 4(5)	1

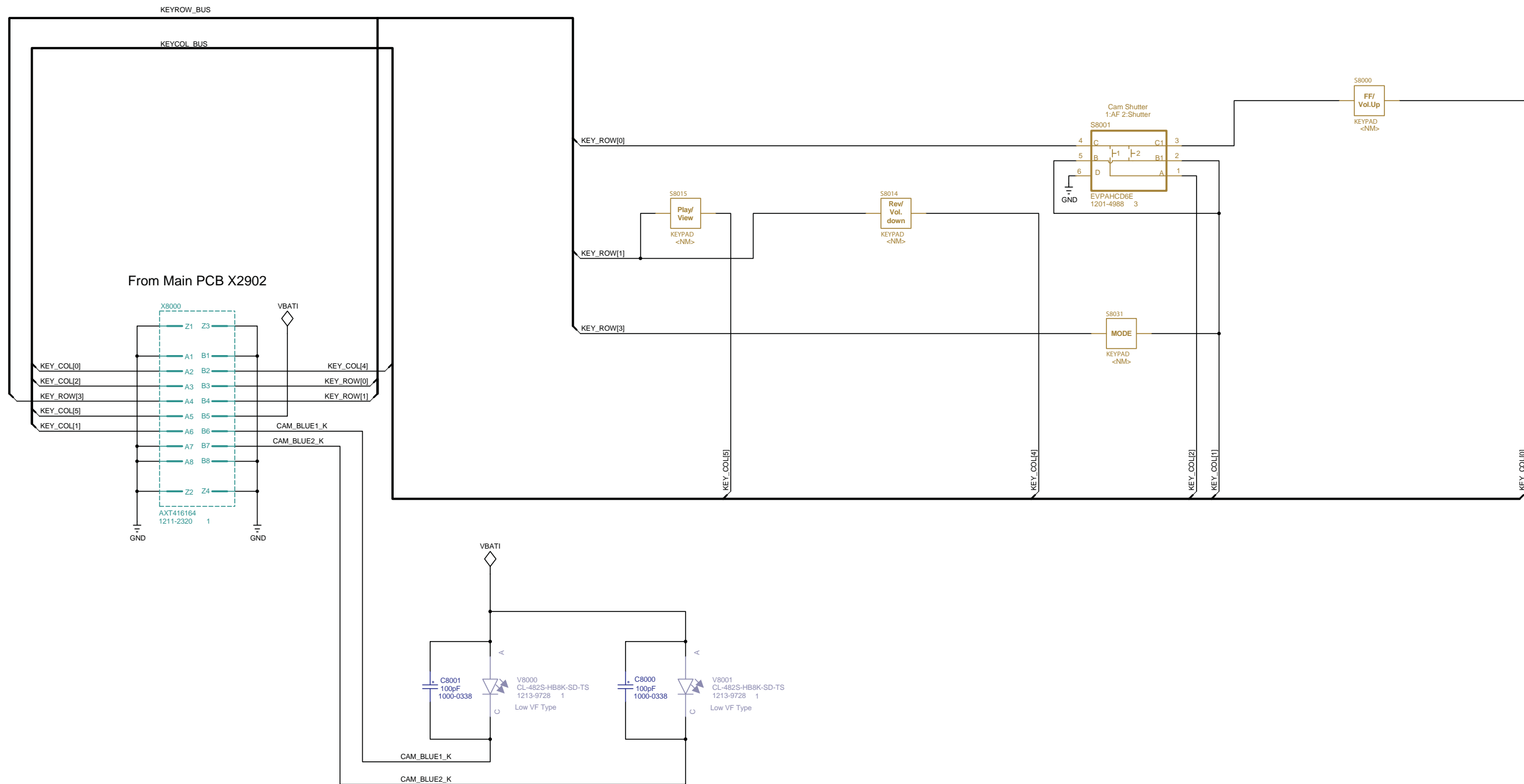


MEASUREMENT POINTS

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Power Decoupling	
Document Nr	Revision
1226-8247 Page PDA 5(5)	1



Made for FPC Receiver	
Document Nr 1215-2816	Revision 1

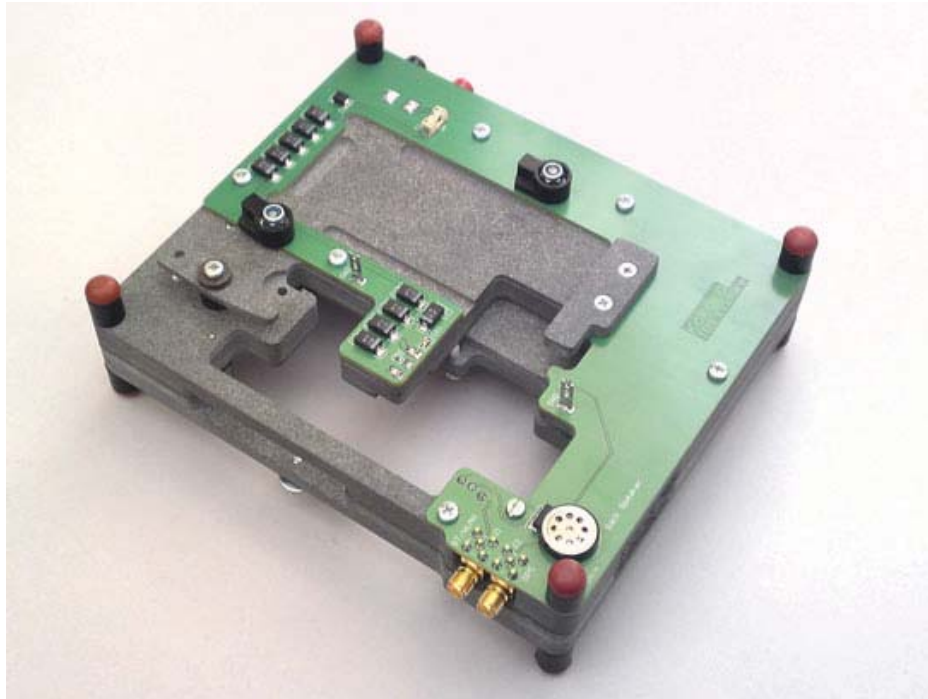


Made for FPC Side Key	
Document Nr 1215-2813	Revision 1

TROUBLESHOOTING FIXTURE SETUP INSTRUCTIONS

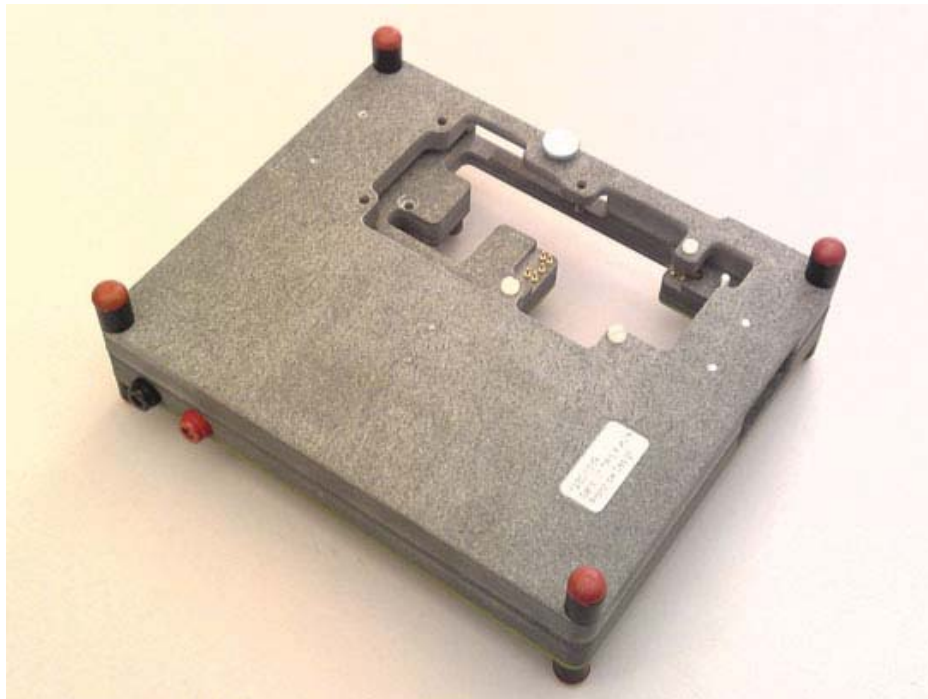
Top-part overview of the TRS Fixture, see picture 1.

Picture 1



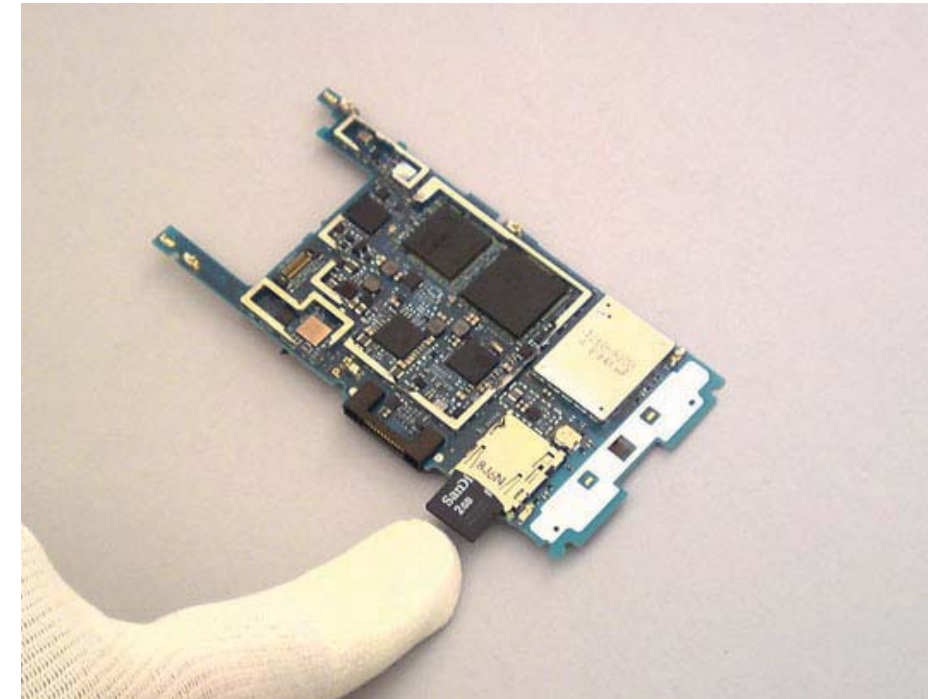
Bottom-part overview of the TRS Fixture, see picture 2.

Picture 2



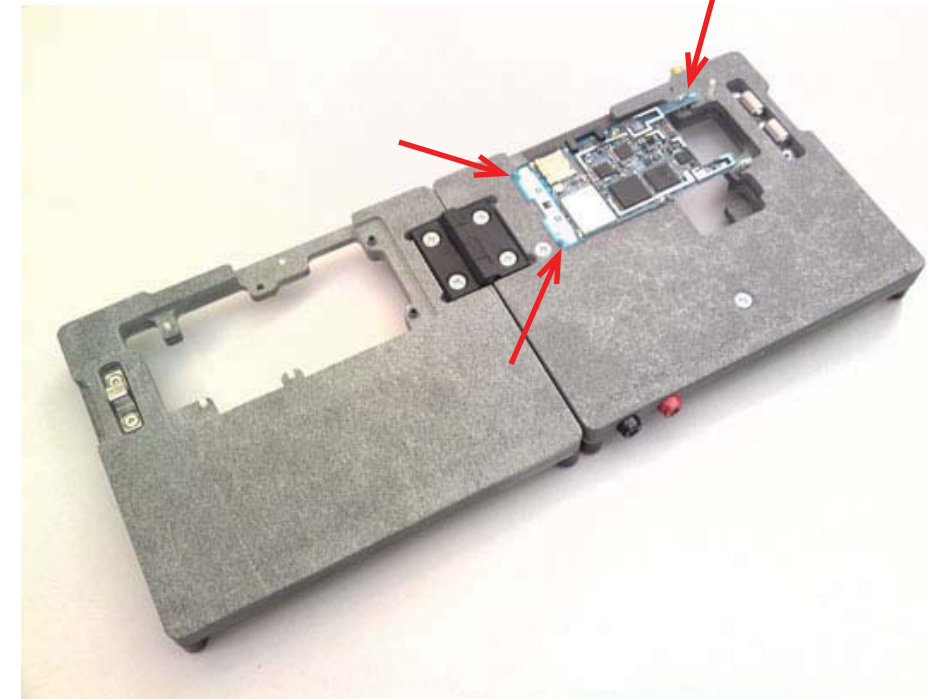
Insert Memory Card into X2600 Memory Card Holder according to picture 3.

Picture 3



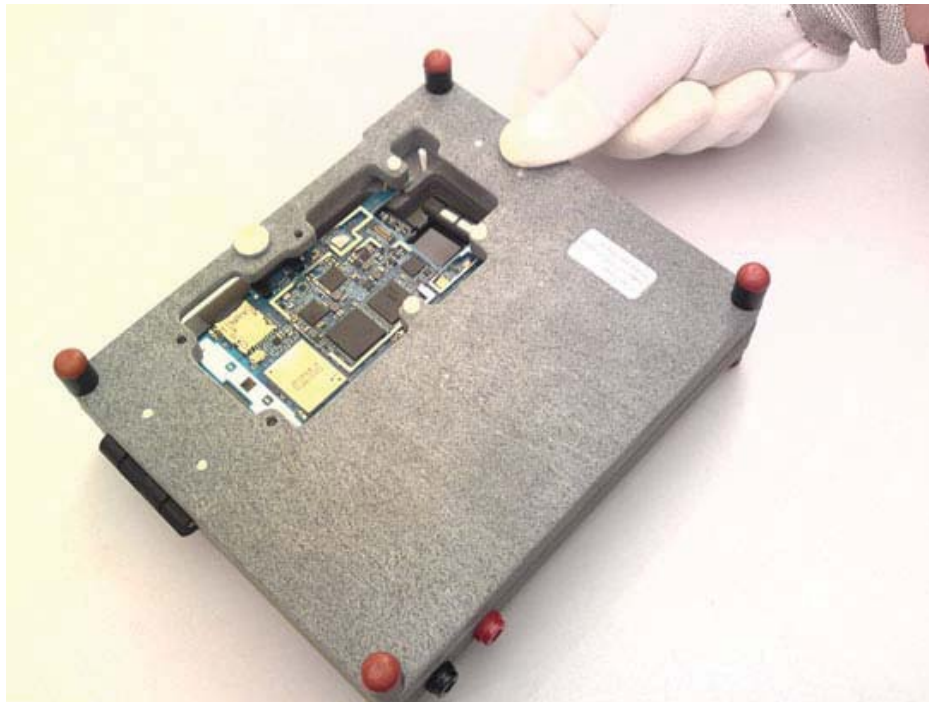
Open the TRS Fixture and place the PBA by using the Guiding Pins according to picture 4.

Picture 4



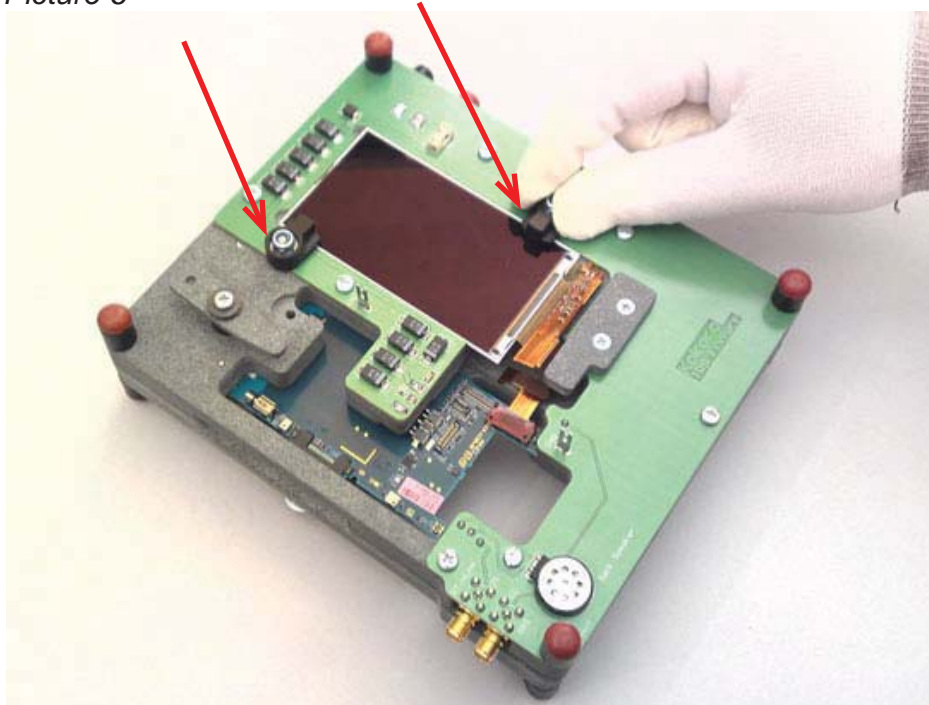
Close the TRS Fixture according to picture 5.

Picture 5



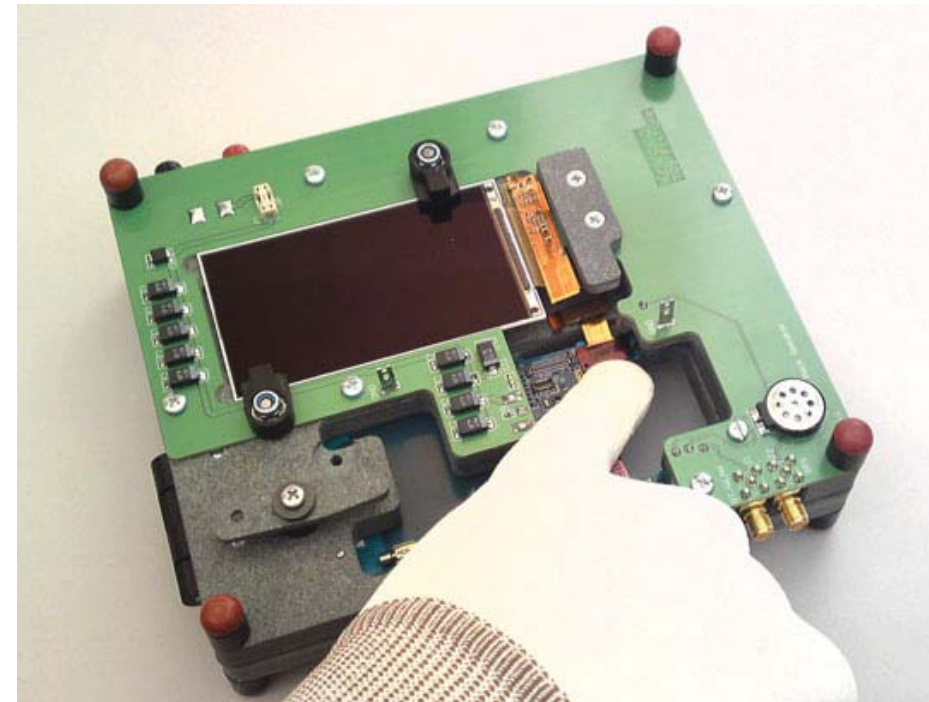
Place the Display 3.47" TFT on the TRS Fixture and secure it by using the locking screws according to picture 6.

Picture 6



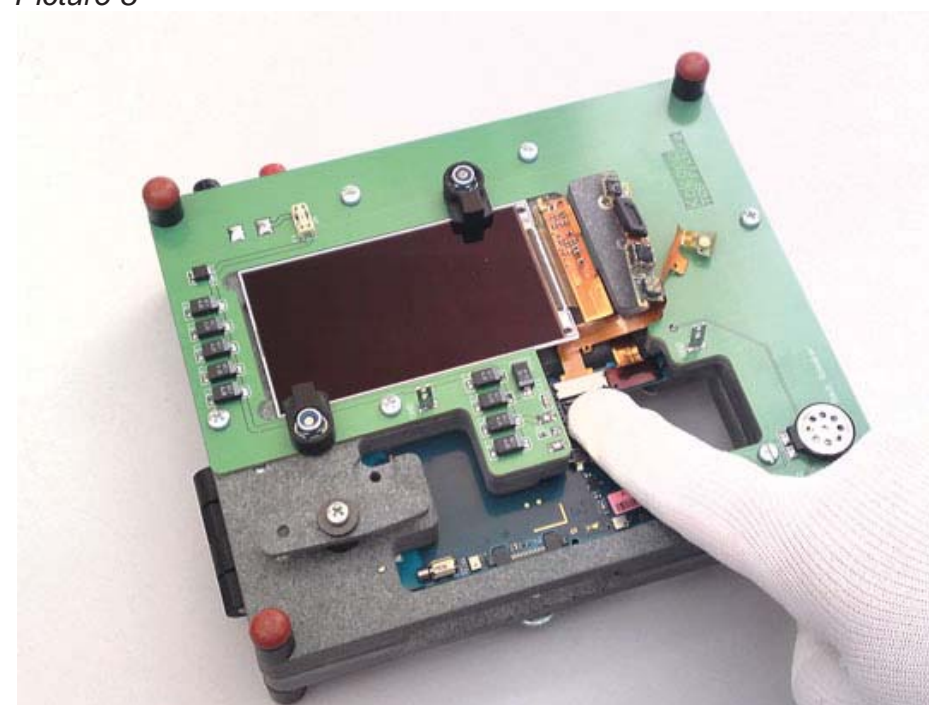
Connect the Display 3.47" TFT to the X2900 BtB connector on the PBA according to picture 7.

Picture 7



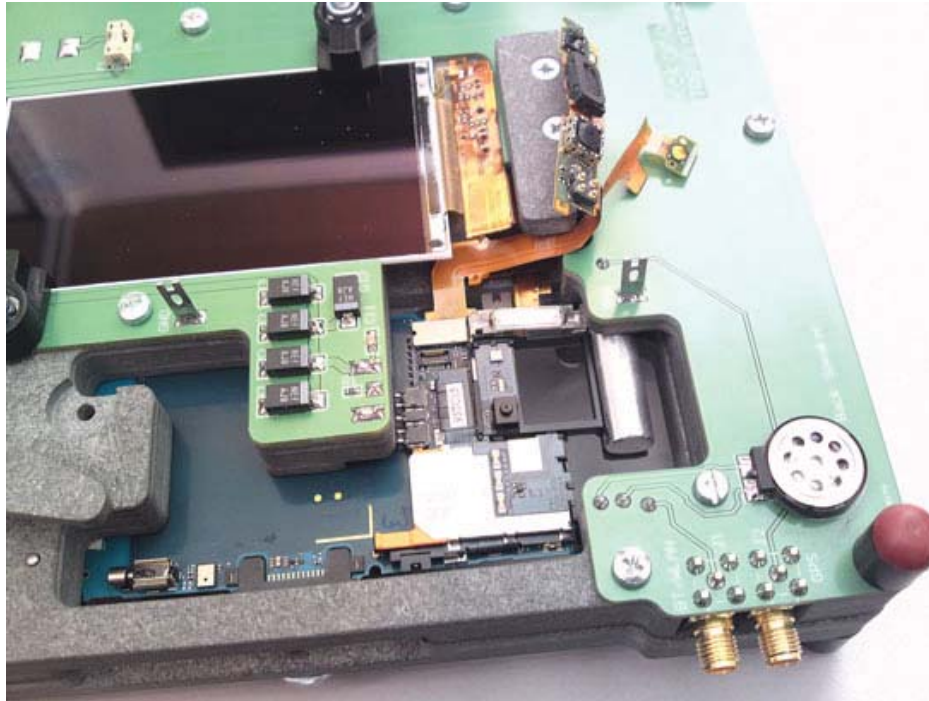
Connect the FPC Receiver to the X2821 BtB connector on the PBA according to picture 8.

Picture 8



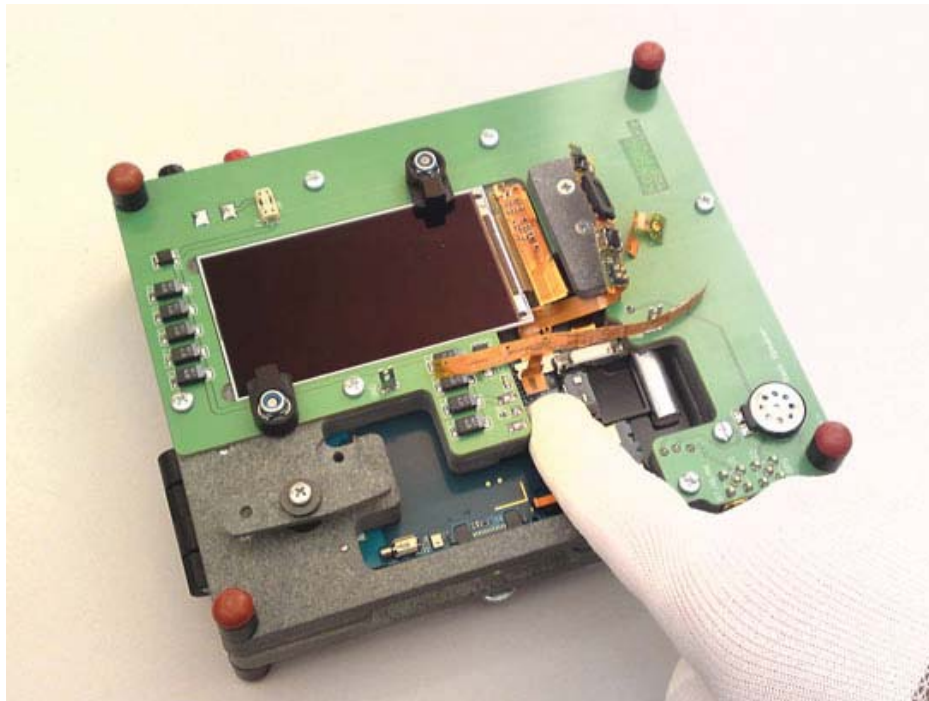
Connect the Xenon Flash Module and SIM Reader to the X2842 BtB connector on the PBA according to picture 9.

Picture 9



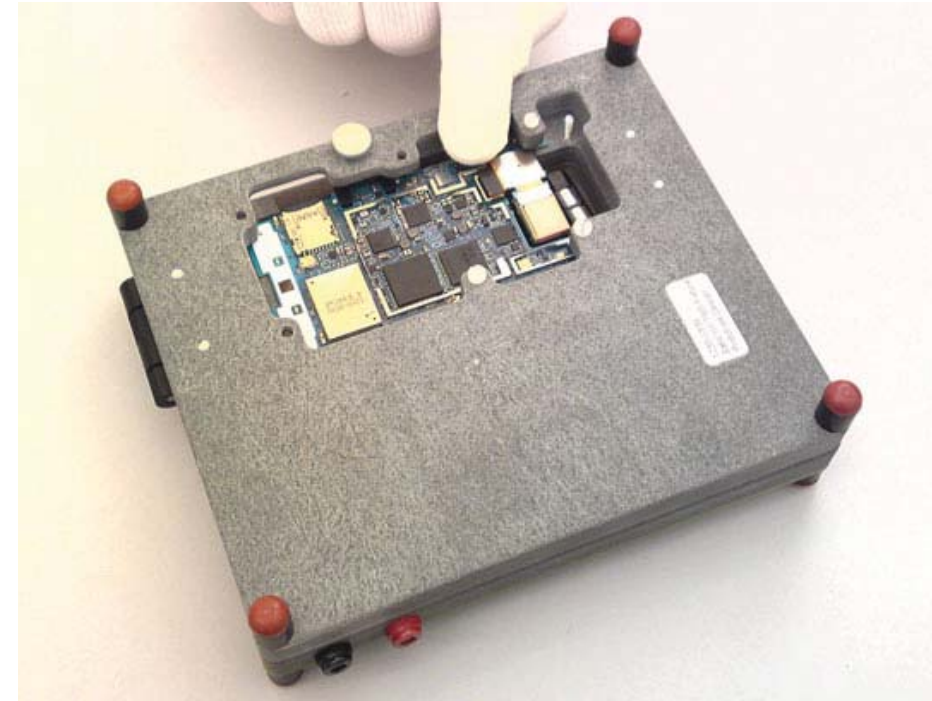
Connect the FPC Side Key to the X2902 BtB connector on the PBA according to picture 10.

Picture 10



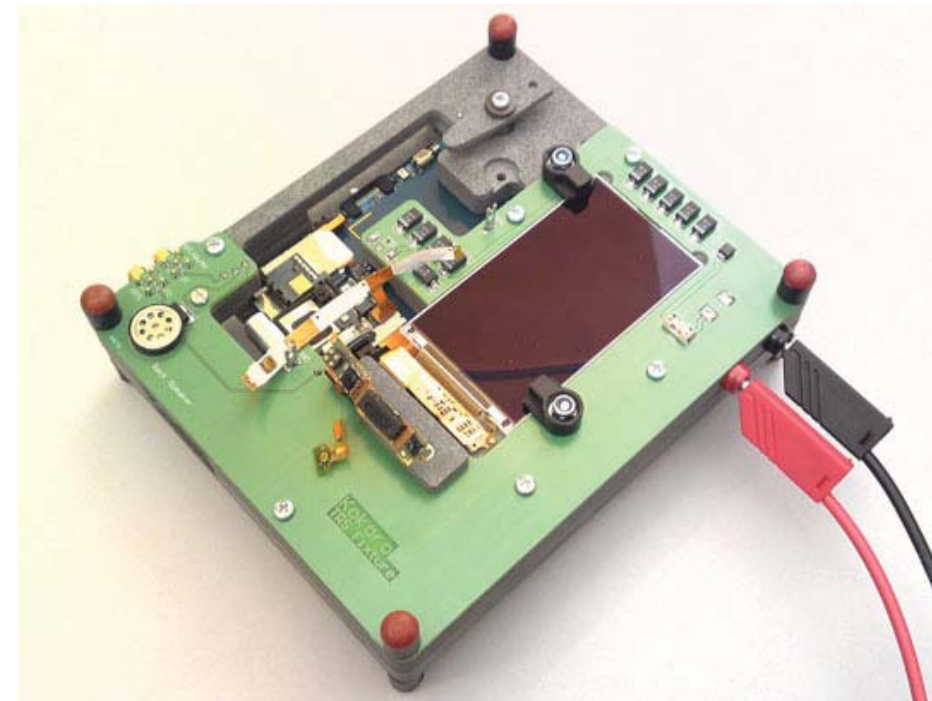
Connect Camera 12.1 MPixel to the X2820 BtB connector on the PBA according to picture 11.

Picture 11



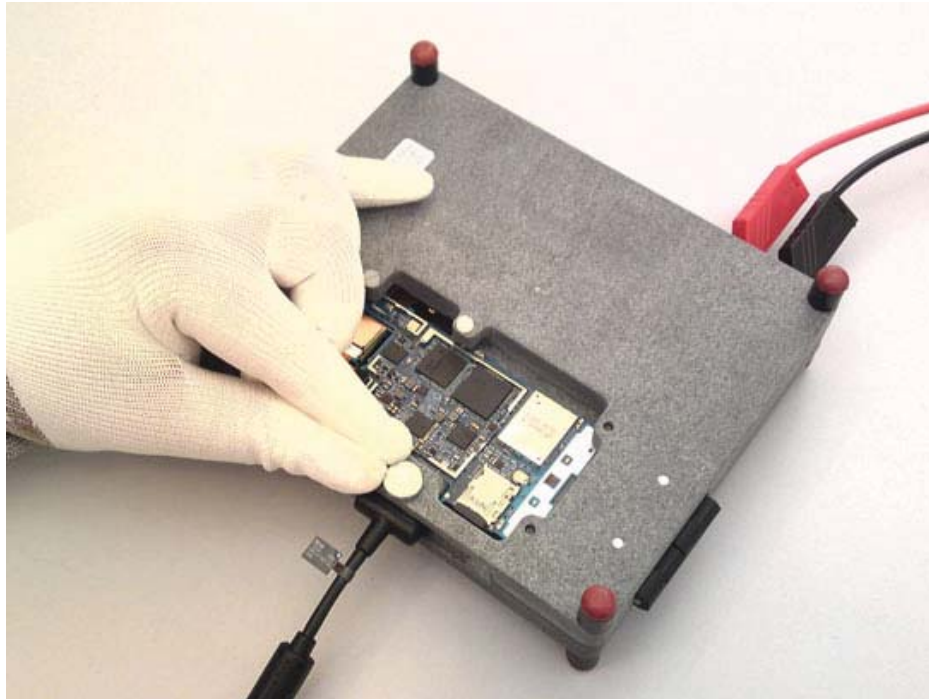
Connect Power Supply Channel 1 (VBATT) Black and Red Lab Plugs to the TRS Fixture according to picture 12.

Picture 12



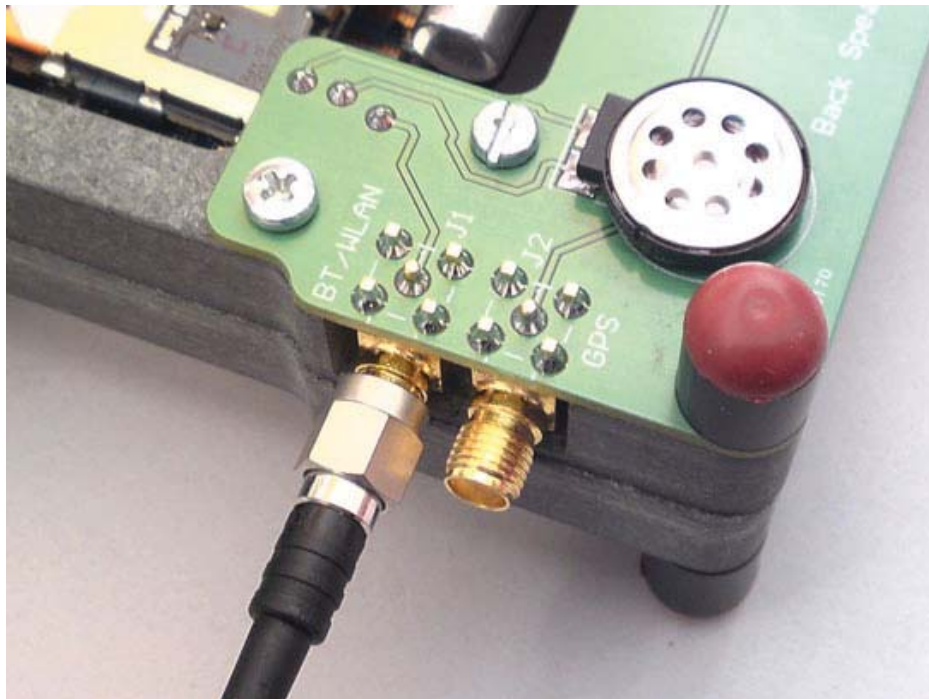
Connect the USB Cable (DSU-65) into the X3000 System Connector and secure it by using the locking screw according to picture 13.

Picture 13



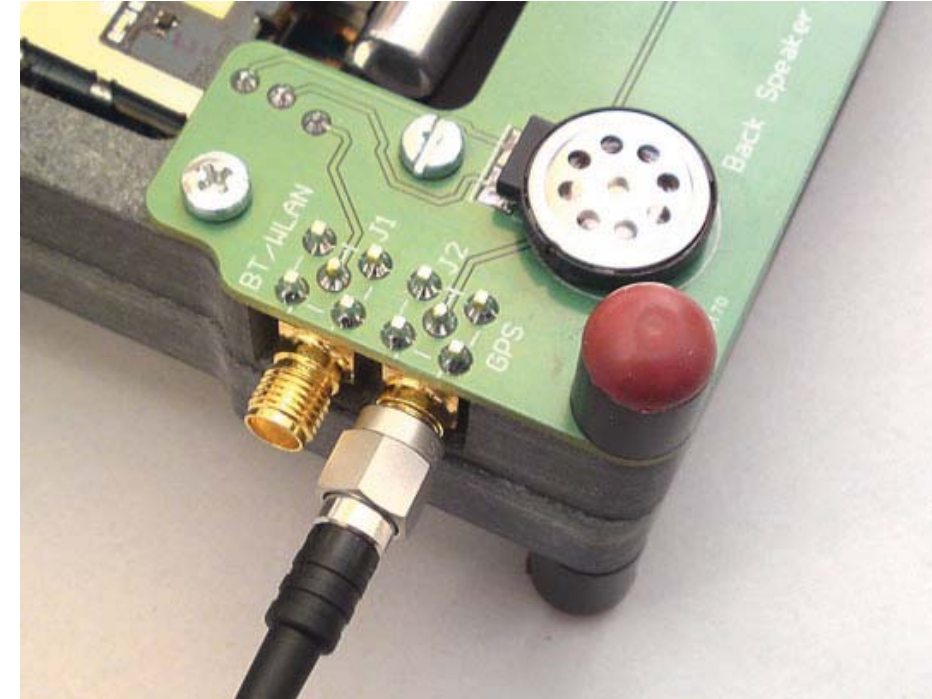
Connect the RF Cable Flexible to the BT/WLAN RF Connector on the TRS Fixture according to picture 14.

Picture 14



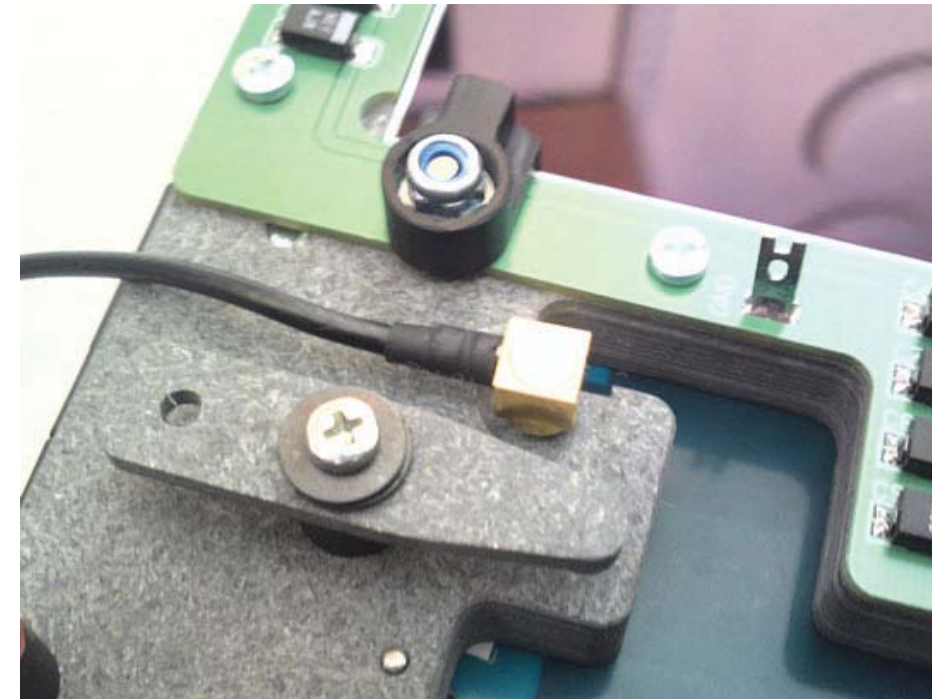
Connect the RF Cable Flexible to the GPS RF Connector on the TRS Fixture according to picture 15.

Picture 15



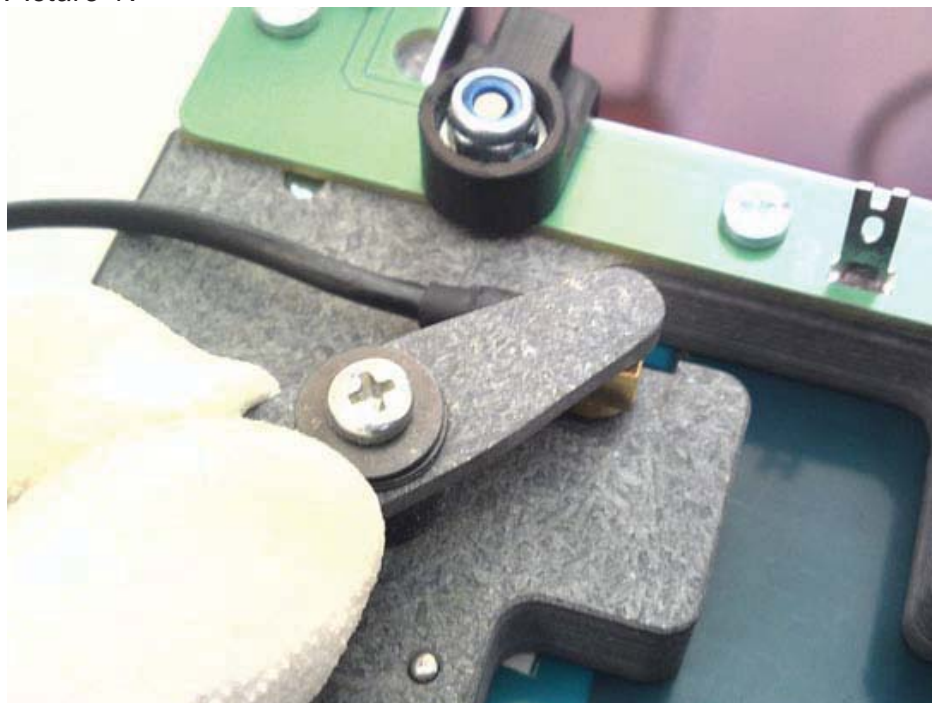
Connect the RF Cable Flexible with SMK RF Probe to the X1000 RF Switch according to picture 16.

Picture 16



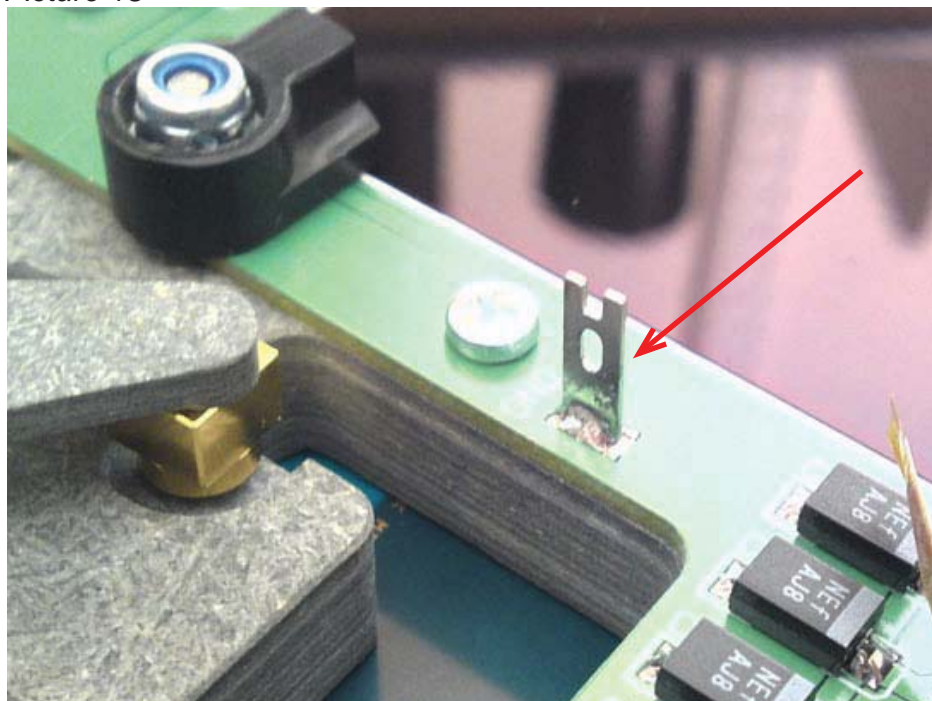
Secure the SMK RF Probe with the RF Probe locking device according to picture 17.

Picture 17



The PIN marked with the GND text on the Top-part of the TRS Fixture can be used as an MP TRS Fixture GND or grounding for the oscilloscope probe, see picture 18.

Picture 18



The PIN mounted inside TRS Fixture can be used as an MP TRS Fixture GND or groundir for the oscilloscope probe see picture 19.

Picture 19

