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TEST REPORT

KCTL KCTL Inc.
65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

KCTL

1. Client

- Name : SystemBase Co., Ltd.
- Address : Daerung Post Tower-1 16F, 288, Digital-ro, Guro-gu, Seoul, South Korea
- Date of Receipt : 2020-05-11

2. Use of Report : Certification

3. Name of Product / Model : Serial to WiFi Converter / sWiFi/all V1.0

4. Manufacturer / Country of Origin : SystemBase Co., Ltd. / Korea

5. FCC ID : PRO-SWIFIALLV10

6. Date of Test : 2020-06-16 to 2020-06-26

7. Location of Test : ■ Permanent Testing Lab □ On Site Testing (Address: Address of testing location)

8. Test method used : FCC Part 15 Subpart E, 15.407

9. Test Result : Refer to the test result in the test report

Affirmation	Tested by Name : Minsoo Yoon (Signature)	Technical Manager Name : Heesu Ahn (Signature)

2020-07-01

KCTL Inc.

As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by KCTL Inc.

REPORT REVISION HISTORY

Date	Revision	Page No
2020-06-19	Originally issued	-
2020-06-26	Updated	4,10,16, 21 ~ 25, 55
2020-07-01	Updated	10

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Note. The report No. KR20-SRF0145-A is superseded by the report No. KR20-SRF0145-B.

General remarks for test reports

Nothing significant to report.

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1. General information

Client	:	SystemBase Co., Ltd.
Address	:	Daerung Post Tower-1 16F, 288, Digital-ro, Guro-gu, Seoul, South Korea
Manufacturer	:	SystemBase Co., Ltd.
Address	:	Daerung Post Tower-1 16F, 288, Digital-ro, Guro-gu, Seoul, South Korea
Laboratory	:	KCTL Inc.
Address	:	65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
Accreditations	:	FCC Site Designation No: KR0040, FCC Site Registration No: 687132 VCCI Registration No. : R-20080, G-20078, C-20059, T-20056 Industry Canada Registration No. : 8035A KOLAS No.: KT231

2. Device information

Equipment under test	:	Serial to WiFi Converter
Model	:	sWiFi/all V1.0
Modulation technique	:	WIFI(802.11a/b/g/n_HT20)_DSSS, OFDM
Number of channels	:	802.11b/g/n_HT20 : 11 ch UNII-1: 4 ch (20 ㎒) UNII-2A: 4 ch (20 ㎒) UNII-2C: 12 ch (20 ㎒) UNII-3: 5 ch (20 ㎒)
Power source	:	AC 120 Ⅴ / 60 ㎐
Antenna specification	:	Dipole Antenna
Antenna gain	:	WIFI(802.11b/g/n_HT20): ANT_6.13 ㏈i UNII-1 ANT_6.20 ㏈i UNII-2A ANT_6.67 ㏈i UNII-2C ANT_6.40 ㏈i UNII-3 ANT_6.40 ㏈i
Frequency range	:	2 412 ㎒ ~ 2 462 ㎒ (802.11b/g/n_HT20) UNII-1: 5 150 ㎒ ~ 5 250 ㎒ (802.11a/n_HT20) UNII-2A: 5 250 ㎒ ~ 5 350 ㎒ (802.11a/n_HT20) UNII-2C: 5 470 ㎒ ~ 5 725 ㎒ (802.11a/n_HT20) UNII-3: 5 725 ㎒ ~ 5 850 ㎒ (802.11a/n_HT20)
Software version	:	V 1.0.0
Hardware version	:	V 1.0.4
Test device serial No.	:	N/A
Operation temperature	:	-40 ~ 85 ℃

2.1. Accessory information

Equipment	Manufacturer	Model	Serial No.	Power source
AC to DC Adapter	Dee Van Electronics(Longchuan) Co.,LTD.	DSA-6PFE-05 FKA 050100	-	INPUT : 100 ~ 240 V / 50/60 Hz / 0.2 A OUTPUT : 5 V, 1.0 A

2.2. Frequency/channel operations

This device contains the following capabilities:
WLAN 2.4 ㎓_802.11b/g/n_HT20, WLAN 5 ㎓_802.11a/n_HT20

UNII-1

Ch.	Frequency (㎒)
36	5 180
40	5 200
48	5 240

UNII-2A

Ch.	Frequency (㎒)
52	5 260
56	5 280
64	5 320

UNII-2C

Ch.	Frequency (㎒)
100	5 500
116	5 580
144	5 720

UNII-3

Ch.	Frequency (㎒)
149	5 745
157	5 785
165	5 825

Table 2.2.1. 802.11a/n_HT20 mode

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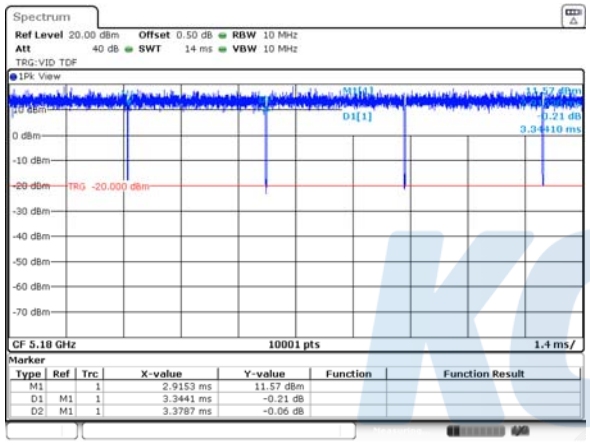
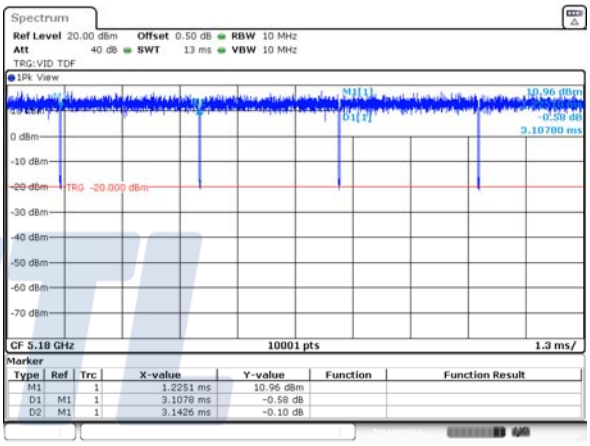
2.4. Duty Cycle Factor

- UNII-1

Test mode	T_{on} time (ms)	Period (ms)	Duty cycle		Duty cycle factor (dB)
			(Linear)	(%)	
802.11a	3.344 1	3.378 7	0.989 8	98.98	0.04
802.11n_HT20	3.107 8	3.142 6	0.988 9	98.89	0.05

Notes.

1. Duty cycle (Linear) = T_{on} time / Period
2. DCF(Duty cycle factor) = 10log(1/duty cycle)

802.11a	802.11n_HT20
	

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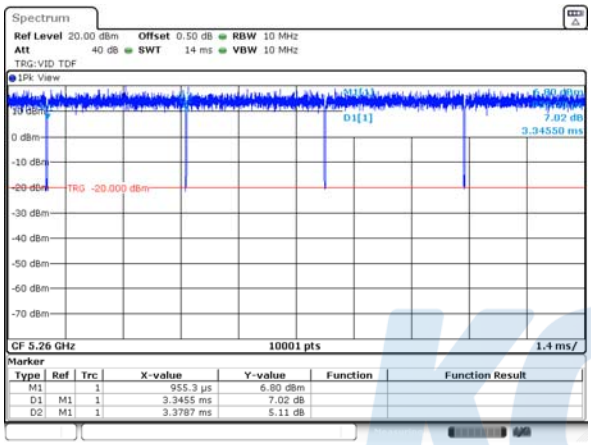
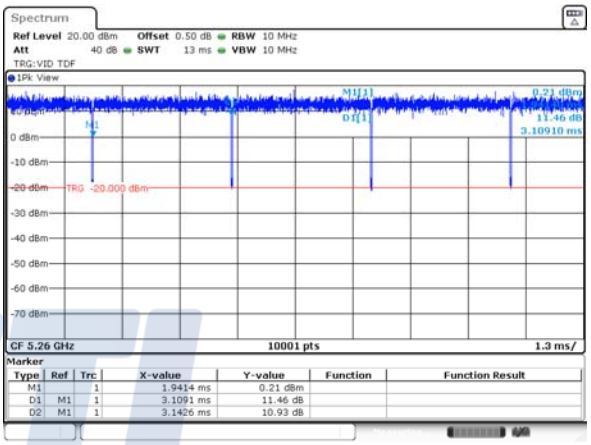
- UNII-2A

Test mode	T_{on} time (ms)	Period (ms)	Duty cycle		Duty cycle factor (dB)
			(Linear)	(%)	
802.11a	3.345 5	3.378 7	0.990 2	99.02	0.04
802.11n_HT20	3.109 1	3.142 6	0.989 3	98.93	0.05

Notes.

1. Duty cycle (Linear) = T_{on} time / Period
2. DCF(Duty cycle factor) = 10log(1/duty cycle)

802.11a	802.11n_HT20
	

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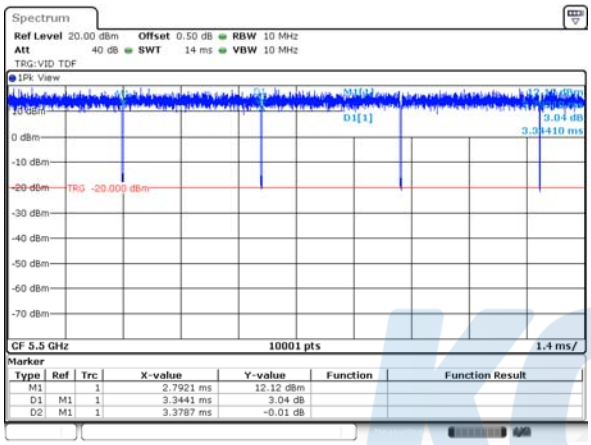
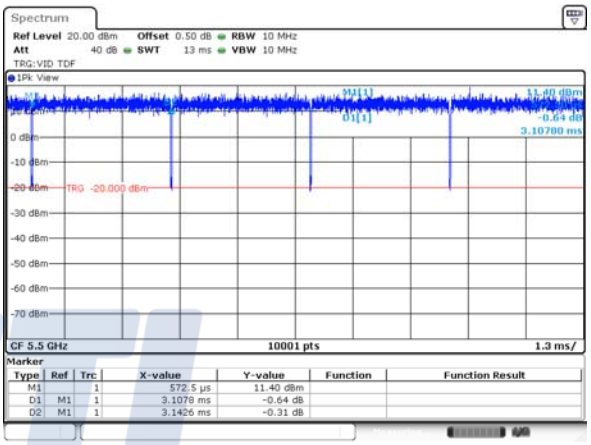
- UNII-2C

Test mode	T_{on} time (ms)	Period (ms)	Duty cycle		Duty cycle factor (dB)
			(Linear)	(%)	
802.11a	3.344 1	3.378 7	0.989 8	98.98	0.04
802.11n_HT20	3.107 8	3.142 6	0.988 9	98.89	0.05

Notes.

1. Duty cycle (Linear) = T_{on} time / Period
2. DCF(Duty cycle factor) = 10log(1/duty cycle)

802.11a	802.11n_HT20
	

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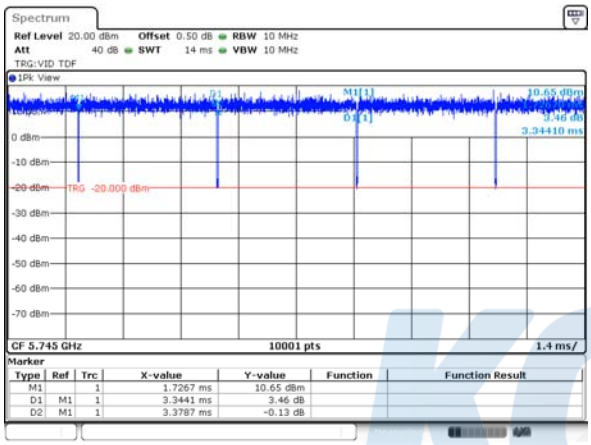
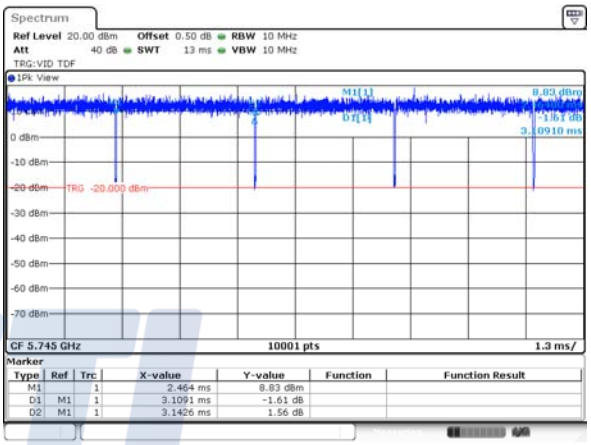
- UNII-3

Test mode	T_{on} time (ms)	Period (ms)	Duty cycle		Duty cycle factor (dB)
			(Linear)	(%)	
802.11a	3.344 1	3.378 7	0.989 8	98.98	0.04
802.11n_HT20	3.109 1	3.142 6	0.989 3	98.93	0.05

Notes.

1. Duty cycle (Linear) = T_{on} time / Period
2. DCF(Duty cycle factor) = 10log(1/duty cycle)

802.11a	802.11n_HT20
	

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3. Antenna requirement

Requirement of FCC part section 15.203, 15.407:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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 this section.
- The transmitter has a dipole antenna with unique antenna connector(RP-SMA).

4. Summary of tests

FCC Part section(s)	Parameter	Test results
15.407(a)	Maximum conducted output power	Pass
15.407(a)	Maximum power spectral density	N/T(Note1)
15.407(a)	26 ㏈ Channel Bandwidth	N/T(Note1)
15.407(e)	6 ㏈ Channel Bandwidth	N/T(Note1)
15.407(g)	Frequency stability	Pass
15.407(b), 15.205(a), 15.209(a)	Spurious emission	Pass
	Band-edge, restricted band	Pass
15.207(a)	Conducted Emissions	Pass
15.407(h)	DFS -Channel closing transmission time -Channel move time -Non occupied period	N/T(Note2)

Notes: (N/T: Not Tested, N/A: Not Applicable)

1. These test item was performed. (FCC ID: 2ADXS-WFM50-SFP2501, Test Report No. F690501/RF-RTL009890-2 issued on 29, June, 2016 by SGS Korea Co., Ltd. (Gunpo Laboratory))
2. These test item was performed. (FCC ID: 2ADXS-WFM50-SFP2501, Test Report No. F690501/RF-RTL009891-1 issued on 29, June, 2016 by SGS Korea Co., Ltd. (Gunpo Laboratory))
3. All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
4. 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.
5. The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z. It was determined that **X** orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in **X** orientation
6. The test procedure(s) in this report were performed in accordance as following.
   - ANSI C63.10-2013
   - KDB 662911 D01 v02r01
   - KDB 789033 D02 v02r01
7. Based on the baseline scan, the worst-case data rates were:
   SISO Antenna: 802.11b mode : 1Mbps
   802.11g mode : 6Mbps
   802.11n_HT20 mode : MCS0

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5. Measurement uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of k=2 to indicated a 95 % level of confidence. The measurement data shown herein meets of exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded uncertainty (±)	
Conducted RF power	1.3 dB	
Conducted spurious emissions	1.3 dB	
Radiated spurious emissions	9 kHz ~ 30 MHz:	2.3 dB
	30 MHz ~ 300 MHz	5.4 dB
	300 MHz ~ 1 000 MHz	5.5 dB
	Above 1 GHz	6.7 dB
Conducted emissions	9 kHz ~ 150 kHz	3.7 dB
	150 kHz ~ 30 MHz	3.3 dB

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6. Measurement results explanation example

The offset level is set in the spectrum analyzer to compensate the RF cable loss factor between EUT conducted output port and spectrum analyzer.
With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

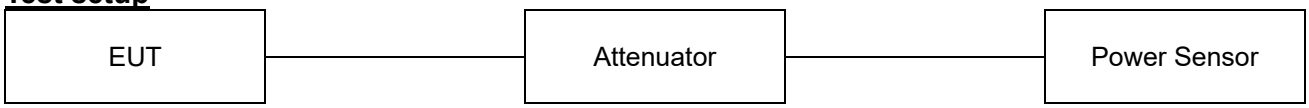
Frequency (㎒)	Factor(㏈)	Frequency (㎒)	Factor(㏈)
30	10.02	9 000	12.38
50	10.09	10 000	12.54
100	10.15	11 000	12.56
200	10.24	12 000	12.59
300	10.34	13 000	12.79
400	10.40	14 000	12.69
500	10.48	15 000	12.82
600	10.53	16 000	13.41
700	10.55	17 000	13.59
800	10.60	18 000	13.48
900	10.62	19 000	13.46
1 000	10.68	20 000	13.73
2 000	11.05	21 000	13.71
3 000	11.33	22 000	13.84
4 000	11.50	23 000	14.05
5 000	11.61	24 000	14.38
6 000	11.93	25 000	14.08
7 000	12.32	26 000	14.19
8 000	12.33	26 500	14.00

Notes:
Offset(㏈) = RF cable loss(㏈) + Attenuator(㏈)

7. Test results

7.1. Maximum conducted output power

Test setup



Limit

According to §15.407(a),

Band	EUT category		Conducted output power limit
UNII-1		Outdoor access point	1 W (30 dBm)
		Indoor access point	
		Fixed point-to-point access point	
	√	Client device	250 ㎽ (23.98 dBm)
UNII-2A	√		250 ㎽ or 11 dBm + 10logB[1)]
UNII-2C	√		250 ㎽ or 11 dBm + 10logB[1)]
UNII-3	√		1 W (30 dBm)

Note:

1) Conducted output power limit B is the 26 dB emission bandwidth.

Test procedure

ANSI C63.10-2013-Section 12.3.3.2 and 14.2
KDB 789033 D02 v02r01 - Section E.2.d) or e)
KDB 662911 D01 v02r01 – Section E).1)

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Test settings
Used test method is Section E.2.d)

◆ KDB 789033 D02 v02r01

Section E.2.d)
Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction):

(i) Measure the duty cycle, x, of the transmitter output signal as described in II.B..
(ii) Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
(iii) Set RBW = 1 ㎒
(iv) Set RBW ≥ 3 ㎒
(v) Number of points in sweep ≥ 2×span/RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
(vi) Sweep time = auto.
(vii) Detector = power averaging (rms), if available. Otherwise use sample detector mode.
(viii) Do not use sweep triggering. Allow the sweep to “free run.”
(ix) Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.
(x) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 ㎒ intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
(xi) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10 log(1/0,25) = 6 ㏈ if the duty cycle is 25%.

Section E.2.e)
Method SA-2 Alternative (power averaging(rms) detection with slow sweep with each spectrum bin averaging across on and off times of the EUT transmissions, followed by duty cycle correction):

(i) Measure the duty cycle, x, of the transmitter output signal as described in II.B..
(ii) Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
(iii) Set RBW = 1 ㎒
(iv) Set RBW ≥ 3 ㎒
(v) Number of points in sweep ≥ 2×span/RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
(vi) Manually set sweep time ≥ 10 × (number of points in sweep) × (total on/off period of the transmitted signal).
(vii) Set detector = power averaging (rms)
(viii) Perform a single sweep.
(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement

function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 ㎒ intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

(x) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10 log(1/0,25) = 6 ㏈ if the duty cycle is 25%.

Section E.3.a)
Method PM (Measurement using an RF average power meter):

(xi) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.

- The EUT is configured to transmit continuously or to transmit with a constant duty cycle.
- At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
- The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five

(xii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in Ⅱ

(xiii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

(xiv) Adjust the measurement in ㏈m by adding 10 log (1/x) where x is the duty cycle (e.g., 10 log (1/0.25) if the duty cycle is 25%).

Section E.3.b)
Method PM-G (Measurement using a gated RF average power meter):
Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

Test results

Test mode	Band	Freq (㎒)	Measured output power (dBm)	Conducted Power Limit (dBm)
802.11a	UNII-1	5 180	9.97	23.78
		5 200	10.25	
		5 240	10.38	
	UNII-2A	5 260	10.35	23.31
		5 280	11.21	
		5 320	11.49	
	UNII-2C	5 500	10.52	23.58
		5 600	9.80	
		5 700	9.16	
	UNII-3	5 745	8.60	29.60
		5 785	8.22	
		5 825	7.92	
802.11n_ HT20	UNII-1	5 180	9.44	23.78
		5 200	9.77	
		5 240	10.02	
	UNII-2A	5 260	9.34	23.31
		5 280	10.25	
		5 320	10.12	
	UNII-2C	5 500	9.51	23.58
		5 600	9.31	
		5 700	8.70	
	UNII-3	5 745	8.61	29.60
		5 785	7.85	
		5 825	7.88	

Note:

1. Conducted Output power Calculation:

Conducted Output power = Measured power(㏈ ㎷) + DCF (㏈)

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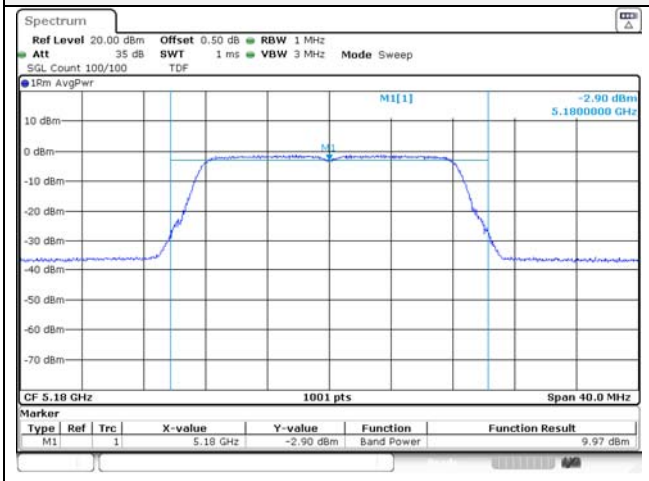
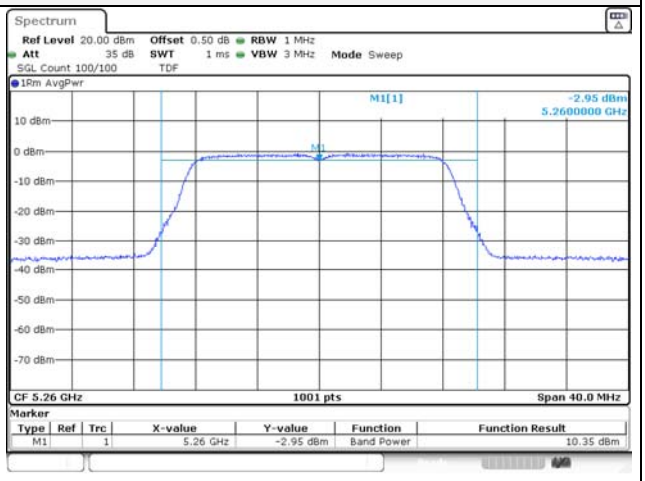
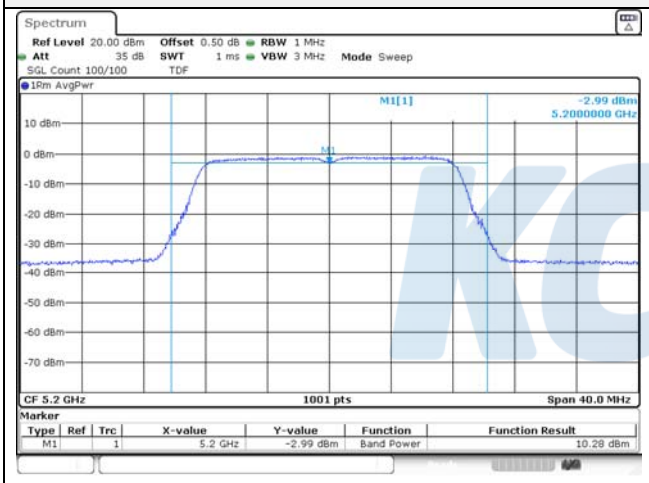
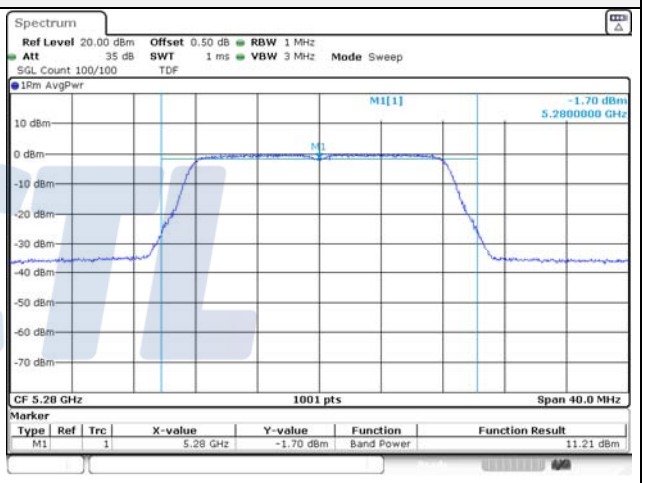
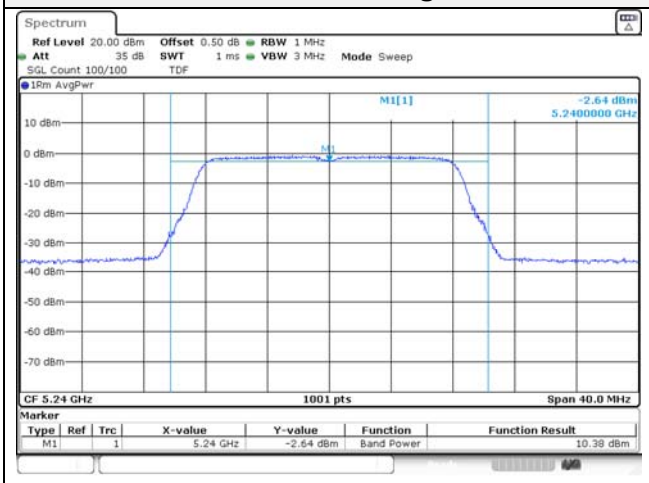
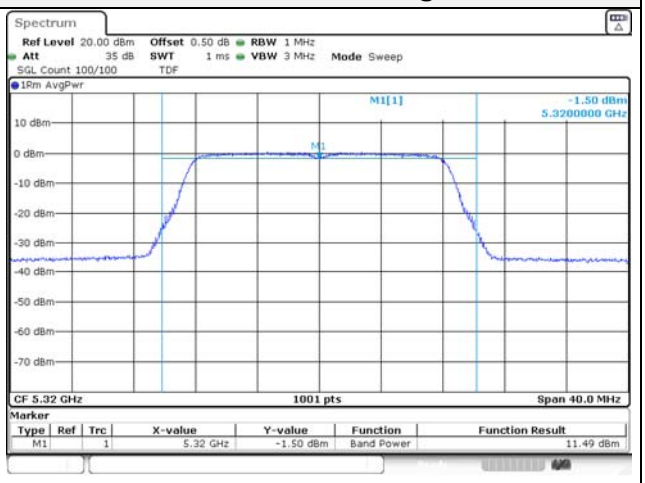
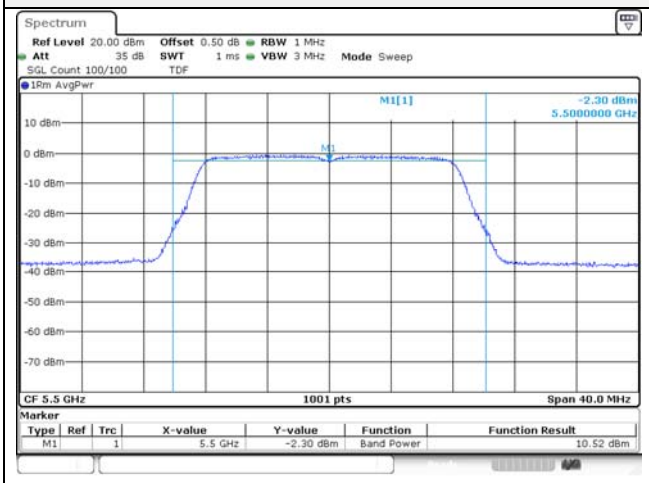
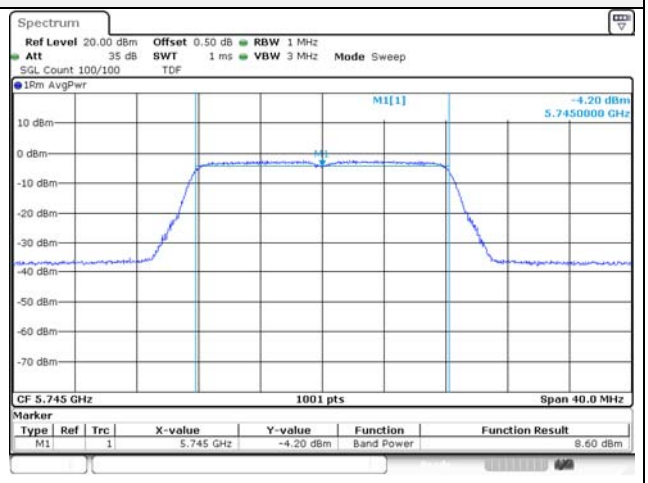
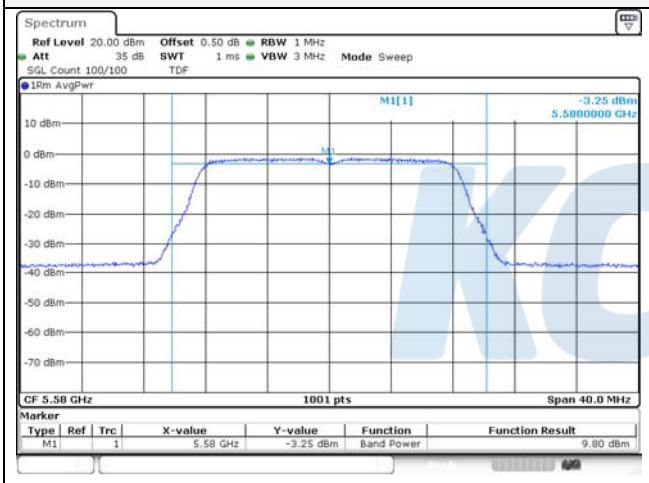
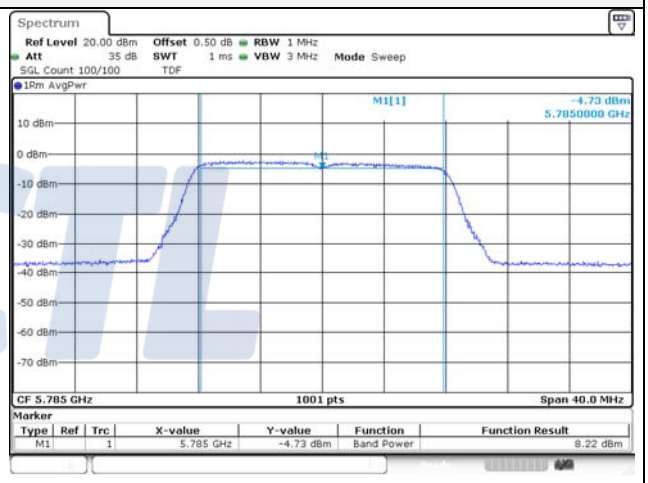
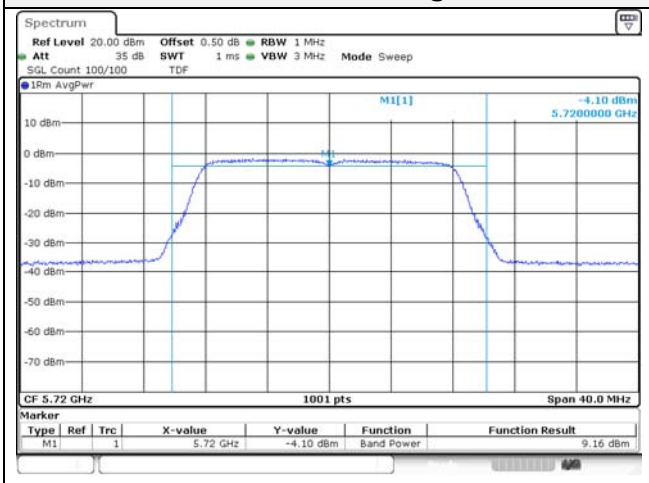
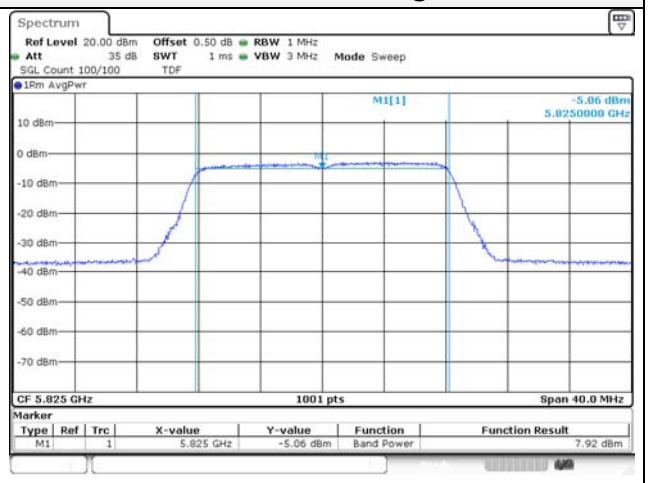
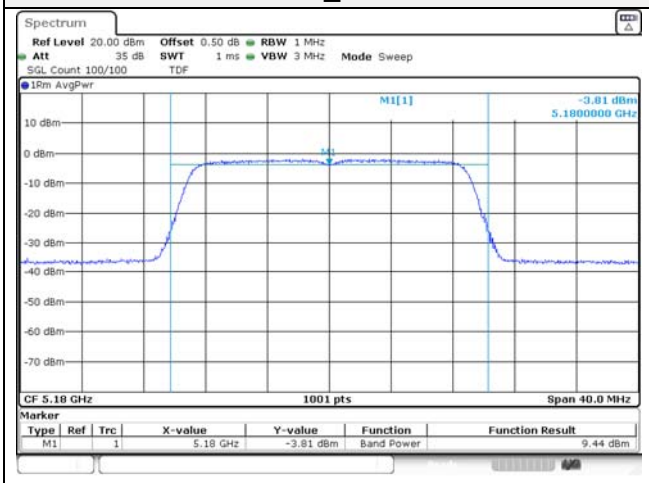
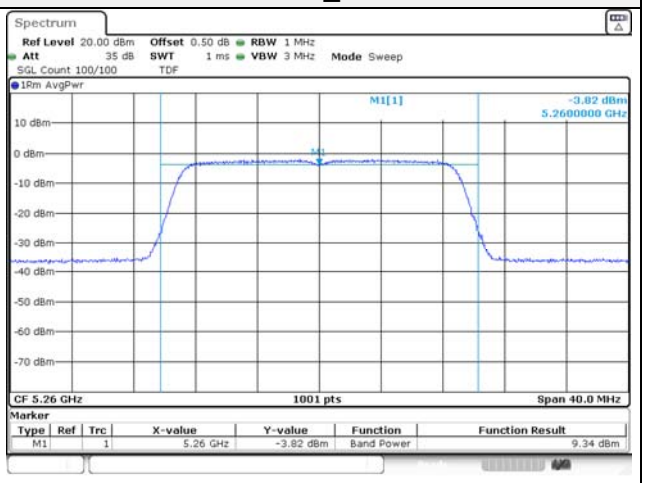
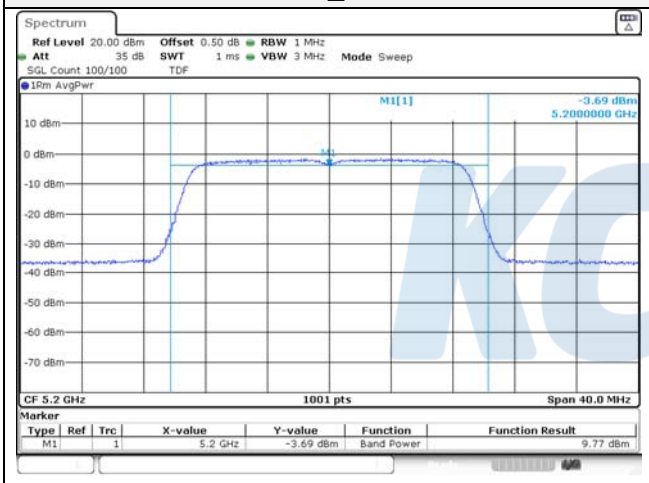
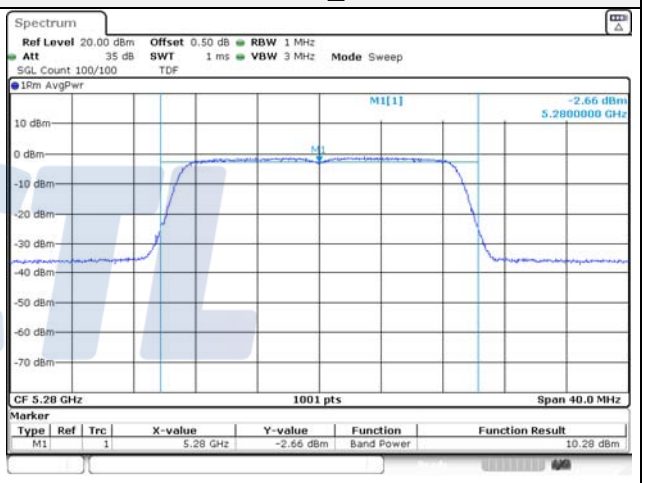
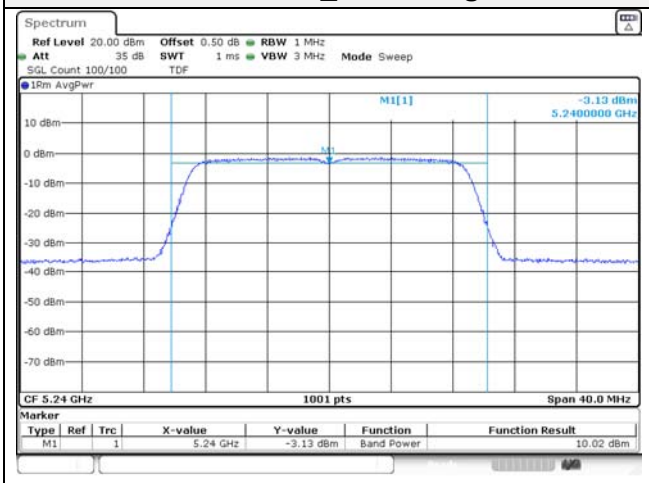
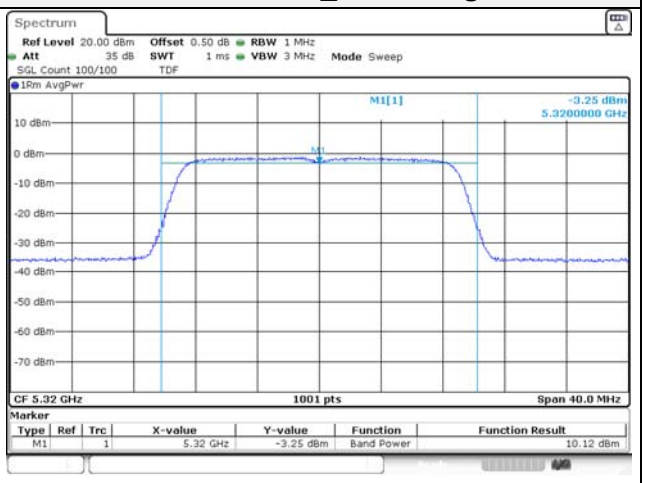
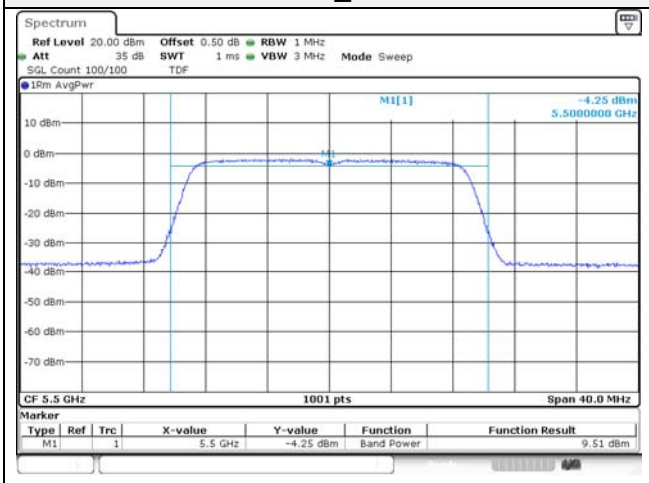
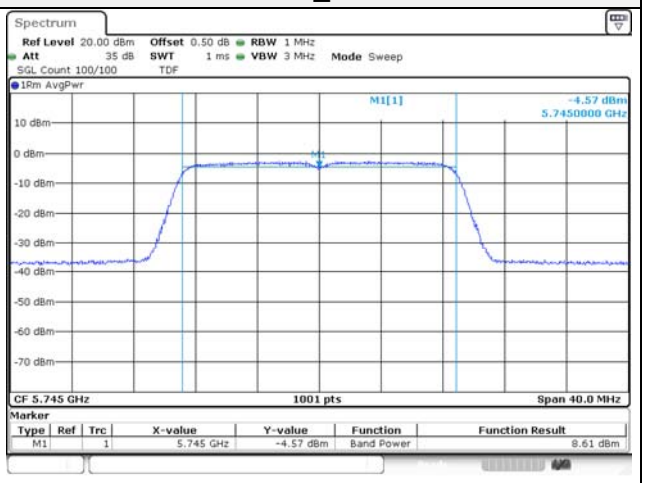
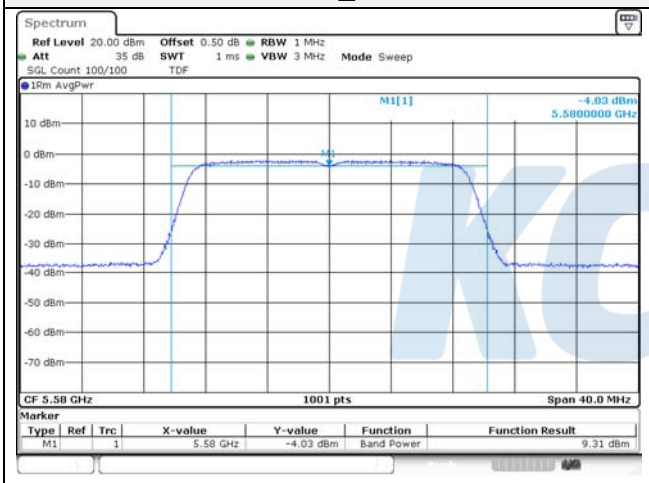
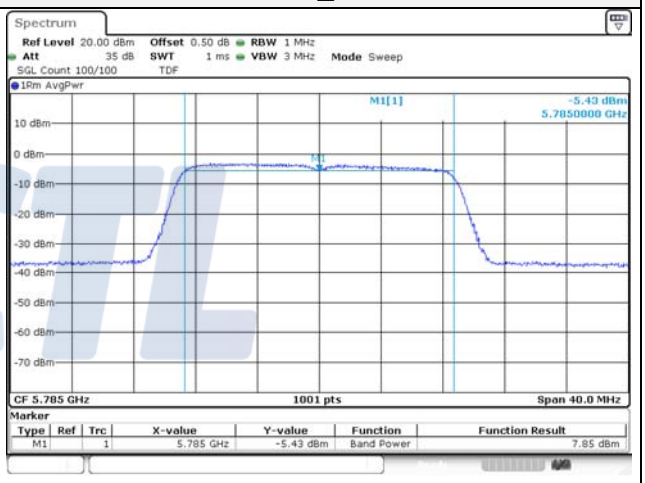
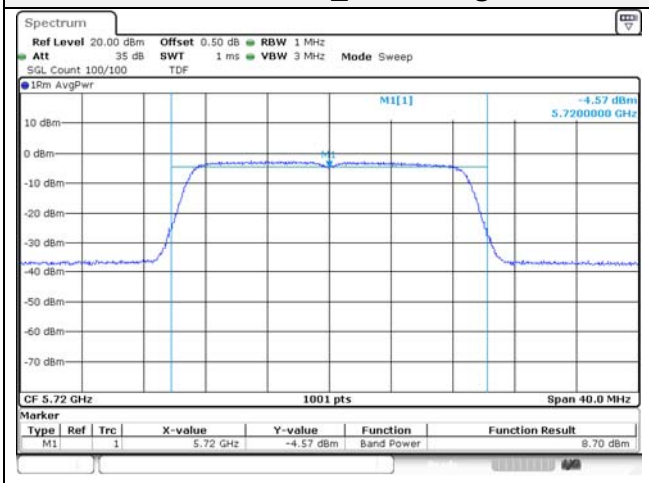
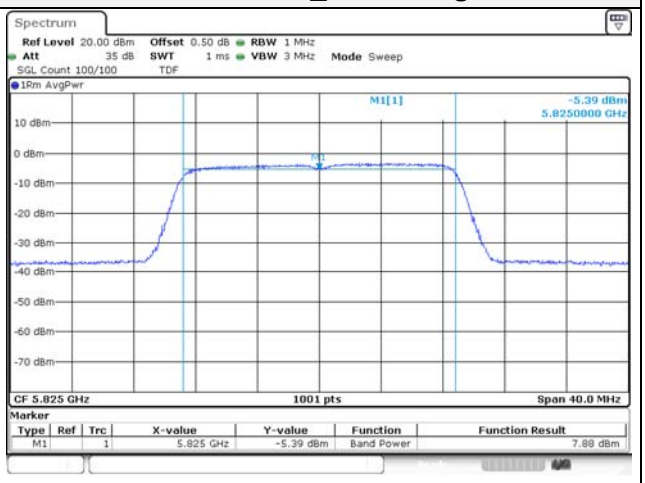
UNII-1 / 802.11a / Low ch.	UNII-2A / 802.11a / Low ch.
	
UNII-1 / 802.11a / Mid ch.	**UNII-2A / 802.11a / Mid ch.**
	
UNII-1 / 802.11a / High ch.	**UNII-2A / 802.11a / High ch.**
	

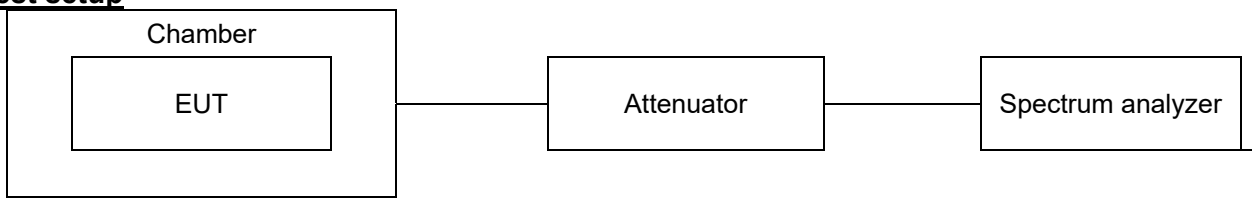
UNII-2C / 802.11a / Low ch.	UNII-3 / 802.11a / Low ch.
	
UNII-2C / 802.11a / Mid ch.	**UNII-3 / 802.11a / Mid ch.**
	
UNII-2C / 802.11a / High ch.	**UNII-3 / 802.11a / High ch.**
	

UNII-1 / 802.11n_HT20 / Low ch.	UNII-2A / 802.11n_HT20 / Low ch.
	
UNII-1 / 802.11n_HT20 / Mid ch.	**UNII-2A / 802.11n_HT20 / Mid ch.**
	
UNII-1 / 802.11n_HT20 / High ch.	**UNII-2A / 802.11n_HT20 / High ch.**
	

UNII-2C / 802.11n_HT20 / Low ch.	UNII-3 / 802.11n_HT20 / Low ch.
	
UNII-2C / 802.11n_HT20 / Mid ch.	**UNII-3 / 802.11n_HT20 / Mid ch.**
	
UNII-2C / 802.11n_HT20 / High ch.	**UNII-3 / 802.11n_HT20 / High ch.**
	

7.2. Frequency Stability

Test setup



Limit

N/A

Test procedure

ANSI C63.10-2013, clause 6.8.1

Test settings

The frequency stability of the carrier frequency of the intentional radiator shall be maintained all conditions of normal operation as specified in the user manual. The frequency stability shall be maintained over a temperature variation of specified in the user manual at normal supply voltage, and over a variation in the primary supply voltage of specified in the user manual of the rated supply voltage at a temperature of 20 °C. For equipment that is capable only of operating from a battery, the frequency stability tests shall be performed using a new battery without any further requirement to vary supply voltage.

1. The EUT was placed inside the environmental test chamber.
2. The temperature was incremented by 10 °C intervals from lowest temperature.
3. Each increase step of temperature measured the frequency.
4. The test temperature was set 20°C and the supply voltage was then adjusted on the EUT from 85 % to 115% and the frequency record.
5. While maintaining a constant temperature inside the environmental chamber, turn the EUT on and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

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Test results

Test mode : UNII-1

Frequency(㎐) : 5 180 000 000

Voltage	Voltage	TEMP	Maintaining time	Measure frequency	Frequency deviation	Deviation
[%]	[V]	[℃]		[㎐]	[㎐]	[%]
100	5	+22(Ref)	Startup	5 179 916 588	-83 412	-0.001 61
			2 minutes	5 179 917 042	-82 958	-0.001 60
			5 minutes	5 179 918 768	-81 232	-0.001 57
			10 minutes	5 179 919 463	-80 537	-0.001 55
		-30	Startup	5 180 005 320	5 320	0.000 10
			2 minutes	5 180 006 102	6 102	0.000 12
			5 minutes	5 180 006 937	6 937	0.000 13
			10 minutes	5 180 007 642	7 642	0.000 15
		-20	Startup	5 180 009 872	9 872	0.000 19
			2 minutes	5 180 010 235	10 235	0.000 20
			5 minutes	5 180 010 768	10 768	0.000 21
			10 minutes	5 180 011 341	11 341	0.000 22
		-10	Startup	5 179 968 062	-31 938	-0.000 62
			2 minutes	5 179 967 731	-32 269	-0.000 62
			5 minutes	5 179 967 625	-32 375	-0.000 63
			10 minutes	5 179 967 422	-32 578	-0.000 63
		0	Startup	5 179 966 542	-33 458	-0.000 65
			2 minutes	5 179 966 231	-33 769	-0.000 65
			5 minutes	5 179 965 867	-34 133	-0.000 66
			10 minutes	5 179 965 477	-34 523	-0.000 67
		10	Startup	5 179 942 616	-57 384	-0.001 11
			2 minutes	5 179 942 237	-57 763	-0.001 12
			5 minutes	5 179 941 864	-58 136	-0.001 12
			10 minutes	5 179 941 345	-58 655	-0.001 13
		20	Startup	5 179 923 844	-76 156	-0.001 47
			2 minutes	5 179 923 462	-76 538	-0.001 48
			5 minutes	5 179 923 052	-76 948	-0.001 49
			10 minutes	5 179 922 731	-77 269	-0.001 49
		30	Startup	5 179 918 690	-81 310	-0.001 57
			2 minutes	5 179 918 237	-81 763	-0.001 58
			5 minutes	5 179 917 849	-82 151	-0.001 59
			10 minutes	5 179 917 428	-82 572	-0.001 59
		40	Startup	5 179 924 643	-75 357	-0.001 45
			2 minutes	5 179 924 877	-75 123	-0.001 45
			5 minutes	5 179 925 031	-74 969	-0.001 45
			10 minutes	5 179 925 386	-74 614	-0.001 44
		50	Startup	5 179 934 778	-65 222	-0.001 26
			2 minutes	5 179 934 912	-65 088	-0.001 26
			5 minutes	5 179 935 106	-64 894	-0.001 25
			10 minutes	5 179 935 328	-64 672	-0.001 25
85	4.25	+22(Ref)	Startup	5 179 915 612	-84 388	-0.001 63
			2 minutes	5 179 915 831	-84 169	-0.001 62
			5 minutes	5 179 916 045	-83 955	-0.001 62
			10 minutes	5 179 916 287	-83 713	-0.001 62
115	5.75	+22(Ref)	Startup	5 179 917 413	-82 587	-0.001 59
			2 minutes	5 179 917 628	-82 372	-0.001 59
			5 minutes	5 179 917 844	-82 156	-0.001 59
			10 minutes	5 179 918 025	-81 975	-0.001 58

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Test mode : UNII-2A

Frequency(㎐) : 5 260 000 000

Voltage	Voltage	TEMP	Maintaining time	Measure frequency	Frequency deviation	Deviation
[%]	[V]	[℃]		[㎐]	[㎐]	[%]
100	5	+22(Ref)	Startup	5 259 916 451	-83 549	-0.001 59
			2 minutes	5 259 916 905	-83 095	-0.001 58
			5 minutes	5 259 918 631	-81 369	-0.001 55
			10 minutes	5 259 919 326	-80 674	-0.001 53
		-30	Startup	5 260 005 183	5 183	0.000 10
			2 minutes	5 260 005 965	5 965	0.000 11
			5 minutes	5 260 006 800	6 800	0.000 13
			10 minutes	5 260 007 505	7 505	0.000 14
		-20	Startup	5 260 009 735	9 735	0.000 19
			2 minutes	5 260 010 098	10 098	0.000 19
			5 minutes	5 260 010 631	10 631	0.000 20
			10 minutes	5 260 011 204	11 204	0.000 21
		-10	Startup	5 259 967 925	-32 075	-0.000 61
			2 minutes	5 259 967 594	-32 406	-0.000 62
			5 minutes	5 259 967 488	-32 512	-0.000 62
			10 minutes	5 259 967 285	-32 715	-0.000 62
		0	Startup	5 259 966 405	-33 595	-0.000 64
			2 minutes	5 259 966 094	-33 906	-0.000 64
			5 minutes	5 259 965 730	-34 270	-0.000 65
			10 minutes	5 259 965 340	-34 660	-0.000 66
		10	Startup	5 259 942 479	-57 521	-0.001 09
			2 minutes	5 259 942 100	-57 900	-0.001 10
			5 minutes	5 259 941 727	-58 273	-0.001 11
			10 minutes	5 259 941 208	-58 792	-0.001 12
		20	Startup	5 259 923 707	-76 293	-0.001 45
			2 minutes	5 259 923 325	-76 675	-0.001 46
			5 minutes	5 259 922 915	-77 085	-0.001 47
			10 minutes	5 259 922 594	-77 406	-0.001 47
		30	Startup	5 259 918 553	-81 447	-0.001 55
			2 minutes	5 259 918 100	-81 900	-0.001 56
			5 minutes	5 259 917 712	-82 288	-0.001 56
			10 minutes	5 259 917 291	-82 709	-0.001 57
		40	Startup	5 259 924 506	-75 494	-0.001 44
			2 minutes	5 259 924 740	-75 260	-0.001 43
			5 minutes	5 259 924 894	-75 106	-0.001 43
			10 minutes	5 259 925 249	-74 751	-0.001 42
		50	Startup	5 259 934 641	-65 359	-0.001 24
			2 minutes	5 259 934 775	-65 225	-0.001 24
			5 minutes	5 259 934 969	-65 031	-0.001 24
			10 minutes	5 259 935 191	-64 809	-0.001 23
85	4.25	+22(Ref)	Startup	5 259 915 475	-84 525	-0.001 61
			2 minutes	5 259 915 694	-84 306	-0.001 60
			5 minutes	5 259 915 908	-84 092	-0.001 60
			10 minutes	5 259 916 150	-83 850	-0.001 59
115	5.75	+22(Ref)	Startup	5 259 917 276	-82 724	-0.001 57
			2 minutes	5 259 917 491	-82 509	-0.001 57
			5 minutes	5 259 917 707	-82 293	-0.001 56
			10 minutes	5 259 917 888	-82 112	-0.001 56

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Test mode : UNII-2C

Frequency(㎐) : 5 500 000 000

Voltage	Voltage	TEMP	Maintaining time	Measure frequency	Frequency deviation	Deviation
[%]	[V]	[℃]		[㎐]	[㎐]	[%]
100	5	+22(Ref)	Startup	5 499 916 799	-83 201	-0.001 51
			2 minutes	5 499 917 253	-82 747	-0.001 50
			5 minutes	5 499 918 979	-81 021	-0.001 47
			10 minutes	5 499 919 674	-80 326	-0.001 46
		-30	Startup	5 500 005 531	5 531	0.000 10
			2 minutes	5 500 006 313	6 313	0.000 11
			5 minutes	5 500 007 148	7 148	0.000 13
			10 minutes	5 500 007 853	7 853	0.000 14
		-20	Startup	5 500 010 083	10 083	0.000 18
			2 minutes	5 500 010 446	10 446	0.000 19
			5 minutes	5 500 010 979	10 979	0.000 20
			10 minutes	5 500 011 552	11 552	0.000 21
		-10	Startup	5 499 968 273	-31 727	-0.000 58
			2 minutes	5 499 967 942	-32 058	-0.000 58
			5 minutes	5 499 967 836	-32 164	-0.000 58
			10 minutes	5 499 967 633	-32 367	-0.000 59
		0	Startup	5 499 966 753	-33 247	-0.000 60
			2 minutes	5 499 966 442	-33 558	-0.000 61
			5 minutes	5 499 966 078	-33 922	-0.000 62
			10 minutes	5 499 965 688	-34 312	-0.000 62
		10	Startup	5 499 942 827	-57 173	-0.001 04
			2 minutes	5 499 942 448	-57 552	-0.001 05
			5 minutes	5 499 942 075	-57 925	-0.001 05
			10 minutes	5 499 941 556	-58 444	-0.001 06
		20	Startup	5 499 924 055	-75 945	-0.001 38
			2 minutes	5 499 923 673	-76 327	-0.001 39
			5 minutes	5 499 923 263	-76 737	-0.001 40
			10 minutes	5 499 922 942	-77 058	-0.001 40
		30	Startup	5 499 918 901	-81 099	-0.001 47
			2 minutes	5 499 918 448	-81 552	-0.001 48
			5 minutes	5 499 918 060	-81 940	-0.001 49
			10 minutes	5 499 917 639	-82 361	-0.001 50
		40	Startup	5 499 924 854	-75 146	-0.001 37
			2 minutes	5 499 925 088	-74 912	-0.001 36
			5 minutes	5 499 925 242	-74 758	-0.001 36
			10 minutes	5 499 925 597	-74 403	-0.001 35
		50	Startup	5 499 934 989	-65 011	-0.001 18
			2 minutes	5 499 935 123	-64 877	-0.001 18
			5 minutes	5 499 935 317	-64 683	-0.001 18
			10 minutes	5 499 935 539	-64 461	-0.001 17
85	4.25	+22(Ref)	Startup	5 499 915 823	-84 177	-0.001 53
			2 minutes	5 499 916 042	-83 958	-0.001 53
			5 minutes	5 499 916 256	-83 744	-0.001 52
			10 minutes	5 499 916 498	-83 502	-0.001 52
115	5.75	+22(Ref)	Startup	5 499 917 624	-82 376	-0.001 50
			2 minutes	5 499 917 839	-82 161	-0.001 49
			5 minutes	5 499 918 055	-81 945	-0.001 49
			10 minutes	5 499 918 236	-81 764	-0.001 49

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Test mode : UNII-3

Frequency(㎐) : 5 745 000 000

Voltage	Voltage	TEMP	Maintaining time	Measure frequency	Frequency deviation	Deviation
[%]	[V]	[℃]		[㎐]	[㎐]	[%]
100	5	+22(Ref)	Startup	5 744 916 641	-83 359	-0.001 45
			2 minutes	5 744 917 095	-82 905	-0.001 44
			5 minutes	5 744 918 821	-81 179	-0.001 41
			10 minutes	5 744 919 516	-80 484	-0.001 40
		-30	Startup	5 745 005 373	5 373	0.000 09
			2 minutes	5 745 006 155	6 155	0.000 11
			5 minutes	5 745 006 990	6 990	0.000 12
			10 minutes	5 745 007 695	7 695	0.000 13
		-20	Startup	5 745 009 925	9 925	0.000 17
			2 minutes	5 745 010 288	10 288	0.000 18
			5 minutes	5 745 010 821	10 821	0.000 19
			10 minutes	5 745 011 394	11 394	0.000 20
		-10	Startup	5 744 968 115	-31 885	-0.000 56
			2 minutes	5 744 967 784	-32 216	-0.000 56
			5 minutes	5 744 967 678	-32 322	-0.000 56
			10 minutes	5 744 967 475	-32 525	-0.000 57
		0	Startup	5 744 966 595	-33 405	-0.000 58
			2 minutes	5 744 966 284	-33 716	-0.000 59
			5 minutes	5 744 965 920	-34 080	-0.000 59
			10 minutes	5 744 965 530	-34 470	-0.000 60
		10	Startup	5 744 942 669	-57 331	-0.001 00
			2 minutes	5 744 942 290	-57 710	-0.001 00
			5 minutes	5 744 941 917	-58 083	-0.001 01
			10 minutes	5 744 941 398	-58 602	-0.001 02
		20	Startup	5 744 923 897	-76 103	-0.001 32
			2 minutes	5 744 923 515	-76 485	-0.001 33
			5 minutes	5 744 923 105	-76 895	-0.001 34
			10 minutes	5 744 922 784	-77 216	-0.001 34
		30	Startup	5 744 918 743	-81 257	-0.001 41
			2 minutes	5 744 918 290	-81 710	-0.001 42
			5 minutes	5 744 917 902	-82 098	-0.001 43
			10 minutes	5 744 917 481	-82 519	-0.001 44
		40	Startup	5 744 924 696	-75 304	-0.001 31
			2 minutes	5 744 924 930	-75 070	-0.001 31
			5 minutes	5 744 925 084	-74 916	-0.001 30
			10 minutes	5 744 925 439	-74 561	-0.001 30
		50	Startup	5 744 934 831	-65 169	-0.001 13
			2 minutes	5 744 934 965	-65 035	-0.001 13
			5 minutes	5 744 935 159	-64 841	-0.001 13
			10 minutes	5 744 935 381	-64 619	-0.001 12
85	4.25	+22(Ref)	Startup	5 744 915 665	-84 335	-0.001 47
			2 minutes	5 744 915 884	-84 116	-0.001 46
			5 minutes	5 744 916 098	-83 902	-0.001 46
			10 minutes	5 744 916 340	-83 660	-0.001 46
115	5.75	+22(Ref)	Startup	5 744 917 466	-82 534	-0.001 44
			2 minutes	5 744 917 681	-82 319	-0.001 43
			5 minutes	5 744 917 897	-82 103	-0.001 43
			10 minutes	5 744 918 078	-81 922	-0.001 43

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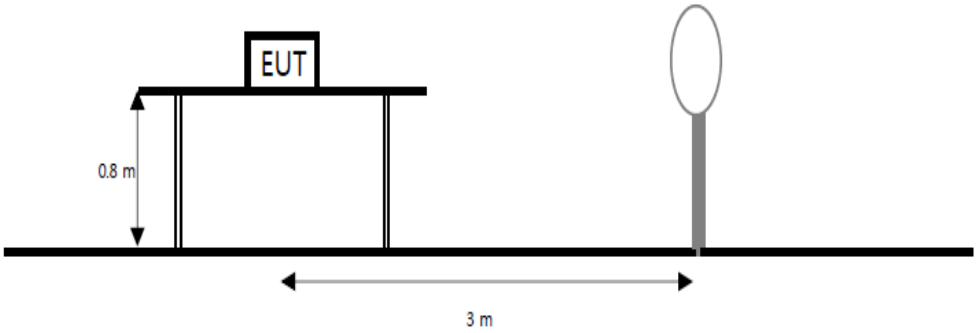
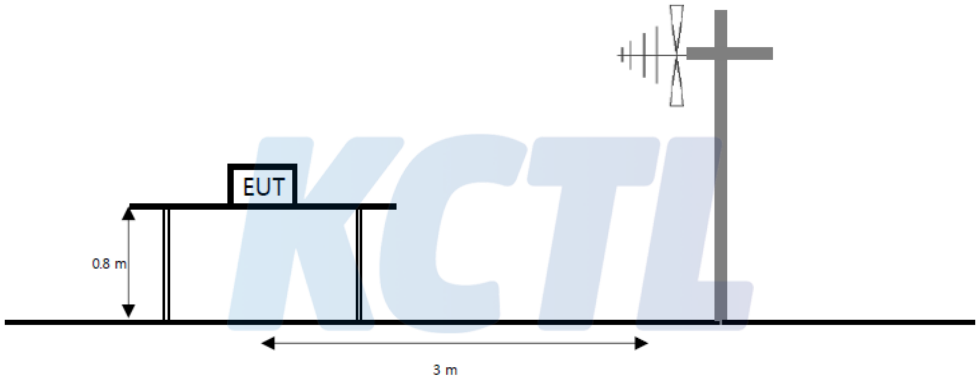
7.3. Spurious Emission, Band Edge and Restricted bands

Test setup

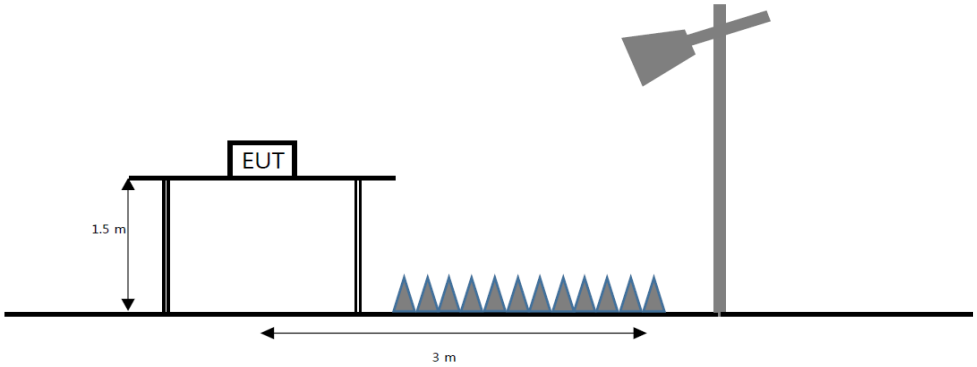
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒ Emissions



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 ㎒ to 1 ㎓ emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 ㎓ to the tenth harmonic of the highest fundamental frequency or to 40 ㎓ emissions, whichever is lower.



Limit

According to section 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 (㎒)	Field strength (㎶/m)	Measurement distance (m)
0.009 - 0.490	2 400/F(㎑)	300
0.490 - 1.705	24 000/F(㎑)	30
1.705 - 30	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 ㎒, 76–88 ㎒, 174–216 ㎒ or 470–806 ㎒. However, operation within these frequency bands is permitted under other sections of this part, e.g., Section15.231 and 15.241.

According to section 15.205(a) and (b) only spurious emissions are permitted in any of the frequency bands listed below:

㎒	㎒	㎒	㎓
0.009 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
0.495 - 0.505	16.694 75 - 16.695 25	608 - 614	5.35 - 5.46
2.173 5 - 2.190 5	16.804 25 - 16.804 75	960 – 1 240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1 300 – 1 427	8.025 - 8.5
4.177 25 - 4.177 75	37.5 - 38.25	1 435 – 1 626.5	9.0 - 9.2
4.207 25 - 4.207 75	73 - 74.6	1 645.5 – 1 646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1 660 – 1 710	10.6 - 12.7
6.267 75 - 6.268 25	108 - 121.94	1 718.8 – 1 722.2	13.25 - 13.4
6.311 75 - 6.312 25	123 - 138	2 200 – 2 300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2 310 – 2 390	15.35 - 16.2
8.362 - 8.366	156.524 75 - 156.525 25	2 483.5 – 2 500	17.7 - 21.4
8.376 25 - 8.386 75	156.7 - 156.9	2 690 – 2 900	22.01 - 23.12
8.414 25 - 8.414 75	162.012 5 - 167.17	3 260 – 3 267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3 332 – 3 339	31.2 - 31.8
12.519 75 - 12.520 25	240 - 285	3 345.8 – 3 358	36.43 - 36.5
12.576 75 - 12.577 25	322 - 335.4	3 600 – 4 400	Above 38.6
13.36 - 13.41			

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in section 15.209. At frequencies equal to or less than 1 000 ㎒, compliance with the limits in section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1 000 ㎒, compliance with the emission limits in section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in section 15.35 apply to these measurements.

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According to section 15.407(b), undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

For transmitters operating in the 5.15-5.25 ㎓ band: All emissions outside of the 5.15-5.35 ㎓ band shall not exceed an e.i.r.p. of −27 ㏈m/㎒
For transmitters operating in the 5.25-5.35 ㎓ band: All emissions outside of the 5.15-5.35 ㎓ band shall not exceed an e.i.r.p. of −27 ㏈m/㎒.

For transmitters operating in the 5.725-5.85 ㎓ band: All emissions shall be limited to a level of -27 ㏈m/㎒ at 75 ㎒ or more above or below the band edge increasing linearly to 10 ㏈m/㎒ at 25 ㎒ above or below the band edge, and form 25 ㎒ above or below the band edge increasing linearly to a level of 15.6 ㏈m/㎒ at 5 ㎒ above or below the band edge, and from 5 ㎒ above or below the band edge increasing linearly to a level of 27 ㏈m/㎒ at the band edge.

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Test procedure

ANSI C63.10-2013 Section 12.7.7.2, 12.7.5, 12.7.6
KDB 789033 D02 v02r01 – Section G

Test settings

Peak field strength measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = as specified in table
3. VBW ≥ (3×RBW)
4. Detector = peak
5. Sweep time = auto
6. Trace mode = max hold
7. Allow sweeps to continue until the trace stabilizes

Table. RBW as a function of frequency

Frequency	RBW
9 ㎑ to 150 ㎑	200 ㎐ to 300 ㎐
0.15 ㎒ to 30 ㎒	9 ㎑ to 10 ㎑
30 ㎒ to 1 000 ㎒	100 ㎑ to 120 ㎑
> 1 000 ㎒	1 ㎒

Average field strength measurements

Trace averaging with continuous EUT transmission at full power

If the EUT can be configured or modified to transmit continuously (D ≥ 98%), then the average emission levels shall be measured using the following method (with EUT transmitting continuously):

1. RBW = 1 ㎒ (unless otherwise specified).
2. VBW ≥ (3×RBW).
3. Detector = RMS (power averaging), if [span / (# of points in sweep)] ≤ (RBW / 2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
4. Averaging type = power (i.e., rms):
   1) As an alternative, the detector and averaging type may be set for linear voltage averaging.
   2) Some instruments require linear display mode to use linear voltage averaging. Log or ㏈ averaging shall not be used.
5. Sweep time = auto.
6. Perform a trace average of at least 100 traces.

Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction

If continuous transmission of the EUT (D ≥ 98%) cannot be achieved and the duty cycle is constant (duty cycle variations are less than ±2%), then the following procedure shall be used:

1. The EUT shall be configured to operate at the maximum achievable duty cycle.
2. Measure the duty cycle D of the transmitter output signal as described in 11.6.
3. RBW = 1 ㎒ (unless otherwise specified).
4. VBW ≥ [3 × RBW].
5. Detector = RMS (power averaging), if [span / (# of points in sweep)] ≤ (RBW / 2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this

condition cannot be satisfied, then the detector mode shall be set to peak.

6. Averaging type = power (i.e., rms):
   1) As an alternative, the detector and averaging type may be set for linear voltage averaging.
   2) Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.
7. Sweep time = auto.
8. Perform a trace average of at least 100 traces.
9. A correction factor shall be added to the measurement results prior to comparing with the emission limit to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:
   1) If power averaging (rms) mode was used in step f), then the applicable correction factor is [10 log (1 / D)], where D is the duty cycle.
   2) If linear voltage averaging mode was used in step f), then the applicable correction factor is [20 log (1 / D)], where D is the duty cycle.
   3) If a specific emission is demonstrated to be continuous (D ≥ 98%) rather than turning ON and OFF with with the transmit cycle, then no duty cycle correction is required for that emission.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 ㎒ for Peak detection and frequency above 1 ㎓. The resolution bandwidth of test receiver/spectrum analyzer is 1 ㎒ and the video bandwidth is 1 ㎑(≥1/T) for Average detection (AV) at frequency above 1 ㎓. (where T = pulse width)
2. *f* <30 ㎒, extrapolation factor of 40 ㏈/decade of distance. $F_d = 40\log(D_m/Ds)$
   f ≥30 ㎒, extrapolation factor of 20 ㏈/decade of distance. $F_d = 20\log(D_m/Ds)$
   Where:
   F_d= Distance factor in ㏈
   D_m= Measurement distance in meters
   D_s= Specification distance in meters
3. Factors(㏈) = Antenna factor(㏈/m) + Cable loss(㏈) + or Amp. gain(㏈) + or F_d(㏈)
4. The worst-case emissions are reported however emissions whose levels were not within 20 ㏈ of respective limits were not reported.
5. Average test would be performed if the peak result were greater than the average limit.
6. 1) means restricted band.
7. According to part 15.31(f)(2), an extrapolation factor of 40 dB/decade is applied because measured distance of radiated emission is 3 m.
8. Below 30 ㎒ frequency range, In order to search for the worst result, all orientations about parallel, perpendicular, and ground-parallel were investigated then reported. when the emission level was higher than 20 ㏈ of the limit, then the following statement shall be made: “No spurious emissions were detected within 20 ㏈ of the limit.”

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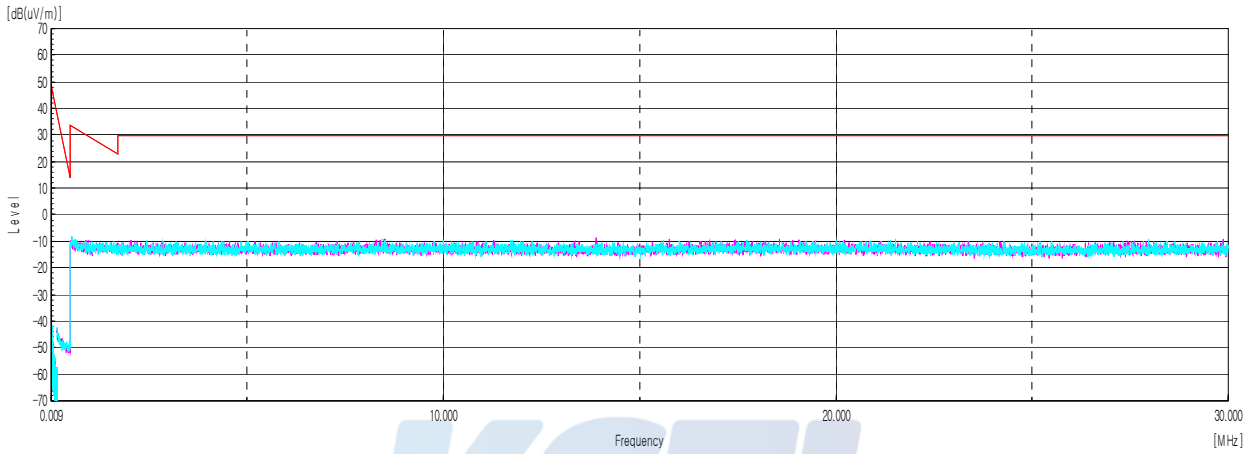
Test results (Below 30 ㎒) – Worst case: 802.11a / UNII-2A High frequency

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
No spurious emissions were detected within 20 ㏈ of the limit.								

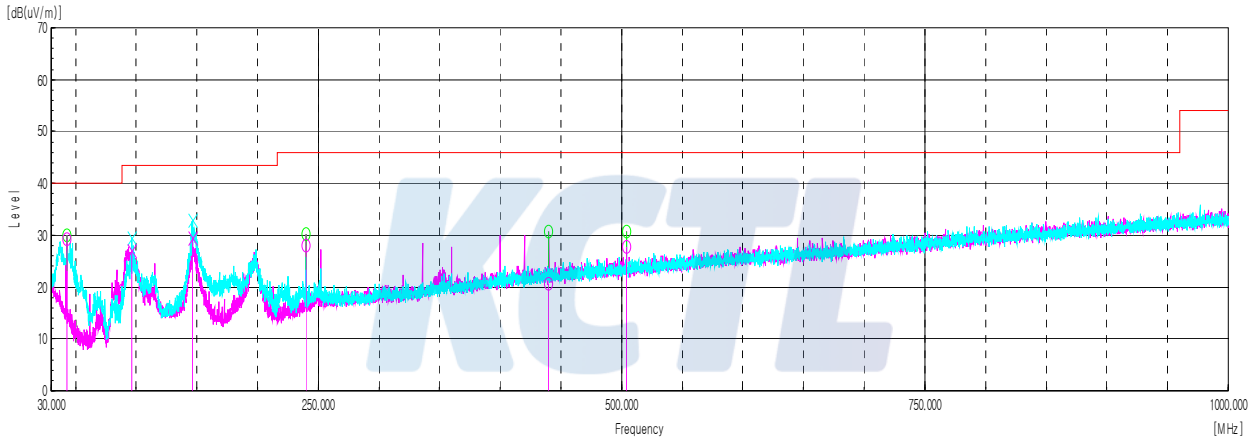
Horizontal/Vertical



Test results (Below 1 000 ㎒) – Worst case: 802.11a / UNII-2A High frequency

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Quasi peak data								
42.731	H	41.3	18.17	-30.29	-	29.18	40.00	10.82
96.203	V	39.8	16.32	-29.24	-	26.88	43.50	16.62
146.400	V	40.6	17.19	-28.47	-	29.32	43.50	14.18
240.005[1)]	H	37.4	17.60	-27.39	-	27.61	46.00	18.39
440.068	H	23.2	23.00	-25.52	-	20.68	46.00	25.32
503.966	H	29	23.82	-25.00	-	27.82	46.00	18.18

Horizontal/Vertical



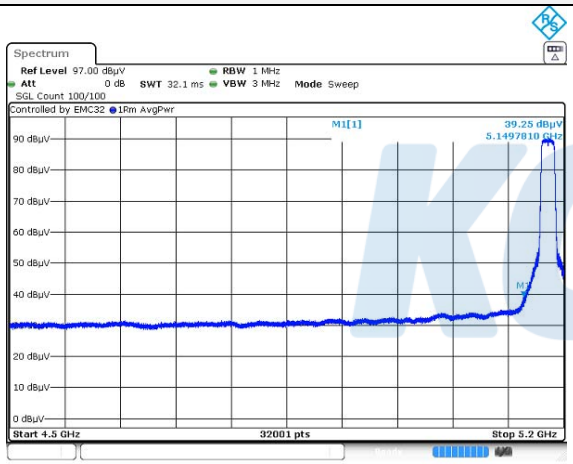
Test results (Above 1 000 ㎒)

802.11a_UNII-1

Lowest Channel (5 180 ㎒)

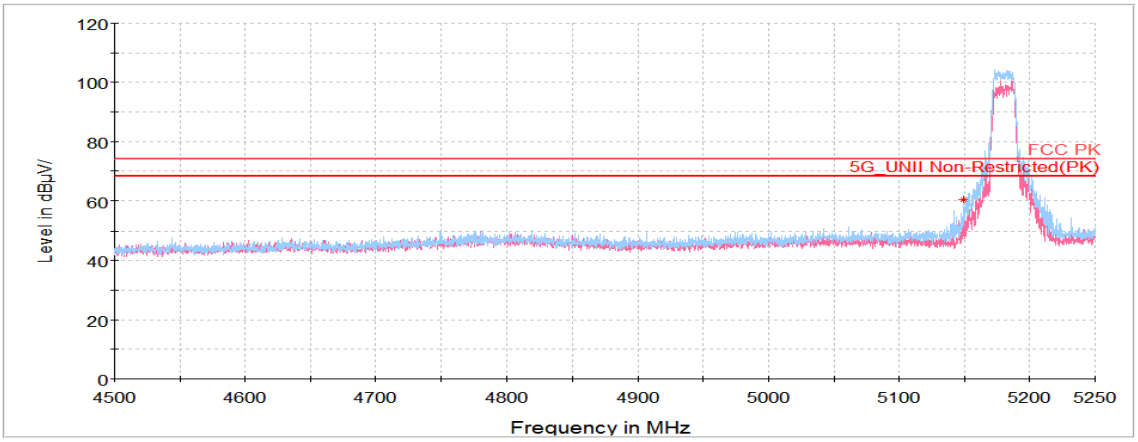
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 149.78[1)]	H	53.14	34.24	-27.12	-	60.26	74.00	13.74
10 347.11	H	58.74	37.25	-52.01	-	43.98	68.20	24.22
16 573.28	V	57.00	41.57	-45.41	-	53.16	68.20	15.04
Average Data								
5 149.78[1)]	H	39.25	34.24	-27.12	-	46.37	54.00	7.63

Average data

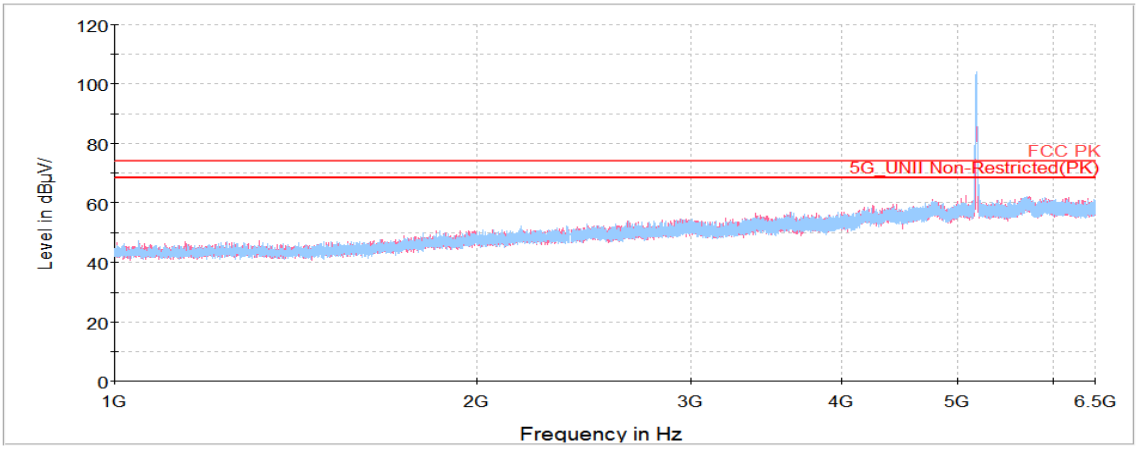


Blank

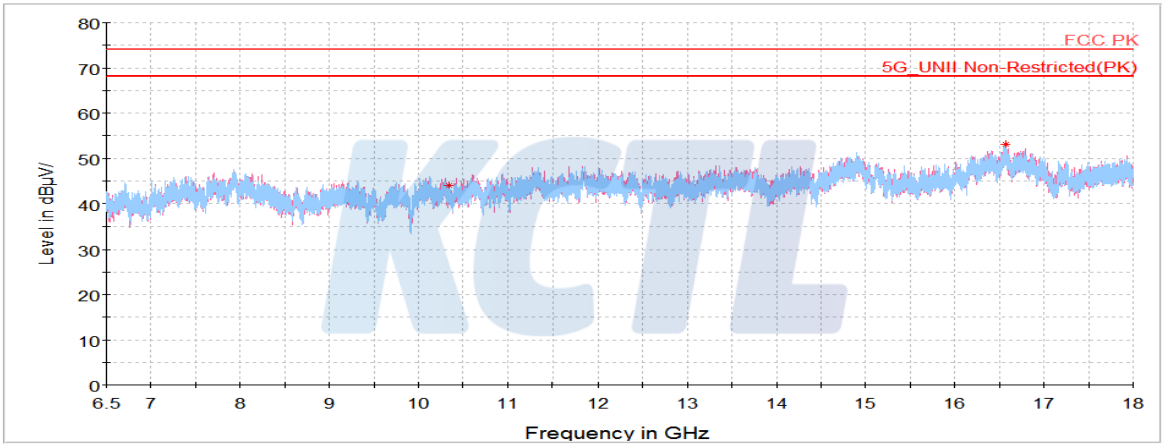
Horizontal/Vertical for Band-edge



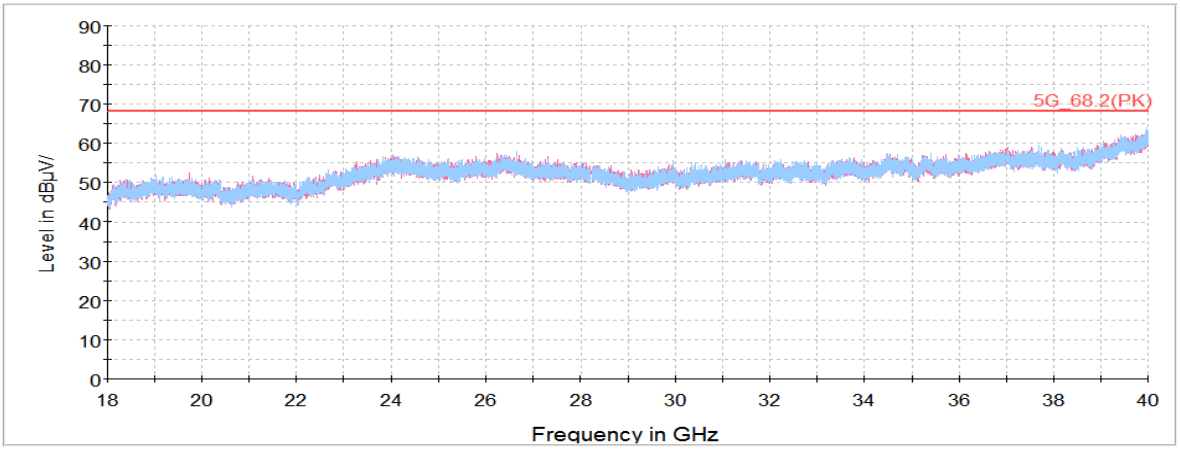
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



Middle Channel (5 200 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 419.70	V	60.07	37.32	-51.85	-	45.54	68.20	22.66
16 553.52	V	56.86	41.55	-45.33	-	53.08	68.20	15.12
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit								

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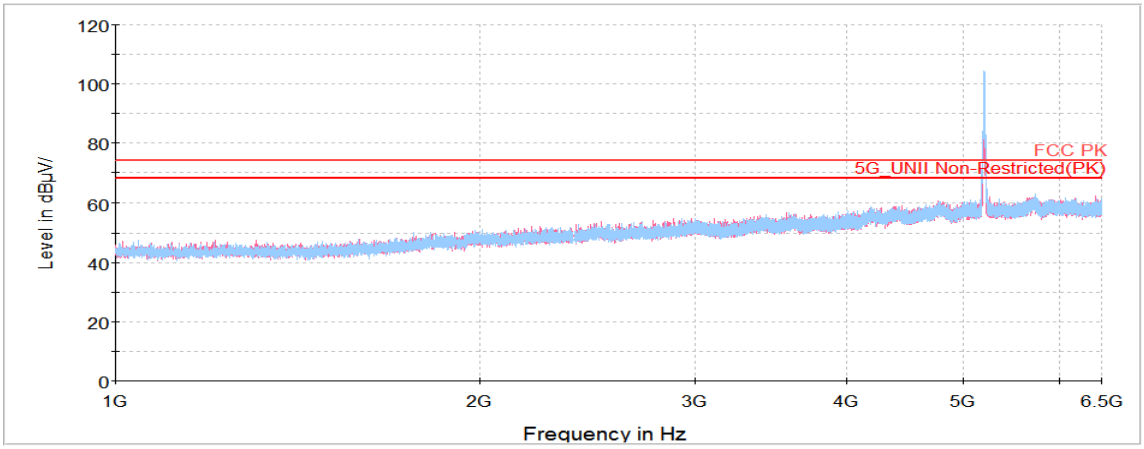
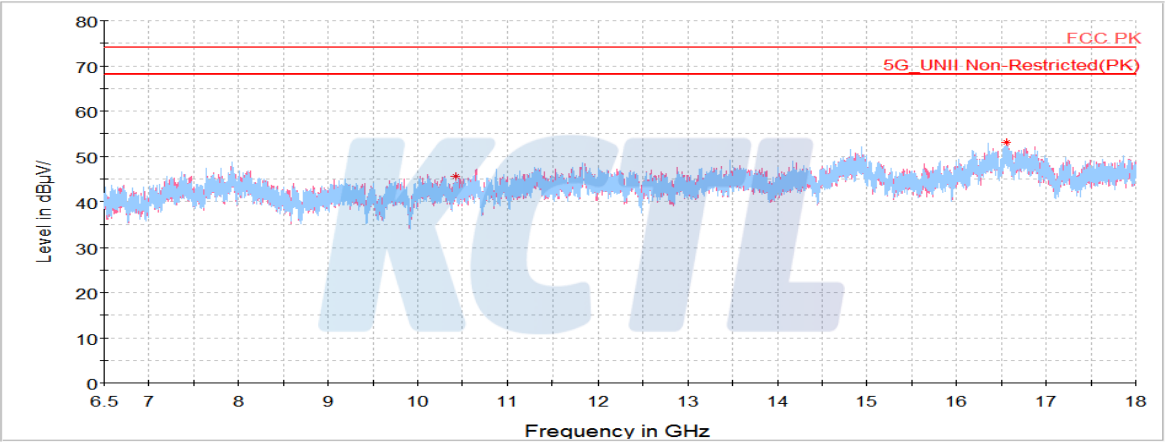
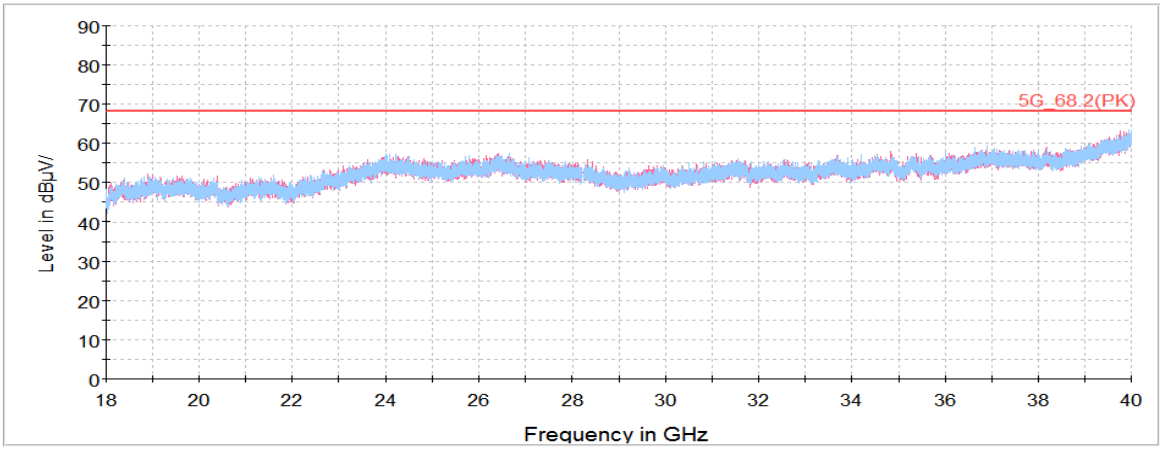
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



Highest Channel (5 240 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 499.84	H	59.84	37.40	-51.67	-	45.57	68.20	22.63
16 587.30	H	56.63	41.59	-45.46	-	52.76	68.20	15.44
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

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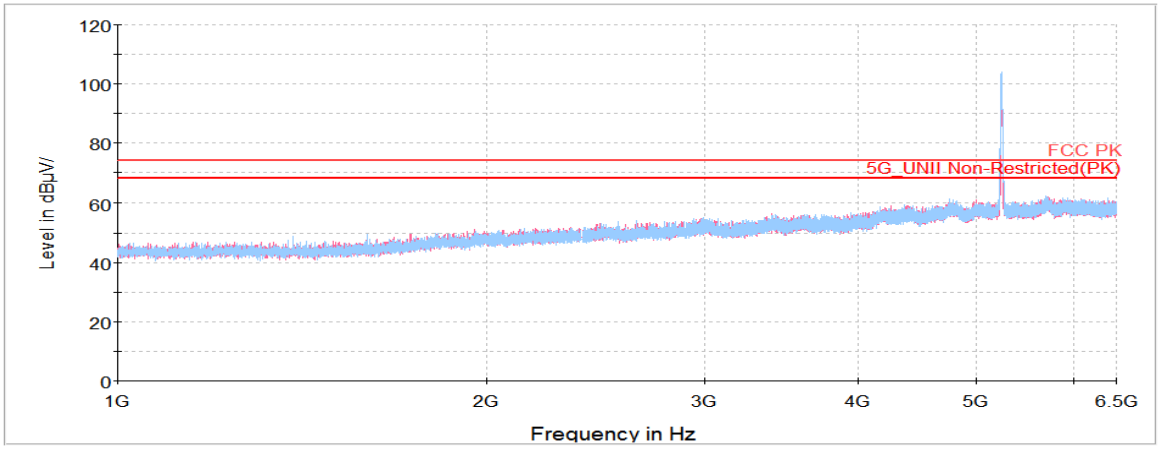
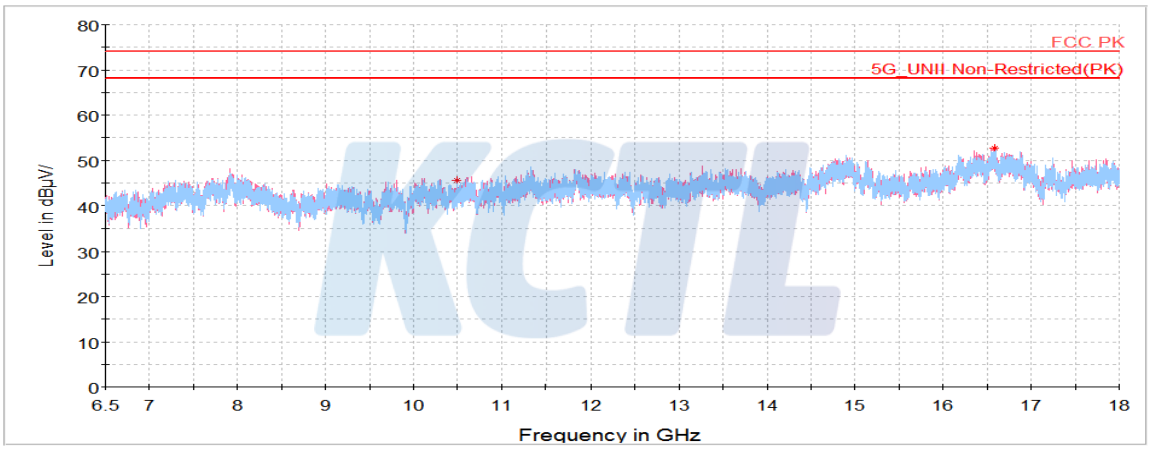
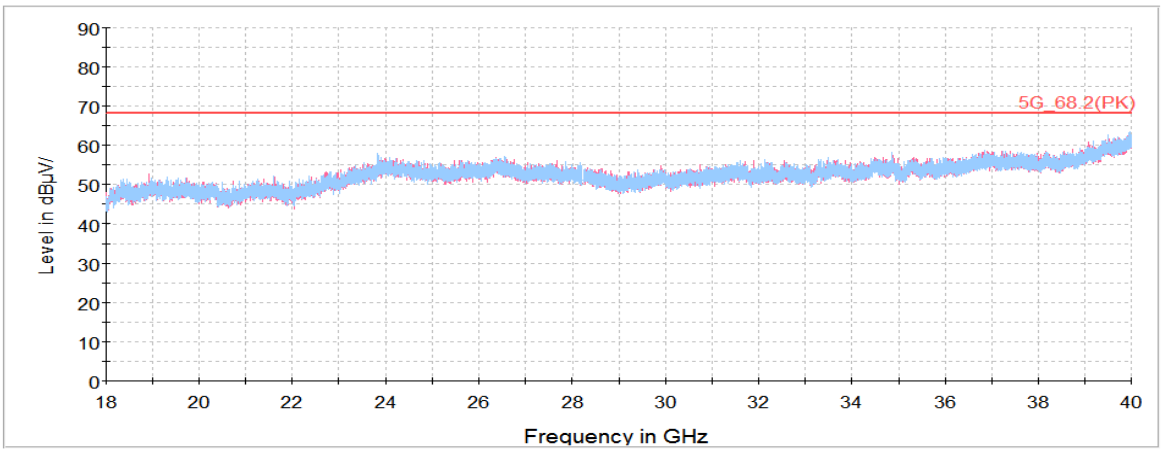
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



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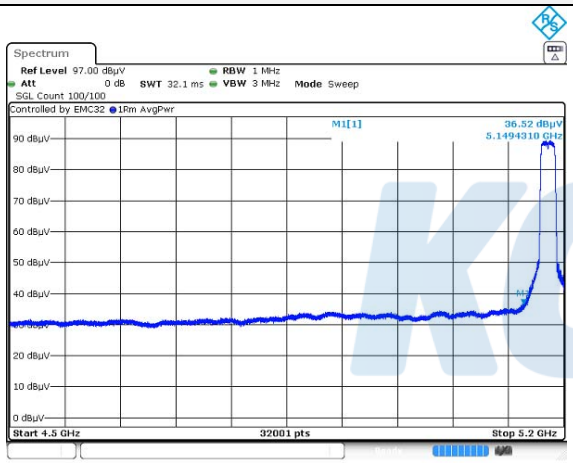
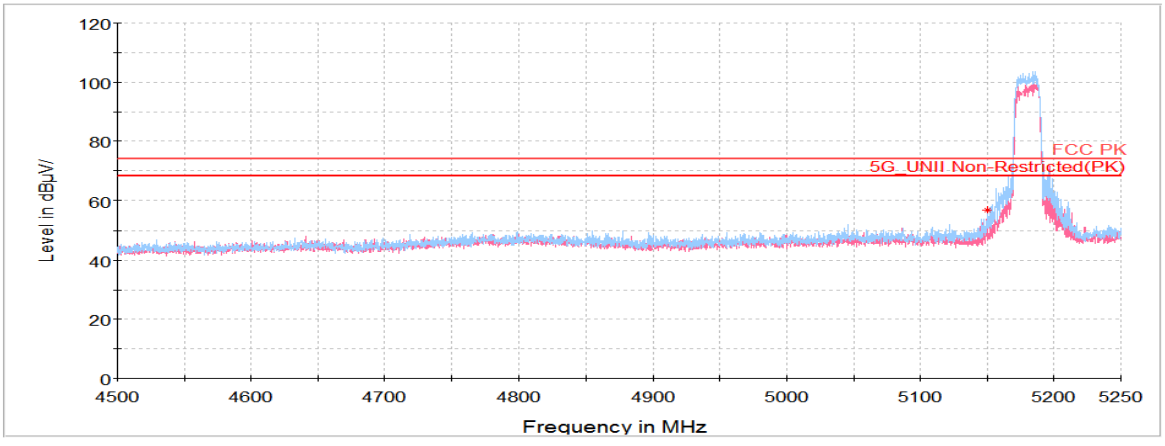
802.11n HT20 UNII-1

Lowest Channel (5 180 ㎒)

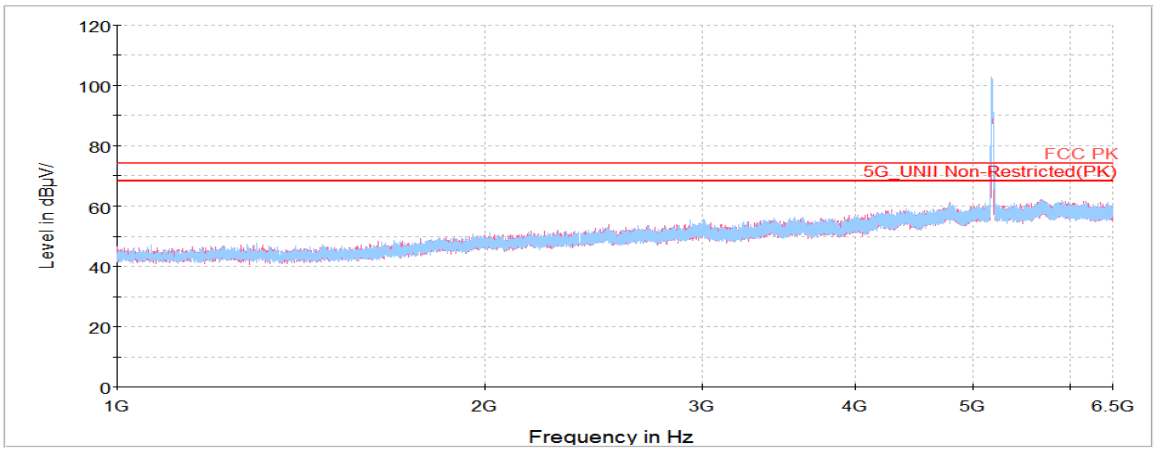
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 149.43[1)]	H	49.60	34.24	-27.12	-	56.72	74.00	17.28
10 412.88	V	60.54	37.31	-51.86	-	45.99	68.20	22.21
16 584.06	V	57.86	41.58	-45.45	-	53.99	68.20	14.21
Average Data								
5 149.43[1)]	H	36.52	34.24	-27.12	-	43.64	54.00	10.36

Average data	
	Blank

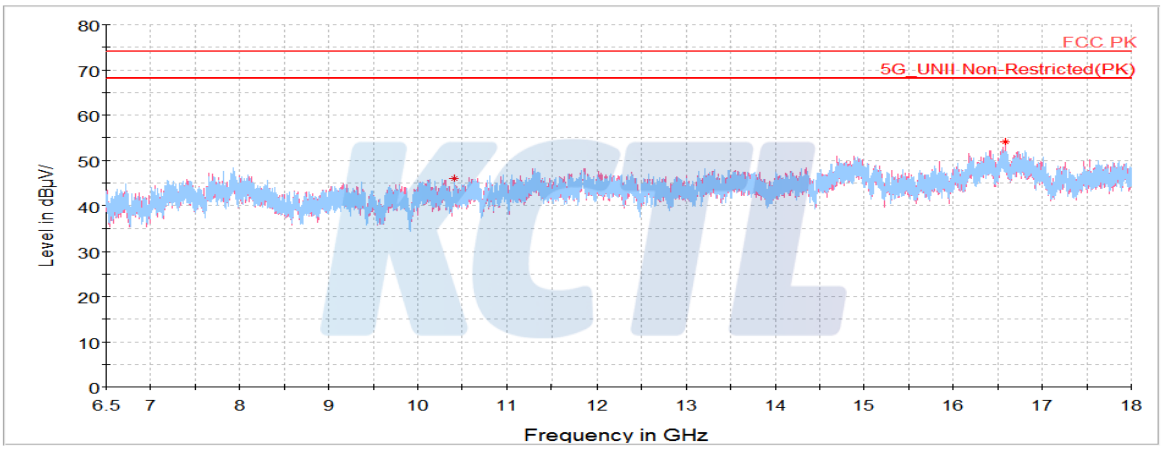
Horizontal/Vertical for Band-edge



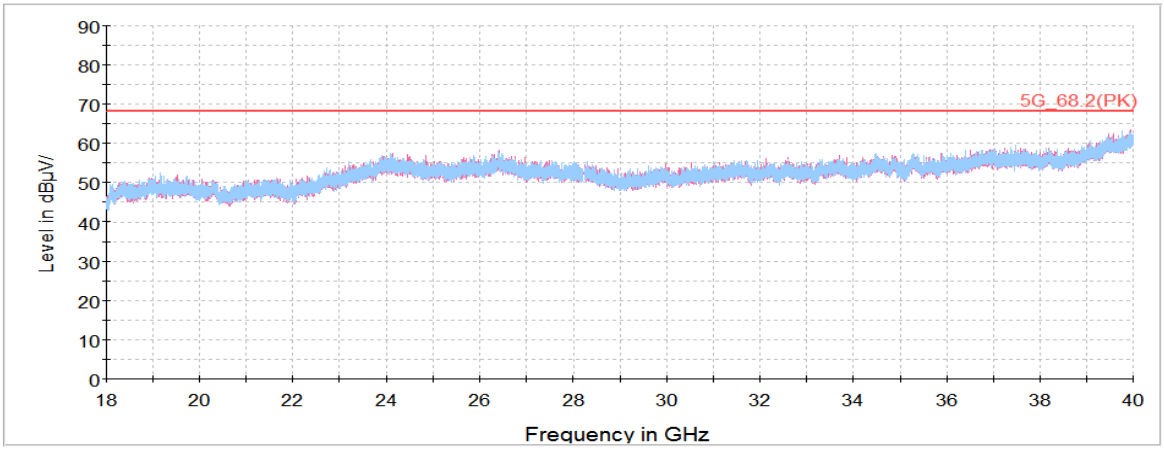
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓

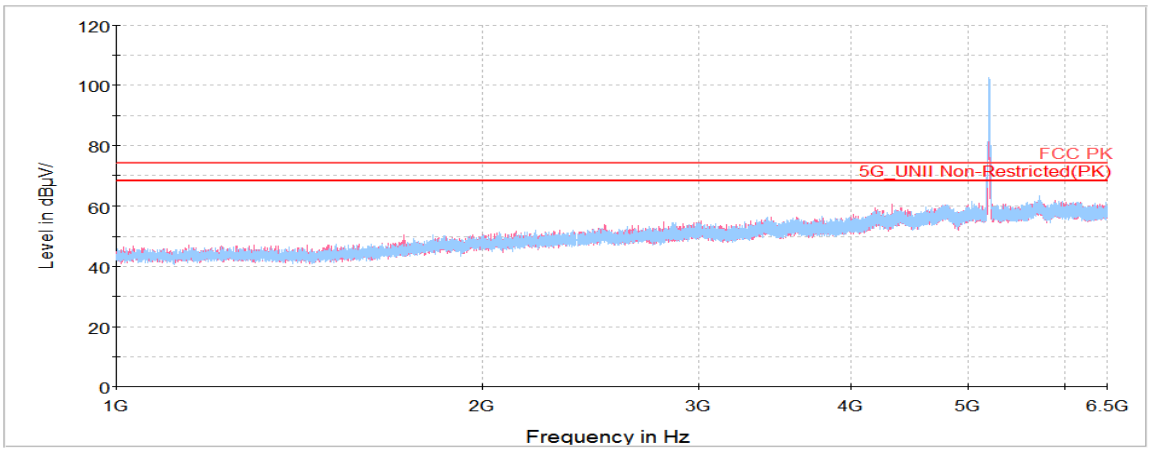


Middle Channel (5 200 ㎒)

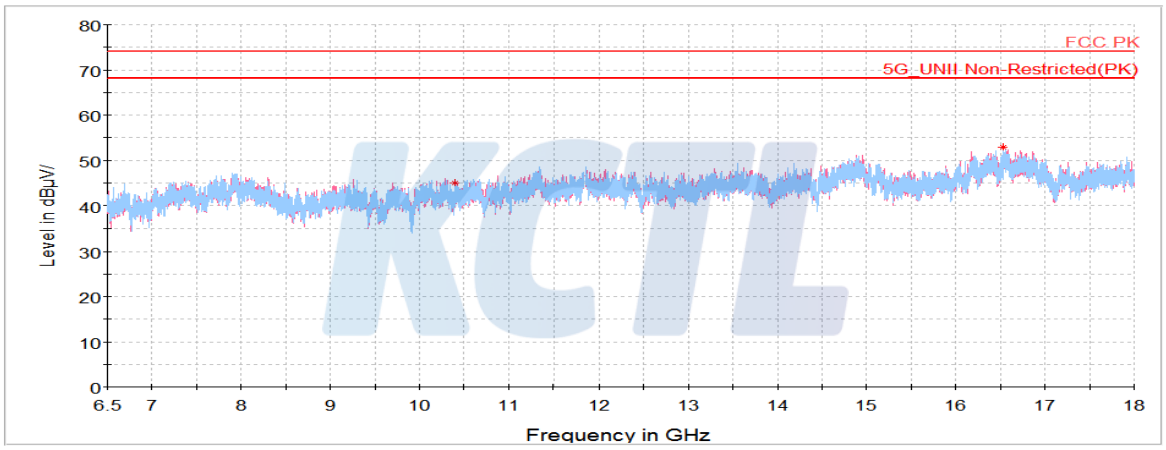
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 401.38	H	59.47	37.30	-51.89	-	44.88	68.20	23.32
16 528.36	V	56.67	41.53	-45.24	-	52.96	68.20	15.24
Average Data								
No spurious emissions were detected within 20 dB of the limit								

KCTL

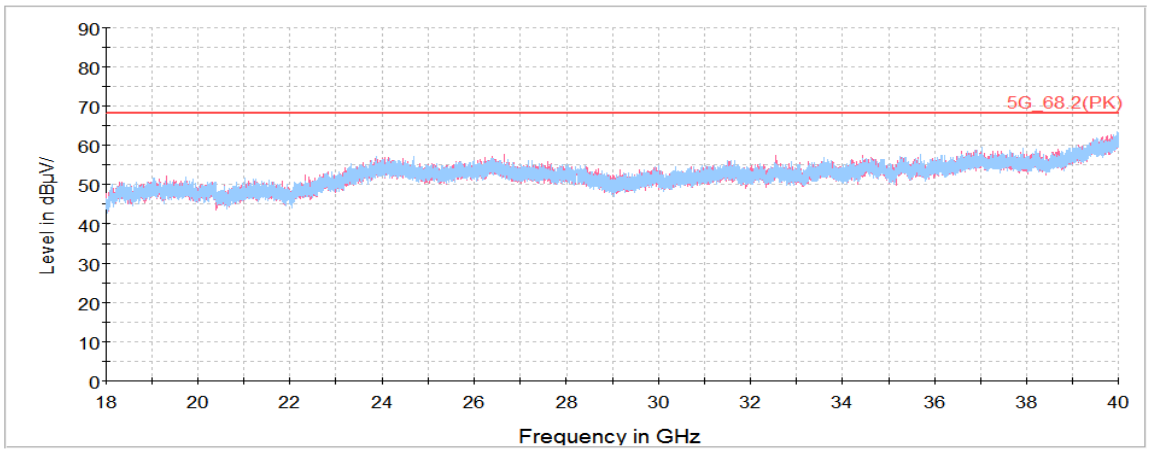
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



Highest Channel (5 240 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 478.28	V	58.65	37.38	-51.71	-	44.32	68.20	23.88
16 567.17	H	56.58	41.57	-45.38	-	52.77	68.20	15.43
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

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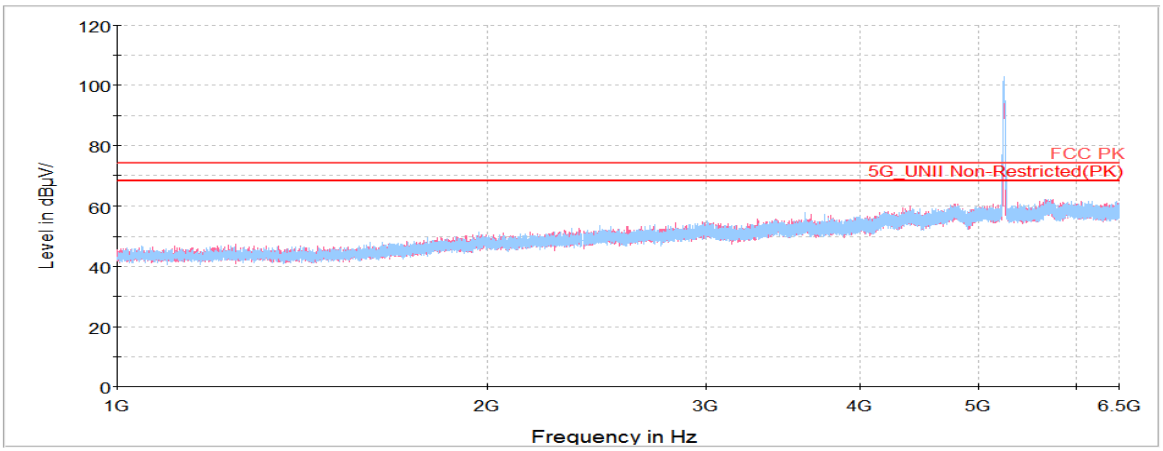
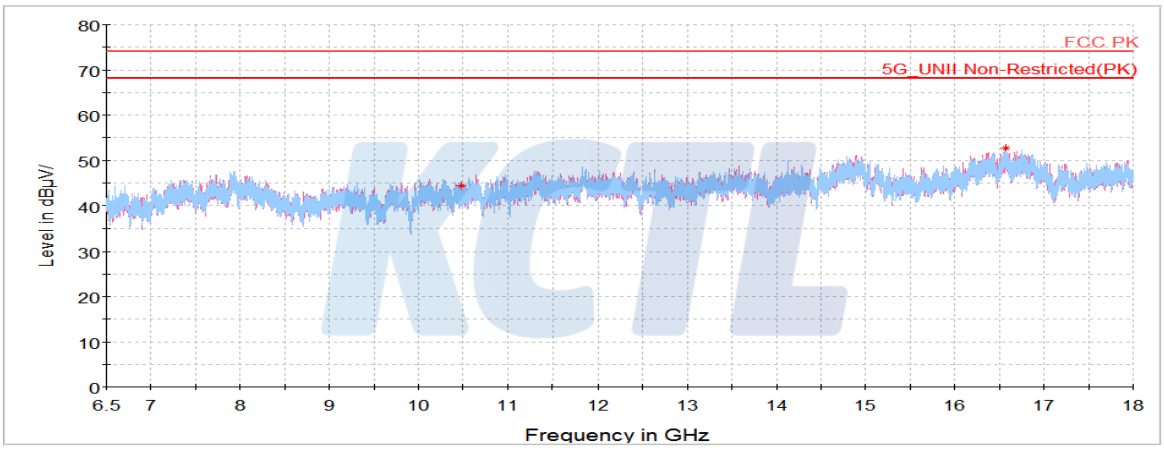
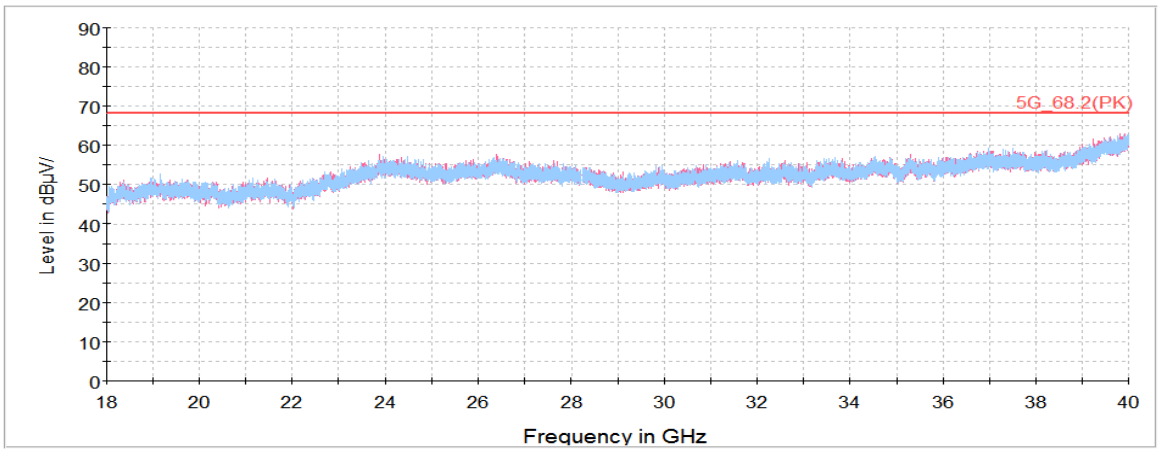
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



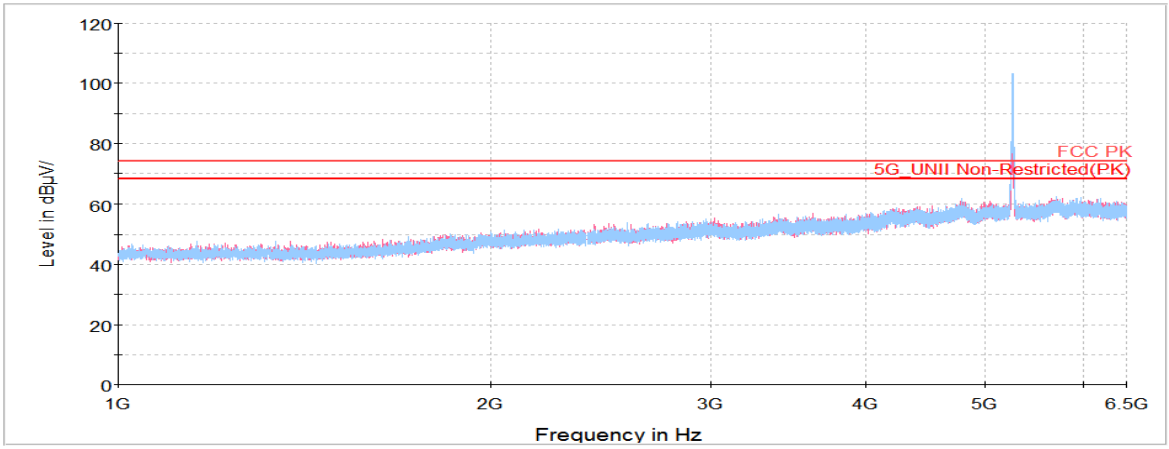
802.11a UNII-2A

Lowest Channel (5 260 ㎒)

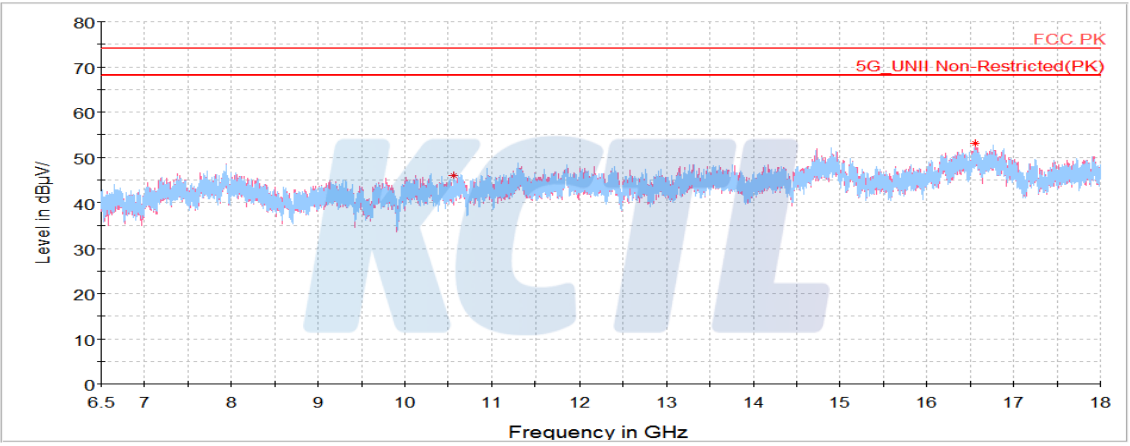
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 567.77	H	60.19	37.44	-51.70	-	45.93	68.20	22.27
16 564.30	V	56.97	41.56	-45.37	-	53.16	68.20	15.04
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

KCTL

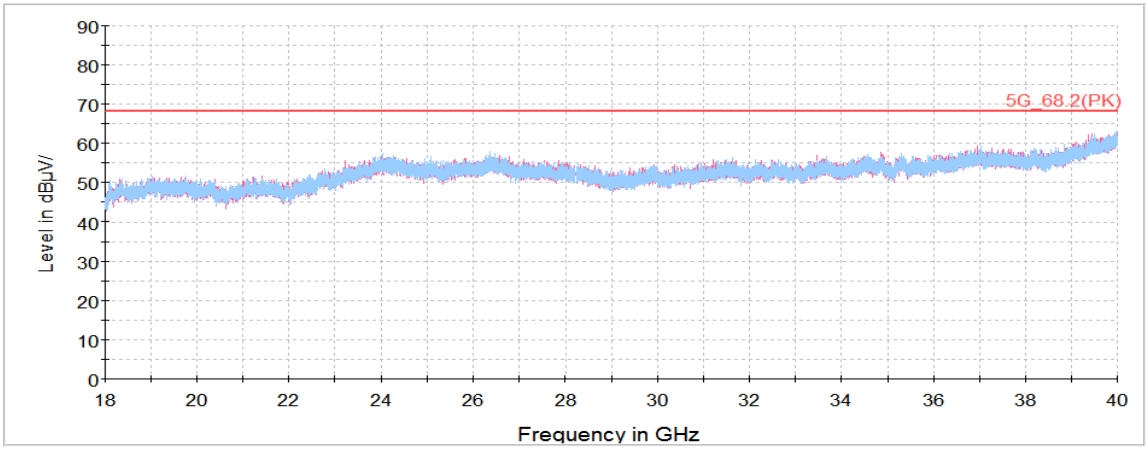
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



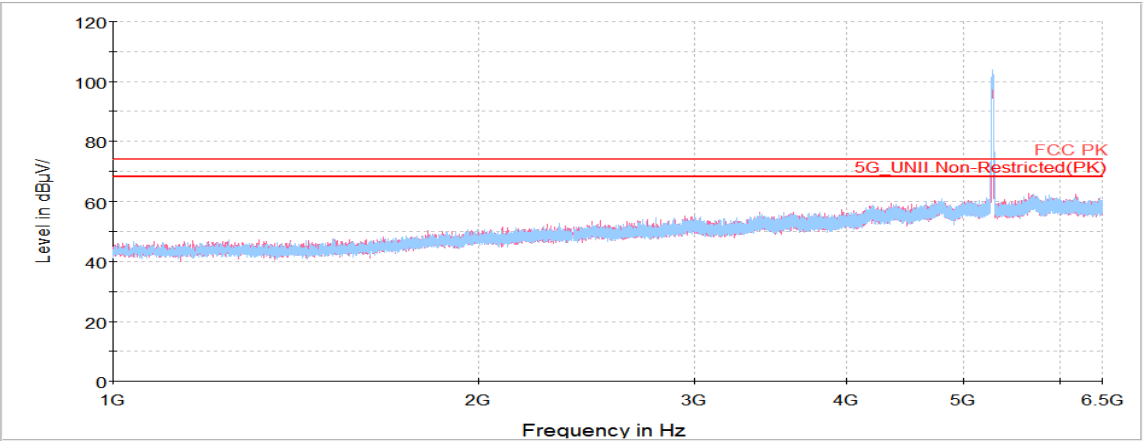
Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



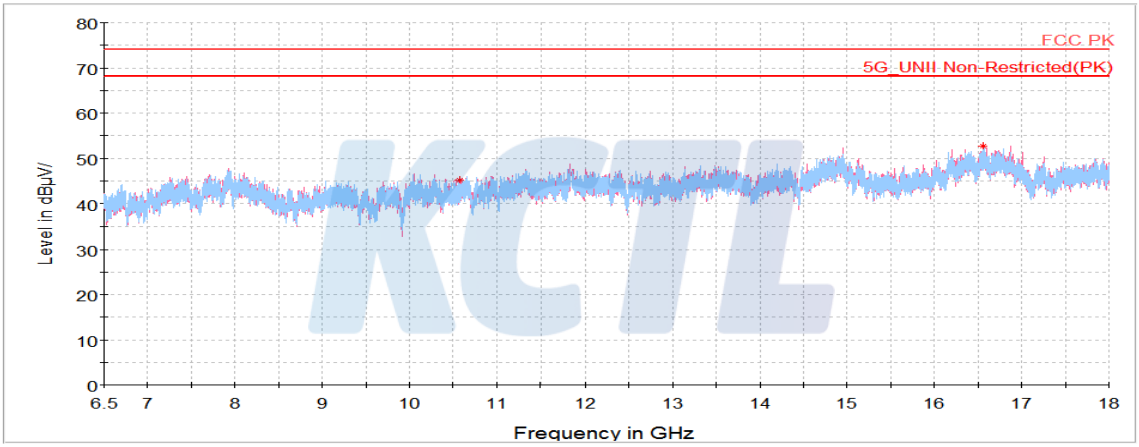
Middle Channel (5 280 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 577.11	H	59.50	37.45	-51.70	-	45.25	68.20	22.95
16 565.73	H	56.51	41.57	-45.38	-	52.70	68.20	15.50
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

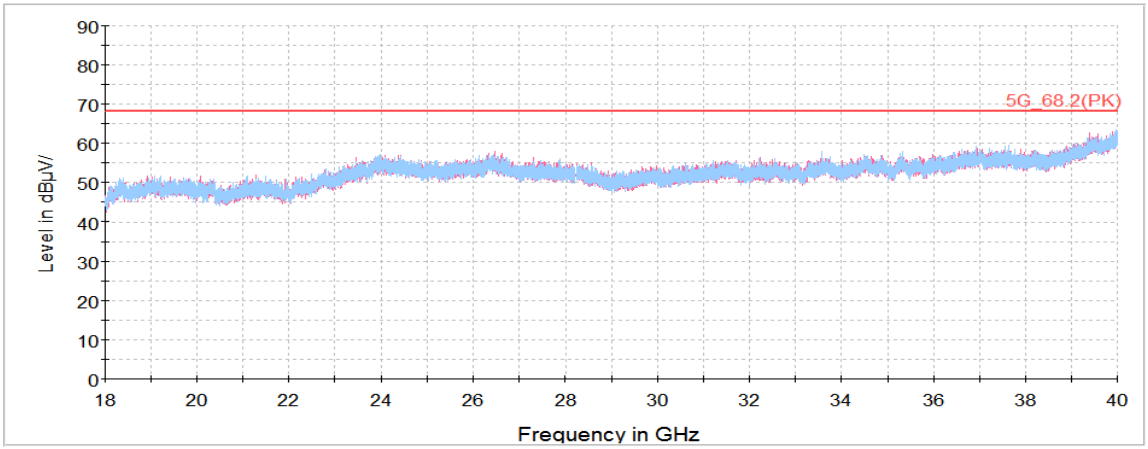
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



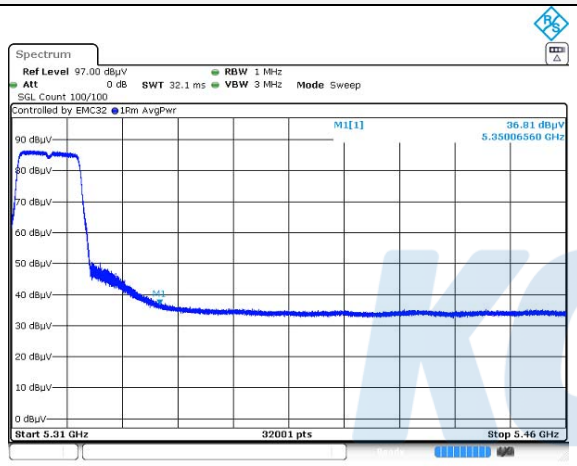
Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



Highest Channel (5 320 ㎒)

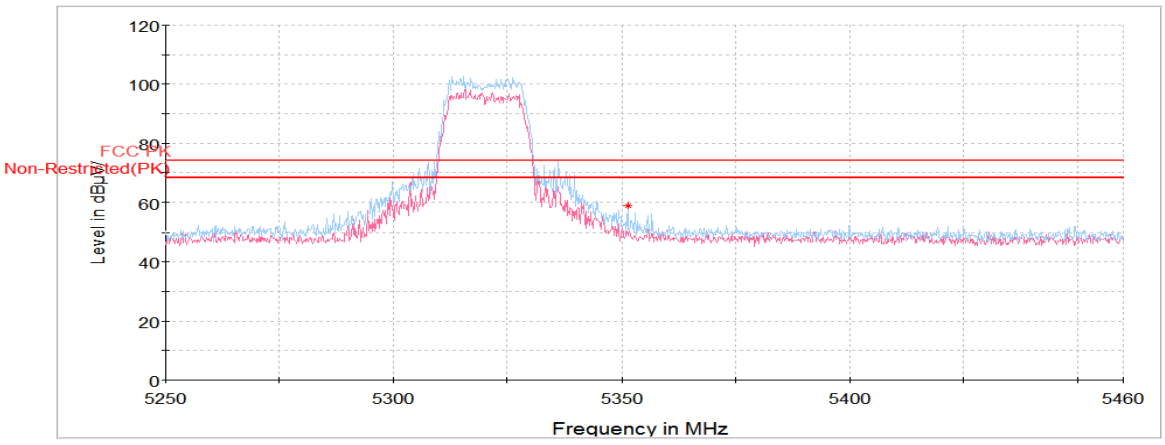
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 350.07[1)]	H	50.99	34.56	-26.84	-	58.71	74.00	15.29
10 654.02[1)]	H	60.77	37.49	-51.74	-	46.52	74.00	27.48
16 767.70	H	57.58	41.77	-46.12	-	53.23	68.20	14.97
Average Data								
5 350.07[1)]	H	36.81	34.56	-26.84	-	44.53	54.00	9.47

Average data

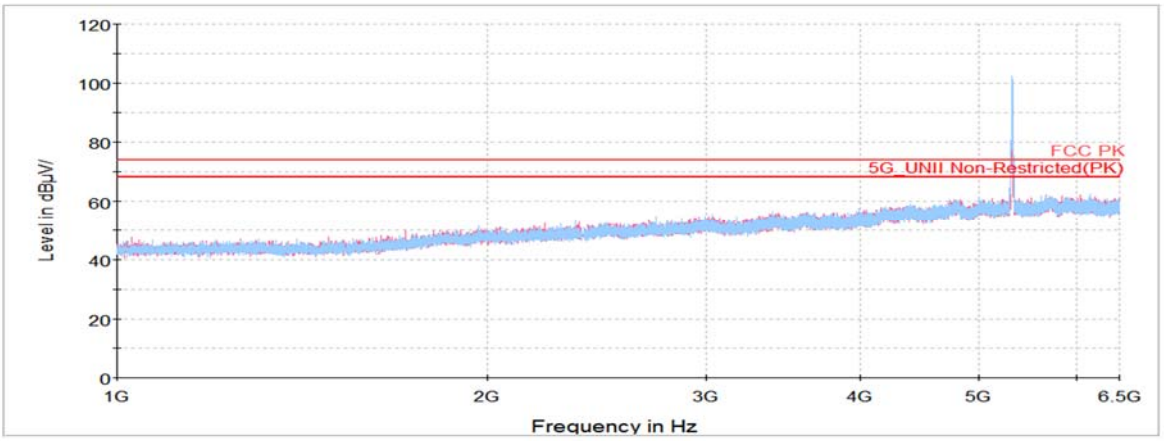


Blank

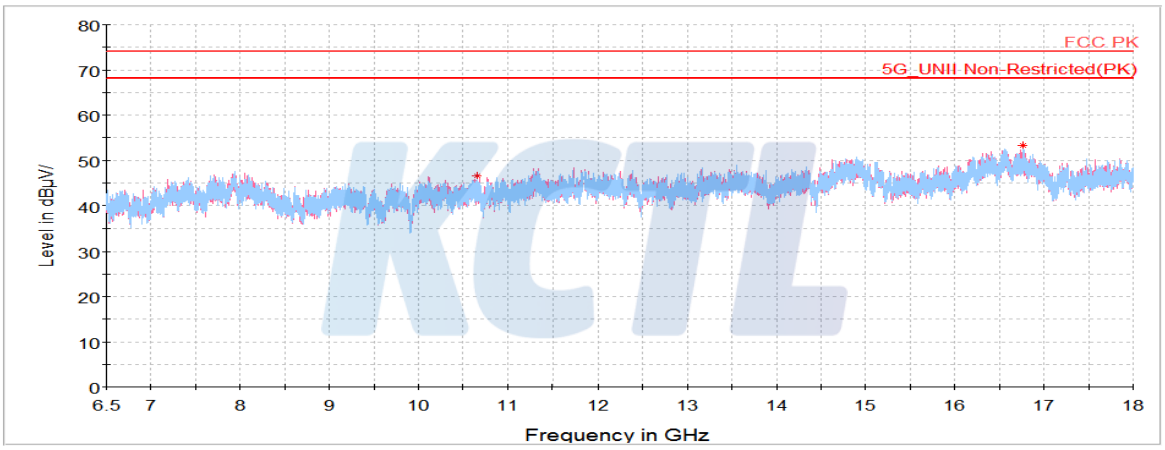
Horizontal/Vertical for Band-edge



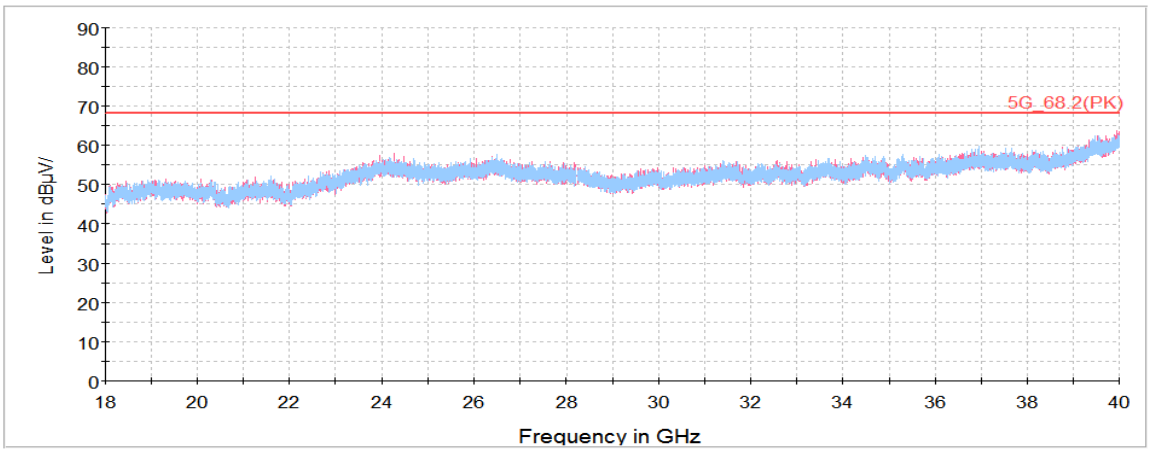
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



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802.11n_HT20_UNII-2A

Lowest Channel (5 260 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 651.50[1)]	V	61.90	37.49	-51.74	-	47.65	74.00	26.35
16 552.80	V	56.65	41.55	-45.33	-	52.87	68.20	15.33
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

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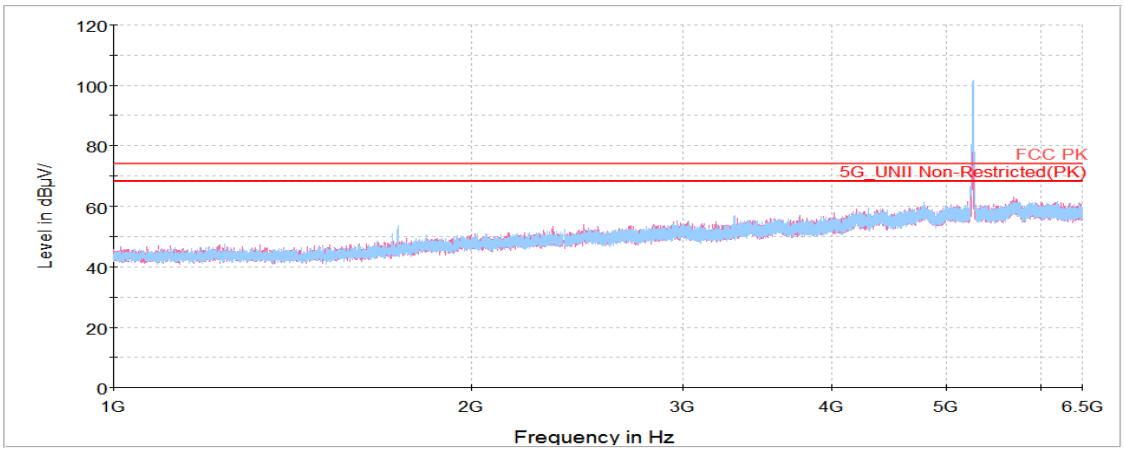
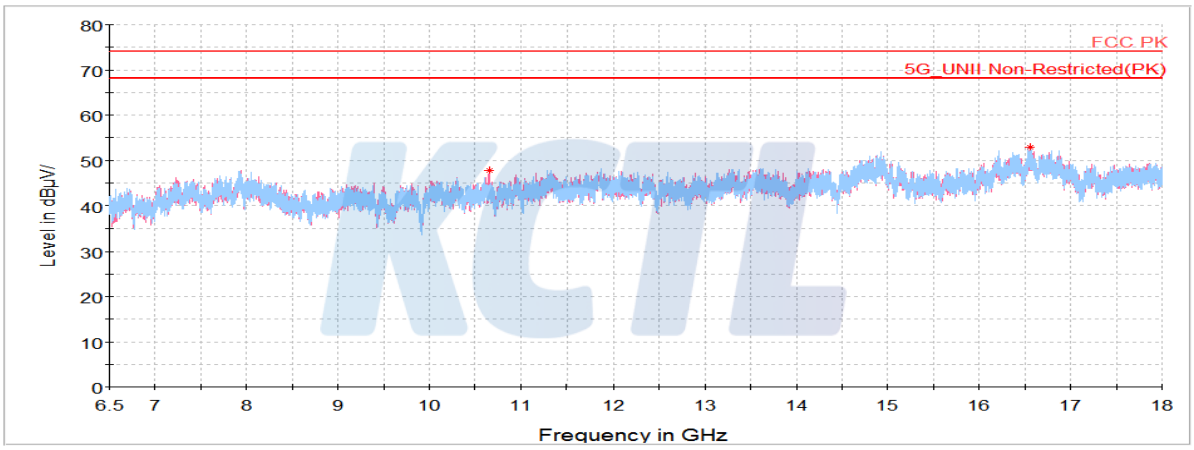
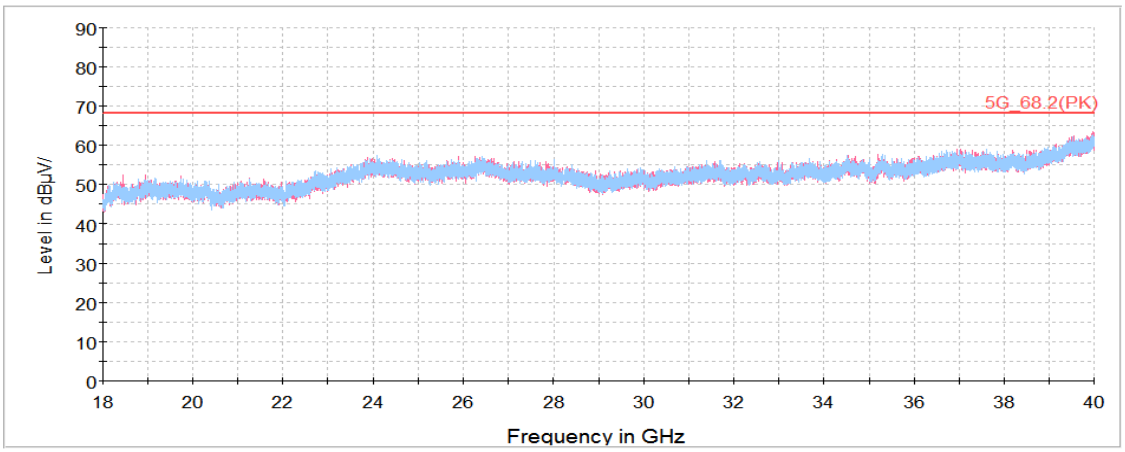
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



Middle Channel (5 280 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 571.72	H	59.11	37.44	-51.70	-	44.85	68.20	23.35
16 558.19	H	56.77	41.56	-45.35	-	52.98	68.20	15.22
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

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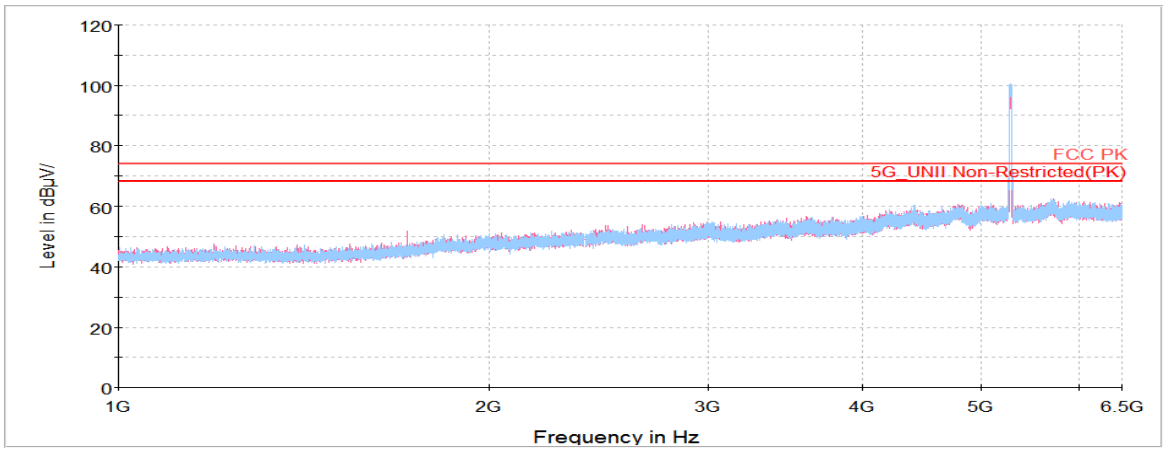
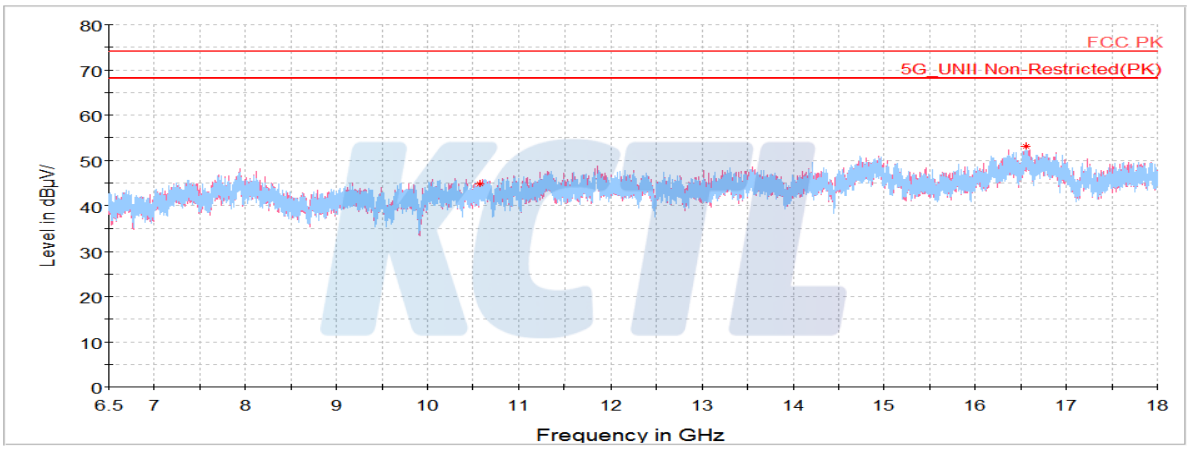
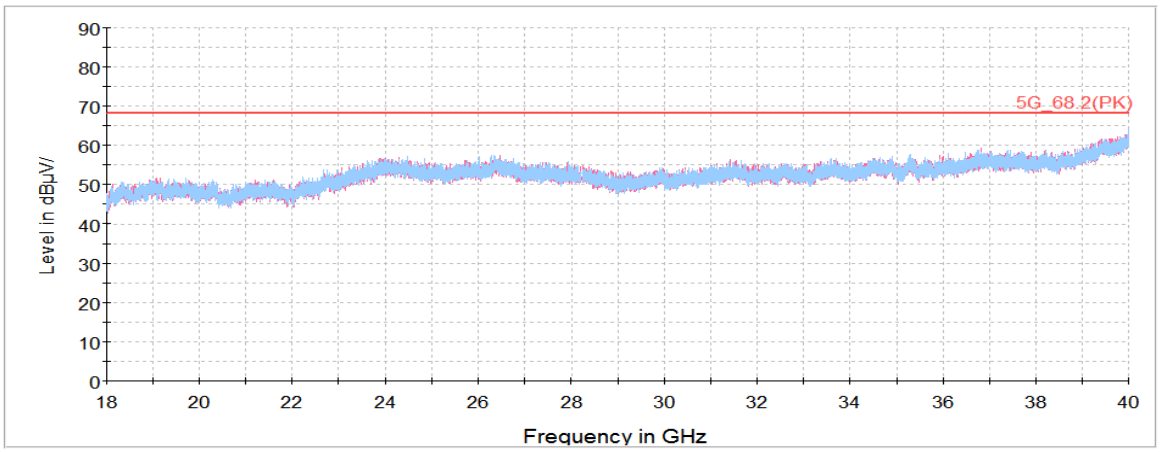
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



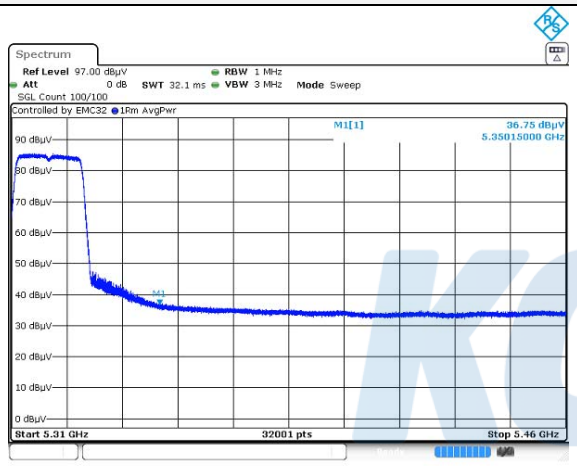
Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



Highest Channel (5 320 ㎒)

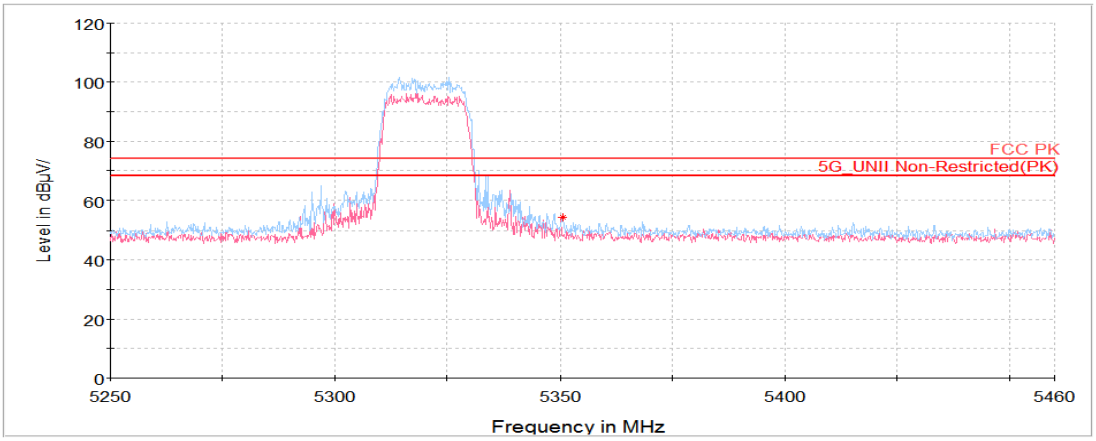
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 350.15[1)]	H	46.39	34.56	-26.84	-	60.08	74.00	13.92
10 657.61[1)]	V	60.38	37.49	-51.74	-	46.13	74.00	27.87
16 540.22	V	56.31	41.54	-45.28	-	52.57	68.20	15.63
Average Data								
5 350.21[1)]	H	36.75	34.56	-26.84	-	44.47	54.00	9.53

Average data

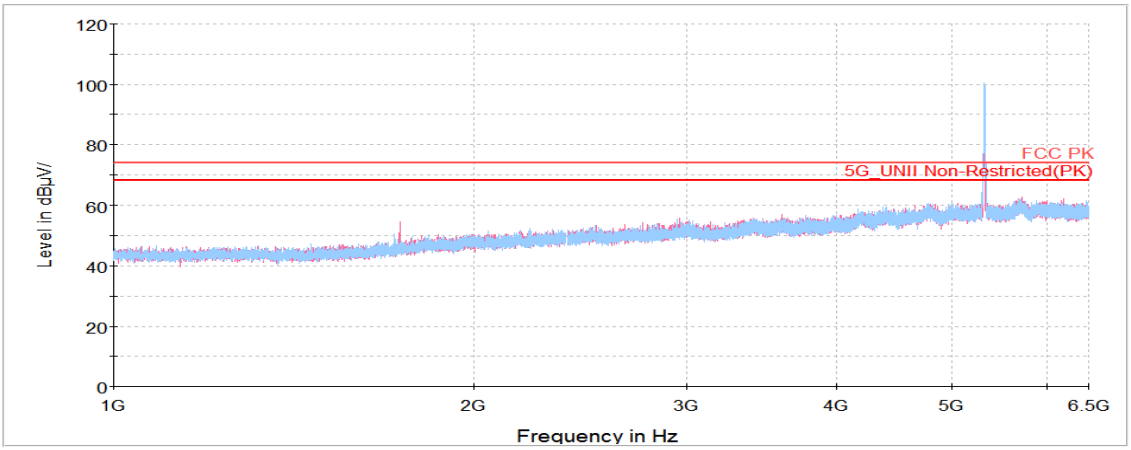


Blank

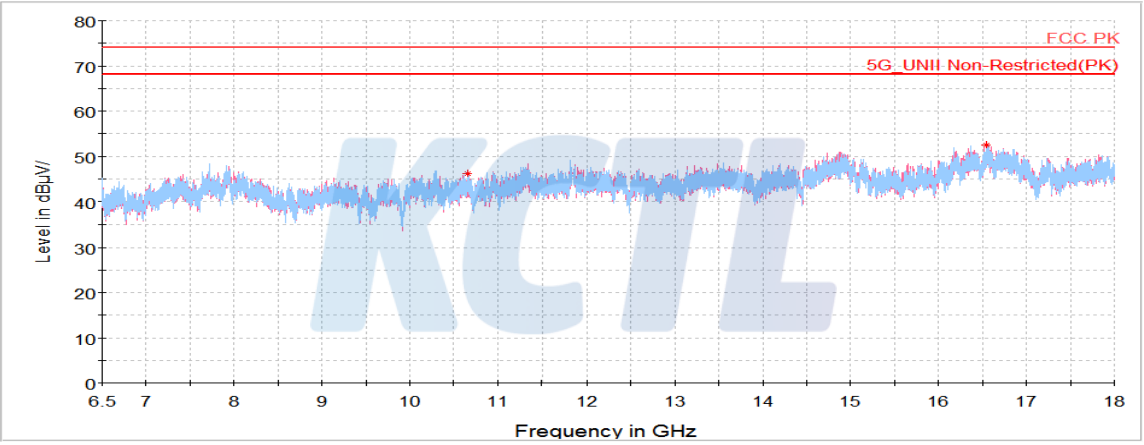
Horizontal/Vertical for Band-edge



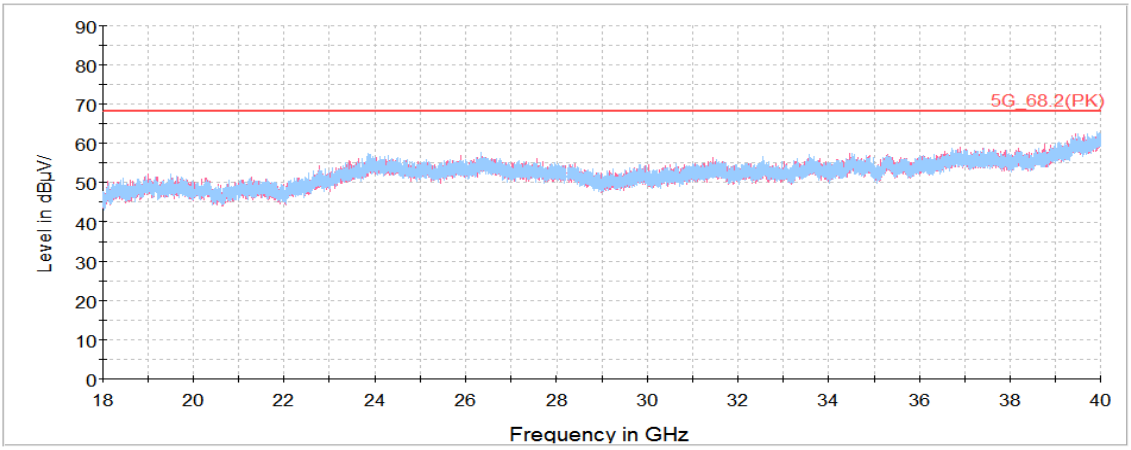
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



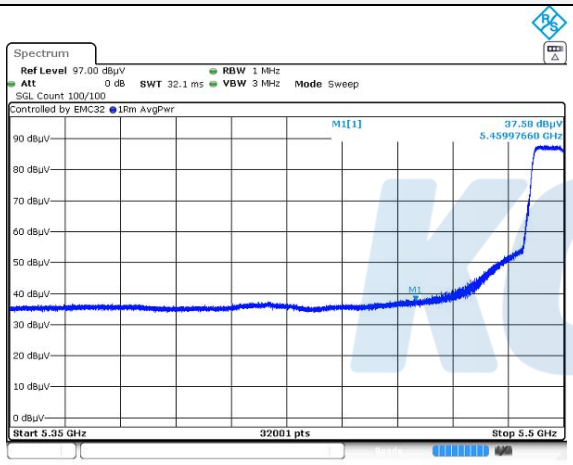
Horizontal/Vertical for 18 ㎓ ~ 40 ㎓

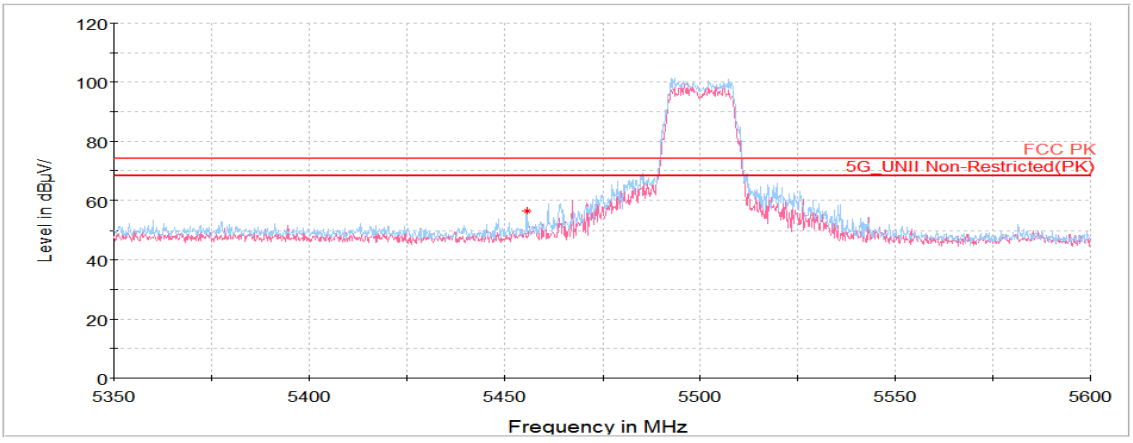


802.11a_UNII-2C

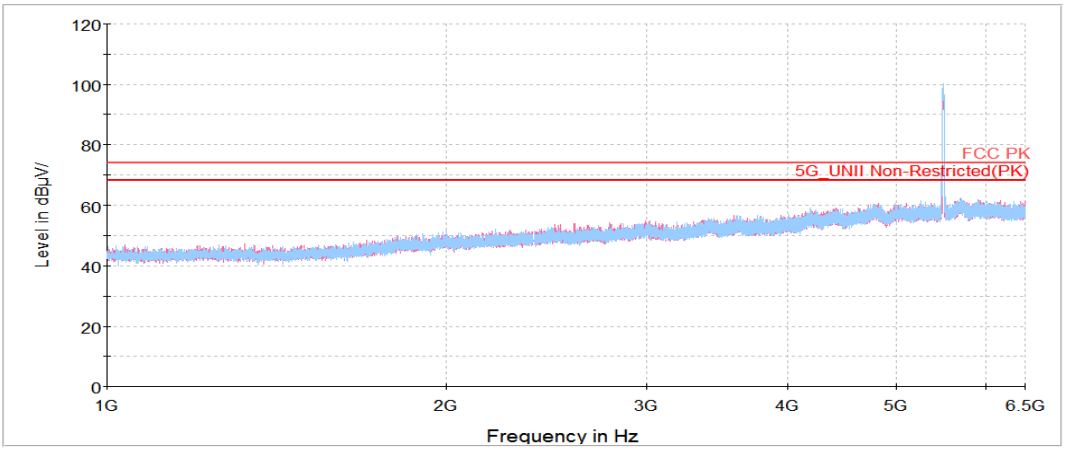
Lowest Channel (5 500 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 459.98[1)]	H	48.91	34.74	-27.35	-	56.30	74.00	17.70
11 000.45[1)]	V	60.77	37.70	-51.90	-	46.57	74.00	27.43
16 549.92	V	57.51	41.55	-45.32	-	53.74	68.20	14.46
Average Data								
5 459.98[1)]	H	37.58	34.74	-27.35	-	44.97	54.00	9.03

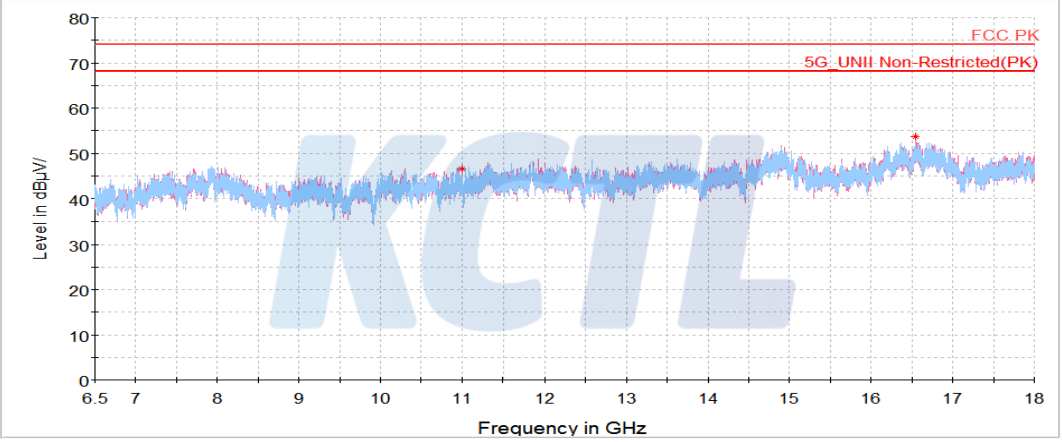
Average data	
	Blank

Horizontal/Vertical for Band-edge


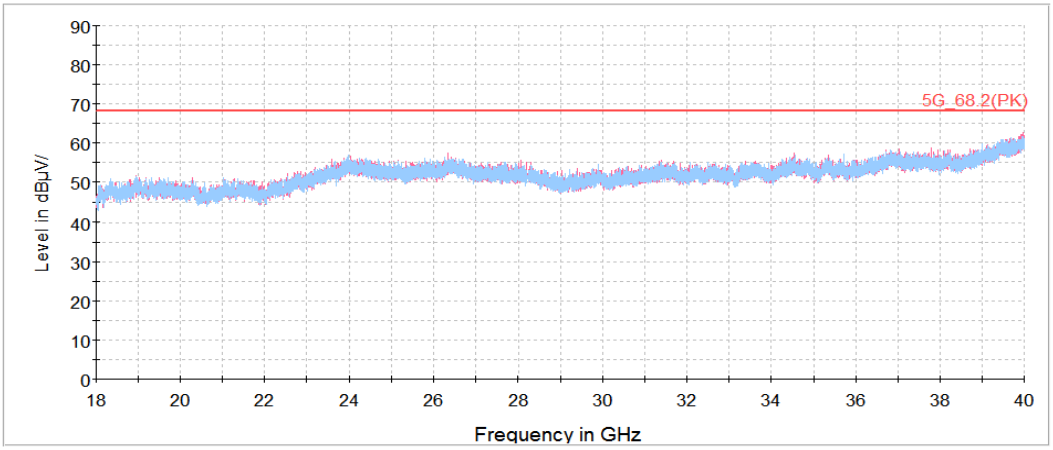
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓

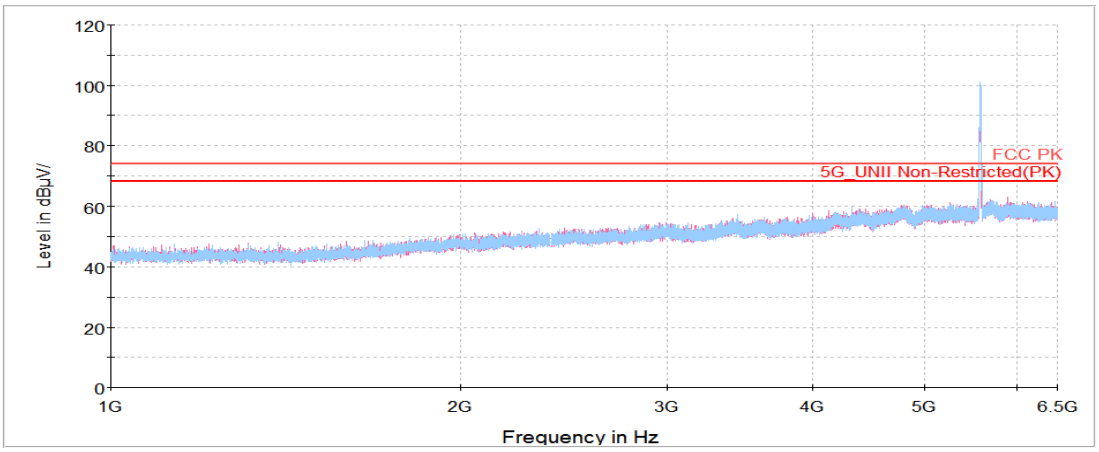


Middle Channel (5 580 ㎒)

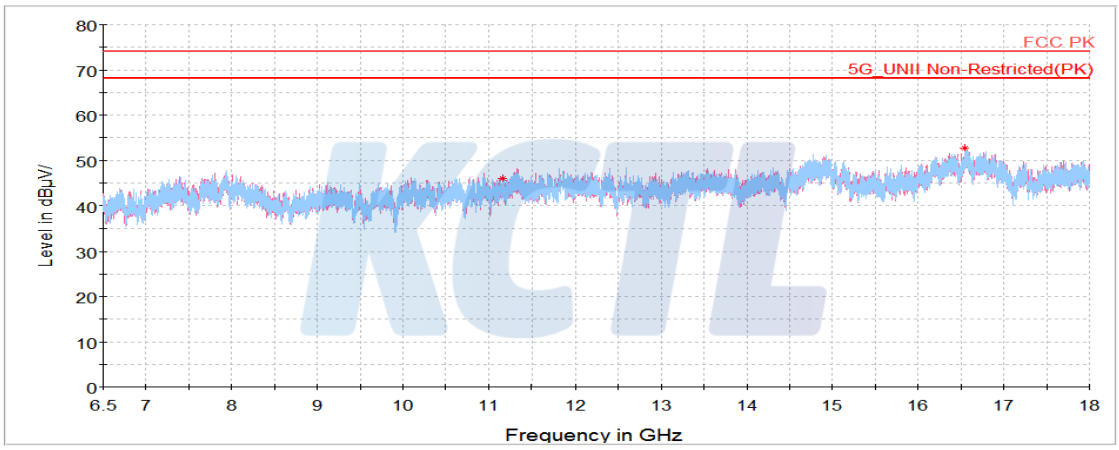
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 160.02[1)]	H	59.32	37.80	-51.18	-	45.94	74.00	28.06
16 545.61	V	56.34	41.55	-45.30		52.59	68.20	15.61
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

KCTL

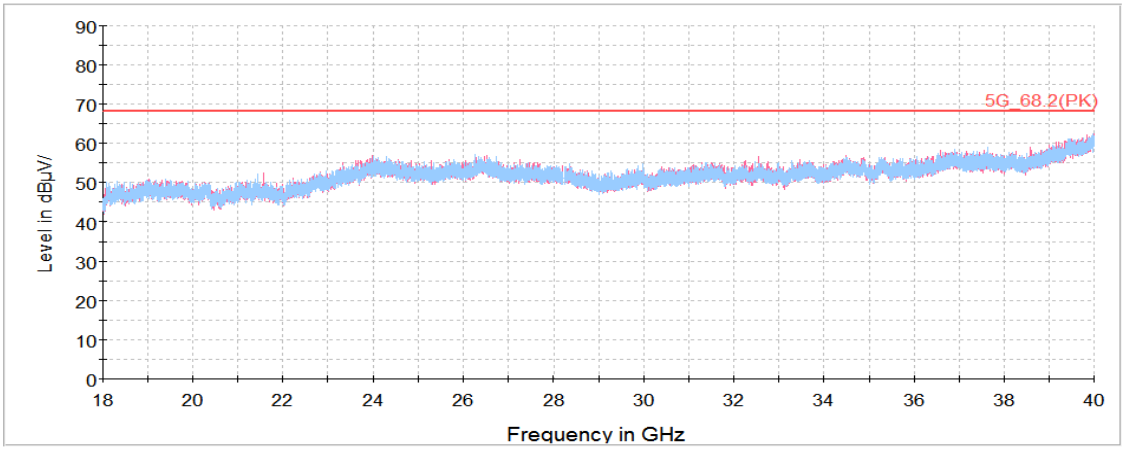
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



Highest Channel (5 720 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 443.20[1)]	V	57.80	37.97	-49.91	-	45.86	74.00	28.14
16 548.84	H	57.29	41.55	-45.32	-	53.52	68.20	14.68
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

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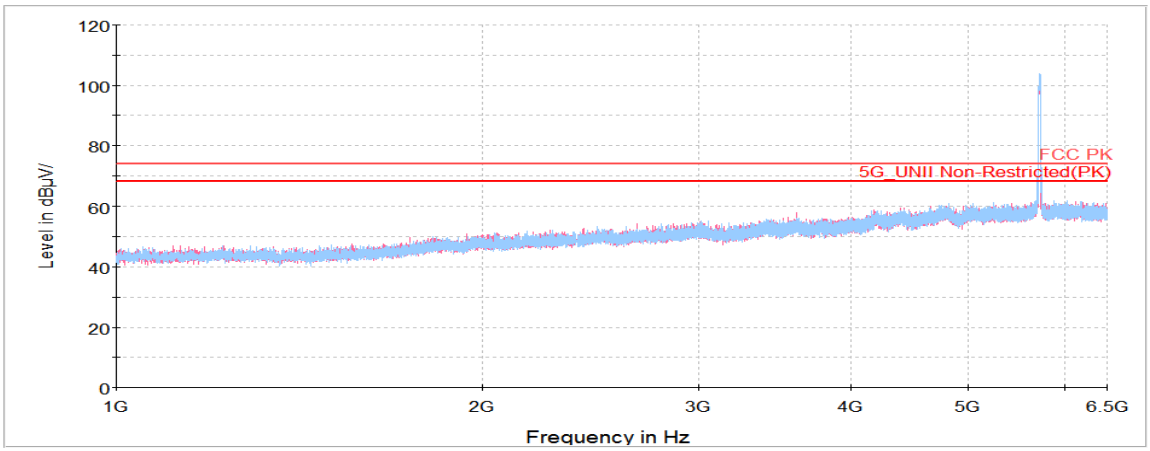
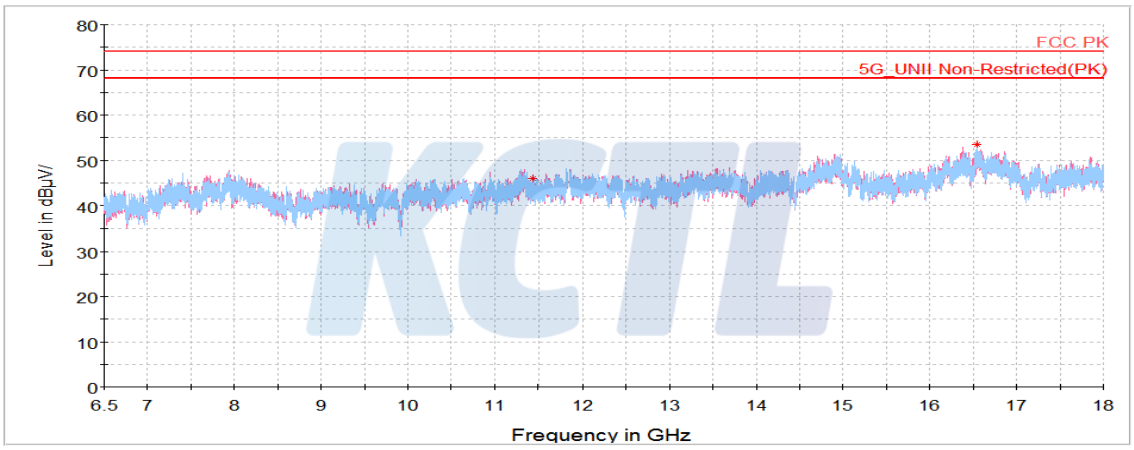
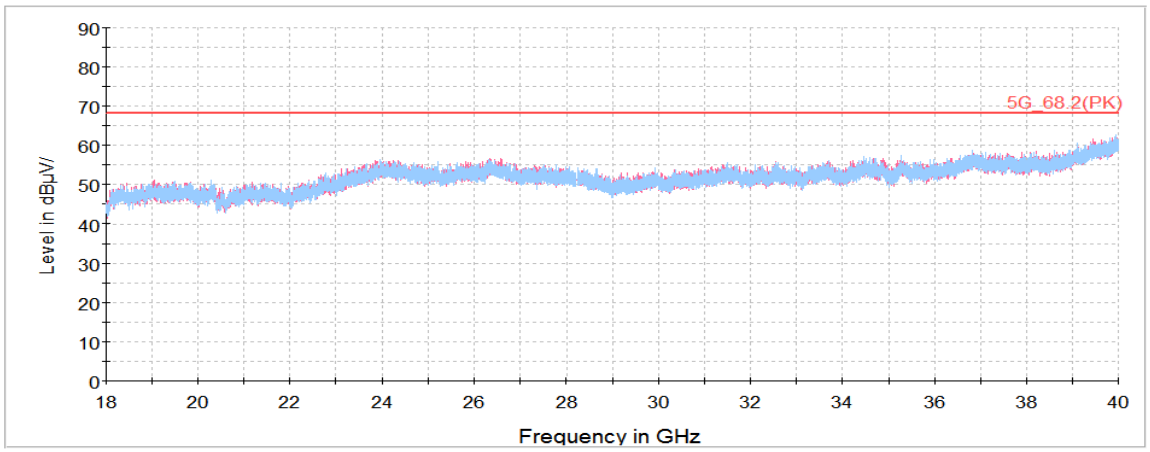
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓

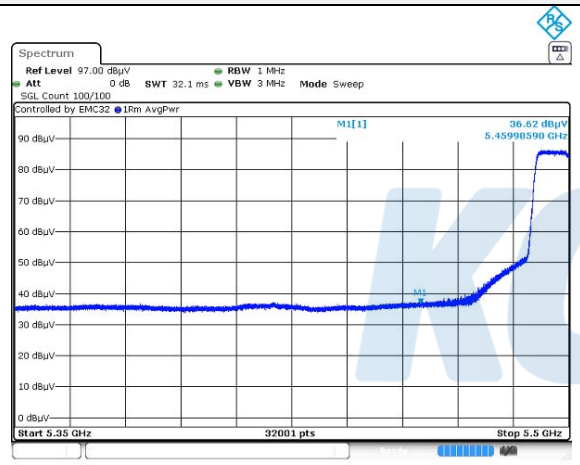


802.11n_HT20_UNII-2C

Lowest Channel (5 500 ㎒)

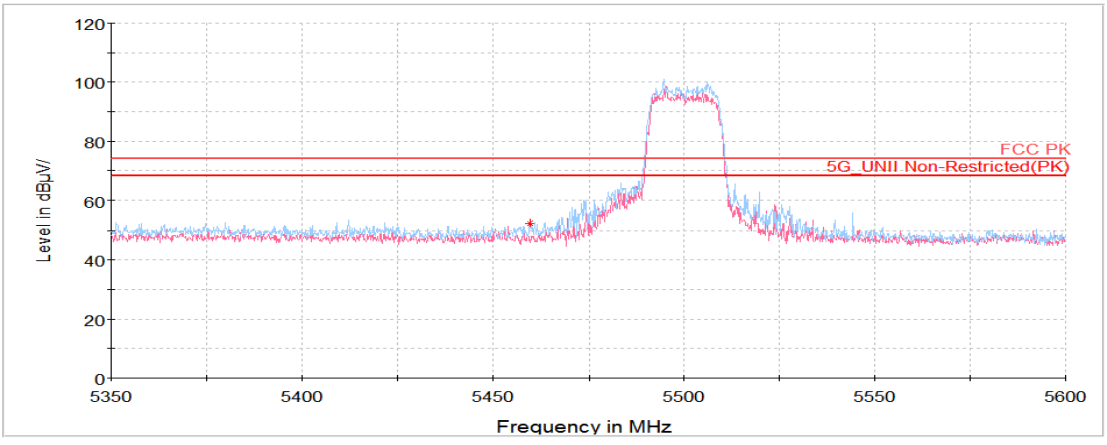
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 459.99[1)]	H	45.00	34.74	-27.35	-	52.39	74.00	21.61
10 990.75[1)]	V	60.45	37.69	-51.89	-	46.25	74.00	27.75
16 549.20	V	57.17	41.55	-45.32	-	53.40	68.20	14.80
Average Data								
5 459.99[1)]	H	36.62	34.74	-27.35	-	44.01	54.00	9.99

Average data

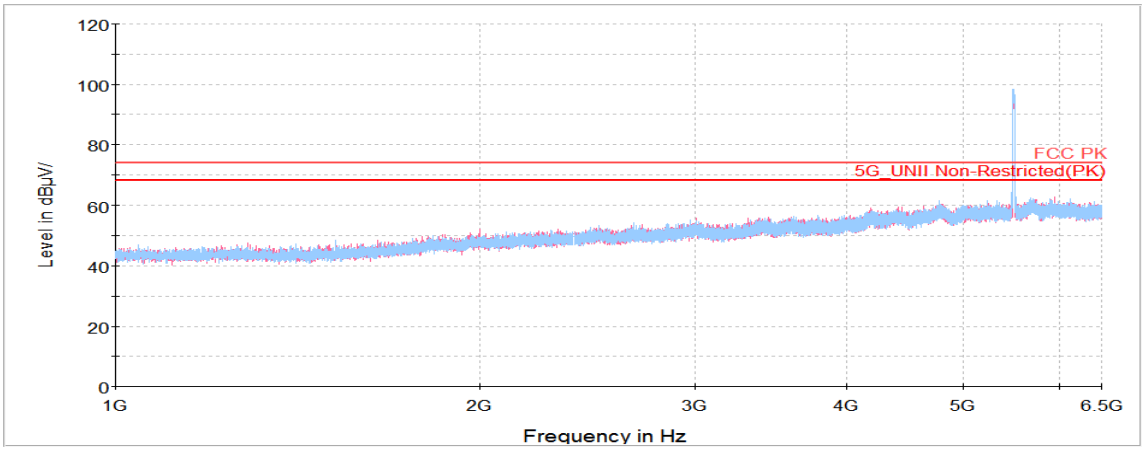


Blank

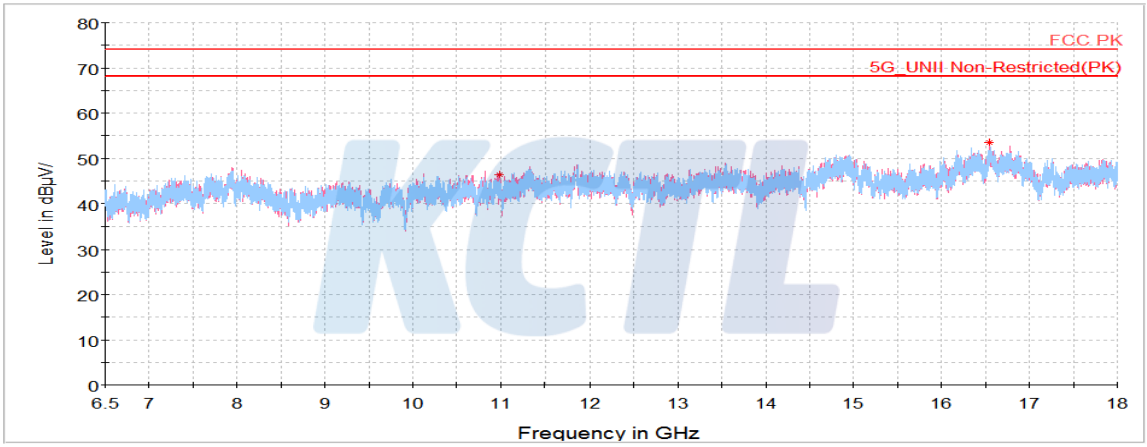
Horizontal/Vertical for Band-edge



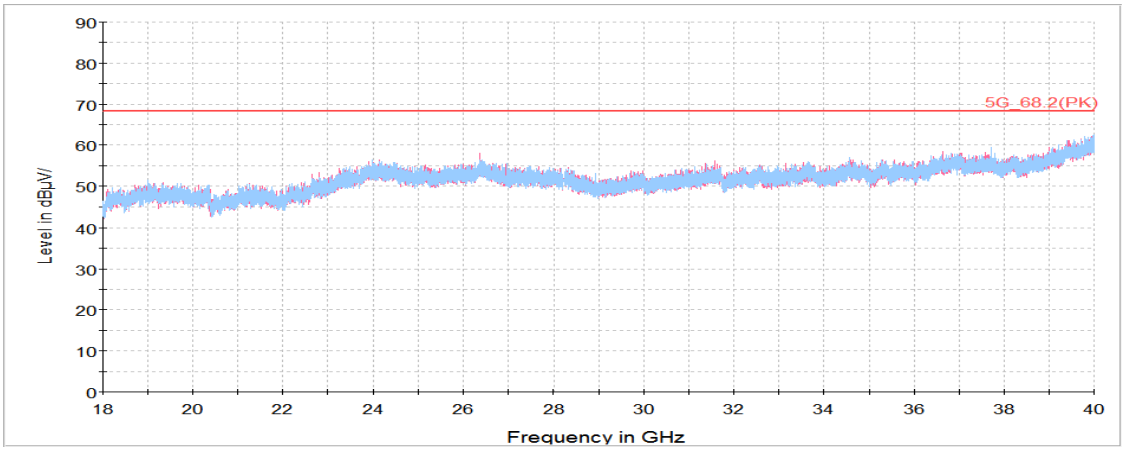
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



Middle Channel (5 580 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 134.86[1)]	H	59.41	37.78	-51.29	-	45.90	74.00	28.10
16 673.55	V	56.42	41.67	-45.77	-	52.32	68.20	15.88
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

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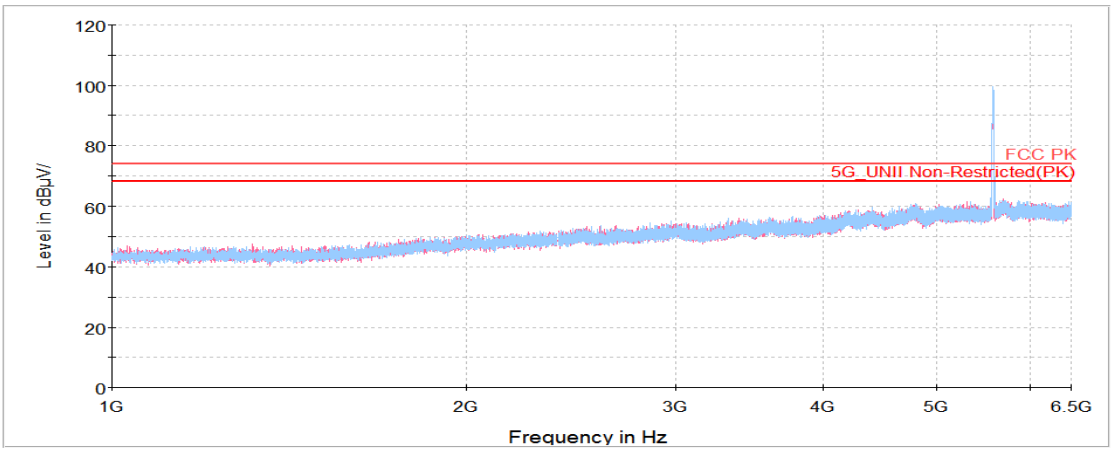
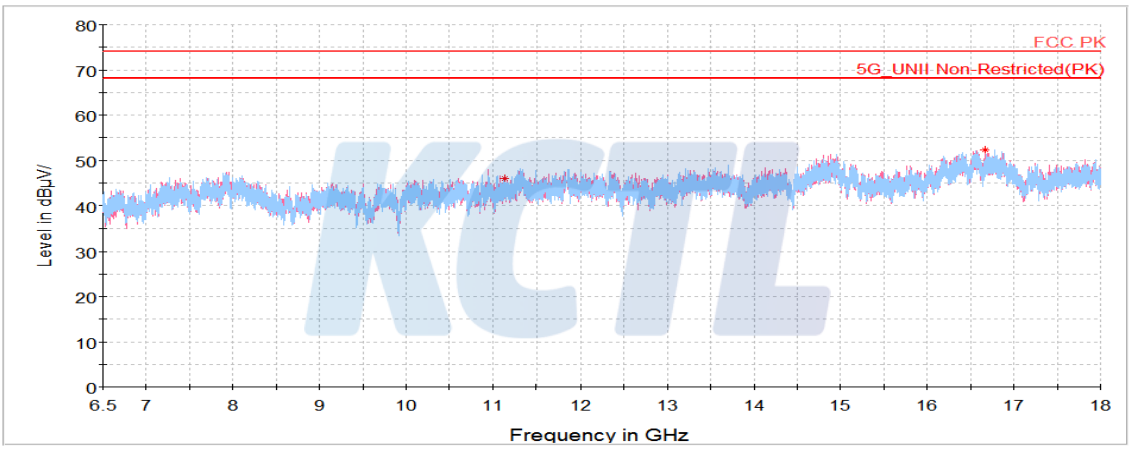
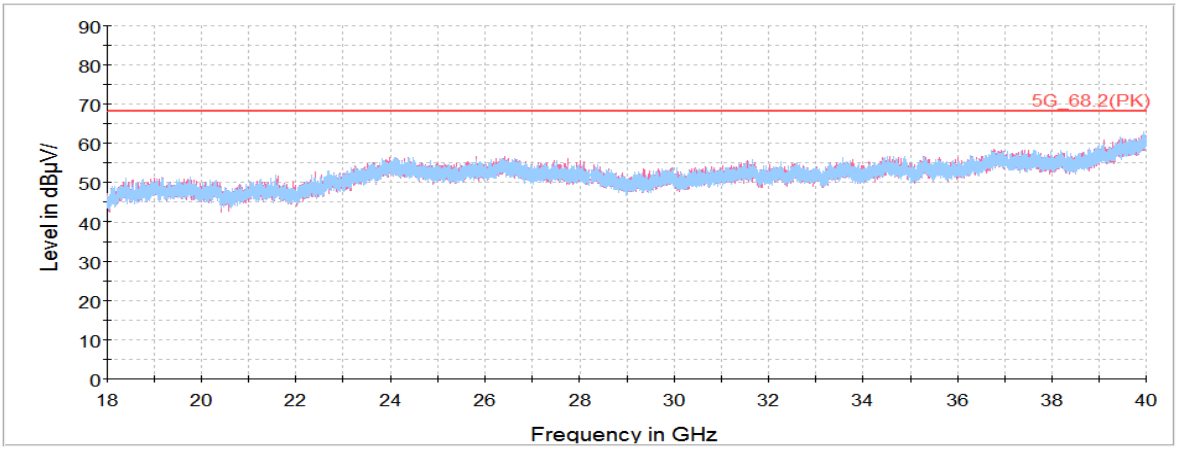
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



Highest Channel (5 720 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 439.97[1)]	V	58.01	37.96	-49.93	-	46.04	74.00	27.96
16 418.75	V	56.32	41.84	-45.64	-	52.52	68.20	15.68
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

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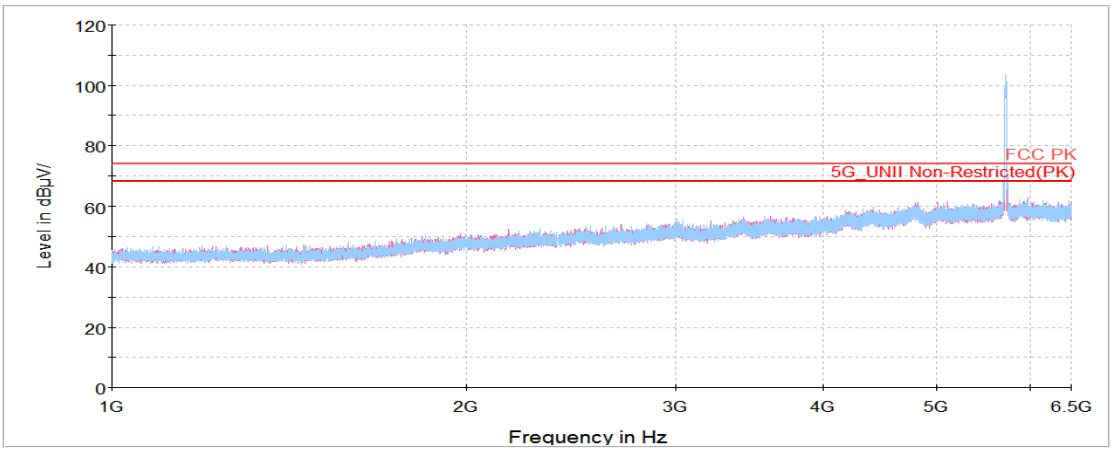
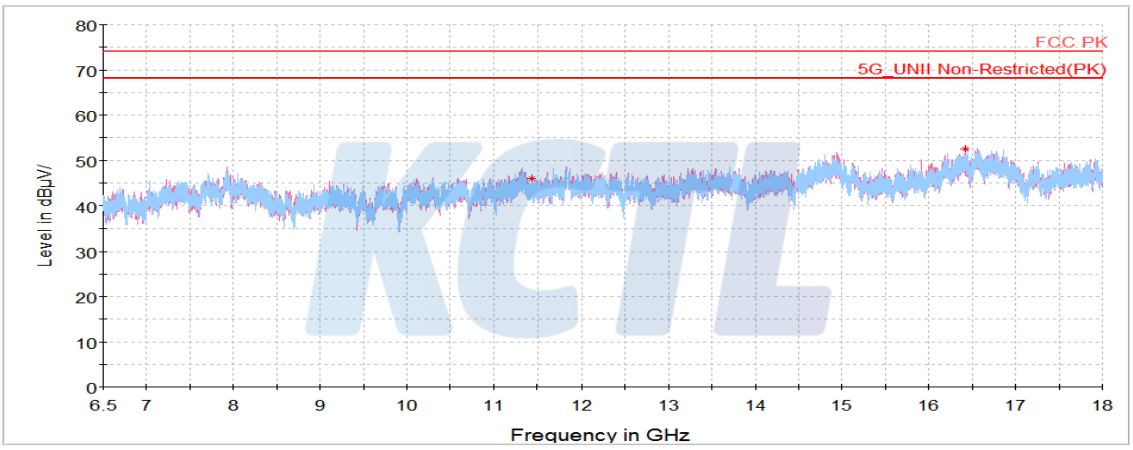
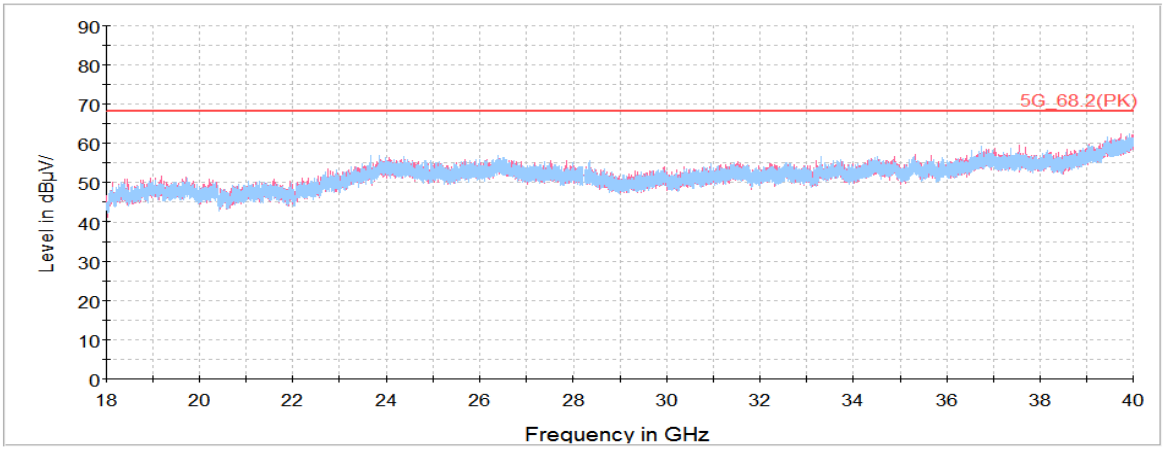
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓

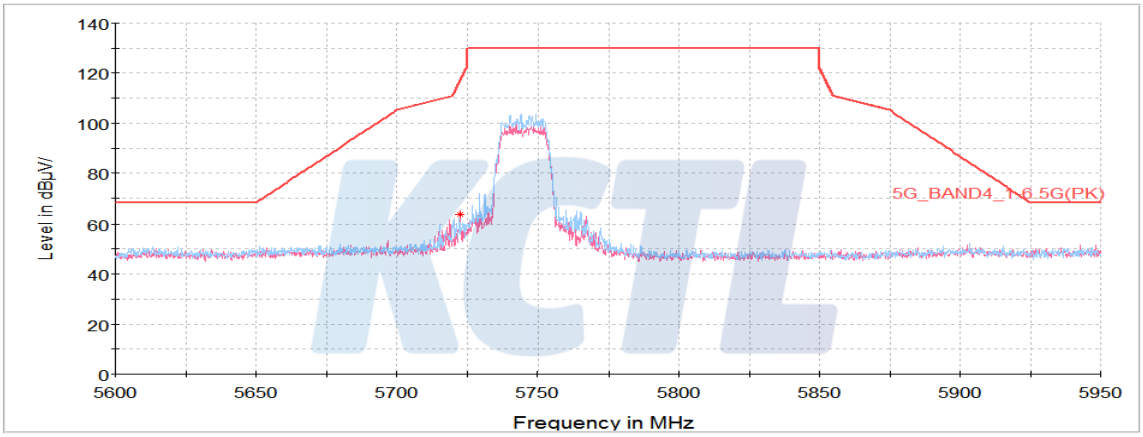


802.11a_UNII-3

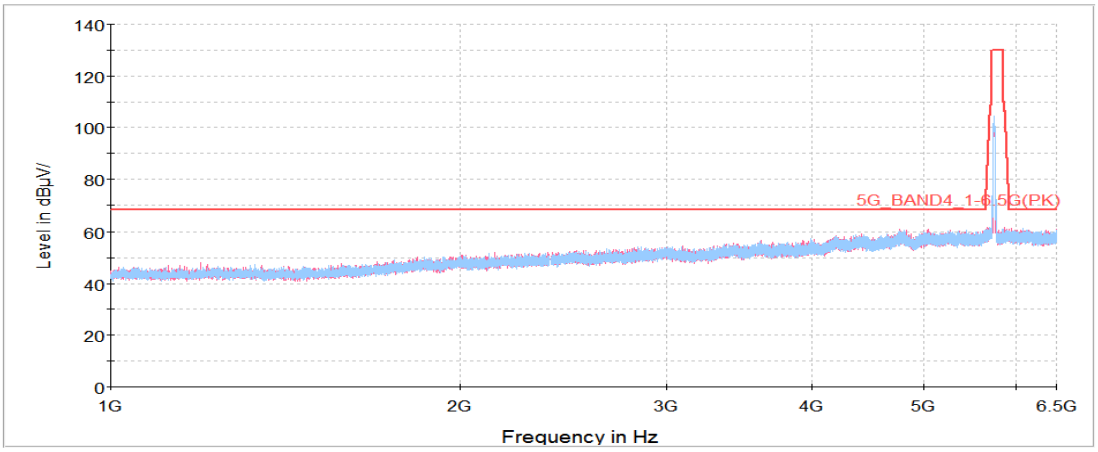
Lowest Channel (5 745 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 722.61	V	54.25	35.07	-25.88	-	63.44	116.75	53.31
11 488.48[1)]	V	59.40	37.99	-49.71	-	47.68	74.00	26.32
16 544.89	H	56.75	41.54	-45.30	-	52.99	68.20	15.21
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

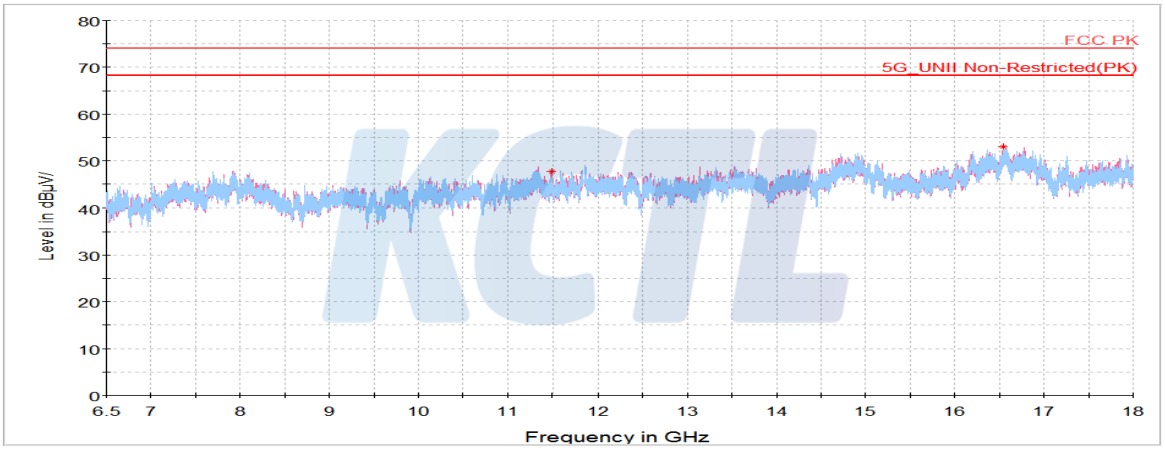
Horizontal/Vertical for Band-edge



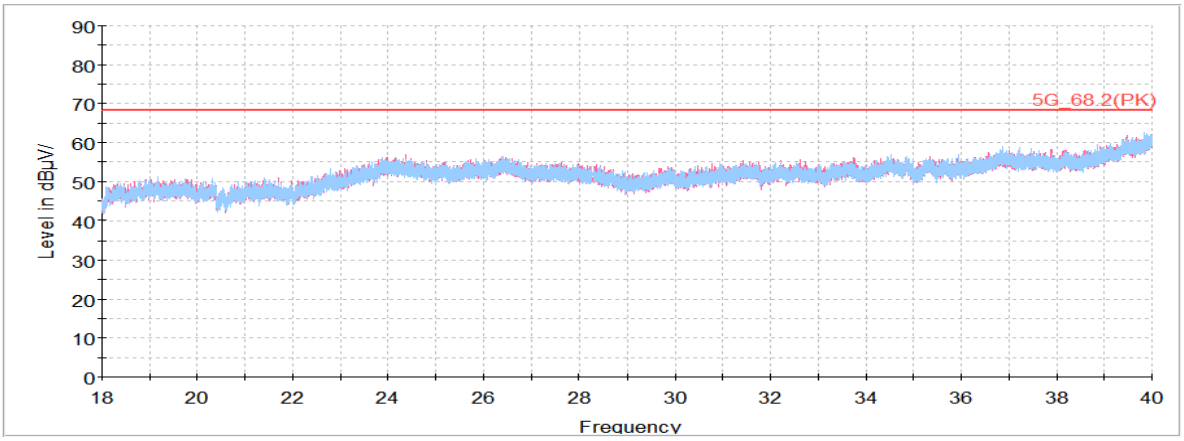
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



Middle Channel (5 785 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 593.78[1)]	V	58.82	38.11	-49.82	-	47.11	74.00	26.89
16 566.45	V	57.78	41.57	-45.38	-	53.97	68.20	14.23
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

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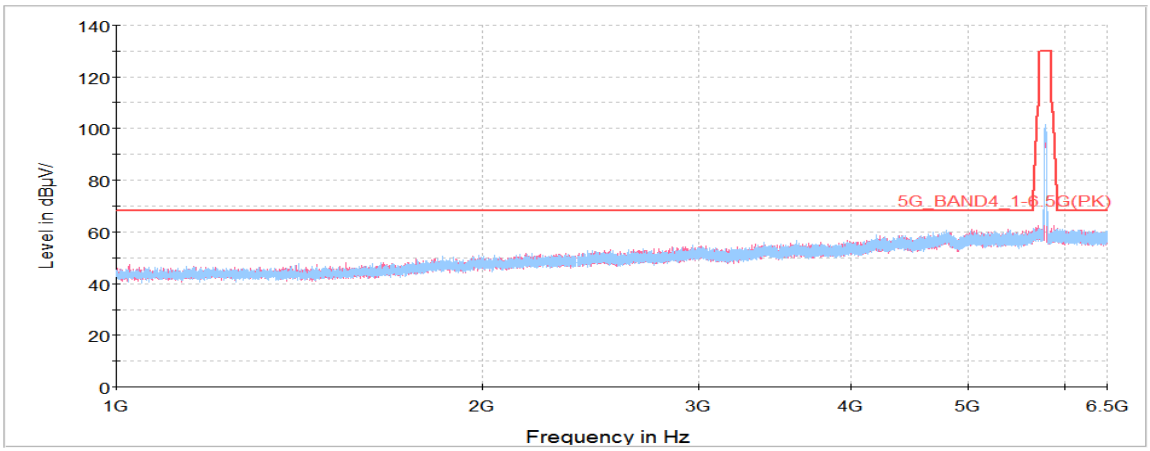
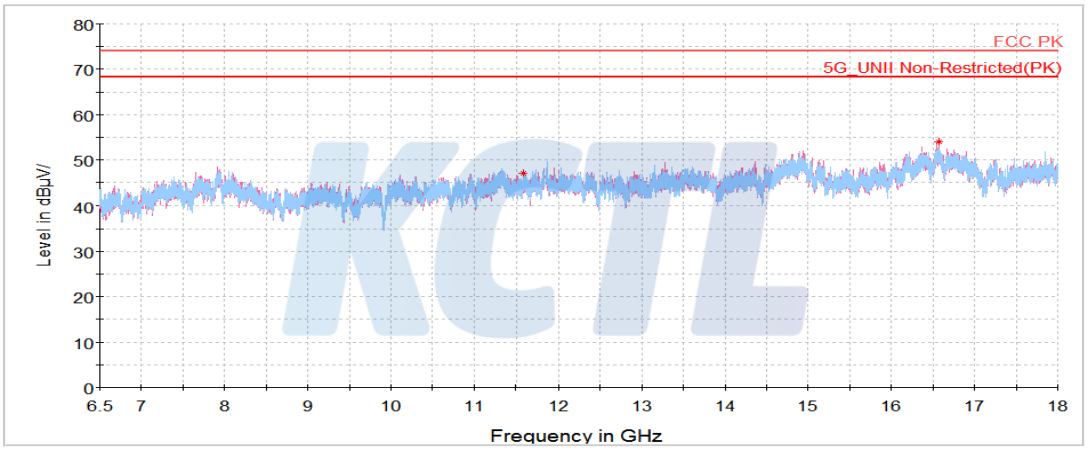
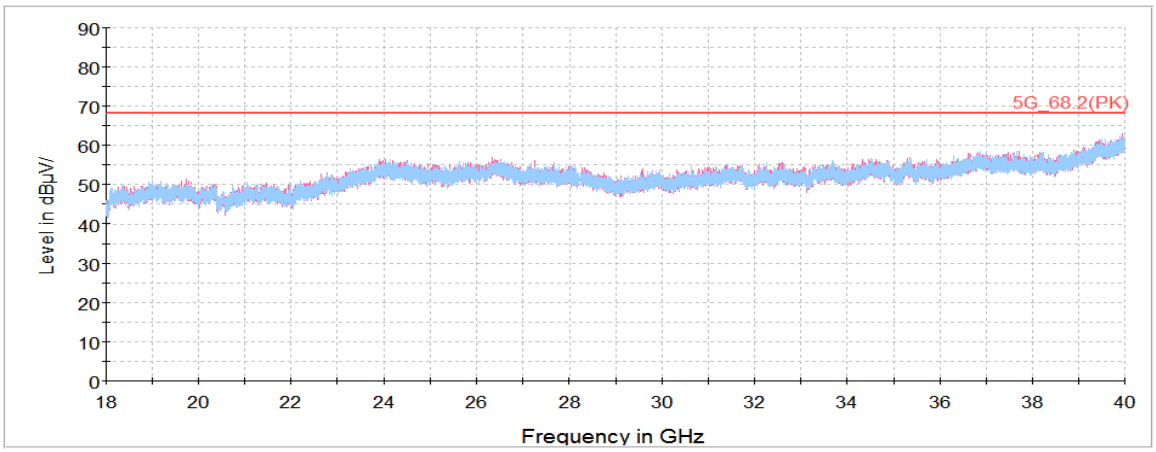
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



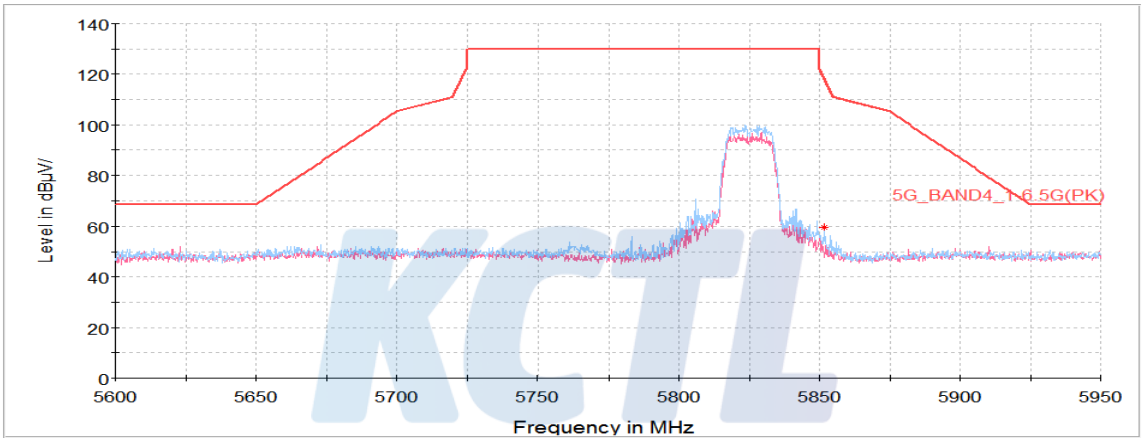
Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



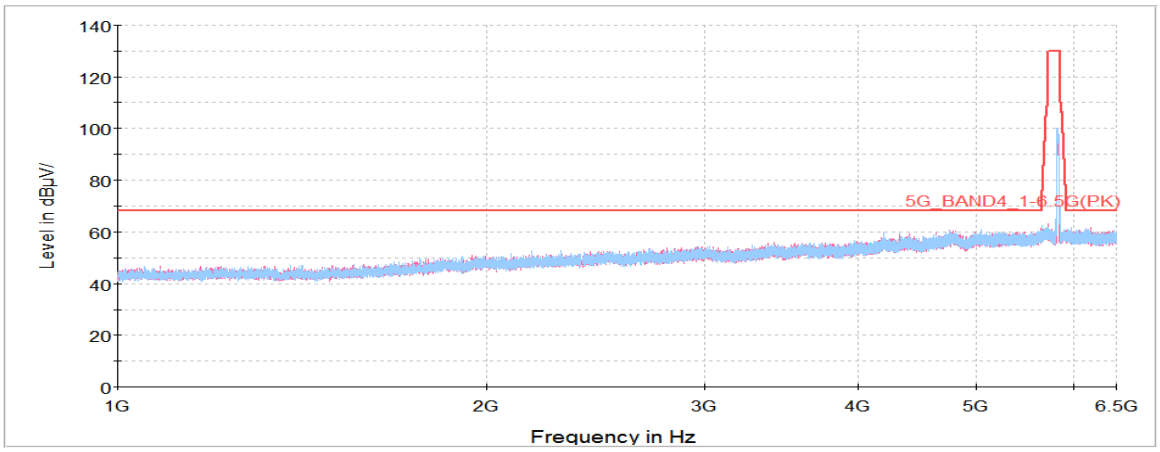
Highest Channel (5 825 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 851.69	H	51.16	35.22	-26.67	-	59.71	118.35	58.64
11 638.34[1)]	H	59.58	38.17	-49.90	-	47.85	74.00	26.15
16 584.78	V	57.12	41.58	-45.45	-	53.25	68.20	14.95
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

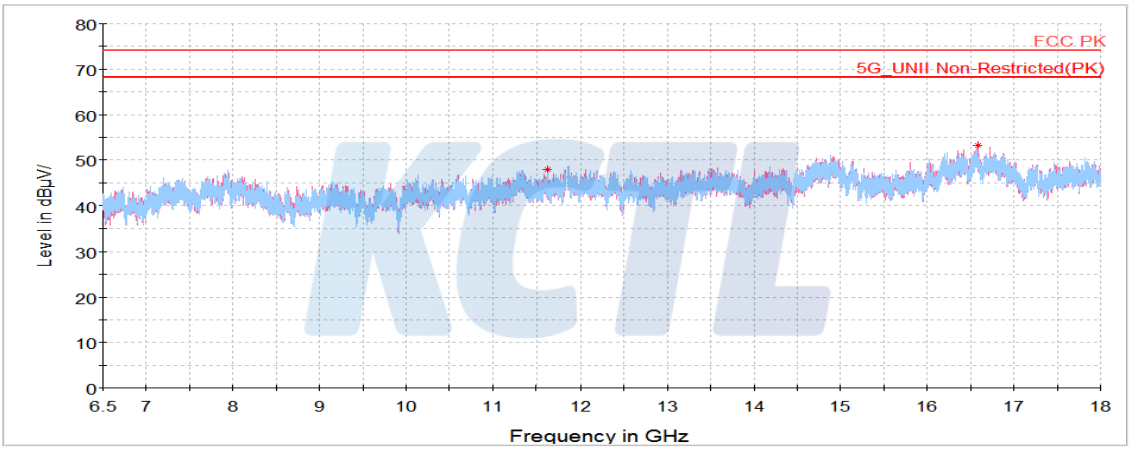
Horizontal/Vertical for Band-edge



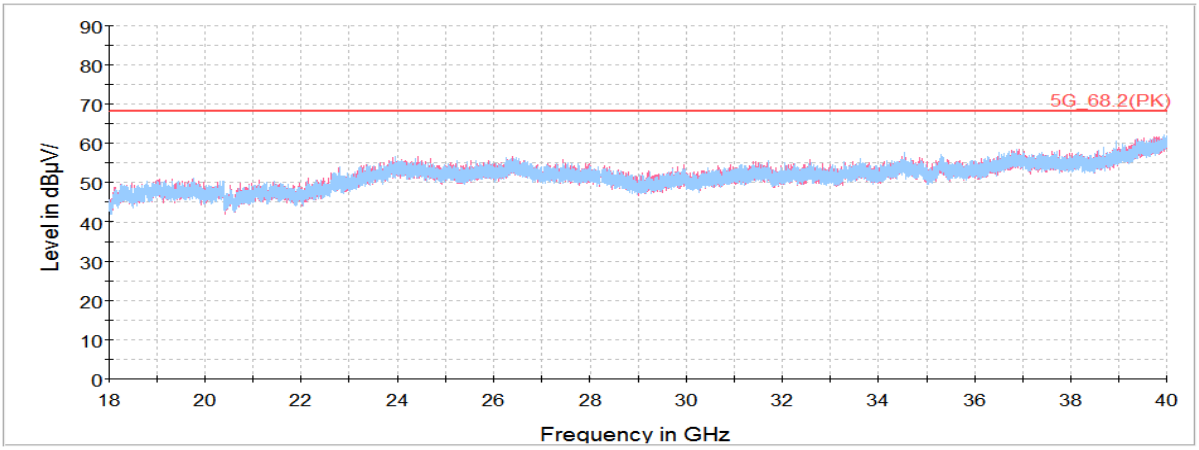
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓

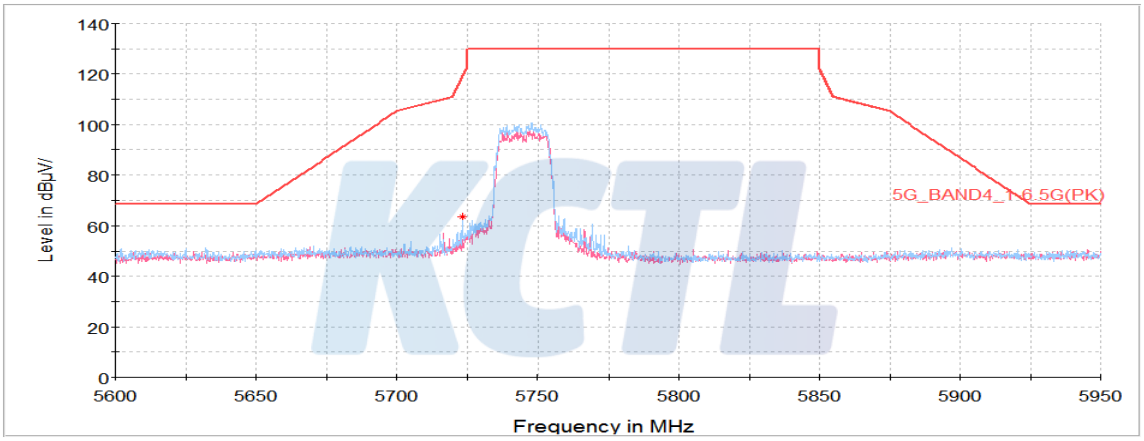


802.11n_HT20_UNII-3

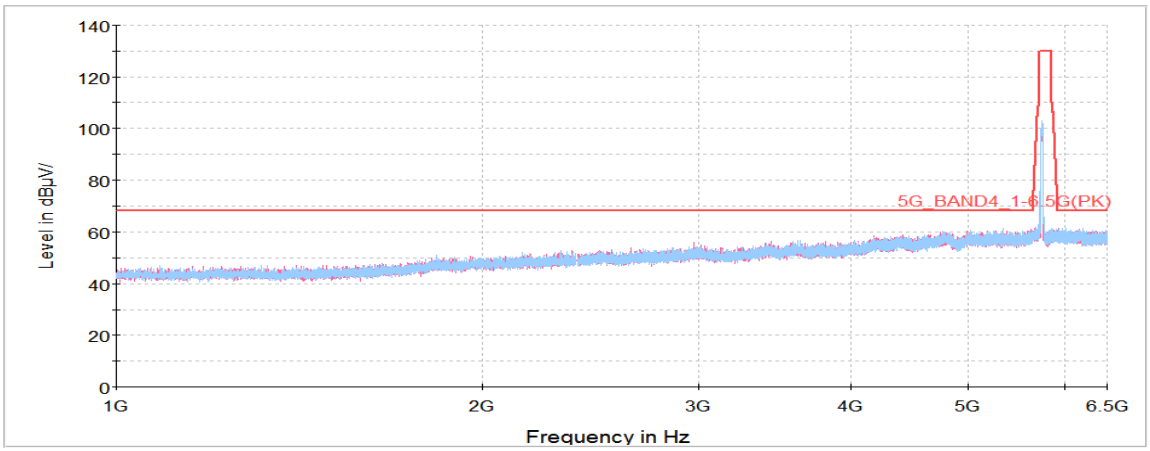
Lowest Channel (5 745 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 723.30	H	54.30	35.07	-25.89	-	63.48	118.32	54.84
11 478.78[1)]	H	58.54	37.99	-49.75	-	46.78	74.00	27.22
16 736.80	H	57.10	41.74	-46.01	-	52.83	68.20	15.37
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

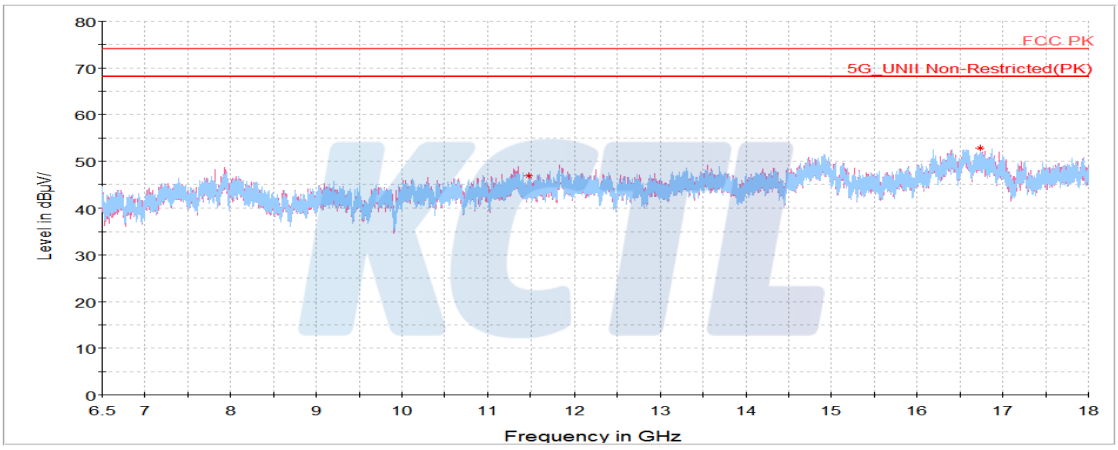
Horizontal/Vertical for Band-edge



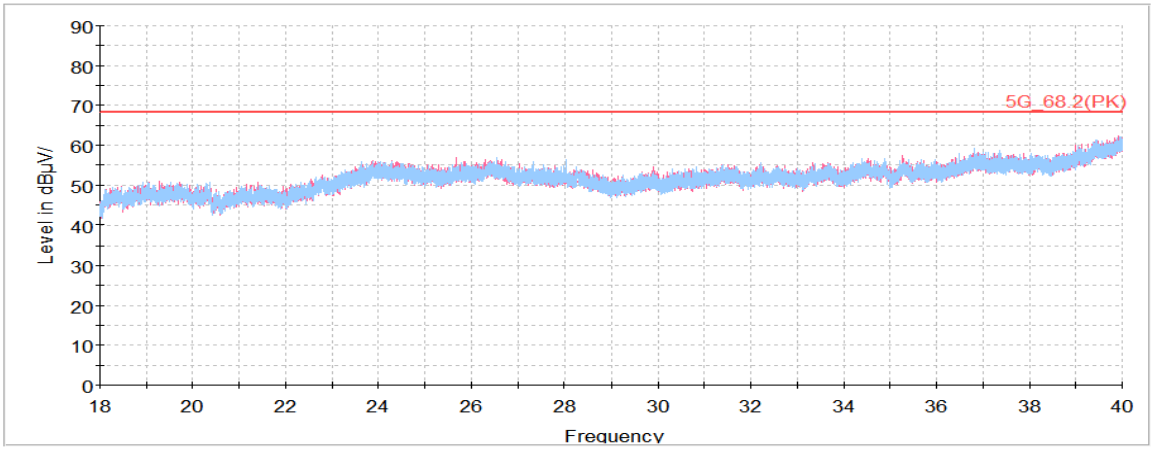
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



Middle Channel (5 785 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 570.06[1)]	H	57.79	38.08	-49.78		46.09	74.00	27.91
16 421.63	V	56.84	41.84	-45.63		53.05	68.20	15.15
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

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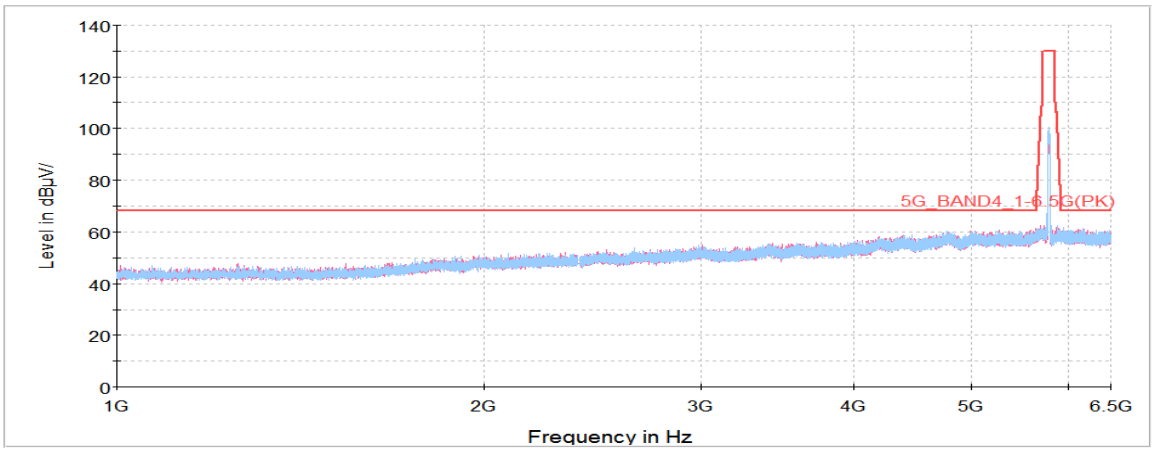
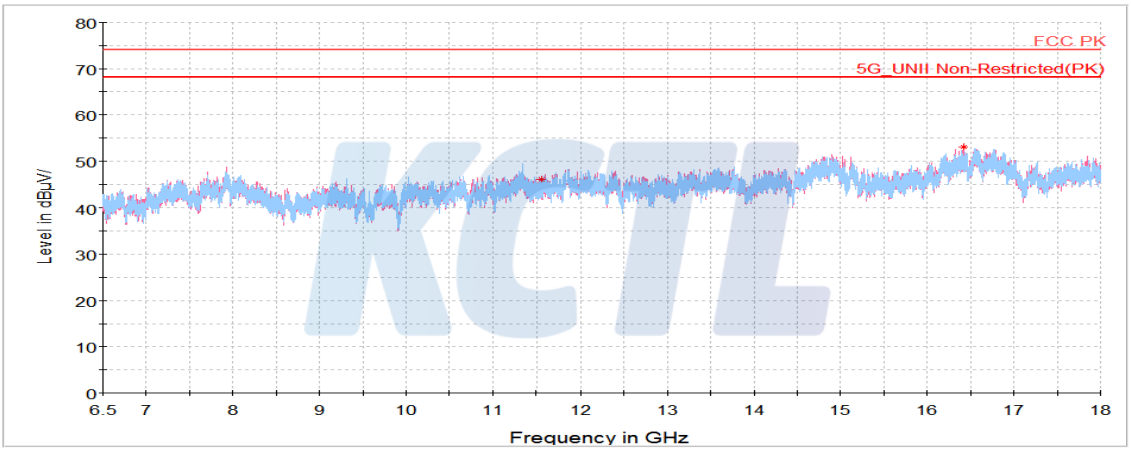
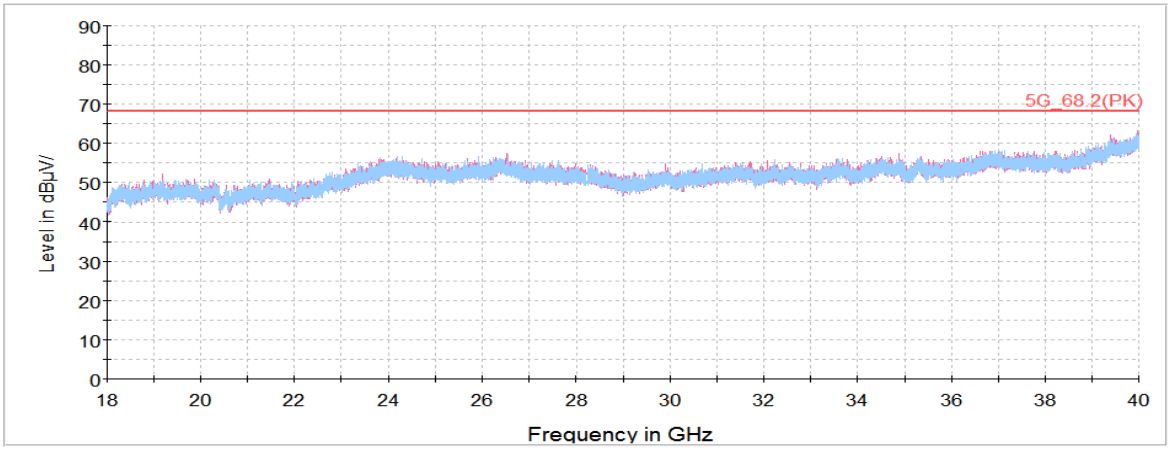
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



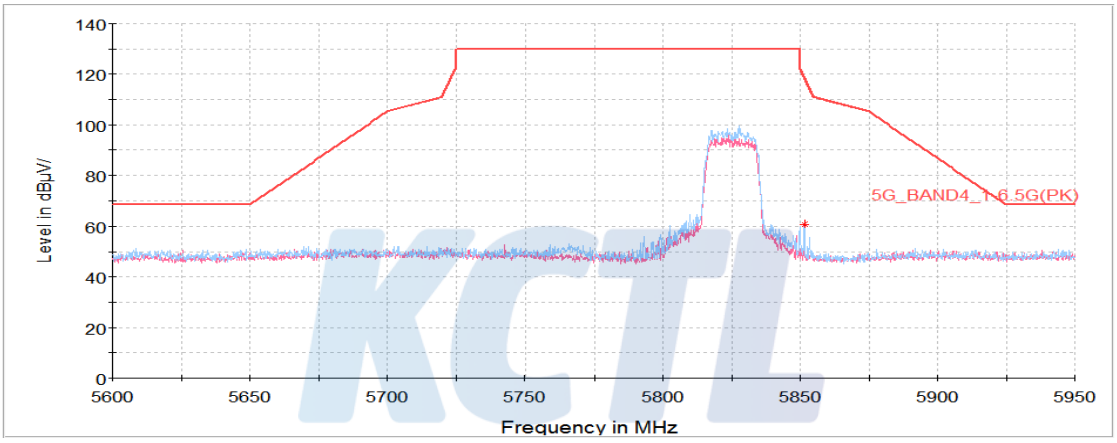
Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



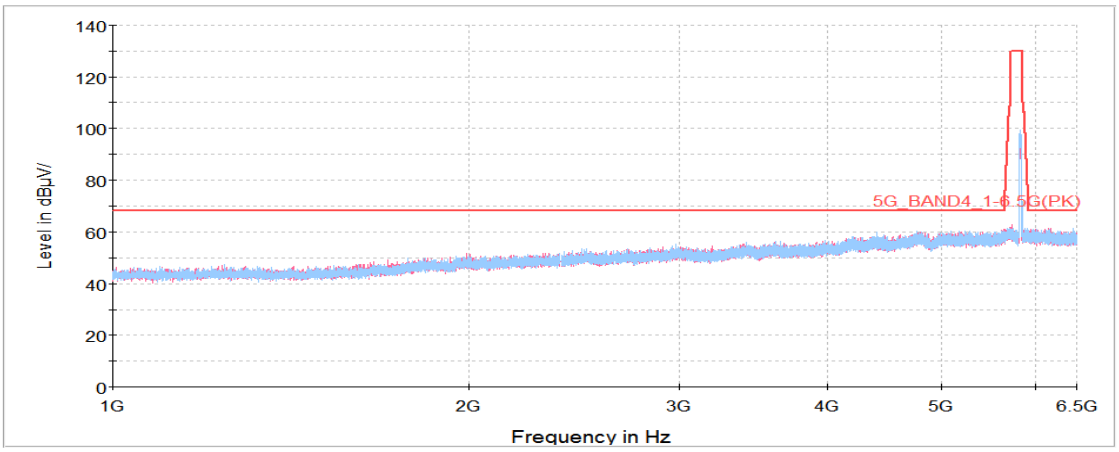
Highest Channel (5 825 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 851.52	H	52.33	35.22	-26.67		60.88	118.74	57.86
11 621.81[1)]	V	59.15	38.15	-49.87		47.43	74.00	26.57
16 793.22	H	57.77	41.79	-46.21		53.35	68.20	14.85
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

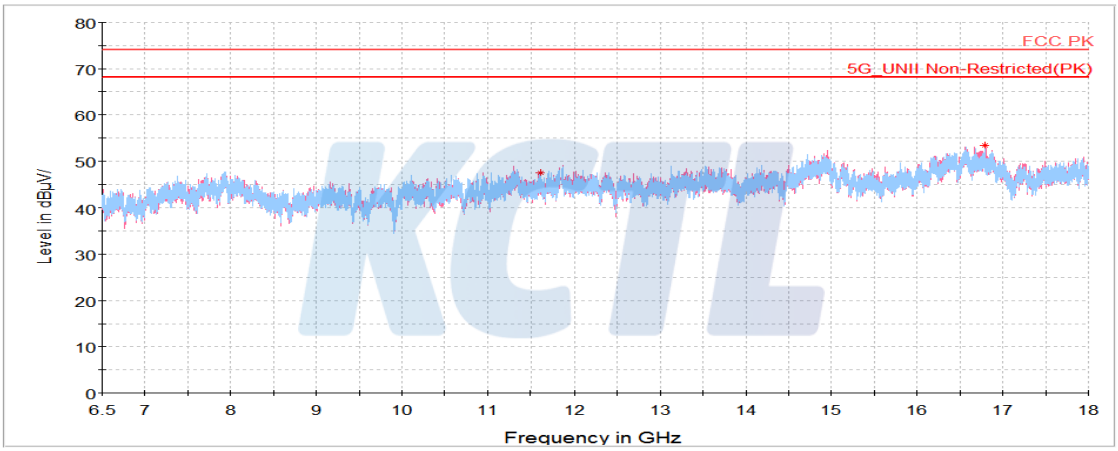
Horizontal/Vertical for Band-edge



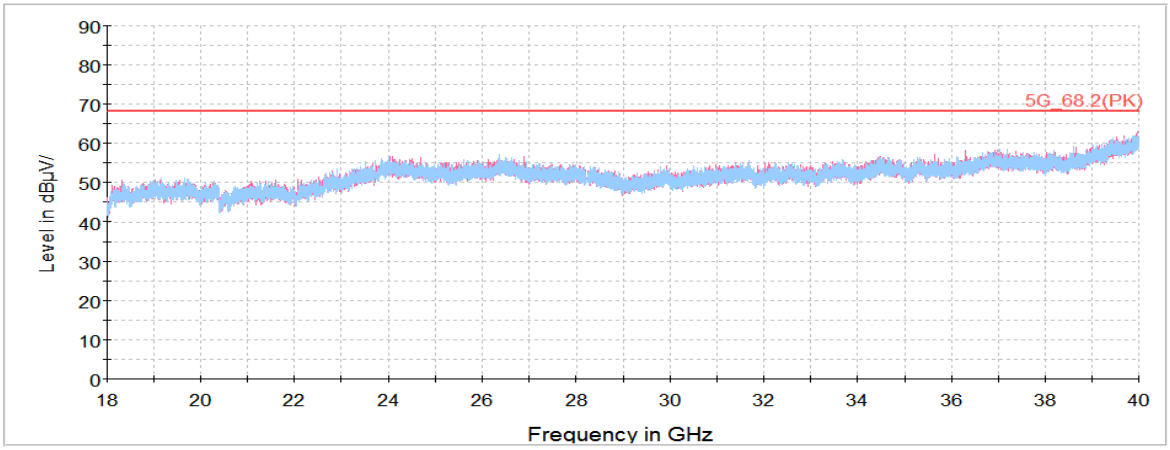
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓

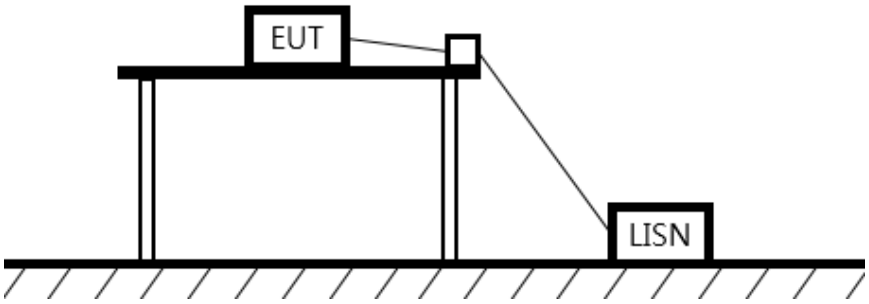


Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



7.3. AC Conducted emission

Test setup



Limit

§15.407

According to 15.207(a), for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 ㎑ to 30 ㎒, shall not exceed the limits in the following table, as measured using a 50uH/50 ohm line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequencies ranges.

Frequency of Emission (㎒)	Conducted limit (dB㎶/m)	
	Quasi-peak	Average
0.15 – 0.50	66 - 56*	56 - 46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

Measurement procedure

1. The EUT was placed on a wooden table of size, 1 m by 1.5 m, raised 80 ㎝ in which is located 40 ㎝ away from the vertical wall and 1.5m away from the side wall of the shielded room.
2. Each current-carrying conductor of the EUT power cord was individually connected through a 50Ω/50μH LISN, which is an input transducer to a spectrum analyzer or an EMI/Field Intensity ㅡ Meter, to the input power source.
3. Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
4. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment is the system) was then performed over the frequency range of 0.15 ㎒ to 30 ㎒.
5. The measurements were made with the detector set to peak amplitude within a bandwidth of 10 ㎑ or to quasi-peak and average within a bandwidth of 9 ㎑. The EUT was in transmitting mode during the measurements.

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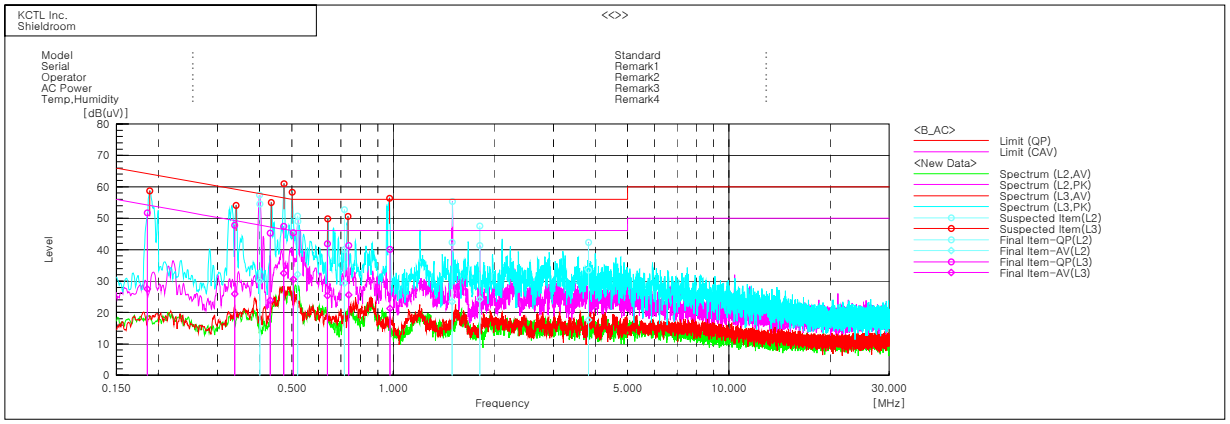
Test results

Worst case: 802.11a / UNII-2A High frequency



Final Result

--- L2 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.40104	44.3	19.8	10.2	54.5	30.0	57.8	47.8	3.3	17.8
2	0.52006	40.5	22.0	10.2	50.7	32.2	56.0	46.0	5.3	13.8
3	0.71595	42.5	19.1	10.2	52.7	29.3	56.0	46.0	3.3	16.7
4	1.49997	32.1	13.1	10.3	42.4	23.4	56.0	46.0	13.6	22.6
5	1.81079	37.2	13.9	10.3	47.5	24.2	56.0	46.0	8.5	21.8
6	3.81621	23.1	7.3	10.4	33.5	17.7	56.0	46.0	22.5	28.3

--- L3 Phase ---

No.	Frequency [MHz]	Reading QP [dB(uV)]	Reading CAV [dB(uV)]	c.f [dB]	Result QP [dB(uV)]	Result CAV [dB(uV)]	Limit QP [dB(uV)]	Limit AV [dB(uV)]	Margin QP [dB]	Margin CAV [dB]
1	0.18525	41.4	17.2	10.3	51.7	27.5	64.2	54.2	12.5	26.7
2	0.3374	37.6	15.8	10.1	47.7	25.9	59.3	49.3	11.6	23.4
3	0.4306	35.1	13.7	10.2	45.3	23.9	57.2	47.2	11.9	23.3
4	0.47259	37.2	22.3	10.2	47.4	32.5	56.5	46.5	9.1	14.0
5	0.5046	35.1	20.4	10.2	45.3	30.6	56.0	46.0	10.7	15.4
6	0.6374	31.6	15.2	10.2	41.8	25.4	56.0	46.0	14.2	20.6
7	0.73851	31.1	15.4	10.2	41.3	25.6	56.0	46.0	14.7	20.4
8	0.97963	29.9	11.1	10.2	40.1	21.3	56.0	46.0	15.9	24.7

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8. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Spectrum Analyzer	R&S	FSV40	100989	21.01.03
EMI TEST RECEIVER	R&S	ESCI7	100732	20.08.22
Bi-Log Antenna	TESEQ	CBL 6112D	37876	20.07.20
Amplifier	SONOMA INSTRUMENT	310N	284608	20.08.22
ATTENUATOR	Agilent	8491B	MY39270292	20.07.20
Horn antenna	ETS.lindgren	3117	155787	20.10.24
Horn antenna	ETS.lindgren	3116	00086632	21.02.17
Attenuator	API Inmet	40AH2W-10	12	21.05.12
Broadband PreAmplifier	SCHWARZBECK	BBV9718	216	20.07.30
AMPLIFIER	L-3 Narda-MITEQ	AMF-7D-01001800 -22-10P	2031196	21.02.12
AMPLIFIER	L-3 Narda-MITEQ	JS44-18004000-33-8P	2000996	21.01.22
LOOP Antenna	R&S	HFH2-Z2	100355	20.08.24
Antenna Mast	Innco Systems	MA4640-XP-ET	-	-
Turn Table	Innco Systems	DT2000	79	-
Antenna Mast	Innco Systems	MA4000-EP	303	-
Turn Table	Innco Systems	DT2000	79	-
Highpass Filter	WT	WT-A1699-HS	WT160411002	21.05.11
TWO-LINE V - NETWORK	R&S	ENV216	101358	20.10.02
EMI TEST RECEIVER	R&S	ESCI	100001	20.08.22
Vector Signal Generator	R&S	SMBV100A	257566	20.07.16
Signal Generator	R&S	SMR40	100007	21.04.08
Cable Assembly	RadiAll	2301761768000PJ	1724.659	-
Cable Assembly	gigalane	RG-400	-	-
Cable Assembly	HUER+SUHNER	SUCOFLEX 104	MY4342/4	-

End of test report

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