RADIO TEST REPORT

(for Bluetooth Low Energy)

Project No.	:	JB-Z0281
Client	:	Sony Corporation
Address	:	1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan
Type of Equipment	:	Digital Music Player
Model No.	:	NW-A45
FCC ID	:	AK8NWA40
Regulation Applied	:	47 CFR Part 15 Subpart C
Final Judgment	:	**Passed**
Sample Receipt	:	April 24, 2017
Testing	:	May 03, 2017 - May 24, 2017
Reported	:	May 24, 2017
Amend Reported	:	June 28, 2017

Reported by :

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Notice

* *These test results relate only to the items (combination equipment, test configuration, operation condition etc.) tested.*
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* *This report must not be used by the client to claim product endorsement by A2LA or any agency of the U.S. Government.*
* *All test results are traceable to the national and / or international standards.*
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TESTING CERT #3203.01

TABLE OF CONTENTS

1. General Information 3
- 1.1. Description of Equipment Under Test (EUT) 3
- 1.2. Summary of Test Result 4
- 1.3. Tested Methodology 5
- 1.4. Measurement Procedures 5
- 1.5. Test Facility 8
- 1.6. Uncertainty 8

2. System Test Configuration 9
- 2.1. Validation 9
- 2.2. Test Operating Conditions 9
- 2.3. EUT Modifications 9
- 2.4. Configuration of Tested System 10

3. Test Data 12
- 3.1. AC Power-line Conducted Emissions 12
- 3.2. 6dB Bandwidth 13
- 3.3. Maximum Peak Conducted Output Power 14
- 3.4. Power Spectral Density 15
- 3.5. Radiated Spurious Emissions 16
- 3.6. Conducted Spurious Emissions for Band Edge 41

4. Method of Calculation 42

5. List of Test Equipment 44
- 5.1. AC Power-line Conducted Emissions 44
- 5.2. Antenna-port Conducted Measurements 44
- 5.3. Radiated Spurious Emissions 44

6. Photographs of test setup 45
- 6.1. AC Conducted Emission Measurements Photo(s) 45
- 6.2. Antenna-port Conducted Measurements Photo(s) 45
- 6.3. Radiated Spurious Emissions Measurement Photo(s) 46

Note

☒-indicates that the listed condition, standard or equipment is applicable for this report.
☐-indicates that the listed condition, standard or equipment is not applicable for this report.

1. General Information

1.1. Description of Equipment Under Test (EUT)

General specification

Test Sample Condition : ☐ Prototype ☒ Pre-production ☐ Mass-production
Type of Equipment : Digital Music Player
Trade Name : SONY
Model No. : NW-A45
Serial No. : 1000106, 1000182
Power Rating : DC 3.7V

Similar model (to be covered by this Report)

Model No. :

Model No.	Point of Difference
NW-A45	Memory size only. (16 GB) *EUT
NW-A46	Memory size only. (32 GB)
NW-A47	Memory size only. (64 GB)

This point of difference do not affect the measurement results.
Total 3 models are covered by this report.

Radio specification

Function of the Equipment : Transceiver
Operating Frequency : 2402 - 2480MHz
Modulation Type : GFSK
Channel Spacing : 2MHz
Channel Bandwidth : 2MHz
Number of channels : 40
Antenna Type : Inverted-F antenna
Antenna connector Type : None
Antenna Gain : -0.72 dBi
Operating Temperature : +5 to +35 deg.C

1.2. Summary of Test Result

Test Item	Worst Margin	Test Frequency band	Results
AC Power-line Conducted Emissions	12.50 dB (QP) 0.150 MHz N	150 kHz - 30 MHz	Complied
6dB Bandwidth	Refer to the test data	Carrier	Complied
Maximum Peak Conducted Output Power	22.59 dB	Carrier	Complied
Power Spectral Density	16.59 dB	Carrier	Complied
Radiated Spurious Emissions	7.5 dB (AV) 7206.047 MHz Vertical	9 kHz - 25 GHz (excluding carrier and band edge)	Complied
Conducted Spurious Emissions for Band Edge *1	34.71 dB 2396.11 MHz	Carrier band edge	Complied

*1: Conducted Spurious Emission was tested for the only frequencies in the non-restricted carrier band edges, since the spurious emissions in other non-restricted band were complied with Radiated Spurious Emission measurement.

*2: This item was not applied to the EUT since its transmission is stopped when the battery is being charged by the PC connected to AC Power-line.

Other requirements

Part 15.31(e) Supply voltage requirement

: Complied (The EUT was tested with a new battery)

Part 15.203 / 212 Antenna requirement

: Complied (The EUT has an internal antenna which cannot be replaced by users)

1.3. Tested Methodology

Test Standard : 47 CFR Part15 Subpart C Section 15.207 / 15.247
Test Method : ANSI C63.10 - 2013
KDB 558074 D01 DTS Meas. Guidance v04

Test Condition

Radiated Spurious Emissions
Test Distance : ☒ 3 m ☐ 10m (9kHz - 30 MHz)
☒ 3 m ☐ 10m (30 - 1000 MHz)
☒ 3 m (1 - 25 GHz)
Dimensions of the EUT table : 0.8m (below 1GHz) or 1.5m (above 1GHz) height, 1.5m width and 1m depth.

AC Power-line Conducted Emissions
Dimensions of the EUT table : 0.8m height, 2m width and 1m depth.

1.4. Measurement Procedures

We performed the measurements in accordance with NV3-06, available upon the request.
☒ No deviation
☐ Deviation from the above procedure

The summary of the above procedure is mentioned below

Antenna-port Conducted Measurements

1. Antenna-port of the EUT was connected to the power sensor (Maximum peak conducted output power) or spectrum analyzer. (other test items).

2. For each EUT operation mode, the Antenna-port Conducted Measurements were measured with power meter or spectrum analyzer.

Test Item * Antenna-port Conducted Measurements	Detector	RBW
6dB Bandwidth	Peak	100 kHz
Maximum Peak Conducted Output Power	Peak	-
Power Spectral Density	Peak	3 kHz
Conducted Spurious Emissions for Band Edge	Peak	100 kHz

AC Power-line Conducted Emissions

1. The non-conductive table (EUT table) made of (☒ FRP, ☐ wood, ☐ other non-conductive material) was placed 0.4 m from its rear to the vertical reference ground plane.

2. The EUT was placed on the center of tabletop and its rear was flush with the rear of the table, connected through a LISN to the input power mains.

3. The LISN was placed in 80 cm from the nearest part of the EUT chassis.

4. The excess length of the AC cable between the EUT and the LISN receptacle, or an adaptor or extension cable connected to and measured with LISN, was folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

5. The connection of the all other equipment to the second LISN was performed. The second LISN was terminated with a 50-ohm terminator.

6. Interconnecting cables that hang closer than 40 cm to the horizontal reference ground plane was folded back and forth forming a bundle 30 to 40 cm long, hanging approximately in the middle between the horizontal reference ground plane and the tabletop.

7. Find the worst mode and arrangement of the EUT according to the follows;
   - Connecting all peripherals and change the position of peripherals and cables.
   - Changing the all test operation modes of the EUT.
   - On every condition, exploring the highest emissions with the spectrum analyzer. (150kHz - 30MHz, peak detector, RBW: 10 kHz)

On the worst condition of the EUT found in above, choose the 6 highest emissions on the spectrum data.
The final measurements carried out on these emissions with EMI test receiver.
(quasi-peak and average detector, RBW: 9 kHz)

Radiated Spurious Emissions

1. The non-conductive table (EUT table) made of (☐ FRP, ☒ Styrene Foam, ☐ other non-conductive material) was placed in the center of the turntable.
2. The EUT was placed on the center of the tabletop.
3. The test antenna was placed away from the EUT at test distance.
4. The limits were compensated the distance factor with follows;
   9 kHz - 490 kHz [Limit at 3m] = [Limit at 300m] + 40log (300[m] / 3[m])
   490 kHz - 30 MHz [Limit at 3m] = [Limit at 30m] + 40log (30[m] / 3[m])
5. Find the worst arrangement of the EUT according to follows;
   - Rotating the turntable and/or scanning the antenna.
   - On every condition, exploring the highest emissions with the spectrum analyzer. (9 kHz - 25 GHz, peak detector)
6. On the worst arrangement of the EUT found in above, choose the three highest harmonics or spurious emissions on the spectrum data.(*excluding carrier band edges)
   The final measurements of all test operating modes carried out on these emissions as follows;

   The test antenna and the turntable were performed with follows;

	9kHz - 30MHz	30MHz - 1000MHz	above 1GHz
Antenna	Loop Antenna	Bi-conical Antenna, Log-periodic Antenna	Horn Antenna
Antenna scanning range	1m, Vertical, 360 degrees	1 - 4m, Horizontal and Vertical	1 - 4m *, Horizontal and Vertical
Turntable rotating range	360 degrees	360 degrees	360 degrees

*: Final measurements are performed keeping the antenna in the "cone of radiation" from EUT area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.

   Instruments settings were carried out with follows;

	9 kHz - 90 kHz 110 kHz - 490 kHz	90 kHz- 110 kHz 490 kHz - 30 MHz	30 MHz - 1000 MHz	above 1GHz
Detector	Peak / Average	Quasi-peak	Quasi-peak	Peak / Average
RBW	9 kHz (6dB) *1	9 kHz (6dB) *1	120 kHz (6dB)	1 MHz (6dB)
VBW	N/A	N/A	N/A	3 MHz (for peak) 10 kHz (for average) *2
Instrument	EMI test receiver	EMI test receiver	EMI test receiver	Spectrum analyzer

*1: When the measurement frequencies below 150 kHz, RBW: 200 Hz was used.
*2: VBW setting (for average) was higher than 1/T. (T is the minimum transmission duration)

7. If the final measurement result exceeded the limit(FCC 15.209(a)) in non-restricted band(excluding carrier band edges), the measurement is carried out additionally and compared with the limit (-20dBc) with follows;

   Measurement points
   - Fundamental Frequency
   - Frequency that exceeded the limit in non-restricted band (excluding carrier band edges)

	9 kHz - 150 kHz	150 kHz - 30MHz	above 30MHz
Detector	Peak	Peak	Peak
RBW	6dB RBW: 300 Hz *	6dB RBW: 10 kHz *	6dB RBW: 100 kHz
Instrument	Spectrum analyzer	Spectrum analyzer	Spectrum analyzer

*: Correction factor of RBW was compensated to a measurement result by the following formula.
C.F. of RBW [dB] = 10*log (100kHz / used RBW)

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

1.5. Test Facility

Address of Test Facility

Test Facility Name : Sony Global Manufacturing & Operations Corporation
EMC/RF Test Laboratory, Main Lab.

Address : Kisarazu Site 8-4 Shiomi Kisarazu-shi, Chiba, 292-0834 Japan

Phone : +81 438 37 2750

AC Power-line Conducted Emissions

Shielded Room

☒ 4th Site ☐ EMC Site

Radiated Spurious Emission

Semi-Anechoic chamber

☒ EMC Site

Antenna-port Conducted Measurements *

Shielded Room

☒ 4th Site SR1

*Note: This item contains the following

-6dB Bandwidth

-Maximum Peak Conducted Output Power

-Power Spectral Density

-Conducted Spurious Emissions for Band Edge

A2LA Accreditation for Test Facility

The above test facility has been fully reported to A2LA and accepted as follows:

Effective dates: 2015-09-15 through 2017-10-31

1.6. Uncertainty

Test Item	Frequency	4th Site SR1
Conducted Output Power	1 - 6GHz	± 0.84 dB
Conducted Spurious Emissions	below 6GHz	± 0.89 dB

Test Item	Frequency	Distance	4th Site	EMC Site
AC Power-line Conducted Emissions	150kHz - 30MHz	-	± 3.34 dB	± 3.35 dB
Radiated Emissions	below 30 MHz	3m	± 2.59 dB	± 3.12 dB
	30 - 300 MHz	3m	± 4.18 dB	± 5.26 dB
	300 - 1000 MHz	3m	± 4.04 dB	± 4.37 dB
	1 - 6 GHz	3m	± 4.63 dB	± 4.90 dB
	6 - 18 GHz	3m	± 5.31 dB	± 5.50 dB
	18 - 26.5 GHz	3m	± 5.78 dB	± 5.63 dB

2. System Test Configuration

2.1. Validation

The system was configured for testing in a typical (as a customer would normally use it).
The tests were conducted with the worst case modes as follows.

2.2. Test Operating Conditions

The tests have been carried out the following conditions.

Test Items	Operating Mode	Data Rate	Test Channels
AC Power-line Conducted Emissions	Bluetooth Low Energy	1 Mbps	2440 MHz *1
6dB Bandwidth, Maximum Peak Conducted Output Power, Power Spectral Density, Radiated Spurious Emissions	Bluetooth Low Energy	1 Mbps	2402 MHz, 2440 MHz, 2480 MHz
Conducted Spurious Emissions for Band Edge	Bluetooth Low Energy	1 Mbps	2402 MHz

Note:
*1: The test was performed with the representative mode that had been found as the worst emissions while exploratory testing.

The Software for Operating Mode Name: Diagnosis
Version: 2.03.02

Special accessories needed for connecting the EUT to achieve compliance:

Item	Manufacturer	Model No.	Serial No.	Remark
-	-	-	-	-

2.3. EUT Modifications

☒ No equipment modification to achieve compliance to the standard levels was done during the tests.
☐ Equipment was modified to achieve compliance to the standard level as below.

Responsible Party Signature

Typed/ Print Name :
Responsible Party :
Position :
Date :

2.4. Configuration of Tested System

Antenna-port Conducted Measurements

The equipment under test (EUT)

Symbol	Item	Manufacturer	Model No.	Serial No.
A-1	Digital Music Player	SONY	NW-A45	1000106

Support equipment for operation

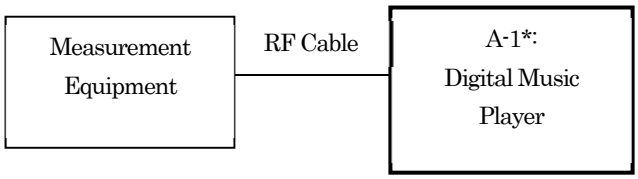
Symbol	Item	Manufacturer	Model No.	Serial No.
-	-	-	-	-

Type of cable

Symbol	Description	Identification (Manufacturer etc.)	Shielded YES / NO	Ferrite Core	Length (m)	Bundled
-	-	-	-	-	-	-

System configuration

*: EUT



Radiated Spurious Emissions Measurement

The equipment under test (EUT)

Symbol	Item	Manufacturer	Model No.	Serial No.
A-2	Digital Music Player	SONY	NW-A45	1000182

Support equipment for operation

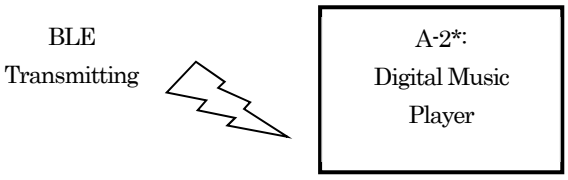
Symbol	Item	Manufacturer	Model No.	Serial No.
-	-	-	-	-

Type of cable

Symbol	Description	Identification (Manufacturer etc.)	Shielded YES / NO	Ferrite Core	Length (m)	Bundled
-	-	-	-	-	-	-

System configuration

*: EUT



AC Power-line Conducted Emissions Measurement

The equipment under test (EUT)

Symbol	Item	Manufacturer	Model No.	Serial No.
A-2	Digital Music Player	SONY	NW-A45	1000182

Support equipment for operation

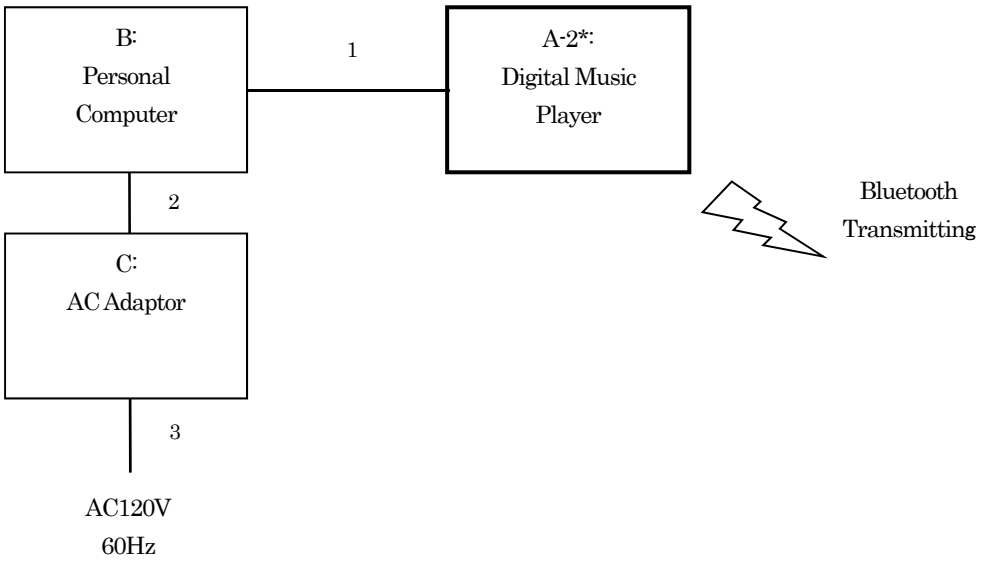
Symbol	Item	Manufacturer	Model No.	Serial No.
B	Personal Computer	HP	HSTNN-I42C	JPH6308MMN
C	AC Adaptor	HP	HSTNN-CA41	WDVTN0CGC9X3WG 0C

Type of cable

Symbol	Description	Identification (Manufacturer etc.)	Shielded YES / NO	Ferrite Core	Length (m)	Bundled
1	USB cable	SONY	YES	NO	1.0	-
2	DC cable	-	NO	NO	1.8	-
3	AC cable	-	NO	NO	0.9	-

System configuration

*: EUT



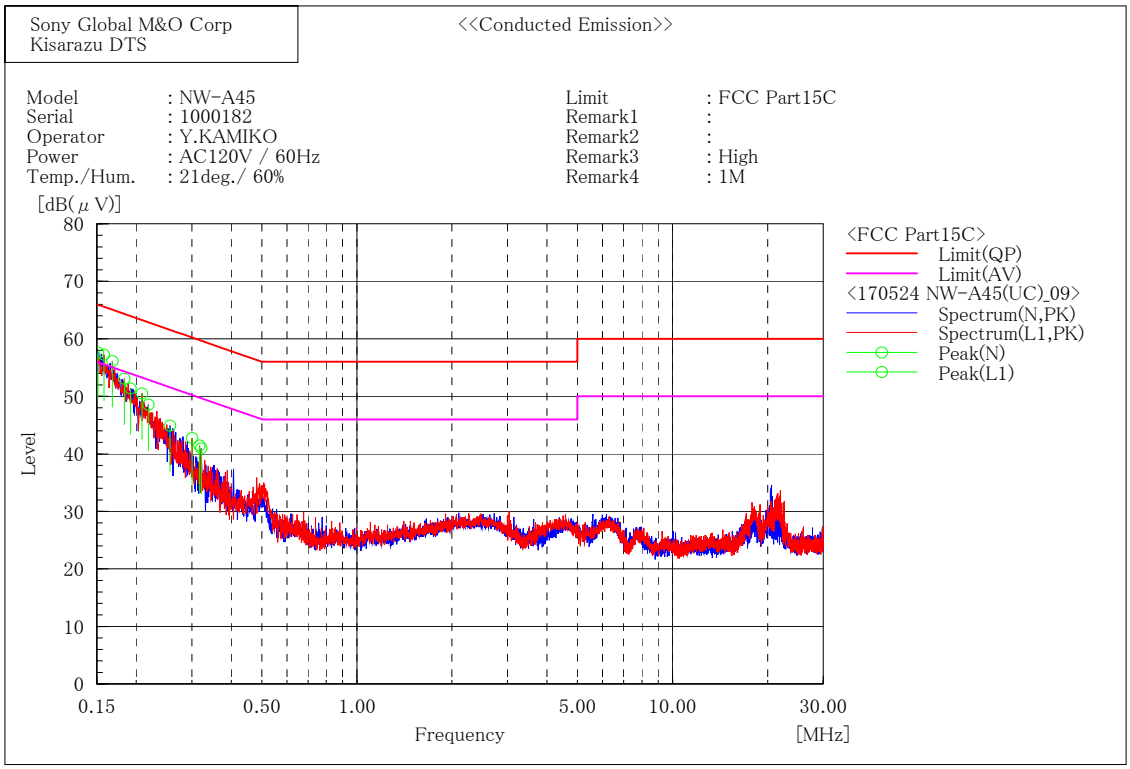
3. Test Data

3.1. AC Power-line Conducted Emissions

150kHz - 30MHz

1) Date of measurement : May 24, 2017

[Bluetooth Low Energy / 2402MHz]



Spectrum Selection

--- N Phase ---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB]	Result PK [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.152	41.6	16.0	57.6	65.9	55.9	8.3	-1.7
2	0.192	35.3	16.1	51.4	63.9	53.9	12.5	2.5
3	0.219	32.8	15.8	48.6	62.9	52.9	14.3	4.3
4	0.256	29.2	15.7	44.9	61.6	51.6	16.7	6.7
5	0.322	25.0	16.0	41.0	59.7	49.7	18.7	8.7

--- L1 Phase ---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB]	Result PK [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.158	41.0	16.2	57.2	65.6	55.6	8.4	-1.6
2	0.168	39.7	16.4	56.1	65.1	55.1	9.0	-1.0
3	0.184	36.8	16.3	53.1	64.3	54.3	11.2	1.2
4	0.209	34.6	15.9	50.5	63.3	53.3	12.8	2.8
5	0.301	26.9	15.9	42.8	60.2	50.2	17.4	7.4
6	0.318	25.5	16.0	41.5	59.8	49.8	18.3	8.3

3.2. 6dB Bandwidth

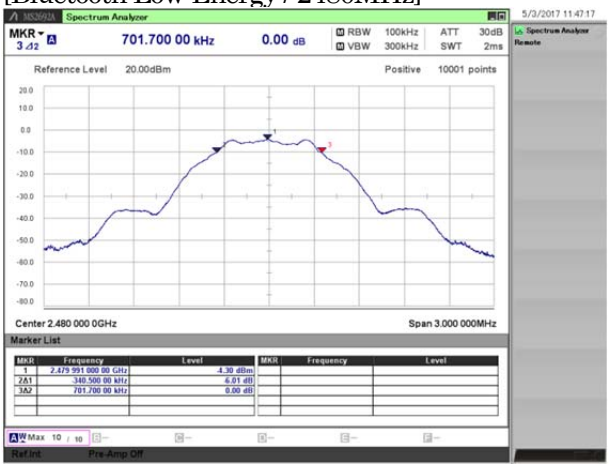
1) Ambient temperature : 22.5 deg.C
2) Relative humidity : 41.0 %
3) Date of measurement : May 03, 2017
4) Measured by : M. KOUGA
5) Operating mode : Transmitting mode

Mode	Rate [Mbps]	Channel [MHz]	Result [MHz]	Limit [MHz]
BLE	1	2402	0.693	0.5
		2440	0.695	0.5
		2480	0.702	0.5

[Bluetooth Low Energy / 2402MHz]

[Bluetooth Low Energy / 2440MHz]

[Bluetooth Low Energy / 2480MHz]



3.3. Maximum Peak Conducted Output Power

1) Ambient temperature : 22.5 deg.C
2) Relative humidity : 41.0 %
3) Date of measurement : May 03, 2017
4) Measured by : M. KOUGA
5) Operating mode : Transmitting mode

Maximum Peak Conducted Output Power

Mode	Rate [Mbps]	Channel [MHz]	Reading(PK) [dBm]	C.F. [dB]	Result(PK) [dBm]	Result(PK) [W]	Limit [dBm]	Margin [dB]
BLE	1	2402	-2.94	10.17	7.23	0.00528	30.0	22.77
		2440	-2.96	10.17	7.21	0.00526	30.0	22.79
		2480	-2.76	10.17	7.41	0.00551	30.0	22.59

Maximum Average Conducted Output Power (for SAR measurement)

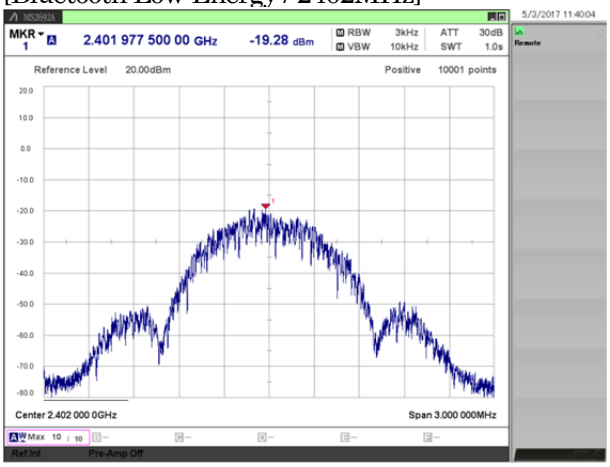
Mode	Rate [Mbps]	Channel [MHz]	Reading(AV) [dBm]	C.F. [dB]	Duty Factor [dB]	Result(AV) [dBm]	Result(AV) [W]
BLE	1	2402	-5.36	10.17	2.11	6.92	0.00492
		2440	-5.36	10.17	2.11	6.92	0.00492
		2480	-5.16	10.17	2.11	7.12	0.00515

3.4. Power Spectral Density

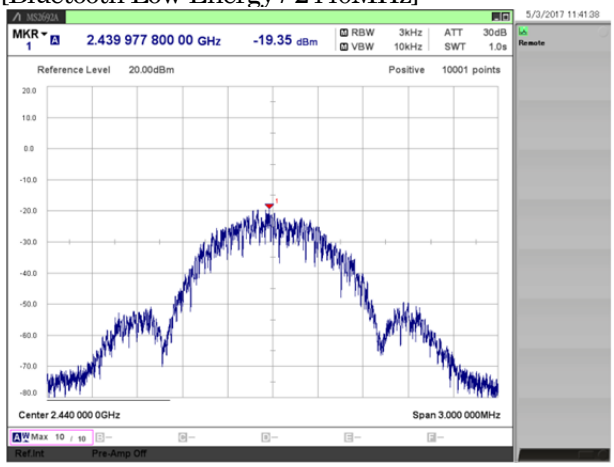
1) Ambient temperature : 22.5 deg.C
2) Relative humidity : 41.0 %
3) Date of measurement : May 03, 2017
4) Measured by : M. KOUGA
5) Operating mode : Transmitting mode

Mode	Rate [Mbps]	Channel [MHz]	Reading(PK) [dBm]	C.F. [dB]	Result(PK) [dBm]	Limit [dBm]	Margin [dB]
BLE	1	2402	-19.28	10.55	-8.73	≦ 8.0	16.73
		2440	-19.35	10.55	-8.80	≦ 8.0	16.80
		2480	-19.14	10.55	-8.59	≦ 8.0	16.59

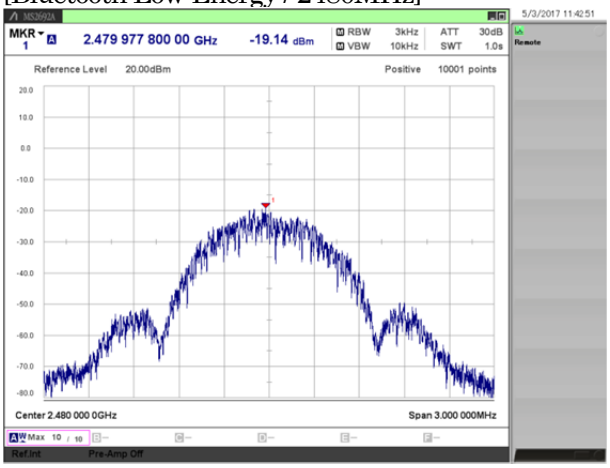
[Bluetooth Low Energy / 2402MHz]



[Bluetooth Low Energy / 2440MHz]



[Bluetooth Low Energy / 2480MHz]



3.5. Radiated Spurious Emissions

1) Date of measurement

9kHz - 30MHz	: May 12, 2017	(all mode)
30MHz - 1000MHz	: May 10, 2017	(all mode)
1GHz - 6GHz	: May 17, 2017	(all mode)
6GHz - 18GHz	: May 15, 2017	(all mode)
18GHz - 24.835GHz	: May 09, 2017	(all mode)

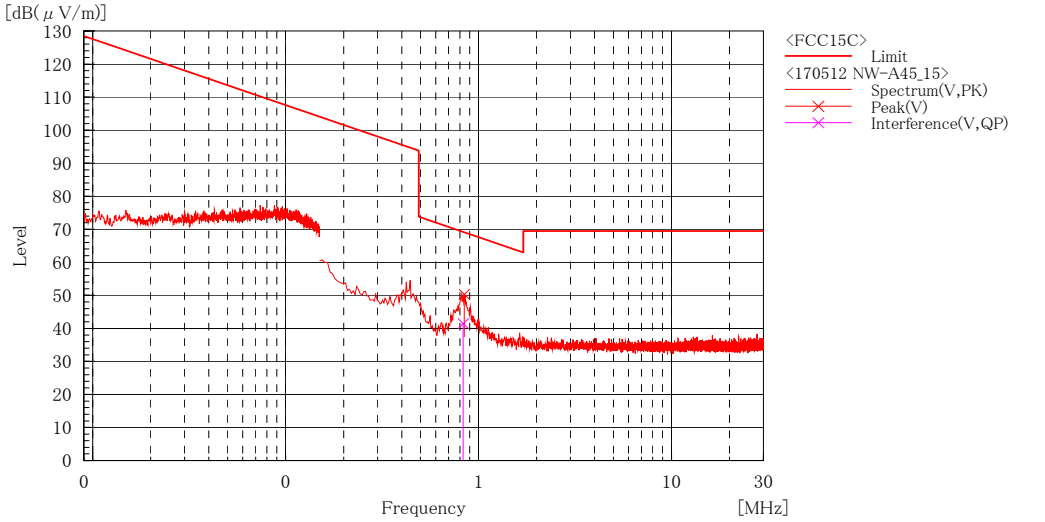
9 kHz - 30 MHz

[Bluetooth Low Energy (1 Mbps) / 2402MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C_15.209 (3m)
Serial	: 1000182	Remark1	: 90°
Operator	: N.TAKANO	Remark2	: Y
Power	: DC 3.7V	Remark3	: Low
Temp./Hum.	: 23deg / 62%	Remark4	: 1M



Final Result

--- Vertical Polarization (QP)---

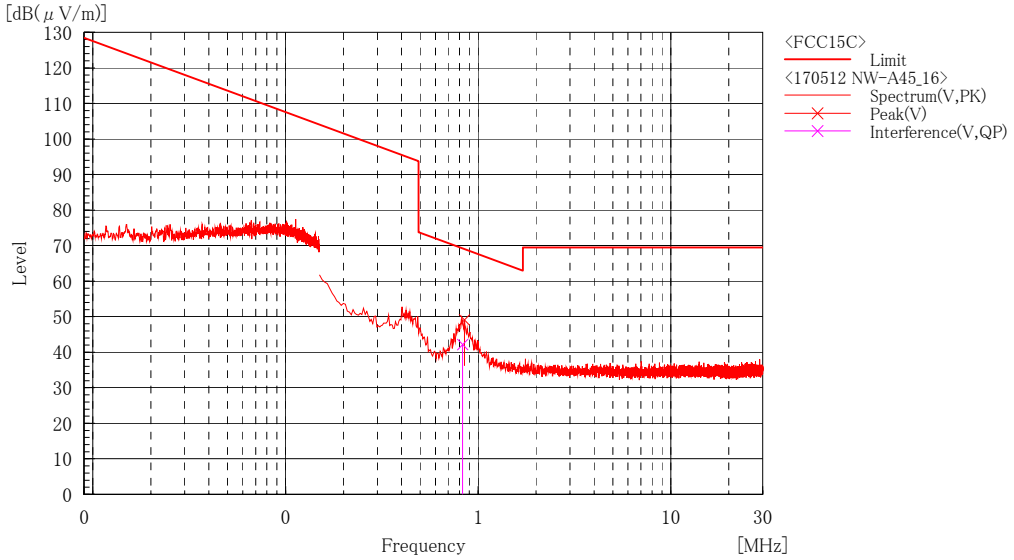
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	0.833	22.1	19.4	41.5	69.2	27.7	100.0	60.1

[Bluetooth Low Energy (1 Mbps) / 2440MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C_15.209 (3m)
Serial	: 1000182	Remark1	: 90°
Operator	: N.TAKANO	Remark2	: Y
Power	: DC 3.7V	Remark3	: Mid
Temp./Hum.	: 23deg / 62%	Remark4	: 1M



Final Result

--- Vertical Polarization (QP)---

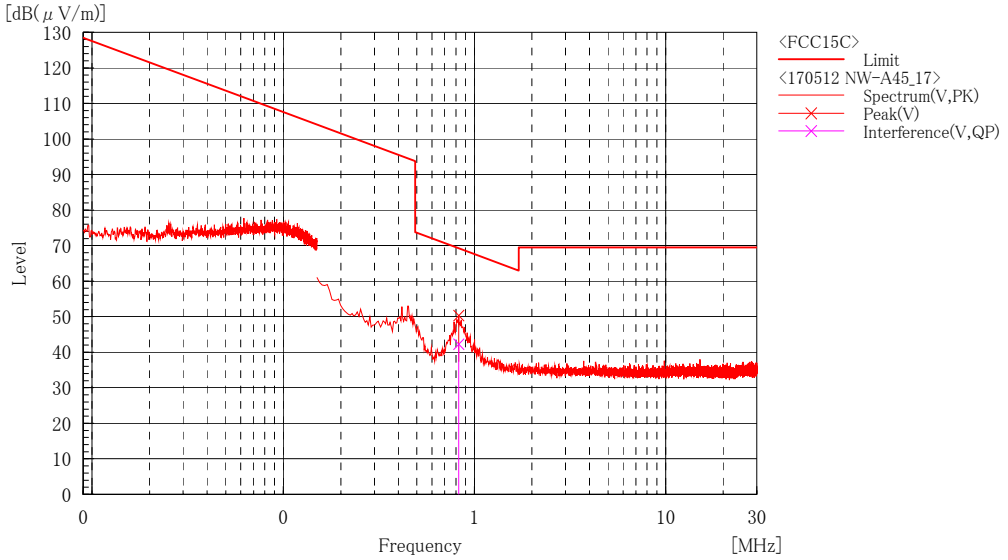
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	0.830	22.8	19.4	42.2	69.2	27.0	100.0	42.5

[Bluetooth Low Energy (1 Mbps) / 2480MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C_15.209 (3m)
Serial	: 1000182	Remark1	: 90°
Operator	: N.TAKANO	Remark2	: Y
Power	: DC 3.7V	Remark3	: Hi
Temp./Hum.	: 23deg / 62%	Remark4	: 1M



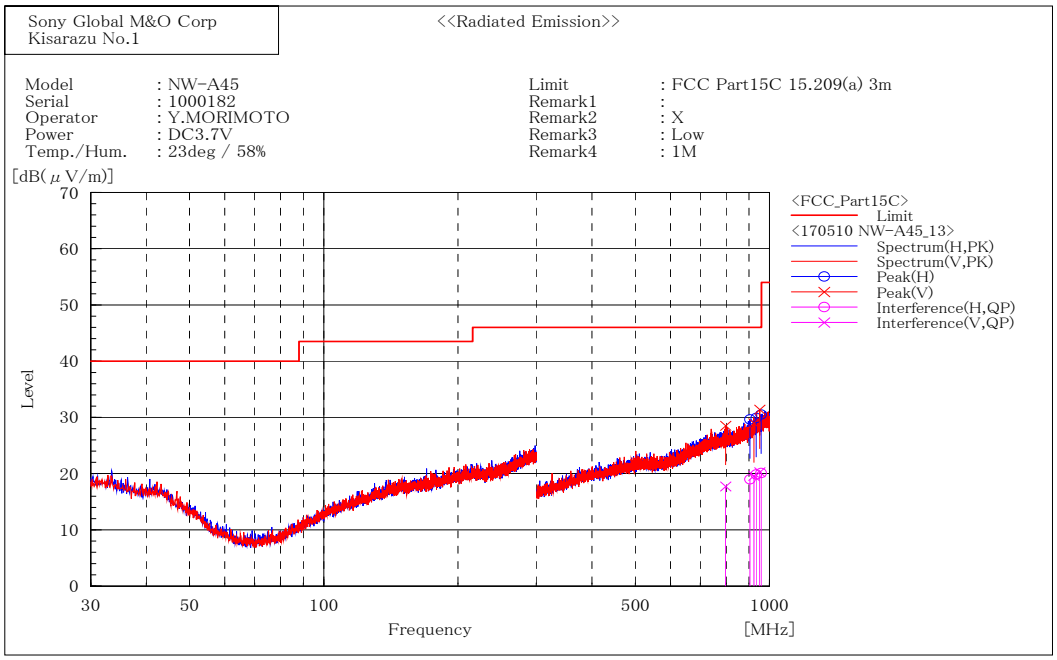
Final Result

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	0.827	22.9	19.4	42.3	69.3	27.0	100.0	172.0

30 MHz - 1000 MHz

[Bluetooth Low Energy (1 Mbps) / 2402MHz]



Final Result

--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	904.567	19.2	-0.2	19.0	46.0	27.0	383.8	62.4
2	933.500	19.1	0.7	19.8	46.0	26.2	345.9	186.1
3	957.300	18.7	1.4	20.1	46.0	25.9	151.0	287.5

--- Vertical Polarization (QP)---

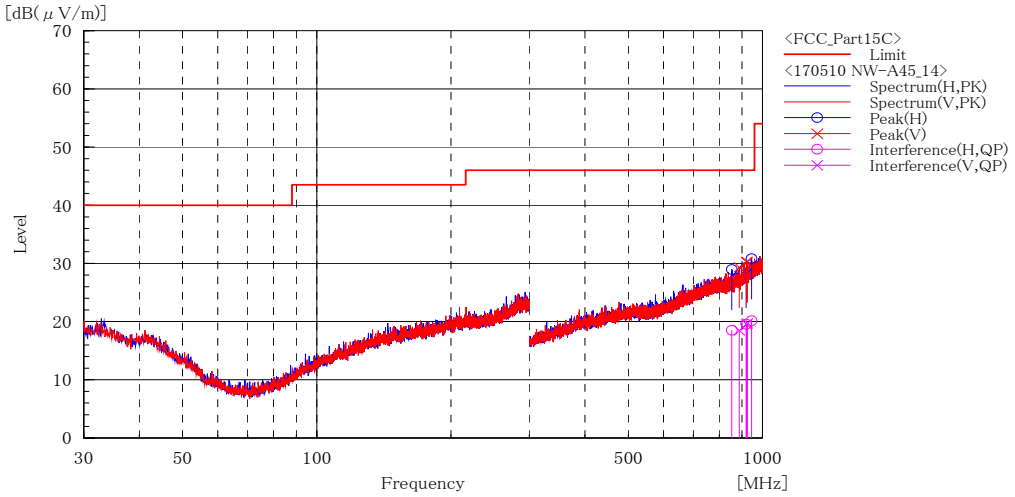
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	797.233	19.5	-1.8	17.7	46.0	28.3	220.3	221.2
2	923.233	19.2	0.4	19.6	46.0	26.4	115.9	178.1
3	950.533	19.0	1.3	20.3	46.0	25.7	273.9	288.2

[Bluetooth Low Energy (1 Mbps) / 2440MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: Y.MORIMOTO	Remark2	: X
Power	: DC3.7V	Remark3	: Mid
Temp./Hum.	: 23deg / 58%	Remark4	: 1M



Final Result

--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	853.933	19.7	-1.2	18.5	46.0	27.5	162.8	192.7
2	919.500	19.3	0.3	19.6	46.0	26.4	150.1	150.8
3	944.700	19.1	1.1	20.2	46.0	25.8	314.2	275.5

--- Vertical Polarization (QP)---

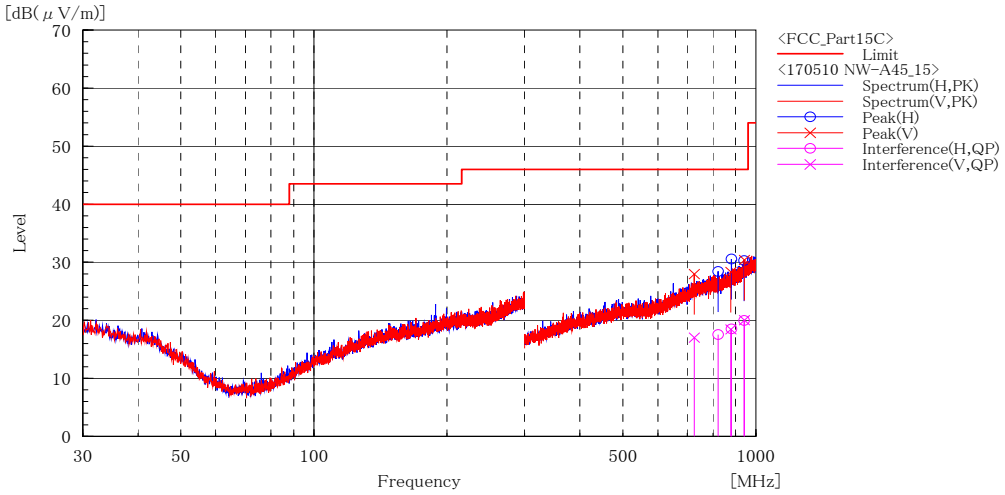
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	887.067	19.1	-0.6	18.5	46.0	27.5	232.9	260.3
2	921.133	19.2	0.3	19.5	46.0	26.5	400.0	136.1
3	925.567	19.2	0.5	19.7	46.0	26.3	188.1	290.2

[Bluetooth Low Energy (1 Mbps) / 2480MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: Y.MORIMOTO	Remark2	: X
Power	: DC3.7V	Remark3	: High
Temp./Hum.	: 23deg / 58%	Remark4	: 1M



Final Result

--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	821.500	19.2	-1.6	17.6	46.0	28.4	126.1	117.1
2	881.233	19.2	-0.7	18.5	46.0	27.5	132.9	329.4
3	940.267	19.1	0.9	20.0	46.0	26.0	363.4	348.9

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	725.367	19.6	-2.6	17.0	46.0	29.0	165.5	316.2
2	877.267	19.3	-0.8	18.5	46.0	27.5	160.3	151.0
3	941.900	19.0	1.0	20.0	46.0	26.0	207.1	183.0

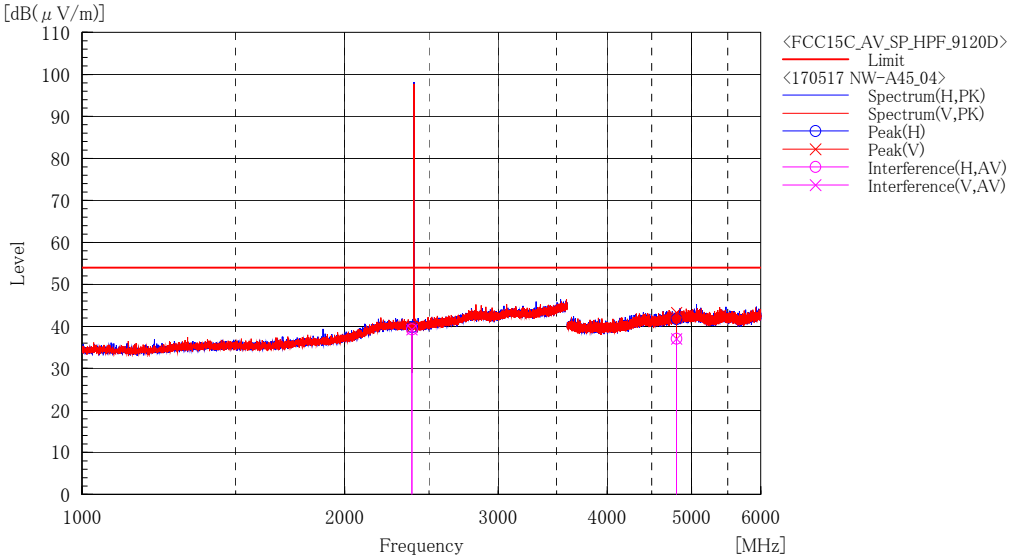
1GHz - 6 GHz

[Bluetooth Low Energy (1 Mbps) / 2402MHz]

Sony Global M&O Corp
Kisarazu TEC No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: N.TAKANO	Remark2	: X
Power	: DC 3.7V	Remark3	: Low
Temp./Hum.	: 23deg / 57%	Remark4	: 1M



Final Result

--- Horizontal Polarization (AV)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	2388.745	38.0	1.3	39.3	54.0	14.7	143.0	210.4
2	4804.615	27.8	9.3	37.1	54.0	16.9	294.3	227.5

--- Vertical Polarization (AV)---

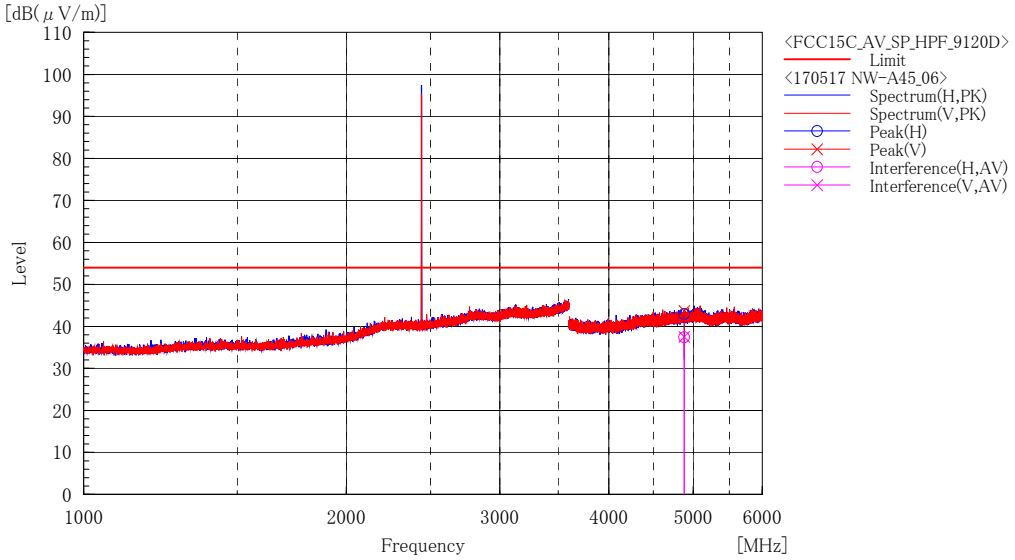
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	2389.122	38.0	1.3	39.3	54.0	14.7	100.2	310.7
2	4803.861	27.7	9.3	37.0	54.0	17.0	126.6	233.2

[Bluetooth Low Energy (1 Mbps) / 2440MHz]

Sony Global M&O Corp
Kisarazu TEC No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: N.TAKANO	Remark2	: X
Power	: DC 3.7V	Remark3	: Mid
Temp./Hum.	: 23deg / 57%	Remark4	: 1M



Final Result

--- Horizontal Polarization (AV)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	4880.319	28.0	9.4	37.4	54.0	16.6	389.9	224.3

--- Vertical Polarization (AV)---

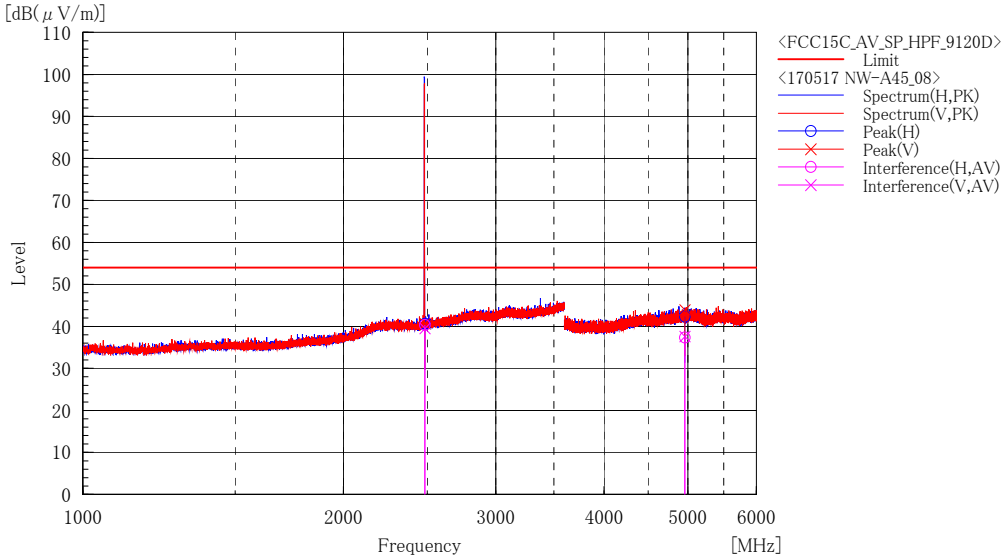
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	4880.411	28.1	9.4	37.5	54.0	16.5	100.0	79.5

[Bluetooth Low Energy (1 Mbps) / 2480MHz]

Sony Global M&O Corp
Kisarazu TEC No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: N.TAKANO	Remark2	: X
Power	: DC 3.7V	Remark3	: Hi
Temp./Hum.	: 23deg / 57%	Remark4	: 1M



Final Result

--- Horizontal Polarization (AV)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	2484.853	38.7	1.6	40.3	54.0	13.7	109.6	16.8
2	4959.566	27.9	9.5	37.4	54.0	16.6	110.0	239.0

--- Vertical Polarization (AV)---

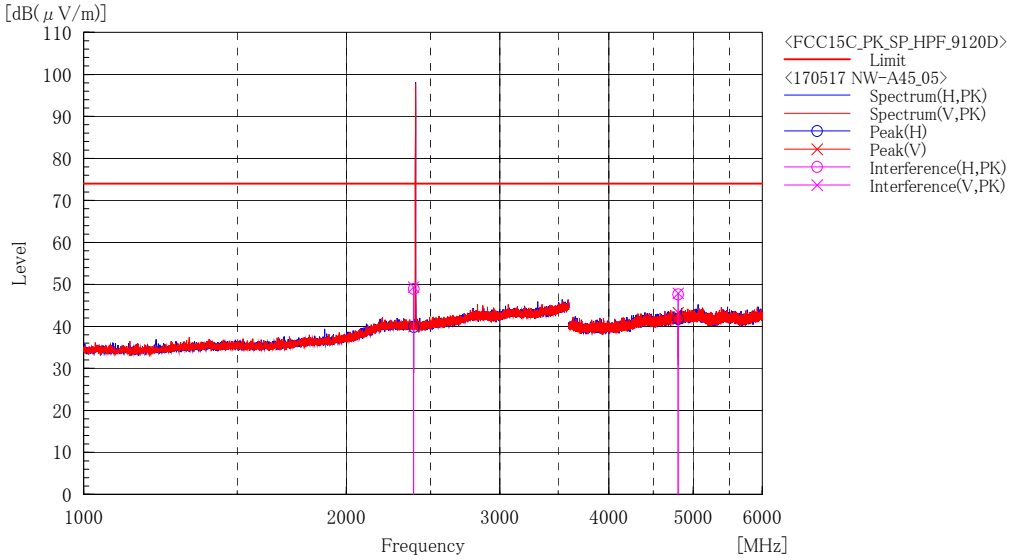
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	2484.938	37.9	1.6	39.5	54.0	14.5	411.9	301.1
2	4959.695	28.1	9.5	37.6	54.0	16.4	219.4	78.9

[Bluetooth Low Energy (1 Mbps) / 2402MHz]

Sony Global M&O Corp
Kisarazu TEC No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: N.TAKANO	Remark2	: X
Power	: DC 3.7V	Remark3	: Low
Temp./Hum.	: 23deg / 57%	Remark4	: 1M



Final Result

--- Horizontal Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	2389.510	47.6	1.3	48.9	74.0	25.1	143.0	212.3
2	4804.409	38.3	9.3	47.6	74.0	26.4	294.3	227.5

--- Vertical Polarization (PK)---

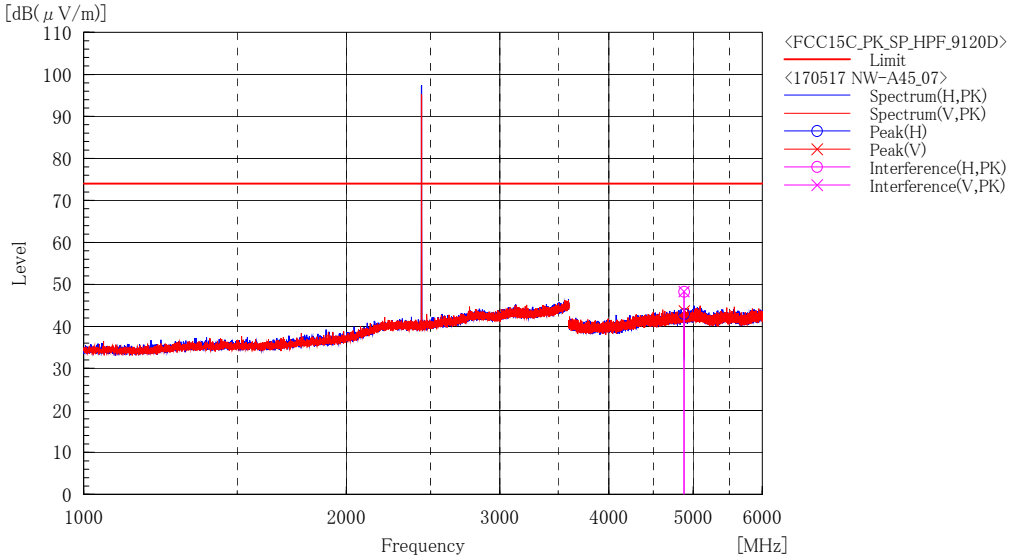
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	2389.431	48.1	1.3	49.4	74.0	24.6	100.2	308.7
2	4803.620	38.6	9.3	47.9	74.0	26.1	126.6	235.2

[Bluetooth Low Energy (1 Mbps) / 2440MHz]

Sony Global M&O Corp
Kisarazu TEC No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: N.TAKANO	Remark2	: X
Power	: DC 3.7V	Remark3	: Mid
Temp./Hum.	: 23deg / 57%	Remark4	: 1M



Final Result

--- Horizontal Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	4881.141	38.8	9.4	48.2	74.0	25.8	389.9	222.4

--- Vertical Polarization (PK)---

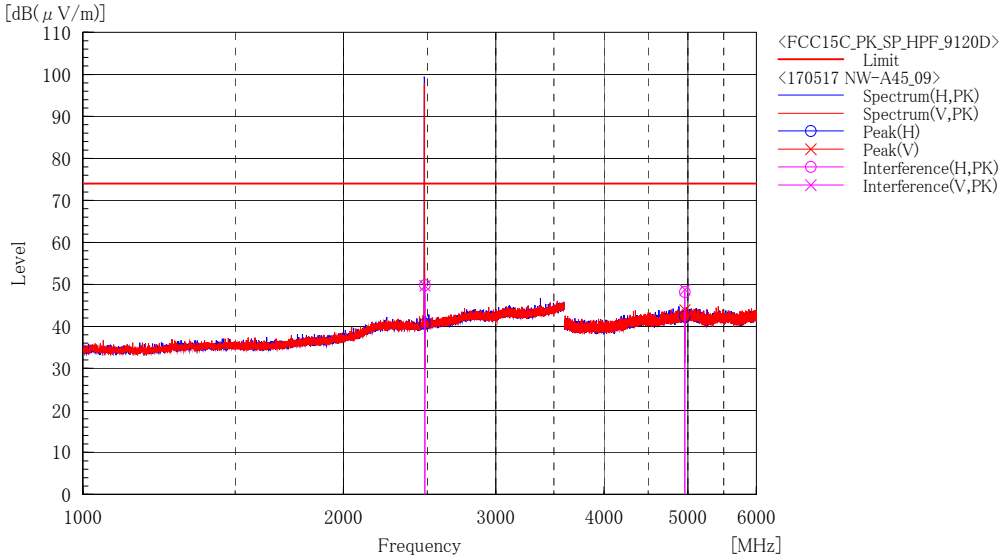
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	4879.454	38.9	9.4	48.3	74.0	25.7	100.0	79.5

[Bluetooth Low Energy (1 Mbps) / 2480MHz]

Sony Global M&O Corp
Kisarazu TEC No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: N.TAKANO	Remark2	: X
Power	: DC 3.7V	Remark3	: Hi
Temp./Hum.	: 23deg / 57%	Remark4	: 1M



Final Result

--- Horizontal Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	2484.450	48.3	1.6	49.9	74.0	24.1	109.6	14.7
2	4960.440	38.7	9.5	48.2	74.0	25.8	109.6	241.0

--- Vertical Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	2484.561	48.1	1.6	49.7	74.0	24.3	411.9	299.1
2	4960.470	39.3	9.5	48.8	74.0	25.2	219.4	76.9

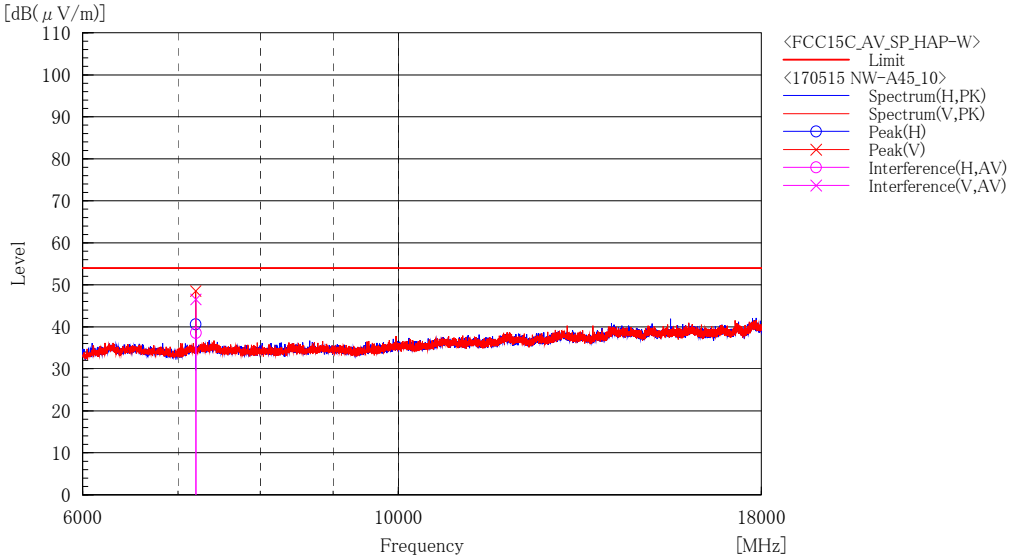
6 GHz - 18 GHz

[Bluetooth Low Energy (1 Mbps) / 2402MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: Y.MORIMOTO	Remark2	: X
Power	: DC3.7V	Remark3	: Low
Temp./Hum.	: 21deg / 51%	Remark4	: 1M



Final Result

--- Horizontal Polarization (AV)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	7206.111	49.2	-10.6	38.6	54.0	15.4	101.2	101.0

--- Vertical Polarization (AV)---

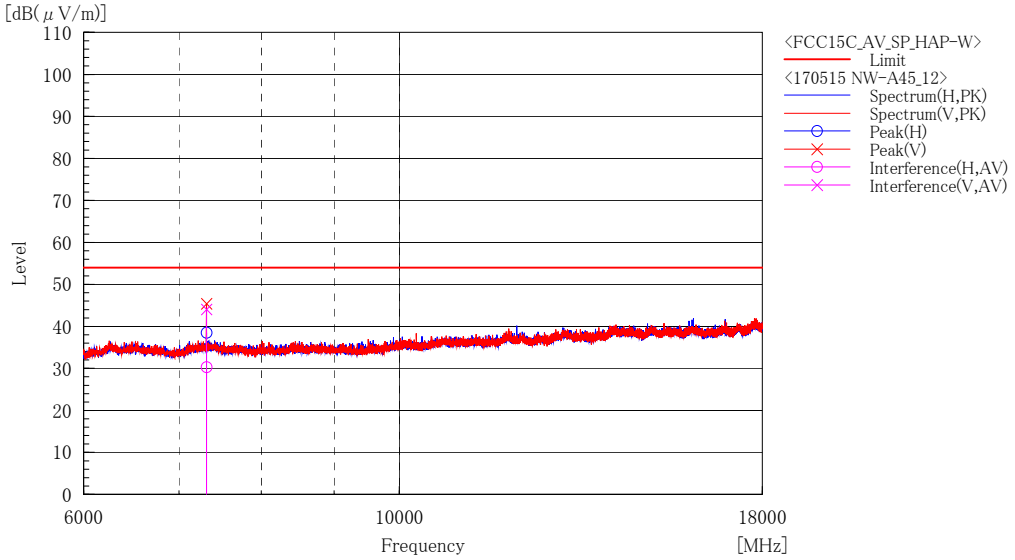
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	7206.047	57.1	-10.6	46.5	54.0	7.5	126.3	347.9

[Bluetooth Low Energy (1 Mbps) / 2440MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: Y.MORIMOTO	Remark2	: X
Power	: DC3.7V	Remark3	: Mid
Temp./Hum.	: 21deg / 51%	Remark4	: 1M



Final Result

--- Horizontal Polarization (AV)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	7320.060	40.9	-10.6	30.3	54.0	23.7	130.1	123.5

--- Vertical Polarization (AV)---

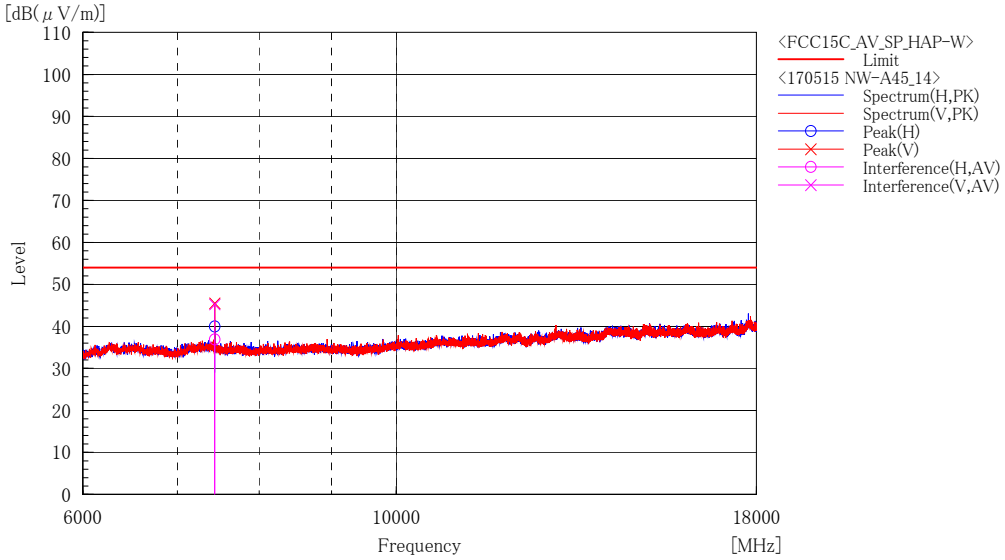
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	7320.141	54.6	-10.6	44.0	54.0	10.0	146.3	30.9

[Bluetooth Low Energy (1 Mbps) / 2480MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: Y.MORIMOTO	Remark2	: X
Power	: DC3.7V	Remark3	: High
Temp./Hum.	: 21deg / 51%	Remark4	: 1M



Final Result

--- Horizontal Polarization (AV)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	7439.859	47.5	-10.6	36.9	54.0	17.1	431.0	101.2

--- Vertical Polarization (AV)---

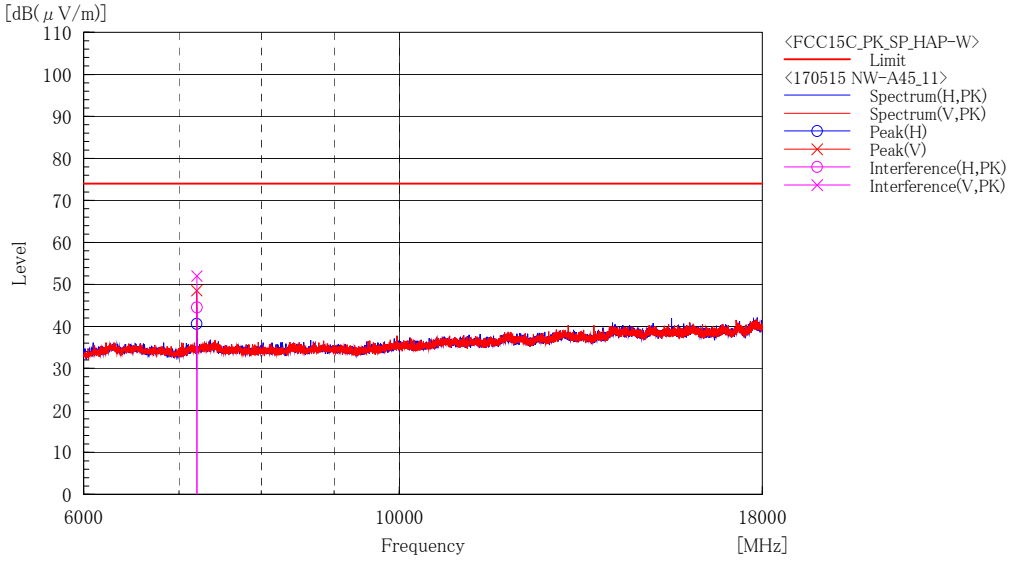
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	7440.113	55.8	-10.6	45.2	54.0	8.8	134.0	359.1

[Bluetooth Low Energy (1 Mbps) / 2402MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: Y.MORIMOTO	Remark2	: X
Power	: DC3.7V	Remark3	: Low
Temp./Hum.	: 21deg / 51%	Remark4	: 1M



Final Result

--- Horizontal Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	7206.004	55.2	-10.6	44.6	74.0	29.4	101.2	98.9

--- Vertical Polarization (PK)---

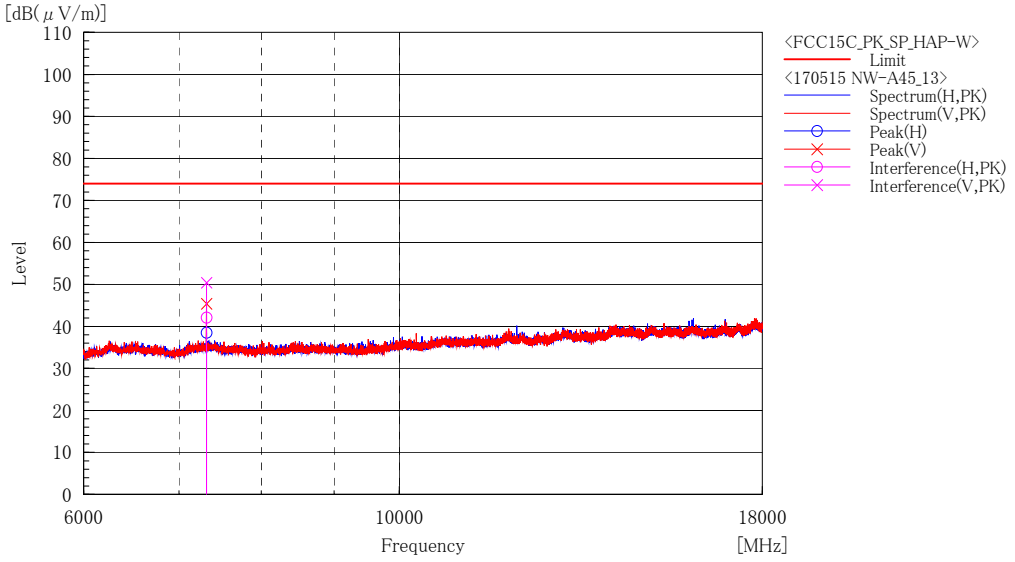
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	7205.924	62.6	-10.6	52.0	74.0	22.0	126.3	347.9

[Bluetooth Low Energy (1 Mbps) / 2440MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: Y.MORIMOTO	Remark2	: X
Power	: DC3.7V	Remark3	: Mid
Temp./Hum.	: 21deg / 51%	Remark4	: 1M



Final Result

--- Horizontal Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	7320.696	52.7	-10.6	42.1	74.0	31.9	130.1	123.5

--- Vertical Polarization (PK)---

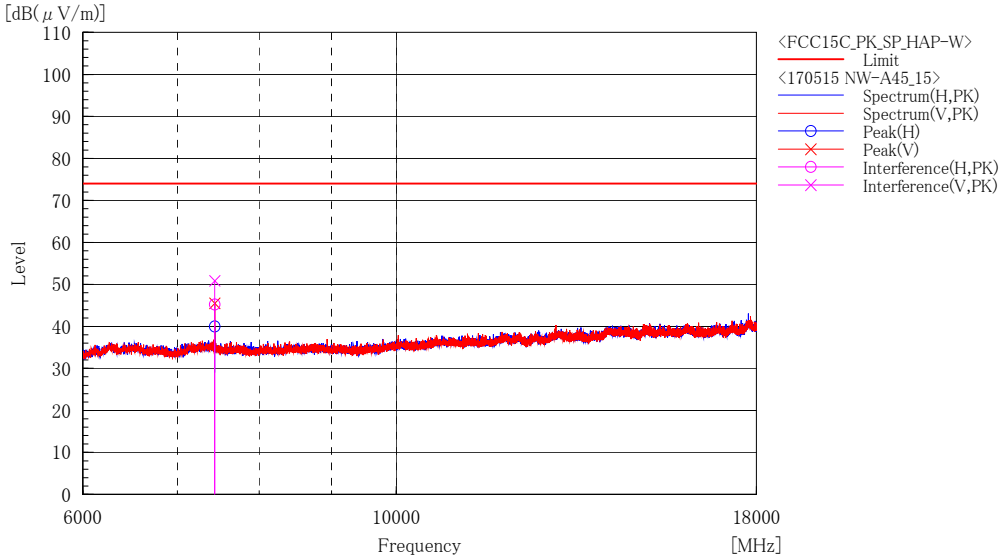
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	7319.985	61.0	-10.6	50.4	74.0	23.6	146.3	32.8

[Bluetooth Low Energy (1 Mbps) / 2480MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: Y.MORIMOTO	Remark2	: X
Power	: DC3.7V	Remark3	: High
Temp./Hum.	: 21deg / 51%	Remark4	: 1M



Final Result

--- Horizontal Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	7440.005	55.8	-10.6	45.2	74.0	28.8	431.0	101.2

--- Vertical Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	7439.919	61.5	-10.6	50.9	74.0	23.1	134.0	1.1

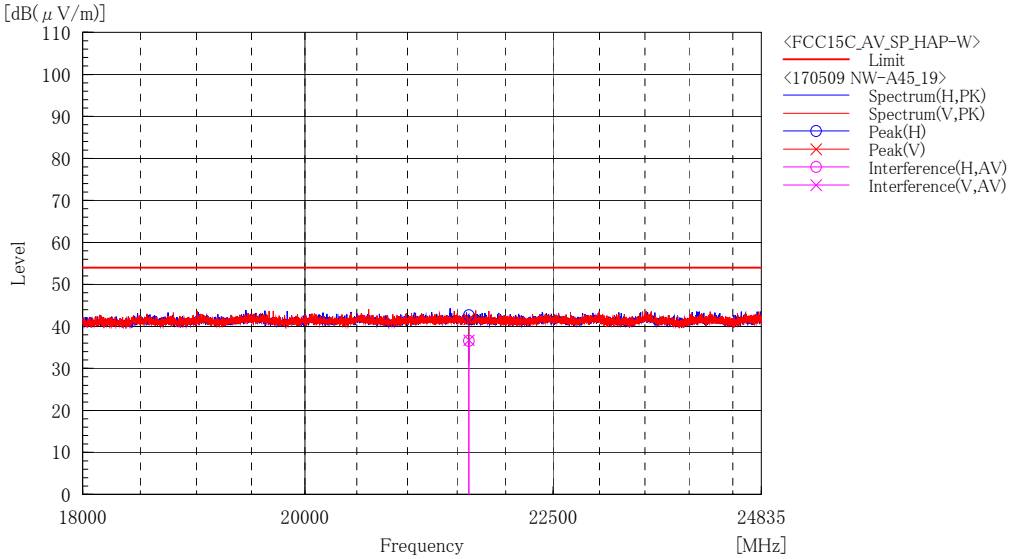
18 GHz - 24.835 GHz

[Bluetooth Low Energy (1 Mbps) / 2402MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: Y.MORIMOTO	Remark2	: X
Power	: DC3.7V	Remark3	: Low
Temp./Hum.	: 22deg / 51%	Remark4	: 1M



Final Result

--- Horizontal Polarization (AV)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	21617.342	33.5	3.1	36.6	54.0	17.4	246.2	96.0

--- Vertical Polarization (AV)---

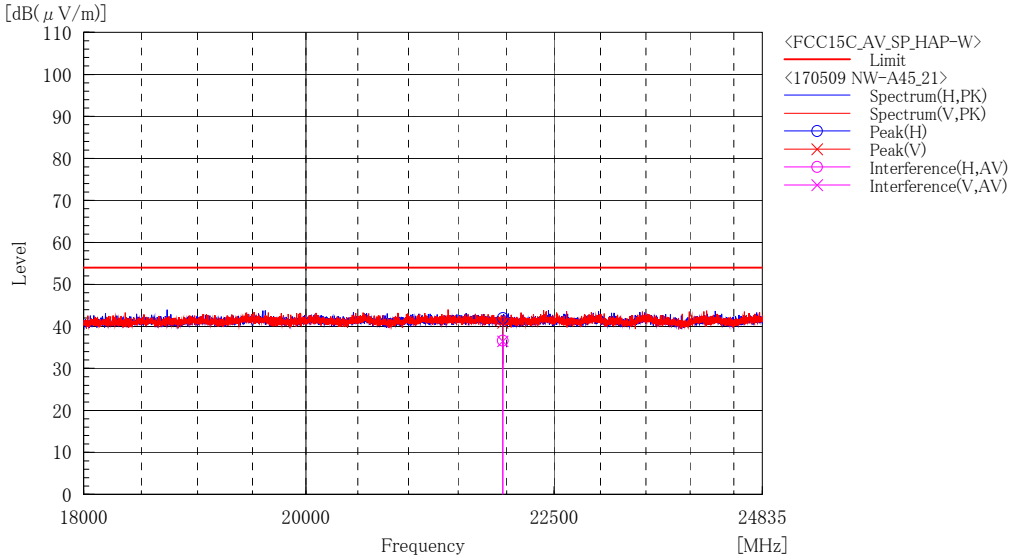
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	21618.044	33.7	3.1	36.8	54.0	17.2	218.8	236.9

[Bluetooth Low Energy (1 Mbps) / 2440MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: Y.MORIMOTO	Remark2	: X
Power	: DC3.7V	Remark3	: Mid
Temp./Hum.	: 22deg / 51%	Remark4	: 1M



Final Result

--- Horizontal Polarization (AV)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	21959.350	33.7	2.9	36.6	54.0	17.4	118.5	301.2

--- Vertical Polarization (AV)---

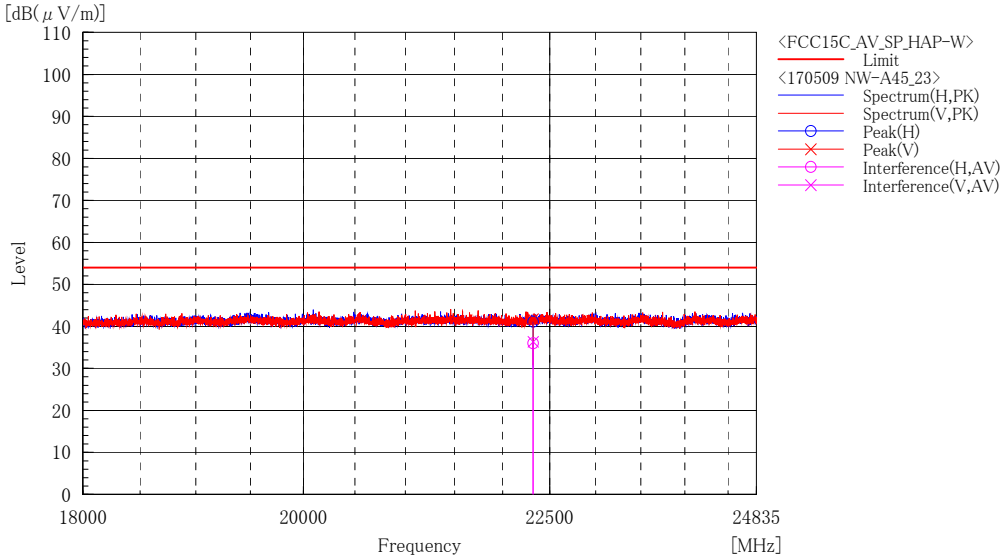
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	21958.828	33.6	2.9	36.5	54.0	17.5	170.5	96.4

[Bluetooth Low Energy (1 Mbps) / 2480MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: Y.MORIMOTO	Remark2	: X
Power	: DC3.7V	Remark3	: High
Temp./Hum.	: 22deg / 51%	Remark4	: 1M



Final Result

--- Horizontal Polarization (AV)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	22321.830	33.2	2.8	36.0	54.0	18.0	118.8	67.6

--- Vertical Polarization (AV)---

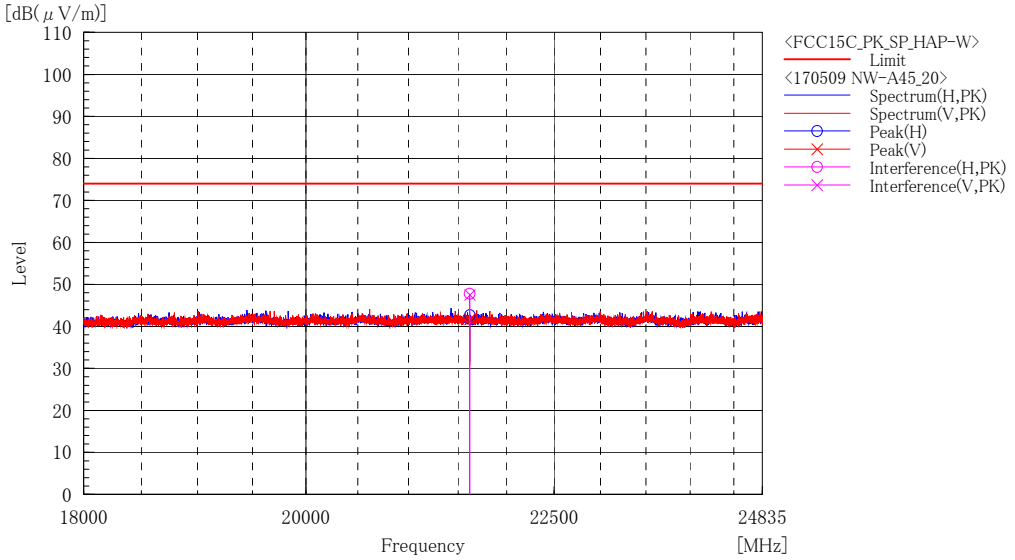
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	22322.334	33.6	2.8	36.4	54.0	17.6	350.4	221.5

[Bluetooth Low Energy (1 Mbps) / 2402MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: Y.MORIMOTO	Remark2	: X
Power	: DC3.7V	Remark3	: Low
Temp./Hum.	: 22deg / 51%	Remark4	: 1M



Final Result

--- Horizontal Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	21616.962	44.7	3.1	47.8	74.0	26.2	246.2	96.0

--- Vertical Polarization (PK)---

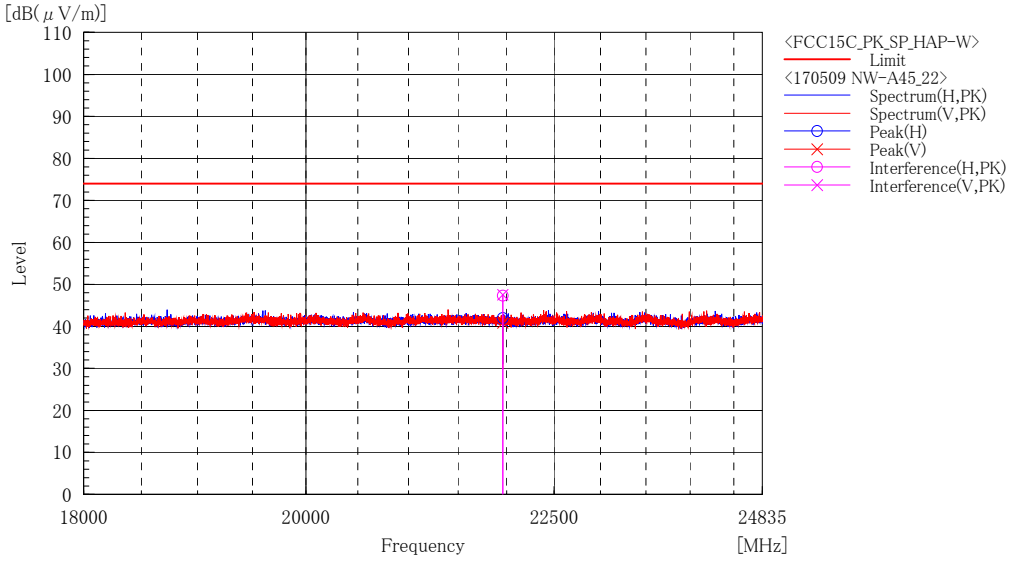
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	21617.570	44.4	3.1	47.5	74.0	26.5	218.8	235.1

[Bluetooth Low Energy (1 Mbps) / 2440MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: Y.MORIMOTO	Remark2	: X
Power	: DC3.7V	Remark3	: Mid
Temp./Hum.	: 22deg / 51%	Remark4	: 1M



Final Result

--- Horizontal Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	21959.028	44.4	2.9	47.3	74.0	26.7	118.5	303.1

--- Vertical Polarization (PK)---

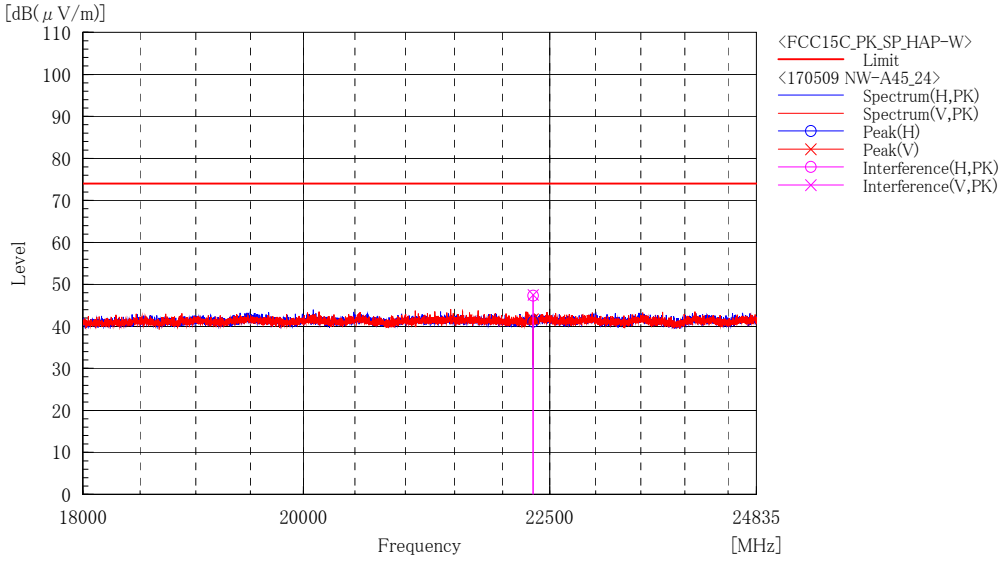
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	21959.116	44.6	2.9	47.5	74.0	26.5	170.5	96.4

[Bluetooth Low Energy (1 Mbps) / 2480MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: NW-A45	Limit	: FCC Part15C 15.209(a) 3m
Serial	: 1000182	Remark1	:
Operator	: Y.MORIMOTO	Remark2	: X
Power	: DC3.7V	Remark3	: High
Temp./Hum.	: 22deg / 51%	Remark4	: 1M



Final Result

--- Horizontal Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	22321.574	44.5	2.8	47.3	74.0	26.7	118.8	67.6

--- Vertical Polarization (PK)---

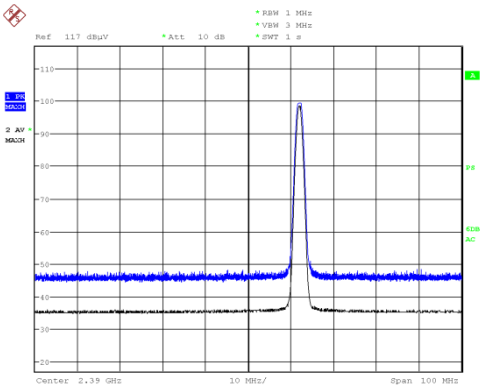
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	22322.266	44.7	2.8	47.5	74.0	26.5	350.4	219.5

2.4GHz Restricted-Band Edge (Plot data)

These plot data show peak (trace blue) and average (trace black) spectrum for worst case emissions in the restricted-band edges. (Restricted band edges: below 2390MHz and above 2483.5MHz)
The result of the final radiated emissions measurement refers in previous pages.

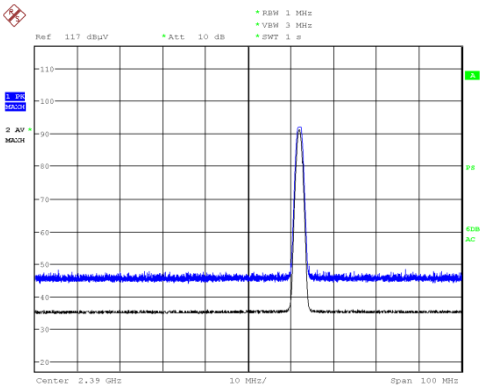
[Bluetooth Low Energy / 2402MHz]

Horizontal



Date: 19.MAY.2017 22:10:12

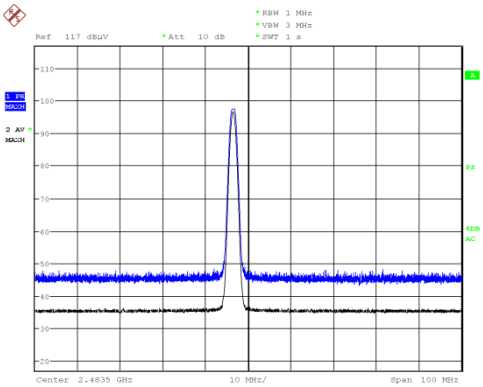
Vertical



Date: 19.MAY.2017 22:12:41

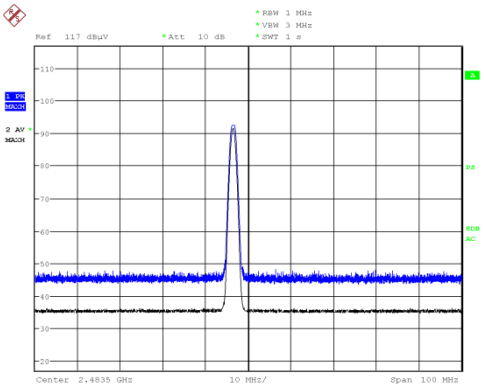
[Bluetooth Low Energy / 2480MHz]

Horizontal



Date: 17.MAY.2017 20:48:46

Vertical



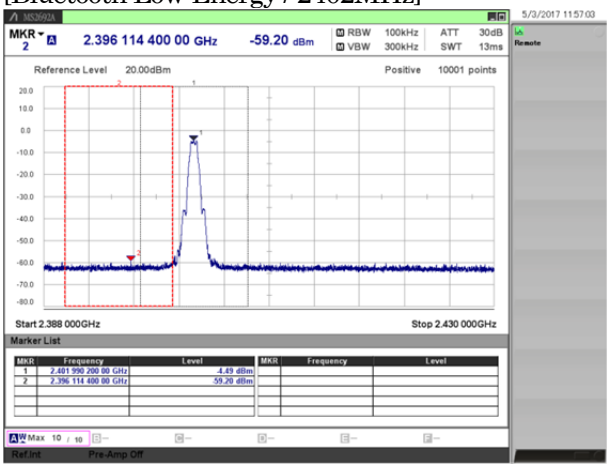
Date: 17.MAY.2017 20:43:27

3.6. Conducted Spurious Emissions for Band Edge

1) Ambient temperature : 22.5 deg.C
2) Relative humidity : 41.0 %
3) Date of measurement : May 03, 2017
4) Measured by : M. KOUGA
5) Operating mode : Transmitting mode

Mode	Rate [Mbps]	Channel [MHz]	Frequency [MHz]	Reading(PK) [dBm]	C.F. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
BLE	1	2402	2396.11	-59.20	10.55	-48.65	-13.9	34.71
			2401.99	-4.49	10.55	6.06	-	-

[Bluetooth Low Energy / 2402MHz]



4. Method of Calculation

4.1. AC Power-line Conducted Emissions Measurement

Method of calculation	:	Software
The Software for Calculation	Name	: EP5/ CE
	Version	: Ver5.0.0

Test Result [dBuV] = Meter Reading [dBuV] + C.F. [dB]

Notes :

(a) Meter Reading : Reading of the EMI test receiver or spectrum analyzer.

(b) C.F. : System Loss + Correction Factor of LISN.

4.2. Maximum Peak Conducted Output Power Measurement

Method of calculation		: Software
The Software for Calculation	Name	: SW-316
	Version	: Ver. 1.3

Test Result [dBm] = Meter Reading [dBm] + C.F. [dB]
Duty Cycle [%] = Tx ON Time / (Tx ON Time + Tx OFF Time) * 100

Notes :

(a) Meter Reading : Reading of the spectrum analyzer.

(b) C.F. : System Cable Loss + EUT Cable Loss

4.3. Power Density Measurement

Method of calculation		: Software
The Software for Calculation	Name	: SW-316
	Version	: Ver.1.3

Test Result [dBm] = Meter Reading [dBm] + C.F. [dB]

Notes :

(a) Meter Reading : Reading of the spectrum analyzer.

(b) C.F. : System Cable Loss + Attenuator Loss + EUT Cable Loss

4.4. Radiated Spurious Emission Measurement

Method of calculation		: Software
The Software for Calculation	Name	: V-Scan
	Version	: Ver.4.0.30

Test Result [dBuV/m] = Meter Reading [dBuV] + C.F. [dB/m]

Notes :

(a) Meter Reading : Reading of the EMI test receiver or spectrum analyzer.

(b) C.F. : ☒ Antenna Factor (including Balun Loss) + System GainLoss

: ☐ Antenna Factor (including Balun Loss) + System GainLoss + 20 log (3 m/ 10 m)

4.5. Conducted Spurious Emission for Band Edge Measurement

Method of calculation		: Software
The Software for Calculation	Name	: SW-316
	Version	: Ver. 1.3

Test Result [dBm] = Meter Reading [dBm] + C.F. [dB]

Notes :

(a) Meter Reading : Reading of the spectrum analyzer.

(b) C.F. : System Cable Loss + EUT Cable Loss

5. List of Test Equipment

All test results are traceable to the national and/or international standards.

5.1. AC Power-line Conducted Emissions

4th Site Shielded Room 1

	Ctrl.#	Equipment	Model No.	Serial No.	Manufacturer	Cal.Int.	Last Cal.
x	M515	EMI Receiver	ESCI	100606	Rohde & Schwarz	12	16.08.04
x	CS043	4th Site CE Cable SYSTEM	-	-	EMC/RF Test Lab.	12	17.01.16
x	M664	6dB Attenuator	6806.01A	N/A	HUBER+SUHNER AG	12	17.01.16
x	M619	HIGH FREQUENCY FUSE	MP612A	N/A	Anritsu	12	17.01.16
x	M026	LISN (for Peripheral)	KNW-407	8-541-1	Kyoritsu	12	17.02.16
-	M116	LISN	KNW-242	8-888-6	Kyoritsu	12	16.07.16
-	M505	LISN	ENV216	100425	Rohde & Schwarz	12	16.06.23
x	M833	AMN (for EUT)	ENV216	100293	Rohde & Schwarz	12	17.01.11
-	M152	50 ohm Terminator	CT-01	N/A	TME	12	17.01.15
-	M153	50 ohm Terminator	CT-01	N/A	TME		16.06.23
-	M159	50 ohm Terminator	T1302	N/A	Stack	12	16.07.16
x	M165	50 ohm Terminator	T1302	N/A	Stack	12	16.06.02
x	M690	Thermo Meter	AD-5640A	201304	A&D	12	16.11.07
x	M634	AC Volt Meter	205207	81BA0323	Yokogawa	12	17.01.15

5.2. Antenna-port Conducted Measurements

4th Site Shielded Room 1

	Ctrl.#	Equipment	Model No.	Serial No.	Manufacturer	Cal.Int.	Last Cal.
x	-	Shield Room	B83117-B2432-T161	P26428	Albatross Project	-	-
x	W100	Spectrum Analyzer	MS2692A	6201338954	Anritsu	12	17.04.14
x	W006	Power Meter	N1911A	MY50000295	Keysight Technologies	12	16.10.03
x	W007	Power Sensor	N1922A	MY50180022	Keysight Technologies	12	16.10.03
x	W029	10dB Attenuator	8493C	76549	Keysight Technologies	12	16.08.01
x	WC05	RF Cable	SUCOFLEX 102	34287	HUBER + SUHNER	12	16.11.04
x	M720	Thermometer	TH-321	140044	AS ONE	12	16.06.02

5.3. Radiated Spurious Emissions

EMC Site 3m Semi-Anechoic Chamber

	Ctrl.#	Equipment	Model No.	Serial No.	Manufacturer	Cal.Int.	Last Cal.
x	M115	Semi-Anechoic Chamber	-	7D1-8A11	Otsuka Science	12	16.06.03
x	M686	EMI Receiver	N9038A	MY52260113	Keysight Technologies	12	16.12.08
x	M959	EMI Receiver	ESU40	100041	Rohde & Schwarz	12	16.11.01
x	A073	Loop Antenna	HFH2-Z2	100171	Rohde & Schwarz	12	16.10.04
x	A089	Biconical Antenna	BBA9106	VHA91032835	Schwarzbeck	12	17.01.15
x	A088	Log periodic Antenna	UHALP9108A1	0643	Schwarzbeck	12	17.01.15
x	A064	Horn Antenna	BBHA9120D	746	Schwarzbeck	12	17.01.14
x	A078	Horn Antenna	HAP06-18W	00000070	TOYO Corporation	12	17.02.20
x	A058	Horn Antenna	HAP18-26W	00000016	TOYO Corporation	12	17.02.13
x	CS017	N-RE Cable SYSTEM 1	-	-	EMC/RF Test Lab.	12	17.01.13
x	CS018	N-RE Cable SYSTEM 2	-	-	EMC/RF Test Lab.	12	17.01.13
x	CS045	N-3m EMF Cable SYSTEM	-	-	EMC/RF Test Lab.	12	17.01.13
x	CS074/075	N-RE Cable SYSTEM 4	-	-	EMC/RF Test Lab.	12	17.01.13
x	M126	Step Attenuator	8494H	3837M01144	Keysight Technologies	12	17.01.13
x	M752	Pre Amplifier	310N	320621	SONOMA INSTRUMENT	12	17.01.13
x	M128	Attenuator (3dB)	8491A	53541	Keysight Technologies	12	17.01.13
x	M609	Attenuator (3dB)	8491B	MY39265960	Keysight Technologies	12	17.01.13
x	M737	GHz Filter Box	FB-G1	001	Sony Global M&O	12	17.01.13
x	M687	Thermo Meter	AD-5640A	201301	A&D	12	16.10.06

About calibration interval

Valid until the end of the month listed in “Cal. Int.” column.