

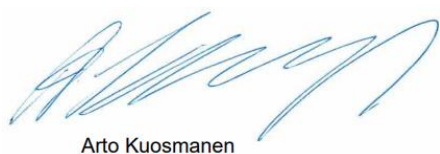
Radio Test Report

According to

**FCC part 15C,
RSS-247, RSS-Gen**

DUT Name: Mobilaris Companion WiFi
Model No. : Mobilaris Companion WiFi
Customer: Epiroc Rock Drills AB
Address: Sundsbacken 6, 97242 Luleå, Sweden
Summary IN COMPLIANCE
Date of Reception: 19.4.2023
Date(s) of Test(s): 16.5.2023 – 16.8.2023

Tested by Test Engineer


Arto Kuosmanen

Approved by Technical Manager


Jukka Rauma

The test report shall not be reproduced except in full, without the written approval of the laboratory. This report is only for the equipment which is described in page 4.

CONTENTS

1. General Information	4
2. Test Samples	5
3. Test mode output power	7
4. Test mode duty cycle	9
5. Configuration and Operation Modes	11
6. Test equipment	12
7. Uncertainties	12
8. Sample emission level calculation	13
9. Test conditions	14
10. Summary	17
11. Occupied bandwidth	18
12. 6 dB bandwidth	24
13. Peak conducted output power	30
14. Peak Power Spectral Density	36
15. Band edge emissions compliance (transmitter)	41
16. Tx spurious emissions, conducted	48
17. Tx spurious emissions, radiated	57
18. Receiver spurious emissions, radiated	82
19. Photographs – Equipment External	85
20. Photographs – Equipment Internal	88
21. Photographs – Test Setups	90

Document Version History	Date of issue	Comments	Approved by
v0.1	20.11.2023	Initial version	
v1.0	22.11.2023	Approved version	Jukka Rauma
v2.0	5.2.2024	Amendment1. Antenna gain changed to 3.3 dBi. EIRP result corrected accordingly. RSS-247 Issue 2 updated to Issue 3. No retesting required.	Jukka Rauma
v3.0	7.2.2024	Amendment2. 99% Occupied bandwidth results added.	Jukka Rauma

1. General Information

Test Engineers: Arto Kuosmanen, Pekka Pulkkinen

Location:

Test Firm Name	Eurofins Electric & Electronics Finland Oy (EEEF)
Test Site	Yrttipellontie, Peltola
Address of Test Site	Yrttipellontie 6, 90230 Oulu, Finland
FCC Designation number	FI0008
FCC site registration number	771880
ISED number	29576
CAB Identifier	T290

Customer: Epiroc Rock Drills AB

Andreas Karvonen

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Sundsbacken 6, 97242 Luleå, Sweden

Climate Conditions: Temperature: 15 - 35 °C

Air pressure: 860 - 1060 hPa

Humidity: 30-60 rH%

These limits were not exceeded during testing.

2. Test Samples

General description: Personal WiFi tag with rechargeable battery, capable of scanning BLE beacons.

Test sample (Conducted):

Sample number	Serial number	Manufacturer	DUT Type	Model	HW version	SW version
3121ER013	000101	ElectroTech Kalix AB	Personal WiFi Tag	Mobilaris Companion WiFi	466F	WIFI=3.1.0.26, BLE=5.50.00

Test sample (Radiated):

Sample number	Serial number	Manufacturer Personal WiFi Tag	DUT Type	Model	HW version	SW version
3121RER015	00104	ElectroTech Kalix AB	Personal WiFi Tag	Mobilaris Companion WiFi	466F	WIFI=3.1.0.26, BLE=5.50.00

Description	Information	
Model	Mobilaris Companion WiFi	
Brand Names(s)	Mobilaris Companion WiFi	
PMN	Companion WiFi	
HVIN	466F	
FVIN	WIFI=3.1.0.26, BLE=5.50.00	
HMN	Companion WiFi	
FCC ID	2A93V-466F	
IC ID	29959-466F	
Equipment type	End product	
Radio type	Transceiver	
- operating frequency range:	2400.0 MHz – 2483.5 MHz	
- Nominal Channel Bandwidth:	20 MHz	
Radio technology / type of equipment	IEEE 802.11b/g/n HT20	
Modulation:	CCK, DSSS, OFDM, 64-QAM	
Number of antennas	1	
Radio Module	Type	Wireless MCU
	Model	CC325S
	Manufacturer	Texas Instruments
	FCC ID	2A93V-466F
	IC ID	29959-466F
Antenna	Type	Integrated antenna
	Model	Inverted F
	Manufacturer	Mobilaris
	Gain	3.3 dBi
Supply voltage	120V/60 Hz (battery operated, $V_{Nom} = 5\text{ V}$)	
Type of Power source	AC/DC adapter, battery	
Operating Temperature	TNom = 20 °C, TMax = 60 °C, TMin = -20 °C	
Manufacturer	ElectroTech Kalix Industrigatan 13, 952 31, Kalix, Sweden	

3. Test mode output power

Information

Test information	
Measurement method	ANSI C63.10 11.9, 14.3

Test procedure
1. EUT set to test mode. 2. The peak power is measured with the wideband power sensor. 3. The power is measured for the lowest data rate on all three channels. 4. For the channel with the highest power the power is also measured for all data rates. 5. The data rate with the highest output power is selected for test mode.

Results

Results – DSSS/CCK			
Data rate [Mbps]	Power [dBm] Channel 2412 MHz	Power [dBm] Channel 2442 MHz	Power [dBm] Channel 2462 MHz
1	16.1	15.7	17
2	16.4	16	17.1
5.5	16.5	16.4	17.6
11	16.7	16.4	17.6

Results - OFDM			
Data rate [Mbps]	Power [dBm] Channel 2412 MHz	Power [dBm] Channel 2442 MHz	Power [dBm] Channel 2462 MHz
6	17.7	18.2	18.5
9	17.6	17.8	18.1
12	17.6	17.8	18.1
18	17.3	17.6	17.9
24	17.7	17.5	18.1
36	17.7	17.5	18.1
48	17.9	17.6	18.3
54	17.9	17.6	18.3

Results – HT20

MCS	Power [dBm]	Power [dBm]	Power [dBm]
	Channel 2412 MHz	Channel 2437 MHz	Channel 2462 MHz
0	17.6	17.6	18.1
1	17.6	17.6	18.1
2	17.3	17.6	18
3	17.4	17.5	17.9
4	17.3	17.6	17.8
5	17.6	17.6	18.1
6	17.6	17.5	18.1
7	17.6	17.3	18.1

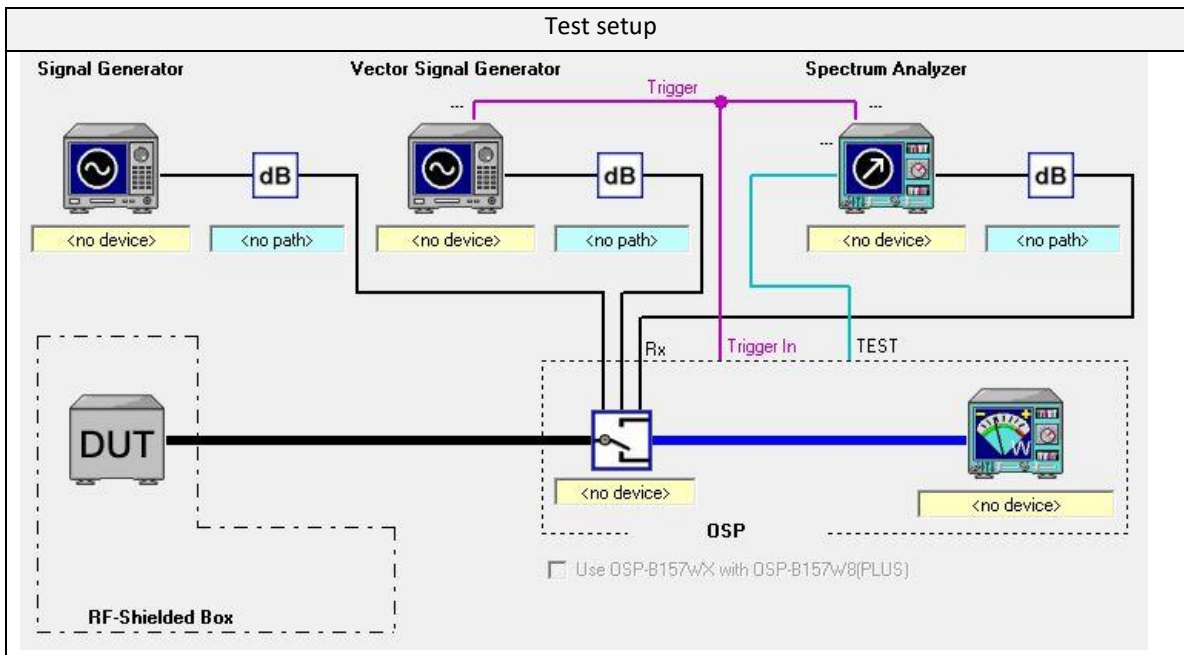
4. Test mode duty cycle

Information

Test information	
Measurement method	ANSI C63.10 11.6

Requirements

Requirements	
Duty cycle	Duty cycle correction
≥ 98%	No correction required
< 98 %	Correction required ($10 \times \log_{10} (1/DC)$)



Test procedure
1. EUT set to test mode 2. Sweep time is set to long enough to capture at least 5 bursts 3. The maximum burst duration T_{ON} is measured 4. The minimum idle duration T_{OFF} is measured 5. The duty cycle is calculated by $DC = T_{ON} / (T_{ON} + T_{OFF})$ 6. The duty cycle correction is calculated by $DC = 10 \times \log_{10} (T_{ON} / (T_{ON} + T_{OFF}))$

Results

Duty Cycle results		
Mode	Duty cycle	Correction Factor [dB]
CCK/DSSS	0,70	1,55
OFDM	0,29	5,38
HT20	0,29	5,38

5. Configuration and Operation Modes

Conducted RF and radiated emission test:

Test modes	Description
IEEE 802.11b	Mode = Transmit Modulation = CCK Bandwidth = 20 MHz Duty cycle = 70% Power setting = Maximum Data rate = 11 Mbps Test frequencies = 2412MHz, 2442MHz and 2462MHz
IEEE 802.11g	Mode = Transmit Modulation = OFDM Bandwidth = 20 MHz Duty cycle = 29% Power setting = Maximum Data rate = 6 Mbps Test frequencies = 2412MHz, 2442MHz and 2462MHz
IEEE 802.11n HT20	Mode = Transmit Modulation = OFDM 16-QAM Bandwidth = 20 MHz Duty cycle = 29% Power setting = Maximum Data rate = MCS 0 Test frequencies = 2412MHz, 2442MHz and 2462MHz
Comment: The above settings are found as worst-case during pre-tests. Conducted peak/output power was evaluated to determine the worst-case settings. According to worst case search in band edge measurements, worst case is the widest occupied bandwidth, see chapter 14.	

Test/configuration software

Manufacturer	Name	Version
Texas Instruments	CC31XX/CC32XX Radio Tool	1.0.3.19

6. Test equipment

Conducted RF tests

R&S TS8997 Test System equipment list:

Equipment	Certification-No.	Calibration Date	Next calibration
SMW200A	1035089-D-K-15195-01-00-2022-03	26.06.2023	25.06.2026
SMB100A	1041326-D-K-15195-01-00-2022-03	26.06.2023	25.06.2026
OSP-B157WX+OSP220	300642762-D-K-15195-01-00-2022-03	26.06.2023	25.06.2024
OSP-B157W8plus+OSP150	300639878-D-K-15195-01-00-2022-03	26.06.2023	25.06.2024
ESW	1039208-D-K-15195-01-00-2022-03	05.07.2023	04.07.2024
CMW500	300693633-D-K-15195-01-00-2023-04	25.04.2023	24.04.2024

Radiated emission

New ID	Manufacturer	Equipment type	Description	Serial	Calibration information	Next calibration
G4C217	Rohde & Schwarz	HF907	Double-Ridged Waveguide Horn Antenna 800MHz-18GHz	100164	4.11.2020	4.11.2023
G4C265	Rohde & Schwarz	ESW26	EMI test receiver	101324	29.6.2023	29.6.2024
G4C273	Frankonia	ALX-4000E	Broadband Antenna, 25MHz-4GHz with 6dB (50-A-MFN-06) att.	00816+1531	11.11.2020	11.11.2023
G4C292	Rohde & Schwarz	TS-LNA 1840	RF Preamplifier 18 to 40 GHz	100841	9.6.2022	9.6.2024
G4C298	Rohde & Schwarz	CMW500	Wideband radio communication tester	170980	29.6.2023	29.6.2024
G4C469	Rohde & Schwarz	TS_PRE2	RF Preamplifier	101541	9.6.2022	9.6.2024
G4C294	Rohde & Schwarz	Antenna	Horn Antenna -> 40GHz	101057	4.11.2022	4.11.2025

Test software

Description	Manufacturer	Name	Version
EMC Software	Rohde & Schwarz	EMC32	10.60.20
RF Software	Rohde & Schwarz	WMS32	11.60.00

7. Uncertainties

Description	Expanded Uncertainty (k=2)
RF Output Power	0,99
Peak Power	0,80
Power Spectral Density	0,99
Accumulated Transmit Time	0,01%
Minimum Frequency Occupation Time	0,01%
Hopping Frequency Separation	0,60%
Occupied Channel Bandwidth	2,08 %
Out-of-band emissions	0,89
Transmitter unwanted emissions in the spurious domain	1,76
AC conducted emission	2,24
Radiated emission ≤ 1 GHz	4,62
Radiated emission > 1 GHz	5,72

8. Sample emission level calculation

The following is a description of term and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dBuV.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strength to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. RF path losses, including RF cables and preamplifiers, have been included with the A.F to simplify the calculations. The antenna factor is used in calculations as follows:

$$\text{Reading on Analyzer (dBuV)} + \text{A.F. (dB/m)} = \text{Net field strength (dBuV/m)}$$

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dBuV/m). The FCC limits are given in units of uV/m. The following formula is used to convert the units of uV/m to dbuV/m:

$$\text{Limit (dBuV/m)} = 20 * \log(\text{uV/m})$$

Margin :

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

Reading + AF	= Net Reading :	Net reading – FCC limit	= Margin
+ 21.5 dBuV + 26 dB/m	= 47.5 dBuV/m :	47.5 dBuV/m – 57.0 dBuV/m	= -9.5 dB

9. Test conditions

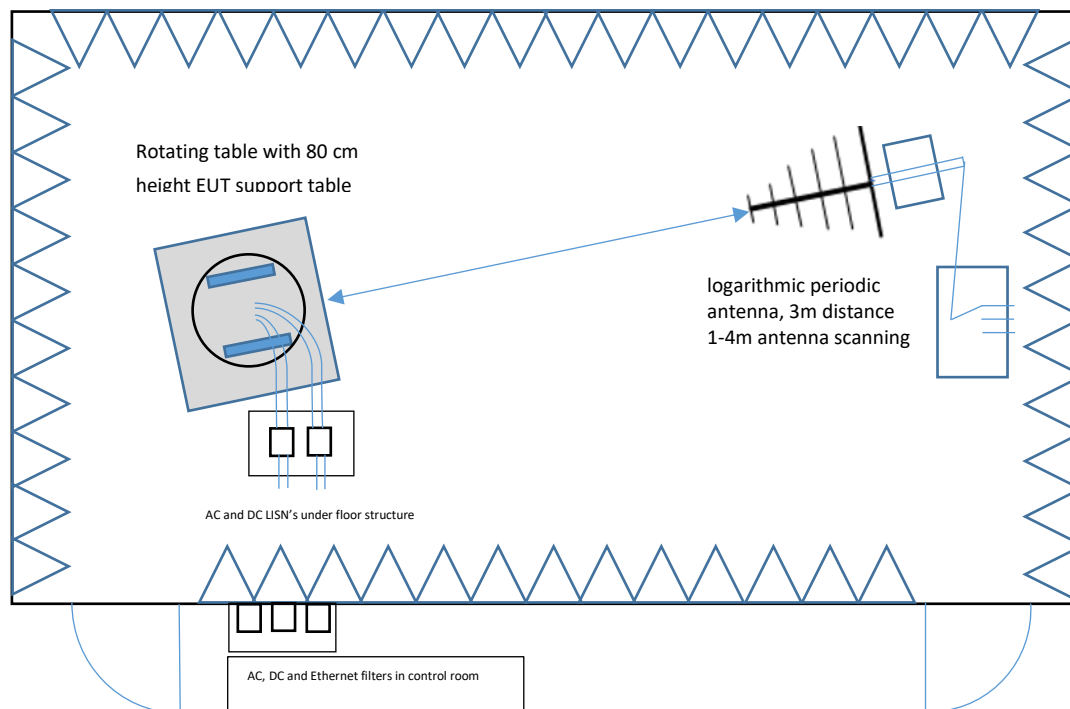
All radiated tests were performed in a semi-anechoic chamber, where the measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz, 1 GHz-18 GHz Double-ridged horn antenna and 18 GHz-40 GHz horn antenna) is located at a distance of 3 m.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height (all antennas) was varied from 1 to 4 meters to find the maximum radiated emission.

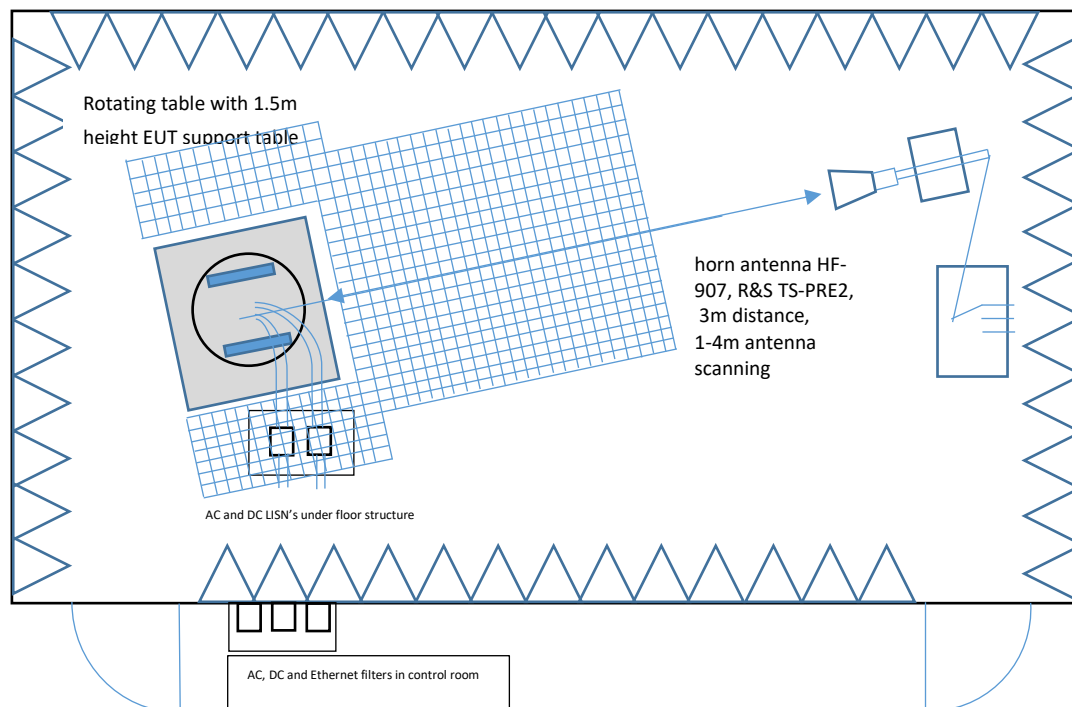
Measurements were made in both horizontal and vertical planes of polarization.

A resolution bandwidth / video bandwidth of 100 kHz / 300 kHz was used for frequencies below 1 GHz and 1 MHz / 3 MHz for frequencies above 1 GHz.

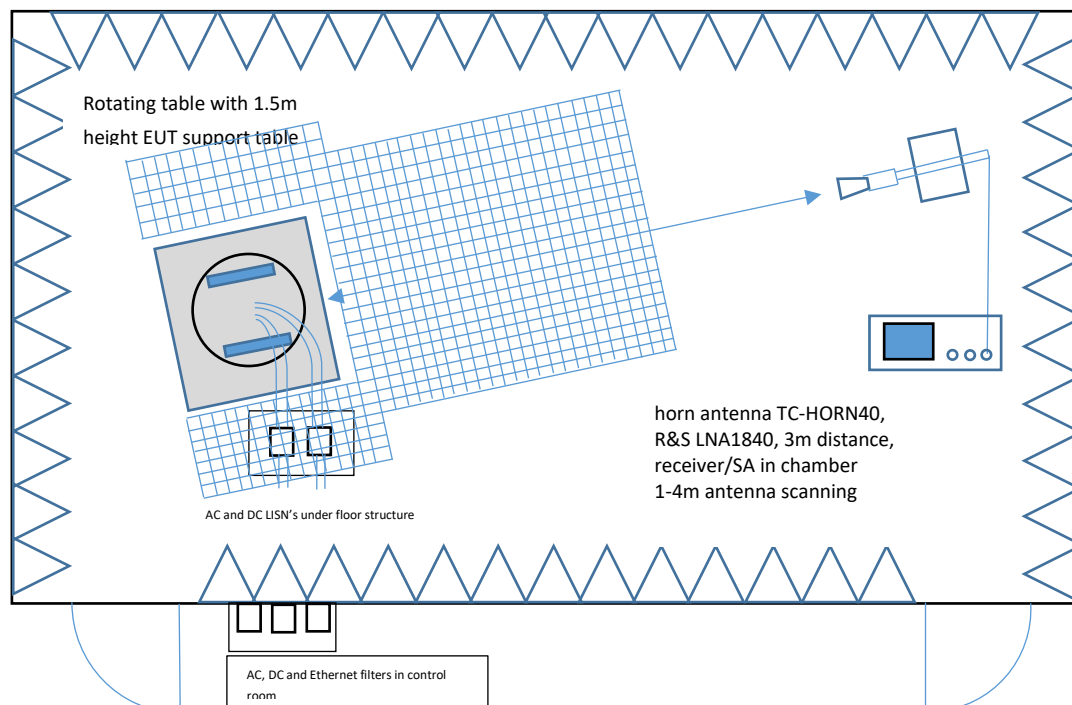
Radiated measurements setup from 30 MHz to 1 GHz:



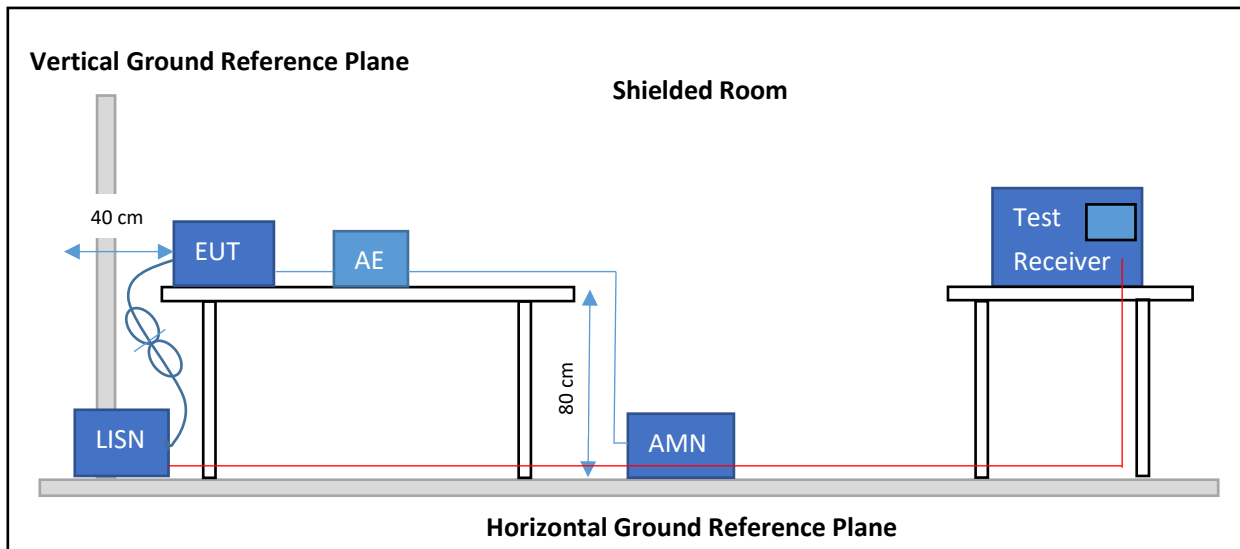
Radiated measurements setup from 1 GHz to 18 GHz:



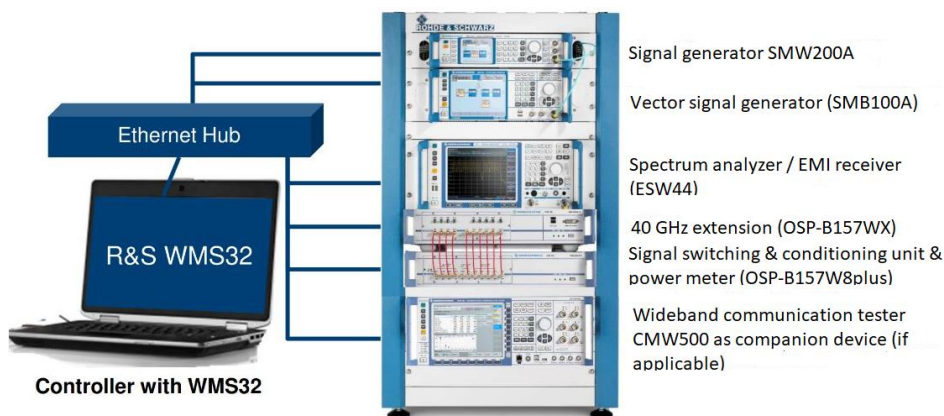
Radiated measurements setup from 18 GHz to 26 / 40 GHz:



Conducted emission setup



Conducted RF measurement system:



10. Summary

FCC/ISED Requirement (15.247 / RSS-247)		Reference method	Result	Remark
Occupied Bandwidth	ISED RSS-Gen, Issue 5 A2 (section 6.7)	ANSI C63.10-2013	N/R	Informational only
6 dB Bandwidth	FCC § 15.247(a)(2) / RSS-247, Issue 2 (section 5.2 (a))	ANSI C63.10-2013	PASS	
Maximum peak conducted power	FCC § 15.247(b) / RSS-247, Issue 3 (section 5.4 (d))	ANSI C63.10-2013	PASS	
Power spectral density	FCC § 15.247(e) / RSS-247, Issue 3 (section 5.2)	ANSI C63.10-2013	PASS	
AC power line conducted emissions	FCC § 15.207 / RSS-247, Issue 3 (section 3.1)	ANSI C63.10-2013	N/A	
Band edge compliance	FCC § 15.247(d) / RSS-247, Issue 3 (section 5.5)	ANSI C63.10-2013	PASS	
Conducted spurious emissions	FCC § 15.247(d) / RSS-247, Issue 3 (section 5.5)	ANSI C63.10-2013	PASS	
Transmitter radiated spurious emissions	FCC § 15.247(d), FCC § 15.209 / RSS-Gen, Issue 5 A2 (section 6.13)	ANSI C63.10-2013	PASS	
Receiver radiated spurious emissions	ISED RSS-247, Issue 3 (section 3.1)	ANSI C63.4-2014	PASS	
Possible test case verdicts: PASS = Tested device meets the requirements FAIL = Tested device does not meet the requirements N/A = Test requirement not applicable for tested device N/T = Test requirement applicable for tested device, but not tested N/R = Not required by standard for the test object				
Applicable FCC KDB(s): KDB 558074 DO1: DTS measurement guidance v 0502 (Apr 2, 2019)				

11. Occupied bandwidth

Reference: ISED RSS-Gen, Issue 5 A2 (section 6.7)

Test method: ANSI C63.10 (6.9.3)

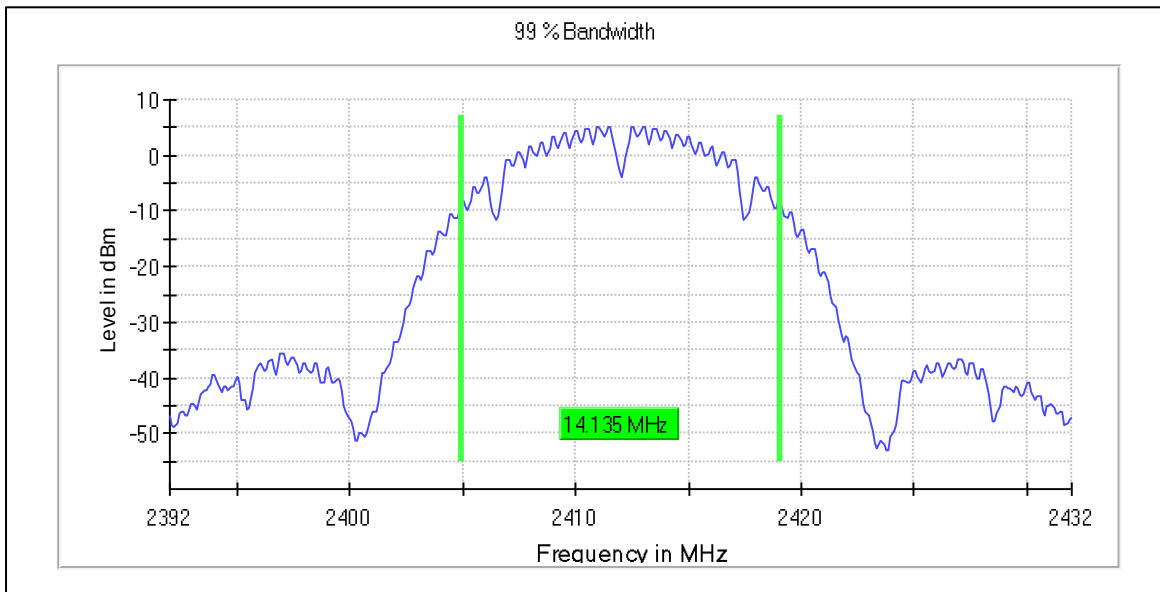
Limits
None (Informational only)

Procedure
1. EUT transmitter is activated in test mode under normal conditions 2. Spectrum analyzer is set to peak detection and maximum hold with a span twice the emission spectrum 3. The resolution bandwidth is set to the range of 1% to 5% of the occupied bandwidth 4. The occupied bandwidth is measured with the build-in analyzer function

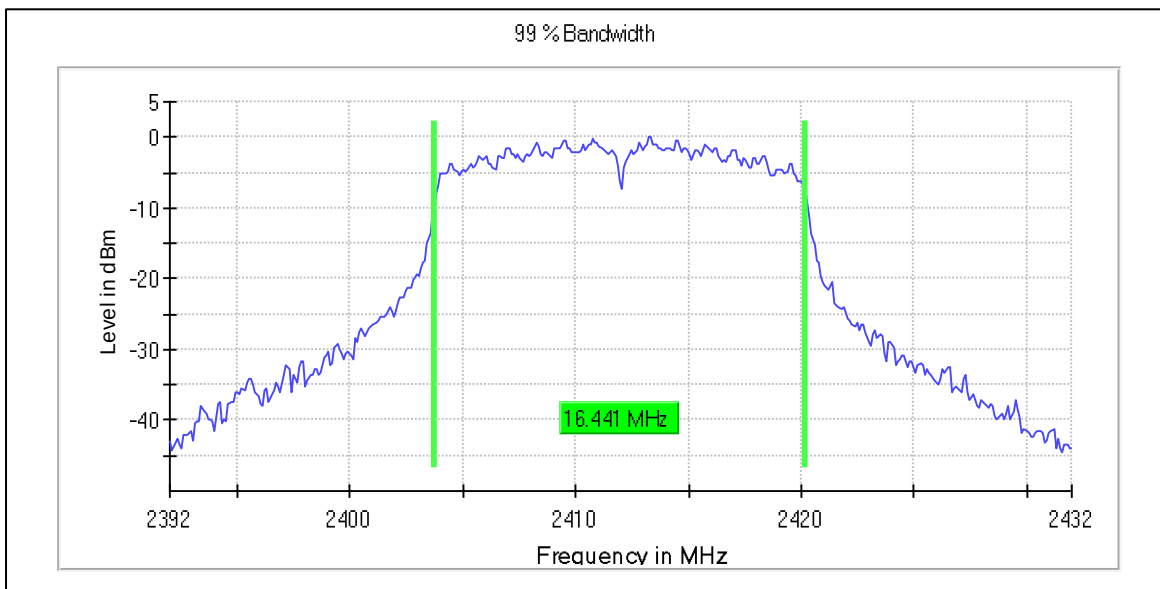
Summary:

Summary		
Mode / modulation	Frequency (MHz)	Bandwidth (MHz)
802.11b	2412	14.135 MHz
802.11b	2442	14.035 MHz
802.11b	2462	14.135 MHz
802.11g	2412	16.441 MHz
802.11g	2442	17.343 MHz
802.11g	2462	16.441 MHz
802.11n	2412	17.544 MHz
802.11n	2442	17.845 MHz
802.11n	2462	17.444 MHz

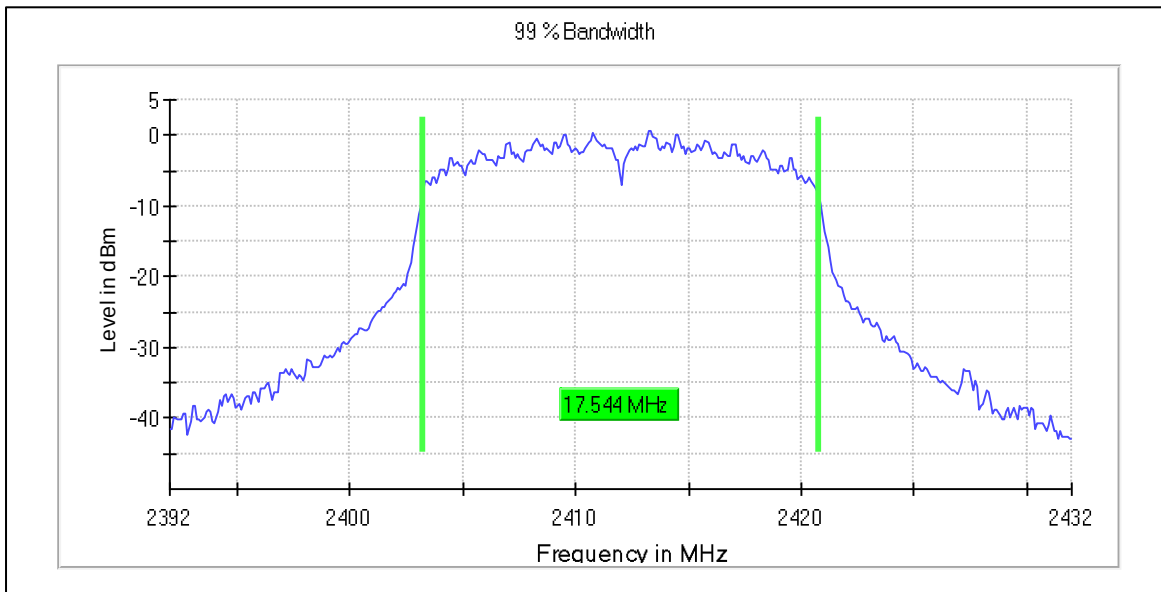
Occupied bandwidth, low channel 802.11b



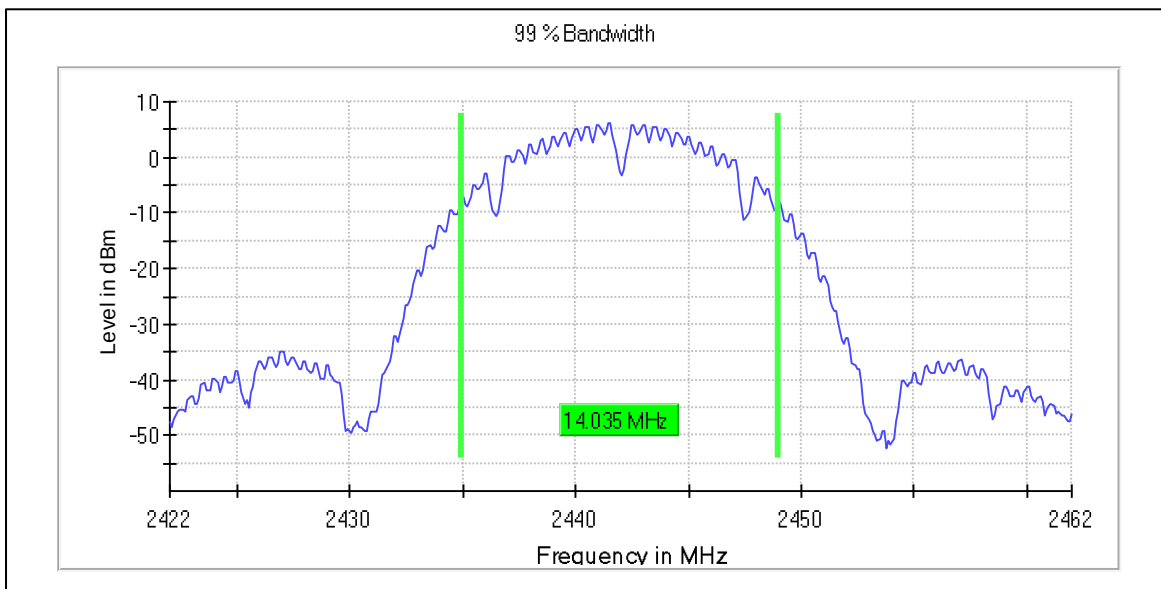
Occupied bandwidth, low channel 802.11g



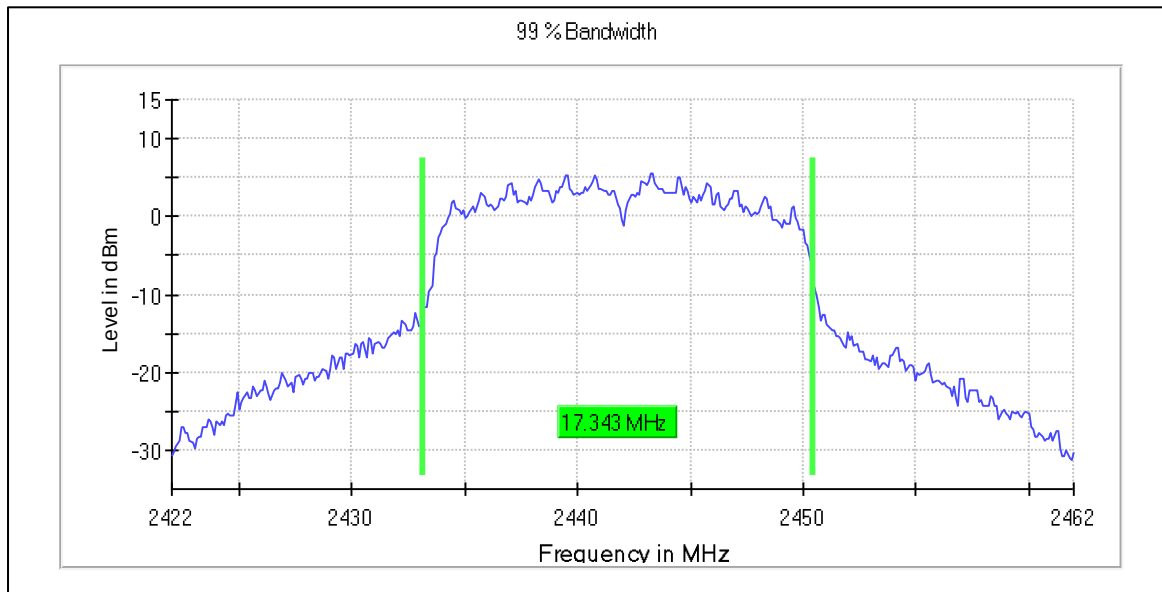
Occupied bandwidth, low channel 802.11n



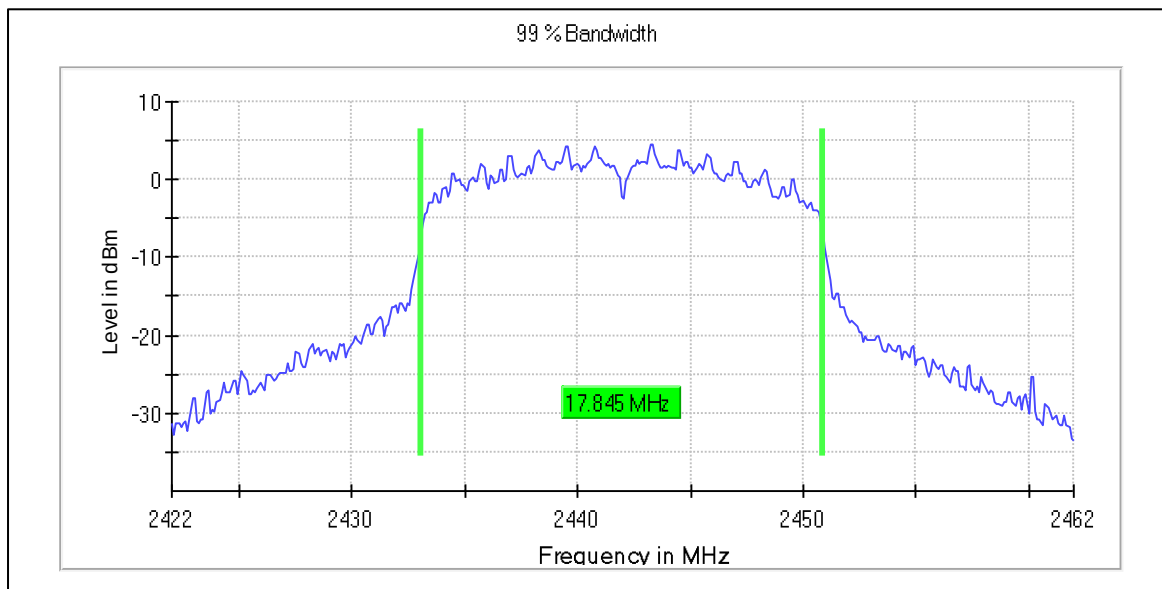
Occupied bandwidth, middle channel 802.11b



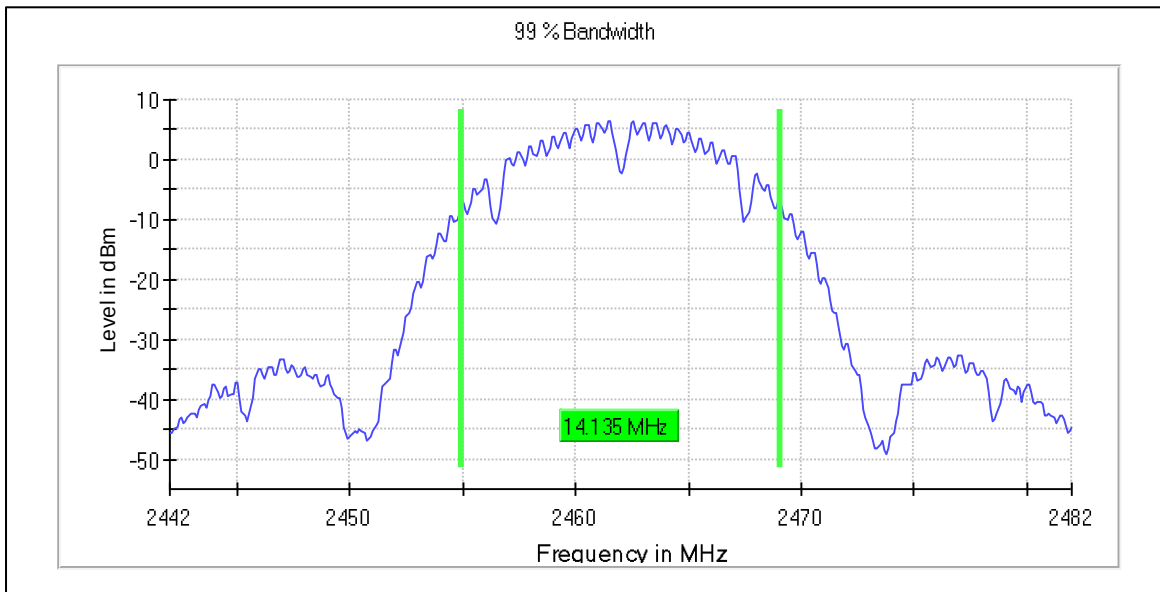
Occupied bandwidth, middle channel 802.11g



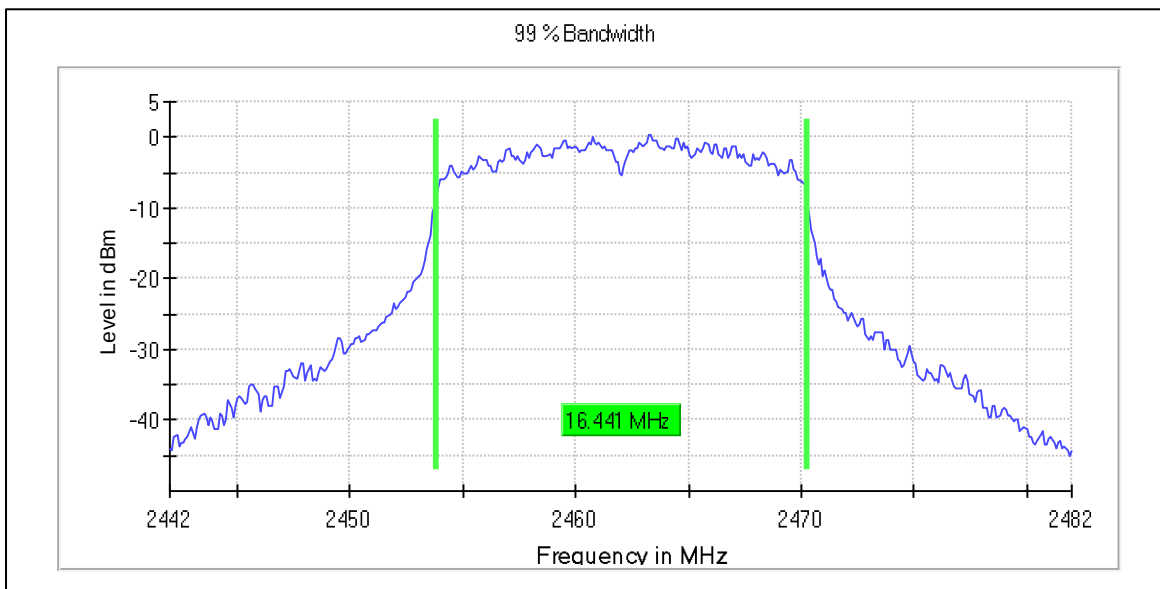
Occupied bandwidth, middle channel 802.11n



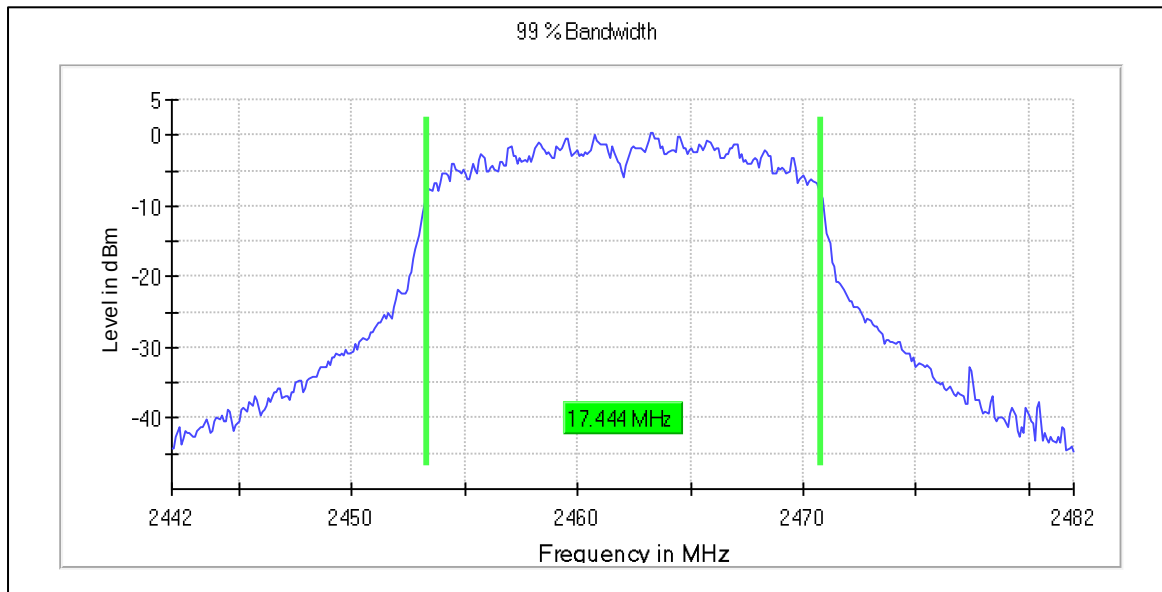
Occupied bandwidth, high channel 802.11b



Occupied bandwidth, high channel 802.11g



Occupied bandwidth, high channel 802.11n



12. 6 dB bandwidth

Reference: FCC title 47 part 15 §15.247(a), ISSED RSS-247, Issue 3 (section 5.2)

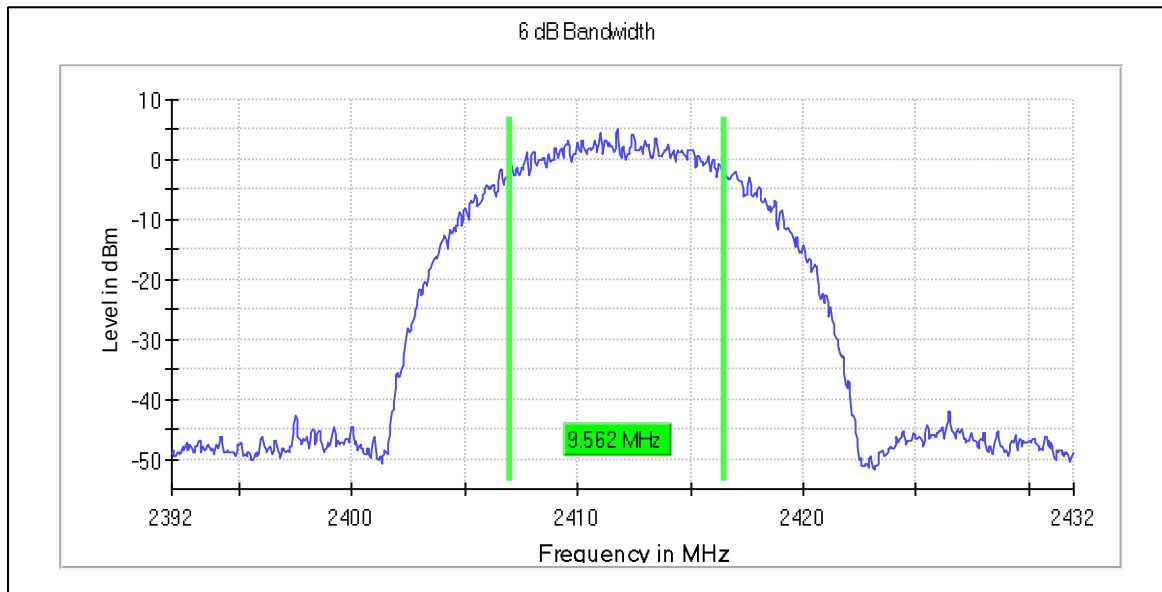
Test method: KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2013 (11.8.1)

Limits
The minimum 6 dB bandwidth shall be at least 500 kHz.

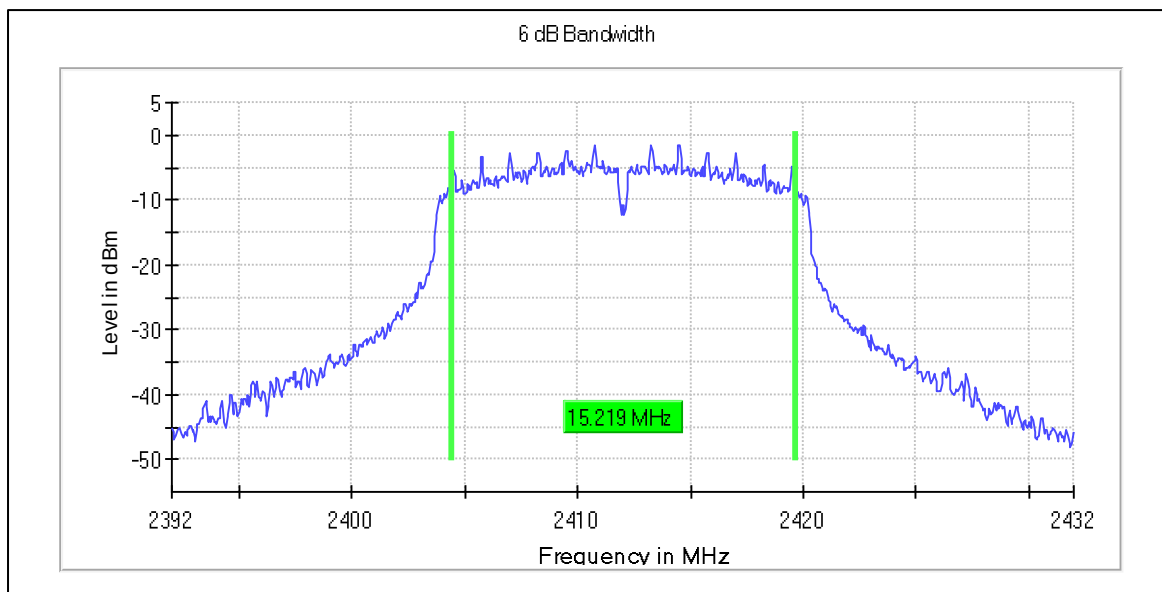
Test procedure
1. EUT set to test mode 2. Span set to at least twice the emission spectrum 3. Detector set to peak and max hold and BW is set to 100 kHz 4. Envelope peak value of emission spectrum is selected 5. Marker on envelope of spectrum is set to level of -6 dB to the left of the peak 6. Marker on envelope of spectrum is set to level of -6 dB to the right of the peak 7. 6 dB bandwidth is determined by marker frequency separation

Mode / modulation	DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
802.11b	2412.000000	9.561952	0.500000	---	2406.968711	2416.530663	5.0	PASS
802.11g	2412.000000	15.219024	0.500000	---	2404.415519	2419.634543	-1.5	PASS
802.11n	2412.000000	15.219024	0.500000	---	2404.415519	2419.634543	-1.1	PASS
802.11b	2442.000000	8.961202	0.500000	---	2437.619524	2446.580726	5.1	PASS
802.11g	2442.000000	15.219024	0.500000	---	2434.415519	2449.634543	4.1	PASS
802.11n	2442.000000	15.168962	0.500000	---	2434.415519	2449.584481	3.1	PASS
802.11b	2462.000000	8.911139	0.500000	---	2457.619524	2466.530663	6.4	PASS
802.11g	2462.000000	15.219024	0.500000	---	2454.415519	2469.634543	-1.1	PASS
802.11n	2462.000000	15.219024	0.500000	---	2454.415519	2469.634543	-1.1	PASS

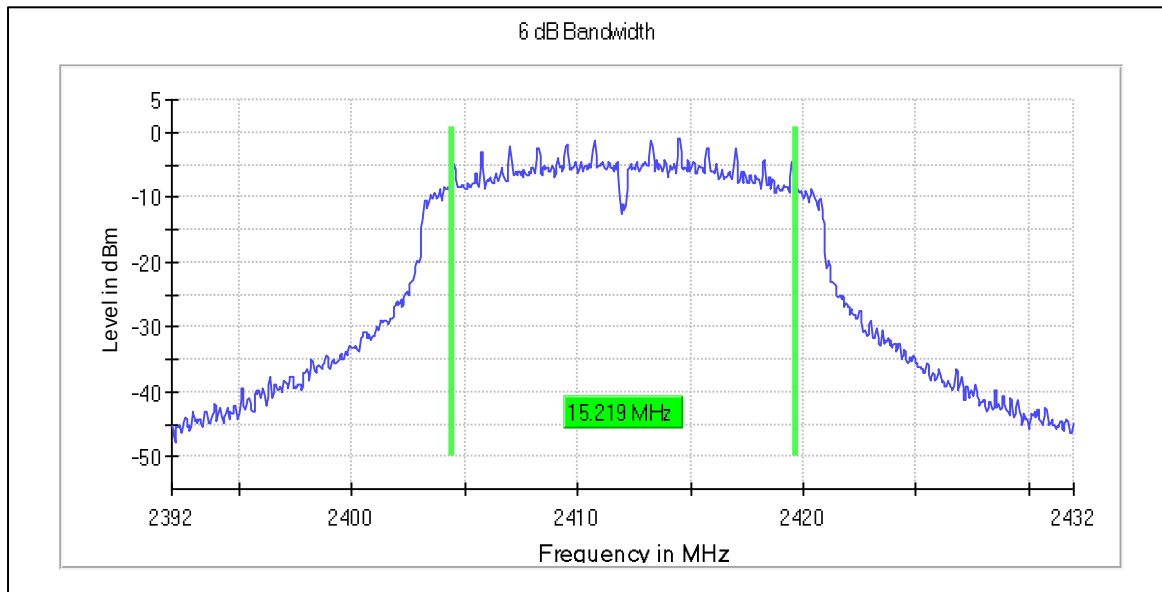
6dB bandwidth, low channel 802.11b



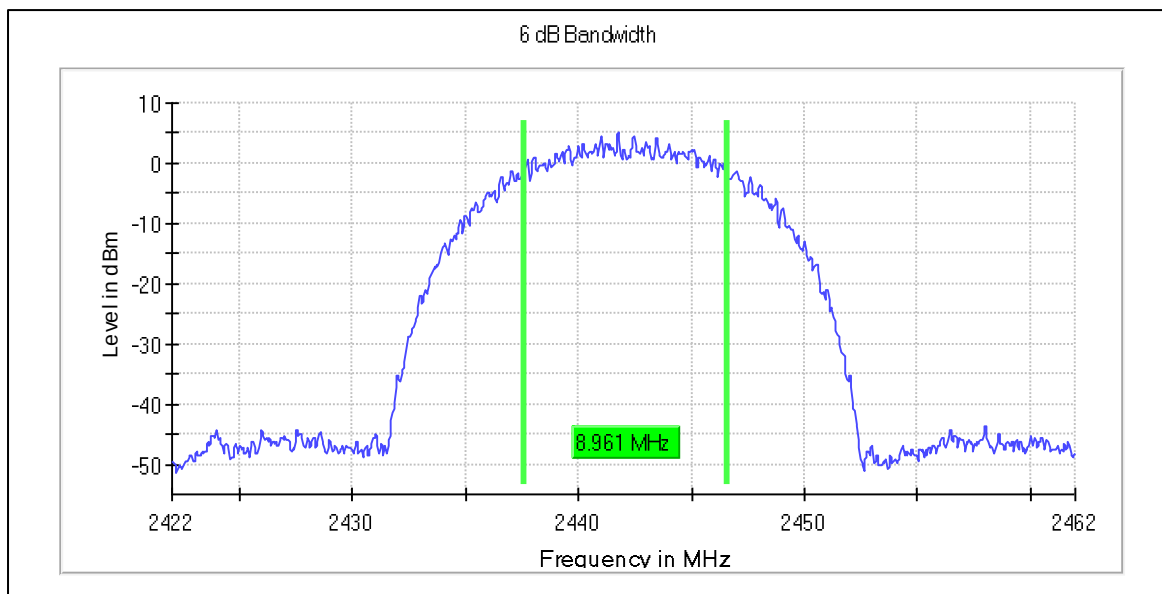
6dB bandwidth, low channel 802.11g



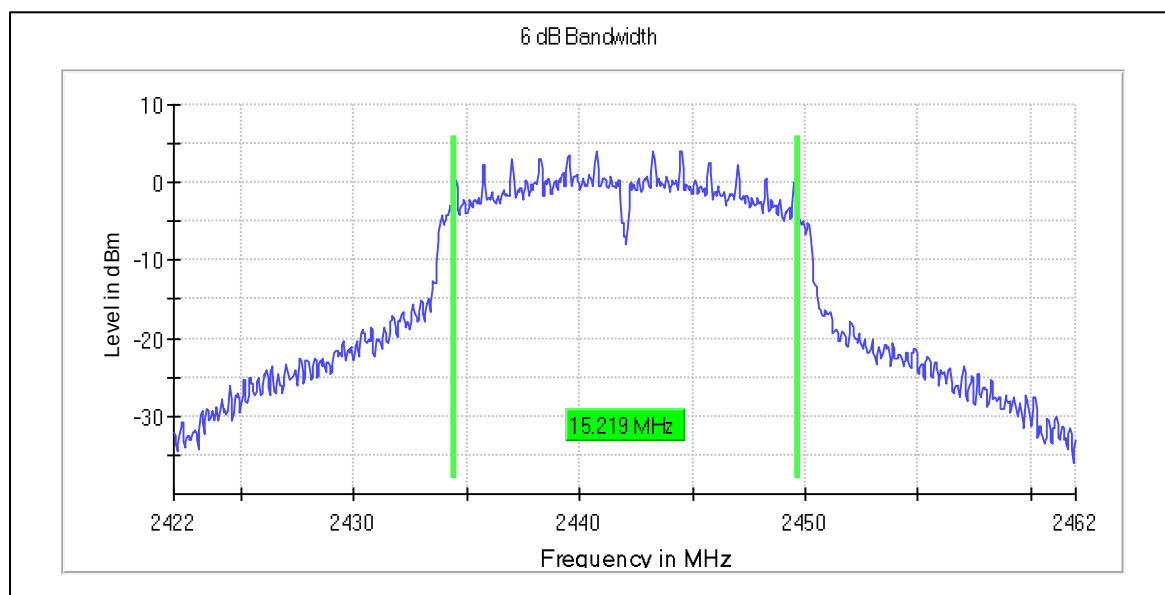
6 dB bandwidth, low channel 802.11n



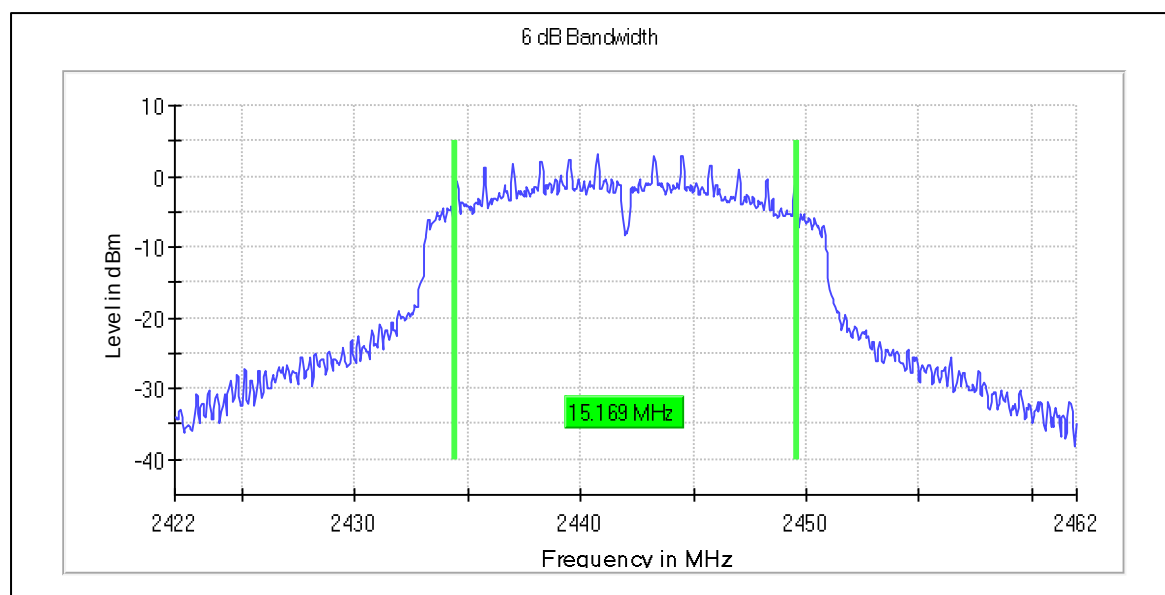
6dB bandwidth, middle channel 802.11b



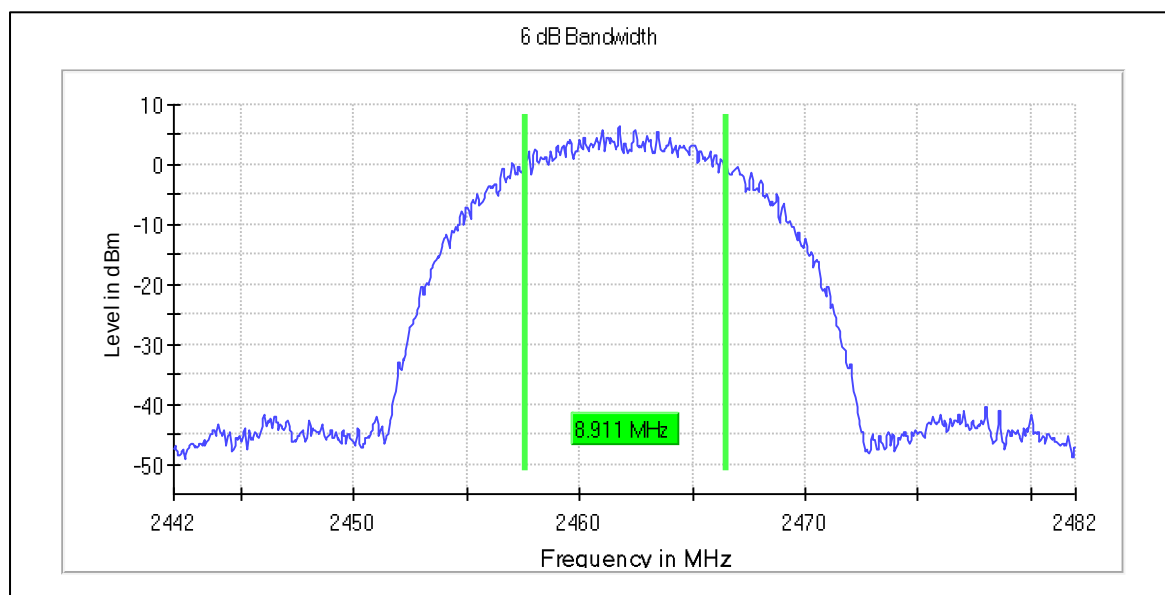
6dB bandwidth, middle channel 802.11g



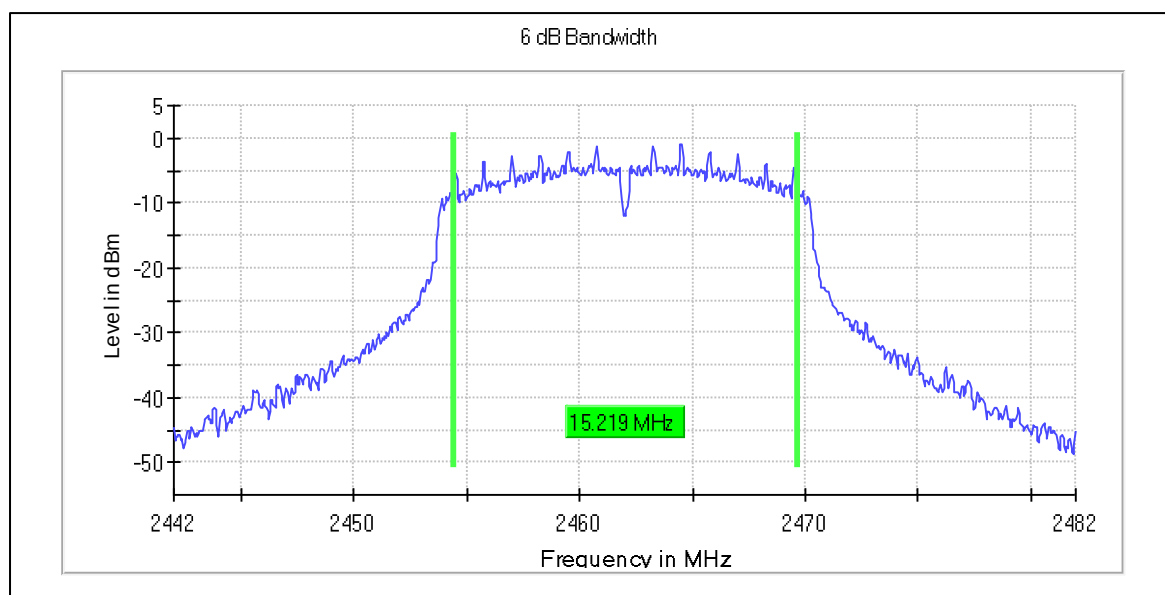
6dB bandwidth, middle channel 802.11n



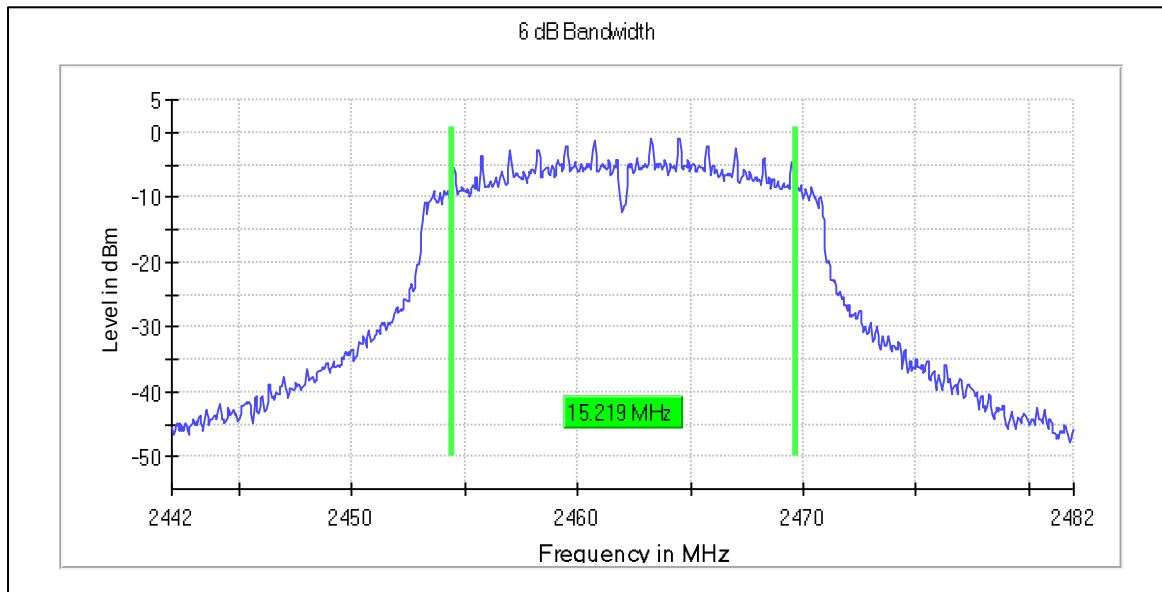
6dB bandwidth, high channel 802.11b



6dB bandwidth, high channel 802.11g



6dB bandwidth, high channel 802.11n



13. Peak conducted output power

Reference: FCC part 15 §15.247(b), ISED RSS-247, Issue 3 (section 5.4)

Test method: KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2013 (11.9.1.1)

Limits
For systems using digital modulation in the 2400-2483.5 MHz band: 1 watt (30 dBm). The e.i.r.p. shall not exceed 4 W (36 dBm) (Canada).
The conducted output power limit specified above is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in the table, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

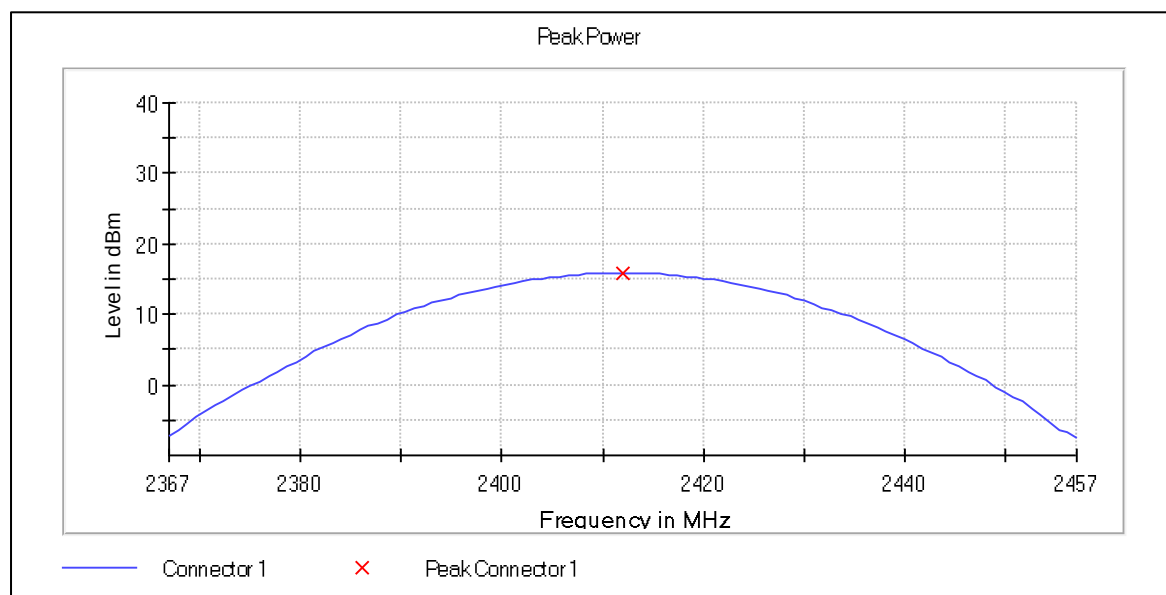
Test procedure
1. EUT set to test mode (communication tester is used if needed) 2. Analyzer resolution bandwidth is set $\geq$ DTS bandwidth 3. Detector set to peak and max hold 4. Sweep time is set to auto 5. After trace has stabilized a marker is set to peak envelope

The EIRP power (dBm) is calculated by adding the declared maximum antenna gain to the measured conducted power.

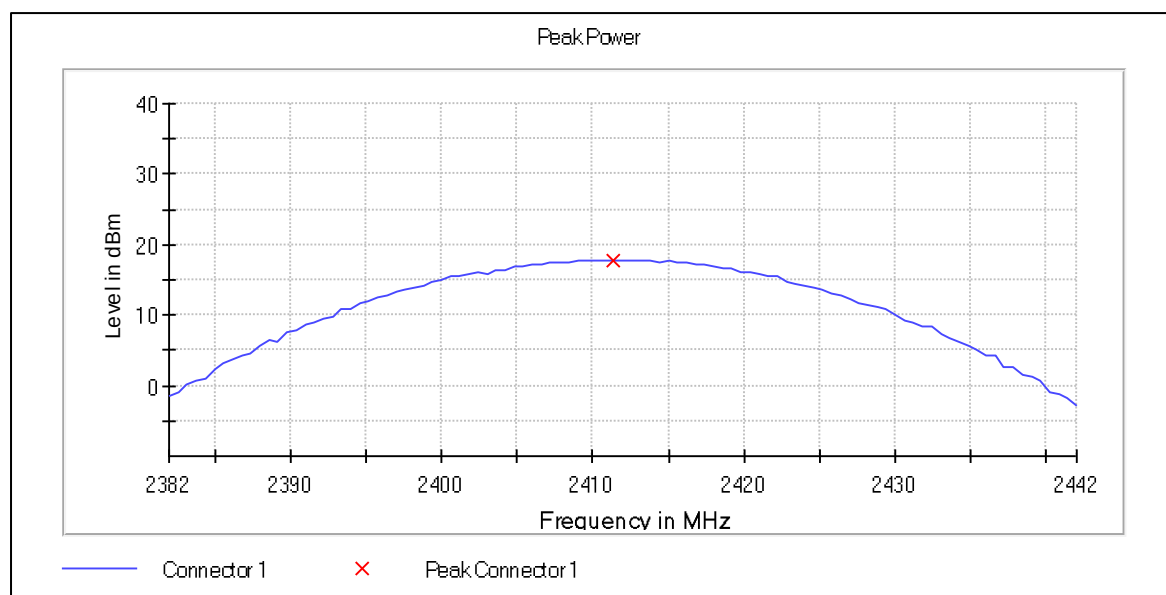
Maximum Declared Antenna Gain: 3.3 dBi

Mode / modulation	DUT Frequency (MHz)	Peak Power (dBm)	EIRP Power (dBm)	Limit Max (dBm)	Result
802.11b	2412.000000	16.7	20.0	30.0	PASS
802.11g	2412.000000	17.7	21.0	30.0	PASS
802.11n	2412.000000	17.6	20.9	30.0	PASS
802.11b	2442.000000	16.4	19.7	30.0	PASS
802.11g	2442.000000	18.2	21.5	30.0	PASS
802.11n	2442.000000	17.6	20.9	30.0	PASS
802.11b	2462.000000	17.6	20.9	30.0	PASS
802.11g	2462.000000	18.5	21.8	30.0	PASS
802.11n	2462.000000	18.1	21.4	30.0	PASS

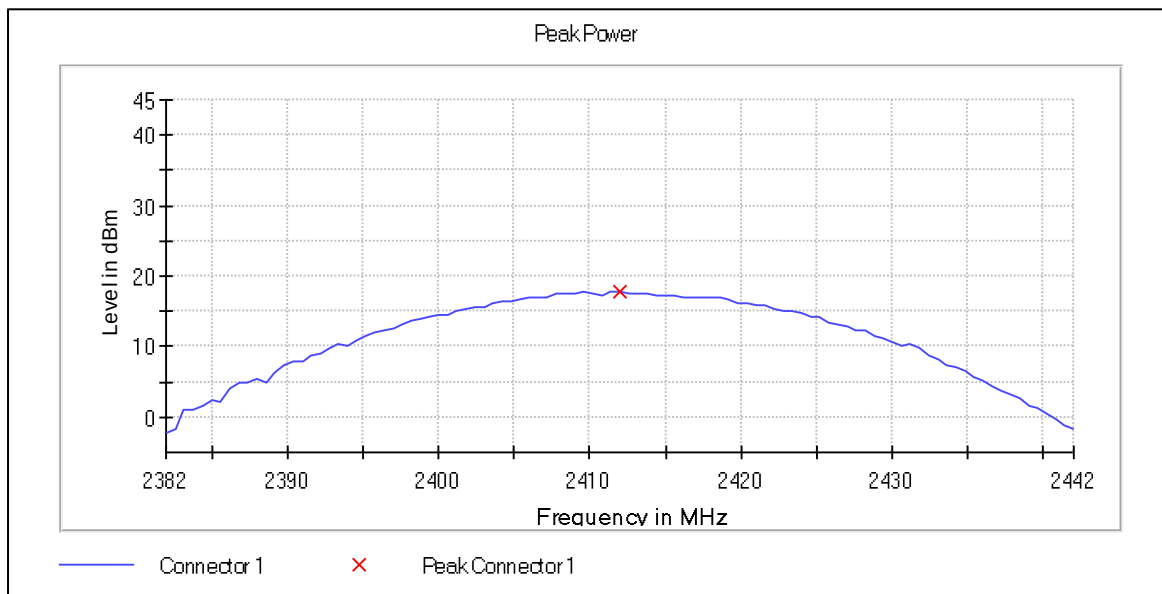
Peak power, low channel 802.11b



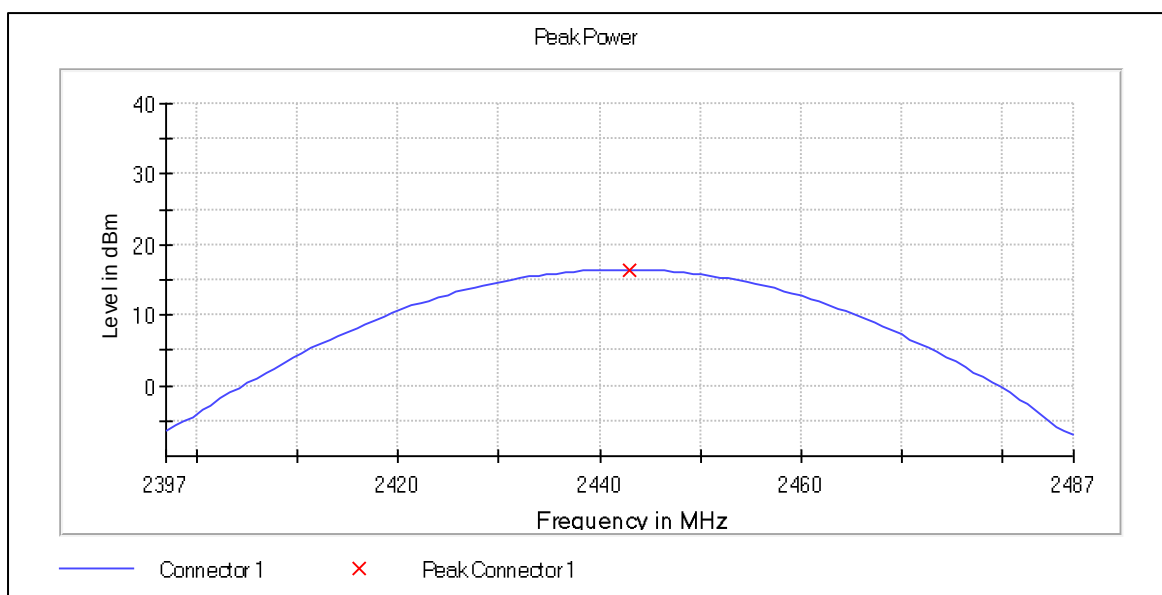
Peak power, low channel 802.11g



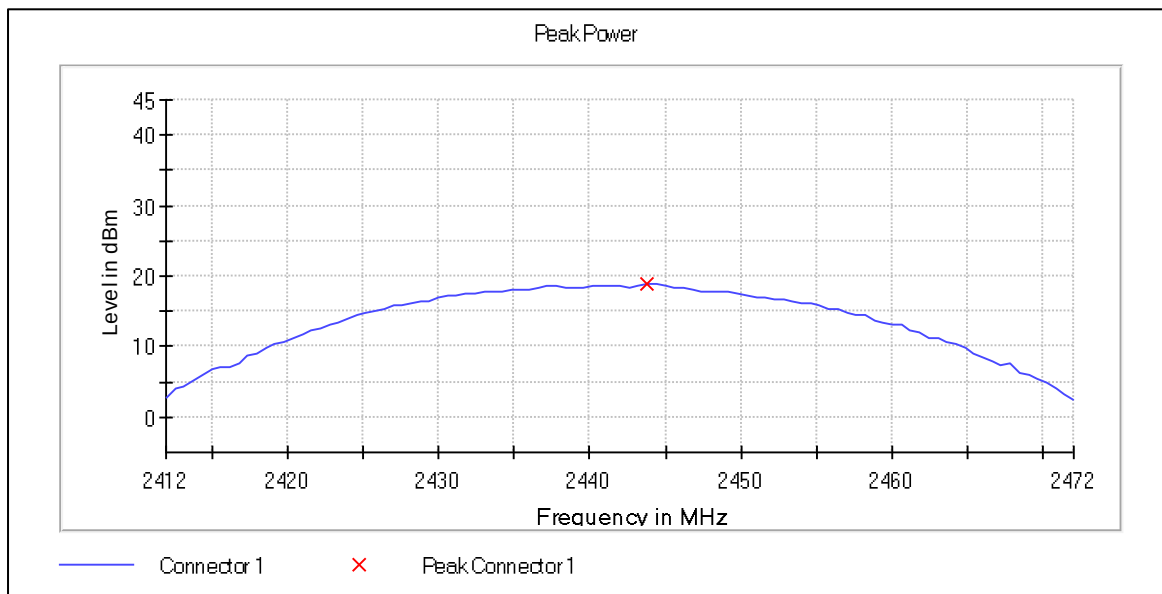
Peak power, low channel 802.11n



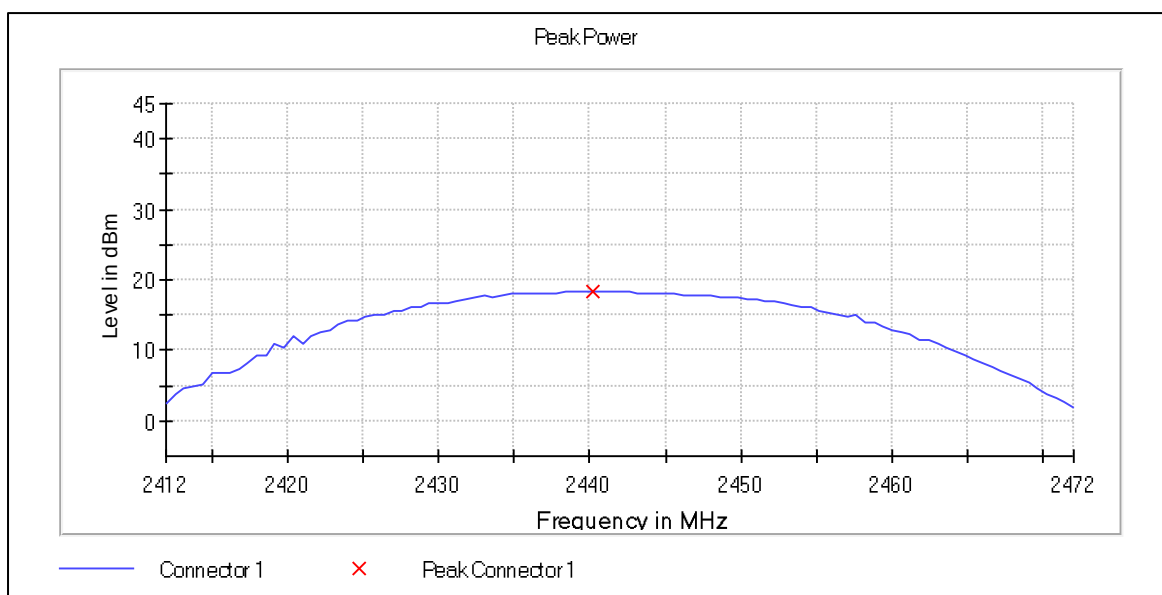
Peak power, middle channel 802.11b



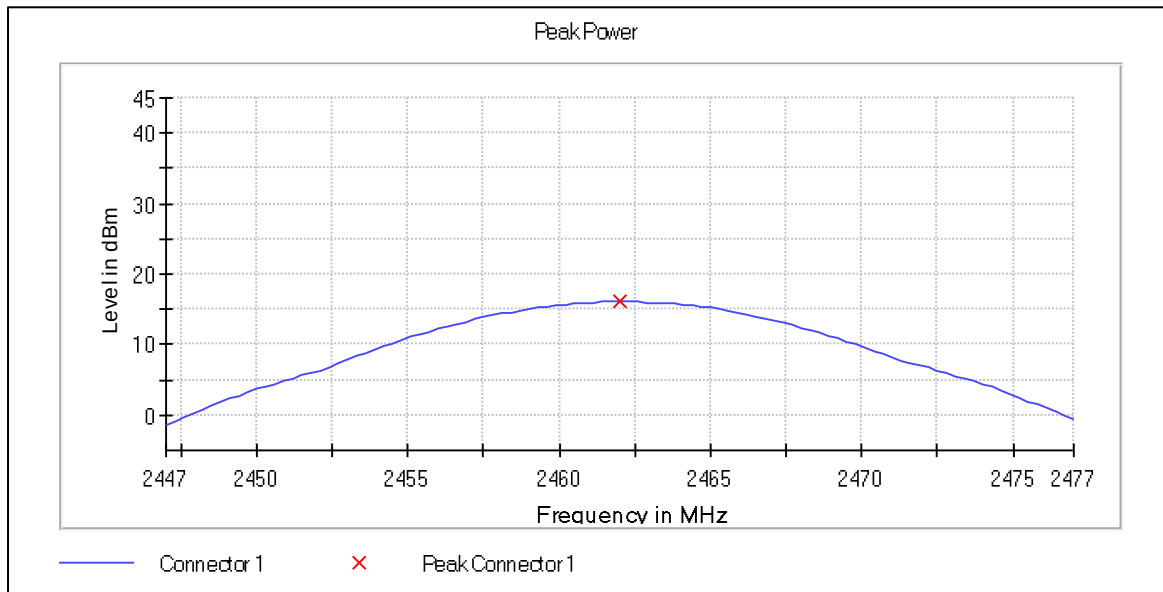
Peak power, middle channel 802.11g



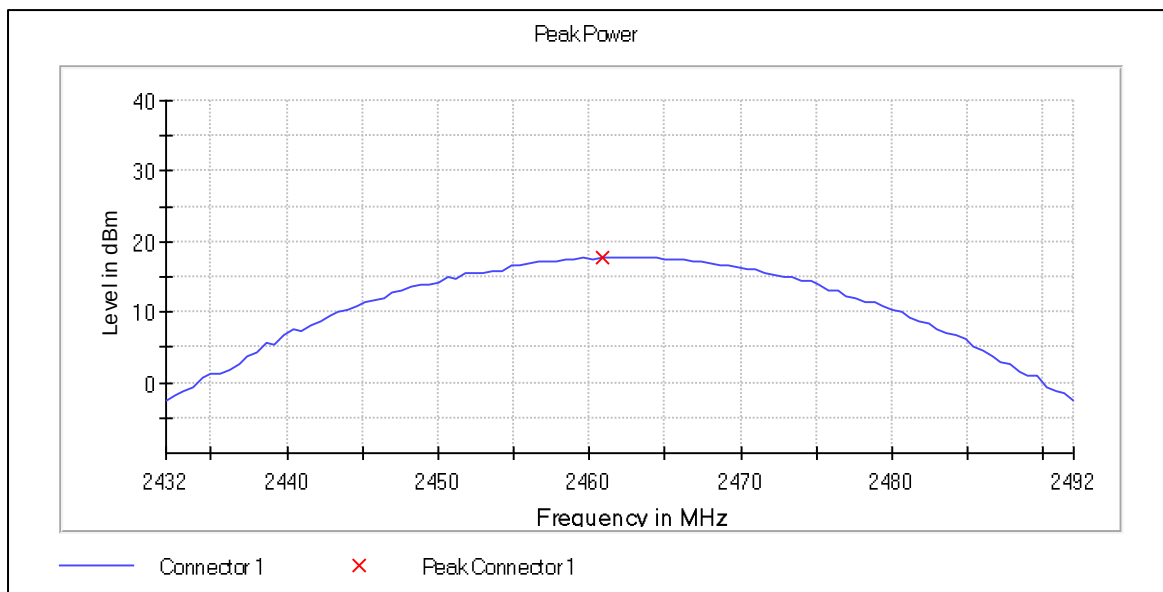
Peak power, middle channel 802.11n



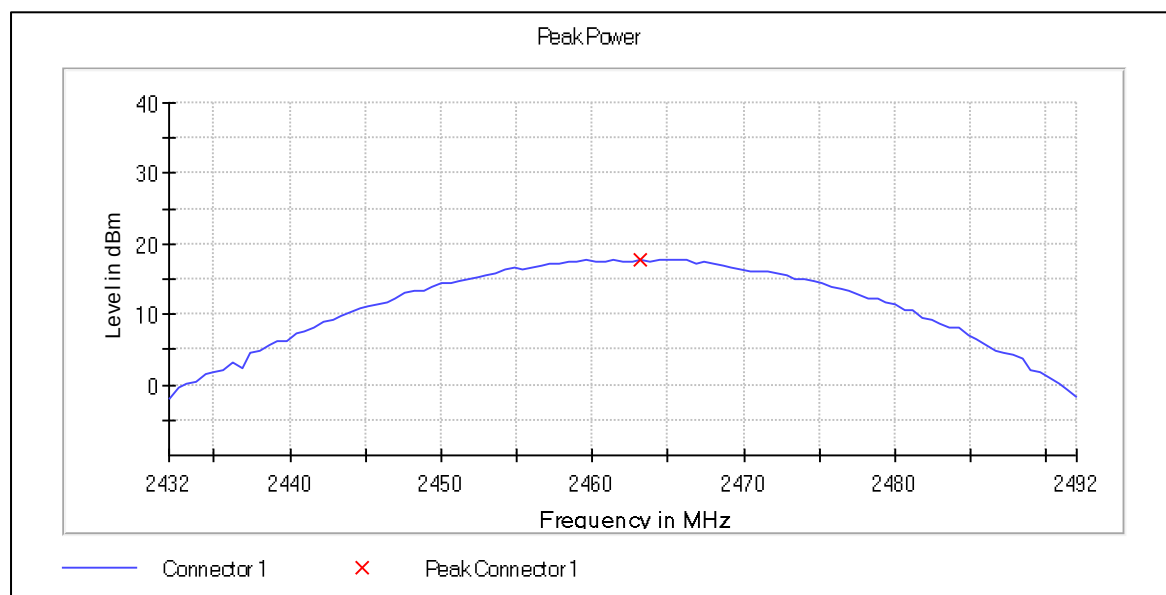
Peak power, high channel 802.11b



Peak power, high channel 802.11g



Peak power, high channel 802.11n



14. Peak Power Spectral Density

Reference: FCC §15.247(a),(e), ISSED RSS-247, Issue 3 (section 5.2)

Test method: KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2013 (11.10.2, 14.3.2)

Specification: For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

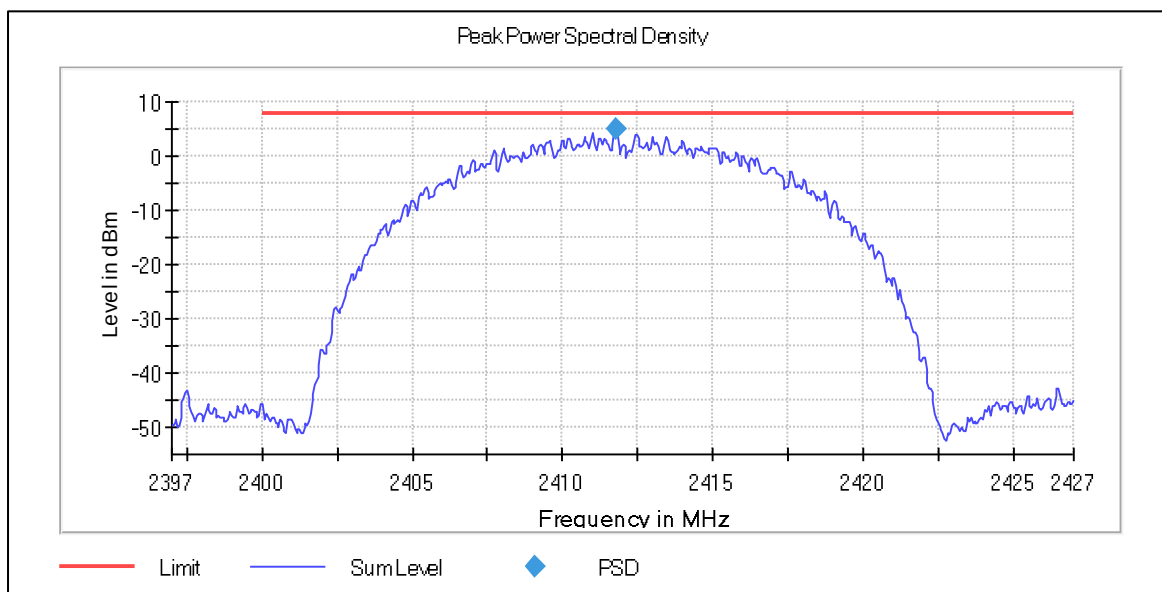
Limits
≤ 8 dBm / 3 kHz

Test procedure
1. EUT set to test mode 2. The analyser is set to DTS channel center frequency with a span of 1.5 times the DTS bandwidth 3. The analyzer is set to 100 kHz with VBW ≥ RBW and the detector is set to peak with max hold 4. After trace has stabilized a marker is set to the envelope maximum 5. If the power spectral density is above the limit the RBW is reduces (not lower than 3 kHz) and the measurement is repeated 6. If the EUT has more than one transmit chain the procedure is repeated for each chain

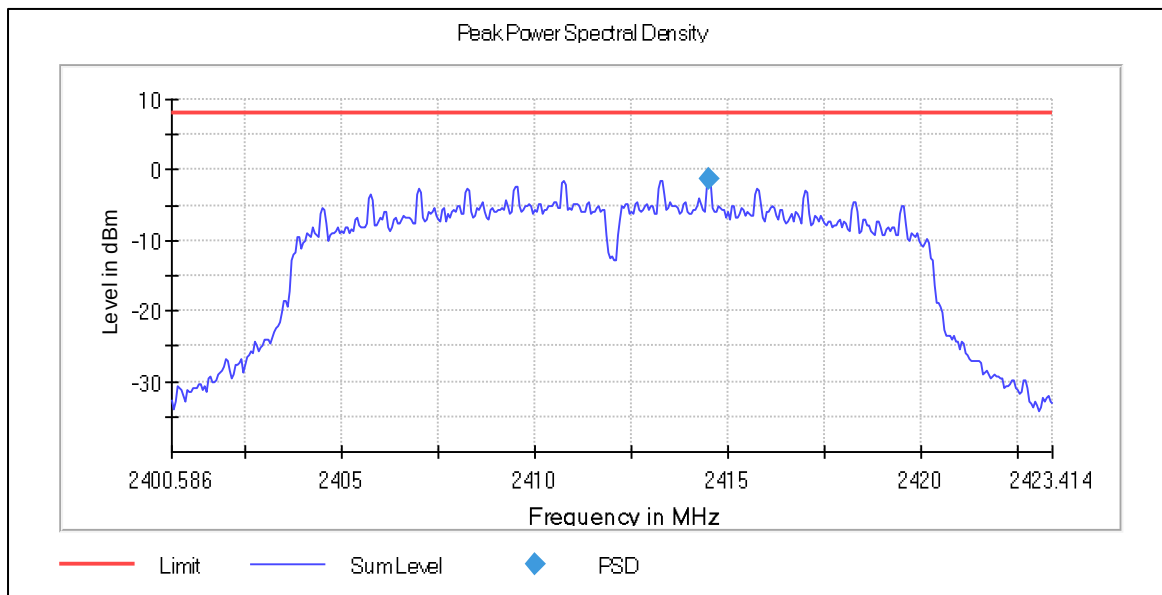
Summary

Mode / modulation	DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
802.11b	2412.000000	2411.774624	5.002	8.0	PASS
802.11g	2412.000000	2414.503129	-1.790	8.0	PASS
802.11n	2412.000000	2414.503129	-1.862	8.0	PASS
802.11b	2442.000000	2441.774624	4.661	8.0	PASS
802.11g	2442.000000	2444.503129	3.090	8.0	PASS
802.11n	2442.000000	2440.747057	1.955	8.0	PASS
802.11b	2462.000000	2461.774624	5.982	8.0	PASS
802.11g	2462.000000	2463.251564	-0.943	8.0	PASS
802.11n	2462.000000	2464.503129	-0.901	8.0	PASS

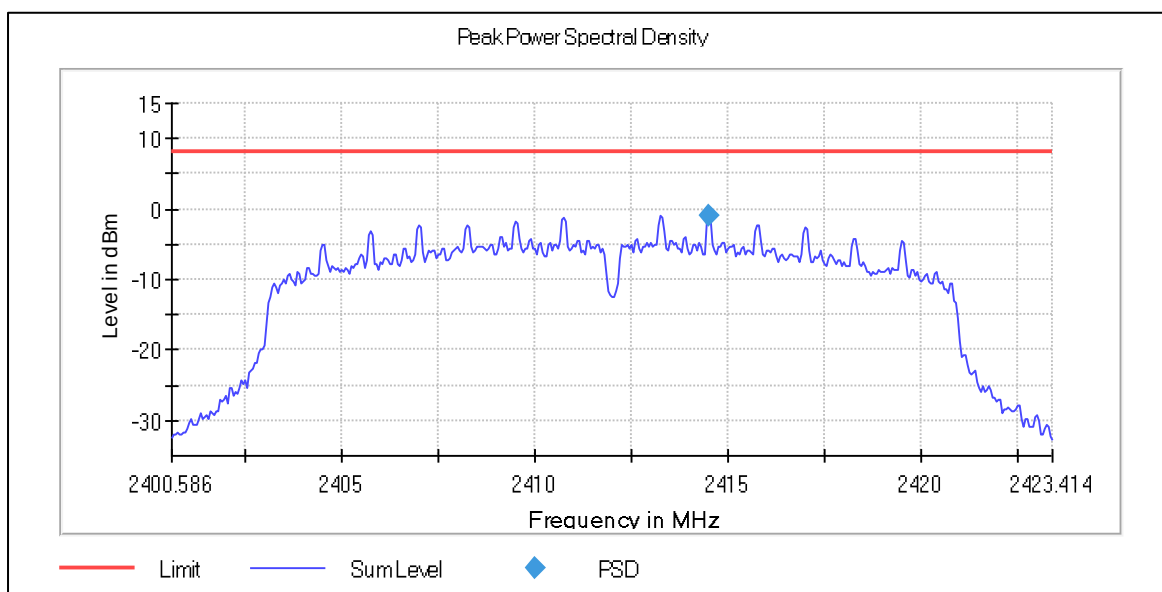
Peak power spectral density, low channel 802.11b



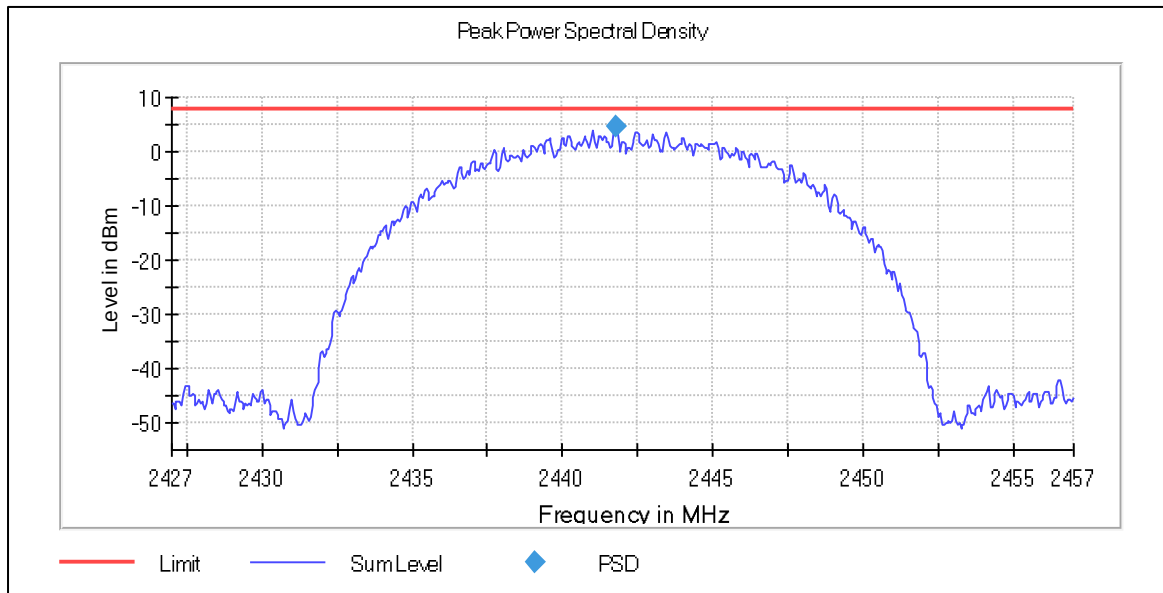
Peak power spectral density, low channel 802.11g



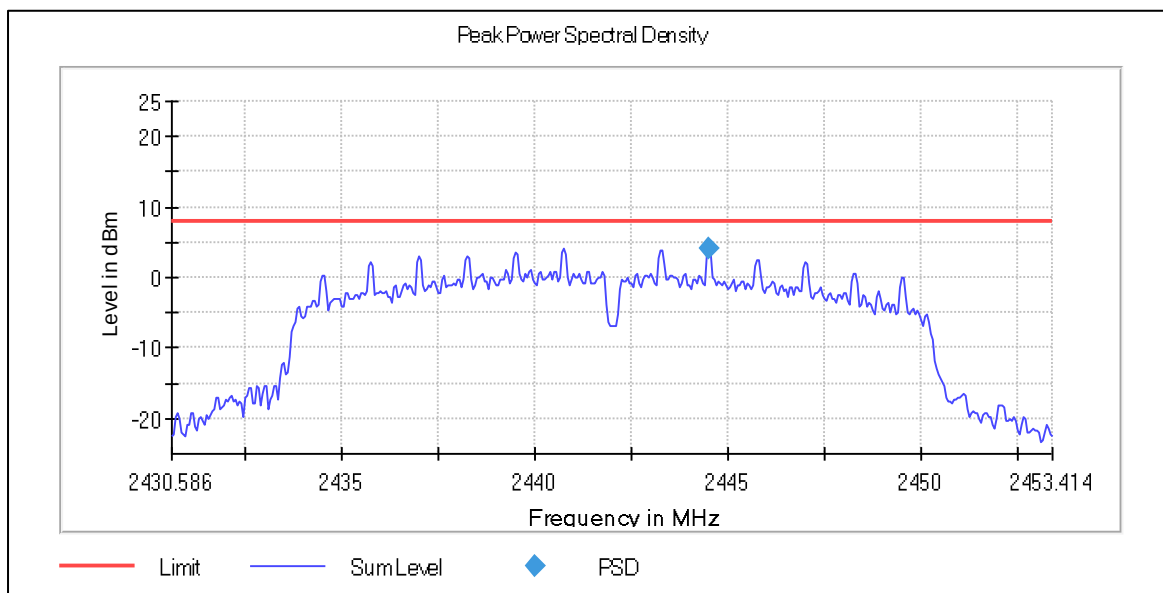
Peak power spectral density, low channel 802.11n



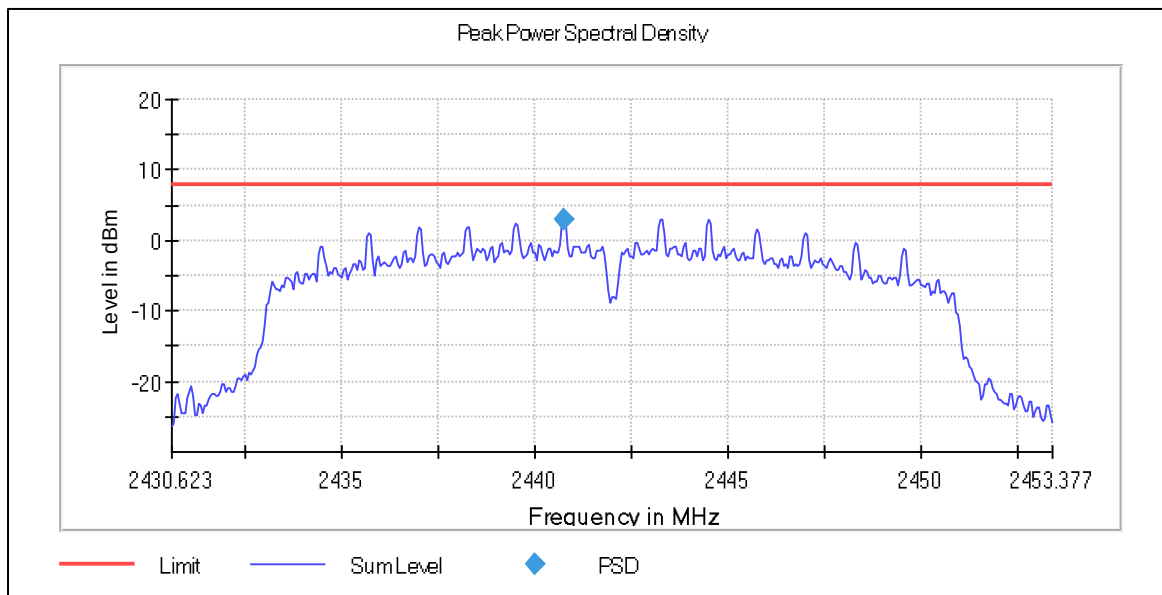
Peak power spectral density, middle channel 802.11b



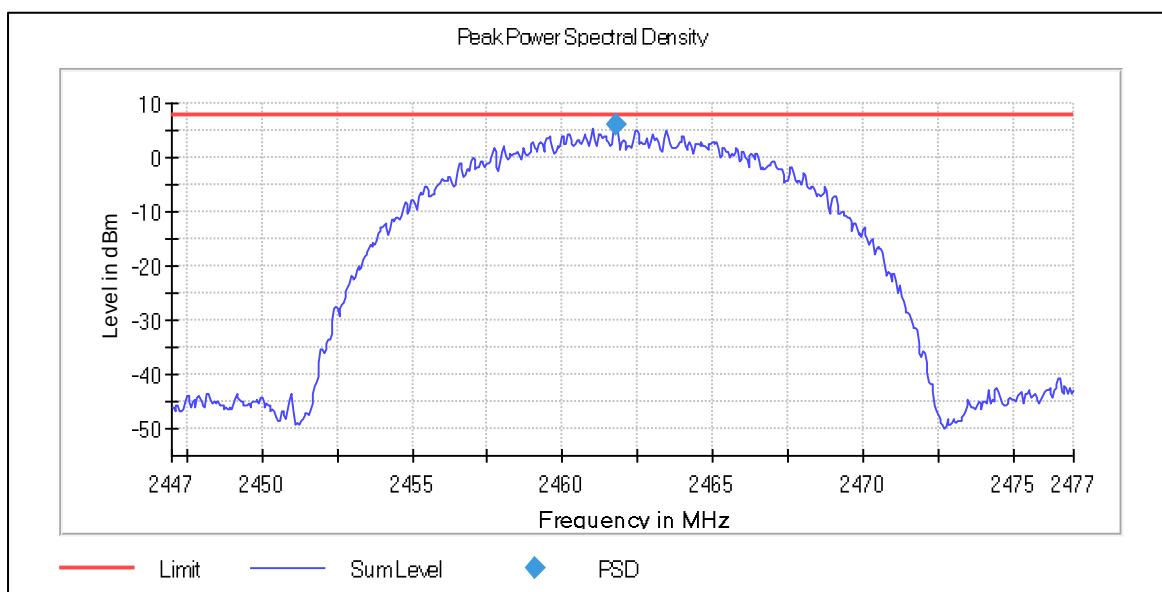
Peak power spectral density, middle channel 802.11g



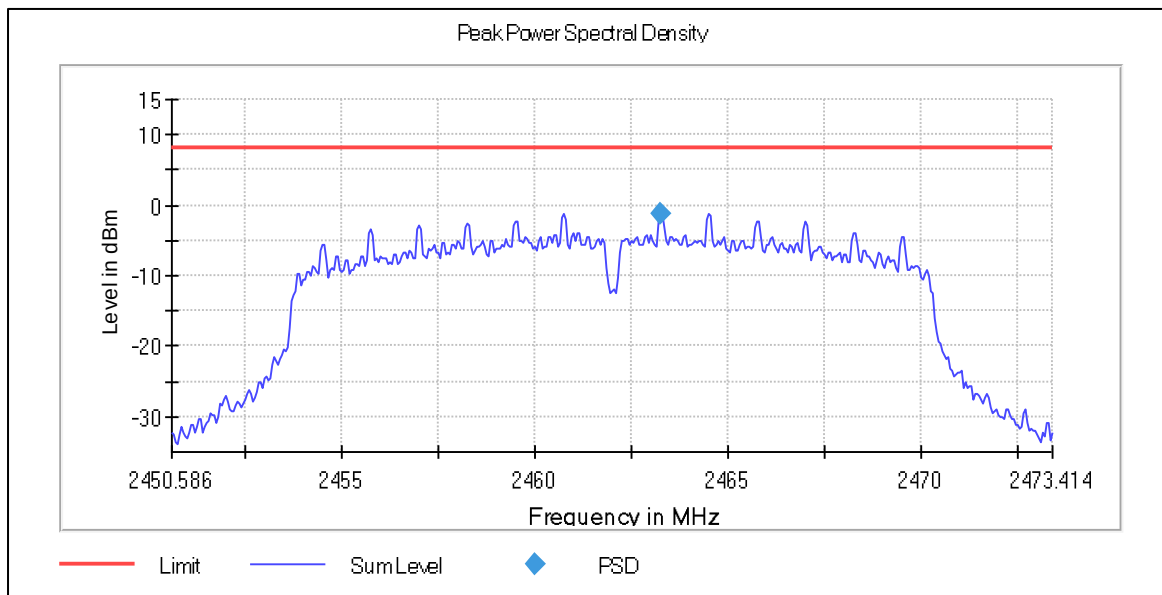
Peak power spectral density, middle channel 802.11n



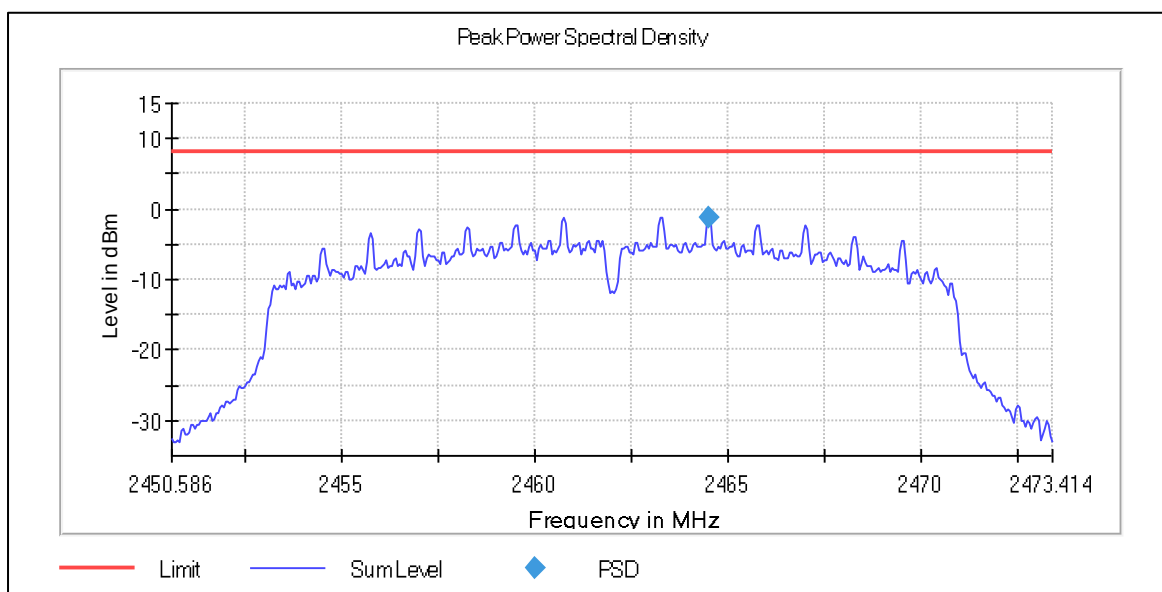
Peak power spectral density, high channel 802.11b



Peak power spectral density, high channel 802.11g



Peak power spectral density, high channel 802.11n



15. Band edge emissions compliance (transmitter)

Reference: FCC §15.247(d), ISED RSS-247, Issue 3 (section 5.5)

Test method: KDB 558074 D01 DTS Meas Guidance v05r02 8.7 and ANSI C63.10-2013 (11.13)

Specification: In any 100 kHz bandwidths outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Limits	
Power measurement	Out-of-band attenuation (dB)
Peak	20
RMS	30

Limits
1. EUT set to test mode (communication tester is used if needed)
2. Span set around lower band edge and detector is set to peak and max hold
3. Resolution bandwidth is set to 100 kHz
4. Peak emission level(s) within frequency band and outside frequency band is measured
5. Band edge attenuation is determined from level difference

Summary

Mode / modulation	DUT Frequency (MHz)	Result
802.11b 11Mbps	2412.000000	PASS
802.11g 54Mbps	2412.000000	PASS
802.11n MCS7	2412.000000	PASS
802.11b 11Mbps	2462.000000	PASS
802.11g 54Mbps	2462.000000	PASS
802.11n MCS7	2462.000000	PASS

Measurements, band edge low 802.11b

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2395.997777	-40.1	29.2	-11.0	PASS
2395.947749	-41.0	30.0	-11.0	PASS
2396.047804	-41.1	30.2	-11.0	PASS
2398.599222	-41.2	30.3	-11.0	PASS
2394.046693	-41.4	30.4	-11.0	PASS
2398.649250	-41.6	30.7	-11.0	PASS
2396.598110	-41.7	30.7	-11.0	PASS
2393.696498	-42.0	31.1	-11.0	PASS
2394.096720	-42.1	31.1	-11.0	PASS
2396.648138	-42.1	31.1	-11.0	PASS
2398.549194	-42.3	31.3	-11.0	PASS
2395.147304	-42.3	31.4	-11.0	PASS
2396.197888	-42.5	31.5	-11.0	PASS
2396.297943	-42.6	31.6	-11.0	PASS
2396.548082	-42.7	31.7	-11.0	PASS

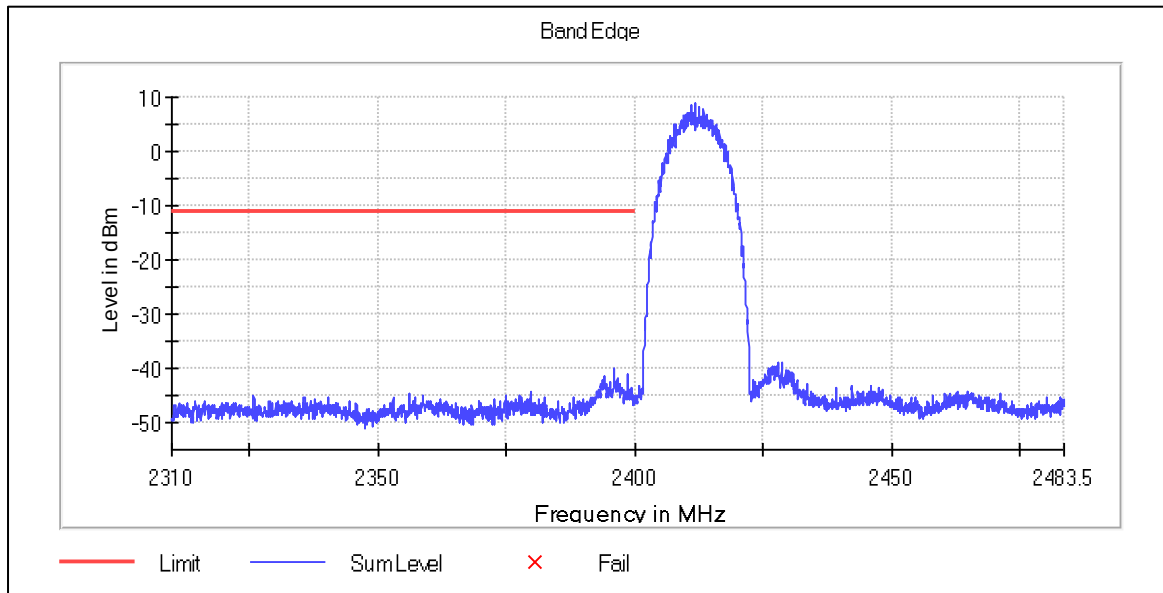
Measurements, band edge low 802.11g

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.849917	-30.3	11.8	-18.6	PASS
2399.799889	-30.4	11.8	-18.6	PASS
2399.949972	-30.8	12.2	-18.6	PASS
2399.899944	-31.1	12.5	-18.6	PASS
2399.549750	-31.2	12.6	-18.6	PASS
2399.449694	-31.2	12.6	-18.6	PASS
2399.299611	-31.3	12.7	-18.6	PASS
2399.749861	-31.3	12.8	-18.6	PASS
2399.499722	-31.4	12.8	-18.6	PASS
2399.399666	-31.4	12.9	-18.6	PASS
2399.249583	-31.4	12.9	-18.6	PASS
2399.699833	-31.5	12.9	-18.6	PASS
2399.599778	-31.9	13.3	-18.6	PASS
2399.349639	-32.0	13.4	-18.6	PASS
2399.649805	-32.1	13.5	-18.6	PASS

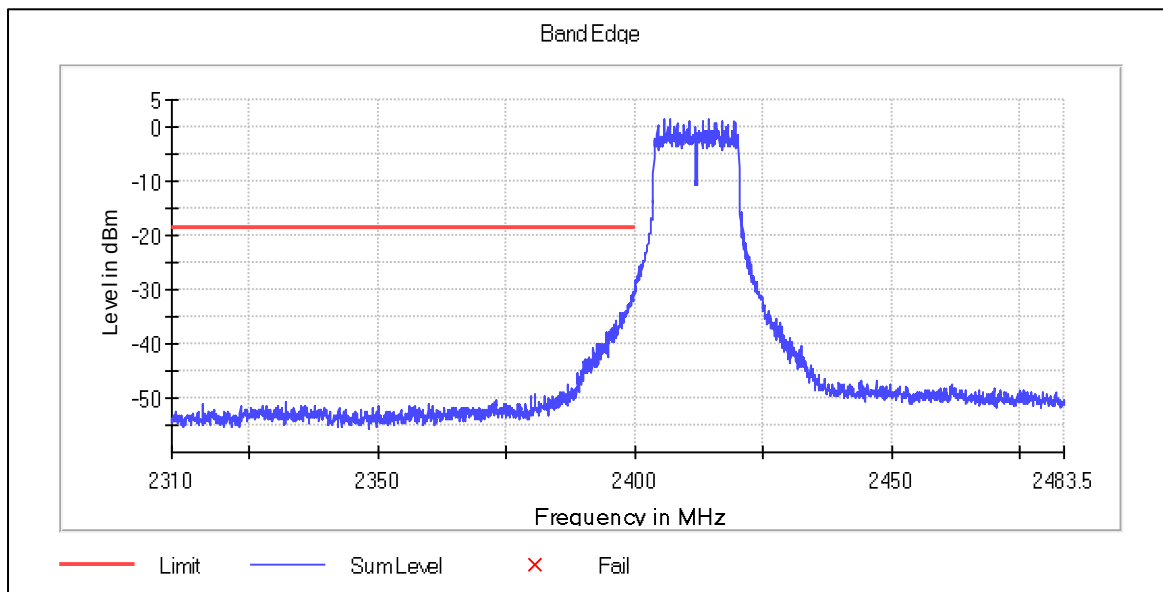
Measurements, band edge low 802.11n

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.549750	-30.1	10.6	-19.5	PASS
2399.499722	-30.5	10.9	-19.5	PASS
2399.799889	-30.7	11.1	-19.5	PASS
2399.749861	-30.8	11.2	-19.5	PASS
2399.449694	-31.3	11.8	-19.5	PASS
2399.849917	-31.4	11.8	-19.5	PASS
2399.699833	-31.4	11.9	-19.5	PASS
2399.249583	-31.4	11.9	-19.5	PASS
2399.949972	-31.5	11.9	-19.5	PASS
2399.899944	-31.5	11.9	-19.5	PASS
2399.299611	-31.6	12.0	-19.5	PASS
2399.599778	-31.6	12.1	-19.5	PASS
2399.649805	-32.1	12.5	-19.5	PASS
2399.399666	-32.2	12.7	-19.5	PASS
2399.199555	-32.3	12.8	-19.5	PASS

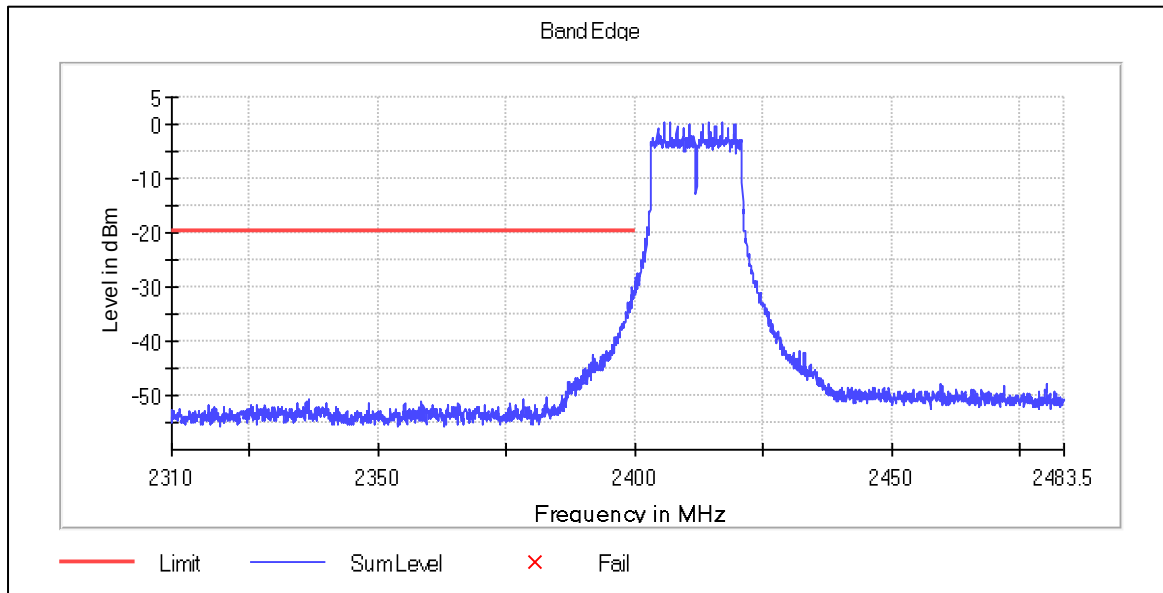
Band edge, low channel 802.11b



Band edge, low channel 802.11g



Band edge, low channel 802.11n



Measurements, band edge high channel 802.11b

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.851064	-43.4	33.0	-10.4	PASS
2489.217325	-43.5	33.1	-10.4	PASS
2483.901216	-43.5	33.1	-10.4	PASS
2485.155015	-43.6	33.2	-10.4	PASS
2489.167173	-43.7	33.3	-10.4	PASS
2485.104863	-43.8	33.4	-10.4	PASS
2496.589666	-44.3	33.9	-10.4	PASS
2485.205167	-44.4	34.0	-10.4	PASS
2484.954407	-44.4	34.0	-10.4	PASS
2485.004559	-44.5	34.0	-10.4	PASS
2483.600304	-44.5	34.1	-10.4	PASS
2487.110942	-44.6	34.2	-10.4	PASS
2495.285714	-44.6	34.2	-10.4	PASS
2493.129179	-44.7	34.2	-10.4	PASS
2488.966565	-44.7	34.2	-10.4	PASS

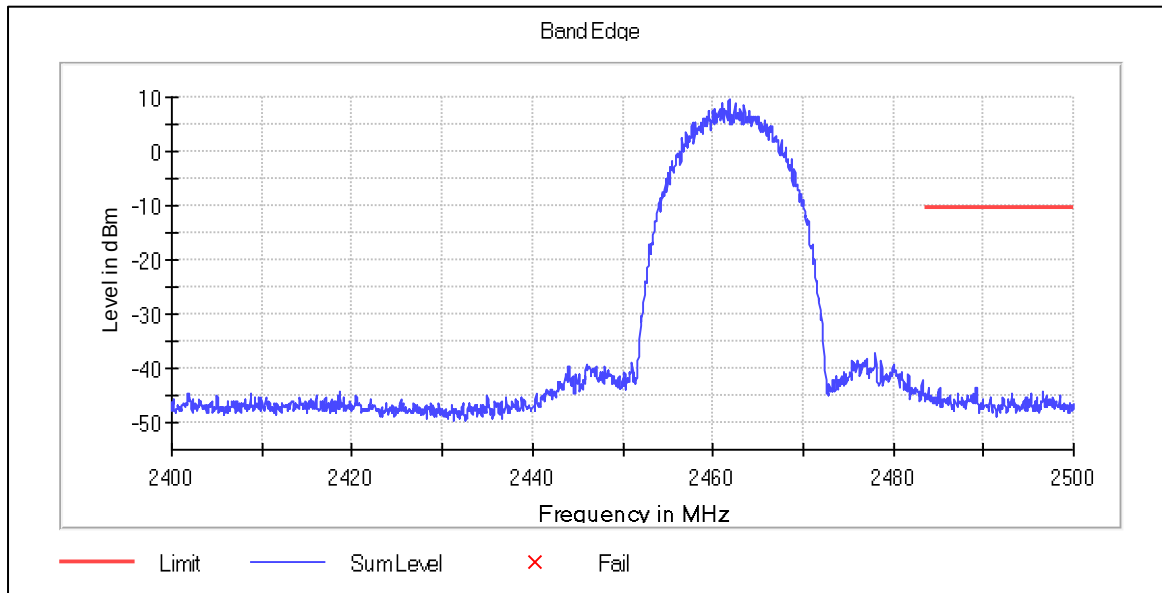
Measurements, band edge high channel 802.11g

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.550152	-45.0	27.0	-18.0	PASS
2483.901216	-45.2	27.3	-18.0	PASS
2484.452888	-45.3	27.3	-18.0	PASS
2484.402736	-45.4	27.4	-18.0	PASS
2484.252280	-45.6	27.6	-18.0	PASS
2483.600304	-45.7	27.7	-18.0	PASS
2483.650456	-45.7	27.7	-18.0	PASS
2484.001520	-45.7	27.7	-18.0	PASS
2484.202128	-45.7	27.8	-18.0	PASS
2484.553191	-46.1	28.1	-18.0	PASS
2484.503040	-46.2	28.2	-18.0	PASS
2483.951368	-46.2	28.3	-18.0	PASS
2483.700608	-46.3	28.4	-18.0	PASS
2483.750760	-46.7	28.7	-18.0	PASS
2484.302432	-46.7	28.8	-18.0	PASS

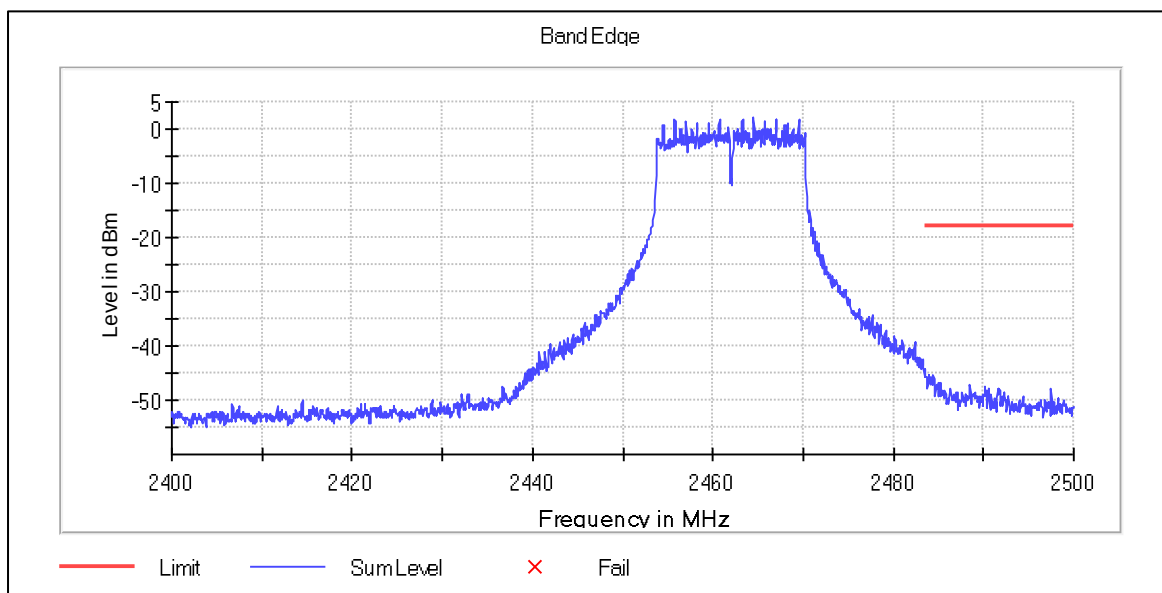
Measurements, band edge high channel 802.11n

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.550152	-46.2	27.1	-19.2	PASS
2483.600304	-46.3	27.1	-19.2	PASS
2483.750760	-46.5	27.3	-19.2	PASS
2483.901216	-46.5	27.4	-19.2	PASS
2484.653495	-46.6	27.5	-19.2	PASS
2483.951368	-46.6	27.5	-19.2	PASS
2484.603343	-46.7	27.5	-19.2	PASS
2483.800912	-46.7	27.5	-19.2	PASS
2486.107903	-46.7	27.5	-19.2	PASS
2483.851064	-47.0	27.8	-19.2	PASS
2486.057751	-47.0	27.8	-19.2	PASS
2483.700608	-47.2	28.1	-19.2	PASS
2484.001520	-47.3	28.1	-19.2	PASS
2484.452888	-47.4	28.2	-19.2	PASS
2484.854103	-47.5	28.4	-19.2	PASS

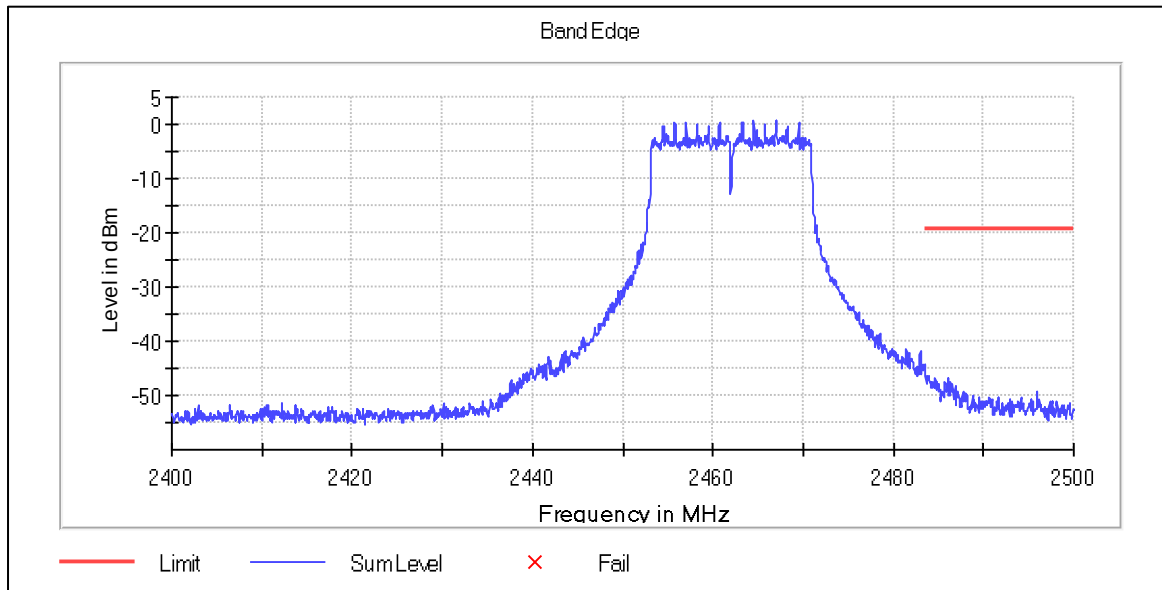
Band edge, high channel 802.11b



Band edge, high channel 802.11g



Band edge, high channel 802.11n



16. Tx spurious emissions, conducted

Reference: FCC §15.247(d), ISSED RSS-247, Issue 3 (section 5.5)

Test method: KDB 558074 D01 DTS Meas Guidance v05r02 8.5 and ANSI C63.10-2013 (11.11.2 & 11.11.3)

Limits	
Power measurement	Out-of-band attenuation (dB)
Peak	20
RMS	30

Test procedure
1. EUT set to test mode (communication tester is used if needed) 2. Span set around lower band edge and detector is set to peak and max hold 3. Resolution bandwidth is set to 100 kHz 4. Markers are set to peak emission levels outside frequency band

Mode / modulation	DUT Frequency (MHz)	Result
802.11b	2412.000000	PASS
802.11g	2412.000000	PASS
802.11n	2412.000000	PASS
802.11b	2442.000000	PASS
802.11g	2442.000000	PASS
802.11n	2442.000000	PASS
802.11b	2462.000000	PASS
802.11g	2462.000000	PASS
802.11n	2462.000000	PASS

Pre Measurements, low channel 802.11b

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2563.488095	-43.3	28.1	-15.2
2573.486607	-43.7	28.6	-15.2
2583.485119	-44.1	28.9	-15.2
2553.489583	-44.4	29.2	-15.2
2543.491071	-46.5	31.3	-15.2
2533.492560	-48.2	33.0	-15.2
2593.483631	-48.2	33.0	-15.2
2523.494048	-48.3	33.1	-15.2
2380.000000	-48.3	33.1	-15.2
2280.000000	-49.3	34.1	-15.2
2270.000000	-49.6	34.4	-15.2
2290.000000	-49.6	34.4	-15.2
1610.000000	-49.8	34.6	-15.2
2503.497024	-49.9	34.7	-15.2
2513.495536	-50.0	34.8	-15.2

Pre Measurements, low channel 802.11g

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2593.483631	-50.0	27.1	-22.9
2583.485119	-50.1	27.2	-22.9
2563.488095	-45.0	27.5	-22.9
2573.486607	-50.5	27.6	-22.9
2553.489583	-51.1	28.2	-22.9
2543.491071	-51.3	28.4	-22.9
2390.000000	-51.7	28.8	-22.9
2533.492560	-52.0	29.1	-22.9
2360.000000	-52.7	29.8	-22.9
2523.494048	-52.9	29.9	-22.9
2380.000000	-53.0	30.1	-22.9
2280.000000	-48.0	30.5	-22.9
2350.000000	-53.5	30.6	-22.9
2493.498512	-54.0	31.0	-22.9
2310.000000	-54.0	31.1	-22.9

Pre Measurements, low channel 802.11n

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2563.488095	-42.6	30.83	-18.8
2573.486607	-43.4	31.53	-18.8
2390.000000	-44.0	32.13	-18.8
2583.485119	-44.1	32.33	-18.8
2543.491071	-44.6	32.83	-18.8
2593.483631	-44.7	32.83	-18.8
2553.489583	-44.9	33.03	-18.8
2493.498512	-46.7	34.83	-18.8
2523.494048	-47.3	35.53	-18.8
2533.492560	-47.4	35.63	-18.8
2300.000000	-47.7	35.83	-18.8
2290.000000	-47.7	35.93	-18.8
2370.000000	-47.7	35.93	-18.8
2513.495536	-47.7	35.93	-18.8
2330.000000	-48.0	36.13	-18.8

Pre Measurements, middle channel 802.11b

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2593.483631	-42.0	28.3	-13.6
2583.485119	-43.4	29.7	-13.6
2613.480655	-43.6	29.9	-13.6
2603.482143	-43.7	30.1	-13.6
2573.486607	-43.9	30.3	-13.6
2553.489583	-44.2	30.5	-13.6
2623.479167	-44.7	31.1	-13.6
2563.488095	-44.7	31.1	-13.6
2290.000000	-45.5	31.9	-13.6
2523.494048	-45.6	31.9	-13.6
2513.495536	-45.6	32.0	-13.6
1630.000000	-45.7	32.0	-13.6
2370.000000	-45.7	32.1	-13.6
2533.492560	-45.9	32.3	-13.6
2543.491071	-45.9	32.3	-13.6

Pre Measurements, middle channel 802.11g

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2593.483631	-43.1	29.0	-14.1
2573.486607	-44.1	30.0	-14.1
2603.482143	-44.2	30.2	-14.1
2583.485119	-45.0	31.0	-14.1
2563.488095	-46.6	32.5	-14.1
2623.479167	-46.8	32.7	-14.1
2613.480655	-46.9	32.8	-14.1
2553.489583	-46.9	32.8	-14.1
2290.000000	-47.1	33.0	-14.1
2320.000000	-47.5	33.4	-14.1
2280.000000	-47.6	33.5	-14.1
2350.000000	-47.7	33.7	-14.1
2310.000000	-47.8	33.7	-14.1
2300.000000	-47.9	33.9	-14.1
2340.000000	-48.0	33.9	-14.1

Pre Measurements, middle channel 802.11n

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2603.482143	-40.3	31.53	-15.7
2573.486607	-40.5	31.63	-15.7
2593.483631	-40.5	31.73	-15.7
2563.488095	-41.2	32.33	-15.7
2613.480655	-41.6	32.83	-15.7
2583.485119	-41.9	33.13	-15.7
2300.000000	-42.4	33.53	-15.7
2553.489583	-42.6	33.83	-15.7
2290.000000	-43.4	34.53	-15.7
2533.492560	-43.4	34.63	-15.7
2623.479167	-43.7	34.93	-15.7
2320.000000	-44.1	35.33	-15.7
2310.000000	-44.3	35.53	-15.7
2503.497024	-44.3	35.53	-15.7
2390.000000	-44.3	35.53	-15.7

Pre Measurements, high channel 802.11b

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
25820.026786	-39.4	22.80	-13.6
25310.102679	-39.9	23.30	-13.6
25790.031250	-40.0	23.40	-13.6
25860.020833	-40.2	23.60	-13.6
25850.022321	-40.3	23.70	-13.6
25410.087798	-40.5	23.90	-13.6
25400.089286	-40.5	24.00	-13.6
25300.104167	-40.5	24.00	-13.6
24880.166667	-40.6	24.00	-13.6
25830.025298	-40.6	24.00	-13.6
25920.011905	-40.7	24.10	-13.6
25910.013393	-40.7	24.10	-13.6
25440.083333	-40.7	24.10	-13.6
25810.028274	-40.8	24.20	-13.6
25360.095238	-40.8	24.20	-13.6

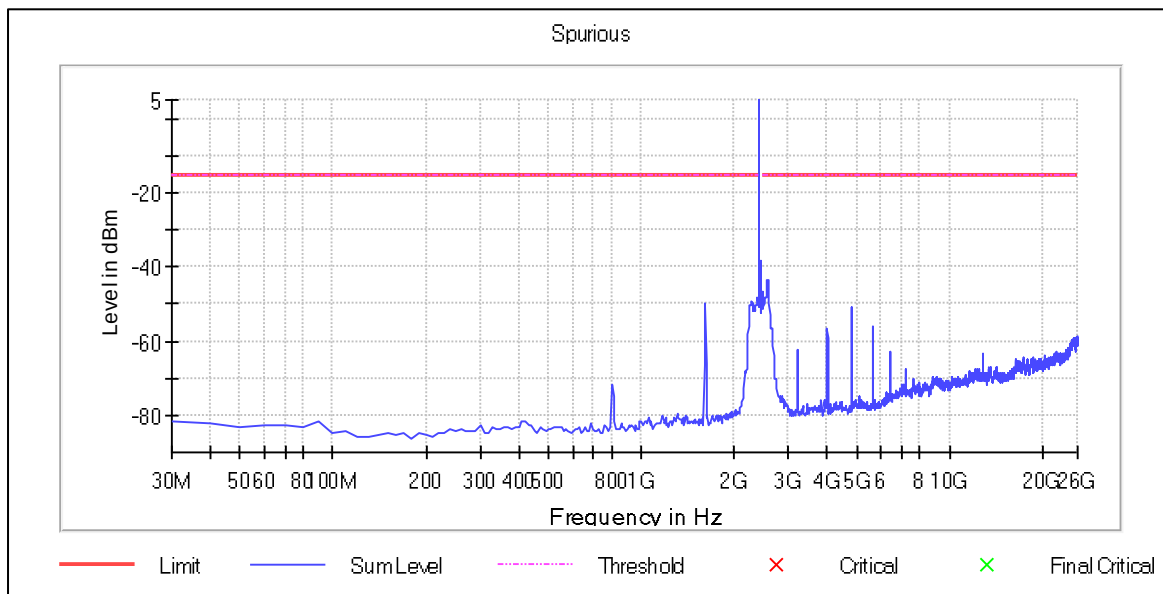
Pre Measurements, high channel 802.11g

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
25840.023810	-37.9	18.5	-19.4
25860.020833	-38.2	18.8	-19.4
25810.028274	-38.7	19.4	-19.4
25820.026786	-38.9	19.6	-19.4
25390.090774	-39.0	19.6	-19.4
25850.022321	-39.0	19.6	-19.4
25830.025298	-39.0	19.7	-19.4
25340.098214	-39.1	19.7	-19.4
25890.016369	-39.2	19.8	-19.4
25960.005952	-39.2	19.8	-19.4
25870.019345	-39.3	19.9	-19.4
25910.013393	-39.3	19.9	-19.4
25350.096726	-39.3	19.9	-19.4
25420.086310	-39.3	19.9	-19.4
25780.032738	-39.3	20.0	-19.4

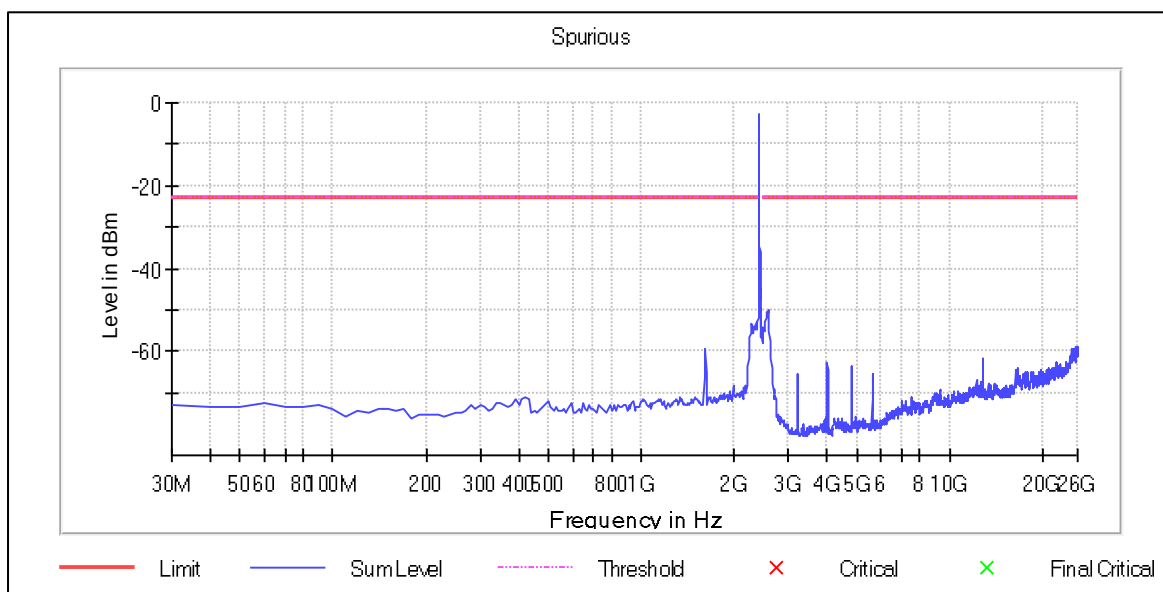
Pre Measurements, high channel 802.11n

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
25840.023810	-32.3	19.83	-19.4
25830.025298	-32.5	19.93	-19.4
25850.022321	-32.7	20.23	-19.4
25880.017857	-32.9	20.43	-19.4
25780.032738	-33.4	20.93	-19.4
25260.110119	-33.5	21.03	-19.4
25820.026786	-33.7	21.23	-19.4
25000.148810	-33.8	21.23	-19.4
25810.028274	-33.8	21.23	-19.4
25440.083333	-33.8	21.33	-19.4
25890.016369	-33.9	21.43	-19.4
25940.008929	-33.9	21.43	-19.4
25350.096726	-34.0	21.53	-19.4
25340.098214	-34.0	21.53	-19.4
25370.093750	-34.0	21.53	-19.4

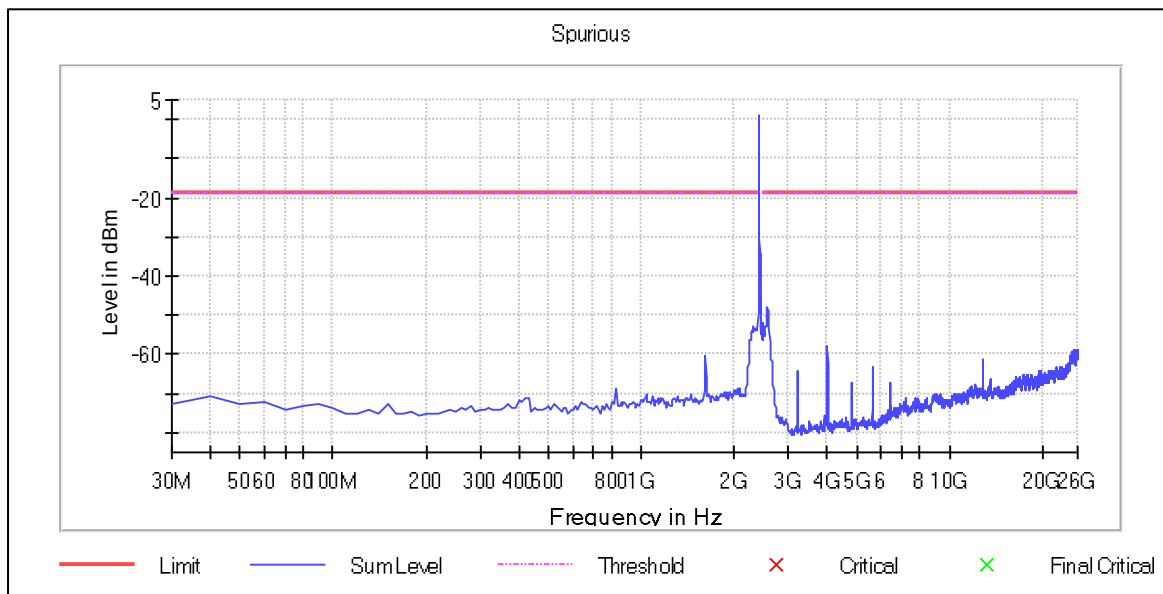
Low channel 802.11b



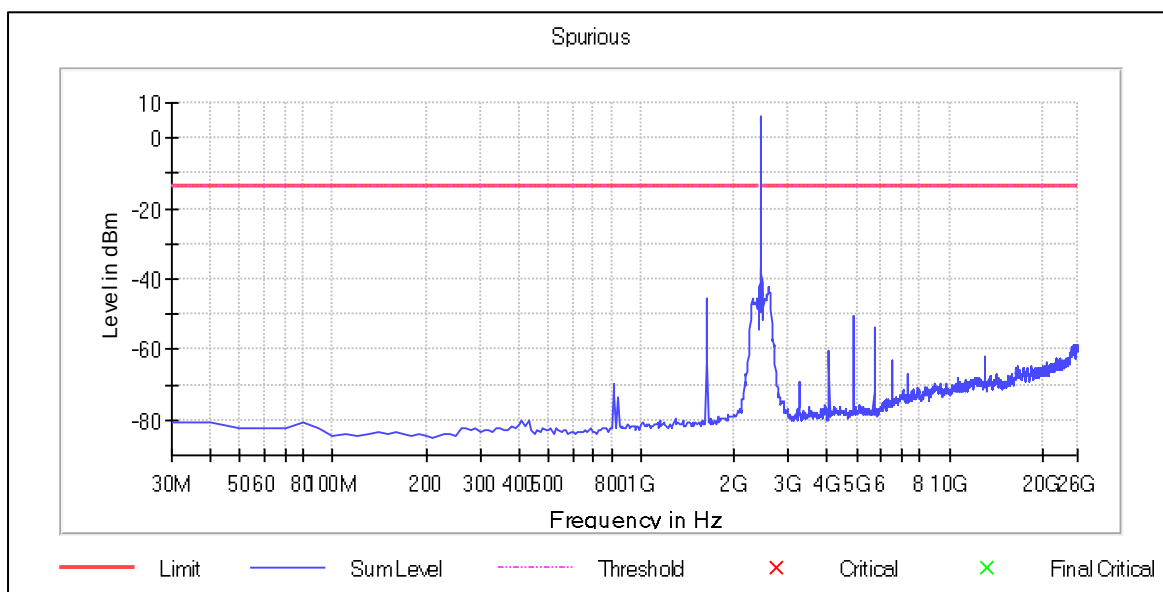
Low channel 802.11g



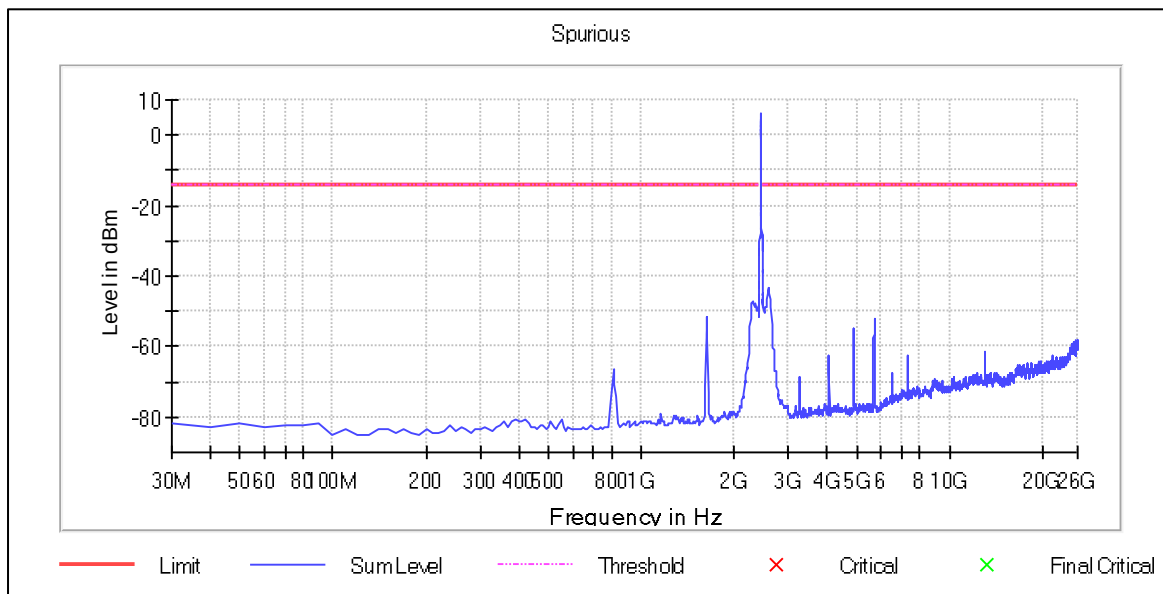
Low channel 802.11n



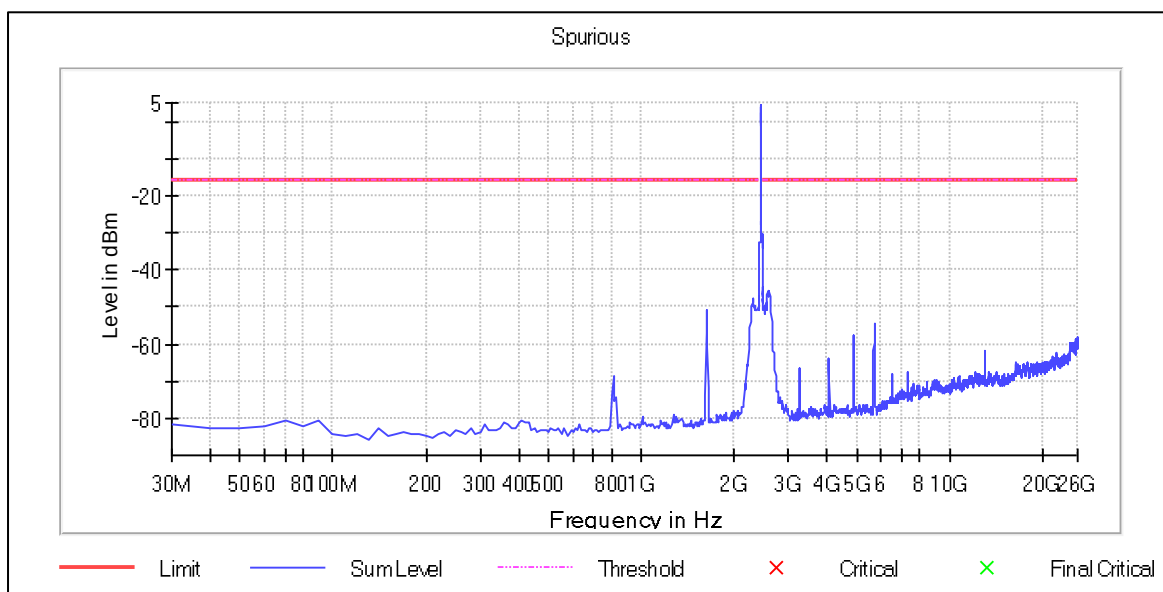
Middle channel 802.11b



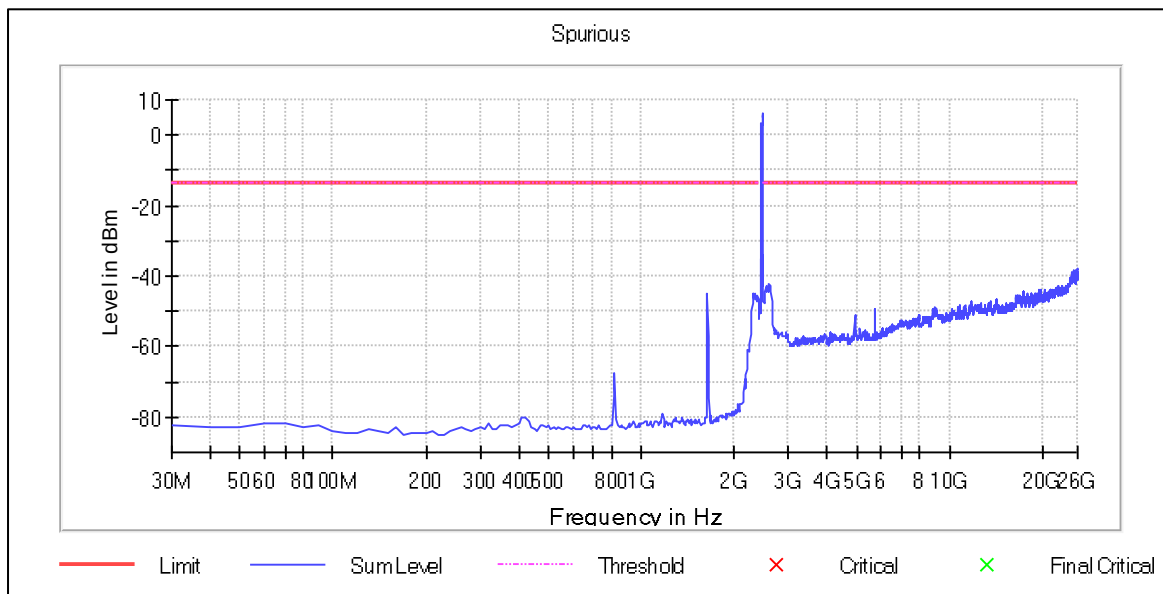
Middle channel 802.11g



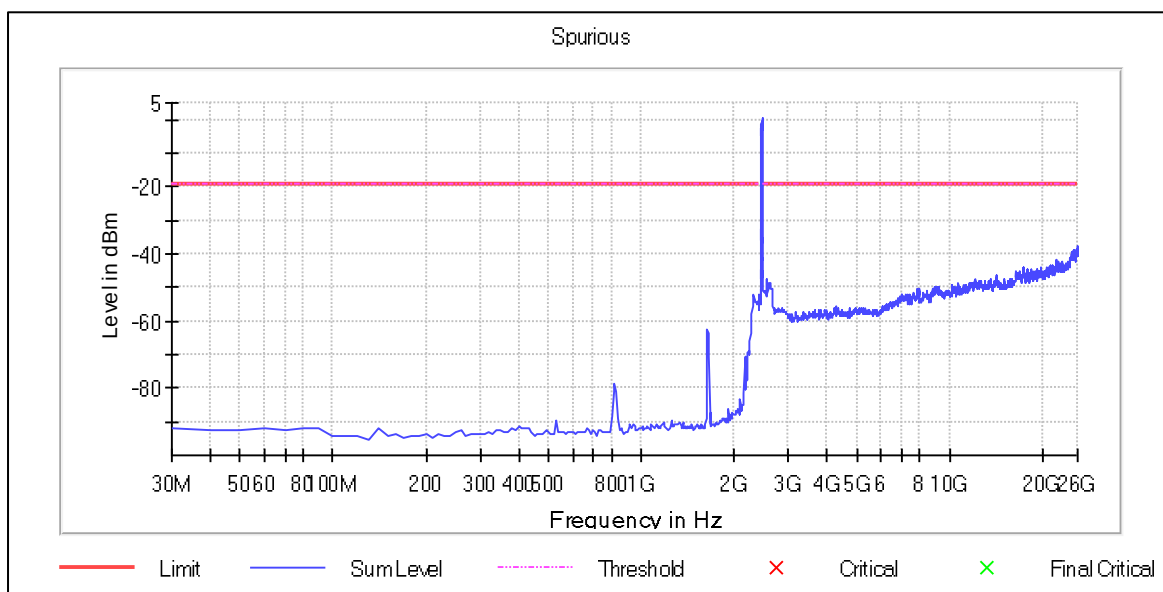
Middle channel 802.11n



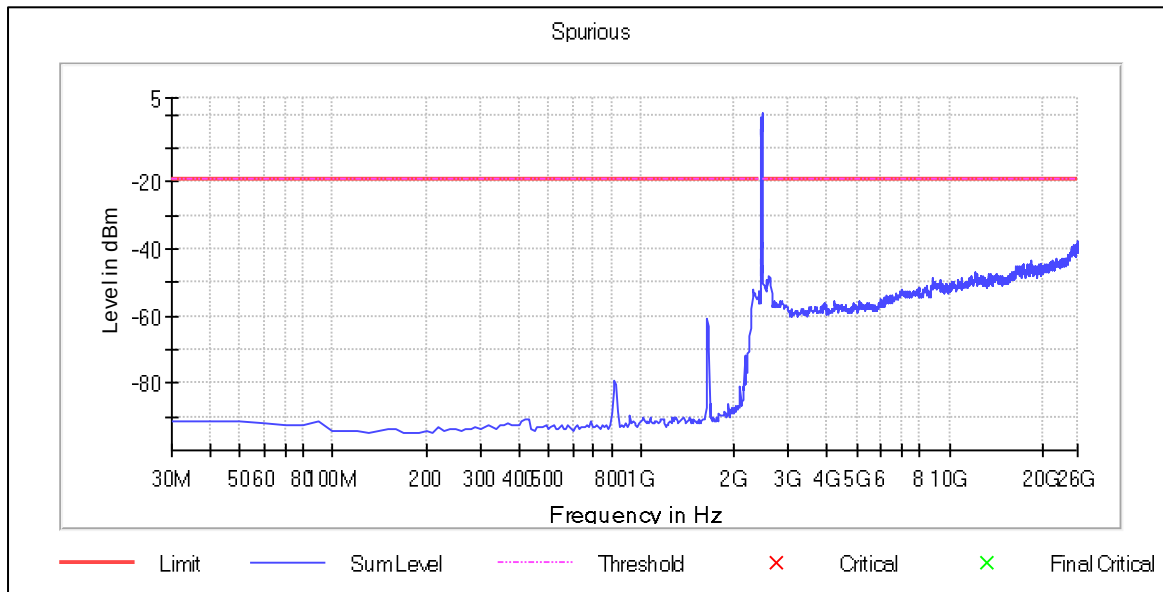
High channel 802.11b



High channel 802.11g



High channel 802.11n



17. Tx spurious emissions, radiated

Reference: FCC §15.247(d), FCC §15.209, ISED RSS-Gen Issue 5 A2 (section 6.13)

Test method: KDB 558074 D01 DTS Meas Guidance v05r02 8.5 and ANSI C63.10-2013 (6.4, 6.5, 6.6 & 11.12)

Specification: Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)/RSS-Gen):

Limits				
Frequency range (MHz)	Detector	Field strength (uV/m)	Field strength (dBuV/m)	Measurement distance (m)
0.009 – 0.09	Average	2400/F(kHz)	-	300
0.09 – 0.110	Quasi-Peak	2400/F(kHz)	-	300
0.110 – 0.490	Average	2400/F(kHz)	-	300
0.490 – 1.705	Quasi-Peak	24000/F(kHz)	-	30
1.705 – 30.0	Quasi-Peak	30	-	30
30 - 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 - 1000	Quasi-Peak	500	54	3
>1000	Average	500	54	3

Test procedure 30 MHz -1 GHz

1. EUT is placed on a non-conducting support at the center of a turn table 0.8m above the ground.
2. EUT set to test mode.
3. The receiver is set to peak detection with max hold.
4. The EUT is rotated through 360 degrees (orientation varied), measurements were made in both horizontal and vertical planes of polarization.
5. Found peak values were further maximized by adjusting turntable position $\pm 22,5$ degrees around detected value and scanning the antenna height 1 to 4m
6. For maximized values, final measurement was done with the corresponding final detector.

Test procedure > 1 GHz

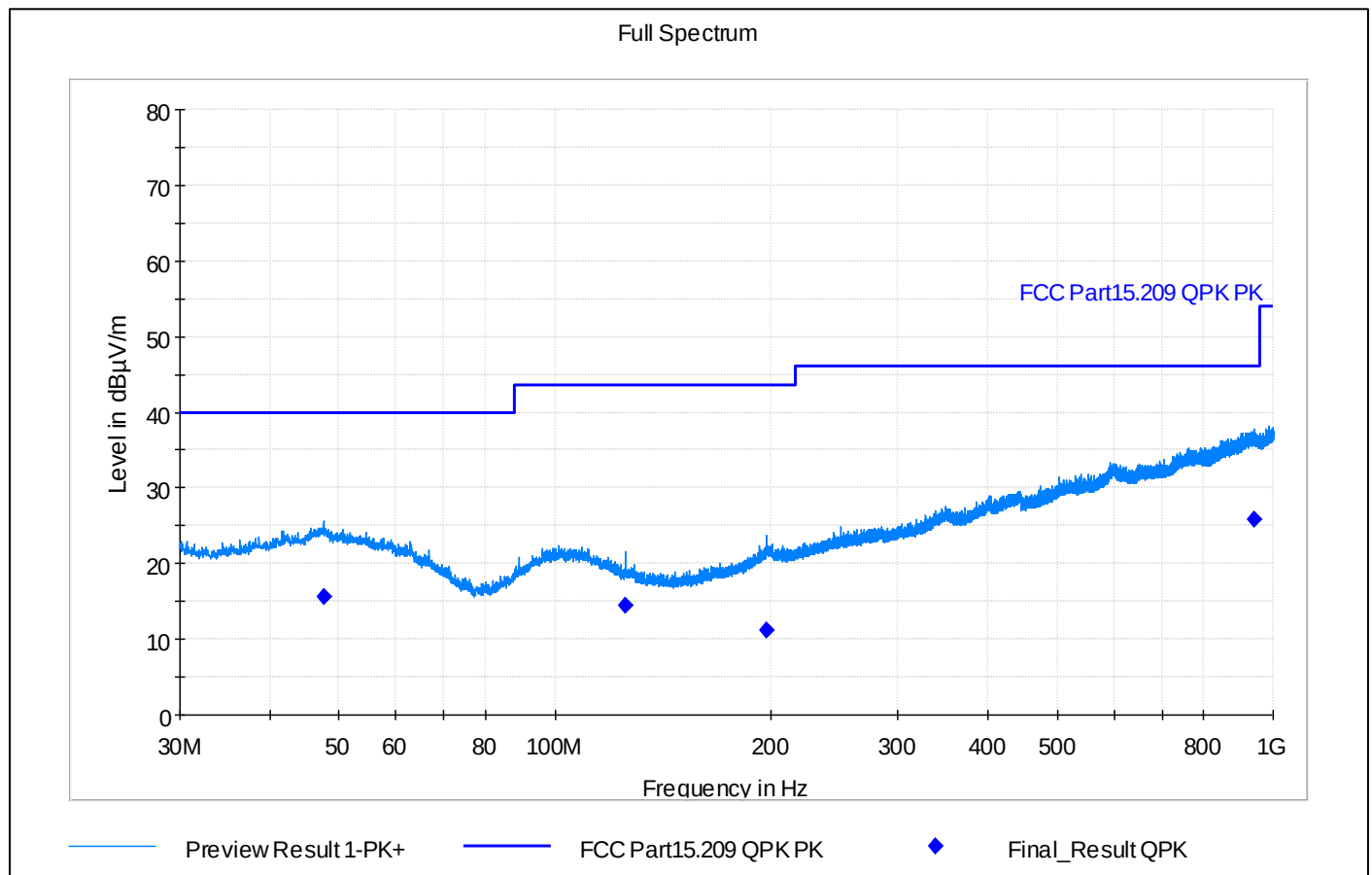
1. EUT is placed on a non-conducting support at the center of a turn table 1.5m above the ground.
2. EUT set to test mode.
3. The receiver is set to peak detection with max hold.
4. The EUT is rotated through 360 degrees (orientation varied), measurements were made in both horizontal and vertical planes of polarization.
5. Found peak values were further maximized by adjusting turntable position $\pm 22,5$ degrees around detected value and scanning the antenna height 1 to 4m.
6. For maximized values, final measurement was done with the corresponding final detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function. RSS-247: Attenuation below the general field strength limits specified in RSS-Gen is not required.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

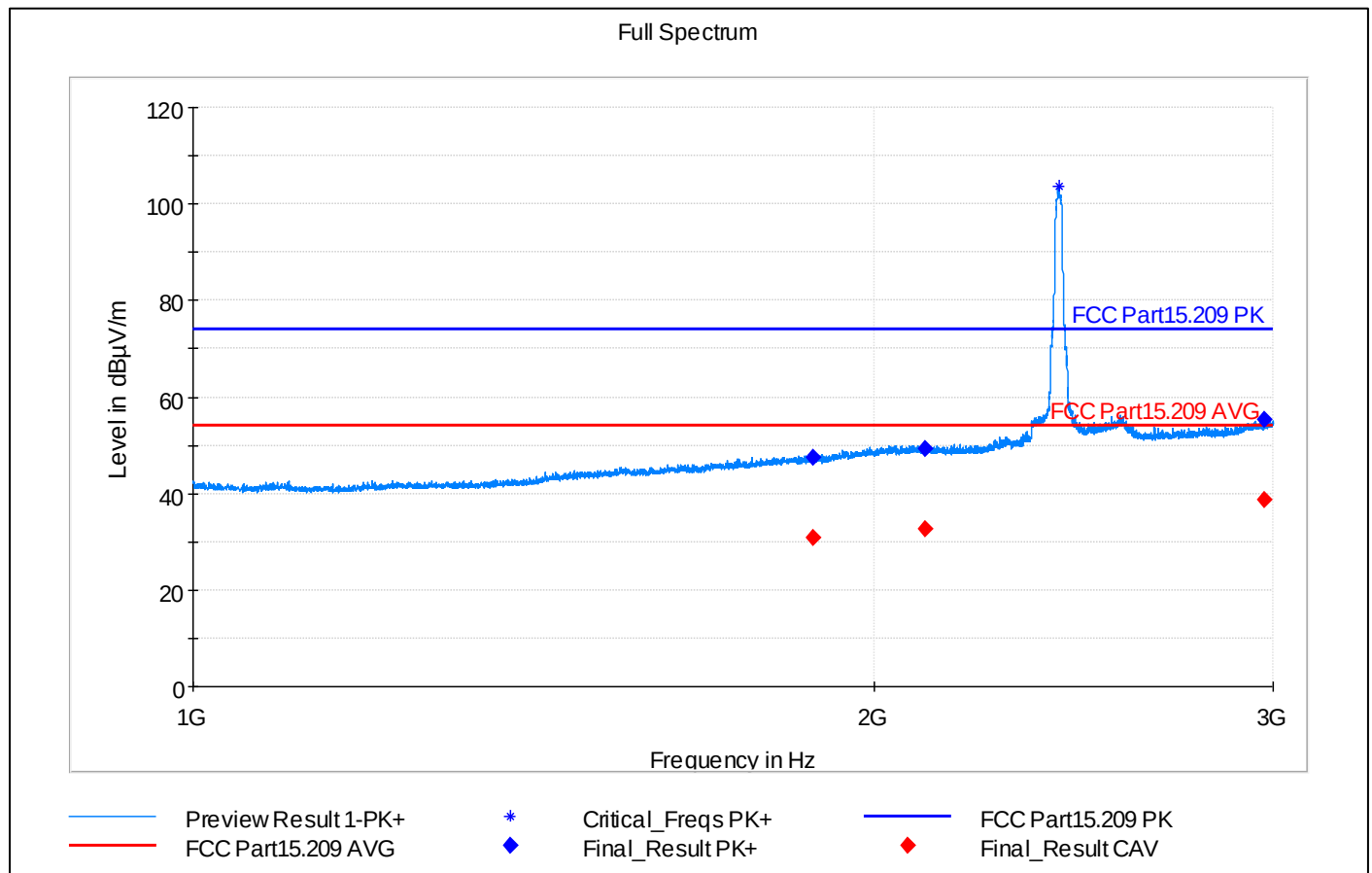
Operation mode(s)	Configuration	Test Verdict
WLAN 802.11g TX, 6 Mbps	Low channel, 2412 MHz	PASS
WLAN 802.11g TX, 6 Mbps	Mid channel, 2442 MHz	PASS
WLAN 802.11g TX, 6 Mbps	High channel, 2462 MHz	PASS
WLAN 802.11b TX, 11 Mbps	Low channel, 2412 MHz	PASS
WLAN 802.11b TX, 11 Mbps	Mid channel, 2442 MHz	PASS
WLAN 802.11b TX, 11 Mbps	High channel, 2462 MHz	PASS

Low channel, 30 MHz – 1 GHz, 802.11g



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
47.520000	15.69	---	40.00	24.31	15000.0	120.000	98.0	V	331.0	180.0	21.0	PASS
125.010000	14.37	---	43.50	29.13	15000.0	120.000	130.0	H	299.0	90.0	17.0	PASS
197.070000	11.20	---	43.50	32.30	15000.0	120.000	266.0	H	154.0	90.0	20.4	PASS
941.100000	25.79	---	46.00	20.21	15000.0	120.000	410.0	V	292.0	90.0	34.1	PASS

Low channel, 1 – 3 GHz, 802.11g


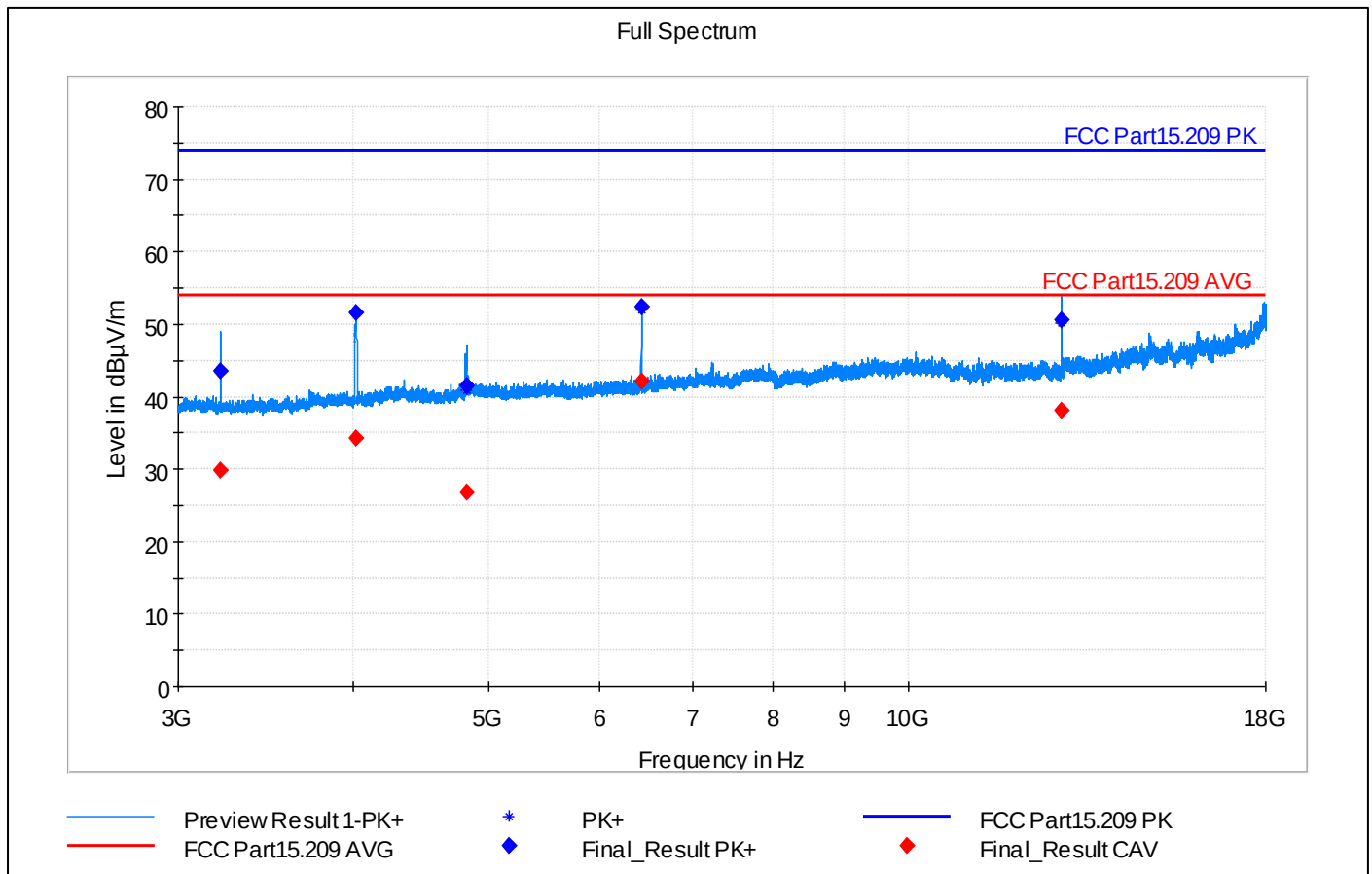
Note: Frequency 2412,000 MHz is excluded from spurious domain measurements and ignored. See table below.

Critical Freqs

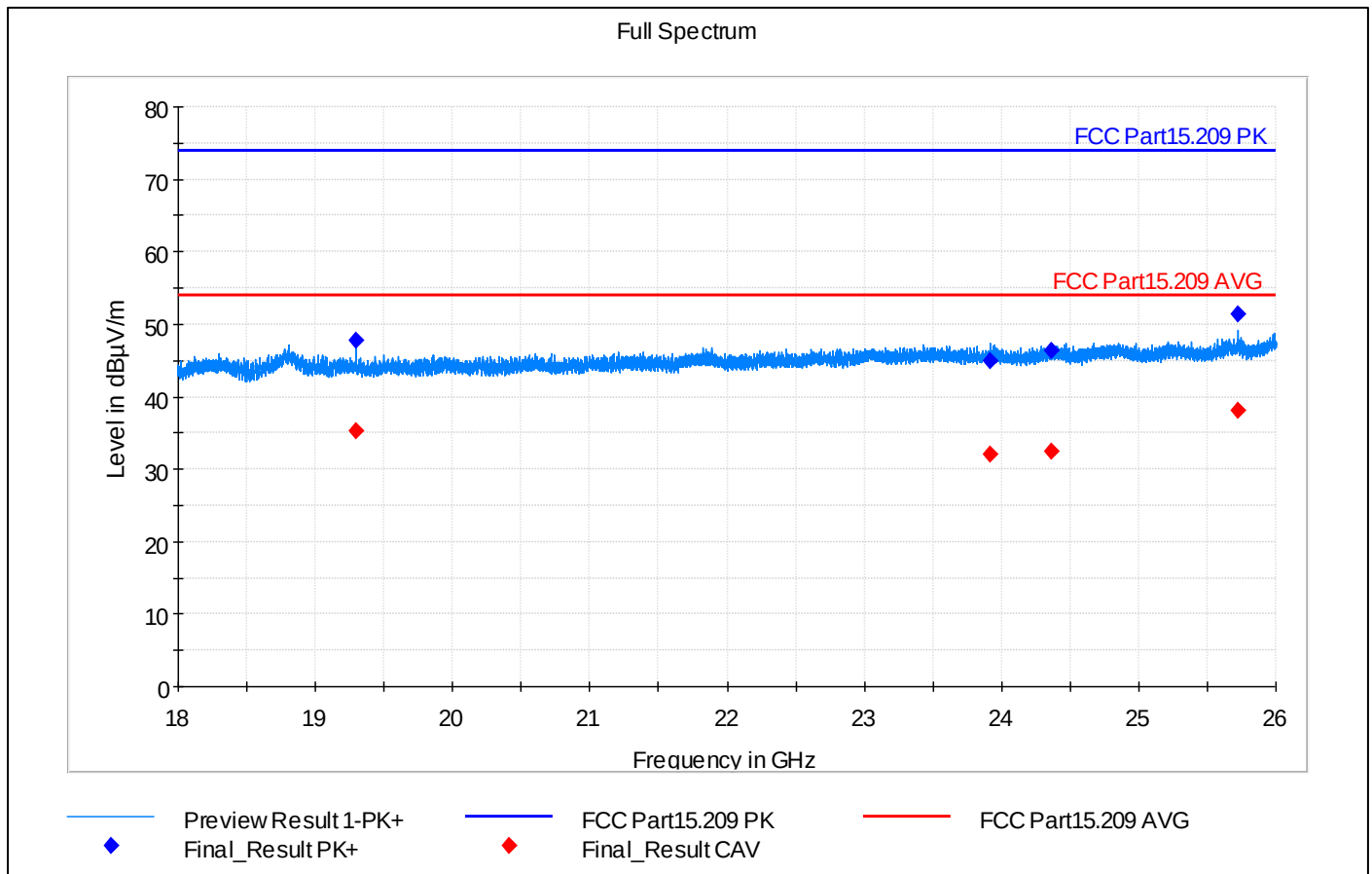
Frequency (MHz)	Comment
2412.000000	Fundamental Wifi signal ***IGNORED***

Final Result

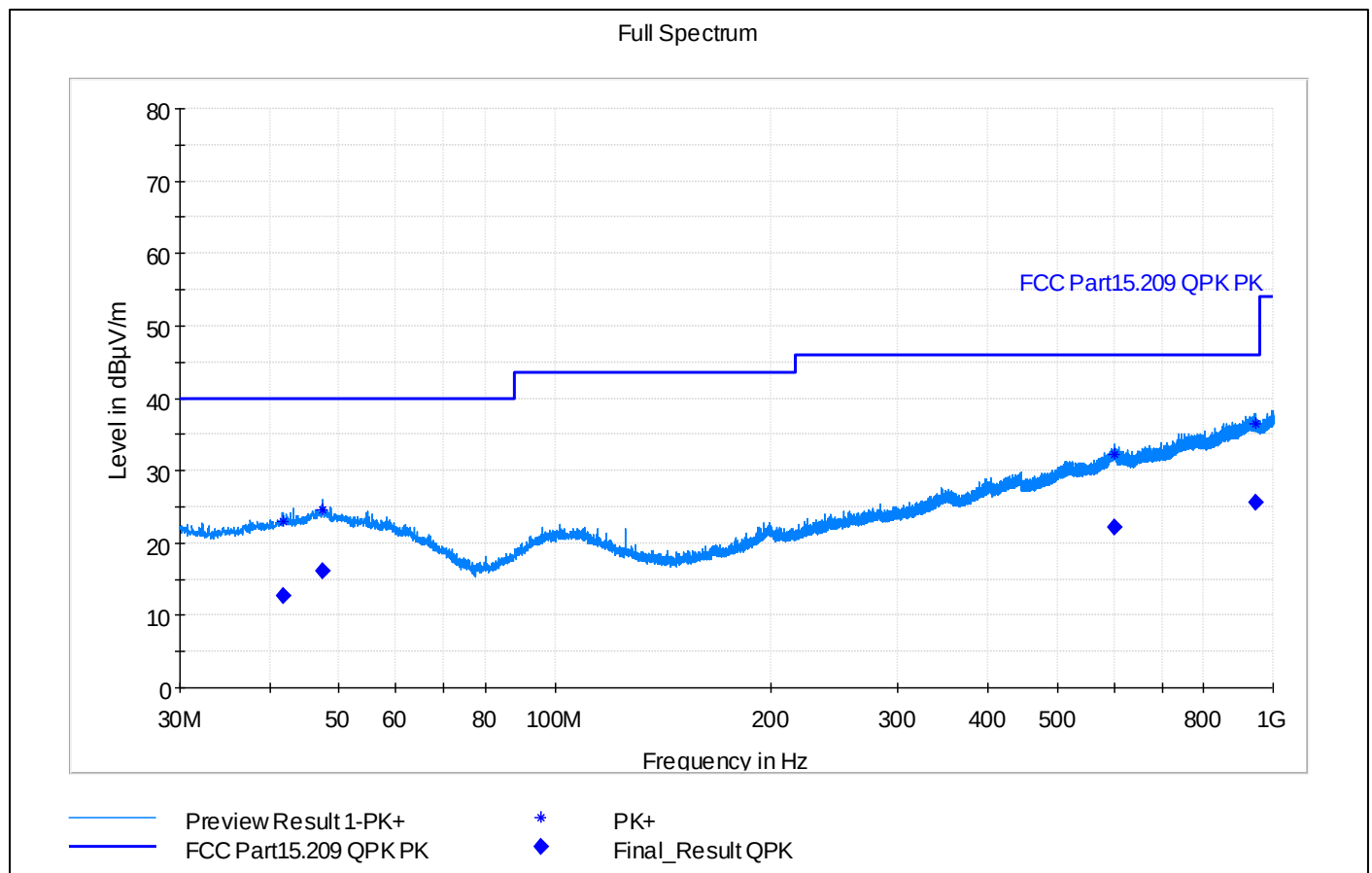
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
1880.250000	---	30.78	54.00	23.22	15000.0	1000.000	300.0	H	257.0	0.0	35.4	PASS
1880.250000	47.42	---	74.00	26.58	15000.0	1000.000	300.0	H	257.0	0.0	35.4	PASS
2106.000000	---	32.63	54.00	21.37	15000.0	1000.000	222.0	H	165.0	90.0	37.1	PASS
2106.000000	49.36	---	74.00	24.64	15000.0	1000.000	222.0	H	165.0	90.0	37.1	PASS
2973.000000	---	38.67	54.00	15.33	15000.0	1000.000	330.0	V	199.0	90.0	40.6	PASS
2973.000000	55.24	---	74.00	18.76	15000.0	1000.000	330.0	V	199.0	90.0	40.6	PASS

Low channel, 3 – 18 GHz, 802.11g

Final_Result

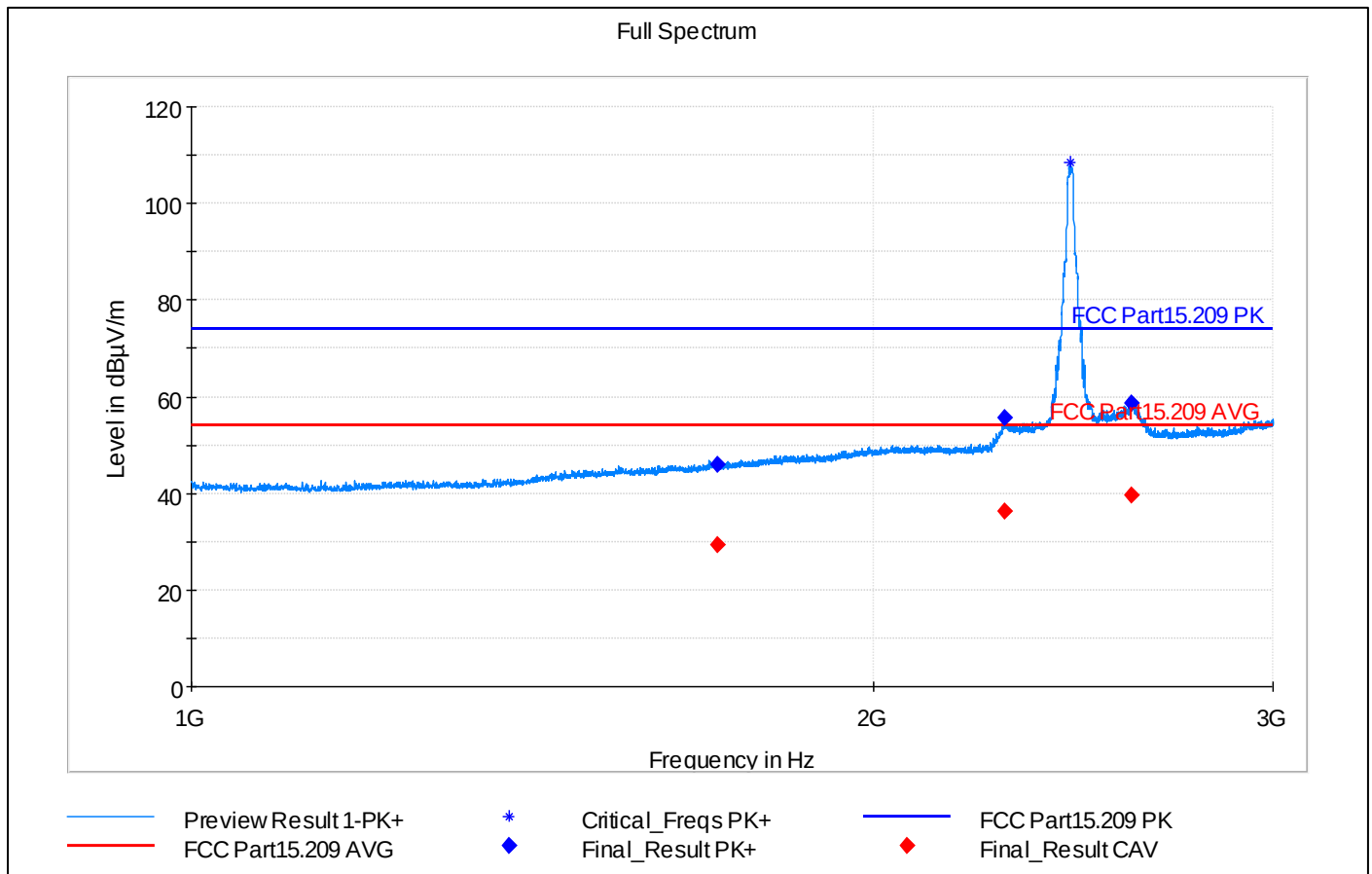
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
3216.000000	---	29.79	54.00	24.21	15000.0	1000.000	122.0	H	292.0	0.0	4.7	PASS
3216.000000	43.53	---	74.00	30.47	15000.0	1000.000	122.0	H	292.0	0.0	4.7	PASS
4021.250000	---	34.28	54.00	19.72	15000.0	1000.000	201.0	V	202.0	180.0	7.4	PASS
4021.250000	51.68	---	74.00	22.32	15000.0	1000.000	201.0	V	202.0	180.0	7.4	PASS
4822.250000	---	26.83	54.00	27.17	15000.0	1000.000	183.0	V	259.0	180.0	9.1	PASS
4822.250000	41.51	---	74.00	32.49	15000.0	1000.000	183.0	V	259.0	180.0	9.1	PASS
6432.000000	52.30	---	74.00	21.70	15000.0	1000.000	119.0	H	179.0	90.0	11.8	PASS
6432.000000	---	42.14	54.00	11.86	15000.0	1000.000	119.0	H	179.0	90.0	11.8	PASS
12864.000000	50.61	---	74.00	23.39	15000.0	1000.000	101.0	V	236.0	0.0	20.4	PASS
12864.000000	---	38.16	54.00	15.84	15000.0	1000.000	101.0	V	236.0	0.0	20.4	PASS

Low channel, 18 – 26 GHz, 802.11g

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
19296.000000	---	35.17	54.00	18.83	3000.0	1000.000	119.0	H	159.0	90.0	23.7	PASS
19296.000000	47.77	---	74.00	26.23	3000.0	1000.000	119.0	H	159.0	90.0	23.7	PASS
23919.250000	---	32.10	54.00	21.90	3000.0	1000.000	134.0	V	271.0	180.0	25.8	PASS
23919.250000	44.94	---	74.00	29.06	3000.0	1000.000	134.0	V	271.0	180.0	25.8	PASS
24360.250000	46.38	---	74.00	27.62	3000.0	1000.000	340.0	V	22.0	0.0	26.1	PASS
24360.250000	---	32.35	54.00	21.65	3000.0	1000.000	340.0	V	22.0	0.0	26.1	PASS
25728.000000	51.31	---	74.00	22.69	3000.0	1000.000	159.0	H	71.0	0.0	26.7	PASS
25728.000000	---	38.05	54.00	15.95	3000.0	1000.000	159.0	H	71.0	0.0	26.7	PASS

Mid channel, 30 MHz – 1 GHz, 802.11g

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
41.700000	12.62	---	40.00	27.38	15000.0	120.000	175.0	V	147.0	180.0	20.0	PASS
47.370000	16.03	---	40.00	23.97	15000.0	120.000	98.0	V	67.0	0.0	21.0	PASS
601.020000	22.09	---	46.00	23.91	15000.0	120.000	226.0	V	241.0	90.0	29.9	PASS
945.840000	25.54	---	46.00	20.46	15000.0	120.000	204.0	H	158.0	0.0	34.1	PASS

Mid channel, 1-3 GHz, 802.11g, 802.11g


Note: Frequency 2442,000 MHz is excluded from spurious domain measurements and ignored. See table below.

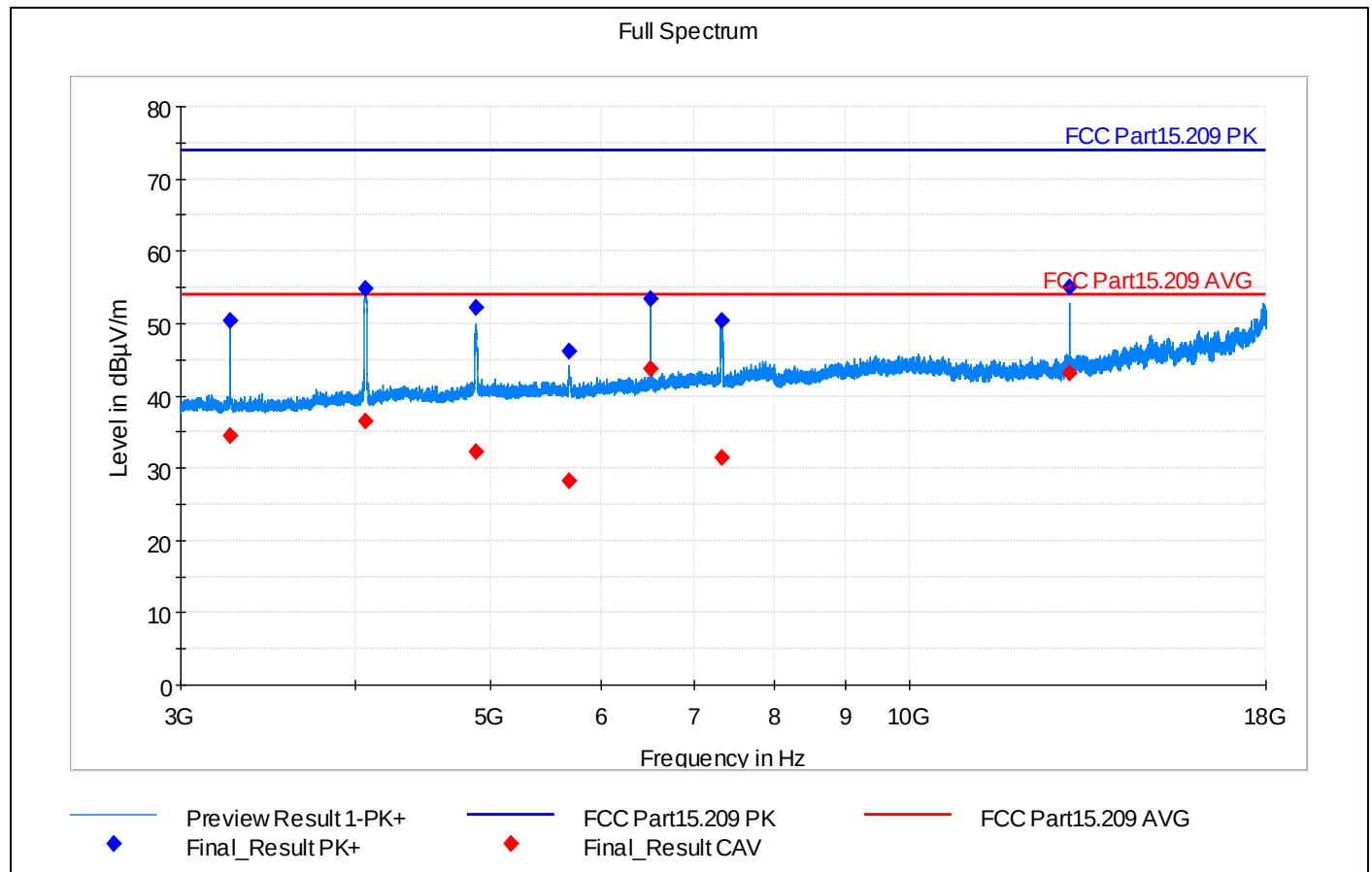
Critical_Freqs

Frequency (MHz)	Comment
2442.000000	Fundamental signal *** IGNORED ***

Final_Result

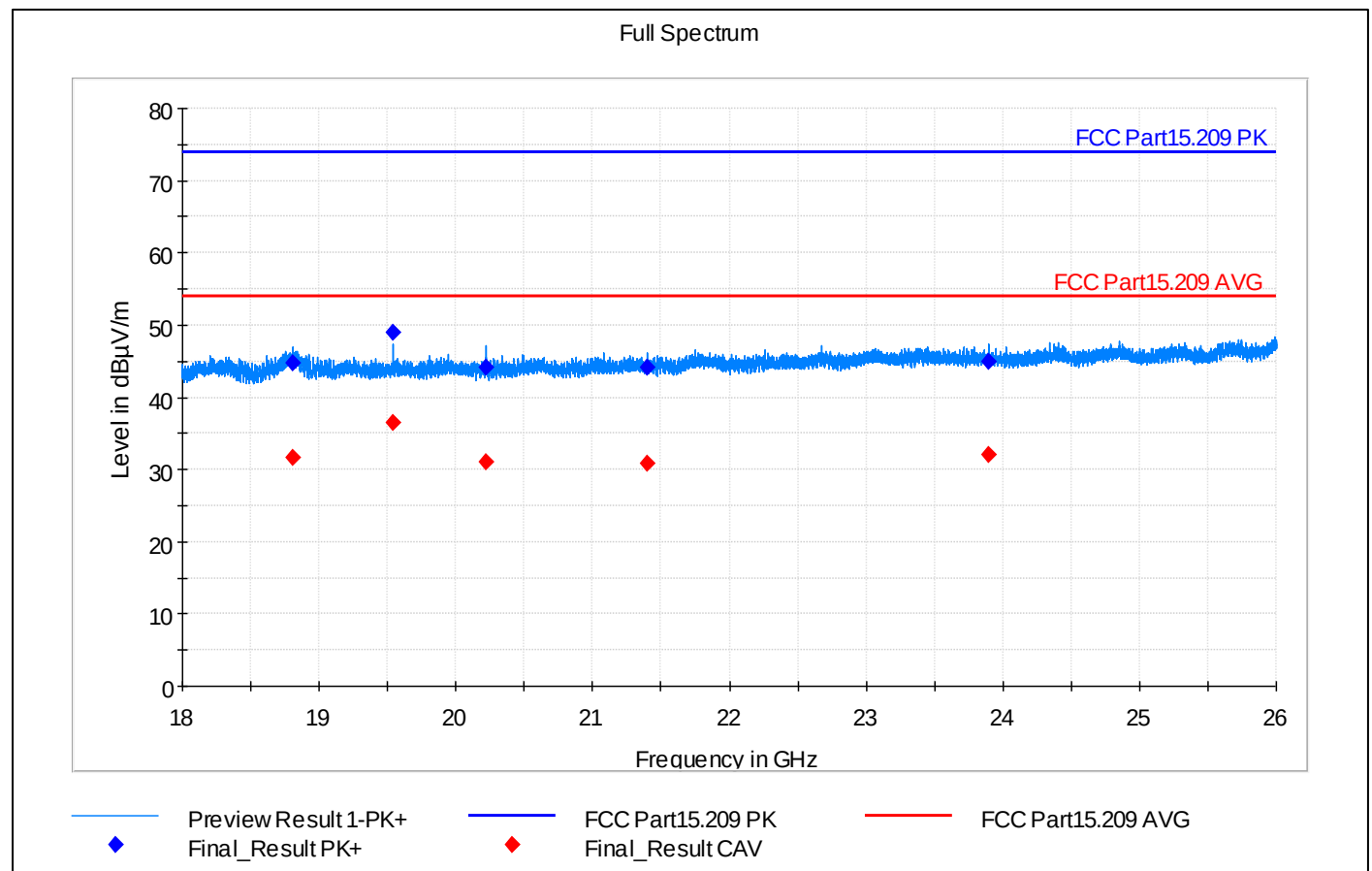
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
1707.750000	---	29.32	54.00	24.68	15000.0	1000.000	147.0	H	220.0	0.0	34.4	PASS
1707.750000	45.84	---	74.00	28.16	15000.0	1000.000	147.0	H	220.0	0.0	34.4	PASS
2285.250000	---	36.15	54.00	17.85	15000.0	1000.000	164.0	H	292.0	0.0	37.4	PASS
2285.250000	55.57	---	74.00	18.43	15000.0	1000.000	164.0	H	292.0	0.0	37.4	PASS
2599.000000	---	39.58	54.00	14.42	15000.0	1000.000	172.0	V	145.0	180.0	39.1	PASS
2599.000000	58.53	---	74.00	15.47	15000.0	1000.000	172.0	V	145.0	180.0	39.1	PASS

Mid channel, 3–18 GHz, 802.11g

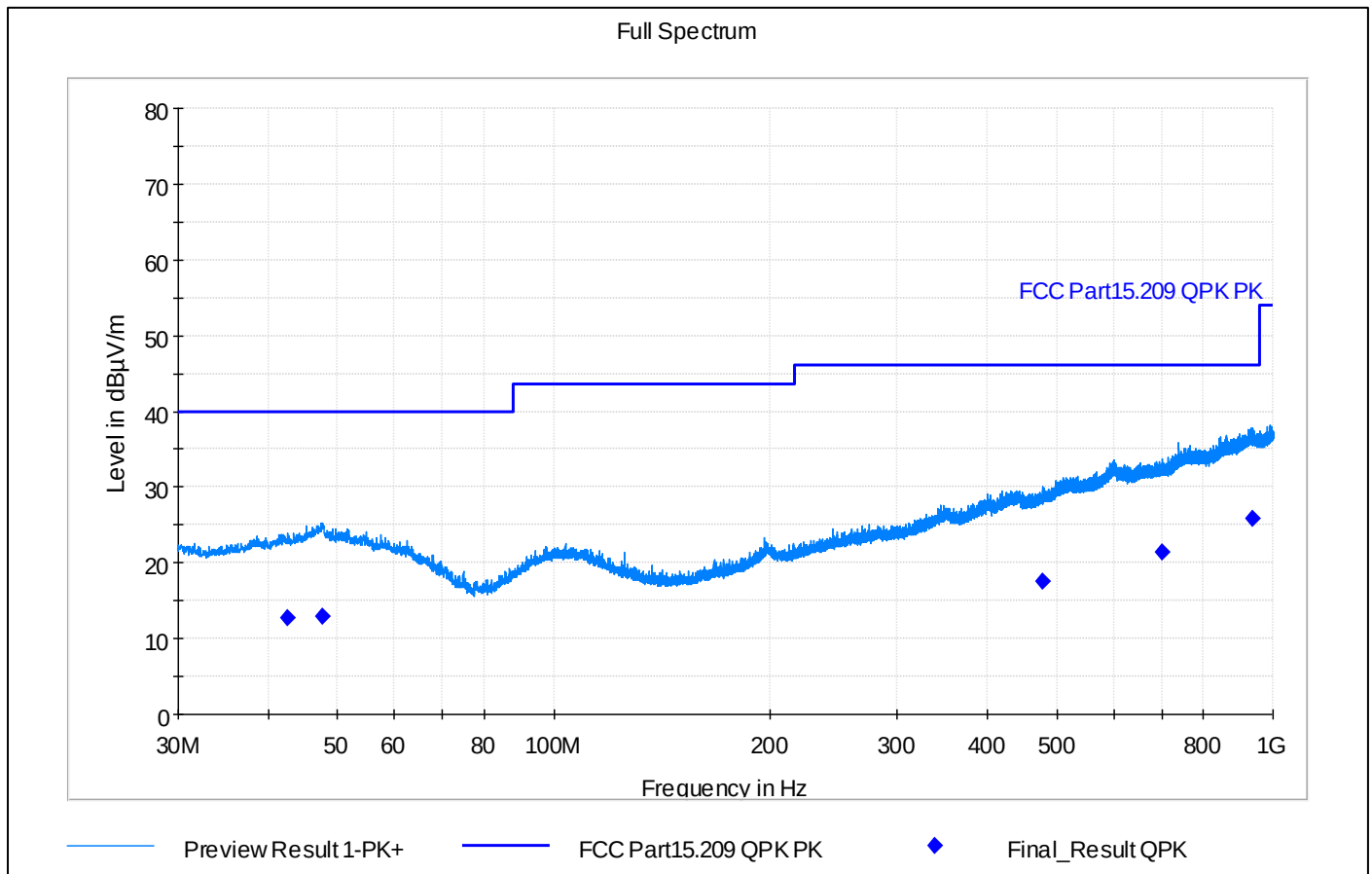


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
3256.000000	---	34.39	54.00	19.62	15000.0	1000.000	111.0	V	214.0	180.0	5.1	PASS
3256.000000	50.35	---	74.00	23.65	15000.0	1000.000	111.0	V	214.0	180.0	5.1	PASS
4071.500000	---	36.38	54.00	17.62	15000.0	1000.000	174.0	H	188.0	90.0	7.2	PASS
4071.500000	54.89	---	74.00	19.11	15000.0	1000.000	174.0	H	188.0	90.0	7.2	PASS
4882.500000	---	32.32	54.00	21.68	15000.0	1000.000	229.0	V	252.0	180.0	9.5	PASS
4882.500000	52.15	---	74.00	21.85	15000.0	1000.000	229.0	V	252.0	180.0	9.5	PASS
5700.750000	---	28.20	54.00	25.80	15000.0	1000.000	230.0	H	213.0	90.0	9.9	PASS
5700.750000	46.11	---	74.00	27.89	15000.0	1000.000	230.0	H	213.0	90.0	9.9	PASS
6512.000000	---	43.71	54.00	10.29	15000.0	1000.000	161.0	H	182.0	90.0	12.1	PASS
6512.000000	53.49	---	74.00	20.51	15000.0	1000.000	161.0	H	182.0	90.0	12.1	PASS
7325.250000	50.42	---	74.00	23.58	15000.0	1000.000	186.0	H	223.0	90.0	13.8	PASS
7325.250000	---	31.53	54.00	22.47	15000.0	1000.000	186.0	H	223.0	90.0	13.8	PASS
13024.000000	54.98	---	74.00	19.02	15000.0	1000.000	108.0	V	45.0	0.0	22.0	PASS
13024.000000	---	43.14	54.00	10.86	15000.0	1000.000	108.0	V	45.0	0.0	22.0	PASS

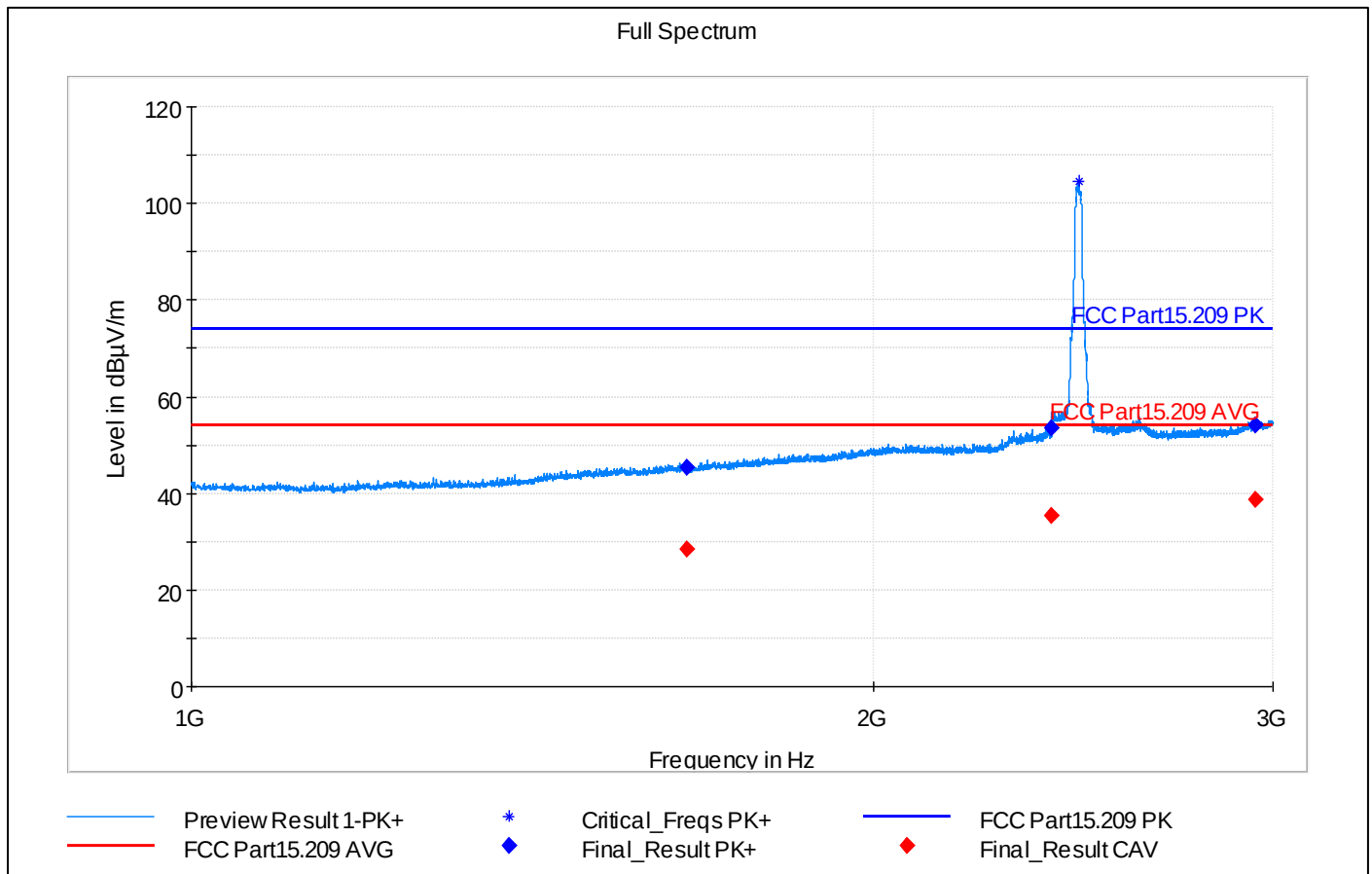
Mid channel, 18–26 GHz, 802.11g

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
18805.750000	44.73	---	74.00	29.27	3000.0	1000.000	338.0	H	202.0	0.0	23.5	PASS
18805.750000	---	31.74	54.00	22.26	3000.0	1000.000	338.0	H	202.0	0.0	23.5	PASS
19536.250000	---	36.53	54.00	17.47	3000.0	1000.000	122.0	H	193.0	90.0	23.8	PASS
19536.250000	48.94	---	74.00	25.06	3000.0	1000.000	122.0	H	193.0	90.0	23.8	PASS
20219.500000	44.07	---	74.00	29.93	3000.0	1000.000	162.0	H	176.0	90.0	24.0	PASS
20219.500000	---	31.06	54.00	22.94	3000.0	1000.000	162.0	H	176.0	90.0	24.0	PASS
21403.000000	44.10	---	74.00	29.90	3000.0	1000.000	197.0	H	112.0	90.0	24.5	PASS
21403.000000	---	30.91	54.00	23.09	3000.0	1000.000	197.0	H	112.0	90.0	24.5	PASS
23895.000000	45.01	---	74.00	28.99	3000.0	1000.000	403.0	H	169.0	0.0	25.9	PASS
23895.000000	---	31.99	54.00	22.01	3000.0	1000.000	403.0	H	169.0	0.0	25.9	PASS

High channel, 30 MHz – 1 GHz, 802.11g

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
42.540000	12.64	---	40.00	27.36	15000.0	120.000	354.0	H	308.0	90.0	20.2	PASS
47.580000	12.88	---	40.00	27.12	15000.0	120.000	312.0	V	67.0	180.0	21.0	PASS
478.800000	17.55	---	46.00	28.45	15000.0	120.000	360.0	H	298.0	180.0	26.7	PASS
700.080000	21.43	---	46.00	24.57	15000.0	120.000	181.0	V	118.0	0.0	30.5	PASS
936.060000	25.88	---	46.00	20.12	15000.0	120.000	342.0	H	173.0	90.0	34.1	PASS

High channel, 1 – 3 GHz, 802.11g



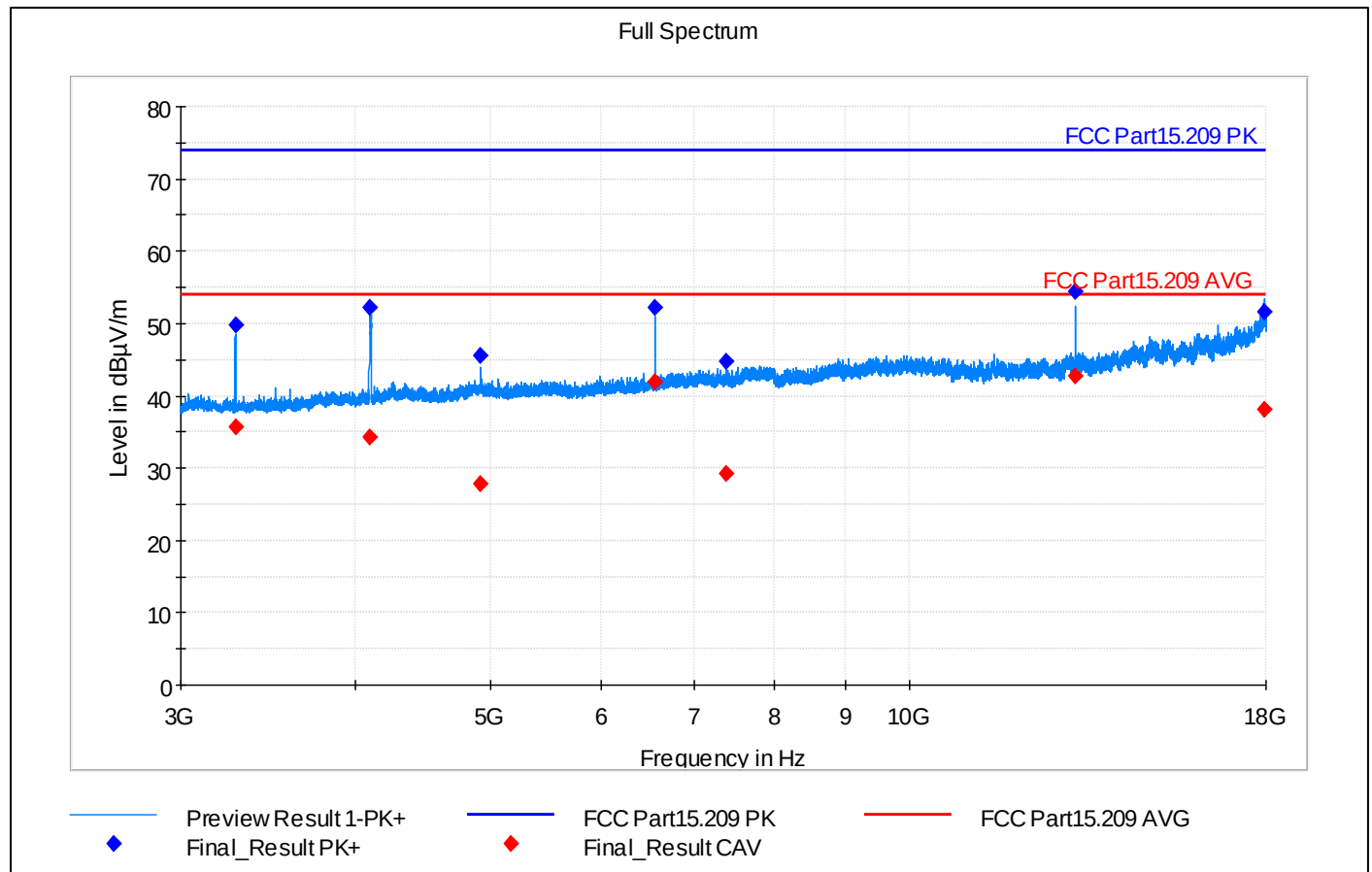
Note: Frequency 2462,000 MHz is excluded from spurious domain measurements and ignored. See table below.

Critical Freqs

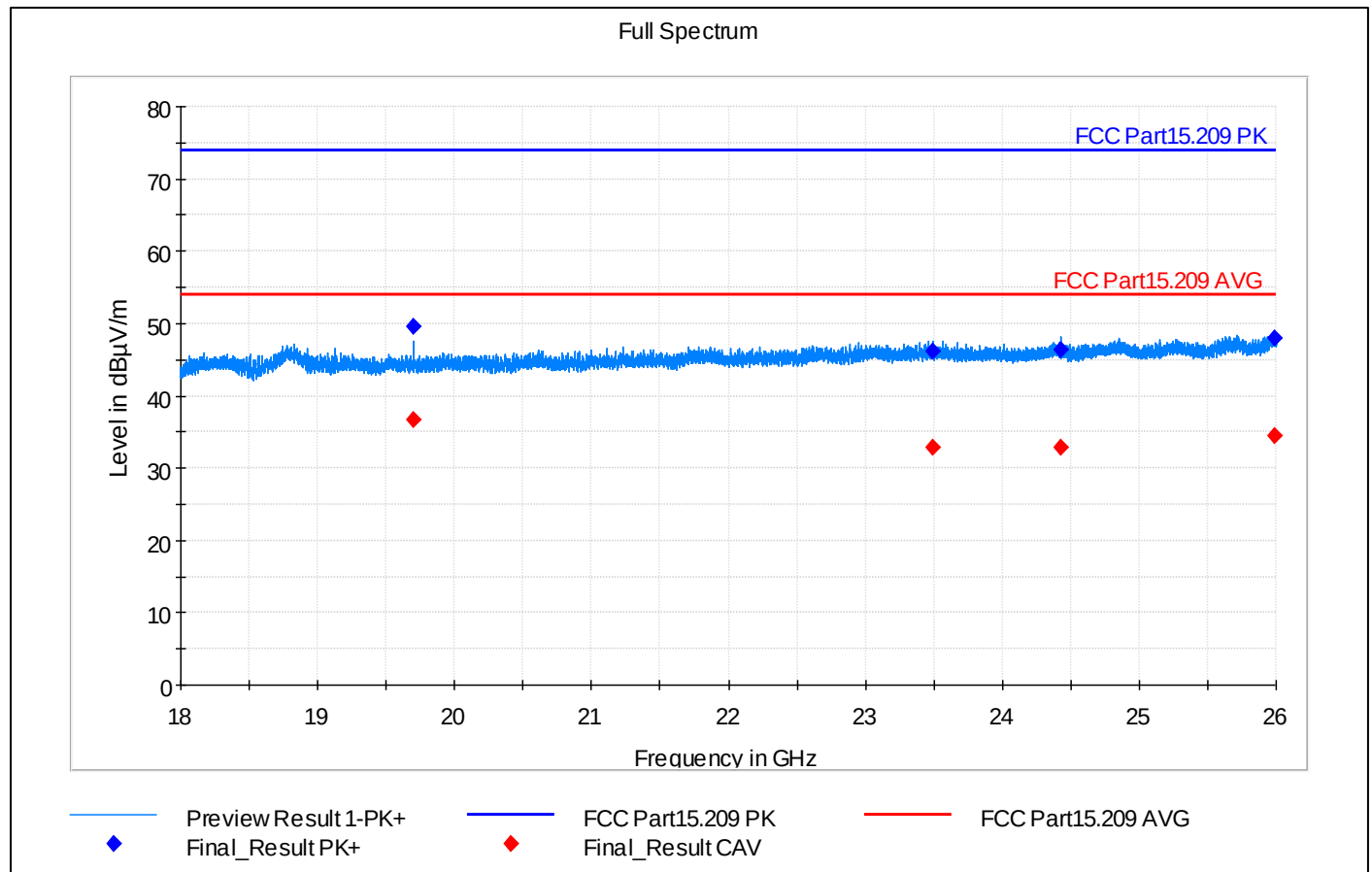
Frequency (MHz)	Comment
2462.000000	Fundamental signal *** IGNORED ***

Final Result

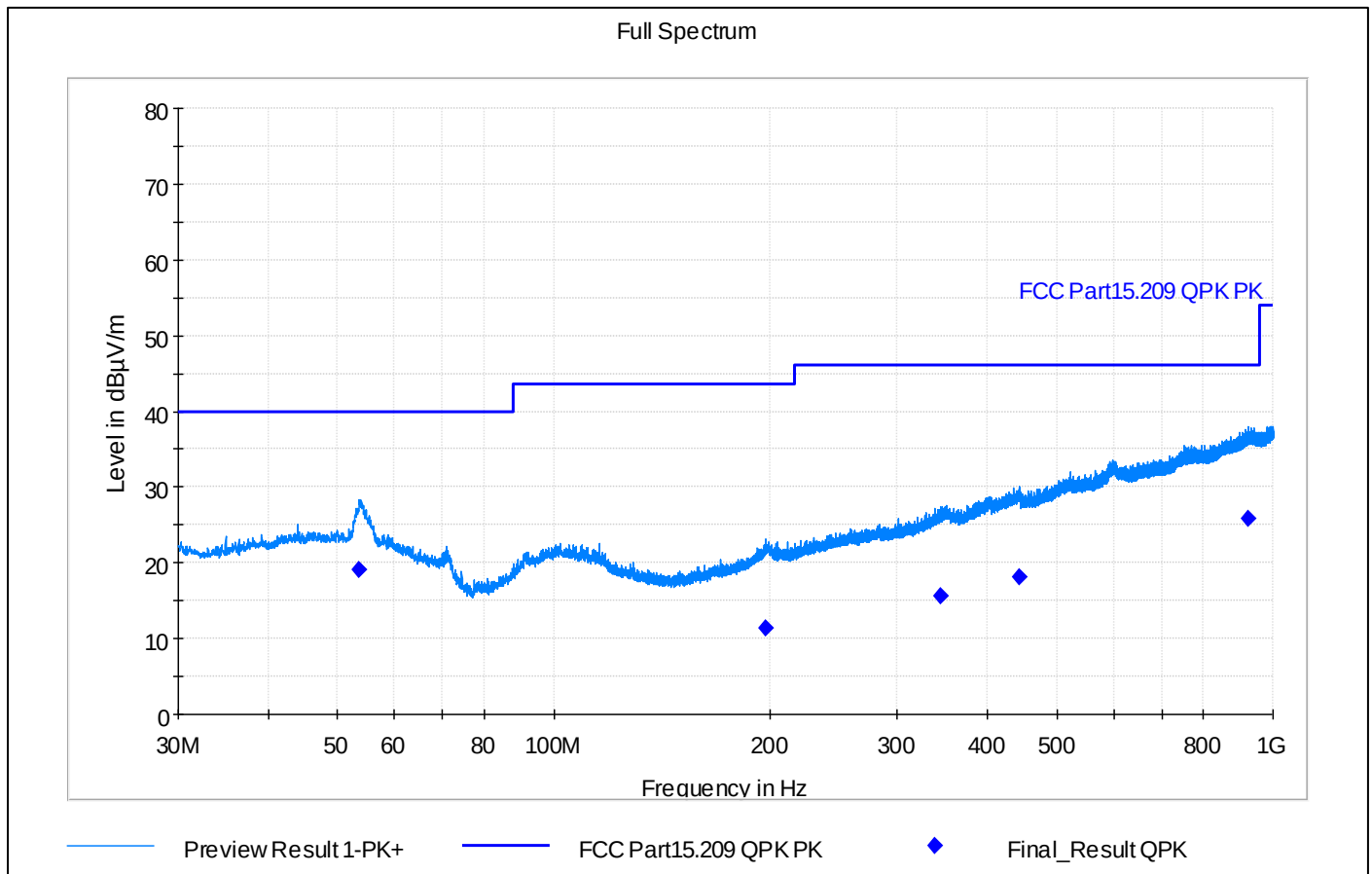
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
1653.750000	45.48	---	74.00	28.52	15000.0	1000.000	270.0	V	205.0	180.0	34.1	PASS
1653.750000	---	28.41	54.00	25.59	15000.0	1000.000	270.0	V	205.0	180.0	34.1	PASS
2396.000000	---	35.47	54.00	18.53	15000.0	1000.000	108.0	V	54.0	180.0	38.0	PASS
2396.000000	53.59	---	74.00	20.41	15000.0	1000.000	108.0	V	54.0	180.0	38.0	PASS
2949.250000	54.06	---	74.00	19.94	15000.0	1000.000	410.0	H	244.0	180.0	40.3	PASS
2949.250000	---	38.69	54.00	15.31	15000.0	1000.000	410.0	H	244.0	180.0	40.3	PASS

High channel, 3 – 18 GHz, 802.11g

Final_Result

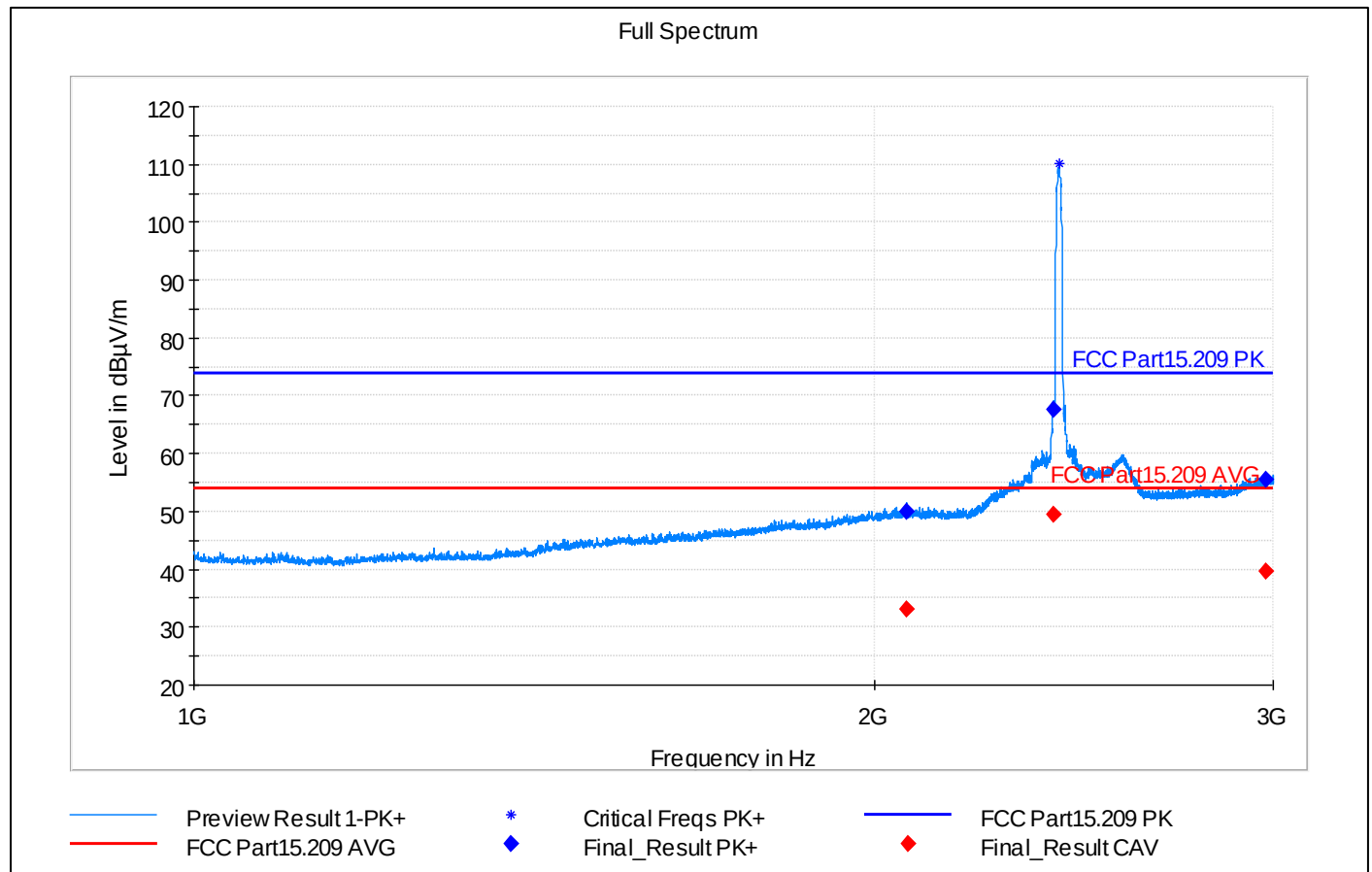
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
3282.750000	---	35.63	54.00	18.37	15000.0	1000.000	148.0	H	151.0	180.0	5.1	PASS
3282.750000	49.82	---	74.00	24.18	15000.0	1000.000	148.0	H	151.0	180.0	5.1	PASS
4101.750000	---	34.32	54.00	19.68	15000.0	1000.000	192.0	H	196.0	90.0	7.0	PASS
4101.750000	52.25	---	74.00	21.75	15000.0	1000.000	192.0	H	196.0	90.0	7.0	PASS
4925.250000	45.58	---	74.00	28.42	15000.0	1000.000	126.0	H	218.0	180.0	9.2	PASS
4925.250000	---	27.77	54.00	26.23	15000.0	1000.000	126.0	H	218.0	180.0	9.2	PASS
6565.500000	52.13	---	74.00	21.87	15000.0	1000.000	153.0	H	178.0	90.0	12.3	PASS
6565.500000	---	42.01	54.00	11.99	15000.0	1000.000	153.0	H	178.0	90.0	12.3	PASS
7384.000000	44.71	---	74.00	29.29	15000.0	1000.000	114.0	H	228.0	90.0	13.7	PASS
7384.000000	---	29.28	54.00	24.72	15000.0	1000.000	114.0	H	228.0	90.0	13.7	PASS
13130.750000	54.41	---	74.00	19.59	15000.0	1000.000	101.0	V	41.0	180.0	21.5	PASS
13130.750000	---	42.77	54.00	11.23	15000.0	1000.000	101.0	V	41.0	180.0	21.5	PASS
17941.000000	---	38.04	54.00	15.96	15000.0	1000.000	326.0	H	106.0	0.0	34.6	PASS
17941.000000	51.54	---	74.00	22.46	15000.0	1000.000	326.0	H	106.0	0.0	34.6	PASS

High channel, 18 – 26 GHz, 802.11g

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
19696.250000	---	36.64	54.00	17.36	3000.0	1000.000	210.0	V	183.0	180.0	23.9	PASS
19696.250000	49.59	---	74.00	24.41	3000.0	1000.000	210.0	V	183.0	180.0	23.9	PASS
23489.000000	46.24	---	74.00	27.76	3000.0	1000.000	274.0	V	91.0	0.0	25.8	PASS
23489.000000	---	32.82	54.00	21.18	3000.0	1000.000	274.0	V	91.0	0.0	25.8	PASS
24430.750000	---	32.75	54.00	21.25	3000.0	1000.000	204.0	H	228.0	0.0	26.1	PASS
24430.750000	46.28	---	74.00	27.72	3000.0	1000.000	204.0	H	228.0	0.0	26.1	PASS
25992.750000	47.92	---	74.00	26.08	3000.0	1000.000	369.0	H	204.0	0.0	27.1	PASS
25992.750000	---	34.39	54.00	19.61	3000.0	1000.000	369.0	H	204.0	0.0	27.1	PASS

Low channel, 30 MHz – 1 GHz, 802.11b

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
53.580000	19.13	40.00	20.87	15000.0	120.000	98.0	V	286.0	90.0	20.9	PASS
196.710000	11.30	43.50	32.20	15000.0	120.000	118.0	H	22.0	0.0	20.3	PASS
344.250000	15.57	46.00	30.43	15000.0	120.000	130.0	H	68.0	0.0	24.2	PASS
444.210000	18.17	46.00	27.83	15000.0	120.000	286.0	V	191.0	0.0	26.0	PASS
922.830000	25.84	46.00	20.16	15000.0	120.000	366.0	V	293.0	90.0	34.1	PASS

Low channel, 1 – 3 GHz, 802.11b


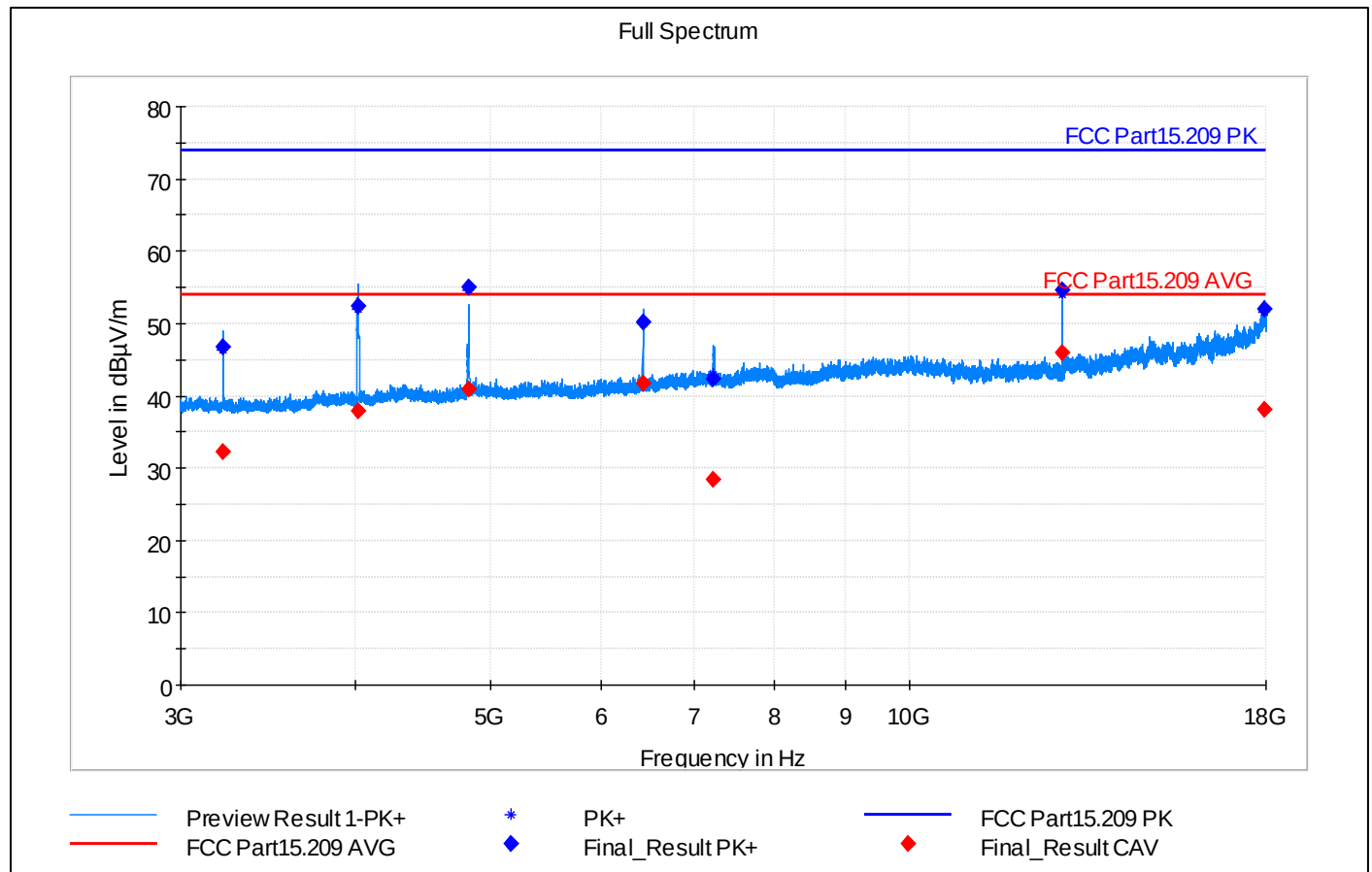
Note: Frequency 2412,000 MHz is excluded from spurious domain measurements and ignored. See table below.

Critical Freqs

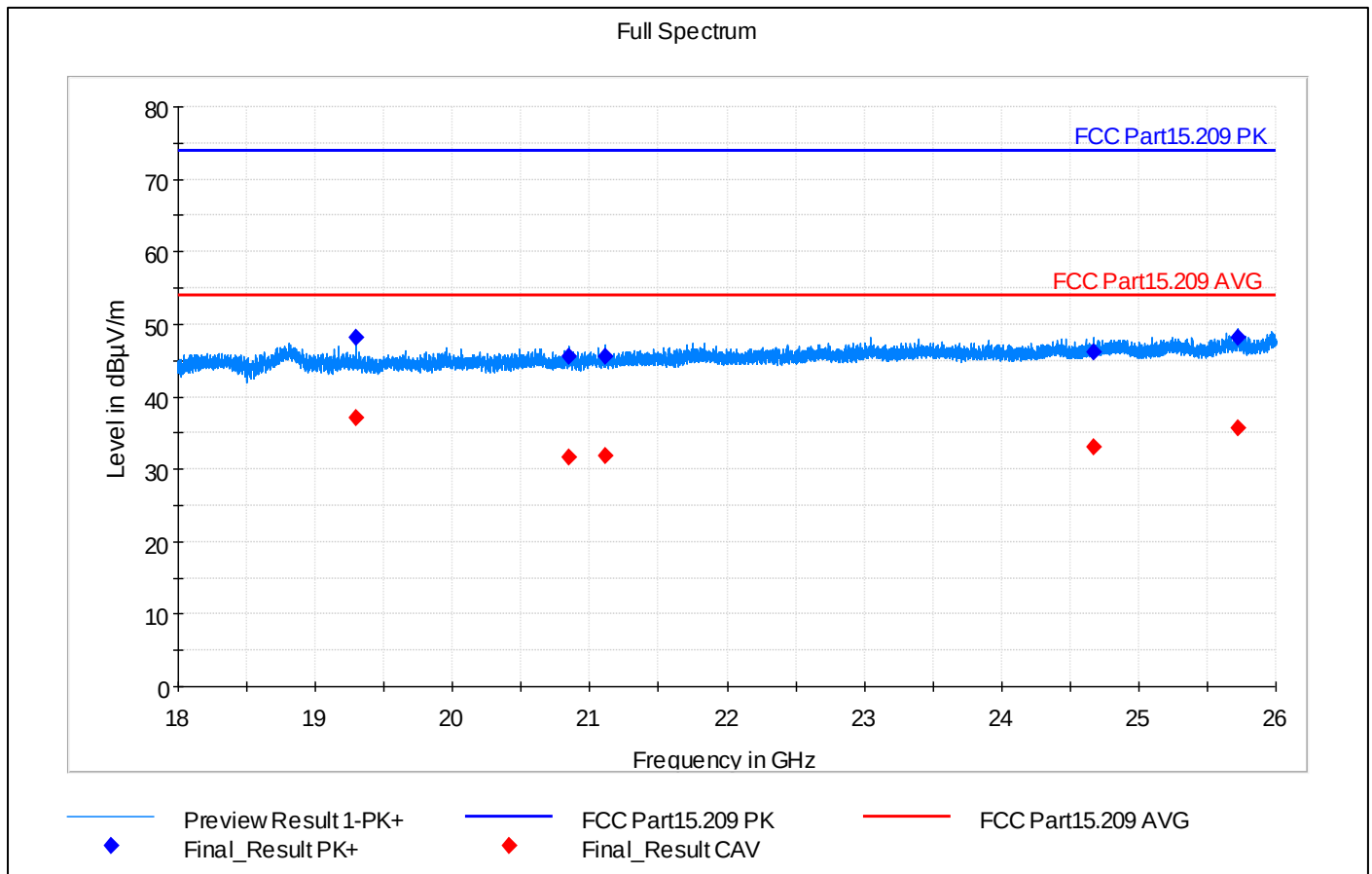
Frequency (MHz)	Comment
2412.000000	Fundamental signal *** IGNORED ***

Final Result

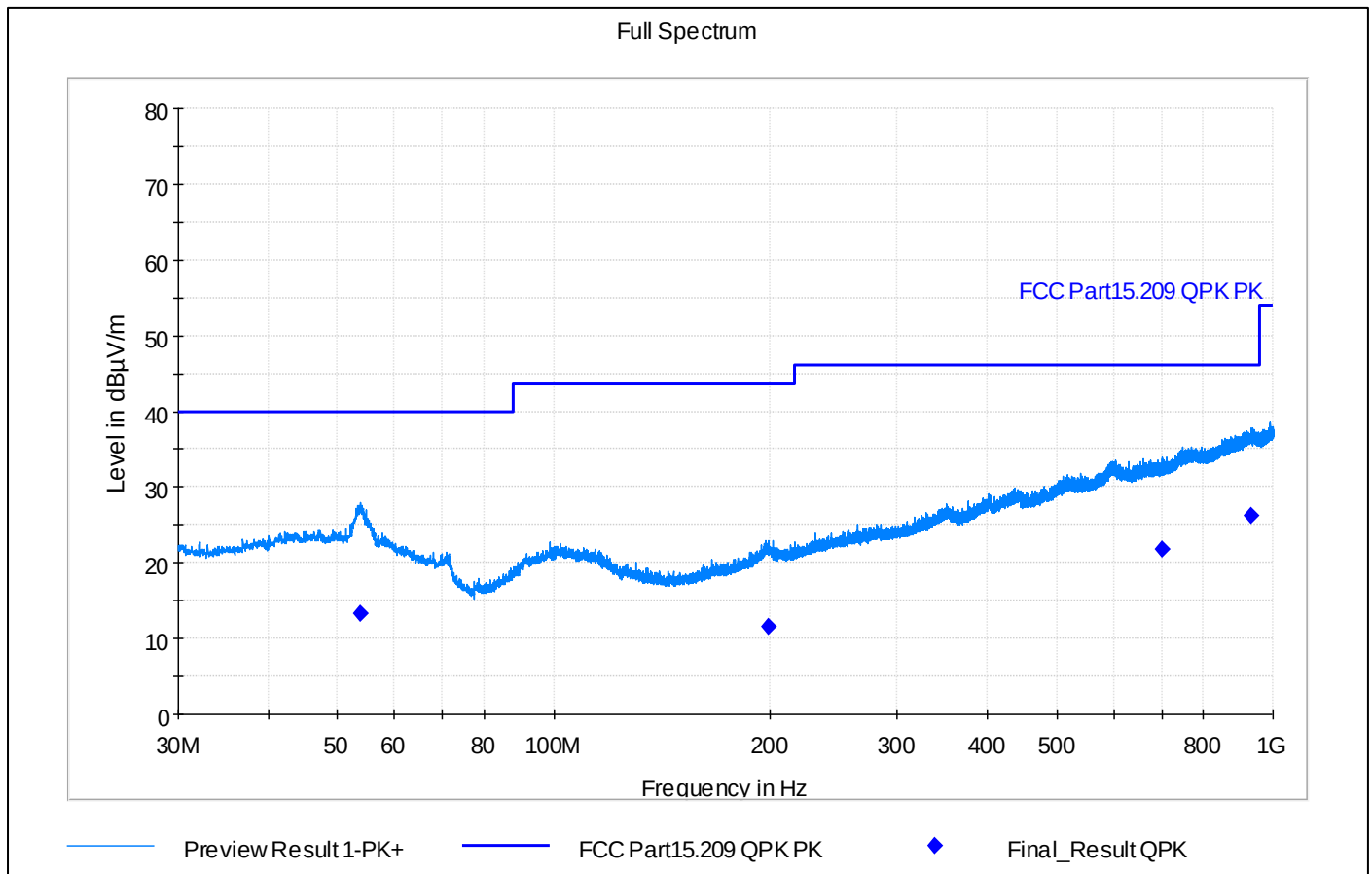
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
2065.500000	---	33.18	54.00	20.82	15000.0	1000.000	202.0	V	89.0	90.0	37.5	PASS
2065.500000	50.04	---	74.00	23.96	15000.0	1000.000	202.0	V	89.0	90.0	37.5	PASS
2400.000000	67.68	---	74.00	6.32	15000.0	1000.000	108.0	H	18.0	0.0	38.5	PASS
2400.000000	---	49.50	54.00	4.50	15000.0	1000.000	108.0	H	18.0	0.0	38.5	PASS
2978.000000	55.55	---	74.00	18.45	15000.0	1000.000	368.0	V	167.0	0.0	41.2	PASS
2978.000000	---	39.53	54.00	14.47	15000.0	1000.000	368.0	V	167.0	0.0	41.2	PASS

Low channel, 3 – 18 GHz, 802.11b

Final_Result

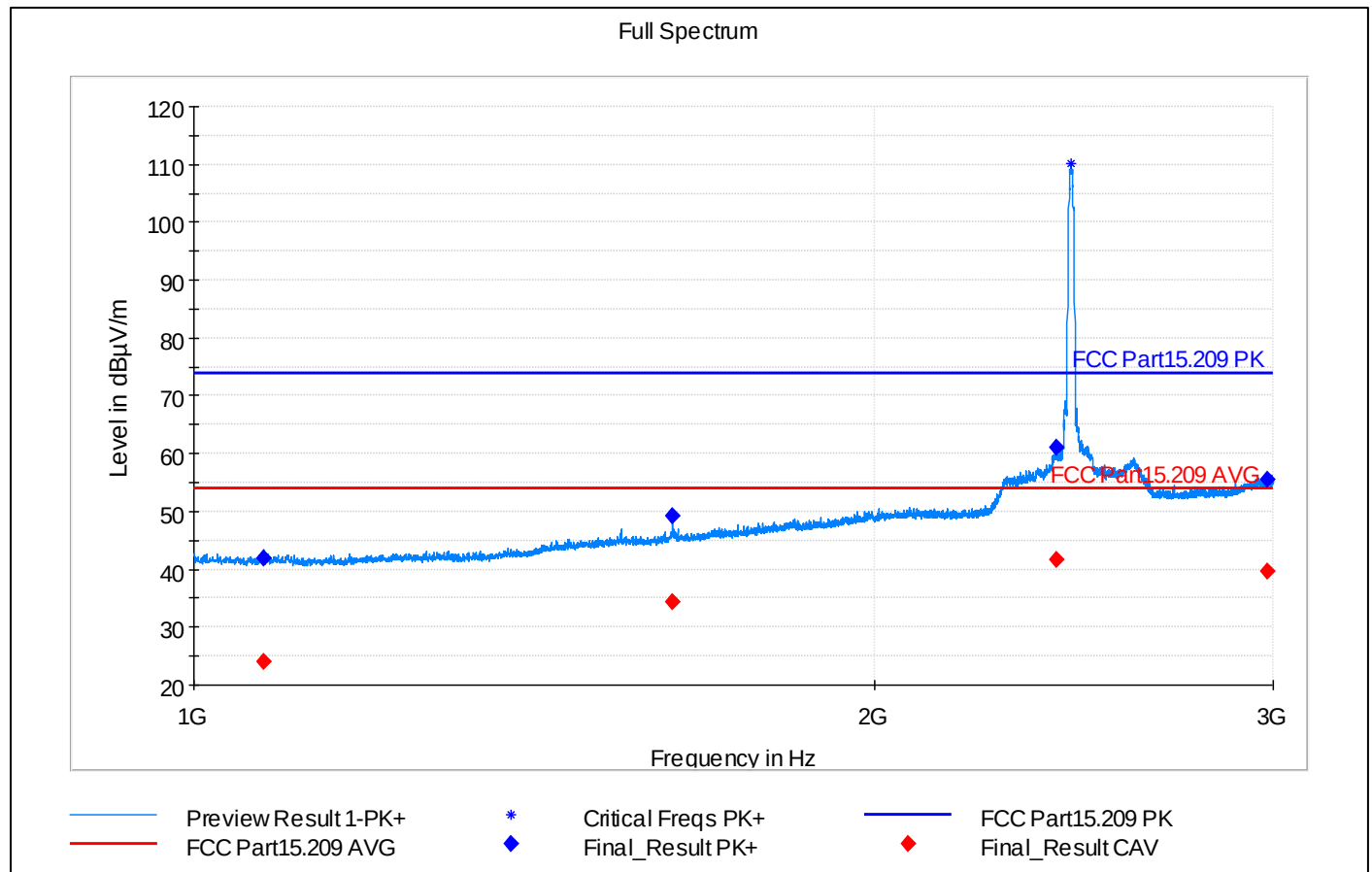
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
3216.000000	46.80	---	74.00	27.20	15000.0	1000.000	268.0	V	216.0	180.0	4.7	PASS
3216.000000	---	32.16	54.00	21.84	15000.0	1000.000	268.0	V	216.0	180.0	4.7	PASS
4019.500000	---	37.80	54.00	16.20	15000.0	1000.000	101.0	V	188.0	180.0	7.4	PASS
4019.500000	52.36	---	74.00	21.64	15000.0	1000.000	101.0	V	188.0	180.0	7.4	PASS
4824.000000	55.08	---	74.00	18.92	15000.0	1000.000	108.0	V	268.0	180.0	9.1	PASS
4824.000000	---	40.83	54.00	13.17	15000.0	1000.000	108.0	V	268.0	180.0	9.1	PASS
6432.000000	50.23	---	74.00	23.77	15000.0	1000.000	153.0	H	163.0	90.0	11.8	PASS
6432.000000	---	41.66	54.00	12.34	15000.0	1000.000	153.0	H	163.0	90.0	11.8	PASS
7234.000000	42.26	---	74.00	31.74	15000.0	1000.000	405.0	V	190.0	90.0	13.5	PASS
7234.000000	---	28.35	54.00	25.65	15000.0	1000.000	405.0	V	190.0	90.0	13.5	PASS
12864.000000	54.57	---	74.00	19.43	15000.0	1000.000	106.0	V	227.0	0.0	20.4	PASS
12864.000000	---	45.94	54.00	8.06	15000.0	1000.000	106.0	V	227.0	0.0	20.4	PASS
17945.500000	51.93	---	74.00	22.08	15000.0	1000.000	217.0	H	22.0	180.0	34.4	PASS
17945.500000	---	38.02	54.00	15.98	15000.0	1000.000	217.0	H	22.0	180.0	34.4	PASS

Low channel, 18 – 26 GHz, 802.11b

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
19296.000000	48.24	---	74.00	25.76	3000.0	1000.000	148.0	H	167.0	90.0	23.7	PASS
19296.000000	---	37.10	54.00	16.90	3000.0	1000.000	148.0	H	167.0	90.0	23.7	PASS
20845.000000	---	31.65	54.00	22.35	3000.0	1000.000	298.0	V	132.0	90.0	24.4	PASS
20845.000000	45.46	---	74.00	28.54	3000.0	1000.000	298.0	V	132.0	90.0	24.4	PASS
21116.250000	---	31.85	54.00	22.15	3000.0	1000.000	372.0	H	141.0	90.0	24.5	PASS
21116.250000	45.61	---	74.00	28.39	3000.0	1000.000	372.0	H	141.0	90.0	24.5	PASS
24672.500000	---	32.98	54.00	21.02	3000.0	1000.000	150.0	H	269.0	90.0	26.4	PASS
24672.500000	46.20	---	74.00	27.80	3000.0	1000.000	150.0	H	269.0	90.0	26.4	PASS
25728.000000	48.21	---	74.00	25.79	3000.0	1000.000	401.0	V	81.0	90.0	26.7	PASS
25728.000000	---	35.68	54.00	18.32	3000.0	1000.000	401.0	V	81.0	90.0	26.7	PASS

Mid channel, 30 MHz – 1 GHz, 802.11b

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
53.790000	13.27	40.00	26.73	15000.0	120.000	103.0	V	67.0	0.0	20.9	PASS
198.420000	11.56	43.50	31.94	15000.0	120.000	182.0	H	67.0	90.0	20.5	PASS
702.540000	21.78	46.00	24.22	15000.0	120.000	155.0	H	122.0	90.0	30.5	PASS
933.690000	26.17	46.00	19.83	15000.0	120.000	183.0	H	248.0	90.0	34.1	PASS

Mid channel, 1-3 GHz, 802.11b


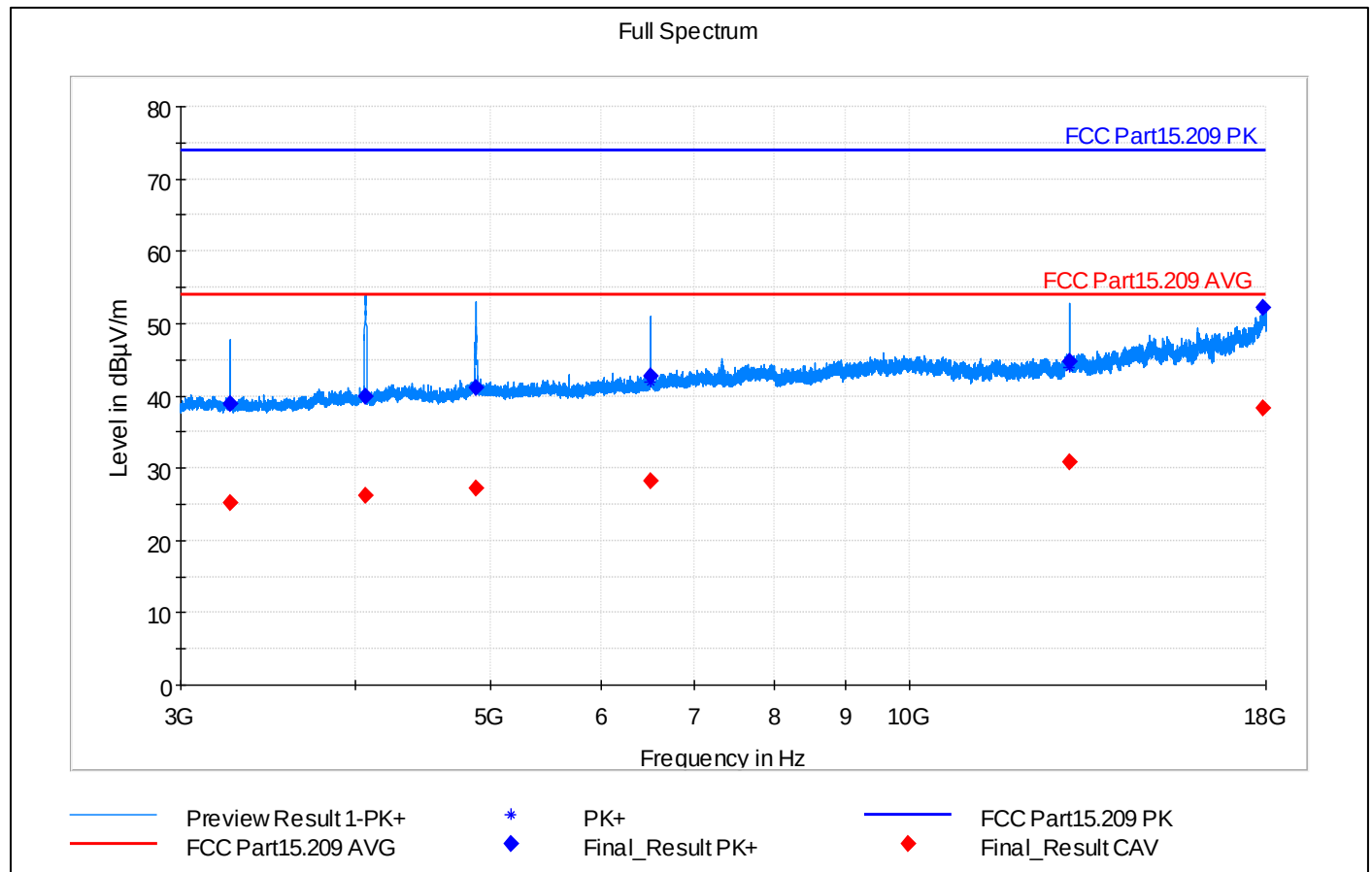
Note: Frequency 2442,000 MHz is excluded from spurious domain measurements and ignored. See table below.

Critical Freqs

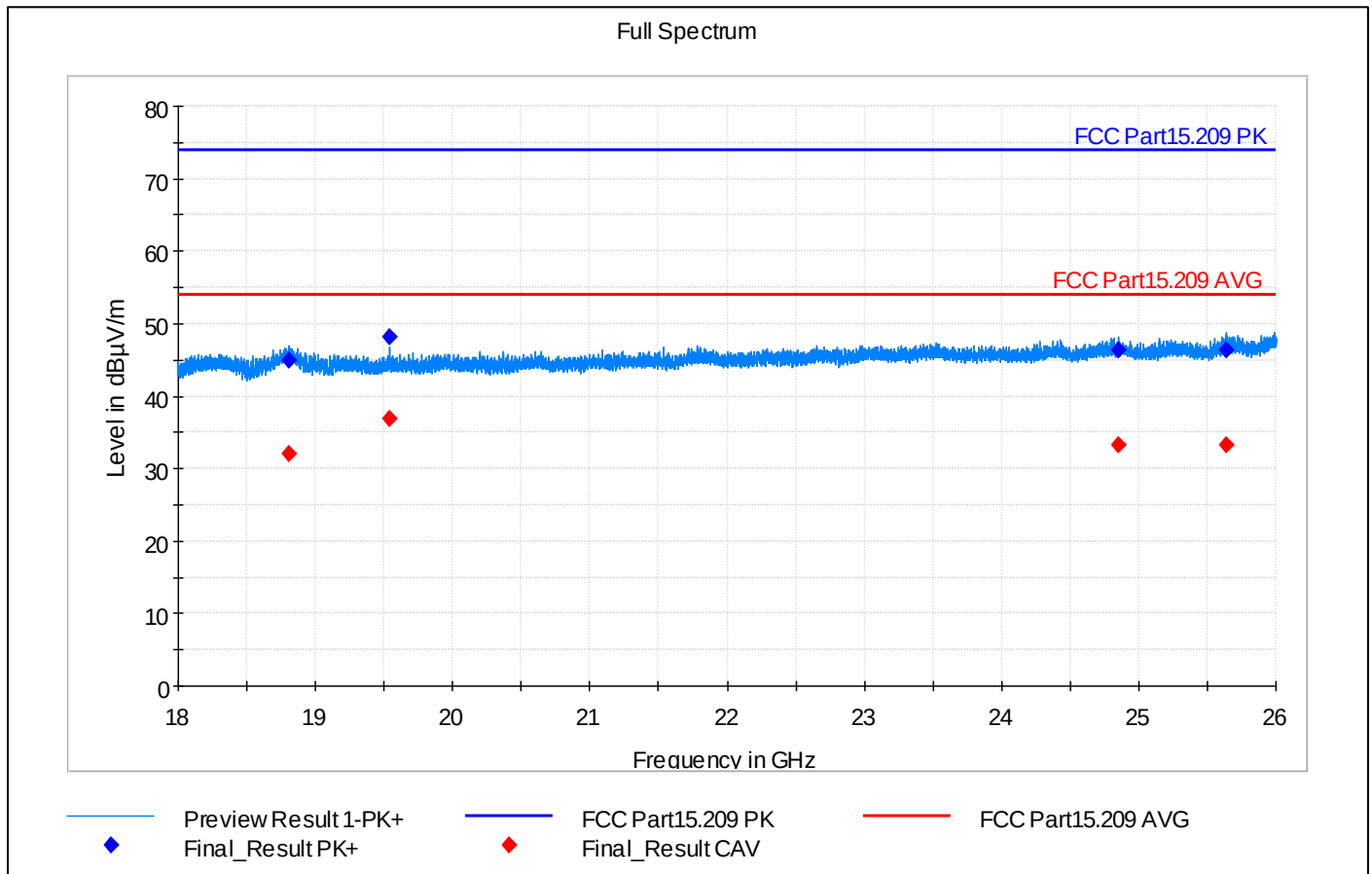
Frequency (MHz)	Comment
2442.000000	Fundamental signal *** IGNORED ***

Final Result

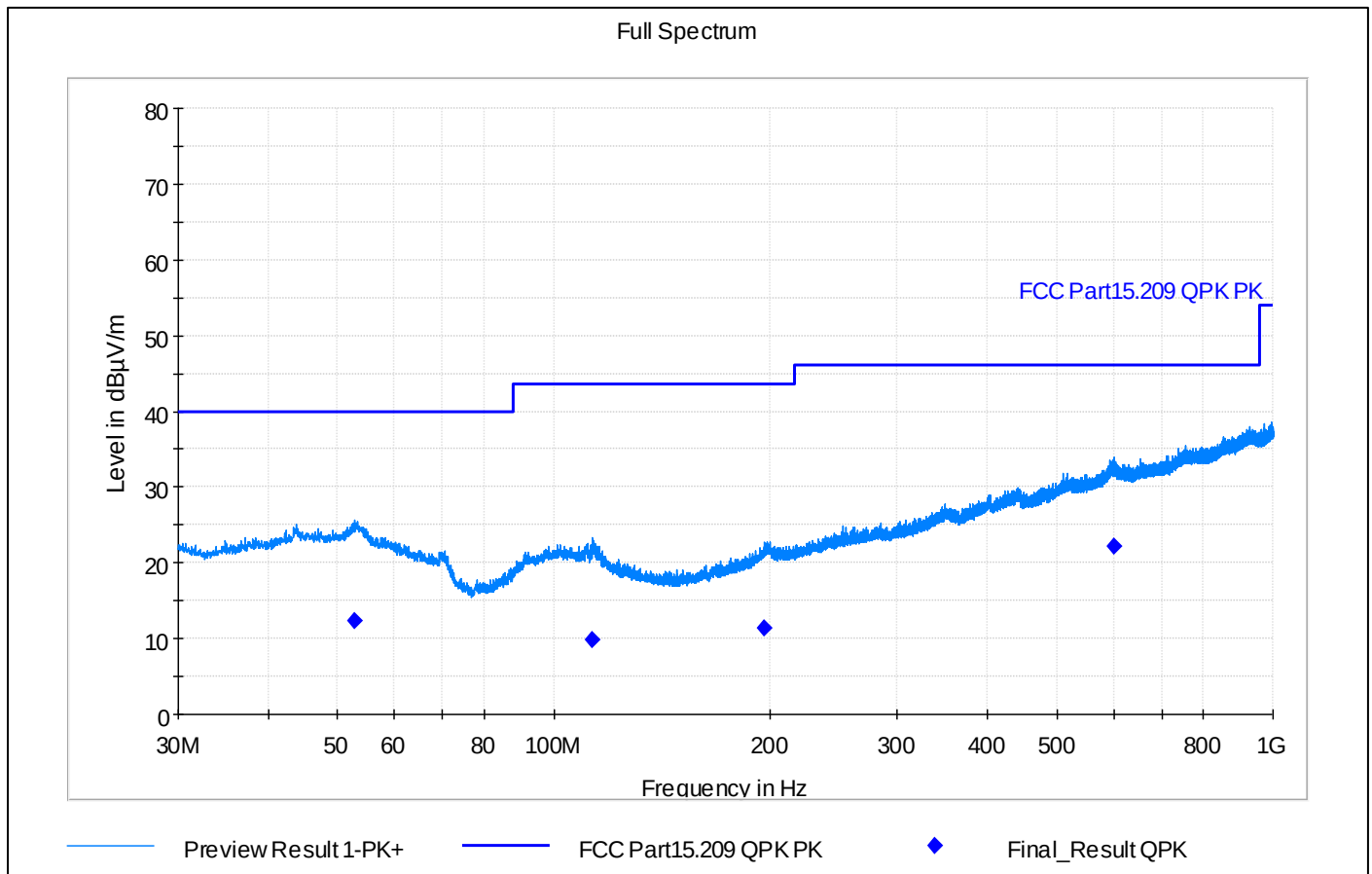
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
1074.000000	41.99	---	74.00	32.01	15000.0	1000.000	140.0	H	327.0	90.0	30.9	PASS
1074.000000	---	24.08	54.00	29.92	15000.0	1000.000	140.0	H	327.0	90.0	30.9	PASS
1628.000000	---	34.33	54.00	19.67	15000.0	1000.000	178.0	V	177.0	180.0	34.4	PASS
1628.000000	49.13	---	74.00	24.87	15000.0	1000.000	178.0	V	177.0	180.0	34.4	PASS
2406.500000	60.99	---	74.00	13.01	15000.0	1000.000	146.0	V	87.0	180.0	38.5	PASS
2406.500000	---	41.78	54.00	12.22	15000.0	1000.000	146.0	V	87.0	180.0	38.5	PASS
2983.750000	55.63	---	74.00	18.37	15000.0	1000.000	318.0	V	134.0	0.0	41.3	PASS
2983.750000	---	39.56	54.00	14.44	15000.0	1000.000	318.0	V	134.0	0.0	41.3	PASS

Mid channel, 3–18 GHz, 802.11b

Final_Result

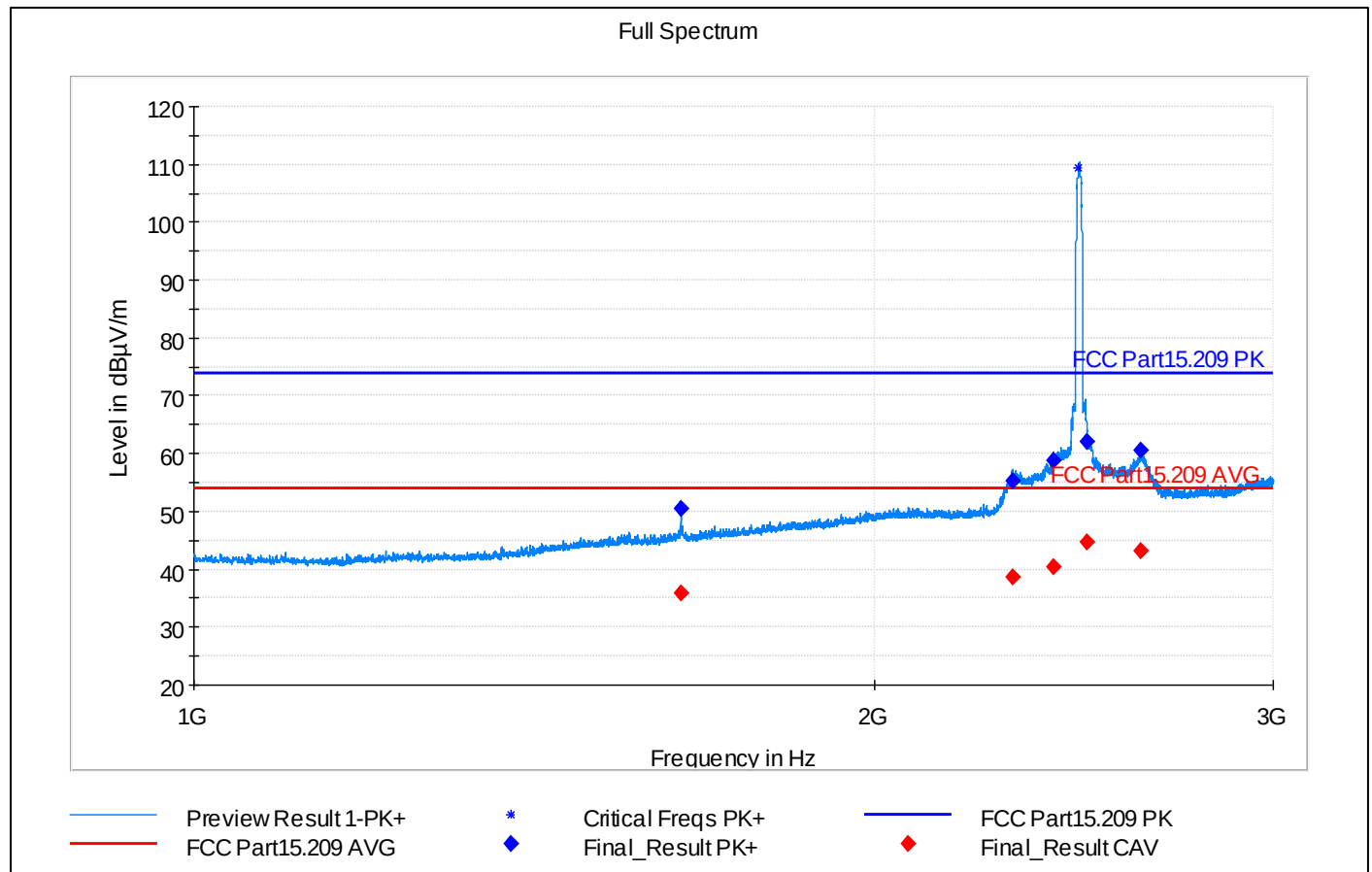
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
3256.000000	38.81	---	74.00	35.19	15000.0	1000.000	400.0	H	152.0	0.0	5.1	PASS
3256.000000	---	25.22	54.00	28.78	15000.0	1000.000	400.0	H	152.0	0.0	5.1	PASS
4069.500000	---	26.13	54.00	27.87	15000.0	1000.000	410.0	H	73.0	0.0	7.2	PASS
4069.500000	39.87	---	74.00	34.13	15000.0	1000.000	410.0	H	73.0	0.0	7.2	PASS
4884.000000	41.17	---	74.00	32.83	15000.0	1000.000	177.0	H	195.0	0.0	9.5	PASS
4884.000000	---	27.22	54.00	26.78	15000.0	1000.000	177.0	H	195.0	0.0	9.5	PASS
6512.000000	42.75	---	74.00	31.25	15000.0	1000.000	224.0	V	3.0	0.0	12.1	PASS
6512.000000	---	28.20	54.00	25.80	15000.0	1000.000	224.0	V	3.0	0.0	12.1	PASS
13024.000000	44.84	---	74.00	29.16	15000.0	1000.000	145.0	V	35.0	0.0	22.0	PASS
13024.000000	---	30.73	54.00	23.27	15000.0	1000.000	145.0	V	35.0	0.0	22.0	PASS
17925.000000	---	38.26	54.00	15.74	15000.0	1000.000	254.0	H	28.0	0.0	35.2	PASS
17925.000000	52.11	---	74.00	21.89	15000.0	1000.000	254.0	H	28.0	0.0	35.2	PASS

Mid channel, 18–26 GHz, 802.11b

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
18806.500000	44.96	---	74.00	29.04	3000.0	1000.000	126.0	H	329.0	180.0	23.5	PASS
18806.500000	---	32.12	54.00	21.88	3000.0	1000.000	126.0	H	329.0	180.0	23.5	PASS
19536.250000	---	36.80	54.00	17.20	3000.0	1000.000	160.0	V	202.0	180.0	23.8	PASS
19536.250000	48.09	---	74.00	25.91	3000.0	1000.000	160.0	V	202.0	180.0	23.8	PASS
24848.750000	---	33.15	54.00	20.85	3000.0	1000.000	169.0	H	154.0	180.0	26.6	PASS
24848.750000	46.36	---	74.00	27.64	3000.0	1000.000	169.0	H	154.0	180.0	26.6	PASS
25635.250000	46.41	---	74.00	27.59	3000.0	1000.000	252.0	V	89.0	180.0	26.6	PASS
25635.250000	---	33.16	54.00	20.84	3000.0	1000.000	252.0	V	89.0	180.0	26.6	PASS

High channel, 30 MHz – 1 GHz, 802.11b

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
52.770000	12.34	40.00	27.66	15000.0	120.000	131.0	V	68.0	90.0	20.9	PASS
113.100000	9.86	43.50	33.64	15000.0	120.000	139.0	V	226.0	180.0	18.8	PASS
196.470000	11.36	43.50	32.14	15000.0	120.000	327.0	V	280.0	180.0	20.3	PASS
600.660000	22.24	46.00	23.76	15000.0	120.000	206.0	V	227.0	180.0	29.9	PASS

High channel, 1 – 3 GHz, 802.11b


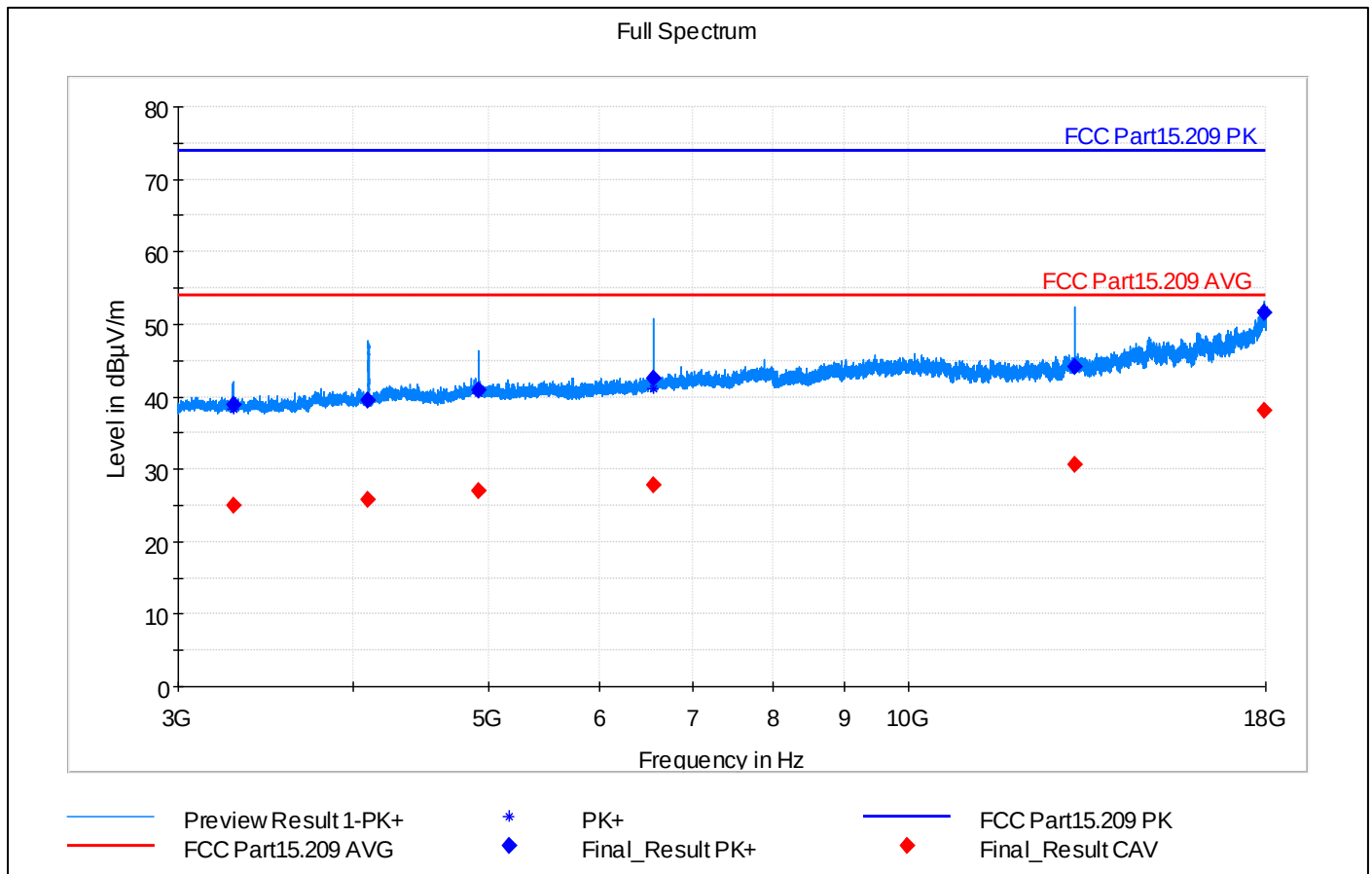
Note: Frequency 2459,500 MHz is excluded from spurious domain measurements and ignored. See table below.

Critical Freqs

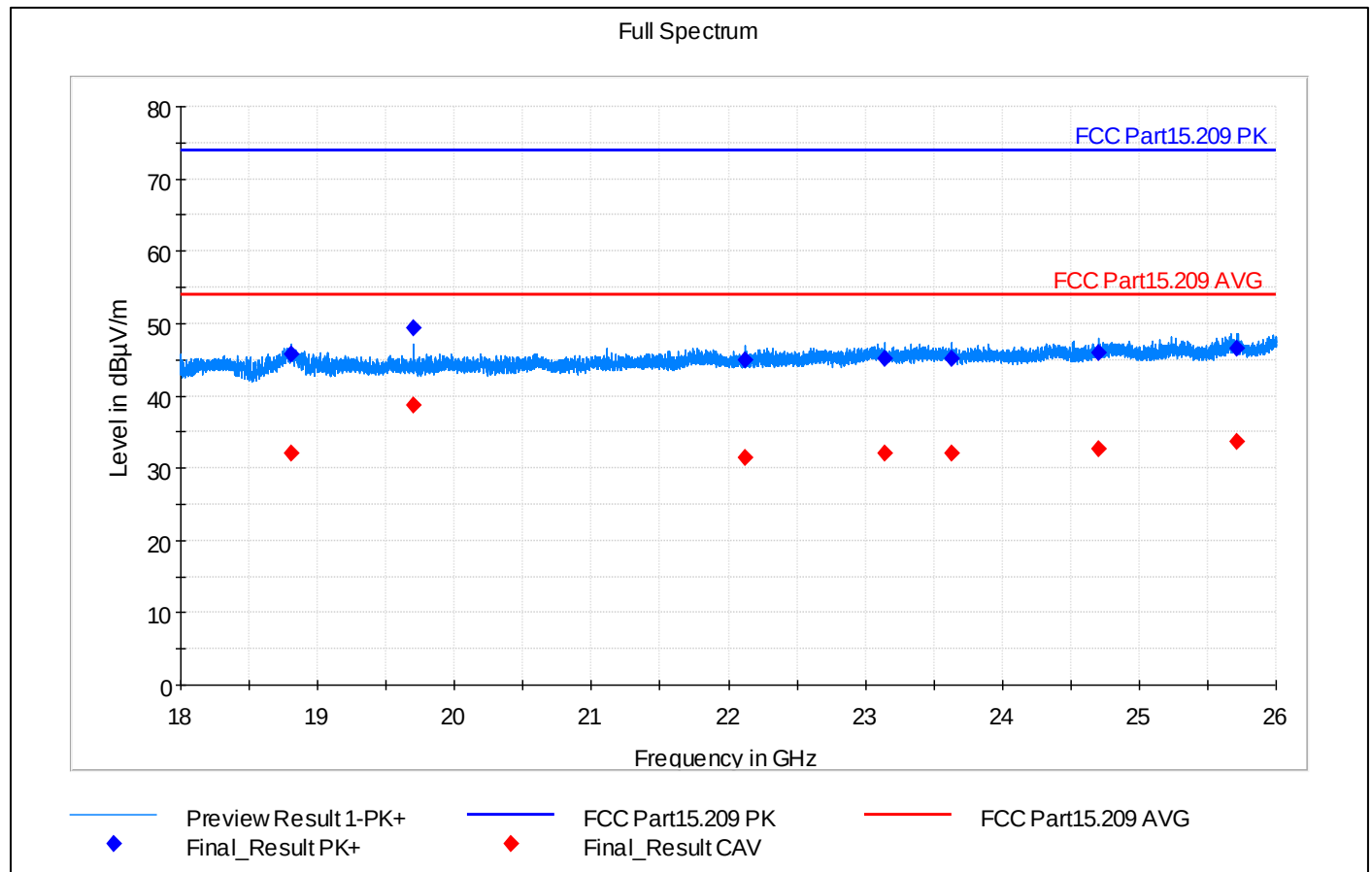
Frequency (MHz)	Comment
2459.500000	Fundamental TX signal, ***IGNORED***

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
1641.250000	50.37	---	74.00	23.63	15000.0	1000.000	135.0	V	161.0	180.0	34.4	PASS
1641.250000	---	35.78	54.00	18.22	15000.0	1000.000	135.0	V	161.0	180.0	34.4	PASS
2302.750000	---	38.57	54.00	15.43	15000.0	1000.000	264.0	H	28.0	0.0	37.9	PASS
2302.750000	55.36	---	74.00	18.64	15000.0	1000.000	264.0	H	28.0	0.0	37.9	PASS
2400.000000	58.68	---	74.00	15.32	15000.0	1000.000	304.0	H	3.0	0.0	38.5	PASS
2400.000000	---	40.46	54.00	13.54	15000.0	1000.000	304.0	H	3.0	0.0	38.5	PASS
2483.500000	---	44.80	54.00	9.20	15000.0	1000.000	158.0	V	314.0	180.0	39.1	PASS
2483.500000	61.94	---	74.00	12.06	15000.0	1000.000	158.0	V	314.0	180.0	39.1	PASS
2622.500000	---	43.22	54.00	10.78	15000.0	1000.000	212.0	V	325.0	180.0	39.8	PASS
2622.500000	60.47	---	74.00	13.53	15000.0	1000.000	212.0	V	325.0	180.0	39.8	PASS

High channel, 3 – 18 GHz, 802.11b

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
3282.750000	---	25.04	54.00	28.96	15000.0	1000.000	410.0	V	28.0	0.0	5.1	PASS
3282.750000	38.91	---	74.00	35.09	15000.0	1000.000	410.0	V	28.0	0.0	5.1	PASS
4104.250000	39.48	---	74.00	34.52	15000.0	1000.000	234.0	V	110.0	0.0	7.0	PASS
4104.250000	---	25.84	54.00	28.16	15000.0	1000.000	234.0	V	110.0	0.0	7.0	PASS
4924.000000	---	27.08	54.00	26.92	15000.0	1000.000	138.0	V	49.0	0.0	9.1	PASS
4924.000000	40.85	---	74.00	33.15	15000.0	1000.000	138.0	V	49.0	0.0	9.1	PASS
6565.250000	---	27.81	54.00	26.19	15000.0	1000.000	234.0	V	73.0	0.0	12.3	PASS
6565.250000	42.50	---	74.00	31.50	15000.0	1000.000	234.0	V	73.0	0.0	12.3	PASS
13130.750000	44.04	---	74.00	29.96	15000.0	1000.000	274.0	V	67.0	0.0	21.5	PASS
13130.750000	---	30.59	54.00	23.41	15000.0	1000.000	274.0	V	67.0	0.0	21.5	PASS
17941.750000	---	38.04	54.00	15.96	15000.0	1000.000	296.0	H	149.0	90.0	34.6	PASS
17941.750000	51.67	---	74.00	22.33	15000.0	1000.000	296.0	H	149.0	90.0	34.6	PASS

High channel, 18 – 26 GHz, 802.11b

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
18803.500000	45.69	---	74.00	28.31	3000.0	1000.000	197.0	H	106.0	90.0	23.5	PASS
18803.500000	---	31.96	54.00	22.04	3000.0	1000.000	197.0	H	106.0	90.0	23.5	PASS
19696.250000	49.41	---	74.00	24.59	3000.0	1000.000	178.0	H	53.0	0.0	23.9	PASS
19696.250000	---	38.64	54.00	15.36	3000.0	1000.000	178.0	H	53.0	0.0	23.9	PASS
22122.750000	44.95	---	74.00	29.05	3000.0	1000.000	118.0	H	46.0	0.0	24.8	PASS
22122.750000	---	31.38	54.00	22.62	3000.0	1000.000	118.0	H	46.0	0.0	24.8	PASS
23140.000000	45.21	---	74.00	28.79	3000.0	1000.000	282.0	H	70.0	90.0	25.6	PASS
23140.000000	---	32.00	54.00	22.00	3000.0	1000.000	282.0	H	70.0	90.0	25.6	PASS
23628.750000	45.22	---	74.00	28.78	3000.0	1000.000	223.0	V	47.0	180.0	25.9	PASS
23628.750000	---	32.12	54.00	21.88	3000.0	1000.000	223.0	V	47.0	180.0	25.9	PASS
24705.000000	---	32.74	54.00	21.26	3000.0	1000.000	198.0	H	318.0	90.0	26.5	PASS
24705.000000	45.86	---	74.00	28.14	3000.0	1000.000	198.0	H	318.0	90.0	26.5	PASS
25717.500000	46.47	---	74.00	27.53	3000.0	1000.000	410.0	H	204.0	0.0	26.8	PASS
25717.500000	---	33.56	54.00	20.44	3000.0	1000.000	410.0	H	204.0	0.0	26.8	PASS

18. Receiver spurious emissions, radiated

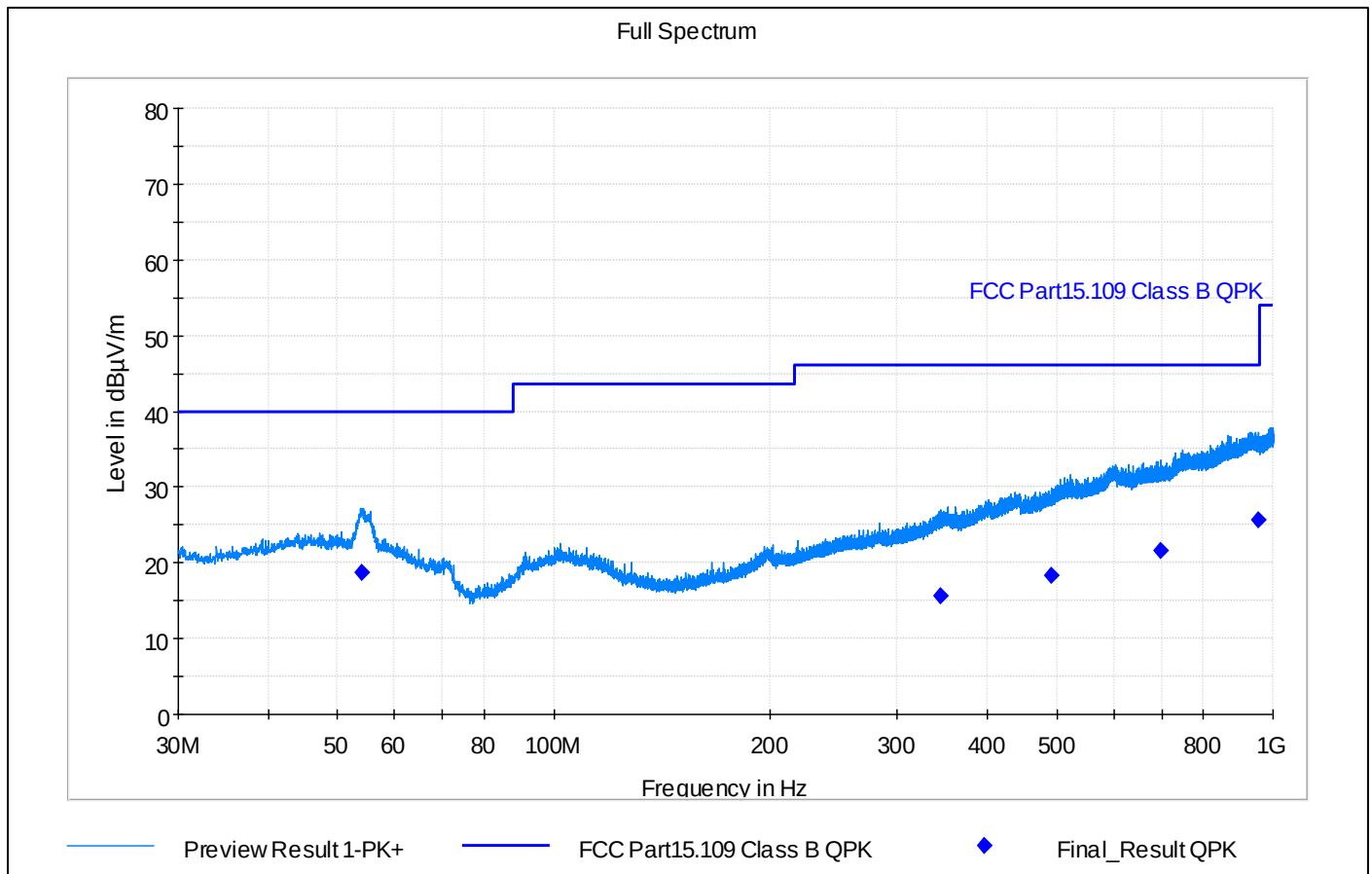
Reference: ISED RSS-247, Issue 3 (section 3.1)

Test method: ANSI C63.4-2014 (8.1 – 8.3)

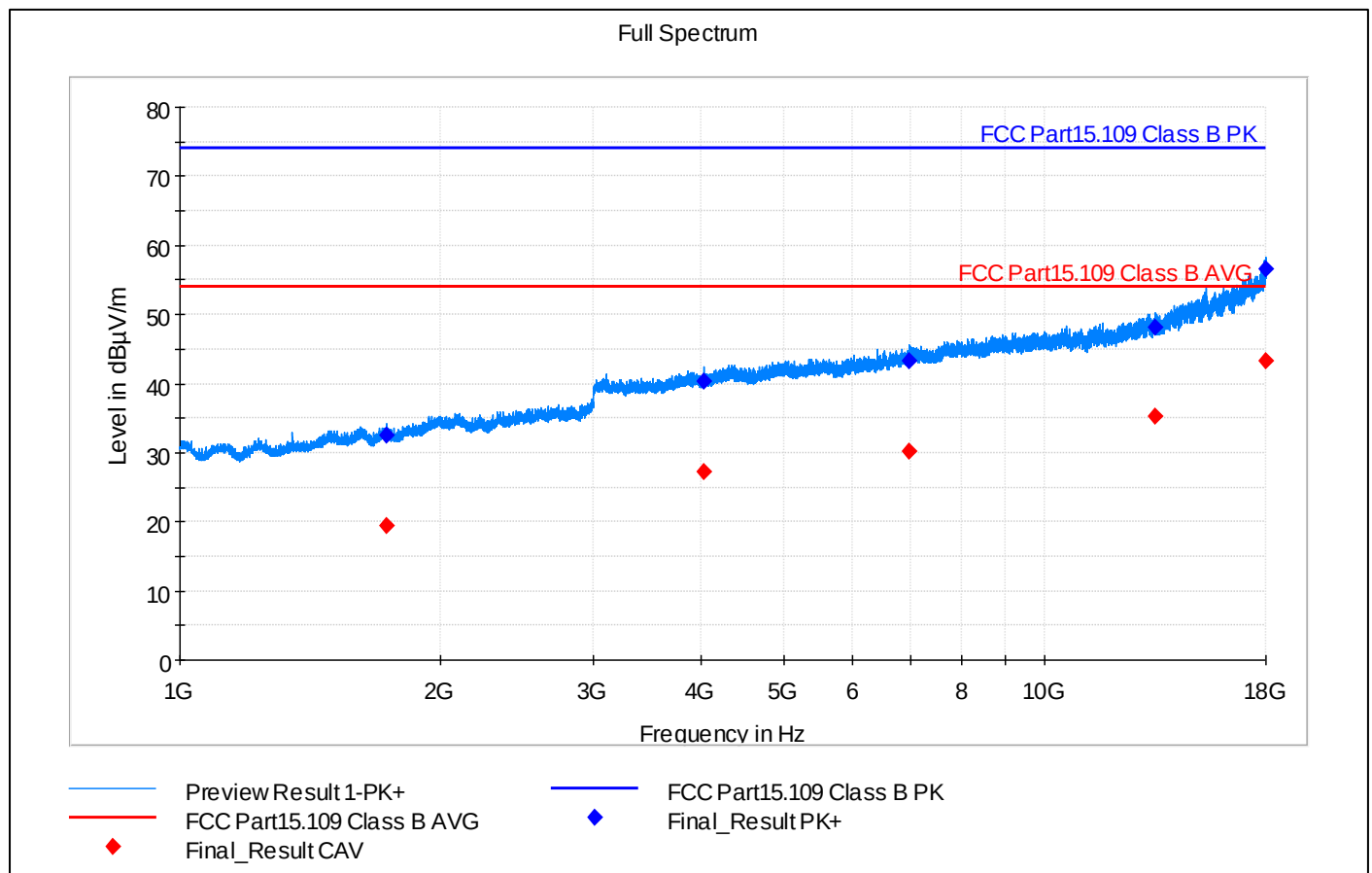
Limits			
Frequency (MHz)	Detector	Field strength (uV/m)	Measurement distance (m)
30 – 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
> 1000	Average	500	3

Test procedure
1. EUT is placed on a non conducting support at the center of a turn table 0.8m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360 degrees (orientation varied), measurements were made in both horizontal and vertical planes of polarization 5. Found peak values were further maximized by adjusting turntable position $\pm 22,5$ degrees around detected value and scanning the antenna height 1 to 4m 6. For maximized values, final measurement was done with the corresponding final detector.

Operation mode(s)	Configuration	Test Verdict
WLAN 802.11b/g/n RX	Mid channel, 2442 MHz	PASS

Mid channel, 30 MHz – 1 GHz

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
54.090000	18.66	40.00	21.34	15000.0	120.000	115.0	V	257.0	0.0	20.9	PASS
345.420000	15.64	46.00	30.36	15000.0	120.000	158.0	H	103.0	0.0	24.2	PASS
491.820000	18.36	46.00	27.64	15000.0	120.000	331.0	V	292.0	0.0	27.0	PASS
697.200000	21.63	46.00	24.37	15000.0	120.000	396.0	H	37.0	0.0	30.5	PASS
953.460000	25.69	46.00	20.31	15000.0	120.000	188.0	H	163.0	0.0	34.0	PASS

Mid channel, 1 GHz – 18 GHz

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
1735.500000	32.50	---	74.00	41.50	500.0	1000.000	146.0	H	221.0	-4.5	PASS
1735.500000	---	19.38	54.00	34.62	500.0	1000.000	146.0	H	221.0	-4.5	PASS
4040.250000	40.30	---	74.00	33.70	500.0	1000.000	153.0	V	39.0	8.1	PASS
4040.250000	---	27.20	54.00	26.80	500.0	1000.000	153.0	V	39.0	8.1	PASS
6961.750000	43.22	---	74.00	30.78	500.0	1000.000	117.0	V	316.0	14.4	PASS
6961.750000	---	30.27	54.00	23.73	500.0	1000.000	117.0	V	316.0	14.4	PASS
13417.500000	---	35.31	54.00	18.69	500.0	1000.000	180.0	H	112.0	25.5	PASS
13417.500000	48.18	---	74.00	25.82	500.0	1000.000	180.0	H	112.0	25.5	PASS
17986.000000	56.67	---	74.00	17.33	500.0	1000.000	389.0	H	335.0	38.7	PASS
17986.000000	---	43.32	54.00	10.68	500.0	1000.000	389.0	H	335.0	38.7	PASS

19. Photographs – Equipment External



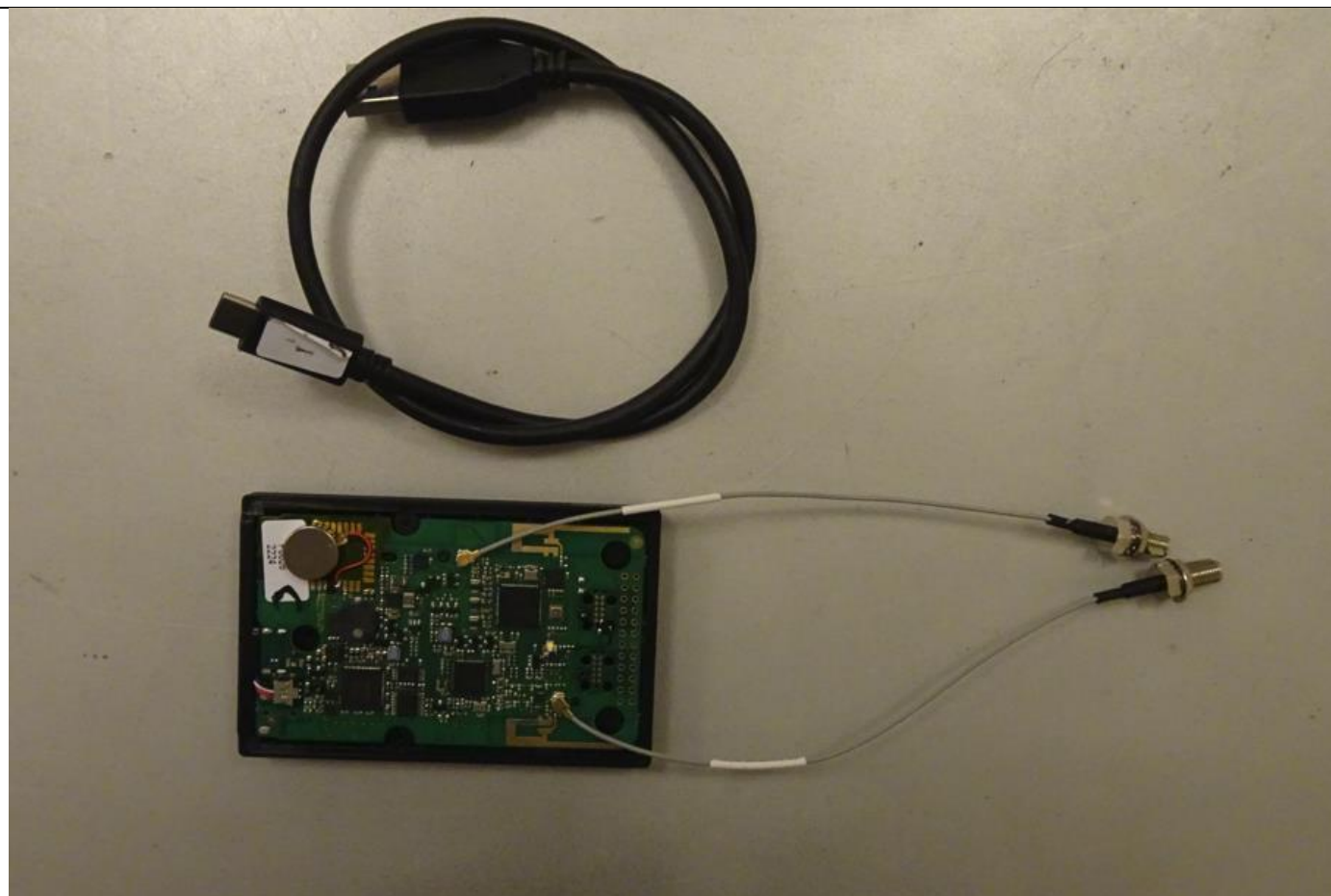
Picture 1, EUT Top view



Picture 2, EUT Bottom view



Picture 3, EUT ports



Picture 5, Conducted RF EUT

20. Photographs – Equipment Internal



Picture 6, PCB top view



Picture 7, PCB bottom view

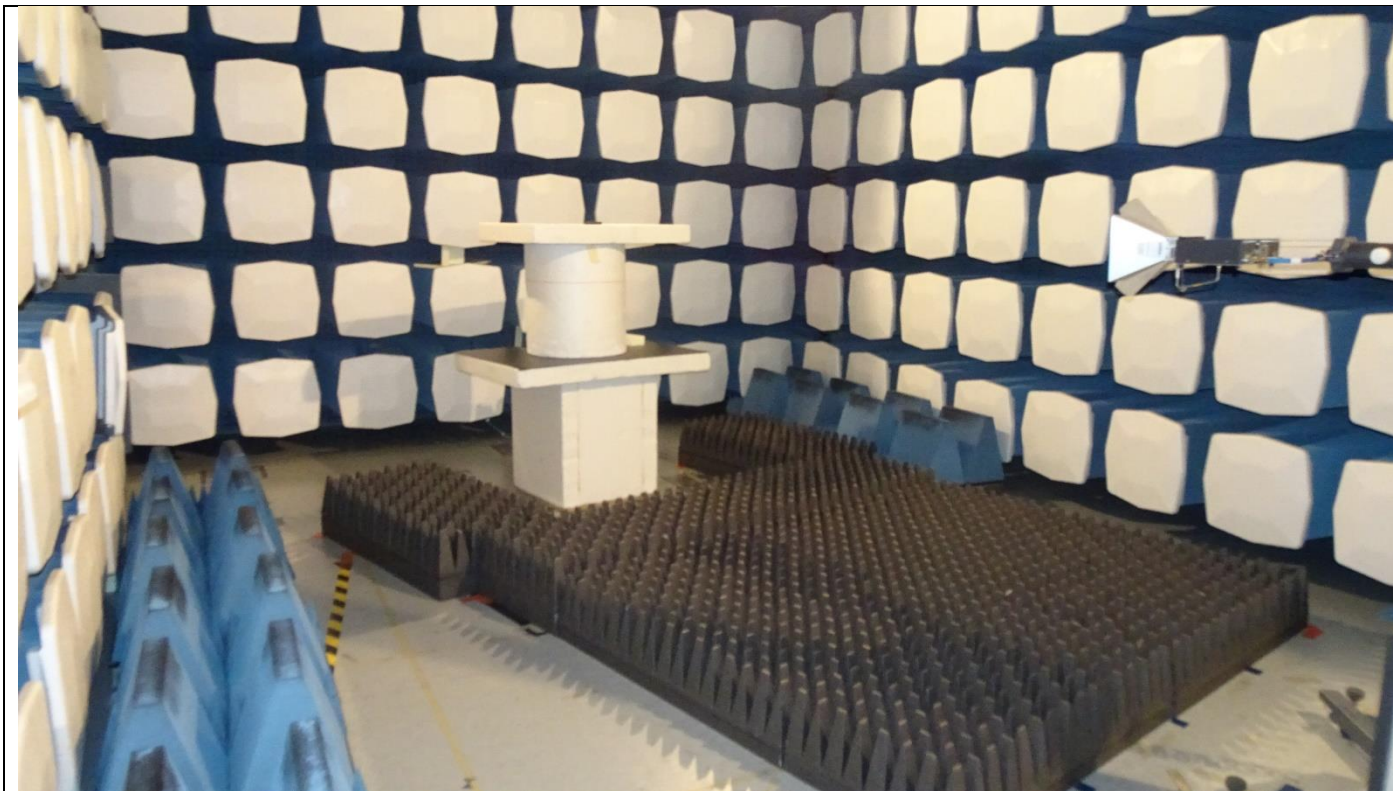


Picture 8, Battery cover

21. Photographs – Test Setups



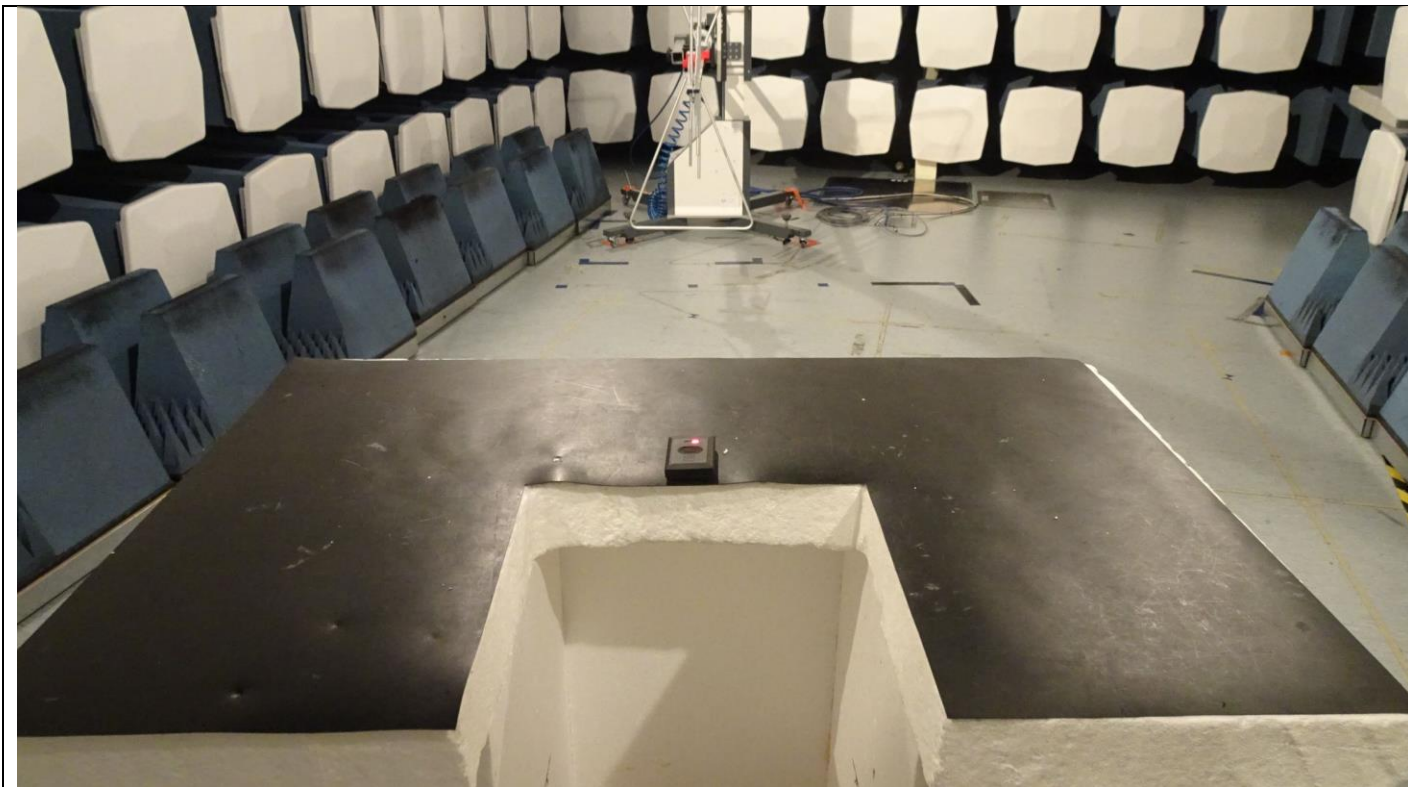
Picture 11, Radiated Spurious Emissions, common setup, TX and RX 30 - 1000 MHz



Picture 12, Radiated Spurious Emissions, common setup, TX, 1 – 26 GHz



Picture 13, Radiated Spurious Emissions, common setup, RX, 1 – 12,75 MHz



Picture 14, Radiated Spurious Emissions, EUT setup, TX and RX 30 – 1000 MHz



Picture 15, Radiated Spurious Emissions, EUT setup, TX and RX 1 GHz ->