TEST REPORT

Report Number: C20T00030-SRD03-V00

Applicant	MobiWire SAS
Product Name	4G Smart phone
Model Name	MobiWire Ituha, MBW Vodafone Smart N12
Brand Name	MobiWire
FCC ID	QPN-ITUHA

Industrial Internet Innovation Center (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in FCC Part15, ANSI C63.10, KDB 558074.

Prepared by	刘艳	Reviewed by	范逸艳
Approved by	熊增新	Issue Date	2021-03-15

Industrial Internet Innovation Center (Shanghai) Co., Ltd.

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Test Laboratory:
Industrial Internet Innovation Center (Shanghai) Co., Ltd.
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Tel: +86 21 63843300

Revision Version

Report Number	Revision	Date	Memo
C20T00030-SRD03-V00	00	2021-03-15	Initial creation of test report

CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name	Industrial Internet Innovation Center (Shanghai) Co., Ltd.
Address	Building 4, No. 766 Jingang Rd, Pudong, Shanghai, China
FCC Registration No.	CN1177

1.2. Testing Environment

Normal Temperature	15℃~35℃
Relative Humidity	30%RH~60%RH
Supply Voltage	120V/60Hz

1.3. Project Information

Project Leader	Xu Yuting
Testing Start Date	2021-03-01
Testing End Date	2021-03-06

2. Client Information

2.1. Applicant Information

Company Name	MobiWire SAS
Address	79 AVENUE FRANCOIS ARAGO 92017 NANTERRE France
Telephone	+33 625 028 368-33

2.2. Manufacturer Information

Company Name	MobiWire SAS
Address	79 AVENUE FRANCOIS ARAGO 92017 NANTERRE France
Telephone	+33 625 028 368-33

3. Equipment under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Product Name	4G Smart phone
Model name	MobiWire Ituha, MBW Vodafone Smart N12
Supported Radio Technology and Bands	GSM850/GSM900/GSM1800/GSM1900 WCDMA Band I/ II/V/VIII LTE Band 1/3/7/8/20/28B BT5.1 WLAN 802.11b/g/n GNSS GLONASS G1/GPS L1
WLAN Frequency	2412MHz-2462MHz
WLAN Channel	Ch1-11
WLAN type of modulation	802.11b: DSSS
Hardware Version	V00A
Software Version	VFD_NZ_SMART_N12_SS_O_T_L_V01
FCC ID	QPN-ITUHA
Extreme Temperature	-10℃~55℃
Nominal Voltage	3.80V
Extreme High Voltage	4.35V
Extreme Low Voltage	3.60V

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N03	352110690002937	V00A	VFD_NZ_SMART_N12_SS_O_T_L_V01	2020-12-03
N04	352110690004057	V00A	VFD_NZ_SMART_N12_SS_O_T_L_V01	2020-12-03

*EUT ID: is internally used to identify the test sample in the lab.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Model	SN/Remark
AE1	RF cable	---	AE1

*AE ID: is internally used to identify the test sample in the lab.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part15	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.	2018-10-01
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013
KDB 558074	Guidance for Performing Compliance Measurements on Frequency Hopping Spread Spectrum systems (DSS) Operating Under §15.247	v05r02

4.2. Reference Information from client

Antenna gain Information of the test sample provided by MobiWire SAS
Maximum of Antenna Gain:-1.5dBi

5. Test Summary

5.1. Summary of Test Results

Measurement Items	Sub-clause of Part15C	Verdict
Maximum Peak Output Power	15.247(a)	Pass
Peak Power Spectral Density	15.247(e)	Pass
Occupied 6dB Bandwidth	15.247(d)	Pass
Band Edges Compliance	15.247(b)	Pass
Transmitter Spurious Emission-Conducted	15.247	Pass
Transmitter Spurious Emission-Radiated	15.209,15.247	Pass
AC Powerline Conducted Emission	15.107,15.207	Pass

Note: please refer to Annex A in this test report for the detailed test results.

Test Conditions

Tnom	Normal Temperature
Tmin	Low Temperature
Tmax	High Temperature
Vnom	Normal Voltage
Vmin	Low Voltage
Vmax	High Voltage
Hnom	Norm Humidity
Anom	Norm Air Pressure

For this report, all the test case listed above are tested under Normal Temperature and Normal Voltage, and also under norm humidity, the specific conditions as following:

Temperature	Tnom	25℃
Voltage	Vnom	3.80V
Humidity	Hnom	48%
Air Pressure	Anom	1010hPa

5.2. Statements

The MobiWire Ituha, MBW Vodafone Smart N12, manufactured by MobiWire SAS is a new product for testing.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. only performed test cases which identified with Pass/Fail/Inc result in section 5.1.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. has verified that the compliance of the tested device specified in section 3 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 4 of this test report.

6. Measurement Results

Shielding Room1 (6.0 meters×3.0 meters×2.7 meters) did not exceed following limits along the conducted RF performance testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Ground system resistance	< 0.5 Ω

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. =30 %, Max. = 60 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber1 (6.9 meters×10.9 meters×5.4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
VSWR	Between 0 and 6 dB, from 1GHz to 18GHz
Site Attenuation Deviation	Between -4 and 4 dB,30MHz to 1GHz
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

6.1. Output Power-Conducted

6.1.1 Measurement Limit and method:

Standard	Limit(dBm)
FCC 47 Part 15.247(b)	<30

6.1.2 Test procedure

The measurement is according to ANSI C63.10 clause 11.2

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Set RBW ⩾ OBW(1MHz), VBW ⩾ 3RBW(3MHz).
4. Span : 80MHz
5. Detector: Peak/RMS.
6. Trace mode: Max Hold
7. Spectrum Analyzer setting : Meas—channel PWR ACP—CP/ACP Config—channel bandwidth—20/40MHz

6.1.4 Maximum Average Output Power-conducted

Measurement Results:

Mode	Test Result(dBm)		
	2412MHz	**2437MHz**	**2462MHz**
802.11b	17.39	17.88	17.42
Duty Cycle Factor (dB)	0.11	0.11	0.11
802.11g	15.08	17.85	16.71
Duty Cycle Factor (dB)	0.11	0.11	0.11
802.11n(20MHz)	15.21	17.82	16.61
Duty Cycle Factor (dB)	0.11	0.11	0.11
Mode	**2422MHz**	**2437MHz**	**2452MHz**
802.11n(40MHz)	17.52	17.02	17.16
Duty Cycle Factor (dB)	0.29	0.29	0.29

6.2. Peak Power Spectral Density

6.2.1 Measurement Limit:

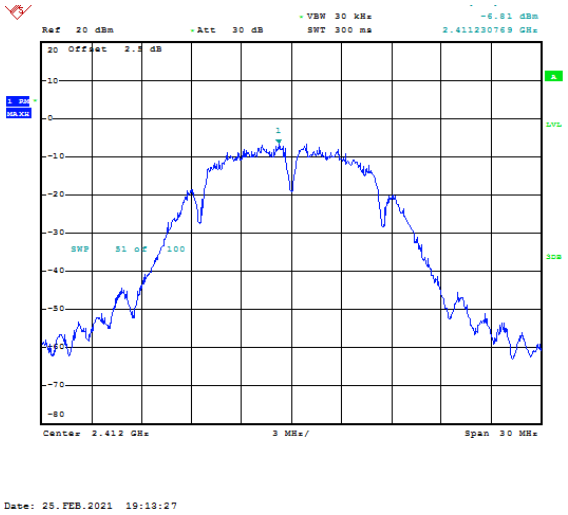
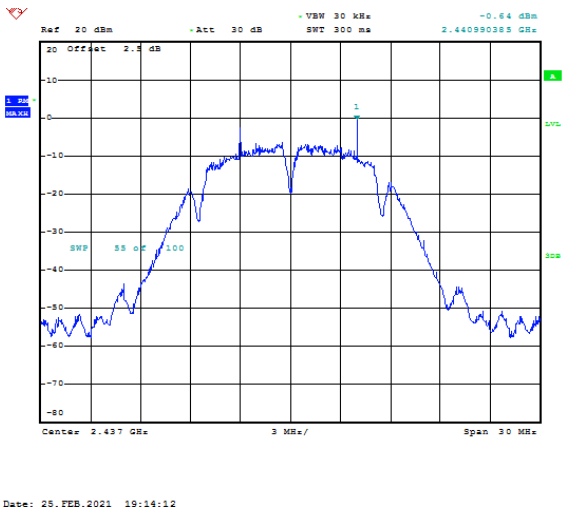
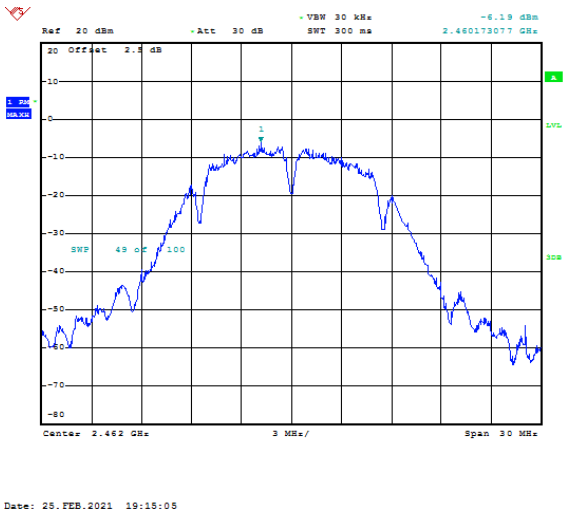
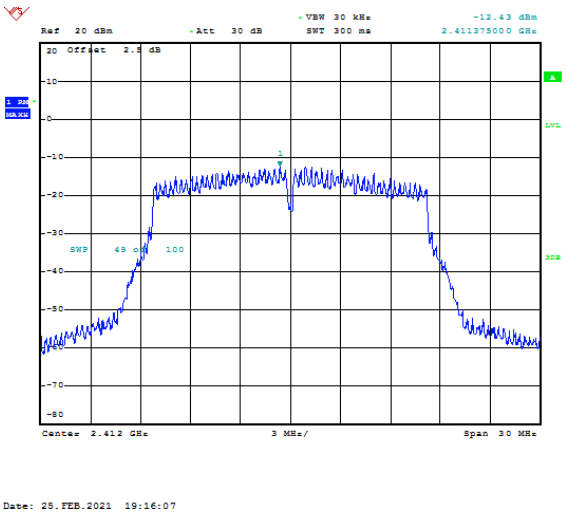
Standard	Limit
FCC 47 Part 15.247(e)	< 8dBm/3 KHz

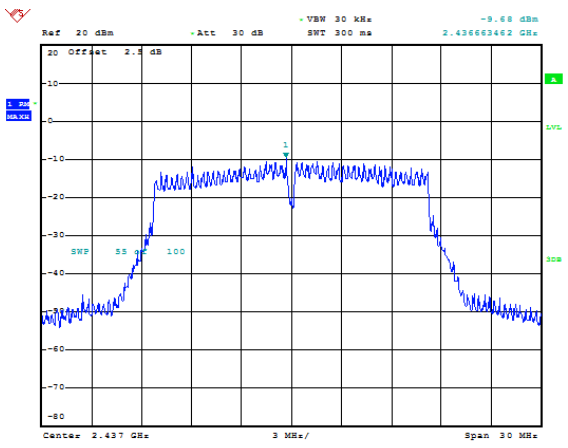
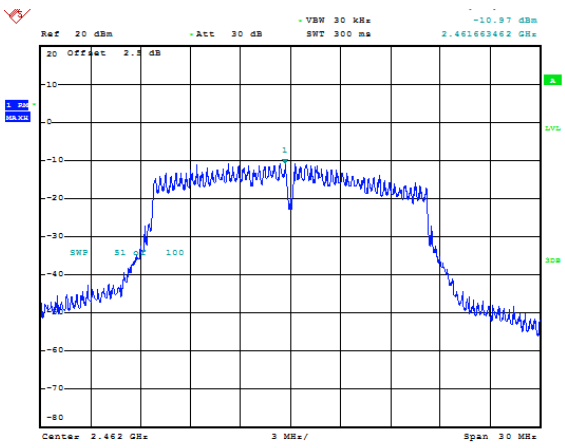
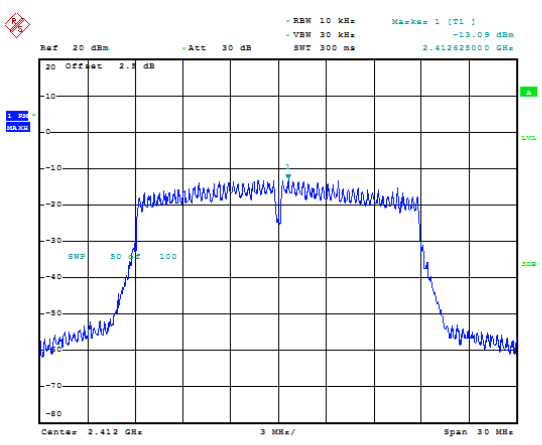
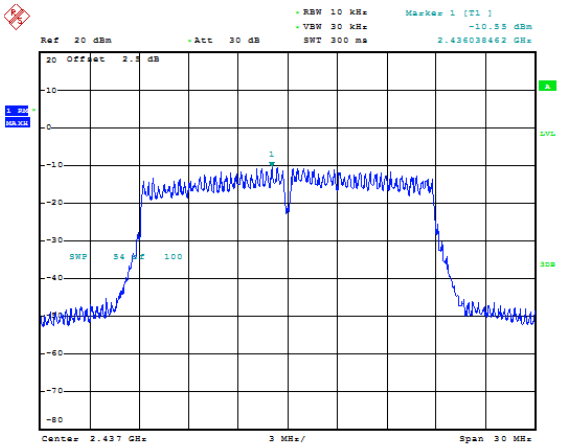
6.2.2 Test procedures

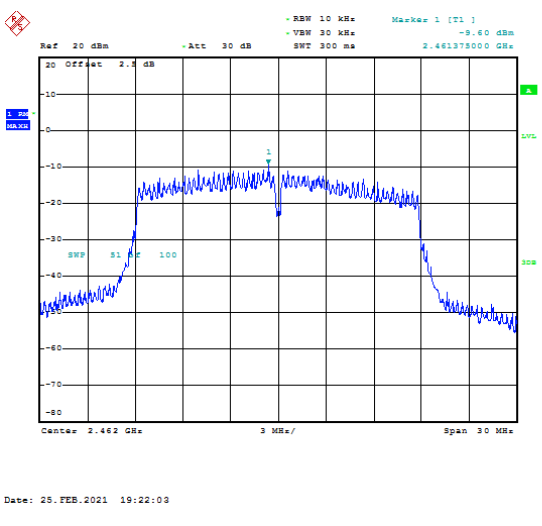
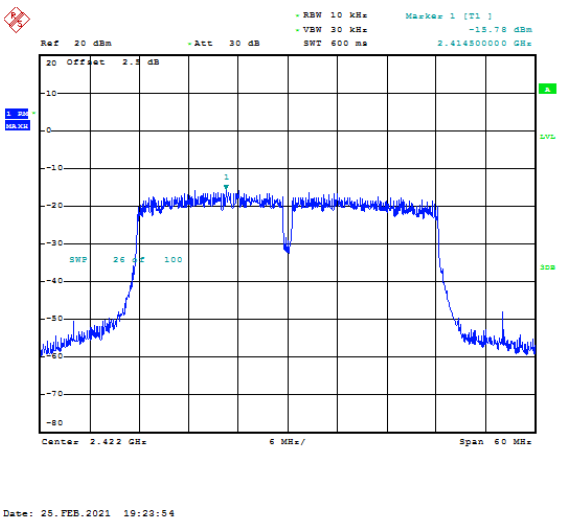
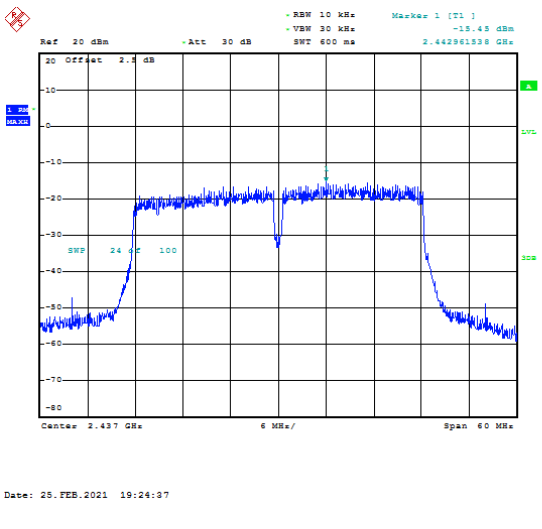
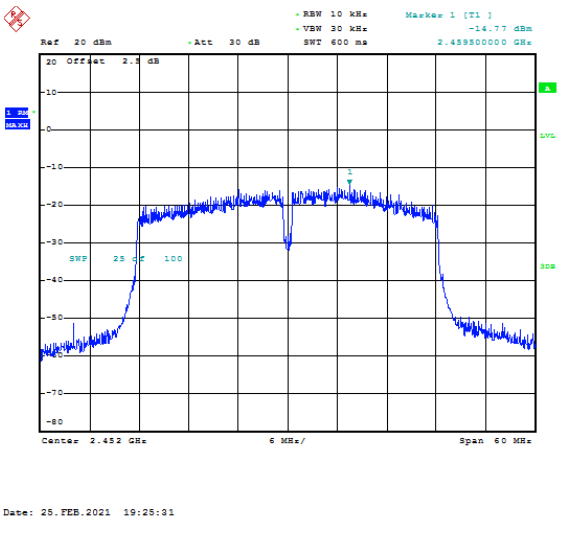
The measurement is according to ANSI C63.10 clause 11.10.

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Set analyzer center frequency to DTS channel center frequency.
4. Set the span to 1.5 times the DTS bandwidth.
5. Set the RBW to 3 kHz $\leqslant$ RBW $\leqslant$ 100 kHz.
6. Set the VBW $\geqslant$ [3 $\times$ RBW].
7. Detector = peak.
8. Sweep time = auto couple.
9. Trace mode = max hold.
10. Allow trace to fully stabilize.
11. Use the peak marker function to determine the maximum amplitude level within the RBW.
12. If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

Measurement Results:

Power Spectral Density(dBm/3kHz) (802.11b, Ch1)	-6.806	Power Spectral Density(dBm/3kHz) (802.11b, Ch6)	-0.642
			
Power Spectral Density (dBm/3kHz) (802.11b, Ch11)	-6.186	Power Spectral Density (dBm/3kHz) (802.11g, Ch1)	-12.434
			

Power Spectral Density (dBm/3kHz) (802.11g, Ch6)	-9.679	Power Spectral Density (dBm/3kHz) (802.11g, Ch11)	-10.966
			
Power Spectral Density (dBm/3kHz) (802.11n-20MHz, Ch1)	-13.087	Power Spectral Density (dBm/3kHz) (802.11n-20MHz, Ch6)	-10.553
			

Power Spectral Density (dBm/3kHz) (802.11n-20MHz, Ch11)	-9.596	Power Spectral Density (dBm/3kHz) (802.11n-40MHz, Ch3)	-15.781
			
Power Spectral Density (dBm/3kHz) (802.11n-40MHz, Ch6)	-15.450	Power Spectral Density (dBm/3kHz) (802.11n-40MHz, Ch9)	-14.769
			

6.3. Occupied 6dB Bandwidth

6.3.1 Measurement Limit:

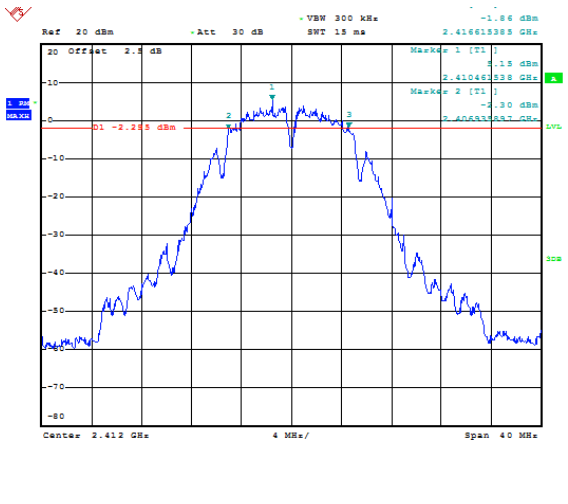
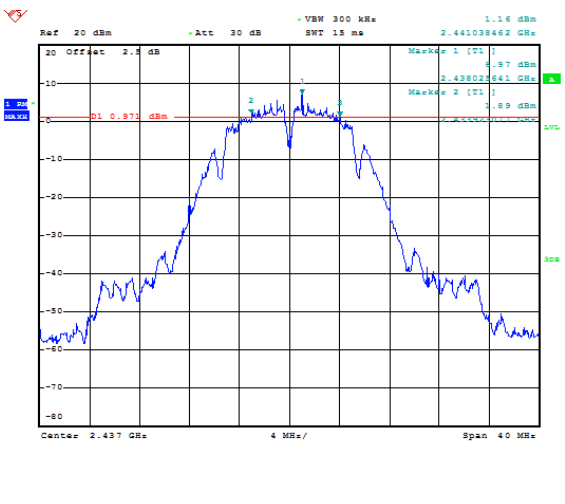
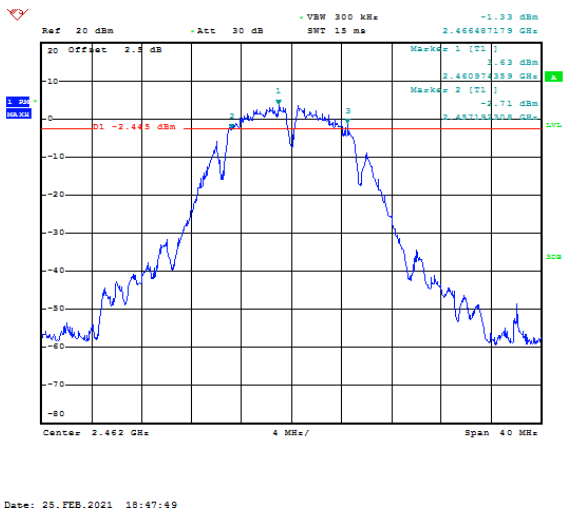
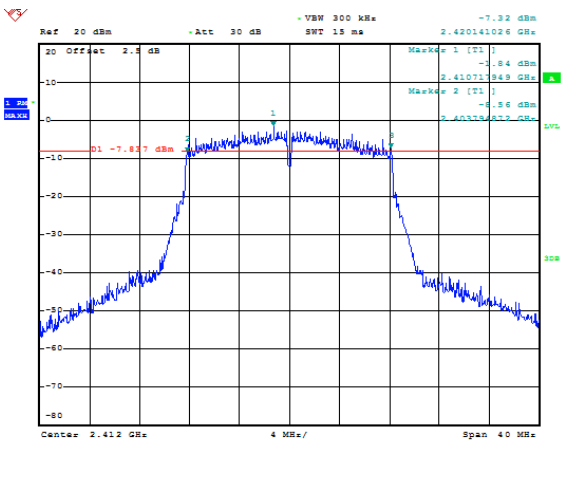
Standard	Limit(KHz)
FCC 47 Part 15.247(a)	≥500

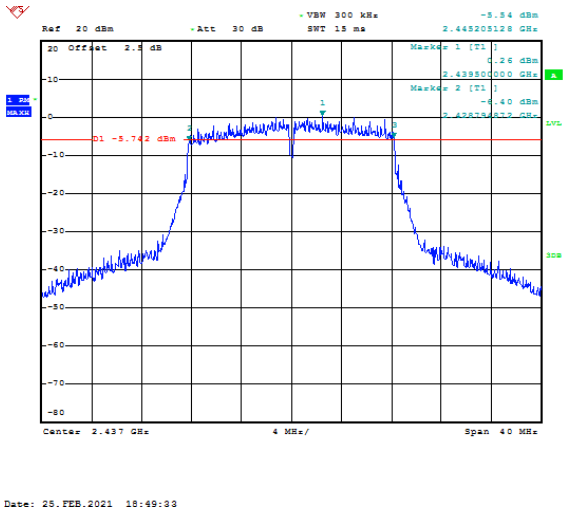
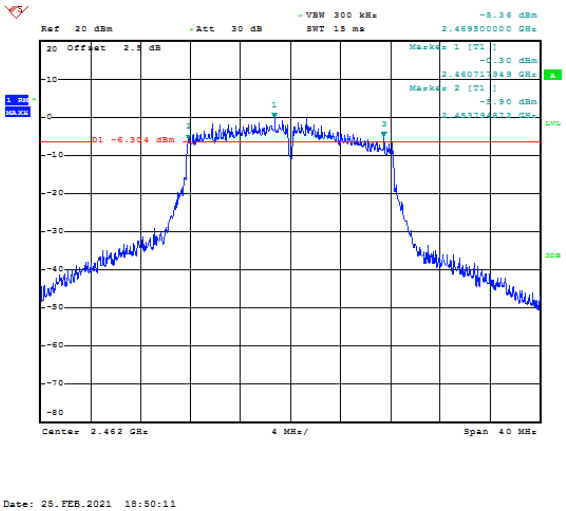
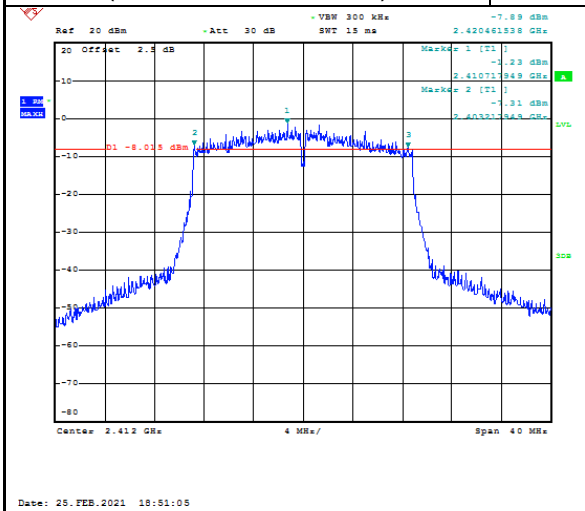
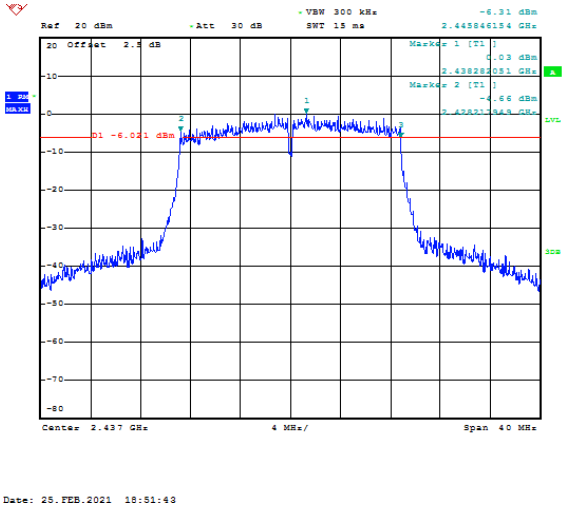
6.3.2 Test procedure

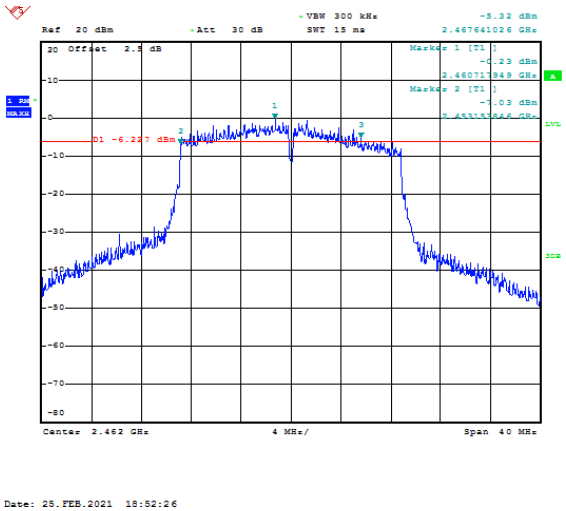
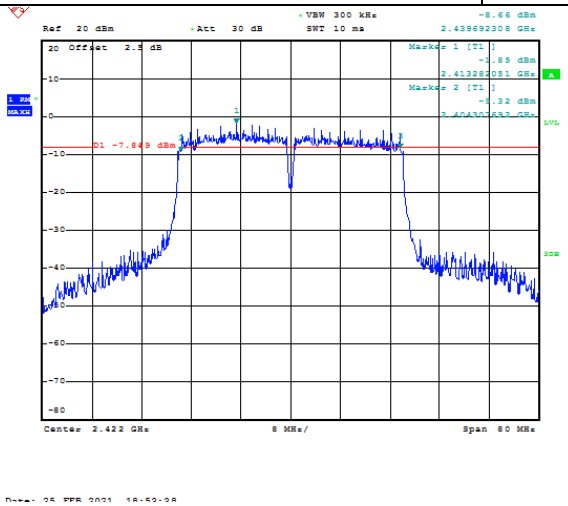
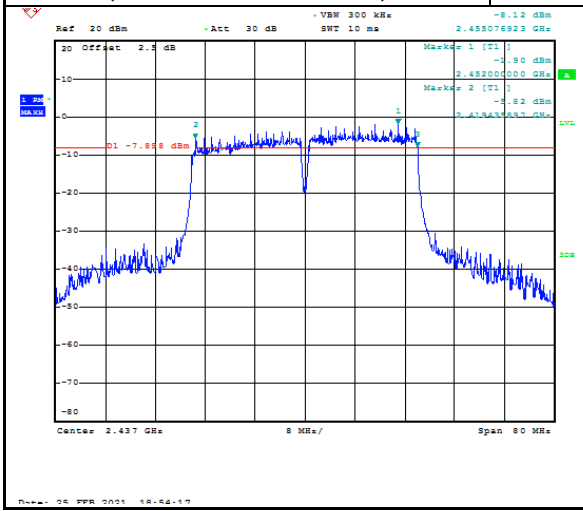
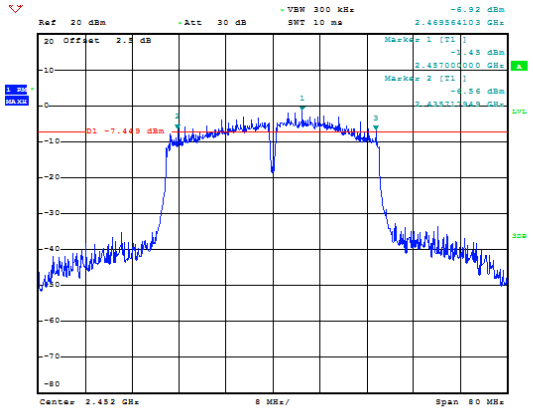
The measurement is according to ANSI C63.10 clause 11.8.

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Set RBW = 100 kHz.
4. Set the VBW ⩾ [3 × RBW].
5. Detector = peak.
6. Trace mode = max hold.
7. Sweep = auto couple.
8. Allow the trace to stabilize.
9. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Measurement Results:

Occupied 6dB Bandwidth (MHz) (802.11b, Ch1)	9.68	Occupied 6dB Bandwidth (MHz) (802.11b, Ch6)	7.12
			
Occupied 6dB Bandwidth (MHz) (802.11b, Ch11)	9.30	Occupied 6dB Bandwidth (MHz) (802.11g, Ch1)	16.35
			

Occupied 6dB Bandwidth (MHz) (802.11g, Ch6)	16.41	Occupied 6dB Bandwidth (MHz) (802.11g, Ch11)	15.70
			
Occupied 6dB Bandwidth (MHz) (802.11n-20MHz, Ch1)	17.24	Occupied 6dB Bandwidth (MHz) (802.11n-20MHz, Ch6)	17.63
			

Occupied 6dB Bandwidth (MHz) (802.11n-20MHz, Ch11)	14.49	Occupied 6dB Bandwidth (MHz) (802.11n-40MHz, Ch3)	35.38
			
Occupied 6dB Bandwidth (MHz) (802.11n-40MHz, Ch6)	35.64	Occupied 6dB Bandwidth (MHz) (802.11n-40MHz, Ch9)	33.85
			

6.4. Band Edges Compliance

6.4.1 Measurement Limit:

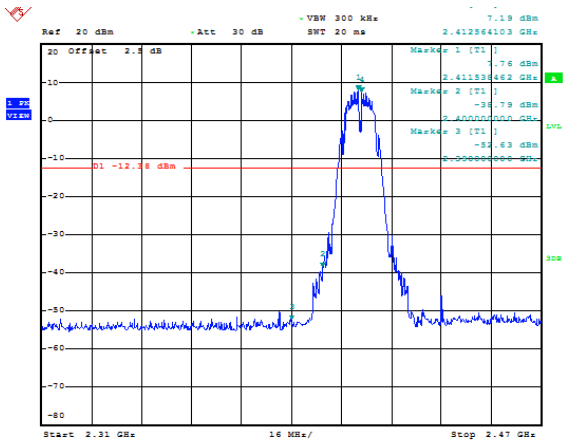
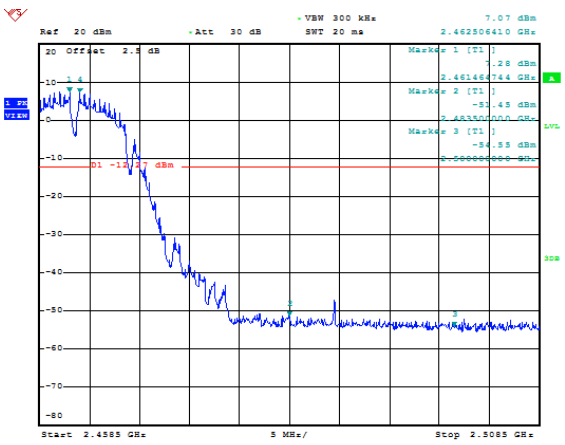
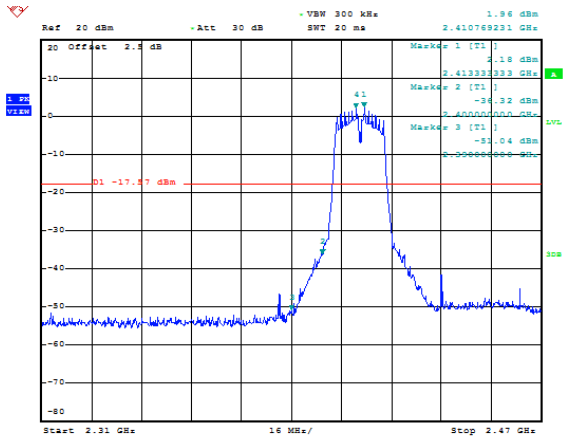
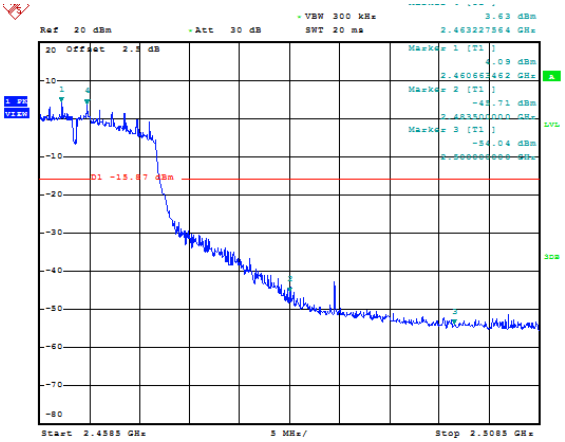
Standard	Limited(dBc)
FCC 47 Part 15.247(d)	>20

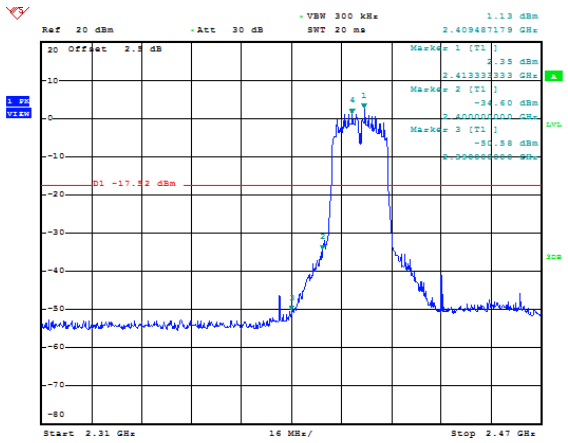
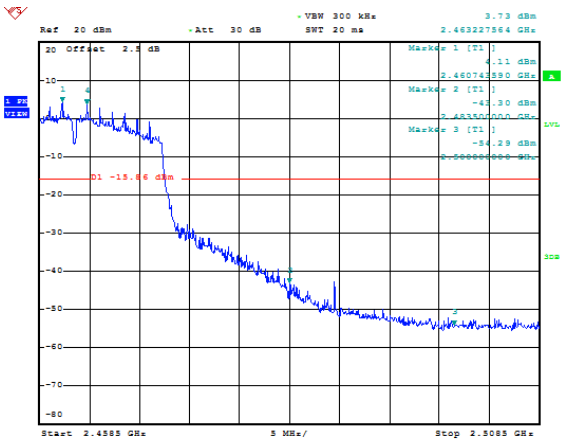
6.4.2 Test procedures

The measurement is according to ANSI C63.10 clause11.13.

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Set instrument center frequency to the frequency of the emission to be measured (must be within 2MHz of the authorized band edge).
4. Set span to 2 MHz.
5. RBW = 100 kHz.
6. VBW ⩾ [3 × RBW].
7. Detector = peak.
8. Sweep time = auto.
9. Trace mode = max hold.
10. Allow sweep to continue until the trace stabilizes

Measurement results:

Band Edges (802.11b, Ch1)	Band Edges (802.11b, Ch11)
	
Band Edges (802.11g, Ch1)	Band Edges (802.11g, Ch11)
	

Band Edges (802.11n-20MHz, Ch1)	Band Edges (802.11n-20MHz, Ch11)
	
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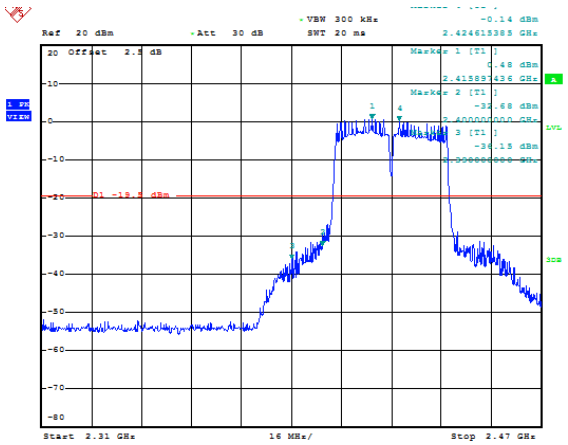
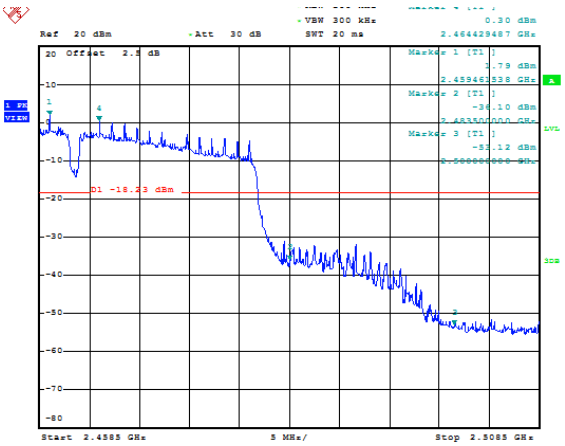
	

6.5. Transmitter Spurious Emission-conducted

6.5.1 Measurement Limit:

Standard	Limit
FCC 47 Part 15.247(d)	20dB below peak output power in 100KHz

6.5.2 Test procedures

This measurement is according to ANSI C63.10 clause 11.11.

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.

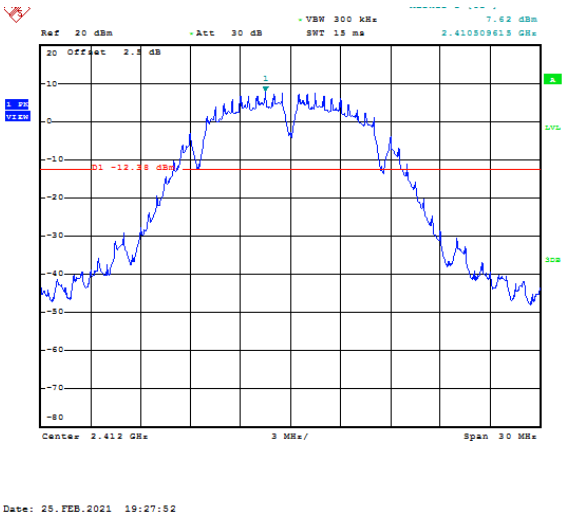
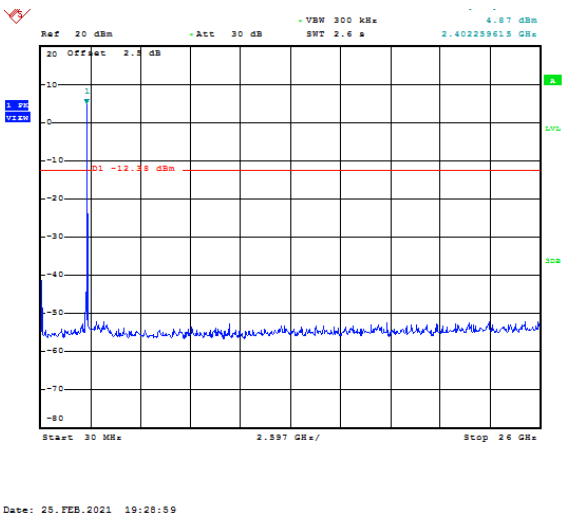
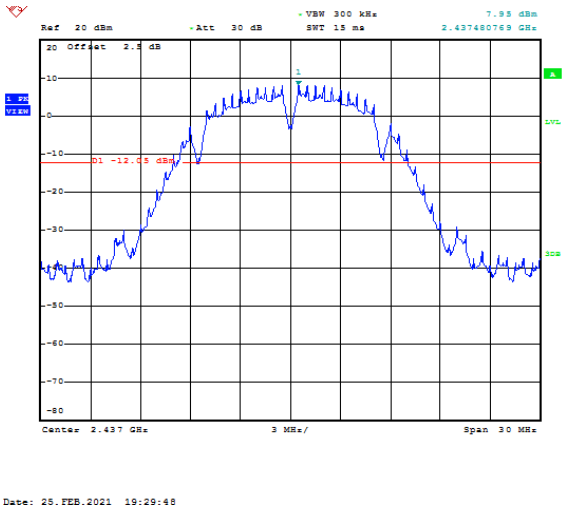
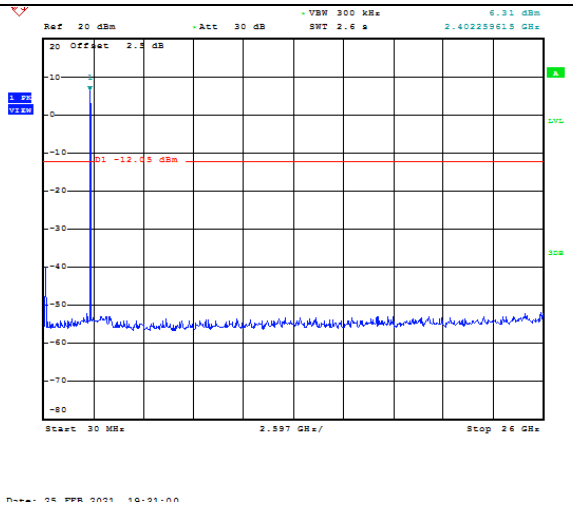
Reference level measurement

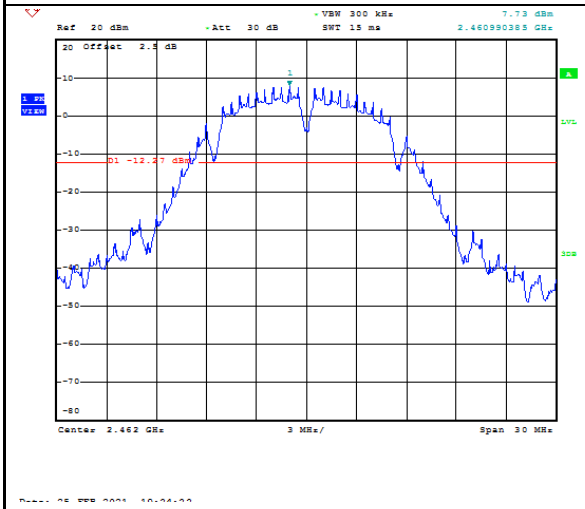
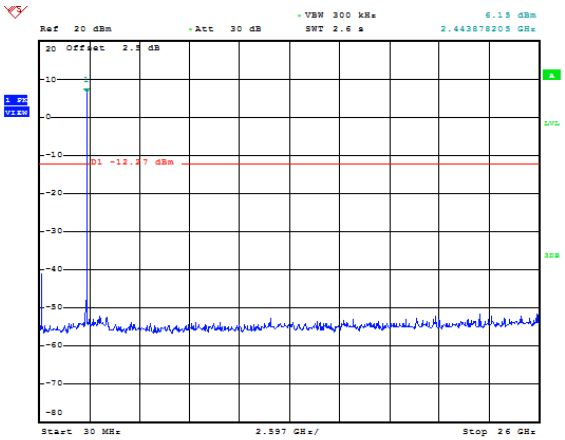
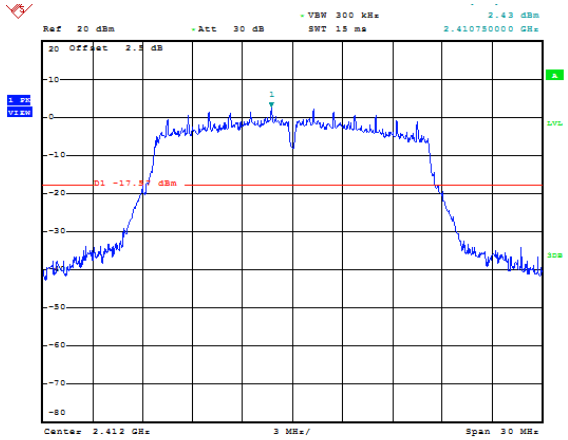
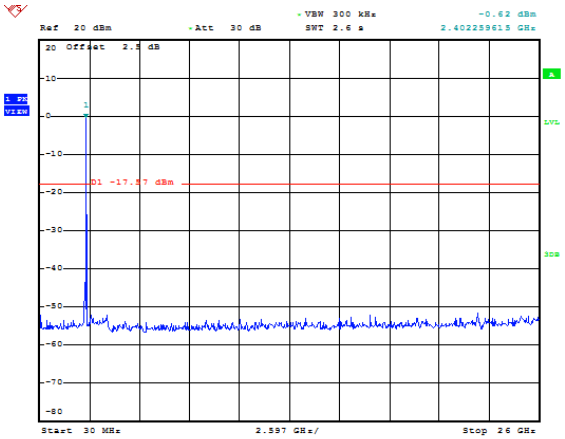
3. Set instrument center frequency to DTS channel center frequency.
4. Set the span to ≥ 1.5 times the DTS bandwidth.
5. Set the RBW = 100 kHz.
6. Set the VBW ≥ [3 × RBW].
7. Detector = peak.
8. Sweep time = auto couple.
9. Trace mode = max hold.
10. Allow trace to fully stabilize.
11. Use the peak marker function to determine the maximum PSD level.

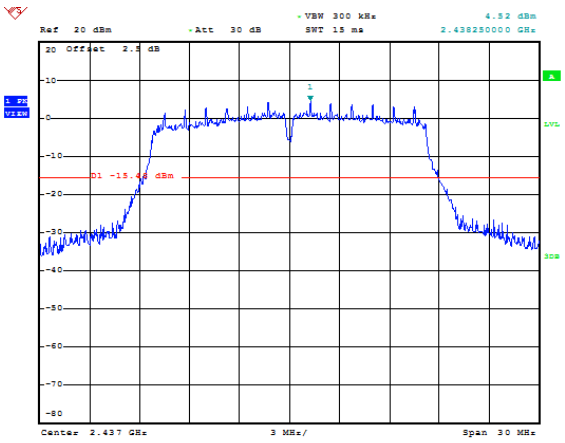
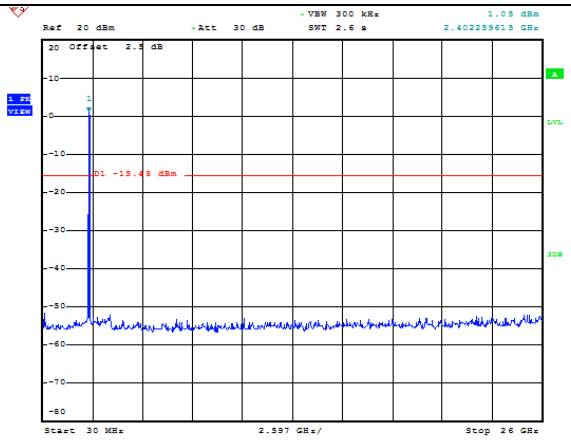
Emission level measurement

12. Set the center frequency and span to encompass frequency range to be measured.
13. Set the RBW = 100 kHz.
14. Set the VBW ≥ [3 × RBW].
15. Detector = peak.
16. Sweep time = auto couple.
17. Trace mode = max hold.
18. Allow trace to fully stabilize.
19. Use the peak marker function to determine the maximum amplitude level.

Measurement Results:

Conducted Spurious Emission (802.11b, Ch1)	Conducted Spurious Emission (802.11b, Ch1, 30MHz~26GHz)
	
Conducted Spurious Emission (802.11b, Ch6)	Conducted Spurious Emission (802.11b, Ch6, 30MHz~26GHz)
	

Conducted Spurious Emission (802.11b, Ch11)	Conducted Spurious Emission (802.11b, Ch11, 30MHz~26GHz)
	
Conducted Spurious Emission (802.11g, Ch1)	Conducted Spurious Emission (802.11g, Ch1, 30MHz~26GHz)
	

Conducted Spurious Emission (802.11g, Ch6)	Conducted Spurious Emission (802.11g, Ch6, 30MHz~26GHz)
 Date: 25.FEB.2021 19:38:37	 Date: 25.FEB.2021 19:39:48
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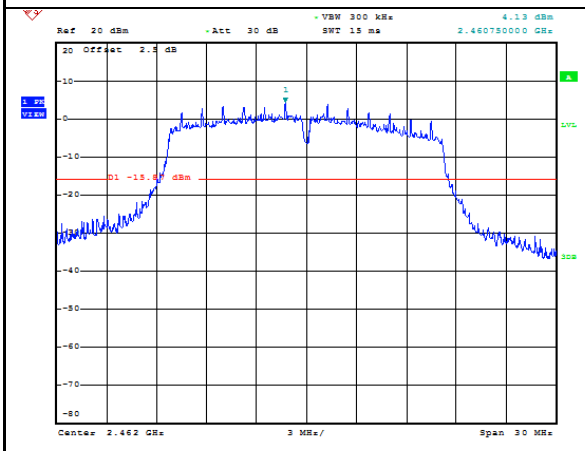
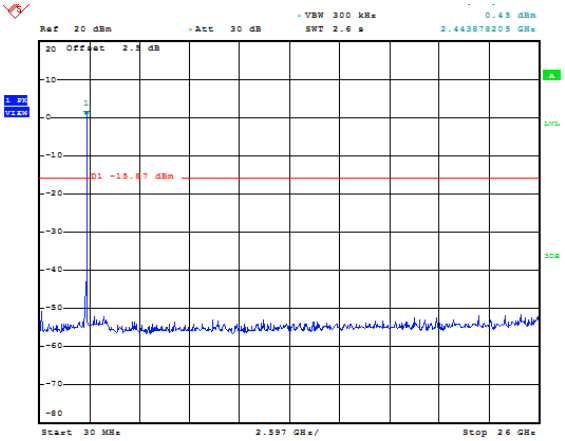
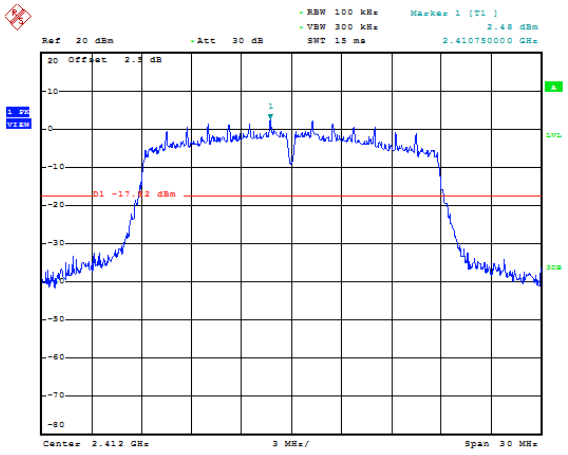
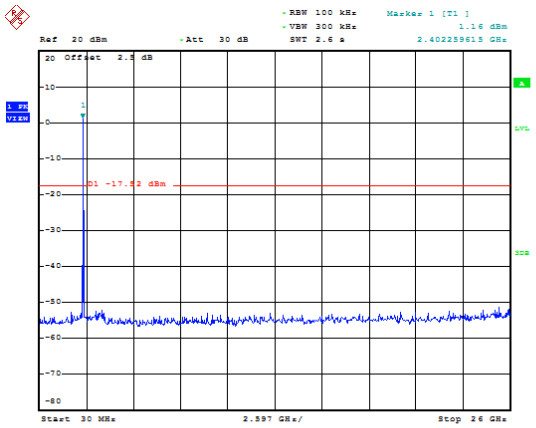
 Date: 25.FEB.2021 19:40:37	 Date: 25.FEB.2021 19:41:44

Conducted Spurious Emission (802.11n-20MHz, Ch1)	Conducted Spurious Emission (802.11n-20MHz, Ch1, 30MHz~26GHz)
 Date: 25.FEB.2021 19:42:43	 Date: 25.FEB.2021 19:43:51
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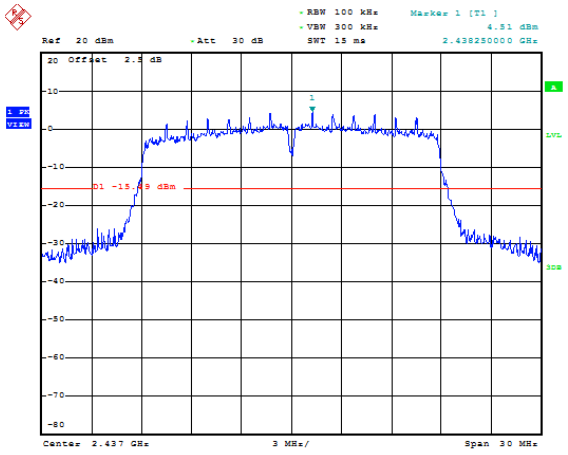
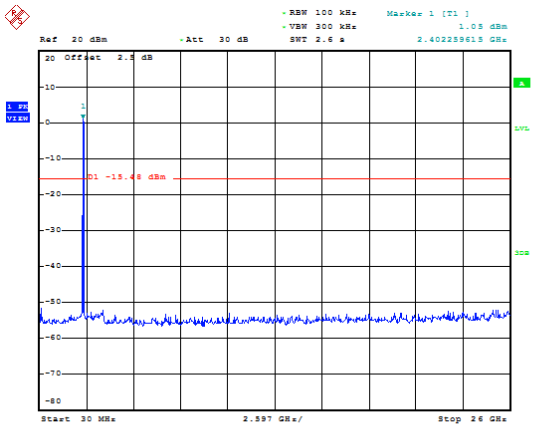
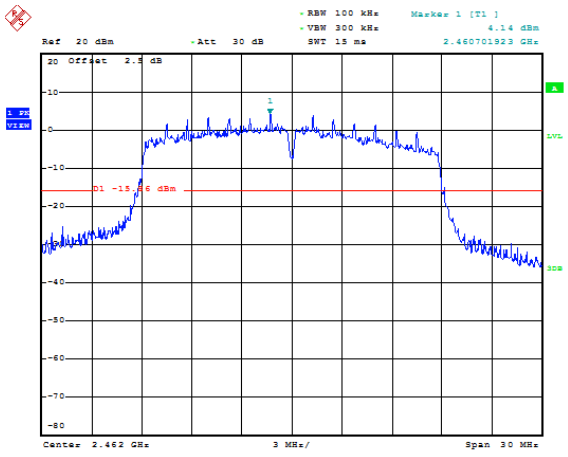
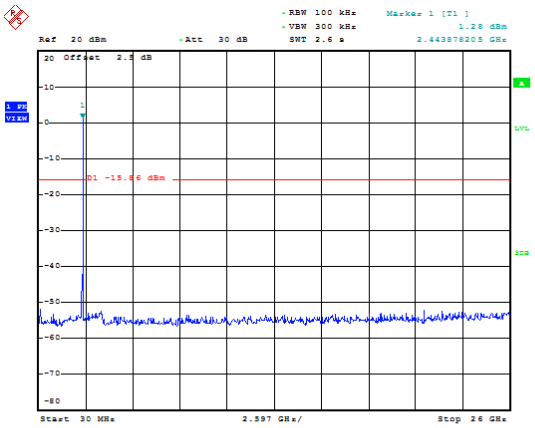
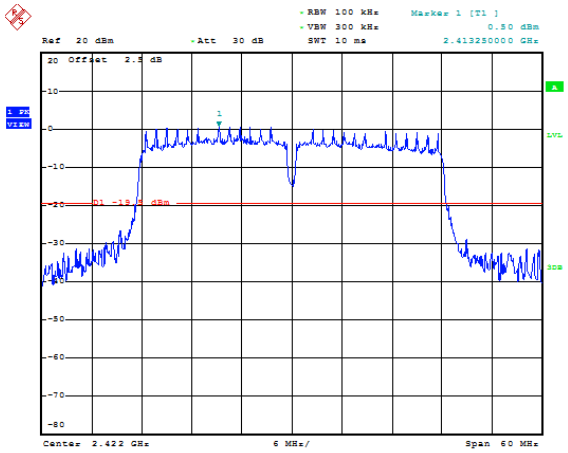
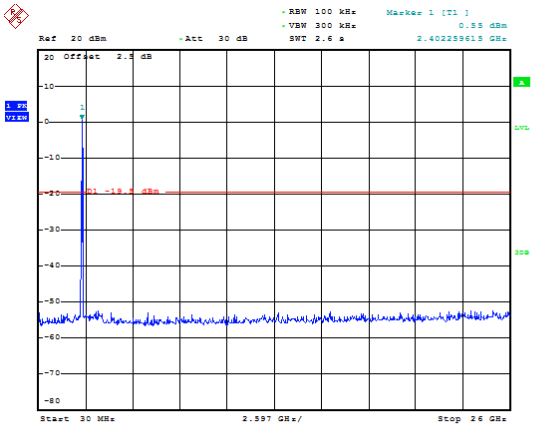
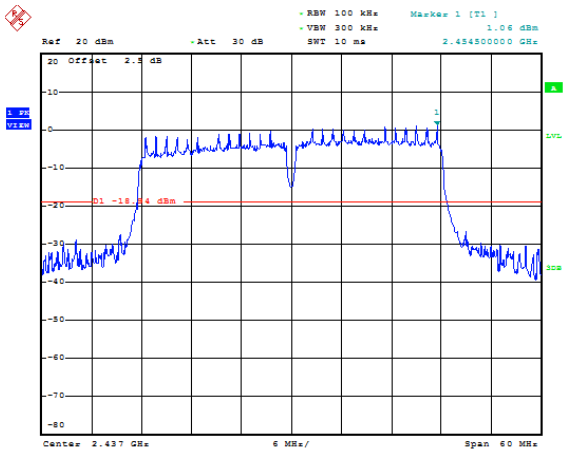
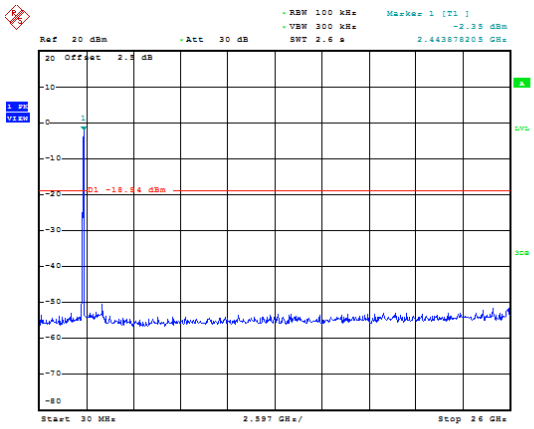
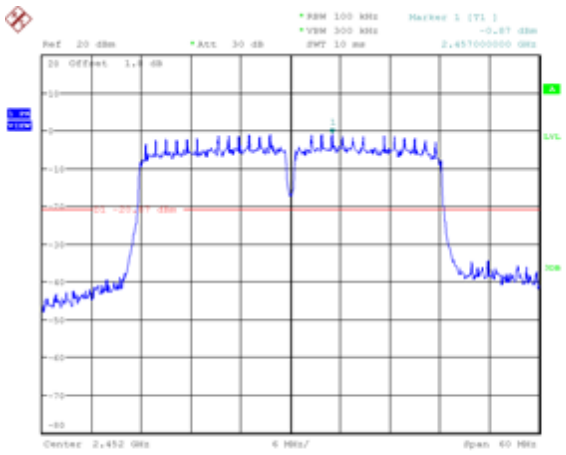
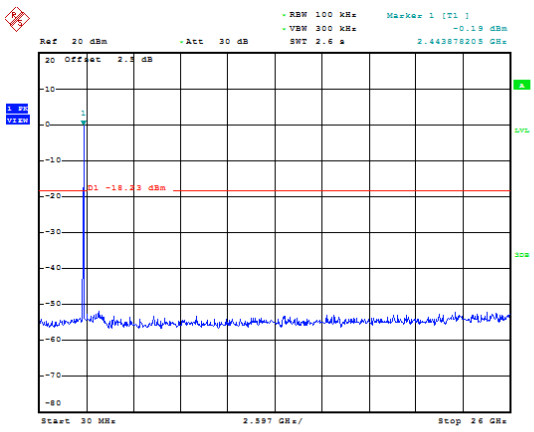
 Date: 25.FEB.2021 19:44:41	 Date: 25.FEB.2021 19:39:48

Conducted Spurious Emission (802.11n-20MHz, Ch11)	Conducted Spurious Emission (802.11n-20MHz, Ch11, 30MHz~26GHz)
 Date: 25.FEB.2021 19:47:36	 Date: 25.FEB.2021 19:48:43
Conducted Spurious Emission (802.11n-40MHz, Ch3)	Conducted Spurious Emission (802.11n-40MHz, Ch3, 30MHz~26GHz)
 Date: 25.FEB.2021 20:01:34	 Date: 25.FEB.2021 20:02:41

Conducted Spurious Emission (802.11n-40MHz, Ch6)	Conducted Spurious Emission (802.11n-40MHz, Ch6, 30MHz~26GHz)
 Date: 25.FEB.2021 20:03:31	 Date: 25.FEB.2021 20:04:43
Conducted Spurious Emission (802.11n-40MHz, Ch9)	Conducted Spurious Emission (802.11n-40MHz, Ch9, 30MHz~26GHz)
	 Date: 25.FEB.2021 20:06:45

6.6. Transmitter Spurious Emission-Radiated

6.6.1 Measurement Limit:

Standard	Limit
FCC 47 Part 15.247,15.205,15.209	20dB below peak output power

In addition, radiated emissions which fall in the restricted bands, as defined in 25.205(a), must also comply with the radiated emission limits specified in 15.209(a)(see 15.205(c)).
The measurement is according to ANSI C63.10 clause 11.11 and 11.12.

6.6.2 Limit in restricted band:

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30~88	100	40
88~216	150	43.5
216~960	200	46
Above 960	500	54

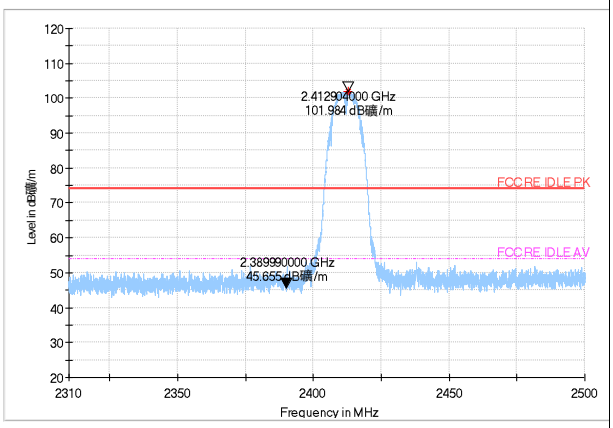
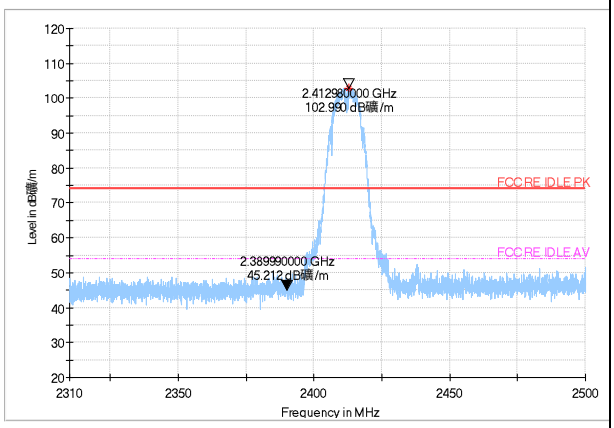
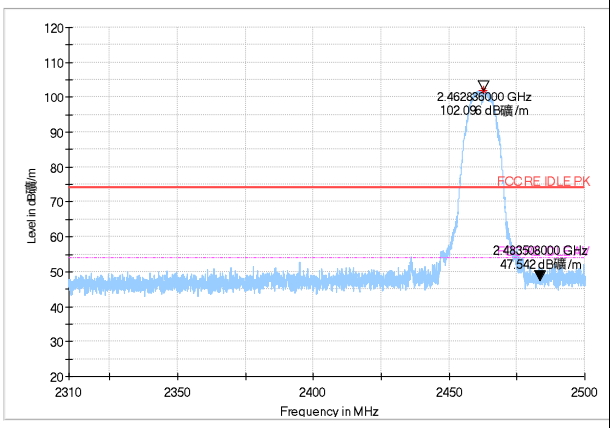
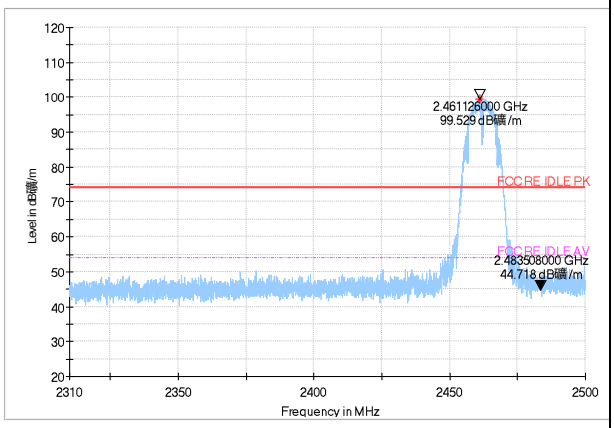
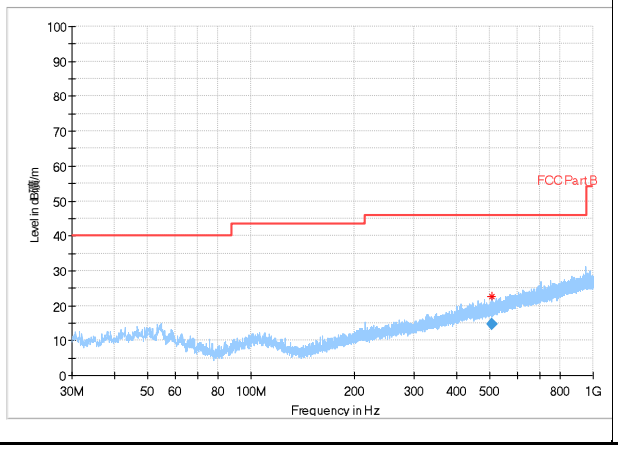
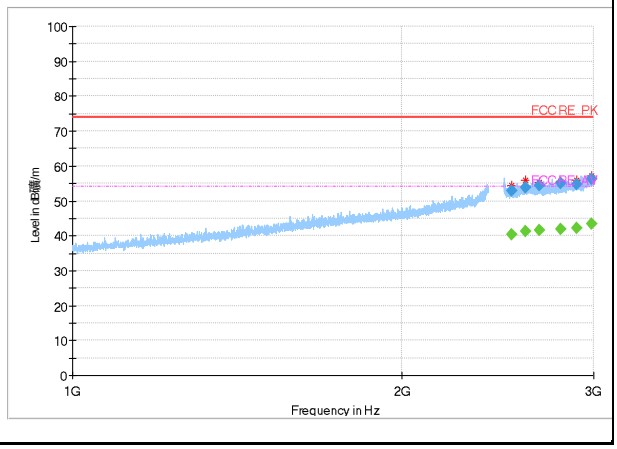
6.6.3 Test procedures

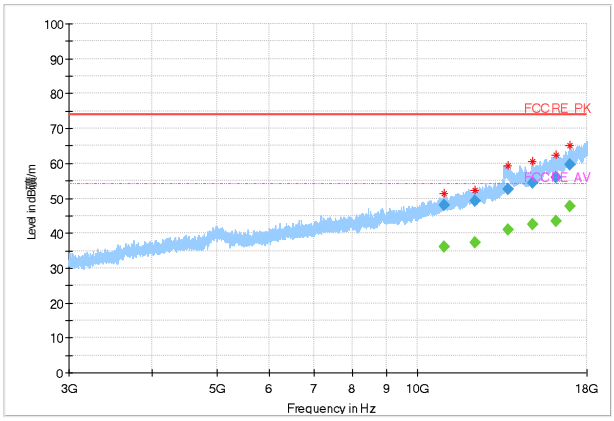
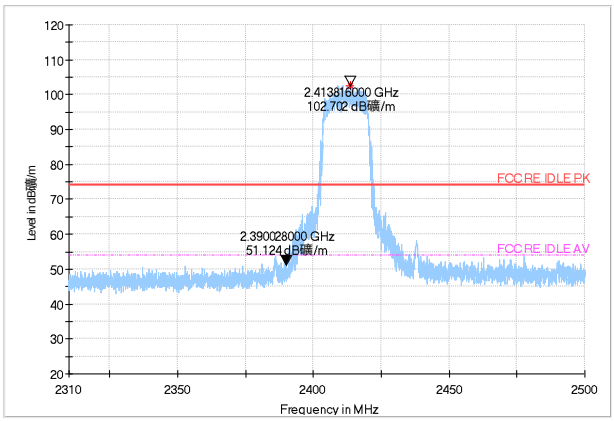
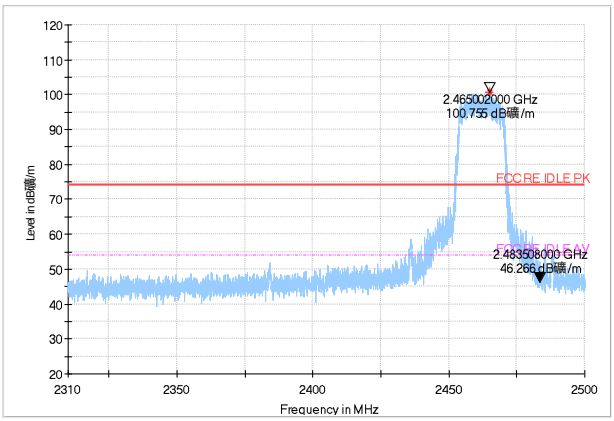
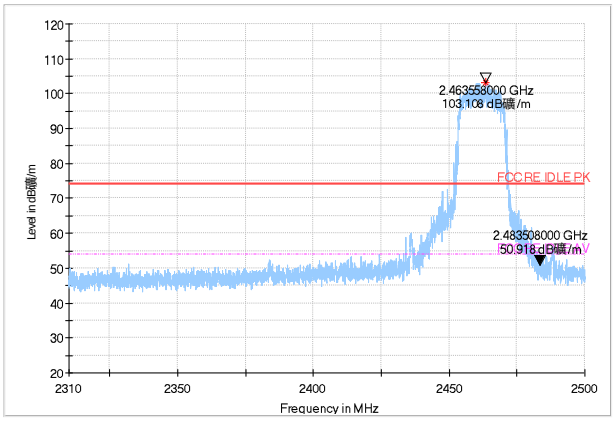
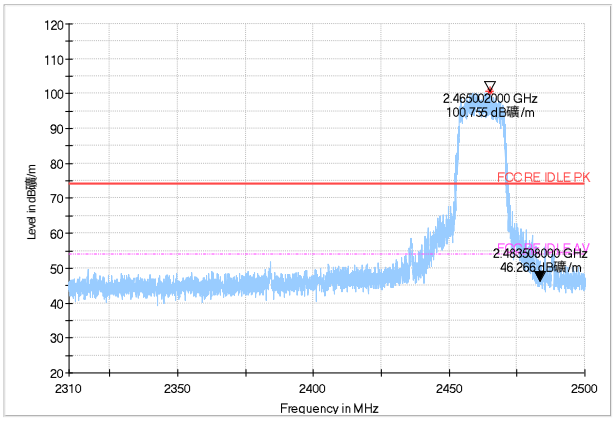
Portable, small, lightweight, or modular devices that may be handheld, worn on the body, or placed on a table during operation shall be positioned on a nonconducting platform, the top of which is 80 cm above the reference ground plane. The preferred area occupied by the EUT arrangement is 1 m by 1.5 m, but it may be larger or smaller to accommodate various sized EUTs. For testing purposes, ceiling- and wall-mounted devices also shall be positioned on a tabletop (see also ANSI C63.4-2013 section 6.3.4 and 6.3.5). In making any tests involving handheld, body-worn, or ceiling-mounted equipment, it is essential to recognize that the measured levels may be dependent on the orientation (attitude) of the three orthogonal axes of the EUT. Thus, exploratory tests as specified in 8.3.1 shall be carried out for various axes orientations to determine the attitude having maximum or near-maximum emission level.

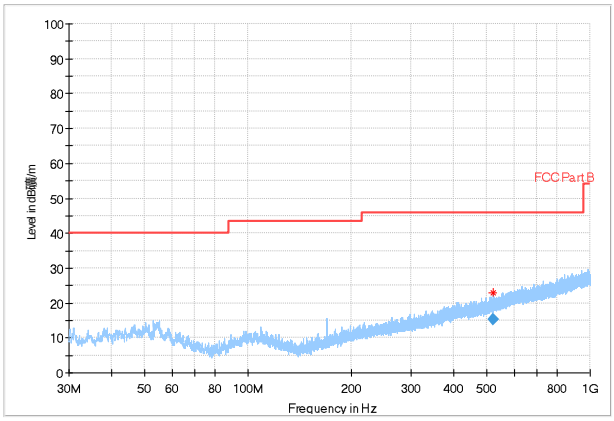
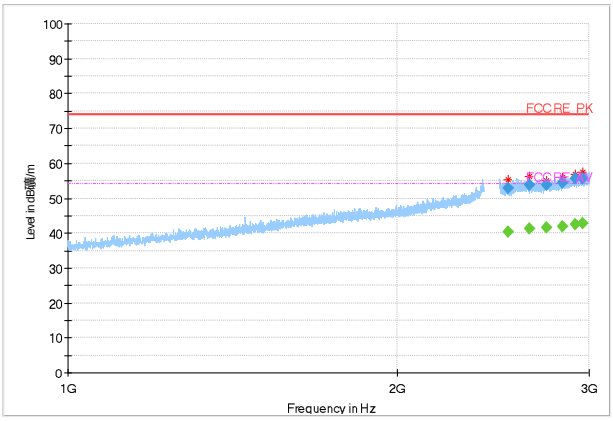
The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During testing, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emission from the EUT. This maximization process was repeated with the EUT positioned in each of its three rthogonal orientations.

Frequency of emission (MHz)	RBW/VBW	Sweep Times (s)
30~1000	100KHz/300KHz	5
1000~4000	1MHz/3MHz	15
4000~18000	1MHz/3MHz	40
18000~26500	1MHz/3MHz	20

Measurement Results:

Band edge: 802.11b, low channel	
Peak detector	AV detector
	
Band edge: 802.11b, high channel	
Peak detector	AV detector
	
Radiated Spurious Emission (802.11b, Ch11,30MHz~1GHz)	Radiated Spurious Emission (802.11b, Ch11,1GHz~3GHz)
	

Radiated Spurious Emission (802.11b, Ch11,3GHz~18GHz)	/
	/
Bandedge: 802.11g, low channel	
Peak detector	AV detector
	
Bandedge: 802.11g, high channel	
Peak detector	AV detector
	

<table>
<tr><td>Radiated Spurious Emission
(802.11g, Ch11,30MHz~1GHz)</td><td>Radiated Spurious Emission
(802.11g, Ch11,1GHz~3GHz)</td></tr>
<tr><td> 
</td><td> 
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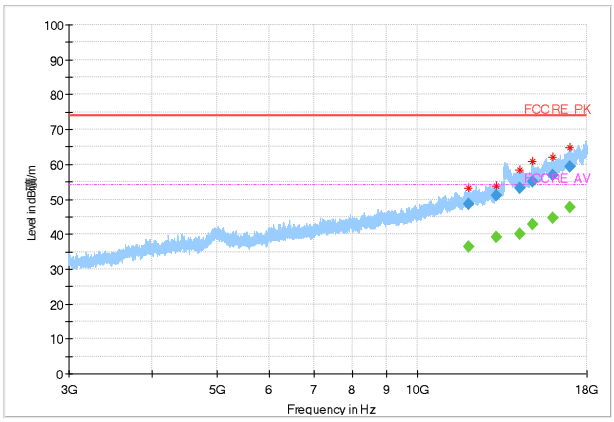
(802.11g, Ch11, 3GHz~18GHz)</td><td>/</td></tr>
<tr><td> 
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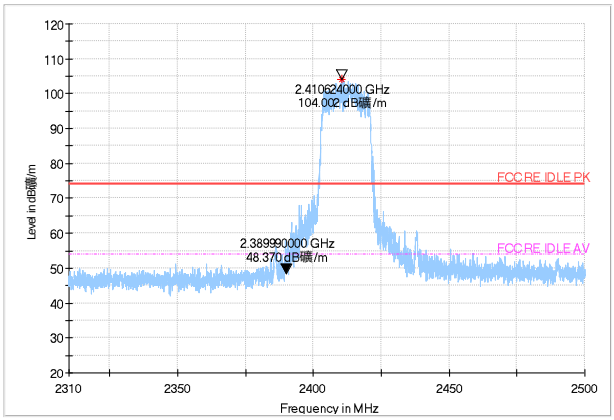
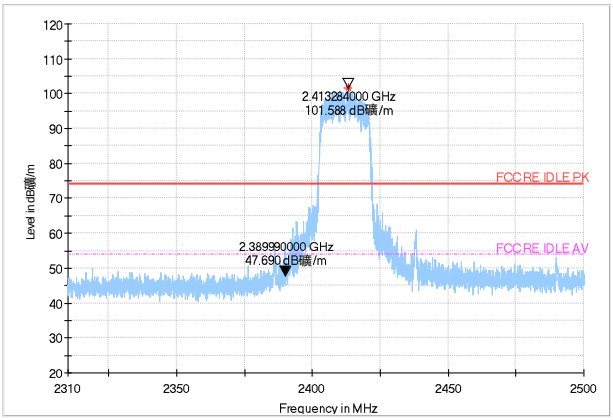
<tr><td>Peak detector</td><td>AV detector</td></tr>
<tr><td> 
</td><td> 
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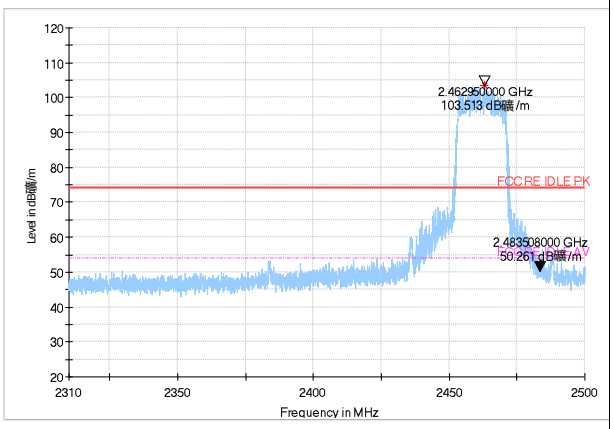
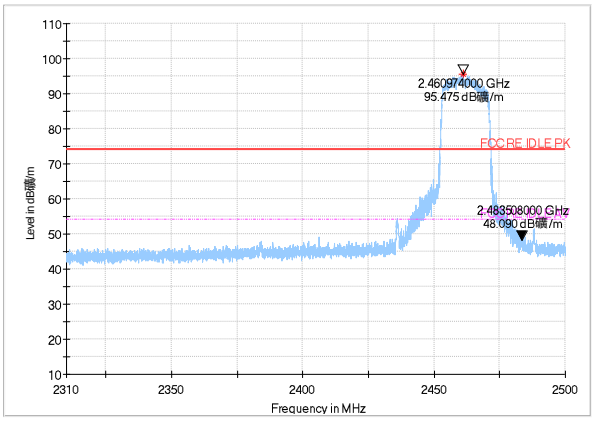
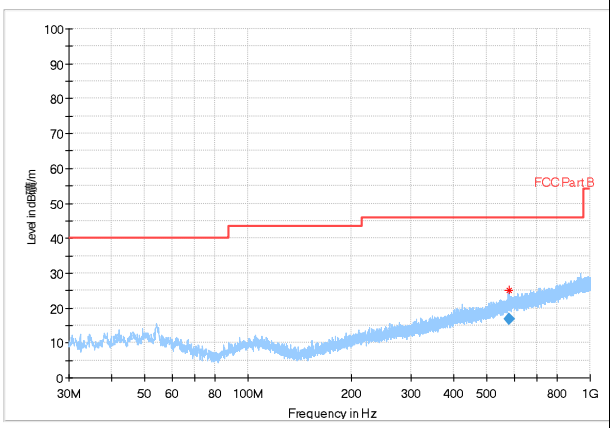
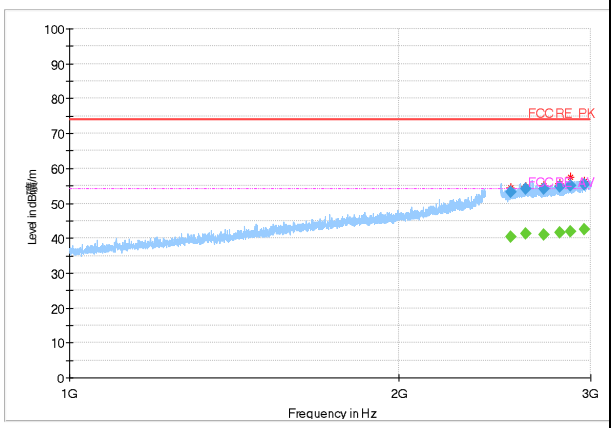
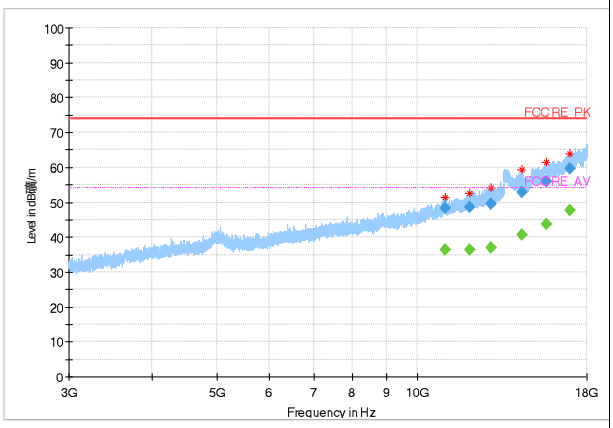
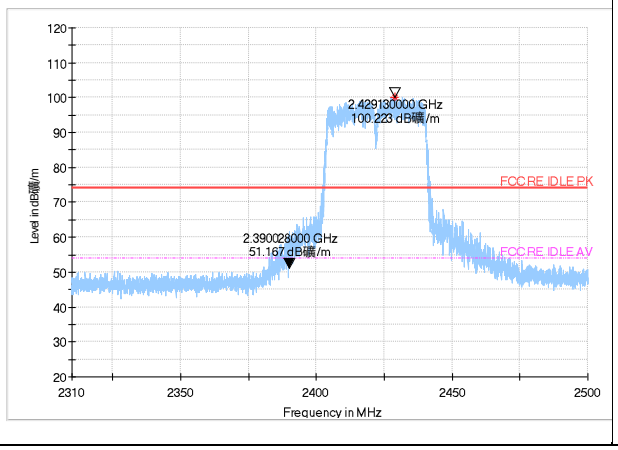
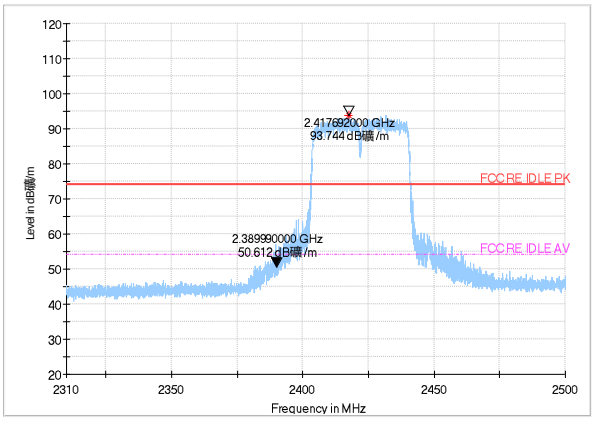
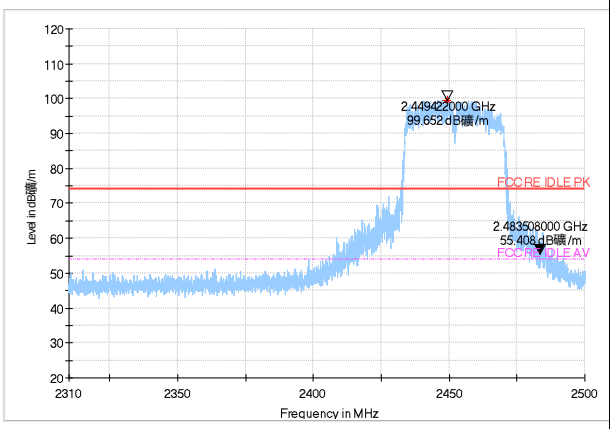
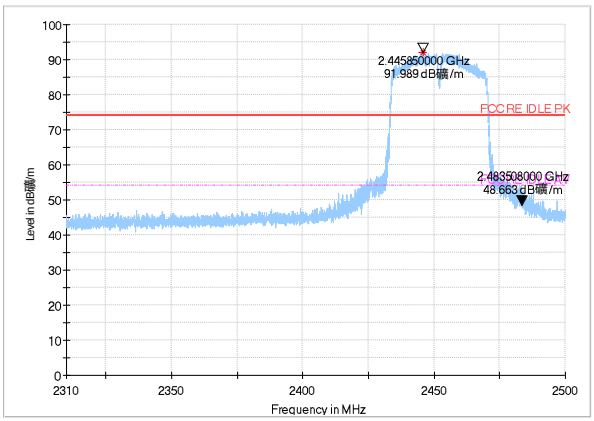
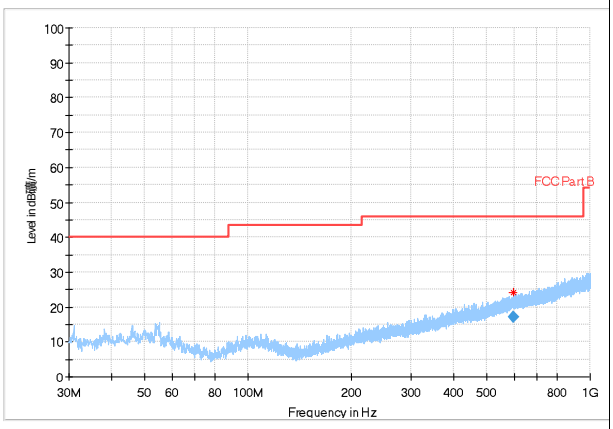
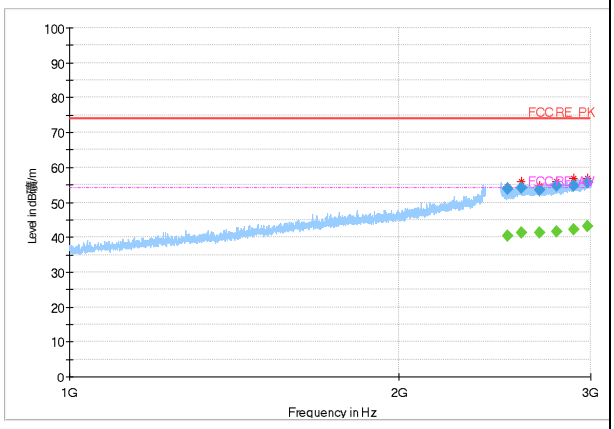
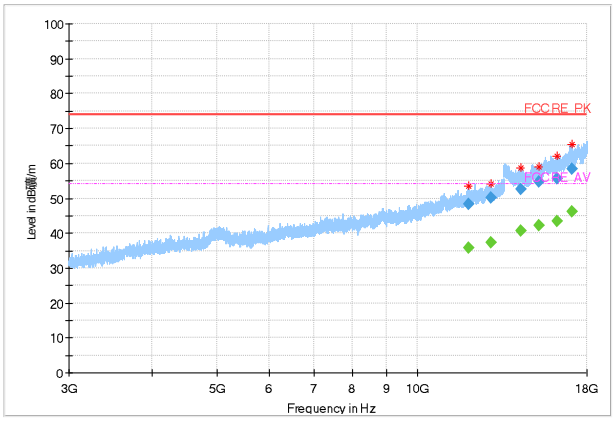
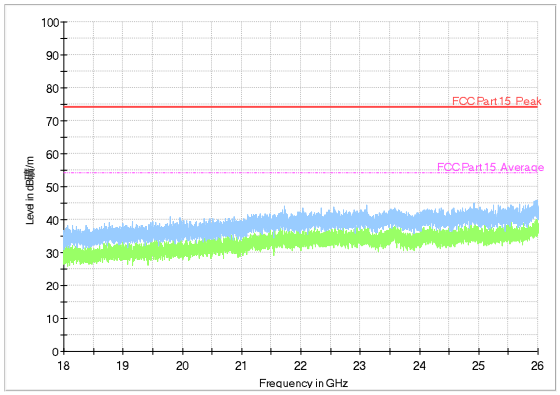
Bandedge: 802.11n-20MHz, high channel	
Peak detector	AV detector
	
Radiated Spurious Emission (802.11n-20MHz, Ch11,30MHz~1GHz)	Radiated Spurious Emission (802.11n-20MHz, Ch11,1GHz~3GHz)
	
Radiated Spurious Emission (802.11n-20MHz, Ch11, 3GHz~18GHz)	/
	/

Bandedge: 802.11n-40MHz, low channel	
Peak detector	AV detector
	
Bandedge: 802.11n-40MHz, high channel	
Peak detector	AV detector
	
Radiated Spurious Emission (802.11n-40MHz, Ch9,30MHz~1GHz)	Radiated Spurious Emission (802.11n-40MHz, Ch9,1GHz~3GHz)
	

Radiated Spurious Emission (802.11n-40MHz, Ch9, 3GHz~18GHz)	All channel
	

Note:

A ”reference path loss” is established and A_{Rpi} is the attenuation of “reference path loss”, and including the gain of receive antenna , the gain of the preamplifier, the cable loss.

P_{Mea} is the field strength recorded from the instrument.

The measurement results are obtained as described below:

ARpi = Cable loss + Antenna Gain-Preamplifier gain

Result = P_{Mea} + Cable loss + Antenna Gain-Preamplifier gain = P_{Mea} + ARpi .

802.11b mode

Ch11 30MHz~1GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
506.0	14.72	-7.6	22.32	V

Ch11 1GHz~3GHz (Peak)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2524.2	52.93	16.1	36.83	H
2598.1	53.87	17.2	36.67	V
2675.8	54.35	17.3	37.05	H
2798.8	55.12	17.6	37.52	V
2891.5	54.62	18.3	36.32	H
2987.7	56.36	19.2	37.16	V

Ch11 1GHz~3GHz (Average)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2675.8	41.56	17.3	24.26	H
2798.8	41.84	17.6	24.24	V
2891.5	42.1	18.3	23.8	H
2987.7	43.38	19.2	24.18	V

Ch11 3GHz~18GHz (Peak)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
10990.0	48.14	13.2	34.94	H
12203.2	49.1	16.1	33	V
13694.2	52.67	18.4	34.27	H
14897.0	54.54	22.3	32.24	V
16189.8	55.85	24.4	31.45	V
16994.6	59.62	28.3	31.32	V

Ch11 3GHz~18GHz (Average)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
14897.0	42.57	22.3	20.27	V
16189.8	43.38	24.4	18.98	V
16994.6	47.76	28.3	19.46	V

802.11g mode

Ch11 30MHz~1GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
520.0	15.22	-7.1	22.32	V

Ch11 1GHz~3GHz (Peak)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2529.0	52.81	16.1	36.71	H
2646.0	53.69	17.3	36.39	H
2743.7	53.74	17.4	36.34	H
2837.9	54.41	17.8	36.61	H
2910.6	55.71	18.4	37.31	H
2959.3	55.57	18.7	36.87	V

Ch11 1GHz~3GHz (Average)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2837.9	41.97	17.8	24.17	H
2910.6	42.5	18.4	24.1	H
2959.3	42.67	18.7	23.97	V

Ch11 3GHz~18GHz (Peak)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
11943.4	48.51	14.4	34.11	H
13160.4	51.21	17.5	33.71	V
14250.6	53.06	19.2	33.86	V
14928.3	54.97	22.1	32.87	V
16011.1	56.98	25.2	31.78	H
16975.0	59.32	28.1	31.22	V

Ch11 3GHz~18GHz (Average)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
14928.3	42.72	22.1	20.62	V
16011.1	44.61	25.2	19.41	H
16975.0	47.57	28.1	19.47	V

802.11n-20MHz

Ch11 30MHz~1GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
580.4	16.68	-5.2	21.88	V

Ch11 1GHz~3GHz (Peak)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2533.8	53.21	16.2	37.01	H
2616.4	54.04	17.3	36.74	V
2717.7	54.13	17.3	36.83	H
2808.9	54.71	17.7	37.01	V
2877.0	54.94	18.1	36.84	H
2959.3	55.28	18.7	36.58	H

Ch11 1GHz~3GHz (Average)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2616.4	41.23	17.3	23.93	V
2717.7	41.13	17.3	23.83	H
2808.9	41.53	17.7	23.83	V
2877.0	41.99	18.1	23.89	H
2959.3	42.64	18.7	23.94	H

Ch11 3GHz~18GHz (Peak)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
11014.5	48.38	13	35.38	V
12008.7	48.53	14.7	33.83	V
12901.4	49.43	16.3	33.13	H
14364.9	52.96	19.4	33.56	V
15638.5	56.05	24.1	31.95	V
16987.6	59.55	28.2	31.35	V

Ch11 3GHz~18GHz (Average)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
15638.5	43.8	24.1	19.7	V
16987.6	47.75	28.2	19.55	V

802.11n-40MHz

Ch9 30MHz~1GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
595.2	17.25	-4.9	22.15	V

Ch9 1GHz~3GHz (Peak)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2519.6	53.73	16.1	37.63	V
2593.6	54.17	17.2	36.97	V
2692.5	53.63	17.3	36.33	V
2789.4	54.75	17.6	37.15	V
2894.3	54.69	18.3	36.39	V
2979.5	55.6	19.1	36.5	H

Ch9 1GHz~3GHz (Average)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2593.6	41.15	17.2	23.95	V
2789.4	41.72	17.6	24.12	V
2894.3	42.17	18.3	23.87	V
2979.5	43.13	19.1	24.03	H

Ch9 3GHz~18GHz (Peak)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
11933.7	48.24	14.4	33.84	V
12940.7	50.19	16.2	33.99	V
14334.4	52.66	19.5	33.16	H
15239.9	54.75	21.7	33.05	H
16230.0	55.54	24.6	30.94	H
17064.7	58.38	27.4	30.98	H

Ch9 3GHz~18GHz (Average)

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
15239.9	42.26	21.7	20.56	H
16230.0	43.45	24.6	18.85	H
17064.7	46.31	27.4	18.91	H

Note: Only the worst case is written in the report.

6.7. AC Powerline Conducted Emission

Method of Measurement: ANSI C63.10 clause 6.2

1 The one EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit is selected for the final measurement, while applying the appropriate modulating signal to the EUT.

2 If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be remaximized at the final test location before final ac power-line conducted emission measurements are performed.

3 The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) is then performed for the full frequency range for which the EUT is being tested for compliance without further variation of the EUT arrangement, cable positions, or EUT mode of operation.

4 If the EUT is comprised of equipment units that have their own separate ac power connections, e.g., floor-standing equipment with independent power cords for each shelf that are able to connect directly to the ac power network, each current-carrying conductor of one unit is measured while the other units are connected to a second (or more) LISN(s). All units shall be separately measured. If a power strip is provided by the manufacturer, to supply all of the units making up the EUT, only the conductors in the power cord of the power strip shall be measured.

If the EUT uses a detachable antenna, these measurements shall be made with a suitable dummy load connected to the antenna output terminals; otherwise, the tests shall be made with the antenna connected and, if adjustable, fully extended. When measuring the ac conducted emissions from a device that operates between 150 kHz and 30 MHz a non-detachable antenna may be replaced with a dummy load for the measurements within the fundamental emission band of the transmitter, but only for those measurements.36 Record the six highest EUT emissions relative to the limit of each of the current-carrying conductors of the power cords of the equipment that comprises the EUT over the frequency range specified by the procuring or regulatory agency. Diagram or photograph the test setup that was used. See Clause 8 for full reporting requirements.

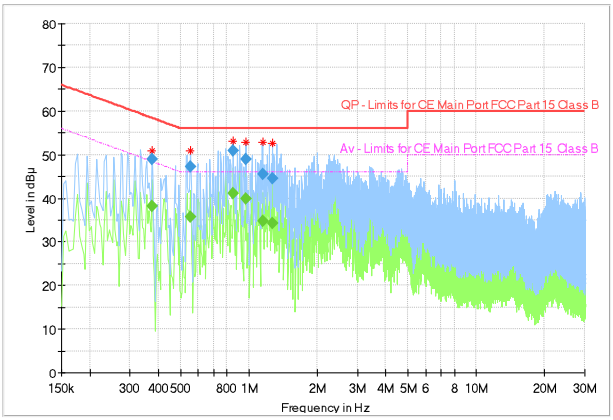
Test Condition:

Voltage（V）	Frequency（Hz）
120	60

Measurement Result and limit:

(Quasi-peak-average Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Average Limit (dBμV)	Conclusion
0.15 to 0.5	66 to 56	56 to 46	P
0.5 to 5	56	46	
5 to 30	60	50	
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.			



Frequency	QuasiPeak	Average	Limit	Margin	Meas.	Bandwidth	Line	Filter	Corr.
0.373875	---	38.05	48.41	10.37	15000.0	9.000	L1	ON	9.6
0.373875	48.90	---	58.41	9.52	15000.0	9.000	L1	ON	9.6
0.552975	---	35.78	46.00	10.22	15000.0	9.000	L1	ON	9.6
0.552975	47.33	---	56.00	8.67	15000.0	9.000	L1	ON	9.6
0.851475	---	41.08	46.00	4.92	15000.0	9.000	L1	ON	9.6
0.851475	50.89	---	56.00	5.11	15000.0	9.000	L1	ON	9.6
0.970875	---	39.83	46.00	6.17	15000.0	9.000	L1	ON	9.6
0.970875	49.03	---	56.00	6.97	15000.0	9.000	L1	ON	9.6
1.149975	---	34.75	46.00	11.26	15000.0	9.000	L1	ON	9.7
1.149975	45.47	---	56.00	10.53	15000.0	9.000	L1	ON	9.7
1.265644	---	34.37	46.00	11.63	15000.0	9.000	L1	ON	9.7
1.265644	44.62	---	56.00	11.38	15000.0	9.000	L1	ON	9.7

7. Test Equipment List

7.1. Conducted Test System

Item	Equipment Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Vector Signal Analyzer	FSQ26	101091	R&S	2020-05-10	1 year
2	DC Power Supply	ZUP60-14	LOC-220Z006-0007	TDL-Lambda	2020-05-10	1 year
3	Eagle Test Software	Eagle V3.1 FCC BT/WIFI	N/A	ECIT	N/A	N/A

7.2. Radiated Emission Test System

Item	Equipment Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Universal Radio Communication Tester	CMU200	123123	R&S	2020-05-10	1 year
2	EMI Test Receiver	ESU40	100307	R&S	2020-05-10	1 year
3	TRILOG Broadband Antenna	VULB9163	VULB9163-515	Schwarzbeck	2020-02-28	2 years
4	Double- ridged Waveguide Antenna	ETS-3117	00135890	ETS	2020-02-28	2 years
5	2-Line V-Network	ENV216	101380	R&S	2020-05-10	1 year
6	EMI Test Software	EMC32 V 9.15.00	N/A	R&S	N/A	N/A

7.3. Climate chamber

Item	Equipment Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Climate chamber	UT333 BT	C191995461	UNI-T	2020-05-10	1 year

Anechoic chamber

Fully anechoic chamber by ETS.

Annex A: Measurement Uncertainty

Measurement uncertainty for all the testing in this report are within the limit specified in 3IN documents . The detailed measurement uncertainty is defined in 3IN documents.

Measurement Items	Range	Confidence Level	Calculated Uncertainty
Peak Output Power-Conducted	2412MHz-2462MHz	95%	0.544dB
Peak Power Spectral Density	2412MHz-2462MHz	95%	0.502dB
Occupied 6dB Bandwidth	2412MHz-2462MHz	95%	69.26kHz
Band Edges-Conducted	2412MHz-2462MHz	95%	0.544dB
Conducted Emission	30MHz-2GHz	95%	0.90dB
Conducted Emission	2GHz-3.6GHz	95%	0.88dB
Conducted Emission	3.6GHz-8GHz	95%	0.96dB
Conducted Emission	8GHz-20GHz	95%	0.94dB
Conducted Emission	20GHz-22GHz	95%	0.88dB
Conducted Emission	22GHz-26GHz	95%	0.86dB
Transmitter Spurious Emission-Radiated	9KHz-30MHz	95%	5.66dB
Transmitter Spurious Emission-Radiated	30MHz-1000MHz	95%	4.98dB
Transmitter Spurious Emission-Radiated	1000MHz -18000MHz	95%	5.06dB
Transmitter Spurious Emission-Radiated	18000MHz -40000MHz	95%	5.20dB
AC Power line Conducted Emission	0.15MHz-30MHz	95%	3.66 dB

Annex B: Accreditation Certificate

Accredited Laboratory

A2LA has accredited

Industrial Internet Innovation Center (Shanghai) Co., Ltd.

Shanghai, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of any additional program requirements in the «field» field. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 6th day of May 2019.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3682.01
Valid to April 30, 2021
Revised February 17, 2021

For the tests to which this accreditation applies, please refer to the laboratory's Electrical«field» Scope of Accreditation.

************END OF REPORT************