



RADIO TEST REPORT

Test Report No. : 10521972H-A

Applicant : MITSUBISHI ELECTRIC CORPORATION SANDA WORKS

Type of Equipment : Head Unit A-Entry

Model No. : NTG5HUE213


FCC ID : UJHNTG5HUE213

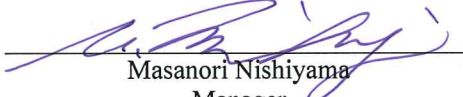
Test regulation : FCC Part 15 Subpart C: 2014

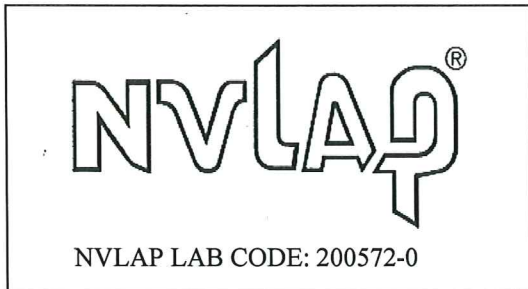
Test Result : Complied

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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.
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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)

Date of test: November 12 to 21, 2014

Representative test engineer: 
Yuta Moriya
Engineer
Consumer Technology Division

Approved by: 
Masanori Nishiyama
Manager
Consumer Technology Division



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REVISION HISTORY

Original Test Report No.: 10521972H-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	10521972H-A	December 9, 2014	-	-

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SECTION 1: Customer information

Company Name : MITSUBISHI ELECTRIC CORPORATION SANDA WORKS
Address : 2-3-33, Miwa, Sanda-city, Hyogo, 669-1513, Japan
Telephone Number : +81-79-559-3607
Facsimile Number : +81-79-559-3875
Contact Person : Yuji Funaba

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

2.1 Identification of E.U.T.

Type of Equipment : Head Unit A-Entry
Model No. : NTG5HUE213
Serial No. : Refer to Clause 4.2
Rating : DC 13.5V
Receipt Date of Sample : October 11, 2014
Country of Mass-production : Thailand
Condition of EUT : Engineering 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 : X'tal: 26MHz

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

Radio Type : Transceiver
Frequency of Operation : 2402-2480MHz
Modulation : FHSS
Power Supply (inner) : DC 3.3V
Antenna type : Dipole Pattern Antenna
Antenna connector type : PSE-LP2
Antenna Gain : Max2.32dBi

[GPS]

Radio Type : Receiver
Frequency of Operation : 1575.42MHz
Antenna type : External Antenna
Antenna Gain : 3dBi

* This test report applies for Bluetooth part.

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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

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(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		4.4dB 933.890MHz, QP, Vert.	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.

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FCC 15.31 (e)

The EUT is a battery-operated device and test was performed with the full-charged battery 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 vehicle. 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 report meets the limits unless the uncertainty is taken into consideration.

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3.5 Test Location

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	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.

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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)

Test Item	Mode	Tested frequency
Spurious Emission (Conducted/Radiated)	Tx (Hopping off) DH5, 3DH5	2402MHz 2441MHz 2480MHz
Carrier Frequency Separation 20dB Bandwidth	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 Inquiry	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. *EUT has the power settings by the software as follows; Power settings: 4dBm Software: E40.0 *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>		

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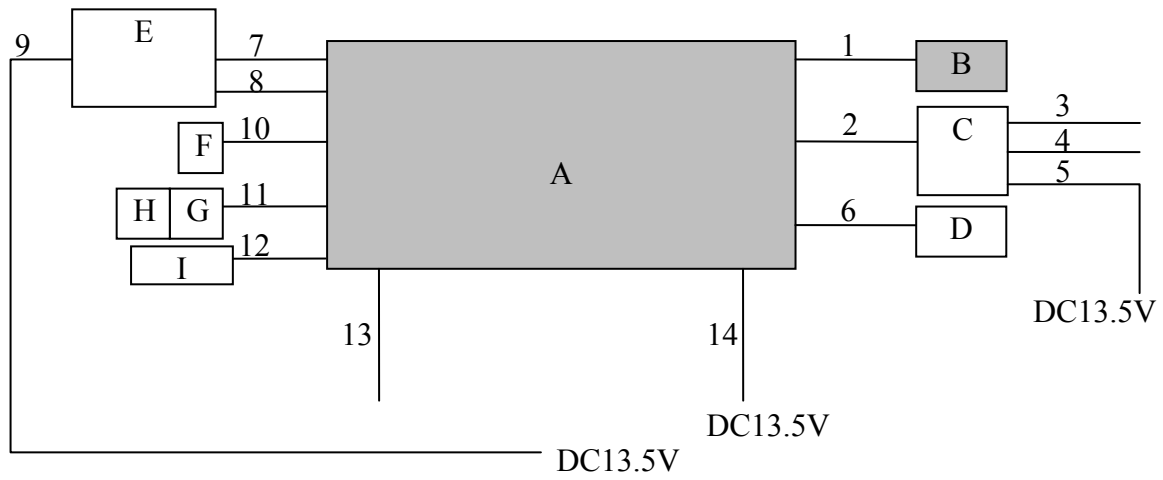
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4.2 Configuration and peripherals



* Cabling and setup(s) 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	Head Unit A-Entry	NTG5HUE213	3-2 for RE *1) 3-1 for AT *1)	mitsubishi electric corporation sanda works	EUT
B	Antenna	AG90	38	Wisi inc.	EUT
C	Controller	ZBEBR205	J10248	Mercedes-Benz	-
D	Dummy load	-	-	mitsubishi electric corporation sanda works	-
E	Display	DU-7DW6ZDE	A 213 900 65 01	Mercedes-Benz	-
F	GPS Antenna	LHC	No.8	mitsubishi electric corporation sanda works	-
G	USB Slot	-	-	mitsubishi electric corporation sanda works	-
H	USB Memory	RUF2-JV4GS-WH	120301	BUFFALO	-
I	AM/FM Antenna	-	-	mitsubishi electric corporation sanda works	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Antenna Cable	0.5	Shielded	Shielded	-
2	Controller Cable	2.2	Unshielded	Unshielded	-
3	Signal Cable	0.5	Unshielded	Unshielded	-
4	Signal Cable	0.5	Unshielded	Unshielded	-
5	DC Cable	1.5	Unshielded	Unshielded	-
6	Speaker Cable	1.1	Unshielded	Unshielded	-
7	Display Cable	2.0	Unshielded	Unshielded	-
8	LVDS Cable	1.0	Shielded	Shielded	-
9	DC Cable	1.5	Unshielded	Unshielded	-
10	GPS Cable	3.0	Shielded	Shielded	-
11	USB Cable	2.0	Shielded	Shielded	-
12	AM/FM Antenna Cable	6.3	Shielded	Shielded	-
13	Dummy Cable	2.1	Shielded	Shielded	-
14	DC Cable	1.5	Unshielded	Unshielded	-

*1) RE: Radiated Spurious Emission test, AT: Antenna Terminal Conducted test

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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 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 : 30M-26.5GHz

Test data : APPENDIX

Test result : Pass

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SECTION 6: Antenna Terminal Conducted Tests

Test Procedure

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

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used
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	3MHz, 5MHz	100kHz, 30kHz	300kHz, 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

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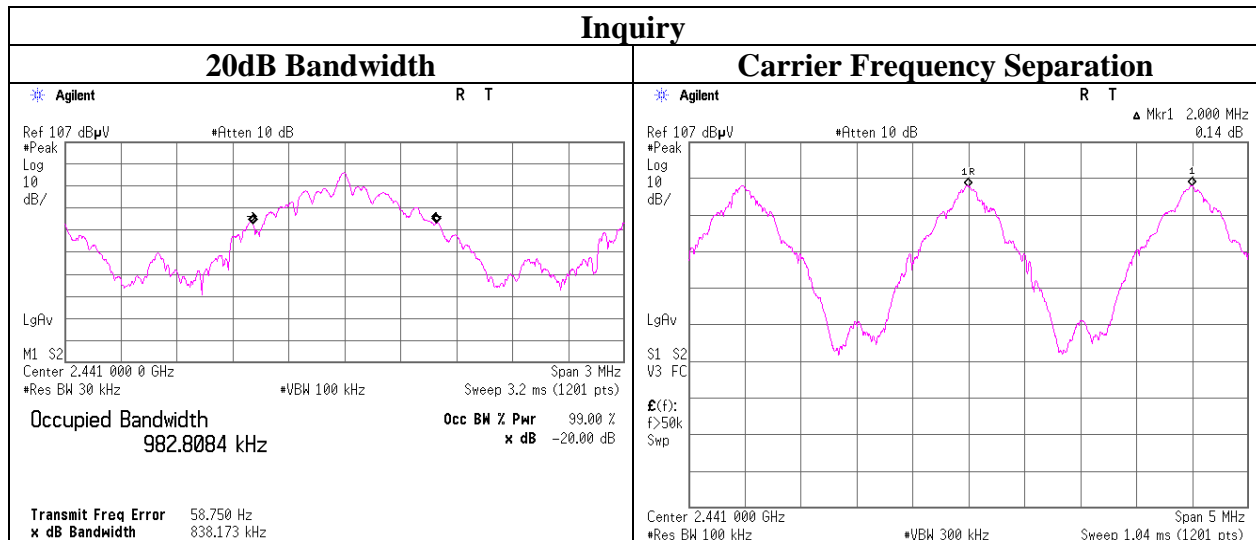
APPENDIX 1: Data of EMI test

20dB Bandwidth and Carrier Frequency Separation

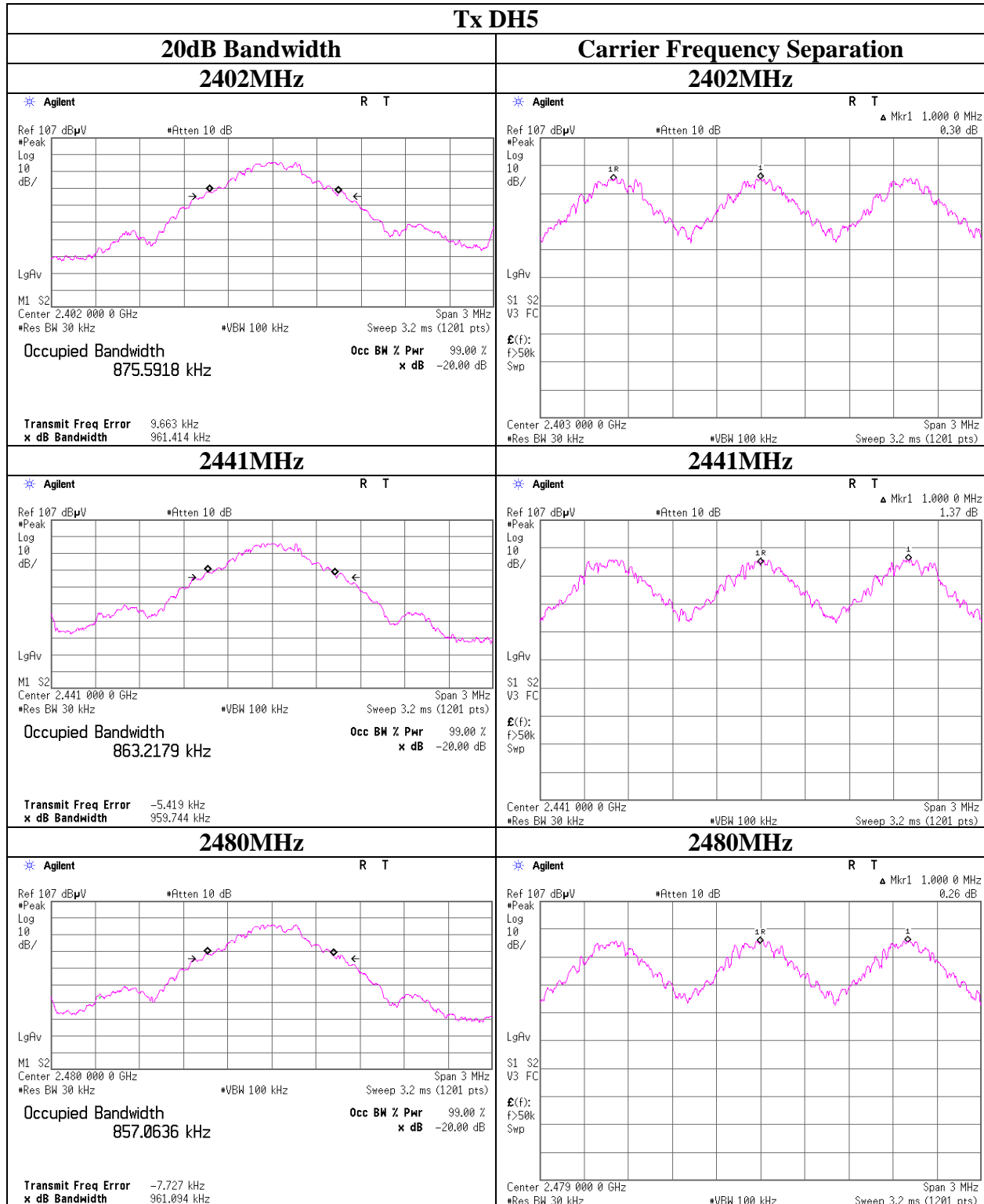
Test place Ise EMC Lab. No.11 Measurement Room
Report No. 10521972H
Date 11/13/2014
Temperature/ Humidity 25 deg. C/ 24% RH
Engineer Yuta Moriya
Mode Tx (Hopping on) DH5/3DH5/Inquiry

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.961	1.000	≧ 0.641
DH5	2441.0	0.960	1.000	≧ 0.640
DH5	2480.0	0.961	1.000	≧ 0.641
3DH5	2402.0	1.315	1.000	≧ 0.877
3DH5	2441.0	1.295	1.000	≧ 0.863
3DH5	2480.0	1.291	1.000	≧ 0.861
Inquiry	2441.0	0.838	2.000	≧ 0.559

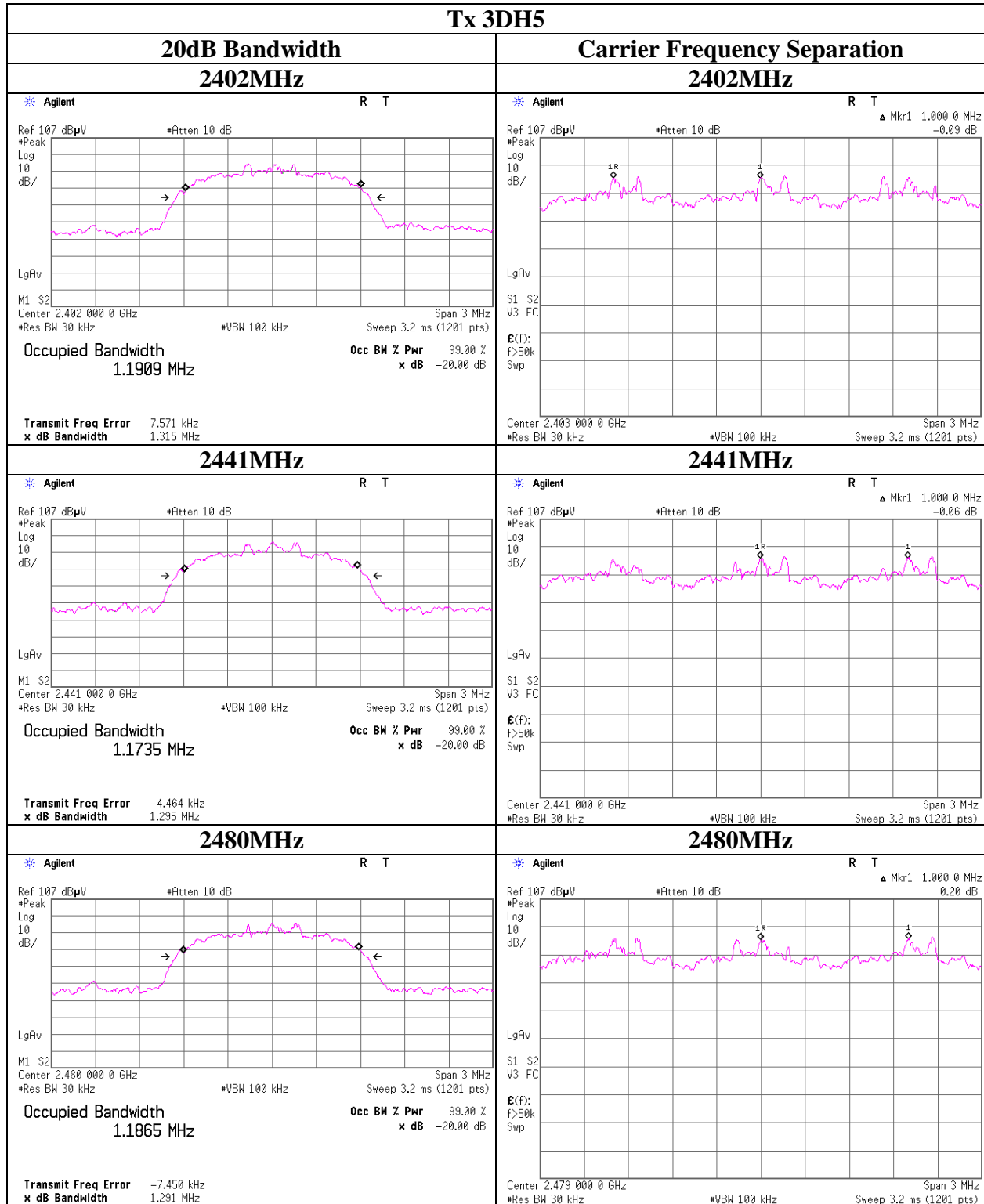
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is great)
No limit applies to 20dB Bandwidth.



20dB Bandwidth and Carrier Frequency Separation



20dB Bandwidth and Carrier Frequency Separation

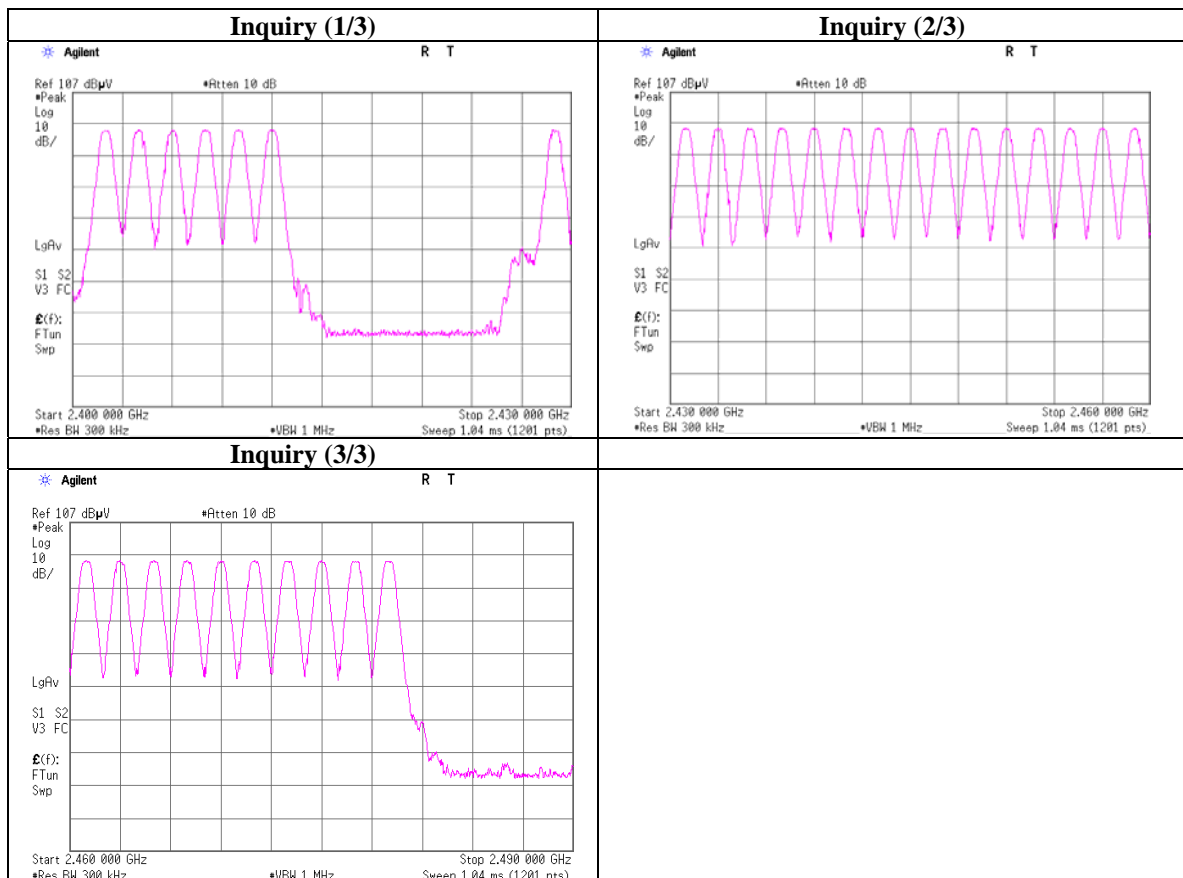


Number of Hopping Frequency

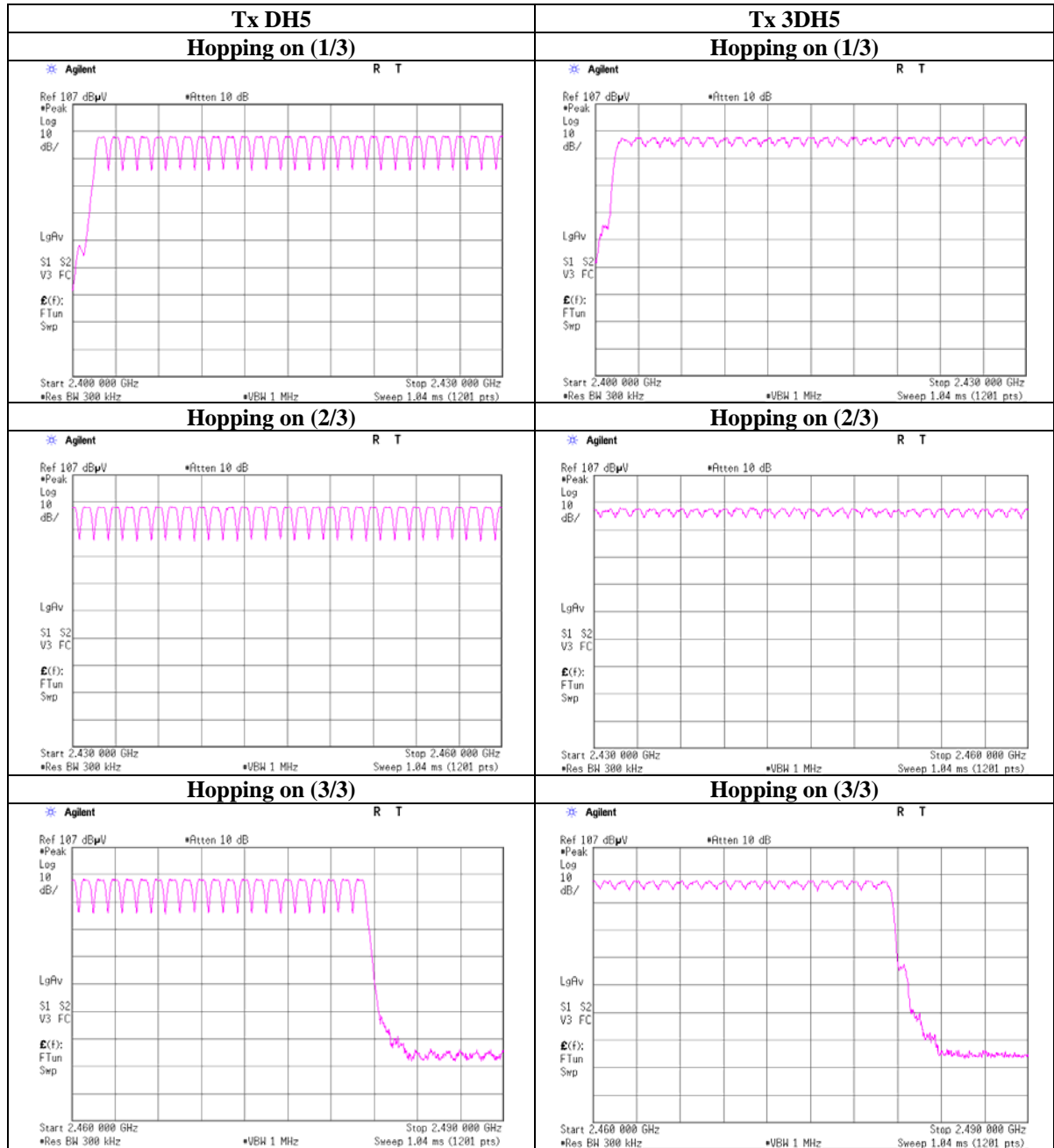
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

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



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Dwell time

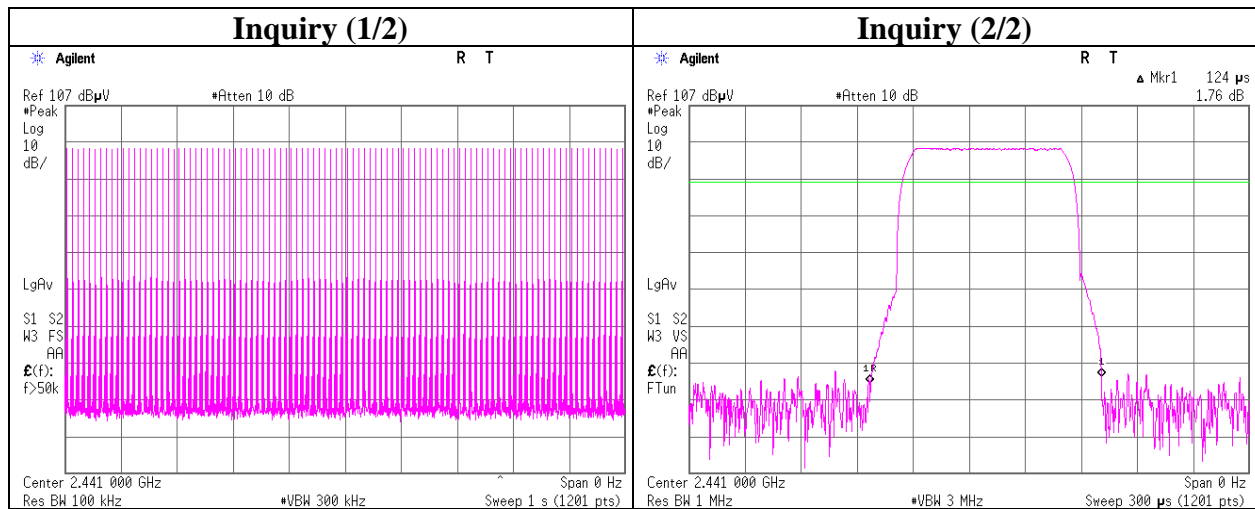
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

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	0.425	137	400
DH3	26.0 times / 5 sec. x 31.6 sec. = 165 times	1.684	278	400
DH5	17.0 times / 5 sec. x 31.6 sec. = 108 times	2.933	317	400
3DH1	51.0 times / 5 sec. x 31.6 sec. = 323 times	0.438	141	400
3DH3	26.0 times / 5 sec. x 31.6 sec. = 165 times	1.688	279	400
3DH5	17.0 times / 5 sec. x 31.6 sec. = 108 times	2.943	318	400
Inquiry	100.0 times / 1 sec. x 12.8 sec. = 1280 times	0.124	159	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 $N=79$.



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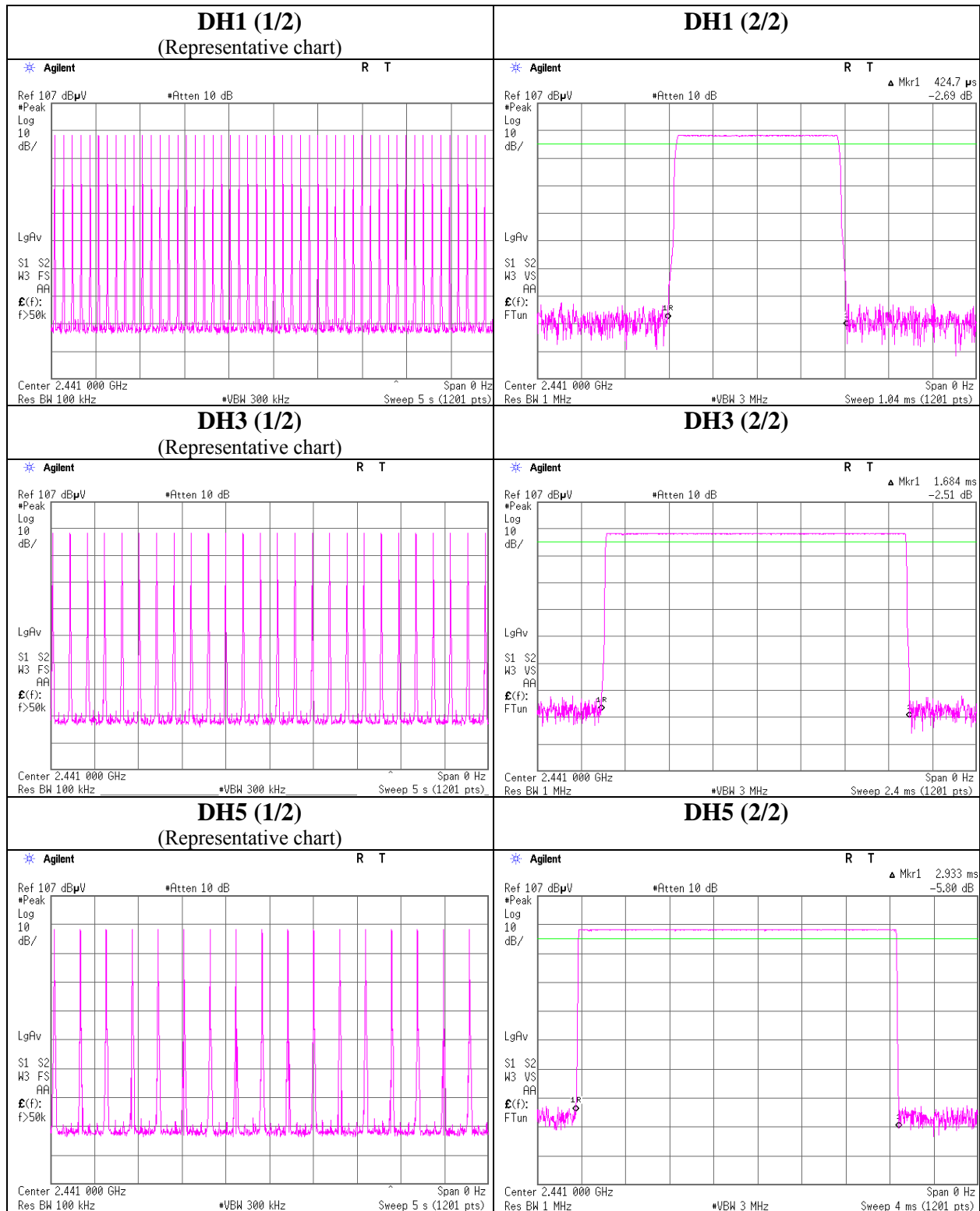
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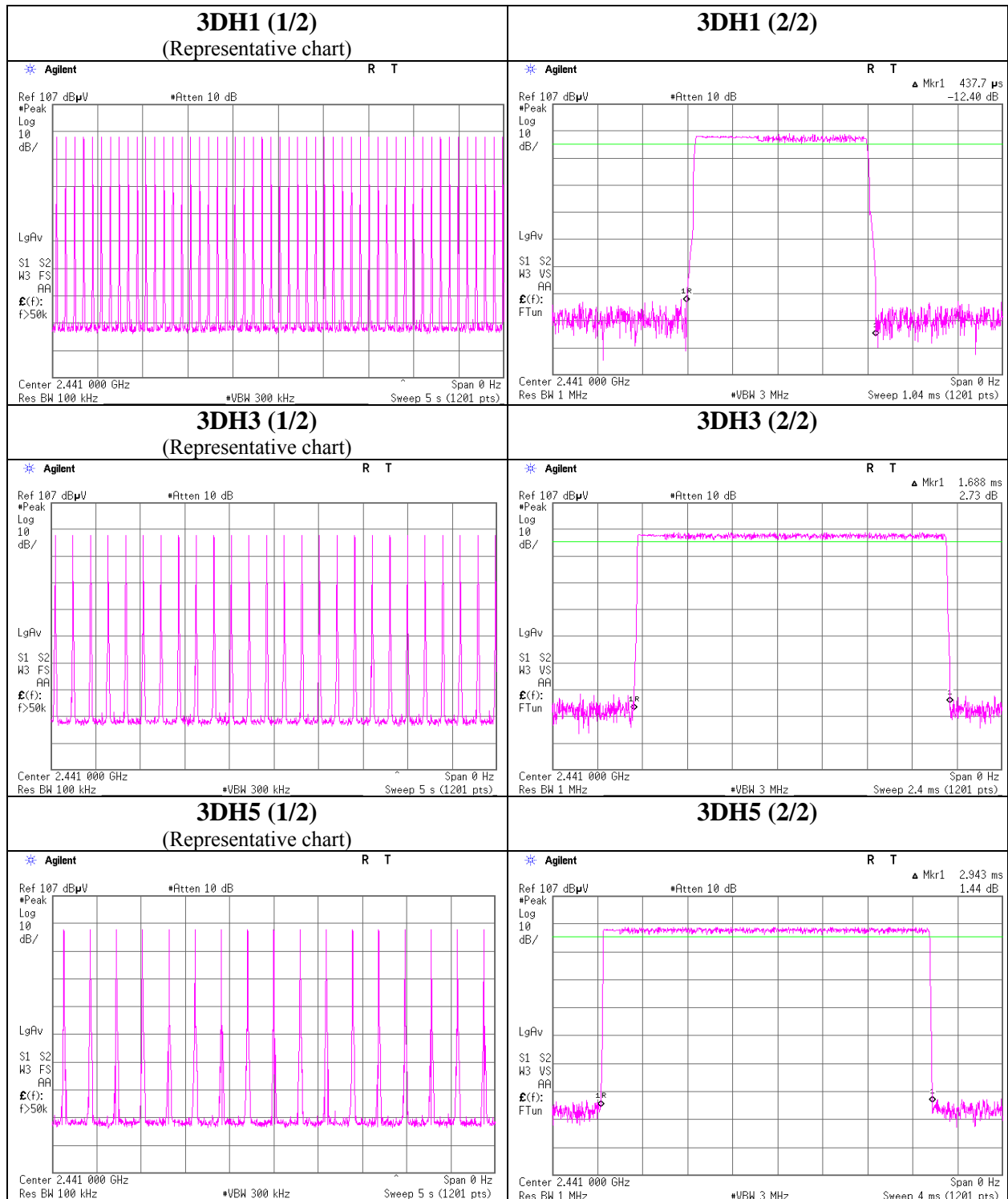
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Dwell time



Dwell time



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Maximum Peak Output Power

Test place : Ise EMC Lab. No.11 Measurement Room
Report No. : 10521972H
Date : 11/13/2014
Temperature/ Humidity : 25 deg. C/ 24% RH
Engineer : Yuta Moriya
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	-11.85	2.28	10.08	0.51	1.12	20.96	125	20.45
DH5	2441.0	-11.51	2.29	10.08	0.86	1.22	20.96	125	20.10
DH5	2480.0	-11.66	2.30	10.08	0.72	1.18	20.96	125	20.24
2DH5	2402.0	-11.35	2.28	10.08	1.01	1.26	20.96	125	19.95
2DH5	2441.0	-11.03	2.29	10.08	1.34	1.36	20.96	125	19.62
2DH5	2480.0	-11.25	2.30	10.08	1.13	1.30	20.96	125	19.83
3DH5	2402.0	-10.95	2.28	10.08	1.41	1.38	20.96	125	19.55
3DH5	2441.0	-10.65	2.29	10.08	1.72	1.49	20.96	125	19.24
3DH5	2480.0	-10.88	2.30	10.08	1.50	1.41	20.96	125	19.46
Inquiry	2441.0	-11.56	2.29	10.08	0.81	1.21	20.96	125	20.15

Sample Calculation:

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

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.

[DH5]

However, the limit level 125mW of AFH mode was used for the test.

[3DH5]

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.

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Average Output Power
(Reference data for SAR testing)

Test place Ise EMC Lab. No.11 Measurement Room
Report No. 10521972H
Date 11/13/2014
Temperature/ Humidity 25 deg. C/ 24% RH
Engineer Yuta Moriya
Mode Tx (Hopping off) DH5/2DH5/3DH5/Inquiry

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm]	[mW]
DH5	2402.0	-13.44	2.28	10.08	-1.08	0.78
DH5	2441.0	-13.02	2.29	10.08	-0.65	0.86
DH5	2480.0	-13.18	2.30	10.08	-0.80	0.83
2DH5	2402.0	-14.75	2.28	10.08	-2.39	0.58
2DH5	2441.0	-14.36	2.29	10.08	-1.99	0.63
2DH5	2480.0	-14.55	2.30	10.08	-2.17	0.61
3DH5	2402.0	-14.73	2.28	10.08	-2.37	0.58
3DH5	2441.0	-14.35	2.29	10.08	-1.98	0.63
3DH5	2480.0	-14.54	2.30	10.08	-2.16	0.61
Inquiry	2441.0	-20.51	2.29	10.08	-8.14	0.15

Sample Calculation:

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

Radiated Spurious Emission

Test place Ise EMC Lab. Semi Anechoic Chamber
Report No. 10521972H
Date 11/12/2014 11/21/2014
Test place No.3 No.2
Temperature/ Humidity 24 deg. C/ 42% RH 23 deg. C/ 41% RH
Engineer Satofumi Matsuyama Tsubasa Takayama
(Above 1GHz) (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	119.920	QP	36.4	12.9	7.6	28.2	28.7	43.5	14.8	
Hori	290.756	QP	28.9	19.2	8.7	27.4	29.4	46.0	16.6	
Hori	772.083	QP	31.9	21.6	10.7	27.8	36.4	46.0	9.6	
Hori	835.576	QP	32.8	22.1	10.9	27.5	38.3	46.0	7.7	
Hori	933.890	QP	33.9	22.9	11.2	27.1	40.9	46.0	5.1	
Hori	2390.000	PK	42.2	26.8	3.2	32.7	39.5	73.9	34.4	
Hori	4804.000	PK	42.6	30.6	5.2	31.8	46.6	73.9	27.3	
Hori	7206.000	PK	42.5	35.9	6.6	32.7	52.3	73.9	21.6	Floor Noise
Hori	9608.000	PK	43.4	38.4	7.0	33.3	55.5	73.9	18.4	Floor Noise
Hori	2390.000	AV	30.1	26.8	3.2	32.7	27.4	53.9	26.5	
Hori	4804.000	AV	31.5	30.6	5.2	31.8	35.5	53.9	18.4	
Hori	7206.000	AV	30.4	35.9	6.6	32.7	40.2	53.9	13.7	Floor Noise
Hori	9608.000	AV	31.0	38.4	7.0	33.3	43.1	53.9	10.8	Floor Noise
Vert	119.100	QP	35.8	12.8	7.6	28.2	28.0	43.5	15.5	
Vert	181.649	QP	29.1	16.4	8.0	27.9	25.6	43.5	17.9	
Vert	290.756	QP	28.0	19.2	8.7	27.4	28.5	46.0	17.5	
Vert	770.430	QP	32.1	21.5	10.7	27.8	36.5	46.0	9.5	
Vert	835.576	QP	32.7	22.1	10.9	27.5	38.2	46.0	7.8	
Vert	933.890	QP	34.2	22.9	11.2	27.1	41.2	46.0	4.8	
Vert	2390.000	PK	42.9	26.8	3.2	32.7	40.2	73.9	33.7	
Vert	4804.000	PK	40.8	30.6	5.2	31.8	44.8	73.9	29.1	Floor Noise
Vert	7206.000	PK	42.4	35.9	6.6	32.7	52.2	73.9	21.7	Floor Noise
Vert	9608.000	PK	42.8	38.4	7.0	33.3	54.9	73.9	19.0	Floor Noise
Vert	2390.000	AV	29.9	26.8	3.2	32.7	27.2	53.9	26.7	
Vert	4804.000	AV	28.9	30.6	5.2	31.8	32.9	53.9	21.0	Floor Noise
Vert	7206.000	AV	30.4	35.9	6.6	32.7	40.2	53.9	13.7	Floor Noise
Vert	9608.000	AV	31.0	38.4	7.0	33.3	43.1	53.9	10.8	Floor Noise

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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place : Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 10521972H
Date : 11/12/2014
Temperature/ Humidity : 24 deg. C/ 42% RH
Engineer : Satofumi Matsuyama
(Above 1GHz)
Mode : Tx, DH5 2402MHz

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	102.0	26.8	3.2	32.7	99.3	-	-	Carrier
Hori	2400.000	PK	50.8	26.8	3.2	32.7	48.1	79.3	31.2	
Vert	2402.000	PK	100.7	26.8	3.2	32.7	98.0	-	-	Carrier
Vert	2400.000	PK	49.7	26.8	3.2	32.7	47.0	78.0	31.0	

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

Radiated Spurious Emission

Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10521972H
Date 11/12/2014 11/21/2014
Temperature/ Humidity 24 deg. C/ 42% RH 23 deg. C/ 41% RH
Engineer Satofumi Matsuyama Masatoshi Nishiguchi
(Above 1GHz) (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	119.258	QP	33.9	12.8	7.6	28.2	26.1	43.5	17.4	
Hori	290.739	QP	34.0	19.2	8.7	27.4	34.5	46.0	11.5	
Hori	835.584	QP	30.9	22.1	10.9	27.5	36.4	46.0	9.6	
Hori	876.884	QP	29.8	22.4	11.0	27.3	35.9	46.0	10.1	
Hori	933.884	QP	33.1	22.9	11.2	27.1	40.1	46.0	5.9	
Hori	4882.000	PK	42.0	30.8	5.3	31.7	46.4	73.9	27.5	
Hori	7323.000	PK	41.7	35.9	6.5	32.7	51.4	73.9	22.5	Floor Noise
Hori	9764.000	PK	43.0	38.7	7.1	33.4	55.4	73.9	18.5	Floor Noise
Hori	4882.000	AV	30.9	30.8	5.3	31.7	35.3	53.9	18.6	
Hori	7323.000	AV	30.2	35.9	6.5	32.7	39.9	53.9	14.0	Floor Noise
Hori	9764.000	AV	30.2	38.7	7.1	33.4	42.6	53.9	11.3	Floor Noise
Vert	119.314	QP	35.3	12.8	7.6	28.2	27.5	43.5	16.0	
Vert	181.715	QP	29.4	16.4	8.0	27.9	25.9	43.5	17.6	
Vert	290.741	QP	28.7	19.2	8.7	27.4	29.2	46.0	16.8	
Vert	835.586	QP	31.8	22.1	10.9	27.5	37.3	46.0	8.7	
Vert	867.587	QP	28.8	22.3	11.0	27.3	34.8	46.0	11.2	
Vert	933.881	QP	31.6	22.9	11.2	27.1	38.6	46.0	7.4	
Vert	4882.000	PK	40.7	30.8	5.3	31.7	45.1	73.9	28.8	Floor Noise
Vert	7323.000	PK	42.7	35.9	6.5	32.7	52.4	73.9	21.5	Floor Noise
Vert	9764.000	PK	42.7	38.7	7.1	33.4	55.1	73.9	18.8	Floor Noise
Vert	4882.000	AV	28.7	30.8	5.3	31.7	33.1	53.9	20.8	Floor Noise
Vert	7323.000	AV	30.2	35.9	6.5	32.7	39.9	53.9	14.0	Floor Noise
Vert	9764.000	AV	30.2	38.7	7.1	33.4	42.6	53.9	11.3	Floor Noise

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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

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Radiated Spurious Emission

Test place	Ise EMC Lab. Semi Anechoic Chamber	
Report No.	10521972H	
Date	11/12/2014	11/21/2014
Test place	No.3	No.2
Temperature/ Humidity	24 deg. C/ 42% RH	23 deg. C/ 41% RH
Engineer	Satofumi Matsuyama (Above 1GHz)	Tsubasa Takayama (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	119.910	QP	36.8	12.9	7.6	28.2	29.1	43.5	14.4	
Hori	290.756	QP	29.1	19.2	8.7	27.4	29.6	46.0	16.4	
Hori	796.252	QP	32.0	21.9	10.8	27.7	37.0	46.0	9.0	
Hori	835.576	QP	32.9	22.1	10.9	27.5	38.4	46.0	7.6	
Hori	933.890	QP	33.7	22.9	11.2	27.1	40.7	46.0	5.3	
Hori	2483.500	PK	46.0	26.9	3.2	32.7	43.4	73.9	30.5	
Hori	4960.000	PK	41.8	30.9	5.2	31.7	46.2	73.9	27.7	
Hori	7440.000	PK	42.2	35.9	6.6	32.7	52.0	73.9	21.9	Floor Noise
Hori	9920.000	PK	42.1	38.9	7.1	33.5	54.6	73.9	19.3	Floor Noise
Hori	2483.500	AV	33.0	26.9	3.2	32.7	30.4	53.9	23.5	
Hori	4960.000	AV	30.3	30.9	5.2	31.7	34.7	53.9	19.2	
Hori	7440.000	AV	30.6	35.9	6.6	32.7	40.4	53.9	13.5	Floor Noise
Hori	9920.000	AV	30.6	38.9	7.1	33.5	43.1	53.9	10.8	Floor Noise
Vert	119.822	QP	35.6	12.8	7.6	28.2	27.8	43.5	15.7	
Vert	181.649	QP	29.4	16.4	8.0	27.9	25.9	43.5	17.6	
Vert	290.756	QP	28.1	19.2	8.7	27.4	28.6	46.0	17.4	
Vert	835.576	QP	32.4	22.1	10.9	27.5	37.9	46.0	8.1	
Vert	868.752	QP	32.4	22.3	11.0	27.3	38.4	46.0	7.6	
Vert	933.890	QP	34.4	22.9	11.2	27.1	41.4	46.0	4.6	
Vert	2483.500	PK	45.0	26.9	3.2	32.7	42.4	73.9	31.5	
Vert	4960.000	PK	40.8	30.9	5.2	31.7	45.2	73.9	28.7	Floor Noise
Vert	7440.000	PK	41.9	35.9	6.6	32.7	51.7	73.9	22.2	Floor Noise
Vert	9920.000	PK	41.8	38.9	7.1	33.5	54.3	73.9	19.6	Floor Noise
Vert	2483.500	AV	32.3	26.9	3.2	32.7	29.7	53.9	24.2	
Vert	4960.000	AV	29.4	30.9	5.2	31.7	33.8	53.9	20.1	Floor Noise
Vert	7440.000	AV	30.6	35.9	6.6	32.7	40.4	53.9	13.5	Floor Noise
Vert	9920.000	AV	30.6	38.9	7.1	33.5	43.1	53.9	10.8	Floor Noise

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
 26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place Ise EMC Lab. Semi Anechoic Chamber
Report No. 10521972H
Date 11/12/2014 11/21/2014
Test Place No.2 No.2
Temperature/ Humidity 24 deg. C/ 42% RH 23 deg. C/ 41% RH
Engineer Satofumi Matsuyama Tsubasa Takayama
(Above 1GHz) (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	119.922	QP	36.0	12.9	7.6	28.2	28.3	43.5	15.2	
Hori	290.756	QP	30.2	19.2	8.7	27.4	30.7	46.0	15.3	
Hori	835.576	QP	32.0	22.1	10.9	27.5	37.5	46.0	8.5	
Hori	876.466	QP	32.1	22.4	11.0	27.3	38.2	46.0	7.8	
Hori	933.890	QP	33.5	22.9	11.2	27.1	40.5	46.0	5.5	
Hori	2390.000	PK	43.7	26.8	3.2	32.7	41.0	73.9	32.9	
Hori	4804.000	PK	42.2	30.6	5.2	31.8	46.2	73.9	27.7	
Hori	7206.000	PK	42.4	35.9	6.6	32.7	52.2	73.9	21.7	Floor Noise
Hori	9608.000	PK	42.1	38.4	7.0	33.3	54.2	73.9	19.7	Floor Noise
Hori	2390.000	AV	30.2	26.8	3.2	32.7	27.5	53.9	26.4	
Hori	4804.000	AV	30.9	30.6	5.2	31.8	34.9	53.9	19.0	
Hori	7206.000	AV	31.1	35.9	6.6	32.7	40.9	53.9	13.0	Floor Noise
Hori	9608.000	AV	31.2	38.4	7.0	33.3	43.3	53.9	10.6	Floor Noise
Vert	120.928	QP	35.4	12.9	7.6	28.2	27.7	43.5	15.8	
Vert	181.649	QP	29.3	16.4	8.0	27.9	25.8	43.5	17.7	
Vert	290.756	QP	28.0	19.2	8.7	27.4	28.5	46.0	17.5	
Vert	835.576	QP	32.1	22.1	10.9	27.5	37.6	46.0	8.4	
Vert	868.752	QP	32.4	22.3	11.0	27.3	38.4	46.0	7.6	
Vert	933.890	QP	34.6	22.9	11.2	27.1	41.6	46.0	4.4	
Vert	2390.000	PK	42.6	26.8	3.2	32.7	39.9	73.9	34.0	
Vert	4804.000	PK	41.0	30.6	5.2	31.8	45.0	73.9	28.9	Floor Noise
Vert	7206.000	PK	41.7	35.9	6.6	32.7	51.5	73.9	22.4	Floor Noise
Vert	9608.000	PK	42.2	38.4	7.0	33.3	54.3	73.9	19.6	Floor Noise
Vert	2390.000	AV	30.2	26.8	3.2	32.7	27.5	53.9	26.4	
Vert	4804.000	AV	29.3	30.6	5.2	31.8	33.3	53.9	20.6	Floor Noise
Vert	7206.000	AV	31.1	35.9	6.6	32.7	40.9	53.9	13.0	Floor Noise
Vert	9608.000	AV	31.2	38.4	7.0	33.3	43.3	53.9	10.6	Floor Noise

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 $20\log(3.0m/1.0m)=9.5dB$
26.5GHz-40GHz $20\log(3.0m/0.5m)=15.6dB$

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Radiated Spurious Emission

Test place : Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 10521972H
Date : 11/12/2014
Temperature/ Humidity : 24 deg. C/ 42% RH
Engineer : Satofumi Matsuyama
(Above 1GHz)
Mode : Tx, 3DH5 2402MHz

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	102.9	26.8	3.2	32.7	100.2	-	-	Carrier
Hori	2400.000	PK	53.5	26.8	3.2	32.7	50.8	80.2	29.4	
Vert	2402.000	PK	101.7	26.8	3.2	32.7	99.0	-	-	Carrier
Vert	2400.000	PK	52.2	26.8	3.2	32.7	49.5	79.0	29.5	

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

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Radiated Spurious Emission

Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10521972H
Date 11/12/2014 11/21/2014
Temperature/ Humidity 24 deg. C/ 42% RH 23 deg. C/ 41% RH
Engineer Satofumi Matsuyama Masatoshi Nishiguchi
(Above 1GHz) (Below 1GHz)
Mode 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	119.640	QP	33.7	12.8	7.6	28.2	25.9	43.5	17.6	
Hori	290.736	QP	35.2	19.2	8.7	27.4	35.7	46.0	10.3	
Hori	835.572	QP	32.5	22.1	10.9	27.5	38.0	46.0	8.0	
Hori	876.888	QP	29.7	22.4	11.0	27.3	35.8	46.0	10.2	
Hori	933.878	QP	32.5	22.9	11.2	27.1	39.5	46.0	6.5	
Hori	4882.000	PK	41.8	30.8	5.3	31.7	46.2	73.9	27.7	
Hori	7323.000	PK	42.8	35.9	6.5	32.7	52.5	73.9	21.4	Floor Noise
Hori	9764.000	PK	42.3	38.7	7.1	33.4	54.7	73.9	19.2	Floor Noise
Hori	4882.000	AV	30.5	30.8	5.3	31.7	34.9	53.9	19.0	
Hori	7323.000	AV	30.6	35.9	6.5	32.7	40.3	53.9	13.6	Floor Noise
Hori	9764.000	AV	30.7	38.7	7.1	33.4	43.1	53.9	10.8	Floor Noise
Vert	120.260	QP	34.8	12.9	7.6	28.2	27.1	43.5	16.4	
Vert	181.649	QP	29.4	16.4	8.0	27.9	25.9	43.5	17.6	
Vert	290.756	QP	29.3	19.2	8.7	27.4	29.8	46.0	16.2	
Vert	835.581	QP	32.0	22.1	10.9	27.5	37.5	46.0	8.5	
Vert	867.586	QP	30.5	22.3	11.0	27.3	36.5	46.0	9.5	
Vert	933.880	QP	31.5	22.9	11.2	27.1	38.5	46.0	7.5	
Vert	4882.000	PK	40.1	30.8	5.3	31.7	44.5	73.9	29.4	Floor Noise
Vert	7323.000	PK	41.3	35.9	6.5	32.7	51.0	73.9	22.9	Floor Noise
Vert	9764.000	PK	42.6	38.7	7.1	33.4	55.0	73.9	18.9	Floor Noise
Vert	4882.000	AV	29.1	30.8	5.3	31.7	33.5	53.9	20.4	Floor Noise
Vert	7323.000	AV	30.6	35.9	6.5	32.7	40.3	53.9	13.6	Floor Noise
Vert	9764.000	AV	30.7	38.7	7.1	33.4	43.1	53.9	10.8	Floor Noise

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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

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Radiated Spurious Emission

Test place	Ise EMC Lab. Semi Anechoic Chamber		
Report No.	10521972H		
Date	11/12/2014	11/21/2014	
Test Place	No.3	No.2	
Temperature/ Humidity	24 deg.C/ 42% RH	23 deg.C/ 41% RH	
Engineer	Satofumi Matsuyama	Tsubasa Takayama	
	(Above 1GHz)	(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	119.910	QP	36.2	12.9	7.6	28.2	28.5	43.5	15.0	
Hori	290.756	QP	29.9	19.2	8.7	27.4	30.4	46.0	15.6	
Hori	835.576	QP	31.9	22.1	10.9	27.5	37.4	46.0	8.6	
Hori	876.466	QP	32.2	22.4	11.0	27.3	38.3	46.0	7.7	
Hori	933.890	QP	33.6	22.9	11.2	27.1	40.6	46.0	5.4	
Hori	2483.500	PK	52.4	26.9	3.2	32.7	49.8	73.9	24.1	
Hori	4960.000	PK	42.3	30.9	5.2	31.7	46.7	73.9	27.2	
Hori	7440.000	PK	41.4	35.9	6.6	32.7	51.2	73.9	22.7	Floor Noise
Hori	9920.000	PK	41.7	38.9	7.1	33.5	54.2	73.9	19.7	Floor Noise
Hori	2483.500	AV	36.5	26.9	3.2	32.7	33.9	53.9	20.0	
Hori	4960.000	AV	30.8	30.9	5.2	31.7	35.2	53.9	18.7	
Hori	7440.000	AV	29.9	35.9	6.6	32.7	39.7	53.9	14.2	Floor Noise
Hori	9920.000	AV	30.0	38.9	7.1	33.5	42.5	53.9	11.4	Floor Noise
Vert	119.272	QP	35.3	12.8	7.6	28.2	27.5	43.5	16.0	
Vert	181.649	QP	29.4	16.4	8.0	27.9	25.9	43.5	17.6	
Vert	290.756	QP	28.1	19.2	8.7	27.4	28.6	46.0	17.4	
Vert	835.576	QP	32.1	22.1	10.9	27.5	37.6	46.0	8.4	
Vert	868.752	QP	32.5	22.3	11.0	27.3	38.5	46.0	7.5	
Vert	933.890	QP	34.2	22.9	11.2	27.1	41.2	46.0	4.8	
Vert	2483.500	PK	50.3	26.9	3.2	32.7	47.7	73.9	26.2	
Vert	4960.000	PK	41.1	30.9	5.2	31.7	45.5	73.9	28.4	Floor Noise
Vert	7440.000	PK	42.3	35.9	6.6	32.7	52.1	73.9	21.8	Floor Noise
Vert	9920.000	PK	43.6	38.9	7.1	33.5	56.1	73.9	17.8	Floor Noise
Vert	2483.500	AV	35.1	26.9	3.2	32.7	32.5	53.9	21.4	
Vert	4960.000	AV	28.8	30.9	5.2	31.7	33.2	53.9	20.7	Floor Noise
Vert	7440.000	AV	29.9	35.9	6.6	32.7	39.7	53.9	14.2	Floor Noise
Vert	9920.000	AV	30.0	38.9	7.1	33.5	42.5	53.9	11.4	Floor Noise

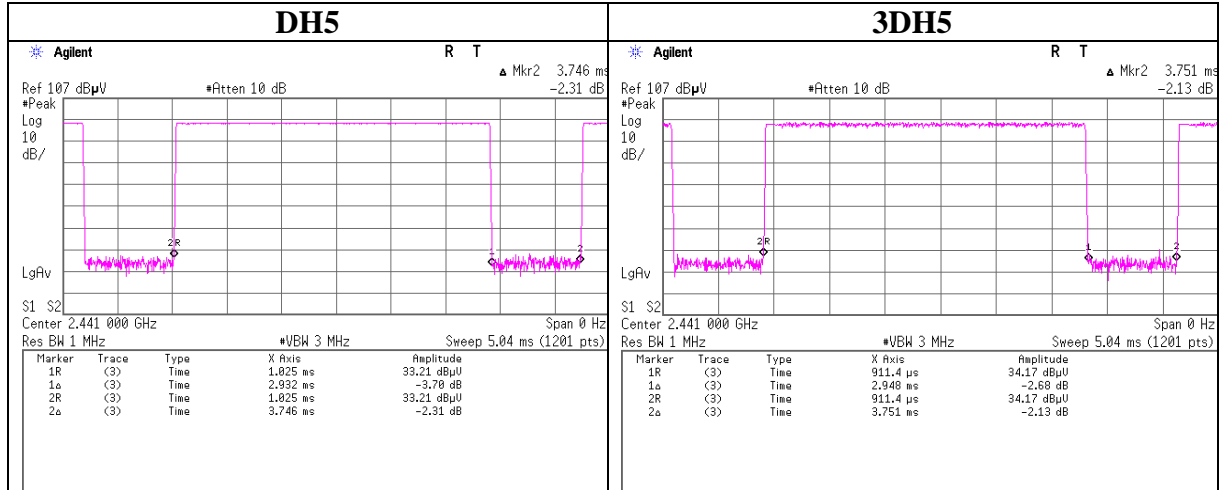
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

*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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Burst Rate Confirmation

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping off) DH5/3DH5



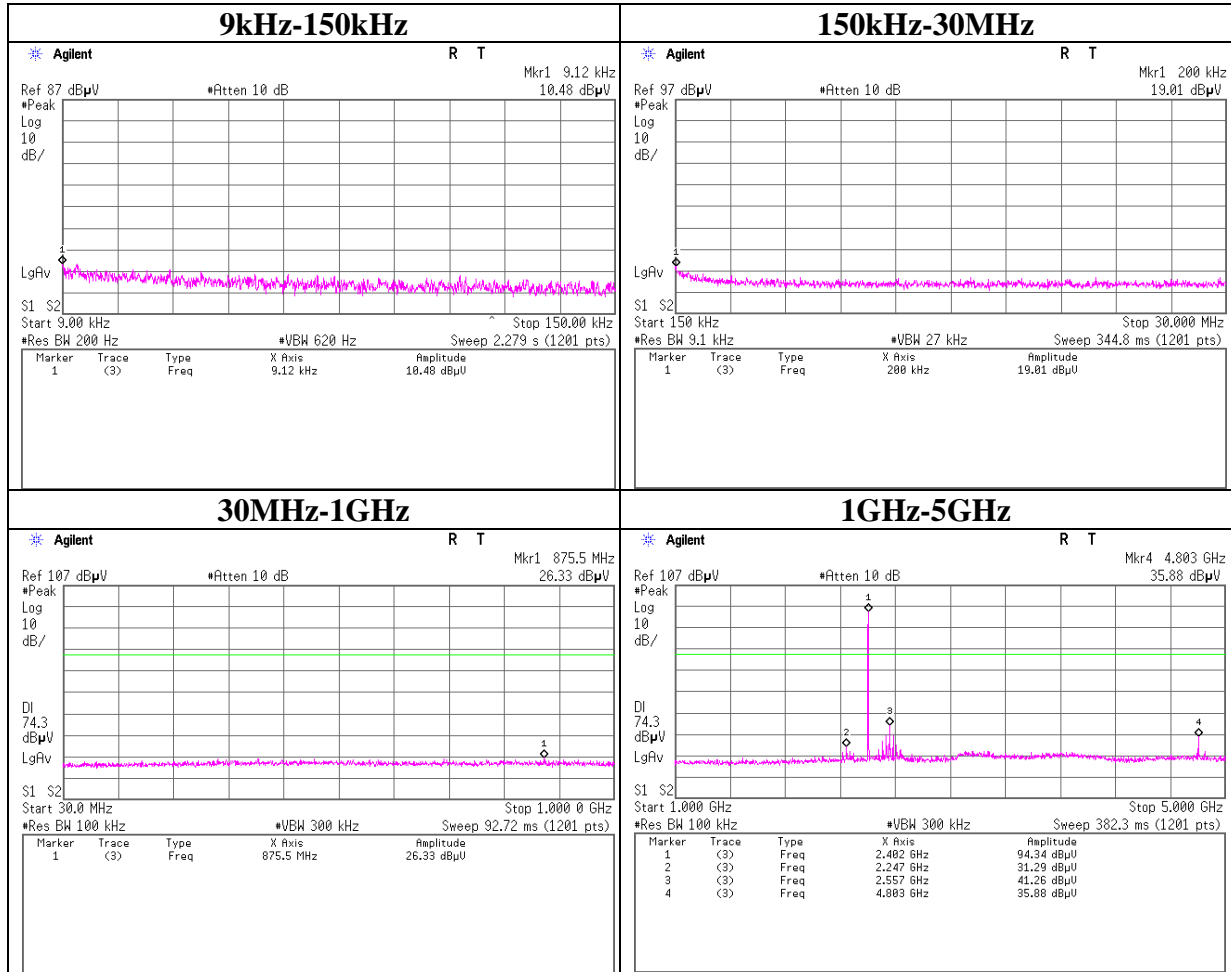
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 Facsimile : +81 596 24 8124

Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping off) DH5

Tx DH5 2402MHz



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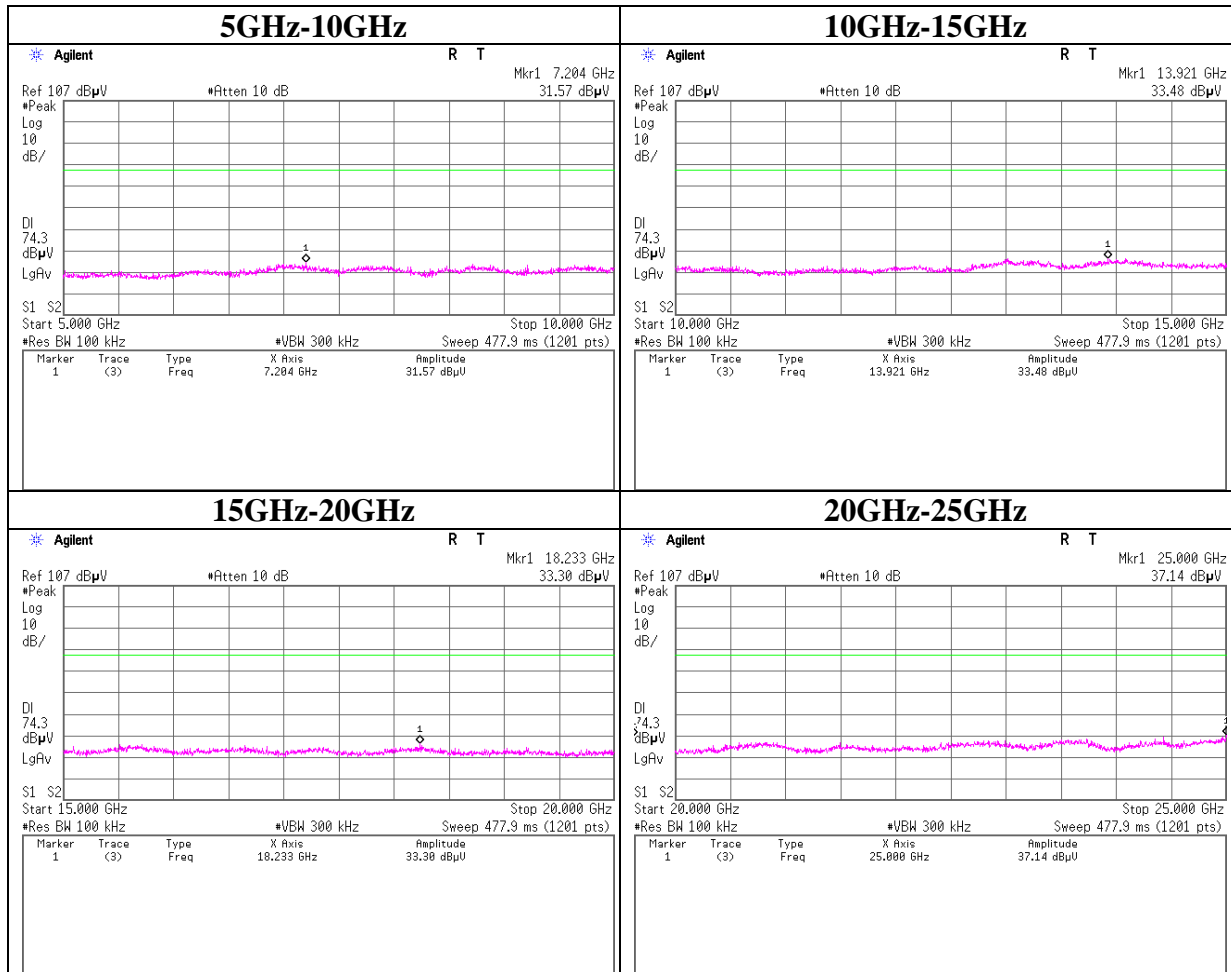
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping off) DH5

Tx DH5 2402MHz



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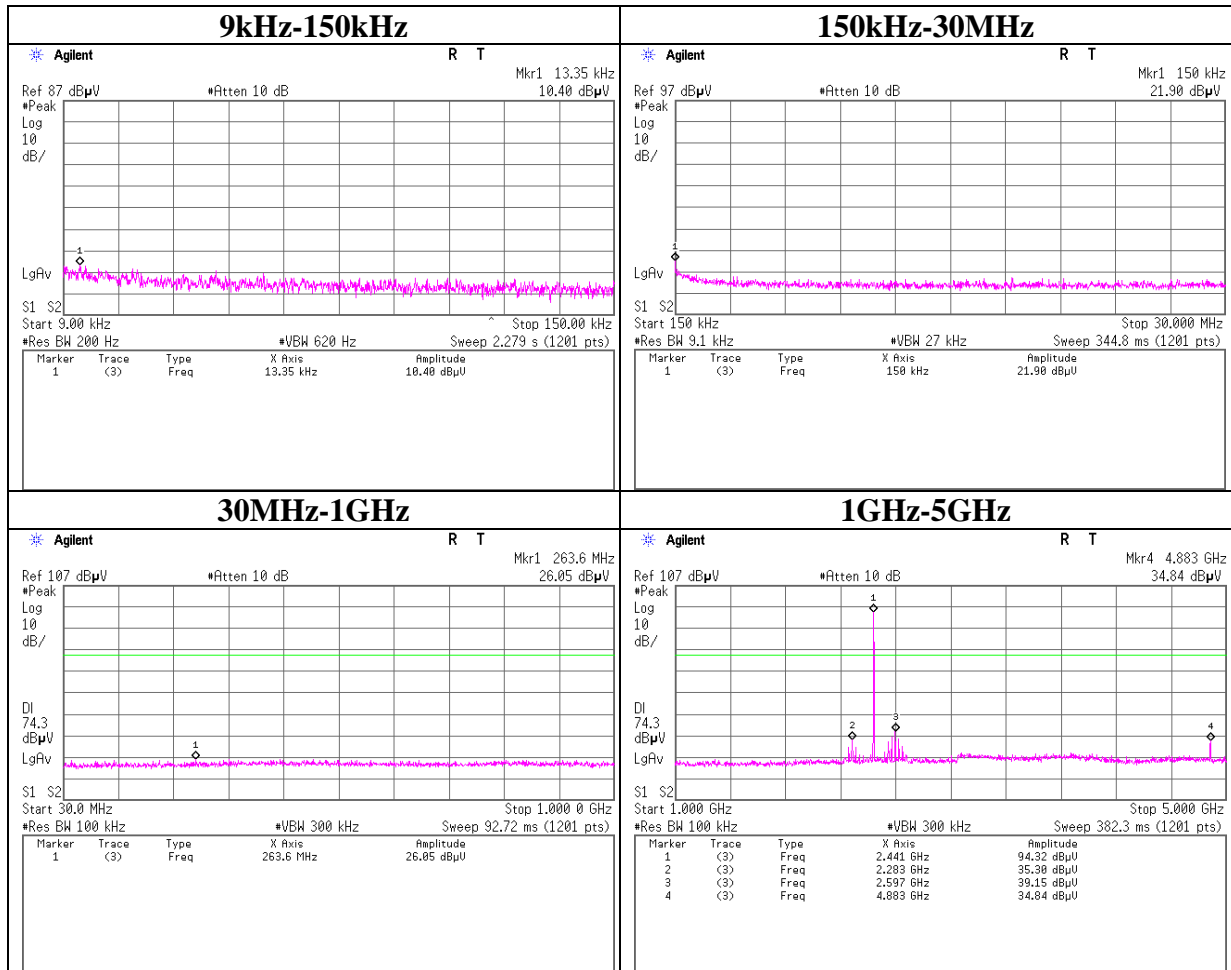
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping off) DH5

Tx DH5 2441MHz



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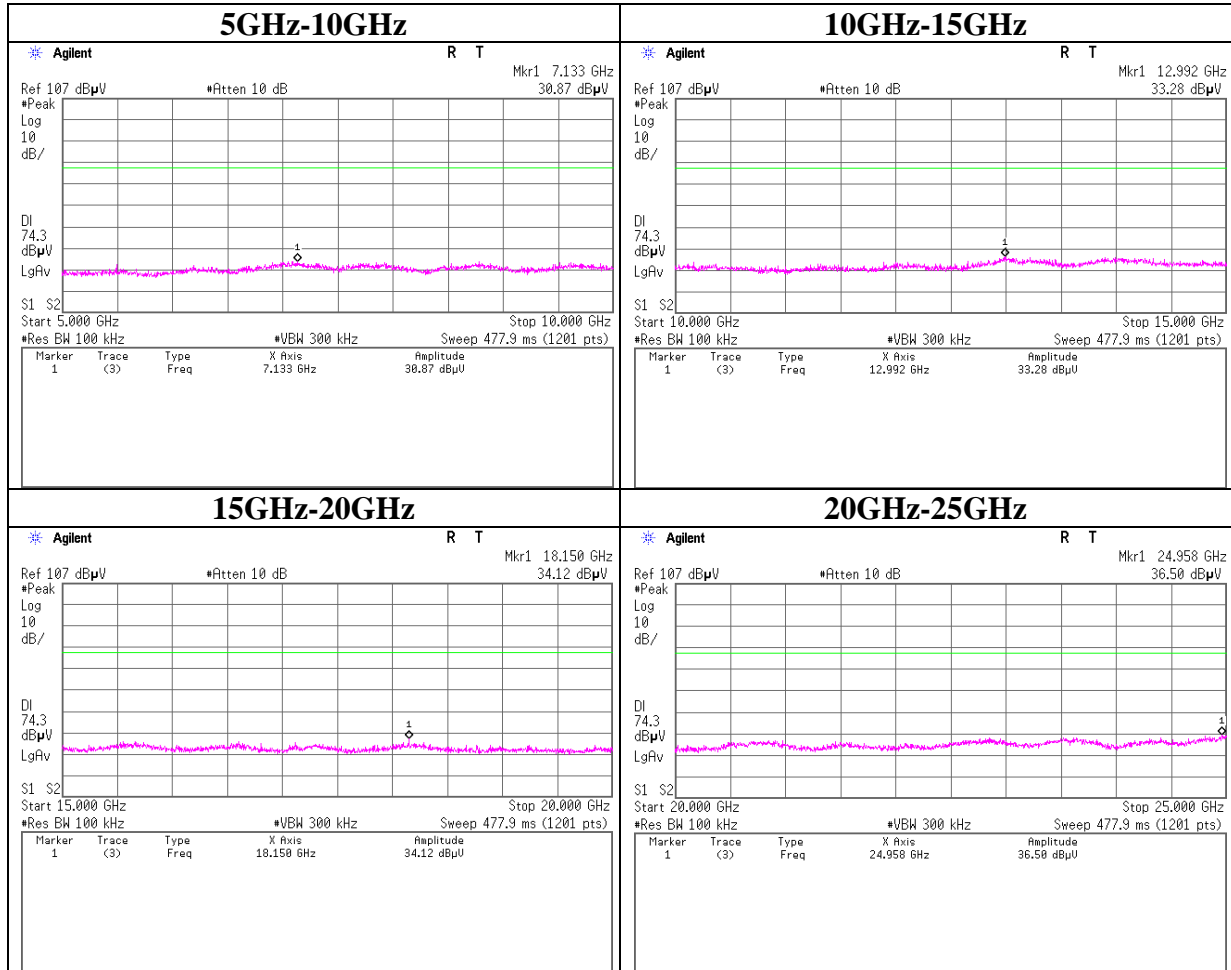
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping off) DH5

Tx DH5 2441MHz



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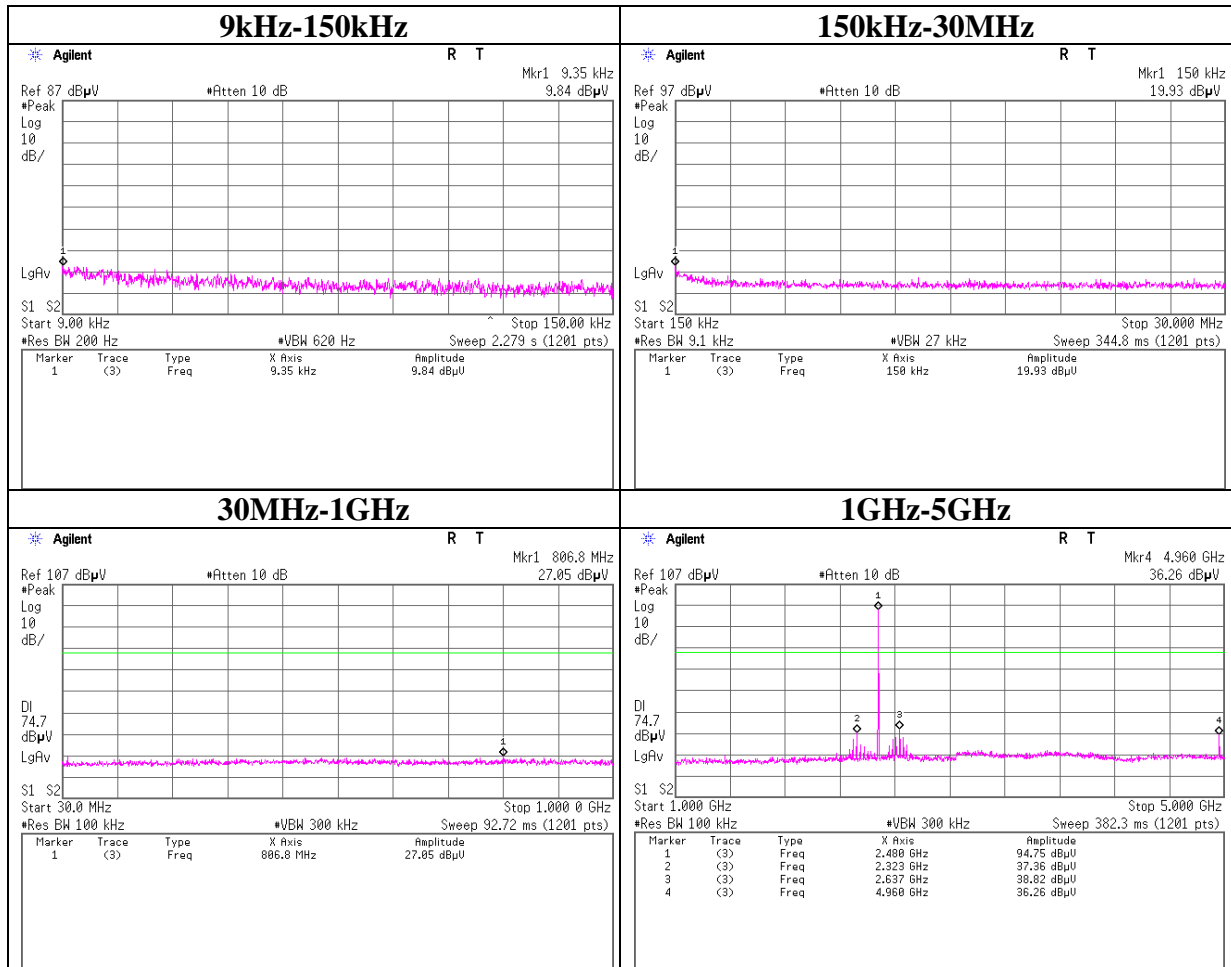
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping off) DH5

Tx DH5 2480MHz



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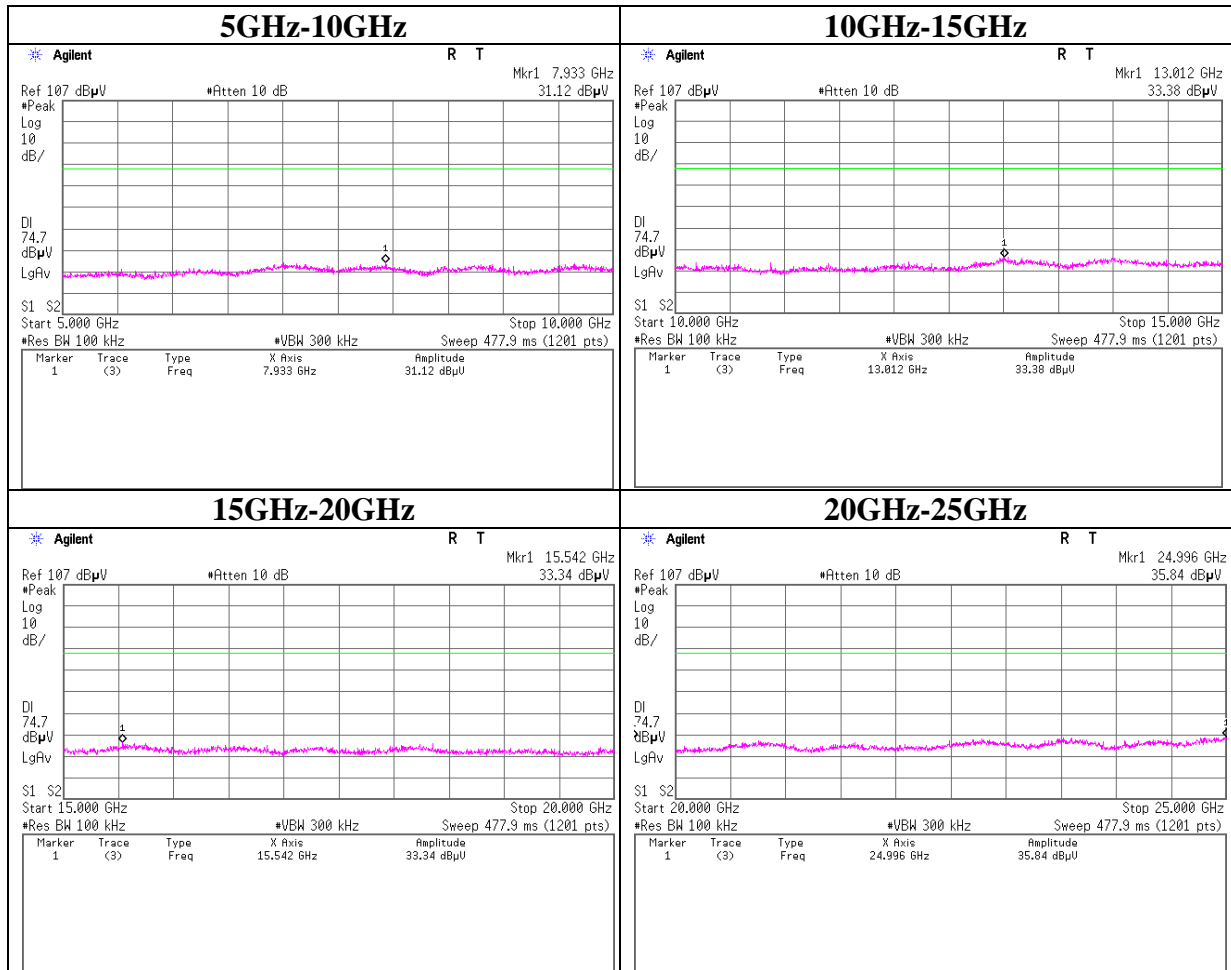
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping off) DH5

Tx DH5 2480MHz



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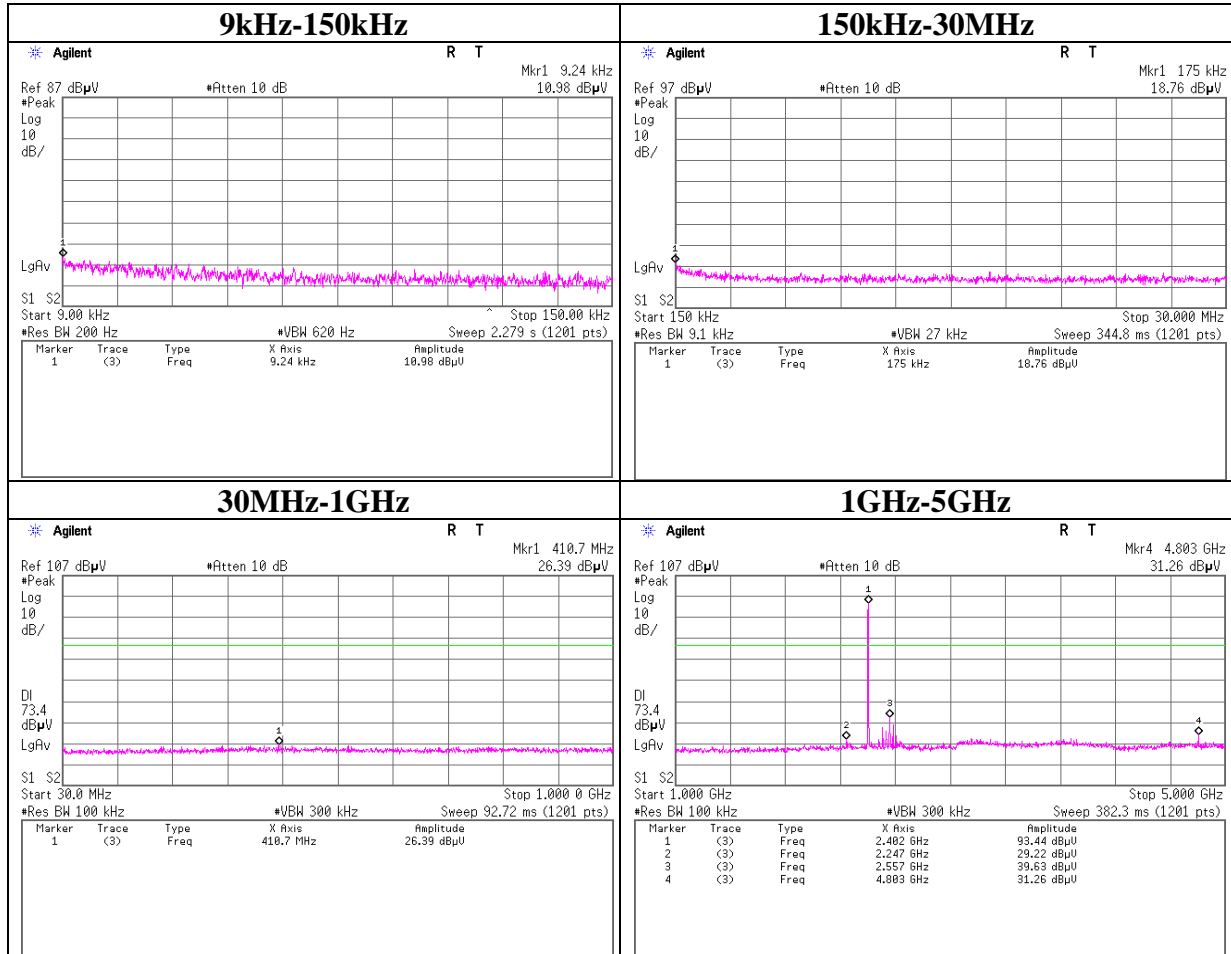
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping off) 3DH5

Tx 3DH5 2402MHz



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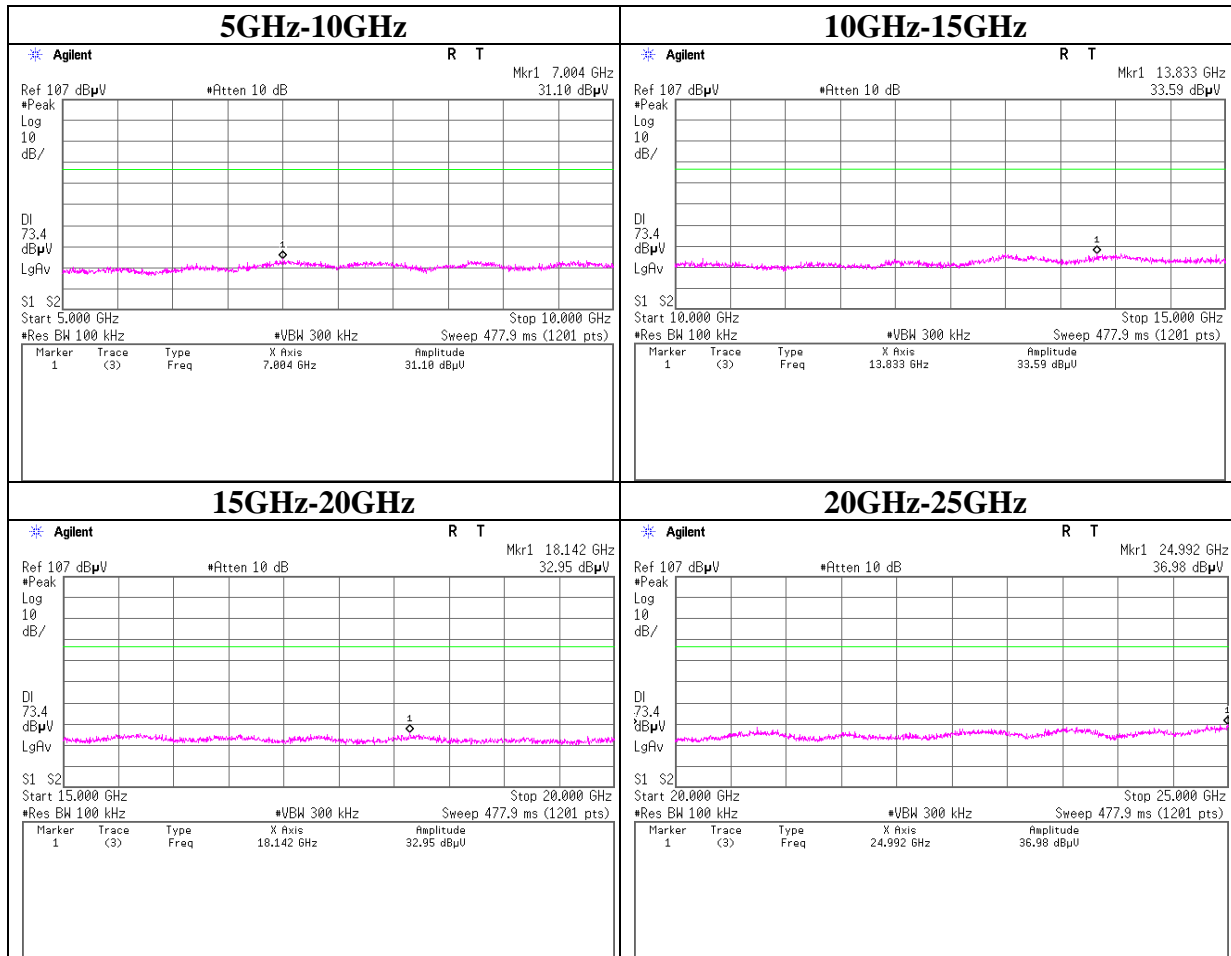
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping off) 3DH5

Tx 3DH5 2402MHz



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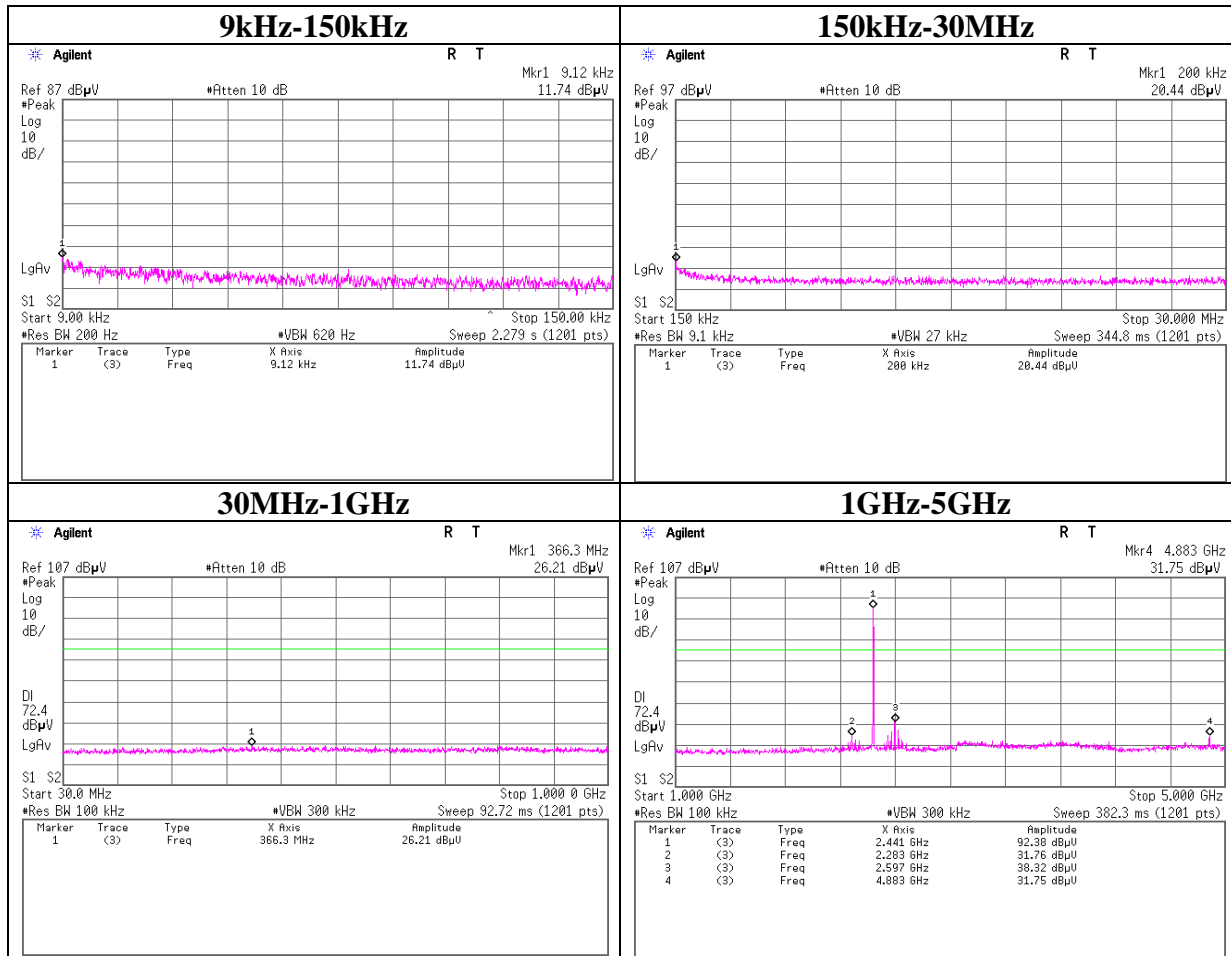
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping off) 3DH5

Tx 3DH5 2441MHz



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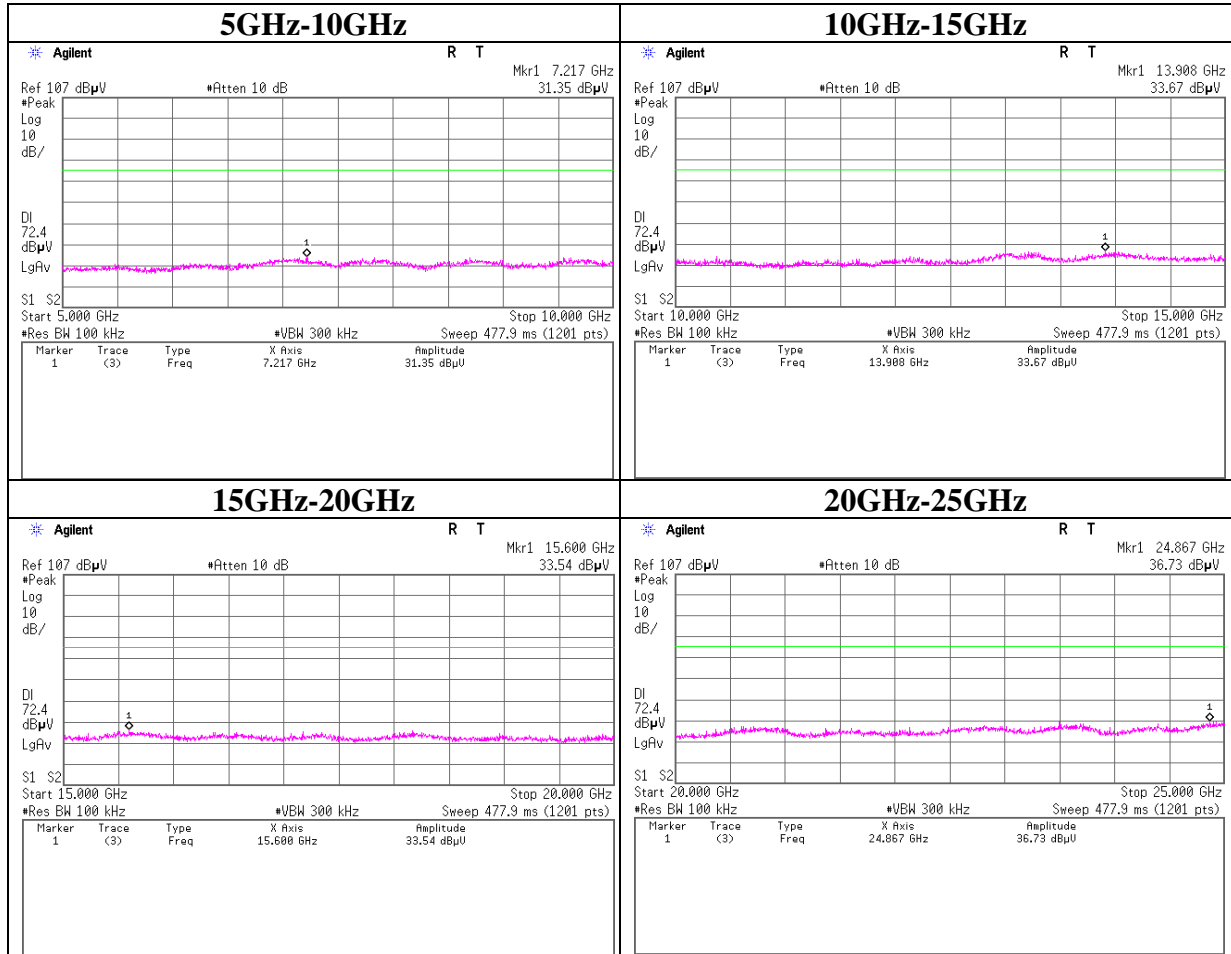
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping off) 3DH5

Tx 3DH5 2441MHz



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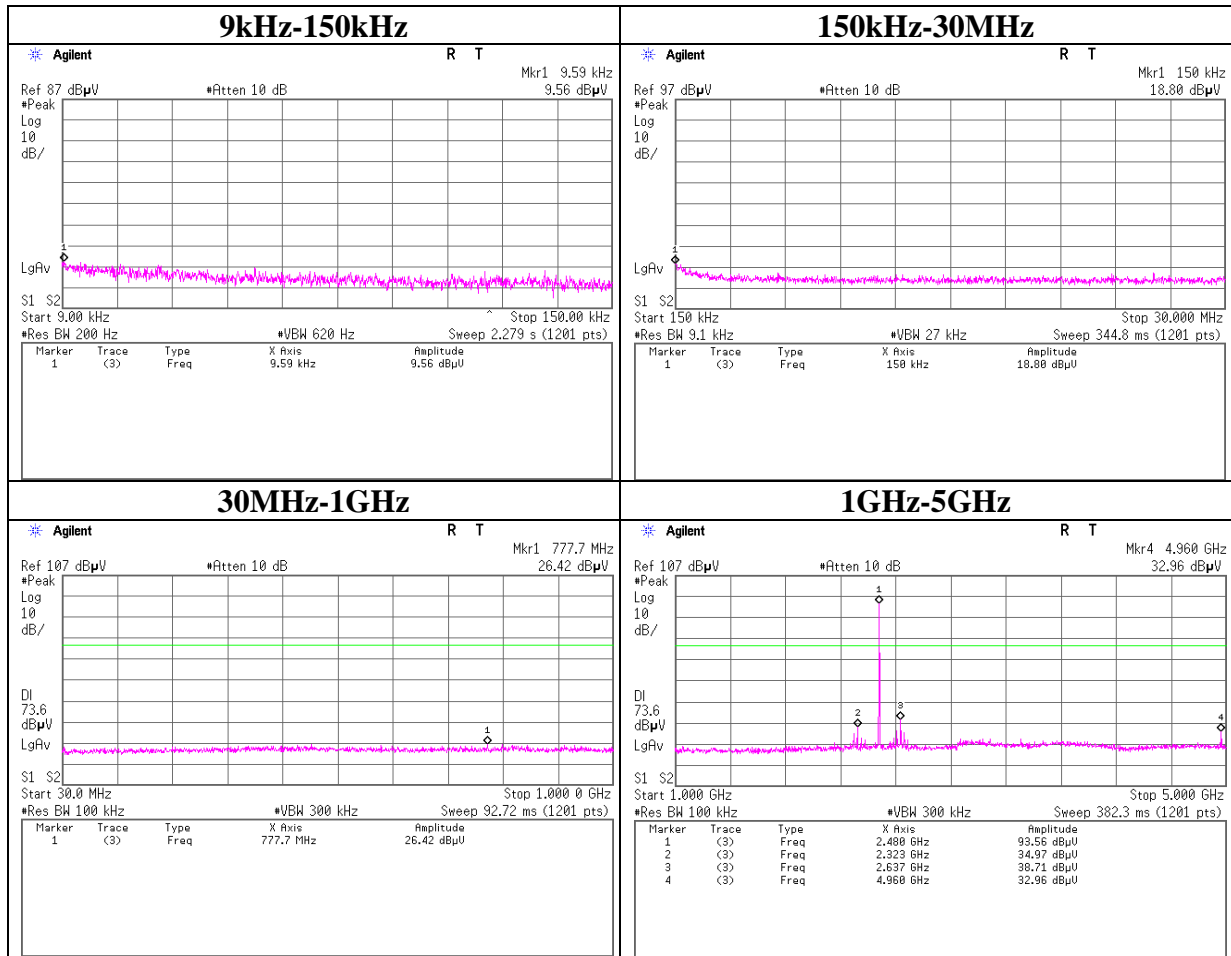
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping off) 3DH5

Tx 3DH5 2480MHz



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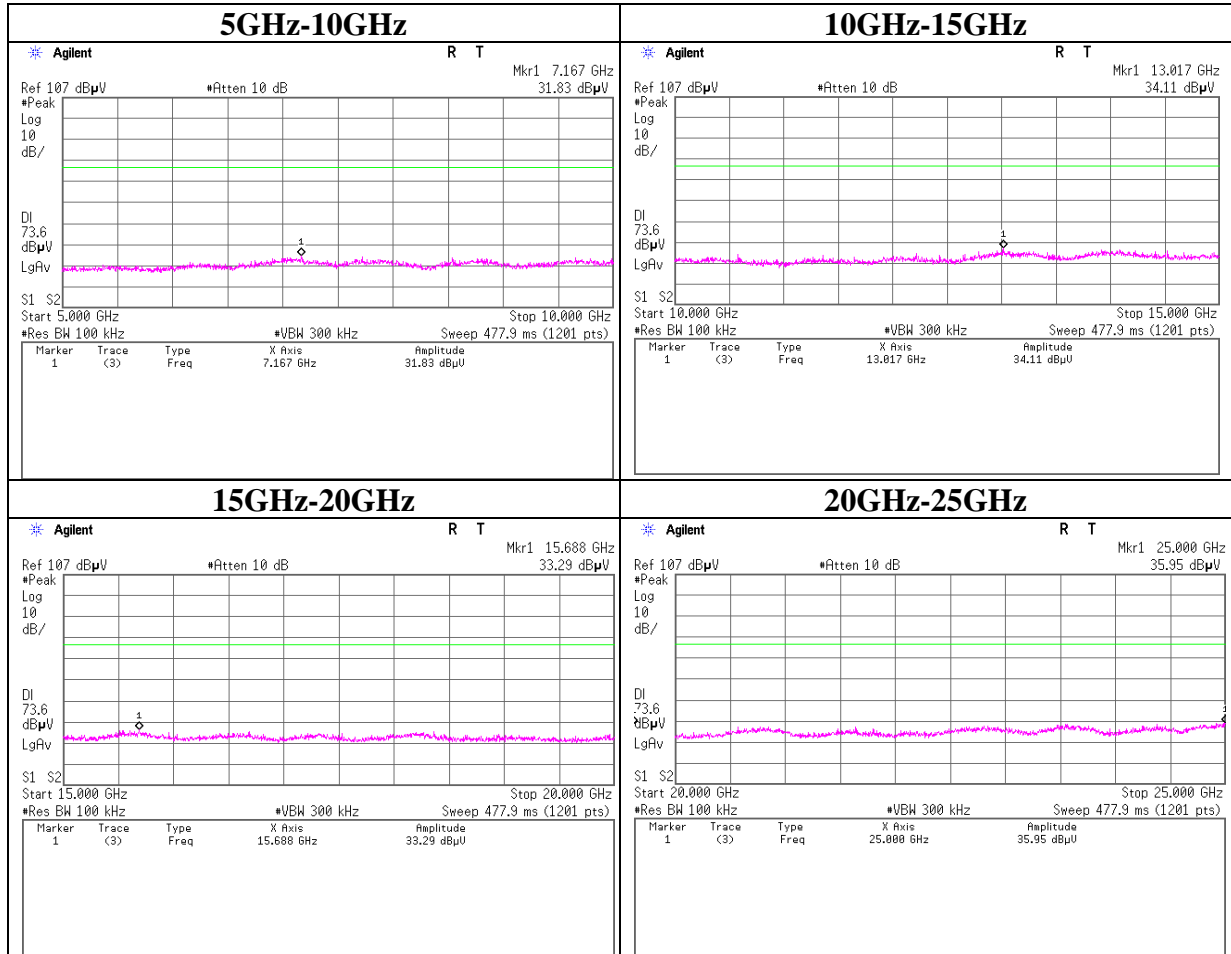
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping off) 3DH5

Tx 3DH5 2480MHz



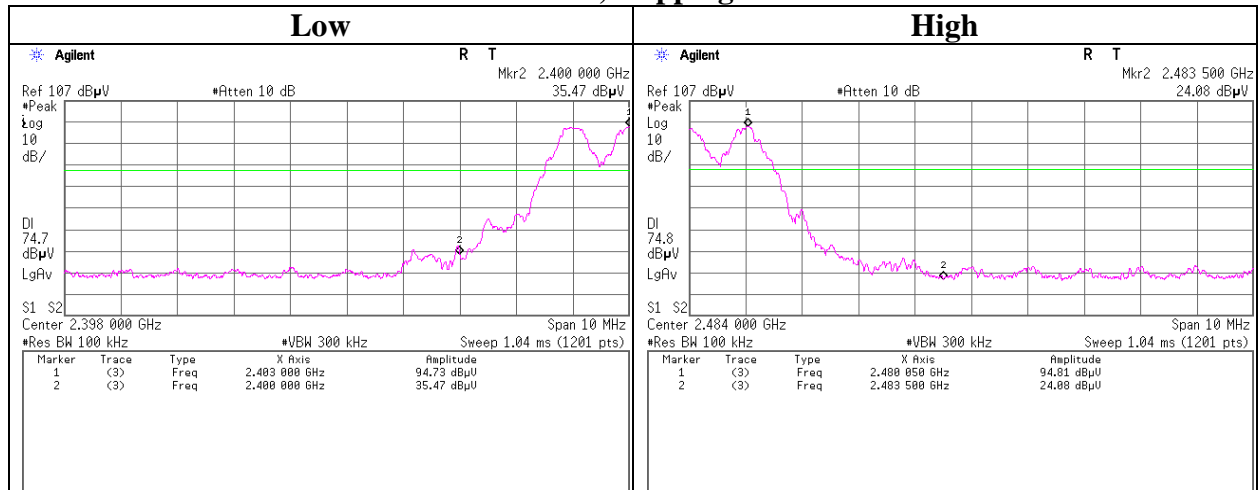
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 Telephone : +81 596 24 8999
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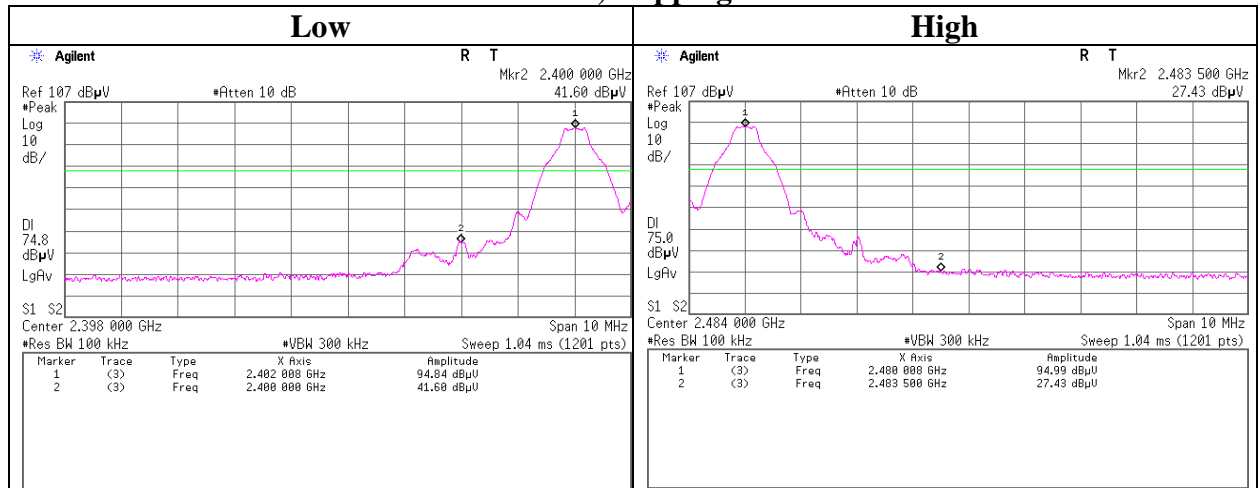
Conducted Emission Band Edge compliance

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping on/off) DH5

Tx DH5, Hopping on



Tx DH5, Hopping off



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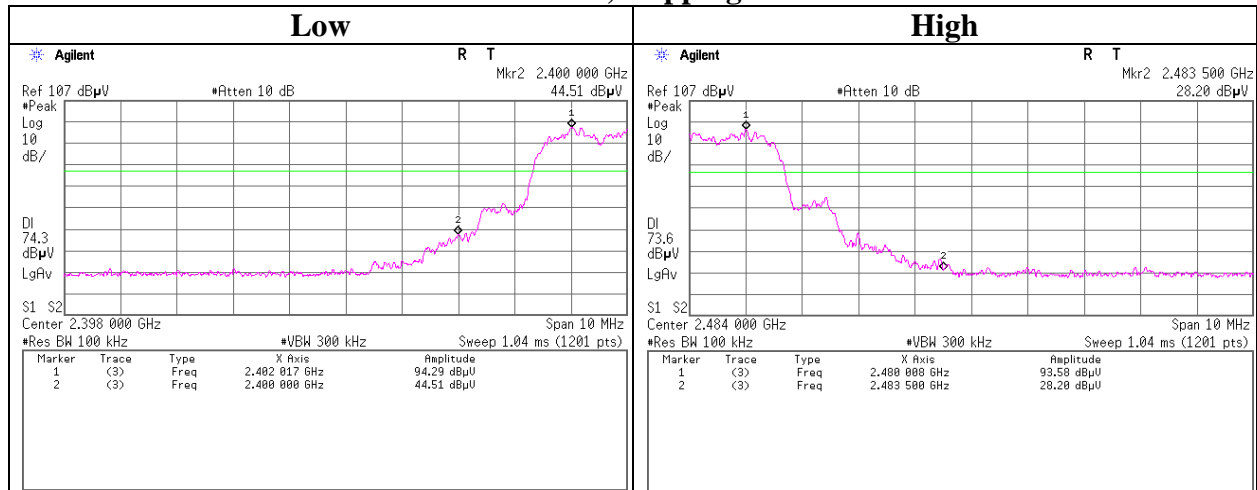
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

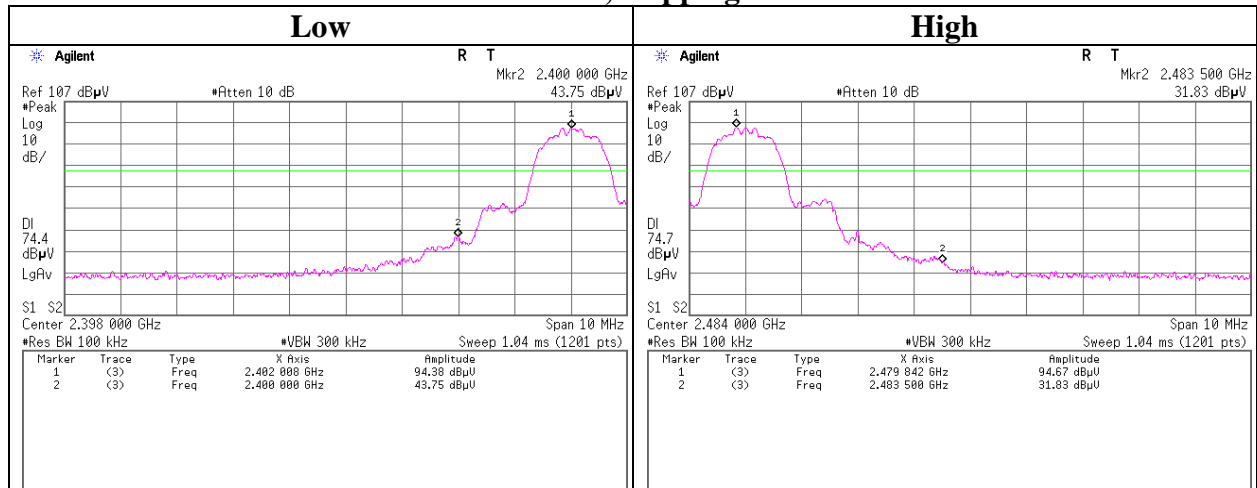
Conducted Emission Band Edge compliance

Test place : Ise EMC Lab. No.11 Measurement Room
Report No. : 10521972H
Date : 11/13/2014
Temperature/ Humidity : 25 deg. C/ 24% RH
Engineer : Yuta Moriya
Mode : Tx (Hopping on/off) 3DH5

Tx 3DH5, Hopping on



Tx 3DH5, Hopping off

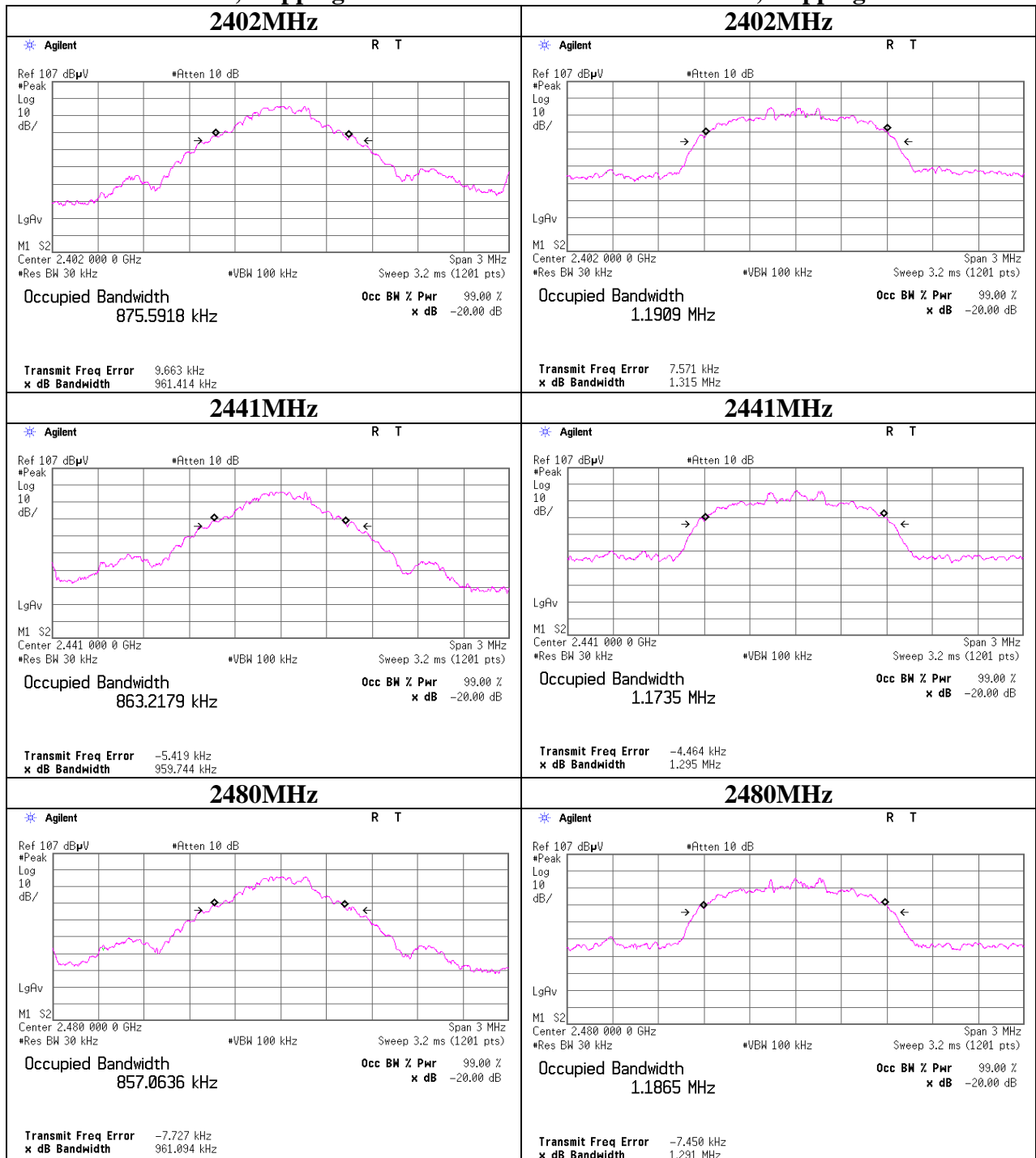


99%Occupied Bandwidth

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping off) DH5/3DH5

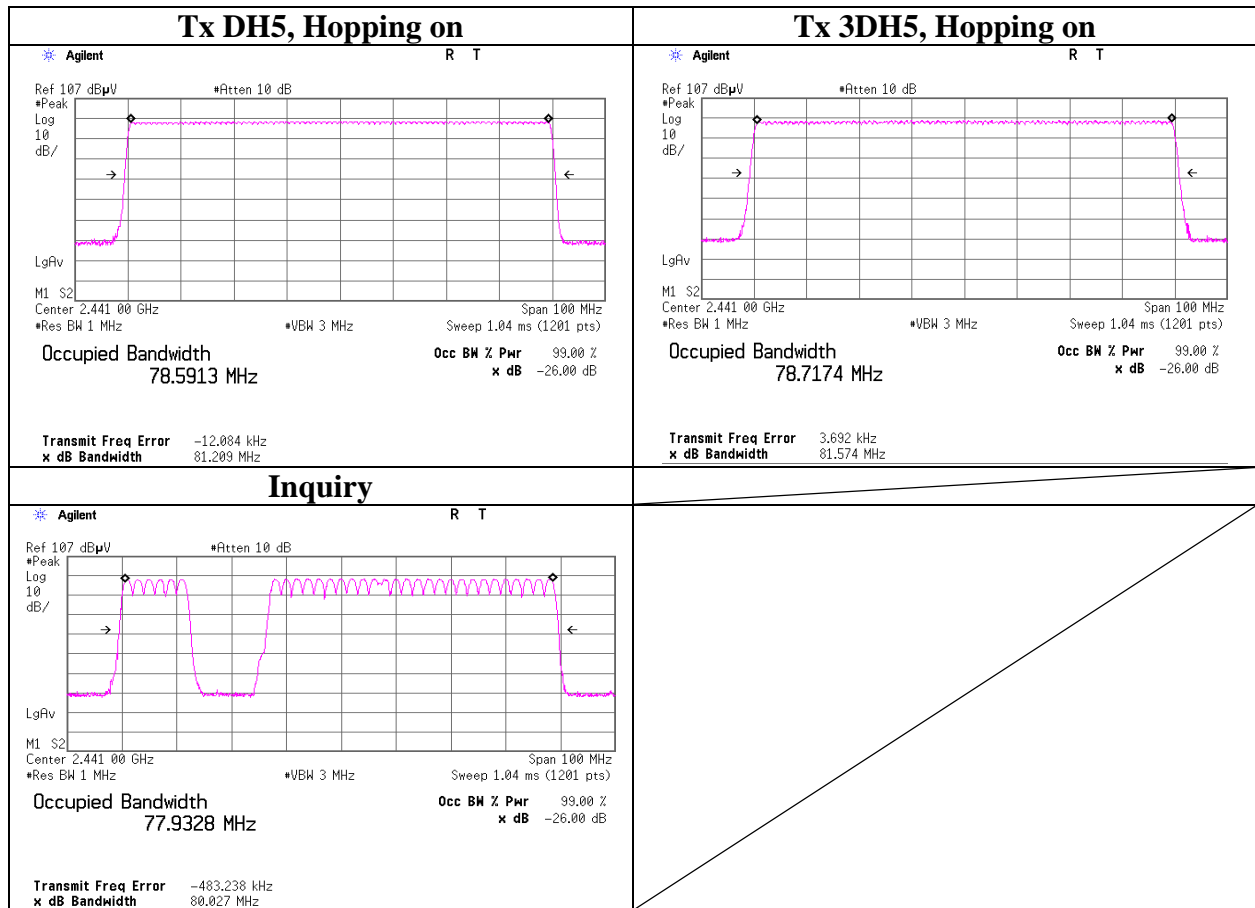
Tx DH5, Hopping off

Tx 3DH5, Hopping off



99% Occupied Bandwidth

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10521972H
Date	11/13/2014
Temperature/ Humidity	25 deg. C/ 24% RH
Engineer	Yuta Moriya
Mode	Tx (Hopping on) DH5/3DH5/Inquiry



APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2014/02/27 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	1301	RE	2014/02/20 * 12
MJM-16	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	RE	2014/04/08 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2014/05/26 * 12
MCC-167	Microwave Cable	Junkosha	MWX221	1404S374(1m) / 1405S074(5m)	RE	2014/05/26 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2014/03/24 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2014/05/26 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	AT/RE	2014/11/12 * 12
MAT-23	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2014/03/13 * 12
MCC-137	Microwave cable	HUBER+SUHNER	SUCOFLEX 102	37954/2	AT	2014/10/02 * 12
MPM-09	Power Meter	Anritsu	ML2495A	6K00003348	AT	2014/10/06 * 12
MPSE-12	Power sensor	Anritsu	MA2411B	011598	AT	2014/10/06 * 12
MCH-06	Temperature and Humidity Chamber	Tabai Espec	PL-1KT	14007630	AT	2014/04/23 * 12
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE	2014/06/25 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE	2014/02/20 * 12
MJM-14	Measure	KOMELON	KMC-36	-	RE	-
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE	2014/06/03 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	2014/10/18 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2014/10/18 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2014/02/20 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2014/11/11 * 12
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2014/09/26 * 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

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