

TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: AK8MP-CL1A

Equipment Under Test : Mobile Projector
Model Name : MP-CL1A
Applicant : Sony Corporation
Manufacturer : Sony Corporation
Date of Receipt : 2016.05.19
Date of Test(s) : 2016.07.10 ~ 2016.07.20
Date of Issue : 2016.07.25

In the configuration tested, the EUT complied with the standards specified above.

Tested By:



Date:

2016.07.25

Jinhyoung ChoTechnical
Manager:

Date:

2016.07.25

Hyunchoe You

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SGS Korea Co., Ltd. (Gunpo Laboratory) 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807 <http://www.sgsgroup.kr>

RTT5041-20(2015.10.01)(3)

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A4(210mm x 297mm)

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

-Wireless Div. 2FL, 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

Telephone : +82 31 688 0901

FAX : +82 31 688 0921

1.2. Details of applicant

Applicant : Sony Corporation

Address : 1-7-1 Konan Minato-ku, Tokyo, 108-0075 Japan

Contact Person : Kim, Sung-Chul

Phone No. : +82 55 205 0677

1.3. Description of EUT

Kind of Product	Mobile Projector
Model Name	MP-CL1A
Power Supply	DC 3.8 V
Frequency Range	2 402 MHz ~ 2 480 MHz (Bluetooth), 2 412 MHz ~ 2 462 MHz (11b/g/n_HT20), 5 745 MHz ~ 5 805 MHz (Band 3: 11a/n_HT20), 5 755 MHz ~ 5 795 MHz (Band 3: 11n_HT40)
Modulation Technique	DSSS, OFDM, GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channels	79 channel (Bluetooth), 11 channel (11b/g/n_HT20), 4 channel (Band 3: 11a/n_HT20), 2 channel (Band 3: 11n_HT40)
Antenna Type	Insert Mold Antenna
Antenna Gain	2 400 MHz ~ 2 483.5 MHz: -0.60 dB i, 5 725 MHz ~ 5 850 MHz: -0.85 dB i
H/W Version	Proto1
S/W Version	0.20160629_1

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1.4. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL010148	2016.07.25	Initial

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2. RF Exposure Evaluation

2.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength(V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time
(A) Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	*100	6
3.0 – 30	1842/f	4.89/f	*900/f ²	6
30 - 300	61.4	0.163	1.0	6
300 – 1 500	-	-	f/300	6
1 500 – 100 000	-	-	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3 – 1.34	614	1.63	*100	30
1.34 – 30	824/f	2.19/f	*180/f ²	30
30 – 300	27.5	0.073	0.2	30
300 – 1 500	-	-	f/1500	30
1 500 – 100 000	-	-	1.0	30

2.1.1. Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

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2.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data

Test Mode : Normal Operation

2.1.3. Output Power into Antenna & RF Exposure Evaluation Distance

Bluetooth

- Maximum tune up tolerance

Channel	Channel Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
78	2 480	4.00	-0.60	0.000 435	1

WLAN (2.4G)

- Maximum tune up tolerance

Channel	Channel Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
11	2 462	16.22	-0.60	0.007 257	1

WLAN (5G)

- Maximum tune up tolerance

Channel	Channel Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
159	5 795	13.25	-0.85	0.003 457	1

Note :

The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm².

Simultaneous transmission MPE test exclusion

Bluetooth: the ratio is 0.000 435 / 1

WLAN: the ratio is 0.007 257 / 1

Confirm the sum result of individual MPEs ratio is ≤ 1.0

$$(0.000\ 435 / 1) + (0.007\ 257 / 1) = 0.007\ 692 \leq 1.0$$

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So this device meets the KDB447498 D01 v06 section 7.2 requirement of "Simultaneous transmission MPE test exclusion".

- End of the Test Report -

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