



9 6dB Bandwidth Measurement

Test Requirement : FCC CFR47 Part 15 Section 15.247

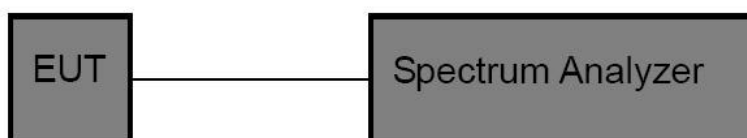
Test Method : ANSI C63.10-2020

Test Limit : Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

9.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

9.2 Test Setup



9.3 Test Result

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.040	2407.440	2416.480	0.5	PASS
11B	Ant1	2437	9.560	2432.440	2442.000	0.5	PASS
11B	Ant1	2462	9.520	2457.480	2467.000	0.5	PASS
11G	Ant1	2412	15.000	2404.480	2419.480	0.5	PASS
11G	Ant1	2437	14.160	2429.480	2443.640	0.5	PASS
11G	Ant1	2462	12.560	2454.480	2467.040	0.5	PASS
11N20SISO	Ant1	2412	12.560	2405.760	2418.320	0.5	PASS
11N20SISO	Ant1	2437	13.760	2430.680	2444.440	0.5	PASS
11N20SISO	Ant1	2462	15.040	2454.480	2469.520	0.5	PASS
11N40SISO	Ant1	2422	35.040	2404.480	2439.520	0.5	PASS
11N40SISO	Ant1	2437	26.240	2423.240	2449.480	0.5	PASS
11N40SISO	Ant1	2452	31.360	2435.680	2467.040	0.5	PASS



Test Graphs:

11B-Ant1-2412-PASS



11B-Ant1-2437-PASS



11B-Ant1-2462-PASS



11G-Ant1-2412-PASS



11G-Ant1-2437-PASS



11G-Ant1-2462-PASS



11N20SISO-Ant1-2412-PASS



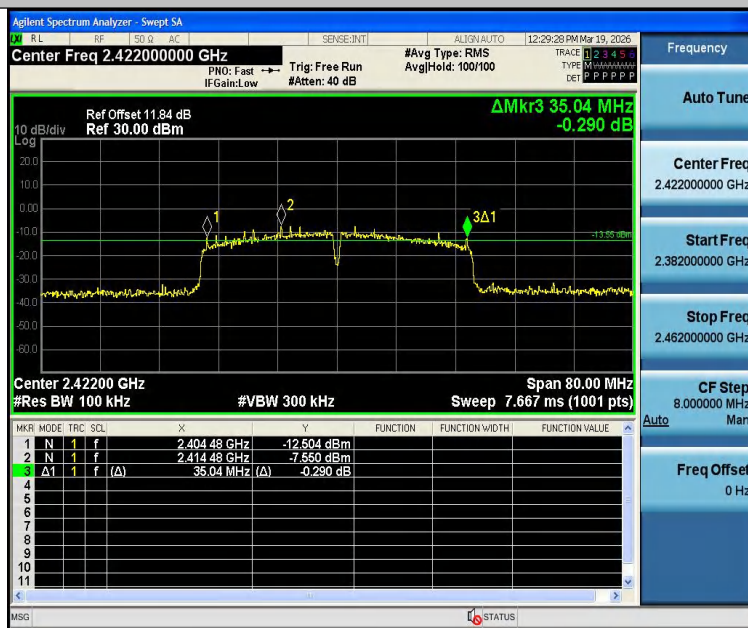
11N20SISO-Ant1-2437-PASS



11N20SISO-Ant1-2462-PASS



11N40ISO-Ant1-2422-PASS



11N40ISO-Ant1-2437-PASS



11N40SISO-Ant1-2452-PASS





10 Maximum conducted output power

Test Requirement : FCC CFR47 Part 15 Section 15.247

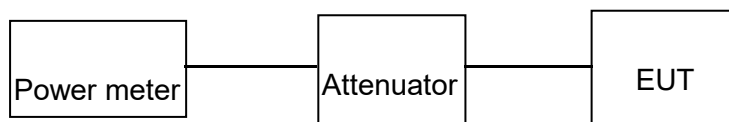
Test Method : ANSI C63.10-2020

Test Limit : Regulation 15.247 (b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power.

10.1 Test Procedure

1. According to ANSI C63.10-2020 clause 11.9.1.2 PKPM1 Peak power meter method. The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

10.2 Test Setup



10.3 Test Result

TestMode	Antenna	Frequency [MHz]	Set Power	Peak Power [dBm]	Conducted Limit [dBm]	Verdict
11B	Ant1	2412	---	11.53	≤30.00	PASS
11B	Ant1	2437	---	12.11	≤30.00	PASS
11B	Ant1	2462	---	10.50	≤30.00	PASS
11G	Ant1	2412	---	13.79	≤30.00	PASS
11G	Ant1	2437	---	12.91	≤30.00	PASS
11G	Ant1	2462	---	11.34	≤30.00	PASS
11N20SISO	Ant1	2412	---	13.25	≤30.00	PASS
11N20SISO	Ant1	2437	---	12.59	≤30.00	PASS
11N20SISO	Ant1	2462	---	11.67	≤30.00	PASS
11N40SISO	Ant1	2422	---	13.33	≤30.00	PASS
11N40SISO	Ant1	2437	---	12.30	≤30.00	PASS
11N40SISO	Ant1	2452	---	12.10	≤30.00	PASS



11 Power Spectral density

Test Requirement : FCC CFR47 Part 15 Section 15.247

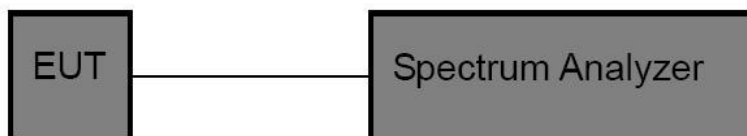
Test Method : ANSI C63.10-2020

Test Limit : Regulation 15.247(e) The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

11.1 Test Procedure

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Configure the spectrum analyzer as shown below:
Center frequency=DTS channel center frequency
Span = 1.5 times the DTS bandwidth
RBW = 3KHz, VBW = 10KHz
Sweep time = auto couple
Detector = peak
Trace mode =max hold
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter wave form on the spectrum analyzer.
4. Use the peak marker function to determine the maximum amplitude level within the RBW.
5. If measured value exceeds limit, reduce RBW(no less than 3KHz) and repeat.

11.2 Test Setup



11.3 Test Result

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-12.76	≤8.00	PASS
11B	Ant1	2437	-12.92	≤8.00	PASS
11B	Ant1	2462	-14.57	≤8.00	PASS
11G	Ant1	2412	-16.34	≤8.00	PASS
11G	Ant1	2437	-17.77	≤8.00	PASS
11G	Ant1	2462	-18.93	≤8.00	PASS
11N20SISO	Ant1	2412	-16.56	≤8.00	PASS
11N20SISO	Ant1	2437	-18.11	≤8.00	PASS
11N20SISO	Ant1	2462	-19.83	≤8.00	PASS
11N40SISO	Ant1	2422	-20.56	≤8.00	PASS
11N40SISO	Ant1	2437	-20.82	≤8.00	PASS
11N40SISO	Ant1	2452	-21.29	≤8.00	PASS



Test Graphs:

11B-Ant1-2412-PASS



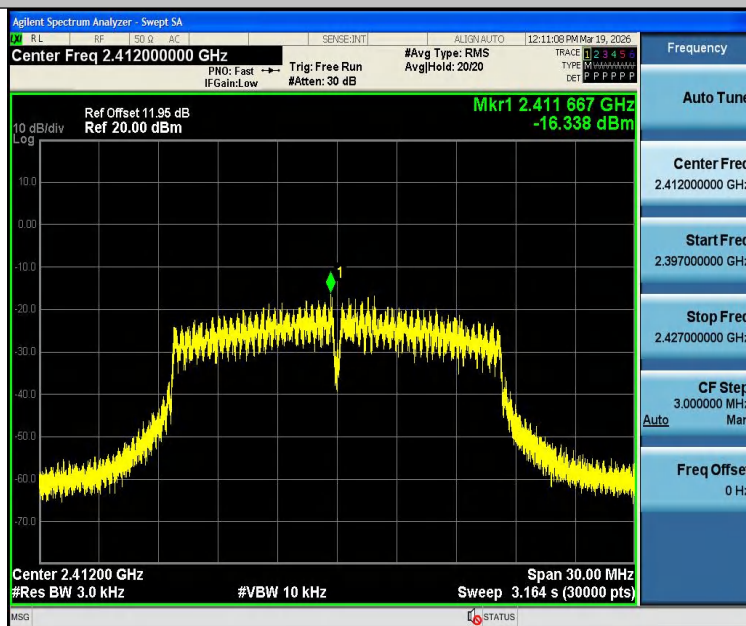
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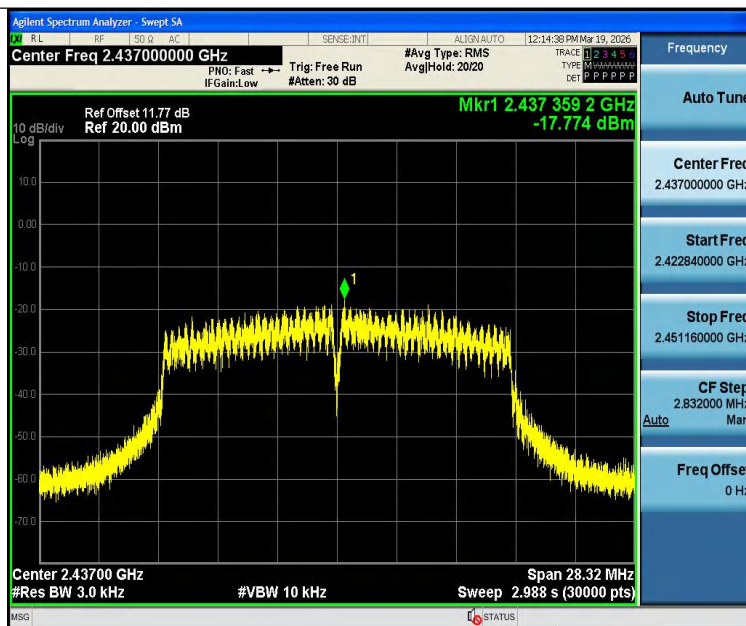
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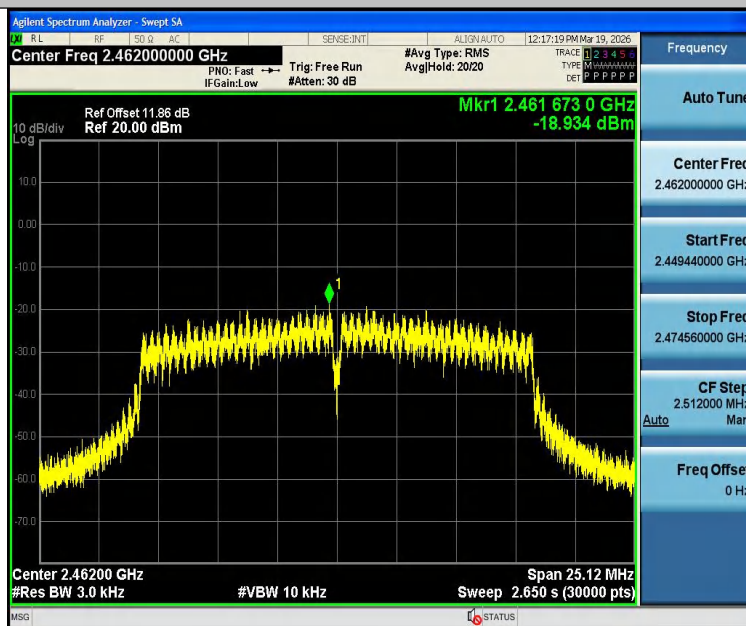
11G-Ant1-2412-PASS



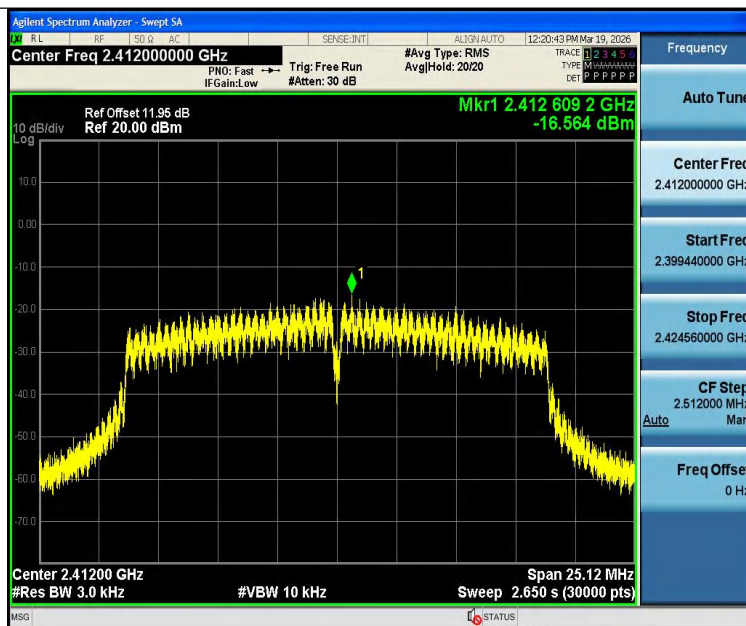
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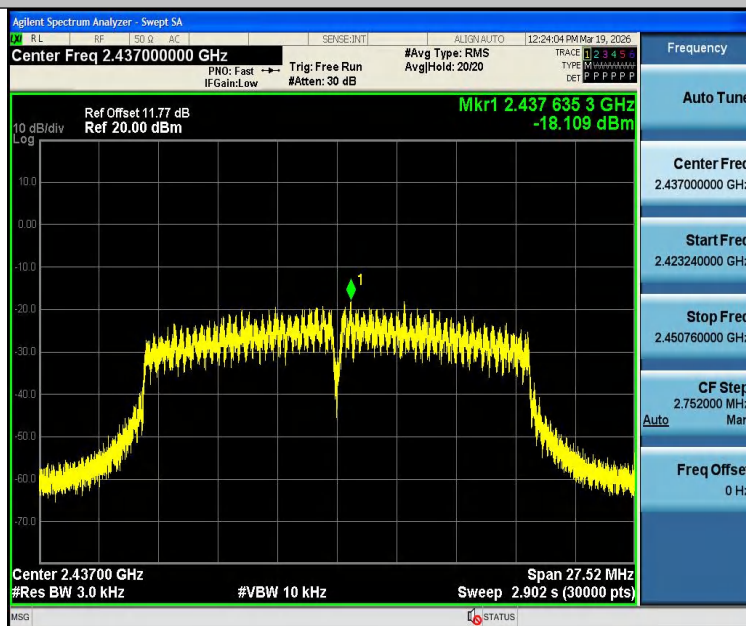
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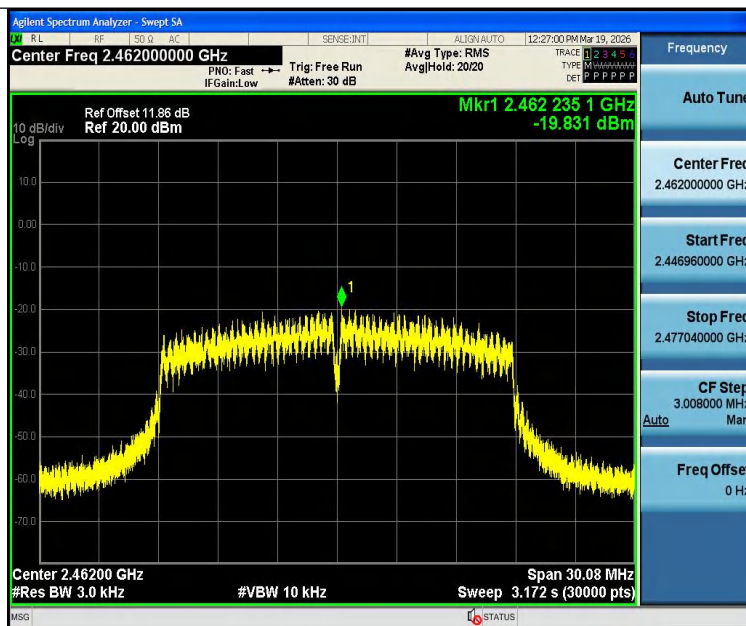
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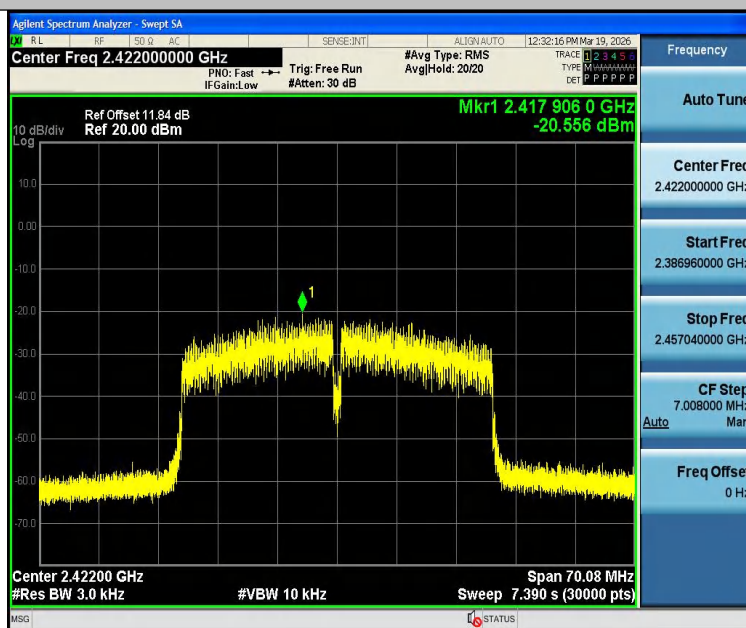
11N20SISO-Ant1-2437-PASS



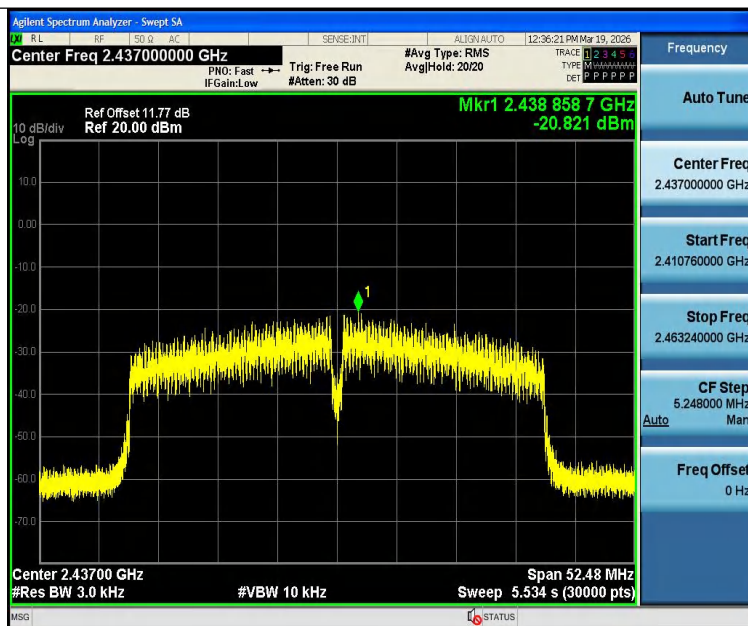
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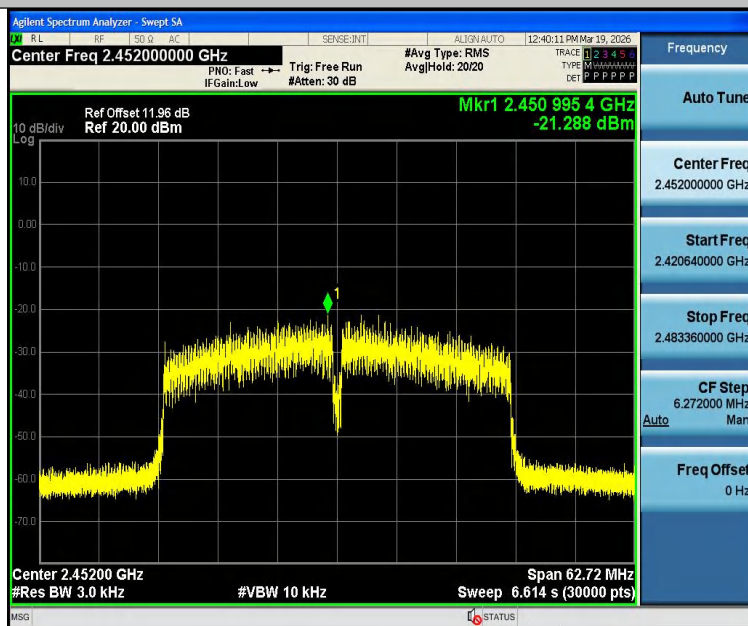
11N40SISO-Ant1-2422-PASS



11N40SISO-Ant1-2437-PASS



11N40SISO-Ant1-2452-PASS





12 Antenna Application

12.1 Antenna Requirement

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

12.2 Result

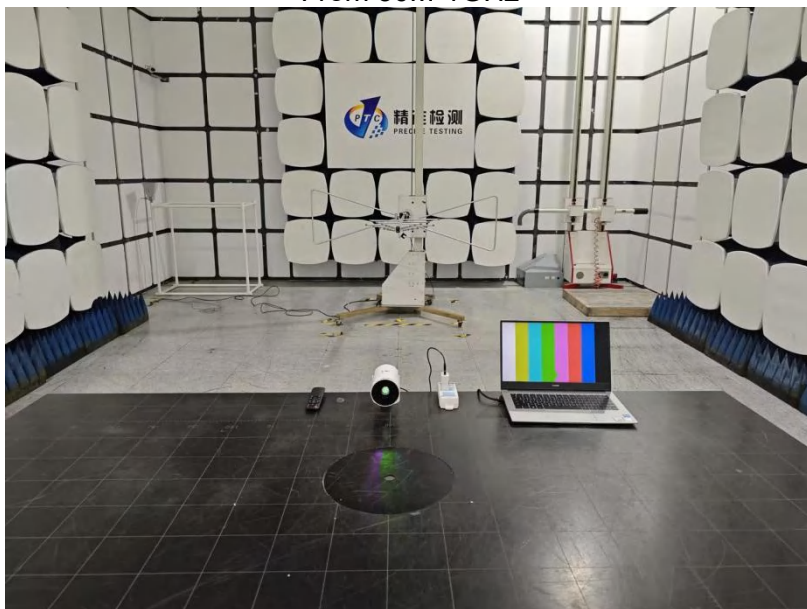
The EUT'S antenna, permanent attached antenna, is Ceramic antenna. The antenna's gain is 2.95 dBi and meets the requirement.

13 Test Setup

Conducted Emissions



Radiated Emissions From 30M-1GHz



Above 1GHz

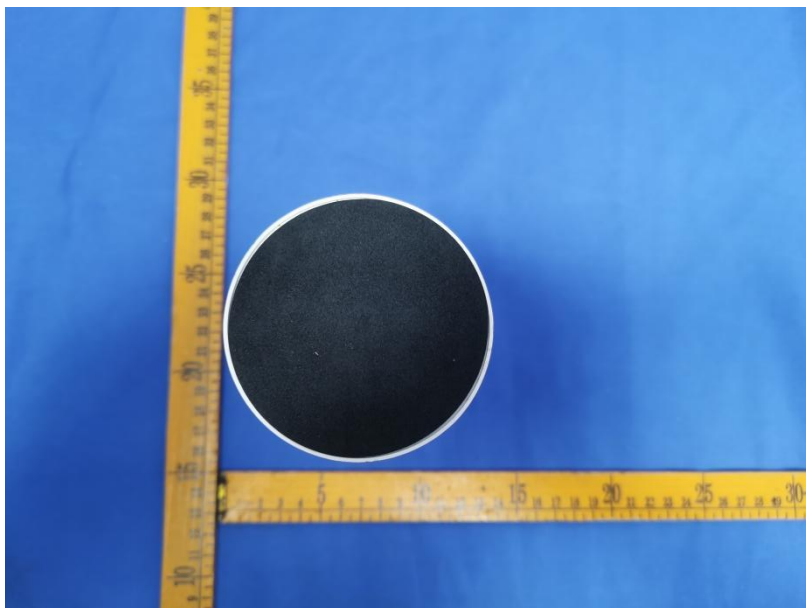


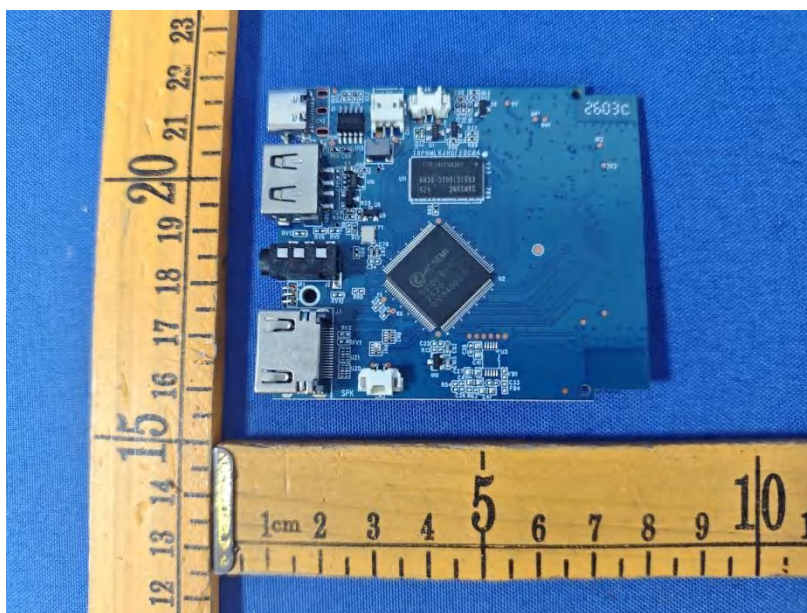
14 EUT PHOTOS

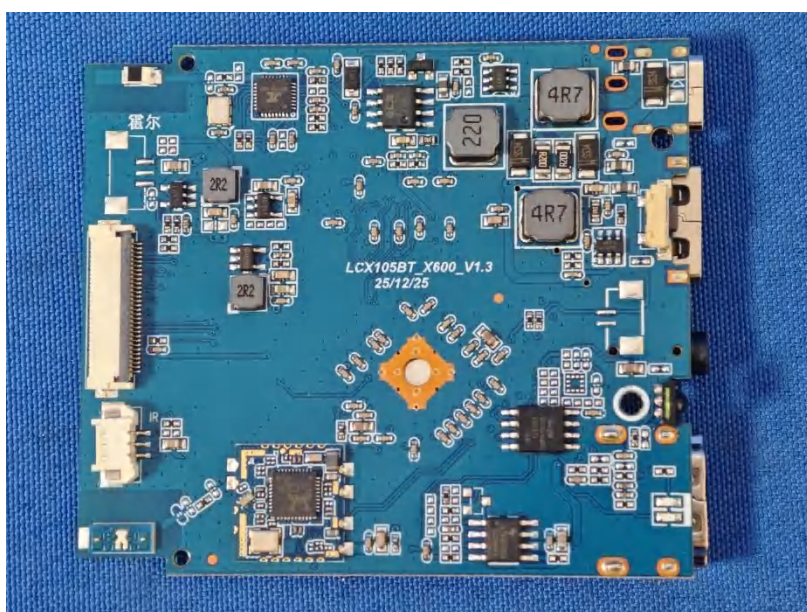
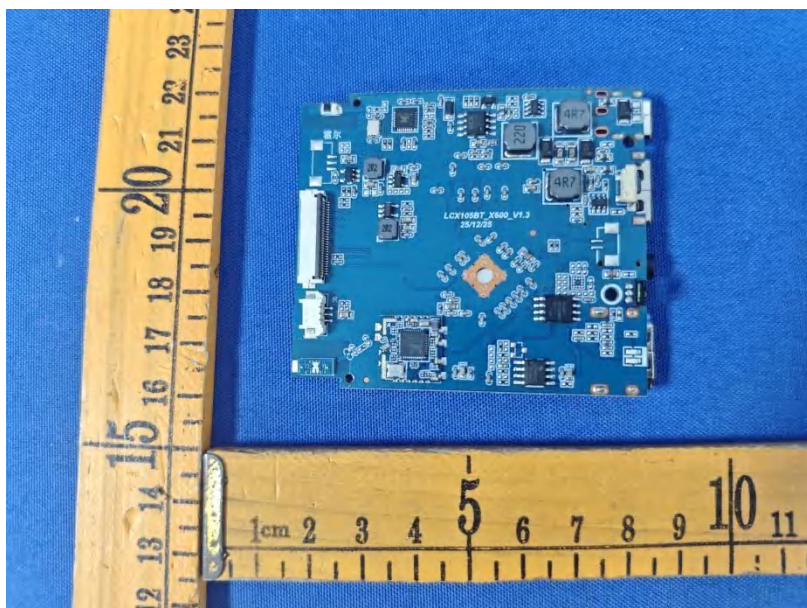


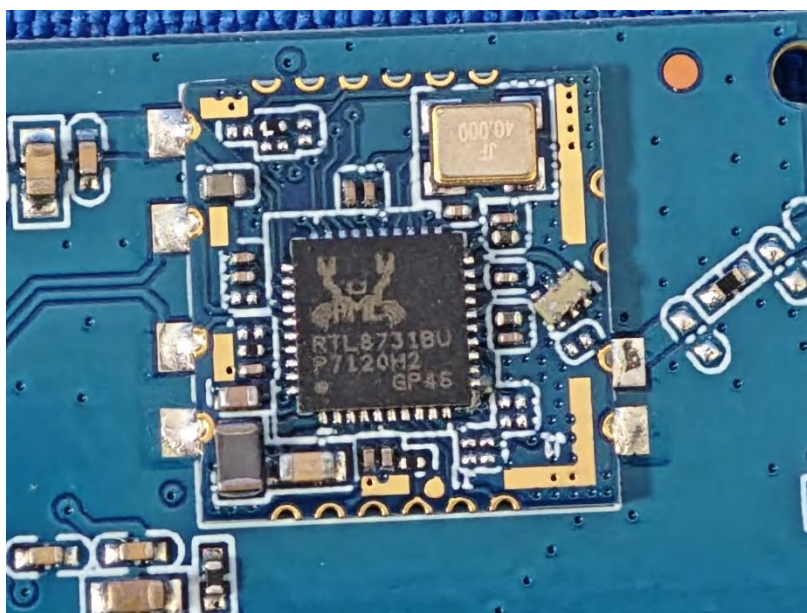
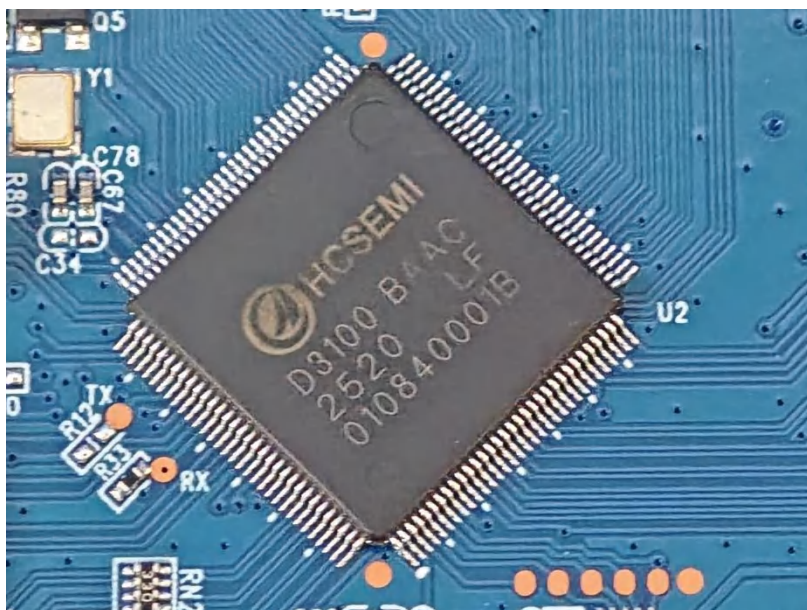


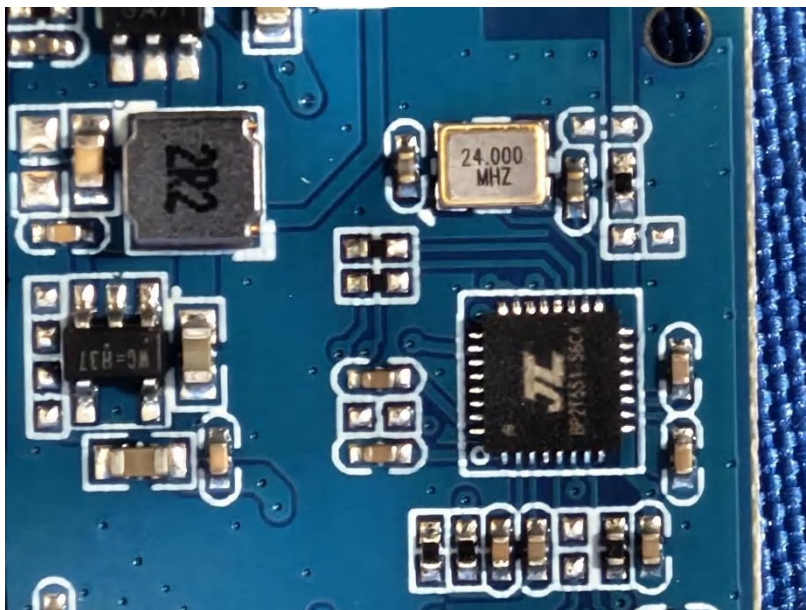












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