Report on the RF Testing of:

KYOCERA Corporation
Mobile Phone, Model: EB1135
FCC ID: JOYEB1135

In accordance with FCC Part15 Subpart C

Japan

Add value.
Inspire trust.

Prepared for: KYOCERA Corporation
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COMMERCIAL-IN-CONFIDENCE

Document Number: JPD-TR-22104-2

SIGNATURE			
NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Hiroaki Suzuki	Deputy Manager of RF Group	Approved Signatory	2024-07-10

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Japan Ltd. document control rules.

EXECUTIVE SUMMARY – Result: Complied
A sample of this product was tested and the result above was confirmed in accordance with FCC Part15 Subpart C.

ACCREDITED
Certificate #3686.03

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1 Summary of Test

1.1 Modification history of the test report

Document Number	Modification History	Issue Date
JPD-TR-22104-0	First Issue	2-June-2022
JPD-TR-22104-1	Conducted test results for EB1134 added.	5-June-2024
JPD-TR-22104-2	The results of the conducted test of EB1134 were deleted and the conducted test of EB1135 was performed.	Refer to the cover page

1.2 Standards

CFR47 FCC Part 15 Subpart C

1.3 Test methods

ANSI C63.10-2013
KDB 558074 D01 15.247 Meas Guidance v05r02

1.4 Deviation from standards

None

1.5 List of applied test(s) of the EUT

Test item section	Test item	Condition	Result	Remark
15.247(a)(2)	DTS Bandwidth / Occupied Bandwidth (99%)	Conducted	PASS	-
15.247(b)(3)	Maximum conducted (average) output power	Conducted	PASS	-
15.247(d)	Band Edge Compliance of RF Conducted Emissions	Conducted	PASS	-
15.247(d) 15.205 15.209	Spurious Emissions	Conducted	PASS	-
		Radiated	PASS	-
15.247(d) 15.205 15.209	Restricted Bands of Operation	Radiated	PASS	-
15.247(e)	Transmitter Power Spectral Density	Conducted	PASS	-
15.207	AC Power Line Conducted Emissions	Conducted	PASS	-

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1.6 Test information

None

1.7 Test set up

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1.8 Test period

7-March-2022 - 9-July-2024

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2 Equipment Under Test

All information in this chapter was provided by the applicant.

2.1 EUT information

Applicant	KYOCERA Corporation
	Yokohama Office 2-1-1 Kagahara, Tsuzuki-ku Yokohama-shi, Kanagawa, Japan
	Phone: +81-45-943-6253 Fax: +81-45-943-6314
Equipment Under Test (EUT)	Mobile Phone
Model number	EB1135
Serial number	RF1, RF2, RF3
Trade name	Kyocera
Number of sample(s)	3
EUT condition	Pre-Production
Power rating	Battery: DC 3.8 V
Size	(W) 112.9 mm × (D) 51.3 mm × (H) 18.0 mm
Environment	Indoor and Outdoor use
Terminal limitation	-20˚C to 60˚C
Hardware Version	DMT1
Software Version	nightly_20220208
Firmware Version	Not applicable
RF Specification	
Protocol	IEEE802.11b, IEEE802.11g, IEEE802.11n (HT20),
Frequency range	IEEE802.11b /11g /11n (HT20): 2412 MHz-2462 MHz
Number of RF Channels	11 Channels
Modulation type	IEEE802.11b: DSSS (DBPSK, DQPSK, CCK) IEEE802.11g / 11n (HT20): OFDM (BPSK, QPSK, 16QAM, 64QAM)
Data rate	IEEE802.11b: 1, 2, 5.5, 11Mbps IEEE802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps IEEE802.11n (HT20 LGI): 6.5, 13, 19.5, 26, 39, 52, 58.5, 65Mbps IEEE802.11n (HT20 SGI): 7.2, 14.4, 21.7, 28.9, 43.3, 57.8, 65, 72.2Mbps
Channel separation	5 MHz
Conducted power	32.434 mW (IEEE802.11b) 116.681 mW (IEEE802.11g) 148.594 mW (IEEE802.11n: HT20)
Antenna type	Internal antenna
Antenna gain	1.99 dBi

Japan

2.2 Modification to the EUT

The table below details modifications made to the EUT during the test project.

Modification State	Description of Modification	Modification fitted by	Date of Modification
Model: EB1135, Serial Number: RF1, RF2, RF3			
0	As supplied by the applicant	Not Applicable	Not Applicable

2.3 Variation of family model(s)

2.3.1 List of family model(s)

EB1135 has model with camera and without camera.

2.3.2 Reason for selection of EUT

Not applicable

2.4 Operating channels and frequencies

Channel	Frequency [MHz]
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462

2.5 Description of test mode

The EUT had been tested under operating condition.
There are three channels have been tested as following:

Tested Channel [11b, 11g, 11n(HT20)]	Frequency [MHz]
Low	2412
Middle	2437
High	2462

The pre-test has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates.

Tested Channel	Modulation Type	Data Rate
Low, Middle, High	IEEE802.11b: DSSS	1Mbps
Low, Middle, High	IEEE802.11g: OFDM	6Mbps
Low, Middle, High	IEEE802.11n (HT20 LGI): OFDM	MCS0 (6.5Mbps)

The field strength of spurious emissions was measured at each position of all three axis X, Y and Z to compare the level, and the maximum noise.
The worst emission was found in X-axis, Open, With camera and the worst case recorded.
Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports.

2.6 Operating flow

- Tx mode

i) Test program setup to the Software
ii) Select a Test mode
[IEEE802.11b, IEEE802.11g, IEEE802.11n (HT20)]
Operating frequency: Channel Low: 2412MHz, Channel Middle: 2437MHz, Channel High: 2462MHz
iii) Start test mode

- Rx mode

i) Test program setup to the Software
ii) Select a Test mode
[IEEE802.11b, IEEE802.11g, IEEE802.11n (HT20)]
Operating frequency: Channel Low: 2412MHz, Channel Middle: 2437MHz, Channel High: 2462MHz
iii) Start test mode

Japan

3 Configuration of Equipment

Numbers assigned to equipment on the diagram in “3.3 System configuration” correspond to the list in “3.1 Equipment used” and “3.2 Cable(s) used”.
This test configuration is based on the manufacture’s instruction.
Cabling and setup(s) were taken into consideration and test data was taken under worse case condition.

3.1 Equipment used

No.	Equipment	Company	Model No.	Serial No.	FCC ID/DoC	Comment
1	Mobile Phone	KYOCERA	EB1135	RF1, RF2, RF3	JOYEB1135	EUT
2	AC Adapter	KDDI	0602PQA	N/A	N/A	*

*:AC power line Conducted Emission Test.

3.2 Cable(s) used

No.	Equipment	Length[m]	Shield	Connector	Comment
a	USB cable (for AC Adapter)	1.5	No	Plastic	*

*:AC power line Conducted Emission Test.

3.3 System configuration

4 Test Result

4.1 DTS Bandwidth / Occupied Bandwidth (99%)

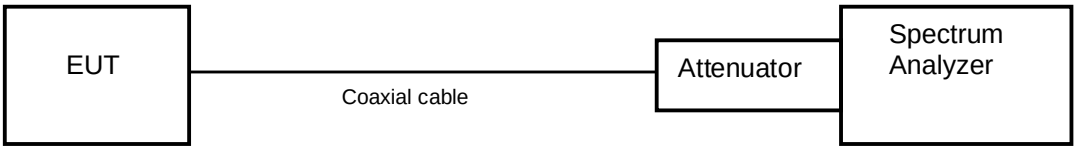
4.1.1 Measurement procedure

[FCC 15.247(a)(2), KDB 558074 D01 v05r02, Section 8.2]

The bandwidth at 6dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
a) RBW = 100kHz.
b) VBW ≥ 3 x RBW.
c) Sweep time = auto-couple.
d) Detector = peak.
e) Trace mode = max hold.

- Test configuration



4.1.2 Limit

The minimum permissible 6 dB bandwidth is 500 kHz.

Japan

4.1.3 Measurement result

Date : 9-July-2024
Temperature : 24.1 [˚C]
Humidity : 54.7 [%] Test engineer :
Test place : Shielded room No.4 Kazunori Saito

Channel	DTS Bandwidth [MHz]		
	IEEE802.11b	IEEE802.11g	IEEE802.11n (HT20)
Low	8.579	15.983	17.315
Middle	8.086	15.698	16.094
High	8.099	15.723	16.313

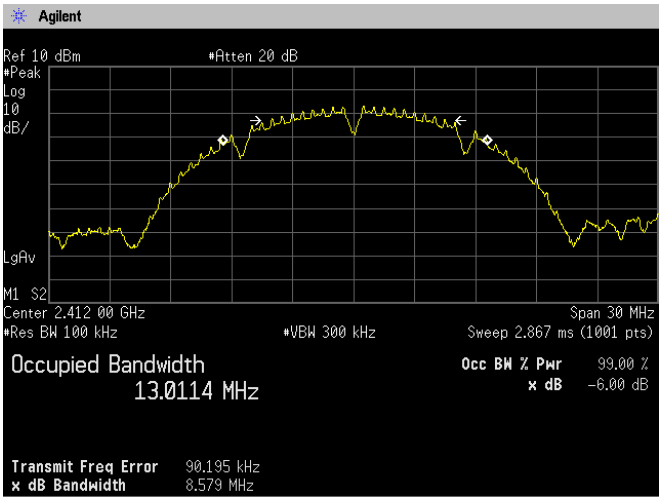
Channel	Occupied Bandwidth (99%) [MHz]		
	IEEE802.11b	IEEE802.11g	IEEE802.11n (HT20)
Low	13.011	16.458	17.620
Middle	12.544	16.248	17.400
High	12.743	16.349	17.491

Japan

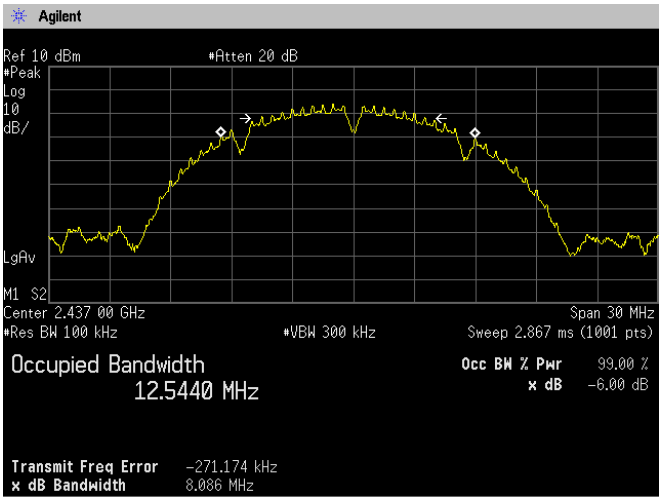
4.1.4 Trace data

[IEEE802.11b]

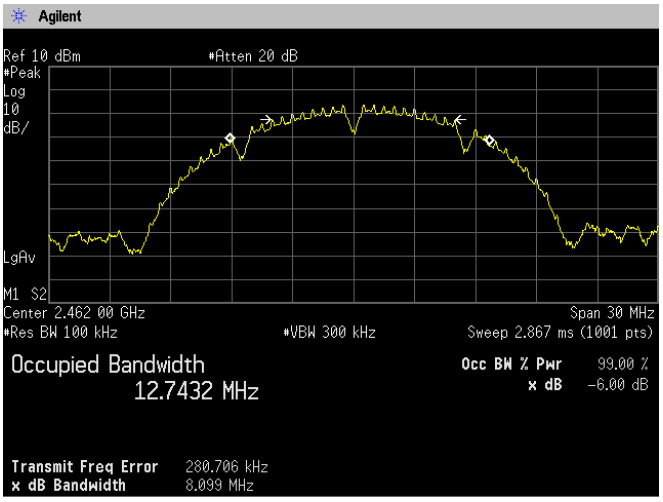
Channel Low



Channel Middle



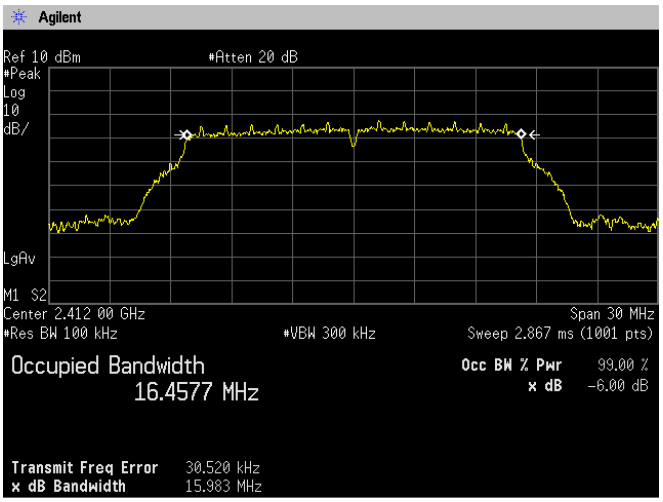
Channel High



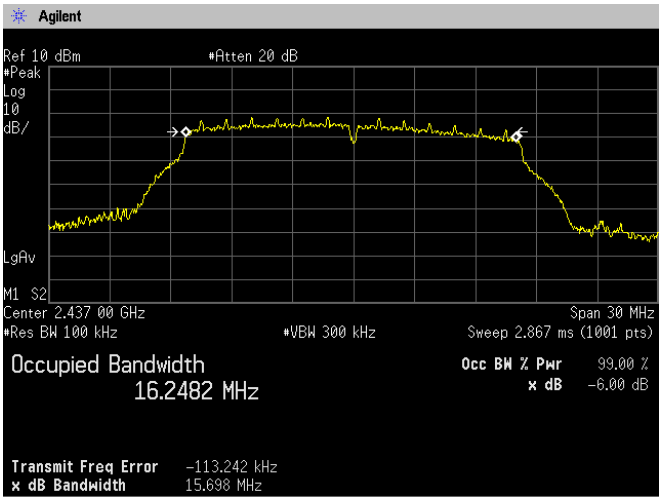
Japan

[IEEE802.11g]

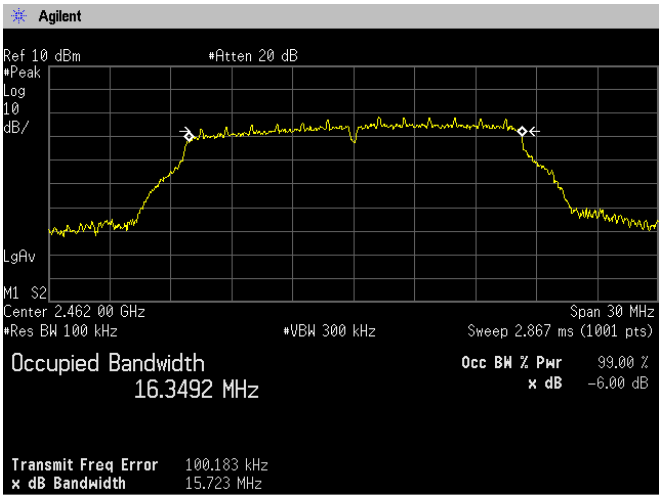
Channel Low



Channel Middle



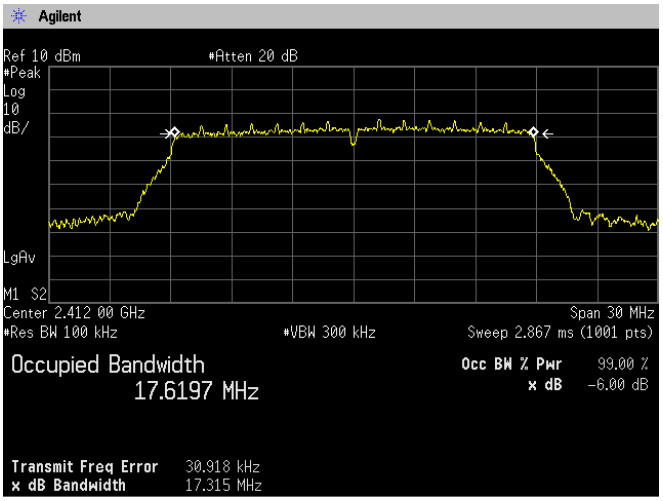
Channel High



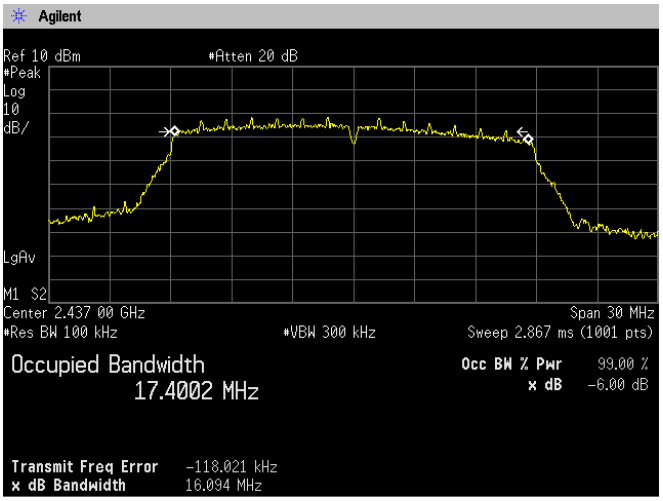
Japan

[IEEE802.11n (HT20)]

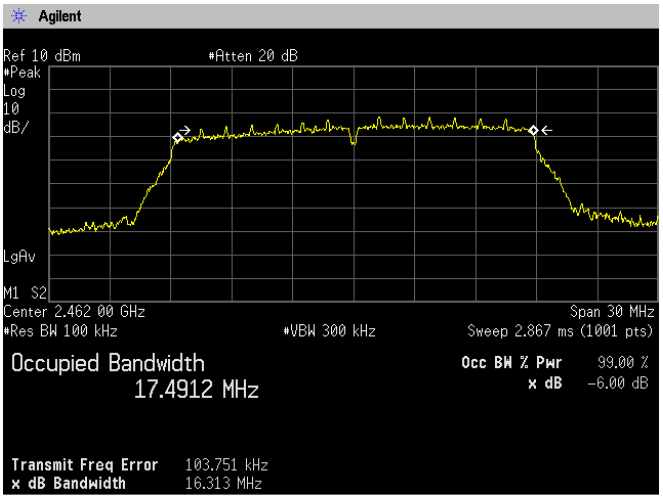
Channel Low



Channel Middle



Channel High



Japan

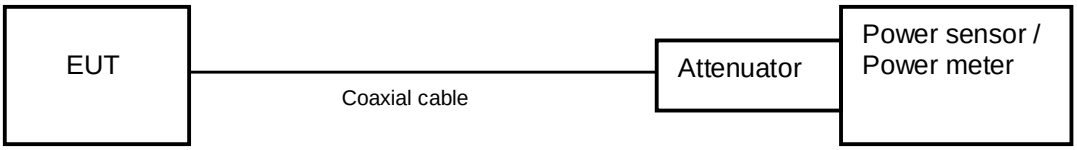
4.2 Maximum Conducted Output Power

4.2.1 Measurement procedure

[FCC 15.247(b)(3), KDB 558074 D01 v05r02, Section 8.3.1.3]

The peak power is measured with a power sensor connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

- Test configuration



4.2.2 Limit

1 W (1000 mW) or less

Japan

4.2.3 Measurement result

Date : 9-July-2024
Temperature : 24.1 [˚C]
Humidity : 54.7 [%] Test engineer :
Test place : Shielded room No.4 Kazunori Saito

[IEEE802.11b]
Battery Full

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Peak Output Power (mW)	Limit (mW)	Result
Low	2412	3.47	10.93	14.40	27.542	≦1000	PASS
Middle	2437	4.18	10.93	15.11	32.434	≦1000	PASS
High	2462	4.10	10.93	15.03	31.842	≦1000	PASS

[IEEE802.11g]
Battery Full

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Peak Output Power (mW)	Limit (mW)	Result
Low	2412	9.68	10.93	20.61	115.080	≦1000	PASS
Middle	2437	9.74	10.93	20.67	116.681	≦1000	PASS
High	2462	9.58	10.93	20.51	112.460	≦1000	PASS

[IEEE802.11n (HT20)]
Battery Full

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Peak Output Power (mW)	Limit (mW)	Result
Low	2412	10.79	10.93	21.72	148.594	≦1000	PASS
Middle	2437	10.43	10.93	21.36	136.773	≦1000	PASS
High	2462	10.23	10.93	21.16	130.617	≦1000	PASS

Calculation;
Reading (dBm) + Factor (dB) = Level (dBm)
10logP = Level (dBm)
$P = 10^{(\text{Maximum Peak Output Power} / 10)}$ (mW)

Japan

4.3 Band Edge Compliance of RF Conducted Emissions

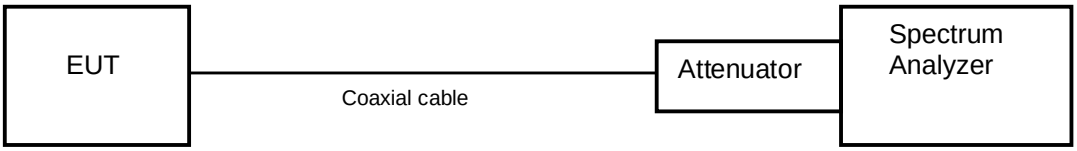
4.3.1 Measurement procedure

[FCC 15.247(d), KDB 558074 D01 v05r02, Section 8.5]

The Band Edge is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
a) Span = Arbitrary setting. (Setting suitable for measurement.)
b) RBW = 100kHz.
c) VBW ≥ 3 x RBW
d) Sweep time = auto-couple.
e) Detector = peak.
f) Trace mode = max hold.

- Test configuration



4.3.2 Limit

In any 100 kHz bandwidth outside the frequency band the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Japan

4.3.3 Measurement result

Date : 9-July-2024
Temperature : 24.1 [˚C]
Humidity : 54.7 [%] Test engineer :
Test place : Shielded room No.4 Kazunori Saito

[IEEE802.11b]

Channel	Frequency (MHz)	RF Power Level (dBm)	Band-edge Frequency (MHz)	Band-edge Level (dBm)	Difference Level (dBm)	Limit (dBm)	Result
Low	2412.00	-7.11	2399.60	-60.19	53.08	At least 20dB below from peak of RF	PASS
High	2462.00	-6.39	2492.78	-66.51	60.12	At least 20dB below from peak of RF	PASS

[IEEE802.11g]

Channel	Frequency (MHz)	RF Power Level (dBm)	Band-edge Frequency (MHz)	Band-edge Level (dBm)	Difference Level (dBm)	Limit (dBm)	Result
Low	2412.00	-12.42	2399.84	-52.82	40.40	At least 20dB below from peak of RF	PASS
High	2462.00	-11.45	2492.86	-63.27	51.82	At least 20dB below from peak of RF	PASS

[IEEE802.11n (HT20)]

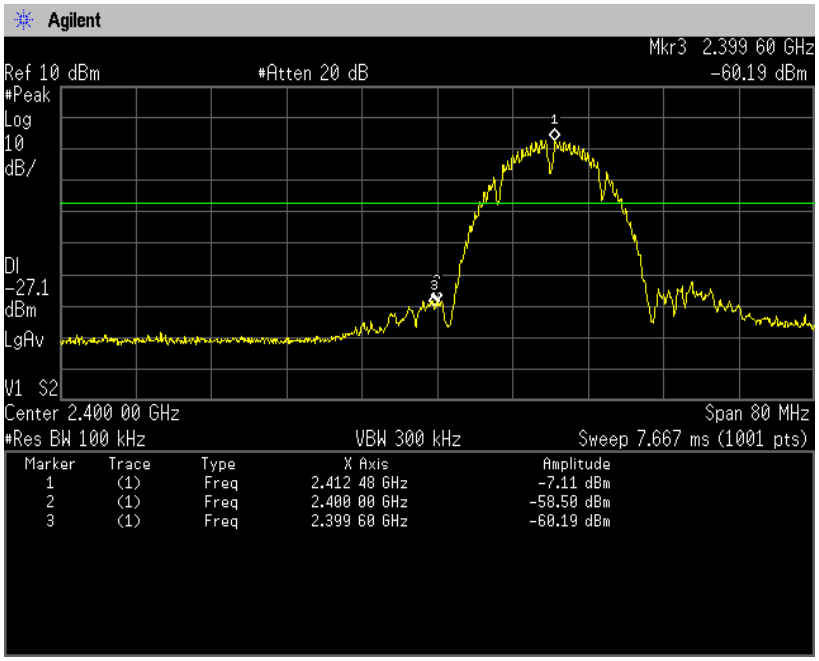
Channel	Frequency (MHz)	RF Power Level (dBm)	Band-edge Frequency (MHz)	Band-edge Level (dBm)	Difference Level (dBm)	Limit (dBm)	Result
Low	2412.00	-12.46	2399.44	-52.84	40.38	At least 20dB below from peak of RF	PASS
High	2462.00	-11.70	2493.26	-63.28	51.58	At least 20dB below from peak of RF	PASS

Japan

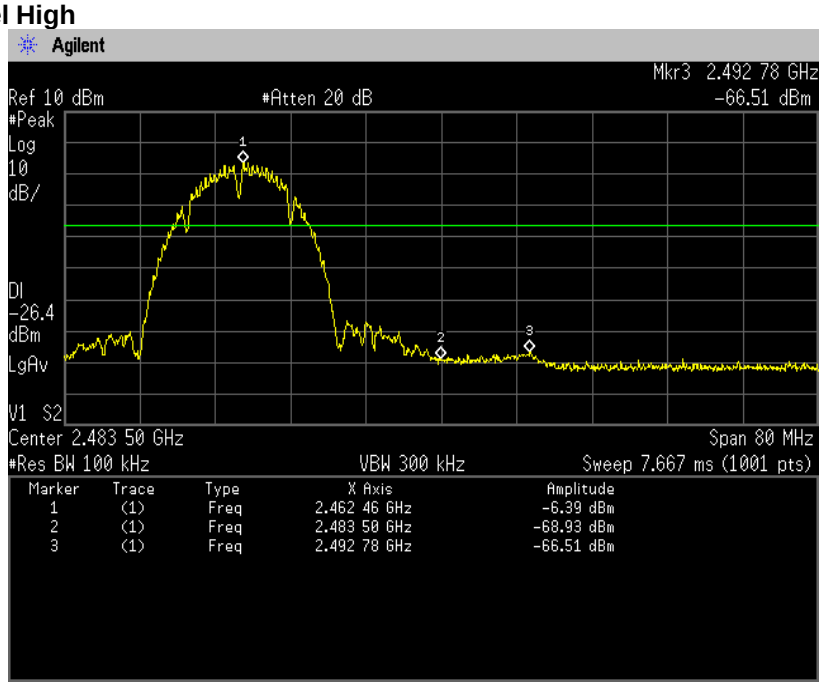
4.3.4 Trace data

[IEEE802.11b]

Channel Low



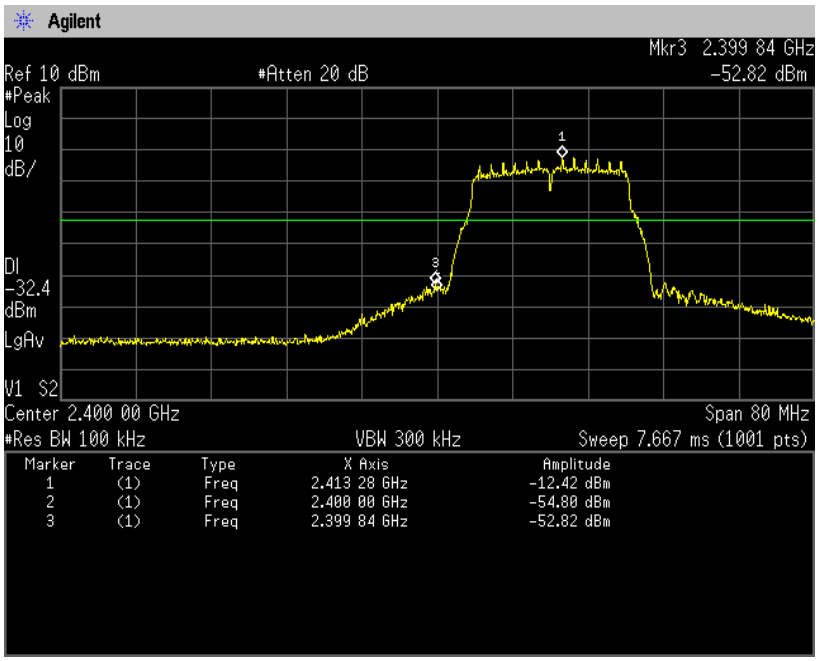
Channel High



Japan

[IEEE802.11g]

Channel Low



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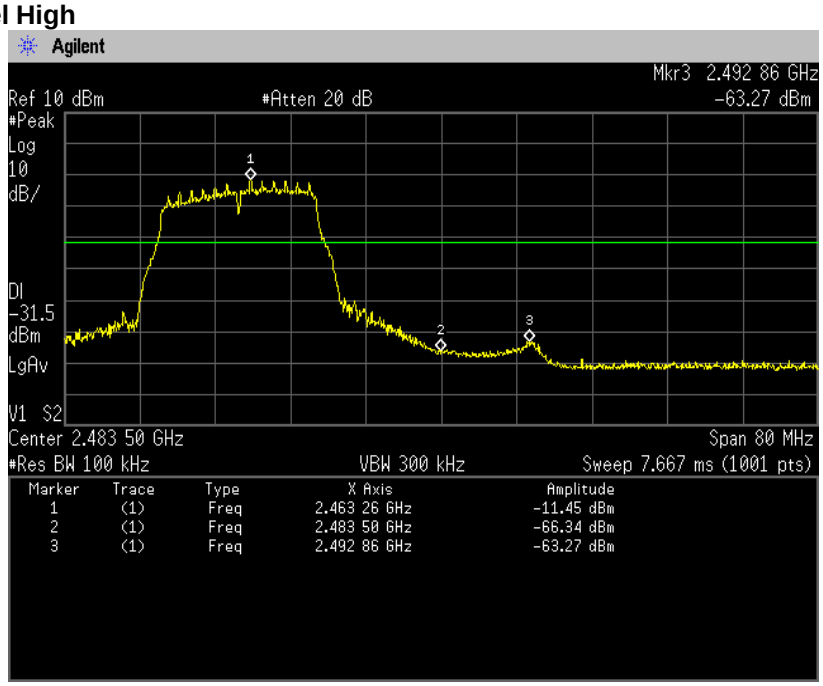
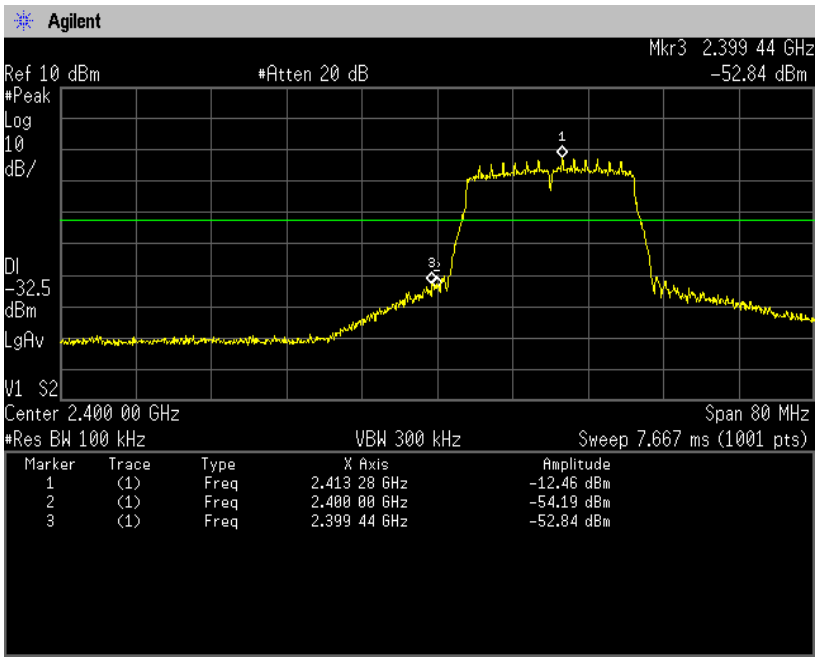


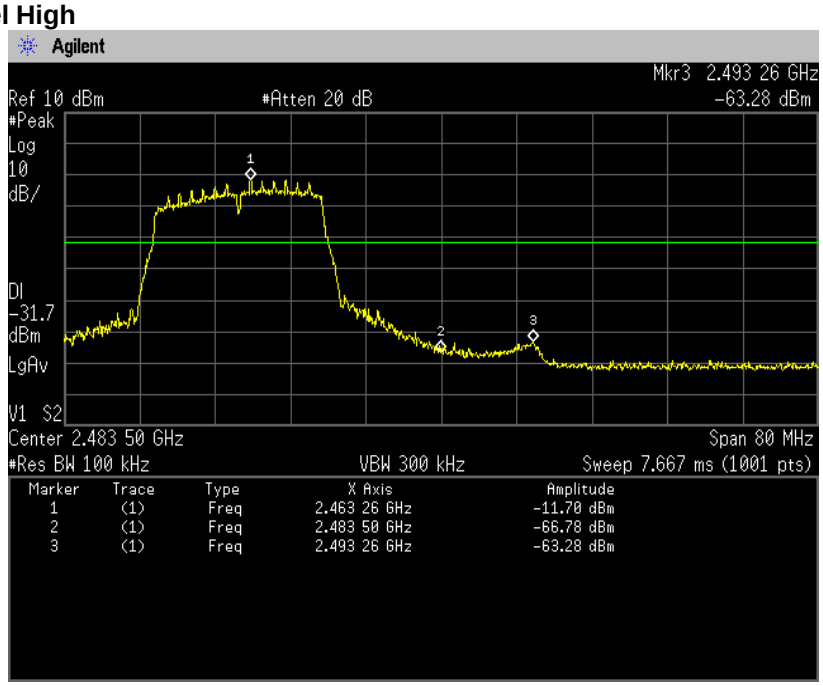
Japan

[IEEE802.11n (HT20)]

Channel Low



Channel High



Japan

4.4 Spurious emissions - Conducted -

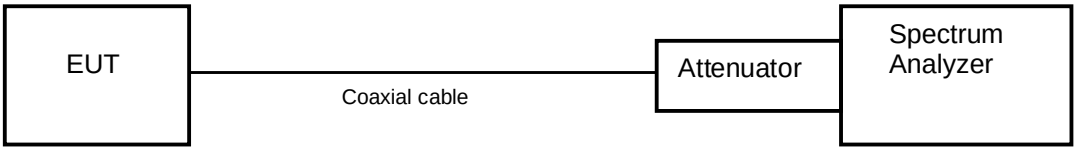
4.4.1 Measurement procedure

[FCC 15.247(d), KDB 558074 D01 v05r02, Section 8.5]

The spurious emissions (Conducted) are measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
a) Span = wide enough to fully capture the emission being measured.
b) RBW = 100 kHz.
c) VBW ≥ RBW.
d) Sweep time = auto-couple.
e) Detector = peak.
f) Trace mode = max hold.

- Test configuration



4.4.2 Limit

In any 100 kHz bandwidth outside the frequency band the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Japan

4.4.3 Measurement result

Date : 9-July-2024
Temperature : 24.1 [˚C]
Humidity : 54.7 [%] Test engineer :
Test place : Shielded room No.4 Kazunori Saito

[IEEE802.11b、IEEE802.11g、IEEE802.11n (HT20)]

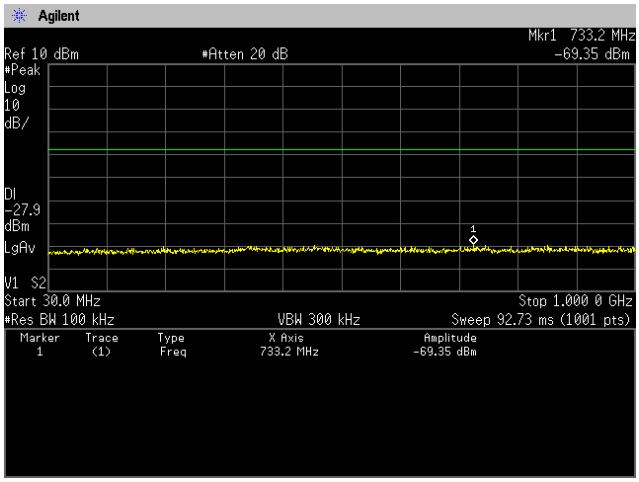
Channel	Frequency [MHz]	Limit [dB]	Results Chart	Result
Low	2412	At least 20dB below from peak of RF	See the trace Data	PASS
Middle	2437	At least 20dB below from peak of RF	See the trace Data	PASS
High	2462	At least 20dB below from peak of RF	See the trace Data	PASS

Japan

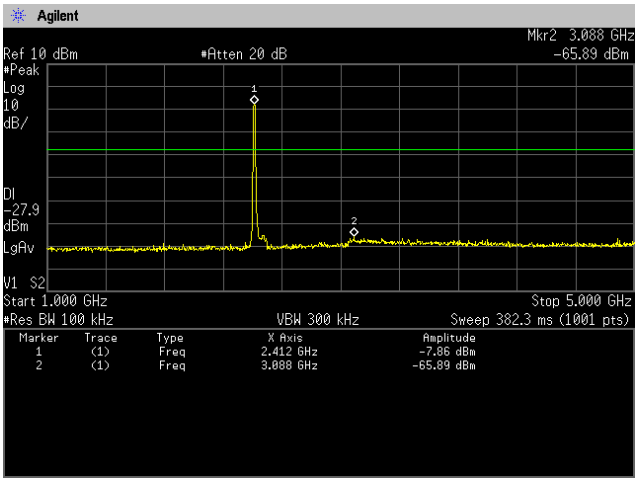
4.4.4 Trace data

[IEEE802.11b]
Channel Low

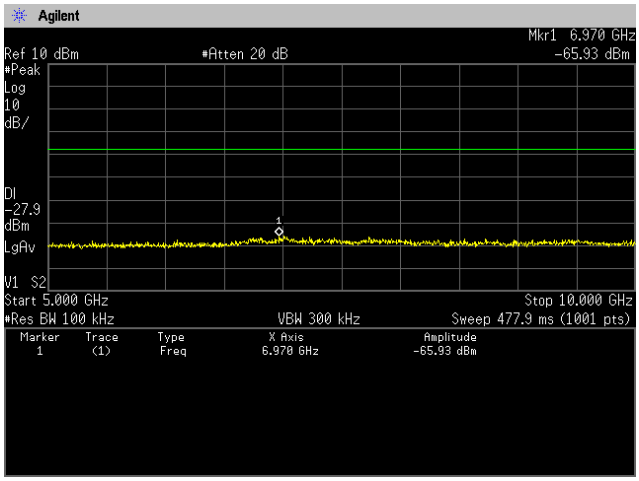
30MHz-1GHz



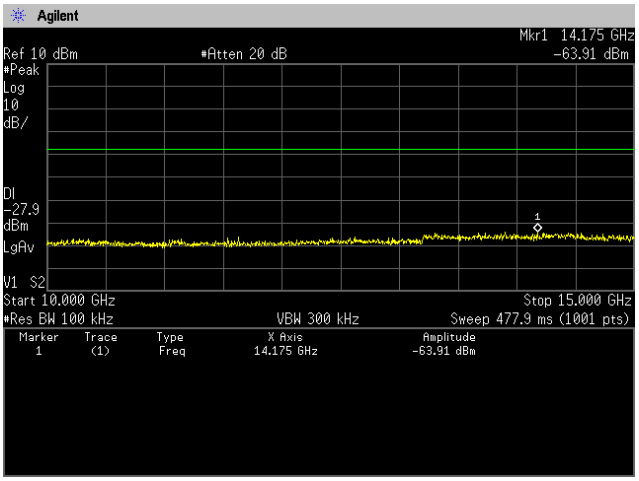
1GHz-5GHz



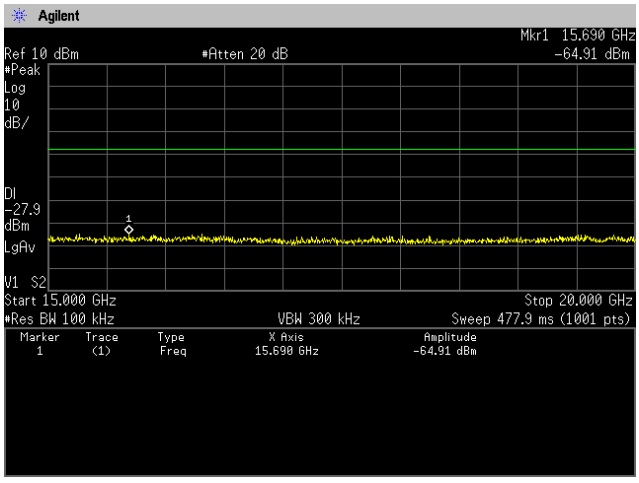
5GHz-10GHz



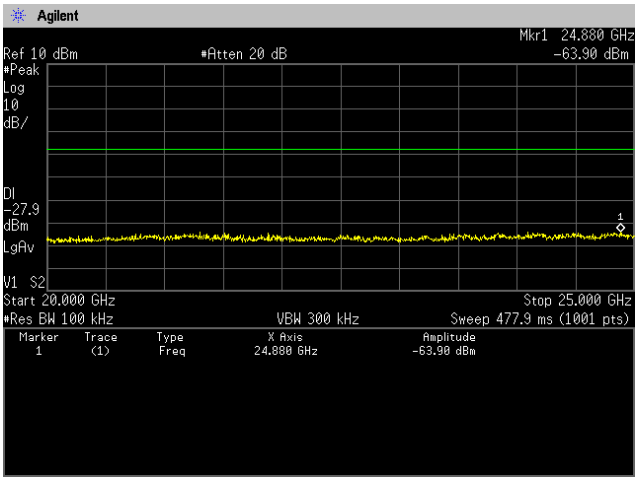
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



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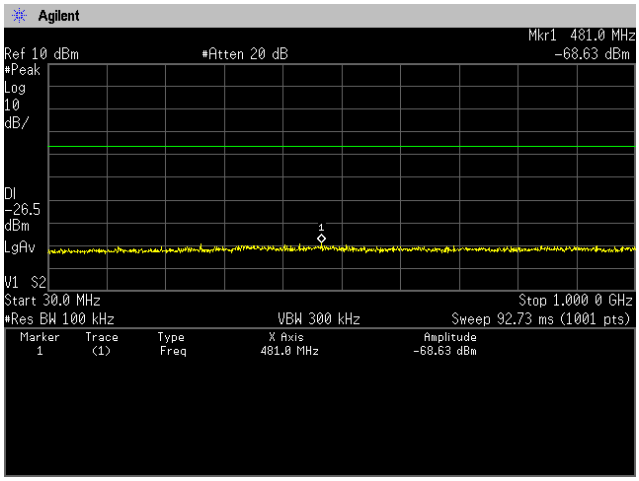
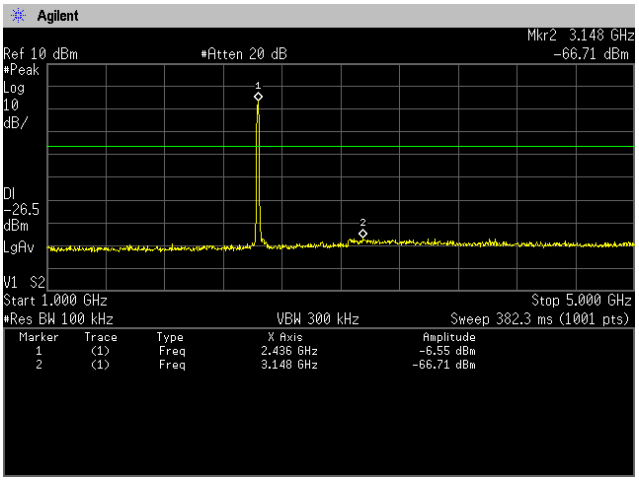
Channel Middle

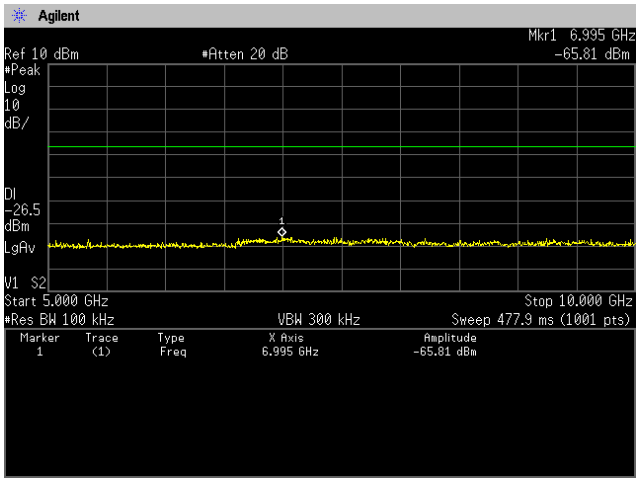
30MHz-1GHz



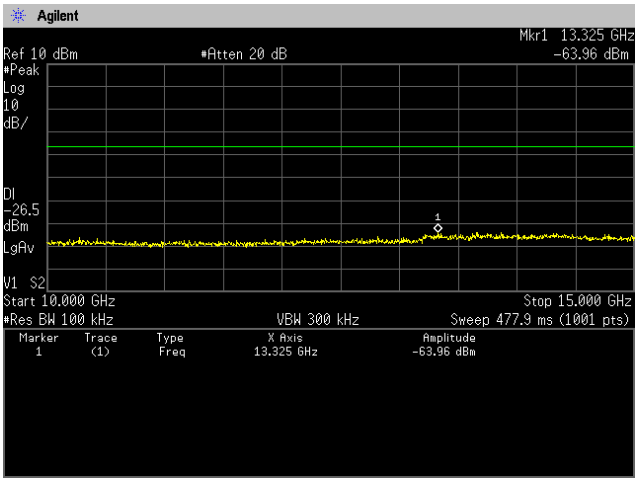
1GHz-5GHz



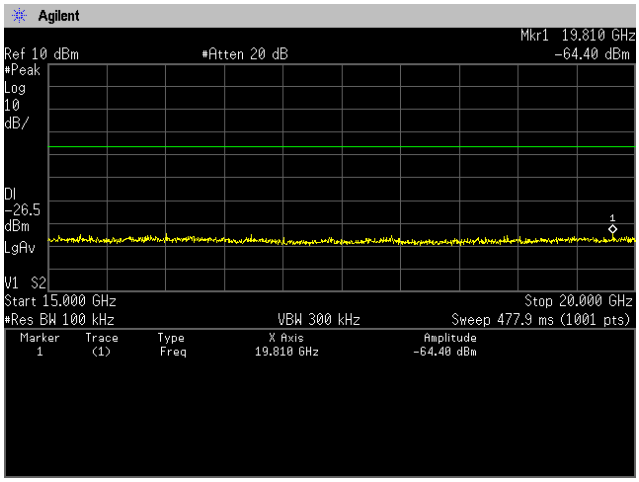
5GHz-10GHz



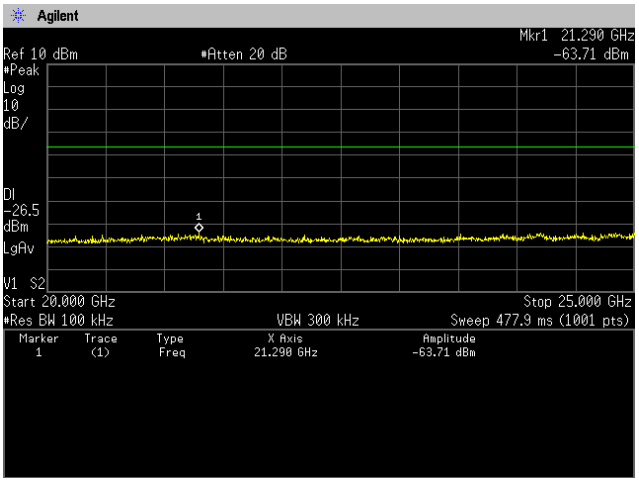
10GHz-15GHz



15GHz-20GHz

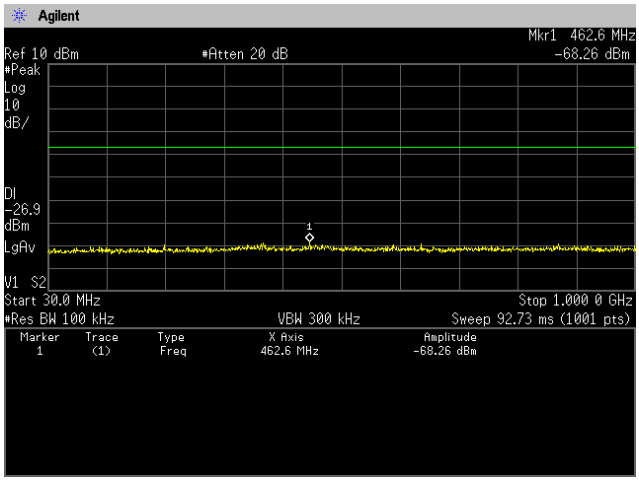


20GHz-25GHz

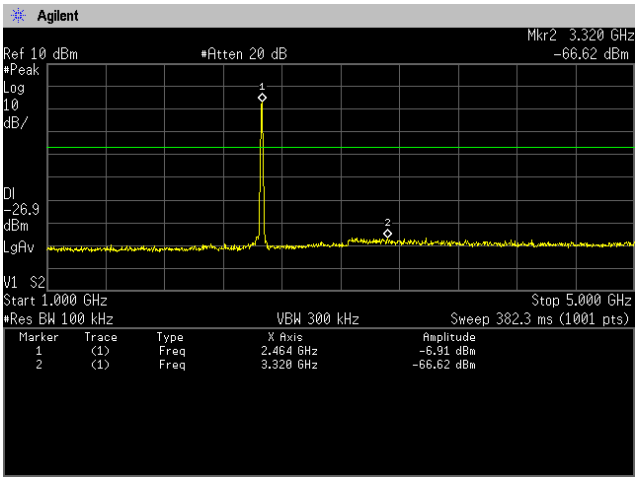


Channel High

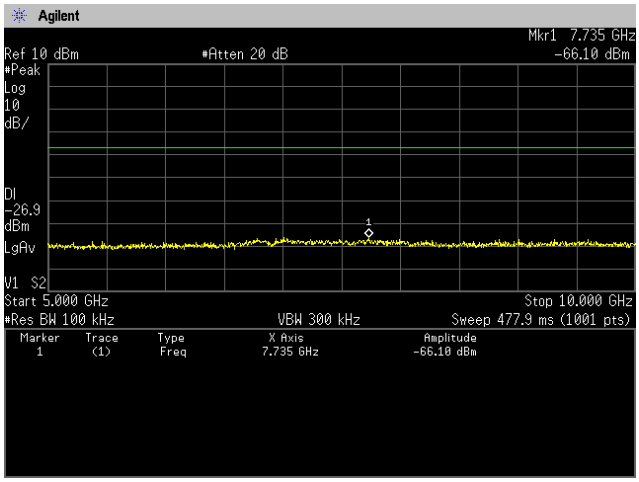
30MHz-1GHz



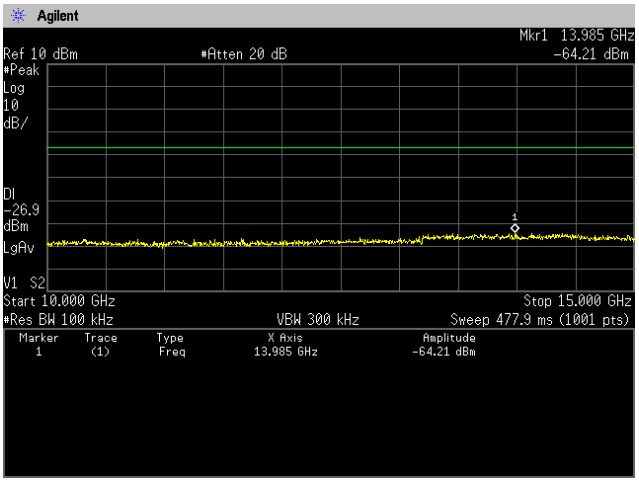
1GHz-5GHz



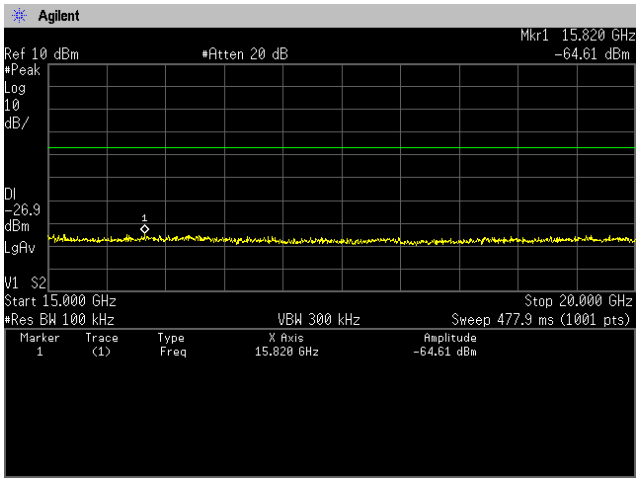
5GHz-10GHz



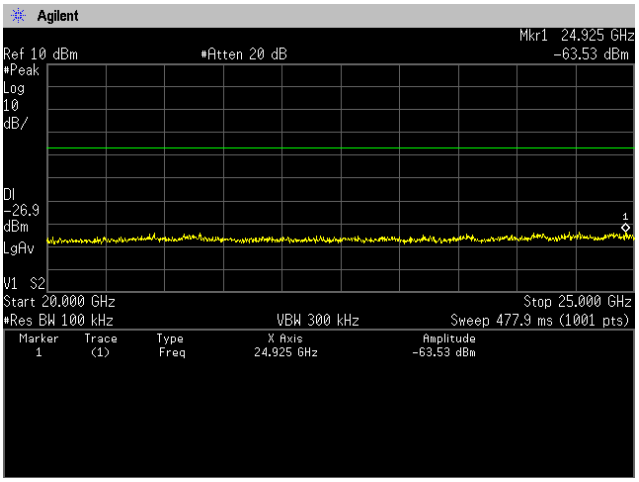
10GHz-15GHz



15GHz-20GHz



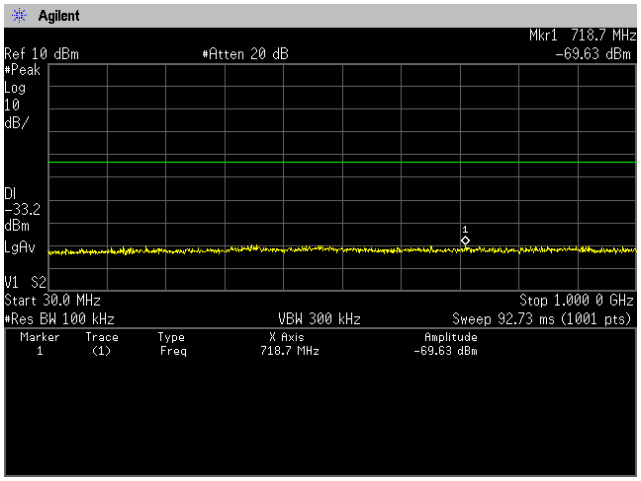
20GHz-25GHz



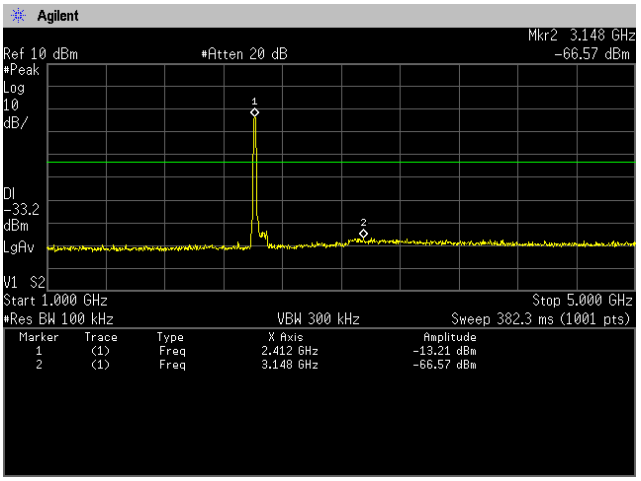
Japan

[IEEE802.11g]
Channel Low

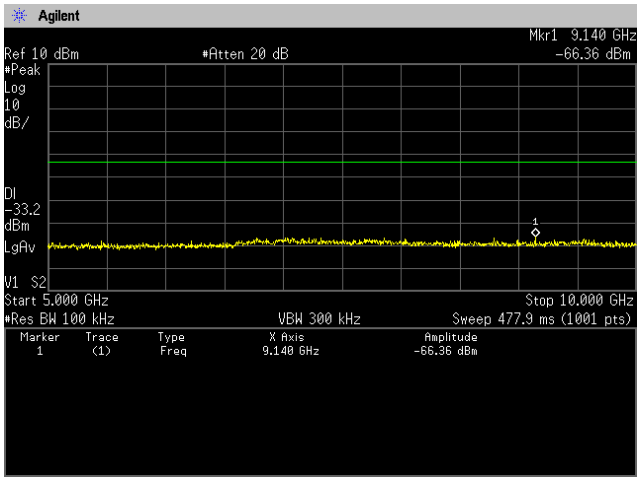
30MHz-1GHz



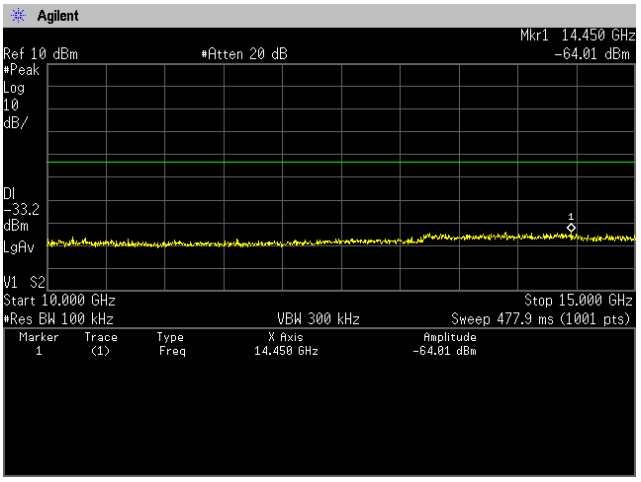
1GHz-5GHz



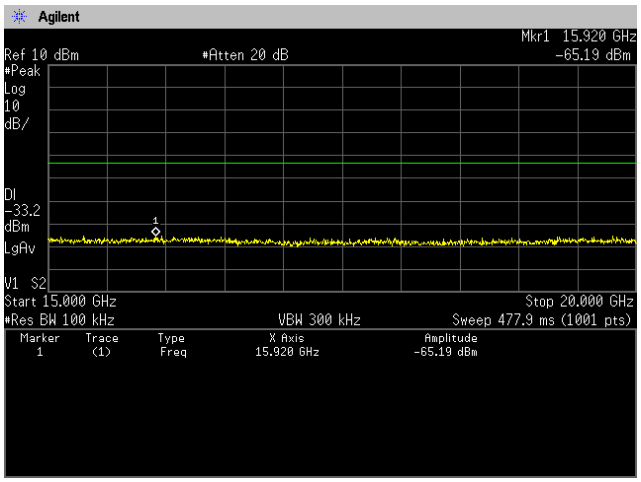
5GHz-10GHz



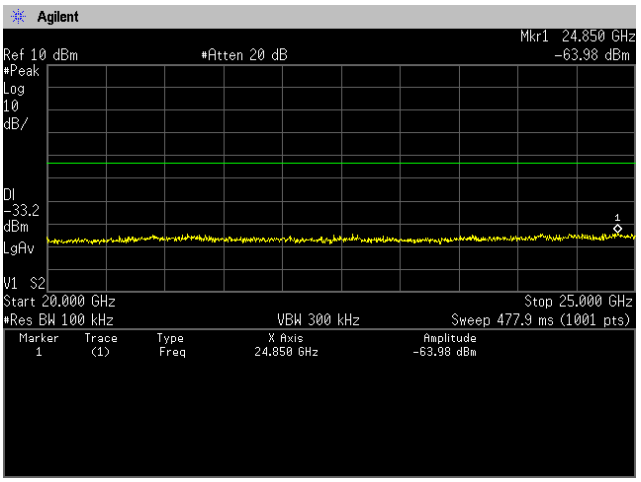
10GHz-15GHz



15GHz-20GHz



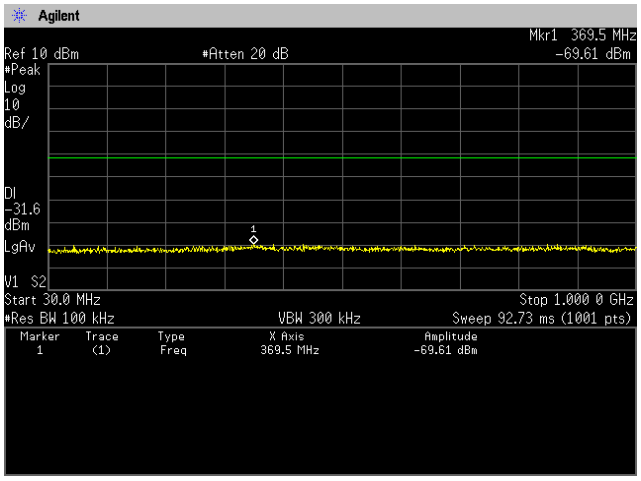
20GHz-25GHz



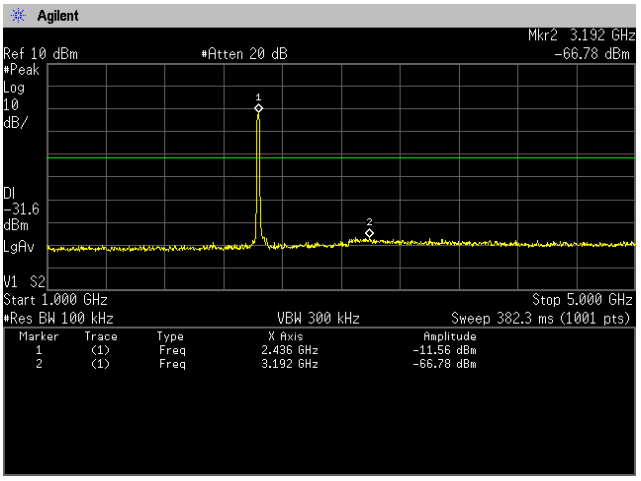
Japan

Channel Middle

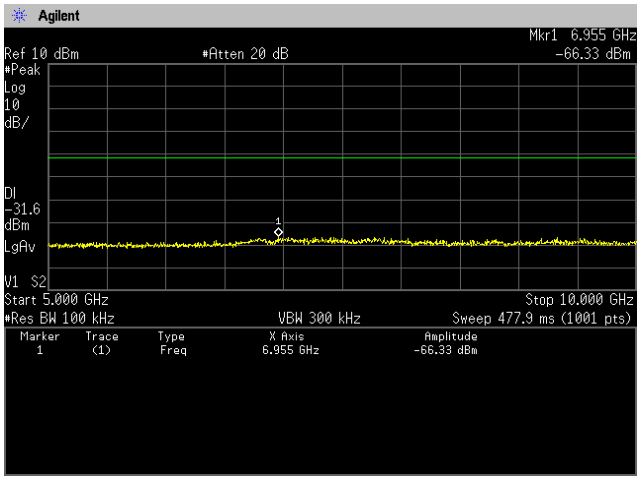
30MHz-1GHz



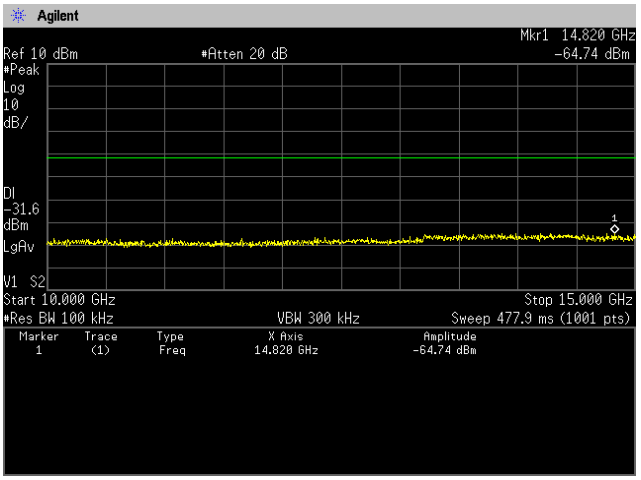
1GHz-5GHz



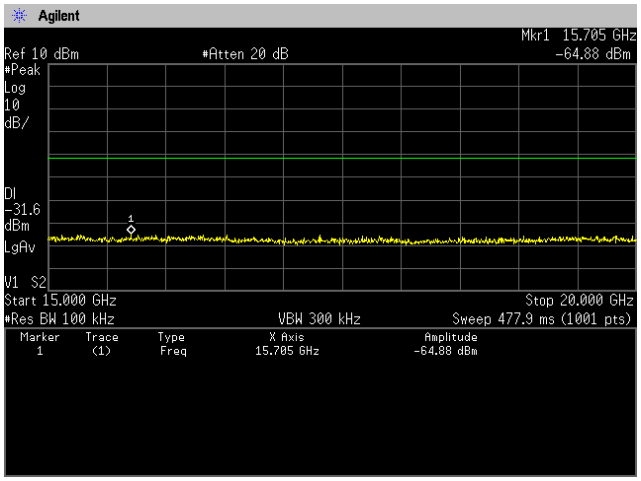
5GHz-10GHz



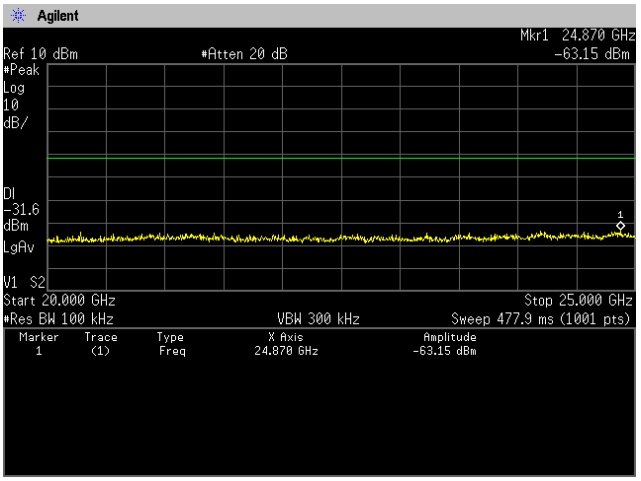
10GHz-15GHz



15GHz-20GHz



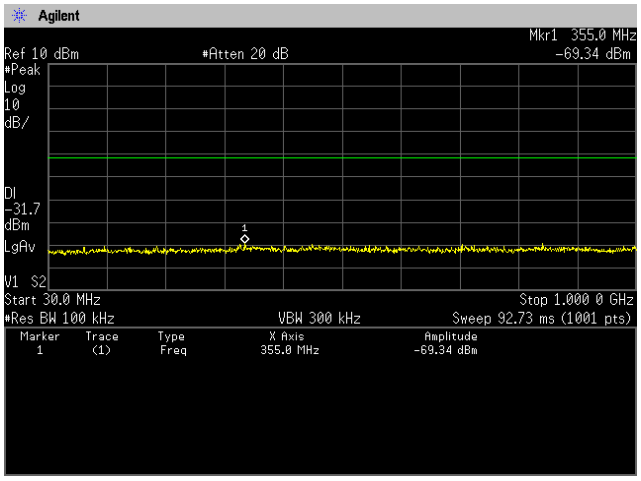
20GHz-25GHz



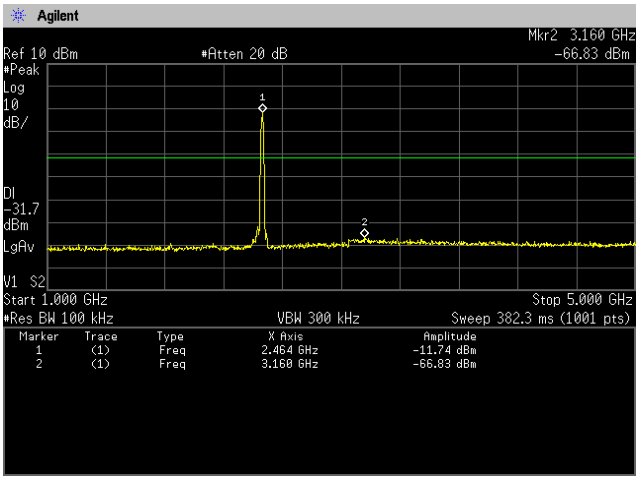
Japan

Channel High

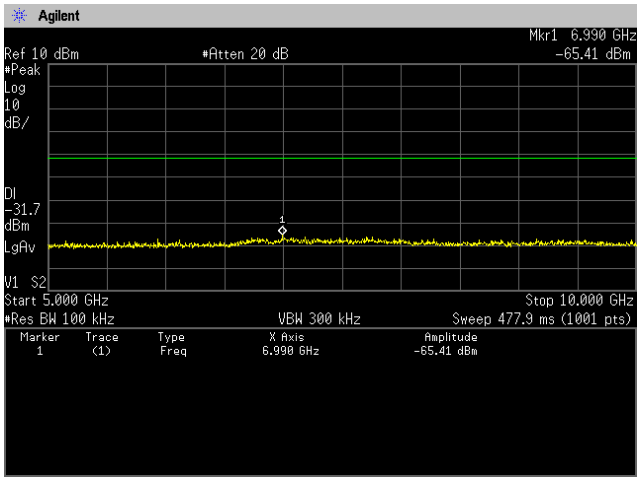
30MHz-1GHz



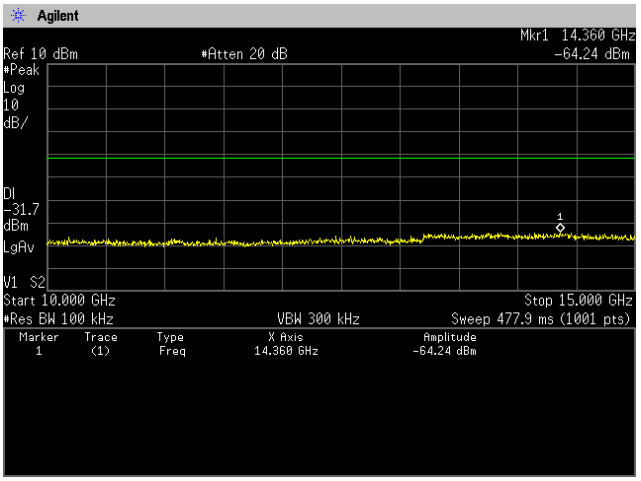
1GHz-5GHz



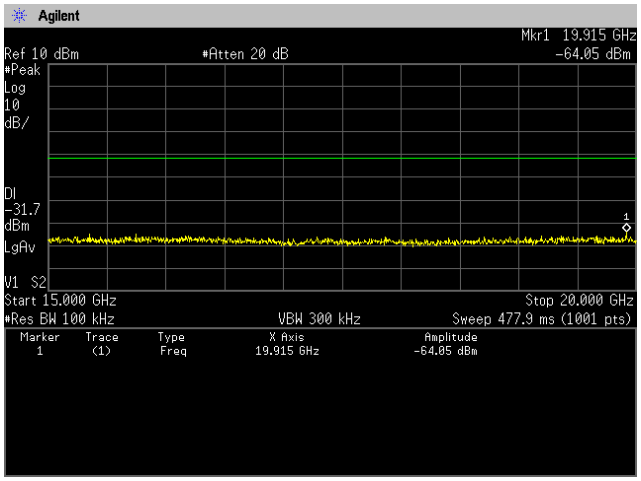
5GHz-10GHz



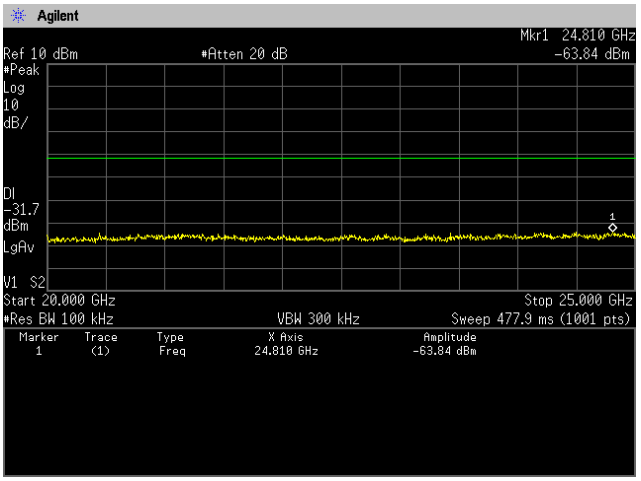
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

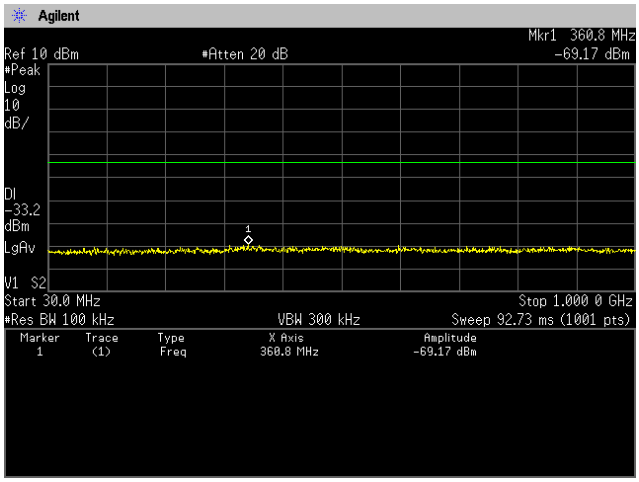


Japan

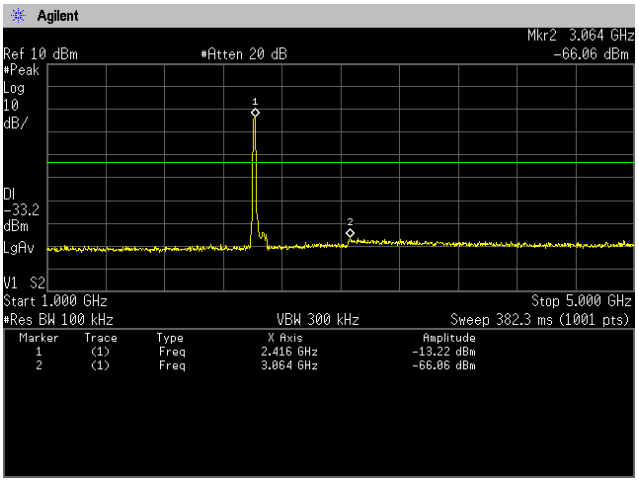
[IEEE802.11n (HT20)]

Channel Low

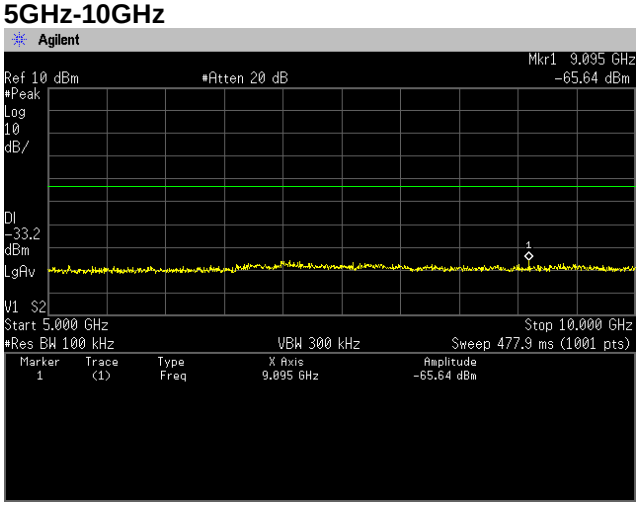
30MHz-1GHz



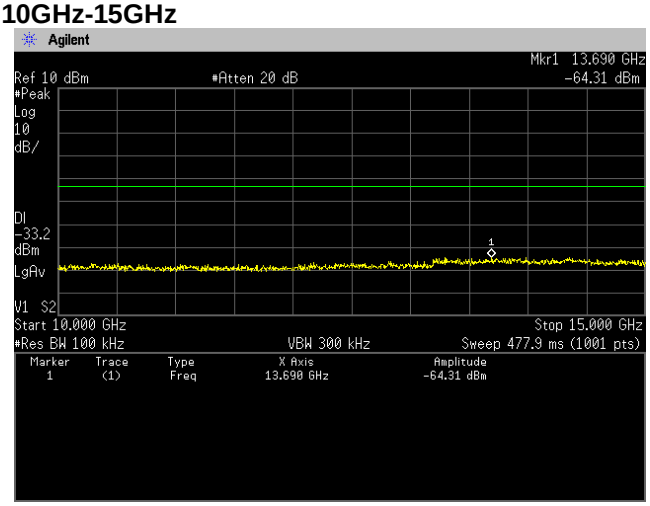
1GHz-5GHz



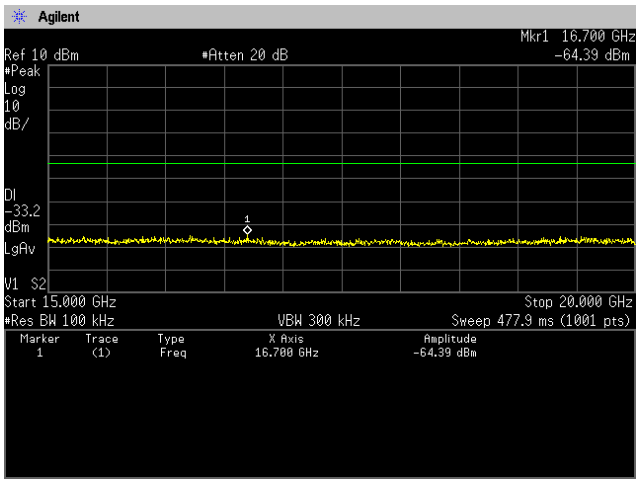
5GHz-10GHz



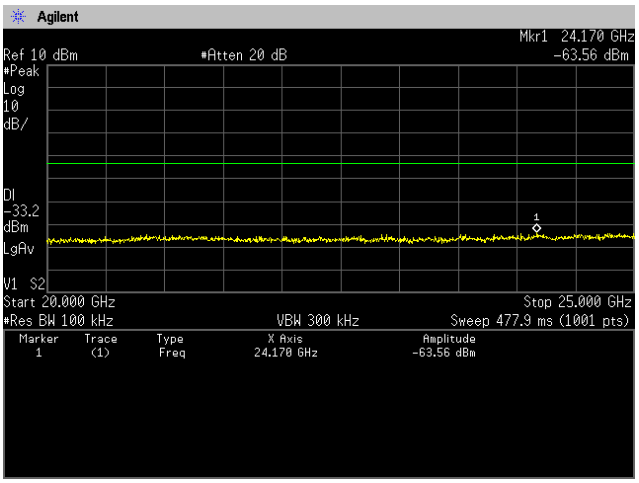
10GHz-15GHz



15GHz-20GHz



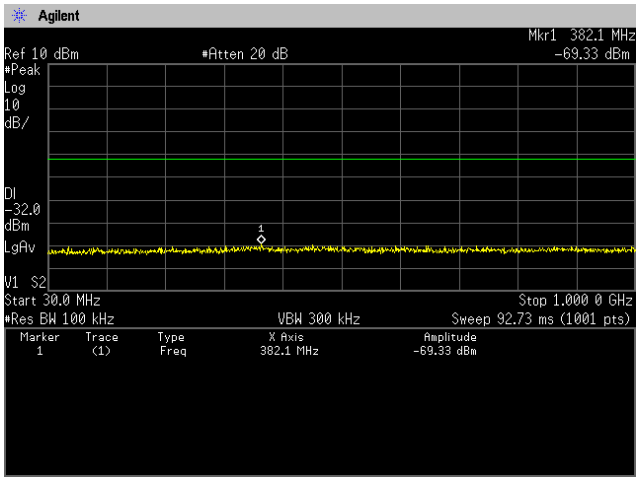
20GHz-25GHz



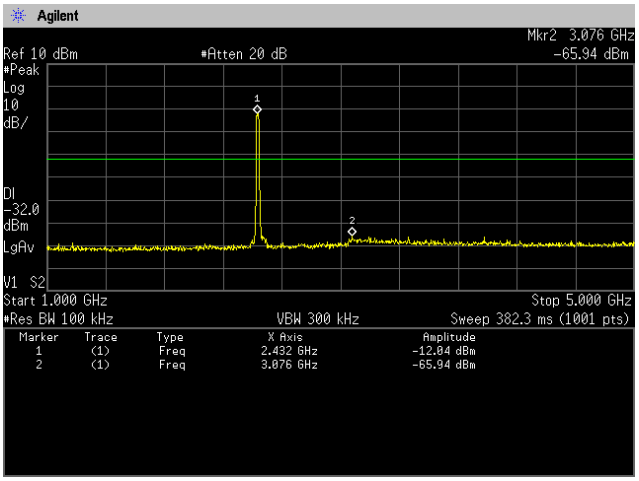
Japan

Channel Middle

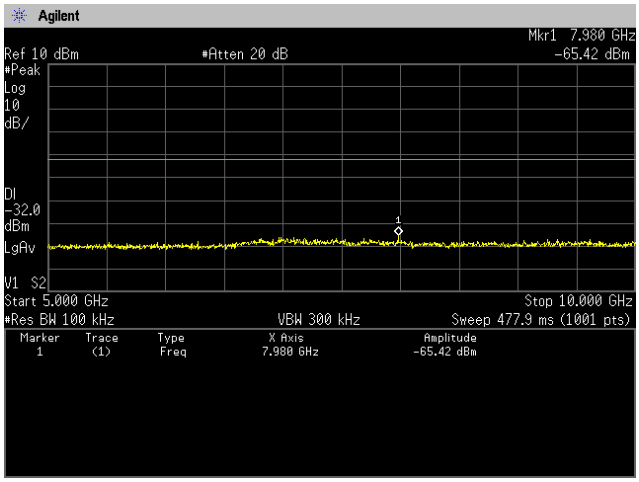
30MHz-1GHz



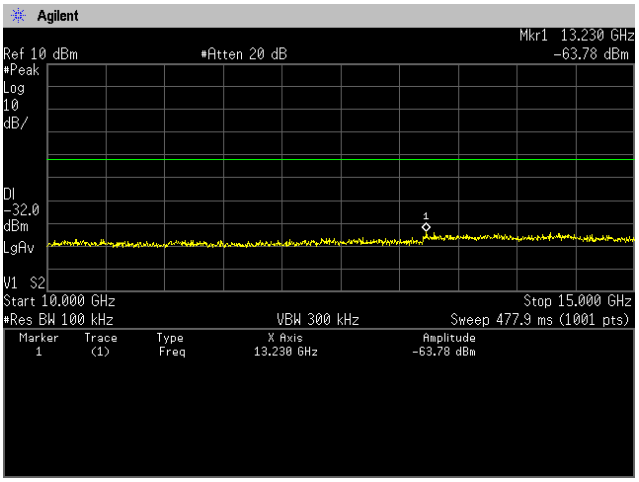
1GHz-5GHz



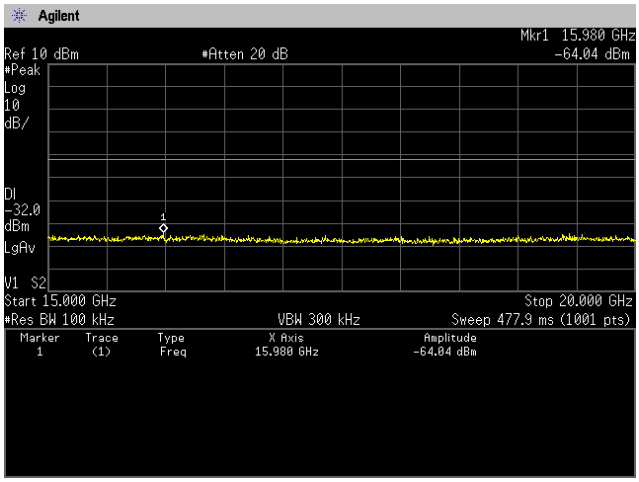
5GHz-10GHz



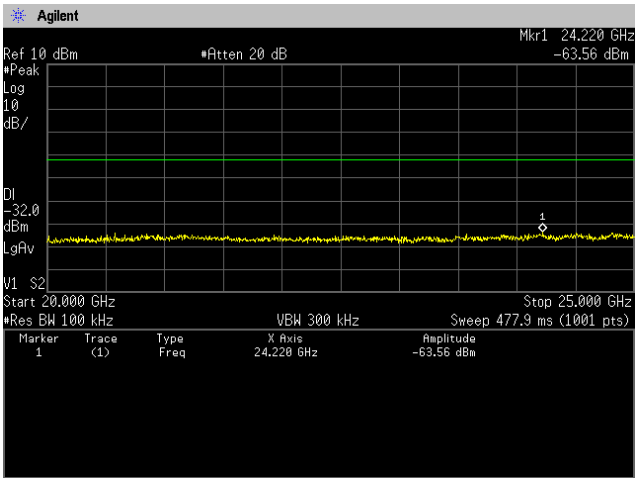
10GHz-15GHz



15GHz-20GHz



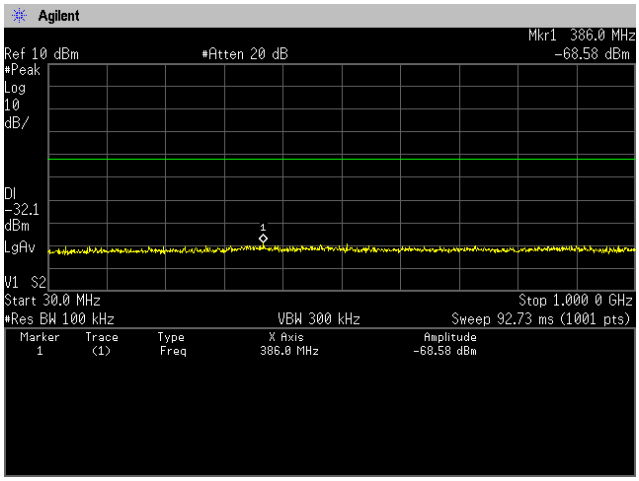
20GHz-25GHz



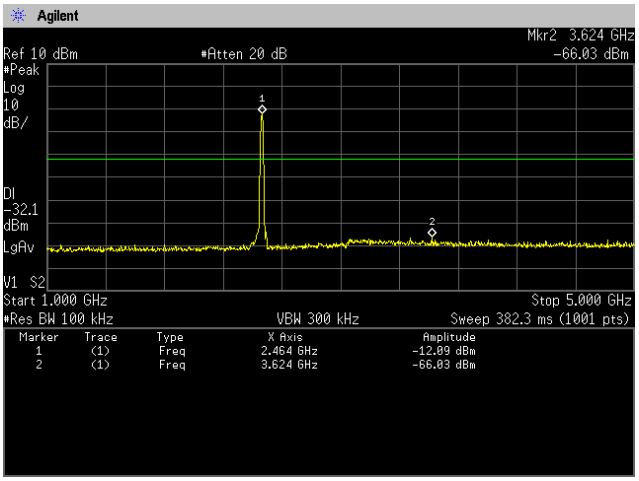
Japan

Channel High

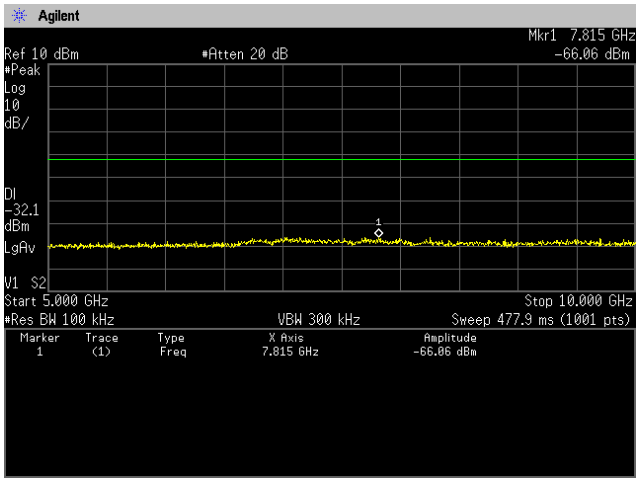
30MHz-1GHz



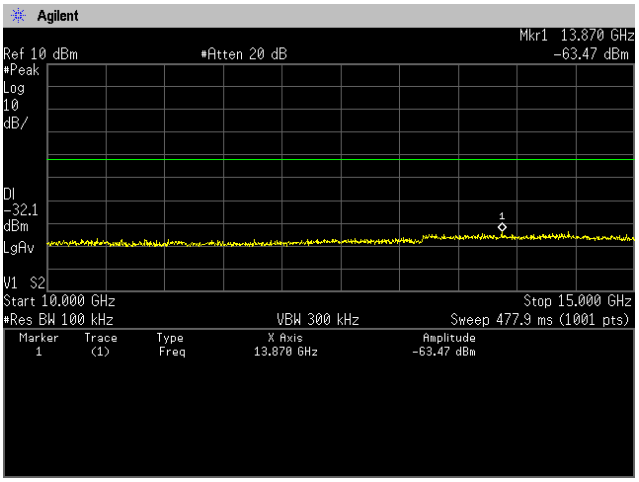
1GHz-5GHz



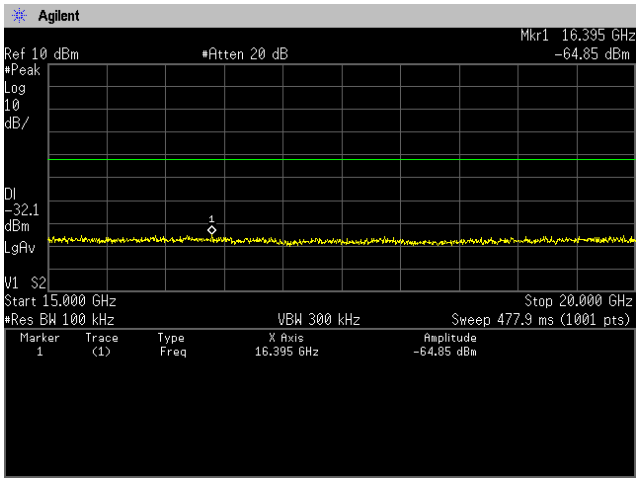
5GHz-10GHz



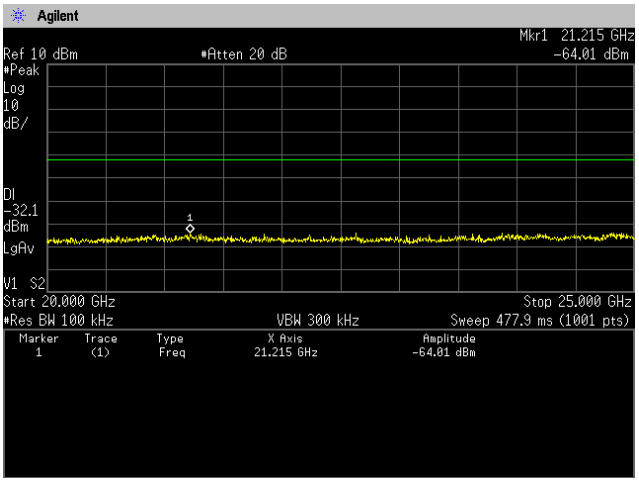
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



Japan

4.5 Spurious Emissions - Radiated -

4.5.1 Measurement procedure

[FCC 15.247(d), 15.205, 15.209, KDB 558074 D01 v05r02, Section 8.6]

Test was applied by following conditions.

Test method	:	ANSI C63.10
Frequency range	:	9 kHz to 25 GHz
Test place	:	3m Semi-anechoic chamber
EUT was placed on	:	Styrofoam table / (W) 1.0 × (D) 1.0 × (H) 0.8 m (below 1 GHz) Styrofoam table / (W) 0.6 × (D) 0.6 ×(H)1.5 m (above 1 GHz)
Antenna distance	:	3 m
Test receiver setting		Below 1 GHz
- Detector	:	Average (9 kHz-90 kHz, 110 kHz-490 kHz), Quasi-peak
- Bandwidth	:	200 Hz, 120 kHz
Spectrum analyzer setting		Above 1 GHz
- Peak	:	RBW=1 MHz, VBW=3 MHz, Span=0 Hz, Sweep=auto
- Average	:	11b: RBW=1 MHz, VBW=3 kHz, Span=0 Hz, Sweep=auto 11g, 11n: RBW=1 MHz, VBW=1 kHz, Span=0 Hz, Sweep=auto Display mode=Linear

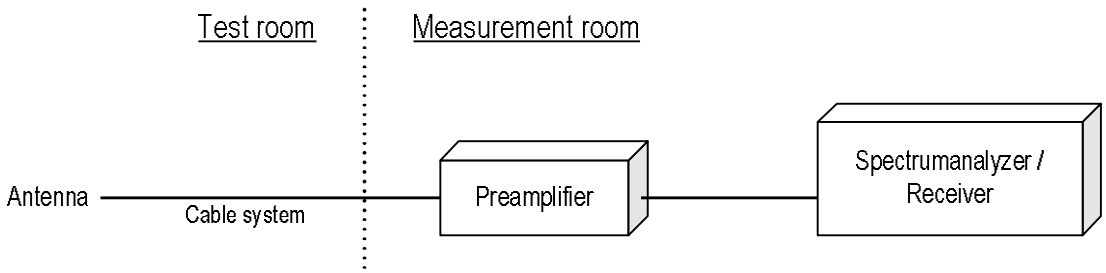
Average Measurement Setting [VBW]

mode	Duty Cycle (%)	Ton [μs]	Toff [μs]	1/Ton (kHz)	Determined VBW Setting
11b	96.32	992.1	37.9	1.008	3kHz
11g	96.80	1392	46	0.718	1kHz
11n(HT20)	96.70	1288	44	0.776	1kHz

Although these tests were performed other than open area test site, adequate comparison measurements
were confirmed against 30 m open are test 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 937606.

Radiated emission measurements are performed at 3m distance with the broadband antenna (Loop antenna, Biconical antenna, Log periodic antenna and Double ridged guide antenna). The antenna is positioned both the horizontal and vertical planes of polarization and height is varied 1m to 4m and stopped at height producing the maximum emission. As for the Loop antenna, it is positioned with its plane vertical, and the center of the Loop antenna is 1m above the ground plane.
The EUT is Placed on a turntable, which is 0.8m/1.5m above ground plane. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. The test results represent the worst cases emission for each emission with manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation. Sufficient time for the EUT, support equipment, and test equipment are allowed in order for them to warm up to their normal operating condition.

- Test configuration



4.5.2 Calculation method

[9 kHz to 150 kHz]
Emission level = Reading + (Ant factor + Cable system loss)
Margin = Limit – Emission level

[150 kHz to 25 GHz]
Emission level = Reading + (Ant factor + Cable system loss - Amp. Gain)
Margin = Limit – Emission level

Example:
Limit @ 4824.0 MHz: 74.0 dBuV/m (Peak Limit)
S.A Reading = 49.5 dBuV Cable system loss = 8.4 dB
Result = 49.5 + 8.4 = 45.1 dBuV/m
Margin = 74.0 - 45.1 = 16.1 dB

4.5.3 Limit

Frequency [MHz]	Field strength		Distance [m]
	[uV/m]	[dBuV/m]	
0.009-0.490	2400 / F [kHz]	20logE [uV/m]	300
0.490-1.705	24000 / F [kHz]	20logE [uV/m]	30
1.705-30	30	29.5	30
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Note:
1. The lower limit shall apply at the transition frequencies.
2. Emission level [dBuV/m] = 20log Emission [uV/m]
3. As shown in 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition modulation.

Japan

4.5.4 Test data

Date	:	7-March-2022			
Temperature	:	20.4 [˚C]			
Humidity	:	21.3 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Kazunori Saito

Date	:	8-March-2022			
Temperature	:	22.1 [˚C]			
Humidity	:	20.2 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Chiaki Kanno

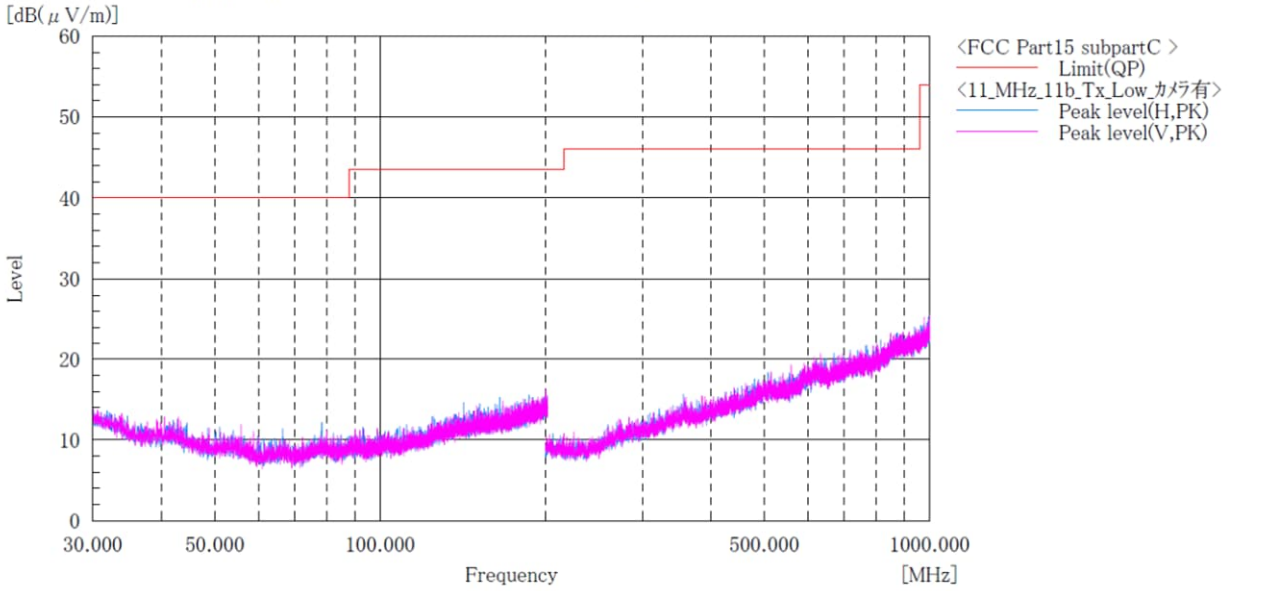
Date	:	8~9-March-2022			
Temperature	:	22.9 [˚C]			
Humidity	:	19.0 [%]	Test engineer	:	
Test place	:	3m Semi-anechoic chamber			Tadahiro Seino

Japan

4.5.4.1 Transmission mode

[11b]
Channel Low
BELOW 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpartC
EUT	: Mobile Phone	Operator	: C.Kanno
Model No.	: EB1135	Temp,Hum	: 22.1[℃] 20.2[%]
Serial No.	: N/A	Note1	: X axis With Camera_Open
Test mode	: 11b_Tx_ch:Low	Note2	:



Final Result

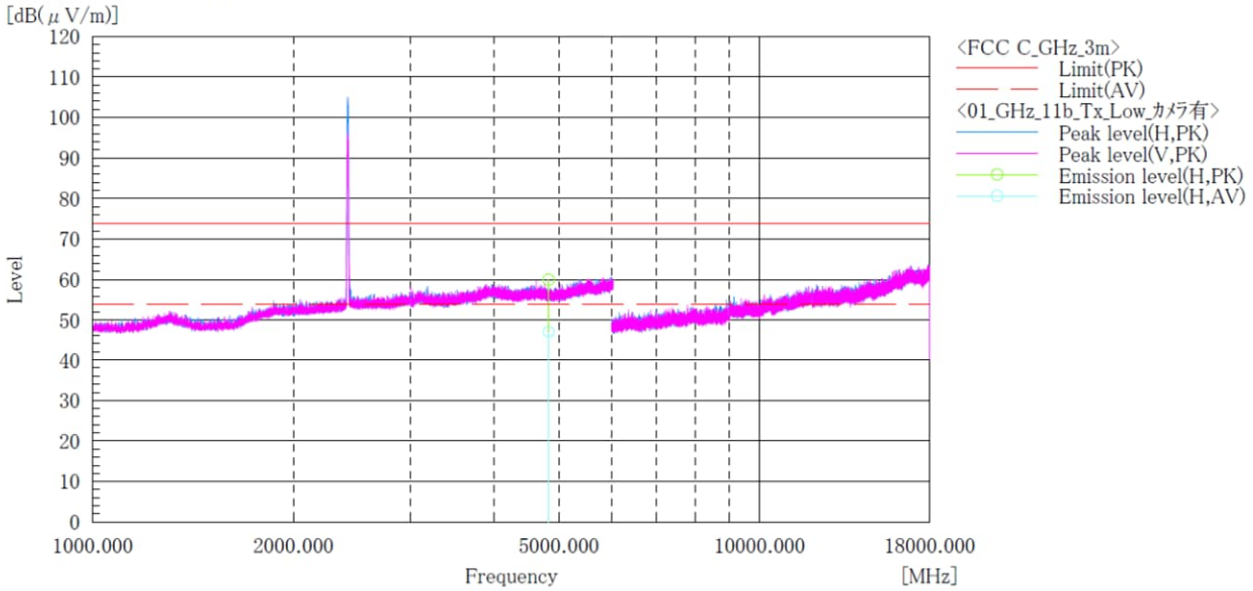
No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]	Remark

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

Japan

[11b]
Channel Low
ABOVE 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart C
EUT	: Mobile Phone	Operator	: K.Saito
Model No.	: EB1135	Temp,Hum,Atm	: 20.4[℃] 21.3[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11b_Tx_ch:Low	Note2	:



Final Result

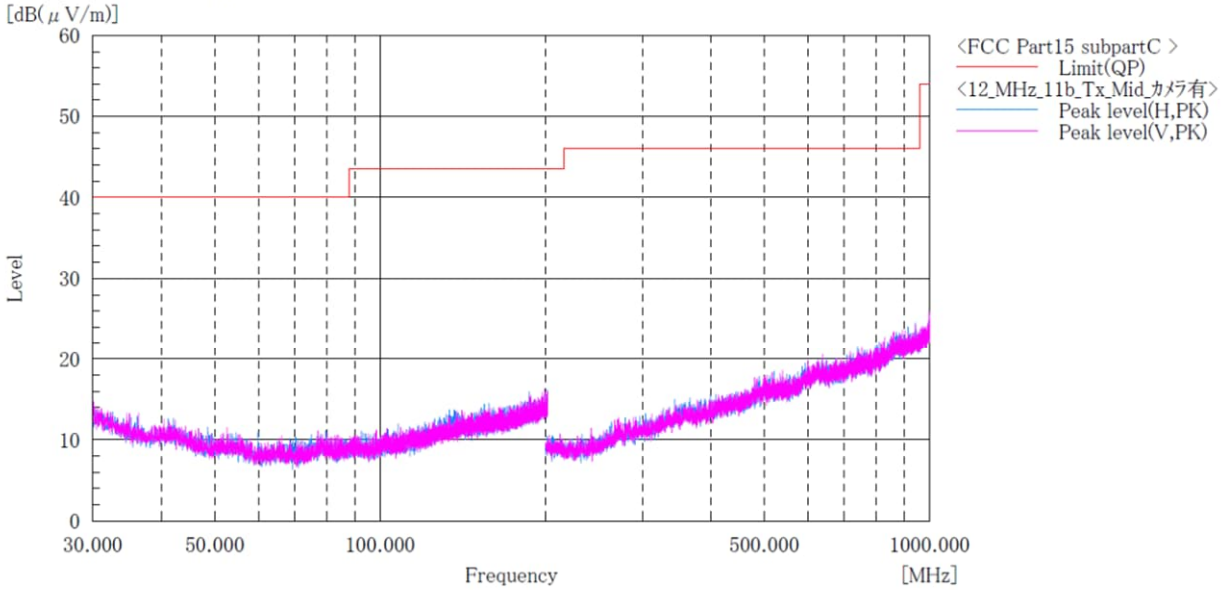
No.	Frequency	(P)	Reading PK	Reading AV	c.f	Result PK	Result AV	Limit PK	Limit AV	Margin PK	Margin AV	Height	Angle	Remark
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]	
1	4824.000	H	49.4	36.4	10.6	60.0	47.0	74.0	54.0	14.0	7.0	195.0	234.0	

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

Japan

[11b]
Channel Middle
BELOW 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpartC
EUT	: Mobile Phone	Operator	: C.Kanno
Model No.	: EB1135	Temp,Hum	: 22.1[℃] 20.2[%]
Serial No.	: N/A	Note1	: X axis With Camera_Open
Test mode	: 11b_Tx_ch:Middle	Note2	:



Final Result

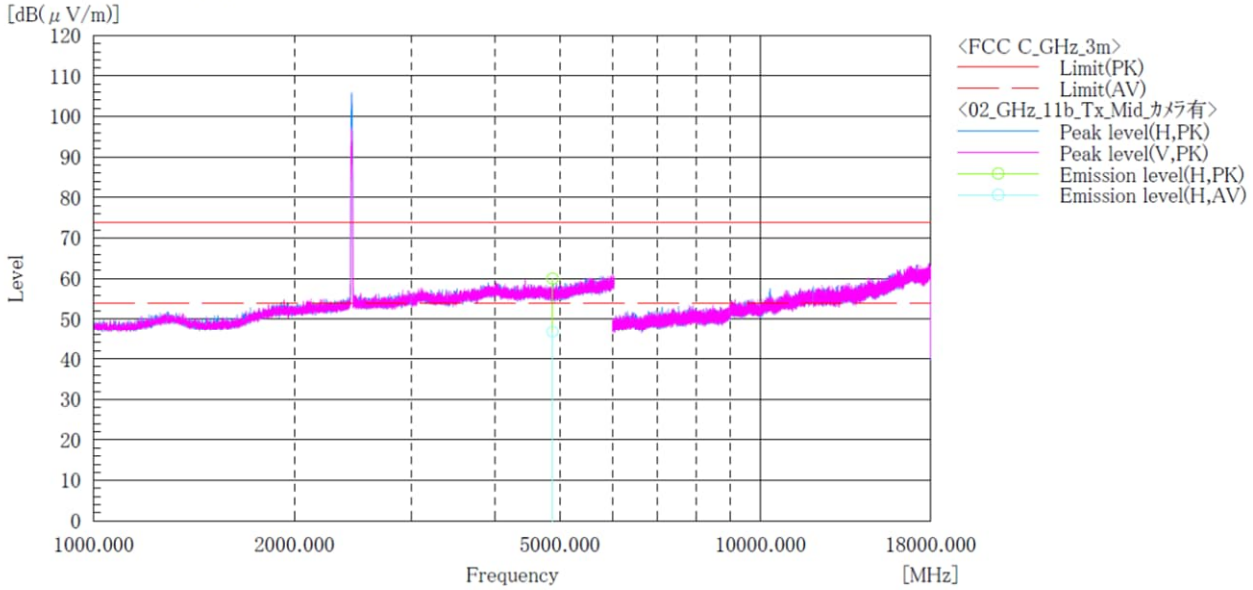
No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]	Remark

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

Japan

[11b]
Channel Middle
ABOVE 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart C
EUT	: Mobile Phone	Operator	: K.Saito
Model No.	: EB1135	Temp,Hum,Atm	: 20.4[℃] 21.3[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11b_Tx_ch:Middle	Note2	:



Final Result

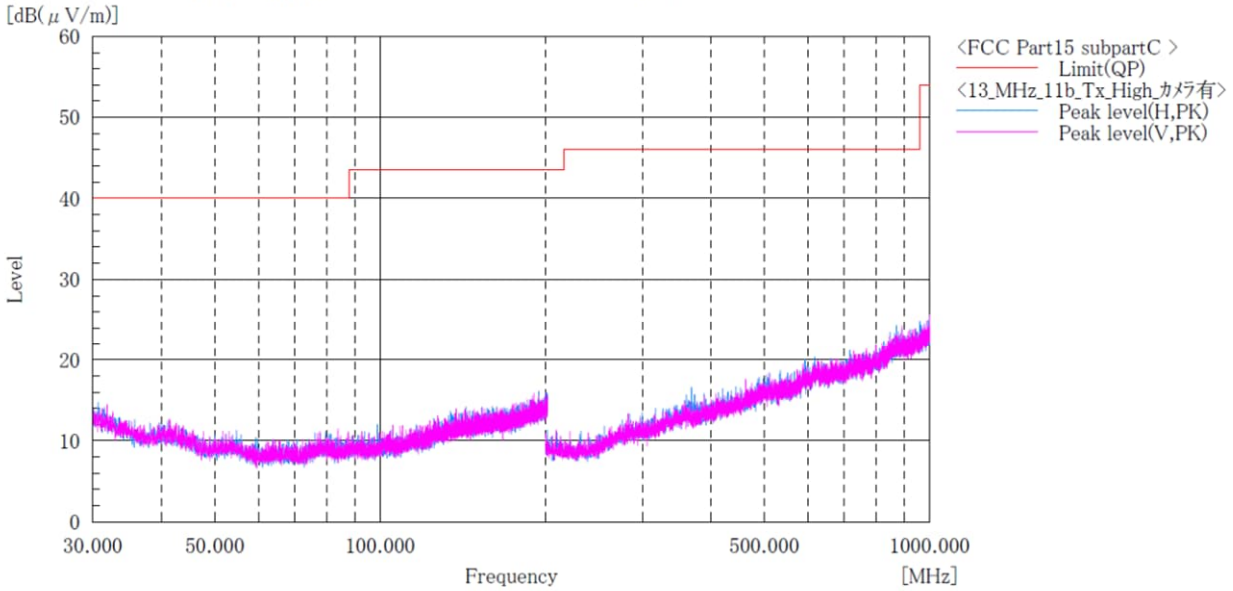
No.	Frequency	(P)	Reading PK	Reading AV	c.f	Result PK	Result AV	Limit PK	Limit AV	Margin PK	Margin AV	Height	Angle	Remark
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]	
1	4874.000	H	49.4	36.2	10.6	60.0	46.8	74.0	54.0	14.0	7.2	346.0	194.0	

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

Japan

[11b]
Channel High
BELOW 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpartC
EUT	: Mobile Phone	Operator	: C.Kanno
Model No.	: EB1135	Temp,Hum	: 22.1[℃] 20.2[%]
Serial No.	: N/A	Note1	: X axis With Camera_Open
Test mode	: 11b_Tx_ch:High	Note2	:



Final Result

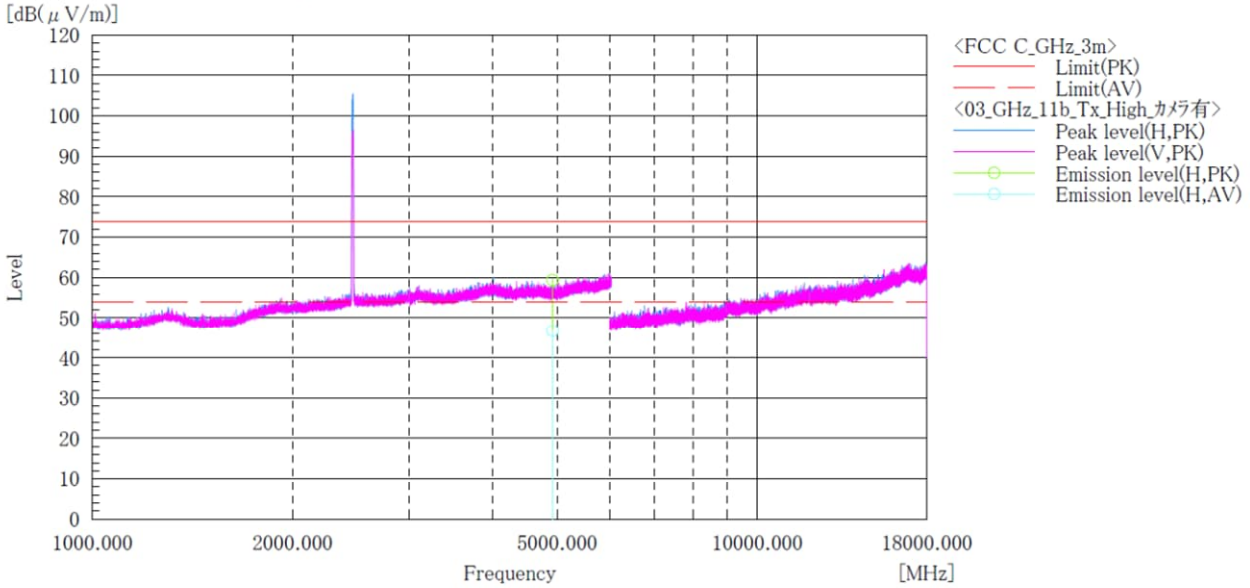
No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]	Remark

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

Japan

[11b]
Channel High
ABOVE 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart C
EUT	: Mobile Phone	Operator	: K.Saito
Model No.	: EB1135	Temp,Hum,Atm	: 20.4[℃] 21.3[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11b_Tx_ch:High	Note2	:



Final Result

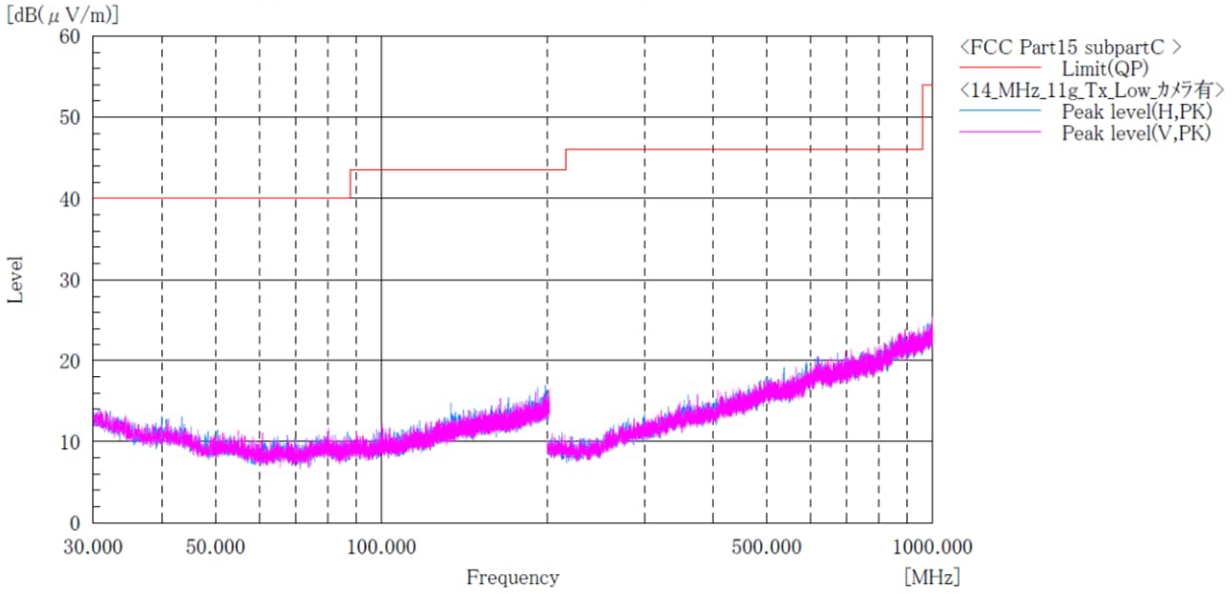
No.	Frequency	(P)	Reading PK	Reading AV	c.f	Result PK	Result AV	Limit PK	Limit AV	Margin PK	Margin AV	Height	Angle	Remark
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]	
1	4924.000	H	48.8	36.1	10.6	59.4	46.7	74.0	54.0	14.6	7.3	340.0	198.0	

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

Japan

[11g]
Channel Low
BELOW 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpartC
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: EB1135	Temp,Hum,Atm	: 22.9[℃] 19.0[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11g_Tx_ch:Low	Note2	:



Final Result

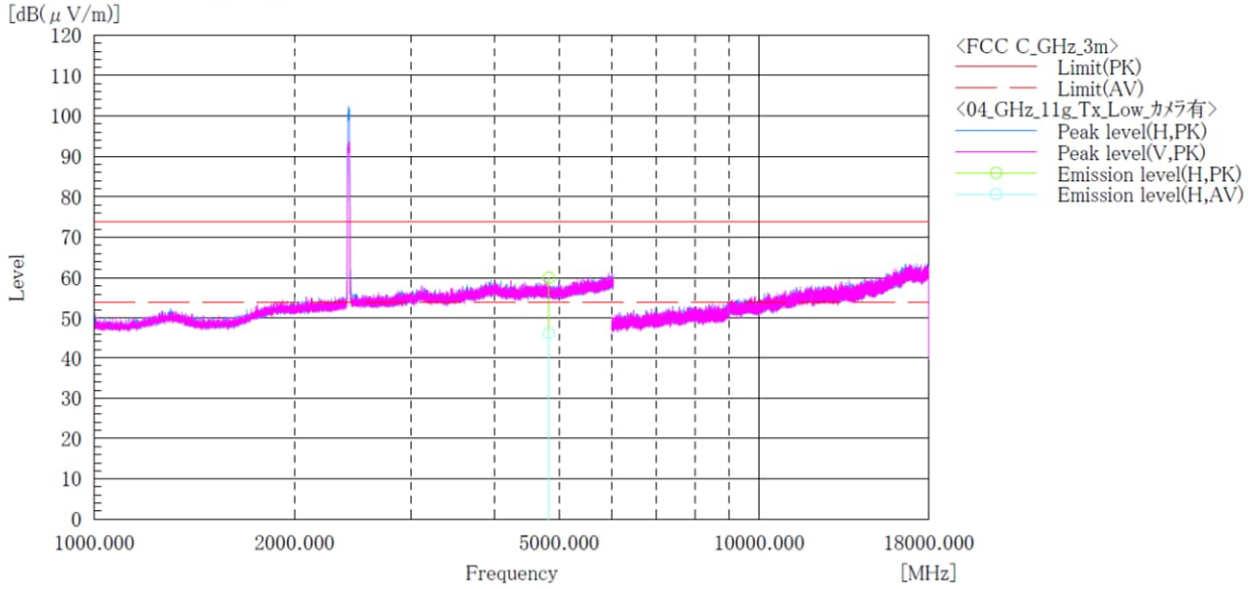
No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]	Remark

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

Japan

[11g]
Channel Low
ABOVE 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart C
EUT	: Mobile Phone	Operator	: K.Saito
Model No.	: EB1135	Temp,Hum,Atm	: 20.4[℃] 21.3[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11g_Tx_ch:Low	Note2	:



Final Result

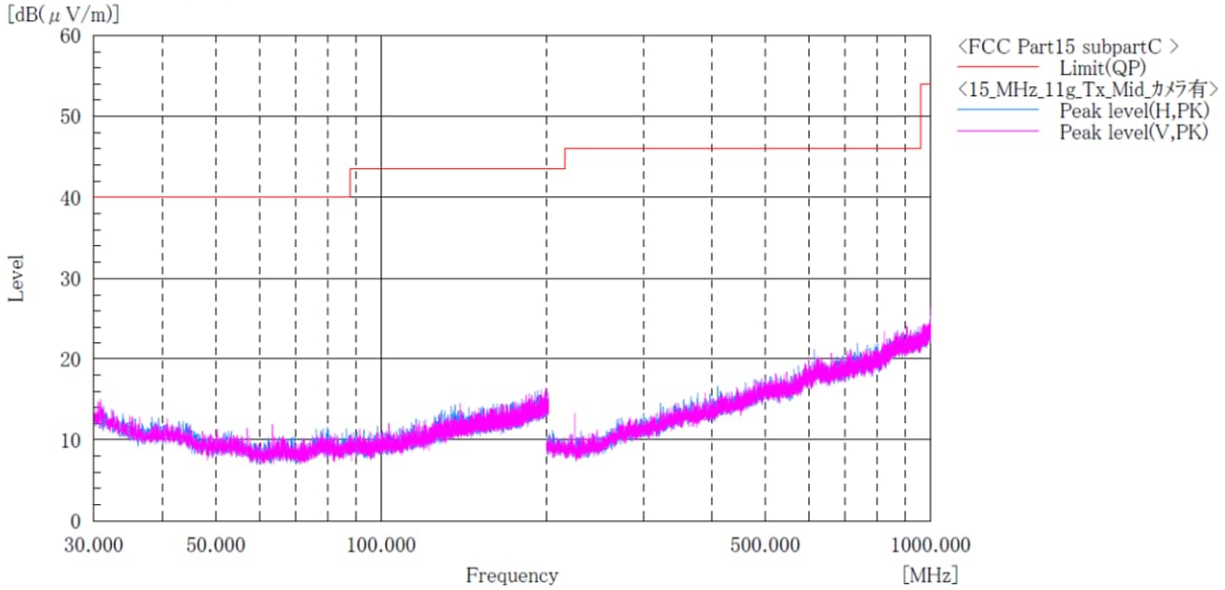
No.	Frequency	(P)	Reading PK	Reading AV	c.f	Result PK	Result AV	Limit PK	Limit AV	Margin PK	Margin AV	Height	Angle	Remark
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]	
1	4824.000	H	49.4	35.6	10.6	60.0	46.2	74.0	54.0	14.0	7.8	350.0	211.0	

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

Japan

[11g]
Channel Middle
BELOW 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpartC
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: EB1135	Temp,Hum,Atm	: 22.9[℃] 19.0[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11g_Tx_ch:Middle	Note2	:



Final Result

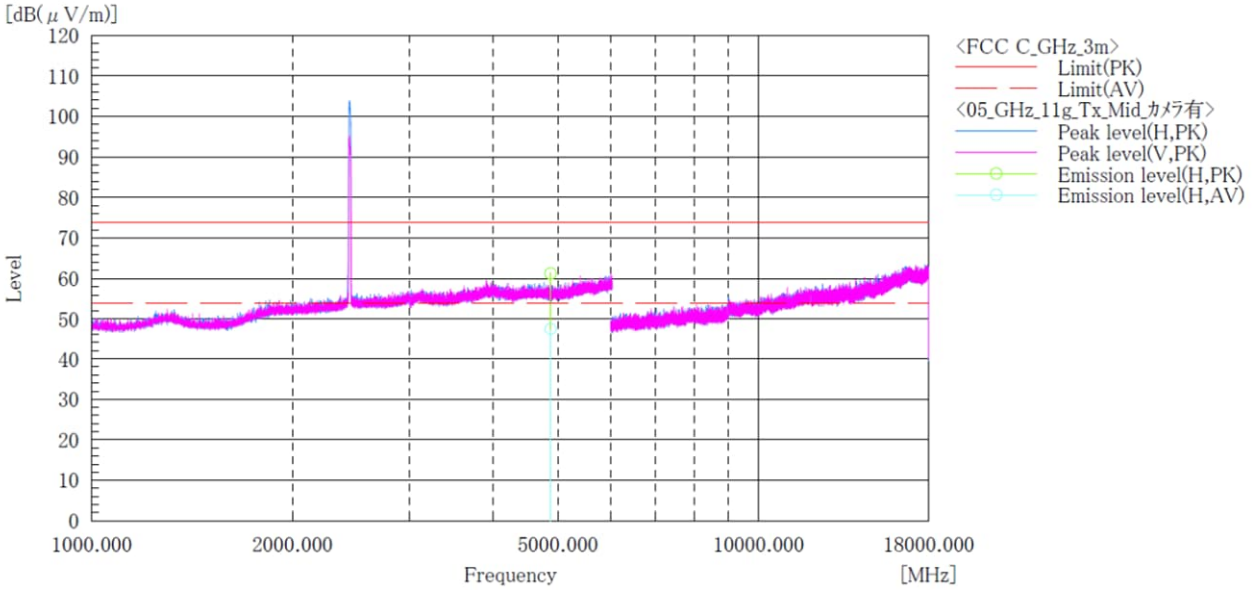
No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]	Remark

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

Japan

[11g]
Channel Middle
ABOVE 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart C
EUT	: Mobile Phone	Operator	: K.Saito
Model No.	: EB1135	Temp,Hum,Atm	: 20.4[℃] 21.3[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11g_Tx_ch:Middle	Note2	:



Final Result

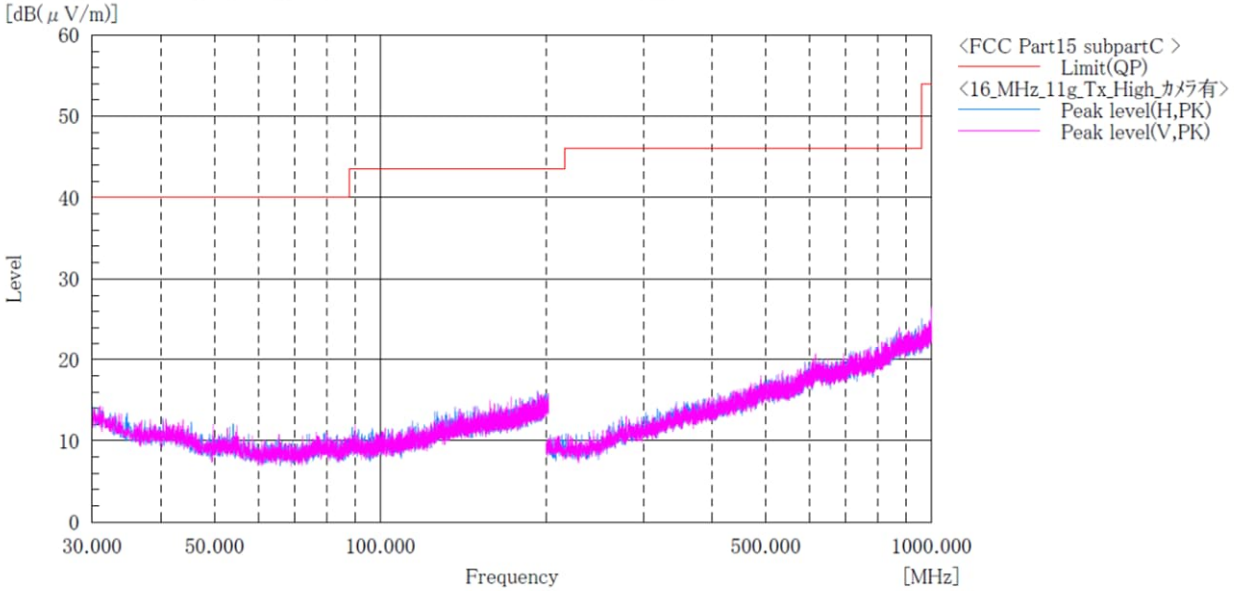
No.	Frequency	(P)	Reading PK	Reading AV	c.f	Result PK	Result AV	Limit PK	Limit AV	Margin PK	Margin AV	Height	Angle	Remark
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]	
1	4874.000	H	50.7	36.9	10.6	61.3	47.5	74.0	54.0	12.7	6.5	311.0	202.0	

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

Japan

[11g]
Channel High
BELOW 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpartC
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: ED1135	Temp,Hum,Atm	: 22.9[℃] 19.0[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11g_Tx_ch:High	Note2	:



Final Result

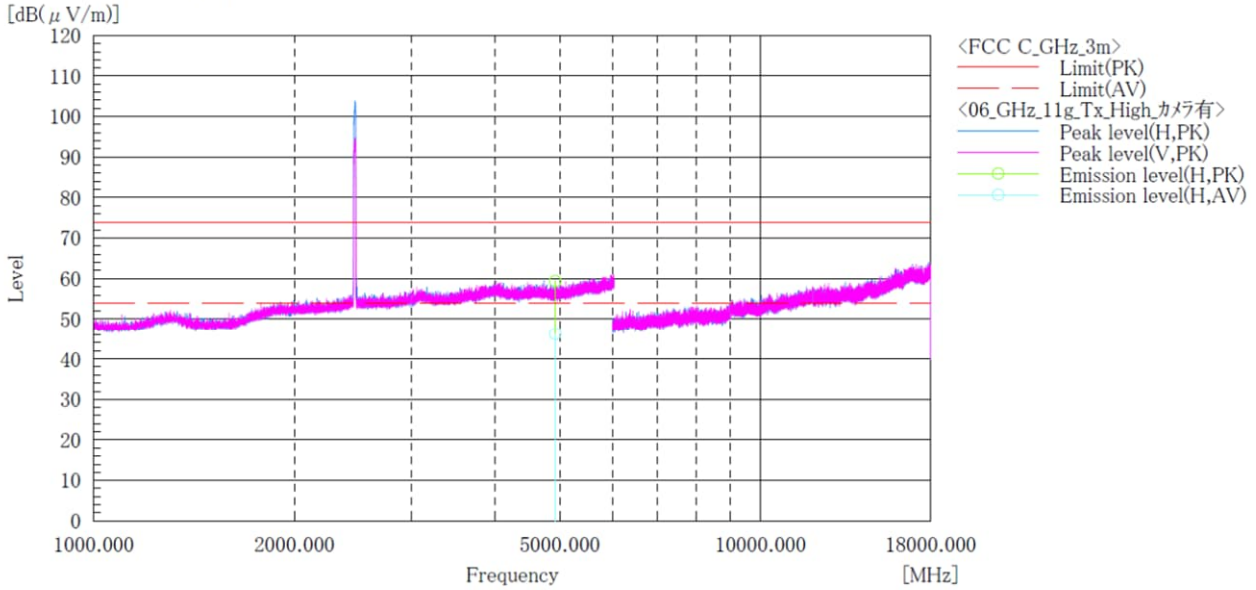
No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]	Remark

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

Japan

[11g]
Channel High
ABOVE 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart C
EUT	: Mobile Phone	Operator	: K.Saito
Model No.	: EB1135	Temp,Hum,Atm	: 20.4[℃] 21.3[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11g_Tx_ch:High	Note2	:



Final Result

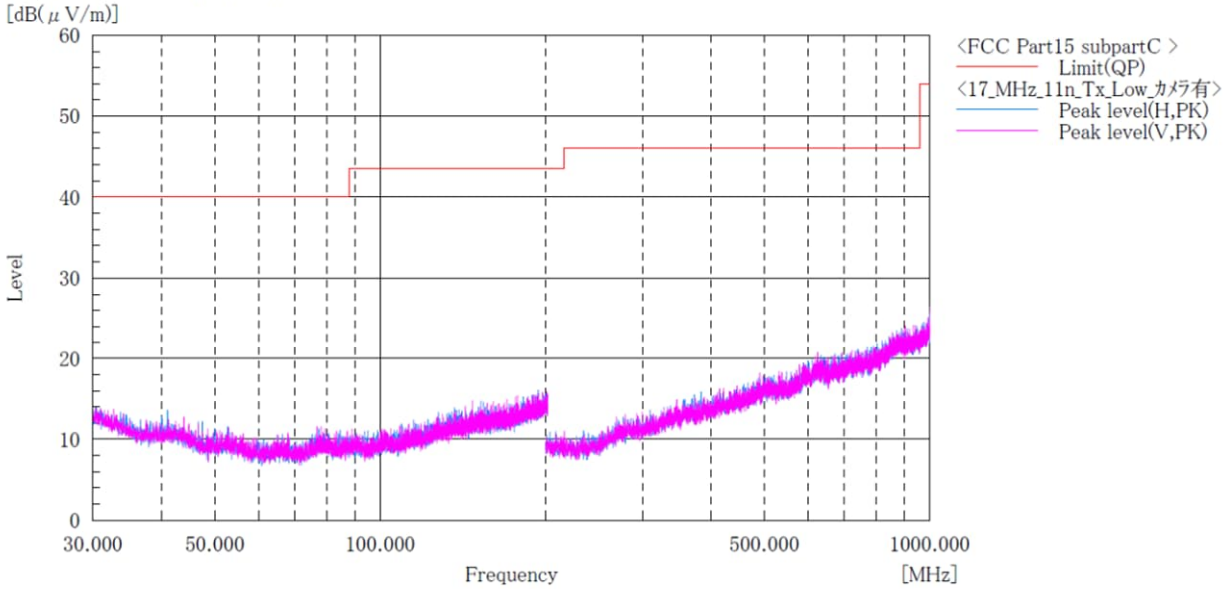
No.	Frequency	(P)	Reading PK	Reading AV	c.f	Result PK	Result AV	Limit PK	Limit AV	Margin PK	Margin AV	Height	Angle	Remark
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]	
1	4924.000	H	48.8	35.6	10.6	59.4	46.2	74.0	54.0	14.6	7.8	340.0	197.0	

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

Japan

[11n(HT20)]
Channel Low
BELOW 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpartC
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: EB1135	Temp,Hum,Atm	: 22.9[℃] 19.0[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11n_Tx_ch:Low	Note2	:



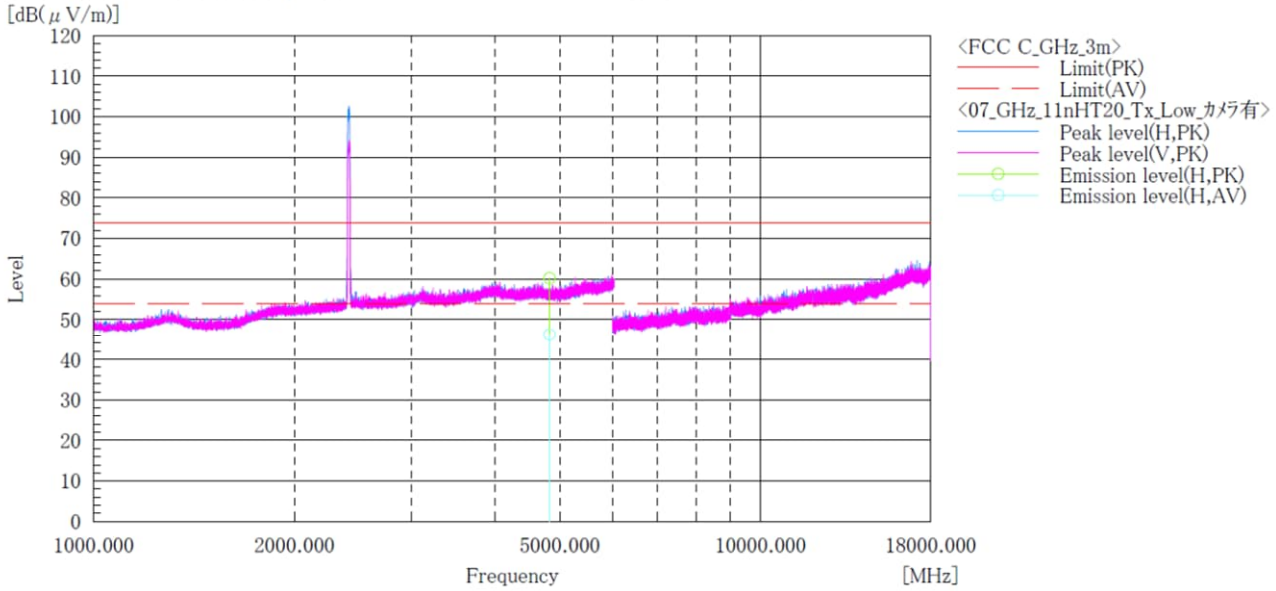
Final Result

No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]	Remark

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

[11n(HT20)]
Channel Low
ABOVE 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart C
EUT	: Mobile Phone	Operator	: K.Saito
Model No.	: EB1135	Temp,Hum,Atm	: 20.4[℃] 21.3[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11n(HT20)_Tx_ch:Low	Note2	:



Final Result

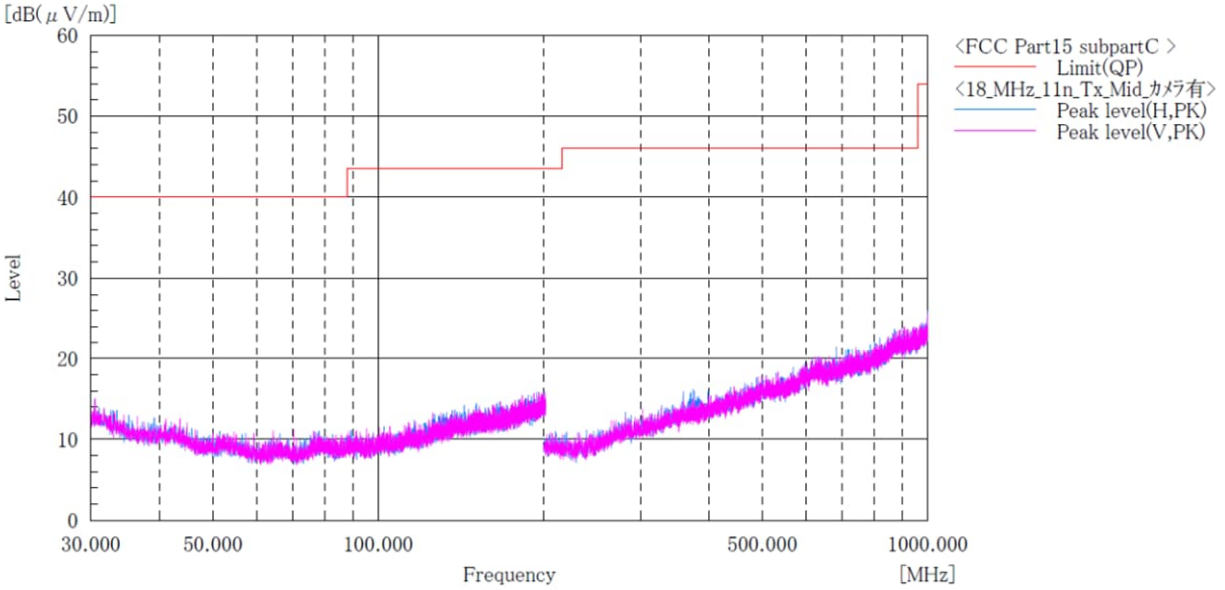
No.	Frequency	(P)	Reading PK	Reading AV	c.f	Result PK	Result AV	Limit PK	Limit AV	Margin PK	Margin AV	Height	Angle	Remark
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]	
1	4824.000	H	49.6	35.6	10.6	60.2	46.2	74.0	54.0	13.8	7.8	316.0	204.0	

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

Japan

[11n(HT20)]
Channel Middle
BELOW 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpartC
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: EB1135	Temp,Hum,Atm	: 22.9[℃] 19.0[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11n_Tx_ch:Middle	Note2	:



Final Result

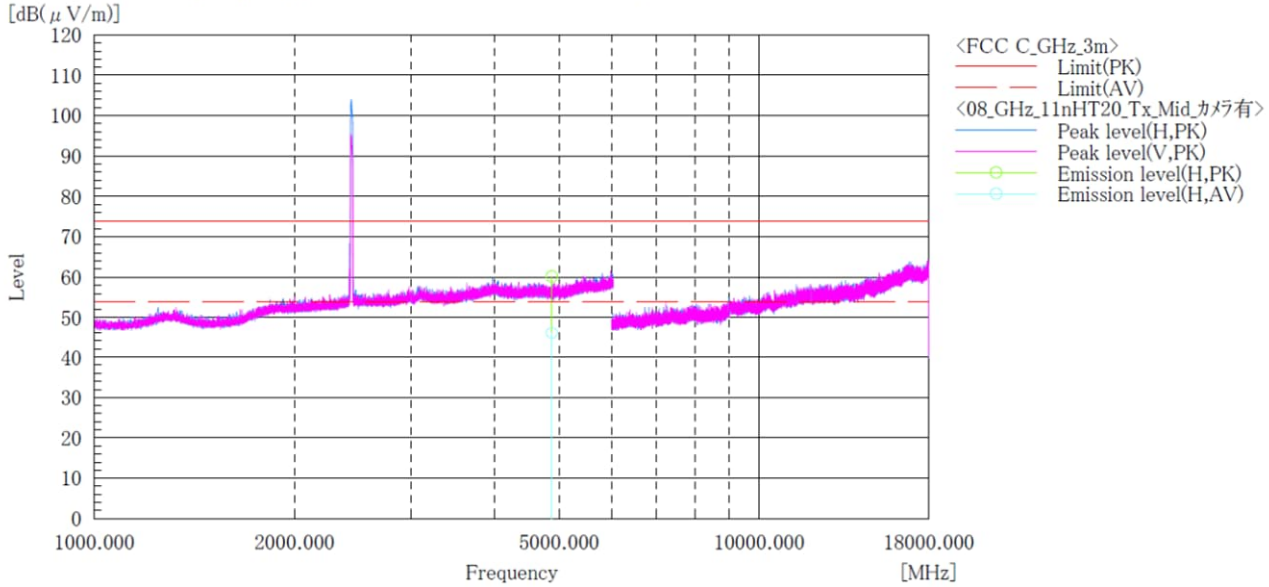
No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]	Remark

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

Japan

[11n(HT20)]
Channel Middle
ABOVE 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart C
EUT	: Mobile Phone	Operator	: K.Saito
Model No.	: EB1135	Temp,Hum,Atm	: 20.4[℃] 21.3[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11n(HT20)_Tx_ch:Middle	Note2	:



Final Result

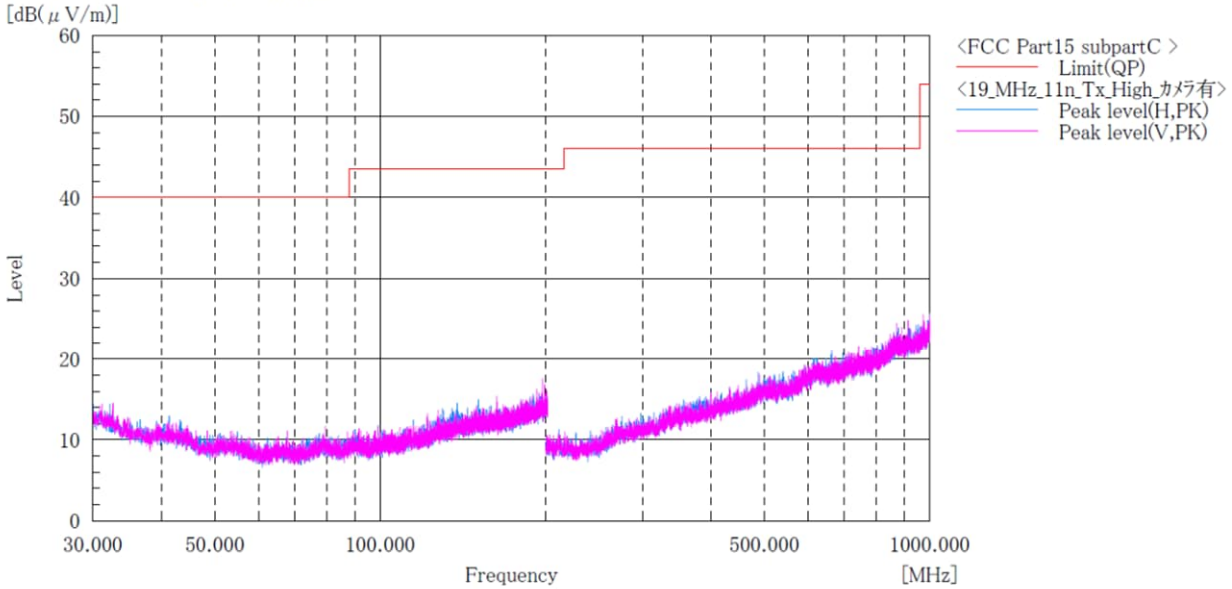
No.	Frequency	(P)	Reading PK	Reading AV	c.f	Result PK	Result AV	Limit PK	Limit AV	Margin PK	Margin AV	Height	Angle	Remark
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]	
1	4874.000	H	49.6	35.5	10.6	60.2	46.1	74.0	54.0	13.8	7.9	345.0	197.0	

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

Japan

[11n(HT20)]
Channel High
BELOW 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpartC
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: EB1135	Temp,Hum,Atm	: 22.9[℃] 19.0[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11n_Tx_ch:High	Note2	:



Final Result

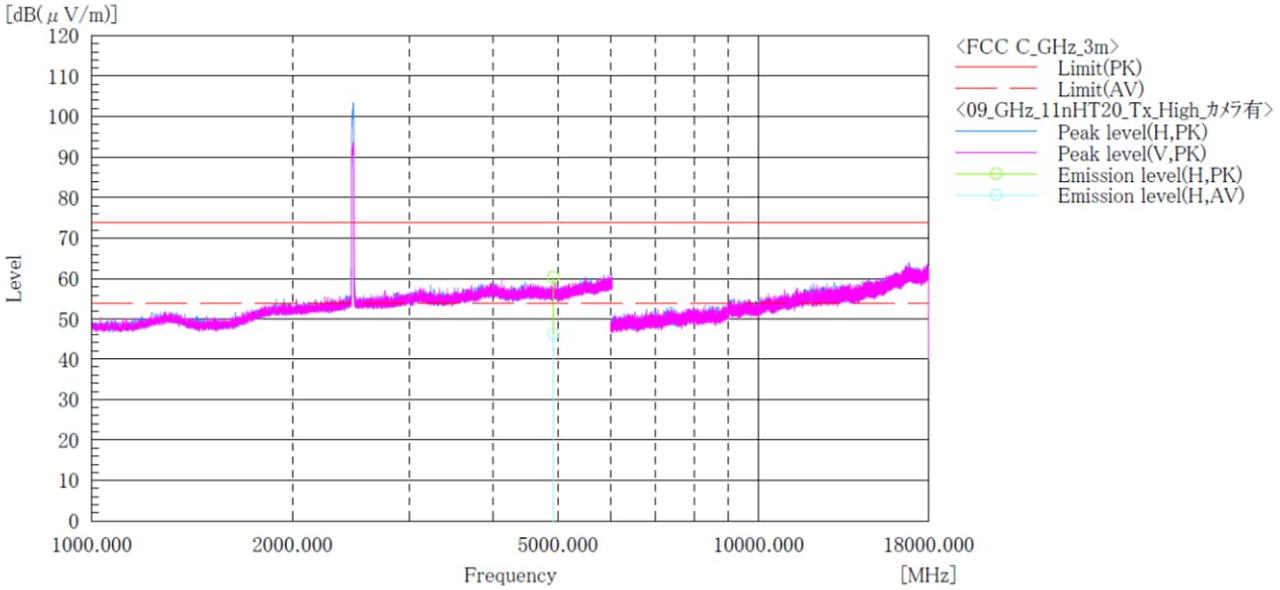
No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]	Remark

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

Japan

[11n(HT20)]
Channel High
ABOVE 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpart C
EUT	: Mobile Phone	Operator	: K.Saito
Model No.	: EB1135	Temp,Hum,Atm	: 20.4[℃] 21.3[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: 11n(HT20)_Tx_ch:High	Note2	:



Final Result

No.	Frequency	(P)	Reading PK	Reading AV	c.f	Result PK	Result AV	Limit PK	Limit AV	Margin PK	Margin AV	Height	Angle	Remark
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]	
1	4924.000	H	49.8	35.6	10.6	60.4	46.2	74.0	54.0	13.6	7.8	340.0	197.0	

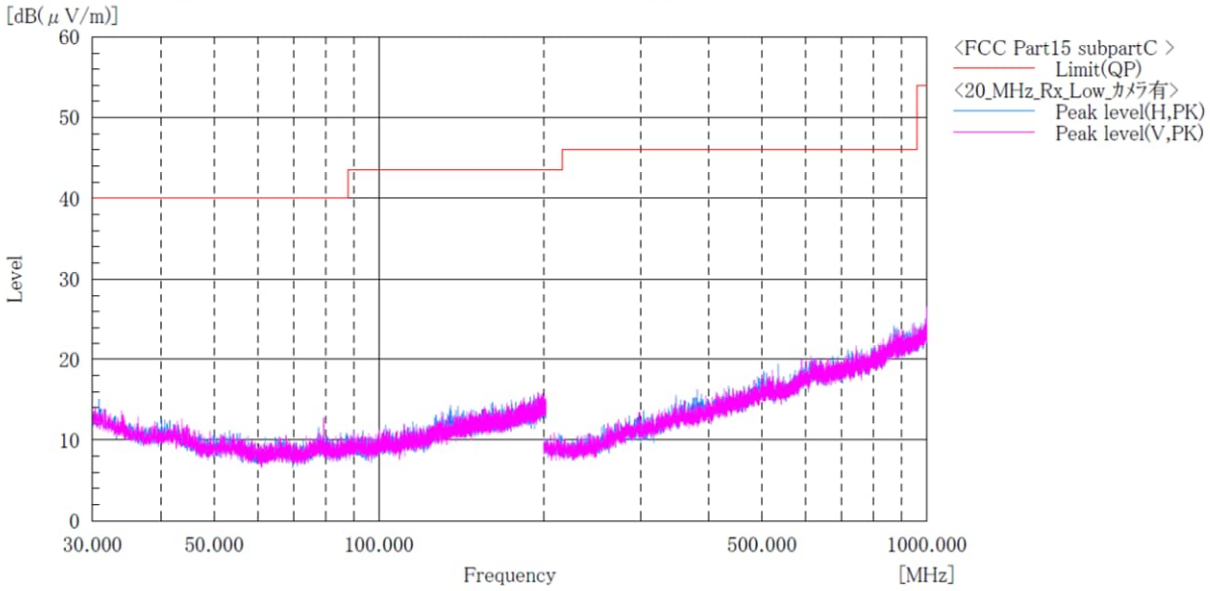
Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

Japan

4.5.4.2 Receive mode

Channel Low
BELOW 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpartC
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: EB1135	Temp,Hum,Atm	: 22.9[℃] 19.0[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: Rx_ch:Low	Note2	:



Final Result

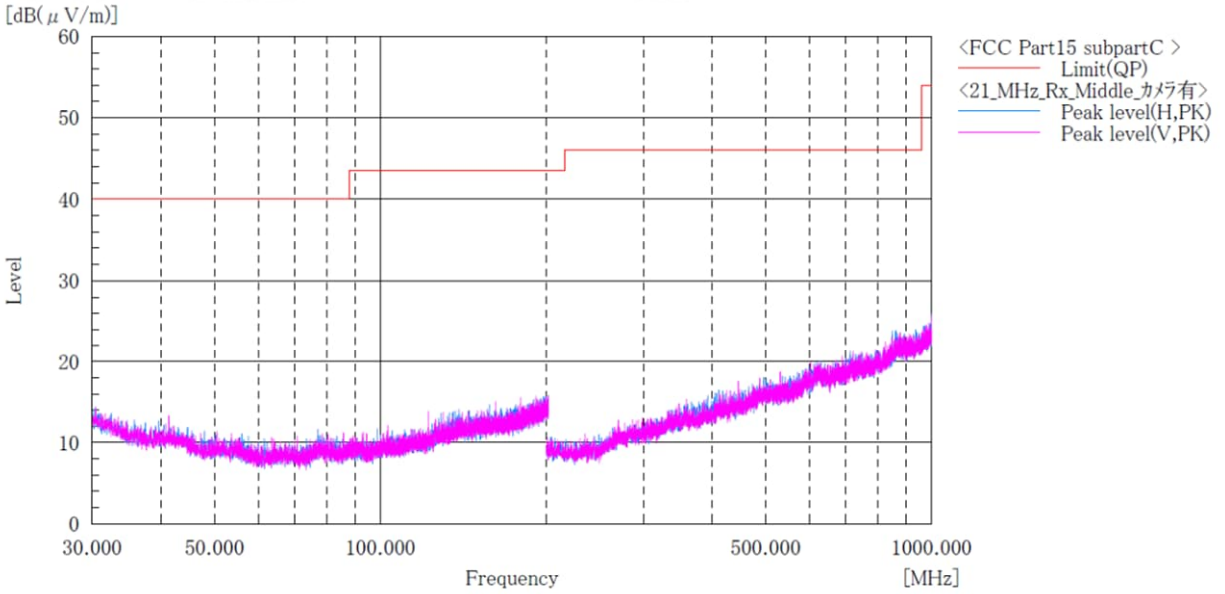
No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]	Remark

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz and 1GHz to 25GHz at the 3 meters distance.

Japan

Channel Middle
BELOW 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpartC
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: EB1135	Temp,Hum,Atm	: 22.9[℃] 19.0[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: Rx_ch:Middle	Note2	:



Final Result

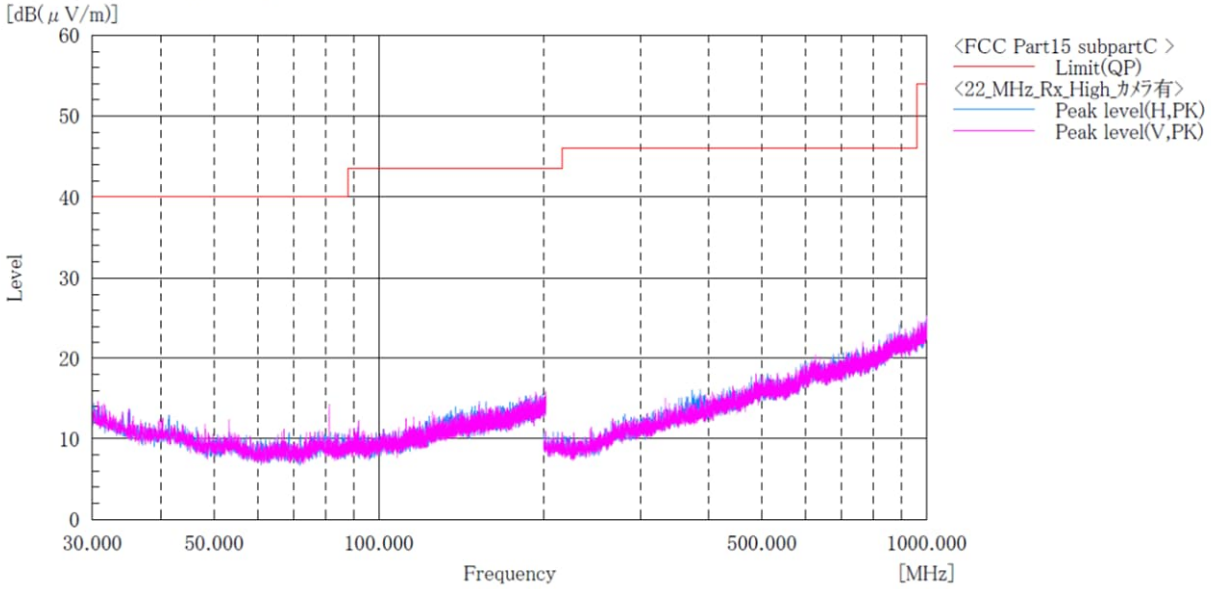
No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]	Remark

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz and 1GHz to 25GHz at the 3 meters distance.

Japan

Channel High
BELOW 1GHz

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 subpartC
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: EB1135	Temp,Hum,Atm	: 22.9[℃] 19.0[%]
Serial No.	: N/A	Note1	: X axis With camera_Open
Test mode	: Rx_ch:High	Note2	:



Final Result

No.	Frequency [MHz]	(P)	c.f [dB(1/m)]	Height [cm]	Angle [°]	Remark

Note:
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz and 1GHz to 25GHz at the 3 meters distance.

4.6 Restricted Band of Operation

4.6.1 Measurement procedure

[FCC 15.247(d), 15.205, 15.209, KDB 558074 D01 v05r02, Section 8.6]

Test was applied by following conditions.

Test method	:	ANSI C63.10
Test place	:	3m Semi-anechoic chamber
EUT was placed on	:	Styrofoam table / (W) 1.0 × (D) 1.0 × (H) 0.8 m (below 1 GHz) Styrofoam table / (W) 0.6 × (D) 0.6 ×(H) 1.5 m (above 1 GHz)
Antenna distance	:	3m
Spectrum analyzer setting		
- Peak	:	RBW=1 MHz, VBW=3 MHz, Span=Arbitrary setting, Sweep=auto
- Average	:	11b: RBW=1 MHz, VBW=3 kHz, Span= Arbitrary setting, Sweep=auto 11g, 11n: RBW=1 MHz, VBW=1 kHz, Span= Arbitrary setting, Sweep=auto Display mode=Linear

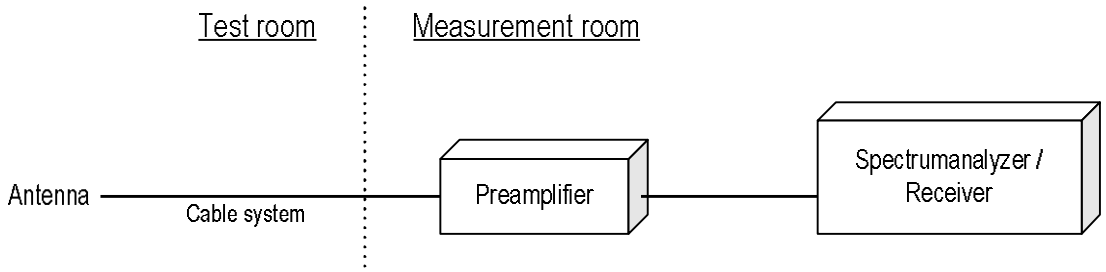
Average Measurement Setting [VBW]

mode	Duty Cycle (%)	Ton [μs]	Toff [μs]	1/Ton (kHz)	Determined VBW Setting
11b	96.26	990.5	38.5	1.010	3kHz
11g	96.94	1392	44	0.718	1kHz
11n(HT20)	96.70	1288	44	0.776	1kHz

Although these tests were performed other than open area test site, adequate comparison measurements
were confirmed against 30 m open are test 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 937606.

Radiated emission measurements are performed at 3m distance with the broadband antenna (Double ridged guide antenna). The antenna is positioned both the horizontal and vertical planes of polarization and height is varied 1m to 4m and stopped at height producing the maximum emission.
The EUT is Placed on a turntable, which is 0.8m/1.5m above ground plane. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. The test results represent the worst case emission for each emission with manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation. Sufficient time for the EUT, support equipment, and test equipment are allowed in order for them to warm up to their normal operating condition.

- Test configuration



Japan

4.6.2 Limit

Emission at the boundary of the restricted band provided by 15.205 shall be lower than 15.209 limit.

4.6.3 Measurement Result

[IEEE802.11b、IEEE802.11g、IEEE802.11n (HT20)]

Channel	Frequency [MHz]	Results Chart	Result
Low	2412	See the Trace Data	Pass
High	2462	See the Trace Data	Pass

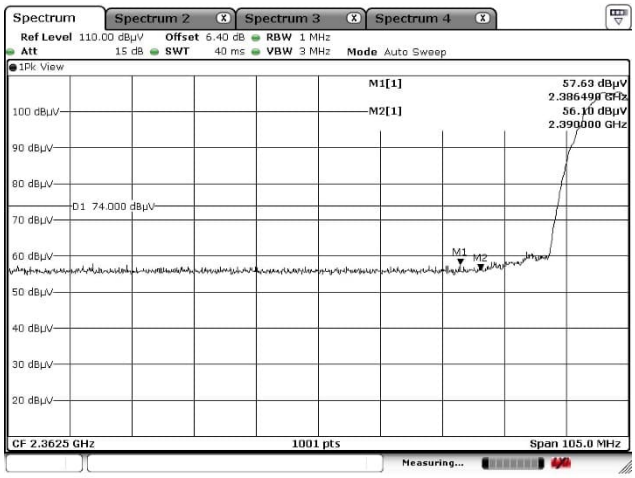
4.6.4 Test data

Date : 7~8-March-2022
Temperature : 20.9 [˚C]
Humidity : 21.1 [%] Test engineer : Tadahiro Seino
Test place : 3m Semi-anechoic chamber

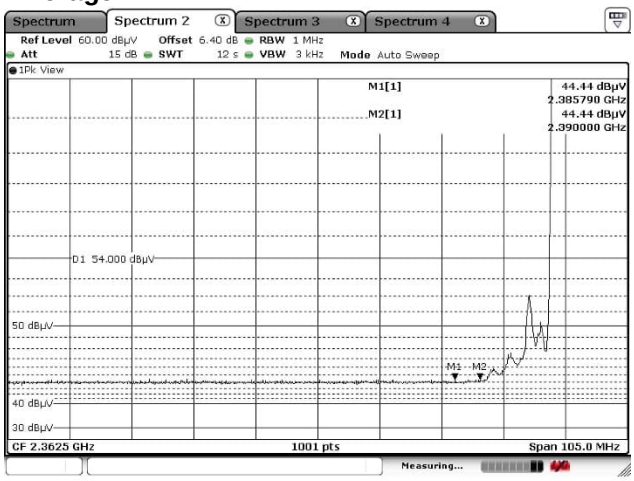
Japan

[IEEE802.11b]

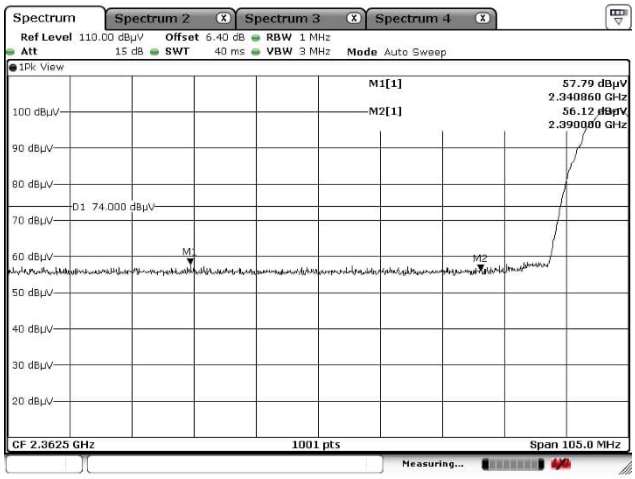
Channel Low
Horizontal
Peak



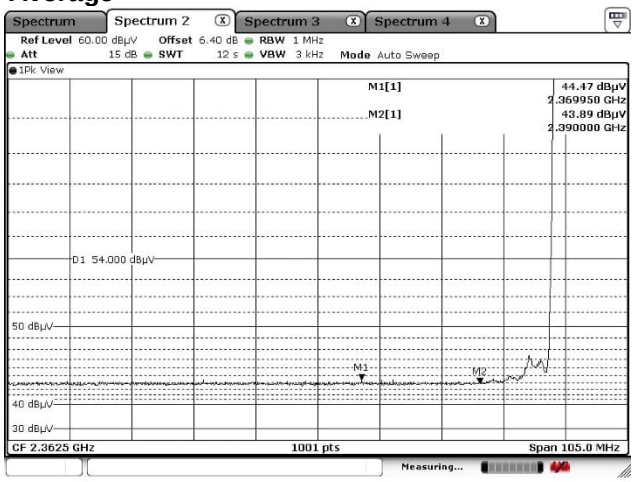
Average



Vertical
Peak



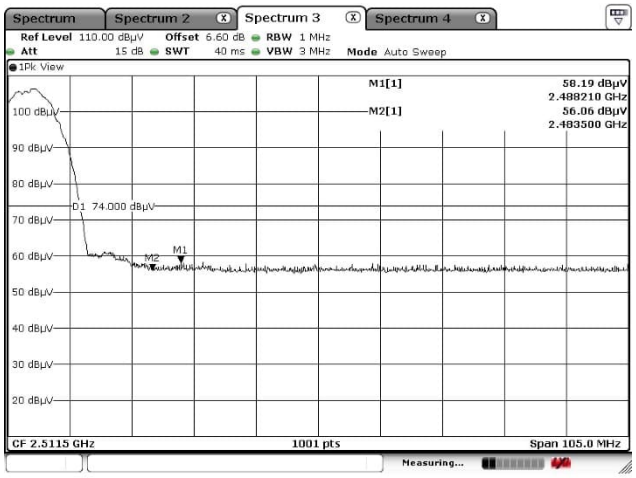
Average



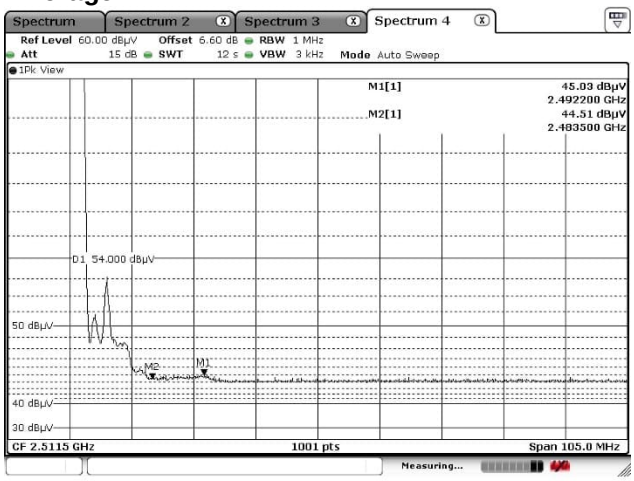
Japan

[IEEE802.11b]

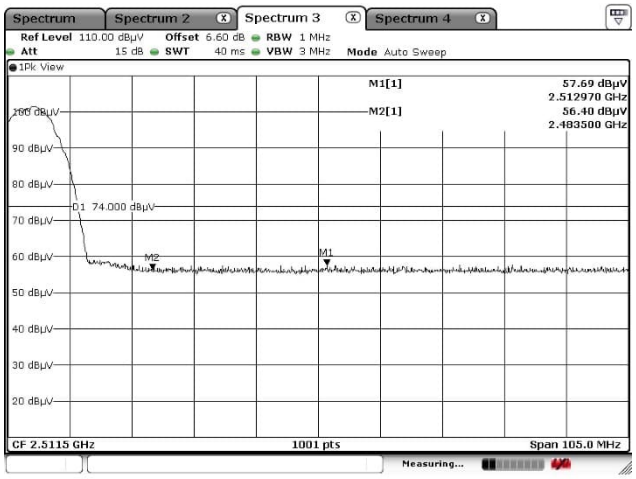
Channel High
Horizontal
Peak



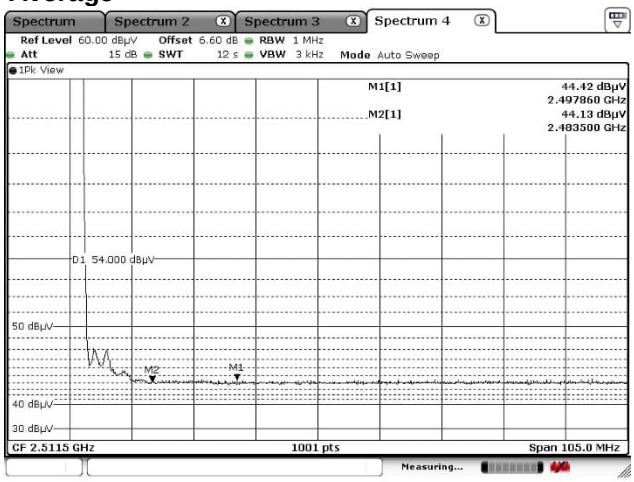
Average



Vertical
Peak

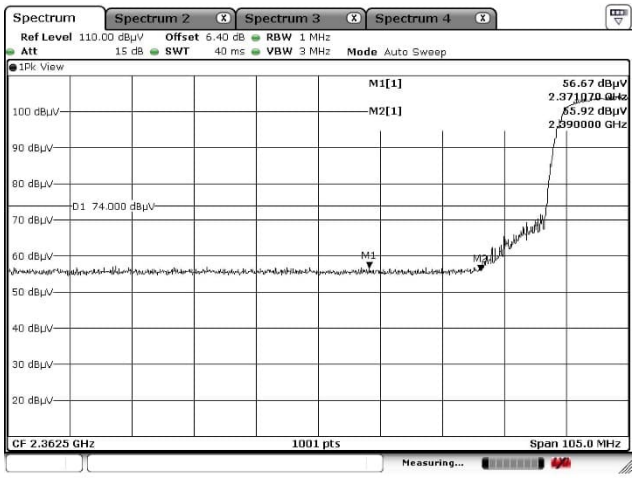


Average

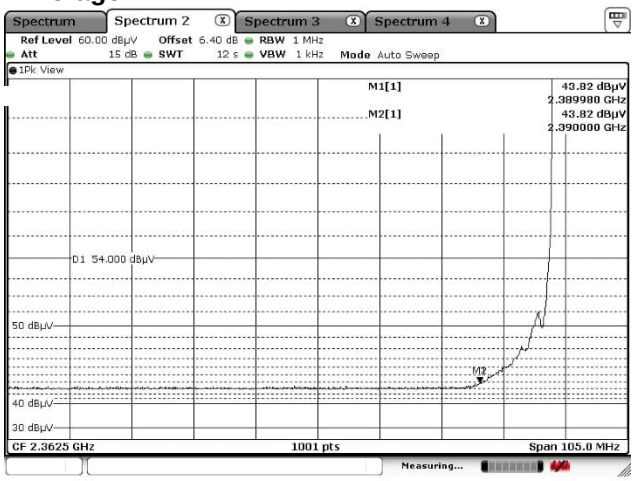


[IEEE802.11g]

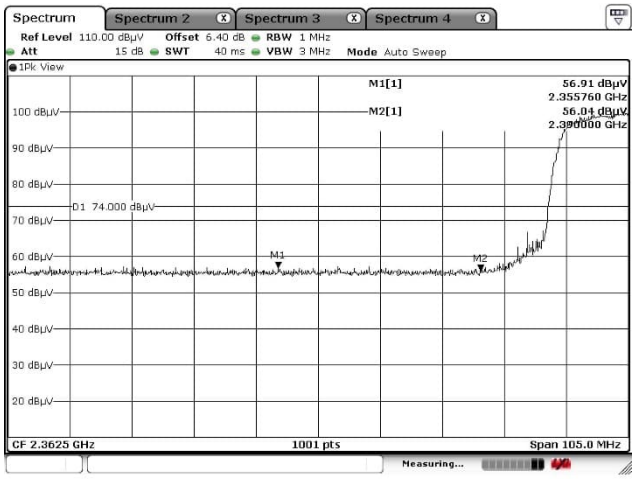
Channel Low
Horizontal
Peak



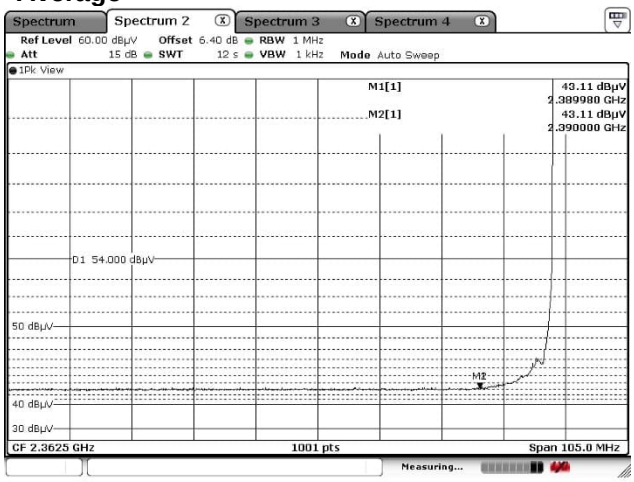
Average



Vertical
Peak



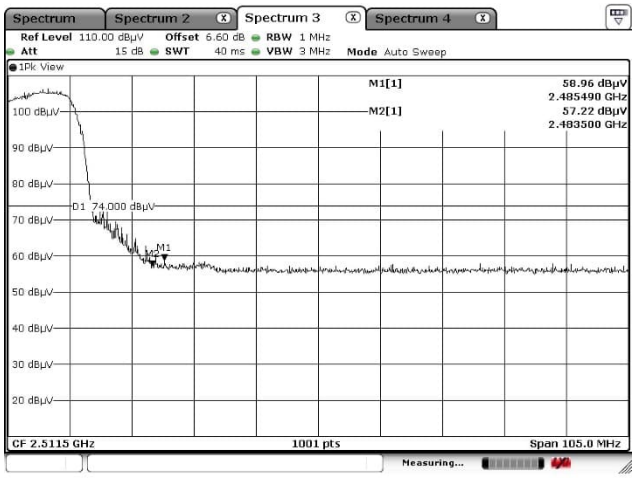
Average



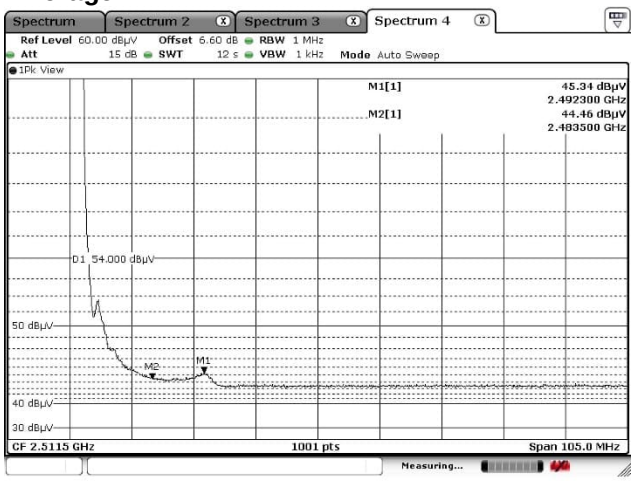
Japan

[IEEE802.11g]

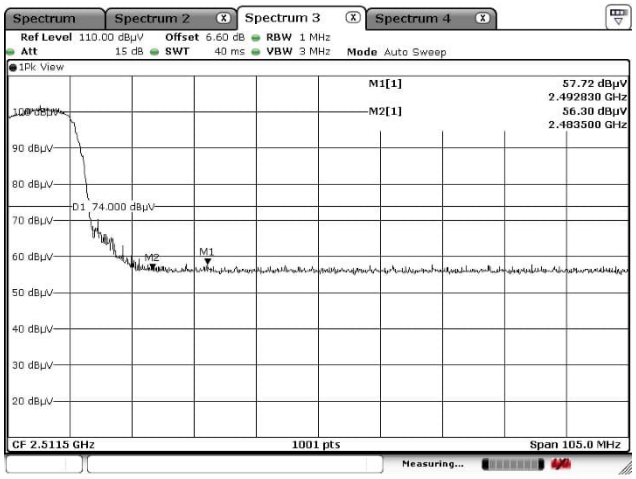
Channel High
Horizontal
Peak



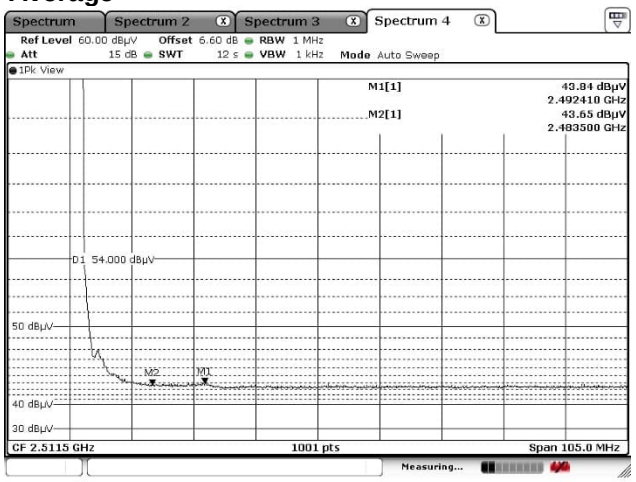
Average



Vertical
Peak

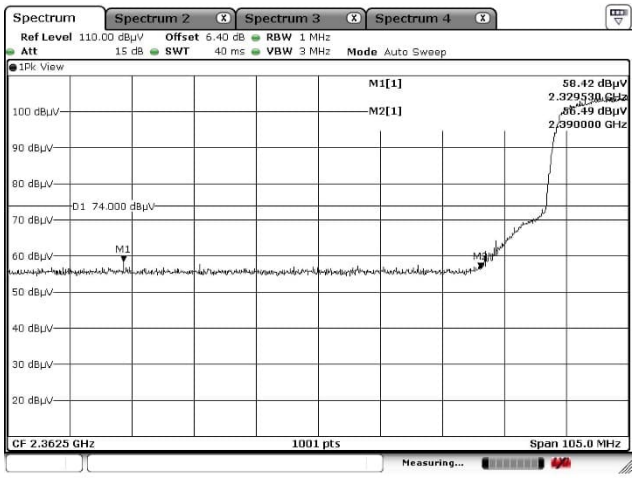


Average

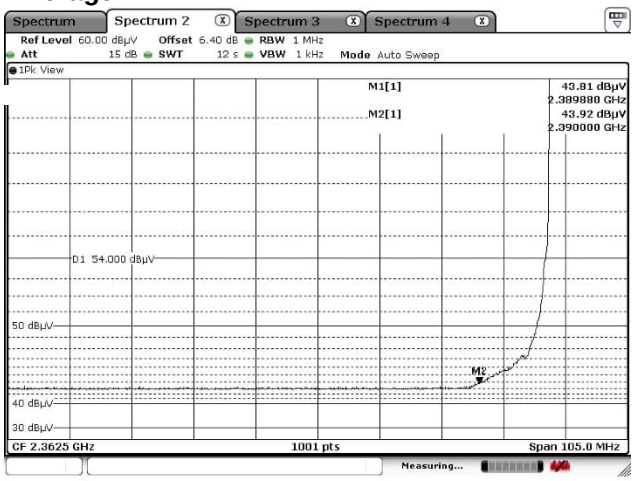


[IEEE802.11n (HT20)]

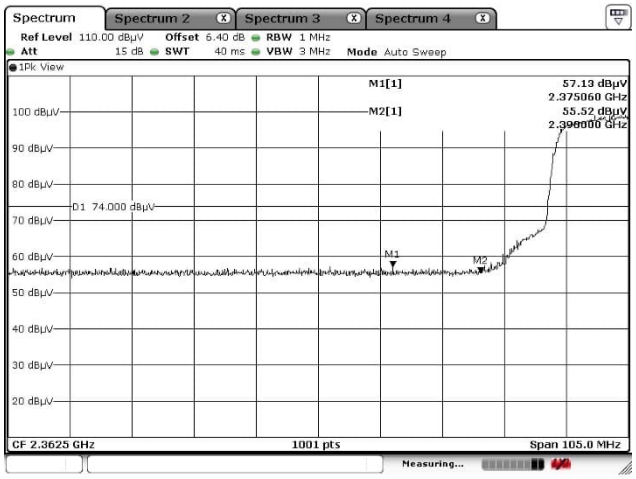
Channel Low
Horizontal
Peak



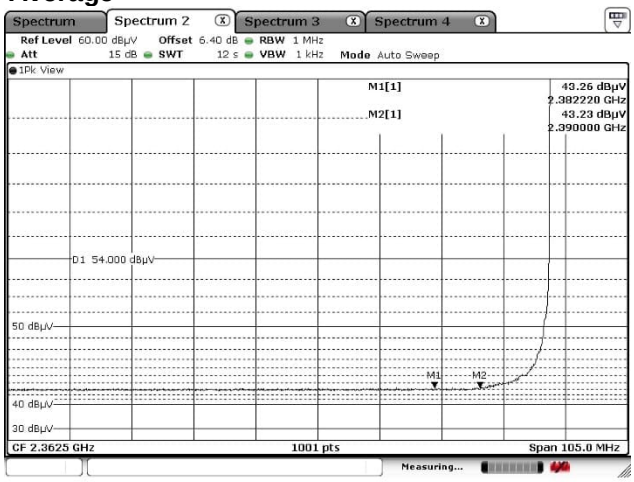
Average



Vertical
Peak



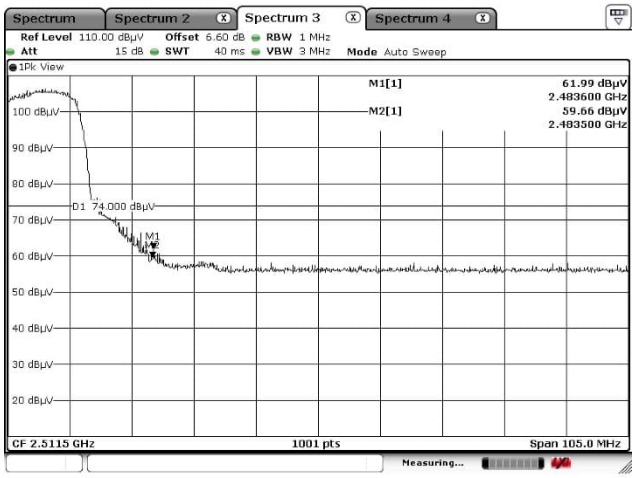
Average



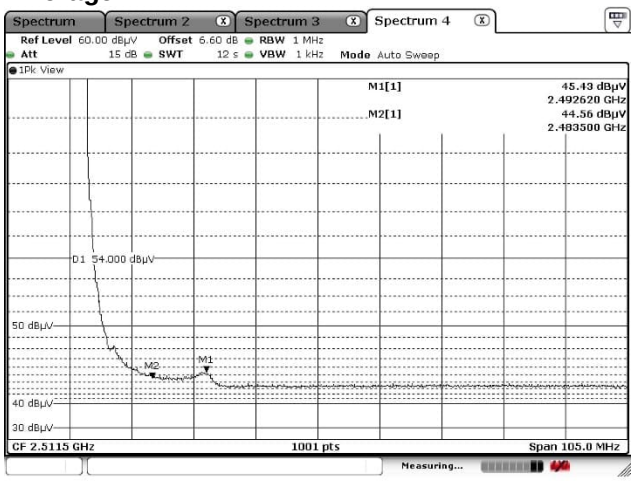
Japan

[IEEE802.11n (HT20)]

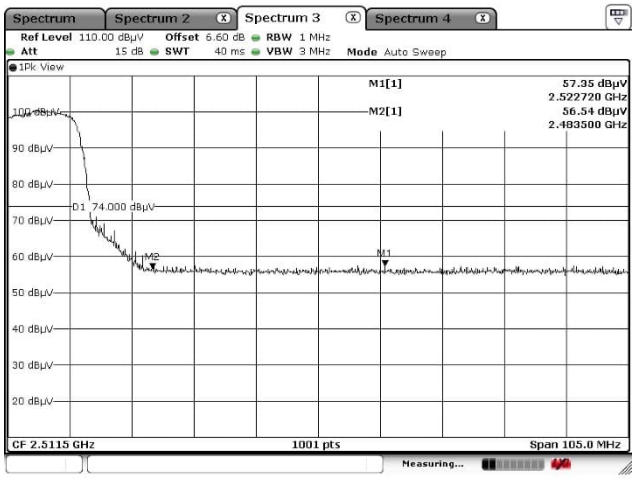
Channel High
Horizontal
Peak



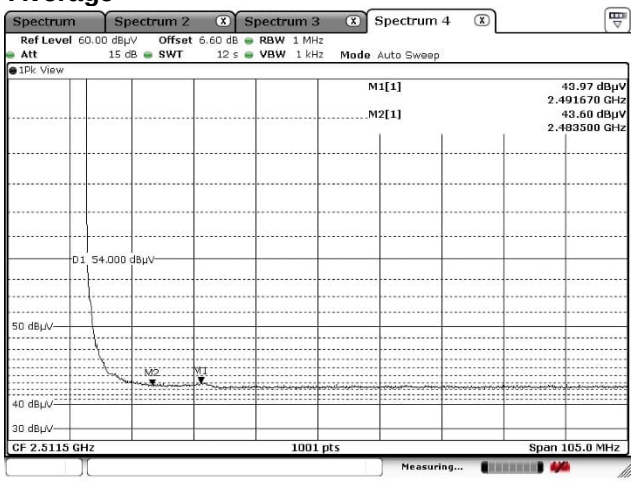
Average



Vertical
Peak



Average



Japan

4.7 Transmitter Power Spectral Density

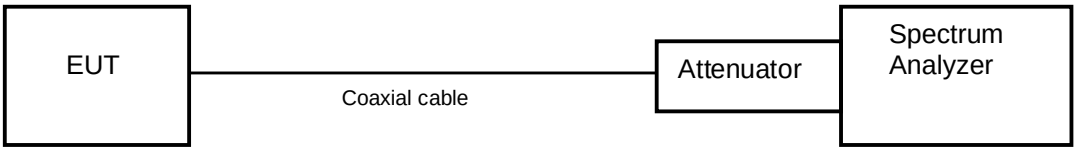
4.7.1 Measurement procedure

[FCC 15.247(e), KDB 558074 D01 v05r02, Section 8.4]

The peak power is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
a) Span = 1.5 times the 6 dB bandwidth.
b) RBW = 3kHz - 100kHz.
c) VBW ≥ 3 x RBW.
d) Sweep time = auto-couple.
e) Detector = peak.
f) Trace mode = max hold.

- Test configuration



4.7.2 Limit

The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band.

4.7.3 Measurement result

Date	:	9-July-2024		
Temperature	:	24.1 [˚C]		
Humidity	:	54.7 [%]	Test engineer	:
Test place	:	Shielded room No.4		Kazunori Saito

Japan

[IEEE802.11b]

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dBm)	Result
Low	2412	-20.37	10.93	-9.44	8.00	17.44	PASS
Middle	2437	-20.34	10.93	-9.41	8.00	17.41	PASS
High	2462	-20.31	10.93	-9.38	8.00	17.38	PASS

Calculation;
Transmitter Power Spectral Density Level (Margin) = Limit – (Reading + Factor)

[IEEE802.11g]

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dBm)	Result
Low	2412	-26.19	10.93	-15.26	8.00	23.26	PASS
Middle	2437	-24.71	10.93	-13.78	8.00	21.78	PASS
High	2462	-25.35	10.93	-14.42	8.00	22.42	PASS

Calculation;
Transmitter Power Spectral Density Level (Margin) = Limit – (Reading + Factor)

[IEEE802.11n (HT20)]

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dBm)	Result
Low	2412	-25.90	10.93	-14.97	8.00	22.97	PASS
Middle	2437	-25.45	10.93	-14.52	8.00	22.52	PASS
High	2462	-24.09	10.93	-13.16	8.00	21.16	PASS

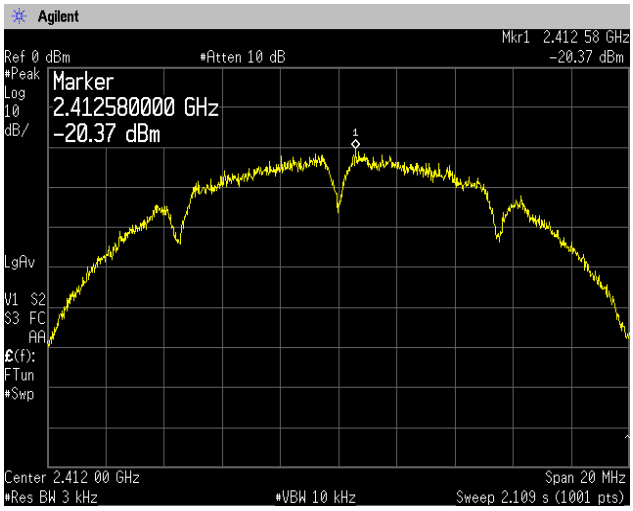
Calculation;
Transmitter Power Spectral Density Level (Margin) = Limit – (Reading + Factor)

Japan

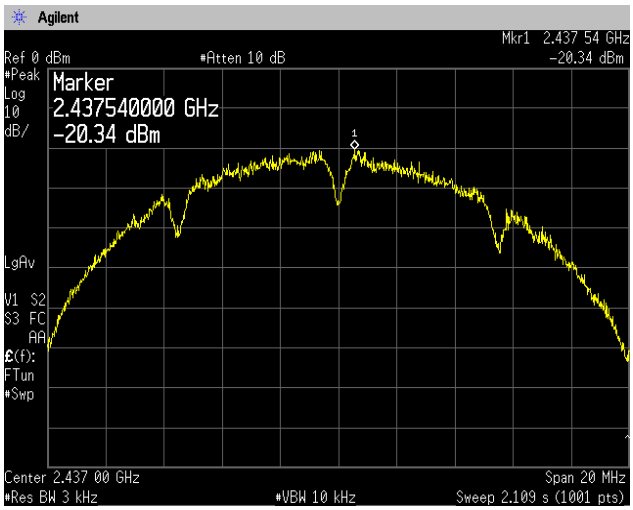
4.7.4 Trace data

[IEEE802.11b]

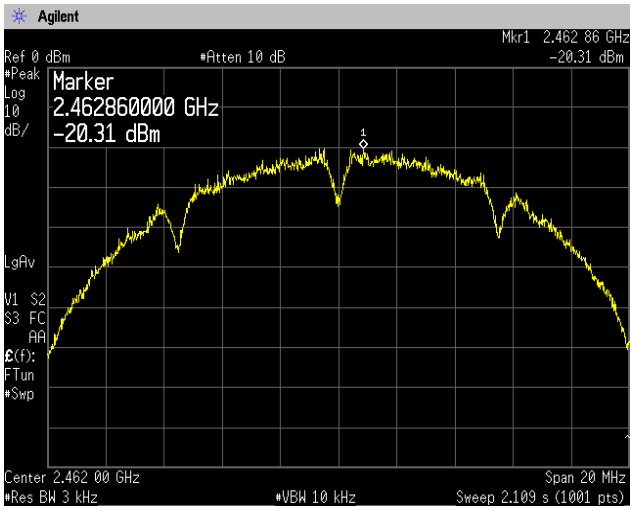
Channel Low



Channel Middle



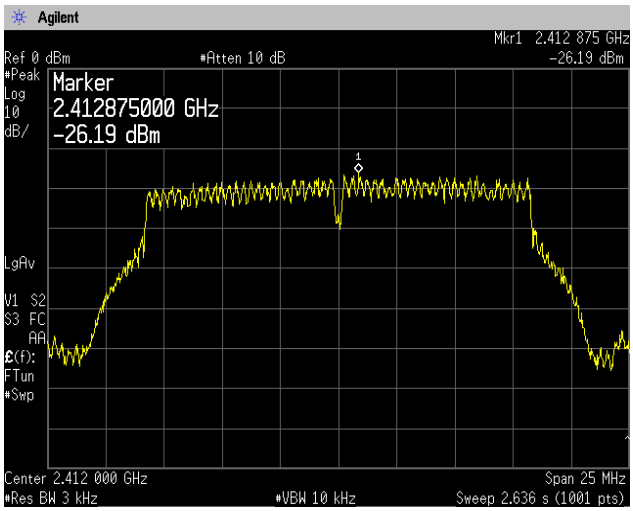
Channel High



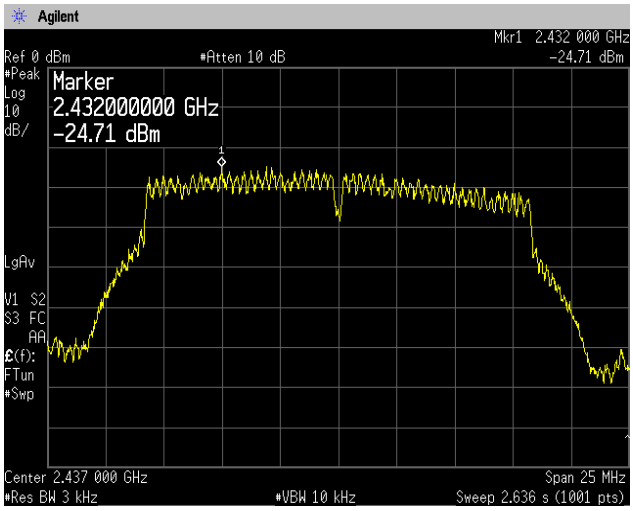
Japan

[IEEE802.11g]

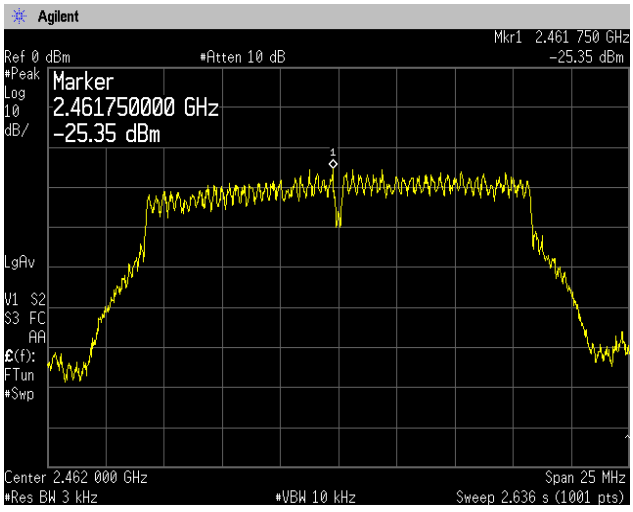
Channel Low



Channel Middle



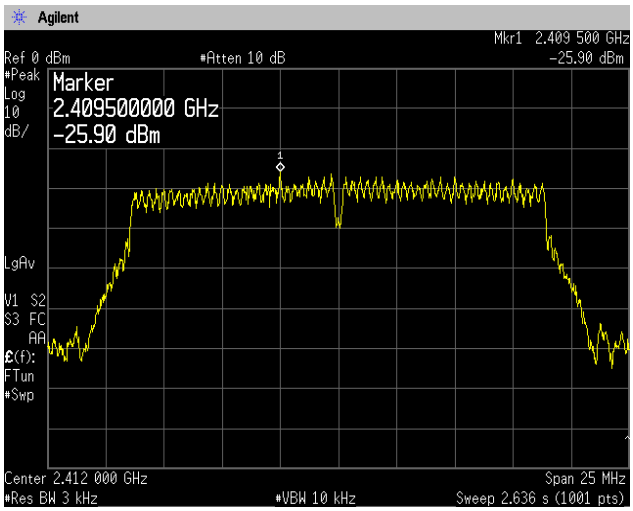
Channel High



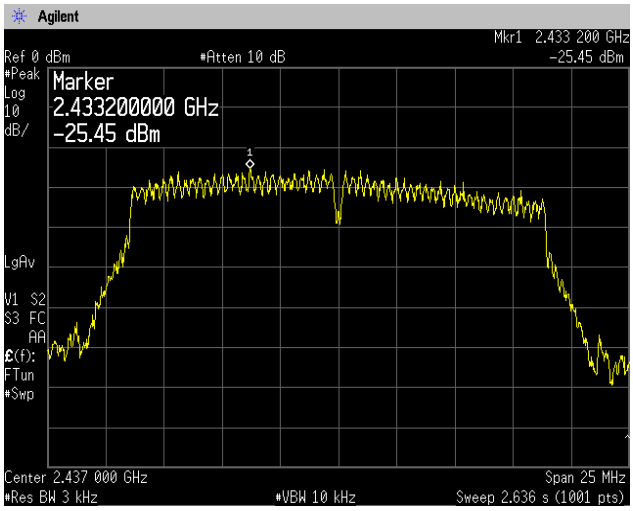
Japan

[IEEE802.11n (HT20)]

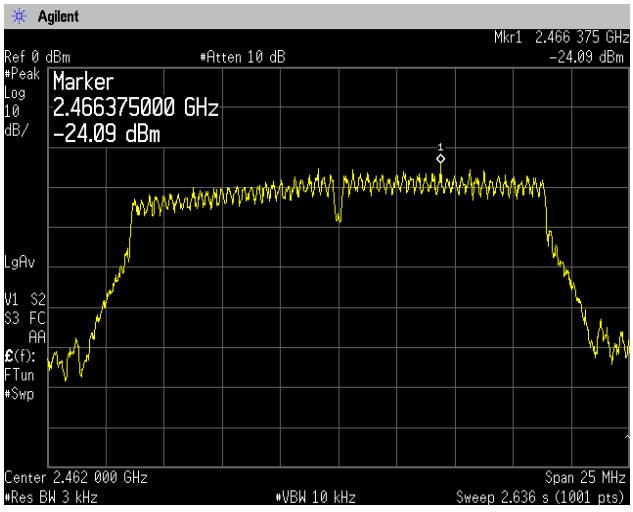
Channel Low



Channel Middle



Channel High



Japan

4.8 AC Power Line Conducted Emissions

4.8.1 Measurement procedure

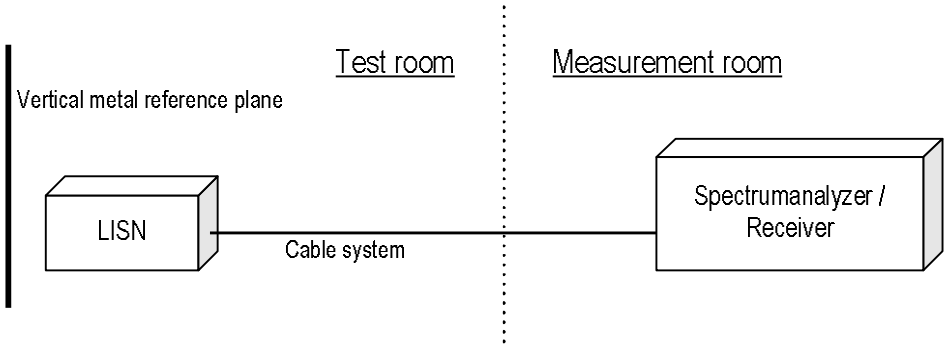
[FCC 15.207]

Test was applied by following conditions.

Test method	:	ANSI C63.10
Frequency range	:	0.15 MHz to 30 MHz
Test place	:	3m Semi-anechoic chamber
EUT was placed on	:	FRP table / (W) 2.0 × (D) 1.0 × (H) 0.8 m
Vertical Metal Reference Plane	:	(W) 2.0 × (H) 2.0 m, 0.4 m away from EUT
Test receiver setting		
- Detector	:	Quasi-peak, Average
- Bandwidth	:	9 kHz

EUT and peripherals are connected to 50Ω/50 μH Line Impedance Stabilization Network (LISN) which are connected to reference ground plane, and are placed 80cm away from EUT. Excess of AC power cable is bundled in center.
LISN for peripheral is terminated in 50Ω.
EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Maximum emission configuration is determined by manipulating the EUT, peripherals, interconnecting cables. Then, emission measurements are performed with test receiver in above setting to each current-carrying conductor of the mains port. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits.

- Test configuration



4.8.2 Calculation method

Emission level = Reading + (LISN. Factor + Cable system loss)
Margin = Limit – Emission level

Example:
Limit @ 0.403 MHz: 57.8 dBμV(Quasi-peak)
: 47.8 dBμV(Average)
(Quasi peak)Reading = 22.7 dBμV c.f. = 10.4 dB
Emission level = 22.7 + 10.4 = 33.1 dBμV
Margin = 57.8 – 33.1 = 24.7 dB
(Average) Reading = 6.5 dBμV c.f. = 10.4 dB
Emission level = 6.5 + 10.4 = 16.9 dBμV
Margin = 47.8 – 16.9 = 30.9 dB

Japan

4.8.3 Limit

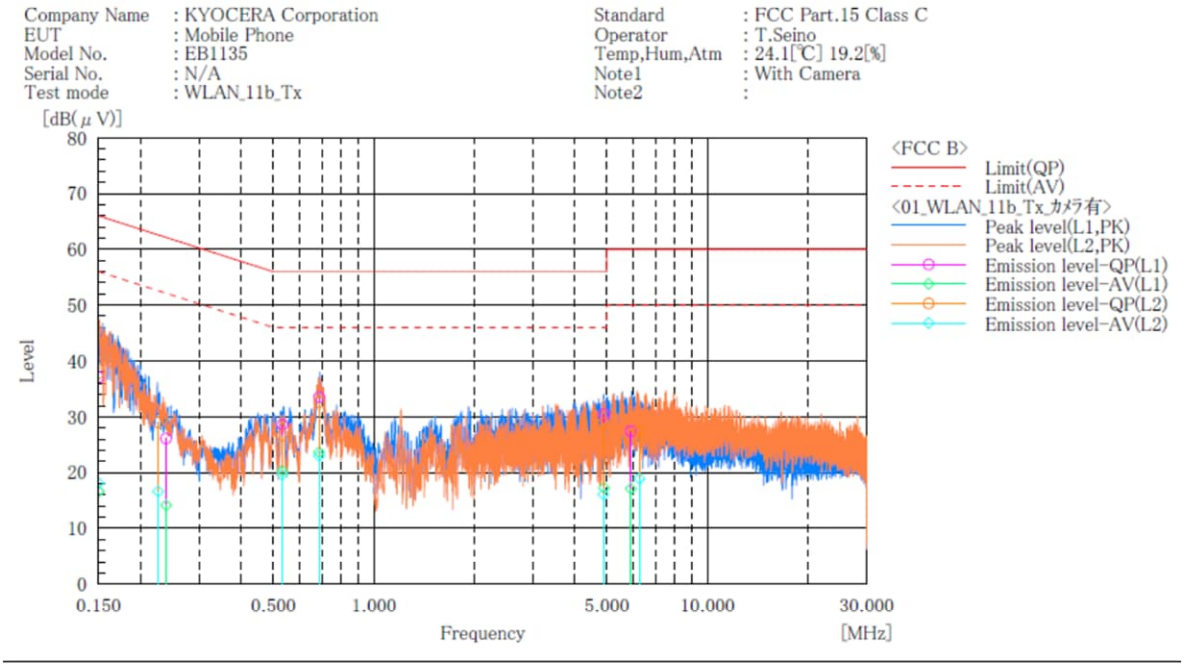
Frequency [MHz]	Limit	
	QP [dBuV]	AV [dBuV]
0.15-0.5	66-56*	56-46*
0.5-5	56	46
5-30	60	50

*: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

Japan

4.8.4 Test data

Date	:	10~11-March-2022		
Temperature	:	24.1 [˚C]		
Humidity	:	19.2 [%]	Test engineer	:
Test place	:	3m Semi-anechoic chamber		Tadahiro Seino



Final Result

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result CAV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin CAV [dB]
1	0.150	26.6	6.1	10.5	37.1	16.6	66.0	56.0	28.9	39.4
2	0.239	15.8	3.8	10.3	26.1	14.1	62.1	52.1	36.0	38.0
3	0.533	18.3	10.0	10.3	28.6	20.3	56.0	46.0	27.4	25.7
4	0.687	23.2	13.3	10.3	33.5	23.6	56.0	46.0	22.5	22.4
5	4.904	19.8	6.6	10.6	30.4	17.2	56.0	46.0	25.6	28.8
6	5.897	16.7	6.4	10.7	27.4	17.1	60.0	50.0	32.6	32.9

--- L2 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result CAV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin CAV [dB]
1	0.150	27.3	7.6	10.5	37.8	18.1	66.0	56.0	28.2	37.9
2	0.226	18.6	6.2	10.4	29.0	16.6	62.6	52.6	33.6	36.0
3	0.532	16.3	9.3	10.3	26.6	19.6	56.0	46.0	29.4	26.4
4	0.687	22.3	12.7	10.3	32.6	23.0	56.0	46.0	23.4	23.0
5	4.877	18.2	5.5	10.6	28.8	16.1	56.0	46.0	27.2	29.9
6	6.246	16.6	8.1	10.8	27.4	18.9	60.0	50.0	32.6	31.1

Japan

5 Antenna requirement

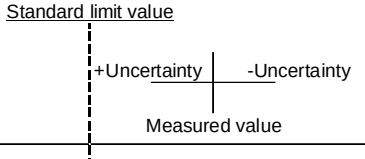
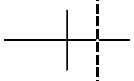
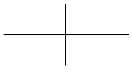
According to FCC section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
The antenna is a special antenna mounted inside of the EUT. Therefore, the EUT complies with the antenna requirement of FCC section 15.203.

Japan

6 Measurement Uncertainty

Expanded uncertainties stated are calculated with a coverage Factor k=2.
Please note that these results are not taken into account when measurement uncertainty considerations contained in ETSI TR 100 028 Parts 1 and 2 determining compliance or non-compliance with test result.

Test item	Measurement uncertainty
Conducted emission, AMN (9 kHz – 150 kHz)	±3.7 dB
Conducted emission, AMN (150 kHz – 30 MHz)	±3.3 dB
Radiated emission (9kHz – 30 MHz)	±3.2 dB
Radiated emission (30 MHz – 1000 MHz)	±5.5 dB
Radiated emission (1 GHz – 6 GHz)	±4.8 dB
Radiated emission (6 GHz – 18 GHz)	±4.4 dB
Radiated emission (18 GHz – 40 GHz)	±6.4 dB
Radio Frequency	$\pm 1.3 * 10^{-8}$
RF power, conducted	±0.7 dB
Adjacent channel power	±1.5 dB
Temperature	±0.6 °C
Humidity	±1.2 %
Voltage (DC)	±0.4 %
Voltage (AC, <10kHz)	±0.2 %

Judge	Measured value and standard limit value	
PASS	Case1	 Even if it takes uncertainty into consideration, a standard limit value is fulfilled.
	Case2	 Although measured value is in a standard limit value, a limit value won't be fulfilled if uncertainty is taken into consideration.
FAIL	Case3	 Although measured value exceeds a standard limit value, a limit value will be fulfilled if uncertainty is taken into consideration.
	Case4	 Even if it takes uncertainty into consideration, a standard limit value isn't fulfilled.

Japan

7 Laboratory Information

Testing was performed and the report was issued at:

TÜV SÜD Japan Ltd. Yonezawa Testing Center

Address: 5-4149-7 Hachimanpara, Yonezawa-shi, Yamagata, 992-1128 Japan
Phone: +81-238-28-2881

Accreditation and Registration
A2LA
Certificate #3686.03

VLAC
Accreditation No.: VLAC-013

BSMI
Laboratory Code: SL2-IN-E-6018, SL2-A1-E-6018

Innovation, Science and Economic Development Canada
ISED#: 4224A

VCCI Council
Registration number: A-0166

Appendix A. Test Equipment

Antenna port conducted test

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
Spectrum analyzer	Agilent Technologies	E4440A	US44302655	30-Sep-2022	20-Sep-2021
				31-Oct-2024	06-Oct-2023
Attenuator	Weinschel	56-10	J4993	31-Dec-2022	21-Dec-2021
				31-Dec-2024	19-Dec-2023
Power meter	ROHDE&SCHWARZ	NRP2	103269	31-Mar-2022	10-Mar-2021
				31-Mar-2023	02-Mar-2022
				31-Mar-2025	26-Mar-2024
Power sensor	ROHDE&SCHWARZ	NRP-Z81	102467	31-Mar-2022	10-Mar-2021
				31-Mar-2023	02-Mar-2022
				31-Mar-2025	26-Mar-2024

Radiated emission

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	30-Sep-2022	15-Sep-2021
Spectrum analyzer	Agilent Technologies	E4440A	US40420937	31-Dec-2022	13-Dec-2021
Spectrum analyzer	ROHDE&SCHWARZ	FSV40	101731	30-Jun-2022	08-Jun-2021
Preamplifier	SONOMA	310	372170	30-Sep-2022	15-Sep-2021
Loop antenna	ROHDE&SCHWARZ	HFH2-Z2	100515	30-Apr-2022	27-Apr-2021
Attenuator	TOYO Connector	NA-PJ-6	N/A(S507)	28-Feb-2023	03-Feb-2022
Biconical antenna	Schwarzbeck	VHBB9124/BBA9106	1333	31-Dec-2022	15-Dec-2021
Log periodic antenna	Schwarzbeck	VUSLP9111B	346	31-Oct-2022	15-Oct-2021
Attenuator	TOYO Connector	NA-PJ-6/6dB	N/A(S541)	30-Sep-2022	16-Sep-2021
Attenuator	TAMAGAWA.ELEC	CFA-10/3dB	N/A(S503)	31-Jul-2022	20-Jul-2021
Preamplifier	TSJ	MLA-100M18-B02-40	1929118	31-Dec-2022	22-Dec-2021
Attenuator	AEROFLEX	26A-10	081217-08	31-Dec-2022	22-Dec-2021
Double ridged guide antenna	ETS LINDGREN	3117	00052315	31-May-2022	24-May-2021
Attenuator	HUBER+SUHNER	6803.17.B	N/A(2340)	31-Dec-2022	23-Dec-2021
Double ridged guide antenna	A.H.Systems Inc.	SAS-574	469	31-Aug-2022	02-Aug-2021
Preamplifier	TSJ	MLA-1840-B03-35	1240332	31-Aug-2022	02-Aug-2021
Band rejection filter	Micro-Tronics	BRC50702	G433	30-Sep-2022	15-Sep-2021
Microwave cable	HUBER+SUHNER	SUCOFLEX104/9m	MY30037/4	31-Dec-2022	22-Dec-2021
		SUCOFLEX104/1m	my24610/4	31-Dec-2022	22-Dec-2021
		SUCOFLEX104/8m	SN MY30033/4	31-Dec-2022	22-Dec-2021
		SUCOFLEX104/1m	MY32976/4	31-Dec-2022	22-Dec-2021
		SUCOFLEX104/2m	SN MY28404/4	31-Dec-2022	22-Dec-2021
		SUCOFLEX104/7m	41625/6	31-Dec-2022	22-Dec-2021
PC	DELL	DIMENSION E521	75465BX	N/A	N/A
Software	TOYO Corporation	EP5/RE-AJ	0611193/V6.0.140	N/A	N/A
Absorber	RIKEN	PFP30	N/A	N/A	N/A
3m Semi an-echoic Chamber	TOKIN	N/A	N/A(9002-NSA)	31-May-2022	20-May-2021
3m Semi an-echoic Chamber	TOKIN	N/A	N/A(9002-SVSWR)	31-May-2022	20-May-2021

*: The calibrations of the above equipment are traceable to NIST or equivalent standards of the reference organizations.

Conducted emission at mains port

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	30-Sep-2022	15-Sep-2021
Attenuator	HUBER+SUHNER	6810.01.A	N/A (S411)	31-Dec-2022	22-Dec-2021
Line impedance stabilization network	Kyoritsu Electrical Works, Ltd.	TNW-407F2	12-17-110-2	30-Jun-2022	17-Jun-2021
Microwave cable	HUBER+SUHNER	SUCOFLEX104/5m	MY33601/4	31-Oct-2022	26-Oct-2021
Microwave cable	HUBER+SUHNER	SUCOFLEX104/2m	MY37268/4	31-Oct-2022	28-Oct-2021
Coaxial cable	HUBER+SUHNER	RG214/U/10m	N/A (S194)	31-Dec-2022	22-Dec-2021
PC	DELL	DIMENSION	75465BX	N/A	N/A
Software	TOYO Corporation	EP5/CE-AJ	0611193/V5.4.11	N/A	N/A

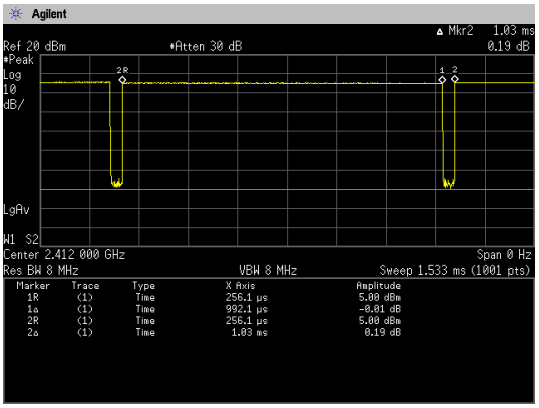
*: The calibrations of the above equipment are traceable to NIST or equivalent standards of the reference organizations.

Japan

Appendix B. Duty Cycle

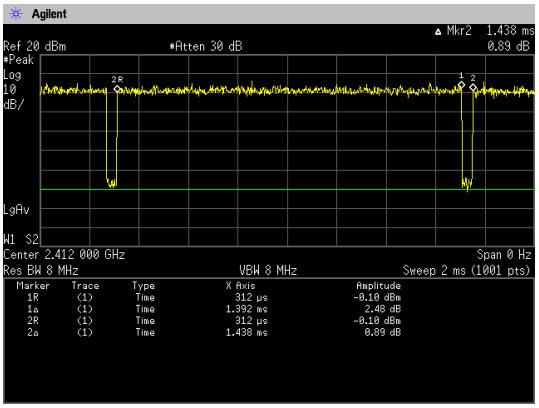
[Plot & Calculation]

11b



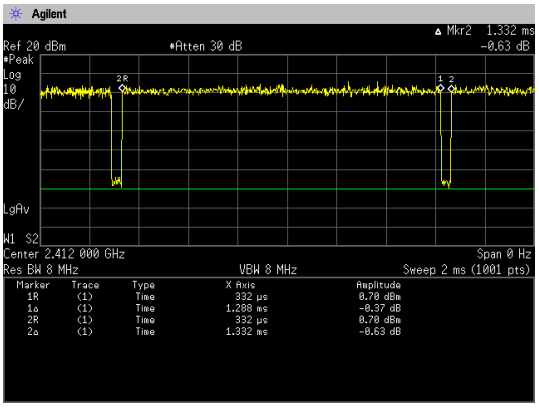
Duty Cycle = Ton / (Ton + Toff) = 992.1[µs] / (992.1[µs] + 37.9[µs]) =96.32[%]

11g



Duty Cycle = Ton / (Ton + Toff) = 1392[µs] / (1392[µs] + 46[µs]) =96.8[%]

11n (HT20)



Duty Cycle = Ton / (Ton + Toff) = 1288[µs] / (1288[µs] + 44[µs]) =96.7[%]