

RADIO TEST REPORT

(for Bluetooth classic)

Project No. : JB-Z0276
Client : Sony Corporation
Address : 1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan
Type of Equipment : Wireless Noise Canceling Stereo Headset
Model No. : WF-1000X (Left part: WF-1000XL, Right part: WF-1000XR)
Serial No. : L1, L2, L4
FCC ID : AK8WF1000X
Regulation Applied : 47 CFR Part 15 Subpart C
Final Judgment : Passed
Sample Receipt : April 21, 2017
Testing : April 24, 2017 - May 15, 2017
Reported : May 23, 2017

Reported by :

Approved Signatory :



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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.
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TESTING CERT #3203.01

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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 : Wireless Noise Canceling Stereo Headset
 Trade Name : SONY
 Model No. : WF-1000X (Left part: WF-1000XL, Right part: WF-1000XR)
 Serial No. : L1, L2, L4
 Power Rating : DC 3.7 V
 Software Ver. : V0004

Similar model (to be covered by this Report)

Model No. : WF-1000XL (Left part), WF-1000XR (Right part)
 WF-1000XL is tested as a representative since RF characteristics are same.

Radio specification

Function of the Equipment : Transceiver
 Operating Frequency : 2400 - 2483.5 MHz
 Modulation Type : FHSS (GFSK, $\pi/4$ DQPSK, 8DPSK)
 Channel Spacing : 1MHz
 Channel Bandwidth : 1MHz
 Number of channels : 79
 Antenna Type : Inverted-F antenna
 Antenna connector Type : None
 Antenna Gain : -0.50 dBi
 Operating Temperature : 0 to +40 deg.C

1.2. Summary of Test Result

Test Item	Worst Margin	Test Frequency band	Results
AC Power-line Conducted Emissions	-	150 kHz - 30 MHz	N/A *2
20dB Bandwidth	Refer to the test data	Carrier	Complied
Carrier Frequency Separation	Refer to the test data	Carrier	Complied
Number of Hopping Frequencies	Refer to the test data	Carrier	Complied
Time of Occupancy (Dwell Time)	Refer to the test data	Carrier	Complied
Maximum Peak Conducted Output Power	22.64 dB	Carrier	Complied
Radiated Spurious Emissions	1.5 dB (AV) 4881.868 MHz Horizontal	9 kHz - 25 GHz (excluding carrier and band edge)	Complied
Conducted Spurious Emissions for Band Edge *1	20.65 dB Margin 2400.00 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
DA 00-705 (March 30, 2000)

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.

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

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	Detector	RBW
* Antenna-port Conducted Measurements		
20dB Bandwidth	Peak	30 kHz
Carrier Frequency Separation	Peak	100 kHz
Number of Hopping Frequencies	Peak	100 kHz
Time of Occupancy (Dwell Time)	Peak	1 MHz
Maximum Peak Conducted Output Power	Peak	N/A
Conducted Spurious Emissions for Band Edge	Peak	100 kHz

Radiated Spurious Emissions

- The non-conductive table (EUT table) made of (☐ FRP, ☒ Styrene Foam, ☐ other non-conductive material) was placed in the center of the turntable.
- The EUT was placed on the center of the tabletop.
- The test antenna was placed away from the EUT at test distance.
- The limits were compensated the distance factor with follows;
 $9\text{ kHz} - 490\text{ kHz [Limit at 3m]} = [\text{Limit at 300m}] + 40\log(300[\text{m}] / 3[\text{m}])$
 $490\text{ kHz} - 30\text{ MHz [Limit at 3m]} = [\text{Limit at 30m}] + 40\log(30[\text{m}] / 3[\text{m}])$
- 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)
- 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) *	9 kHz (6dB) *	120 kHz (6dB)	1 MHz (6dB)
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

*: When the measurement frequencies below 150 kHz, RBW: 200 Hz was used.

- 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	6 dB RBW: 300 Hz *	6 dB RBW: 10 kHz *	6 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.

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

- 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

Antenna-port Conducted Measurements *

Shielded Room

☒ 4th Site SR1

Radiated Spurious Emission

Semi-Anechoic chamber

☒ EMC Site

*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 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 *1	Packet type *2,3	Test Channels
Carrier Frequency Separation, Number of Hopping Frequencies, Time of Occupancy (Dwell Time)	BDR	DH5	Hopping ON
	EDR	3DH1	
20dB Bandwidth, Maximum Peak Conducted Output Power, Radiated Spurious Emissions	BDR	DH5	2402MHz, 2441MHz, 2480MHz
	EDR	3DH1	
Conducted Spurious Emissions for Band Edge	BDR	DH5	2402MHz
	EDR	3DH1	

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.

The Software for Operating Mode

Name: Blue suite

Version: 2.6.4

Special accessories needed for connecting the EUT to achieve compliance:

Item	Manufacturer	Model No.	Serial No.	Remark
Personal Computer	SONY	PCG-4121AN	27547114 1000852	-
AC Adapter	SONY	VPG-AC19C37	0099484	-

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	Wireless Noise Canceling Stereo Headset	SONY	WF-1000XL	L1

Support equipment for operation

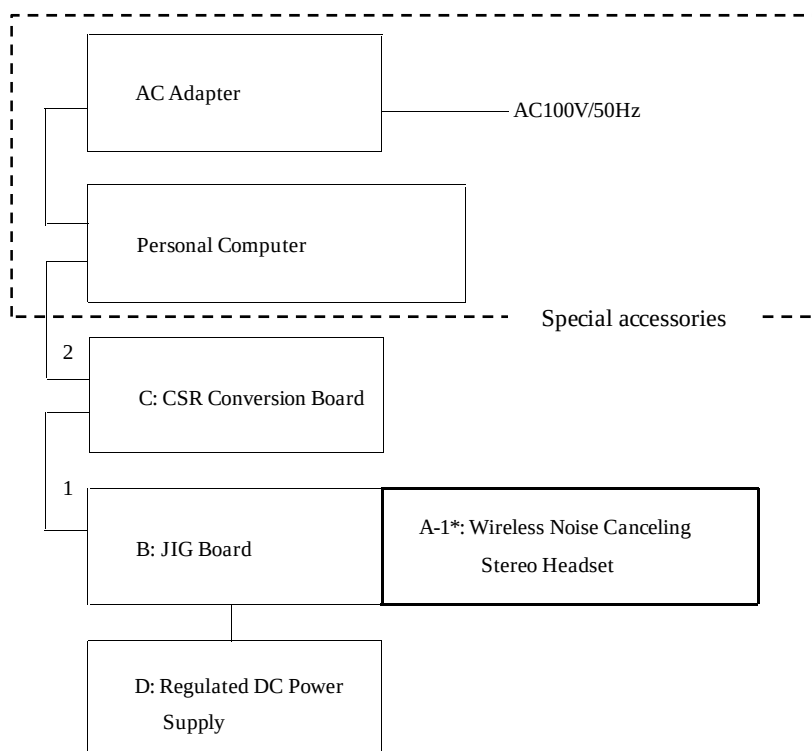
Symbol	Item	Manufacturer	Model No.	Serial No.
B	JIG Board	-	B to B jig	1
C	CSR Conversion Board	CSR	CNS10020V5A	343455
D	Regulated DC Power Supply	KENWOOD	PW18-1.3AT	08046429

Type of cable

Symbol	Description	Identification (Manufacturer etc.)	Shielded YES / NO	Ferrite Core	Length (m)	Bundled
1	USB Cable	-	YES	NO	0.2	-
2	USB Cable	-	YES	NO	2.0	-

System configuration

*: EUT



Radiated Spurious Emissions Measurement

The equipment under test (EUT)

Symbol	Item	Manufacturer	Model No.	Serial No.
A-2	Wireless Noise Canceling Stereo Headset	SONY	WF-1000XL	L2
A-3	Wireless Noise Canceling Stereo Headset	SONY	WF-1000XL	L4

Support equipment for operation

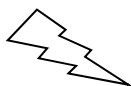
Symbol	Item	Manufacturer	Model No.	Serial No.
-	-	-	-	-

Type of cable

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

System configuration

*: EUT

Bluetooth
Transmitting

A-2/A-3*: Wireless Noise Canceling
Stereo Headset

3. Test Data

3.1. 20dB Bandwidth

- 1) Ambient temperature : 23.1 deg.C
- 2) Relative humidity : 47.0 %
- 3) Date of measurement : April 24, 2017
- 4) Measured by : M. KOUGA
- 5) Operating mode : Transmitting mode

Mode		Channel [MHz]	Result [MHz]	Limit [MHz]
BDR	DH5	2402	0.938	-
		2441	0.935	-
		2480	0.935	-
EDR	3DH1	2402	1.205	-
		2441	1.207	-
		2480	1.204	-

[BDR / 2402MHz]



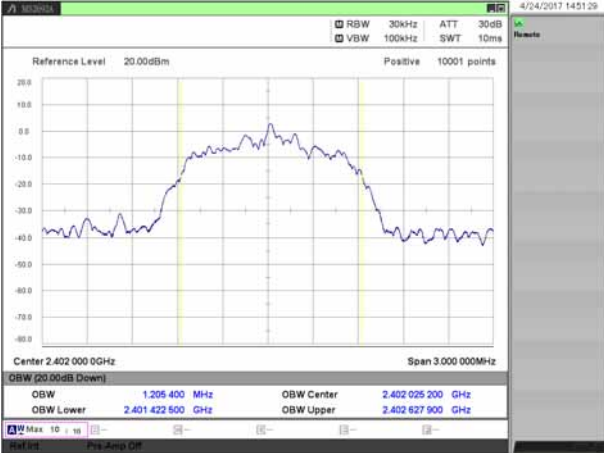
[BDR / 2441MHz]



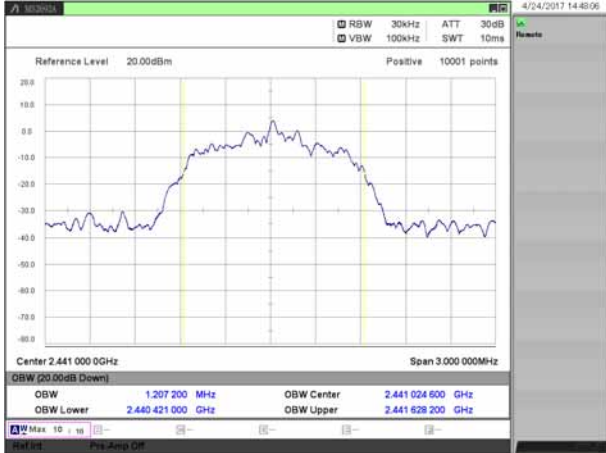
[BDR / 2480MHz]



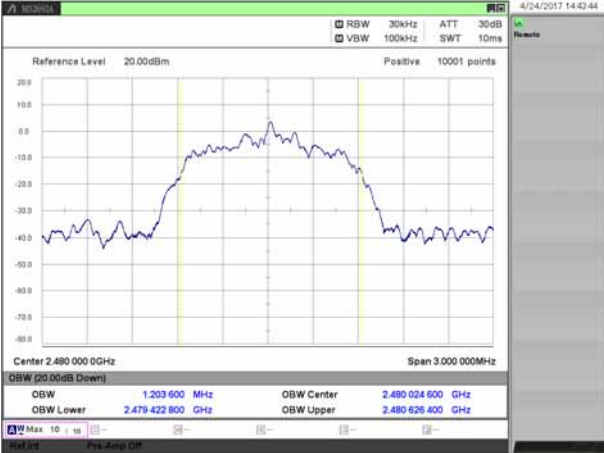
[EDR / 2402MHz]



[EDR / 2441MHz]



[EDR / 2480MHz]



3.2. Carrier Frequency Separation

- 1) Ambient temperature : 23.1 deg.C
- 2) Relative humidity : 47.0 %
- 3) Date of measurement : April 24, 2017
- 4) Measured by : M. KOUGA
- 5) Operating mode : Transmitting mode

Mode		Reading [kHz]	Limit [kHz]
BDR	DH5	822.6	≥ 625.4
EDR	3DH1	982.2	≥ 804.8

[BDR]



[EDR]

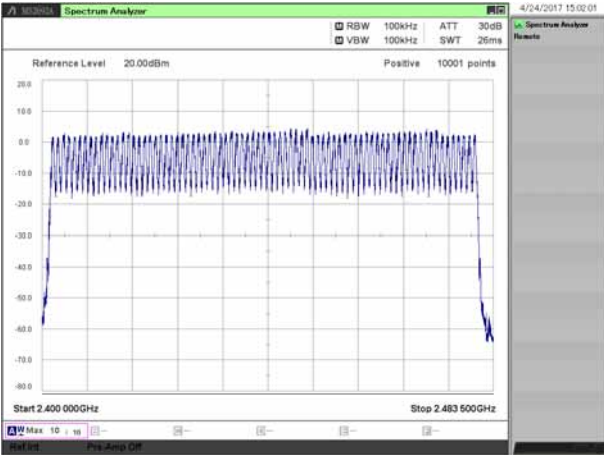


3.3. Number of Hopping Frequencies

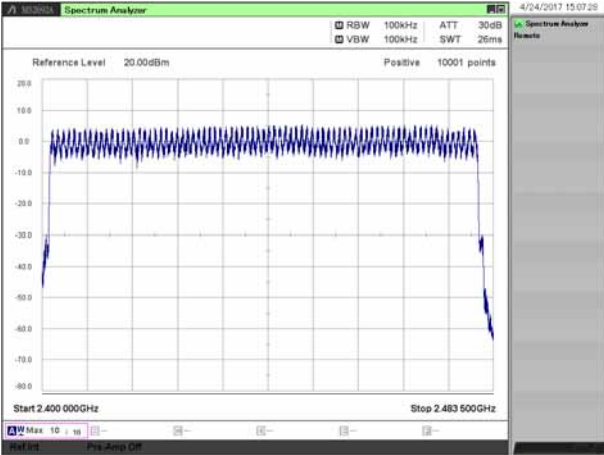
- 1) Ambient temperature : 23.1 deg.C
- 2) Relative humidity : 47.0 %
- 3) Date of measurement : April 24, 2017
- 4) Measured by : M. KOUGA
- 5) Operating mode : Transmitting mode

Mode		Number [channel]	Limit [channel]
BDR	DH5	79	≥ 15
EDR	3DH1	79	≥ 15

[BDR]



[EDR]



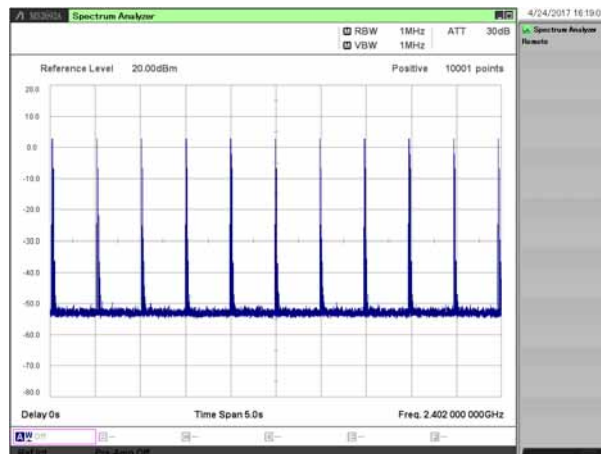
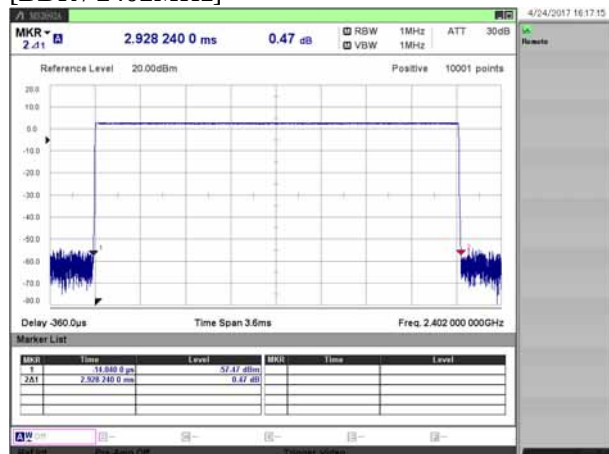
3.4. Time of Occupancy (Dwell Time)

- 1) Ambient temperature : 23.1 deg.C
- 2) Relative humidity : 47.0 %
- 3) Date of measurement : April 24, 2017
- 4) Measured by : M. KOUGA
- 5) Operating mode : Transmitting mode

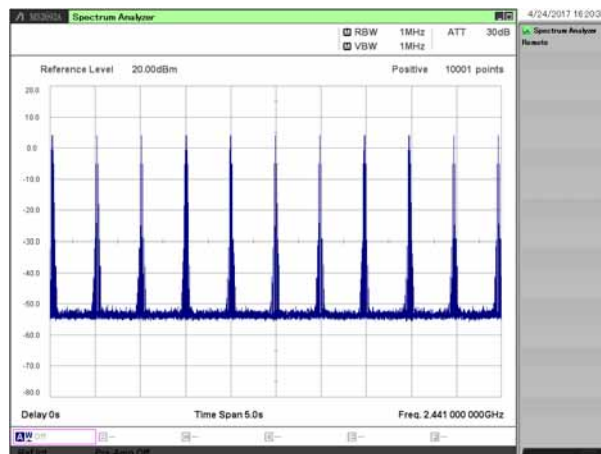
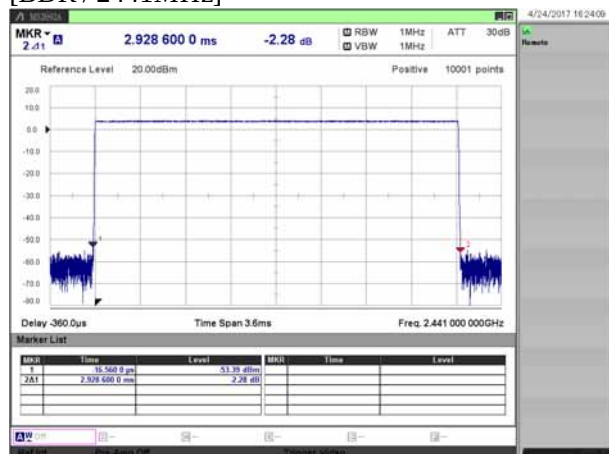
Mode		Channel [MHz]	Dwell Time [msec]
BDR	DH5	2402	2.93
		2441	2.93
		2480	2.93
EDR	3DH1	2402	0.44
		2441	0.44
		2480	0.44

Cycle [time]	Result [msec]	Limit [msec]
11.0	203.6	≤ 400.0
11.0	203.6	≤ 400.0
11.0	203.6	≤ 400.0
51.0	141.7	≤ 400.0
51.0	141.7	≤ 400.0
51.0	141.9	≤ 400.0

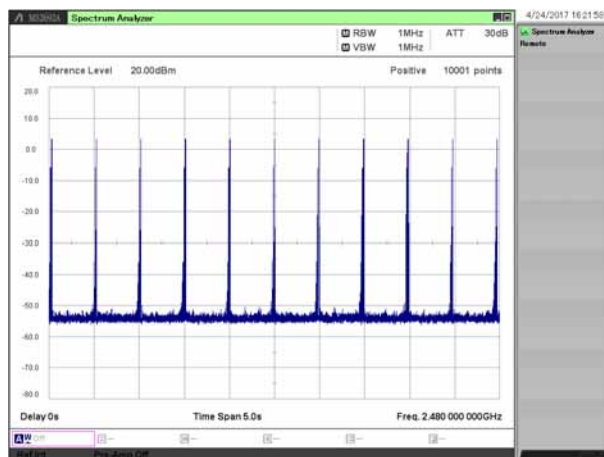
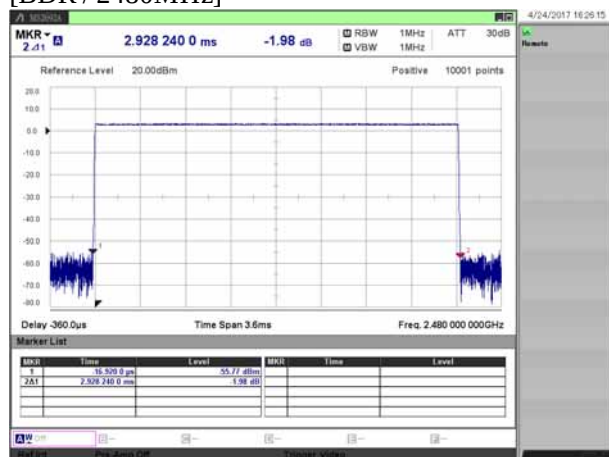
[BDR / 2402MHz]



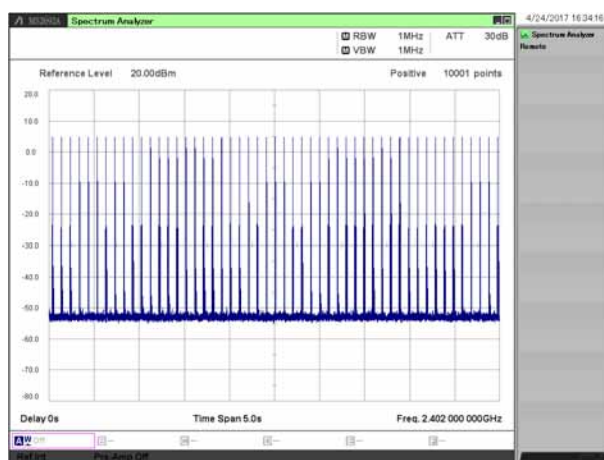
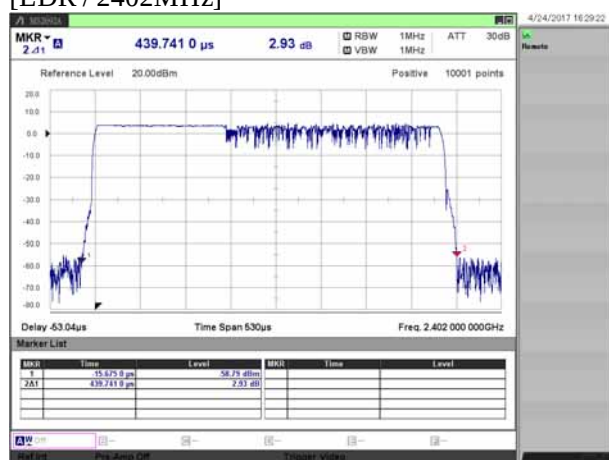
[BDR / 2441MHz]



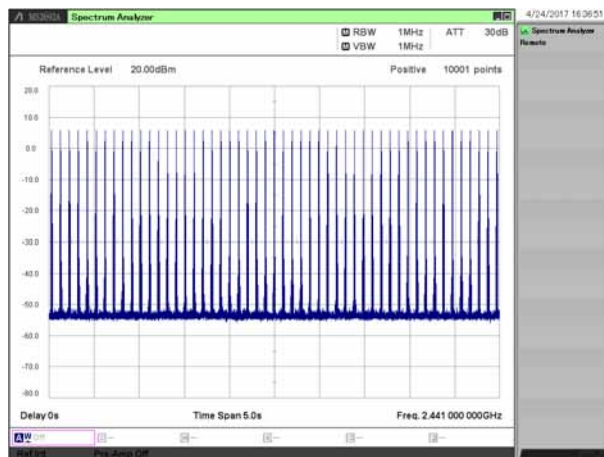
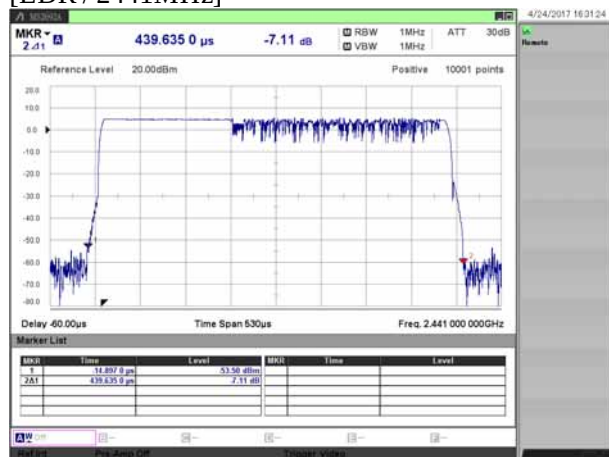
[BDR / 2480MHz]



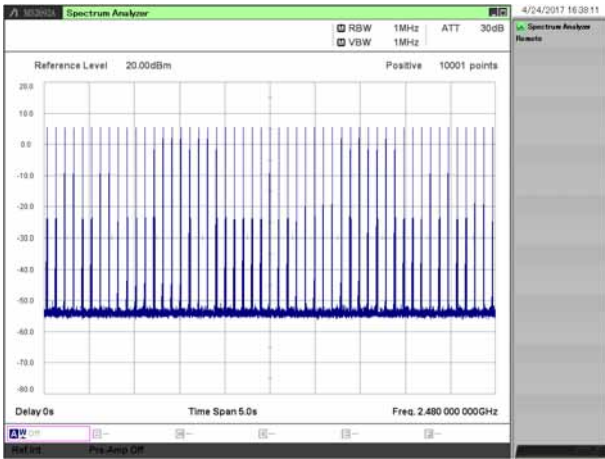
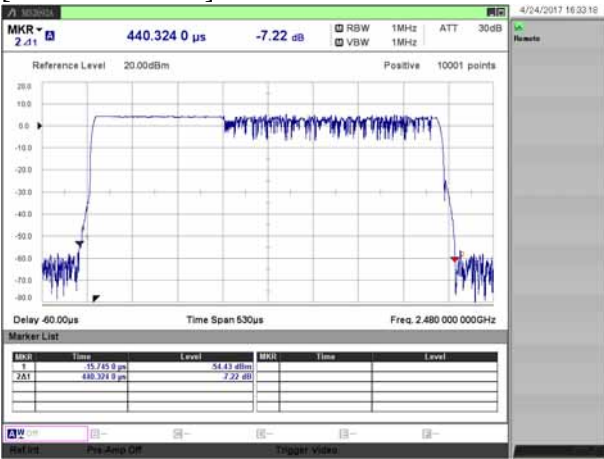
[EDR / 2402MHz]



[EDR / 2441MHz]



[EDR / 2480MHz]



3.5. Maximum Peak Conducted Output Power

- 1) Ambient temperature : 23.1 deg.C
- 2) Relative humidity : 47.0 %
- 3) Date of measurement : April 24, 2017
- 4) Measured by : M. KOUGA
- 5) Operating mode : Transmitting mode

Peak Conducted Output Power

Mode		Channel [MHz]	Reading(PK) [dBm]	C.F. [dB]	Result(PK) [dBm]	Result(PK) [W]	Limit [dBm]	Limit [W]	Margin [dB]
BDR	DH5	2402	3.60	0.11	3.71	0.00235	30.0	1.0	26.29
		2441	5.13	0.11	5.24	0.00334	30.0	1.0	24.76
		2480	4.08	0.11	4.19	0.00262	30.0	1.0	25.81
EDR	2DH1	2402	5.69	0.11	5.80	0.00380	30.0	1.0	24.20
		2441	6.88	0.11	6.99	0.00500	30.0	1.0	23.01
		2480	6.26	0.11	6.37	0.00434	30.0	1.0	23.63
	3DH1	2402	6.13	0.11	6.24	0.00421	30.0	1.0	23.76
		2441	7.25	0.11	7.36	0.00545	30.0	1.0	22.64
		2480	6.66	0.11	6.77	0.00475	30.0	1.0	23.23

Average Conducted Output Power (for SAR measurement)

Mode		Channel [MHz]	Reading(AV) [dBm]	C.F. [dB]	Duty Factor [dB]	Result(AV) [dBm]	Result(AV) [W]
BDR	DH5	2402	-0.19	0.11	3.28	3.20	0.00209
		2441	1.40	0.11	3.28	4.79	0.00301
		2480	0.31	0.11	3.28	3.70	0.00234
EDR	2DH1	2402	-1.14	0.11	4.38	3.35	0.00216
		2441	0.32	0.11	4.38	4.81	0.00303
		2480	-0.56	0.11	4.38	3.93	0.00247
	3DH1	2402	-1.12	0.11	4.38	3.37	0.00217
		2441	0.31	0.11	4.38	4.80	0.00302
		2480	-0.55	0.11	4.38	3.94	0.00248

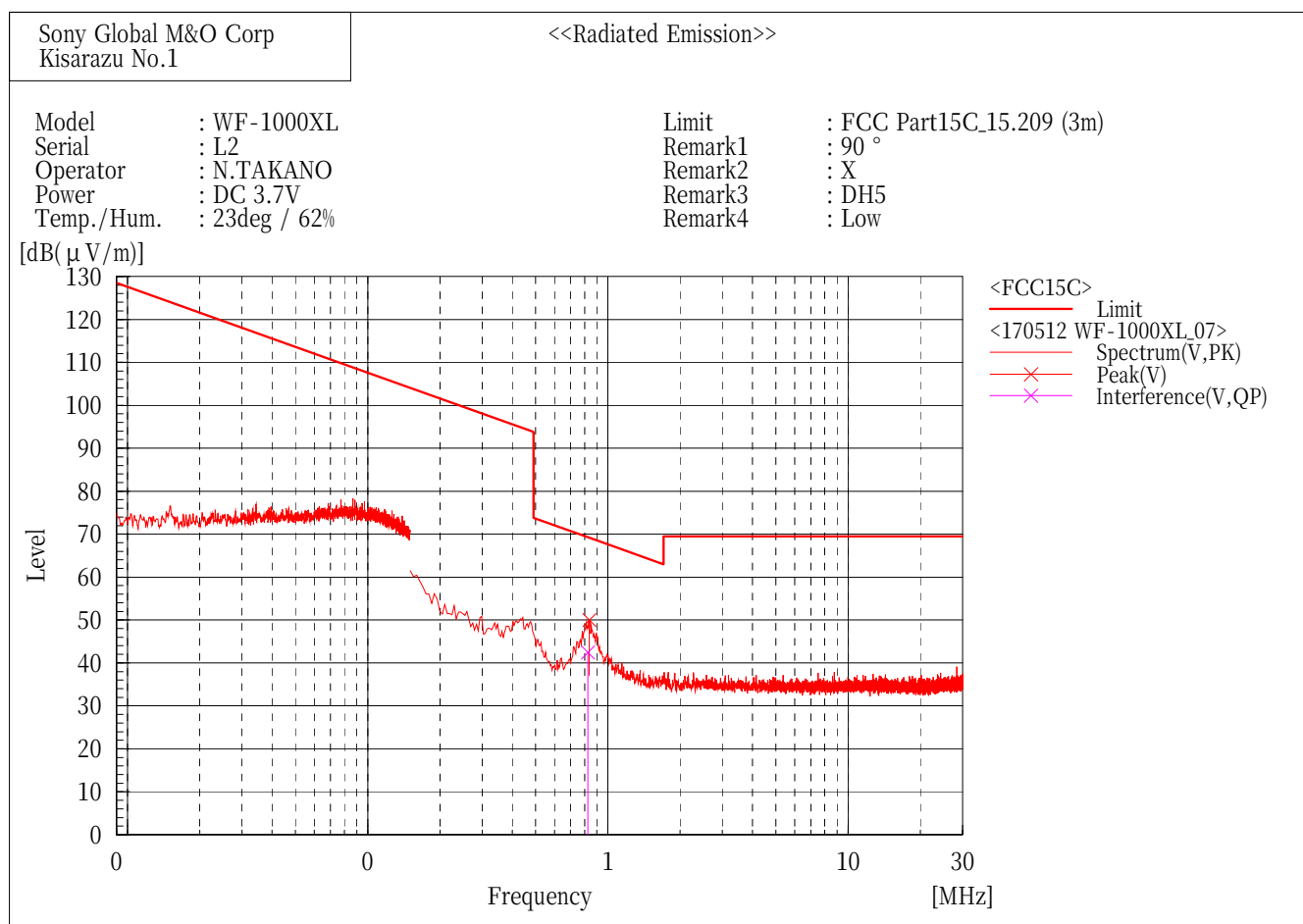
Duty Cycle check

Mode		Channel [MHz]	T(on+off) [msec]	T(on) [msec]	Duty Cycle [%]
BDR	DH1	2441	1.250	0.450	36.00
	DH3	2441	3.750	1.690	45.07
	DH5	2441	6.260	2.940	46.96
EDR	2DH1	2441	1.250	0.456	36.48
	2DH3	2441	4.990	1.680	33.67
	2DH5	2441	12.500	2.950	23.60
	3DH1	2441	1.250	0.456	36.48
	3DH3	2441	4.990	1.680	33.67
	3DH5	2441	12.500	2.950	23.60

3.6. Radiated Spurious Emissions

1) Date of measurement

9kHz - 30MHz	: May 12, 2017	(all mode)
30MHz - 1000MHz	: May 10, 2017	(all mode)
1GHz - 6GHz	: April 28, 2017	(mode: BDR / Mid, EDR / Mid)
	: May 15, 2017	(others)
6GHz - 18GHz	: May 08, 2017	(all mode)
18GHz - 24.835GHz	: May 09, 2017	(all mode)

9 kHz - 30 MHz

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	0.826	23.0	19.4	42.4	69.3	26.9	100.0	337.9

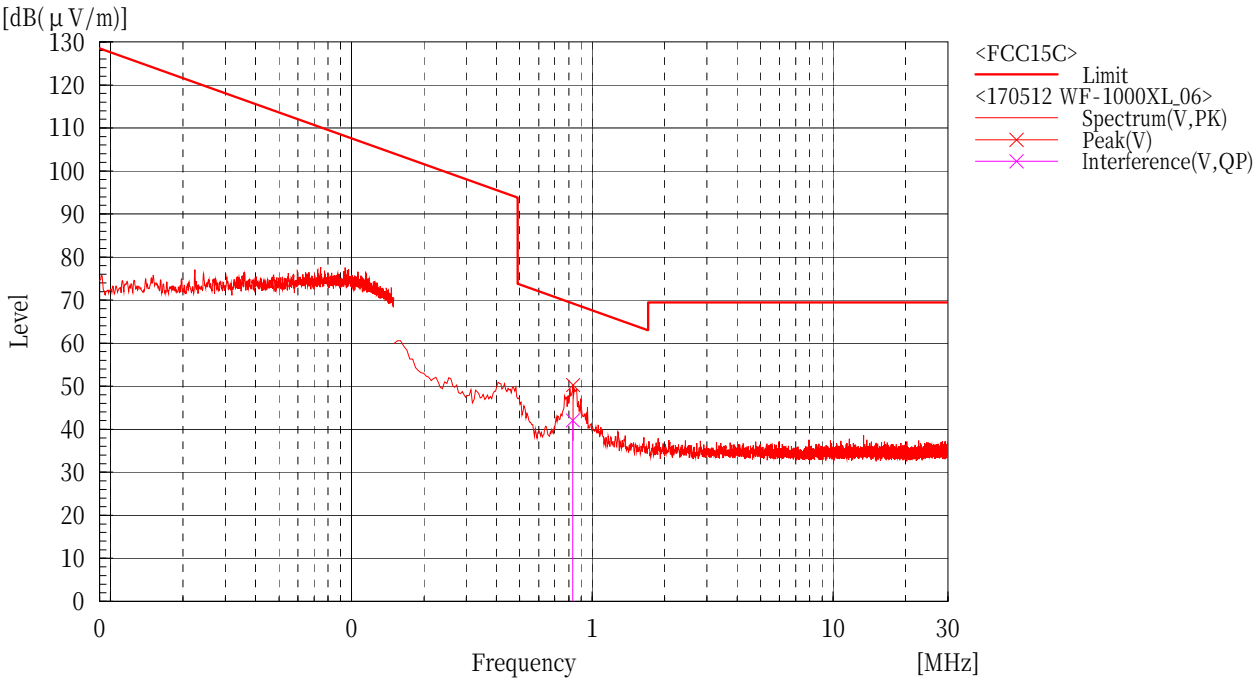
[BDR(DH5)/2441MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
Serial : L4
Operator : N.TAKANO
Power : DC 3.7V
Temp./Hum. : 23deg / 62%

Limit : FCC Part15C_15.209 (3m)
Remark1 : 90 °
Remark2 : X
Remark3 : DH5
Remark4 : Mid

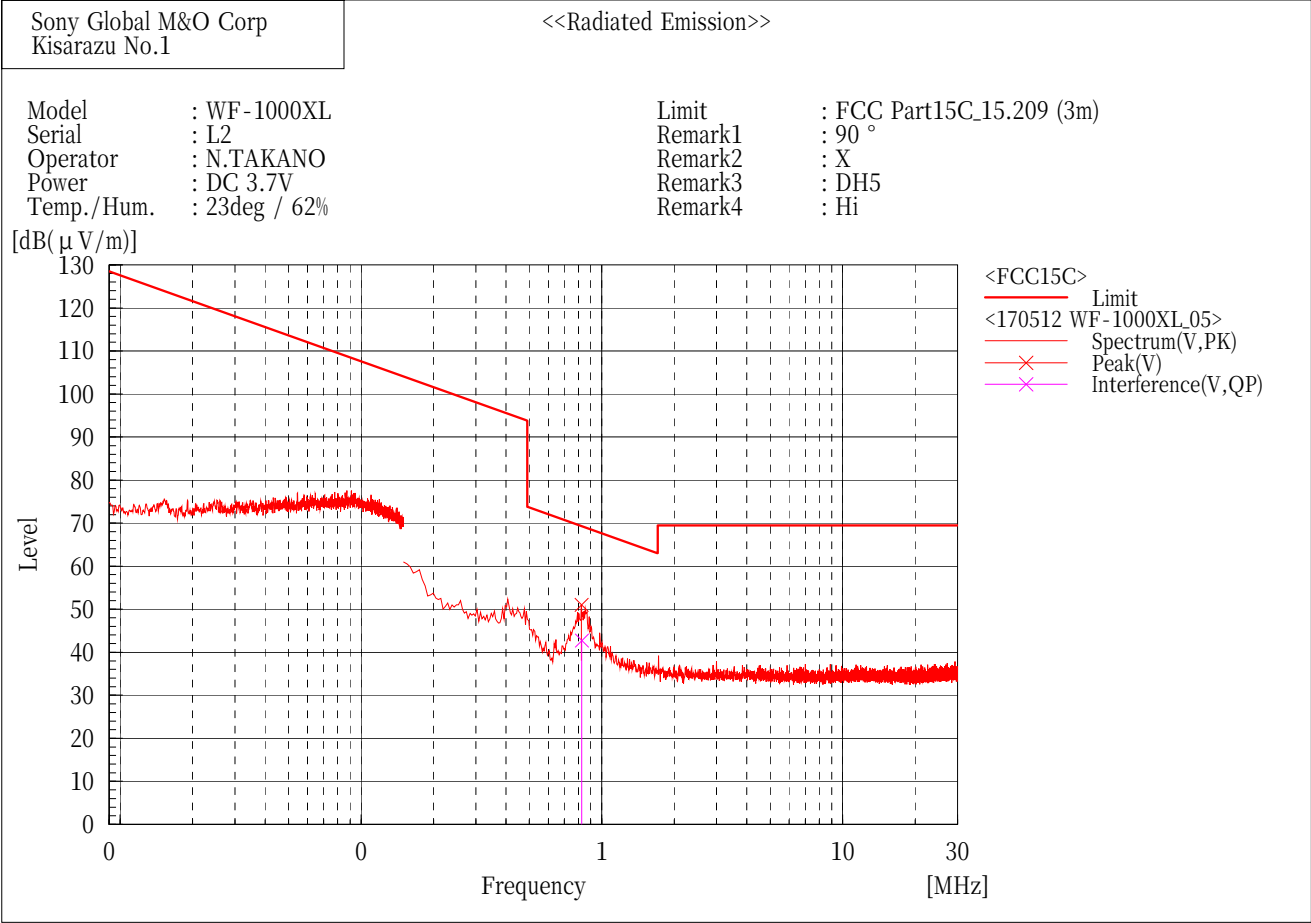


Final Result

--- 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	22.6	19.4	42.0	69.2	27.2	100.0	211.1

[BDR(DH5)/2480MHz]

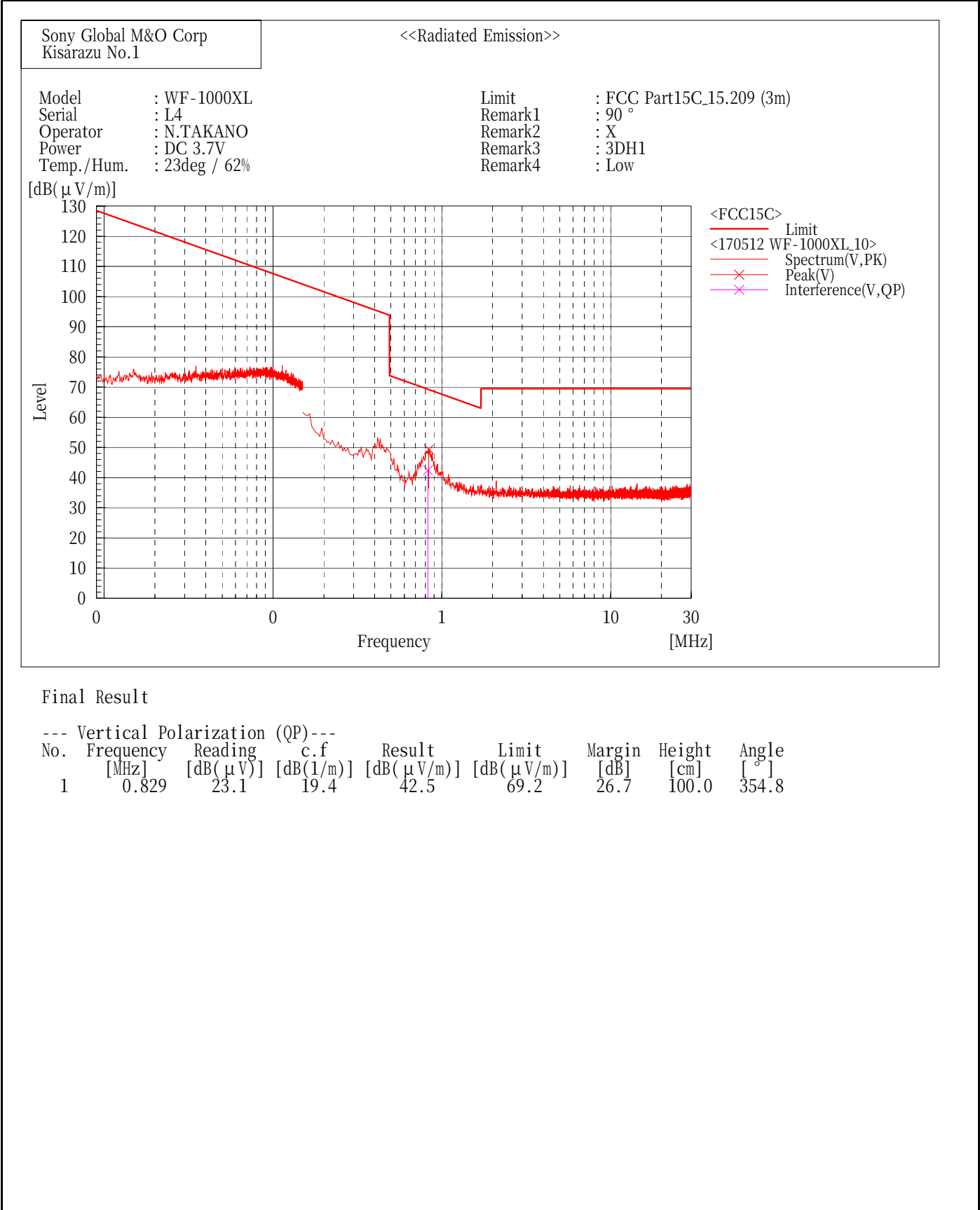


Final Result

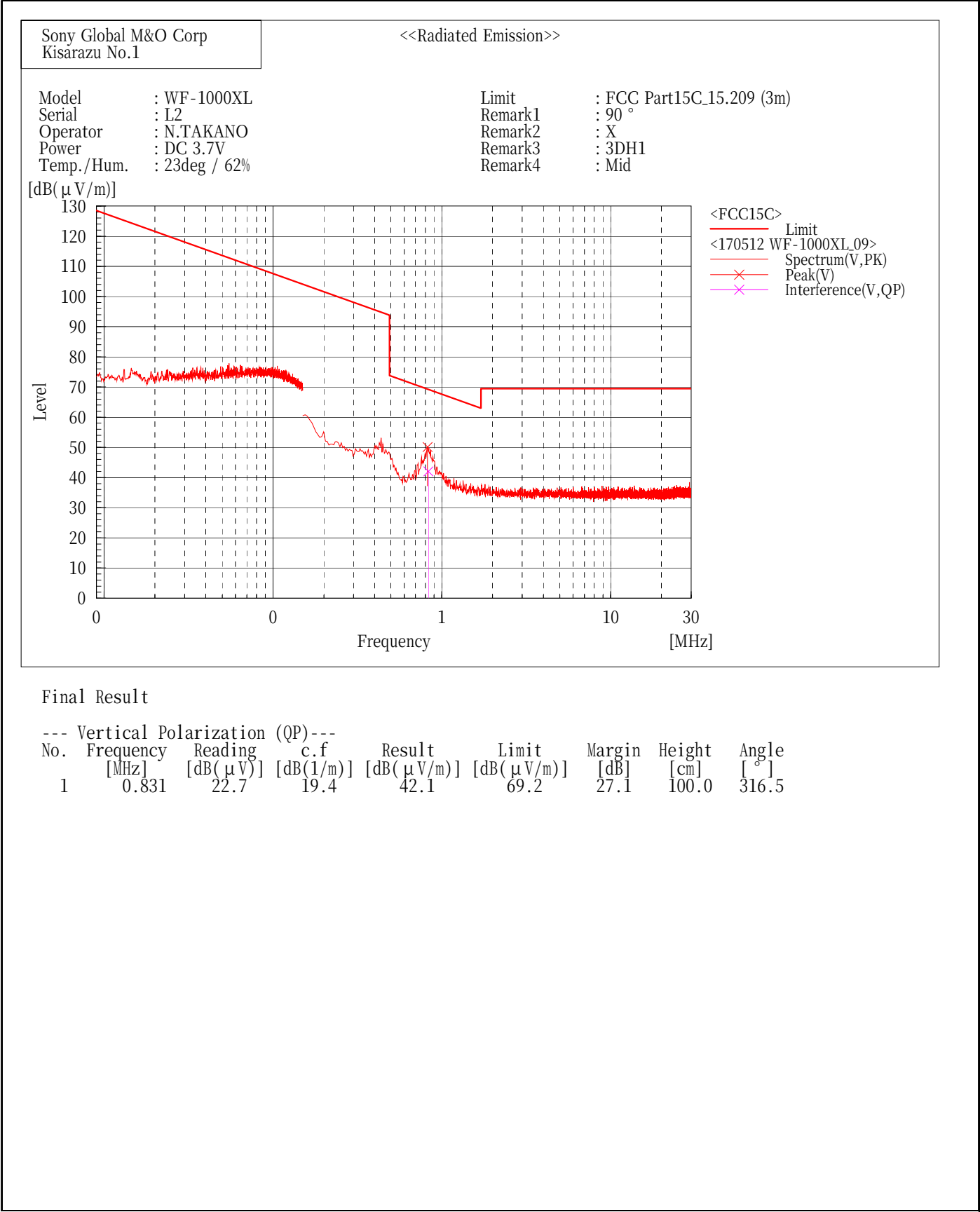
--- Vertical Polarization (QP)---

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	0.826	23.3	19.4	42.7	69.3	26.6	100.0	357.5

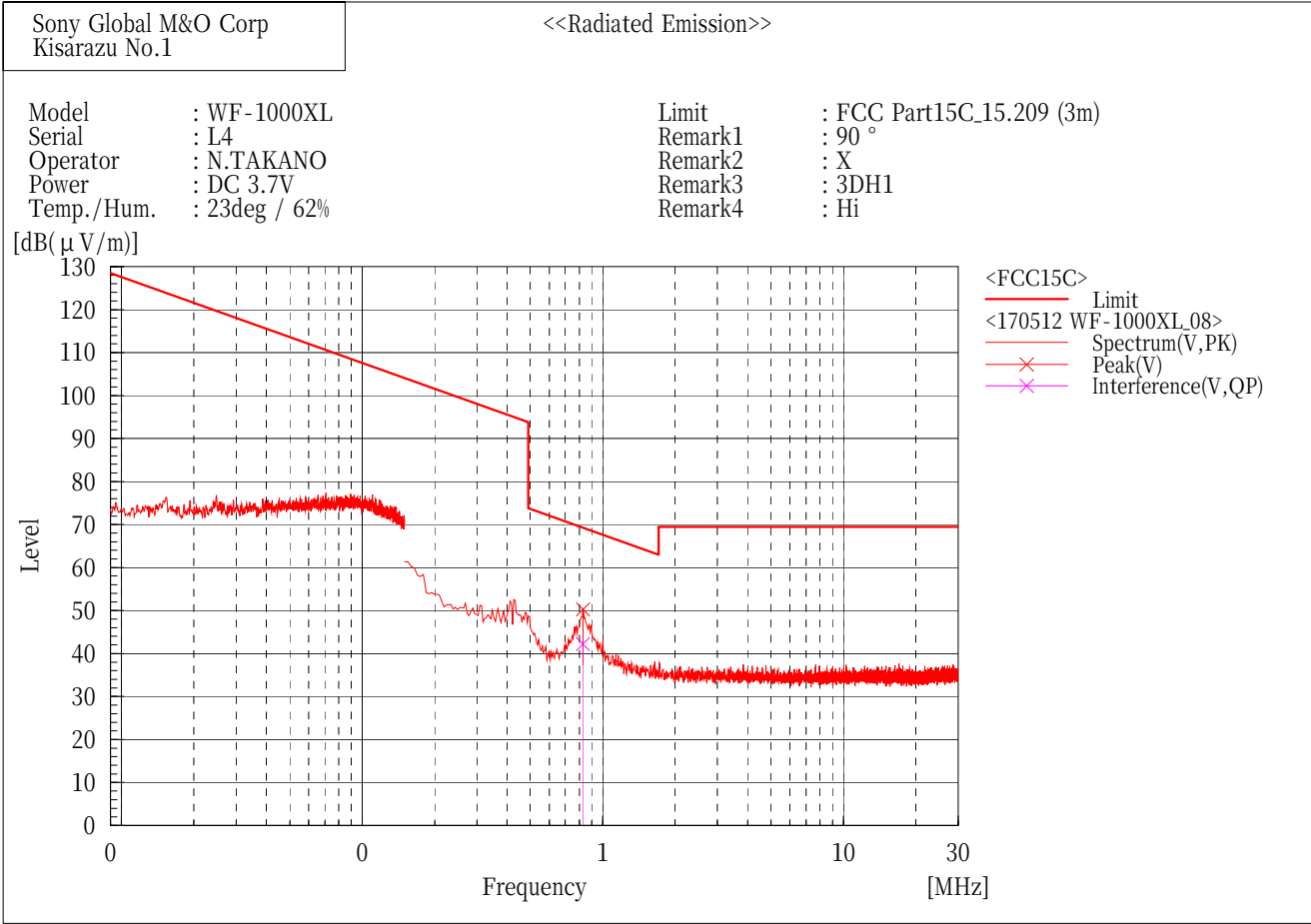
[EDR(3DH1)/2402MHz]



[EDR(3DH1)/2441MHz]



[EDR(3DH1)/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	0.825	22.8	19.4	42.2	69.3	27.1	100.0	9.6

30 MHz - 1000 MHz

[BDR(DH5)/2402MHz]

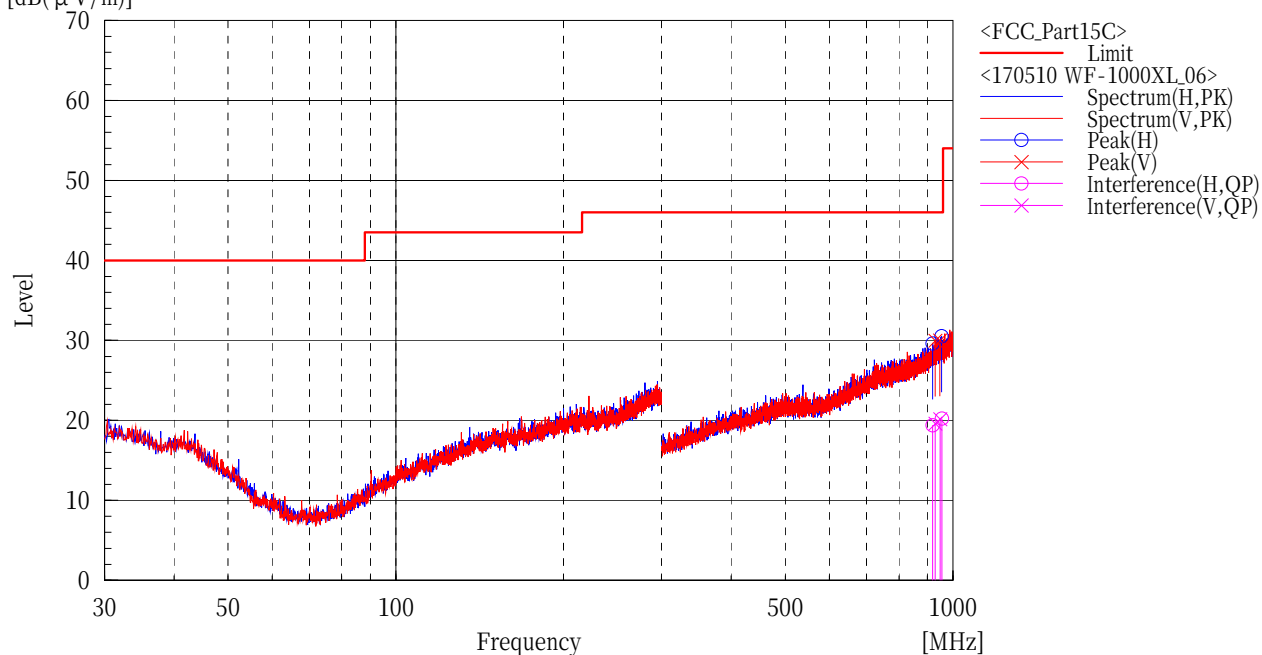
Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L2
 Operator : N.TAKANO
 Power : DC 3.7V
 Temp./Hum. : 23deg / 58%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : Y
 Remark3 : DH5
 Remark4 : Low

[dB(μV/m)]

**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	919.500	19.1	0.3	19.4	46.0	26.6	144.0	321.4
2	954.972	18.8	1.4	20.2	46.0	25.8	100.0	5.0

--- 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	929.533	19.0	0.6	19.6	46.0	26.4	230.1	190.5
2	948.096	18.9	1.2	20.1	46.0	25.9	116.8	334.5

[BDR(DH5)/2441MHz]

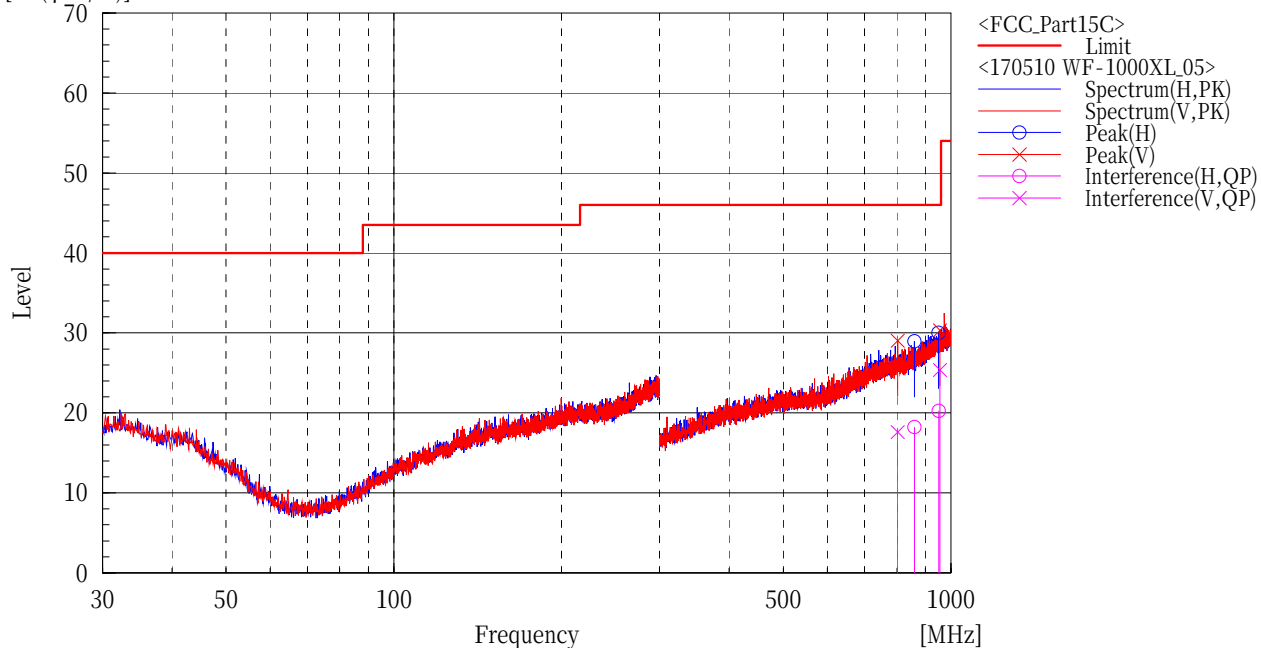
Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L4
 Operator : N.TAKANO
 Power : DC 3.7V
 Temp./Hum. : 23deg / 58%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : Y
 Remark3 : DH5
 Remark4 : Mid

[dB(μV/m)]



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	859.533	19.3	-1.1	18.2	46.0	27.8	102.2	80.6
2	951.185	18.9	1.3	20.2	46.0	25.8	100.0	345.2

--- 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	801.900	19.4	-1.8	17.6	46.0	28.4	388.2	292.8
2	955.528	24.0	1.4	25.4	46.0	20.6	100.0	329.6

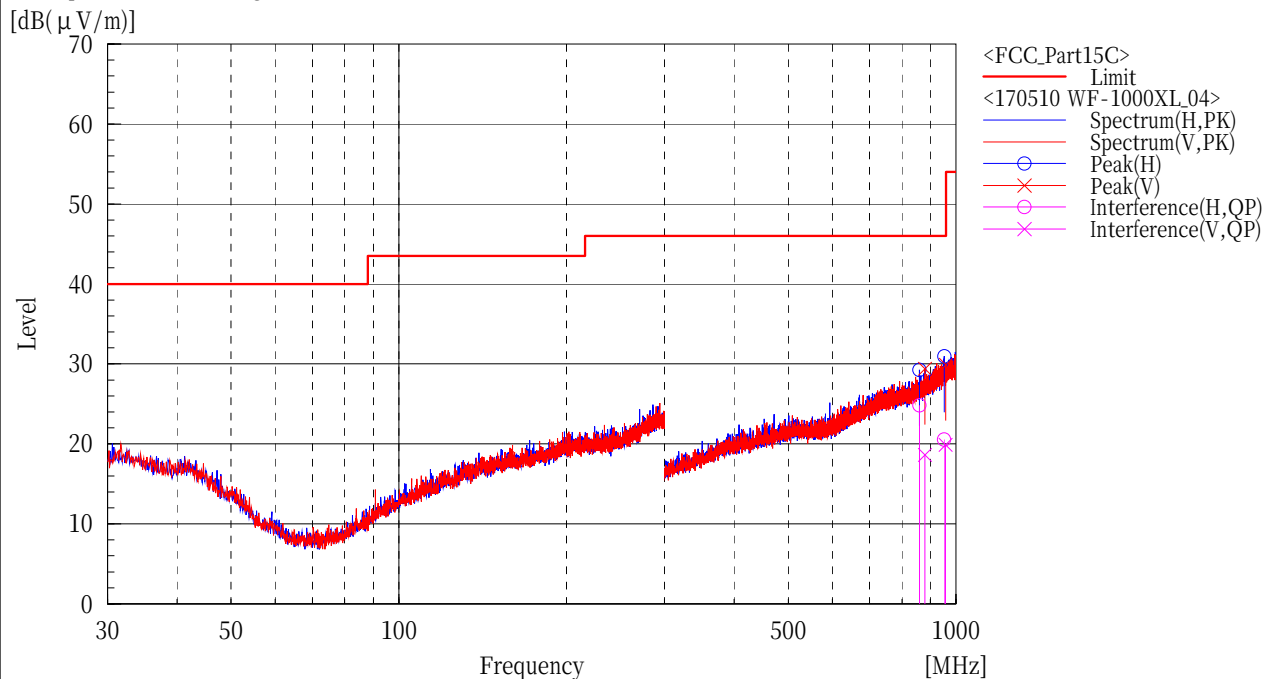
[BDR(DH5)/2480MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L2
 Operator : N.TAKANO
 Power : DC 3.7V
 Temp./Hum. : 23deg / 58%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : Y
 Remark3 : DH5
 Remark4 : Hi



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	860.233	25.9	-1.1	24.8	46.0	21.2	160.0	104.4
2	952.535	19.2	1.3	20.5	46.0	25.5	100.0	171.1

--- 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	879.833	19.4	-0.8	18.6	46.0	27.4	105.2	204.6
2	957.513	18.5	1.4	19.9	46.0	26.1	100.0	326.1

[EDR(3DH1)/2402MHz]

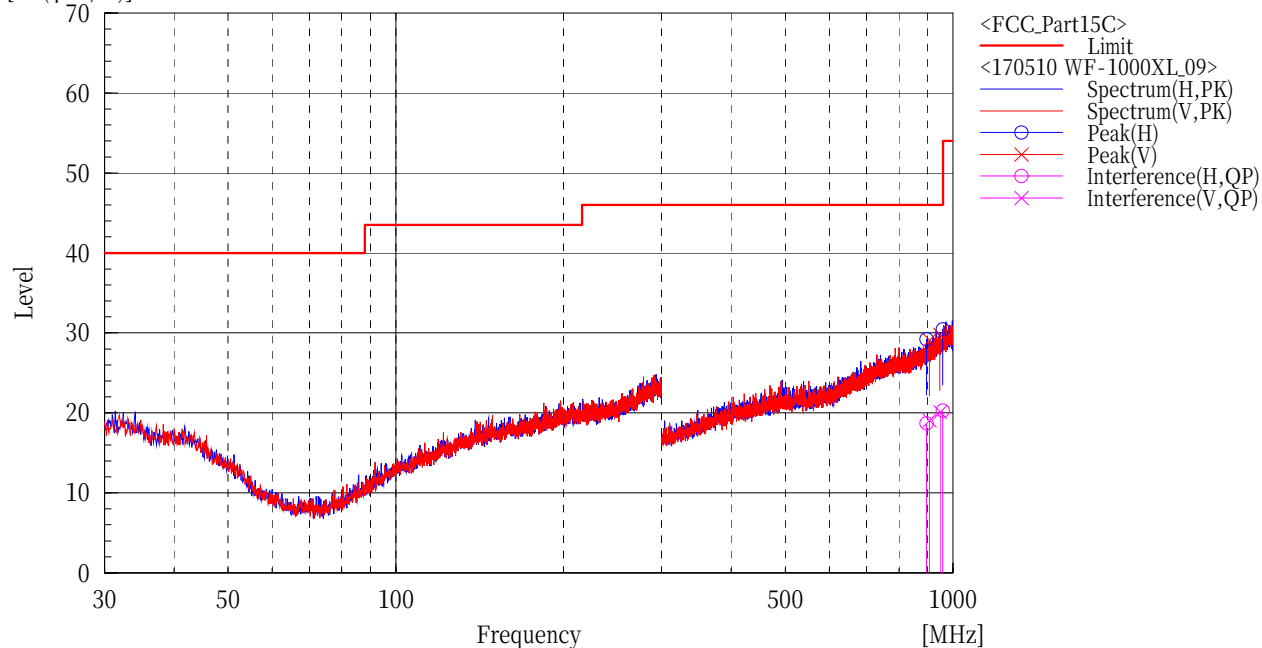
Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L4
 Operator : N.TAKANO
 Power : DC 3.7V
 Temp./Hum. : 23deg / 58%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : Y
 Remark3 : 3DH1
 Remark4 : Low

[dB(μV/m)]



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	896.167	19.1	-0.4	18.7	46.0	27.3	240.6	119.5
2	959.247	18.8	1.5	20.3	46.0	25.7	100.0	357.0

--- 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	907.133	19.2	-0.1	19.1	46.0	26.9	189.0	320.9
2	948.367	18.9	1.2	20.1	46.0	25.9	116.4	281.0

[EDR(3DH1)/2441MHz]

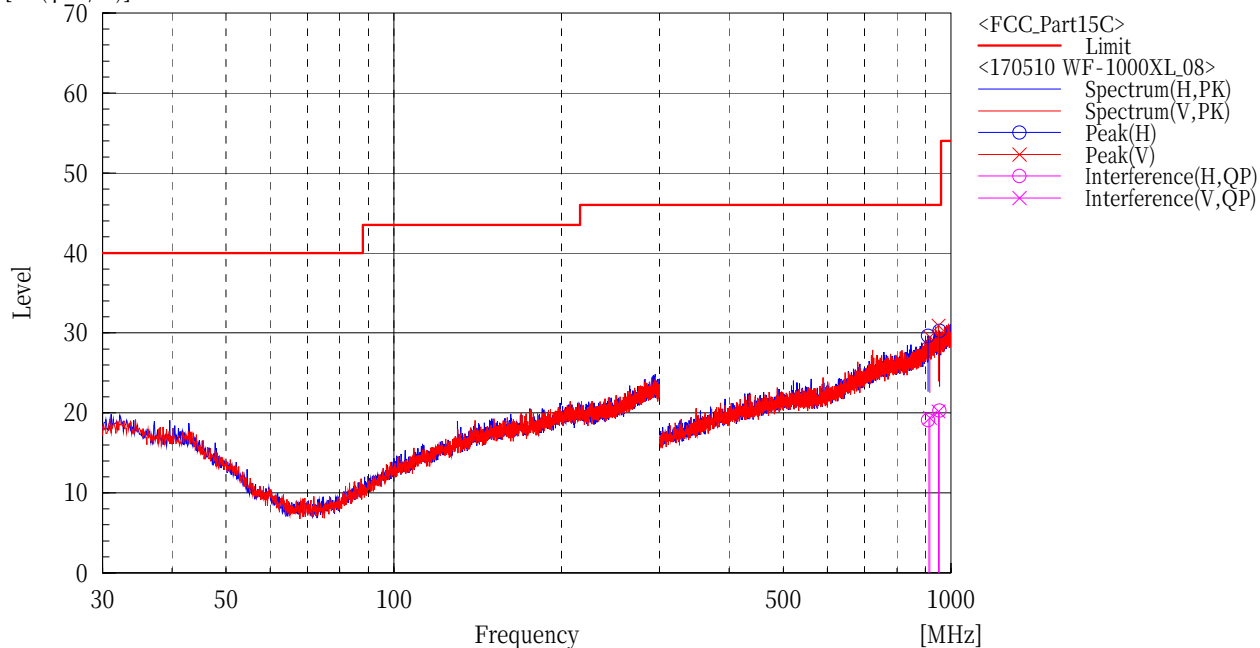
Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L2
 Operator : N.TAKANO
 Power : DC 3.7V
 Temp./Hum. : 23deg / 58%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : Y
 Remark3 : 3DH1
 Remark4 : Mid

[dB(μV/m)]



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	910.167	19.1	0.0	19.1	46.0	26.9	121.0	317.0
2	952.903	19.0	1.3	20.3	46.0	25.7	100.0	356.8

--- 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	916.233	19.2	0.2	19.4	46.0	26.6	400.0	60.6
2	950.085	19.0	1.2	20.2	46.0	25.8	119.5	21.9

[EDR(3DH1)/2480MHz]

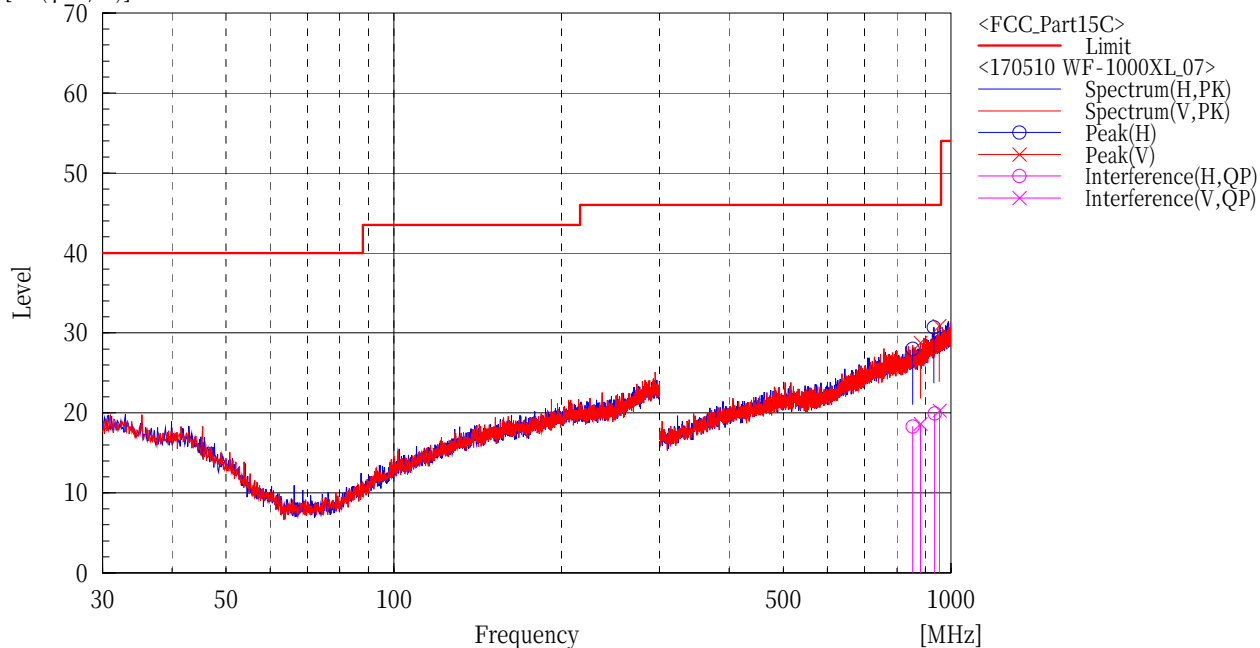
Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L4
 Operator : N.TAKANO
 Power : DC 3.7V
 Temp./Hum. : 23deg / 58%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : Y
 Remark3 : 3DH1
 Remark4 : Hi

[dB(μV/m)]



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	853.700	19.5	-1.2	18.3	46.0	27.7	100.0	34.4
2	935.533	19.1	0.8	19.9	46.0	26.1	100.0	188.3

--- 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	881.467	19.3	-0.7	18.6	46.0	27.4	102.2	111.3
2	954.315	18.9	1.4	20.3	46.0	25.7	129.8	16.8

1GHz - 6 GHz

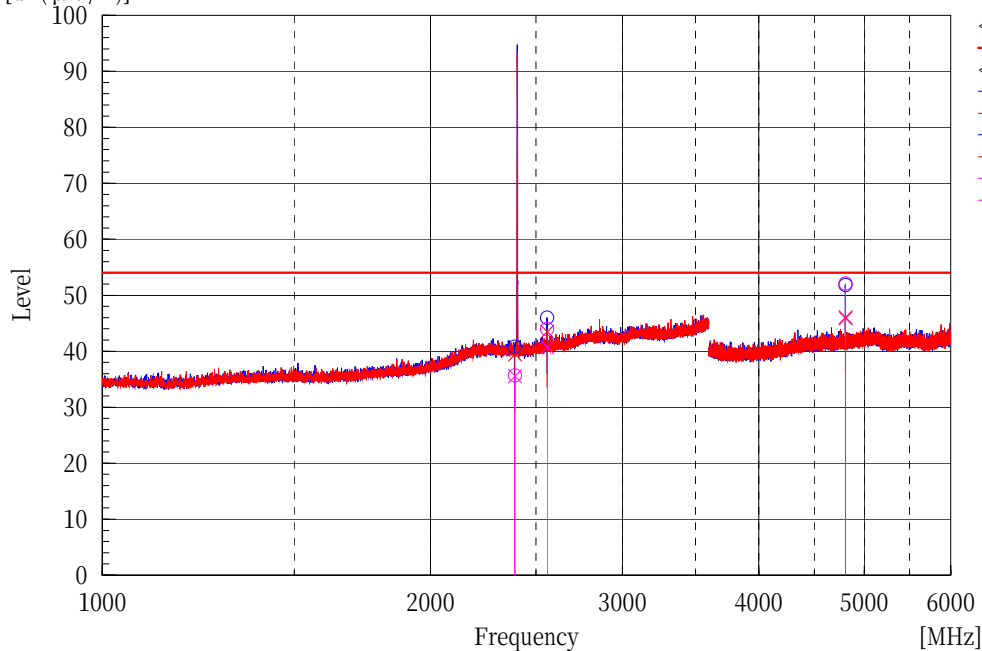
[BDR(DH5)/2402MHz]

Sony Global M&O Corp
Kisarazu TEC No.1

<<Radiated Emission>>

Model : WF-1000XL
Serial : L2
Operator : Y.MORIMOTO
Power : DC 3.7V
Temp./Hum. : 21deg / 51%Limit : FCC Part15C 15.209(a) 3m
Remark1 :
Remark2 : X
Remark3 : DH5
Remark4 : Low

[dB(μV/m)]

**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	2390.000	34.4	1.3	35.7	54.0	18.3	100.0	277.5
2	2558.025	42.1	1.8	43.9	54.0	10.1	107.1	273.0
3	4804.199	42.8	9.3	52.1	54.0	1.9	100.0	319.2

--- 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	2390.000	34.3	1.3	35.6	54.0	18.4	111.0	156.3
2	2557.898	39.0	1.8	40.8	54.0	13.2	274.5	8.8
3	4804.031	36.6	9.3	45.9	54.0	8.1	100.0	228.5

[BDR(DH5)/2441MHz]

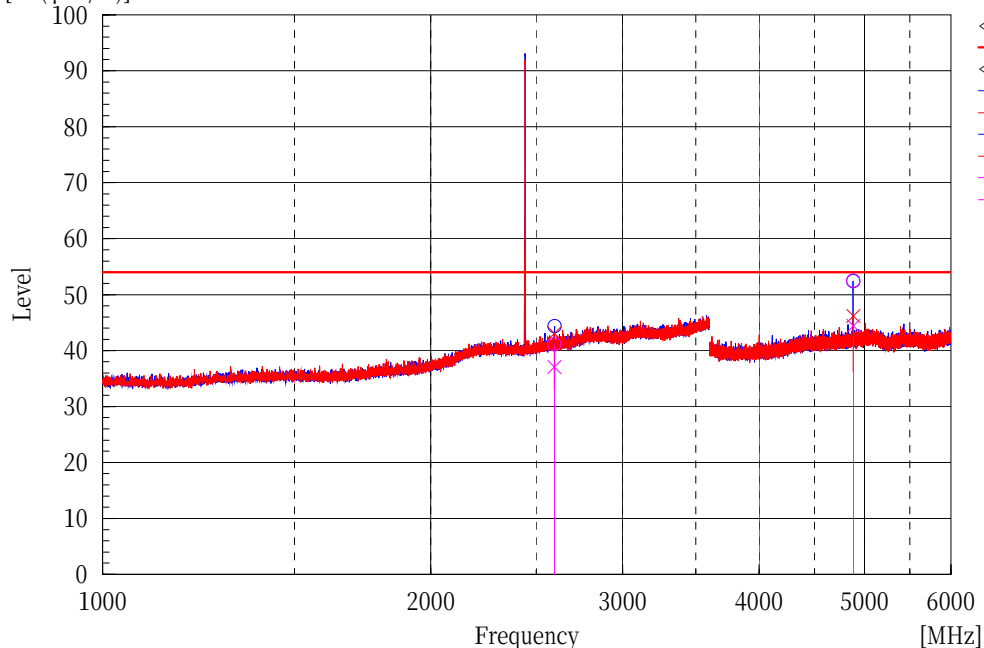
Sony Global M&O Corp
Kisarazu TEC No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L4
 Operator : N.TAKANO
 Power : DC 3.7V
 Temp./Hum. : 22deg / 49%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : X
 Remark3 : DH5
 Remark4 : Mid

[dB(μV/m)]



Final Result

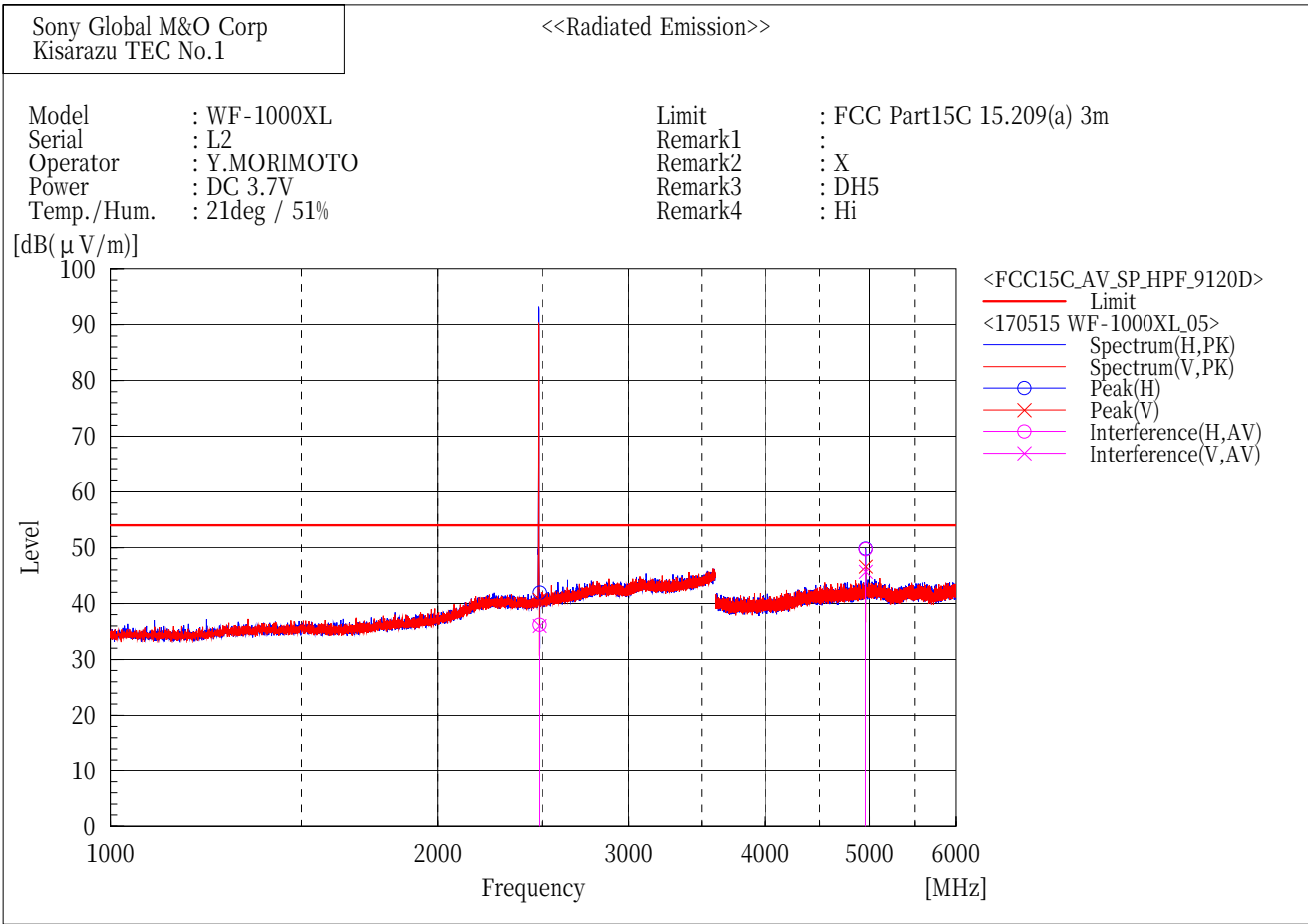
--- Horizontal Polarization (AV)---

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	2596.932	39.1	2.0	41.1	54.0	12.9	126.8	276.6
2	4881.868	43.1	9.4	52.5	54.0	1.5	113.0	323.4

--- 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	2596.941	35.1	2.0	37.1	54.0	16.9	108.5	171.2
2	4881.691	35.0	9.4	44.4	54.0	9.6	387.1	289.8

[BDR(DH5)/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	2483.500	34.6	1.6	36.2	54.0	17.8	123.0	284.8
2	4959.835	40.2	9.5	49.7	54.0	4.3	100.0	316.1

--- 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	2483.500	34.4	1.6	36.0	54.0	18.0	118.0	333.2
2	4959.911	36.2	9.5	45.7	54.0	8.3	110.0	229.5

[BDR(DH5)/2402MHz]

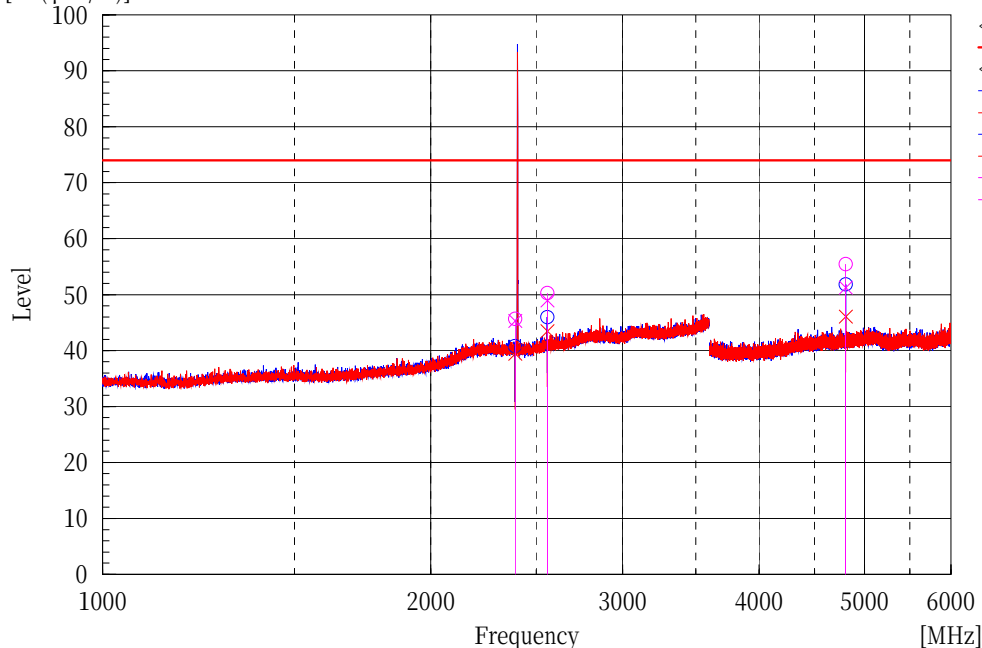
Sony Global M&O Corp
Kisarazu TEC No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L2
 Operator : Y.MORIMOTO
 Power : DC 3.7V
 Temp./Hum. : 21deg / 51%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : X
 Remark3 : DH5
 Remark4 : Low

[dB(μV/m)]



<FCC15C.PK.SP.HPF_9120D>
 Limit
 <170515 WF-1000XL_02>
 Spectrum(H,PK)
 Spectrum(V,PK)
 Peak(H)
 Peak(V)
 Interference(H,PK)
 Interference(V,PK)

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	2390.000	44.4	1.3	45.7	74.0	28.3	100.0	277.5
2	2557.999	48.5	1.8	50.3	74.0	23.7	107.0	273.1
3	4804.144	46.2	9.3	55.5	74.0	18.5	100.0	317.3

--- 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	2390.000	44.0	1.3	45.3	74.0	28.7	111.0	158.1
2	2557.960	47.2	1.8	49.0	74.0	25.0	274.5	10.8
3	4804.418	42.0	9.3	51.3	74.0	22.7	100.0	230.5

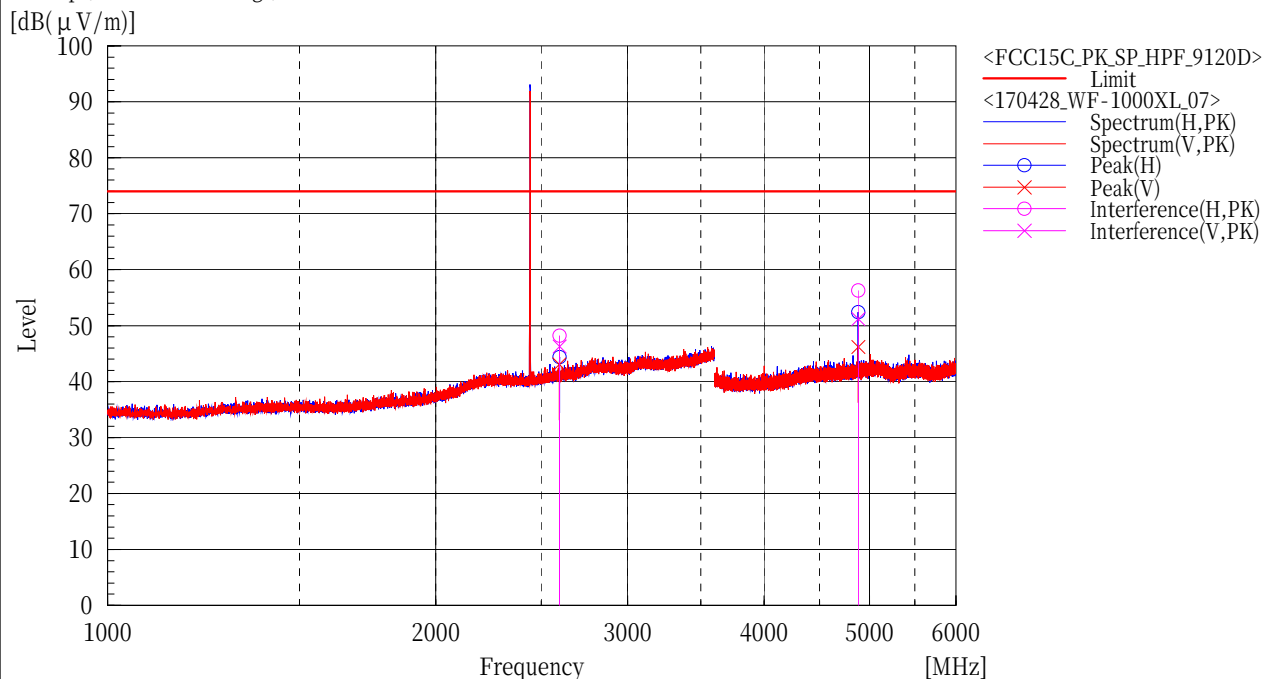
[BDR(DH5)/2441MHz]

Sony Global M&O Corp
Kisarazu TEC No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L4
 Operator : N.TAKANO
 Power : DC 3.7V
 Temp./Hum. : 22deg / 49%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : X
 Remark3 : DH5
 Remark4 : Mid



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	2597.207	46.2	2.0	48.2	74.0	25.8	126.8	278.6
2	4881.583	46.9	9.4	56.3	74.0	17.7	113.0	323.4

--- 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	2597.253	44.3	2.0	46.3	74.0	27.7	108.5	173.1
2	4881.543	41.8	9.4	51.2	74.0	22.8	387.1	287.8

[BDR(DH5)/2480MHz]

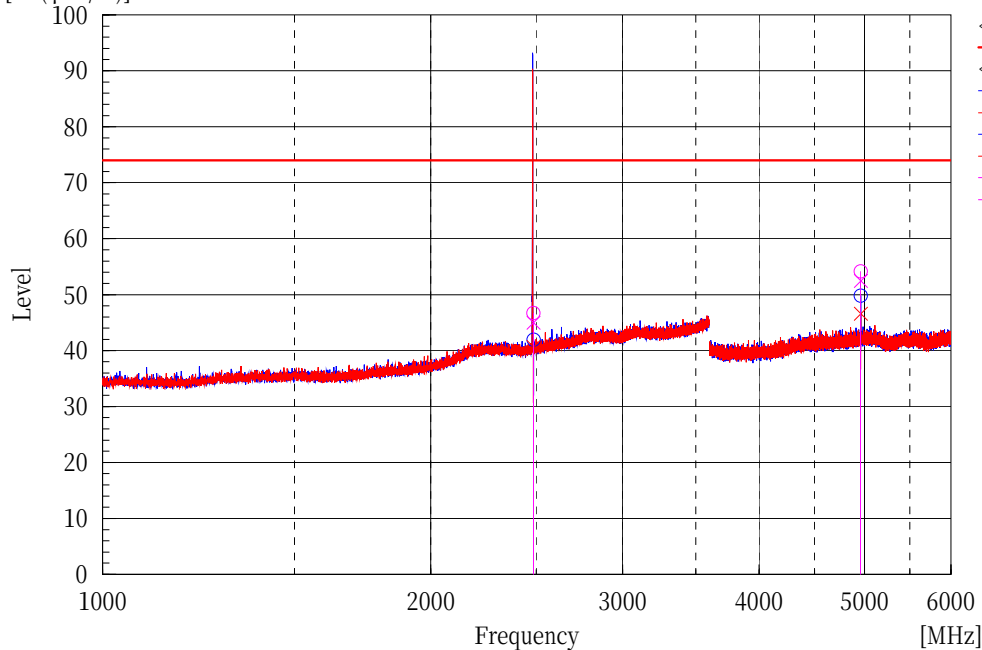
Sony Global M&O Corp
Kisarazu TEC No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L2
 Operator : Y.MORIMOTO
 Power : DC 3.7V
 Temp./Hum. : 21deg / 51%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : X
 Remark3 : DH5
 Remark4 : Hi

[dB(μV/m)]



<FCC15C.PK.SP.HPF_9120D>
 Limit
 <170515 WF-1000XL_06>
 Spectrum(H,PK)
 Spectrum(V,PK)
 Peak(H)
 Peak(V)
 Interference(H,PK)
 Interference(V,PK)

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	2483.500	45.1	1.6	46.7	74.0	27.3	123.0	286.8
2	4959.795	44.7	9.5	54.2	74.0	19.8	100.0	314.2

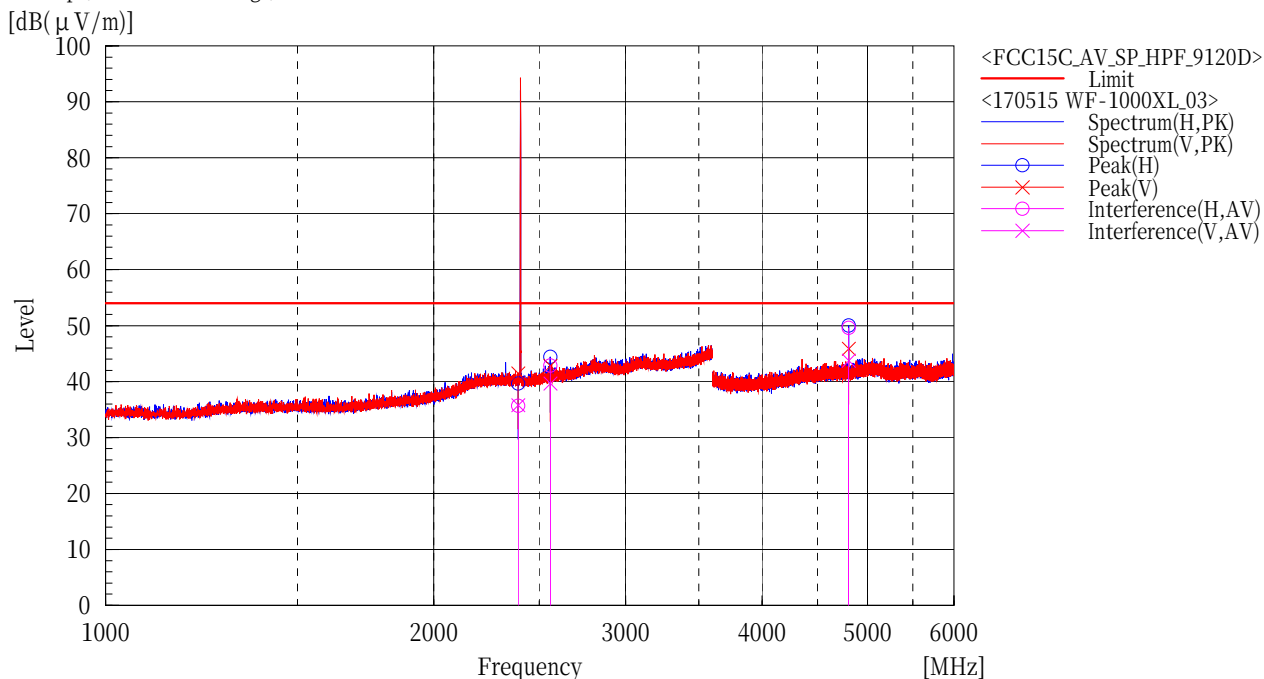
--- Vertical Polarization (PK)---

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	2483.500	43.4	1.6	45.0	74.0	29.0	118.0	331.3
2	4959.540	43.0	9.5	52.5	74.0	21.5	110.0	231.5

[EDR(3DH1)/2402MHz]

Sony Global M&O Corp
Kisarazu TEC No.1

<<Radiated Emission>>

Model : WF-1000XL
Serial : L4
Operator : Y.MORIMOTO
Power : DC 3.7V
Temp./Hum. : 21deg / 51%Limit : FCC Part15C 15.209(a) 3m
Remark1 :
Remark2 : X
Remark3 : 3DH1
Remark4 : Low

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	2390.000	34.4	1.3	35.7	54.0	18.3	135.0	274.4
2	2558.002	41.1	1.8	42.9	54.0	11.1	100.0	281.6
3	4803.973	40.3	9.3	49.6	54.0	4.4	100.0	331.7

--- 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	2390.000	34.5	1.3	35.8	54.0	18.2	315.4	16.3
2	2557.965	37.8	1.8	39.6	54.0	14.4	394.1	353.5
3	4804.067	34.4	9.3	43.7	54.0	10.3	186.9	291.7

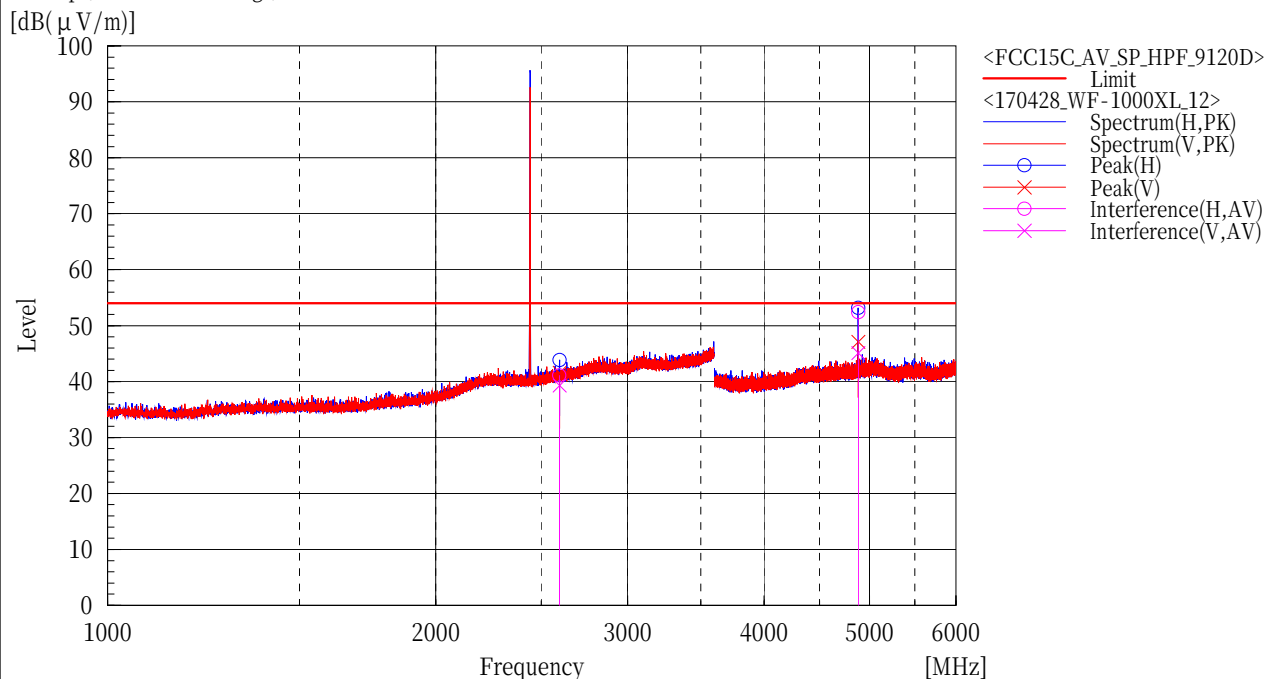
[EDR(3DH1)/2441MHz]

Sony Global M&O Corp
Kisarazu TEC No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L2
 Operator : N.TAKANO
 Power : DC 3.7V
 Temp./Hum. : 22deg / 49%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : X
 Remark3 : 3DH1
 Remark4 : Mid



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	2596.908	39.1	2.0	41.1	54.0	12.9	119.1	289.7
2	4882.031	43.0	9.4	52.4	54.0	1.6	155.7	326.4

--- 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	2597.049	37.3	2.0	39.3	54.0	14.7	430.0	191.0
2	4881.875	35.7	9.4	45.1	54.0	8.9	110.0	226.1

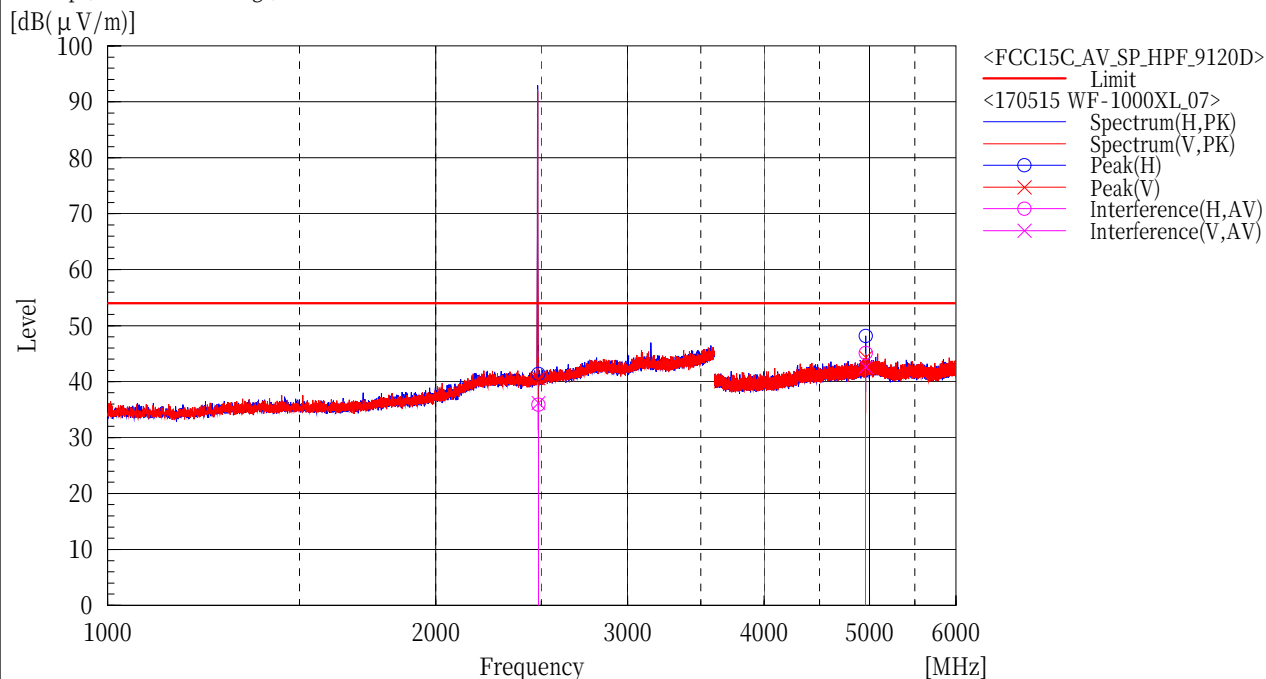
[EDR(3DH1)/2480MHz]

Sony Global M&O Corp
Kisarazu TEC No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L4
 Operator : Y.MORIMOTO
 Power : DC 3.7V
 Temp./Hum. : 21deg / 51%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : X
 Remark3 : 3DH1
 Remark4 : Hi



Final Result

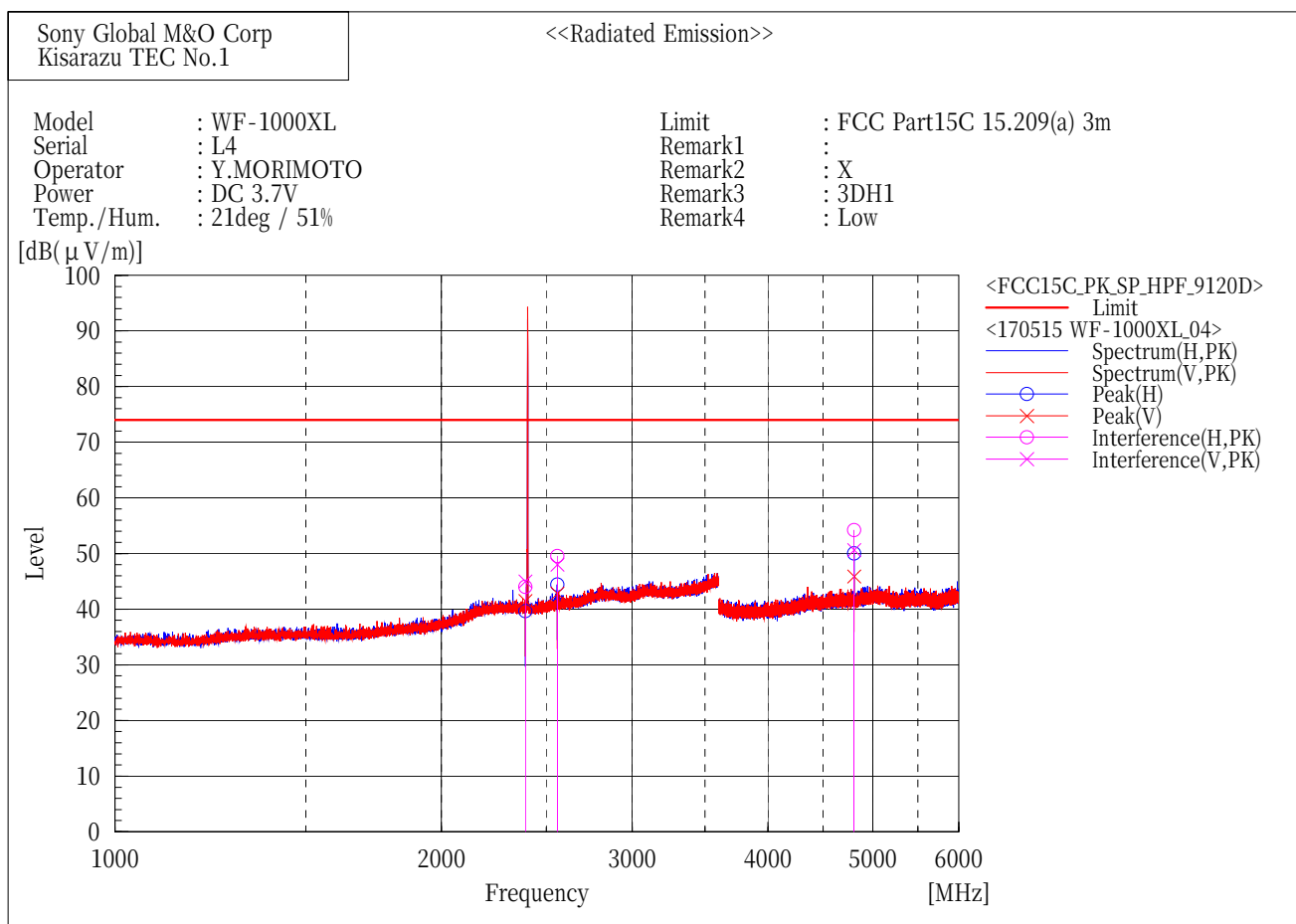
--- Horizontal Polarization (AV)---

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	2483.500	34.3	1.6	35.9	54.0	18.1	136.0	101.5
2	4959.847	35.6	9.5	45.1	54.0	8.9	416.0	298.1

--- 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	2483.500	34.6	1.6	36.2	54.0	17.8	122.6	323.5
2	4960.045	33.1	9.5	42.6	54.0	11.4	161.0	328.0

[EDR(3DH1)/2402MHz]



Final Result

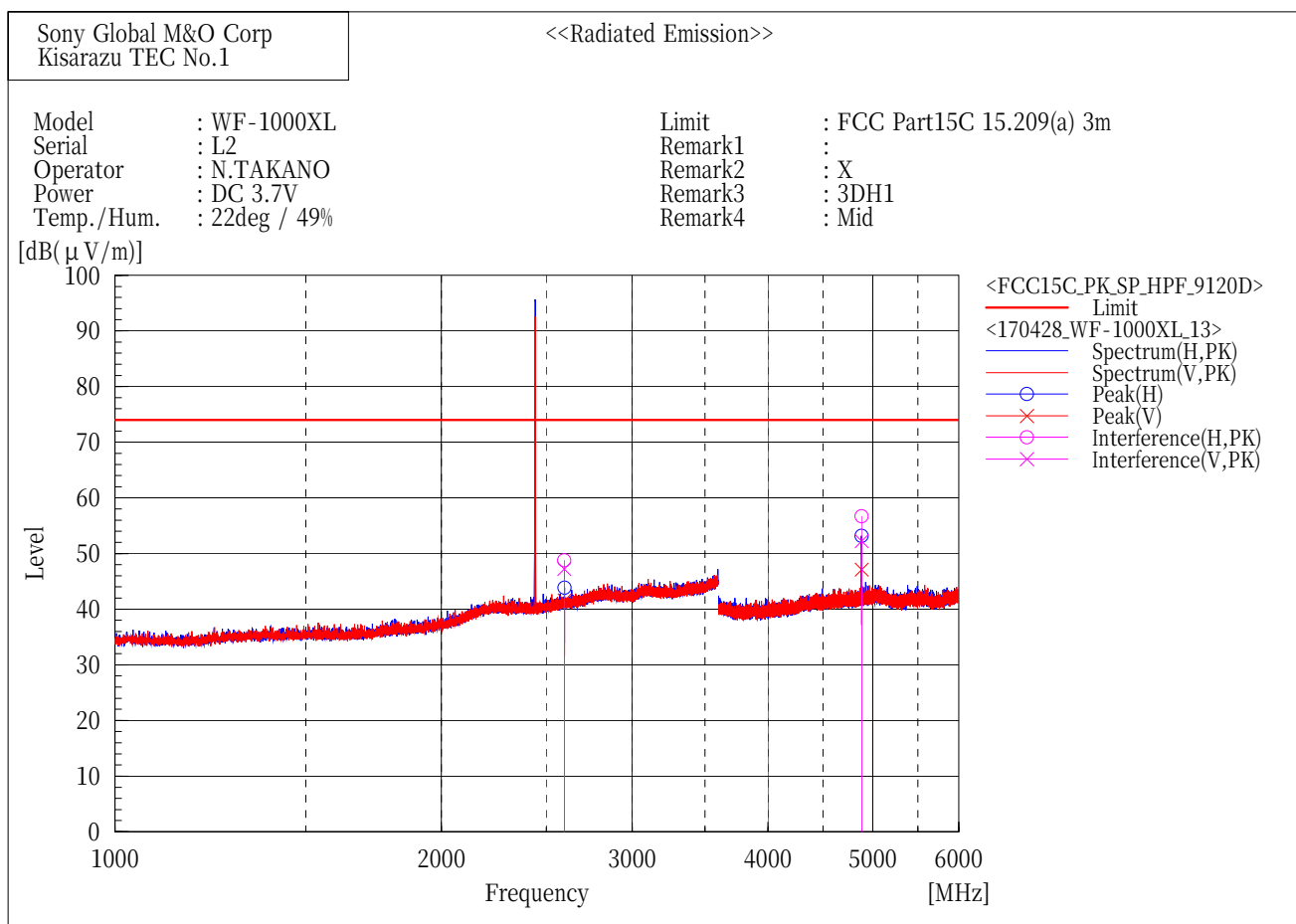
--- Horizontal Polarization (PK)---

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	2390.000	42.7	1.3	44.0	74.0	30.0	135.0	276.3
2	2557.965	47.8	1.8	49.6	74.0	24.4	100.0	280.1
3	4803.579	44.9	9.3	54.2	74.0	19.8	100.0	329.7

--- 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	2390.000	43.7	1.3	45.0	74.0	29.0	431.8	205.6
2	2557.955	46.2	1.8	48.0	74.0	26.0	394.1	351.5
3	4804.297	41.4	9.3	50.7	74.0	23.3	186.9	293.7

[EDR(3DH1)/2441MHz]



Final Result

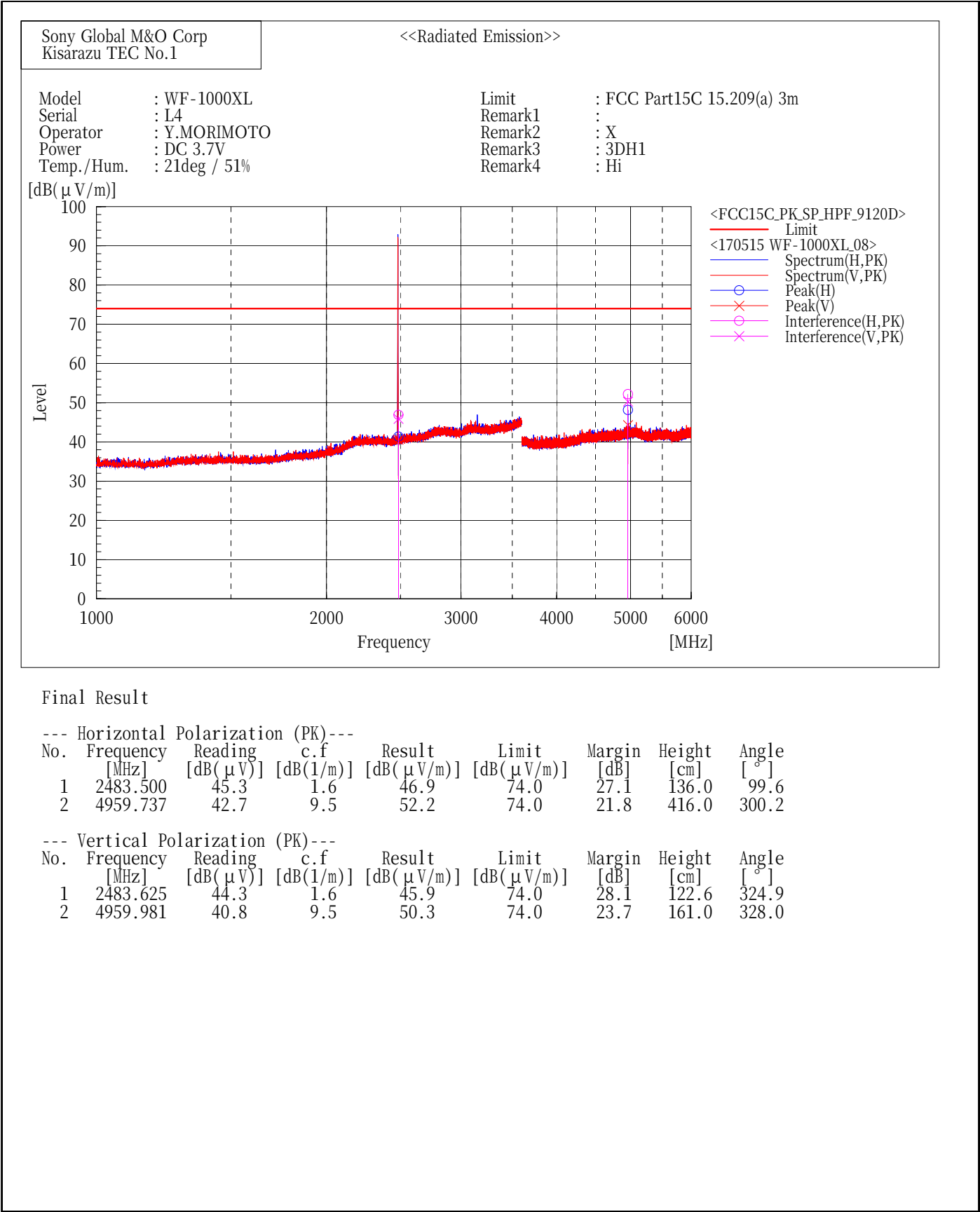
--- Horizontal Polarization (PK)---

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	2596.929	46.8	2.0	48.8	74.0	25.2	119.1	291.7
2	4881.603	47.3	9.4	56.7	74.0	17.3	155.7	326.4

--- 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	2596.668	45.2	2.0	47.2	74.0	26.8	430.0	193.0
2	4881.600	42.9	9.4	52.3	74.0	21.7	110.0	224.1

[EDR(3DH1)/2480MHz]



6 GHz - 18 GHz

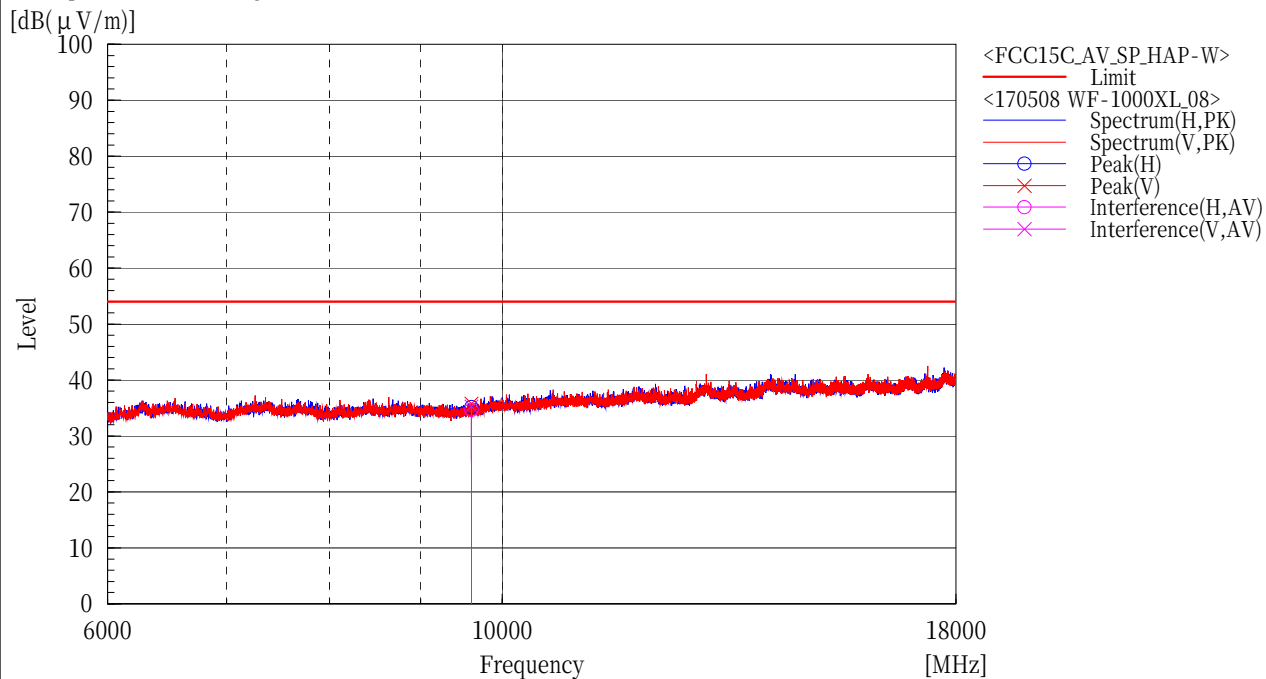
[BDR(DH5)/2402MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L2
 Operator : N.TAKANO
 Power : DC 3.7V
 Temp./Hum. : 21deg / 61%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : X
 Remark3 : DH5
 Remark4 : Low

**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	9610.098	42.7	-8.0	34.7	54.0	19.3	100.0	327.5

--- 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	9610.002	43.3	-8.0	35.3	54.0	18.7	117.1	264.4

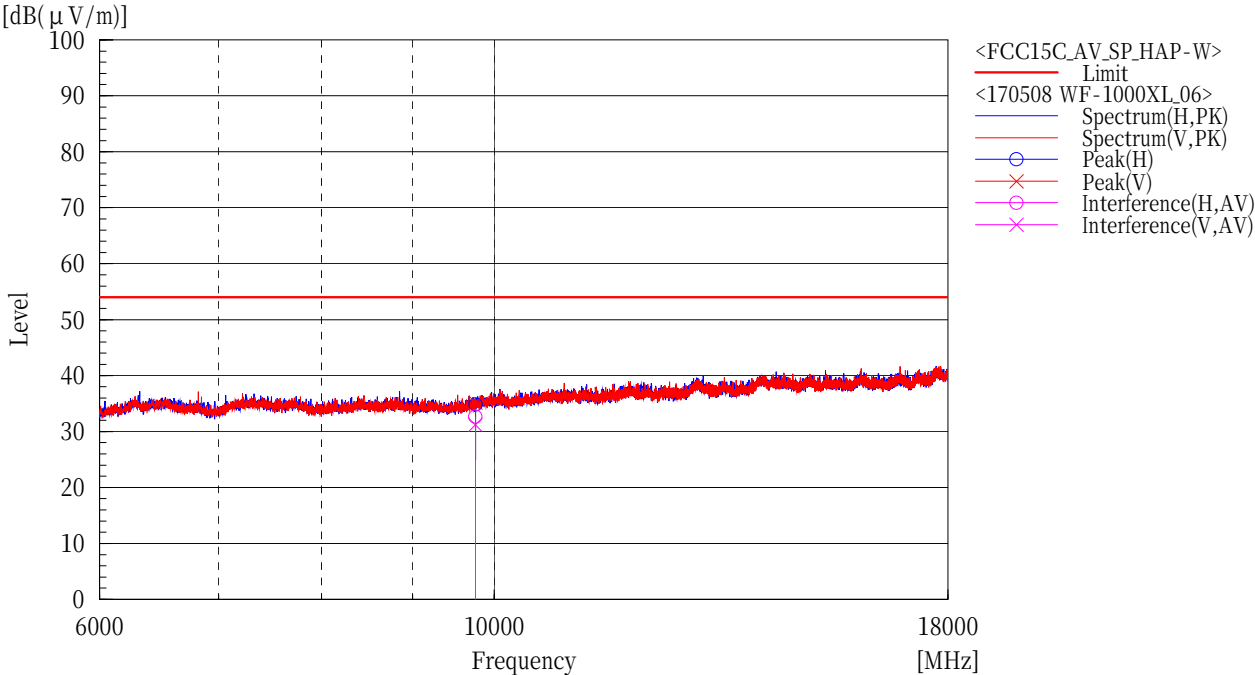
[BDR(DH5)/2441MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
Serial : L4
Operator : N.TAKANO
Power : DC 3.7V
Temp./Hum. : 21deg / 61%

Limit : FCC Part15C 15.209(a) 3m
Remark1 :
Remark2 : X
Remark3 : DH5
Remark4 : Mid



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	9762.018	40.1	-7.4	32.7	54.0	21.3	100.0	33.1

--- 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	9761.996	38.6	-7.4	31.2	54.0	22.8	263.0	176.5

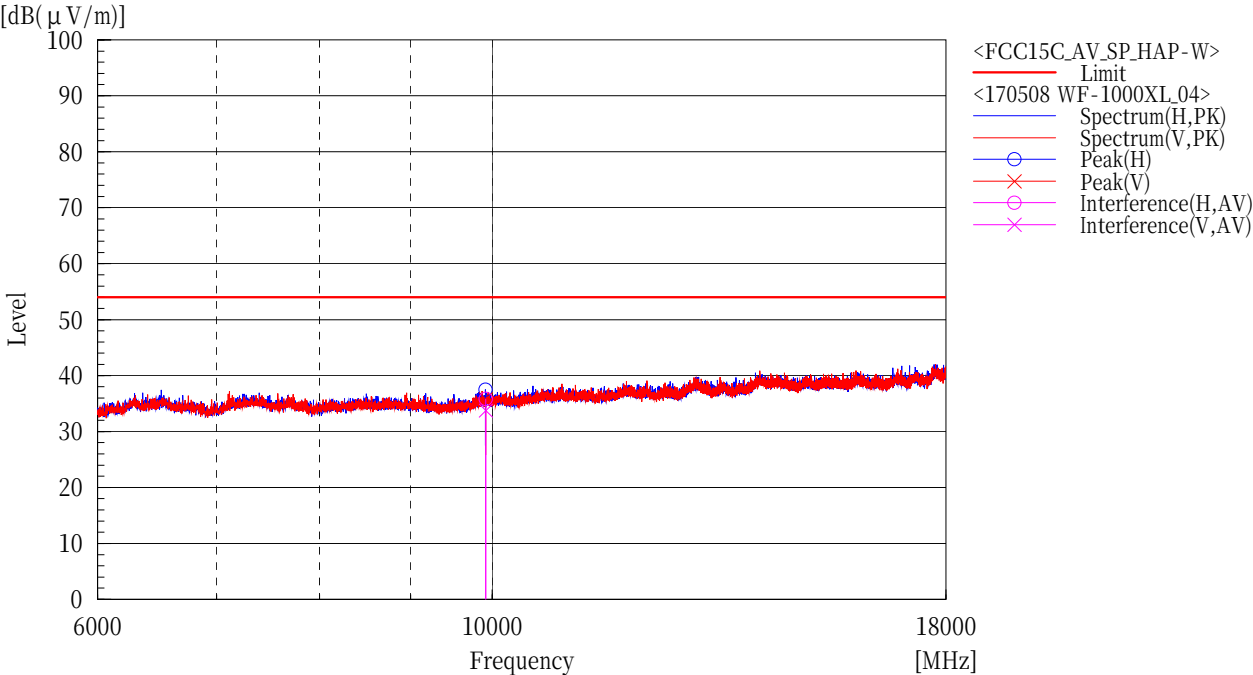
[BDR(DH5)/2480MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
Serial : L2
Operator : N.TAKANO
Power : DC 3.7V
Temp./Hum. : 21deg / 61%

Limit : FCC Part15C 15.209(a) 3m
Remark1 :
Remark2 : X
Remark3 : DH5
Remark4 : Hi



Final Result

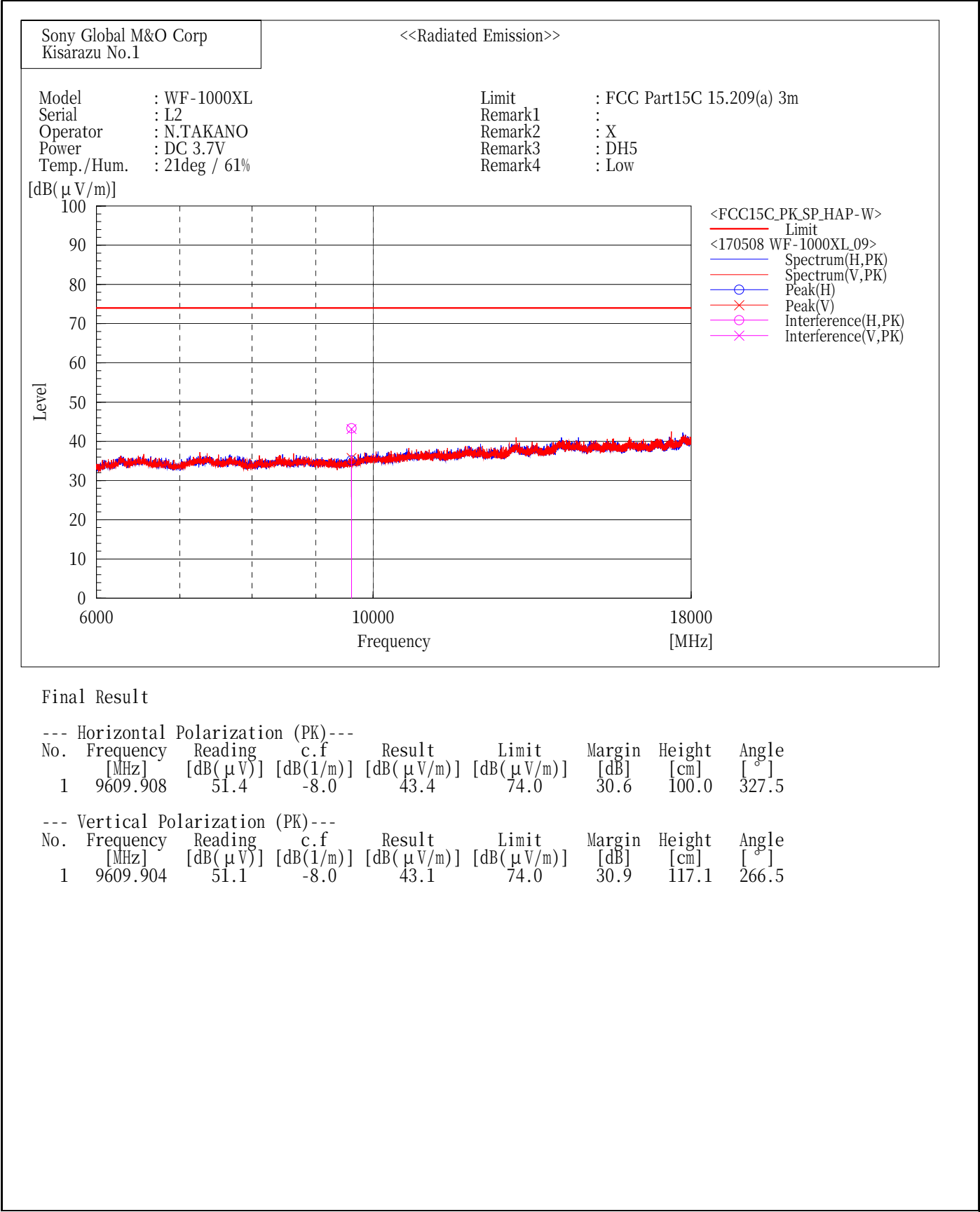
--- Horizontal Polarization (AV)---

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	9917.925	42.5	-6.7	35.8	54.0	18.2	100.0	346.4

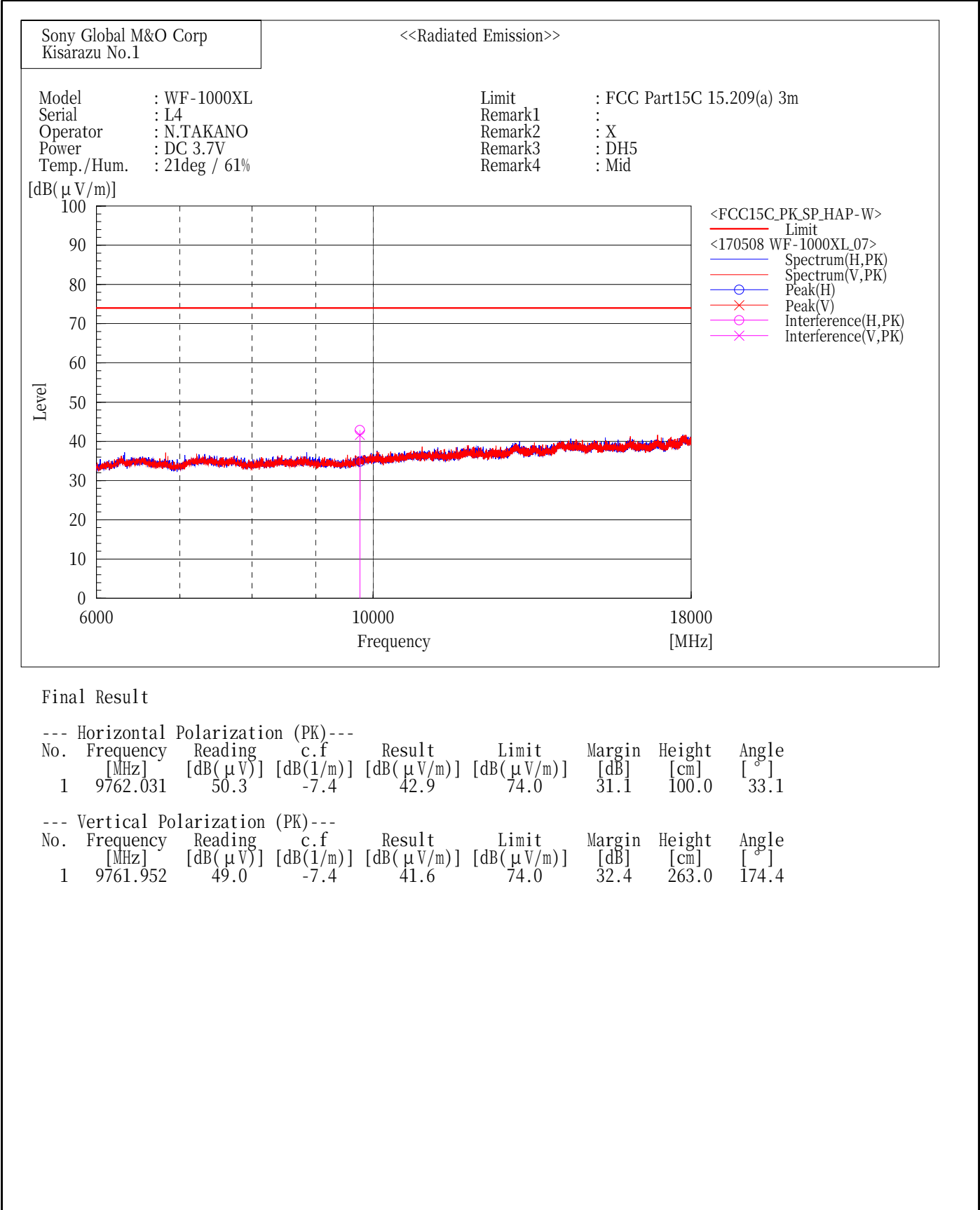
--- Vertical Polarization (AV)---

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	9917.950	40.5	-6.7	33.8	54.0	20.2	234.0	276.1

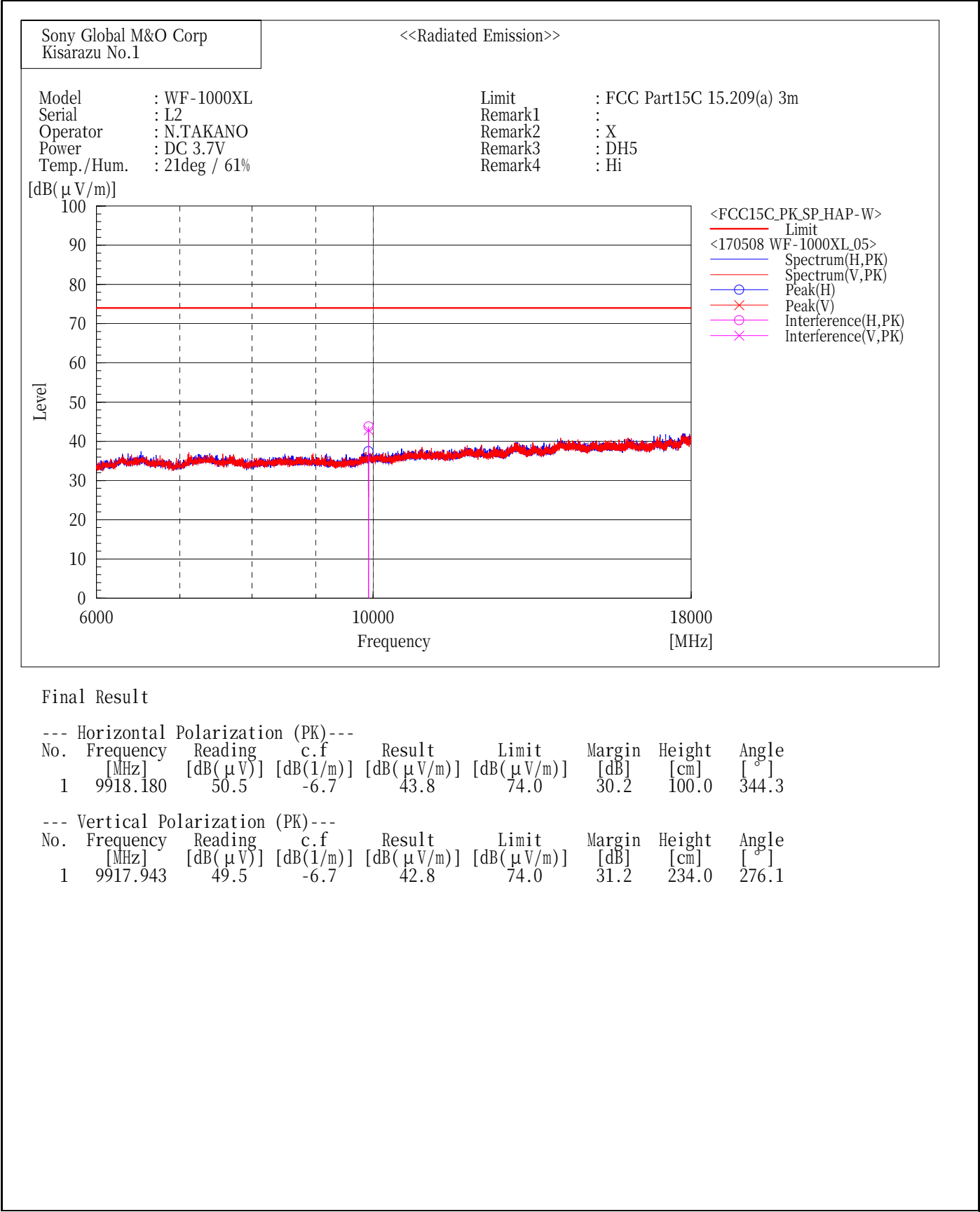
[BDR(DH5)/2402MHz]



[BDR(DH5)/2441MHz]



[BDR(DH5)/2480MHz]



[EDR(3DH1)/2402MHz]

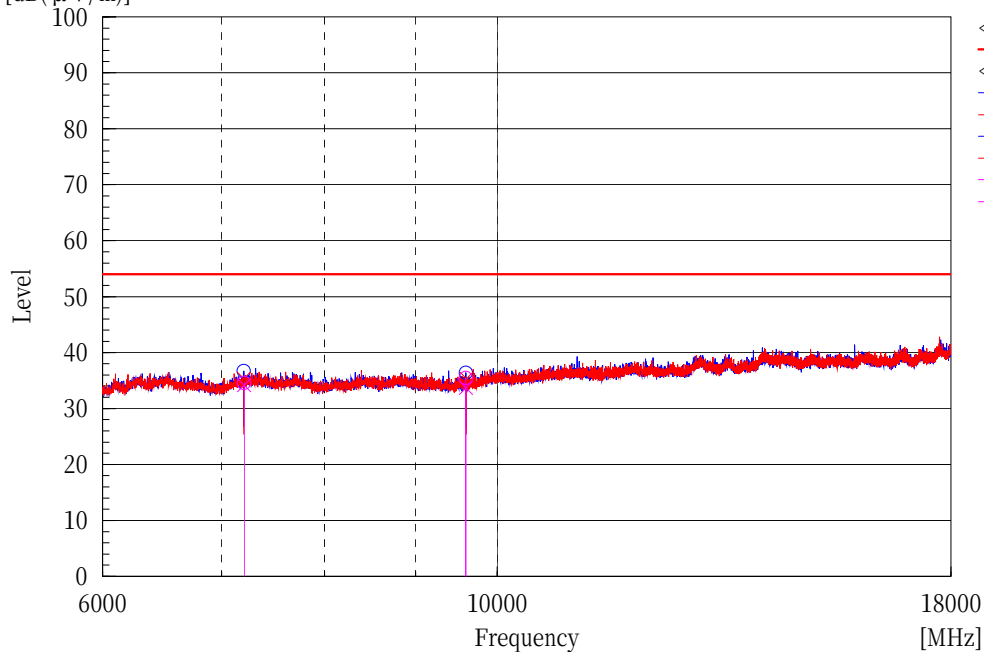
Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L4
 Operator : N.TAKANO
 Power : DC 3.7V
 Temp./Hum. : 21deg / 61%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : X
 Remark3 : 3DH1
 Remark4 : Low

[dB(μV/m)]



<FCC15C_AV.SP.HAP-W>

Limit

<170508 WF-1000XL_14>

Spectrum(H,PK)

Spectrum(V,PK)

Peak(H)

Peak(V)

Interference(H,AV)

Interference(V,AV)

Final Result

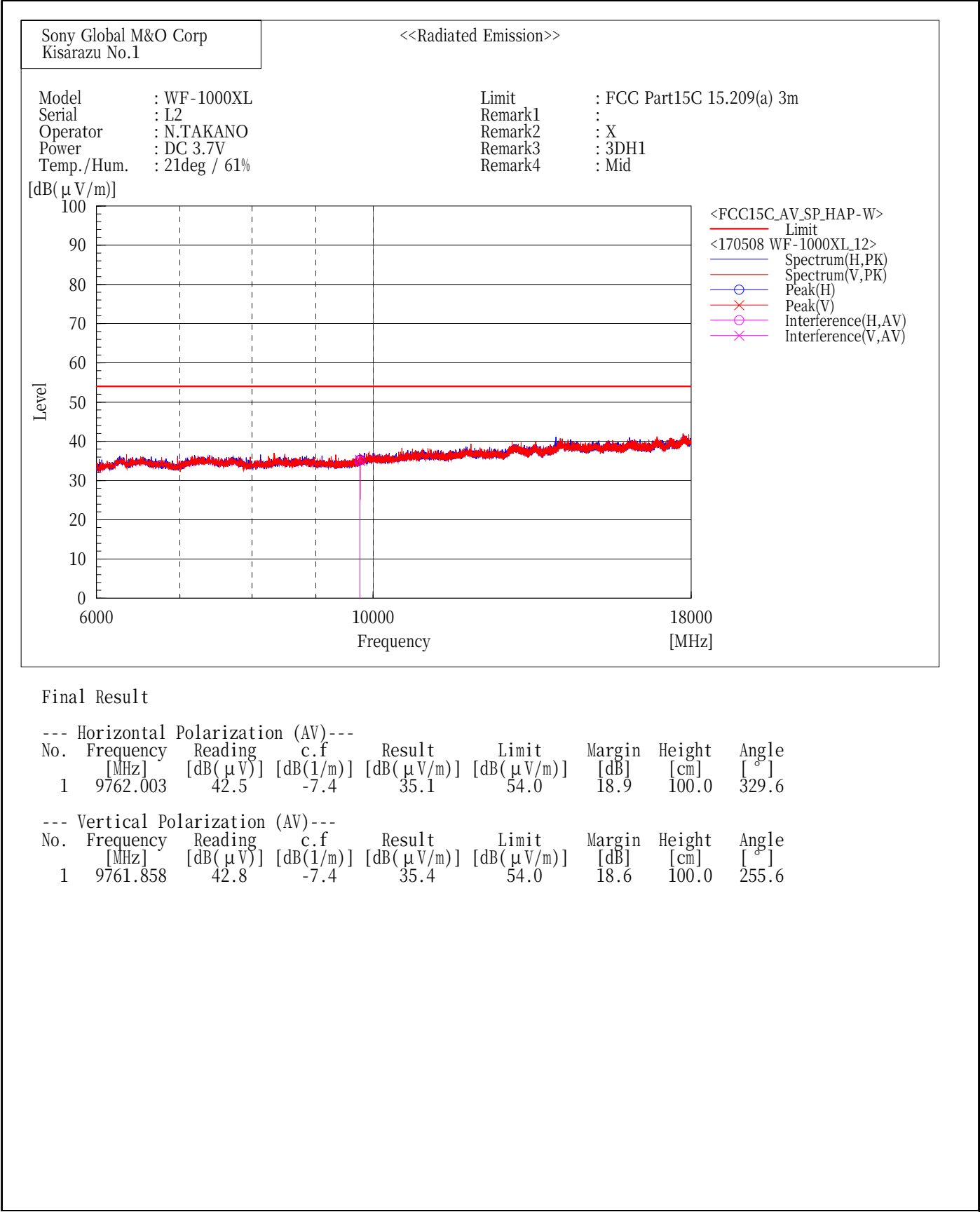
--- Horizontal Polarization (AV)---

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	7206.244	45.2	-10.6	34.6	54.0	19.4	100.0	287.4
2	9605.956	43.6	-8.1	35.5	54.0	18.5	100.0	277.8

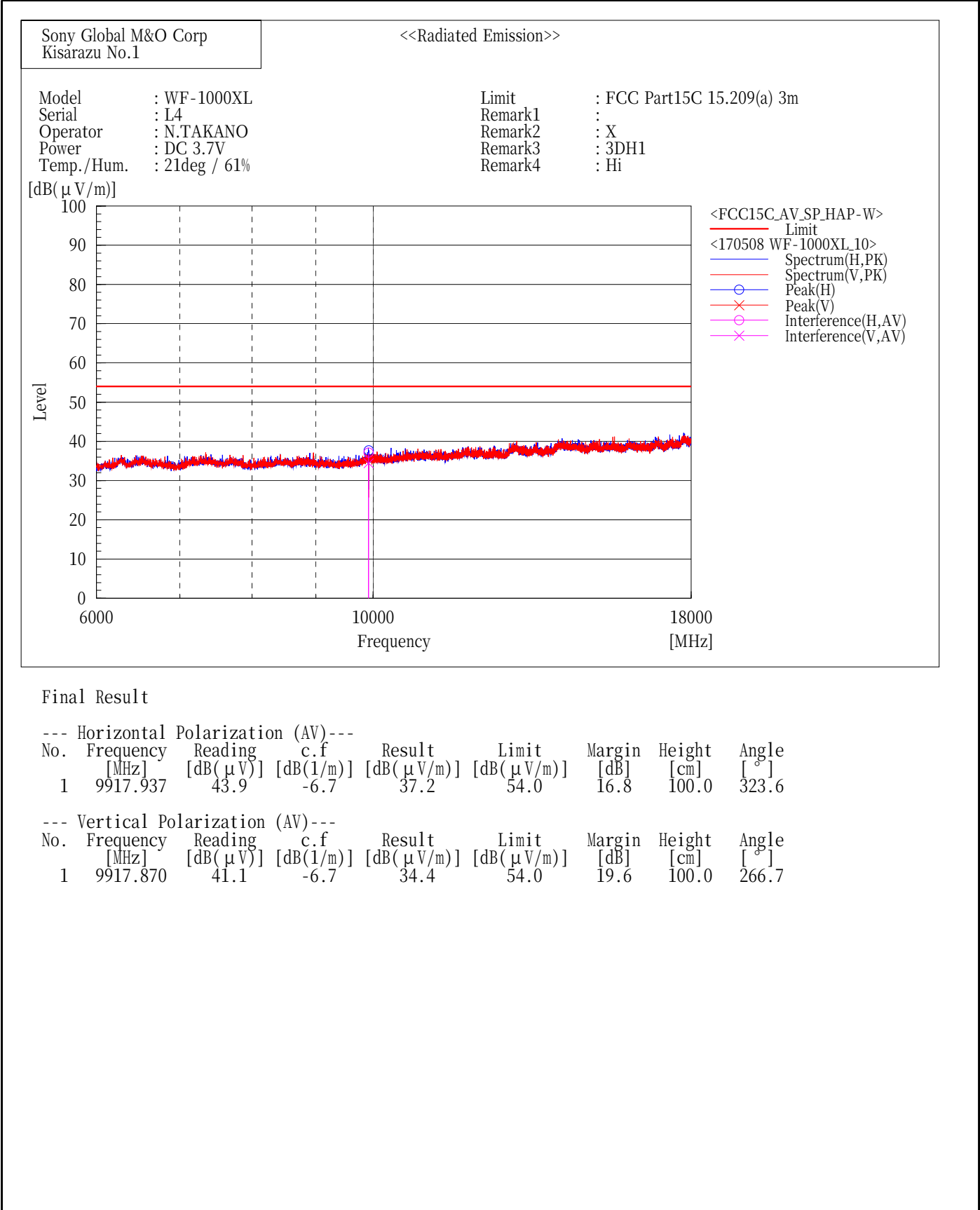
--- Vertical Polarization (AV)---

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	7206.039	44.8	-10.6	34.2	54.0	19.8	100.0	230.0
2	9605.978	41.8	-8.1	33.7	54.0	20.3	100.0	83.9

[EDR(3DH1)/2441MHz]



[EDR(3DH1)/2480MHz]

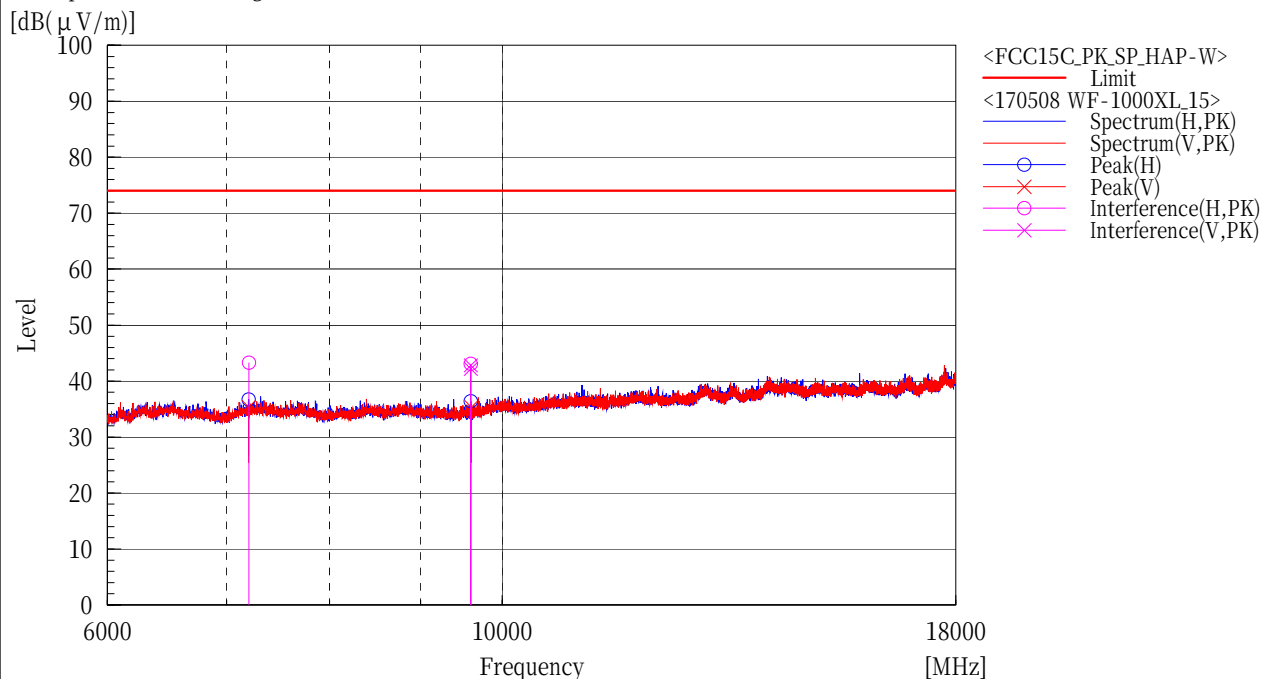


Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
Serial : L4
Operator : N.TAKANO
Power : DC 3.7V
Temp./Hum. : 21deg / 61%

Limit : FCC Part15C 15.209(a) 3m
Remark1 :
Remark2 : X
Remark3 : 3DH1
Remark4 : Low



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	7206.079	53.9	-10.6	43.3	74.0	30.7	100.0	287.4
2	9606.059	51.2	-8.1	43.1	74.0	30.9	100.0	279.4

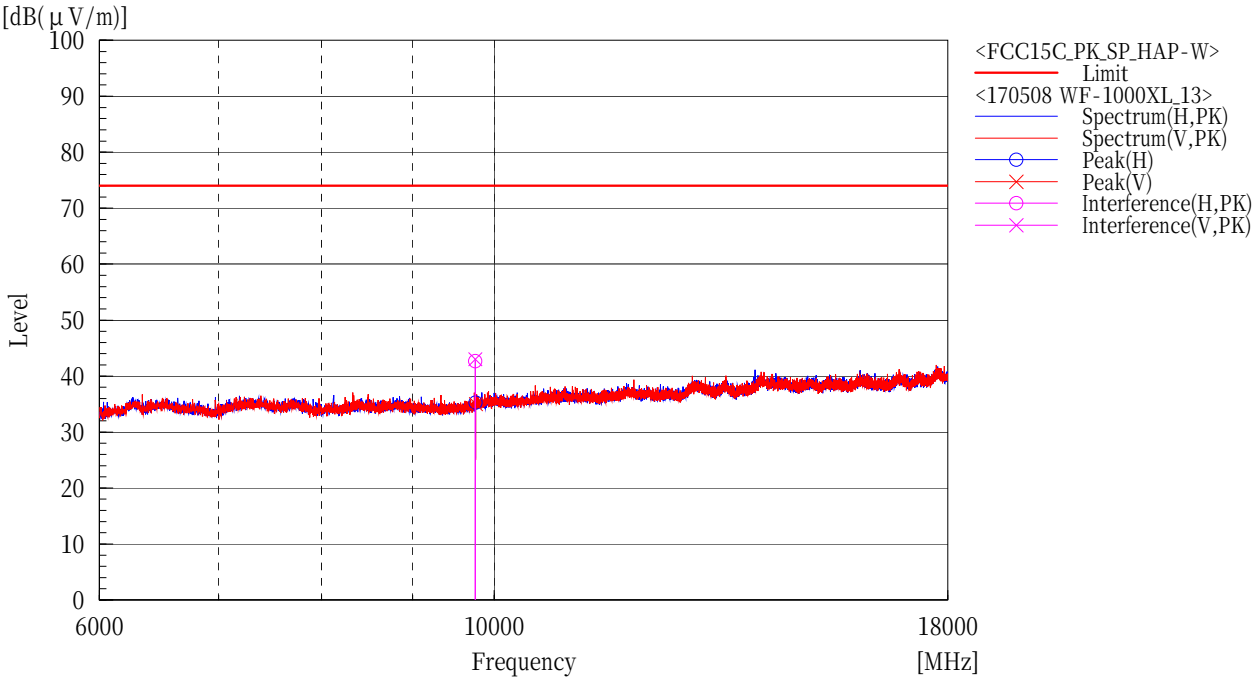
--- Vertical Polarization (PK)---

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	9605.967	50.9	-8.1	42.8	74.0	31.2	100.0	278.9
2	9606.118	50.3	-8.1	42.2	74.0	31.8	100.0	82.0

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model	: WF-1000XL	Limit	: FCC Part15C 15.209(a) 3m
Serial	: L2	Remark1	:
Operator	: N.TAKANO	Remark2	: X
Power	: DC 3.7V	Remark3	: 3DH1
Temp./Hum.	: 21deg / 61%	Remark4	: Mid



Final Result

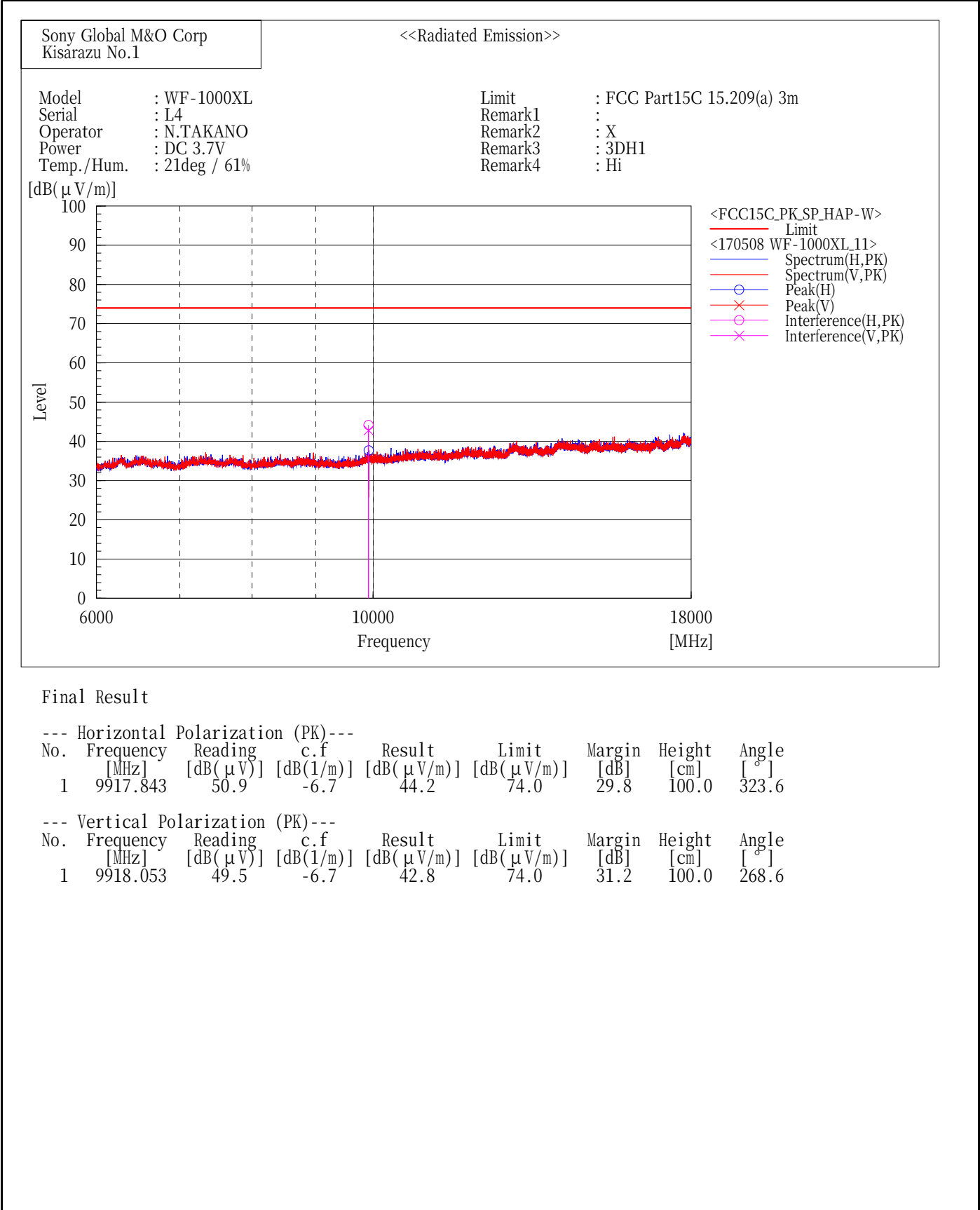
--- Horizontal Polarization (PK)---

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	9761.938	50.1	-7.4	42.7	74.0	31.3	100.0	329.6

--- 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	9762.074	50.4	-7.4	43.0	74.0	31.0	100.0	257.6

[EDR(3DH1)/2480MHz]



18 GHz – 24.835 GHz

[BDR(DH5)/2402MHz]

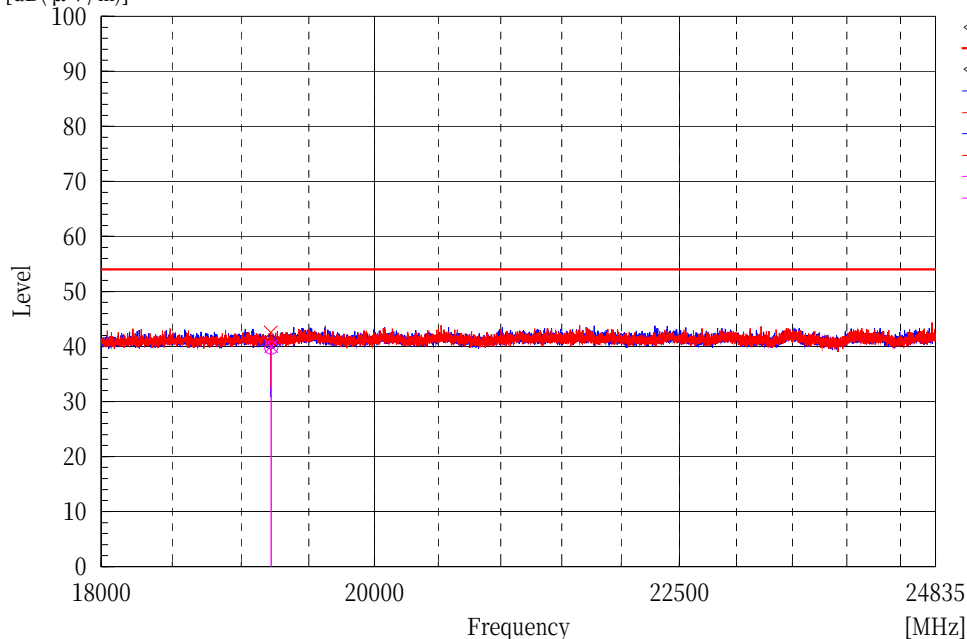
Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
 Serial : L2
 Operator : N.TAKANO
 Power : DC 3.7V
 Temp./Hum. : 23deg / 51%

Limit : FCC Part15C 15.209(a) 3m
 Remark1 :
 Remark2 : X
 Remark3 : DH5
 Remark4 : Low

[dB(μV/m)]



<FCC15C_AV.SP.HAP-W>
 Limit
 <170509 WF-1000XL.08>
 Spectrum(H,PK)
 Spectrum(V,PK)
 Peak(H)
 Peak(V)
 Interference(H,AV)
 Interference(V,AV)

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	19220.052	36.3	3.5	39.8	54.0	14.2	100.0	258.9

--- 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	19219.958	36.6	3.5	40.1	54.0	13.9	100.0	54.2

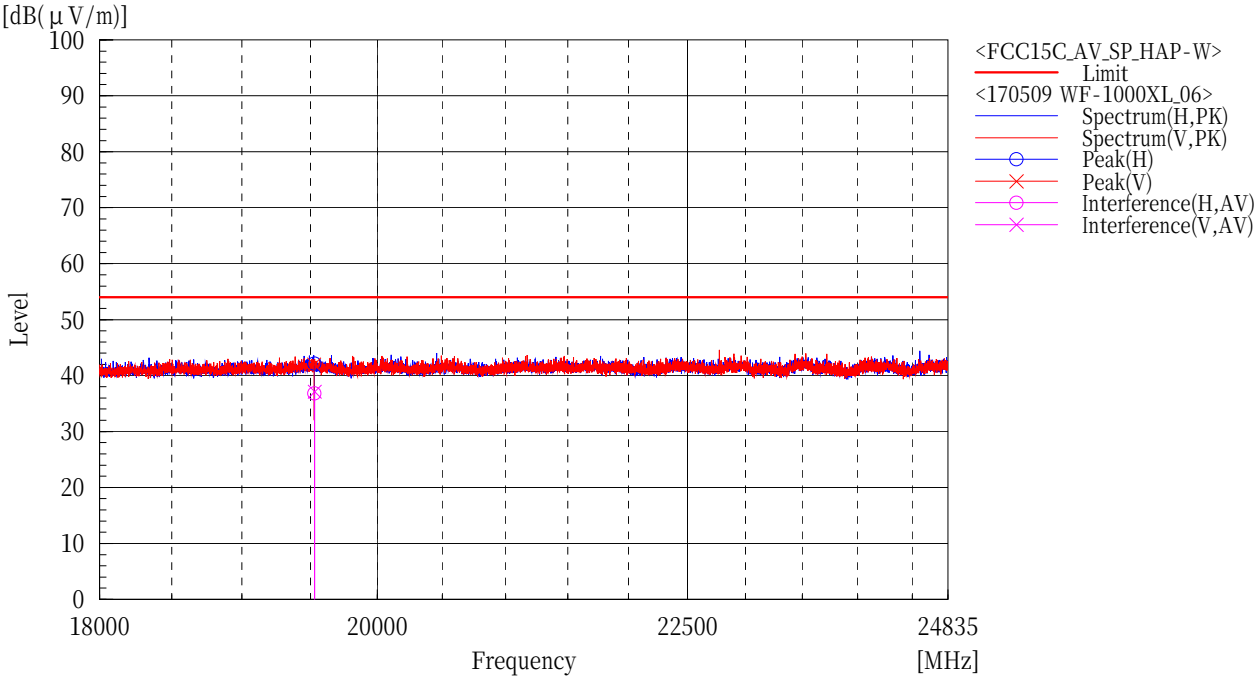
[BDR(DH5)/2441MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
Serial : L4
Operator : N.TAKANO
Power : DC 3.7V
Temp./Hum. : 23deg / 51%

Limit : FCC Part15C 15.209(a) 3m
Remark1 :
Remark2 : X
Remark3 : DH5
Remark4 : Mid



Final Result

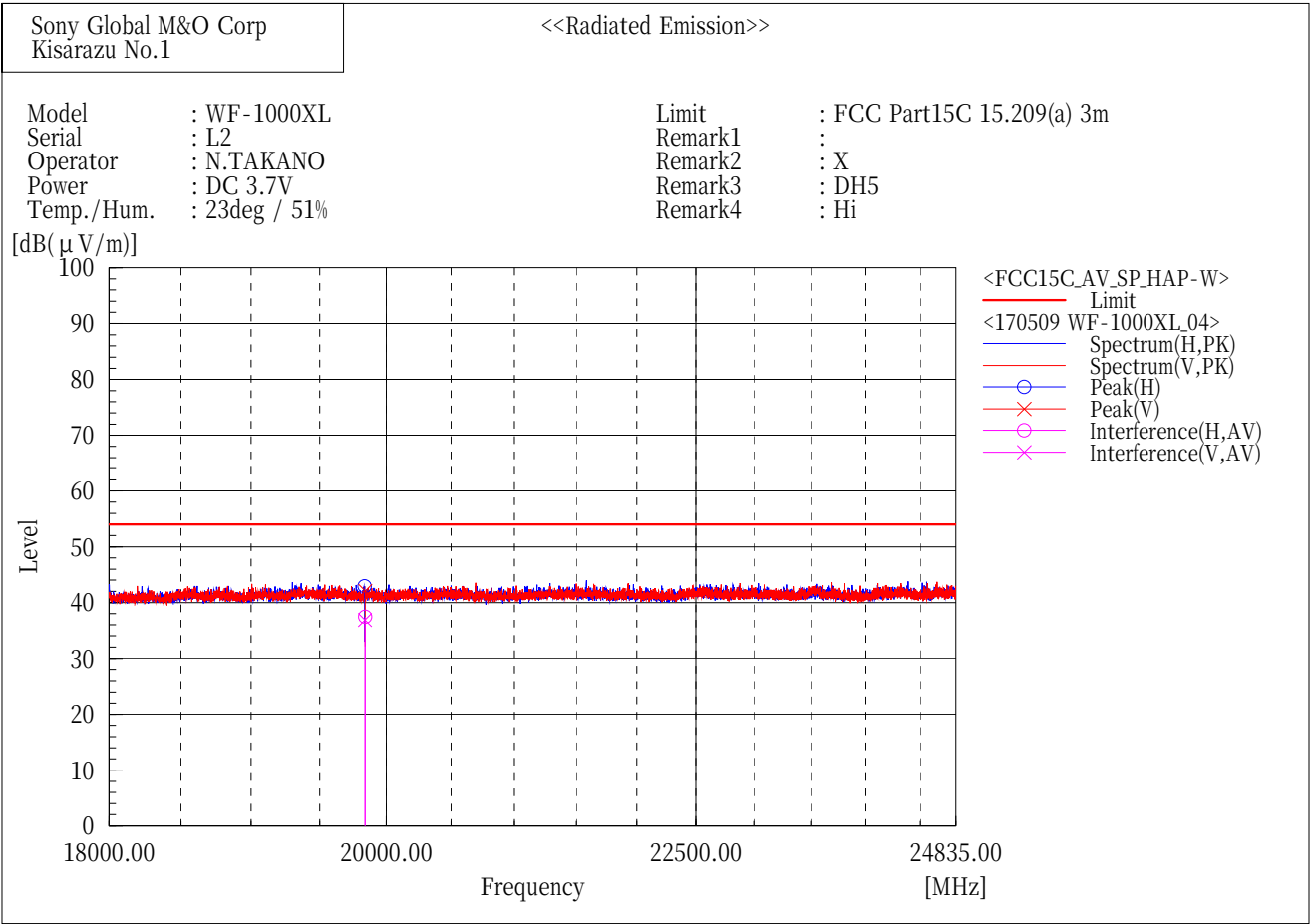
--- Horizontal Polarization (AV)---

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	19528.754	33.2	3.6	36.8	54.0	17.2	162.6	157.5

--- 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	19530.024	33.6	3.6	37.2	54.0	16.8	163.5	145.0

[BDR(DH5)/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	19841.522	33.9	3.6	37.5	54.0	16.5	100.0	0.9

--- 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	19838.698	33.3	3.6	36.9	54.0	17.1	129.0	153.1

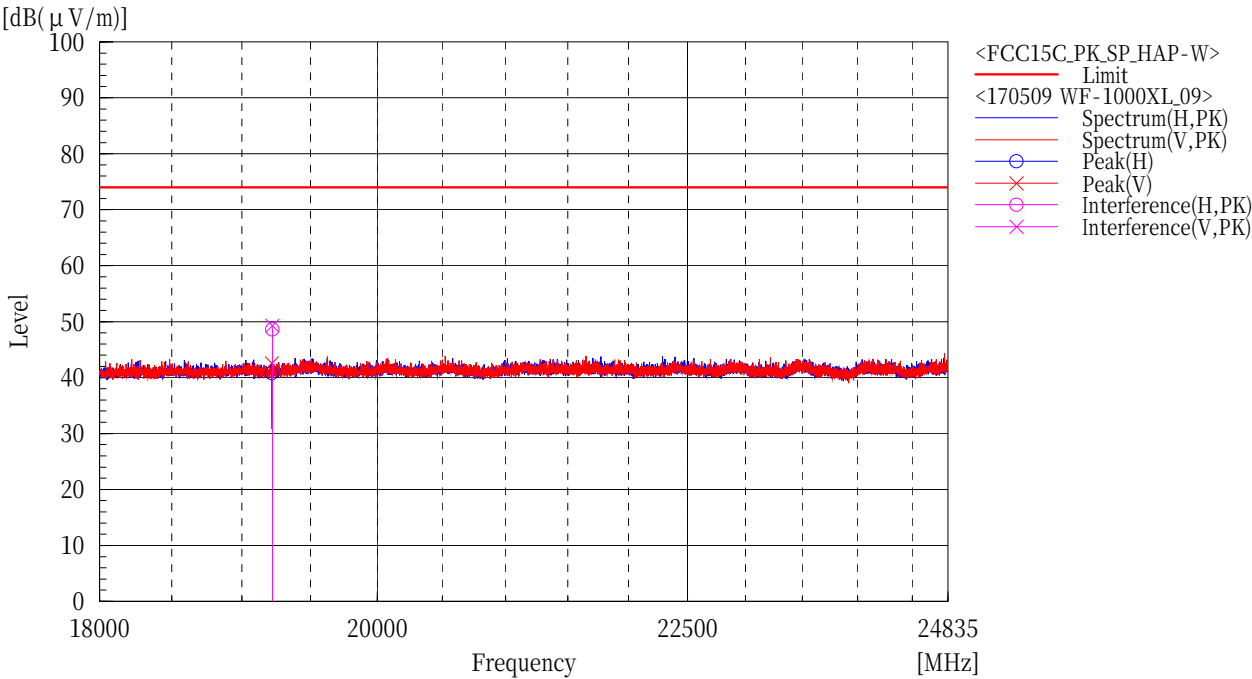
[BDR(DH5)/2402MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
Serial : L2
Operator : N.TAKANO
Power : DC 3.7V
Temp./Hum. : 23deg / 51%

Limit : FCC Part15C 15.209(a) 3m
Remark1 :
Remark2 : X
Remark3 : DH5
Remark4 : Low



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	19220.094	45.1	3.5	48.6	74.0	25.4	100.0	258.9

--- 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	19220.154	45.8	3.5	49.3	74.0	24.7	100.0	52.3

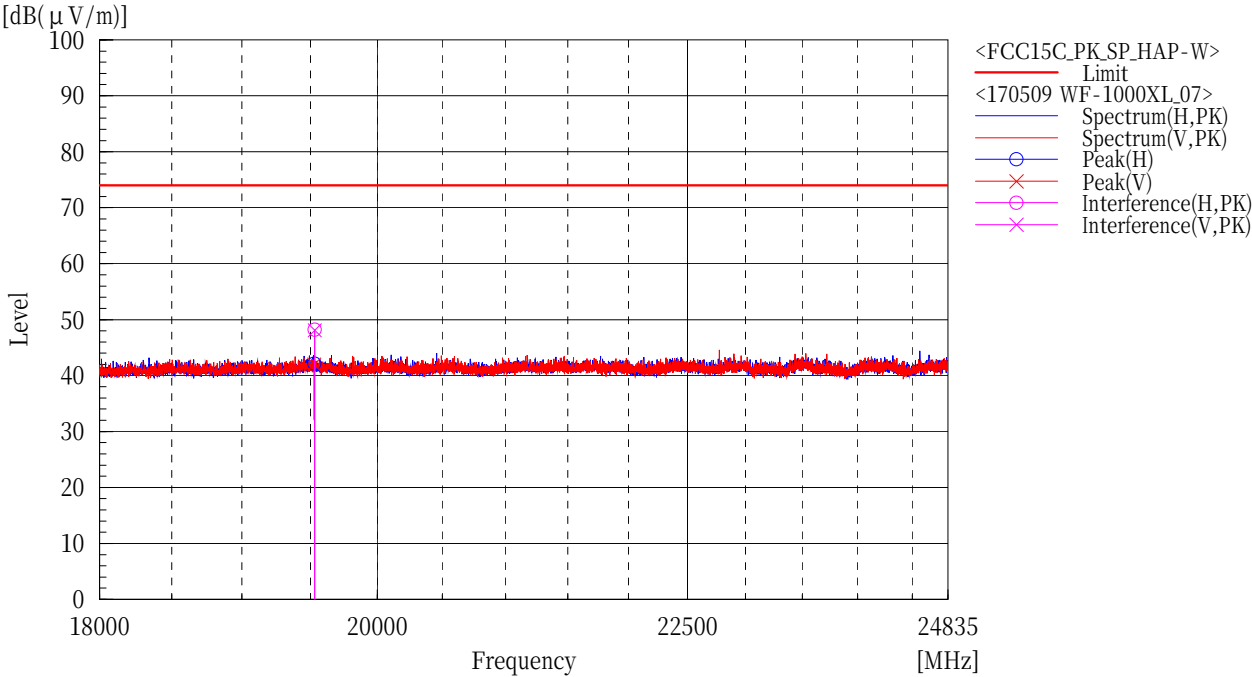
[BDR(DH5)/2441MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
Serial : L4
Operator : N.TAKANO
Power : DC 3.7V
Temp./Hum. : 23deg / 51%

Limit : FCC Part15C 15.209(a) 3m
Remark1 :
Remark2 : X
Remark3 : DH5
Remark4 : Mid



Final Result

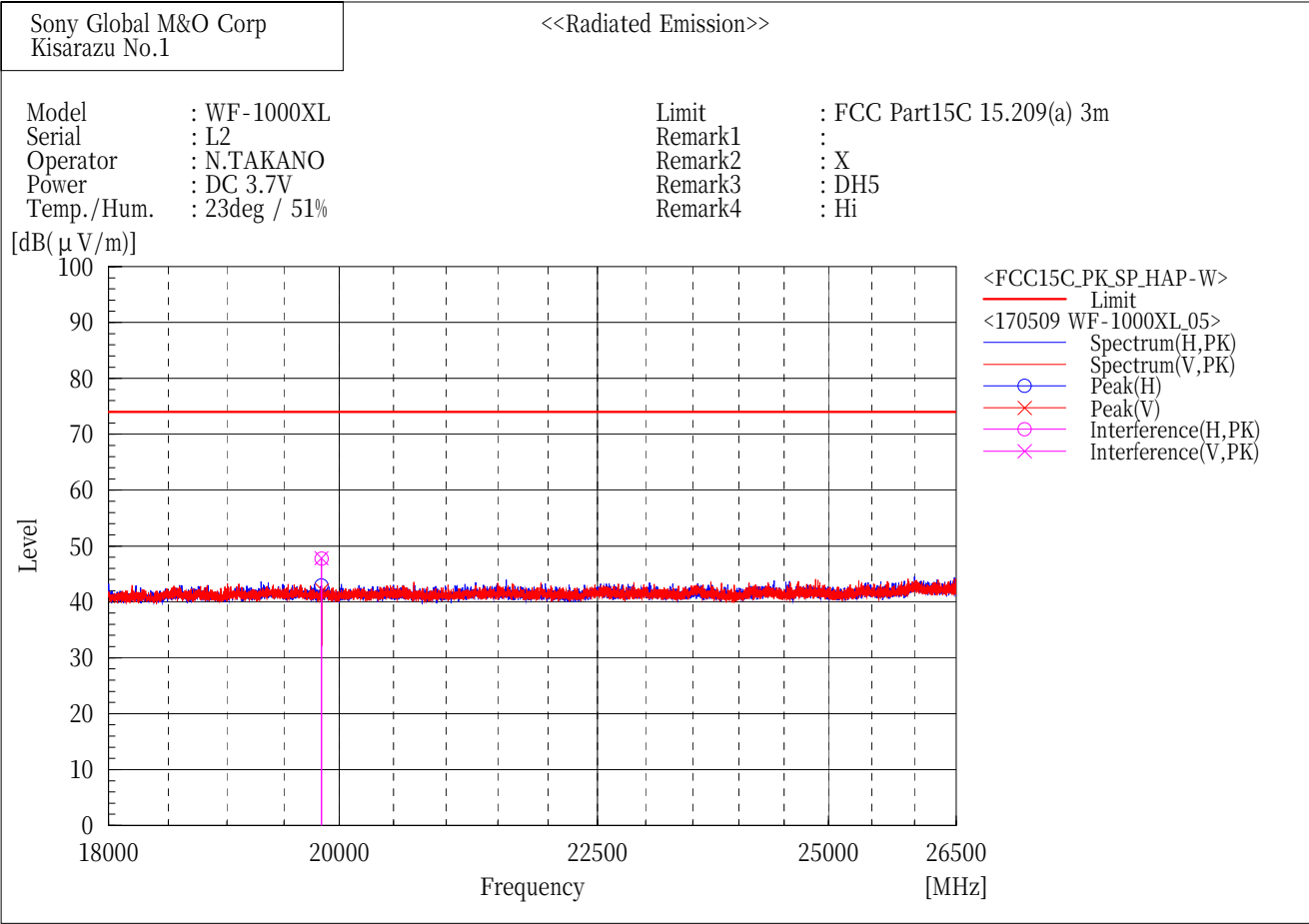
--- Horizontal Polarization (PK)---

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	19530.698	44.6	3.6	48.2	74.0	25.8	162.6	157.5

--- 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	19530.138	44.5	3.6	48.1	74.0	25.9	163.5	146.8

[BDR(DH5)/2480MHz]



Final Result

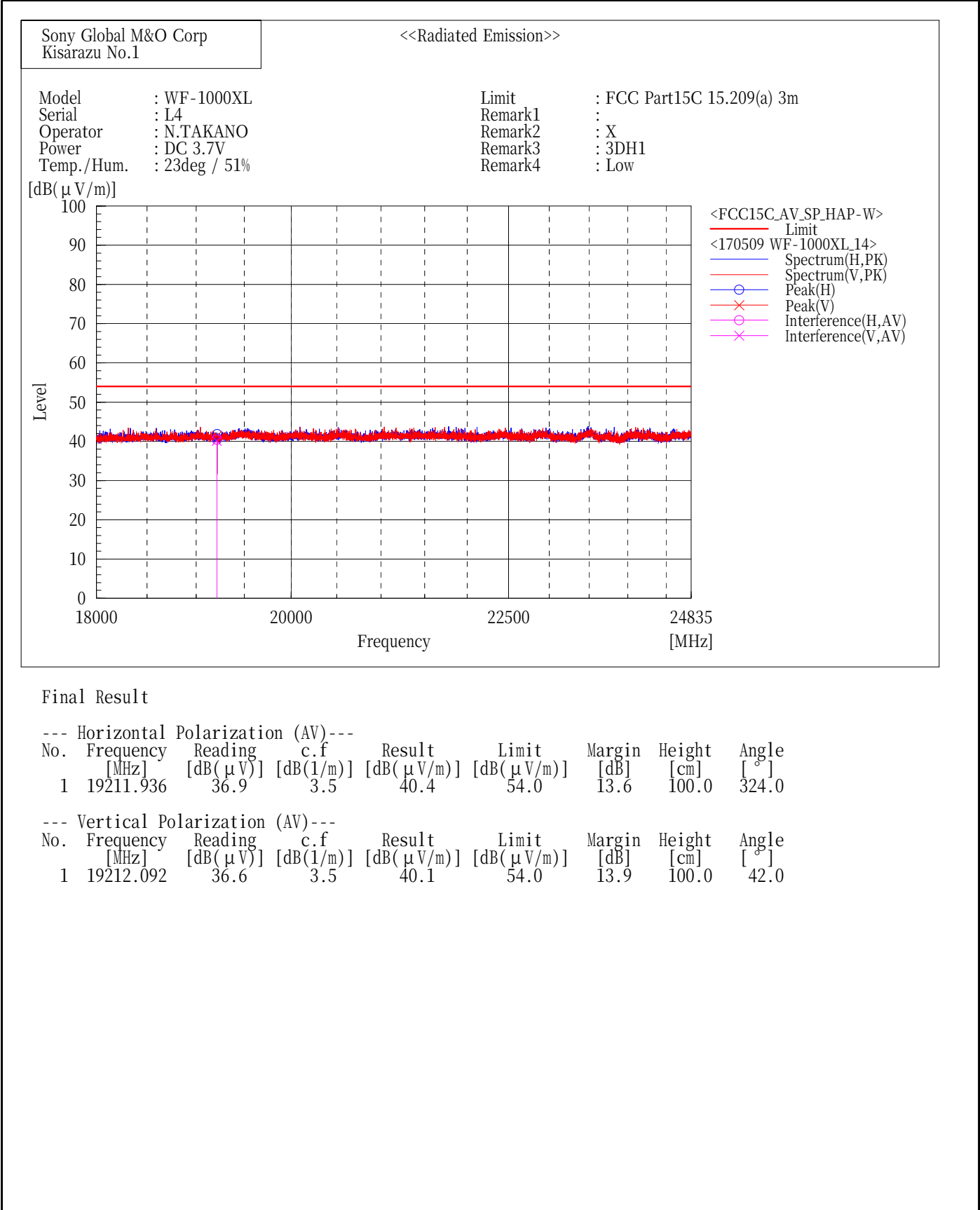
--- Horizontal Polarization (PK)---

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	19839.816	44.2	3.6	47.8	74.0	26.2	100.0	0.9

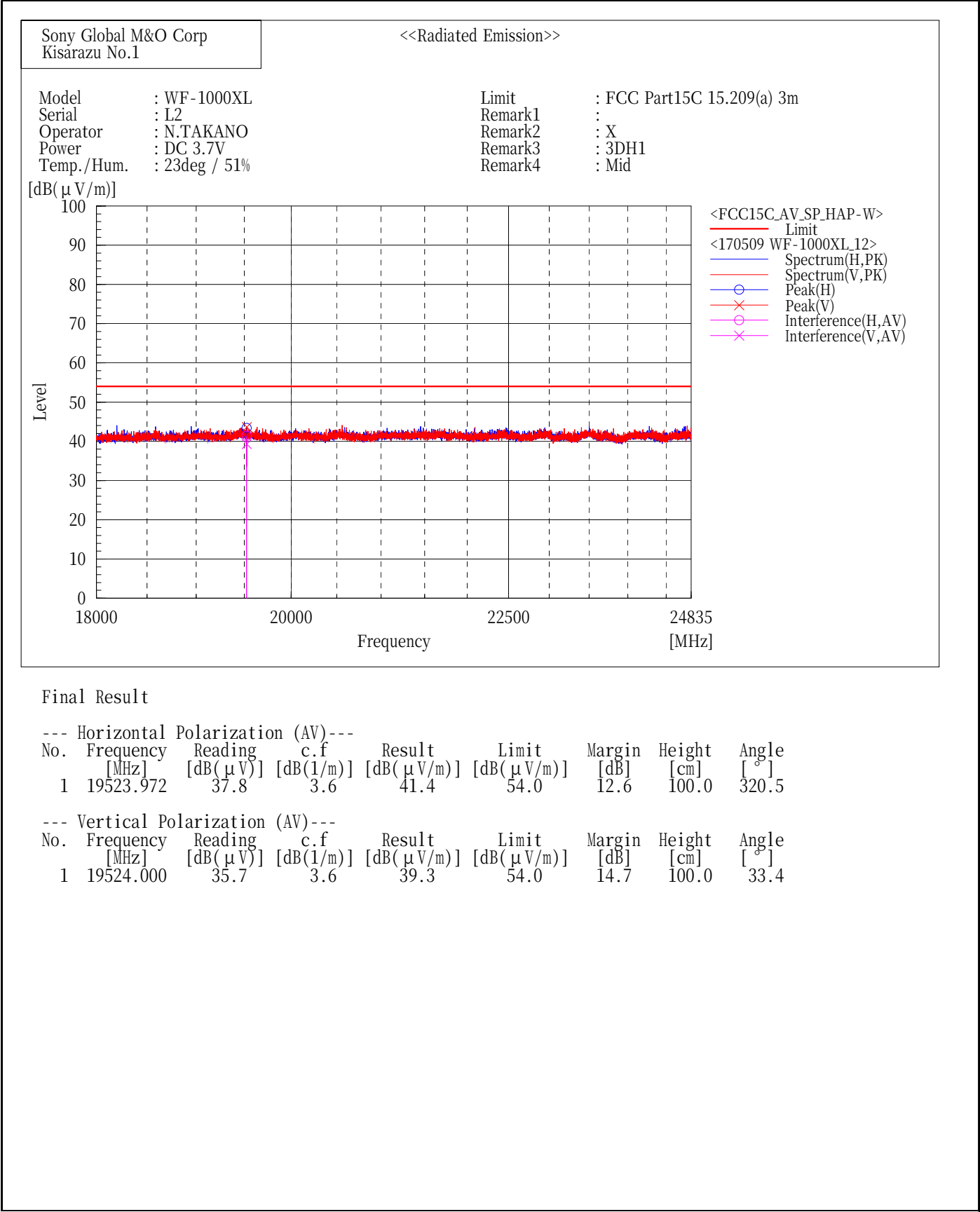
--- Vertical Polarization (PK)---

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	19837.710	44.2	3.6	47.8	74.0	26.2	129.0	151.2

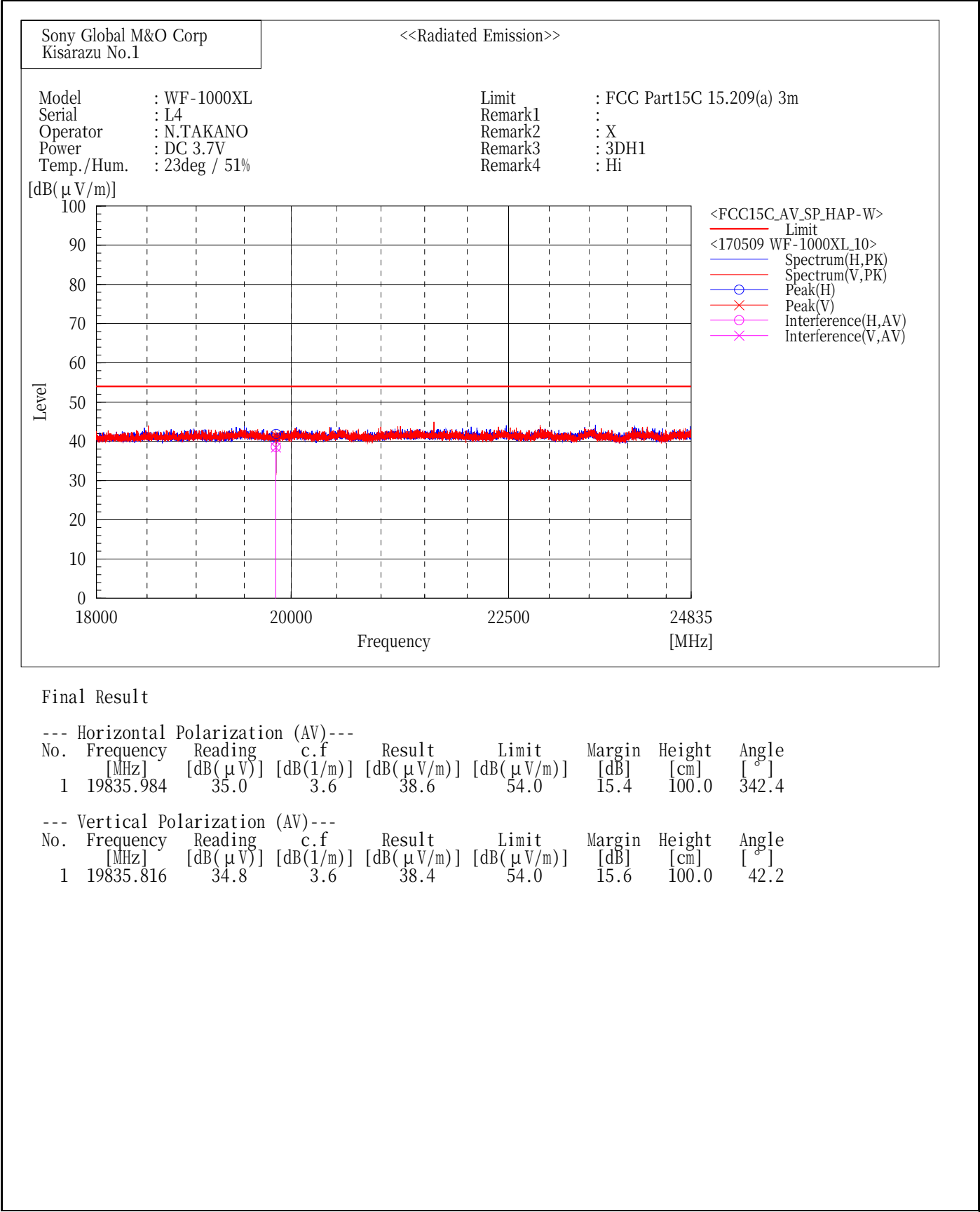
[EDR(3DH1)/2402MHz]



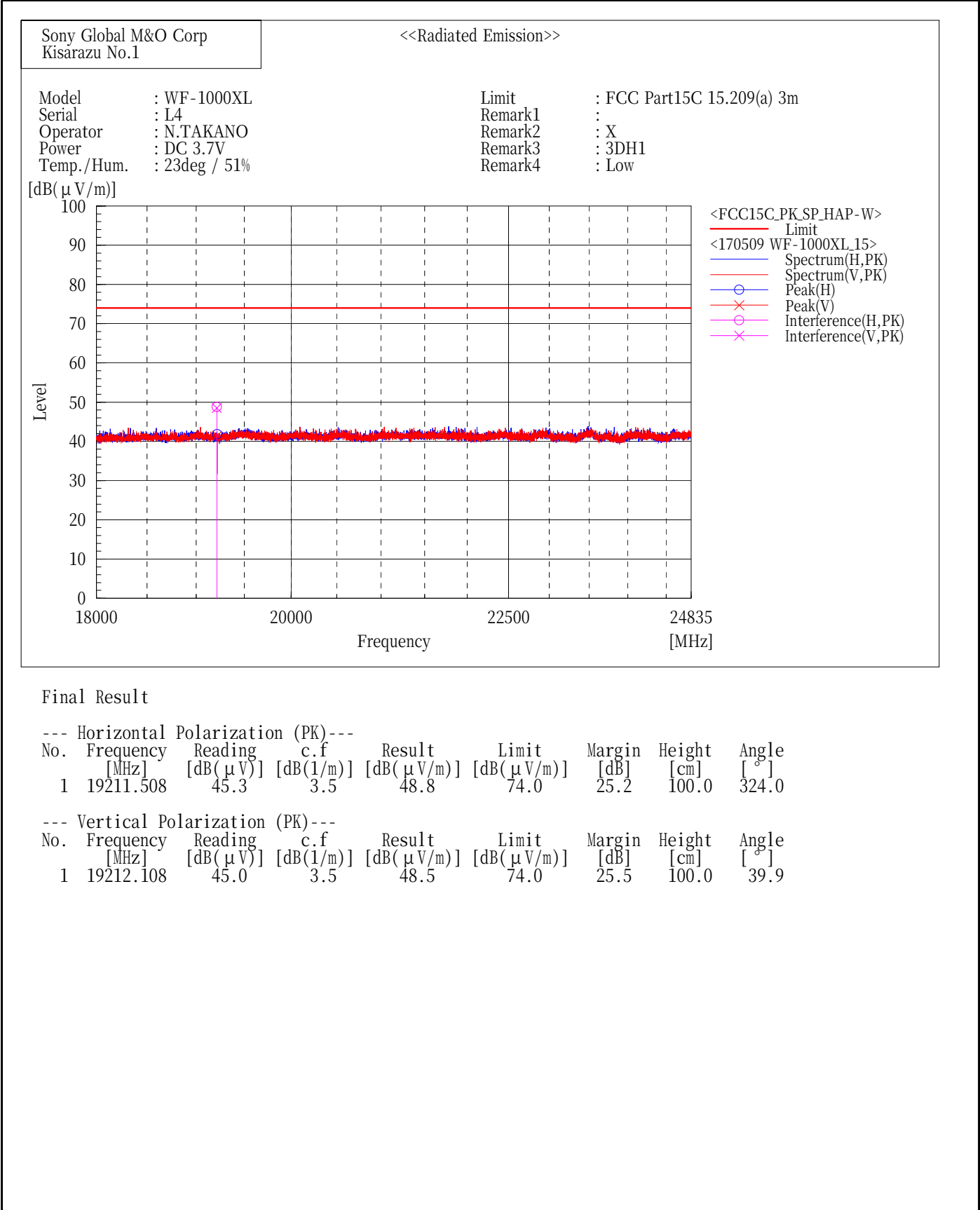
[EDR(3DH1)/2441MHz]



[EDR(3DH1)/2480MHz]



[EDR(3DH1)/2402MHz]



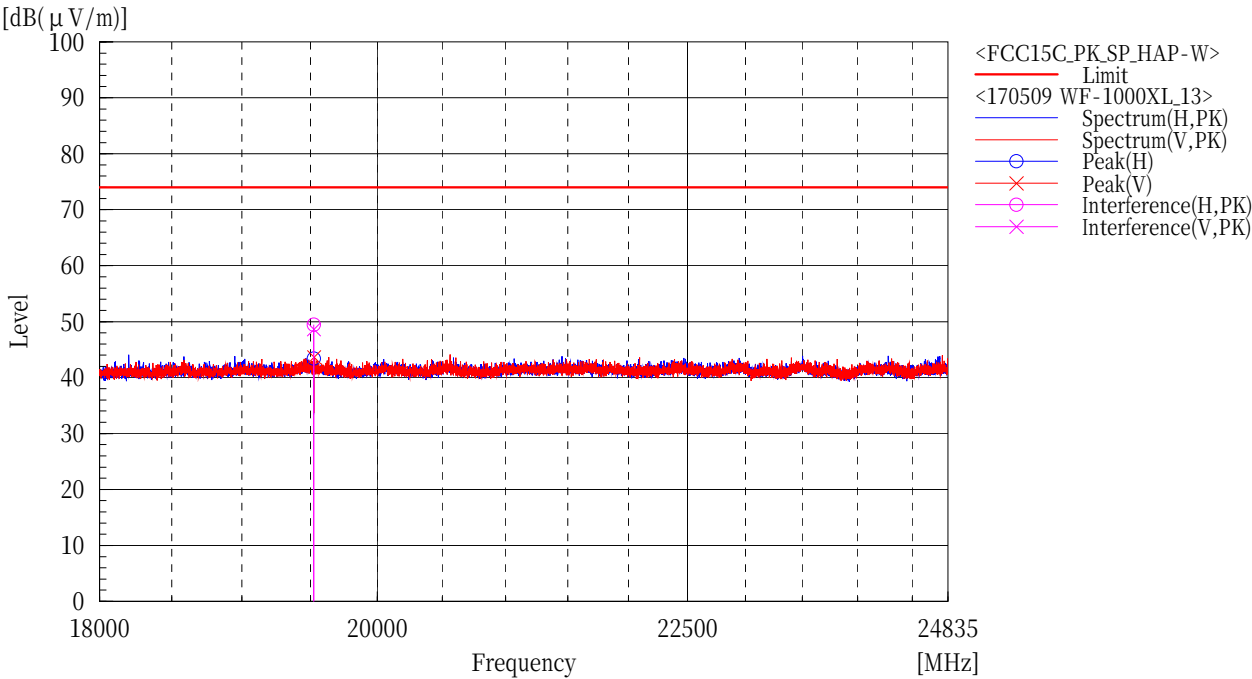
[EDR(3DH1)/2441MHz]

Sony Global M&O Corp
Kisarazu No.1

<<Radiated Emission>>

Model : WF-1000XL
Serial : L2
Operator : N.TAKANO
Power : DC 3.7V
Temp./Hum. : 23deg / 51%

Limit : FCC Part15C 15.209(a) 3m
Remark1 :
Remark2 : X
Remark3 : 3DH1
Remark4 : Mid



Final Result

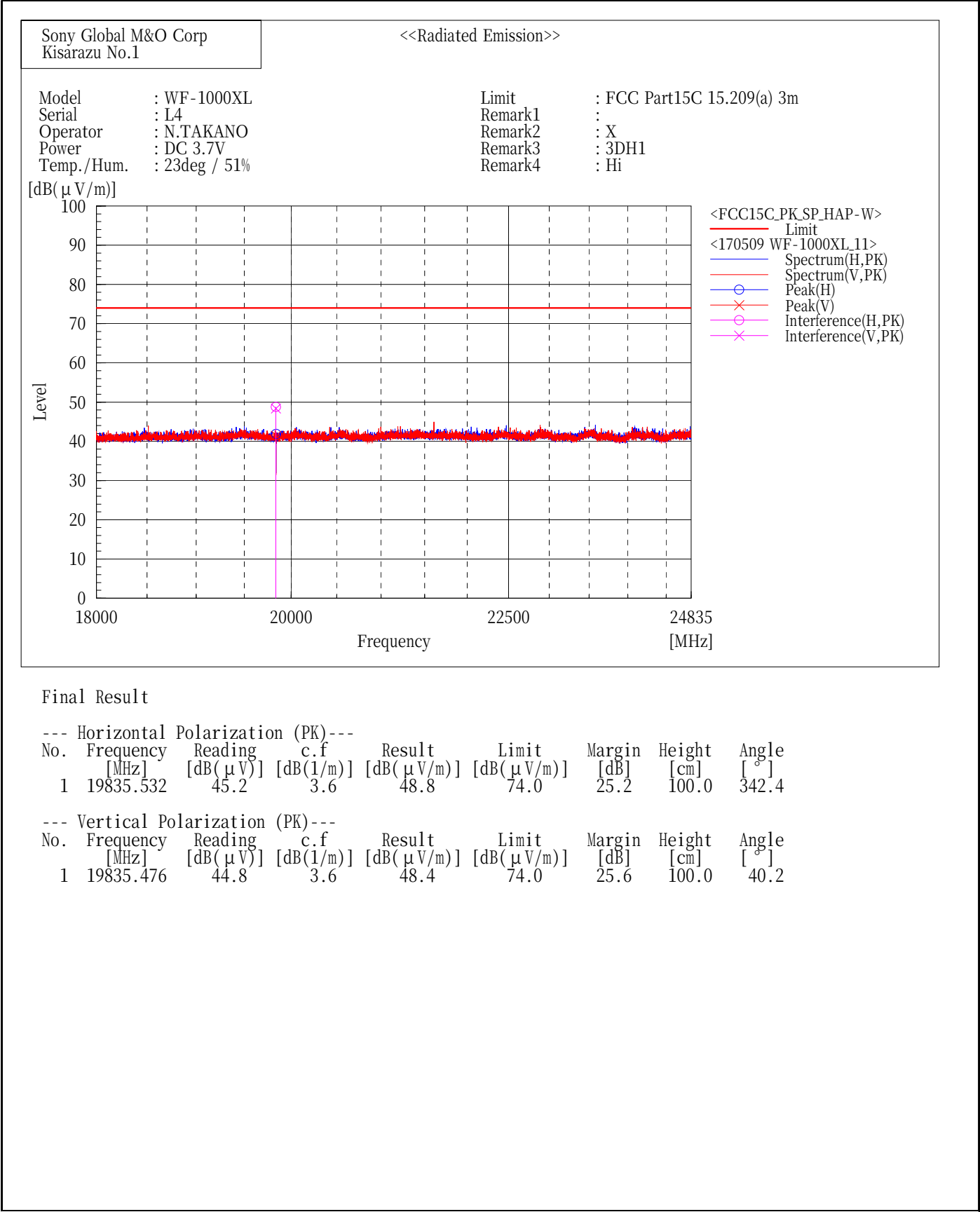
--- Horizontal Polarization (PK)---

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	19523.648	45.9	3.6	49.5	74.0	24.5	100.0	320.5

--- 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	19524.038	45.0	3.6	48.6	74.0	25.4	100.0	31.4

[EDR(3DH1)/2480MHz]



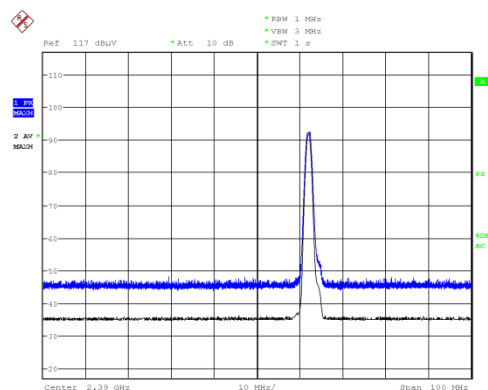
2.4GHz Restricted-Band Edge (Plot data)

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.

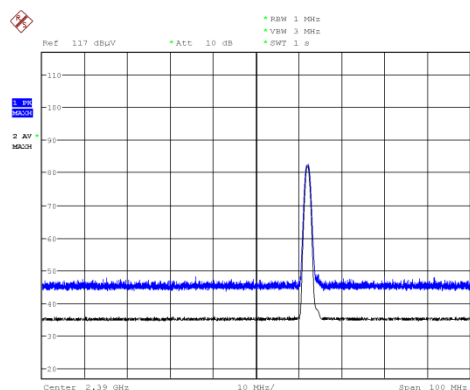
[BDR / 2402MHz]

Horizontal



Date: 19.MAY.2017 21:24:09

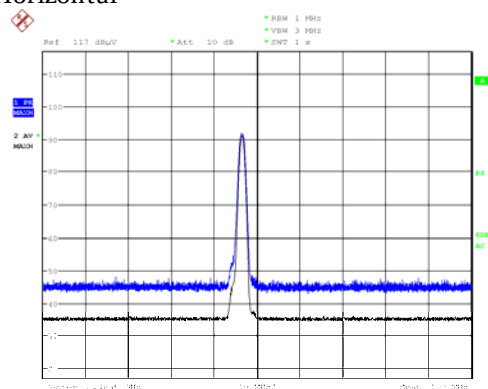
Vertical



Date: 19.MAY.2017 21:25:52

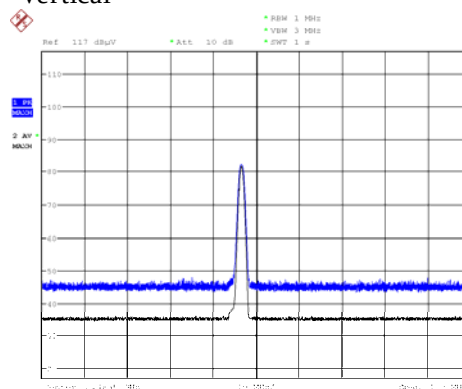
[BDR / 2480MHz]

Horizontal



Date: 19.MAY.2017 0:44:14

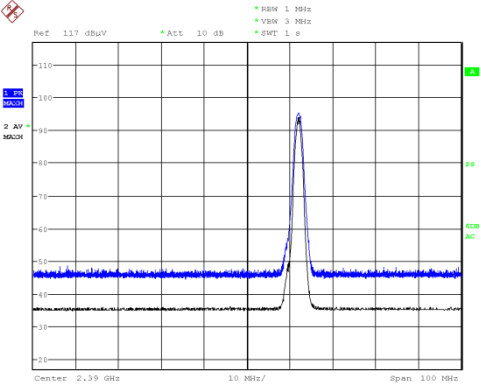
Vertical



Date: 19.MAY.2017 0:44:14

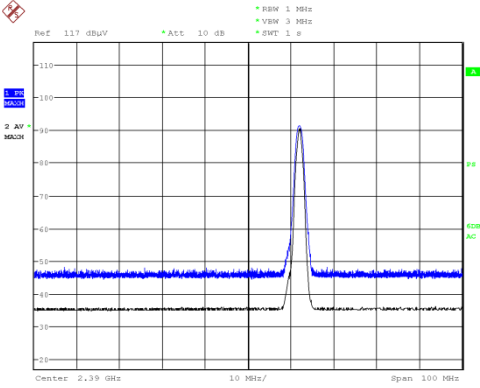
[EDR / 2402MHz]

Horizontal



Date: 19.MAY.2017 21:22:09

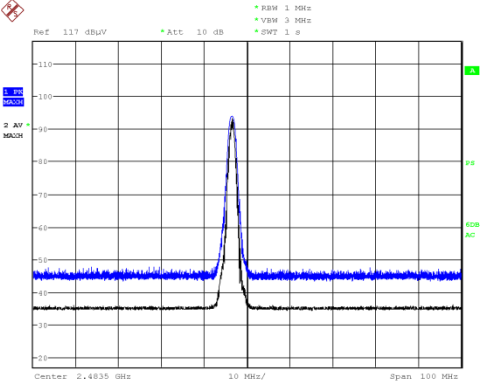
Vertical



Date: 19.MAY.2017 21:18:34

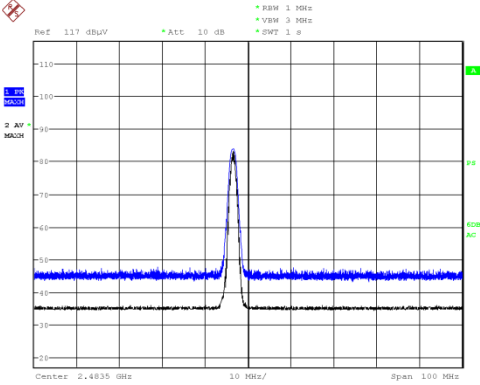
[EDR / 2480MHz]

Horizontal



Date: 16.MAY.2017 01:01:32

Vertical



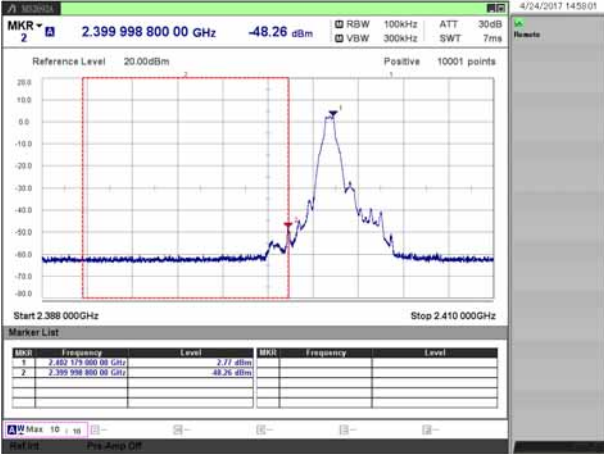
Date: 16.MAY.2017 00:57:50

3.7. Conducted Spurious Emissions for Band Edge

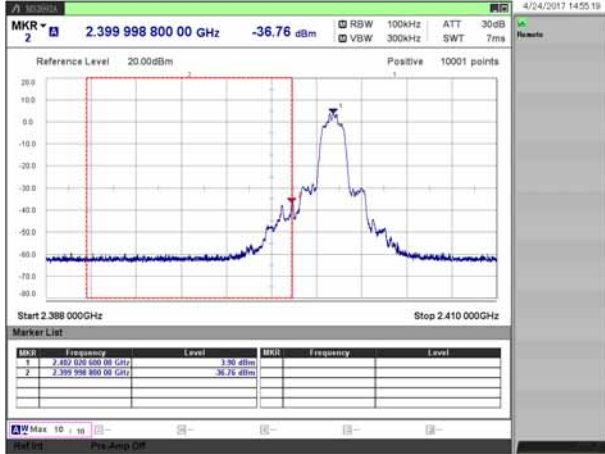
- 1) Ambient temperature : 23.1 deg.C
- 2) Relative humidity : 47.0 %
- 3) Date of measurement : April 24, 2017
- 4) Measured by : M. KOUGA
- 5) Operating mode : Transmitting mode

Mode		Channel [MHz]	Frequency [MHz]	Reading(PK) [dBm]	C.F. [dB]	Result(PK) [dBm]	Limit [dBm]	Margin [dB]
BDR	DH5	2402	2400.00	-48.26	0.48	-47.78	-16.8	31.02
			2402.18	2.77	0.48	3.25	-	-
EDR	3DH1	2402	2400.00	-36.76	0.48	-36.28	-15.6	20.65
			2402.02	3.90	0.48	4.38	-	-

[BDR]



[EDR]



4. Method of Calculation

4.1. Time of Occupancy (Dwell Time) Measurement

Method of calculation : Software
The Software for Calculation Name : SW-308
Version : Ver.3.0

Test Result [msec] = Dwell Time [msec] * Cycle [time] * 31.6 [sec] / Sweep Time [sec]

Notes :

- (a) Dwell Time : Transmission duration of 1 hopping.
- (b) Cycle : Number of hopping appearances on the spectrum analyzer.
(The average of 5 measurements if it is random hopping equipment)
- (c) 31.6 : $0.4 \text{ [sec]} * \text{Number of Hopping Frequencies(79)}$
- (d) Sweep Time : Sweep time settings on the spectrum analyzer.

4.2. Maximum Peak Conducted Output Power Measurement

Method of calculation : Software
The Software for Calculation Name : SW-308
Version : Ver.3.0

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. 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)

4.4. Conducted Spurious Emission for Band Edge Measurement

Method of calculation : Software
The Software for Calculation Name : SW-308
 Version : Ver.3.0

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. 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
-	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

5.2. 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	0649	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	17.03.13
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.