



EMI TEST REPORT

Test Report No.: 11646018S-R1

Applicant : Sony Engineering Corporation
Type of Equipment : RF glow-stick receiver
Model No. : FFS-RP
FCC ID : 2AADJFFS-B
Test regulation : FCC Part 15 Subpart B:2016
Test result : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by any agency of the Federal Government.
6. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
7. This test report covers EMC technical requirements. It does not cover administrative issues such as Manual or non-EMC test related Requirements. (if applicable)
8. This report is a revised version of 11646018S. 11646018S is replaced with this report.

Date of test:

February 17, 2017

Representative test engineer:

K. Adachi

Kenichi Adachi
Engineer
Consumer Technology Division

Approved by:

T. Imamura

Toyokazu Imamura
Leader
Consumer Technology Division



- ☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan.
☒ There is no testing item of "Non-accreditation".

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6400

13-EM-F0429

CONTENTS

	PAGE
Section 1 : Customer information	4
Section 2 : Equipment under test (E.U.T.)	4
Section 3 : Test specification, procedures and results	5
Section 4 : Operation of E.U.T. during testing	7
Section 5 : Radiated emission	8
APPENDIX 1 : Data of EMI test Radiated emission	10
APPENDIX 2 : Test instruments	18
APPENDIX 3 : Photographs of test setup	19
APPENDIX 4 : Configuration and peripherals	21

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

SECTION 3: Test specification, procedures and results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart B
FCC Part 15 final revised on November 14, 2016 and effective December 14, 2016
Title : FCC 47CFR Part15 Radio Frequency Device
Subpart B Unintentional Radiators

3.2 Procedures & results

Item	Test Procedure	Limits	Deviation	Worst margin	Result
Conducted emission	ANSI C63.4:2014 7. AC powerline conducted emission measurements	FCC 15.107 (a)	N/A *1) *2)	N/A	N/A
Radiated emission	ANSI C63.4:2014 8. Radiated emission measurements	FCC 15.109 (a)	N/A	16.7 dB Freq.: 4633.500 MHz Detection: AV Polarization: Horizontal / vertical Mode: Receiving 926.7 MHz	Complied
Antenna power conduction for receivers	ANSI C63.4:2014 12.2.6 Antenna-conducted power measurements	FCC 15.111 (a)	N/A *3)	N/A	N/A
*1) The calibration of test receiver contains CISPR 16-1-1 requirements. *2) The test is not applicable since the EUT does not have AC Mains ports. *3) The test is not applicable since the EUT does not antenna ports. Note: UL Japan's EMI Work Procedures No. 13-EM-W0420					

3.3 Addition to standard

No addition, exclusion nor deviation has been made from the standard.

3.4 Confirmation

UL Japan, Inc. hereby confirms that E.U.T., in the configuration tested, complies with the specifications FCC Part 15 Subpart B:2016.

UL Japan, Inc.
Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN
Telephone: +81 463 50 6400
Facsimile: +81 463 50 6401

3.5 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k=2$.

Item	Frequency range	No.1 SAC ^{*1} /SR ^{*2} (±)	No.2 SAC/SR (±)	No.3 SAC/SR (±)
Radiated emission (Measurement distance: 3 m)	30 MHz-200 MHz	4.6 dB	4.4 dB	4.6 dB
	200 MHz-1 GHz	5.8 dB	5.7 dB	5.8 dB
	1 GHz-18 GHz	4.9 dB	4.9 dB	4.9 dB
	18 GHz-40 GHz	4.8 dB	4.8 dB	4.8 dB

*1: SAC=Semi-Anechoic Chamber

*2: SR= Shielded Room is applied besides radiated emission

Radiated emission

The data listed in this test report has enough margin, more than the site margin.

3.6 Test Location

UL Japan, Inc. Shonan EMC Lab.

1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 JAPAN

Telephone number : +81 463 50 6400

Facsimile number : +81 463 50 6401

JAB Accreditation No. : RTL02610

	IC Registration No.	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5 m
No.4 Semi-anechoic chamber	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
No.1 Shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.2 Shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.3 Shielded room	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
No.4 Shielded room	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
No.5 Shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.6 Shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.7 Shielded room	-	2.76 x 3.76 x 2.4	2.76 x 3.76	-
No.8 Shielded room	-	3.45 x 5.5 x 2.4	3.45 x 5.5	-
No.1 Measurement room	-	2.55 x 4.1 x 2.5	2.55 x 4.1	-

3.7 Test setup, Data of EMI & Test instruments

Refer to APPENDIX.

UL Japan, Inc. Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

Section 4 : Operation of E.U.T. during testing

4.1 Operating modes

The EUT exercise program used during testing was designed to exercise the various system components in a manner similar to typical use.

Test sequence is used: Receiving 902.2 MHz
 Receiving 914.2 MHz
 Receiving 926.7 MHz
 Receiving Hopping

Software: Node2CD_USA_10ID_v0007_FFSRUS2_001.hex

Justification: The system was configured in a typical fashion, as a customer would normally use it, for testing.

4.2 Configuration and peripherals

This page has been submitted for separate exhibit (refer to APPENDIX 4).

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

Section 5: Radiated emission

5.1 Operating environment

Test room : Refer to data
Temperature : Refer to data
Humidity : Refer to data

5.2 Test configuration

The EUT was placed on a platform of nominal size, 0.5m by 0.5m, raised 80cm above the conducting ground plane. The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength. Photographs of the set up are shown in Appendix 3.

5.3 Test conditions

Frequency range : 30 MHz – 5 GHz
Test distance : 3 m
EUT position : Table Top

5.4 Test procedure

The Radiated Electric Field Strength intensity has been measured on a Semi-Anechoic Chamber with a ground plane at a distance of 3 m.

* Measuring distance

- ☐ The boundary of the EUT is defined by an imaginary straight-line periphery describing a simple geometric configuration encompassing the EUT.
☒ The boundary of the EUT is defined by an imaginary circular periphery.
☐ This test report use worse case for the setup.

The measuring antenna height was varied between 1 and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization.

The radiated emission measurements were made with the following detector function of the test receiver and spectrum analyzer.

	<u>30 MHz -1000 MHz (Test receiver)</u>	<u>1 GHz -5 GHz (Spectrum analyzer)</u>
Detector Type	: QP	AV *1) PK
IF Band width	: 120 kHz	RBW 1MHz/ VBW 10 Hz RBW 1MHz/ VBW 3 MHz

*1) When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

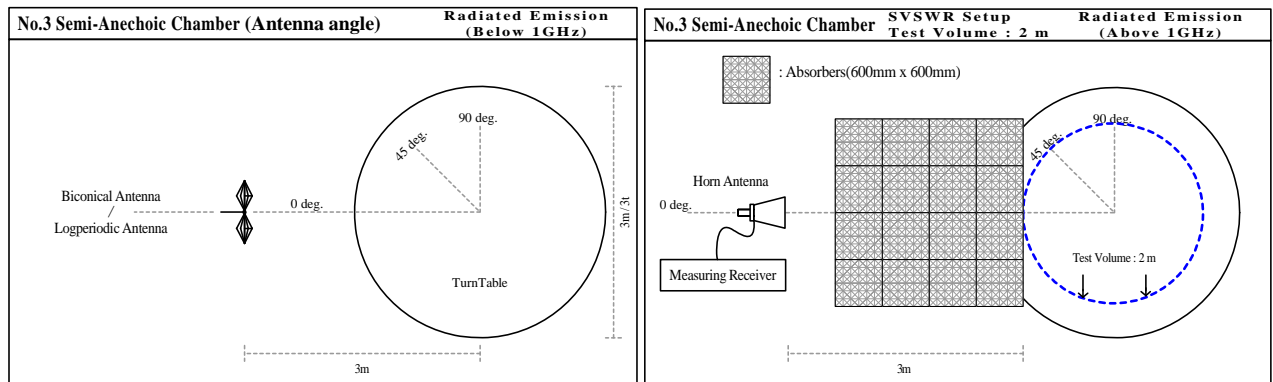
Combinations of the worst case

Antenna polarization	Frequency	
	Spurious	
	Below 1GHz	Above 1 GHz
Horizontal	Y	X
Vertical	Y	Y

5.5 Results

Summary of the test results: Pass

Figure 1. Antenna angle



UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone: +81 463 50 6400

Facsimile: +81 463 50 6401

APPENDIX 1: Data of EMI tests

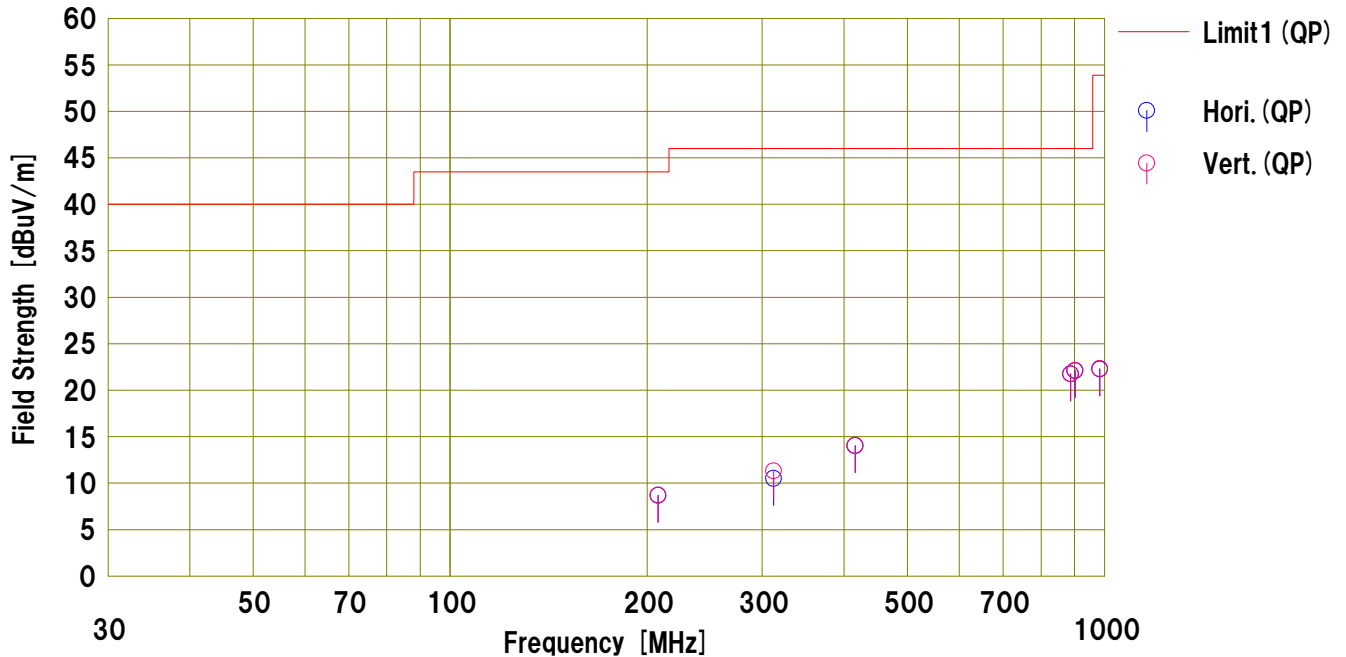
DATA OF RADIATED EMISSION TESTUL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2017/02/17

Company : Sony Engineering Corporation
 Kind of EUT : RF glow-stick receiver
 Model No. : FFS-RP
 Serial No. : No.1
 Remarks : EUT: Y

Mode : Receiving 902.2 MHz
 Order No. : 11646018S
 Power : DC 3 V
 Temp./Humi. : 23 deg.C / 30 %RH

Limit1 : FCC15.109 (a) 3m, below 1GHz:QP, above 1GHz:AV

Engineer : Kenichi Adachi



No.	Freq. [MHz]	Reading <QP> [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result <QP> [dBuV/m]	Limit <QP> [dBuV/m]	Margin <QP> [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
1	208.000	21.07	11.44	8.17	31.98	8.70	43.50	34.8	Hori.	150	0	LP	
2	312.000	20.00	13.66	8.75	31.90	10.51	46.00	35.4	Hori.	100	0	LP	
3	416.000	20.73	15.94	9.24	31.86	14.05	46.00	31.9	Hori.	100	0	LP	
4	888.000	20.01	21.78	10.97	31.00	21.76	46.00	24.2	Hori.	100	0	LP	
5	902.200	20.05	21.96	11.01	30.91	22.11	46.00	23.8	Hori.	100	0	LP	
6	984.000	19.02	22.19	11.29	30.22	22.28	53.90	31.6	Hori.	100	0	LP	
7	208.000	21.05	11.44	8.17	31.98	8.68	43.50	34.8	Vert.	100	0	LP	
8	312.000	20.81	13.66	8.75	31.90	11.32	46.00	34.6	Vert.	100	0	LP	
9	416.000	20.71	15.94	9.24	31.86	14.03	46.00	31.9	Vert.	100	0	LP	
10	888.000	19.99	21.78	10.97	31.00	21.74	46.00	24.2	Vert.	100	0	LP	
11	902.200	20.07	21.96	11.01	30.91	22.13	46.00	23.8	Vert.	100	0	LP	
12	984.000	19.06	22.19	11.29	30.22	22.32	53.90	31.5	Vert.	100	0	LP	

Calculation: Result [dBuV/m] = Reading [dBuV] + Ant.Fac [dB/m] + Loss (Cable+ATT+ ΔAF) [dB] - Gain (AMP) [dB]
 Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna SHA**: Horn Antenna

DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2017/02/17

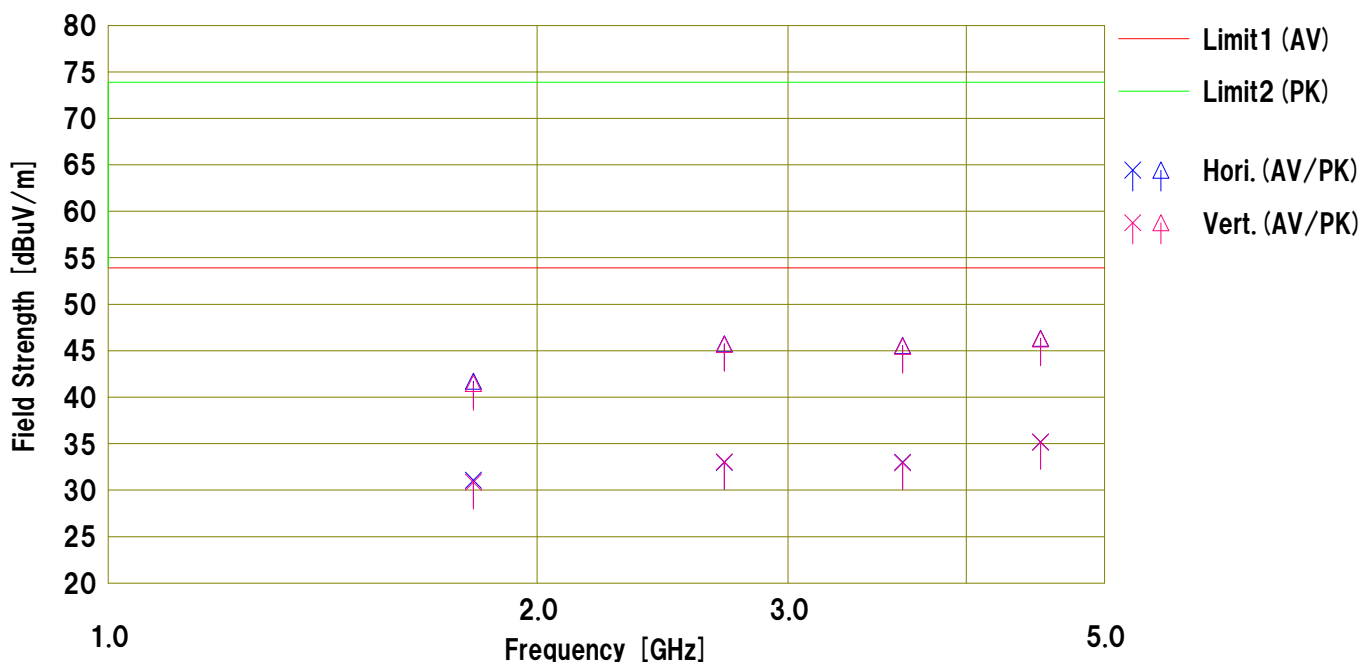
Company : Sony Engineering Corporation
Kind of EUT : RF glow-stick receiver
Model No. : FFS-RP
Serial No. : No.1
Remarks : EUT: H: X, V: Y

Mode : Receiving 902.2 MHz
Order No. : 11646018S
Power : DC 3 V
Temp./Humi. : 23 deg.C / 30 %RH

Limit1 : FCC15.109 (a) 3m, below 1GHz:QP, above 1GHz:AV

Limit2 : FCC15.109 (a) 3m, below 1GHz:QP, above 1GHz:PK Engineer

: Kenichi Adachi



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	D.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		<AV> [dBuV]	<PK> [dBuV]					<AV> [dBuV/m]	<PK> [dBuV/m]	<AV> [dBuV/m]	<PK> [dBuV/m]	<AV> [dB]	<PK> [dB]					
1	1804.400	35.54	46.21	25.47	4.69	37.10	2.46	31.06	41.73	53.90	73.90	22.8	32.1	Hori.	192	258	SHA03	
2	2706.600	33.42	46.18	28.10	5.87	36.86	2.46	32.99	45.75	53.90	73.90	20.9	28.1	Hori.	100	0	SHA03	
3	3608.800	31.94	44.50	28.95	6.44	36.78	2.46	33.01	45.57	53.90	73.90	20.8	28.3	Hori.	100	0	SHA03	
4	4511.000	31.69	42.84	30.54	7.05	36.55	2.46	35.19	46.34	53.90	73.90	18.7	27.5	Hori.	100	0	SHA03	
5	1804.400	35.34	45.98	25.47	4.69	37.10	2.46	30.86	41.50	53.90	73.90	23.0	32.4	Vert.	100	301	SHA03	
6	2706.600	33.48	46.12	28.10	5.87	36.86	2.46	33.05	45.69	53.90	73.90	20.8	28.2	Vert.	100	0	SHA03	
7	3608.800	31.86	44.42	28.95	6.44	36.78	2.46	32.93	45.49	53.90	73.90	20.9	28.4	Vert.	100	0	SHA03	
8	4511.000	31.65	42.77	30.54	7.05	36.55	2.46	35.15	46.27	53.90	73.90	18.7	27.6	Vert.	100	0	SHA03	

DATA OF RADIATED EMISSION TEST

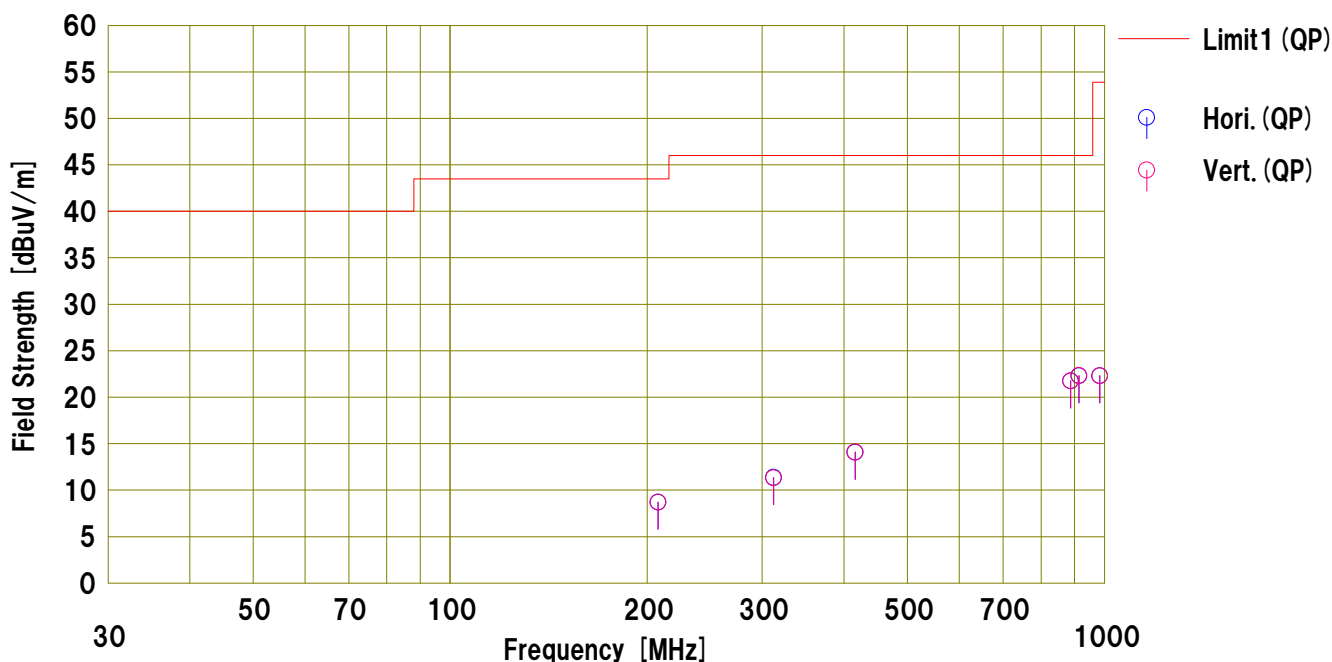
UL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2017/02/17

Company : Sony Engineering Corporation
Kind of EUT : RF glow-stick receiver
Model No. : FFS-RP
Serial No. : No.2
Remarks : EUT: Y

Mode : Receiving 914.2 MHz
Order No. : 11646018S
Power : DC 3 V
Temp./Humi. : 23 deg.C / 30 %RH

Limit1 : FCC15.109 (a) 3m, below 1GHz:QP, above 1GHz:AV

Engineer : Kenichi Adachi



No.	Freq.	Reading	Ant.Fac	Loss	Gain	Result	Limit	Margin	Pola.	Height	Angle	Ant. Type	Comment
	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]		
1	208.000	21.07	11.44	8.17	31.98	8.70	43.50	34.8	Hori.	150	0	LP	
2	312.000	20.86	13.66	8.75	31.90	11.37	46.00	34.6	Hori.	100	0	LP	
3	416.000	20.75	15.94	9.24	31.86	14.07	46.00	31.9	Hori.	100	0	LP	
4	888.000	20.00	21.78	10.97	31.00	21.75	46.00	24.2	Hori.	100	0	LP	
5	914.200	20.05	21.99	11.06	30.80	22.30	46.00	23.7	Hori.	100	0	LP	
6	984.000	19.04	22.19	11.29	30.22	22.30	53.90	31.6	Hori.	100	0	LP	
7	208.000	21.09	11.44	8.17	31.98	8.72	43.50	34.7	Vert.	100	0	LP	
8	312.000	20.82	13.66	8.75	31.90	11.33	46.00	34.6	Vert.	100	0	LP	
9	416.000	20.77	15.94	9.24	31.86	14.09	46.00	31.9	Vert.	100	0	LP	
10	888.000	20.01	21.78	10.97	31.00	21.76	46.00	24.2	Vert.	100	0	LP	
11	914.200	20.07	21.99	11.06	30.80	22.32	46.00	23.6	Vert.	100	0	LP	
12	984.000	19.05	22.19	11.29	30.22	22.31	53.90	31.5	Vert.	100	0	LP	

DATA OF RADIATED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi - Anechoic Chamber
Date : 2017/02/17

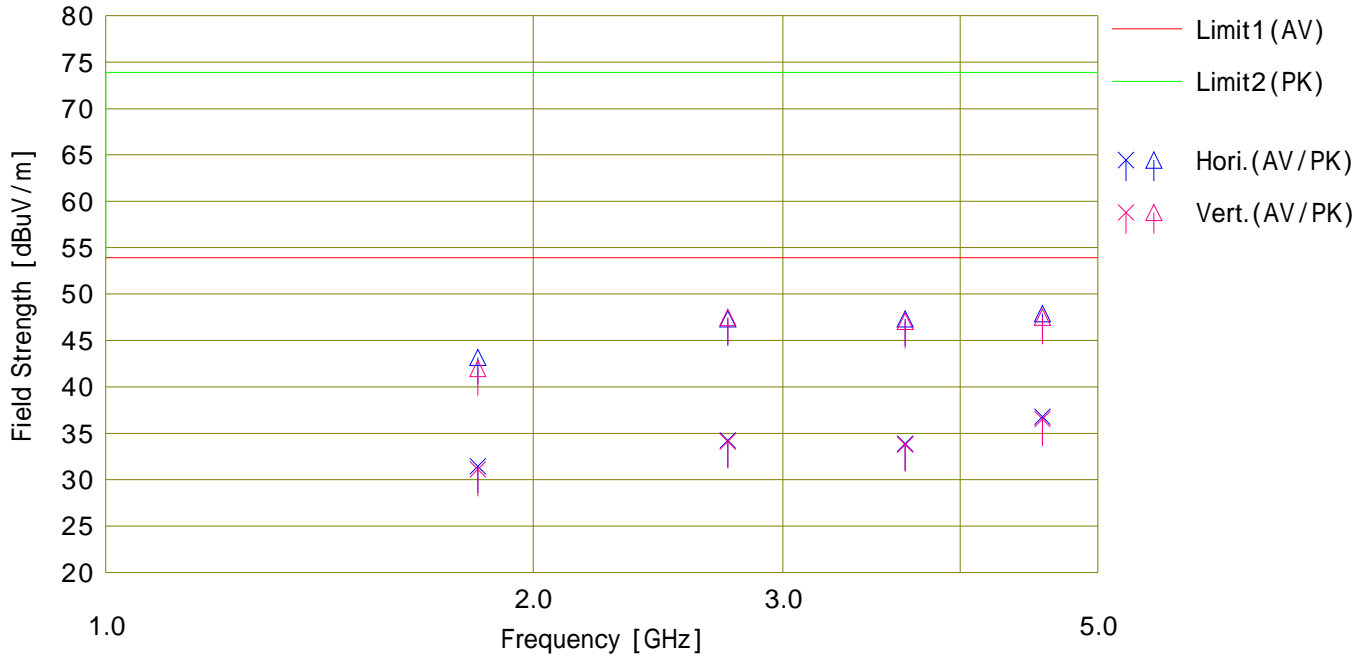
Company : Sony Engineering Corporation
Kind of EUT : RF glow-stick receiver
Model No. : FFS-RP
Serial No. : No.2
Remarks : EUT: H: X, V: Y

Mode : Receiving 914.2 MHz
Order No. : 11646018S
Power : DC 3 V
Temp./Humi. : 23 deg.C / 30 %RH

Limit1 : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:AV

Limit2 : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK

Engineer : Yohsuke Matsuzawa



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	D.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		<AV> [dBuV]	<PK> [dBuV]					<AV> [dBuV/m]	<PK> [dBuV/m]	<AV> [dBuV/m]	<PK> [dBuV/m]	<AV> [dB]	<PK> [dB]					
1	1828.400	35.86	47.58	25.51	4.70	37.08	2.46	31.45	43.17	53.90	73.90	22.4	30.7	Hori.	186	260	SHA03	
2	2742.600	34.58	47.68	28.14	5.90	36.86	2.46	34.22	47.32	53.90	73.90	19.6	26.5	Hori.	100	0	SHA03	
3	3656.800	32.67	46.12	29.04	6.46	36.77	2.46	33.86	47.31	53.90	73.90	20.0	26.5	Hori.	100	0	SHA03	
4	4571.000	33.11	44.21	30.66	7.10	36.55	2.46	36.78	47.88	53.90	73.90	17.1	26.0	Hori.	100	0	SHA03	
5	1828.400	35.52	46.38	25.51	4.70	37.08	2.46	31.11	41.97	53.90	73.90	22.7	31.9	Vert.	100	147	SHA03	
6	2742.600	34.48	47.83	28.14	5.90	36.86	2.46	34.12	47.47	53.90	73.90	19.7	26.4	Vert.	100	0	SHA03	
7	3656.800	32.58	45.87	29.04	6.46	36.77	2.46	33.77	47.06	53.90	73.90	20.1	26.8	Vert.	100	0	SHA03	
8	4571.000	32.86	43.84	30.66	7.10	36.55	2.46	36.53	47.51	53.90	73.90	17.3	26.3	Vert.	100	0	SHA03	

DATA OF RADIATED EMISSION TEST

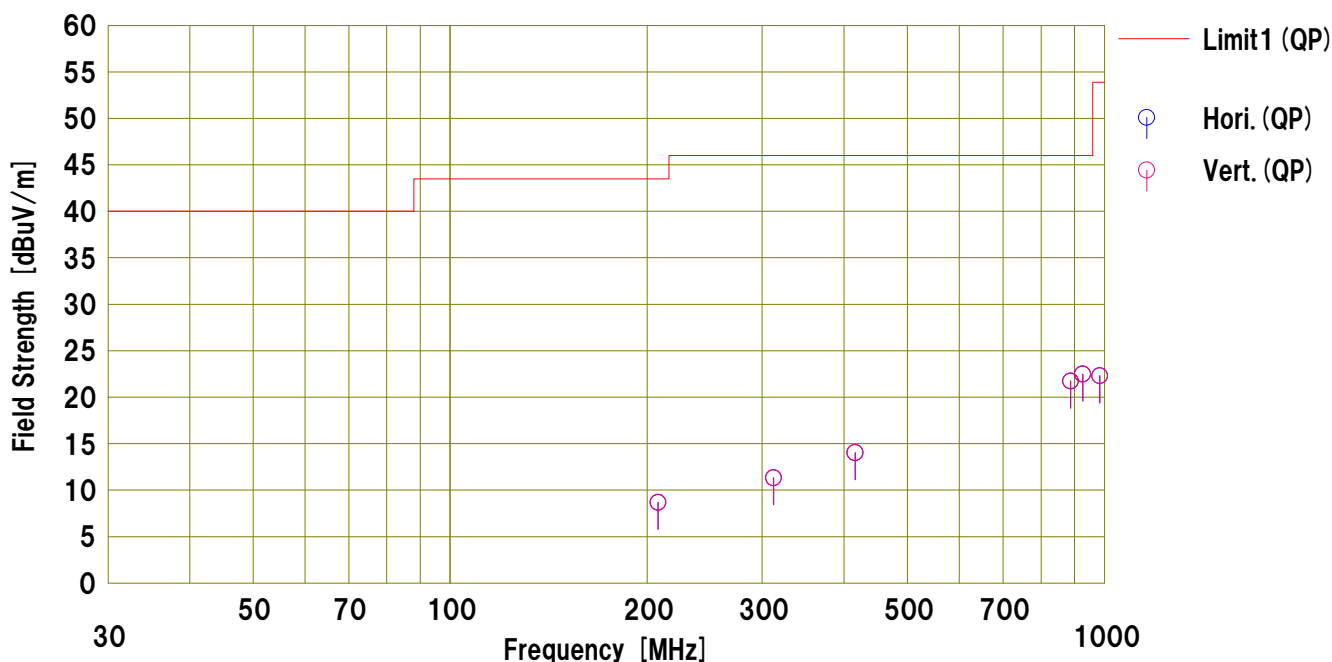
UL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2017/02/17

Company : Sony Engineering Corporation
Kind of EUT : RF glow-stick receiver
Model No. : FFS-RP
Serial No. : No.3
Remarks : EUT: Y

Mode : Receiving 926.7 MHz
Order No. : 11646018S
Power : DC 3 V
Temp./Humi. : 23 deg.C / 30 %RH

Limit1 : FCC15.109 (a) 3m, below 1GHz:QP, above 1GHz:AV

Engineer : Kenichi Adachi



No.	Freq. [MHz]	Reading <QP> [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result <QP> [dBuV/m]	Limit <QP> [dBuV/m]	Margin <QP> [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
1	208.000	21.04	11.44	8.17	31.98	8.67	43.50	34.8	Hori.	150	0	LP	
2	312.000	20.82	13.66	8.75	31.90	11.33	46.00	34.6	Hori.	100	0	LP	
3	416.000	20.71	15.94	9.24	31.86	14.03	46.00	31.9	Hori.	100	0	LP	
4	888.000	19.98	21.78	10.97	31.00	21.73	46.00	24.2	Hori.	100	0	LP	
5	926.700	20.04	22.02	11.11	30.69	22.48	46.00	23.5	Hori.	100	0	LP	
6	984.000	19.03	22.19	11.29	30.22	22.29	53.90	31.6	Hori.	100	0	LP	
7	208.000	21.07	11.44	8.17	31.98	8.70	43.50	34.8	Vert.	100	0	LP	
8	312.000	20.83	13.66	8.75	31.90	11.34	46.00	34.6	Vert.	100	0	LP	
9	416.000	20.73	15.94	9.24	31.86	14.05	46.00	31.9	Vert.	100	0	LP	
10	888.000	19.99	21.78	10.97	31.00	21.74	46.00	24.2	Vert.	100	0	LP	
11	926.700	20.06	22.02	11.11	30.69	22.50	46.00	23.5	Vert.	100	0	LP	
12	984.000	19.04	22.19	11.29	30.22	22.30	53.90	31.6	Vert.	100	0	LP	

DATA OF RADIATED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi - Anechoic Chamber
Date : 2017/02/17

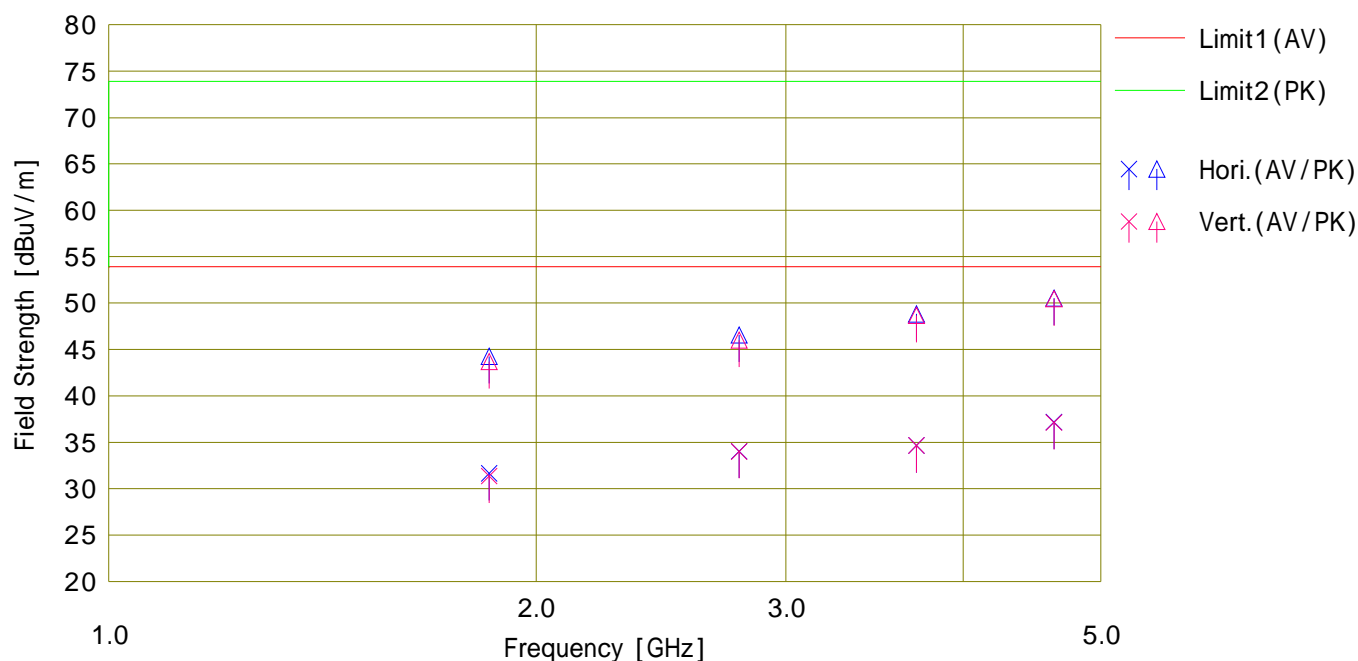
Company : Sony Engineering Corporation
Kind of EUT : RF glow-stick receiver
Model No. : FFS-RP
Serial No. : No.3
Remarks : EUT: H: X, V: Y

Mode : Receiving 926.7 MHz
Order No. : 11646018S
Power : DC 3 V
Temp./Humi. : 23 deg.C / 30 %RH

Limit1 : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:AV

Limit2 : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK

Engineer : Yohsuke Matsuzawa



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	D.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		<AV> [dBuV]	<PK> [dBuV]					<AV> [dBuV/m]	<PK> [dBuV/m]	<AV> [dBuV/m]	<PK> [dBuV/m]	<AV> [dB]	<PK> [dB]					
1	1853.400	35.97	48.58	25.55	4.73	37.06	2.46	31.65	44.26	53.90	73.90	22.2	29.6	Hori.	178	143	SHA03	
2	2780.100	34.33	46.83	28.18	5.95	36.86	2.46	34.06	46.56	53.90	73.90	19.8	27.3	Hori.	100	0	SHA03	
3	3706.800	33.35	47.52	29.13	6.48	36.77	2.46	34.65	48.82	53.90	73.90	19.2	25.0	Hori.	100	0	SHA03	
4	4633.500	33.30	46.67	30.79	7.16	36.54	2.46	37.17	50.54	53.90	73.90	16.7	23.3	Hori.	100	0	SHA03	
5	1853.400	35.68	48.01	25.55	4.73	37.06	2.46	31.36	43.69	53.90	73.90	22.5	30.2	Vert.	100	247	SHA03	
6	2780.100	34.26	46.28	28.18	5.95	36.86	2.46	33.99	46.01	53.90	73.90	19.9	27.8	Vert.	100	0	SHA03	
7	3706.800	33.35	47.37	29.13	6.48	36.77	2.46	34.65	48.67	53.90	73.90	19.2	25.2	Vert.	100	0	SHA03	
8	4633.500	33.25	46.58	30.79	7.16	36.54	2.46	37.12	50.45	53.90	73.90	16.7	23.4	Vert.	100	0	SHA03	

DATA OF RADIATED EMISSION TEST

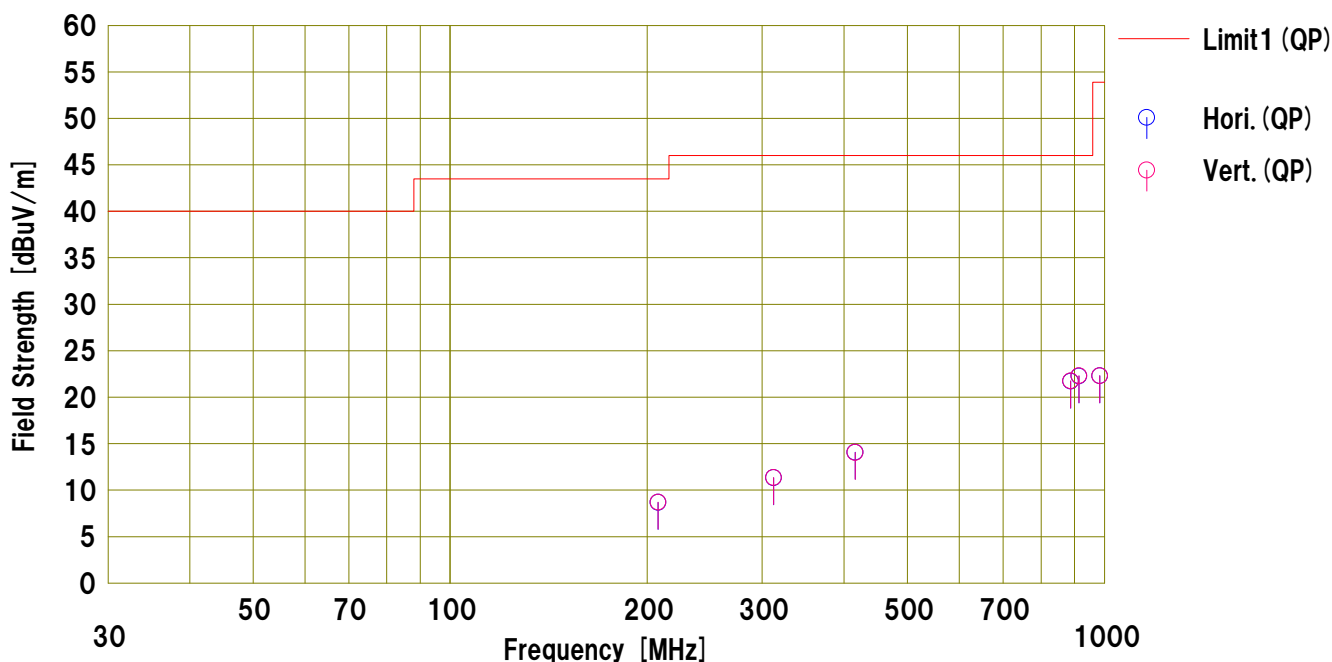
UL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2017/02/17

Company : Sony Engineering Corporation
Kind of EUT : RF glow-stick receiver
Model No. : FFS-RP
Serial No. : No.4
Remarks : EUT: Y

Mode : Receiving Hopping
Order No. : 11646018S
Power : DC 3 V
Temp./Humi. : 23 deg.C / 30 %RH

Limit1 : FCC15.109 (a) 3m, below 1GHz:QP, above 1GHz:AV

Engineer : Kenichi Adachi



No.	Freq. [MHz]	Reading <QP> [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result <QP> [dBuV/m]	Limit <QP> [dBuV/m]	Margin <QP> [dB]	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
1	208.000	21.06	11.44	8.17	31.98	8.69	43.50	34.8	Hori.	150	0	LP	
2	312.000	20.83	13.66	8.75	31.90	11.34	46.00	34.6	Hori.	100	0	LP	
3	416.000	20.76	15.94	9.24	31.86	14.08	46.00	31.9	Hori.	100	0	LP	
4	888.000	19.98	21.78	10.97	31.00	21.73	46.00	24.2	Hori.	100	0	LP	
5	914.200	20.03	21.99	11.06	30.80	22.28	46.00	23.7	Hori.	100	0	LP	
6	984.000	19.03	22.19	11.29	30.22	22.29	53.90	31.6	Hori.	100	0	LP	
7	208.000	21.08	11.44	8.17	31.98	8.71	43.50	34.7	Vert.	100	0	LP	
8	312.000	20.85	13.66	8.75	31.90	11.36	46.00	34.6	Vert.	100	0	LP	
9	416.000	20.74	15.94	9.24	31.86	14.06	46.00	31.9	Vert.	100	0	LP	
10	888.000	20.00	21.78	10.97	31.00	21.75	46.00	24.2	Vert.	100	0	LP	
11	914.200	20.06	21.99	11.06	30.80	22.31	46.00	23.6	Vert.	100	0	LP	
12	984.000	19.05	22.19	11.29	30.22	22.31	53.90	31.5	Vert.	100	0	LP	

DATA OF RADIATED EMISSION TEST

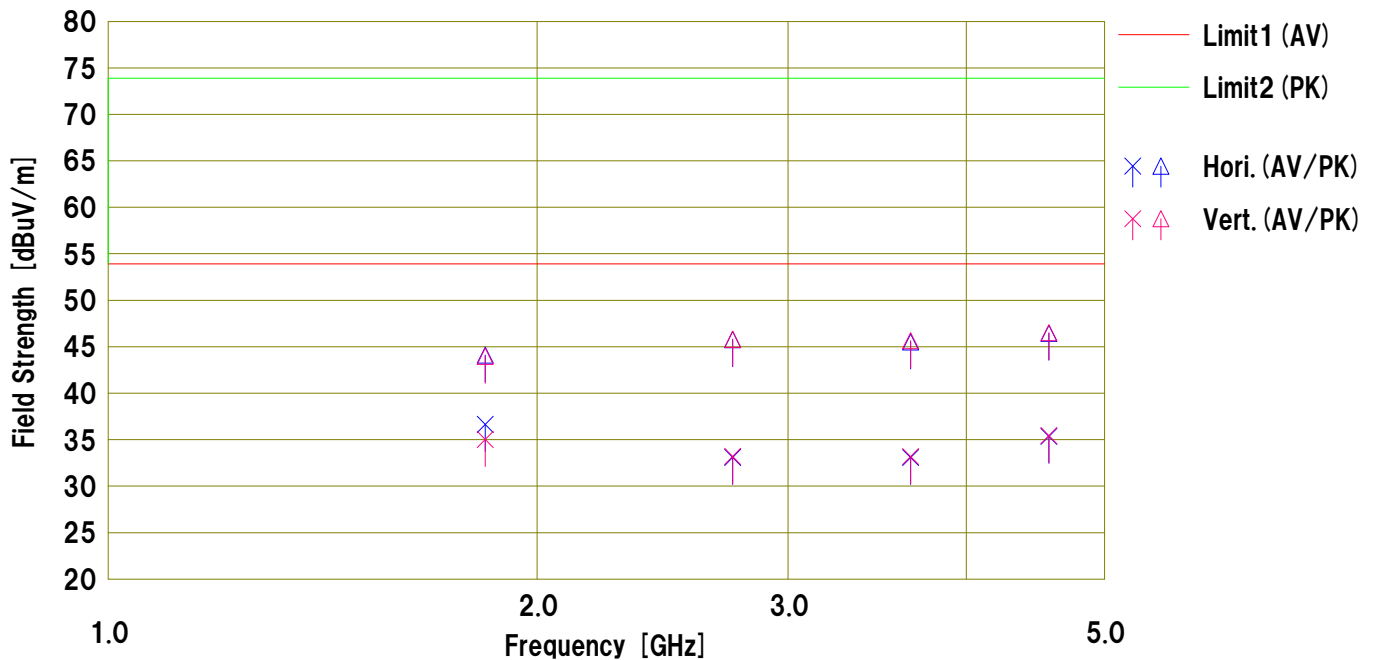
UL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2017/02/17

Company : Sony Engineering Corporation
Kind of EUT : RF glow-stick receiver
Model No. : FFS-RP
Serial No. : No.4
Remarks : EUT: H: X, V: Y

Mode : Receiving Hopping
Order No. : 11646018S
Power : DC 3 V
Temp./Humi. : 23 deg.C / 30 %RH

Limit1 : FCC15.109 (a) 3m, below 1GHz:QP, above 1GHz:AV

Limit2 : FCC15.109 (a) 3m, below 1GHz:QP, above 1GHz:PK Engineer : Kenichi Adachi



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	D.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		<AV> [dBuV]	<PK> [dBuV]					<AV> [dBuV/m]	<PK> [dBuV/m]	<AV> [dBuV/m]	<PK> [dBuV/m]	<AV> [dB]	<PK> [dB]					
1	1838.919	40.99	48.45	25.53	4.72	37.07	2.46	36.63	44.09	53.90	73.90	17.2	29.8	Hori.	192	257	SHA03	
2	2742.600	33.46	46.12	28.14	5.90	36.86	2.46	33.10	45.76	53.90	73.90	20.8	28.1	Hori.	100	0	SHA03	
3	3656.800	31.89	44.33	29.04	6.46	36.77	2.46	33.08	45.52	53.90	73.90	20.8	28.3	Hori.	100	0	SHA03	
4	4571.000	31.69	42.78	30.66	7.10	36.55	2.46	35.36	46.45	53.90	73.90	18.5	27.4	Hori.	100	0	SHA03	
5	1838.919	39.38	48.34	25.53	4.72	37.07	2.46	35.02	43.98	53.90	73.90	18.8	29.9	Vert.	100	299	SHA03	
6	2742.600	33.55	46.16	28.14	5.90	36.86	2.46	33.19	45.80	53.90	73.90	20.7	28.1	Vert.	100	0	SHA03	
7	3656.800	31.99	44.45	29.04	6.46	36.77	2.46	33.18	45.64	53.90	73.90	20.7	28.2	Vert.	100	0	SHA03	
8	4571.000	31.77	42.85	30.66	7.10	36.55	2.46	35.44	46.52	53.90	73.90	18.4	27.3	Vert.	100	0	SHA03	

APPENDIX 2

Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2016/07/15 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2016/10/18 * 12
SLA-07	Logperiodic Antenna	Schwarzbeck	VUSLP9111B	196	RE	2017/01/26 * 12
SAT6-08	Attenuator	HIROSE ELECTRIC CO.,LTD.	AT-406(40)	-	RE	2016/08/04 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271 (RF Selector)	RE	2016/04/22 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2017/02/09 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	RE	2016/03/28 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RF,LMF)	-	RE	-
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2016/10/12 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE	-
STS-03	Digital Hitester	Hioki	3805-50	080997823	RE	2016/10/17 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2016/08/22 * 12
SCC-G15	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	RE	2016/03/08 * 12
SFL-01	Highpass Filter	MICRO-TRONICS	HPM50115	001	RE	2016/11/29 * 12
KAF-02	Pre Amplifier	Hewlett Packard	8449B	3008A01268	RE	2016/04/22 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2016/05/11 * 12
SCC-G40	Coaxial Cable	Junkosha	MWX221-01000NF SNMS/B	1612S005	RE	2017/01/08 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2016/03/23 * 12
SAEC-03(SVSWR)	Semi-Anechoic Chamber	TDK	SAEC-03(SVSWR)	3	RE	2016/07/25 * 12

The expiration date of the calibration is the end of the expired month .
 As for some calibrations performed after the tested dates , those test equipment have been controlled by means of an unbroken chains of calibrations .

All equipment is calibrated with valid calibrations . Each measurement data is traceable to the national or international standards .

Test Item :

RE: Radiated emission ,

End of Report