

Report on the RF Testing of:

KYOCERA Corporation
Mobile Phone, Model: EB1055
FCC ID: JOYEB1055

In accordance with FCC Part15 Subpart C

Prepared for: KYOCERA Corporation
Yokohama Office 2-1-1 Kagahara, Tsuzuki-ku
Yokohama-shi, Kanagawa, Japan
Phone: +81-45-943-6253 Fax: +81-45-943-6314



Japan

Add value.
Inspire trust.

COMMERCIAL-IN-CONFIDENCE

Document Number: JPD-TR-20192-0

SIGNATURE

NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Hiroaki Suzuki	Deputy Manager of RF Group	Approved Signatory	01 OCT 2020

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.



Certificate #3686.03

DISCLAIMER AND COPYRIGHT

The results in this report are applicable only to the equipment tested.
This report shall not be re-produced except in full without the written approval of TÜV SÜD Japan Ltd.

ACCREDITATION

This test report must not be used by the client to claim product certification, approval, or endorsement by A2LA or any agency of the U.S. Government.

TÜV SÜD Japan Ltd.
Yonezawa Testing Center
5-4149-7 Hachimanpara,
Yonezawa-shi, Yamagata,
992-1128 Japan

Phone: +81 (0) 238 28 2881
Fax: +81 (0) 238 28 2888
www.tuv-sud.jp

TÜV SÜD Japan Ltd.

TÜV®

Contents

1	Summary of Test	3
1.1	Modification history of the test report	3
1.2	Standards	3
1.3	Test methods.....	3
1.4	Deviation from standards	3
1.5	List of applied test(s) of the EUT	3
1.6	Test information.....	3
1.7	Test set up.....	3
1.8	Test period	3
2	Equipment Under Test	4
2.1	EUT information	4
2.2	Modification to the EUT	5
2.3	Variation of family model(s).....	5
2.4	Operating channels and frequencies	5
2.5	Description of test mode	6
2.6	Operating flow	6
3	Configuration of Equipment.....	7
3.1	Equipment used	7
3.2	Cable(s) used	7
3.3	System configuration	7
4	Test Result	8
4.1	DTS Bandwidth / Occupied Bandwidth (99%)	8
4.2	Maximum Conducted Output Power	13
4.3	Band Edge Compliance of RF Conducted Emissions.....	15
4.4	Spurious emissions - Conducted -	20
4.5	Spurious Emissions - Radiated -	31
4.6	Restricted Band of Operation	55
4.7	Transmitter Power Spectral Density.....	63
4.8	AC Power Line Conducted Emissions	68
5	Antenna requirement	70
6	Measurement Uncertainty	71
7	Laboratory Information.....	72
Appendix A. Test Equipment.....		73
Appendix B. Duty Cycle		74

1 Summary of Test

1.1 Modification history of the test report

Document Number	Modification History	Issue Date
JPD-TR-20192-0	First Issue	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	-

1.6 Test information

None

1.7 Test set up

Table-top

1.8 Test period

03-August-2020 - 17-September-2020

2 Equipment Under Test

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	EB1055
Serial number	N/A
Trade name	Kyocera
Number of sample(s)	1
EUT condition	Pre-Production
Power rating	Battery: DC 3.85 V
Size	(W) 76.0 × (D) 8.7 × (H) 162.0 mm
Environment	Indoor and Outdoor use
Terminal limitation	-20°C to 60°C
Hardware Version	DMT1
Software Version	0.020SI.0020.a
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	82.604 mW (IEEE802.11b) 171.791 mW (IEEE802.11g) 222.331 mW (IEEE802.11n: HT20)
Antenna type	Internal antenna
Antenna gain	-1.2 dBi

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: EB1055, Serial Number: N/A			
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)

Not applicable

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 Y-axis 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

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”.

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	EB1055	N/A	JOYEB1055	EUT
2	AC Adapter	KDDI	0301PQA	N/A	N/A	*

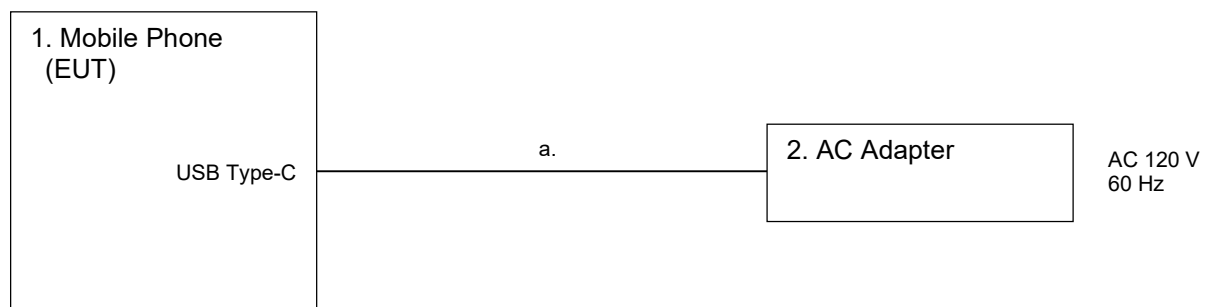
*:AC power line Conducted Emission Test.

3.2 Cable(s) used

No.	Equipment	Length[m]	Shield	Connector	Comment
a	USB cable (for AC Adapter)	1.0	Yes	Metal	*

*: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

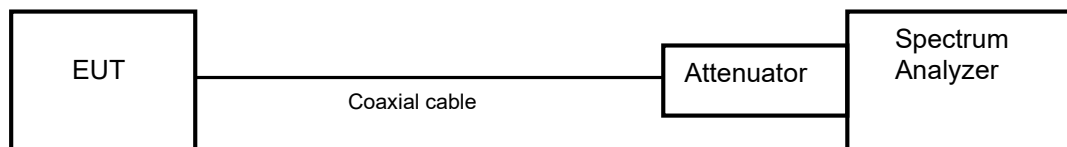
[FCC 15.247(a)(2), KDB 558074 D01 v05r02, Section 8.2]

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 $\geq 3 \times$ 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.

4.1.3 Measurement result

Date : 3-August-2020

Temperature : 24.1 [°C]

Humidity : 43.5 [%]

Test place : Shielded room No.4

Test engineer :

Tadahiro Seino

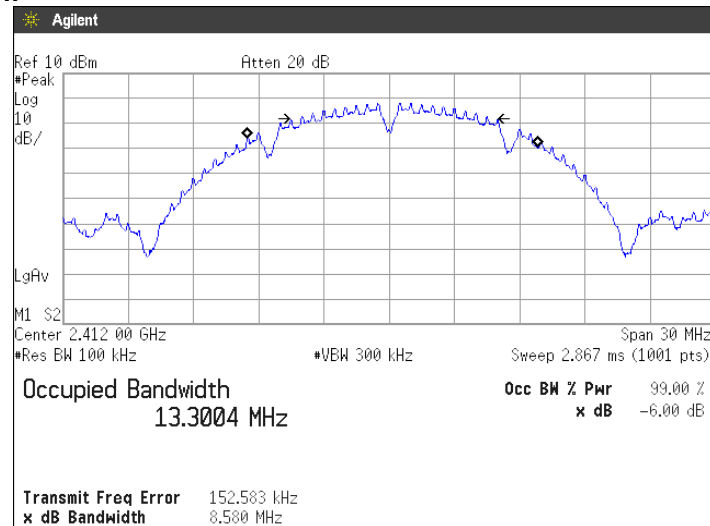
Channel	DTS Bandwidth [MHz]		
	IEEE802.11b	IEEE802.11g	IEEE802.11n (HT20)
Low	8.580	15.749	16.369
Middle	8.605	15.753	16.373
High	8.064	13.876	16.069

Channel	Occupied Bandwidth (99%) [MHz]		
	IEEE802.11b	IEEE802.11g	IEEE802.11n (HT20)
Low	13.300	16.454	17.626
Middle	13.254	16.401	17.570
High	12.566	16.155	17.387

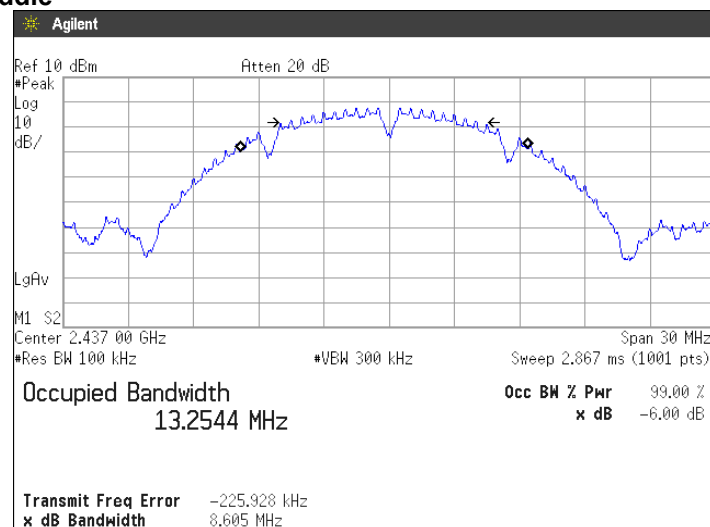
4.1.4 Trace data

[IEEE802.11b]

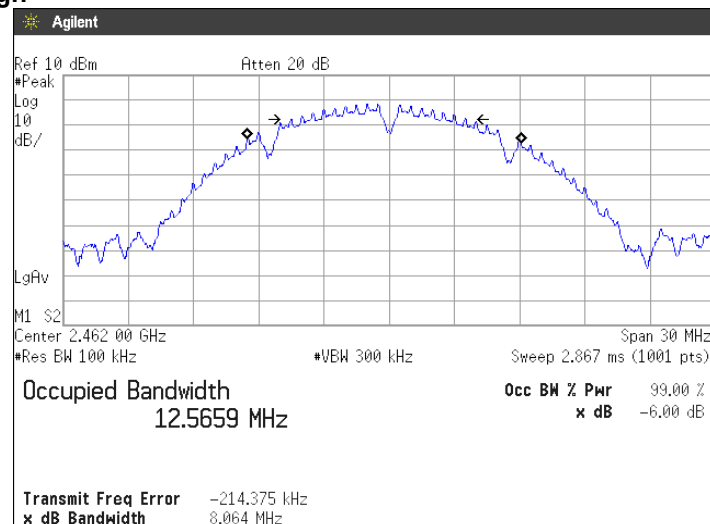
Channel Low



Channel Middle

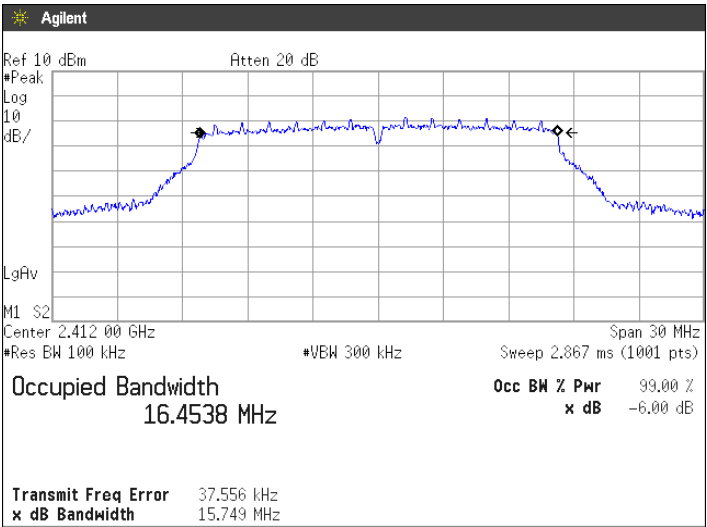


Channel High

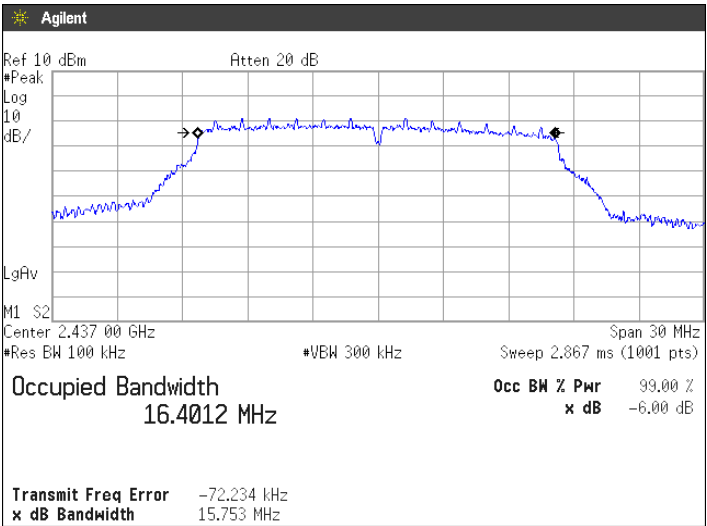


[IEEE802.11g]

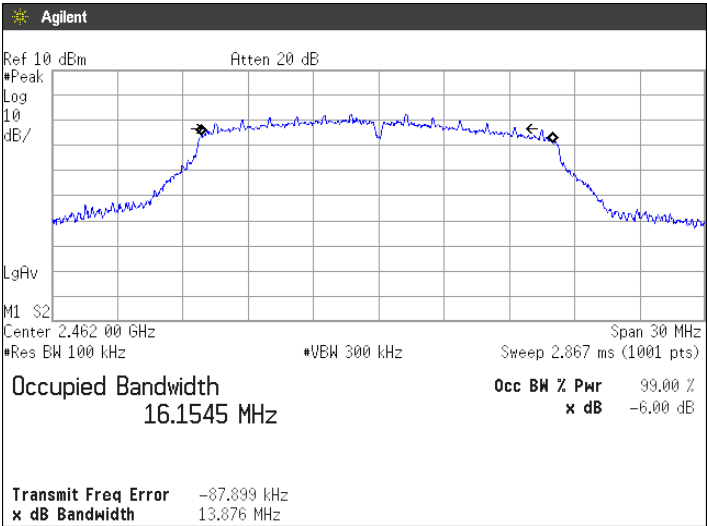
Channel Low



Channel Middle

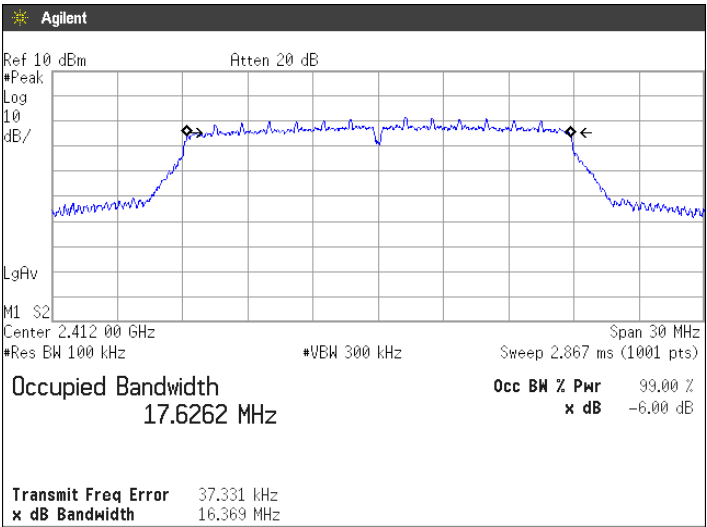


Channel High

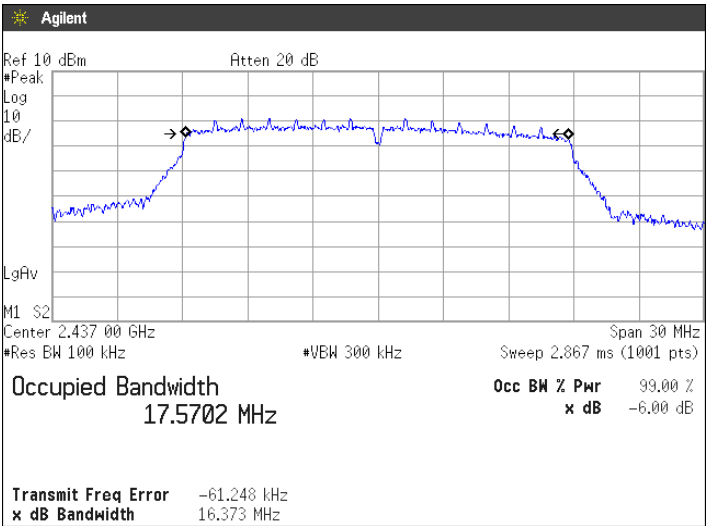


[IEEE802.11n (HT20)]

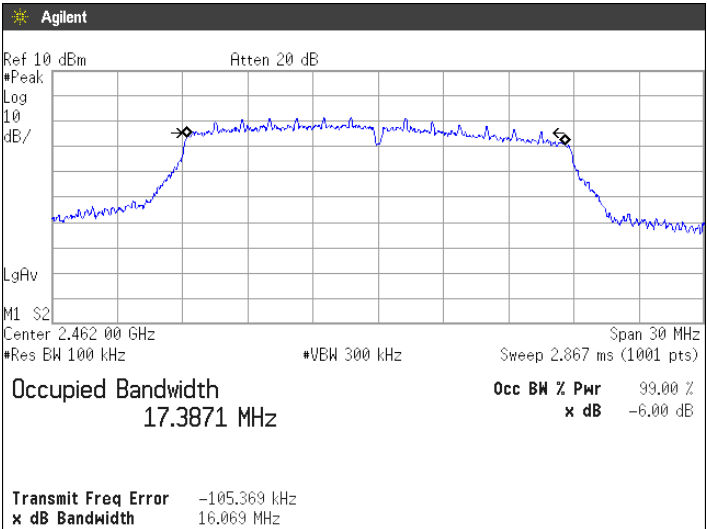
Channel Low



Channel Middle



Channel High



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

4.2.3 Measurement result

Date : 17-September-2020
 Temperature : 23.1 [°C]
 Humidity : 49.1 [%]
 Test place : Shielded room No.4

Test engineer : Tadahiro Seino

[IEEE802.11b]
Battery Full

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Output Power (mW)	Limit (mW)	Result
Low	2412	8.36	10.53	18.89	77.446	≤1000	PASS
Middle	2437	8.32	10.53	18.85	76.736	≤1000	PASS
High	2462	8.64	10.53	19.17	82.604	≤1000	PASS

[IEEE802.11g]
Battery Full

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Output Power (mW)	Limit (mW)	Result
Low	2412	11.11	10.53	21.64	145.881	≤1000	PASS
Middle	2437	11.38	10.53	21.91	155.239	≤1000	PASS
High	2462	11.82	10.53	22.35	171.791	≤1000	PASS

[IEEE802.11n (HT20)]
Battery Full

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Output Power (mW)	Limit (mW)	Result
Low	2412	12.84	10.53	23.37	217.270	≤1000	PASS
Middle	2437	12.94	10.53	23.47	222.331	≤1000	PASS
High	2462	12.58	10.53	23.11	204.644	≤1000	PASS

Calculation;

Reading (dBm) + Factor (dB) = Level (dBm)

$10\log P = \text{Level (dBm)}$

$P = 10^{(\text{Maximum Peak Output Power} / 10)} \text{ (mW)}$

4.3 Band Edge Compliance of RF Conducted Emissions

4.3.1 Measurement procedure

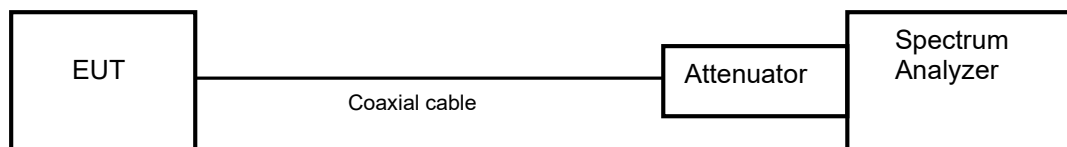
[FCC 15.247(d), KDB 558074 D01 v05r02, Section 8.5]

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 $\geq 3 \times$ 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.

4.3.3 Measurement result

Date : 3-August-2020

Temperature : 24.1 [°C]

Humidity : 43.5 [%]

Test place : Shielded room No.4

Test engineer :

Tadahiro Seino**[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	-2.33	2399.04	-46.72	44.39	At least 20dB below from peak of RF	PASS
High	2462.00	-1.96	2486.46	-66.31	64.35	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	-8.58	2399.84	-42.89	34.31	At least 20dB below from peak of RF	PASS
High	2462.00	-7.61	2483.58	-60.17	52.56	At least 20dB below from peak of RF	PASS

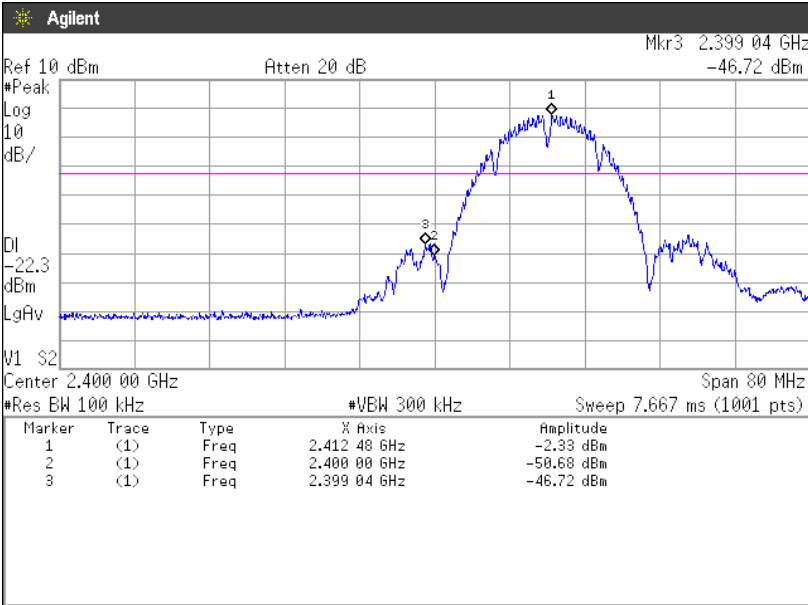
[IEEE802.11n (HT20)]

Channel	Frequency (MHz)	RF Power Level (dBm)	Band-edge Frequency (MHz)	Band-edge Level (dBm)	Difference Level (dBm)	Limit (dBm)	Result
Low	2412.00	-8.56	2398.88	-41.22	32.66	At least 20dB below from peak of RF	PASS
High	2462.00	-7.65	2483.90	-60.72	53.07	At least 20dB below from peak of RF	PASS

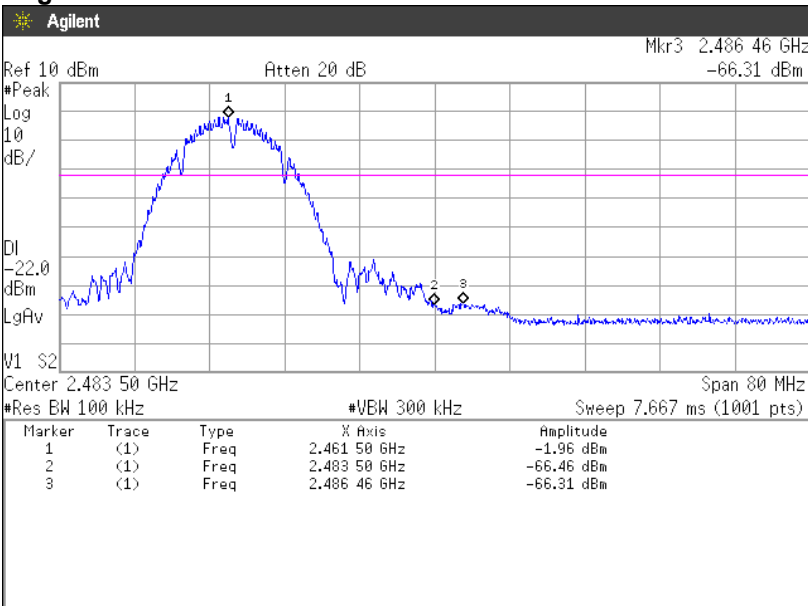
4.3.4 Trace data

[IEEE802.11b]

Channel Low

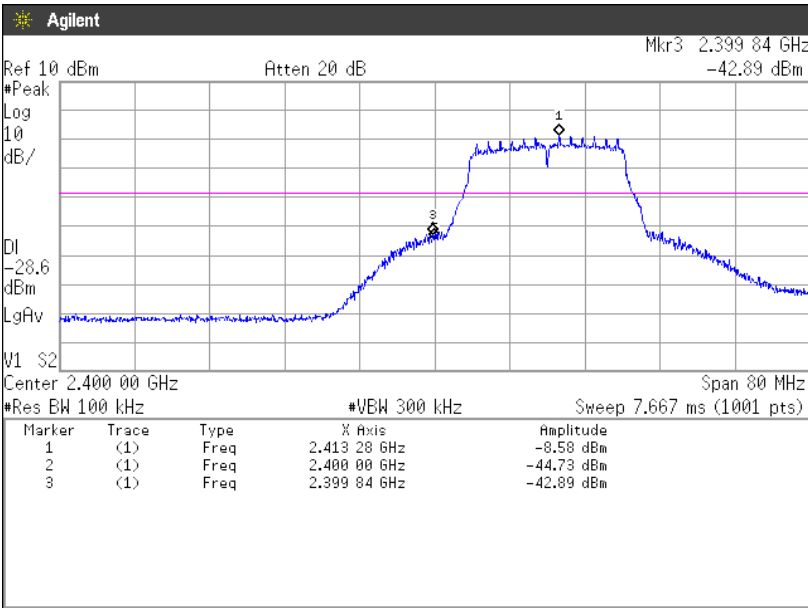


Channel High

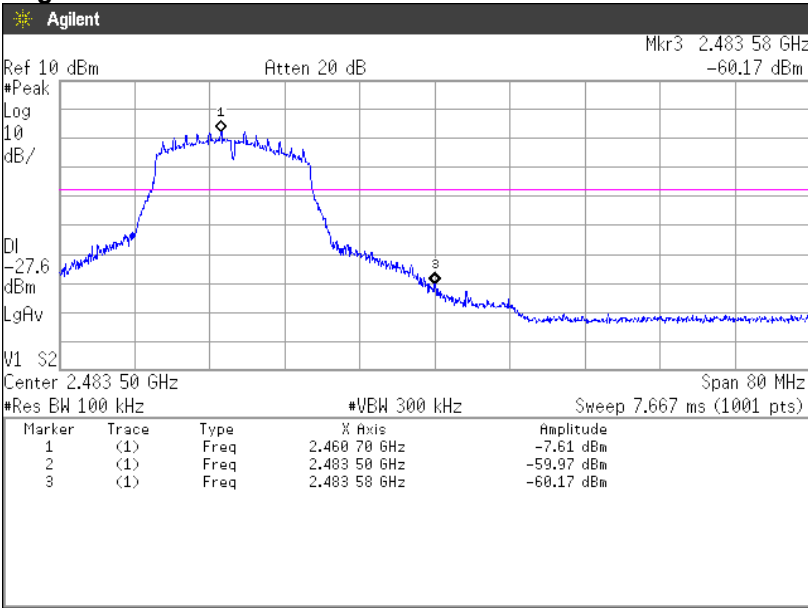


[IEEE802.11g]

Channel Low

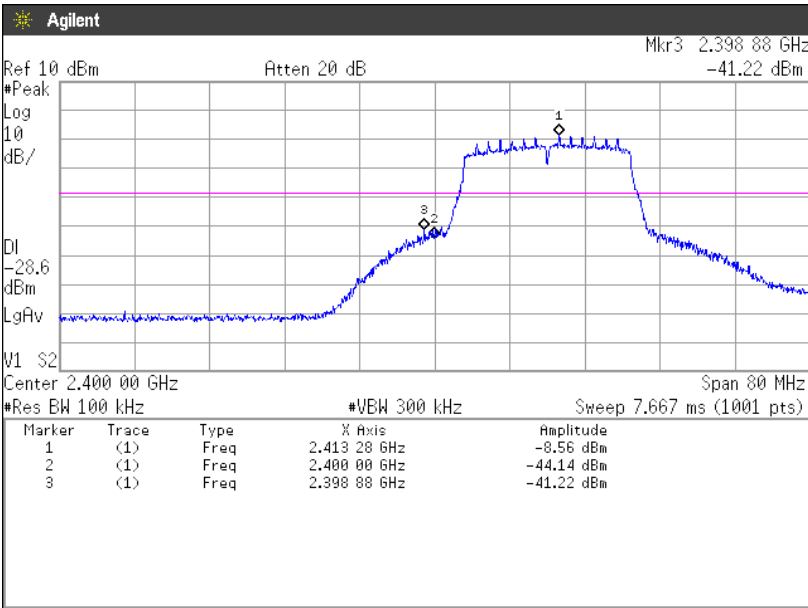


Channel High

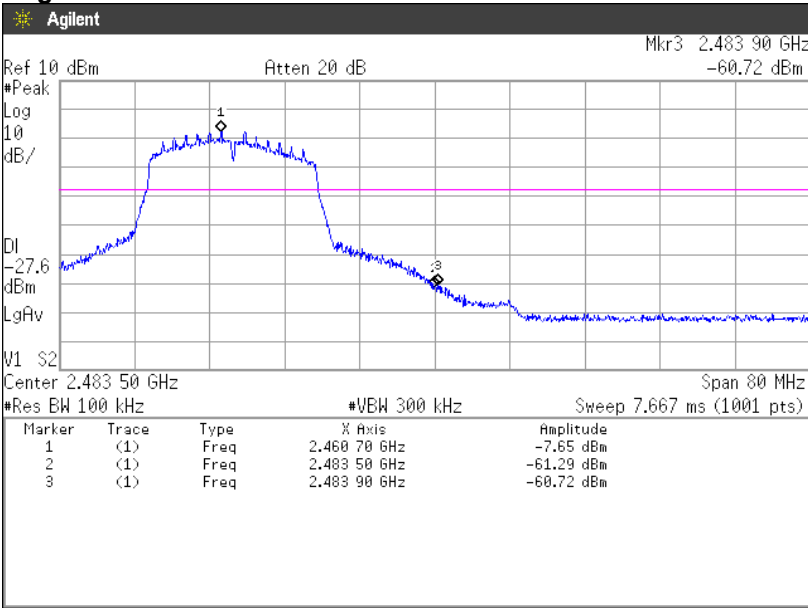


[IEEE802.11n (HT20)]

Channel Low



Channel High



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 $\geq$ 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.

4.4.3 Measurement result

Date : 3-August-2020

Temperature : 24.1 [°C]

Humidity : 43.5 [%]

Test place : Shielded room No.4

Test engineer :

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

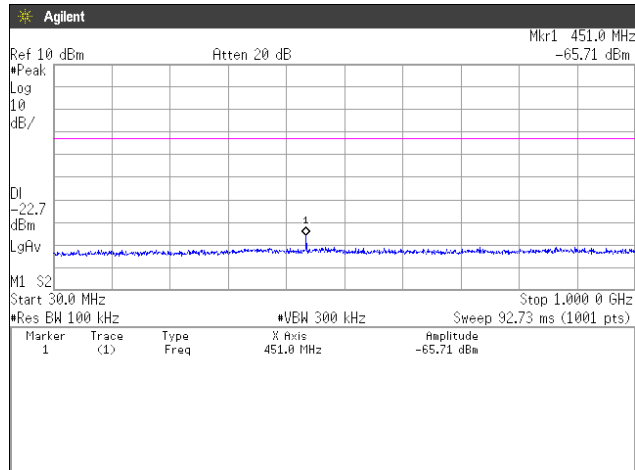
Channel	Frequency [MHz]	Limit [dB]	Results Chart	Result
Low	2412	At least 20dB below from peak of RF	See the trace Data	PASS
Middle	2437	At least 20dB below from peak of RF	See the trace Data	PASS
High	2462	At least 20dB below from peak of RF	See the trace Data	PASS

4.4.4 Trace data

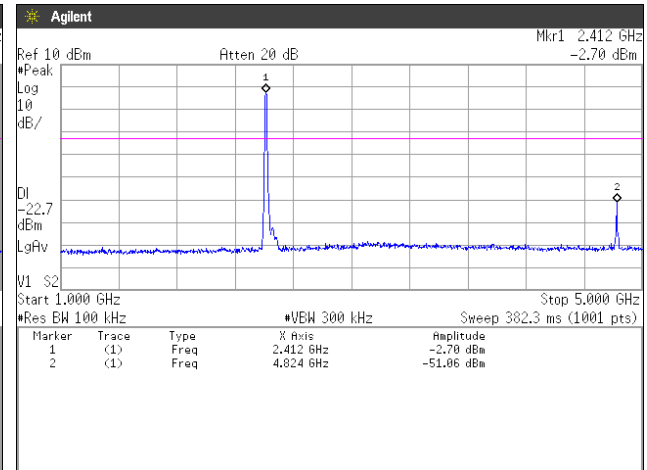
[IEEE802.11b]

Channel Low

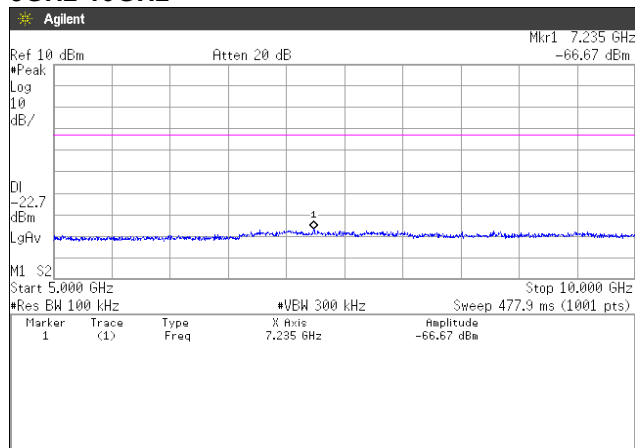
30MHz-1GHz



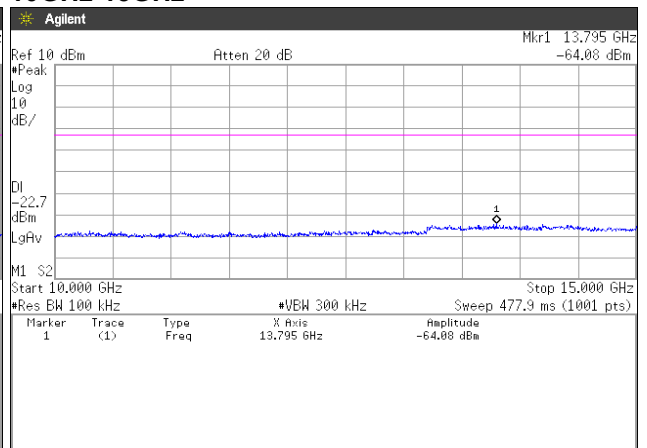
1GHz-5GHz



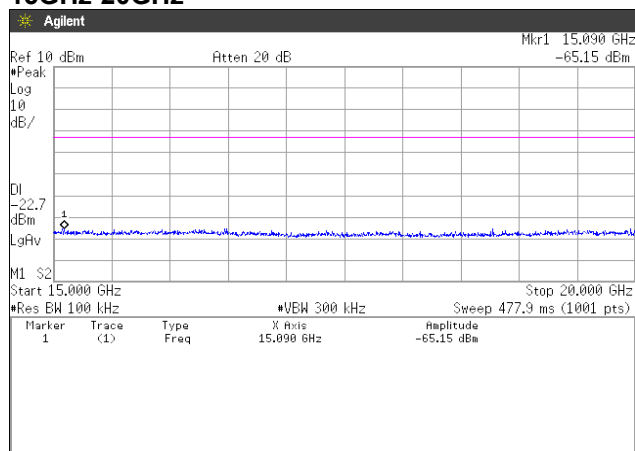
5GHz-10GHz



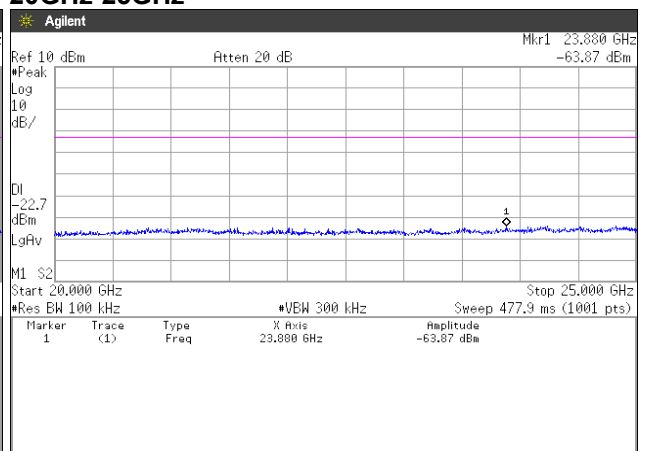
10GHz-15GHz

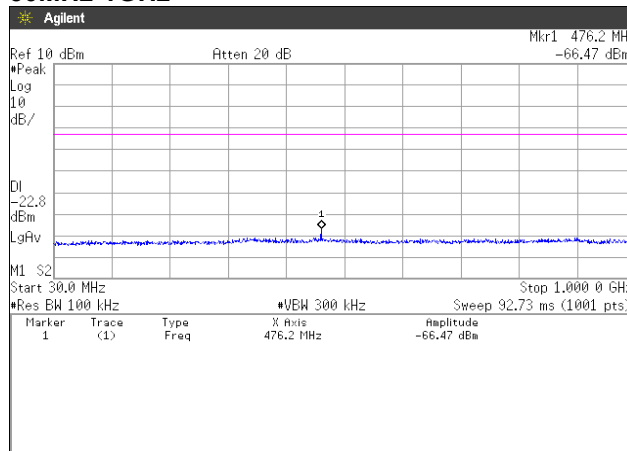
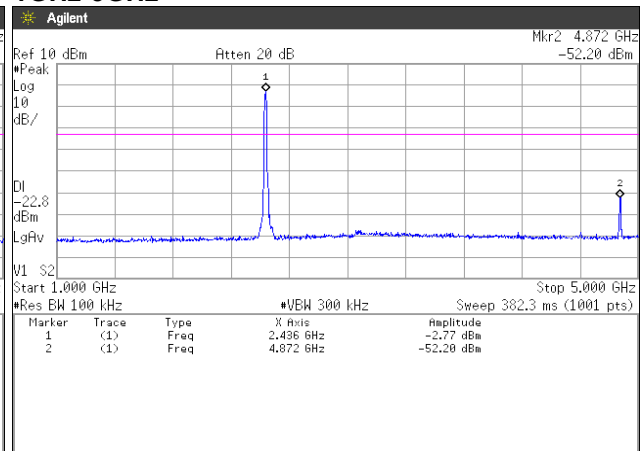
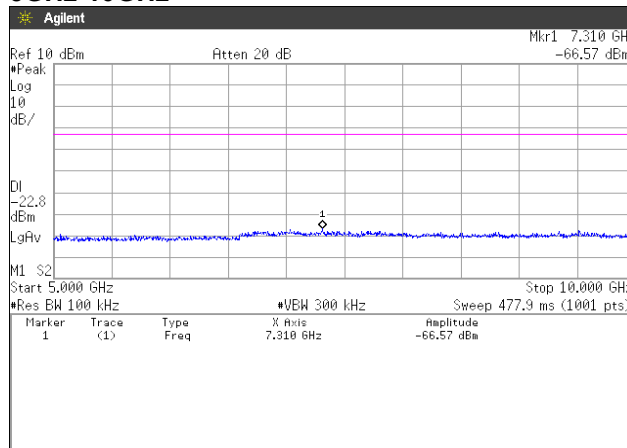
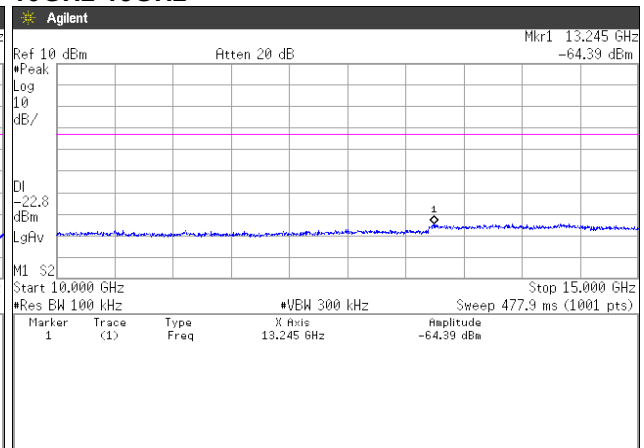
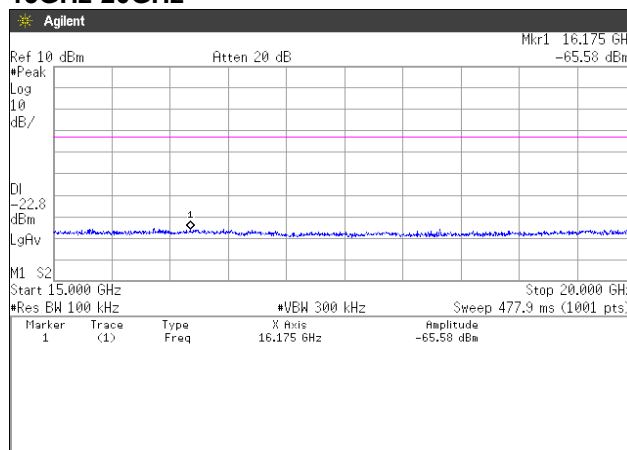
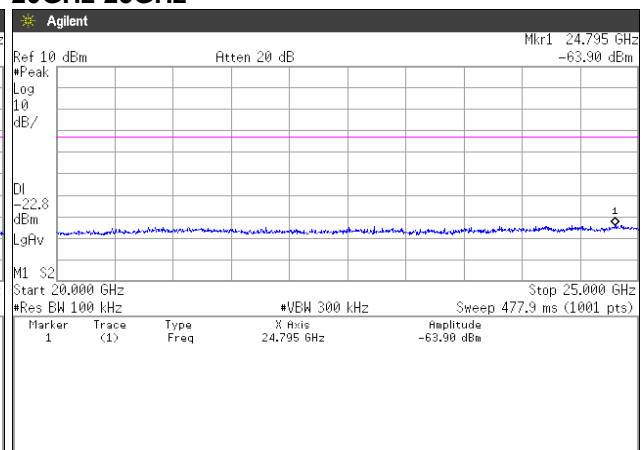


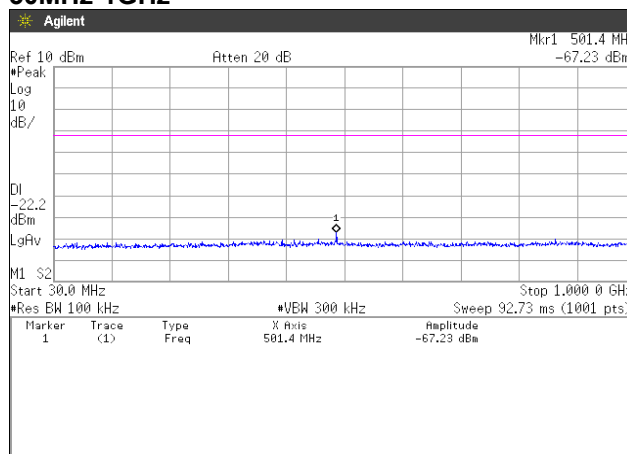
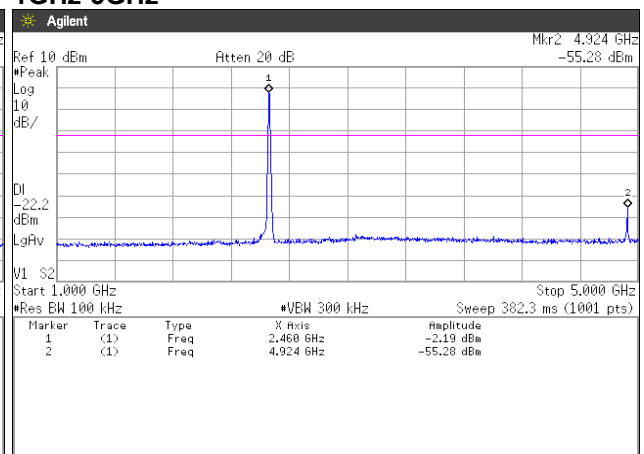
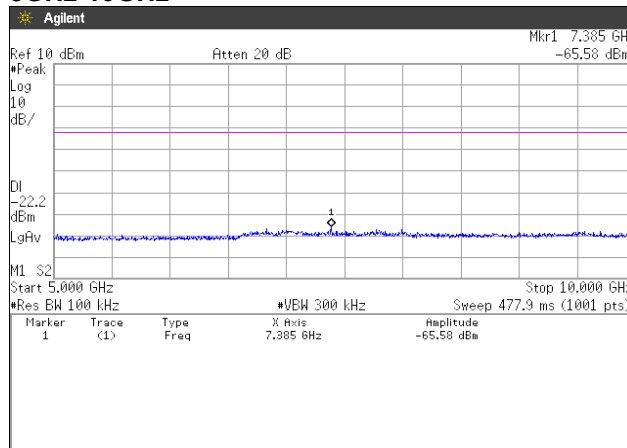
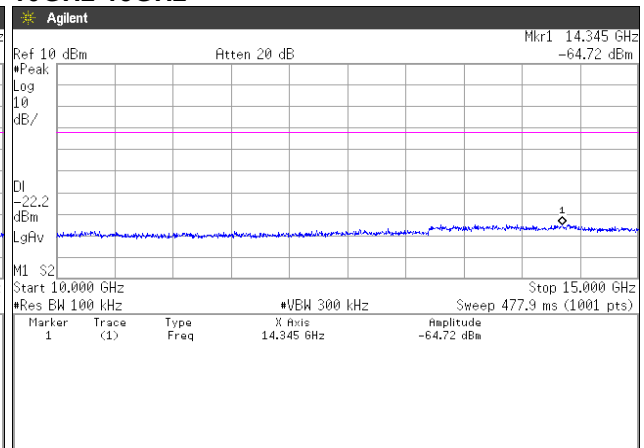
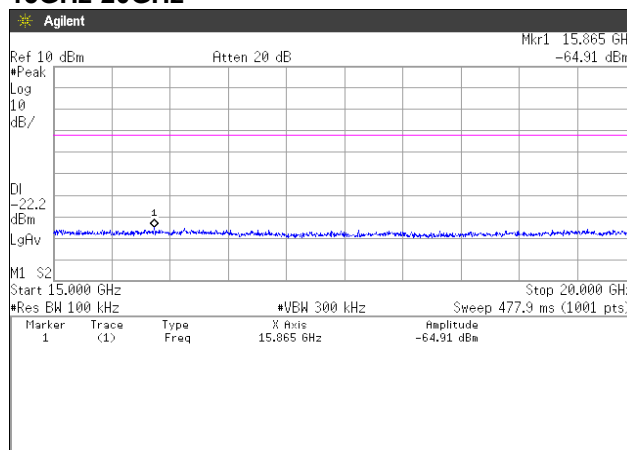
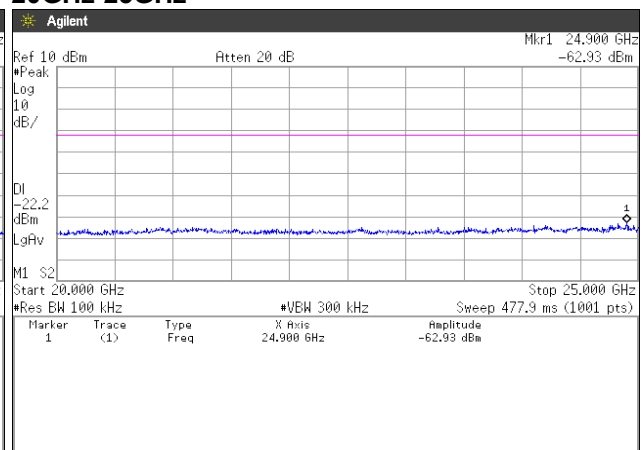
15GHz-20GHz



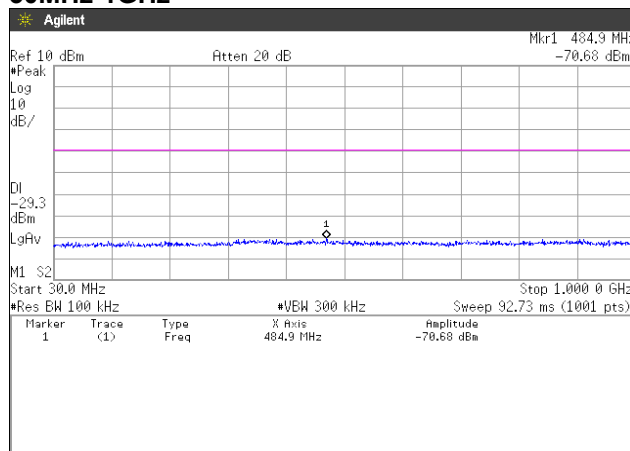
20GHz-25GHz



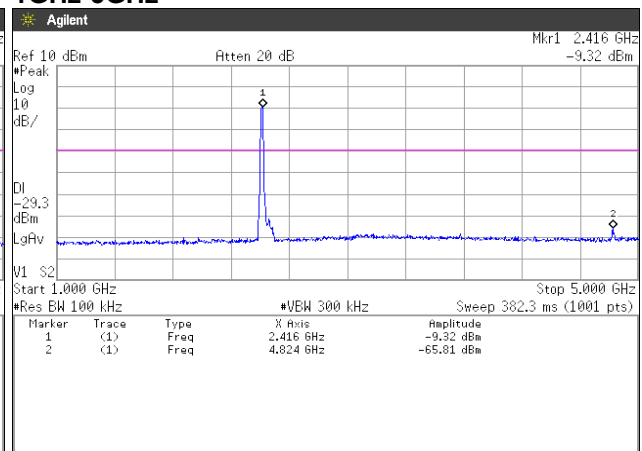
Channel Middle**30MHz-1GHz****1GHz-5GHz****5GHz-10GHz****10GHz-15GHz****15GHz-20GHz****20GHz-25GHz**

**Channel High
30MHz-1GHz****1GHz-5GHz****5GHz-10GHz****10GHz-15GHz****15GHz-20GHz****20GHz-25GHz**

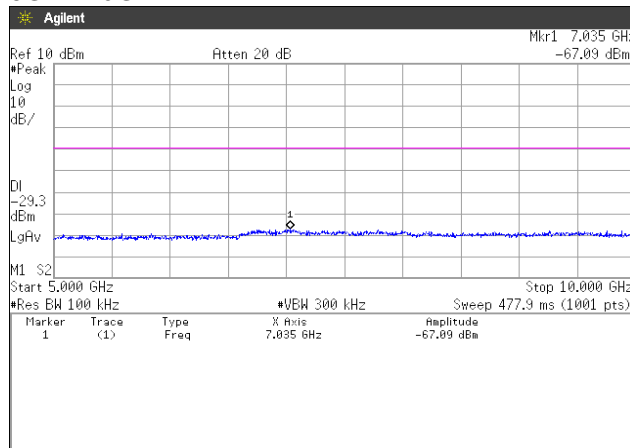
[IEEE802.11g] Channel Low 30MHz-1GHz



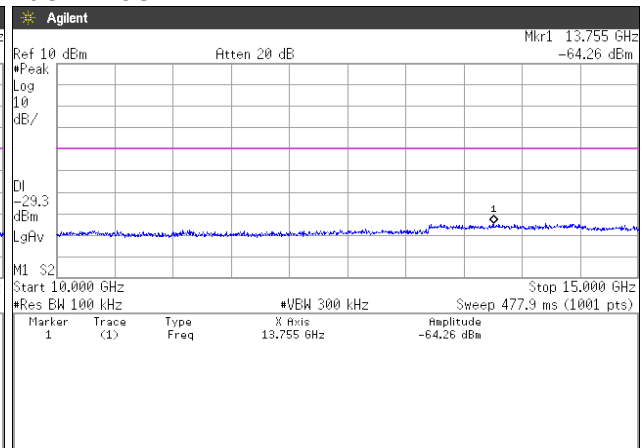
1GHz-5GHz



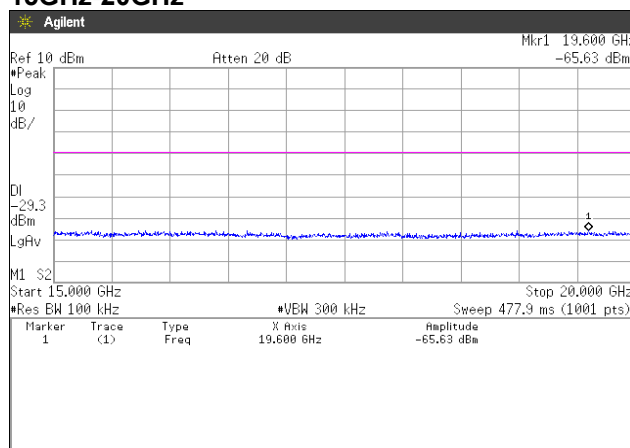
5GHz-10GHz



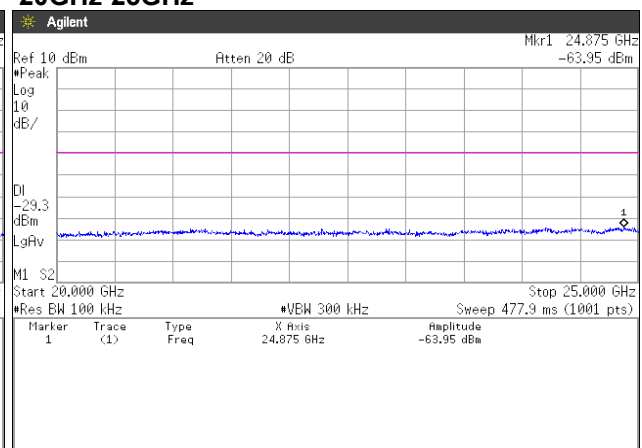
10GHz-15GHz

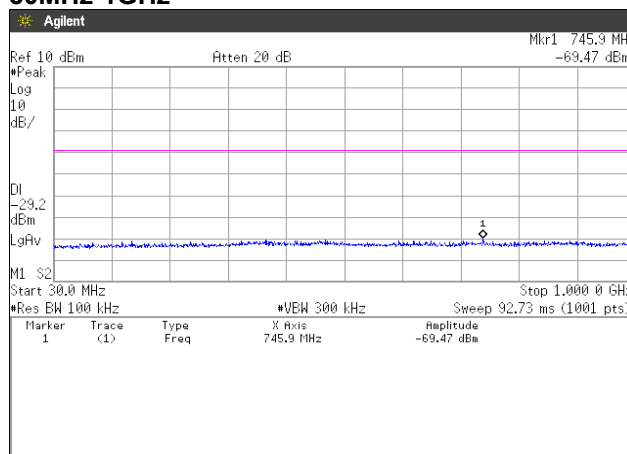
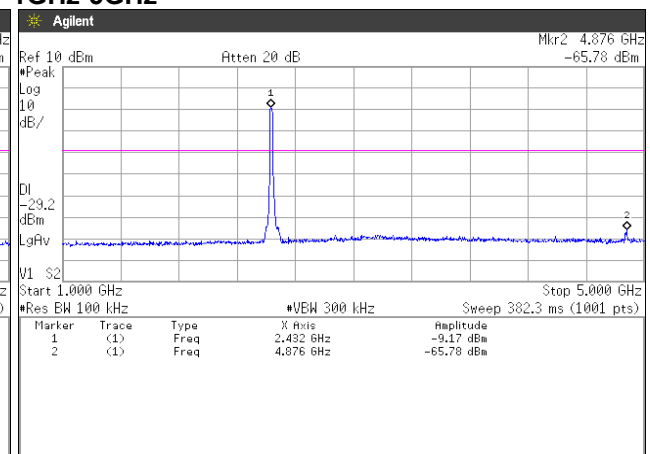
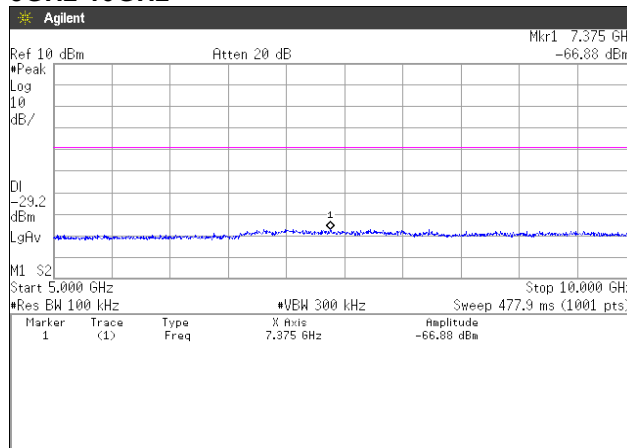
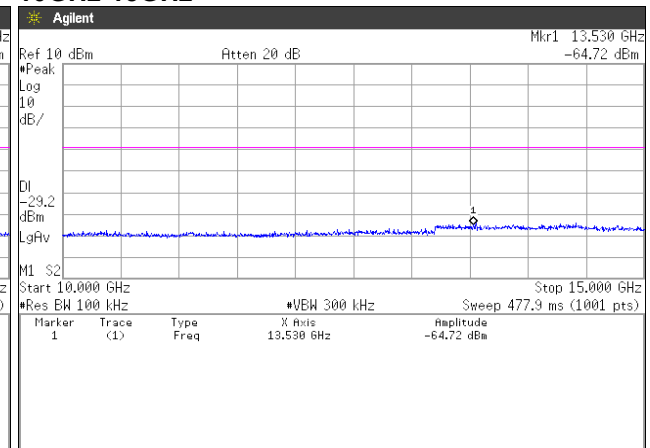
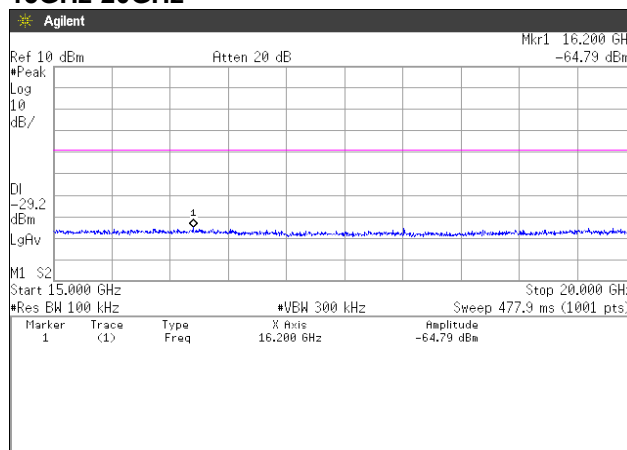
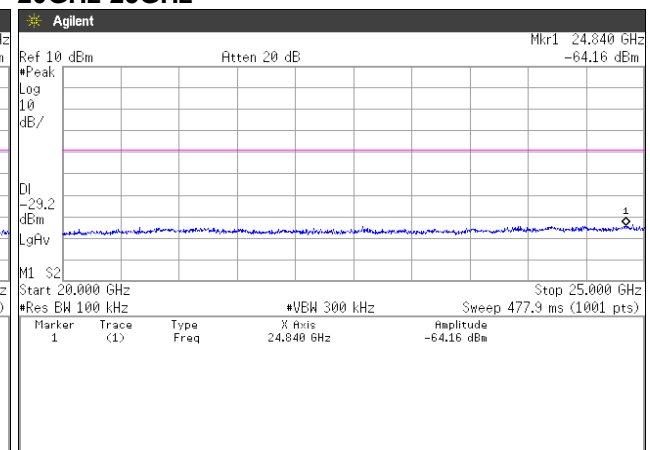


15GHz-20GHz

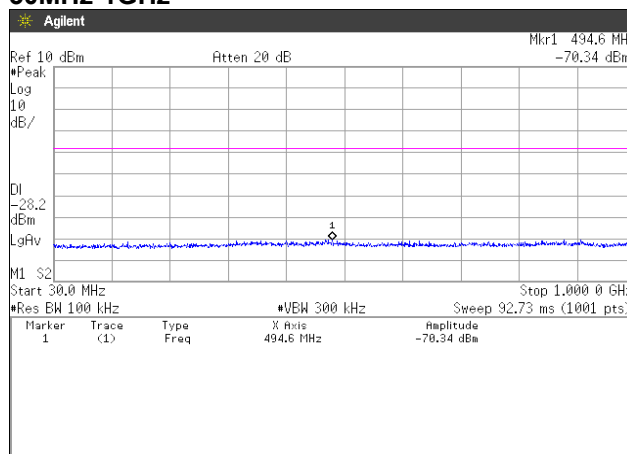


20GHz-25GHz

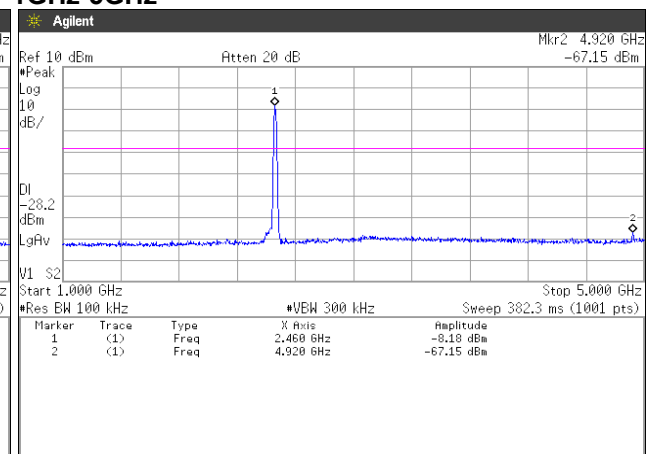


Channel Middle**30MHz-1GHz****1GHz-5GHz****5GHz-10GHz****10GHz-15GHz****15GHz-20GHz****20GHz-25GHz**

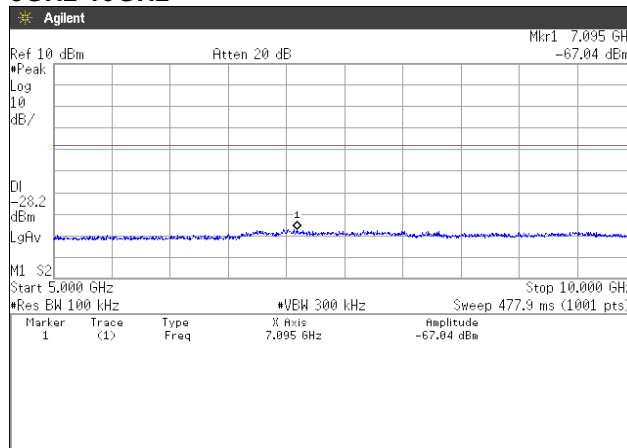
Channel High 30MHz-1GHz



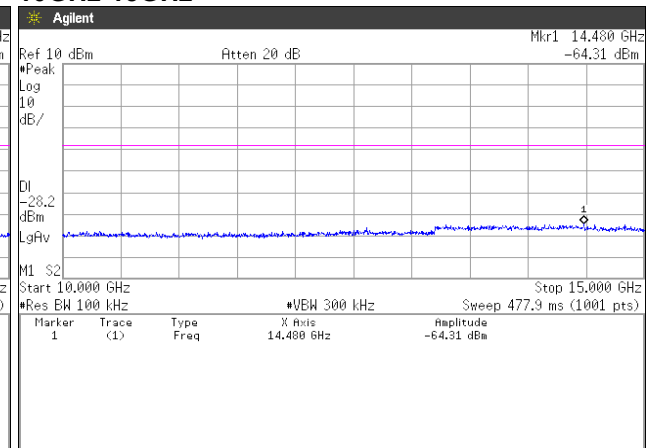
1GHz-5GHz



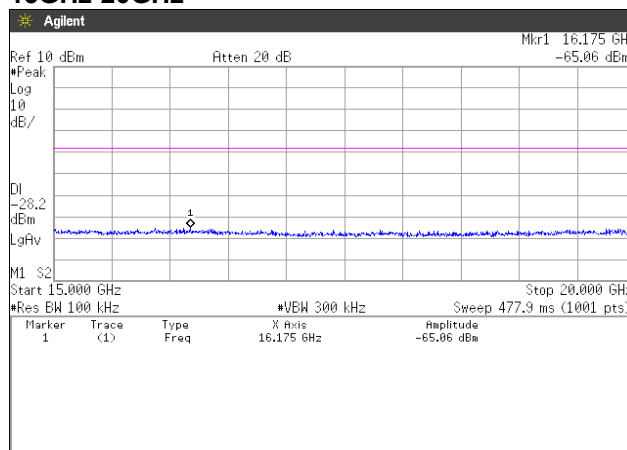
5GHz-10GHz



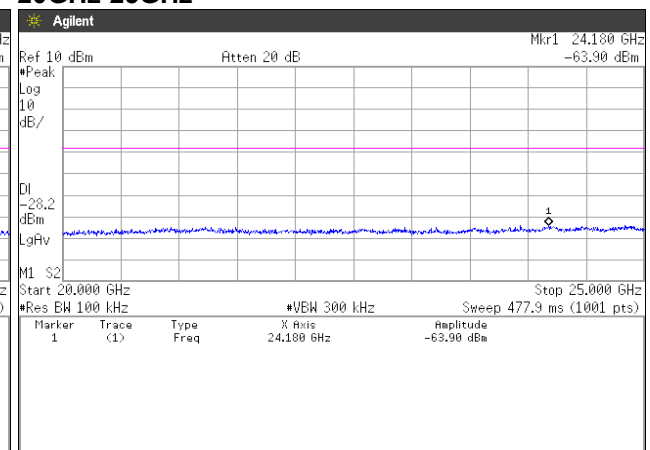
10GHz-15GHz



15GHz-20GHz



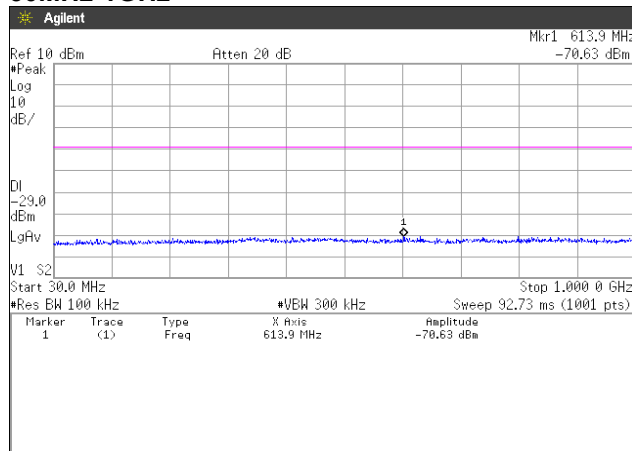
20GHz-25GHz



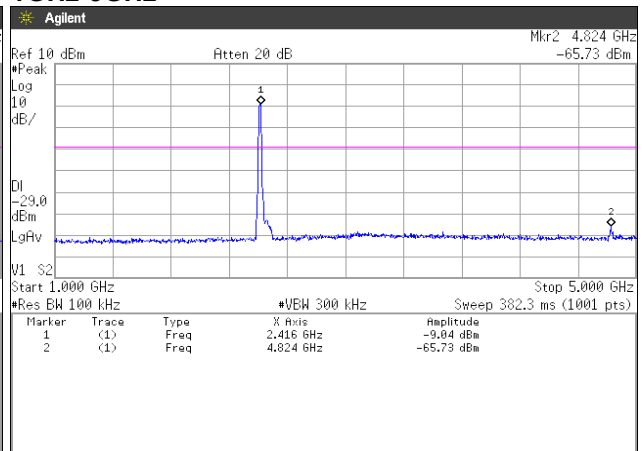
[IEEE802.11n (HT20)]

Channel Low

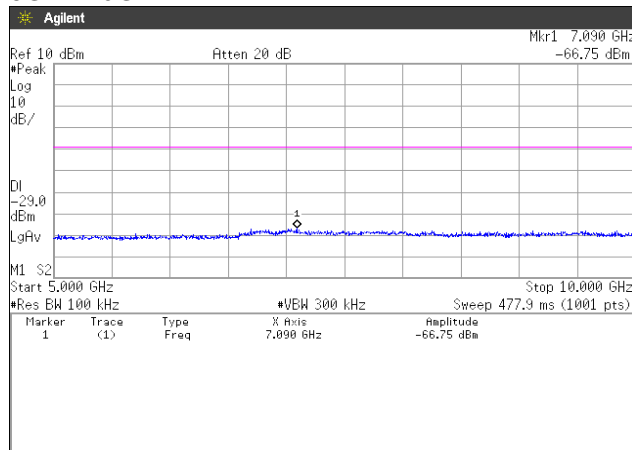
30MHz-1GHz



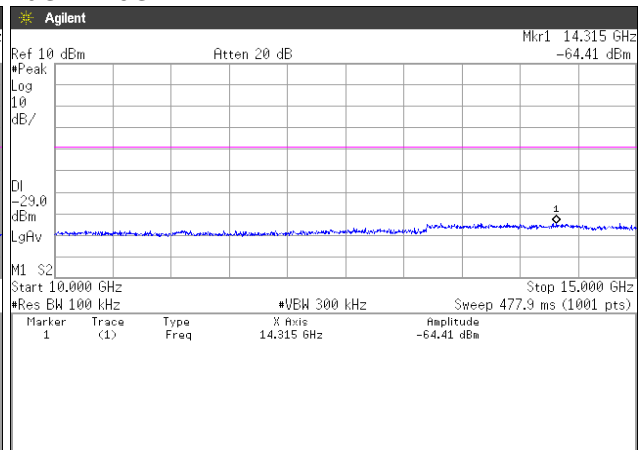
1GHz-5GHz



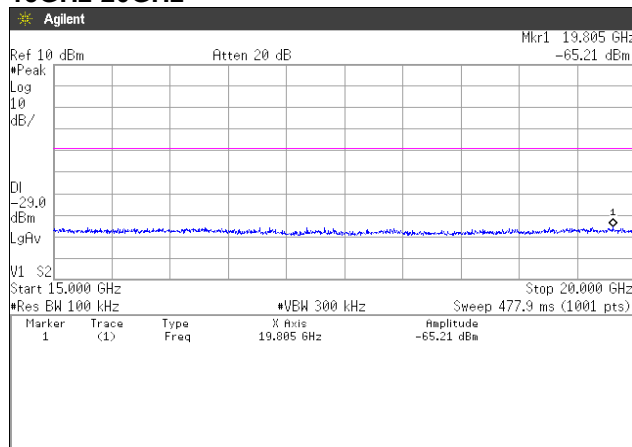
5GHz-10GHz



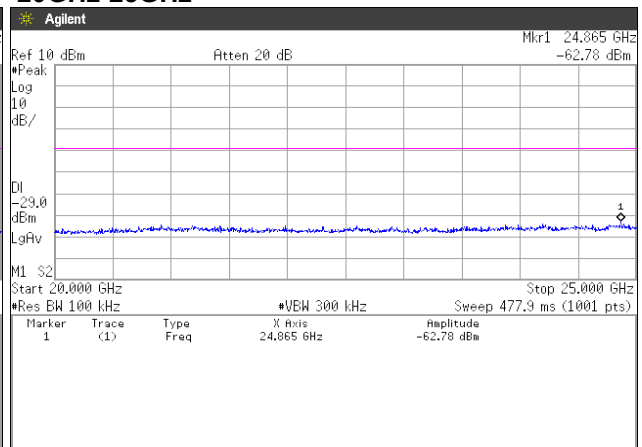
10GHz-15GHz



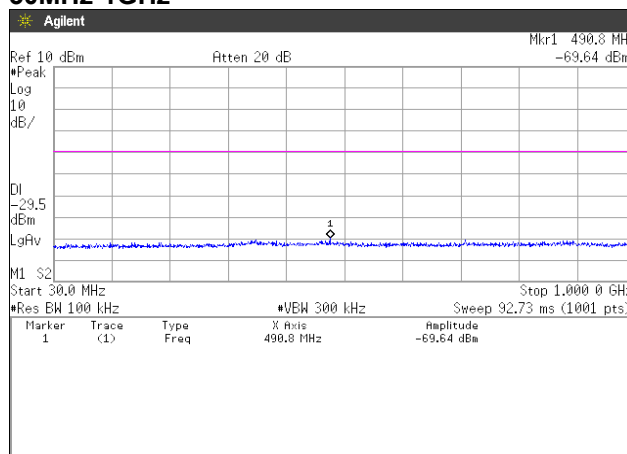
15GHz-20GHz



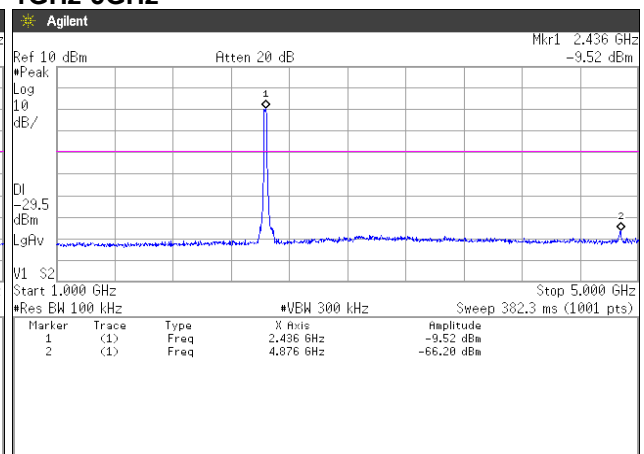
20GHz-25GHz



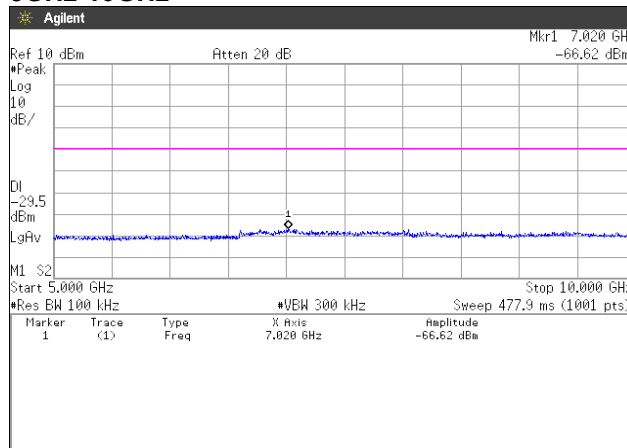
Channel Middle 30MHz-1GHz



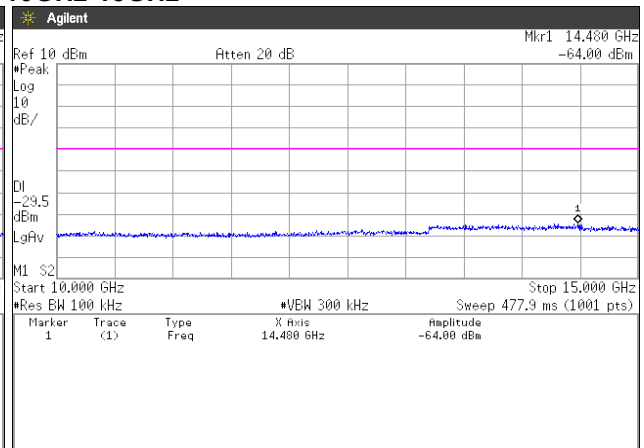
1GHz-5GHz



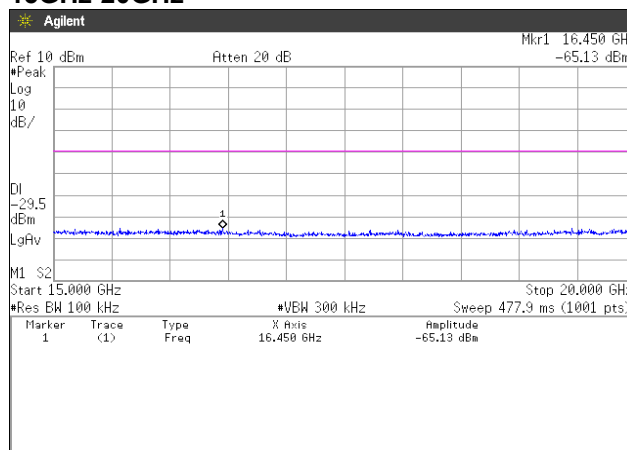
5GHz-10GHz



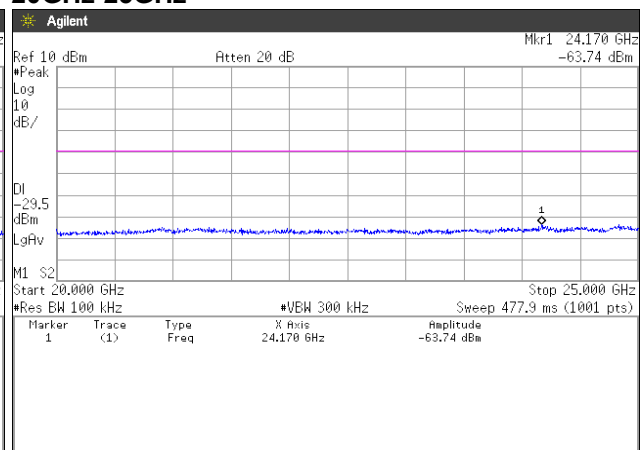
10GHz-15GHz



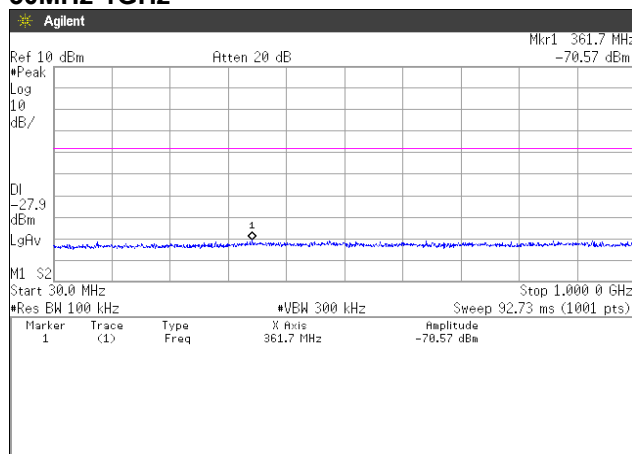
15GHz-20GHz



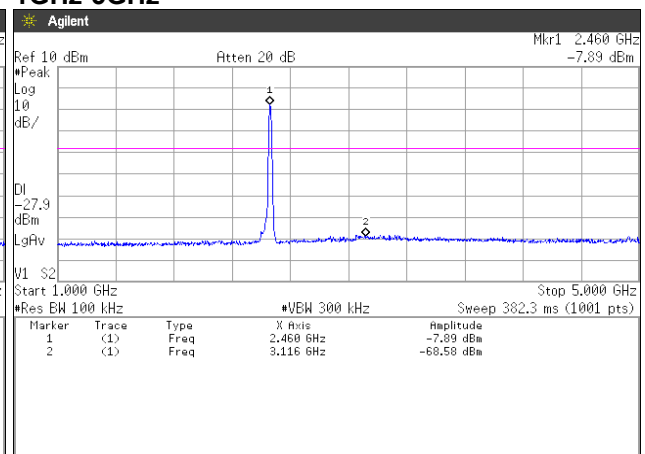
20GHz-25GHz



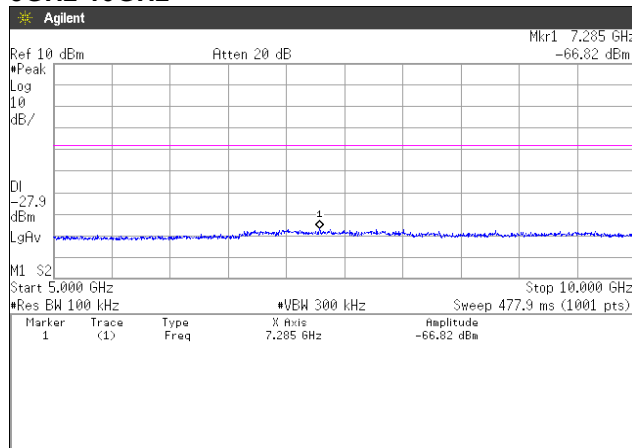
Channel High 30MHz-1GHz



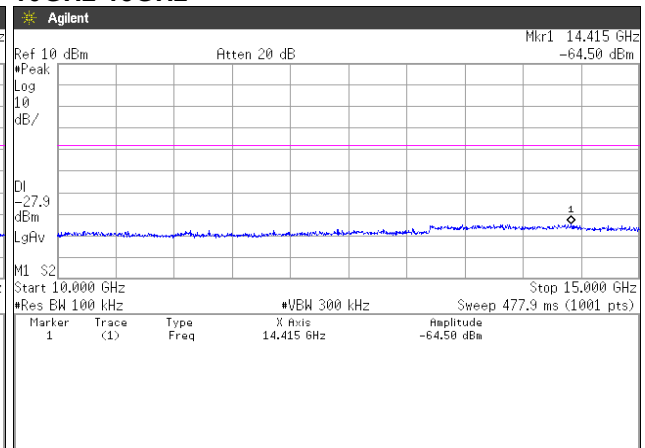
1GHz-5GHz



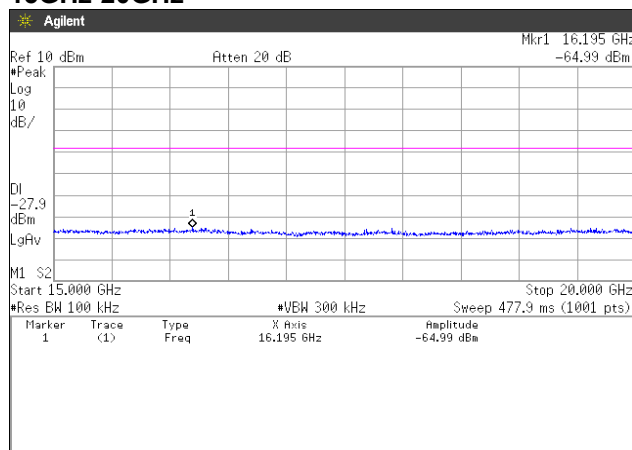
5GHz-10GHz



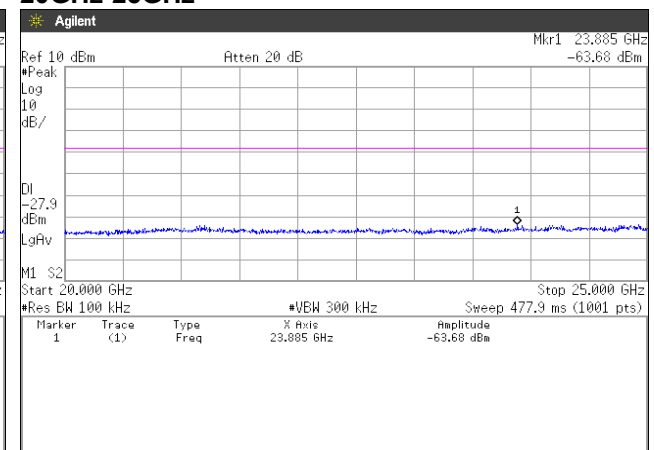
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



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	: RBW=1 MHz, VBW=1kHz,3kHz, Span=0 Hz, Sweep=auto Display mode=Linear

Average Measurement Setting [VBW]

Mode	Duty Cycle (%)	T _{on} (us)	T _{off} (us)	1/T _{on} (kHz)	Determined VBW Setting
IEEE802.11b	96.12	992	40	1.008	3kHz
IEEE802.11g	96.66	1390	48	0.719	1kHz
IEEE802.11n(HT20)	96.40	1286	48	0.778	1kHz

Although these tests were performed other than open area test site, adequate comparison measurements

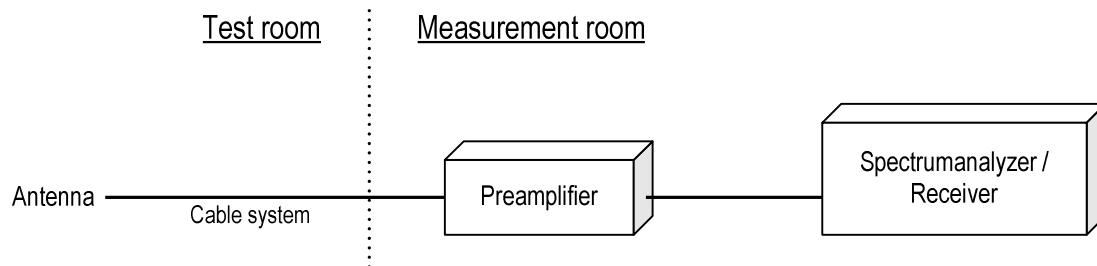
were confirmed against 30 m open area test site.

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 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



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 : 5-August -2020
Temperature : 20.1 [°C]
Humidity : 69.1 [%]
Test place : 3m Semi-anechoic chamber

Test engineer : Tadahiro Seino

Date : 25-August -2020
Temperature : 22.6 [°C]
Humidity : 64.6 [%]
Test place : 3m Semi-anechoic chamber

Test engineer : Tadahiro Seino

Date : 26-August -2020
Temperature : 22.3 [°C]
Humidity : 64.9 [%]
Test place : 3m Semi-anechoic chamber

Test engineer : Tadahiro Seino

4.5.4.1 Transmission mode

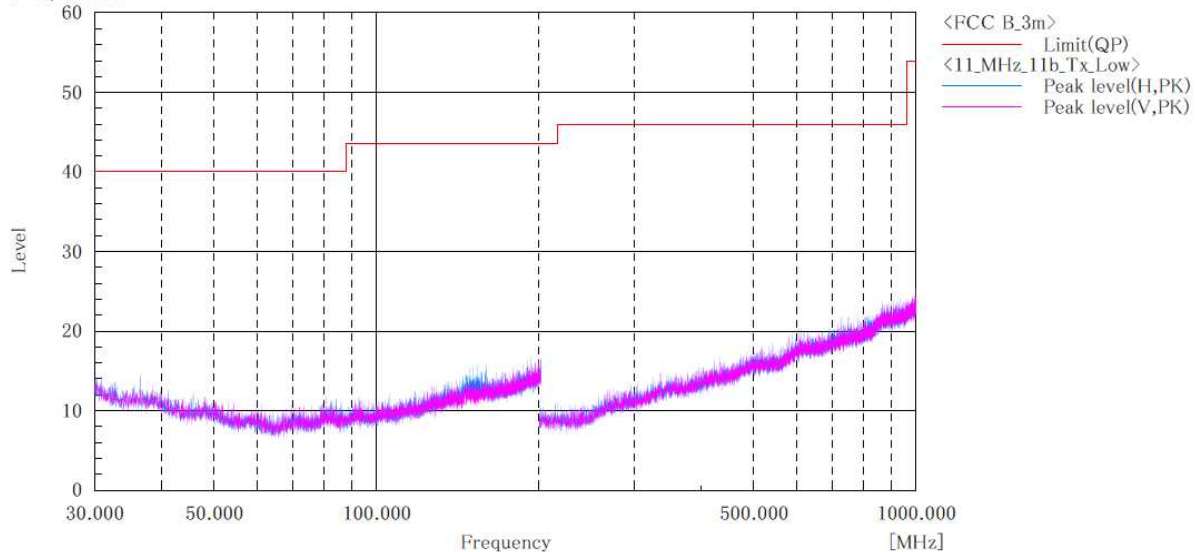
[11b]

Channel Low
BELOW 1GHz

Company name : KYOCERA Corporation
EUT : Mobile Phone
Model No. : EB1055
Serial No. : N/A
Test mode : WLAN2.4GHz_11b_Tx_ch:Low

Standard : FCC Part.15 subpartC
Operator : T.Seino
Temp,Hum : 22.6[°C] 64.6[%]
Note1 :
Note2 :

[dB(μV/m)]



Final Result

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

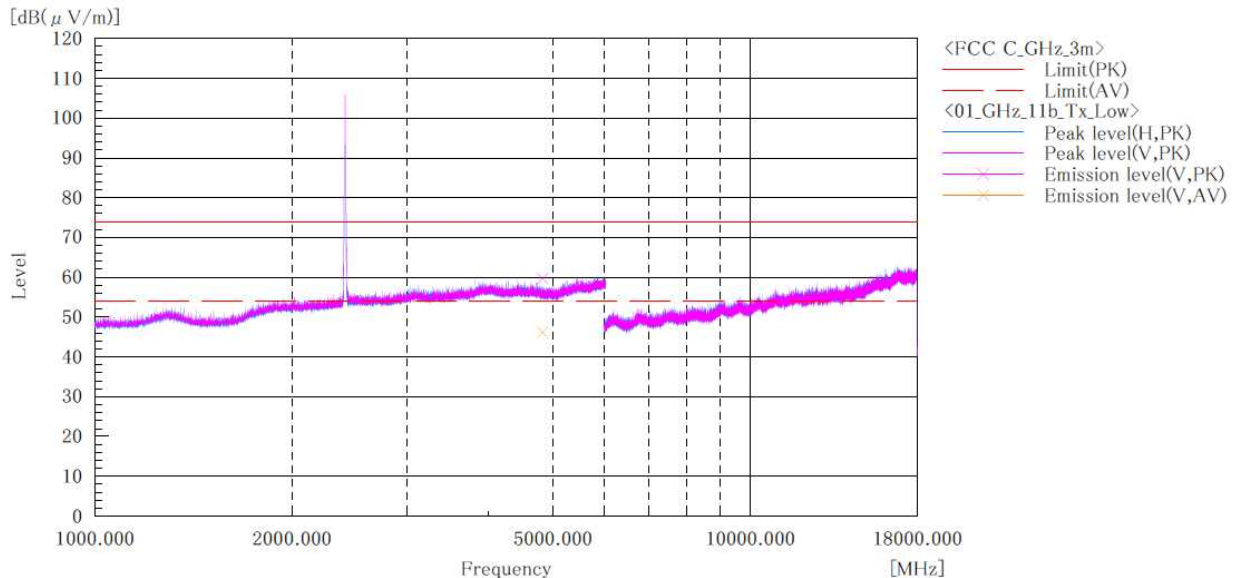
Note:

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.

[11b]
Channel Low
ABOVE 1GHz

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1055
 Serial No. : N/A
 Test mode : WLAN2.4GHz_11b_Tx_ch:Low

Standard : FCC Part.15 subpart C
 Operator : T.Seino
 Temp,Hum,Atm : 20.1[°C] 69.1[%]
 Note1 :
 Note2 :



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(μV)]	Reading AV [dB(μV)]	c.f [dB(1/m)]	Result PK [dB(μV/m)]	Result AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Margin PK [dB]	Margin AV [dB]	Height [cm]	Angle [°]
1	4824.000	V	49.4	35.9	10.3	59.7	46.2	74.0	54.0	14.3	7.8	206.0	185.0

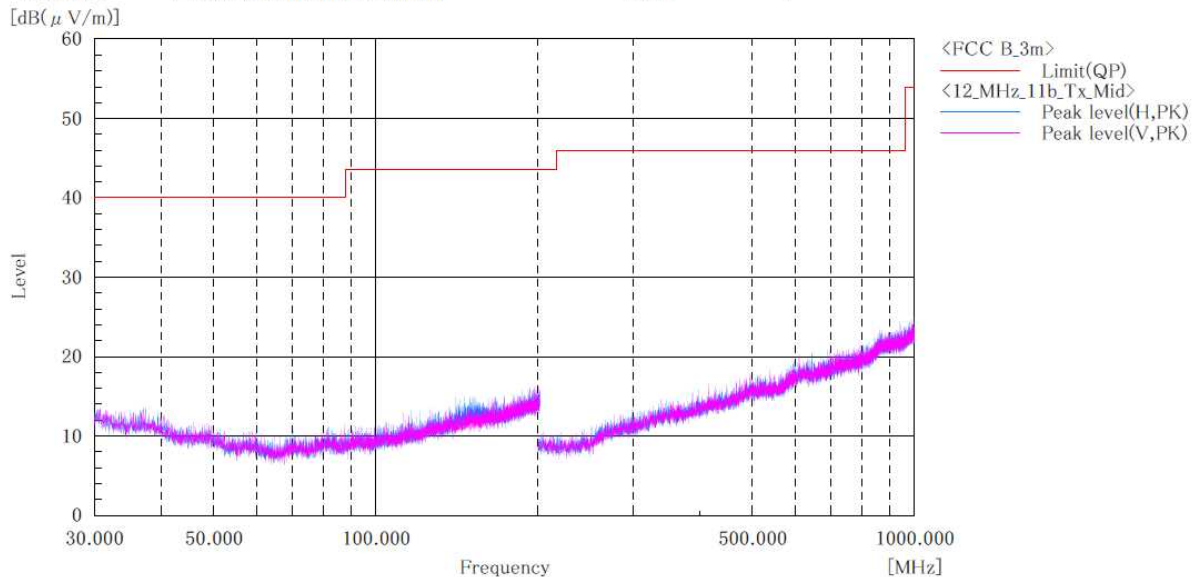
Note:

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.

[11b]
Channel Middle
BELOW 1GHz

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1055
 Serial No. : N/A
 Test mode : WLAN2.4GHz_11b_Tx_ch:Mid

Standard : FCC Part.15 subpartC
 Operator : T.Seino
 Temp,Hum : 22.6[°C] 64.6[%]
 Note1 :
 Note2 :



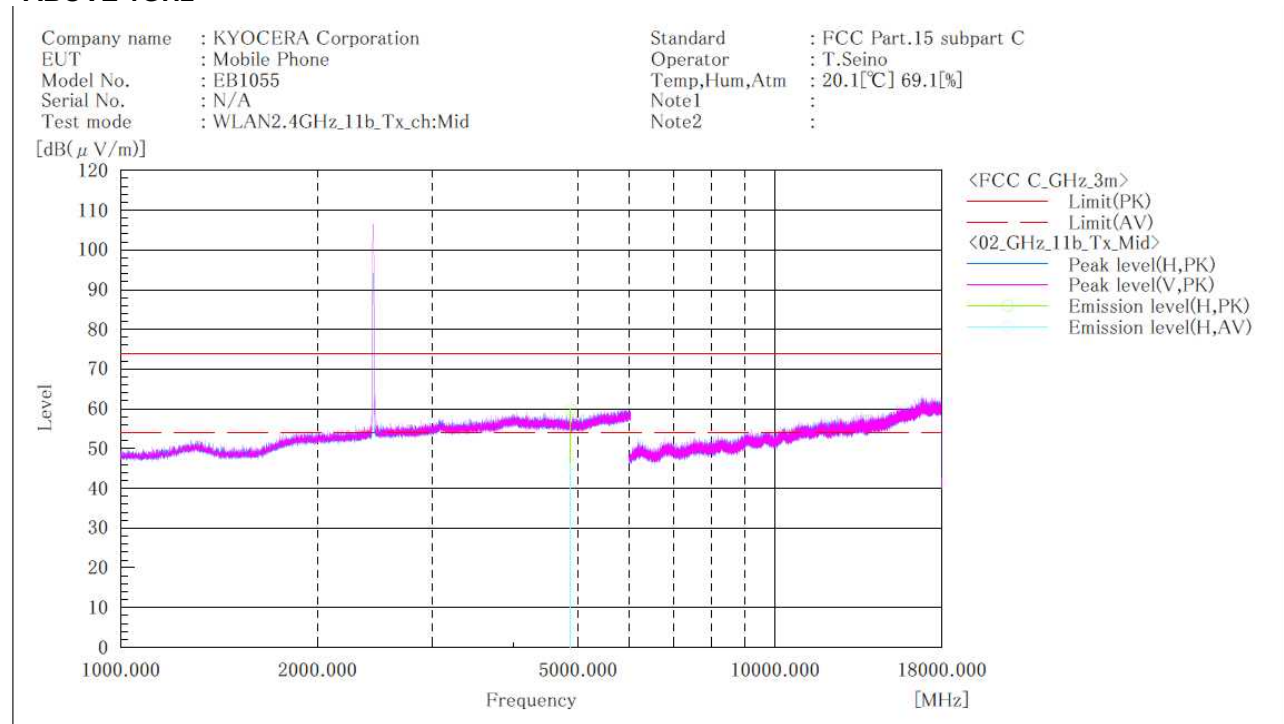
Final Result

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

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.

[11b]
Channel Middle
ABOVE 1GHz



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(μV)]	Reading AV [dB(μV)]	c. f. [dB(1/m)]	Result PK [dB(μV/m)]	Result AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Margin PK [dB]	Margin AV [dB]	Height [cm]	Angle [°]
1	4874.000	H	49.5	35.8	10.3	59.8	46.1	74.0	54.0	14.2	7.9	178.0	168.0

Note:

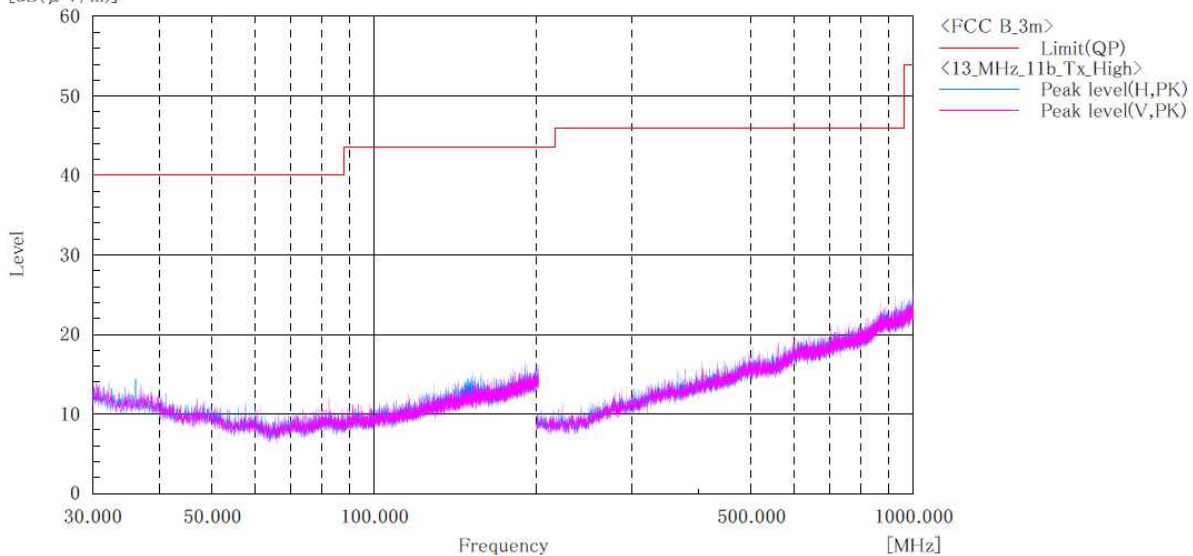
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

[11b]
Channel High
BELOW 1GHz

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1055
 Serial No. : N/A
 Test mode : WLAN2.4GHz_11b_Tx_ch:High

Standard : FCC Part.15 subpartC
 Operator : T.Seino
 Temp,Hum : 22.6[°C] 64.6[%]
 Note1 :
 Note2 :

[dB(μ V/m)]



Final Result

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

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.

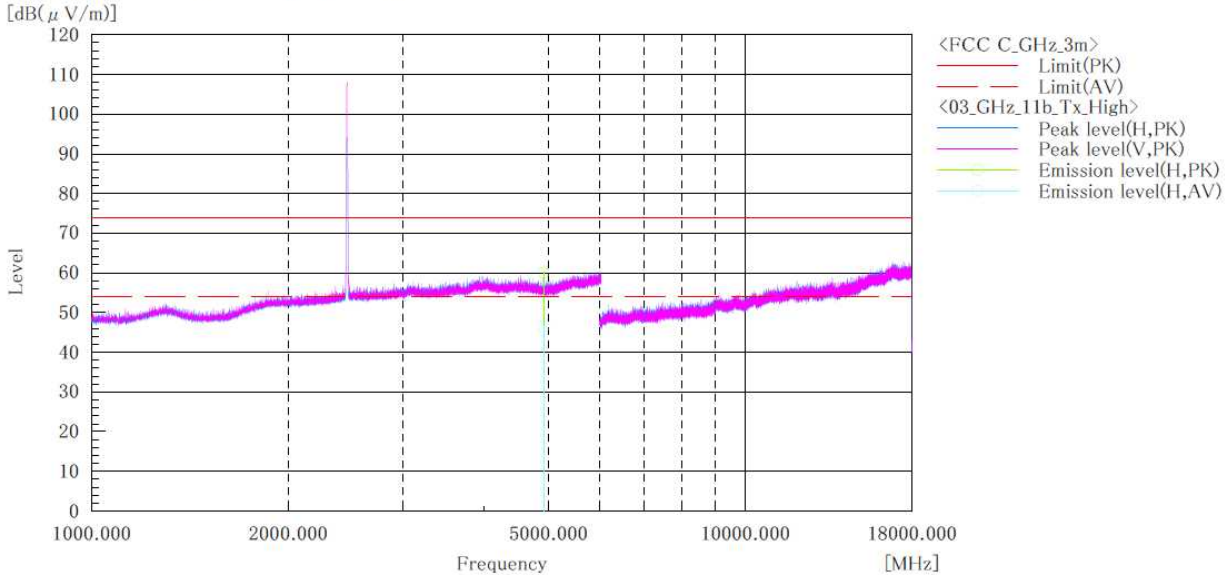


Japan

[11b]
Channel High
ABOVE 1GHz

Company name : KYOCERA Corporation
EUT : Mobile Phone
Model No. : EB1055
Serial No. : N/A
Test mode : WLAN2.4GHz_11b_Tx_ch:High

Standard : FCC Part.15 subpart C
Operator : T.Seino
Temp,Hum,Atm : 20.1[°C] 69.1[%]
Note1 :
Note2 :



Final Result

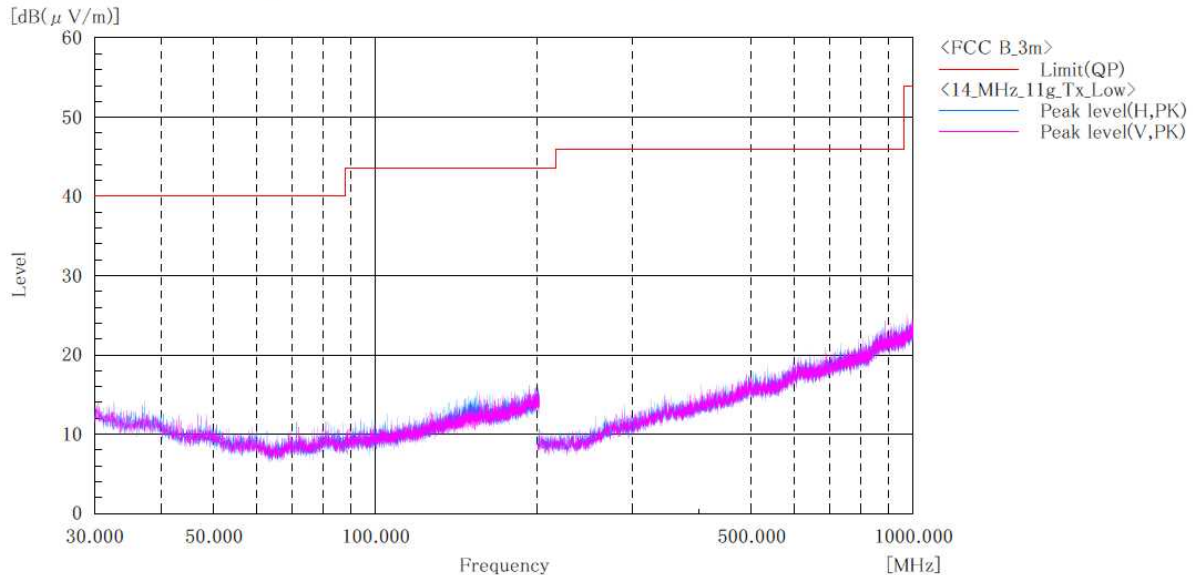
No.	Frequency [MHz]	(P)	Reading PK [dB(μV)]	Reading AV [dB(μV)]	c. f [dB(1/m)]	Result PK [dB(μV/m)]	Result AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Margin PK [dB]	Margin AV [dB]	Height [cm]	Angle [°]
1	4924.000	H	49.7	36.0	10.4	60.1	46.4	74.0	54.0	13.9	7.6	157.0	185.0

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

**[11g]
Channel Low
BELOW 1GHz**

Company name : KYOCERA Corporation
EUT : Mobile Phone
Model No. : EB1055
Serial No. : N/A
Test mode : WLAN2.4GHz_11g_Tx_ch:Low

Standard : FCC Part.15 subpartC
Operator : T.Seino
Temp,Hum : 22.6[°C] 64.6[%]
Note1 :
Note2 :



Final Result

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

Note:

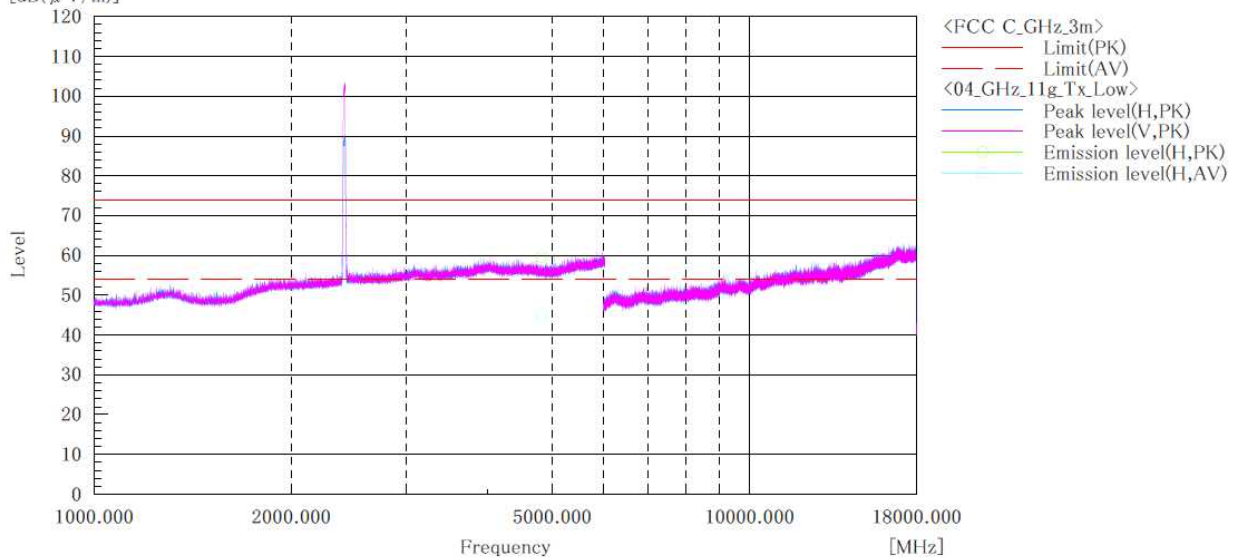
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

**[11g]
Channel Low
ABOVE 1GHz**

Company name : KYOCERA Corporation
EUT : Mobile Phone
Model No. : EB1055
Serial No. : N/A
Test mode : WLAN2.4GHz_11g_Tx_ch:Low

Standard : FCC Part.15 subpart C
Operator : T.Seino
Temp,Hum,Atm : 20.1[°C] 69.1[%]
Note1 :
Note2 :

[dB(μV/m)]



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
	[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	49.2	34.5	10.3	59.5	44.8	74.0	54.0	14.5	9.2	182.0	174.0

Note:

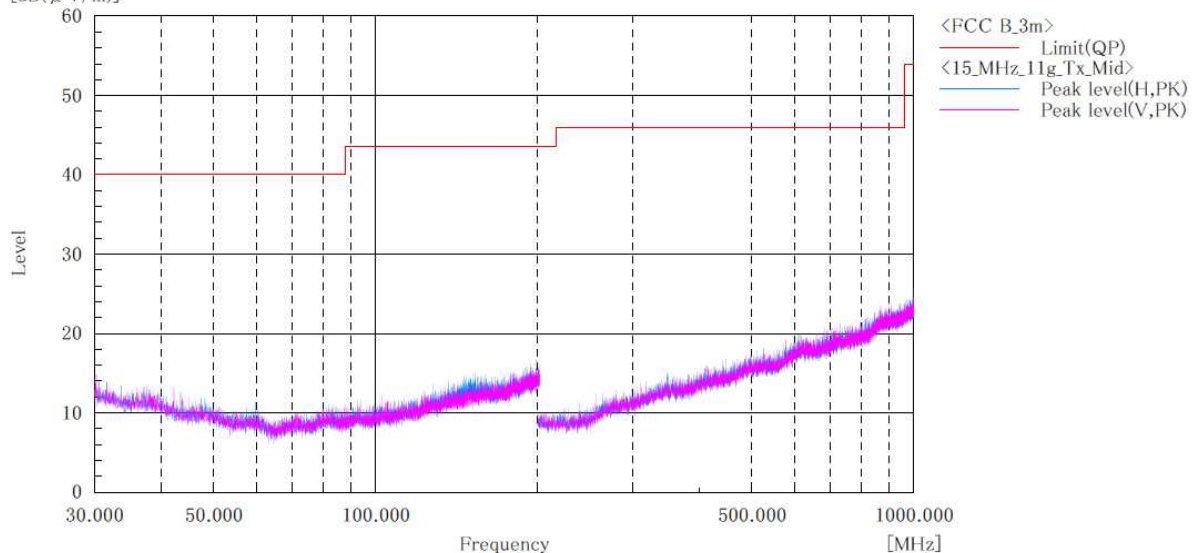
- Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
- No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

**[11g]
Channel Middle
BELOW 1GHz**

Company name : KYOCERA Corporation
EUT : Mobile Phone
Model No. : EB1055
Serial No. : N/A
Test mode : WLAN2.4GHz_11g_Tx_ch:Mid

Standard : FCC Part.15 subpartC
Operator : T.Seino
Temp,Hum : 22.6[°C] 64.6[%]
Note1 :
Note2 :

[dB(μV/m)]



Final Result

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

Note:

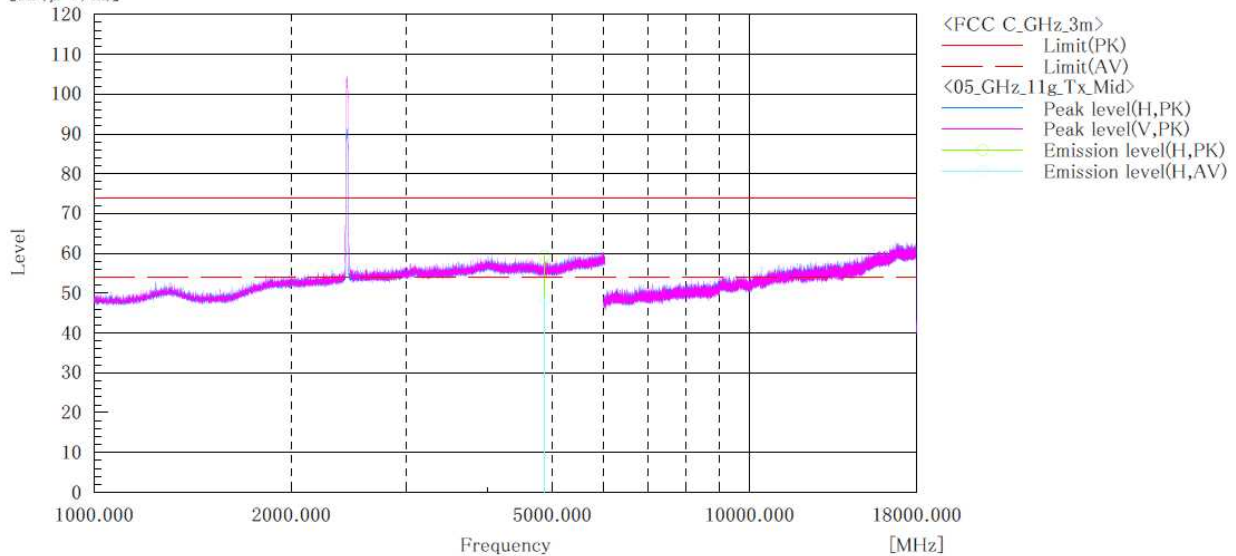
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

[11g]
Channel Middle
ABOVE 1GHz

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1055
 Serial No. : N/A
 Test mode : WLAN2.4GHz_11g_Tx_ch:Mid

Standard : FCC Part.15 subpart C
 Operator : T.Seino
 Temp,Hum,Atm : 20.1[°C] 69.1[%]
 Note1 :
 Note2 :

[dB(μV/m)]



Final Result

No.	Frequency	(P)	Reading	Reading	c.f	Result	Result	Limit	Limit	Margin	Margin	Height	Angle
	[MHz]		PK	AV		PK	AV	PK	AV	PK	AV		
			[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	49.1	38.4	10.3	59.4	48.7	74.0	54.0	14.6	5.3	181.0	175.0

Note:

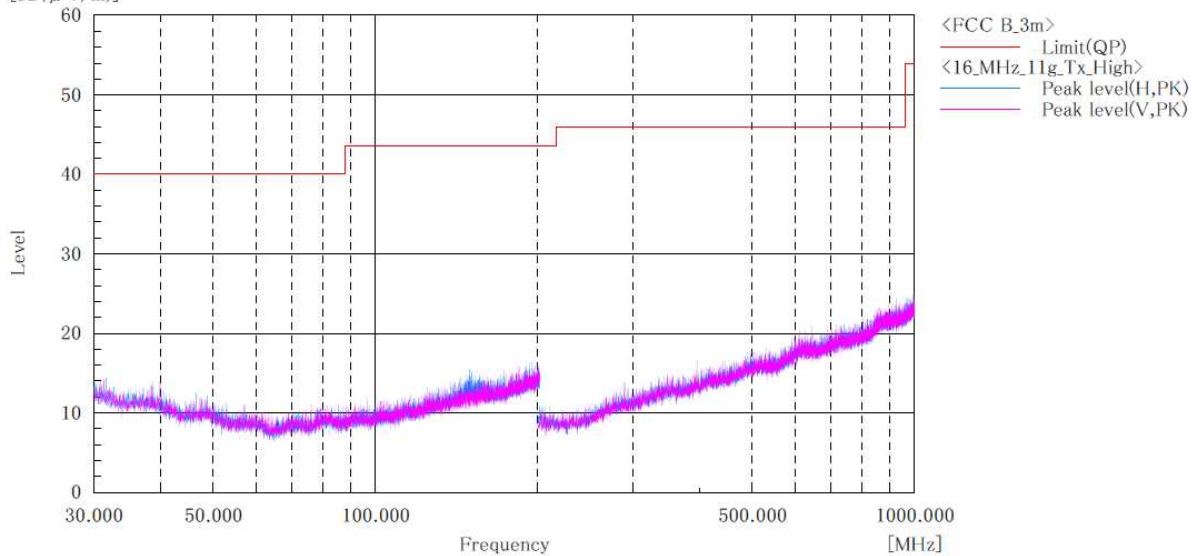
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

**[11g]
Channel High
BELOW 1GHz**

Company name : KYOCERA Corporation
EUT : Mobile Phone
Model No. : EB1055
Serial No. : N/A
Test mode : WLAN2.4GHz_11g_Tx_ch:High

Standard : FCC Part.15 subpartC
Operator : T.Seino
Temp,Hum : 22.6[°C] 64.6[%]
Note1 :
Note2 :

[dB(μV/m)]



Final Result

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

Note:

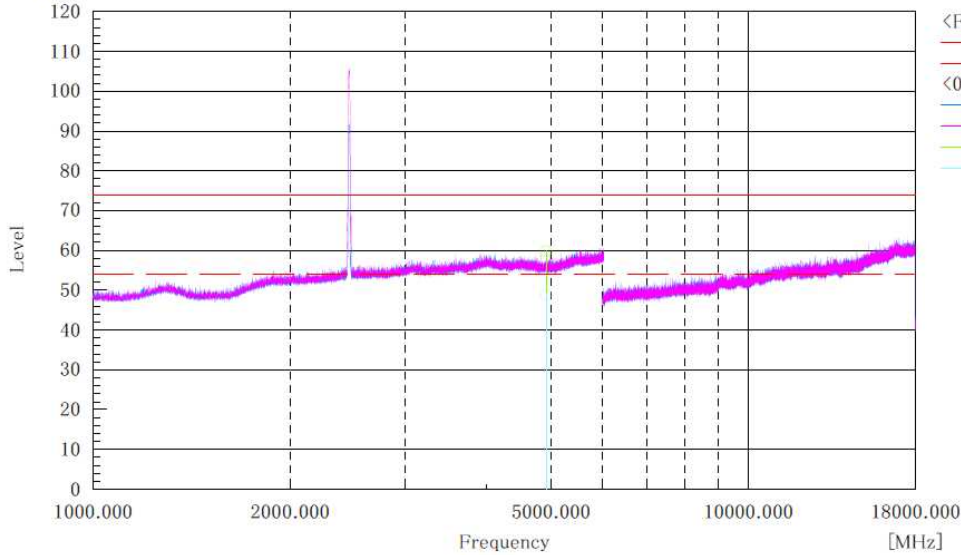
- Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
- No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

[11g]
Channel High
ABOVE 1GHz

Company name : KYOCERA Corporation
EUT : Mobile Phone
Model No. : EB1055
Serial No. : N/A
Test mode : WLAN2.4GHz_11g_Tx_ch:High

Standard : FCC Part.15 subpart C
Operator : T.Seino
Temp,Hum,Atm : 20.1[°C] 69.1[%]
Note1 :
Note2 :

[dB(μV/m)]



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(μV)]	Reading AV [dB(μV)]	c.f [dB(1/m)]	Result PK [dB(μV/m)]	Result AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Margin PK [dB]	Margin AV [dB]	Height [cm]	Angle [°]
1	4924.000	H	49.4	38.5	10.4	59.8	48.9	74.0	54.0	14.2	5.1	179.0	178.0

Note:

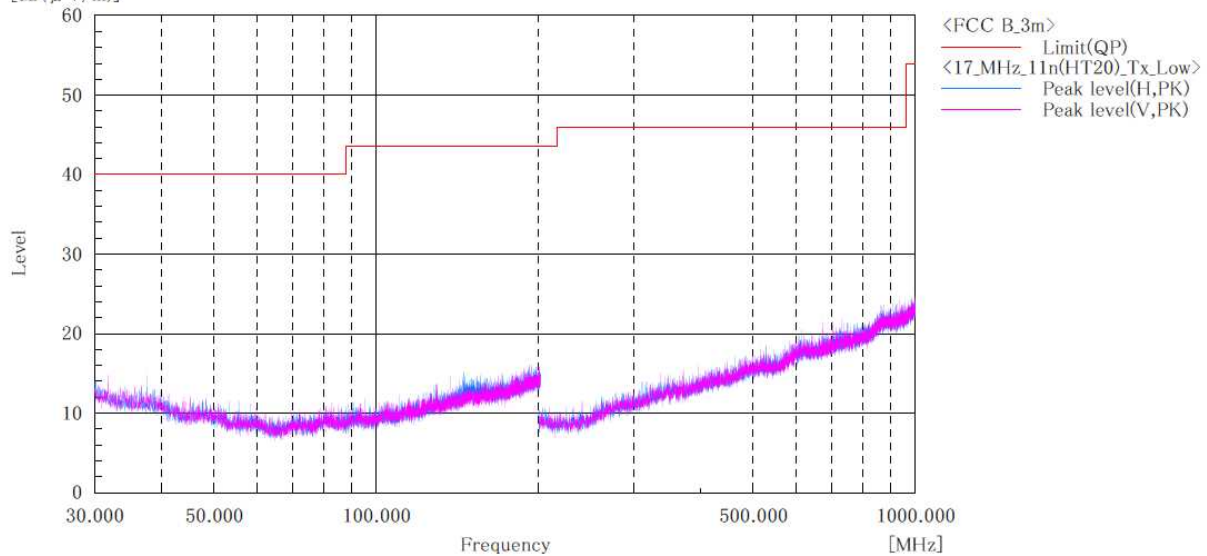
- Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
- No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

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

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1055
 Serial No. : N/A
 Test mode : WLAN2.4GHz_11n(HT20)_Tx_ch:Low

Standard : FCC Part.15 subpartC
 Operator : T.Seino
 Temp,Hum : 22.6[°C] 64.6[%]
 Note1 :
 Note2 :

[dB(μ V/m)]



Final Result

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

Note:

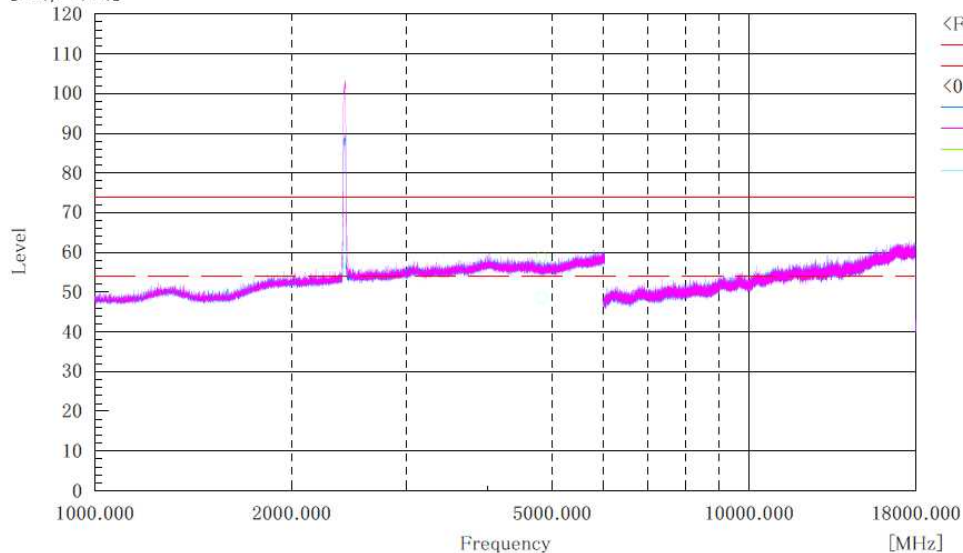
1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.

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

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1055
 Serial No. : N/A
 Test mode : WLAN2.4GHz_11n(HT20)_Tx_ch:Low

Standard : FCC Part.15 subpart C
 Operator : T.Seino
 Temp,Hum,Atm : 20.1[°C] 69.1[%]
 Note1 :
 Note2 :

[dB(μV/m)]



<FCC C_GHz_3m>
 Limit(PK)
 Limit(AV)
 <07_GHz_11n(HT20)_Tx_Low>
 Peak level(H,PK)
 Peak level(V,PK)
 Emission level(H,PK)
 Emission level(H,AV)

Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(μV)]	Reading AV [dB(μV)]	c.f [dB(1/m)]	Result PK [dB(μV/m)]	Result AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Margin PK [dB]	Margin AV [dB]	Height [cm]	Angle [°]
1	4824.000	H	48.4	38.3	10.3	58.7	48.6	74.0	54.0	15.3	5.4	182.0	181.0

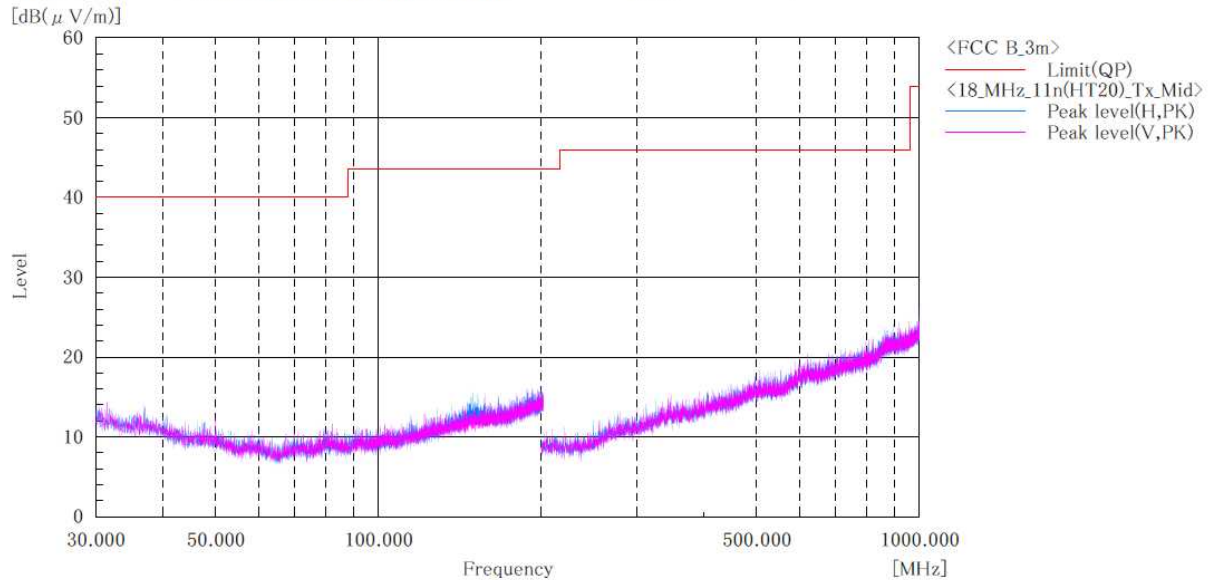
Note:

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

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

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1055
 Serial No. : N/A
 Test mode : WLAN2.4GHz_11n(HT20)_Tx_ch:Mid

Standard : FCC Part.15 subpartC
 Operator : T.Seino
 Temp,Hum : 22.6[°C] 64.6[%]
 Note1 :
 Note2 :



Final Result

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

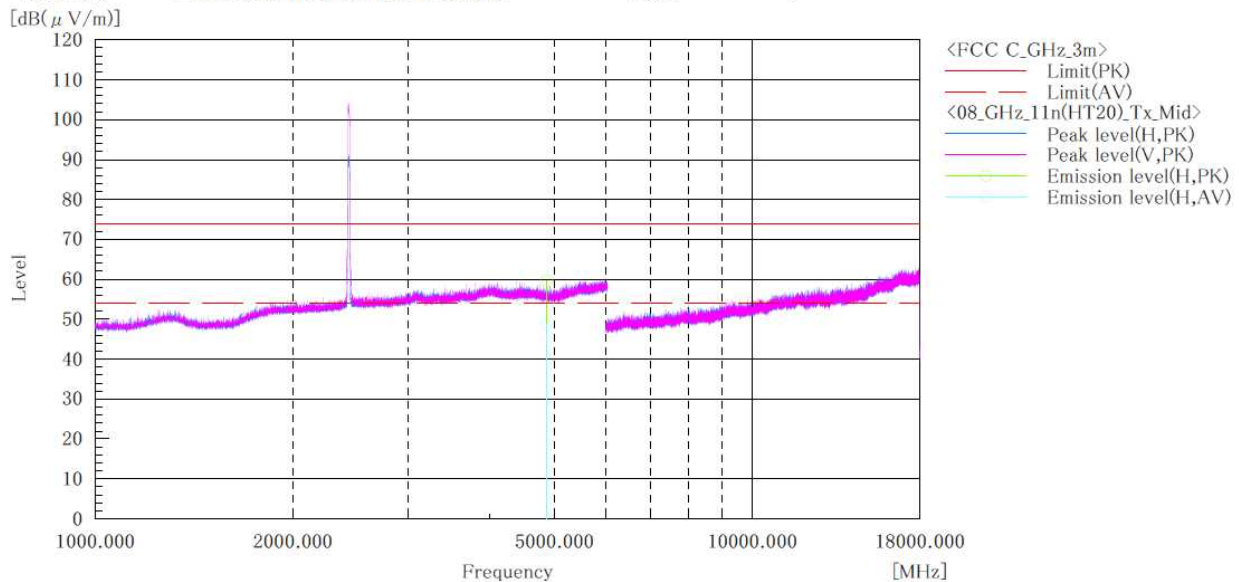
Note:

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 Middle
ABOVE 1GHz

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1055
 Serial No. : N/A
 Test mode : WLAN2.4GHz_11n(HT20)_Tx_ch:Mid

Standard : FCC Part.15 subpart C
 Operator : T.Seino
 Temp,Hum,Atm : 20.1[°C] 69.1[%]
 Note1 :
 Note2 :



Final Result

No.	Frequency [MHz]	(P)	Reading PK [dB(μV)]	Reading AV [dB(μV)]	c.f [dB(1/m)]	Result PK [dB(μV/m)]	Result AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Margin PK [dB]	Margin AV [dB]	Height [cm]	Angle [°]
1	4874.000	H	49.3	38.4	10.3	59.6	48.7	74.0	54.0	14.4	5.3	180.0	177.0

Note:

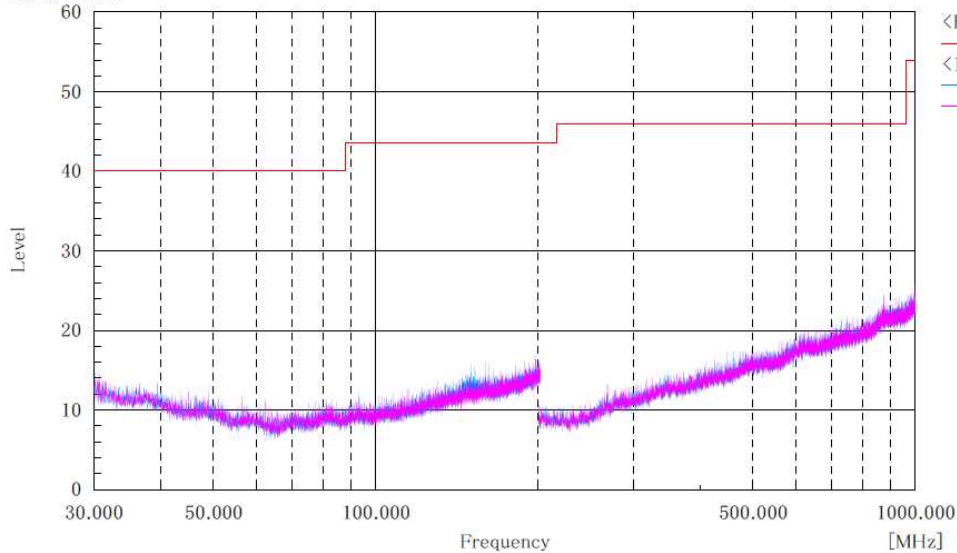
- Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
- No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

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

Company name : KYOCERA Corporation
EUT : Mobile Phone
Model No. : EB1055
Serial No. : N/A
Test mode : WLAN2.4GHz_11n(HT20)_Tx_ch:High

Standard : FCC Part.15 subpartC
Operator : T.Seino
Temp,Hum : 22.3[°C] 64.9[%]
Note1 :
Note2 :

[dB(μV/m)]



<FCC B.3m>
Limit(QP)
<19_MHz_11n(HT20)_Tx_High>
Peak level(H,PK)
Peak level(V,PK)

Final Result

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

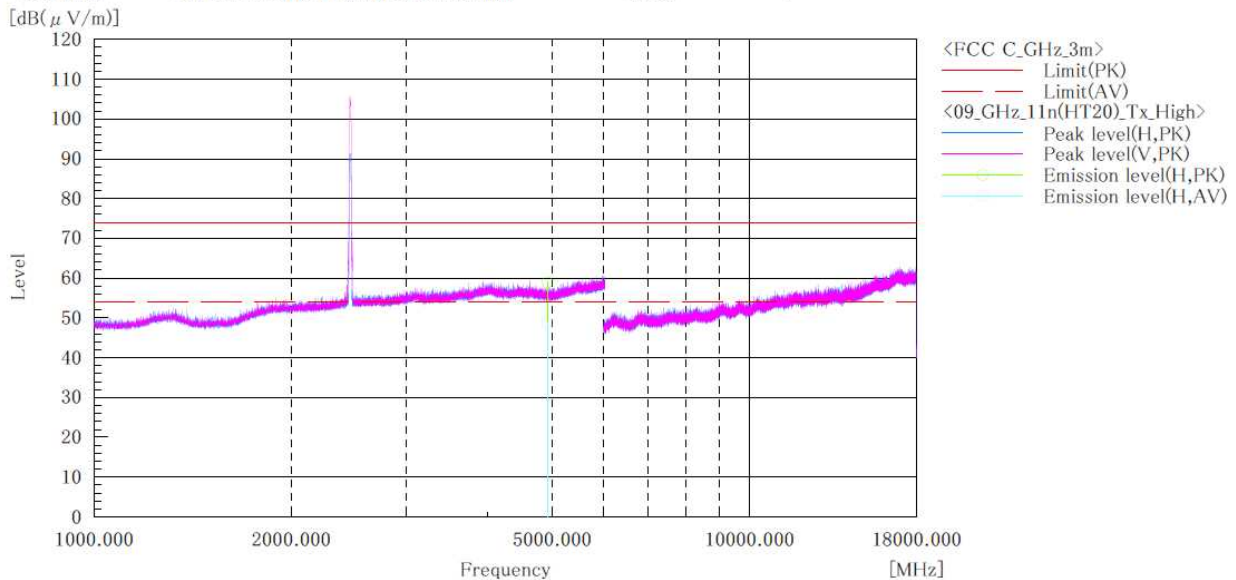
Note:

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 High
ABOVE 1GHz

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1055
 Serial No. : N/A
 Test mode : WLAN2.4GHz_11n(HT20)_Tx_ch:High

Standard : FCC Part.15 subpart C
 Operator : T.Seino
 Temp,Hum,Atm : 20.1[°C] 69.1[%]
 Note1 :
 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
	[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	48.5	38.4	10.4	58.9	48.8	74.0	54.0	15.1	5.2	159.0	183.0

Note:

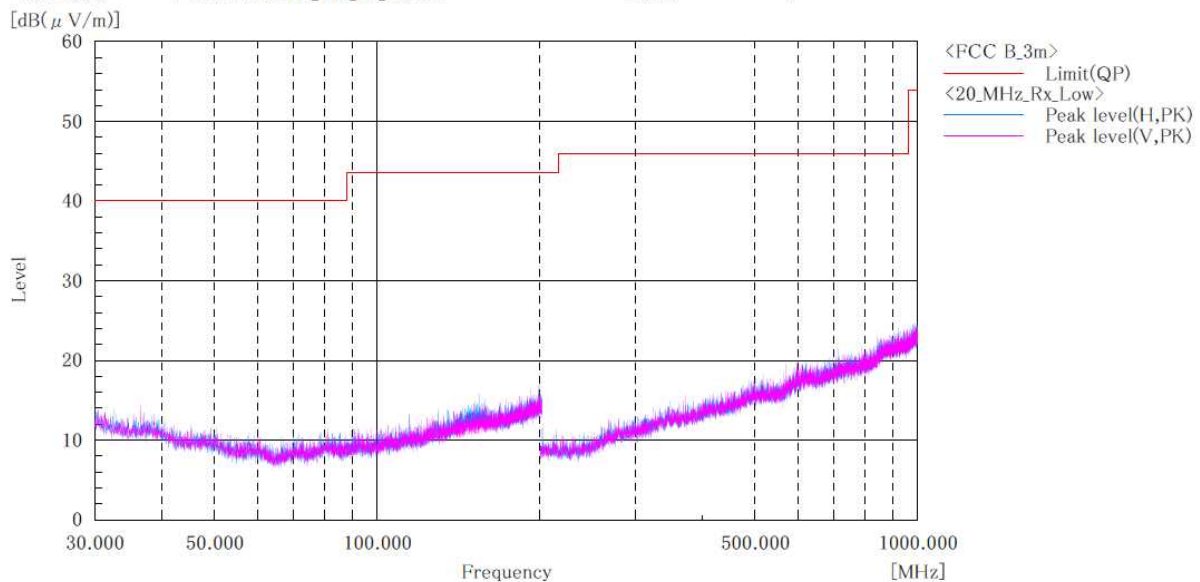
- Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
- No emission were detected in frequency range 18GHz to 25GHz at the 3 meters distance.

4.5.4.2 Receive mode

Channel Low BELOW 1GHz

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1055
 Serial No. : N/A
 Test mode : WLAN2.4GHz_11b_Rx_ch:Low

Standard : FCC Part.15 subpartC
 Operator : T.Seino
 Temp,Hum : 22.3[°C] 64.9[%]
 Note1 :
 Note2 :



Final Result

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

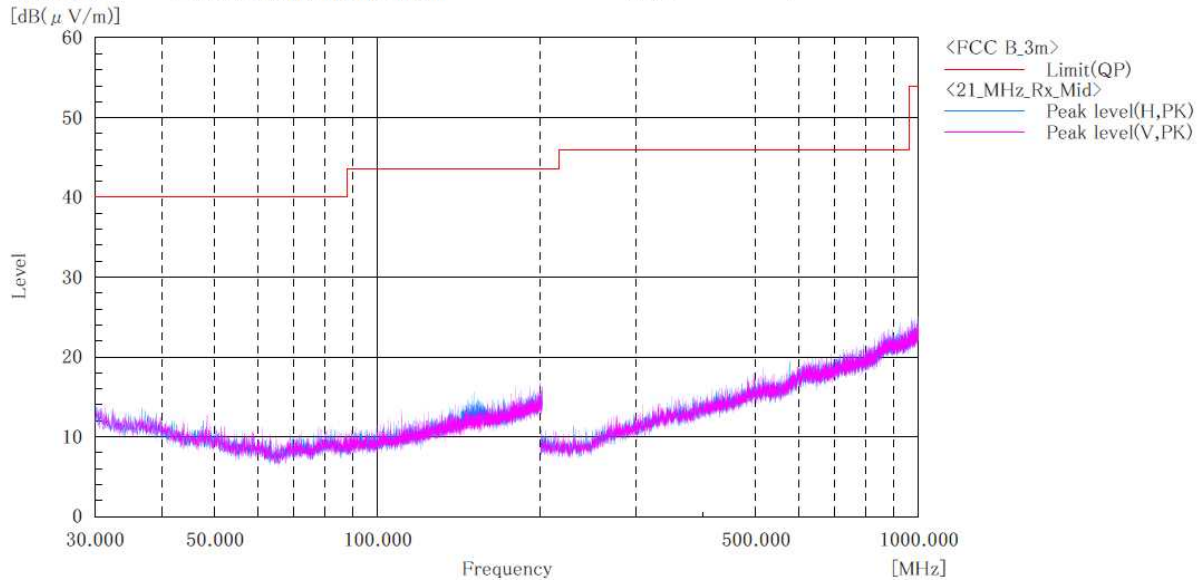
Note:

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.

**Channel Middle
BELOW 1GHz**

Company name : KYOCERA Corporation
EUT : Mobile Phone
Model No. : EB1055
Serial No. : N/A
Test mode : WLAN2.4GHz_11b_Rx_ch:Mid

Standard : FCC Part.15 subpartC
Operator : T.Seino
Temp,Hum : 22.3[°C] 64.9[%]
Note1 :
Note2 :



Final Result

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

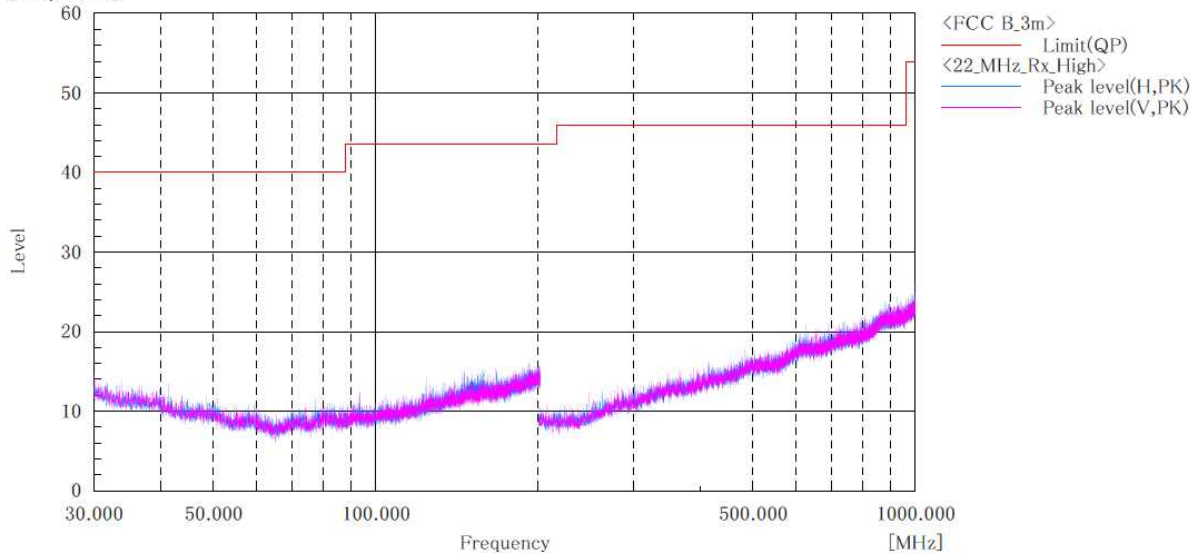
Note:

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.

Channel High BELOW 1GHz

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1055
 Serial No. : N/A
 Test mode : WLAN2.4GHz_11b_Rx_ch:High

Standard : FCC Part.15 subpartC
 Operator : T.Seino
 Temp,Hum : 22.3[°C] 64.9[%]
 Note1 :
 Note2 :

[dB(μ V/m)]

Final Result

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

Note:

- Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
- 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	: RBW=1 MHz, VBW=1kHz,3kHz, Span=0 Hz, Sweep=auto Display mode=Linear

Average Measurement Setting [VBW]

Mode	Duty Cycle (%)	T _{on} (us)	T _{off} (us)	1/T _{on} (kHz)	Determined VBW Setting
IEEE802.11b	96.31	992	38	1.008	3kHz
IEEE802.11g	96.80	1390	46	0.719	1kHz
IEEE802.11n(HT20)	96.55	1286	46	0.778	1kHz

Although these tests were performed other than open area test site, adequate comparison measurements

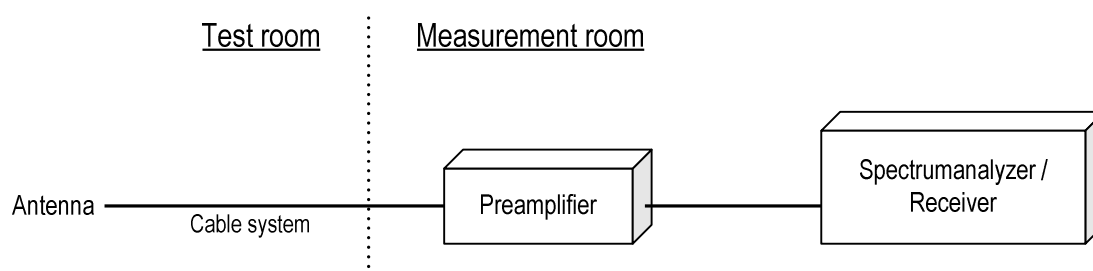
were confirmed against 30 m open area test site.

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



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-August-2020

Temperature : 22.4 [°C]

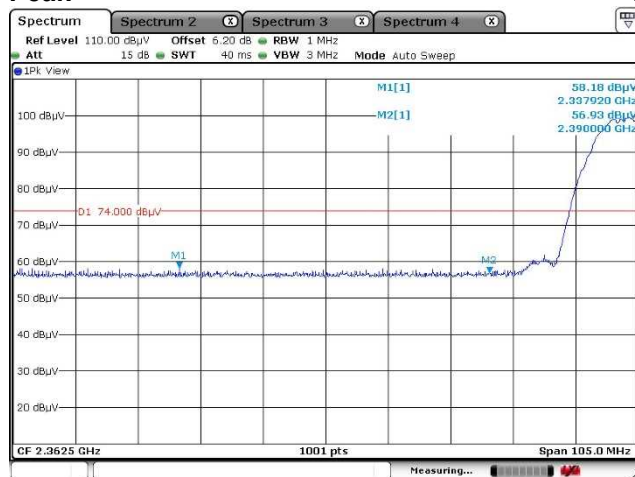
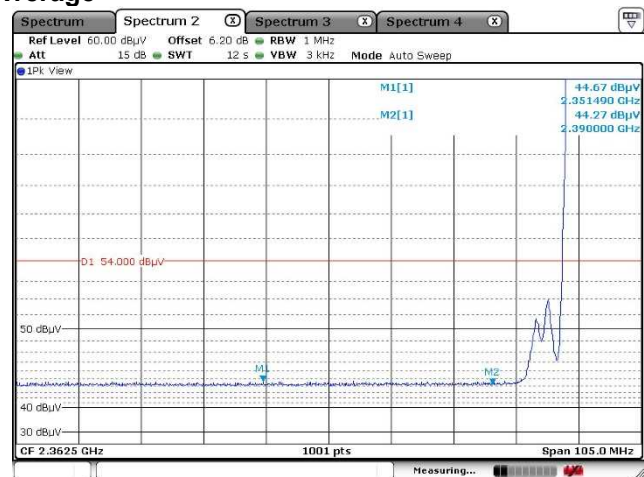
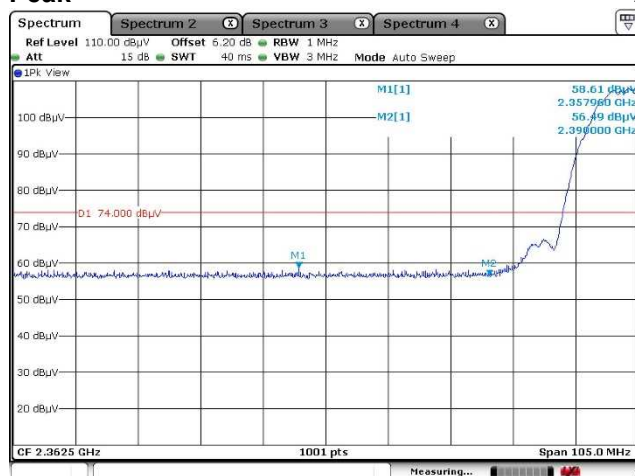
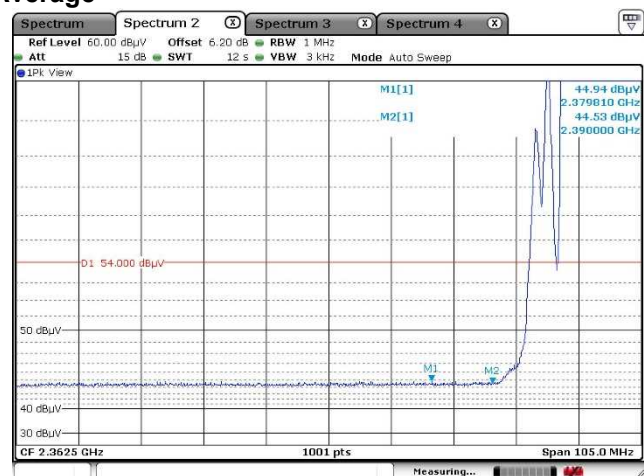
Humidity : 64.7 [%]

Test place : 3m Semi-anechoic chamber

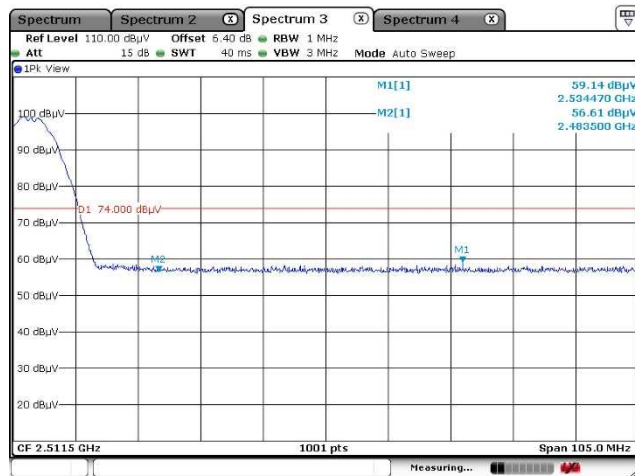
Test engineer :

Tadahiro Seino

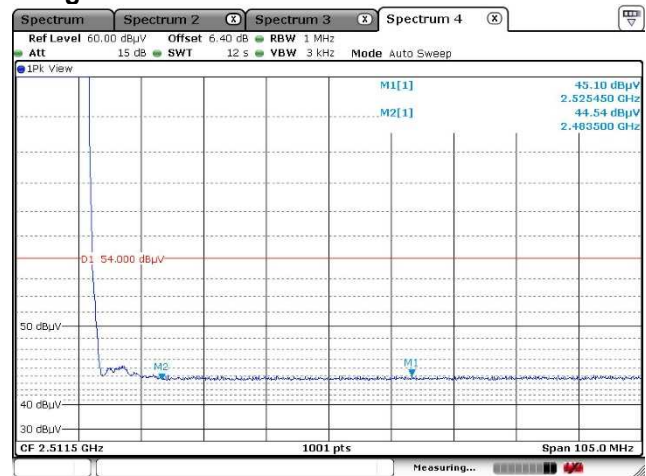
[IEEE802.11b]

**Channel Low
Horizontal
Peak****Average****Vertical
Peak****Average**

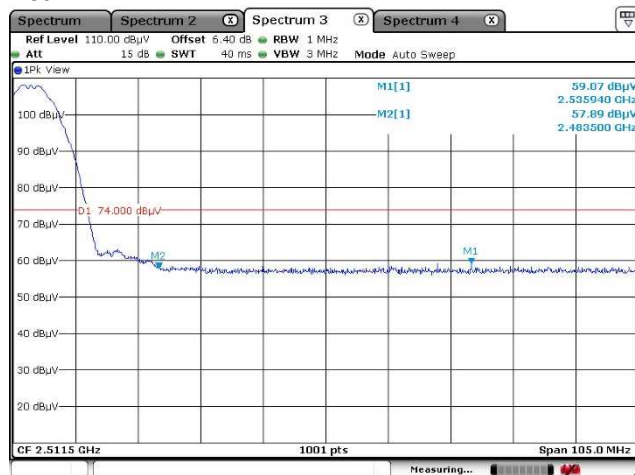
Channel High Horizontal Peak



Average



Vertical Peak

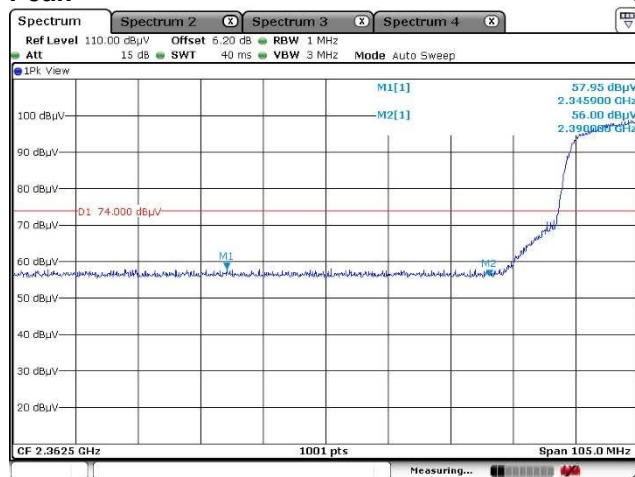


Average



[IEEE802.11g]

**Channel Low
Horizontal
Peak**



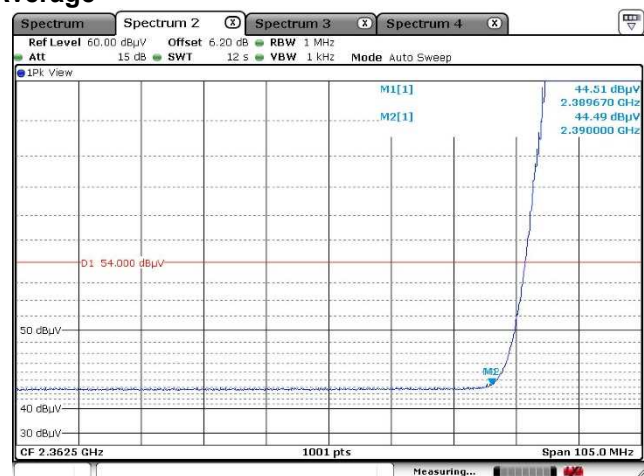
Average



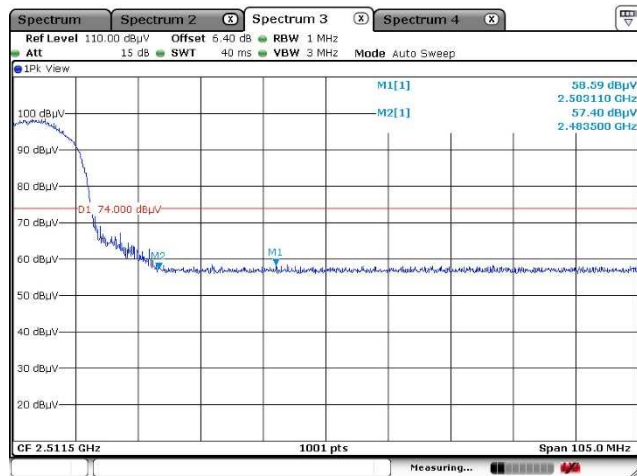
**Vertical
Peak**



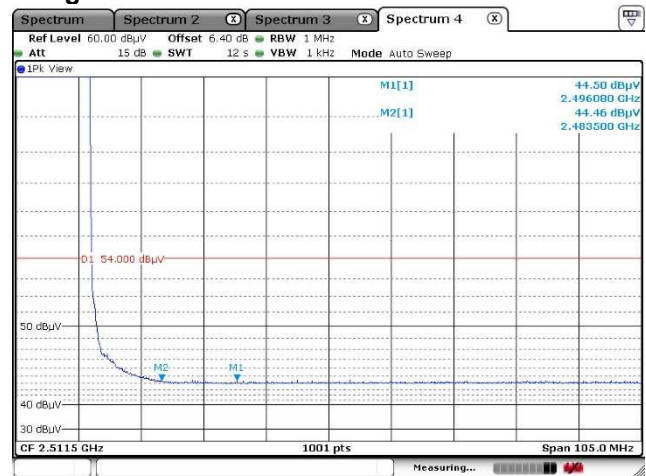
Average



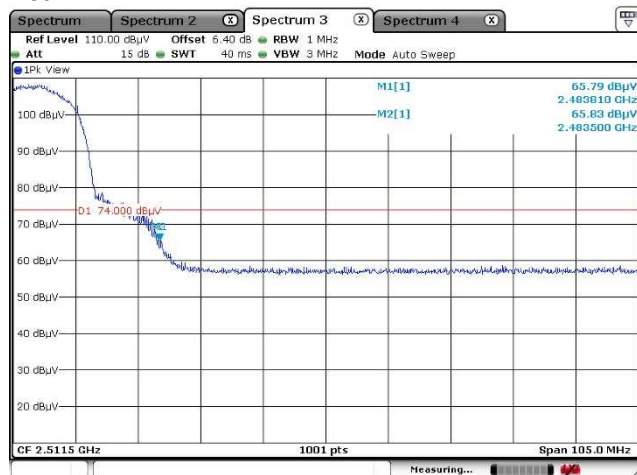
Channel High Horizontal Peak



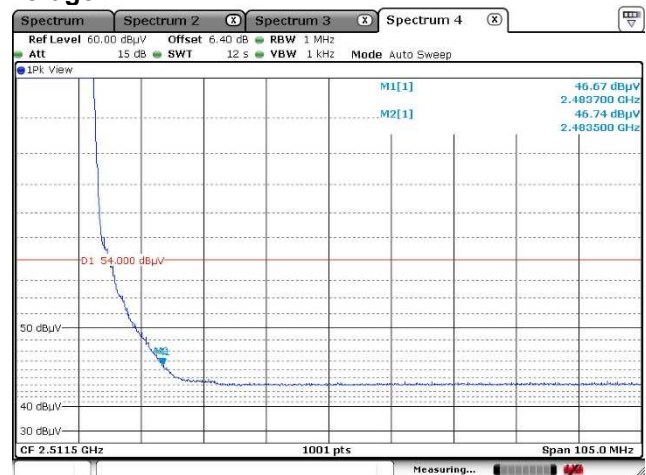
Average



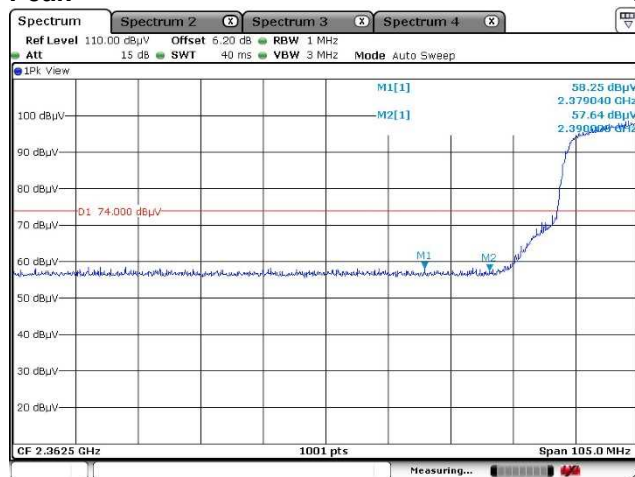
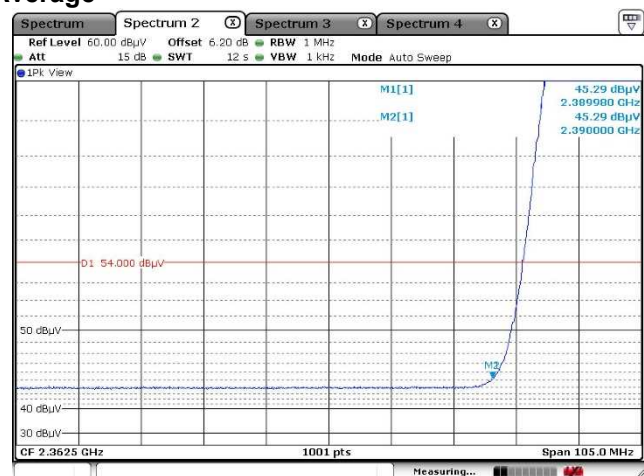
Vertical Peak



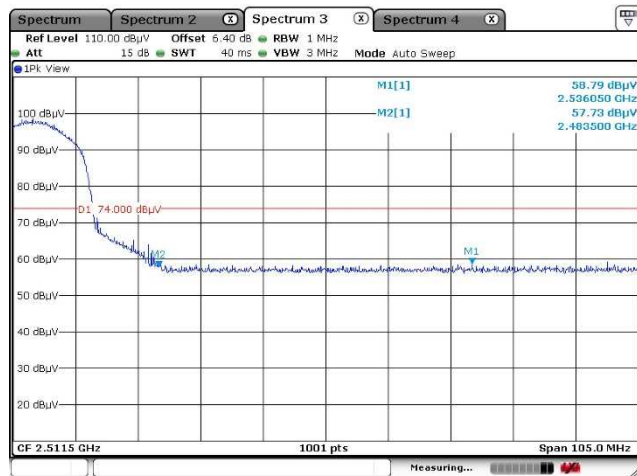
Average



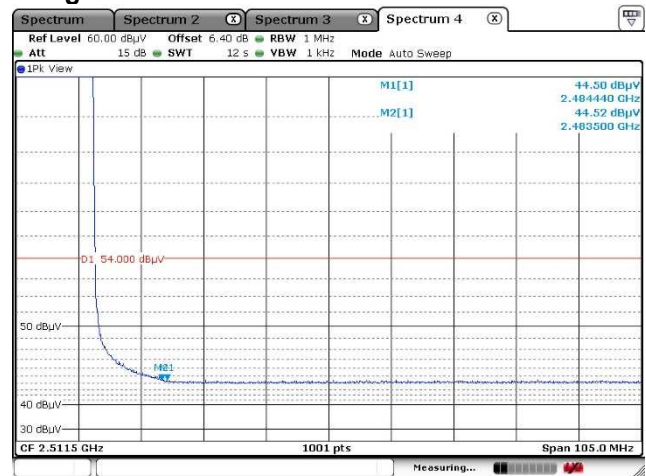
[IEEE802.11n (HT20)]

**Channel Low
Horizontal
Peak****Average****Vertical
Peak****Average**

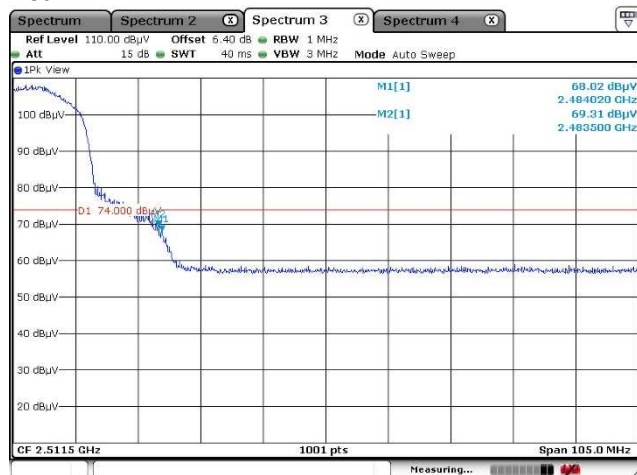
Channel High Horizontal Peak



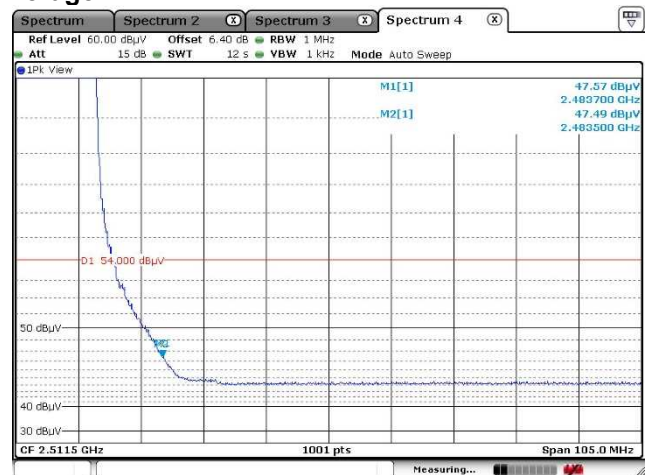
Average



Vertical Peak



Average



4.7 Transmitter Power Spectral Density

4.7.1 Measurement procedure

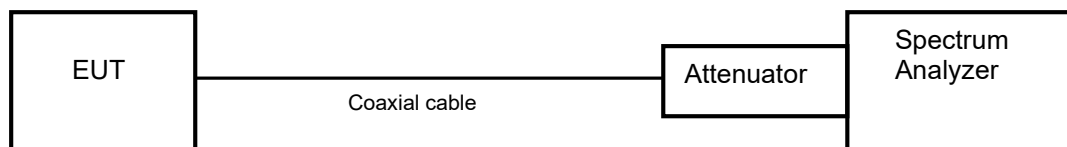
[FCC 15.247(e), KDB 558074 D01 v05r02, Section 8.4]

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 $\geq 3 \times$ 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 : 4-August-2020

Temperature : 25.1 [°C]

Humidity : 52.1 [%]

Test place : Shielded room No.4

Test engineer :

Tadahiro Seino

[IEEE802.11b]

Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dBm)	Result
Low	2412	-16.04	10.53	-5.51	8.00	13.51	PASS
Middle	2437	-16.36	10.53	-5.83	8.00	13.83	PASS
High	2462	-15.05	10.53	-4.52	8.00	12.52	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	-21.40	10.53	-10.87	8.00	18.87	PASS
Middle	2437	-22.34	10.53	-11.81	8.00	19.81	PASS
High	2462	-20.33	10.53	-9.80	8.00	17.80	PASS

Calculation;

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

[IEEE802.11n (HT20)]

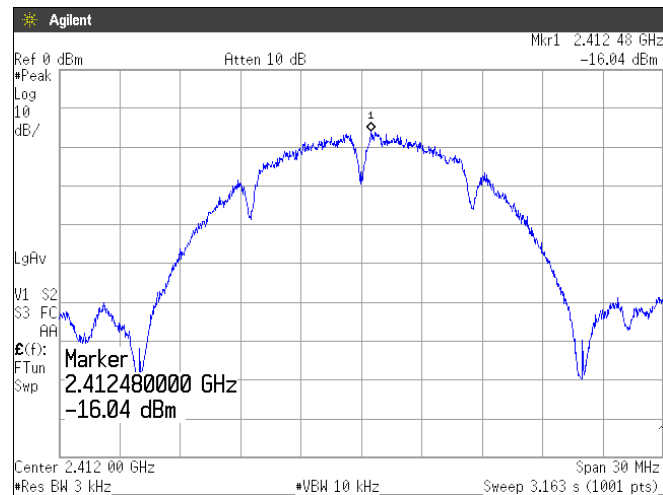
Channel	Center Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dBm)	Result
Low	2412	-22.36	10.53	-11.83	8.00	19.83	PASS
Middle	2437	-22.08	10.53	-11.55	8.00	19.55	PASS
High	2462	-20.79	10.53	-10.26	8.00	18.26	PASS

Calculation;

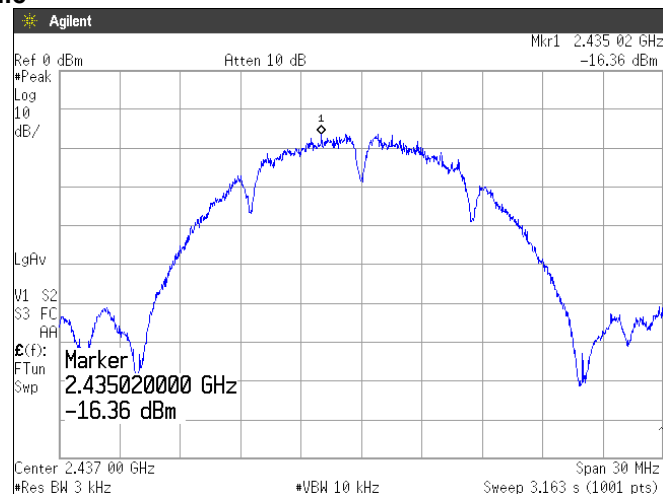
Transmitter Power Spectral Density Level (Margin) = Limit – (Reading + Factor)

10.4 Trace data [IEEE802.11b]

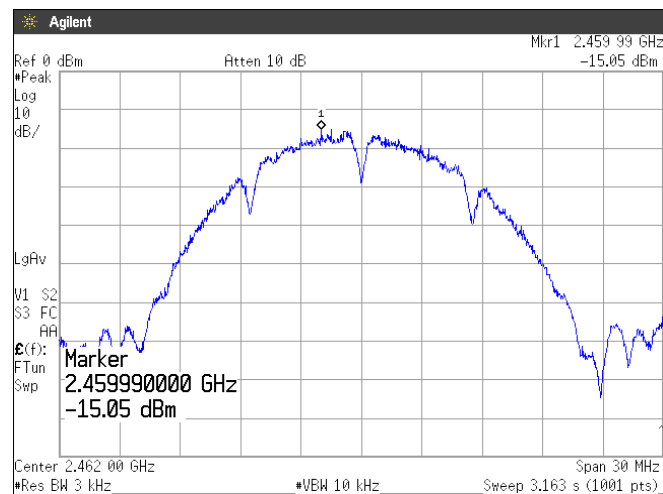
Channel Low



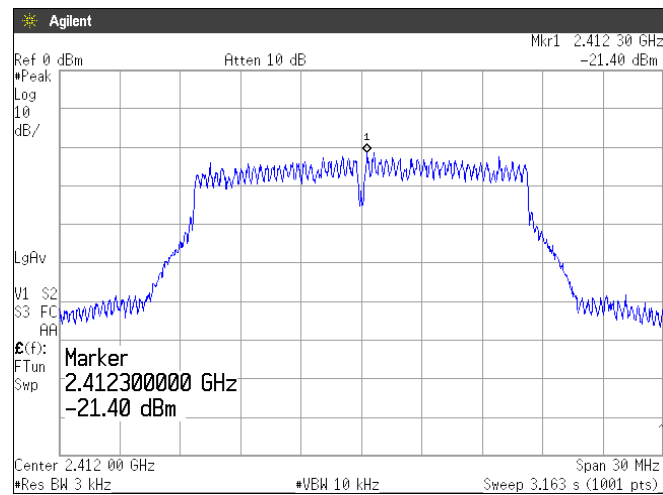
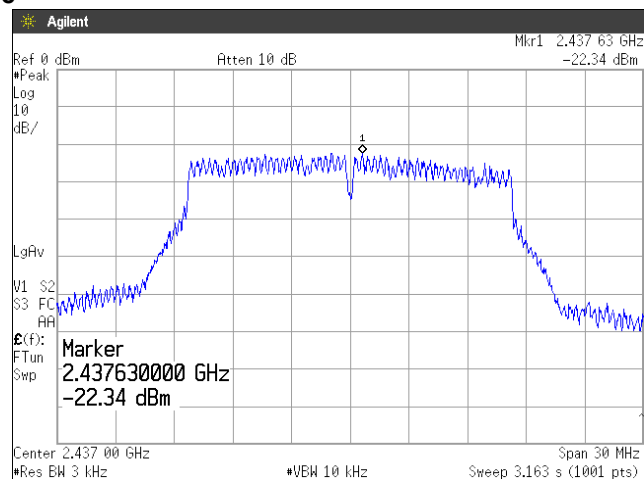
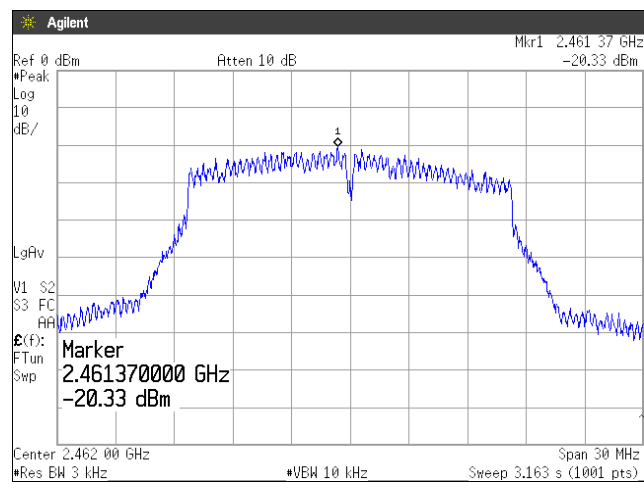
Channel Middle



Channel High

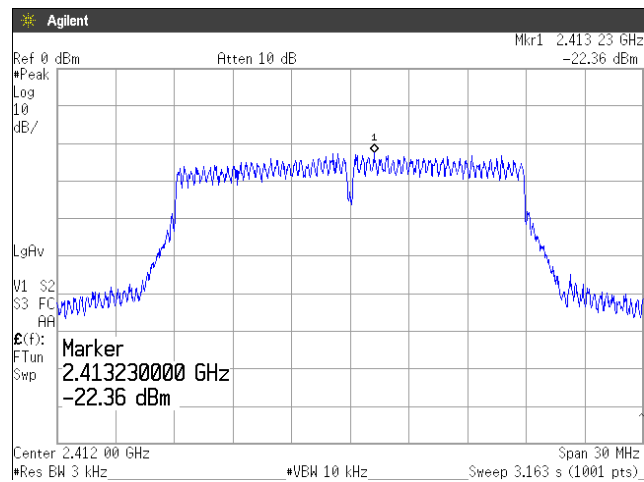


[IEEE802.11g]

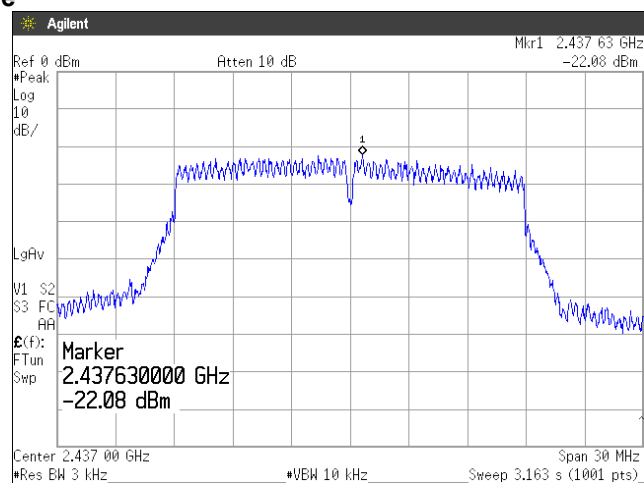
Channel Low**Channel Middle****Channel High**

[IEEE802.11n (HT20)]

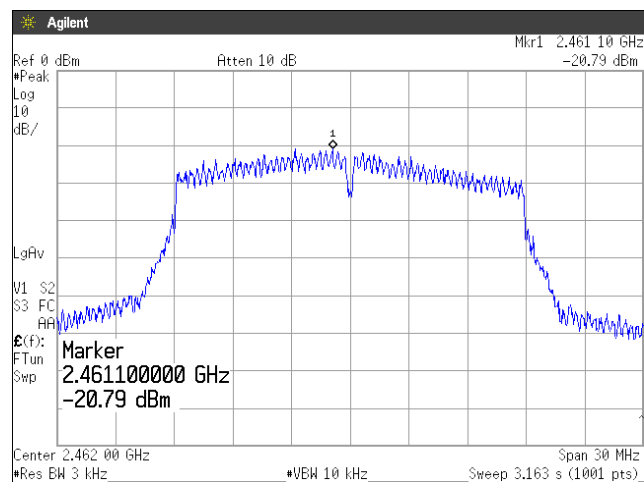
Channel Low



Channel Middle



Channel High



4.8 AC Power Line Conducted Emissions

4.8.1 Measurement procedure

[FCC 15.207]

Test was applied by following conditions.

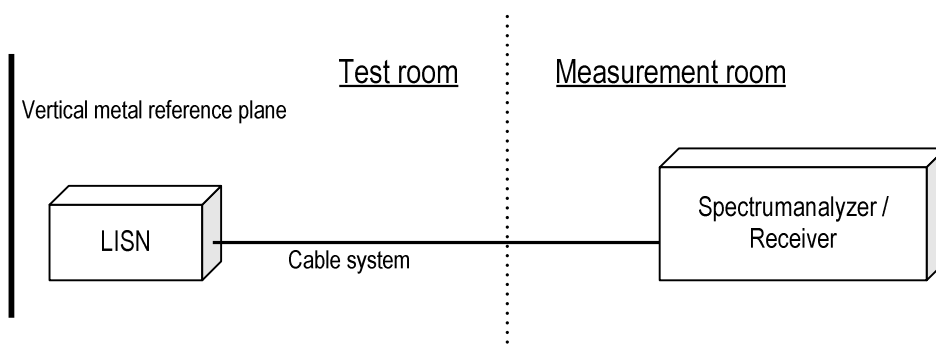
Test method	: ANSI C63.10
Frequency range	: 0.15 MHz to 30 MHz
Test place	: 3m Semi-anechoic chamber
EUT was placed on	: FRP table / (W) 2.0 × (D) 1.0 × (H) 0.8 m
Vertical Metal Reference Plane	: (W) 2.0 × (H) 2.0 m, 0.4 m away from EUT
Test receiver setting	
- Detector	: Quasi-peak, Average
- Bandwidth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

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.

4.8.4 Test data

Date : 2-August-2020

Temperature : 20.9 [°C]

Humidity : 69.1 [%]

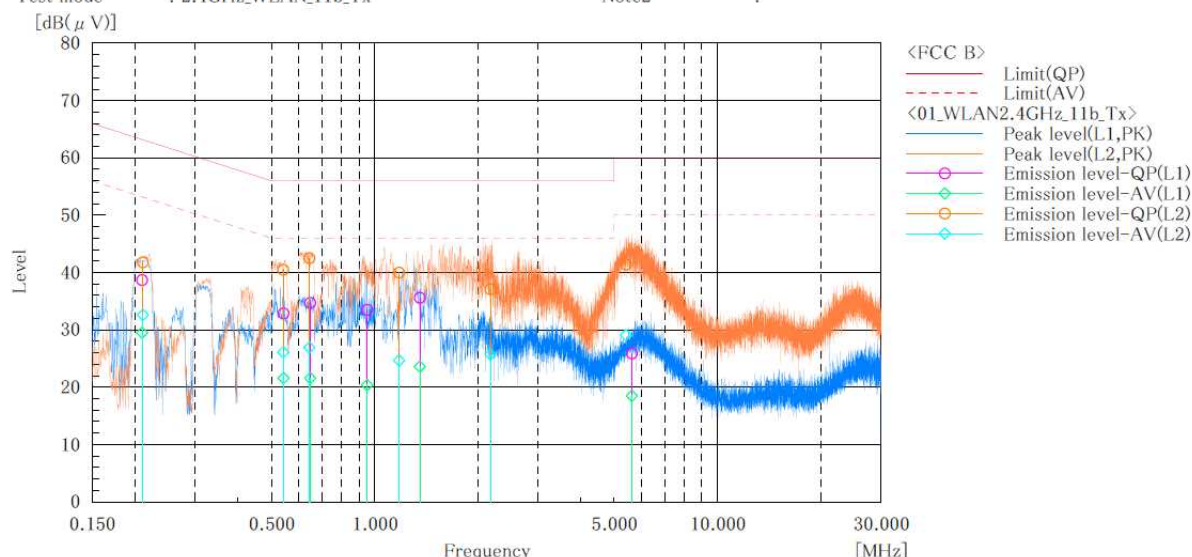
Test place : 3m Semi-anechoic chamber

Test engineer :

Tadahiro Seino

Company Name : KYOCERA Corporation
EUT : Mobile Phone
Model No. : EB1055
Serial No. : N/A
Test mode : 2.4GHz_WLAN_11b_Tx

Standard : FCC Part.15 Subpart C
Operator : T.Seino
Temp,Hum,Atm : 20.9[°C] 69.1[%]
Note1 :
Note2 :



Final Result

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c. f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.210	28.3	19.1	10.4	38.7	29.5	63.2	53.2	24.5	23.7
2	0.543	22.6	11.3	10.3	32.9	21.6	56.0	46.0	23.1	24.4
3	0.649	24.4	11.3	10.3	34.7	21.6	56.0	46.0	21.3	24.4
4	0.951	23.2	10.1	10.3	33.5	20.4	56.0	46.0	22.5	25.6
5	1.354	25.2	13.2	10.4	35.6	23.6	56.0	46.0	20.4	22.4
6	5.629	15.3	7.9	10.6	25.9	18.5	60.0	50.0	34.1	31.5

--- L2 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c. f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.211	31.4	22.2	10.4	41.8	32.6	63.2	53.2	21.4	20.6
2	0.542	30.2	15.8	10.3	40.5	26.1	56.0	46.0	15.5	19.9
3	0.646	32.2	16.6	10.3	42.5	26.9	56.0	46.0	13.5	19.1
4	1.179	29.6	14.3	10.4	40.0	24.7	56.0	46.0	16.0	21.3
5	2.178	26.7	15.3	10.4	37.1	25.7	56.0	46.0	18.9	20.3
6	5.411	30.9	18.6	10.5	41.4	29.1	60.0	50.0	18.6	20.9



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.

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)	± 3.8 dB
Conducted emission, AMN (150 kHz – 30 MHz)	± 3.4 dB
Radiated emission (9 kHz – 30 MHz)	± 3.9 dB
Radiated emission (30 MHz – 1000 MHz)	± 4.9 dB
Radiated emission (1 GHz – 6 GHz)	± 4.6 dB
Radiated emission (6 GHz – 18 GHz)	± 4.9 dB
Radiated emission (18 GHz – 40 GHz)	± 5.8 dB
Radio Frequency	$\pm 1.4 \times 10^{-8}$
RF power, conducted	± 0.6 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	Standard limit value +Uncertainty -Uncertainty Measured value Even if it takes uncertainty into consideration, a standard limit value is fulfilled.	Case1
	Standard limit value +Uncertainty -Uncertainty Measured value Although measured value is in a standard limit value, a limit value won't be fulfilled if uncertainty is taken into consideration.	Case2
FAIL	Standard limit value +Uncertainty -Uncertainty Measured value Although measured value exceeds a standard limit value, a limit value will be fulfilled if uncertainty is taken into consideration.	Case3
	Standard limit value +Uncertainty -Uncertainty Measured value Even if it takes uncertainty into consideration, a standard limit value isn't fulfilled.	Case4

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
Fax: +81-238-28-2888

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	Expiration date
A-0166	03-July-2021

Appendix A. Test Equipment

Antenna port conducted test

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
Spectrum analyzer	Agilent Technologies	E4440A	US40420937	25-Sep-2020	26-Sep-2019
Spectrum analyzer	Agilent Technologies	E4440A	US44302655	19-Aug-2021	20-Aug-2020
Attenuator	Weinschel	56-10	J4180	20-Jul-2021	21-Jul-2020
Power meter	Keysight	N1911A	MY57390003	09-Dec-2020	10-Dec-2019
Power sensor	Keysight	N1921A	MY57370009	09-Dec-2020	10-Dec-2019

Radiated emission

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	24-Sep-2020	25-Sep-2019
Spectrum analyzer	Agilent Technologies	E4447A	MY46180188	26-Mar-2021	27-Mar-2020
Spectrum analyzer	Agilent Technologies	E4440A	US40420937	25-Sep-2020	26-Sep-2019
Spectrum analyzer	ROHDE&SCHWARZ	FSV40	101731	21-Jun-2021	22-Jun-2020
Preamplifier	SONOMA	310	372170	25-Sep-2020	26-Sep-2019
Loop antenna	ROHDE&SCHWARZ	HFH2-Z2	100515	14-Apr-2021	15-Apr-2020
Attenuator	TOYO Connector	NA-PJ-6	N/A(S507)	17-Dec-2020	18-Dec-2019
Biconical antenna	Schwarzbeck	VHBB9124/BBA9106	1344	03-Dec-2020	04-Dec-2019
Log periodic antenna	Schwarzbeck	VUSLP9111B	344	16-Apr-2021	17-Apr-2020
Attenuator	TAMAGAWA.ELEC	CFA-01/6dB	N/A(S466)	01-Oct-2020	02-Oct-2019
Attenuator	TAMAGAWA.ELEC	CFA-10/3dB	N/A(S503)	19-Jul-2021	20-Jul-2020
Preamplifier	SONOMA	310	372170	25-Sep-2020	26-Sep-2019
Attenuator	AEROFLEX	26A-10	081217-08	09-Jan-2021	10-Jan-2020
Double ridged guide antenna	ETS LINDGREN	3117	00052315	07-Apr-2021	08-Apr-2020
Attenuator	HUBER+SUHNER	6803.17.B	N/A(2341)	17-Dec-2020	18-Dec-2019
Double ridged guide antenna	A.H.Systems Inc.	SAS-574	469	27-Aug-2020	28-Aug-2019
Preamplifier	TSJ	MLA-1840-B03-35	1240332	27-Aug-2020	28-Aug-2019
Band rejection filter	Micro-Tronics	BRC50702	045	16-May-2021	15-May-2020
Microwave cable	HUBER+SUHNER	SUCOFLEX104/9m	MY30037/4	07-Jan-2021	08-Jan-2020
		SUCOFLEX104/1m	my24610/4	07-Jan-2021	08-Jan-2020
		SUCOFLEX104/8m	SN MY30031/4	08-Jan-2021	09-Jan-2020
		SUCOFLEX104	MY32976/4	07-Jan-2021	08-Jan-2020
		SUCOFLEX104/1.5m	MY19309/4	07-Jan-2021	08-Jan-2020
		SUCOFLEX104/7m	41625/6	07-Jan-2021	08-Jan-2020
PC	DELL	DIMENSION E521	75465BX	N/A	N/A
Software	TOYO Corporation	EP5/RE-AJ	0611193/V5.6.0	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)	28-May-2021	29-May-2020
3m Semi an-echoic Chamber	TOKIN	N/A	N/A(9002-SVSWR)	27-May-2021	28-May-2020

Conducted emission at mains port

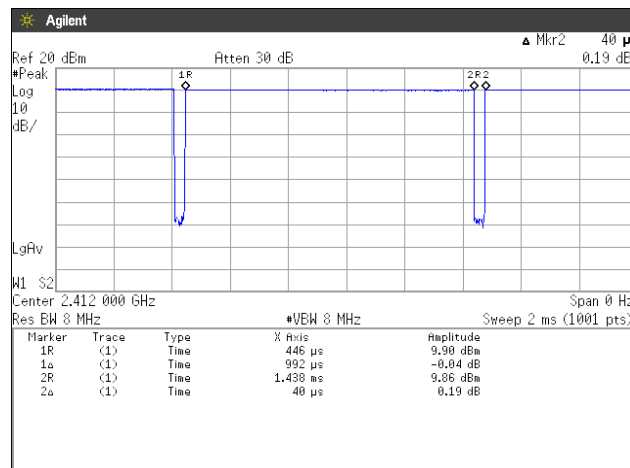
Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	24-Sep-2020	25-Sep-2019
Attenuator	HUBER+SUHNER	6810.01.A	N/A (S411)	07-Jan-2021	08-Jan-2020
Line impedance stabilization network	Kyoritsu Electrical Works, Ltd.	TNW-407F2	12-17-110-2	02-Jun-2021	03-Jun-2020
Coaxial cable	FUJIKURA	5D-2W/4m	N/A (S350)	07-Jan-2021	08-Jan-2020
Coaxial cable	FUJIKURA	5D-2W/1m	N/A (S193)	07-Jan-2021	08-Jan-2020
Coaxial cable	HUBER+SUHNER	RG214/U/10m	N/A (S194)	07-Jan-2021	08-Jan-2020
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.

Appendix B. Duty Cycle

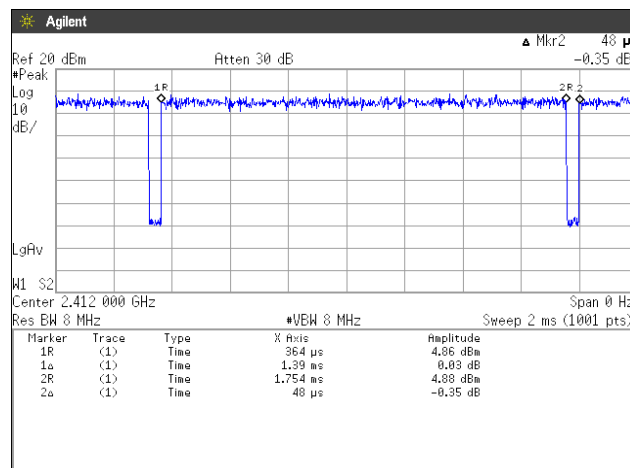
[Plot & Calculation]

11b



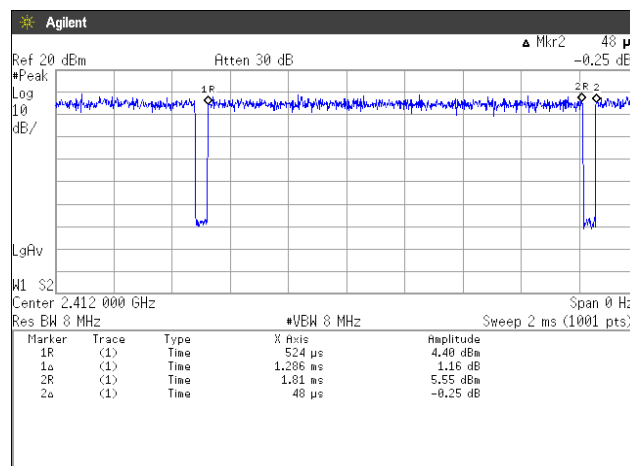
$$\text{Duty Cycle} = \text{Ton} / (\text{Ton} + \text{Toff}) = 992[\mu\text{s}] / (992[\mu\text{s}] + 40[\mu\text{s}]) = 96.12\%$$

11g



$$\text{Duty Cycle} = \text{Ton} / (\text{Ton} + \text{Toff}) = 1390[\mu\text{s}] / (1390[\mu\text{s}] + 48[\mu\text{s}]) = 96.66\%$$

11n (HT20)



$$\text{Duty Cycle} = \text{Ton} / (\text{Ton} + \text{Toff}) = 1286[\mu\text{s}] / (1286[\mu\text{s}] + 48[\mu\text{s}]) = 96.40\%$$