TEST REPORT

Report Number: C21T00142-SRD03-V01

Applicant	Shanghai Sunmi Technology Co.,Ltd.
Product Name	Data Processing Terminal
Model Name	L3561
Brand Name	SUNMI
FCC ID	2AH25D2SKDS
IC	22621-D2SKDS

Industrial Internet Innovation Center (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in FCC Part15, ANSI C63.10, KDB 558074, RSS-Gen Issue 5, RSS-247 Issue 2.

Prepared by	范宇航	Reviewed by	王长青
Approved by		Issue Date	2022-01-24

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

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Test Laboratory:
Industrial Internet Innovation Center (Shanghai) Co., Ltd.
Add: Building 4, No. 766 Jingang Rd, Pudong, Shanghai, China
Tel: +86 21 68866880

Revision Version

Report Number	Revision	Date	Memo
C21T00142-SRD03-V00	00	2022-01-14	Initial creation of test report
C21T00142-SRD03-V01	01	2022-01-24	Update the Testing End Date

CONTENTS

1. Test Laboratory

1.1. Testing Location

Primary Lab:

Company Name	Industrial Internet Innovation Center (Shanghai) Co., Ltd.
Address	Building 4, No. 766 Jingang Rd, Pudong, Shanghai, China
FCC Registration No.	958356
FCC Designation No.	CN1177
IC Degistration No.	CN0067

1.2. Testing Environment

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

1.3. Project Information

Project Leader	Wang Wenwen
Testing Start Date	2021-12-01
Testing End Date	2022-01-14

2. Client Information

2.1. Applicant Information

Company Name	Shanghai Sunmi Technology Co.,Ltd.
Address	Room 505, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai, China
Telephone	+86 18501703215

2.2. Manufacturer Information

Company Name	Shanghai Sunmi Technology Co.,Ltd.
Address	Room 505, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai, China
Telephone	+86 18501703215

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

3.1. About EUT

Product Name	Data Processing Terminal
Model name	L3561
Supported Radio Technology and Bands	BT4.2 WLAN 802.11b,g,n WLAN 802.11a, n, ac
Hardware Version	Athens_MB_V1.1
Software Version	d2-userdebug 11 RQ1D.210105.003 97 release-keys
FCC ID	2AH25D2SKDS
IC	22621-D2SKDS

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of Receipt
N01	DK03D1B240017	Athens_MB_V1.1	d2-userdebug 11 RQ1D.210105.003 97 release-keys	2021-12-01
N02	DK03D1B240033	Athens_MB_V1.1	d2-userdebug 11 RQ1D.210105.003 97 release-keys	2021-12-01
N03	DK03D1B240014	Athens_MB_V1.1	d2-userdebug 11 RQ1D.210105.003 97 release-keys	2021-12-01
N04	DK134259200019D05L2	Athens_MB_V1.1	d2-userdebug 11 RQ1D.210105.003 97 release-keys	2021-12-10

*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
CA02	Adapter	CYZS36-240150	N/A
UB01	Serial port line	N/A	N/A
AE1	Notebook PC	DELL Latitude E6510	N/A
AE2	LAN Cable	N/A	N/A
AE3	USB Cable	N/A	N/A
AE4	Keyboard	KB212-B	CN-0Y88XT-65890-12I-005Q-A00
AE5	Mouse	MS111-P	CN-011D3V-71581-19J-1A64
AE6	Micro SD Card	Kingston SDC4/4GB 77	N/A
AE7	U-disk	DataTraveler 100 G3 64GB	N/A

AE8	Earphone	N/A	N/A
AE9	RF Cable	N/A	N/A

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

*The AE is provided by the client.

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.	2020
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013
KDB 558074 D01	Guidance for Performing Compliance Measurements on Frequency Hopping Spread Spectrum systems (DSS) Operating Under §15.247	2019
RSS-247 Issue 2	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices	2017
RSS-Gen Issue 5	General Requirements for Compliance of Radio Apparatus	2021

4.2. Reference Information from client

Information of the test sample provided by the client.

Maximum of Antenna Gain：1.58 dBi

5. Test Summary

5.1. Summary of Test Results

Measurement Items	Sub-clause of Part15C	Sub-clause of IC	Verdict
Maximum Peak Output Power	15.247(b)	RSS-247 5.4	Pass
Peak Power Spectral Density	15.247(e)	RSS-247 5.2	Pass
Occupied 6dB Bandwidth	15.247(a)	RSS-247 5.2	Pass
99% Occupied Bandwidth	N/A	RSS-Gen 6.7	Pass
Band Edges Compliance	15.247(d)	RSS-247 5.5	Pass
Transmitter Spurious Emission-Conducted	15.247(d)	RSS-247 5.5	Pass
Transmitter Spurious Emission-Radiated	15.247/15.205/15.209	RSS-Gen 8.9,8.10	Pass
AC Powerline Conducted Emission	15.207	RSS-Gen 8.8	Pass

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	230V
Humidity	Hnom	48%
Air Pressure	Anom	1010hPa

5.2. Statements

The L3561 supporting BT/WLAN, manufactured by Shanghai Sunmi Technology Co.,Ltd. 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
Electrical insulation	> 10 kΩ
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:

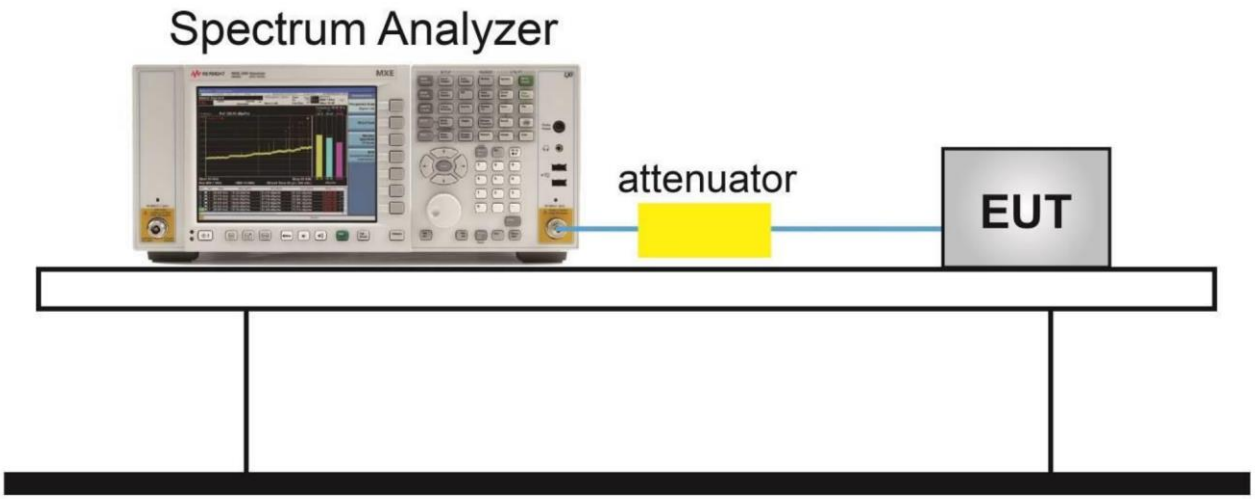
Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
VSWR	Between 0 and 6 dB, from 1GHz to 18GHz
Site Attenuation Deviation	Between -4 and 4 dB,30MHz to 1GHz
Uniformity of field 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) (3)	<30
RSS-247 5.4(d)	<30

6.1.2 Test Setup



6.1.3 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
8. Method AVGPM-G (Measurement using a gated RF average-reading power meter)
   Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required

Maximum Average Output Power-conducted

Measurement Results

802.11b

Mode	Reading Power (dBm)		
	2412MHz(Ch1)	2437MHz(Ch6)	2462MHz(Ch11)
802.11b	14.85	13.55	13.77
Mode	Max Power (dBm)		
	2412MHz(Ch1)	2437MHz(Ch6)	2462MHz(Ch11)
802.11b	14.85	13.55	13.77
Mode	EIRP(dBm)		
	2412MHz(Ch1)	2437MHz(Ch6)	2462MHz(Ch11)
802.11b	16.43	15.13	15.35
Mode	Duty Cycle Factor (dB)		
	2412MHz(Ch1)	2437MHz(Ch6)	2462MHz(Ch11)
802.11b	0.00	0.00	0.00

802.11g

Mode	Reading Power (dBm)		
	2412MHz(Ch1)	2437MHz(Ch6)	2462MHz(Ch11)
802.11g	13.81	11.97	12.89
Mode	Max Power (dBm)		
	2412MHz(Ch1)	2437MHz(Ch6)	2462MHz(Ch11)
802.11g	13.98	12.14	13.06
Mode	EIRP(dBm)		
	2412MHz(Ch1)	2437MHz(Ch6)	2462MHz(Ch11)
802.11g	15.56	13.72	14.64
Mode	Duty Cycle Factor (dB)		

	2412MHz(Ch1)	2437MHz(Ch6)	2462MHz(Ch11)
802.11g	0.17	0.17	0.17

802.11n(20MHZ)

Mode	Reading Power (dBm)		
	2412MHz(Ch1)	2437MHz(Ch6)	2462MHz(Ch11)
802.11n (20MHz)	13.88	12.83	13.37
Mode	**Max Power (dBm)**		
	2412MHz(Ch1)	**2437MHz(Ch6)**	**2462MHz(Ch11)**
802.11n (20MHz)	14	12.95	13.49
Mode	**EIRP(dBm)**		
	2412MHz(Ch1)	**2437MHz(Ch6)**	**2462MHz(Ch11)**
802.11n (20MHz)	15.58	14.53	15.07
Mode	**Duty Cycle Factor (dB)**		
	2412MHz(Ch1)	**2437MHz(Ch6)**	**2462MHz(Ch11)**
802.11n (20MHz)	0.12	0.12	0.12

802.11n(40MHZ)

Mode	Reading Power (dBm)		
	2422MHz(Ch3)	2437MHz(Ch6)	2452MHz(Ch11)
802.11n (40MHz)	13.61	11.86	11.87
Mode	**Max Power (dBm)**		
	2422MHz(Ch3)	**2437MHz(Ch7)**	**2452MHz(Ch11)**
802.11n (40MHz)	13.9	12.15	12.16

Mode	EIRP(dBm)		
	2422MHz(Ch3)	2437MHz(Ch6)	2452MHz(Ch11)
802.11n (40MHz)	15.48	13.73	13.74
Mode	**Duty Cycle Factor (dB)**		
	2422MHz(Ch3)	**2437MHz(Ch6)**	**2452MHz(Ch11)**
802.11n (40MHz)	0.29	0.29	0.29

Note: Max power(dBm)= Reading Power (dBm)+ Duty Cycle Factor (dB)

E.I.R.P (dBm) = Max Power (dBm) + Antenna Gain (dBi), Antenna Gain = 1.58 dBi.

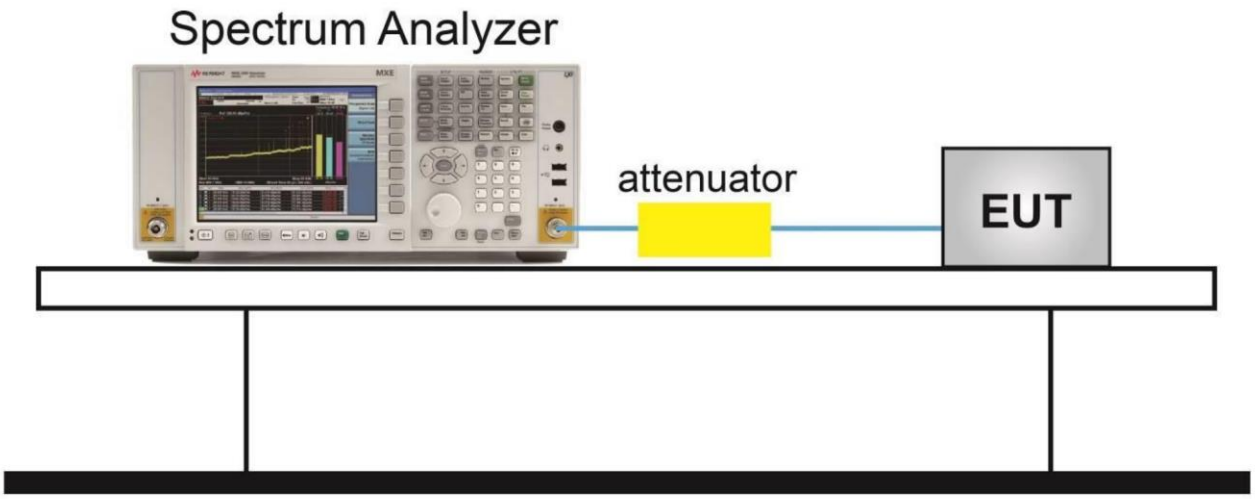
Conclusion: PASS

6.2. Peak Power Spectral Density

6.2.1 Measurement Limit

Standard	Limit
FCC 47 Part 15.247(e)	≤ 8dBm/3 KHz
RSS-247 5.2(b)	≤ 8dBm/3 kHz

6.2.2 Test Setup

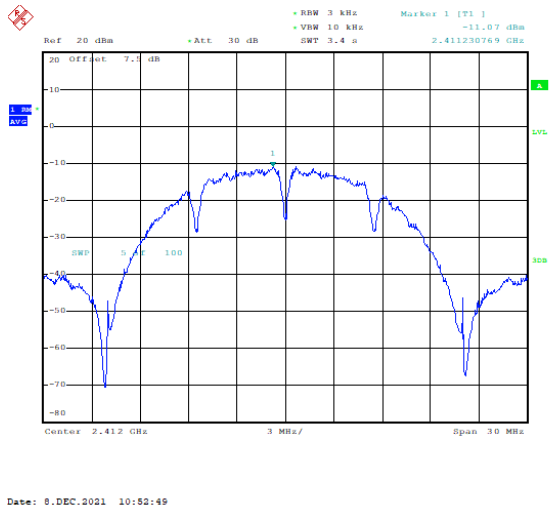
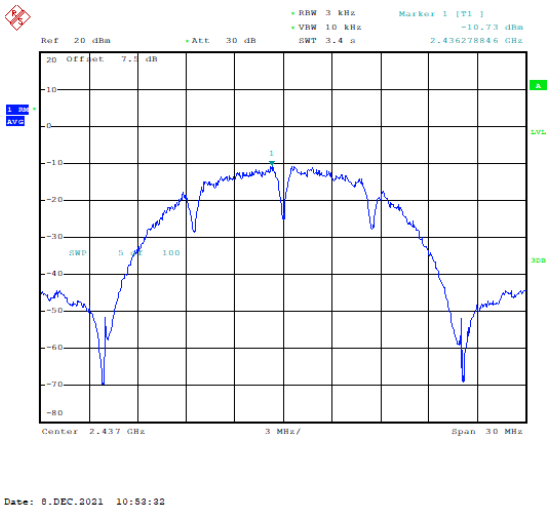
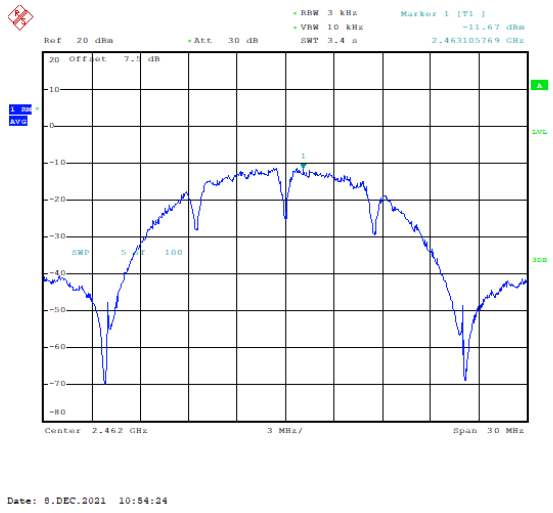
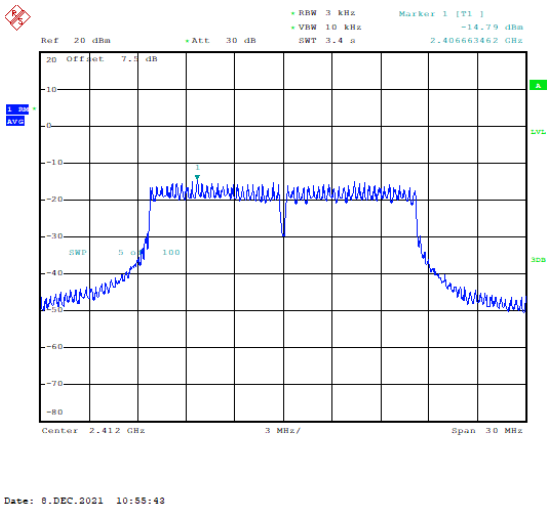


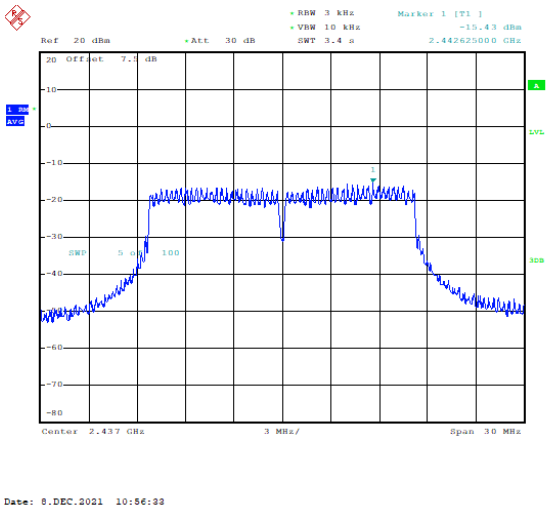
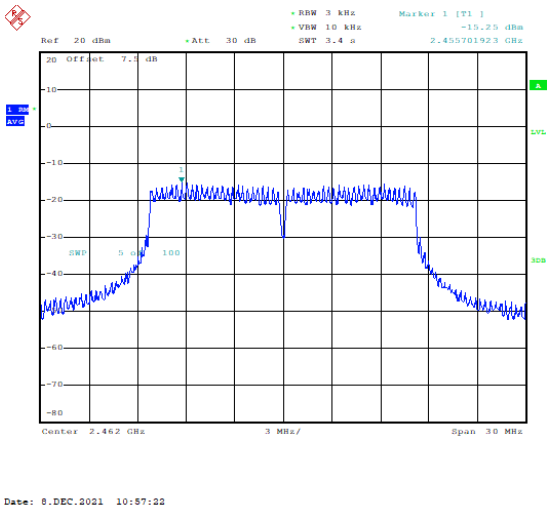
6.2.3 Test procedures

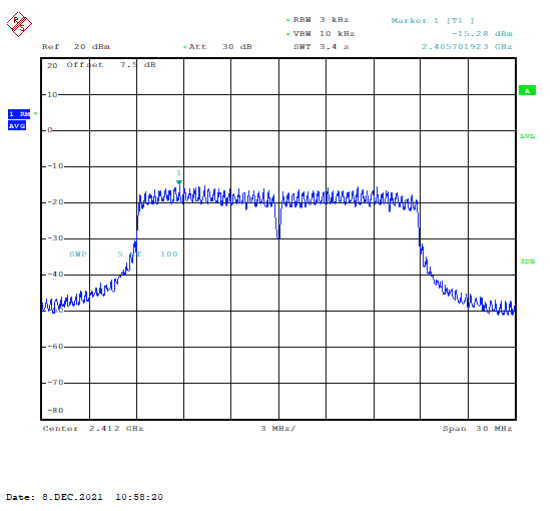
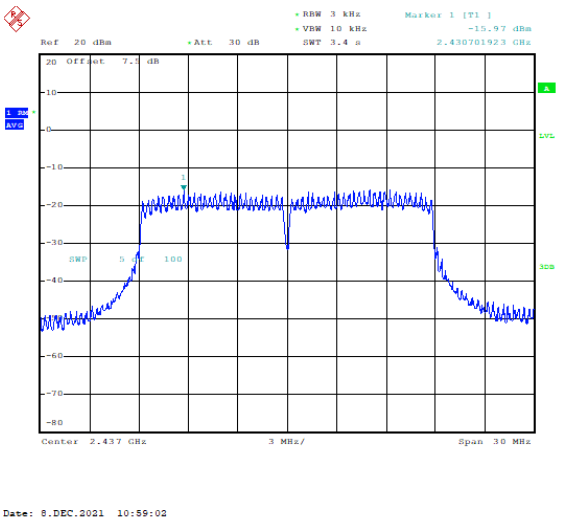
The measurement is according to ANSI C63.10 clause 11.10.

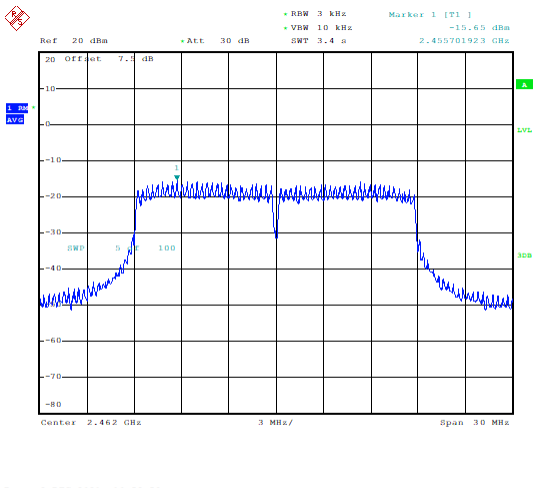
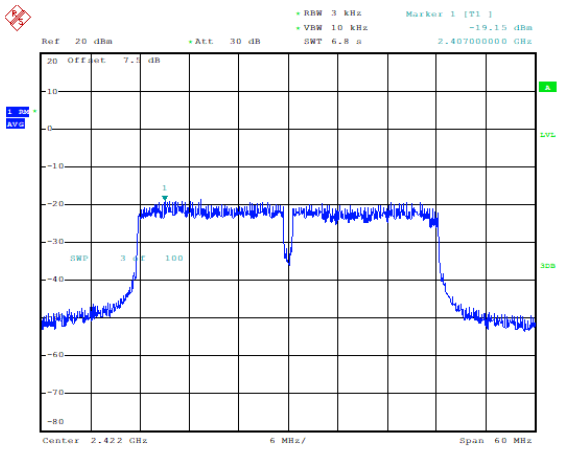
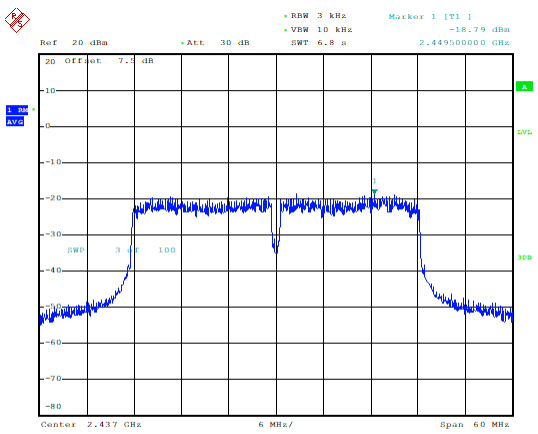
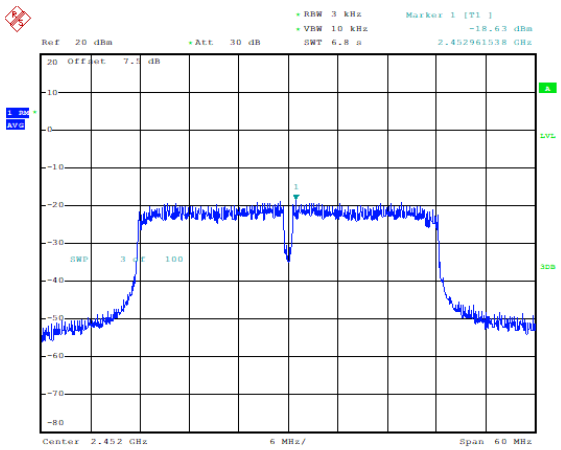
1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Set analyzer center frequency to DTS channel center frequency.
4. Set the span to 1.5 times the DTS bandwidth.
5. Set the RBW=3kHz
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 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)	-11.074	Power Spectral Density(dBm/3kHz) (802.11b, Ch6)	-10.726
			
Power Spectral Density (dBm/3kHz) (802.11b, Ch11)	-11.670	Power Spectral Density (dBm/3kHz) (802.11g, Ch1)	-14.620
			

Power Spectral Density (dBm/3kHz) (802.11g, Ch6)	-15.260	Power Spectral Density (dBm/3kHz) (802.11g, Ch11)	-15.083
			

Power Spectral Density (dBm/3kHz) (802.11n-20MHz, Ch1)	-15.163	Power Spectral Density (dBm/3kHz) (802.11n-20MHz, Ch6)	-15.848
			

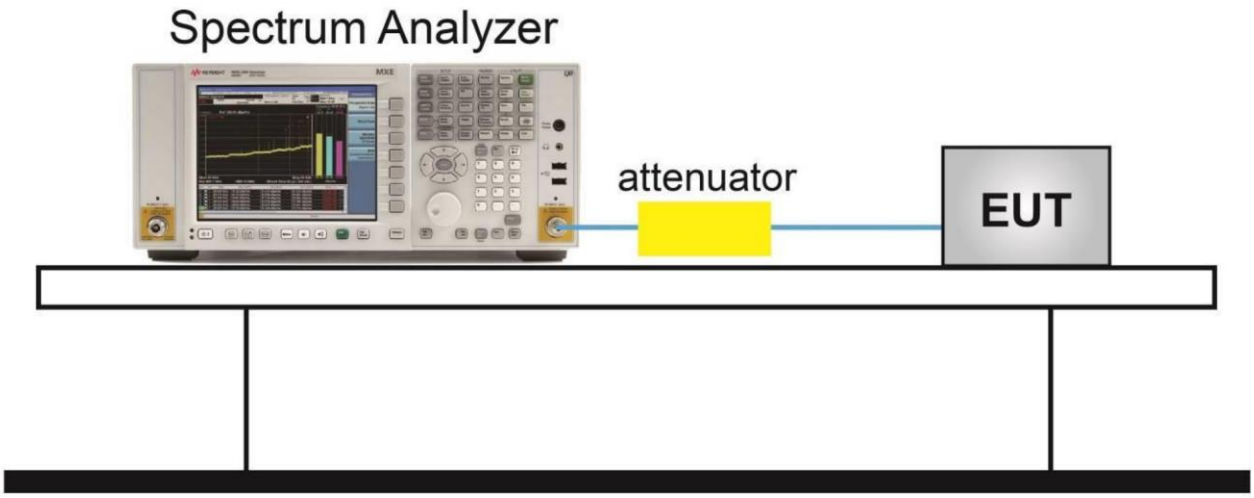
Power Spectral Density (dBm/3kHz) (802.11n-20MHz, Ch11)	-15.534	Power Spectral Density (dBm/3kHz) (802.11n-40MHz, Ch3)	-18.859
			
Power Spectral Density (dBm/3kHz) (802.11n-40MHz, Ch6)	-18.502	Power Spectral Density (dBm/3kHz) (802.11n-40MHz, Ch9)	-18.343
			

6.3. Occupied 6dB Bandwidth

6.3.1 Measurement Limit

Standard	Limit(KHz)
FCC 47 Part 15.247(a) (2)	≥500
RSS-247 5.2(a)	⩾500kHz

6.3.2 Test Setup



6.3.3 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.

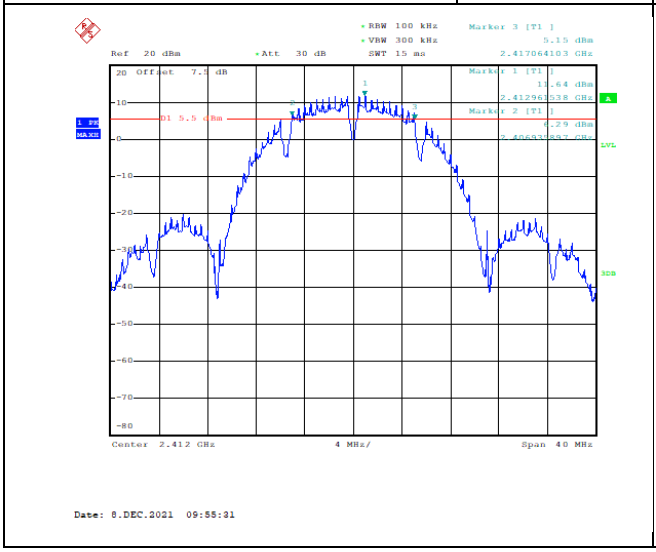
Measurement Results

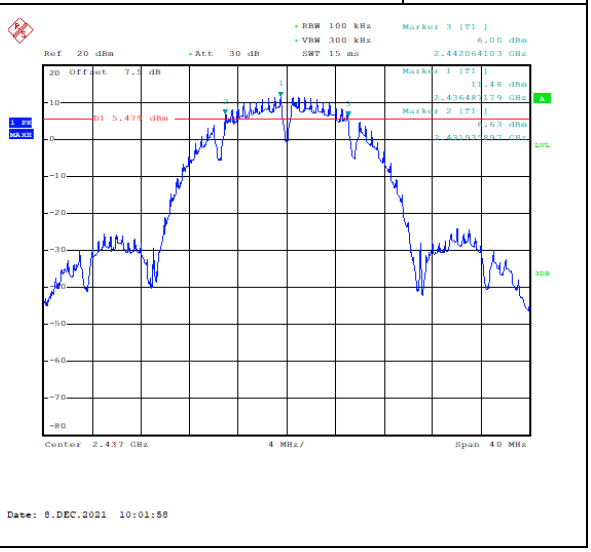
Mode	Test Result (MHz)		
	2412MHz (Ch1)	**2437MHz (Ch6)**	**2462MHz (Ch11)**
802.11b	10.13	10.13	10.13
802.11g	16.09	16.28	16.15
802.11n(20MHz)	16.67	16.99	16.67
Mode	**2422MHz (Ch3)**	**2437MHz (Ch6)**	**2452MHz (Ch9)**
802.11n(40MHz)	35.64	35.38	35.38

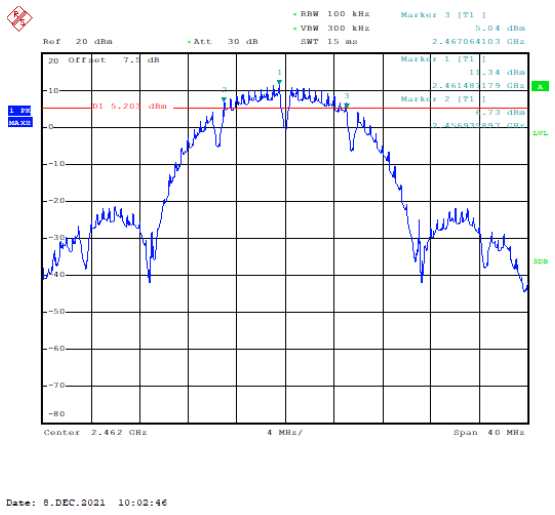
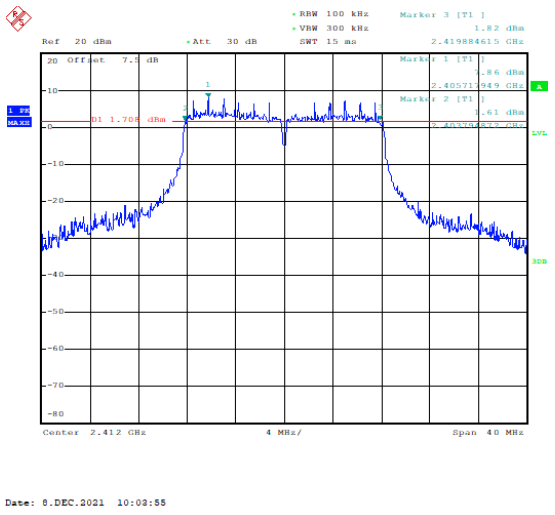
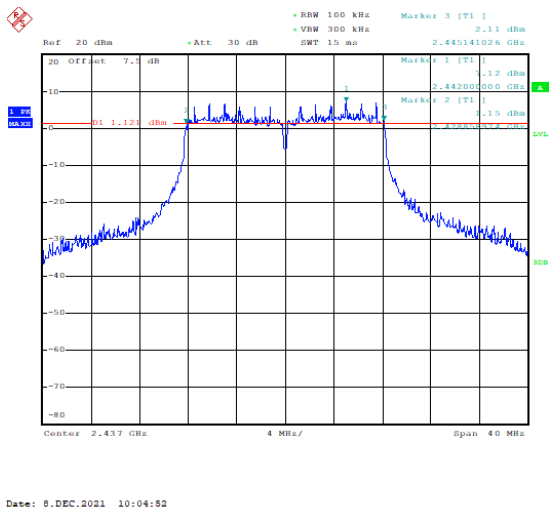
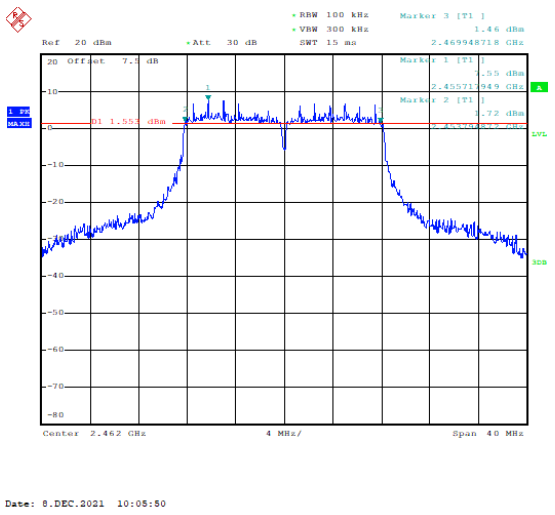
Conclusion: PASS

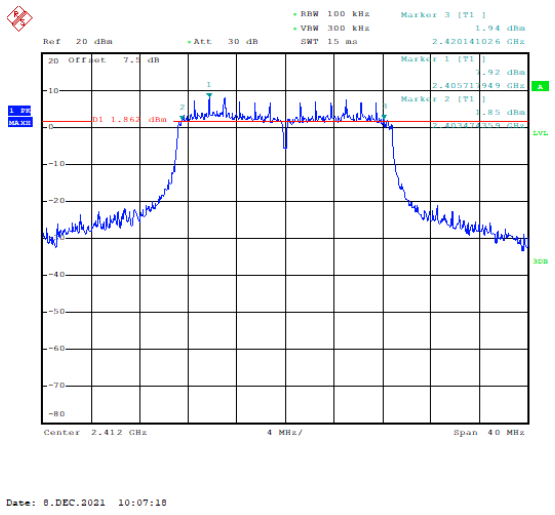
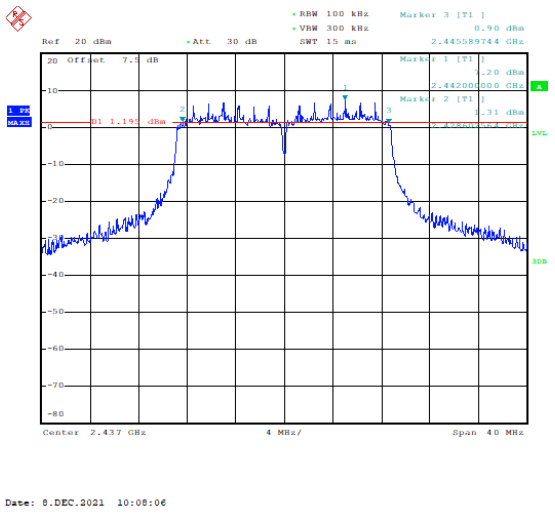
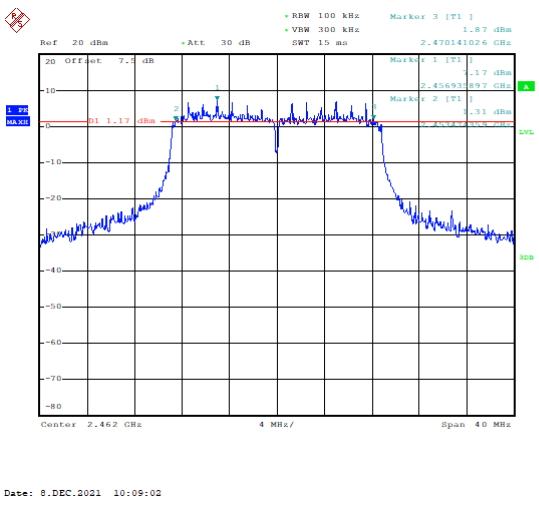
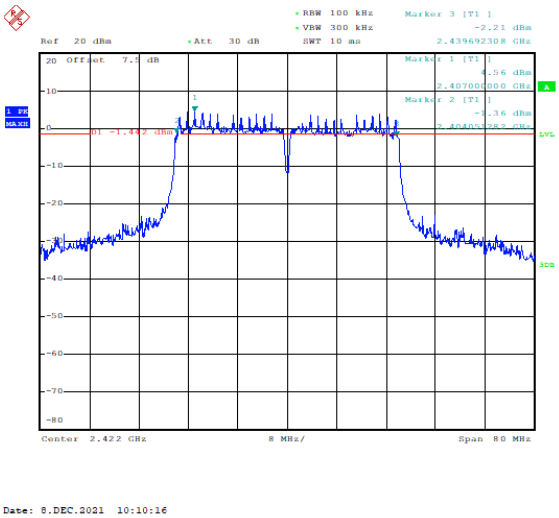
Test graphs as below

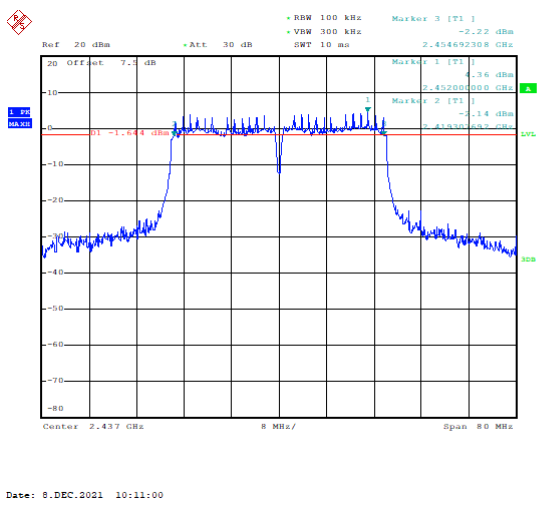
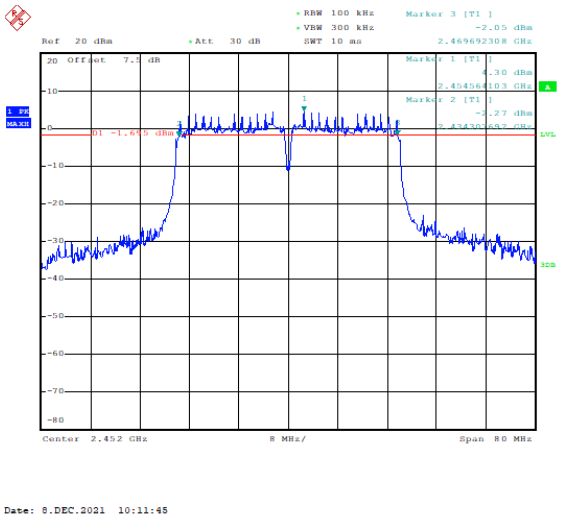
Occupied 6dB Bandwidth (MHz) (802.11b, Ch1)	10.13	Occupied 6dB Bandwidth (MHz) (802.11b, Ch6)	10.13





Occupied 6dB Bandwidth (MHz) (802.11b, Ch11)	10.13	Occupied 6dB Bandwidth (MHz) (802.11g, Ch1)	16.09
			
Occupied 6dB Bandwidth (MHz) (802.11g, Ch6)	16.28	Occupied 6dB Bandwidth (MHz) (802.11g, Ch11)	16.15
			

Occupied 6dB Bandwidth (MHz) (802.11n-20MHz, Ch1)	16.67	Occupied 6dB Bandwidth (MHz) (802.11n-20MHz, Ch6)	16.99
			
Occupied 6dB Bandwidth (MHz) (802.11n-20MHz, Ch11)	16.67	Occupied 6dB Bandwidth (MHz) (802.11n-40MHz, Ch3)	35.64
			

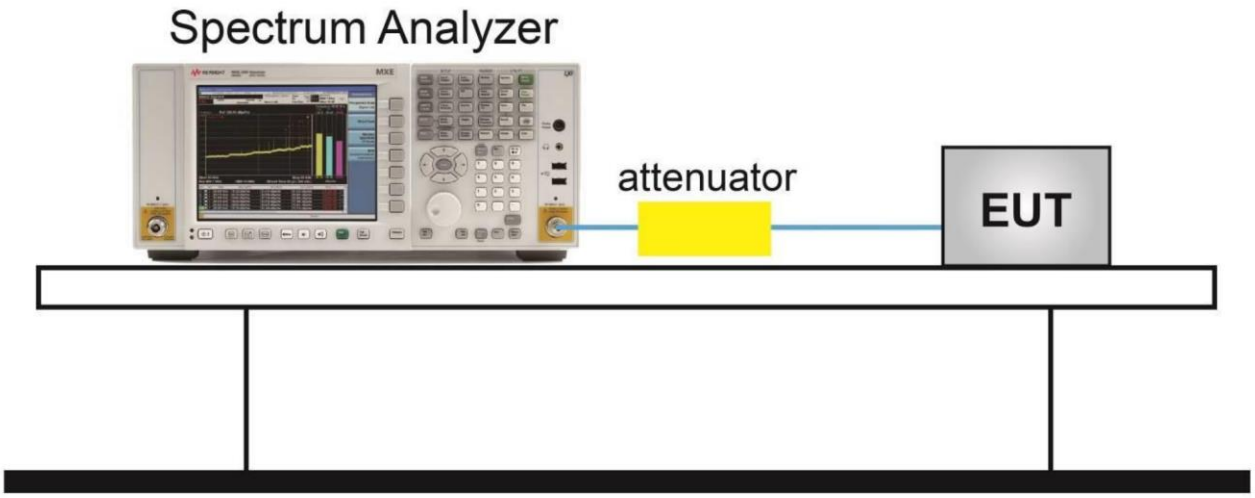
Occupied 6dB Bandwidth (MHz) (802.11n-40MHz, Ch6)	35.38	Occupied 6dB Bandwidth (MHz) (802.11n-40MHz, Ch9)	35.38
			

6.4. 99% Occupied Bandwidth

6.4.1 Measurement Limit

Standard	Limit(KHz)
RSS-Gen 6.7	N/A

6.4.2 Test Setup



6.4.3 Test procedure

The measurement is according to ANSI C63.10 clause 6.9.3.

10. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
11. Enable EUT transmitter maximum power continuously.
12. Set RBW shall be in the range of 1% to 5% of the OBW.
13. Set the VBW ≥ [3 × RBW].
14. Detector = peak.
15. Trace mode = max hold.
16. Sweep = auto couple.
17. Allow the trace to stabilize.
18. The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

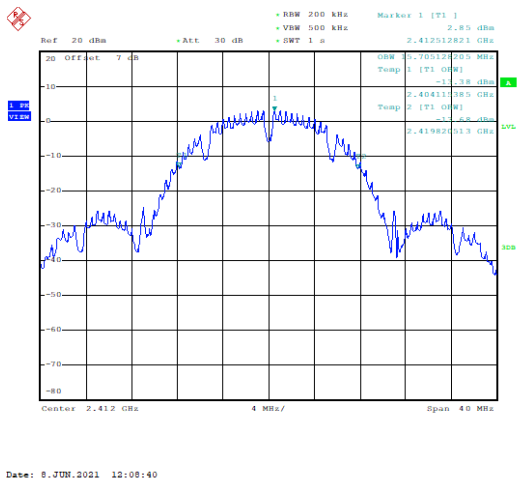
Measurement Result

Mode	Test Result (MHz)		
	2412MHz (Ch1)	**2437MHz (Ch6)**	**2462MHz (Ch11)**
802.11b	15.705	15.449	15.256
802.11g	17.115	17.308	17.244
802.11n(20MHz)	18.141	18.141	18.141
Mode	**2422MHz (Ch3)**	**2437MHz (Ch6)**	**2452MHz (Ch9)**
802.11n(40MHz)	37.436	37.436	37.308

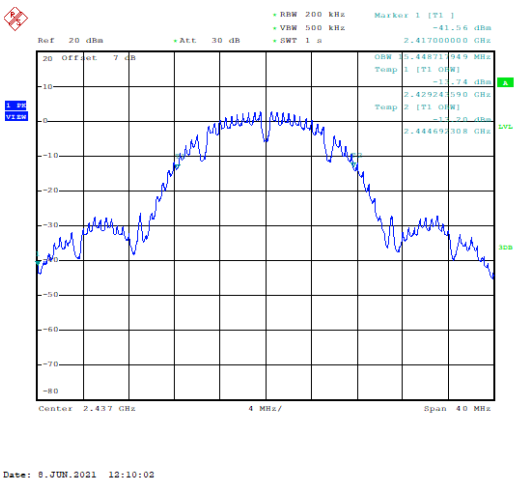
Conclusion: PASS

Test graphs as below

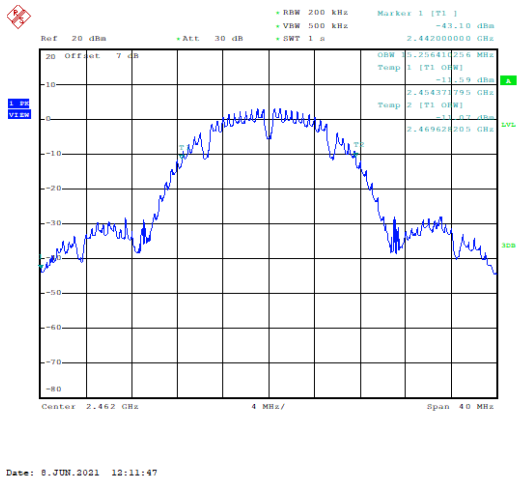
99% Occupied Bandwidth (802.11b, Ch1)
15.705 MHz



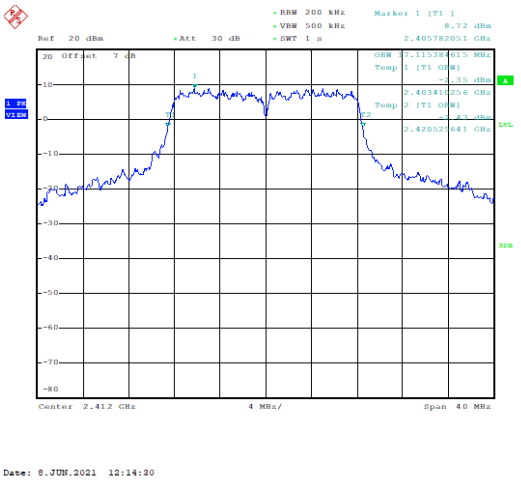
99% Occupied Bandwidth (802.11b, Ch6)
15.449 MHz

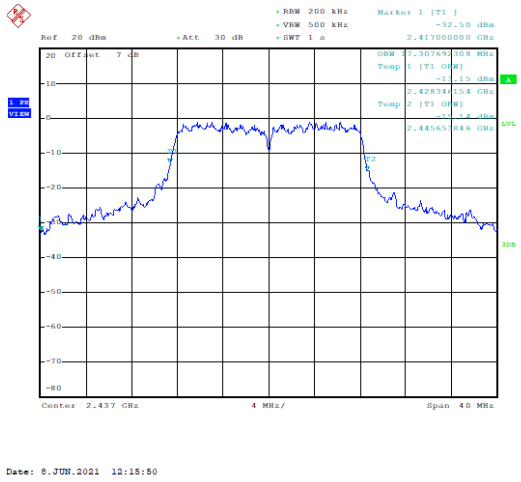
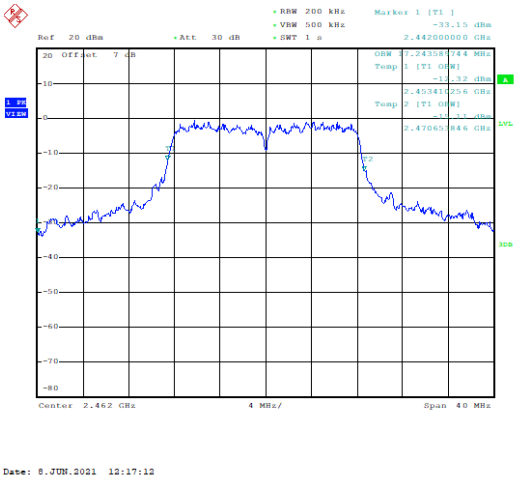
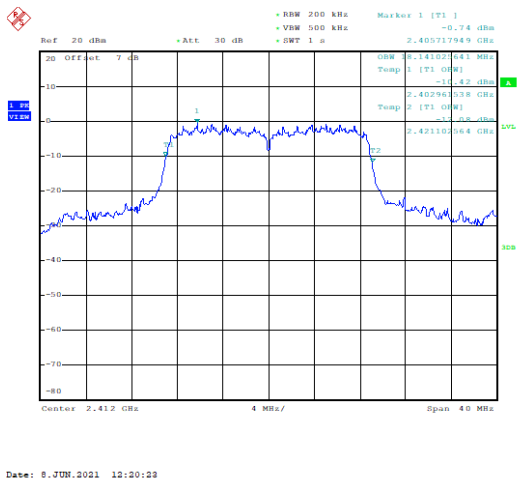
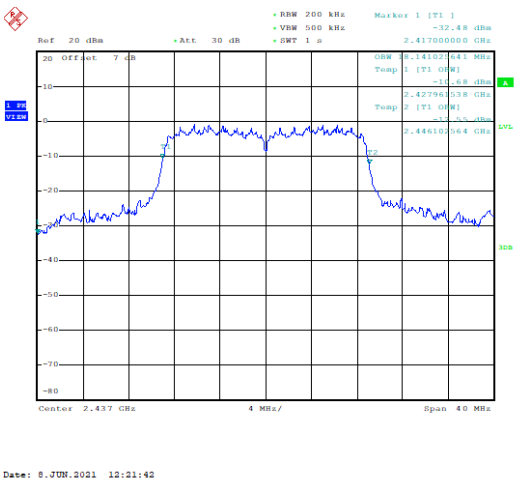


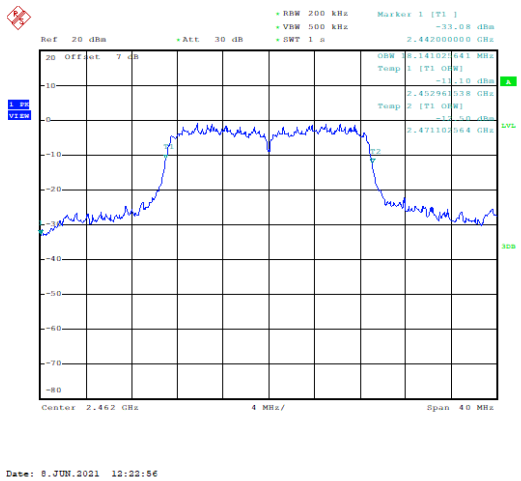
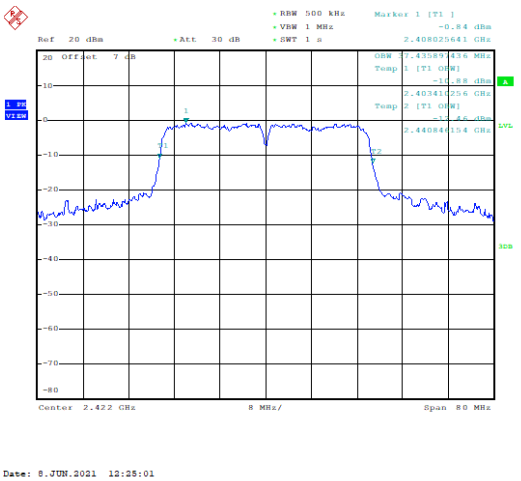
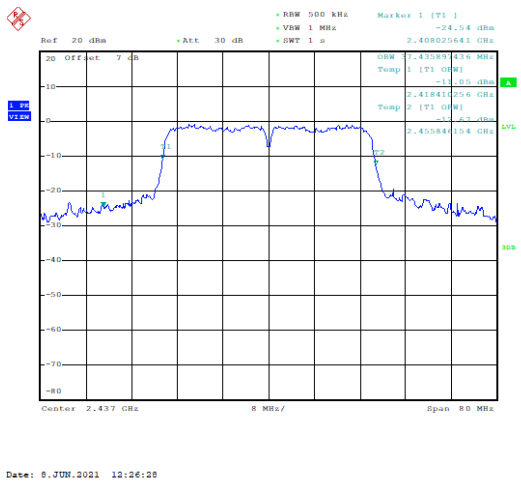
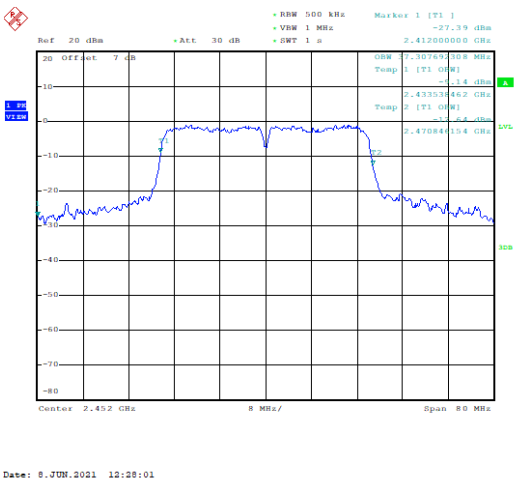
99% Occupied Bandwidth (802.11b, Ch11)
15.256 MHz



99% Occupied Bandwidth (802.11g, Ch1)
17.115 MHz



99% Occupied Bandwidth (802.11g, Ch6) 17.308 MHz	99% Occupied Bandwidth (802.11g, Ch11) 17.244 MHz
	
99% Occupied Bandwidth (802.11n20, Ch1) 18.141 MHz	99% Occupied Bandwidth (802.11n20, Ch6) 18.141 MHz
	

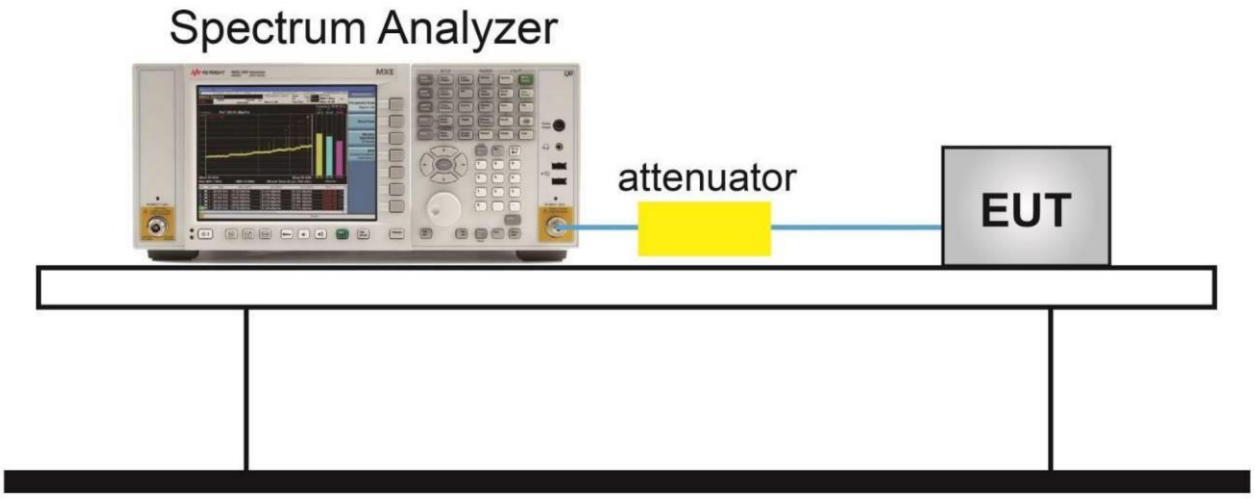
99% Occupied Bandwidth (802.11n20, Ch11) 18.141 MHz	99% Occupied Bandwidth (802.11n40, Ch3) 37.436 MHz
	
99% Occupied Bandwidth (802.11n40, Ch6) 37.436 MHz	99% Occupied Bandwidth (802.11n40, Ch9) 37.308 MHz
	

6.5. Band Edges Compliance

6.5.1 Measurement Limit

Standard	Limited(dBc)
FCC 47 Part 15.247(d)	>20
RSS-247 5.5	>20

6.5.2 Test Setup

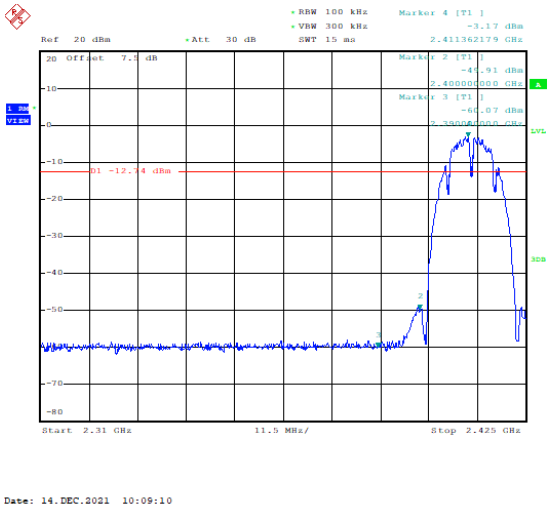
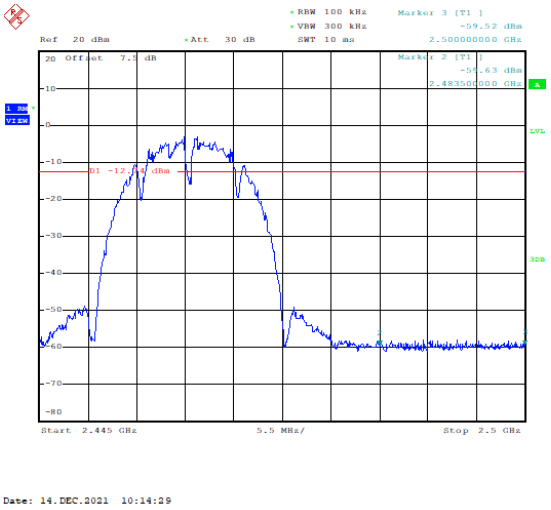
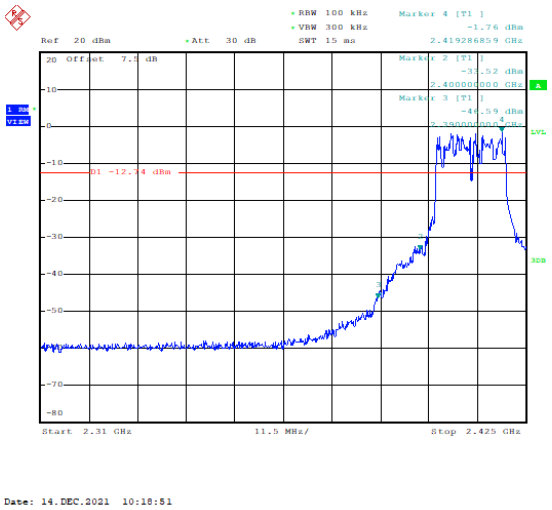
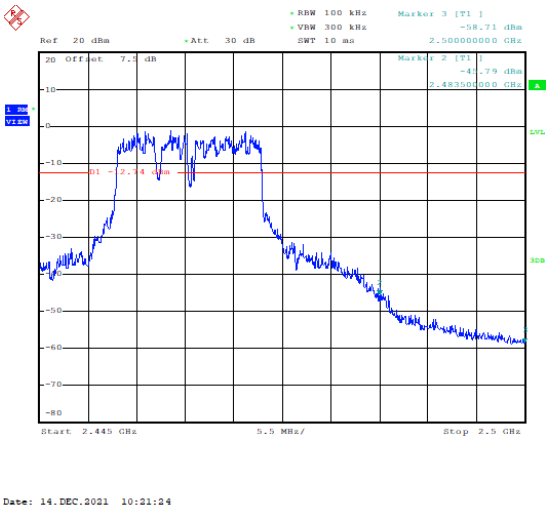


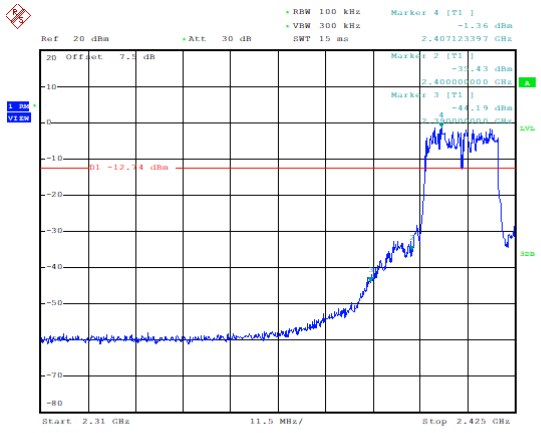
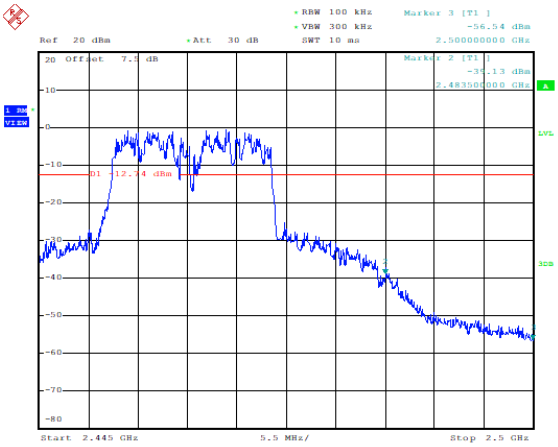
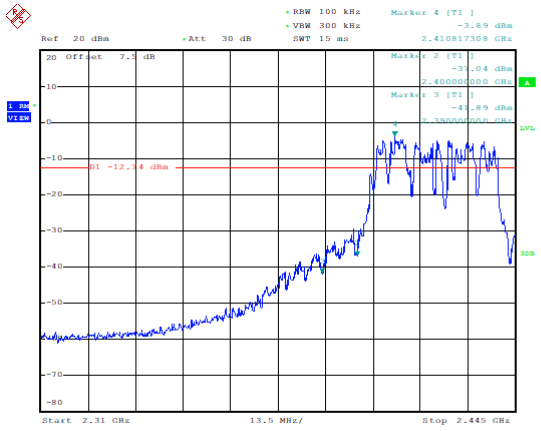
6.5.3 Test procedures

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)
	
Band Edges (802.11n-40MHz, Ch3)	Band Edges (802.11n-40MHz, Ch9)
	

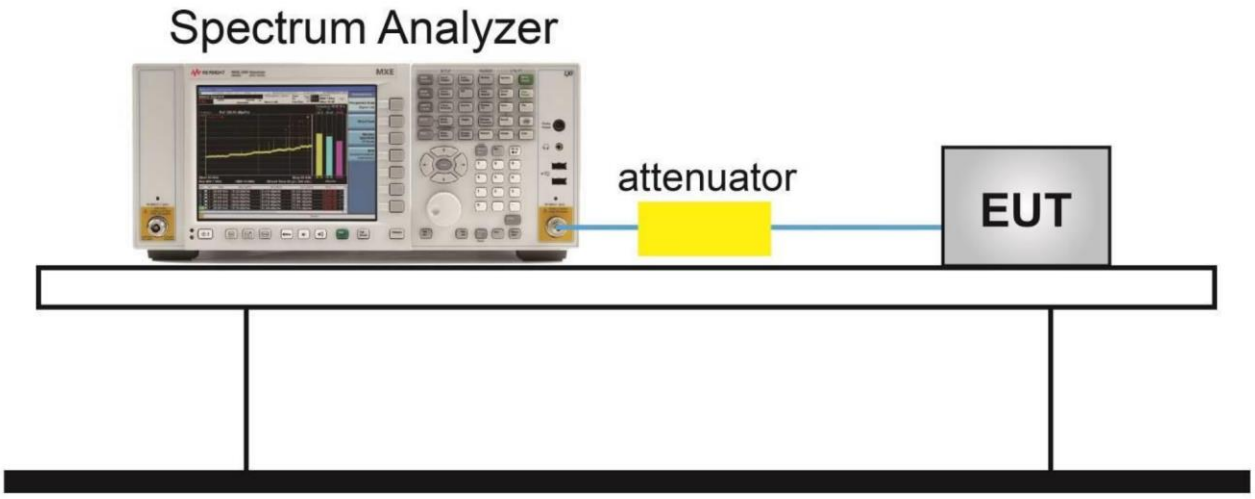
Conclusion: PASS

6.6. Transmitter Spurious Emission-conducted

6.6.1 Measurement Limit

Standard	Limit
FCC 47 Part 15.247(d)	20dB below peak output power in 100KHz
RSS-247 5.5	20dB below peak output power in 100KHz

6.6.2 Test Setup



6.6.3 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.

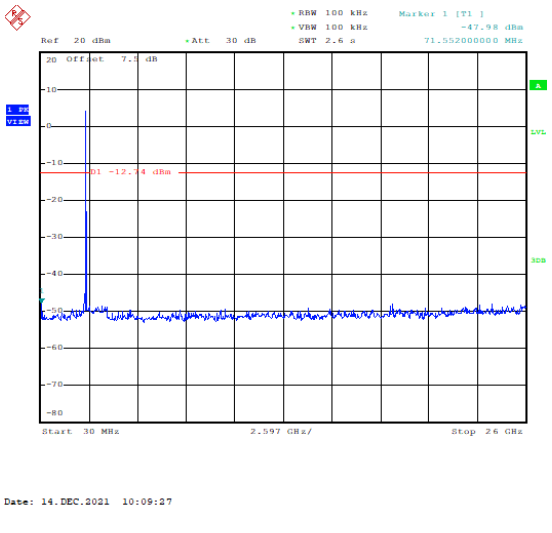
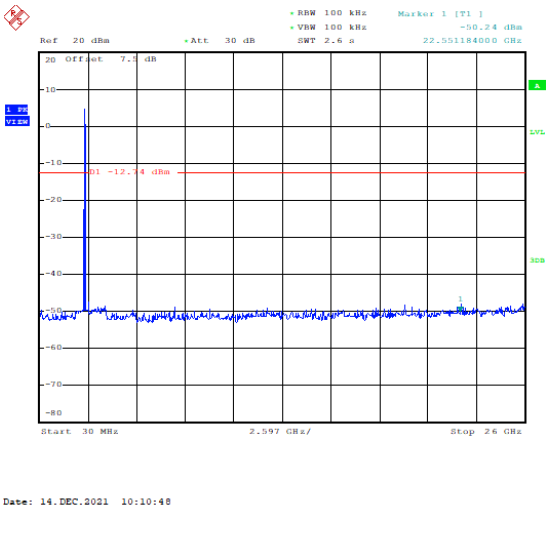
Reference level measurement

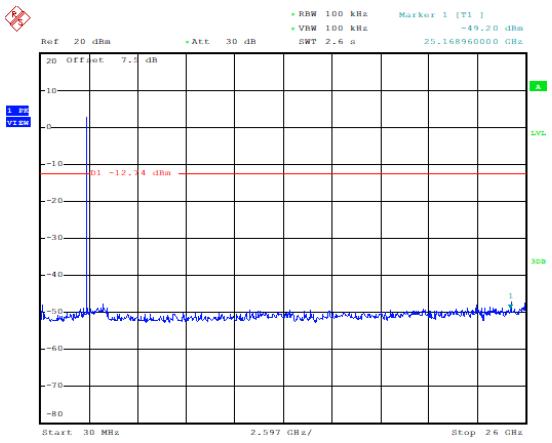
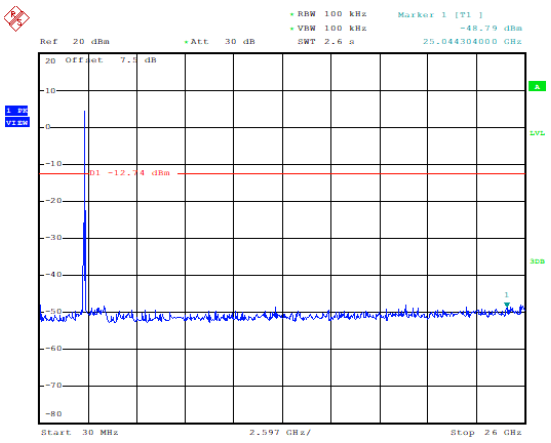
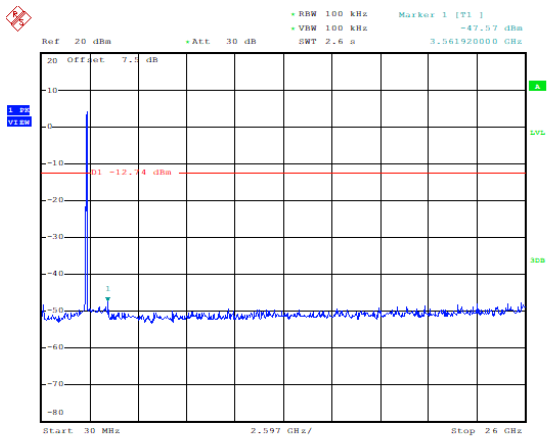
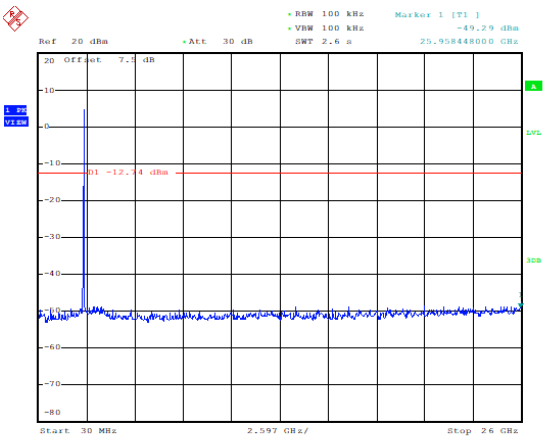
3. Set instrument center frequency to DTS channel center frequency.
4. Set the span to ≥ 1.5 times the DTS bandwidth.
5. Set the RBW = 100 kHz.
6. Set the VBW ≥ [3 × RBW].
7. Detector = peak.
8. Sweep time = auto couple.
9. Trace mode = max hold.
10. Allow trace to fully stabilize.
11. Use the peak marker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

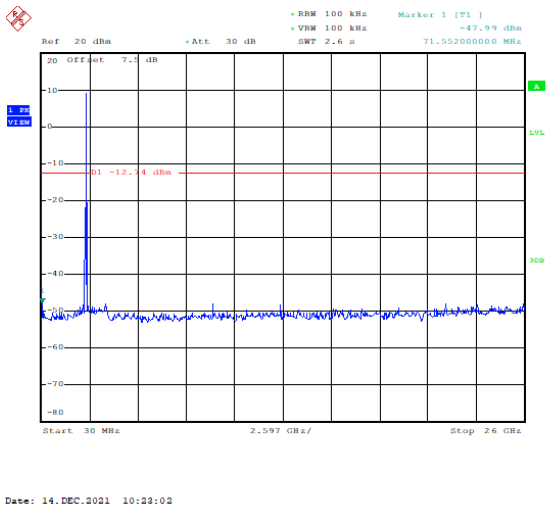
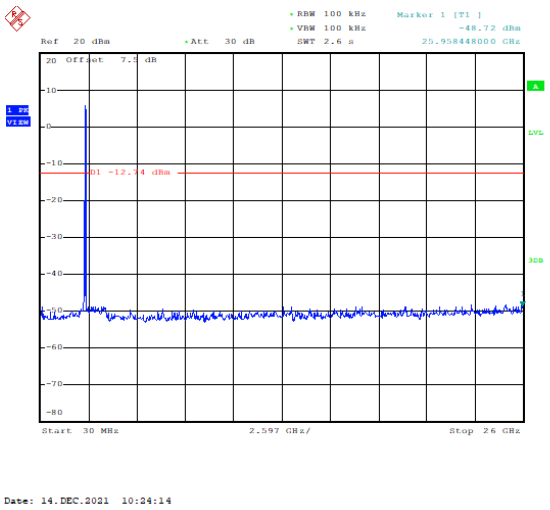
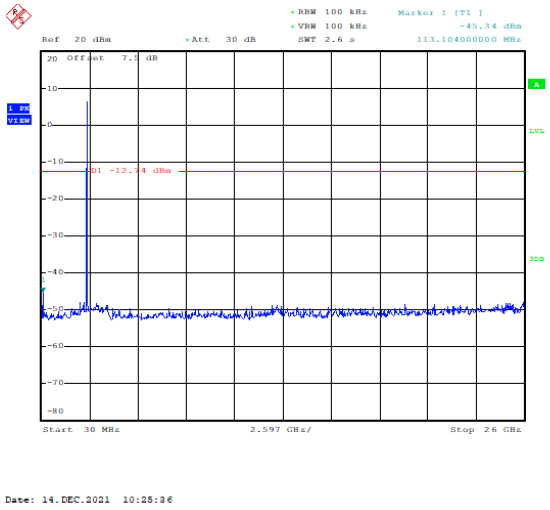
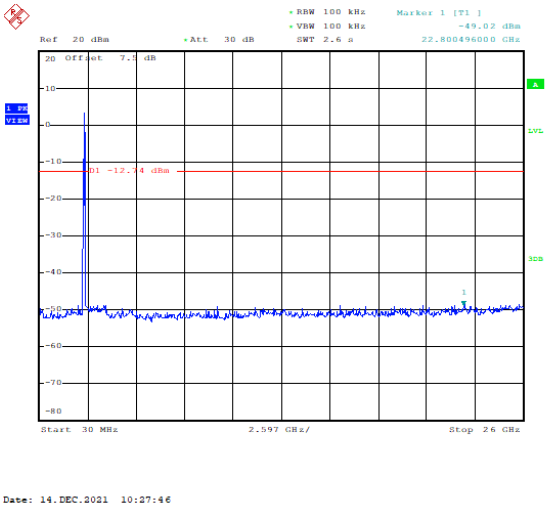
Emission level measurement

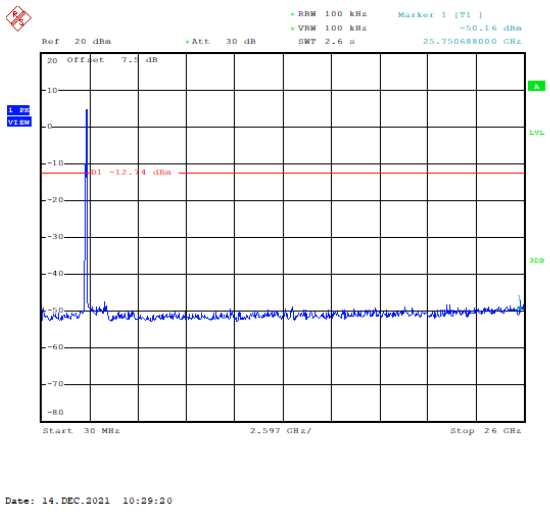
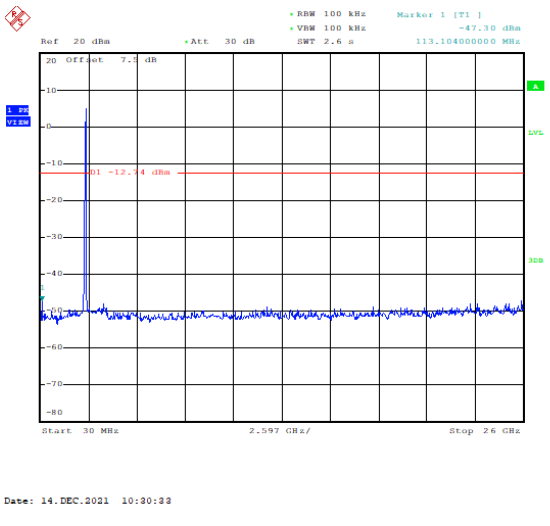
12. Set the center frequency and span to encompass frequency range to be measured.
13. Set the RBW = 100 kHz.
14. Set the VBW ≥ [3 × RBW].
15. Detector = peak.
16. Sweep time = auto couple.
17. Trace mode = max hold.
18. Allow trace to fully stabilize.
19. Use the peak marker function to determine the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

Measurement Results

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

Conducted Spurious Emission (802.11b, Ch11, 30MHz~26GHz)	Conducted Spurious Emission (802.11g, Ch1, 30MHz~26GHz)
 Date: 14.DEC.2021 10:14:46	 Date: 14.DEC.2021 10:19:08
Conducted Spurious Emission (802.11g, Ch6, 30MHz~26GHz)	**Conducted Spurious Emission (802.11g, Ch11, 30MHz~26GHz)**
 Date: 14.DEC.2021 10:20:16	 Date: 14.DEC.2021 10:21:40

Conducted Spurious Emission (802.11n-20MHz, Ch1, 30MHz~26GHz)	Conducted Spurious Emission (802.11n-20MHz, Ch6, 30MHz~26GHz)
	
Conducted Spurious Emission (802.11n-20MHz, Ch11, 30MHz~26GHz)	**Conducted Spurious Emission (802.11n-40MHz, Ch3, 30MHz~26GHz)**
	

Conducted Spurious Emission (802.11n-40MHz, Ch6, 30MHz~26GHz)	Conducted Spurious Emission (802.11n-40MHz, Ch9, 30MHz~26GHz)
	

6.7. Transmitter Spurious Emission-Radiated

6.7.1 Measurement Limit

Standard	Limit
FCC 47 Part 15.247,15.205,15.209	20dB below peak output power
RSS-Gen 8.9,8.10	20dB below peak output power

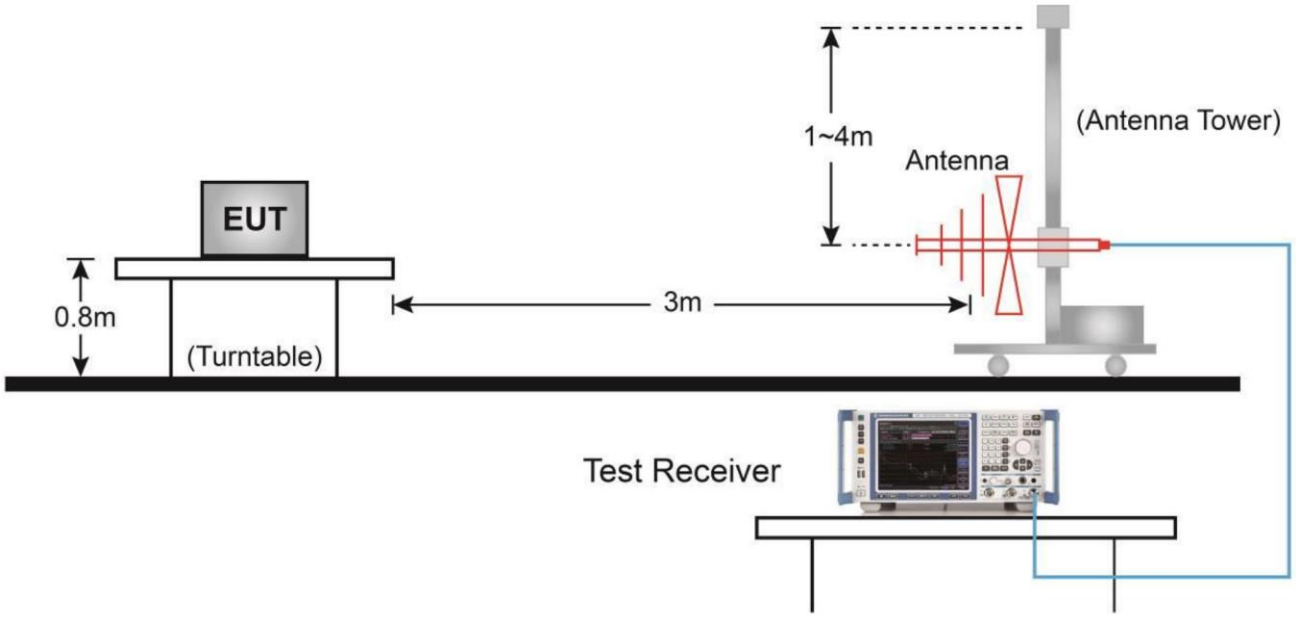
In addition, radiated emissions which fall in the restricted bands, as defined in 25.205(a), must also comply with the radiated emission limits specified in 15.209(a)(see 15.205(c)).
The measurement is according to ANSI C63.10 clause 11.11 and 11.12.

6.7.2 Limit in restricted band

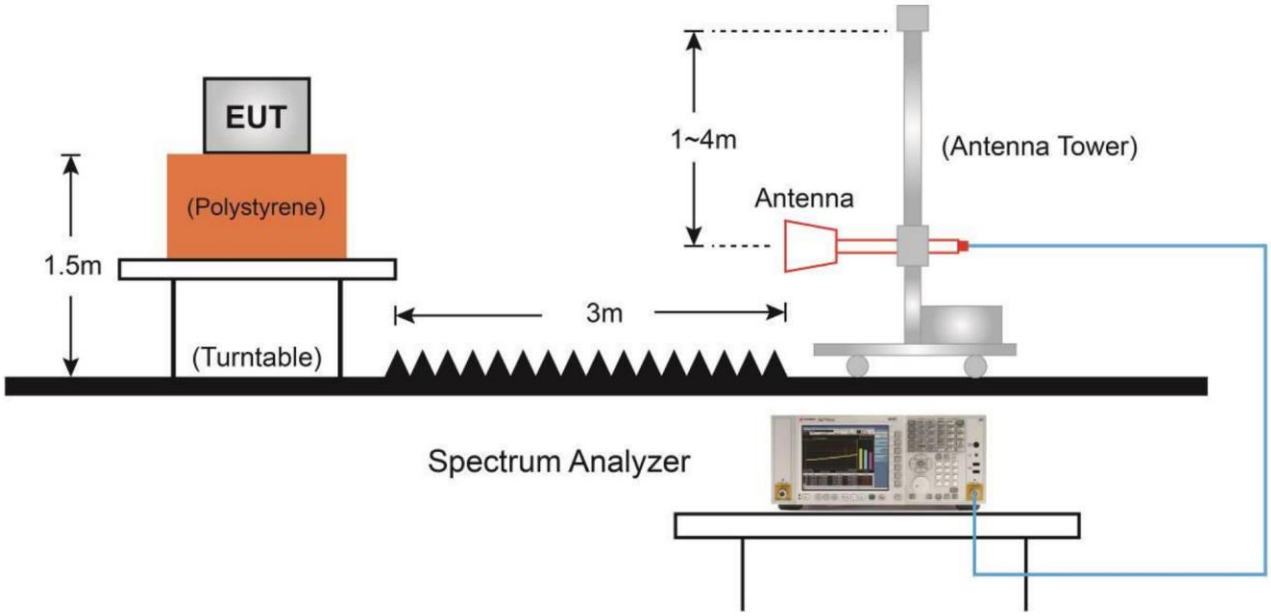
Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30~88	100	40
88~216	150	43.5
216~960	200	46
Above 960	500	54

6.7.3 Test Setup

Below 1GHz Test Setup



Above 1GHz Test Setup



6.7.4 Test procedures

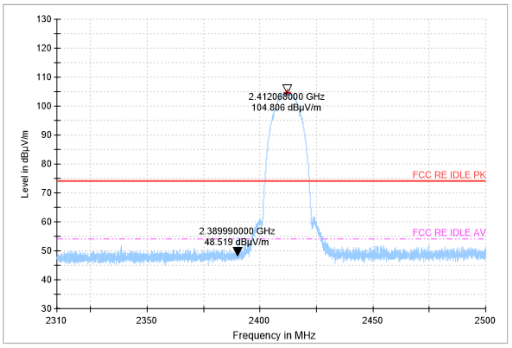
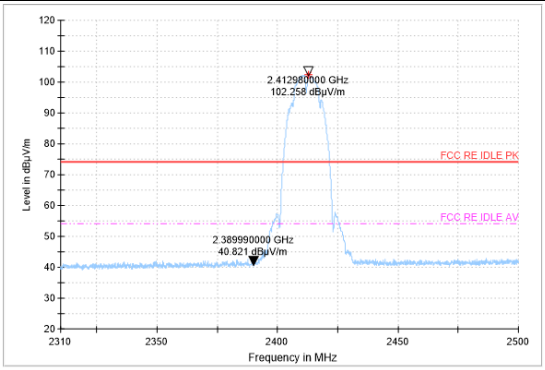
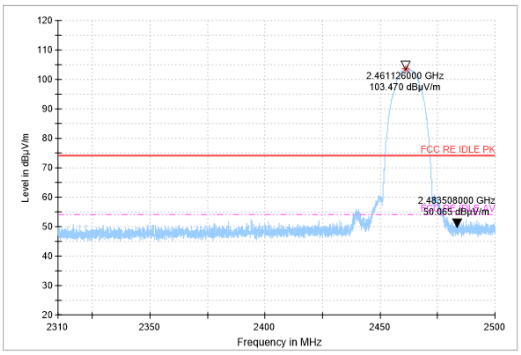
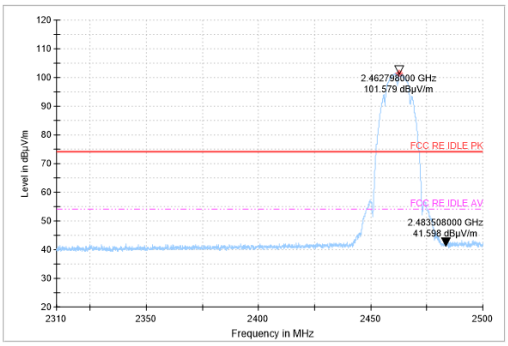
Portable, small, lightweight, or modular devices that may be handheld, worn on the body, or placed on a table during operation shall be positioned on a nonconducting platform, the top of which is 80 cm above the reference ground plane. The preferred area occupied by the EUT arrangement is 1 m by 1.5 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.

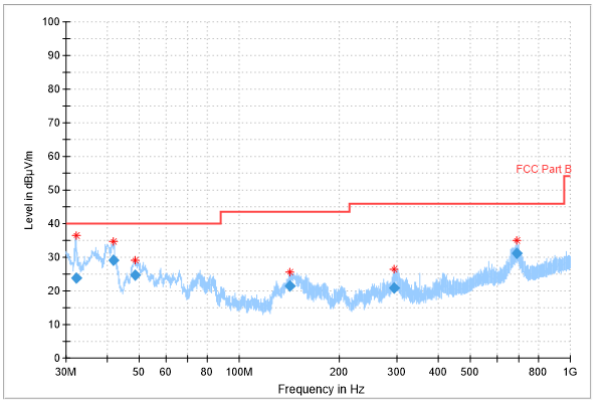
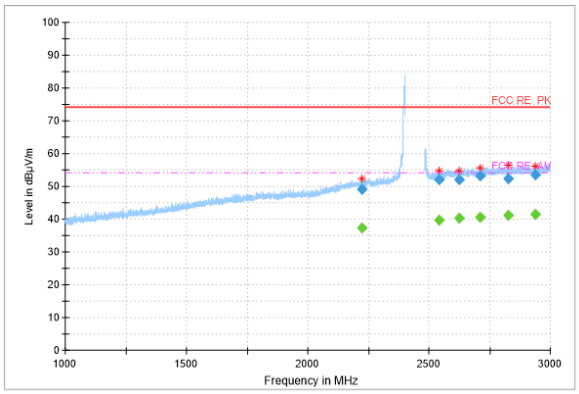
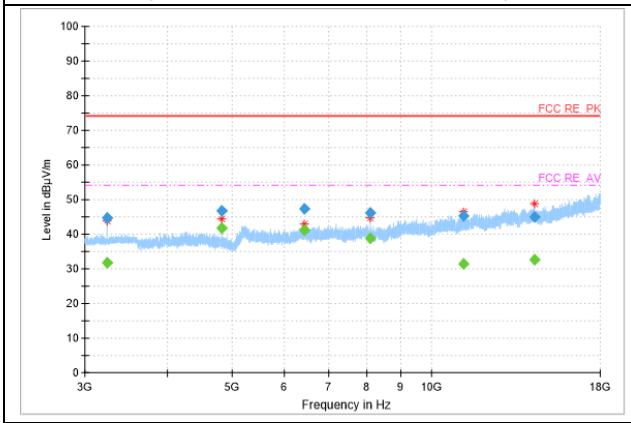
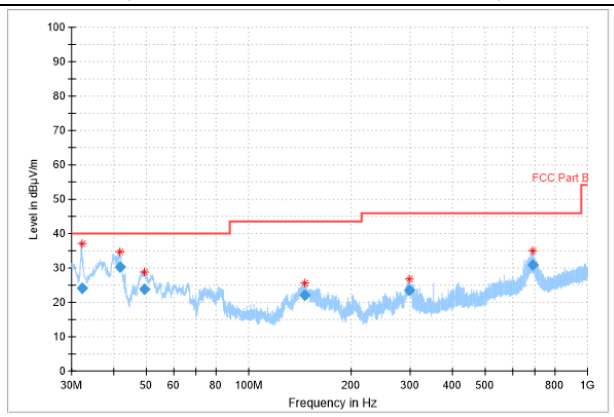
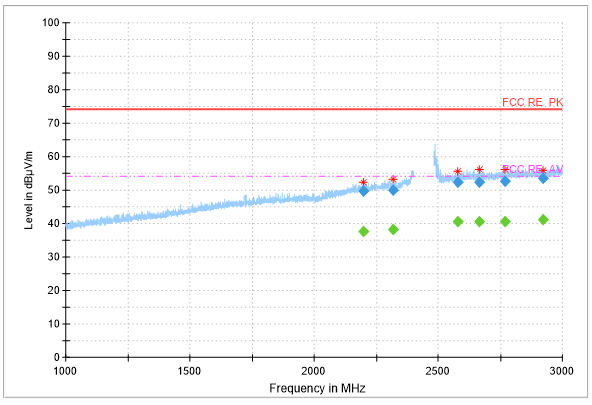
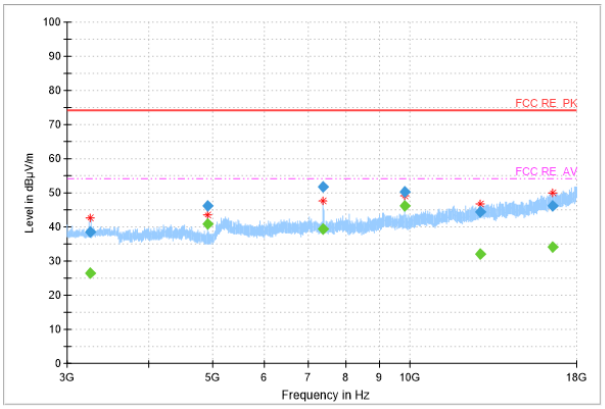
The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During testing, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emission from the EUT. This maximization process was repeated with the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

Mainly Supply

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, Ch1,30MHz~1GHz)	Radiated Spurious Emission (802.11b, Ch1,1GHz~3GHz)
	
Radiated Spurious Emission (802.11b, Ch1,3GHz~18GHz)	**Radiated Spurious Emission (802.11b, Ch11,30MHz~1GHz)**
	
Radiated Spurious Emission (802.11b, Ch11,1GHz~3GHz)	**Radiated Spurious Emission (802.11b, Ch11,3GHz~18GHz)**
	

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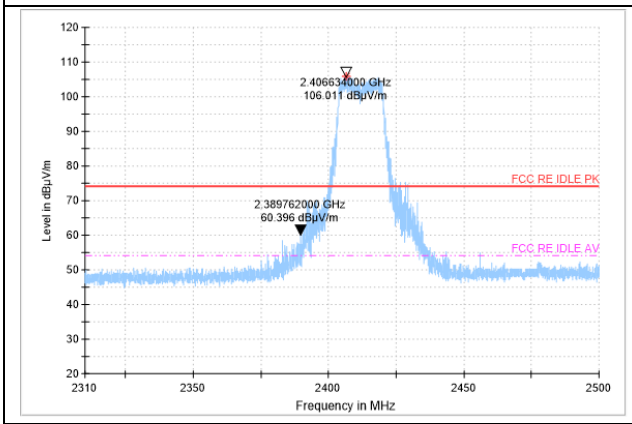
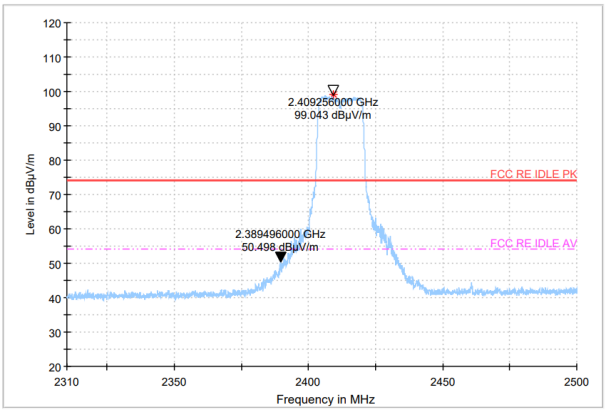
<tr><td colspan="2">Band edge: 802.11g, low channel</td></tr>
<tr><td>Peak detector</td><td>AV detector</td></tr>
<tr><td> 
</td><td> 
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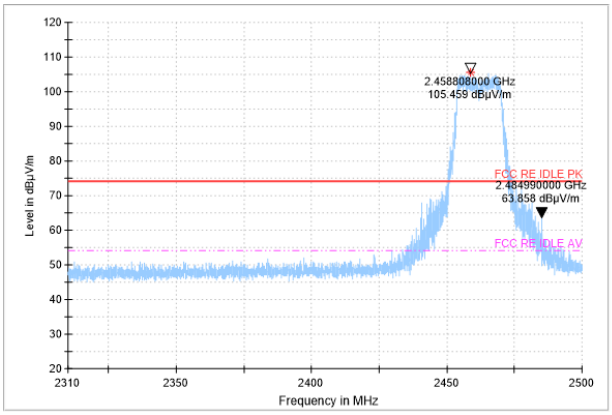
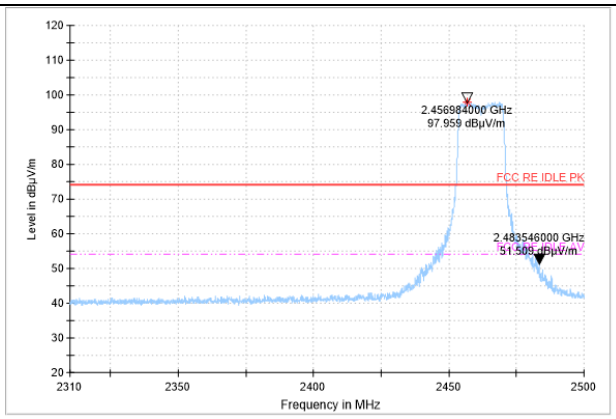
<tr><td>Peak detector</td><td>AV detector</td></tr>
<tr><td> 
</td><td> 
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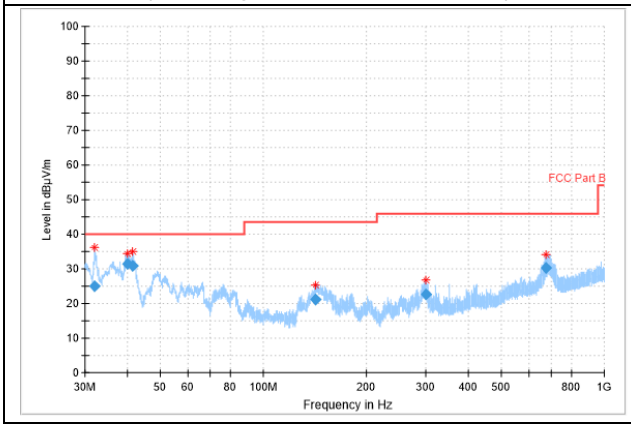
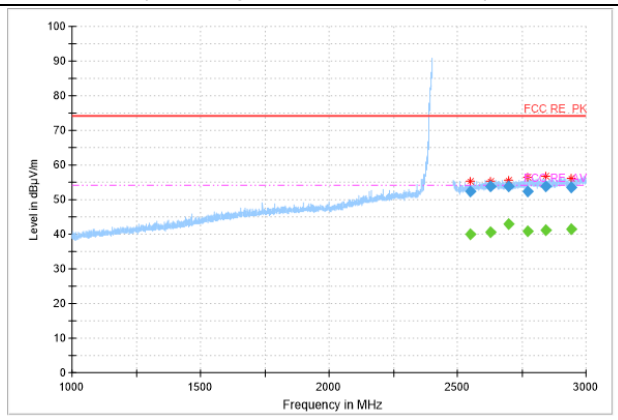
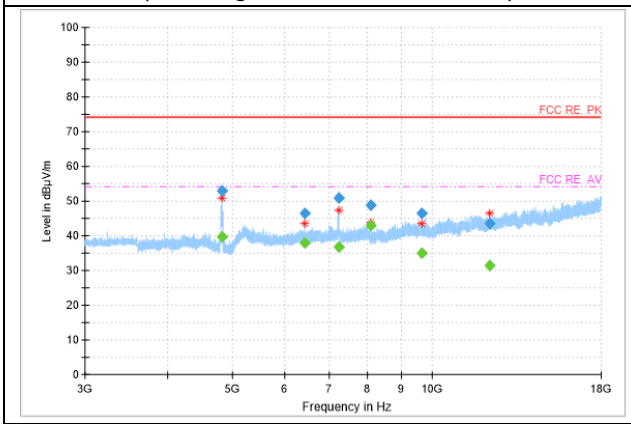
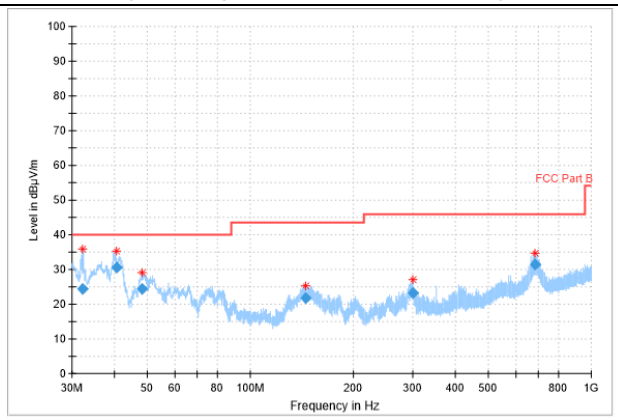
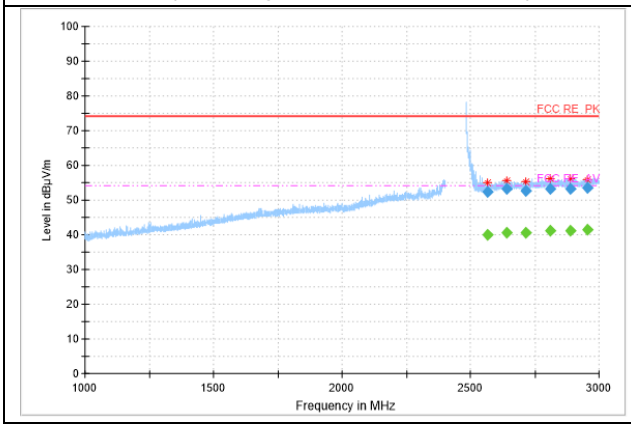
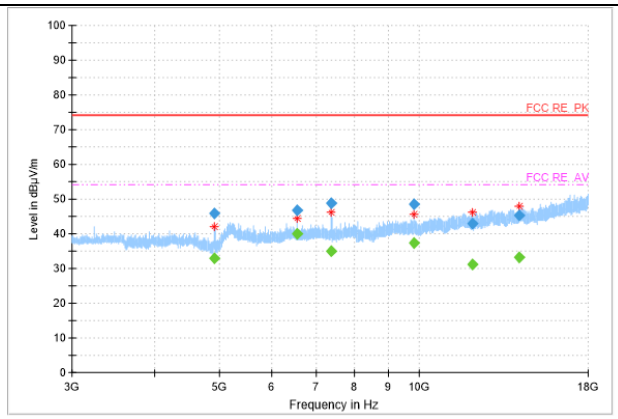
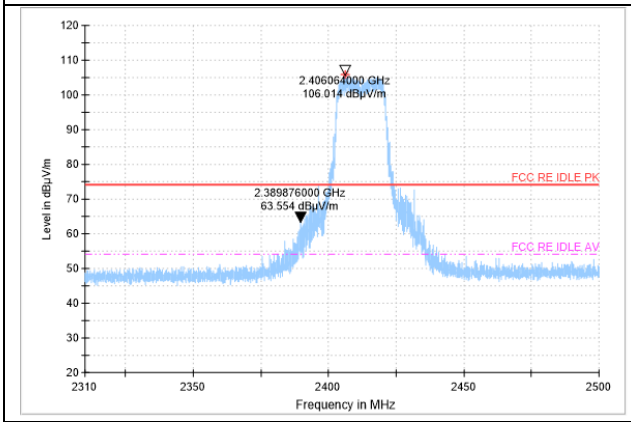
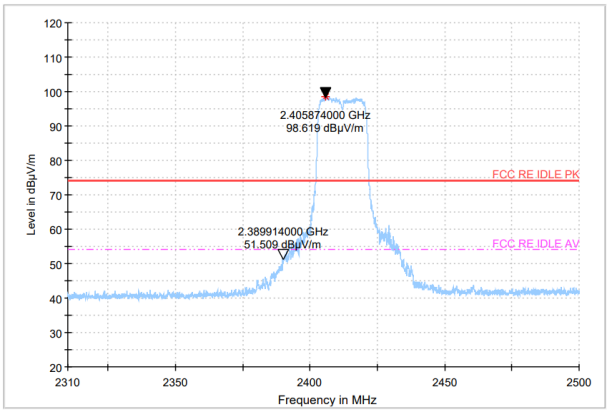
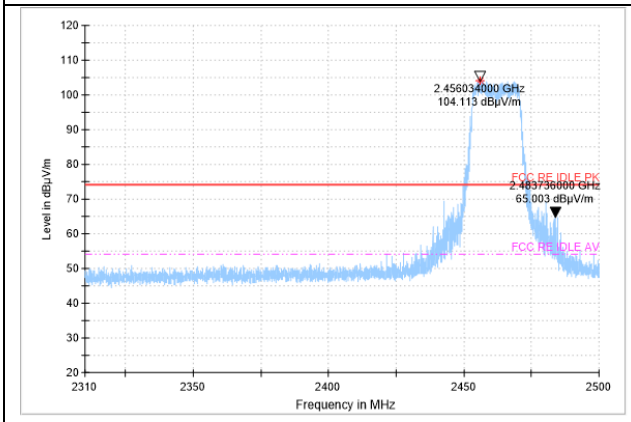
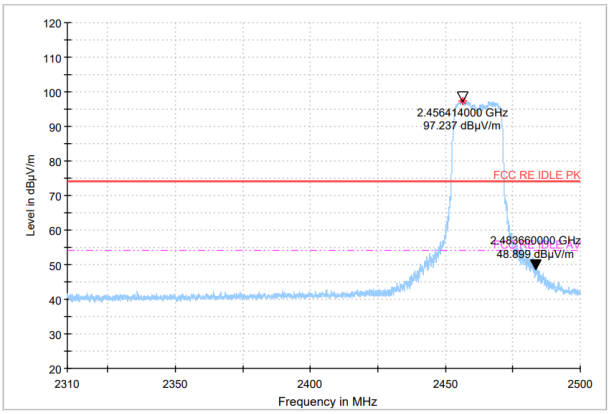
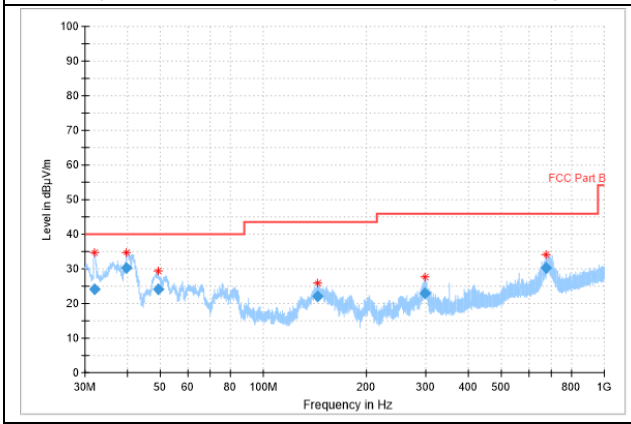
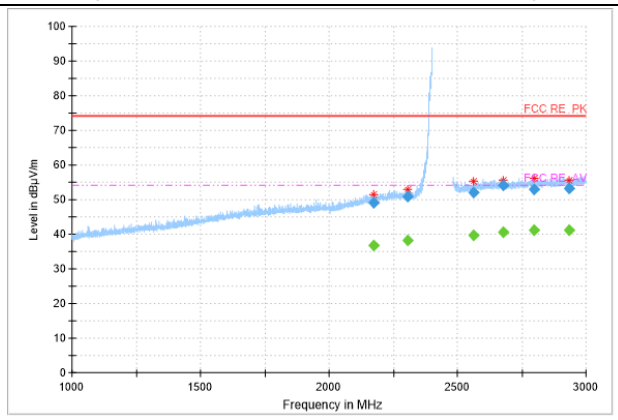
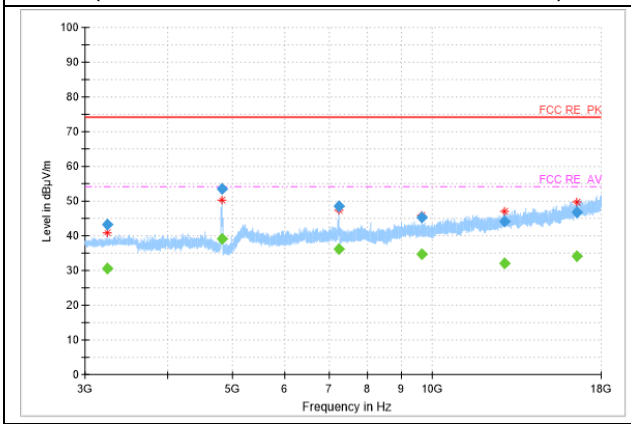
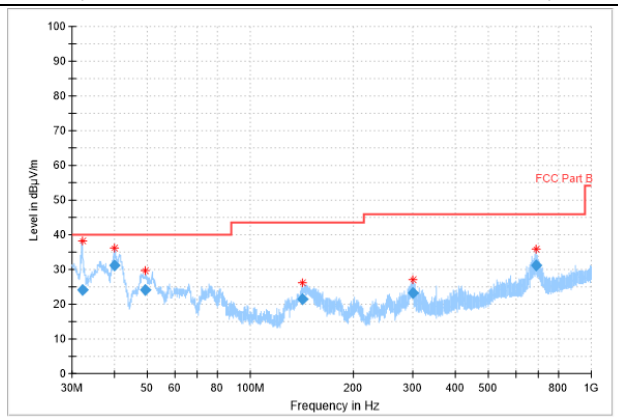
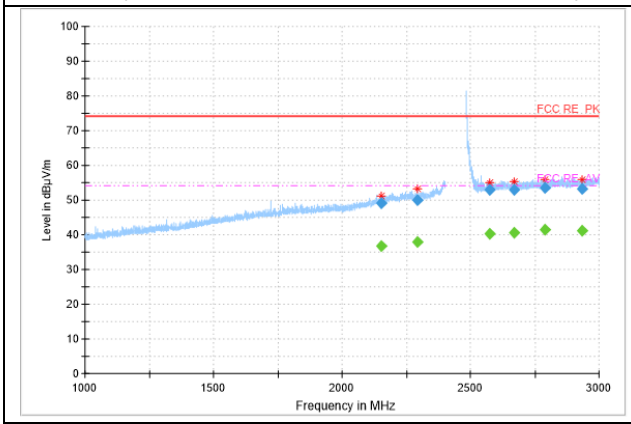
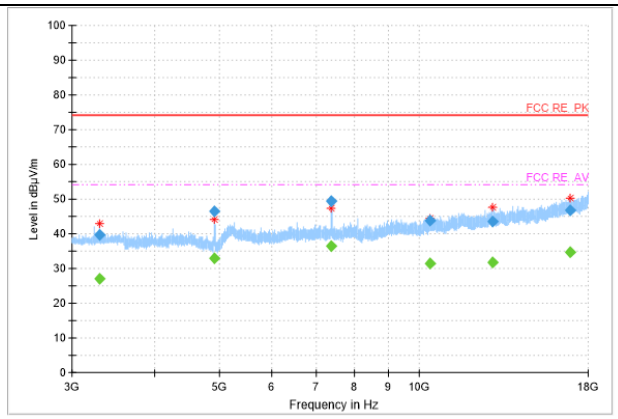
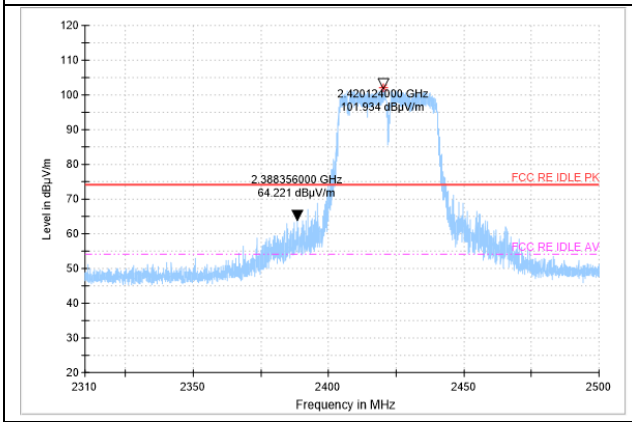
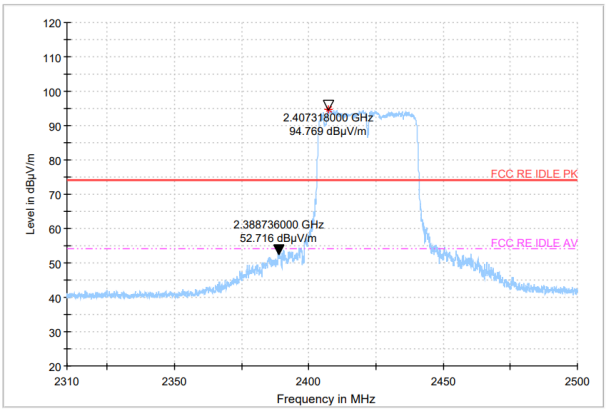
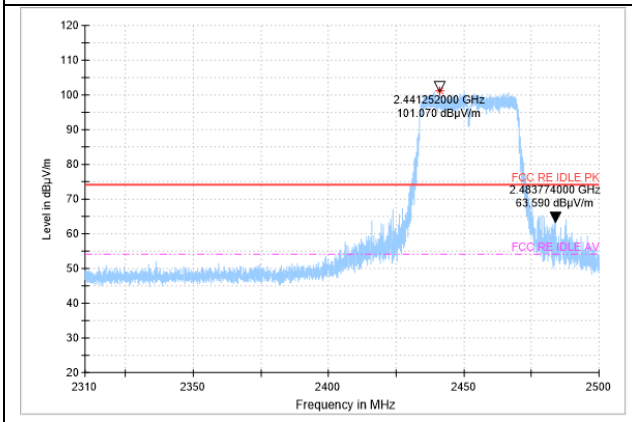
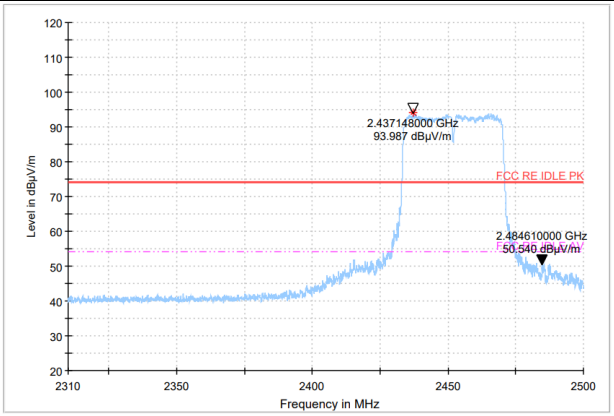
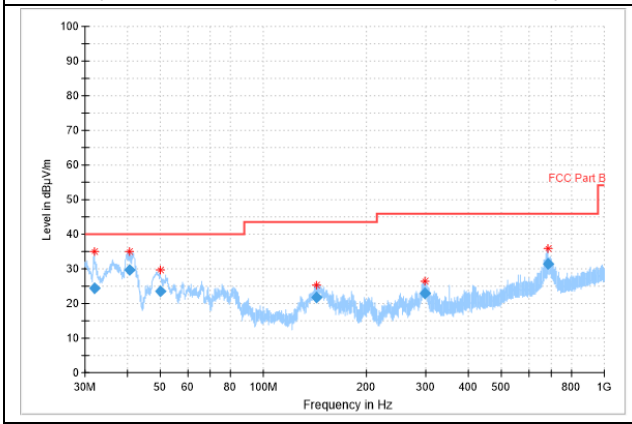
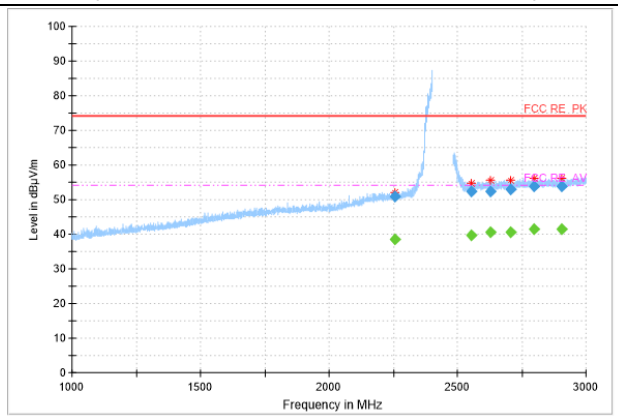
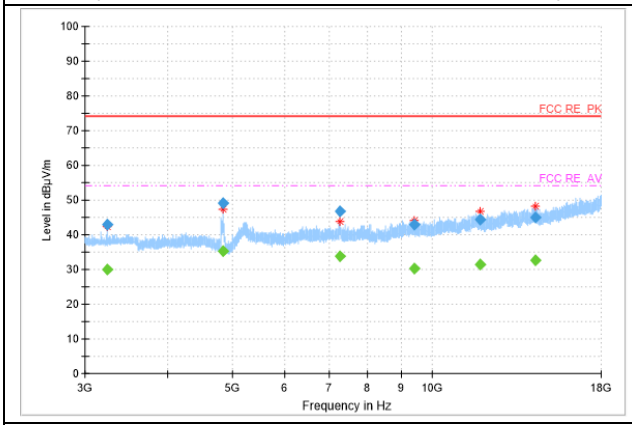
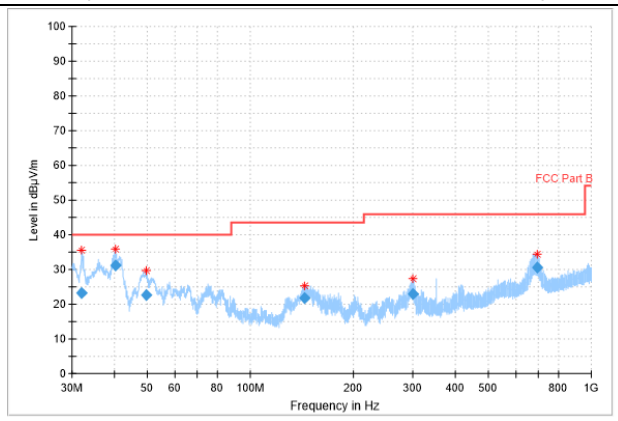
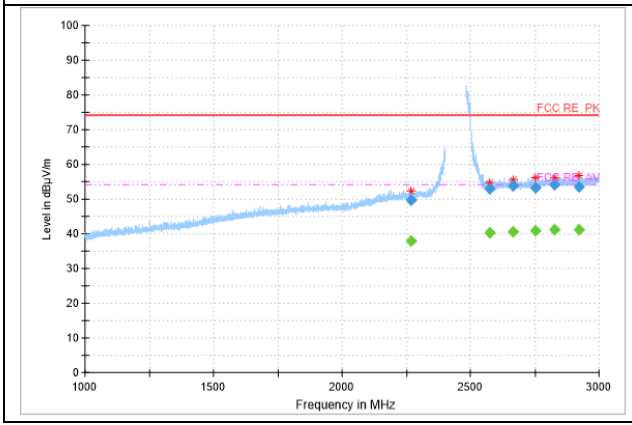
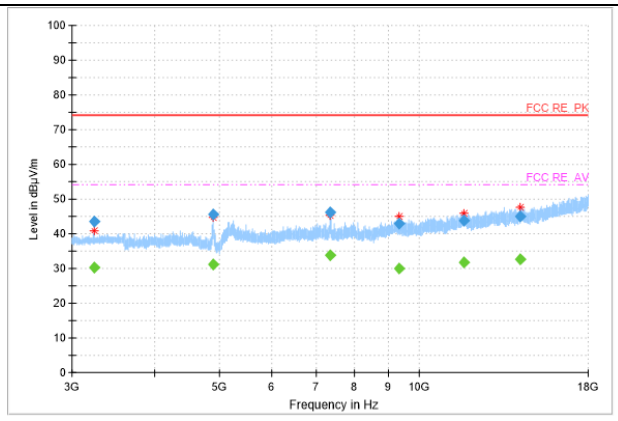
Radiated Spurious Emission (802.11g, Ch1,30MHz~1GHz)	Radiated Spurious Emission (802.11g, Ch1,1GHz~3GHz)
	
Radiated Spurious Emission (802.11g, Ch1, 3GHz~18GHz)	**Radiated Spurious Emission (802.11g, Ch11,30MHz~1GHz)**
	
Radiated Spurious Emission (802.11g, Ch11,1GHz~3GHz)	**Radiated Spurious Emission (802.11g, Ch11, 3GHz~18GHz)**
	

Band edge: 802.11n-20MHz, low channel	
Peak detector	AV detector
	
Band edge: 802.11n-20MHz, high channel	
Peak detector	AV detector
	

Radiated Spurious Emission (802.11n-20MHz, Ch1,30MHz~1GHz)	Radiated Spurious Emission (802.11n-20MHz, Ch1,1GHz~3GHz)
	
Radiated Spurious Emission (802.11n-20MHz, Ch1, 3GHz~18GHz)	**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)**
	

Band edge: 802.11n-40MHz, low channel	
Peak detector	AV detector
	
Band edge: 802.11n-40MHz, high channel	
Peak detector	AV detector
	

Radiated Spurious Emission (802.11n-40MHz, Ch3,30MHz~1GHz)	Radiated Spurious Emission (802.11n-40MHz, Ch3,1GHz~3GHz)
	
Radiated Spurious Emission (802.11n-40MHz, Ch3, 3GHz~18GHz)	**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)**
	

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 Factor-Preamplifier gain

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

Ch1 30MHz~1GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
32.2	23.72	-14.3	38.02	V
41.8	29.2	-12.7	41.9	V
48.4	24.6	-12	36.6	V
142.5	21.37	-17.1	38.47	H
292.6	20.88	-11	31.88	V
687.4	31.09	-2.9	33.99	V

Ch1 1GHz~3GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2221.7	49.17	12.6	36.57	V
2539.7	51.98	14.9	37.08	V
2625.5	52.2	15.7	36.5	V
2710.4	53.31	15.9	37.41	H
2825.4	52.4	16.6	35.8	V
2939.0	53.64	16.8	36.84	H

Ch1 3GHz~18GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3239.9	44.82	-7.3	52.12	V
4824.1	46.87	-4.8	51.67	V
6431.9	47.36	-2.6	49.96	H
8099.8	46.13	-1.5	47.63	H
11178.0	45.27	1.6	43.67	V
14306.9	44.91	5.4	39.51	H

Ch11 30MHz~1GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
32.3	24.02	-14.2	38.22	V

41.6	30.35	-12.7	43.05	V
49.2	23.86	-12	35.86	V
145.9	22.02	-17.1	39.12	H
298.2	23.41	-10.9	34.31	H
686.4	30.88	-2.8	33.68	V

Ch11 1GHz~3GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2199.0	49.58	12.5	37.08	V
2320.0	49.88	13.3	36.58	H
2577.3	52.29	15.3	36.99	H
2666.9	52.48	15.9	36.58	H
2769.2	52.72	16.4	36.32	H
2920.7	53.54	16.8	36.74	H

Ch11 3GHz~18GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3259.0	38.43	-7.3	45.73	V
4923.9	46.22	-4.5	50.72	H
7385.9	51.9	-2.2	54.1	H
9848.0	50.41	-0.4	50.81	V
12826.9	44.4	3.1	41.3	V
16509.2	46.3	8.3	38	H

802.11g mode

Ch1 30MHz~1GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
32.1	24.86	-14.3	39.16	V
39.9	31.43	-12.9	44.33	V
41.3	30.74	-12.7	43.44	V
142.7	21.3	-17.1	38.4	H

300.8	22.67	-10.9	33.57	H
674.3	30.44	-2.8	33.24	V

Ch1 1GHz~3GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2550.2	52.29	15.1	37.19	H
2627.9	53.69	15.7	37.99	V
2699.6	53.87	15.9	37.97	V
2771.3	52.33	16.4	35.93	V
2841.9	53.92	16.6	37.32	V
2943.6	53.47	16.8	36.67	H

Ch1 3GHz~18GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
4823.9	52.83	-4.8	57.63	H
6432.0	46.52	-2.6	49.12	V
7238.6	50.83	-2.2	53.03	V
8099.9	48.68	-1.5	50.18	V
9647.8	46.42	-0.7	47.12	V
12233.3	43.5	2	41.5	V

Ch11 30MHz~1GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
32.3	24.48	-14.2	38.68	V
40.4	30.56	-12.8	43.36	V
48.2	24.33	-12.1	36.43	V
145.2	21.86	-17.1	38.96	H
299.5	23.19	-10.9	34.09	H
681.5	31.53	-2.8	34.33	V

Ch11 1GHz~3GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2567.3	52.29	15.3	36.99	V
2642.2	53.27	15.8	37.47	H
2715.3	52.51	16	36.51	V
2809.3	53.18	16.6	36.58	V
2887.8	53.28	16.7	36.58	V
2953.7	53.54	16.9	36.64	V

Ch11 3GHz~18GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
4920.1	45.92	-4.5	50.42	H
6565.4	46.65	-2.5	49.15	H
7383.3	48.8	-2.2	51	H
9848.0	48.43	-0.4	48.83	V
12032.0	42.93	2	40.93	H
14162.1	45.19	4.9	40.29	V

802.11n(20M) mode

Ch1 30MHz~1GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
32.1	24.18	-14.3	38.48	V
39.8	30.3	-12.9	43.2	V
49.1	24.21	-12	36.21	V
144.4	22.03	-17.1	39.13	H
297.0	22.96	-10.9	33.86	H
673.0	30.38	-2.8	33.18	V

Ch1 1GHz~3GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2172.4	49.18	12.2	36.98	H
2304.7	50.86	13.2	37.66	H

2564.0	52.08	15.2	36.88	H
2676.0	53.99	15.9	38.09	H
2799.0	52.87	16.6	36.27	V
2934.6	53.31	16.8	36.51	V

Ch1 3GHz~18GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3239.9	43.18	-7.3	50.48	V
4822.3	53.67	-4.8	58.47	H
7237.4	48.47	-2.2	50.67	V
9647.8	45.31	-0.7	46.01	V
12868.7	44.25	3.2	41.05	V
16515.8	46.65	8.3	38.35	V

Ch11 30MHz~1GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
32.2	24.16	-14.3	38.46	V
39.9	31.29	-12.8	44.09	V
49.2	24.16	-12	36.16	V
142.6	21.49	-17.1	38.59	H
298.8	23.16	-10.9	34.06	H
687.6	31.25	-2.9	34.15	V

Ch11 1GHz~3GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2154.0	49.02	12.1	36.92	H
2293.9	50.11	13.2	36.91	H
2573.9	53.08	15.3	37.78	V
2668.0	52.88	15.9	36.98	V
2790.6	53.6	16.5	37.1	V
2932.8	53.21	16.8	36.41	V

Ch11 3GHz~18GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3300.0	39.68	-7.3	46.98	V
4922.7	46.44	-4.5	50.94	H
7385.0	49.31	-2.2	51.51	V
10384.3	43.91	0.5	43.41	H
12929.3	43.52	3.4	40.12	H
16910.9	46.68	8.9	37.78	H

11n(40M) mode

Ch3 30MHz~1GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
32.1	24.39	-14.3	38.69	V
40.7	29.68	-12.8	42.48	V
49.8	23.57	-11.9	35.47	V
143.4	21.76	-17.1	38.86	H
297.7	23	-10.9	33.9	H
683.7	31.4	-2.8	34.2	V

Ch3 1GHz~3GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2258.1	50.86	12.9	37.96	H
2553.4	52.33	15.2	37.13	H
2626.9	52.44	15.7	36.74	V
2705.8	52.8	15.9	36.9	V
2796.4	53.87	16.6	37.27	H
2903.3	53.95	16.7	37.25	V

Ch3 3GHz~18GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3240.0	42.85	-7.3	50.15	V

4843.1	49.22	-4.7	53.92	H
7261.8	46.73	-2.2	48.93	V
9411.5	42.81	-0.1	42.91	H
11839.8	44.5	2	42.5	H
14329.0	44.98	5.3	39.68	H

Ch9 30MHz~1GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
32.1	23.09	-14.3	37.39	V
40.2	31.11	-12.8	43.91	V
49.5	22.72	-11.9	34.62	V
144.7	21.7	-17.1	38.8	H
300.8	22.93	-10.9	33.83	H
692.6	30.45	-2.9	33.35	V

Ch9 1GHz~3GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2270.0	49.73	13	36.73	H
2574.3	52.84	15.3	37.54	V
2666.5	53.85	15.9	37.95	H
2751.3	53.24	16.2	37.04	H
2826.0	53.98	16.6	37.38	H
2921.3	53.62	16.8	36.82	H

Ch9 3GHz~18GHz

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3239.9	43.4	-7.3	50.7	V
4900.5	45.6	-4.7	50.3	H
7350.5	46.07	-2.1	48.17	V
9348.8	42.93	-0.2	43.13	V
11676.0	43.79	2.1	41.69	H

14229.0	45.1	5.1	40	V

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

6.8. AC Powerline Conducted Emission

6.8.1 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.

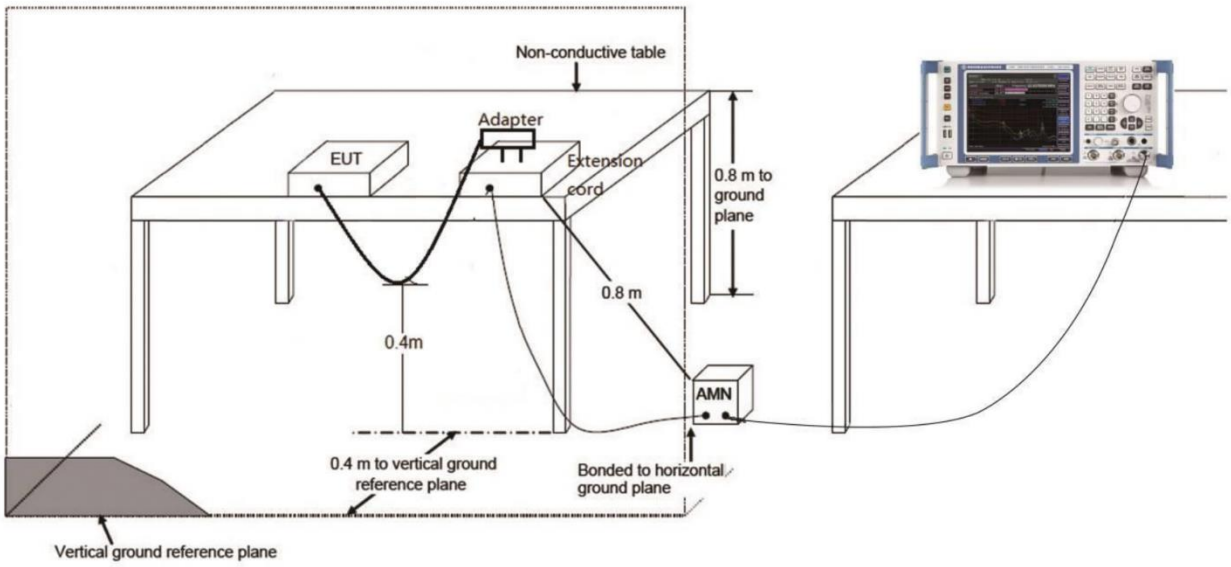
2 If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be remaximized at the final test location before final ac power-line conducted emission measurements are performed.

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.

6.8.2 Test Setup



6.8.3 Test Condition

Voltage（V）	Frequency（Hz）
120	60

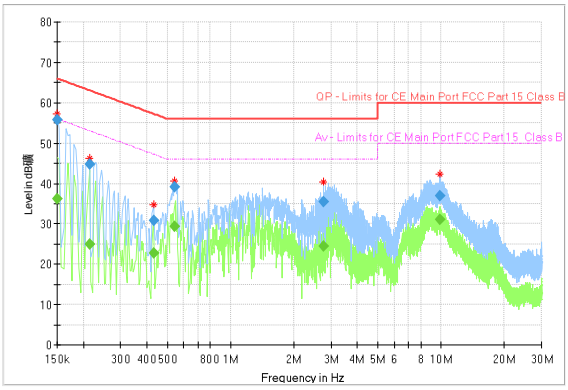
Measurement Result and limit:

(Quasi-peak-average Limit)

Mainly Supply

CA02

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.			

CA02	/
	/

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	---	36.20	56.00	19.80	15000.0	9.000	L1	ON	9.6
0.150000	55.71	---	66.00	10.29	15000.0	9.000	L1	ON	9.6
0.213431	---	25.06	53.07	28.01	15000.0	9.000	L1	ON	9.6
0.213431	44.67	---	63.07	18.40	15000.0	9.000	L1	ON	9.6
0.429844	---	22.72	47.26	24.54	15000.0	9.000	N	ON	9.6
0.429844	30.94	---	57.26	26.31	15000.0	9.000	N	ON	9.6
0.541781	---	29.43	46.00	16.57	15000.0	9.000	N	ON	9.6
0.541781	39.19	---	56.00	16.81	15000.0	9.000	N	ON	9.6
2.765606	---	24.36	46.00	21.64	15000.0	9.000	N	ON	9.7
2.765606	35.51	---	56.00	20.49	15000.0	9.000	N	ON	9.7
9.892294	---	31.14	50.00	18.86	15000.0	9.000	N	ON	9.9
9.892294	37.05	---	60.00	22.95	15000.0	9.000	N	ON	9.9

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	2021-05-10	1 year
2	DC Power Supply	ZUP60-14	LOC-220Z006-0007	TDL-Lambda	2021-05-10	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	2021-05-10	1 year
2	EMI Test Receiver	ESU40	100307	R&S	2021-03-03	1 year
3	TRILOG Broadband Antenna	VULB9163	VULB9163-515	Schwarzbeck	2021-02-03	2 years
4	Double- ridged Waveguide Antenna	ETS-3117	00135890	ETS	2020-02-28	3 years
5	Universal Radio Communication Tester	CMW500	104178	R&S	2021-05-10	1 year
6	EMI Test Software	EMC32 V 9.15.00	N/A	R&S	N/A	N/A

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 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 12th day of April 2021.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3682.01
Valid to February 28, 2023

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

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