




# RADIO TEST REPORT


**Test Report No. : 10429374H-A-R1**

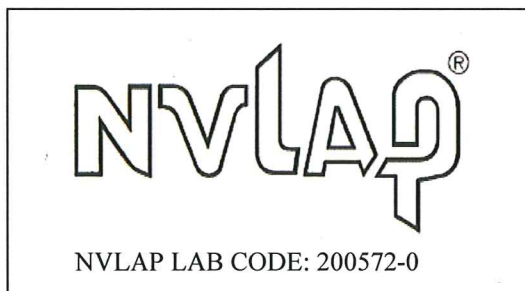
**Applicant** : DENSO CORPORATION  
**Type of Equipment** : Display Control Unit  
**Model No.** : DNNS075  
**FCC ID** : HYQDNNS075  
**Test regulation** : FCC Part 15 Subpart C: 2014  
**Test Result** : Complied

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. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
6. This report is a revised version of 10429374H-A. 10429374H-A is replaced with this report.

**Date of test:** September 5 to 9, 2014

**Representative test engineer:**   
Tsubasa Takayama  
Engineer  
Consumer Technology Division

**Approved by:**   
Takayuki Shimada  
Engineer  
Consumer Technology Division



This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation. \*As for the range of Accreditation in NVLAP, you may refer to the WEB address, <http://www.ul.com/japan/jpn/pages/services/emc/about/mar1/index.jsp#nvlap>



<b>CONTENTS</b>	<b>PAGE</b>
<b>SECTION 1: Customer information.....</b>	<b>4</b>
<b>SECTION 2: Equipment under test (E.U.T.).....</b>	<b>4</b>
<b>SECTION 3: Test specification, procedures &amp; results.....</b>	<b>5</b>
<b>SECTION 4: Operation of E.U.T. during testing.....</b>	<b>8</b>
<b>SECTION 5: Radiated Spurious Emission .....</b>	<b>10</b>
<b>SECTION 6: Antenna Terminal Conducted Tests.....</b>	<b>11</b>
<b>APPENDIX 1: Data of EMI test.....</b>	<b>12</b>
20dB Bandwidth and Carrier Frequency Separation.....	12
Number of Hopping Frequency .....	15
Dwell time.....	17
Maximum Peak Output Power .....	20
Radiated Spurious Emission .....	22
Conducted Spurious Emission .....	29
Conducted Emission Band Edge compliance .....	41
99%Occupied Bandwidth .....	43
<b>APPENDIX 2: Test instruments .....</b>	<b>45</b>
<b>APPENDIX 3: Photographs of test setup .....</b>	<b>46</b>
Radiated Spurious Emission .....	46

---

**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## **SECTION 1: Customer information**

Company Name : DENSO CORPORATION  
Address : 1-1 Showa-cho, Kariya-shi, Aichi-ken, 448-8661 Japan  
Telephone Number : +81-566-20-2880  
Facsimile Number : +81-566-25-4920  
Contact Person : Isamu Suzuki

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

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

Type of Equipment : Display Control Unit  
Model No. : DNNS075  
Serial No. : Refer to Section 4, Clause 4.2  
Rating : DC 12V  
Receipt Date of Sample : September 2, 2014  
Country of Mass-production : China  
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**

#### **General Specification**

Clock frequency(ies) in the system : Bluetooth: 26MHz

#### **Radio Specification**

##### **[Bluetooth (Ver. 3.0 with EDR function)]**

Radio Type : Transceiver  
Frequency of Operation : 2402-2480MHz  
Modulation : FHSS, GFSK,  $\pi/4$ DQPSK, 8DPSK  
Power Supply (radio part input) : DC 3.3V  
Antenna type : Chip Antenna  
Antenna Gain : -1.0dBi (max)

---

**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

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

### **3.1 Test Specification**

Test Specification : FCC Part 15 Subpart C: 2014, final revised on August 15, 2014 and effective October 14, 2014

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 revision on August 15, 2014 does not affect the test specification applied to the EUT.

### **3.2 Procedures and results**

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Conducted Emission	FCC: ANSI C63.4:2003 7. AC powerline conducted emission measurements IC: RSS-Gen 7.2.4	FCC: Section 15.207 ----- IC: RSS-Gen 7.2.4		N/A *1)	-
Carrier Frequency Separation	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1) ----- IC: RSS-210 A8.1 (b)	See data.	Complied	Conducted
20dB Bandwidth	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1) ----- IC: RSS-210 A8.1 (a)		Complied	Conducted
Number of Hopping Frequency	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1)(iii) ----- IC: RSS-210 A8.1 (d)		Complied	Conducted
Dwell time	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1)(iii) ----- IC: RSS-210 A8.1 (d)		Complied	Conducted
Maximum Peak Output Power	FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 4.8	FCC: Section15.247(a)(b)(1) ----- IC: RSS-210 A8.4 (2)		Complied	Conducted
Spurious Emission & Band Edge Compliance	FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 4.9	FCC: Section15.247(d) ----- IC: RSS-210 A8.5 RSS-Gen 6 and 7.2.3		8.2dB 111.085MHz, Vertical, QP	Complied

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

\*1) The test is not applicable since the EUT is not the device that is designed to be connected to the public utility (AC) power line.

\* In case any questions arise about test procedure, ANSI C63.4: 2003 is also referred.

## **UL Japan, Inc. Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN  
Telephone : +81 596 24 8999  
Facsimile : +81 596 24 8124

**FCC 15.31 (e)**

The EUT is a battery-operated device and test was performed with the full-charged battery. 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 antenna requirement of Section 15.203.

**3.3 Addition to standard**

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99% Occupied Bandwidth	IC: RSS-Gen 4.6.1	IC: RSS-Gen 4.6.1	N/A	-	Conducted

Other than above, 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.

Test room (semi-anechoic chamber)	Radiated emission						
	(3m*)(+dB)				(1m*)(+dB)		(0.5m*)(+dB)
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz	1GHz -10GHz	10GHz -18GHz	18GHz -26.5GHz	26.5GHz -40GHz
No.1	4.0dB	5.1dB	5.0dB	5.1dB	6.0dB	4.9dB	4.3dB
No.2	3.9dB	5.2dB	5.0dB	4.9dB	5.9dB	4.7dB	4.2dB
No.3	4.3dB	5.1dB	5.2dB	5.2dB	6.0dB	4.8dB	4.2dB
No.4	4.6dB	5.2dB	5.0dB	5.2dB	6.0dB	5.7dB	4.2dB

\*3m/1m/0.5m = Measurement distance

Power meter (+dB)	
Below 1GHz	Above 1GHz
0.7dB	1.5dB

Antenna terminal conducted emission and Power density (+dB)			Antenna terminal conducted emission (+dB)		Channel power (+dB)
Below 1GHz	1GHz-3GHz	3GHz-18GHz	18GHz-26.5GHz	26.5GHz-40GHz	
1.5dB	1.7dB	2.8dB	2.8dB	2.9dB	2.6dB

**Radiated emission test (3m)**

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

**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

### 3.5 Test Location

UL Japan, Inc. Ise EMC Lab. \*NVLAP Lab. code: 200572-0  
 4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN  
 Telephone : +81 596 24 8999 Facsimile : +81 596 24 8124

	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	2973C-1	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	2973C-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	2973C-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	4.0 x 4.5 x 2.7m	4.0 x 4.5 m	-
No.6 measurement room	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	8.0 x 4.6 x 2.8m	2.4 x 2.4m	-
No.11 measurement room	-	6.2 x 4.7 x 3.0m	4.8 x 4.6m	-

\* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

### 3.6 Data of EMI, Test instruments, and Test set up

Refer to APPENDIX.

## UL Japan, Inc. Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN  
 Telephone : +81 596 24 8999  
 Facsimile : +81 596 24 8124

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

### **4.1 Operating Mode(s)**

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

Details of Operating Mode(s)

<b>Test Item</b>	<b>Mode</b>	<b>Tested frequency</b>
Spurious Emission (Conducted/Radiated)	Tx (Hopping off) DH5, 3DH5	2402MHz 2441MHz 2480MHz
20dB Bandwidth , Carrier Frequency Separation	Tx (Hopping on) DH5, 3DH5 Inquiry	2402MHz 2441MHz 2480MHz
Number of Hopping Frequency	Tx (Hopping on) DH5, 3DH5 Inquiry	-
Dwell time	Tx (Hopping on), -DH1, DH3, DH5 -3DH1, 3DH3, 3DH5 Inquiry	-
Maximum Peak Output Power	Tx (Hopping off) DH5, 2DH5, 3DH5 Inquiry	2402MHz 2441MHz 2480MHz
Band Edge Compliance (Conducted)	Tx DH5, 3DH5 -Hopping on -Hopping off	2402MHz 2480MHz
99% Occupied Bandwidth	Tx DH5, 3DH5 -Hopping on -Hopping off	2402MHz 2441MHz 2480MHz
<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)  *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>Power settings: BDR: 51, EDR: 49 (For Antenna terminal conducted tests)  BDR: 56, EDR: 54 (For Radiated spurious emission test)</p> <p>Software: CSR BlueTest3  *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>		

**UL Japan, Inc.**

**Ise EMC Lab.**

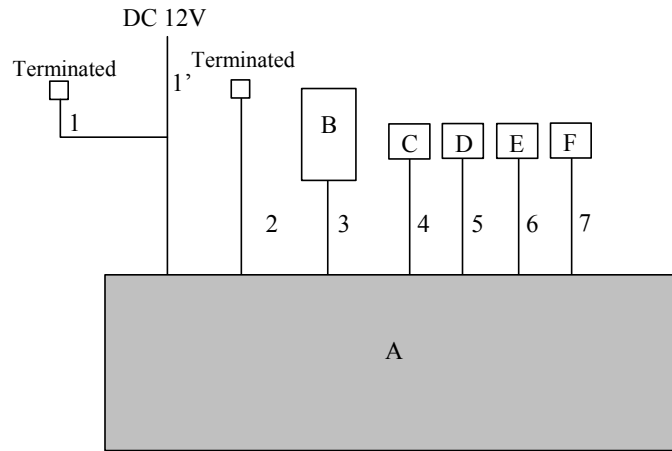
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124



## 4.2 Configuration and peripherals



\*Cabling and setup were taken into consideration and test data was taken under worse case conditions.

### Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Display Control Unit	DNNS075	No.12 for RE* No.15 for AT*	DENSO CORPORATION	EUT
B	DCM USB Dummy Load	-	-	DENSO CORPORATION	-
C	AUX USB Dummy Load	-	-	DENSO CORPORATION	-
D	Audio USB Dummy Load	-	-	DENSO CORPORATION	-
E	Navi USB Dummy Load	-	-	DENSO CORPORATION	-
F	Navi LVDS Dummy Load	-	-	DENSO CORPORATION	-

\*RE: Radiated Emission, AT: Antenna Terminal Conducted test

### List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Signal Cable	2.1	Unshielded	Unshielded	-
1'	DC Cable	2.1	Unshielded	Unshielded	-
2	Signal Cable	2.1	Unshielded	Unshielded	-
3	USB Cable	1.8	Shielded	Shielded	-
4	Signal Cable	2.1	Shielded	Shielded	-
5	Signal Cable	2.1	Shielded	Shielded	-
6	Signal Cable	2.1	Shielded	Shielded	-
7	Signal Cable	2.1	Shielded	Shielded	-

**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## **SECTION 5: Radiated Spurious Emission**

### **Test Procedure**

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 0.8m above the conducting ground plane.

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

The height of the measuring antenna varied between 1 and 4m 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 30MHz	30MHz to 300MHz	300MHz to 1GHz	Above 1GHz
Antenna Type	Loop	Biconical	Logperiodic	Horn

In any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

### **20dBc was applied to the frequency over the limit of FCC 15.209 / Table 5 of RSS-Gen 7.2.5 (IC) and outside the restricted band of FCC15.205 / Table 3 of RSS-Gen 7.2.2 (IC).**

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

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

\*2) Distance Factor:  $20 \times \log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

The test was made on EUT at the normal use position.

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

**Measurement range** : 30M-25GHz  
**Test data** : APPENDIX  
**Test result** : Pass

**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## **SECTION 6: Antenna Terminal Conducted Tests**

### **Test Procedure**

The tests were made with below setting connected to the antenna port.

<b>Test</b>	<b>Span</b>	<b>RBW</b>	<b>VBW</b>	<b>Sweep time</b>	<b>Detector</b>	<b>Trace</b>	<b>Instrument used</b>
20dB Bandwidth	3MHz	30kHz	100kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99% Occupied Bandwidth	Enough width to display 20dB Bandwidth	1 to 3% of Span	Three times of RBW	Auto	Peak	Max Hold *1)	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak Average *2)	-	Power Meter (Sensor: 50MHz BW)
Carrier Frequency Separation	5MHz or 3MHz	100kHz or 30kHz	300kHz or 100kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Number of Hopping Frequency	30MHz	300kHz	1MHz	Auto	Peak	Max Hold	Spectrum Analyzer
Dwell Time	Zero Span	100kHz, 1MHz	300kHz, 3MHz	As necessary capture the entire dwell time per hopping channel	Peak	Clear Write	Spectrum Analyzer
Conducted Spurious Emission *3)	9kHz to 150kHz	200Hz	620Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150kHz to 30MHz	9.1kHz	27kHz				
	30MHz to 25GHz (Less or equal to 5GHz)	100kHz	300kHz				
Conducted Spurious Emission Band Edge compliance	10MHz	100kHz	300kHz	Auto	Peak	Max Hold	Spectrum Analyzer

\*1) The measurement was performed with Max Hold since the duty cycle was not 100%.  
\*2) Reference data  
\*3) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.  
Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.  
(9kHz-150kHz:RBW=200Hz, 150kHz-30MHz:RBW=9.1kHz)

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

**Test data** : APPENDIX  
**Test result** : Pass

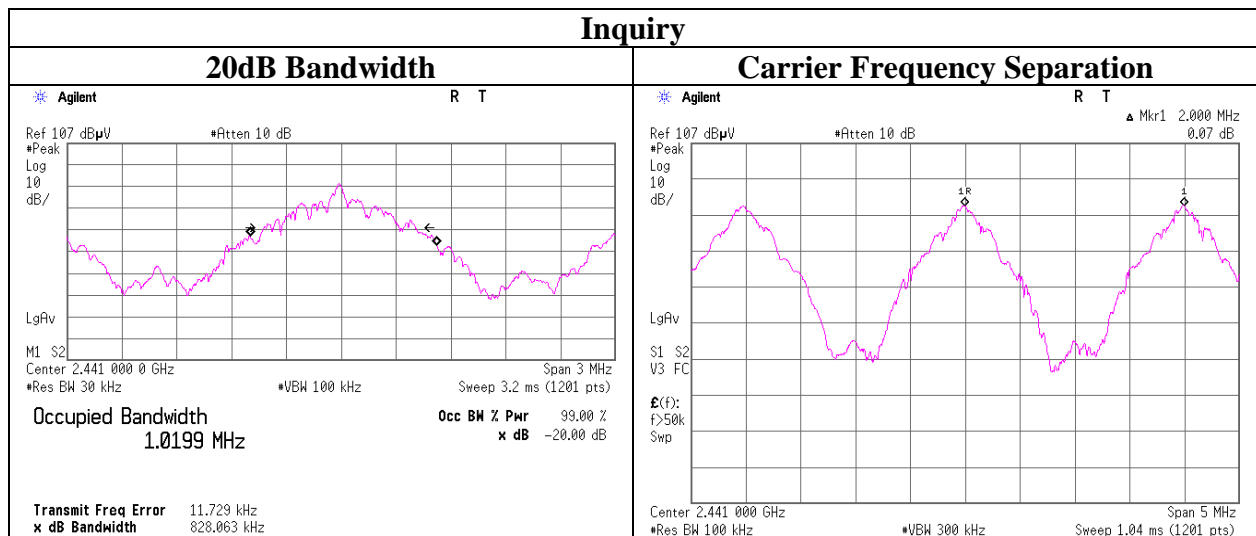
**APPENDIX 1: Data of EMI test**

**20dB Bandwidth and Carrier Frequency Separation**

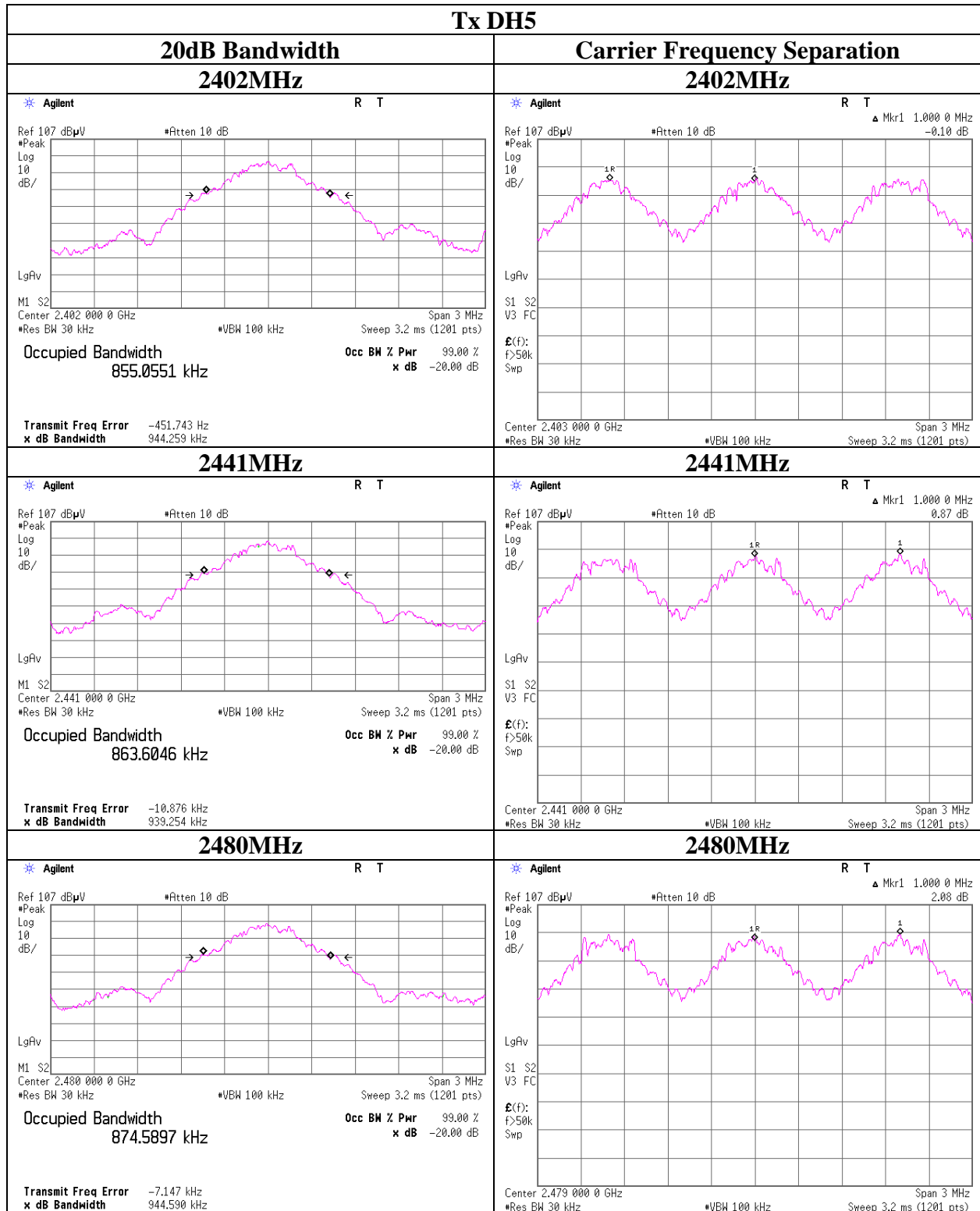
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg.C / 42% RH
Engineer	Tsubasa Takayama
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.944	1.000	≧ 0.630
DH5	2441.0	0.939	1.000	≧ 0.626
DH5	2480.0	0.945	1.000	≧ 0.630
3DH5	2402.0	1.276	1.000	≧ 0.851
3DH5	2441.0	1.261	1.000	≧ 0.841
3DH5	2480.0	1.267	1.000	≧ 0.845
Inquiry	2441.0	0.828	2.000	≧ 0.552

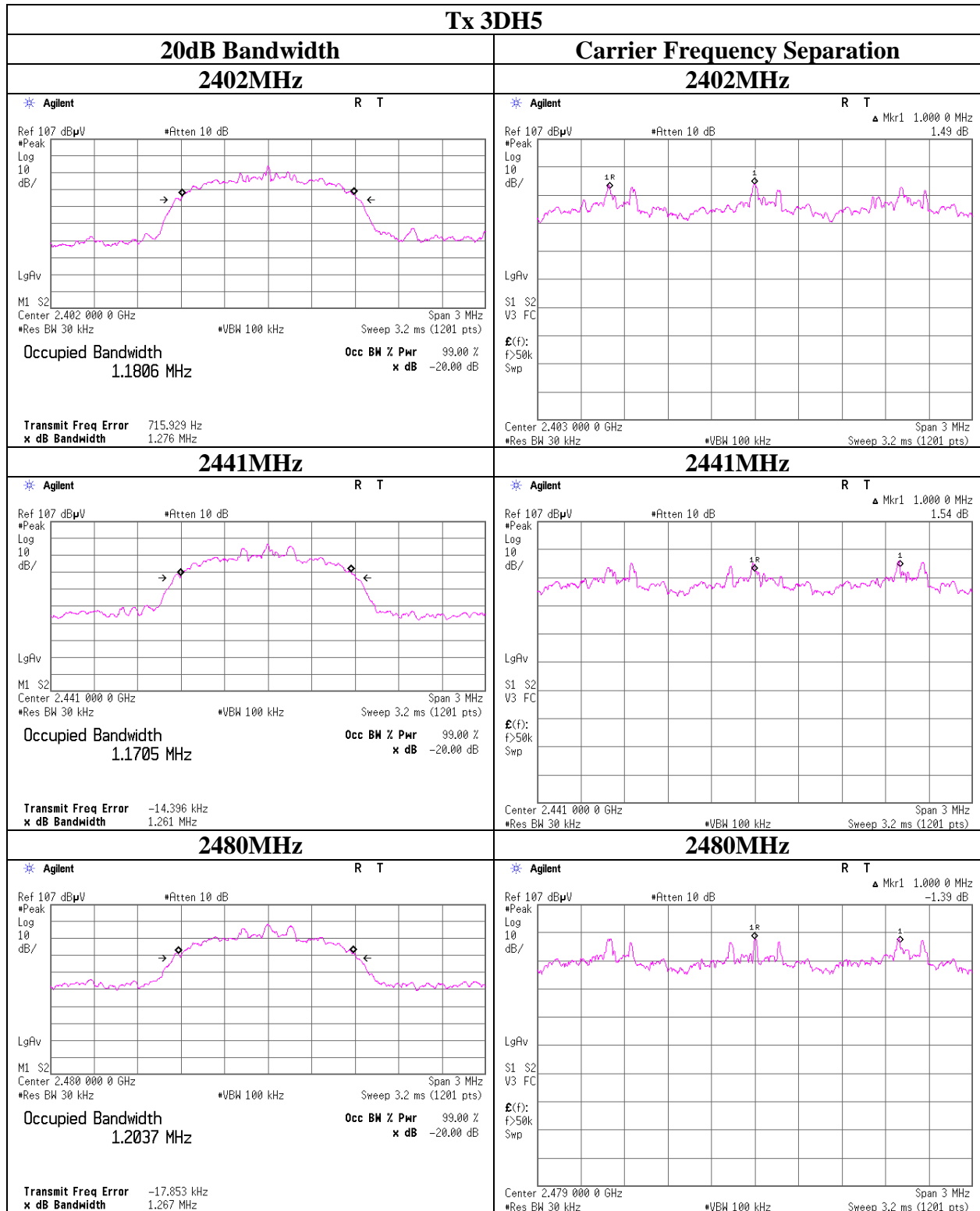
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is great)  
 No limit applies to 20dB Bandwidth.



## 20dB Bandwidth and Carrier Frequency Separation



## 20dB Bandwidth and Carrier Frequency Separation

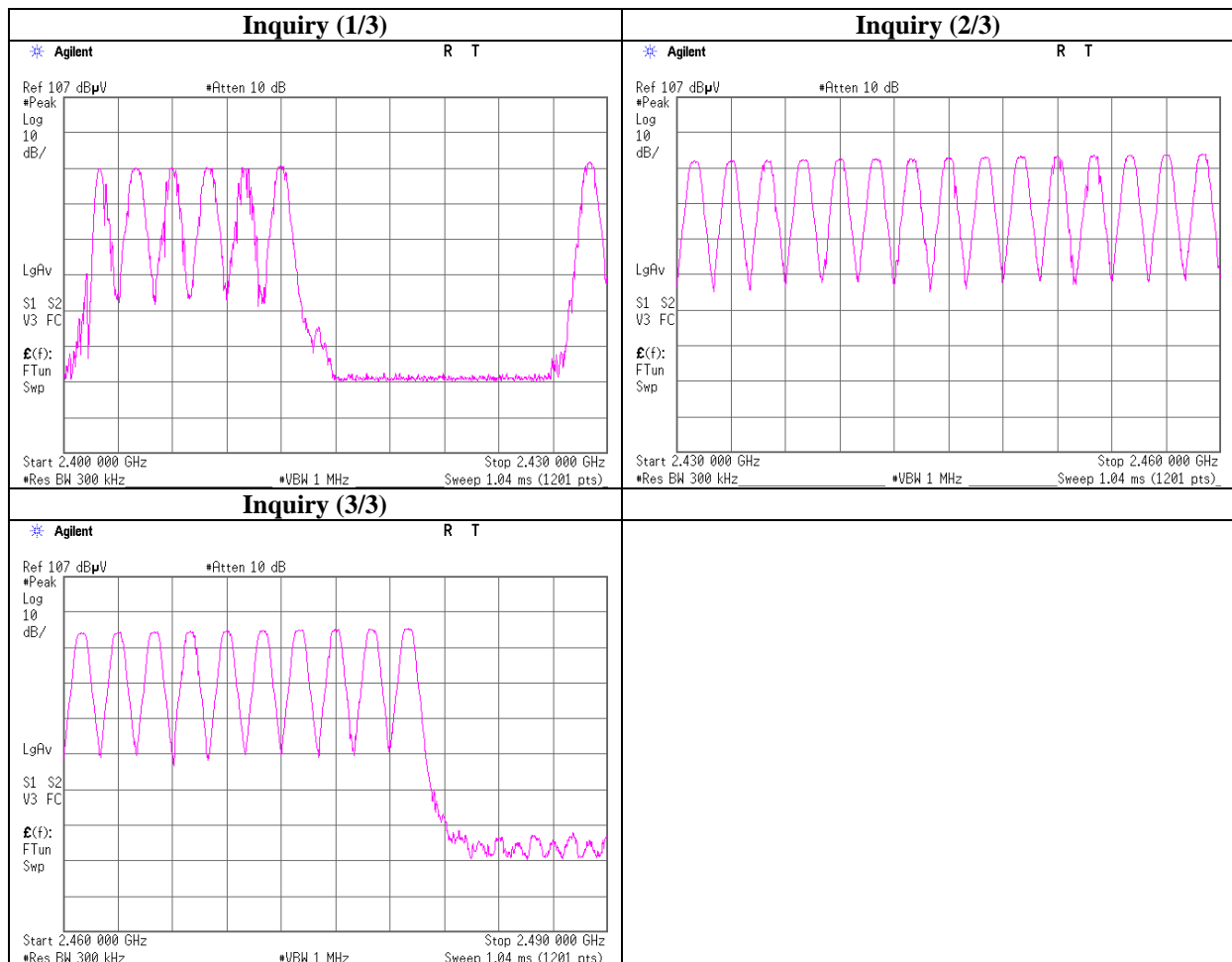


## Number of Hopping Frequency

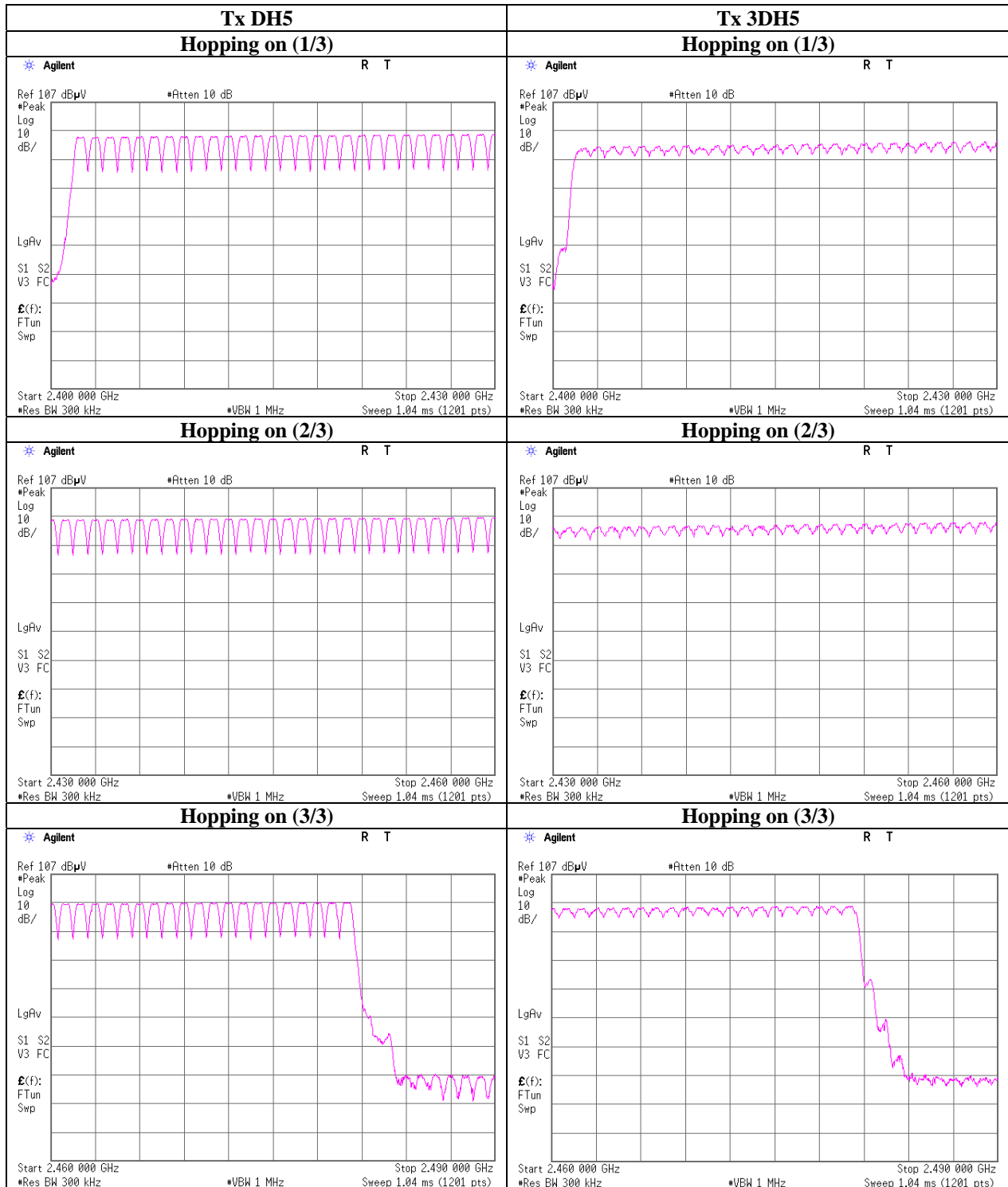
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg.C / 42% RH
Engineer	Tsubasa Takayama
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

Mode	Number of channel [times]	Limit [times]
DH5	79	>= 15
3DH5	79	>= 15
Inquiry	32	>= 15

Test was not performed at AFH mode whose number of hopping channel is 20 channels because this Bluetooth radio is in compliance of Bluetooth Specification.



### Number of Hopping Frequency



**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124



### Dwell time

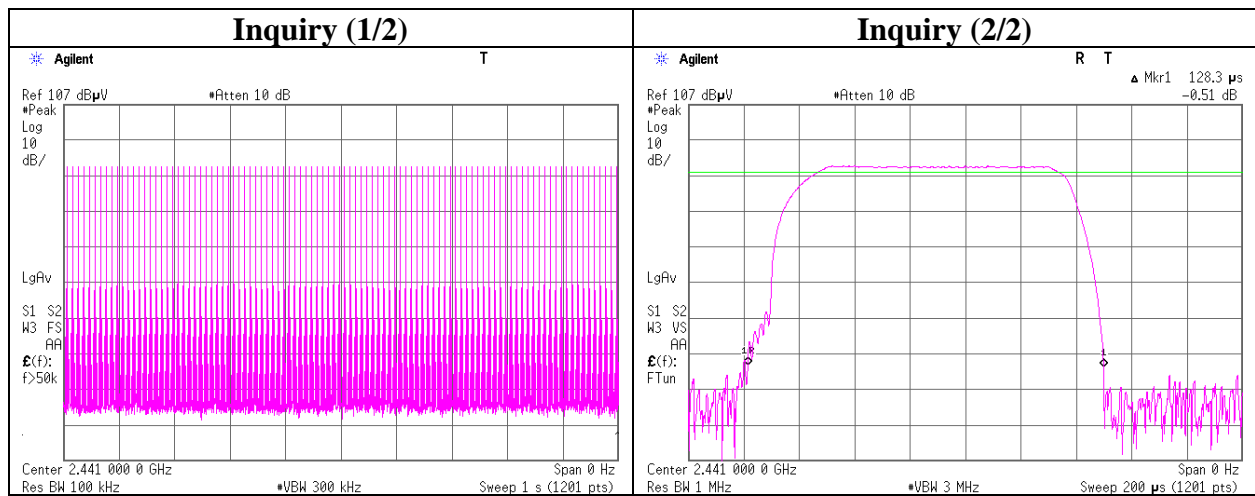
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg.C / 42% RH
Engineer	Tsubasa Takayama
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period	Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	51.0 times / 5 sec. x 31.6 sec. = 323 times	0.432	140	400
DH3	26.0 times / 5 sec. x 31.6 sec. = 165 times	1.690	279	400
DH5	17.0 times / 5 sec. x 31.6 sec. = 108 times	2.940	318	400
3DH1	51.0 times / 5 sec. x 31.6 sec. = 323 times	0.443	143	400
3DH3	26.0 times / 5 sec. x 31.6 sec. = 165 times	1.694	280	400
3DH5	17.0 times / 5 sec. x 31.6 sec. = 108 times	2.950	319	400
Inquiry	100.0 times / 1 sec. x 12.8 sec. = 1280 times	0.128	164	400

Sample Calculation

Result = Number of transmission x Length of transmission time

This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in  $N \times 0.4s$ , where  $N$  is the number of channels being used in the hopping sequence ( $20 \leq N \leq 79$ ), is always less than 0.4s regardless of packet size. This is confirmed in the test report for  $N=79$ .



**UL Japan, Inc.**

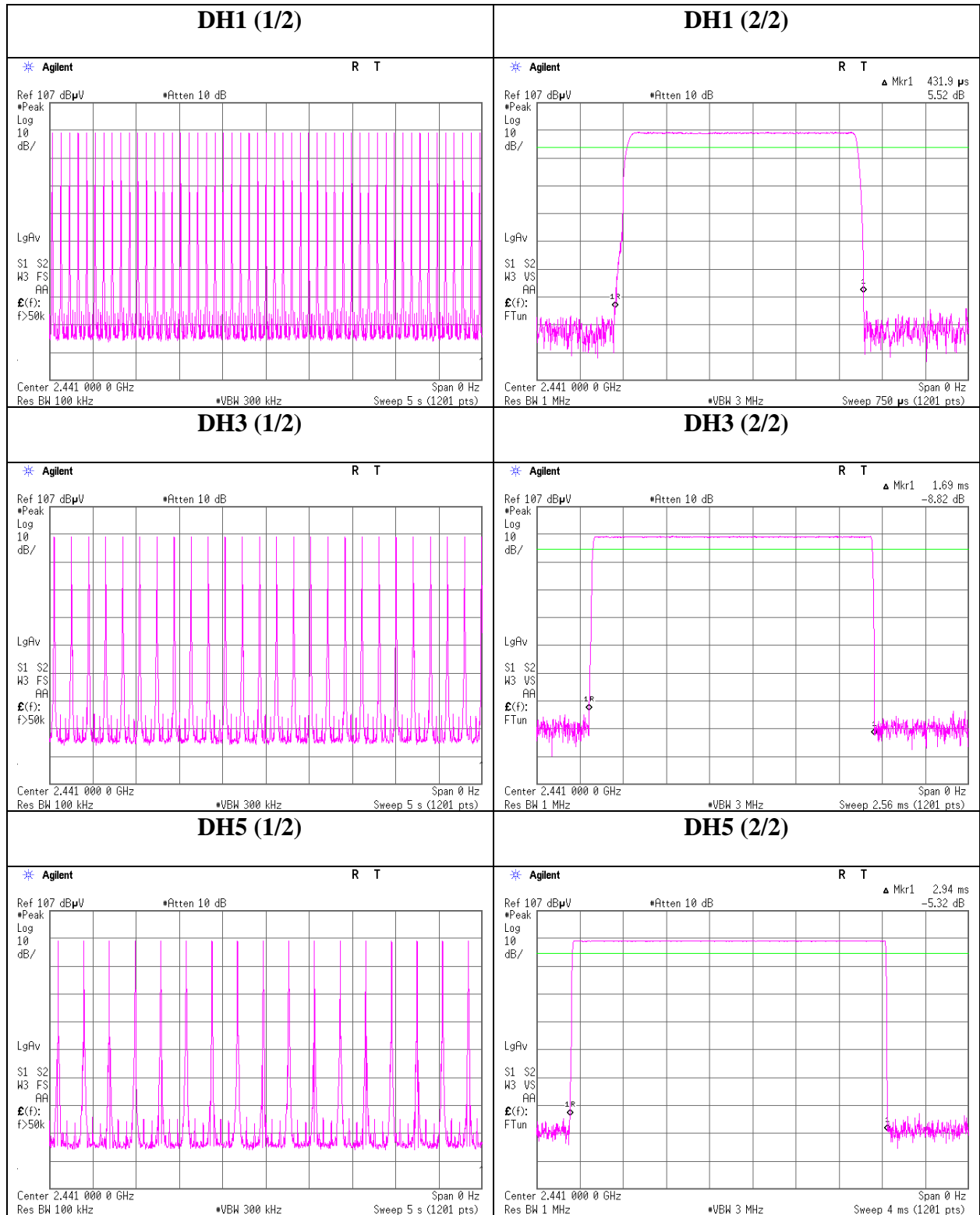
**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

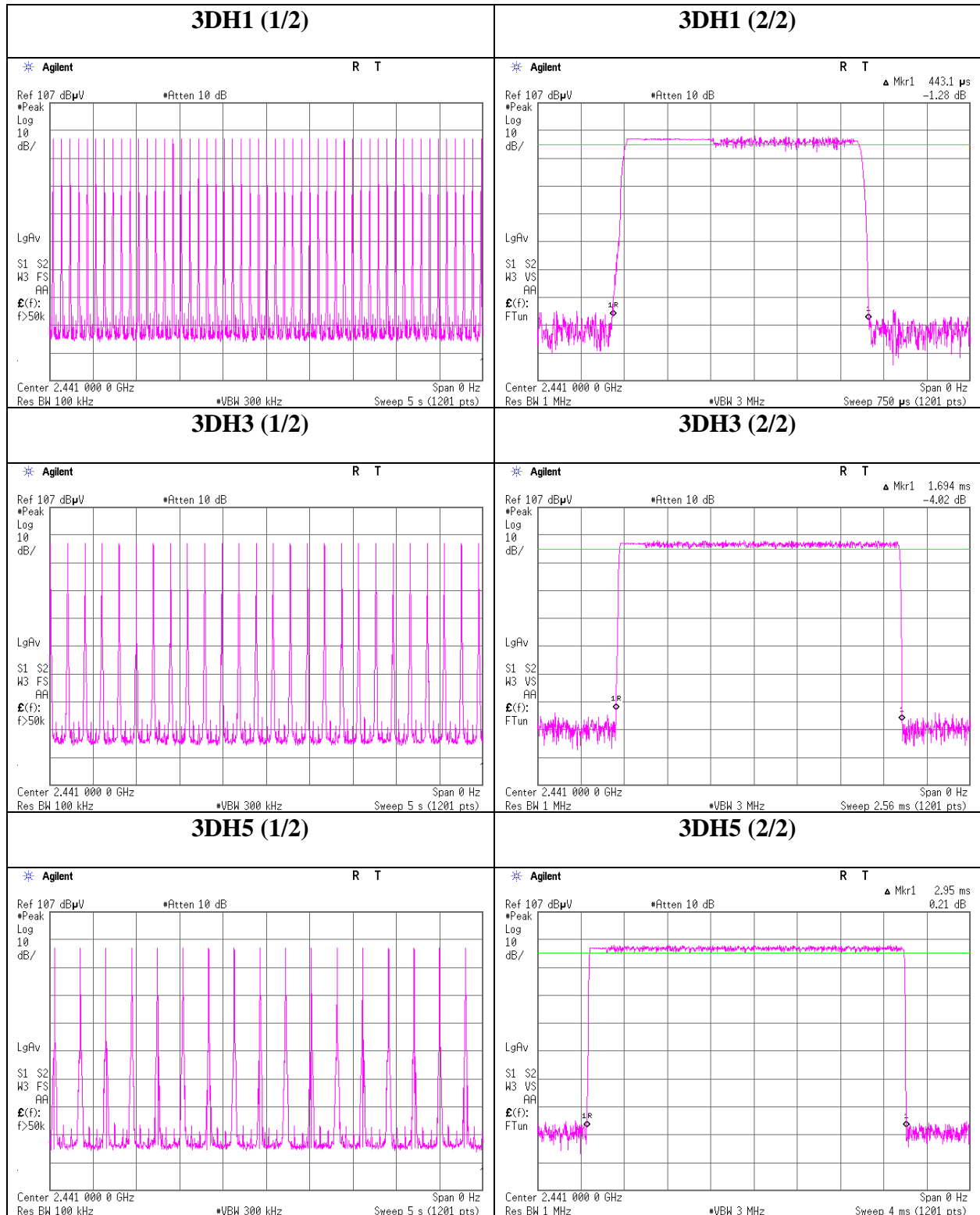
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

**Dwell time**



**Dwell time**



### Maximum Peak Output Power

Test place : Ise EMC Lab. No.11 Measurement Room  
Report No. : 10429374H  
Date : 09/05/2014  
Temperature/ Humidity : 25 deg.C / 42% RH  
Engineer : Tsubasa Takayama  
Mode : Tx (Hopping off) DH5/2DH5/3DH5/Inquiry

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-7.56	1.92	0.00	-5.64	0.27	20.96	125	26.60
DH5	2441.0	-5.85	1.93	0.00	-3.92	0.41	20.96	125	24.88
DH5	2480.0	-3.64	1.95	0.00	-1.69	0.68	20.96	125	22.65
2DH5	2402.0	-7.13	1.92	0.00	-5.21	0.30	20.96	125	26.17
2DH5	2441.0	-5.04	1.93	0.00	-3.11	0.49	20.96	125	24.07
2DH5	2480.0	-2.56	1.95	0.00	-0.61	0.87	20.96	125	21.57
3DH5	2402.0	-6.88	1.92	0.00	-4.96	0.32	20.96	125	25.92
3DH5	2441.0	-4.73	1.93	0.00	-2.80	0.52	20.96	125	23.76
3DH5	2480.0	-2.35	1.95	0.00	-0.40	0.91	20.96	125	21.36
Inquiry	2441.0	-14.60	1.93	0.00	-12.67	0.05	20.96	125	33.63

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied)+ Attenuator

\*The equipment and cables were not used for factor 0.0dB of the data sheets.

Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power and bandwidth of the EUT.

As this device had AFH mode and frequency separation could not meet the requirement of over 20dB BW without 2/3 relaxation, 125mW power limit was applied to it.

**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

**Average Output Power**  
**(Reference data for SAR testing)**

Test place : Ise EMC Lab. No.11 Measurement Room  
Report No. : 10429374H  
Date : 09/05/2014  
Temperature/ Humidity : 25 deg.C / 42% RH  
Engineer : Tsubasa Takayama  
Mode : Tx (Hopping off) DH5/2DH5/3DH5

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm]	[mW]
DH5	2402.0	-10.40	1.92	0.00	-8.48	0.14
DH5	2441.0	-7.87	1.93	0.00	-5.94	0.25
DH5	2480.0	-5.34	1.95	0.00	-3.39	0.46
2DH5	2402.0	-11.40	1.92	0.00	-9.48	0.11
2DH5	2441.0	-8.98	1.93	0.00	-7.05	0.20
2DH5	2480.0	-6.62	1.95	0.00	-4.67	0.34
3DH5	2402.0	-11.38	1.92	0.00	-9.46	0.11
3DH5	2441.0	-8.93	1.93	0.00	-7.00	0.20
3DH5	2480.0	-6.32	1.95	0.00	-4.37	0.37

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied)+ Attenuator

\*The equipment and cables were not used for factor 0.0dB of the data sheets.

## Radiated Spurious Emission

Test place	Ise EMC Lab.	
Report No.	10429374H	
Semi Anechoic Chamber	No.1	No.4
Date	09/08/2014	09/09/2014
Temperature/ Humidity	18 deg. C / 70% RH	22 deg. C / 59% RH
Engineer	Yuta Moriya (1-10GHz)	Yuta Moriya (10-26.5GHz, Below 1GHz)
Mode	Tx, DH5 2402MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	55.440	QP	33.5	9.3	7.5	32.1	18.2	40.0	21.8	
Hori	92.567	QP	35.5	8.8	8.0	32.1	20.2	43.5	23.3	
Hori	111.082	QP	42.4	11.8	8.3	32.1	30.4	43.5	13.1	
Hori	314.763	QP	35.8	16.4	10.0	31.9	30.3	46.0	15.7	
Hori	370.302	QP	31.0	17.2	10.4	31.9	26.7	46.0	19.3	
Hori	481.386	QP	27.9	18.9	11.1	32.0	25.9	46.0	20.1	
Hori	2390.000	PK	45.5	26.7	2.5	36.7	38.0	73.9	35.9	
Hori	4804.000	PK	49.4	30.9	4.5	36.2	48.6	73.9	25.3	
Hori	7206.000	PK	41.7	35.9	5.2	36.3	46.5	73.9	27.4	
Hori	9608.000	PK	42.7	38.1	6.1	36.8	50.1	73.9	23.8	
Hori	2390.000	AV	35.0	26.7	2.5	36.7	27.5	53.9	26.4	
Hori	4804.000	AV	41.0	30.9	4.5	36.2	40.2	53.9	13.7	
Hori	7206.000	AV	35.4	35.9	5.2	36.3	40.2	53.9	13.7	
Hori	9608.000	AV	35.5	38.1	6.1	36.8	42.9	53.9	11.0	
Vert	55.544	QP	36.1	9.2	7.5	32.1	20.7	40.0	19.3	
Vert	92.571	QP	40.1	8.8	8.0	32.1	24.8	43.5	18.7	
Vert	111.085	QP	47.2	11.8	8.3	32.1	35.2	43.5	8.3	
Vert	481.383	QP	31.9	18.9	11.1	32.0	29.9	46.0	16.1	
Vert	555.447	QP	29.2	19.7	11.5	32.1	28.3	46.0	17.7	
Vert	629.520	QP	28.3	20.7	11.9	32.2	28.7	46.0	17.3	
Vert	2390.000	PK	45.4	26.7	2.5	36.7	37.9	73.9	36.0	
Vert	4804.000	PK	53.1	30.9	4.5	36.2	52.3	73.9	21.6	
Vert	7206.000	PK	44.8	35.9	5.2	36.3	49.6	73.9	24.3	
Vert	9608.000	PK	44.5	38.1	6.1	36.8	51.9	73.9	22.0	
Vert	2390.000	AV	35.0	26.7	2.5	36.7	27.5	53.9	26.4	
Vert	4804.000	AV	40.3	30.9	4.5	36.2	39.5	53.9	14.4	
Vert	7206.000	AV	35.0	35.9	5.2	36.3	39.8	53.9	14.1	
Vert	9608.000	AV	35.7	38.1	6.1	36.8	43.1	53.9	10.8	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

\*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

### 20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	92.2	26.7	2.5	36.7	84.7	-	-	Carrier
Hori	2400.000	PK	41.1	26.7	2.5	36.7	33.6	64.7	31.1	
Vert	2402.000	PK	96.3	26.7	2.5	36.7	88.8	-	-	Carrier
Vert	2400.000	PK	43.2	26.7	2.5	36.7	35.7	68.8	33.1	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Radiated Spurious Emission

Test place	Ise EMC Lab.	
Report No.	10429374H	
Semi Anechoic Chamber	No.1	No.4
Date	09/08/2014	09/09/2014
Temperature/ Humidity	18 deg. C / 70% RH	22 deg. C / 59% RH
Engineer	Yuta Moriya	Yuta Moriya
	(1-10GHz)	(10-26.5GHz, Below 1GHz)
Mode	Tx, DH5 2441MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	55.538	QP	33.7	9.2	7.5	32.1	18.3	40.0	21.7	
Hori	96.994	QP	32.5	9.7	8.1	32.1	18.2	43.5	25.3	
Hori	111.082	QP	42.5	11.8	8.3	32.1	30.5	43.5	13.0	
Hori	314.788	QP	36.5	16.4	10.0	31.9	31.0	46.0	15.0	
Hori	370.306	QP	29.0	17.2	10.4	31.9	24.7	46.0	21.3	
Hori	481.396	QP	27.4	18.9	11.1	32.0	25.4	46.0	20.6	
Hori	4882.000	PK	48.5	31.2	4.5	36.2	48.0	73.9	25.9	
Hori	7323.000	PK	44.1	36.0	5.2	36.4	48.9	73.9	25.0	
Hori	9764.000	PK	43.4	38.2	6.2	36.8	51.0	73.9	22.9	
Hori	4882.000	AV	40.0	31.2	4.5	36.2	39.5	53.9	14.4	
Hori	7323.000	AV	32.4	36.0	5.2	36.4	37.2	53.9	16.7	
Hori	9764.000	AV	32.2	38.2	6.2	36.8	39.8	53.9	14.1	
Vert	55.544	QP	36.8	9.2	7.5	32.1	21.4	40.0	18.6	
Vert	92.610	QP	38.4	8.8	8.0	32.1	23.1	43.5	20.4	
Vert	111.085	QP	47.3	11.8	8.3	32.1	35.3	43.5	8.2	
Vert	481.383	QP	32.0	18.9	11.1	32.0	30.0	46.0	16.0	
Vert	555.447	QP	29.9	19.7	11.5	32.1	29.0	46.0	17.0	
Vert	629.520	QP	28.4	20.7	11.9	32.2	28.8	46.0	17.3	
Vert	4882.000	PK	48.9	31.2	4.5	36.2	48.4	73.9	25.5	
Vert	7323.000	PK	44.1	36.0	5.2	36.4	48.9	73.9	25.0	
Vert	9764.000	PK	43.7	38.2	6.2	36.8	51.3	73.9	22.6	
Vert	4882.000	AV	40.0	31.2	4.5	36.2	39.5	53.9	14.4	
Vert	7323.000	AV	32.4	36.0	5.2	36.4	37.2	53.9	16.7	
Vert	9764.000	AV	32.2	38.2	6.2	36.8	39.8	53.9	14.1	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

\*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Radiated Spurious Emission

Test place	Ise EMC Lab.	
Report No.	10429374H	
Semi Anechoic Chamber	No.1	No.4
Date	09/08/2014	09/09/2014
Temperature/ Humidity	18 deg. C / 70% RH	22 deg. C / 59% RH
Engineer	Yuta Moriya	Yuta Moriya
	(1-10GHz)	(10-26.5GHz, Below 1GHz)
Mode	Tx, DH5 2480MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	55.538	QP	32.6	9.2	7.5	32.1	17.2	40.0	22.8	
Hori	96.994	QP	32.0	9.7	8.1	32.1	17.7	43.5	25.8	
Hori	111.082	QP	42.2	11.8	8.3	32.1	30.2	43.5	13.3	
Hori	222.164	QP	32.4	16.9	9.3	31.9	26.7	46.0	19.3	
Hori	481.396	QP	28.8	18.9	11.1	32.0	26.8	46.0	19.2	
Hori	550.026	QP	31.1	19.6	11.5	32.1	30.1	46.0	15.9	
Hori	2483.500	PK	47.1	26.8	2.6	36.7	39.8	73.9	34.1	
Hori	4960.000	PK	46.8	31.4	4.5	36.2	46.5	73.9	27.4	
Hori	7440.000	PK	41.0	36.1	5.3	36.4	46.0	73.9	27.9	
Hori	9920.000	PK	44.3	38.4	6.3	36.9	52.1	73.9	21.8	
Hori	2483.500	AV	34.6	26.8	2.6	36.7	27.3	53.9	26.6	
Hori	4960.000	AV	38.0	31.4	4.5	36.2	37.7	53.9	16.2	
Hori	7440.000	AV	33.6	36.1	5.3	36.4	38.6	53.9	15.3	
Hori	9920.000	AV	32.8	38.4	6.3	36.9	40.6	53.9	13.3	
Vert	55.544	QP	34.8	9.2	7.5	32.1	19.4	40.0	20.6	
Vert	92.610	QP	34.1	8.8	8.0	32.1	18.8	43.5	24.7	
Vert	111.085	QP	46.6	11.8	8.3	32.1	34.6	43.5	8.9	
Vert	481.366	QP	31.0	18.9	11.1	32.0	29.0	46.0	17.0	
Vert	555.447	QP	29.9	19.7	11.5	32.1	29.0	46.0	17.0	
Vert	629.520	QP	28.2	20.7	11.9	32.2	28.6	46.0	17.4	
Vert	2483.500	PK	47.0	26.8	2.6	36.7	39.7	73.9	34.2	
Vert	4960.000	PK	48.7	31.4	4.5	36.2	48.4	73.9	25.5	
Vert	7440.000	PK	41.0	36.1	5.3	36.4	46.0	73.9	27.9	
Vert	9920.000	PK	44.2	38.4	6.3	36.9	52.0	73.9	21.9	
Vert	2483.500	AV	34.6	26.8	2.6	36.7	27.3	53.9	26.6	
Vert	4960.000	AV	39.7	31.4	4.5	36.2	39.4	53.9	14.5	
Vert	7440.000	AV	33.5	36.1	5.3	36.4	38.5	53.9	15.4	
Vert	9920.000	AV	32.3	38.4	6.3	36.9	40.1	53.9	13.8	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

\*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124



## Radiated Spurious Emission

Test place	Ise EMC Lab.		
Report No.	10429374H		
Semi Anechoic Chamber	No.1	No.4	
Date	09/08/2014	09/09/2014	
Temperature/ Humidity	18 deg. C / 70% RH	22 deg. C / 59% RH	
Engineer	Yuta Moriya	Yuta Moriya	
	(1-10GHz)	(10-26.5GHz, Below 1GHz)	
Mode	Tx, 3DH5 2402MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	55.538	QP	32.7	9.2	7.5	32.1	17.3	40.0	22.7	
Hori	74.078	QP	40.4	6.5	7.8	32.1	22.6	40.0	17.4	
Hori	111.082	QP	42.7	11.8	8.3	32.1	30.7	43.5	12.8	
Hori	203.637	QP	33.6	16.6	9.1	31.9	27.4	43.5	16.1	
Hori	481.396	QP	28.7	18.9	11.1	32.0	26.7	46.0	19.3	
Hori	550.026	QP	31.6	19.6	11.5	32.1	30.6	46.0	15.4	
Hori	2390.000	PK	45.2	26.7	2.5	36.7	37.7	73.9	36.2	
Hori	4804.000	PK	47.8	30.9	4.5	36.2	47.0	73.9	26.9	
Hori	7206.000	PK	43.3	35.9	5.2	36.3	48.1	73.9	25.8	
Hori	9608.000	PK	43.8	38.1	6.1	36.8	51.2	73.9	22.7	
Hori	2390.000	AV	34.8	26.7	2.5	36.7	27.3	53.9	26.6	
Hori	4804.000	AV	36.3	30.9	4.5	36.2	35.5	53.9	18.4	
Hori	7206.000	AV	32.8	35.9	5.2	36.3	37.6	53.9	16.3	
Hori	9608.000	AV	32.0	38.1	6.1	36.8	39.4	53.9	14.5	
Vert	74.058	QP	38.9	6.5	7.8	32.1	21.1	40.0	18.9	
Vert	92.575	QP	35.9	8.8	8.0	32.1	20.6	43.5	22.9	
Vert	111.085	QP	46.8	11.8	8.3	32.1	34.8	43.5	8.7	
Vert	481.370	QP	31.6	18.9	11.1	32.0	29.6	46.0	16.4	
Vert	550.016	QP	34.2	19.6	11.5	32.1	33.2	46.0	12.8	
Vert	666.573	QP	28.0	21.6	12.1	32.2	29.5	46.0	16.5	
Vert	2390.000	PK	44.3	26.7	2.5	36.7	36.8	73.9	37.1	
Vert	4804.000	PK	47.9	30.9	4.5	36.2	47.1	73.9	26.8	
Vert	7206.000	PK	43.6	35.9	5.2	36.3	48.4	73.9	25.5	
Vert	9608.000	PK	43.7	38.1	6.1	36.8	51.1	73.9	22.8	
Vert	2390.000	AV	34.7	26.7	2.5	36.7	27.2	53.9	26.7	
Vert	4804.000	AV	41.0	30.9	4.5	36.2	40.2	53.9	13.7	
Vert	7206.000	AV	31.6	35.9	5.2	36.3	36.4	53.9	17.5	
Vert	9608.000	AV	32.0	38.1	6.1	36.8	39.4	53.9	14.5	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

\*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

### 20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	91.1	26.7	2.5	36.7	83.6	-	-	Carrier
Hori	2400.000	PK	41.6	26.7	2.5	36.7	34.1	63.6	29.5	
Vert	2402.000	PK	95.8	26.7	2.5	36.7	88.3	-	-	
Vert	2400.000	PK	43.7	26.7	2.5	36.7	36.2	68.3	32.1	Carrier

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Radiated Spurious Emission

Test place	Ise EMC Lab.	
Report No.	10429374H	
Semi Anechoic Chamber	No.1	No.4
Date	09/08/2014	09/09/2014
Temperature/ Humidity	18 deg. C / 70% RH	22 deg. C / 59% RH
Engineer	Yuta Moriya	Yuta Moriya
Mode	(1-10GHz)	(10-26.5GHz, Below 1GHz)
	Tx, 3DH5 2441MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	55.538	QP	32.7	9.2	7.5	32.1	17.3	40.0	22.7	
Hori	74.078	QP	40.6	6.5	7.8	32.1	22.8	40.0	17.2	
Hori	111.082	QP	42.7	11.8	8.3	32.1	30.7	43.5	12.8	
Hori	398.710	QP	27.3	17.5	10.6	31.9	23.5	46.0	22.5	
Hori	481.396	QP	28.7	18.9	11.1	32.0	26.7	46.0	19.3	
Hori	550.026	QP	32.0	19.6	11.5	32.1	31.0	46.0	15.0	
Hori	4882.000	PK	46.7	31.2	4.5	36.2	46.2	73.9	27.7	
Hori	7323.000	PK	43.2	36.0	5.2	36.4	48.0	73.9	25.9	
Hori	9764.000	PK	43.4	38.2	6.2	36.8	51.0	73.9	22.9	
Hori	4882.000	AV	38.2	31.2	4.5	36.2	37.7	53.9	16.2	
Hori	7323.000	AV	31.5	36.0	5.2	36.4	36.3	53.9	17.6	
Hori	9764.000	AV	32.1	38.2	6.2	36.8	39.7	53.9	14.2	
Vert	74.058	QP	38.4	6.5	7.8	32.1	20.6	40.0	19.4	
Vert	92.575	QP	36.0	8.8	8.0	32.1	20.7	43.5	22.8	
Vert	111.085	QP	46.5	11.8	8.3	32.1	34.5	43.5	9.0	
Vert	481.370	QP	31.6	18.9	11.1	32.0	29.6	46.0	16.4	
Vert	550.016	QP	35.0	19.6	11.5	32.1	34.0	46.0	12.0	
Vert	666.543	QP	29.5	21.6	12.1	32.2	31.0	46.0	15.0	
Vert	4882.000	PK	48.2	31.2	4.5	36.2	47.7	73.9	26.2	
Vert	7323.000	PK	42.8	36.0	5.2	36.4	47.6	73.9	26.3	
Vert	9764.000	PK	44.4	38.2	6.2	36.8	52.0	73.9	21.9	
Vert	4882.000	AV	40.0	31.2	4.5	36.2	39.5	53.9	14.4	
Vert	7323.000	AV	31.5	36.0	5.2	36.4	36.3	53.9	17.6	
Vert	9764.000	AV	32.2	38.2	6.2	36.8	39.8	53.9	14.1	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

\*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Radiated Spurious Emission

Test place	Ise EMC Lab.	
Report No.	10429374H	
Semi Anechoic Chamber	No.1	No.4
Date	09/08/2014	09/09/2014
Temperature/ Humidity	18 deg. C / 70% RH	22 deg. C / 59% RH
Engineer	Yuta Moriya (1-10GHz)	Yuta Moriya (10-26.5GHz, Below 1GHz)
Mode	Tx, 3DH5 2480MHz	

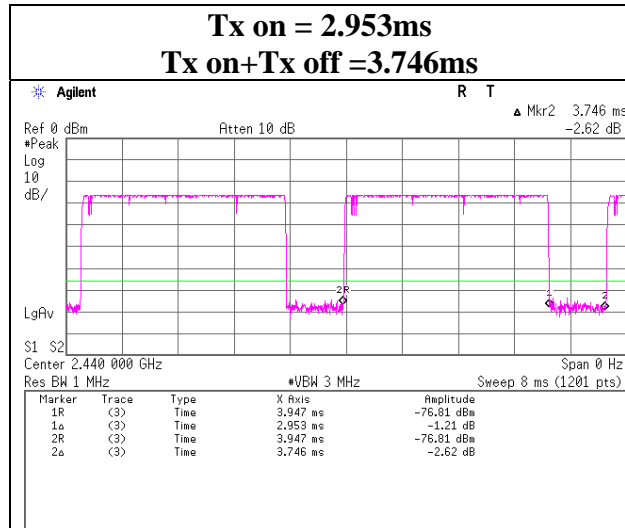
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	55.538	QP	32.6	9.2	7.5	32.1	17.2	40.0	22.8	
Hori	74.078	QP	40.9	6.5	7.8	32.1	23.1	40.0	16.9	
Hori	111.082	QP	42.8	11.8	8.3	32.1	30.8	43.5	12.7	
Hori	425.859	QP	31.4	18.0	10.8	32.0	28.2	46.0	17.8	
Hori	481.396	QP	28.6	18.9	11.1	32.0	26.6	46.0	19.4	
Hori	550.026	QP	32.8	19.6	11.5	32.1	31.8	46.0	14.2	
Hori	2483.500	PK	47.4	26.8	2.6	36.7	40.1	73.9	33.8	
Hori	4960.000	PK	47.2	31.4	4.5	36.2	46.9	73.9	27.0	
Hori	7440.000	PK	43.1	36.1	5.3	36.4	48.1	73.9	25.8	
Hori	9920.000	PK	44.0	38.4	6.3	36.9	51.8	73.9	22.1	
Hori	2483.500	AV	34.3	26.8	2.6	36.7	27.0	53.9	26.9	
Hori	4960.000	AV	37.0	31.4	4.5	36.2	36.7	53.9	17.2	
Hori	7440.000	AV	31.5	36.1	5.3	36.4	36.5	53.9	17.4	
Hori	9920.000	AV	31.9	38.4	6.3	36.9	39.7	53.9	14.2	
Vert	74.058	QP	38.5	6.5	7.8	32.1	20.7	40.0	19.3	
Vert	92.575	QP	36.1	8.8	8.0	32.1	20.8	43.5	22.7	
Vert	111.085	QP	46.6	11.8	8.3	32.1	34.6	43.5	8.9	
Vert	148.065	QP	33.9	14.9	8.7	32.0	25.5	43.5	18.0	
Vert	550.016	QP	35.3	19.6	11.5	32.1	34.3	46.0	11.7	
Vert	666.543	QP	29.5	21.6	12.1	32.2	31.0	46.0	15.0	
Vert	949.000	QP	28.0	25.5	13.5	30.9	36.1	46.0	9.9	
Vert	2483.500	PK	48.0	26.8	2.6	36.7	40.7	73.9	33.2	
Vert	4960.000	PK	48.3	31.4	4.5	36.2	48.0	73.9	25.9	
Vert	7440.000	PK	43.4	36.1	5.3	36.4	48.4	73.9	25.5	
Vert	9920.000	PK	43.6	38.4	6.3	36.9	51.4	73.9	22.5	
Vert	2483.500	AV	33.4	26.8	2.6	36.7	26.1	53.9	27.8	
Vert	4960.000	AV	37.4	31.4	4.5	36.2	37.1	53.9	16.8	
Vert	7440.000	AV	31.4	36.1	5.3	36.4	36.4	53.9	17.5	
Vert	9920.000	AV	31.9	38.4	6.3	36.9	39.7	53.9	14.2	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)  
\*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).  
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

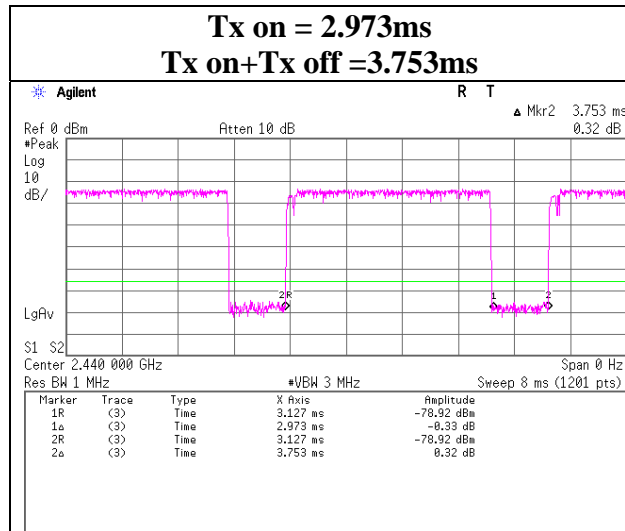
### Burst Rate Confirmation

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg. C / 42% RH
Engineer	Tsubasa Takayama
Mode	Tx (Hopping off) DH5/3DH5

#### DH5



#### 3DH5



**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

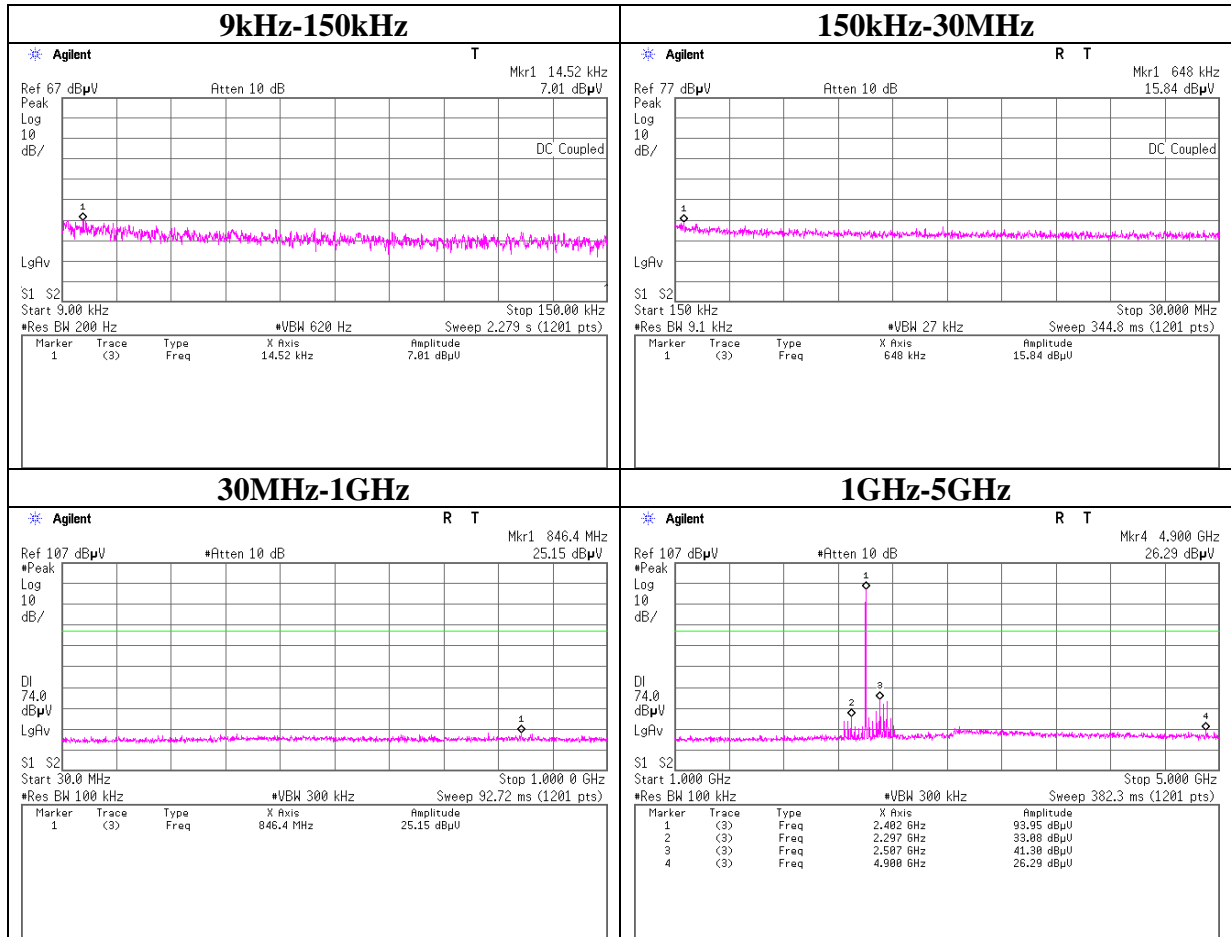
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg. C / 42% RH
Engineer	Tsubasa Takayama

### Tx DH5 2402MHz



**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

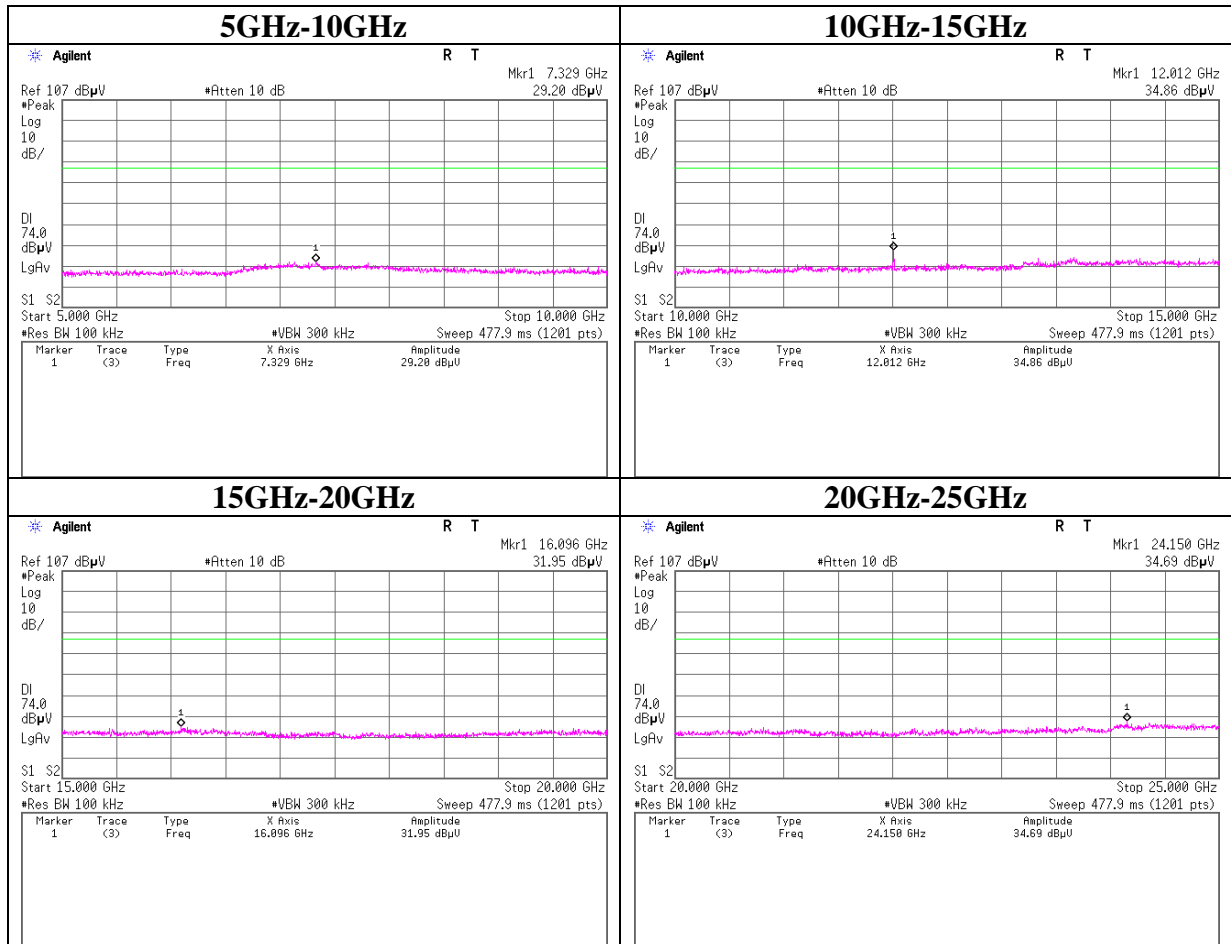
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg. C / 42% RH
Engineer	Tsubasa Takayama

### Tx DH5 2402MHz



**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

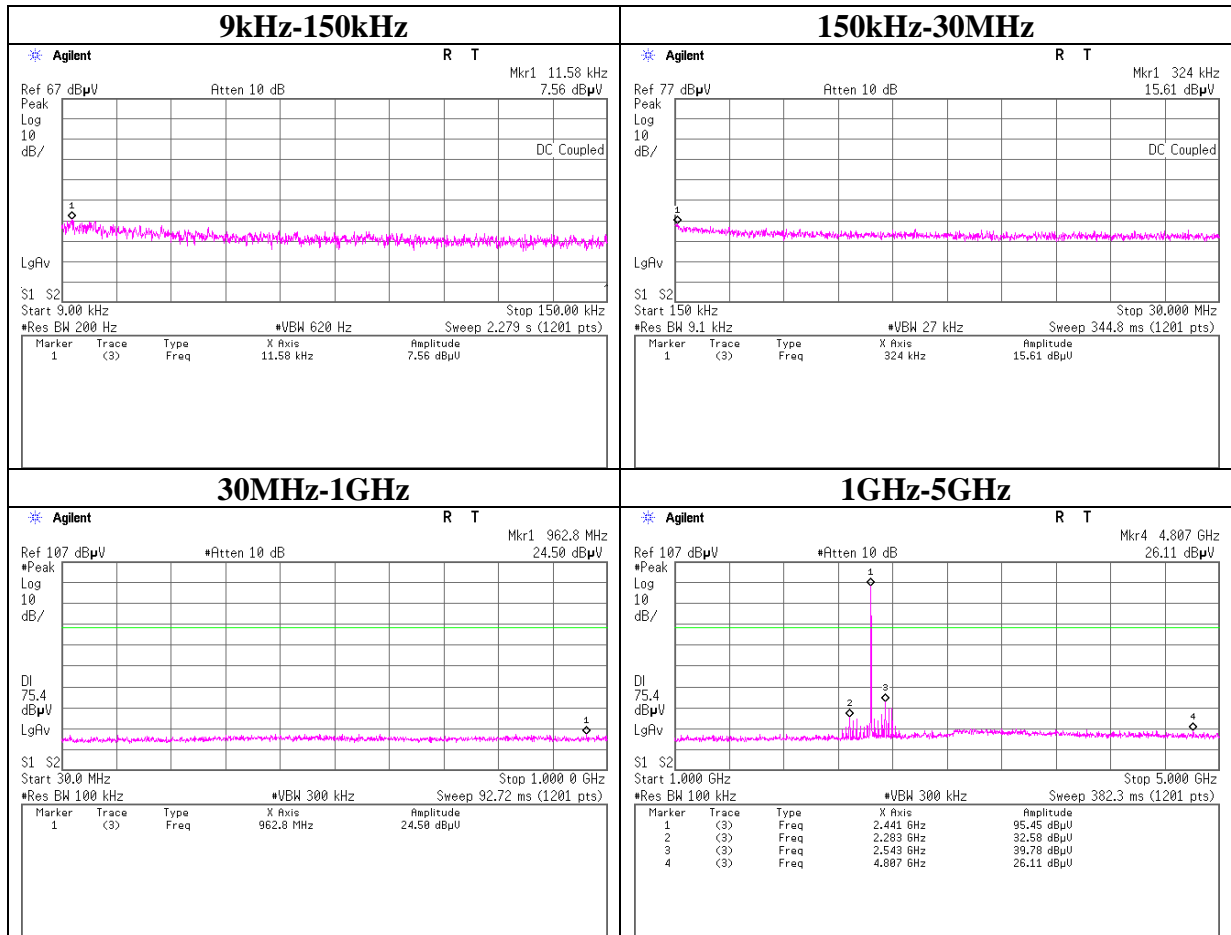
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg. C / 42% RH
Engineer	Tsubasa Takayama

### Tx DH5 2441MHz



**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

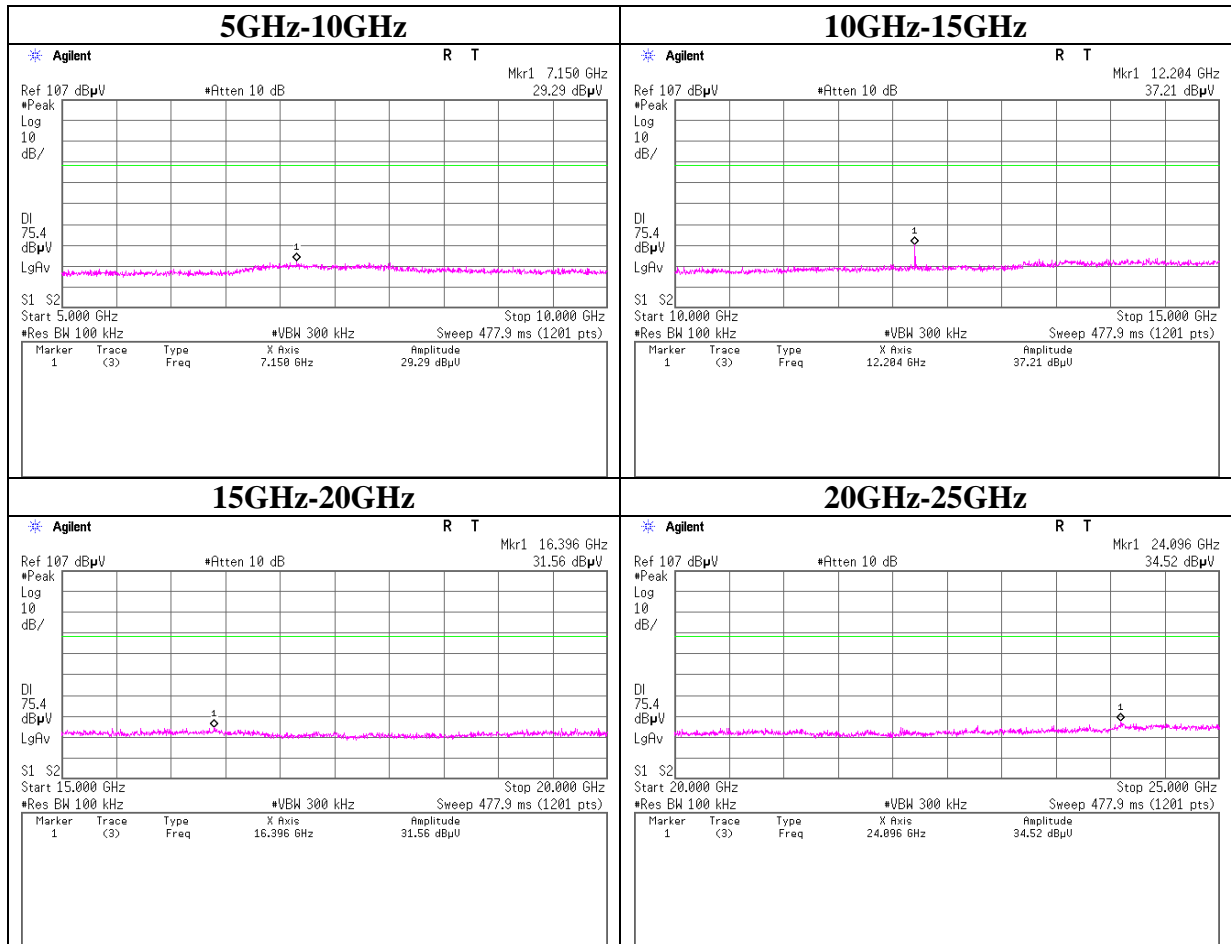
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg. C / 42% RH
Engineer	Tsubasa Takayama

### Tx DH5 2441MHz



**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

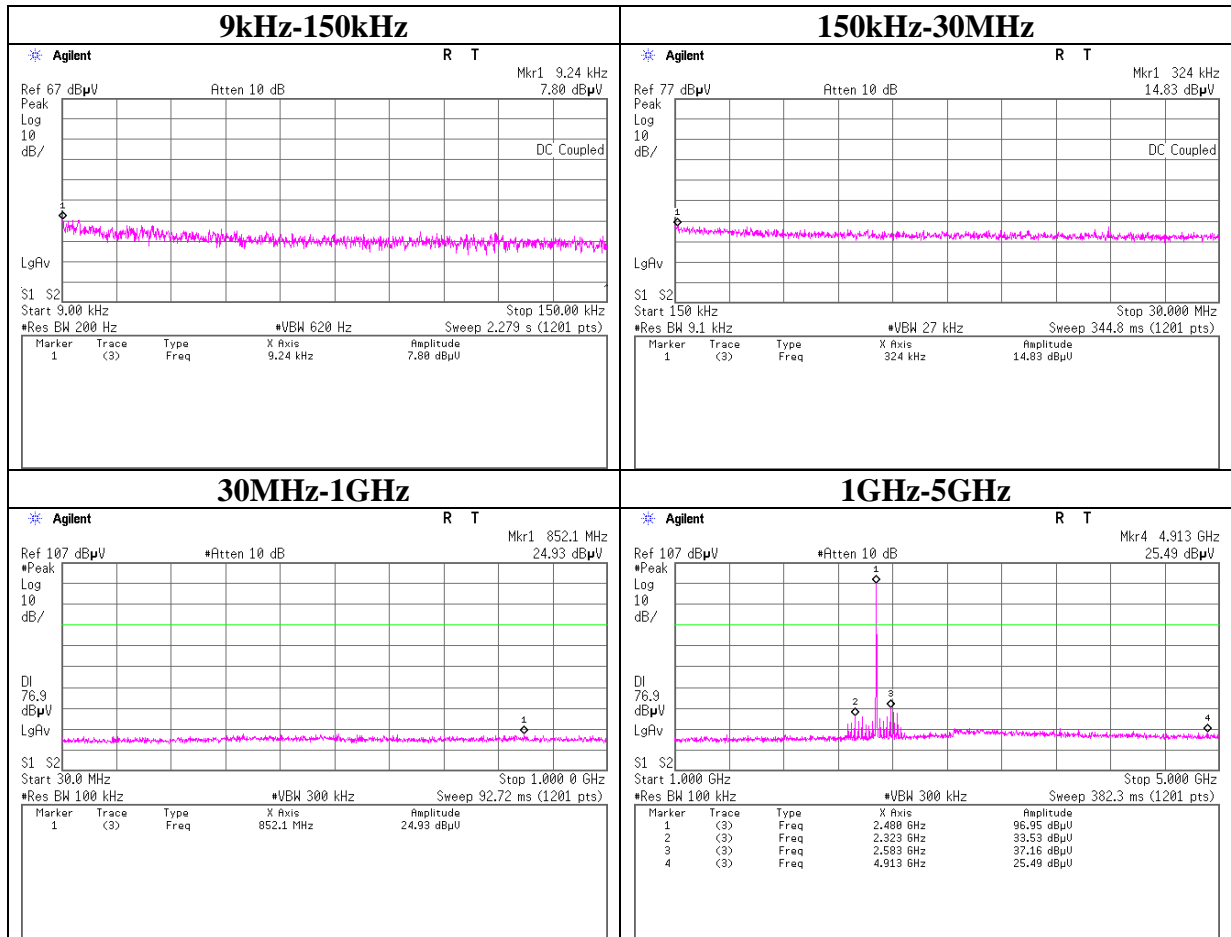
Facsimile : +81 596 24 8124



## Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg. C / 42% RH
Engineer	Tsubasa Takayama

### Tx DH5 2480MHz



**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

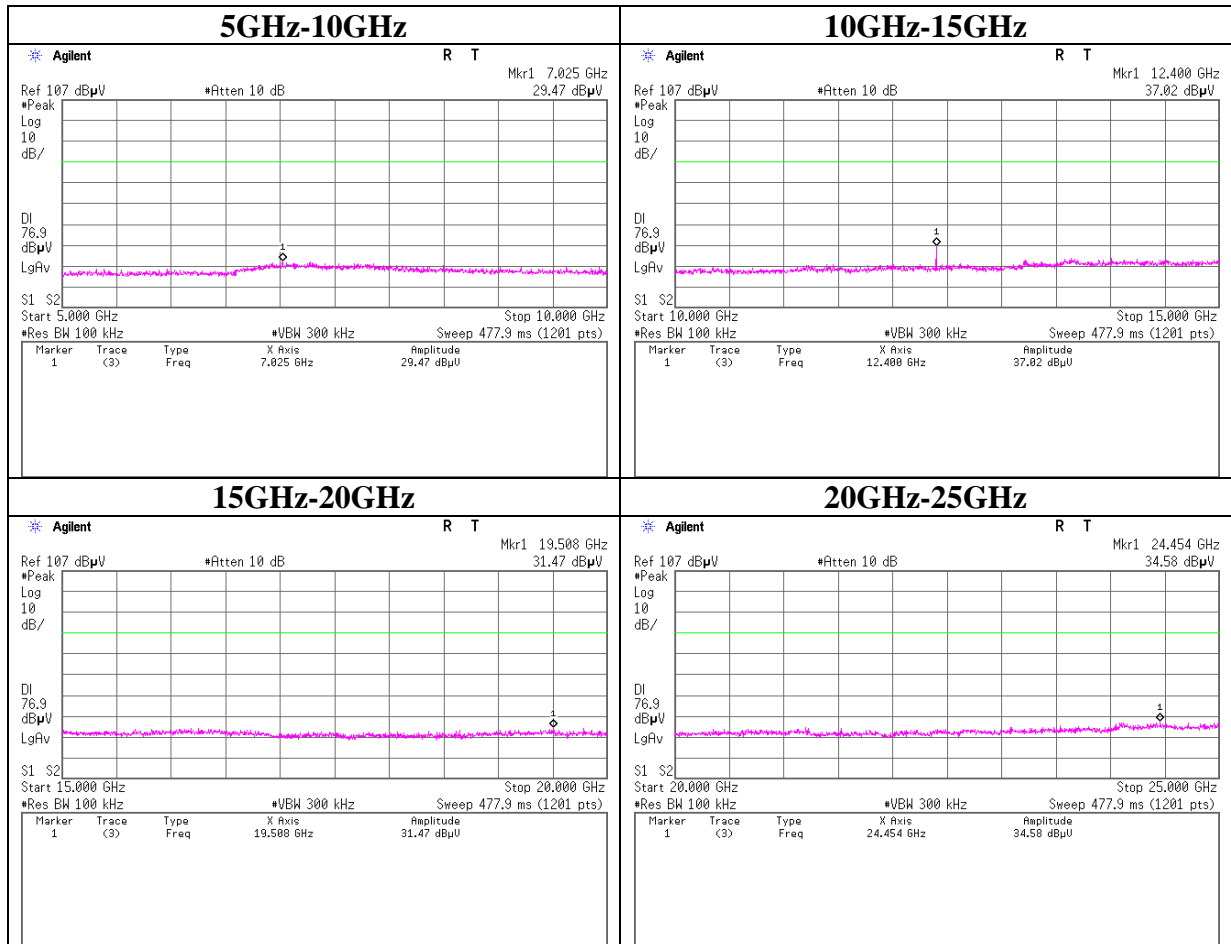
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg. C / 42% RH
Engineer	Tsubasa Takayama

### Tx DH5 2480MHz



**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

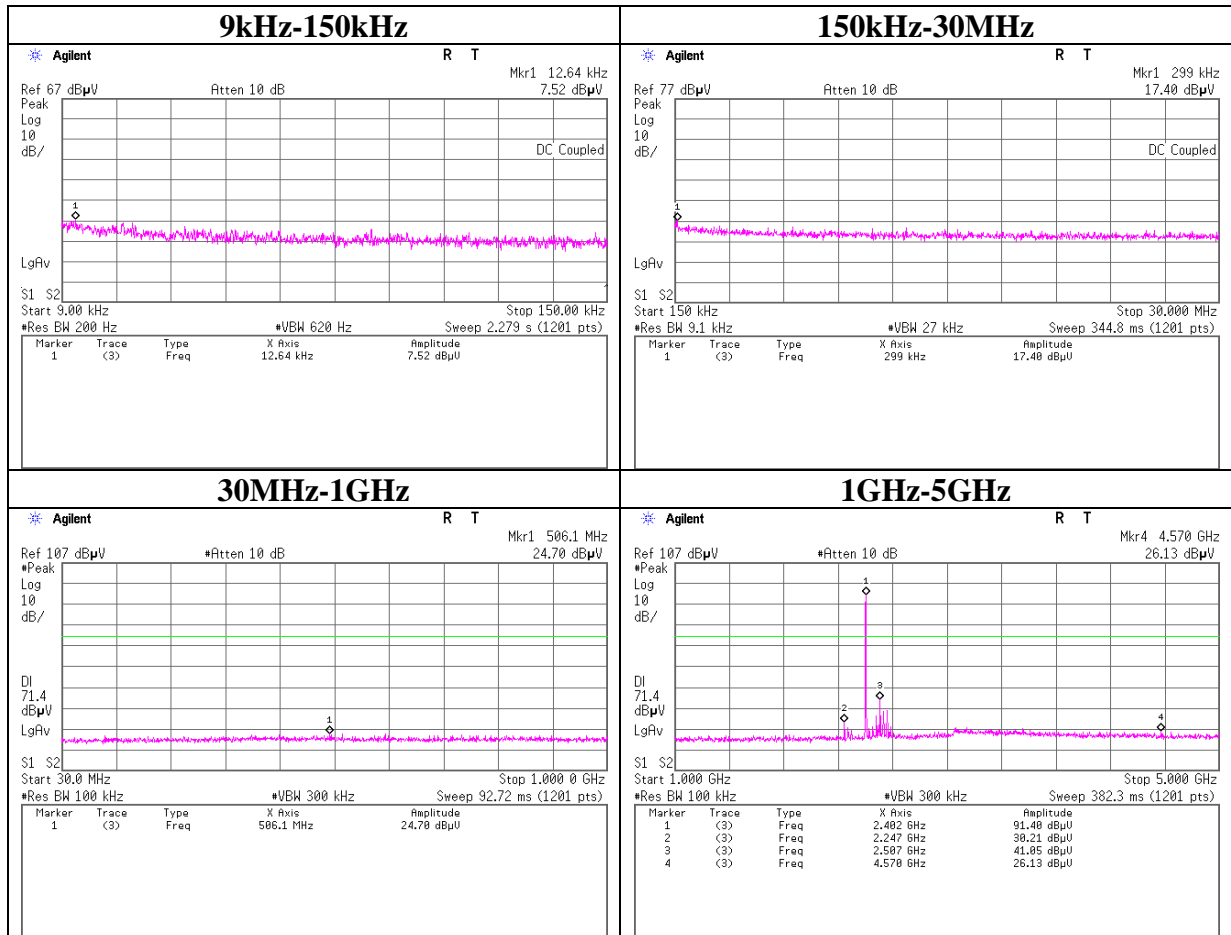
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Conducted Spurious Emission

Test place : Ise EMC Lab. No.11 Measurement Room  
 Report No. : 10429374H  
 Date : 09/05/2014  
 Temperature/ Humidity : 25 deg. C / 42% RH  
 Engineer : Tsubasa Takayama

### Tx 3DH5 2402MHz



**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

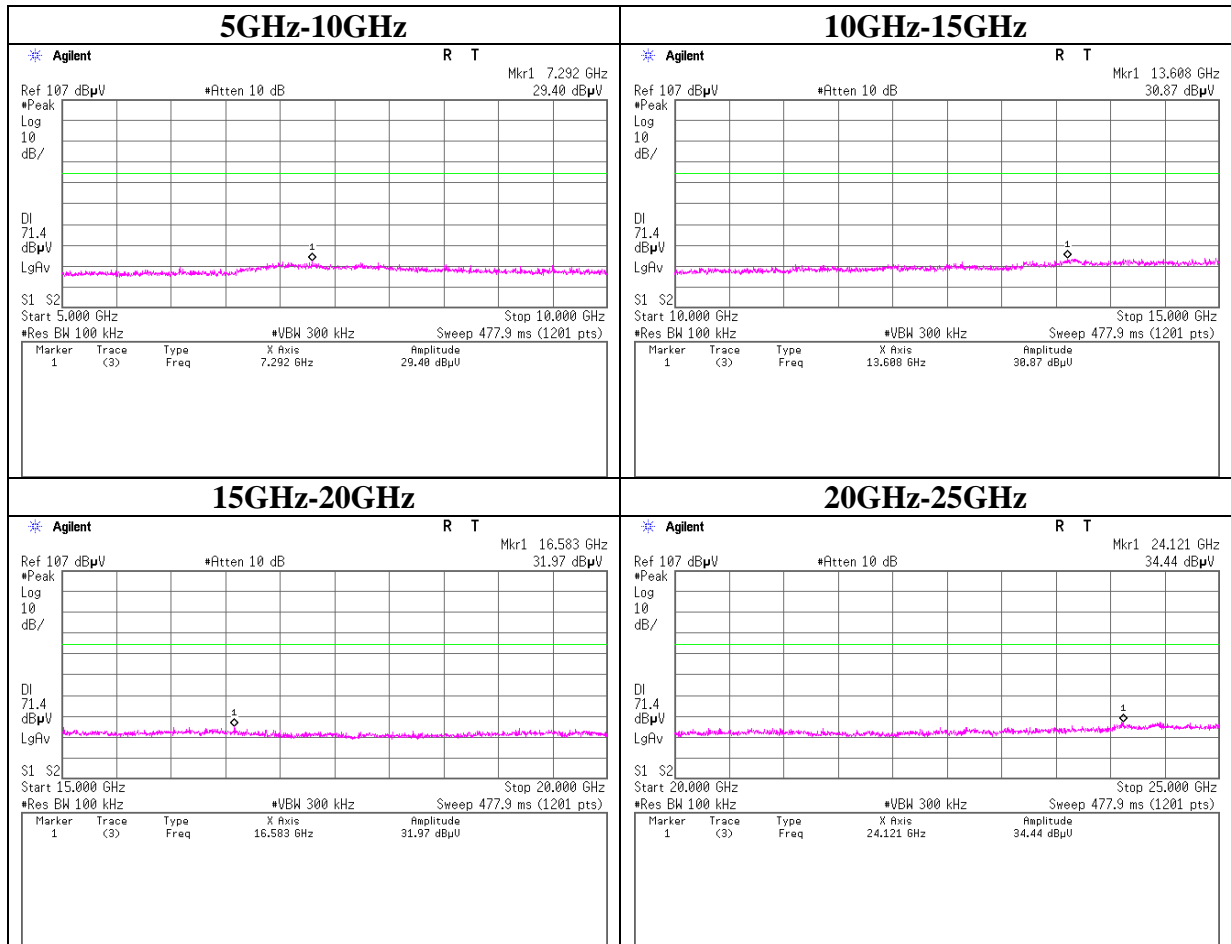
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

### Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg. C / 42% RH
Engineer	Tsubasa Takayama

#### Tx 3DH5 2402MHz



**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

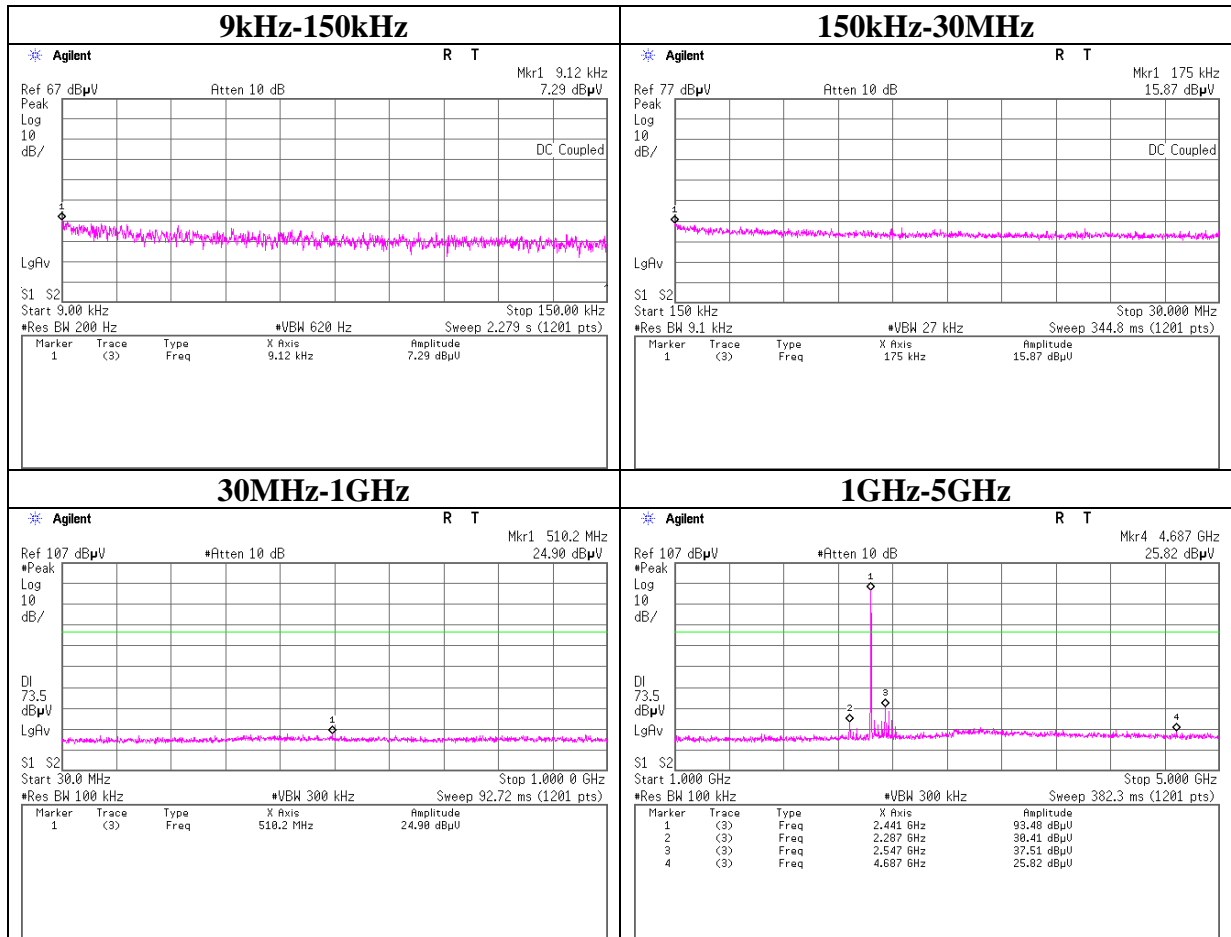
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

### Conducted Spurious Emission

Test place : Ise EMC Lab. No.11 Measurement Room  
 Report No. : 10429374H  
 Date : 09/05/2014  
 Temperature/ Humidity : 25 deg. C / 42% RH  
 Engineer : Tsubasa Takayama

#### Tx 3DH5 2441MHz



**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

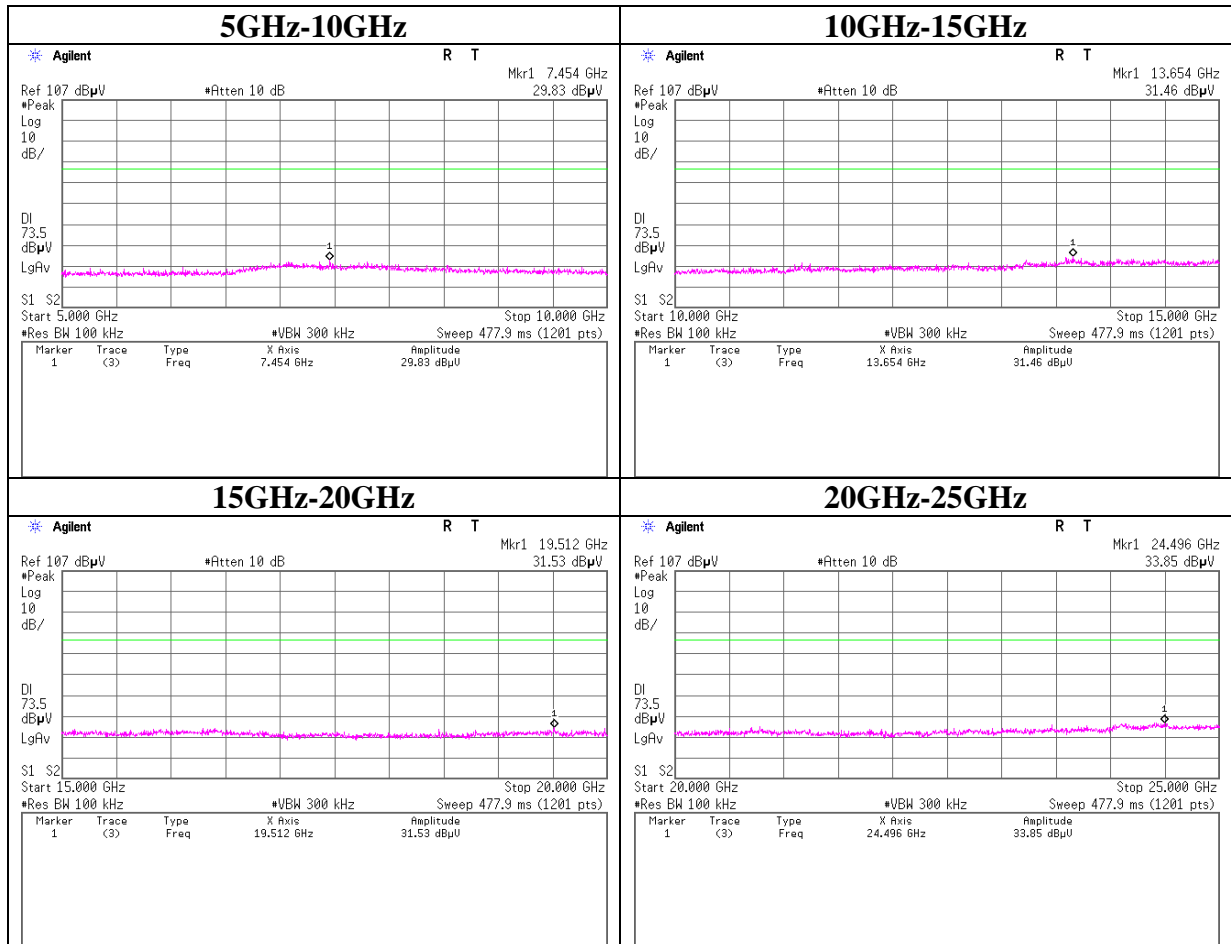
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

### Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg. C / 42% RH
Engineer	Tsubasa Takayama

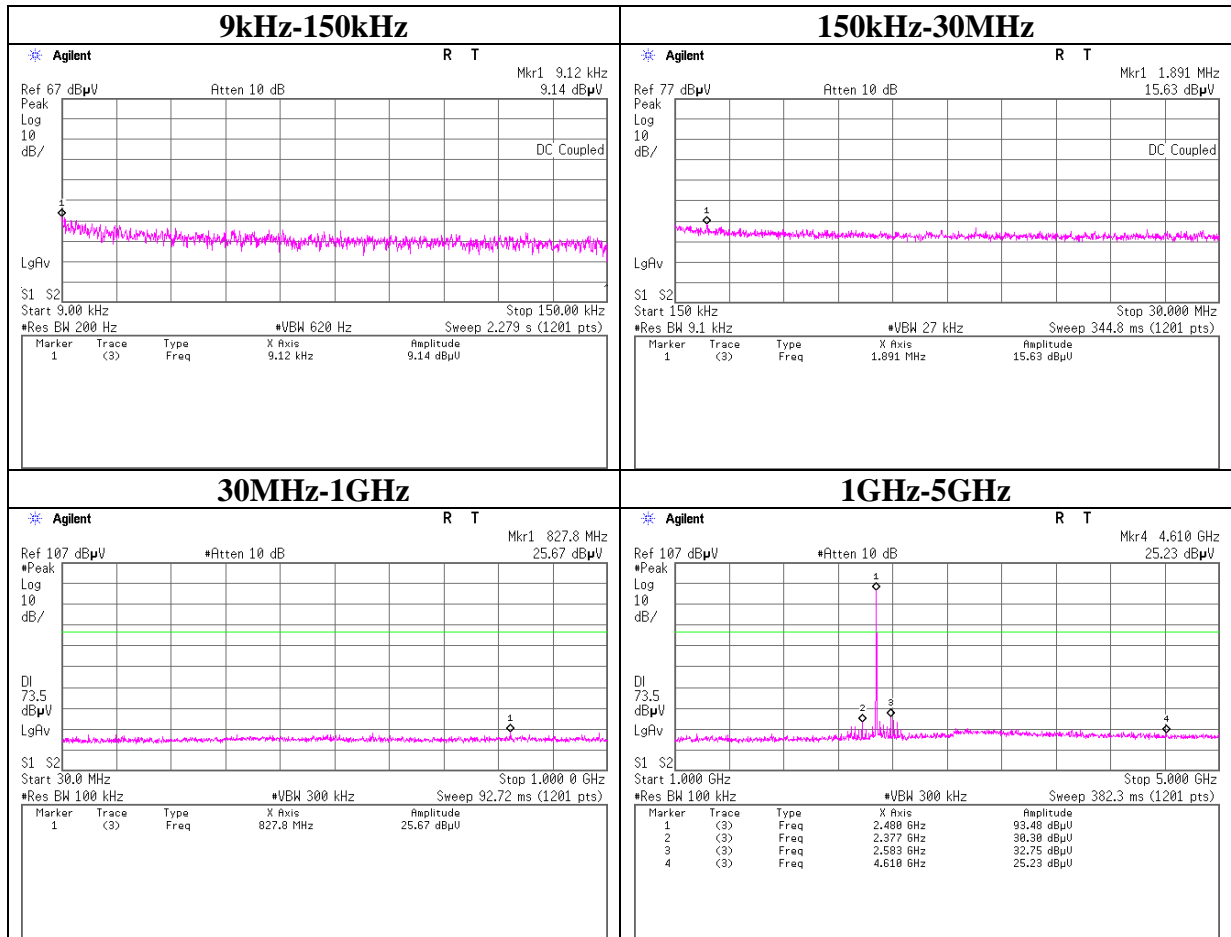
#### Tx 3DH5 2441MHz



## Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg. C / 42% RH
Engineer	Tsubasa Takayama

### Tx 3DH5 2480MHz



**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

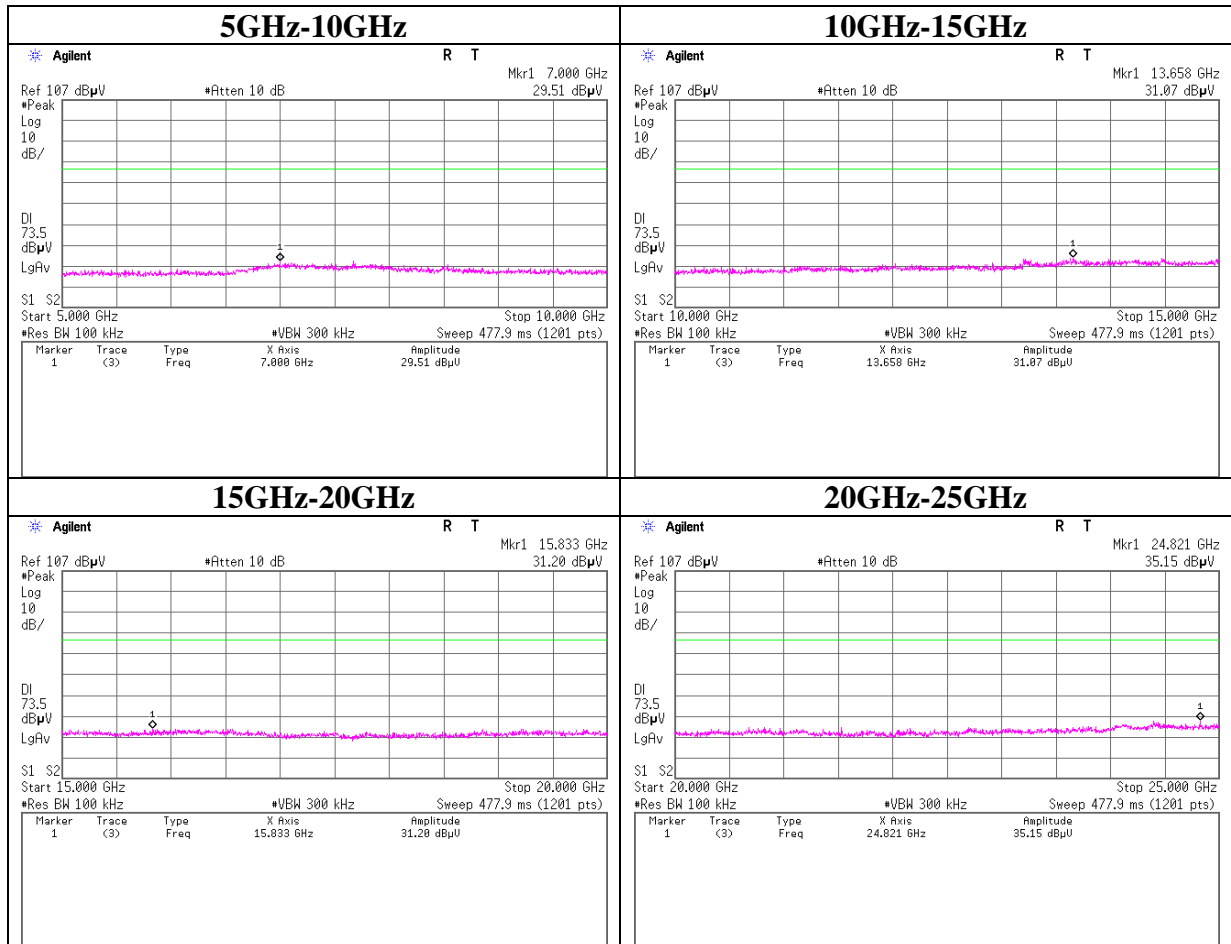
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

## Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg. C / 42% RH
Engineer	Tsubasa Takayama

### Tx 3DH5 2480MHz

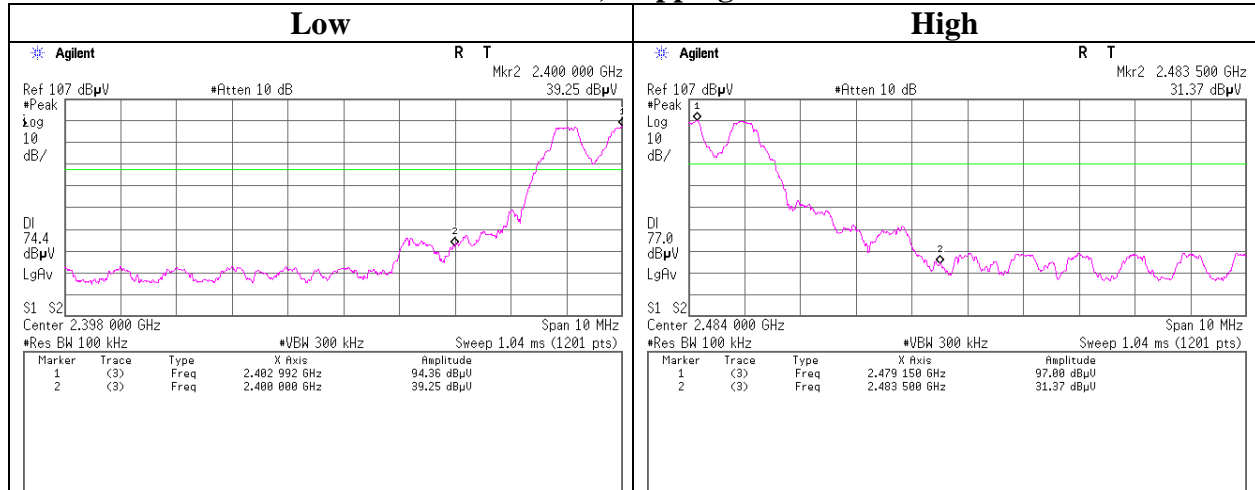




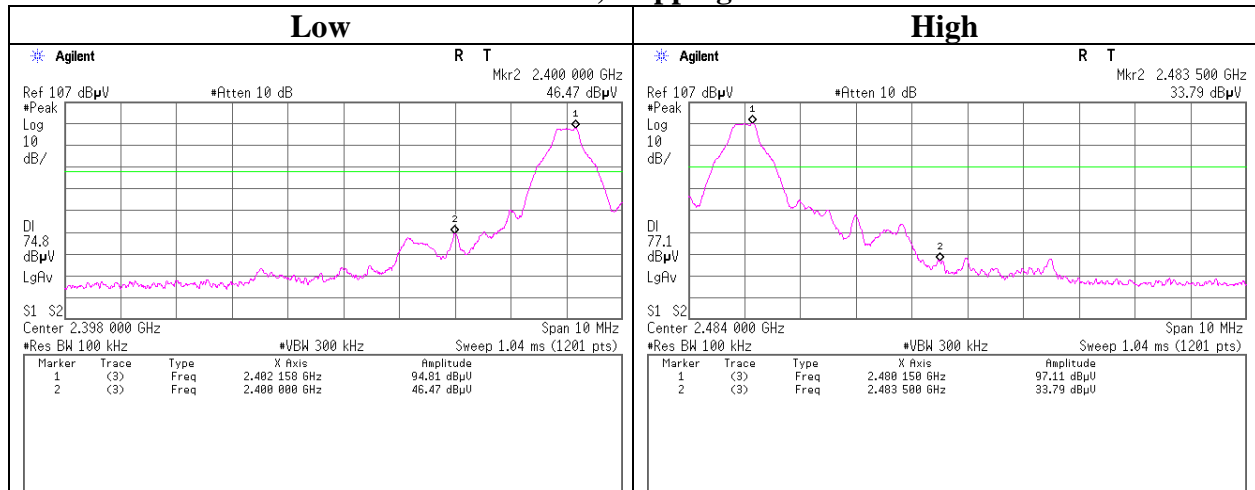
### Conducted Emission Band Edge compliance

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg. C / 42% RH
Engineer	Tsubasa Takayama

#### Tx DH5, Hopping on



#### Tx DH5, Hopping off



**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

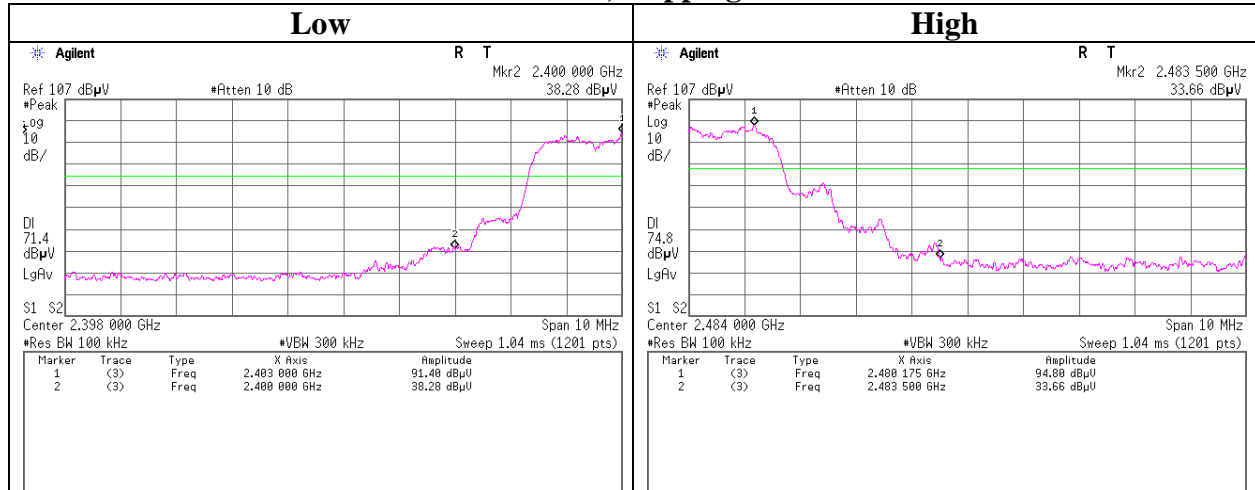
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

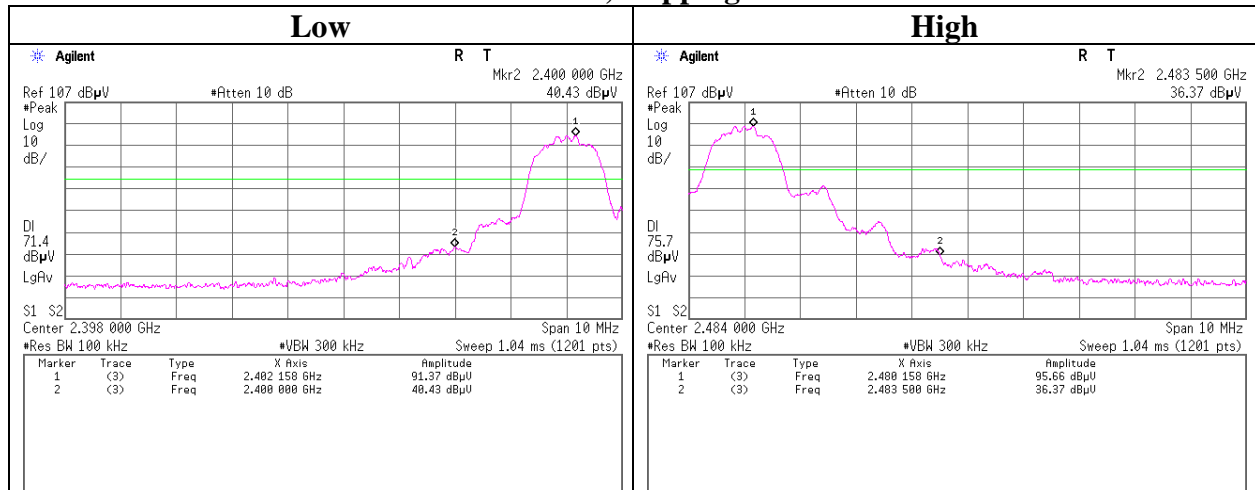
## Conducted Emission Band Edge compliance

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg. C / 42% RH
Engineer	Tsubasa Takayama

### Tx 3DH5, Hopping on



### Tx 3DH5, Hopping off



**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

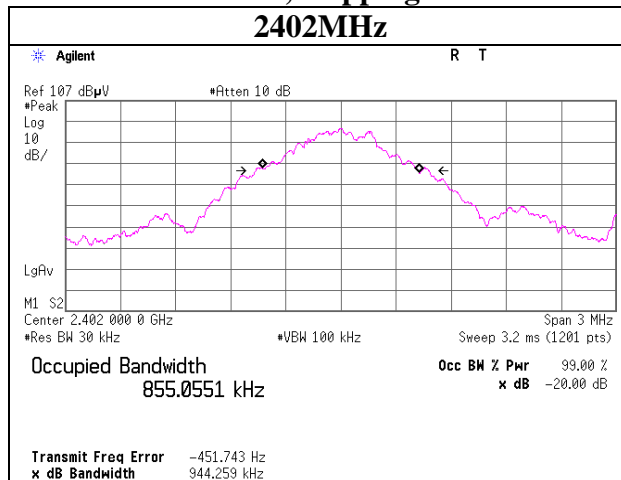
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

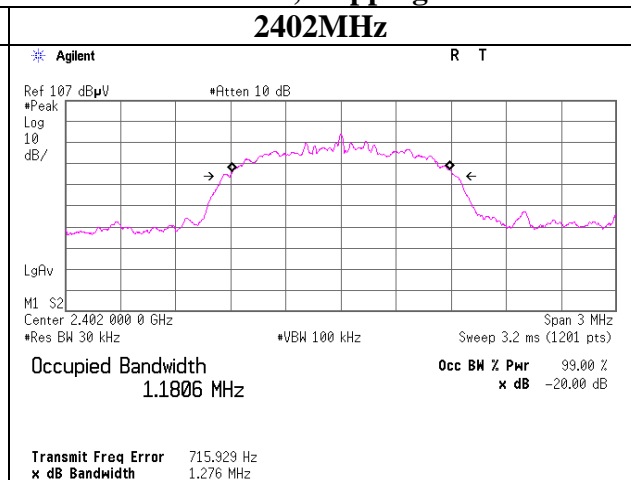
### 99%Occupied Bandwidth

Test place : Ise EMC Lab. No.11 Measurement Room  
 Report No. : 10429374H  
 Date : 09/05/2014  
 Temperature/ Humidity : 25 deg. C / 42% RH  
 Engineer : Tsubasa Takayama

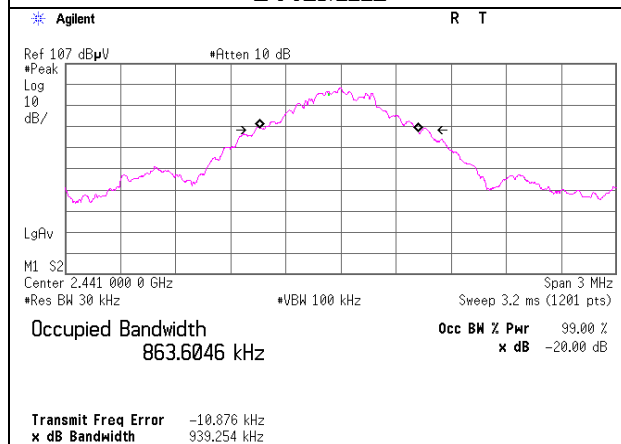
#### Tx DH5, Hopping off



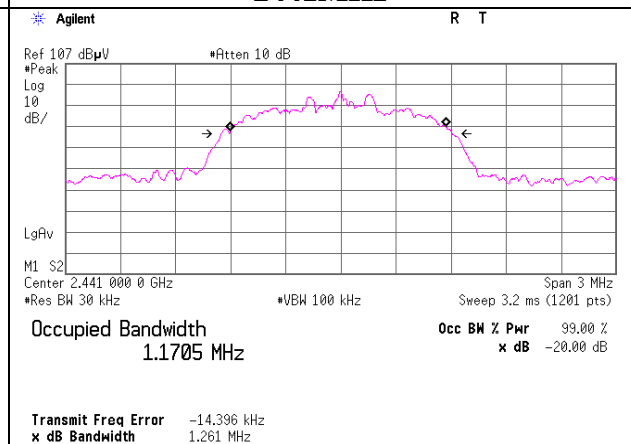
#### Tx 3DH5, Hopping off



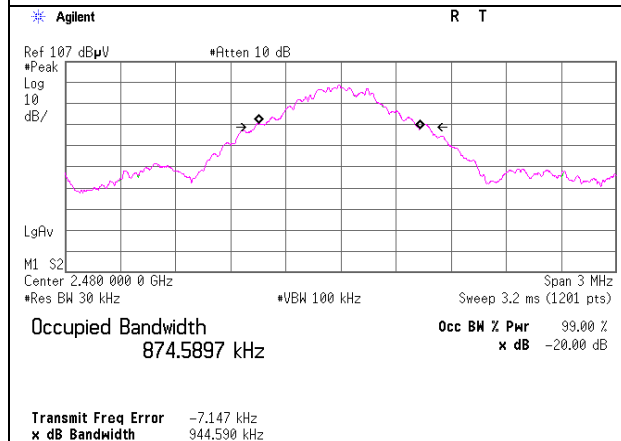
#### 2441MHz



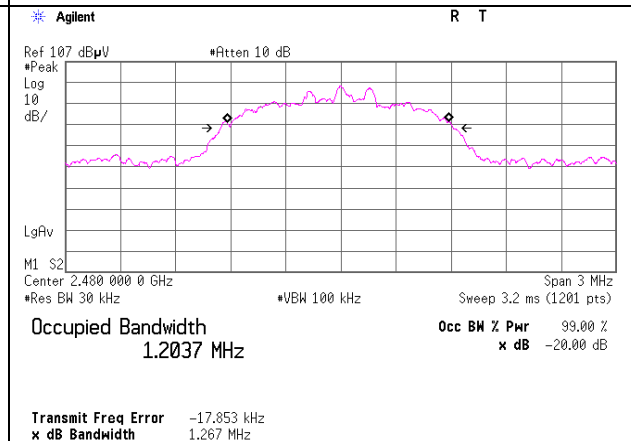
#### 2441MHz



#### 2480MHz



#### 2480MHz



**UL Japan, Inc.**

**Ise EMC Lab.**

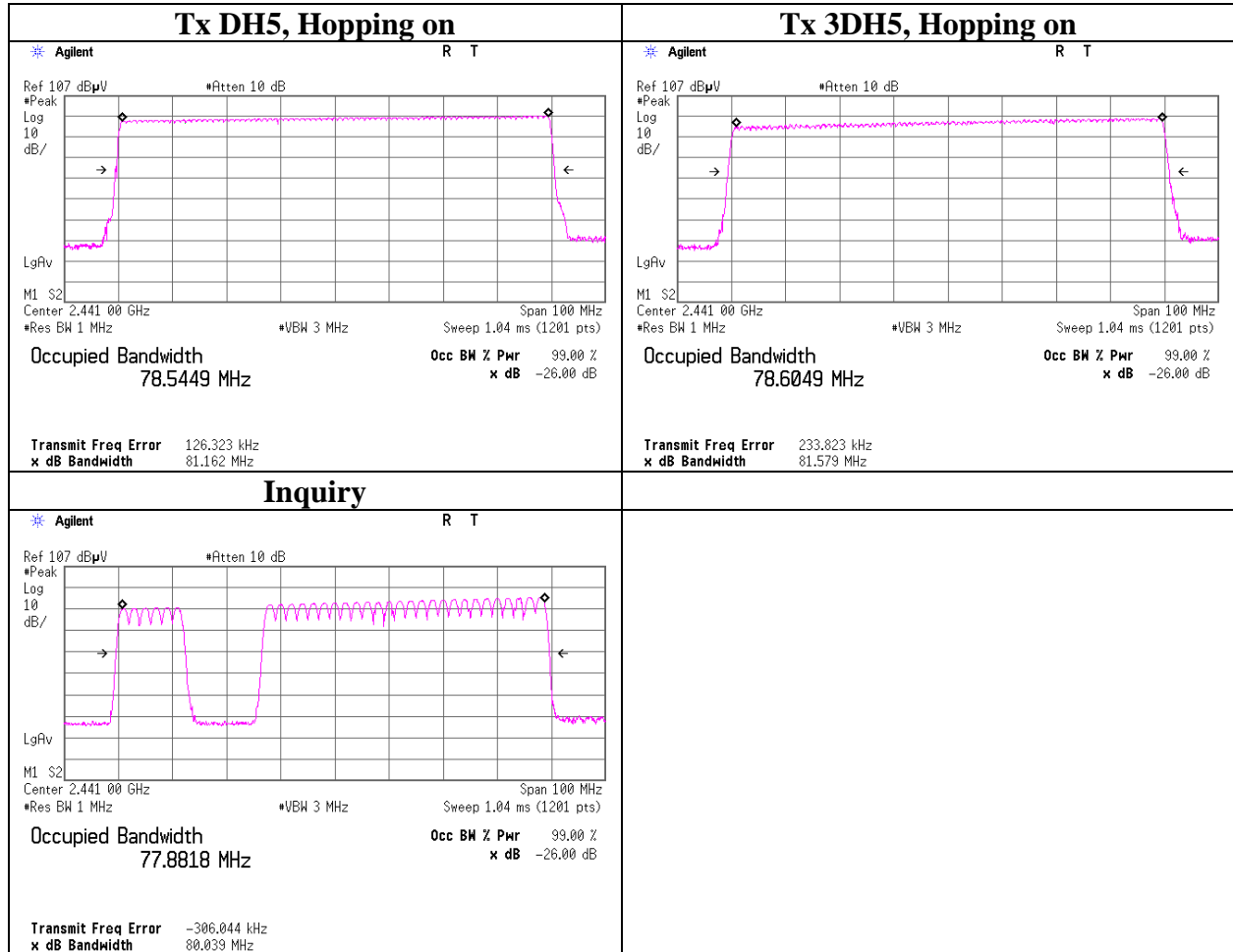
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

### 99% Occupied Bandwidth

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10429374H
Date	09/05/2014
Temperature/ Humidity	25 deg. C / 42% RH
Engineer	Tsubasa Takayama



## APPENDIX 2: Test instruments

### EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MOS-19	Thermo-Hygrometer	Custom	CTH-201	0001	AT	2013/12/17 * 12
MRENT-115	Spectrum Analyzer	Agilent	E4440A	MY46186390	AT	2014/02/28 * 12
MAT-24	Attenuator(10dB)(above1GHz)	Agilent	8493C	71389	AT	2014/06/12 * 12
MPM-09	Power Meter	Anritsu	ML2495A	6K00003348	AT	2013/10/21 * 12
MPSE-12	Power sensor	Anritsu	MA2411B	011598	AT	2013/10/21 * 12
MAEC-01	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 10m	DA-06881	RE	2014/09/01 * 12
MOS-27	Thermo-Hygrometer	CUSTOM	CTH-201	A08Q26	RE	2014/02/20 * 12
MJM-21	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MHA-05	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	253	RE	2014/05/16 * 12
MPA-01	Pre Amplifier	Agilent	8449B	3008A01671	RE	2014/02/05 * 12
MCC-165	Microwave Cable	Junkosha	MWX221	1203S213(1m) / 1311S166(5m)	RE	2013/11/27 * 12
MHF-06	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	RE	2014/05/21 * 12
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2014/02/28 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	1501	RE	2014/02/20 * 12
MJM-22	Measure	ASKUL	-	-	RE	-
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	100084	RE	2013/11/12 * 12
MBA-05	Biconical Antenna	Schwarzbeck	BBA9106	1302	RE	2013/11/24 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	N/A	RE	2013/11/24 * 12
MCC-50	Coaxial Cable	UL Japan	-	-	RE	2014/06/02 * 12
MAT-68	Attenuator	Anritsu	MP721B	6200961025	RE	2013/11/26 * 12
MPA-14	Pre Amplifier	SONOMA INSTRUMENT	310	260833	RE	2014/03/14 * 12
MRENT-114	Spectrum Analyzer	Agilent	E4440A	MY46187105	RE	2013/11/11 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2014/08/12 * 12
MCC-141	Microwave Cable	Junkosha	MWX221	1305S002R(1m) / 1405S146(5m)	RE	2014/06/11 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2014/03/11 * 12
MHA-17	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170307	RE	2014/06/11 * 12
MHF-26	High Pass Filter 3.5-18.0GHz	UL Japan	HPF SELECTOR	002	RE	2013/09/01 * 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: RE: Radiated Emission  
AT: Antenna Terminal Conducted test**

**UL Japan, Inc.**

**Ise EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124