verify No.067114480043

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TEST REPORT

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

1. Client

- Name : Samsung Electronics Co., Ltd.
- Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
- Date of Receipt : 2021-07-07

2. Use of Report : Certification

3. Name of Product / Model : Wi-Fi Kit 2.0 / MIM-H05UN

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

5. FCC ID : A3LMIMH05UN

6. IC Certificate No. : 649E-MIMH05UN

7. Date of Test : 2021-07-07 to 2021-07-19

8. Location of Test : ■ Permanent Testing Lab ☐ On Site Testing
(Address:65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea)

9. Test method used : FCC Part 15 Subpart E, 15.407
RSS-247 Issue 2 February 2017
RSS-Gen Issue 5 March 2019

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

Affirmation	Tested by Name : Eunseong Lim (Signature)	Technical Manager Name : Hyeonsu Jang (Signature)

2021-08-10

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
2021-07-27	Originally issued	-
2021-08-10	Updated	22,23

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Note. The report No. KR21-SRF0157 is superseded by the report No. KR21-SRF0157-A.

General remarks for test reports

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the testing laboratory that conducted the testing.

☒ **Statement not required by the standard or client used for type testing**

CONTENTS

1. General information

Client	:	Samsung Electronics Co., Ltd.
Address	:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Manufacturer	:	Samsung Electronics Co., Ltd.
Address	:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of 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 CAB Identifier: KR0040, ISED Number: 8035A KOLAS No.: KT231

2. Device information

Equipment under test	:	Wi-Fi Kit 2.0	
Model	:	MIM-H05UN	
Derivative Model	:	MIM-H05U, MIM-H05N, MIM-H05	
Modulation technique	:	WIFI(802.11a/b/g/n/ac)_DSSS, OFDM	
Number of channels	:	2.4 GHz band: 13 ch (20 ㎒), 9 ch (40 ㎒), UNII-1: 4 ch (20 ㎒), 2 ch (40 ㎒), 1 ch (80 ㎒) UNII-2A: 4 ch (20 ㎒), 2 ch (40 ㎒), 1 ch (80 ㎒) UNII-2C: 12 ch (20 ㎒), 6 ch (40 ㎒), 3 ch (80 ㎒) UNII-3: 5 ch (20 ㎒), 2 ch (40 ㎒), 1 ch (80 ㎒)	
Frequency range	:	2.4 ㎓ band	2 412 ㎒ ~ 2 472 ㎒ (802.11b/g/n_HT20) 2 422 ㎒ ~ 2 462 ㎒ (802.11n_HT40)
		UNII-1:	5 180 ㎒ ~ 5 240 ㎒ (802.11a/n/ac_HT20/VHT20) 5 190 ㎒ ~ 5 230 ㎒ (802.11n/ac_HT40/VHT40) 5 210 ㎒ (802.11ac_VHT80)
		UNII-2A:	5 260 ㎒ ~ 5 320 ㎒ (802.11a/n/ac_HT20/VHT20) 5 270 ㎒ ~ 5 310 ㎒ (802.11n/ac_HT40/VHT40) 5 290 ㎒ (802.11ac_VHT80)
		UNII-2C:	5 500 ㎒ ~ 5 720 ㎒ (802.11a/n/ac_HT20/VHT20) 5 510 ㎒ ~ 5 710 ㎒ (802.11n/ac_HT40/VHT40) 5 530 ㎒ ~ 5 690 ㎒ (802.11ac_VHT80)
		UNII-3:	5 745 ㎒ ~ 5 825 ㎒ (802.11a/n/ac_HT20/VHT20) 5 755 ㎒ ~ 5 795 ㎒ (802.11n/ac_HT40/VHT40) 5 775 ㎒ (802.11ac_VHT80)
Antenna gain	:	2.4 ㎓ band	ANT 0 : 0.50 ㏈i, ANT 1 : 0.00 ㏈i, MIMO:3.27 ㏈i
		UNII-1	ANT 0 : 0.90 ㏈i, ANT 1: 0.70 ㏈i, MIMO : 3.81 ㏈i
		UNII-2A	ANT 0 : 0.50 ㏈i, ANT 1 : -0.40 ㏈i, MIMO : 3.08 ㏈i
		UNII-2C	ANT 0 : 0.10 ㏈i, ANT 1 : -0.30 ㏈i, MIMO : 2.91 ㏈i
		UNII-3	ANT 0 : -0.20 ㏈i, ANT 1 : -0.30 ㏈i, MIMO : 2.76 ㏈i
Power source	:	DC 12 V	
Antenna type	:	Metal Antenna	
Software version	:	DB91-02102A 2021-06-08	
Hardware version	:	1.4	
Test device serial No.	:	N/A	
Operation temperature	:	0 ℃ ~ 40 ℃	

2.1. Information about derivative model

The difference between basic model and derivative models is:

1. The differences between the basic model and the derivative model (MIM-H05U) is described below.
 1) HW
 -AP, MICOM, PMIC & RF IC are same.
 -The PCB layout is also same.
 2) SW
 -Other Protocol feature is same.
 -RS485 Communication protocol is a little different for Adaptable Air-conditioner Unit.

2. Derivative models (MIM-H05N, MIM-H05) are different only for the marketing area.
The basic and derivative model are electrically identical.

2.2. Frequency/channel operations

This device contains the following capabilities:
WLAN 2.4 GHz_802.11b/g/n(HT20/40)
WLAN 5 GHz_802.11a/n(HT20/40)/ac(VHT20/40/80)

UNII-1		UNII-2A		UNII-2C		UNII-3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
36	5 180	52	5 260	100	5 500	149	5 745
44	5 220	60	5 300	120	5 580	157	5 785
48	5 240	64	5 320	140	5 700	165	5 825
				144	5 720		

Table 2.2.1. 802.11a/n/ac_HT20/VHT20 mode

UNII-1		UNII-2A		UNII-2C		UNII-3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
38	5 190	54	5 270	102	5 510	151	5 755
46	5 230	62	5 310	110	5 550	159	5 795
				134	5 670		
				142	5 710		

Table 2.2.2. 802.11n/ac_HT40/VHT40 mode

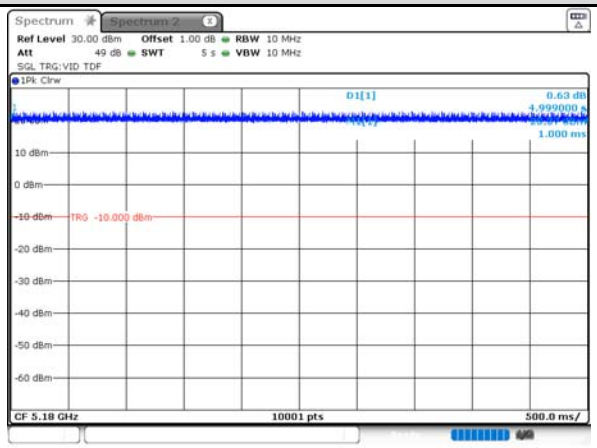
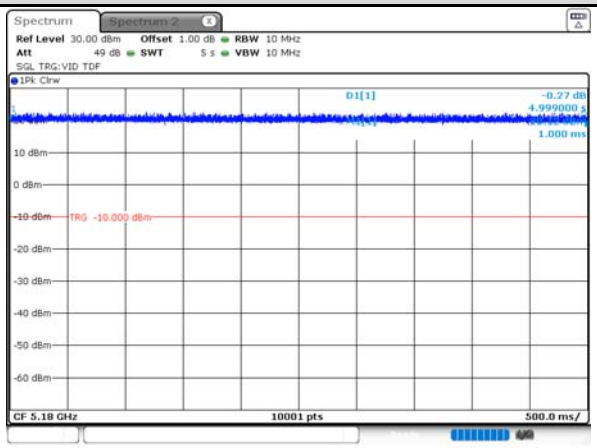
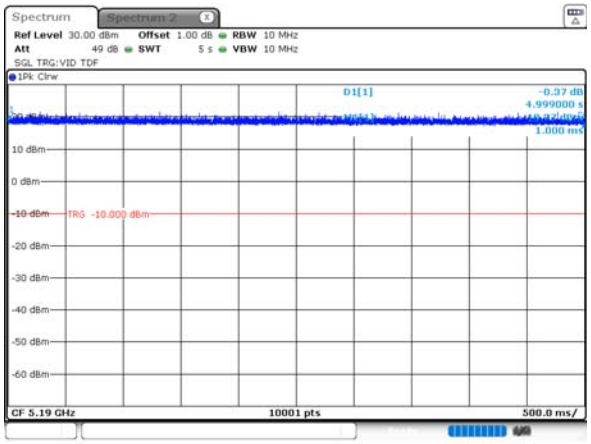
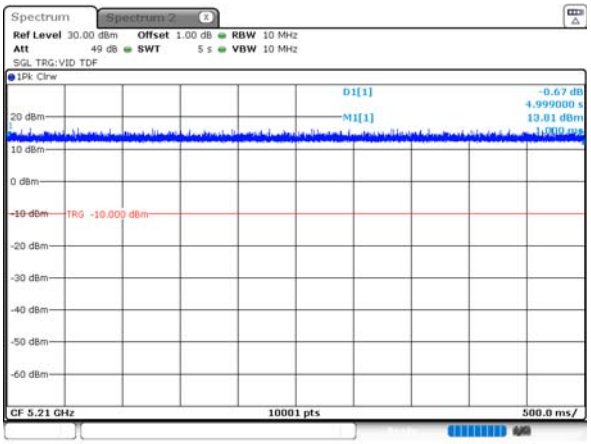
UNII-1		UNII-2A		UNII-2C		UNII-3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
42	5 210	58	5 290	106	5 530	155	5 775
				138	5 690		

Table 2.2.3. 802.11ac_VHT80 mode

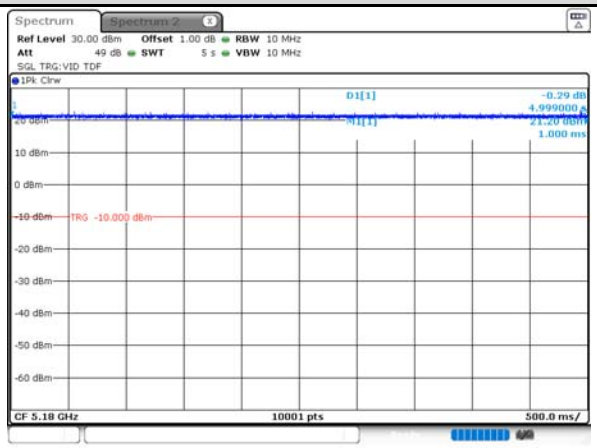
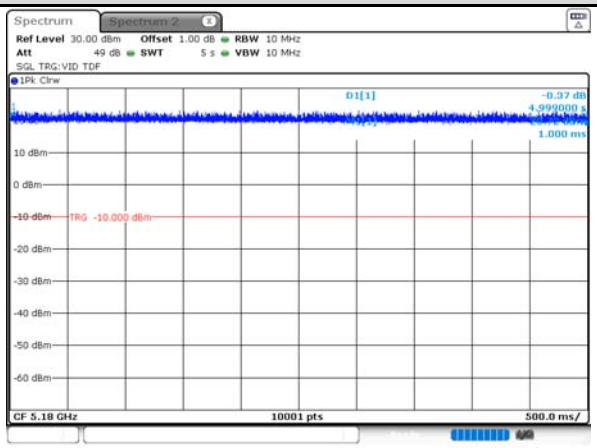
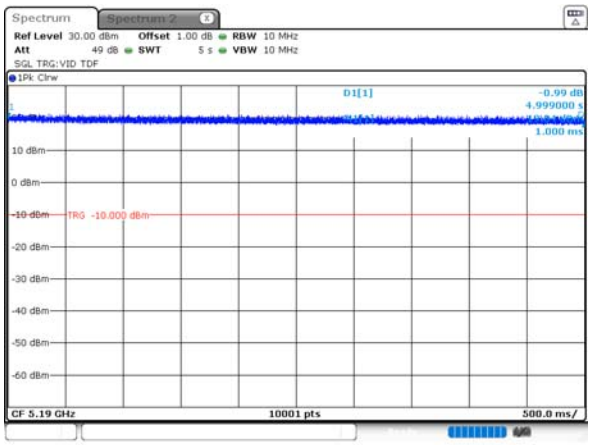
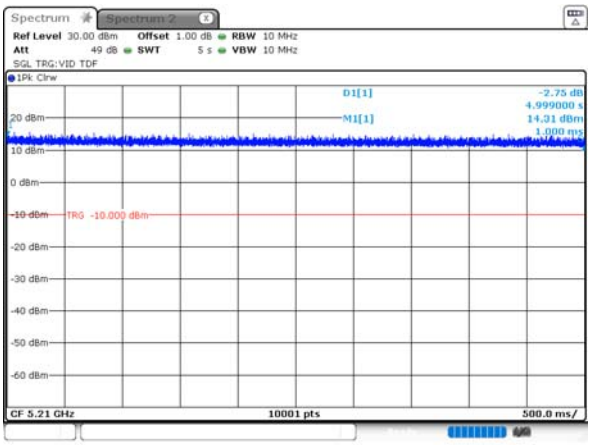
2.3. Duty Cycle Factor

DCF is not compensated to average result because duty cycle is 100%.

SISO

802.11a	802.11n_HT20
	
802.11n_HT40	**802.11ac_VHT80**
	

MIMO

802.11a	802.11n_HT20
	
802.11n_HT40	**802.11ac_VHT80**
	

3. Antenna requirement

Requirement of FCC part section 15.203

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.

Requirement of RSS-Gen Section 6.8:

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

- The transmitter has permanently attached metal antenna on board.
- The E.U.T Complies with the requirement of §15.203, §15.247, §15.407.

3.1 Antenna information

Mode	SISO		MIMO
	ANT 0	ANT 1	ANT 0 + 1
802.11a	√	√	√
802.11n HT20	√	√	√
802.11n HT40	√	√	√
802.11ac VHT80	√	√	√

√ = Support, ✕ = Not support
SISO = Single Input Single Output
MIMO = Multiple Input Multiple Output

3.2 Directional Gain Calculations

According to clause F), 2), d), (i) of KDB 662911 D01 Multiple Transmitter Output, Directional gain may be calculated by using the formulas as below.

Band	ANT 0 Gain (dBi)	ANT 1 Gain (dBi)	Power Directional Gain (dBi)
UNII 1	0.9	0.7	3.81
UNII 2A	0.5	-0.4	3.08
UNII 2C	0.1	-0.3	2.91
UNII 3	-0.2	-0.3	2.76

Note.
Unequal antenna gains, with equal transmit powers. For antenna gains given by G_1, G_2, …, G_N dBi
Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$ dBi

4. Summary of tests

FCC Part section(s)	IC Rule Reference	Parameter	Test Condition	Test results
15.407(a)	RSS-247 Issue 2, 6.2	Maximum conducted output power	Conducted	Pass
15.407(a)	RSS-247 Issue 2, 6.2	Maximum power spectral density		N/T[1)]
15.407(a)	RSS-Gen Issue 5, 6.7	26 dB Channel Bandwidth		N/T[1)]
15.407(e)	RSS-247 Issue 2, 6.2.4	6 dB Channel Bandwidth		N/T[1)]
-	RSS-Gen Issue 5, 6.7	Occupied Bandwidth		N/T[1)]
15.207(a)	RSS-Gen Issue 5, 8.8	AC Conducted Emissions		N/A[2)]
15.407(b), 15.205(a), 15.209(a)	RSS-Gen Issue 5, 8.9, 8.10 RSS-247 Issue 2, 6.2,	Spurious emission	Radiated	Pass
		Band-edge, restricted band		Pass

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

1. These test items were performed. Please refer to original module report.
   (FCC ID: A3LWCA720M, IC: 649E-WCA720M)
   -FCC Test Report No. OT-213-RWD-050 issued on March 25, 2021 by ONETECH Corp.
   -IC Test Report No. OT-213-RWD-053 issued on March 25, 2021 by ONETECH Corp.
2. This test is not applied because the adapter is not used during the test.
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:
   802.11a mode: 6Mbps
   802.11n HT20 mode: MCS0
   802.11n HT40 mode: MCS0
   802.11ac VHT80 mode: MCS0

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 (±)	
Radiated spurious emissions	9 ㎑ ~ 30 ㎒:	2.3 dB
	30 ㎒ ~ 300 ㎒	5.4 dB
	300 ㎒ ~ 1 000 ㎒	5.5 dB
	Above 1 ㎓	6.7 dB

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.

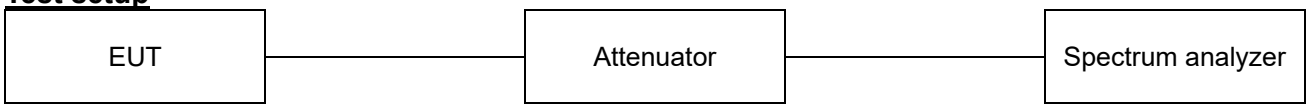
Frequency (㎒)	Factor(㏈)	Frequency (㎒)	Factor(㏈)
30	10.17	9 000	12.12
50	10.21	10 000	12.39
100	10.36	11 000	12.31
200	10.41	12 000	12.57
300	10.45	13 000	12.66
400	10.47	14 000	12.70
500	10.53	15 000	12.73
600	10.56	16 000	12.98
700	10.65	17 000	13.47
800	10.51	18 000	13.08
900	10.58	19 000	13.28
1 000	10.68	20 000	13.31
2 000	11.00	21 000	13.42
3 000	11.28	22 000	13.66
4 000	11.40	23 000	13.81
5 000	11.56	24 000	13.68
6 000	11.73	25 000	13.84
7 000	11.98	26 000	14.02
8 000	12.01	26 500	14.01

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

7. Test results

7.1. Maximum conducted output power

Test setup



Limit

According to §15.407(a), RSS-247(6.2)

FCC

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)

IC

Band	Maximum e.i.r.p. limit
UNII-1	200 ㎽ or 10 + 10 log10B[2)], dBm
UNII-2A	1 W or 17 dBm + 10logB[2)]
UNII-2C	1 W or 17 dBm + 10logB[2)]
UNII-3	1 W (30 dBm)

Note:

1) Conducted output power limit B is the 26 dB emission bandwidth.
2) Maximum e.i.r.p. limit B is the 99% 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)

Test settings

◆ **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

SISO Conducted Output Power

Test mode	Band	Frequency (㎒)	Measured output power		Limit (dBm)
			Result (dBm)		
			ANT0	ANT1	
802.11a	UNII 1	5 180	11.95	12.18	22.12
		5 220	12.33	12.47	22.12
		5 240	12.59	12.21	22.13
	UNII 2A	5 260	15.35	14.81	29.13
		5 300	15.30	14.89	29.14
		5 320	15.47	15.13	29.12
	UNII 2C	5 500	15.23	15.05	29.12
		5 580	15.45	14.96	29.13
		5 700	15.19	15.09	29.13
	UNII 3	5 745	15.20	14.90	30.00
		5 785	15.23	14.71	30.00
		5 825	15.06	14.95	30.00
802.11n HT20	UNII 1	5 180	12.01	11.84	22.45
		5 220	12.12	12.28	22.44
		5 240	12.10	12.14	22.45
	UNII 2A	5 260	15.14	14.67	29.45
		5 300	15.13	14.78	29.45
		5 320	15.39	14.88	29.47
	UNII 2C	5 500	14.66	14.76	29.45
		5 580	14.92	14.82	29.44
		5 700	15.08	14.63	29.45
	UNII 3	5 745	14.75	14.45	30.00
		5 785	14.94	14.43	30.00
		5 825	14.73	14.73	30.00
802.11n HT40	UNII 1	5 190	12.78	12.74	23.00
		5 230	12.97	12.99	23.00
	UNII 2A	5 270	13.28	12.61	30.00
		5 310	13.11	12.74	30.00
	UNII 2C	5 510	12.96	12.64	30.00
		5 550	12.87	12.83	30.00
		5 670	12.84	13.24	30.00
	UNII 3	5 755	12.96	12.49	30.00
		5 795	13.05	12.63	30.00

Test mode	Band	Frequency (㎒)	Measured output power		Limit (dBm)
			Result (dBm)		
			ANT0	ANT4	
802.11ac VHT80	UNII 1	5 210	10.36	11.13	23.00
	UNII 2A	5 290	11.53	11.84	30.00
	UNII 2C	5 530	11.65	12.26	30.00
	UNII 3	5 775	12.67	13.07	30.00

Note.
1. DCF is not compensated to average result because duty cycle is more than 98%

SISO e.i.r.p.

Test mode	Band	Frequency (㎒)	Measured output power						MAX e.i.r.p Limit (dBm)	
			Conducted output power (dBm)		ANT gain (dBi)		MAX e.i.r.p (dBm)			
			ANT0	ANT1	ANT0	ANT1	ANT0	ANT1	ANT0	ANT1
802.11a	UNII 1	5 180	11.95	12.18	0.90	0.70	12.85	12.88	22.12	22.13
		5 220	12.33	12.47			13.23	13.17	22.12	22.12
		5 240	12.59	12.21			13.49	12.91	22.13	22.14
	UNII 2A	5 260	15.35	14.81	0.50	-0.40	15.85	14.41	29.13	29.13
		5 300	15.30	14.89			15.80	14.49	29.14	29.12
		5 320	15.47	15.13			15.97	14.73	29.12	29.12
	UNII 2C	5 500	15.23	15.05	0.10	-0.30	15.33	14.75	29.12	29.12
		5 580	15.45	14.96			15.55	14.66	29.13	29.12
		5 700	15.19	15.09			15.29	14.79	29.13	29.12
	UNII 3	5 745	15.20	14.90	-0.20	-0.30	15.00	14.60	30.00	30.00
		5 785	15.23	14.71			15.03	14.41	30.00	30.00
		5 825	15.06	14.95			14.86	14.65	30.00	30.00
802.11n HT20	UNII 1	5 180	12.01	11.84	0.90	0.70	12.91	12.54	22.45	22.46
		5 220	12.12	12.28			13.02	12.98	22.44	22.45
		5 240	12.10	12.14			13.00	12.84	22.45	22.45
	UNII 2A	5 260	15.14	14.67	0.50	-0.40	15.64	14.27	29.45	29.45
		5 300	15.13	14.78			15.63	14.38	29.45	29.45
		5 320	15.39	14.88			15.89	14.48	29.47	29.45
	UNII 2C	5 500	14.66	14.76	0.10	-0.30	14.76	14.46	29.45	29.45
		5 580	14.92	14.82			15.02	14.52	29.44	29.44
		5 700	15.08	14.63			15.18	14.33	29.45	29.45
	UNII 3	5 745	14.75	14.45	-0.20	-0.30	14.55	14.15	30.00	30.00
		5 785	14.94	14.43			14.74	14.13	30.00	30.00
		5 825	14.73	14.73			14.53	14.43	30.00	30.00
802.11n HT40	UNII 1	5 190	12.78	12.74	0.50	0.00	13.28	12.74	23.00	23.00
		5 230	12.97	12.99			13.47	12.99	23.00	23.00
	UNII 2A	5 270	13.28	12.61	0.90	0.70	14.18	13.31	30.00	30.00
		5 310	13.11	12.74			14.01	13.44	30.00	30.00
	UNII 2C	5 510	12.96	12.64	0.50	-0.40	13.46	12.24	30.00	30.00
		5 550	12.87	12.83			13.37	12.43	30.00	30.00
		5 670	12.84	13.24			13.34	12.84	30.00	30.00
	UNII 3	5 755	12.96	12.49	-0.20	-0.30	12.76	12.19	30.00	30.00
		5 795	13.05	12.63			12.85	12.33	30.00	30.00

Test mode	Band	Frequency (㎒)	Measured output power						MAX e.i.r.p Limit (dBm)	
			Reading (dBm)		ANT gain (dBi)		MAX e.i.r.p (dBm)			
			ANT0	ANT1	ANT0	ANT1	ANT0	ANT1	ANT0	ANT1
802.11ac VHT80	UNII 1	5 210	10.36	11.13	0.50	0.00	10.86	11.13	23.00	23.00
	UNII 2A	5 290	11.53	11.84	0.90	0.70	12.43	12.54	30.00	30.00
	UNII 2C	5 530	11.65	12.26	0.50	-0.40	12.15	11.86	30.00	30.00
	UNII 3	5 775	12.67	13.07	-0.20	-0.30	12.47	12.77	30.00	30.00

Notes:

1. e.i.r.p. Calculation: e.i.r.p. (dBm) = Conducted output power (dBm) + Antenna gain (dBi)

MIMO Conducted Output Power

Test mode	Band	Frequency (㎒)	Measured output power			Limit (dBm)
			Reading (dBm)	DCF (dB)	Result (dBm)	
			ANT0+ANT1			
802.11a	UNII 1	5 180	15.16	-	18.43	22.12
		5 220	15.27	-	18.54	22.12
		5 240	15.37	-	18.64	22.12
	UNII 2A	5 260	17.89	-	21.70	29.13
		5 300	17.99	-	21.80	29.12
		5 320	18.08	-	21.89	29.12
	UNII 2C	5 500	18.11	-	21.19	29.12
		5 580	17.92	-	21.00	29.12
		5 700	17.96	-	21.04	29.12
	UNII 3	5 745	18.07	-	20.83	30.00
		5 785	18.02	-	20.78	30.00
		5 825	18.03	-	20.79	30.00
802.11n HT20	UNII 1	5 180	14.79	-	18.06	22.45
		5 220	15.11	-	18.38	22.44
		5 240	15.18	-	18.45	22.45
	UNII 2A	5 260	17.71	-	21.52	29.45
		5 300	17.93	-	21.74	29.45
		5 320	18.08	-	21.89	29.45
	UNII 2C	5 500	17.64	-	20.72	29.45
		5 580	17.81	-	20.89	29.44
		5 700	17.79	-	20.87	29.45
	UNII 3	5 745	17.67	-	20.43	30.00
		5 785	17.69	-	20.45	30.00
		5 825	17.65	-	20.41	30.00
802.11n HT40	UNII 1	5 190	15.67	-	18.94	23.00
		5 230	15.91	-	19.18	23.00
	UNII 2A	5 270	15.87	-	19.68	30.00
		5 310	15.86	-	19.67	30.00
	UNII 2C	5 510	15.77	-	18.85	30.00
		5 550	15.61	-	18.69	30.00
		5 670	16.06	-	19.14	30.00
	UNII 3	5 755	15.68	-	18.44	30.00
		5 795	15.94	-	18.70	30.00

Test mode	Band	Frequency (㎒)	Measured output power			Limit (dBm)
			Reading (dBm)	DCF (dB)	Result (dBm)	
			ANT0+ANT1			
802.11ac VHT80	UNII 1	5 210	13.85	-	17.12	23.00
	UNII 2A	5 290	14.59	-	18.40	30.00
	UNII 2C	5 530	15.02	-	18.10	30.00
	UNII 3	5 775	15.68	-	18.44	30.00

Note.
1. Result(dB㎷) = 10log($10^{(ANT\ 1/10)}$ + $10^{(ANT\ 2/10)}$) + D.C.F

MIMO e.i.r.p.

Test mode	Band	Frequency (㎒)	Measured output power			MAX e.i.r.p Limit (dBm)
			Conducted output Power (dBm)	ANT gain (dBi)	MAX e.i.r.p (dBm)	
802.11a	UNII 1	5 180	15.16	3.81	18.97	22.12
		5 220	15.27		19.08	22.12
		5 240	15.37		19.18	22.12
	UNII 2A	5 260	17.89	3.08	20.97	29.13
		5 300	17.99		21.07	29.12
		5 320	18.08		21.16	29.12
	UNII 2C	5 500	18.11	2.91	21.02	29.12
		5 580	17.92		20.83	29.12
		5 700	17.96		20.87	29.12
	UNII 3	5 745	18.07	2.76	20.83	30.00
		5 785	18.02		20.78	30.00
		5 825	18.03		20.79	30.00
802.11n HT20	UNII 1	5 180	14.79	3.81	18.60	22.45
		5 220	15.11		18.92	22.44
		5 240	15.18		18.99	22.45
	UNII 2A	5 260	17.71	3.08	20.79	29.45
		5 300	17.93		21.01	29.45
		5 320	18.08		21.16	29.45
	UNII 2C	5 500	17.64	2.91	20.55	29.45
		5 580	17.81		20.72	29.44
		5 700	17.79		20.70	29.45
	UNII 3	5 745	17.67	2.76	20.43	30.00
		5 785	17.69		20.45	30.00
		5 825	17.65		20.41	30.00
802.11n HT40	UNII 1	5 190	15.67	3.81	19.48	23.00
		5 230	15.91		19.72	23.00
	UNII 2A	5 270	15.87	3.08	18.95	30.00
		5 310	15.86		18.94	30.00
	UNII 2C	5 510	15.77	2.91	18.68	30.00
		5 550	15.61		18.52	30.00
		5 670	16.06		18.97	30.00
	UNII 3	5 755	15.68	2.76	18.44	30.00
		5 795	15.94		18.70	30.00

Test mode	Band	Frequency (㎒)	Measured output power			MAX e.i.r.p Limit (dBm)
			Conducted output Power (dBm)	ANT gain (dBi)	MAX e.i.r.p (dBm)	
802.11ac VHT80	UNII 1	5 210	13.85	3.81	17.66	23.00
	UNII 2A	5 290	14.59	3.08	17.67	30.00
	UNII 2C	5 530	15.02	2.91	17.93	30.00
	UNII 3	5 775	15.68	2.76	18.44	30.00

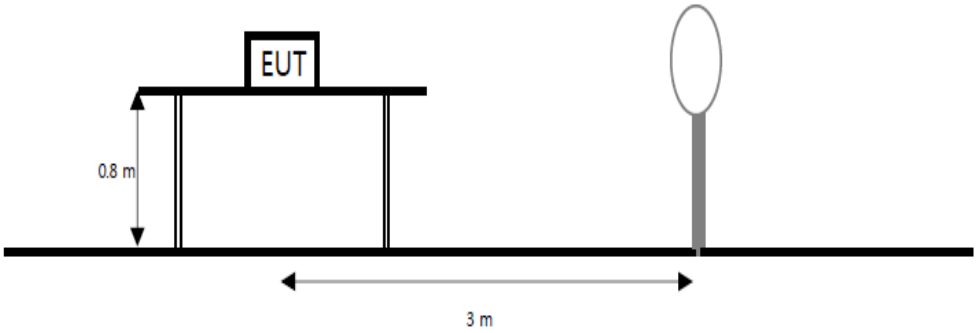
Notes:

1. e.i.r.p. Calculation: e.i.r.p. (dBm) = Conducted output power (dBm) + Antenna gain (dBi)

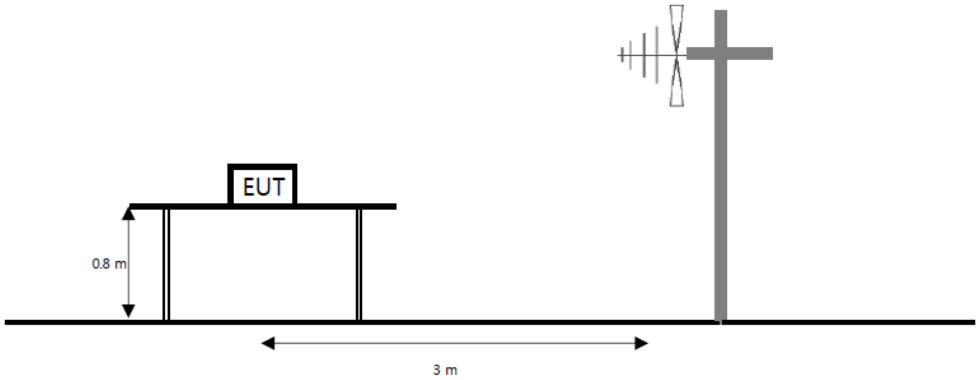
7.2. Spurious Emission, Band Edge and Restricted bands

Test setup

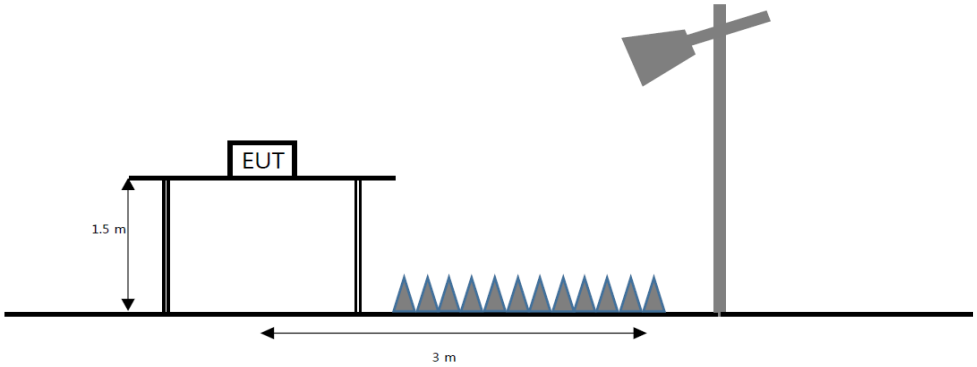
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒ Emissions



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

FCC

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		2 690 – 2 900	22.01 - 23.12
8.414 25 - 8.414 75	156.7 - 156.9	3 260 – 3 267	23.6 - 24.0
12.29 - 12.293	162.012 5 - 167.17	3 332 – 3 339	31.2 - 31.8
12.519 75 - 12.520 25	167.72 - 173.2	3 345.8 – 3 358	36.43 - 36.5
12.576 75 - 12.577 25	240 - 285	3 600 – 4 400	Above 38.6
13.36 - 13.41	322 - 335.4		

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.

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.

IC

According to RSS-247(5.5), In any 100 ㎑ bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 ㏈ below that in the 100 ㎑ bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 ㏈ instead of 20 ㏈. Attenuation below the general field strength limits specified in RSS-Gen is not required.

According to RSS-Gen(8.9), Except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table 5 and table 6. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.

The limits for spurious emissions below 30 MHz in RSS GEN Section 8.9 Table 6 are given in dBuA/m while the FCC Part 15.209(a) limits are expressed in dBuV/m. Using the free space impedance of 377Ω to convert between electric and magnetic field strength (a factor of 51.5dB in logarithmic units) the two sets of limits are equivalent and therefore a measured value of X dBuV/m shown in the plots and tables is equal to a magnetic field strength of (X - 51.5) dBuA/m and the margin of that emission relative to the RSS GEN limit (FCC 15.209 limit – 51.5) dBuA/m would be the same as the margin to the FCC limit detailed in those plots/tables.

Table 5- General field strength limits at frequencies above 30 ㎒

Frequency(㎒)	Field strength (㎶/m at 3 m)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960	500

Table 6- General field strength limits at frequencies below 30 ㎒

Frequency	Magnetic field strength (H-Field) (㎂/m)	Measurement distance(m)
9 – 490 ㎑ 1)	6.37/F (F in ㎑)	300
490 – 1705 ㎑	63.7/F (F in ㎑)	30
1.705 - 30 ㎒	0.08	30

According to RSS-Gen(8.10), Restricted frequency bands, identified in table 7, are designated primarily for safety-of-life services (distress calling and certain aeronautical activities), certain satellite downlinks, radio astronomy and some government uses. Except where otherwise indicated, the following conditions related to the restricted frequency bands apply:

(a) The transmit frequency, including fundamental components of modulation, of licence-exempt radio apparatus shall not fall within the restricted frequency bands listed in table 7 except for apparatus compliant with RSS-287, Emergency Position Indicating Radio Beacons (EPIRB), Emergency Locator Transmitters (ELT), Personal Locator Beacons (PLB), and Maritime Survivor Locator Devices (MSLD).
(b) Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in table 5 and table 6.
(c) Unwanted emissions that do not fall within the restricted frequency bands listed in table 7 shall comply either with the limits specified in the applicable RSS or with those specified in table 5 and table 6.

Table 7- Restricted frequency bands*

MHz	MHz	GHz
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2
0.495 - 0.505	156.52475 - 156.52525	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 - 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	
8.37625 - 8.38675	1718.8 - 1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 - 2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 - 13.41	3260 - 3267	
16.42 - 16.423	3332 - 3339	
16.69475 - 16.69525	3345.8 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 - 8500	
108 - 138	--	

* Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

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.

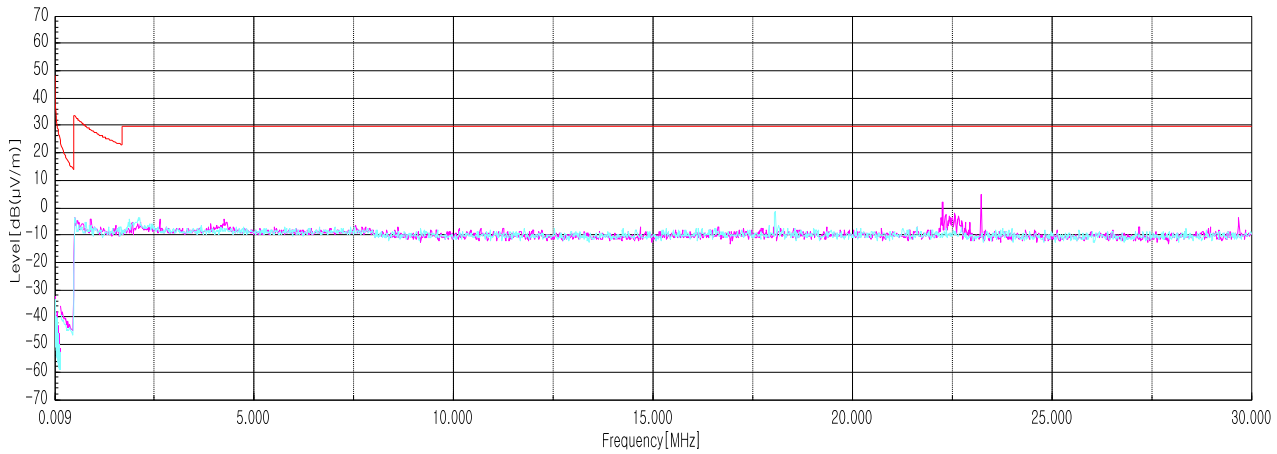
Notes:

1. *f* <30 ㎒, extrapolation factor of 40 dB/decade of distance. $F_d = 40\log(D_m/Ds)$
   f ≥30 ㎒, extrapolation factor of 20 dB/decade of distance. $F_d = 20\log(D_m/Ds)$
   Where:
   F_d= Distance factor in dB
   D_m= Measurement distance in meters
   D_s= Specification distance in meters
2. Factors(dB) = Antenna factor(dB/m) + Cable loss(dB) + or Amp. gain(dB) + or F_d(dB)
3. The worst-case emissions are reported however emissions whose levels were not within 20 dB of respective limits were not reported.
4. Average test would be performed if the peak result were greater than the average limit.
5. 1) means restricted band.
6. 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.
7. 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 dB of the limit, then the following statement shall be made: “No spurious emissions were detected within 20 dB of the limit.”

Test results (Below 30 ㎒) – Worst case: 802.11a MIMO / 5 500 ㎒

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

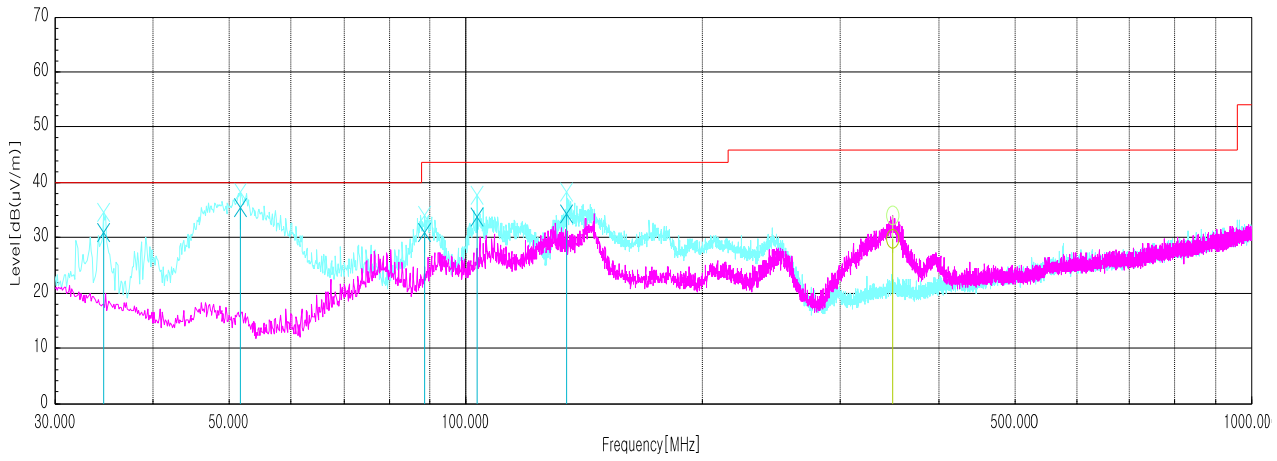
Horizontal/Vertical



Test results (Below 1 000 ㎒) –Worst case: 802.11a MIMO / 5 500 ㎒

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								
34.61	V	39.20	22.01	-30.35	-	30.86	40.00	9.14
51.70	V	52.00	13.39	-29.87	-	35.52	40.00	4.48
88.69	V	45.20	14.54	-28.89	-	30.85	43.50	12.65
103.48	V	45.50	17.00	-28.71	-	33.79	43.50	9.71
134.40[1)]	V	44.90	17.66	-28.14	-	34.42	43.50	9.08
349.25	H	34.80	20.27	-25.16	-	29.91	46.00	16.09

Horizontal/Vertical



Test results (Above 1 000 ㎒)

802.11a_UNII-1 ANT0

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								
5 149.48[1)]	H	40.21	34.22	-23.73	-	50.70	74.00	23.30
10 366.74	H	55.47	37.47	-47.94	-	45.00	68.20	23.20
Average Data								
No spurious emissions were detected within 20 dB of the limit								

Middle Channel (5 220 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 434.10	H	52.57	37.53	-47.90	-	42.20	68.20	26.00
Average Data								
No spurious emissions were detected within 20 dB of the limit								

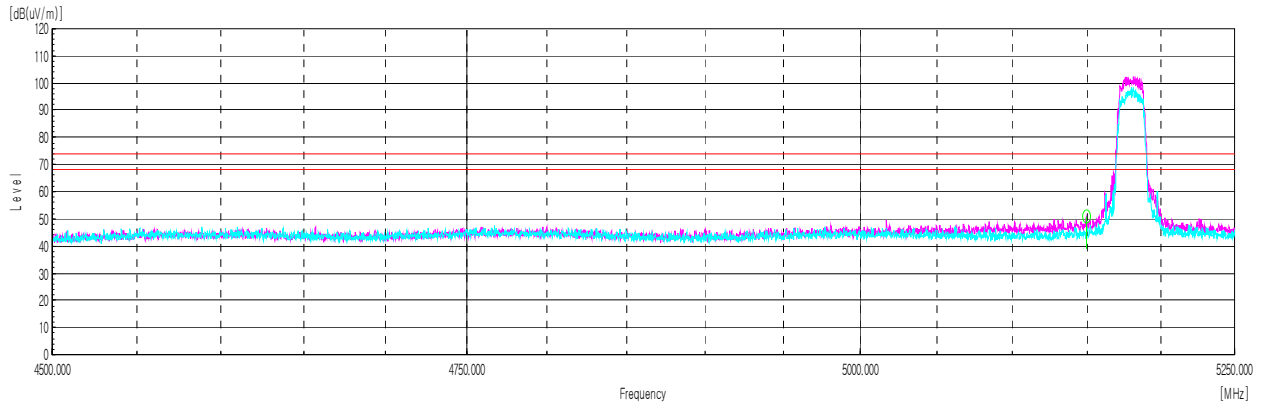
Highest Channel (5 240 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 482.57	H	53.39	37.58	-47.87	-	43.10	68.20	25.10
Average Data								
No spurious emissions were detected within 20 dB of the limit								

802.11a_UNII-1 ANT0

Lowest Channel (5 180 ㎒)

Horizontal/Vertical for Band-edge



802.11a UNII-1 ANT1

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								
5 138.08[1)]	V	37.97	34.21	-23.78	-	48.40	74.00	25.60
10 360.17	V	51.18	37.46	-47.94	-	40.70	68.20	27.50
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit								

Middle Channel (5 220 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 440.67	V	50.66	37.54	-47.90	-	40.30	68.20	27.90
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit								

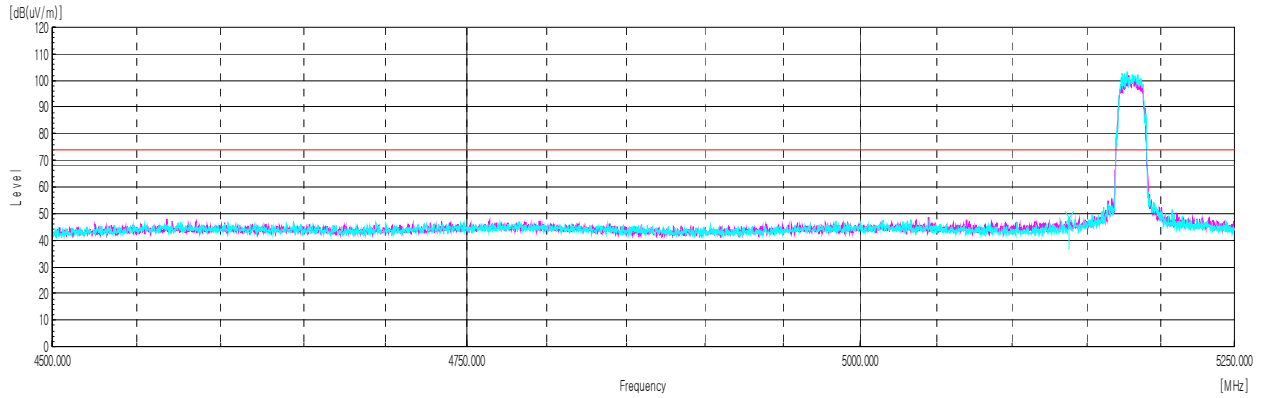
Highest Channel (5 240 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 482.57	H	51.59	37.58	-47.87	-	41.30	68.20	26.90
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

802.11a_UNII-1 ANT1

Lowest Channel (5 180 ㎒)

Horizontal/Vertical for Band-edge



802.11a UNII-1 2TX MIMO

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								
5 127.13[1)]	H	40.22	34.20	-23.82	-	50.60	74.00	23.40
10 370.23	V	57.47	37.47	-47.94	-	47.00	68.20	21.20
Average Data								
No spurious emissions were detected within 20 dB of the limit								

Middle Channel (5 220 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 439.24	V	52.06	37.54	-47.90	-	41.70	68.20	26.50
Average Data								
No spurious emissions were detected within 20 dB of the limit								

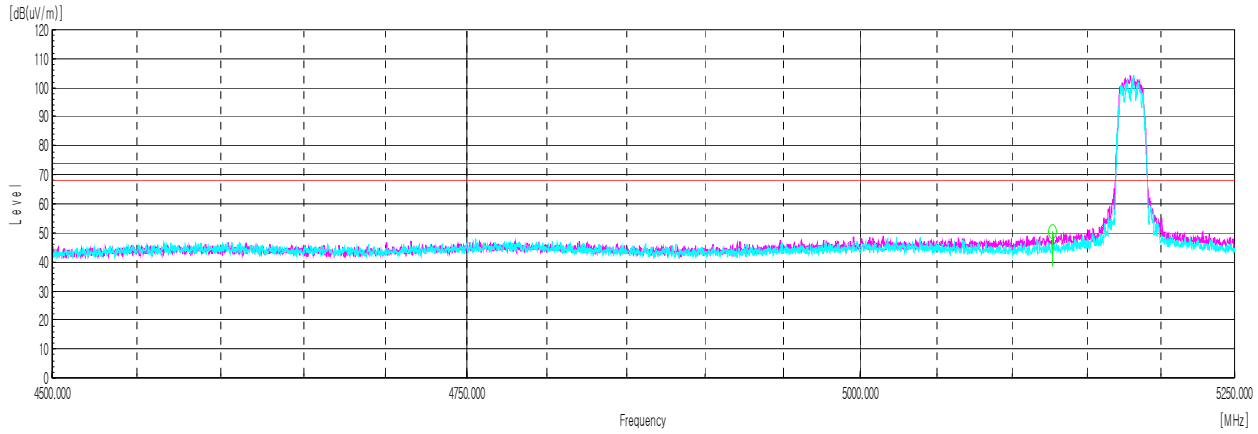
Highest Channel (5 240 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 475.18	V	54.59	37.58	-47.87	-	44.30	68.20	23.90
Average Data								
No spurious emissions were detected within 20 dB of the limit								

802.11a UNII-1 2TX MIMO

Lowest Channel (5 180 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT20 UNII-1_ANT0

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								
5 149.63[1)]	H	39.21	34.22	-23.73	-	49.70	74.00	24.30
10 361.81	V	55.28	37.46	-47.94	-	44.80	68.20	23.40
Average Data								
No spurious emissions were detected within 20 dB of the limit								

Middle Channel (5 220 ㎒)

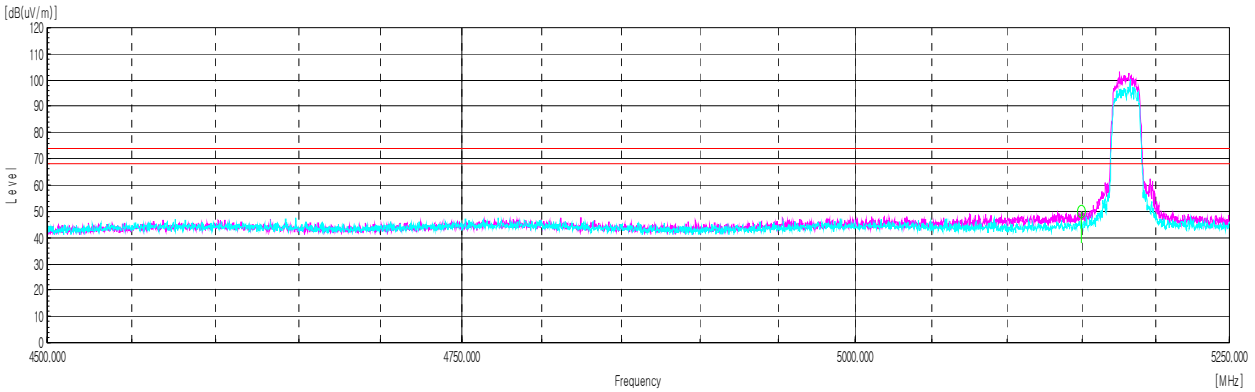
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 436.57	V	52.66	37.54	-47.90	-	42.30	68.20	25.90
Average Data								
No spurious emissions were detected within 20 dB of the limit								

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								
10 480.11	H	52.59	37.58	-47.87	-	42.30	68.20	25.90
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT20 UNII-1_ANT0

Lowest Channel (5 180 ㎒)

Horizontal/Vertical for Band-edge


802.11n HT20 UNII-1_ANT1

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								
5 138.83[1)]	V	37.56	34.21	-23.77	-	48.00	74.00	26.00
10 360.99	H	50.98	37.46	-47.94	-	40.50	68.20	27.70
Average Data								
No spurious emissions were detected within 20 dB of the limit								

Middle Channel (5 220 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 441.50	H	50.86	37.54	-47.90	-	40.50	68.20	27.70
Average Data								
No spurious emissions were detected within 20 dB of the limit								

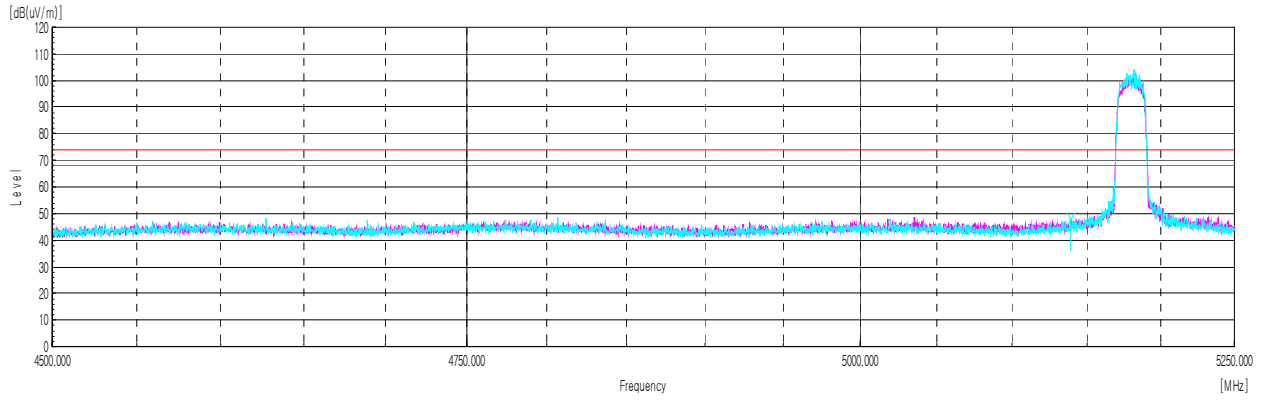
Highest Channel (5 240 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 479.28[1)]	H	52.19	37.58	-47.87	-	41.90	68.20	26.30
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT20 UNII-1_ANT1

Lowest Channel (5 180 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT20 UNII-1 2TX MIMO

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								
5 130.88[1)]	H	40.00	34.20	-23.80	-	50.40	74.00	23.60
10 367.36	V	54.97	37.47	-47.94	-	44.50	68.20	23.70
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

Middle Channel (5 220 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 440.68	H	51.36	37.54	-47.90	-	41.00	68.20	27.20
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

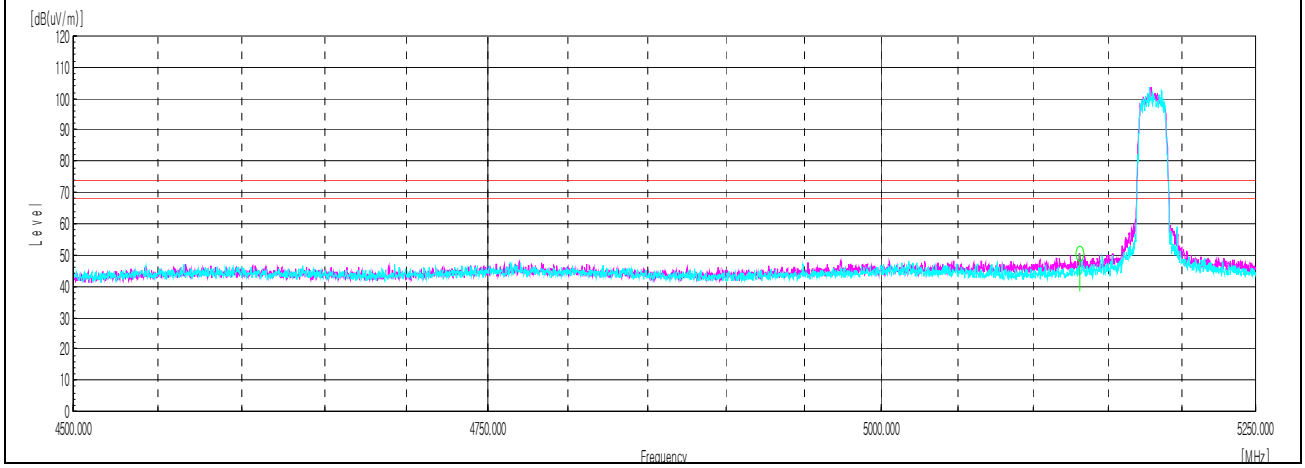
Highest Channel (5 240 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 478.06	V	54.99	37.58	-47.87	-	44.70	68.20	23.50
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

802.11n HT20 UNII-1_2TX MIMO

Lowest Channel (5 180 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT40_UNII-1_ANT0

Lowest Channel (5 190 ㎒)

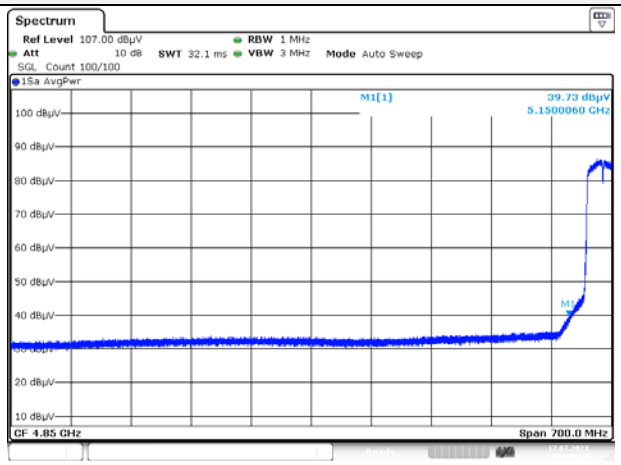
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 150.01[1)]	H	46.41	34.22	-23.73	-	56.90	74.00	17.10
10 377.42	H	51.85	37.48	-47.93	-	41.40	68.20	26.80
Average Data								
5 150.01[1)]	H	39.73	34.22	-23.73	-	50.22	54.00	3.78

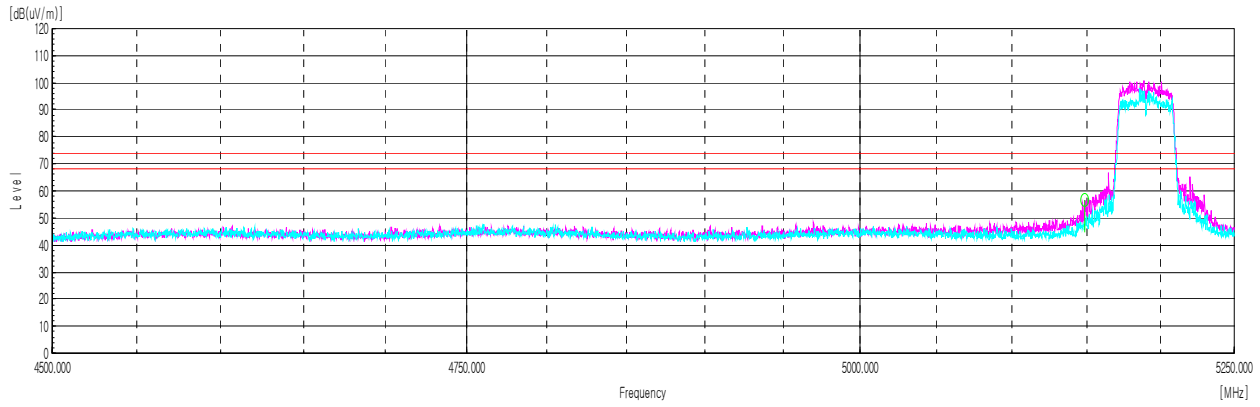
Highest Channel (5 230 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 462.03	V	50.92	37.56	-47.88	-	40.60	68.20	27.60
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT40_UNII-1_ANT0

Lowest Channel (5 190 ㎒)

Average data	
	Blank

Horizontal/Vertical for Band-edge


802.11n HT40_UNII-1_ANT1

Lowest Channel (5 190 ㎒)

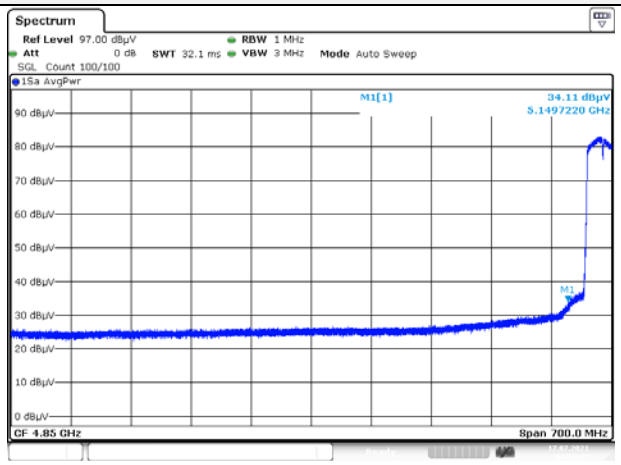
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 149.72[1)]	H	42.11	34.22	-23.73	-	52.60	74.00	21.40
10 379.88	H	50.75	37.48	-47.93	-	40.30	68.20	27.90
Average Data								
5 149.72[1)]	H	34.11	34.22	-23.73	-	44.60	54.00	9.40

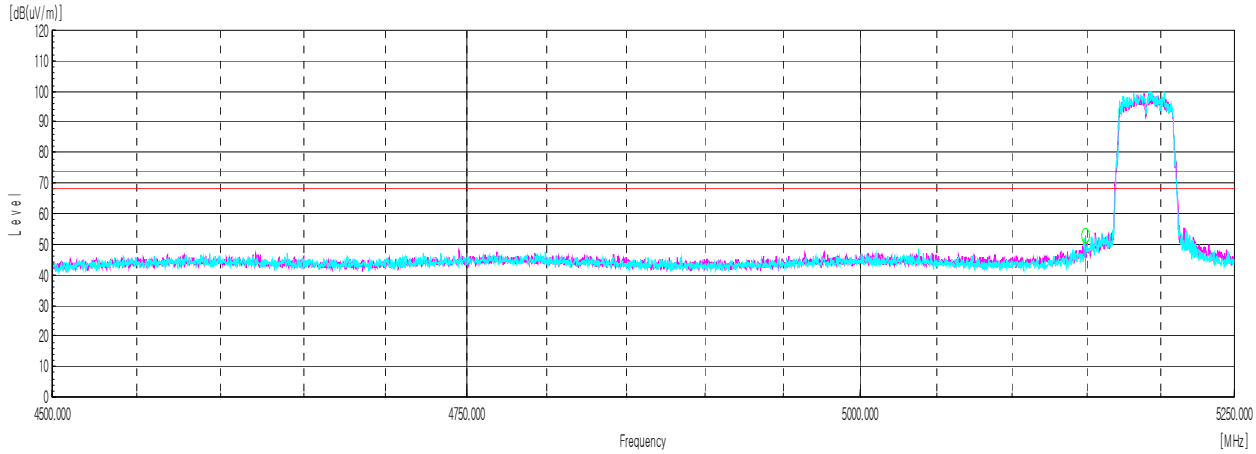
Highest Channel (5 230 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 457.10	H	51.23	37.56	-47.89	-	40.90	68.20	27.30
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

802.11n HT40_UNII-1_ANT1

Lowest Channel (5 190 ㎒)

Average data	
	Blank

Horizontal/Vertical for Band-edge


802.11n HT40_UNII-1_2TX MIMO

Lowest Channel (5 190 ㎒)

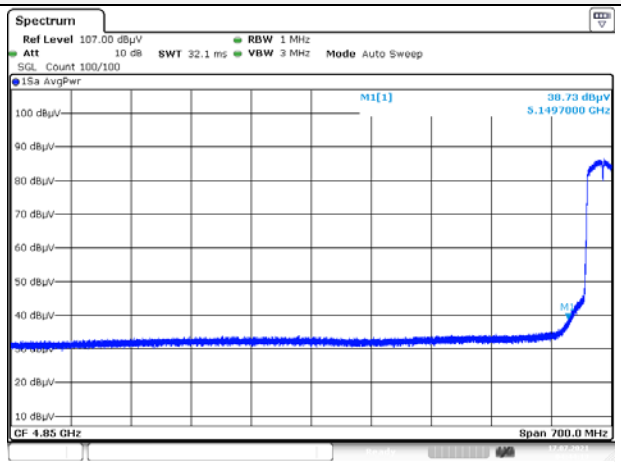
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 149.70[1)]	H	43.81	34.22	-23.73	-	54.30	74.00	19.70
10 381.73	V	52.55	37.48	-47.93	-	42.10	68.20	26.10
Average Data								
5 149.70[1)]	H	38.73	34.22	-23.73	-	49.22	54.00	4.78

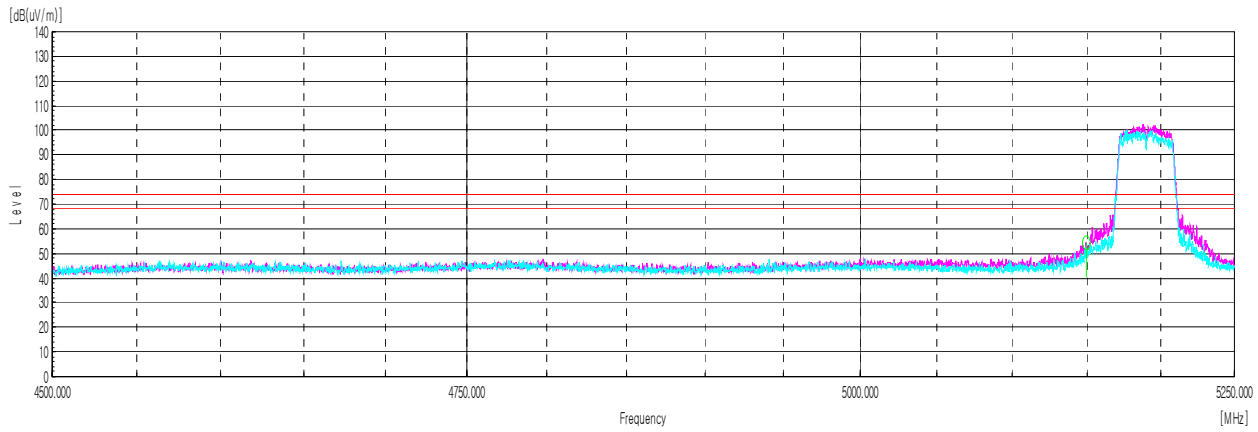
Highest Channel (5 230 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 460.81	H	51.52	37.56	-47.88	-	41.20	68.20	27.00
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT40_UNII-1_2TX MIMO

Lowest Channel (5 190 ㎒)

Average data	
	Blank

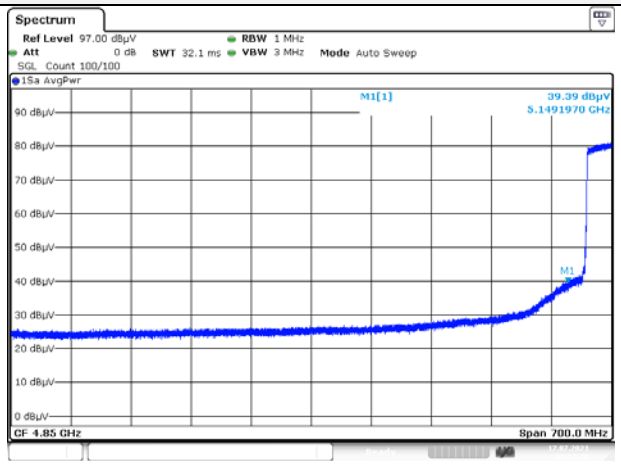
Horizontal/Vertical for Band-edge


802.11ac VHT80_UNII-1_ANT0

Lowest Channel (5 210 ㎒)

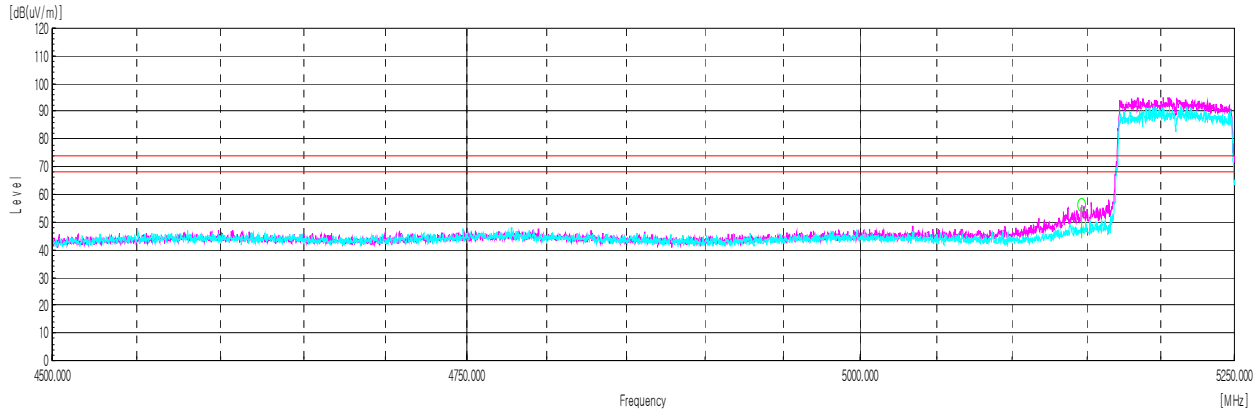
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 149.20[1)]	H	45.71	34.22	-23.73	-	56.20	74.00	17.80
10 420.96	V	50.99	37.52	-47.91	-	40.60	68.20	27.60
Average Data								
5 149.20[1)]	H	39.39	34.22	-23.73	-	49.88	54.00	4.12

Average data



Blank

Horizontal/Vertical for Band-edge

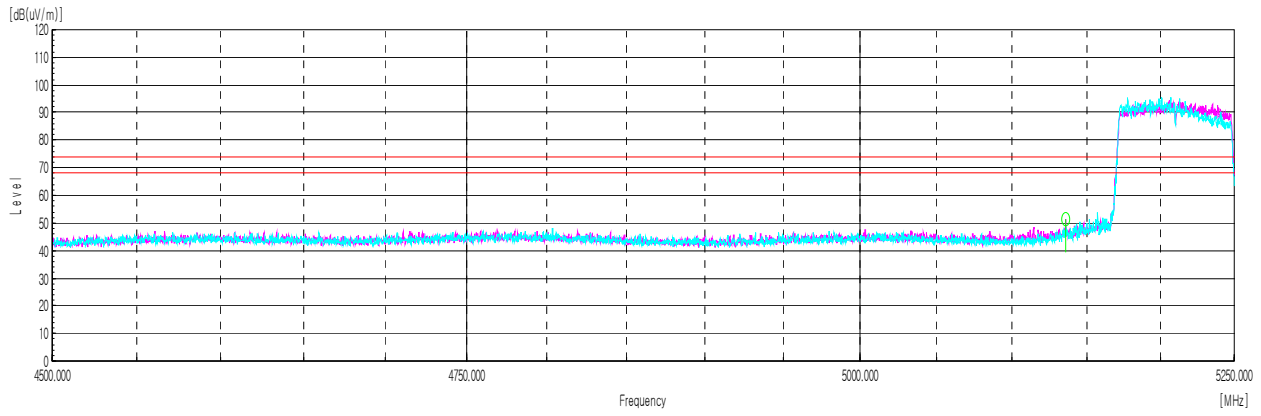


802.11ac VHT80_UNII-1_ANT1

Lowest Channel (5 210 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 135.98[1)]	H	40.37	34.21	-23.78	-	50.80	74.00	23.20
10 421.78	V	51.19	37.52	-47.91	-	40.80	68.20	27.40
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

Horizontal/Vertical for Band-edge

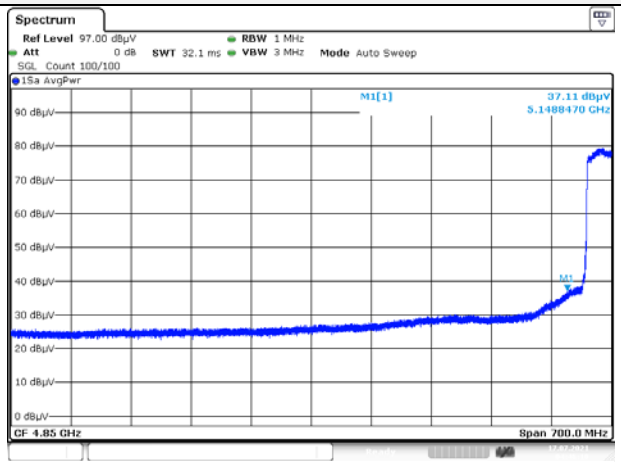


802.11ac VHT80_UNII-1_2TX MIMO

Lowest Channel (5 210 ㎒)

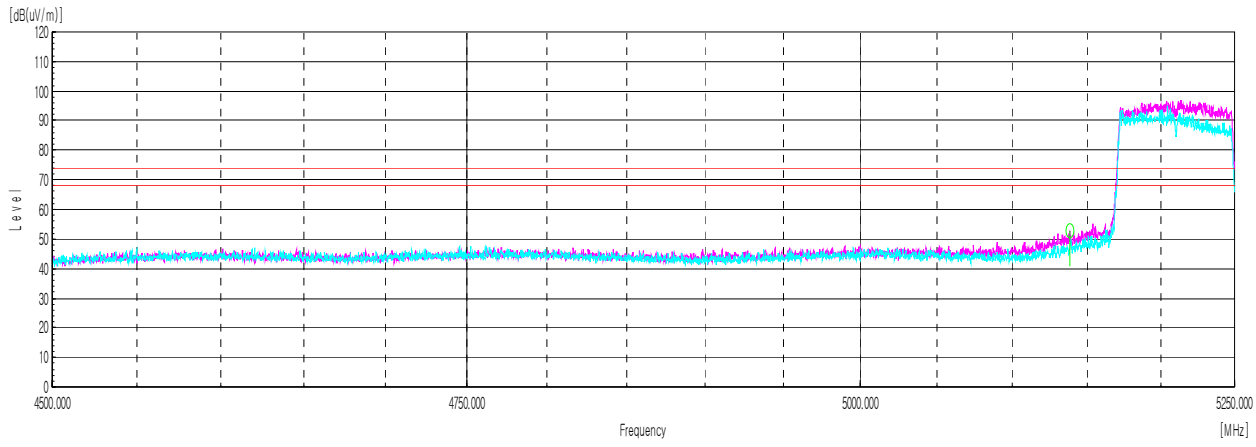
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 148.85[1)]	H	42.31	34.22	-23.73	-	52.80	74.00	21.20
10 419.11	H	51.99	37.52	-47.91	-	41.60	68.20	26.60
Average Data								
5 148.85[1)]	H	37.11	34.22	-23.73	-	47.60	54.00	6.40

Average data



Blank

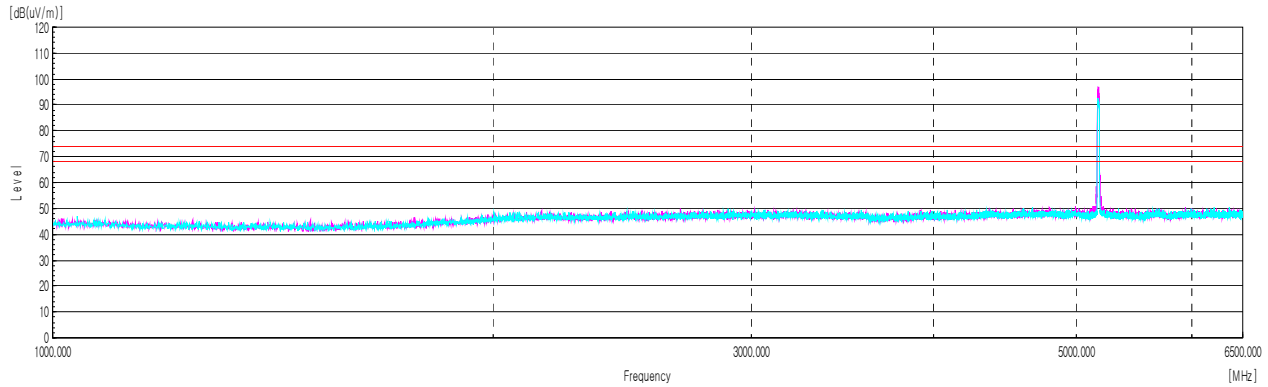
Horizontal/Vertical for Band-edge



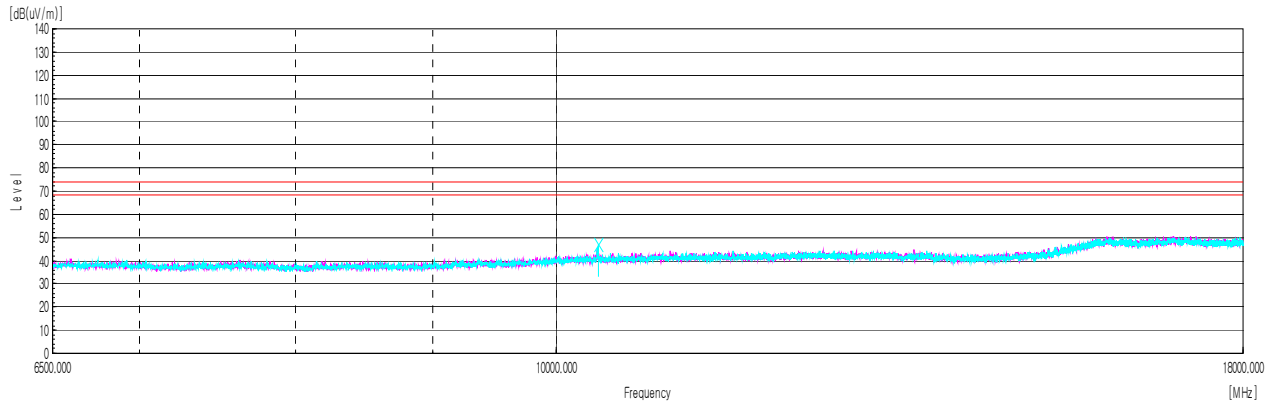
Plot of Harmonics and Spurious Emissions
In order to simplify the report, attached plots were only the lowest margin condition

802.11a_UNII-1_MIMO_Highest Channel (5 180 ㎒)

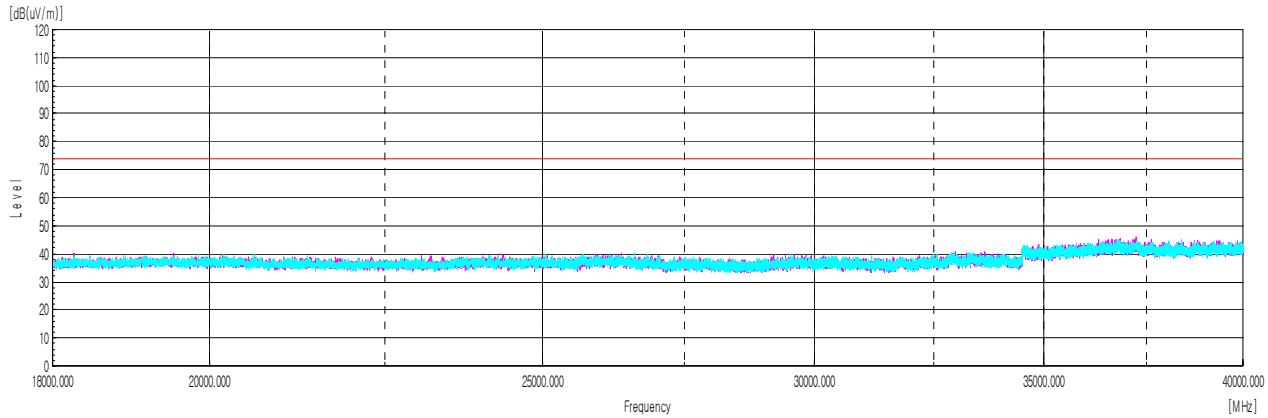
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



802.11a UNII-2A_ANT0

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								
10 522.00	H	54.12	37.61	-47.83	-	43.90	68.20	24.30
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 300 ㎒)

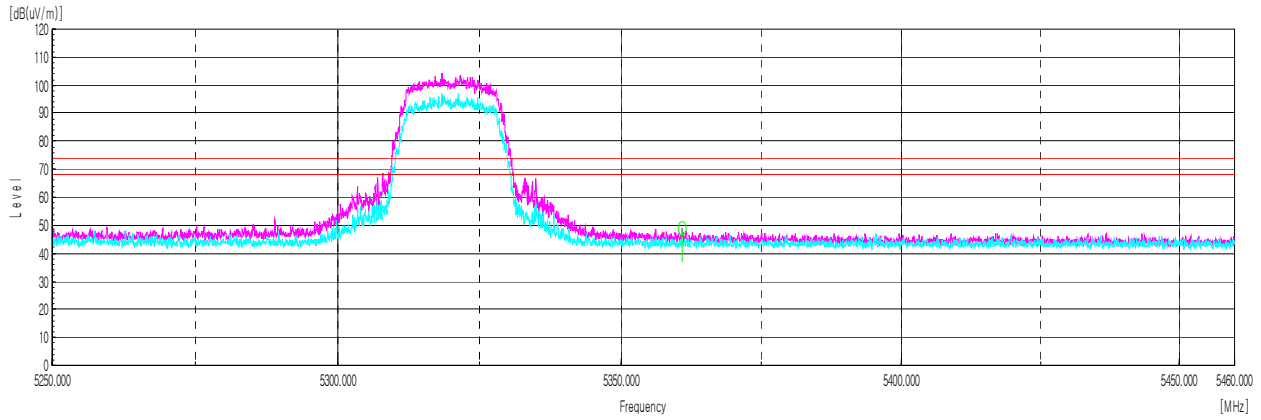
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 601.68[1)]	H	56.60	37.64	-47.74	-	46.50	74.00	27.50
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

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								
5 360.86[1)]	H	38.40	34.39	-23.89	-	48.90	74.00	25.10
10 640.29[1)]	H	56.44	37.66	-47.70	-	46.40	74.00	27.60
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11a UNII-2A_ANT0

Highest Channel (5 320 ㎒)

Horizontal/Vertical for Band-edge


802.11a UNII-2A_ANT1

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								
10 518.71	V	51.53	37.61	-47.84	-	41.30	68.20	26.90
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 300 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 602.51[1)]	H	51.80	37.64	-47.74	-	41.70	74.00	32.30
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

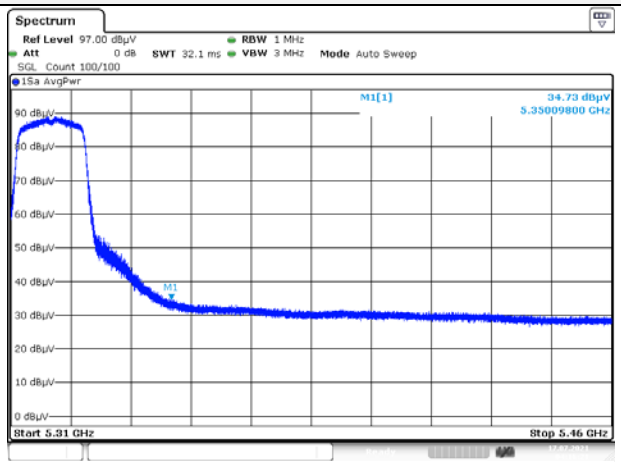
Highest Channel (5 320 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 350.10[1)]	H	42.41	34.38	-23.89	-	52.90	74.00	21.10
10 640.29	V	50.14	37.66	-47.70	-	40.10	74.00	33.90
Average Data								
5 350.10[1)]	H	34.73	34.38	-23.89	-	45.22	54.00	8.78

802.11a UNII-2A_ANT1

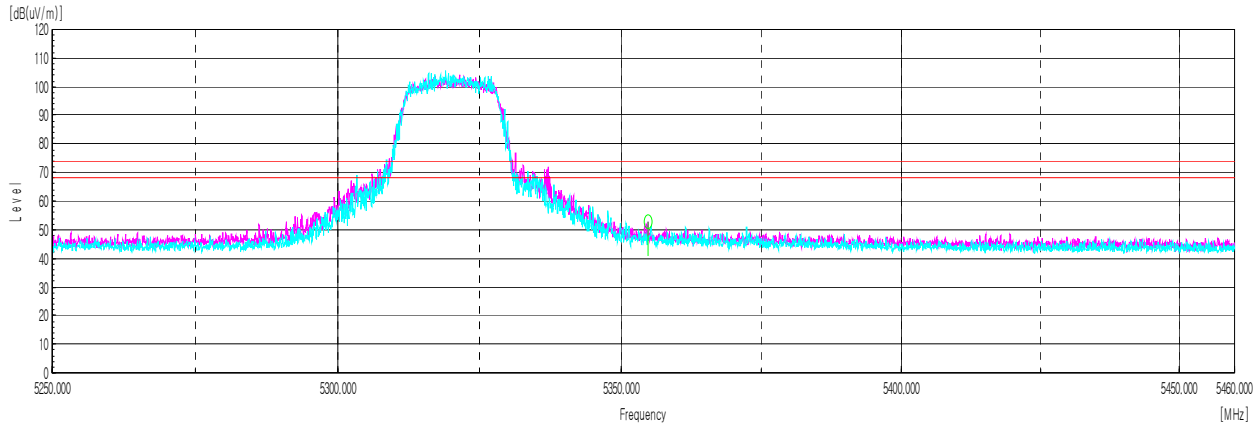
Highest Channel (5 320 ㎒)

Average data



Blank

Horizontal/Vertical for Band-edge



802.11a UNII-2A 2TX MIMO

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								
10 518.31	V	55.23	37.61	-47.84	-	45.00	68.20	23.20
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 300 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 607.45[1)]	V	53.60	37.64	-47.74	-	43.50	74.00	30.50
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

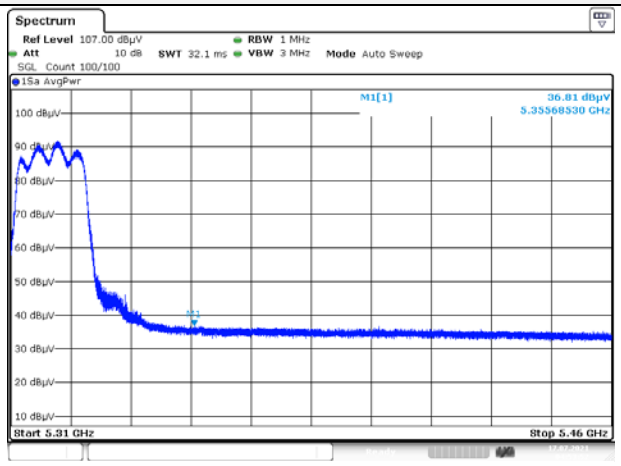
Highest Channel (5 320 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 355.69[1)]	H	41.01	34.38	-23.89	-	51.50	74.00	22.50
10 644.83[1)]	H	53.73	37.66	-47.69	-	43.70	74.00	30.30
Average Data								
5 355.69[1)]	H	36.81	34.38	-23.89	-	47.30	54.00	6.70

802.11a UNII-2A_2TX MIMO

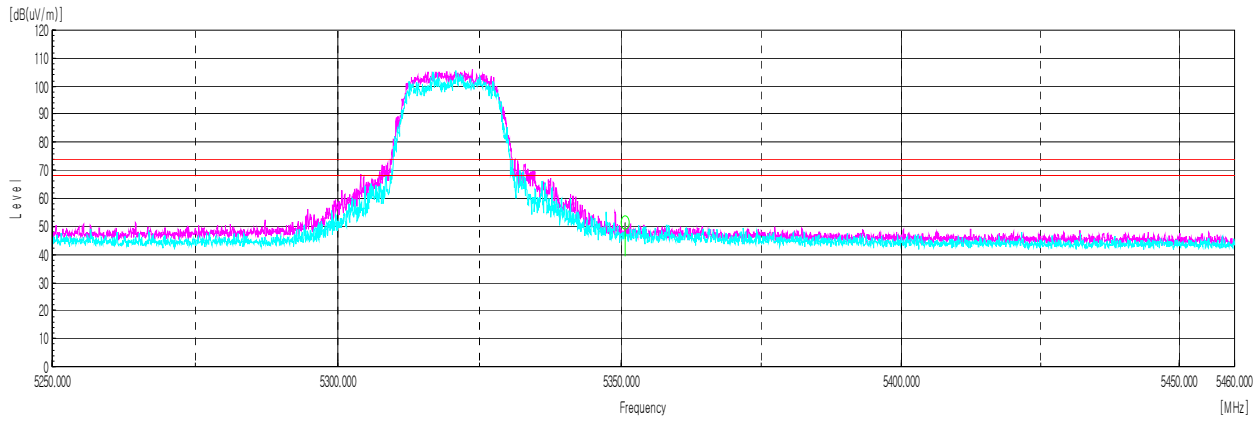
Highest Channel (5 320 ㎒)

Average data



Blank

Horizontal/Vertical for Band-edge



802.11n HT20_UNII-2A_ANT0

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								
10 522.82	V	50.72	37.61	-47.83	-	40.50	68.20	27.70
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

Middle Channel (5 300 ㎒)

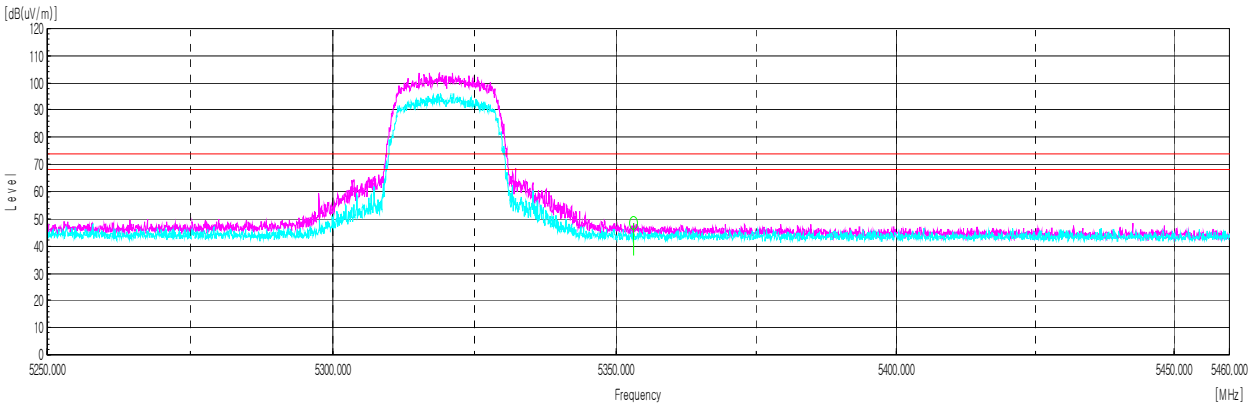
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 601.68[1)]	V	56.70	37.64	-47.74	-	46.60	74.00	27.40
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

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								
5 353.13[1)]	H	38.01	34.38	-23.89	-	48.50	74.00	25.50
10 639.47[1)]	V	56.14	37.66	-47.70	-	46.10	74.00	27.90
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

802.11n HT20_UNII-2A_ANT0

Highest Channel (5 320 ㎒)

Horizontal/Vertical for Band-edge


802.11n HT20_UNII-2A_ANT1

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								
10 519.54	V	50.93	37.61	-47.84	-	40.70	68.20	27.50
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 300 ㎒)

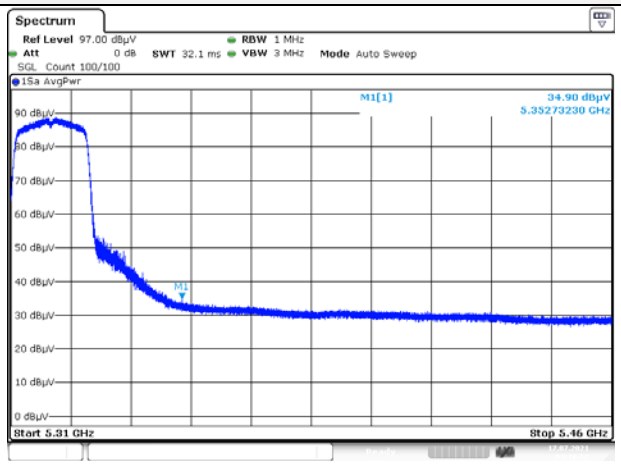
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 600.04[1)]	V	50.30	37.64	-47.74	-	40.20	74.00	33.80
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

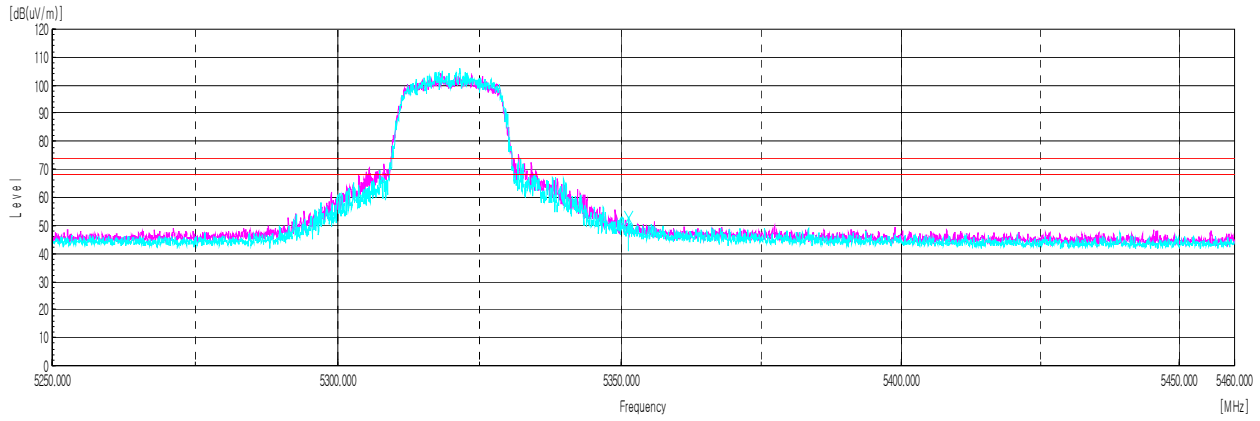
Highest Channel (5 320 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 352.73[1)]	V	42.31	34.38	-23.89	-	52.80	74.00	21.20
10 639.47[1)]	H	50.74	37.66	-47.70	-	40.70	74.00	33.30
Average Data								
5 352.73[1)]	H	34.90	34.38	-23.89	-	45.39	54.00	8.61

802.11n HT20_UNII-2A_ANT1

Highest Channel (5 320 ㎒)

Average data	
	Blank

Horizontal/Vertical for Band-edge


802.11n HT20_UNII-2A_2TX MIMO

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								
10 522.63	V	53.92	37.61	-47.83	-	43.70	68.20	24.50
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 300 ㎒)

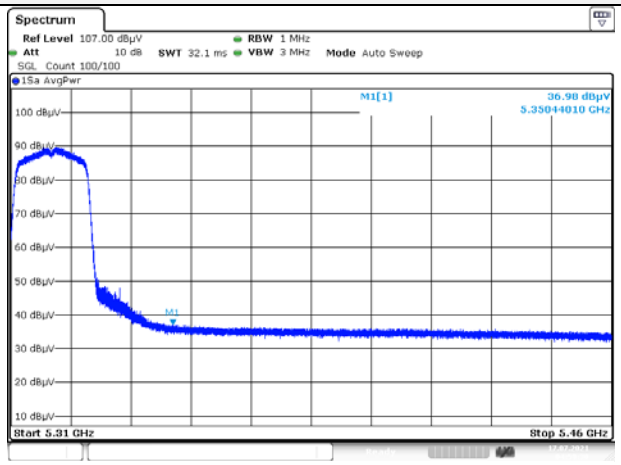
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 597.39	V	53.61	37.64	-47.75	-	43.50	68.20	24.70
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

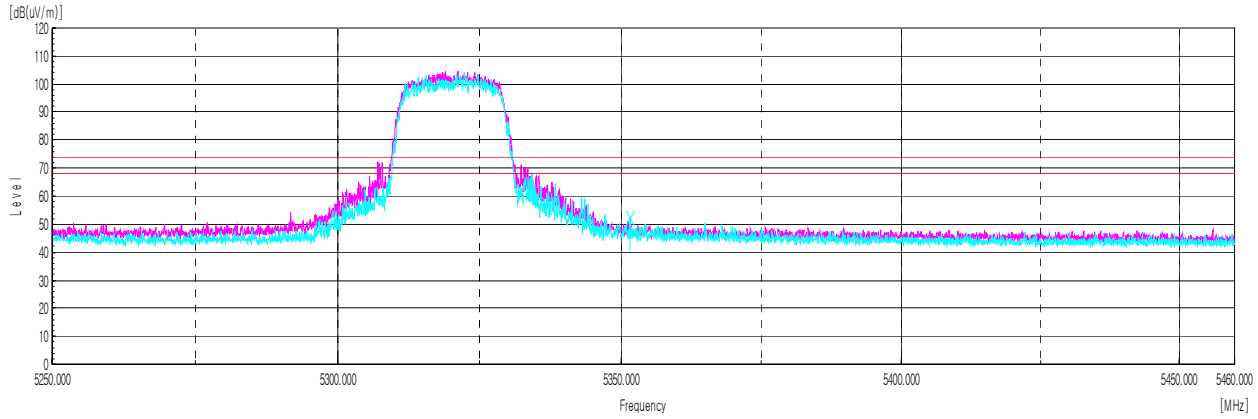
Highest Channel (5 320 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 350.44[1)]	V	41.71	34.38	-23.89	-	52.20	74.00	21.80
10 641.95[1)]	V	54.14	37.66	-47.70	-	44.10	74.00	29.90
Average Data								
5 350.44[1)]	H	36.98	34.38	-23.89	-	47.47	54.00	6.53

802.11n HT20_UNII-2A_2TX MIMO

Highest Channel (5 320 ㎒)

Average data	
	Blank

Horizontal/Vertical for Band-edge


802.11n HT40_UNII-2A ANT0

Lowest Channel (5 270 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 540.07	V	51.49	37.62	-47.81	-	41.30	68.20	26.90
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

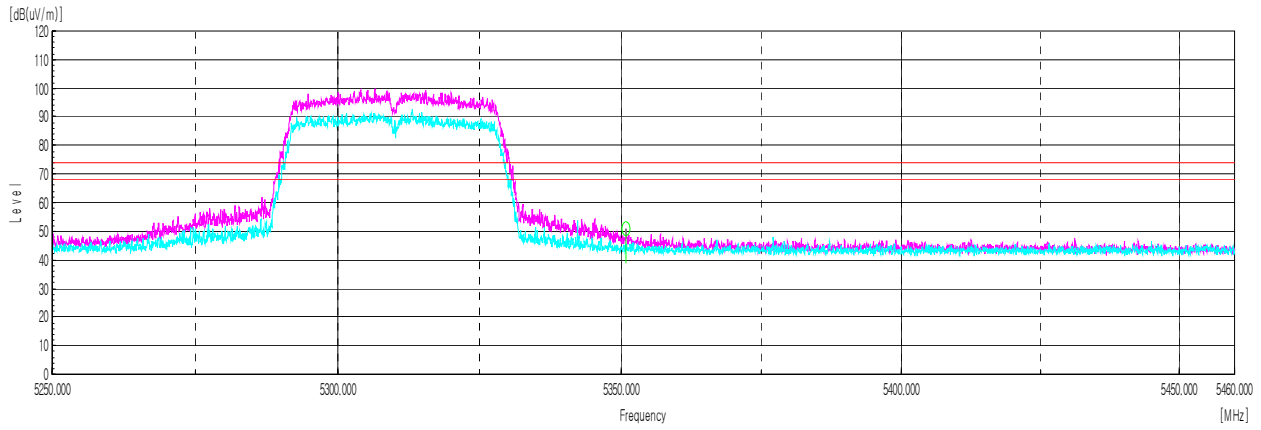
Highest Channel (5 310 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 350.90[1)]	H	40.31	34.38	-23.89	-	50.80	74.00	23.20
10 618.11[1)]	V	50.67	37.65	-47.72	-	40.60	74.00	33.40
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

802.11n HT40_UNII-2A ANT0

Highest Channel (5 310 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT40_UNII-2A ANT1

Lowest Channel (5 270 ㎒)

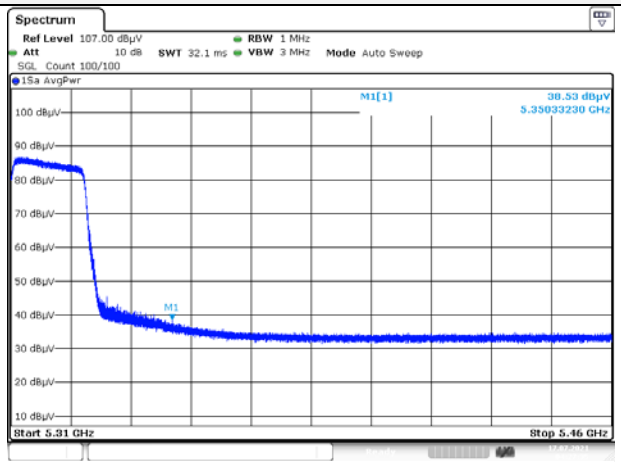
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 537.61	H	50.90	37.62	-47.82	-	40.70	68.20	27.50
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

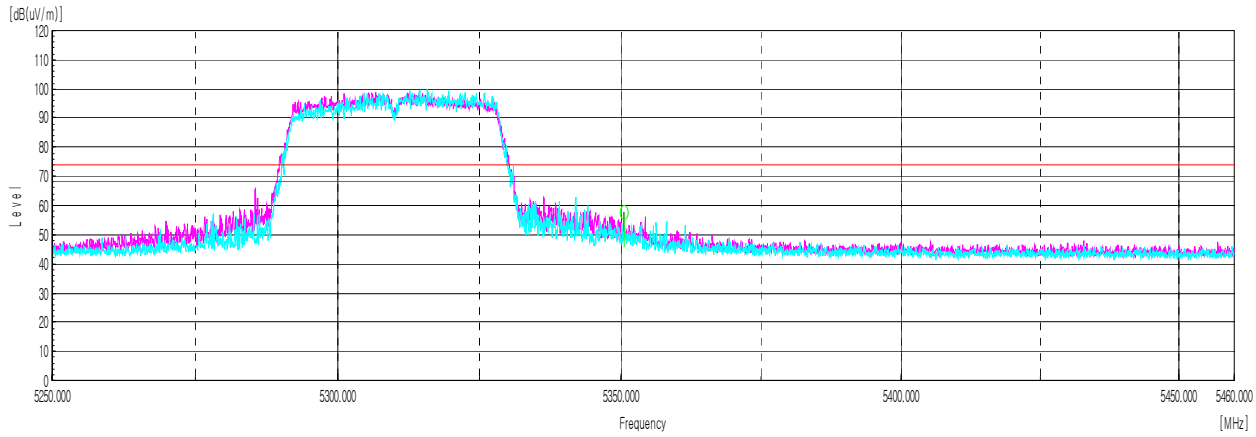
Highest Channel (5 310 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 350.33[1)]	H	47.31	34.38	-23.89	-	57.80	74.00	16.20
10 618.94[1)]	V	50.17	37.65	-47.72	-	40.10	74.00	33.90
Average Data								
5 350.33[1)]	V	38.53	34.38	-23.89	-	49.02	54.00	4.98

802.11n HT40_UNII-2A ANT1

Highest Channel (5 310 ㎒)

Average data	
	Blank

Horizontal/Vertical for Band-edge


802.11n HT40_UNII-2A 2TX MIMO

Lowest Channel (5 270 ㎒)

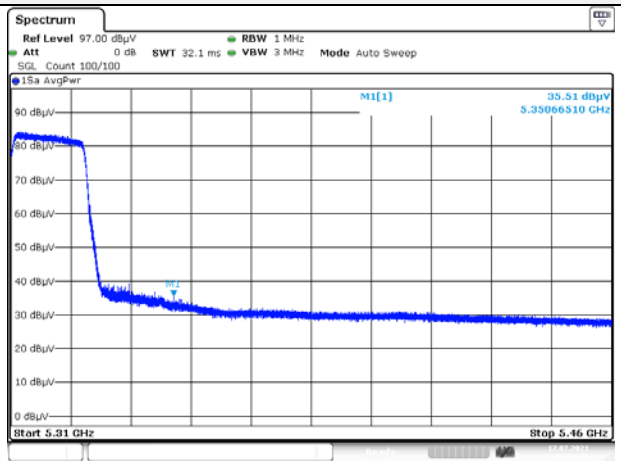
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
10 542.75	V	52.29	37.62	-47.81	-	42.10	68.20	26.10
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

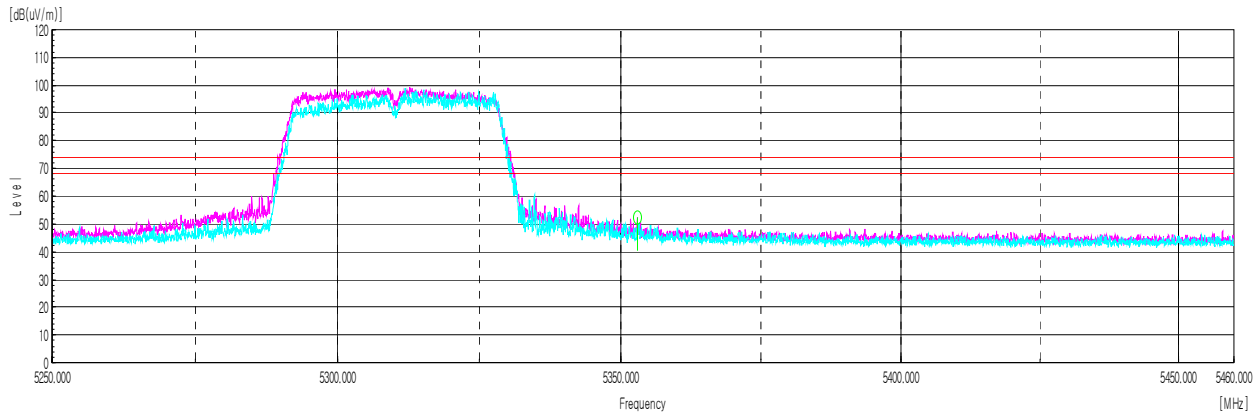
Highest Channel (5 310 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 350.67[1)]	H	41.71	34.38	-23.89	-	52.20	74.00	21.80
10 621.83[1)]	H	51.17	37.65	-47.72	-	41.10	74.00	32.90
Average Data								
5 350.67[1)]	H	35.51	34.38	-23.89	-	46.00	54.00	8.00

802.11n HT40_UNII-2A 2TX MIMO

Highest Channel (5 310 ㎒)

Average data	
	Blank

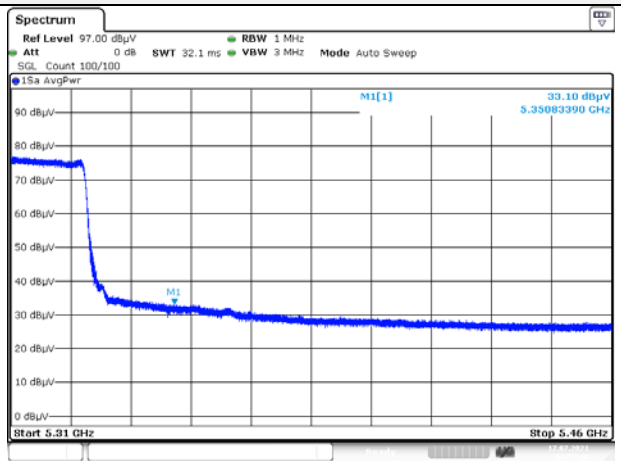
Horizontal/Vertical for Band-edge


802.11ac VHT80_UNII-2A_ANT0

Lowest Channel (5 290 ㎒)

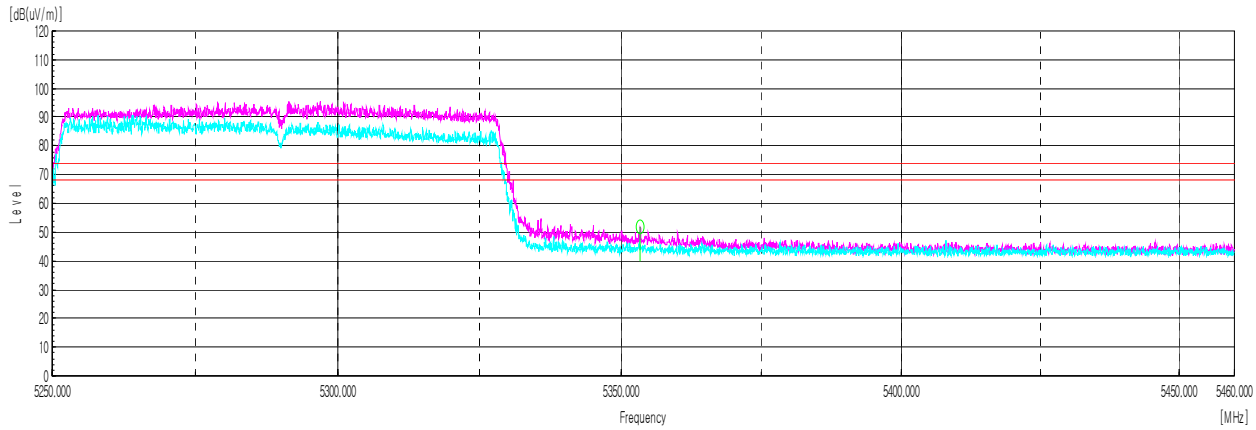
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 350.83[1)]	H	41.51	34.38	-23.89	-	52.00	74.00	22.00
10 580.33	H	51.04	37.63	-47.77	-	40.90	68.20	27.30
Average Data								
5 350.83[1)]	H	33.10	34.38	-23.89	-	43.59	54.00	10.41

Average data



Blank

Horizontal/Vertical for Band-edge

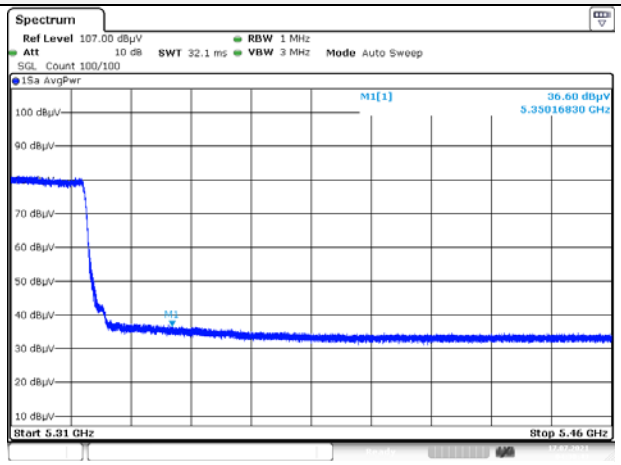


802.11ac VHT80_UNII-2A_ANT1

Lowest Channel (5 290 ㎒)

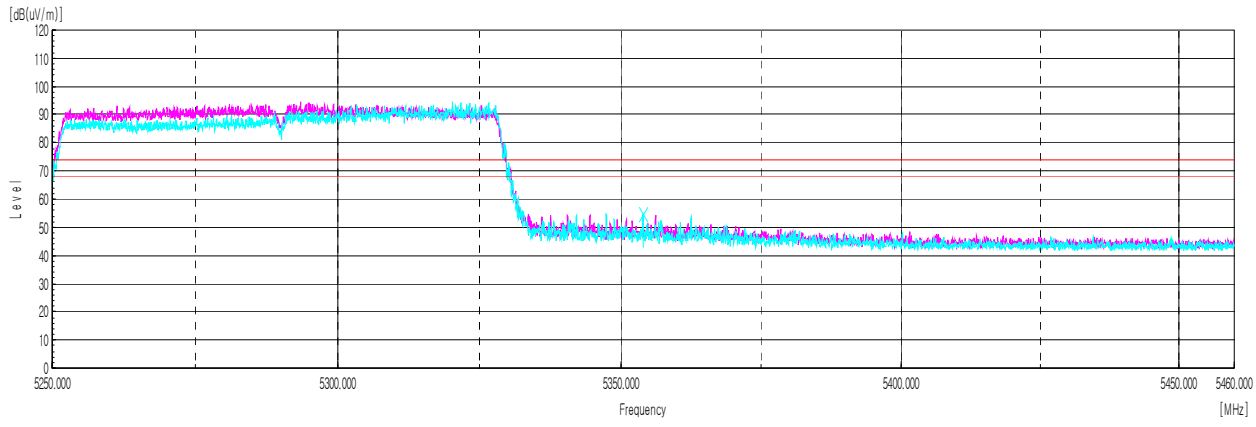
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 350.17[1)]	V	44.11	34.38	-23.89	-	54.60	74.00	19.40
10 580.33	H	51.44	37.63	-47.77	-	41.30	68.20	26.90
Average Data								
5 350.17[1)]	V	36.60	34.38	-23.89	-	47.09	54.00	6.91

Average data



Blank

Horizontal/Vertical for Band-edge

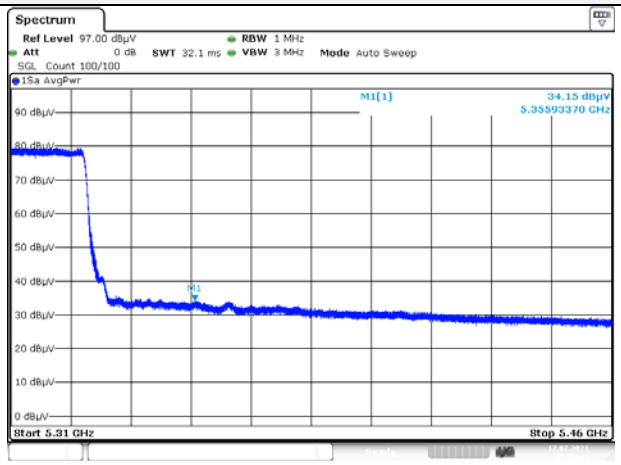


802.11ac VHT80_UNII-2A_2TX MIMO

Lowest Channel (5 290 ㎒)

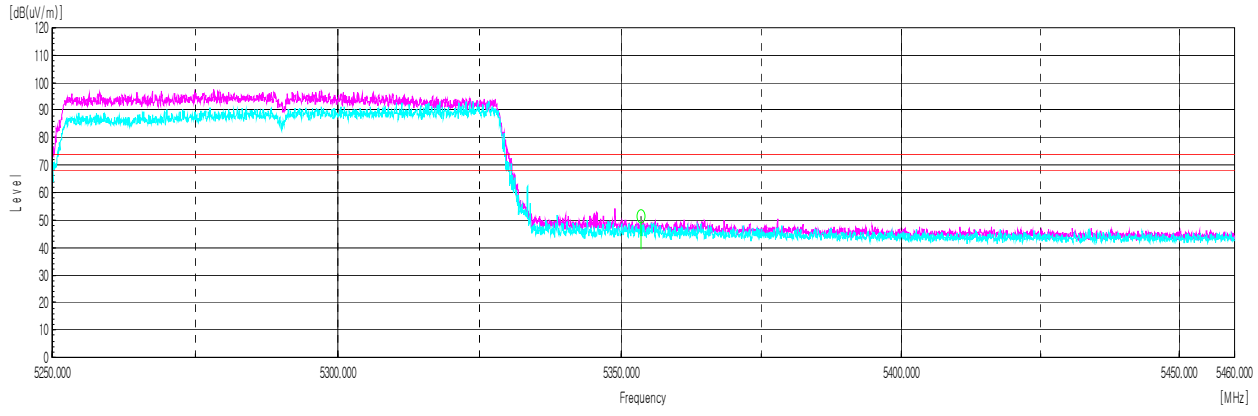
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 355.93[1)]	H	41.11	34.38	-23.89	-	51.60	74.00	22.40
10 581.57	V	52.44	37.63	-47.77	-	42.30	68.20	25.90
Average Data								
5 355.93[1)]	H	34.15	34.38	-23.89	-	44.64	54.00	9.36

Average data



Blank

Horizontal/Vertical for Band-edge

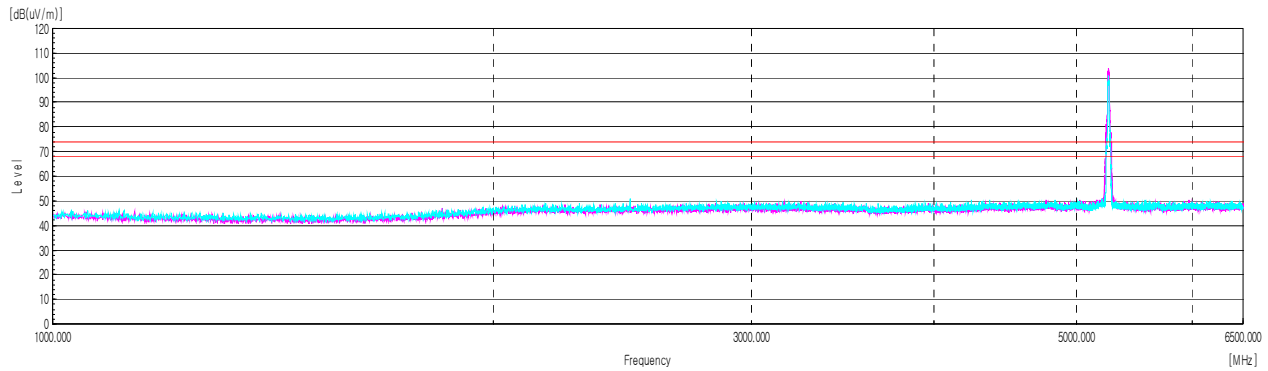


Plot of Harmonics and Spurious Emissions

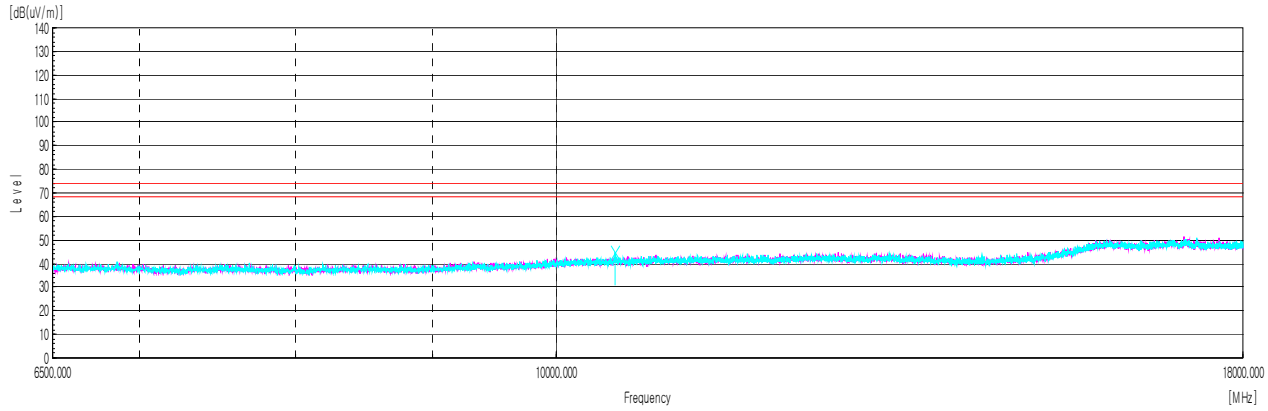
In order to simplify the report, attached plots were only the lowest margin condition

802.11a UNII-2A_MIMO_ Lowest Channel (5 260 ㎒)

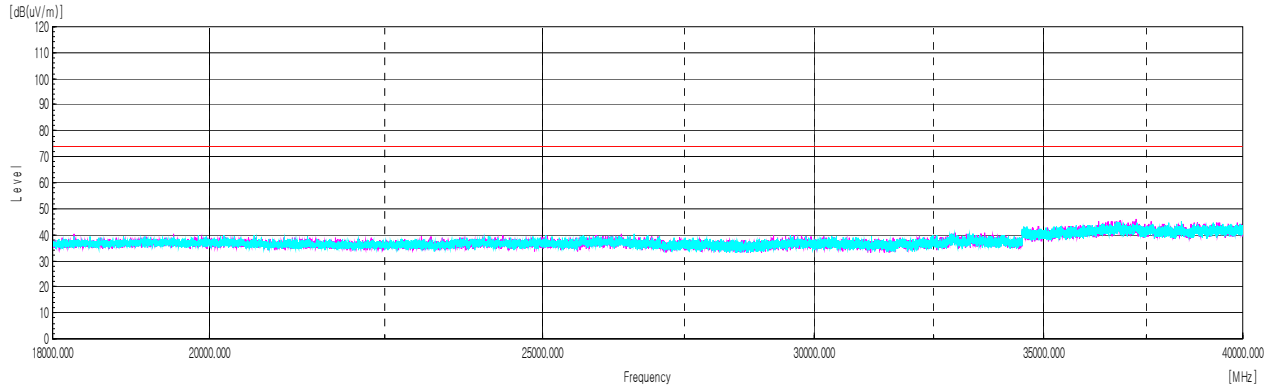
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



802.11a_UNII-2C_ANT0

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								
5 454.67[1)]	H	39.82	34.46	-23.68	-	50.60	74.00	23.40
10 997.64[1)]	V	49.48	37.80	-47.28	-	40.00	74.00	34.00
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

Middle Channel (5 580 ㎒)

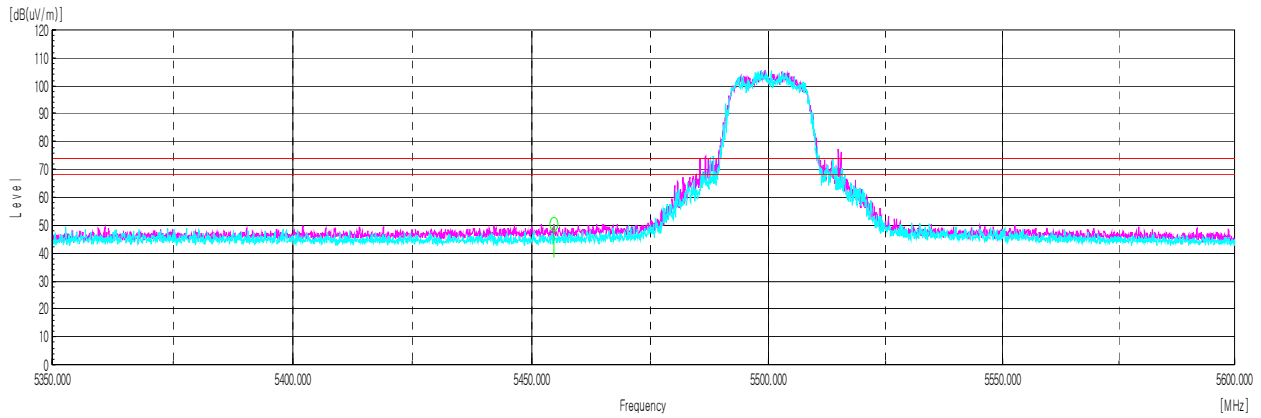
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 161.12[1)]	V	51.90	37.93	-47.23	-	42.60	74.00	31.40
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

Highest Channel (5 700 ㎒)

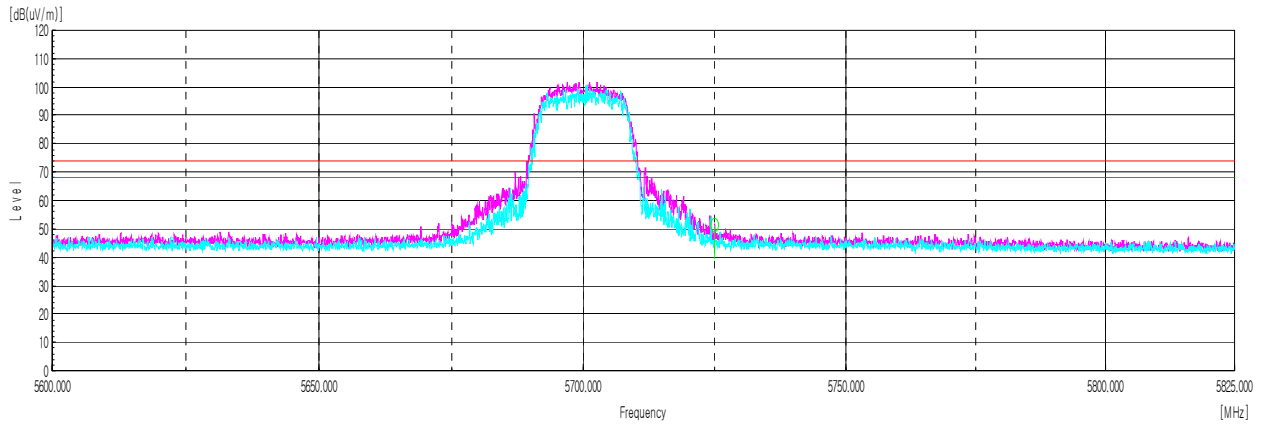
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 725.04	H	40.05	34.77	-23.52	-	51.30	68.20	16.90
11 400.17[1)]	H	52.82	38.12	-47.14	-	43.80	74.00	30.20
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

802.11a_UNII-2C_ANT0

Lowest Channel (5 500 ㎒)

Horizontal/Vertical for Band-edge


Highest Channel (5 700 ㎒)

Horizontal/Vertical for Band-edge


802.11a_UNII-2C_ANT1

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								
5 459.47[1)]	H	39.69	34.47	-23.66	-	50.50	74.00	23.50
10 998.46[1)]	H	51.48	37.80	-47.28	-	42.00	74.00	32.00
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

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								
11 162.76[1)]	V	49.39	37.93	-47.22	-	40.10	74.00	33.90
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

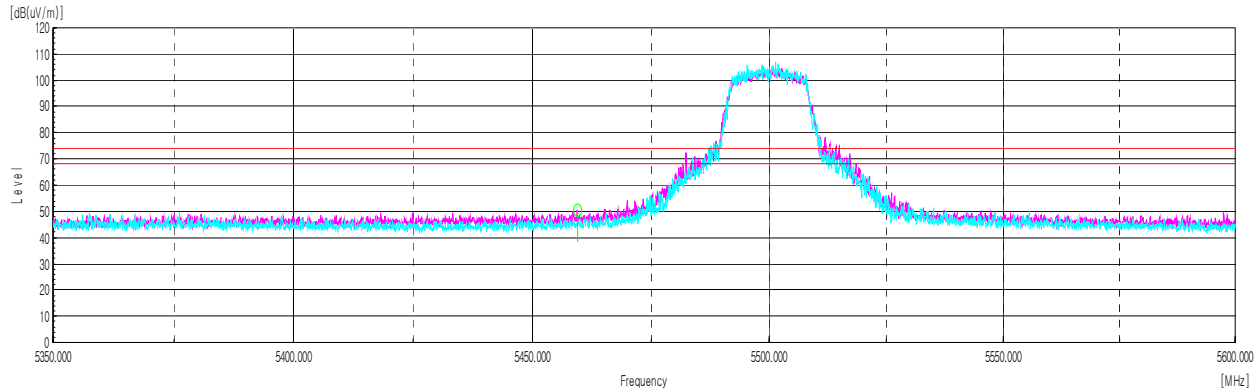
Highest Channel (5 700 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 727.06	V	40.16	34.77	-23.53	-	51.40	68.20	16.80
11 400.99[1)]	H	48.82	38.12	-47.14	-	39.80	74.00	34.20
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

802.11a_UNII-2C_ANT1

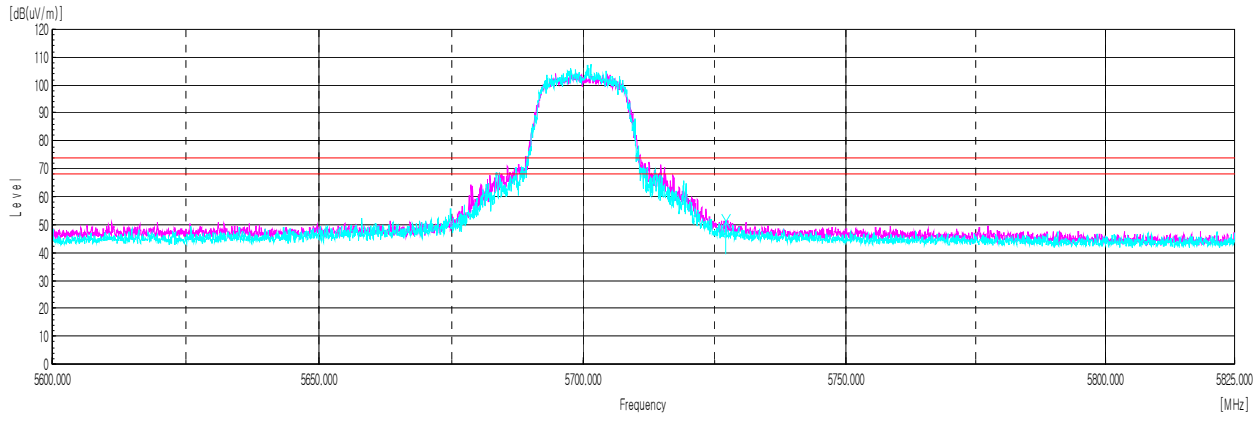
Lowest Channel (5 500 ㎒)

Horizontal/Vertical for Band-edge



Highest Channel (5 700 ㎒)

Horizontal/Vertical for Band-edge



802.11a_UNII-2C_2TX MIMO

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								
5 458.02[1)]	H	40.10	34.47	-23.67	-	50.90	74.00	23.10
10 998.50[1)]	V	53.58	37.80	-47.28	-	44.10	74.00	29.90
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

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								
11 160.96[1)]	V	52.30	37.93	-47.23	-	43.00	74.00	31.00
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

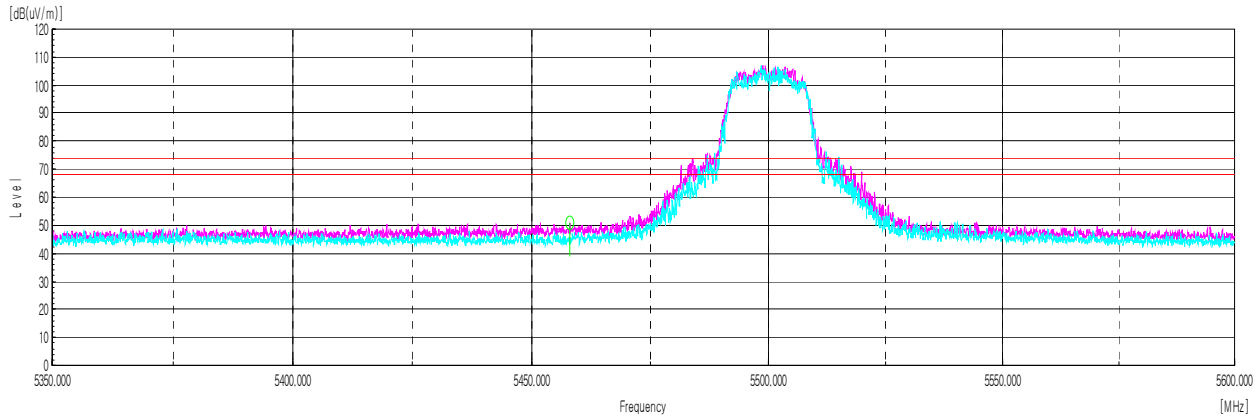
Highest Channel (5 700 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 731.74	H	40.78	34.78	-23.56	-	52.00	68.20	16.20
11 399.61[1)]	H	51.72	38.12	-47.14	-	42.70	74.00	31.30
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11a_UNII-2C_2TX MIMO

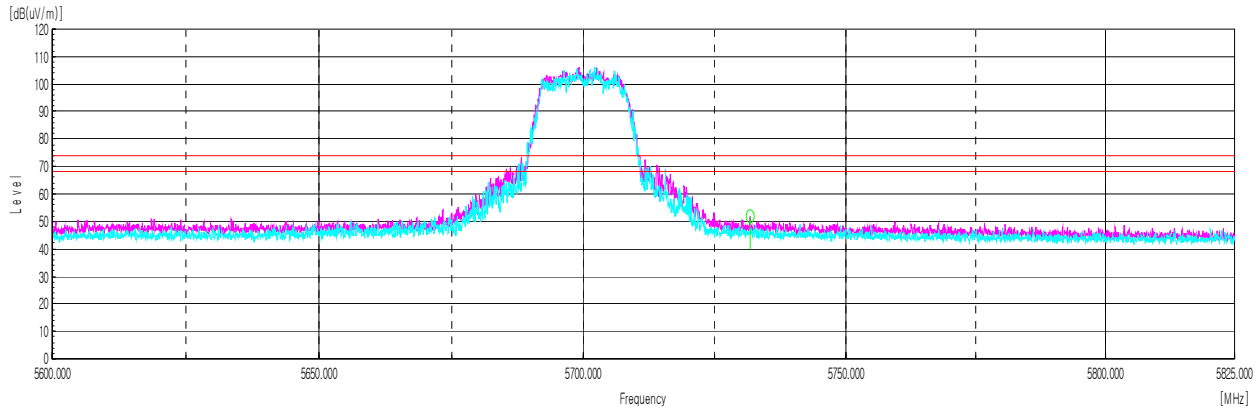
Lowest Channel (5 500 ㎒)

Horizontal/Vertical for Band-edge



Highest Channel (5 700 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT20_UNII-2C_ANT0

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								
5 445.57[1)]	H	37.35	34.46	-23.71	-	48.10	74.00	25.90
11 000.93[1)]	H	50.98	37.80	-47.28	-	41.50	74.00	32.50
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

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								
11 152.90[1)]	V	52.11	37.92	-47.23	-	42.80	74.00	31.20
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

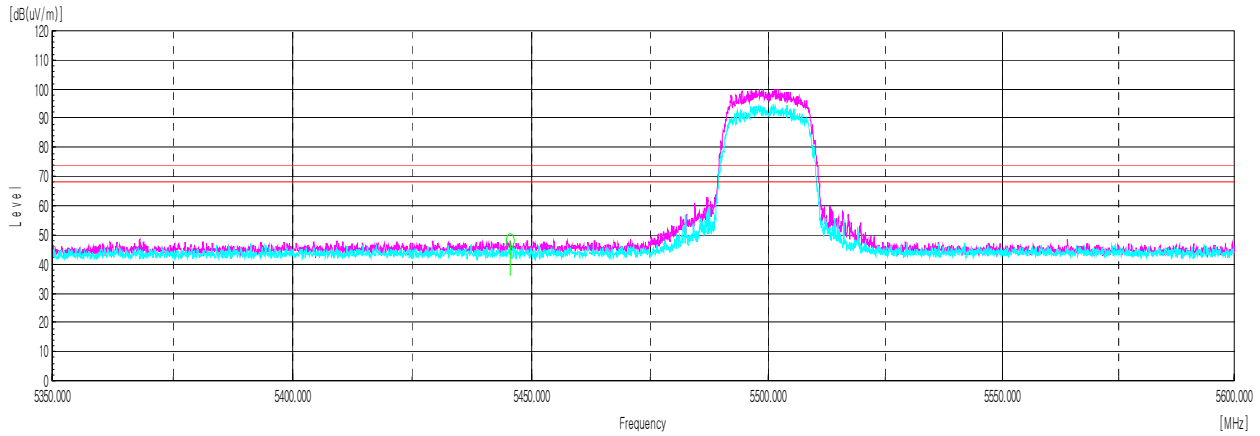
Highest Channel (5 700 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 725.67	H	40.56	34.77	-23.53	-	51.80	68.20	16.40
11 398.53[1)]	V	52.42	38.12	-47.14	-	43.40	74.00	30.60
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT20_UNII-2C_ANT0

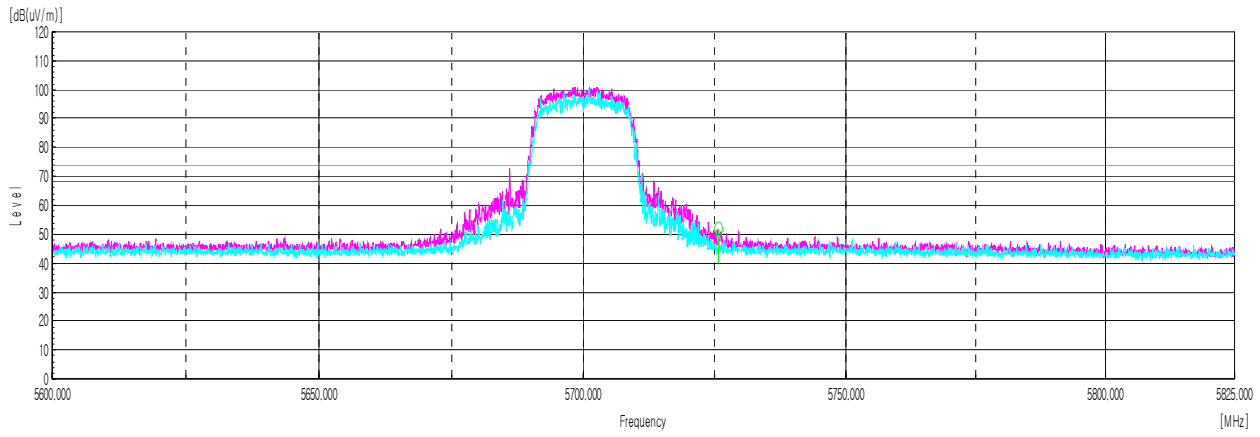
Lowest Channel (5 500 ㎒)

Horizontal/Vertical for Band-edge



Highest Channel (5 700 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT20_UNII-2C_ANT1

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								
5 457.92[1)]	H	39.20	34.47	-23.67	-	50.00	74.00	24.00
10 997.64[1)]	V	49.48	37.80	-47.28	-	40.00	74.00	34.00
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

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								
11 159.34[1)]	V	51.90	37.93	-47.23	-	42.60	74.00	31.40
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

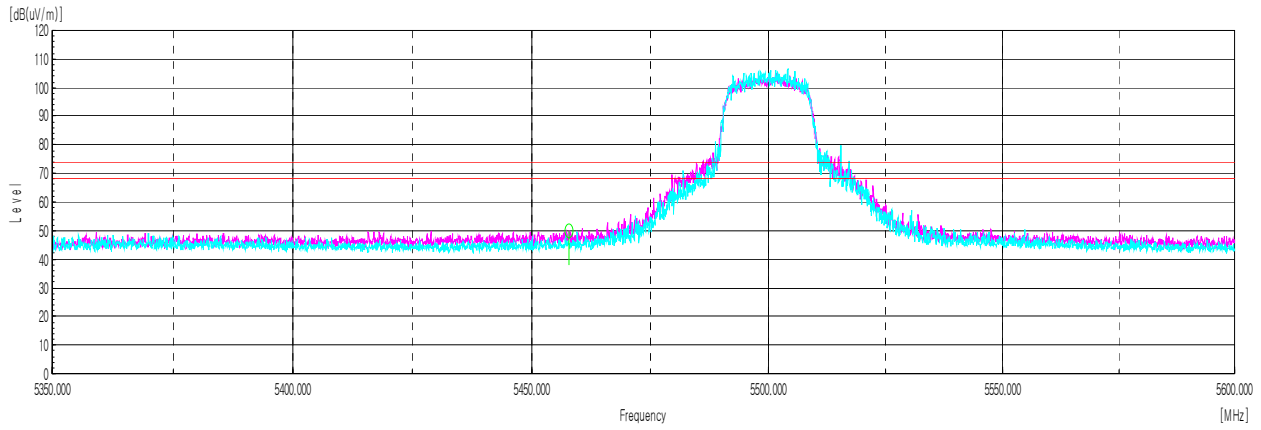
Highest Channel (5 700 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 725.31	H	42.25	34.77	-23.52	-	53.50	68.20	14.70
11 400.09[1)]	V	51.32	38.12	-47.14	-	42.30	74.00	31.70
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT20_UNII-2C_ANT1

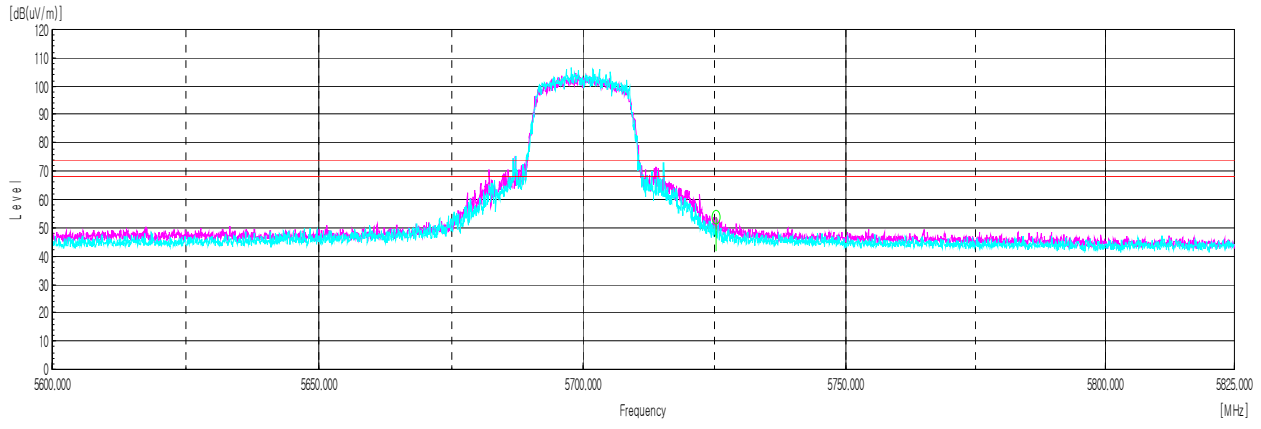
Lowest Channel (5 500 ㎒)

Horizontal/Vertical for Band-edge



Highest Channel (5 700 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT20_UNII-2C_2TX MIMO

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								
5 443.42[1)]	H	39.37	34.45	-23.72	-	50.10	74.00	23.90
10 995.62[1)]	V	52.99	37.80	-47.29	-	43.50	74.00	30.50
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

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								
11 158.08[1)]	V	52.00	37.93	-47.23	-	42.70	74.00	31.30
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

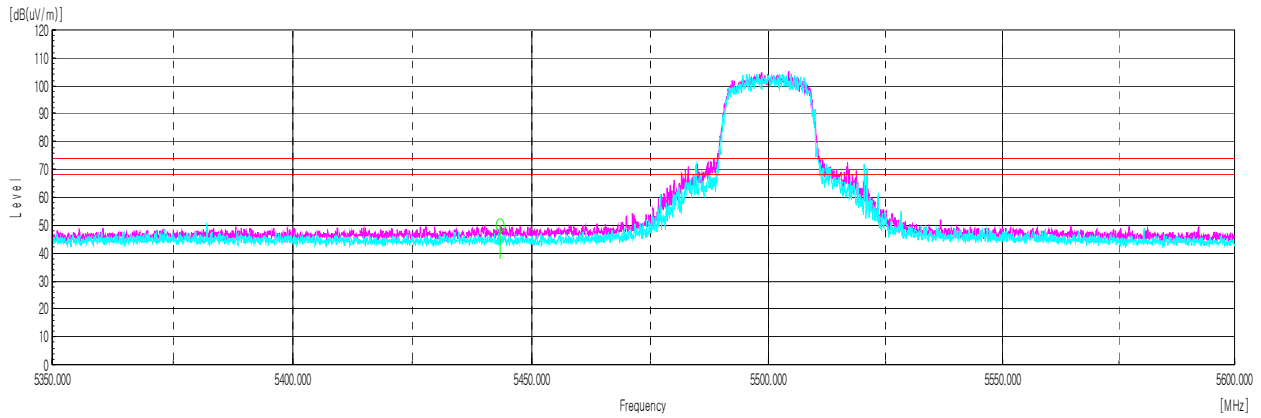
Highest Channel (5 700 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 726.16	H	39.76	34.77	-23.53	-	51.00	68.20	17.20
11 399.61[1)]	V	50.52	38.12	-47.14	-	41.50	74.00	32.50
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT20_UNII-2C_2TX MIMO

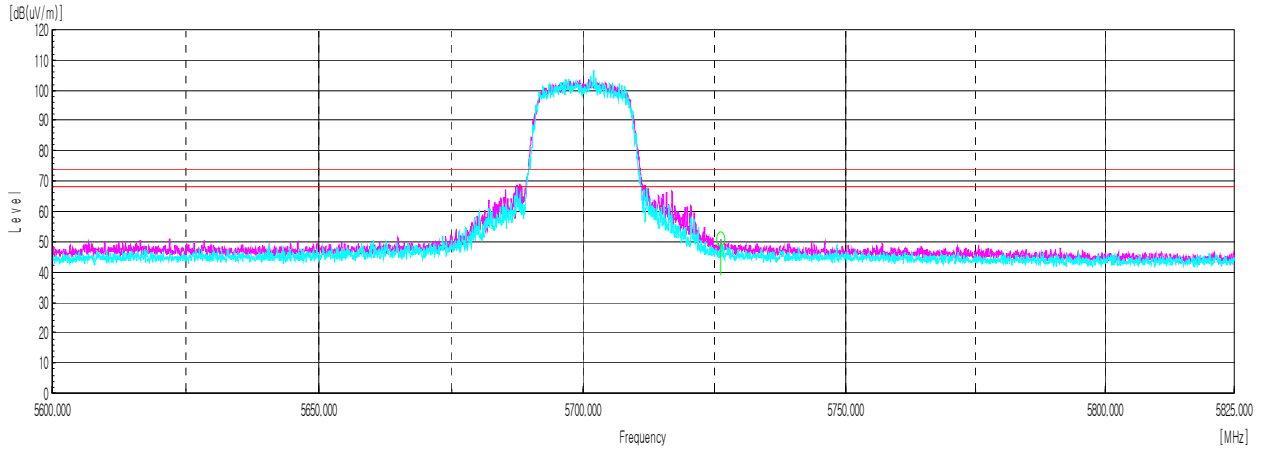
Lowest Channel (5 500 ㎒)

Horizontal/Vertical for Band-edge



Highest Channel (5 700 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT40_UNII-2C_ANT0

Lowest Channel (5 510 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 457.92[1)]	H	37.20	34.47	-23.67	-	48.00	74.00	26.00
11 018.18[1)]	V	49.56	37.81	-47.27	-	40.10	74.00	33.90
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 550 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 098.68[1)]	V	49.47	37.88	-47.25	-	40.10	74.00	33.90
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

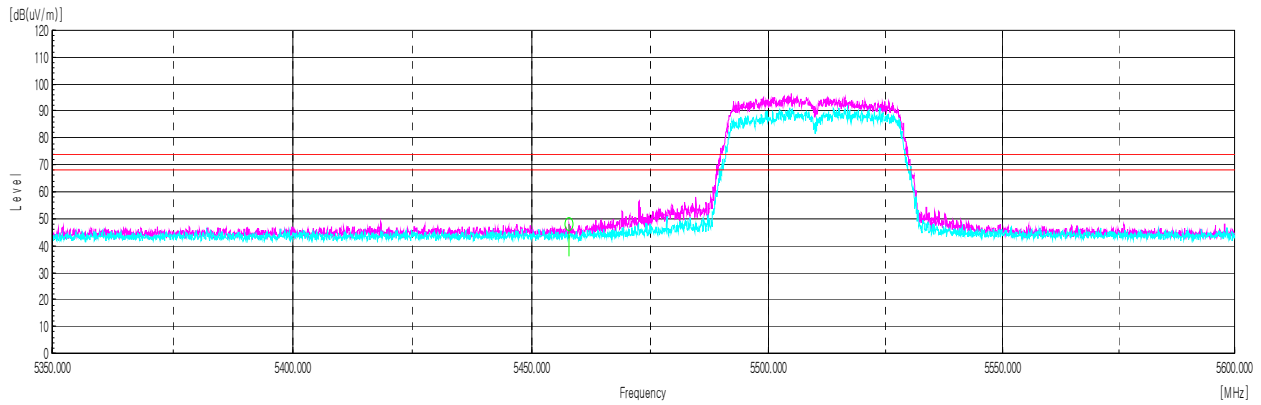
Highest Channel (5 670 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 729.72	H	36.77	34.78	-23.55	-	48.00	74.00	26.00
11 341.02[1)]	V	49.19	38.07	-47.16	-	40.10	74.00	33.90
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT40_UNII-2C_ANT0

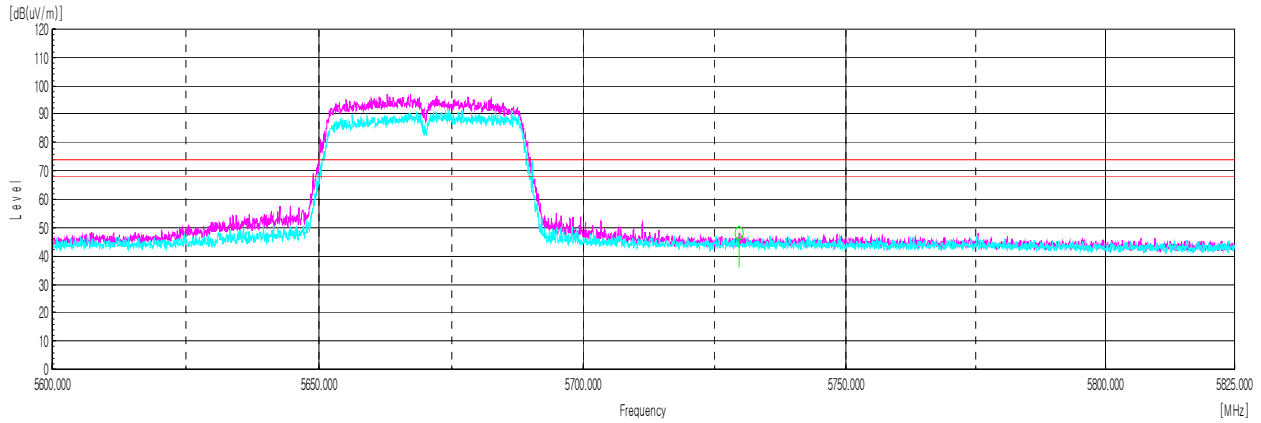
Lowest Channel (5 510 ㎒)

Horizontal/Vertical for Band-edge



Highest Channel (5 670 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT40_UNII-2C_ANT1

Lowest Channel (5 510 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 459.79[1)]	H	40.79	34.47	-23.66	-	51.60	74.00	22.40
11 022.10[1)]	H	52.35	37.82	-47.27	-	42.90	74.00	31.10
Average Data								
5 459.79[1)]	V	34.97	34.47	-23.66	-	45.78	54.00	8.22

Middle Channel (5 550 ㎒)

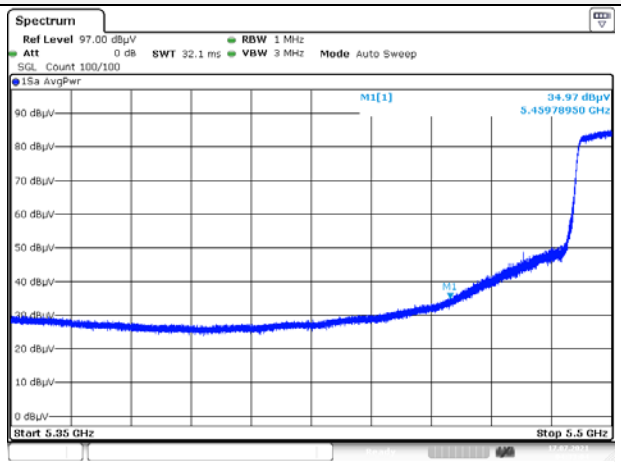
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 103.37[1)]	H	51.76	37.88	-47.24	-	42.40	74.00	31.60
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

Highest Channel (5 670 ㎒)

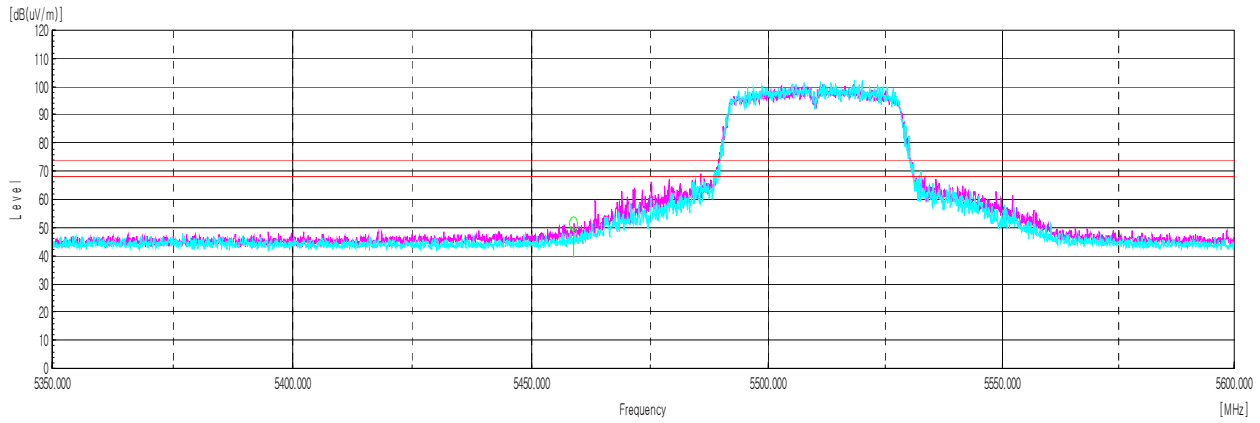
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 726.30	V	37.16	34.77	-23.53	-	48.40	68.20	19.80
11 337.22[1)]	H	51.20	38.07	-47.17	-	42.10	74.00	31.90
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

802.11n HT40_UNII-2C_ANT1

Lowest Channel (5 510 ㎒)

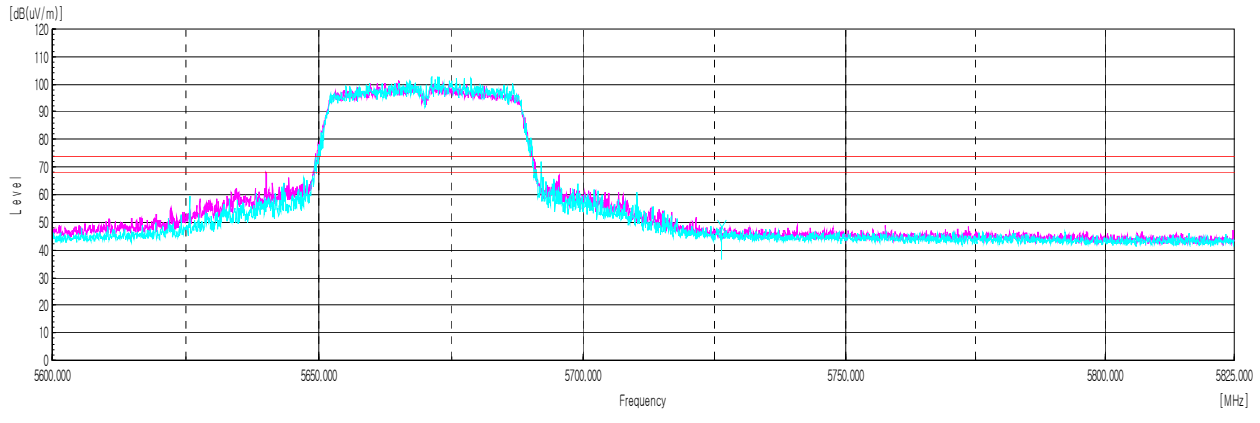
Average data	
	Blank

Horizontal/Vertical for Band-edge



Highest Channel (5 670 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT40_UNII-2C_2TX MIMO

Lowest Channel (5 510 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 441.52[1)]	H	38.77	34.45	-23.72	-	49.50	74.00	24.50
11 028.69[1)]	H	52.15	37.82	-47.27	-	42.70	74.00	31.30
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 550 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 097.70[1)]	V	51.37	37.88	-47.25	-	42.00	74.00	32.00
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

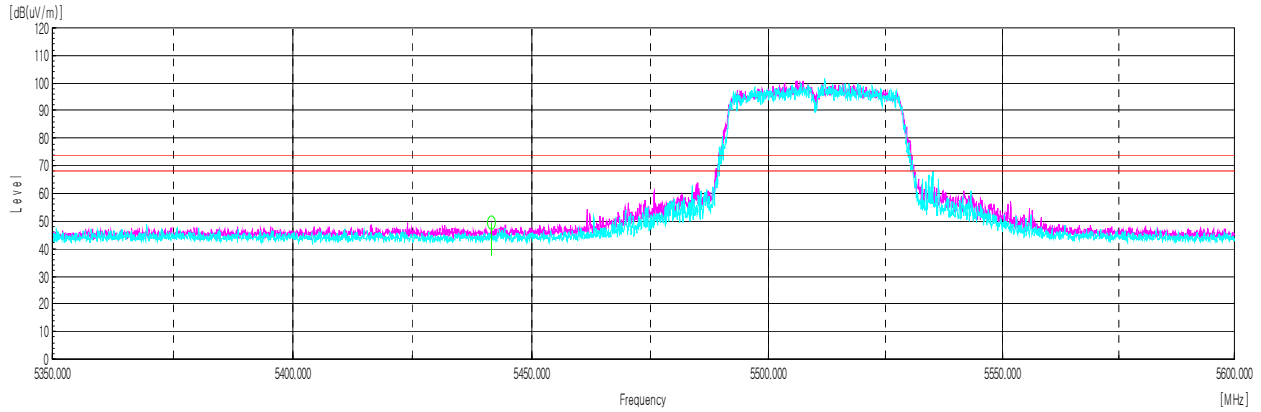
Highest Channel (5 670 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 726.16	H	39.76	34.77	-23.53	-	51.00	68.20	17.20
11 339.23[1)]	V	51.69	38.07	-47.16	-	42.60	74.00	31.40
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT40_UNII-2C_2TX MIMO

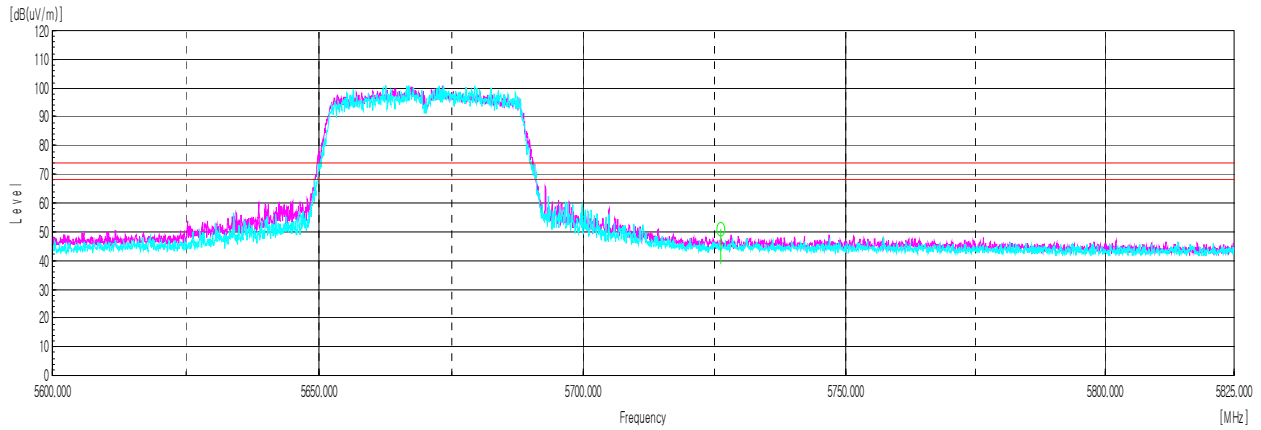
Lowest Channel (5 510 ㎒)

Horizontal/Vertical for Band-edge



Highest Channel (5 670 ㎒)

Horizontal/Vertical for Band-edge



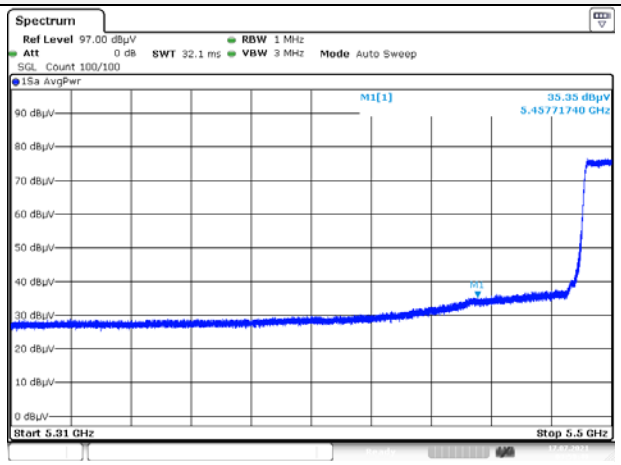
802.11ac VHT80_UNII-2C_ANT0

Lowest Channel (5 530 ㎒)

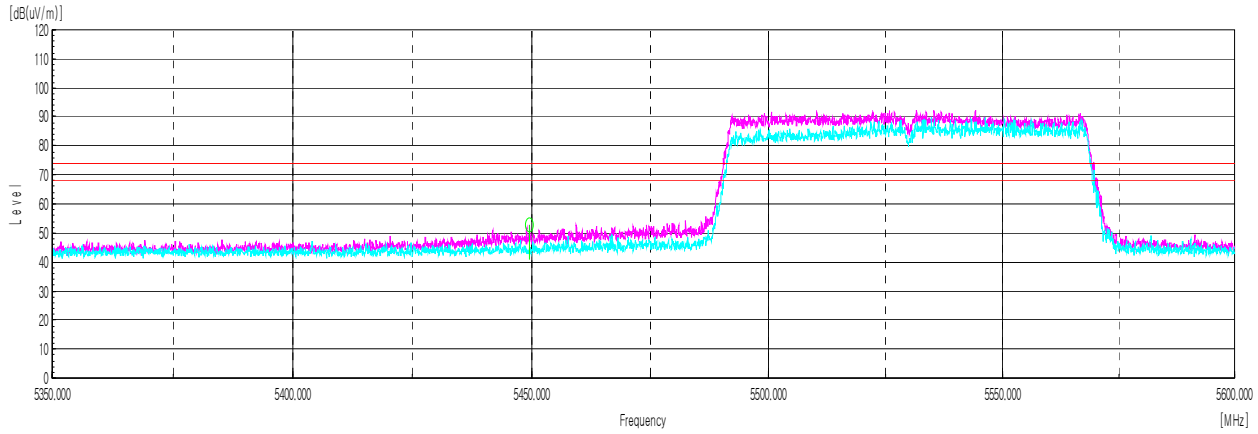
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 457.72	H	41.90	34.47	-23.67	-	52.70	74.00	21.30
11 057.61	H	49.81	37.85	-47.26	-	40.40	74.00	33.60
Average Data								
5 457.72[1)]	H	35.35	34.47	-23.67	-	46.15	54.00	7.85

802.11ac VHT80_UNII-2C_ANT0

Lowest Channel (5 530 ㎒)

Average data	
	Blank

Horizontal/Vertical for Band-edge



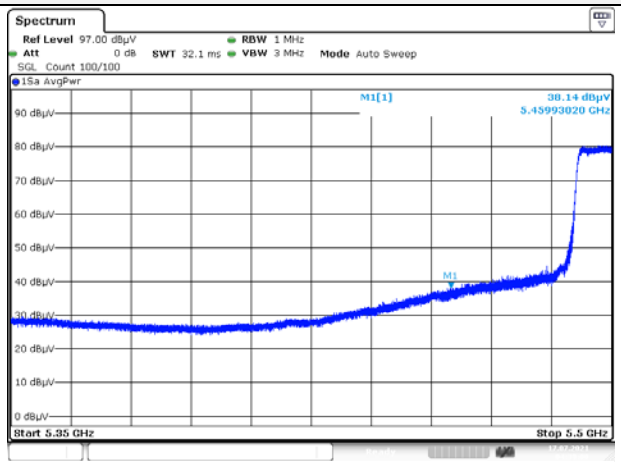
802.11ac VHT80_UNII-2C_ANT1

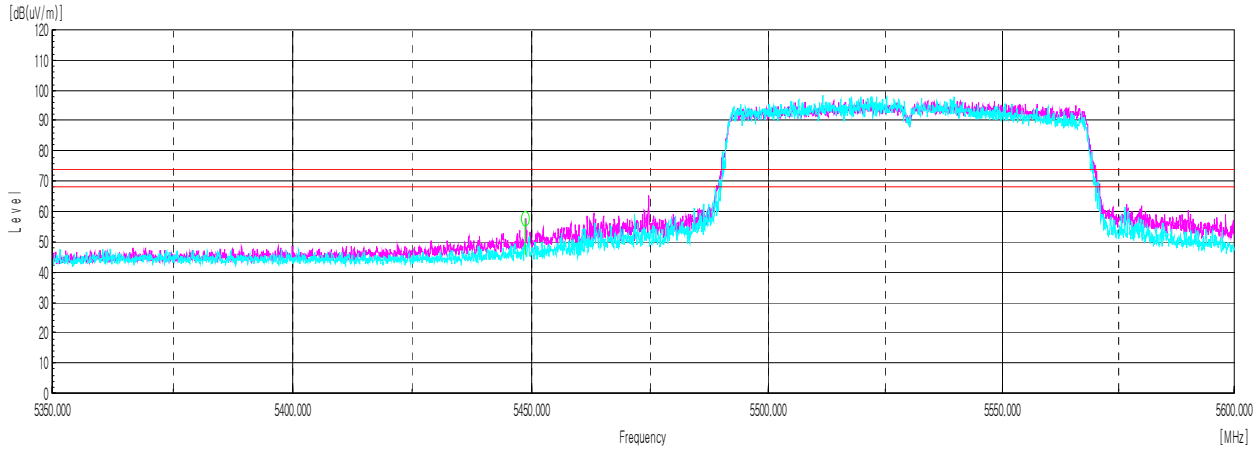
Lowest Channel (5 530 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 459.93[1)]	H	46.89	34.47	-23.66	-	57.70	74.00	16.30
11 059.67[1)]	H	51.41	37.85	-47.26	-	42.00	74.00	32.00
Average Data								
5 459.93[1)]	V	38.14	34.47	-23.66	-	48.95	54.00	5.05

802.11ac VHT80_UNII-2C_ANT1

Lowest Channel (5 530 ㎒)

Average data	
	Blank

Horizontal/Vertical for Band-edge


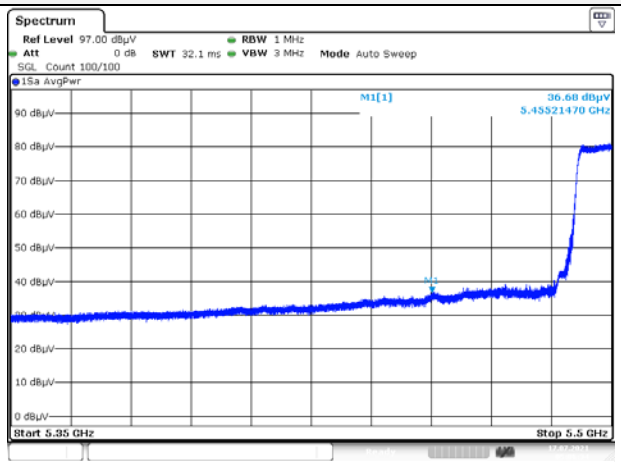
802.11ac VHT80_UNII-2C_2TX MIMO

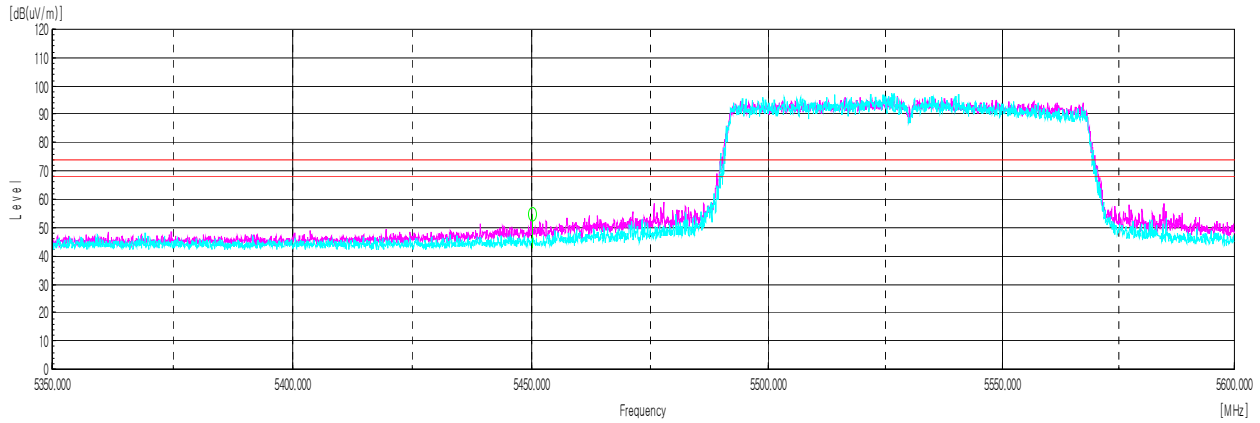
Lowest Channel (5 530 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 455.21[1)]	H	43.92	34.46	-23.68	-	54.70	74.00	19.30
11 062.54[1)]	H	50.51	37.85	-47.26	-	41.10	74.00	32.90
Average Data								
5 455.21[1)]	H	36.68	34.46	-23.68	-	47.46	54.00	6.54

802.11ac VHT80_UNII-2C_2TX MIMO

Lowest Channel (5 530 ㎒)

Average data	
	Blank

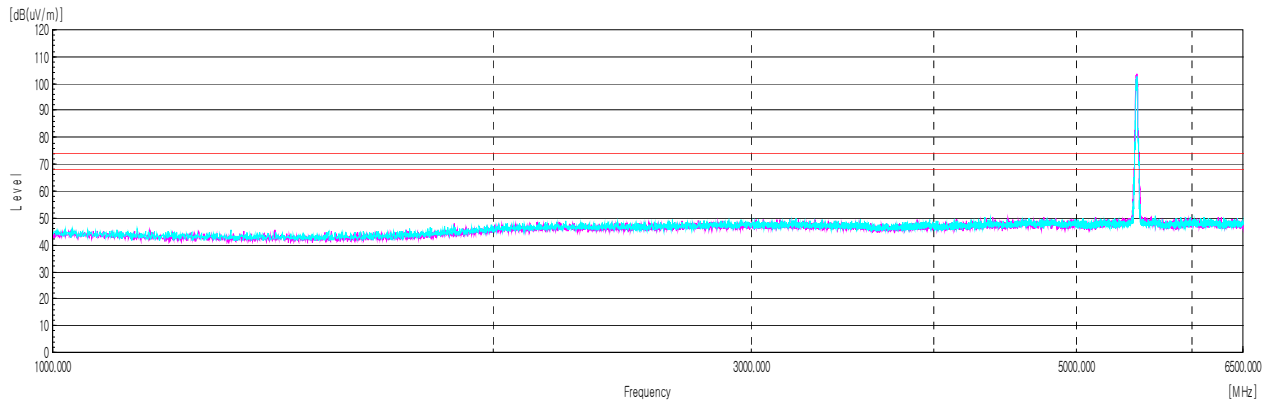
Horizontal/Vertical for Band-edge


Plot of Harmonics and Spurious Emissions

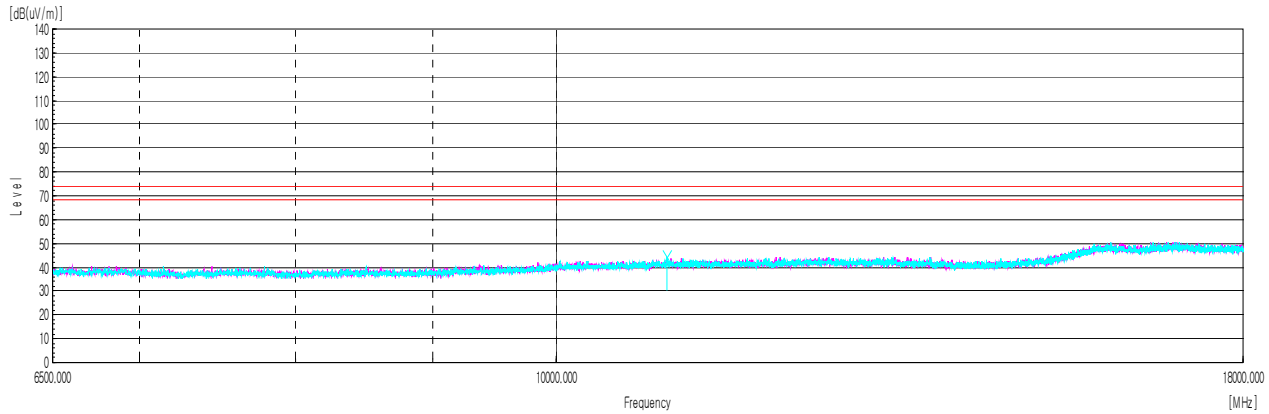
In order to simplify the report, attached plots were only the lowest margin condition

802.11a_UNII-2C_MIMO_ Lowest Channel (5 500 ㎒)

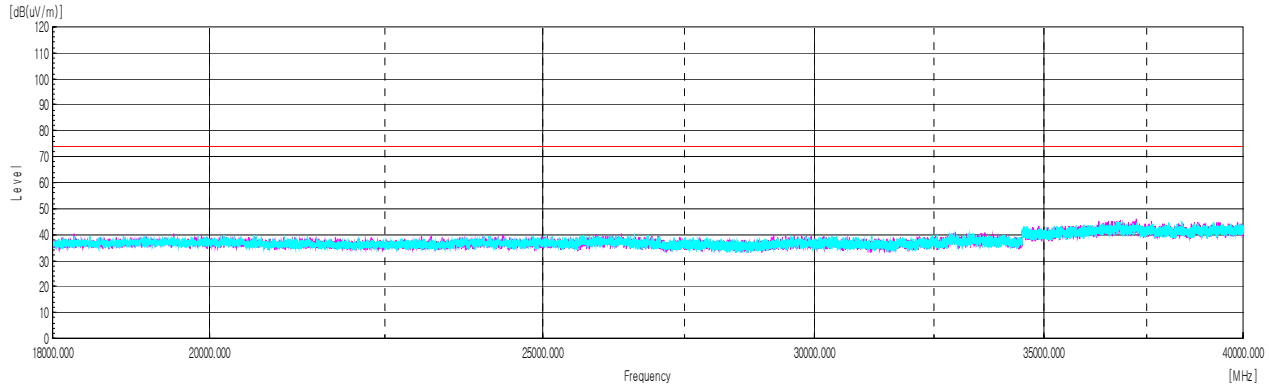
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



Straddle channel_ANT0

802.11a_UNII-2C

Straddle 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								
11 437.96[1)]	V	53.48	38.15	-47.13	-	44.50	74.00	29.50
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT20_UNII-2C

Straddle 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								
11 440.42[1)]	V	53.88	38.15	-47.13	-	44.90	74.00	29.10
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT40_UNII-2C

Straddle Channel (5 710 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 418.24[1]	V	47.91	38.13	-47.14	-	38.90	74.00	35.10
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac VHT80_UNII-2C

Straddle Channel (5 690 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 377.17[1)]	V	48.45	38.10	-47.15	-	39.40	74.00	34.60
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Straddle channel_ANT1

802.11a_UNII-2C

Straddle 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								
11 437.96[1)]	H	48.68	38.15	-47.13	-	39.70	74.00	34.30
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT20_UNII-2C

Straddle 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								
11 439.20[1)]	V	50.28	38.15	-47.13	-	41.30	74.00	32.70
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT40_UNII-2C

Straddle Channel (5 710 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 419.26[1)]	V	50.90	38.14	-47.14	-	41.90	74.00	32.10
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac VHT80_UNII-2C

Straddle Channel (5 690 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 380.16[1)]	H	51.25	38.10	-47.15	-	42.20	74.00	31.80
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Straddle channel_2TX MIIMO

802.11a_UNII-2C

Straddle 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								
11 444.18[1)]	V	54.17	38.16	-47.13	-	45.20	74.00	28.80
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT20_UNII-2C

Straddle 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								
11 442.74[1)]	H	50.78	38.15	-47.13	-	41.80	74.00	32.20
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT40_UNII-2C

Straddle Channel (5 710 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 418.24[1)]	V	48.71	38.13	-47.14	-	39.70	74.00	34.30
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11ac VHT80_UNII-2C

Straddle Channel (5 690 ㎒)

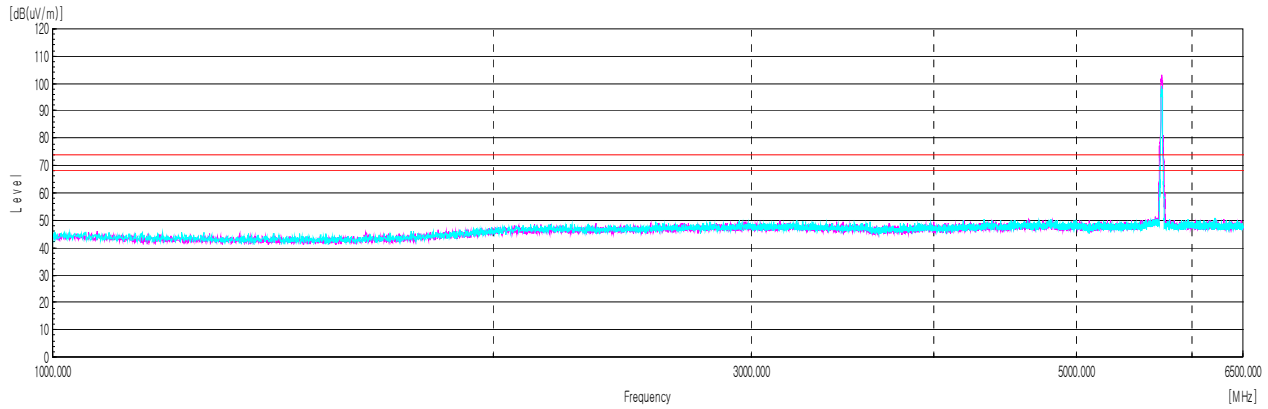
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 378.81[1)]	H	48.85	38.10	-47.15	-	39.80	74.00	34.20
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Plot of Harmonics and Spurious Emissions

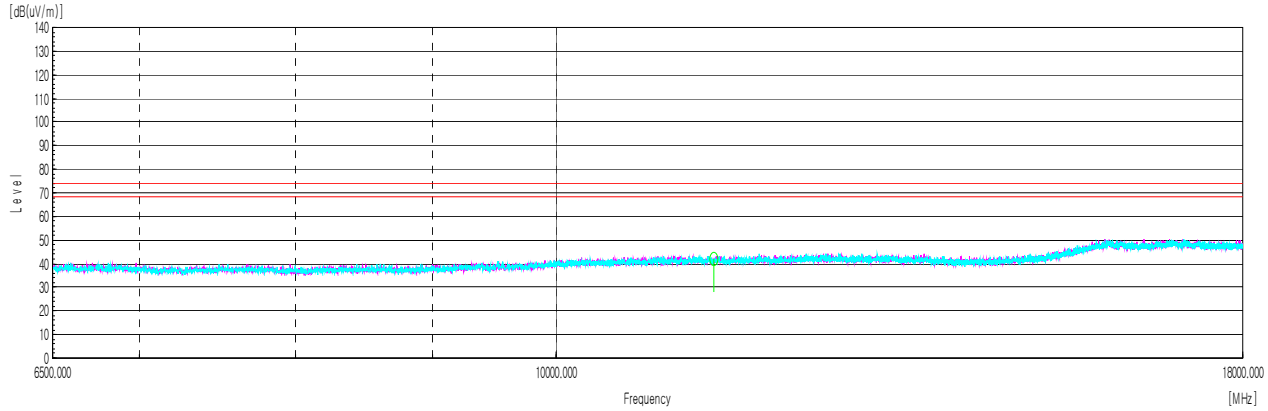
In order to simplify the report, attached plots were only the lowest margin condition

802.11a_UNII-2C_MIMO_ Straddle Channel (5 720 ㎒)

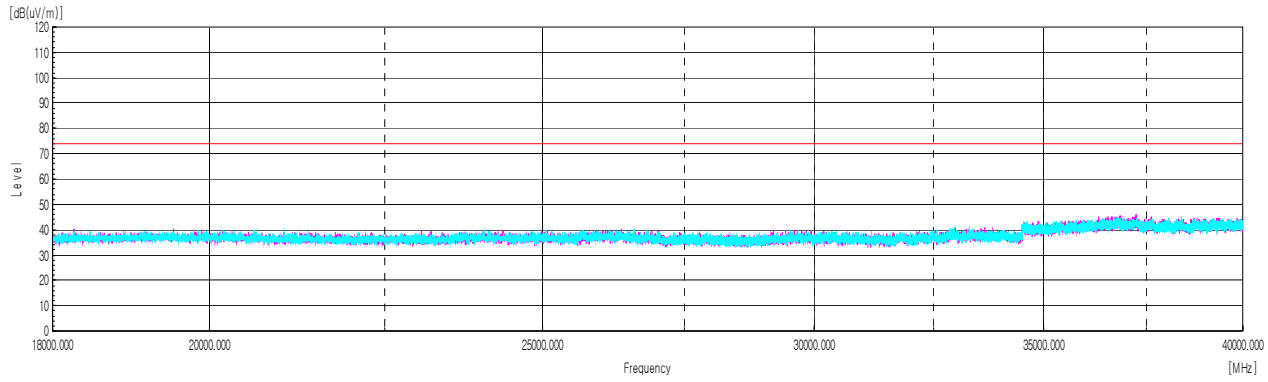
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



802.11a_UNII-3_ANT0

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								
5 724.63	H	41.05	34.77	-23.52	-	52.30	121.30	69.00
11 485.61[1)]	V	51.32	38.19	-47.11	-	42.40	74.00	31.60
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

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								
11 566.93[1)]	V	52.99	38.25	-47.04	-	44.20	74.00	29.80
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

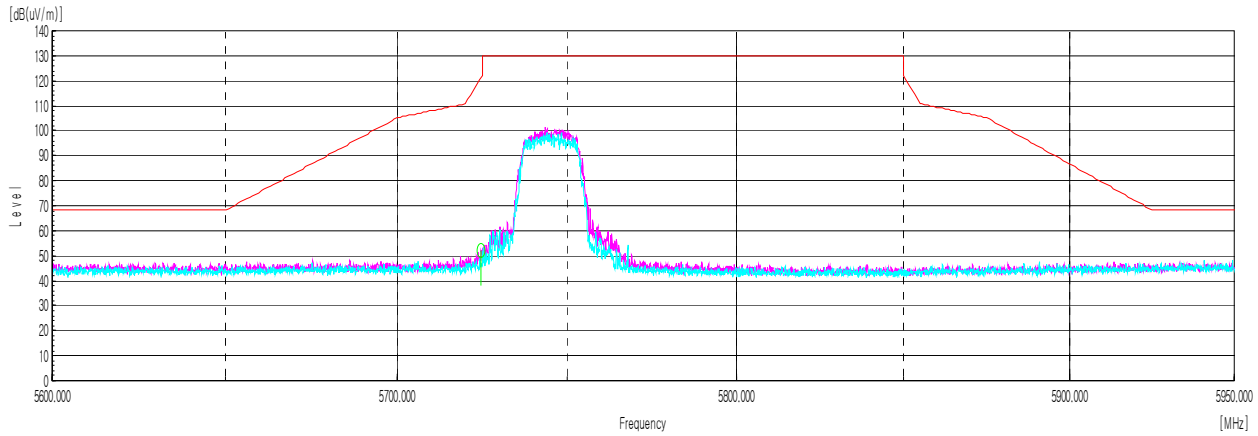
Highest Channel (5 825 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 851.42	H	37.61	34.92	-23.43	-	49.10	118.80	69.70
11 647.44[1)]	V	49.94	38.32	-46.96	-	41.30	74.00	32.70
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11a_UNII-3_ANT0

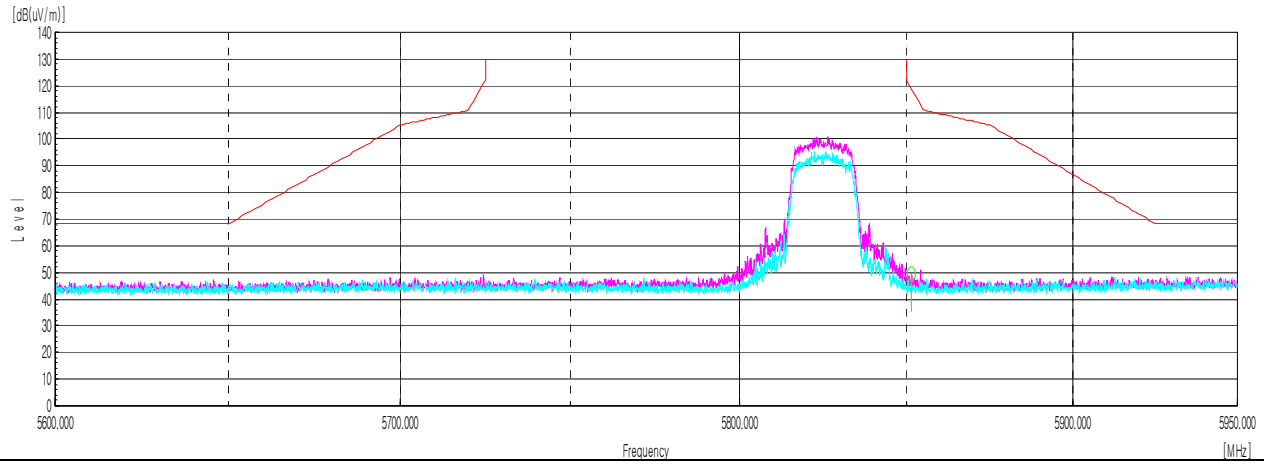
Lowest Channel (5 745 ㎒)

Horizontal/Vertical for Band-edge



Highest Channel (5 825 ㎒)

Horizontal/Vertical for Band-edge



802.11a_UNII-3_ANT1

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								
5 723.58	V	47.64	34.77	-23.51	-	58.90	118.90	60.00
11 488.26[1)]	V	50.72	38.19	-47.11	-	41.80	74.00	32.20
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

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								
11 567.24[1)]	V	51.19	38.25	-47.04	-	42.40	74.00	31.60
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

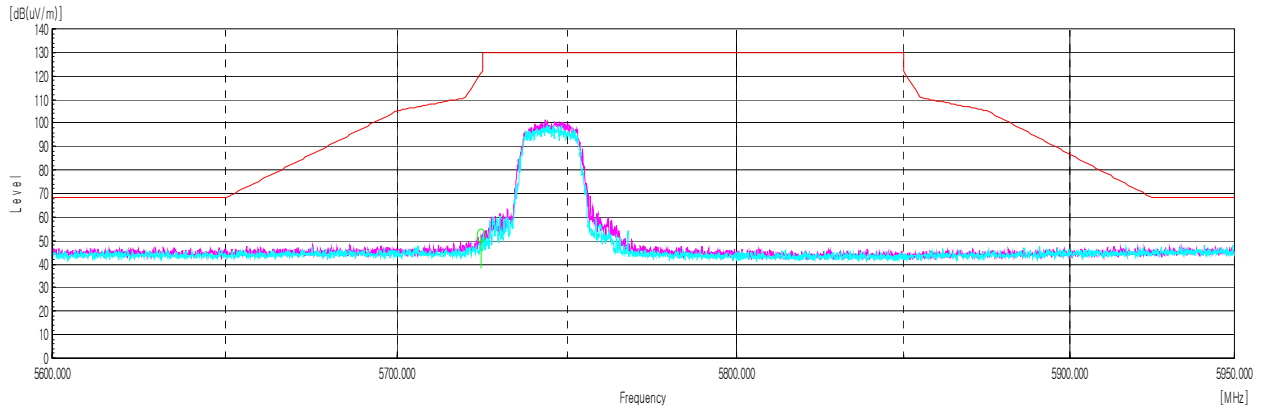
Highest Channel (5 825 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 851.35	H	41.81	34.92	-23.43	-	53.30	119.00	65.70
11 649.28[1)]	V	50.54	38.32	-46.96	-	41.90	74.00	32.10
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11a_UNII-3_ANT1

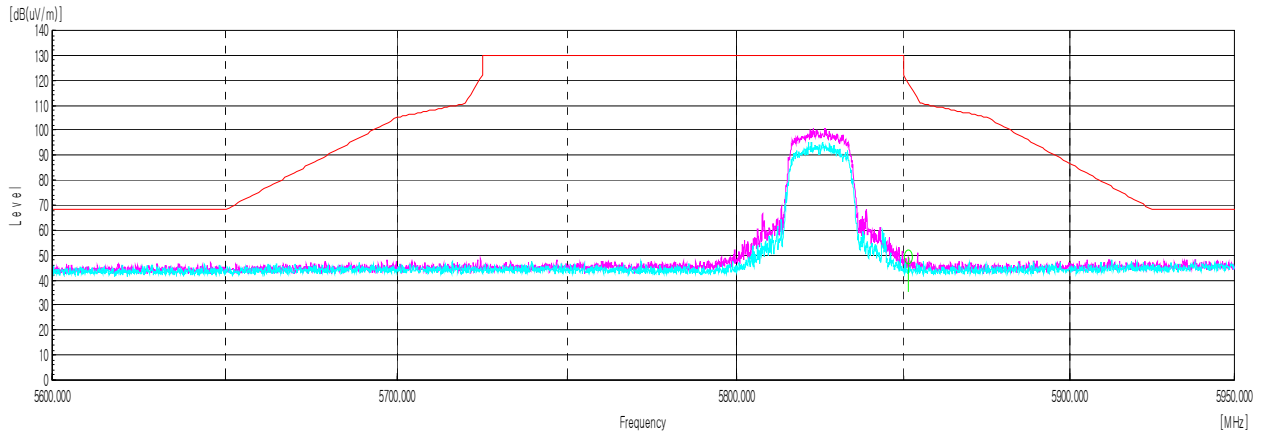
Lowest Channel (5 745 ㎒)

Horizontal/Vertical for Band-edge



Highest Channel (5 825 ㎒)

Horizontal/Vertical for Band-edge



802.11a_UNII-3_2TX MIIMO

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								
5 724.07	H	47.55	34.77	-23.52	-	58.80	120.10	61.30
11 486.43[1)]	V	50.52	38.19	-47.11	-	41.60	74.00	32.40
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

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								
11 572.68[1)]	V	52.78	38.26	-47.04	-	44.00	74.00	30.00
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

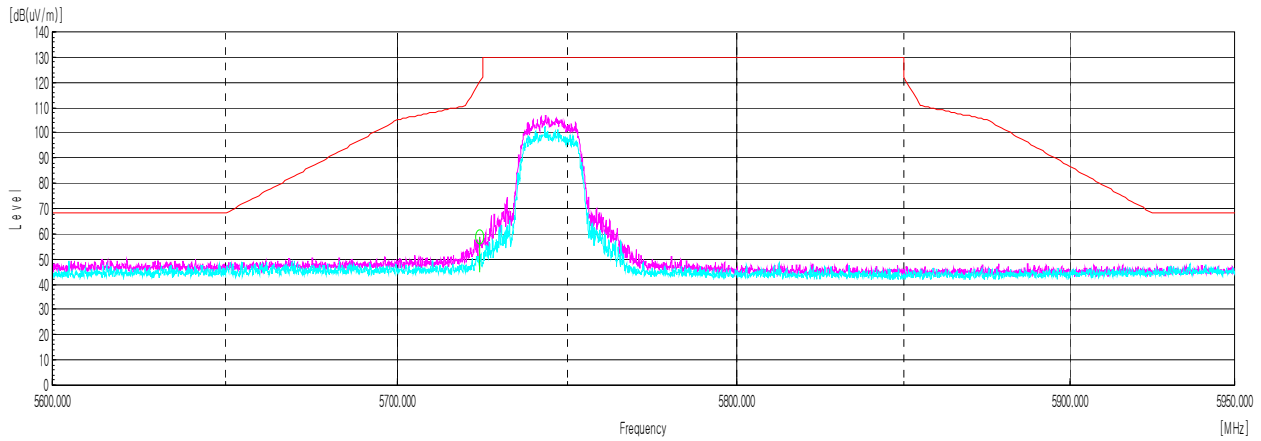
Highest Channel (5 825 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 850.93	H	39.22	34.92	-23.44	-	50.70	119.90	69.20
11 648.26[1)]	V	49.54	38.32	-46.96	-	40.90	74.00	33.10
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11a_UNII-3_2TX MIIMO

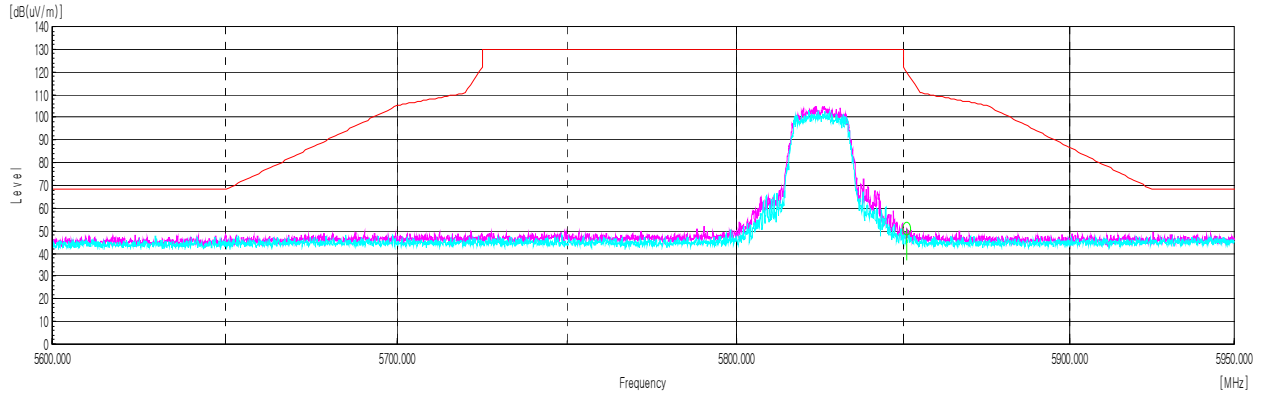
Lowest Channel (5 745 ㎒)

Horizontal/Vertical for Band-edge



Highest Channel (5 825 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT20_UNII-3_ANT0

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								
5 724.98	H	45.95	34.77	-23.52	-	57.20	122.10	64.90
11 495.46[1)]	V	51.91	38.20	-47.11	-	43.00	74.00	31.00
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

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								
11 571.04[1)]	V	50.98	38.26	-47.04	-	42.20	74.00	31.80
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

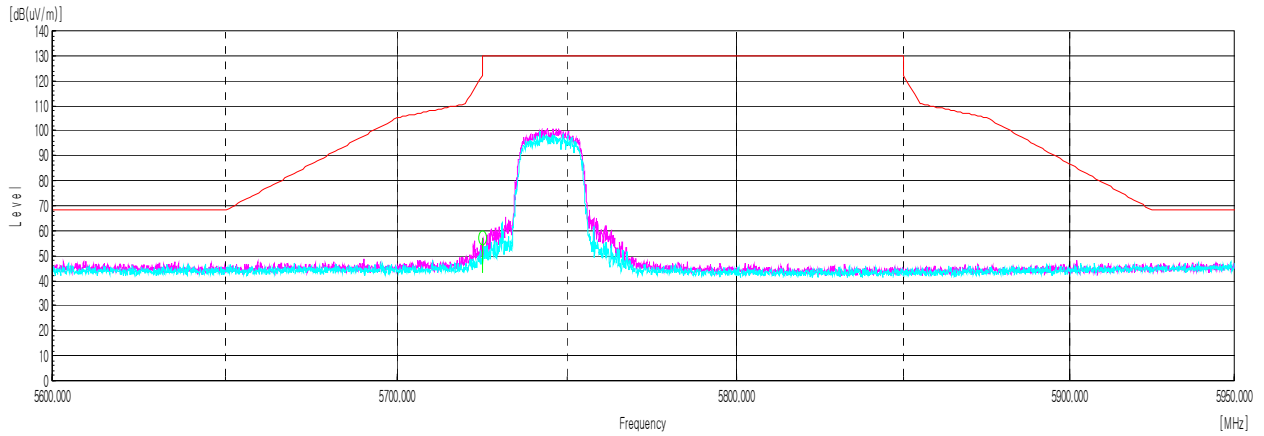
Highest Channel (5 825 ㎒)

Frequency	Pol.	Reading	Amp. + Cable	Antenna Factor	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 851.07	H	38.61	34.92	-23.43	-	50.10	119.60	69.50
11 651.54[1)]	V	49.34	38.32	-46.96	-	40.70	74.00	33.30
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT20_UNII-3_ANT0

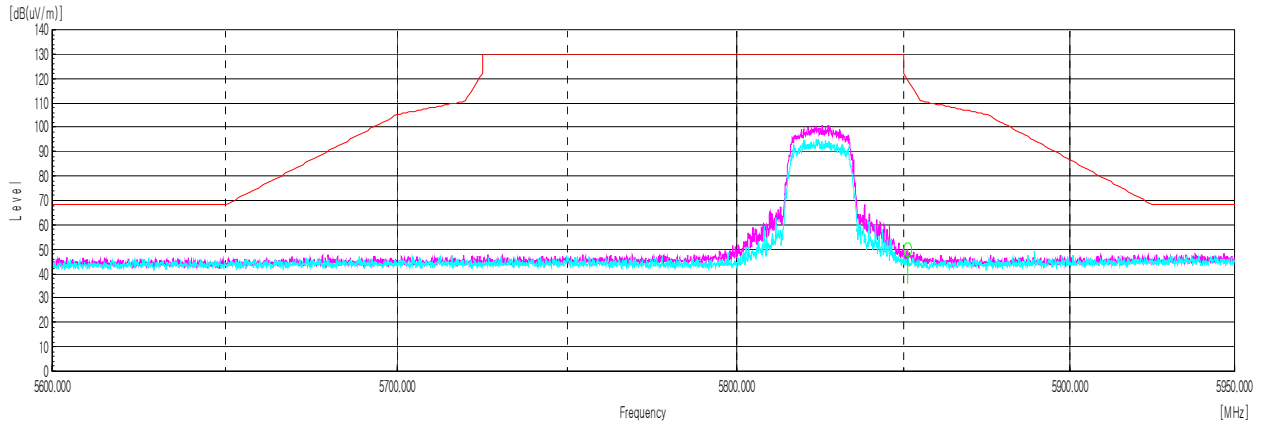
Lowest Channel (5 745 ㎒)

Horizontal/Vertical for Band-edge



Highest Channel (5 825 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT20_UNII-3_ANT1

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								
5 723.86	H	49.45	34.77	-23.52	-	60.70	119.60	58.90
11 492.87[1)]	H	51.62	38.19	-47.11	-	42.70	74.00	31.30
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Middle Channel (5 785 ㎒)

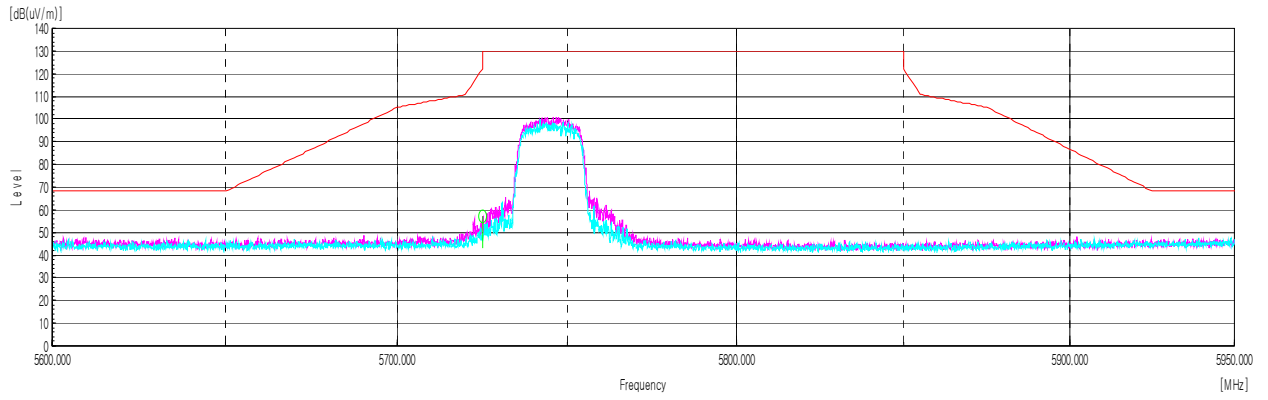
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
11 571.07[1)]	V	51.18	38.26	-47.04	-	42.40	74.00	31.60
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Highest Channel (5 825 ㎒)

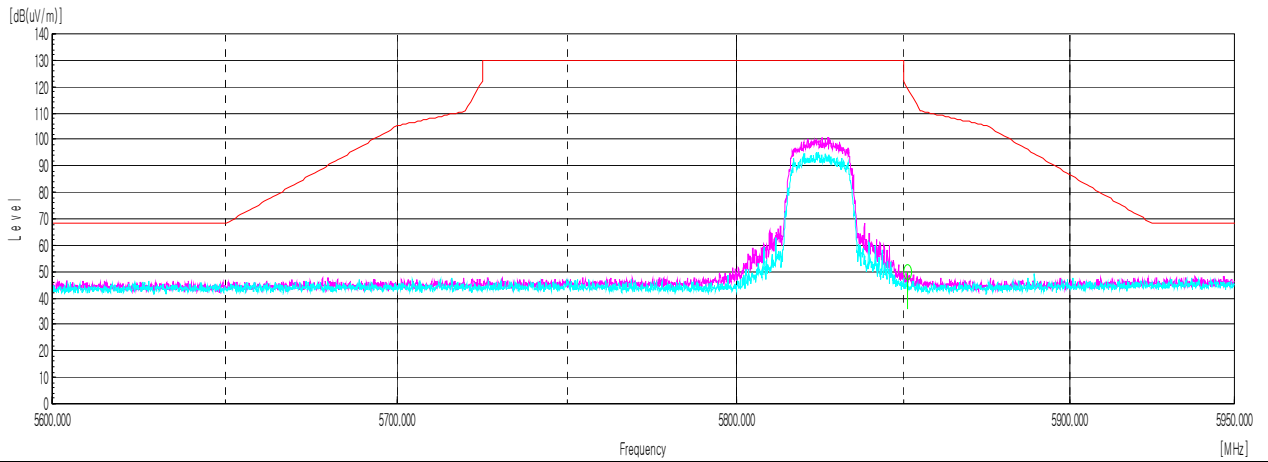
Frequency	Pol.	Reading	Amp. + Cable	Antenna Factor	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 854.15	V	44.19	34.92	-23.41	-	55.70	112.70	57.00
11 647.74[1)]	H	50.44	38.32	-46.96	-	41.80	74.00	32.20
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT20_UNII-3_ANT1

Lowest Channel (5 745 ㎒)

Horizontal/Vertical for Band-edge


Highest Channel (5 825 ㎒)

Horizontal/Vertical for Band-edge


802.11n HT20_UNII-3_2TX MIMO

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								
5 724.91	H	44.25	34.77	-23.52	-	55.50	122.00	66.50
11 485.61[1)]	V	52.32	38.19	-47.11	-	43.40	74.00	30.60
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

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								
11 576.79[1)]	V	51.77	38.26	-47.03	-	43.00	74.00	31.00
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

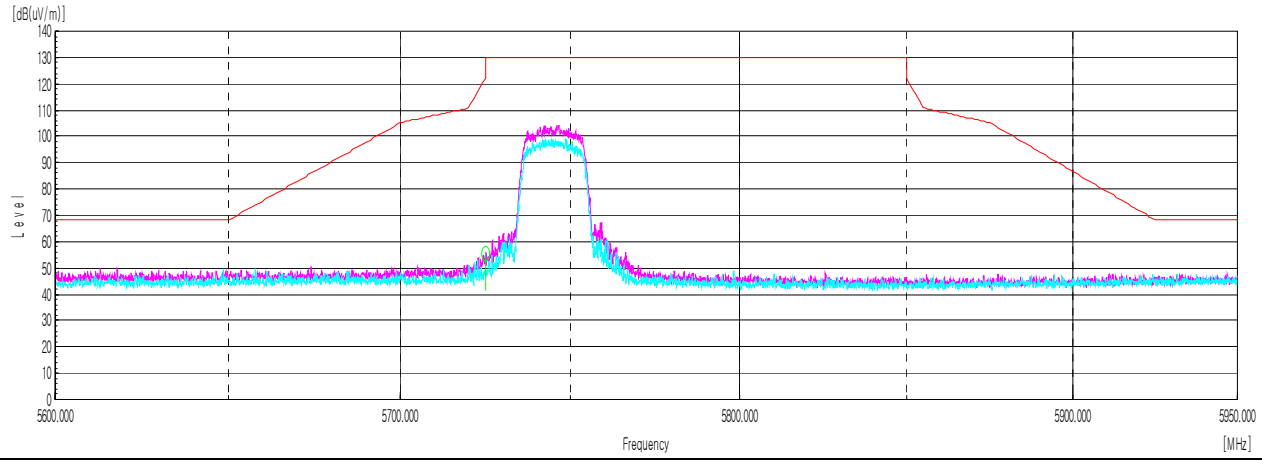
Highest Channel (5 825 ㎒)

Frequency	Pol.	Reading	Amp. + Cable	Antenna Factor	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 853.45	H	38.19	34.92	-23.41	-	49.70	114.30	64.60
11 656.47[1)]	H	50.02	38.33	-46.95	-	41.40	74.00	32.60
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT20_UNII-3_2TX MIMO

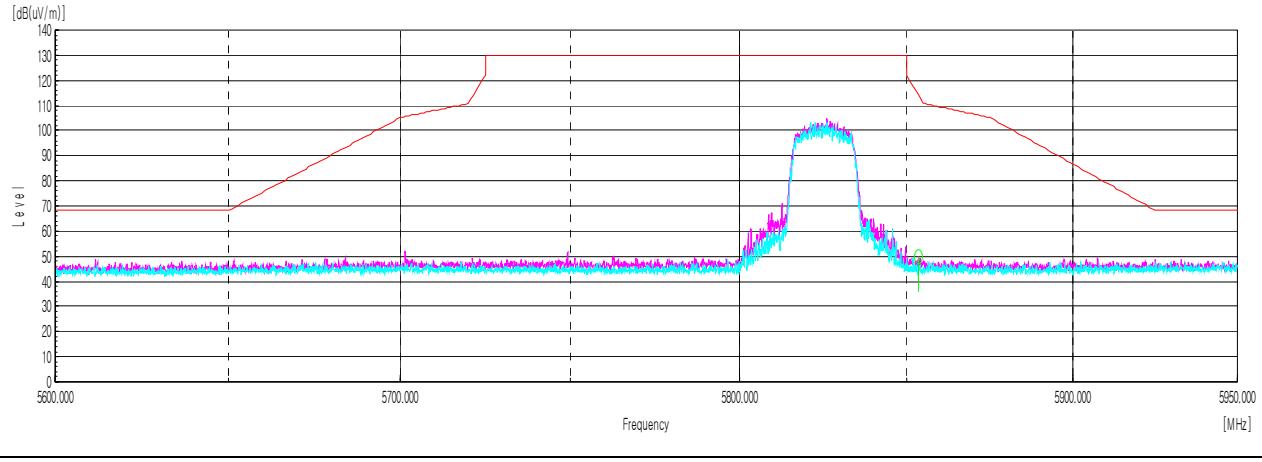
Lowest Channel (5 745 ㎒)

Horizontal/Vertical for Band-edge



Highest Channel (5 825 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT40_UNII-3_ANT0

Lowest Channel (5 755 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 723.50	H	42.84	34.77	-23.51	-	54.10	118.80	64.70
11 511.07[1)]	V	48.09	38.21	-47.10	-	39.20	74.00	34.80
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

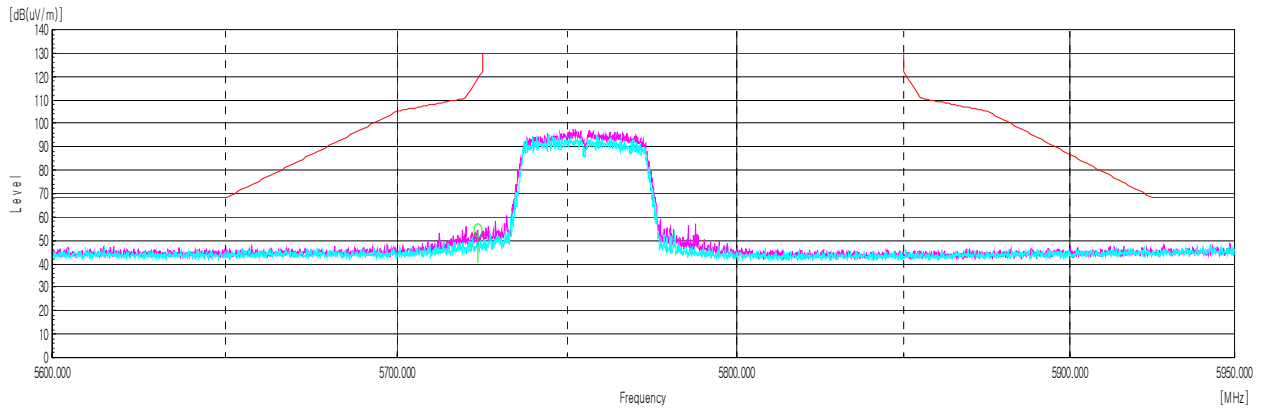
Highest Channel (5 795 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 851.84	H	34.61	34.92	-23.43	-	46.10	117.90	71.80
11 589.11[1)]	H	47.75	38.27	-47.02	-	39.00	74.00	35.00
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT40_UNII-3_ANT0

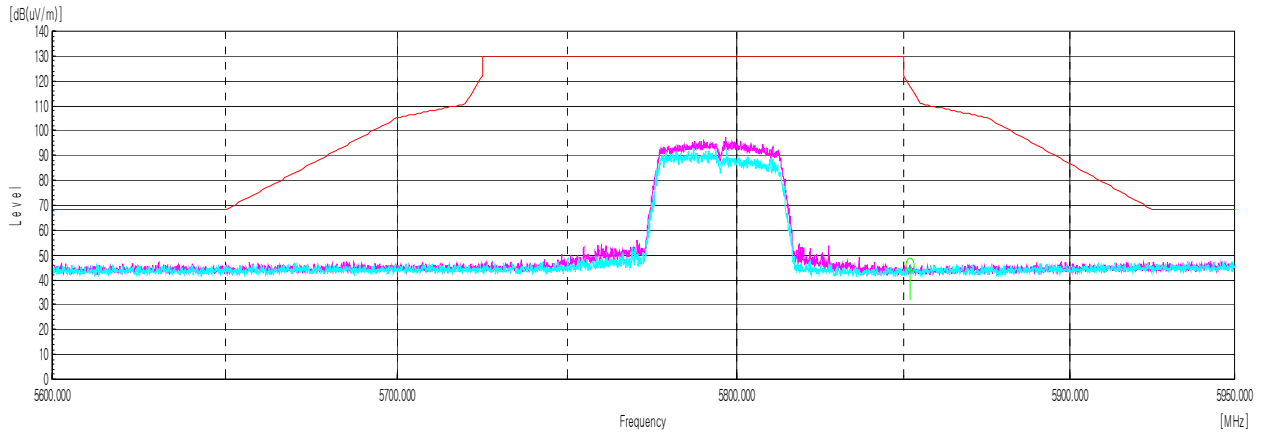
Lowest Channel (5 755 ㎒)

Horizontal/Vertical for Band-edge



Highest Channel (5 795 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT40_UNII-3_ANT1

Lowest Channel (5 755 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 722.38	H	47.74	34.77	-23.51	-	59.00	116.20	57.20
11 507.43[1)]	V	51.89	38.21	-47.10	-	43.00	74.00	31.00
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

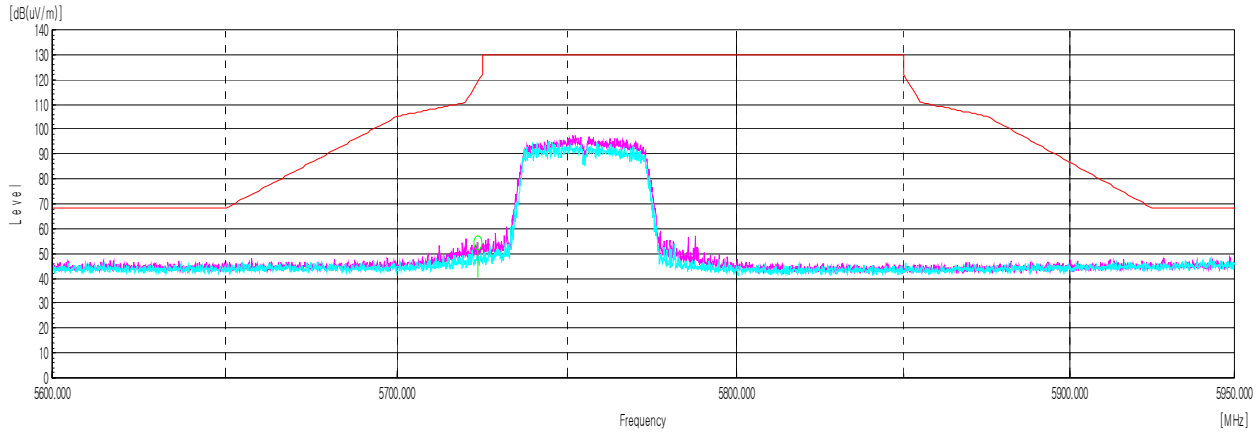
Highest Channel (5 795 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 856.60	H	36.15	34.93	-23.38	-	47.70	110.40	62.70
11 592.54[1)]	H	50.75	38.27	-47.02	-	42.00	74.00	32.00
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT40_UNII-3_ANT1

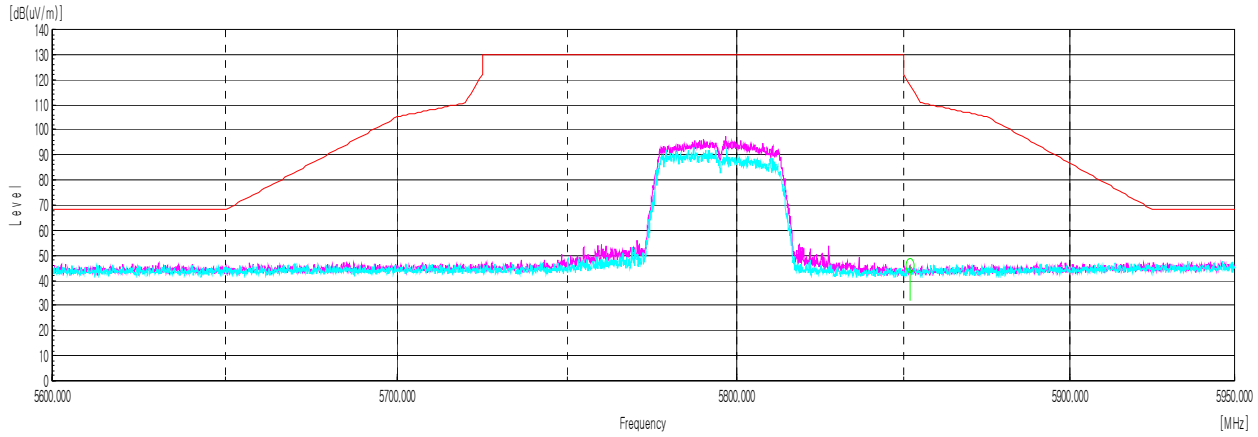
Lowest Channel (5 755 ㎒)

Horizontal/Vertical for Band-edge



Highest Channel (5 795 ㎒)

Horizontal/Vertical for Band-edge



802.11n HT40_UNII-3_2TX MIMO

Lowest Channel (5 755 ㎒)

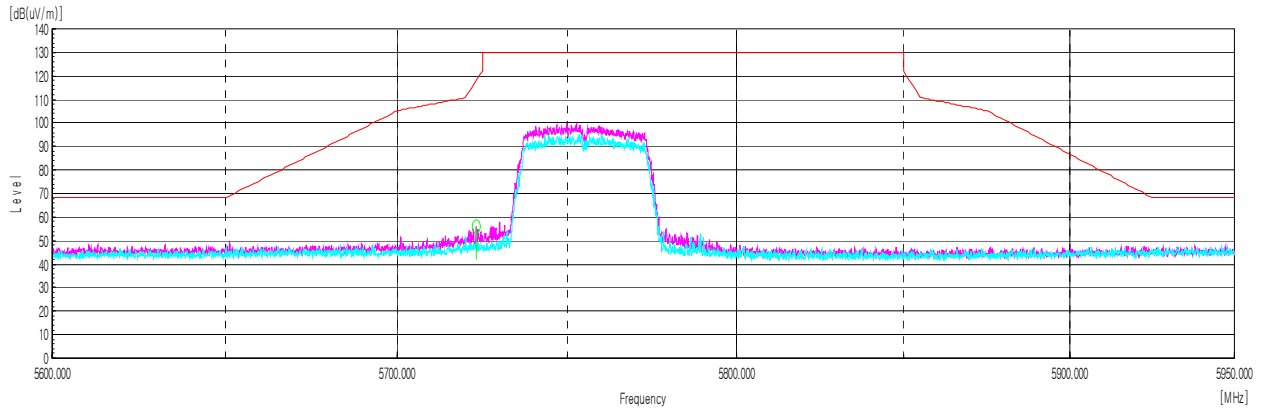
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 723.15	H	44.84	34.77	-23.51	-	56.10	118.00	61.90
11 510.25[1)]	H	49.69	38.21	-47.10	-	40.80	74.00	33.20
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Highest Channel (5 795 ㎒)

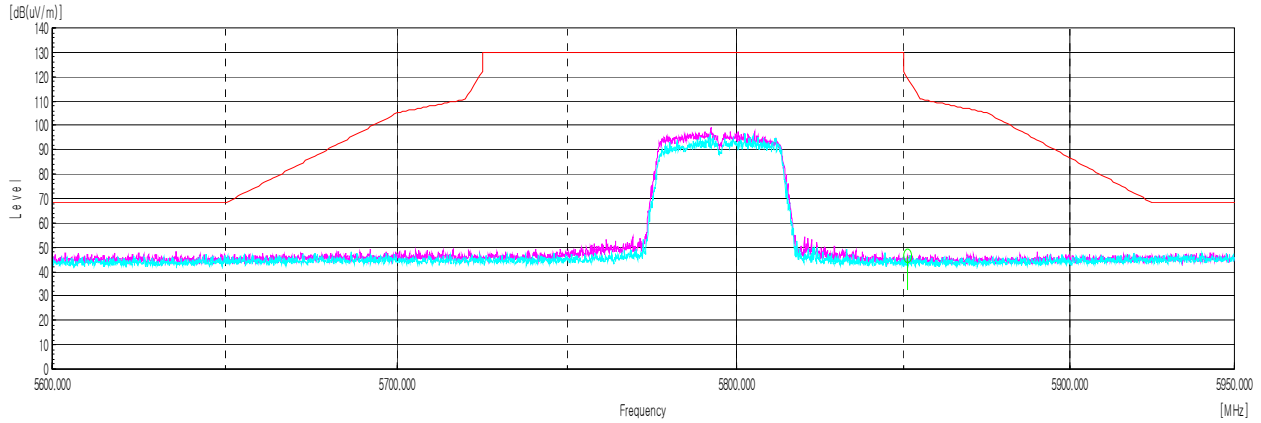
Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 851.00	H	34.92	34.92	-23.44	-	46.40	119.80	73.40
11 590.75[1)]	V	47.75	38.27	-47.02	-	39.00	74.00	35.00
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

802.11n HT40_UNII-3_2TX MIMO

Lowest Channel (5 755 ㎒)

Horizontal/Vertical for Band-edge


Highest Channel (5 795 ㎒)

Horizontal/Vertical for Band-edge


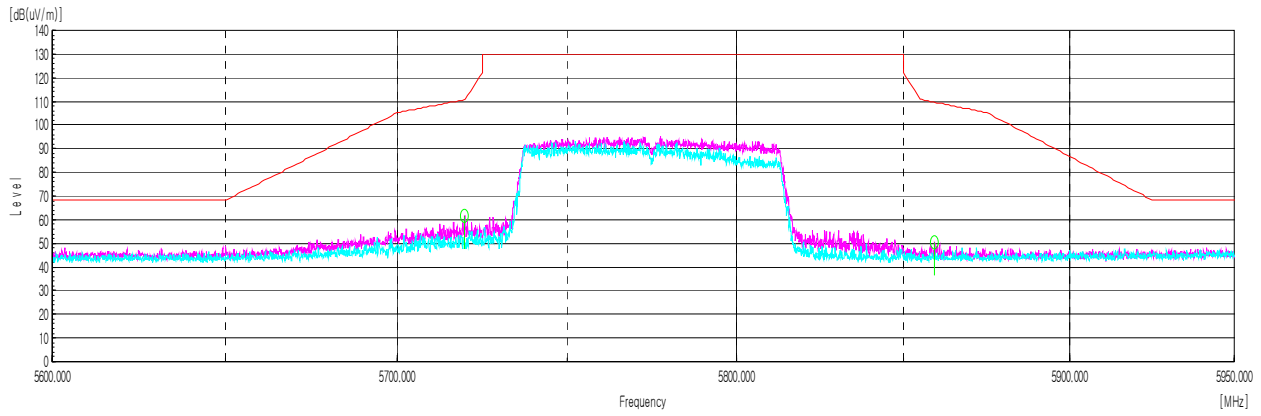
802.11ac VHT80_UNII-3_ANT0

Lowest Channel (5 775 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 719.72	H	50.33	34.76	-23.49	-	61.60	110.70	49.10
5 859.26	H	38.83	34.93	-23.36	-	50.40	109.60	59.20
11 552.97[1)]	V	48.42	38.24	-47.06	-	39.60	74.00	34.40
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Lowest Channel (5 775 ㎒)

Horizontal/Vertical for Band-edge



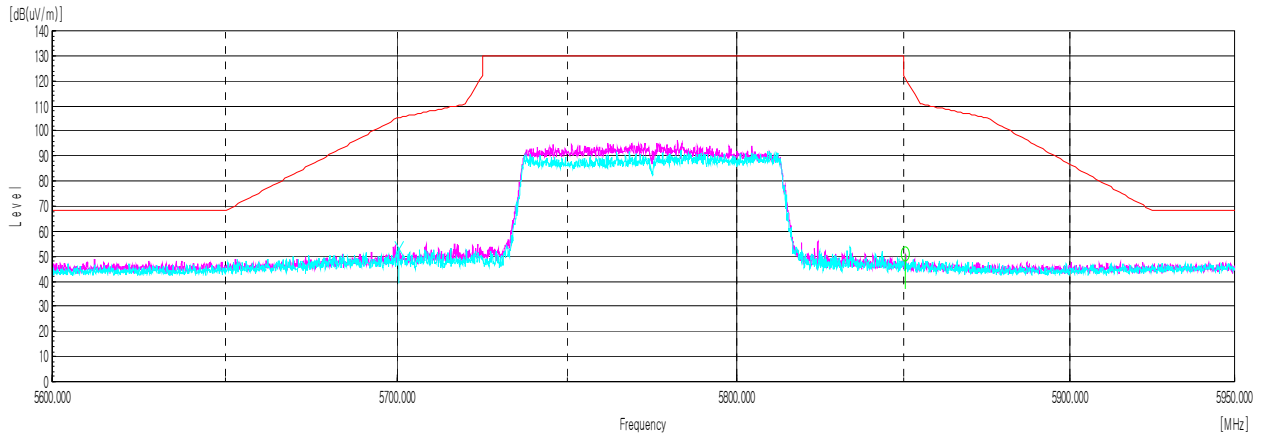
802.11ac VHT80_UNII-3_ANT1

Lowest Channel (5 775 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 700.33	V	42.15	34.74	-23.39	-	53.50	105.30	51.80
5 850.51	H	39.22	34.92	-23.44	-	50.70	120.90	70.20
11 548.83[1)]	V	52.32	38.24	-47.06	-	43.50	74.00	30.50
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Lowest Channel (5 775 ㎒)

Horizontal/Vertical for Band-edge



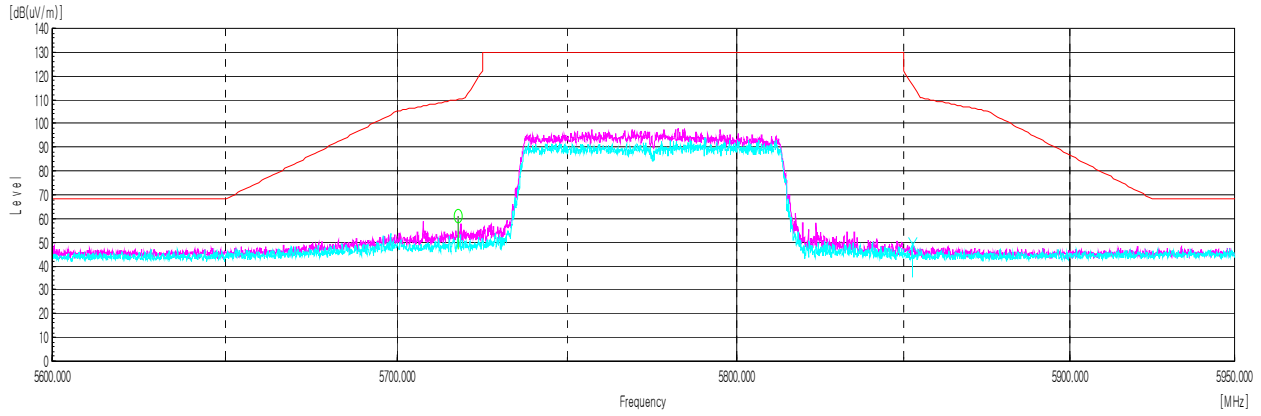
802.11ac VHT80_UNII-3_2TX MIMO

Lowest Channel (5 775 ㎒)

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
5 717.83	H	49.52	34.76	-23.48	-	60.80	110.20	49.40
5 852.47	V	37.50	34.92	-23.42	-	49.00	116.50	67.50
11 547.22[1)]	H	49.52	38.24	-47.06	-	40.70	74.00	33.30
Average Data								
No spurious emissions were detected within 20 dB of the limit.								

Lowest Channel (5 775 ㎒)

Horizontal/Vertical for Band-edge

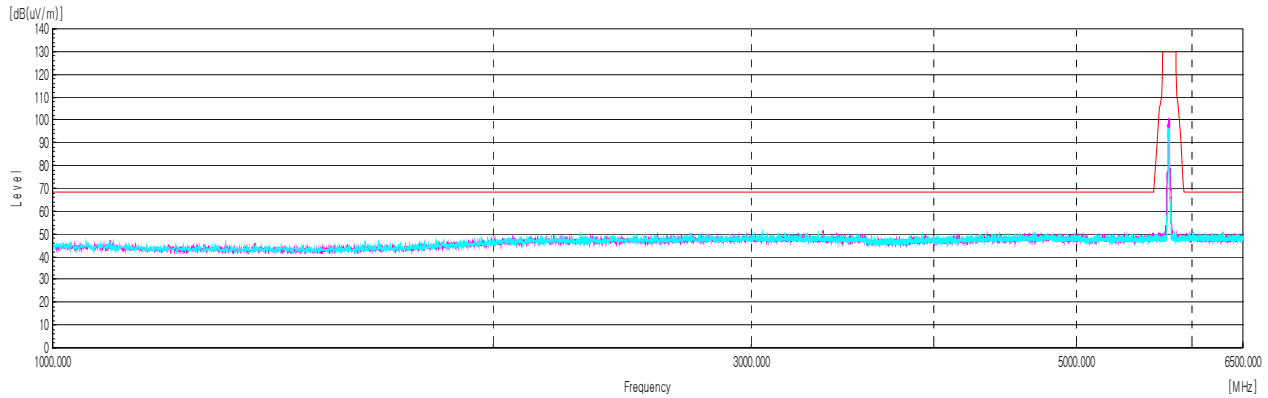


Plot of Harmonics and Spurious Emissions

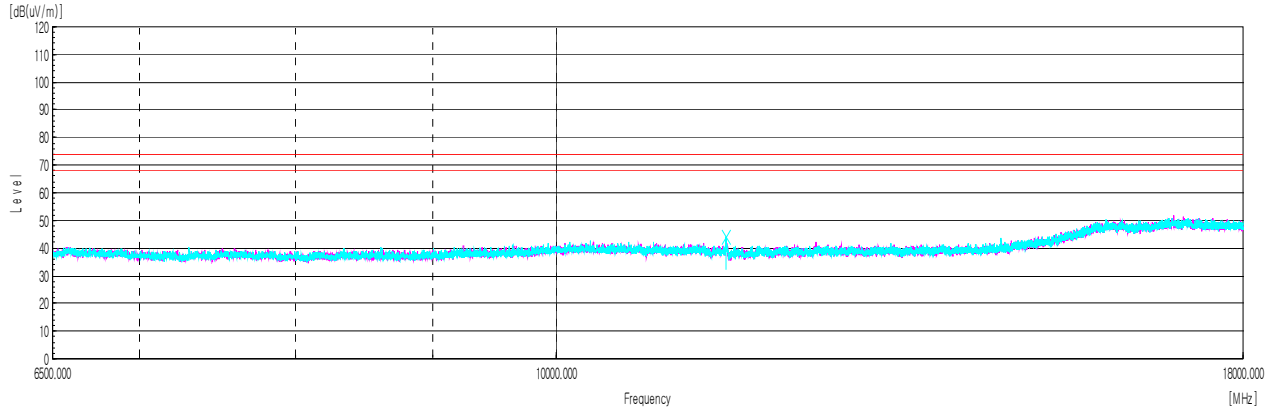
In order to simplify the report, attached plots were only the lowest margin condition

802.11a_UNII-3_ANT1_ Middle Channel (5 785 ㎒)

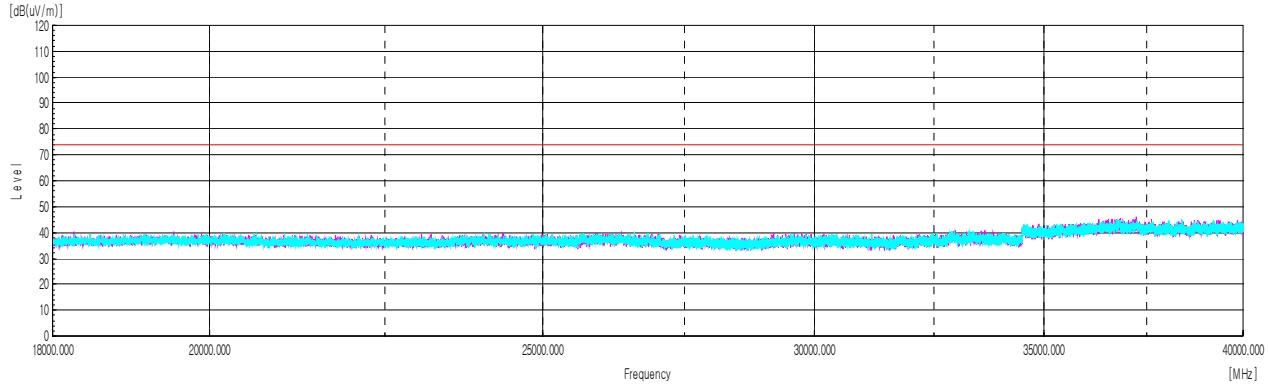
Horizontal/Vertical for 1 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



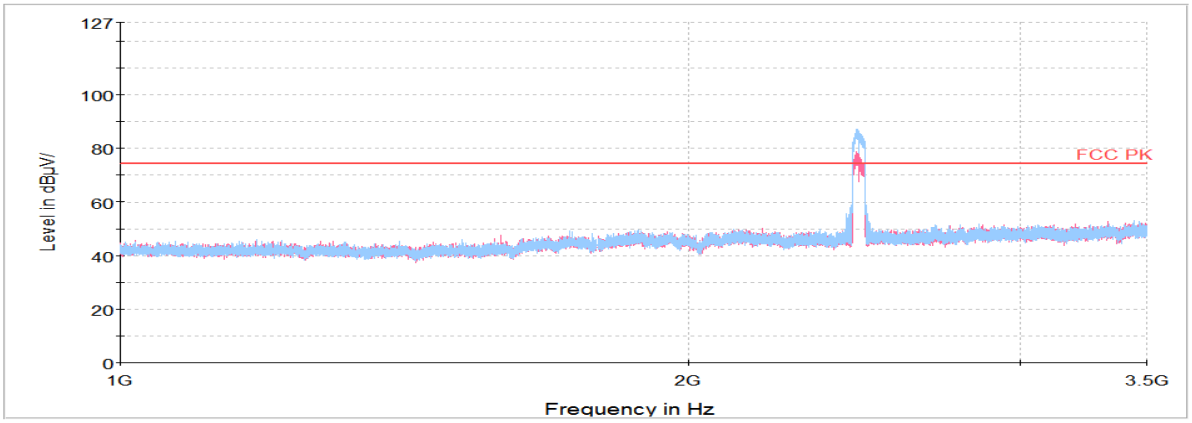
Spurious Emission for Simultaneous Tx Condition (Worst Case)

Test Mode

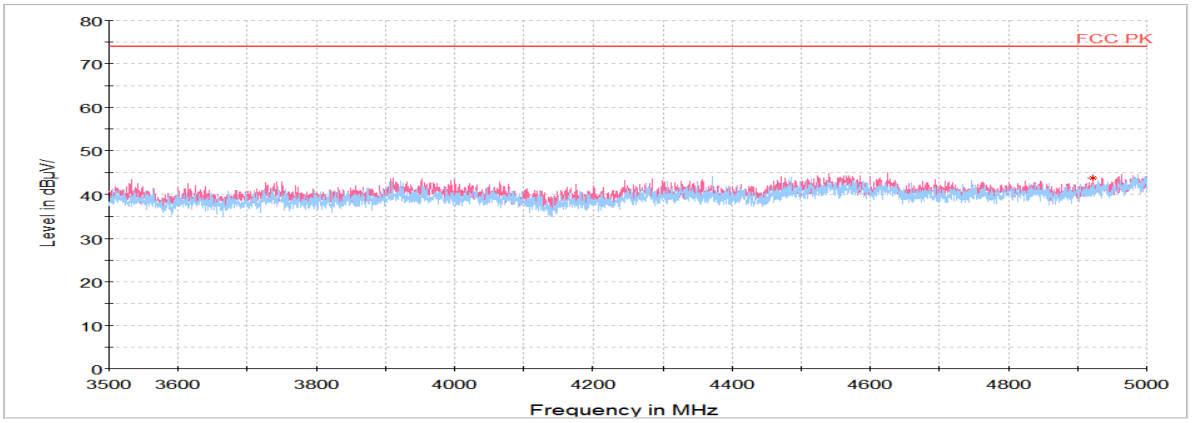
- **Ant0 (11n HT40_ 2 462 ㎒), Ant1 (11n HT40_ 5 190 ㎒)**

Frequency	Pol.	Reading	Ant. Factor	Amp.+Cable	DCF	Result	Limit	Margin
(㎒)	(V/H)	(dB(㎶))	(dB)	(dB)	(dB)	(dB(㎶/m))	(dB(㎶/m))	(dB)
Peak data								
4 921.91[1)]	V	62.88	33.85	-52.93	-	43.80	74.00	30.20
10 324.47	H	58.66	37.52	-49.69	-	46.49	68.20	21.71
15 577.81[1)]	H	54.73	39.97	-45.57	-	49.13	74.00	24.87
Average Data								
No spurious emissions were detected within 20 ㏈ of the limit.								

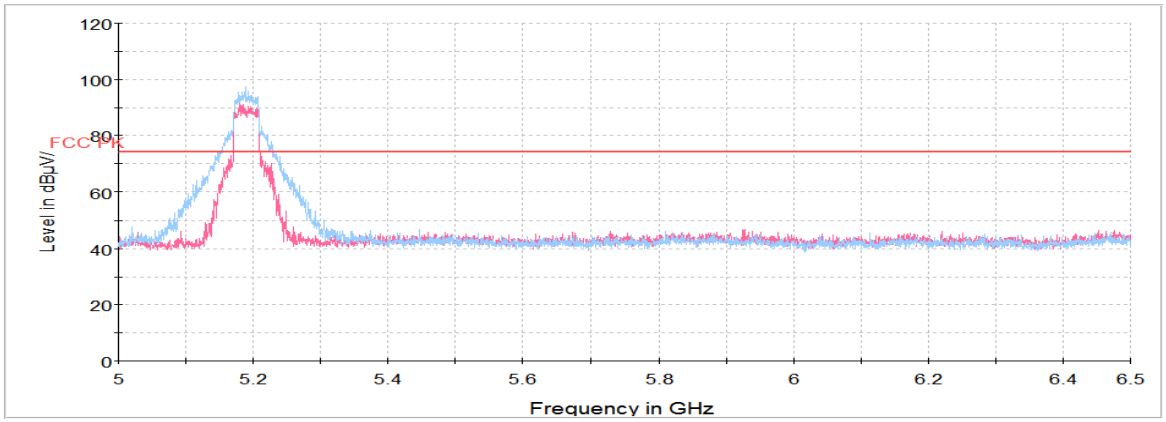
Horizontal/Vertical for 1 ㎓ ~ 3.5 ㎓



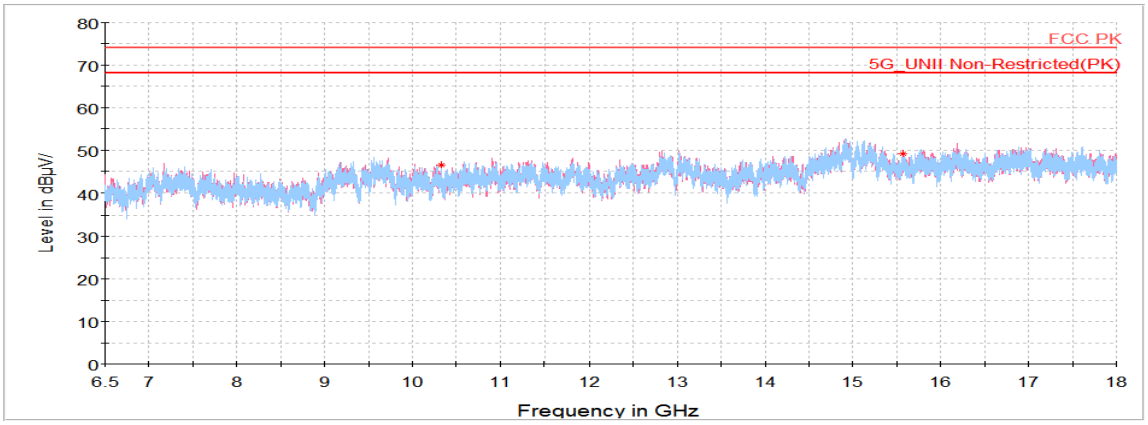
Horizontal/Vertical for 3.5 ㎓ ~ 5 ㎓



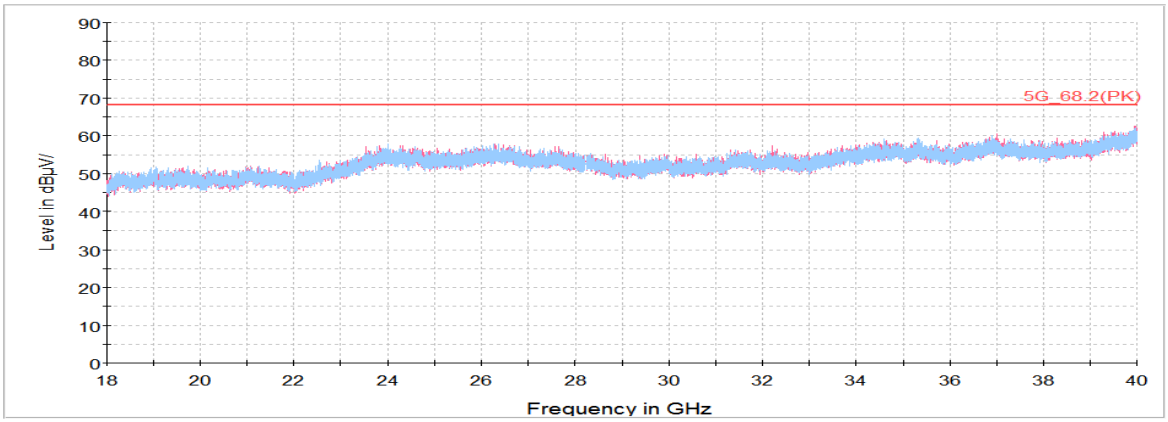
Horizontal/Vertical for 5 ㎓ ~ 6.5 ㎓



Horizontal/Vertical for 6.5 ㎓ ~ 18 ㎓



Horizontal/Vertical for 18 ㎓ ~ 40 ㎓



8. Measurement equipment

Equipment Name	Manufacturer	Model No.	Serial No.	Next Cal. Date
Spectrum Analyzer	AGILENT	N9040B	MY57010132	21.07.29
Spectrum Analyzer	R&S	FSV40	100989	21.12.23
EMI TEST RECEIVER	R&S	ESCI7	101408	21.08.20
Bi-Log Antenna	TESEQ	CBL 6112D	55545	22.04.24
ATTENUATOR	KEYSIGHT	8491B-6dB	MY39271060	21.12.24
COAXIAL FIXED ATTENUATOR	Agilent	8491B-003	2708A18758	22.04.23
Horn antenna	ETS.lindgren	3117	155787	21.10.28
Horn antenna	ETS.lindgren	3116	86632	22.05.17
Attenuator	API Inmet	40AH2W-10	12	22.05.11
Attenuator	API Inmet	40AH2W-10	14	22.05.11
Broadband PreAmplifier	SCHWARZBECK	BBV9718	216	21.07.28
AMPLIFIER	L-3 Narda-MITEQ	AMF-7D-01001800 -22-10P	2003683	21.08.28
AMPLIFIER	L-3 Narda-MITEQ	JS44-18004000-33-8P	2000996	22.01.21
LOOP Antenna	R&S	HFH2-Z2	100355	22.08.21
AMPLIFIER	SONOMA	310N	186280	22.04.03
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-A1698-HS	WT160411001	22.05.10
TWO-LINE V - NETWORK	R&S	ENV216	101584	21.09.29
Signal Generator	R&S	SMB100A	176206	22.01.20
Highpass Filter	WT	WT-A1699-HS	WT160411002	22.05.10
Vector Signal Generator	R&S	SMBV100A	257566	22.07.09
Band Reject Filter	Wainwright Instruments GmbH	WTRCJV8-5100-5850-20-100-50SSK	62	21.10.13
Cable Assembly	RadiAll	2301761768000PJ	1724.659	-
Cable Assembly	gigalane	RG-400	-	-
Cable Assembly	HUER+SUHNER	SUCOFLEX 104	MY4342/4	-

End of test report