Certificate No.: 3745.01

China

FCC - TEST REPORT

Report Number	:	**7095021029106-00**	Date of Issue:	Dec.13,2021

Model	:	SC022-WBI0
Product Type	:	Doorbell Camera+Chime
Applicant	:	Hangzhou Xizhi Electronics Co., Ltd.
Address	:	The second floor,Building 3,No. 8 Yuyang Road,Lushan Subdistrict, Fuyang Hangzhou, Zhejiang
Manufacturer	:	Hangzhou Xizhi Electronics Co., Ltd.
Address	:	The second floor,Building 3,No. 8 Yuyang Road,Lushan Subdistrict, Fuyang Hangzhou, Zhejiang

Test Result	:	■ **Positive** ☐ **Negative**
Total pages including Appendices	:	53

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2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch No.16 Lane, 1951 Du Hui Road, Shanghai 201108, P.R. China
Test Firm FCC Registration Number:	820234
Designation number:	CN1183
IC Company Number:	25988
CAB identifier:	CN0101
Telephone:	+86 21 6141 0123
Fax:	+86 21 6140 8600

3 Description of the Equipment under Test

Product:	Doorbell Camera+Chime
Model no.:	SC022-WBI0
FCC ID:	2ASBR-XZ-R8841
Options and accessories:	NA
Rating:	3*1.5V AA batteries for doorbell camera AC 100-120V,50/60Hz for Chime
RF Transmission Frequency:	802.11b/g/n-HT20: 2412~2462 MHz (Wi-Fi) 802.11n-HT40: 2422~2452 MHz (Wi-Fi) 2402~2480 MHz (BLE4.2) 433.92MHz (SRD)
Modulation:	Direct Sequence Spread Spectrum (DSSS) for 802.11b Orthogonal Frequency Division Multiplexing (OFDM) for 802.11g/n; 2.4GHz BLE: GFSK 433.92MHz: ASK

Channel list:

802.11b/g/n(HT20)					802.11n(HT40)		
Ch	Fre(MHz)	Ch	Fre(MHz)	Ch	Fre(MHz)	Ch	Fre(MHz)
1	2412	7	2442	3	2422	8	2447MHz
2	2417	8	2447	4	2427	9	2452MHz
3	2422	9	2452	5	2432		
4	2427	10	2457	6	2437		
5	2432	11	2462	7	2442		
6	2437						

Bluetooth Low Energy							
Ch	Fre(MHz)	Ch	Fre(MHz)	Ch	Fre(MHz)	Ch	Fre(MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Antenna Type:	Spring antenna for 433.92MHz; Inverted-F antenna for BLE and Wi-Fi
Antenna Gain:	-10.36dBi for spring antenna 3dBi for Inverted-F antenna
Description of the EUT:	The EUT was a wireless doorbell camera+ Chime. The doorbell camera which have Wi-Fi and BLE function, it also can transmit at 433.92MHz. However, the Chime is a SRD receiver.
Test sample no.:	SHA-614997-1

The sample's mentioned in this report is/are submitted/ supplied/ manufactured by client. The laboratory therefore assumes no responsibility for accuracy of information on the brand name, model number, origin of manufacture, consignment, antenna gain or any information supplied.

4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to KDB 558074 D01 15.247 Meas Guidance v05r02 and ANSI C63.10 (2013).

5 Summary of Test Results

Technical Requirements						
FCC Part 15 Subpart C						
Test Condition		Pages	Test Site	Test Result		
				Pass	Fail	N/A
§15.207	Conducted emission AC power port	---	---	☐	☐	☒
§15.247 (b) (1)	Conducted peak output power	15-17	Site 1	☒	☐	☐
§15.247(a)(1)	20dB bandwidth	---	---	☐	☐	☒
§15.247(a)(1)	Carrier frequency separation	---	---	☐	☐	☒
§15.247(a)(1)(iii)	Number of hopping frequencies	---	---	☐	☐	☒
§15.247(a)(1)(iii)	Dwell Time	---	---	☐	☐	☒
§15.247(a)(2)	6dB bandwidth	18-20	Site 1	☒	☐	☐
§15.247(e)	Power spectral density	21-23	Site 1	☒	☐	☐
§15.247(d)	Spurious RF conducted emissions	24-30	Site 1	☒	☐	☐
§15.247(d)	Band edge	31-33	Site 1	☒	☐	☐
§15.247(d) & §15.209	Spurious radiated emissions for transmitter	34-39	Site 1	☒	☐	☐
§15.203	Antenna requirement	See note 1		☒	☐	☐

Note 1: N/A=Not Applicable. Conducted emission is not apply for battery operated device.
Note 2: The EUT uses spring antenna and Inverted-F antenna. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.

6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2ASBR-XZ-R8841 complies with Section 15.205, 15.209, 15.231 of the FCC Part 15, Subpart C Rules.

This report is only for the 2.4GHz Wi-Fi test report, for the 2.4GHz BLE test report please refer to 7095021029105-00 and 433.92MHz report please refer to 7095021029107-00.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

☐ - **Not** Performed

The Equipment under Test

■ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

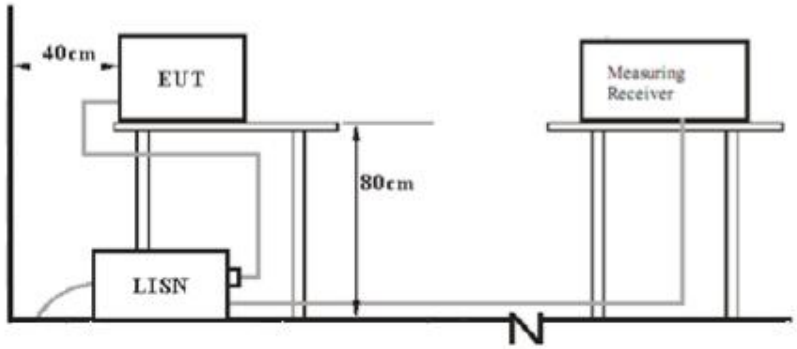
Sample Received Date:	November 26, 2021
Testing Start Date:	December 2, 2021
Testing End Date:	December 9, 2021

-TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Reviewed by:	Prepared by:	Tested by:
Hui TONG Review Engineer	Jiaxi XU Project Engineer	Cheng Huali Test Engineer

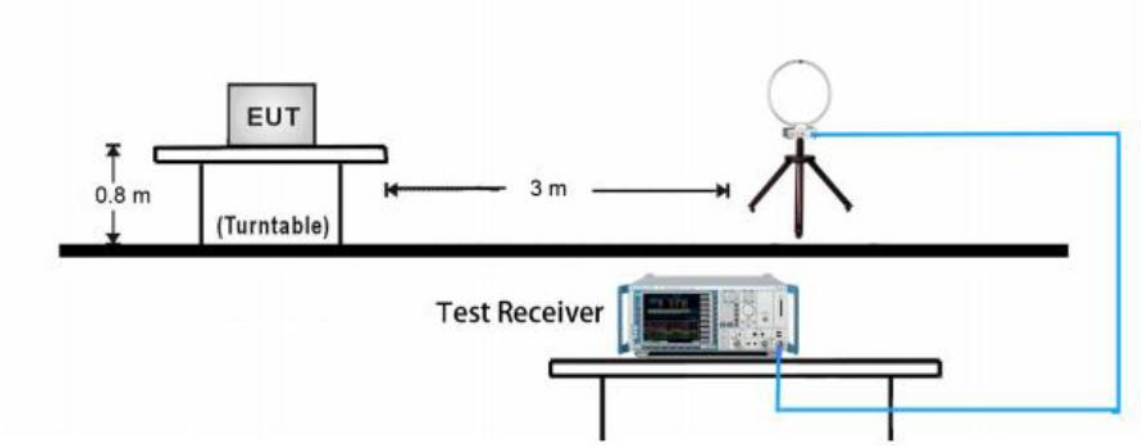
7 Test Setups

7.1 AC Power Line Conducted Emission test setups



7.2 Radiated test setups

9kHz ~ 30MHz Test Setup:



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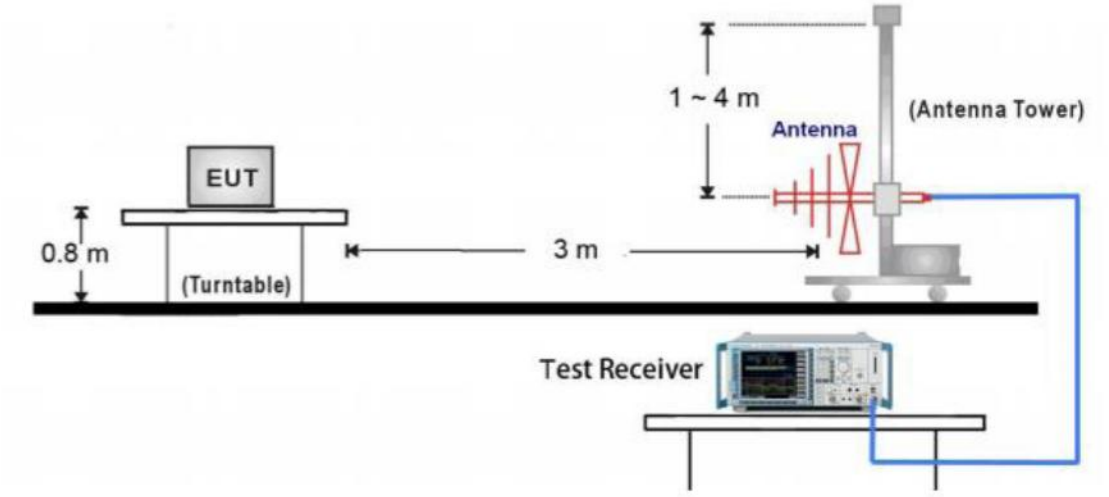
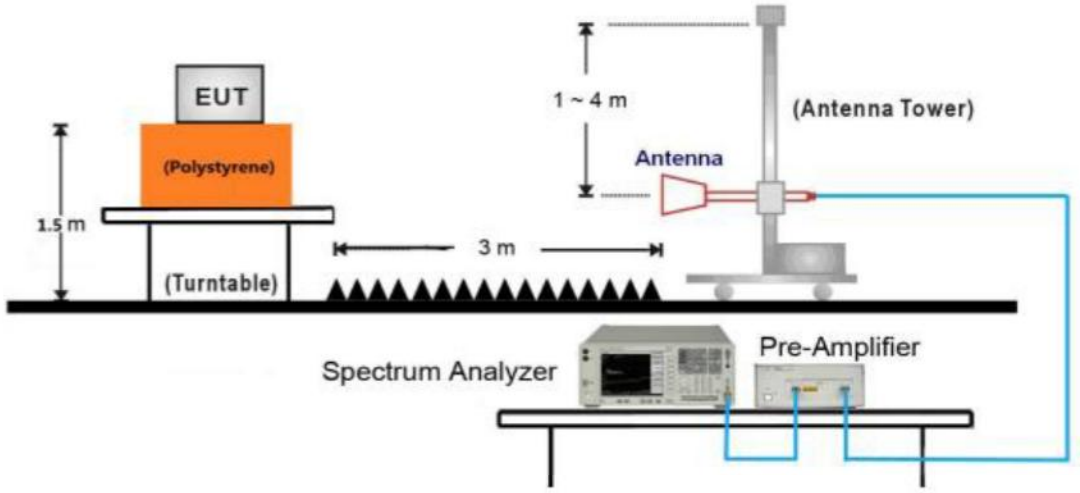
30MHz ~ 1GHz Test Setup:



1GHz ~ 18GHz Test Setup:



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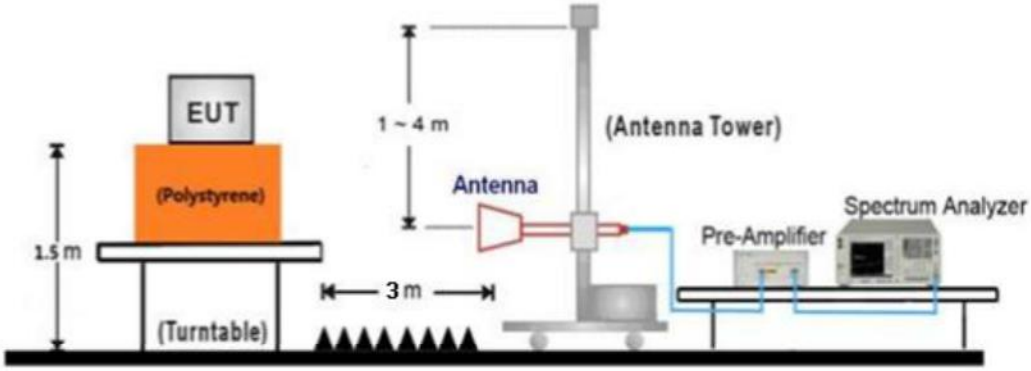
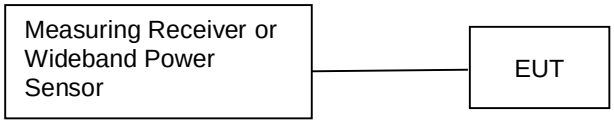
18GHz ~ 40GHz Test Setup:



7.3 Conducted RF test setups



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8 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
Notebook	Lenove	E470	PF-OU5TS7 17/09

Test software: Wifi Test Tool v1.6.0 release

The system was configured to channel 1(2412MHz), 6(2437MHz), and 11(2462MHz) for 802.11 b/g/n HT20 test and channel 3(2422MHz), 6(2437MHz), 9(2452MHz) for 802.11n HT40.

Non-hopping mode: The system was configured to operate at a signal channel transmitting. The test software allows the configuration and operation at the worst-case duty and the highest transmit power.

9 Technical Requirement

9.1 Conducted peak output power

Test Method

1. Use the following spectrum analyzer settings:
   RBW > the 6dB bandwidth of the emission being measured, VBW≥3RBW, Span≥3RBW
   Sweep = auto, Detector function = peak, Trace = max hold.
2. Add a correction factor to the display.
3. Use a power meter to measure the conducted peak output power.

Limits

Frequency Range MHz	Limit W	Limit dBm
2400-2483.5	≤1	≤30

Test result as below table

802.11B

Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2412MHz	16.79	Pass
Middle channel 2437MHz	18.20	Pass
High channel 2462MHz	20.40	Pass

802.11G

Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2412MHz	19.42	Pass
Middle channel 2437MHz	20.86	Pass
High channel 2462MHz	22.15	Pass

802.11N20

Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2412MHz	17.46	Pass
Middle channel 2437MHz	18.85	Pass
High channel 2462MHz	20.69	Pass

802.11N40

Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2422MHz	18.91	Pass
Middle channel 2437MHz	19.21	Pass
High channel 2452MHz	19.28	Pass

9.2 6dB bandwidth

Test Method

1. Use the following spectrum analyzer settings:
   RBW=100K, VBW≥3RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Use the automatic bandwidth measurement capability of an instrument, may be employed using the X dB bandwidth mode with X set to 6 dB, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB.
3. Allow the trace to stabilize, record the X dB Bandwidth value.

Limit

Limit [kHz]
≥500

Test result

802.11B

Frequency MHz	6dB bandwidth MHz	Result
Top channel 2412MHz	9.085	Pass
Middle channel 2437MHz	9.076	Pass
Bottom channel 2462MHz	9.544	Pass

802.11G

Frequency MHz	6dB bandwidth MHz	Result
Top channel 2412MHz	13.795	Pass
Middle channel 2437MHz	13.789	Pass
Bottom channel 2462MHz	13.793	Pass

802.11N20

Frequency MHz	6dB bandwidth MHz	Result
Top channel 2412MHz	13.789	Pass
Middle channel 2437MHz	13.779	Pass
Bottom channel 2462MHz	11.331	Pass

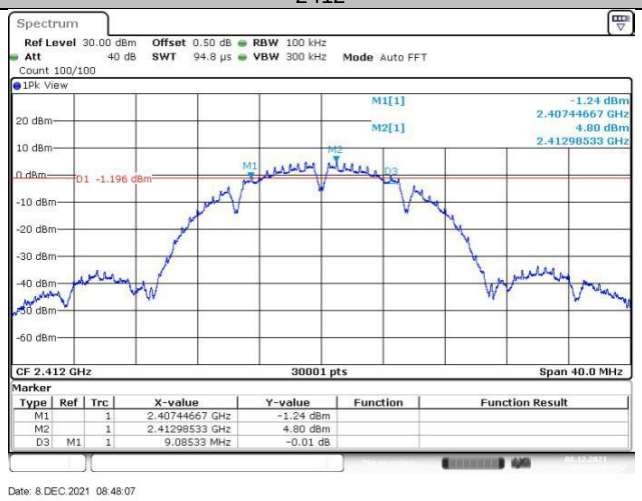
802.11N40

Frequency MHz	6dB bandwidth MHz	Result
Low channel 2422MHz	33.812	Pass
Middle channel 2437MHz	33.801	Pass
High channel 2452MHz	31.318	Pass

6 dB Bandwidth

802.11B

2412



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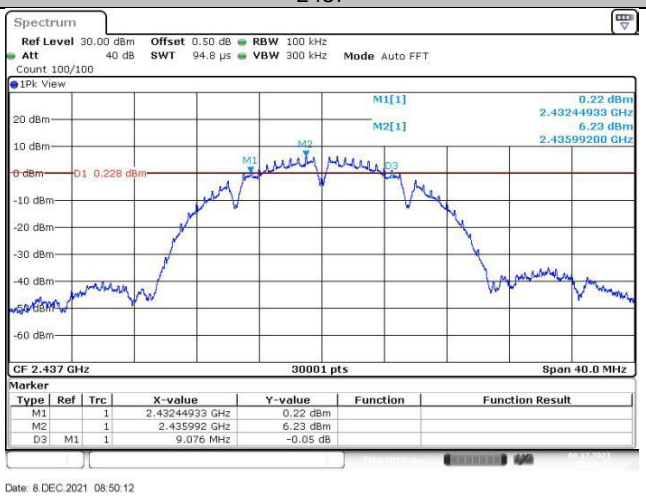

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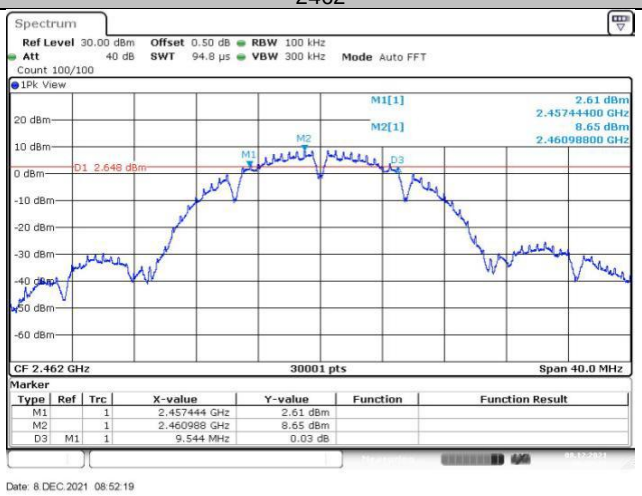
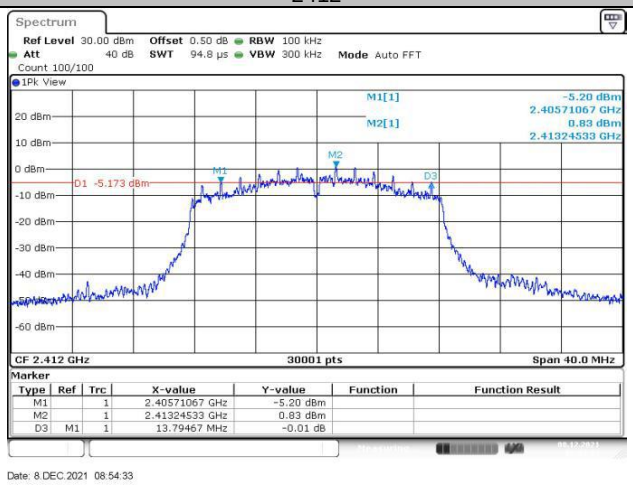


802.11G

2412



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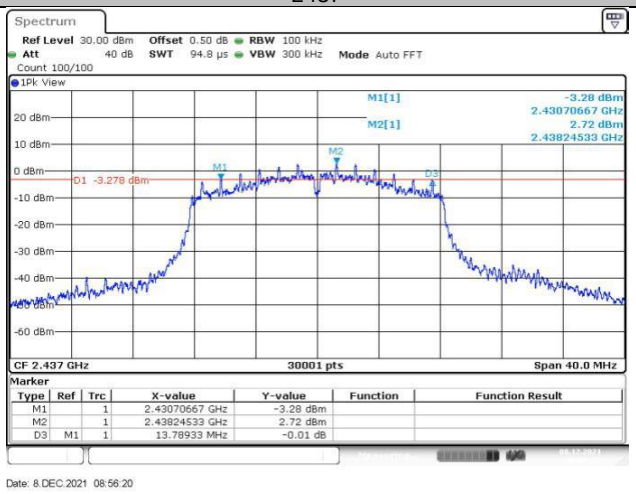

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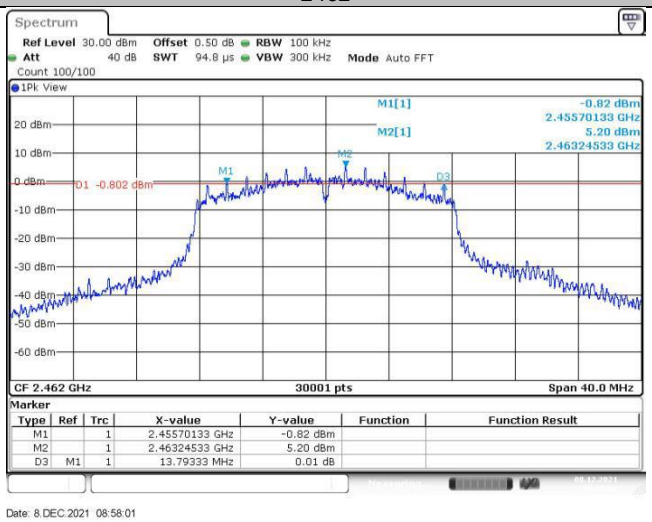
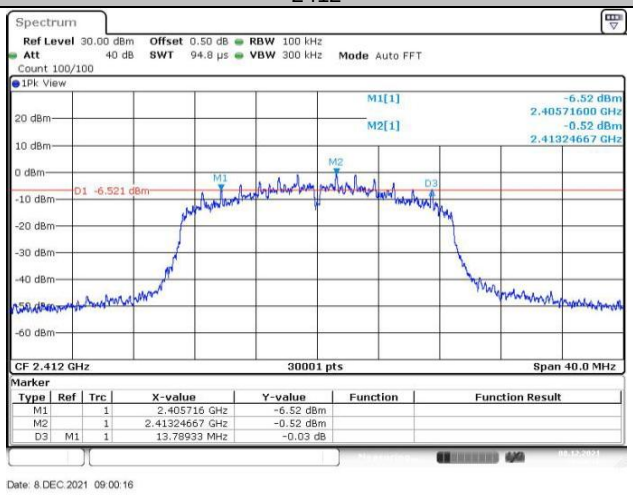


802.11N20

2412



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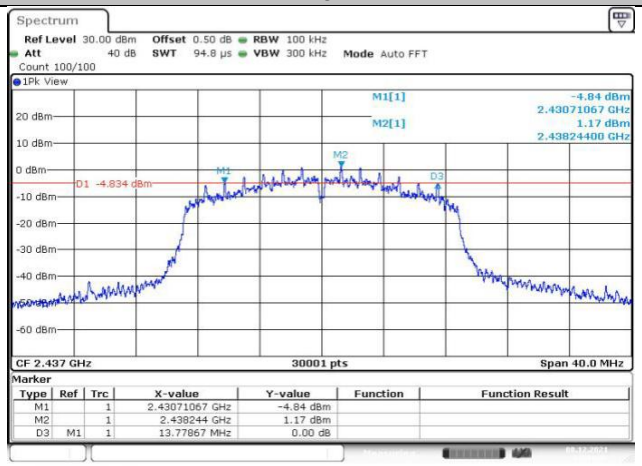

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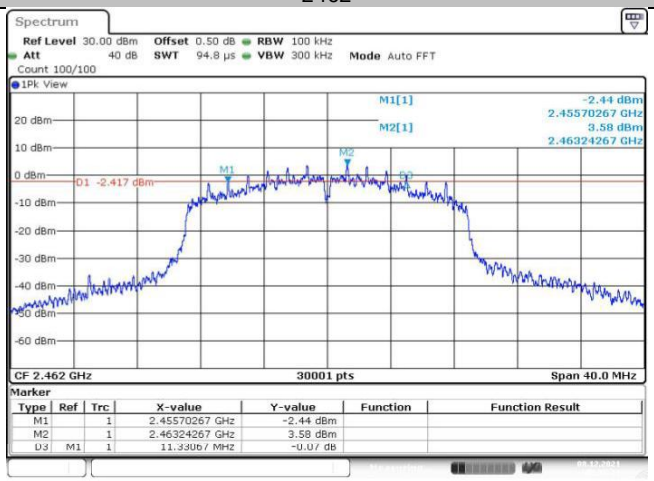

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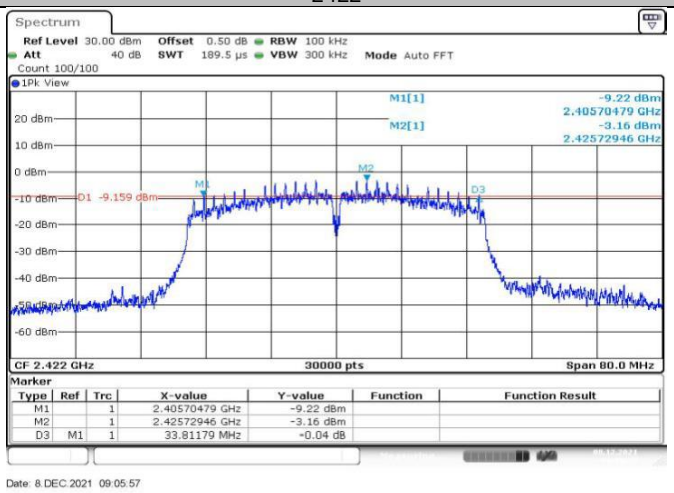
802.11N40

2422



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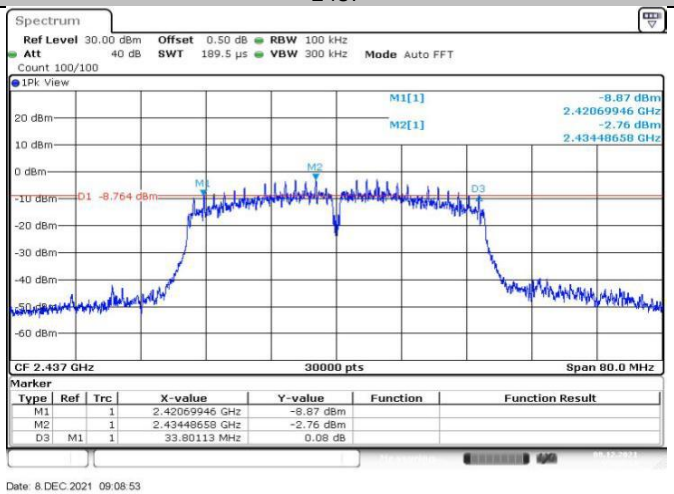

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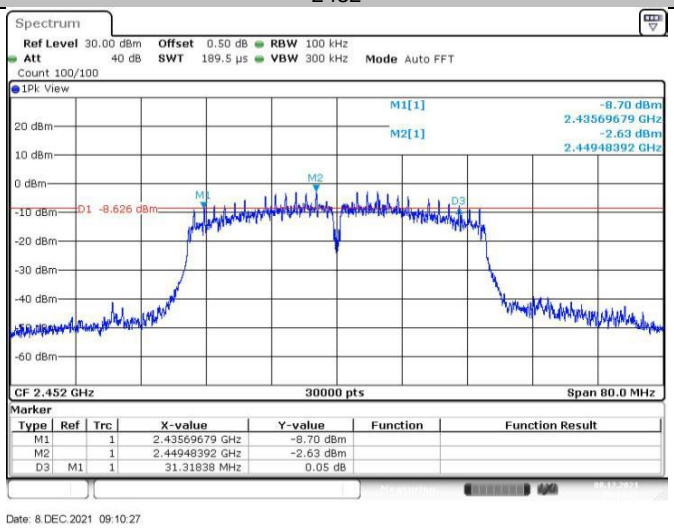


9.3 Power spectral density

Test Method

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance:

1. Set analyzer center frequency to DTS channel center frequency. RBW=3kHz,VBW≥3RBW,Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
2. Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
3. Repeat above procedures until other frequencies measured were completed.

Limit

Limit [dBm/3KHz]
≤8

Test result

802.11 B

Frequency MHz	Power spectral density dBm/3KHz	Result
Low channel 2412MHz	-7.75	Pass
Middle channel 2437MHz	-6.44	Pass
High channel 2462MHz	-4.08	Pass

802.11 G

Frequency MHz	Power spectral density dBm/3KHz	Result
Low channel 2412MHz	-11.92	Pass
Middle channel 2437MHz	-10.06	Pass
High channel 2462MHz	-7.88	Pass

802.11 N20

Frequency MHz	Power spectral density dBm/3KHz	Result
Low channel 2412MHz	-14.52	Pass
Middle channel 2437MHz	-12.96	Pass
High channel 2462MHz	-10.6	Pass

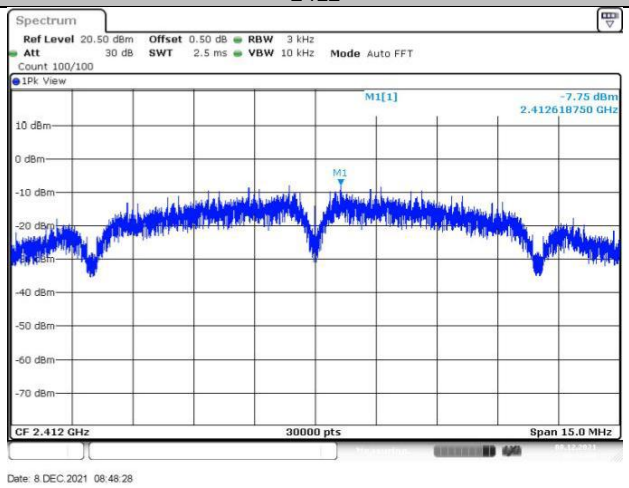
802.11 N40

Frequency MHz	Power spectral density dBm/3KHz	Result
Low channel 2422MHz	-12.77	Pass
Middle channel 2437MHz	-12.39	Pass
High channel 2452MHz	-12.25	Pass

Power spectral density

802.11B

2412



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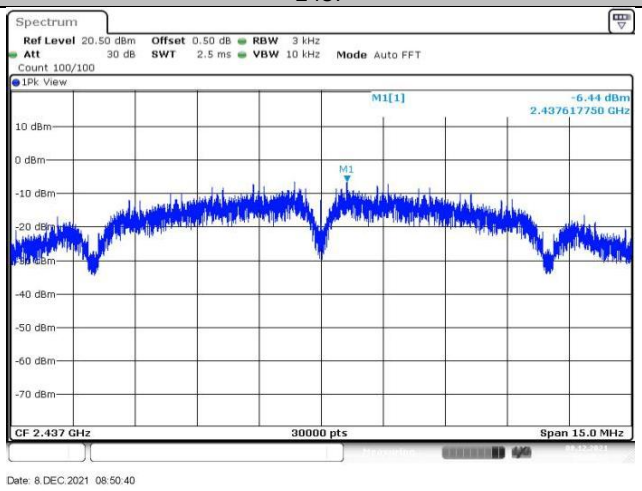

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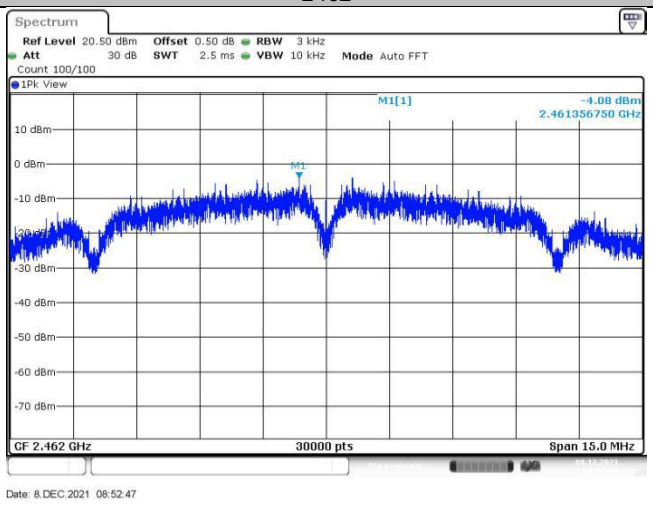
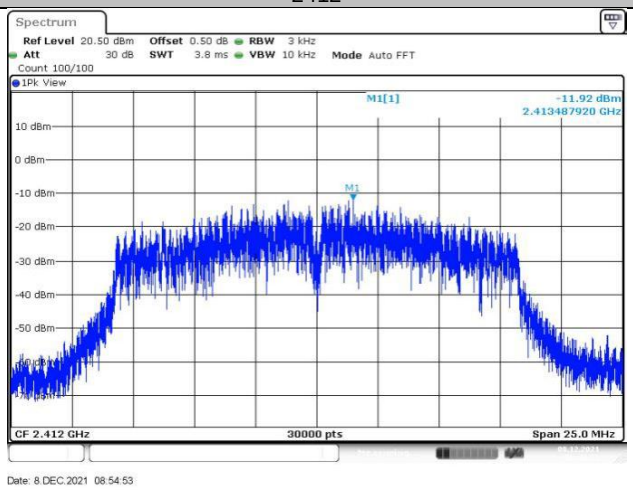


802.11G

2412



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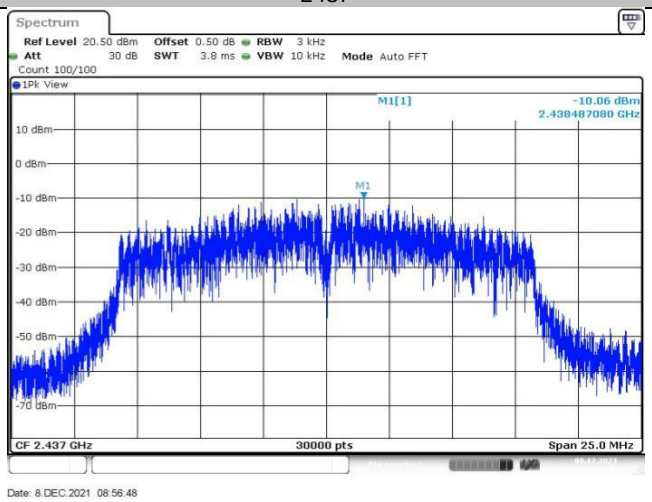

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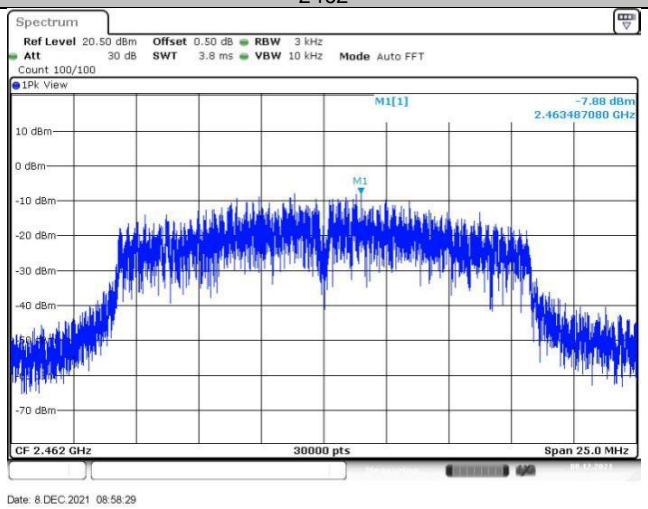

802.11N20

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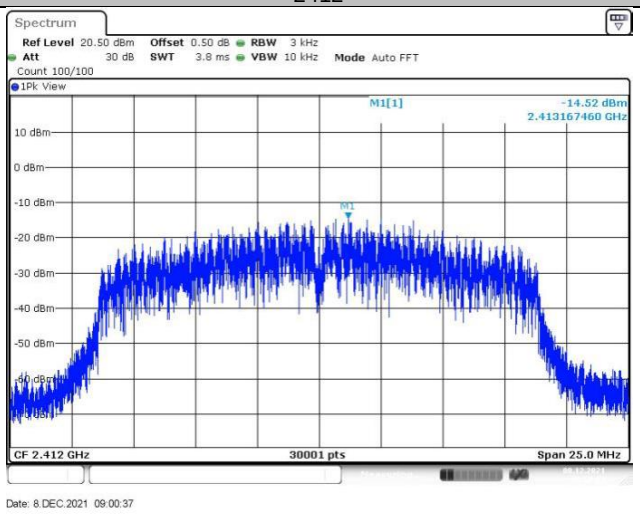

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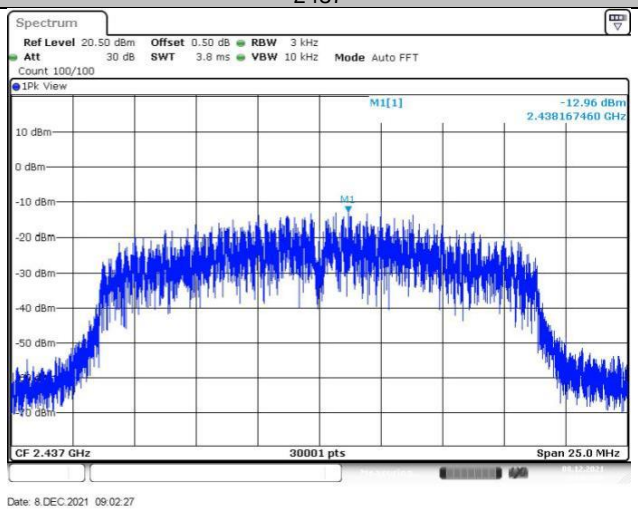

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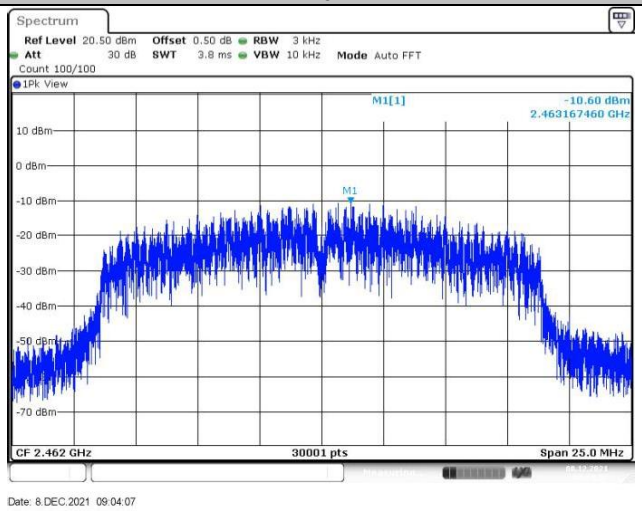
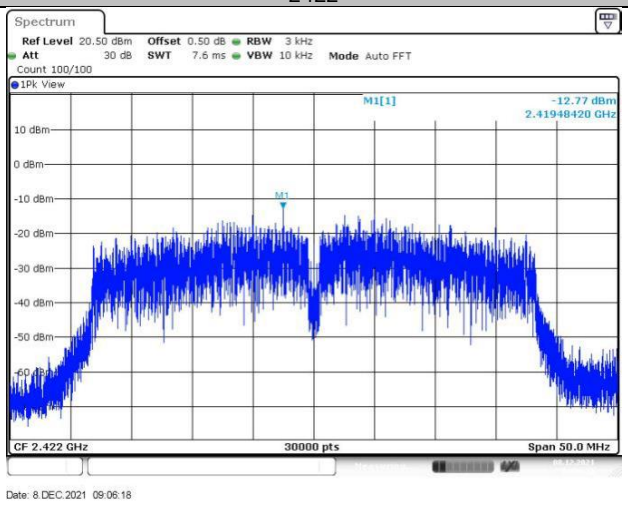
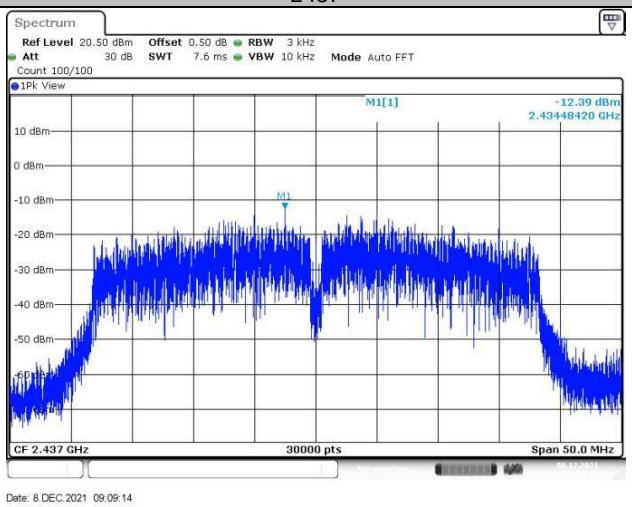


802.11N40

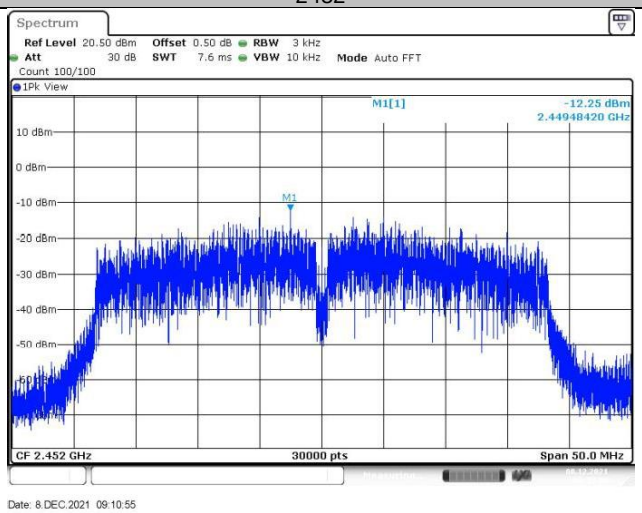
2422



2437



2452



9.4 Spurious RF conducted emissions

Test Method

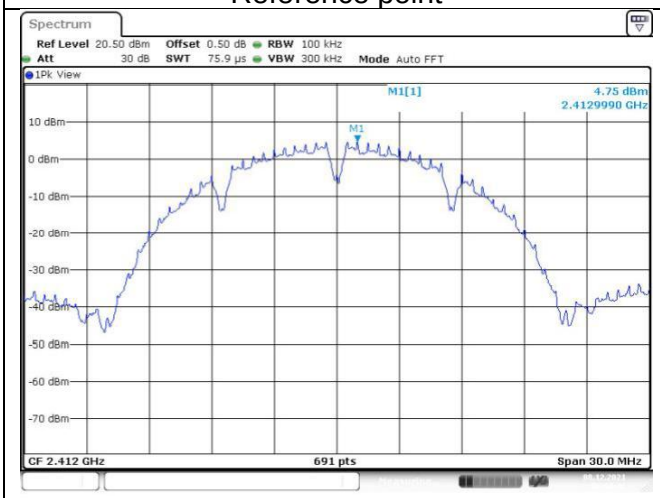
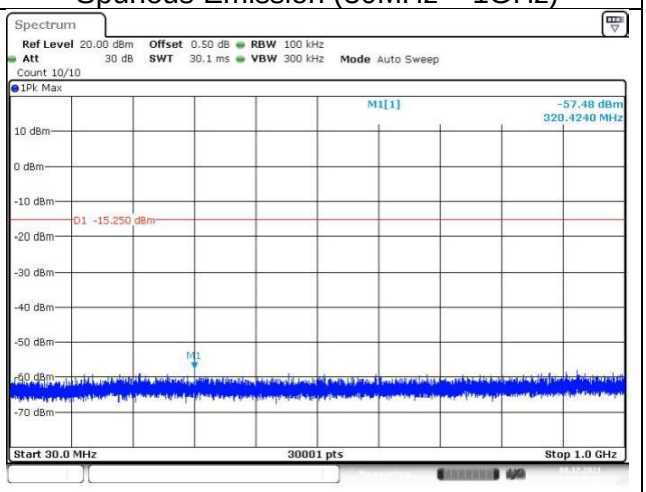
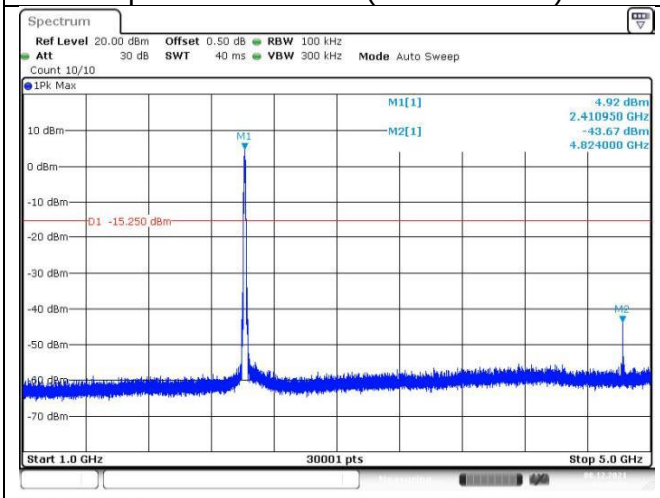
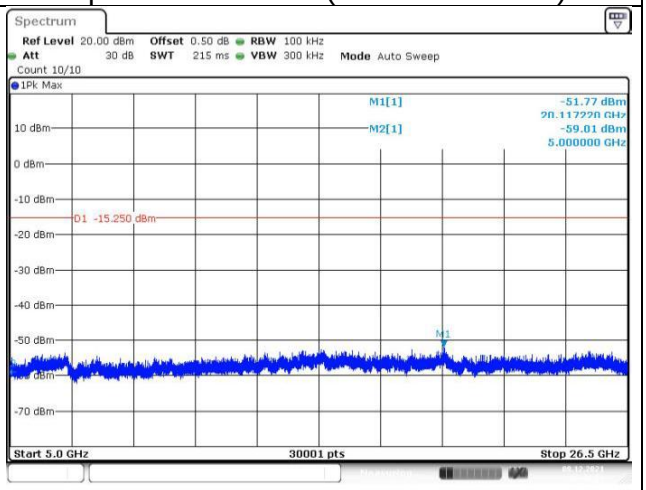
1. Establish a reference level by using the following procedure:
   a. Set RBW=100 kHz. VBW≥3RBW. Detector =peak, Sweep time = auto couple, Trace mode = max hold.
   b. Allow trace to fully stabilize, use the peak marker function to determine the maximum PSD level.
2. Use the maximum PSD level to establish the reference level.
   a. Set the center frequency and span to encompass frequency range to be measured.
   b. Use the peak marker function to determine the maximum amplitude level. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements, report the three highest emissions relative to the limit.
3. Repeat above procedures until other frequencies measured were completed.

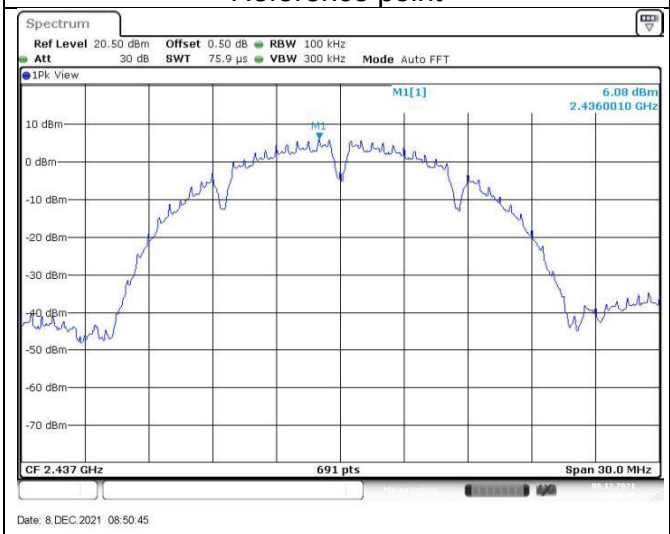
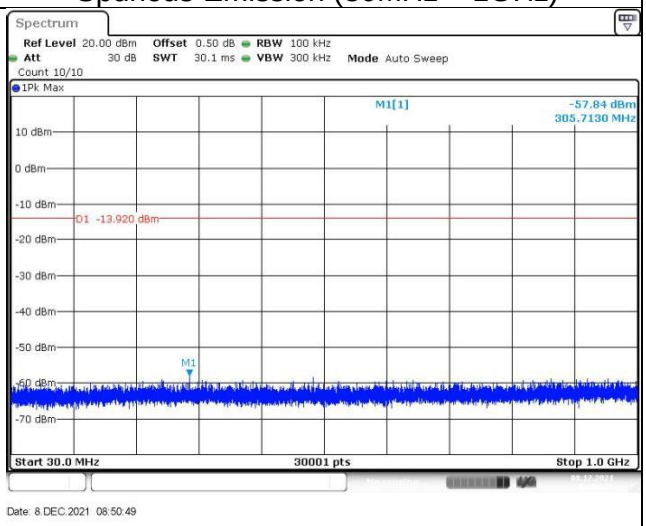
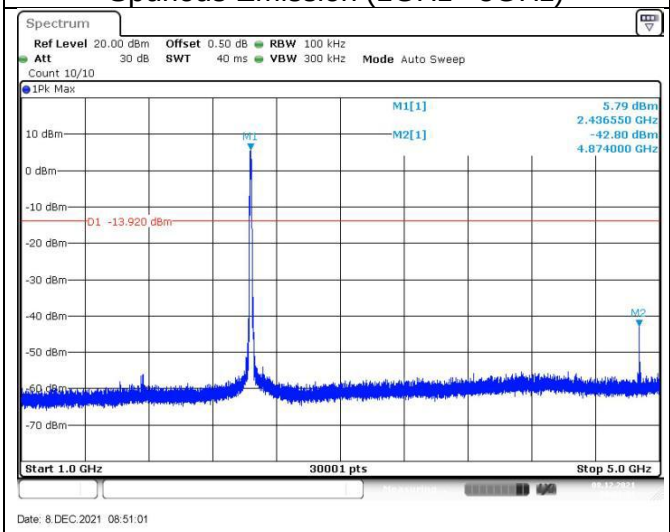
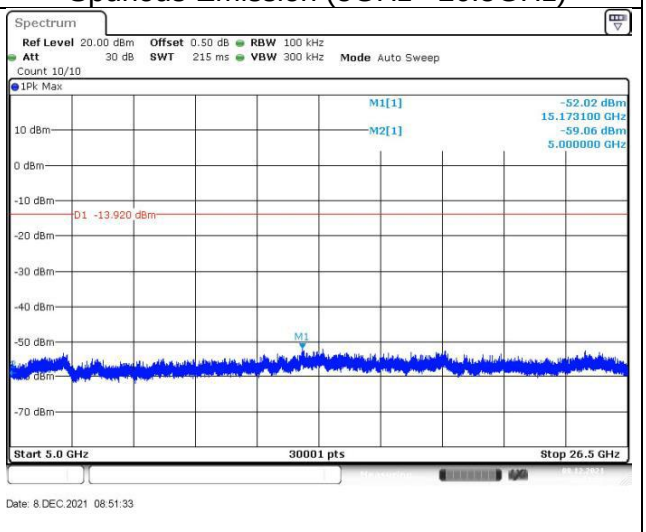
Limit

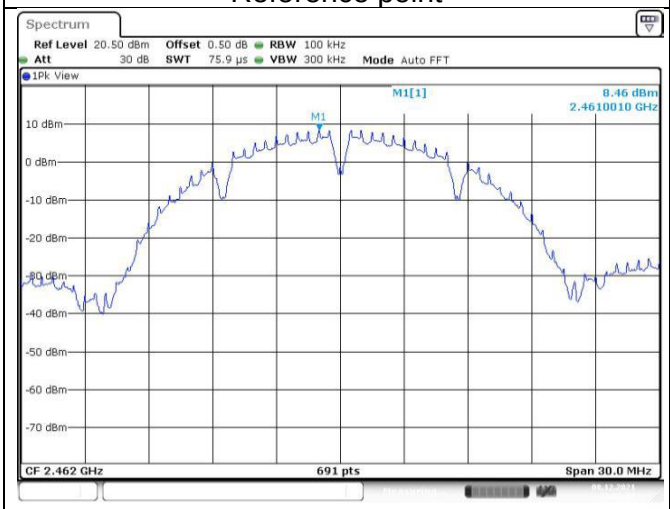
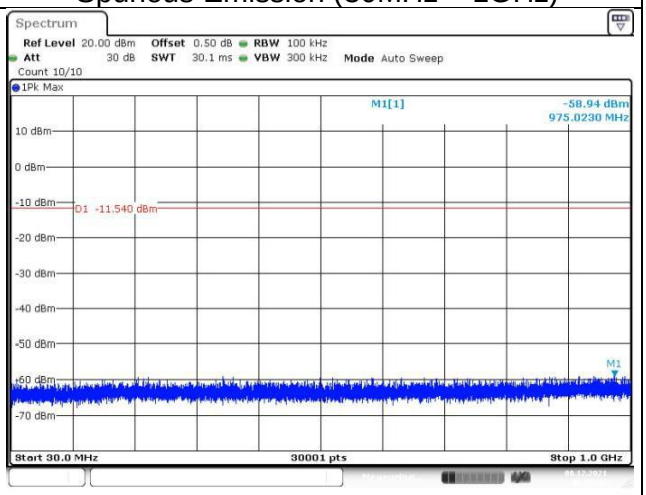
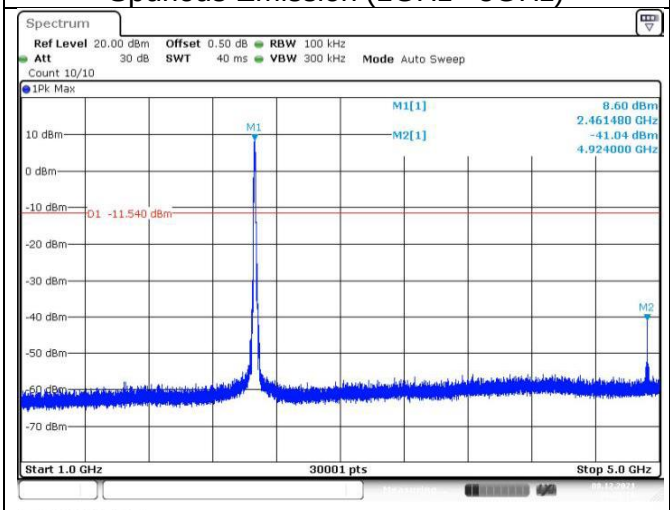
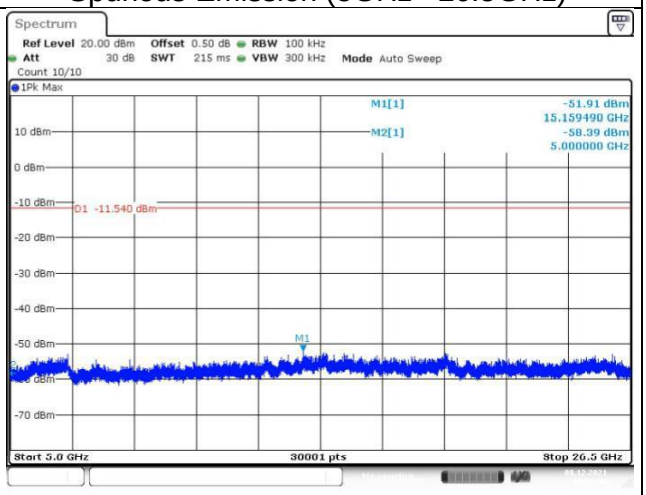
Frequency Range MHz	Limit (dBc)
30-25000	-20

Spurious RF conducted emissions

802.11 B

Out-of-Band Emissions	
Channel 1 (2412MHz)	
Reference point	Spurious Emission (30MHz – 1GHz)
	
Spurious Emission (1GHz –5GHz)	Spurious Emission (5GHz –26.5GHz)
	

Out-of-Band Emissions	
Channel 6 (2437MHz)	
Reference point	Spurious Emission (30MHz – 1GHz)
	
Spurious Emission (1GHz –5GHz)	Spurious Emission (5GHz –26.5GHz)
	

Out-of-Band Emissions	
Channel 11 (2462MHz)	
Reference point	Spurious Emission (30MHz – 1GHz)
	
Spurious Emission (1GHz –5GHz)	Spurious Emission (5GHz –26.5GHz)
	

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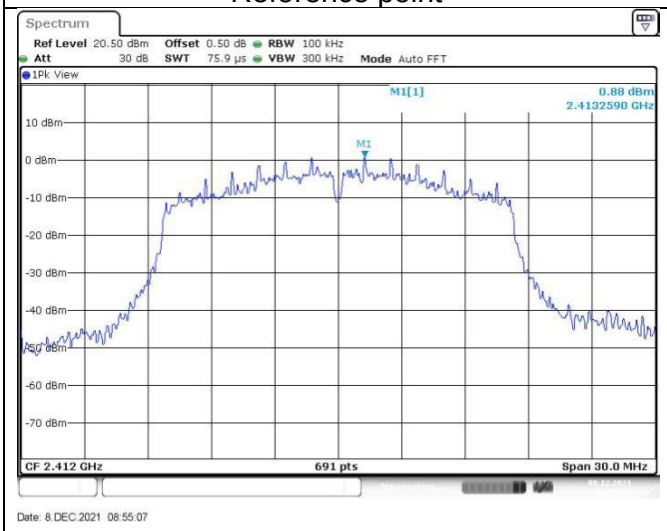
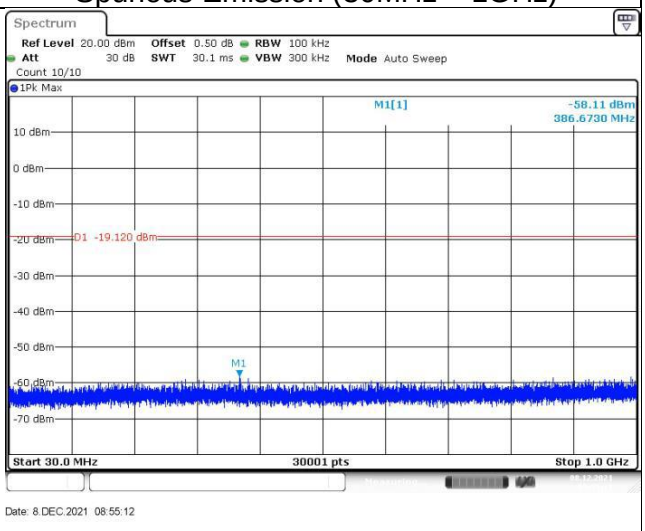
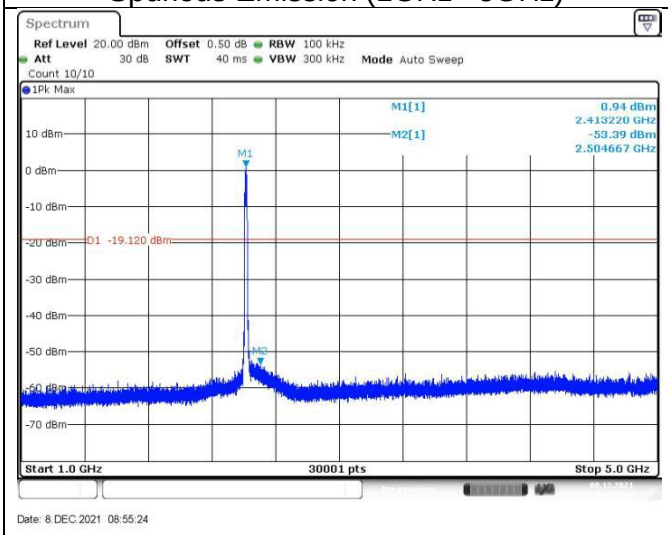
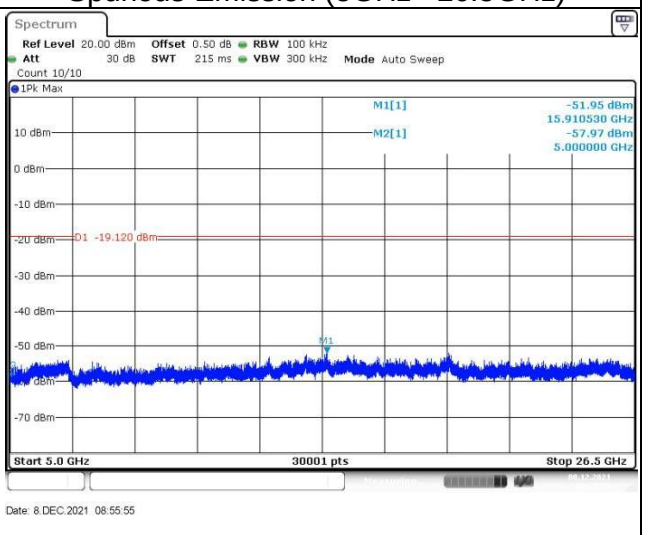
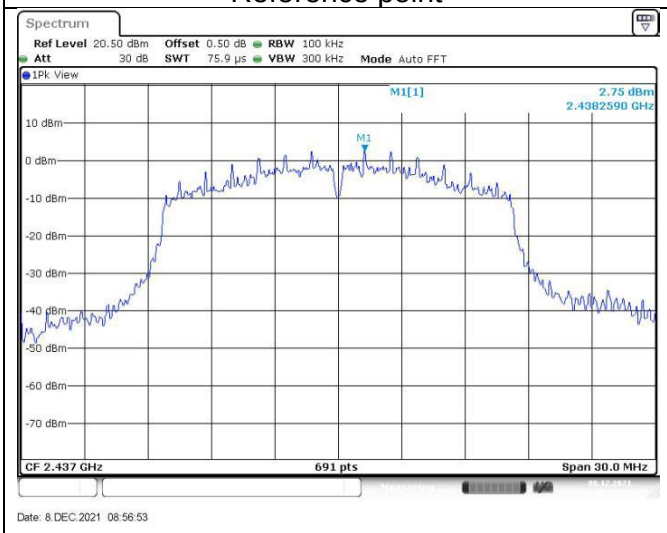
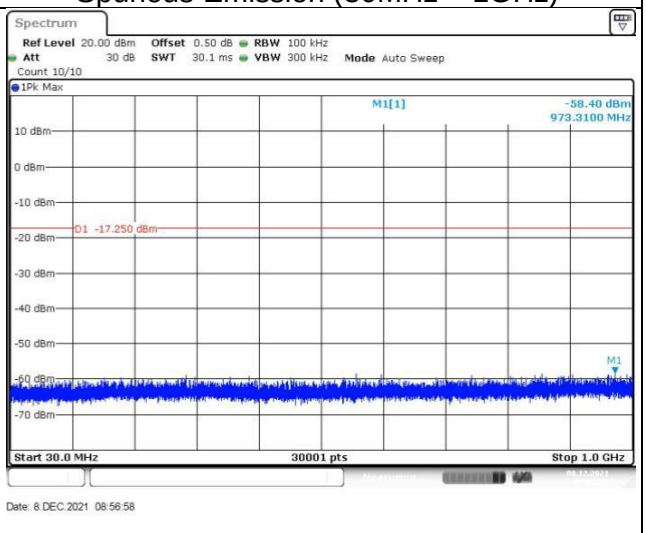
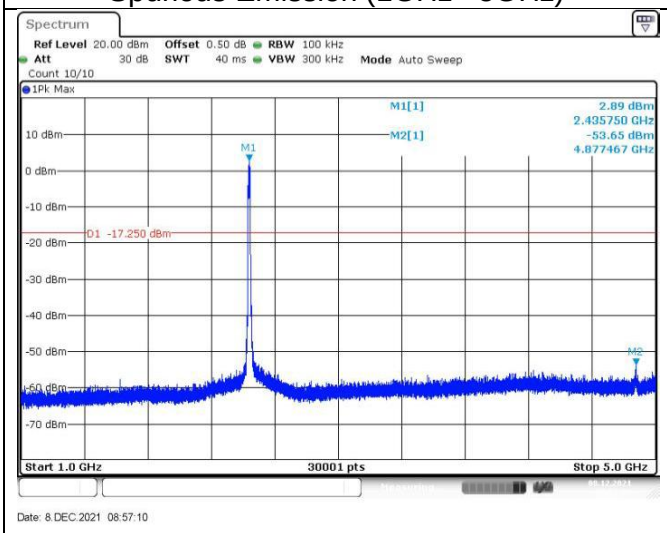
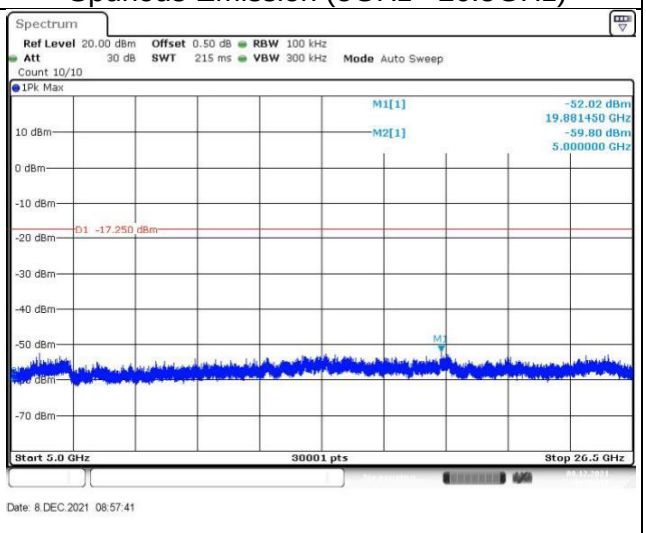
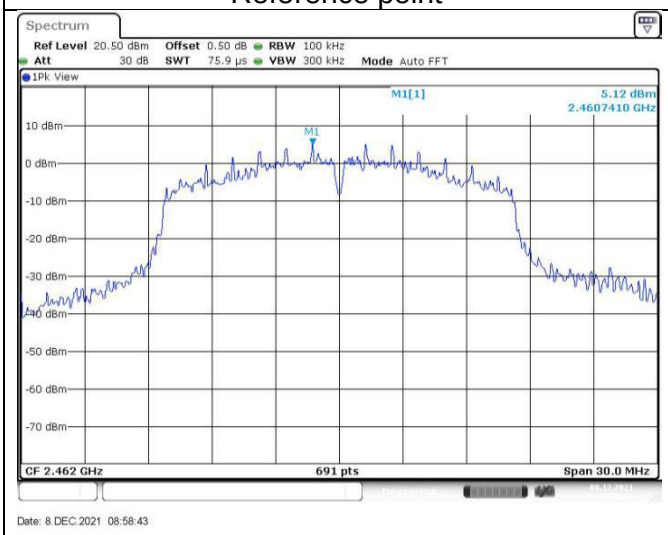
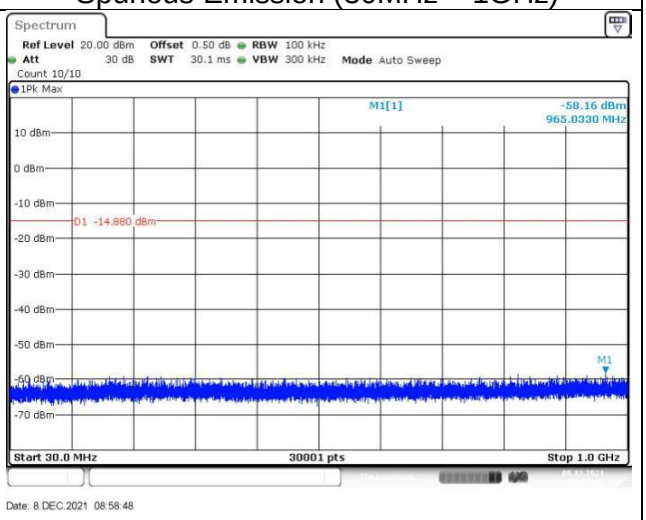
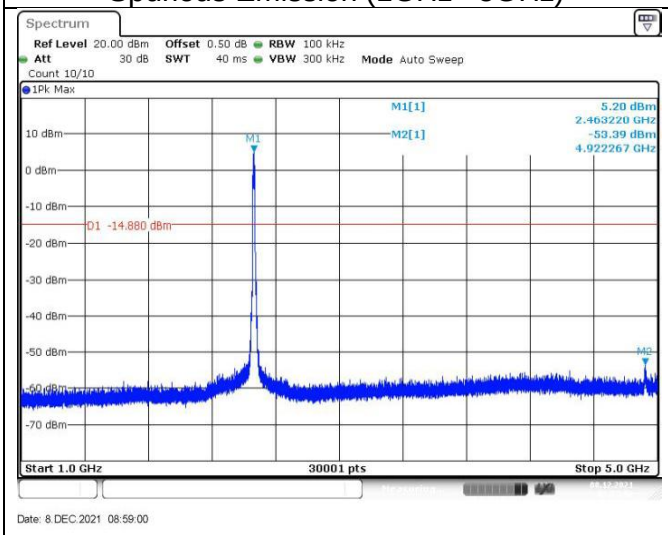
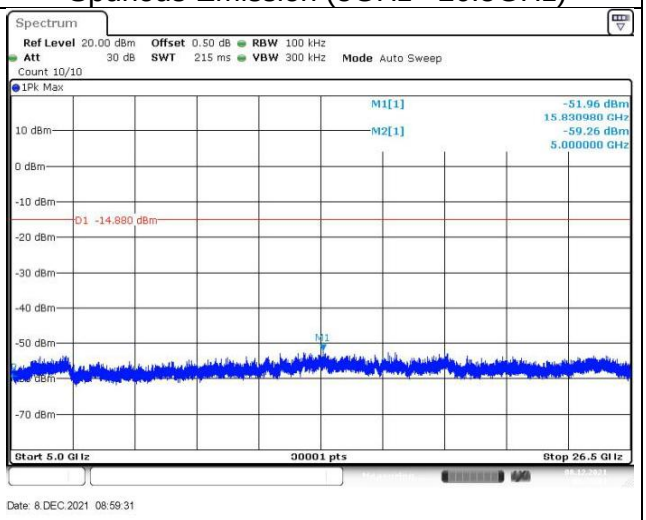
Out-of-Band Emissions	
Channel 1 (2412MHz)	
Reference point	Spurious Emission (30MHz – 1GHz)
	
Spurious Emission (1GHz –5GHz)	Spurious Emission (5GHz –26.5GHz)
	

Out-of-Band Emissions	
Channel 6 (2437MHz)	
Reference point	Spurious Emission (30MHz – 1GHz)
	
Spurious Emission (1GHz –5GHz)	Spurious Emission (5GHz –26.5GHz)
	

Out-of-Band Emissions	
Channel 11 (2462MHz)	
Reference point	Spurious Emission (30MHz – 1GHz)
	
Spurious Emission (1GHz –5GHz)	Spurious Emission (5GHz –26.5GHz)
	

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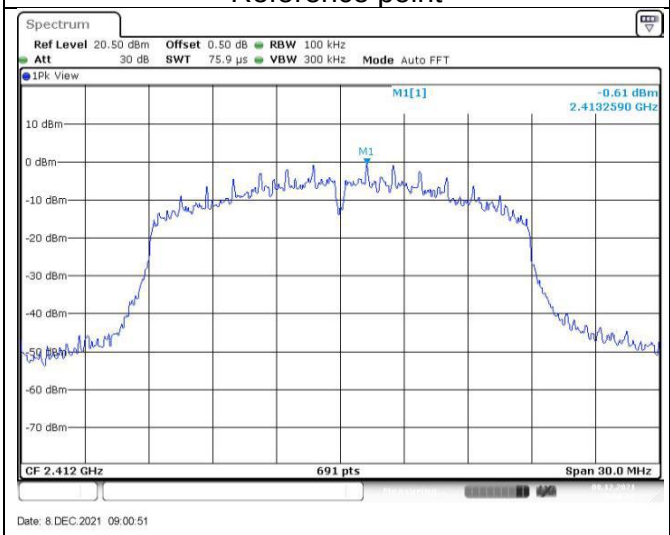
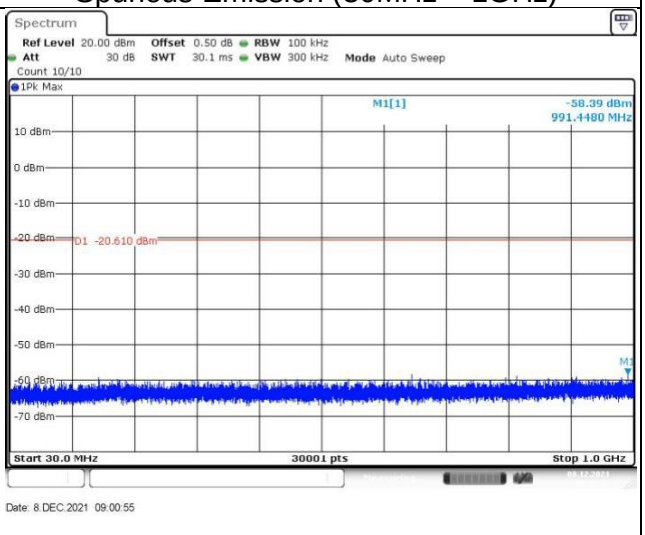
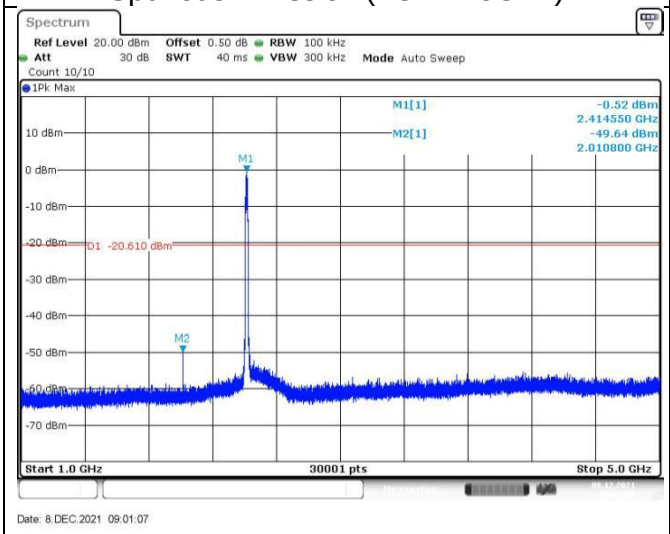
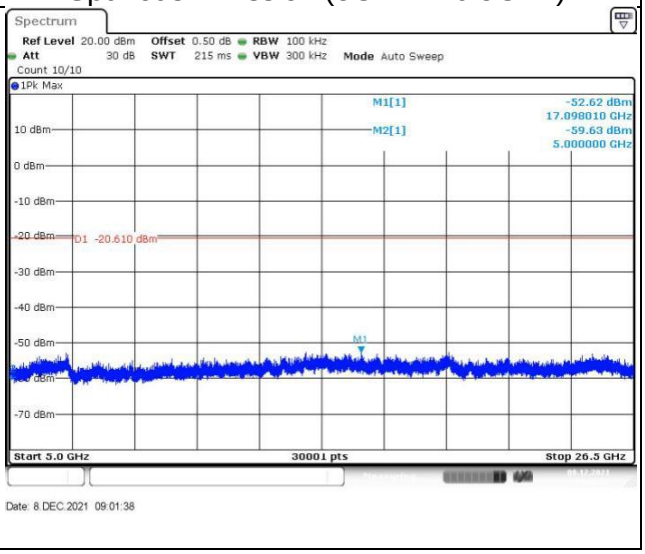
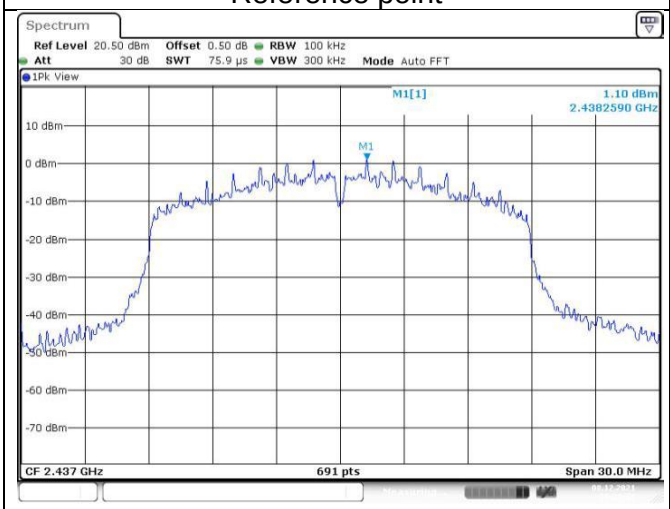
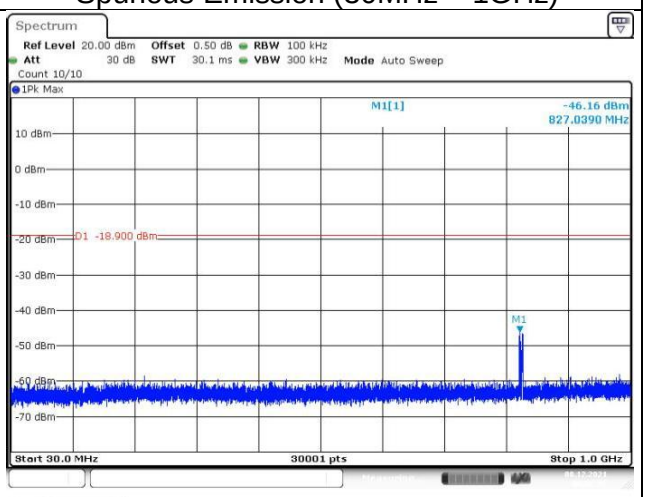
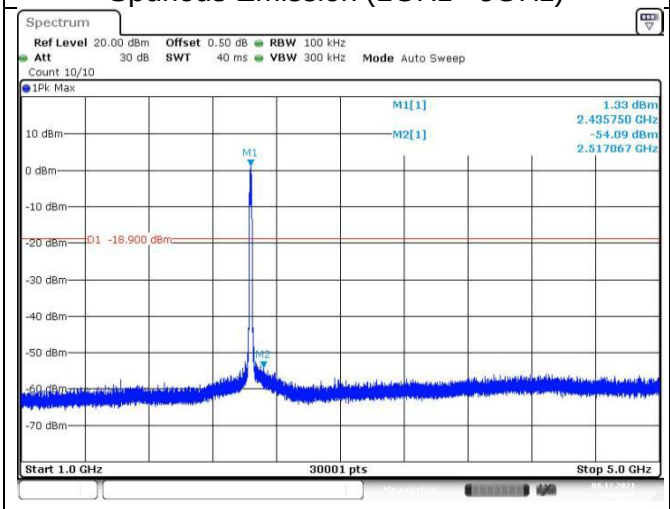
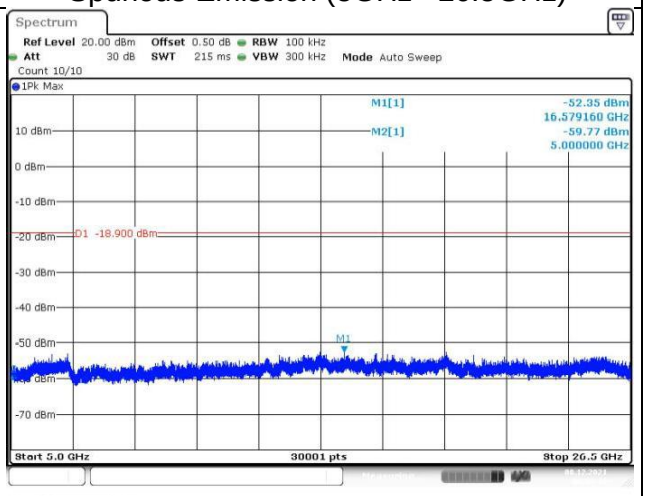
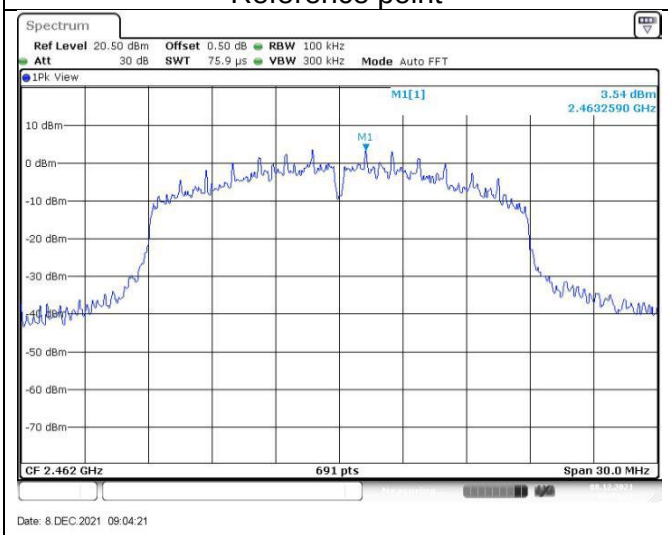
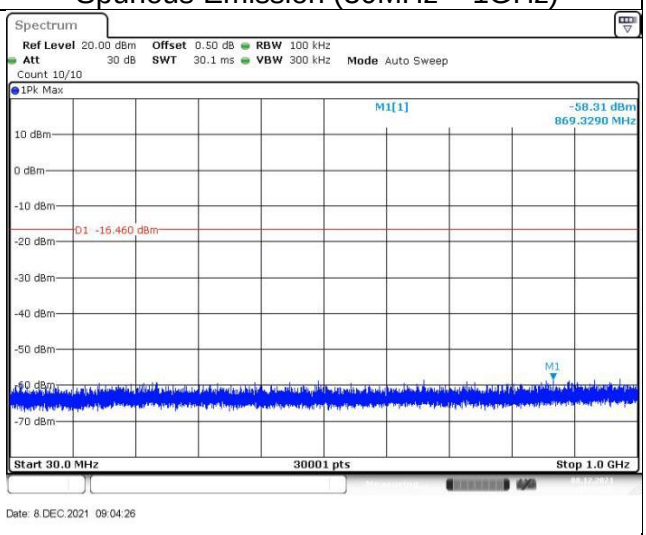
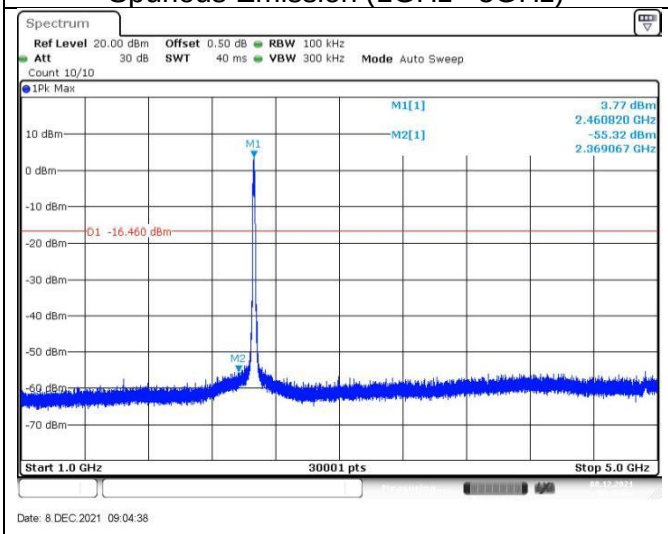
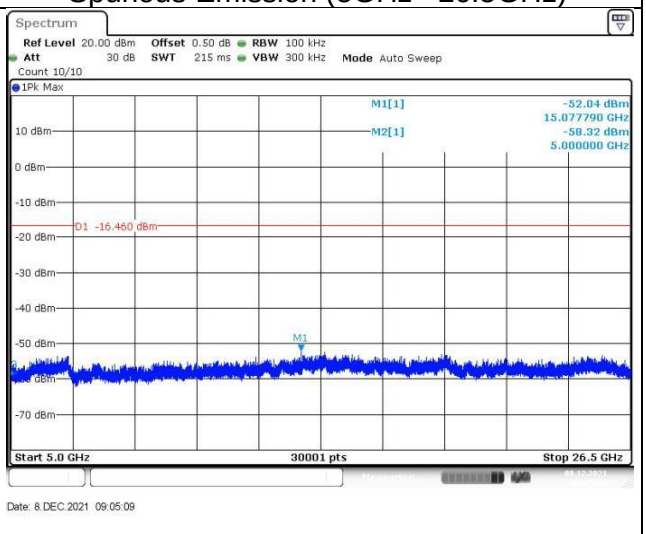
Out-of-Band Emissions	
Channel 1 (2412MHz)	
Reference point	Spurious Emission (30MHz – 1GHz)
	
Spurious Emission (1GHz –5GHz)	Spurious Emission (5GHz –26.5GHz)
	

Out-of-Band Emissions	
Channel 6 (2437MHz)	
Reference point	Spurious Emission (30MHz – 1GHz)
 Date: 8.DEC.2021 09:02:32	 Date: 8.DEC.2021 09:02:36
Spurious Emission (1GHz –5GHz)	Spurious Emission (5GHz –26.5GHz)
 Date: 8.DEC.2021 09:02:48	 Date: 8.DEC.2021 09:03:20

Out-of-Band Emissions	
Channel 11 (2462MHz)	
Reference point	Spurious Emission (30MHz – 1GHz)
	
Spurious Emission (1GHz –5GHz)	Spurious Emission (5GHz –26.5GHz)
	

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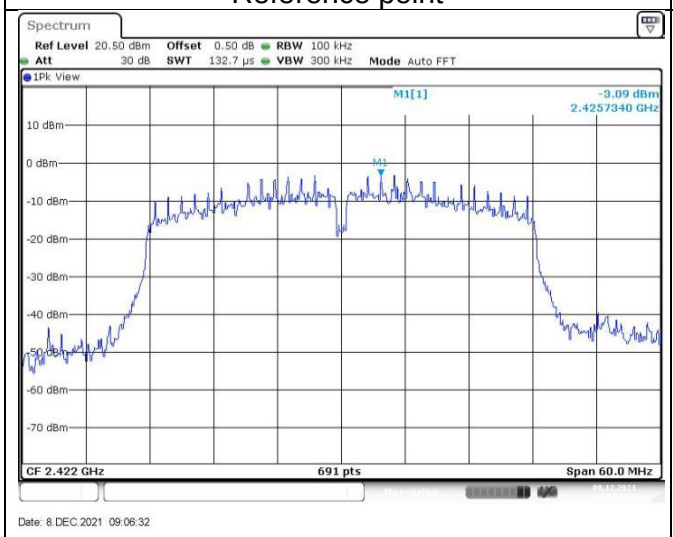
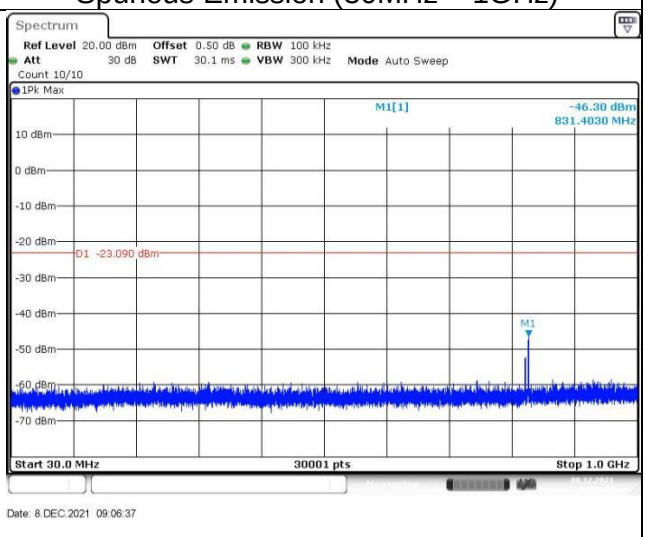
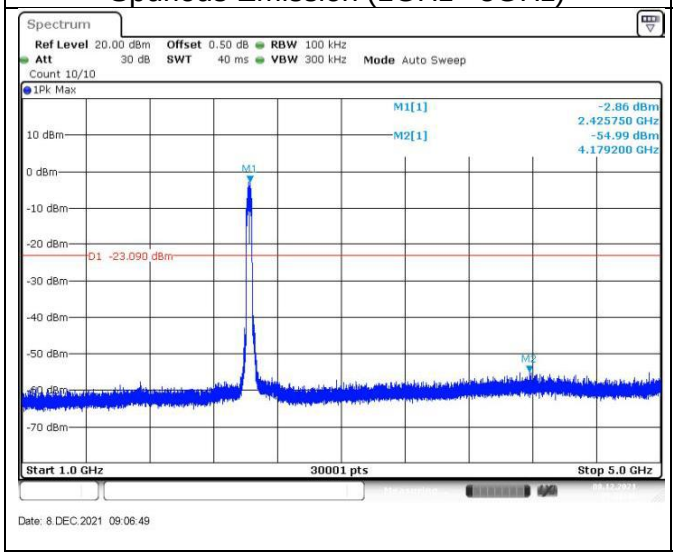
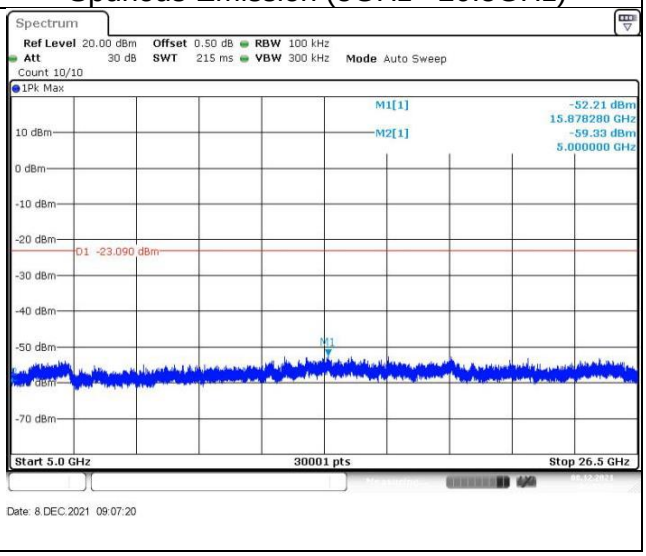
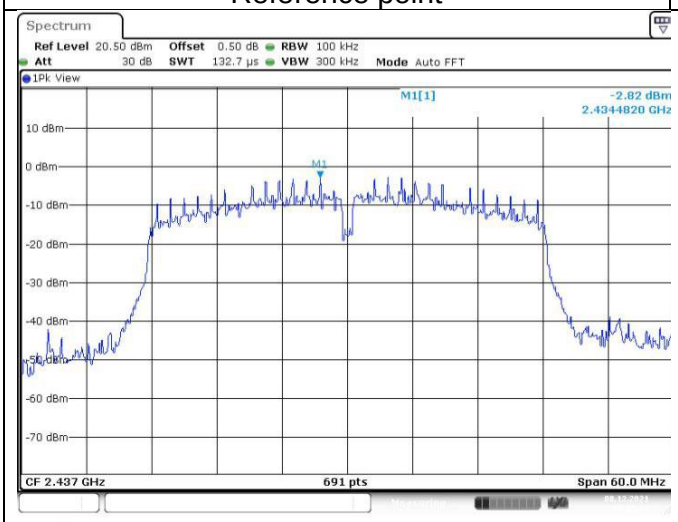
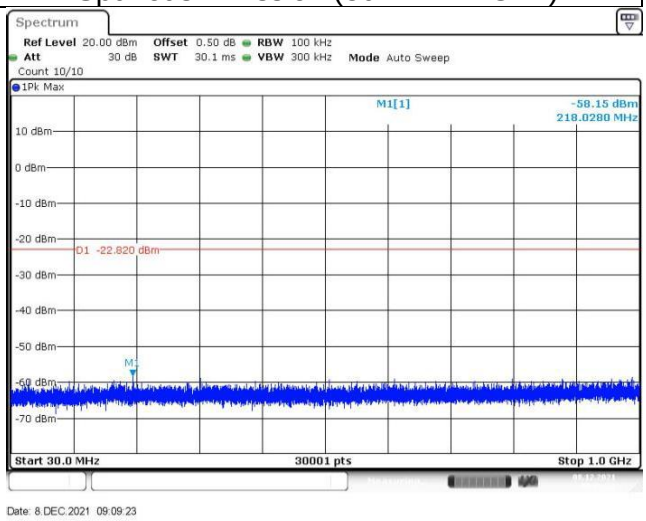
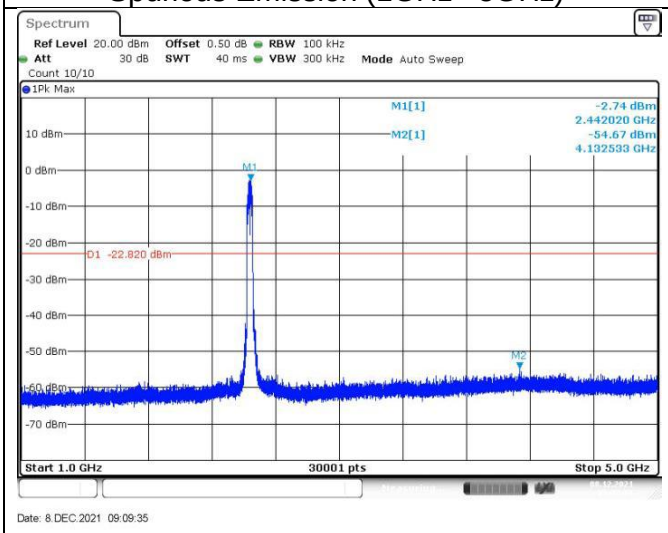
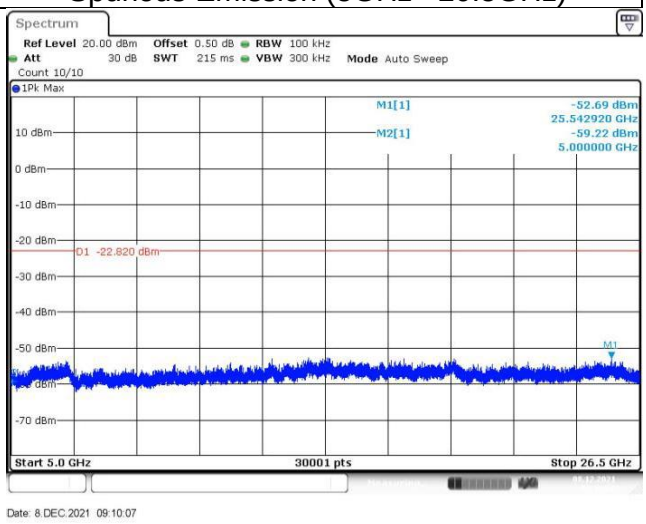
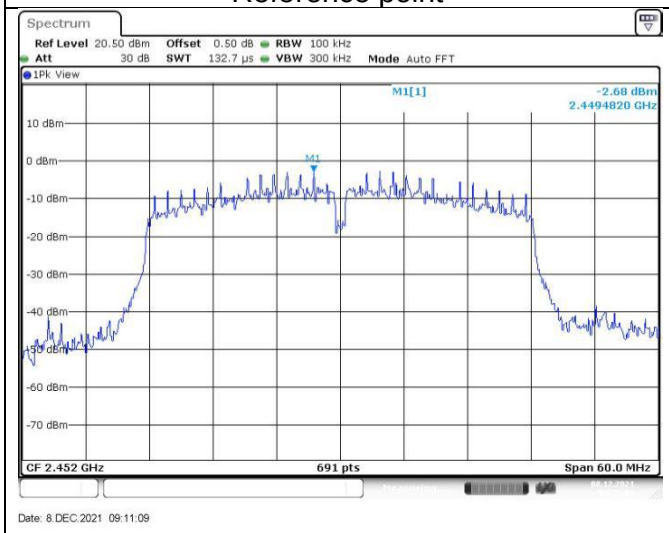
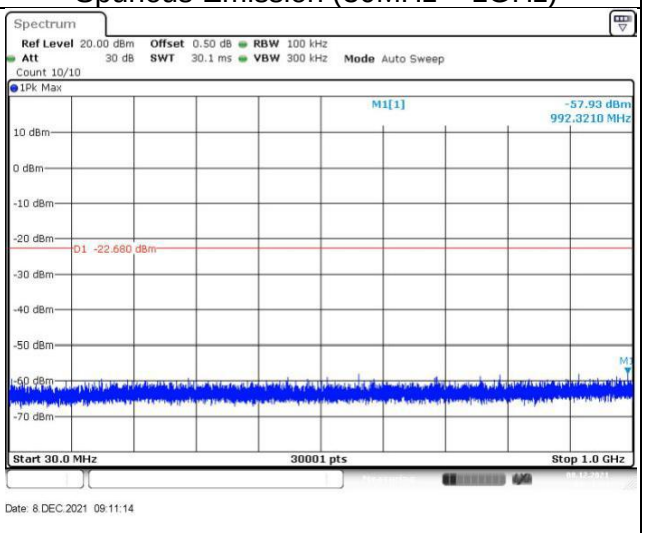
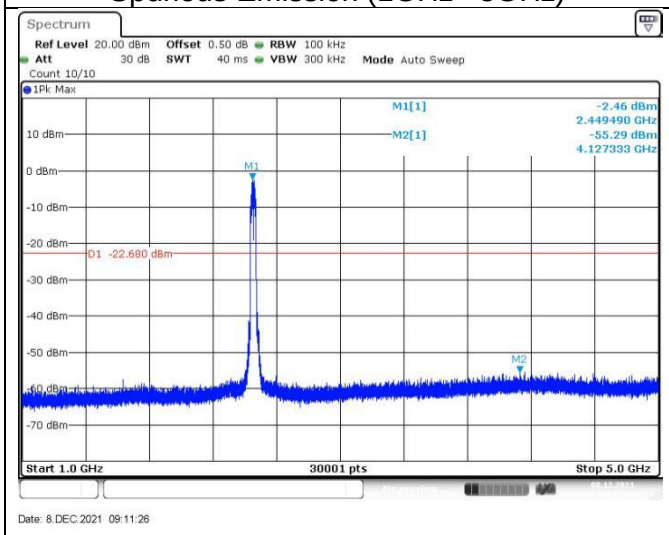
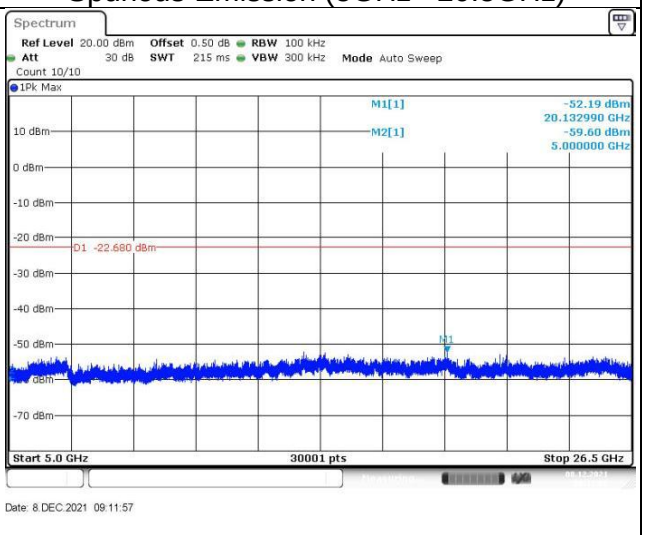
Out-of-Band Emissions	
Channel 3 (2422MHz)	
Reference point	Spurious Emission (30MHz – 1GHz)
	
Spurious Emission (1GHz –5GHz)	Spurious Emission (5GHz –26.5GHz)
	

Out-of-Band Emissions	
Channel 6 (2437MHz)	
Reference point	Spurious Emission (30MHz – 1GHz)
	
Spurious Emission (1GHz –5GHz)	Spurious Emission (5GHz –26.5GHz)
	

Out-of-Band Emissions	
Channel 9 (2452MHz)	
Reference point	Spurious Emission (30MHz – 1GHz)
	
Spurious Emission (1GHz –5GHz)	Spurious Emission (5GHz –26.5GHz)
	

9.5 Band edge

Test Method

1 Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 kHz, VBW≥RBW, Sweep = auto, Detector function = peak, Trace = max hold.
2 Allow the trace to stabilize, use the peak and delta measurement to record the result.
3 The level displayed must comply with the limit specified in this Section.

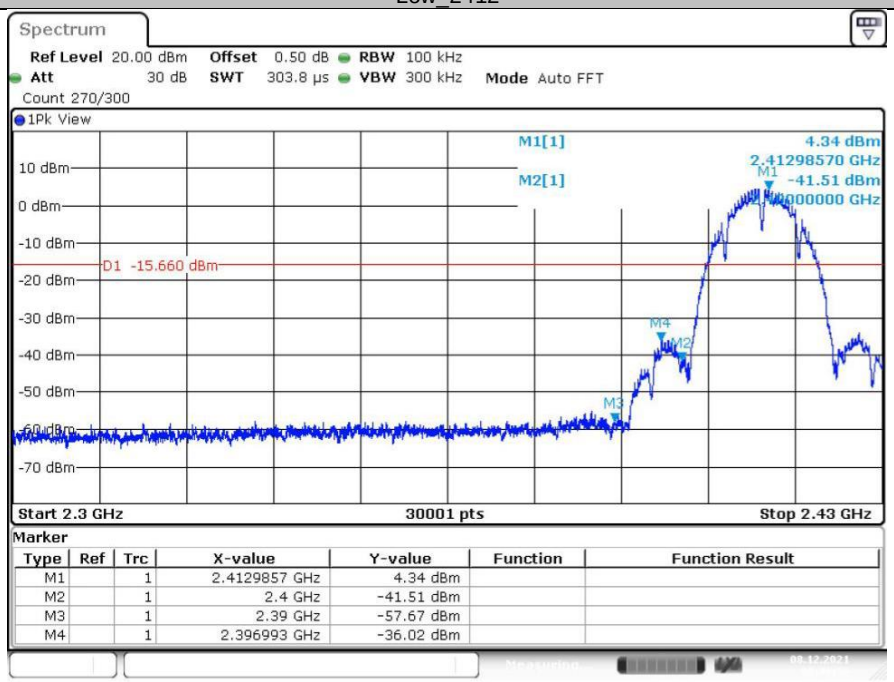
Limit

In any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a) and RSS-Gen8.10, must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)) and RSS-Gen.

Test result

802.11 B

Low_2412

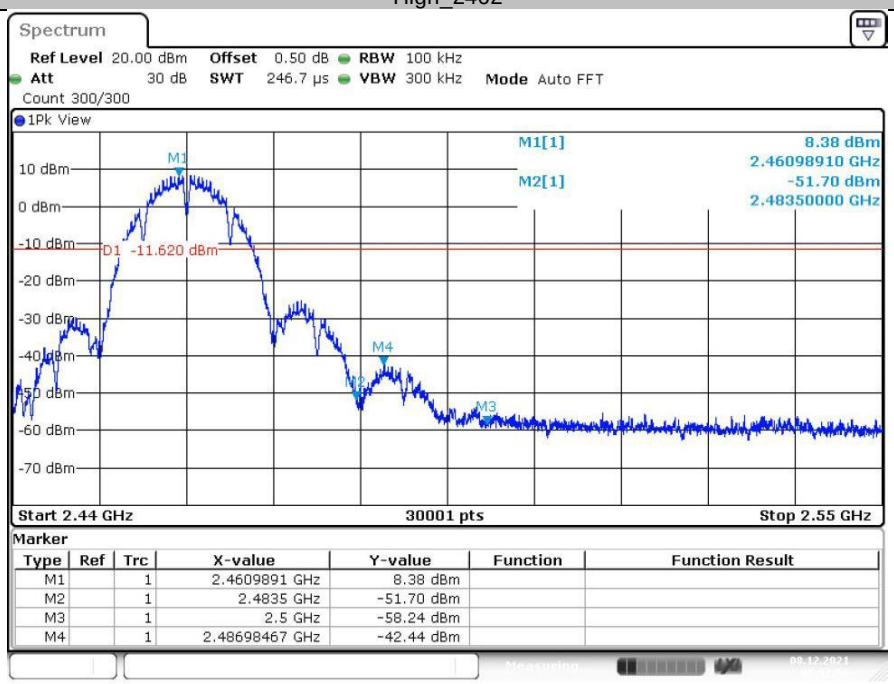


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4129857 GHz	4.34 dBm		
M2		1	2.4 GHz	-41.51 dBm		
M3		1	2.39 GHz	-57.67 dBm		
M4		1	2.396993 GHz	-36.02 dBm		

Date: 8.DEC.2021 08:48:37

High_2462



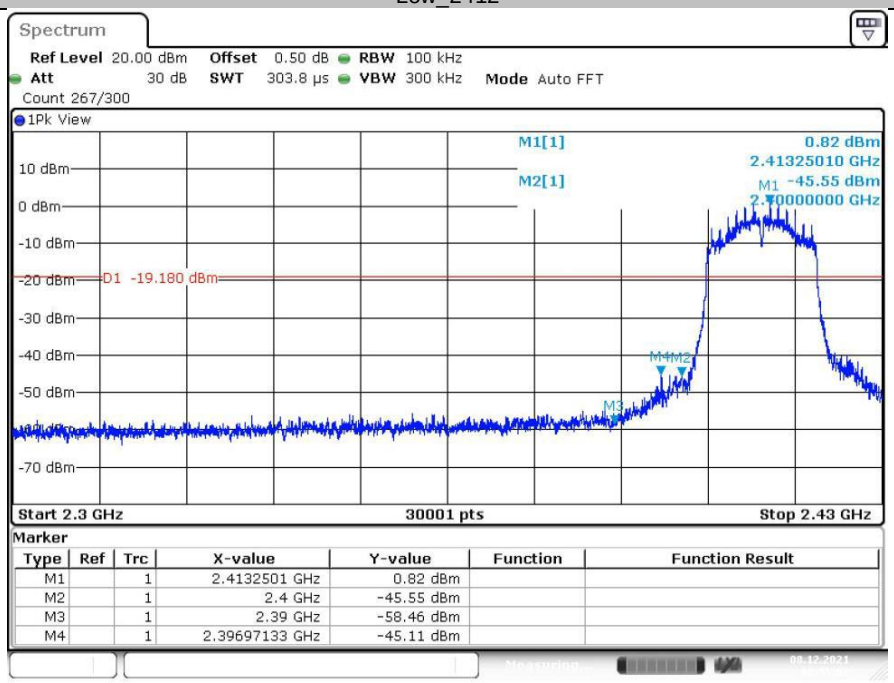
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4609891 GHz	8.38 dBm		
M2		1	2.4835 GHz	-51.70 dBm		
M3		1	2.5 GHz	-58.24 dBm		
M4		1	2.48698467 GHz	-42.44 dBm		

Date: 8.DEC.2021 08:52:56

802.11 G

Low_2412

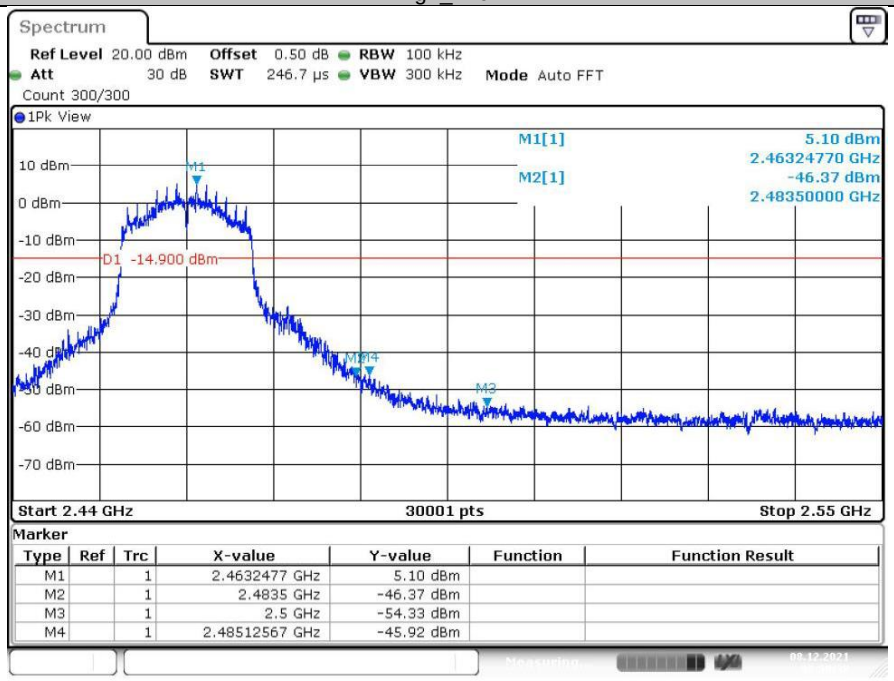


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4132501 GHz	0.82 dBm		
M2		1	2.4 GHz	-45.55 dBm		
M3		1	2.39 GHz	-58.46 dBm		
M4		1	2.39697133 GHz	-45.11 dBm		

Date: 8.DEC.2021 08:55:02

High_2462



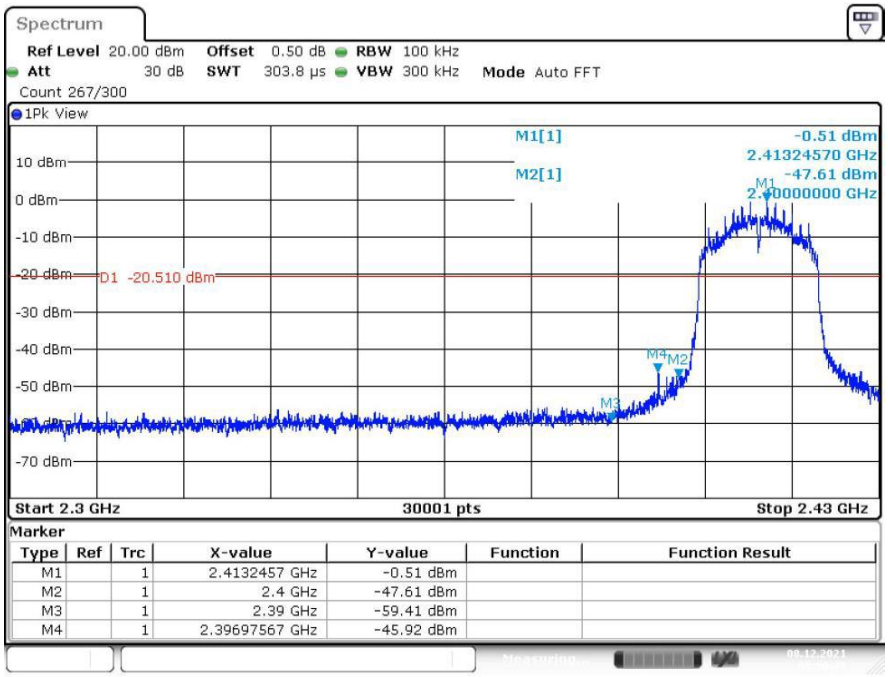
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4632477 GHz	5.10 dBm		
M2		1	2.4835 GHz	-46.37 dBm		
M3		1	2.5 GHz	-54.33 dBm		
M4		1	2.48512567 GHz	-45.92 dBm		

Date: 8.DEC.2021 08:58:38

802.11 N20

Low_2412

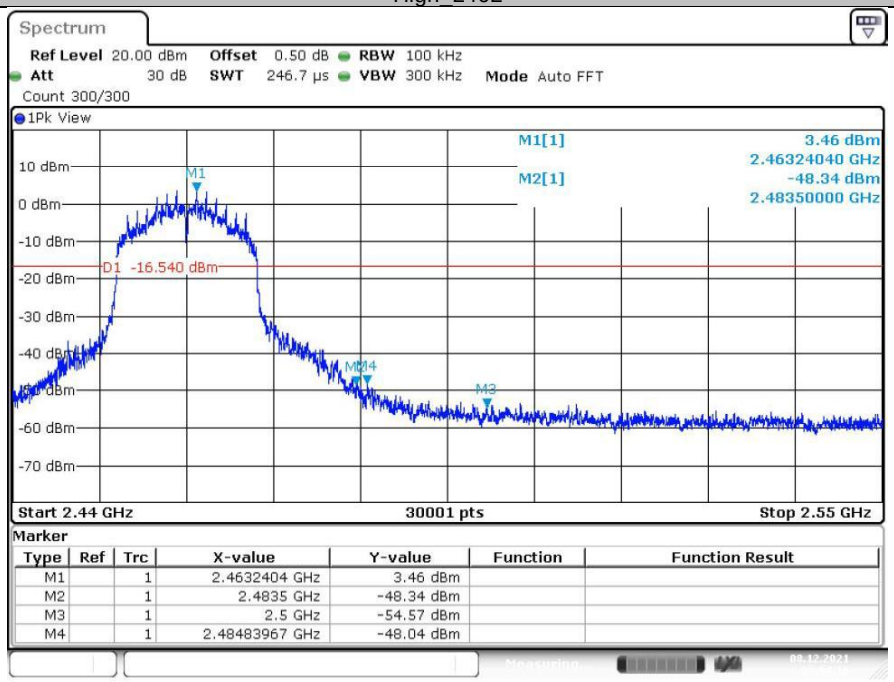


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4132457 GHz	-0.51 dBm		
M2		1	2.4 GHz	-47.61 dBm		
M3		1	2.39 GHz	-59.41 dBm		
M4		1	2.39697567 GHz	-45.92 dBm		

Date: 8.DEC.2021 09:00:46

High_2462



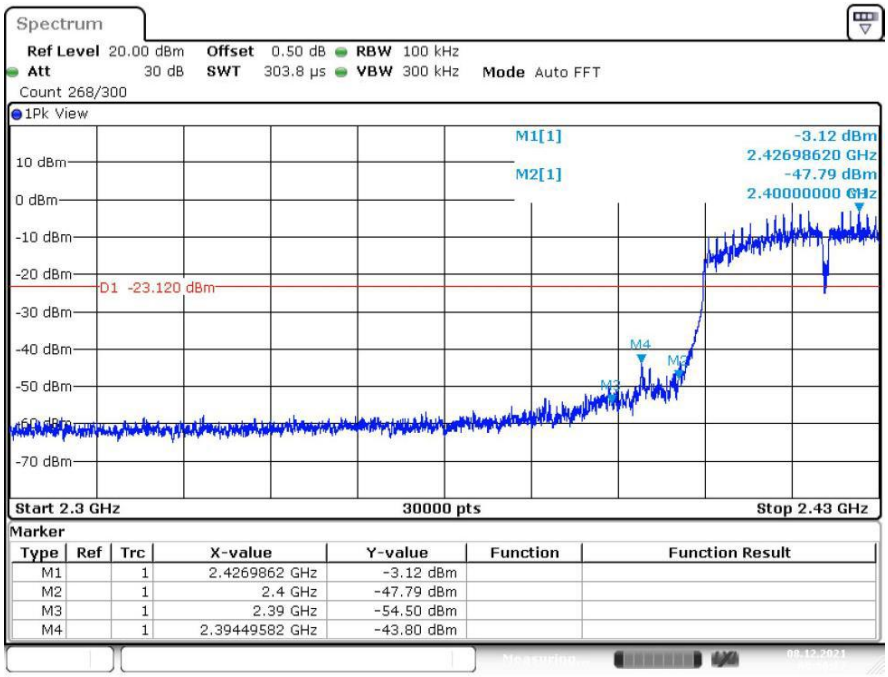
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4632404 GHz	3.46 dBm		
M2		1	2.4835 GHz	-48.34 dBm		
M3		1	2.5 GHz	-54.57 dBm		
M4		1	2.48483967 GHz	-48.04 dBm		

Date: 8.DEC.2021 09:04:16

802.11 N40

Low_2412

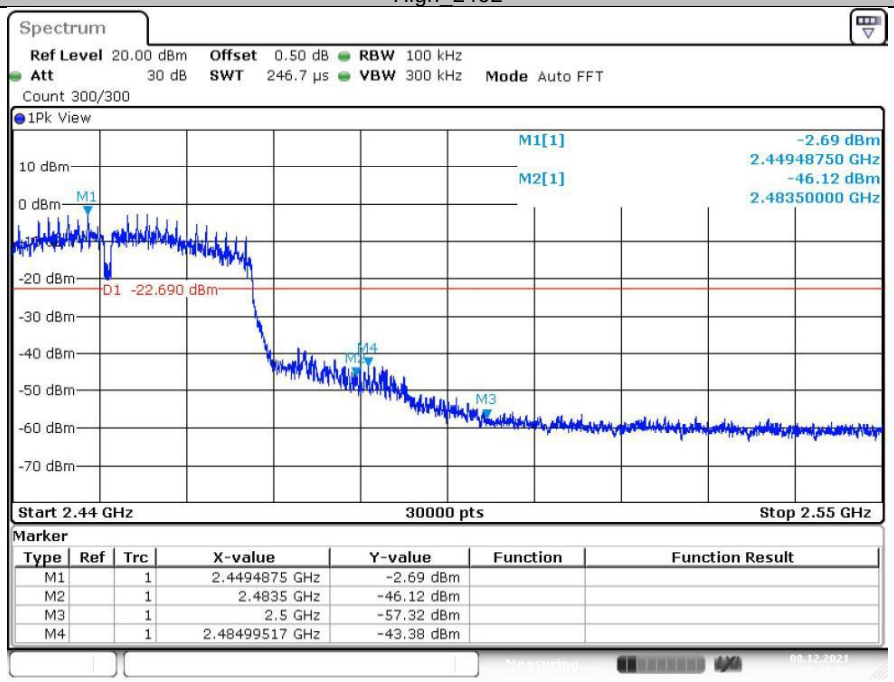


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4269862 GHz	-3.12 dBm		
M2		1	2.4 GHz	-47.79 dBm		
M3		1	2.39 GHz	-54.50 dBm		
M4		1	2.39449582 GHz	-43.80 dBm		

Date: 8.DEC.2021 09:06:27

High_2462



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4494875 GHz	-2.69 dBm		
M2		1	2.4835 GHz	-46.12 dBm		
M3		1	2.5 GHz	-57.32 dBm		
M4		1	2.48499517 GHz	-43.38 dBm		

Date: 8.DEC.2021 09:11:04

9.6 Spurious radiated emissions for transmitter

Test Method

1. The EUT was place on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. Use the following spectrum analyzer settings According to C63.10:

For Below 1GHz

Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 kHz to 120 kHz, VBW≥RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

For Peak unwanted emissions Above 1GHz:

Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 1MHz, VBW≥RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

Procedures for average unwanted emissions measurements above 1000 MHz

a) RBW = 1MHz.
b) VBW ≥ [3 × RBW].
c) Detector = RMS (power averaging), if [span / (# of points in sweep)] ≤ RBW / 2. Satisfying this condition can require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, then the detector mode shall be set to peak.
d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.)
e) Sweep time = auto.
f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of 1 / D, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)
g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the

emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:
1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is [10 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.
2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is [20 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.
3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

Limit

The radio emission outside the operating frequency band shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Radiated emissions which fall in the restricted bands, as defined in section15.205 and RSS-GEN 8.10 must comply with the radiated emission limits specified in section 15.209.

Frequency MHz	Field Strength uV/m	Measured Distance Meters
0.009~0.490	2400/F (kHz)	300
0.490~1.705	24000/F (kHz)	30
1.705~30	30	30

Frequency MHz	Field Strength uV/m	Field Strength dBμV/m	Detector
30-88	100	40	QP
88-216	150	43.5	QP
216-960	200	46	QP
960-1000	500	54	QP
Above 1000	500	54	AV
Above 1000	5000	74	PK

Spurious radiated emissions for transmitter

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Transmitting spurious emission test result as below:

Pre-scan with three orthogonal axis and worst case as X axis listed below table

Test mode: 802.11B					
Channel 1 (2412MHz)					
Frequency (MHz)	**Measure Level (dBuV/m)**	**Limit (dBuV/M)**	**Margin (dB)**	**Detector**	**Polarization**
2386.2	51.70	74.00	22.30	Peak	Horizontal
4823.6	46.89	74.00	27.11	Peak	Horizontal
2387.6	46.57	74.00	27.43	Peak	Vertical
4823.6	48.77	74.00	25.23	Peak	Vertical

Test mode: 802.11B					
Channel 6 (2437MHz)					
Frequency (MHz)	**Measure Level (dBuV/m)**	**Limit (dBuV/M)**	**Margin (dB)**	**Detector**	**Polarization**
4873.7	46.68	74.00	27.32	Peak	Horizontal
4873.7	45.35	74.00	28.65	Peak	Vertical

Test mode: 802.11B					
Channel 11 (2462MHz)					
Frequency (MHz)	**Measure Level (dBuV/m)**	**Limit (dBuV/M)**	**Margin (dB)**	**Detector**	**Polarization**
2484.5	51.86	74.00	22.14	Peak	Horizontal
2486.6	51.96	74.00	22.04	Peak	Horizontal
4923.6	46.99	74.00	27.01	Peak	Horizontal
2483.6	47.14	74.00	26.86	Peak	Vertical
4924.1	50.43	74.00	23.57	Peak	Vertical

Remark:

(1) Emission level= Original Receiver Reading + Correct Factor
(2) Correct Factor = Antenna Factor + Cable Loss -Amplifier gain
(3) Margin = limit – Corrected Reading

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3-13, No.151, Heng Tong Road, Shanghai, 200070, P.R. China
Phone: +86 21 61410123, Fax:+86 21 61408600

Test mode: 802.11G					
Channel 1 (2412MHz)					
Frequency (MHz)	Measure Level (dBuV/m)	Limit (dBuV/M)	Margin (dB)	Detector	Polarization
2356.9	52.63	74.00	21.37	Peak	Horizontal
2389.1	55.42	74.00	18.58	Peak	Horizontal
2389.1	46.20	54.00	7.80	AV	Horizontal
4821.6	44.28	74.00	29.72	Peak	Horizontal
2389.9	48.19	74.00	25.81	Peak	Vertical
4823.8	42.92	74.00	31.08	Peak	Vertical

Test mode: 802.11G					
Channel 6 (2437MHz)					
Frequency (MHz)	Measure Level (dBuV/m)	Limit (dBuV/M)	Margin (dB)	Detector	Polarization
4874.3	43.47	74.00	30.53	Peak	Horizontal
4874.4	43.35	74.00	30.65	Peak	Vertical

Test mode: 802.11G					
Channel 11 (2462MHz)					
Frequency (MHz)	Measure Level (dBuV/m)	Limit (dBuV/M)	Margin (dB)	Detector	Polarization
2483.6	54.08	74.00	19.92	Peak	Horizontal
2483.6	46.22	54.00	7.78	AV	Horizontal
4924.5	44.66	74.00	9.34	Peak	Horizontal
2483.6	47.33	74.00	26.67	Peak	Vertical
4924.5	44.29	74.00	29.71	Peak	Vertical

Remark:

(1) Emission level= Original Receiver Reading + Correct Factor
(2) Correct Factor = Antenna Factor + Cable Loss -Amplifier gain
(3) Margin = limit – Corrected Reading

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Test mode: 802.11N20					
Channel 1 (2412MHz)					
Frequency (MHz)	Measure Level (dBuV/m)	Limit (dBuV/M)	Margin (dB)	Detector	Polarization
2359.4	51.94	74.00	22.06	Peak	Horizontal
2386.0	53.94	74.00	20.06	Peak	Horizontal
2386.0	47.09	54.00	6.91	AV	Horizontal
4844.4	45.01	74.00	28.99	Peak	Horizontal
2389.5	46.40	74.00	27.60	Peak	Vertical
4828.4	43.05	74.00	30.95	Peak	Vertical

Test mode: 802.11N20					
Channel 6 (2437MHz)					
Frequency (MHz)	Measure Level (dBuV/m)	Limit (dBuV/M)	Margin (dB)	Detector	Polarization
4871.2	44.32	74.00	29.68	Peak	Horizontal
4871.2	43.09	74.00	30.91	Peak	Vertical

Test mode: 802.11N20					
Channel 11 (2462MHz)					
Frequency (MHz)	Measure Level (dBuV/m)	Limit (dBuV/M)	Margin (dB)	Detector	Polarization
2483.5	51.48	74.00	22.52	Peak	Horizontal
2484.7	51.43	74.00	22.57	Peak	Horizontal
4924.1	44.15	74.00	29.85	Peak	Horizontal
2483.5	47.65	74.00	26.35	Peak	Vertical
4924.8	44.16	74.00	29.84	Peak	Vertical

Remark:

(1) Emission level= Original Receiver Reading + Correct Factor
(2) Correct Factor = Antenna Factor + Cable Loss -Amplifier gain
(3) Margin = limit – Corrected Reading

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Test mode: 802.11N40					
Channel 1 (2422MHz)					
Frequency (MHz)	Measure Level (dBuV/m)	Limit (dBuV/M)	Margin (dB)	Detector	Polarization
2385.2	57.83	74.00	16.17	Peak	Horizontal
2385.2	46.90	54.00	7.10	AV	Horizontal
2390.0	60.28	74.00	13.72	Peak	Horizontal
2390.0	49.90	54.00	4.10	AV	Horizontal
4844.4	42.66	74.00	31.34	Peak	Horizontal
2389.9	55.44	74.00	18.56	Peak	Vertical
2389.5	42.80	54.00	11.20	AV	Vertical
4844.4	48.30	74.00	25.70	Peak	Vertical

Test mode: 802.11N40					
Channel 6 (2437MHz)					
Frequency (MHz)	Measure Level (dBuV/m)	Limit (dBuV/M)	Margin (dB)	Detector	Polarization
4873.2	43.28	74.00	30.72	Peak	Horizontal
4873.2	44.52	74.00	29.48	Peak	Vertical

Test mode: 802.11N40					
Channel 9 (2452MHz)					
Frequency (MHz)	Measure Level (dBuV/m)	Limit (dBuV/M)	Margin (dB)	Detector	Polarization
2483.6	57.86	74.00	16.14	Peak	Horizontal
2483.8	50.10	54.00	3.90	AV	Horizontal
4904.1	43.28	74.00	30.72	Peak	Horizontal
2483.8	50.58	74.00	23.42	Peak	Vertical
4904.8	43.19	74.00	30.81	Peak	Vertical

Remark:

(1) Emission level= Original Receiver Reading + Correct Factor
(2) Correct Factor = Antenna Factor + Cable Loss -Amplifier gain
(3) Margin = limit – Corrected Reading

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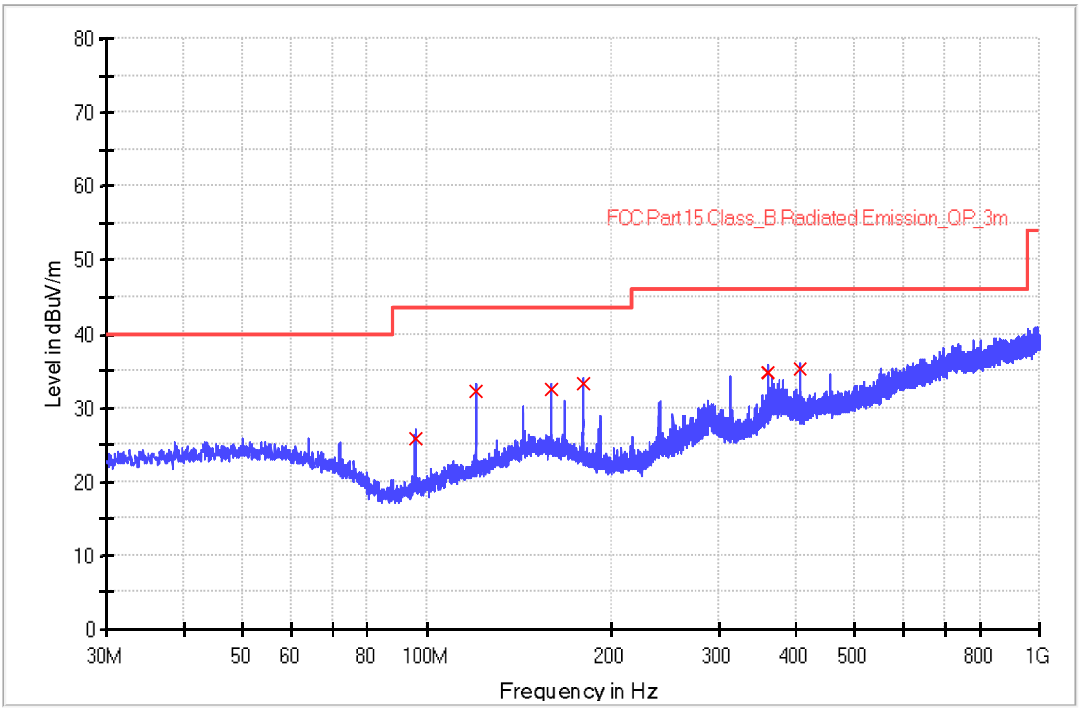
The worst case of Radiated Emission below 1GHz:

Site: 3 meter chamber	Time: 2021/12/05 - 14:32
Limit: FCC_Part15.209_RE(3m)_ClassB	Engineer: Cheng Huali
Probe: VULB9168	Polarity: Horizontal
EUT: Doorbell Camera, Model no: SC022-WBI0	Power: DC 4.5V
Note: Transmit by at 802.11g, channel 2462MHz. Note: Pre-scan with three orthogonal axis and worst case as X axis	



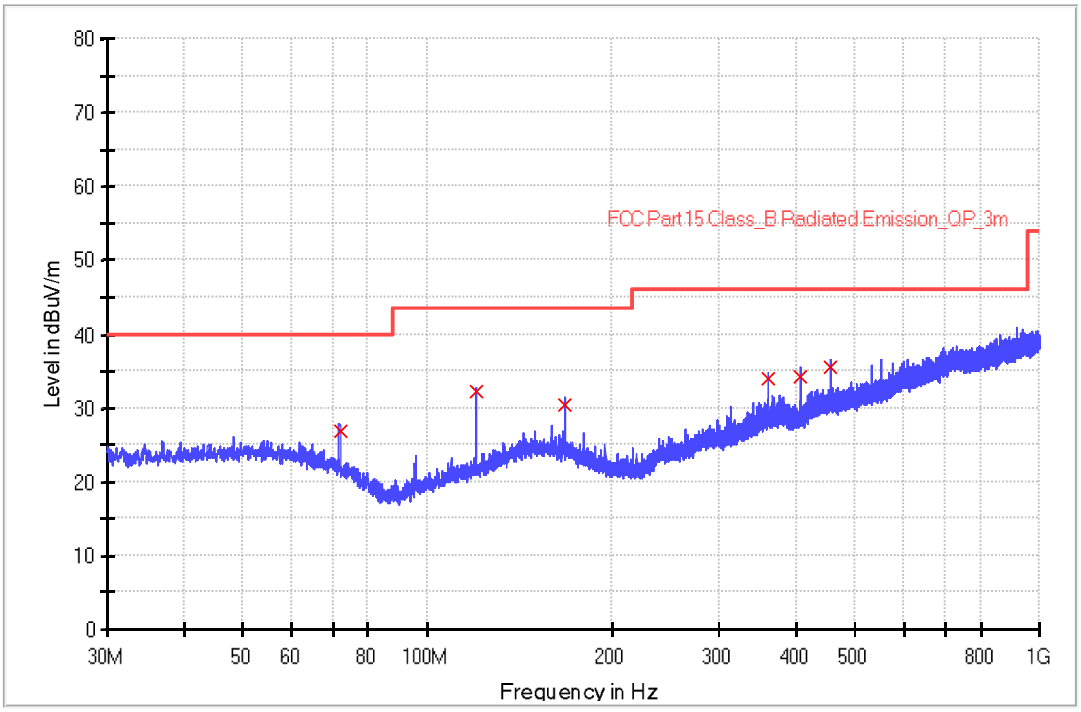
Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
95.680000	25.9	1000.0	120.000	100.2	H	36.0	15.6	17.6	43.5
119.960000	32.1	1000.0	120.000	100.2	H	319.0	18.1	11.4	43.5
159.960000	32.4	1000.0	120.000	100.2	H	106.0	20.9	11.1	43.5
180.000000	33.3	1000.0	120.000	100.2	H	253.0	19.3	10.3	43.5
359.960000	34.9	1000.0	120.000	100.2	H	209.0	23.0	11.1	46.0
407.960000	35.2	1000.0	120.000	100.2	H	146.0	24.2	10.8	46.0

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)
Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

Site: 3 meter chamber	Time: 2021/12/05 - 14:58
Limit: FCC_Part15.209_RE(3m)_ClassB	Engineer: Cheng Huali
Probe: VULB9168	Polarity: Vertical
EUT: Doorbell Camera, Model no: SC022-WBI0	Power: DC 4.5V
Note: Transmit by at 802.11g, channel 2462MHz. Note: Pre-scan with three orthogonal axis and worst case as X axis	

RE_VULB9168_pre_Cont_30-1000



Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
72.000000	26.8	1000.0	120.000	100.2	V	217.0	18.2	13.2	40.0
120.000000	32.1	1000.0	120.000	100.2	V	315.0	18.1	11.4	43.5
168.000000	30.4	1000.0	120.000	100.2	V	262.0	20.4	13.1	43.5
359.960000	33.9	1000.0	120.000	100.2	V	51.0	23.0	12.1	46.0
408.040000	34.3	1000.0	120.000	100.2	V	116.0	24.2	11.7	46.0
455.960000	35.6	1000.0	120.000	100.2	V	162.0	25.9	10.4	46.0

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)
Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

10 Test Equipment List

List of Test Instruments
Test Site1

	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DATE	CAL. DUE DATE
C	Signal Analyzer	Rohde & Schwarz	FSV40	101091	2021-8-2	2022-8-1
	Wideband power sensor	Rohde & Schwarz	NRP-Z81	105903	2021-03-19	2022-3-18
RE	EMI Test Receiver	Rohde & Schwarz	ESR3	101906	2021-8-2	2022-8-1
	Signal Analyzer	Rohde & Schwarz	FSV40	101091	2021-8-2	2022-8-1
	Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9168	961	2019-3-16	2022-3-15
	Double-ridged waveguide horn antenna	Rohde & Schwarz	HF907	102868	2021-3-15	2024-3-14
	Pre-amplifier	Rohde & Schwarz	SCU-18D	19006451	2021-8-2	2022-8-1
	Loop antenna	Rohde & Schwarz	HFH2-Z2E	100933	2021-5-21	2022-5-20
	DOUBLE-RIDGED WAVEGUIDE HORN WITH PRE-AMPLIFIER (18 GHZ - 40 GHZ)	ETS-Lindgren	3116C-PA	002222727	2020-9-23	2023-9-22
	3m Semi-anechoic chamber	TDK	9X6X6	----	2021-5-8	2024-5-7
CE	EMI Test Receiver	Rohde & Schwarz	ESR3	101907	2021-8-2	2022-8-1
	LISN	Rohde & Schwarz	ENV216	101924	2021-8-2	2022-8-1

Measurement Software Information			
Test Item	Software	Manufacturer	Version
C	Bluetooth and WiFi Test System	Shenzhen JS tonscend co.,ltd	2.6.77.0518
RE	EMC 32	Rohde & Schwarz	V9.15.00
CE	EMC 32	Rohde & Schwarz	V9.15.03

C - Conducted RF tests

- Conducted peak output power
- 6dB bandwidth and 99% Occupied Bandwidth
- Power spectral density*
- Spurious RF conducted emissions
- Band edge

11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

Items	Extended Uncertainty
Conducted Disturbance at Mains Terminals	150kHz to 30MHz, LISN, ±3.16dB
Radiated Disturbance	30MHz to 1GHz, ±5.03dB (Horizontal) ±5.12dB (Vertical) 1GHz to 18GHz, ±5.49dB 18GHz to 40GHz, ±5.63dB
Carrier power conducted measurement	50MHz~18GHz, ±1.238dB
Spurious Emission Conducted Measurement	9kHz ~40GHz, ± 1.224dB

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2007, clause 4.4.3 and 4.5.1.

12 Photographs of Test Set-ups

Refer to the < Test Setup photos >.

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13 Photographs of EUT

Refer to the < External Photos > & < Internal Photos >.

THE END

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