TEST REPORT

Part 15 Subpart E 15.407 & RSS-247 (Issue 2)

Equipment under test	802.11abgn, USB module
Model name	WUBR-508N
FCC ID	RYK-WUBR508N
IC	6158A-WUBR508N
Applicant	SprakLAN Communications, Inc.
Manufacturer	SprakLAN Communications, Inc.
Date of test(s)	2019.08.05 ~ 2019.08.16
Date of issue	2019.11.13

Issued to
SprakLAN Communications, Inc.
8F., No.257, Sec. 2, Tiding Blvd., Neihu District, Taipei City 11493, Taiwan
Tel: +02-2659-1800 / Fax: +02-2659-5538

Issued by
KES Co., Ltd.
3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si,
Gyeonggi-do, 14057, Korea
473-21, Gayeo-ro, Yeoju-si, Gyeonggi-do, Korea
Tel: +82-31-425-6200 / Fax: +82-31-424-0450

Test and report completed by :	**Report approval by :**
	
Yeong-Jun, Cho Test engineer	Hyeon-Su, Jang Technical manager

Revision history

Revision	Date of issue	Test report No.	Description
-	2019.11.13	KES-RF-19T0181	Initial

TABLE OF CONTENTS

1. General information

Applicant:	SprakLAN Communications, Inc.
Applicant address:	8F., No.257, Sec. 2, Tiding Blvd., Neihu District, Taipei City 11493, Taiwan
Test site:	KES Co., Ltd.
Test site address:	3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea 473-21, Gayeo-ro, Yeoju-si, Gyeonggi-do, Korea
FCC/IC rule part(s):	15.407 / RSS-247
FCC ID:	RYK-WUBR508N
IC Certification	6158A-WUBR508N
Test device serial No.:	☒ Production ☐ Pre-production ☐ Engineering

1.1. EUT description

Equipment under test	802.11abgn, USB module	
Frequency range		2 412 ㎒ ~ 2 462 ㎒ (11b/g/n_HT20)
		2 422 ㎒ ~ 2 452 ㎒ (11n_HT40)
	UNII-1	5 180 ㎒ ~ 5 240 ㎒ (11a/n_HT20)
		5 190 ㎒ ~ 5 230 ㎒ (11n_HT40)
	UNII-2A	5 260 ㎒ ~ 5 320 ㎒ (11a/n_HT20)
		5 270 ㎒ ~ 5 310 ㎒ (11n_HT40)
	UNII-2C	5 500 ㎒ ~ 5 720 ㎒ (11a/n_HT20)
		5 510 ㎒ ~ 5 710 ㎒ (11n_HT40)
	UNII-3	5 745 ㎒ ~ 5 825 ㎒ (11a/n_HT20)
		5 755 ㎒ ~ 5 795 ㎒ (11n_HT40)
Model:	WUBR-508N	
Modulation technique	DSSS, OFDM	
Number of channels	2 412 ㎒ ~ 2 462 ㎒ (11b/g/n_HT20) : 11ch 2 422 ㎒ ~ 2 452 ㎒ (11n_HT40) : 7 ch 5 180 ㎒ ~ 5 240 ㎒ (11a/n_HT20) : 4ch 5 190 ㎒ ~ 5 230 ㎒ (11n_HT40) : 2ch 5 260 ㎒ ~ 5 320 ㎒ (11a/n_HT20) : 4ch 5 270 ㎒ ~ 5 310 ㎒ (11n_HT40) : 2ch 5 500 ㎒ ~ 5 720 ㎒ (11a/n_HT20) : 12ch 5 510 ㎒ ~ 5 710 ㎒ (11n_HT40) : 6ch 5 745 ㎒ ~ 5 825 ㎒ (11a/n_HT20) : 5ch 5 755 ㎒ ~ 5 795 ㎒ (11n_HT40) : 2ch	
Antenna specification	Antenna type(2.4 ㎓ WIFI) : PCB antenna, Peak gain : -3.6 dBi Antenna type(5 ㎓ WIFI) : PCB antenna, Peak gain : 0.7 dBi	
Power source	DC 3.30 V	

1.2. Test configuration

The **SprakLAN Communications, Inc. // WUBR-508N // FCC ID: RYK-WUBR508N , IC : 6158A-WUBR508N** was tested according to the specification of EUT, the EUT must comply with following standards and KDB documents.

FCC Part 15.407
RSS-247 Issue 2 and RSS-Gen Issue 5
KDB 789033 D02 v02r01
ANSI C63.10-2013

1.3. Device modifications

N/A

1.4. Accessory information

Equipment	Manufacturer	Model	Serial No.	Power source
USB C-type Gender	-	-	-	-
MEDICAL AC/DC ADAPTOR	Shenzhen Megmeet Electronical Co., Ltd.	MANGO60S-USB-PDA	-	-

1.5. Measurement results explanation example

For all conducted test items :

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator 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.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).
= 1.56 + 10 = 11.56 (dB)

1.6. Measurement Uncertainty

Test Item		Uncertainty
Uncertainty for Conduction emission test		2.62 dB
Uncertainty for Radiation emission test (include Fundamental emission)	9kHz - 30MHz	4.54 dB
	30MHz - 1GHz	4.36 dB
	Above 1GHz	5.00 dB
Note. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.		

1.7. Frequency/channel operations

UNII-1 802.11a/n_HT20

Ch.	Frequency (㎒)	Mode
36	5 180	802.11a/n_HT20
.		.
.		.
44	5 220	802.11a/n_HT20
.		.
.		.
48	5 240	802.11a/n_HT20

UNII-1 802.11n_HT40

Ch.	Frequency (㎒)	Mode
38	5 190	802.11n_HT40
.		.
.		.
46	5 230	802.11n_HT40

UNII-2A 802.11a/n_HT20

Ch.	Frequency (㎒)	Mode
52	5 260	802.11a/n_HT20
.		.
.		.
56	5 280	802.11a/n_HT20
.		.
.		.
64	5 320	802.11a/n_HT20

UNII-2A 802.11n_HT40

Ch.	Frequency (㎒)	Mode
54	5 270	802.11n_HT40
.		.
.		.
62	5 310	802.11n_HT40

UNII-2C 802.11a/n_HT20

Ch.	Frequency (㎒)	Mode
100	5 500	802.11a/n_HT20
.		.
116	5 580	802.11a/n_HT20
.		.
140	5 700	802.11a/n_HT20

UNII-2C 802.11n_HT40

Ch.	Frequency (㎒)	Mode
102	5 510	802.11n_HT40
.		.
110	5 550	802.11n_HT40
.		.
134	5 670	802.11n_HT40

UNII-3 802.11a/n_HT20

Ch.	Frequency (㎒)	Mode
149	5 745	802.11a/n_HT20
.		.
157	5 785	802.11a/n_HT20
.		.
165	5 825	802.11a/n_HT20

UNII-3 802.11n_HT40

Ch.	Frequency (㎒)	Mode
151	5 755	802.11n_HT40
.		.
159	5 795	802.11n_HT40

1.8. Worst case data rate

1. Radiated emission was performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.
2. Worst-case data rates were:
   802.11n_HT20: **MCS8**

1.9. Host model information

Host model No.	EVS 4343W
Derived model (s)	EVS 4343WG, EVS 4343WP, EVS3643WP, EVS 3643W, EVS 3643WG
Applicant	DRTECH Corporation
Address	Suite No.1, 1Floor / Suite No.2 3Floor, 29, Dunchon-daero 541 beon- gil, Jungwon-gu, Seongnam-si, Gyeonggi-do, 13216, Korea
Telephone	+82-31-779-7784
Fax	+82-31-779-7790
E-mail	mwkim@drtech.co.kr
Contact name	Minwoo Kim
Manufacturer	DRTECH Corporation
Manufacturer Address	Suite No.1, 1Floor / Suite No.2 3Floor, 29, Dunchon-daero 541 beon- gil, Jungwon-gu, Seongnam-si, Gyeonggi-do, 13216, Korea

2. Summary of tests

Section in FCC Part 15	Section in RSS-247 & Gen	Parameter	Test results
15.407(a)	RSS-Gen 6.7	26 dB bandwidth & 99 % bandwidth	N/A[1)]
15.407(e)	RSS-247 6.2.4	6 dB bandwidth (UNII-3)	N/A[1)]
15.407(a)	RSS-247 6.2	Maximum conducted output power	Pass
15.407(a)	RSS-247 6.2	Power spectral density	N/A[1)]
15.407(g)	RSS-Gen 6.11	Frequency stability	N/A[1)]
15.205 15.209 15.407(d)	RSS-247 6.2 RSS-Gen 8.9, 8.10	Radiated restricted band and emission	Pass
15.207	RSS-Gen 8.8	AC power line conducted emissions	N/A[1)]

Note :

1) Please Refer to the approved Module Report (Report No.: FR232843AN, FR232843AI) for these parameters.

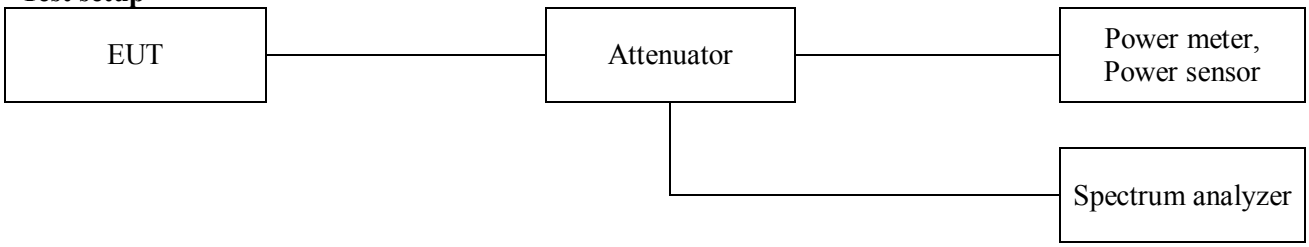
3. Test results

3.1. Maximum conducted output power

Test procedure

KDB 789033 D02 v02r01– Section E.3.a) or b)
Used test method is Section E.3.b)

Test setup



Section E.3.a)

Method PM (Measurement using an RF average power meter):

i. 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.

ii. If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section II.B.

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

iv. Adjust the measurement in dBm 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.

Limit

FCC

Band	EUT Category		Limit
UNII-1		Outdoor access point	1 W (30 dBm)
		Indoor access point	
		Fixed point-to-point access point	
	✓	Mobile and portable client device	250 ㎽(24 dBm)
UNII-2A	✓		250 ㎽ or 11 dBm + 10logB*
UNII-2C	✓		250 ㎽ or 11 dBm + 10logB*
UNII-3	✓		1 W (30 dBm)

IC

Band	Limit
5150~5250 ㎒	EIRP shall not exceed 200 mW or 10+10logB*, dBm
5250~5350 ㎒	Conducted output power shall not exceed 250 ㎽ or 11 dBm + 10logB* EIRP shall not exceed 1.0 W or 17+10logB*, dBm
5470~5600 ㎒ and 5650~5725 ㎒	Conducted output power shall not exceed 250 ㎽ or 11 dBm + 10logB* EIRP shall not exceed 1.0 W or 17+10logB*, dBm
5725~5850 ㎒	Conducted output power shall not exceed 1 W

Note.

1. FCC Limit B is the 26 dB emission bandwidth.
2. IC Limit B is the 99% emission bandwidth in megahertz.

Test results

Band	Frequency (㎒)	Mode	Average Output Power (dBm)	Limit (dBm)	
				FCC	IC
UNII-1	5 180	802.11a	14.25	24.00	23.25
	5 220		15.06		23.28
	5 240		16.00		23.25

Band	Frequency (㎒)	Mode	Average Output Power (dBm)	Limit (dBm)	
				FCC	IC
UNII-1	5 180	802.11n_ HT20	14.31	24.00	23.43
	5 220		14.19		23.46
	5 240		15.08		23.46

Band	Frequency (㎒)	Mode	Average Output Power (dBm)	Limit (dBm)	
				FCC	IC
UNII-1	5 190	802.11n_ HT40	15.13	24.00	24.00
	5 230		14.60		

Band	Frequency (㎒)	Mode	Average Output Power (dBm)	Limit (dBm)	
				FCC	IC
UNII-2A	5 260	802.11a	17.70	24.00	23.25
	5 280		17.65	24.00	23.30
	5 320		16.96	23.98	23.25

Band	Frequency (㎒)	Mode	Average Output Power (dBm)	Limit (dBm)	
				FCC	IC
UNII-2A	5 260	802.11n_ HT20	20.37	24.00	23.48
	5 280		19.61	24.00	23.46
	5 320		18.57	24.00	23.46

Band	Frequency (㎒)	Mode	Average Output Power (dBm)	Limit (dBm)	
				FCC	IC
UNII-2A	5 270	802.11n_ HT40	18.72	24.00	24.00
	5 310		17.59		

Band	Frequency (㎒)	Mode	Average Output Power (dBm)	Limit (dBm)	
				FCC	IC
UNII-2C	5 500	802.11a	12.50	24.00	23.25
	5 580		12.40		23.25
	5 700		10.62		23.28

Band	Frequency (㎒)	Mode	Average Output Power (dBm)	Limit (dBm)	
				FCC	IC
UNII-2C	5 500	802.11n_HT20	16.07	24.00	23.46
	5 580		14.28	23.97	23.46
	5 700		15.76	24.00	23.46

Band	Frequency (㎒)	Mode	Average Output Power (dBm)	Limit (dBm)	
				FCC	IC
UNII-2C	5 510	802.11n_HT40	15.48	24.00	24.00
	5 550		14.55		
	5 670		12.93		

Band	Frequency (㎒)	Mode	Average Output Power (dBm)	Limit (dBm)	
				FCC	IC
UNII-3	5 745	802.11a	8.04	30.00	30.00
	5 785		10.88		
	5 825		9.62		

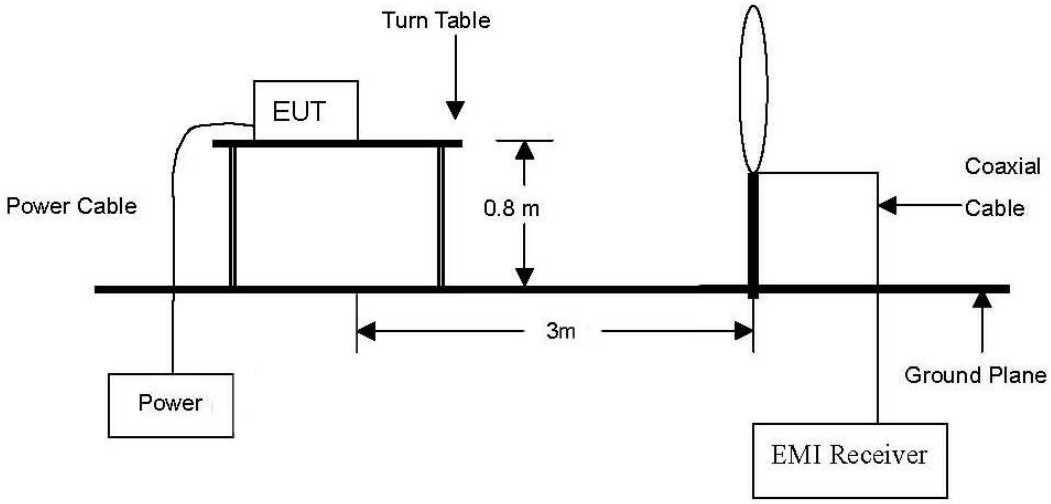
Band	Frequency (㎒)	Mode	Average Output Power (dBm)	Limit (dBm)	
				FCC	IC
UNII-3	5 745	802.11n_HT20	18.08	30.00	30.00
	5 785		17.25		
	5 825		16.46		

Band	Frequency (㎒)	Mode	Average Output Power (dBm)	Limit (dBm)	
				FCC	IC
UNII-3	5 755	802.11n_HT40	18.00	30.00	30.00
	5 795		17.48		

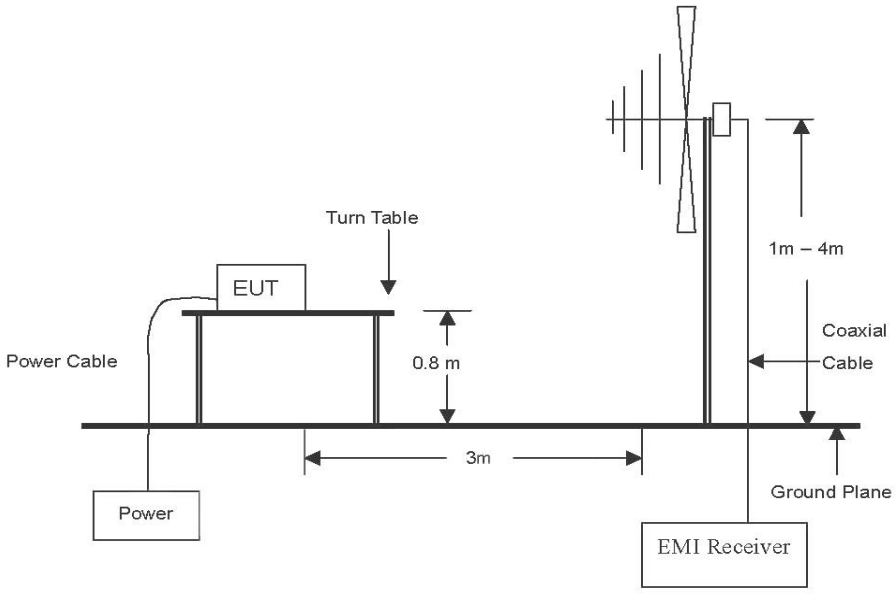
3.2. Radiated restricted band and emissions

Test setup

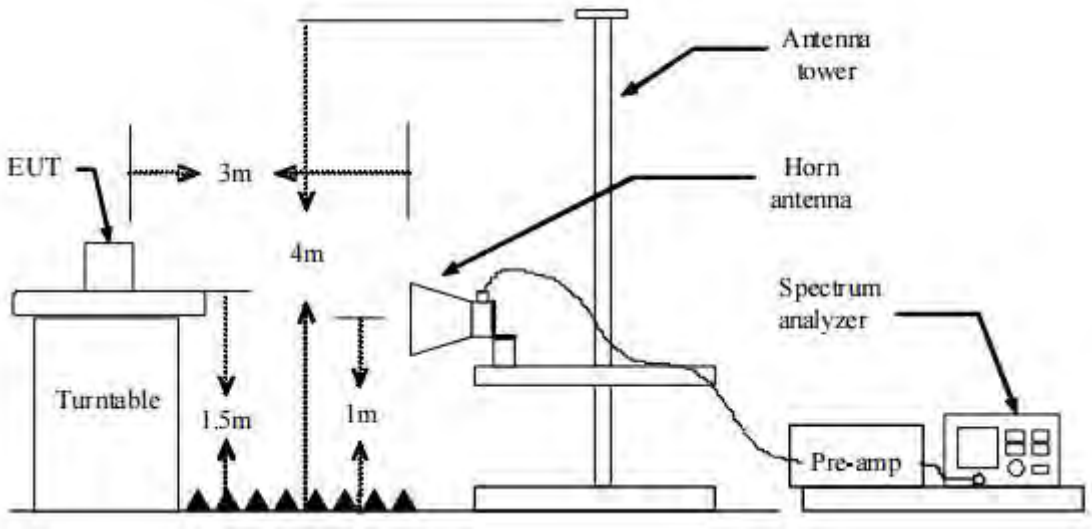
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒ Emissions.



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.



Test procedure

Radiated emissions from the EUT were measured according to the dictates in section 11.11 & 11.12 of ANSI C63.10-2013.

Test procedure below 30 ㎒

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel, ground parallel and perpendicular of the antenna are set to make the measurement. It was determined that **parallel** was worst-case orientation; therefore, all final radiated testing was performed with the EUT in **parallel.**
3. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading.
4. The test-receiver system was set to average or quasi peak detect function and Specified Bandwidth with Maximum hold mode.

Test procedure above 30 ㎒

1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The antenna is a bi-log antenna, a horn antenna ,and its height are varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
4. The test receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

5. Spectrum analyzer settings for $f < 1$ ㎓:
   ① Span = wide enough to fully capture the emission being measured
   ② RBW = 100 ㎑
   ③ VBW ≥ RBW
   ④ Detector = quasi peak
   ⑤ Sweep time = auto
   ⑥ Trace = max hold
6. Spectrum analyzer settings for $f \geq 1$ ㎓: Peak
   ① Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
   ② RBW = 1 ㎒
   ③ VBW ≥ 3 ㎒
   ④ Detector = peak
   ⑤ Sweep time = auto
   ⑥ Trace = max hold
   ⑦ Trace was allowed to stabilize

7. Spectrum analyzer settings for $f \geq 1$ ㎓: Average
   ① Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
   ② RBW = 1 ㎒
   ③ VBW ≥ 3 × RBW
   ④ Detector = RMS, 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.
   ⑤ 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 in order to use linear voltage averaging. Log or ㏈ averaging shall not be used.
   ⑥ Sweep = auto
   ⑦ Trace = max hold
   ⑧ Perform a trace average of at least 100 traces.
   ⑨ A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:
      1) If power averaging (RMS) mode was used in step ⑤, then the applicable correction factor is 10 log(1/x), where x is the duty cycle.
      2) If linear voltage averaging mode was used in step ⑤, then the applicable correction factor is 20 log(1/x), where x is the duty cycle.
      3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

Note.

1. f<30 ㎒, extrapolation factor of 40 ㏈/decade of distance. $F_d = 40\log(D_m/Ds)$
   f ≥30 ㎒, extrapolation factor of 20 ㏈/decade of distance. $F_d = 20\log(D_m/Ds)$
   Where:
   F_d = Distance factor in ㏈
   D_m = Measurement distance in meters
   D_s = Specification distance in meters
2. Field strength(㏈㎶/m) = Level(㏈㎶) + CF (㏈) + or DCF(㏈)
3. Margin(㏈) = Limit(㏈㎶/m) - Field strength(㏈㎶/m)
4. Emissions below 18 ㎓ were measured at a 3 meter test distance while emissions above 18 ㎓ were measured at a 1 meter test distance with the application of a distance correction factor.
7. 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.**
8. The worst-case emissions are reported however emissions whose levels were not within 20 ㏈ of respective limits were not reported.
9. 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.

Limit

According to 15.209(a), for an intentional radiator devices, the general required of field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values：

Frequency (㎒)	Distance (Meters)	Radiated (㎶/m)
0.009 ~ 0.490	300	2400/F(㎑)
0.490 ~ 1.705	30	24000/F(㎑)
1.705 ~ 30.0	30	30
30 ~ 88	3	100**
88 ~ 216	3	150**
216 ~ 960	3	200**
Above 960	3	500

**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., Sections 15.231 and 15.241.

According to RSS-Gen, Except when the requirements applicable to a given device state otherwise, emissions from licence-exempt transmitters shall comply with the field strength limits：

Frequency (㎒)	Distance (Meters)	Radiated (㎶/m)
0.009 ~ 0.490	300	2 400 / F(㎑)
0.490 ~ 1.705	30	24 000 / F(㎑)
1.705 ~ 30.0	30	30
30 ~ 88	3	100
88 ~ 216	3	150
216 ~ 960	3	200
Above 960*	3	500

* Unless otherwise specified, for all frequencies greater than 1 GHz, the radiated emission limits for licence-exempt radio apparatus stated in applicable RSSs (including RSS-Gen) are based on measurements using a linear average detector function having a minimum resolution bandwidth of 1 MHz. If an average limit is specified for the EUT, then the peak emission shall also be measured with instrumentation properly adjusted for such factors as pulse desensitization to ensure the peak emission is less than 20 dB above the average limit.

Note: Transmitting devices are not permitted in restricted frequency bands unless stated otherwise in the specific RSS.

According to 15.407(b), (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:

(1) 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/㎒.
(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band:
i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.
(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 ㎒.
A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 ㎒.
(6) Unwanted emissions below 1 ㎓ must comply with the general field strength limits set forth in § 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in § 15.207.
(7) The provisions of §15.205 apply to intentional radiators operating under this section.
(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

According to RSS-247 6.2 The equipment output power and e.i.r.p. shall be measured in terms of average value. If the transmission is in bursts, the provisions of RSS-Gen for pulsed operation shall apply.

(1) For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

(2) For transmitters operating in the band 5250-5350 MHz Devices shall comply with the following:
a) All emissions outside the band 5250-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p.; or
b) All emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. and its power shall comply with the spectral power density for operation within the band 5150-5250 MHz. The device, except devices installed in vehicles, shall be labelled or include in the user manual the following text “for indoor use only.”

(3) For transmitters operating in the band 5470-5600 MHz and 5650-5725 MHz, Emissions outside the band 5470-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p. However, devices with bandwidth overlapping the band edge of 5725 MHz can meet the emission limit of -27 dBm/MHz e.i.r.p. at 5850 MHz instead of 5725 MHz.

(4) For the band 5725-5850 MHz, Devices operating in the band 5725-5850 MHz with antenna gain greater than 10 dBi can have unwanted emissions that comply with either the limits in this section or in section 5.5 until six (6) months after the publication date of this standard for certification. Certified devices that do not comply with emission limits in this section shall not be manufactured, imported, distributed, leased, offered for sale or sold after April 1, 2018.
Devices operating in the band 5725-5850 MHz with antenna gain of 10 dBi or less can have unwanted emissions that comply with either the limits in this section or in section 5.5 until April 1, 2018 for certification. Certified devices that do not comply with emission limits in this section shall not be manufactured, imported, distributed, leased, offered for sale or sold after April 1, 2020.
Devices operating in the band 5725-5850 MHz shall have e.i.r.p. of unwanted emissions comply with the following:
a) 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges;
b) 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;
c) 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and
d) -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

Duty cycle

Regarding to KDB 789033 D02 v02r01, B)2)b), the maximum duty cycles of all modes were investigated and set the spectrum analyzer as below.

Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T, where T is defined in II.B.1.a), and the number of sweep points across duration T exceeds 100.

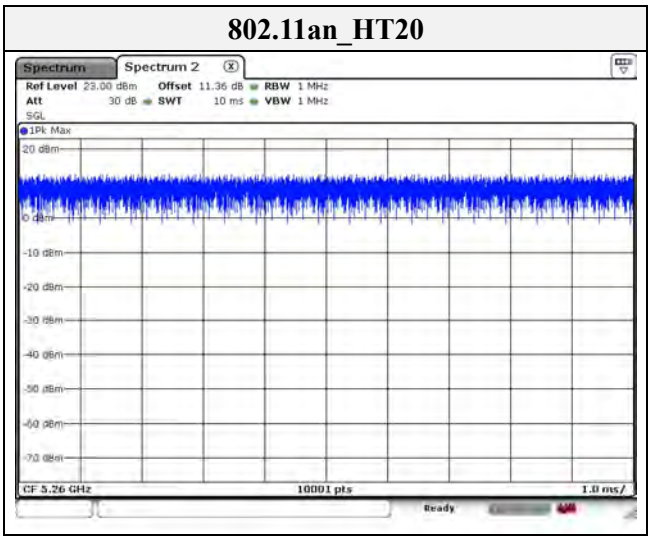
Test mode	T_{on} time (㎳)	Period (㎳)	Duty cycle (Linear)	Duty cycle (%)	Duty cycle correction factor (dB)
802.11an_HT20	1	1	1	100	0

Note:

Duty cycle (Linear) = T_{on} time/Period

DCF(Duty cycle correction factor (㏈)) = 10log(1/duty cycle)

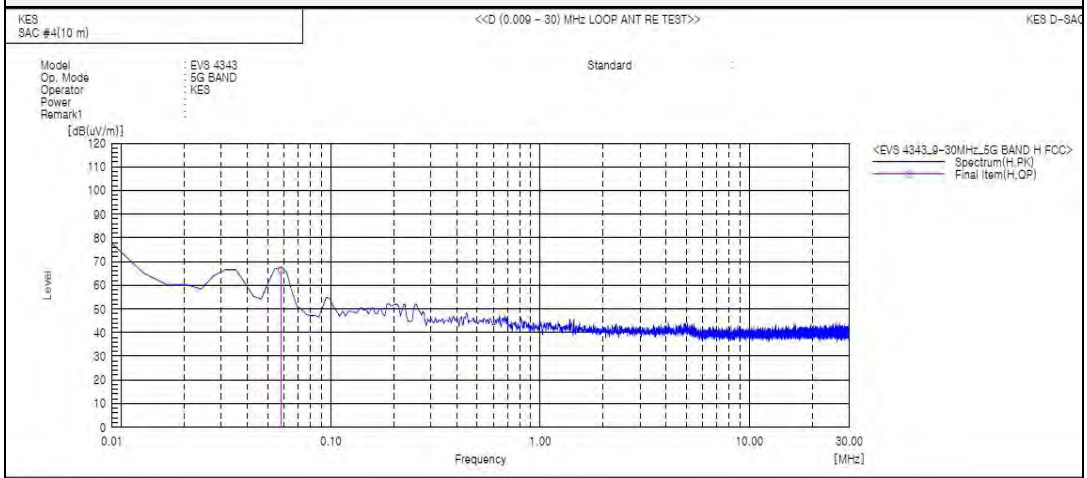
802.11an_HT20



Test results (Below 30 ㎒)

Mode:	802.11an_HT20
Distance of measurement:	3 meter
Channel:	52 (Worst case)

Parallel



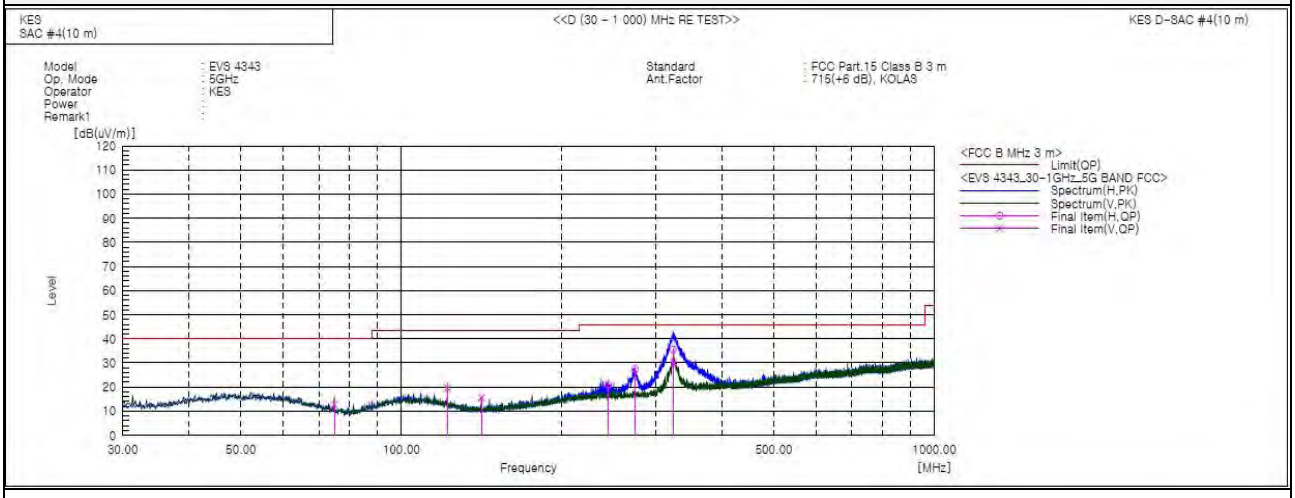
Final Result

No.	Frequency	(P)	Reading QP	c.f	Result QP	Limit QP	Margin QP	Height	Angle	Remark
	[MHz]		[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[cm]	[deg]	
1	0.058	H	47.3	19.0	66.3	112.3	46.0	100.0	144.0	

Test results (Below 1 000 ㎒) – Worst case

Mode:	802.11an_HT20
Distance of measurement:	3 meter
Channel:	52 (Worst case)

Horizontal // Vertical



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	74.863	V	40.2	-27.5	12.7	40.0	27.3	102.0	291.0	
2	122.029	V	44.7	-25.2	19.5	43.5	24.0	134.0	283.0	
3	141.308	V	42.5	-27.0	15.5	43.5	28.0	100.0	283.0	
4	244.613	H	42.3	-21.3	21.0	46.0	25.0	349.0	90.0	
5	274.683	H	48.3	-20.8	27.5	46.0	18.5	400.0	67.0	
6	323.546	H	54.2	-18.6	35.6	46.0	10.4	376.0	341.0	
7	324.516	V	48.7	-18.5	30.2	46.0	15.8	126.0	92.0	

Test results (Above 1 000 ㎒)

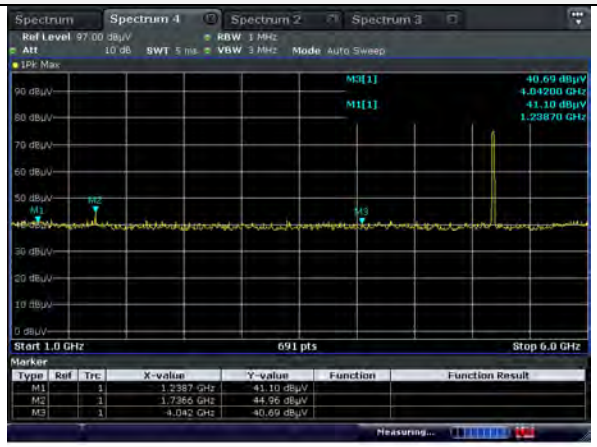
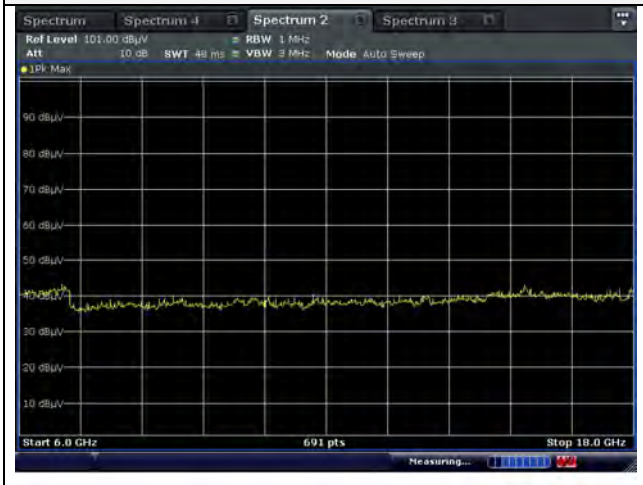
Mode: 802.11an_HT20 (Worst case)
Distance of measurement: 3 meter
Channel: 36

- **Spurious**

Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
1 238.70	41.10	Peak	H	24.37	-32.72	-	32.75	74.00	41.25
1 737.00	44.96	Peak	H	26.67	-27.86	-	43.77	68.23	24.46
4 042.00	40.69	Peak	H	31.75	-27.81	-	44.63	74.00	29.37
1 202.60	44.96	Peak	V	24.27	-32.66	-	36.57	74.00	37.43
1 591.90	46.01	Peak	V	25.71	-29.20	-	42.52	74.00	31.48
2 442.80	43.47	Peak	V	29.54	-36.70	-	36.31	68.23	31.92

- **Band edge**

Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
5 007.60	41.89	Peak	H	34.08	-25.08	-	50.89	74.00	23.11
5 020.20	42.64	Peak	V	34.07	-25.12	-	51.59	74.00	22.41

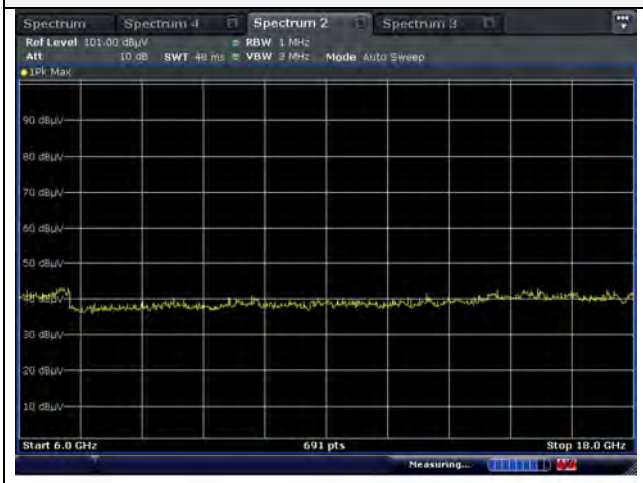
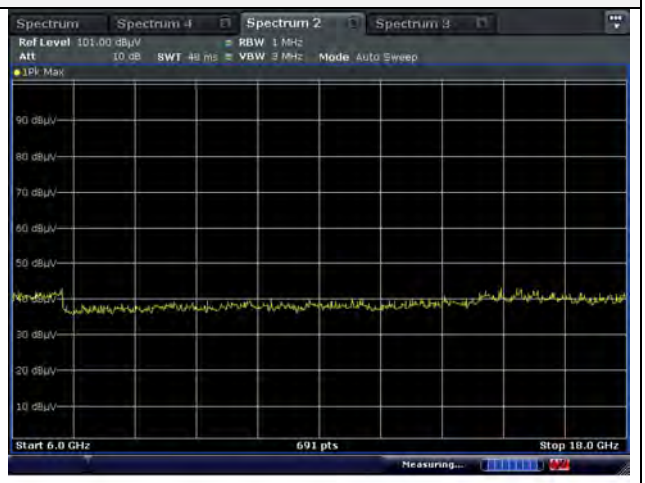
Restricted band // Horizontal // Peak	Restricted band // Vertical // Peak
	
Horizontal // Peak for 1 ㎓ to 6 ㎓	**Vertical // Peak for 1 ㎓ to 6 ㎓**
	
Horizontal // Peak for 6 ㎓ to 18 ㎓	**Vertical // Peak for 6 ㎓ to 18 ㎓**
	

Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

Mode: 802.11an_HT20 (Worst case)
Distance of measurement: 3 meter
Channel: 44

- **Spurious**

Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
1 166.40	41.56	Peak	H	24.17	-32.58	-	33.15	74.00	40.85
1 599.10	44.51	Peak	H	25.76	-29.14	-	41.13	74.00	32.87
2 551.40	40.29	Peak	H	29.74	-28.57	-	41.46	68.23	26.77
1 202.60	42.74	Peak	V	24.27	-32.66	-	34.35	68.23	33.88
1 599.10	44.96	Peak	V	25.76	-29.14	-	41.58	68.23	26.65
2 442.84	42.85	Peak	V	29.54	-36.70	-	35.69	74.00	38.31

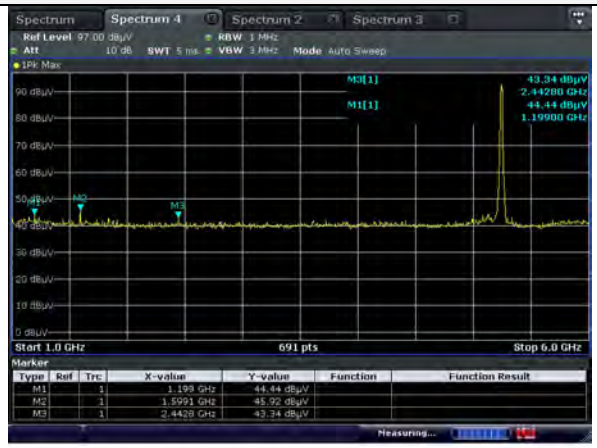
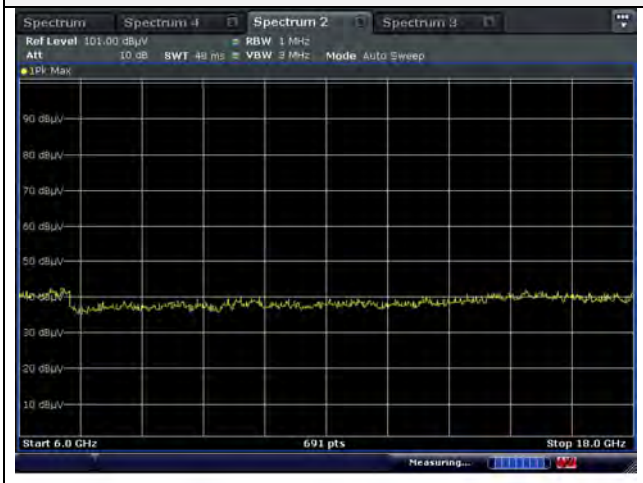
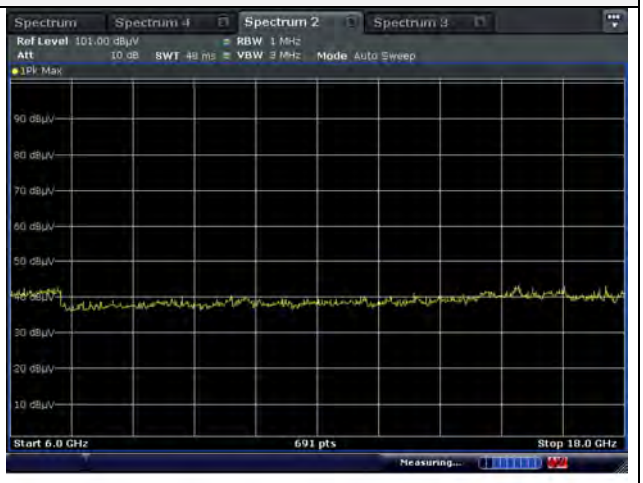
Horizontal // Peak for 1 ㎓ to 6 ㎓	Vertical // Peak for 1 ㎓ to 6 ㎓
	
Horizontal // Peak for 6 ㎓ to 18 ㎓	**Vertical // Peak for 6 ㎓ to 18 ㎓**
	

Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

Mode: 802.11an_HT20 (Worst case)
Distance of measurement: 3 meter
Channel: 48

- **Spurious**

Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
1 296.60	43.32	Peak	H	24.53	-32.80	-	35.05	68.23	33.18
1 599.10	42.70	Peak	H	25.76	-29.14	-	39.32	74.00	34.68
2 442.80	42.39	Peak	H	29.54	-36.70	-	35.23	68.23	33.00
1 199.00	44.44	Peak	V	24.26	-32.66	-	36.04	74.00	37.96
1 599.10	45.92	Peak	V	25.76	-29.14	-	42.54	74.00	31.46
2 442.80	43.34	Peak	V	29.54	-36.70	-	36.18	68.23	32.05

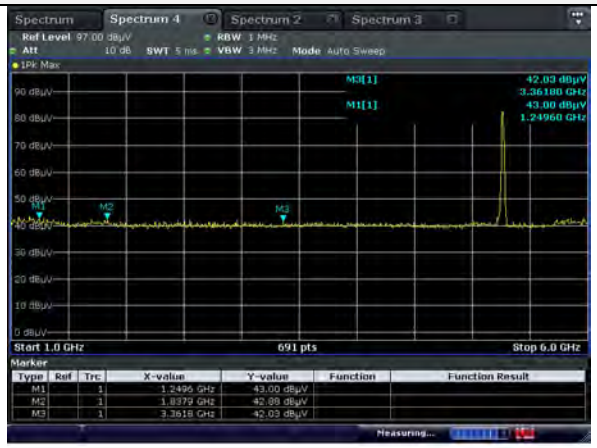
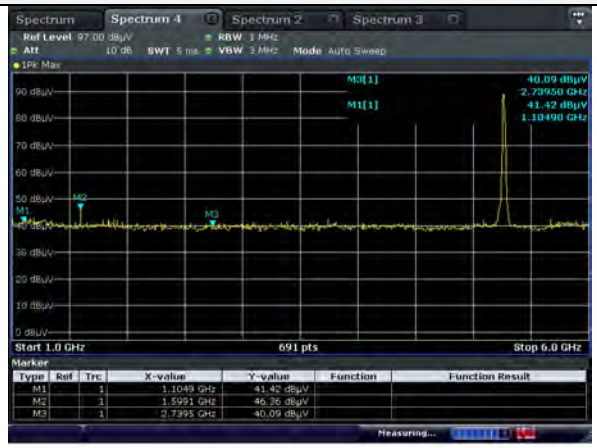
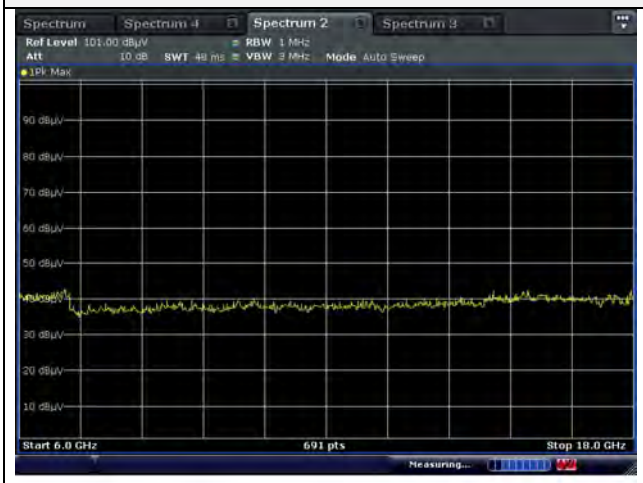
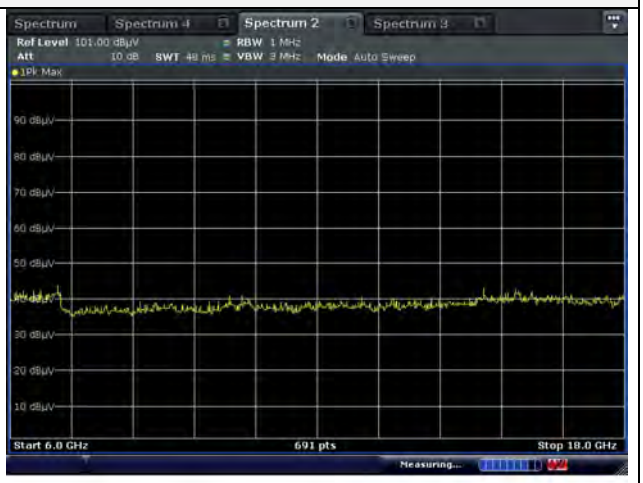
Horizontal // Peak for 1 ㎓ to 6 ㎓	Vertical // Peak for 1 ㎓ to 6 ㎓
	
Horizontal // Peak for 6 ㎓ to 18 ㎓	**Vertical // Peak for 6 ㎓ to 18 ㎓**
	

Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

Mode: 802.11an_HT20 (Worst case)
Distance of measurement: 3 meter
Channel: 52

- **Spurious**

Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
1 249.60	43.00	Peak	H	24.40	-32.73	-	34.67	68.23	33.56
1 837.90	42.88	Peak	H	27.34	-26.94	-	43.28	68.23	24.95
3 361.80	42.03	Peak	H	30.56	-26.79	-	45.80	68.23	22.43
1 104.90	41.42	Peak	V	23.99	-32.44	-	32.97	74.00	41.03
1 599.10	46.36	Peak	V	25.76	-29.14	-	42.98	74.00	31.02
2 739.50	40.09	Peak	V	29.96	-28.61	-	41.44	74.00	32.56

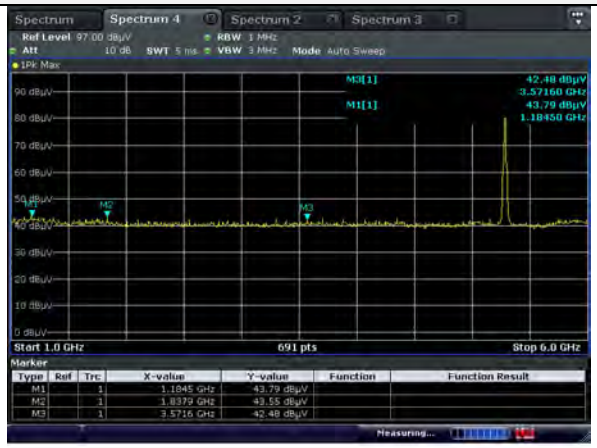
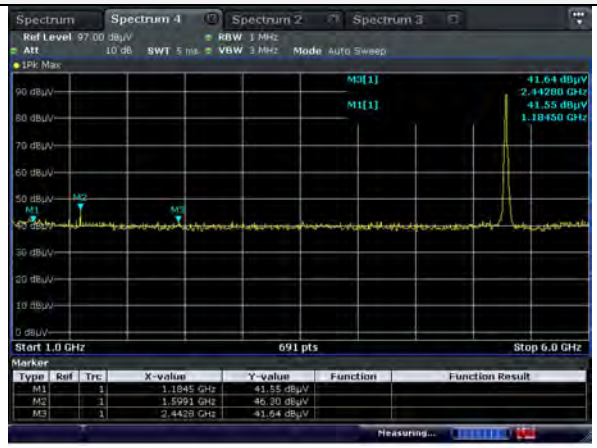
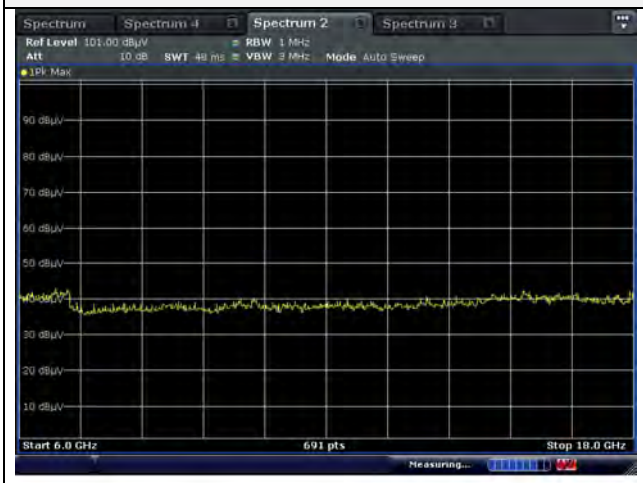
Horizontal // Peak for 1 ㎓ to 6 ㎓	Vertical // Peak for 1 ㎓ to 6 ㎓
	
Horizontal // Peak for 6 ㎓ to 18 ㎓	**Vertical // Peak for 6 ㎓ to 18 ㎓**
	

Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

Mode: 802.11an_HT20 (Worst case)
Distance of measurement: 3 meter
Channel: 56

- **Spurious**

Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
1 184.50	43.79	Peak	H	24.22	-32.62	-	35.39	74.00	38.61
1 837.90	43.55	Peak	H	27.34	-26.94	-	43.95	68.23	24.28
3 571.60	42.48	Peak	H	30.82	-27.16	-	46.14	68.23	22.09
1 184.50	41.55	Peak	V	24.22	-32.62	-	33.15	74.00	40.85
1 599.10	46.30	Peak	V	25.76	-29.14	-	42.92	74.00	31.08
2 442.80	41.64	Peak	V	29.54	-36.70	-	34.48	68.23	33.75

Horizontal // Peak for 1 ㎓ to 6 ㎓	Vertical // Peak for 1 ㎓ to 6 ㎓
	
Horizontal // Peak for 6 ㎓ to 18 ㎓	**Vertical // Peak for 6 ㎓ to 18 ㎓**
	

Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

Mode: 802.11an_HT20 (Worst case)
Distance of measurement: 3 meter
Channel: 64

- **Spurious**

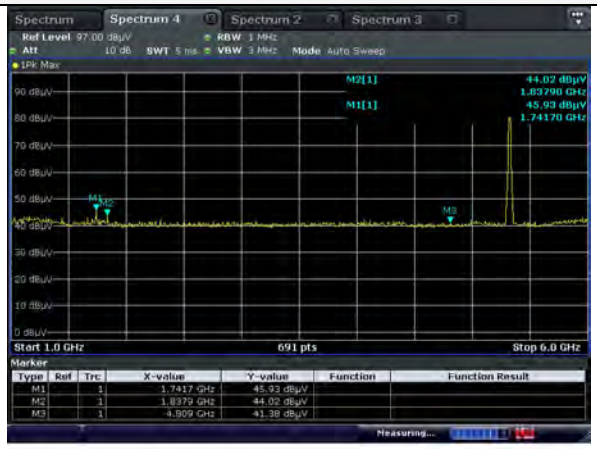
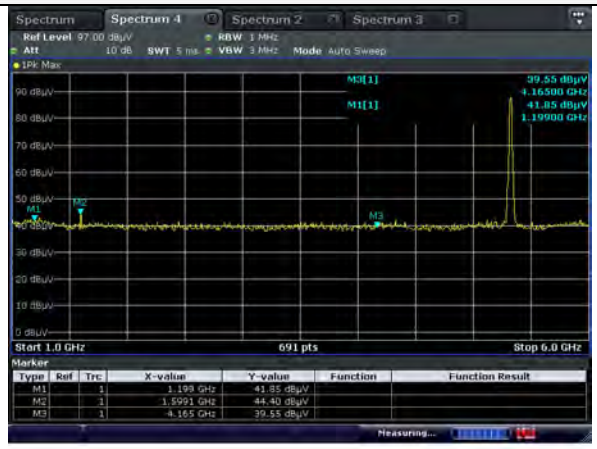
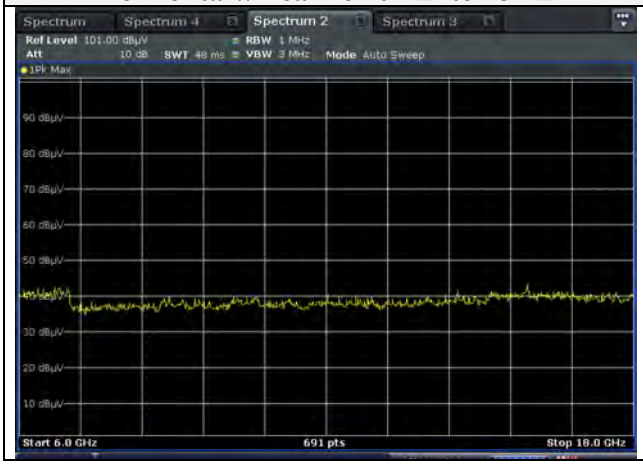
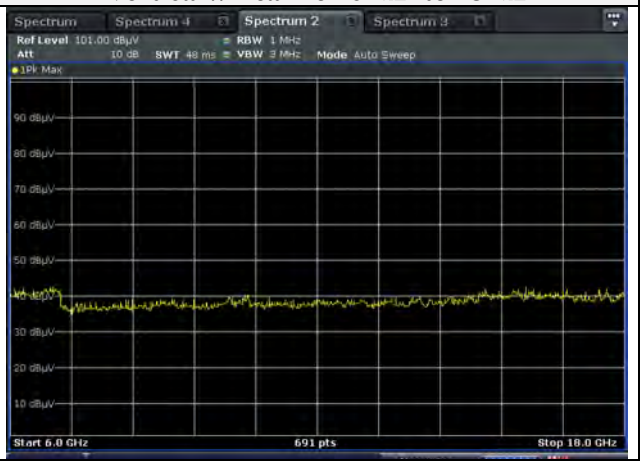
Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
1 741.70	45.93	Peak	H	26.70	-27.82	-	44.81	68.23	23.42
1 837.90	44.02	Peak	H	27.34	-26.94	-	44.42	68.23	23.81
4 809.00	41.38	Peak	H	33.19	-24.68	-	49.90	74.00	24.10
1 199.00	41.85	Peak	V	24.26	-32.66	-	33.45	74.00	40.55
1 599.10	44.40	Peak	V	25.76	-29.14	-	41.02	74.00	32.98
4 165.00	39.55	Peak	V	31.75	-28.20	-	43.10	74.00	30.90

- **Band edge**

Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
5 352.72	49.88	Peak	H	33.91	-26.20	-	57.59	74.00	16.41
5 352.72	33.21	Average	H	33.91	-26.20	-	40.92	54.00	13.08
5 353.42	55.69	Peak	V	33.91	-26.20	-	63.40	74.00	10.60
5 353.42	34.05	Average	V	33.91	-26.20	-	41.76	54.00	12.24

Restricted band // Horizontal // Peak

Restricted band // Vertical // Peak

Restricted band // Horizontal // Average	Restricted band // Vertical // Average
	
Horizontal // Peak for 1 ㎓ to 6 ㎓	**Vertical // Peak for 1 ㎓ to 6 ㎓**
	
Horizontal // Peak for 6 ㎓ to 18 ㎓	**Vertical // Peak for 6 ㎓ to 18 ㎓**
	

Note.
1. No spurious emission were detected above 6 ㎓.

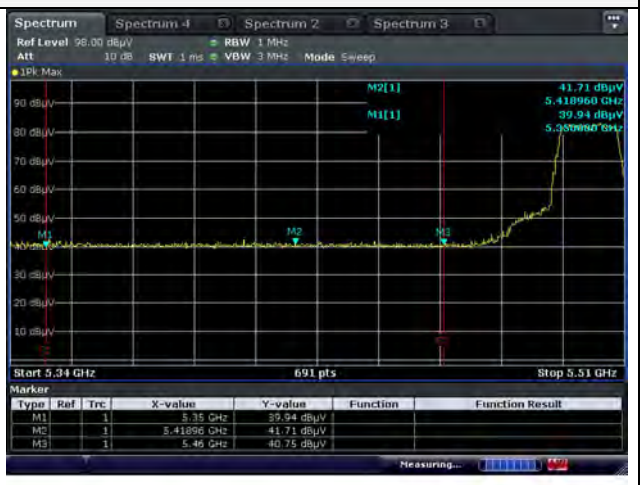
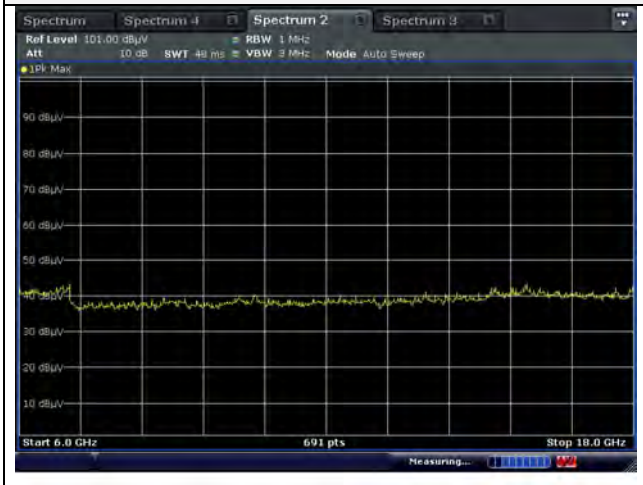
Mode: 802.11an_HT20 (Worst case)
Distance of measurement: 3 meter
Channel: 100

- **Spurious**

Frequency (㎒)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1 242.40	44.11	Peak	H	24.38	-32.72	-	35.77	68.23	32.46
1 837.90	44.22	Peak	H	27.34	-26.94	-	44.62	68.23	23.61
6 179.50	42.24	Peak	H	35.19	-25.13	-	52.30	68.23	15.93
1 597.00	42.27	Peak	V	25.74	-29.16	-	38.85	74.00	35.15
2 445.70	43.26	Peak	V	29.54	-36.72	-	36.08	68.23	32.15
5 070.20	40.23	Peak	V	34.05	-25.28	-	49.00	74.00	25.00

- **Band edge**

Frequency (㎒)	Level (dBμV)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
5 386.24	41.74	Peak	H	33.89	-26.30	-	49.33	74.00	24.67
5 418.96	41.71	Peak	V	33.88	-26.40	-	49.19	74.00	24.81

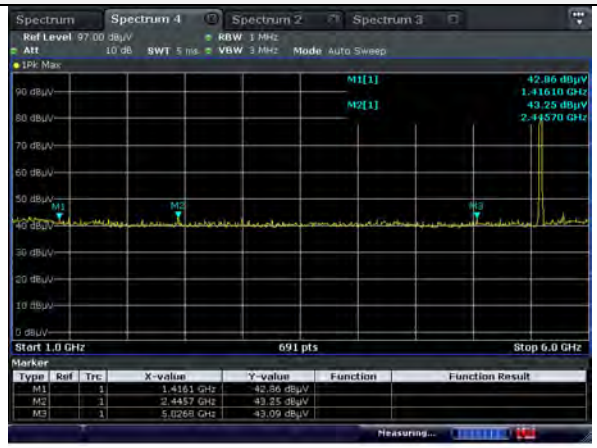
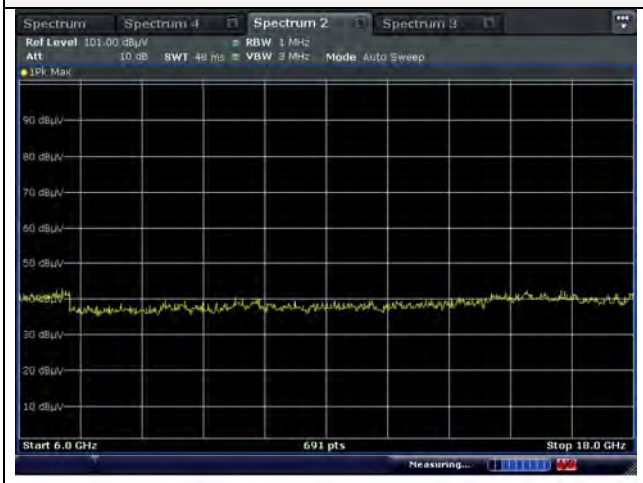
Restricted band // Horizontal // Peak	Restricted band // Vertical // Peak
	
Horizontal // Peak for 1 ㎓ to 6 ㎓	**Vertical // Peak for 1 ㎓ to 6 ㎓**
	
Horizontal // Peak for 6 ㎓ to 18 ㎓	**Vertical // Peak for 6 ㎓ to 18 ㎓**
	

Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

Mode: 802.11an_HT20 (Worst case)
Distance of measurement: 3 meter
Channel: 116

- **Spurious**

Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
1 322.00	43.64	Peak	H	24.60	-32.84	-	35.40	74.00	38.60
2 445.70	42.32	Peak	H	29.54	-36.72	-	35.14	68.23	33.09
5 128.10	41.99	Peak	H	34.02	-25.47	-	50.54	74.00	23.46
1 416.10	42.86	Peak	V	24.87	-33.00	-	34.73	74.00	39.27
2 445.70	43.25	Peak	V	29.54	-36.72	-	36.07	68.23	32.16
5 026.80	43.09	Peak	V	34.07	-25.14	-	52.02	74.00	21.98

Horizontal // Peak for 1 ㎓ to 6 ㎓	Vertical // Peak for 1 ㎓ to 6 ㎓
	
Horizontal // Peak for 6 ㎓ to 18 ㎓	**Vertical // Peak for 6 ㎓ to 18 ㎓**
	

Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

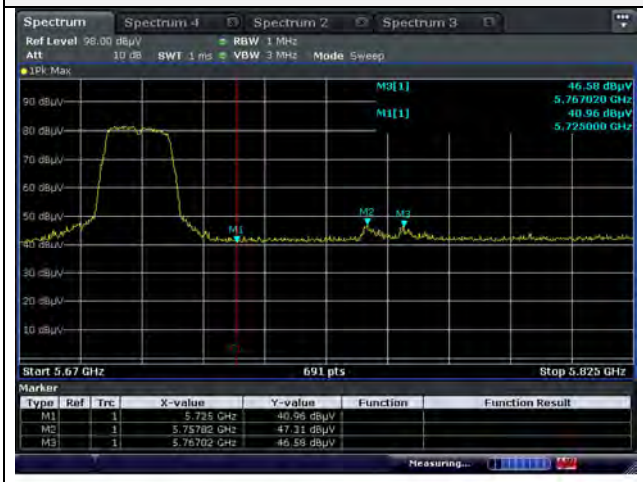
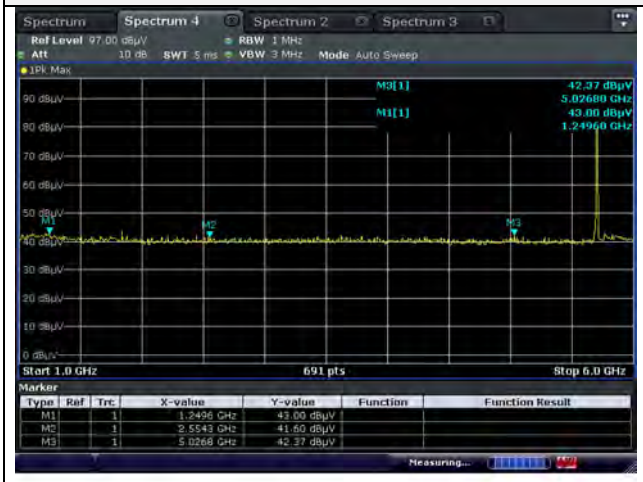
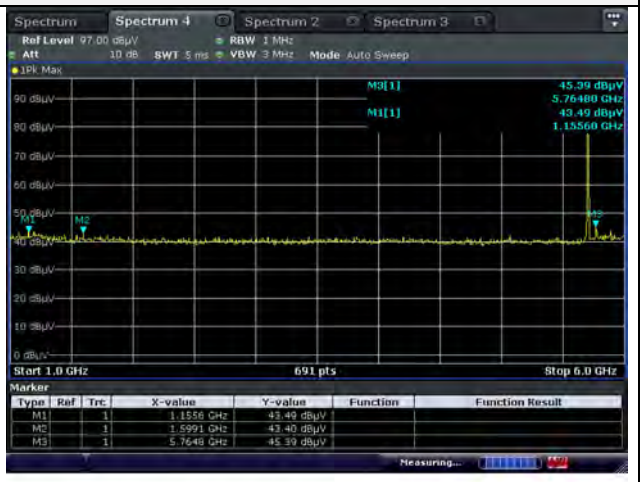
Mode: 802.11an_HT20 (Worst case)
Distance of measurement: 3 meter
Channel: 140

- **Spurious**

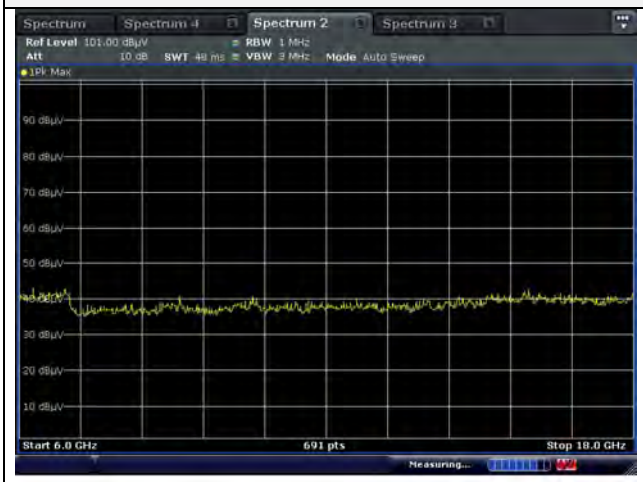
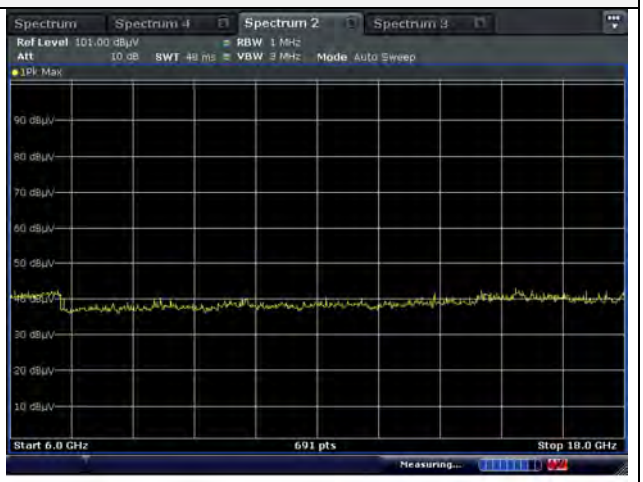
Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
1 249.60	43.00	Peak	H	24.40	-32.73	-	34.67	68.23	33.56
2 554.30	41.60	Peak	H	29.74	-28.57	-	42.77	68.23	25.46
5 026.80	42.37	Peak	H	34.07	-25.14	-	51.30	74.00	22.70
1 155.60	43.49	Peak	V	24.14	-32.56	-	35.07	74.00	38.93
1 599.10	43.40	Peak	V	25.76	-29.14	-	40.02	74.00	33.98
5 764.80	45.39	Peak	V	34.46	-21.41	-	58.45	68.23	9.78
5 764.80	31.44	Average	V	34.46	-21.41	-	44.50	58.23	13.73

- **Band edge**

Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
5 757.82	47.31	Peak	H	34.44	-21.45	-	60.30	68.23	7.93
5 757.82	31.06	Average	H	34.44	-21.45	-	44.05	58.23	14.18
5 767.02	46.58	Peak	H	34.46	-21.39	-	59.65	68.23	8.58
5 767.02	30.88	Average	H	34.46	-21.39	-	43.95	58.23	14.28
5 757.82	46.82	Peak	V	34.44	-21.45	-	59.81	68.23	8.42
5 757.82	31.48	Average	V	34.44	-21.45	-	44.47	58.23	13.76
5 766.57	46.53	Peak	V	34.46	-21.39	-	59.60	68.23	8.63
5 766.57	31.42	Average	V	34.46	-21.39	-	44.49	58.23	13.74

Restricted band // Horizontal // Peak	Restricted band // Vertical // Peak
	
Restricted band // Horizontal // Average	**Restricted band // Vertical // Average**
	
Horizontal // Peak for 1 ㎓ to 6 ㎓	**Vertical // Peak for 1 ㎓ to 6 ㎓**
	

Note.
1. No spurious emission were detected above 6 ㎓.

Horizontal // Average for 1 ㎓ to 6 ㎓	Vertical // Average for 1 ㎓ to 6 ㎓
N/A	
Horizontal // Peak for 6 ㎓ to 18 ㎓	**Vertical // Peak for 6 ㎓ to 18 ㎓**
	

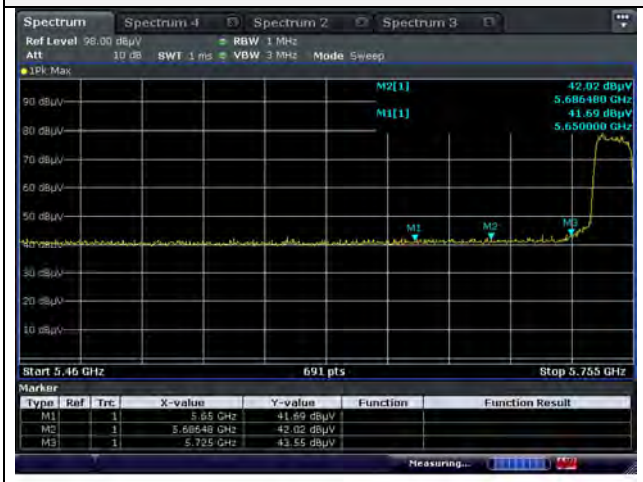
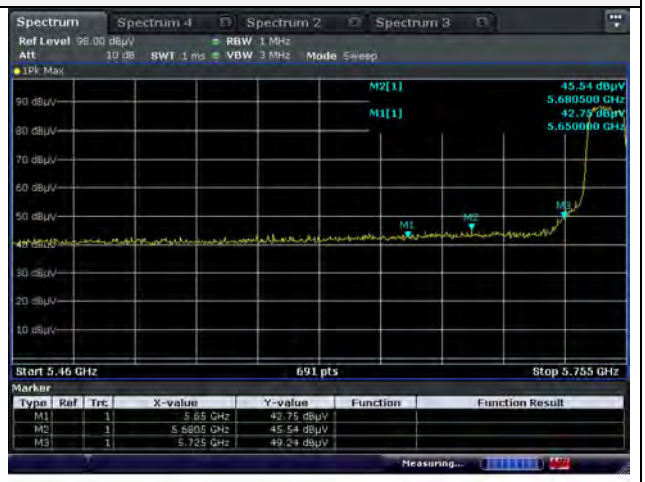
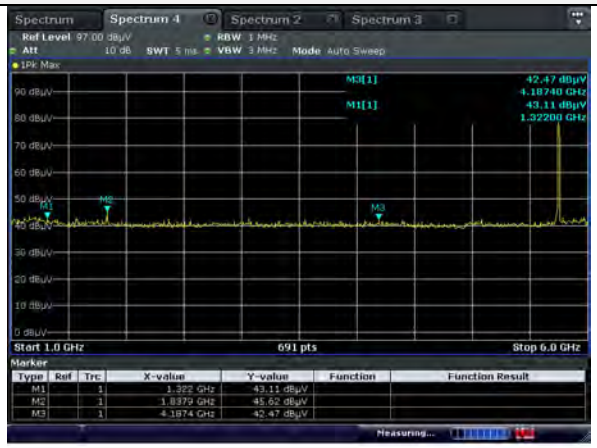
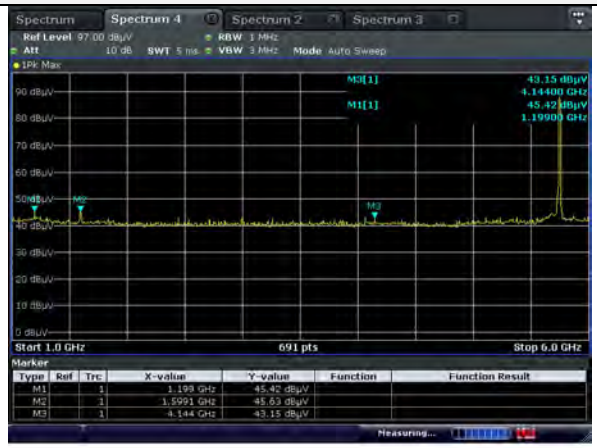
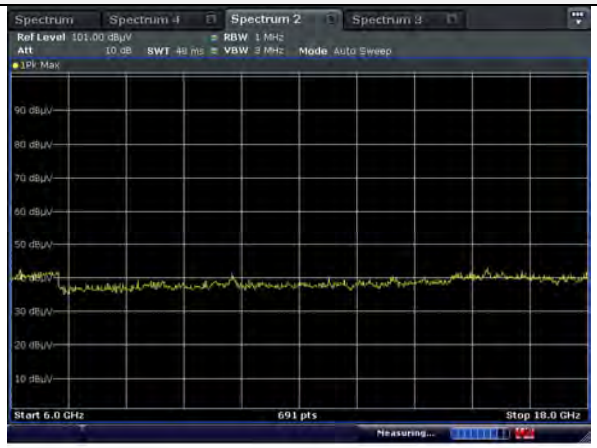
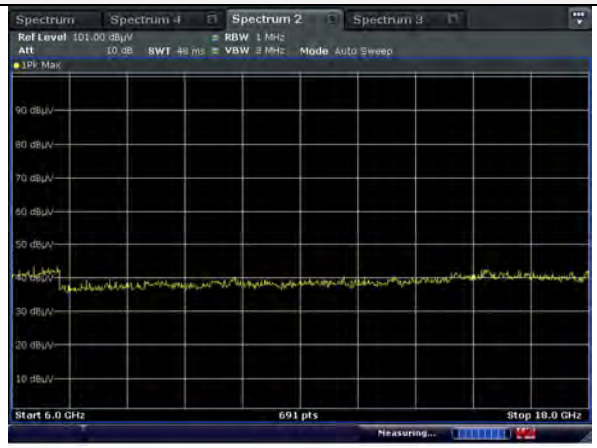
Mode: 802.11an_HT20 (Worst case)
Distance of measurement: 3 meter
Channel: 149

- **Spurious**

Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
1 322.00	43.11	Peak	H	24.60	-30.78	-	36.93	74.00	37.07
1 837.90	45.62	Peak	H	27.34	-32.26	-	40.70	68.23	27.53
4 187.40	42.47	Peak	H	31.75	-26.69	-	47.53	74.00	26.47
1 199.00	45.42	Peak	V	24.26	-31.38	-	38.30	74.00	35.70
1 599.10	45.63	Peak	V	25.76	-30.70	-	40.69	74.00	33.31
4 144.00	43.15	Peak	V	31.75	-26.92	-	47.98	74.00	26.02

- **Band edge**

Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
5686.48	42.02	Peak	H	34.28	-23.52	-	52.78	94.87	42.09
5680.50	45.54	Peak	V	34.26	-23.50	-	56.30	91.17	34.87

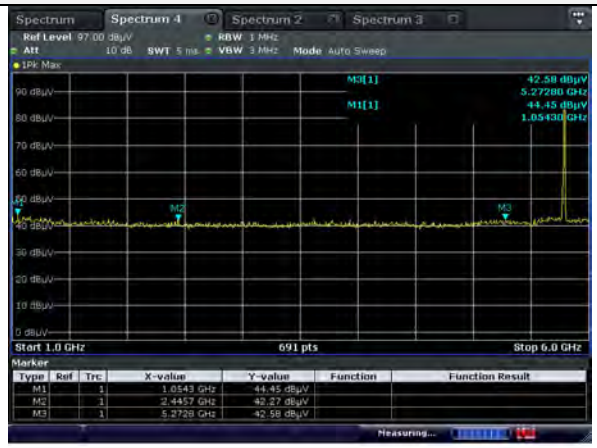
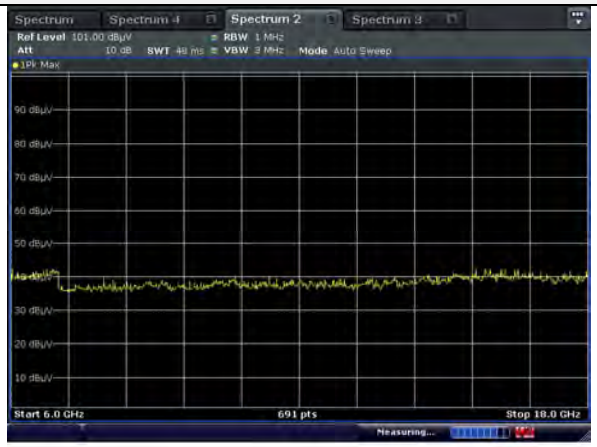
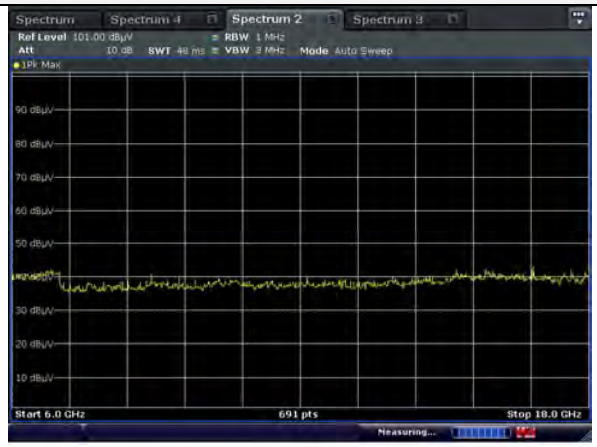
Restricted band // Horizontal // Peak	Restricted band // Vertical // Peak
	
Horizontal // Peak for 1 ㎓ to 6 ㎓	**Vertical // Peak for 1 ㎓ to 6 ㎓**
	
Horizontal // Peak for 6 ㎓ to 18 ㎓	**Vertical // Peak for 6 ㎓ to 18 ㎓**
	

Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

Mode: 802.11an_HT20 (Worst case)
Distance of measurement: 3 meter
Channel: 157

- **Spurious**

Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
1 597.00	44.93	Peak	H	25.74	-30.69	-	39.98	74.00	34.02
1 837.90	43.79	Peak	H	27.34	-32.27	-	38.86	68.23	29.37
4 122.30	42.97	Peak	H	31.75	-27.03	-	47.69	74.00	26.31
1 054.30	44.45	Peak	V	23.85	-31.98	-	36.32	74.00	37.68
2 445.70	42.27	Peak	V	29.54	-29.09	-	42.72	68.23	25.51
5 272.80	42.58	Peak	V	33.95	-23.90	-	52.63	68.23	15.60

Horizontal // Peak for 1 ㎓ to 6 ㎓	Vertical // Peak for 1 ㎓ to 6 ㎓
	
Horizontal // Peak for 6 ㎓ to 18 ㎓	**Vertical // Peak for 6 ㎓ to 18 ㎓**
	

Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

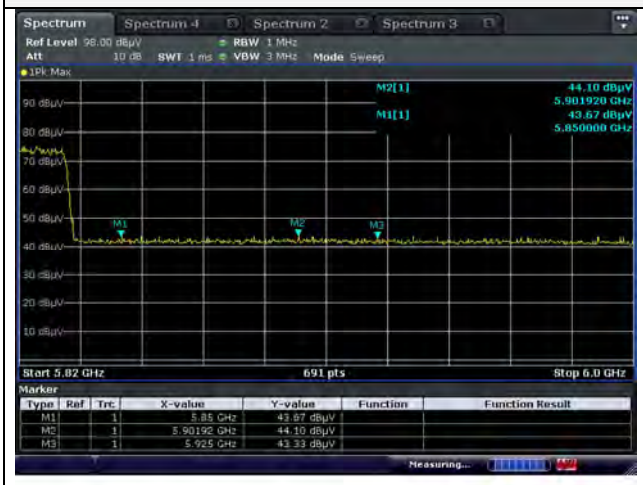
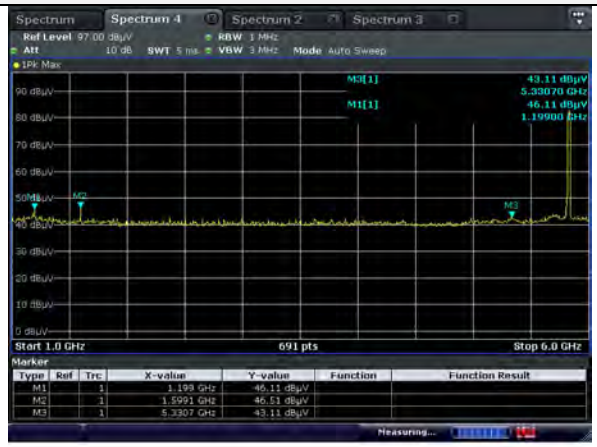
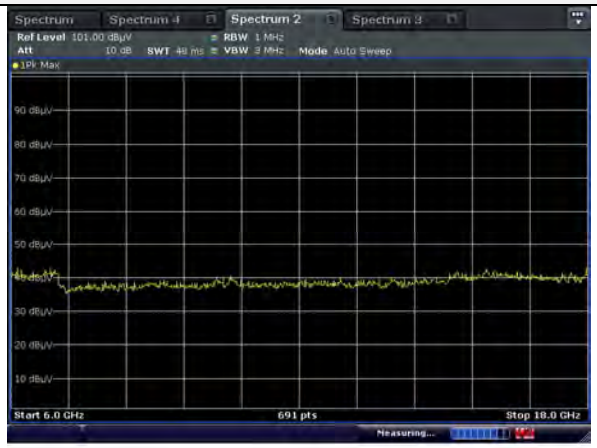
Mode: 802.11an_HT20 (Worst case)
Distance of measurement: 3 meter
Channel: 165

- **Spurious**

Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
1 597.00	45.42	Peak	H	25.74	-30.68	-	40.48	74.00	33.53
1 736.60	45.55	Peak	H	26.67	-31.59	-	40.63	68.23	27.60
4 390.00	42.18	Peak	H	31.74	-25.66	-	48.26	74.00	25.74
1 199.00	46.11	Peak	V	24.26	-31.38	-	38.99	74.00	35.01
1 599.10	46.51	Peak	V	25.76	-30.70	-	41.57	74.00	32.43
4 144.00	43.11	Peak	V	31.75	-26.92	-	47.94	74.00	26.06

- **Band edge**

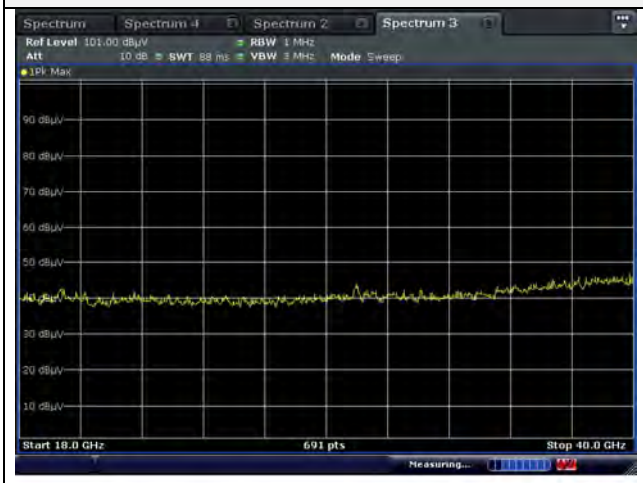
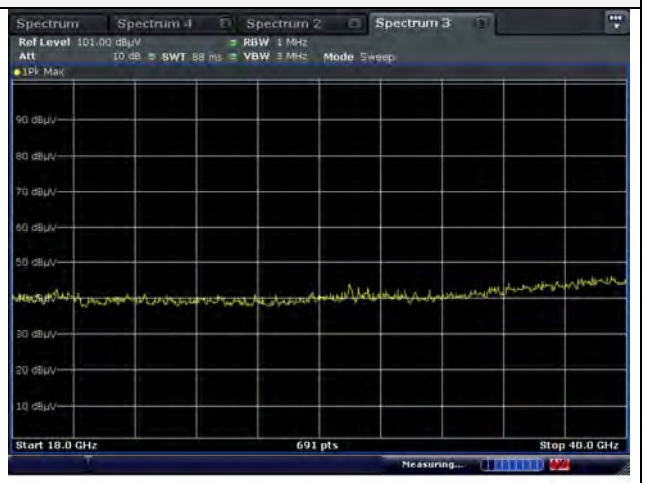
Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	AF (dB)	AMP+CL (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
5 901.92	44.10	Peak	H	34.78	-24.26	-	54.62	76.77	22.15
5 894.63	42.91	Peak	V	34.76	-24.23	-	53.44	79.47	26.03

Restricted band // Horizontal // Peak	Restricted band // Vertical // Peak
	
Horizontal // Peak for 1 ㎓ to 6 ㎓	**Vertical // Peak for 1 ㎓ to 6 ㎓**
	
Horizontal // Peak for 6 ㎓ to 18 ㎓	**Vertical // Peak for 6 ㎓ to 18 ㎓**
	

Note.
1. No spurious emission were detected above 6 ㎓.
2. Average test would be performed if the peak result were greater than the average limit.

Test results (18 ㎓ to 40 ㎓) – Worst case

Mode:	802.11an_HT20
Distance of measurement:	3 meter
Channel:	52

Horizontal // 18 GHz ~ 40 GHz	Vertical // 18 GHz ~ 40 GHz
	

Note.

1. No spurious emission were detected above 18 ㎓.

Appendix A. Measurement equipment

Equipment	Manufacturer	Model	Serial No.	Calibration interval	Calibration due.
Spectrum Analyzer	R&S	FSV30	101389	1 year	2020.01.09
Spectrum Analyzer	R&S	FSV40	101002	1 year	2020.06.24
8360B Series Swept Signal Generator	HP	83630B	3844A00786	1 year	2020.01.15
Vector Signal Generator	R&S	SMBV100A	1407.6004K02	1 year	2020.06.25
Power Meter	Anritsu	ML2495A	1438001	1 year	2020.01.15
Pulse Power Sensor	Anritsu	MA2411B	1339205	1 year	2020.01.15
Attenuator	HP	8494B	2630A12857	1 year	2020.01.15
Attenuator	KEYSIGHT	8493C	82506	1 year	2020.01.15
Loop Antenna	Schwarzbeck	FMZB1513	225	2 years	2021.02.15
Trilog-broadband antenna	SCHWARZBECK	VULB 9163	714	2 years	2020.11.26
Horn Antenna	A.H	SAS-571	414	2 years	2021.02.11
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA 9170550	2 years	2021.02.19
High Pass Filter	Wainwright Instrument Gmbh	WHJS3000-10TT	1	1 year	2020.06.25
Band Reject Filter	MICRO-TRONICS	BRM50702	G272	1 year	2020.01.16
Low Pass Filter	Wainwright Instrument Gmbh	WLK1.0/18G-10TT	1	1 year	2020.06.24
Broadband Amplifier	Schwarzbeck	BBV9721	PS9721-003	1 year	2020.01.16
Preamplifier	AGILENT	8449B	3008A01742	1 year	2020.01.08
Amplifier	R&S	SCU 01	100603	1 year	2019.11.26
EMI Test Receiver	R&S	ESU26	100551	1 year	2020.04.09
EMI Test Receiver	R&S	ESR3	101781	1 year	2020.04.22
DC Power supply	Agilent	6632B	MY43004090	1 year	2020.06.25

Peripheral devices

Device	Manufacturer	Model No.	Serial No.
Notebook Computer	HP	HP-6530B	CNU8313PMW
Test Jig Board	N/A	N/A	N/A