

4.6 Conducted Band Edge and Spurious Emission Measurement

Test Specification

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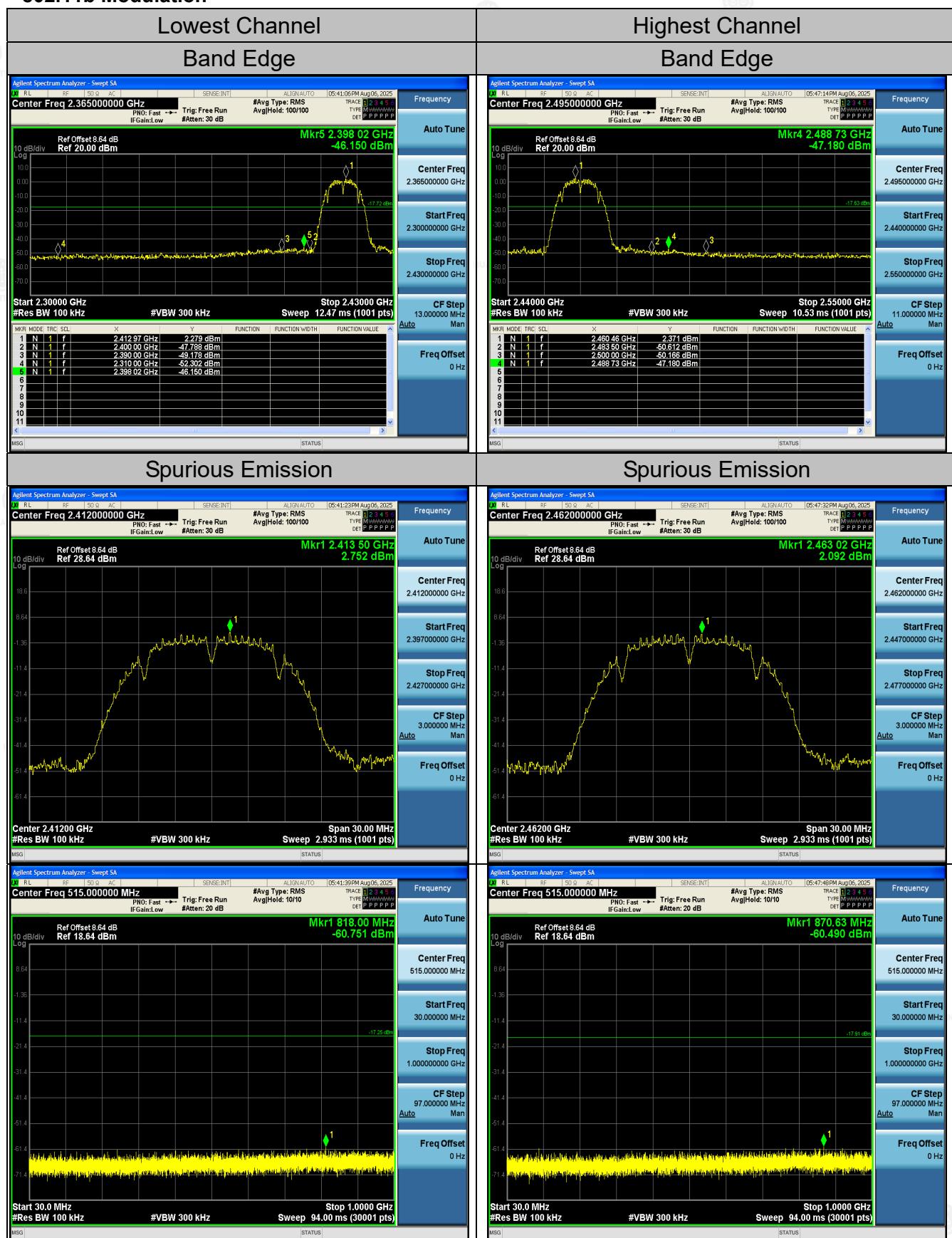
Test Instruments

RF Test Room					
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum analyzer	Agilent	N9020A	HKE-025	Feb. 19, 2025	Feb. 18, 2026
Spectrum analyzer	Agilent	N9020A	HKE-117	Feb. 19, 2025	Feb. 18, 2026
High pass filter unit	Tonscend	JS0806-F	HKE-055	Feb. 19, 2025	Feb. 18, 2026
RF Cable (9KHz-26.5GHz)	Tonscend	170660	N/A	Feb. 19, 2025	Feb. 18, 2026
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 19, 2025	Feb. 18, 2026
RF Test software	Tonscend	JS1120-3 Version 3.5.39	HKE-083	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



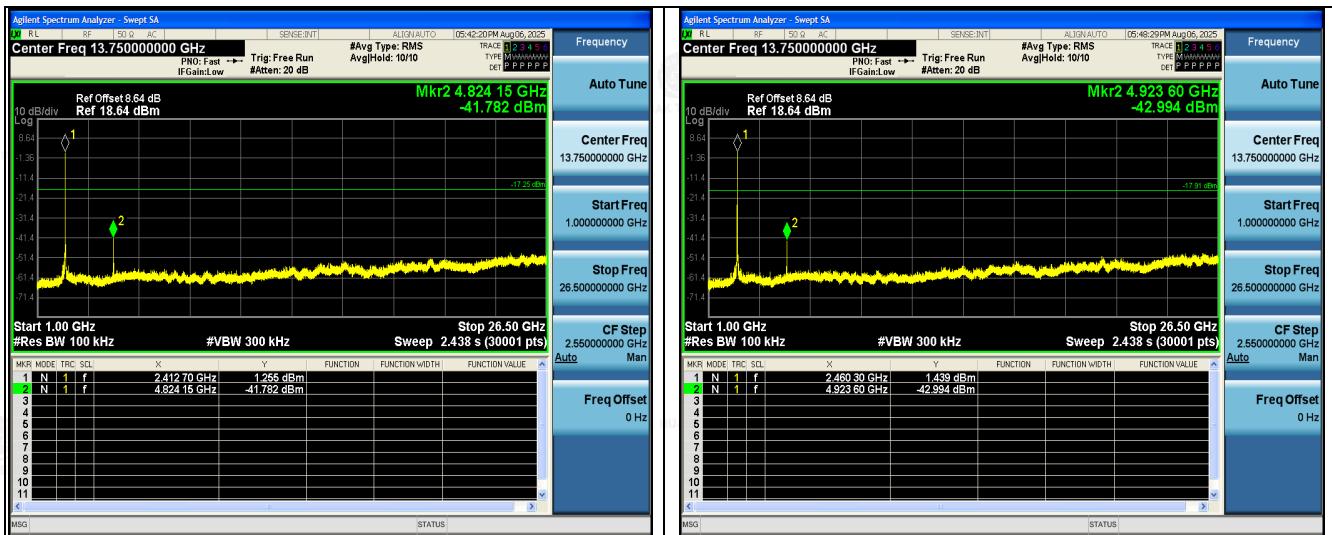
802.11b Modulation



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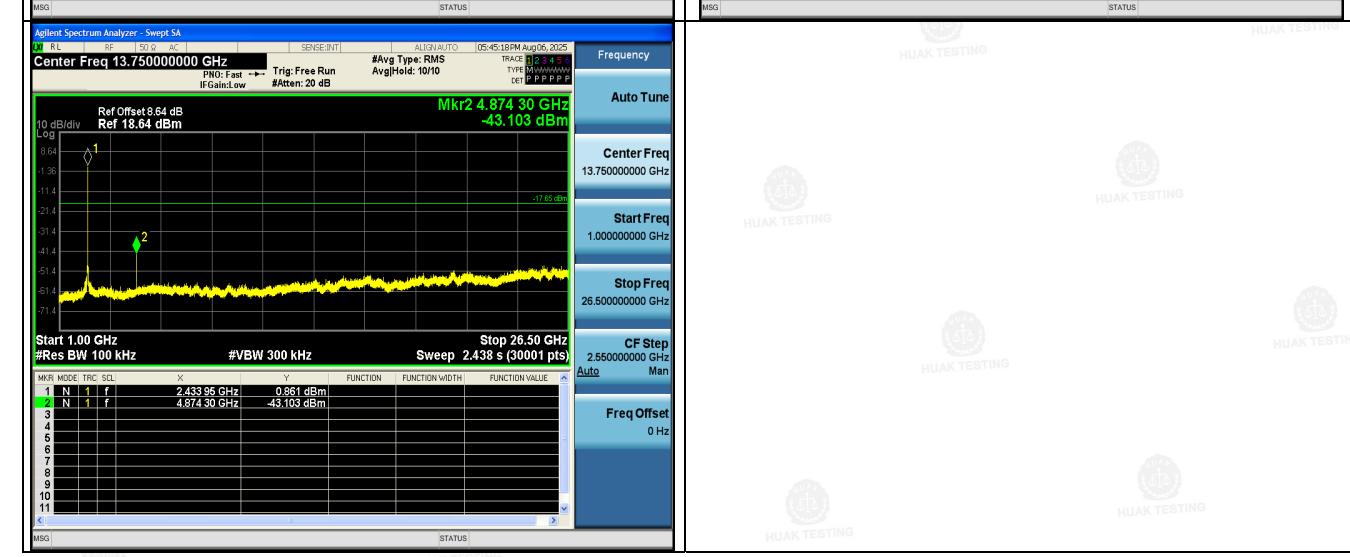
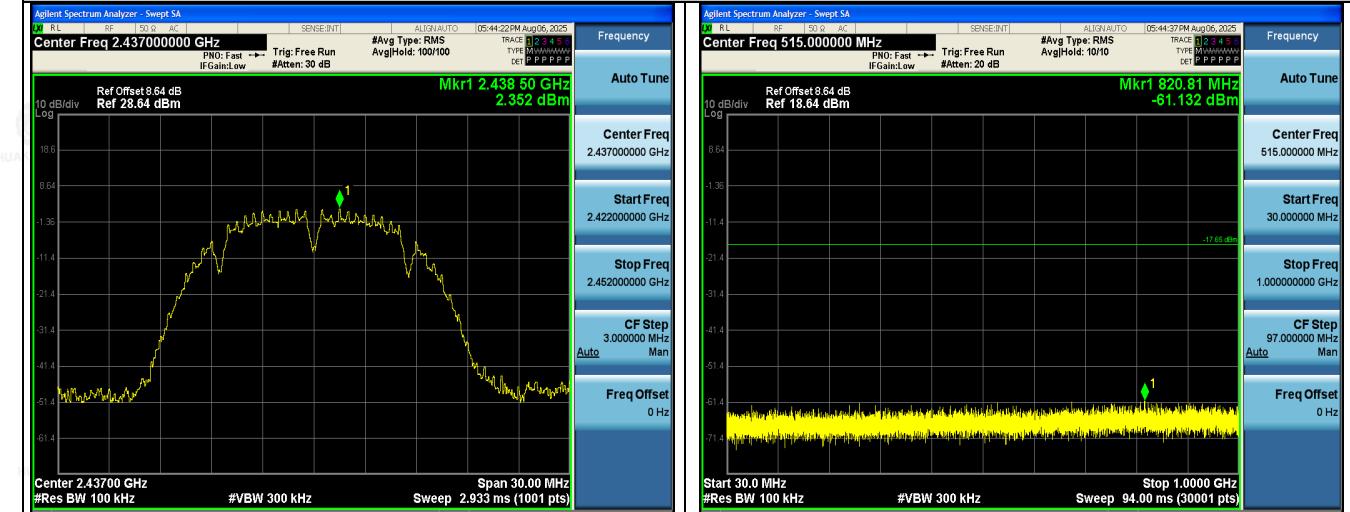
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Middle Channel

Spurious Emission



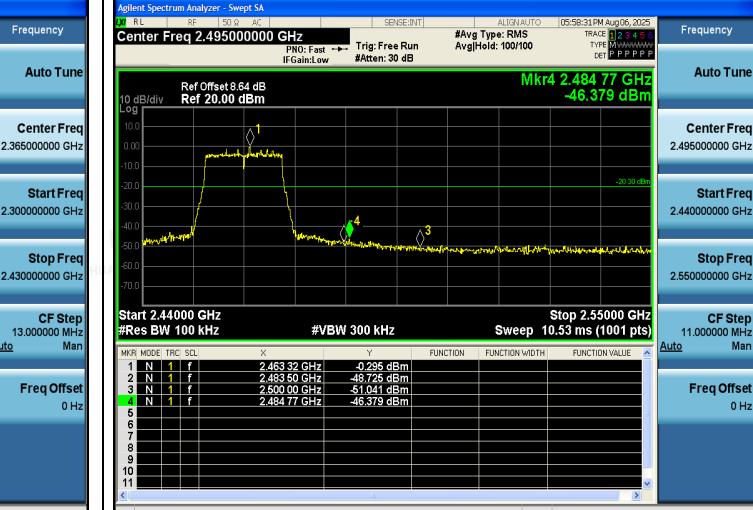
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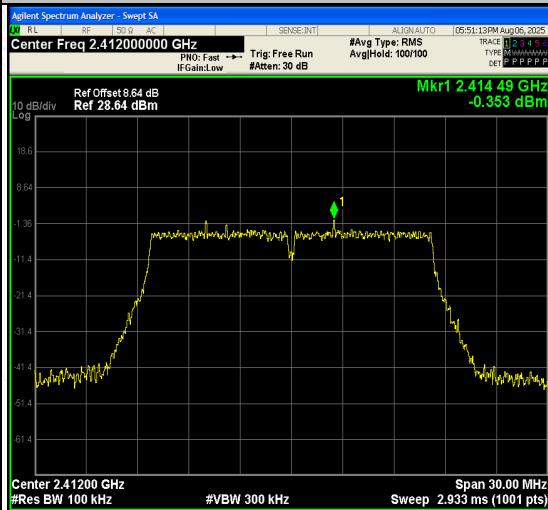
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Lowest Channel
Band Edge



Spurious Emission



Agilent Spectrum Analyzer - Swept SA

Center Freq 151.000000 MHz

Ref Offset 8.64 dB

Ref 18.64 dBm

PNL: Fast → Trig: Free Run

#Aver: 20 dB

#Avg Type: RMS

AvgHold: 10/10

10 dB/div Log

8.64

-1.36

-11.4

-21.4

-31.4

-41.4

-51.4

-61.4

-71.4

-20.35 dBm

Start 30.0 MHz

#Res BW 100 KHz

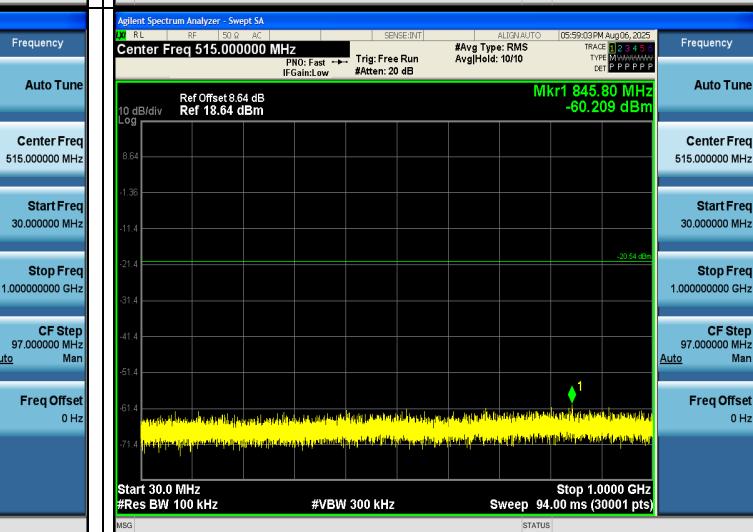
#VBW 300 KHz

Stop 1.0000 GHz

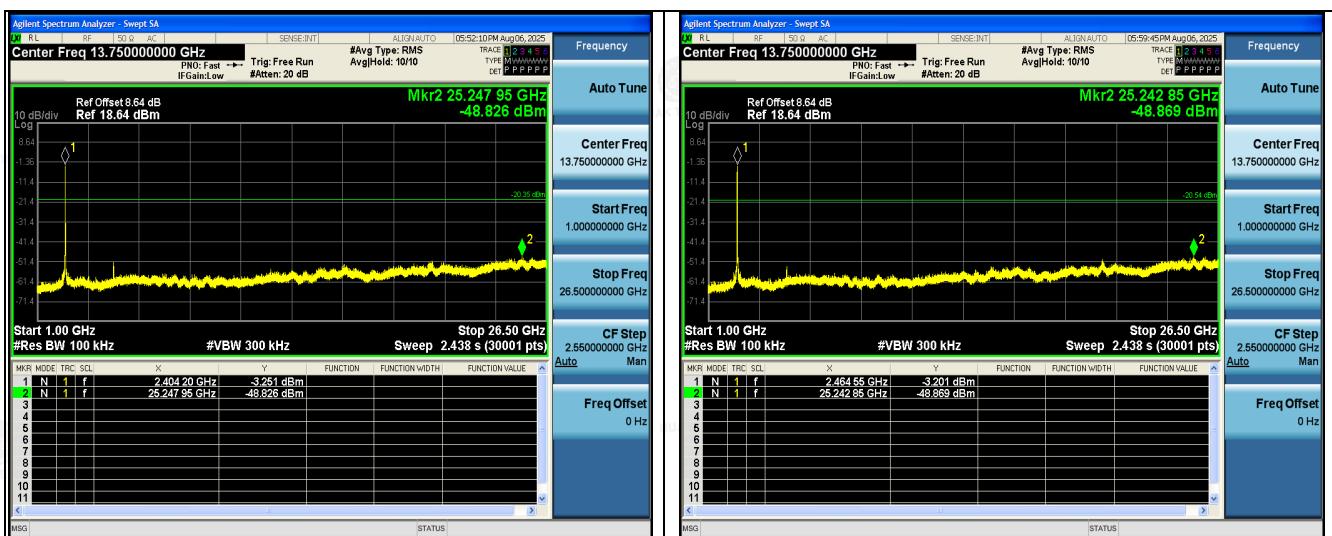
Sweep 94.00 ms (3001 pts)

Marker 1: 151.44625 MHz, -60.946 dBm

MSG STATUS

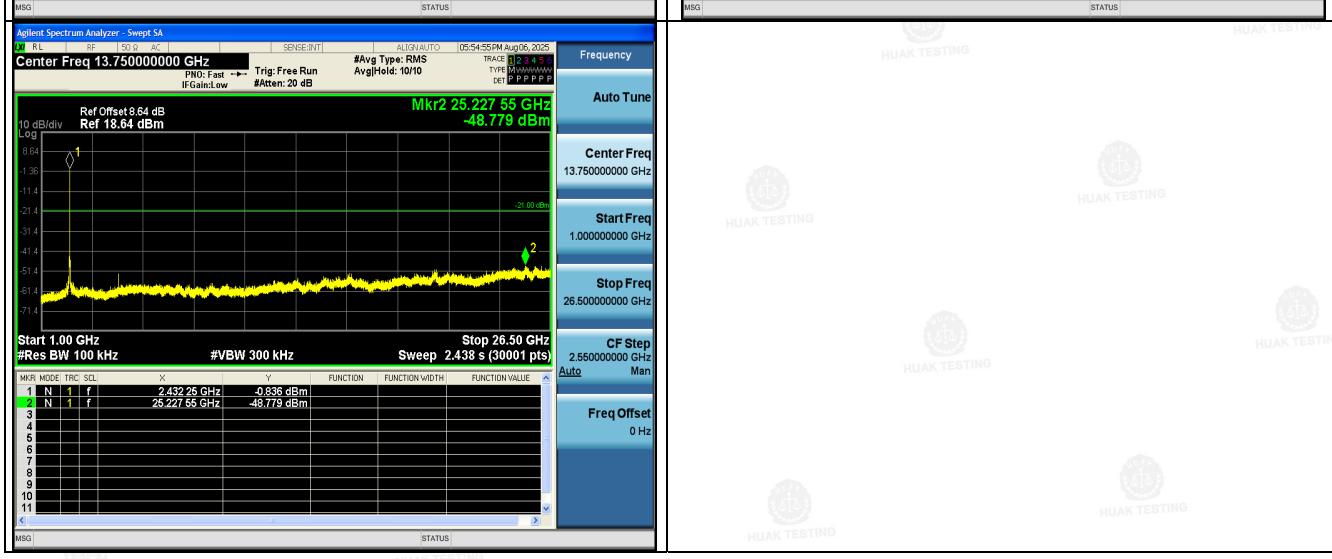
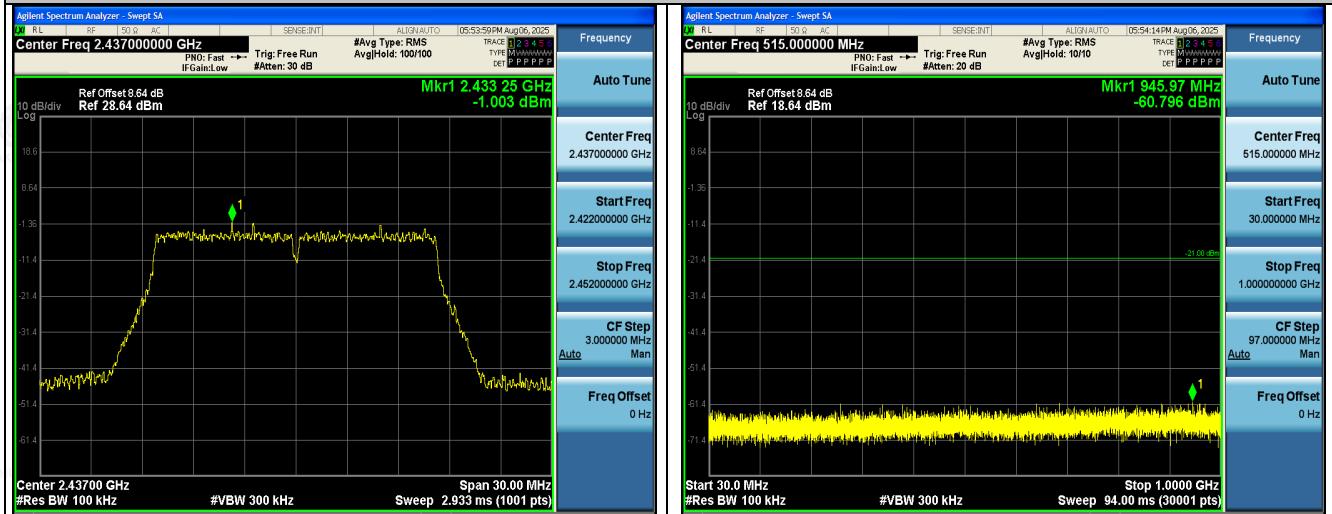


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Middle Channel

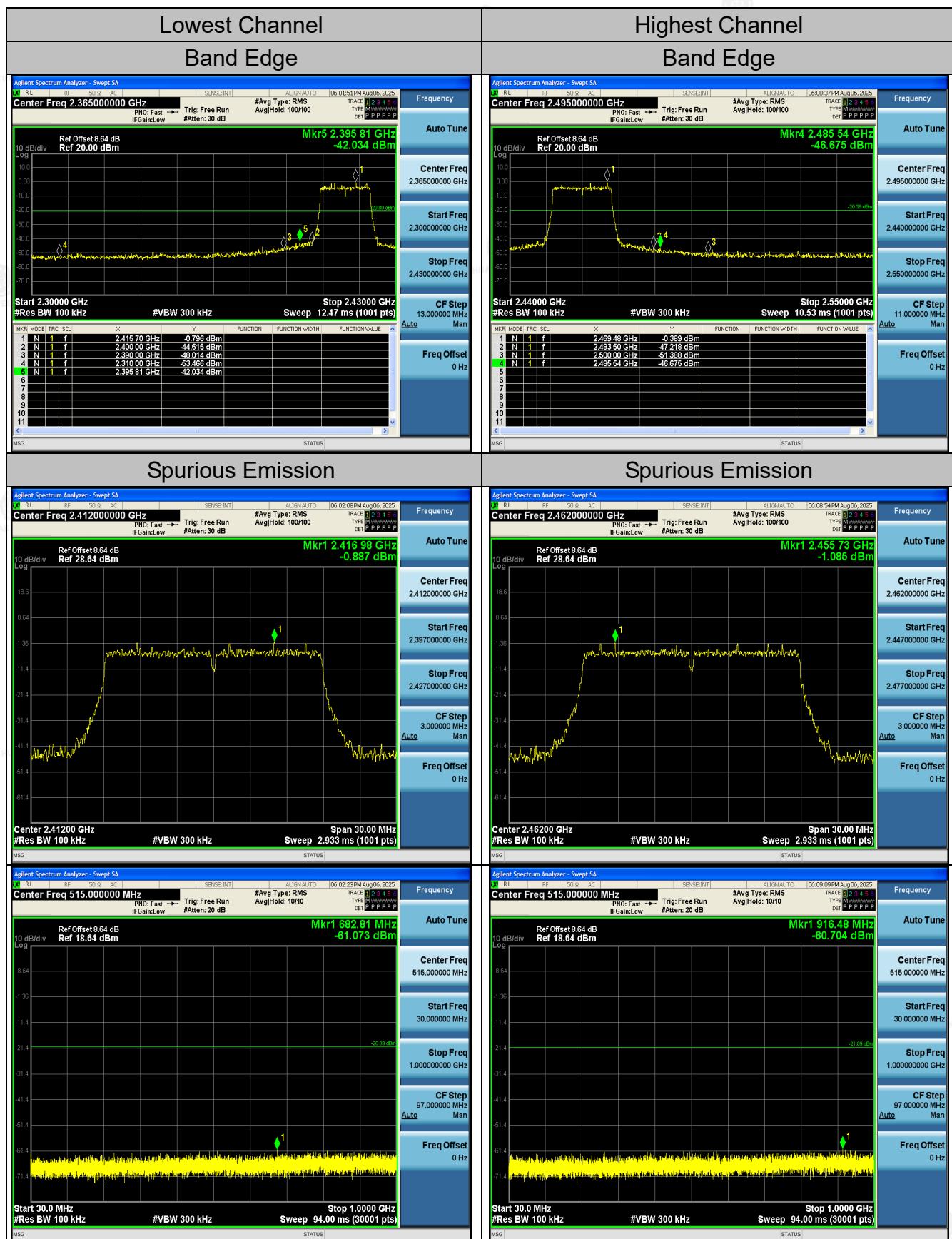
Spurious Emission



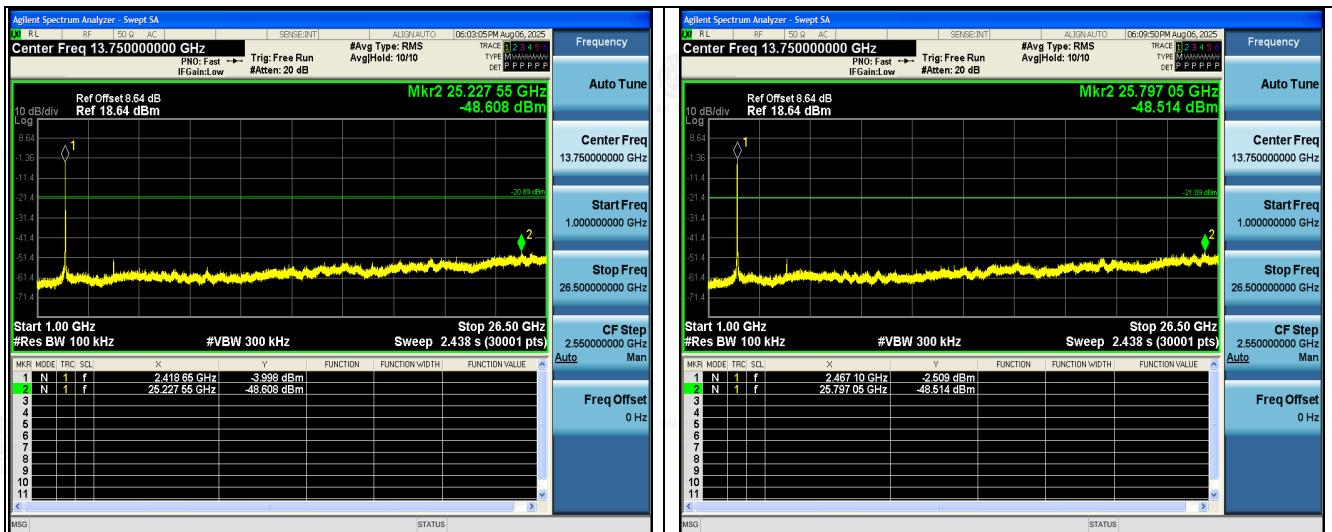
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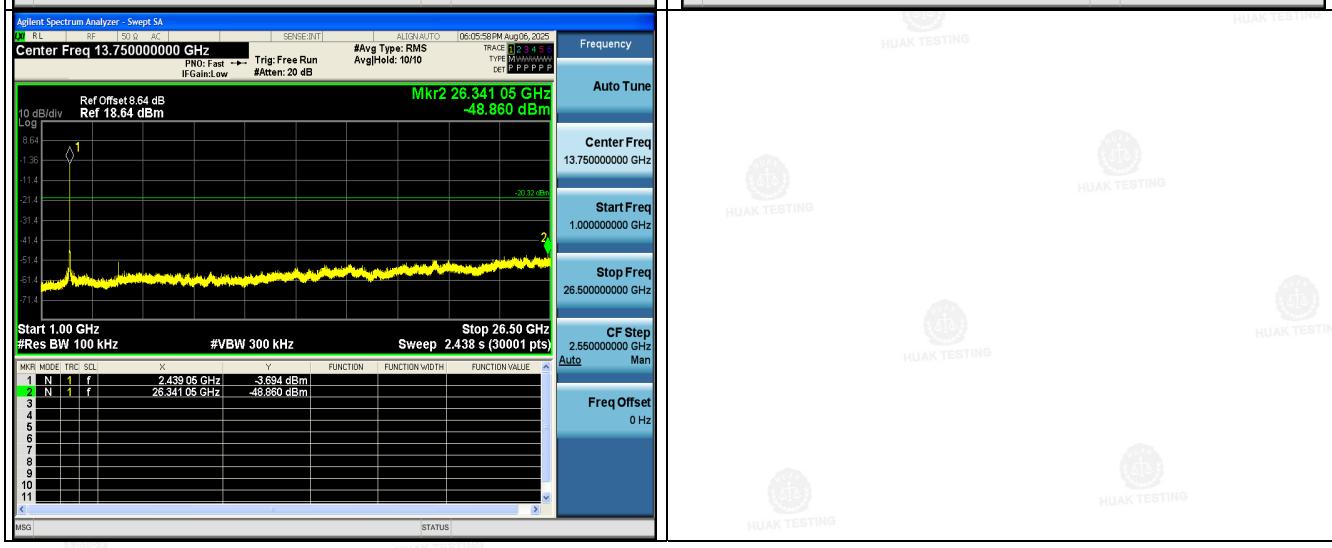
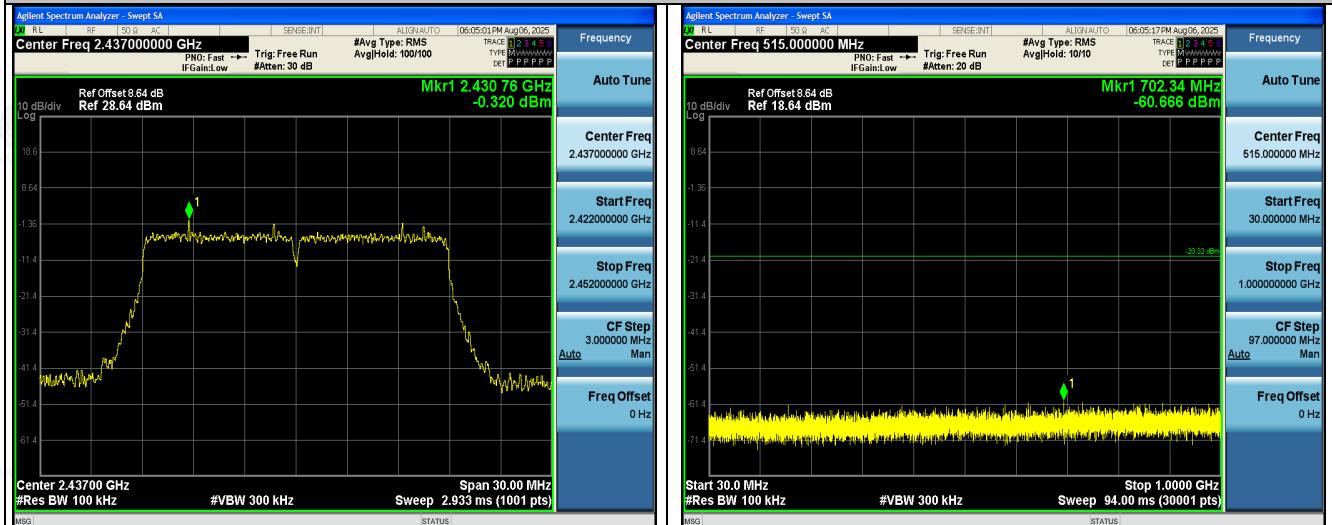


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Middle Channel

Spurious Emission



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4.7 Radiated Spurious Emission Measurement

Test Specification

Test Requirement:	FCC Part15 C Section 15.209																																							
Test Method:	ANSI C63.10: 2020																																							
Frequency Range:	9 kHz to 25 GHz																																							
Measurement Distance:	3 m																																							
Antenna Polarization:	Horizontal & Vertical																																							
Operation Mode:	Transmitting mode with modulation																																							
Receiver Setup:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>9kHz- 150kHz</td> <td>Quasi-peak</td> <td>200Hz</td> <td>1kHz</td> <td>Quasi-peak Value</td> </tr> <tr> <td>150kHz- 30MHz</td> <td>Quasi-peak</td> <td>9kHz</td> <td>30kHz</td> <td>Quasi-peak Value</td> </tr> <tr> <td>30MHz-1GHz</td> <td>Quasi-peak</td> <td>120KHz</td> <td>300KHz</td> <td>Quasi-peak Value</td> </tr> <tr> <td rowspan="2">Above 1GHz</td><td>Peak</td> <td>1MHz</td> <td>3MHz</td> <td>Peak Value</td> </tr> <tr> <td>Peak</td> <td>1MHz</td> <td>10Hz</td> <td>Average Value</td> </tr> </tbody> </table>					Frequency	Detector	RBW	VBW	Remark	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value	Above 1GHz	Peak	1MHz	3MHz	Peak Value	Peak	1MHz	10Hz	Average Value						
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88-216	150	3																																						
216-960	200	3																																						
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Above 1GHz	500	3	Average																																					
	5000	3	Peak																																					
Test Setup:	<p>For radiated emissions below 30MHz</p>																																							

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Test Procedure:	<p>The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.</p> <p>3. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level</p> <p>4. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.</p> <p>5. Use the following spectrum analyzer settings:</p> <ul style="list-style-type: none">(1) Span shall wide enough to fully capture the emission being measured;(2) Set RBW=120 kHz for $f < 1$ GHz; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold;(3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement. <p>6. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.</p>
Test Results:	PASS



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Test Instruments

Radiated Emission Test Site (966)

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum analyzer	Agilent	N9020A	HKE-025	Feb. 19, 2025	Feb. 18, 2026
Spectrum analyzer	Agilent	N9020A	HKE-117	Feb. 19, 2025	Feb. 18, 2026
Spectrum analyzer	R&S	FSV3044	HKE-126	Feb. 19, 2025	Feb. 18, 2026
Preamplifier	EMCI	EMC051845S	HKE-006	Feb. 19, 2025	Feb. 18, 2026
Preamplifier	Schwarzbeck	BBV 9743	HKE-016	Feb. 19, 2025	Feb. 18, 2026
Preamplifier	A.H. Systems	SAS-574	HKE-182	Feb. 19, 2025	Feb. 18, 2026
6dB Attenuator	Pasternack	6db	HKE-184	Feb. 19, 2025	Feb. 18, 2026
EMI Test Receiver	Rohde & Schwarz	ESR-7	HKE-010	Feb. 19, 2025	Feb. 18, 2026
Broadband Antenna	Schwarzbeck	VULB9168	HKE-167	Feb. 21, 2024	Feb. 20, 2026
Loop Antenna	COM-POWER	AL-130R	HKE-014	Feb. 21, 2024	Feb. 20, 2026
Horn Antenna	Schwarzbeck	9120D	HKE-013	Feb. 21, 2024	Feb. 20, 2026
EMI Test Software	Tonscend	JS32-RE 5.0.0	HKE-082	/	/
RSE Test Software	Tonscend	JS36-RSE 5.0.0	HKE-184	/	/

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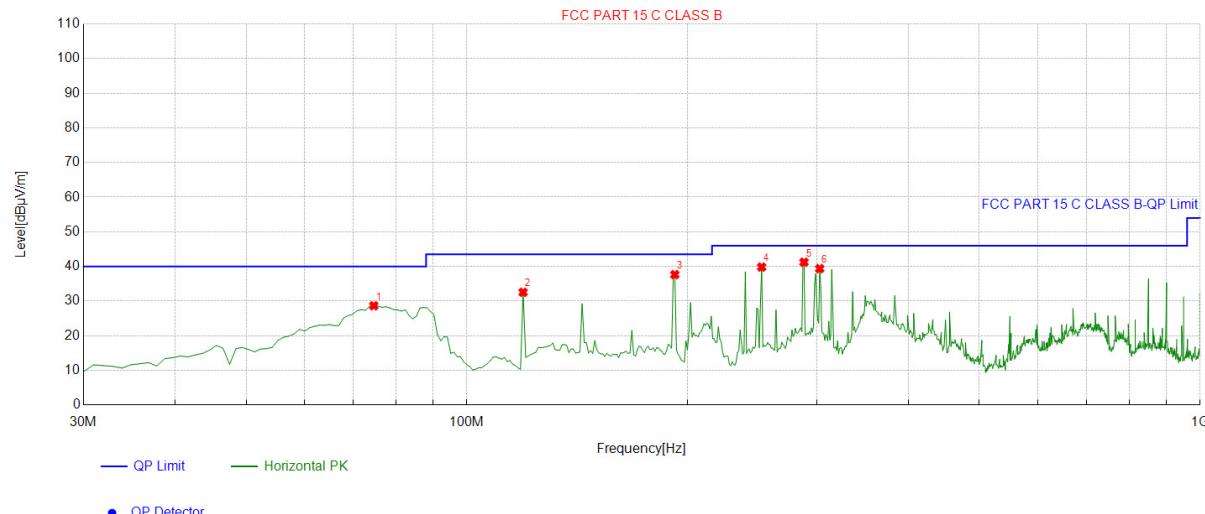
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Test Data

All the test modes completed for test. Only the worst result was reported as below:

Below 1GHz

Horizontal:



Suspected List

NO.	Freq. [MHz]	Factor [dB]	Reading [dB μ V/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	74.6647	-17.94	46.59	28.65	40.00	11.35	100	180	Horizontal
2	119.3293	-15.94	48.48	32.54	43.50	10.96	100	151	Horizontal
3	192.1522	-15.74	53.38	37.64	43.50	5.86	100	221	Horizontal
4	252.3524	-13.53	53.35	39.82	46.00	6.18	100	188	Horizontal
5	288.2783	-12.19	53.42	41.23	46.00	4.77	100	209	Horizontal
6	302.8428	-11.83	51.20	39.37	46.00	6.63	100	2	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor;
Margin = Limit – Level

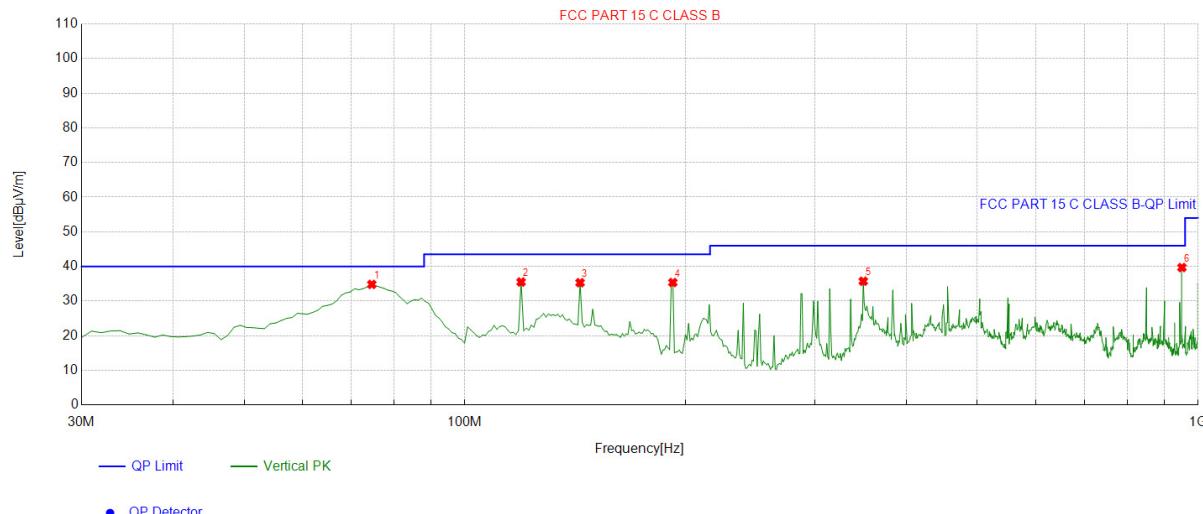
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Vertical:



Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dB μ V/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	74.6647	-17.94	52.76	34.82	40.00	5.18	100	300	Vertical
2	119.3293	-15.94	51.45	35.51	43.50	7.99	100	159	Vertical
3	143.6036	-18.35	53.66	35.31	43.50	8.19	100	123	Vertical
4	192.1522	-15.74	51.11	35.37	43.50	8.13	100	357	Vertical
5	349.4494	-10.04	45.78	35.74	46.00	10.26	100	144	Vertical
6	950.4805	-1.36	41.05	39.69	46.00	6.31	100	271	Vertical

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

Harmonics and Spurious Emissions

Frequency Range (9kHz-30MHz)

Frequency (MHz)	Level@3m (dB μ V/m)	Limit@3m (dB μ V/m)
--	--	--
--	--	--
--	--	--
--	--	--

Note: 1. Emission Level=Reading+ Cable loss-Antenna factor-Amp factor.

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement.

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Radiated Emission Test**LOW CH1 (802.11b Mode)/2412****Horizontal:**

Frequency (MHz)	Reading Result (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	HUAK TESTING Limits (dB μ V/m)	Margin (dB)	Detector Type
4824	53.47	-3.64	49.83	74	24.17	peak
4824	42.97	-3.64	39.33	54	14.67	AVG
7236	50.29	-0.95	49.34	74	24.66	peak
7236	38.52	-0.95	37.57	54	16.43	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency (MHz)	Reading Result (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
4824	50.91	-3.64	47.27	74	26.73	peak
4824	43.69	-3.64	40.05	54	13.95	AVG
7236	48.55	-0.95	47.6	74	26.4	peak
7236	40.7	-0.95	39.75	54	14.25	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.



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MID CH6 (802.11b Mode)/2437

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
4874	51.05	-3.51	47.54	74	26.46	peak
4874	41.15	-3.51	37.64	54	16.36	AVG
7311	48.83	-0.82	48.01	74	25.99	peak
7311	39.73	-0.82	38.91	54	15.09	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-L level

Vertical:

Frequency (MHz)	Reading Result (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
4874	52.8	-3.51	49.29	74	24.71	peak
4874	40.37	-3.51	36.86	54	17.14	AVG
7311	49.67	-0.82	48.85	74	25.15	peak
7311	40.1	-0.82	39.28	54	14.72	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-L level



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HIGH CH11 (802.11b Mode)/2462

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
4924	52.23	-3.43	48.8	74	25.2	peak
4924	41.74	-3.43	38.31	54	15.69	AVG
7386	48.95	-0.75	48.2	74	25.8	peak
7386	41.12	-0.75	40.37	54	13.63	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
4924	53.26	-3.43	49.83	74	24.17	peak
4924	41.58	-3.43	38.15	54	15.85	AVG
7386	48.09	-0.75	47.34	74	26.66	peak
7386	40.08	-0.75	39.33	54	14.67	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency; "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) The emissions are attenuated more than 20dB below the permissible limits are not recorded in the report.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB μ V/m(PK Value) < 93.98(AV Limit), at harmonic 53.20 dB μ V/m(PK Value) < 54dB μ V/m(AV Limit), the Average Detected not need to completed.



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LOW CH1 (802.11g Mode)/2412

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
4824	52.64	-3.64	49	74	25	peak
4824	40.03	-3.64	36.39	54	17.61	AVG
7236	49.47	-0.95	48.52	74	25.48	peak
7236	39.97	-0.95	39.02	54	14.98	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-level

Vertical:

Frequency (MHz)	Reading Result (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
4824	50.63	-3.64	46.99	74	27.01	peak
4824	42.62	-3.64	38.98	54	15.02	AVG
7236	47.90	-0.95	46.95	74	27.05	peak
7236	39.95	-0.95	39	54	15	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level



HUAK TESTING

MID CH6 (802.11g Mode)/2437

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
4874	49.63	-3.51	46.12	74	27.88	peak
4874	43.04	-3.51	39.53	54	14.47	AVG
7311	48.69	-0.82	47.87	74	26.13	peak
7311	44.18	-0.82	43.36	54	10.64	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-L level

Vertical:

Frequency (MHz)	Reading Result (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
4874	52.68	-3.51	49.17	74	24.83	peak
4874	44.53	-3.51	41.02	54	12.98	AVG
7311	53.05	-0.82	52.23	74	21.77	peak
7311	39.68	-0.82	38.86	54	15.14	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-L level



HIGH CH11 (802.11g Mode)/2462

Horizontal:

Frequency	Reading Result	Factor	HUAK TESTING	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
4924	52.55	-3.43	49.12	74	24.88	peak
4924	43.47	-3.43	40.04	54	13.96	AVG
7386	52.82	-0.75	52.07	74	21.93	peak
7386	41.32	-0.75	40.57	54	13.43	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency (MHz)	Reading Result (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
4924	54.56	-3.43	51.13	74	22.87	peak
4924	41.55	-3.43	38.12	54	15.88	AVG
7386	51.19	-0.75	50.44	74	23.56	peak
7386	39.62	-0.75	38.87	54	15.13	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-1 level

Remark:

(1) Measuring frequencies from 1 GHz to the 25 GHz.

(2) "F" denotes fundamental frequency; "H" denotes spurious frequency; "E" denotes band edge frequency.

(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

(4) The emissions are attenuated more than 20dB below the permissible limits are not recorded in the report.

(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.

(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) < 93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) < 54dBuV/m(AV Limit), the Average Detected not need to completed.

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LOW CH1 (802.11n/HT20 Mode)/2412

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
4824	50.66	-3.64	47.02	74	26.98	peak
4824	45.47	-3.64	41.83	54	12.17	AVG
7236	49.90	-0.95	48.95	74	25.05	peak
7236	41.64	-0.95	40.69	54	13.31	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-L level

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
4824	53.5	-3.64	49.86	74	24.14	peak
4824	43.3	-3.64	39.66	54	14.34	AVG
7236	53.22	-0.95	52.27	74	21.73	peak
7236	38.92	-0.95	37.97	54	16.03	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.



HIGH CH11 (802.11n/HT20 Mode)/2462

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
4924	52.89	-3.43	49.46	74	24.54	peak
4924	42.35	-3.43	38.92	54	15.08	AVG
7386	50.39	-0.75	49.64	74	24.36	peak
7386	39.12	-0.75	38.37	54	15.63	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
4924	53.39	-3.43	49.96	74	24.04	peak
4924	39.19	-3.43	35.76	54	18.24	AVG
7386	52.02	-0.75	51.27	74	22.73	peak
7386	39.35	-0.75	38.6	54	15.4	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency; "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) The emissions are attenuated more than 20dB below the permissible limits are not recorded in the report.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB μ V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB μ V/m(PK Value) <54 dB μ V/m(AV Limit), the Average Detected not need to completed.

Test Result of Radiated Spurious at Band edges

All modes have been tested. Only the worst result was reported as below:

Operation Mode:

802.11b Mode TX CH Low (2412MHz)

Horizontal:

Frequency (MHz)	Reading Result (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
2310.00	52.74	-5.81	46.93	74	27.07	peak
2310.00	42.9	-5.81	37.09	54	16.91	AVG
2390.00	51.65	-5.84	45.81	74	28.19	peak
2390.00	42.89	-5.84	37.05	54	16.95	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency (MHz)	Reading Result (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
2310.00	51.57	-5.81	45.76	74	28.24	peak
2310.00	41.71	-5.81	35.9	54	18.1	AVG
2390.00	54.67	-5.84	48.83	74	25.17	peak
2390.00	40.98	-5.84	35.14	54	18.86	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.



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Operation Mode: TX CH High (2462MHz)

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
2483.50	54.08	-5.81	48.27	74	25.73	peak
2483.50	42.99	-5.81	37.18	54	16.82	AVG
2500.00	50.57	-6.06	44.51	74	29.49	peak
2500.00	39.77	-6.06	33.71	54	20.29	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
2483.50	53.45	-5.81	47.64	74	26.36	peak
2483.50	40.53	-5.81	34.72	54	19.28	AVG
2500.00	52.21	-6.06	46.15	74	27.85	peak
2500.00	38.58	-6.06	32.52	54	21.48	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.

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Horizontal:

Frequency (MHz)	Reading Result (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits 74	Margin (dB)	Detector Type
2310.00	53.68	-5.81	47.87	74	26.13	
2310.00	42.18	-5.81	36.37	54	17.63	AVG
2390.00	53.34	-5.84	47.5	74	26.5	peak
2390.00	39.52	-5.84	33.68	54	20.32	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency (MHz)	Reading Result (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits 74	Margin (dB)	Detector Type
2310.00	53.18	-5.81	47.37	74	26.63	
2310.00	39.59	-5.81	33.78	54	20.22	AVG
2390.00	49.83	-5.84	43.99	74	30.01	peak
2390.00	40.98	-5.84	35.14	54	18.86	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

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Operation Mode: TX CH High (2462MHz)

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
2483.50	51.71	-5.65	46.06	74	27.94	peak
2483.50	44.02	-5.65	38.37	54	15.63	AVG
2500.00	53.18	-5.65	47.53	74	26.47	peak
2500.00	40.23	-5.65	34.58	54	19.42	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-L level

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
2483.50	52.68	-5.65	47.03	74	26.97	peak
2483.50	40.11	-5.65	34.46	54	19.54	AVG
2500.00	53.41	-5.65	47.76	74	26.24	peak
2500.00	42.46	-5.65	36.81	54	17.19	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-L level

Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limits.



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Operation Mode: 802.11n/HT20 Mode TX CH Low (2412MHz)

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
2310.00	55.34	-5.81	49.53	74	24.47	peak
2310.00	40.44	-5.81	34.63	54	19.37	AVG
2390.00	54.75	-5.84	48.91	74	25.09	peak
2390.00	41.98	-5.84	36.14	54	17.86	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
2310.00	54.26	-5.81	48.45	74	25.55	peak
2310.00	40.8	-5.81	34.99	54	19.01	AVG
2390.00	51.96	-5.84	46.12	74	27.88	peak
2390.00	42.17	-5.84	36.33	54	17.67	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.



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Operation Mode: TX CH High (2462MHz)

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
2483.50	53.87	-5.65	48.22	74	25.78	peak
2483.50	39.51	-5.65	33.86	54	20.14	AVG
2500.00	51.98	-5.65	46.33	74	27.67	peak
2500.00	42.02	-5.65	36.37	54	17.63	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
2483.50	52.03	-5.65	46.38	74	27.62	peak
2483.50	43.16	-5.65	37.51	54	16.49	AVG
2500.00	51.50	-5.65	45.85	74	28.15	peak
2500.00	40.22	-5.65	34.57	54	19.43	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.

Remark:

1. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.
2. In restricted bands of operation, the spurious emissions below the permissible value more than 20dB.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



HUAK TESTING

4.8 Antenna Requirement

Standard Applicable

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, 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.

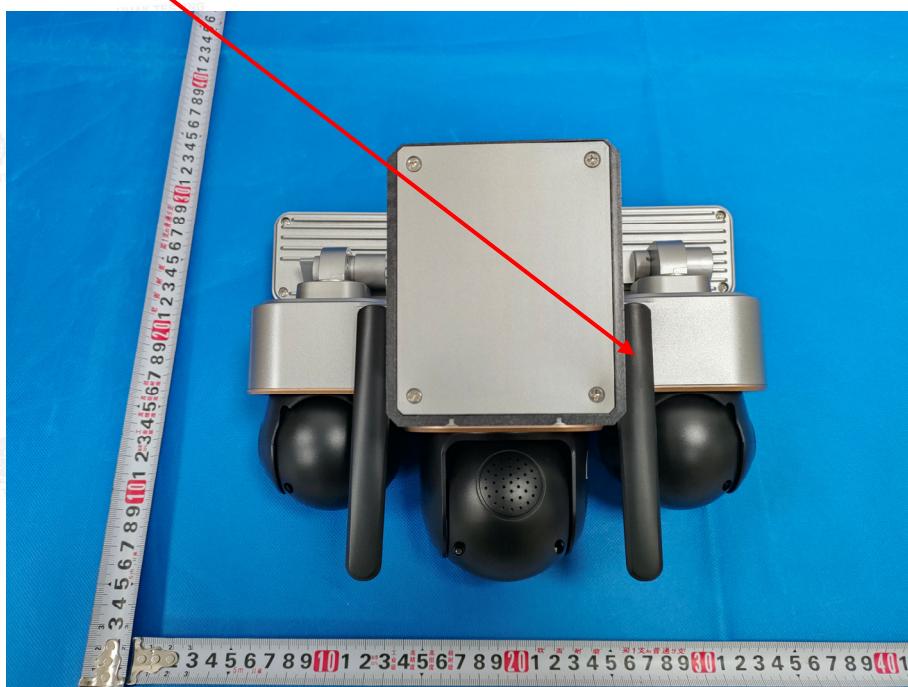
Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is an External Antenna, need professional installation, not easy to remove. It conforms to the standard requirements. The directional gains of antenna used for transmitting is 3.87dBi.

Antenna



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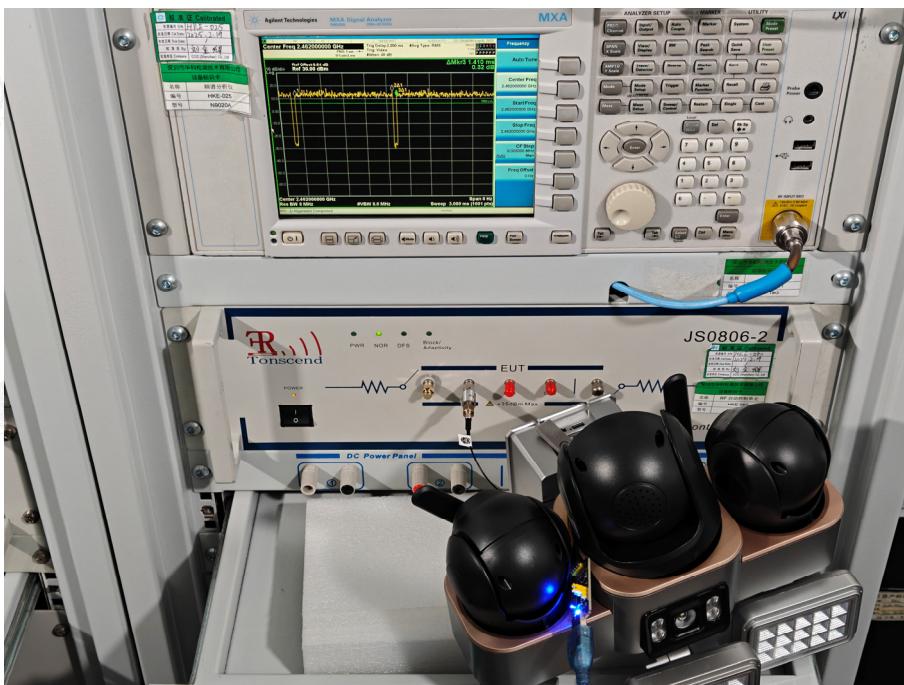
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AC Conducted Emission



RF Conducted Emission

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6. Photos of the EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos.

-----End of test report-----

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