



# RADIO TEST REPORT

**Test Report No. : 11306372M-A-R2**

**Applicant** : **Sony Corporation**  
**Type of Equipment** : **Digital Paper**  
**Model No.** : **DPT-RP1**  
**FCC ID** : **AK8DPTRP1**  
**Test regulation** : **FCC Part 15 Subpart C: 2016  
(Bluetooth part)**  
**Test item** : **Conducted Emission  
Radiated Spurious Emission**  
**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 above regulation.
4. The test results in this report are traceable to the national or international standards.
5. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
6. This test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. This report is a revised version of 11306372M-A-R1. 11306372M-A-R1 is replaced with this report.

**Date of test:** June 10-12, 28, 29, 2016

**Representative  
test engineer:**

*K. Ando*

Kazuhiro Ando  
Engineer  
Consumer Technology Division

**Approved by:**

*M. Nishiyama*

Masanori Nishiyama  
Manager  
Consumer Technology Division



CERTIFICATE 1266.01

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

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**Kashima EMC Lab.**

1614, Mushihata, Katori-shi, Chiba-ken, 289-0341 Japan  
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Facsimile : +81 478 82 3373



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## **SECTION 1: Customer information**

Company Name : Sony Corporation  
Brand Name : SONY  
Address : 1-7-1 Konan, Minato-ku, Tokyo 108-0075, Japan

## **SECTION 2: Equipment under test (E.U.T.)**

### **2.1 Identification of E.U.T.**

Type of Equipment : Digital Paper  
Model No. : DPT-RP1  
Serial No. : Refer to Section 4, Clause 4.2  
Rating : DC 3.7 V  
Receipt Date of Sample : May 30, 2016  
Country of Mass-production : Japan  
Condition of EUT : Production prototype  
(Not for Sale: This sample is equivalent to mass-produced items.)  
Modification of EUT : No Modification by the test lab.

### **2.2 Product Description**

Model: DPT-RP1 (referred to as the EUT in this report) is a Digital Paper.

Clock frequency : 156 MHz (CPLD), 667 MHz (LPDDR3), 200 MHz (eMMC),  
40 MHz (WLAN/BT), 208 MHz (WLAN/BT), 32.768 kHz (clock),  
26 MHz (CPU), 27 MHz (NFC)

### **Radio Specification**

Equipment name	IEEE 802.11 2x2 MIMO a/b/g/n/ac Wireless LAN + Bluetooth + NFC		
Frequency of operation	Bluetooth	2.4GHz band: 2402-2480 MHz (BDR (Basic Data Rate), EDR (Enhanced Data Rate), LE (Low Energy mode))	
	WLAN	2.4GHz band: 2412-2462 MHz (b,g,n(HT20)); W52 (U-NII-1): 5180-5240 MHz (a,n(HT20),ac(VHT20)) / 5190-5230 MHz (n(HT40),ac(VHT40)) / 5210 MHz (ac(VHT80)); W53 (U-NII-2A): 5260-5320 MHz (a,n(HT20),ac(VHT20)) / 5270-5310 MHz (n(HT40),ac(VHT40)) / 5290 MHz (ac(VHT80)); W56 (U-NII-2C): 5500-5720 MHz (a,n(HT20),ac(VHT20)) / 5510-5710 MHz (n(HT40),ac(VHT40)) / 5530-5690 MHz (ac(VHT80)) W58 (U-NII-3): 5745-5825 MHz (a,n(HT20),ac(VHT20)) / 5755-5795 MHz (n(HT40),ac(VHT40)) / 5775 MHz (ac(VHT80))	
	NFC	13.56 MHz	
Operation mode	Wi-Fi	Bluetooth	NFC
Channel spacing	5 MHz (2.4 GHz band), 20 MHz (W52, W53, W56, W58)	1 MHz (BDR, EDR), 2 MHz (LE)	-
Bandwidth	20 MHz (b,g,a,n(HT20),ac(VHT20)), 40 MHz (n(HT40),ac(VHT40)), 80 MHz (ac(VHT80))	79 MHz	-
Type of modulation	DSSS: DBPSK, DQPSK, CCK OFDM: BPSK, QPSK, 16QAM, 64QAM, 256QAM(*1) (*1. 256QAM is only supported by 11ac mode.)	FHSS: GFSK (*. EDR: GFSK+ $\pi/4$ -DQPSK, GFSK+ 8DPSK)	ASK
Antenna	antenna #A (Wi-Fi)	antenna #B (Wi-Fi+Bluetooth)	
Antenna type	Loop		
Antenna gain (Peak)	3.75 dBi (2.4 GHz), 2.81 dBi (5 GHz) (*. including cable loss)	1.38 dBi (2.4 GHz), 4.29 dBi (5 GHz) (*. including cable loss)	
Antenna	NFC antenna		
Antenna type	Loop		
Card type	type A, type F		

**UL Japan, Inc.**

**Kashima EMC Lab.**

1614, Mushiata, Katori-shi, Chiba-ken, 289-0341 Japan

Telephone : +81 478 88 6500

Facsimile : +81 478 82 3373

## **SECTION 3: Test specification, procedures & results**

### **3.1 Test Specification**

Test Specification : FCC Part 15 Subpart C  
FCC part 15 final revised on April 6, 2016.

Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators  
Section 15.207 Conducted limits  
Section 15.247 Operation within the bands 902-928MHz,  
2400-2483.5MHz, and 5725-5850MHz

The EUT has been tested for compliance with FCC Part 15 Subpart B. Refer to the test report 11306371S-F.

### **3.2 Procedures and results**

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Conducted Emission	FCC: ANSI C63.10-2013 6. Standard test methods IC: RSS-Gen 8.8	FCC: Section 15.207 IC: RSS-Gen 8.8	QP 13.6 dB, 0.66063 MHz, N AV 13.8 dB, 0.66063 MHz, N	Complied	-
Carrier Frequency Separation	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1) IC: RSS-247 5.1 (2)	N/A	N/A *1)	Conducted
20dB Bandwidth	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1) IC: RSS-247 5.1 (1)		N/A *1)	Conducted
Number of Hopping Frequency	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1)(iii) IC: RSS-247 5.1 (4)		N/A *1)	Conducted
Dwell time	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1)(iii) IC: RSS-247 5.1 (4)		N/A *1)	Conducted
Maximum Peak Output Power	FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 6.12	FCC: Section15.247(a)(b)(1) IC: RSS-247 5.4 (2)		N/A *1)	Conducted
Spurious Emission & Band Edge Compliance	FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 6.13	FCC: Section15.247(d) IC: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	12.5 dB 624.008 MHz, QP, Hori.	Complied	Conducted *1) /Radiated (above 30 MHz) *2)

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.

\*1) Refer to the test report: 11306372S-A.

\*2) Radiated test was selected over 30 MHz based on section 15.247(d).

\* In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred.

#### **FCC Part 15.31 (e)**

This EUT provides stable voltage (DC 3.3 V and 1.8 V) constantly to RF transmitter regardless of input voltage. Therefore, this EUT complies with the requirement.

#### **FCC Part 15.203 Antenna requirement**

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the requirement.

**UL Japan, Inc.**

**Kashima EMC Lab.**

1614, Mushihata, Katori-shi, Chiba-ken, 289-0341 Japan

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Facsimile : +81 478 82 3373

### 3.3 Addition to standard

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

### 3.4 Uncertainty

#### EMI

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

Item	Frequency range	Uncertainty (+/-)
Conducted emission	0.15 MHz-30 MHz	2.8 dB
Radiated emission	30MHz - 300MHz	5.1dB
	300MHz - 1GHz	6.3dB
	1GHz - 6GHz	4.5dB
	6GHz - 18GHz	4.8dB
	18GHz - 26.5GHz	4.9dB

#### Conducted Emission test

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

#### Radiated emission test

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

### 3.5 Test Location

UL Japan, Inc. Kashima EMC Lab.  
1614 Mushihata, Katori-shi, Chiba-ken, 289-0341 JAPAN  
Telephone: +81 478 88 6500, Facsimile: +81 478 82 3373  
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Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Open site	4659A-1	6.0 x 5.5 x 2.5	20 x 40	10 m
No.2 Open site	4659A-2	4.4 x 4.4 x 2.15	18 x 20	10 m
No.5 Open site	4659A-5	8.6 x 7.1 x 2.4	18 x 23	10 m
No.1 Shielded room	4659A-1	5.4 x 4.5 x 2.3	-	-
No.2 Shielded room	4659A-2	3.6 x 2.7 x 2.3	-	-
No.3 Shielded room	-	5.4 x 3.6 x 2.3	-	-
No.4 Shielded Room	-	6.1 x 6.1 x 3.1	-	-
No.5 Shielded Room	4659A-5	4.2 x 3.1 x 2.5	-	-
No.3 Fully Anechoic Chamber	-	7.0 x 3.5 x 3.5	-	-
No.6 Semi-anechoic Chamber	4659A-6	8.5 x 5.5 x 5.2	-	3 m
No.10 Semi-anechoic Chamber	4659A-10	18.4 x 9.9 x 7.7	-	10 m
No.11 Semi-anechoic Chamber	4659A-7	9.0 x 6.5 x 5.2	-	3 m
No.1 Measurement room	-	5.0 x 3.7 x 2.6	-	-
No.2 Measurement room	-	4.3 x 4.4 x 2.7	-	-
No.3 Measurement room	-	4.3 x 4.4 x 2.7	-	-

### 3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

## UL Japan, Inc.

### Kashima EMC Lab.

1614, Mushihata, Katori-shi, Chiba-ken, 289-0341 Japan  
Telephone : +81 478 88 6500  
Facsimile : +81 478 82 3373

**SECTION 4: Operation of E.U.T. during testing**

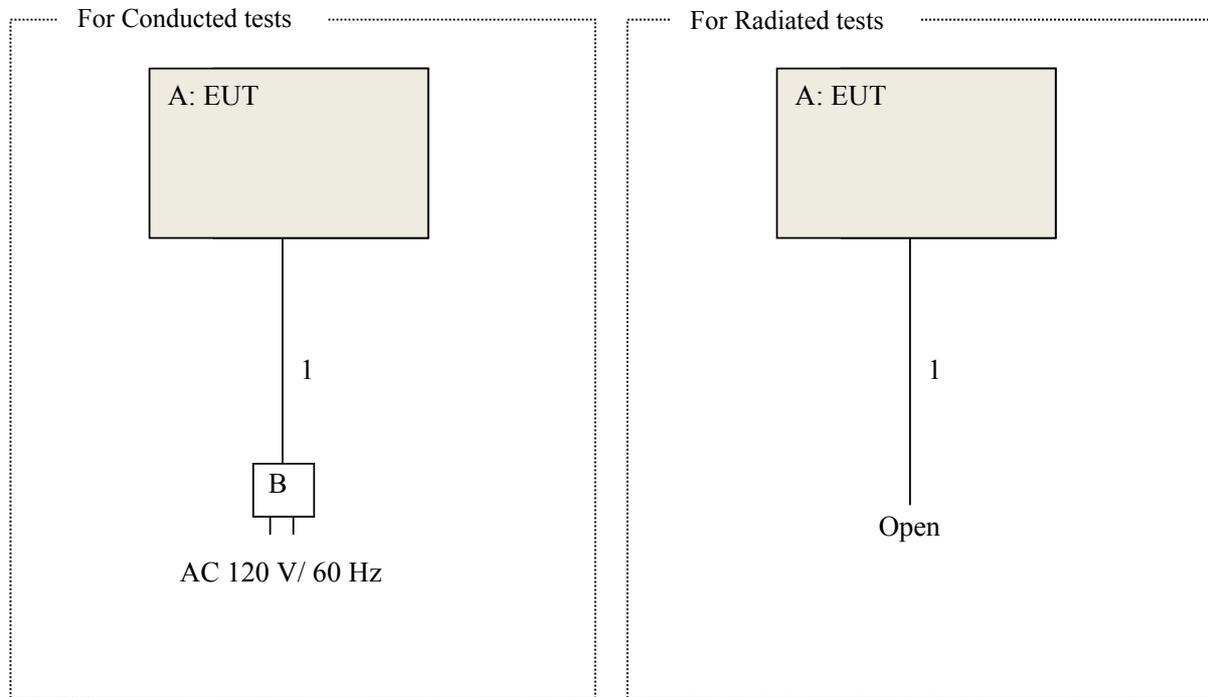
**4.1 Operating Mode(s)**

Bluetooth (BT): Transmitting (Tx), Payload: PRBS9

Details of Operating Mode(s)

Test Item	Mode	Tested frequency
Conducted Emission, Spurious Emission (Conducted/Radiated)	Tx (Hopping Off) DH5, 3DH5	2402 MHz 2441 MHz 2480 MHz
<p>*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload length (except Dwell time test)</p> <p>*2DH mode (2Mb/s EDR: pi/4DQPSK) was excluded for other tests than power measurement by using 3DH mode (3 Mb/s EDR: 8DPSK) as a representative.</p> <p>* It is considered that the non-tested packet type (e.g. inquiry) can be omitted as it is complied with above all the test items based on Bluetooth Core specification.</p> <p>*EUT has the power settings by the software as follows;  Power settings:    BDR:    2 dBm                            EDR:    2 dBm</p> <p>Software: DutApiMimoBtFmBridgeEth.exe Version 2.0.0.75</p> <p>*This setting of software is the worst case.  Any conditions under the normal use do not exceed the condition of setting.  In addition, end users cannot change the settings of the output power of the product.</p> <p>* The test was performed on the Bluetooth Low Energy as a representative, because it had higher than Bluetooth BDR/EDR of the simultaneously transmission of 2 GHz Band and 5GHz band at the spurious emission tests. (Refer to the report: No. 11306372M-B)</p>		

## 4.2 Configuration and peripherals



\* Test data was taken under worse case conditions.

### Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Digital Paper	DPT-RP1	504	Sony Corporation	EUT
B	AC Adaptor	AC-UUD12	15091AR1000145	Sony Corporation	-

### List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB Cable	1.5	Shielded	Shielded	-

**UL Japan, Inc.**

**Kashima EMC Lab.**

1614, Mushihata, Katori-shi, Chiba-ken, 289-0341 Japan

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## **SECTION 5: Conducted Emission**

### **Test Procedure and conditions**

EUT was placed on a wooden table of nominal size, 1.0 m by 2.0 m, raised 0.8m above the conducting ground plane. The rear of tabletop was located 40 cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80 cm from any other grounded conducting surface. EUT was located 80 cm from a Line Impedance Stabilization Network (LISN) / Artificial mains Network (AMN) and excess AC cable was bundled in center.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT via AC adaptor in a Shielded room.

The EUT via AC adaptor was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

The test results and limit are rounded off to one decimal place, so some differences might be observed.

**Detector** : QP and CISPR AV  
**Measurement range** : 0.15 MHz - 30 MHz  
**Test data** : APPENDIX  
**Test result** : Pass

**SECTION 6: Radiated Spurious Emission**

**Test Procedure**

[For below 1GHz]

EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 0.8 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

[For above 1GHz]

EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane.

The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane.

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

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.

The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).

The test was made with the detector (RBW/VBW) in the following table.

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

**Test Antennas are used as below;**

Frequency	Below 1 GHz	Above 1 GHz
Antenna Type	Hybrid	Horn

In any 100 kHz bandwidth outside the restricted band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

**20 dBc was applied to the frequency over the limit of FCC 15.209 / Table 4 of RSS-Gen 8.9 (IC) and outside the restricted band of FCC15.205 / Table 6 of RSS-Gen 8.10 (IC).**

Frequency	Below 1 GHz	Above 1 GHz		20 dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	RBW: 1 MHz VBW: 10 Hz *1)	RBW: 100 kHz VBW: 300 kHz
Test Distance	3 m	4 m*2) (1 GHz – 10 GHz), 1 m*3) (10 GHz – 26.5 GHz)		4 m*2) (1 GHz – 10 GHz), 1 m*3) (10 GHz – 26.5 GHz)

\*1) Although DA 00-705 accepts VBW = 10 Hz for AV measurements, it was confirmed that superfluous smoothing was not performed.

\*2) Distance Factor:  $20 \times \log(4.0 \text{ m}/3.0 \text{ m}) = 2.5 \text{ dB}$

\*3) Distance Factor:  $20 \times \log(1.0 \text{ m}/3.0 \text{ m}) = -9.5 \text{ dB}$

- 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.

The test results and limit are rounded off to one decimal place, so some differences might be observed.

**Measurement range : 30 MHz - 26.5 GHz**

**Test data : APPENDIX**

**Test result : Pass**

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**Kashima EMC Lab.**

1614, Mushihata, Katori-shi, Chiba-ken, 289-0341 Japan

Telephone : +81 478 88 6500

Facsimile : +81 478 82 3373

**APPENDIX 1: Test data**

**Conducted Emission**

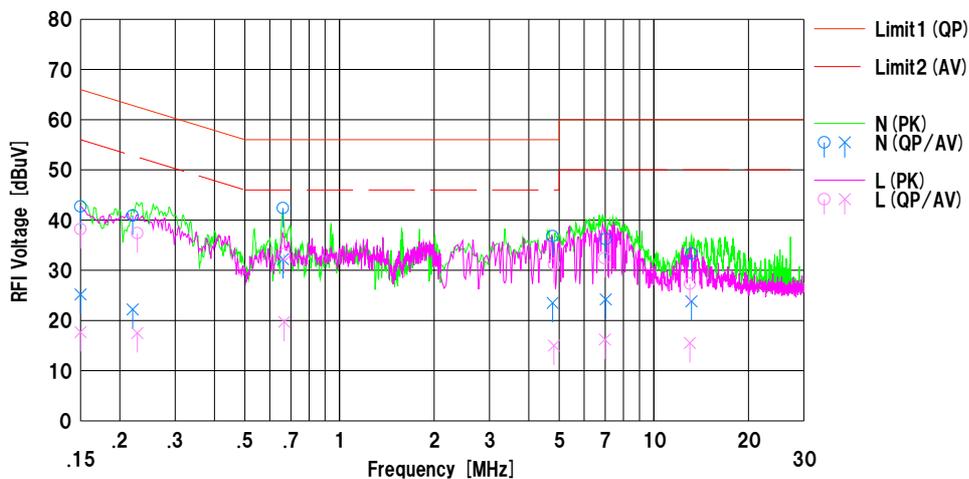
**DATA OF CONDUCTED EMISSION TEST**

UL Japan,Inc. Kashima EMC Lab. No.5 Shielded Room  
Date : 2016/06/28

Mode : BDR DH5 2402MHz  
Report No. : 11306372M  
Power : AC 120V / 60Hz  
Temp./Humi. : 24deg.C / 52%RH

Limit1 : FCC 15C (15.207) QP  
Limit2 : FCC 15C (15.207) AV

Tested by : Kazuhiro Ando



No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	33.0	15.5	9.7	42.7	25.2	66.0	56.0	23.3	30.8	N	
2	0.21970	31.2	12.5	9.7	40.9	22.2	62.8	52.8	21.9	30.6	N	
3	0.66063	32.7	22.5	9.7	42.4	32.2	56.0	46.0	13.6	13.8	N	
4	4.76421	26.8	13.5	10.0	36.8	23.5	56.0	46.0	19.2	22.5	N	
5	7.03122	26.0	14.0	10.2	36.2	24.2	60.0	50.0	23.8	25.8	N	
6	13.17128	23.0	13.5	10.3	33.3	23.8	60.0	50.0	26.7	26.2	N	
7	0.15000	28.5	8.0	9.7	38.2	17.7	66.0	56.0	27.8	38.3	L	
8	0.22741	27.7	7.8	9.7	37.4	17.5	62.5	52.5	25.1	35.0	L	
9	0.66722	23.5	10.0	9.7	33.2	19.7	56.0	46.0	22.8	26.3	L	
10	4.81275	21.2	5.0	10.0	31.2	15.0	56.0	46.0	24.8	31.0	L	
11	6.98278	22.2	6.0	10.2	32.4	16.2	60.0	50.0	27.6	33.8	L	
12	13.02455	17.0	5.2	10.3	27.3	15.5	60.0	50.0	32.7	34.5	L	

Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable) [dB]  
LISN:CLS-25

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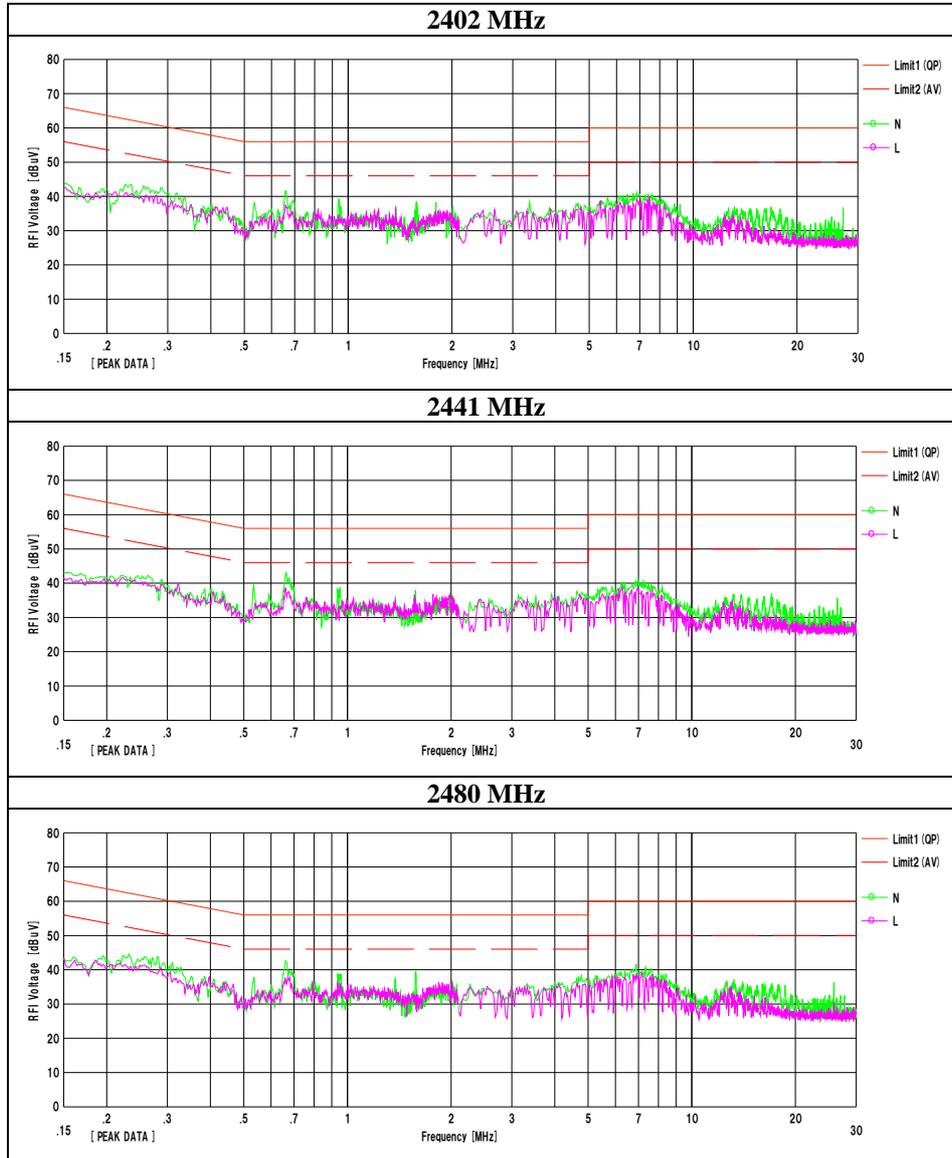
1614, Mushihata, Katori-shi, Chiba-ken, 289-0341 Japan

Telephone : +81 478 88 6500

Facsimile : +81 478 82 3373

## Conducted Emission

Test place : Kashima EMC Lab. No.5 Shielded Room  
Report No. : 11306372M  
Date : June 28, 2016  
Temperature / Humidity : 24 deg. C / 52 % RH  
Engineer : Kazuhiro Ando  
Mode : Tx, Hopping Off, DH5



## Conducted Emission

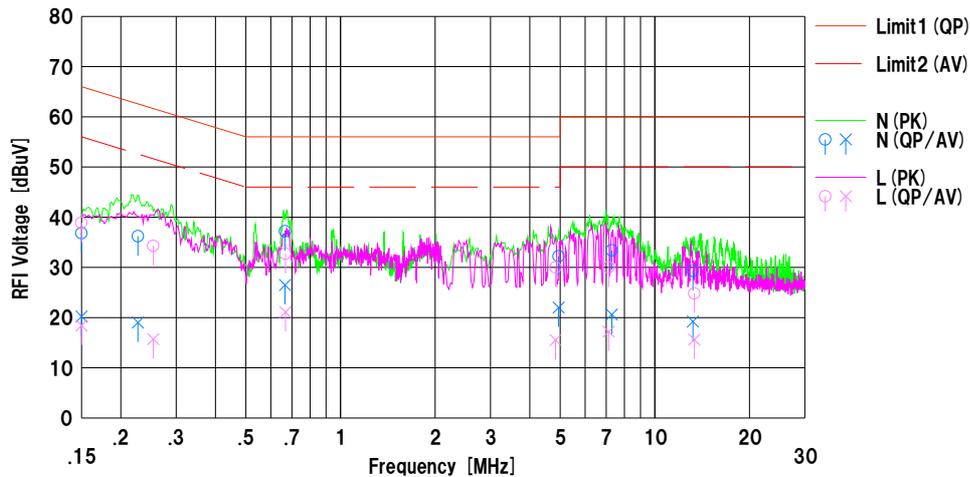
### DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Kashima EMC Lab. No.5 Shielded Room  
Date : 2016/06/29

Mode : EDR 3DH5 2402MHz  
Report No. : 11306372M  
Power : AC 120V / 60Hz  
Temp./Humi. : 24deg.C / 52%RH

Limit1 : FCC 15C (15.207) QP  
Limit2 : FCC 15C (15.207) AV

Tested by : Kazuhiro Ando

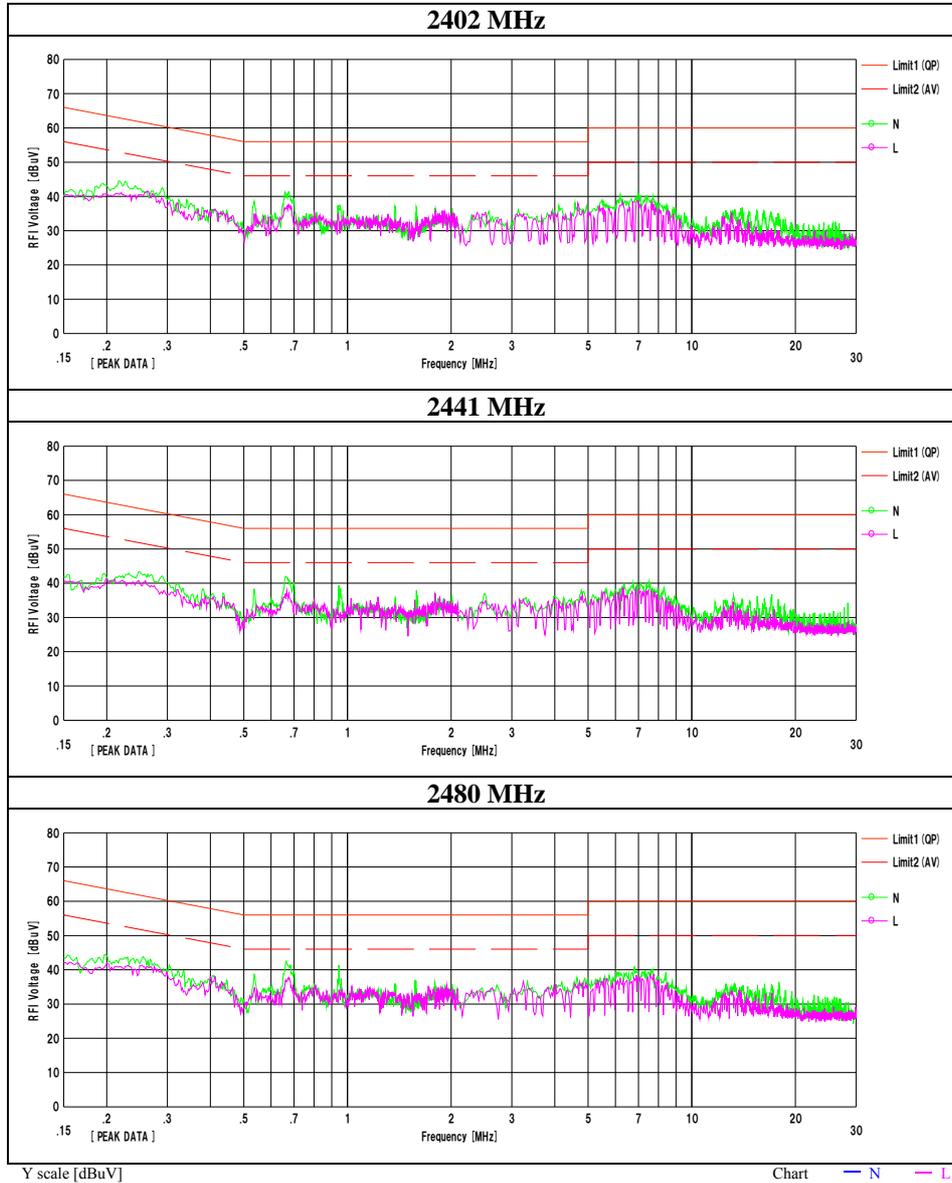


No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	27.1	10.5	9.7	36.8	20.2	66.0	56.0	29.2	35.8	N	
2	0.22682	26.5	9.3	9.7	36.2	19.0	62.6	52.6	26.4	33.6	N	
3	0.66601	27.5	16.8	9.7	37.2	26.5	56.0	46.0	18.8	19.5	N	
4	4.94225	22.2	12.0	10.0	32.2	22.0	56.0	46.0	23.8	24.0	N	
5	7.29755	23.2	10.4	10.2	33.4	20.6	60.0	50.0	26.6	29.4	N	
6	13.21352	19.0	8.9	10.3	29.3	19.2	60.0	50.0	30.7	30.8	N	
7	0.15000	29.2	8.7	9.7	38.9	18.4	66.0	56.0	27.1	37.6	L	
8	0.25385	24.6	6.0	9.7	34.3	15.7	61.6	51.6	27.3	35.9	L	
9	0.66794	23.0	11.4	9.7	32.7	21.1	56.0	46.0	23.3	24.9	L	
10	4.83200	20.0	5.5	10.0	30.0	15.5	56.0	46.0	26.0	30.5	L	
11	7.13072	19.8	7.0	10.2	30.0	17.2	60.0	50.0	30.0	32.8	L	
12	13.36328	14.5	5.3	10.3	24.8	15.6	60.0	50.0	35.2	34.4	L	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable) [dB]  
LISN:CLS-25

## Conducted Emission

Test place	Kashima EMC Lab. No.5 Shielded Room
Report No.	11306372M
Date	June 28, 2016
Temperature / Humidity	24 deg. C / 52 % RH
Engineer	Kazuhiro Ando
Mode	Tx, Hopping Off, 3DH5



Y scale [dBuV]

Chart

— N — L

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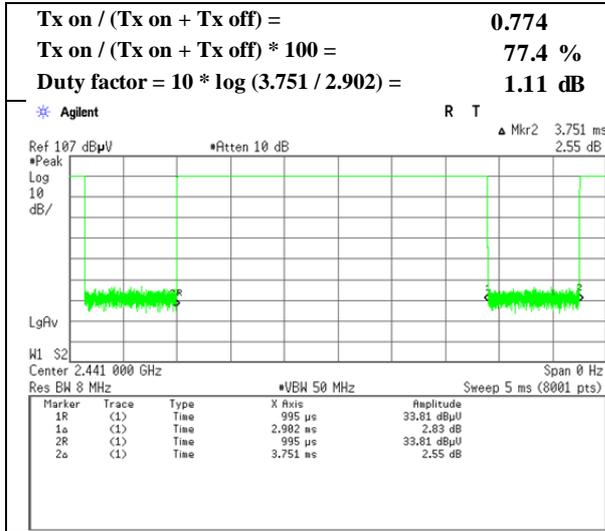
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Telephone : +81 478 88 6500

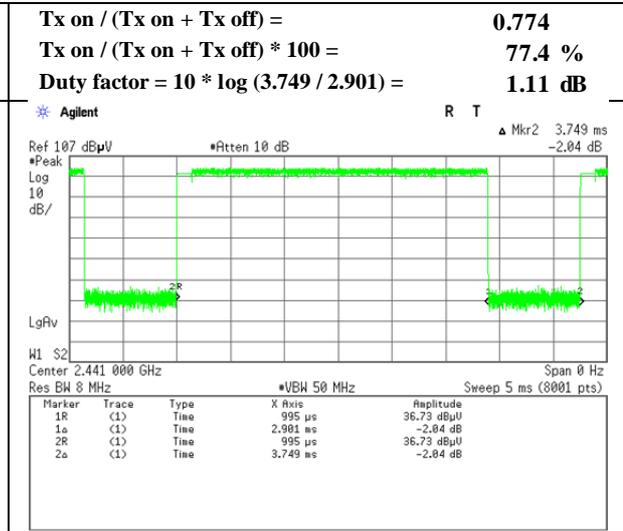
Facsimile : +81 478 82 3373

## Burst Rate Confirmation

### DH5



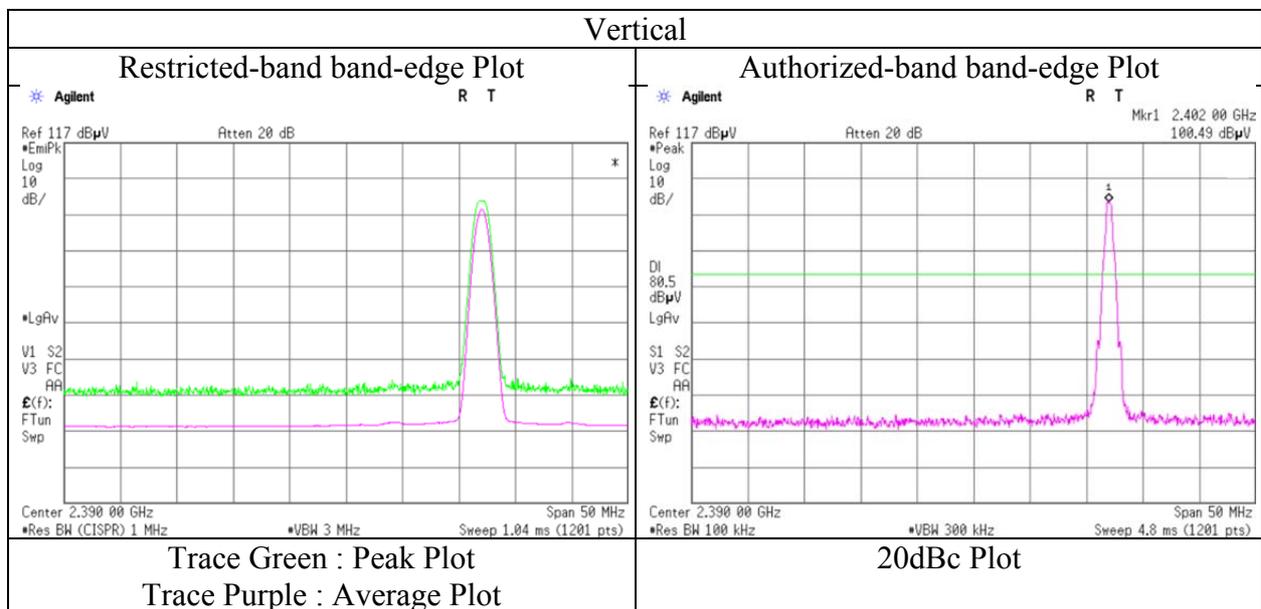
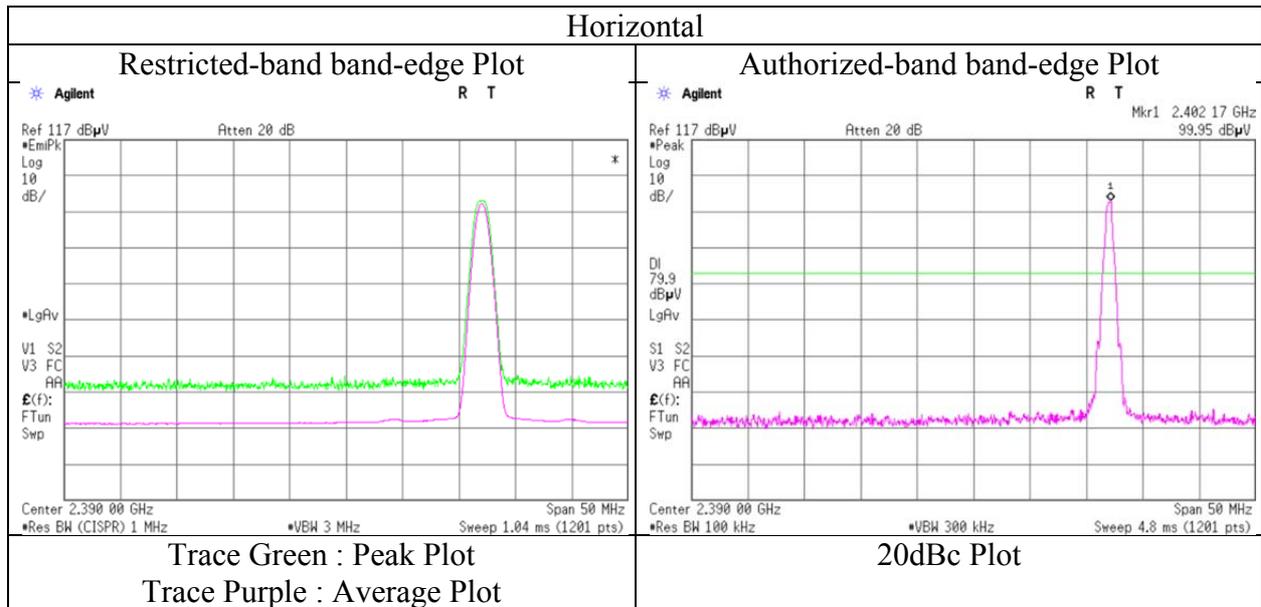
### 3DH5





## Radiated Spurious Emission (Reference Plot for band-edge)

Test place	Kashima EMC Lab. No.6 Semi Anechoic Chamber
Report No.	11306372M
Date	June 10, 2016
Temperature / Humidity	21 deg. C / 48 % RH
Engineer	Kazuhiro Ando (1-10GHz)
Mode	Tx, Hopping Off, DH5 2402 MHz



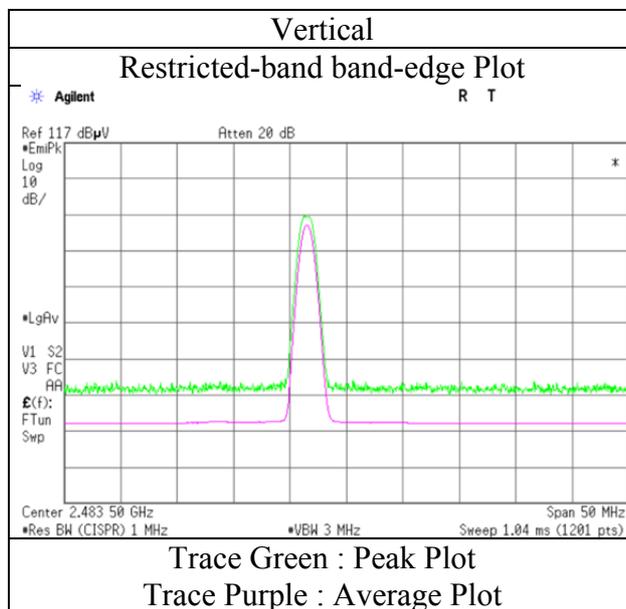
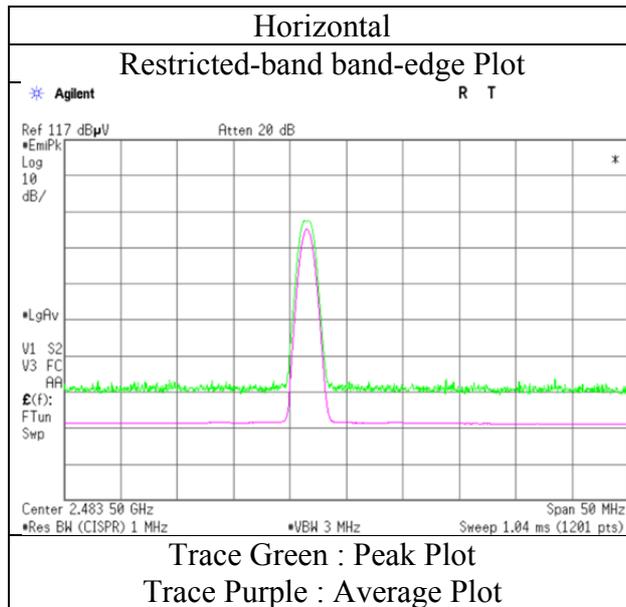
\* Final result of restricted band edge was shown in tabular data.





**Radiated Spurious Emission**  
**(Reference Plot for band-edge)**

Test place : Kashima EMC Lab. No.6 Semi Anechoic Chamber  
Report No. : 11306372M  
Date : June 10, 2016  
Temperature / Humidity : 21 deg. C / 48 % RH  
Engineer : Kazuhiro Ando  
(1-10GHz)  
Mode : Tx, Hopping Off, DH5 2480 MHz

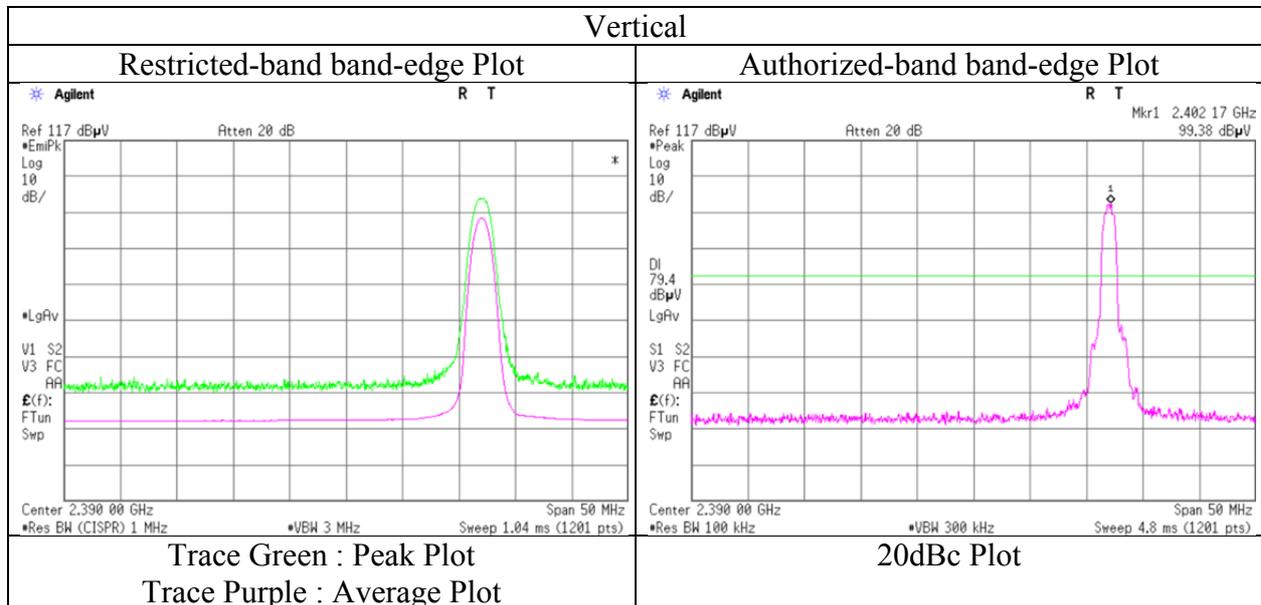
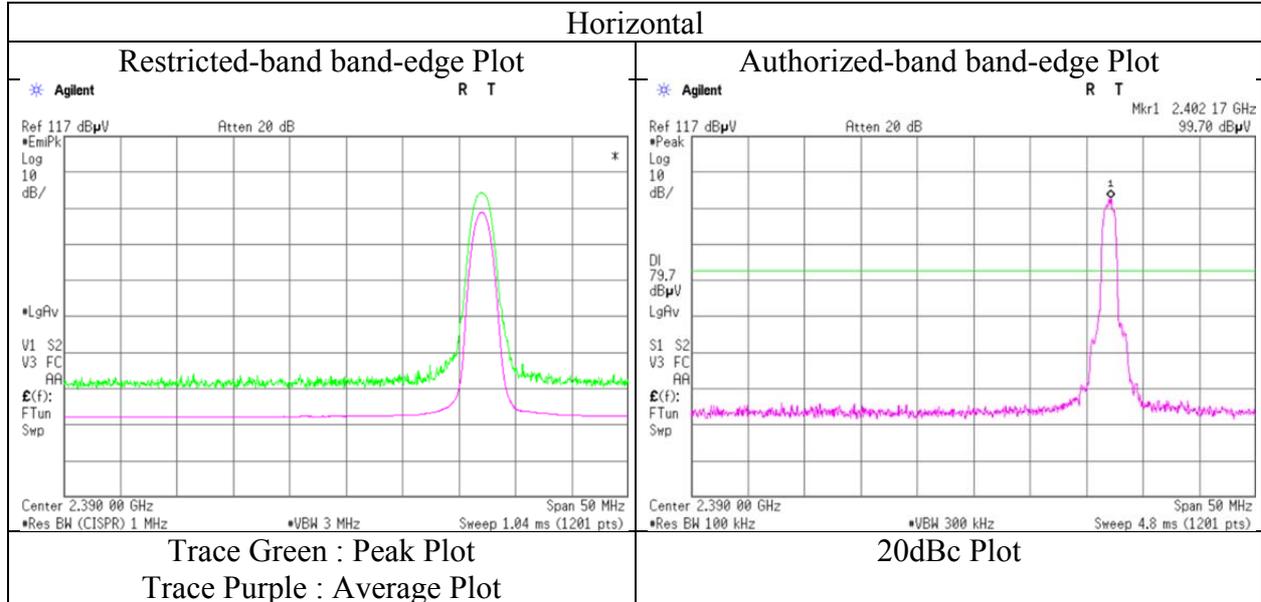


\* Final result of restricted band edge was shown in tabular data.



**Radiated Spurious Emission**  
**(Reference Plot for band-edge)**

Test place : Kashima EMC Lab. No.6 Semi Anechoic Chamber  
Report No. : 11306372M  
Date : June 10, 2016  
Temperature / Humidity : 21 deg. C / 48 % RH  
Engineer : Kazuhiro Ando  
(1-10GHz)  
Mode : Tx, Hopping Off, 3DH5 2402 MHz



\* Final result of restricted band edge was shown in tabular data.



## Radiated Spurious Emission

Test place	Kashima EMC Lab. No.6 Semi Anechoic Chamber		
Report No.	11306372M		
Date	June 12, 2016	June 10, 2016	June 11, 2016
Temperature / Humidity	20 deg. C / 52 % RH	21 deg. C / 48 % RH	23 deg. C / 47 % RH
Engineer	Kazuhiro Ando	Kazuhiro Ando	Kazuhiro Ando
	(30-1000MHz)	(1-10GHz)	(10-26.5GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz		

(\* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	208.010	QP	31.2	10.2	5.4	32.4	0.0	14.4	43.5	29.1	100	34	
Hori.	624.008	QP	38.3	20.1	7.4	32.3	0.0	33.5	46.0	12.5	112	183	
Hori.	667.343	QP	32.6	20.5	7.6	32.3	0.0	28.4	46.0	17.6	100	190	
Hori.	2483.500	PK	53.5	27.5	14.2	44.3	2.5	53.4	73.9	20.5	109	12	
Hori.	3306.688	PK	55.4	28.2	5.9	44.6	2.5	47.4	73.9	26.5	140	229	
Hori.	4960.000	PK	52.8	31.4	6.4	46.1	2.5	47.0	73.9	26.9	153	80	
Hori.	7440.000	PK	49.2	36.7	7.7	44.2	2.5	51.9	73.9	22.0	100	0	Floor noise
Hori.	2483.500	AV	39.8	27.5	14.2	44.3	2.5	39.7	53.9	14.2	109	12	
Hori.	3306.688	AV	46.3	28.2	5.9	44.6	2.5	38.3	53.9	15.6	140	229	
Hori.	4960.000	AV	40.0	31.4	6.4	46.1	2.5	34.2	53.9	19.7	153	80	
Hori.	7440.000	AV	36.7	36.7	7.7	44.2	2.5	39.4	53.9	14.5	100	0	Floor noise
Vert.	624.004	QP	36.2	20.1	7.4	32.3	0.0	31.4	46.0	14.6	100	175	
Vert.	667.343	QP	31.3	20.5	7.6	32.3	0.0	27.1	46.0	18.9	151	212	
Vert.	2483.500	PK	53.6	27.5	14.2	44.3	2.5	53.5	73.9	20.4	147	137	
Vert.	3306.723	PK	54.0	28.2	5.9	44.6	2.5	46.0	73.9	27.9	152	27	
Vert.	4960.000	PK	51.0	31.4	6.4	46.1	2.5	45.2	73.9	28.7	144	84	
Vert.	7440.000	PK	48.8	36.7	7.7	44.2	2.5	51.5	73.9	22.4	100	0	Floor noise
Vert.	2483.500	AV	39.8	27.5	14.2	44.3	2.5	39.7	53.9	14.2	147	137	
Vert.	3306.723	AV	43.9	28.2	5.9	44.6	2.5	35.9	53.9	18.0	152	27	
Vert.	4960.000	AV	39.8	31.4	6.4	46.1	2.5	34.0	53.9	19.9	144	84	
Vert.	7440.000	AV	36.8	36.7	7.7	44.2	2.5	39.5	53.9	14.4	100	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz :  $20\log(4.0\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$

10 GHz - 26.5 GHz :  $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

\* These results have sufficient margin without taking account Dwell time factor.

**UL Japan, Inc.**

**Kashima EMC Lab.**

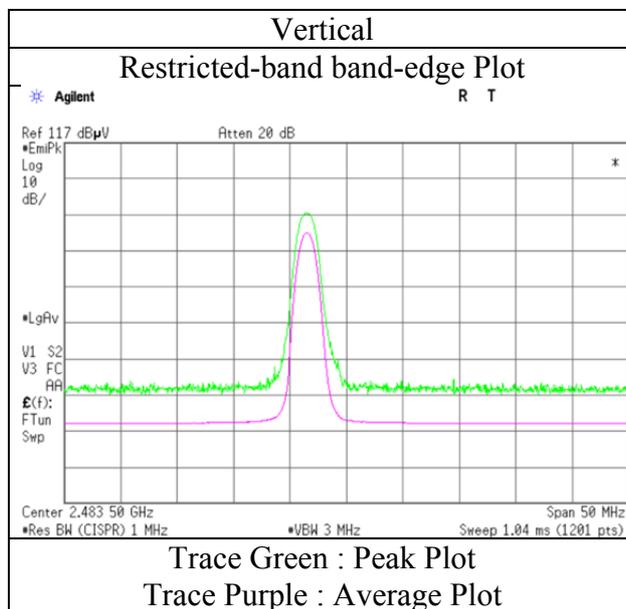
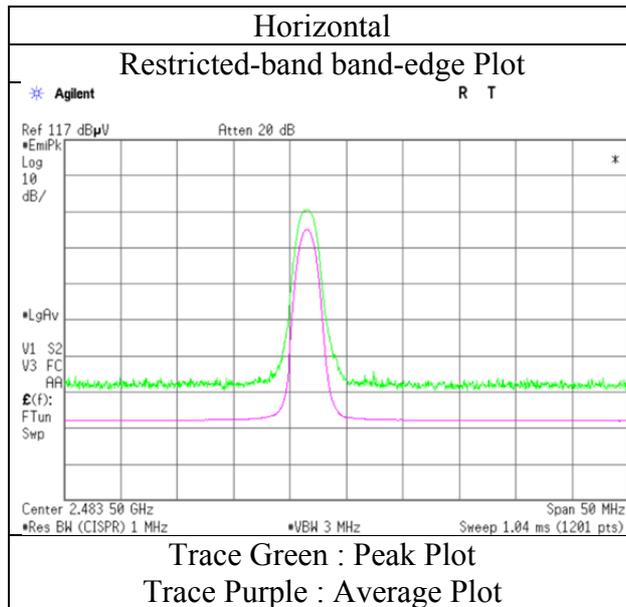
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Telephone : +81 478 88 6500

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**Radiated Spurious Emission**  
**(Reference Plot for band-edge)**

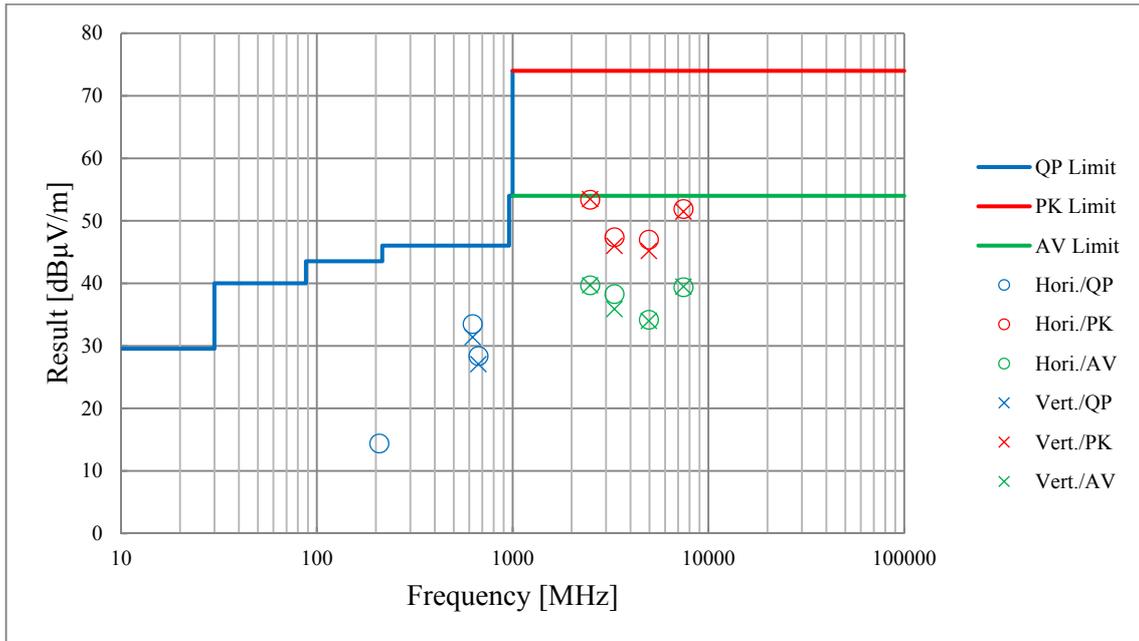
Test place : Kashima EMC Lab. No.6 Semi Anechoic Chamber  
Report No. : 11306372M  
Date : June 10, 2016  
Temperature / Humidity : 21 deg. C / 48 % RH  
Engineer : Kazuhiro Ando  
(1-10GHz)  
Mode : Tx, Hopping Off, 3DH5 2480 MHz



\* Final result of restricted band edge was shown in tabular data.

**Radiated Spurious Emission**  
**(Plot data, Worst case)**

Test place	Kashima EMC Lab. No.6 Semi Anechoic Chamber		
Report No.	11306372M		
Date	June 12, 2016	June 10, 2016	June 11, 2016
Temperature / Humidity	20 deg. C / 52 % RH	21 deg. C / 48 % RH	23 deg. C / 47 % RH
Engineer	Kazuhiro Ando	Kazuhiro Ando	Kazuhiro Ando
	(30-1000MHz)	(1-10GHz)	(10-26.5GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz		



\*These plots data contains sufficient number to show the trend of characteristic features for EUT.

## **APPENDIX 2: Test instruments**

### **Test equipment**

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
CLS-25	A.M.N.	Rohde & Schwarz	ENV216	101042	CE	2015/08/06 * 12
CCC-S5-C(2/ 9/10/11)	Coaxial Cable	Fujikura,Fujikura,F ujikura,Fujikura	5D-2W,5D-2W, 5D-2W,5D-2W	-	CE	2015/07/14 * 12
CTR-07	Test Receiver	Rohde & Schwarz	ESCS30	100014 Ver,2.30	CE	2015/08/24 * 12
CSA-11(D)	Spectrum Analyzer	Hewlett Packard	8568B	3340A21567 Rev 7.4.87	CE	2015/11/30 * 12
CSA-19(R)	Spectrum Analyzer	Hewlett Packard	8568B	3340A05799 Rev 7.4.87	CE	2015/11/30 * 12
CSCL-06	Ruler	Tajima	L19-55S	none	CE	2016/02/18 * 12
COS-05	Temperature & Humidity Indicator	A&D	AD-5681	6975761	CE	2015/07/13 * 12
CTS-09	Digital Multimeter	FLUKE	112	89790194	CE	2015/10/01 * 12
COTS-CEMI -02	EMI Software	TSJ	TEPTO-DV(RE, CE,MF,PE)	Ver, RE: 2.5.0131, CE: 2.5.0131,	CE/RE	-
CTR-04	Test Receiver	Rohde & Schwarz	ESCI	100053 Rev 4.32	RE	2015/10/01 * 12
CCC-S6-R(1/ 9/10/CATS-0 7-08/11/12/1 3)	Coaxial Cable	Fujikura,Suhner,Su hner,Agilent,Suhner ,-,Suhner	15DSFA,SF106, SF104,8496B+8 494B,SF104,-,S F104	MY41110308,255 0A11724(Step Att)	RE	2015/12/22 * 12
CBL-09	LOGBICON	Schwarzbeck	VULB 9168	508	RE	2016/04/11 * 12
CAT3-07	3dB Fixed Atten.	TAMAGAWA	UFA-01	none	RE	2016/05/12 * 12
CAF-07	Pre-Amplifier	Sonoma Instrument	310N	240505	RE	2015/11/02 * 12
CSCL-08	Ruler	Tajima	L25-55	none	RE	2016/02/22 * 12
COS-06	Temperature & Humidity Indicator	HIOKI	3641/9680-50	070727010/07079 9296	RE	2016/05/24 * 12
CTS-12	Digital Multimeter	FLUKE	112	89790192	RE	2015/09/08 * 12
CSA-06	Spectrum Analyzer	Agilent	N9030A	MY53310670 Version A.13.12	RE	2016/05/26 * 12
CSA-07	Spectrum Analyzer	Agilent	E4448A	MY52490024 Version A.11.21	RE	2016/05/11 * 12
CHA-20	Broad Band Horn	Schwarzbeck	BBHA 9120D	9120D-1270	RE	2015/07/31 * 12
CHA-07	Double Ridged Horn	ETS-Lindgren	3160-09	00166043	RE	2015/06/28 * 12
CAF-21	Pre-Amplifier	Micro Wave Factory	MPR-1G26.5-35	161398	RE	2016/05/06 * 12
CAF-19	Pre-Amplifier	TOYO	HAP18-26W	00000035	RE	2015/06/28 * 12
CAT10-16	10dB Fixed Atten.	Weinschel	54A-10	56246	RE	2016/05/13 * 12
CHF-03	HPF	Micro-Tronics	HPM50111-02	008	RE	2016/05/13 * 12
CCC-W05	Micro Wave Cable	Junkosha	MWX241	MRA-12-14-145	RE	2016/05/13 * 12
CCC-W07	Micro Wave Cable	Junkosha	MWX221	MRA-12-14-148	RE	2016/05/13 * 12
CCC-W09	Micro Wave Cable	SUHNER	SUCOFLEX104	MY588/4	RE	2015/07/13 * 12

**The expiration date of the calibration is the end of the expired month.**

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

**As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.**

**Test Item: CE: Conducted Emission test,  
RE: Radiated Emission test**

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