



TEST REPORT

Report Number: C21T00027-SRD03-V01

Applicant	Cipia Vision Ltd
Product Name	Cipia-FS10
Model Name	FS10-LOC / FS10-LOC-ADS
Brand Name	Cipia
FCC ID	2AZIQFS10L
IC	27633-FS10L

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

Reviewed by

Approved by

Issue Date

2021-09-30

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
C21T00027-SRD03-V00	00	2021-08-30	Initial creation of test report
C21T00027-SRD03-V01	01	2021-09-30	1.Update the calibration information. 2.Add block diagram to all items. 3.ADD requirement at clause4.2. 4.Modify the IC ID.

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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 Designation No.	CN0067

Subcontracting Lab #1:

Company Name	N/A
Address	N/A

1.2. Testing Environment

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

1.3. Project Information

Project Leader	Chen Minfei
Testing Start Date	2021-03-23
Testing End Date	2021-08-06



2. Client Information

2.1. Applicant Information

Company Name	Cipia Vision Ltd
Address	Maskit 8th st. Hertzelia, Israel
Telephone	+972-77-5047760

2.2. Manufacturer Information

Company Name	Cipia Vision Ltd
Address	Maskit 8th st. Hertzelia, Israel
Telephone	+972-77-5047760

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

3.1. About EUT

Product Name	Cipia-FS10
Model name	FS10-LOC / FS10-LOC-ADS
Supported Radio Technology and Bands	BT5.0 WLAN 802.11b,g,n WLAN 802.11a,n,ac
Hardware Version	Revision D
Software Version	0.0.0.19B
FCC ID	2AZIQFS10L
IC	27633-FS10L

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of Receipt
N01	N/A	Revision D	0.0.0.19B	2021-03-15
N02	N/A	Revision D	0.0.0.19B	2021-04-14
N22	N/A	Revision D	0.0.0.19B	2021-07-20

*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	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.	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
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	2019

4.2. Reference Information from client

Antenna gain Information of the test sample provided by Toast, Incorporated.

Maximum of Antenna Gain: 1.82 dBi

Note: The product FS10-LOC / FS10-LOC-ADS use a PIFA antenna and doesn't allow Manufacturer change the design.

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	15.247/15.205/1 5.209	RSS-Gen 8.9,8.10	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	24V
Humidity	Hnom	48%
Air Pressure	Anom	1010hPa

Note:

- a. All the test data for each data were verified, but only the worst case was reported.

5.2. Statements

The FS10-LOC / FS10-LOC-ADS manufactured by Cipia Vision Ltd, Incorporated are new products for testing.

This project have two sets of configured sample N01(N02)/N22, and we mainly tested sample N01(N02)tested the worst mode, the main difference is as below:

Mainly Supply	FS10-LOC	(N01/N02)
Secondary Supply	FS10-LOC-ADS	Add ADAS(N22)

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 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 k
Ground system resistance	< 0.5

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

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

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

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 k
Ground system resistance	< 0.5
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

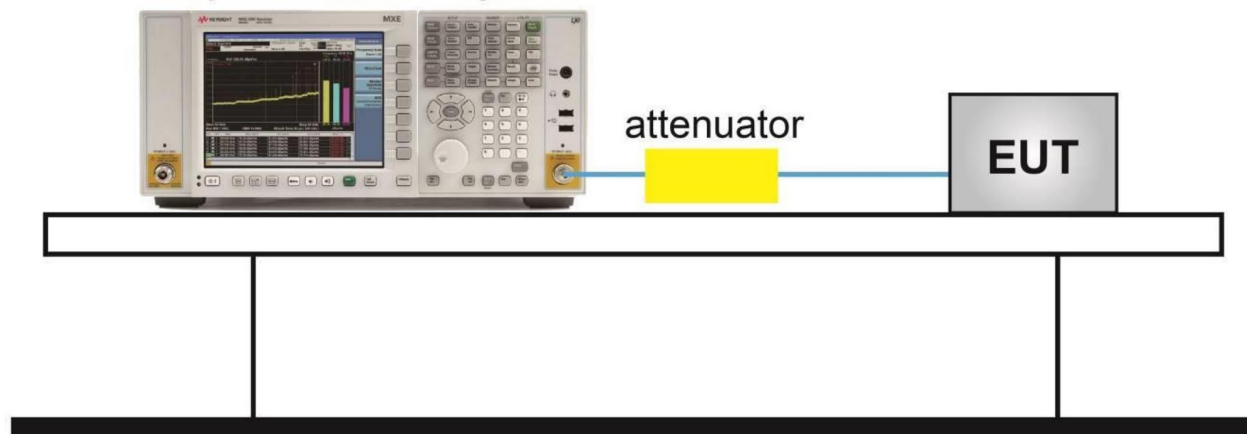
Standard	Limit(dBm)
FCC 47 Part 15.247(b) (3)	<30
RSS-247 5.4(d)	<30

6.1.2 Test procedure

The measurement is according to ANSI C63.10 clause 11.9.

- Set span to at least 1.5 times the OBW.
- Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
- Set VBW $\geq 3 \times$ RBW.
- Number of points in sweep $\geq 2 \times$ span / RBW. (This gives bin-to-bin spacing $\leq$ RBW/2, so that narrowband signals are not lost between frequency bins.)
- Sweep time = auto.
- Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
- If transmit duty cycle < 98 %, use a sweep trigger with the level set to enable triggering only on full power pulses. The transmitter shall operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 %, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run” .
- Trace average at least 100 traces in power averaging (i.e., RMS) mode.i) Compute power by integrating the spectrum across the OBW of the signal using the instrument’ s band power measurement function, with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

Spectrum Analyzer



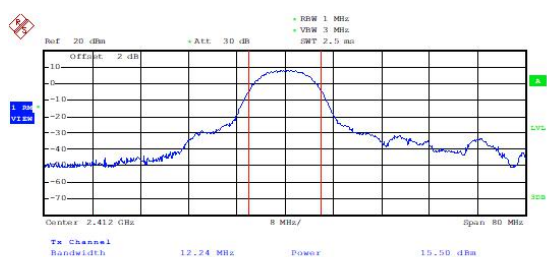
Maximum Average Output Power-conducted Measurement Results

Mode	Channel	Conducted (dBm)	E. I.R.P(dBm)	Duty cycle factor (dB)
802.11b	2412	15.94	17.76	0.45
	2437	16.13	17.95	0.46
	2462	16.29	18.11	0.44
802.11g	2412	14.95	16.77	0.31
	2437	14.98	16.8	0.29
	2462	15.17	17.52	0.30
802.11n(20MHz)	2412	12.48	14.3	0.31
	2437	12.33	14.15	0.33
	2462	12.52	14.37	0.32

Conclusion: PASS

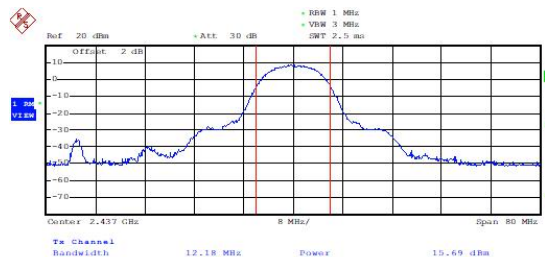
TEST PLOTS:

Output Power-Conducted (802.11b, Ch1)



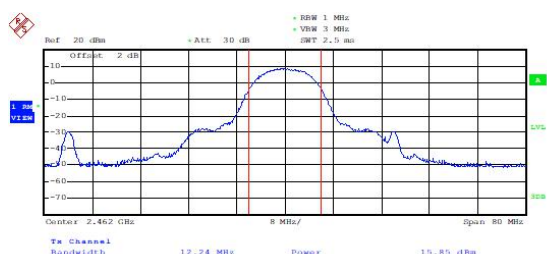
Date: 23.APR.2021 11:12:22

Output Power-Conducted (802.11b, Ch6)



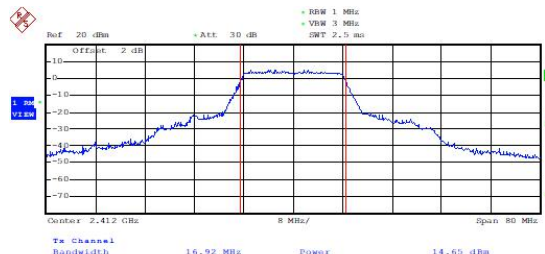
Date: 23.APR.2021 11:15:20

Output Power-Conducted (802.11b, Ch11)



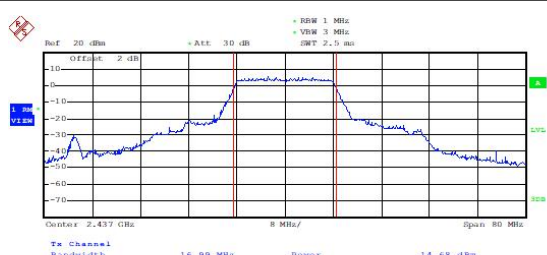
Date: 23.APR.2021 11:17:04

Output Power-Conducted (802.11g, Ch1)



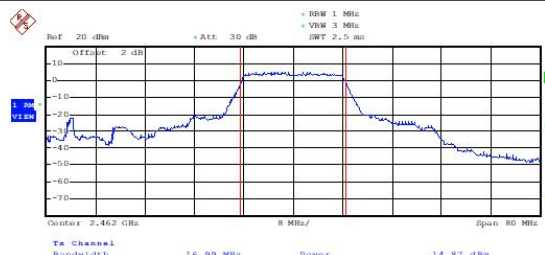
Date: 23.APR.2021 11:20:39

Output Power-Conducted (802.11g, Ch6)



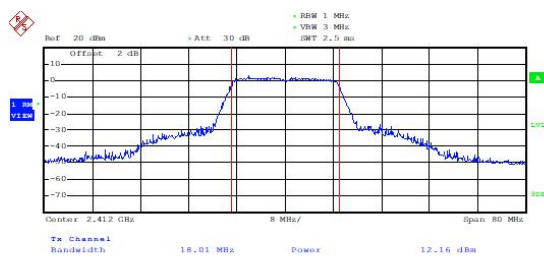
Date: 23.APR.2021 11:23:49

Output Power-Conducted (802.11g, Ch11)



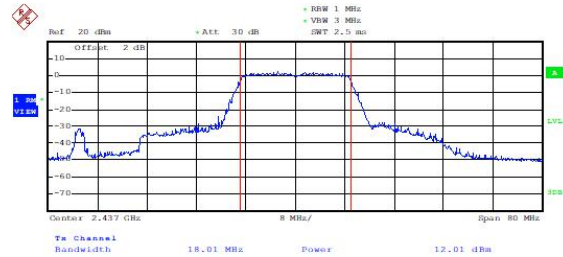
Date: 23.APR.2021 11:25:49

Output Power-Conducted (802.11n-HT20, Ch1)



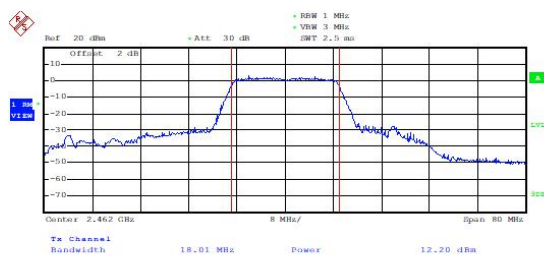
Date: 23.APR.2021 11:28:18

Output Power-Conducted (802.11n-HT20, Ch6)



Date: 23.APR.2021 11:29:44

Output Power-Conducted (802.11n-HT20, Ch11)



Date: 23.APR.2021 11:31:02

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/

6.2. Peak Power Spectral Density

6.2.1 Measurement Limit

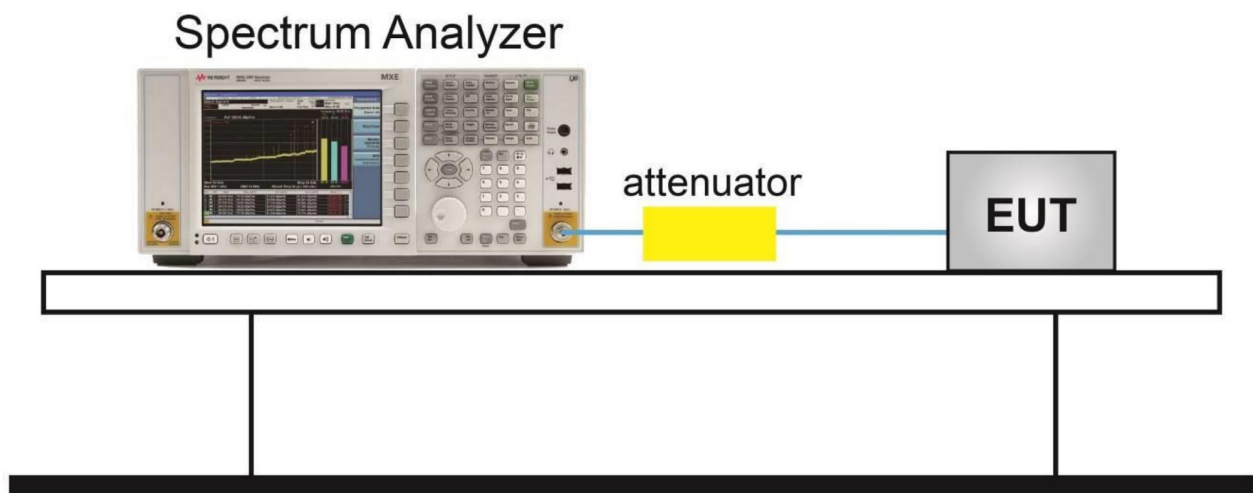
Standard	Limit
FCC 47 Part 15.247(e)	$\leq 8\text{dBm}/3\text{ KHz}$
RSS-247 5.2(b)	$\leq 8\text{dBm}/3\text{ kHz}$

6.2.2 Test procedures

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

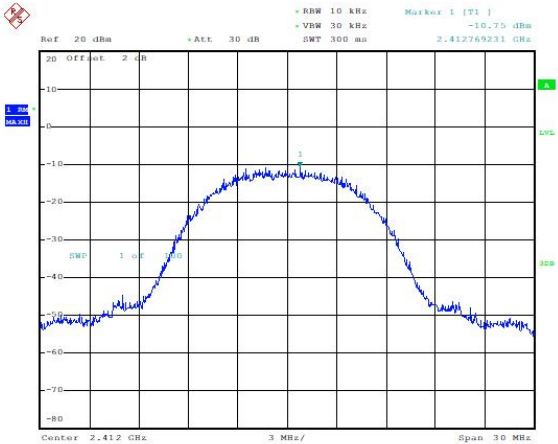
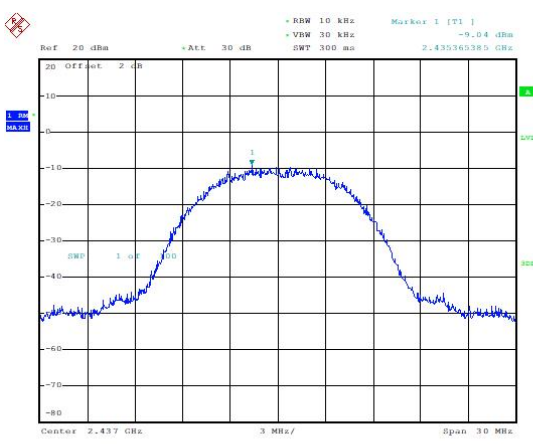
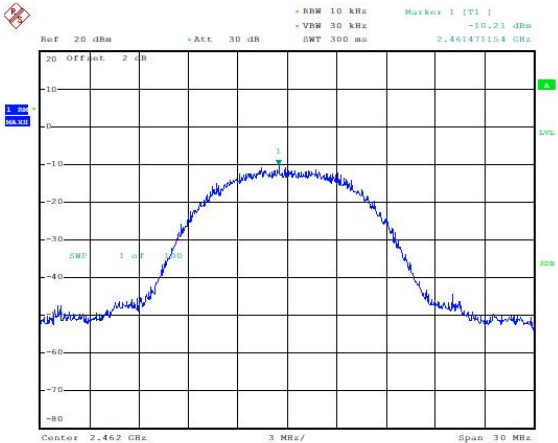
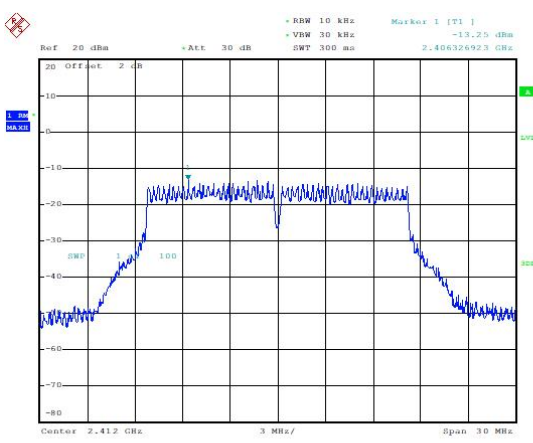
1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Set analyzer center frequency to DTS channel center frequency.
4. Set the span to 1.5 times the DTS bandwidth.
5. Set the RBW=3kHz
6. Set the VBW $\geq [3 \times \text{RBW}]$.
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.

6.2.3. Test Setup



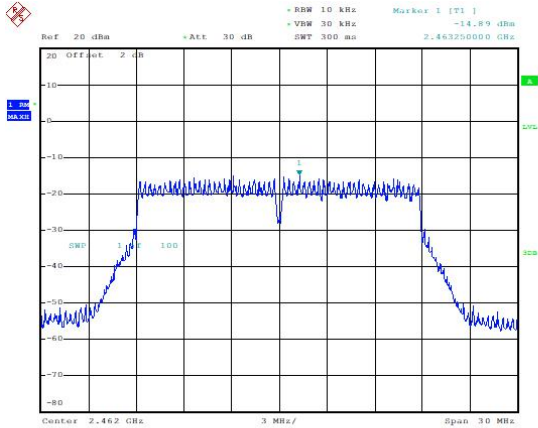
Measurement Results:

Power Spectral	-10.748	Power Spectral Density(dBm/3kHz)	-9.040
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Density(dBm/3kHz) (802.11b, Ch1)		(802.11b, Ch6)	
 Date: 23.APR.2021 11:32:18		 Date: 23.APR.2021 11:59:05	
Power Spectral Density (dBm/3kHz) (802.11b, Ch11)	-10.214	Power Spectral Density (dBm/3kHz) (802.11g, Ch1)	-13.251
 Date: 23.APR.2021 13:57:31		 Date: 23.APR.2021 13:59:39	

Power Spectral Density (dBm/3kHz)	-13.390	Power Spectral Density (dBm/3kHz) (802.11g, Ch11)	-12.916
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(802.11g, Ch6)			
Date: 23.APR.2021 14:00:41		Date: 23.APR.2021 14:02:09	
Power Spectral Density (dBm/3kHz) (802.11n-20MHz, Ch1)		Power Spectral Density (dBm/3kHz) (802.11n-20MHz, Ch6)	
Date: 23.APR.2021 14:03:40		Date: 23.APR.2021 14:04:59	
-15.460		-15.957	

Power Spectral Density (dBm/3kHz) (802.11n-20MHz, Ch11)	-14.570	/
 Ref: 20 dBm Att: 30 dB RBW: 10 kHz VBW: 30 kHz SWT: 300 ms Marker 1 [T1] -14.57 dBm 2.463250000 GHz Center: 2.462 GHz Span: 30 MHz Date: 20.APR.2021 14:11:31		

6.3. Occupied 6dB Bandwidth

6.3.1 Measurement Limit

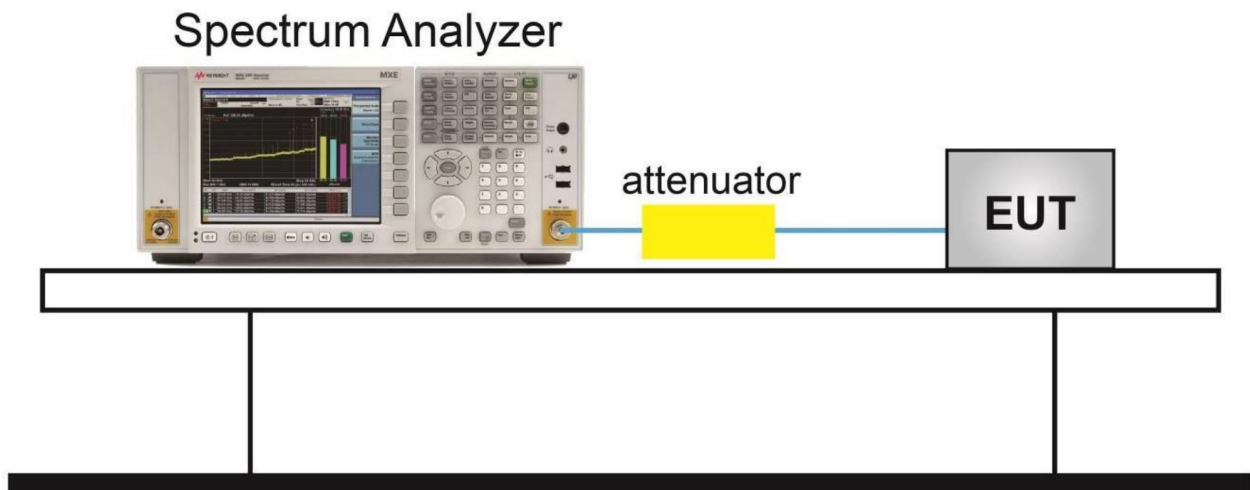
Standard	Limit(KHz)
FCC 47 Part 15.247(a) (2)	≥ 500
RSS-247 5.2(a)	$\geq 500\text{kHz}$

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 $\geq [3 \times \text{RBW}]$.
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.

6.3.3 Test Setup



Measurement Results

Mode	Test Result (MHz)		
	2412MHz (Ch1)	2437MHz (Ch6)	2462MHz (Ch11)
802.11b	8.08	8.33	8.14
802.11g	16.47	16.54	16.54
802.11n(20MHz)	17.76	17.76	17.76

Conclusion: PASS

Test graphs as below

Occupied 6dB Bandwidth (MHz) (802.11b, Ch1)	8.08	Occupied 6dB Bandwidth (MHz) (802.11b, Ch6)	8.33
Date: 22.APR.2021 18:15:27		Date: 22.APR.2021 18:16:50	
Occupied 6dB Bandwidth (MHz) (802.11b, Ch11)	8.14	Occupied 6dB Bandwidth (MHz) (802.11g, Ch1)	16.47
Date: 22.APR.2021 18:17:45		Date: 22.APR.2021 18:18:54	

Occupied 6dB Bandwidth (MHz) (802.11g, Ch6)	16.54	Occupied 6dB Bandwidth (MHz) (802.11g, Ch11)	16.54
Date: 22.APR.2021 18:20:08		Date: 22.APR.2021 18:20:32	
Occupied 6dB Bandwidth (MHz) (802.11n-20MHz, Ch1)	17.76	Occupied 6dB Bandwidth (MHz) (802.11n-20MHz, Ch6)	17.76
Date: 22.APR.2021 18:25:18		Date: 22.APR.2021 18:26:07	

Occupied 6dB Bandwidth (MHz) (802.11n-20MHz, Ch11)	17.76	/
RBW 100 kHz Max Res 3 [T1] VBW 300 kHz -11.59 dBm SWP 15 MHz 2.470846154 GHz Ref 20 dBm Att 30 dB 20 Off 2 dB 10 -11.59 dBm 0 -11.59 dBm -10 -11.59 dBm -20 -11.59 dBm -30 -11.59 dBm -40 -11.59 dBm -50 -11.59 dBm -60 -11.59 dBm -70 -11.59 dBm -80 -11.59 dBm Center 2.462 GHz 4 MHz/Div Span 40 MHz Date: 22.APR.2021 16:27:11		

6.4. 99% Occupied Bandwidth

6.4.1 Measurement Limit

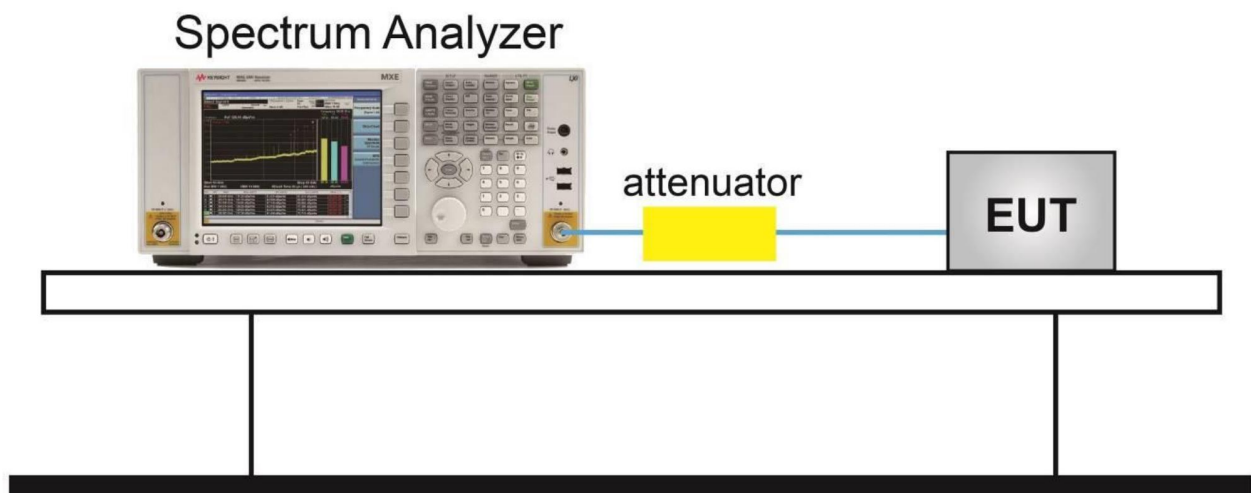
Standard	Limit(KHz)
RSS-Gen 6.7	N/A

6.4.2 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 $\geq [3 \times \text{RBW}]$.
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.

6.4.3. Test Setup



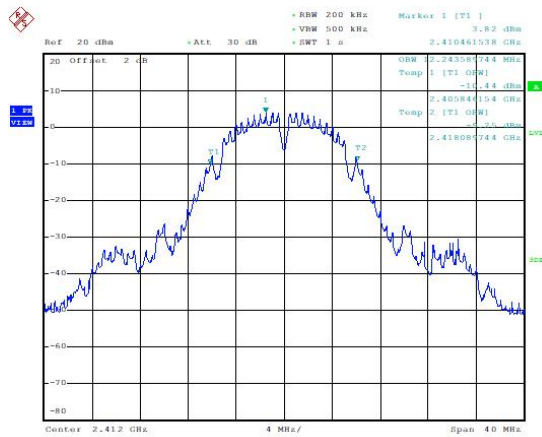
Measurement Result

Mode	Test Result (MHz)		
	2412MHz (Ch1)	2437MHz (Ch6)	2462MHz (Ch11)
802.11b	12.244	12.179	12.244
802.11g	16.923	16.987	16.987
802.11n(20MHz)	18.013	18.013	18.013

Conclusion: PASS

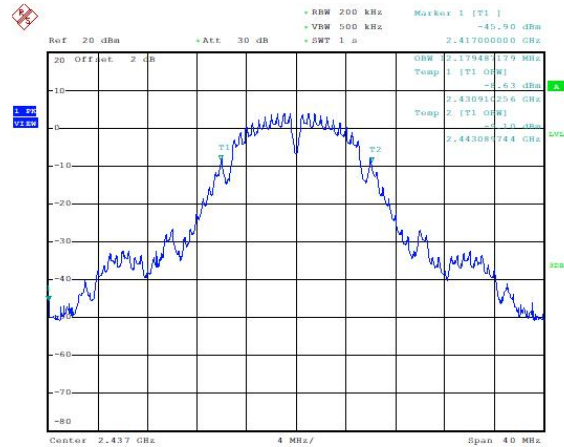
Test graphs as below

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



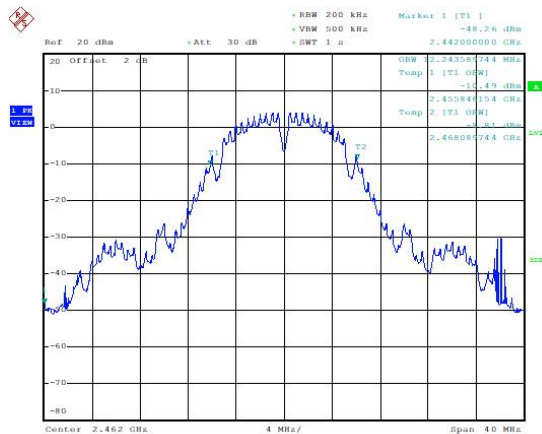
Date: 23.APR.2021 10:26:08

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



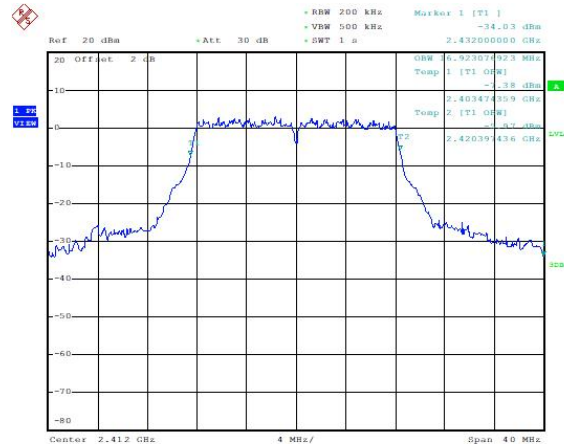
Date: 23.APR.2021 10:27:15

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



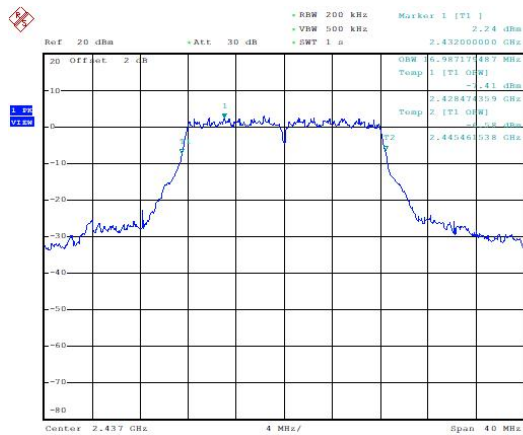
Date: 23.APR.2021 10:31:16

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



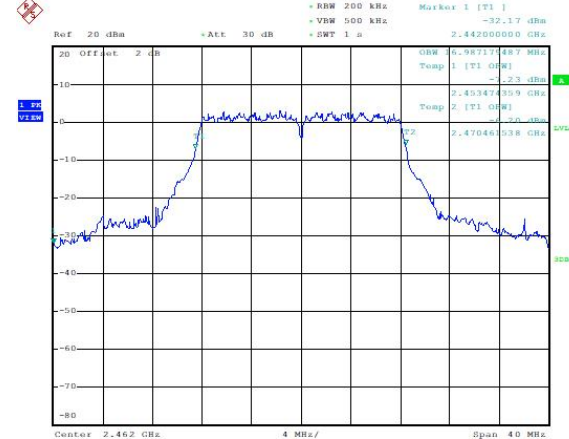
Date: 23.APR.2021 10:33:10

99% Occupied Bandwidth (802.11g, Ch6) 16.987 MHz



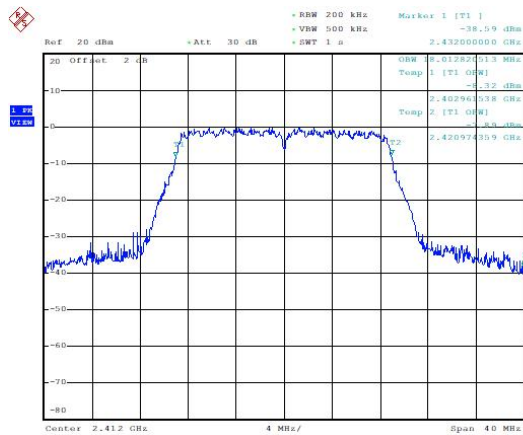
Date: 23.APR.2021 10:34:42

99% Occupied Bandwidth (802.11g, Ch11) 16.987 MHz



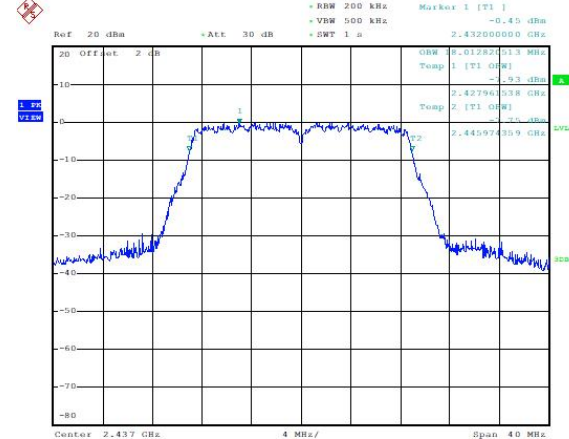
Date: 23.APR.2021 10:36:09

99% Occupied Bandwidth (802.11n20, Ch1) 18.013 MHz



Date: 23.APR.2021 10:37:55

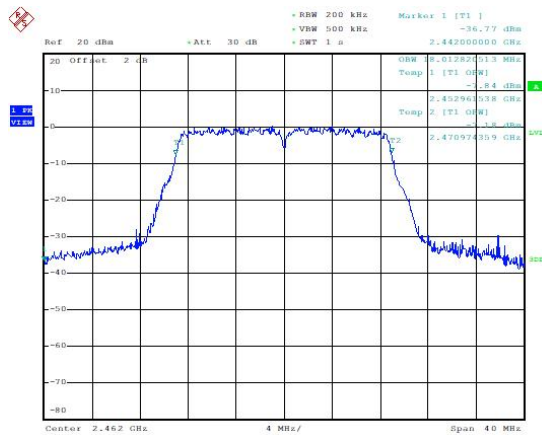
99% Occupied Bandwidth (802.11n20, Ch6) 18.013 MHz



Date: 23.APR.2021 10:39:14

99% Occupied Bandwidth (802.11n20, Ch11)
18.013 MHz

/



Date: 23.APR.2021 10:40:21

/

6.5. Band Edges Compliance

6.5.1 Measurement Limit

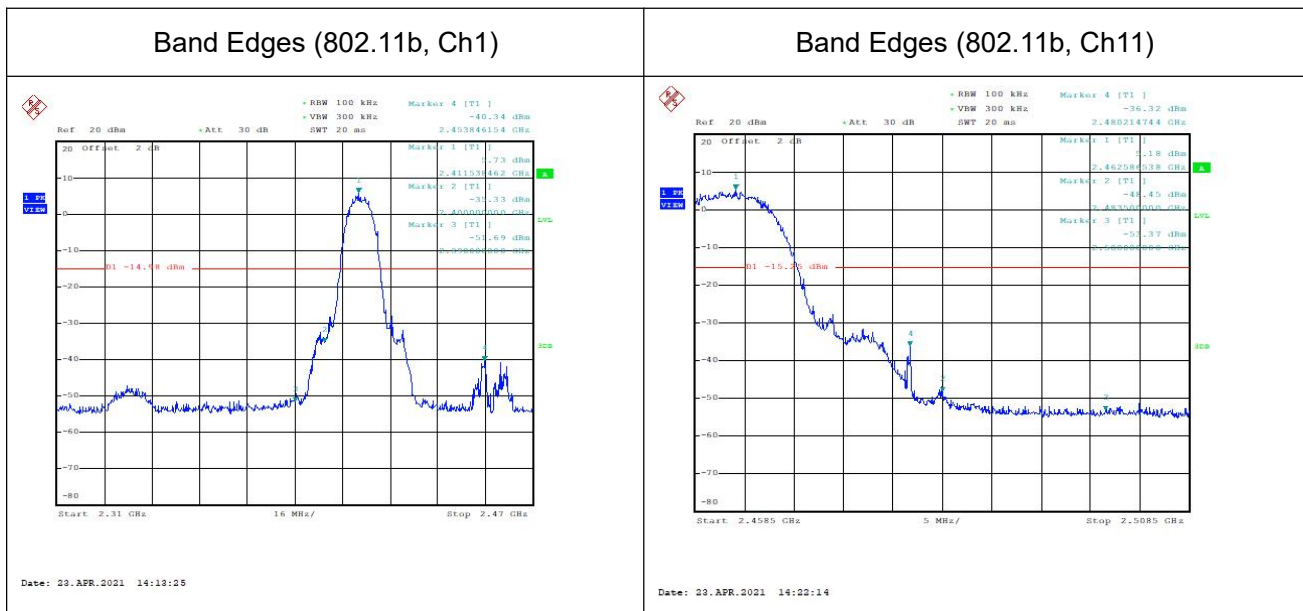
Standard	Limited(dBc)
FCC 47 Part 15.247(d)	>20
RSS-247 5.5	>20

6.5.2 Test procedures

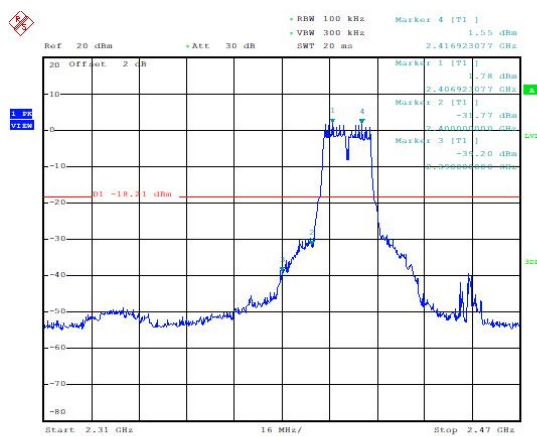
The measurement is according to ANSI C63.10 clause 11.13.

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. $VBW \geq [3 \times RBW]$.
7. Detector = peak.
8. Sweep time = auto.
9. Trace mode = max hold.
10. Allow sweep to continue until the trace stabilizes

Measurement results

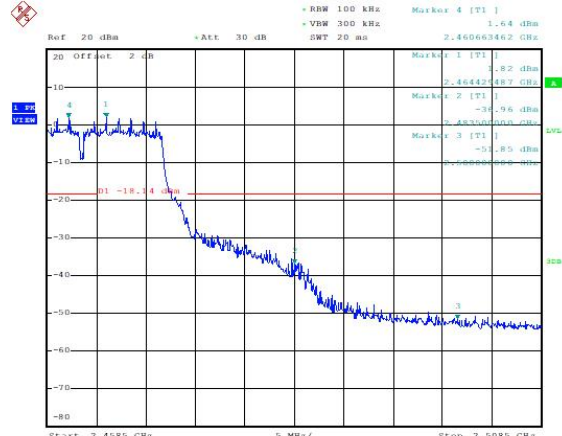


Band Edges (802.11g, Ch1)



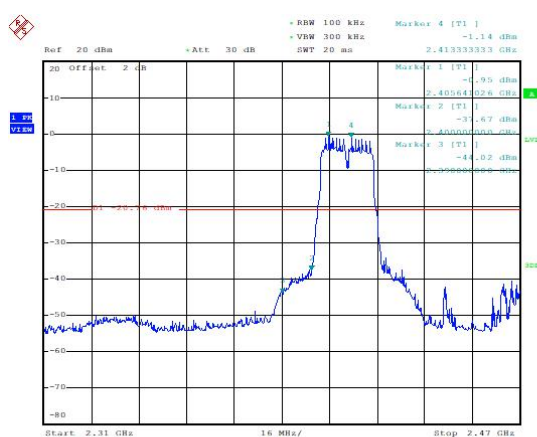
Date: 23.APR.2021 14:26:18

Band Edges (802.11g, Ch11)



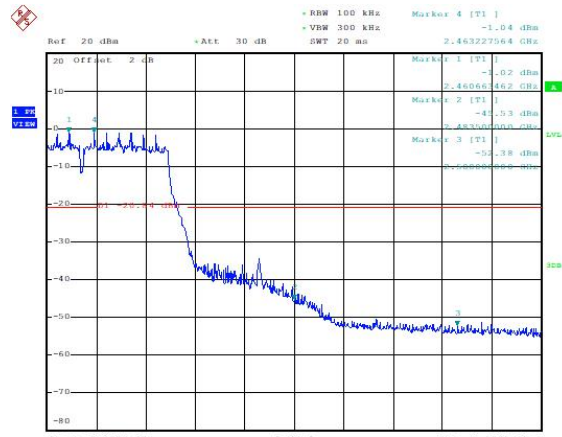
Date: 23.APR.2021 14:24:59

Band Edges (802.11n-20MHz, Ch1)



Date: 23.APR.2021 14:37:56

Band Edges (802.11n-20MHz, Ch11)



Date: 23.APR.2021 14:44:20

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 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.

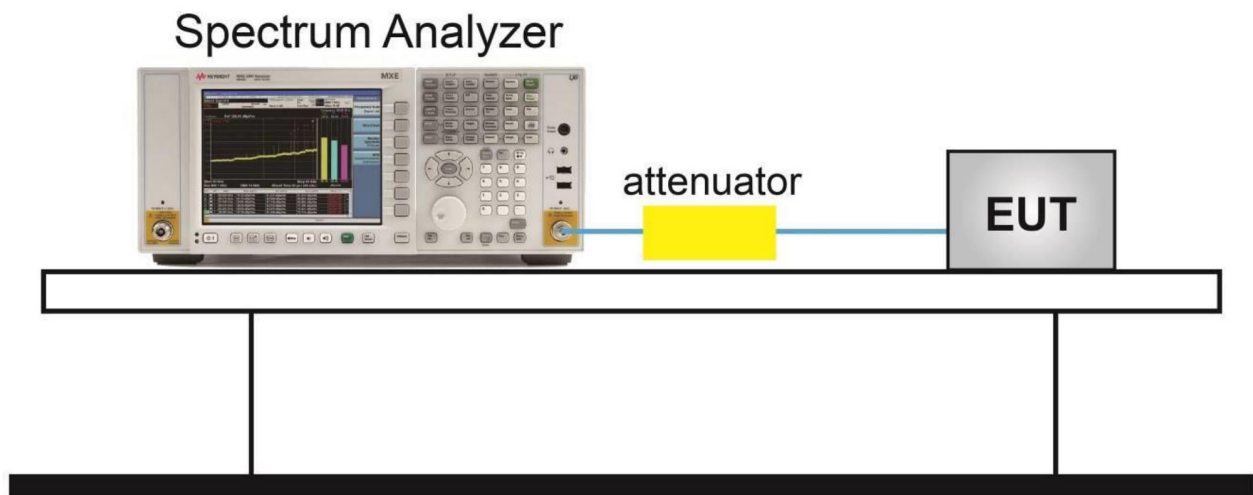
Reference level measurement

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 $\geq [3 \times \text{RBW}]$.
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

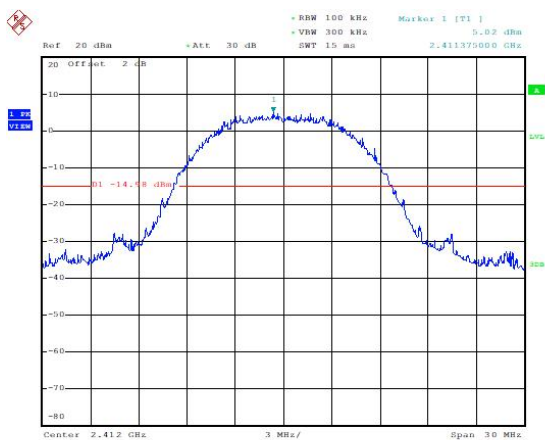
12. Set the center frequency and span to encompass frequency range to be measured.
13. Set the RBW = 100 kHz.
14. Set the VBW $\geq [3 \times \text{RBW}]$.
15. Detector = peak.
16. Sweep time = auto couple.
17. Trace mode = max hold.
18. Allow trace to fully stabilize.
19. Use the peak marker function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

6.6.3. Test Setup



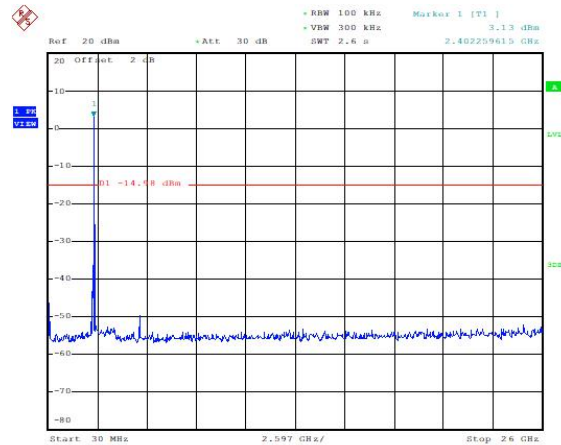
Measurement Results

Conducted Spurious Emission (802.11b, Ch1)



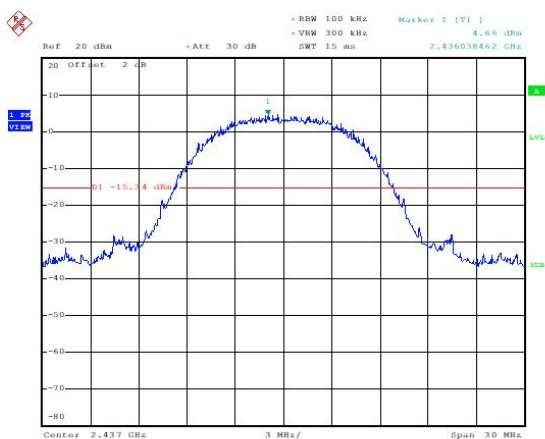
Date: 23.APR.2021 14:12:50

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



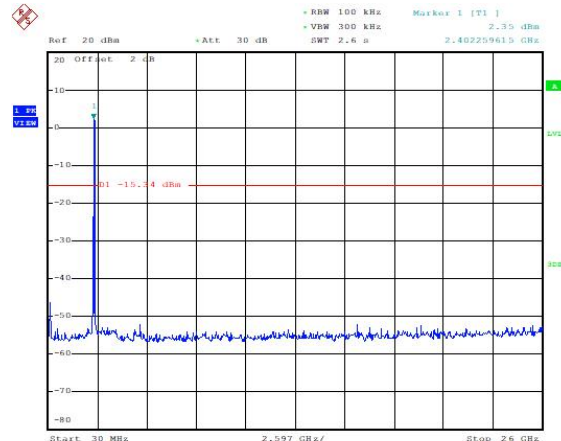
Date: 23.APR.2021 14:13:58

Conducted Spurious Emission (802.11b, Ch6)



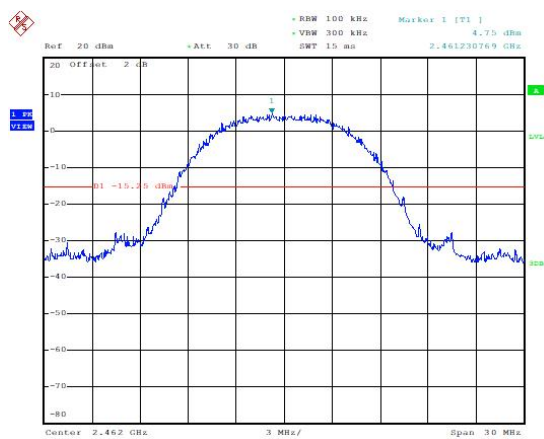
Date: 23.APR.2021 14:19:28

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



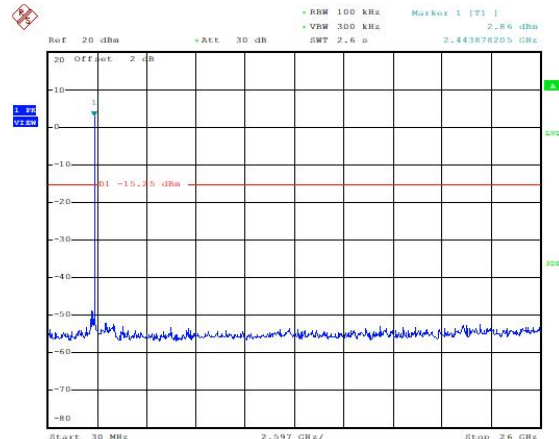
Date: 23.APR.2021 14:20:41

Conducted Spurious Emission (802.11b, Ch11)



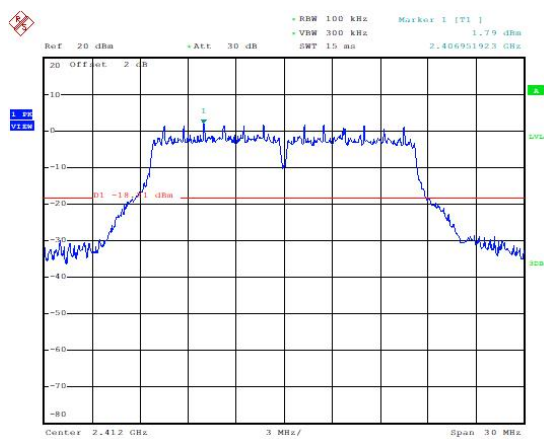
Date: 23.APR.2021 14:21:29

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



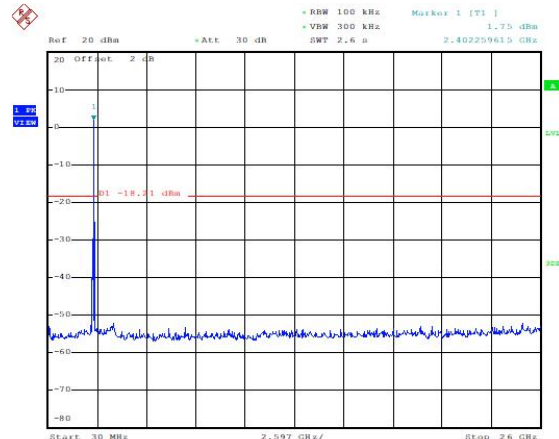
Date: 23.APR.2021 14:22:47

Conducted Spurious Emission (802.11g, Ch1)



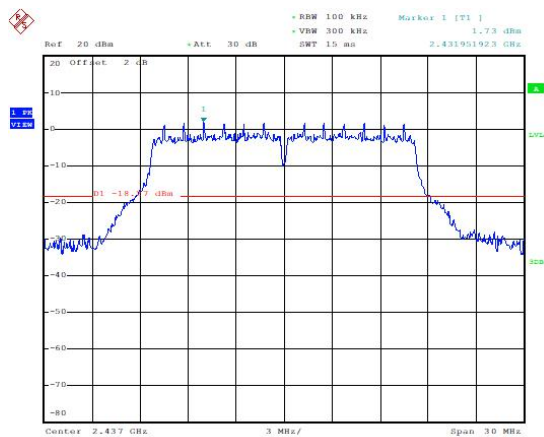
Date: 23.APR.2021 14:25:49

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



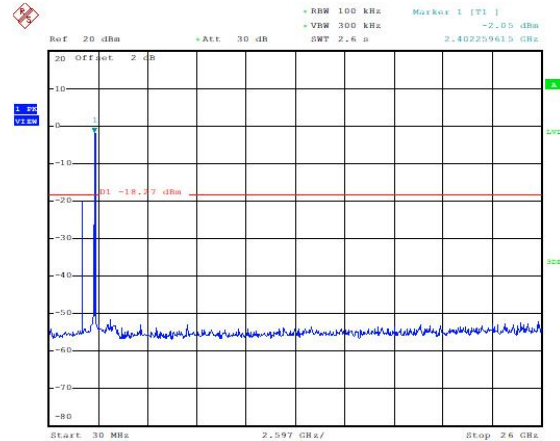
Date: 23.APR.2021 14:26:51

Conducted Spurious Emission (802.11g, Ch6)



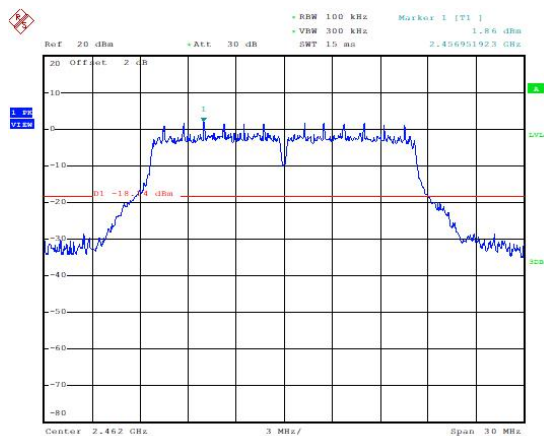
Date: 23.APR.2021 14:30:40

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



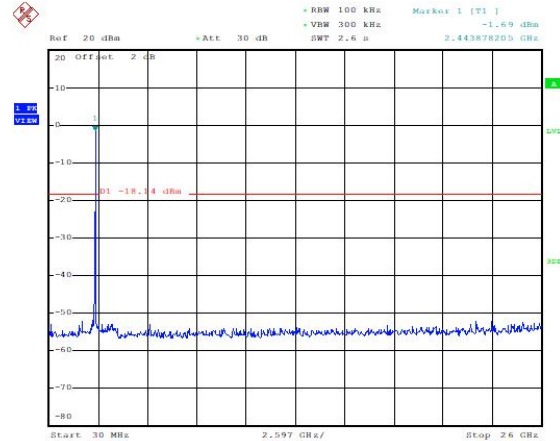
Date: 23.APR.2021 14:31:53

Conducted Spurious Emission (802.11g, Ch11)



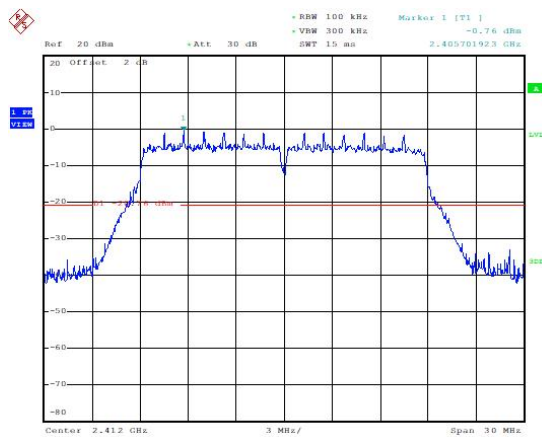
Date: 23.APR.2021 14:34:24

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



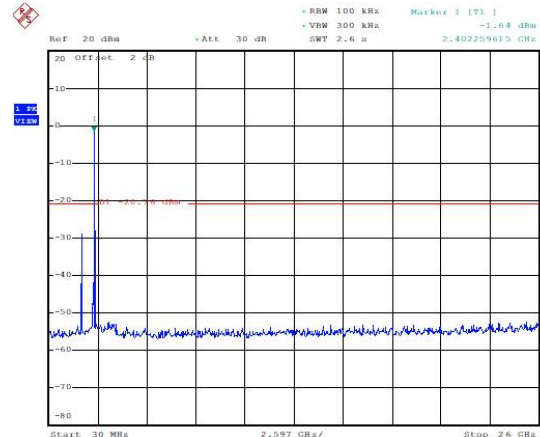
Date: 23.APR.2021 14:35:22

Conducted Spurious Emission (802.11n-20MHz, Ch1)



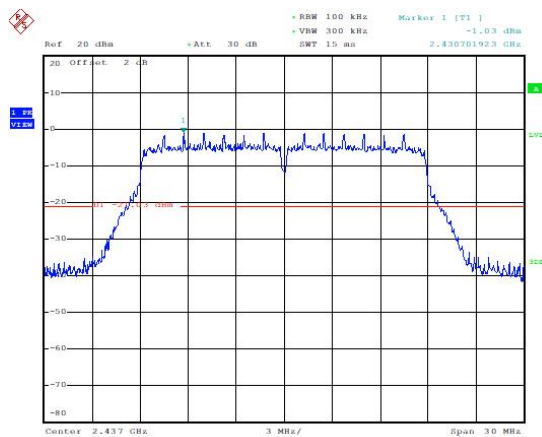
Date: 23.APR.2021 14:37:21

Conducted Spurious Emission (802.11n-20MHz, Ch1, 30MHz~26GHz)



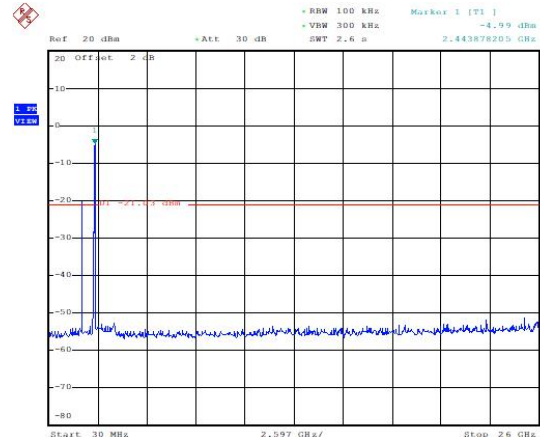
Date: 23.APR.2021 14:38:29

Conducted Spurious Emission (802.11n-20MHz, Ch6)



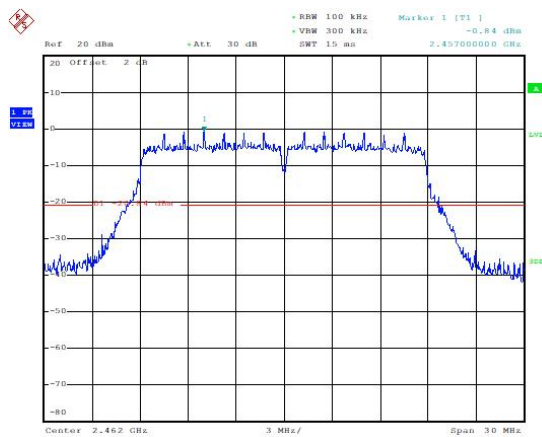
Date: 23.APR.2021 14:39:23

Conducted Spurious Emission (802.11n-20MHz, Ch6, 30MHz~26GHz)



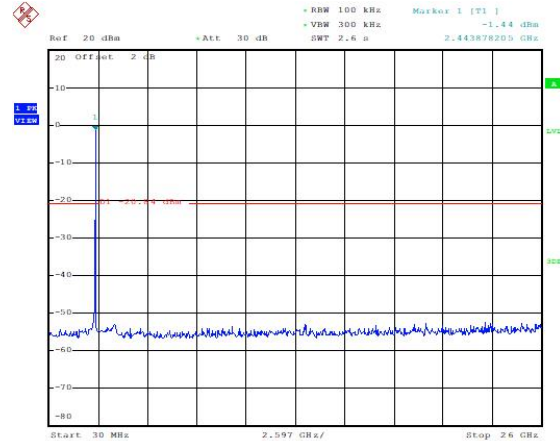
Date: 23.APR.2021 14:40:36

Conducted Spurious Emission (802.11n-20MHz, Ch11)



Date: 23.APR.2021 14:42:44

Conducted Spurious Emission (802.11n-20MHz, Ch11, 30MHz~26GHz)



Date: 23.APR.2021 14:44:50

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

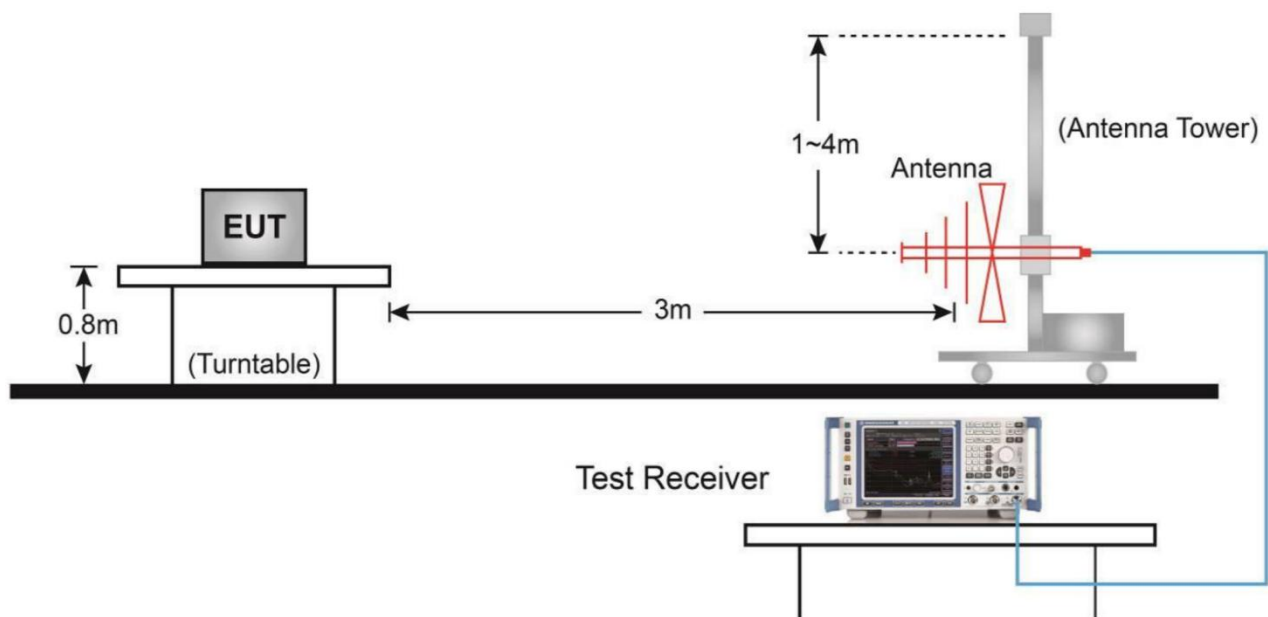
6.7.3 Test procedures

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.

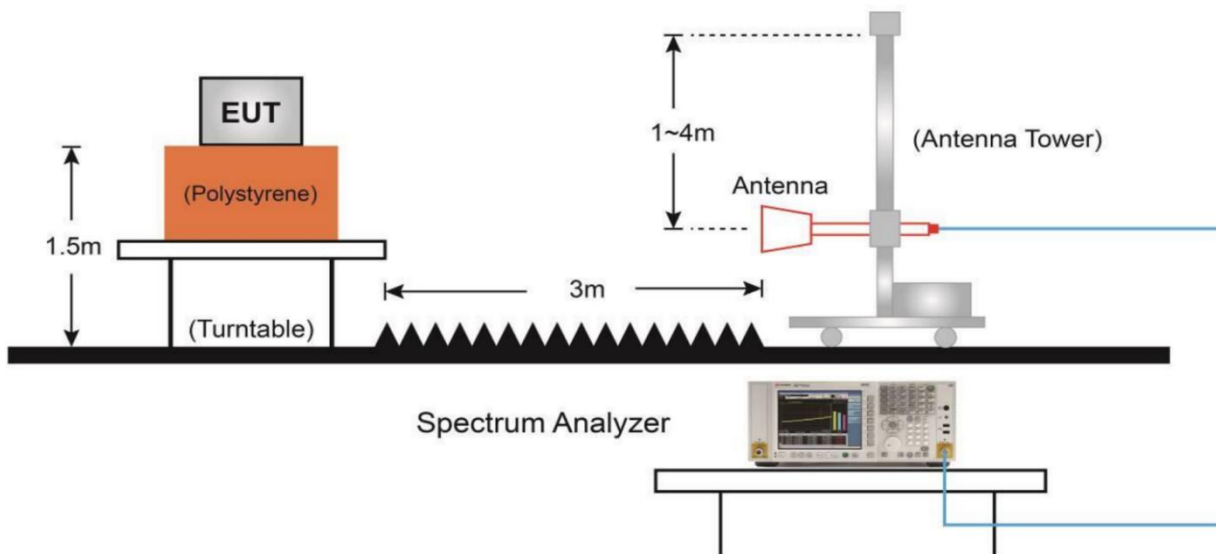
The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During testing, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emission from the EUT. This maximization process was repeated with the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

6.7.4. Test Setup

Below 1GHz Test Setup



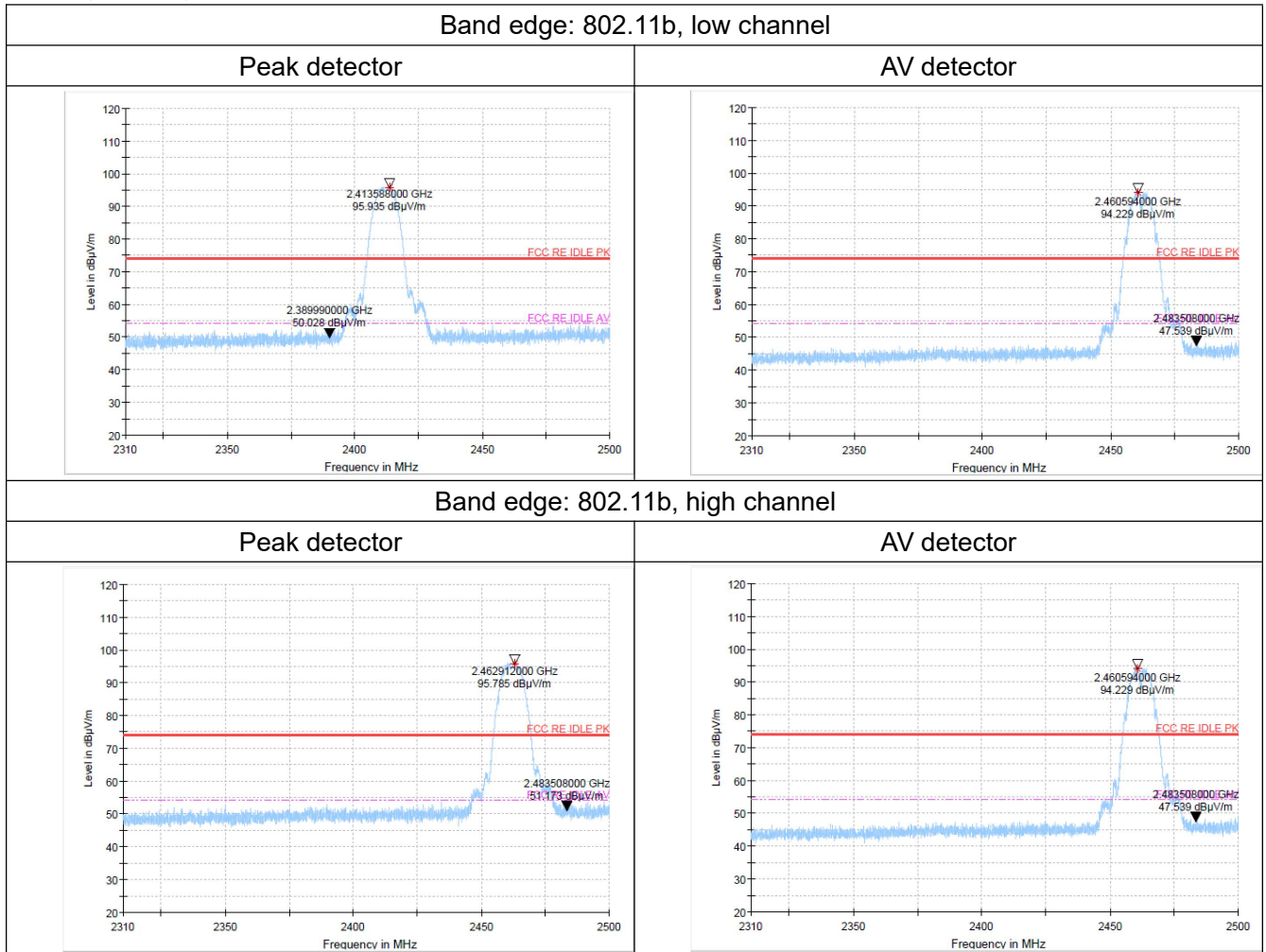
Above 1GHz Test Setup



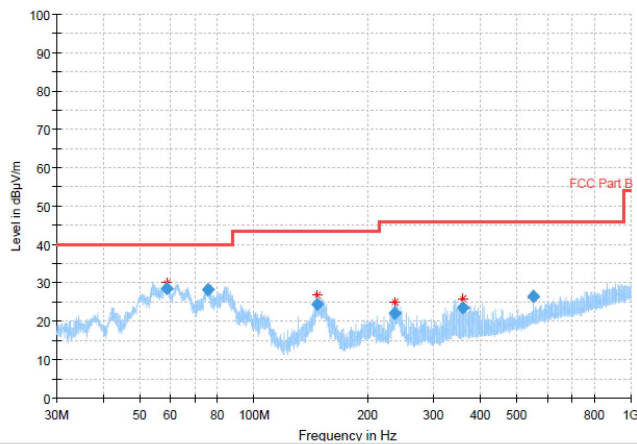
Frequency of emission (MHz)	RBW/VBW	Sweep Times (s)
30~1000	100KHz/300KHz	5
1000~4000	1MHz/3MHz	15
4000~18000	1MHz/3MHz	40
18000~26500	1MHz/3MHz	20

Measurement Results

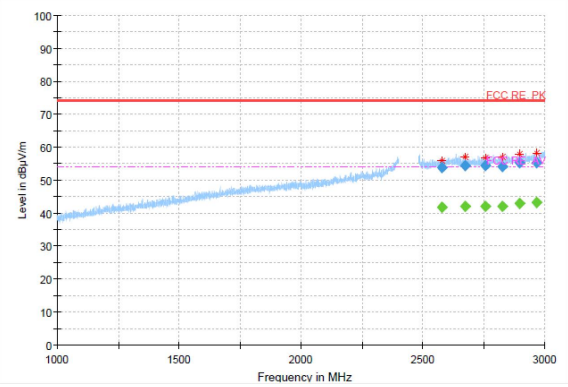
Mainly Supply-12V



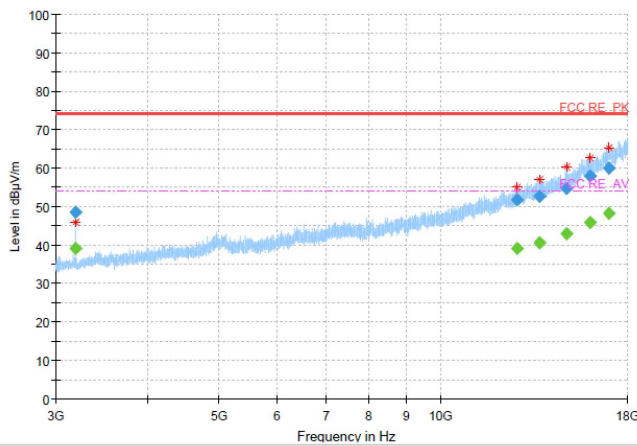
Radiated Spurious Emission
(802.11b, Ch11, 30MHz~1GHz)



Radiated Spurious Emission
(802.11b, Ch11, 1GHz~3GHz)



Radiated Spurious Emission
(802.11b, Ch11, 3GHz~18GHz)



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