

Radio Test Report

According to

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

DUT Name: NOWATCH B
Model No. : NBL
Customer: Nowatch BV
Address: Prinsengracht 769, 1017 JZ Amsterdam, Netherlands
Summary IN COMPLIANCE
Date of Reception: 05.05.2025
Date(s) of Test(s): 16.5.2025 – 6.6.2025

Tested by Test Engineer


Pekka Pulkkinen

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.

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Document Version History	Date of issue	Comments	Approved by
v0.1	18.06.2025	Initial version	
v0.2	03.07.2025	Updated Additional model, PMN, HVIN, FVIN	
v1.0	04.07.2025	Final approved version	Jukka Rauma
v2.0	26.01.2026	ANSI C63.10 version updated	Jukka Rauma

1. General Information

Test Engineer(s): 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:

Nowatch BV

Prinsengracht 769, 1017 JZ Amsterdam, Netherlands

Marinus van Diggelen

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e-mail: marinus@nowatch.com

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: Nowatch NBL is Bluetooth bracelet which monitors user's heart rate, stress level, sleep quality, activity and temperature. In addition of PPG and Bio-impedance sensors, device main features include accelerometer and vibra motor for smart alarming. Device is waterproof for swimming.

Test sample (Conducted):

Sample number	Serial number	Manufacturer	DUT Type	Model	HW version	SW version
2500076101	NB5120028	Haltian Oy	Wearable Bluetooth bracelet	NBL	SNS_L_S_04, SNS_L_S_03	2025.06.xx.x

Test sample (Emission):

Sample number	Serial number	Manufacturer	DUT Type	Model	HW version	SW version
2500076102	NB51710013	Haltian Oy	Wearable Bluetooth bracelet	NBL	SNS_L_S_04, SNS_L_S_03	2025.06.xx.x
2500076104	NB5171009	Haltian Oy	Wearable Bluetooth bracelet	NBL	SNS_L_S_04, SNS_L_S_03	2025.06.xx.x

Auxiliary equipment:

Sample number	Serial number	Manufacturer	DUT Type	Model	HW version	SW version	Comments
2500076103	NA	Haltian Oy	Charger for Nowatch	NBC	SNS_CH G_02		
G4CER062	3424100 241	StarTechcom	USB-C Power Tester with OLED display	USB-PWRTESTER			
2500009404	C4H444 41MKHP K84AP	Apple	Charger	A2347	NA	NA	Reference charger
G4CER047	NA	NA	USB-C to USB-C cable, 1m	NA			
G4C-L045	28E644B 9	Lenovo	Laptop	Thinkpad L14			

Description	Information	
Additional model	Model B Large	
Brand Names(s)	NOWATCH	
PMN	NBL	
HVIN	SNS_M_L_04, SNS_S_L_03	
FVIN	nowatch-fw-b-2025.06.xx.x	
HMN	N/A	
FCC ID	2A35XLB	
IC ID	28449-LB	
Radio type	Bluetooth LE Transceiver	
- operating frequency range:	2400.0 MHz – 2483.5 MHz	
- Nominal Channel Bandwidth:	1 and 2 MHz	
Radio technology / type of equipment	Bluetooth LE	
Modulation:	GFSK	
Number of antennas	1	
Bluetooth Specification	LE 1 Mbps PHY	Yes
	LE 2 Mbps PHY	Yes
	LE Coded PHY S=2 (500 kbit)	No
	LE Coded PHY S=8 (125 kbit)	No
	Stable Modulation Index - Transmitter	No
	Stable Modulation Index - Reer	No
Antenna	Type	IFA Antenna
	Model	-
	Manufacturer	Haltian
	Gain	-4.6...-5.6 dBi
Supply voltage	3.3 – 4.4 VDC	
Type of Power source	Battery operated	
Operating Temperature	TNom = 23°C TMin = 0°C TMax = 45°C	
Manufacturer	Haltian Oy Yrtytipellontie 1, 90230 Oulu, Finland	

3. Configuration and Operation Modes

Conducted and radiated emission test:

Test modes / description
Conducted RF: Continuous modulated carrier at 2402 MHz, 2442 MHz and 2480 MHz, Duty cycle 64 %, power level setting 0 dB, data rate 1 Mbps and 2 Mbps. AIROC v1.4.2.3884 was used to set power level.
Radiated emission: Continuous modulated carrier at 2402 MHz (ch37), 2440 MHz (ch17) and 2480 MHz (ch39). 1 Mbps and 2 Mbps data rates. AIROC v1.4.2.3884 was used to set power to maximum
Conducted emission: Continuous reception at 2440 MHz (ch17) set by AIROC v1.4.2.3884.

Test/configuration software

Manufacturer	Name	Version
Infineon	AIROC Bluetooth test and debug tool	v1.4.2.3884

4. Test equipment

Conducted RF tests

R&S TS8997 Test System equipment list:

New ID	Manufacturer	Equipment type	Description	Serial	Calibration information	Next calibration
G4C462	Rohde & Schwarz	SMW200A	Vector signal generator	110578	27.6.2023	27.6.2026
G4C463	Rohde & Schwarz	SMB100A	Signal Generator	183205	27.6.2023	27.6.2026
G4C464	Rohde & Schwarz	OSP150	Open switch and control unit	101135	13.8.2024	13.8.2025
G4C465	Rohde & Schwarz	OSP220	Open switch and control unit	102440	14.8.2024	14.8.2025
G4C466	Rohde & Schwarz	ESW44	EMI test receiver	103103	29.7.2024	29.7.2025
G4C467	Rohde & Schwarz	CMW500	Wideband radio communication tester	171062	29.6.2023	29.6.2025

Radiated emission

New ID	Manufacturer	Equipment type	Description	Serial	Calibration information	Next calibration
G4C265	Rohde & Schwarz	ESW26	EMI test receiver	101324	26.7.2024	26.7.2025
G4C273	Frankonia	ALX-4000E	Broadband Antenna, 25MHz-4GHz with 6dB (50-A-MFN-06) att.	00816+1531	22.1.2024	22.1.2027
G4C292	Rohde & Schwarz	TS-LNA 1840	RF Preamplifier 18 to 40 GHz	100841	12.8.2024	12.8.2026
G4C294	Rohde & Schwarz	TC-HORN40 + WRD180-2.5	Horn Antenna -> 40GHz	101057 + 100667	4.11.2022	4.11.2025
G4C469	Rohde & Schwarz	TS_PRE2	RF Preamplifier	101541	12.8.2024	12.8.2026
G4C576	Rohde & Schwarz	HF907	Double-Ridged Waveguide Horn Antenna 800MHz-18GHz	100163	9.8.2022	9.8.2025

Conducted emission

New ID	Manufacturer	Equipment type	Description	Serial	Calibration information	Next calibration
G4C265	Rohde & Schwarz	ESW26	EMI test receiver	101324	26.7.2024	26.7.2025
G4C516	Rohde & Schwarz	ENV216	Two-line V-Network LISN	100078	14.5.2024	14.5.2025
	0 Eurofins/Salo	Extension cord	ANSI cord 1.0		1 9.10.2024	9.10.2025

Test software

Description	Manufacturer	Name	Version
EMC Software	Rohde & Schwarz	EMC32	10.60.20
RF Software	Rohde & Schwarz	WMS32	12.10.00

5. 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

6. 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

7. Test conditions

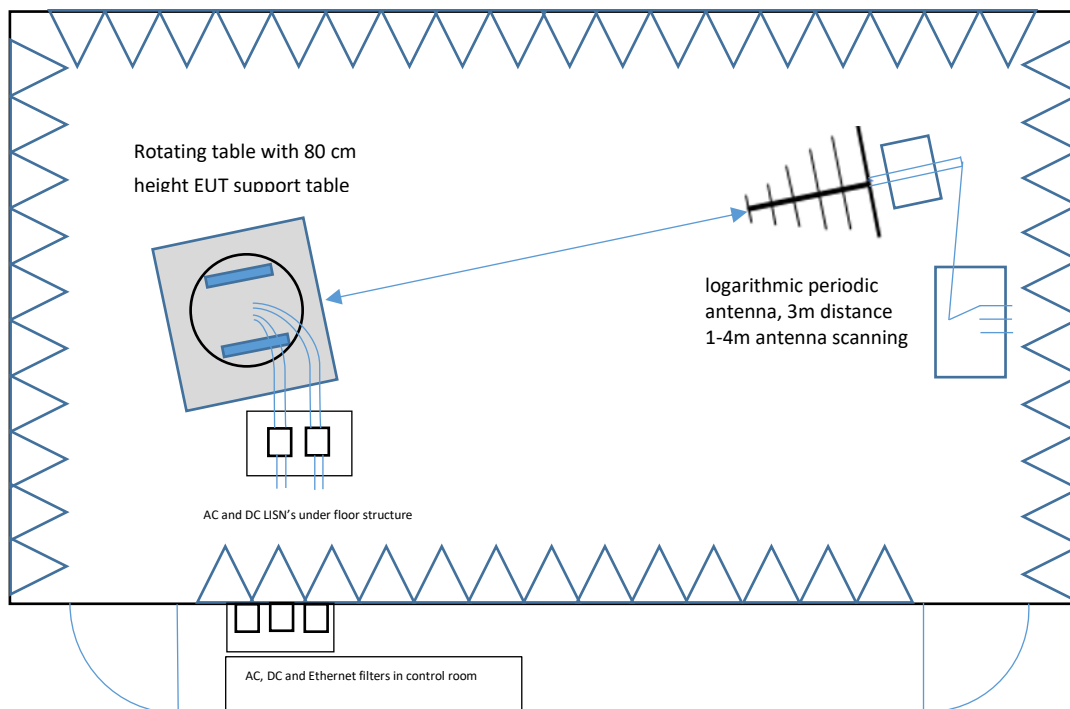
All radiated tests were performed in a semi-anechoic chamber, where the measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz, 1 GHz-18 GHz Double-ridged horn antenna and 18 GHz-40 GHz horn antenna) is located at a distance of 3 m.

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.

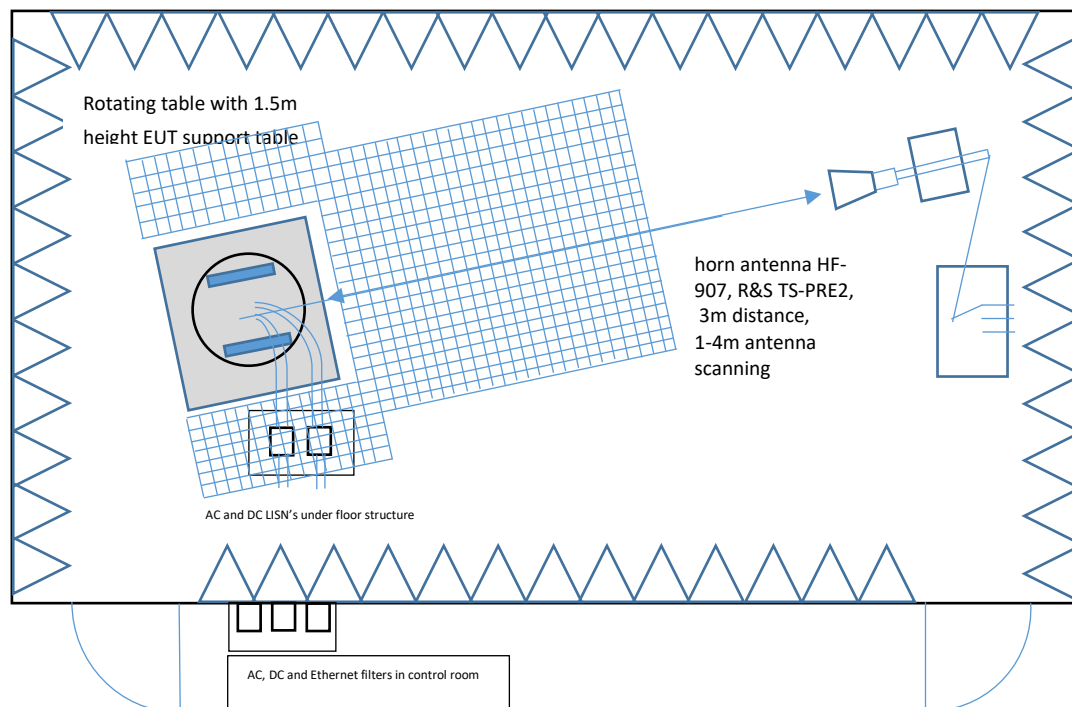
Measurements were made in both horizontal and vertical planes of polarization.

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.

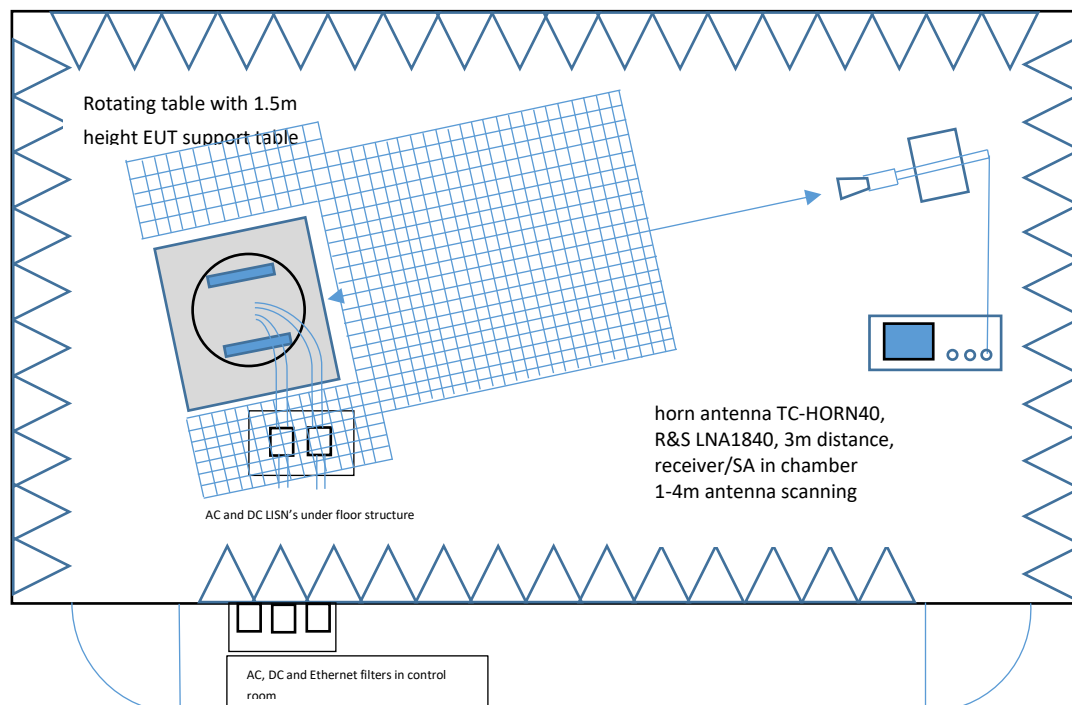
Radiated measurements setup from 30 MHz to 1 GHz:



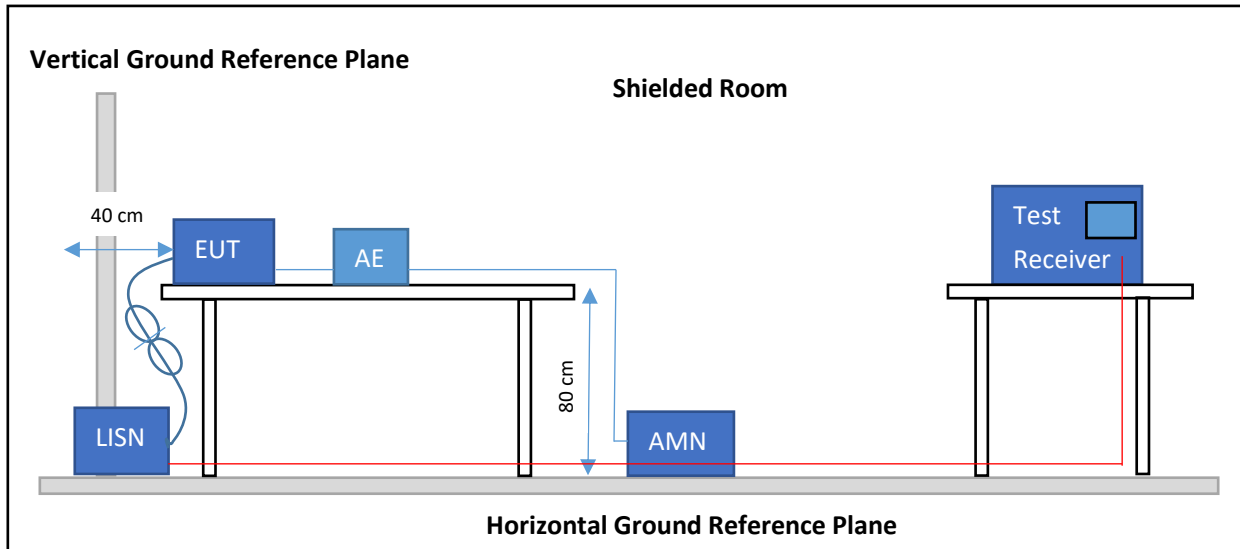
Radiated measurements setup from 1 GHz to 18 GHz:



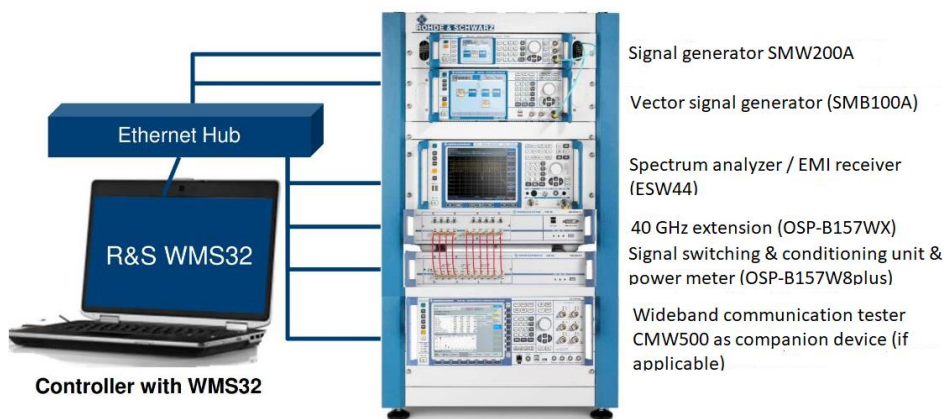
Radiated measurements setup from 18 GHz to 26 / 40 GHz:



Conducted emission setup



Conducted RF measurement system:



8. Summary

Bluetooth LE

FCC/ISED Requirement (15.247 / RSS-247)		Reference method	Result	Remark
Occupied Bandwidth	ISED RSS-Gen, Issue 5 A2 (section 6.7)	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024	N/R	Informational only
6 dB Bandwidth	FCC § 15.247(a)(2) / RSS-247, Issue 3 (section 5.2 (a))	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024	PASS	
Maximum peak conducted power	FCC § 15.247(b) / RSS-247, Issue 3 (section 5.4 (d))	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024	PASS	
Power spectral density	FCC § 15.247(e) / RSS-247, Issue 3 (section 5.2 (b))	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024	PASS	
AC power line conducted emissions	FCC § 15.207 / RSS-247, Issue 3 (section 3.1)	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024	PASS	
Band edge compliance	FCC § 15.247(d) / RSS-247, Issue 3 (section 5.5)	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024	PASS	
Conducted spurious emissions	FCC § 15.247(d) / RSS-247, Issue 3 (section 5.5)	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024	PASS	
Transmitter radiated spurious emissions	FCC § 15.247(d), FCC § 15.209 / RSS-Gen, Issue 5 A2 (section 6.13)	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024	PASS	
Receiver radiated spurious emissions	ISED RSS-247, Issue 3 (section 3.1)	ANSI C63.4-2014 + C63.4a-2017	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				
Applicable FCC KDB(s): KDB 558074 DO1: DTS measurement guidance v 0502 (Apr 2, 2019)				

9. Occupied bandwidth

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

Test method: ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 (6.9.3)

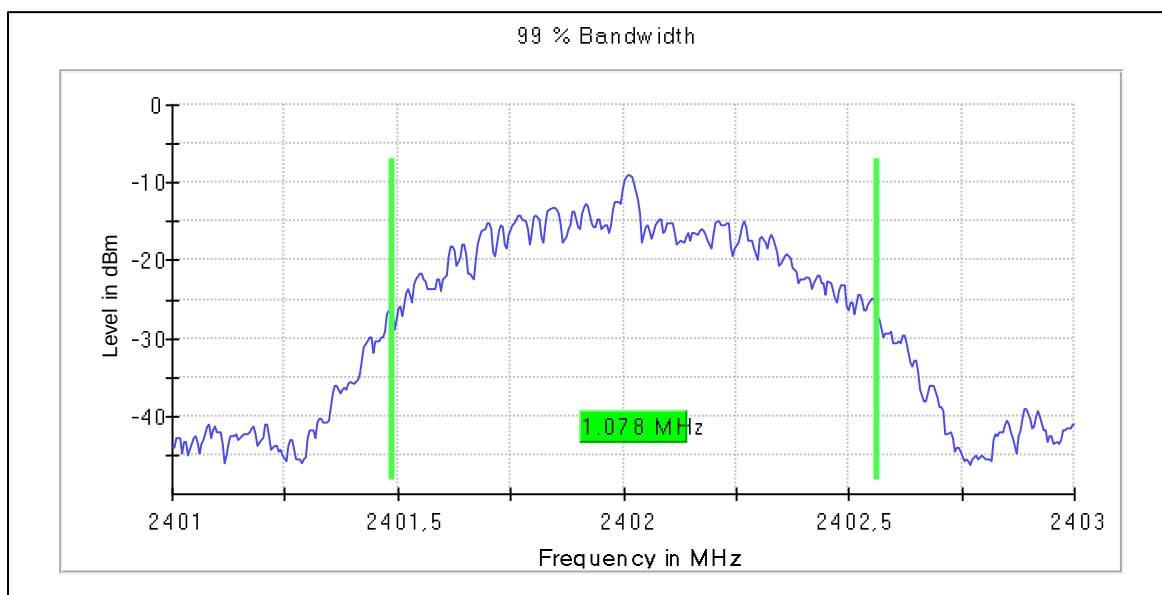
Limits
None (Informational only)

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

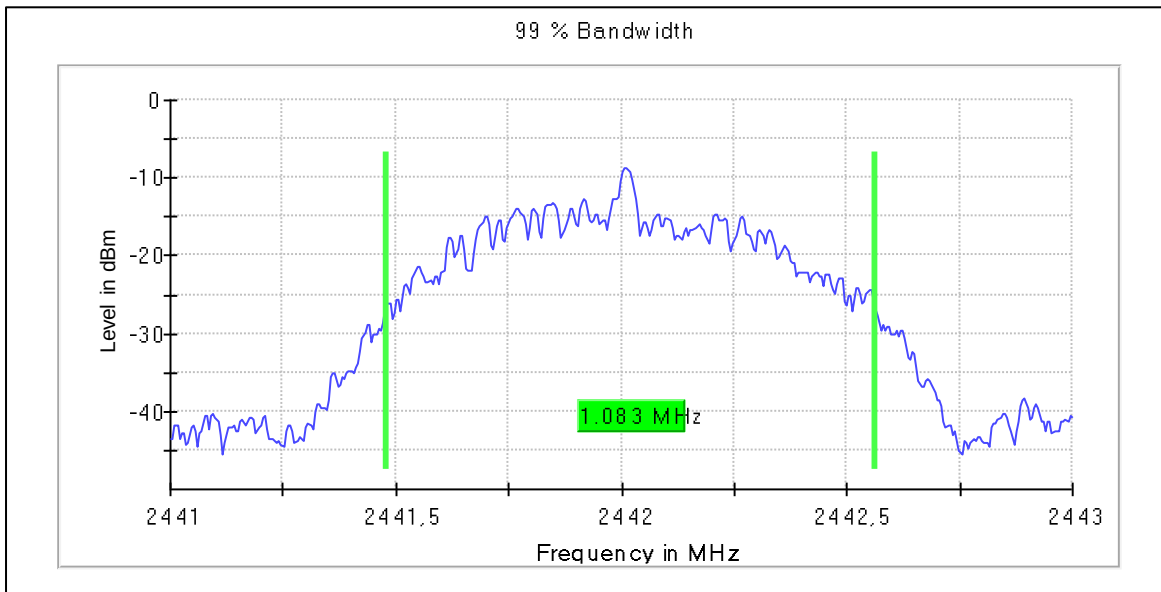
Summary:

Summary		
Mode / modulation	Frequency (MHz)	Bandwidth (MHz)
Bluetooth LE, 1 Mbps	2402	1.077694
Bluetooth LE, 1 Mbps	2442	1.082707
Bluetooth LE, 1 Mbps	2480	1.097745
Bluetooth LE, 2 Mbps	2402	2.035088
Bluetooth LE, 2 Mbps	2442	2.045113
Bluetooth LE, 2 Mbps	2480	2.085213

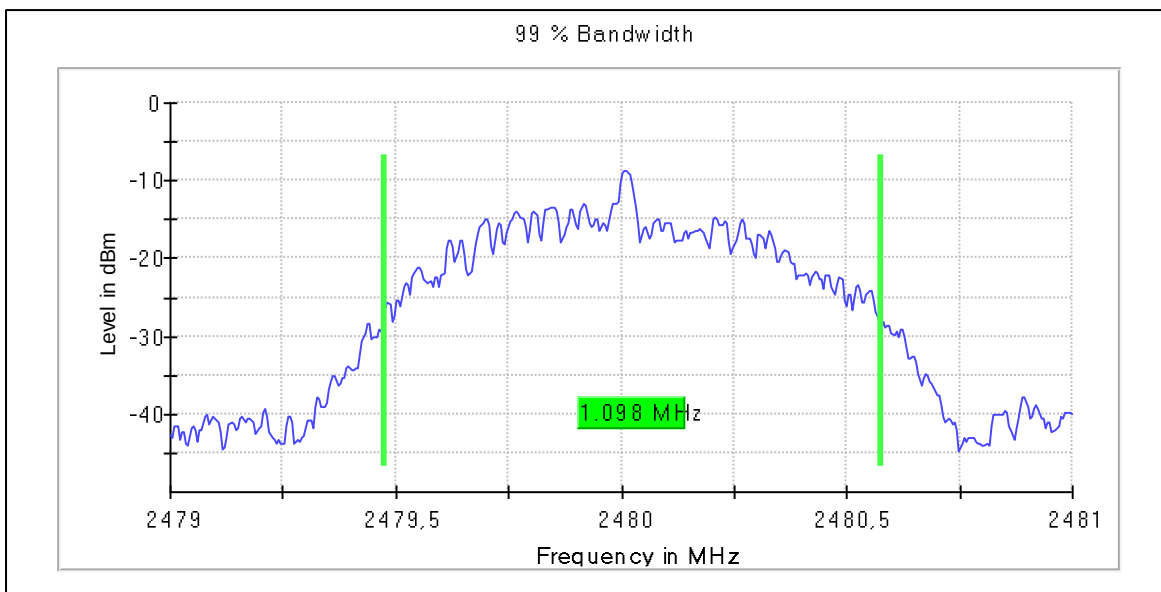
Occupied bandwidth, low channel, 1 Mbps



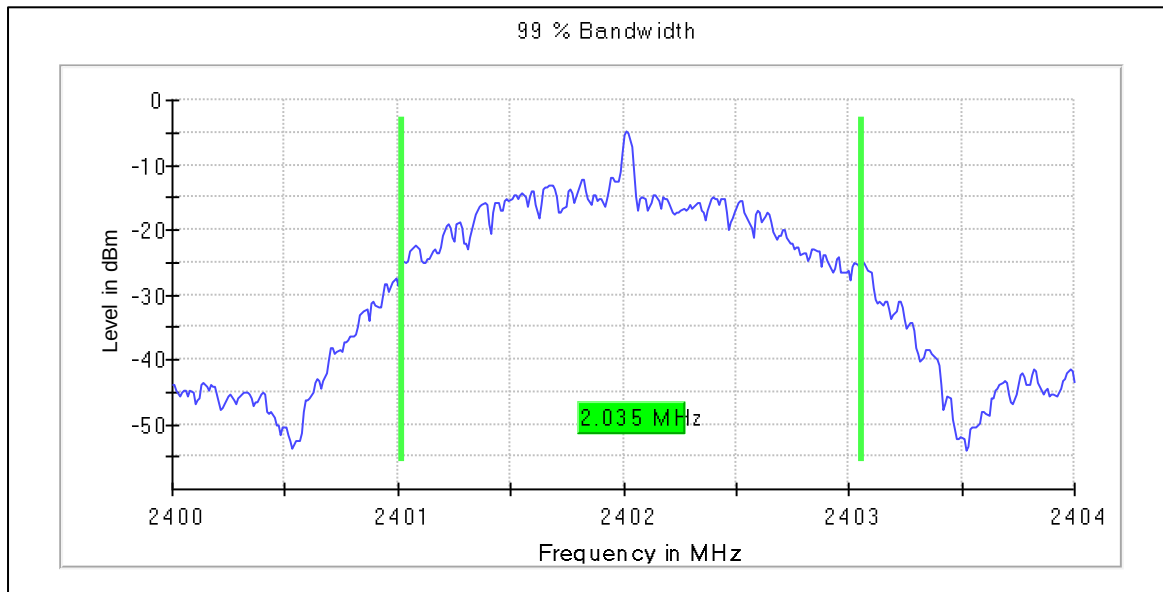
Occupied bandwidth, middle channel, 1 Mbps



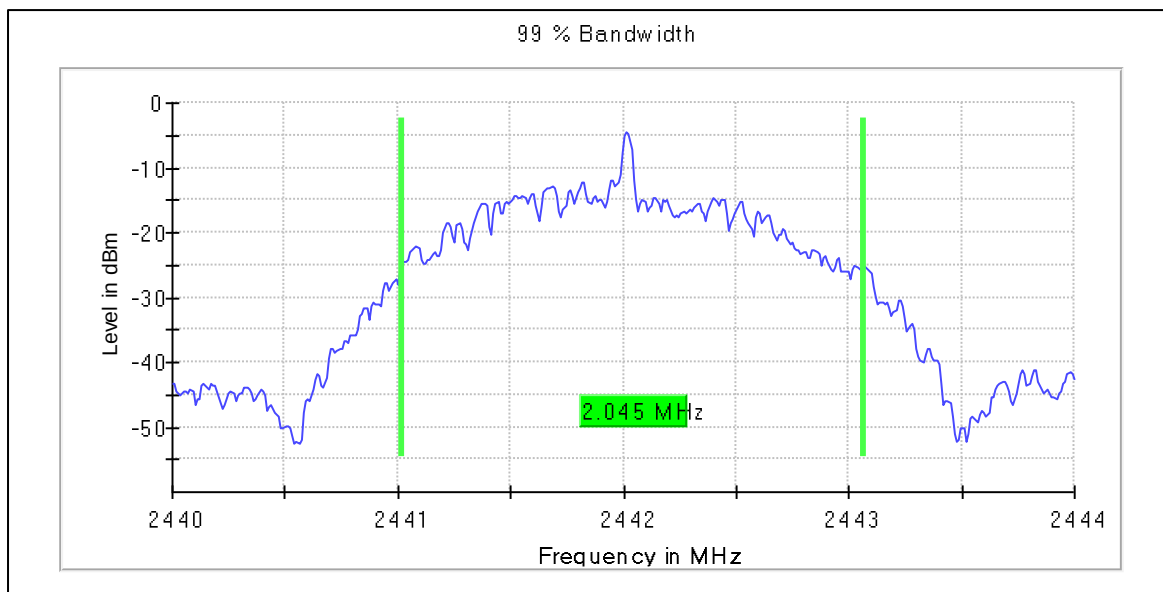
Occupied bandwidth, high channel, 1 Mbps



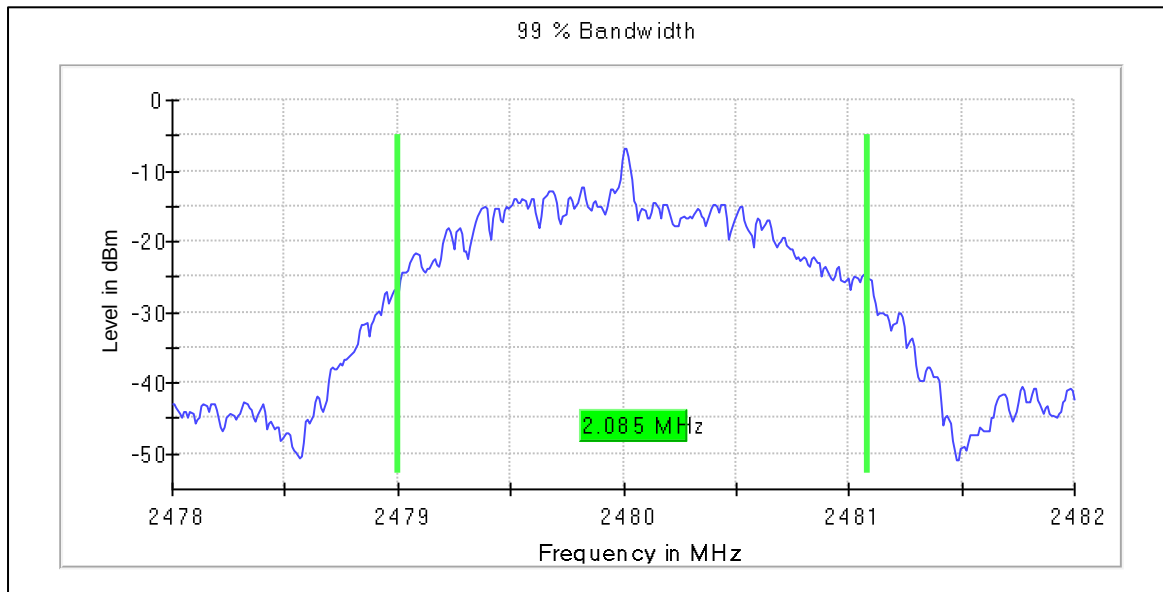
Occupied bandwidth, low channel, 2 Mbps



Occupied bandwidth, middle channel, 2 Mbps



Occupied bandwidth, high channel, 2 Mbps



10. 6 dB bandwidth

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

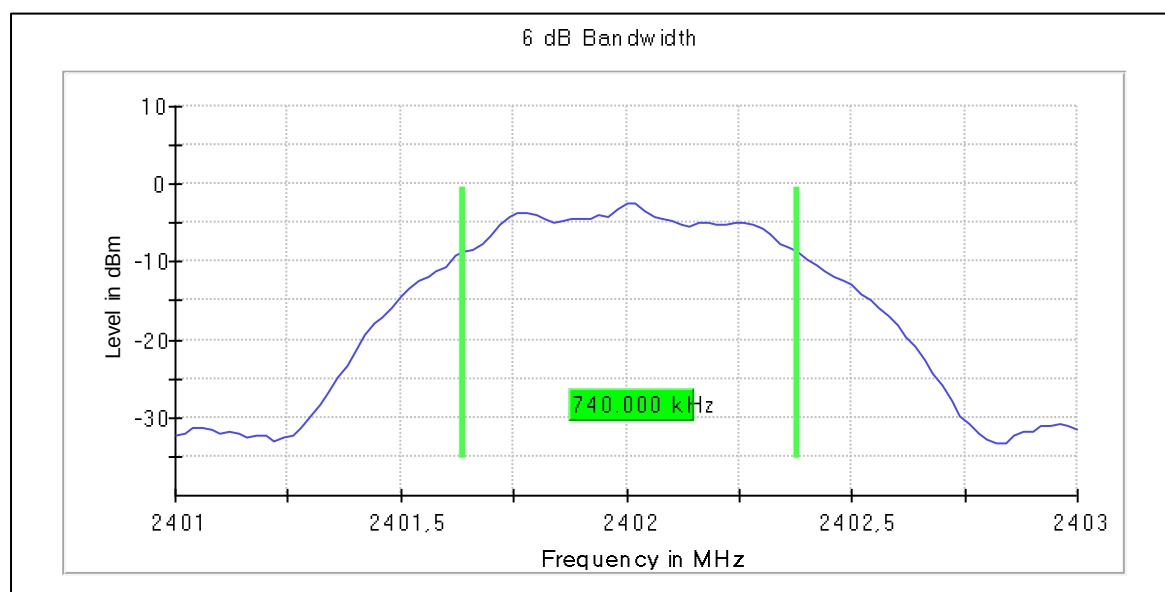
Test method: KDB 558074 D01 DTS Meas Guidance v05r02 and ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 (11.8.1)

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

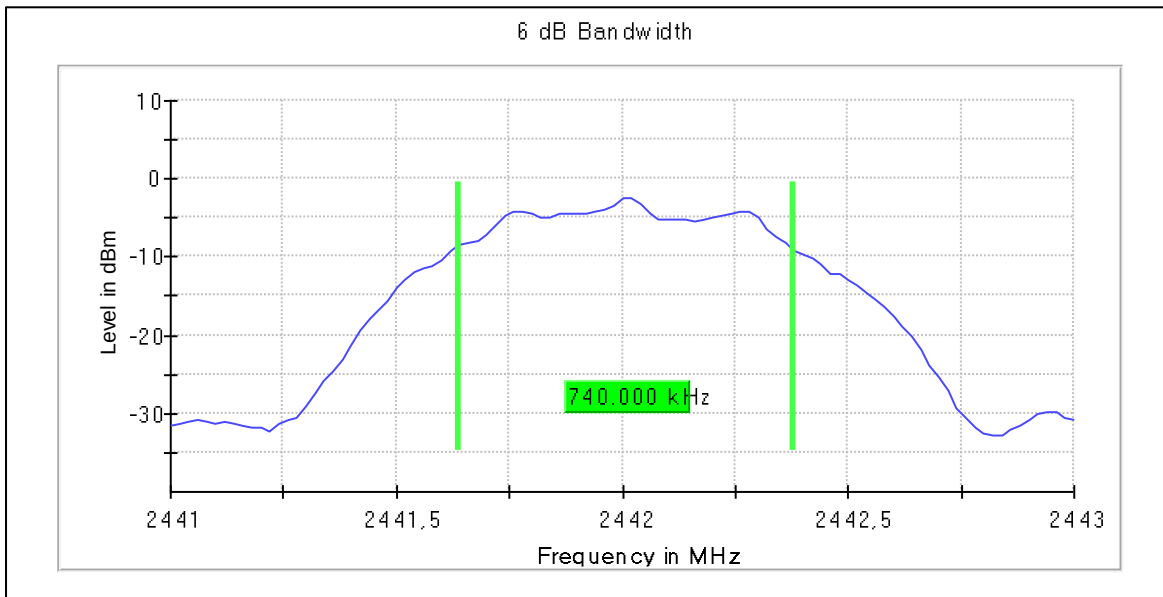
Test procedure
1. EUT set to test mode 2. Span set to at least twice the emission spectrum 3. Detector set to peak and max hold and BW is set to 100 kHz 4. Envelope peak value of emission spectrum is selected 5. Marker on envelope of spectrum is set to level of -6 dB to the left of the peak 6. Marker 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
Bluetooth LE, 1 Mbps	2402.000000	0.740000	0.500000	---	2401.640000	2402.380000	-2.5	PASS
Bluetooth LE, 1 Mbps	2442.000000	0.740000	0.500000	---	2441.640000	2442.380000	-2.4	PASS
Bluetooth LE, 1 Mbps	2480.000000	0.740000	0.500000	---	2479.640000	2480.380000	-2.2	PASS
Bluetooth LE, 2 Mbps	2402.000000	1.200000	0.500000	---	2401.400000	2402.600000	-3.0	PASS
Bluetooth LE, 2 Mbps	2442.000000	1.200000	0.500000	---	2441.400000	2442.600000	-2.4	PASS
Bluetooth LE, 2 Mbps	2480.000000	1.200000	0.500000	---	2479.400000	2480.600000	-2.2	PASS

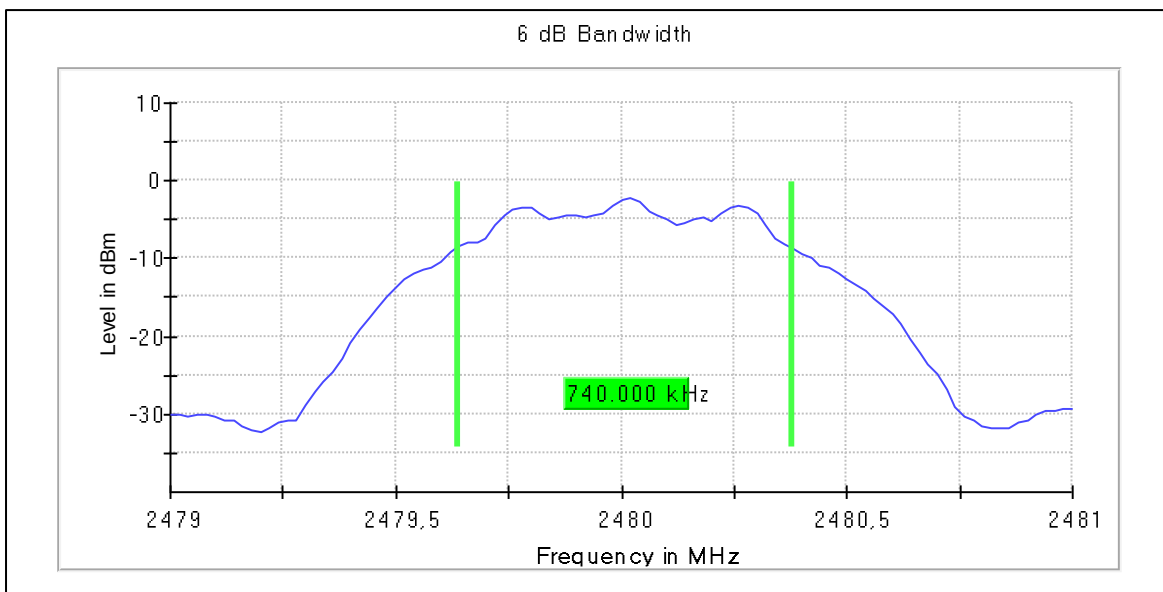
6 dB Bandwidth, low channel, 1 Mbps:



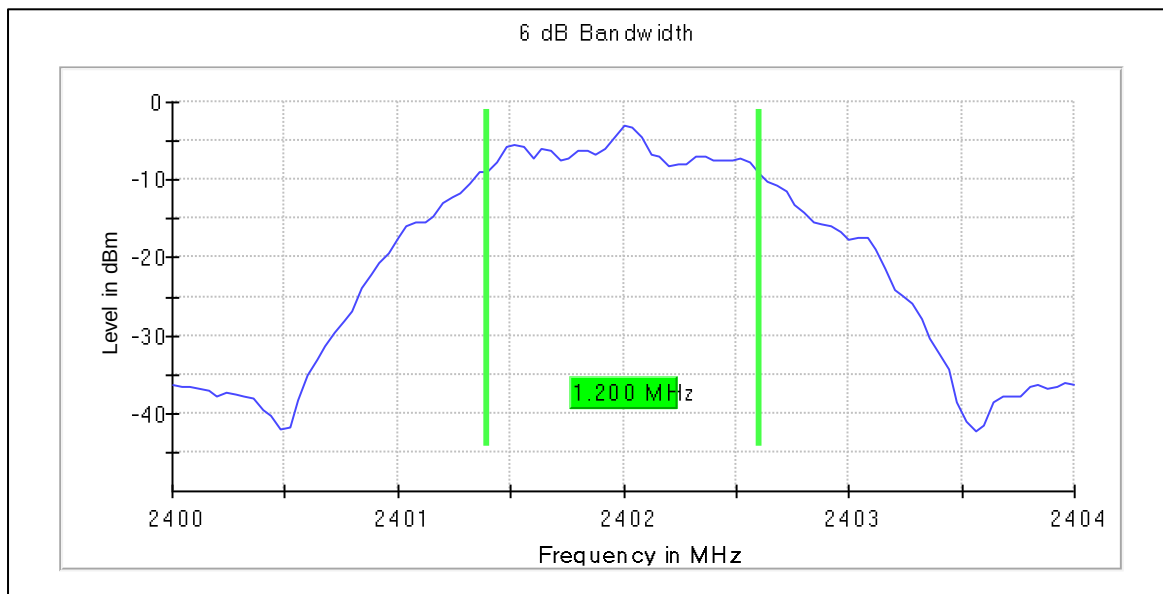
6 dB Bandwidth, middle channel, 1 Mbps:



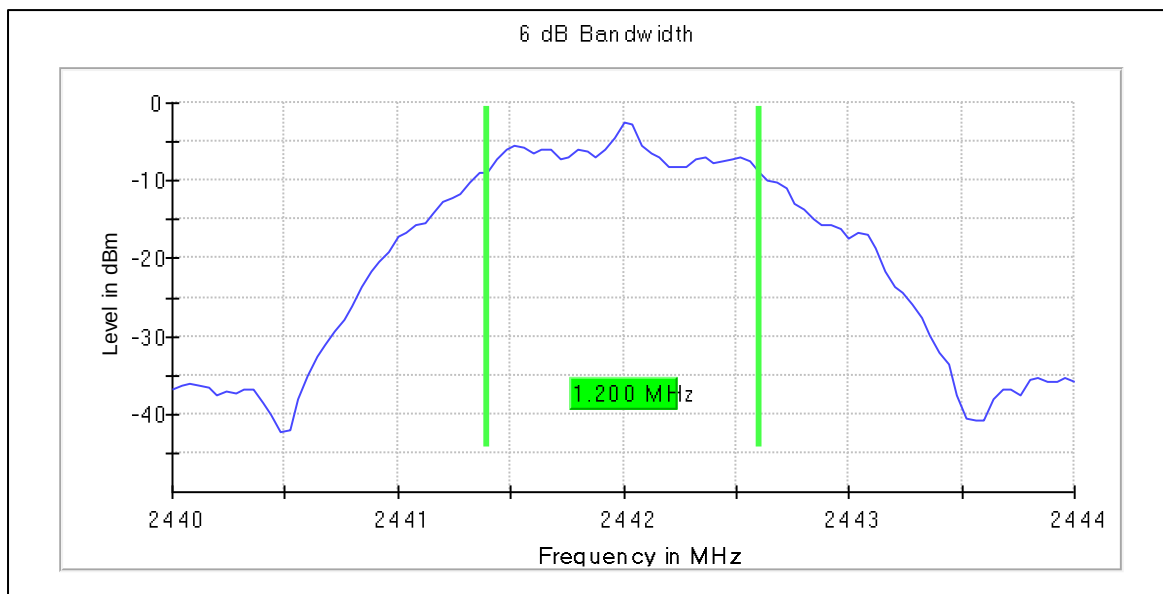
6 dB Bandwidth, high channel, 1 Mbps:



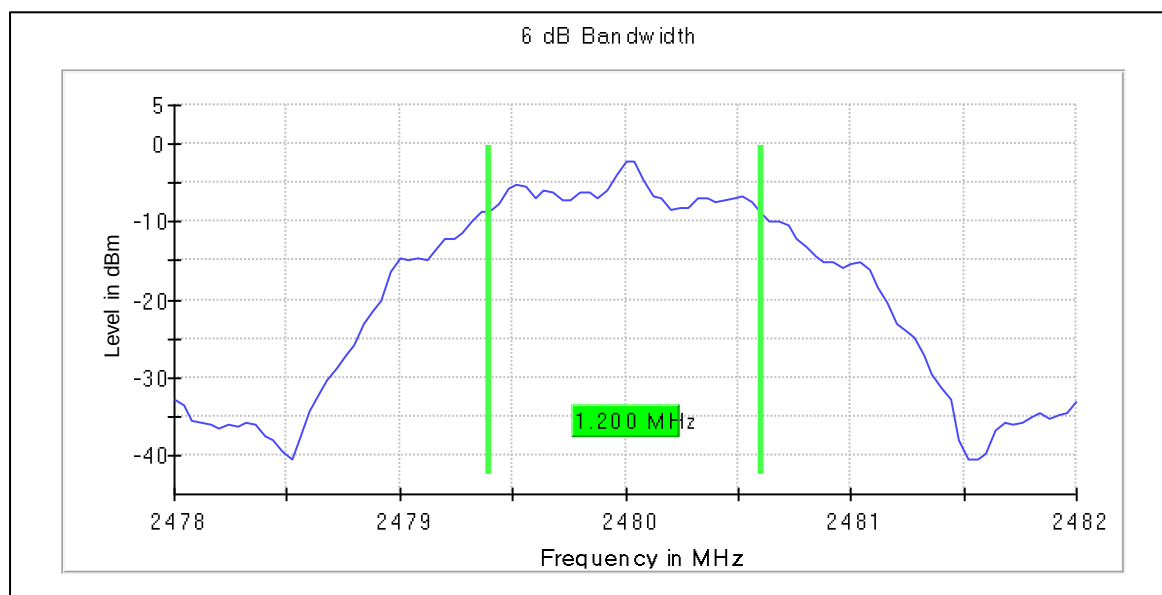
6 dB Bandwidth, low channel, 2 Mbps:



6 dB Bandwidth, middle channel, 2 Mbps:



6 dB Bandwidth, high channel, 2 Mbps:



11. 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 C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 (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.

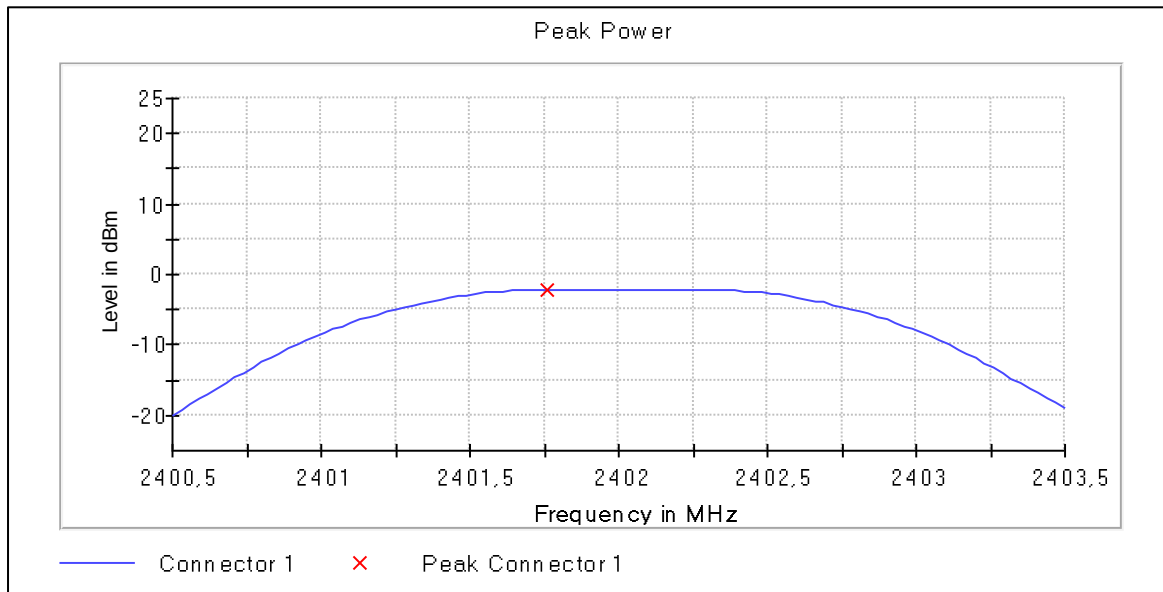
Test procedure
1. EUT set to test mode (communication tested is used if needed) 2. Analyzer resolution bandwidth is set $\geq$ DTS bandwidth 3. Detector set to peak and max hold 4. Sweep time is set to auto 5. After trace has stabilized a marker is set to peak envelope

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

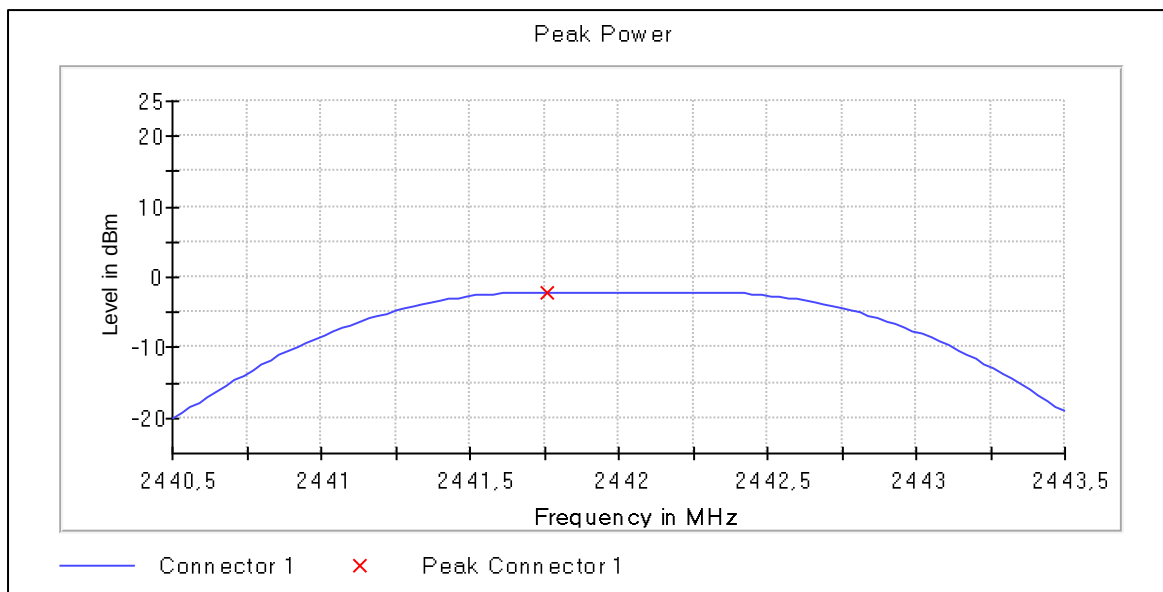
Maximum Declared Antenna Gain: -4.6...-5.6 dBi

Mode / modulation	DUT Frequency (MHz)	Peak Power (dBm)	EIRP Power (dBm)	Result
Bluetooth LE, 1 Mbps	2402.000000	-2.2	-6.8	PASS
Bluetooth LE, 1 Mbps	2442.000000	-2.1	-7.2	PASS
Bluetooth LE, 1 Mbps	2480.000000	-2.1	-7.7	PASS
Bluetooth LE, 1 Mbps	2402.000000	-2.3	-6.9	PASS
Bluetooth LE, 1 Mbps	2442.000000	-2.2	-7.3	PASS
Bluetooth LE, 1 Mbps	2480.000000	-2.0	-7.6	PASS

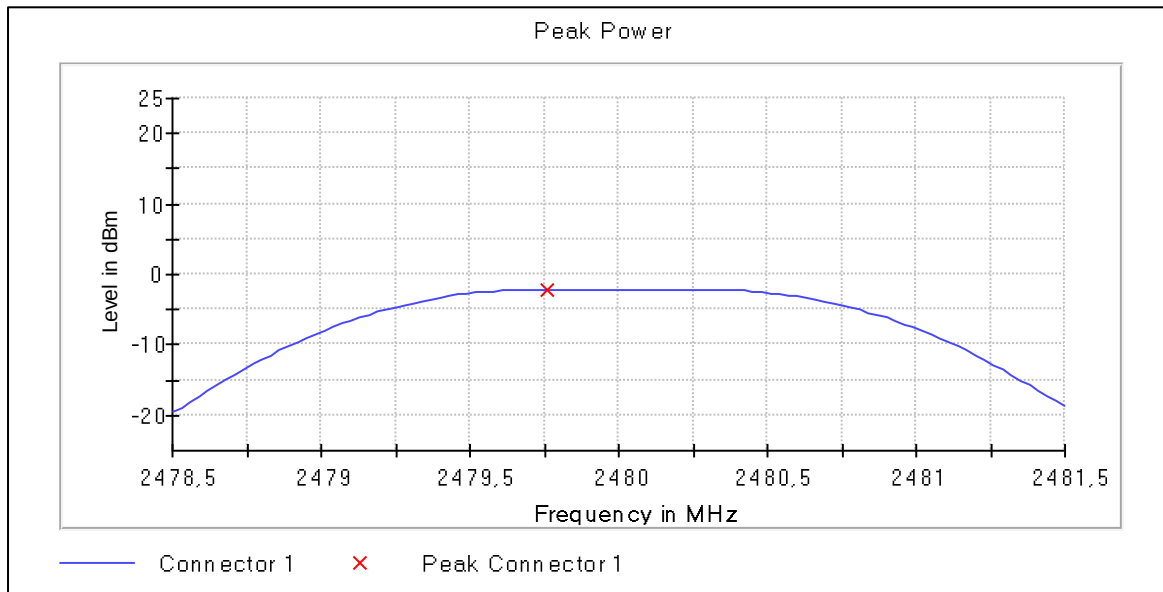
Peak power, low channel, 1 Mbps



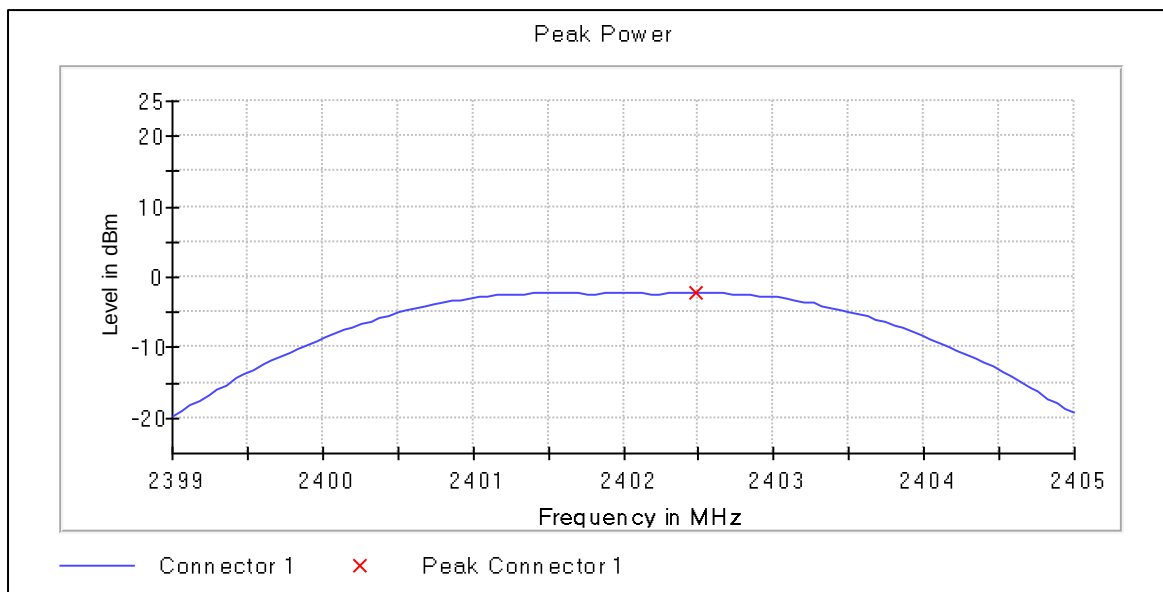
Peak power, middle channel, 1 Mbps



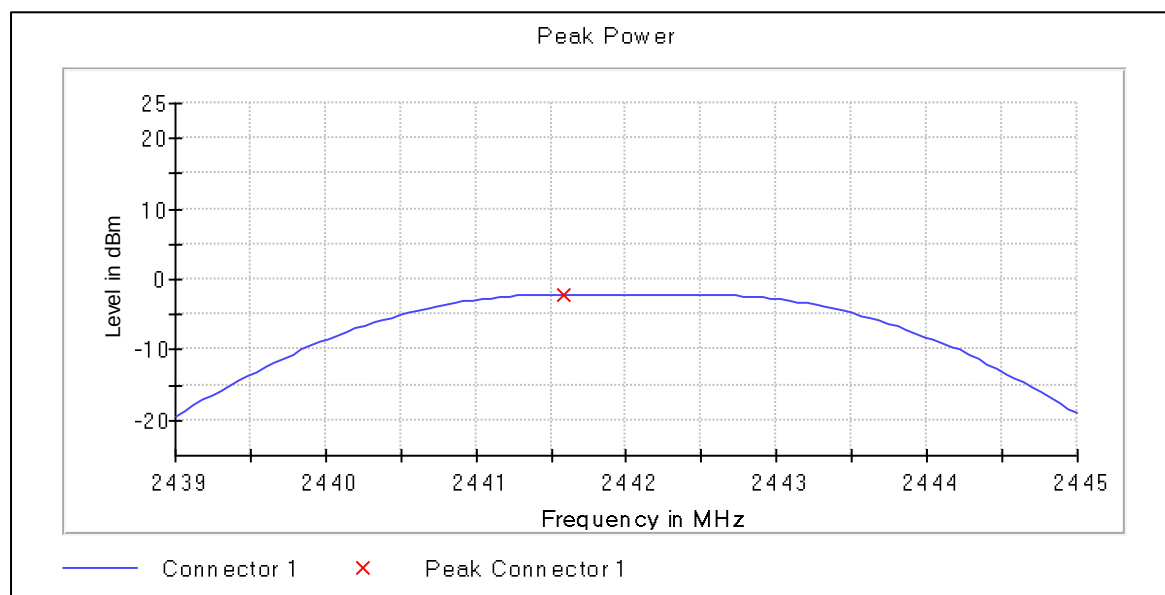
Peak power, high channel, 1 Mbps



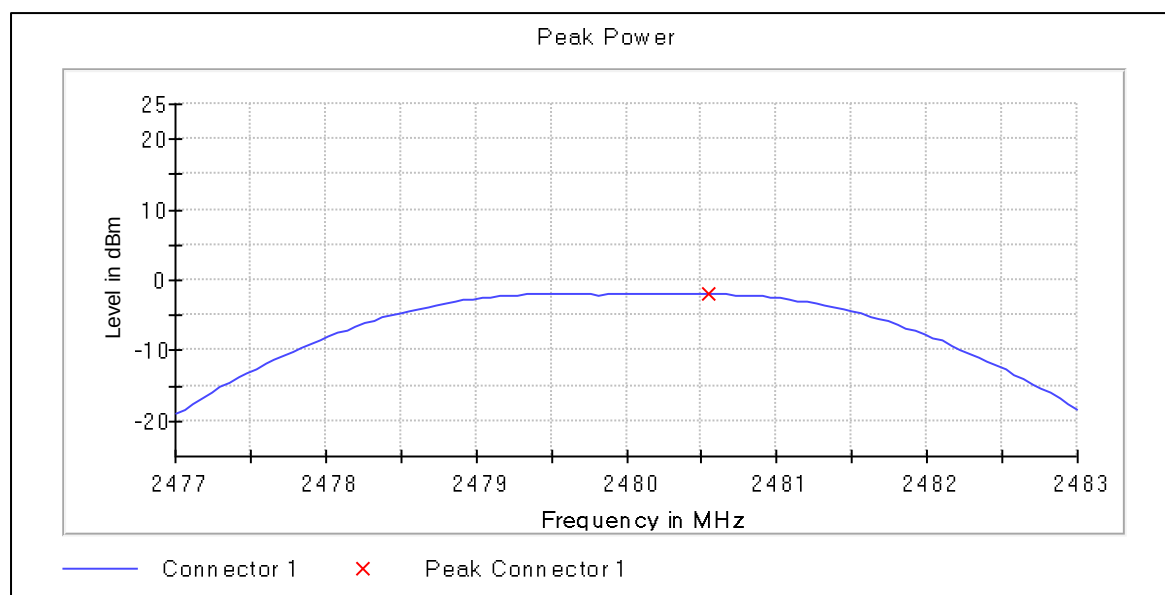
Peak power, low channel, 2 Mbps



Peak power, middle channel, 2 Mbps



Peak power, high channel, 2 Mbps



12. 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 C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 (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.

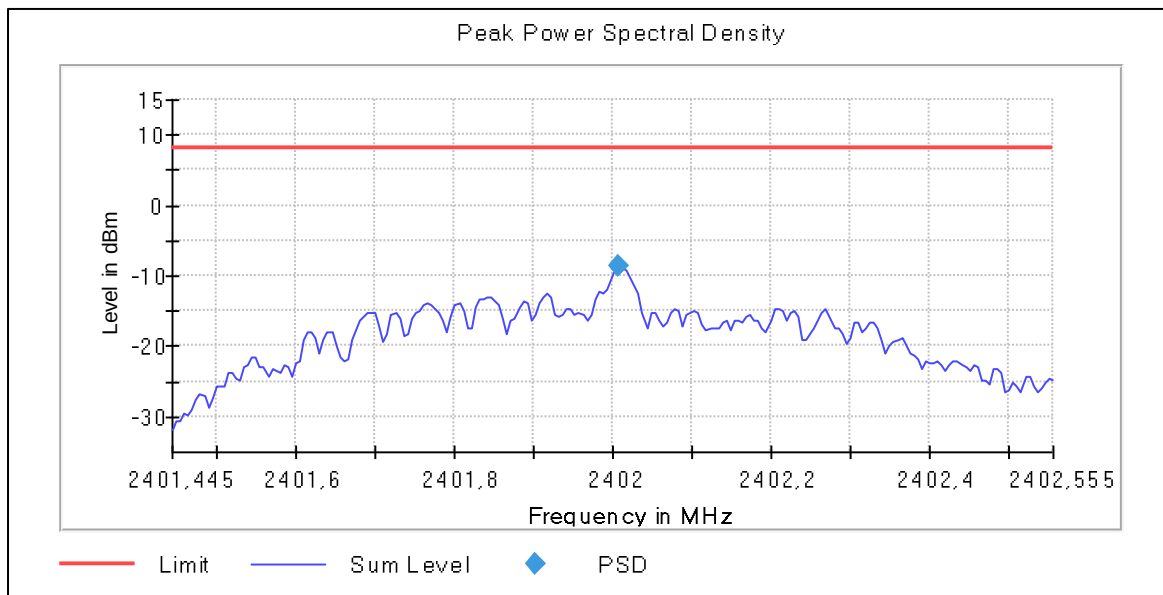
Limits
≤ 8 dBm / 3 kHz

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

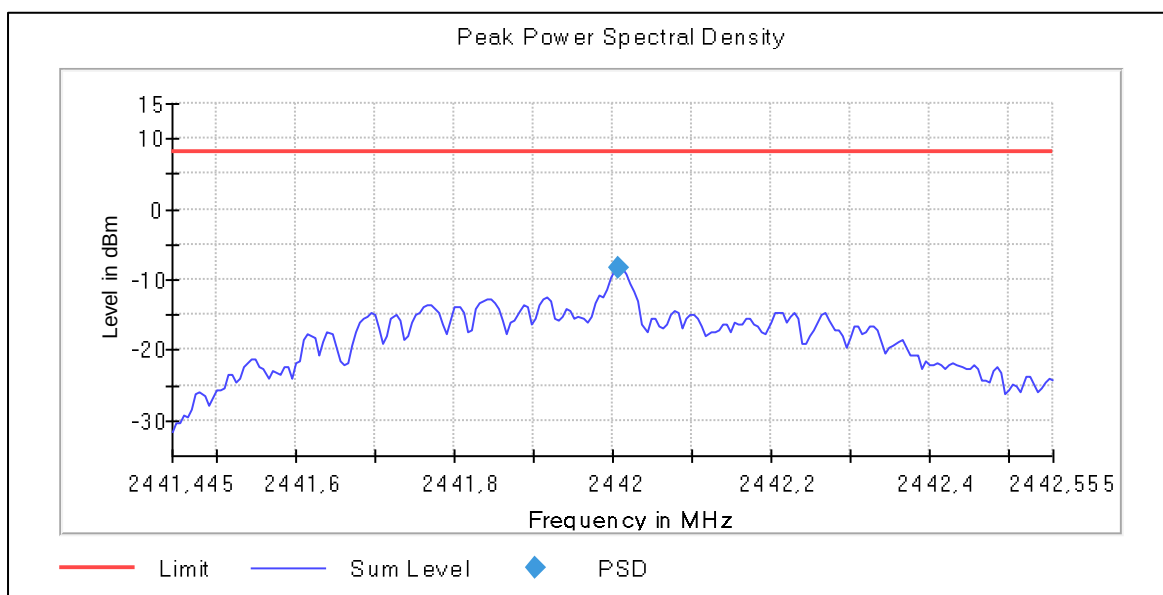
Summary

Mode / modulation	DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
Bluetooth LE, 1 Mbps	2402.000000	2402.007534	-8.736	8.0	PASS
Bluetooth LE, 1 Mbps	2442.000000	2442.007534	-8.308	8.0	PASS
Bluetooth LE, 1 Mbps	2480.000000	2480.007534	-8.395	8.0	PASS
Bluetooth LE, 2 Mbps	2402.000000	2402.012535	-8.849	8.0	PASS
Bluetooth LE, 2 Mbps	2442.000000	2442.012535	-8.445	8.0	PASS
Bluetooth LE, 2 Mbps	2480.000000	2480.012535	-8.478	8.0	PASS

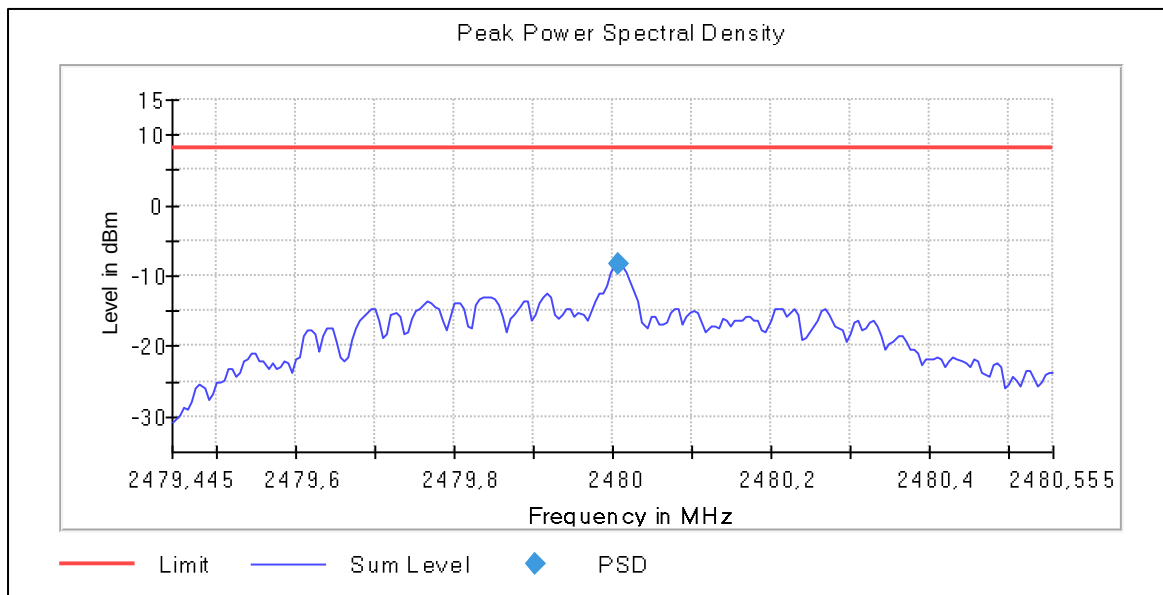
Peak power spectral density, low channel, 1 Mbps



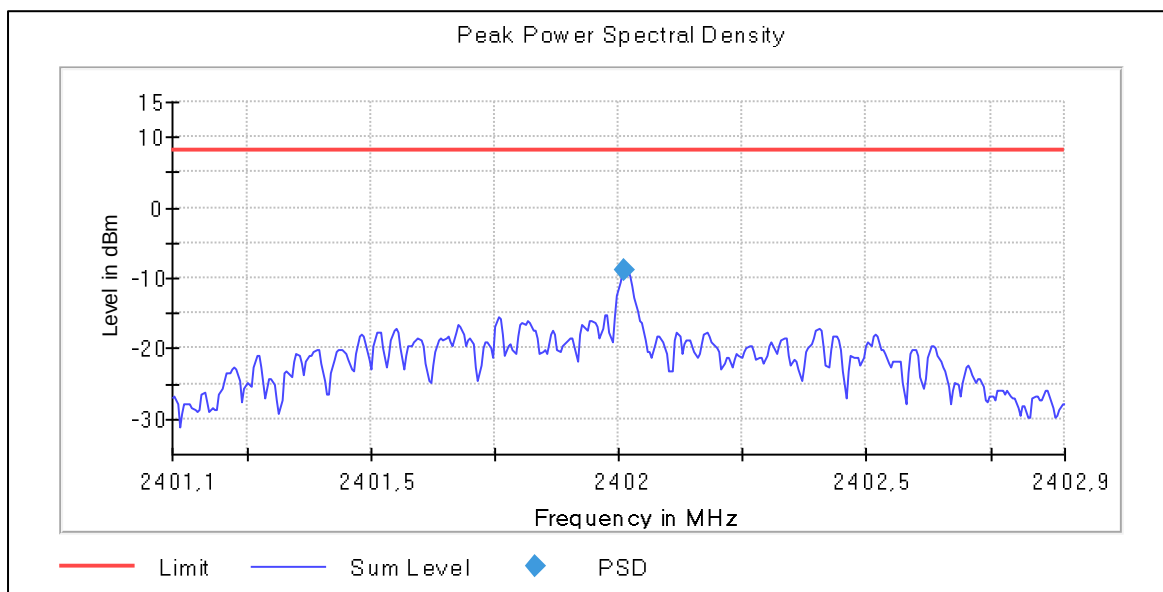
Peak power spectral density, middle channel, 1 Mbps



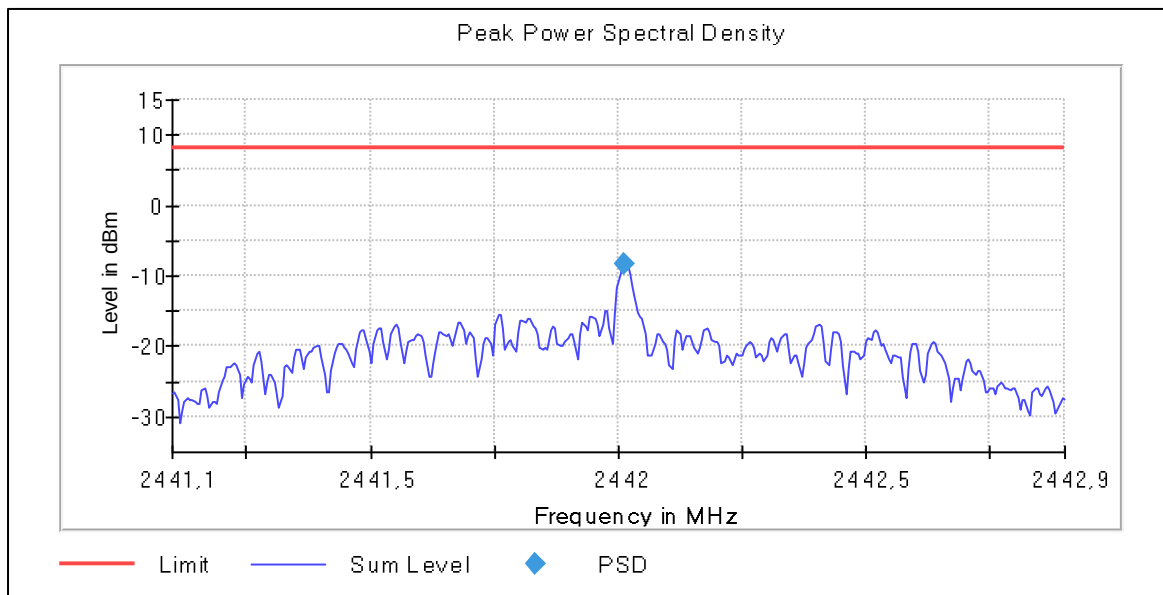
Peak power spectral density, high channel, 1 Mbps



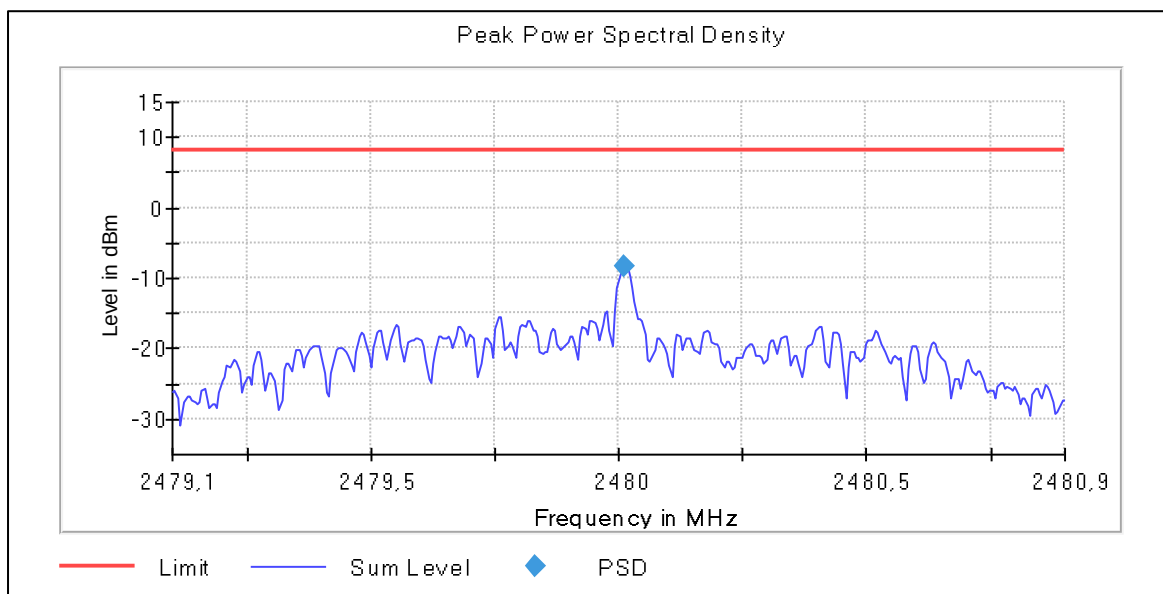
Peak power spectral density, low channel, 2 Mbps



Peak power spectral density, middle channel, 2 Mbps



Peak power spectral density, high channel, 2 Mbps



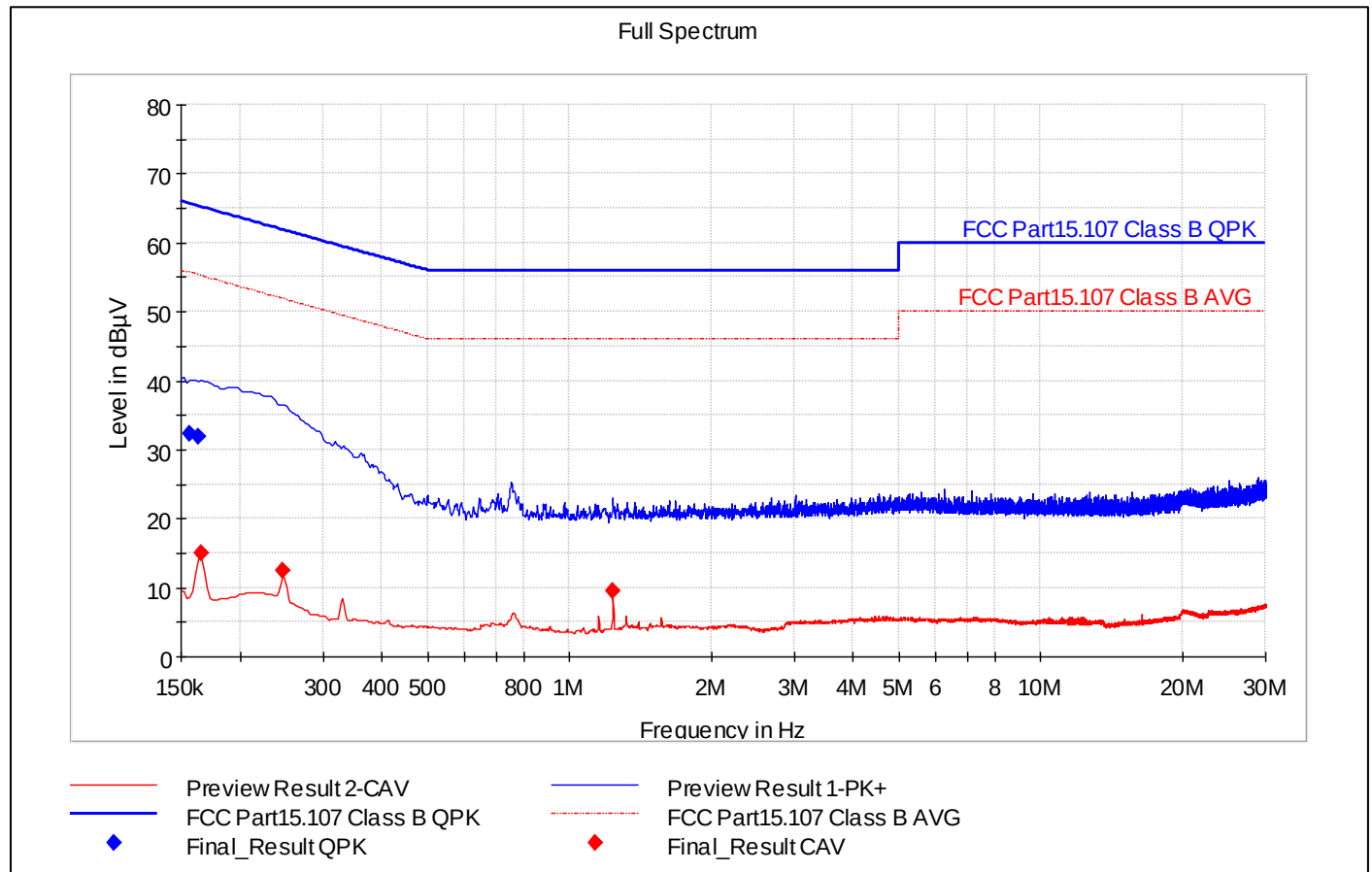
13. AC power line conducted emissions

Reference: FCC §15.207, ISED RSS-247, Issue 3 (section 3.1)

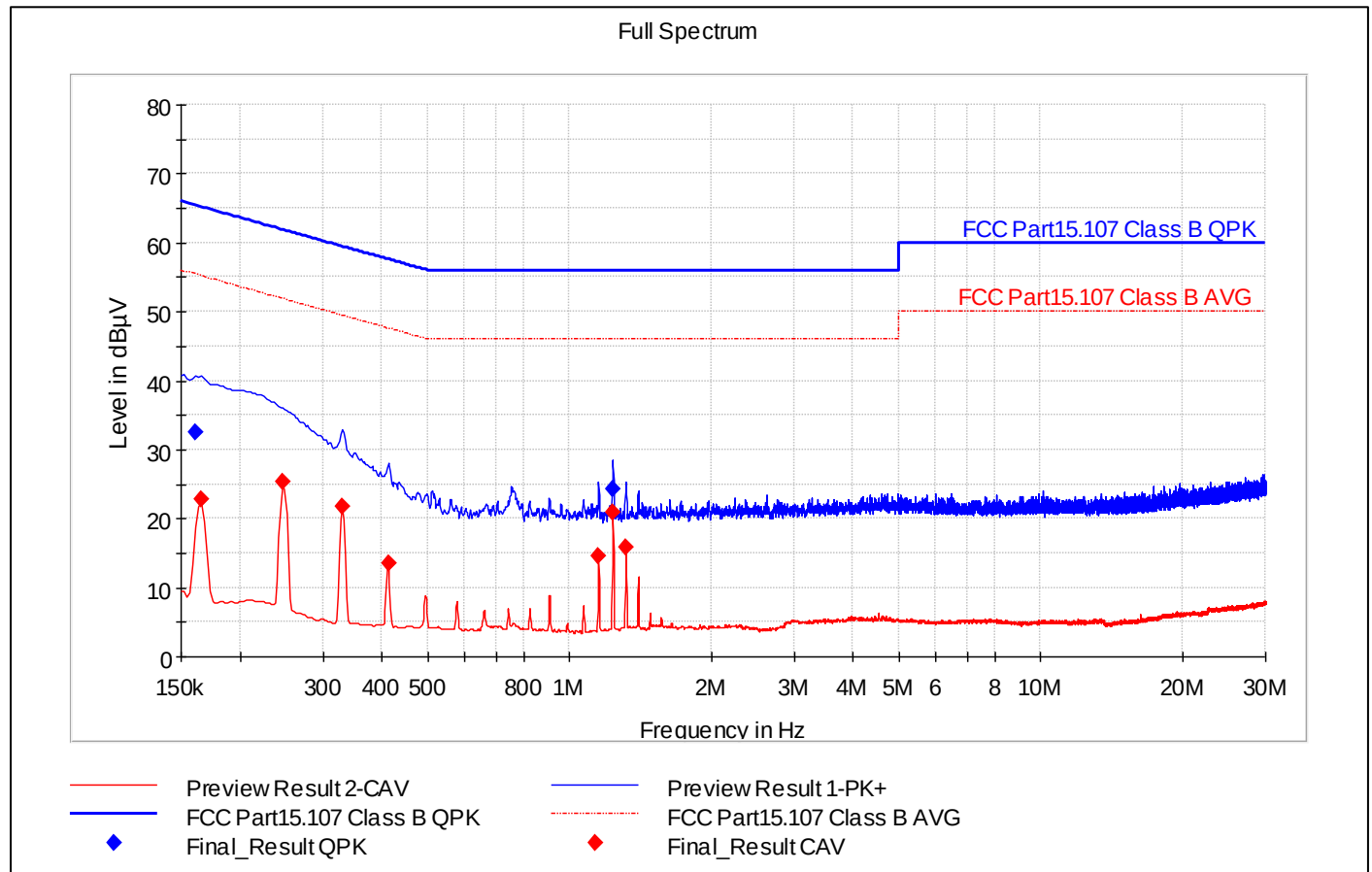
Test method: ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 (6.2)

Limits		
Frequency (MHz)	Quasi-Peak (dBuV)	Average (dBuV)
0.15 – 0.5	66 -56*	56 – 46*
0.5 – 5	56	46
5 - 30	60	50
*Limit decreases linearly with the logarithm of the frequency		

Operation mode(s)	Configuration	Test Verdict
Bluetooth LE RX, 1 Mbps	2500076102 + 2500076103 + G4CER047 + G4CER063	PASS

Conducted emission at the mains power port according to 47 CFR Part 15.207, Phase

Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)	Comment
0.156750	32.29	---	65.63	33.34	15000.0	9.000	L1	ON	9.9	PASS
0.163500	31.85	---	65.28	33.44	15000.0	9.000	L1	ON	9.9	PASS
0.165750	---	14.92	55.17	40.25	15000.0	9.000	L1	ON	9.9	PASS
0.246750	---	12.48	51.87	39.39	15000.0	9.000	L1	ON	9.9	PASS
1.236750	---	9.56	46.00	36.44	15000.0	9.000	L1	ON	10.0	PASS

Conducted emission at the mains power port according to 47 CFR Part 15.207, Neutral

Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)	Comment
0.161250	32.43	---	65.40	32.97	15000.0	9.000	N	ON	9.9	PASS
0.165750	---	22.72	55.17	32.45	15000.0	9.000	N	ON	9.9	PASS
0.246750	---	25.25	51.87	26.62	15000.0	9.000	N	ON	9.9	PASS
0.330000	---	21.84	49.45	27.62	15000.0	9.000	N	ON	9.9	PASS
0.413250	---	13.56	47.58	34.02	15000.0	9.000	N	ON	9.9	PASS
1.155750	---	14.46	46.00	31.54	15000.0	9.000	N	ON	10.0	PASS
1.236750	---	20.94	46.00	25.06	15000.0	9.000	N	ON	10.0	PASS
1.236750	24.21	---	56.00	31.79	15000.0	9.000	N	ON	10.0	PASS
1.320000	---	15.74	46.00	30.26	15000.0	9.000	N	ON	10.0	PASS

14. Band edge emissions compliance (transmitter)

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

Test method: KDB 558074 D01 DTS Meas Guidance v05r02 8.7 and ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 (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
Bluetooth LE, 1 Mbps	2402.000000	PASS
Bluetooth LE, 1 Mbps	2480.000000	PASS
Bluetooth LE, 2 Mbps	2402.000000	PASS
Bluetooth LE, 2 Mbps	2480.000000	PASS

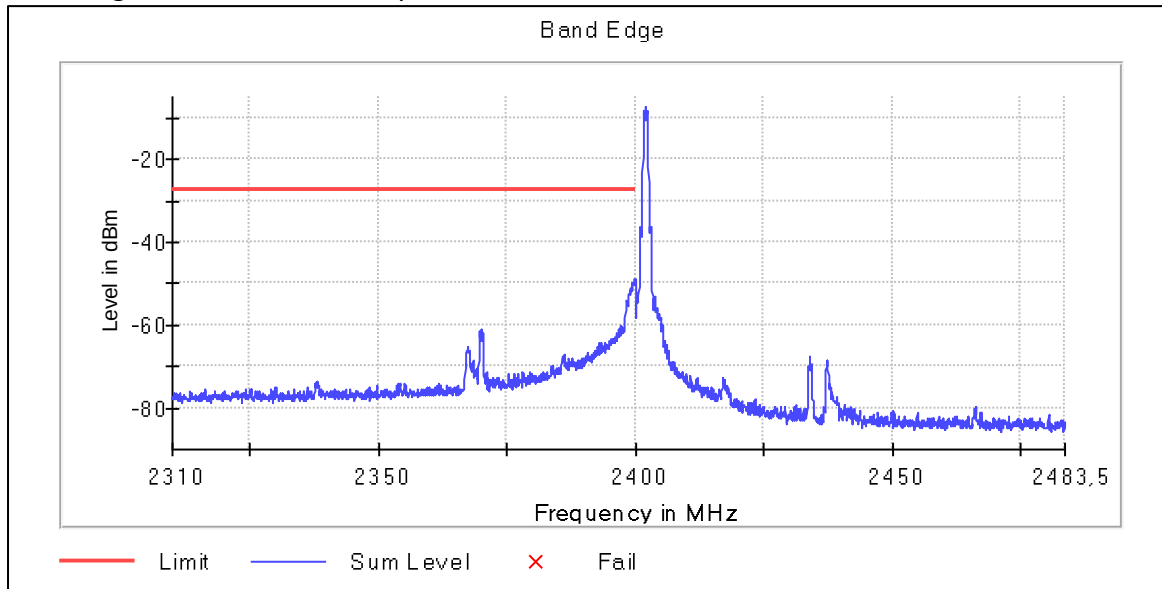
Measurements, band edge low, 1 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.949972	-48.8	21.3	-27.6	PASS
2399.899944	-49.0	21.4	-27.6	PASS
2399.849917	-49.4	21.8	-27.6	PASS
2399.799889	-49.8	22.3	-27.6	PASS
2399.499722	-50.0	22.5	-27.6	PASS
2399.699833	-50.0	22.5	-27.6	PASS
2399.749861	-50.2	22.6	-27.6	PASS
2399.649805	-50.3	22.7	-27.6	PASS
2399.549750	-50.3	22.7	-27.6	PASS
2399.449694	-50.4	22.8	-27.6	PASS
2399.599778	-50.5	22.9	-27.6	PASS
2399.199555	-50.6	23.1	-27.6	PASS
2399.249583	-50.7	23.2	-27.6	PASS
2399.349639	-51.1	23.5	-27.6	PASS
2399.399666	-51.2	23.7	-27.6	PASS

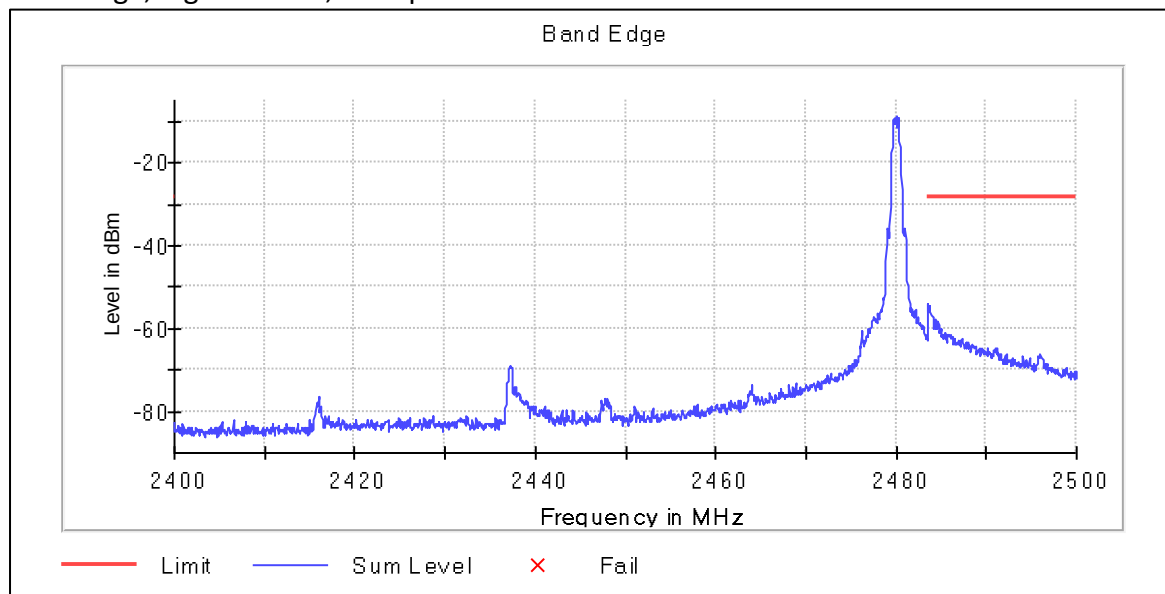
Measurements, band edge high, 1 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.550152	-54.2	25.7	-28.5	PASS
2483.700608	-54.7	26.2	-28.5	PASS
2483.750760	-55.4	26.8	-28.5	PASS
2483.650456	-55.8	27.3	-28.5	PASS
2483.800912	-55.9	27.4	-28.5	PASS
2483.600304	-55.9	27.4	-28.5	PASS
2484.001520	-56.7	28.2	-28.5	PASS
2483.851064	-56.8	28.2	-28.5	PASS
2483.901216	-56.9	28.4	-28.5	PASS
2483.951368	-56.9	28.4	-28.5	PASS
2484.051672	-57.5	29.0	-28.5	PASS
2484.101824	-57.5	29.0	-28.5	PASS
2484.302432	-58.0	29.5	-28.5	PASS
2484.151976	-58.1	29.6	-28.5	PASS
2484.202128	-58.2	29.7	-28.5	PASS

Band edge, low channel, 1 Mbps



Band edge, high channel, 1 Mbps



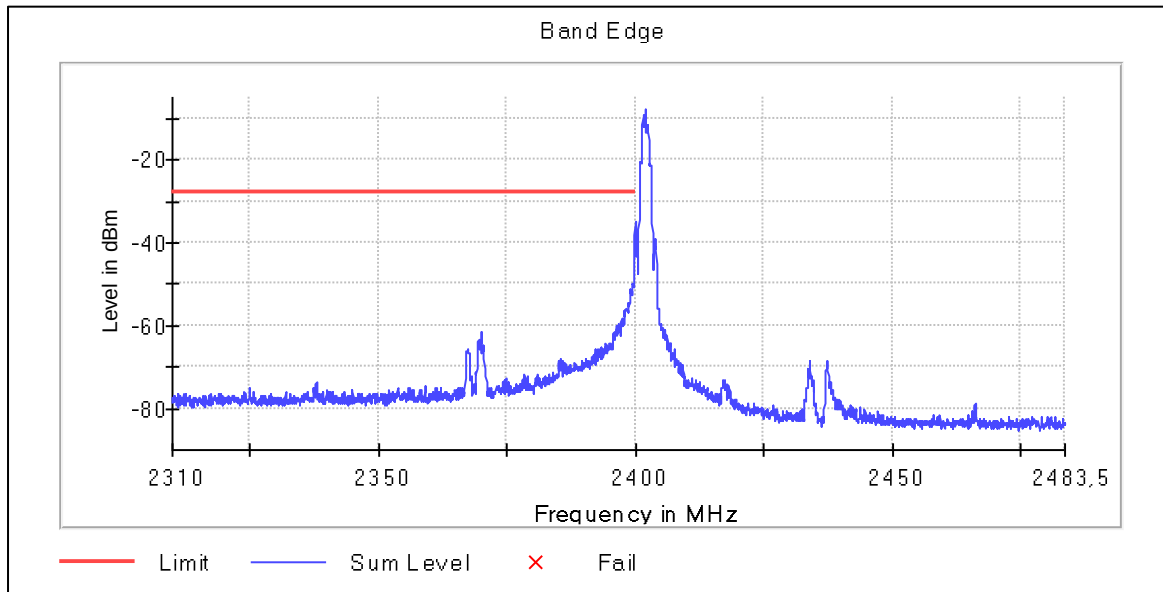
Measurements, band edge low, 2 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.949972	-34.9	7.2	-27.7	PASS
2399.899944	-38.0	10.3	-27.7	PASS
2400.000000	-38.9	11.2	-27.7	PASS
2399.849917	-41.3	13.7	-27.7	PASS
2399.799889	-41.7	14.0	-27.7	PASS
2399.749861	-43.2	15.5	-27.7	PASS
2399.699833	-46.8	19.1	-27.7	PASS
2399.649805	-47.5	19.8	-27.7	PASS
2399.499722	-49.8	22.2	-27.7	PASS
2399.549750	-49.9	22.2	-27.7	PASS
2399.599778	-50.6	22.9	-27.7	PASS
2399.449694	-50.6	23.0	-27.7	PASS
2399.049472	-51.2	23.5	-27.7	PASS
2399.099500	-51.5	23.8	-27.7	PASS
2398.999444	-51.8	24.1	-27.7	PASS

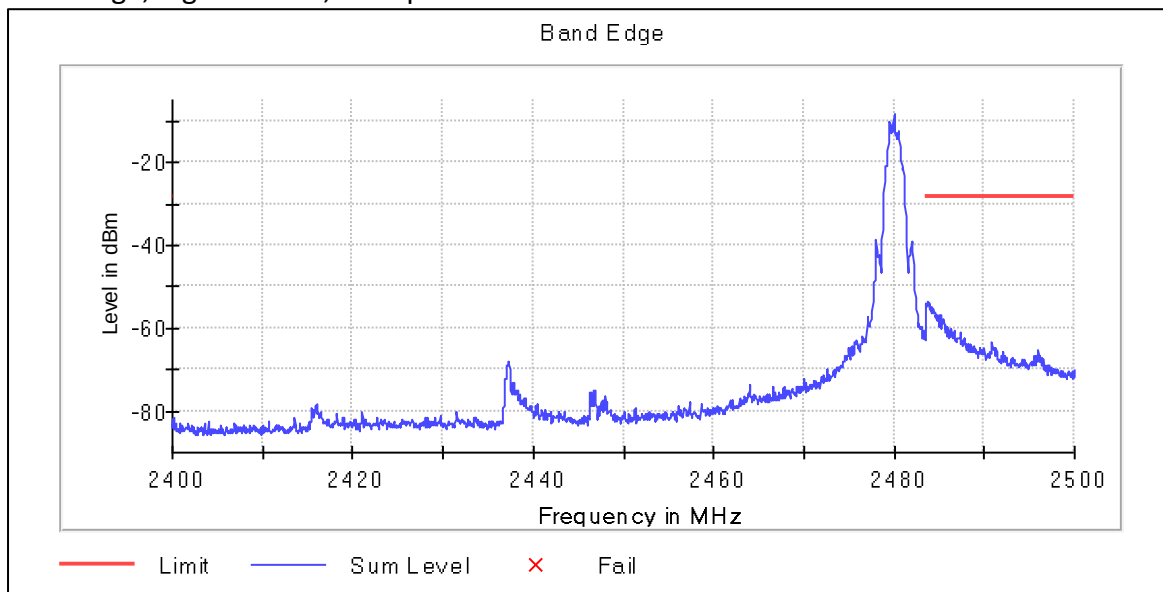
Measurements, band edge high, 2 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.750760	-53.4	25.0	-28.5	PASS
2483.800912	-53.6	25.1	-28.5	PASS
2483.550152	-53.9	25.4	-28.5	PASS
2483.851064	-54.3	25.8	-28.5	PASS
2483.650456	-54.4	25.9	-28.5	PASS
2483.700608	-54.5	26.0	-28.5	PASS
2483.951368	-54.6	26.1	-28.5	PASS
2483.901216	-54.8	26.3	-28.5	PASS
2484.252280	-55.1	26.6	-28.5	PASS
2483.600304	-55.1	26.6	-28.5	PASS
2484.101824	-55.2	26.7	-28.5	PASS
2484.151976	-55.6	27.1	-28.5	PASS
2484.302432	-55.6	27.1	-28.5	PASS
2484.001520	-55.6	27.1	-28.5	PASS
2484.452888	-55.7	27.2	-28.5	PASS

Band edge, low channel, 2 Mbps



Band edge, high channel, 2 Mbps



15. Tx spurious emissions, conducted

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

Test method: KDB 558074 D01 DTS Meas Guidance v05r02 8.5 and ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 (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
Bluetooth LE, 1 Mbps	2402.000000	PASS
Bluetooth LE, 1 Mbps	2440.000000	PASS
Bluetooth LE, 1 Mbps	2480.000000	PASS
Bluetooth LE, 2 Mbps	2402.000000	PASS
Bluetooth LE, 2 Mbps	2440.000000	PASS
Bluetooth LE, 2 Mbps	2480.000000	PASS

Pre Measurements, low channel, 1 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4803.154762	-59.0	30.7	-28.3
2370.000000	-61.9	33.6	-28.3
2380.000000	-64.5	36.2	-28.3
19740.931548	-65.2	37.0	-28.3
19690.938988	-65.5	37.2	-28.3
19770.927083	-65.9	37.7	-28.3
19810.921131	-66.5	38.3	-28.3
2310.000000	-66.7	38.4	-28.3
19720.934524	-67.2	38.9	-28.3
19710.936012	-67.2	38.9	-28.3
19750.930060	-67.4	39.1	-28.3
19730.933036	-67.5	39.2	-28.3
19700.937500	-67.5	39.2	-28.3
19670.941964	-67.6	39.3	-28.3
19760.928571	-67.7	39.5	-28.3

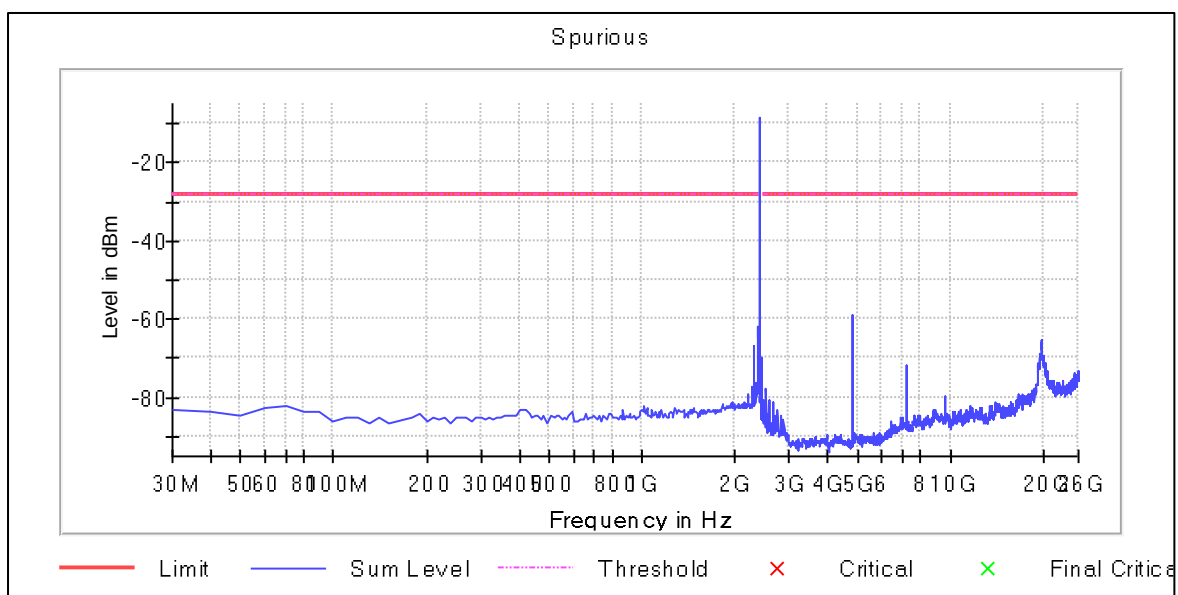
Pre Measurements, middle channel, 1 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4883.142857	-60.0	31.9	-28.0
19740.931548	-66.9	38.9	-28.0
19730.933036	-67.0	39.0	-28.0
19760.928571	-67.5	39.5	-28.0
19670.941964	-67.6	39.5	-28.0
19780.925595	-67.6	39.6	-28.0
19690.938988	-67.8	39.8	-28.0
19640.946429	-68.0	40.0	-28.0
19770.927083	-68.2	40.1	-28.0
19720.934524	-68.2	40.1	-28.0
19790.924107	-68.3	40.3	-28.0
19750.930060	-68.4	40.4	-28.0
19890.909226	-68.4	40.4	-28.0
19820.919643	-68.5	40.5	-28.0
19650.944940	-68.5	40.5	-28.0

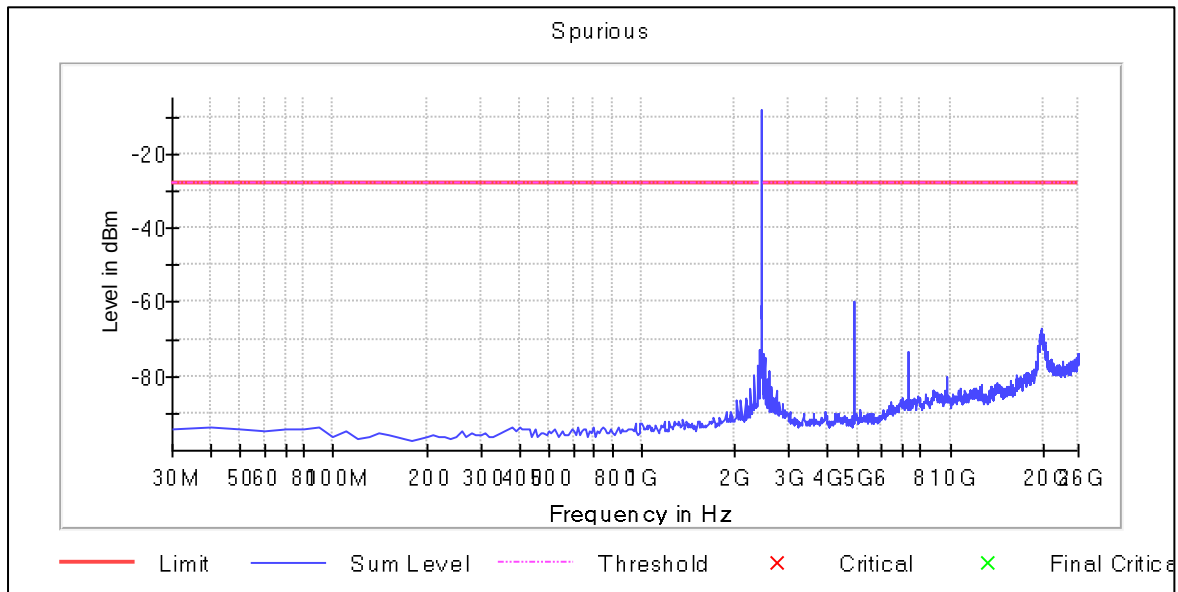
Pre Measurements, top channel, 1 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4953.132440	-56.6	27.3	-29.3
19740.931548	-56.7	27.4	-29.3
19680.940476	-56.9	27.5	-29.3
19700.937500	-56.9	27.6	-29.3
19690.938988	-56.9	27.6	-29.3
19710.936012	-57.0	27.7	-29.3
19720.934524	-57.1	27.8	-29.3
19750.930060	-57.2	27.9	-29.3
19580.955357	-57.2	27.9	-29.3
19760.928571	-57.3	28.0	-29.3
19650.944940	-57.5	28.1	-29.3
19730.933036	-57.6	28.3	-29.3
19810.921131	-57.7	28.4	-29.3
19660.943452	-57.8	28.5	-29.3
19790.924107	-57.9	28.6	-29.3

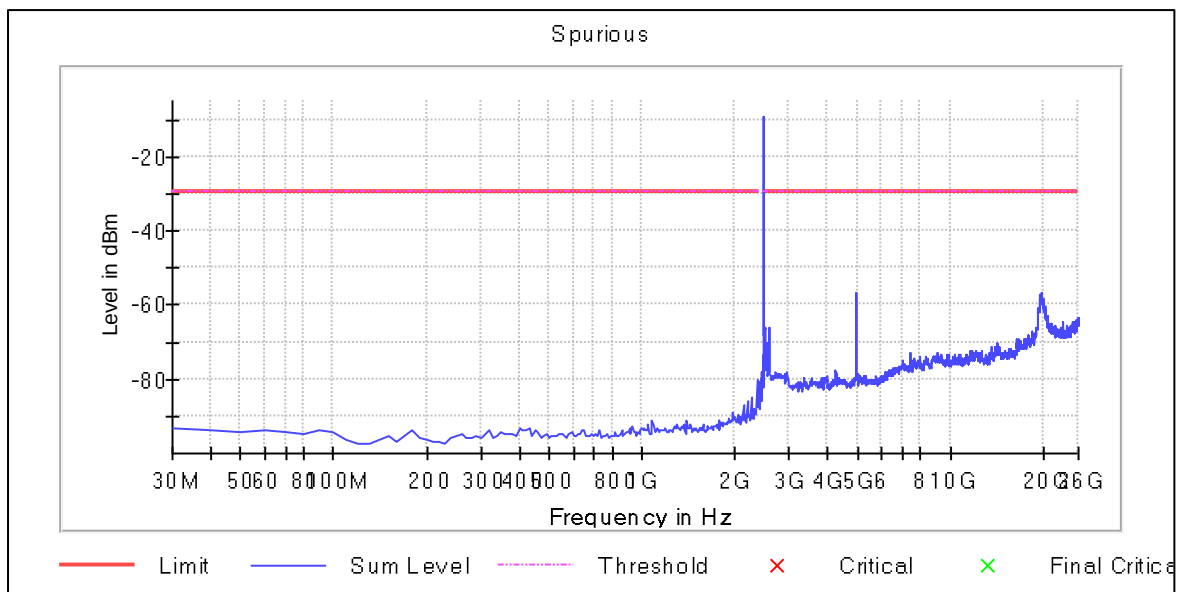
Low channel, 1 Mbps



Middle channel, 1 Mbps



High channel, 1 Mbps



Pre Measurements, low channel, 2 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4803.154762	-58.9	31.1	-27.8
2370.000000	-61.9	34.1	-27.8
19680.940476	-67.1	39.2	-27.8
19780.925595	-67.1	39.3	-27.8
19760.928571	-67.6	39.8	-27.8
19720.934524	-67.9	40.1	-27.8
19790.924107	-68.0	40.2	-27.8
19730.933036	-68.0	40.2	-27.8
19590.953869	-68.1	40.3	-27.8
19690.938988	-68.1	40.3	-27.8
19750.930060	-68.1	40.3	-27.8
19660.943452	-68.1	40.3	-27.8
19770.927083	-68.2	40.4	-27.8
19630.947917	-68.2	40.4	-27.8
19610.950893	-68.3	40.5	-27.8

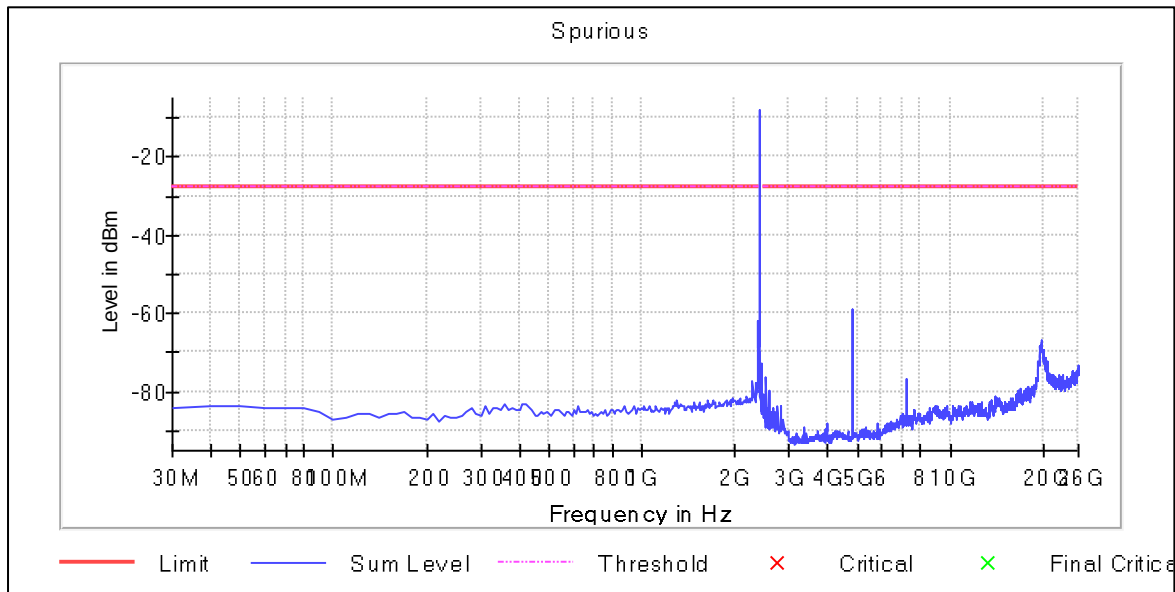
Pre Measurements, middle channel, 2 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4883.142857	-58.2	30.0	-28.1
19760.928571	-66.5	38.3	-28.1
19740.931548	-66.8	38.7	-28.1
19680.940476	-66.9	38.8	-28.1
19730.933036	-66.9	38.8	-28.1
19700.937500	-67.2	39.0	-28.1
19710.936012	-67.2	39.1	-28.1
19810.921131	-67.3	39.2	-28.1
19690.938988	-67.6	39.4	-28.1
19750.930060	-67.7	39.6	-28.1
19660.943452	-67.7	39.6	-28.1
19720.934524	-67.7	39.6	-28.1
19790.924107	-67.9	39.8	-28.1
19770.927083	-67.9	39.8	-28.1
19670.941964	-67.9	39.8	-28.1

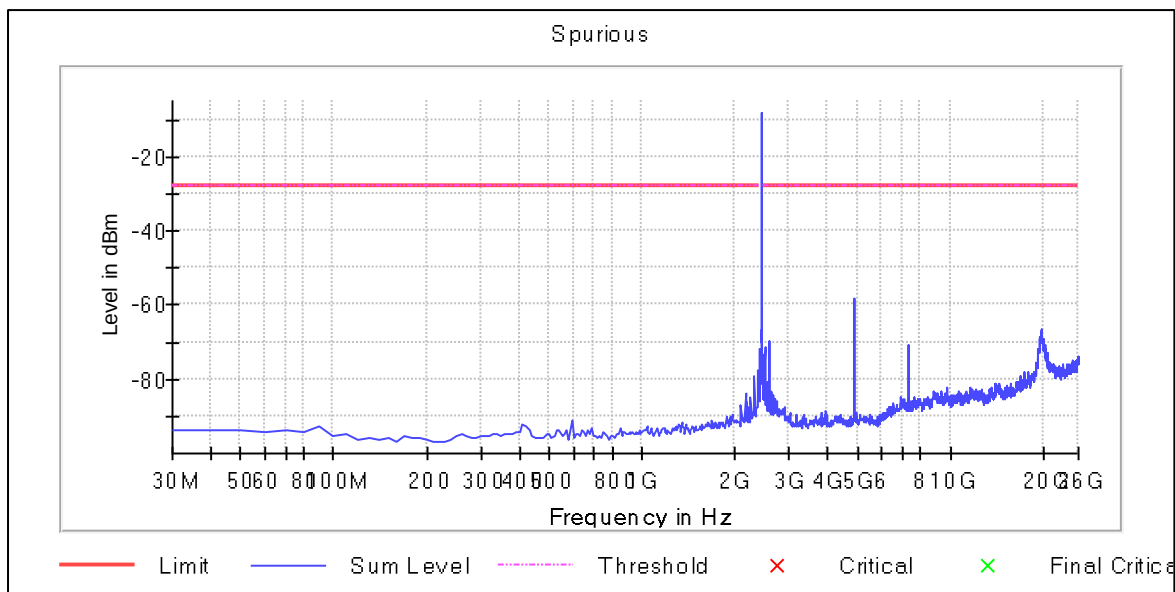
Pre Measurements, top channel, 2 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
19730.933036	-56.1	23.3	-32.7
4953.132440	-56.6	23.8	-32.7
19670.941964	-56.7	23.9	-32.7
19720.934524	-56.8	24.1	-32.7
19710.936012	-57.0	24.3	-32.7
19770.927083	-57.0	24.3	-32.7
19780.925595	-57.1	24.3	-32.7
19690.938988	-57.1	24.4	-32.7
19740.931548	-57.1	24.4	-32.7
19790.924107	-57.3	24.6	-32.7
19580.955357	-57.3	24.6	-32.7
19760.928571	-57.4	24.7	-32.7
19660.943452	-57.5	24.8	-32.7
19850.915179	-57.6	24.9	-32.7
19750.930060	-57.6	24.9	-32.7

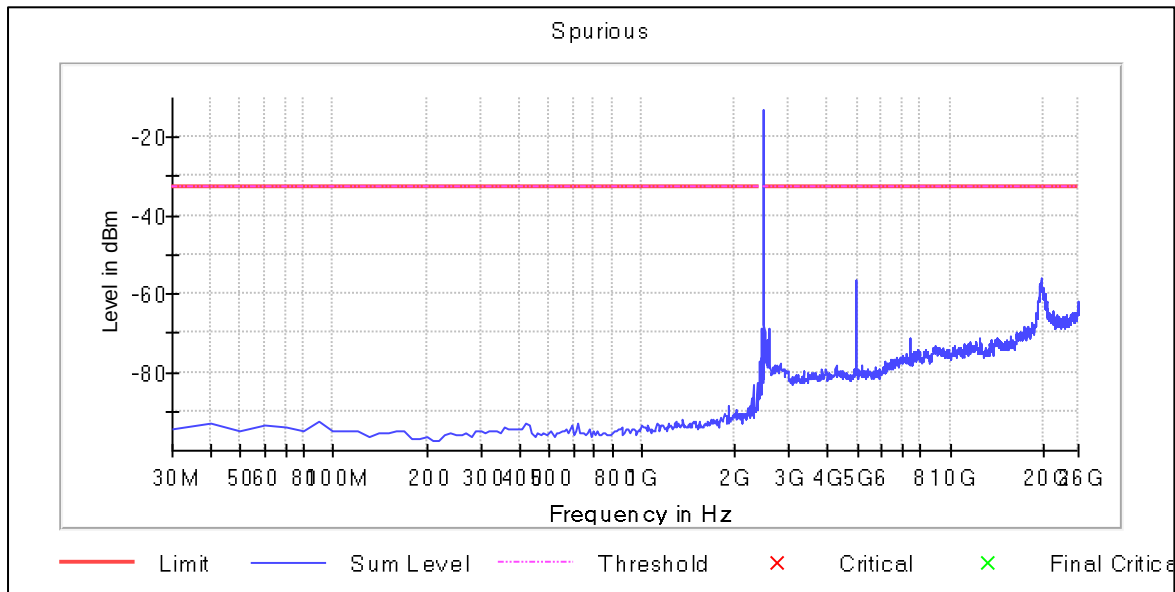
Low channel, 2 Mbps



Middle channel, 2 Mbps



High channel, 2 Mbps



16. Emissions in restricted frequency bands

Reference: FCC §15.247(d), ISED RSS-247, Issue 3 (section 6.2)

Test method: KDB 558074 D01 DTS Meas Guidance v05r02 8.6 and ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 (11.12)

Limits	
Power measurement	Out-of-band attenuation (dB)
Peak	according to FCC §15.209 and FCC §15.205

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 300 Hz 4. Markers are set to peak emission levels outside frequency band

Summary		
Mode / modulation	Frequency (MHz)	Result
Bluetooth LE, 1 Mbps	2402.000000	PASS
Bluetooth LE, 1 Mbps	2440.000000	PASS
Bluetooth LE, 1 Mbps	2480.000000	PASS
Bluetooth LE, 2 Mbps	2402.000000	PASS
Bluetooth LE, 2 Mbps	2440.000000	PASS
Bluetooth LE, 2 Mbps	2480.000000	PASS

Pre Measurements, low channel, 1 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
19731.186559	-56.3	35.1	-21.2
19704.685234	-56.3	35.1	-21.2
19704.185209	-56.3	35.1	-21.2
19716.185809	-56.5	35.3	-21.2
19734.186709	-56.6	35.4	-21.2
19694.684734	-56.6	35.4	-21.2
19754.687734	-56.7	35.5	-21.2
19670.183509	-56.7	35.5	-21.2
19752.187609	-56.9	35.7	-21.2
19669.683484	-56.9	35.7	-21.2
19728.686434	-56.9	35.7	-21.2
19722.186109	-56.9	35.7	-21.2
19761.188059	-56.9	35.7	-21.2
19735.686784	-56.9	35.7	-21.2
19751.687584	-57.0	35.8	-21.2

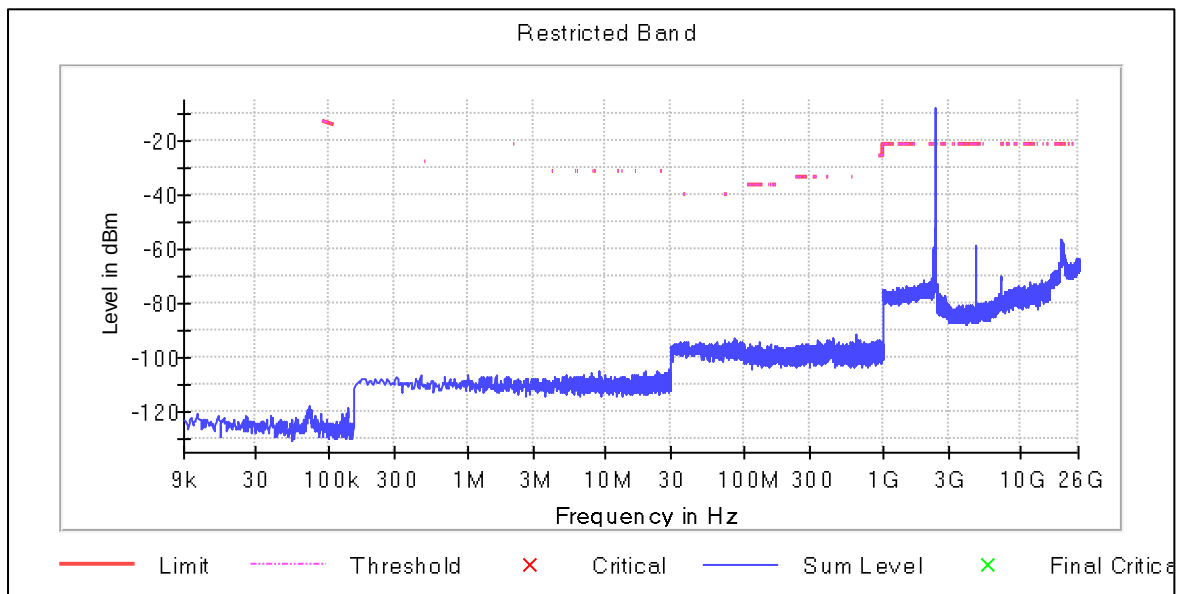
Pre Measurements, middle channel, 1 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
19739.186959	-56.3	35.1	-21.2
19750.187509	-56.3	35.1	-21.2
19752.187609	-56.4	35.2	-21.2
19719.685984	-56.4	35.2	-21.2
19737.186859	-56.4	35.2	-21.2
19756.687834	-56.5	35.3	-21.2
19692.184609	-56.7	35.5	-21.2
19748.187409	-56.7	35.5	-21.2
19729.686484	-56.8	35.6	-21.2
19740.687034	-56.8	35.6	-21.2
19754.687734	-56.8	35.6	-21.2
19738.686934	-56.8	35.6	-21.2
19745.187259	-56.8	35.6	-21.2
19741.187059	-56.8	35.6	-21.2
19670.683534	-56.9	35.7	-21.2

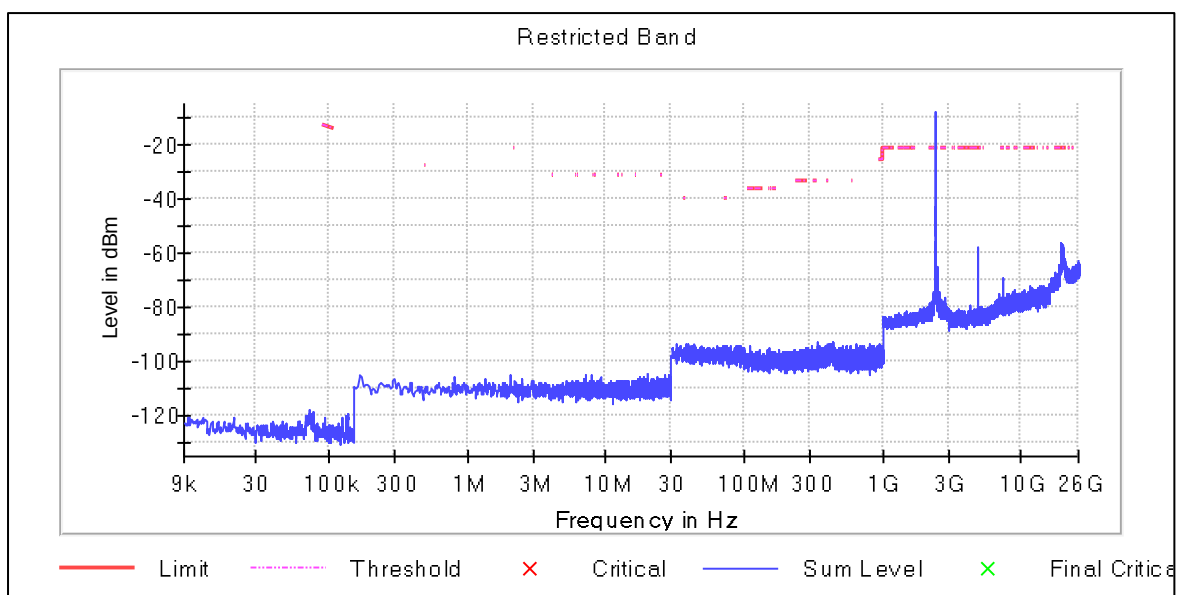
Pre Measurements, top channel, 1 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2483.500000	-40.9	19.7	-21.2
2484.500037	-50.7	29.5	-21.2
2484.000018	-52.6	31.4	-21.2
2485.500074	-54.2	33.0	-21.2
2485.000055	-55.1	33.9	-21.2
2486.500111	-55.5	34.3	-21.2
2487.000129	-55.6	34.4	-21.2
4959.591595	-55.8	34.6	-21.2
2486.000092	-56.1	34.9	-21.2
4960.591632	-56.2	35.0	-21.2
2489.000203	-56.3	35.1	-21.2
4959.091577	-56.3	35.1	-21.2
19742.687134	-56.3	35.1	-21.2
4960.091614	-56.4	35.2	-21.2
19744.187209	-56.4	35.2	-21.2

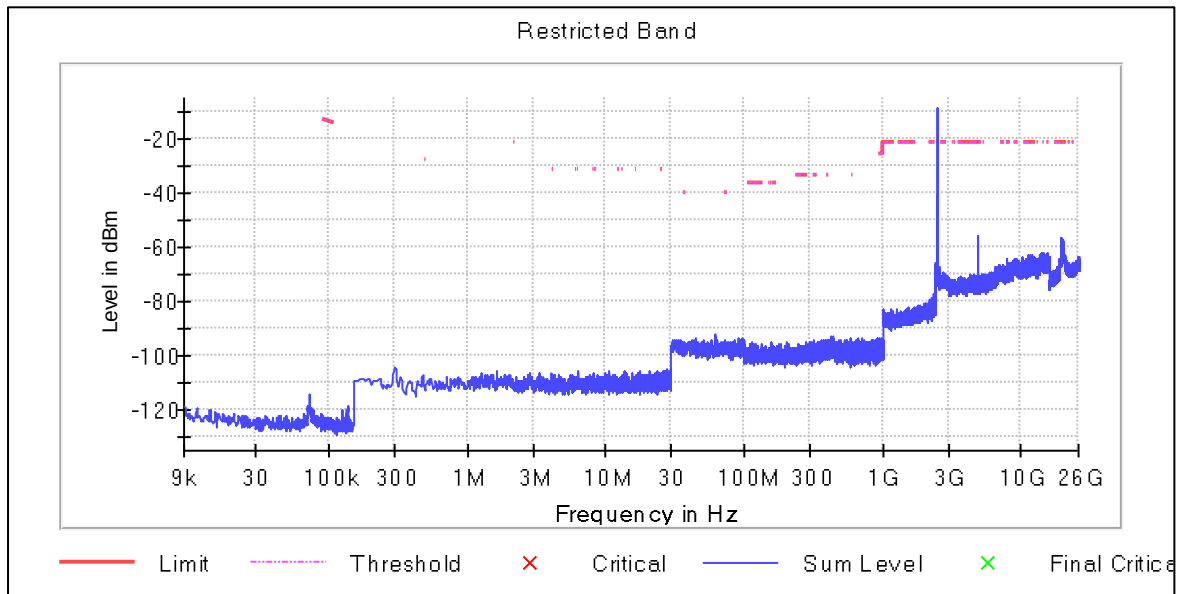
Low channel, 1 Mbps



Middle channel, 1 Mbps



High channel, 1 Mbps



Pre Measurements, low channel, 2 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
19744.687234	-56.4	35.2	-21.2
19656.682834	-56.5	35.3	-21.2
19717.685884	-56.6	35.4	-21.2
19707.685384	-56.6	35.4	-21.2
19681.684084	-56.8	35.6	-21.2
19754.687734	-56.8	35.6	-21.2
19740.187009	-56.9	35.7	-21.2
19749.187459	-57.0	35.8	-21.2
19699.684984	-57.0	35.8	-21.2
19772.688634	-57.1	35.9	-21.2
19721.686084	-57.1	35.9	-21.2
19760.188009	-57.1	35.9	-21.2
19721.186059	-57.2	36.0	-21.2
19719.185959	-57.2	36.0	-21.2
19686.684334	-57.2	36.0	-21.2

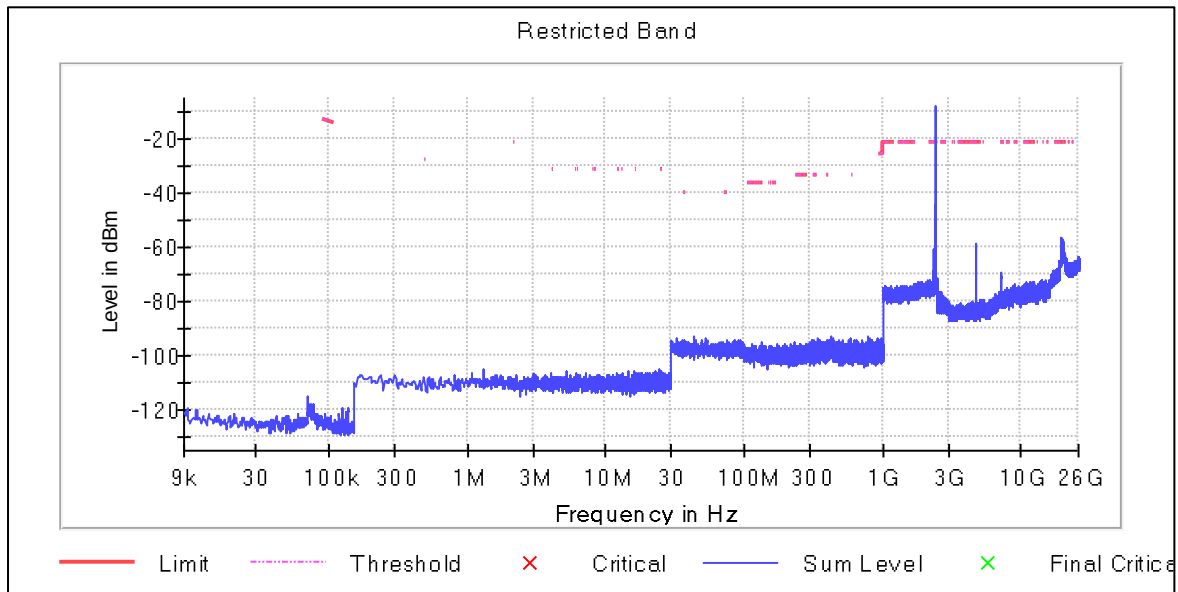
Pre Measurements, middle channel, 2 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
19724.186209	-56.5	35.3	-21.2
19740.187009	-56.6	35.4	-21.2
19704.185209	-56.8	35.6	-21.2
19737.186859	-56.9	35.7	-21.2
19719.685984	-56.9	35.7	-21.2
19729.686484	-56.9	35.7	-21.2
19759.187959	-57.0	35.8	-21.2
19730.186509	-57.0	35.8	-21.2
19743.687184	-57.0	35.8	-21.2
19729.186459	-57.0	35.8	-21.2
19758.687934	-57.0	35.8	-21.2
19762.188109	-57.1	35.9	-21.2
19673.183659	-57.1	35.9	-21.2
19842.692135	-57.1	35.9	-21.2
19740.687034	-57.1	35.9	-21.2

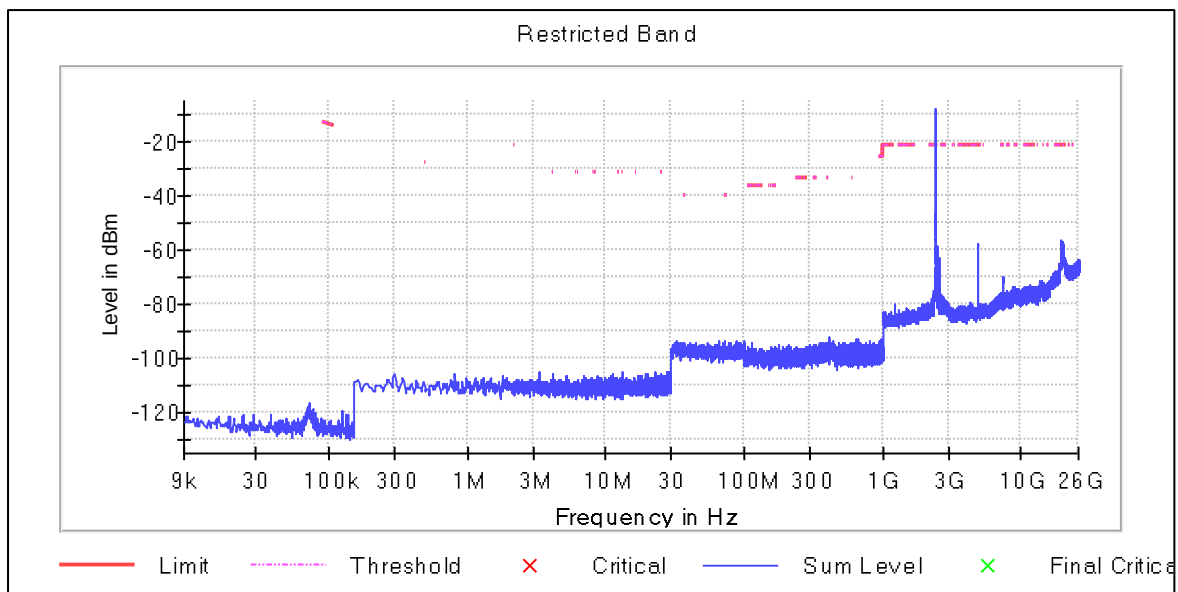
Pre Measurements, top channel, 2 Mbps

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2483.500000	-46.2	25.0	-21.2
2484.000018	-51.8	30.6	-21.2
2487.000129	-52.1	30.9	-21.2
2484.500037	-52.4	31.2	-21.2
2485.000055	-53.8	32.6	-21.2
2485.500074	-55.1	33.9	-21.2
2486.500111	-55.7	34.5	-21.2
2486.000092	-55.7	34.5	-21.2
19747.187359	-56.1	34.9	-21.2
19723.686184	-56.1	34.9	-21.2
19774.188709	-56.2	35.0	-21.2
19729.186459	-56.3	35.1	-21.2
4959.091577	-56.3	35.1	-21.2
4961.091651	-56.6	35.4	-21.2
19692.184609	-56.7	35.5	-21.2

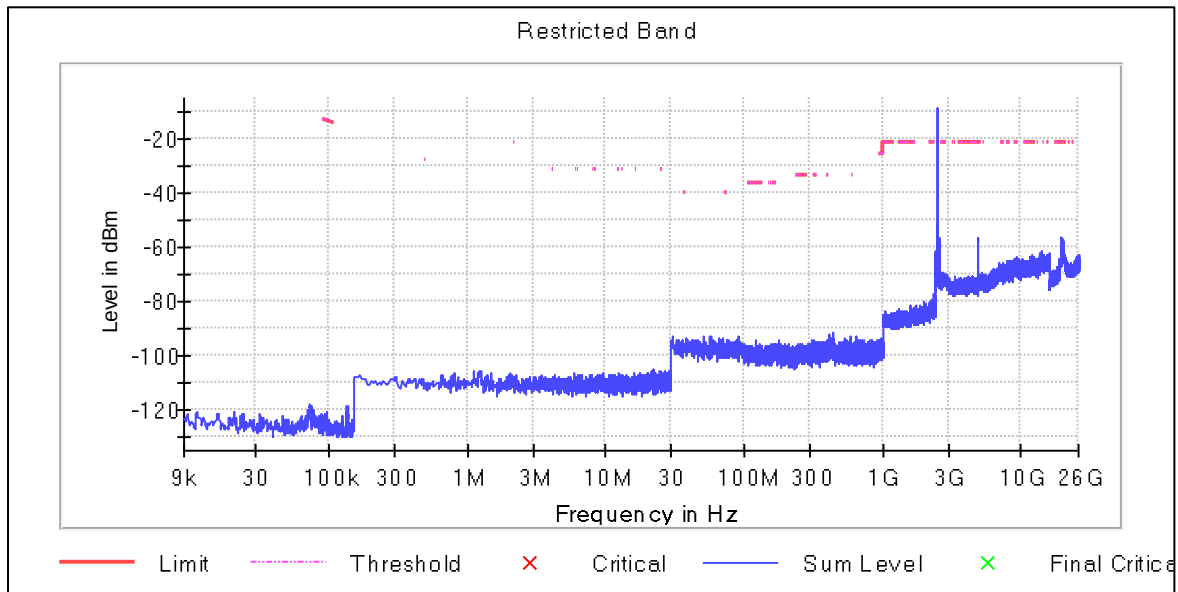
Low channel ,2 Mbps



Middle channel, 2 Mbps



High channel, 2 Mbps



17. Tx spurious emissions, radiated

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

Test method: KDB 558074 D01 DTS Meas Guidance v05r02 8.5 and ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 (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.

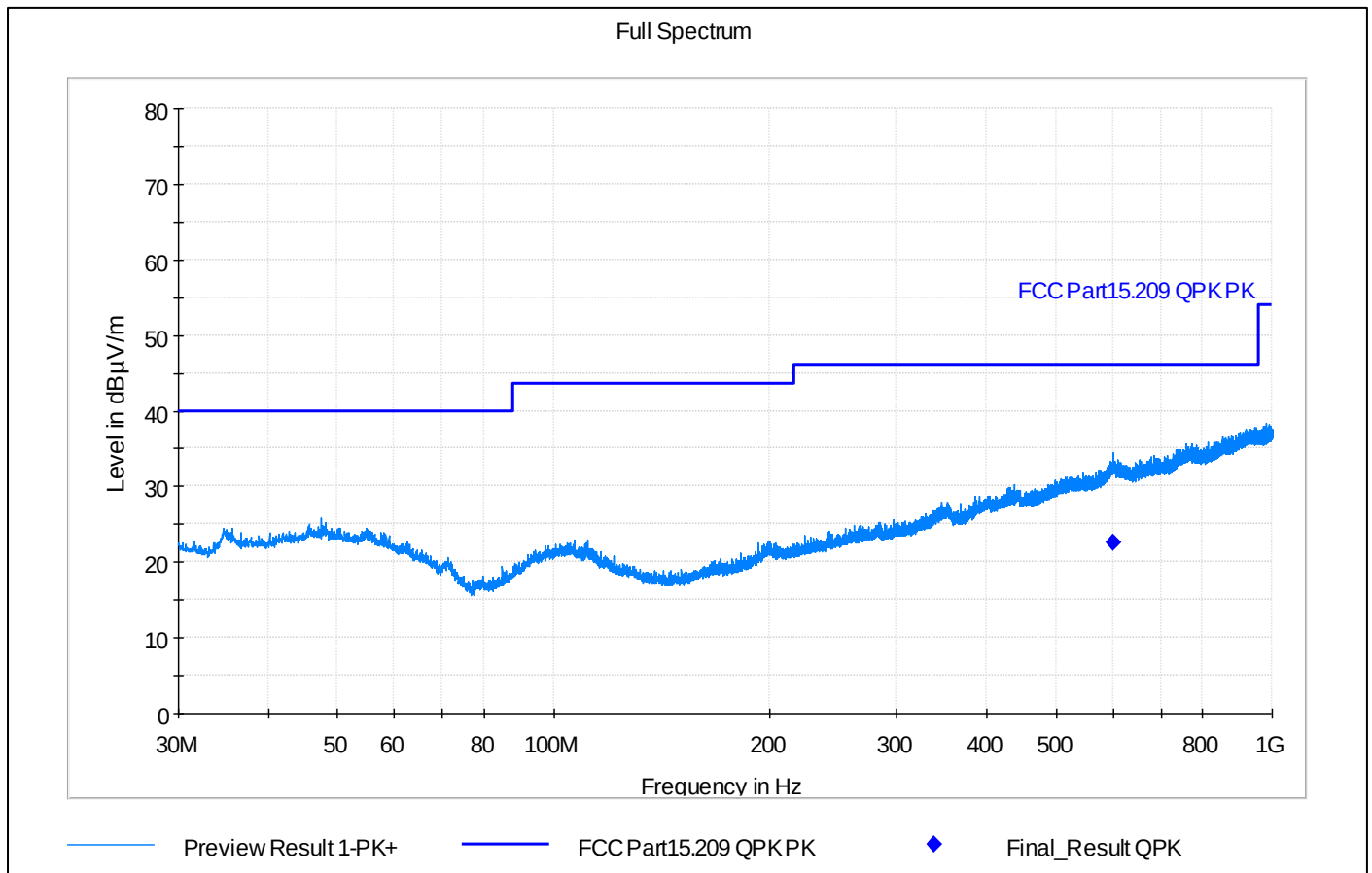
Test procedure > 1 GHz
1. EUT is placed on a non conducting support at the center of a turn table 1.5m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360 degrees (orientation varied), measurements were made in both horizontal 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.

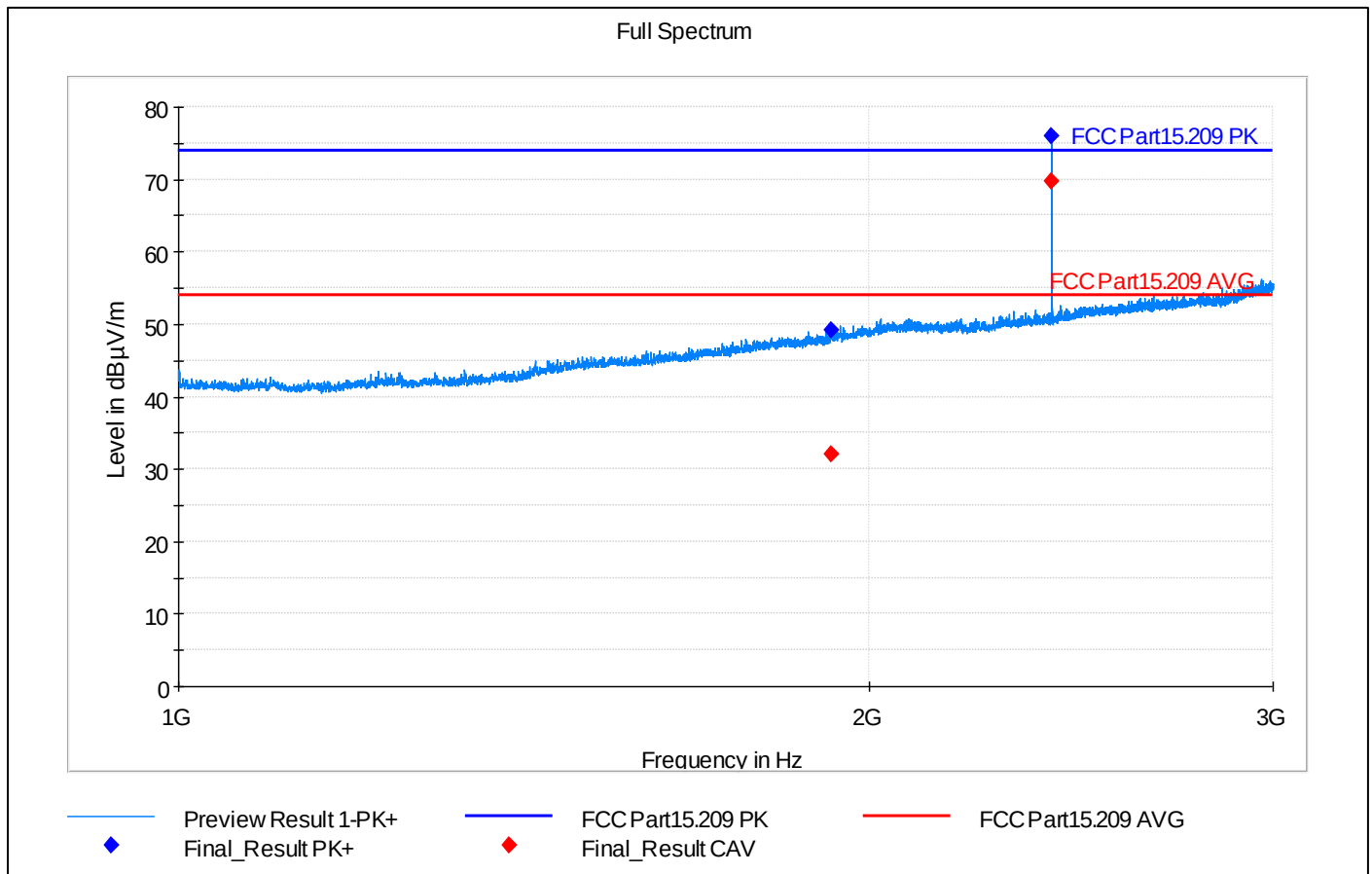
Operation mode(s)	Configuration	Test Verdict
Bluetooth LE TX, 1 Mbps	Low channel, 2402 MHz	PASS
Bluetooth LE TX, 1 Mbps	Mid channel, 2440 MHz	PASS
Bluetooth LE TX, 1 Mbps	High channel, 2480 MHz	PASS
Bluetooth LE TX, 2 Mbps	Low channel, 2402 MHz	PASS
Bluetooth LE TX, 2 Mbps	Mid channel, 2440 MHz	PASS
Bluetooth LE TX, 2 Mbps	High channel, 2480 MHz	PASS

Low channel, 30 MHz – 1 GHz, 1 Mbps



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
601.440000	22.47	46.00	23.53	15000.0	120.000	114.0	H	308.0	90.0	29.9	PASS

Low channel, 1 – 3 GHz, 1 Mbps


Note: Frequency 2401,750 MHz is excluded from spurious domain measurements and ignored. See table below.

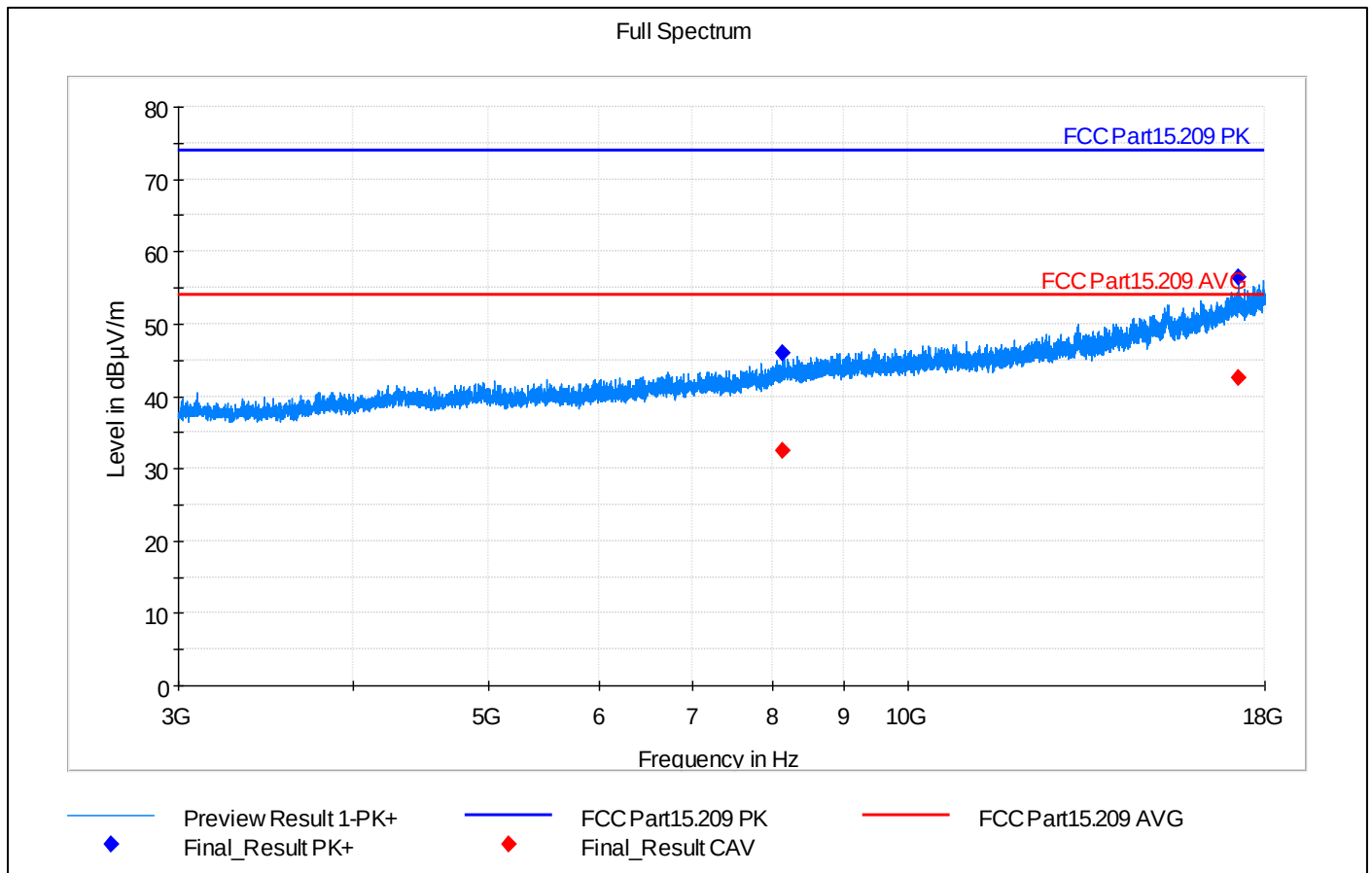
Final_Result

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)
1926.750	49.24	---	74.0	24.76	15000	1000.000	356.0	V	187	90	36.4
1926.750	---	32.08	54.0	21.92	15000	1000.000	356.0	V	187	90	36.4
2401.750	75.99	---	74.0	-1.99	15000	1000.000	212.0	H	181	90	38.6
2401.750	---	69.76	54.0	-15.76	15000	1000.000	212.0	H	181	90	38.6

(continuation of the "Final_Result" table from column 17 ...)

Frequency (MHz)	Comment
1926.750	PASS
1926.750	PASS
2401.750	Fundamental TX signal ***IGNORED***
2401.750	Fundamental TX signal ***IGNORED***

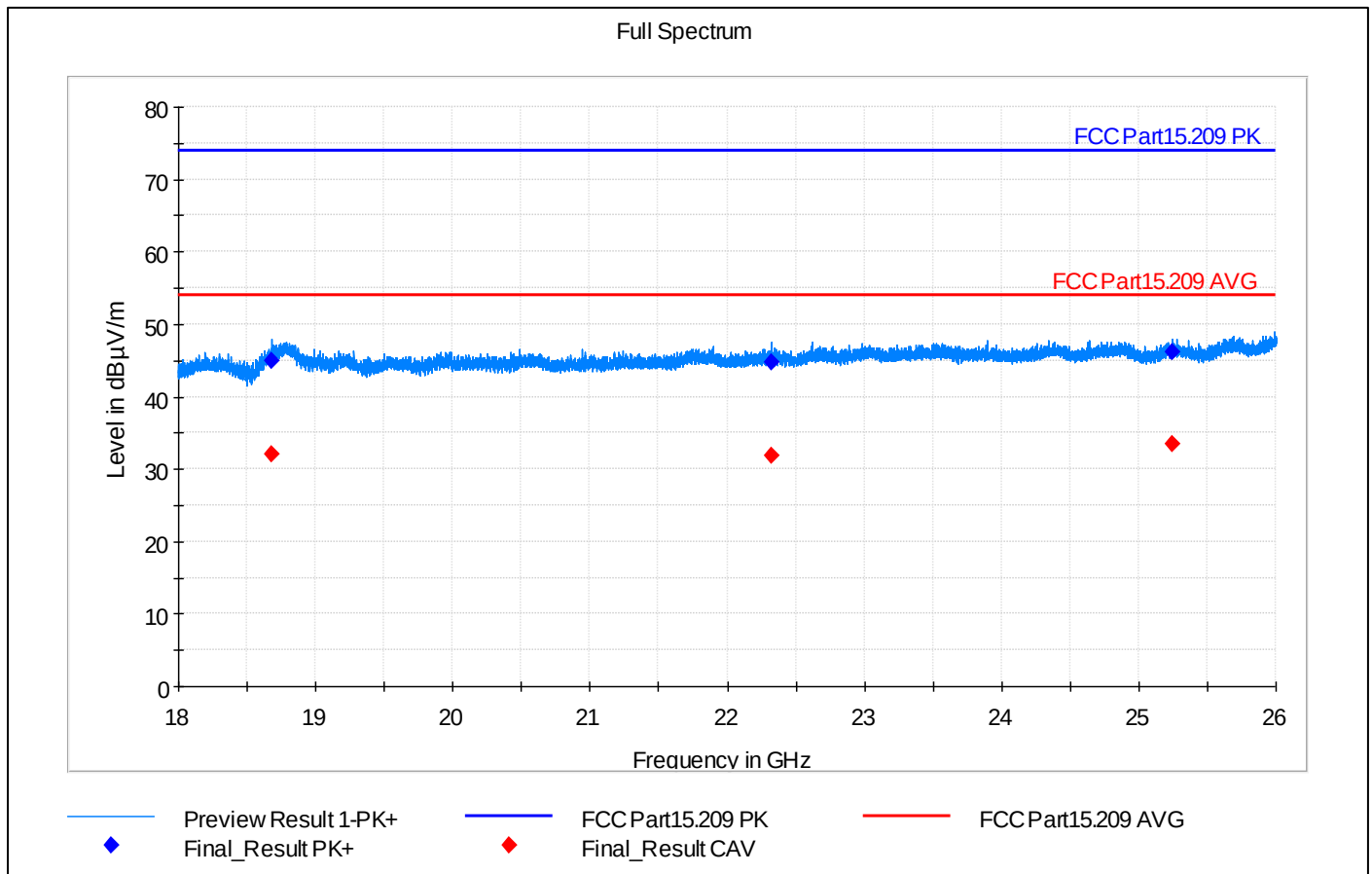
Low channel, 3 – 18 GHz, 1 Mbps



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
8130.000000	45.96	---	74.00	28.04	15000.0	1000.000	256.0	V	74.0	90.0	17.6	PASS
8130.000000	---	32.35	54.00	21.65	15000.0	1000.000	256.0	V	74.0	90.0	17.6	PASS
17228.250000	56.37	---	74.00	17.63	15000.0	1000.000	291.0	H	18.0	90.0	36.7	PASS
17228.250000	---	42.44	54.00	11.56	15000.0	1000.000	291.0	H	18.0	90.0	36.7	PASS

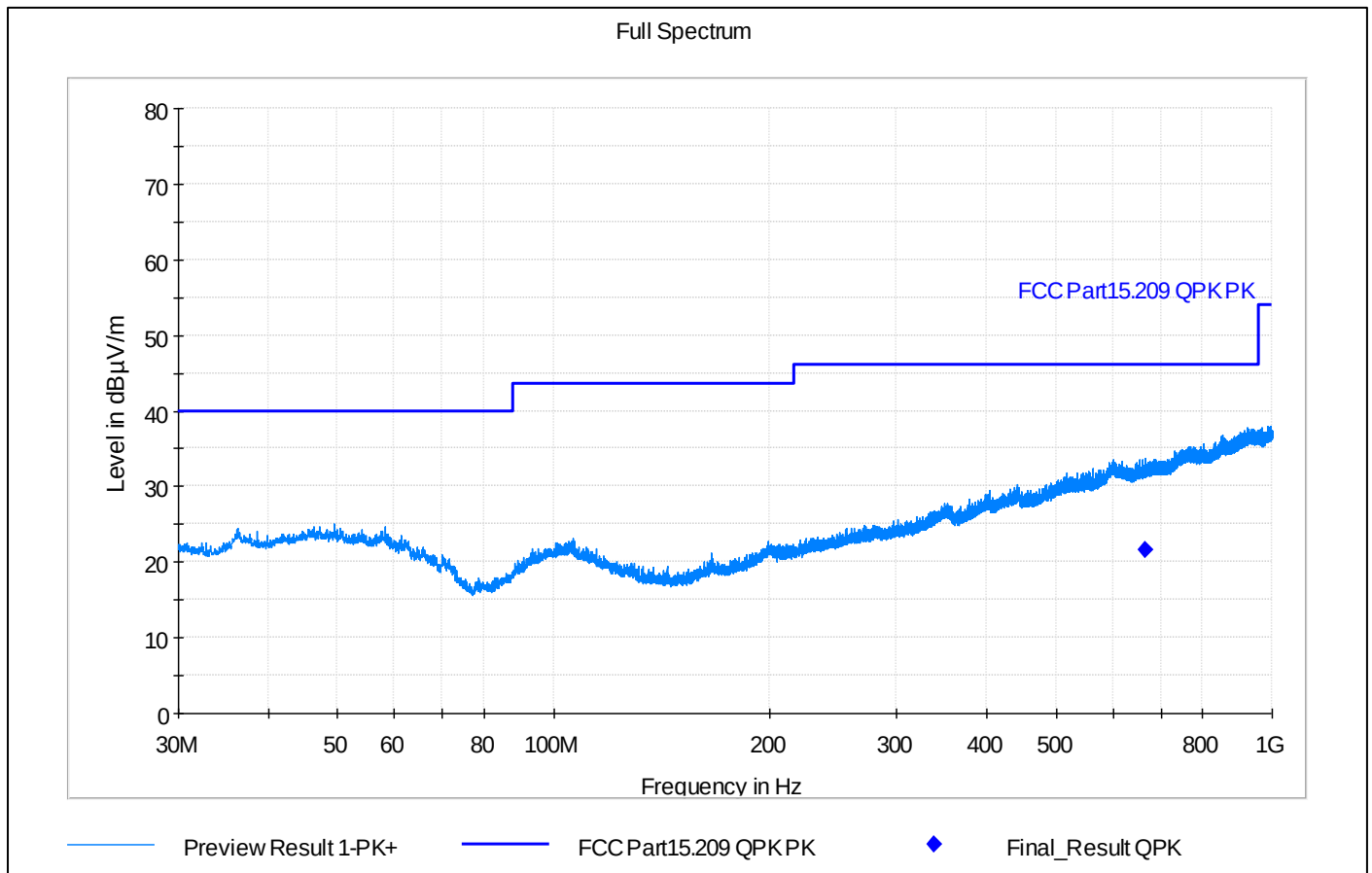
Low channel, 18 – 26 GHz, 1 Mbps



Final_Result

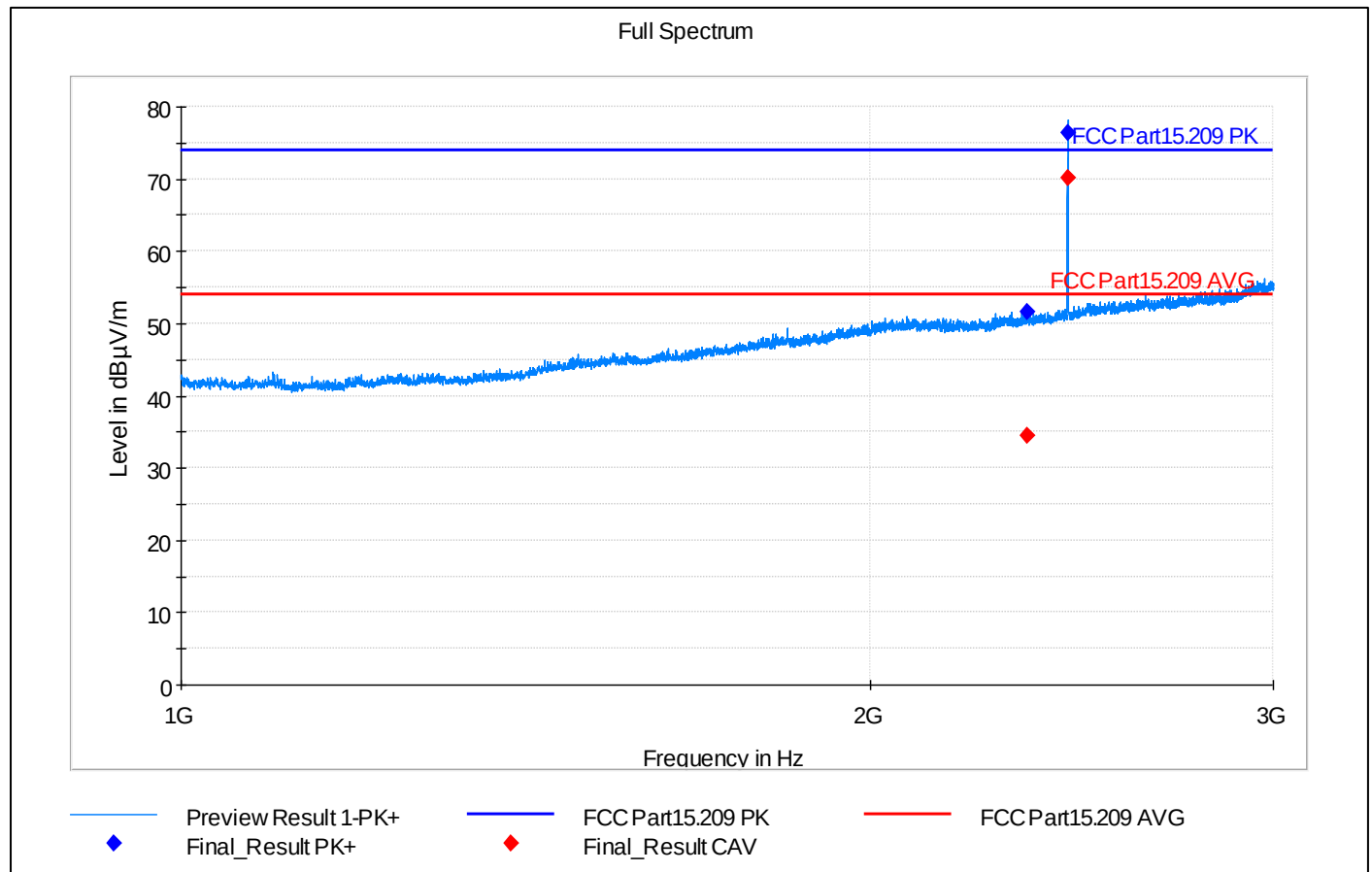
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
18682.500	---	32.05	54.0	21.95	3000	1000	240.0	H	52	90	23.4	PASS
18682.500	44.84	---	74.0	29.16	3000	1000	240.0	H	52	90	23.4	PASS
22320.250	44.81	---	74.0	29.19	3000	1000	210.0	V	70	0	24.9	PASS
22320.250	---	31.90	54.0	22.10	3000	1000	210.0	V	70	0	24.9	PASS
25243.000	46.18	---	74.0	27.82	3000	1000	181.0	V	88	0	26.7	PASS
25243.000	---	33.38	54.0	20.62	3000	1000	181.0	V	88	0	26.7	PASS

Mid channel, 30 MHz – 1 GHz, 1 Mbps



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
665.100000	21.67	46.00	24.33	15000.0	120.000	196.0	V	12.0	90.0	30.2	PASS

Mid channel, 1-3 GHz, 1 Mbps


Note: Frequency 2439,750 MHz is excluded from spurious domain measurements and ignored. See table below.

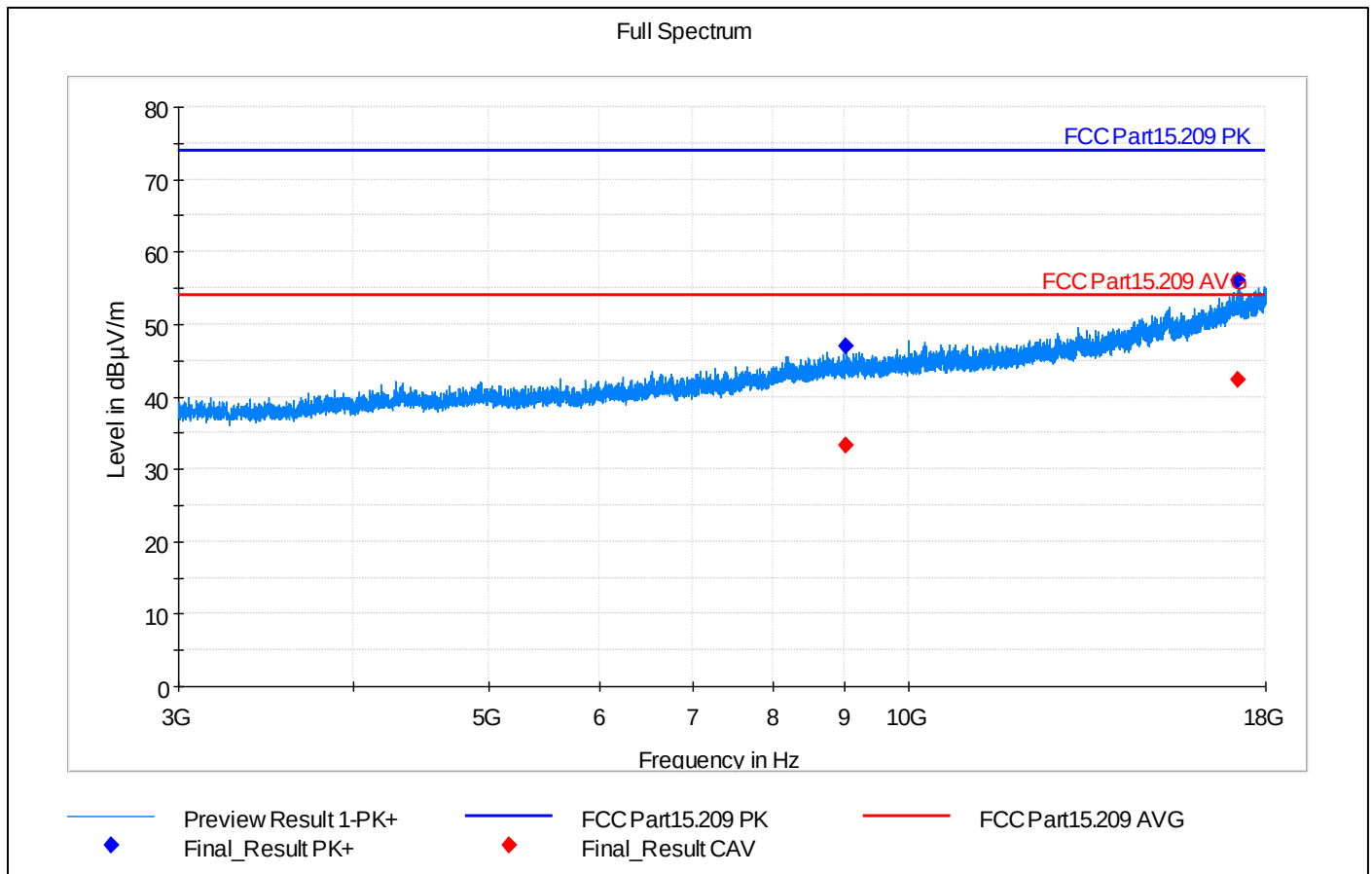
Final Result

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)
2344.000	51.60	---	74.0	22.40	15000	1000.000	228.0	H	165	90	38.4
2344.000	---	34.49	54.0	19.51	15000	1000.000	228.0	H	165	90	38.4
2439.750	---	70.18	54.0	-16.18	15000	1000.000	146.0	H	181	90	38.9
2439.750	76.39	---	74.0	-2.39	15000	1000.000	146.0	H	181	90	38.9

(continuation of the "Final_Result" table from column 17 ...)

Frequency (MHz)	Comment
2344.000	PASS
2344.000	PASS
2439.750	Fundamental TX signal ***IGNORED***
2439.750	Fundamental TX signal ***IGNORED***

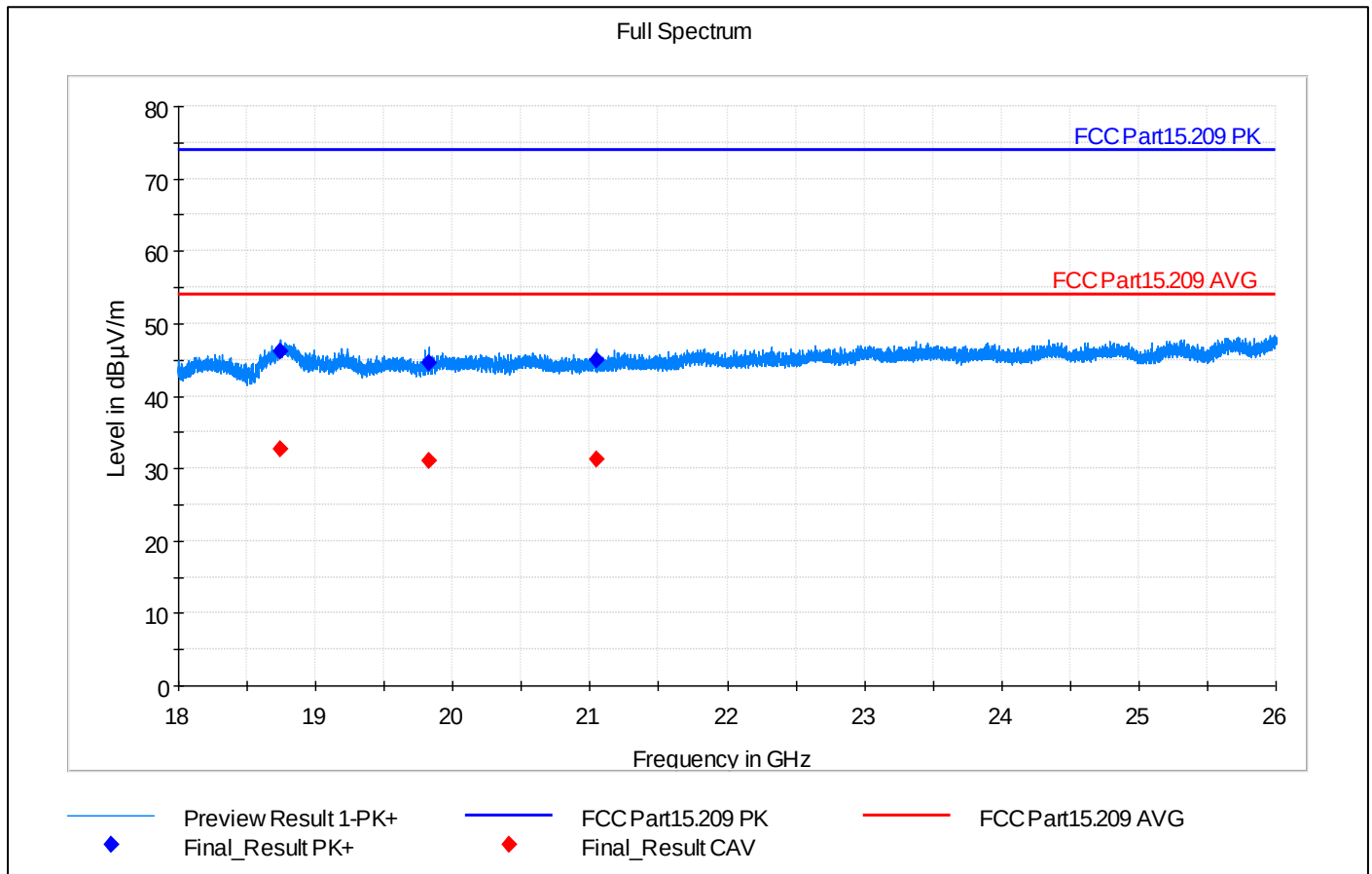
Mid channel, 3–18 GHz, 1 Mbps



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
9009.500000	46.94	---	74.00	27.06	15000.0	1000.000	146.0	V	5.0	90.0	18.8	PASS
9009.500000	---	33.34	54.00	20.66	15000.0	1000.000	146.0	V	5.0	90.0	18.8	PASS
17212.250000	56.06	---	74.00	17.94	15000.0	1000.000	240.0	H	100.0	90.0	36.7	PASS
17212.250000	---	42.31	54.00	11.69	15000.0	1000.000	240.0	H	100.0	90.0	36.7	PASS

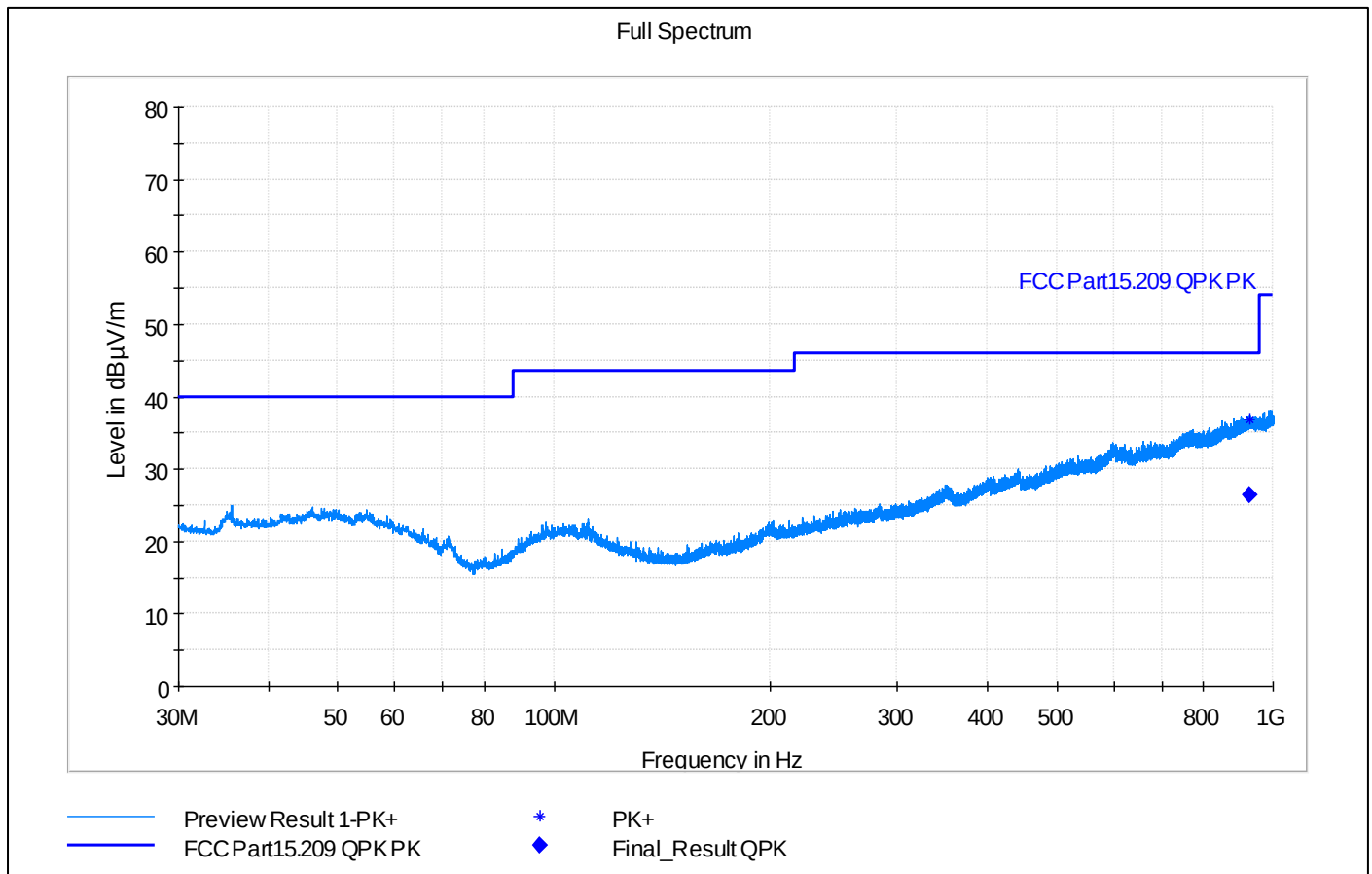
Mid channel, 18–26 GHz, 1 Mbps



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
18748.500	---	32.70	54.0	21.30	3000	1000	371.0	H	26	0	23.5	PASS
18748.500	46.07	---	74.0	27.93	3000	1000	371.0	H	26	0	23.5	PASS
19825.250	44.53	---	74.0	29.47	3000	1000	134.0	V	34	90	24.0	PASS
19825.250	---	30.98	54.0	23.02	3000	1000	134.0	V	34	90	24.0	PASS
21044.000	44.87	---	74.0	29.13	3000	1000	302.0	V	76	0	24.5	PASS
21044.000	---	31.16	54.0	22.84	3000	1000	302.0	V	76	0	24.5	PASS

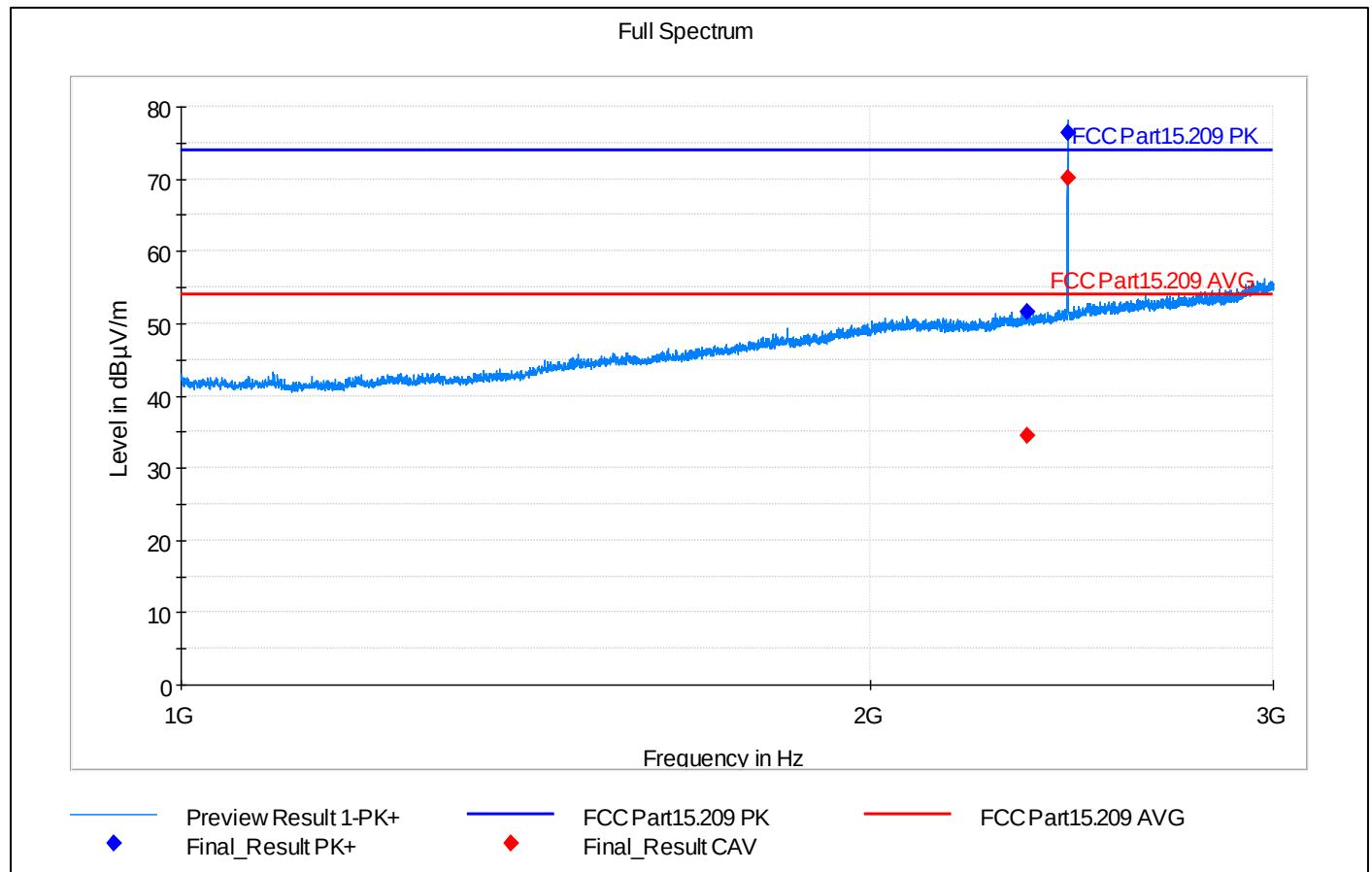
High channel, 30 MHz – 1 GHz, 1 Mbps



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
929.550000	26.36	46.00	19.64	15000.0	120.000	223.0	V	277.0	90.0	34.0	PASS

High channel, 1 – 3 GHz, 1 Mbps



Note: Frequency 2479,750 MHz is excluded from spurious domain measurements and ignored. See table below.

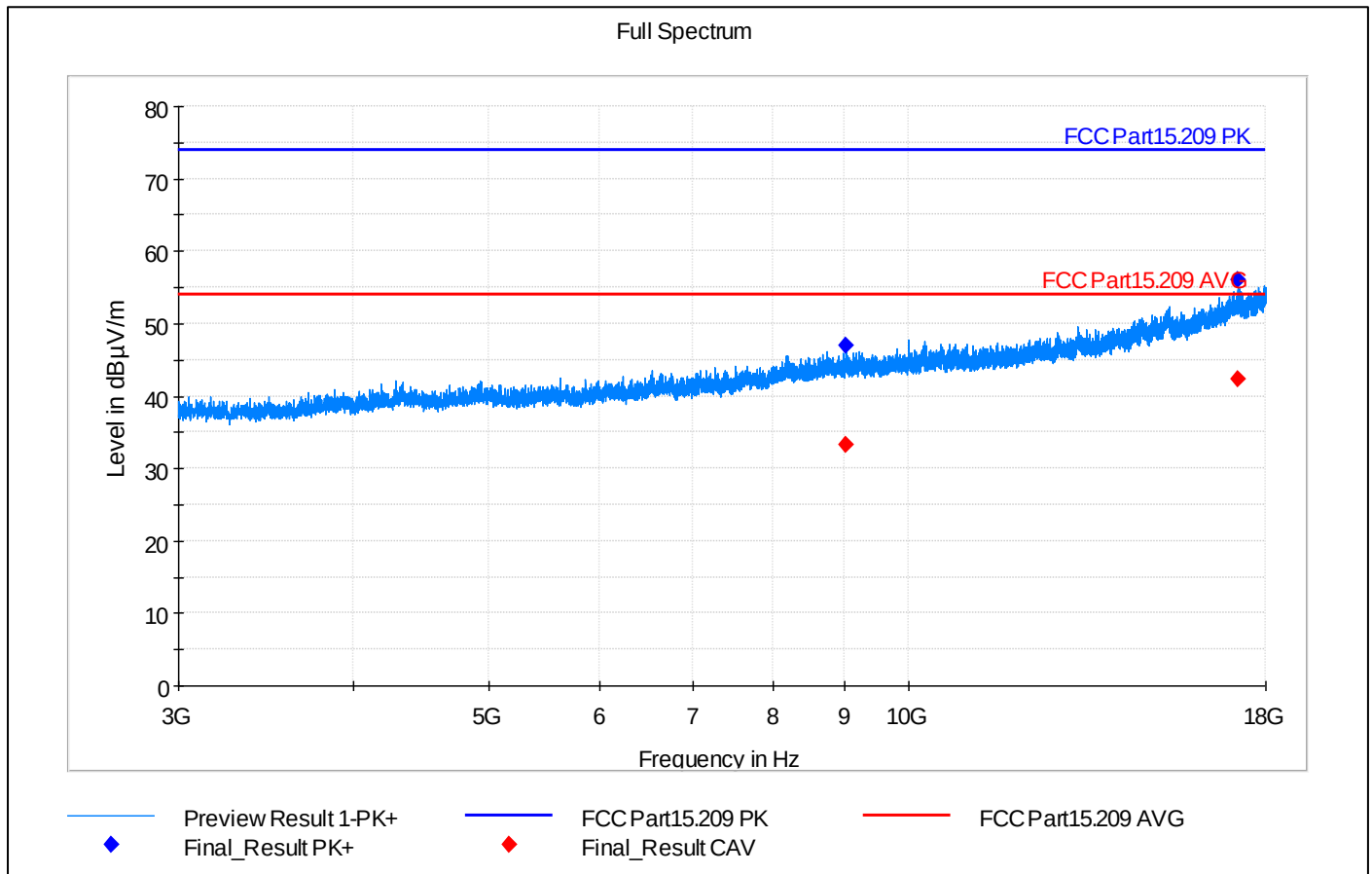
Final Result

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)
2344.000	51.60	---	74.0	22.40	15000	1000.000	228.0	H	165	90	38.4
2344.000	---	34.49	54.0	19.51	15000	1000.000	228.0	H	165	90	38.4
2439.750	---	70.18	54.0	-16.18	15000	1000.000	146.0	H	181	90	38.9
2439.750	76.39	---	74.0	-2.39	15000	1000.000	146.0	H	181	90	38.9

(continuation of the "Final_Result" table from column 17 ...)

Frequency (MHz)	Comment
2344.000	PASS
2344.000	PASS
2439.750	Fundamental TX signal ***IGNORED***
2439.750	Fundamental TX signal ***IGNORED***

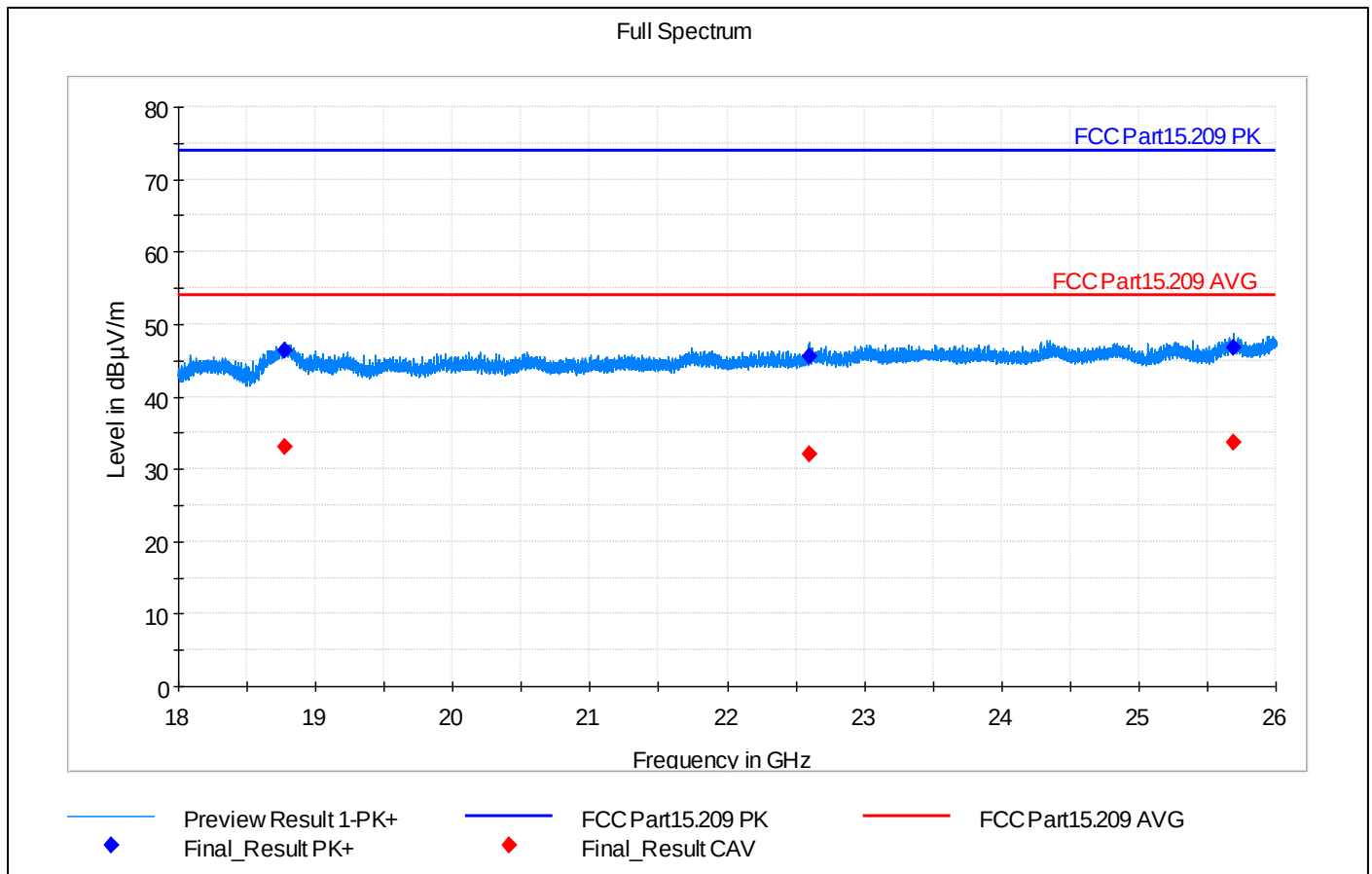
High channel, 3 – 18 GHz, 1 Mbps



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
9009.500000	46.94	---	74.00	27.06	15000.0	1000.000	146.0	V	5.0	90.0	18.8	PASS
9009.500000	---	33.34	54.00	20.66	15000.0	1000.000	146.0	V	5.0	90.0	18.8	PASS
17212.250000	56.06	---	74.00	17.94	15000.0	1000.000	240.0	H	100.0	90.0	36.7	PASS
17212.250000	---	42.31	54.00	11.69	15000.0	1000.000	240.0	H	100.0	90.0	36.7	PASS

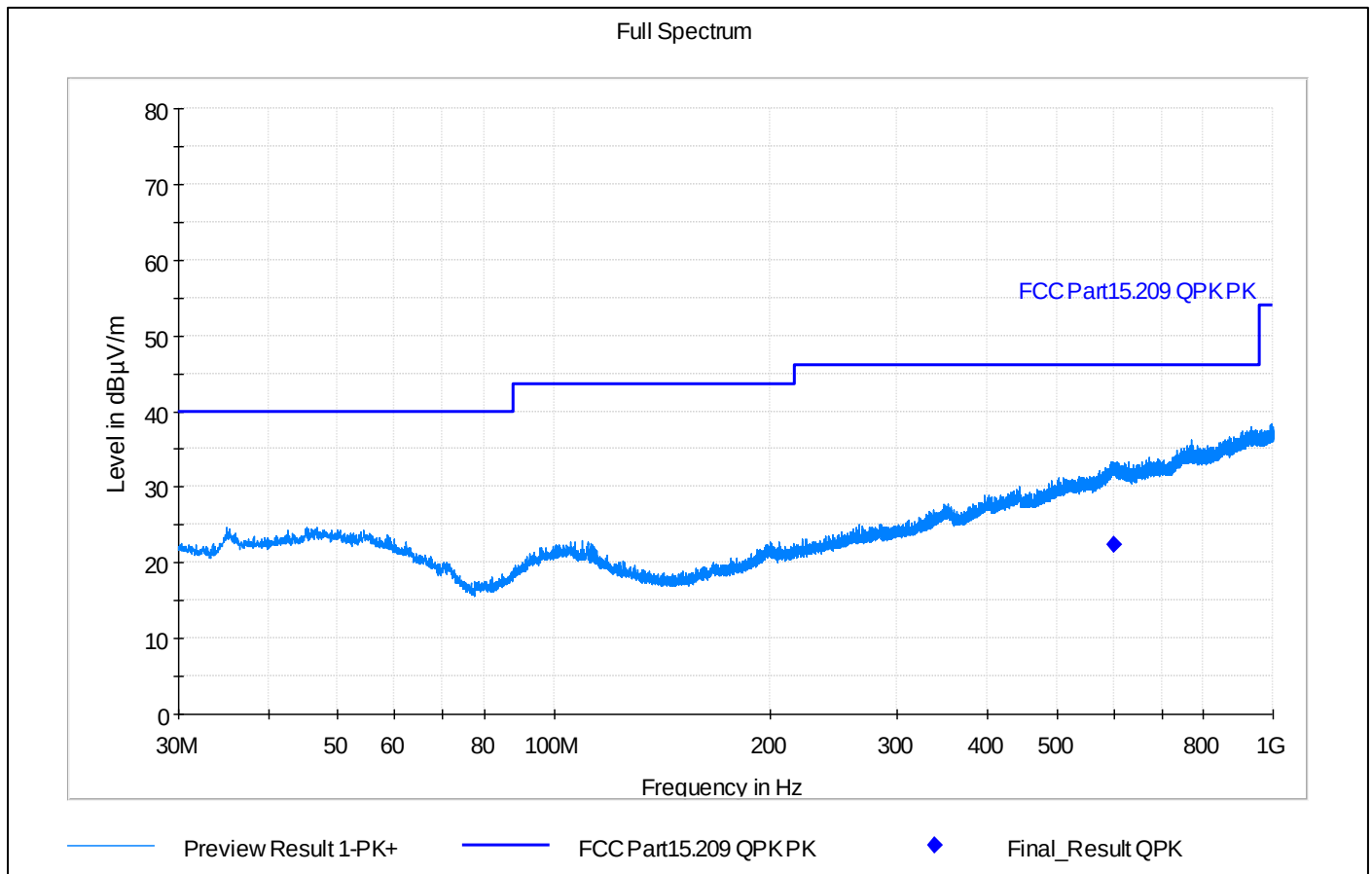
High channel, 18 – 26 GHz, 1 Mbps



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
18774.000	---	32.99	54.0	21.01	3000	1000	191.0	H	132	90	23.5	PASS
18774.000	46.36	---	74.0	27.64	3000	1000	191.0	H	132	90	23.5	PASS
22595.000	---	32.06	54.0	21.94	3000	1000	98.0	H	271	90	25.1	PASS
22595.000	45.63	---	74.0	28.37	3000	1000	98.0	H	271	90	25.1	PASS
25693.000	---	33.65	54.0	20.35	3000	1000	371.0	H	247	90	26.8	PASS
25693.000	46.84	---	74.0	27.16	3000	1000	371.0	H	247	90	26.8	PASS

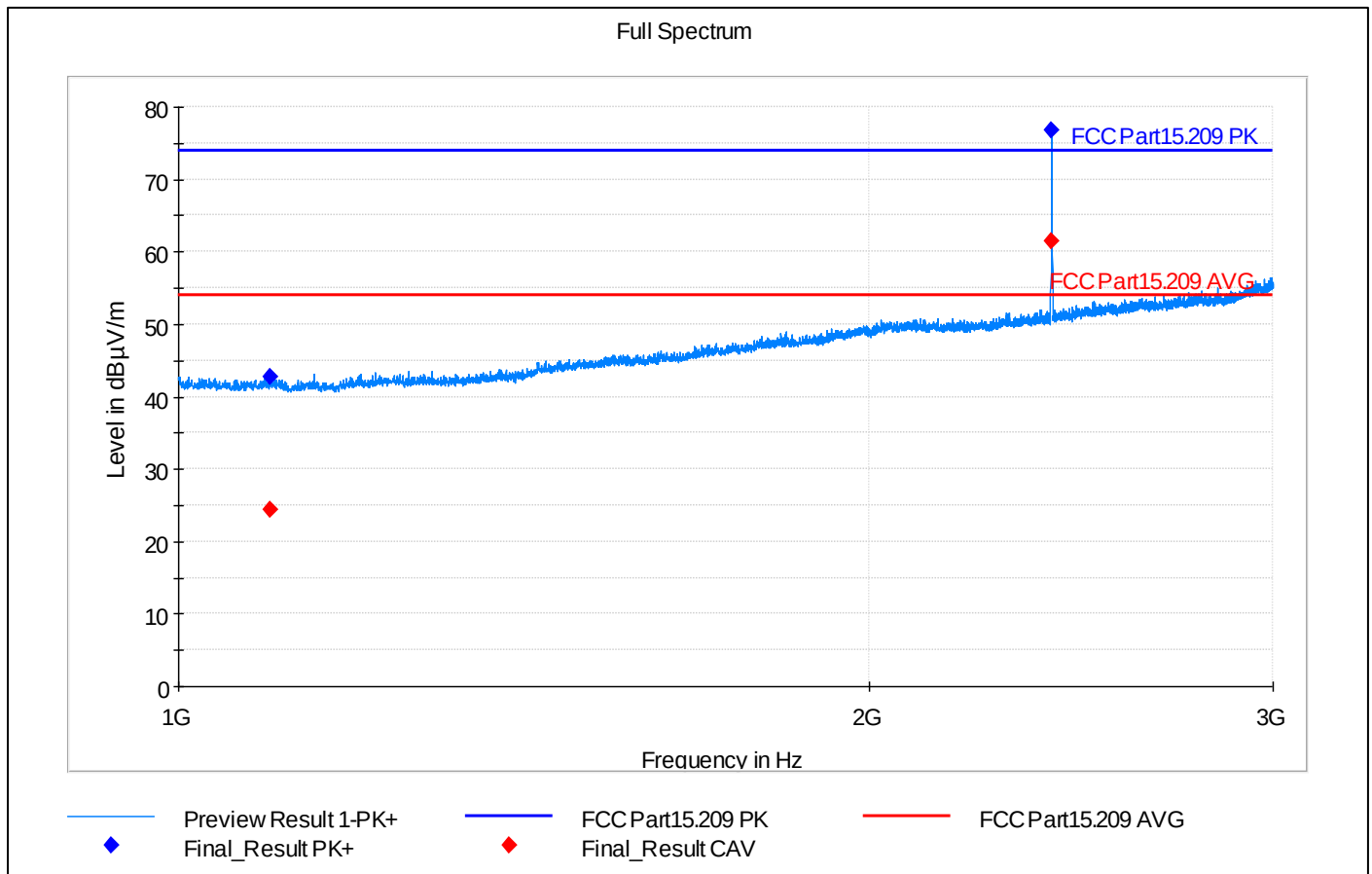
Low channel, 30 MHz – 1 GHz, 2 Mbps



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
601.590000	22.42	46.00	23.58	15000.0	120.000	315.0	H	67.0	0.0	29.9	PASS

Low channel, 1 – 3 GHz, 2 Mbps



Note: Frequency 2402,500 MHz is excluded from spurious domain measurements and ignored. See table below.

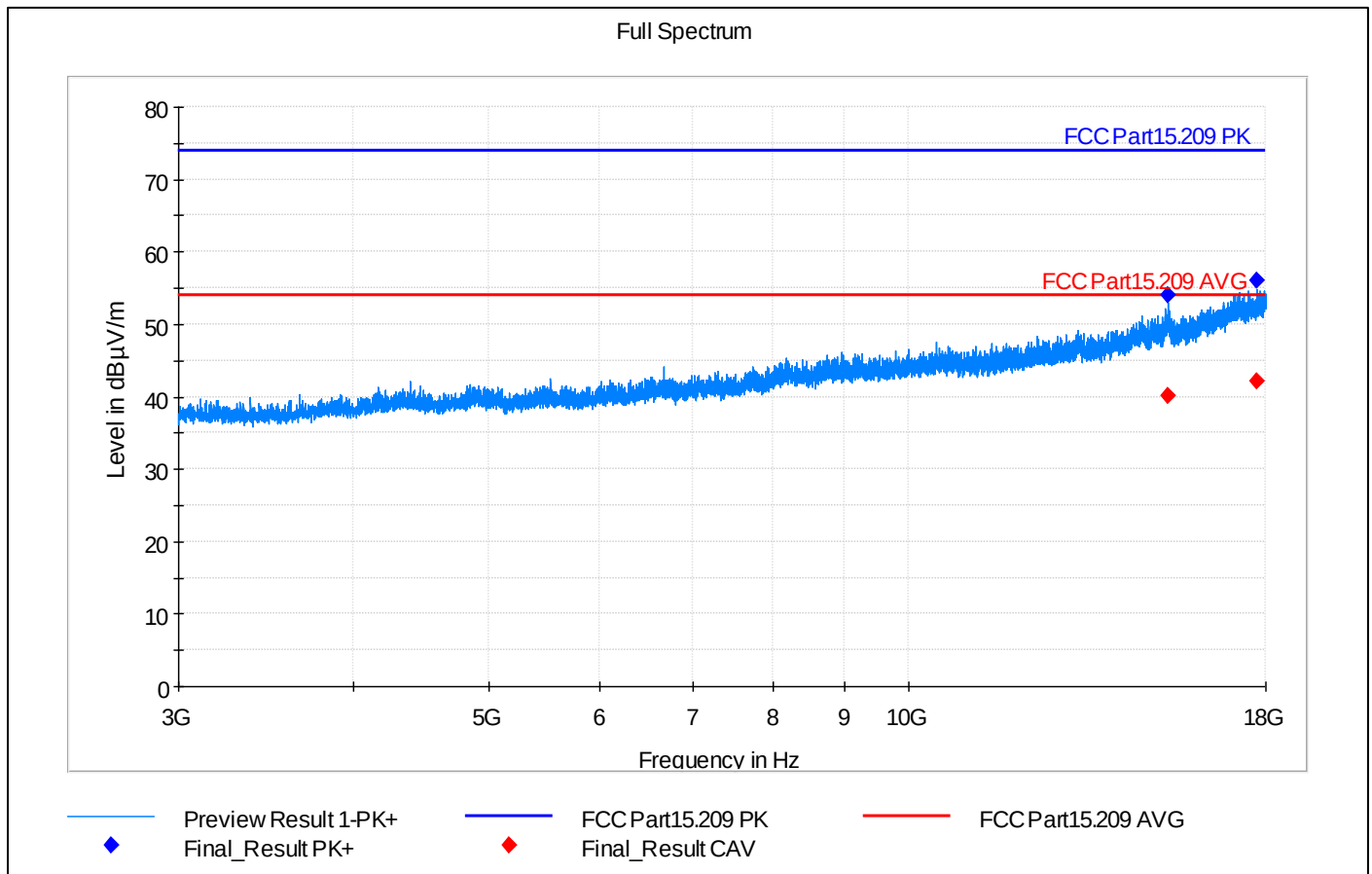
Final_Result

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)
1097.000	---	24.37	54.0	29.63	15000	1000.000	188.0	H	157	90	31.2
1097.000	42.68	---	74.0	31.32	15000	1000.000	188.0	H	157	90	31.2
2402.500	---	61.49	54.0	-7.49	15000	1000.000	217.0	H	186	90	38.6
2402.500	76.69	---	74.0	-2.69	15000	1000.000	217.0	H	186	90	38.6

(continuation of the "Final_Result" table from column 17 ...)

Frequency (MHz)	Comment
1097.000	PASS
1097.000	PASS
2402.500	Fundamental TX signal ***IGNORED***
2402.500	Fundamental TX signal ***IGNORED***

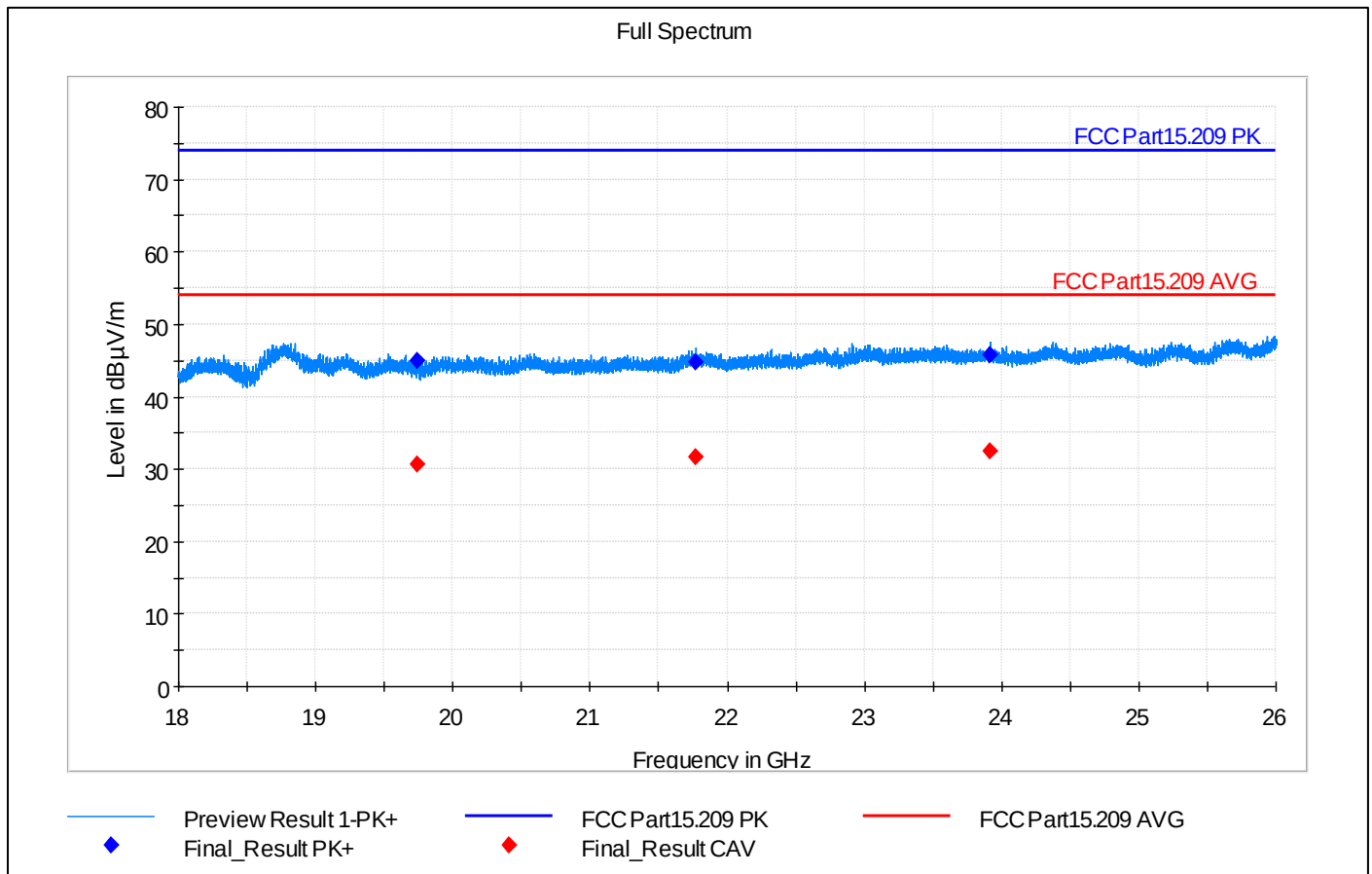
Low channel, 3 – 18 GHz, 2 Mbps



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
15314.250000	53.97	---	74.00	20.03	15000.0	1000.000	138.0	V	327.0	90.0	32.2	PASS
15314.250000	---	40.14	54.00	13.86	15000.0	1000.000	138.0	V	327.0	90.0	32.2	PASS
17741.750000	56.03	---	74.00	17.97	15000.0	1000.000	191.0	V	60.0	0.0	38.2	PASS
17741.750000	---	42.15	54.00	11.85	15000.0	1000.000	191.0	V	60.0	0.0	38.2	PASS

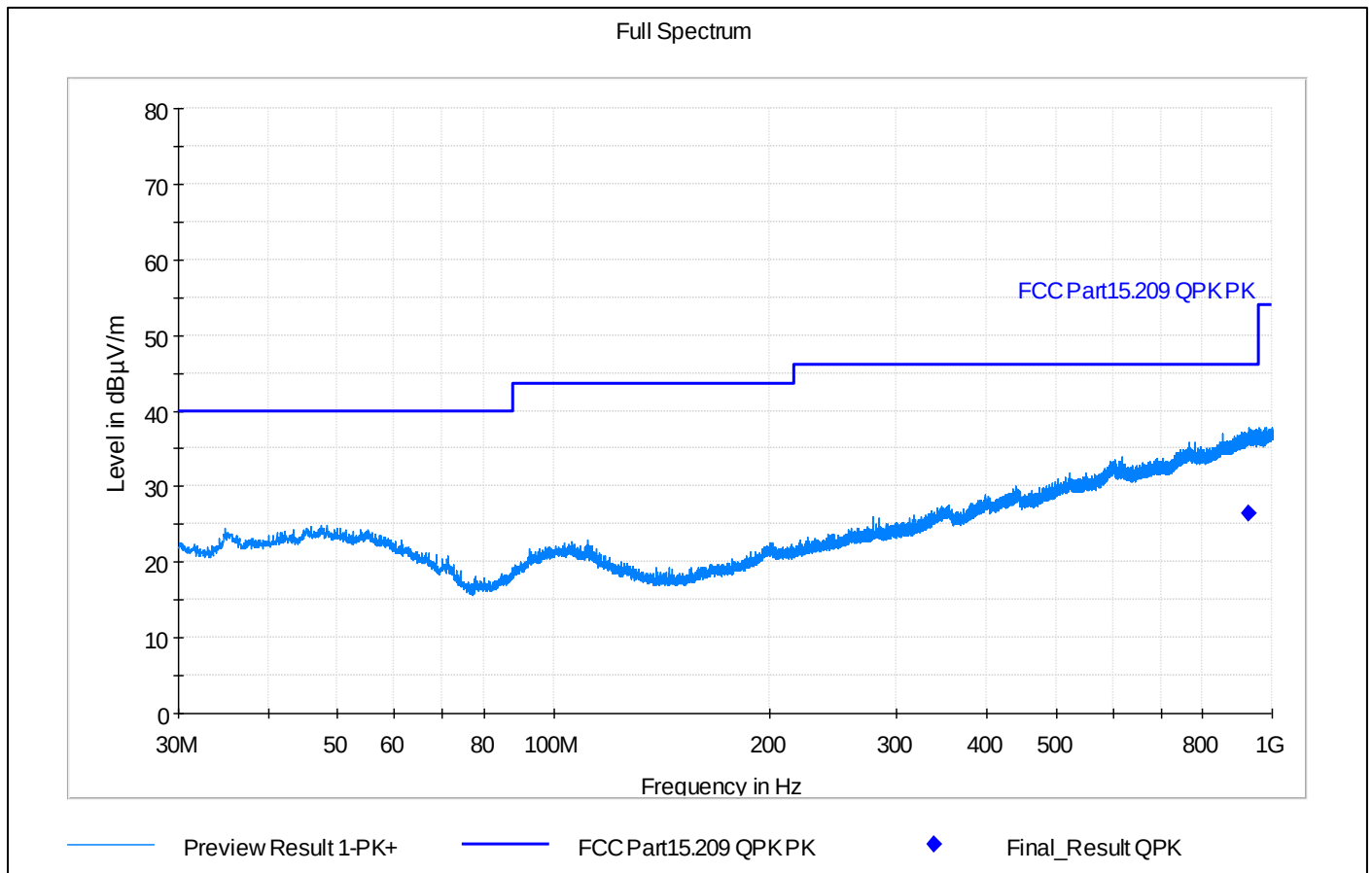
Low channel, 18 – 26 GHz, 2 Mbps



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
19740.750	44.94	---	74.0	29.06	3000	1000	178.0	V	190	0	23.9	PASS
19740.750	---	30.70	54.0	23.30	3000	1000	178.0	V	190	0	23.9	PASS
21773.500	44.71	---	74.0	29.29	3000	1000	371.0	V	86	0	24.8	PASS
21773.500	---	31.68	54.0	22.32	3000	1000	371.0	V	86	0	24.8	PASS
23918.250	---	32.36	54.0	21.64	3000	1000	352.0	V	154	90	25.8	PASS
23918.250	45.69	---	74.0	28.31	3000	1000	352.0	V	154	90	25.8	PASS

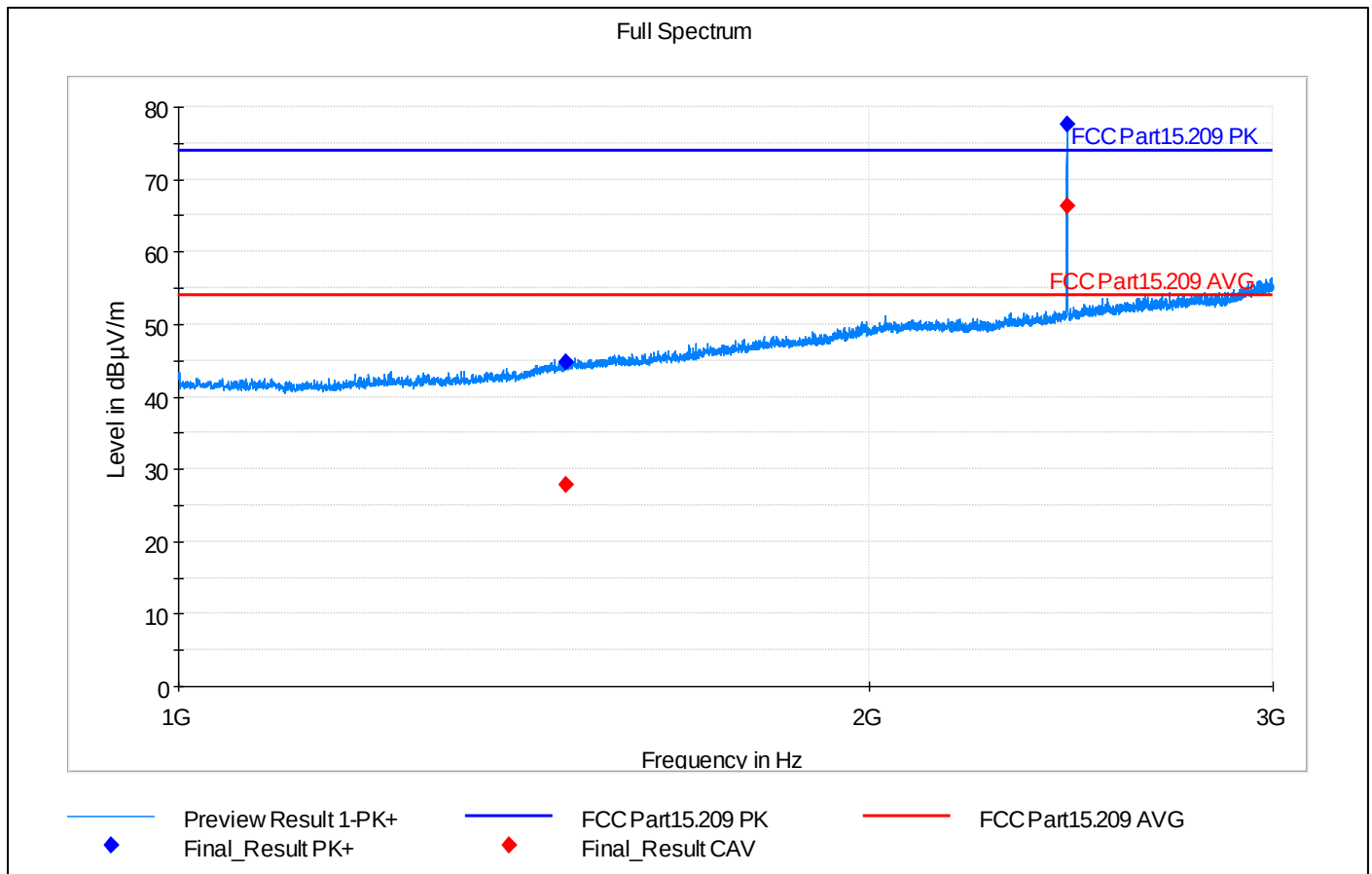
Mid channel, 30 MHz – 1 GHz, 2 Mbps



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
926.100000	26.38	46.00	19.62	15000.0	120.000	100.0	V	295.0	90.0	34.0	PASS

Mid channel, 1-3 GHz, 2 Mbps



Note: Frequency 2440,000 MHz is excluded from spurious domain measurements and ignored. See table below.

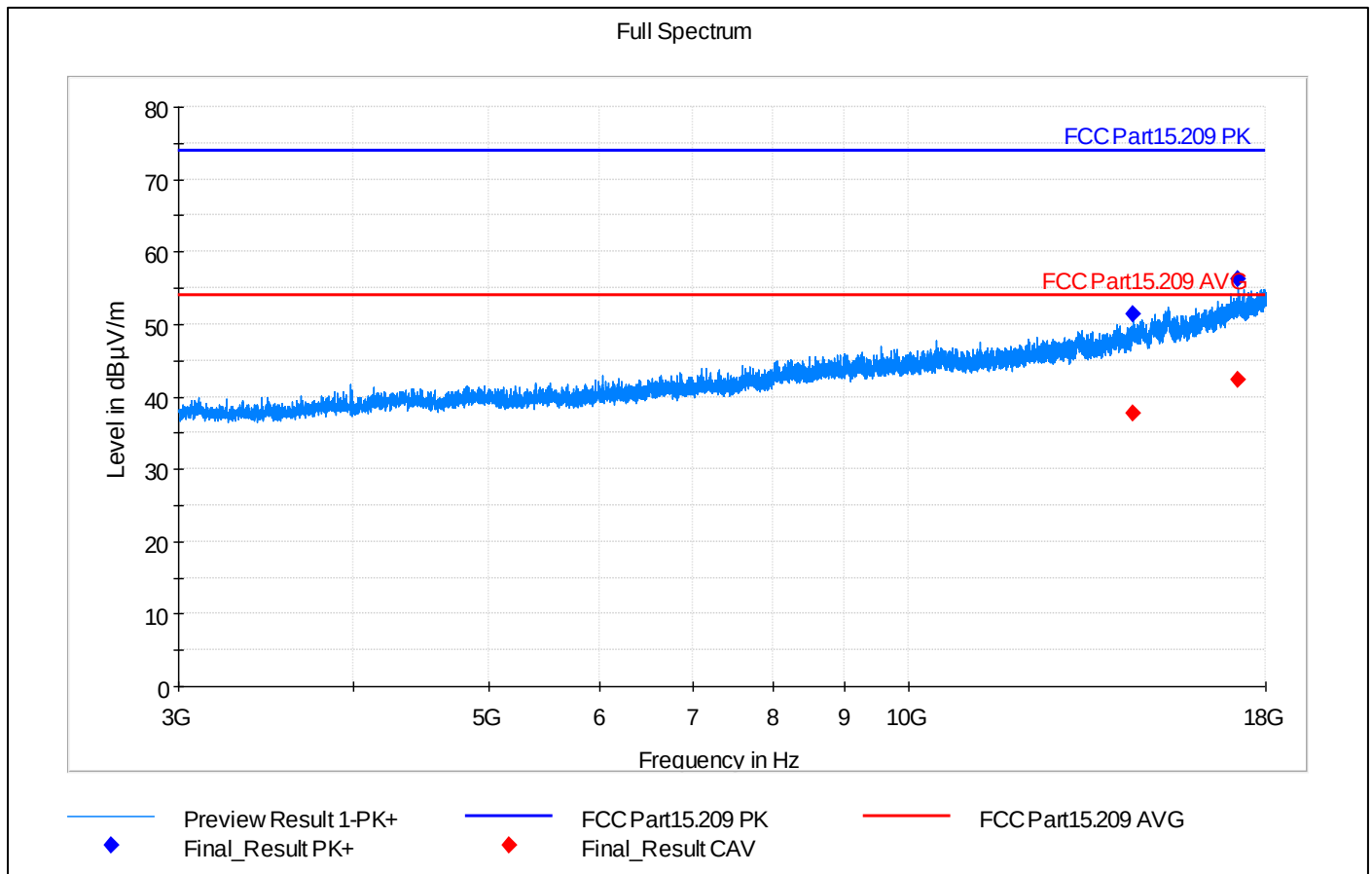
Final_Result

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)
1475.500	44.80	---	74.0	29.20	15000	1000.000	302.0	V	137	90	33.3
1475.500	---	27.85	54.0	26.15	15000	1000.000	302.0	V	137	90	33.3
2440.000	77.64	---	74.0	-3.64	15000	1000.000	236.0	H	181	90	38.9
2440.000	---	66.31	54.0	-12.31	15000	1000.000	236.0	H	181	90	38.9

(continuation of the "Final_Result" table from column 17 ...)

Frequency (MHz)	Comment
1475.500	PASS
1475.500	PASS
2440.000	Fundamental TX signal ***IGNORED***
2440.000	Fundamental TX signal ***IGNORED***

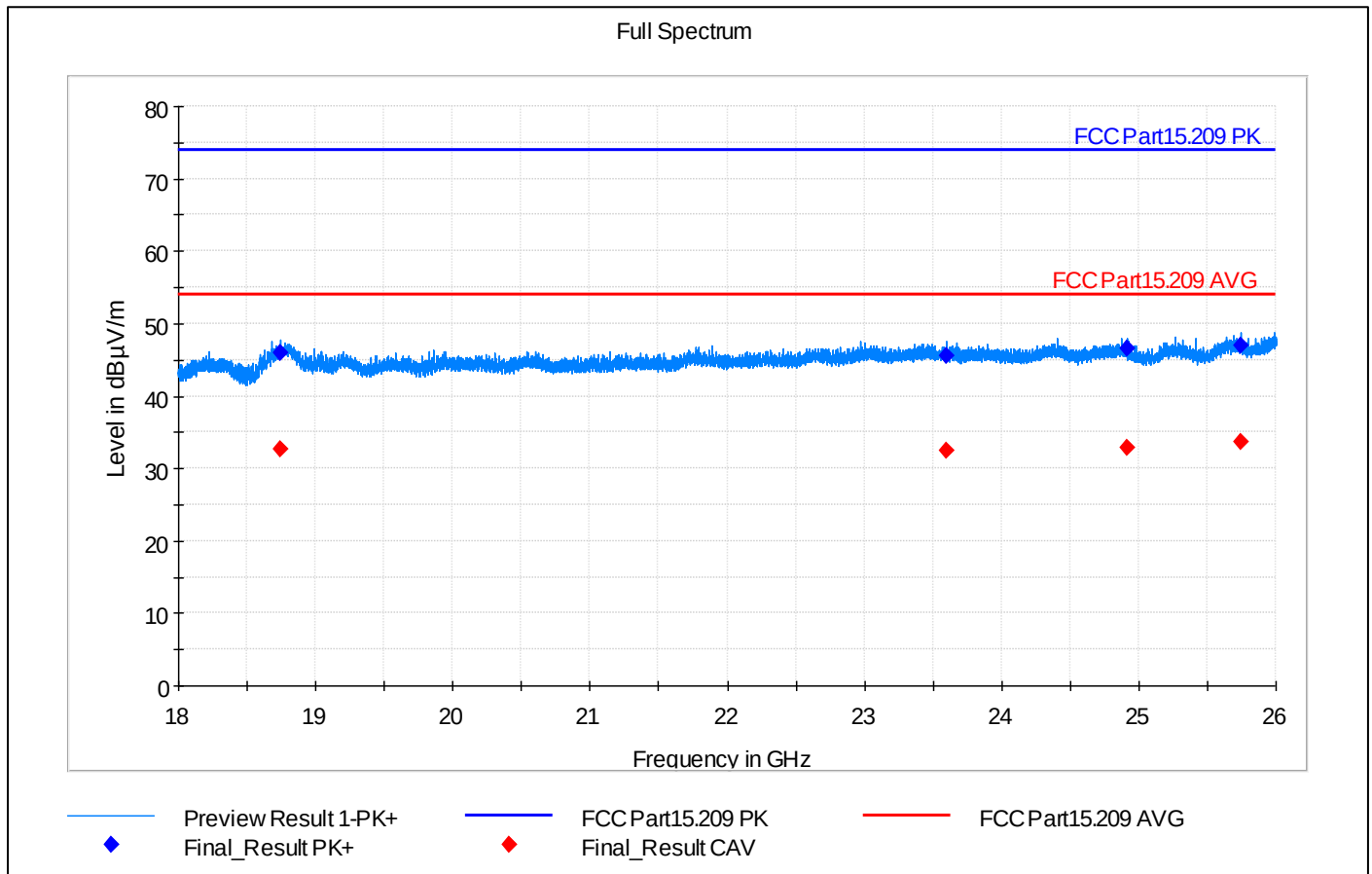
Mid channel, 3–18 GHz, 2 Mbps



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
14463.250000	---	37.75	54.00	16.25	15000.0	1000.000	244.0	V	245.0	0.0	29.6	PASS
14463.250000	51.43	---	74.00	22.57	15000.0	1000.000	244.0	V	245.0	0.0	29.6	PASS
17209.750000	---	42.33	54.00	11.67	15000.0	1000.000	221.0	V	59.0	90.0	36.7	PASS
17209.750000	56.31	---	74.00	17.69	15000.0	1000.000	221.0	V	59.0	90.0	36.7	PASS

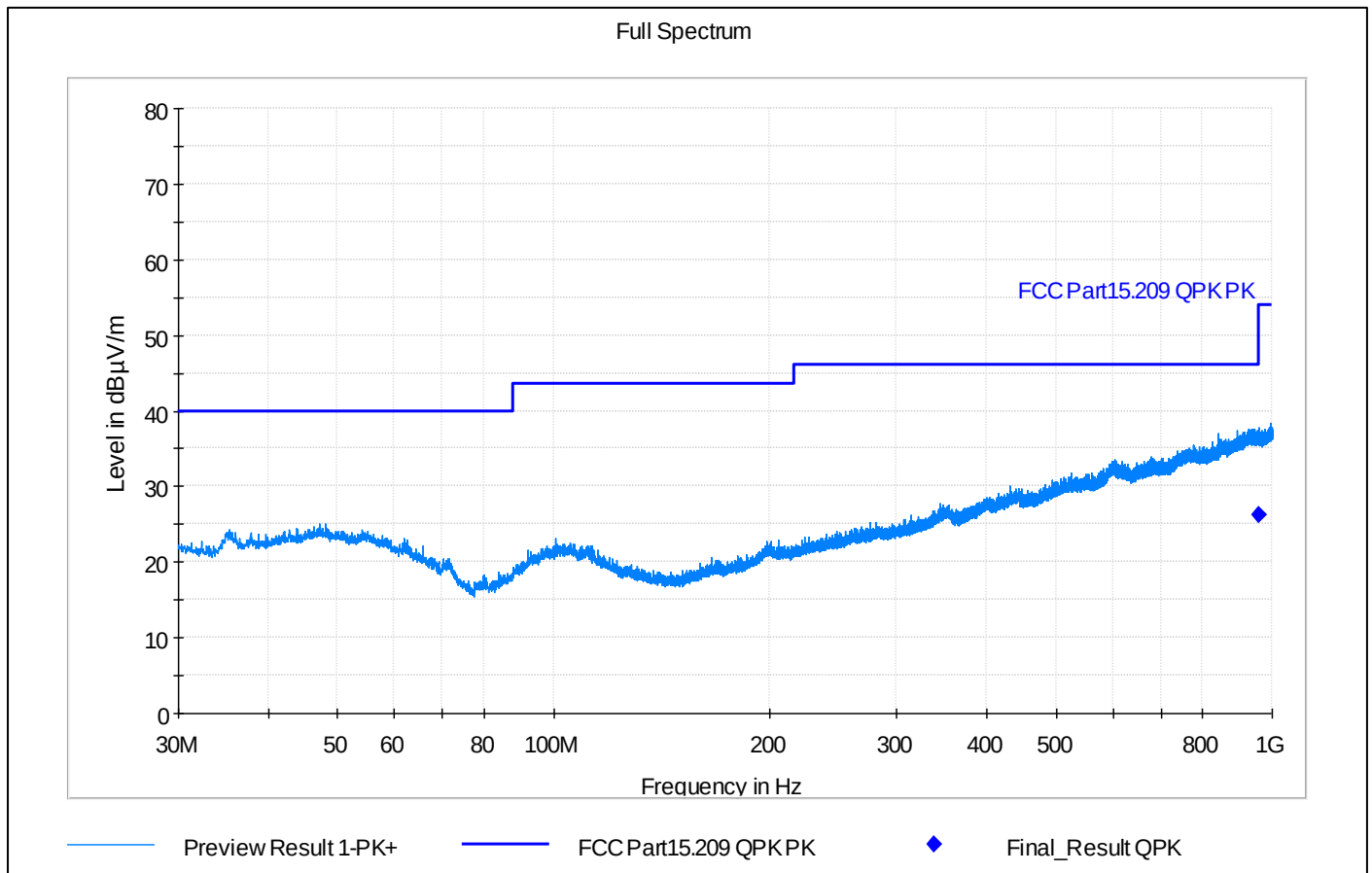
Mid channel, 18–26 GHz, 2 Mbps



Final_Result

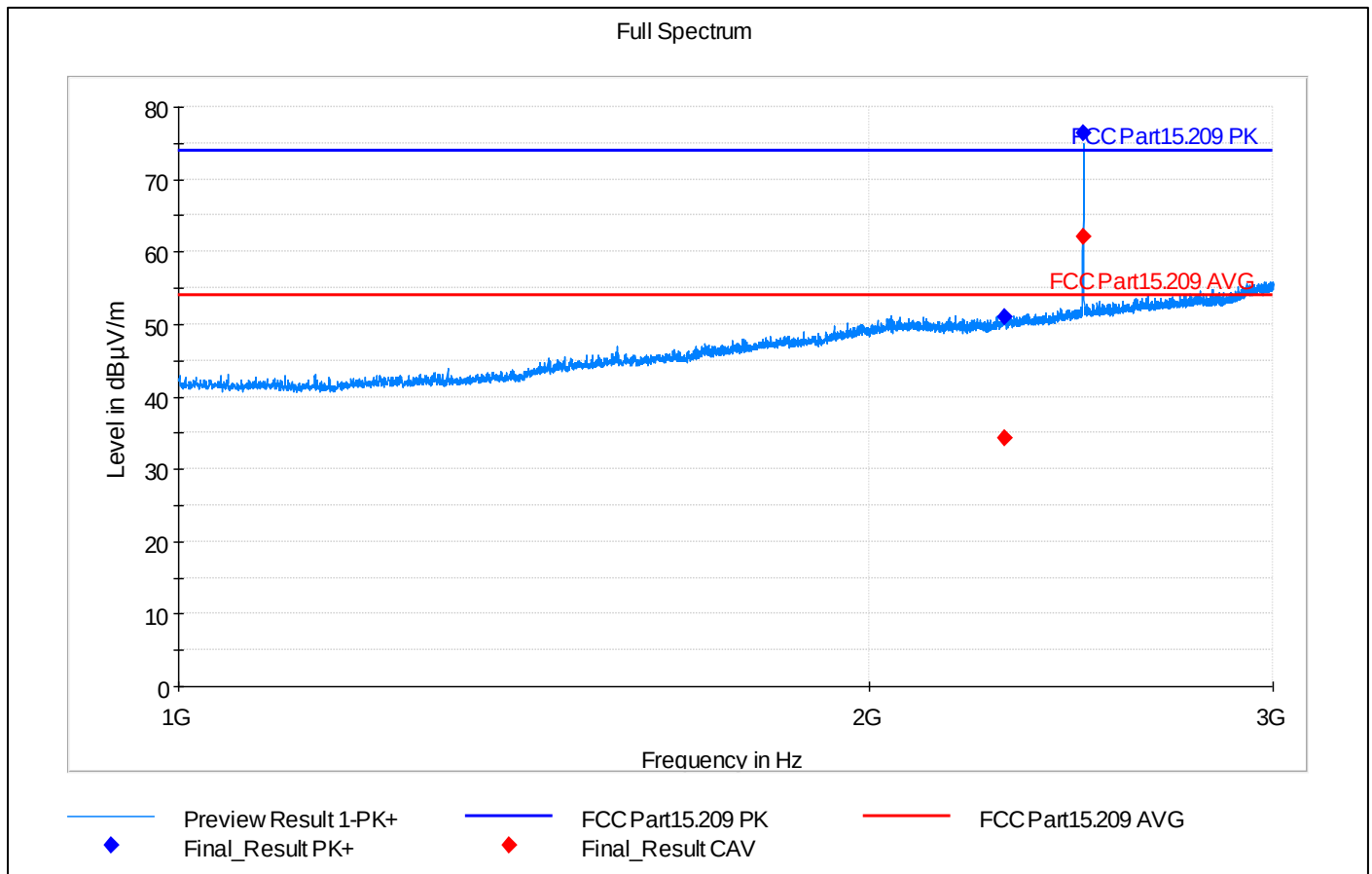
Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Comment
18745.000	---	32.64	54.0	21.36	3000	1000	115.0	H	78	90	23.4	PASS
18745.000	45.91	---	74.0	28.09	3000	1000	115.0	H	78	90	23.4	PASS
23600.250	45.53	---	74.0	28.47	3000	1000	296.0	V	171	0	25.8	PASS
23600.250	---	32.36	54.0	21.64	3000	1000	296.0	V	171	0	25.8	PASS
24912.750	---	32.90	54.0	21.10	3000	1000	341.0	V	292	90	26.6	PASS
24912.750	46.48	---	74.0	27.52	3000	1000	341.0	V	292	90	26.6	PASS
25740.000	46.99	---	74.0	27.01	3000	1000	269.0	V	337	0	26.7	PASS
25740.000	---	33.72	54.0	20.28	3000	1000	269.0	V	337	0	26.7	PASS

High channel, 30 MHz – 1 GHz, 2 Mbps



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
956.970000	26.15	46.00	19.85	15000.0	120.000	117.0	V	235.0	90.0	34.2	PASS

High channel, 1 – 3 GHz, 2 Mbps


Note: Frequency 2479,500 MHz is excluded from spurious domain measurements and ignored. See table below.

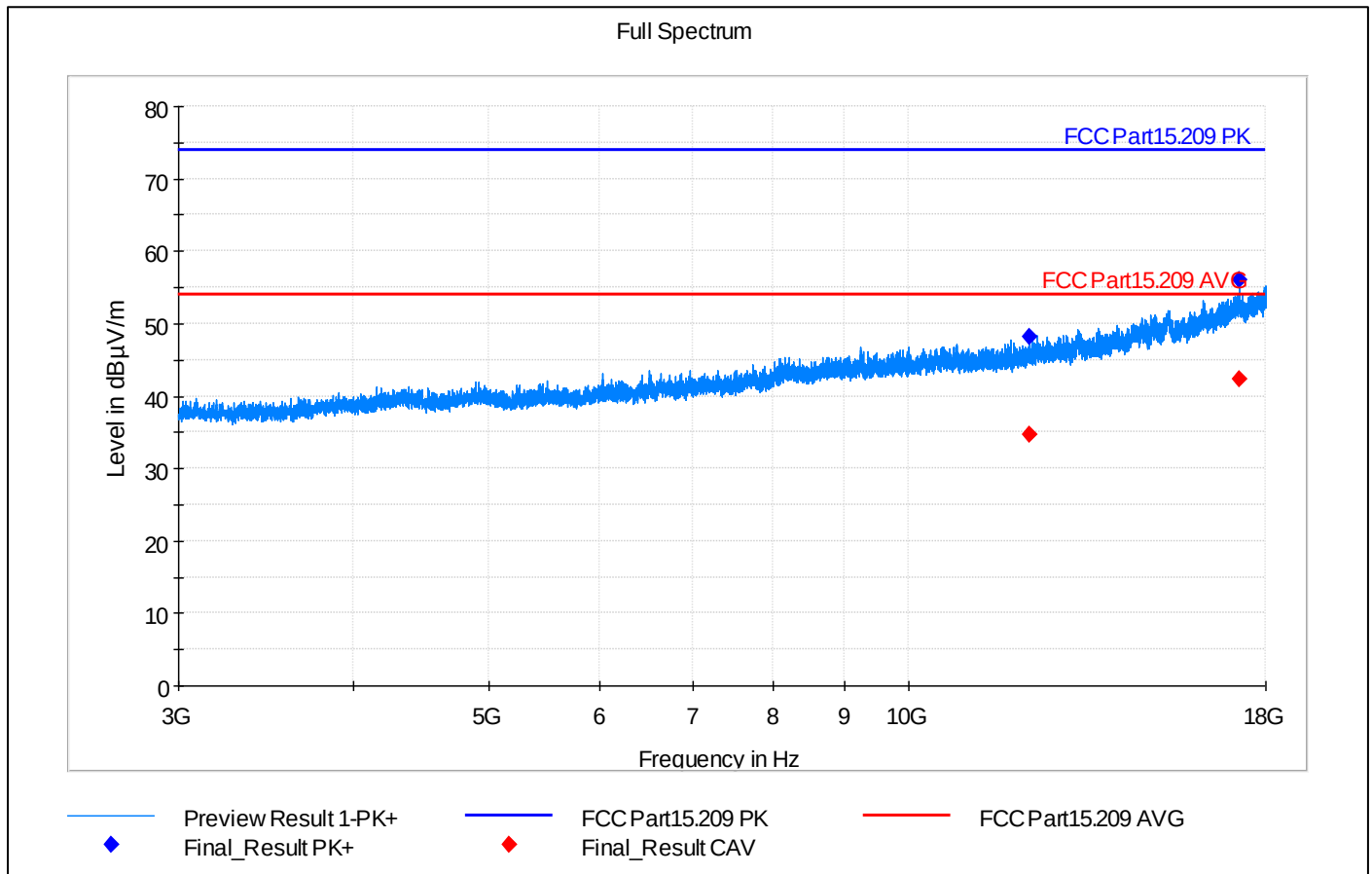
Final Result

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)
2291.750	51.02	---	74.0	22.98	15000	1000.000	124.0	V	225	90	38.1
2291.750	---	34.31	54.0	19.69	15000	1000.000	124.0	V	225	90	38.1
2479.500	76.39	---	74.0	-2.39	15000	1000.000	98.0	H	195	90	39.3
2479.500	---	62.01	54.0	-8.01	15000	1000.000	98.0	H	195	90	39.3

(continuation of the "Final_Result" table from column 17 ...)

Frequency (MHz)	Comment
2291.750	PASS
2291.750	PASS
2479.500	Fundamental TX signal ***IGNORED***
2479.500	Fundamental TX signal ***IGNORED***

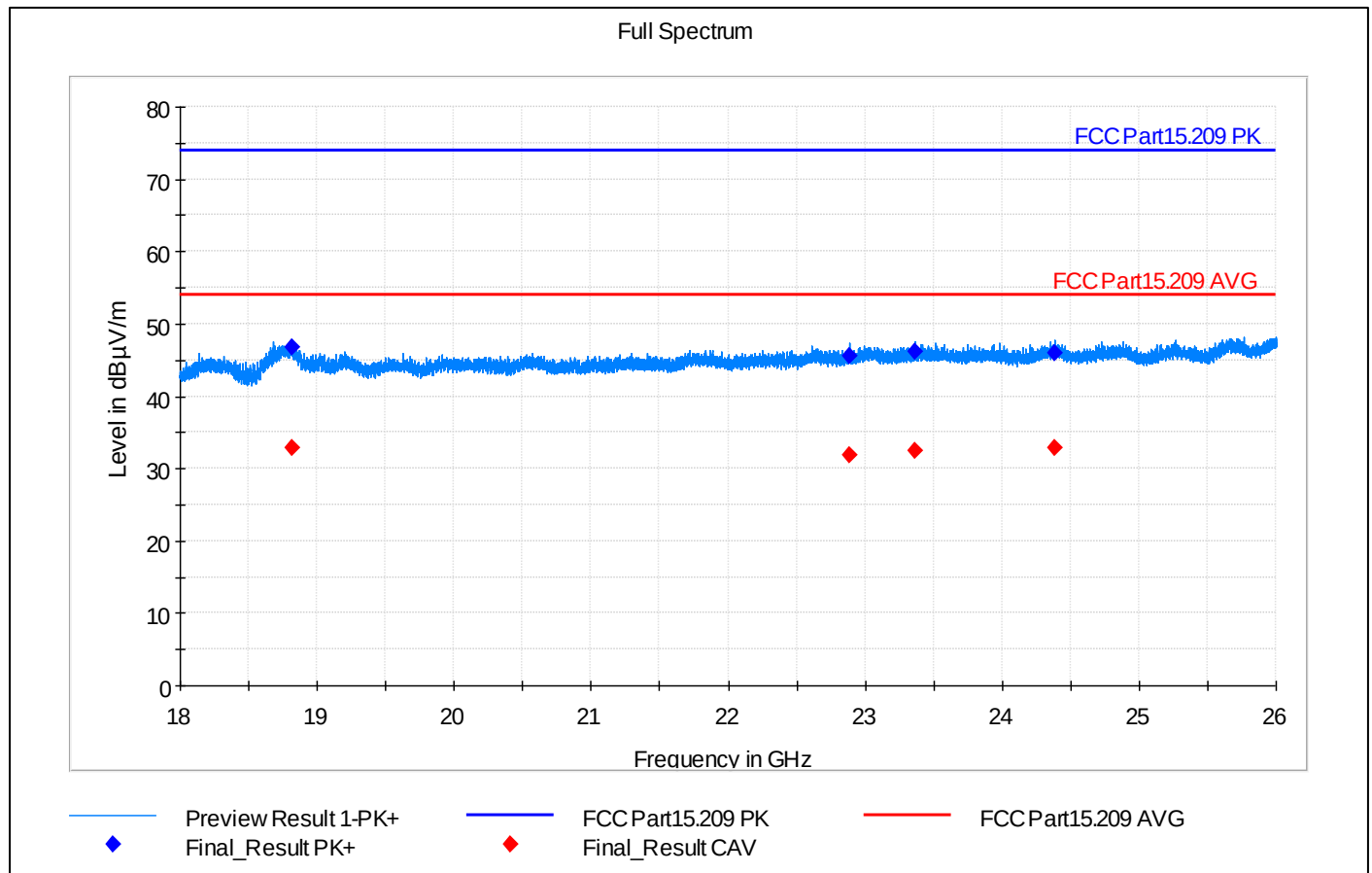
High channel, 3 – 18 GHz, 2 Mbps



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
12185.000000	48.09	---	74.00	25.91	15000.0	1000.000	351.0	H	133.0	90.0	23.9	PASS
12185.000000	---	34.64	54.00	19.36	15000.0	1000.000	351.0	H	133.0	90.0	23.9	PASS
17219.000000	55.96	---	74.00	18.04	15000.0	1000.000	154.0	H	210.0	0.0	36.7	PASS
17219.000000	---	42.28	54.00	11.72	15000.0	1000.000	154.0	H	210.0	0.0	36.7	PASS

High channel, 18 – 26 GHz, 2 Mbps



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
18817.750	---	32.80	54.0	21.20	3000	1000	156.0	H	197	90	23.5	PASS
18817.750	46.76	---	74.0	27.24	3000	1000	156.0	H	197	90	23.5	PASS
22889.250	45.62	---	74.0	28.38	3000	1000	371.0	H	81	90	25.4	PASS
22889.250	---	31.92	54.0	22.08	3000	1000	371.0	H	81	90	25.4	PASS
23366.000	---	32.46	54.0	21.54	3000	1000	155.0	V	3	0	25.7	PASS
23366.000	46.13	---	74.0	27.87	3000	1000	155.0	V	3	0	25.7	PASS
24381.500	45.85	---	74.0	28.15	3000	1000	371.0	V	133	0	26.1	PASS
24381.500	---	32.90	54.0	21.10	3000	1000	371.0	V	133	0	26.1	PASS

18. Receiver spurious emissions, radiated

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

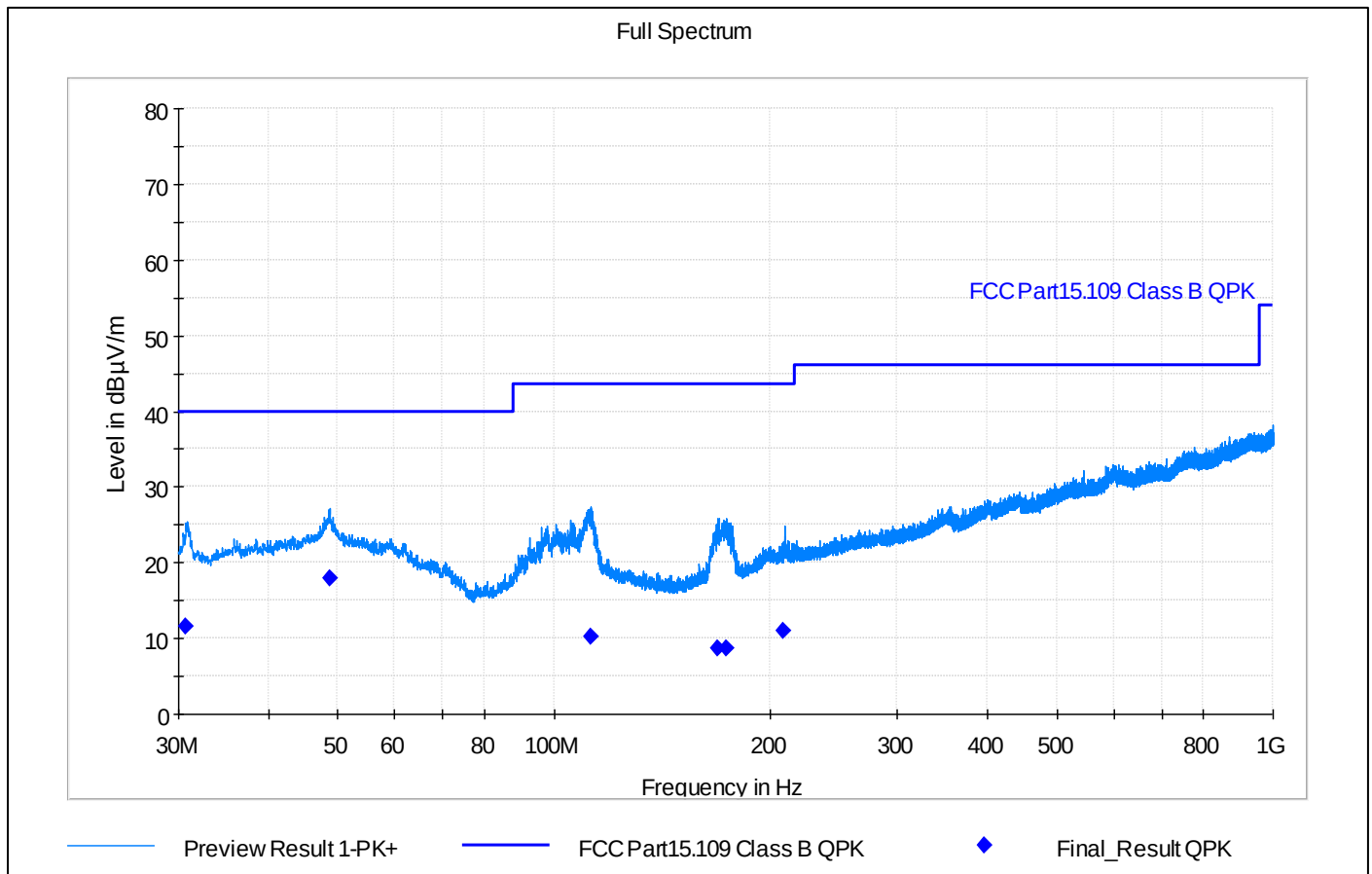
Test method: ANSI C63.4-2014 + C63.4a-2017 (8.1 – 8.3)

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
Bluetooth LE RX	Mid channel, 2440 MHz	PASS

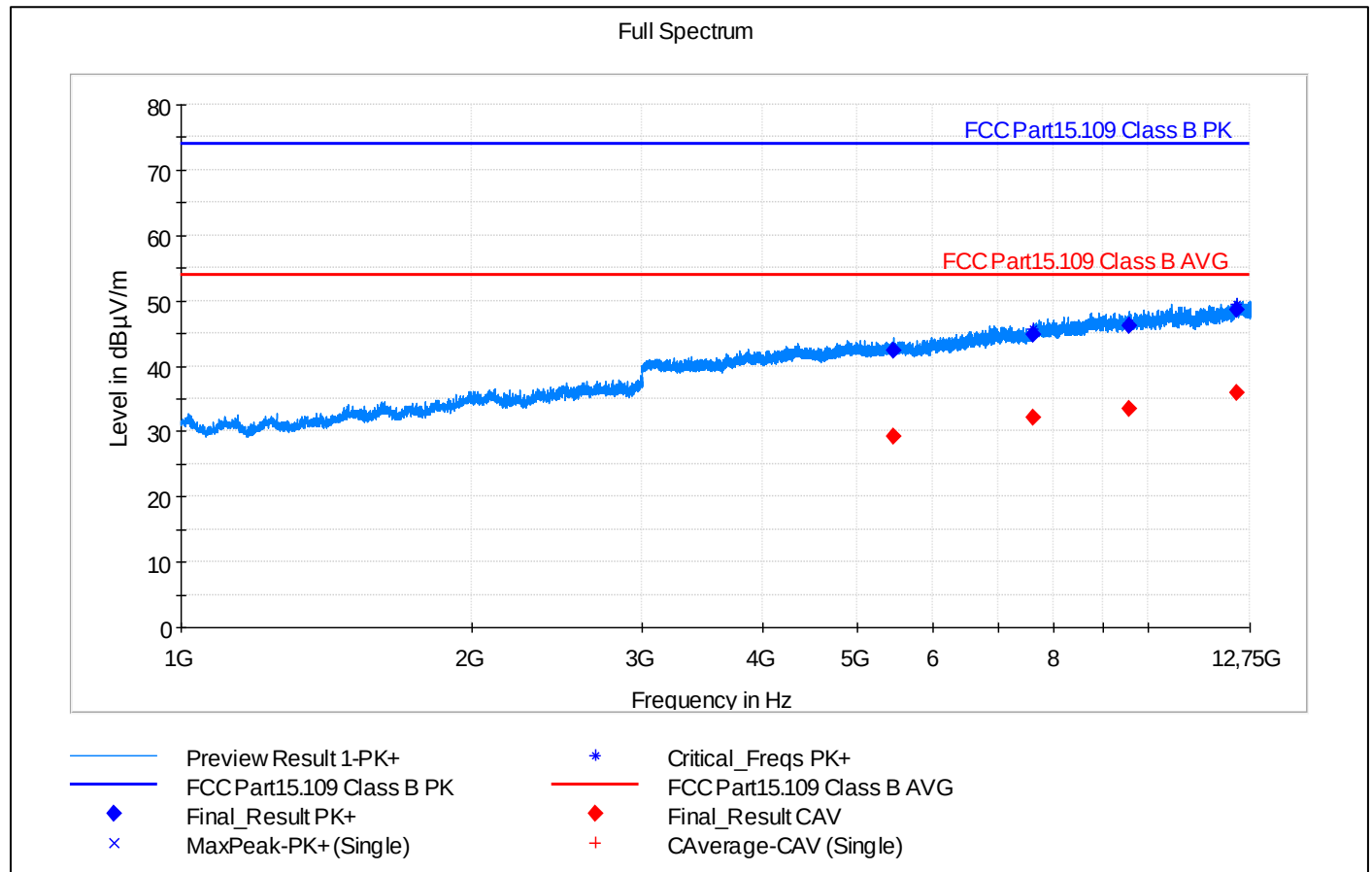
Mid channel, 30 MHz – 1 GHz



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
30.780000	11.62	40.00	28.38	15000.0	120.000	134.0	V	329.0	0.0	17.1	PASS
48.690000	18.00	40.00	22.00	15000.0	120.000	98.0	V	229.0	0.0	21.1	PASS
112.500000	10.30	43.50	33.20	15000.0	120.000	106.0	V	248.0	0.0	18.9	PASS
168.720000	8.75	43.50	34.75	15000.0	120.000	100.0	V	95.0	0.0	17.1	PASS
173.460000	8.77	43.50	34.73	15000.0	120.000	102.0	V	98.0	0.0	17.3	PASS
208.770000	10.90	43.50	32.60	15000.0	120.000	118.0	V	306.0	0.0	19.5	PASS

Mid channel, 1 GHz – 12,75 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
5456.500	42.32	---	74.00	31.68	500	1000.000	100.0	H	139	11.1	PASS
5456.500	---	29.23	54.00	24.77	500	1000.000	100.0	H	139	11.1	PASS
7622.250	---	32.04	54.00	21.96	500	1000.000	203.0	H	256	16.7	PASS
7622.250	44.73	---	74.00	29.27	500	1000.000	203.0	H	256	16.7	PASS
9580.500	46.22	---	74.00	27.78	500	1000.000	249.0	V	311	19.6	PASS
9580.500	---	33.45	54.00	20.55	500	1000.000	249.0	V	311	19.6	PASS
12348.750	---	35.82	54.00	18.18	500	1000.000	248.0	H	241	24.2	PASS
12348.750	48.62	---	74.00	25.38	500	1000.000	248.0	H	241	24.2	PASS