RF Test Report

2.4 GHz WLAN 802.11b/g/n/ax

Report No.	:	FCCBVCO-WAY-P21121009R1
Customer	:	Samsung Electronics Co., Ltd.
Address	:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
Use of Report	:	Certification
Model Name	:	NP950QED
FCC ID	:	A3LAX211D950QED
IC ID	:	649E-AX211950QED
Date of Test	:	2021.11.25 to 2021.12.07
Test Method Used	:	FCC 47 CFR PART 15 Subpart C (Section §15.247) ISED RSS-247
Testing Environment	:	Refer to the Test Condition

Test Result : ☒ **Pass** ☐ **Fail**

ISSUED BY: BV CPS ADT Korea Ltd., EMC/RF Laboratory

ADDRESS: Innoplex No.2 106, Sinwon-ro 306, Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea 16675

TEST LOCATION: HeungAn-daero 49, DongAn-gu, Anyang-si, Gyeonggi-do, Korea, 14119

Tested by

Name : Donghwa Shin (Signature)

Technical Manager

Name : Jongha Choi (Signature)

2021. 12. 24

BV CPS ADT Korea Ltd.

RELEASE CONTROL RECORD

REPORT NO.	REASON FOR CHANGE	DATE ISSUED
FCCBVCO-WAY-P21121009	Original release	2021.12.20
FCCBVCO-WAY-P21121009R1	Add modulation information	2021.12.24

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1 Summary of Test Results

The EUT has been tested according to the following specifications

Applied Standard : FCC Part 15, Subpart C 15.247, RSS-247					
FCC Part Section(s)	**RSS Section(s)**	**Test Description**	**Limit**	**Test Result**	**Reference**
15.205 15.407(b)(1), (4), (5), (6)	RSS-Gen [8.9],[8.10]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209 (RSS-Gen [8.9])	PASS	Section 3.2

NOTES

1) The general test methods used to test on this devices are ANSI C63.10.

2) Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

3) According to exploratory test no any obvious emission were detected from 9 ㎑ to 30 ㎒.
Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30 m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

1.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2

Measurement Items	Frequency Range	Expanded Uncertainty U = *k*Uc (*k* = 2)
Conducted Emissions at main ports	150 kHz – 30 MHz	2.99
Radiated Spurious Emissions	9 kHz – 30 MHz	1.92
	30 MHz – 1 GHz	4.00
	1 GHz – 18 GHz	5.68
	18 GHz – 40 GHz	5.24

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k = 2.

2 General Information

2.1 General Description of EUT

Product	Laptop
Brand	Samsung Electronics. Co., Ltd.
Model	NP950QED
Identification No. of EUT	1KJG912R900031L
Series Model	-
Model Difference	-
Power Supply	Battery: DC 15.44 V / Adaptor: DC 20 V(Output), AC 100 ~ 240 V(Input)
Modulation Type	DSSS, OFDM, OFDMA
Transfer Rate	1, 2, 5.5, 11 Mbps (802.11b) 6, 9, 12, 18, 24, 36, 48, 54 Mbps (802.11g) MCS0 to MCS15 (802.11n) MCS0 to MCS11 (802.11ax)
Operating Frequency	2 412 to 2 472 MHz (20 MHz BW) 2 422 to 2 462 MHz (40 MHz BW)
Antenna Type	FPCB
Antenna Connector	U.FL Connector
H/W Version	PV1
S/W Version	N/A

NOTES

1) The above equipment has been tested by **Bureau Veritas Consumer Products Services ADT Korea**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Frequency Range	Test Mode	WLAN ANT1 (Main)	WLAN ANT2 (Aux)
2.4 GHz DTS Band (2 400 to 2 483.5 MHz)	802.11b_SISO	TX/RX	TX/RX
	802.11g_SISO	TX/RX	TX/RX
	802.11n(HT20)_SISO	TX/RX	TX/RX
	802.11n(HT40)_SISO	TX/RX	TX/RX
	802.11ax(HE20)_SISO	TX/RX	TX/RX
	802.11ax(HE40)_SISO	TX/RX	TX/RX
	802.11n(HT20)_MIMO	TX/RX	TX/RX
	802.11n(HT40)_MIMO	TX/RX	TX/RX
	802.11ax(HE20)_MIMO	TX/RX	TX/RX
	802.11ax(HE40)_MIMO	TX/RX	TX/RX

2) The following antennas were provided to the EUT

Antenna	Type	Manufacturer	Frequency	Peak Gain(dBi)
Ant B (Main)	PIFA	Galtronics	2400 - 2500 MHz	0.47
			5150 - 5250 MHz	2.52
			5250 - 5350 MHz	3.08
			5470 - 5725 MHz	3.94
			5725 - 5850 MHz	3.35
			5925 - 6425 MHz	4.81
			6425 - 6525 MHz	3.79
			6525 - 6875 MHz	4.98
			6875 - 7125 MHz	4.99
Ant A (Aux)	PIFA	Galtronics	2400 - 2500 MHz	-3.01
			5150 - 5250 MHz	-0.23
			5250 - 5350 MHz	0.57
			5470 - 5725 MHz	0.77
			5725 - 5850 MHz	-0.15
			5925 - 6425 MHz	1.52
			6425 - 6525 MHz	-1.24
			6525 - 6875 MHz	-1.23
			6875 - 7125 MHz	-0.99

3) **List of Accessories**

Accessories	Brand	Model	Manufacturer	Specification
Adapter	Samsung Electronics. Co., Ltd.	EP-TA865 R01	Samsung Electronics. Co., Ltd.	Input : AC 100 ~ 240 V 50 ~ 60 Hz Output : DC 5 ~ 20 V

2.2 Description of Test Mode

[Test Channel of EUT]

- 2.4 GHz DTS 802.11b/g/n/ax (20/40 MHz BW)

Channel	Frequency [MHz]	Band Edge	Harmonic
1	2 412	Worst case from 802.11g/n(HT20)/ax(HE20)	-
2	2 417	-	-
3	2 422	Worst case from 802.11n(HT40)/ax(HE40)	-
4	2 427	-	-
5	2 432	-	-
6	2 437	-	Applies to 802.11b only
7	2 442	-	-
8	2 447	-	-
9	2 452	Worst case from 802.11n(HT40)/ax(HE40)	-
10	2 457	-	-
11	2 462	Worst case from 802.11g/n(HT20)/ax(HE20)	-
12	2 467	Worst case from 802.11g/n(HT20)/ax(HE20)	-
13	2 472	Worst case from 802.11g/n(HT20)/ax(HE20)	-

NOTES

1) Channel 12/13 should be tested if Channel 12/13 are used in US SKU shipping.

2) Band Edge/Harmonic has 2 dB margin of minimum.

3) For 802.11ax SU/RU highest output power was tested.

Test Condition

Applicable to	Environmental Conditions	Test Voltage	Tested by
RE < 1G	(22 ± 2) °C, (50 ± 3 %) R.H.	AC 120 V, 60 Hz	Donghwa Shin
RE ≥ 1G	(22 ± 2) °C, (50 ± 3 %) R.H.	AC 120 V, 60 Hz	Donghwa Shin

2.2.1 Test Mode Applicability

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available XYZ axis, antenna port and EUT mode.
The worst case was found as listed below:

EUT Configure mode	Applicable to			Description
	Ant A	Ant B	MIMO	
Note book	-	Z axis	-	-
Tablet	X axis	-	Z axis	-

2.3 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards.

FCC CFR 47 Part 15, Subpart C (§15.247)
KDB 558074 D01 15.247 Meas Guidance v05r02
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013
RSS-247 Issue 2
RSS-Gen Issue 5

All test items in this test report have been performed and recorded as per the above standards.

2.4 Test Equipment

Test Equipment is traceable to the National Institute of Standards and Technology (NIST). Measurement antenna used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Equipment	Model	Serial Number	Manufacturer	Description	Cal Date	Cal Due
Loop Antenna	HFH2-Z2E	349806	R&S	Active Loop Antenna, 30 MHz	2021-02-18	2023-02-18
Bi-log Antenna	VULB 9163	1099	Schwarzbeck	Trilog Antenna, 3 GHz (with 6 dB ATT.)	2021-09-03	2023-09-03
Horn Antenna	HF907	102773	R&S	Horn Antenna, 18 GHz	2021-12-09	2022-12-09
Horn Antenna	BBHA9170	00955	Schwarzbeck	15 - 40 GHz, 10 W (cont.) 25 W (peak)	2021-12-13	2022-12-13
Amplifier	SCU08F2	8400016	R&S	Signal Conditioning Unit, 8 GHz	2021-11-23	2022-11-23
Amplifier	SCU08F2	8400017	R&S	Signal Conditioning Unit, 8 GHz	2021-11-23	2022-11-23
Amplifier	SCU-18F	180111	R&S	Signal Conditioning Unit, 18 GHz	2021-11-23	2022-11-23
Amplifier	JS44-18004000-33-8P	2142086	L3 Narda-MITEQ	Amplifier, 40 GHz	2021-11-29	2022-11-29
Signal analyzer	FSW50	101403	R&S	DC Coupled : 2 Hz to 50 GHz AC Coupled : 10 MHz to 50 GHz	2021-11-22	2022-11-22
Attenuator	PE7087-10	1712-2	Pasternack	10 dB Atten / 2 W / DC to 26 GHz	2021-06-04	2022-06-04
High Pass Filter	HPM17543	028	Micro-Tronics	3 GHz High Pass Filter	2021-06-04	2022-06-04
High Pass Filter	HPS17542	027	Micro-Tronics	6 GHz High Pass Filter	2021-06-04	2022-06-04
High Pass Filter	HPM50107-02	G010	Micro-Tronics	8 GHz High Pass Filter	2021-06-28	2022-06-28
EMI Receiver	ESR	102529	R&S	DC ~ 7 GHz	2021-11-23	2022-11-23
EMI Test Receiver	ESW8	101170	R&S	2 Hz - 8 GHz	2021-11-24	2022-11-24
EMI Test Receiver	ESW44	101812	R&S	2 Hz - 44 GHz	2021-11-25	2022-11-25
MXG Vecter Signal Generator	N5182B	MY59100574	Keysight	9 kHz ~ 6 GHz	2021-12-02	2022-12-02
Frequency Extender	N5182BX07	MY59360139	Keysight	9 kHz ~ 7.2 GHz	2021-12-02	2022-12-02
Signal Generator	SMB100A	MY41006053	R&S	100 kHz ~ 40 GHz	2021-06-04	2022-06-04

3 Test Results

3.1 Antenna Requirement

Except from §15.203 of the FCC Rules/Regulations:

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of the section.

- The antenna(s) of the EUT are Permanently attached.
- There are no provisions for connection to an external antenna.

Result

The EUT complies with the requirement of §15.203

3.2 Spurious Emission, Band edge and Restricted Bands

3.2.1 Regulation

§15.247(d) : In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

§15.209(a) : Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permItted under other sections of this part, e.g., §§15.231 and 15.241.

§15.205(a) : Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below and RSS-Gen 8.10 Table 7 :

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2]Above 38.6

§15.205 (b) : Except as provided in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

3.2.2 Test Procedure

Band-edge Compliance for RF Conducted Emissions

These procedures are applicable for determining compliance at authorized-band band-edges where the requirements are expressed as a value relative to the in-band signal level. Procedures for determining compliance with field strength limits at or close to the band-edges are given in 6.10.6 (see also Table A.2).

Band-edge tests are typically performed as a conducted test but may be performed as radiated measurements on a test site meeting the specifications in 5.2, at the measurement distances specified in 5.3. The instrumentation shall meet the requirements in 4.1.1 using the bandwidths and detectors specified in 4.1.4.2.

When performing radiated measurements, the measurement antenna(s) shall meet the specifications in 4.3. The EUT shall be connected to an antenna and operated at the highest power settings following procedures in 6.3.

For other than frequency-hopping devices, this test sequence shall be performed once. For devices that support frequency hopping, this test sequence shall be performed twice: once with the hopping function turned OFF and then repeated with the hopping function turned ON. The purpose of the test with the hopping function turned on is to confirm that the RF power remains OFF while the device is changing frequencies, and that the oscillator stabilizes at the new frequency before RF power is turned back ON. Overshoot of any oscillator, including phase-lock-loop stabilized oscillators, can cause the device to be temporarily tuned to frequencies outside the authorized band, and it is important that no transmissions occur during such temporary periods. Particular attention to the hopping sequence requirements specified below is needed in the case of adaptive frequency-hopping devices:

a) Connect the EMI receiver or spectrum analyzer to the EUT using an appropriate RF cable connected to the EUT output. Configure the spectrum analyzer settings as described in step e) (be sure to enter all losses between the unlicensed wireless device output and the spectrum analyzer).

b) Set the EUT to the lowest frequency channel (for the hopping on test, the hopping sequence shall include the lowest frequency channel).

c) Set the EUT to operate at maximum output power and 100% duty cycle, or equivalent “normalmode of operation” as specified in 6.10.3.

d) If using the radiated method, then use the applicable procedure(s) of 6.4, 6.5, or 6.6, and orient the EUT and measurement antenna positions to produce the highest emission level.

e) Perform the test as follows:

   1) Span: Wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products that fall outside of the authorized band of operation.

   2) Reference level: As required to keep the signal from exceeding the maximum instrument input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

   3) Attenuation: Auto (at least 10 dB preferred).

   4) Sweep time: Coupled.

   5) Resolution bandwidth: 100 kHz.

   6) Video bandwidth: 300 kHz.

   7) Detector: Peak.

   8) Trace: Max hold.

f) Allow the trace to stabilize. For the test with the hopping function turned ON, this can takeseveral minutes to achieve a reasonable probability of intercepting any emissions due to oscillator overshoot.

g) Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge. Enable the marker-delta function, and then use the marker-to-peak function to move the marker to the peak of the in-band emission.

h) Repeat step c) through step e) for every applicable modulation.

i) Set the EUT to the highest frequency channel (for the hopping on test, the hopping sequence shall include the highest frequency channel) and repeat step c) through step d).

j) The band-edge measurement shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

Spurious RF Conducted Emissions

Conducted spurious emissions shall be measured for the transmit frequency, per 5.5 and 5.6, and at the maximum transmit powers.

Connect the primary antenna port through an attenuator to the spectrum analyzer input; in the results,account for all losses between the unlicensed wireless device output and the spectrum analyzer. The instrument shall span 30 MHz to 10 times the operating frequency in GHz, with a resolution bandwidth of 100 kHz, video bandwidth of 300 kHz, and a coupled sweep time with a peak detector. The band 30 MHz to the highest frequency may be split into smaller spans, as long as the entire spectrum is covered.

Spurious Radiated Emissions

1. The preliminary radiated measurement were performed to determine the frequency producing the maximum emissions in an semi-anechoic chamber at a distance of 3 meters.

2. The EUT was placed on the top of the 0.8-meter height, 1 x 1.5 meter non-metallic table. To find the maximum emission levels, the height of a measuring antenna was changed and the turntable was rotated 360^{o}.

3. The antenna polarization was also changed from vertical to horizontal. The spectrum was scanned from 9 kHz to 30 MHz using the loop antenna, and from 30 to 1000 MHz using the Bi-Log antenna, and from 1000 MHz to 26500 MHz using the horn antenna.

4. To obtain the final measurement data, the EUT was arranged on a turntable situated on a 4 x 4 meter in an semi-anechoic chamber. The EUT was tested at a distance 3 meters.

5. Each frequency found during preliminary measurements was re-examined and investigated. The test-receiver system was set up to average, peak, and quasi-peak detector fuction with specified bandwidth.

6. The 0.8 m height is for below 1 GHz testing, and 1.5 m is for above 1GHz testing.

- Procedure for unwanted emissions measurements below 1 000 MHz

The procedure for unwanted emissions measurements below 1 000 MHz is as follows:

a) Follow the requirements in 12.7.4.

b) Compliance shall be determined using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.

- Procedure for peak unwanted emissions measurements above 1 000 MHz

The procedure for peak unwanted emissions measurements above 1 000 MHz is as follows:

a) Follow the requirements in 12.7.4.

b) Peak emission levels are measured by setting the instrument as follows:

1) RBW = 1 MHz.

2) VBW ≥ [3 × RBW].

3) Detector = peak.

4) Sweep time = auto.

5) Trace mode = max hold.

6) Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not ontinuous, then the time required for the trace to stabilize will increase by a factor of pproximately 1 / D, where D is the duty cycle. For example, at 50 % duty cycle, the easurement time will increase by a factor of two, relative to measurement time for ontinuous transmission.

- Procedure for average unwanted emissions measurements above 1 000 MHz

Method VB-A is averaging using reduced video bandwidth. The procedure for this method is as follows:

a) RBW = 1 MHz.

b) Video bandwidth:

1) If the EUT is configured to transmit with D ≥ 98 %, then set VBW ≤ RBW / 100 (i.e., 10 kHz), but not less than 10 Hz.

2) If the EUT D is < 98%, then set VBW ≥ 1 / T, where T is defined in item a1) of 12.2.

c) Video bandwidth mode or display mode:

1) The instrument shall be set with video filtering applied in the power domain. Typically, this requires setting the detector mode to RMS (power averaging) and setting the average-VBW type to power (rms).

2) As an alternative, the instrument may be set to linear detector mode. Video filtering shall be applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode to accomplish this. Others have a setting for average-VBW type, which can be set to "voltage" regardless of the display mode.

d) Detector = peak.

e) Sweep time = auto.

f) Trace mode = max hold.

g) Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 % duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of 1/x, where D is the duty cycle. For example, use at least 200 traces if the duty cycle is 25 %. (If a specific emission is demonstrated to be continuous—i.e., 100 % duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 50 traces should be averaged.)

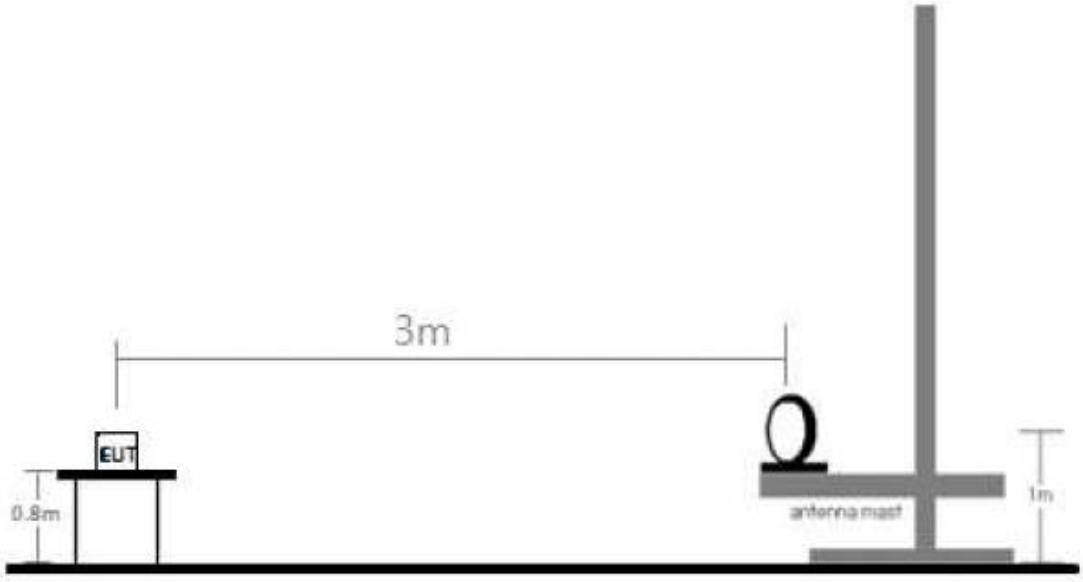
- Sample Calculation

- Field Strength Level [dBµV/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m] + Duty Cycle Correction [dB]
- AFCL [dB/m] = Antenna Factor [dB/m] + Cable loss [dB]
- Margin [dB] = Field Strength Level [dBµV/m] – Limit [dBµV/m]

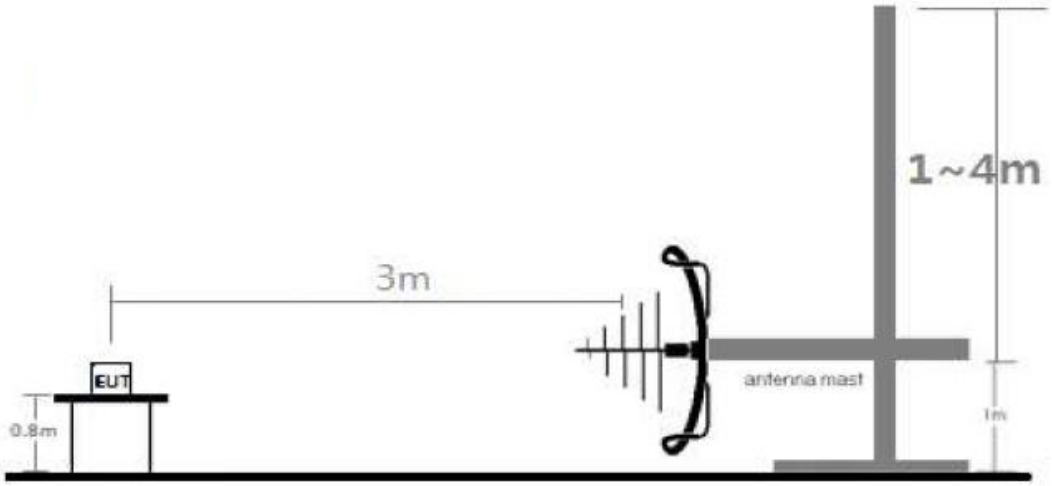
3.2.3 Deviation from Test Standard

No deviation.

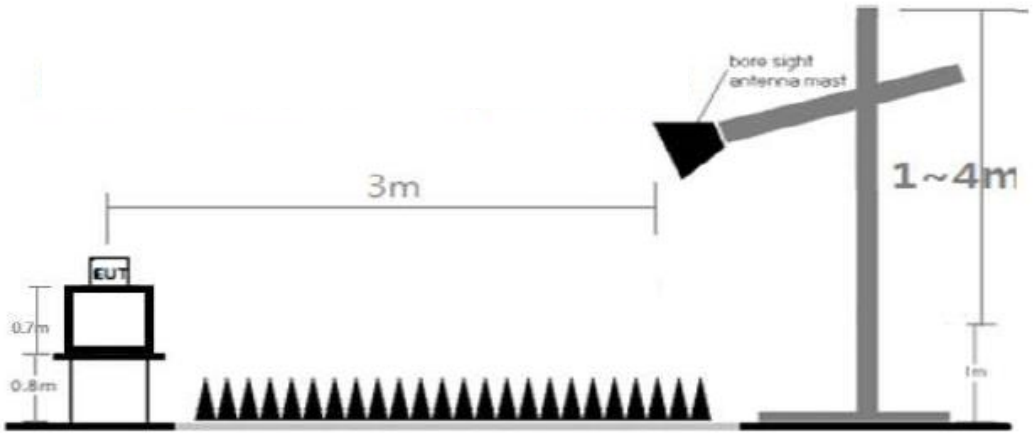
3.2.4 Test Setup

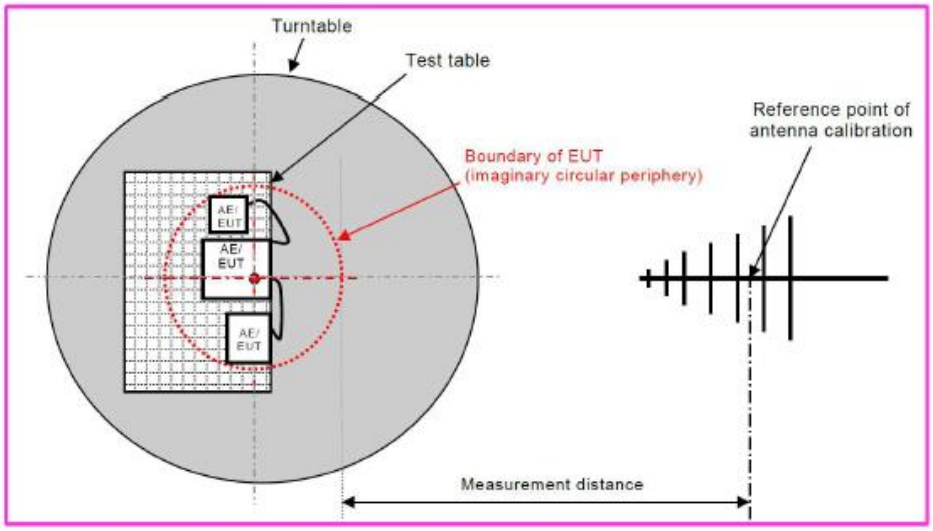


[Radiated Emission Test Setup Below 30 MHz]



[Radiated Emission Test Setup Below 1 GHz]





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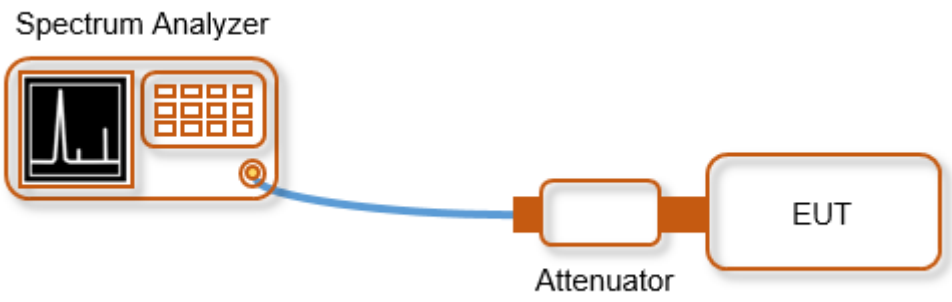
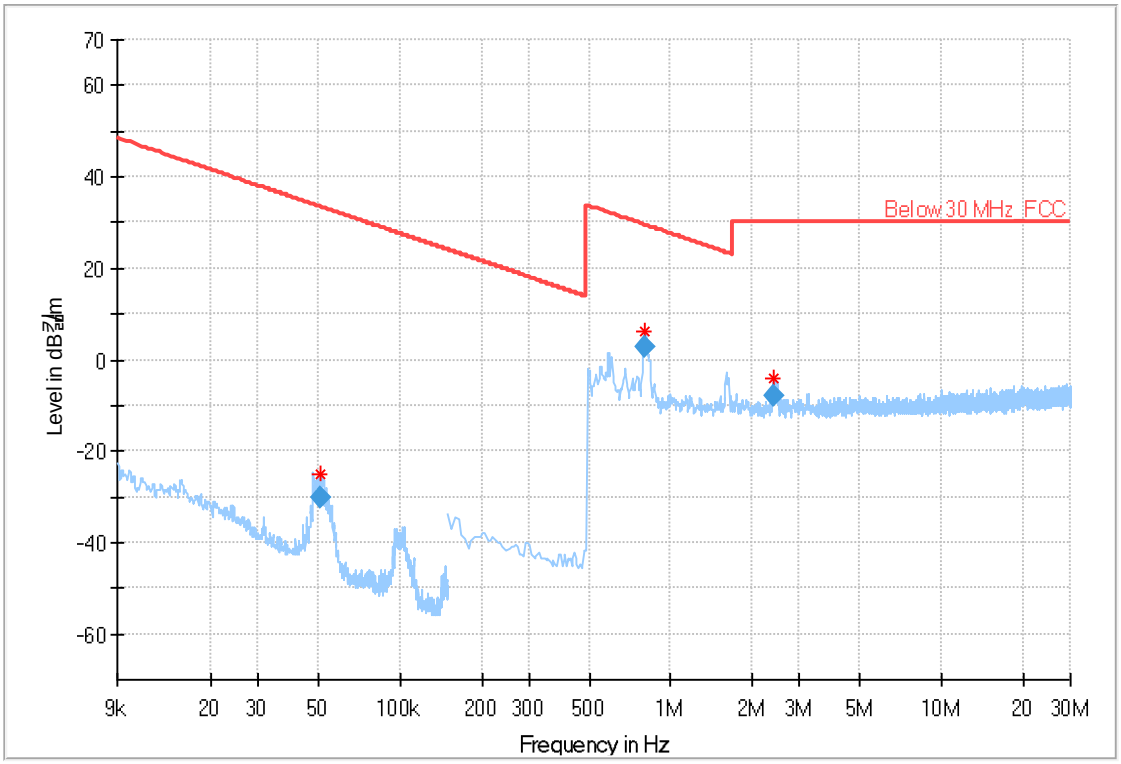


[Conducted Spurious Emission]

3.2.5 Test Result

3.2.5.1 Radiated Spurious Emission (Below 30 MHz)

RSE_2.4GHz_ANT A_802.11ax(20)_HE0(106T/53)_2412_Parallel



FCC

Frequency [MHz]	Peak Reading Value [dBuV]	Peak [dBuV/m]	Distance Correction Factor [dB]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Correction Factor [dB/m]
0.05	29.42	-29.98	-80.00	33.47	63.45	100.00	Parallel	19.00	-59.40
0.80	22.18	2.98	-40.00	29.56	26.58	100.00	Parallel	208.00	-19.20
2.39	11.10	-7.80	-40.00	30.00	37.80	100.00	Parallel	296.00	-18.90

IC

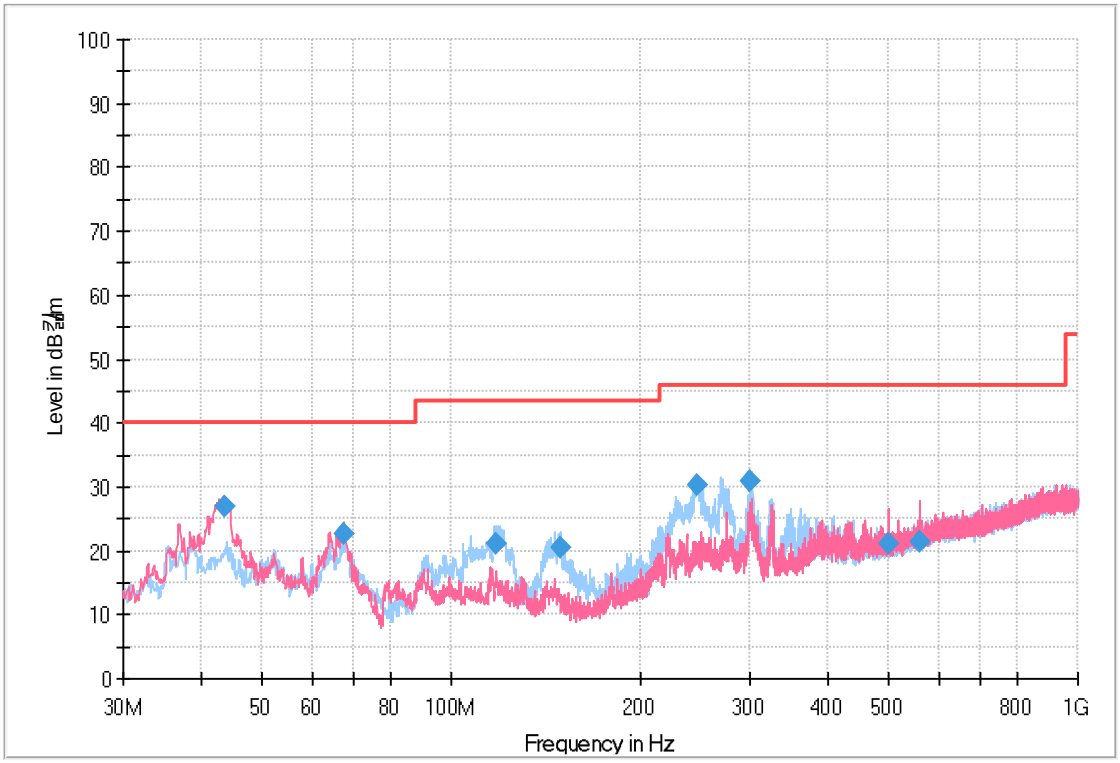
Frequency [MHz]	Peak Reading Value [dBuA]	Peak [dBuA/m]	Distance Correction Factor [dB]	Limit [dBuA/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Correction Factor [dB/m]
0.05	-22.08	-81.48	-80.00	-18.03	63.45	100.00	Parallel	19.00	-59.40
0.80	-29.32	-48.52	-40.00	-21.94	26.58	100.00	Parallel	208.00	-19.20
2.39	-40.40	-59.30	-40.00	-21.50	37.80	100.00	Parallel	296.00	-18.90

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBµV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
3. Margin(dB) = (Peak/AVG) Result (dBµV/m) – (Peak/AVG) Limit (dBµV/m)
4. dBuA/m = dBuV/m – 51.5 dB
5. We tested three kind of Antenna Pol (Parallel, Perpendicular, Ground parallel) and reported worst case antenna Pol.

3.2.5.2 Test Result of Radiated Spurious Emission (Below 1 GHz)

RSE_2.4GHz_802.11ax(20)_HE0(106T/53)_2412



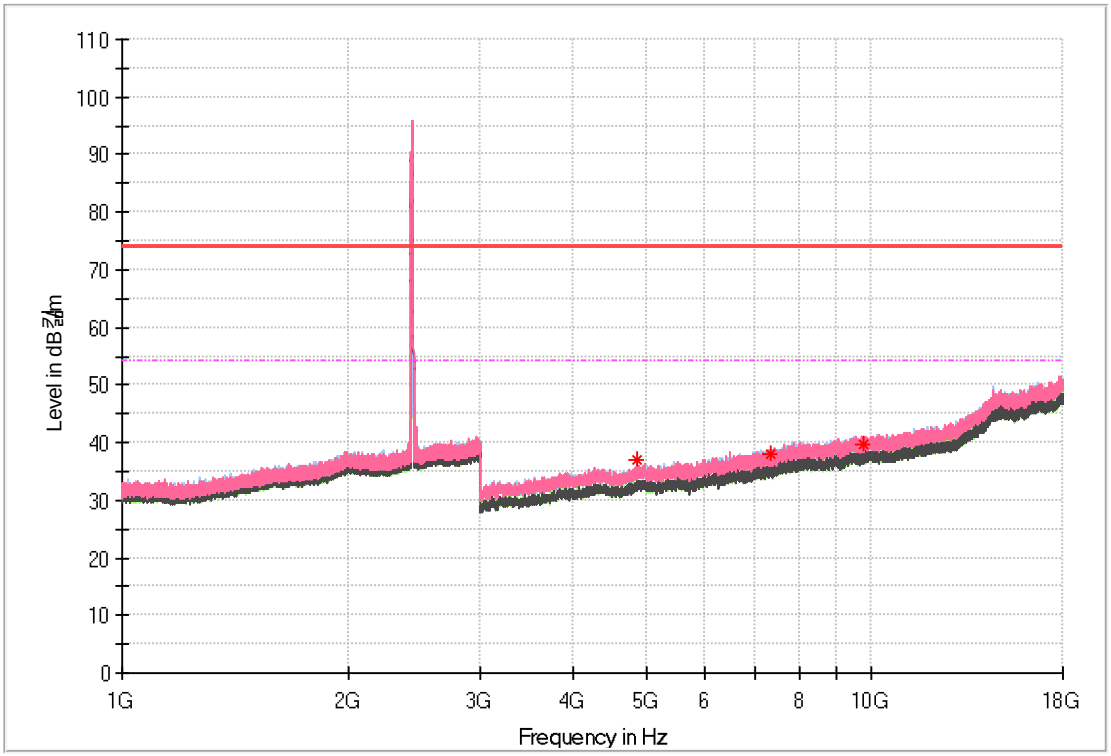
Frequency [MHz]	Quasi Reading Value [dBuV]	Quasi Peak [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Pol	Azimuth [deg]	Correction Factor [dB/m]
43.48	44.47	26.77	40.00	13.23	100	V	322	-17.70
67.44	44.47	22.57	40.00	17.43	100	V	176	-21.90
117.79	43.27	21.07	43.52	22.45	350	H	355	-22.20
149.12	44.42	20.52	43.52	23.00	223	H	199	-23.90
247.38	49.41	30.41	46.02	15.61	103	H	58	-19.00
300.53	48.97	30.87	46.02	15.15	100	H	54	-18.10
500.06	34.25	21.25	46.02	24.77	154	V	338	-13.00
561.08	32.78	21.28	46.02	24.74	100	V	165	-11.50

Remarks
1. Peak Result(dBuV/m) = Peak Reading Value(dBµV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
3. Margin(dB) = (Peak/AVG) Result (dBµV/m) – (Peak/AVG) Limit (dBµV/m)

3.2.5.3 Radiated Spurious Emission (Above 1 GHz)

RSE_2.4 GHz_ANT A_802.11b_1Mbps_2437

1 GHz - 18 GHz

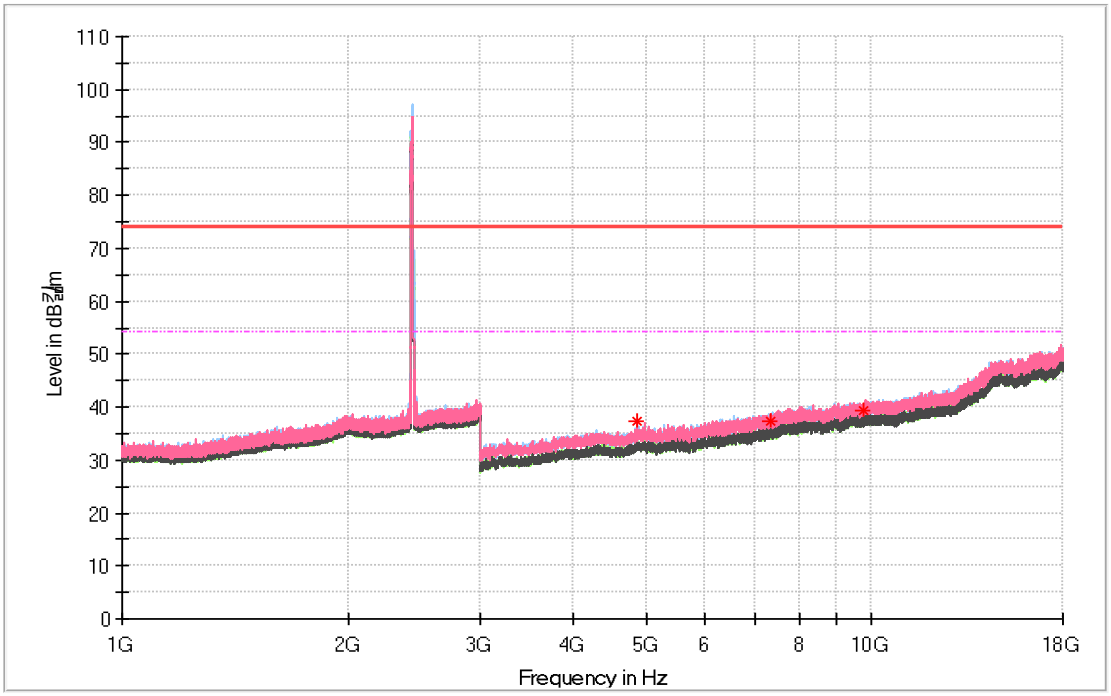


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
4 874.06	33.71	37.01	-	-	-	300	V	258	3.30	36.99	74.00	-	-
7 311.09	30.04	38.04	-	-	-	300	H	284	8.00	35.96	74.00	-	-
9 748.13	28.70	39.60	-	-	-	200	H	152	10.90	34.40	74.00	-	-

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
4. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

RSE_2.4 GHz_ANT B_802.11b_1Mbps_2437
1 GHz - 18 GHz



Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
4 874.06	34.17	37.47	-	-	-	300	V	184	3.30	36.53	74.00	-	-
7 311.09	29.51	37.51	-	-	-	200	H	110	8.00	36.49	74.00	-	-
9 748.13	28.32	39.22	-	-	-	300	V	152	10.90	34.78	74.00	-	-

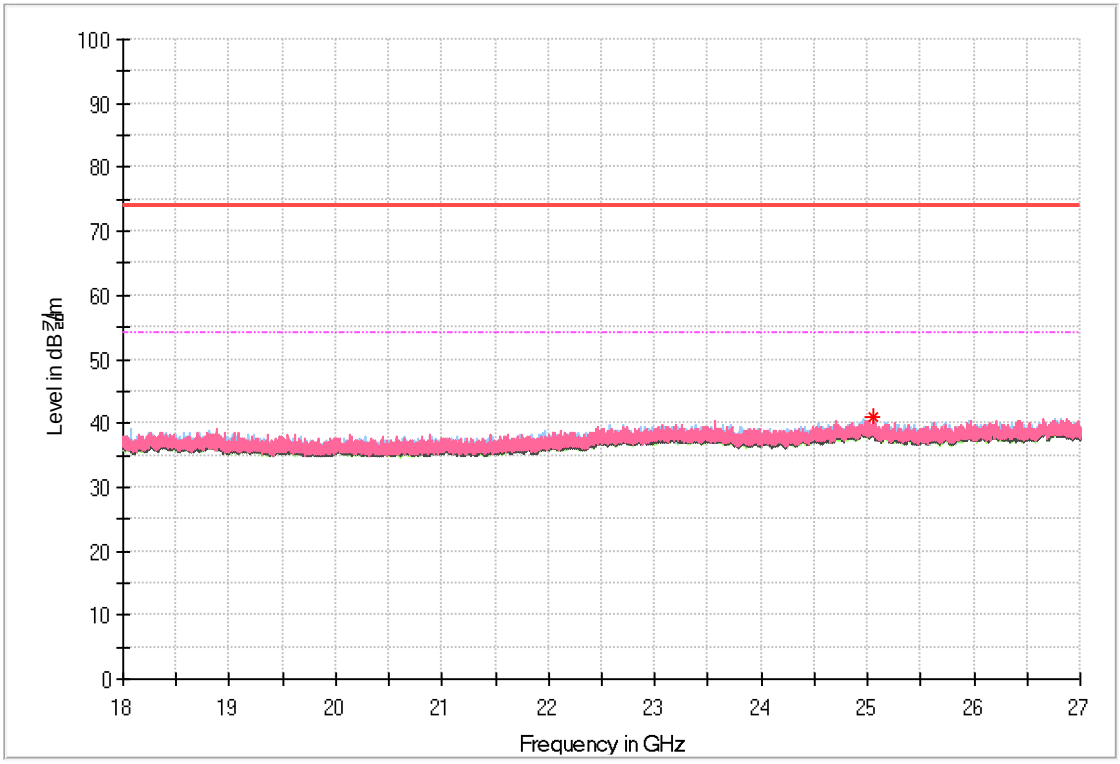
Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
4. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

3.2.5.4 Radiated Spurious Emission (Above 18 GHz)

RSE_2.4 GHz_802.11ax(20)_HE0(106T/53)_2412

18 GHz - 27 GHz



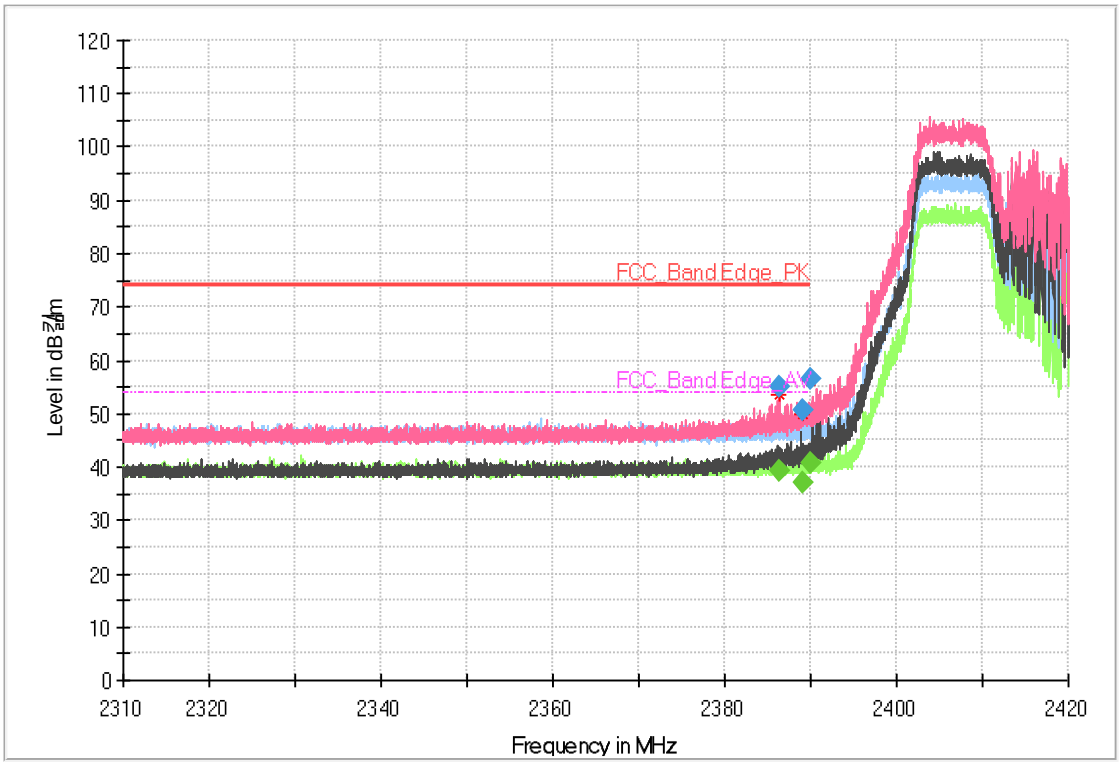
Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
25.053.19	39.20	41.00	-	-	-	300	H	2	1.80	33.00	74.00	-	-

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
4. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

3.2.5.5 Restricted Band Edge Measurements

Band Edge_2.4 GHz_ANT A_802.11ax(20)_HE0(106T/53)_2412

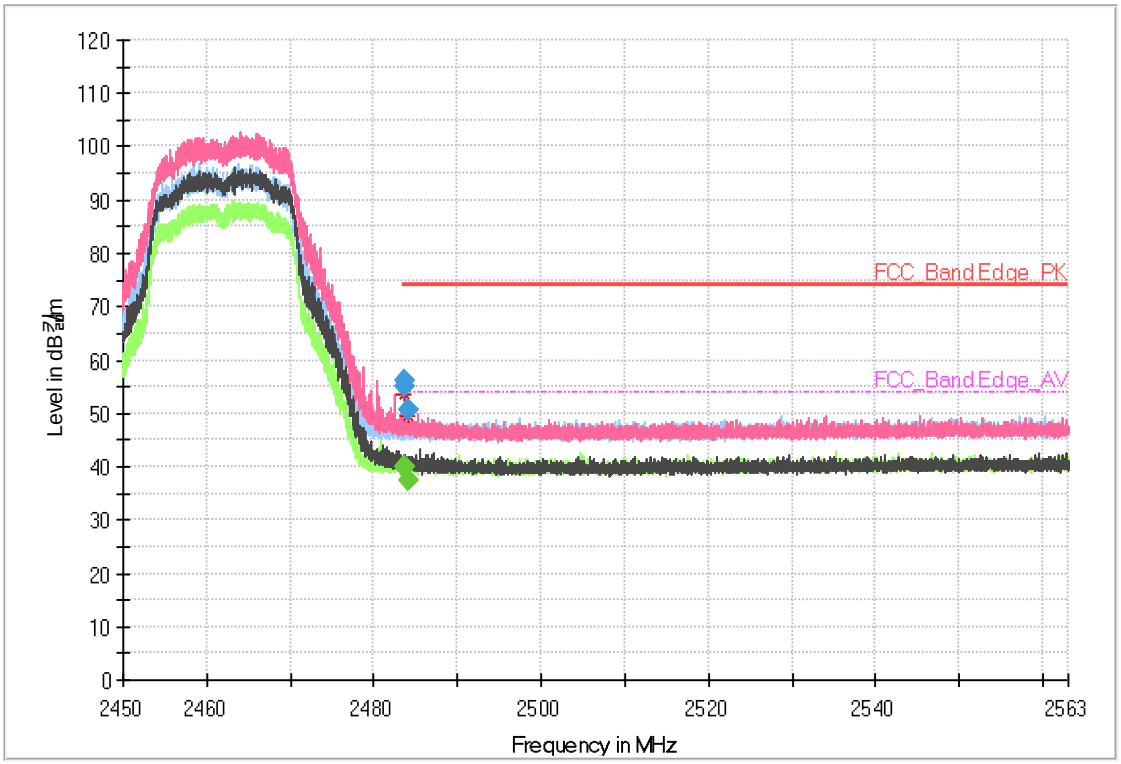


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 386.33	51.74	55.14	-	-	-	250	V	81	3.40	18.86	74.00	-	-
2 386.33	-	-	35.73	39.13	-	250	V	81	3.40	-	-	14.87	54.00
2 389.12	47.38	50.78	-	-	-	260	H	146	3.40	23.22	74.00	-	-
2 389.12	-	-	33.61	37.01	-	260	H	146	3.40	-	-	16.99	54.00
2 389.99	-	-	37.47	40.87	-	299	V	86	3.40	-	-	13.13	54.00
2 389.99	53.15	56.55	-	-	-	299	V	86	3.40	17.45	74.00	-	-

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
4. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_ANT A_802.11g_6Mbps_2462

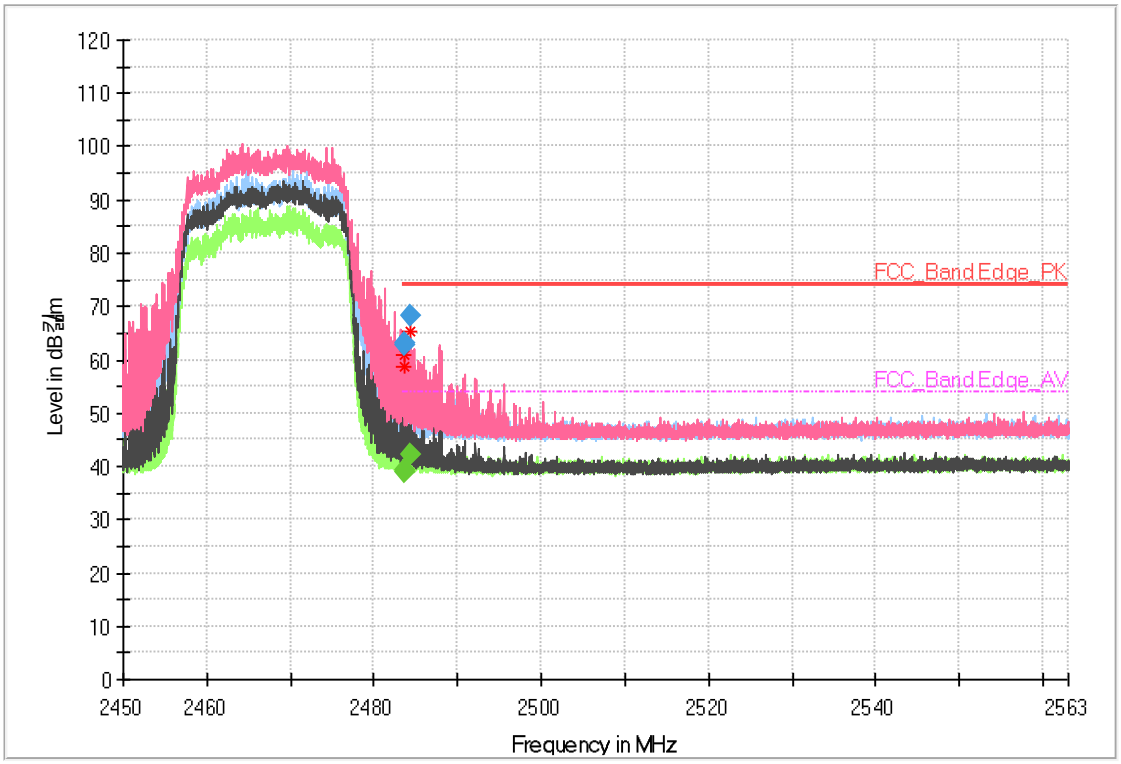


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 483.50	52.43	56.23	-	-	-	197	V	285	3.80	17.77	74.00	-	-
2 483.50	-	-	36.18	39.98	-	197	V	285	3.80	-	-	14.02	54.00
2 483.56	-	-	36.03	39.83	-	163	V	288	3.80	-	-	14.17	54.00
2 483.56	51.16	54.96	-	-	-	163	V	288	3.80	19.04	74.00	-	-
2 484.15	46.84	50.64	-	-	-	339	H	189	3.80	23.36	74.00	-	-
2 484.15	-	-	33.57	37.37	-	339	H	189	3.80	-	-	16.63	54.00

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_ANT A_802.11ax(20)_HE0_(Full)_2467

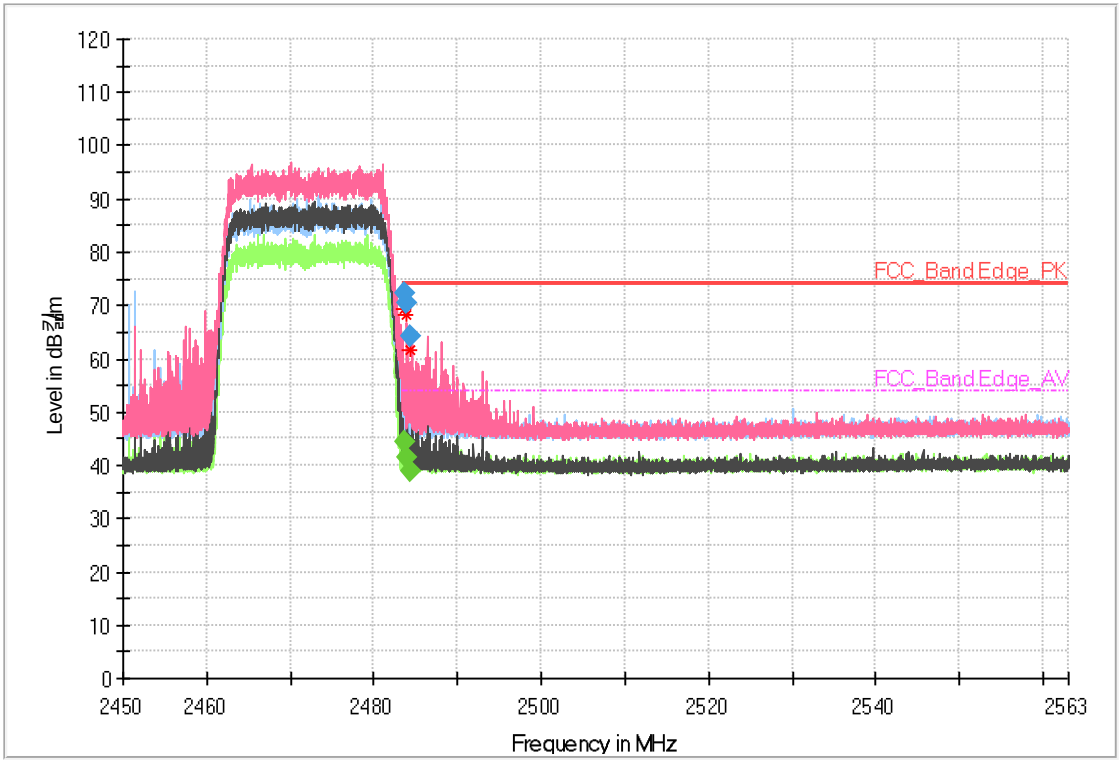


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 483.52	58.87	62.67	-	-	-	303	H	110	3.80	11.33	74.00	-	-
2 483.52	-	-	34.98	38.78	-	303	H	110	3.80	-	-	15.22	54.00
2 483.56	59.22	63.02	-	-	-	263	H	64	3.80	10.98	74.00	-	-
2 483.56	-	-	35.31	39.11	-	263	H	64	3.80	-	-	14.89	54.00
2 484.37	-	-	38.29	42.09	-	199	V	286	3.80	-	-	11.91	54.00
2 484.37	64.55	68.35	-	-	-	199	V	286	3.80	5.65	74.00	-	-

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_ANT A_802.11ax(20)_HE0_(Full)_2472

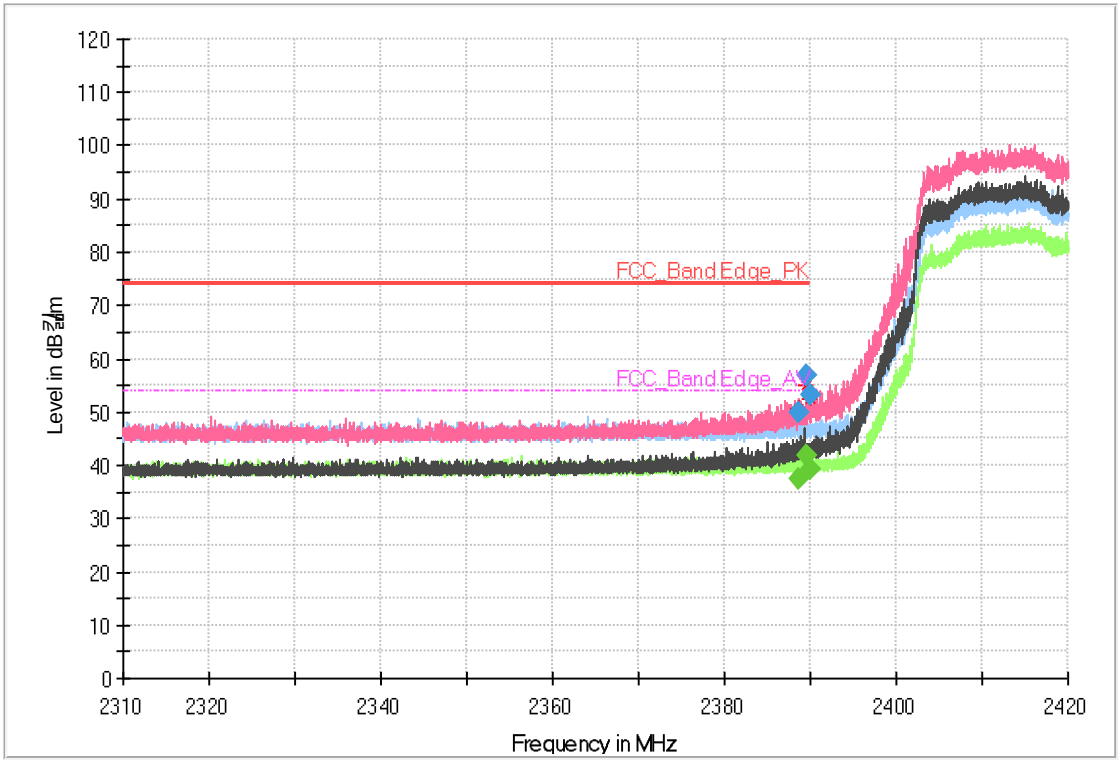


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 483.50	67.40	71.20	-	-	-	207	V	285	3.80	2.80	74.00	-	-
2 483.50	-	-	40.63	44.43	-	207	V	285	3.80	-	-	9.57	54.00
2 483.97	66.48	70.28	-	-	-	198	V	283	3.80	3.72	74.00	-	-
2 483.97	-	-	37.59	41.39	-	198	V	283	3.80	-	-	12.61	54.00
2 484.35	-	-	34.94	38.74	-	350	H	113	3.80	-	-	15.26	54.00
2 484.35	60.49	64.29	-	-	-	350	H	113	3.80	9.71	74.00	-	-

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_ANT A_802.11ax(40)_ HE0(242T/61)_2422

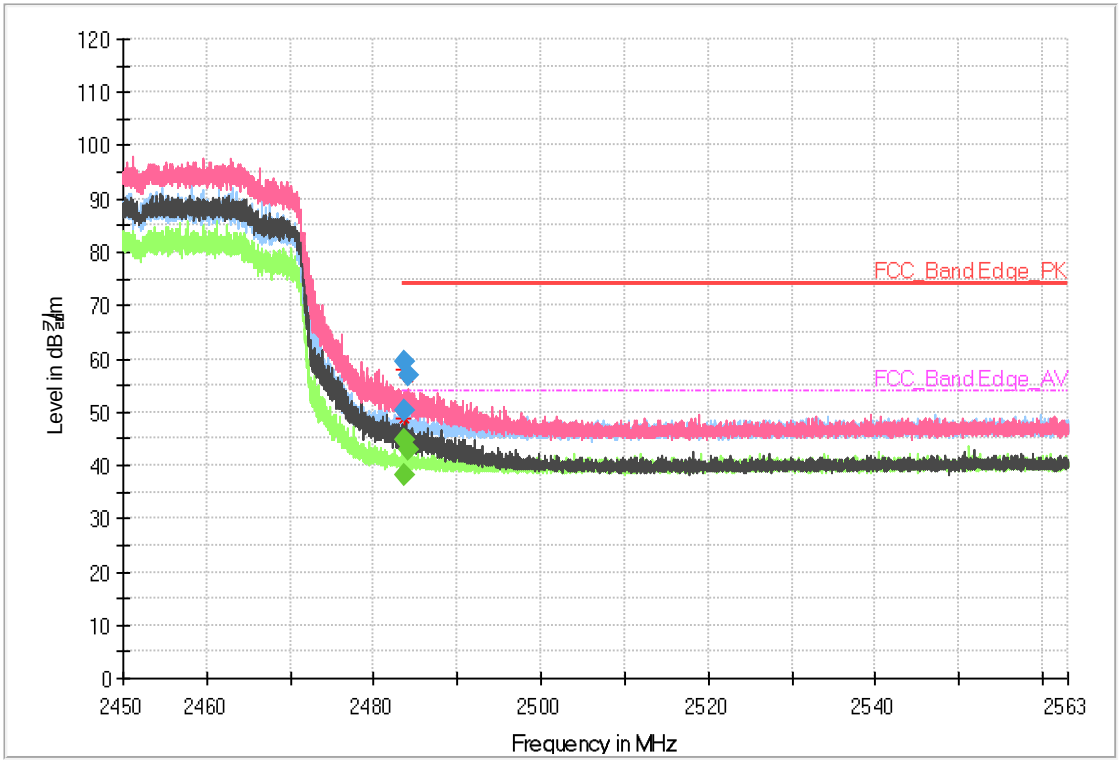


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 388.68	-	-	34.08	37.48	-	262	H	3	3.40	-	-	16.52	54.00
2 388.68	46.43	49.83	-	-	-	262	H	3	3.40	24.17	74.00	-	-
2 389.54	53.42	56.82	-	-	-	302	V	86	3.40	17.18	74.00	-	-
2 389.54	-	-	38.29	41.69	-	302	V	86	3.40	-	-	12.31	54.00
2 389.99	49.78	53.18	-	-	-	151	V	239	3.40	20.82	74.00	-	-
2 389.99	-	-	35.77	39.17	-	151	V	239	3.40	-	-	14.83	54.00

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_ANT A_802.11ax(40)_HE0(Full)_2452

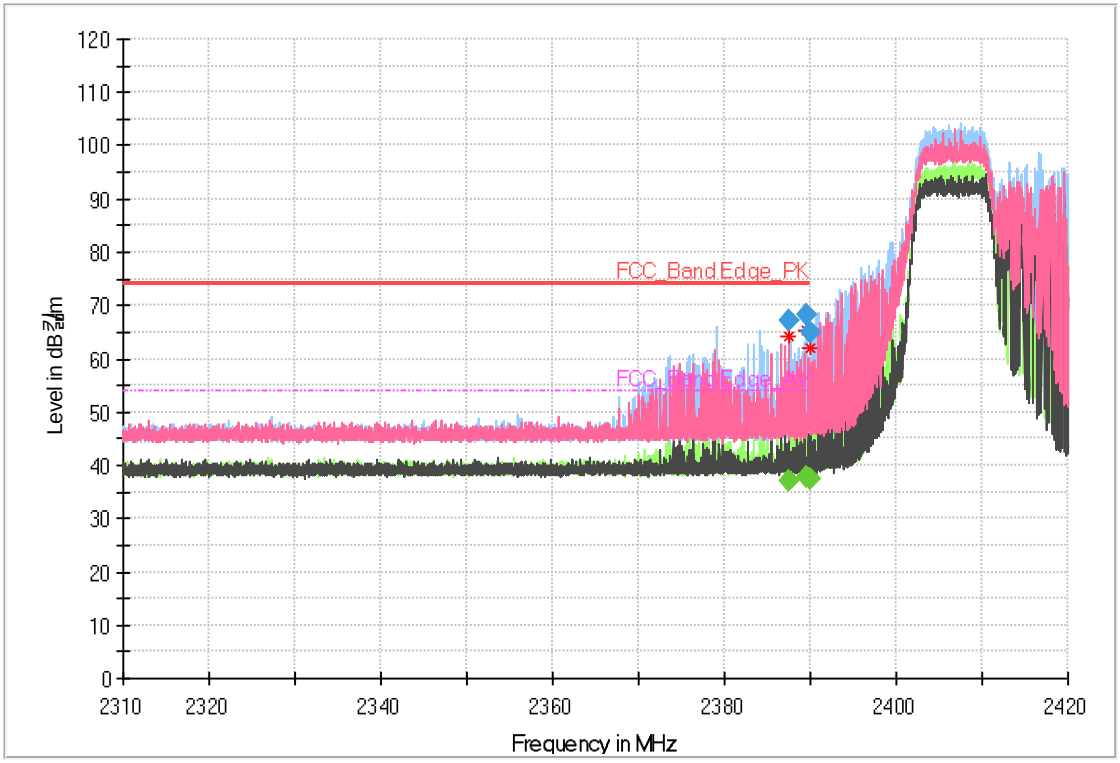


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 483.50	55.67	59.47	-	-	-	197	V	288	3.80	14.53	74.00	-	-
2 483.50	-	-	41.11	44.91	-	197	V	288	3.80	-	-	9.09	54.00
2 483.63	46.52	50.32	-	-	-	318	H	357	3.80	23.68	74.00	-	-
2 483.63	-	-	34.22	38.02	-	318	H	357	3.80	-	-	15.98	54.00
2 484.09	-	-	39.24	43.04	-	350	V	51	3.80	-	-	10.96	54.00
2 484.09	53.20	57.00	-	-	-	350	V	51	3.80	17.00	74.00	-	-

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_ANT B_802.11ax(20)_HE0(106T/53)_2412

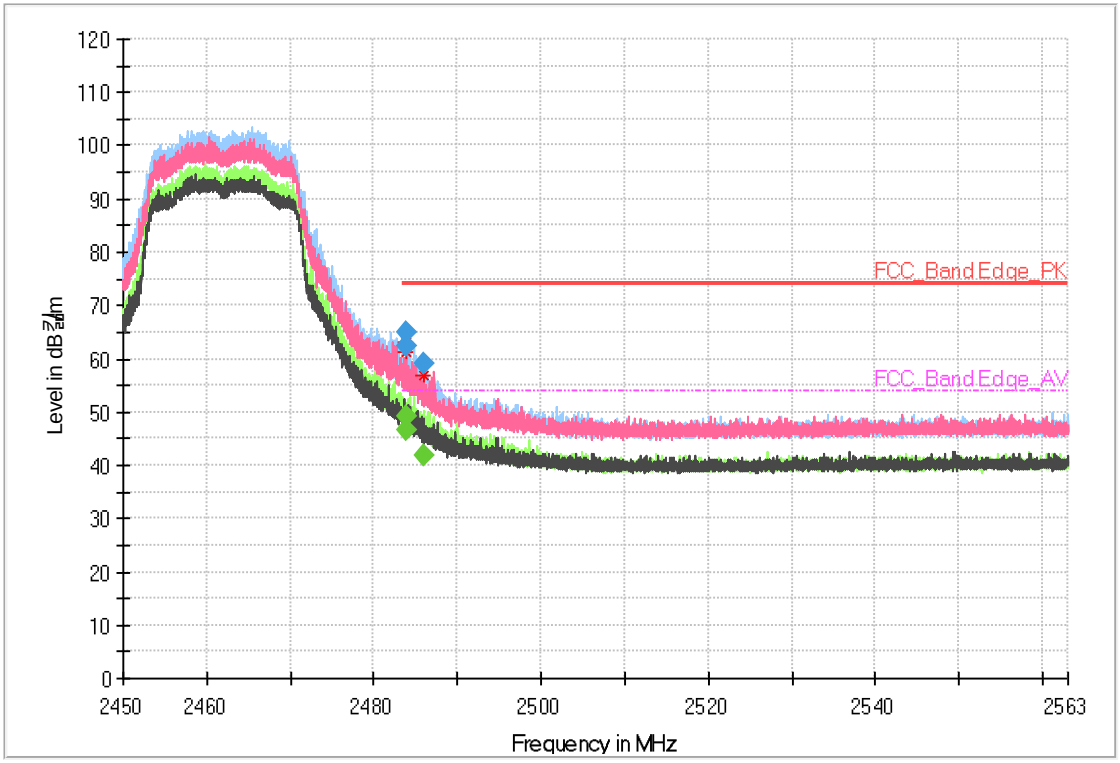


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 386.33	-	-	33.85	37.25	-	350	V	152	3.40	-	-	16.75	54.00
2 386.33	46.27	49.67	-	-	-	350	V	152	3.40	24.33	74.00	-	-
2 388.66	50.26	53.66	-	-	-	159	H	111	3.40	20.34	74.00	-	-
2 388.66	-	-	36.36	39.76	-	159	H	111	3.40	-	-	14.24	54.00
2 389.99	49.69	53.09	-	-	-	153	H	118	3.40	20.91	74.00	-	-
2 389.99	-	-	36.42	39.82	-	153	H	118	3.40	-	-	14.18	54.00

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_ ANT B_802.11n(HT20)_HT0_2462

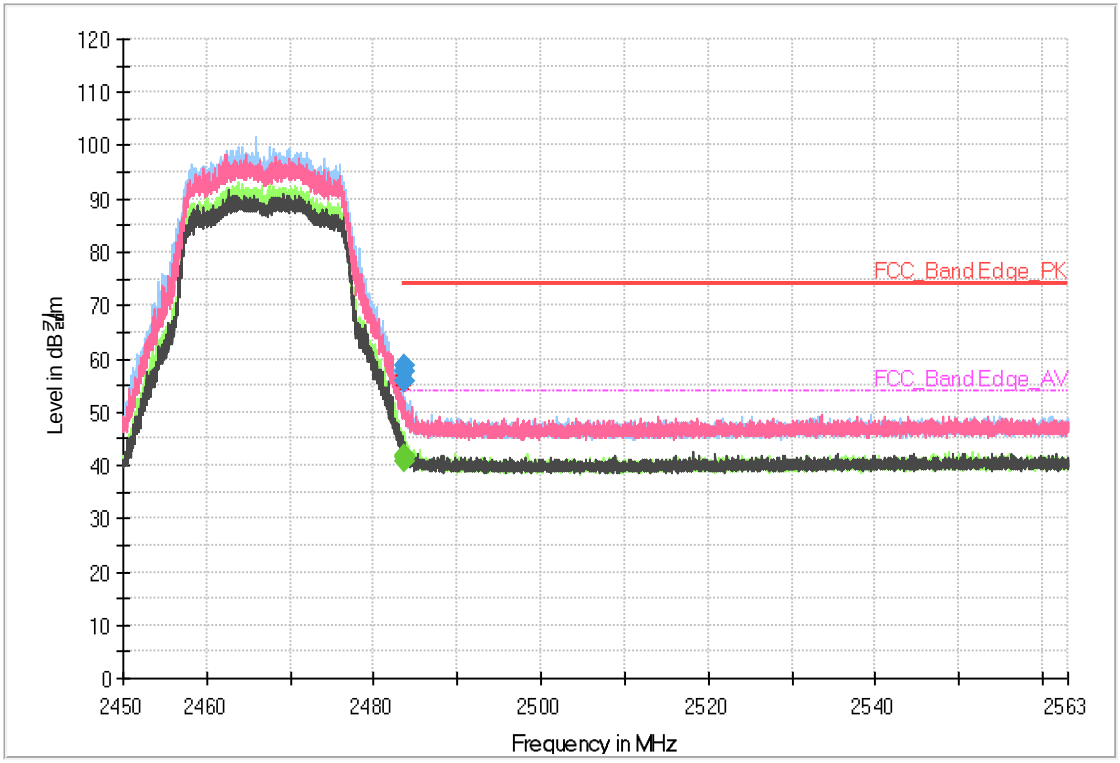


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 483.76	58.58	62.38	-	-	-	216	V	220	3.80	11.62	74.00	-	-
2 483.76	-	-	42.63	46.43	-	216	V	220	3.80	-	-	7.57	54.00
2 483.93	61.22	65.02	-	-	-	150	H	141	3.80	8.98	74.00	-	-
2 483.93	-	-	45.41	49.21	-	150	H	141	3.80	-	-	4.79	54.00
2 485.96	-	-	38.14	41.94	-	268	V	168	3.80	-	-	12.06	54.00
2 485.96	55.21	59.01	-	-	-	268	V	168	3.80	14.99	74.00	-	-

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_ANT B_802.11ax(20)_HE0(Full)_2467

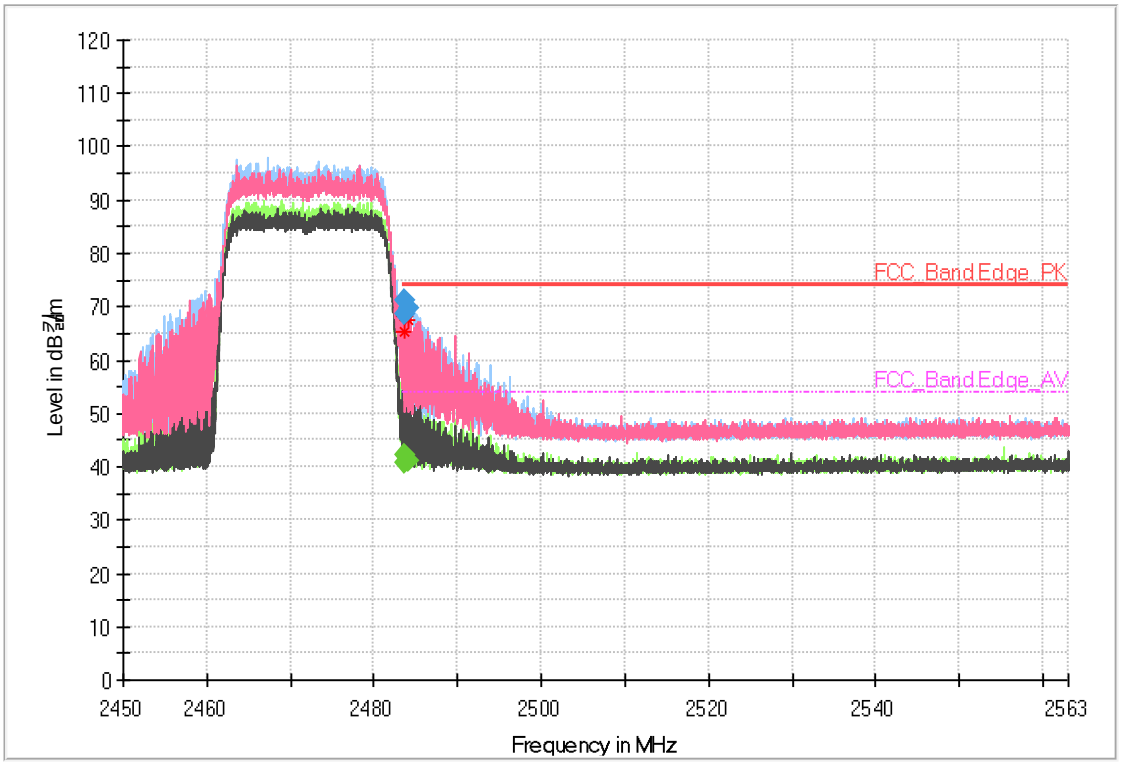


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 483.50	-	-	37.50	41.30	-	304	V	133	3.80	-	-	12.70	54.00
2 483.50	53.70	57.50	-	-	-	304	V	133	3.80	16.50	74.00	-	-
2 483.52	55.08	58.88	-	-	-	238	H	135	3.80	15.12	74.00	-	-
2 483.52	-	-	38.15	41.95	-	238	H	135	3.80	-	-	12.05	54.00
2 483.56	52.13	55.93	-	-	-	245	V	174	3.80	18.07	74.00	-	-
2 483.56	-	-	37.03	40.83	-	245	V	174	3.80	-	-	13.17	54.00

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_ANT B_802.11ax(20)_HE0(Full)_2472

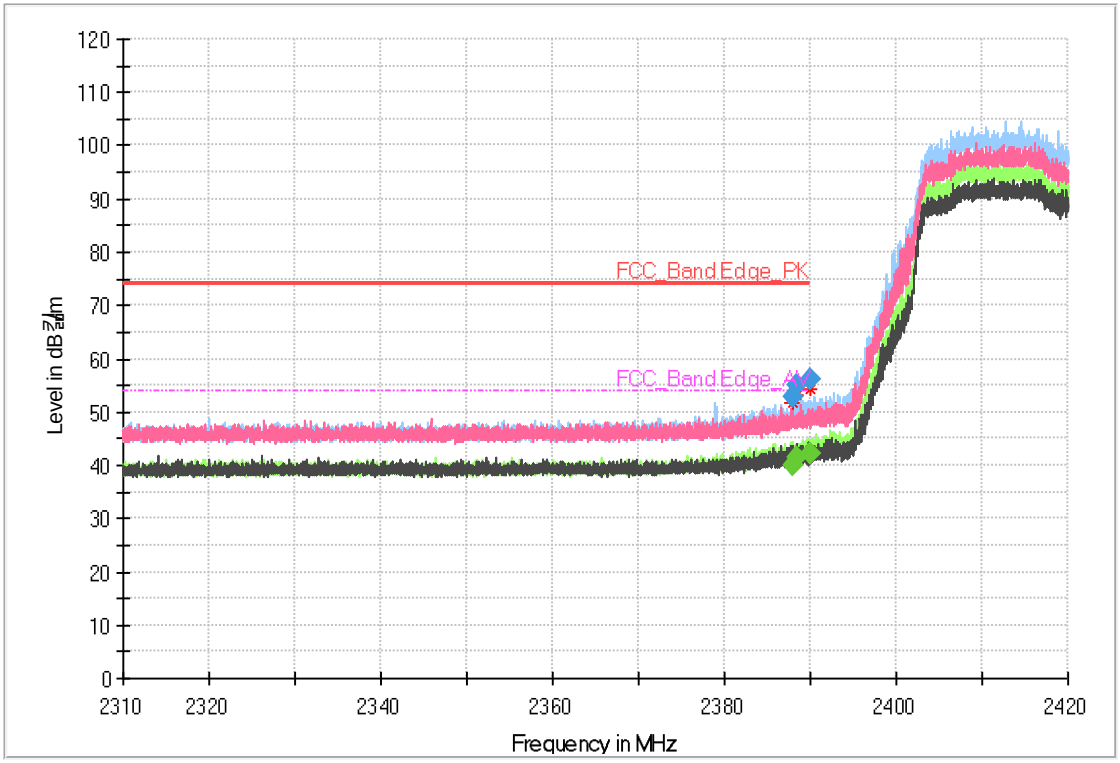


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 483.52	64.77	68.57	-	-	-	250	H	98	3.80	5.43	74.00	-	-
2 483.52	-	-	37.03	40.83	-	250	H	98	3.80	-	-	13.17	54.00
2 483.71	67.57	71.37	-	-	-	150	H	137	3.80	2.63	74.00	-	-
2 483.71	-	-	38.54	42.34	-	150	H	137	3.80	-	-	11.66	54.00
2 484.07	-	-	37.36	41.16	-	276	V	133	3.80	-	-	12.84	54.00
2 484.07	65.90	69.70	-	-	-	276	V	133	3.80	4.30	74.00	-	-

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_ANT B_802.11ax(40)_HE0(242T/61)_2422

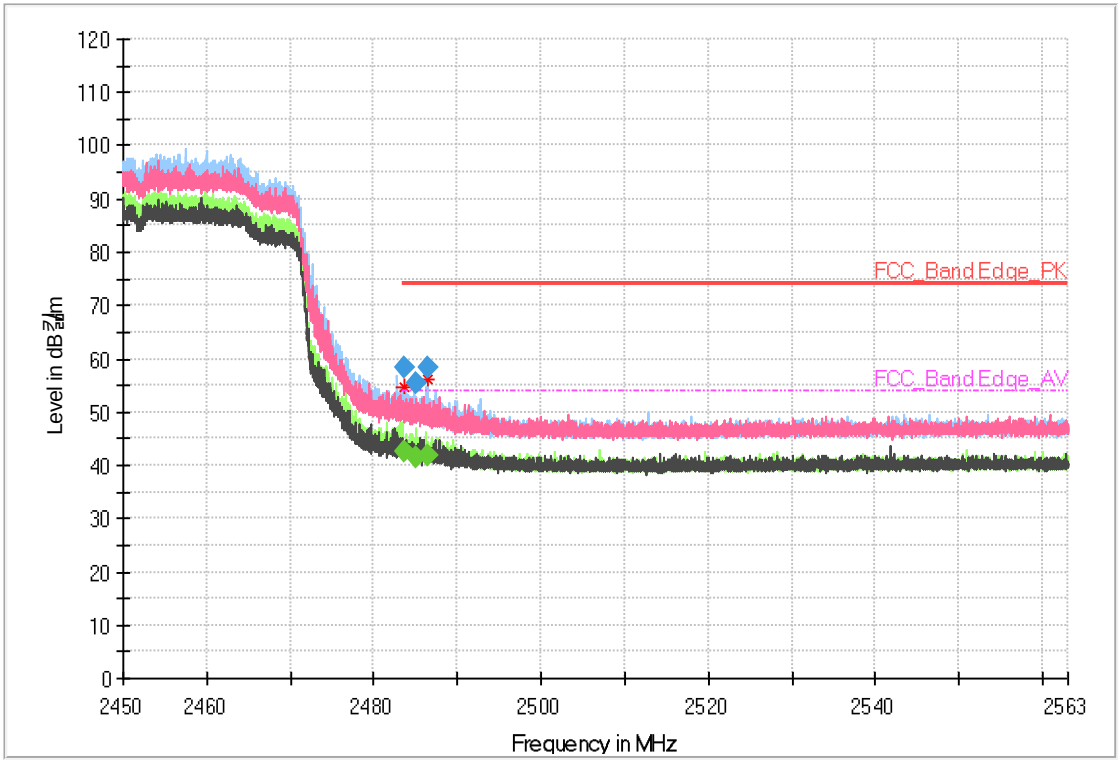


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 387.99	-	-	36.48	39.88	-	184	V	209	3.40	-	-	14.12	54.00
2 387.99	49.37	52.77	-	-	-	184	V	209	3.40	21.23	74.00	-	-
2 388.50	51.65	55.05	-	-	-	150	H	120	3.40	18.95	74.00	-	-
2 388.50	-	-	38.08	41.48	-	150	H	120	3.40	-	-	12.52	54.00
2 389.98	52.62	56.02	-	-	-	165	H	144	3.40	17.98	74.00	-	-
2 389.98	-	-	38.96	42.36	-	165	H	144	3.40	-	-	11.64	54.00

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_ANT B_802.11ax(40)_HE0(Full)_2452

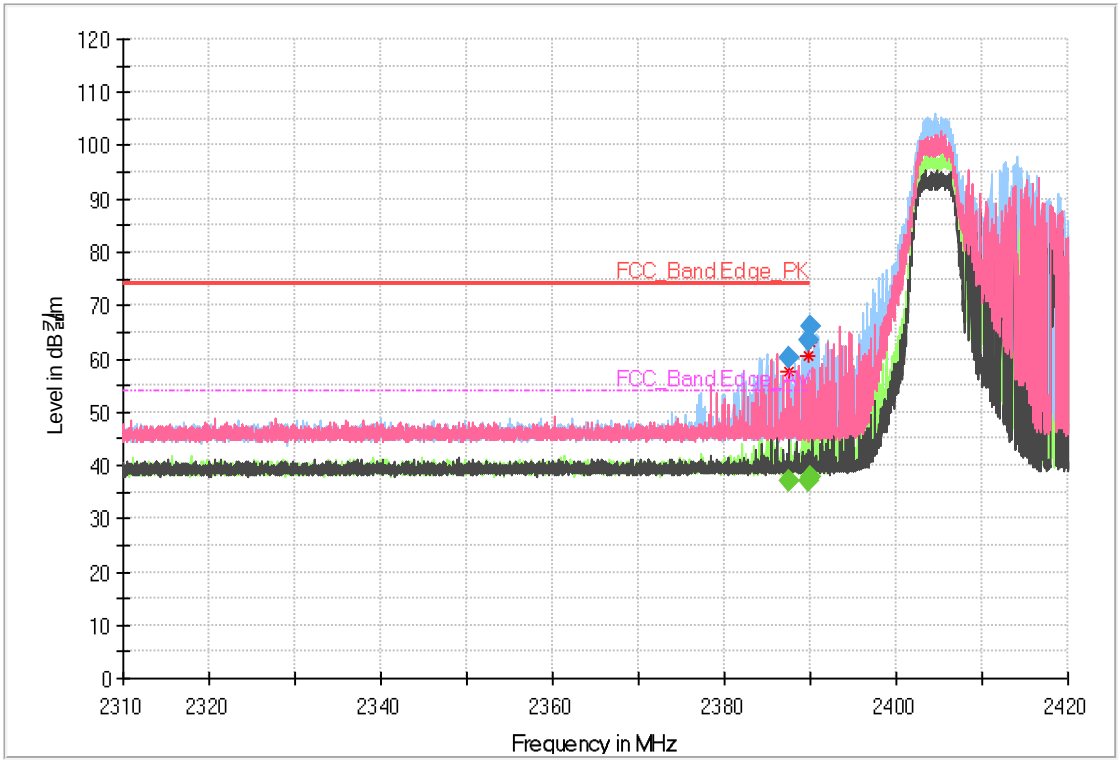


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 483.50	54.46	58.26	-	-	-	150	H	99	3.80	15.74	74.00	-	-
2 483.50	-	-	38.63	42.43	-	150	H	99	3.80	-	-	11.57	54.00
2 485.01	51.79	55.59	-	-	-	314	V	131	3.80	18.41	74.00	-	-
2 485.01	-	-	37.56	41.36	-	314	V	131	3.80	-	-	12.64	54.00
2 486.41	-	-	38.05	41.85	-	150	H	117	3.80	-	-	12.15	54.00
2 486.41	54.56	58.36	-	-	-	150	H	117	3.80	15.64	74.00	-	-

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_MIMO_802.11ax(20)_HE0(52T/37)_2412

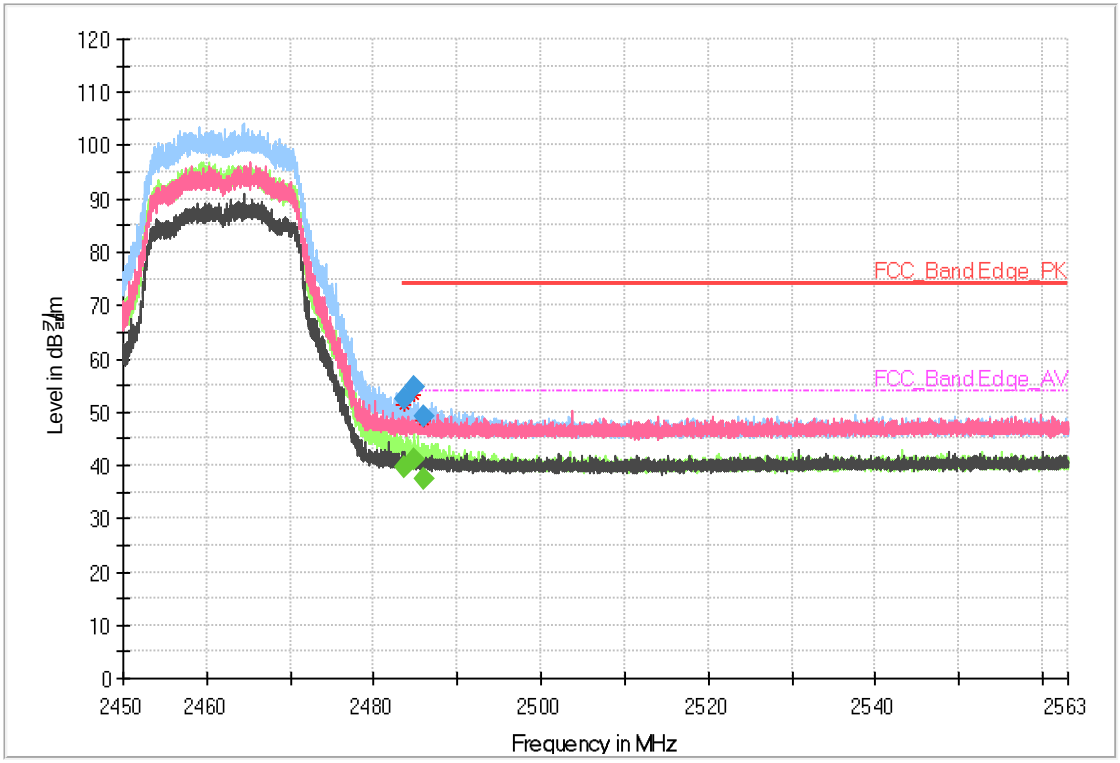


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 387.58	56.81	60.21	-	-	-	163	V	351	3.40	13.79	74.00	-	-
2 387.58	-	-	33.49	36.89	-	163	V	351	3.40	-	-	17.11	54.00
2 389.73	-	-	33.75	37.15	-	151	H	124	3.40	-	-	16.85	54.00
2 389.73	60.02	63.42	-	-	-	151	H	124	3.40	10.58	74.00	-	-
2 389.95	62.69	66.09	-	-	-	237	H	105	3.40	7.91	74.00	-	-
2 389.95	-	-	34.26	37.66	-	237	H	105	3.40	-	-	16.34	54.00

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_MIMO_802.11n(HT20)_HT8_2462

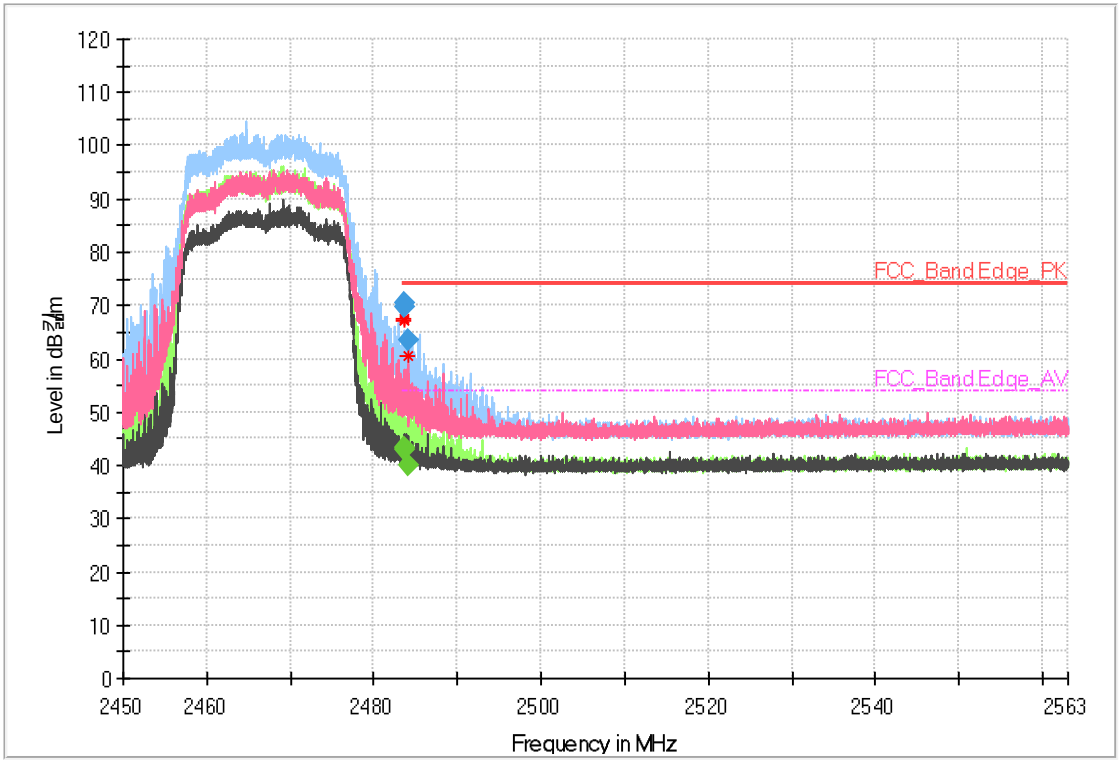


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 483.50	48.56	52.36	-	-	-	197	H	343	3.80	21.64	74.00	-	-
2 483.50	-	-	35.94	39.74	-	197	H	343	3.80	-	-	14.26	54.00
2 484.71	50.72	54.52	-	-	-	250	H	97	3.80	19.48	74.00	-	-
2 484.71	-	-	37.29	41.09	-	250	H	97	3.80	-	-	12.91	54.00
2 485.91	-	-	33.59	37.39	-	213	V	281	3.80	-	-	16.61	54.00
2 485.91	45.49	49.29	-	-	-	213	V	281	3.80	24.71	74.00	-	-

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_MIMO_802.11ax(20)_HE0(Full)_2467

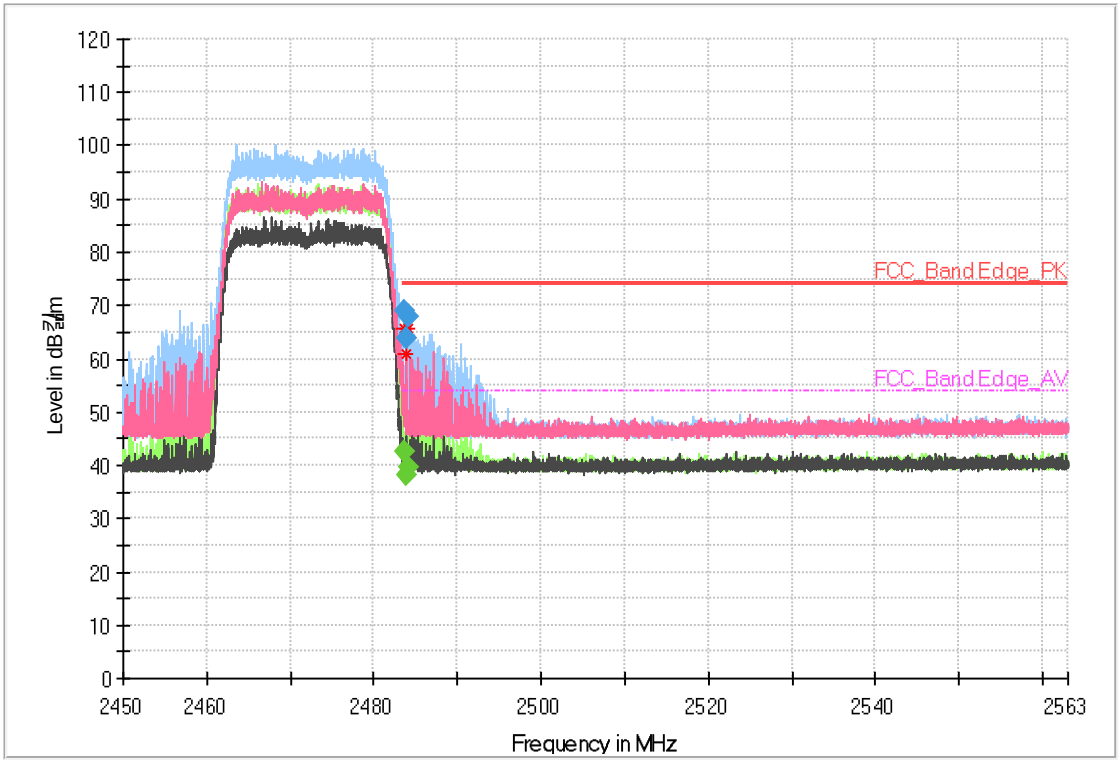


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 483.53	-	-	39.50	43.30	-	250	H	100	3.80	-	-	10.70	54.00
2 483.53	66.10	69.90	-	-	-	250	H	100	3.80	4.10	74.00	-	-
2 483.63	-	-	39.26	43.06	-	250	H	96	3.80	-	-	10.94	54.00
2 483.63	66.54	70.34	-	-	-	250	H	96	3.80	3.66	74.00	-	-
2 483.99	-	-	36.30	40.10	-	187	V	213	3.80	-	-	13.90	54.00
2 483.99	59.83	63.63	-	-	-	187	V	213	3.80	10.37	74.00	-	-

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_MIMO_802.11ax(20)_HE0(Full)_2472

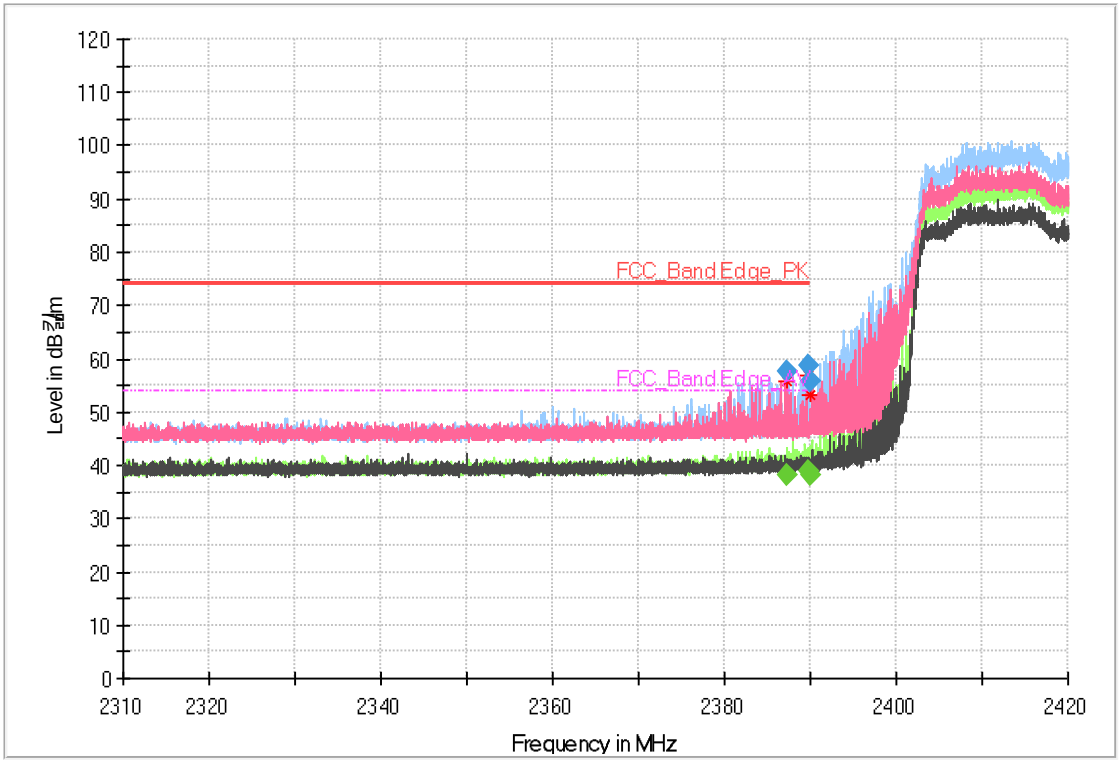


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 483.52	65.17	68.97	-	-	-	150	H	121	3.80	5.03	74.00	-	-
2 483.52	-	-	38.85	42.65	-	150	H	121	3.80	-	-	11.35	54.00
2 483.80	60.03	63.83	-	-	-	250	V	224	3.80	10.17	74.00	-	-
2 483.80	-	-	34.38	38.18	-	250	V	224	3.80	-	-	15.82	54.00
2 484.02	-	-	35.96	39.76	-	186	H	108	3.80	-	-	14.24	54.00
2 484.02	64.07	67.87	-	-	-	186	H	108	3.80	6.13	74.00	-	-

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_MIMO_802.11ax(40)_HE0(242T/61)_2422

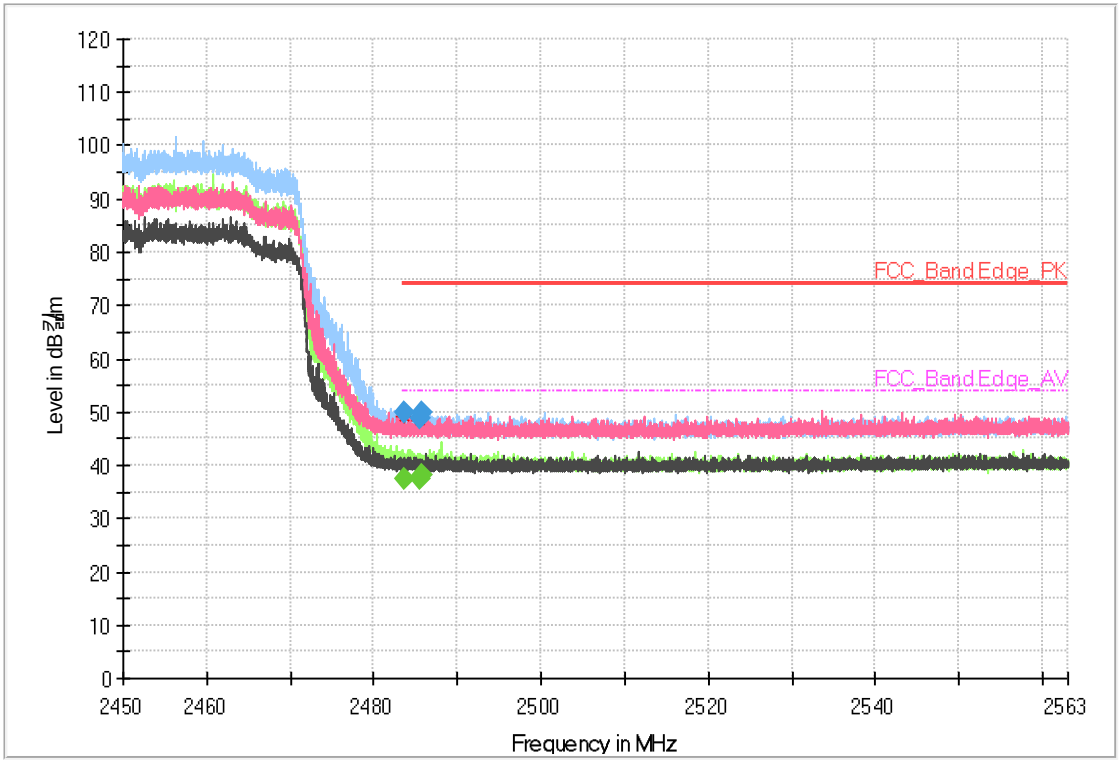


Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 387.37	54.07	57.47	-	-	-	163	V	358	3.40	16.53	74.00	-	-
2 387.37	-	-	34.63	38.03	-	163	V	358	3.40	-	-	15.97	54.00
2 389.83	55.22	58.62	-	-	-	199	H	127	3.40	15.38	74.00	-	-
2 389.83	-	-	35.39	38.79	-	199	H	127	3.40	-	-	15.21	54.00
2 389.97	-	-	34.78	38.18	-	150	V	352	3.40	-	-	15.82	54.00
2 389.97	52.28	55.68	-	-	-	150	V	352	3.40	18.32	74.00	-	-

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Band Edge_2.4 GHz_MIMO_802.11ax(40)_HE0(Full)_2452



Frequency [MHz]	Peak Reading Value [dBuV]	Peak Result [dBuV/m]	AVG Reading Value [dBuV]	AVG Result [dBuV/m]	DCCF [dB]	Height [cm]	Pol [H/V]	Azimuth [deg]	Correction Factor [dB/m]	Peak Margin [dB]	Peak Limit [dBuV/m]	AVG Margin [dB]	AVG Limit [dBuV/m]
2 483.50	-	-	33.81	37.61	-	260	H	310	3.80	-	-	16.39	54.00
2 483.50	46.19	49.99	-	-	-	260	H	310	3.80	24.01	74.00	-	-
2 485.50	45.19	48.99	-	-	-	311	V	336	3.80	25.01	74.00	-	-
2 485.50	-	-	33.66	37.46	-	311	V	336	3.80	-	-	16.54	54.00
2 485.74	46.00	49.80	-	-	-	252	H	342	3.80	24.20	74.00	-	-
2 485.74	-	-	34.23	38.03	-	252	H	342	3.80	-	-	15.97	54.00

Remarks

1. Peak Result(dBuV/m) = Peak Reading Value(dBuV) + Correction Factor(dB/m)
2. AVG Result(dBuV/m) = AVG Reading Value(dBuV) + DCCF + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor (dB)
4. DCCF(Duty Cycle Correction Factor) = 10 x Log(1/Duty Cycle)
5. Margin(dB) = (Peak/AVG) Result (dBuV/m) – (Peak/AVG) Limit (dBuV/m)

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services Korea. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

Test Firm Name : BV CPS ADT Korea Ltd.

Address : Innoplex No.2 106, Sinwon-ro 306, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 KOREA

FCC

Designation Number : KR0158
Test Firm Registration Number : 666061

ISED

Designation Number : KR0158
Test Firm Registration Number : 25944

If you have any comments, please feel free to contact us at the following:

Email: Meyer.Shin@bureauveritas.com
Web Site: www.bureauveritas.co.kr/cps/eaw

The address and road map of all our labs can be found in our web site also.

- End of report -