



RADIO TEST REPORT

Test Report No. : 10748020H-A-R2

Applicant : silex technology, Inc.
Type of Equipment : Wireless LAN SDIO module
Model No. : SX-SDMAN2
FCC ID : N6C-SDMAN2
Test regulation : FCC Part 15 Subpart C: 2015
(Bluetooth part)
Test Result : Complied

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2. The results in this report apply only to the sample tested.
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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)
7. This report is a revised version of 10748020H-A-R1. 10748020H-A-R1 is replaced with this report.

Date of test: May 10 to July 18, 2015

Representative test engineer:

T. Shimada

Takumi Shimada

Engineer

Consumer Technology Division

Approved by:

T. Hatake

Takahiro Hatakeda

Leader

Consumer Technology Division



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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

13-EM-F0429

REVISION HISTORY

Original Test Report No.: 10748020H-A

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SECTION 1: Customer information

Company Name	:	silex technology, Inc.
Address	:	2-3-1 Hikaridai, Seika-cho, Kyoto 619-0237, Japan
Telephone Number	:	+81-774-98-3878
Facsimile Number	:	+81-774-98-3758
Contact Person	:	Toshiro Kometani

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

2.1 Identification of E.U.T.

Type of Equipment	:	Wireless LAN SDIO module
Model No.	:	SX-SDMAN2
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.3 V, DC 1.8 V
Receipt Date of Sample	:	April 17, 2015
Country of Mass-production	:	Japan
Condition of EUT	:	Production prototype
		(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No Modification by the test lab

2.2 Product Description

Model: SX-SDMAN2 (referred to as the EUT in this report) is a Wireless LAN SDIO module.

General Specification

Clock frequency(ies) in the system : 26 MHz
 Operating Temperature : -20 deg. C - +85 deg. C

Radio Specification

Radio Type : Transceiver
 Method of Frequency Generation : Synthesizer
 Power Supply (inner) : DC 1.27 V

	IEEE802.11b	IEEE802.11g/n (20 M band)	IEEE802.11a/n (20 M band)	IEEE802.11n (40 M band)	Bluetooth Ver.4.0 with EDR function
Frequency of operation	2412 MHz - 2462 MHz	2412 MHz - 2462 MHz	5180 MHz - 5240 MHz 5260 MHz - 5320 MHz 5500 MHz - 5700 MHz 5745 MHz - 5825 MHz	5190 MHz - 5230 MHz 5270 MHz - 5310 MHz 5510 MHz - 5670 MHz 5755 MHz - 5795 MHz	2402 MHz - 2480 MHz *1)
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)		BT: FHSS (GFSK, $\pi/4$ -DQPSK, 8-DPSK) LE: GFSK
Channel spacing	5MHz		20MHz	40MHz	BT: 1MHz LE: 2MHz
Antenna type	[Antenna 1] Antenna port 0: External antenna (WLAN) Antenna port 1: External antenna (WLAN / Bluetooth)				
	[Antenna 2] Antenna port 0: Chip antenna (WLAN) Antenna port 1: Chip antenna (WLAN / Bluetooth)				
Antenna Connector type	Antenna 1: U.FL Alternative connector Antenna 2: none				
Antenna Gain	Antenna 1: 1.8 dBi (2.4 GHz Band), 3.9 dBi (5 GHz Band) Antenna 2: 1.4 dBi (2.4 GHz Band), 2.3 dBi (5 GHz Band)				

*1) This test report applies to Bluetooth Ver.4.0 with EDR function (2402 MHz - 2480 MHz).

* Spurious emission test was performed with two antenna type (external antenna and chip antenna).

** WLAN and Bluetooth do not transmit simultaneously.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C: 2015, final revised on June 12, 2015 and effective July 13, 2015

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 June 12, 2015 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 C63.4-2009 7. AC powerline conducted emission measurements IC: RSS-Gen 8.8	FCC: Section 15.207 IC: RSS-Gen 8.8	QP 18.0 dB, 12.38200 MHz, N AV 16.2 dB, 12.38200 MHz, N	Complied	-
Carrier Frequency Separation	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1) IC: RSS-247 5.1 (2)	See data.	Complied	Conducted
20dB Bandwidth	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1) IC: RSS-247 5.1 (1)		Complied	Conducted
Number of Hopping Frequency	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1)(iii) IC: RSS-247 5.1 (4)		Complied	Conducted
Dwell time	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1)(iii) IC: RSS-247 5.1 (4)		Complied	Conducted
Maximum Peak Output Power	FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 6.12	FCC: Section15.247(a)(b)(1) IC: RSS-247 5.4 (2)		Complied	Conducted
Spurious Emission & Band Edge Compliance	FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 6.13	FCC: Section15.247(d) IC: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	4.9 dB 2483.5 MHz Horizontal, AV	Complied	Conducted/ Radiated

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

* In case any questions arise about test procedure, ANSI C63.4: 2009 is also referred.

FCC 15.31 (e)

The RF Module has own regulator.

The RF Module is constantly provided voltage through own regulator regardless of input voltage (DC 3.3 V / DC 1.8 V).

Therefore, this EUT complies with the requirement.

FCC Part 15.203/212 Antenna requirement

[Antenna 1]

The EUT has a unique coupling/antenna connector (U.FL Alternative connector). Therefore the equipment complies with the requirement of 15.203/212.

[Antenna 2]

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 15.203/212.

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

3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99% Occupied Bandwidth	IC: RSS-Gen 6.6	IC: -	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 $k = 2$.
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Test site (semi anechoic chamber)	Conducted emission Uncertainty (+/-)			
	No. 1	No. 2	No. 3	No. 4
150 kHz - 30 MHz	3.5 dB	3.5 dB	3.4 dB	3.5 dB

Test site (semi anechoic chamber)	Radiated emission Uncertainty (+/-)						
	Measurement distance: 3 m				1 m		0.5 m
	9 kHz - 30 MHz	30 MHz - 300 MHz	300 MHz - 1 GHz	1 GHz - 10 GHz	10 GHz - 18 GHz	18 GHz - 26.5 GHz	26.5 GHz - 40 GHz
No. 1	4.3 dB	5.5 dB	6.3 dB	5.5 dB	5.8 dB	5.8 dB	4.3 dB
No. 2	4.2 dB	5.4 dB	6.3 dB	5.4 dB	5.7 dB	5.9 dB	5.6 dB
No. 3	4.4 dB	5.4 dB	6.4 dB	5.2 dB	5.5 dB	5.8 dB	5.5 dB
No. 4	4.7 dB	5.6 dB	6.4 dB	5.3 dB	5.7 dB	5.9 dB	5.5 dB

Antenna terminal test Uncertainty (+/-)							
Power meter		Conducted emission and Power density			Conducted emission		Channel power
Below 1 GHz	Above 1 GHz	Below 1 GHz	1 GHz - 3 GHz	3 GHz - 18 GHz	18 GHz - 26.5 GHz	26.5 GHz - 40 GHz	
0.7 dB	1.5 dB	1.5 dB	1.7 dB	2.8 dB	2.8 dB	2.9 dB	

Conducted Emission test

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

Radiated emission test

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

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

Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms	Maximum measurement distance
No.1 semi-anechoic chamber	2973C-1	19.2 x 11.2 x 7.7	7.0 x 6.0	No.1 Power source room	10m
No.2 semi-anechoic chamber	2973C-2	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3m
No.3 semi-anechoic chamber	2973C-3	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3m
No.3 shielded room	-	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber	2973C-4	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room	3m
No.4 shielded room	-	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber	-	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.6 shielded room	-	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room	-	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room	-	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room	-	3.1 x 5.0 x 2.7	N/A	-	-
No.9 measurement room	-	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.11 measurement room	-	6.2 x 4.7 x 3.0	4.8 x 4.6	-	-

* 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 Test data, Test instruments, and Test set up

Refer to APPENDIX.

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

4.1 Operating Mode(s)

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

Details of Operating Mode(s)

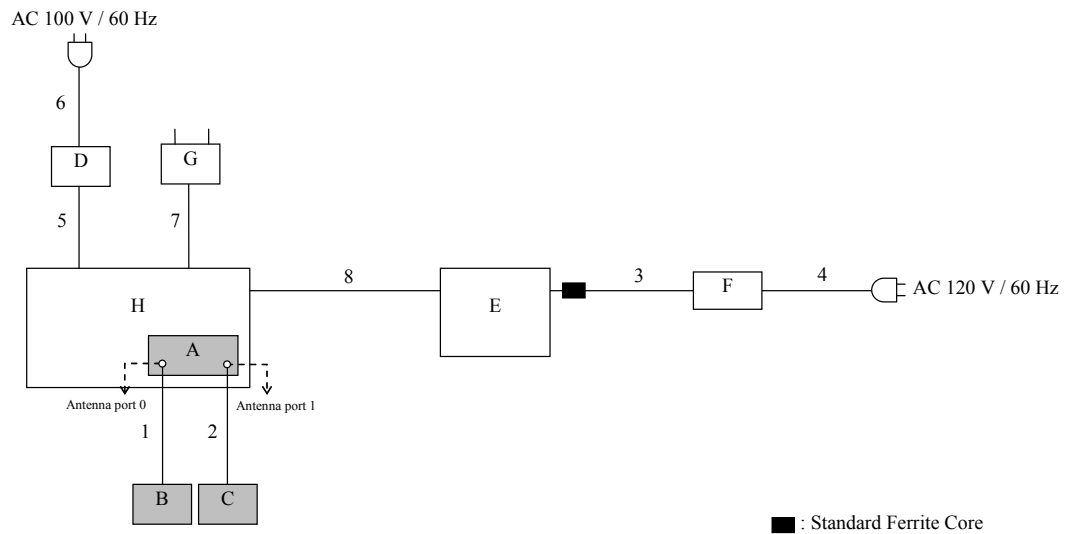
Test Item	Mode	Tested frequency
Conducted Emission, Spurious Emission (Conducted/Radiated)	Tx (Hopping Off) DH5, 3DH5	2402 MHz 2441 MHz 2480 MHz
Carrier Frequency Separation	Tx (Hopping On) DH5, 3DH5	-
20dB Bandwidth	Tx (Hopping Off) DH5, 3DH5	2402 MHz 2441 MHz 2480 MHz
Number of Hopping Frequency	Tx (Hopping On) DH5, 3DH5	-
Dwell time	Tx (Hopping On), -DH1, DH3, DH5 -3DH1, 3DH3, 3DH5	-
Maximum Peak Output Power	Tx (Hopping Off) DH5, 2DH5, 3DH5	2402 MHz 2441 MHz 2480 MHz
Band Edge Compliance (Conducted)	Tx DH5, 3DH5 -Hopping On -Hopping Off	2402 MHz 2480 MHz
99% Occupied Bandwidth	Tx DH5, 3DH5 -Hopping On -Hopping Off	2402 MHz 2441 MHz 2480 MHz
*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. * It is considered that the non-tested packet type (e.g. inquiry) can be omitted as it is complied with above all test items based on Bluetooth Core specification. *EUT has the power settings by the software as follows; - Power Setting: 8 dBm (Target power: 7dBm) - Software: Atheros Radio Test Tool (ART-2-GUI) Version 2.3 *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.		

*This EUT has two ratings: DC 3.3 V and DC 1.8 V.

After the comparison between above ratings, all tests except for maximum peak output power test were performed with rating that had worst case (DC 3.3 V) as a representative.

4.2 Configuration and peripherals

[Antenna 1]



* 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	Wireless LAN SDIO module	SX-SDMAN2	84253F-01053F	silex technology, Inc.	EUT
B	External Antenna	H2B1PC1A1C	1	Unictron Technologies Corporation	EUT
C	External Antenna	H2B1PC1A1C	2	Unictron Technologies Corporation	EUT
D	Power supply	PMC35-2A	13090501	KIKUSUI ELECTRONICS, CORP.	-
E	Laptop PC	Latitude E6530	1FBSYW1	Dell	-
F	AC Adapter	LA90PM111	CN-0Y4M8K-72438-31A-08 61-A00	Dell	-
G	AC Adapter	US115-05	B12-0112765	UNIFIVE	-
H	Jig	-	-	silex technology, Inc.	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Antenna Cable	0.15	Unshielded	Unshielded	-
2	Antenna Cable	0.15	Unshielded	Unshielded	-
3	DC Cable	1.80	Unshielded	Unshielded	-
4	AC Cable	0.80	Unshielded	Unshielded	-
5	DC Cable	0.80	Unshielded	Unshielded	-
6	AC Cable	2.10	Unshielded	Unshielded	-
7	DC Cable	1.80	Unshielded	Unshielded	-
8	USB Cable	1.70	Shielded	Shielded	-

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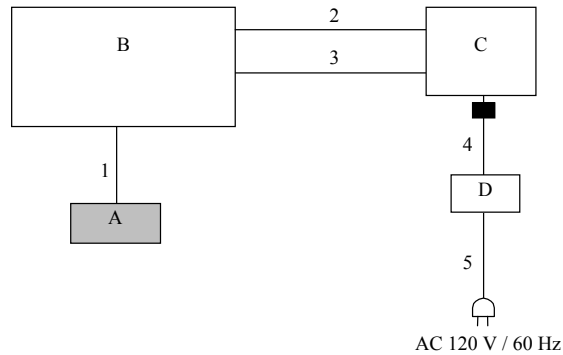
Ise EMC Lab.

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

[Antenna 2]



■ : Standard Ferrite Core

* 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	Wireless LAN SDIO module	SX-SDMAN2	84253F-0106D4	silex technology, Inc.	EUT
B	Jig	-	-	silex technology, Inc.	-
C	Laptop PC	Latitude E6530	1FBSYW1	Dell	-
D	AC Adapter	LA90PM111	CN-0Y4M8K-72438-31A-0861-A00	Dell	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	FFC Harness Cable	0.15	Unshielded	Unshielded	-
2	Signal Cable	0.40	Unshielded	Unshielded	-
3	RS-232C-USB conversion Cable	1.80	Shielded	Shielded	-
4	DC Cable	1.80	Unshielded	Unshielded	-
5	AC Cable	0.80	Unshielded	Unshielded	-

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a urethane platform of nominal size, 1.0m by 0.5m, raised 0.8m above the conducting ground plane.

The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from a Line Impedance Stabilization Network (LISN) / Artificial mains Network (AMN) and excess AC cable was bundled in center.

For the tests on EUT with other peripherals (as a whole system)

I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. All unused 50ohm connectors of the LISN (AMN) were resistivity terminated in 50ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber.

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

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

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

SECTION 6: Radiated Spurious Emission

Test Procedure

EUT was placed on a urethane platform of nominal size, 1.0m by 0.5m, 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	30MHz to 300MHz	300MHz to 1GHz	Above 1GHz
Antenna Type	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 4 of RSS-Gen 8.9 (IC) and outside the restricted band of FCC15.205 / Table 6 of RSS-Gen 8.10 (IC).

Frequency	Below 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 DA 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 (module and antenna) 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

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 7: 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 *1)	Enough width to display emission skirts	1 to 5% of OBW	Three times of RBW	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak / Average *3)	-	Power Meter (Sensor: 50MHz BW)
Carrier Frequency Separation	3MHz	30kHz	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 *2)	9kHz to 150kHz	200Hz	620Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150kHz to 30MHz	9.1kHz	27kHz				
	30MHz to 25GHz	100kHz	300kHz				
Conducted Spurious Emission Band Edge compliance	10MHz	100kHz	300kHz	Auto	Peak	Max Hold	Spectrum Analyzer

*1) Peak hold was applied as Worst-case measurement.
 *2) 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 low enough as shown in the chart.(9kHz-150kHz:RBW=200Hz, 150kHz-30MHz:RBW=9.1kHz).
 *3) Reference data

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: Test data

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

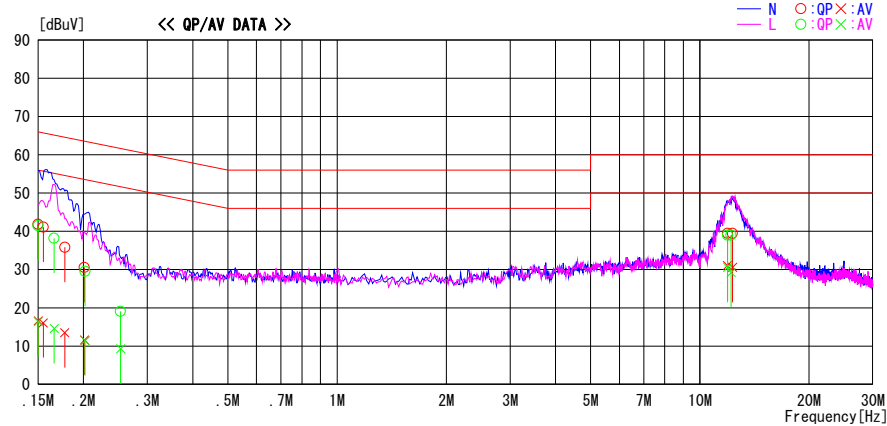
UL Japan, Inc. Ise EMC Lab. No. 2 Semi Anechoic Chamber
Date : 2015/05/27

Report No. : 10748020H

Temp./Humi. : 24deg. C / 41% RH
Engineer : Tomoki Matsui

Mode / Remarks : Tx DH5 2402MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15000	28.6	3.4	13.2	41.8	16.6	66.0	56.0	24.2	39.4	N	
0.15500	27.9	2.9	13.2	41.1	16.1	65.7	55.7	24.6	39.6	N	
0.17755	22.6	0.3	13.2	35.8	13.5	64.6	54.6	28.8	41.1	N	
0.20120	17.4	-1.6	13.2	30.6	11.6	63.6	53.6	33.0	42.0	N	
11.91860	25.2	16.8	14.3	39.5	31.1	60.0	50.0	20.5	18.9	N	
12.30860	25.2	16.3	14.3	39.5	30.6	60.0	50.0	20.5	19.4	N	
0.15000	28.3	3.2	13.2	41.5	16.4	66.0	56.0	24.5	39.6	L	
0.16600	25.0	1.4	13.2	38.2	14.6	65.2	55.2	27.0	40.6	L	
0.20220	16.4	-1.8	13.2	29.6	11.4	63.5	53.5	33.9	42.1	L	
0.25310	5.9	-3.9	13.2	19.1	9.3	61.7	51.7	42.6	42.4	L	
11.93660	24.7	16.3	14.3	39.0	30.6	60.0	50.0	21.0	19.4	L	
12.19960	24.7	14.9	14.3	39.0	29.2	60.0	50.0	21.0	20.8	L	

CHART : WITH FACTOR. Peak hold data. CALCULATION : RESULT = READING + C.F (LISN + ATTN. + CABLE)
Except for the above table : adequate margin data below the limits.

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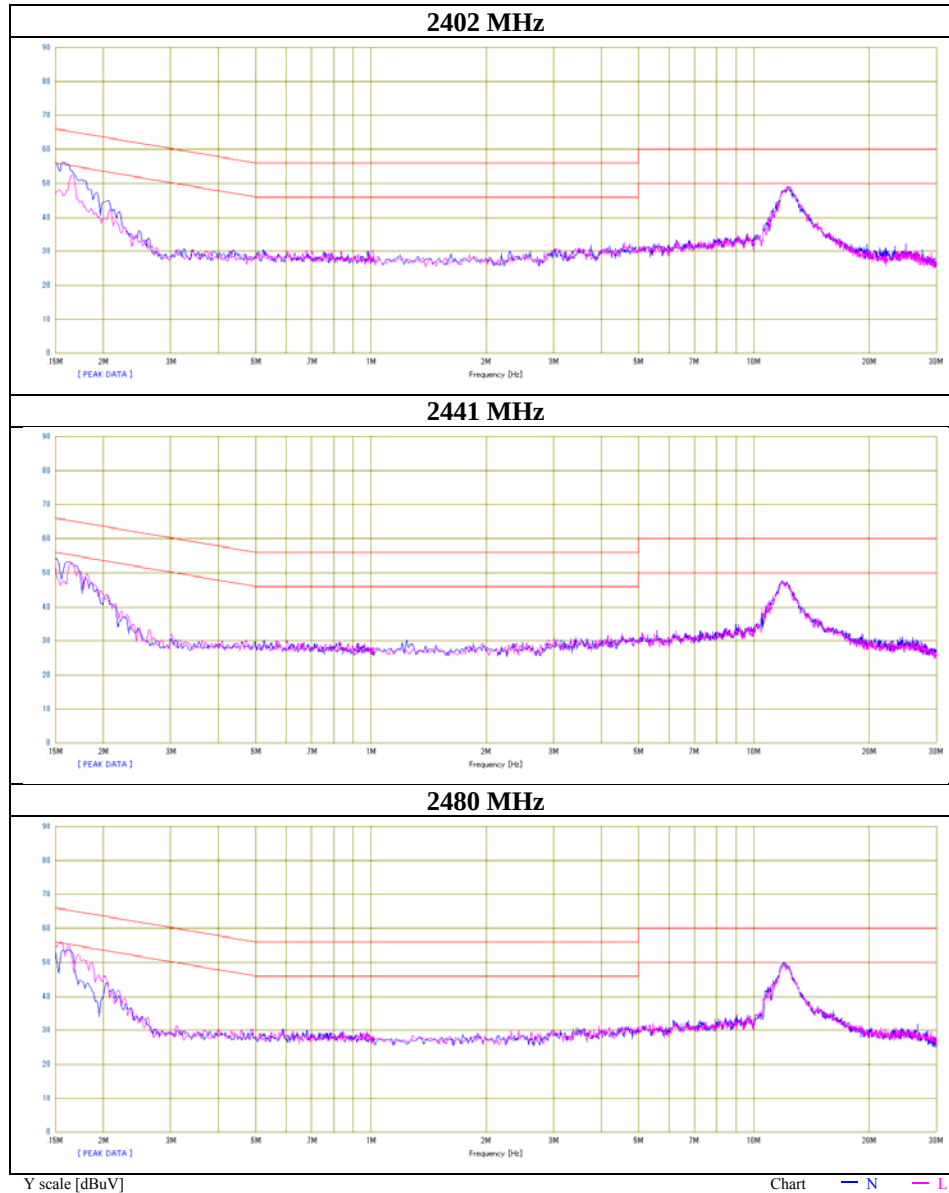
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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Emission

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10748020H
Date	May 27, 2015
Temperature / Humidity	24deg. C / 41% RH
Engineer	Tomoki Matsui
Mode	Tx DH5



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Conducted Emission

DATA OF CONDUCTED EMISSION TEST

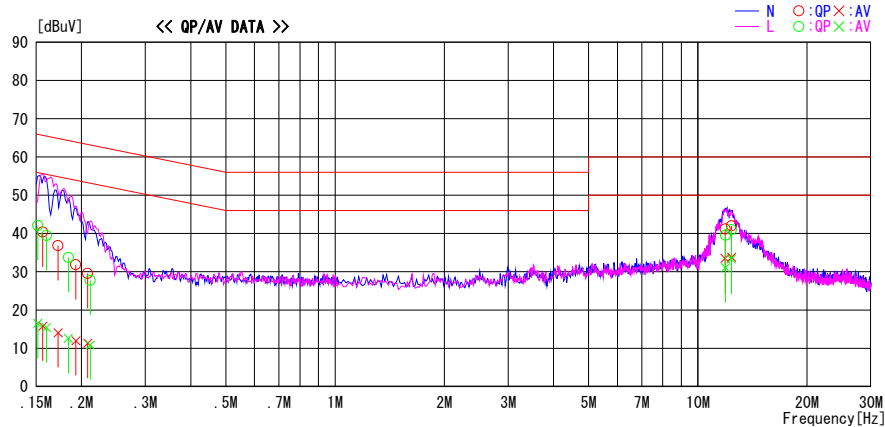
UL Japan, Inc. Ise EMC Lab. No.2 Semi Anechoic Chamber
Date : 2015/05/27

Report No. : 10748020H

Temp./Humi. : 24deg. C / 41% RH
Engineer : Tomoki Matsui

Mode / Remarks : Tx 3DH5 2402MHz

LIMIT : FCC15.207 QP
FCC15.207 AV

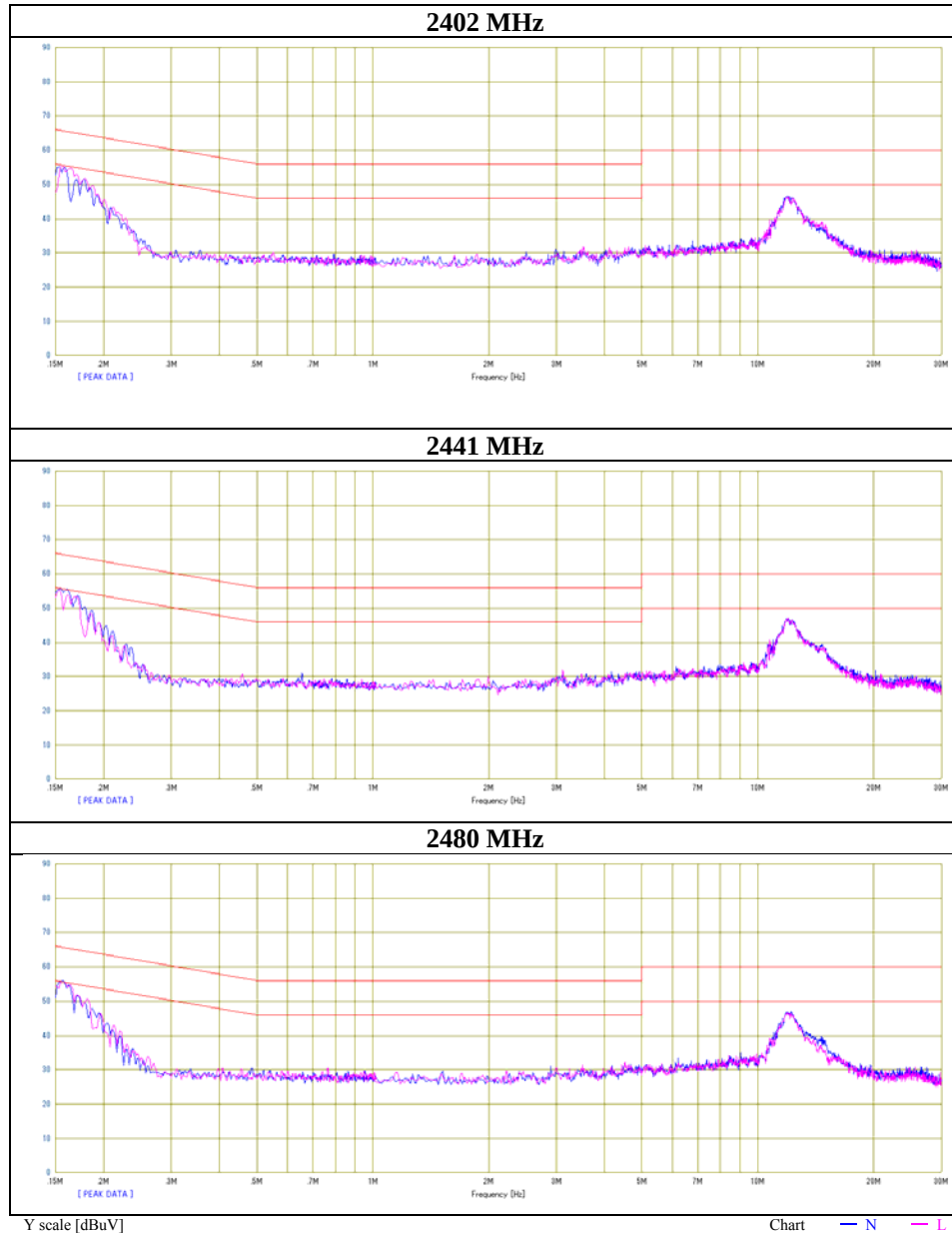


Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15640	27.2	2.6	13.2	40.4	15.8	65.7	55.7	25.3	39.9	N	
0.17238	23.6	0.9	13.2	36.8	14.1	64.8	54.8	28.0	40.7	N	
0.19288	18.6	-1.2	13.2	31.8	12.0	63.9	53.9	32.1	41.9	N	
0.20800	16.4	-1.9	13.2	29.6	11.3	63.3	53.3	33.7	42.0	N	
11.88800	26.9	19.2	14.3	41.2	33.5	60.0	50.0	18.8	16.5	N	
12.36200	27.6	19.4	14.4	42.0	33.8	60.0	50.0	18.0	16.2	N	
0.15150	28.9	3.3	13.2	42.1	16.5	65.9	55.9	23.8	39.4	L	
0.16016	26.3	2.2	13.2	39.5	15.4	65.5	55.5	26.0	40.1	L	
0.18400	20.5	-0.6	13.2	33.7	12.6	64.3	54.3	30.6	41.7	L	
0.21140	14.5	-2.3	13.2	27.7	10.9	63.2	53.2	35.5	42.3	L	
11.91800	25.3	16.8	14.3	39.6	31.1	60.0	50.0	20.4	18.9	L	
12.36800	26.7	19.0	14.3	41.0	33.3	60.0	50.0	19.0	16.7	L	

CHART : WITH FACTOR, Peak hold data. CALCULATION : RESULT = READING + C.F (LISN + ATTEN. + CABLE)
Except for the above table : adequate margin data below the limits.

Conducted Emission

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10748020H
Date	May 27, 2015
Temperature / Humidity	24deg. C / 41% RH
Engineer	Tomoki Matsui
Mode	Tx 3DH5



20dB Bandwidth and Carrier Frequency Separation

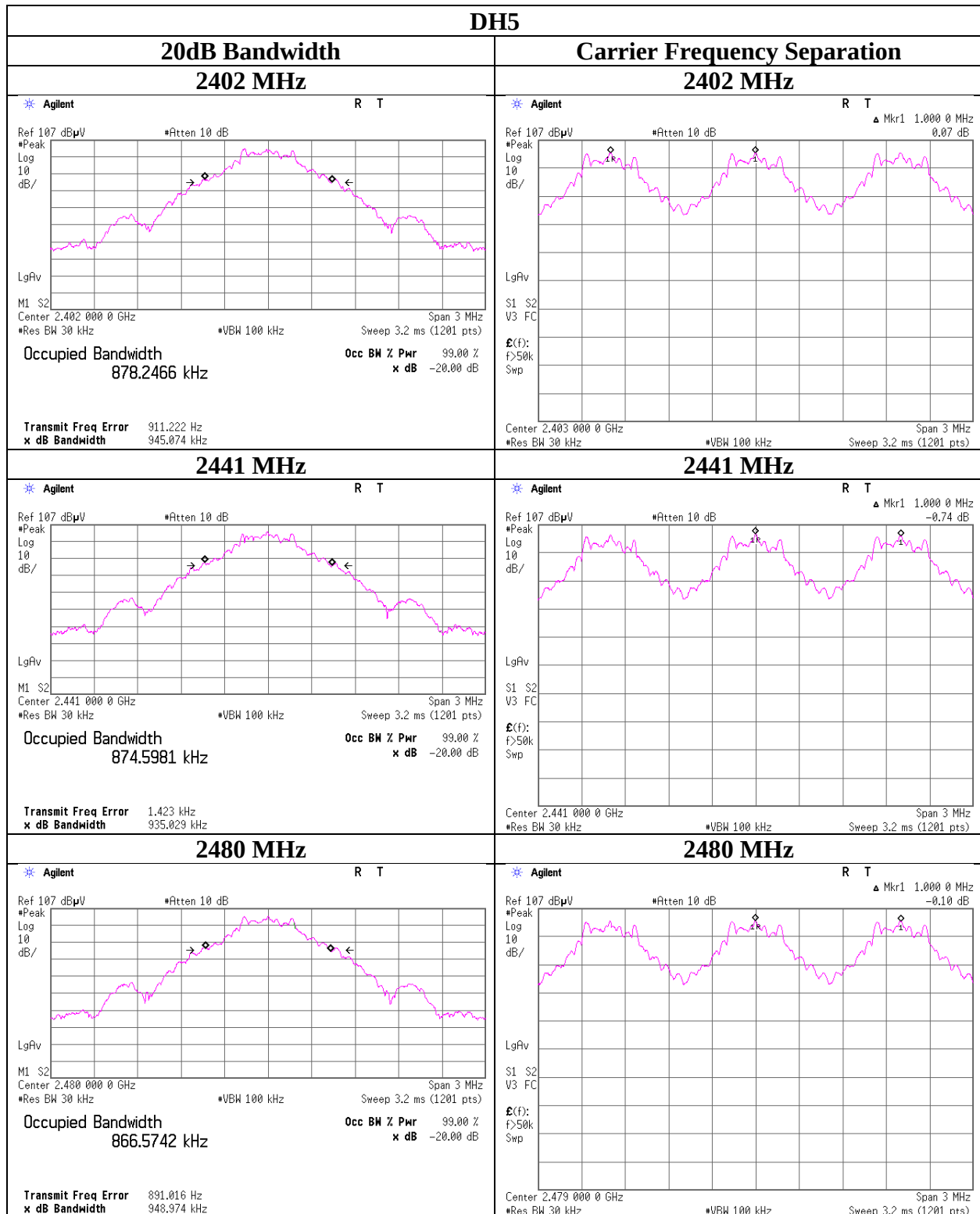
Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10748020H
Date : May 10, 2015
Temperature / Humidity : 20deg. C / 63% RH
Engineer : Kenshi Shimomura
Mode : Tx Hopping On / Off

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.945	1.000	≥ 0.630
DH5	2441.0	0.935	1.000	≥ 0.623
DH5	2480.0	0.949	1.000	≥ 0.633
3DH5	2402.0	1.303	1.000	≥ 0.869
3DH5	2441.0	1.301	1.000	≥ 0.867
3DH5	2480.0	1.303	1.000	≥ 0.869

Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).

No limit applies to 20dB Bandwidth.

20dB Bandwidth and Carrier Frequency Separation



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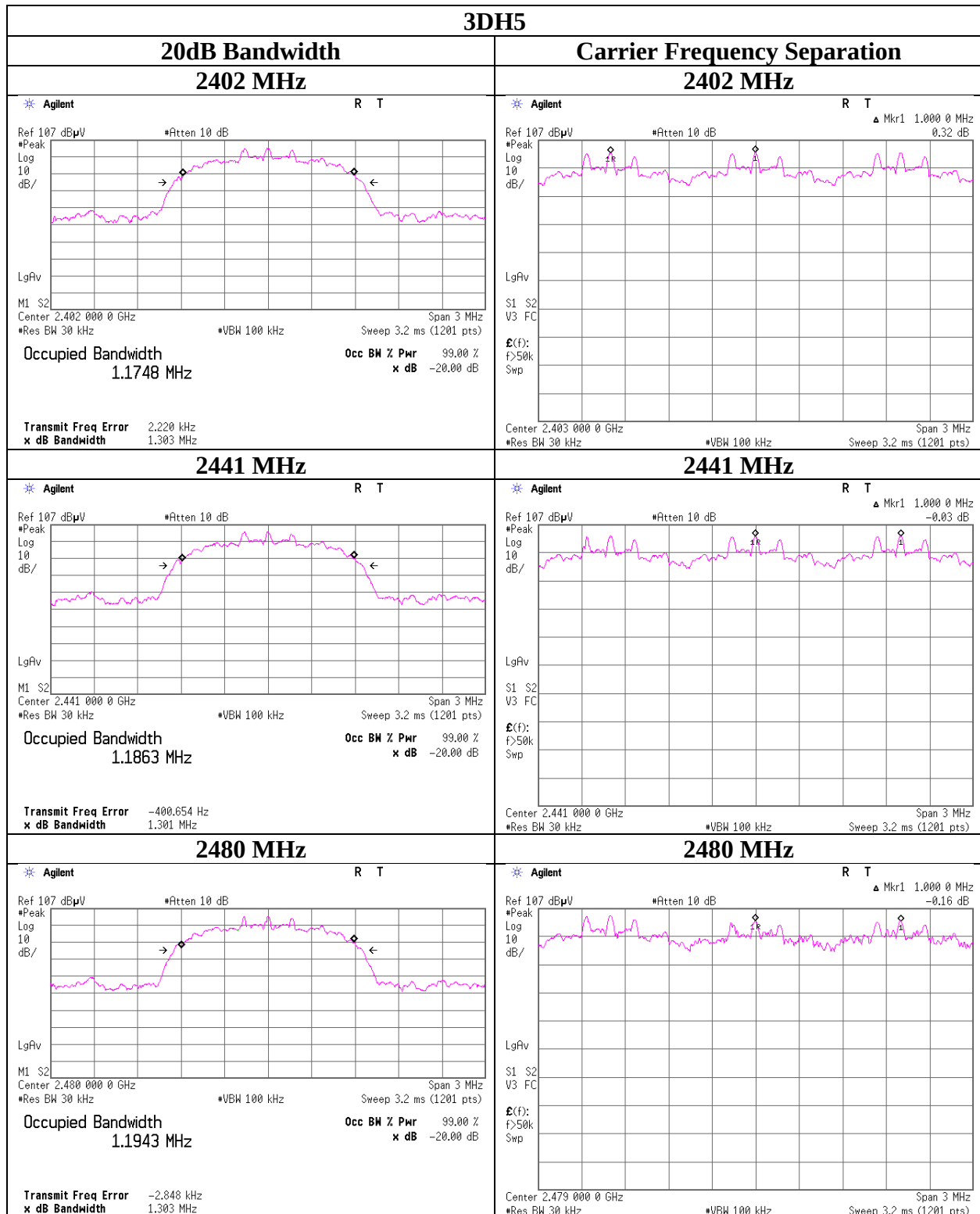
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4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

20dB Bandwidth and Carrier Frequency Separation



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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

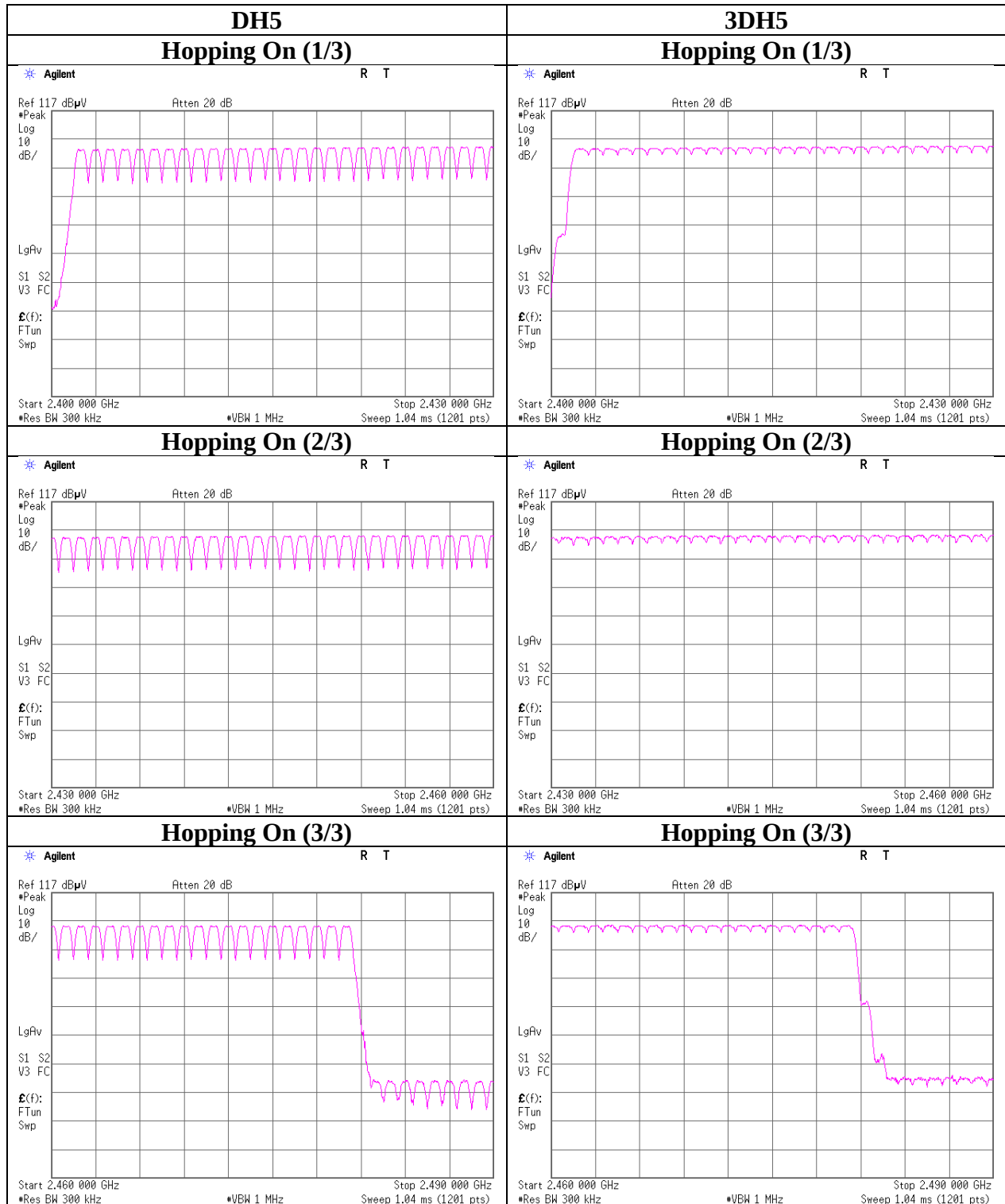
Number of Hopping Frequency

Test place Ise EMC Lab. No.6 Measurement Room
Report No. 10748020H
Date May 10, 2015
Temperature / Humidity 20deg. C / 63% RH
Engineer Kenshi Shimomura
Mode Tx Hopping On

Mode	Number of channel [channels]	Limit [channels]
DH5	79	≥ 15
3DH5	79	≥ 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.6 Measurement Room
Report No.	10748020H
Date	May 10, 2015
Temperature / Humidity	20deg. C / 63% RH
Engineer	Kenshi Shimomura
Mode	Tx Hopping On

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 [msec]	Result [msec]	Limit [msec]
DH1	50.0 times / 5 sec. x 31.6 sec. = 316 times	0.306	97	400
DH3	25.4 times / 5 sec. x 31.6 sec. = 161 times	1.662	268	400
DH5	17.0 times / 5 sec. x 31.6 sec. = 108 times	2.917	315	400
3DH1	50.0 times / 5 sec. x 31.6 sec. = 316 times	0.412	130	400
3DH3	25.2 times / 5 sec. x 31.6 sec. = 160 times	1.669	267	400
3DH5	16.2 times / 5 sec. x 31.6 sec. = 103 times	2.925	301	400

Sample Calculation

Result = Number of transmission x Length of transmission

*Average data of 5 tests.(except Inquiry)

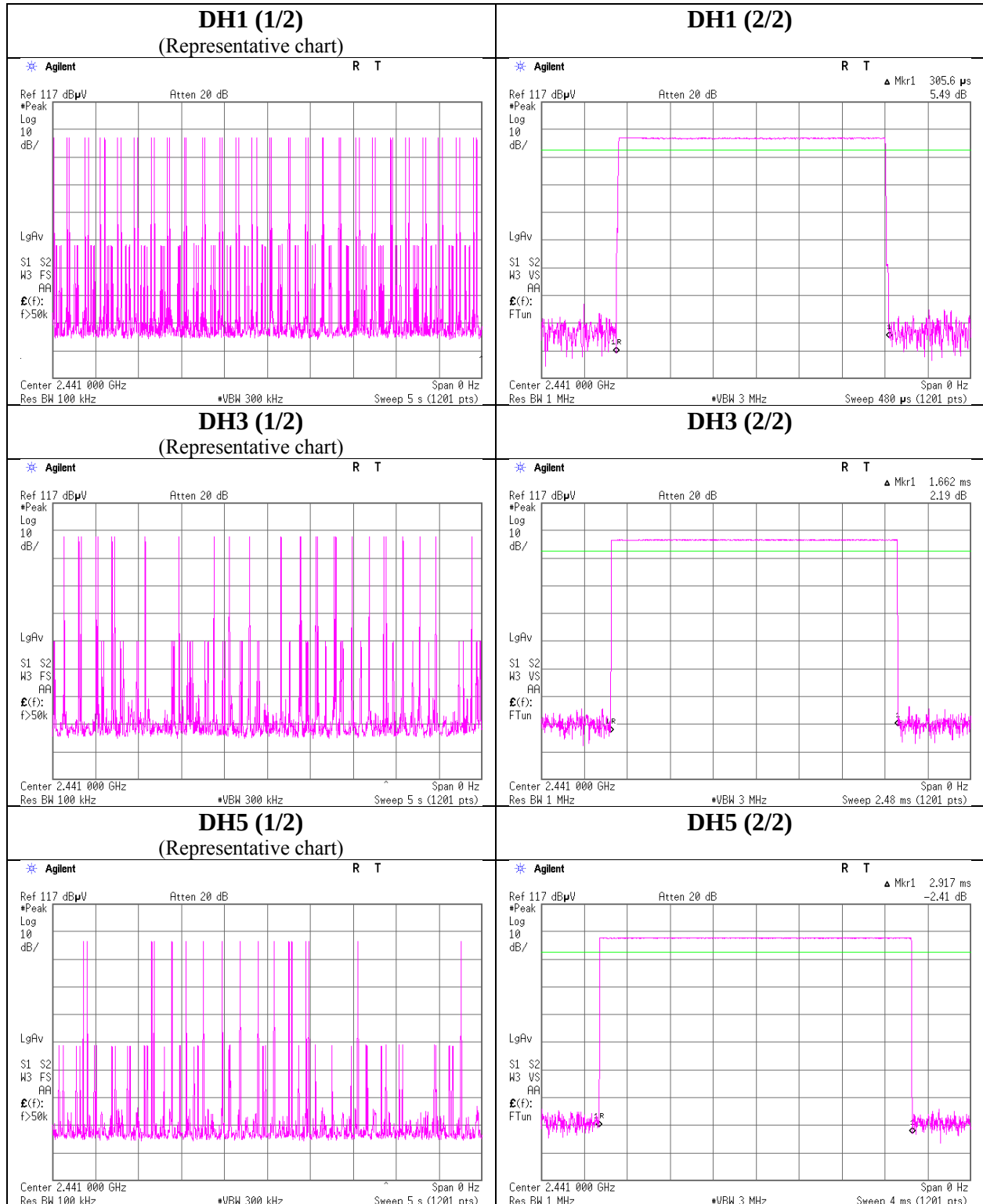
Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	50	51	50	49	50	50
DH3	26	25	29	24	23	25.4
DH5	17	12	20	18	18	17
3DH1	51	48	50	51	50	50
3DH3	25	23	25	30	23	25.2
3DH5	14	21	14	16	16	16.2

Sample Calculation

Average = Summation (Sampling 1 to 5) / 5

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 $N=79$.

Dwell time



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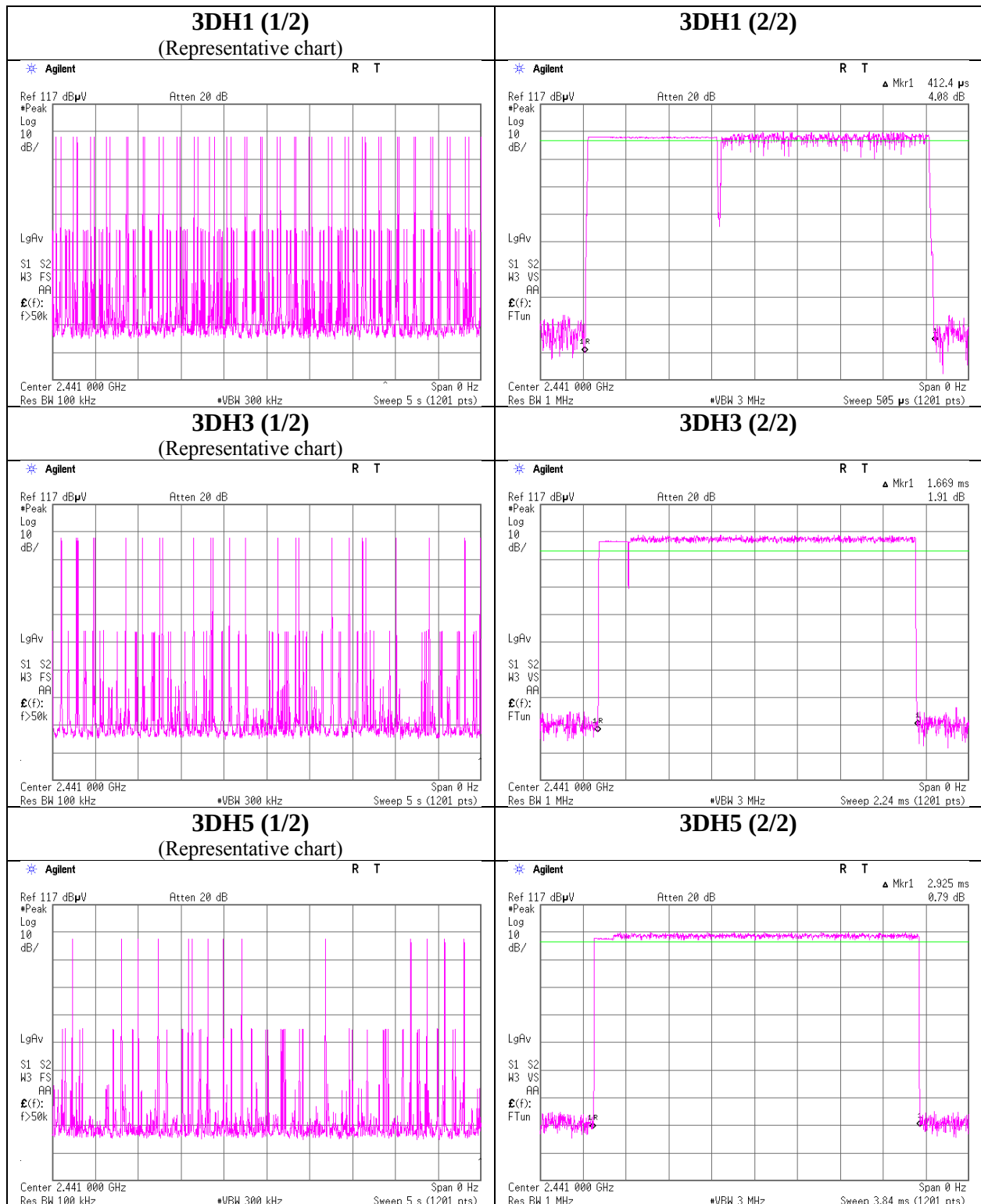
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Dwell time



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Maximum Peak Output Power

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10748020H
Date	May 10, 2015
Temperature / Humidity	20deg. C / 63% RH
Engineer	Kenshi Shimomura
Mode	Tx Hopping Off

DC 3.3 V

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-3.70	2.04	10.06	8.40	6.92	20.96	125	12.56
DH5	2441.0	-3.07	2.06	10.06	9.05	8.04	20.96	125	11.91
DH5	2480.0	-3.35	2.07	10.06	8.78	7.55	20.96	125	12.18
2DH5	2402.0	-1.52	2.04	10.06	10.58	11.43	20.96	125	10.38
2DH5	2441.0	-1.05	2.06	10.06	11.07	12.79	20.96	125	9.89
2DH5	2480.0	-1.45	2.07	10.06	10.68	11.69	20.96	125	10.28
3DH5	2402.0	-1.24	2.04	10.06	10.86	12.19	20.96	125	10.10
3DH5	2441.0	-0.70	2.06	10.06	11.42	13.87	20.96	125	9.54
3DH5	2480.0	-1.07	2.07	10.06	11.06	12.76	20.96	125	9.90

Sample Calculation:

Result = Reading + Cable Loss + Attenuator Loss

*The equipment and cables were not used for factor 0dB of the data sheets.

DC 1.8 V

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-4.49	2.04	10.06	7.61	5.77	20.96	125	13.35
DH5	2441.0	-4.25	2.06	10.06	7.87	6.12	20.96	125	13.09
DH5	2480.0	-5.05	2.07	10.06	7.08	5.11	20.96	125	13.88
2DH5	2402.0	-2.73	2.04	10.06	9.37	8.65	20.96	125	11.59
2DH5	2441.0	-2.59	2.06	10.06	9.53	8.97	20.96	125	11.43
2DH5	2480.0	-3.11	2.07	10.06	9.02	7.98	20.96	125	11.94
3DH5	2402.0	-2.51	2.04	10.06	9.59	9.10	20.96	125	11.37
3DH5	2441.0	-2.42	2.06	10.06	9.70	9.33	20.96	125	11.26
3DH5	2480.0	-2.92	2.07	10.06	9.21	8.34	20.96	125	11.75

Sample Calculation:

Result = Reading + Cable Loss + Attenuator Loss

*The equipment and cables were not used for factor 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.

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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 RF Exposure)

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10748020H
Date	May 10, 2015
Temperature / Humidity	20deg. C / 63% RH
Engineer	Kenshi Shimomura
Mode	Tx Hopping Off

DC 3.3 V

Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result	
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
DH5	2402.0	-5.10	2.04	10.06	7.00	5.01
DH5	2441.0	-4.50	2.06	10.06	7.62	5.78
DH5	2480.0	-4.75	2.07	10.06	7.38	5.47
2DH5	2402.0	-4.97	2.04	10.06	7.13	5.16
2DH5	2441.0	-4.33	2.06	10.06	7.79	6.01
2DH5	2480.0	-4.80	2.07	10.06	7.33	5.41
3DH5	2402.0	-4.89	2.04	10.06	7.21	5.26
3DH5	2441.0	-4.33	2.06	10.06	7.79	6.01
3DH5	2480.0	-4.77	2.07	10.06	7.36	5.45

Sample Calculation:

Result = Reading + Cable Loss + Attenuator Loss

*The equipment and cables were not used for factor 0dB of the data sheets.

DC 1.8 V

Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result	
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
DH5	2402.0	-5.77	2.04	10.06	6.33	4.30
DH5	2441.0	-5.57	2.06	10.06	6.55	4.52
DH5	2480.0	-6.38	2.07	10.06	5.75	3.76
2DH5	2402.0	-5.76	2.04	10.06	6.34	4.31
2DH5	2441.0	-5.56	2.06	10.06	6.56	4.53
2DH5	2480.0	-6.36	2.07	10.06	5.77	3.78
3DH5	2402.0	-5.75	2.04	10.06	6.35	4.32
3DH5	2441.0	-5.53	2.06	10.06	6.59	4.56
3DH5	2480.0	-6.31	2.07	10.06	5.82	3.82

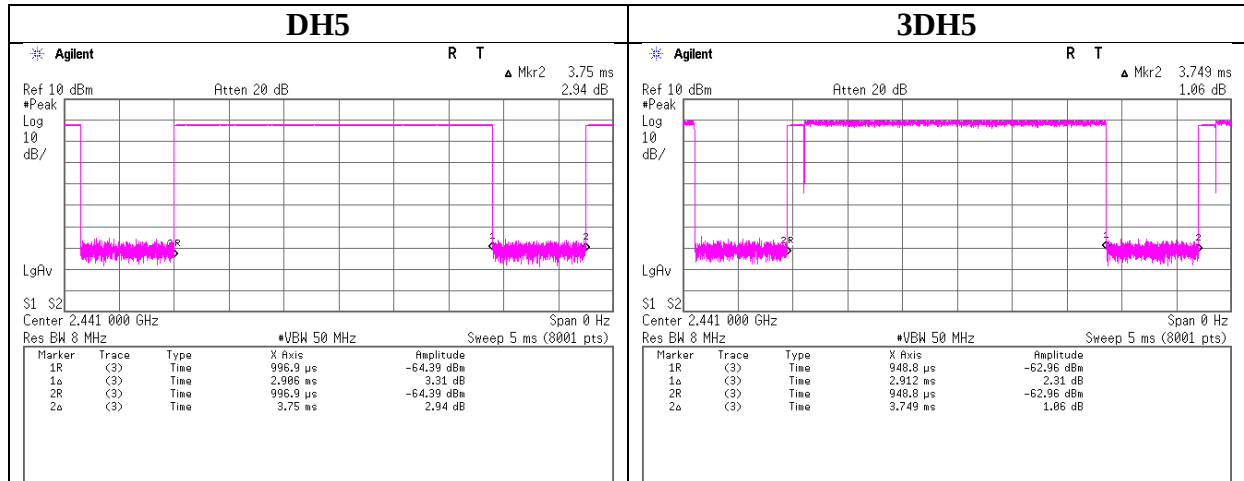
Sample Calculation:

Result = Reading + Cable Loss + Attenuator Loss

*The equipment and cables were not used for factor 0dB of the data sheets.

Burst Rate Confirmation

Test place Ise EMC Lab. No.6 Measurement Room
Report No. 10748020H
Date May 10, 2015
Temperature / Humidity 20deg. C / 63% RH
Engineer Kenshi Shimomura
Mode Tx Hopping Off



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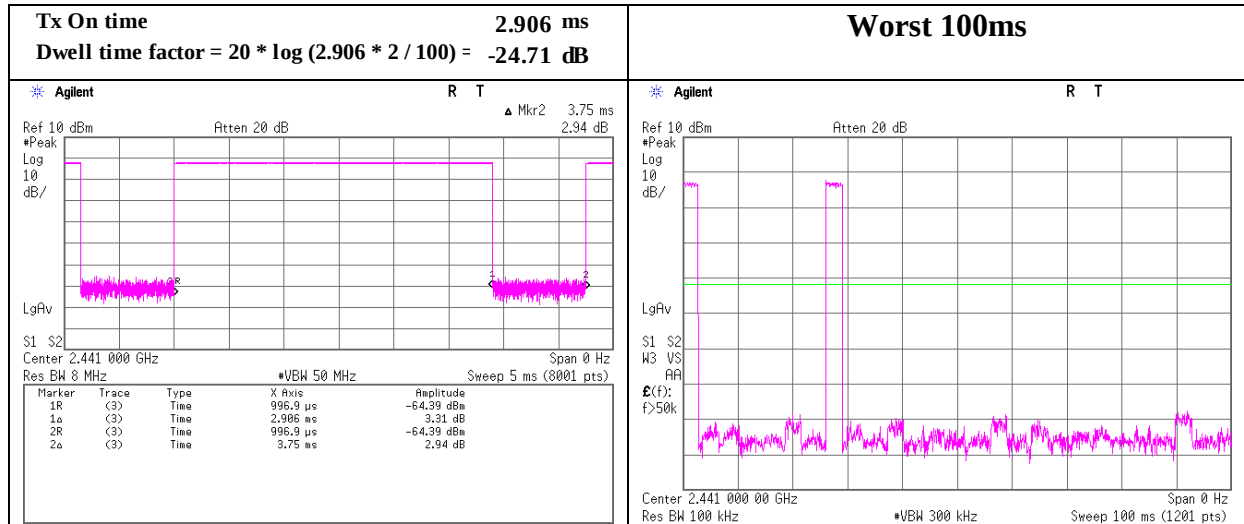
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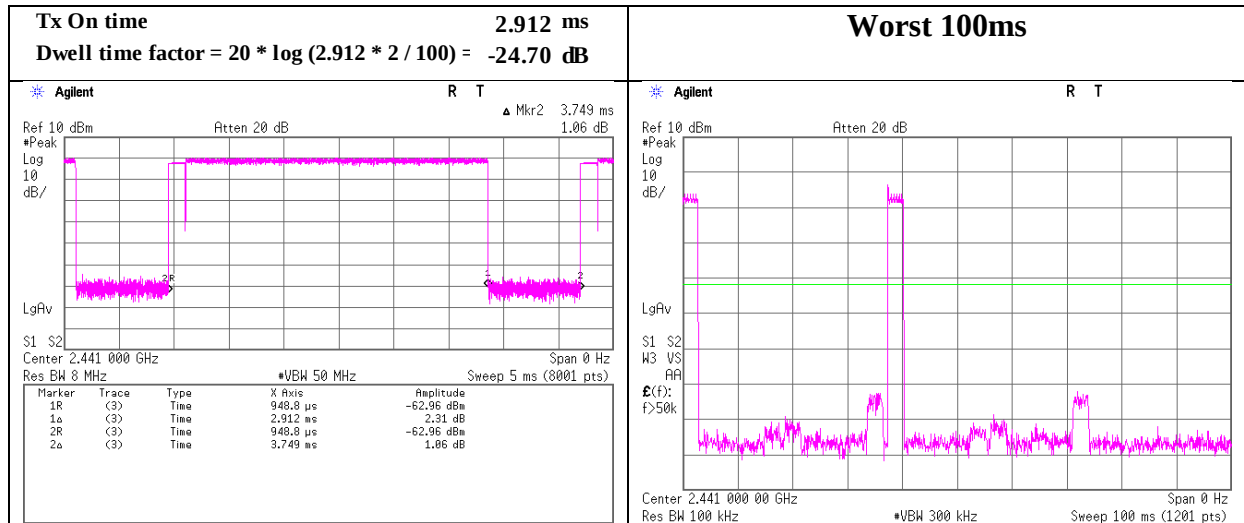
Dwell time factor

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10748020H
Date	May 10, 2015
Temperature / Humidity	20deg. C / 63% RH
Engineer	Kenshi Shimomura
Mode	Tx Hopping On

DH5



3DH5



UL Japan, Inc.

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Radiated Spurious Emission (Antenna 1)

Test place : Ise EMC Lab. No.3 and No.2 Semi Anechoic Chamber
Report No. : 10748020H
Date : May 17, 2015 May 18, 2015 May 18, 2015
Temperature / Humidity : 21 deg. C / 57% RH 22 deg. C / 44% RH 22 deg. C / 44% RH
Engineer : Tomohisa Nakagawa Shinichi Miyazono Keisuke Kawamura
(1-10GHz) (10-26.5GHz) (Below 1GHz)
Mode : Tx, Hopping Off, DH5 2402 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	144.011	QP	36.6	14.6	7.8	28.1	30.9	43.5	12.6	
Hori	166.253	QP	28.2	15.8	7.9	28.0	23.9	43.5	19.6	
Hori	204.019	QP	24.8	16.5	8.2	27.9	21.6	43.5	21.9	
Hori	240.021	QP	36.4	17.0	8.4	27.6	34.2	46.0	11.8	
Hori	287.850	QP	27.2	19.0	8.8	27.4	27.6	46.0	18.4	
Hori	564.832	QP	22.4	19.4	10.1	28.5	23.4	46.0	22.6	
Hori	2305.990	PK	40.8	27.2	3.1	32.1	39.0	73.9	34.9	
Hori	2390.000	PK	46.7	27.4	3.2	32.0	45.3	73.9	28.6	
Hori	2497.877	PK	58.3	27.6	3.2	31.9	57.2	73.9	16.7	
Hori	4804.000	PK	43.0	31.5	5.2	31.3	48.4	73.9	25.5	
Hori	7206.000	PK	42.7	36.8	6.6	32.0	54.1	73.9	19.9	
Hori	9608.000	PK	42.1	38.8	7.0	32.4	55.5	73.9	18.4	
Hori	2390.000	AV	31.9	27.4	3.2	32.0	30.5	53.9	23.4	
Hori	4804.000	AV	29.2	31.5	5.2	31.3	34.6	53.9	19.3	
Hori	7206.000	AV	29.8	36.8	6.6	32.0	41.2	53.9	12.7	
Hori	9608.000	AV	30.0	38.8	7.0	32.4	43.4	53.9	10.5	
Vert	54.063	QP	42.4	9.3	7.0	28.5	30.2	40.0	9.8	
Vert	73.729	QP	41.9	6.4	7.2	28.4	27.1	40.0	12.9	
Vert	99.702	QP	40.1	10.1	7.4	28.2	29.4	43.5	14.1	
Vert	144.012	QP	39.4	14.6	7.8	28.1	33.7	43.5	9.8	
Vert	240.198	QP	36.9	17.0	8.4	27.6	34.7	46.0	11.3	
Vert	565.999	QP	22.2	19.4	10.1	28.5	23.2	46.0	22.8	
Vert	2305.990	PK	50.4	27.2	3.1	32.1	48.6	73.9	25.3	
Vert	2390.000	PK	41.2	27.4	3.2	32.0	39.8	73.9	34.1	
Vert	2497.877	PK	58.1	27.6	3.2	31.9	57.0	73.9	16.9	
Vert	4804.000	PK	41.3	31.5	5.2	31.3	46.7	73.9	27.2	
Vert	7206.000	PK	41.6	36.8	6.6	32.0	53.0	73.9	20.9	
Vert	9608.000	PK	41.5	38.8	7.0	32.4	54.9	73.9	19.0	
Vert	2390.000	AV	34.4	27.4	3.2	32.0	33.0	53.9	20.9	
Vert	4804.000	AV	29.2	31.5	5.2	31.3	34.6	53.9	19.3	
Vert	7206.000	AV	29.9	36.8	6.6	32.0	41.3	53.9	12.6	
Vert	9608.000	AV	30.1	38.8	7.0	32.4	43.5	53.9	10.4	

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

Radiated Spurious Emission (Antenna 1)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10748020H
Date	May 17, 2015
Temperature / Humidity	21 deg. C / 57% RH
Engineer	Tomohisa Nakagawa
Mode	Tx, Hopping Off, DH5 2402 MHz

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2402.000	PK	105.4	27.4	3.2	32.0	104.0	-	-	Carrier
Hori	2400.000	PK	45.1	27.4	3.2	32.0	43.7	84.0	40.3	
Vert	2402.000	PK	107.9	27.4	3.2	32.0	106.5	-	-	Carrier
Vert	2400.000	PK	48.3	27.4	3.2	32.0	46.9	86.5	39.6	

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

Dwell time factor relaxation

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Dwell Factor	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2305.990	AV	47.9	27.2	3.1	32.1	-24.7	21.4	53.9	32.5	*1)
Hori	2497.877	AV	51.9	27.6	3.2	31.9	-24.7	26.1	53.9	27.8	*1)
Vert	2305.990	AV	45.3	27.2	3.1	32.1	-24.7	18.8	53.9	35.1	*1)
Vert	2497.877	AV	52.2	27.6	3.2	31.9	-24.7	26.4	53.9	27.5	*1)

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

*1) Above noise was synchronized with carrier frequency.

Radiated Spurious Emission (Antenna 1)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10748020H
Date	April 17, 2015
Temperature / Humidity	21 deg. C / 57% RH
Engineer	Tomohisa Nakagawa
Mode	Tx, Hopping Off, DH5 2441 MHz

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2441.000	PK	107.0	27.5	3.2	32.0	105.7	-	-	Carrier
Hori	2393.008	PK	54.3	27.4	3.2	32.0	52.9	85.7	32.8	
Vert	2441.000	PK	108.3	27.5	3.2	32.0	107.0	-	-	Carrier
Vert	2393.008	PK	54.7	27.4	3.2	32.0	53.3	87.0	33.7	

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

Dwell time factor relaxation

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Dwell Factor	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2536.806	AV	51.5	27.7	3.2	31.9	-24.7	25.8	53.9	28.1	*1)
Vert	2536.806	AV	48.3	27.7	3.2	31.9	-24.7	22.6	53.9	31.3	*1)

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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

*1) Above noise was synchronized with carrier frequency.

Radiated Spurious Emission (Antenna 1)

Test place : Ise EMC Lab. No.3 and No.2 Semi Anechoic Chamber
Report No. : 10748020H
Date : May 17, 2015 May 18, 2015 May 18, 2015
Temperature / Humidity : 21 deg. C / 57% RH 22 deg. C / 44% RH 22 deg. C / 44% RH
Engineer : Tomohisa Nakagawa Shinichi Miyazono Keisuke Kawamura
(1-10GHz) (10-26.5GHz) (Below 1GHz)
Mode : Tx, Hopping Off, DH5 2480 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	99.702	QP	31.5	10.1	7.4	28.2	20.8	43.5	22.7	
Hori	144.011	QP	36.1	14.6	7.8	28.1	30.4	43.5	13.1	
Hori	192.022	QP	28.9	16.4	8.1	27.9	25.5	43.5	18.0	
Hori	240.021	QP	36.1	17.0	8.4	27.6	33.9	46.0	12.1	
Hori	264.019	QP	30.4	17.9	8.6	27.5	29.4	46.0	16.6	
Hori	288.013	QP	28.2	19.1	8.8	27.4	28.7	46.0	17.3	
Hori	2384.153	PK	55.0	27.4	3.2	32.1	53.5	73.9	20.4	
Hori	2483.500	PK	56.2	27.6	3.2	32.0	55.0	73.9	18.9	
Hori	2527.830	PK	55.4	27.6	3.2	31.9	54.3	73.9	19.7	
Hori	4960.000	PK	41.2	32.0	5.2	31.2	47.2	73.9	26.7	
Hori	7440.000	PK	43.1	37.2	6.6	32.1	54.8	73.9	19.1	
Hori	9920.000	PK	42.3	39.0	7.1	32.5	55.9	73.9	18.1	
Hori	2483.500	AV	36.1	27.6	3.2	32.0	34.9	53.9	19.0	
Hori	4960.000	AV	29.8	32.0	5.2	31.2	35.8	53.9	18.1	
Hori	7440.000	AV	29.9	37.2	6.6	32.1	41.6	53.9	12.3	
Hori	9920.000	AV	29.9	39.0	7.1	32.5	43.5	53.9	10.4	
Vert	49.754	QP	41.9	10.7	7.0	28.5	31.1	40.0	8.9	
Vert	50.788	QP	43.0	10.4	7.0	28.5	31.9	40.0	8.1	
Vert	53.900	QP	43.4	9.3	7.0	28.5	31.2	40.0	8.8	
Vert	99.736	QP	43.0	10.1	7.4	28.2	32.3	43.5	11.2	
Vert	144.012	QP	39.1	14.6	7.8	28.1	33.4	43.5	10.1	
Vert	240.017	QP	37.4	17.0	8.4	27.6	35.2	46.0	10.8	
Vert	2384.153	PK	57.7	27.4	3.2	32.1	56.2	73.9	17.8	
Vert	2483.500	PK	53.7	27.6	3.2	32.0	52.5	73.9	21.4	
Vert	2527.830	PK	57.7	27.6	3.2	31.9	56.6	73.9	17.4	
Vert	4960.000	PK	42.2	32.0	5.2	31.2	48.2	73.9	25.7	
Vert	7440.000	PK	42.5	37.2	6.6	32.1	54.2	73.9	19.7	
Vert	9920.000	PK	43.5	39.0	7.1	32.5	57.1	73.9	16.8	
Vert	2483.500	AV	37.6	27.6	3.2	32.0	36.4	53.9	17.5	
Vert	4960.000	AV	29.1	32.0	5.2	31.2	35.1	53.9	18.8	
Vert	7440.000	AV	29.9	37.2	6.6	32.1	41.6	53.9	12.3	
Vert	9920.000	AV	29.9	39.0	7.1	32.5	43.5	53.9	10.4	

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

Radiated Spurious Emission (Antenna 1)

Test place	Ise EMC Lab. No.3 and No.2 Semi Anechoic Chamber
Report No.	10748020H
Date	May 17, 2015
Temperature / Humidity	21 deg. C / 57% RH
Engineer	Tomohisa Nakagawa (1-10GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz

Dwell time factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Dwell Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2384.153	AV	47.3	27.4	3.2	32.1	-24.7	21.1	53.9	32.8	*1)
Hori	2527.830	AV	46.8	27.6	3.2	31.9	-24.7	21.0	53.9	32.9	*1)
Vert	2384.153	AV	50.0	27.4	3.2	32.1	-24.7	23.8	53.9	30.1	*1)
Vert	2527.830	AV	48.2	27.6	3.2	31.9	-24.7	22.4	53.9	31.5	*1)

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz))
 - Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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

*1) Above noise was synchronized with carrier 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

Radiated Spurious Emission (Antenna 1)

Test place : Ise EMC Lab. No.3 and No.2 Semi Anechoic Chamber
Report No. : 10748020H
Date : May 17, 2015 May 18, 2015 May 18, 2015
Temperature / Humidity : 21 deg. C / 57% RH 22 deg. C / 44% RH 22 deg. C / 44% RH
Engineer : Tomohisa Nakagawa Shinichi Miyazono Keisuke Kawamura
(1-10GHz) (10-26.5GHz) (Below 1GHz)
Mode : Tx, Hopping Off, 3DH5 2402 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	99.702	QP	33.2	10.1	7.4	28.2	22.5	43.5	21.0	
Hori	144.011	QP	36.9	14.6	7.8	28.1	31.2	43.5	12.3	
Hori	192.022	QP	29.4	16.4	8.1	27.9	26.0	43.5	17.5	
Hori	240.021	QP	36.7	17.0	8.4	27.6	34.5	46.0	11.5	
Hori	264.019	QP	30.5	17.9	8.6	27.5	29.5	46.0	16.5	
Hori	288.000	QP	28.1	19.1	8.8	27.4	28.6	46.0	17.4	
Hori	2305.990	PK	50.1	27.2	3.1	32.1	48.3	73.9	25.6	
Hori	2390.000	PK	47.9	27.4	3.2	32.0	46.5	73.9	27.4	
Hori	2497.877	PK	59.5	27.6	3.2	31.9	58.4	73.9	15.5	
Hori	4804.000	PK	41.8	31.5	5.2	31.3	47.2	73.9	26.7	
Hori	7206.000	PK	43.1	36.8	6.6	32.0	54.5	73.9	19.4	
Hori	9608.000	PK	42.6	38.8	7.0	32.4	56.0	73.9	17.9	
Hori	2390.000	AV	32.8	27.4	3.2	32.0	31.4	53.9	22.5	
Hori	4804.000	AV	31.3	31.5	5.2	31.3	36.7	53.9	17.2	
Hori	7206.000	AV	29.8	36.8	6.6	32.0	41.2	53.9	12.7	
Hori	9608.000	AV	30.1	38.8	7.0	32.4	43.5	53.9	10.5	
Vert	49.863	QP	42.2	10.7	7.0	28.5	31.4	40.0	8.6	
Vert	50.918	QP	41.3	10.3	7.0	28.5	30.1	40.0	9.9	
Vert	54.038	QP	42.6	9.3	7.0	28.5	30.4	40.0	9.6	
Vert	99.736	QP	43.2	10.1	7.4	28.2	32.5	43.5	11.0	
Vert	144.012	QP	40.3	14.6	7.8	28.1	34.6	43.5	8.9	
Vert	240.017	QP	37.4	17.0	8.4	27.6	35.2	46.0	10.8	
Vert	2305.990	PK	53.8	27.2	3.1	32.1	52.0	73.9	21.9	
Vert	2390.000	PK	48.9	27.4	3.2	32.0	47.5	73.9	26.4	
Vert	2497.877	PK	59.9	27.6	3.2	31.9	58.8	73.9	15.1	
Vert	4804.000	PK	43.5	31.5	5.2	31.3	48.9	73.9	25.0	
Vert	7206.000	PK	43.5	36.8	6.6	32.0	54.9	73.9	19.0	
Vert	9608.000	PK	42.8	38.8	7.0	32.4	56.2	73.9	17.8	
Vert	2390.000	AV	32.7	27.4	3.2	32.0	31.3	53.9	22.6	
Vert	4804.000	AV	29.3	31.5	5.2	31.3	34.7	53.9	19.2	
Vert	7206.000	AV	29.8	36.8	6.6	32.0	41.2	53.9	12.7	
Vert	9608.000	AV	30.3	38.8	7.0	32.4	43.7	53.9	10.3	

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

Radiated Spurious Emission (Antenna 1)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10748020H
Date	May 17, 2015
Temperature / Humidity	21 deg. C / 57% RH
Engineer	Tomohisa Nakagawa
Mode	Tx, Hopping Off, 3DH5 2402 MHz

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2402.000	PK	105.3	27.4	3.2	32.0	103.9	-	-	Carrier
Hori	2400.000	PK	50.3	27.4	3.2	32.0	48.9	83.9	35.0	
Vert	2402.000	PK	109.0	27.4	3.2	32.0	107.6	-	-	Carrier
Vert	2400.000	PK	52.0	27.4	3.2	32.0	50.6	87.6	37.0	

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

Dwell time factor relaxation

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Dwell Factor	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2305.990	AV	42.2	27.2	3.1	32.1	-24.7	15.7	53.9	38.2	*1)
Hori	2497.877	AV	53.0	27.6	3.2	31.9	-24.7	27.2	53.9	26.7	*1)
Vert	2305.990	AV	45.9	27.2	3.1	32.1	-24.7	19.4	53.9	34.5	*1)
Vert	2497.877	AV	51.8	27.6	3.2	31.9	-24.7	26.0	53.9	27.9	*1)

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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

*1) Above noise was synchronized with carrier frequency.

Radiated Spurious Emission (Antenna 1)

Test place : Ise EMC Lab. No.3 and No.2 Semi Anechoic Chamber
Report No. : 10748020H
Date : May 17, 2015 May 18, 2015 May 18, 2015
Temperature / Humidity : 21 deg. C / 57% RH 22 deg. C / 44% RH 22 deg. C / 44% RH
Engineer : Tomohisa Nakagawa Shinichi Miyazono Keisuke Kawamura
(1-10GHz) (10-26.5GHz) (Below 1GHz)
Mode : Tx, Hopping Off, 3DH5 2441 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	99.702	QP	33.2	10.1	7.4	28.2	22.5	43.5	21.0	
Hori	144.011	QP	36.9	14.6	7.8	28.1	31.2	43.5	12.3	
Hori	192.022	QP	29.4	16.4	8.1	27.9	26.0	43.5	17.5	
Hori	240.021	QP	36.7	17.0	8.4	27.6	34.5	46.0	11.5	
Hori	264.019	QP	30.5	17.9	8.6	27.5	29.5	46.0	16.5	
Hori	288.000	QP	28.1	19.1	8.8	27.4	28.6	46.0	17.4	
Hori	2536.806	PK	59.5	27.7	3.2	31.9	58.5	73.9	15.4	
Hori	4882.000	PK	41.7	31.8	5.3	31.3	47.5	73.9	26.4	
Hori	7323.000	PK	42.4	37.0	6.5	32.0	53.9	73.9	20.0	
Hori	9764.000	PK	42.7	38.9	7.1	32.5	56.2	73.9	17.7	
Hori	4882.000	AV	29.4	31.8	5.3	31.3	35.2	53.9	18.7	
Hori	7323.000	AV	29.5	37.0	6.5	32.0	41.0	53.9	12.9	
Hori	9764.000	AV	29.7	38.9	7.1	32.5	43.2	53.9	10.7	
Vert	49.863	QP	42.0	10.7	7.0	28.5	31.2	40.0	8.8	
Vert	50.918	QP	41.3	10.3	7.0	28.5	30.1	40.0	9.9	
Vert	54.038	QP	42.6	9.3	7.0	28.5	30.4	40.0	9.6	
Vert	99.736	QP	43.2	10.1	7.4	28.2	32.5	43.5	11.0	
Vert	144.012	QP	40.3	14.6	7.8	28.1	34.6	43.5	8.9	
Vert	240.017	QP	37.4	17.0	8.4	27.6	35.2	46.0	10.8	
Vert	2536.806	PK	56.5	27.7	3.2	31.9	55.5	73.9	18.4	
Vert	4882.000	PK	43.3	31.8	5.3	31.3	49.1	73.9	24.8	
Vert	7323.000	PK	42.8	37.0	6.5	32.0	54.3	73.9	19.6	
Vert	9764.000	PK	42.4	38.9	7.1	32.5	55.9	73.9	18.0	
Vert	4882.000	AV	30.2	31.8	5.3	31.3	36.0	53.9	17.9	
Vert	7323.000	AV	29.5	37.0	6.5	32.0	41.0	53.9	12.9	
Vert	9764.000	AV	29.9	38.9	7.1	32.5	43.4	53.9	10.5	

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

Radiated Spurious Emission (Antenna 1)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10748020H
Date	April 1, 2015
Temperature / Humidity	21 deg. C / 57% RH
Engineer	Tomohisa Nakagawa
Mode	Tx, Hopping Off, 3DH5 2441 MHz

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2441.000	PK	108.0	27.5	3.2	32.0	106.7	-	-	Carrier
Hori	2393.008	PK	51.5	27.4	3.2	32.0	50.1	86.7	36.6	
Vert	2441.000	PK	109.4	27.5	3.2	32.0	108.1	-	-	Carrier
Vert	2393.008	PK	54.7	27.4	3.2	32.0	53.3	88.1	34.8	

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

Dwell time factor relaxation

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Dwell Factor	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2536.806	AV	50.7	27.7	3.2	31.9	-24.7	25.0	53.9	28.9	*1)
Vert	2536.806	AV	47.4	27.7	3.2	31.9	-24.7	21.7	53.9	32.2	*1)

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz))
- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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

*1) Above noise was synchronized with carrier frequency.

Radiated Spurious Emission (Antenna 1)

Test place : Ise EMC Lab. No.3 and No.2 Semi Anechoic Chamber
Report No. : 10748020H
Date : May 17, 2015 May 18, 2015 May 18, 2015
Temperature / Humidity : 21 deg. C / 57% RH 22 deg. C / 44% RH 22 deg. C / 44% RH
Engineer : Tomohisa Nakagawa Shinichi Miyazono Keisuke Kawamura
(1-10GHz) (10-26.5GHz) (Below 1GHz)
Mode : Tx, Hopping Off, 3DH5 2480 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	99.702	QP	33.2	10.1	7.4	28.2	22.5	43.5	21.0	
Hori	144.011	QP	36.9	14.6	7.8	28.1	31.2	43.5	12.3	
Hori	192.022	QP	29.4	16.4	8.1	27.9	26.0	43.5	17.5	
Hori	240.021	QP	36.7	17.0	8.4	27.6	34.5	46.0	11.5	
Hori	264.019	QP	30.5	17.9	8.6	27.5	29.5	46.0	16.5	
Hori	288.000	QP	28.1	19.1	8.8	27.4	28.6	46.0	17.4	
Hori	2384.153	PK	55.6	27.4	3.2	32.1	54.1	73.9	19.8	
Hori	2483.500	PK	61.3	27.6	3.2	32.0	60.1	73.9	13.8	
Hori	2527.830	PK	58.5	27.6	3.2	31.9	57.4	73.9	16.5	
Hori	4960.000	PK	43.4	32.0	5.2	31.2	49.4	73.9	24.5	
Hori	7440.000	PK	41.7	37.2	6.6	32.1	53.4	73.9	20.5	
Hori	9920.000	PK	42.4	39.0	7.1	32.5	56.0	73.9	17.9	
Hori	2483.500	AV	40.9	27.6	3.2	32.0	39.7	53.9	14.2	
Hori	4960.000	AV	29.2	32.0	5.2	31.2	35.2	53.9	18.7	
Hori	7440.000	AV	29.9	37.2	6.6	32.1	41.6	53.9	12.3	
Hori	9920.000	AV	29.9	39.0	7.1	32.5	43.5	53.9	10.4	
Vert	49.754	QP	41.3	10.7	7.0	28.5	30.5	40.0	9.5	
Vert	50.038	QP	41.6	10.6	7.0	28.5	30.7	40.0	9.3	
Vert	53.184	QP	41.3	9.6	7.0	28.5	29.4	40.0	10.6	
Vert	99.736	QP	43.2	10.1	7.4	28.2	32.5	43.5	11.0	
Vert	144.012	QP	40.3	14.6	7.8	28.1	34.6	43.5	8.9	
Vert	240.017	QP	37.4	17.0	8.4	27.6	35.2	46.0	10.8	
Vert	2384.153	PK	58.0	27.4	3.2	32.1	56.5	73.9	17.4	
Vert	2483.500	PK	60.4	27.6	3.2	32.0	59.2	73.9	14.7	
Vert	2527.830	PK	57.5	27.6	3.2	31.9	56.4	73.9	17.5	
Vert	4960.000	PK	42.6	32.0	5.2	31.2	48.6	73.9	25.3	
Vert	7440.000	PK	42.7	37.2	6.6	32.1	54.4	73.9	19.5	
Vert	9920.000	PK	43.3	39.0	7.1	32.5	56.9	73.9	17.0	
Vert	2483.500	AV	39.3	27.6	3.2	32.0	38.1	53.9	15.8	
Vert	4960.000	AV	31.4	32.0	5.2	31.2	37.4	53.9	16.5	
Vert	7440.000	AV	29.9	37.2	6.6	32.1	41.6	53.9	12.3	
Vert	9920.000	AV	30.0	39.0	7.1	32.5	43.6	53.9	10.3	

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

Radiated Spurious Emission (Antenna 1)

Test place	Ise EMC Lab. No.3 and No.2 Semi Anechoic Chamber
Report No.	10748020H
Date	May 17, 2015
Temperature / Humidity	21 deg. C / 57% RH
Engineer	Tomohisa Nakagawa (1-10GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz

Dwell time factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Dwell Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2384.153	AV	49.3	27.4	3.2	32.1	-24.7	23.1	53.9	30.8	*1)
Hori	2527.830	AV	46.9	27.6	3.2	31.9	-24.7	21.1	53.9	32.8	*1)
Vert	2384.153	AV	51.2	27.4	3.2	32.1	-24.7	25.0	53.9	28.9	*1)
Vert	2527.830	AV	46.5	27.6	3.2	31.9	-24.7	20.7	53.9	33.2	*1)

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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

*Above noise was synchronized with carrier frequency.

Radiated Spurious Emission (Antenna 2)

Test place	Ise EMC Lab. No.2 and 3 Semi Anechoic Chamber
Report No.	10748020H
Date	July 12, 2015 July 14, 2015
Temperature / Humidity	22 deg. C / 67 % RH 22 deg. C / 62 % RH
Engineer	Takumi Shimada Ken Fujita
	(Above 1GHz) (Below 1GHz)
Mode	Tx, Hopping Off, DH5 2402 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	73.875	QP	46.6	6.4	7.7	32.1	28.6	40.0	11.4	
Hori	99.525	QP	50.3	10.0	8.0	32.3	36.0	43.5	7.5	
Hori	166.350	QP	45.2	15.7	8.8	32.2	37.5	43.5	6.0	
Hori	192.001	QP	39.8	16.4	9.0	32.1	33.1	43.5	10.4	
Hori	239.926	QP	40.3	17.0	9.4	32.1	34.6	46.0	11.4	
Hori	450.500	QP	36.9	17.9	11.0	32.1	33.7	46.0	12.3	
Hori	2305.943	PK	51.7	29.3	3.4	35.0	49.4	73.9	24.5	
Hori	2390.000	PK	47.2	29.3	3.5	35.0	45.0	73.9	28.9	
Hori	2497.975	PK	58.7	29.3	3.5	34.9	56.6	73.9	17.3	
Hori	4804.000	PK	46.5	32.7	5.7	34.2	50.7	73.9	23.3	Floor Noise
Hori	7206.000	PK	42.9	36.8	7.2	34.1	52.8	73.9	21.1	Floor Noise
Hori	9608.000	PK	43.6	38.9	7.8	34.7	55.6	73.9	18.3	Floor Noise
Hori	2390.000	AV	34.5	29.3	3.5	35.0	32.3	53.9	21.6	
Hori	4804.000	AV	38.2	32.7	5.7	34.2	42.4	53.9	11.5	Floor Noise
Hori	7206.000	AV	30.5	36.8	7.2	34.1	40.4	53.9	13.5	Floor Noise
Hori	9608.000	AV	31.2	38.9	7.8	34.7	43.2	53.9	10.7	Floor Noise
Vert	73.875	QP	48.3	6.4	7.7	32.1	30.3	40.0	9.7	
Vert	99.525	QP	50.2	10.0	8.0	32.3	35.9	43.5	7.6	
Vert	166.350	QP	39.1	15.7	8.8	32.2	31.4	43.5	12.1	
Vert	192.001	QP	35.2	16.4	9.0	32.1	28.5	43.5	15.0	
Vert	239.926	QP	39.6	17.0	9.4	32.1	33.9	46.0	12.1	
Vert	450.500	QP	29.1	17.9	11.0	32.1	25.9	46.0	20.1	
Vert	2305.943	PK	51.7	29.3	3.4	35.0	49.4	73.9	24.5	
Vert	2390.000	PK	46.3	29.3	3.5	35.0	44.1	73.9	29.8	
Vert	2497.975	PK	56.1	29.3	3.5	34.9	54.0	73.9	19.9	
Vert	4804.000	PK	46.4	32.7	5.7	34.2	50.6	73.9	23.3	Floor Noise
Vert	7206.000	PK	42.7	36.8	7.2	34.1	52.6	73.9	21.3	Floor Noise
Vert	9608.000	PK	42.7	38.9	7.8	34.7	54.7	73.9	19.2	Floor Noise
Vert	2390.000	AV	33.6	29.3	3.5	35.0	31.4	53.9	22.5	
Vert	4804.000	AV	36.5	32.7	5.7	34.2	40.7	53.9	13.2	Floor Noise
Vert	7206.000	AV	30.5	36.8	7.2	34.1	40.4	53.9	13.5	Floor Noise
Vert	9608.000	AV	31.1	38.9	7.8	34.7	43.1	53.9	10.8	Floor Noise

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

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

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

Radiated Spurious Emission (Antenna 2)

Test place	Ise EMC Lab. No.2 and 3 Semi Anechoic Chamber	
Report No.	10748020H	
Date	July 12, 2015	July 14, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 62 % RH
Engineer	Takumi Shimada	Ken Fujita
	(Above 1GHz)	(Below 1GHz)
Mode	Tx, Hopping Off, DH5 2402 MHz	

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2402.000	PK	110.2	29.3	3.5	35.0	108.0	-	-	Carrier
Hori	2400.000	PK	50.2	29.3	3.5	35.0	48.0	88.0	40.0	
Vert	2402.000	PK	107.3	29.3	3.5	35.0	105.1	-	-	Carrier
Vert	2400.000	PK	47.1	29.3	3.5	35.0	44.9	85.1	40.2	

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

Dwell time factor relaxation

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Dwell Factor	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2305.943	AV	46.9	29.3	3.4	35.0	-24.7	19.9	53.9	34.0	*1)
Hori	2497.975	AV	54.8	29.3	3.5	34.9	-24.7	28.0	53.9	25.9	*1)
Vert	2305.943	AV	46.5	29.3	3.4	35.0	-24.7	19.5	53.9	34.4	*1)
Vert	2497.975	AV	51.4	29.3	3.5	34.9	-24.7	24.6	53.9	29.3	*1)

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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

*1) Above noise was synchronized with carrier frequency.

Radiated Spurious Emission (Antenna 2)

Test place : Ise EMC Lab. No.2 and 3 Semi Anechoic Chamber
Report No. : 10748020H
Date : July 12, 2015 July 14, 2015
Temperature / Humidity : 22 deg. C / 67 % RH 22 deg. C / 62 % RH
Engineer : Takumi Shimada Ken Fujita
(Above 1GHz) (Below 1GHz)
Mode : Tx, Hopping Off, DH5 2441 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	73.875	QP	46.3	6.4	7.7	32.1	28.3	40.0	11.7	
Hori	99.525	QP	50.3	10.0	8.0	32.3	36.0	43.5	7.5	
Hori	166.350	QP	45.4	15.7	8.8	32.2	37.7	43.5	5.8	
Hori	192.001	QP	39.6	16.4	9.0	32.1	32.9	43.5	10.6	
Hori	239.926	QP	40.2	17.0	9.4	32.1	34.5	46.0	11.5	
Hori	450.500	QP	36.6	17.9	11.0	32.1	33.4	46.0	12.6	
Hori	2393.000	PK	55.1	29.3	3.5	35.0	52.9	73.9	21.0	
Hori	2536.985	PK	60.8	29.3	3.5	34.9	58.7	73.9	15.2	
Hori	4882.000	PK	44.0	32.8	5.8	34.2	48.4	73.9	25.5	Floor Noise
Hori	7323.000	PK	43.4	36.8	7.1	34.1	53.2	73.9	20.7	Floor Noise
Hori	9764.000	PK	43.4	39.0	7.8	34.7	55.5	73.9	18.4	Floor Noise
Hori	4882.000	AV	32.1	32.8	5.8	34.2	36.5	53.9	17.4	Floor Noise
Hori	7323.000	AV	30.8	36.8	7.1	34.1	40.6	53.9	13.3	Floor Noise
Hori	9764.000	AV	31.9	39.0	7.8	34.7	44.0	53.9	9.9	Floor Noise
Vert	73.875	QP	48.2	6.4	7.7	32.1	30.2	40.0	9.8	
Vert	99.525	QP	50.1	10.0	8.0	32.3	35.8	43.5	7.7	
Vert	166.350	QP	39.3	15.7	8.8	32.2	31.6	43.5	11.9	
Vert	192.001	QP	35.1	16.4	9.0	32.1	28.4	43.5	15.1	
Vert	239.926	QP	39.4	17.0	9.4	32.1	33.7	46.0	12.3	
Vert	450.500	QP	29.5	17.9	11.0	32.1	26.3	46.0	19.7	
Vert	2393.000	PK	53.7	29.3	3.5	35.0	51.5	73.9	22.4	
Vert	2536.985	PK	58.9	29.3	3.5	34.9	56.8	73.9	17.1	
Vert	4882.000	PK	43.5	32.8	5.8	34.2	47.9	73.9	26.0	Floor Noise
Vert	7323.000	PK	43.4	36.8	7.1	34.1	53.2	73.9	20.7	Floor Noise
Vert	9764.000	PK	43.3	39.0	7.8	34.7	55.4	73.9	18.5	Floor Noise
Vert	4882.000	AV	31.3	32.8	5.8	34.2	35.7	53.9	18.2	Floor Noise
Vert	7323.000	AV	30.8	36.8	7.1	34.1	40.6	53.9	13.3	Floor Noise
Vert	9764.000	AV	31.8	39.0	7.8	34.7	43.9	53.9	10.0	Floor Noise

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

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

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

Radiated Spurious Emission (Antenna 2)

Test place	Ise EMC Lab. No.2 and 3 Semi Anechoic Chamber	
Report No.	10748020H	
Date	July 12, 2015	July 14, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 62 % RH
Engineer	Takumi Shimada	Ken Fujita
	(Above 1GHz)	(Below 1GHz)
Mode	Tx, Hopping Off, DH5 2441 MHz	

Dwell time factor relaxation

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Dwell Factor	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2393.000	AV	50.8	29.3	3.5	35.0	-24.7	23.9	53.9	30.0	*1)
Hori	2536.985	AV	56.9	29.3	3.5	34.9	-24.7	30.1	53.9	23.8	*1)
Vert	2393.000	AV	48.4	29.3	3.5	35.0	-24.7	21.5	53.9	32.4	*1)
Vert	2536.985	AV	55.2	29.3	3.5	34.9	-24.7	28.4	53.9	25.5	*1)

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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

*1) Above noise was synchronized with carrier frequency.

Radiated Spurious Emission (Antenna 2)

Test place	Ise EMC Lab. No.2 and 3 Semi Anechoic Chamber	
Report No.	10748020H	
Date	July 12, 2015	July 14, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 62 % RH
Engineer	Takumi Shimada	Ken Fujita
	(Above 1GHz)	(Below 1GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	73.875	QP	46.3	6.4	7.7	32.1	28.3	40.0	11.7	
Hori	99.525	QP	50.2	10.0	8.0	32.3	35.9	43.5	7.6	
Hori	166.350	QP	45.3	15.7	8.8	32.2	37.6	43.5	5.9	
Hori	192.001	QP	39.7	16.4	9.0	32.1	33.0	43.5	10.5	
Hori	239.926	QP	40.4	17.0	9.4	32.1	34.7	46.0	11.3	
Hori	450.500	QP	36.8	17.9	11.0	32.1	33.6	46.0	12.4	
Hori	2383.823	PK	57.5	29.3	3.5	35.0	55.3	73.9	18.6	
Hori	2483.500	PK	60.8	29.3	3.5	34.9	58.7	73.9	15.2	
Hori	2528.008	PK	55.1	29.3	3.5	34.9	53.0	73.9	20.9	
Hori	4960.000	PK	43.4	33.0	5.7	34.3	47.8	73.9	26.1	
Hori	7440.000	PK	43.1	36.8	7.1	34.2	52.8	73.9	21.1	Floor Noise
Hori	9920.000	PK	44.0	39.0	7.9	34.7	56.2	73.9	17.7	Floor Noise
Hori	2483.500	AV	51.1	29.3	3.5	34.9	49.0	53.9	4.9	
Hori	4960.000	AV	31.7	33.0	5.7	34.3	36.1	53.9	17.8	
Hori	7440.000	AV	31.0	36.8	7.1	34.2	40.7	53.9	13.2	Floor Noise
Hori	9920.000	AV	31.4	39.0	7.9	34.7	43.6	53.9	10.3	Floor Noise
Vert	73.875	QP	48.4	6.4	7.7	32.1	30.4	40.0	9.6	
Vert	99.525	QP	50.2	10.0	8.0	32.3	35.9	43.5	7.6	
Vert	166.350	QP	39.2	15.7	8.8	32.2	31.5	43.5	12.0	
Vert	192.001	QP	35.1	16.4	9.0	32.1	28.4	43.5	15.1	
Vert	239.926	QP	39.7	17.0	9.4	32.1	34.0	46.0	12.0	
Vert	450.500	QP	29.2	17.9	11.0	32.1	26.0	46.0	20.0	
Vert	2383.823	PK	54.0	29.3	3.5	35.0	51.8	73.9	22.1	
Vert	2483.500	PK	51.4	29.3	3.5	34.9	49.3	73.9	24.6	
Vert	2528.008	PK	54.6	29.3	3.5	34.9	52.5	73.9	21.4	
Vert	4960.000	PK	42.5	33.0	5.7	34.3	46.9	73.9	27.0	
Vert	7440.000	PK	43.4	36.8	7.1	34.2	53.1	73.9	20.8	Floor Noise
Vert	9920.000	PK	43.6	39.0	7.9	34.7	55.8	73.9	18.1	Floor Noise
Vert	2483.500	AV	37.2	29.3	3.5	34.9	35.1	53.9	18.8	
Vert	4960.000	AV	32.4	33.0	5.7	34.3	36.8	53.9	17.1	
Vert	7440.000	AV	31.0	36.8	7.1	34.2	40.7	53.9	13.2	Floor Noise
Vert	9920.000	AV	31.2	39.0	7.9	34.7	43.4	53.9	10.5	Floor Noise

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

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

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

Radiated Spurious Emission (Antenna 2)

Test place	Ise EMC Lab. No.2 and 3 Semi Anechoic Chamber	
Report No.	10748020H	
Date	July 12, 2015	July 14, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 62 % RH
Engineer	Takumi Shimada	Ken Fujita
	(Above 1GHz)	(Below 1GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz	

Dwell time factor relaxation

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Dwell Factor	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2383.823	AV	53.1	29.3	3.5	35.0	-24.7	26.2	53.9	27.7	*1)
Hori	2528.008	AV	51.1	29.3	3.5	34.9	-24.7	24.3	53.9	29.6	*1)
Vert	2383.823	AV	49.5	29.3	3.5	35.0	-24.7	22.6	53.9	31.3	*1)
Vert	2528.008	AV	50.6	29.3	3.5	34.9	-24.7	23.8	53.9	30.1	*1)

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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

*1) Above noise was synchronized with carrier frequency.

Radiated Spurious Emission (Antenna 2)

Test place : Ise EMC Lab. No.2 and 3 Semi Anechoic Chamber
Report No. : 10748020H
Date : July 12, 2015 July 14, 2015
Temperature / Humidity : 22 deg. C / 67 % RH 22 deg. C / 62 % RH
Engineer : Takumi Shimada Ken Fujita
(Above 1GHz) (Below 1GHz)
Mode : Tx, Hopping Off, 3DH5 2402 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	73.875	QP	46.2	6.4	7.7	32.1	28.2	40.0	11.8	
Hori	99.525	QP	50.1	10.0	8.0	32.3	35.8	43.5	7.7	
Hori	166.350	QP	45.1	15.7	8.8	32.2	37.4	43.5	6.1	
Hori	192.001	QP	39.6	16.4	9.0	32.1	32.9	43.5	10.6	
Hori	239.926	QP	40.4	17.0	9.4	32.1	34.7	46.0	11.3	
Hori	450.500	QP	36.6	17.9	11.0	32.1	33.4	46.0	12.6	
Hori	2305.943	PK	52.5	29.3	3.4	35.0	50.2	73.9	23.7	
Hori	2390.000	PK	46.2	29.3	3.5	35.0	44.0	73.9	30.0	
Hori	2497.975	PK	59.0	29.3	3.5	34.9	56.9	73.9	17.0	
Hori	4804.000	PK	47.2	32.7	5.7	34.2	51.4	73.9	22.5	
Hori	7206.000	PK	42.7	36.8	7.2	34.1	52.6	73.9	21.3	Floor Noise
Hori	9608.000	PK	43.5	38.9	7.8	34.7	55.5	73.9	18.4	Floor Noise
Hori	2390.000	AV	34.1	29.3	3.5	35.0	31.9	53.9	22.0	
Hori	4804.000	AV	37.3	32.7	5.7	34.2	41.5	53.9	12.4	
Hori	7206.000	AV	30.6	36.8	7.2	34.1	40.5	53.9	13.4	Floor Noise
Hori	9608.000	AV	31.3	38.9	7.8	34.7	43.3	53.9	10.6	Floor Noise
Vert	73.875	QP	48.3	6.4	7.7	32.1	30.3	40.0	9.7	
Vert	99.525	QP	50.2	10.0	8.0	32.3	35.9	43.5	7.6	
Vert	166.350	QP	39.2	15.7	8.8	32.2	31.5	43.5	12.0	
Vert	192.001	QP	35.3	16.4	9.0	32.1	28.6	43.5	14.9	
Vert	239.926	QP	39.3	17.0	9.4	32.1	33.6	46.0	12.4	
Vert	450.500	QP	29.2	17.9	11.0	32.1	26.0	46.0	20.0	
Vert	2305.943	PK	51.2	29.3	3.4	35.0	48.9	73.9	25.0	
Vert	2390.000	PK	46.4	29.3	3.5	35.0	44.2	73.9	29.7	
Vert	2497.975	PK	56.4	29.3	3.5	34.9	54.3	73.9	19.6	
Vert	4804.000	PK	45.6	32.7	5.7	34.2	49.8	73.9	24.1	
Vert	7206.000	PK	42.5	36.8	7.2	34.1	52.4	73.9	21.5	Floor Noise
Vert	9608.000	PK	42.6	38.9	7.8	34.7	54.6	73.9	19.3	Floor Noise
Vert	2390.000	AV	33.6	29.3	3.5	35.0	31.4	53.9	22.5	
Vert	4804.000	AV	35.4	32.7	5.7	34.2	39.6	53.9	14.3	
Vert	7206.000	AV	30.4	36.8	7.2	34.1	40.3	53.9	13.6	Floor Noise
Vert	9608.000	AV	31.1	38.9	7.8	34.7	43.1	53.9	10.8	Floor Noise

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

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

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

Radiated Spurious Emission (Antenna 2)

Test place	Ise EMC Lab. No.2 and 3 Semi Anechoic Chamber	
Report No.	10748020H	
Date	July 12, 2015	July 14, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 62 % RH
Engineer	Takumi Shimada	Ken Fujita
	(Above 1GHz)	(Below 1GHz)
Mode	Tx, Hopping Off, 3DH5 2402 MHz	

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2402.000	PK	109.7	29.3	3.5	35.0	107.5	-	-	Carrier
Hori	2400.000	PK	48.9	29.3	3.5	35.0	46.7	87.5	40.8	
Vert	2402.000	PK	106.6	29.3	3.5	35.0	104.4	-	-	Carrier
Vert	2400.000	PK	47.2	29.3	3.5	35.0	45.0	84.4	39.4	

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

Dwell time factor relaxation

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Dwell Factor	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2305.943	AV	45.9	29.3	3.4	35.0	-24.7	18.9	53.9	35.0	*1)
Hori	2497.975	AV	52.9	29.3	3.5	34.9	-24.7	26.1	53.9	27.8	*1)
Vert	2305.943	AV	44.6	29.3	3.4	35.0	-24.7	17.6	53.9	36.3	*1)
Vert	2497.975	AV	51.2	29.3	3.5	34.9	-24.7	24.4	53.9	29.5	*1)

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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

*1) Above noise was synchronized with carrier frequency.

Radiated Spurious Emission (Antenna 2)

Test place	Ise EMC Lab. No.2 and 3 Semi Anechoic Chamber	
Report No.	10748020H	
Date	July 12, 2015	July 14, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 62 % RH
Engineer	Takumi Shimada	Ken Fujita
	(Above 1GHz)	(Below 1GHz)
Mode	Tx, Hopping Off, 3DH5 2441 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	73.875	QP	46.2	6.4	7.7	32.1	28.2	40.0	11.8	
Hori	99.525	QP	49.9	10.0	8.0	32.3	35.6	43.5	7.9	
Hori	166.350	QP	45.2	15.7	8.8	32.2	37.5	43.5	6.0	
Hori	192.001	QP	39.5	16.4	9.0	32.1	32.8	43.5	10.7	
Hori	239.926	QP	40.1	17.0	9.4	32.1	34.4	46.0	11.6	
Hori	450.500	QP	36.3	17.9	11.0	32.1	33.1	46.0	12.9	
Hori	2393.000	PK	56.6	29.3	3.5	35.0	54.4	73.9	19.5	
Hori	2536.985	PK	62.7	29.3	3.5	34.9	60.6	73.9	13.4	
Hori	4882.000	PK	42.4	32.8	5.8	34.2	46.8	73.9	27.1	Floor Noise
Hori	7323.000	PK	43.0	36.8	7.1	34.1	52.8	73.9	21.2	Floor Noise
Hori	9764.000	PK	43.6	39.0	7.8	34.7	55.7	73.9	18.2	Floor Noise
Hori	4882.000	AV	31.4	32.8	5.8	34.2	35.8	53.9	18.2	Floor Noise
Hori	7323.000	AV	30.7	36.8	7.1	34.1	40.5	53.9	13.4	Floor Noise
Hori	9764.000	AV	31.7	39.0	7.8	34.7	43.8	53.9	10.1	Floor Noise
Vert	73.875	QP	48.1	6.4	7.7	32.1	30.1	40.0	9.9	
Vert	99.525	QP	50.1	10.0	8.0	32.3	35.8	43.5	7.7	
Vert	166.350	QP	39.0	15.7	8.8	32.2	31.3	43.5	12.2	
Vert	192.001	QP	35.1	16.4	9.0	32.1	28.4	43.5	15.1	
Vert	239.926	QP	39.1	17.0	9.4	32.1	33.4	46.0	12.6	
Vert	450.500	QP	29.2	17.9	11.0	32.1	26.0	46.0	20.0	
Vert	2393.000	PK	56.2	29.3	3.5	35.0	54.0	73.9	19.9	
Vert	2536.985	PK	58.6	29.3	3.5	34.9	56.5	73.9	17.4	
Vert	4882.000	PK	42.5	32.8	5.8	34.2	46.9	73.9	27.0	Floor Noise
Vert	7323.000	PK	42.2	36.8	7.1	34.1	52.0	73.9	21.9	Floor Noise
Vert	9764.000	PK	43.9	39.0	7.8	34.7	56.0	73.9	17.9	Floor Noise
Vert	4882.000	AV	31.2	32.8	5.8	34.2	35.6	53.9	18.3	Floor Noise
Vert	7323.000	AV	30.7	36.8	7.1	34.1	40.5	53.9	13.4	Floor Noise
Vert	9764.000	AV	31.7	39.0	7.8	34.7	43.8	53.9	10.1	Floor Noise

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

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

Distance factor: 10 GHz - 26.5 GHz 20log (3.0 m / 1.0 m) = 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 **(Antenna 2)**

Test place	Ise EMC Lab. No.2 and 3 Semi Anechoic Chamber	
Report No.	10748020H	
Date	July 12, 2015	July 14, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 62 % RH
Engineer	Takumi Shimada	Ken Fujita
	(Above 1GHz)	(Below 1GHz)
Mode	Tx, Hopping Off, 3DH5 2441 MHz	

Dwell time factor relaxation

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Dwell Factor	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2393.000	AV	51.0	29.3	3.5	35.0	-24.7	24.1	53.9	29.8	*1)
Hori	2536.985	AV	54.2	29.3	3.5	34.9	-24.7	27.4	53.9	26.5	*1)
Vert	2393.000	AV	50.2	29.3	3.5	35.0	-24.7	23.3	53.9	30.6	*1)
Vert	2536.985	AV	52.9	29.3	3.5	34.9	-24.7	26.1	53.9	27.8	*1)

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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

*1) Above noise was synchronized with carrier frequency.

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Radiated Spurious Emission (Antenna 2)

Test place	Ise EMC Lab. No.2 and 3 Semi Anechoic Chamber	
Report No.	10748020H	
Date	July 12, 2015	July 14, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 62 % RH
Engineer	Takumi Shimada	Ken Fujita
	(Above 1GHz)	(Below 1GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	73.875	QP	46.3	6.4	7.7	32.1	28.3	40.0	11.7	
Hori	99.525	QP	50.2	10.0	8.0	32.3	35.9	43.5	7.6	
Hori	166.350	QP	45.3	15.7	8.8	32.2	37.6	43.5	5.9	
Hori	192.001	QP	39.5	16.4	9.0	32.1	32.8	43.5	10.7	
Hori	239.926	QP	40.2	17.0	9.4	32.1	34.5	46.0	11.5	
Hori	450.500	QP	37.0	17.9	11.0	32.1	33.8	46.0	12.2	
Hori	2383.823	PK	60.7	29.3	3.5	35.0	58.5	73.9	15.5	
Hori	2483.500	PK	53.8	29.3	3.5	34.9	51.7	73.9	22.2	
Hori	2528.008	PK	56.3	29.3	3.5	34.9	54.2	73.9	19.7	
Hori	4960.000	PK	42.0	33.0	5.7	34.3	46.4	73.9	27.5	
Hori	7440.000	PK	43.2	36.8	7.1	34.2	52.9	73.9	21.0	Floor Noise
Hori	9920.000	PK	42.8	39.0	7.9	34.7	55.0	73.9	18.9	Floor Noise
Hori	2483.500	AV	40.4	29.3	3.5	34.9	38.3	53.9	15.7	
Hori	4960.000	AV	31.5	33.0	5.7	34.3	35.9	53.9	18.0	
Hori	7440.000	AV	31.0	36.8	7.1	34.2	40.7	53.9	13.2	Floor Noise
Hori	9920.000	AV	31.3	39.0	7.9	34.7	43.5	53.9	10.4	Floor Noise
Vert	73.875	QP	48.3	6.4	7.7	32.1	30.3	40.0	9.7	
Vert	99.525	QP	50.1	10.0	8.0	32.3	35.8	43.5	7.7	
Vert	166.350	QP	39.2	15.7	8.8	32.2	31.5	43.5	12.0	
Vert	192.001	QP	35.3	16.4	9.0	32.1	28.6	43.5	14.9	
Vert	239.926	QP	39.5	17.0	9.4	32.1	33.8	46.0	12.2	
Vert	450.500	QP	29.2	17.9	11.0	32.1	26.0	46.0	20.0	
Vert	2383.823	PK	55.3	29.3	3.5	35.0	53.1	73.9	20.9	
Vert	2483.500	PK	56.2	29.3	3.5	34.9	54.1	73.9	19.8	
Vert	2528.008	PK	54.9	29.3	3.5	34.9	52.8	73.9	21.1	
Vert	4960.000	PK	42.3	33.0	5.7	34.3	46.7	73.9	27.2	
Vert	7440.000	PK	43.3	36.8	7.1	34.2	53.0	73.9	20.9	Floor Noise
Vert	9920.000	PK	42.7	39.0	7.9	34.7	54.9	73.9	19.0	Floor Noise
Vert	2483.500	AV	37.8	29.3	3.5	34.9	35.7	53.9	18.2	
Vert	4960.000	AV	31.0	33.0	5.7	34.3	35.4	53.9	18.5	
Vert	7440.000	AV	30.9	36.8	7.1	34.2	40.6	53.9	13.3	Floor Noise
Vert	9920.000	AV	31.2	39.0	7.9	34.7	43.4	53.9	10.5	Floor Noise

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

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

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

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Radiated Spurious Emission **(Antenna 2)**

Test place	Ise EMC Lab. No.2 and 3 Semi Anechoic Chamber	
Report No.	10748020H	
Date	July 12, 2015	July 14, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 62 % RH
Engineer	Takumi Shimada	Ken Fujita
	(Above 1GHz)	(Below 1GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz	

Dwell time factor relaxation

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Dwell Factor	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	dBuV/m	dBuV/m	[dB]	
Hori	2383.823	AV	51.9	29.3	3.5	35.0	-24.7	25.0	53.9	28.9	*1)
Hori	2528.008	AV	50.5	29.3	3.5	34.9	-24.7	23.7	53.9	30.2	*1)
Vert	2383.823	AV	49.5	29.3	3.5	35.0	-24.7	22.6	53.9	31.3	*1)
Vert	2528.008	AV	48.4	29.3	3.5	34.9	-24.7	21.6	53.9	32.3	*1)

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

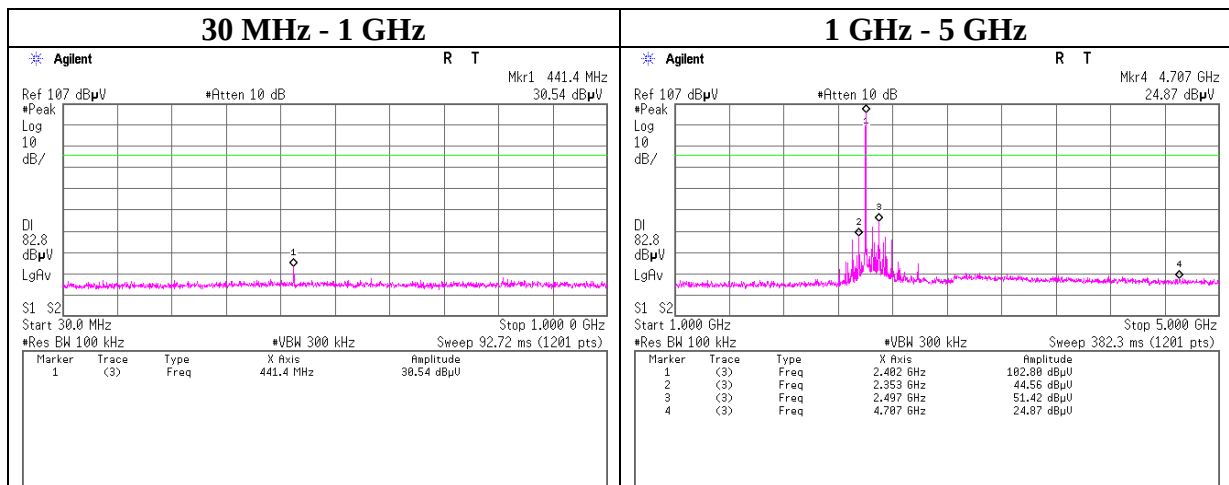
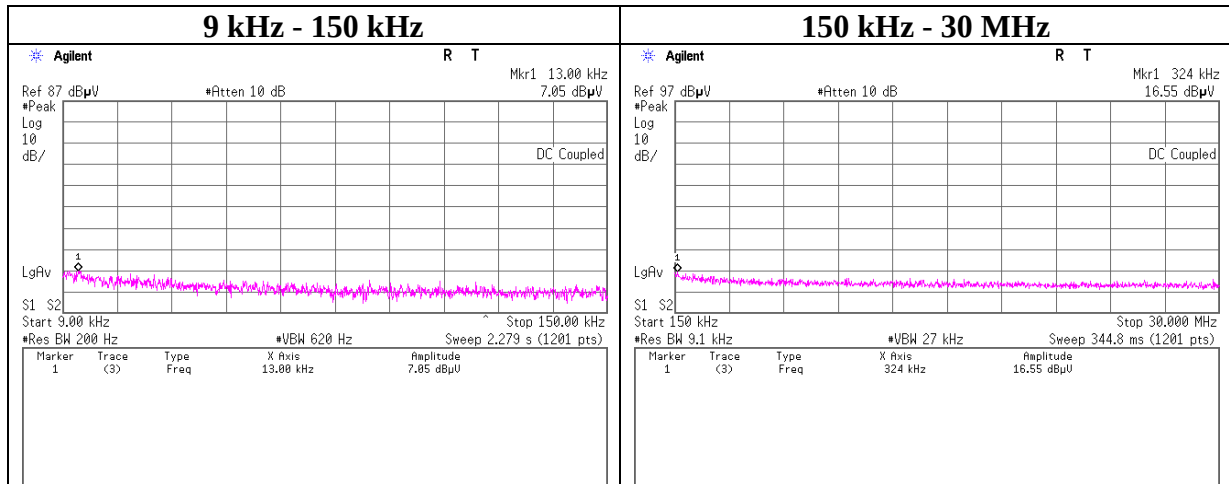
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*1) Above noise was synchronized with carrier frequency.

Conducted Spurious Emission

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10748020H
Date	May 10, 2015
Temperature / Humidity	20deg. C / 63% RH
Engineer	Kenshi Shimomura
Mode	Tx DH5

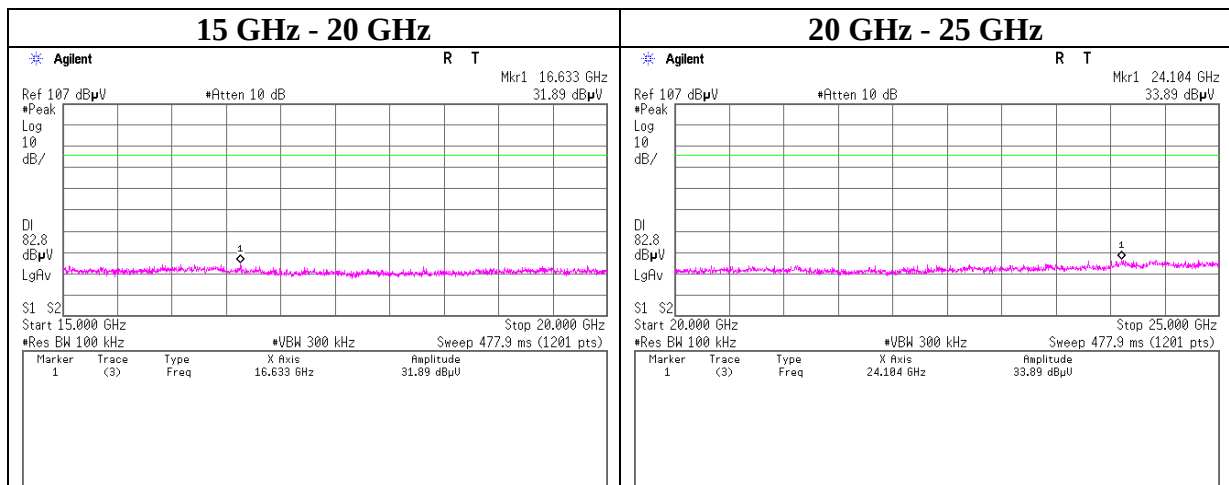
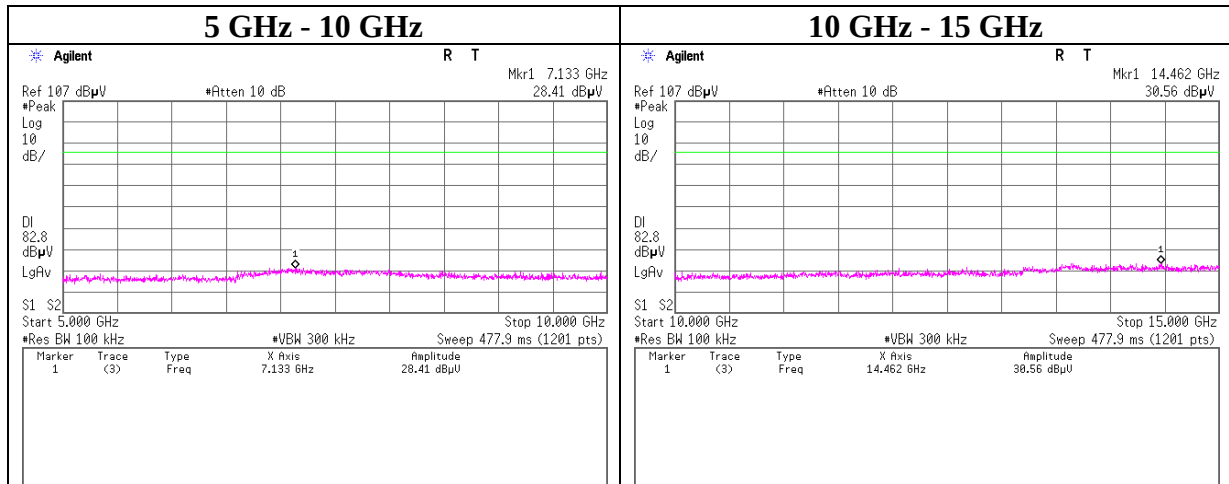
2402 MHz



Conducted Spurious Emission

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10748020H
Date : May 10, 2015
Temperature / Humidity : 20deg. C / 63% RH
Engineer : Kenshi Shimomura
Mode : Tx DH5

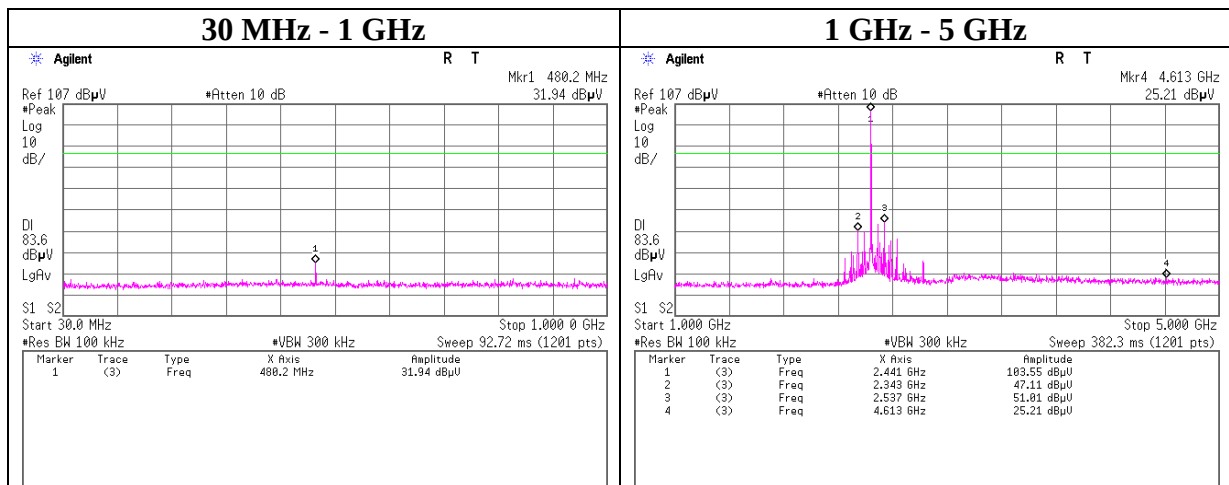
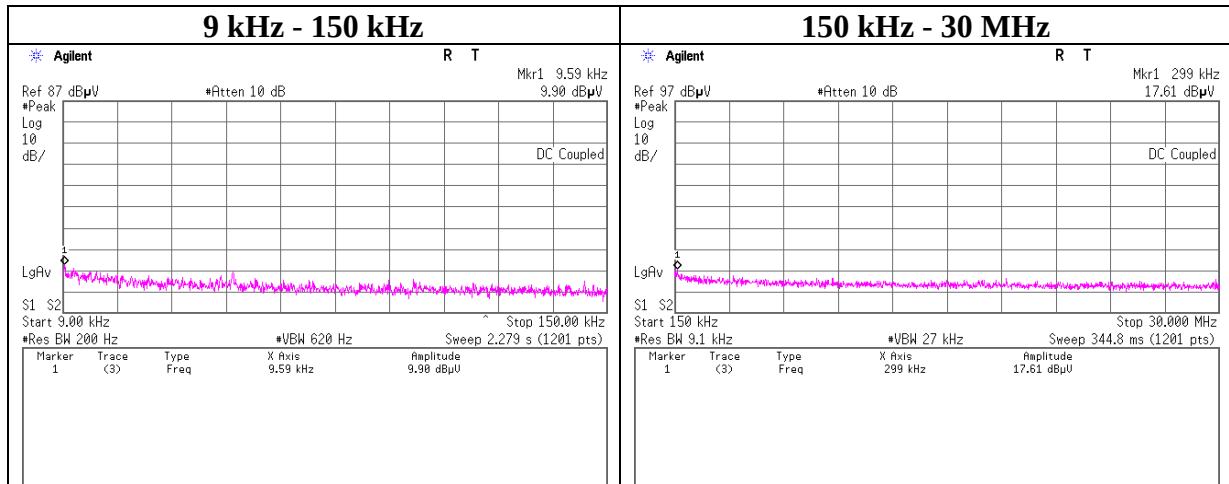
2402 MHz



Conducted Spurious Emission

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10748020H
Date : May 10, 2015
Temperature / Humidity : 20deg. C / 63% RH
Engineer : Kenshi Shimomura
Mode : Tx DH5

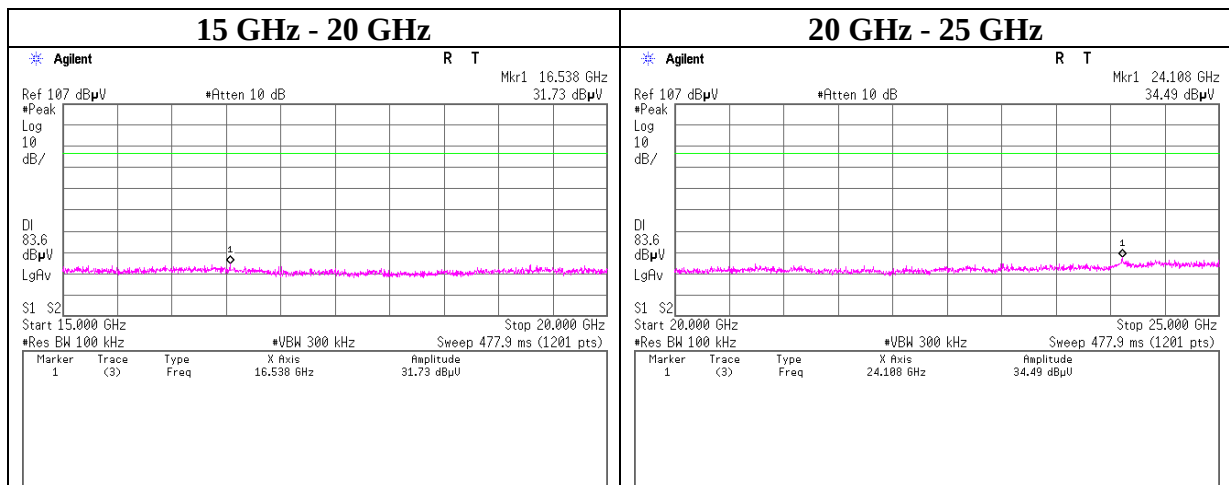
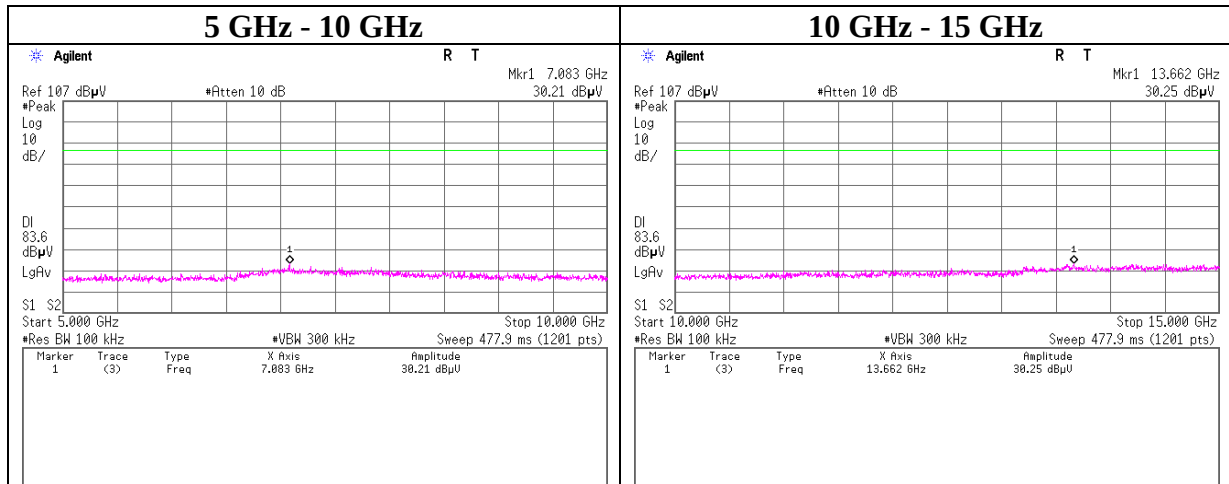
2441 MHz



Conducted Spurious Emission

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10748020H
Date : May 10, 2015
Temperature / Humidity : 20deg. C / 63% RH
Engineer : Kenshi Shimomura
Mode : Tx DH5

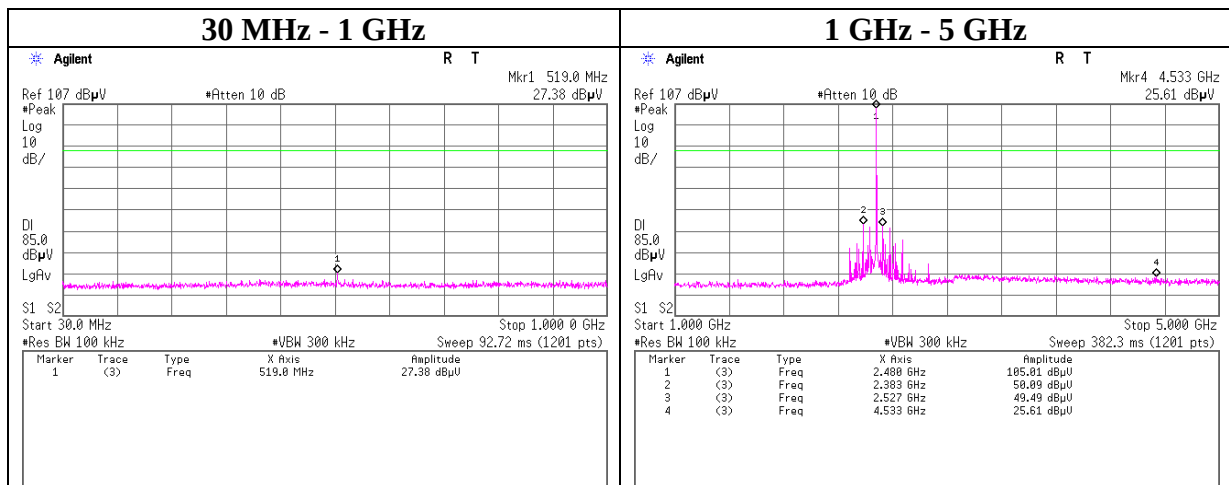
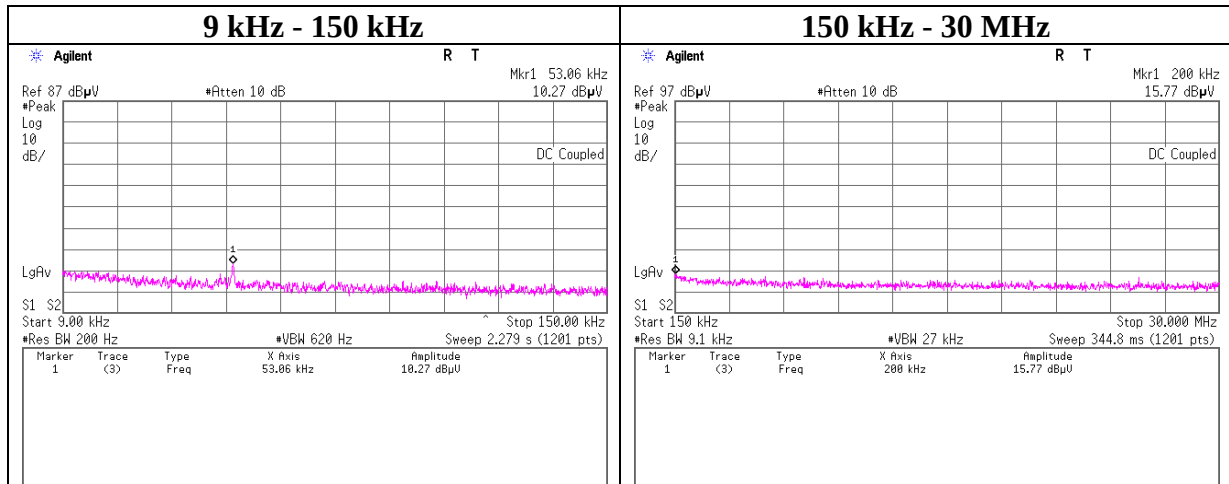
2441 MHz



Conducted Spurious Emission

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10748020H
Date : May 10, 2015
Temperature / Humidity : 20deg. C / 63% RH
Engineer : Kenshi Shimomura
Mode : Tx DH5

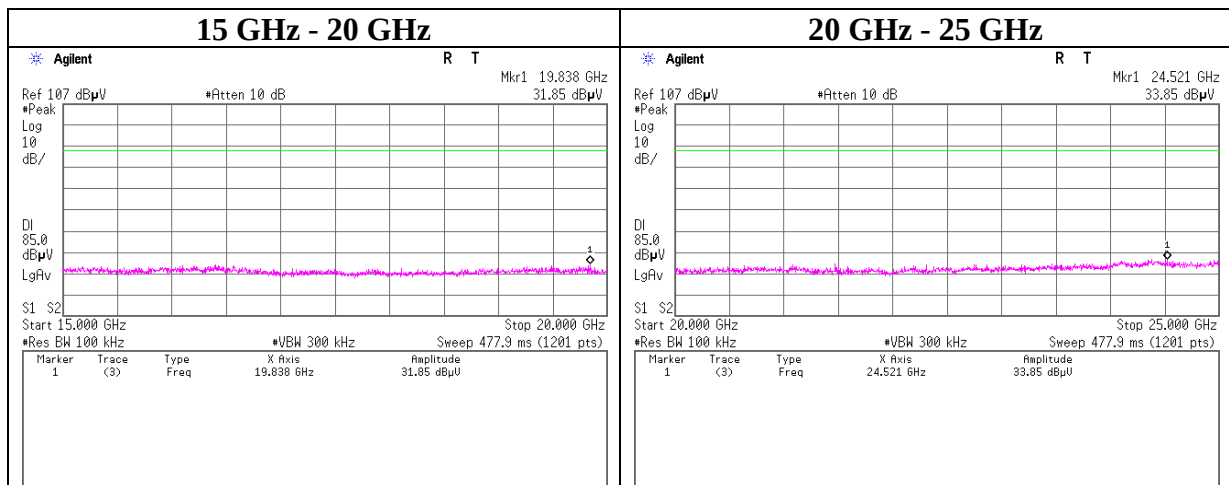
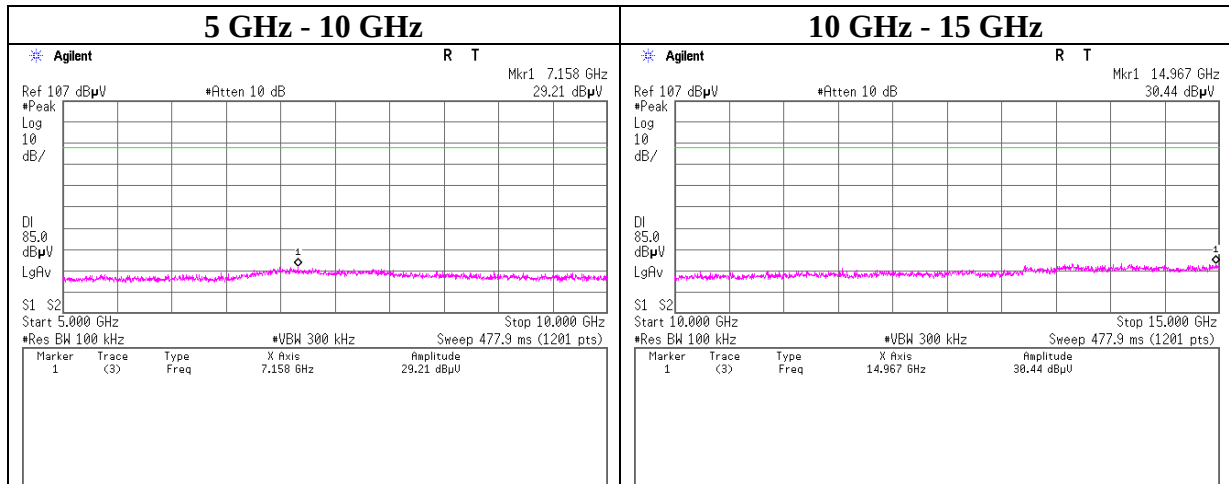
2480 MHz



Conducted Spurious Emission

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10748020H
Date : May 10, 2015
Temperature / Humidity : 20deg. C / 63% RH
Engineer : Kenshi Shimomura
Mode : Tx DH5

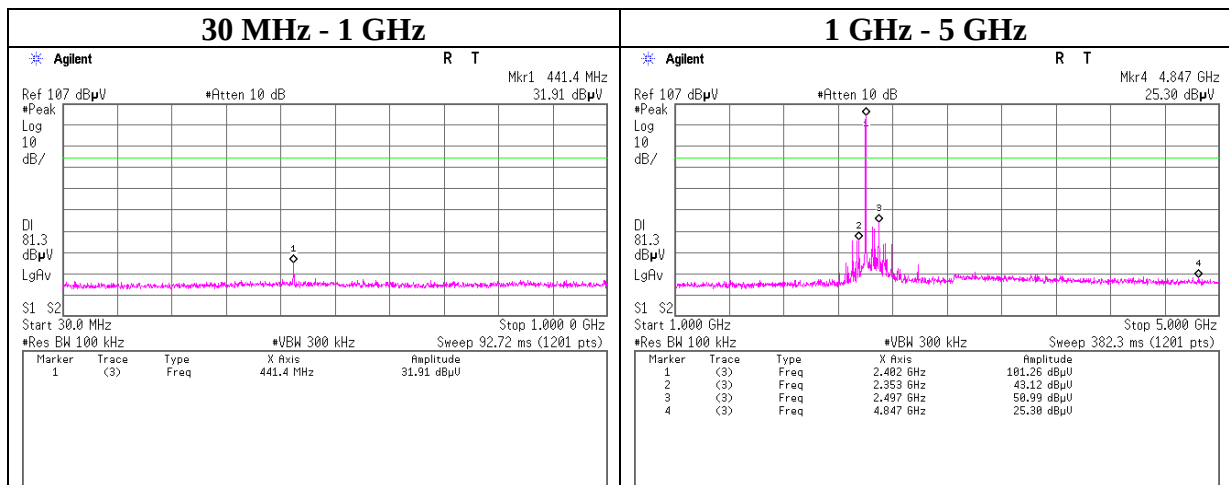
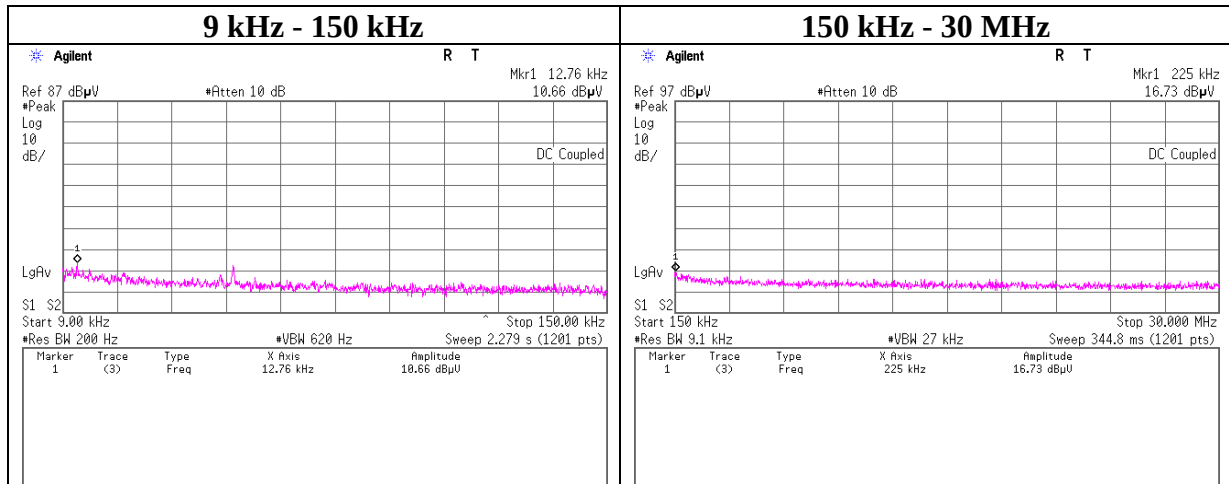
2480 MHz



Conducted Spurious Emission

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10748020H
Date : May 10, 2015
Temperature / Humidity : 20deg. C / 63% RH
Engineer : Kenshi Shimomura
Mode : Tx 3DH5

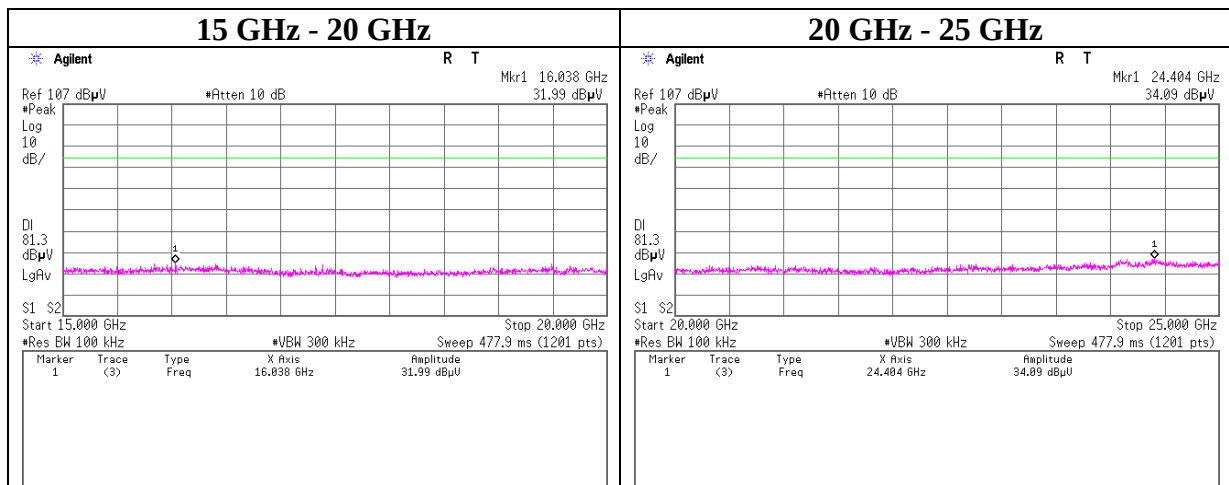
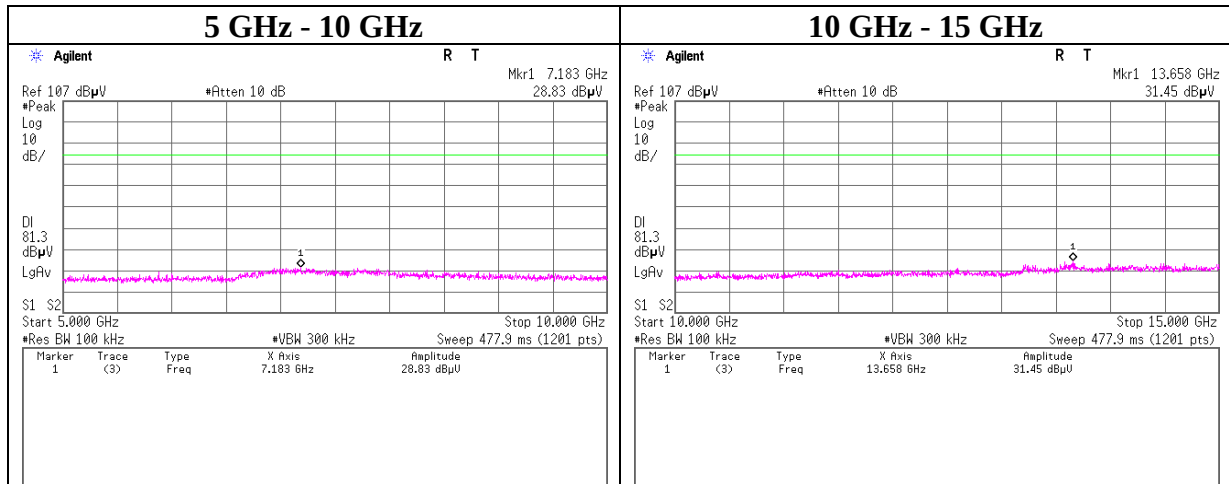
2402 MHz



Conducted Spurious Emission

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10748020H
Date : May 10, 2015
Temperature / Humidity : 20deg. C / 63% RH
Engineer : Kenshi Shimomura
Mode : Tx 3DH5

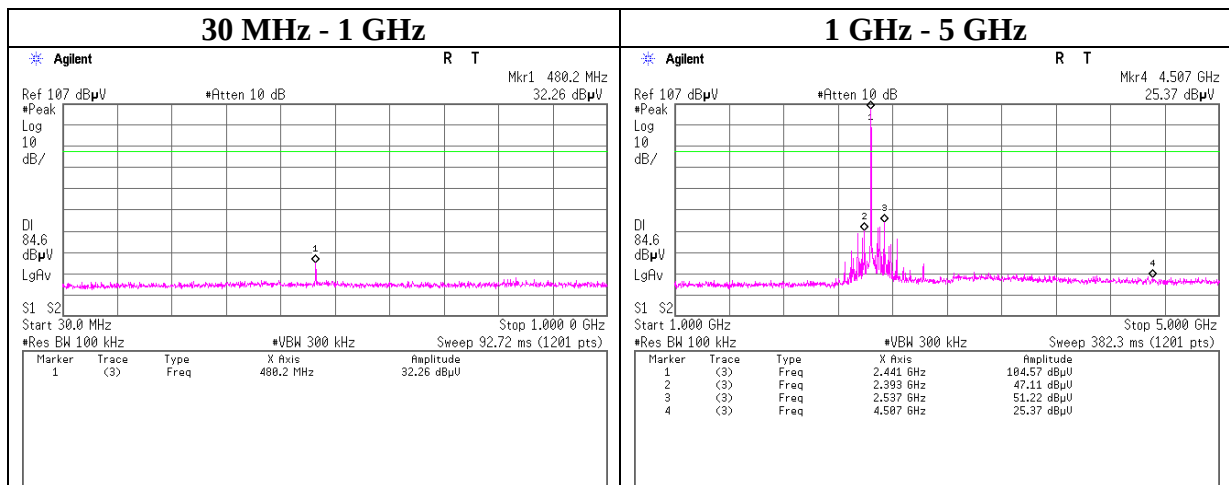
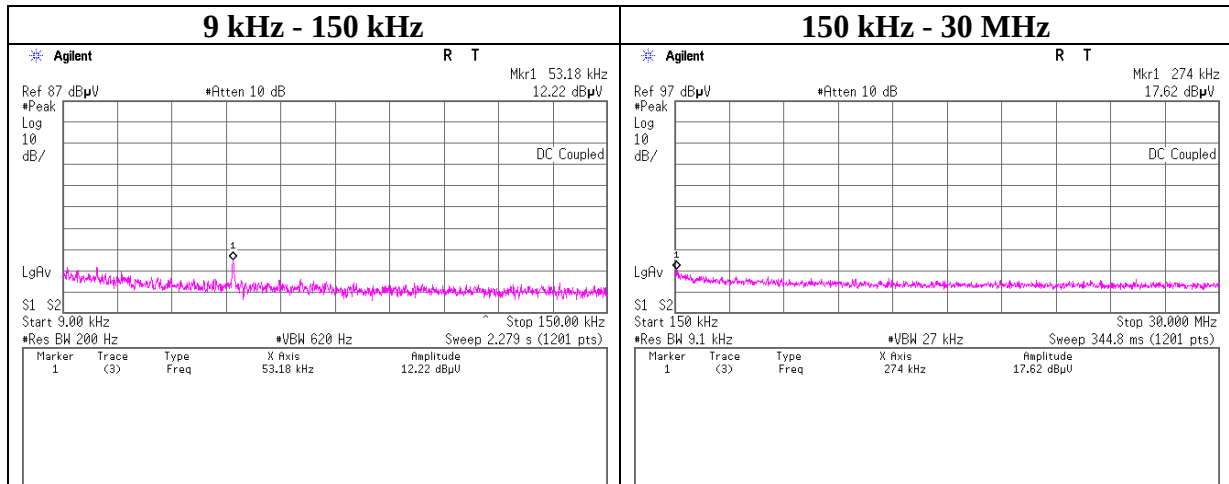
2402 MHz



Conducted Spurious Emission

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10748020H
Date : May 10, 2015
Temperature / Humidity : 20deg. C / 63% RH
Engineer : Kenshi Shimomura
Mode : Tx 3DH5

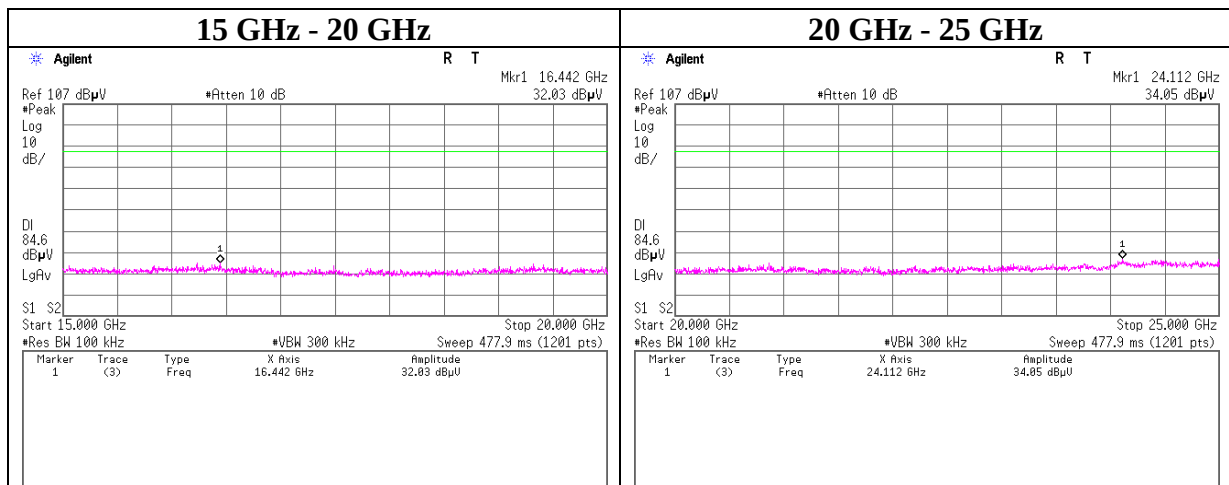
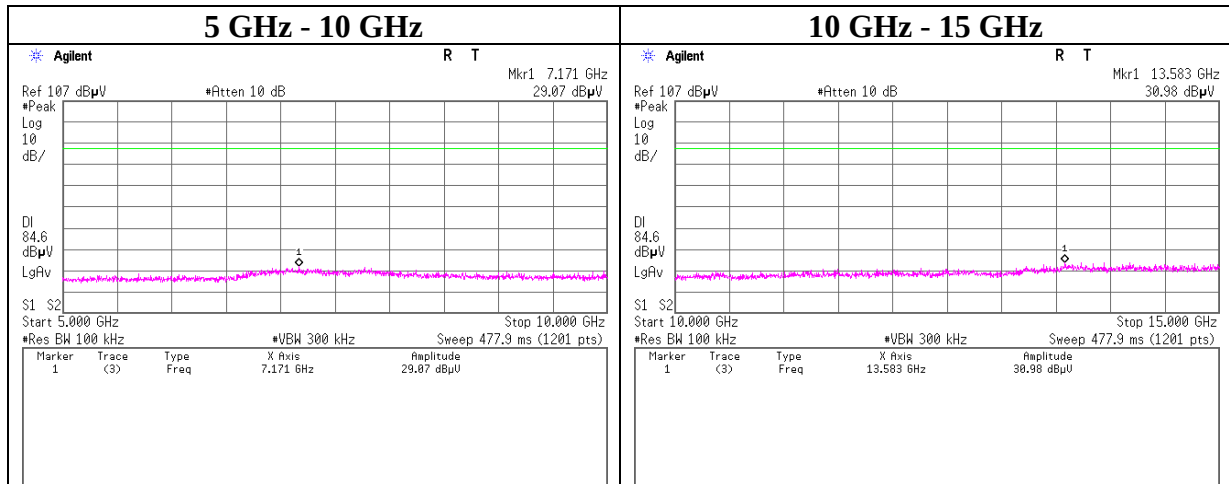
2441 MHz



Conducted Spurious Emission

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10748020H
Date : May 10, 2015
Temperature / Humidity : 20deg. C / 63% RH
Engineer : Kenshi Shimomura
Mode : Tx 3DH5

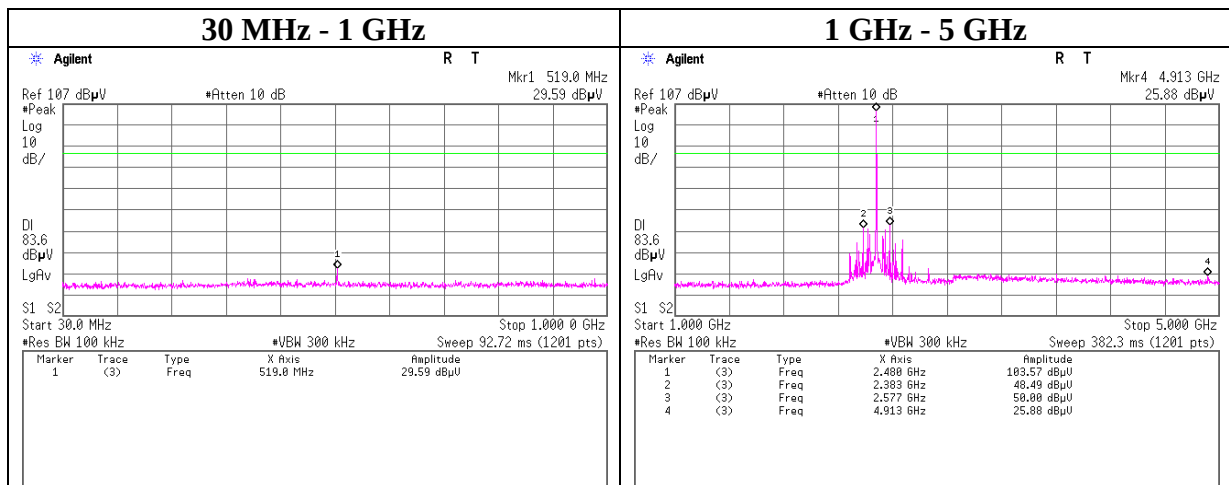
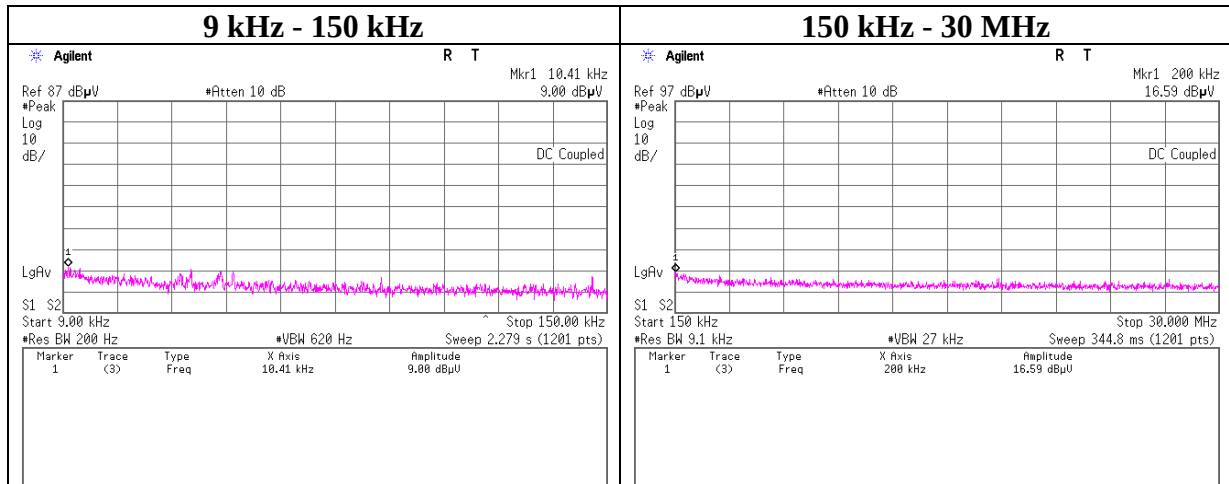
2441 MHz



Conducted Spurious Emission

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10748020H
Date : May 10, 2015
Temperature / Humidity : 20deg. C / 63% RH
Engineer : Kenshi Shimomura
Mode : Tx 3DH5

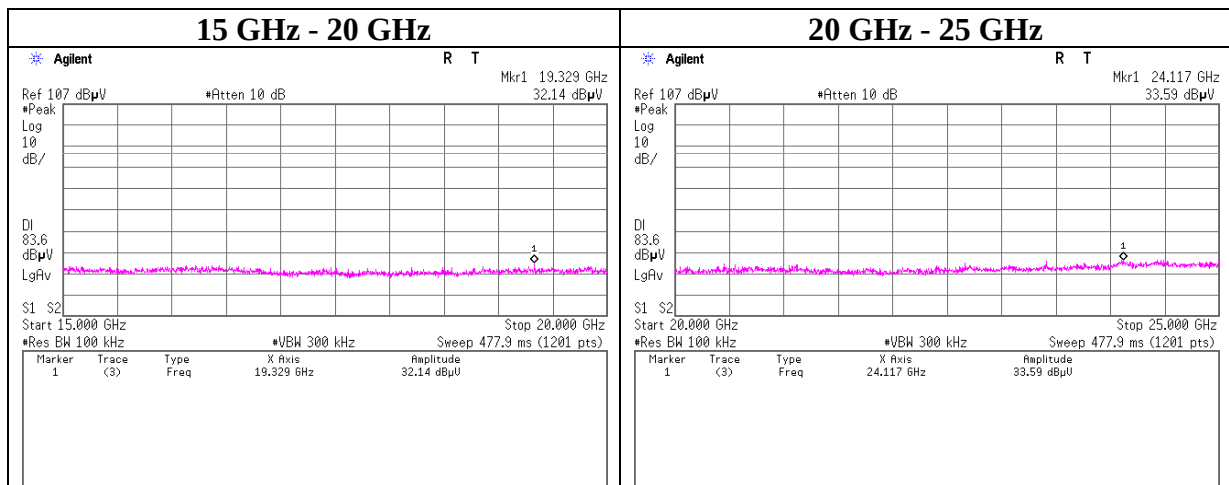
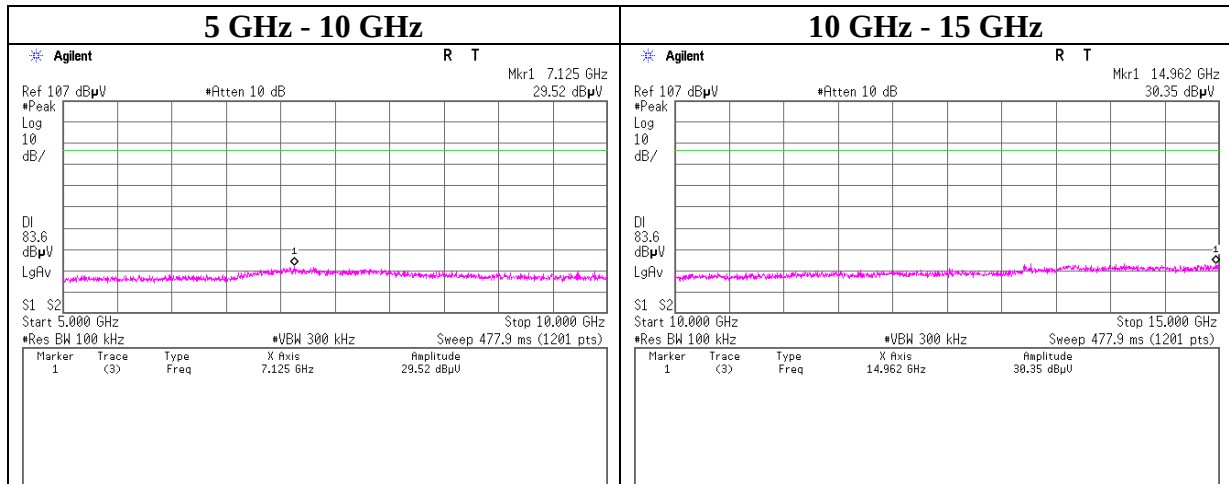
2480 MHz



Conducted Spurious Emission

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 10748020H
Date : May 10, 2015
Temperature / Humidity : 20deg. C / 63% RH
Engineer : Kenshi Shimomura
Mode : Tx 3DH5

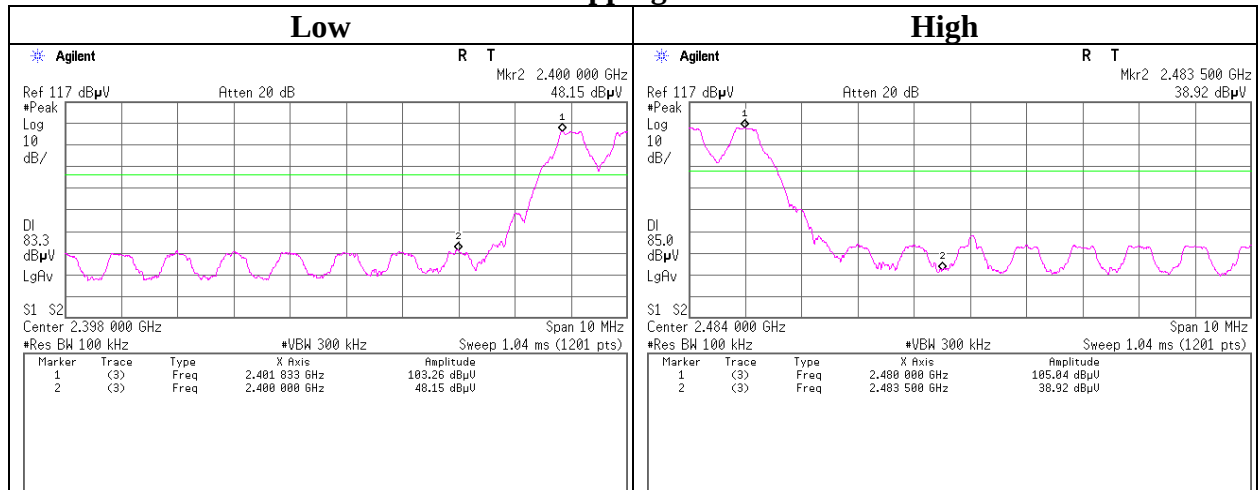
2480 MHz



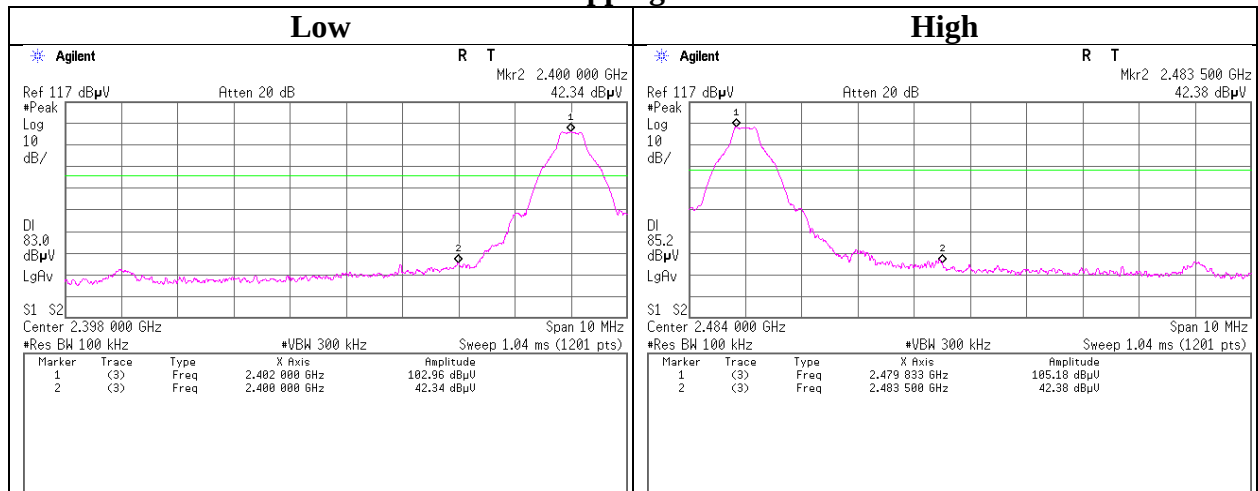
Conducted Emission Band Edge compliance

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10748020H
Date	May 10, 2015
Temperature / Humidity	20deg. C / 63% RH
Engineer	Kenshi Shimomura
Mode	Tx DH5

Hopping On



Hopping Off



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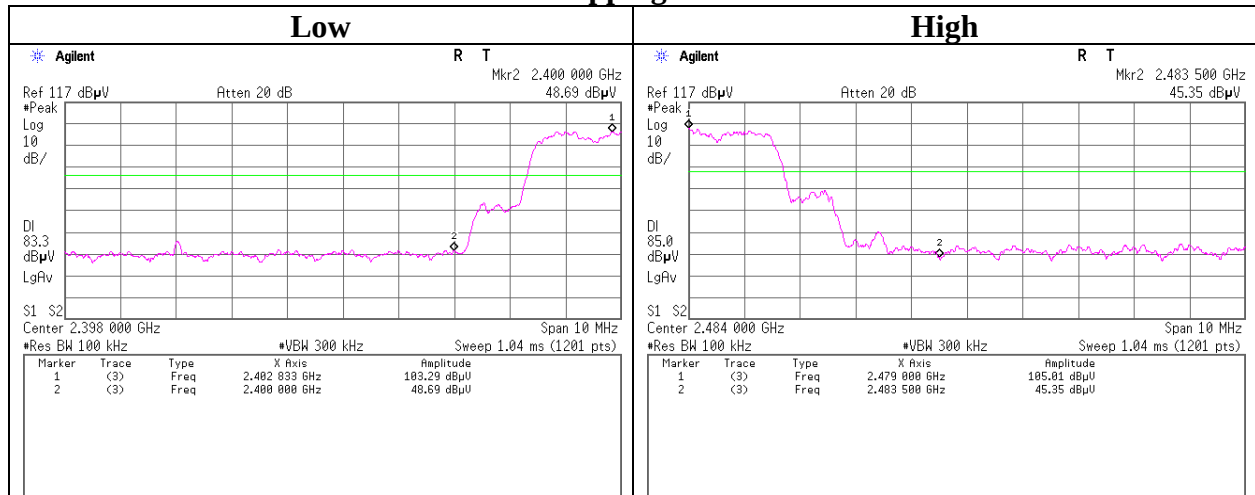
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

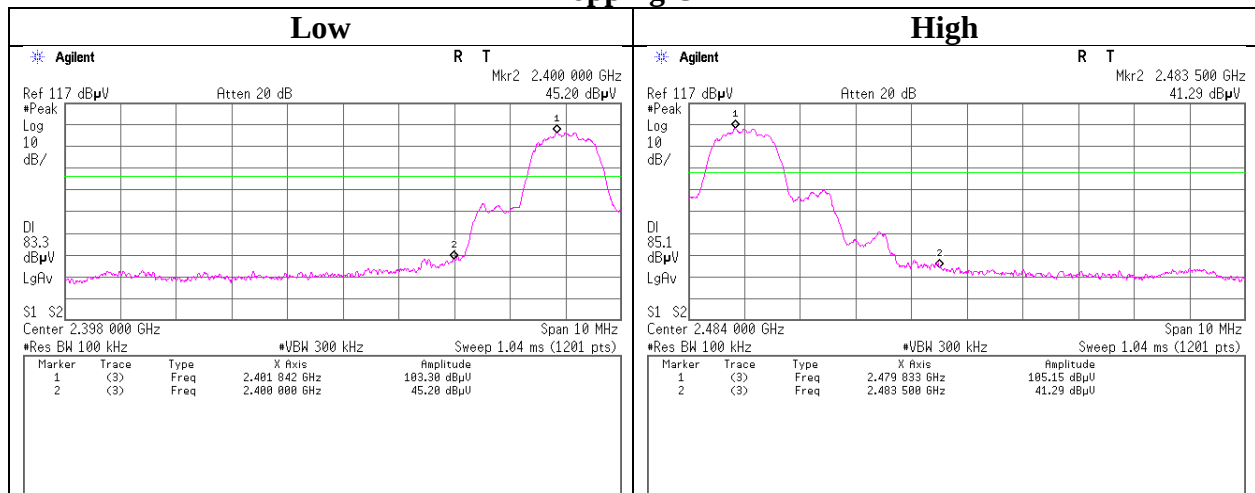
Conducted Emission Band Edge compliance

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10748020H
Date	May 10, 2015
Temperature / Humidity	20deg. C / 63% RH
Engineer	Kenshi Shimomura
Mode	Tx 3DH5

Hopping On



Hopping Off



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Telephone : +81 596 24 8999

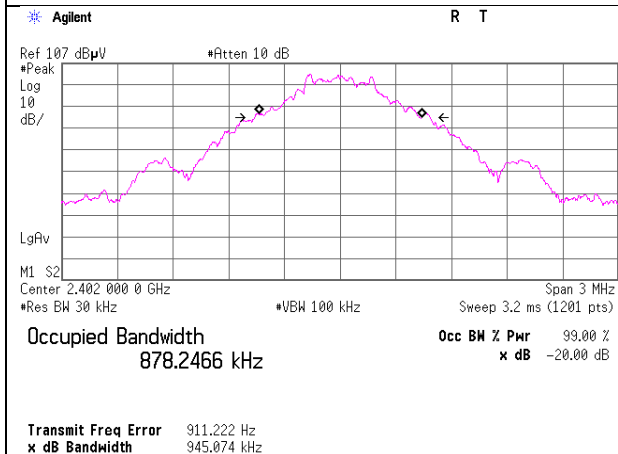
Facsimile : +81 596 24 8124

99% Occupied Bandwidth

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10748020H
Date	May 10, 2015
Temperature / Humidity	20deg. C / 63% RH
Engineer	Kenshi Shimomura
Mode	Tx Hopping Off

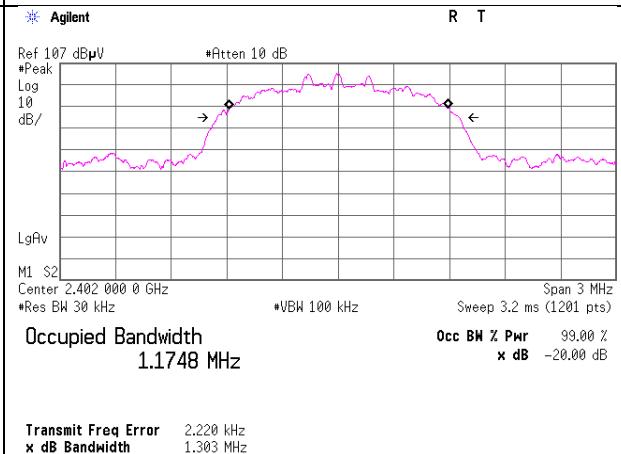
Hopping Off, DH5

2402 MHz

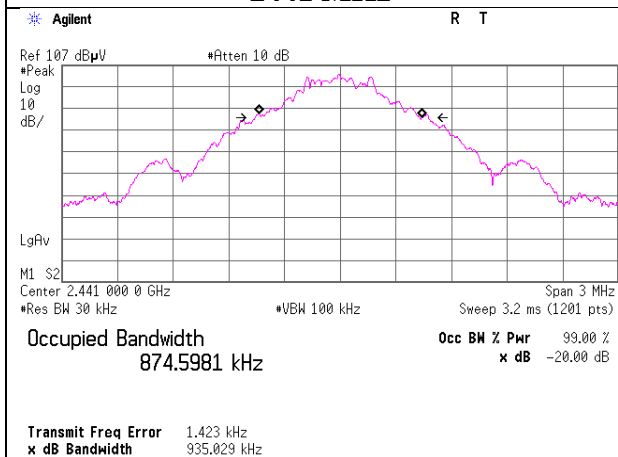


Hopping Off, 3DH5

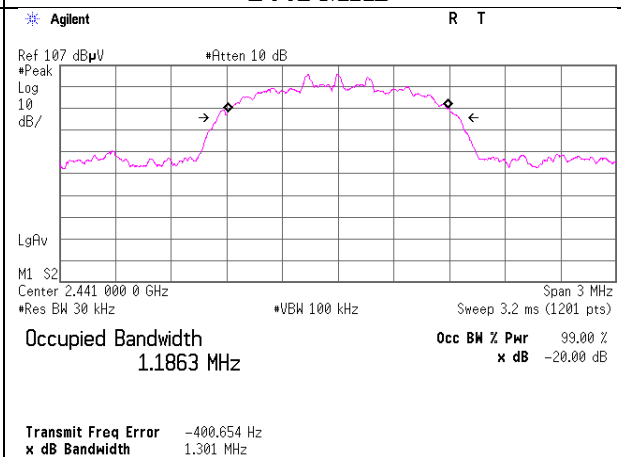
2402 MHz



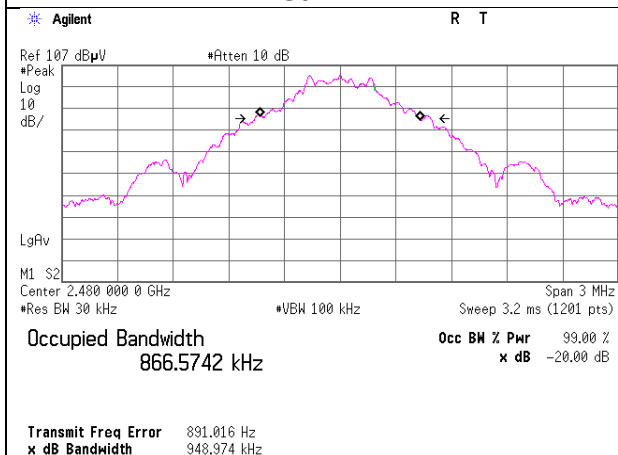
2441 MHz



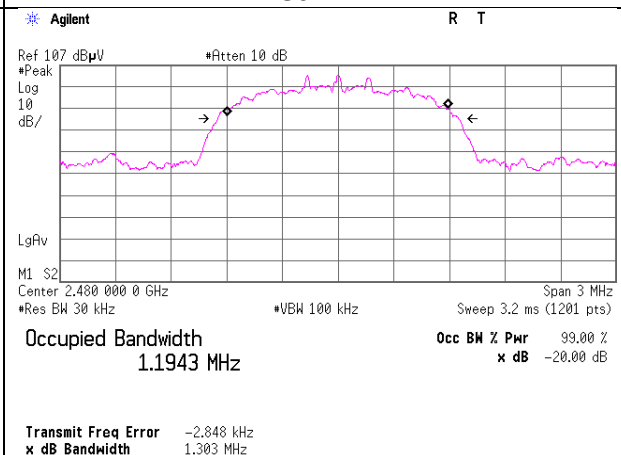
2441 MHz



2480 MHz



2480 MHz



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Ise EMC Lab.

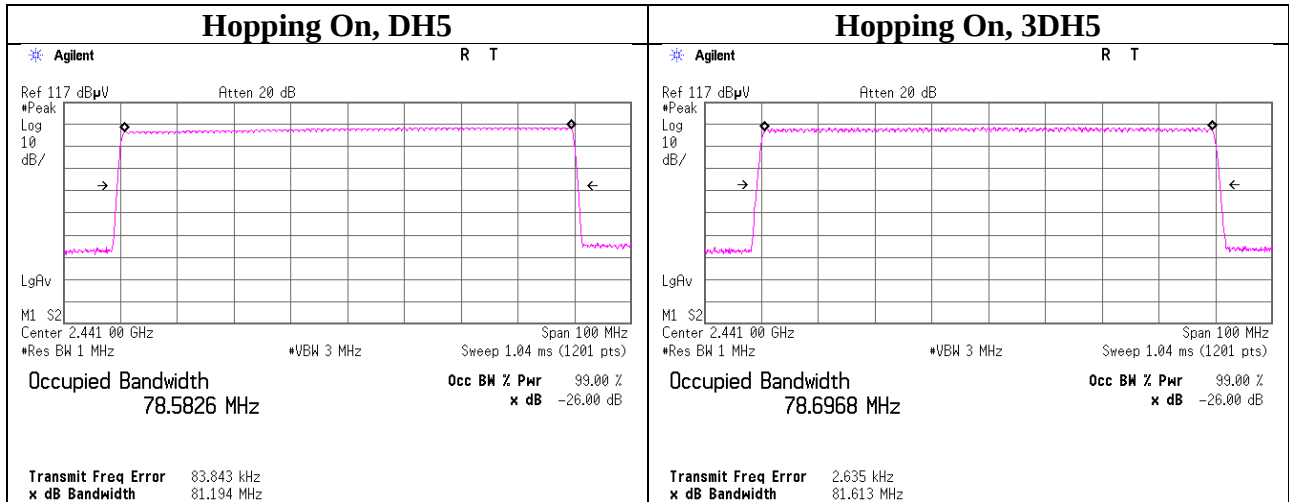
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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

99% Occupied Bandwidth

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10748020H
Date	May 10, 2015
Temperature / Humidity	20deg. C / 63% RH
Engineer	Kenshi Shimomura
Mode	Tx Hopping On



APPENDIX 2: Test instruments

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE/CE	2015/07/01 * 12
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MSA-13	Spectrum Analyzer	Agilent	E4440A	MY46185823	RE	2015/06/02 * 12
MHF-25	High Pass Filter 3.5-18.0GHz	UL Japan	HPF SELECTOR	001	RE	2014/09/22 * 12
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2015/02/19 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	1301	RE	2015/01/13 * 12
MJM-16	Measure	KOMELON	KMC-36	-	RE	-
MSA-16	Spectrum Analyzer	Agilent	E4440A	MY46186390	RE/CE/AT	2015/02/16 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE	2014/08/19 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2014/10/18 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2014/10/18 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2015/07/13 * 12
MAT-70	Attenuator(6dB)	Agilent	8491A-006	MY52460153	RE	2015/04/08 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2015/03/10 * 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
MAT-20	Attenuator(10dB)(above1G Hz)	HIROSE ELECTRIC CO.,LTD.	AT-110	-	AT	2015/01/08 * 12
MCC-138	Microwave cable	HUBER+SUHNER	SUCOFLEX 102	37953/2	AT	2014/10/02 * 12
MCC-36	Microwave Cable	Hirose Electric	U.FL-2LP-066-A-(200)	-	AT	2014/09/12 * 12
MOS-14	Thermo-Hygrometer	Custom	CTH-201	1401	AT	2015/01/13 * 12
MRENT-116	Spectrum Analyzer	Agilent	E4440A	MY46187620	RE	2015/03/09 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2014/08/12 * 12
MCC-167	Microwave Cable	Junkosha	MWX221	1404S374(1m) / 1405S074(5m)	RE	2014/05/26 * 12 *1)
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2015/03/19 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE/CE	2015/01/13 * 12
MJM-14	Measure	KOMELON	KMC-36	-	RE/CE	-
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	RE/CE	2014/11/12 * 12
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2015/02/05 * 12
MCC-166	Microwave Cable	Junkosha	MWX221	1303S120(1m) / 1311S167(5m)	RE	2014/09/24 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2015/01/28 * 12
MHA-02	Horn Antenna 18-26.5GHz	EMCO	3160-09	1265	RE	2015/02/05 * 12
MHF-26	High Pass Filter 3.5-18.0GHz	UL Japan	HPF SELECTOR	002	RE	2014/09/24 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE/CE	2014/06/03 * 12 *1)
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	2015/02/06 * 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
MSA-14	Spectrum Analyzer	Agilent	E4440A	MY48250080	RE	2014/10/17 * 12
MLS-26	LISN(AMN)	Schwarzbeck	NSLK8127	8127-732	CE(AE)	2014/07/09 * 12
MLS-24	LISN(AMN)	Schwarzbeck	NSLK8127	8127-730	CE(EUT)	2014/07/10 * 12
MTA-02	Terminator	TME	CT-01	-	CE	2015/02/17 * 12
MCC-13	Coaxial Cable	Fujikura	3D-2W(12m)/5D-2W(5m)/5D-2W(0.8m)/5D-2W(1m)	-	CE	2015/02/06 * 12
MAT-65	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2015/01/29 * 12
MMM-01	Digital Tester	Fluke	FLUKE 26-3	78030611	RE	2014/08/28 * 12

*1) This test equipment was used for the tests before the expiration date of the calibration.

UL Japan, Inc.

Ise EMC Lab.

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

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

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

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

Test Item: CE: Conducted Emission test
 RE: Radiated Emission test
 AT: Antenna Terminal Conducted test