

Test results of Mitigation or Shutdown

PCS	Uplink(1850-1915MHz)								
Signal Type	AWGN								
Isolation	Peak Oscillations		Minimal Level		Delta Value	Limit	Time to Mitigate Oscillation	Mitigation Time Limit	Result
	Freq.	Level	Freq.	Level					
dB	MHz	dBm	MHz	dBm	dB	dB	sec	sec	
+5	1871.19	-49.24	1873.97	-57.66	8.42	<12	83	300	Pass
+4	1869.72	-60.82	1873.61	-63.86	3.04	<12	84	300	Pass
+3	EUT Shutdown								

PCS	Downlink(1930-1995MHz)								
Signal Type	AWGN								
Isolation	Peak Oscillations		Minimal Level		Delta Value	Limit	Time to Mitigate Oscillation	Mitigation Time Limit	Result
	Freq.	Level	Freq.	Level					
dB	MHz	dBm	MHz	dBm	dB	dB	sec	sec	
+5	1960.44	-49.28	1958.67	-55.05	5.77	<12	83	300	Pass
+4	1960.20	-48.56	1958.67	-55.22	6.66	<12	80	300	Pass
+3	1960.36	-47.69	1958.67	-55.38	7.69	<12	88	300	Pass
+2	1960.36	-46.39	1958.67	-55.39	9.00	<12	79	300	Pass
+1	1960.46	-44.77	1958.67	-56.66	11.89	<12	76	300	Pass
0	1960.40	-42.74	1958.67	-56.67	13.93	<12	77	300	Pass
-1	1960.46	-39.95	1958.67	-56.19	16.24	<12	85	300	Pass
-2	1960.50	-35.18	1958.67	-56.04	20.86	<12	84	300	Pass
-3	1960.61	-7.98	1958.67	-56.42	48.44	<12	81	300	Pass
-4	EUT Shutdown								

AWS-1	Uplink(1710-1755MHz)								
Signal Type	AWGN								
Isolation	Peak Oscillations		Minimal Level		Delta Value	Limit	Time to Mitigate Oscillation	Mitigation Time Limit	Result
	Freq.	Level	Freq.	Level					
dB	MHz	dBm	MHz	dBm	dB	dB	sec	sec	
+5	1739.86	-50.60	1736.40	-56.48	5.88	<12	82	300	Pass
+4	EUT Shutdown								

AWS-1		Downlink(2110-2155MHz)							
Signal Type		AWGN							
Isolation	Peak Oscillations		Minimal Level		Delta Value	Limit	Time to Mitigate Oscillation	Mitigation Time Limit	Result
	Freq.	Level	Freq.	Level					
dB	MHz	dBm	MHz	dBm	dB	dB	sec	sec	
+5	2125.31	-49.80	2122.05	-56.03	6.23	<12	86	300	Pass
+4	2125.31	-50.23	2122.05	-56.12	5.89	<12	80	300	Pass
+3	2125.31	-48.75	2122.05	-56.54	7.79	<12	78	300	Pass
+2	2125.31	-48.34	2122.05	-56.39	8.05	<12	79	300	Pass
+1	2125.31	-47.95	2122.05	-56.26	8.31	<12	81	300	Pass
0	2125.31	-45.58	2122.05	-56.15	10.57	<12	83	300	Pass
-1	2125.31	-44.52	2122.05	-56.32	11.80	<12	82	300	Pass
-2	2125.39	-43.14	2122.05	-57.28	14.14	<12	84	300	Pass
-3	2125.53	-39.17	2122.05	-56.87	17.70	<12	80	300	Pass
-4	2124.84	-27.83	2122.05	-57.54	29.71	<12	83	300	Pass
-5	EUT Shutdown								

Cellular		Uplink(824-849MHz)							
Signal Type		AWGN							
Isolation	Peak Oscillations		Minimal Level		Delta Value	Limit	Time to Mitigate Oscillation	Mitigation Time Limit	Result
	Freq.	Level	Freq.	Level					
dB	MHz	dBm	MHz	dBm	dB	dB	sec	sec	
+5	839.98	-55.28	841.54	-62.39	7.11	<12	81	300	Pass
+4	EUT Shutdown								

Cellular		Downlink(869-894MHz)							
Signal Type		AWGN							
Isolation	Peak Oscillations		Minimal Level		Delta Value	Limit	Time to Mitigate Oscillation	Mitigation Time Limit	Result
	Freq.	Level	Freq.	Level					
dB	MHz	dBm	MHz	dBm	dB	dB	sec	sec	
+5	880.44	-53.41	879.05	-58.59	5.18	<12	82	300	Pass
+4	880.44	-53.38	879.05	-57.92	4.54	<12	80	300	Pass
+3	880.44	-52.50	879.05	-59.20	6.70	<12	83	300	Pass
+2	880.44	-51.12	879.05	-58.65	7.53	<12	81	300	Pass
+1	880.39	-43.87	879.05	-58.89	15.02	<12	78	300	Pass
0	EUT Shutdown								

Lower700M Hz		Uplink(698-716MHz)							
Signal Type		AWGN							
Isolation	Peak Oscillations		Minimal Level		Delta Value	Limit	Time to Mitigate Oscillation	Mitigation Time Limit	Result
	Freq.	Level	Freq.	Level					
dB	MHz	dBm	MHz	dBm	dB	dB	sec	sec	
+5	703.90	-54.99	705.92	-65.69	10.70	<12	83	300	Pass
+4	703.90	-54.70	705.92	-65.94	11.24	<12	81	300	Pass
+3	703.90	-53.00	705.92	-66.14	13.14	<12	76	300	Pass
+2	703.96	-51.52	705.92	-66.38	14.86	<12	79	300	Pass
+1	703.90	-47.71	705.92	-66.08	18.37	<12	82	300	Pass
0	703.95	-42.22	705.92	-66.87	24.65	<12	80	300	Pass
-1	703.95	-30.71	705.92	-66.67	35.96	<12	84	300	Pass
-2	EUT Shutdown								

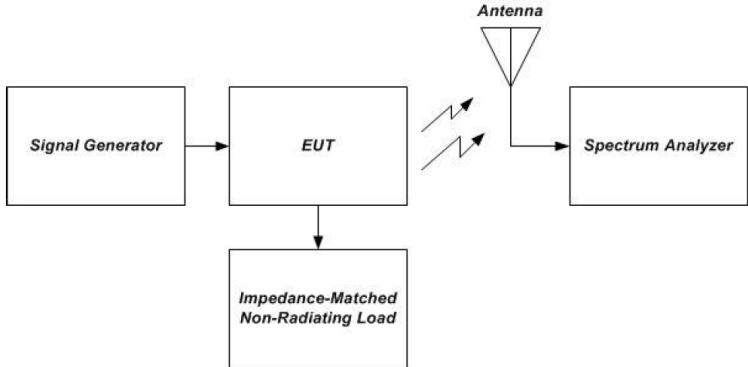
Lower700M Hz		Downlink(728-746MHz)							
Signal Type		AWGN							
Isolation	Peak Oscillations		Minimal Level		Delta Value	Limit	Time to Mitigate Oscillation	Mitigation Time Limit	Result
	Freq.	Level	Freq.	Level					
dB	MHz	dBm	MHz	dBm	dB	dB	sec	sec	
+5	732.08	-54.62	735.85	-59.32	4.7	<12	85	300	Pass
+4	732.08	-52.69	735.85	-59.41	6.72	<12	83	300	Pass
+3	732.08	-50.17	735.85	-59.36	9.19	<12	86	300	Pass
+2	732.08	-47.85	735.85	-59.96	12.11	<12	82	300	Pass
+1	732.08	-40.36	735.85	-60.24	19.88	<12	78	300	Pass
0	EUT Shutdown								

Upper700M Hz		Uplink(776-787MHz)							
Signal Type		AWGN							
Isolation	Peak Oscillations		Minimal Level		Delta Value	Limit	Time to Mitigate Oscillation	Mitigation Time Limit	Result
	Freq.	Level	Freq.	Level					
dB	MHz	dBm	MHz	dBm	dB	dB	sec	sec	
+5	778.29	-55.28	777.09	-64.42	9.14	<12	79	300	Pass
+4	778.29	-54.73	777.09	-64.89	10.16	<12	77	300	Pass
+3	778.24	-51.82	777.09	-65.27	13.45	<12	80	300	Pass
+2	778.24	-49.74	777.09	-65.49	15.75	<12	83	300	Pass
+1	778.29	-38.99	777.09	-65.95	26.96	<12	81	300	Pass
0	EUT Shutdown								

Upper700M Hz	Downlink(746-757MHz)								
Signal Type	AWGN								
Isolation	Peak Oscillations		Minimal Level		Delta Value	Limit	Time to Mitigate Oscillation	Mitigation Time Limit	Result
	Freq.	Level	Freq.	Level					
dB	MHz	dBm	MHz	dBm	dB	dB	sec	sec	
+5	750.95	-53.62	753.42	-58.63	5.01	<12	84	300	Pass
+4	750.95	-52.15	753.42	-58.78	6.63	<12	78	300	Pass
+3	750.95	-50.86	753.42	-58.72	7.86	<12	80	300	Pass
+2	750.95	-48.52	753.42	-58.65	10.13	<12	83	300	Pass
+1	750.95	-45.21	753.42	-59.01	13.8	<12	74	300	Pass
0	750.95	-40.32	753.42	-59.15	18.83	<12	63	300	Pass
-1	EUT Shutdown								

6. Radiation Spurious Emission

6.1.1. Test Specification

Test Requirement:	FCC Part2 Section 2.1053
Test Method:	KDB935210 D03 Signal booster Measurements v04r04
Limit:	-13dBm
Test setup:	 <p style="text-align: center;">Figure 10 – Radiated spurious emissions test and instrumentation setup</p>
Test Procedure:	<ol style="list-style-type: none"> a) Place the EUT on an OATS or semi-anechoic chamber turntable 3 m from the receiving antenna.15 b) Connect the EUT to the test equipment as shown in Figure 10 beginning with the uplink output (donor) port. c) Set the signal generator to produce a CW signal with the frequency set to the center of the operational band under test, and the power level set at PIN as determined from measurement results per 7.2. d) Measure the radiated spurious emissions from the EUT from the lowest to the highest frequencies as specified in § 2.1057. Maximize the radiated emissions by using the procedures described in ANSI C63.4. e) Capture the peak emissions Test Plotss using a peak detector with Max-Hold for inclusion in the test report. Tabular data is acceptable in lieu of spectrum analyzer Test Plotss. f) Repeat 7.12c) through 7.12e) for all uplink and downlink operational bands.
Test results:	PASS

6.1.2. Test Instruments

Radiated Emission				
Name	Model No.	Manufacturer	Date of Cal.	Due Date
EMI Test Receiver	ESIB7	R&S	Jul. 08, 2021	Jul. 07, 2022
Spectrum Analyzer	FSQ40	R&S	Jul. 08, 2021	Jul. 07, 2022
Pre-amplifier	8447D	HP	Jul. 08, 2021	Jul. 07, 2022
Pre-amplifier	LNPA_0118G-45	SKET	Mar. 12, 2021	Mar. 11, 2022
Pre-amplifier	LNPA_1840G-50	SKET	Apr. 09, 2021	Apr. 08, 2022
Broadband Antenna	VULB9163	Schwarzbeck	Sep. 05, 2020	Sep. 04, 2022
Horn Antenna	BBHA 9120D	Schwarzbeck	Sep. 05, 2020	Sep. 04, 2022
Horn Antenna	BBHA 9170	Schwarzbeck	Apr. 11, 2021	Apr. 10, 2023
Coaxial cable	RC_DC18G-N	SKET	Apr. 09, 2021	Apr. 08, 2022
Coaxial cable	RC-DC18G-N	SKET	Apr. 09, 2021	Apr. 08, 2022
Coaxial cable	RC-DC40G-N	SKET	Jul. 08, 2021	Jul. 07, 2022
Loop antenna	ZN30900A	ZHINAN	Sep. 06, 2020	Sep. 05, 2022
Signal Generator	N5182A	Agilent	Jul. 19, 2021	Jul. 18, 2022

6.1.3. Test data

Frequency [MHz]	Antenna polarity [H/V]	Reading Level	Substitution factor	Measurement Level [dBm]	Limit [dBm]	Margin [dB]
PCS Uplink						
170.24	H	-44.44	-8.05	-52.49	-13.00	-39.49
555.61	V	-58.05	5.91	-52.14		-39.14
3765.0	H	-49.94	4.62	-45.32		-32.32
3765.0	V	-47.98	6.04	-41.94		-28.94
PCS Downlink						
175.14	H	-45.38	-6.95	-52.33	-13.00	-39.33
553.88	V	-56.87	5.97	-50.90		-37.90
3925.00	H	-54.63	8.39	-46.24		-33.24
3925.00	V	-56.08	9.01	-47.07		-34.07

Frequency [MHz]	Antenna polarity [H/V]	Reading Level	Substitution factor	Measurement Level [dBm]	Limit [dBm]	Margin [dB]
AWS-1 Uplink						
115.62	V	-50.85	0.79	-50.06	-13.00	-37.06
115.62	H	-51.69	0.79	-50.90		-37.90
3465.00	V	-50.11	4.32	-45.79		-32.79
3465.00	H	-52.58	4.32	-48.26		-35.26
AWS-1 Downlink						
119.55	V	-53.35	0.83	-52.52	-13.00	-39.52
119.55	H	-55.62	0.83	-54.79		-41.79
4265.00	V	-55.01	4.92	-50.09		-37.09
4265.00	H	-55.99	4.92	-51.07		-38.07

Frequency [MHz]	Antenna polarity [H/V]	Reading Level	Substitution factor	Measurement Level [dBm]	Limit [dBm]	Margin [dB]
Cellular Uplink						
160.54	H	-43.95	-8.05	-52.00	-13.00	-39.00
556.30	V	-58.19	5.91	-52.28		-39.28
1673.00	H	-51.73	4.62	-47.11		-34.11
1673.00	V	-49.62	6.04	-43.58		-30.58
Cellular Downlink						
168.20	H	-46.20	-6.95	-53.15	-13.00	-40.15
552.63	V	-57.96	5.97	-51.99		-38.99
1763.00	H	-55.14	8.39	-46.75		-33.75
1763.00	V	-56.82	9.01	-47.81		-34.81

Frequency [MHz]	Antenna polarity [H/V]	Reading Level	Substitution factor	Measurement Level [dBm]	Limit [dBm]	Margin [dB]
Lower700MHz Uplink						
170.23	H	-44.69	-8.84	-53.53	-13.00	-40.53
553.61	V	-57.20	5.91	-51.29		-38.29
1414.00	H	-44.36	-0.37	-44.73		-31.73
1414.00	V	-46.62	1.25	-45.37		-32.37
Lower700MHz Downlink						
173.26	H	-46.82	-7.01	-53.83	-13.00	-40.83
555.49	V	-56.55	5.28	-51.27		-38.27
1474.36	H	-48.99	-0.19	-49.18		-36.18
1474.36	V	-47.63	1.38	-46.25		-33.25

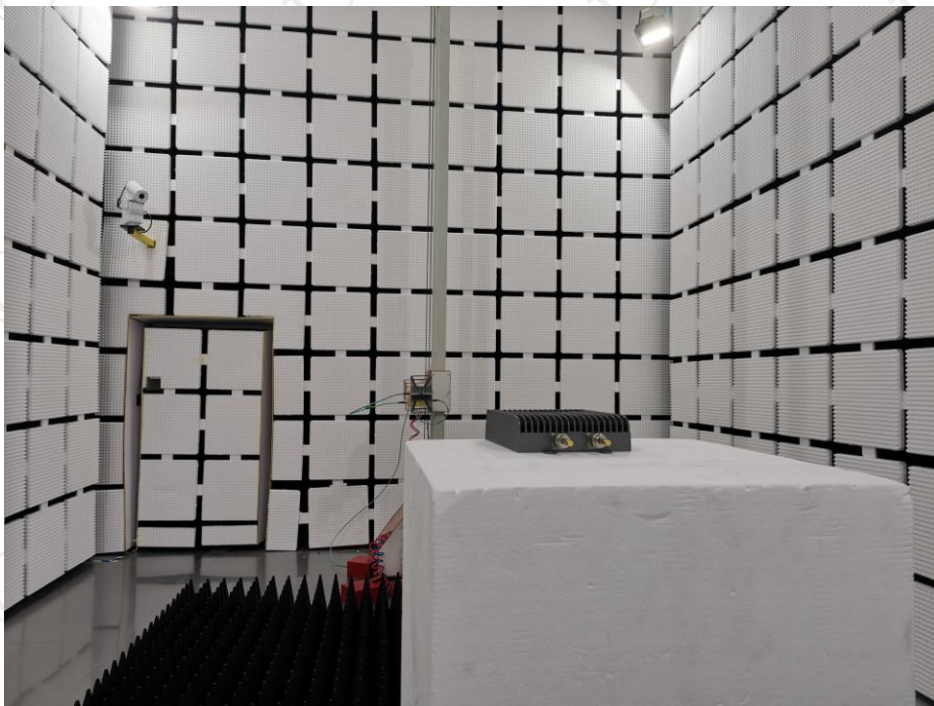
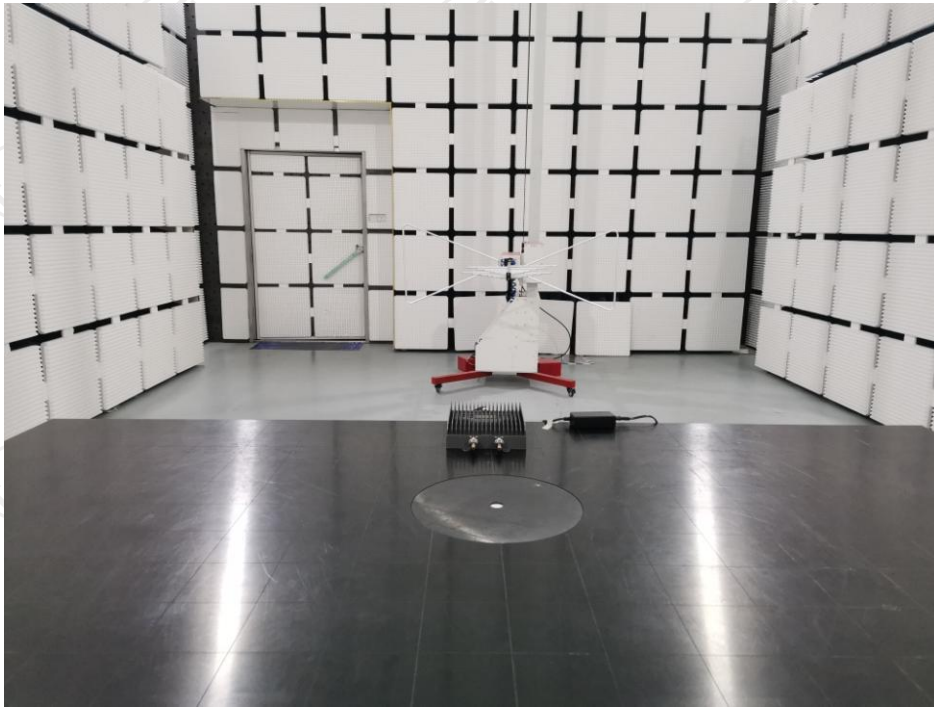
Frequency [MHz]	Antenna polarity [H/V]	Reading Level	Substitution factor	Measurement Level [dBm]	Limit [dBm]	Margin [dB]
Upper700MHz Uplink						
382.12	H	-44.31	-8.15	-52.46	-13.00	-39.46
382.12	V	-58.93	5.83	-53.10		-40.10
1564.00	H	-44.88	-0.76	-45.64		-32.64
1564.00	V	-47.32	2.76	-44.56		-31.56
Upper700MHz Downlink						
388.26	H	-44.49	-6.82	-51.31	-13.00	-38.31
388.26	V	-48.70	5.68	-43.02		-30.02
1502.00	H	-46.95	-0.72	-47.67		-34.67
1502.00	V	-48.12	1.20	-46.92		-33.92

Note: Three cable lengths: shortest (50 foot), medium (100 foot), and longest (150 foot) cable lengths that are have been used in the test, only the worst case in shortest (50 foot) cable length reported.

Appendix A: Photographs of Test Setup

Product: Consumer five-band booster

Model: Fusion5X Max

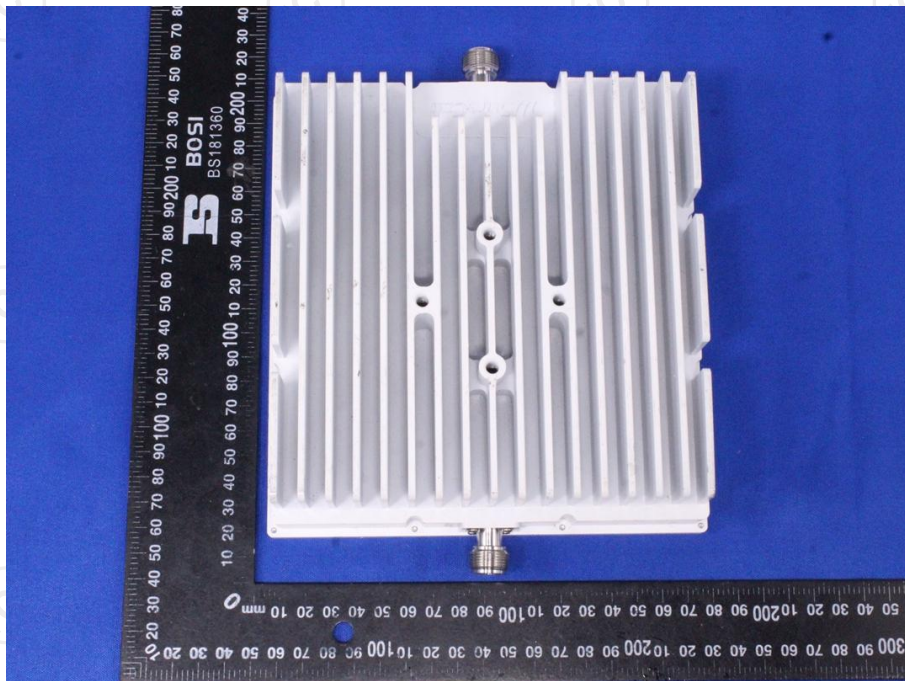


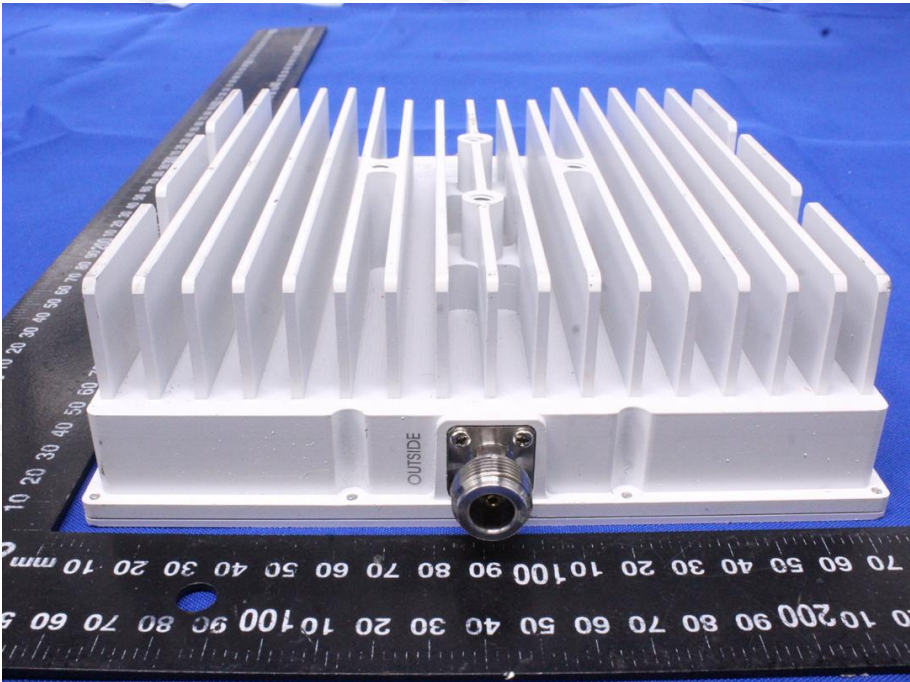
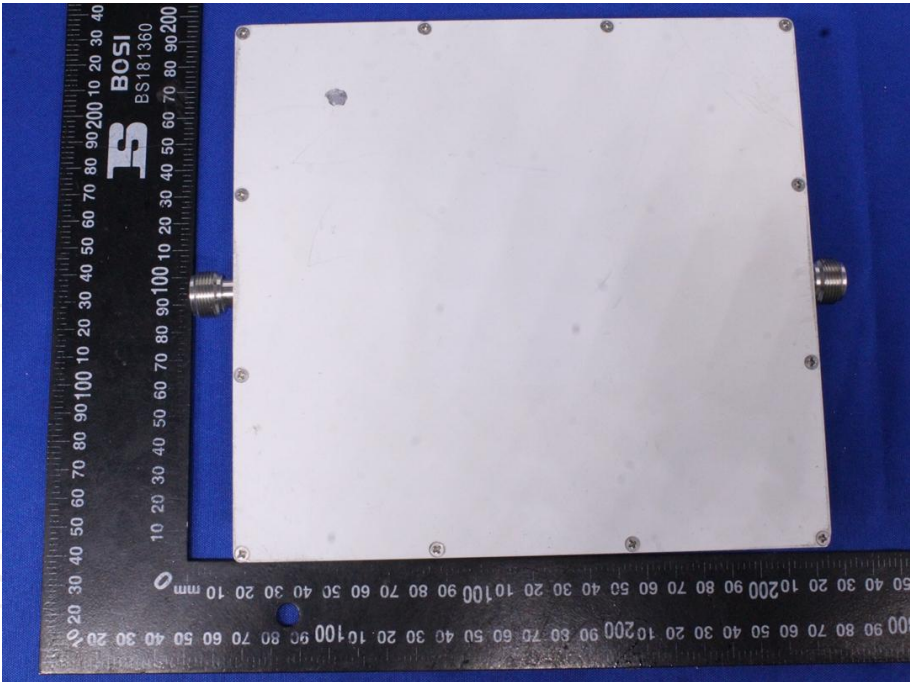


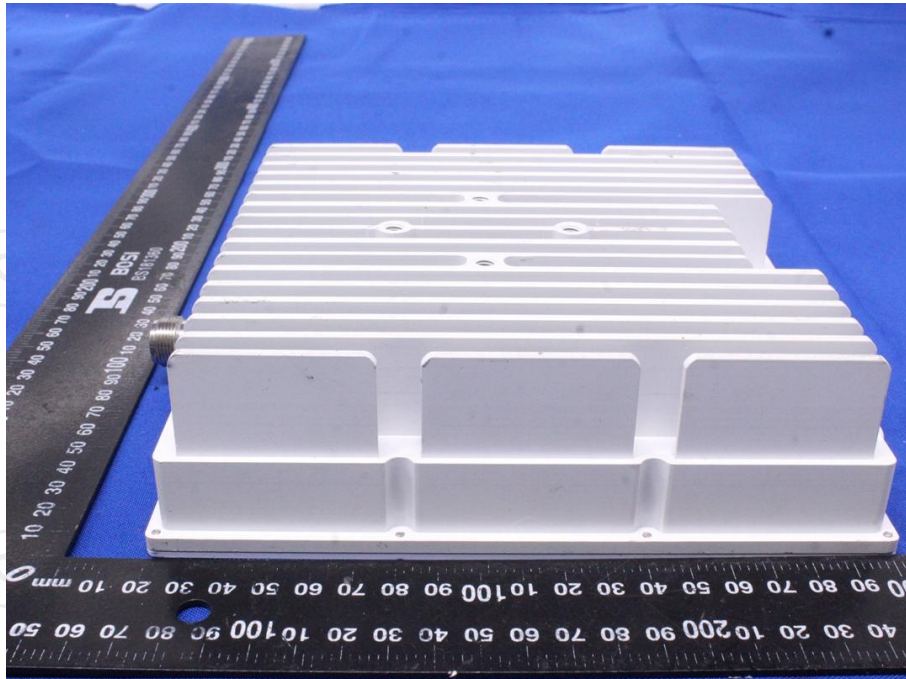
Appendix B: Photographs of EUT
Product: Consumer five-band booster
Model: Fusion5X Max
External Photos

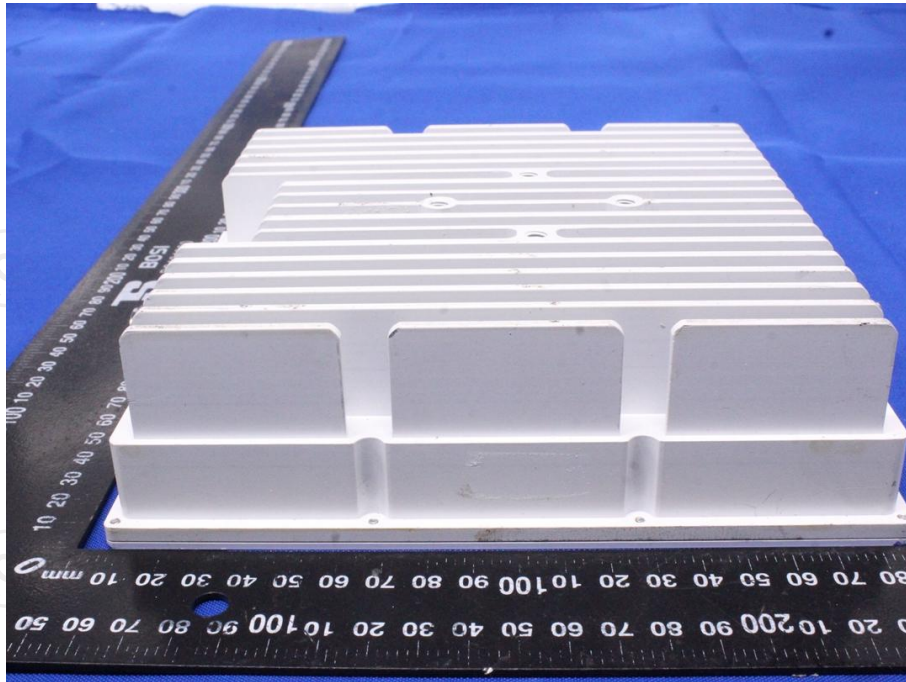


Donor unit

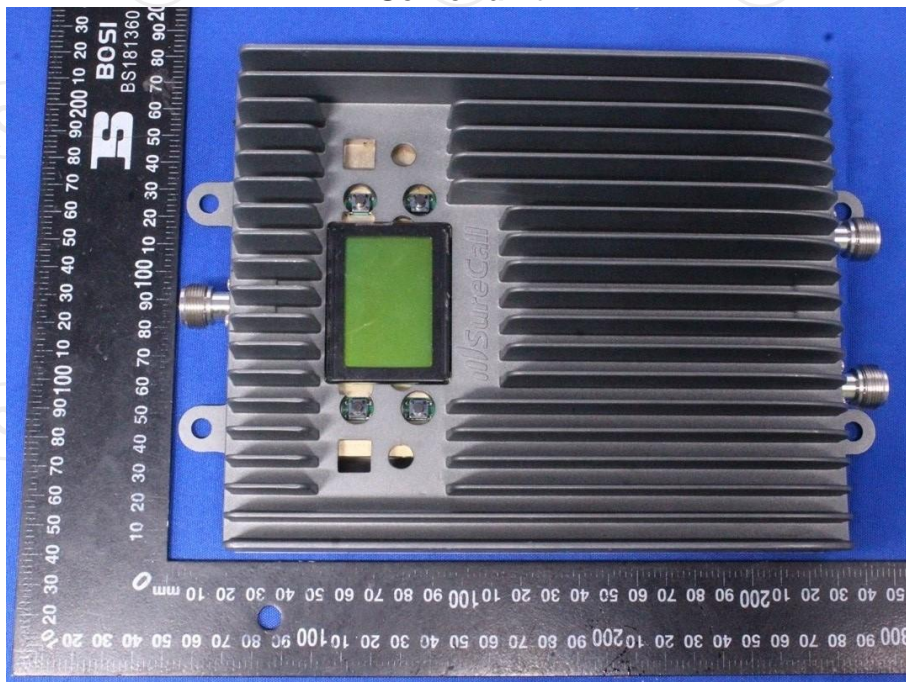


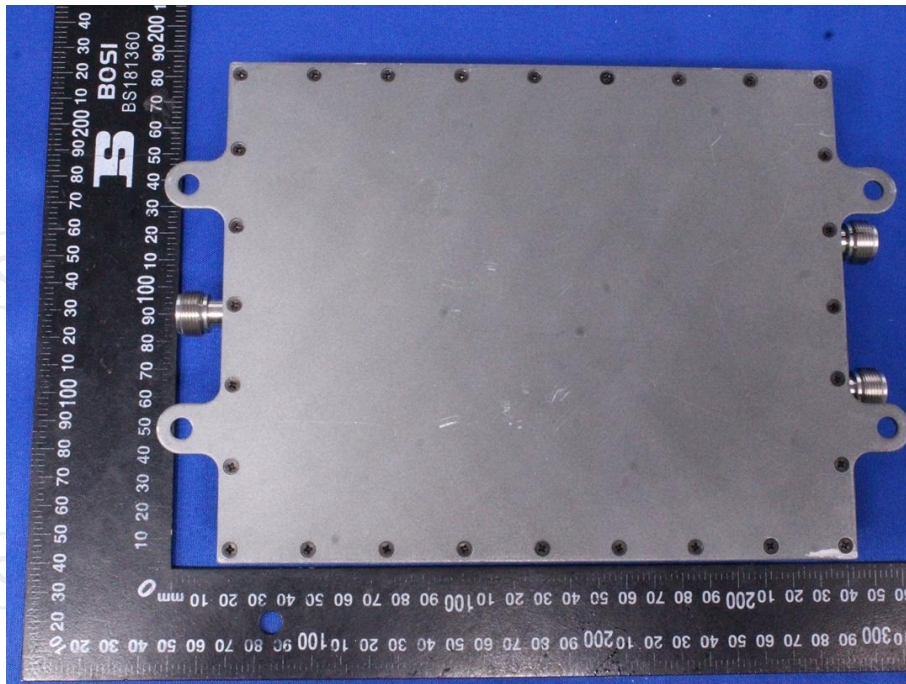


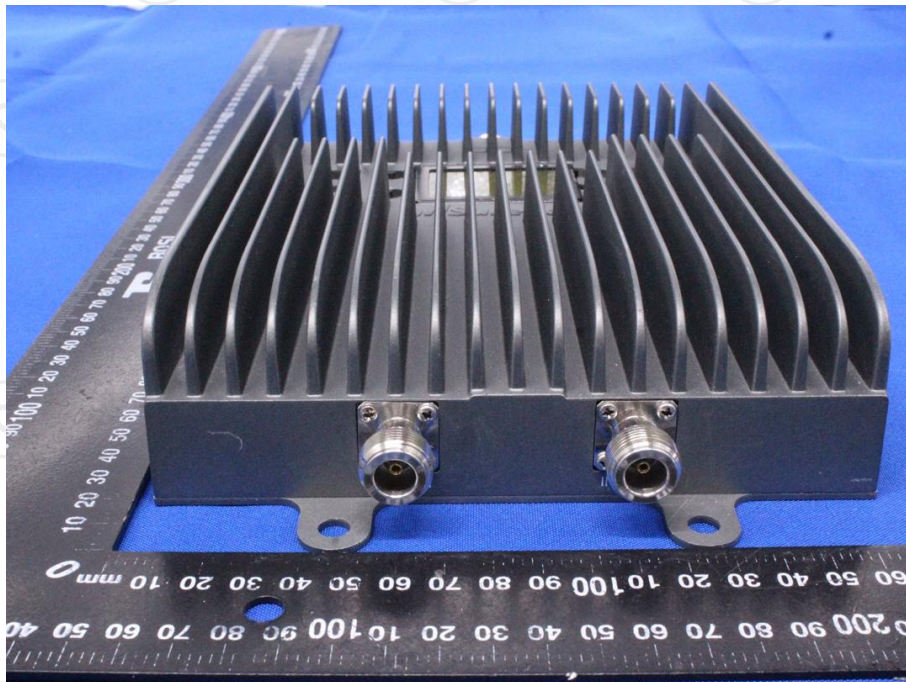
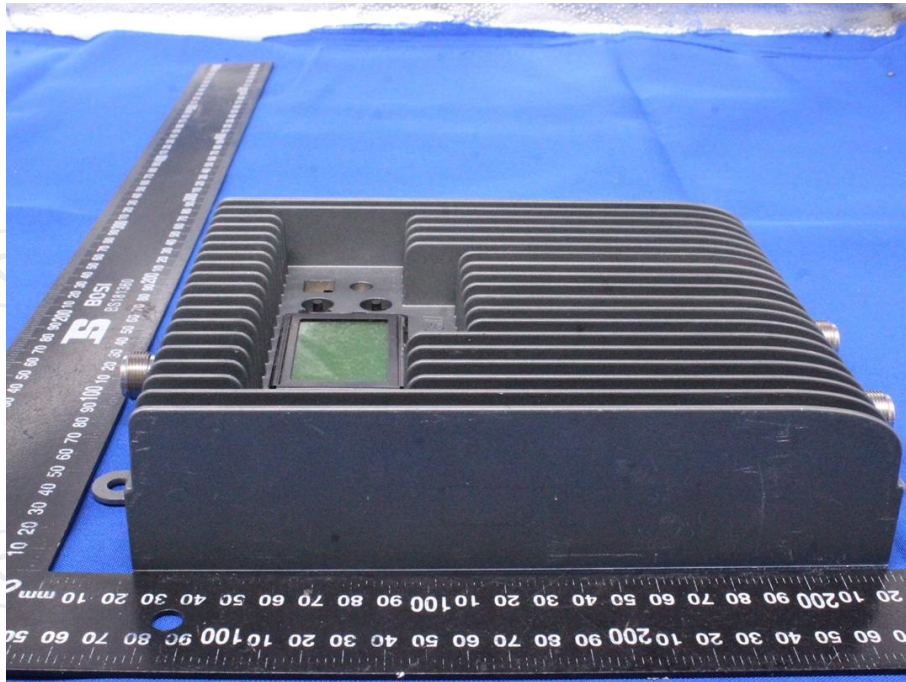


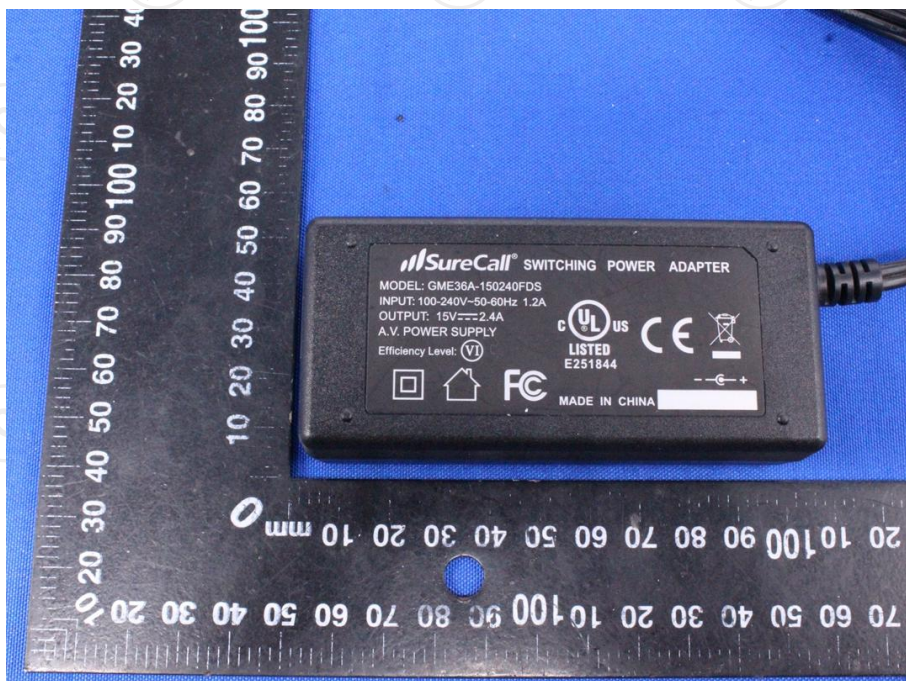


Server unit

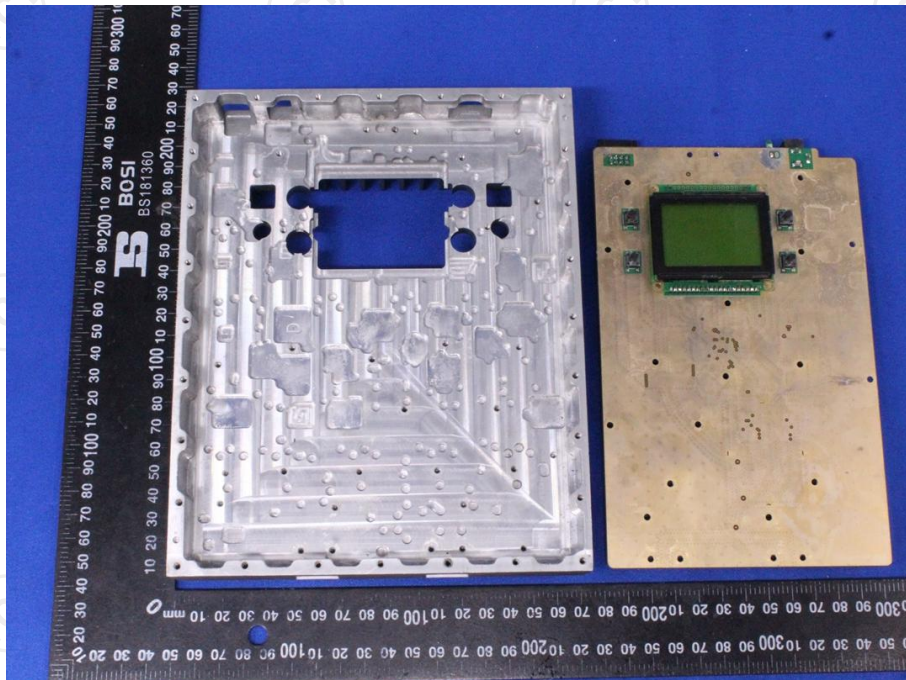
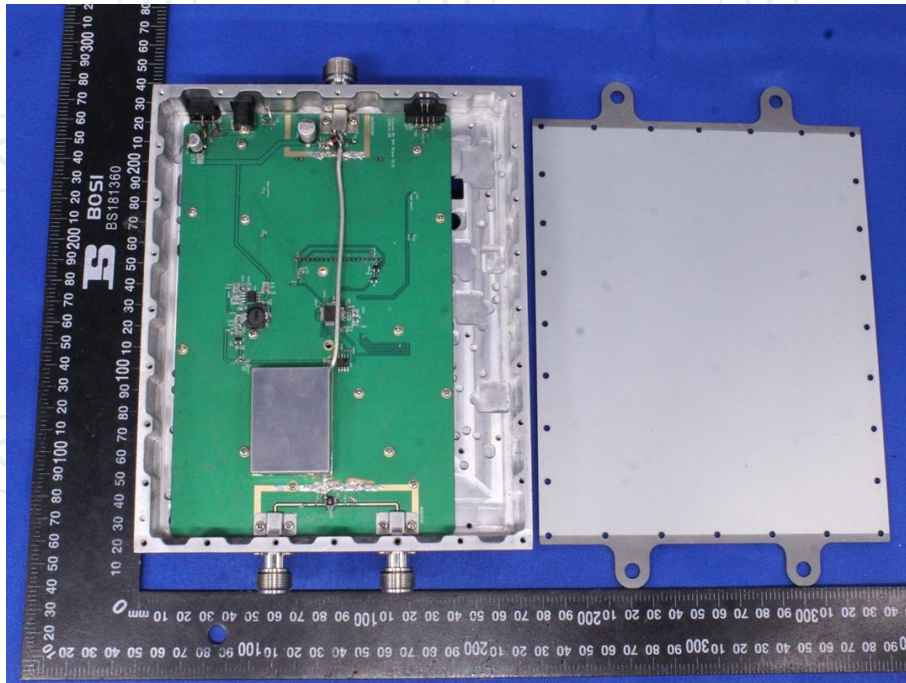


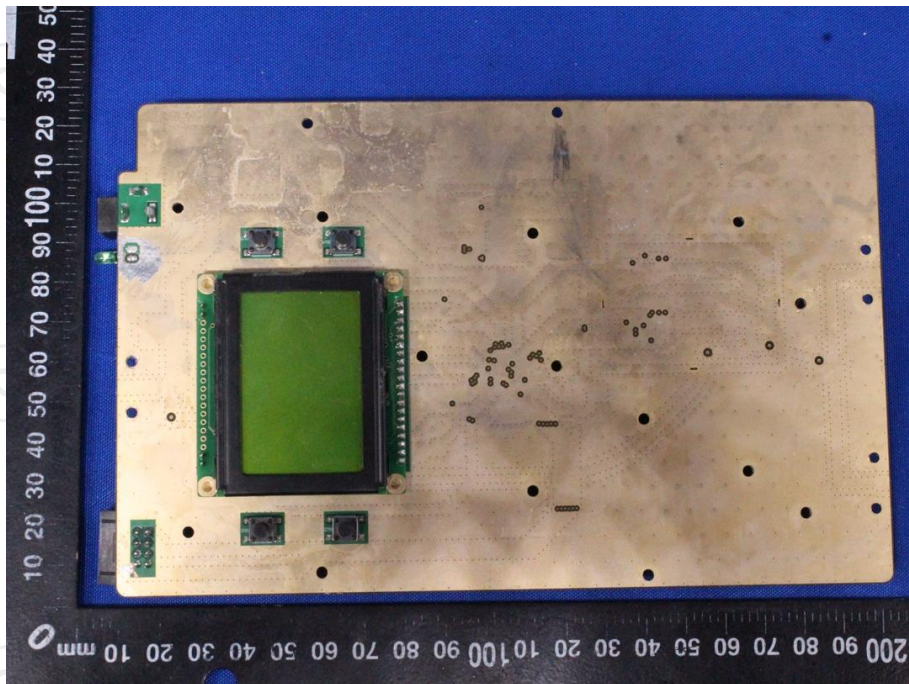
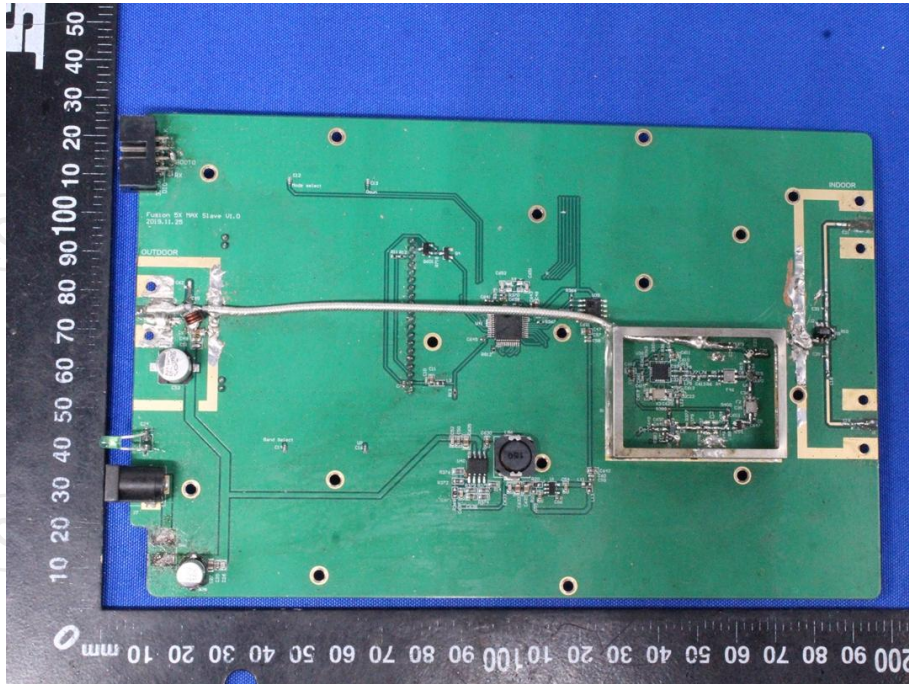


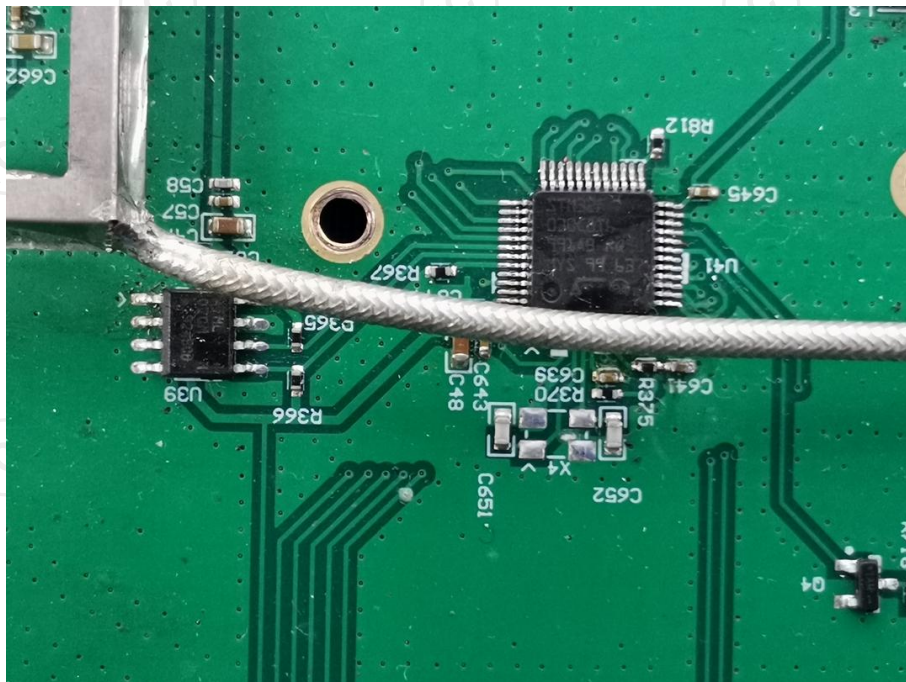
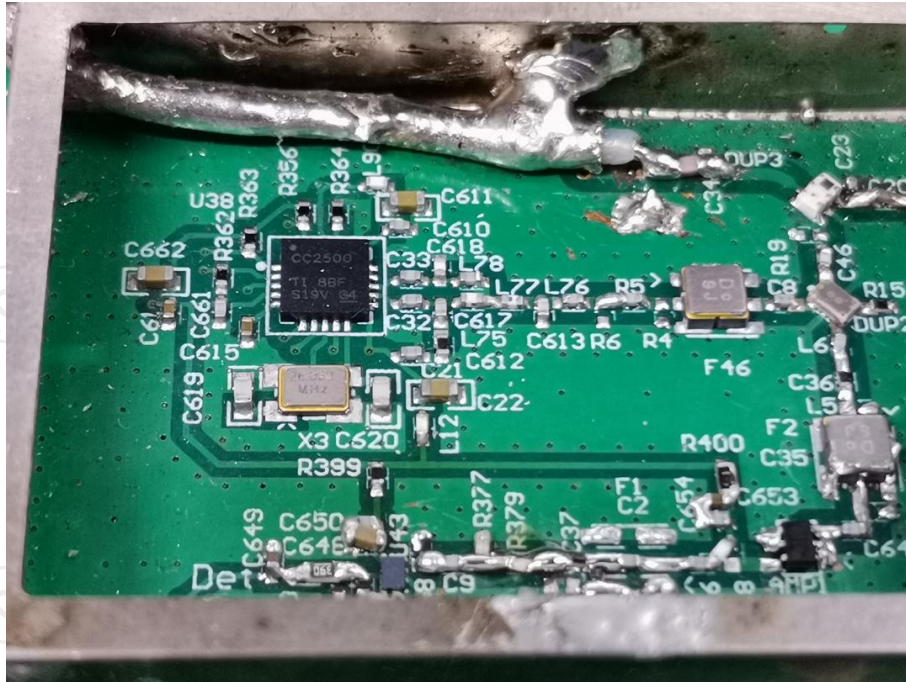


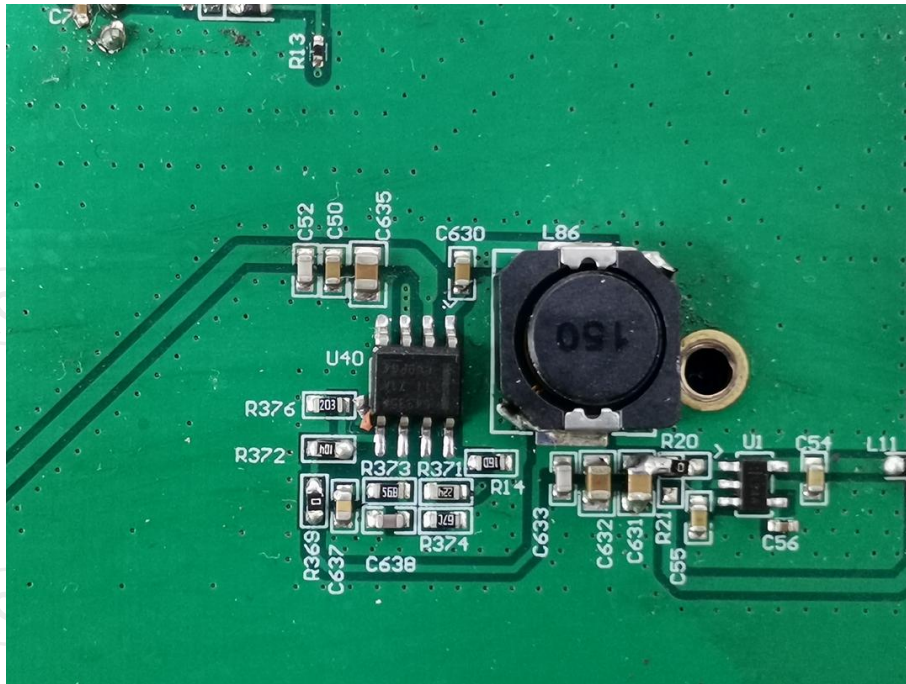


Product: Consumer five-band booster
Model: Fusion5X Max
Internal Photos
Server unit









Donor unit

