

RADIO TEST REPORT**CONFIDENTIAL**

Project No. : JB-Z0036-F
Client : Sony Corporation
Address : 1-7-1 Konan, Minato-ku Tokyo 108-0075, Japan
Type of Equipment : SmartEyeglass (for Bluetooth part)
Model No. : SED-E1
Serial No. : K300138, K300145
FCC ID : AK8SEDE1
Regulation Applied : 47 CFR Part 15 Subpart C
Final Judgment : Passed
Sample Receipt : December 15, 2014
Testing : December 18, 2014 - January 09, 2015
Reported : February 02, 2015

Reported by :

Approved Signatory :



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Notice

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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.*

The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in Sony EMCS EMC/ RF Test Laboratory.



TESTING CERT #3203.01

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Note

☒-indicates that be listed condition, standard or equipment is applicable for this report.

☐-indicates that be 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 : SmartEyeglass
 Trade Name : SONY
 Model No. : SED-E1
 Serial No. : K300138, K300145
 Power Rating : DC 3.6V (The EUT was supplied with the power from built-in battery)
 DC 5V / 1A (Built-in battery was charged through USB input port)
 Clock Frequency in used : 810 MHz (*Highest Frequency)

Radio specification

Function of the Equipment : Transceiver
 Operating Frequency : 2402 - 2480MHz
 Modulation Type : FHSS (GFSK, $\pi/4$ DQPSK, 8DPSK)
 Channel Spacing : 1MHz
 Channel Bandwidth : 1MHz
 Number of channels : 79
 Antenna Type : Chip Antenna
 Antenna connector Type : None
 Antenna Gain : +2.5 dBi
 Operating Temperature : +5 to +35 deg.C

1.2. Summary of Test Result

Test Item	Worst Margin	Measurement Detector	Test Frequency band	Results
AC Power-line Conducted Emissions	19.5 dB (QP) 0.199 MHz L1	Average, Quasi-peak	150 kHz - 30 MHz	Complied
20dB Bandwidth	Refer to the test data	Peak	Carrier	Complied
Carrier Frequency Separation	Refer to the test data	Peak	Carrier	Complied
Number of Hopping Frequencies	Refer to the test data	Peak	Carrier	Complied
Time of Occupancy (Dwell Time)	Refer to the test data	Peak	Carrier	Complied
Maximum Peak Conducted Output Power	28.52 dB	Peak	Carrier	Complied
Radiated Spurious Emissions	15.2 dB (AV) 4959.99 MHz Vertical	Below 1GHz: QP or Average Above 1GHz: Peak, Average	9 kHz - 25 GHz (excluding carrier and band edge)	Complied
Conducted Spurious Emissions for Band Edge *1	28.60 dB 2399.99 MHz	Peak	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.

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 C63.4 - 2009
DA 00-705 (March 30, 2000)

Test Distance for Radiated Spurious Emissions : ☒ 3 m ☐ 10m (9kHz - 30 MHz)
☒ 3 m ☐ 10m (30 - 1000 MHz)
☒ 3 m ☐ 10m (1 - 25 GHz)

1.4. Measurement Procedures

We performed the measurements in accordance with NV3-12, available upon the request.

- ☒ No deviation
☐ Deviation from the above procedure

The summary of the above procedure is mentioned below

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 dimensions of the EUT table were 0.8 m height, 2.0m width and 1.0 m depth.
3. 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.
4. The LISN was placed in 80 cm from the nearest part of the EUT chassis.
5. 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.
6. The connection of the all other equipment to the second LISN was performed. The second LISN was terminated with a 50-ohm terminator.
7. 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.
8. 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)
9. 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)

20dB Bandwidth

1. Antenna-port of the EUT was connected to the spectrum analyzer.
2. On every test operating mode of the EUT, the 20dB Bandwidth was measured with spectrum analyzer.
Detector type : Peak
RBW : 100kHz

Carrier Frequency Separation

1. Antenna-port of the EUT was connected to the spectrum analyzer.
2. On every test operating mode of the EUT, the Carrier Frequency Separation was measured with spectrum analyzer.
Detector type : Peak
RBW : 100kHz

Number of Hopping Frequencies

1. Antenna-port of the EUT was connected to the spectrum analyzer.
2. On every test operating mode of the EUT, the Number of Hopping Frequencies was measured with a spectrum analyzer.
Detector type : Peak
RBW : 510kHz

Time of Occupancy (Dwell Time)

1. Antenna-port of the EUT was connected to the spectrum analyzer.
2. On every test operating mode of the EUT, the Time of Occupancy (Dwell Time) was measured with a spectrum analyzer.
Detector type : Peak
RBW : 1MHz

Maximum Peak Conducted Output Power

1. Antenna-port of the EUT was connected to the spectrum analyzer.
2. On every test operating mode of the EUT, the Maximum Peak Conducted Output Power was measured with spectrum analyzer.
Detector type : Peak
RBW : 3MHz

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 dimensions of the EUT table were 0.8 m height, 2.0 m width and 1.0 m depth.
3. The EUT was placed on the center of the tabletop and its rear was flush with the rear of the table.
4. The test antenna was placed away from the EUT at 3m distance.
5. 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])

6. Interconnecting cables that hang closer than 40 cm to the ground plane was folded back and forth forming a bundle 30 to 40 cm long, hanging approximately in the middle between the ground plane and the tabletop.
7. Find the worst arrangement of the EUT according to follows;
 - Connecting all peripherals and change the position of EUT, peripherals and cables.
 - Rotating the turntable and/or scanning the antenna.
 - On every condition, exploring the highest emissions with the spectrum analyzer.
(9 kHz - 24.835 GHz, peak detector)
8. 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

*: When the measurement frequencies above 1GHz, 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	200 Hz (6dB) or 9 kHz (6dB) *1	200 Hz (6dB) or 9 kHz (6dB) *1	120 kHz (6dB)	1 MHz (3dB)
VBW	N/A	N/A	N/A	3 MHz (for peak) 10 Hz (for average)
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.

9. If the final measurement result exceeded the limit in non-restricted band(excluding carrier band edges), the measurement is carried out additionally 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	3 dB RBW: 300 Hz *	3 dB RBW: 10 kHz *	3 dB RBW: 100 kHz
Instrument	Spectrum analyzer	Spectrum analyzer	Spectrum analyzer

*: Correction factor of RBW was compensated to a measurement result by the following formula.

$$C.F. \text{ of RBW [dB]} = 10 * \log (100\text{kHz} / \text{used RBW})$$

10. These tests were performed in semi anechoic chamber. Therefore the measured level of emissions may be higher than if measurements were made without a ground plane. However test results were confirmed to pass against standard limit.

Conducted Spurious Emissions for Band Edge

1. Antenna-port of the EUT was connected to the spectrum analyzer.
2. On every test operation modes of the EUT, the Conducted Spurious Emissions for Band Edge was measured with a spectrum analyzer.
 - Detector type : Peak
 - RBW : 100kHz

1.5. Test Facility

Address of Test Facility

Test Facility Name : Sony EMCS 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

Radiated Spurious Emission

Semi-Anechoic chamber

☒ 4th Site

Antenna-port Conducted Measurements *

Shielded Room

☒ 4th Site SR1

*Note: This item contains the following

- 20dB Bandwidth
- Carrier Frequency Separation
- Number of Hopping Frequencies
- Time of Occupancy (Dwell Time)
- Maximum Peak Conducted Output Power
- Conducted Spurious Emissions and Band Edge Compliance

A2LA Accreditation for Test Facility

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

Effective dates: 2013-09-30 through 2015-10-31

1.6. Uncertainty

Test Item	Frequency	4th Site SR1
Conducted Output Power, Conducted Spurious Emissions	below 6GHz	± 1.25 dB
	6 - 25GHz	± 1.75 dB

Test Item	Frequency	4th Site	
AC Power-line Conducted Emissions	150kHz - 30MHz	± 2.57 dB	
Radiated Emissions (EUT height 0.8m)	below 30 MHz	3m	± 2.60 dB
	30 - 300 MHz	3m	± 3.70 dB
	300 - 1000 MHz	3m	± 5.23 dB
	1 - 6 GHz	3m	± 5.15 dB
	6 - 18 GHz	3m	± 5.24 dB
	18 - 26.5 GHz	3m	± 4.33 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 *1	Packet type *2,3	Test Channels
AC Power-line Conducted Emissions	EDR *4	2DH3	2441MHz *4
Carrier Frequency Separation, Number of Hopping Frequencies, Time of Occupancy (Dwell Time)	BDR	DH3	Hopping ON
	EDR	2DH3	
20dB Bandwidth, Maximum Peak Conducted Output Power, Radiated Spurious Emissions	BDR	DH3	2402MHz, 2441MHz, 2480MHz
	EDR	2DH3	
Conducted Spurious Emissions for Band Edge	BDR	DH3	2402MHz
	EDR	2DH3	

Note:

*1: Inquiry mode was not performed based on the result of pre-compliance testing.

*2: The worst packet type has been decided based on the result of maximum duty cycle and pre-compliance testing in the actual product specification.

*3: Packet type for EDR has been decided based on the result of Maximum Peak Conducted Output Power.

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

2.3. Special Accessories

Special accessories needed for connecting the EUT to achieve compliance:

Item	Manufacturer	Model No.	Serial No.	Remark
Personal Computer	SONY	PCG-5H7N	28209214 1000062	Installation software: CSR Blue Test3 Ver.2.4
AC Adaptor	SONY	VGP-AC16V11	147994841 0009639	-

2.4. 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 :

2.5. Configuration of Tested System

AC Power-line Conducted Emissions and Radiated Spurious Emissions Measurement

The equipment under test (EUT) consists of:

Symbol	Item	Manufacturer	Model No.	FCC ID	Serial No.
A-1	SmartEyeglass (Eyewear)	SONY	SED-E1	AK8SEDE1	K300145
A-2	SmartEyeglass (Controller)	SONY	SED-E1	AK8SEDE1	K300145

The measurement was carried out with the following support equipment connected

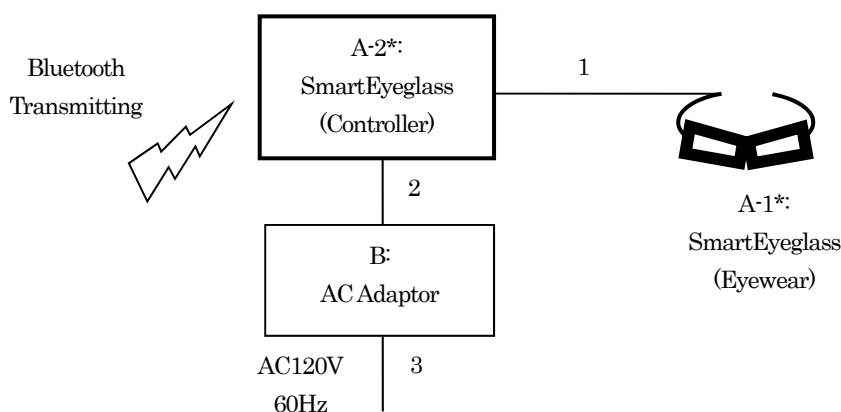
Symbol	Item	Manufacturer	Model No.	FCC ID	Serial No.
B	AC Adaptor	SONY	AC-UD20	N/A	11106003236

Type of Cable

Symbol	Description	Identification (Manufacturer etc.)	Shielded YES / NO	Ferrite Core	Bundled	Length (m)
1	SmartEyeglass Cable	-	NO	NO	-	0.66
2	USB Cable	-	YES	NO	-	0.6
3	Extension AC Cable	-	NO	NO	-	1.0

System configuration

*: EUT



Antenna-port Conducted Measurements

The equipment under test (EUT) consists of:

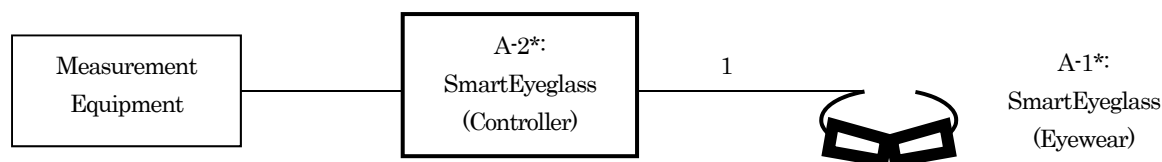
Symbol	Item	Manufacturer	Model No.	FCC ID	Serial No.
A-1	SmartEyeglass (Eyewear)	SONY	SED-E1	AK8SEDE1	K300138
A-2	SmartEyeglass (Controller)	SONY	SED-E1	AK8SEDE1	K300138

Type of Cable

Symbol	Description	Identification (Manufacturer etc.)	Shielded YES / NO	Ferrite Core	Bundled	Length (m)
1	SmartEyeglass Cable	-	NO	NO	-	0.66

System configuration

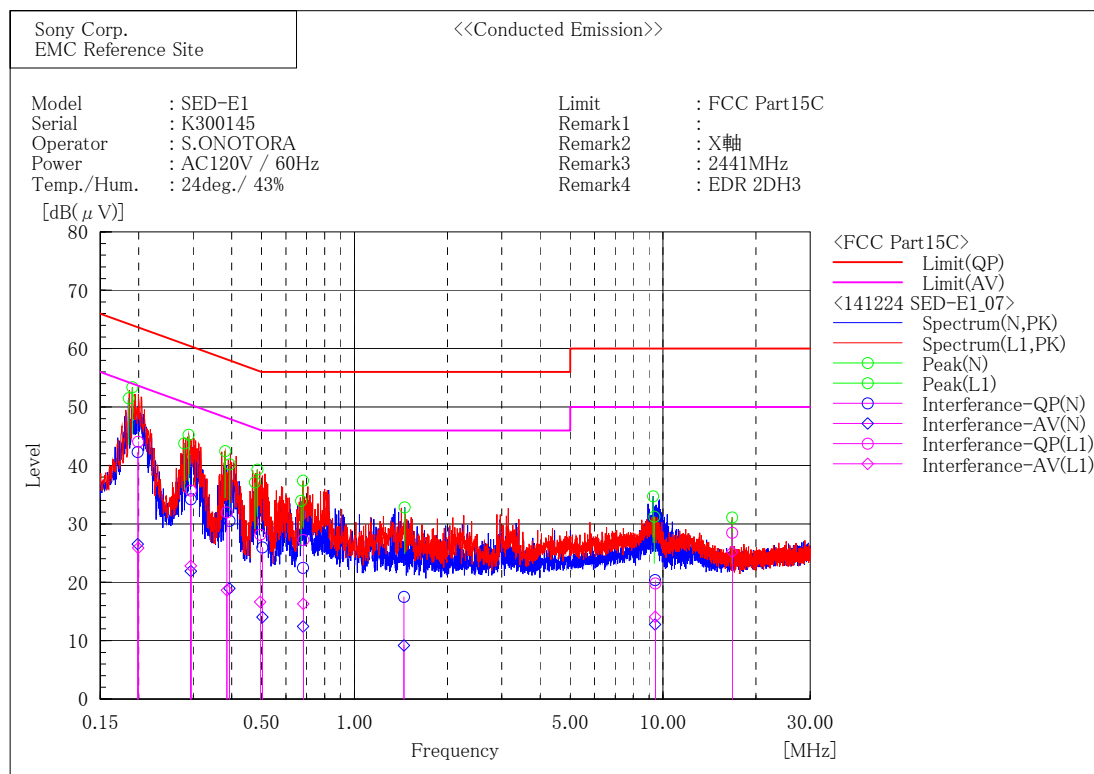
*: EUT



3. Test Data

3.1. AC Power-line Conducted Emissions

[EDR (2DH3) / 2441MHz]



Final Result

--- N 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	0.198	26.3	10.5	16.0	42.3	26.5	63.7	53.7	21.4	27.2
2	0.295	18.4	6.1	15.8	34.2	21.9	60.4	50.4	26.2	28.5
3	0.394	14.5	2.9	16.0	30.5	18.9	58.0	48.0	27.5	29.1
4	0.503	9.9	-2.1	16.1	26.0	14.0	56.0	46.0	30.0	32.0
5	0.682	6.5	-3.6	16.0	22.5	12.4	56.0	46.0	33.5	33.6
6	1.447	1.7	-6.6	15.8	17.5	9.2	56.0	46.0	38.5	36.8
7	9.429	4.3	-3.4	16.1	20.4	12.7	60.0	50.0	39.6	37.3

--- 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	0.199	28.2	10.0	15.9	44.1	25.9	63.6	53.6	19.5	27.7
2	0.295	19.9	7.0	15.8	35.7	22.8	60.4	50.4	24.7	27.6
3	0.386	15.9	2.6	16.0	31.9	18.6	58.2	48.2	26.3	29.6
4	0.496	12.1	0.5	16.1	28.2	16.6	56.1	46.1	27.9	29.5
5	0.683	11.2	0.3	16.0	27.2	16.3	56.0	46.0	28.8	29.7
6	9.434	3.7	-2.0	16.1	19.8	14.1	60.0	50.0	40.2	35.9
7	16.749	12.3	9.0	16.2	28.5	25.2	60.0	50.0	31.5	24.8

3.2. 20dB Bandwidth

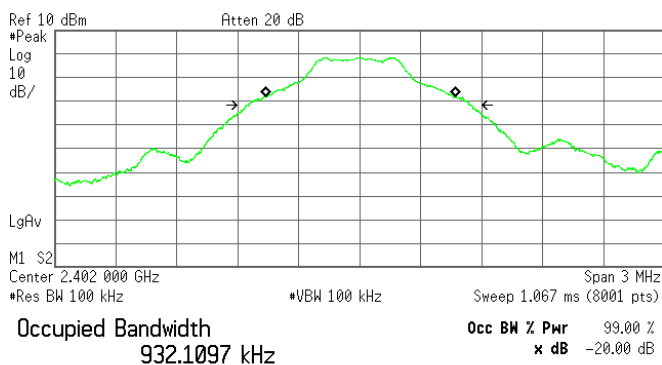
- | | |
|------------------------|--|
| 1) Ambient temperature | : 23.2deg.C, 25.5deg.C |
| 2) Relative humidity | : 31.6%, 21.0% |
| 3) Date of measurement | : December 18, 2014 - January 09, 2015 |
| 4) Measured by | : S.ONOTORA, YAOYAMA |
| 5) Operating mode | : Transmitting mode |

Mode	Channel [MHz]	Result [MHz]	Limit [MHz]
BDR	DH3	2402	1.105
		2441	1.096
		2480	1.094
EDR	2DH3	2402	1.360
		2441	1.362
		2480	1.364

[BDR (DH3) / 2402MHz]

* Agilent 00:58:37 Dec 18, 2014

L

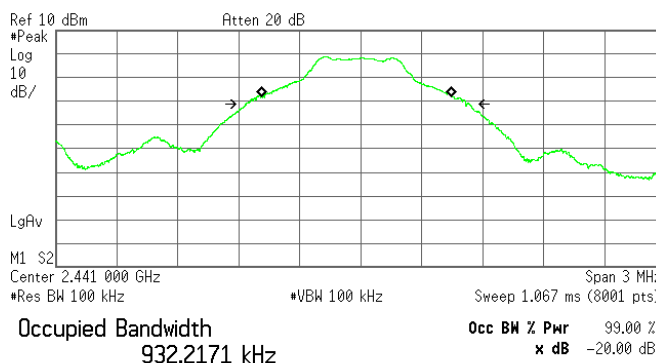


Transmit Freq Error 3.295 kHz
x dB Bandwidth 1.105 MHz

[BDR (DH3) / 2441MHz]

* Agilent 00:56:53 Dec 18, 2014

L

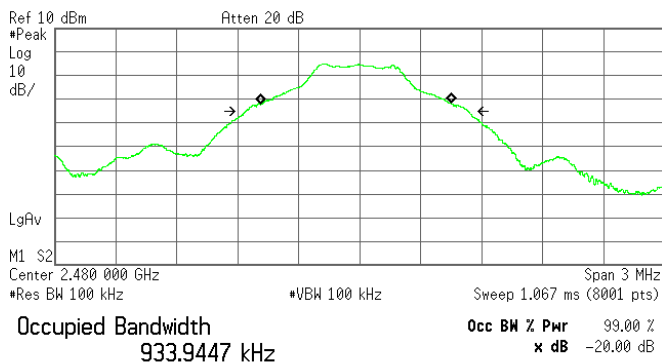


Transmit Freq Error -19.228 kHz
x dB Bandwidth 1.096 MHz

[BDR (DH3) / 2480MHz]

* Agilent 00:55:12 Dec 18, 2014

L

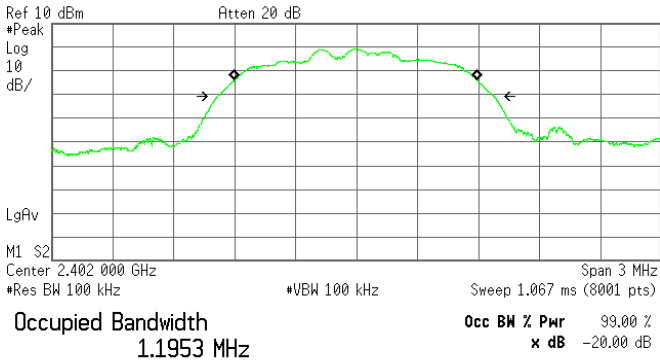


Transmit Freq Error -17.454 kHz
x dB Bandwidth 1.094 MHz

[EDR (2DH3) / 2402MHz]

Agilent 00:46:19 Dec 18, 2014

L

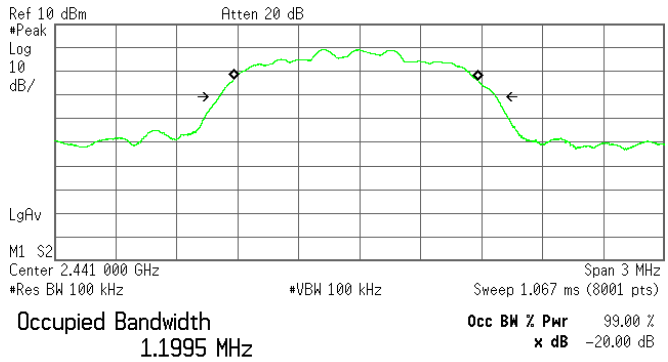


Transmit Freq Error -3.300 kHz
x dB Bandwidth 1.360 MHz

[EDR (2DH3) / 2441MHz]

Agilent 12:02:24 Jan 9, 2015

T

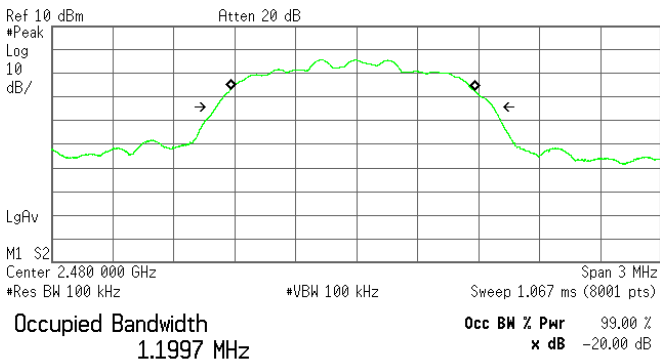


Transmit Freq Error -16.967 kHz
x dB Bandwidth 1.362 MHz

[EDR (2DH3) / 2480MHz]

Agilent 12:41:21 Jan 9, 2015

L



Transmit Freq Error -17.287 kHz
x dB Bandwidth 1.364 MHz

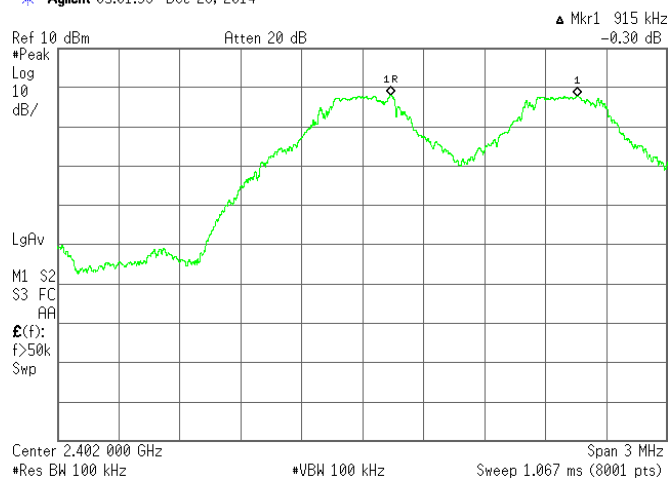
3.3. Carrier Frequency Separation

- | | |
|------------------------|---------------------|
| 1) Ambient temperature | : 22.5deg.C |
| 2) Relative humidity | : 29.2% |
| 3) Date of measurement | : December 25, 2014 |
| 4) Measured by | : S.ONOTORA |
| 5) Operating mode | : Transmitting mode |

Mode		Reading [kHz]	Limit [kHz]
BDR	DH3	915.0	736.7
EDR	2DH3	1035.0	906.7

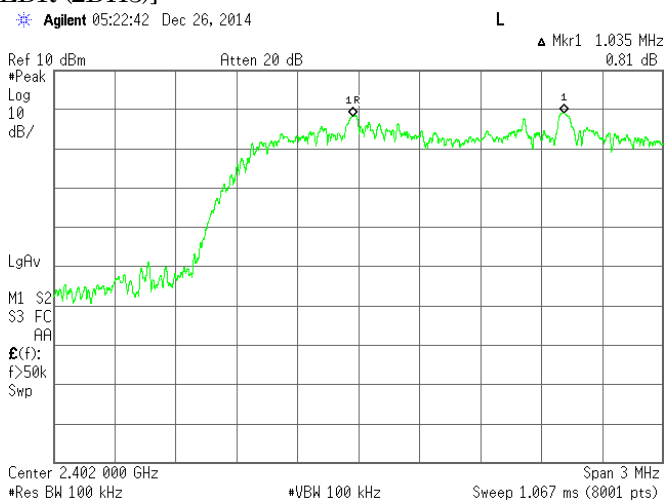
[BDR (DH3)]

* Agilent 05:01:39 Dec 26, 2014



[EDR (2DH3)]

* Agilent 05:22:42 Dec 26, 2014



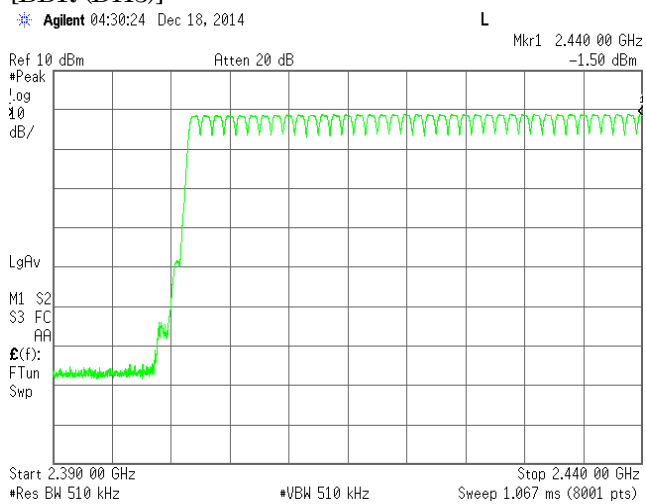
3.4. Number of Hopping Frequencies

- | | |
|------------------------|---------------------|
| 1) Ambient temperature | : 23.2deg.C |
| 2) Relative humidity | : 31.6% |
| 3) Date of measurement | : December 18, 2014 |
| 4) Measured by | : S.ONOTORA |
| 5) Operating mode | : Transmitting mode |

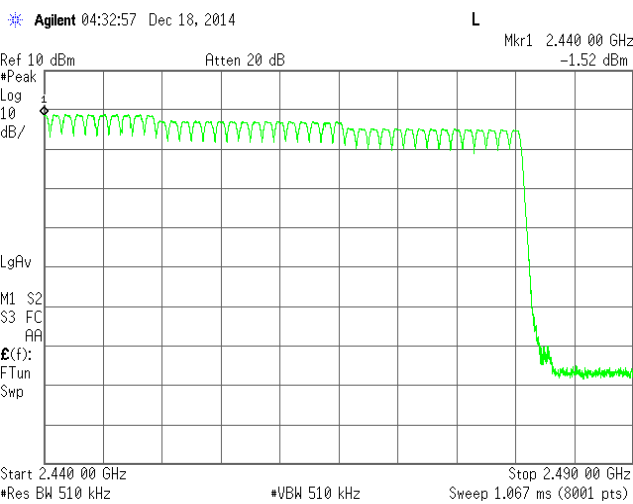
Mode		Number [channel]	Limit [channel]
BDR	DH3	79	15
EDR	2DH3	79	15

[BDR (DH3)]

Agilent 04:30:24 Dec 18, 2014

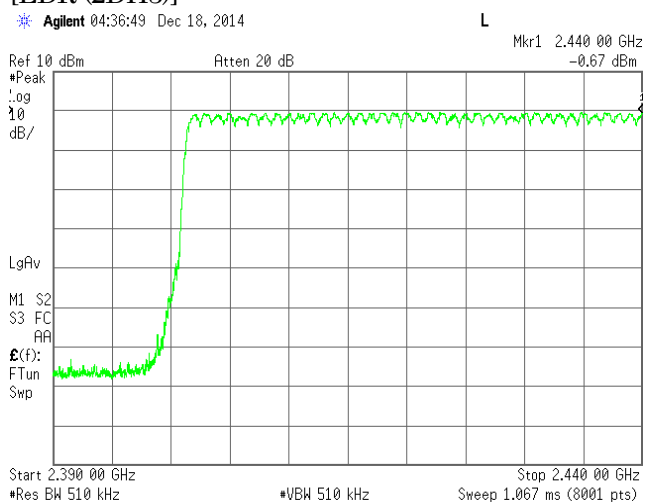


Agilent 04:32:57 Dec 18, 2014

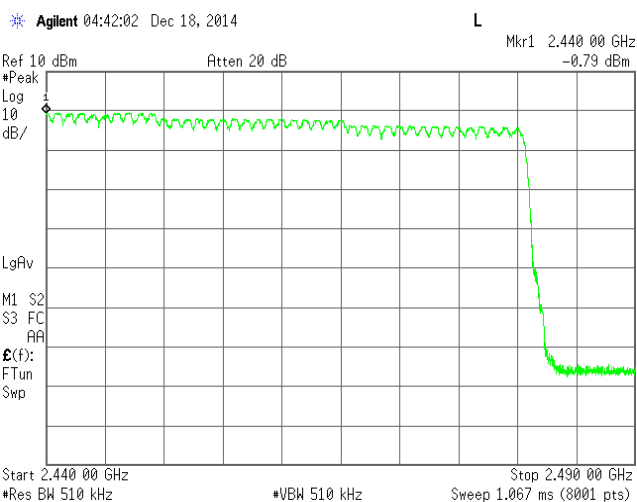


[EDR (2DH3)]

Agilent 04:36:49 Dec 18, 2014



Agilent 04:42:02 Dec 18, 2014



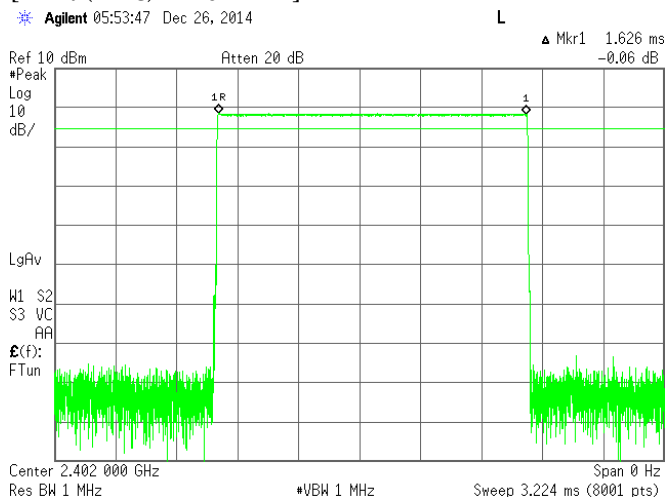
3.5. Time of Occupancy (Dwell Time)

- | | |
|------------------------|---------------------|
| 1) Ambient temperature | : 22.5deg.C |
| 2) Relative humidity | : 29.2% |
| 3) Date of measurement | : December 25, 2014 |
| 4) Measured by | : S.ONOTORA |
| 5) Operating mode | : Transmitting mode |

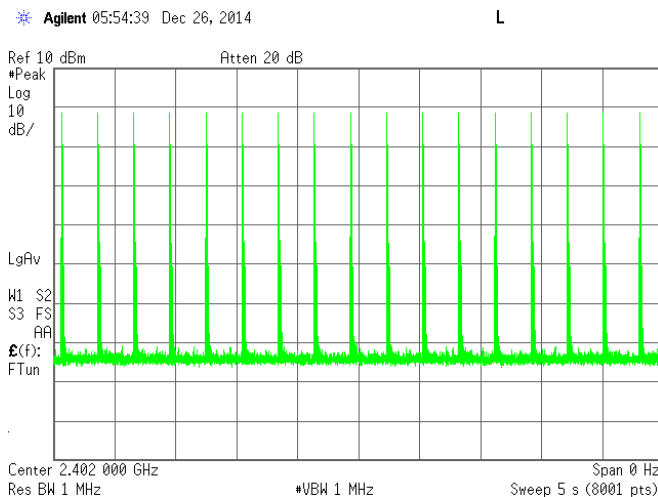
Mode	Channel [MHz]	Dwell Time [msec]	Cycle [time]	Result [msec]	Limit [msec]
BDR	DH3	2402	1.63	17	174.7
		2441	1.62	17	174.5
		2480	1.62	17	174.5
EDR	2DH3	2402	1.64	17	176.3
		2441	1.64	17	176.1
		2480	1.64	17	176.0

[BDR (DH3) / 2402MHz]

* Agilent 05:53:47 Dec 26, 2014

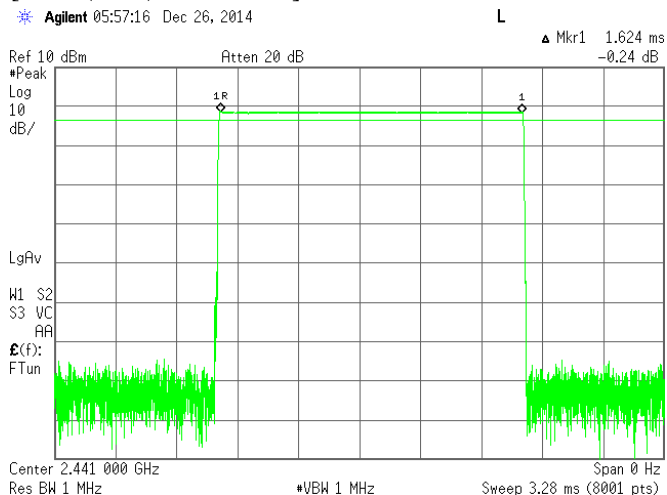


* Agilent 05:54:39 Dec 26, 2014

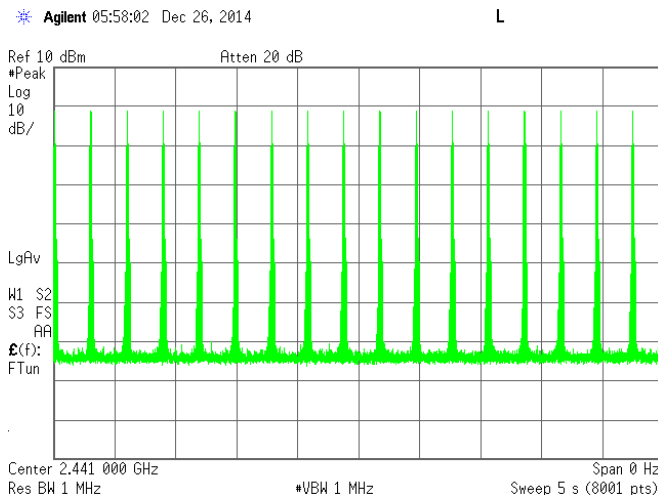


[BDR (DH3) / 2441MHz]

* Agilent 05:57:16 Dec 26, 2014

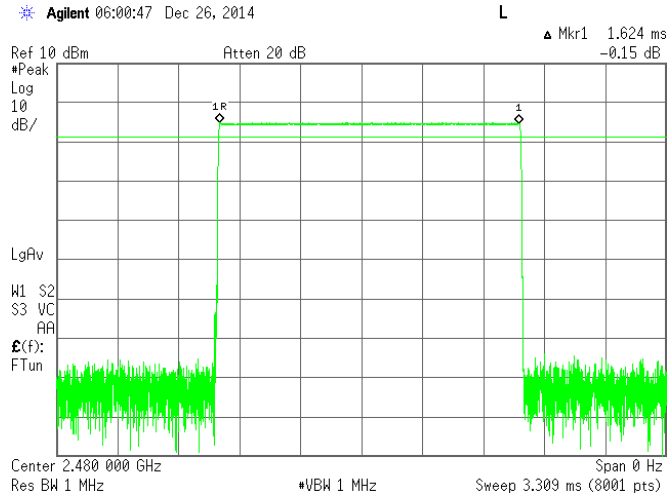


* Agilent 05:58:02 Dec 26, 2014

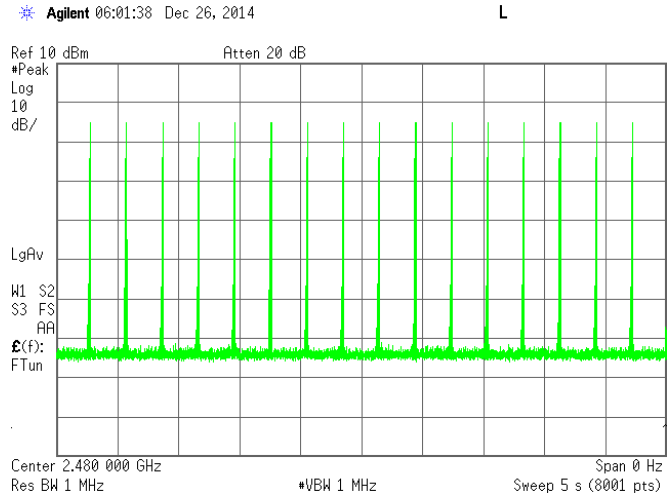


[BDR (DH3) / 2480MHz]

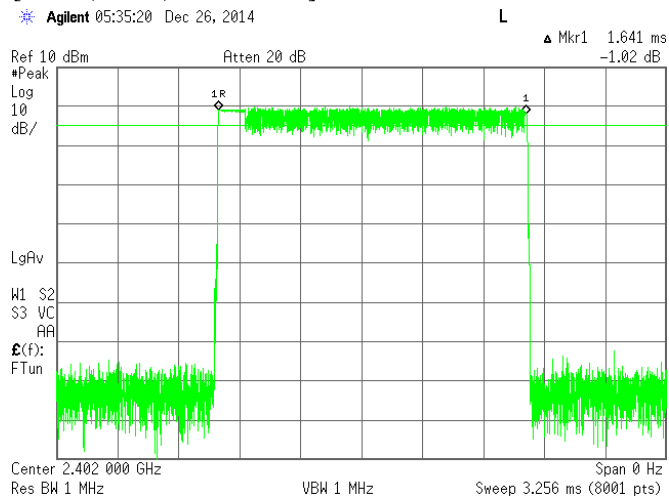
* Agilent 06:00:47 Dec 26, 2014



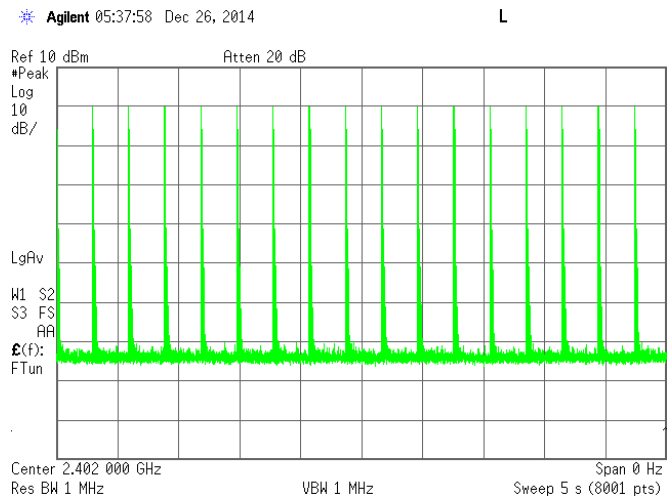
* Agilent 06:01:38 Dec 26, 2014

**[EDR (2DH3) / 2402MHz]**

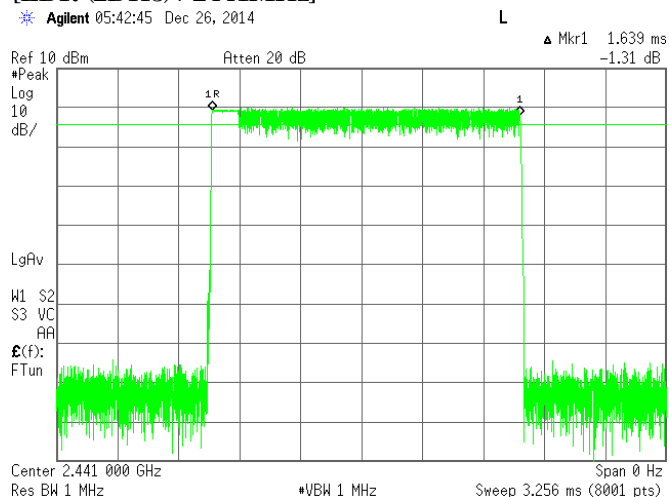
* Agilent 05:35:20 Dec 26, 2014



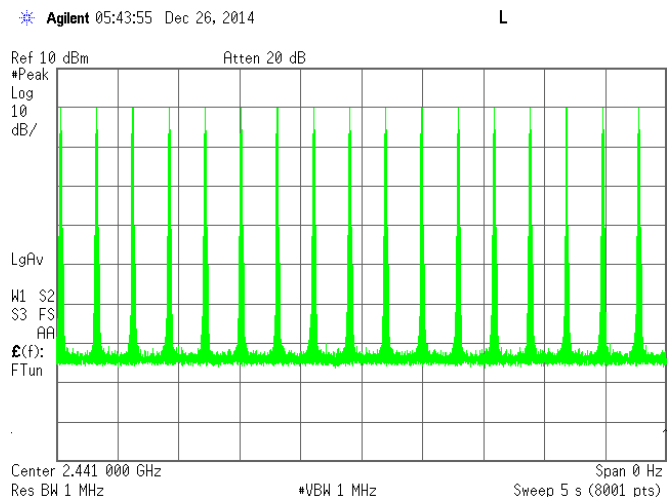
* Agilent 05:37:58 Dec 26, 2014

**[EDR (2DH3) / 2441MHz]**

* Agilent 05:42:45 Dec 26, 2014

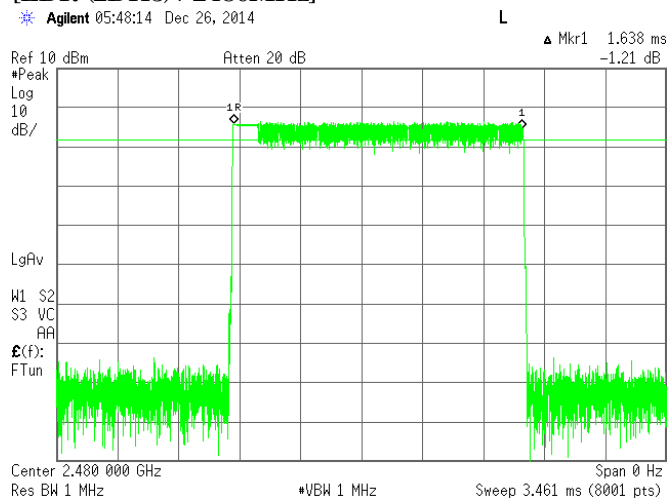


* Agilent 05:43:55 Dec 26, 2014

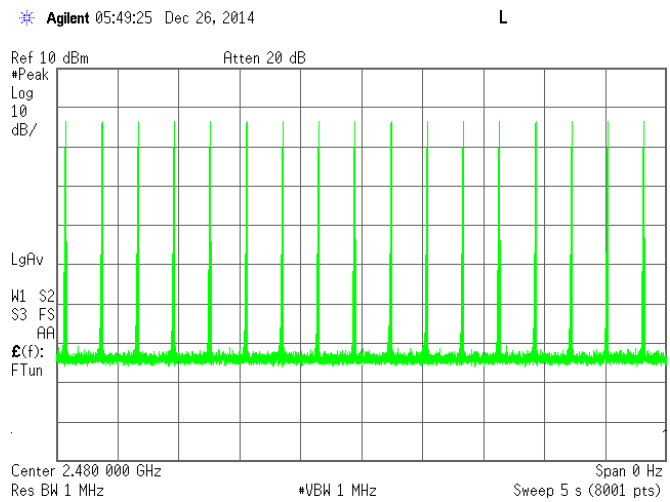


[EDR (2DH3) / 2480MHz]

* Agilent 05:48:14 Dec 26, 2014



* Agilent 05:49:25 Dec 26, 2014



3.6. Maximum Peak Conducted Output Power

- 1) Ambient temperature : 23.2deg.C
- 2) Relative humidity : 31.6%
- 3) Date of measurement : December 18, 2014
- 4) Measured by : S.ONOTORA
- 5) Operating mode : Transmitting mode

Mode		Channel [MHz]	Reading(PK) [dBm]	C.F. [dB]	Result(PK) [dBm]	Limit [dBm]	Margin [dB]
BDR	DH3	2402	-1.23	0.68	-0.55	30.0	30.55
		2441	-0.99	0.69	-0.30	30.0	30.30
		2480	-4.89	0.69	-4.20	30.0	34.20
EDR	2DH3	2402	0.68	0.68	1.36	30.0	28.64
		2441	0.79	0.69	1.48	30.0	28.52
		2480	-2.76	0.69	-2.07	30.0	32.07
	3DH3	2402	0.64	0.68	1.32	30.0	28.68
		2441	0.76	0.69	1.45	30.0	28.55
		2480	-2.84	0.69	-2.15	30.0	32.15

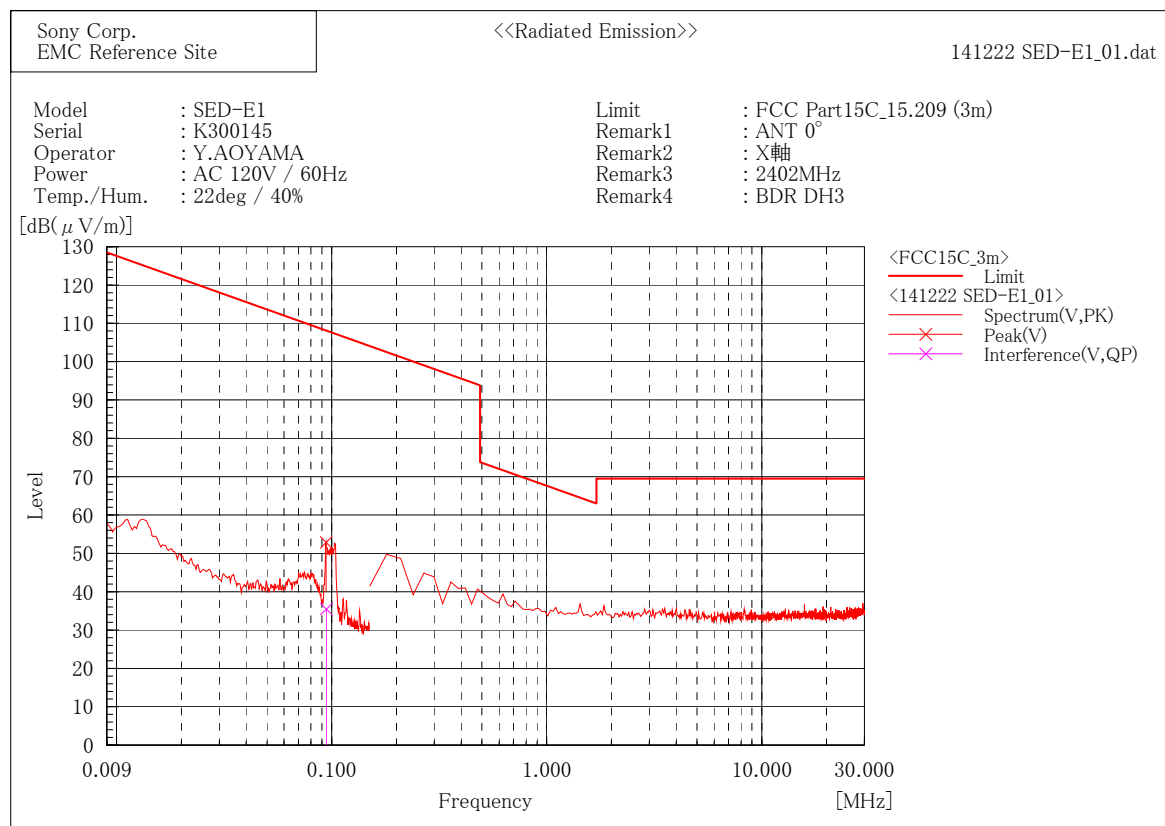
Duty Cycle check

Mode		Channel [MHz]	T(on+off) [msec]	T(on) [msec]	Duty Cycle [%]
BDR	DH1	2402	1.251	0.373	29.83
	DH3	2402	3.750	1.622	43.25
	DH5	2402	12.500	2.859	22.87
EDR	2DH1	2402	1.251	0.387	30.93
	2DH3	2402	3.758	1.632	43.43
	2DH5	2402	12.490	2.864	22.93
	3DH1	2402	1.252	0.393	31.42
	3DH3	2402	4.997	1.622	32.46
	3DH5	2402	12.470	2.822	22.63

3.7. Radiated Spurious Emissions

9 kHz - 30 MHz

[BDR (DH3) / 2402MHz]

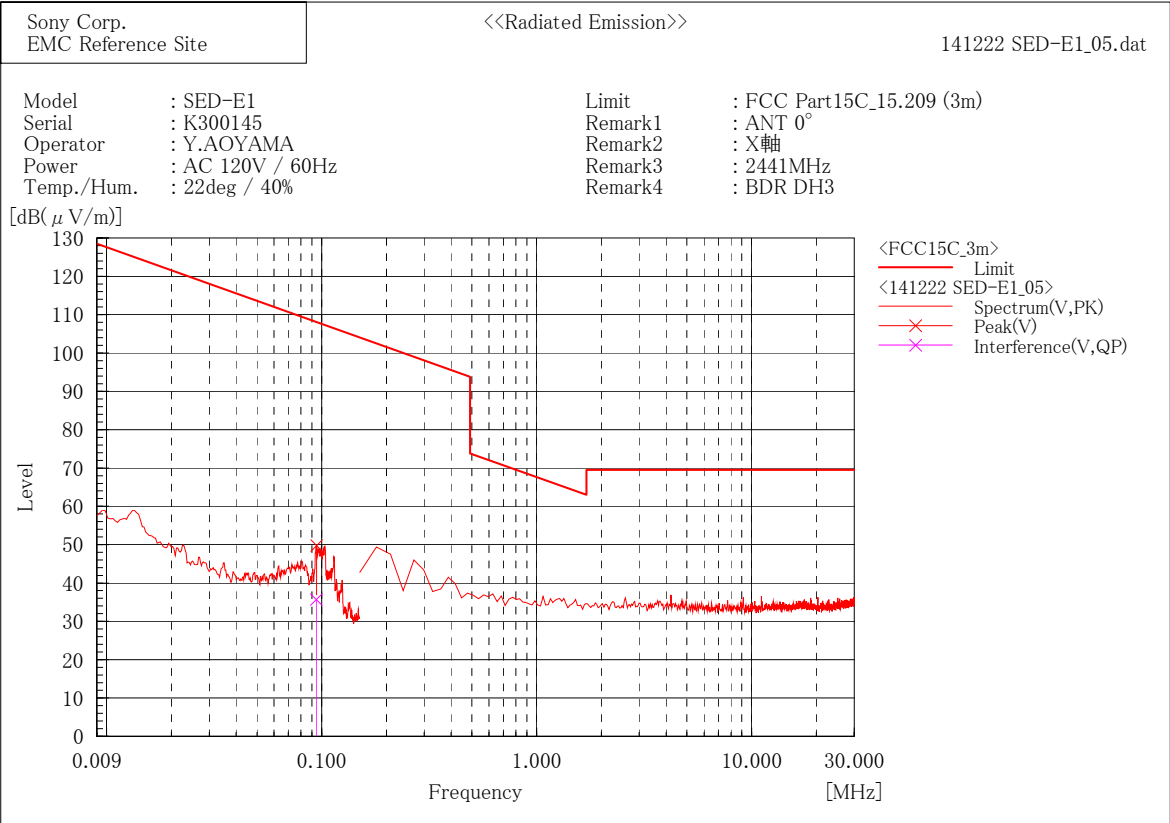


Final Result

--- 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	0.094	15.9	19.6	35.5	108.1	72.6	100.0	172.1

[BDR (DH3) / 2441MHz]

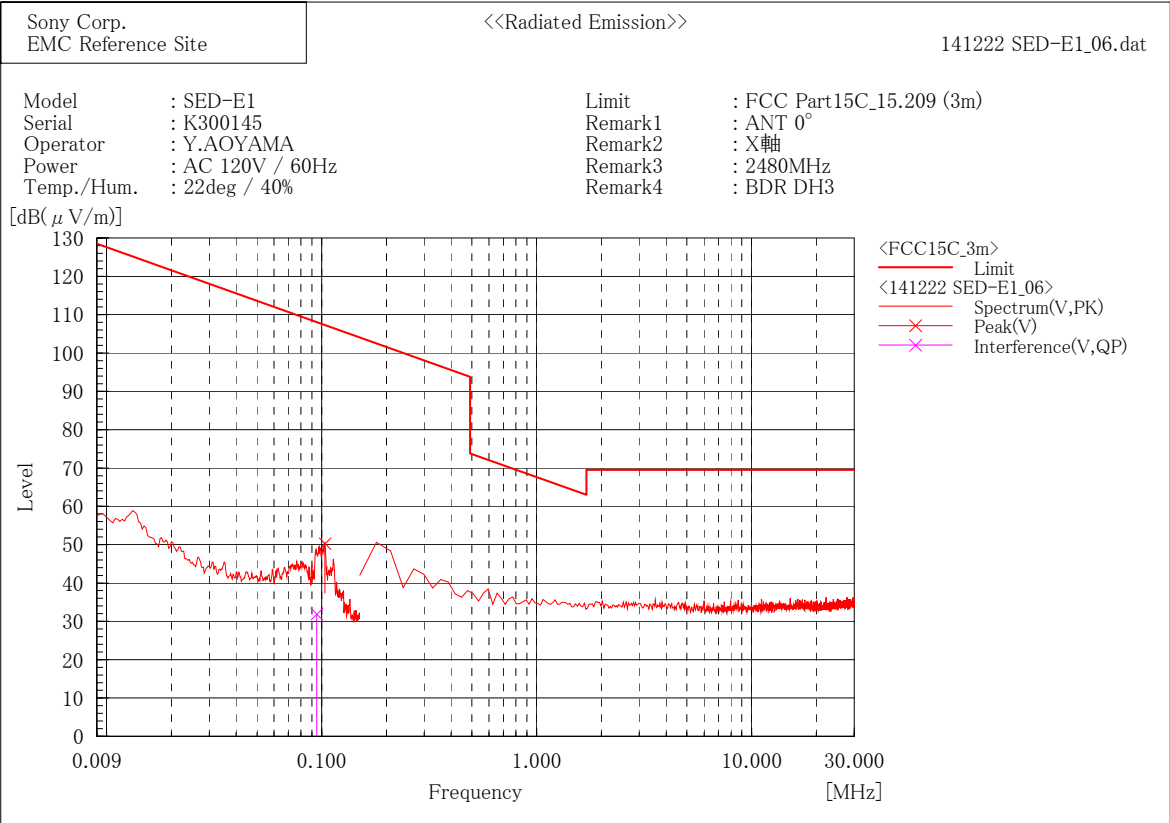


Final Result

--- 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	0.094	16.1	19.6	35.7	108.1	72.4	100.0	166.7

[BDR (DH3) / 2480MHz]

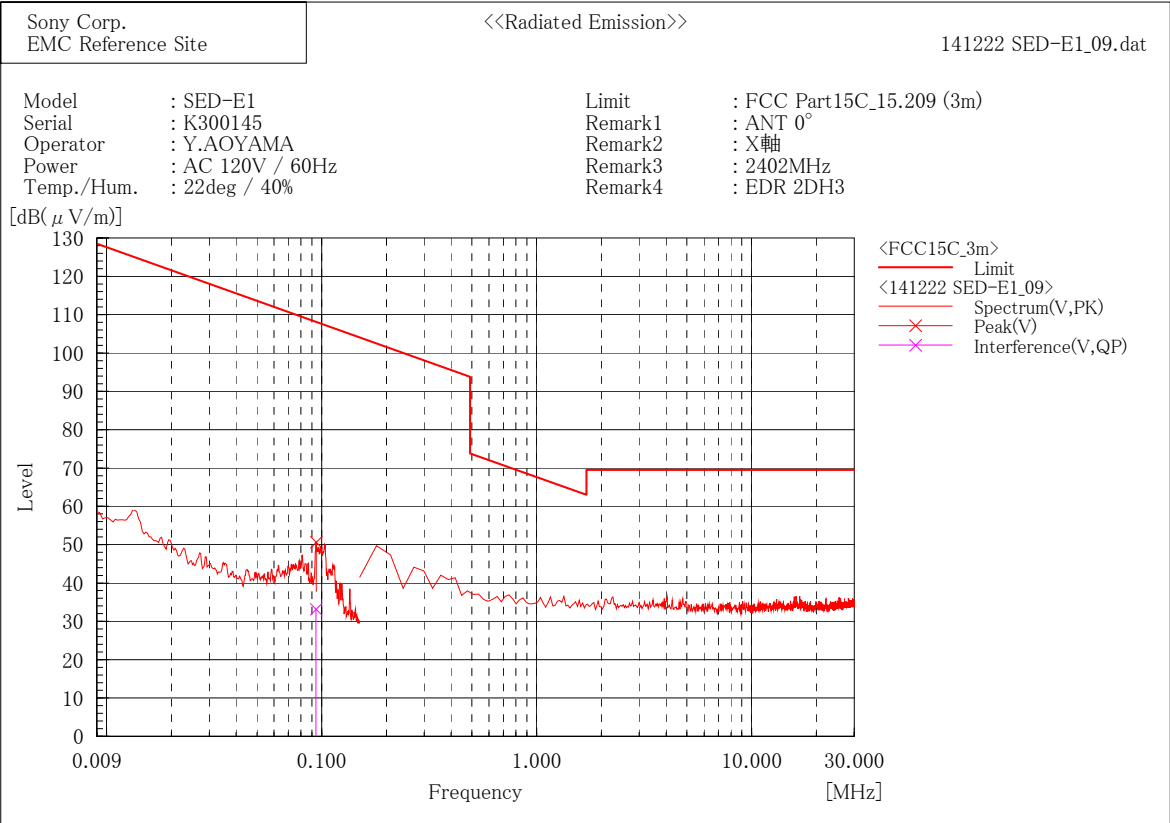


Final Result

--- 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	0.095	12.3	19.6	31.9	108.0	76.1	100.0	166.6

[EDR (2DH3) / 2402MHz]

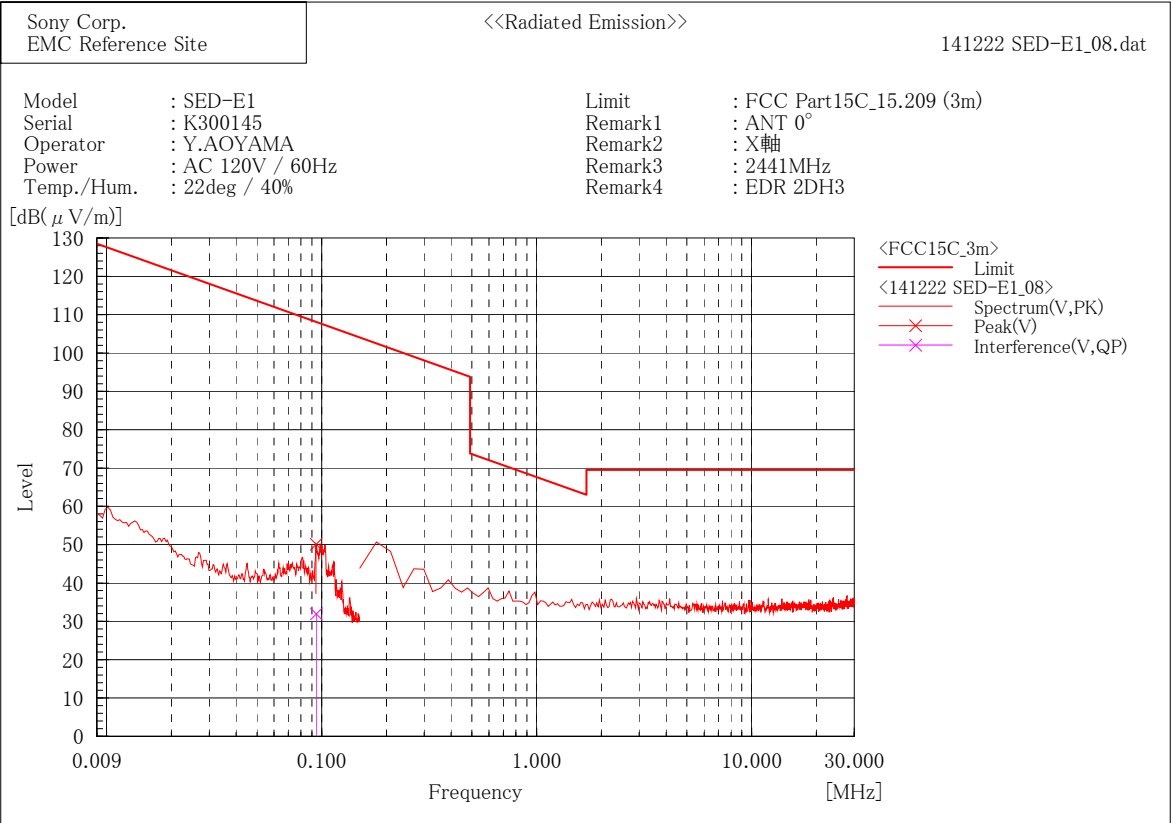


Final Result

--- 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	0.094	13.5	19.6	33.1	108.1	75.0	100.0	173.4

[EDR (2DH3) / 2441MHz]

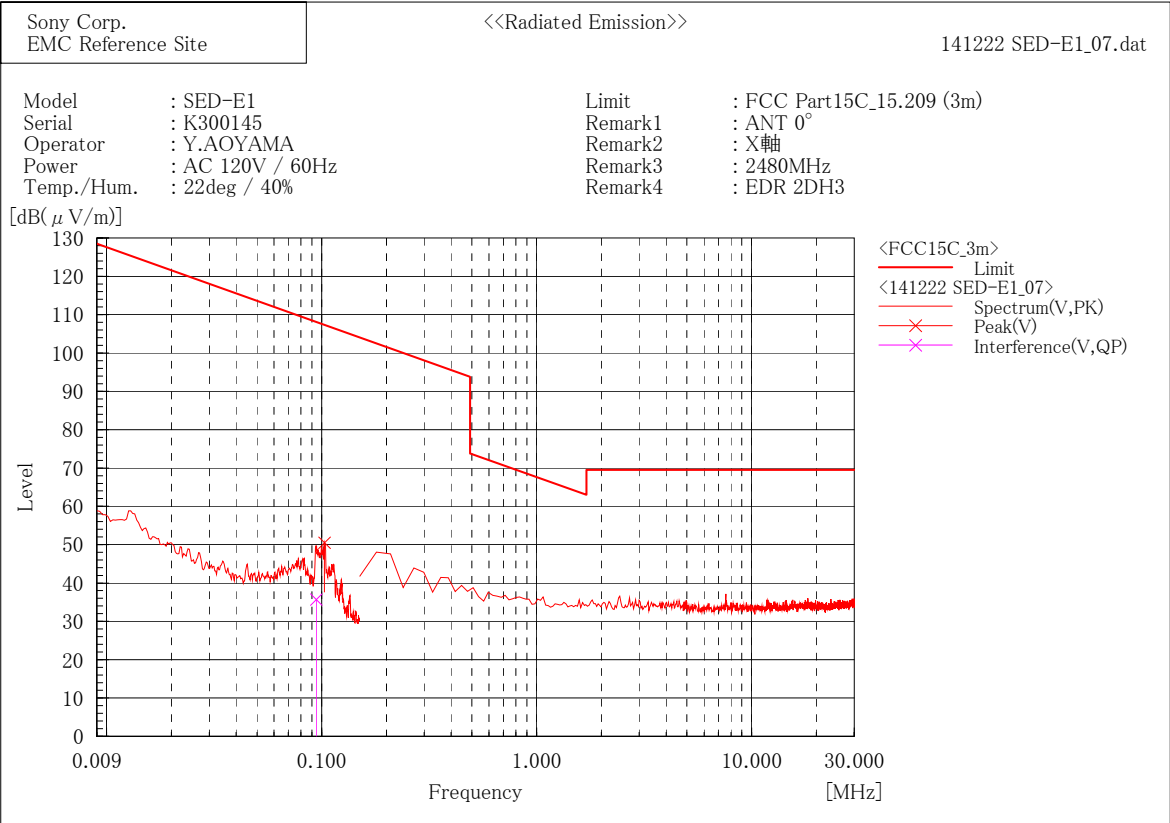


Final Result

--- 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	0.094	12.3	19.6	31.9	108.1	76.2	100.0	163.6

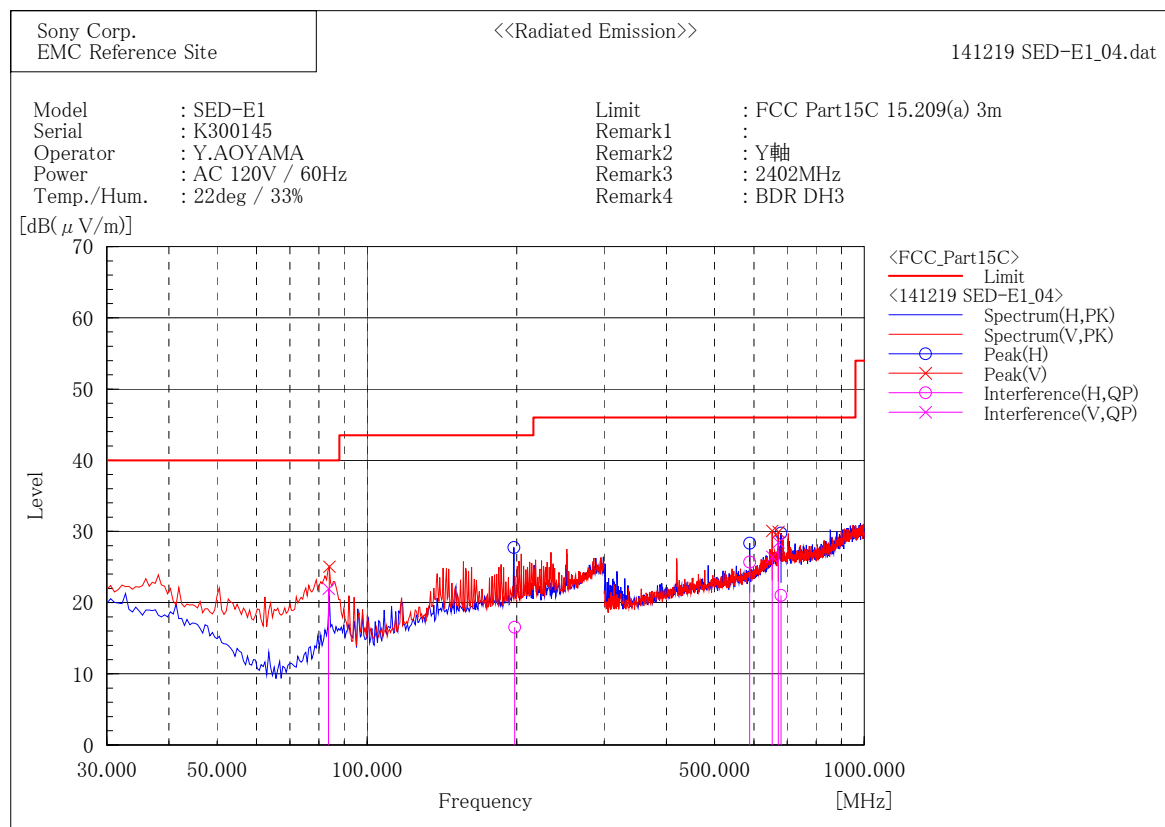
[EDR (2DH3) / 2480MHz]



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	0.094	16.1	19.6	35.7	108.1	72.4	100.0	166.5

30 MHz - 1000 MHz
[BDR (DH3) / 2402MHz]

Final Result

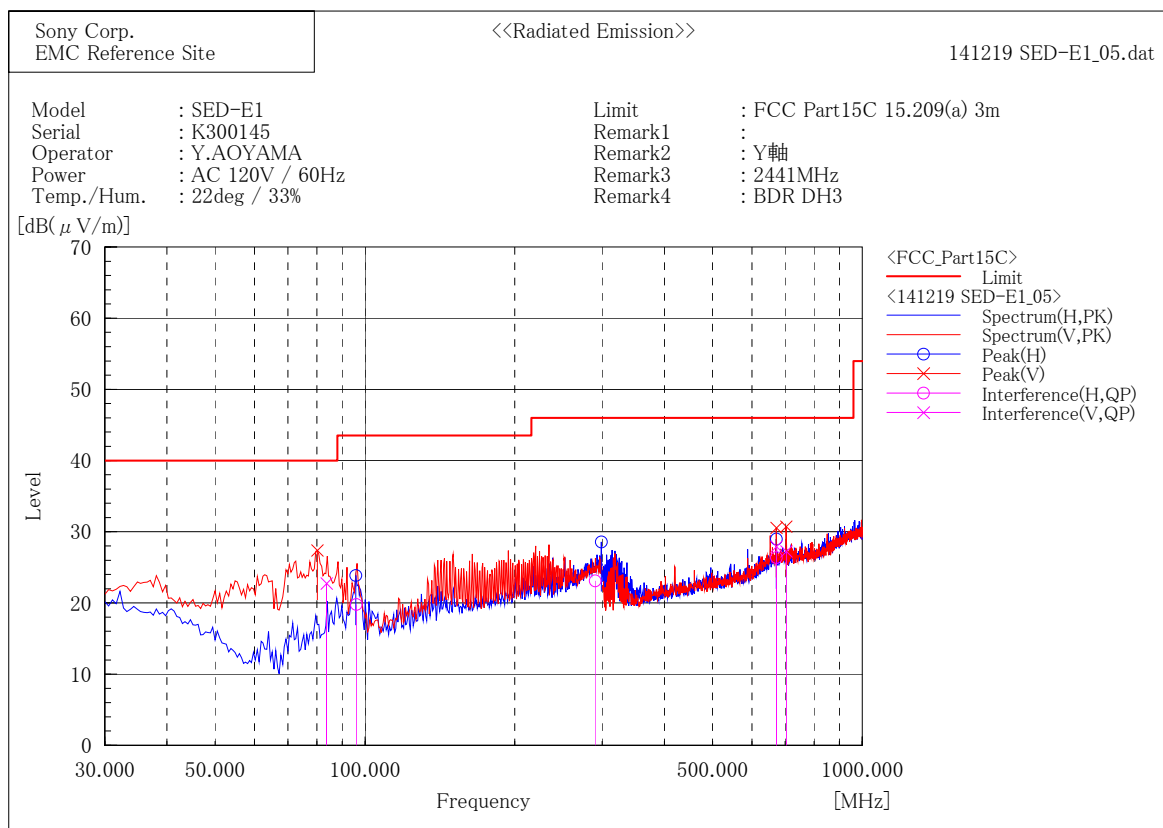
--- Horizontal Polarization (QP)---

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	198.257	26.5	-10.0	16.5	43.5	27.0	170.0	67.2
2	588.008	33.5	-7.8	25.7	46.0	20.3	179.9	128.5
3	680.140	26.2	-5.2	21.0	46.0	25.0	119.2	174.8

--- 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	83.749	41.8	-19.9	21.9	40.0	18.1	110.4	196.6
2	653.336	32.3	-5.9	26.4	46.0	19.6	100.0	213.1
3	672.008	33.9	-5.4	28.5	46.0	17.5	100.0	244.9

[BDR (DH3) / 2441MHz]



Final Result

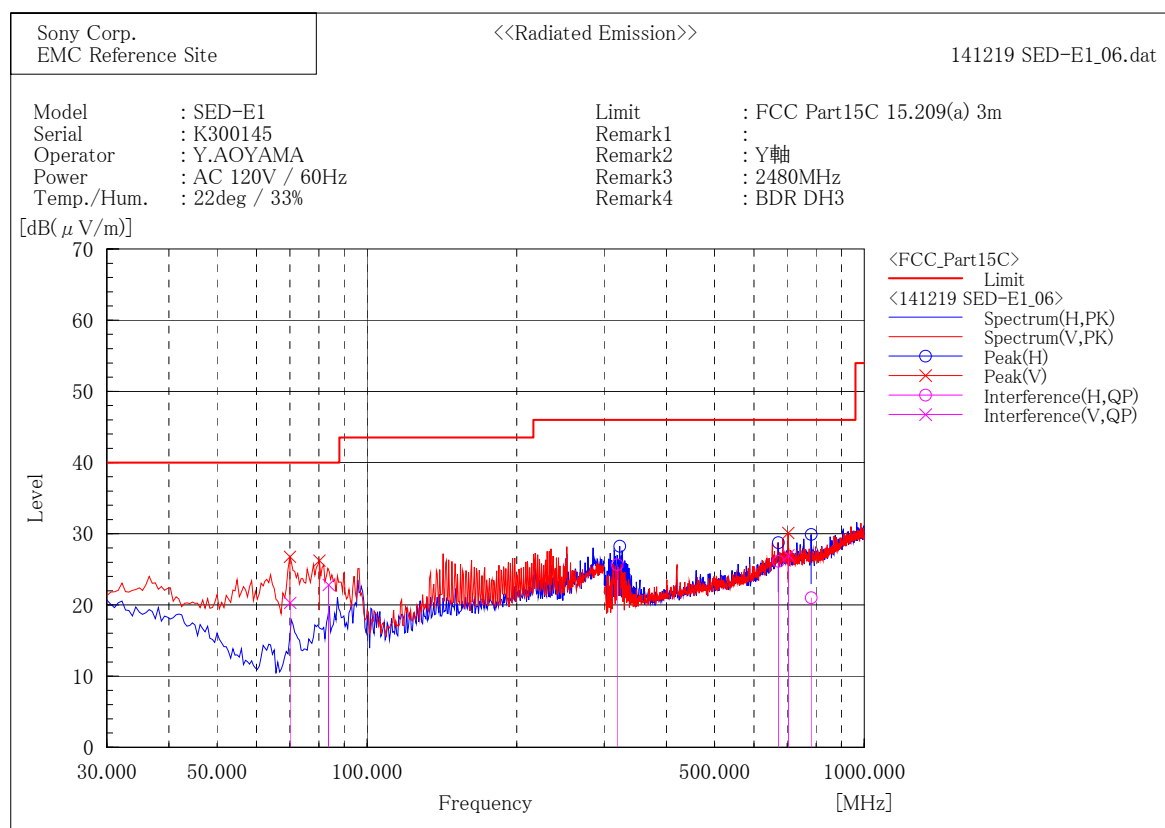
--- Horizontal Polarization (QP)---

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	96.145	37.3	-17.5	19.8	43.5	23.7	314.9	206.7
2	290.435	29.0	-5.9	23.1	46.0	22.9	119.2	350.6
3	672.010	31.8	-5.4	26.4	46.0	19.6	148.1	243.5

--- 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	83.749	42.7	-19.9	22.8	40.0	17.2	100.0	217.6
2	671.994	33.3	-5.4	27.9	46.0	18.1	100.0	241.9
3	703.508	32.1	-4.9	27.2	46.0	18.8	100.0	227.0

[BDR (DH3) / 2480MHz]



Final Result

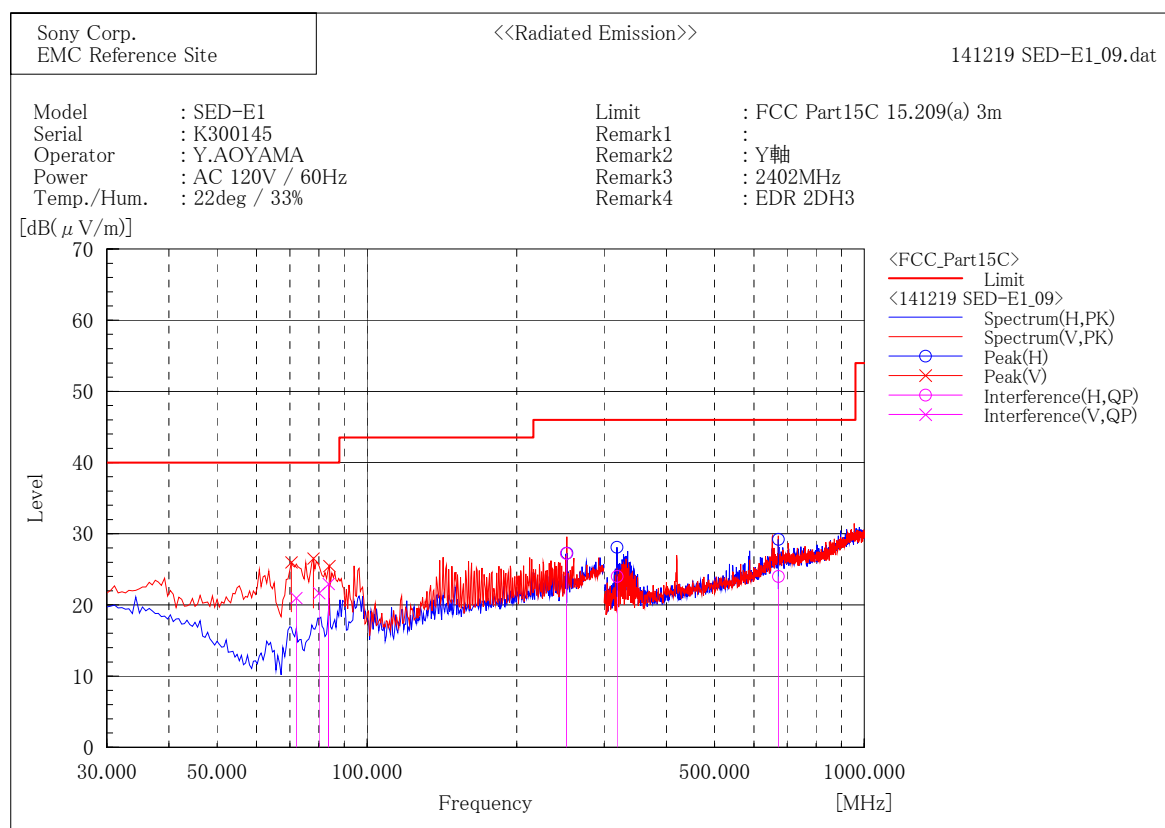
--- Horizontal Polarization (QP)---

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	318.528	36.9	-11.3	25.6	46.0	20.4	100.0	146.5
2	672.012	31.5	-5.4	26.1	46.0	19.9	148.1	239.1
3	782.305	25.4	-4.4	21.0	46.0	25.0	125.0	194.6

--- 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	70.103	41.9	-21.6	20.3	40.0	19.7	100.0	196.6
2	83.748	42.7	-19.9	22.8	40.0	17.2	100.0	211.5
3	703.560	31.9	-4.9	27.0	46.0	19.0	100.0	229.9

[EDR (2DH3) / 2402MHz]



Final Result

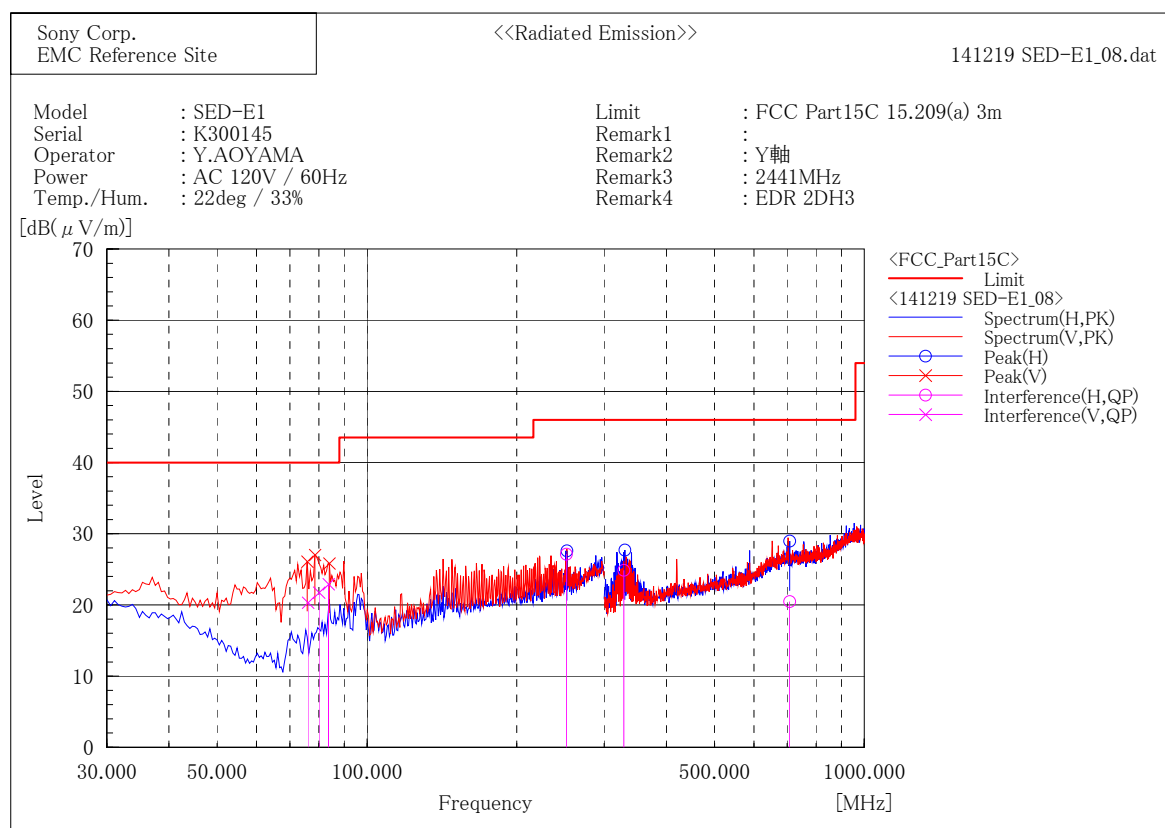
--- Horizontal Polarization (QP)---

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	251.997	35.9	-8.6	27.3	46.0	18.7	131.1	166.4
2	318.420	35.3	-11.3	24.0	46.0	22.0	100.0	342.4
3	672.018	29.4	-5.4	24.0	46.0	22.0	275.0	192.0

--- 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	72.102	42.5	-21.5	21.0	40.0	19.0	100.0	187.2
2	80.121	42.3	-20.6	21.7	40.0	18.3	100.0	174.8
3	83.749	42.9	-19.9	23.0	40.0	17.0	110.1	205.5

[EDR (2DH3) / 2441MHz]



Final Result

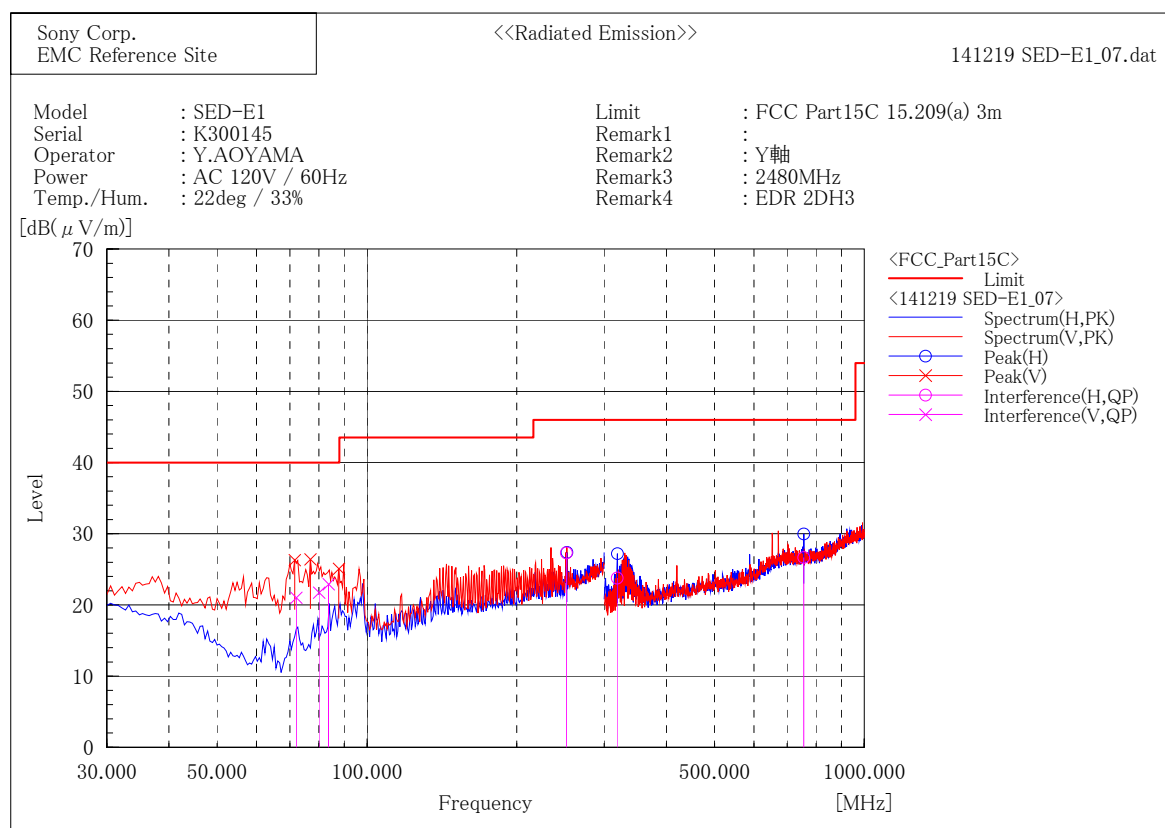
--- Horizontal Polarization (QP)---

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	251.998	35.7	-8.6	27.1	46.0	18.9	129.5	166.2
2	328.592	36.0	-11.1	24.9	46.0	21.1	100.0	356.7
3	708.100	25.4	-4.9	20.5	46.0	25.5	395.5	248.9

--- 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	76.107	41.5	-21.2	20.3	40.0	19.7	114.8	171.3
2	80.121	42.3	-20.6	21.7	40.0	18.3	100.0	176.8
3	83.750	42.8	-19.9	22.9	40.0	17.1	100.0	210.2

[EDR (2DH3) / 2480MHz]



Final Result

--- Horizontal Polarization (QP)---

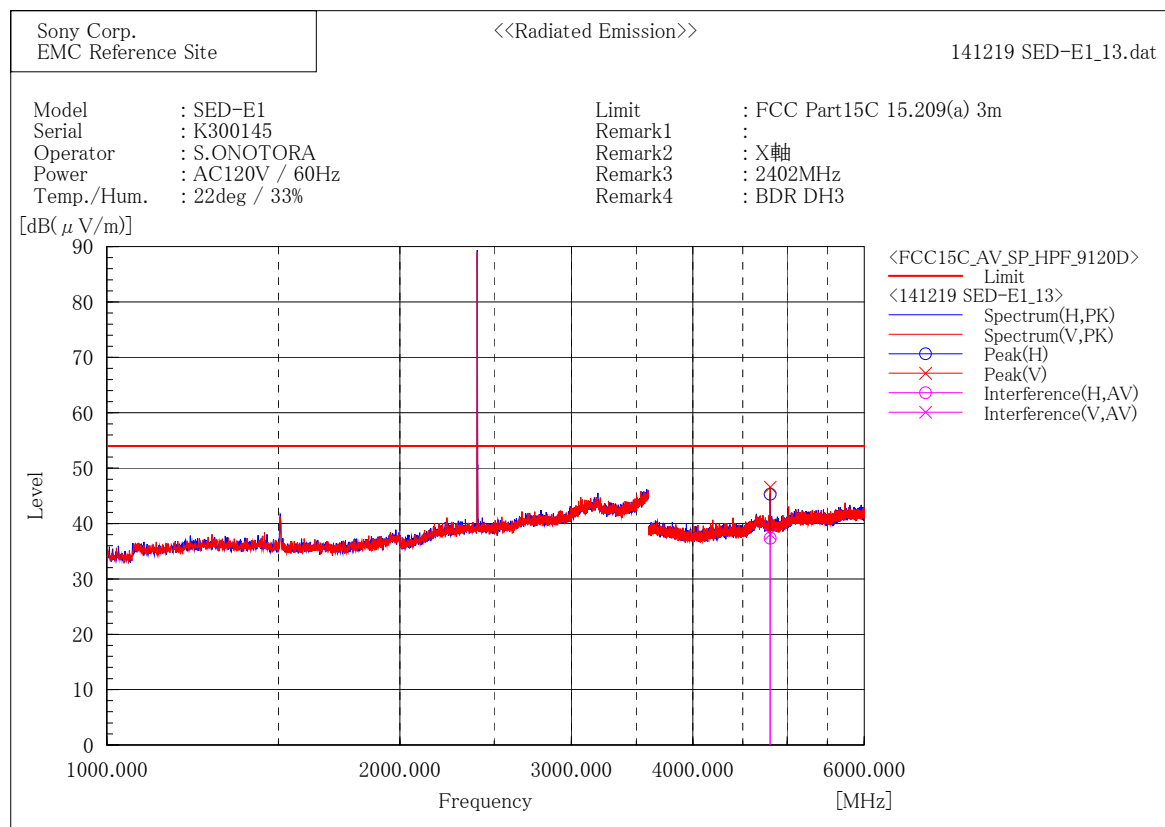
No.	Frequency [MHz]	Reading [dB(μV)]	c. f. [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	252.000	35.9	-8.6	27.3	46.0	18.7	132.9	159.6
2	318.480	35.1	-11.3	23.8	46.0	22.2	100.0	346.6
3	756.040	31.3	-4.6	26.7	46.0	19.3	118.4	179.1

--- 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	72.109	42.5	-21.5	21.0	40.0	19.0	100.0	207.4
2	80.114	42.3	-20.6	21.7	40.0	18.3	103.9	179.0
3	83.749	42.8	-19.9	22.9	40.0	17.1	100.0	204.8

1GHz - 6 GHz

[BDR (DH3) / 2402MHz]



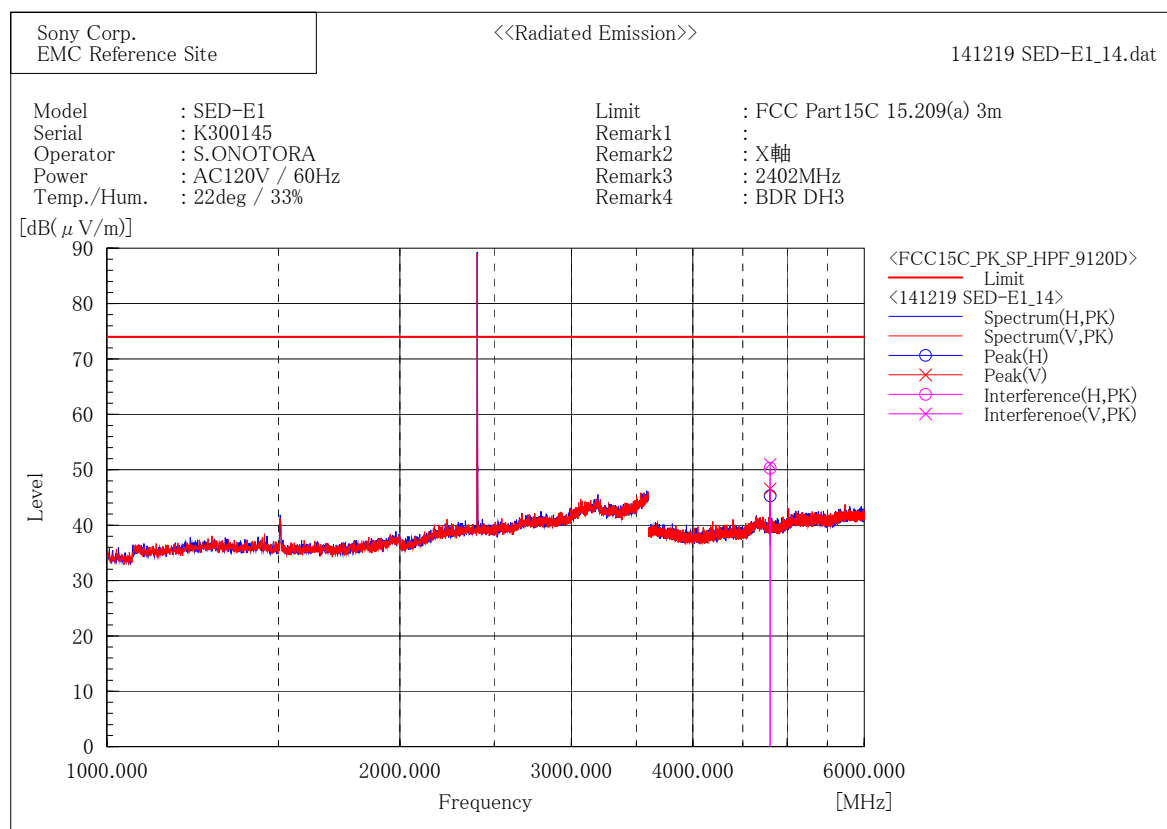
Final Result

--- 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	4803.937	32.4	4.9	37.3	54.0	16.7	375.5	173.8

--- 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	4803.920	33.2	4.9	38.1	54.0	15.9	141.2	69.4



Final Result

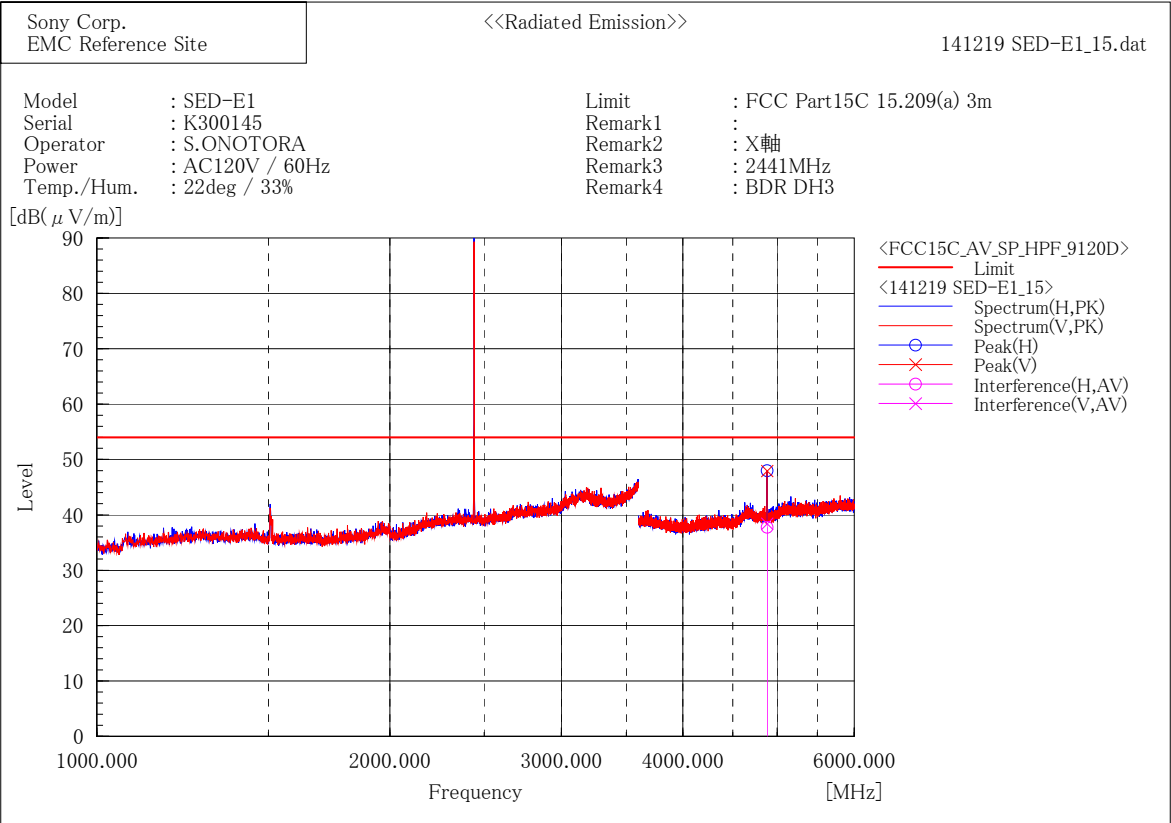
--- Horizontal Polarization (PK)---

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	4803.600	45.4	4.9	50.3	74.0	23.7	375.5	173.8

--- 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	4804.123	46.2	4.9	51.1	74.0	22.9	141.2	69.2

[BDR (DH3) / 2441MHz]



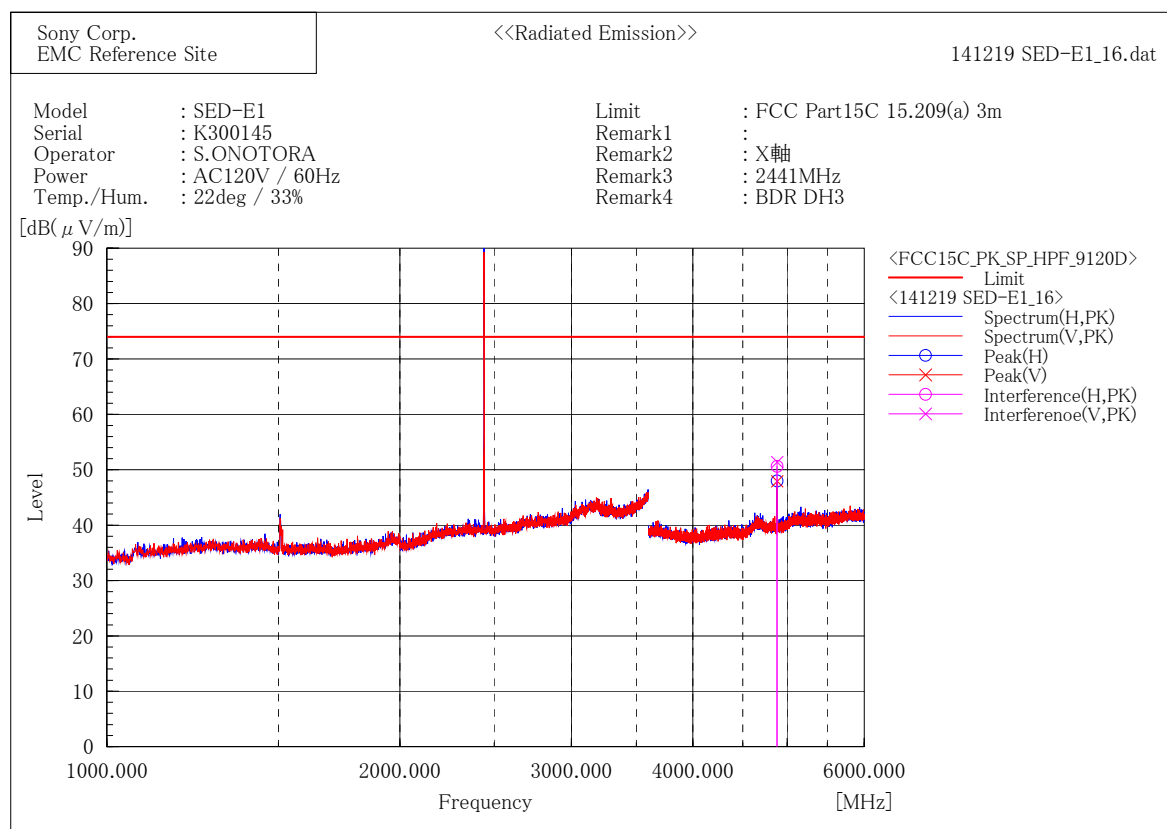
Final Result

--- 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	4881.984	32.9	4.9	37.8	54.0	16.2	225.5	267.0

--- 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	4881.963	33.5	4.9	38.4	54.0	15.6	220.4	47.3



Final Result

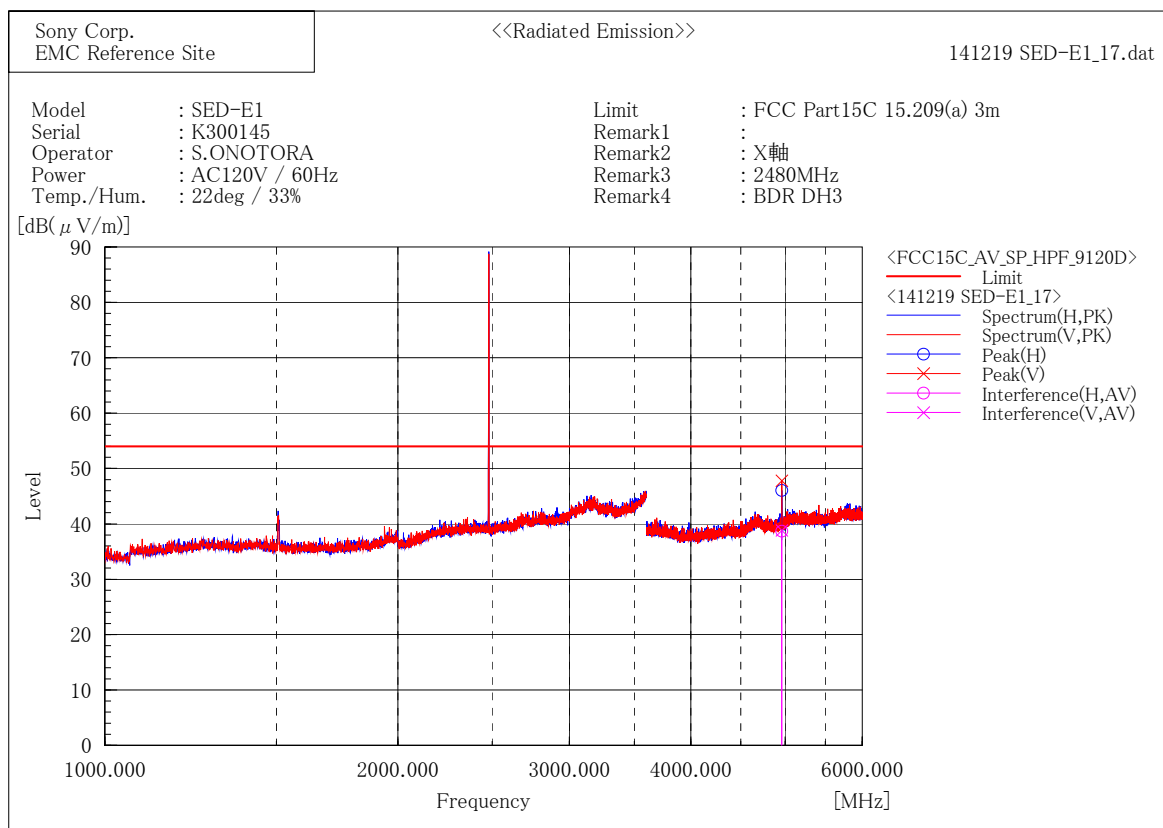
--- Horizontal Polarization (PK)---

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	4881.674	45.7	4.9	50.6	74.0	23.4	225.5	267.0

--- 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	4881.712	46.5	4.9	51.4	74.0	22.6	220.4	47.1

[BDR (DH3) / 2480MHz]



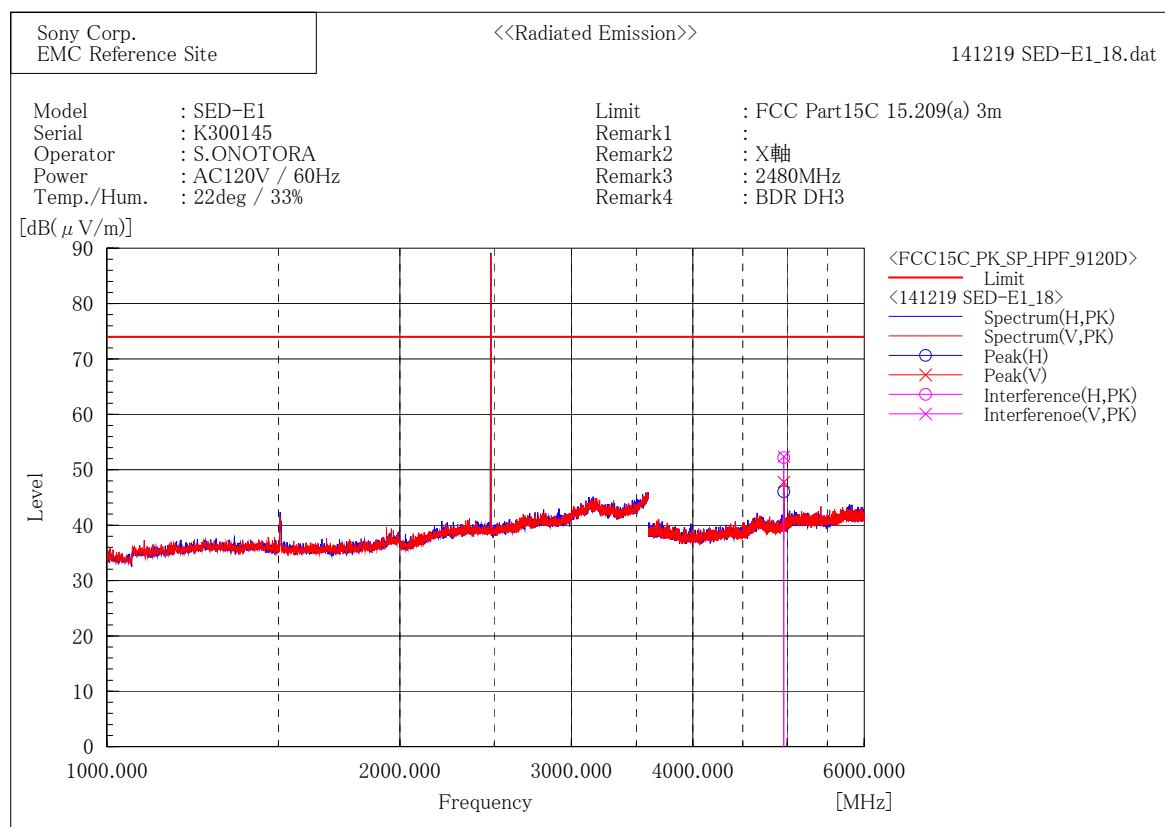
Final Result

--- 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	4959.935	33.5	5.2	38.7	54.0	15.3	344.7	84.7

--- 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	4959.994	33.6	5.2	38.8	54.0	15.2	363.2	181.7



Final Result

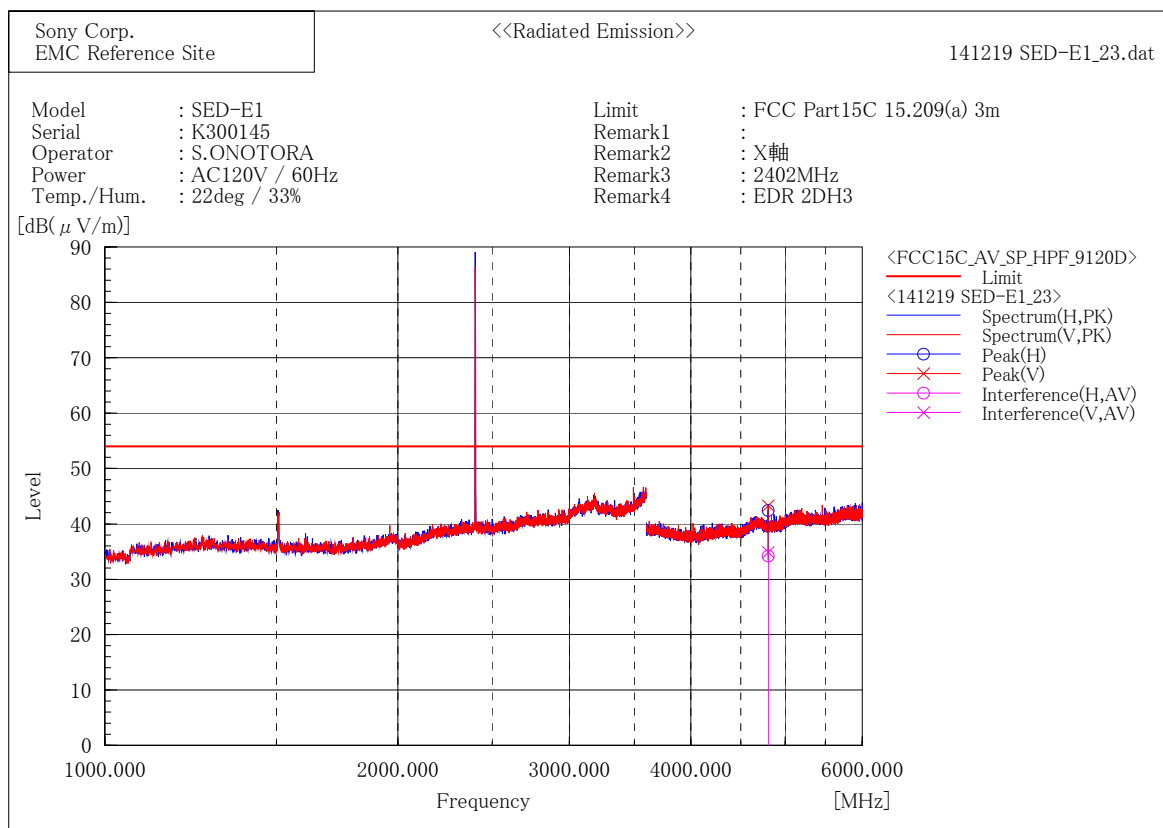
--- Horizontal Polarization (PK)---

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	4959.645	47.0	5.2	52.2	74.0	21.8	344.7	84.7

--- 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	4959.713	47.2	5.2	52.4	74.0	21.6	363.2	181.5

[EDR (2DH3) / 2402MHz]



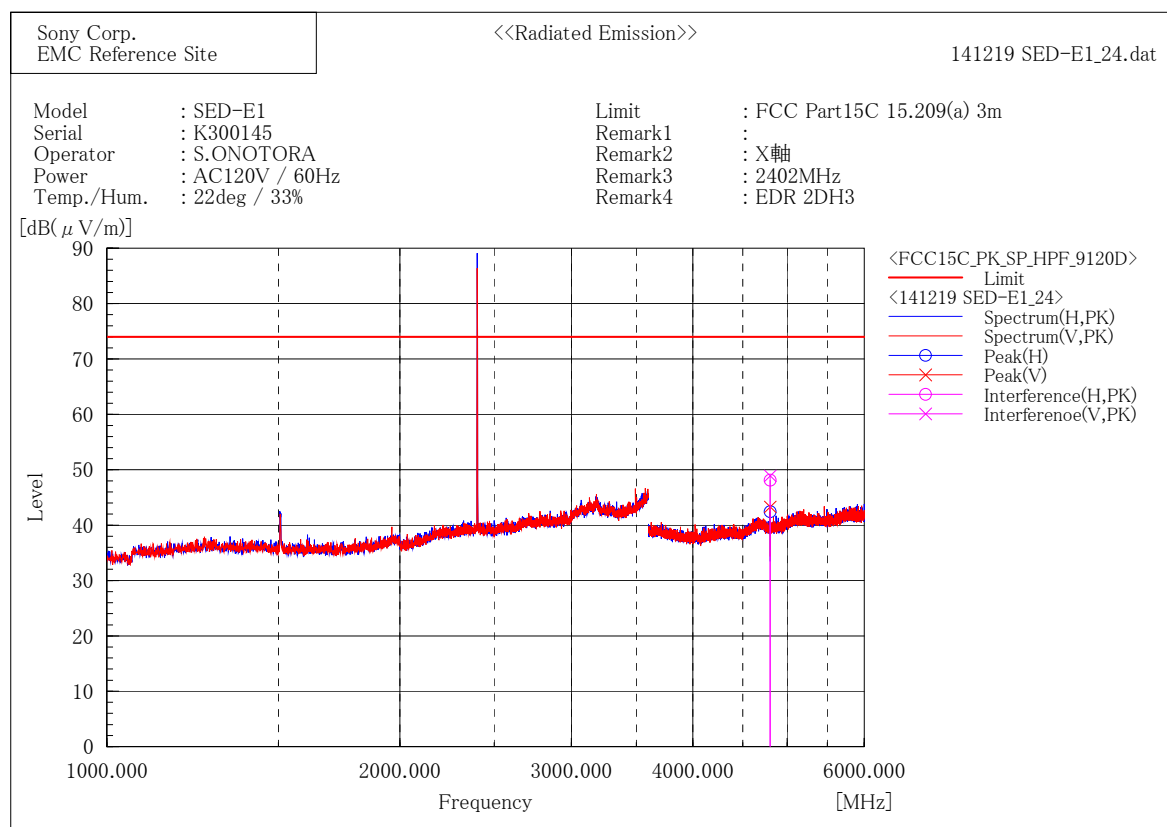
Final Result

--- 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	4803.990	29.3	4.9	34.2	54.0	19.8	381.9	128.4

--- 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	4803.980	30.0	4.9	34.9	54.0	19.1	231.6	67.6



Final Result

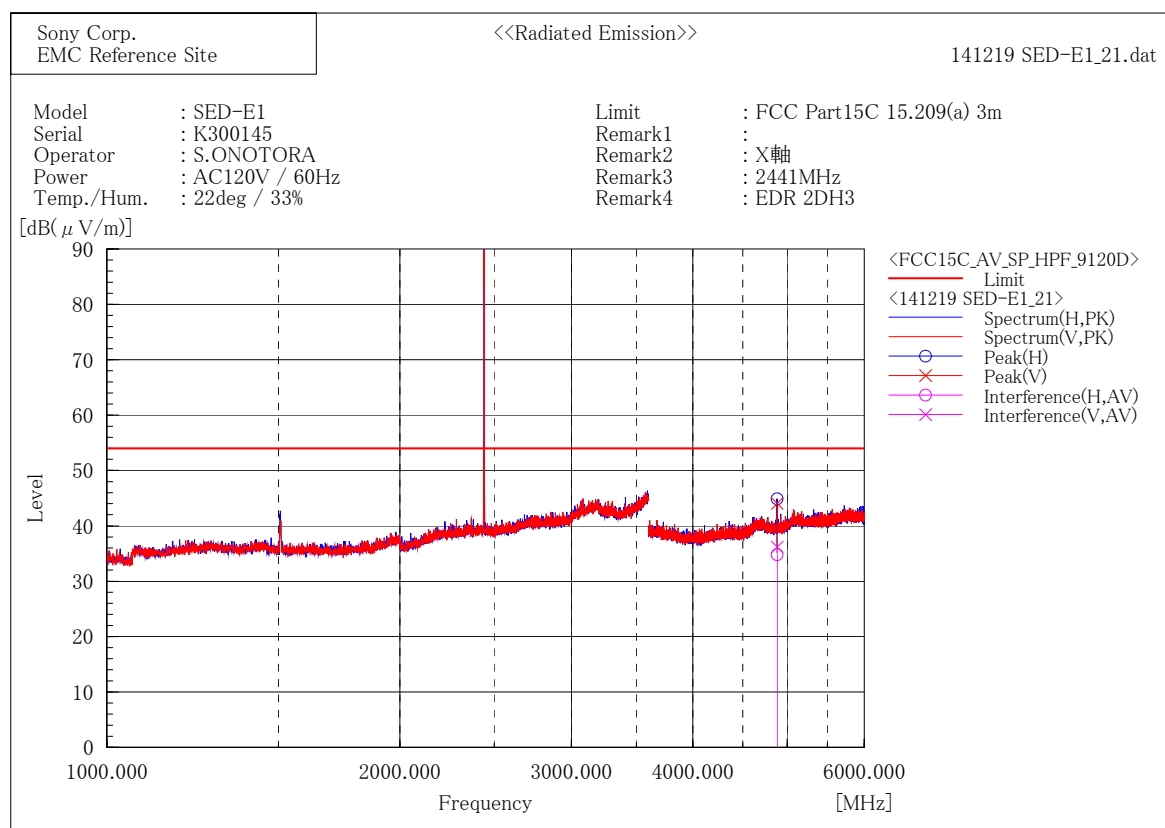
--- Horizontal Polarization (PK)---

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	4804.189	43.2	4.9	48.1	74.0	25.9	381.9	128.4

--- 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	4803.635	44.0	4.9	48.9	74.0	25.1	231.6	67.4

[EDR (2DH3) / 2441MHz]



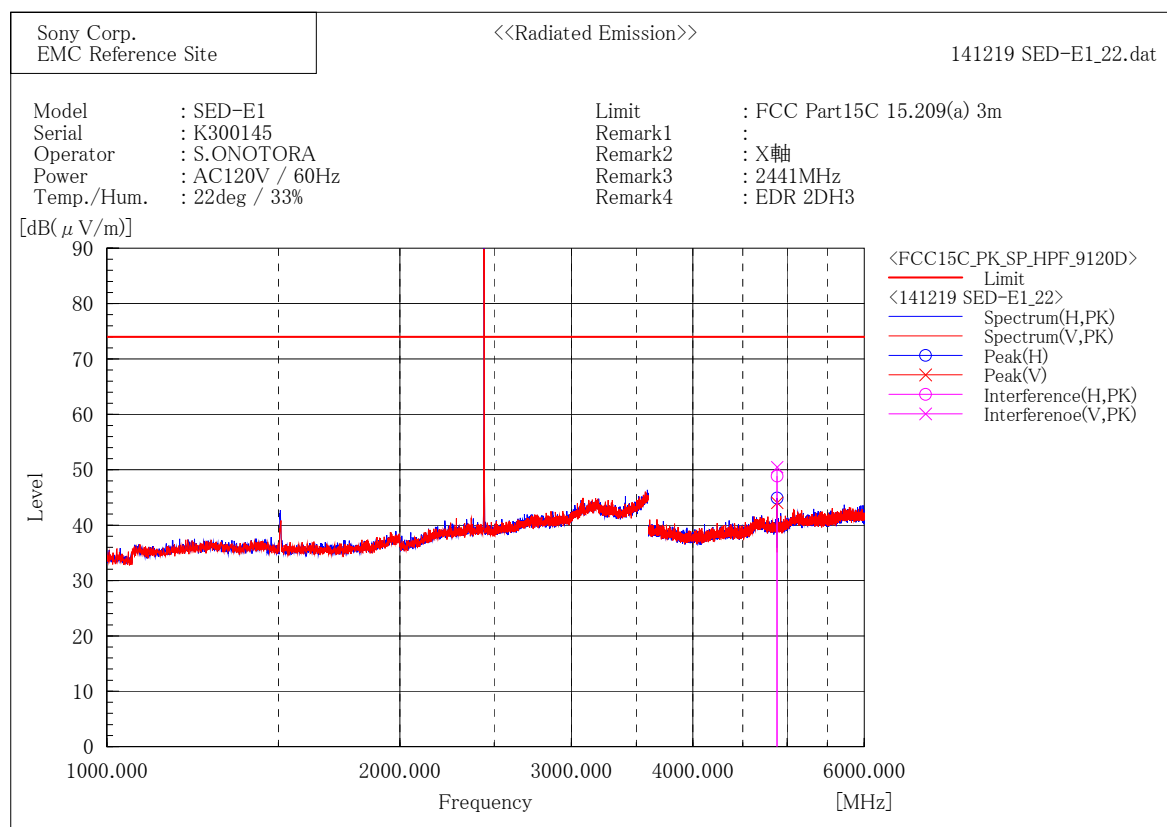
Final Result

--- 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	4882.002	29.9	4.9	34.8	54.0	19.2	253.4	215.4

--- 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	4881.957	31.3	4.9	36.2	54.0	17.8	346.3	214.8



Final Result

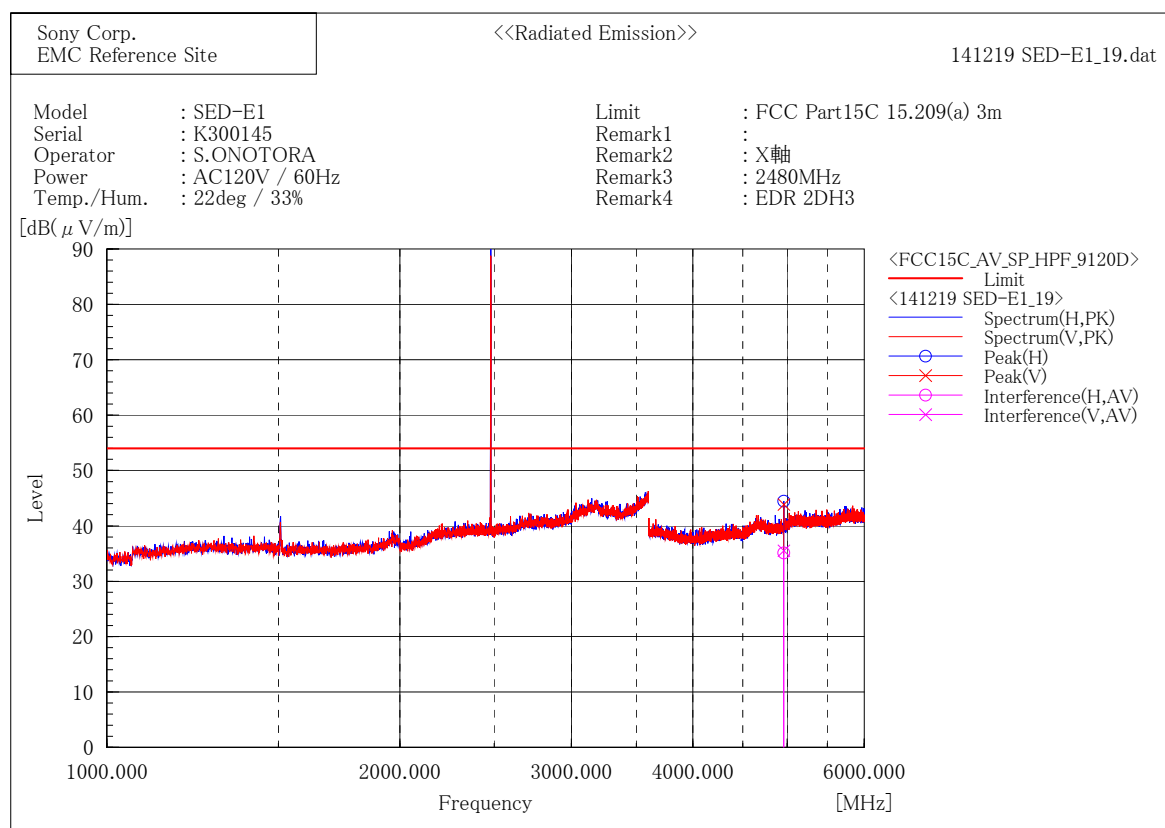
--- Horizontal Polarization (PK)---

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	4882.277	43.9	4.9	48.8	74.0	25.2	253.4	215.4

--- 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	4882.107	45.6	4.9	50.5	74.0	23.5	346.3	214.6

[EDR (2DH3) / 2480MHz]



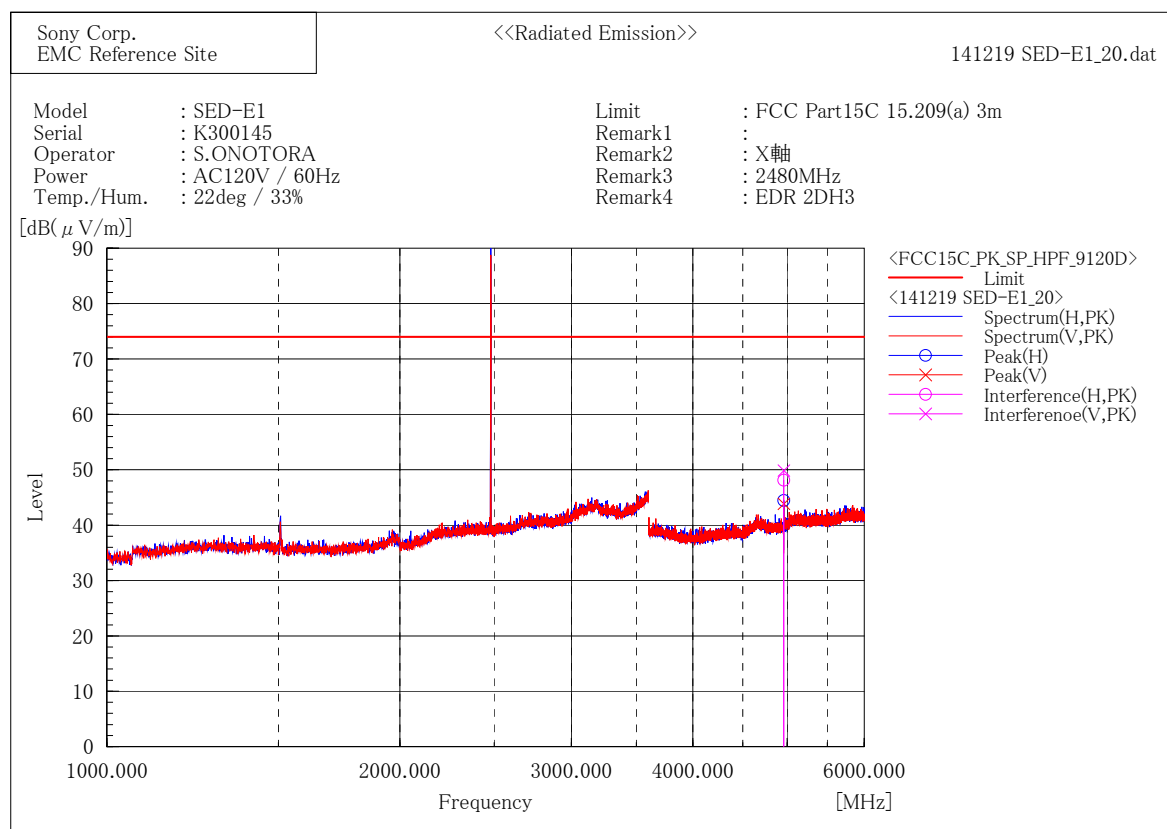
Final Result

--- 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	4959.967	29.9	5.2	35.1	54.0	18.9	366.8	272.0

--- 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	4959.952	30.3	5.2	35.5	54.0	18.5	333.3	215.6



Final Result

--- Horizontal Polarization (PK)---

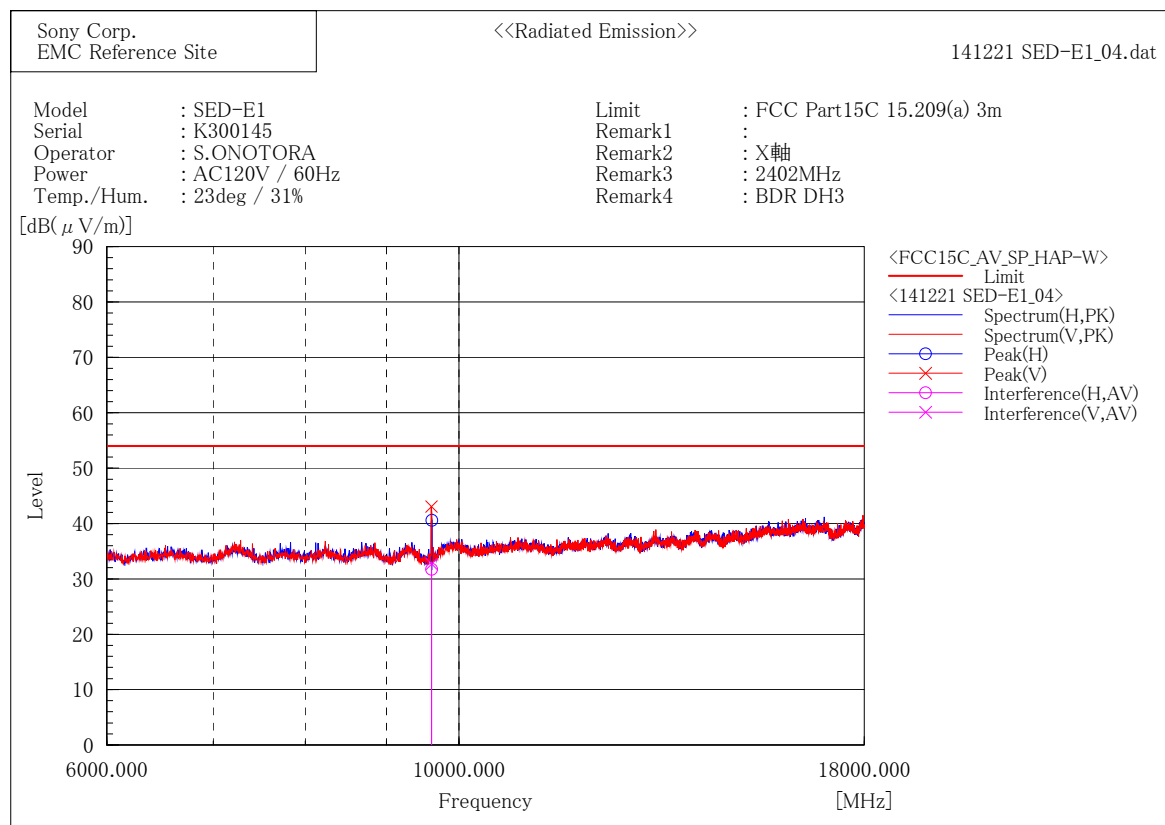
No.	Frequency [MHz]	Reading [dB(μV)]	c. f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	4959.655	42.9	5.2	48.1	74.0	25.9	366.8	272.0

--- 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	4960.226	44.7	5.2	49.9	74.0	24.1	333.3	215.4

6 GHz - 18 GHz

[BDR (DH3) / 2402MHz]



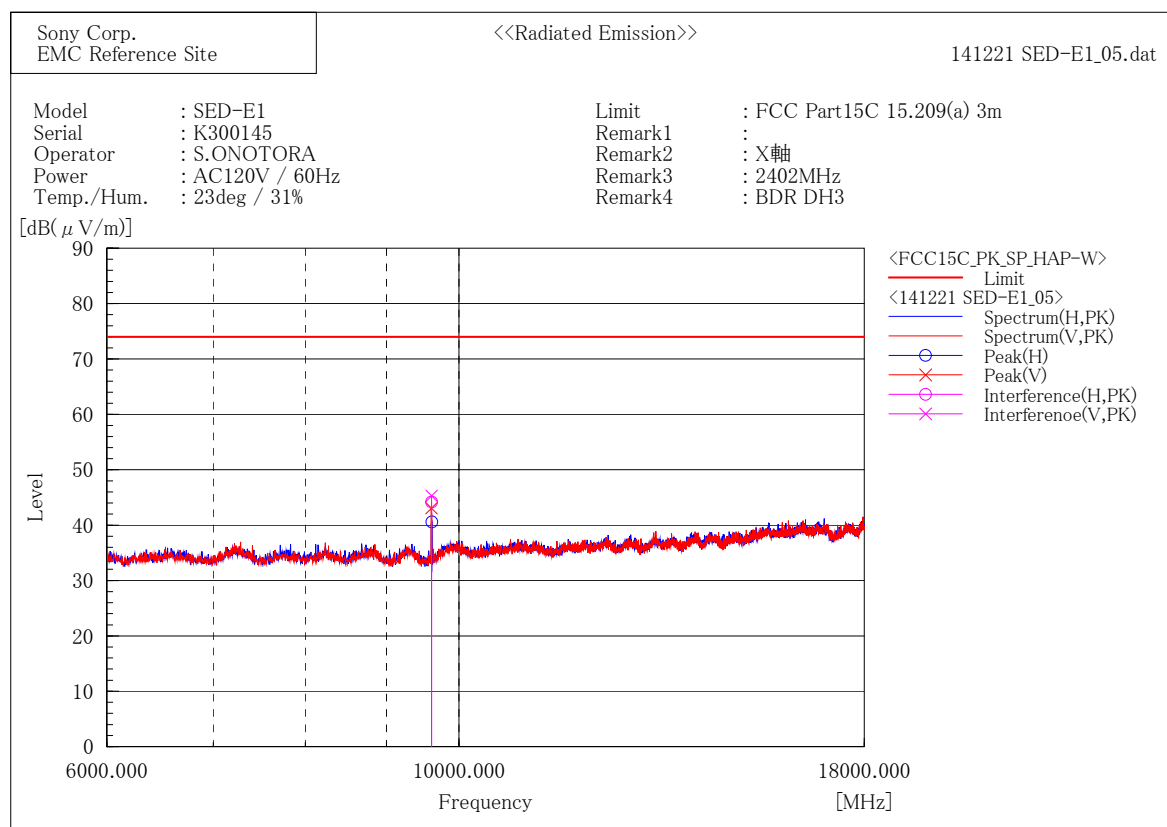
Final Result

--- 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	9609.934	39.0	-7.3	31.7	54.0	22.3	100.0	209.5

--- 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	9609.905	40.0	-7.3	32.7	54.0	21.3	114.0	222.7



Final Result

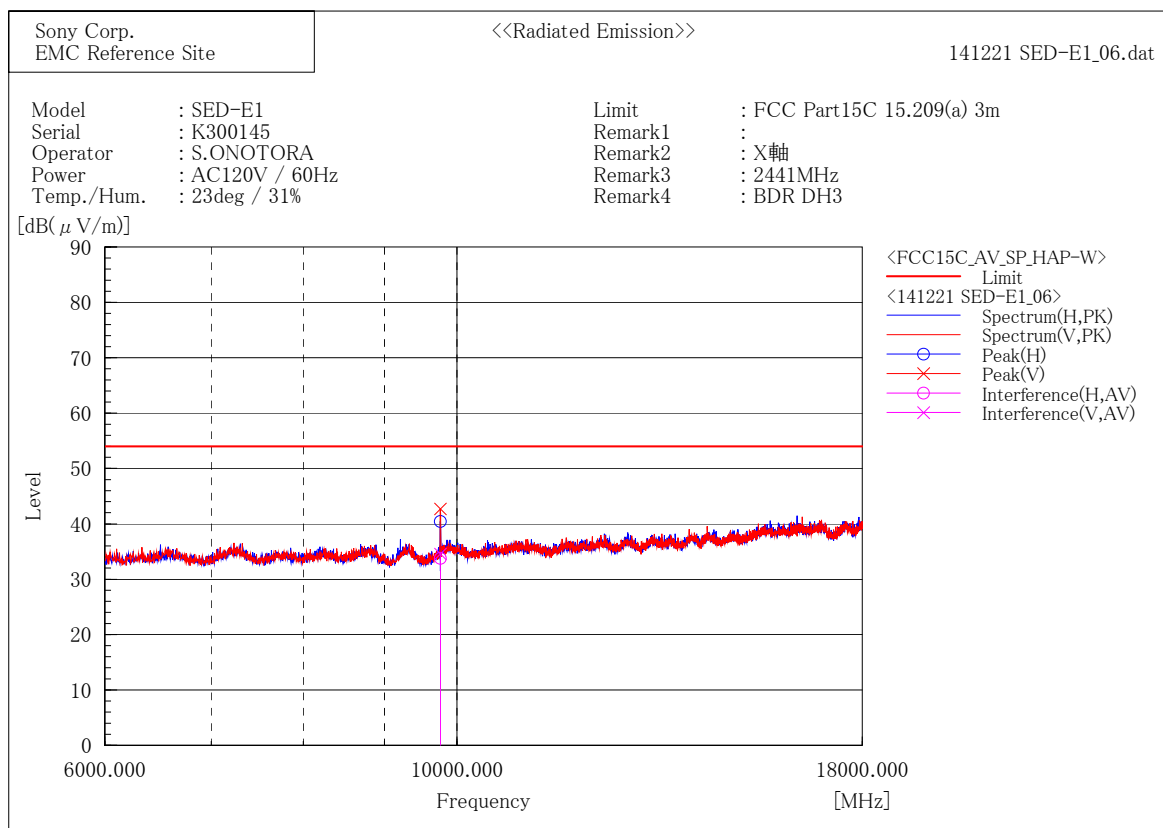
--- Horizontal Polarization (PK)---

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	9609.809	51.5	-7.3	44.2	74.0	29.8	100.0	209.5

--- 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	9609.814	52.6	-7.3	45.3	74.0	28.7	114.0	222.5

[BDR (DH3) / 2441MHz]



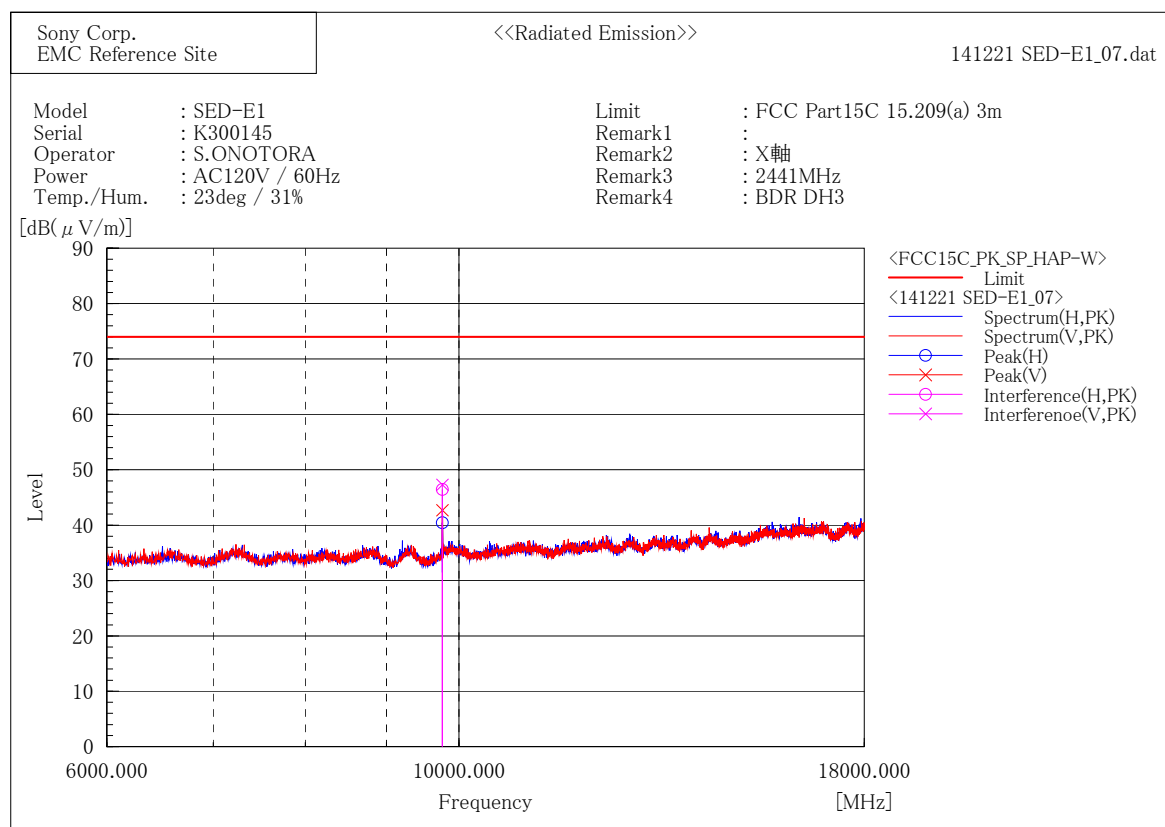
Final Result

--- 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	9761.931	40.9	-7.1	33.8	54.0	20.2	111.5	201.3

--- 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	9761.959	41.7	-7.1	34.6	54.0	19.4	367.6	211.7



Final Result

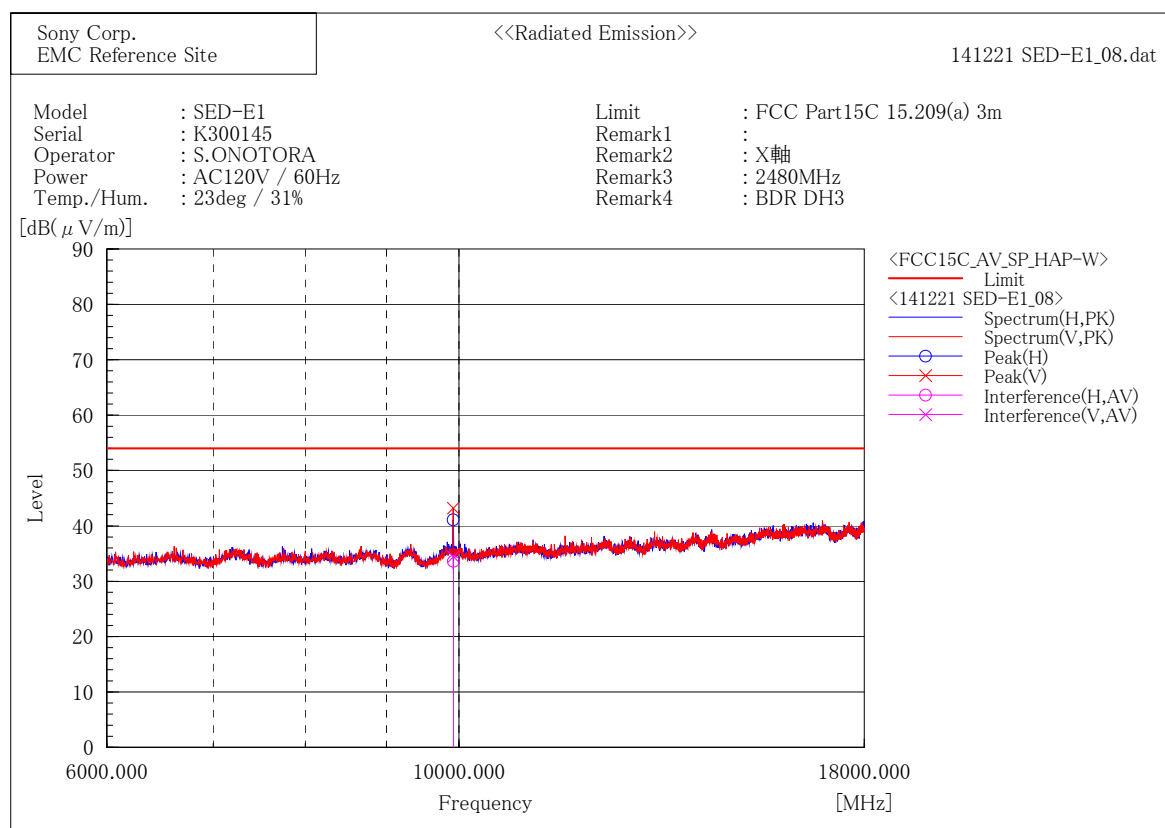
--- Horizontal Polarization (PK)---

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	9761.873	53.6	-7.1	46.5	74.0	27.5	111.5	201.3

--- 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	9761.944	54.4	-7.1	47.3	74.0	26.7	367.6	211.7

[BDR (DH3) / 2480MHz]



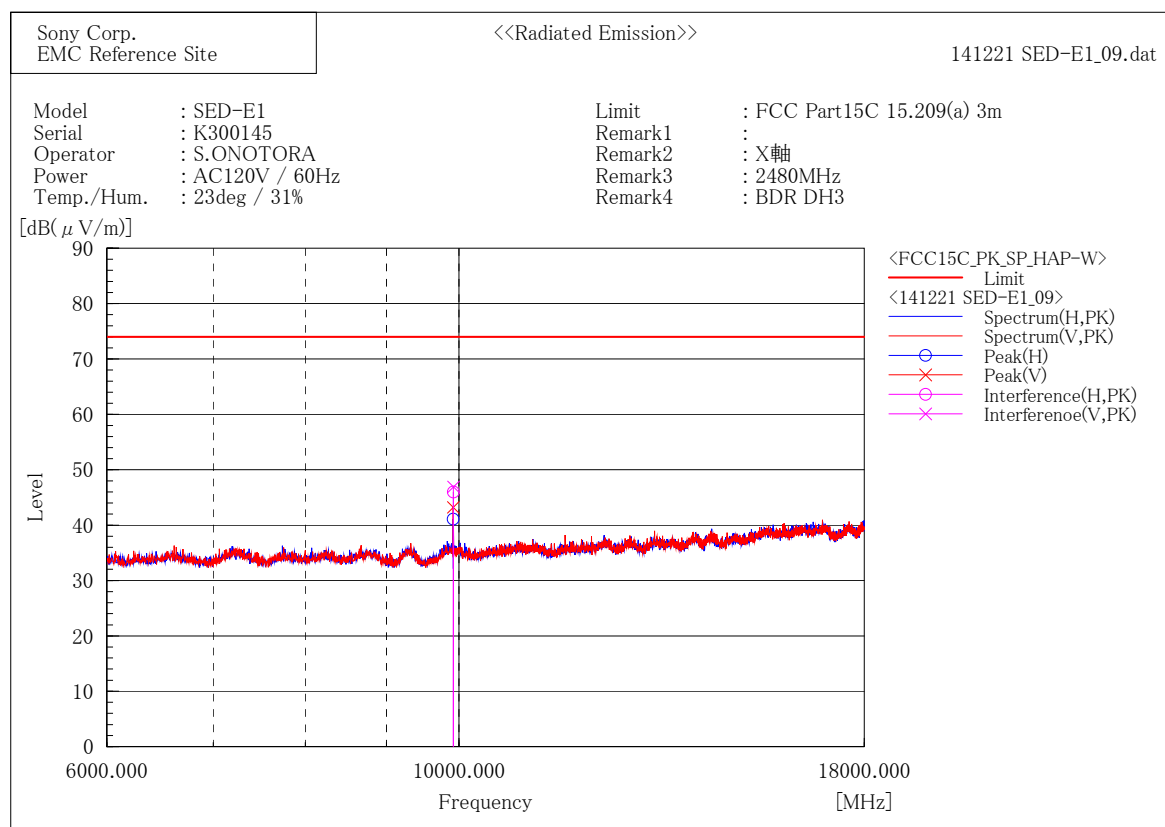
Final Result

--- 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	9917.908	40.2	-6.6	33.6	54.0	20.4	201.2	190.2

--- 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	9917.925	41.0	-6.6	34.4	54.0	19.6	361.3	190.4



Final Result

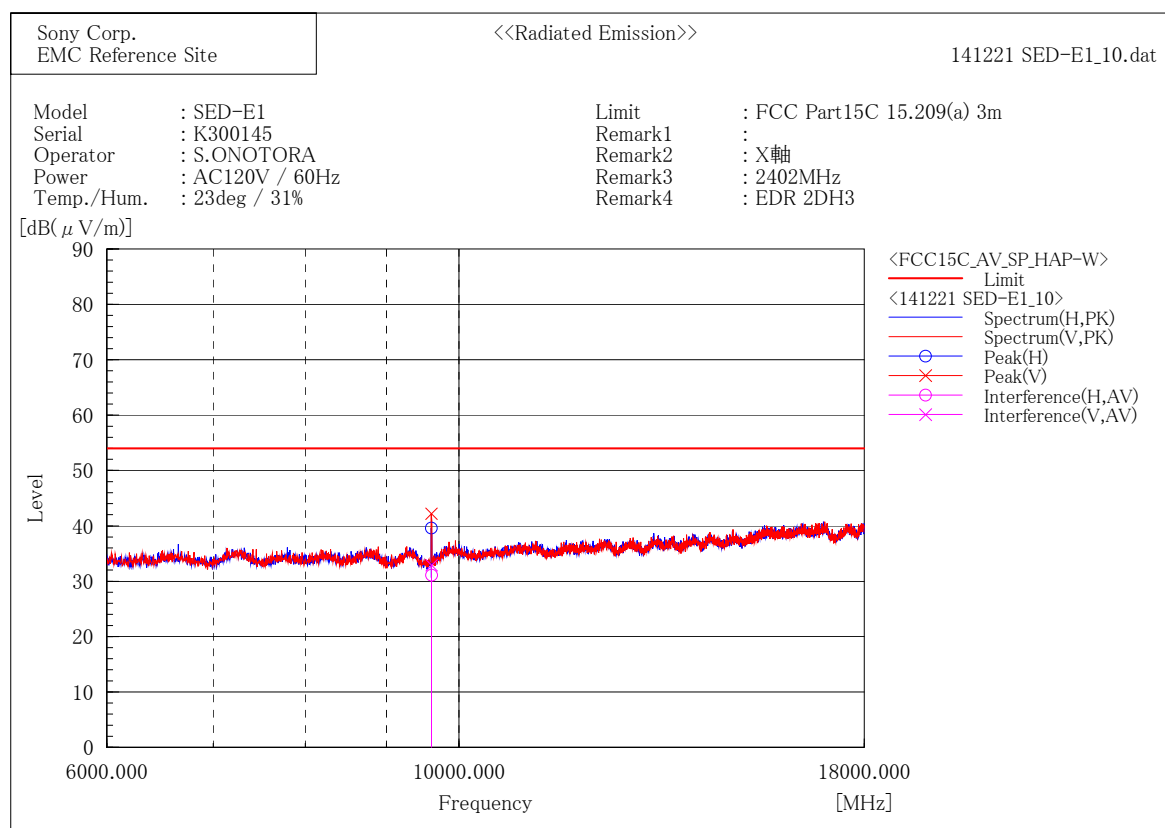
--- Horizontal Polarization (PK)---

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	9917.771	52.6	-6.6	46.0	74.0	28.0	201.2	190.2

--- 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	9917.723	53.5	-6.6	46.9	74.0	27.1	361.3	190.4

[EDR (2DH3) / 2402MHz]



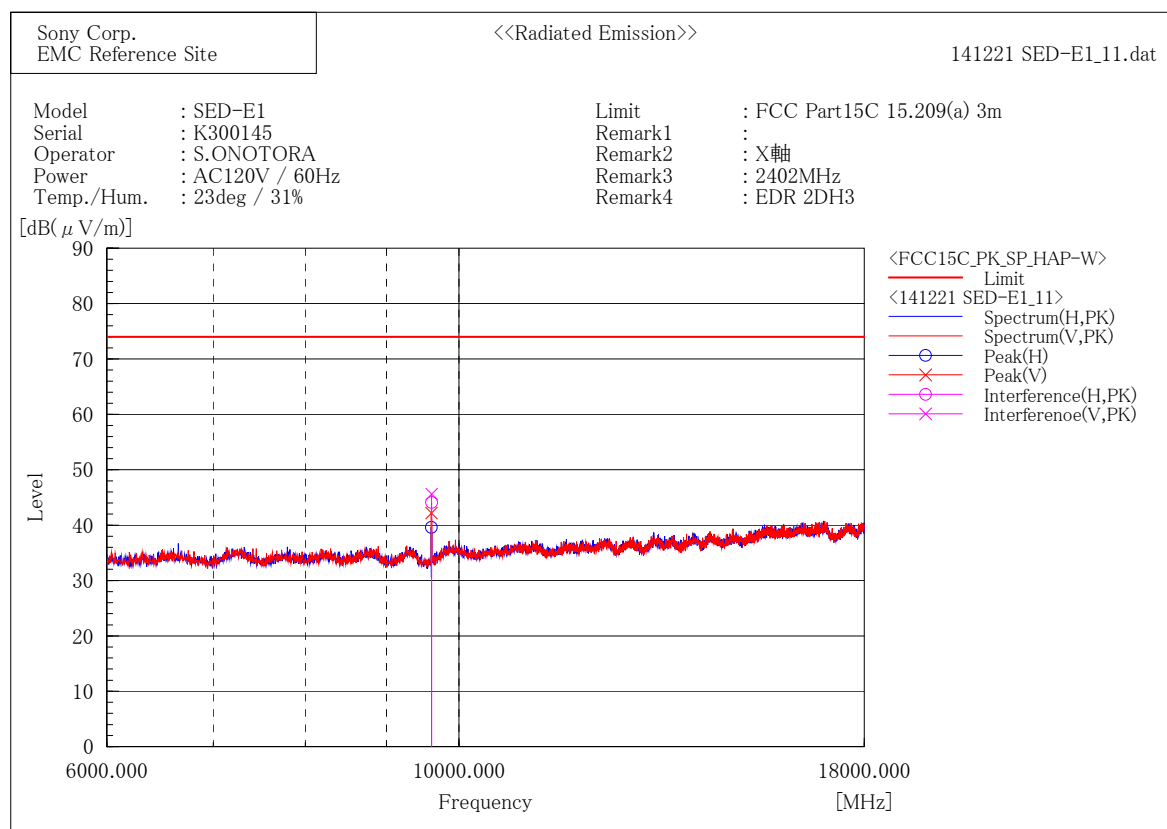
Final Result

--- 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	9609.962	38.4	-7.3	31.1	54.0	22.9	240.2	133.2

--- 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	9609.924	40.2	-7.3	32.9	54.0	21.1	151.2	218.5



Final Result

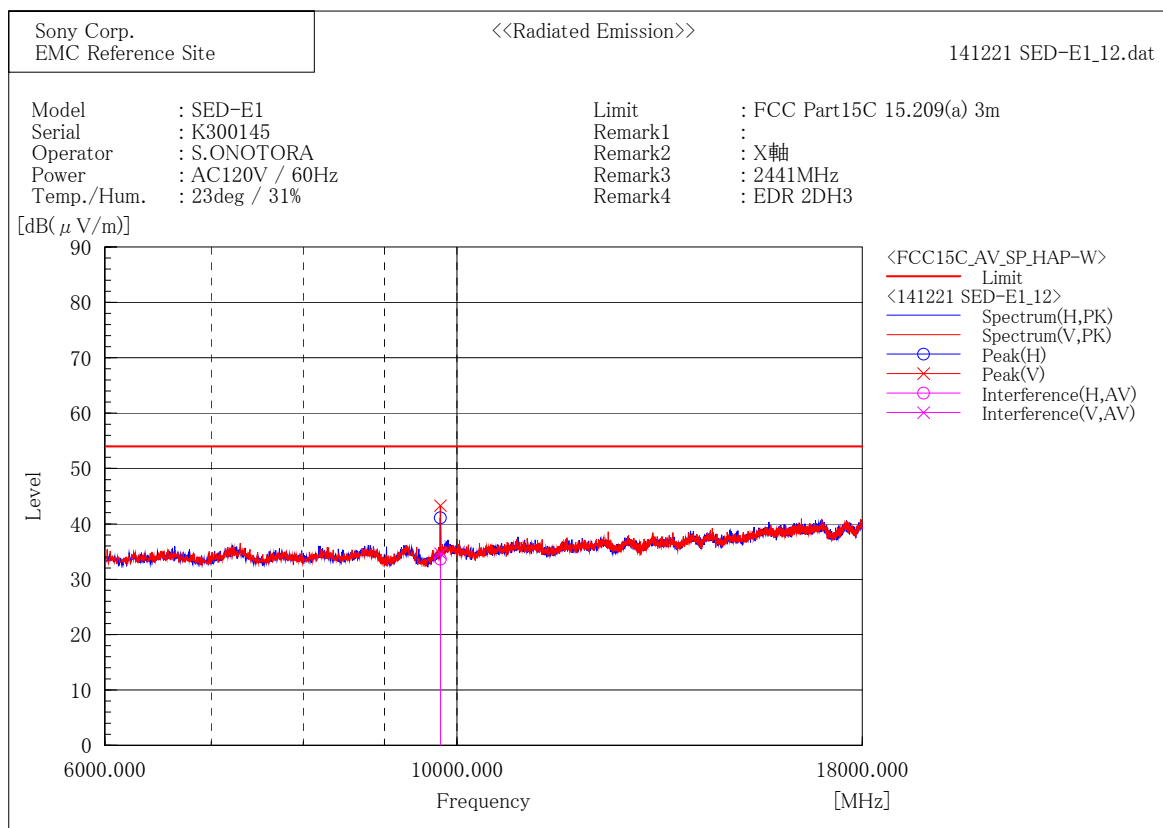
--- Horizontal Polarization (PK)---

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	9609.980	51.4	-7.3	44.1	74.0	29.9	240.2	133.2

--- 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	9609.851	52.9	-7.3	45.6	74.0	28.4	151.2	218.5

[EDR (2DH3) / 2441MHz]



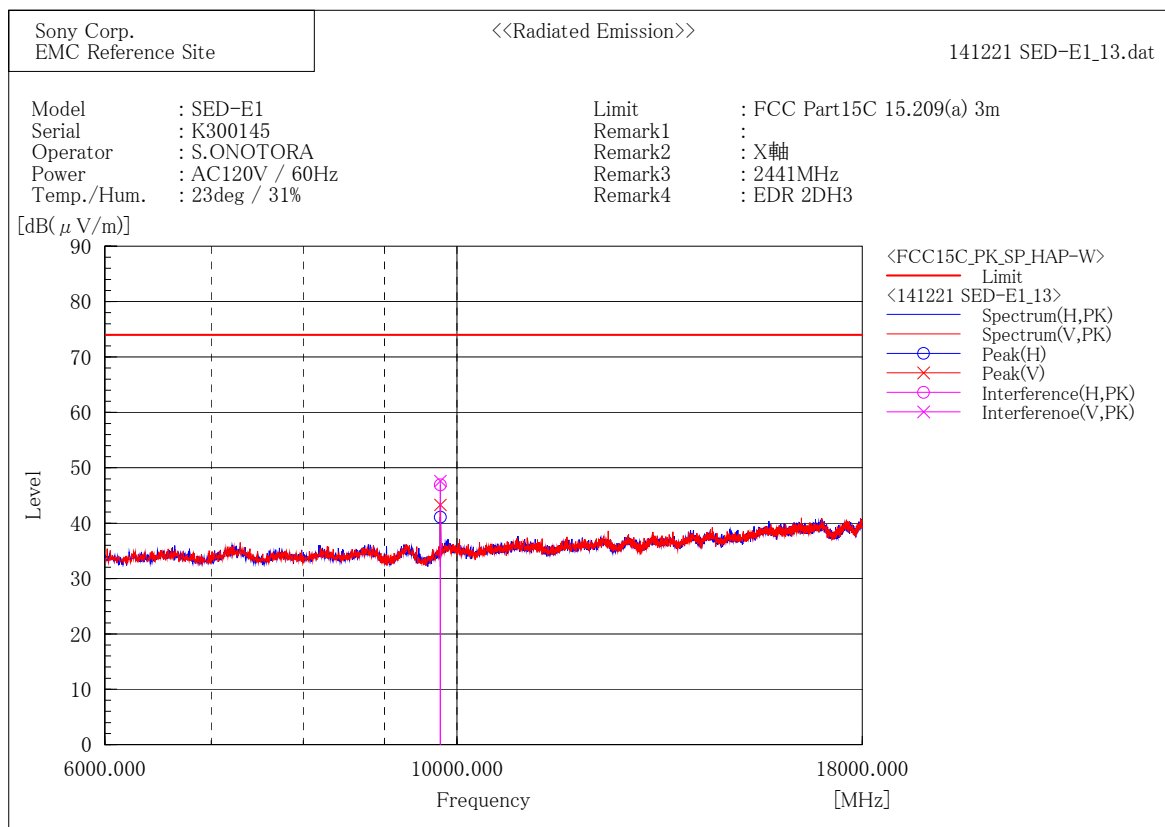
Final Result

--- 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	9761.957	40.7	-7.1	33.6	54.0	20.4	168.1	188.9

--- 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	9761.929	41.8	-7.1	34.7	54.0	19.3	303.0	201.0



Final Result

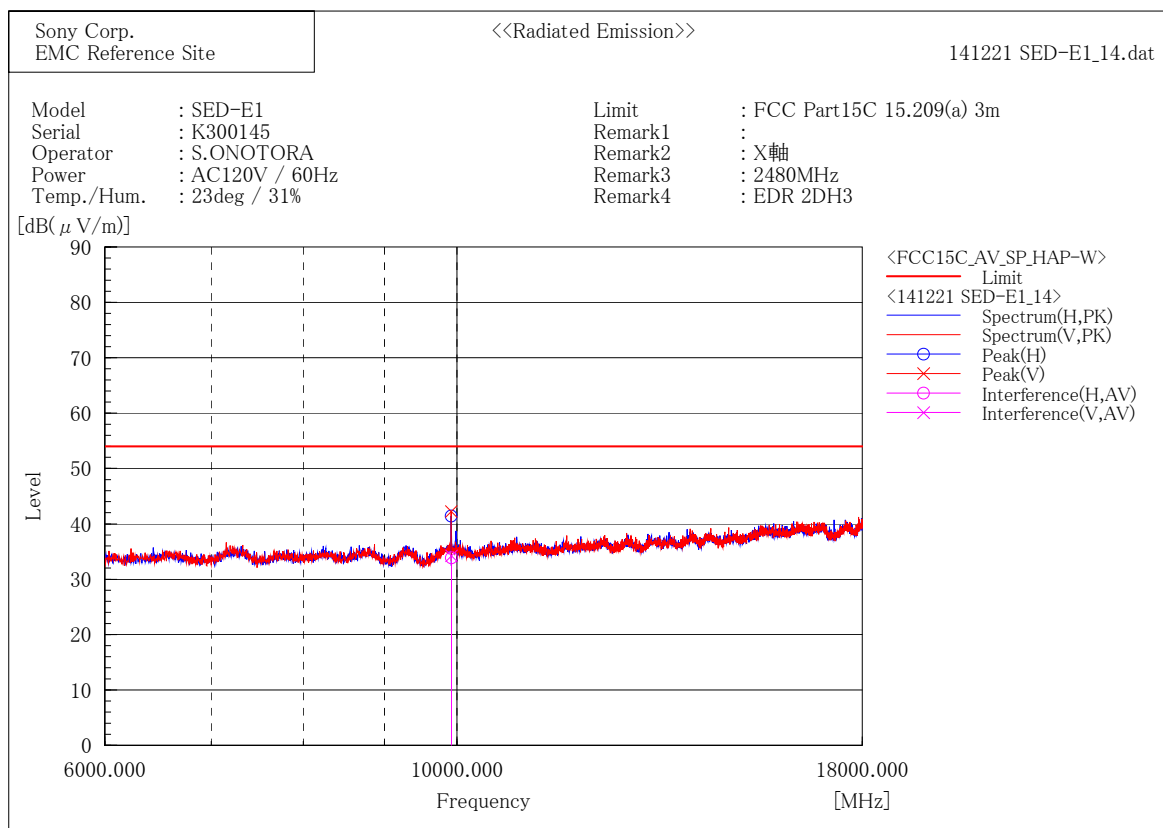
--- Horizontal Polarization (PK)---

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	9761.832	54.0	-7.1	46.9	74.0	27.1	168.1	188.9

--- 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	9761.940	54.7	-7.1	47.6	74.0	26.4	303.0	201.0

[EDR (2DH3) / 2480MHz]



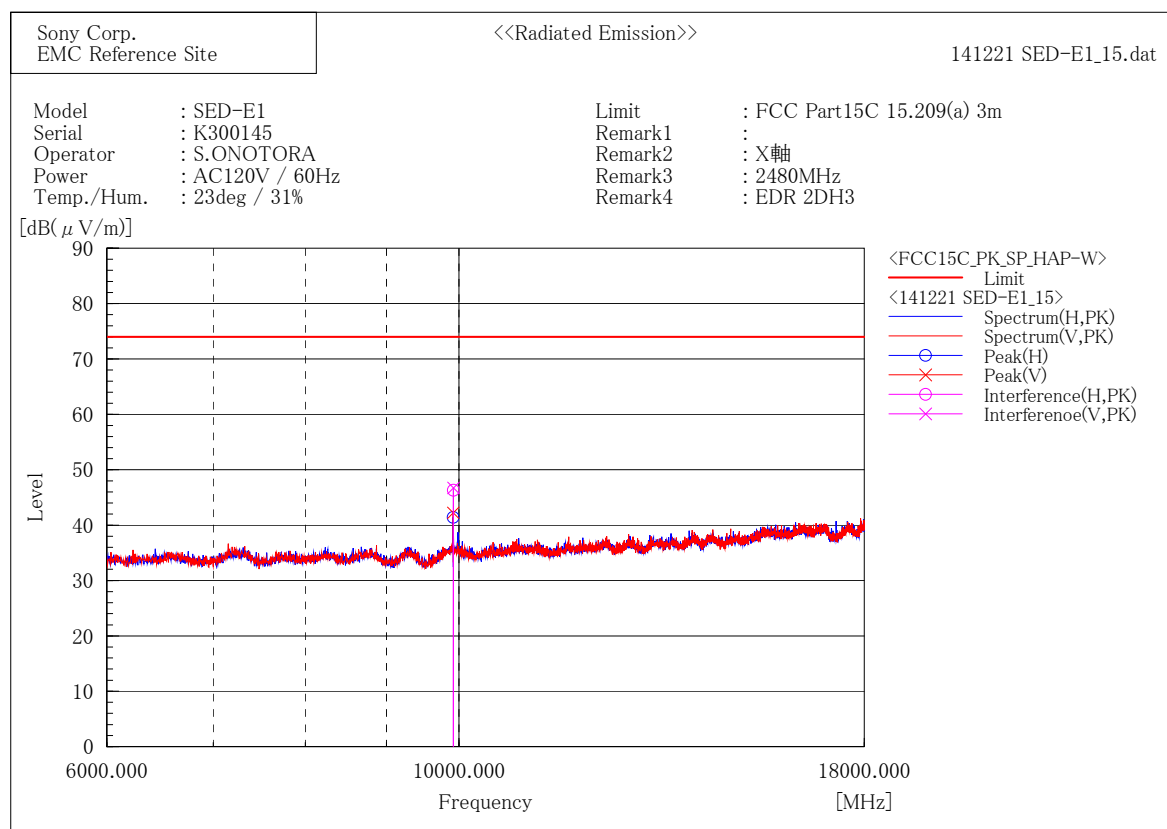
Final Result

--- 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	9917.883	40.5	-6.6	33.9	54.0	20.1	194.8	215.5

--- 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	9917.936	40.9	-6.6	34.3	54.0	19.7	215.2	208.9



Final Result

--- Horizontal Polarization (PK)---

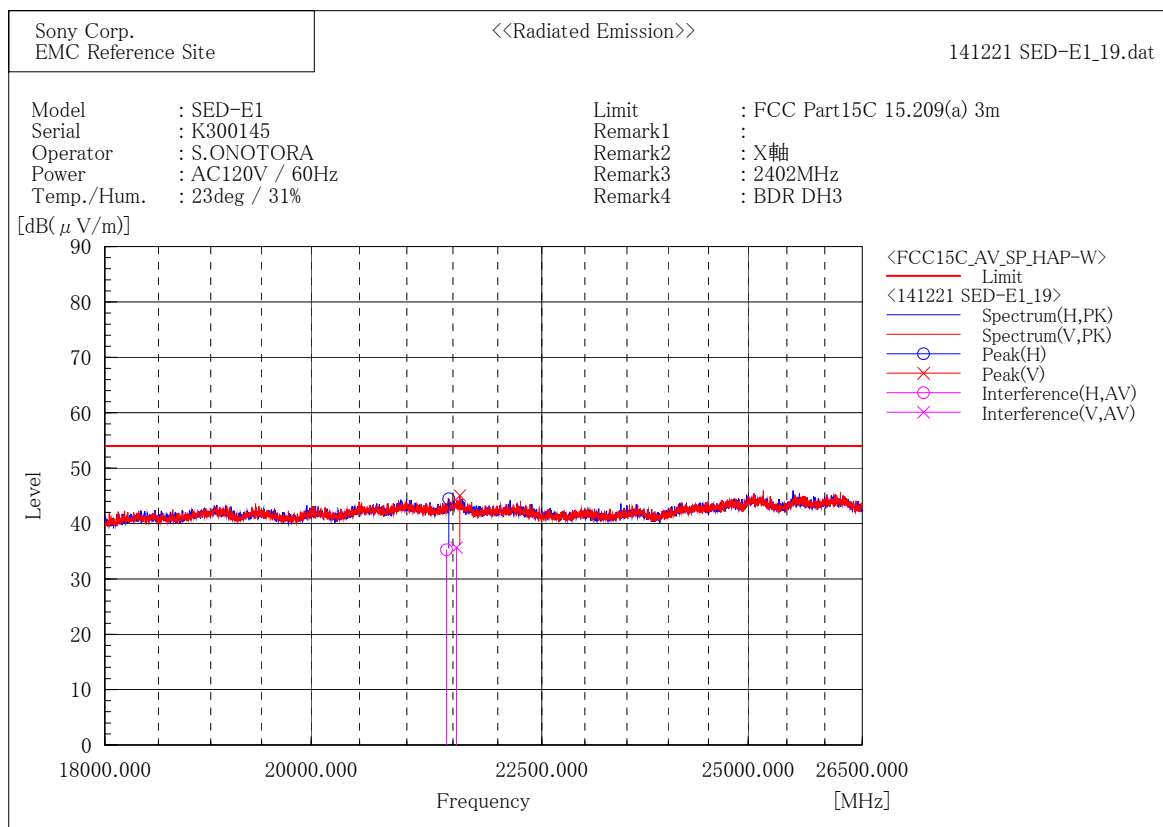
No.	Frequency [MHz]	Reading [dB(μV)]	c. f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	9918.157	52.9	-6.6	46.3	74.0	27.7	194.8	215.5

--- 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	9917.730	53.3	-6.6	46.7	74.0	27.3	215.2	208.9

18 GHz - 26 GHz

[BDR (DH3) / 2402MHz]



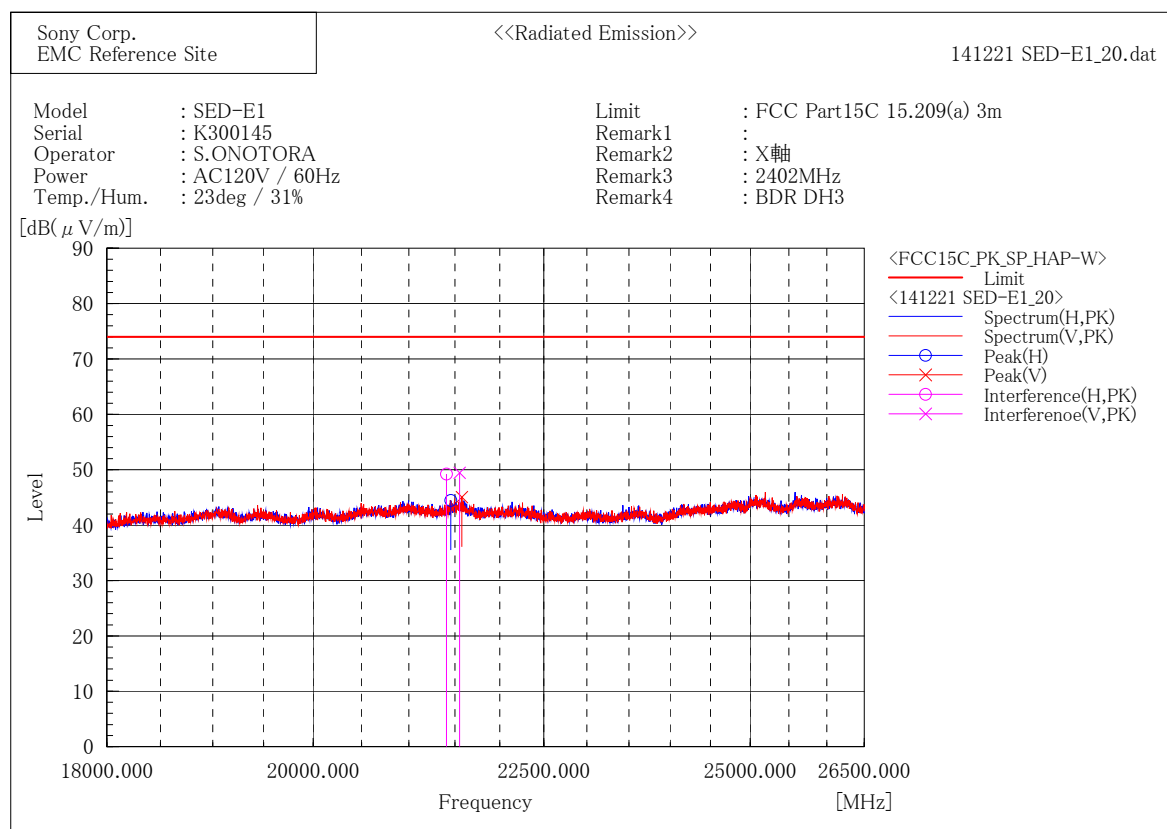
Final Result

--- 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	21430.418	35.6	-0.3	35.3	54.0	18.7	201.0	35.1

--- 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	21541.054	36.2	-0.5	35.7	54.0	18.3	258.7	256.7



Final Result

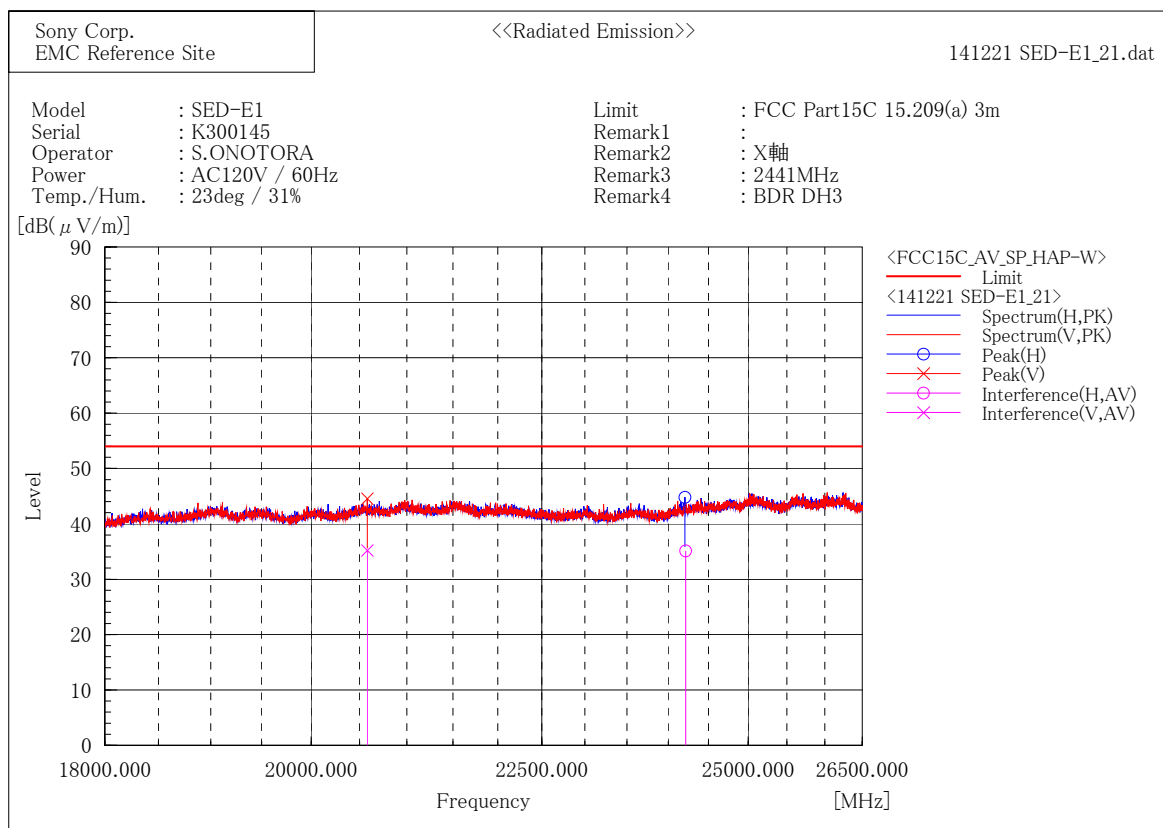
--- Horizontal Polarization (PK)---

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	21407.992	49.5	-0.3	49.2	74.0	24.8	201.0	35.1

--- 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	21552.560	49.9	-0.5	49.4	74.0	24.6	258.7	256.7

[BDR (DH3) / 2441MHz]



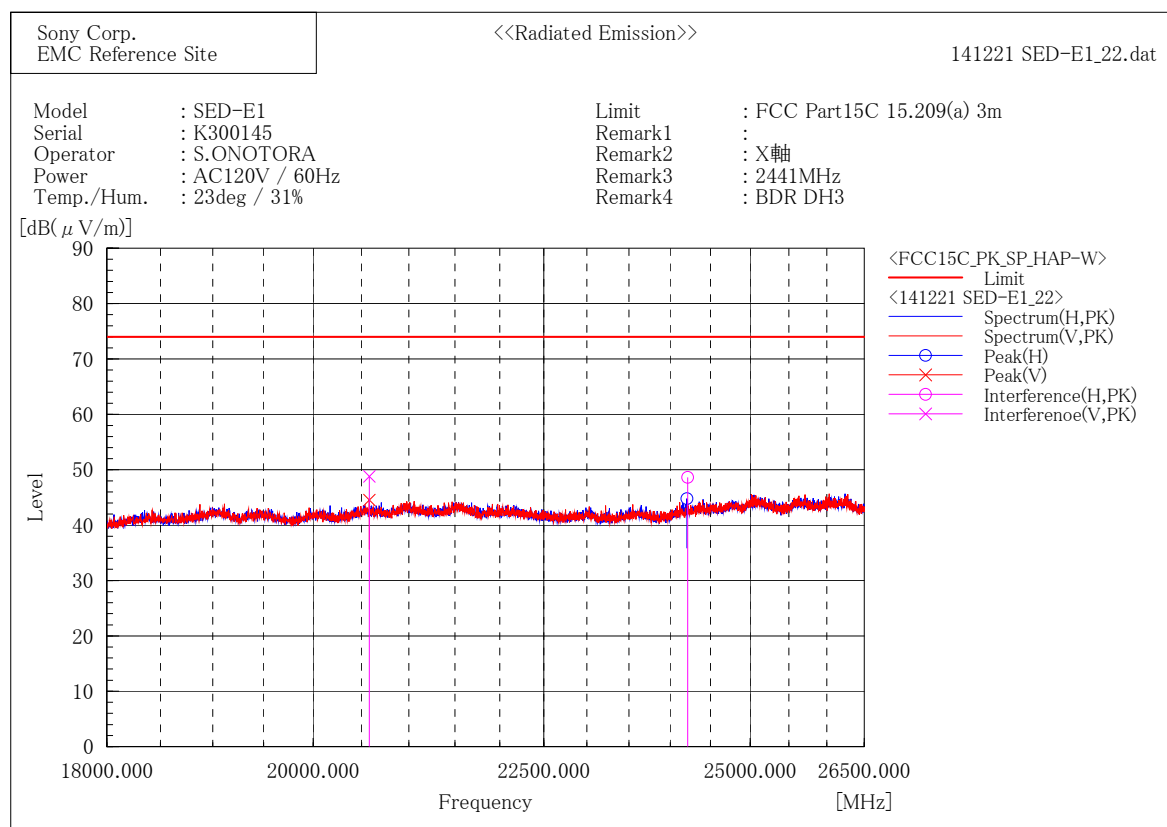
Final Result

--- 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	24213.488	37.0	-1.9	35.1	54.0	18.9	221.1	231.0

--- 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	20582.096	35.3	-0.1	35.2	54.0	18.8	371.8	38.8



Final Result

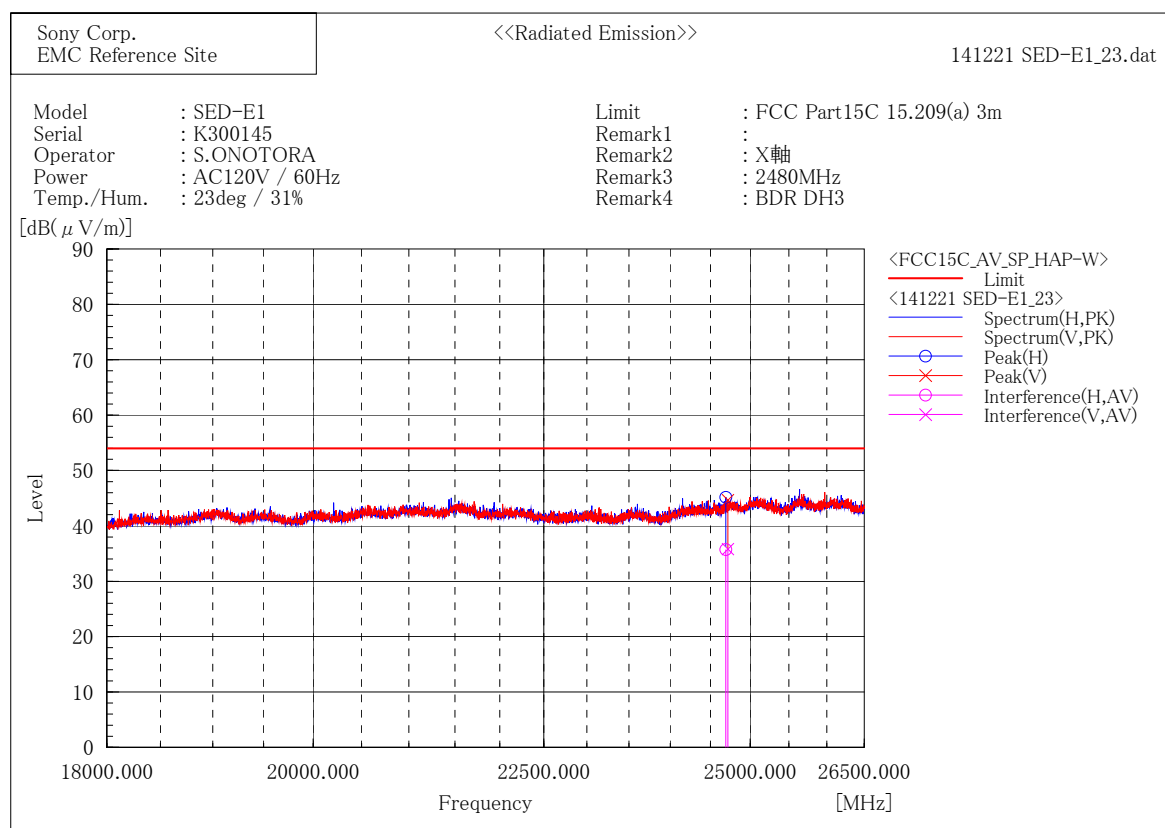
--- Horizontal Polarization (PK)---

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	24213.908	50.6	-1.9	48.7	74.0	25.3	221.1	231.0

--- 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	20582.600	48.9	-0.1	48.8	74.0	25.2	371.8	38.8

[BDR (DH3) / 2480MHz]



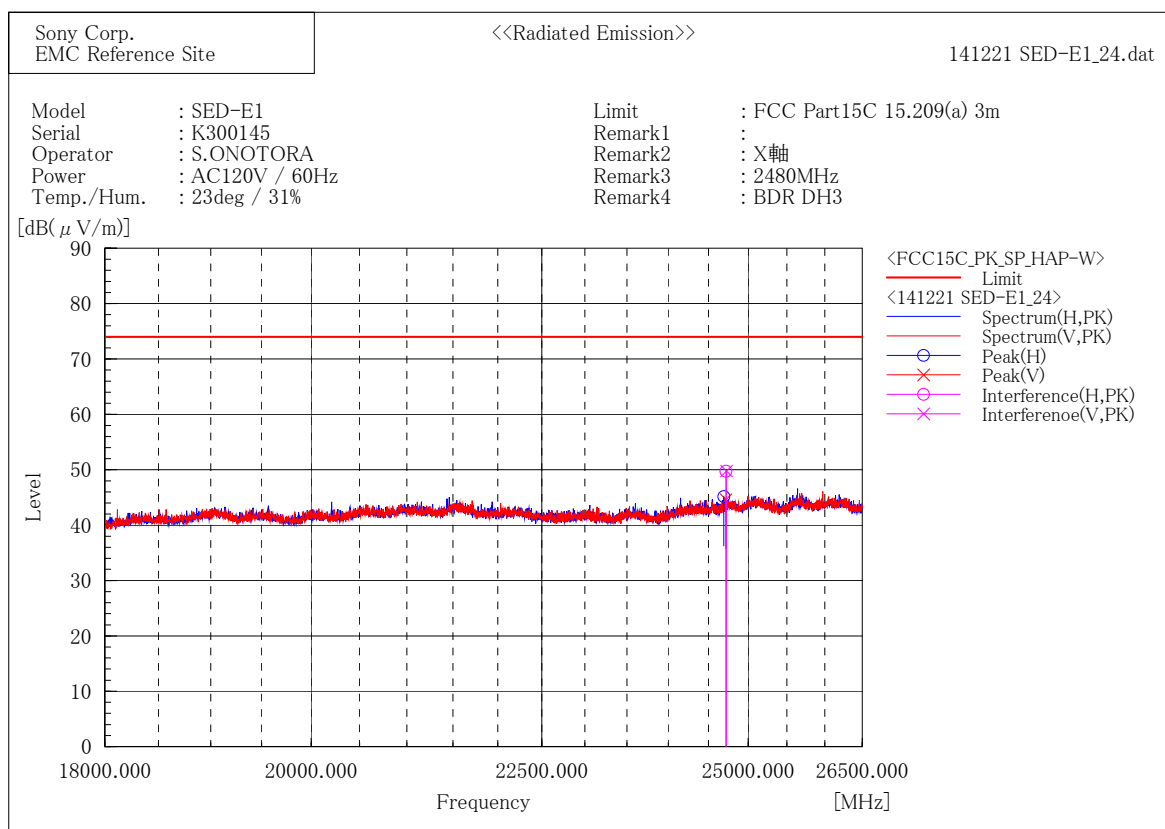
Final Result

--- 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	24693.200	37.3	-1.6	35.7	54.0	18.3	318.1	139.9

--- 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	24717.542	37.4	-1.6	35.8	54.0	18.2	125.5	302.4



Final Result

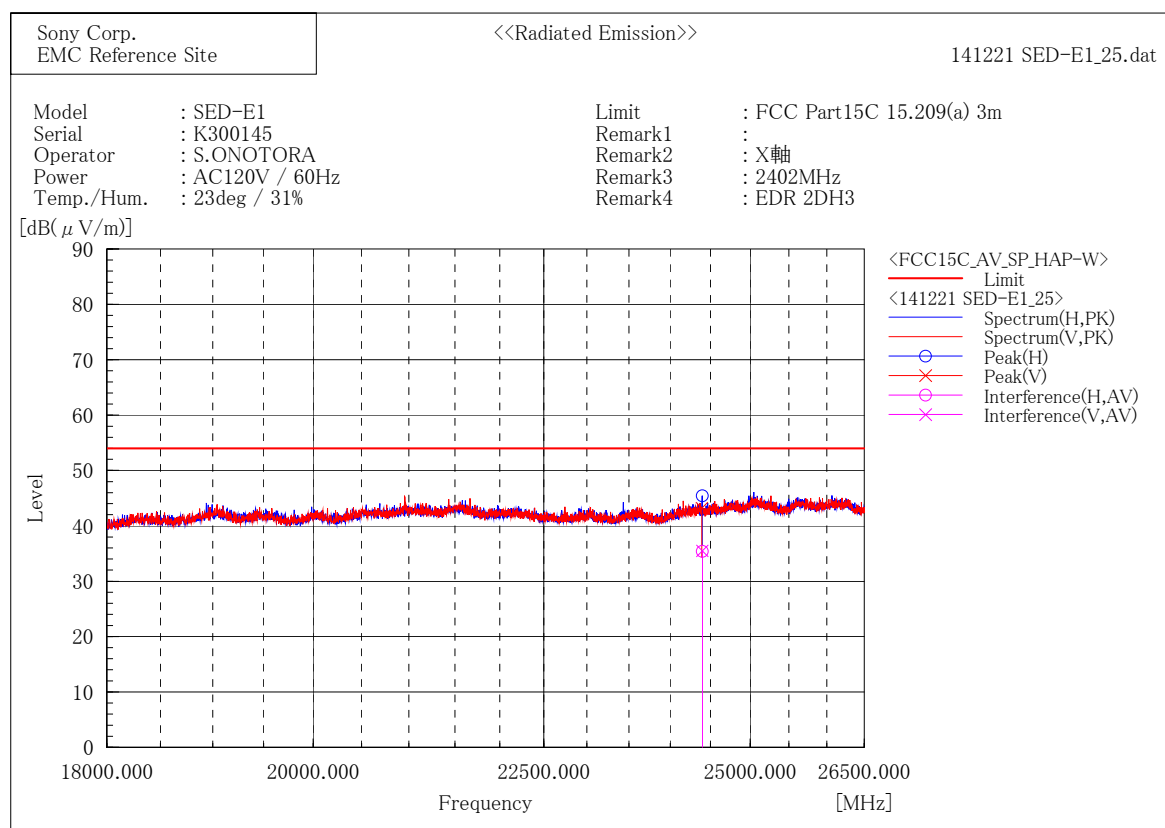
--- Horizontal Polarization (PK)---

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	24718.094	51.3	-1.6	49.7	74.0	24.3	318.1	139.9

--- 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	24723.332	51.4	-1.6	49.8	74.0	24.2	125.5	302.4

[EDR (2DH3) / 2402MHz]



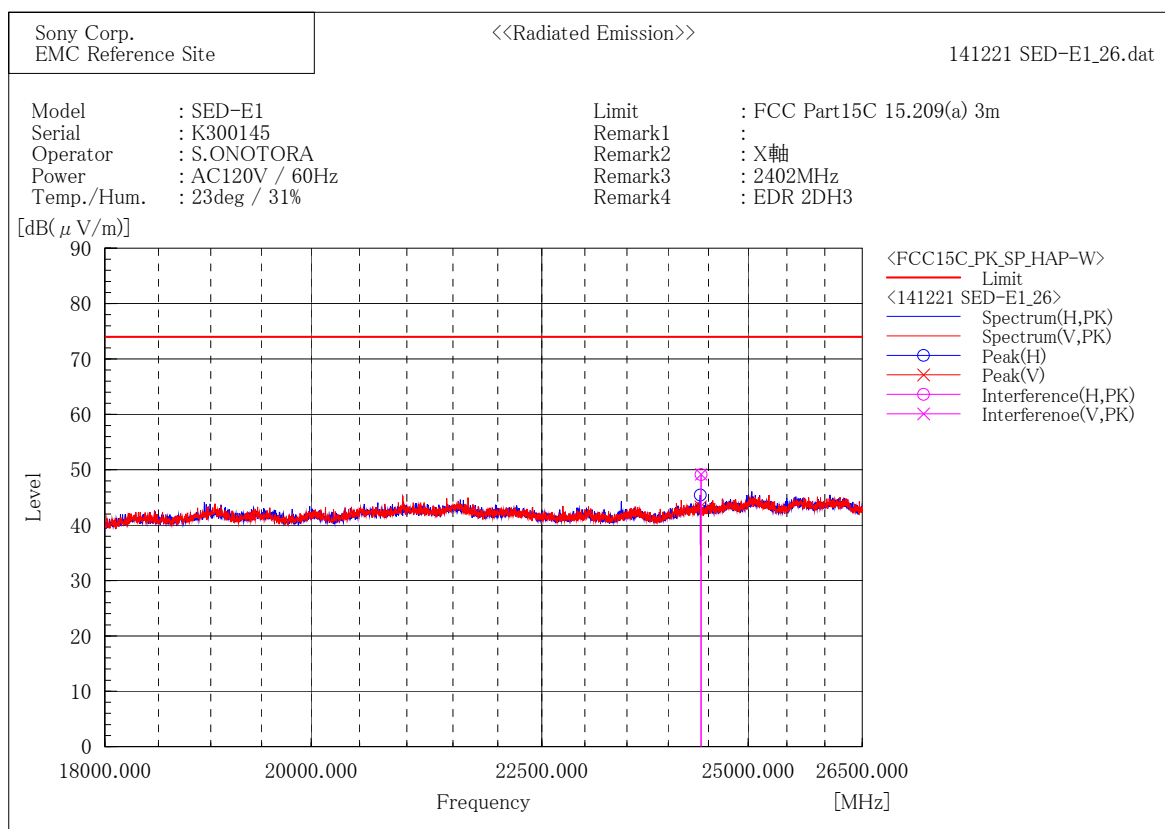
Final Result

--- 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	24395.888	37.2	-1.8	35.4	54.0	18.6	208.2	325.1

--- 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	24395.108	37.3	-1.8	35.5	54.0	18.5	123.9	29.8



Final Result

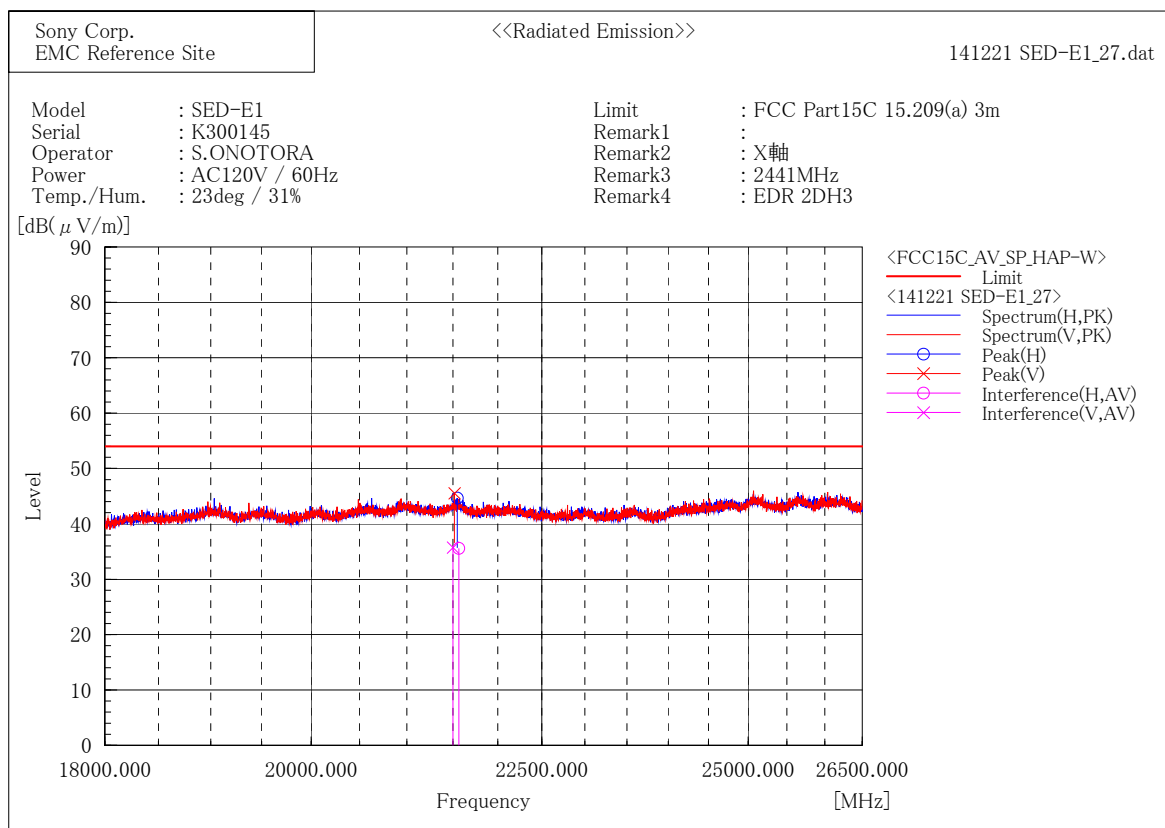
--- Horizontal Polarization (PK)---

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	24406.312	51.0	-1.8	49.2	74.0	24.9	208.2	325.1

--- 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	24405.656	51.0	-1.8	49.2	74.0	24.8	123.9	29.8

[EDR (2DH3) / 2441MHz]



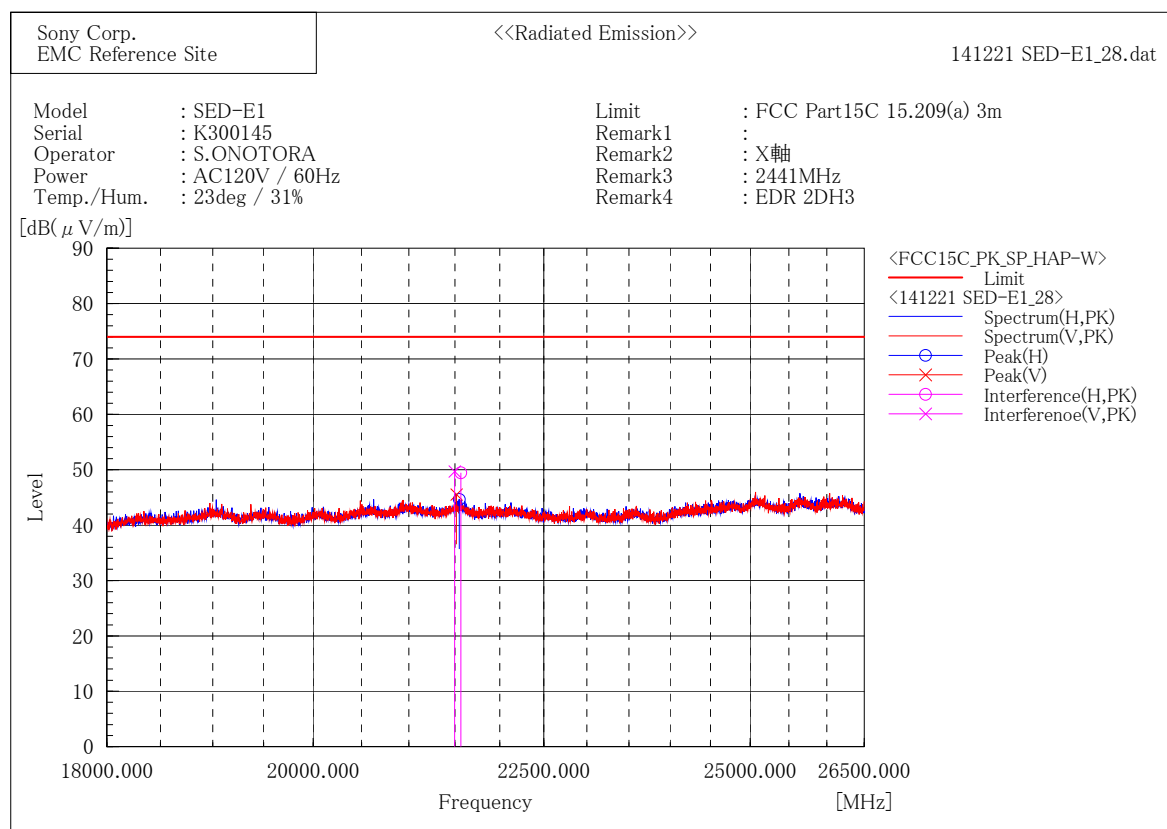
Final Result

--- 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	21567.076	36.1	-0.5	35.6	54.0	18.4	379.2	90.2

--- 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	21500.606	36.1	-0.4	35.7	54.0	18.3	392.3	316.5



Final Result

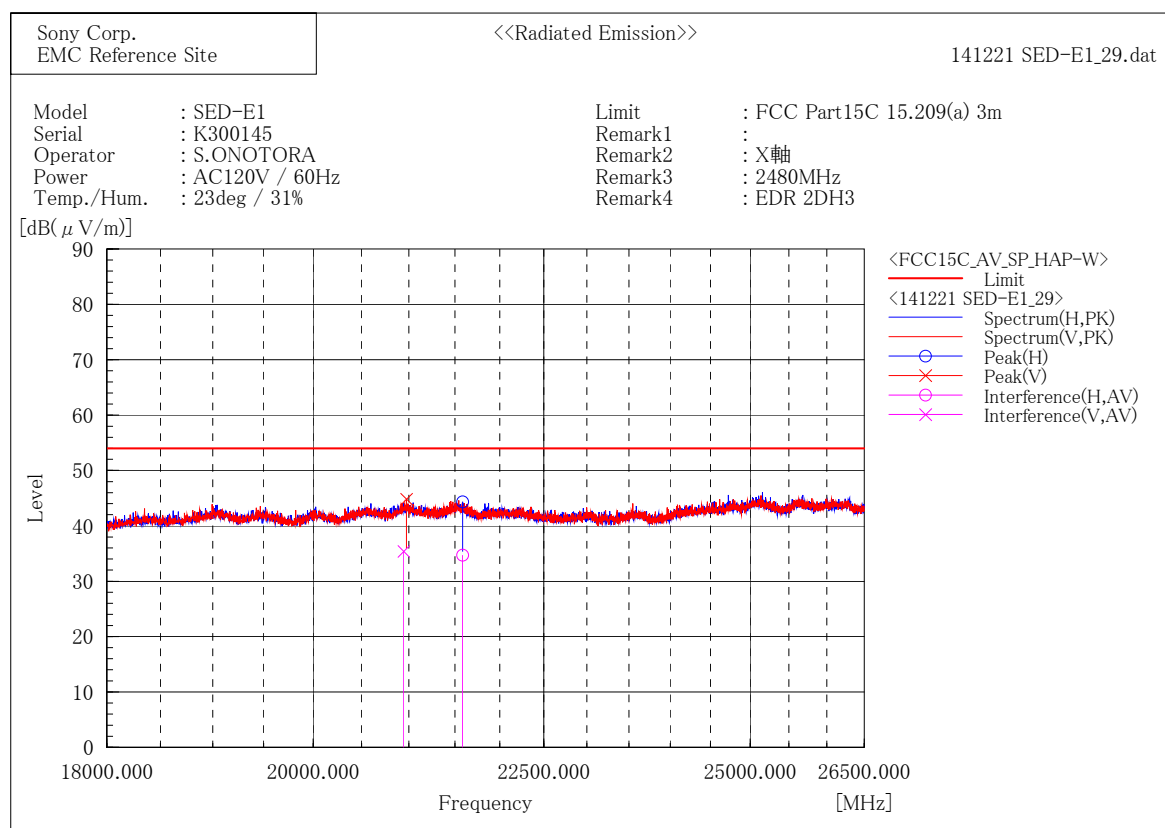
--- Horizontal Polarization (PK)---

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	21566.896	50.0	-0.5	49.5	74.0	24.5	379.2	90.1

--- 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	21498.278	50.1	-0.4	49.7	74.0	24.3	392.3	316.5

[EDR (2DH3) / 2480MHz]



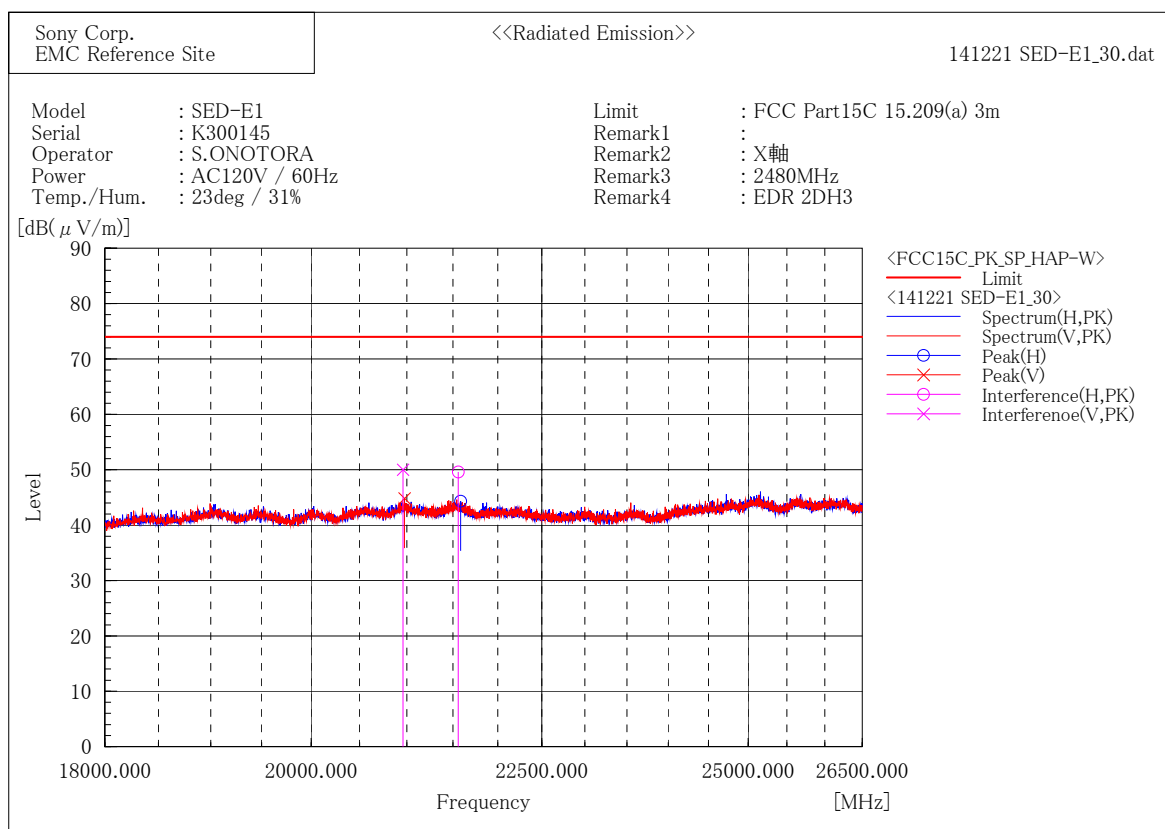
Final Result

--- 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	21586.616	35.2	-0.5	34.7	54.0	18.8	381.0	160.1

--- 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	20946.788	35.4	0.0	35.4	54.0	18.6	300.7	242.5



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	21561.286	50.1	-0.5	49.6	74.0	24.4	381.0	160.1

--- 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	20959.682	50.0	0.0	50.0	74.0	24.0	300.7	242.5

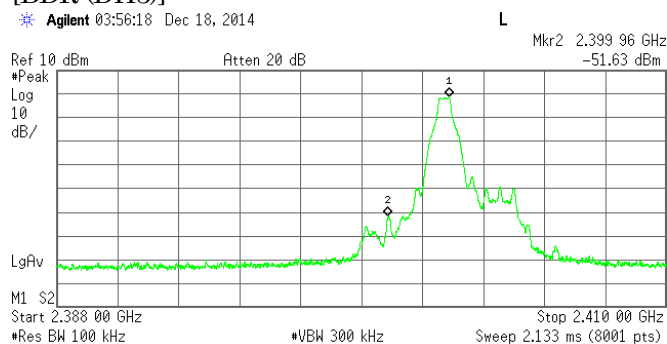
3.8. Conducted Spurious Emissions for Band Edge

- | | |
|------------------------|---------------------|
| 1) Ambient temperature | : 23.2deg.C |
| 2) Relative humidity | : 31.6% |
| 3) Date of measurement | : December 18, 2014 |
| 4) Measured by | : S.ONOTORA |
| 5) Operating mode | : Transmitting mode |

Mode		Channel [MHz]	Frequency [MHz]	Reading(PK) [dBm]	C.F. [dB]	Result(PK) [dBm]	Limit [dBm]	Margin [dB]
BDR	DH3	2402	2402.15	-1.45	0.68	-0.77	-	-
			2399.96	-51.63	0.68	-50.95	-20.77	30.18
EDR	2DH3	2402	2402.00	-0.75	0.68	-0.07	-	-
			2399.99	-49.35	0.68	-48.67	-20.07	28.60

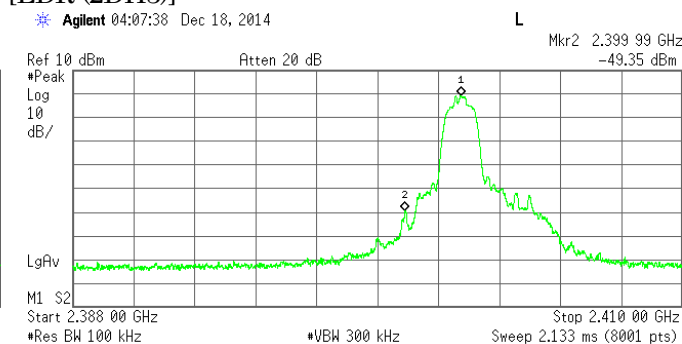
[BDR (DH3)]

* Agilent 03:56:18 Dec 18, 2014



[EDR (2DH3)]

* Agilent 04:07:38 Dec 18, 2014



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

$$\text{Test Result [dBuV]} = \text{Meter Reading [dBuV]} + \text{C.F. [dB]}$$

Notes :

- (a) Meter Reading : Reading of the EMI test receiver or spectrum analyzer.
- (b) C.F. : System Loss + Correction Factor of LISN.

4.2. Time of Occupancy (Dwell Time) Measurement

Method of calculation : Software
The Software for Calculation Name : SW-308
Version : Ver1.0

$$\text{Test Result [msec]} = \text{Dwell Time [msec]} * \text{Cycle [time]} * 31.6 [\text{sec}] / \text{Sweep Time [sec]}$$

Notes :

- (a) Dwell Time : Transmission duration of 1 hopping.
- (b) Cycle : Number of hopping appearances on the spectrum analyzer.
- (c) 31.6 : $0.4 [\text{sec}] * \text{Number of Hopping Frequencies}(79)$
- (d) Sweep Time : Sweep time settings on the spectrum analyzer.

4.3. Maximum Peak Conducted Output Power Measurement

Method of calculation : Software
The Software for Calculation Name : SW-308
Version : Ver1.0

$$\text{Test Result [dBm]} = \text{Meter Reading [dBm]} + \text{C.F. [dB]}$$

$$\text{Duty Cycle [\%]} = \text{Tx ON Time} / (\text{Tx ON Time} + \text{Tx OFF Time}) * 100$$

Notes :

- (a) Meter Reading : Reading of the spectrum analyzer.
- (b) C.F. : System Cable 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

$$\text{Test Result [dBuV/m]} = \text{Meter Reading [dBuV]} + \text{C.F. [dB/m]}$$

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-308
Version : Ver1.0

$$\text{Test Result [dBm]} = \text{Meter Reading [dBm]} + \text{C.F. [dB]}$$

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

	Control No.	Description	Model No.	Serial No.	Manufacturer	Cal. Int.	Last Cal.
☒	-	Shield Room	-	-	TDK	-	-
☐	M515	EMI Receiver	ESCI	100606	Rohde & Schwarz	12	14.07.01
☒	M109	EMI Receiver	ESI7	100051	Rohde & Schwarz	12	14.04.17
☒	M514	LISN (for EUT)	ENV216	100424	Rohde & Schwarz	12	14.03.20
☐	M505	LISN	ENV216	100425	Rohde & Schwarz	12	14.04.25
☐	M116	LISN	KNW-242	8-888-6	Kyoritsu	12	14.05.23
☒	CS043	4th Site CE Cable SYSTEM	-	-	EMC/RF Test Lab.	12	14.11.20
☒	M664	6dB Attenuator	6806.01.A	-	HUBER+SUHNER	12	14.11.20
☒	M619	HIGH FREQUENCY FUSE	MP612A	-	Anritsu	12	14.11.20
☒	M153	50 ohm Terminator (M505)	CT-01	-	TME	12	14.08.20
☐	M159	50 ohm Terminator	T1302	-	Stack	12	14.08.20
☒	M690	Thermo Meter	AD-5640A	201304	A&D	12	14.10.03

5.2. Antenna-port Conducted Measurements

4th Site Shielded Room 1

	Control No.	Equipment	Model No.	Serial No.	Manufacturer	Cal. Int.	Last Cal.
☒	-	Shield Room	B83117-B2432-T161	P26428	Albatross Project	-	-
☒	W003	Spectrum Analyzer	E4440A	US42511926	Keysight Technologies	12	14.05.19
☐	W006	Power Meter	N1911A	MY50000295	Keysight Technologies	12	14.10.16
☐	W007	Power Sensor	N1922A	MY50180022	Keysight Technologies	12	14.10.16
☐	W029	10dB Attenuator	8493C	76549	Keysight Technologies	12	14.09.26
☒	WC05	RF Cable	SUCOFLEX 102	34287	HUBER + SUHNER	12	14.09.26
☒	M719	Thermo Meter	TH-321	140053	AS ONE	12	14.06.02

5.3. Radiated Spurious Emissions

4th Site 10m Semi-Anechoic Chamber

	Control No.	Equipment	Model No.	Serial No.	Manufacturer	Cal. Int.	Last Cal.
☒	M506	Semi-Anechoic Chamber	-	-	TDK	12	14.05.20
☒	M575	EMI Receiver	ESCI	100161	Rohde & Schwarz	12	14.10.23
☒	M669	EMI Receiver	N9038A	MY51210223	Keysight Technologies	12	14.05.23
☒	A073	Loop Antenna	HFH2-Z2	100171	Rohde & Schwarz	12	14.04.08
☒	A043	Biconical Antenna	BBA9106	V5 (91032598)	Schwarzbeck	12	14.08.19
☒	A046	Logperiodic Antenna	UHALP9108A1	0830	Schwarzbeck	12	14.08.20
☒	A056	Horn Antenna	BBHA9120D	1201	Schwarzbeck	12	14.01.25
☒	A057	Horn Antenna	HAP06-18W	00000037	TOYO Corporation	12	14.08.22
☒	A058	Horn Antenna	HAP18-26W	00000016	TOYO Corporation	12	14.01.14
☐	CS037	4th Site RE Cable SYS1	-	-	EMC/RF Test Lab.	12	14.01.22
☒	CS039	4th Site RE Cable SYS3	-	-	EMC/RF Test Lab.	12	14.01.22
☒	CS054	4th Site EMF Cable SYS	-	-	EMC/RF Test Lab.	12	14.11.20
☒	CS064/065	Ref Site RE Cable SYS8	-	-	EMC/RF Test Lab.	12	14.05.19
☒	M510	RF Selector	NS4900	0802-226	TOYO Corporation	12	14.01.22
☒	M706	3dB Attenuator	8491A	MY39267782	Keysight Technologies	12	14.01.22
☒	M620	RF Pre-Amp	8447D	2944A10720	Keysight Technologies	12	14.01.22
☒	M737	GHz Filter Box	GB-G01	001	Sony EMCS	12	14.05.19
☒	M689	Thermo Meter	AD-5640A	201303	A&D	12	14.10.03