RADIO TEST REPORT

Test Report No. : 10953040H-B-R1

Applicant	:	**Murata Manufacturing Co., Ltd.**
Type of Equipment	:	**Communication Module**
Model No.	:	**TYPE1FJ**
FCC ID	:	**VPYLB1FJ**
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.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
6. This 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 10953040H-B. 10953040H-B is replaced with this report.

Date of test: October 1 to 5, 2015

Representative test engineer:
Kazuya Yoshioka
Engineer
Consumer Technology Division

Approved by:
Takayuki Shimada
Engineer
Consumer Technology Division

NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.
*As for the range of Accreditation in NVLAP, you may refer to the WEB address,
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REVISION HISTORY

Original Test Report No.: 10953040H-B

Revision	Test report No.	Date	Page revised	Contents
- (Original)	10953040H-B	October 23, 2015	-	-
1	10953040H-B-R1	October 29, 2015	P.5	Correction of power supply (inner)
1	10953040H-B-R1	October 29, 2015	P.7	Correction of FCC Part 15.31 (e) sentence

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SECTION 1: Customer information

Company Name	:	Murata Manufacturing Co., Ltd.
Address	:	1-10-1 Higashikotari, Nagaokakyo-shi, Kyoto 617-8555 Japan
Telephone Number	:	+81-75-955-6736
Facsimile Number	:	+81-75-955-6634
Contact Person	:	Motoo Hayashi

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

2.1 Identification of E.U.T.

Type of Equipment	:	Communication Module
Model No.	:	TYPE1FJ
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	VBAT: Typ. 3.3 V, Min. 3.0 V, Max. 4.8 V VDDIO*: Typ. 1.8 V or 3.3 V, Min. 1.71 V, Max. 3.63 V *This doesn't influence the RF Characteristic.
Receipt Date of Sample	:	September 20, 2015
Country of Mass-production	:	China
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

Model: TYPE1FJ (referred to as the EUT in this report) is a Communication Module.

General Specification

Clock frequency(ies) in the system	:	37.4 MHz
Operating temperature	:	-30 deg. C to +70 deg. C

Radio Specification

WLAN (IEEE802.11b/g/n-20)

Equipment Type	Transceiver
Frequency of Operation	2412-2462MHz
Type of Modulation	DSSS, OFDM
Bandwidth & Channel spacing	20MHz & 5MHz
Method of frequency generation	Synthesizer
Power Supply (inner)	DC 1.2 V / DC 3.3 V
Antenna Type	Monopole Pattern Antenna
Antenna Gain	+0.8 dBi (Internal) +0.3 dBi (External)

Bluetooth (Ver. 4.1 with EDR function)

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Type of Modulation	BT: FHSS (GFSK, π/4DQPSK, 8DPSK) LE: GFSK
Bandwidth & Channel spacing	BT: 1MHz & 1MHz LE: 2MHz & 2MHz
Method of frequency generation	Synthesizer
Power Supply (inner)	DC 1.2 V / DC 3.3 V
Antenna Type	Monopole Pattern Antenna
Antenna Gain	+0.8 dBi (Internal) +0.3 dBi (External)

*This test report applies for Bluetooth part.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart C: 2015, final revised on September 8, 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

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	**[External antenna]** **QP** 40.6 dB 0.15000 MHz, N **AV** 35.2 dB, 0.87384 MHz, N 0.87483 MHz, L 0.89921 MHz, N 0.89709 MHz, L **[Internal antenna]** **QP** 39.9 dB 0.15000 MHz, N **AV** 35.1 dB 0.88725 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	**[External antenna]** 0.3 dB 4882.000 MHz, AV, Hori. **[Internal antenna]** 10.1 dB 9608.000 MHz, AV, Hori.	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 Part 15.31 (e)

The RF Module has its own regulator.
The RF Module is constantly provided voltage (DC 1.2V / DC 3.3 V) through the regulator regardless of input voltage.
Therefore, this EUT complies with the requirement.

FCC Part 15.203/212 Antenna requirement

[Internal antenna]

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.

[External antenna]

The EUT has a unique antenna connector (Microwave Coaxial Connectors (MM5829-2700RK0) on the Module).
Therefore the equipment complies with the requirement of Section 15.203/212.

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 $k = 2$.
Ise EMC Lab.

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	5.1 dB	6.2 dB	5.5 dB	5.8 dB	5.8 dB	4.3 dB
No. 2	4.2 dB	5.1 dB	6.2 dB	5.4 dB	5.7 dB	5.9 dB	5.6 dB
No. 3	4.4 dB	5.1 dB	6.3 dB	5.2 dB	5.5 dB	5.8 dB	5.5 dB
No. 4	4.7 dB	5.3 dB	6.3 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	2.6 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	10 m
No.2 semi-anechoic chamber	2973C-2	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	2973C-3	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3 m
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	3 m
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 m x 2.0 m 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	2402 MHz 2441 MHz 2480 MHz
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.

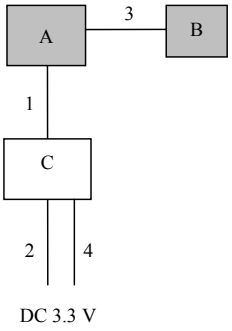
*The power value of the EUT was set for testing as follows (setting value might be different from product specification value);
Power settings: Config:0136
Software: Blue tool 1.8.9.3

*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.

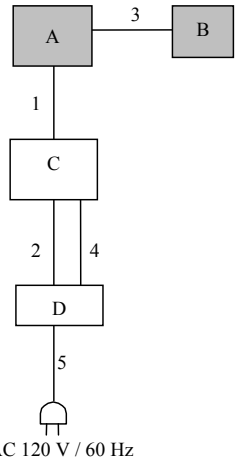
4.2 Configuration and peripherals

[External antenna]

[Radiated emission]

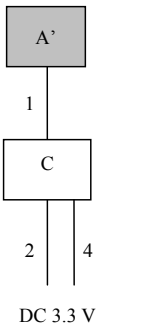


[Conducted emission]

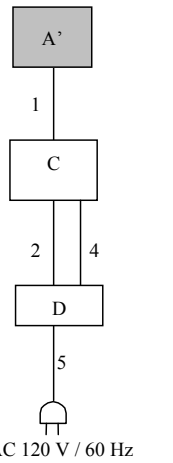


[Internal antenna]

[Radiated emission]



[Conducted emission]



* 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	Communication Module	TYPE1FJ	11	Murata Manufacturing Co., Ltd.	EUT
A'	Communication Module	TYPE1FJ	2	Murata Manufacturing Co., Ltd.	EUT *1)
B	External Antenna	Type1CH_Antenna	No.1	Murata Manufacturing Co., Ltd.	EUT
C	Jig Board	-	-	Murata Manufacturing Co., Ltd.	-
D	DC Power Supply	PMC35-2A	13090501	KIKUSUI	-

*1) Used for Radiated emission and Conducted emission tests

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	FPC Cable	0.03	Unshielded	Unshielded	-
2	DC Cable	2.00	Unshielded	Unshielded	*1)
		1.00	Unshielded	Unshielded	*2)
3	Antenna Cable	0.10	Shielded	Shielded	-
4	DC Cable	2.00	Unshielded	Unshielded	*1)
		1.00	Unshielded	Unshielded	*2)
5	AC Cable	1.80	Unshielded	Unshielded	-

*1) Used for all tests except for Conducted emission test
*2) Used for Conducted emission test only

SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 m, raised 0.8m above the conducting ground plane.
The rear of tabletop was located 40 cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80 cm from any other grounded conducting surface. EUT was located 80 cm from a Line Impedance Stabilization Network (LISN) / Artificial mains Network (AMN) and excess AC cable was bundled in center.

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 30 cm to 40 cm long and were hanged at a 40 cm height to the ground plane. All unused 50 ohm connectors of the LISN (AMN) were resistivity terminated in 50 ohm 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 MHz - 30 MHz**
Test data	**: APPENDIX**
Test result	**: Pass**

SECTION 6: Radiated Spurious Emission

Test Procedure

EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 m, raised 0.8 m above the conducting ground plane.
The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.
The height of the measuring antenna varied between 1 m and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.
The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.
The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Test Antennas are used as below;

Frequency	30 MHz to 300 MHz	300 MHz to 1 GHz	Above 1 GHz
Antenna Type	Biconical	Logperiodic	Horn

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

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

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

*1) Although DA 00-705 accepts VBW = 10 Hz for AV measurements, it was confirmed that superfluous smoothing was not performed.
*2) Distance Factor: 20 x log (3.0 m / 1.0 m) = 9.5 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 : 30 M - 26.5 GHz
Test data : APPENDIX
Test result : Pass

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	3 MHz	30 kHz	100 kHz	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	3 MHz	30 kHz	100 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Number of Hopping Frequency	30 MHz	300 kHz	1 MHz	Auto	Peak	Max Hold	Spectrum Analyzer
Dwell Time	Zero Span	100 kHz, 1 MHz	300 kHz, 3 MHz	As necessary capture the entire dwell time per hopping channel	Peak	Clear Write	Spectrum Analyzer
Conducted Spurious Emission *2)	9 kHz to 150 kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150 kHz to 30 MHz	9.1 kHz	27 kHz				
	30 MHz to 25 GHz	100 kHz	300 kHz				
Conducted Spurious Emission Band Edge compliance	10 MHz	100 kHz	300 kHz	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 not detected as shown in the chart.
*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

External antenna

DATA OF CONDUCTED EMISSION TEST

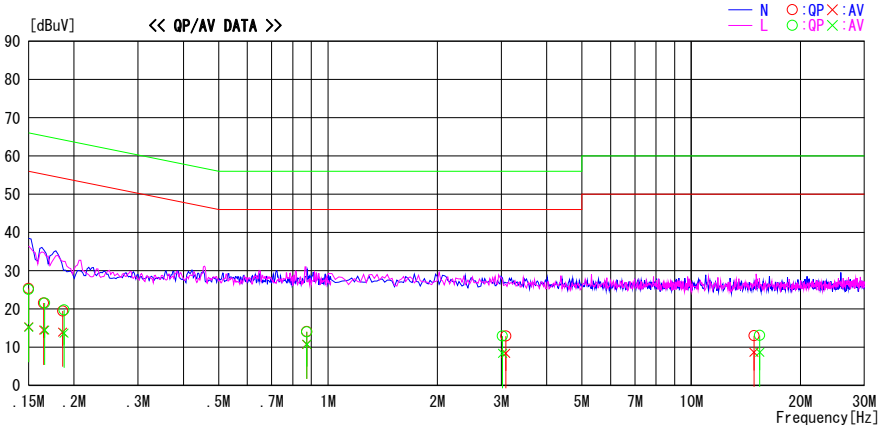
UL Japan, Inc. Ise EMC Lab. No.2 Semi Anechoic Chamber
Date : 2015/10/05

Report No. : 10953040H

Temp./Humi. : 24deg. C / 61% RH
Engineer : Tomoki Matsui

Mode / Remarks : BT DH5 2480MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.15000	12.2	2.1	13.2	25.4	15.3	66.0	56.0	40.6	40.7	N	
0.16495	8.4	1.3	13.2	21.6	14.5	65.2	55.2	43.6	40.7	N	
0.18608	6.3	0.8	13.2	19.5	14.0	64.2	54.2	44.7	40.2	N	
0.87384	0.8	-2.5	13.3	14.1	10.8	56.0	46.0	41.9	35.2	N	
3.08621	-0.7	-5.2	13.6	12.9	8.4	56.0	46.0	43.1	37.6	N	
14.89600	-1.5	-5.8	14.5	13.0	8.7	60.0	50.0	47.0	41.3	N	
0.15000	11.9	2.0	13.2	25.1	15.2	66.0	56.0	40.9	40.8	L	
0.16599	8.4	1.3	13.2	21.6	14.5	65.2	55.2	43.6	40.7	L	
0.18765	6.5	0.5	13.2	19.7	13.7	64.1	54.1	44.4	40.4	L	
0.87483	0.7	-2.5	13.3	14.0	10.8	56.0	46.0	42.0	35.2	L	
3.02505	-0.7	-5.2	13.6	12.9	8.4	56.0	46.0	43.1	37.6	L	
15.44023	-1.4	-5.8	14.5	13.1	8.7	60.0	50.0	46.9	41.3	L	

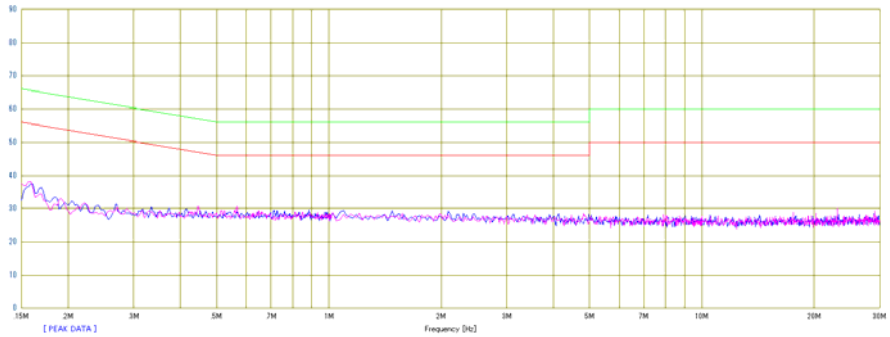
CHART : WITH FACTOR, Peak hold data. CALCULATION : RESULT = READING + C.F (LISN + ATTEN + CABLE)
Except for the above table : adequate margin data below the limits.

Conducted Emission

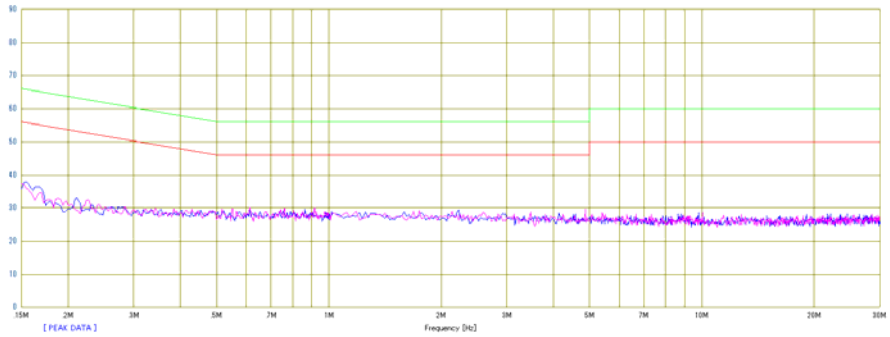
External antenna

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10953040H
Date	October 5, 2015
Temperature / Humidity	24 deg. C / 61 % RH
Engineer	Tomoki Matsui
Mode	Tx, Hopping Off, DH5

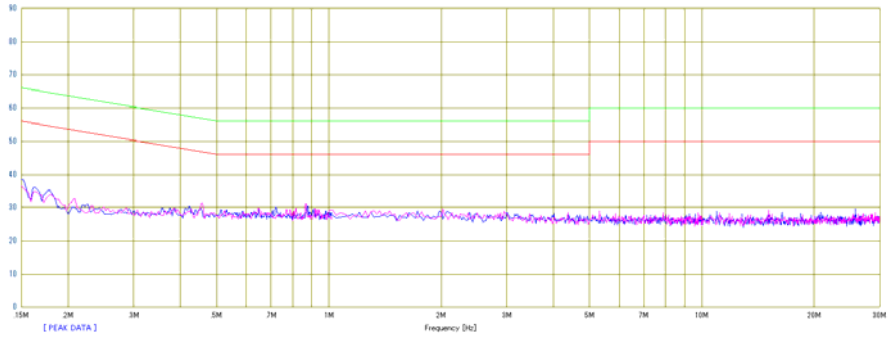
2402 MHz



2441 MHz



2480 MHz



Y scale [dBuV] Chart — N — L

Conducted Emission

External antenna

DATA OF CONDUCTED EMISSION TEST

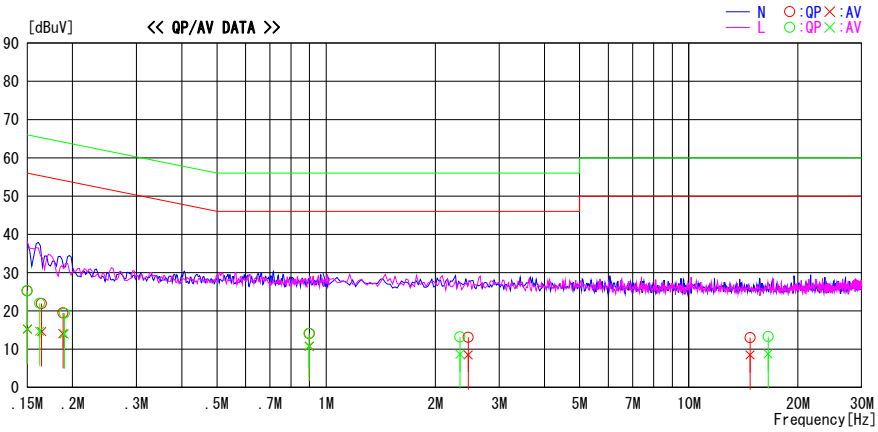
UL Japan, Inc. Ise EMC Lab. No.2 Semi Anechoic Chamber
Date : 2015/10/05

Report No. : 10953040H

Temp./Humi. : 24deg. C / 61% RH
Engineer : Tomoki Matsui

Mode / Remarks : BT 3DH5 2480MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.15000	12.0	2.0	13.2	25.2	15.2	66.0	56.0	40.8	40.8	N	
0.16420	8.7	1.4	13.2	21.9	14.6	65.2	55.2	43.3	40.6	N	
0.18822	6.3	0.9	13.2	19.5	14.1	64.1	54.1	44.6	40.0	N	
0.89921	0.8	-2.5	13.3	14.1	10.8	56.0	46.0	41.9	35.2	N	
2.46525	-0.4	-5.0	13.5	13.1	8.5	56.0	46.0	42.9	37.5	N	
14.76384	-1.5	-6.0	14.5	13.0	8.5	60.0	50.0	47.0	41.5	N	
0.15000	12.1	2.1	13.2	25.3	15.3	66.0	56.0	40.7	40.7	L	
0.16223	8.8	1.5	13.2	22.0	14.7	65.3	55.3	43.3	40.6	L	
0.18978	6.2	0.8	13.2	19.4	14.0	64.0	54.0	44.6	40.0	L	
0.89709	0.8	-2.5	13.3	14.1	10.8	56.0	46.0	41.9	35.2	L	
2.33820	-0.3	-4.8	13.5	13.2	8.7	56.0	46.0	42.8	37.3	L	
16.56045	-1.4	-5.9	14.7	13.3	8.8	60.0	50.0	46.7	41.2	L	

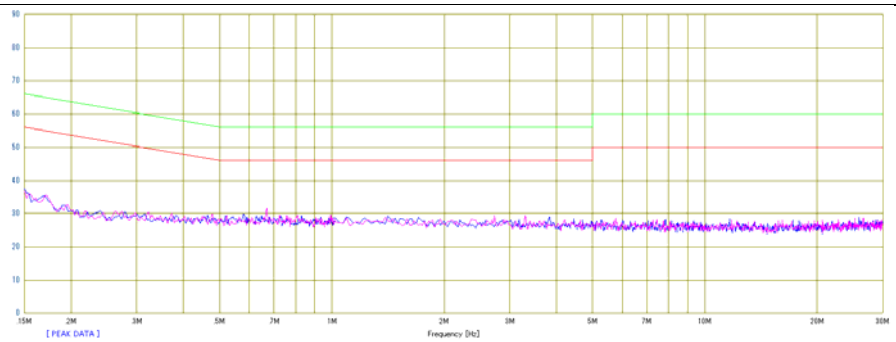
CHART : WITH FACTOR, Peak hold data. CALCULATION : RESULT = READING + C.F (LISN + ATTEN + CABLE)
Except for the above table : adequate margin data below the limits.

Conducted Emission

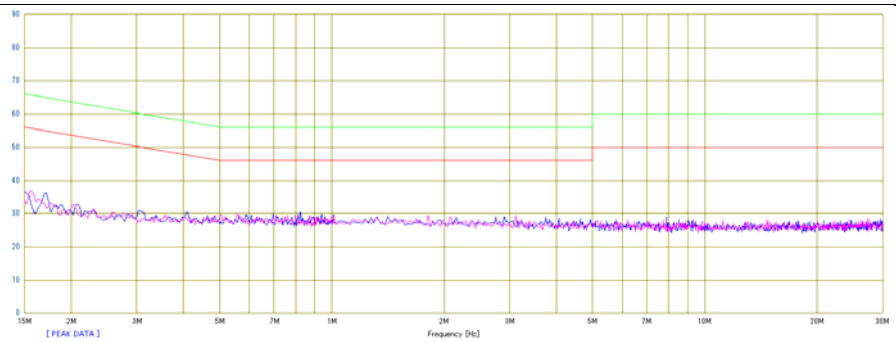
External antenna

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10953040H
Date	October 5, 2015
Temperature / Humidity	24 deg. C / 61 % RH
Engineer	Tomoki Matsui
Mode	Tx, Hopping Off, 3DH5

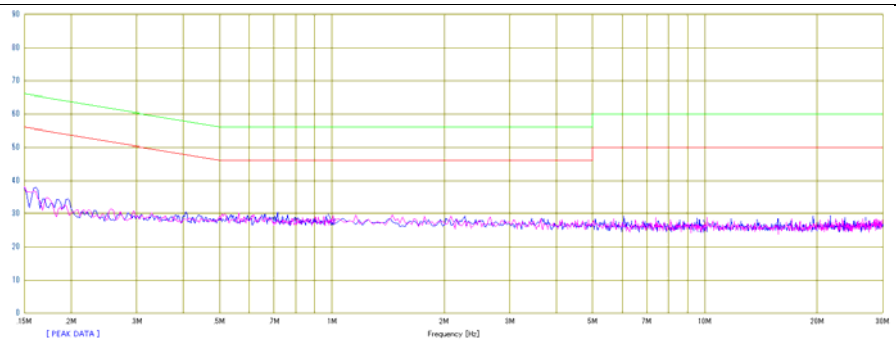
2402 MHz



2441 MHz



2480 MHz



Y scale [dBuV] Chart — N — L

Conducted Emission

Internal antenna

DATA OF CONDUCTED EMISSION TEST

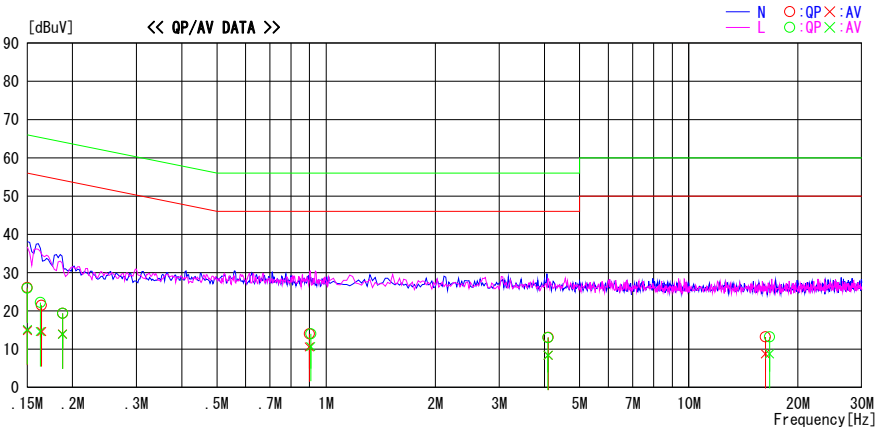
UL Japan, Inc. Ise EMC Lab. No.2 Semi Anechoic Chamber
Date : 2015/10/05

Report No. : 10953040H

Temp./Humi. : 24deg. C / 61% RH
Engineer : Tomoki Matsui

Mode / Remarks : BT DH5 2480MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.15000	12.9	1.7	13.2	26.1	14.9	66.0	56.0	39.9	41.1	N	
0.16430	8.3	1.4	13.2	21.5	14.6	65.2	55.2	43.8	40.6	N	
0.18770	6.2	0.8	13.2	19.4	14.0	64.1	54.1	44.7	40.1	N	
0.89957	0.7	-2.7	13.3	14.0	10.6	56.0	46.0	42.0	35.4	N	
4.09760	-0.6	-5.3	13.7	13.1	8.4	56.0	46.0	42.9	37.6	N	
16.27218	-1.5	-5.9	14.7	13.2	8.8	60.0	50.0	46.8	41.2	N	
0.15000	12.7	1.9	13.2	25.9	15.1	66.0	56.0	40.1	40.9	L	
0.16290	9.0	1.4	13.2	22.2	14.6	65.3	55.3	43.1	40.7	L	
0.18763	6.2	0.7	13.2	19.4	13.9	64.1	54.1	44.7	40.2	L	
0.90700	0.7	-2.6	13.3	14.0	10.7	56.0	46.0	42.0	35.3	L	
4.08960	-0.7	-5.3	13.7	13.0	8.4	56.0	46.0	43.0	37.6	L	
16.70031	-1.5	-5.9	14.7	13.2	8.8	60.0	50.0	46.8	41.2	L	

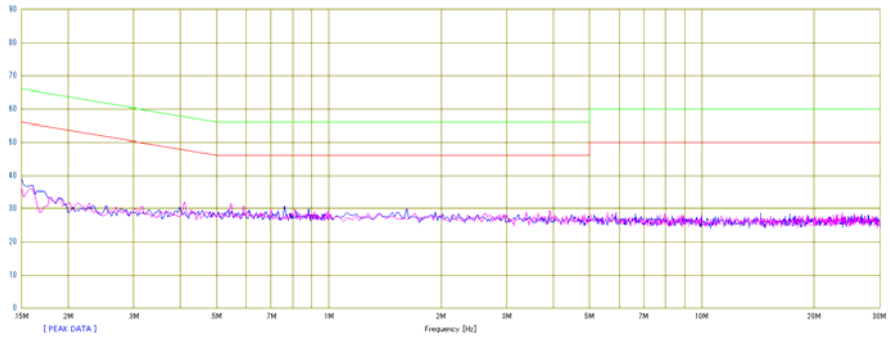
CHART : WITH FACTOR, Peak hold data. CALCULATION : RESULT = READING + C.F (LISN + ATTEN + CABLE)
Except for the above table : adequate margin data below the limits.

Conducted Emission

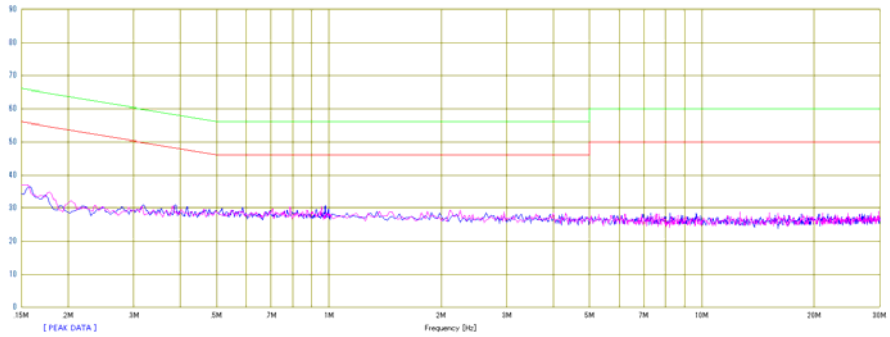
Internal antenna

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10953040H
Date	October 5, 2015
Temperature / Humidity	24 deg. C / 61 % RH
Engineer	Tomoki Matsui
Mode	Tx, Hopping Off, DH5

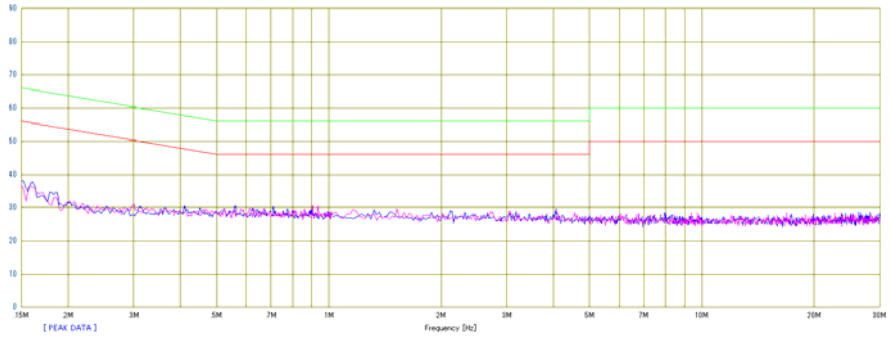
2402 MHz



2441 MHz



2480 MHz



Y scale [dBuV] Chart — N — L

Conducted Emission

Internal antenna

DATA OF CONDUCTED EMISSION TEST

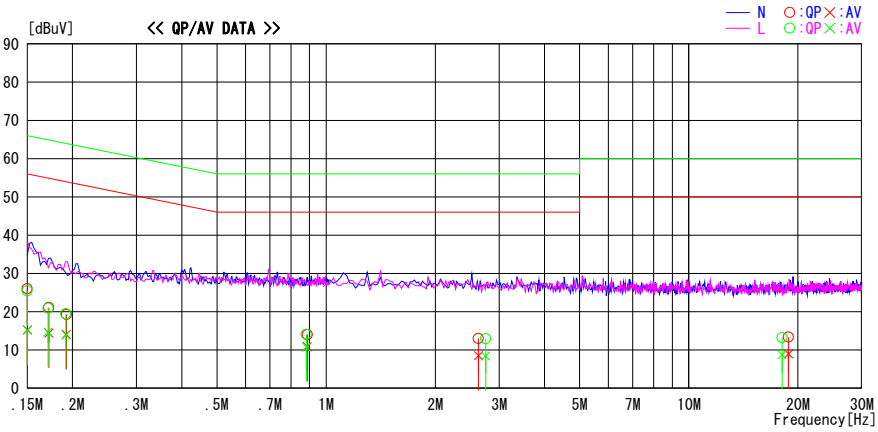
UL Japan, Inc. Ise EMC Lab. No.2 Semi Anechoic Chamber
Date : 2015/10/05

Report No. : 10953040H

Temp./Humi. : 24deg. C / 61% RH
Engineer : Tomoki Matsui

Mode / Remarks : BT 3DH5 2480MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.15000	12.9	2.0	13.2	26.1	15.2	66.0	56.0	40.0	40.8	N	
0.17202	7.9	1.2	13.2	21.1	14.4	64.9	54.9	43.8	40.5	N	
0.19237	6.1	0.9	13.2	19.3	14.1	63.9	53.9	44.6	39.8	N	
0.88725	0.7	-2.4	13.3	14.0	10.9	56.0	46.0	42.0	35.1	N	
2.63200	-0.6	-5.1	13.6	13.0	8.5	56.0	46.0	43.0	37.5	N	
18.83210	-1.4	-5.8	14.8	13.4	9.0	60.0	50.0	46.6	41.0	N	
0.15000	12.3	2.0	13.2	25.5	15.2	66.0	56.0	40.5	40.8	L	
0.17112	7.7	1.5	13.2	20.9	14.7	64.9	54.9	44.0	40.2	L	
0.19170	6.3	0.8	13.2	19.5	14.0	64.0	54.0	44.5	40.0	L	
0.88253	0.8	-2.5	13.3	14.1	10.8	56.0	46.0	41.9	35.2	L	
2.75231	-0.7	-5.2	13.6	12.9	8.4	56.0	46.0	43.1	37.6	L	
18.09082	-1.5	-5.9	14.7	13.2	8.8	60.0	50.0	46.8	41.2	L	

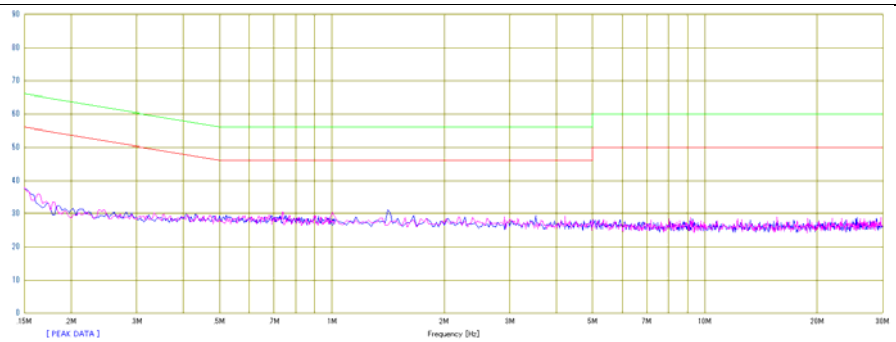
CHART : WITH FACTOR, Peak hold data. CALCULATION : RESULT = READING + C.F (LISN + ATTEN + CABLE)
Except for the above table : adequate margin data below the limits.

Conducted Emission

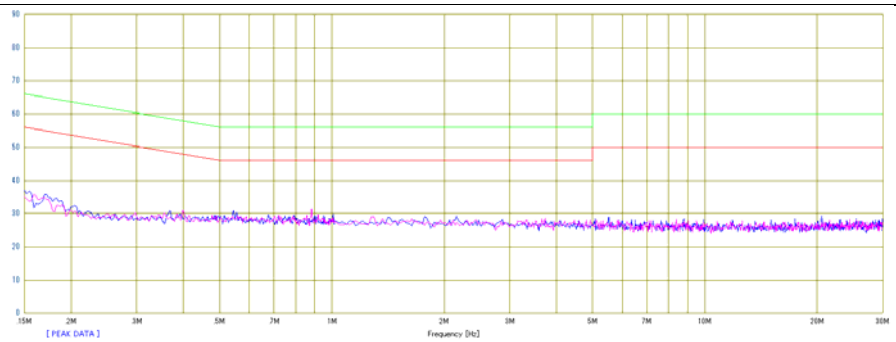
Internal antenna

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10953040H
Date	October 5, 2015
Temperature / Humidity	24 deg. C / 61 % RH
Engineer	Tomoki Matsui
Mode	Tx, Hopping Off, 3DH5

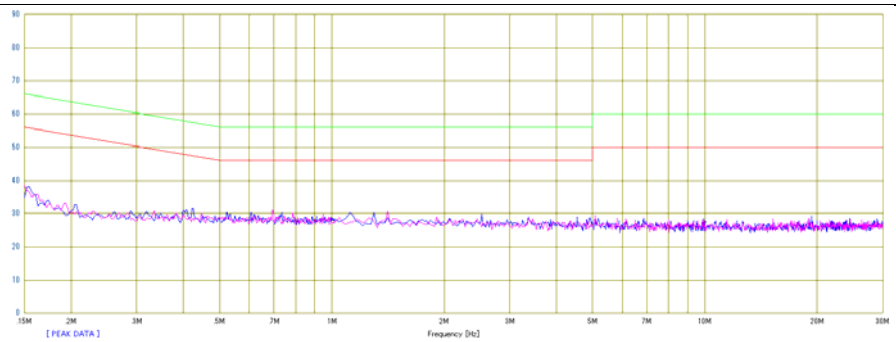
2402 MHz



2441 MHz



2480 MHz



Y scale [dBuV] Chart — N — L

20dB Bandwidth and Carrier Frequency Separation

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx DH5 / 3DH5

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.989	1.000	>= 0.659
DH5	2441.0	1.011	1.000	>= 0.674
DH5	2480.0	1.009	1.000	>= 0.673
3DH5	2402.0	1.317	1.000	>= 0.878
3DH5	2441.0	1.326	1.000	>= 0.884
3DH5	2480.0	1.315	1.000	>= 0.877

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

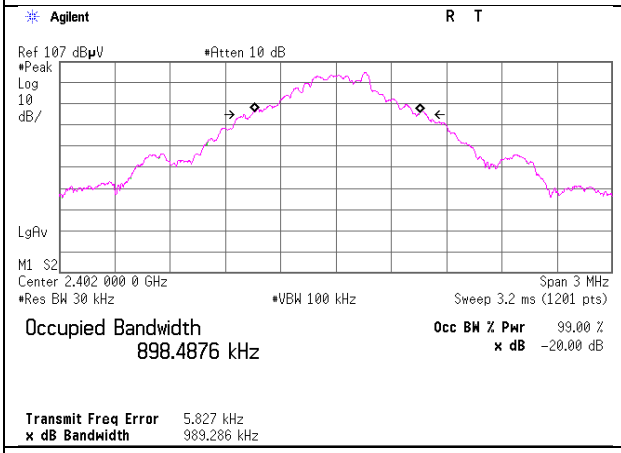
No limit applies to 20dB Bandwidth.

20dB Bandwidth and Carrier Frequency Separation

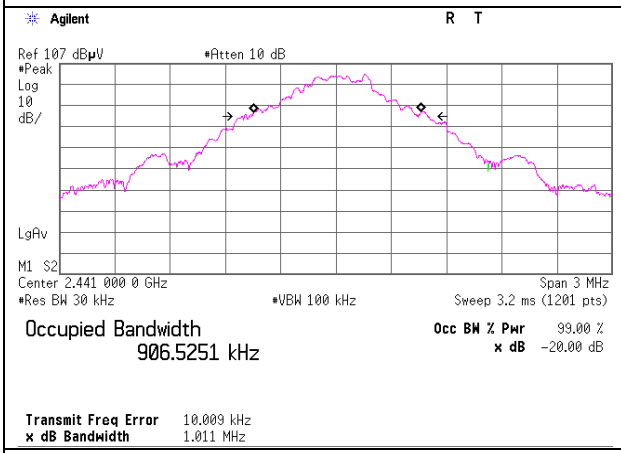
DH5

20 dB Bandwidth

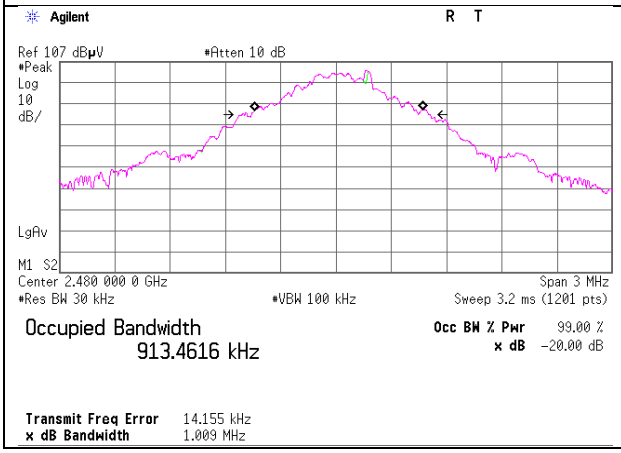
2402 MHz



2441 MHz

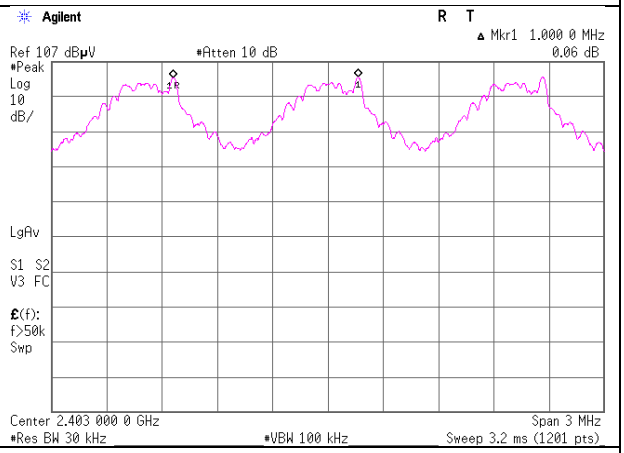


2480 MHz

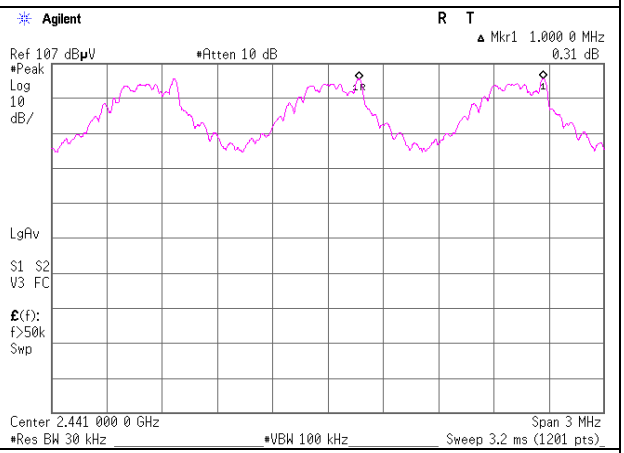


Carrier Frequency Separation

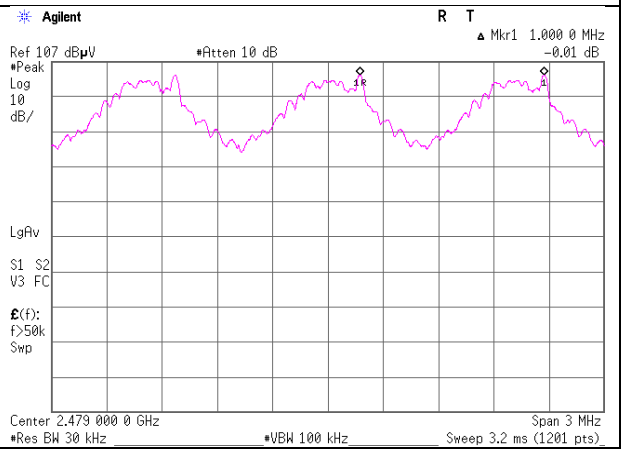
2402 MHz



2441 MHz



2480 MHz

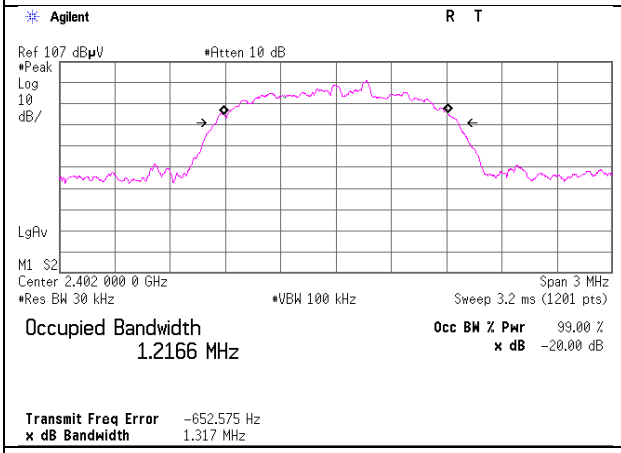


20dB Bandwidth and Carrier Frequency Separation

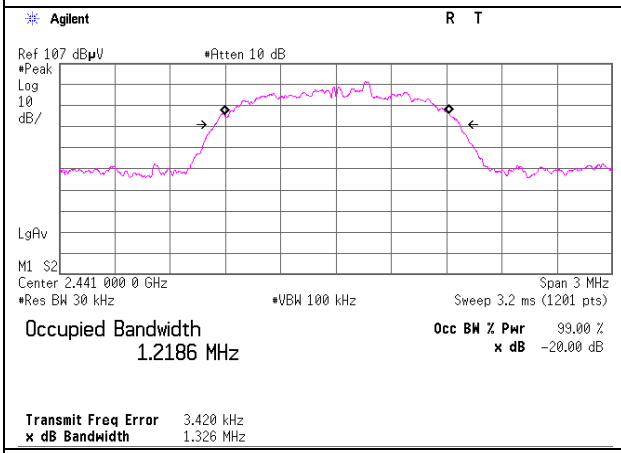
3DH5

20 dB Bandwidth

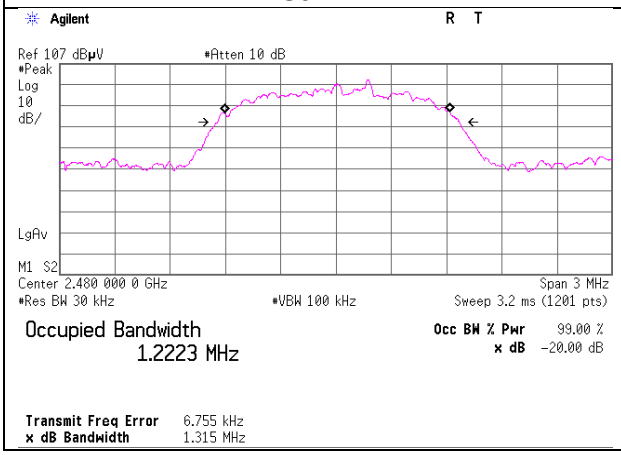
2402 MHz



2441MHz

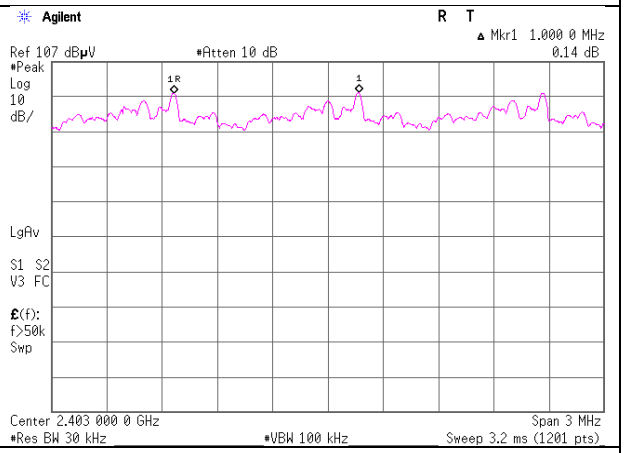


2480MHz

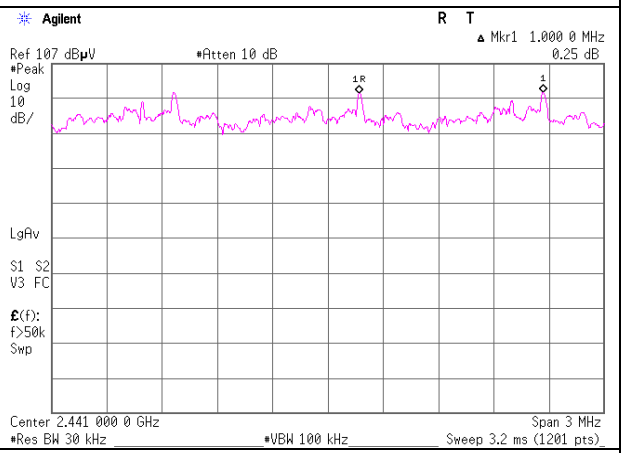


Carrier Frequency Separation

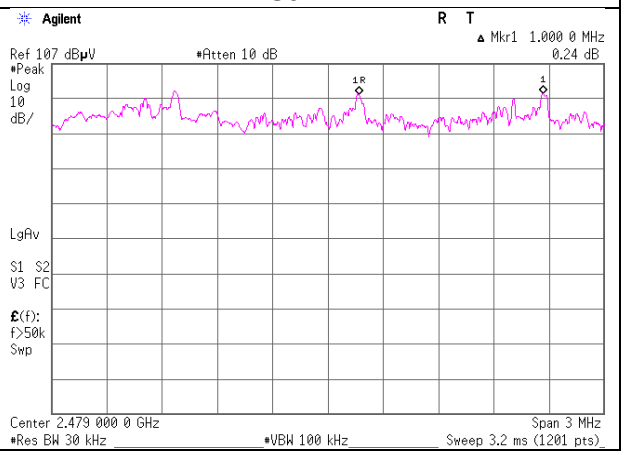
2402 MHz



2441 MHz



2480 MHz



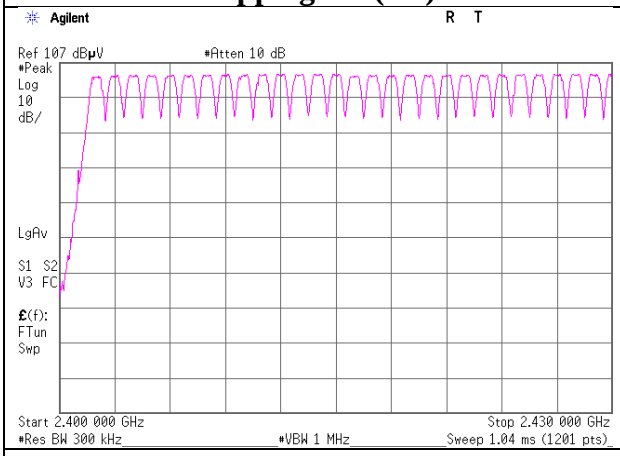
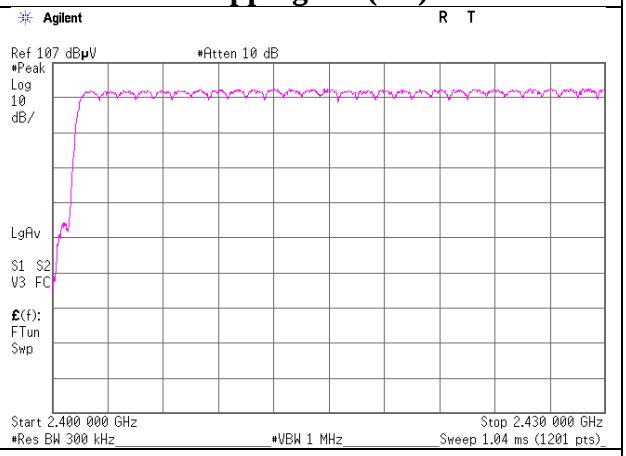
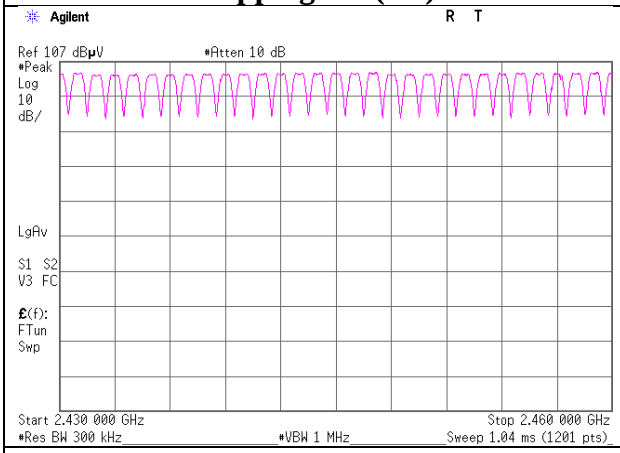
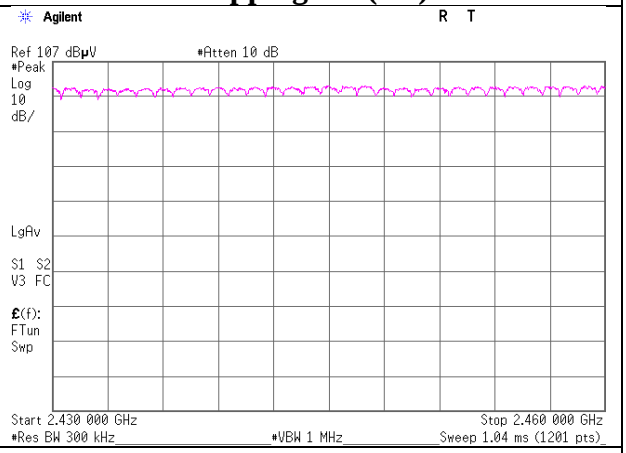
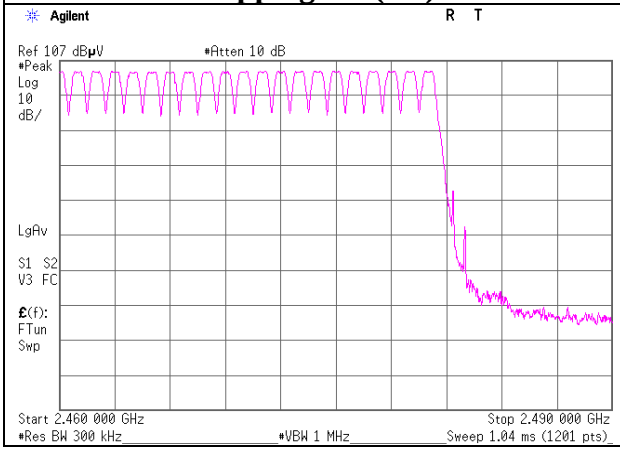
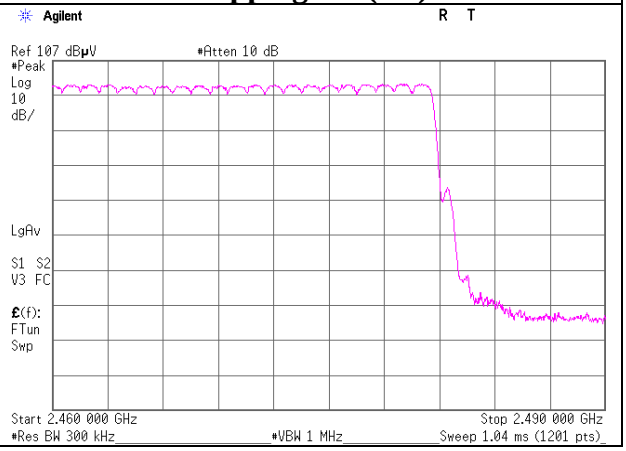
Number of Hopping Frequency

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
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

DH5	3DH5
Hopping On (1/3)	**Hopping On (1/3)**
	
Hopping On (2/3)	**Hopping On (2/3)**
	
Hopping On (3/3)	**Hopping On (3/3)**
	

Dwell time

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature/ Humidity	24deg. C / 56% RH
Engineer	Satofumi Matsuyama
Mode	Tx (Hopping on) DH5/3DH5

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	49.2 times / 5 sec. x 31.6 sec. = 311 times	0.422	131	400
DH3	29.0 times / 5 sec. x 31.6 sec. = 184 times	1.681	309	400
DH5	20.0 times / 5 sec. x 31.6 sec. = 127 times	2.936	373	400
3DH1	51.0 times / 5 sec. x 31.6 sec. = 323 times	0.429	139	400
3DH3	26.4 times / 5 sec. x 31.6 sec. = 167 times	1.684	281	400
3DH5	20.8 times / 5 sec. x 31.6 sec. = 132 times	2.940	388	400

Sample Calculation
Result = Number of transmission x Length of transmition time

*Average data of 5 tests.(except Inquiry)

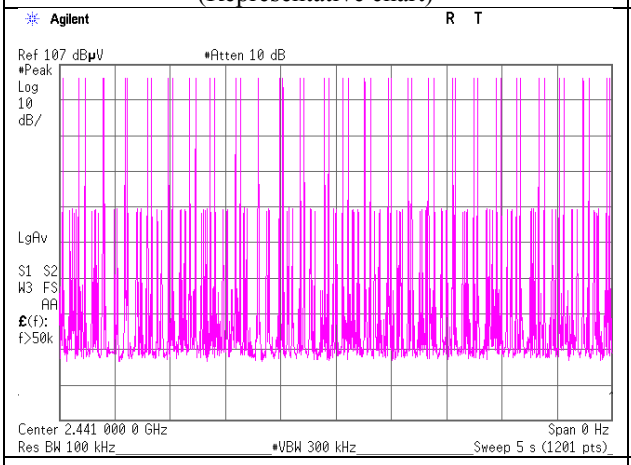
Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	49	49	49	50	49	49.2
DH3	31	28	27	29	30	29.0
DH5	20	21	19	21	19	20.0
3DH1	51	51	51	52	50	51.0
3DH3	27	27	26	25	27	26.4
3DH5	21	20	21	19	23	20.8

Sample Calculation
Average= Summation(Sampling 1 to 5) / 5

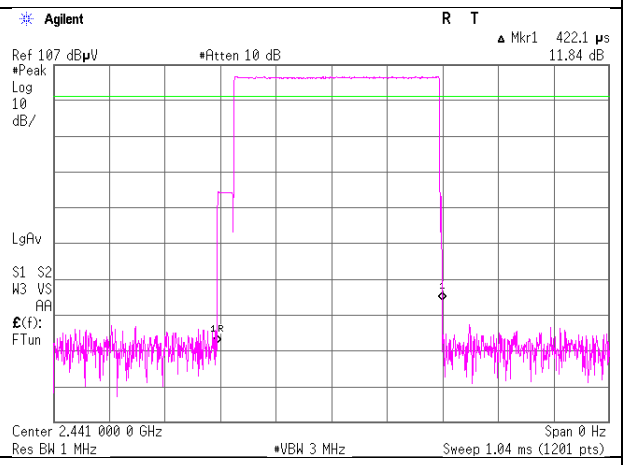
This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in N x 0.4s, where N is the number of channels being used in the hopping sequence ($20 \leq N \leq 79$), is always less than 0.4s regardless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

Dwell time

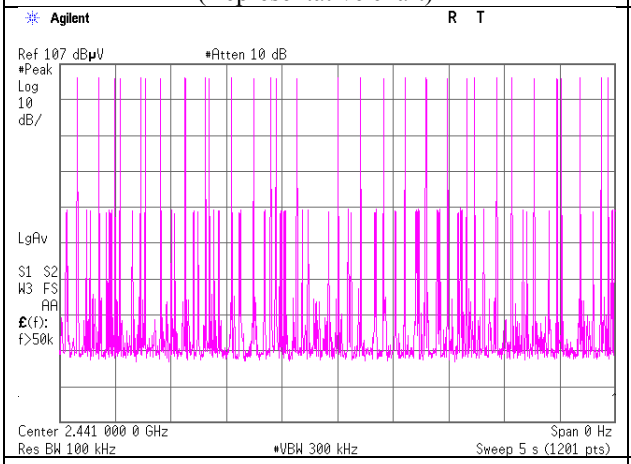
DH1 (1/2)
(Representative chart)



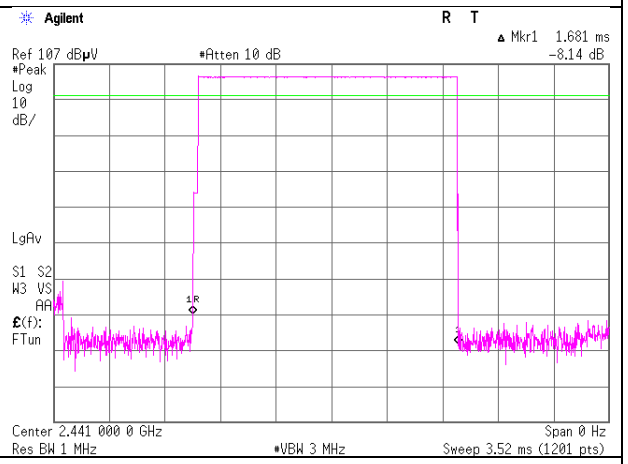
DH1 (2/2)



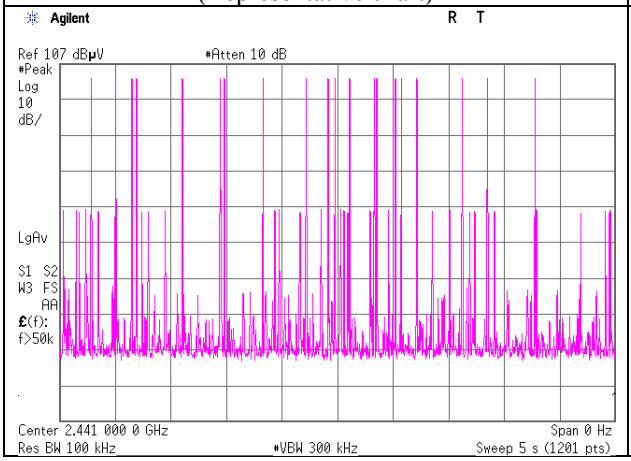
DH3 (1/2)
(Representative chart)



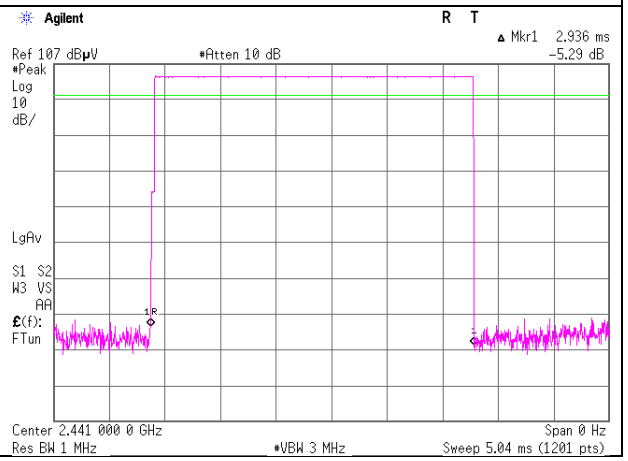
DH3 (2/2)



DH5 (1/2)
(Representative chart)

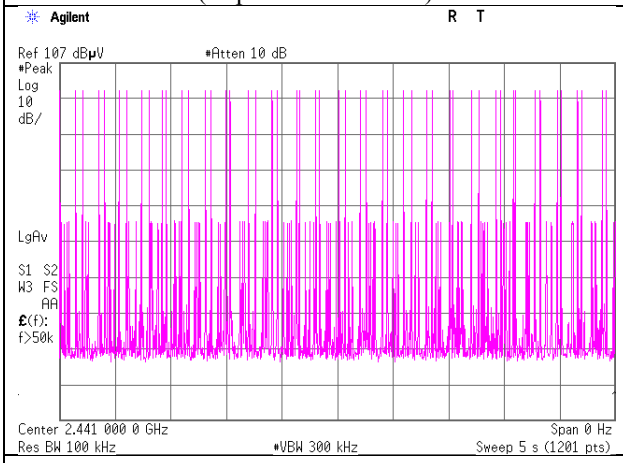


DH5 (2/2)

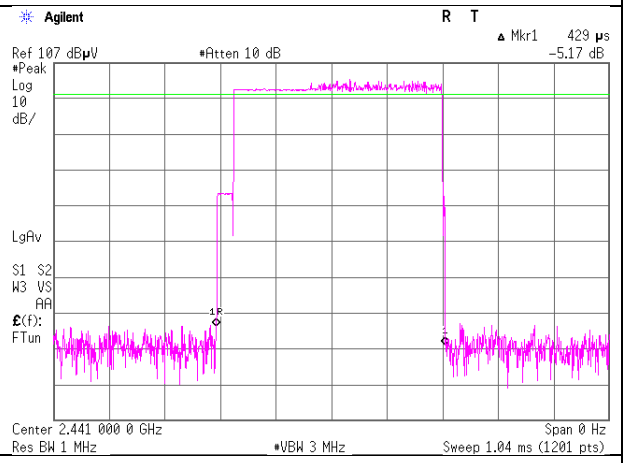


Dwell time

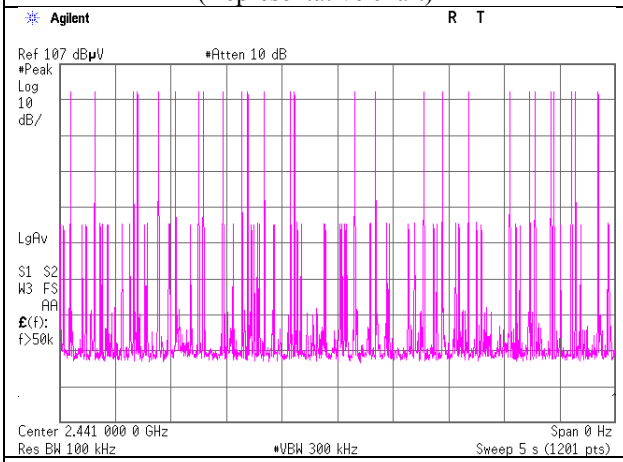
3DH1 (1/2)
(Representative chart)



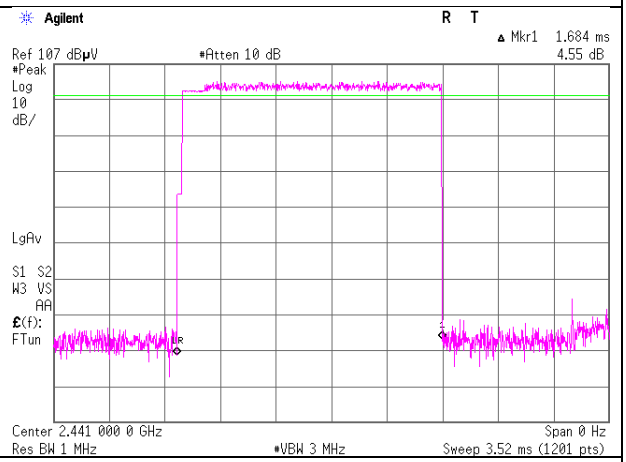
3DH1 (2/2)



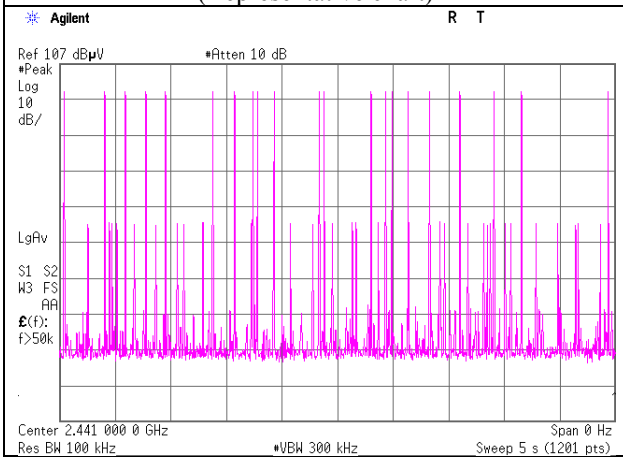
3DH3 (1/2)
(Representative chart)



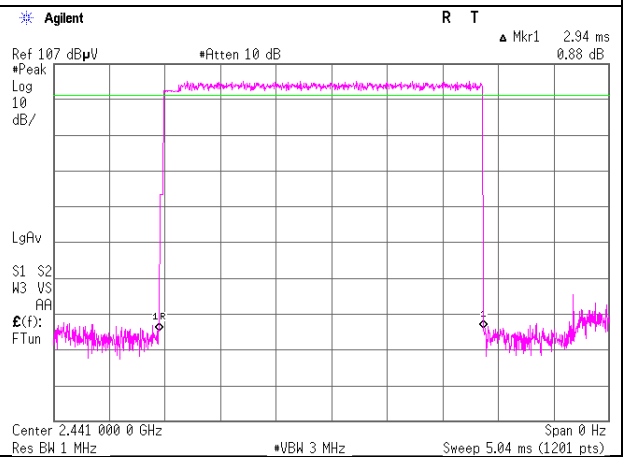
3DH3 (2/2)



3DH5 (1/2)
(Representative chart)



3DH5 (2/2)



Maximum Peak Output Power

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off

Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
DH5	2402.0	-3.87	2.03	9.77	7.93	6.21	20.96	125	13.03
DH5	2441.0	-3.47	2.04	9.77	8.34	6.82	20.96	125	12.62
DH5	2480.0	-3.03	2.05	9.77	8.79	7.57	20.96	125	12.17
2DH5	2402.0	-5.76	2.03	9.77	6.04	4.02	20.96	125	14.92
2DH5	2441.0	-4.84	2.04	9.77	6.97	4.98	20.96	125	13.99
2DH5	2480.0	-4.44	2.05	9.77	7.38	5.47	20.96	125	13.58
3DH5	2402.0	-5.35	2.03	9.77	6.45	4.42	20.96	125	14.51
3DH5	2441.0	-4.62	2.04	9.77	7.19	5.24	20.96	125	13.77
3DH5	2480.0	-4.24	2.05	9.77	7.58	5.73	20.96	125	13.38

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

*The equipment and cables were not used for factor 0 dB 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.

Average Output Power
(Reference data for RF Exposure)

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off

Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)	
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
DH5	2402.0	-5.15	2.03	9.77	6.65	4.62
DH5	2441.0	-4.78	2.04	9.77	7.03	5.05
DH5	2480.0	-4.46	2.05	9.77	7.36	5.45
2DH5	2402.0	-9.55	2.03	9.77	2.25	1.68
2DH5	2441.0	-8.60	2.04	9.77	3.21	2.09
2DH5	2480.0	-8.03	2.05	9.77	3.79	2.39
3DH5	2402.0	-9.35	2.03	9.77	2.45	1.76
3DH5	2441.0	-8.58	2.04	9.77	3.23	2.10
3DH5	2480.0	-8.02	2.05	9.77	3.80	2.40

Sample Calculation:
Result (Frame power) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

Burst Rate Confirmation

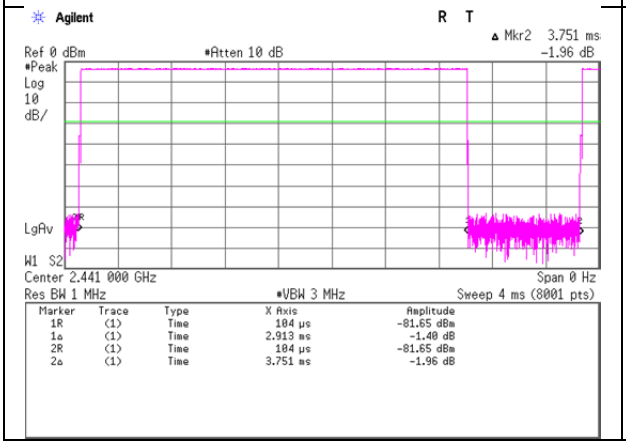
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off

DH5

Tx on / (Tx on + Tx off) = 0.777

Tx on / (Tx on + Tx off) * 100 = 77.7 %

Duty factor = 10 * log (3.751 / 2.913) = 1.10 dB

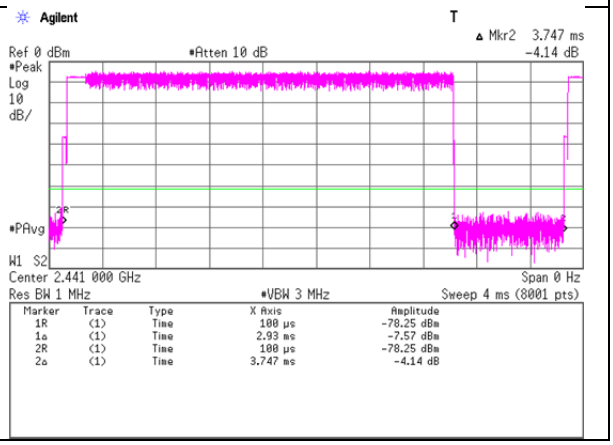


3DH5

Tx on / (Tx on + Tx off) = 0.782

Tx on / (Tx on + Tx off) * 100 = 78.2 %

Duty factor = 10 * log (3.747 / 2.93) = 1.07 dB



Radiated Spurious Emission

External antenna

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.2
Report No.	10953040H		
Date	October 2, 2015	October 3, 2015	October 5, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 57 % RH	23 deg. C / 47 % RH
Engineer	Kazuya Yoshioka (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Kazuya Yoshioka (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	58.982	QP	24.2	7.7	7.1	28.4	10.6	40.0	29.4	
Hori	100.000	QP	22.0	10.1	7.5	28.2	11.4	43.5	32.1	
Hori	163.200	QP	21.7	15.6	7.9	27.9	17.3	43.5	26.2	
Hori	288.001	QP	25.9	19.1	8.8	27.4	26.4	46.0	19.6	
Hori	326.400	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Hori	402.000	QP	21.4	17.6	9.4	28.2	20.2	46.0	25.8	
Hori	2390.000	PK	40.9	26.9	3.3	32.0	39.1	73.9	34.8	
Hori	4804.000	PK	51.4	31.8	5.5	31.3	57.4	73.9	16.5	
Hori	7206.000	PK	42.5	36.0	6.7	32.0	53.2	73.9	20.7	
Hori	9608.000	PK	42.3	38.2	7.5	32.4	55.6	73.9	18.3	
Hori	2390.000	AV	28.1	26.9	3.3	32.0	26.3	53.9	27.6	
Hori	4804.000	AV	43.6	31.8	5.5	31.3	49.6	53.9	4.3	
Hori	7206.000	AV	30.4	36.0	6.7	32.0	41.1	53.9	12.8	
Hori	9608.000	AV	28.7	38.2	7.5	32.4	42.0	53.9	11.9	
Vert	58.982	QP	28.4	7.7	7.1	28.4	14.8	40.0	25.2	
Vert	100.000	QP	22.0	10.1	7.5	28.2	11.4	43.5	32.1	
Vert	163.200	QP	21.7	15.6	7.9	27.9	17.3	43.5	26.2	
Vert	288.001	QP	23.3	19.1	8.8	27.4	23.8	46.0	22.2	
Vert	326.400	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Vert	402.000	QP	21.4	17.6	9.4	28.2	20.2	46.0	25.8	
Vert	2390.000	PK	42.1	26.9	3.3	32.0	40.3	73.9	33.6	
Vert	4804.000	PK	48.4	31.8	5.5	31.3	54.4	73.9	19.5	
Vert	7206.000	PK	42.6	36.0	6.7	32.0	53.3	73.9	20.6	
Vert	9608.000	PK	42.5	38.2	7.5	32.4	55.8	73.9	18.1	
Vert	2390.000	AV	29.5	26.9	3.3	32.0	27.7	53.9	26.2	
Vert	4804.000	AV	40.5	31.8	5.5	31.3	46.5	53.9	7.4	
Vert	7206.000	AV	30.2	36.0	6.7	32.0	40.9	53.9	13.0	
Vert	9608.000	AV	28.7	38.2	7.5	32.4	42.0	53.9	11.9	

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

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	96.9	26.9	3.3	32.0	95.1	-	-	Carrier
Hori	2400.000	PK	36.0	26.9	3.3	32.0	34.2	75.1	40.9	
Vert	2402.000	PK	95.4	26.9	3.3	32.0	93.6	-	-	Carrier
Vert	2400.000	PK	35.4	26.9	3.3	32.0	33.6	73.6	40.0	

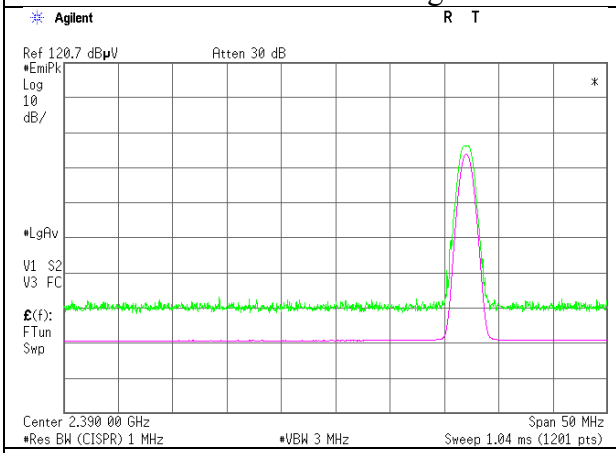
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

Radiated Spurious Emission
(Reference Plot for band-edge)
External antenna

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10953040H
Date	October 2, 2015
Temperature / Humidity	22 deg. C / 67 % RH
Engineer	Kazuya Yoshioka (1-10GHz)
Mode	Tx, Hopping Off, DH5 2402 MHz

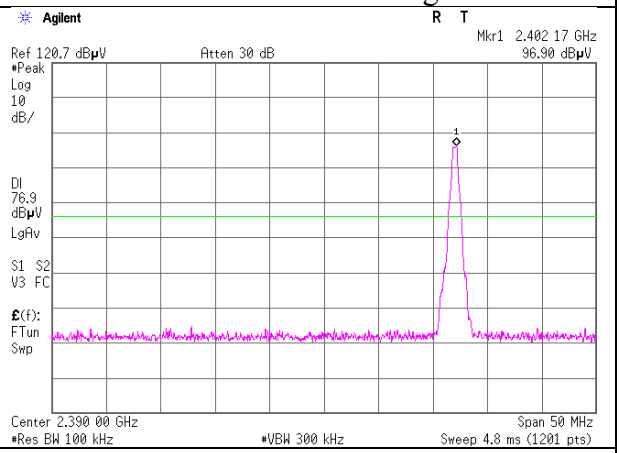
Horizontal

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

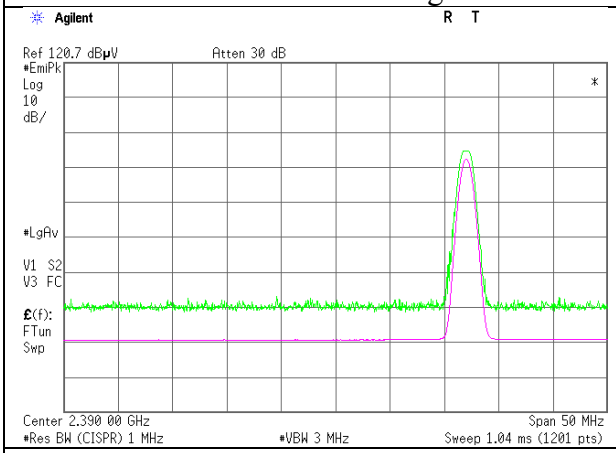
Authorized-band band-edge Plot



20dBc Plot

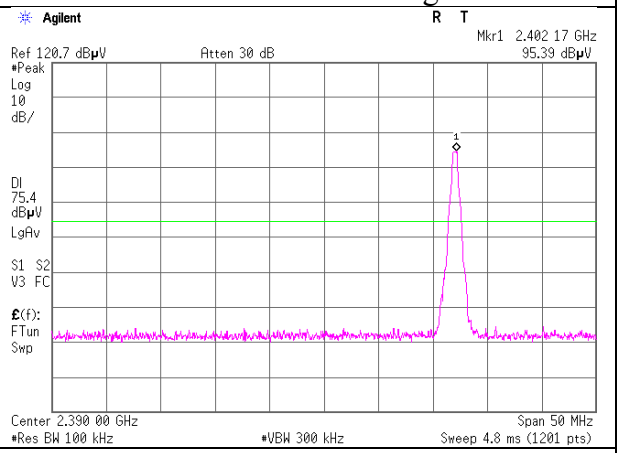
Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Authorized-band band-edge Plot



20dBc Plot

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

Radiated Spurious Emission

External antenna

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.2
Report No.	10953040H		
Date	October 2, 2015	October 3, 2015	October 5, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 57 % RH	23 deg. C / 47 % RH
Engineer	Kazuya Yoshioka (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Kazuya Yoshioka (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	58.982	QP	24.2	7.7	7.1	28.4	10.6	40.0	29.4	
Hori	100.000	QP	22.0	10.1	7.5	28.2	11.4	43.5	32.1	
Hori	163.200	QP	21.7	15.6	7.9	27.9	17.3	43.5	26.2	
Hori	288.001	QP	25.7	19.1	8.8	27.4	26.2	46.0	19.8	
Hori	326.400	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Hori	402.000	QP	21.4	17.6	9.4	28.2	20.2	46.0	25.8	
Hori	4882.000	PK	52.5	31.9	5.5	31.3	58.6	73.9	15.3	
Hori	7323.000	PK	43.4	36.0	6.8	32.0	54.2	73.9	19.7	
Hori	9764.000	PK	41.6	38.2	7.5	32.5	54.8	73.9	19.1	
Hori	4882.000	AV	47.5	31.9	5.5	31.3	53.6	53.9	0.3	
Hori	7323.000	AV	33.7	36.0	6.8	32.0	44.5	53.9	9.4	
Hori	9764.000	AV	29.7	38.2	7.5	32.5	42.9	53.9	11.0	
Vert	58.982	QP	28.0	7.7	7.1	28.4	14.4	40.0	25.6	
Vert	100.000	QP	22.0	10.1	7.5	28.2	11.4	43.5	32.1	
Vert	163.200	QP	21.7	15.6	7.9	27.9	17.3	43.5	26.2	
Vert	288.001	QP	24.0	19.1	8.8	27.4	24.5	46.0	21.5	
Vert	326.400	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Vert	402.000	QP	21.4	17.6	9.4	28.2	20.2	46.0	25.8	
Vert	4882.000	PK	50.0	31.9	5.5	31.3	56.1	73.9	17.8	
Vert	7323.000	PK	43.7	36.0	6.8	32.0	54.5	73.9	19.4	
Vert	9764.000	PK	41.8	38.2	7.5	32.5	55.0	73.9	18.9	
Vert	4882.000	AV	44.3	31.9	5.5	31.3	50.4	53.9	3.5	
Vert	7323.000	AV	33.0	36.0	6.8	32.0	43.8	53.9	10.1	
Vert	9764.000	AV	29.7	38.2	7.5	32.5	42.9	53.9	11.0	

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

Radiated Spurious Emission

External antenna

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.2
Report No.	10953040H		
Date	October 2, 2015	October 3, 2015	October 5, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 57 % RH	23 deg. C / 47 % RH
Engineer	Kazuya Yoshioka (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Kazuya Yoshioka (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	58.982	QP	24.2	7.7	7.1	28.4	10.6	40.0	29.4	
Hori	100.000	QP	22.0	10.1	7.5	28.2	11.4	43.5	32.1	
Hori	163.200	QP	21.7	15.6	7.9	27.9	17.3	43.5	26.2	
Hori	288.001	QP	25.6	19.1	8.8	27.4	26.1	46.0	19.9	
Hori	326.400	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Hori	402.000	QP	21.4	17.6	9.4	28.2	20.2	46.0	25.8	
Hori	2483.500	PK	44.8	26.9	3.3	32.0	43.0	73.9	30.9	
Hori	4960.000	PK	51.0	32.1	5.4	31.2	57.3	73.9	16.6	
Hori	7440.000	PK	43.6	36.0	6.7	32.1	54.2	73.9	19.7	
Hori	9920.000	PK	40.9	38.2	7.6	32.5	54.2	73.9	19.7	
Hori	2483.500	AV	32.0	26.9	3.3	32.0	30.2	53.9	23.7	
Hori	4960.000	AV	43.2	32.1	5.4	31.2	49.5	53.9	4.4	
Hori	7440.000	AV	32.4	36.0	6.7	32.1	43.0	53.9	10.9	
Hori	9920.000	AV	28.2	38.2	7.6	32.5	41.5	53.9	12.4	
Vert	58.982	QP	28.5	7.7	7.1	28.4	14.9	40.0	25.1	
Vert	100.000	QP	22.0	10.1	7.5	28.2	11.4	43.5	32.1	
Vert	163.200	QP	21.7	15.6	7.9	27.9	17.3	43.5	26.2	
Vert	288.001	QP	24.0	19.1	8.8	27.4	24.5	46.0	21.5	
Vert	326.400	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Vert	402.000	QP	21.4	17.6	9.4	28.2	20.2	46.0	25.8	
Vert	2483.500	PK	45.9	26.9	3.3	32.0	44.1	73.9	29.8	
Vert	4960.000	PK	47.5	32.1	5.4	31.2	53.8	73.9	20.1	
Vert	7440.000	PK	43.0	36.0	6.7	32.1	53.6	73.9	20.3	
Vert	9920.000	PK	41.1	38.2	7.6	32.5	54.4	73.9	19.5	
Vert	2483.500	AV	33.8	26.9	3.3	32.0	32.0	53.9	21.9	
Vert	4960.000	AV	39.3	32.1	5.4	31.2	45.6	53.9	8.3	
Vert	7440.000	AV	31.5	36.0	6.7	32.1	42.1	53.9	11.8	
Vert	9920.000	AV	28.2	38.2	7.6	32.5	41.5	53.9	12.4	

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).

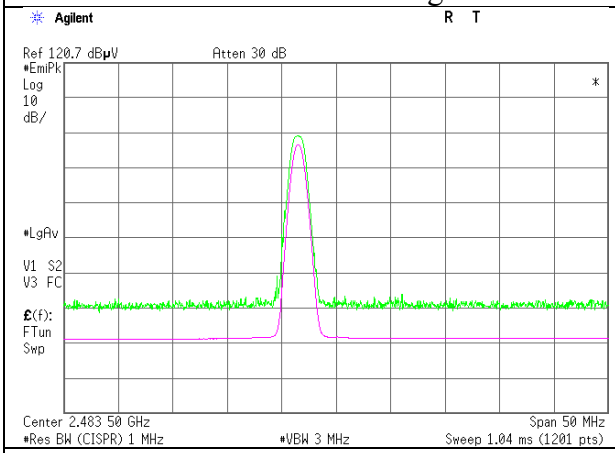
Distance factor: 10 GHz - 26.5 GHz 20log (3.0 m / 1.0 m) = 9.5 dB
26.5 GHz - 40 GHz 20log (3.0 m / 0.5 m) = 15.6 dB

Radiated Spurious Emission
(Reference Plot for band-edge)
External antenna

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10953040H
Date	October 2, 2015
Temperature / Humidity	22 deg. C / 67 % RH
Engineer	Kazuya Yoshioka (1-10GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz

Horizontal

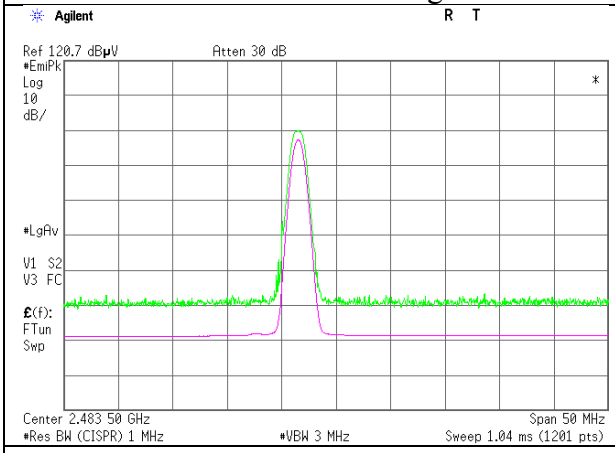
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

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

Radiated Spurious Emission

External antenna

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.2
Report No.	10953040H		
Date	October 2, 2015	October 3, 2015	October 5, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 57 % RH	23 deg. C / 47 % RH
Engineer	Kazuya Yoshioka (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Kazuya Yoshioka (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	58.982	QP	24.1	7.7	7.1	28.4	10.5	40.0	29.5	
Hori	100.000	QP	22.0	10.1	7.5	28.2	11.4	43.5	32.1	
Hori	163.200	QP	21.7	15.6	7.9	27.9	17.3	43.5	26.2	
Hori	288.001	QP	25.4	19.1	8.8	27.4	25.9	46.0	20.1	
Hori	326.400	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Hori	402.000	QP	21.4	17.6	9.4	28.2	20.2	46.0	25.8	
Hori	2390.000	PK	40.8	26.9	3.3	32.0	39.0	73.9	34.9	
Hori	4804.000	PK	45.9	31.8	5.5	31.3	51.9	73.9	22.0	
Hori	7206.000	PK	40.7	36.0	6.7	32.0	51.4	73.9	22.5	
Hori	9608.000	PK	41.7	38.2	7.5	32.4	55.0	73.9	18.9	
Hori	2390.000	AV	28.0	26.9	3.3	32.0	26.2	53.9	27.7	
Hori	4804.000	AV	35.1	31.8	5.5	31.3	41.1	53.9	12.8	
Hori	7206.000	AV	28.0	36.0	6.7	32.0	38.7	53.9	15.2	
Hori	9608.000	AV	28.5	38.2	7.5	32.4	41.8	53.9	12.1	
Vert	58.982	QP	28.0	7.7	7.1	28.4	14.4	40.0	25.6	
Vert	100.000	QP	22.0	10.1	7.5	28.2	11.4	43.5	32.1	
Vert	163.200	QP	21.7	15.6	7.9	27.9	17.3	43.5	26.2	
Vert	288.001	QP	23.9	19.1	8.8	27.4	24.4	46.0	21.6	
Vert	326.400	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Vert	402.000	QP	21.4	17.6	9.4	28.2	20.2	46.0	25.8	
Vert	2390.000	PK	41.7	26.9	3.3	32.0	39.9	73.9	34.0	
Vert	4804.000	PK	44.0	31.8	5.5	31.3	50.0	73.9	23.9	
Vert	7206.000	PK	41.0	36.0	6.7	32.0	51.7	73.9	22.2	
Vert	9608.000	PK	42.0	38.2	7.5	32.4	55.3	73.9	18.6	
Vert	2390.000	AV	29.5	26.9	3.3	32.0	27.7	53.9	26.2	
Vert	4804.000	AV	33.9	31.8	5.5	31.3	39.9	53.9	14.0	
Vert	7206.000	AV	28.0	36.0	6.7	32.0	38.7	53.9	15.2	
Vert	9608.000	AV	28.5	38.2	7.5	32.4	41.8	53.9	12.1	

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

20dBc Data Sheet

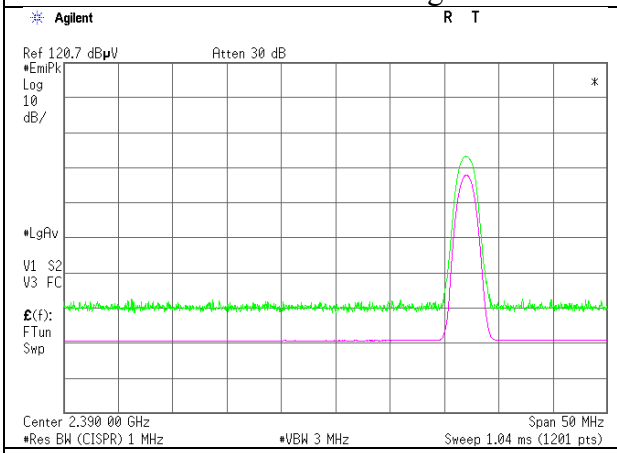
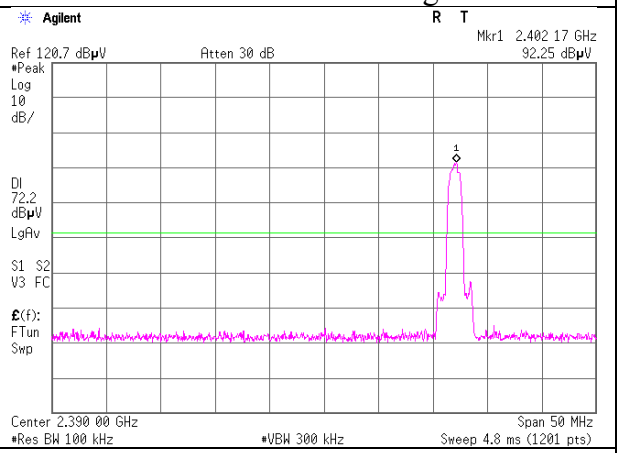
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	92.3	26.9	3.3	32.0	90.5	-	-	Carrier
Hori	2400.000	PK	33.0	26.9	3.3	32.0	31.2	70.5	39.3	
Vert	2402.000	PK	91.9	26.9	3.3	32.0	90.1	-	-	Carrier
Vert	2400.000	PK	34.3	26.9	3.3	32.0	32.5	70.1	37.6	

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

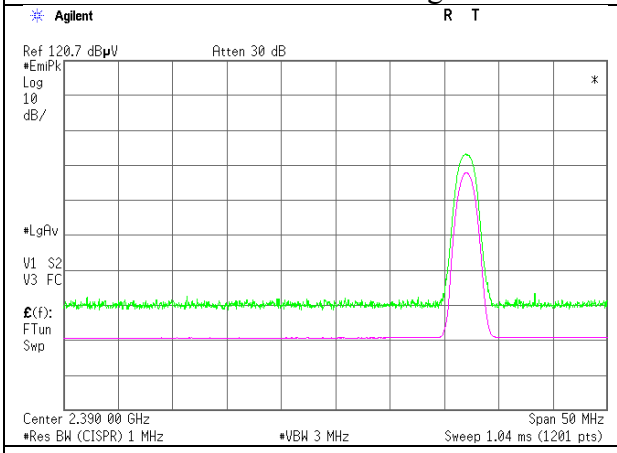
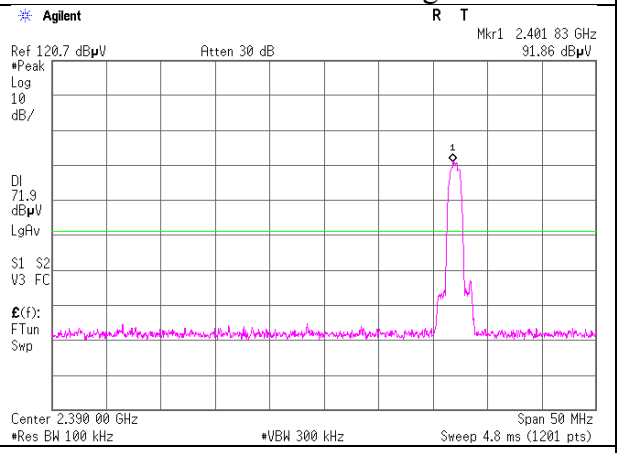
Radiated Spurious Emission
(Reference Plot for band-edge)
External antenna

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10953040H
Date	October 2, 2015
Temperature / Humidity	22 deg. C / 67 % RH
Engineer	Kazuya Yoshioka (1-10GHz)
Mode	Tx, Hopping Off, 3DH5 2402 MHz

Horizontal

Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical

Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

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

Radiated Spurious Emission

External antenna

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.2
Report No.	10953040H		
Date	October 2, 2015	October 3, 2015	October 5, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 57 % RH	23 deg. C / 47 % RH
Engineer	Kazuya Yoshioka (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Kazuya Yoshioka (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	58.982	QP	24.0	7.7	7.1	28.4	10.4	40.0	29.6	
Hori	100.000	QP	22.0	10.1	7.5	28.2	11.4	43.5	32.1	
Hori	163.200	QP	21.7	15.6	7.9	27.9	17.3	43.5	26.2	
Hori	288.001	QP	25.2	19.1	8.8	27.4	25.7	46.0	20.3	
Hori	326.400	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Hori	402.000	QP	21.4	17.6	9.4	28.2	20.2	46.0	25.8	
Hori	4882.000	PK	48.4	31.9	5.5	31.3	54.5	73.9	19.4	
Hori	7323.000	PK	40.9	36.0	6.8	32.0	51.7	73.9	22.2	
Hori	9764.000	PK	41.6	38.2	7.5	32.5	54.8	73.9	19.1	
Hori	4882.000	AV	39.8	31.9	5.5	31.3	45.9	53.9	8.0	
Hori	7323.000	AV	29.8	36.0	6.8	32.0	40.6	53.9	13.3	
Hori	9764.000	AV	29.7	38.2	7.5	32.5	42.9	53.9	11.0	
Vert	58.982	QP	28.2	7.7	7.1	28.4	14.6	40.0	25.4	
Vert	100.000	QP	22.0	10.1	7.5	28.2	11.4	43.5	32.1	
Vert	163.200	QP	21.7	15.6	7.9	27.9	17.3	43.5	26.2	
Vert	288.001	QP	24.0	19.1	8.8	27.4	24.5	46.0	21.5	
Vert	326.400	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Vert	402.000	QP	21.4	17.6	9.4	28.2	20.2	46.0	25.8	
Vert	4882.000	PK	45.7	31.9	5.5	31.3	51.8	73.9	22.1	
Vert	7323.000	PK	41.0	36.0	6.8	32.0	51.8	73.9	22.1	
Vert	9764.000	PK	41.8	38.2	7.5	32.5	55.0	73.9	18.9	
Vert	4882.000	AV	36.7	31.9	5.5	31.3	42.8	53.9	11.1	
Vert	7323.000	AV	29.8	36.0	6.8	32.0	40.6	53.9	13.3	
Vert	9764.000	AV	29.7	38.2	7.5	32.5	42.9	53.9	11.0	

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

Radiated Spurious Emission

External antenna

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.2
Report No.	10953040H		
Date	October 2, 2015	October 3, 2015	October 5, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 57 % RH	23 deg. C / 47 % RH
Engineer	Kazuya Yoshioka (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Kazuya Yoshioka (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	58.982	QP	23.9	7.7	7.1	28.4	10.3	40.0	29.7	
Hori	100.000	QP	22.0	10.1	7.5	28.2	11.4	43.5	32.1	
Hori	163.200	QP	21.7	15.6	7.9	27.9	17.3	43.5	26.2	
Hori	288.001	QP	25.0	19.1	8.8	27.4	25.5	46.0	20.5	
Hori	326.400	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Hori	402.000	QP	21.4	17.6	9.4	28.2	20.2	46.0	25.8	
Hori	2483.500	PK	43.9	26.9	3.3	32.0	42.1	73.9	31.8	
Hori	4960.000	PK	46.7	32.1	5.4	31.2	53.0	73.9	20.9	
Hori	7440.000	PK	40.9	36.0	6.7	32.1	51.5	73.9	22.4	
Hori	9920.000	PK	41.4	38.2	7.6	32.5	54.7	73.9	19.2	
Hori	2483.500	AV	30.7	26.9	3.3	32.0	28.9	53.9	25.0	
Hori	4960.000	AV	35.5	32.1	5.4	31.2	41.8	53.9	12.1	
Hori	7440.000	AV	28.1	36.0	6.7	32.1	38.7	53.9	15.2	
Hori	9920.000	AV	28.2	38.2	7.6	32.5	41.5	53.9	12.4	
Vert	58.982	QP	27.9	7.7	7.1	28.4	14.3	40.0	25.7	
Vert	100.000	QP	22.0	10.1	7.5	28.2	11.4	43.5	32.1	
Vert	163.200	QP	21.7	15.6	7.9	27.9	17.3	43.5	26.2	
Vert	288.001	QP	24.2	19.1	8.8	27.4	24.7	46.0	21.3	
Vert	326.400	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Vert	402.000	QP	21.4	17.6	9.4	28.2	20.2	46.0	25.8	
Vert	2483.500	PK	43.6	26.9	3.3	32.0	41.8	73.9	32.1	
Vert	4960.000	PK	45.8	32.1	5.4	31.2	52.1	73.9	21.8	
Vert	7440.000	PK	41.1	36.0	6.7	32.1	51.7	73.9	22.2	
Vert	9920.000	PK	41.6	38.2	7.6	32.5	54.9	73.9	19.0	
Vert	2483.500	AV	30.5	26.9	3.3	32.0	28.7	53.9	25.2	
Vert	4960.000	AV	33.5	32.1	5.4	31.2	39.8	53.9	14.1	
Vert	7440.000	AV	28.1	36.0	6.7	32.1	38.7	53.9	15.2	
Vert	9920.000	AV	28.2	38.2	7.6	32.5	41.5	53.9	12.4	

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).

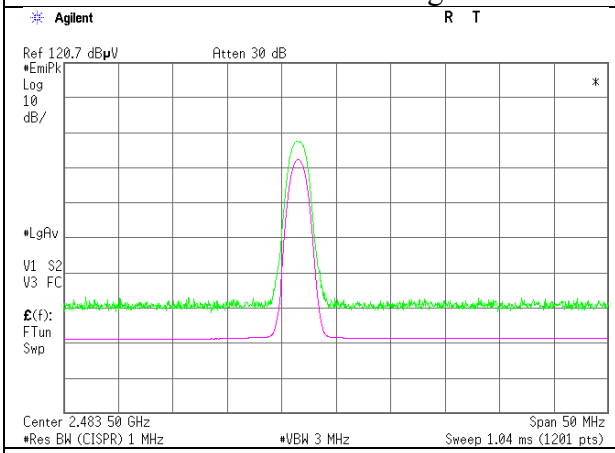
Distance factor: 10 GHz - 26.5 GHz 20log (3.0 m / 1.0 m) = 9.5 dB
26.5 GHz - 40 GHz 20log (3.0 m / 0.5 m) = 15.6 dB

Radiated Spurious Emission
(Reference Plot for band-edge)
External antenna

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10953040H
Date	October 2, 2015
Temperature / Humidity	22 deg. C / 67 % RH
Engineer	Kazuya Yoshioka
	(1-10GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz

Horizontal

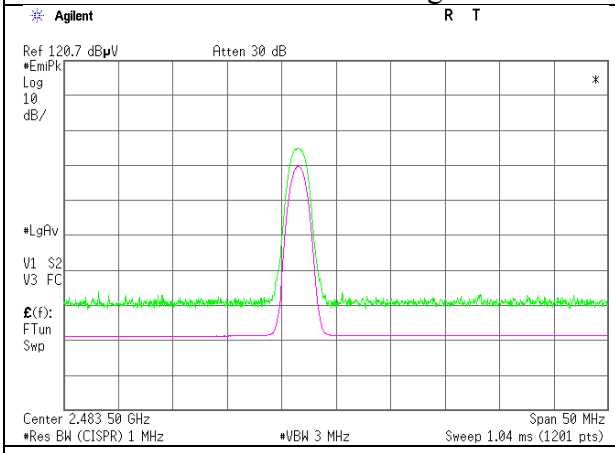
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot

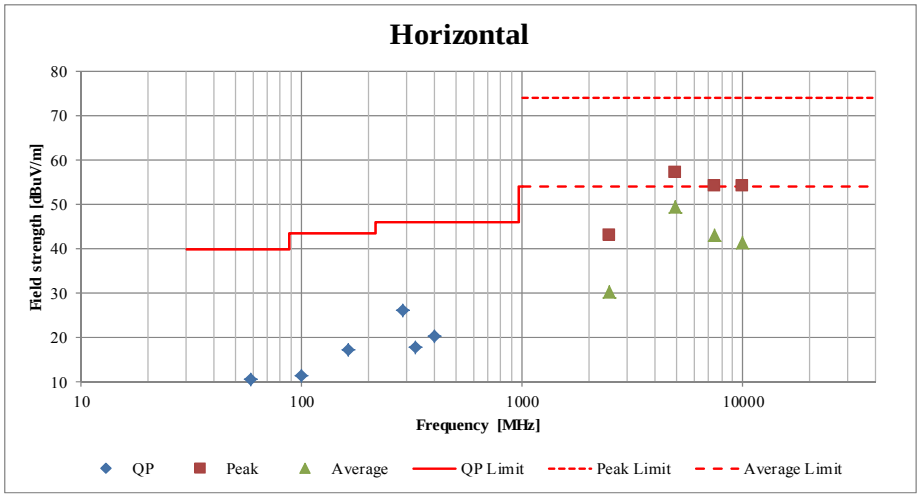


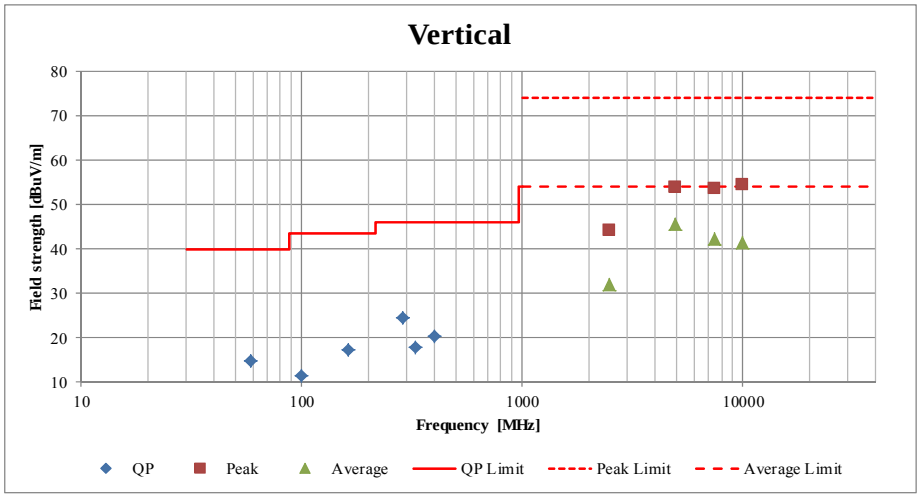
Trace Green : Peak Plot
Trace Purple : Average Plot

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

Radiated Spurious Emission
(Plot data, Worst case)
External antenna

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.2
Report No.	10953040H		
Date	October 2, 2015	October 3, 2015	October 5, 2015
Temperature / Humidity	22 deg. C / 67 % RH	22 deg. C / 57 % RH	23 deg. C / 47 % RH
Engineer	Kazuya Yoshioka (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Kazuya Yoshioka (Below 1GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz		





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

Radiated Spurious Emission

Internal antenna

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.2
Report No.	10953040H		
Date	October 2, 2015	October 3, 2015	October 5, 2015
Temperature / Humidity	22 deg. C / 61 % RH	22 deg. C / 57 % RH	23 deg. C / 47 % RH
Engineer	Tomoki Matsui (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Kazuya Yoshioka (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	100.000	QP	22.3	10.1	7.5	28.2	11.7	43.5	31.8	
Hori	163.200	QP	21.6	15.6	7.9	27.9	17.2	43.5	26.3	
Hori	288.001	QP	25.3	19.1	8.8	27.4	25.8	46.0	20.2	
Hori	326.000	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Hori	402.000	QP	21.5	17.6	9.4	28.2	20.3	46.0	25.7	
Hori	489.600	QP	21.8	18.5	9.7	28.5	21.5	46.0	24.5	
Hori	2390.000	PK	43.6	26.9	3.3	32.0	41.8	73.9	32.1	
Hori	4804.000	PK	43.3	31.8	5.5	31.3	49.3	73.9	24.6	
Hori	7206.000	PK	40.6	36.0	6.7	32.0	51.3	73.9	22.6	
Hori	9608.000	PK	41.4	38.2	7.5	32.4	54.7	73.9	19.2	
Hori	2390.000	AV	30.6	26.9	3.3	32.0	28.8	53.9	25.1	
Hori	4804.000	AV	34.7	31.8	5.5	31.3	40.7	53.9	13.2	
Hori	7206.000	AV	30.1	36.0	6.7	32.0	40.8	53.9	13.1	
Hori	9608.000	AV	30.2	38.2	7.5	32.4	43.5	53.9	10.4	
Vert	100.000	QP	22.3	10.1	7.5	28.2	11.7	43.5	31.8	
Vert	163.200	QP	21.6	15.6	7.9	27.9	17.2	43.5	26.3	
Vert	288.001	QP	25.5	19.1	8.8	27.4	26.0	46.0	20.0	
Vert	326.000	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Vert	402.000	QP	21.5	17.6	9.4	28.2	20.3	46.0	25.7	
Vert	489.600	QP	21.8	18.5	9.7	28.5	21.5	46.0	24.5	
Vert	2390.000	PK	43.1	26.9	3.3	32.0	41.3	73.9	32.6	
Vert	4804.000	PK	42.6	31.8	5.5	31.3	48.6	73.9	25.3	
Vert	7206.000	PK	41.0	36.0	6.7	32.0	51.7	73.9	22.2	
Vert	9608.000	PK	41.7	38.2	7.5	32.4	55.0	73.9	18.9	
Vert	2390.000	AV	30.4	26.9	3.3	32.0	28.6	53.9	25.3	
Vert	4804.000	AV	32.1	31.8	4.7	31.3	37.3	53.9	16.6	
Vert	7206.000	AV	29.5	36.0	6.7	32.0	40.2	53.9	13.7	
Vert	9608.000	AV	30.0	38.2	7.5	32.4	43.3	53.9	10.6	

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

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	106.8	26.9	3.3	32.0	105.0	-	-	Carrier
Hori	2400.000	PK	47.2	26.9	3.3	32.0	45.4	85.0	39.6	
Vert	2402.000	PK	105.4	26.9	3.3	32.0	103.6	-	-	Carrier
Vert	2400.000	PK	45.5	26.9	3.3	32.0	43.7	83.6	39.9	

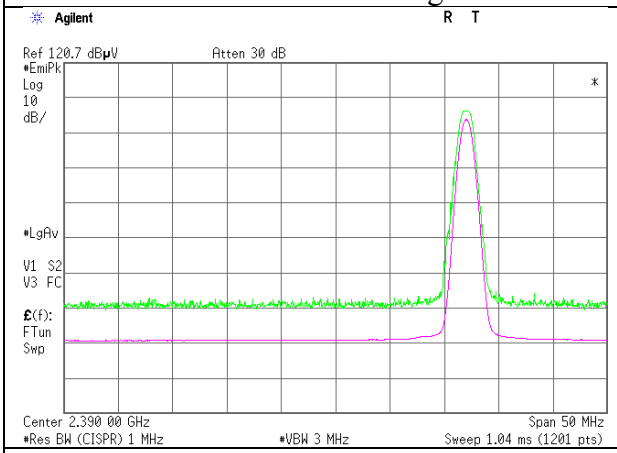
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

Radiated Spurious Emission
(Reference Plot for band-edge)
Internal antenna

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10953040H
Date	October 2, 2015
Temperature / Humidity	22 deg. C / 61 % RH
Engineer	Tomoki Matsui
	(1-10GHz)
Mode	Tx, Hopping Off, DH5 2402 MHz

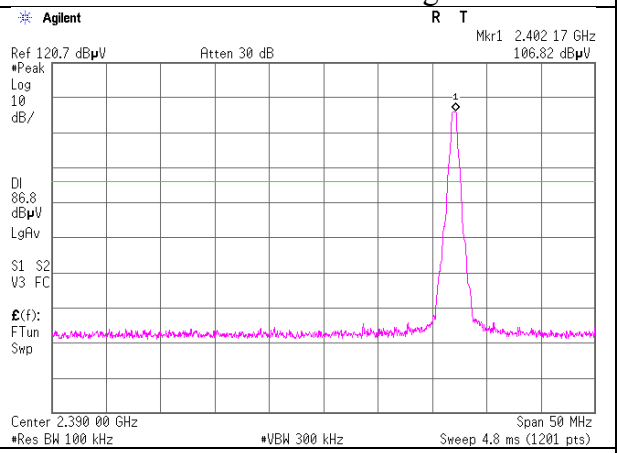
Horizontal

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

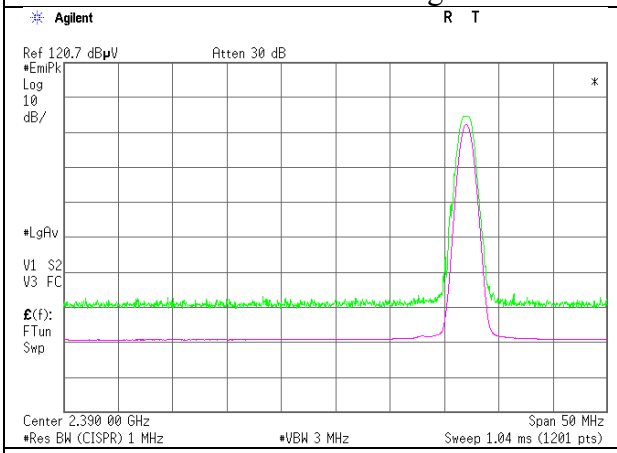
Authorized-band band-edge Plot



20dBc Plot

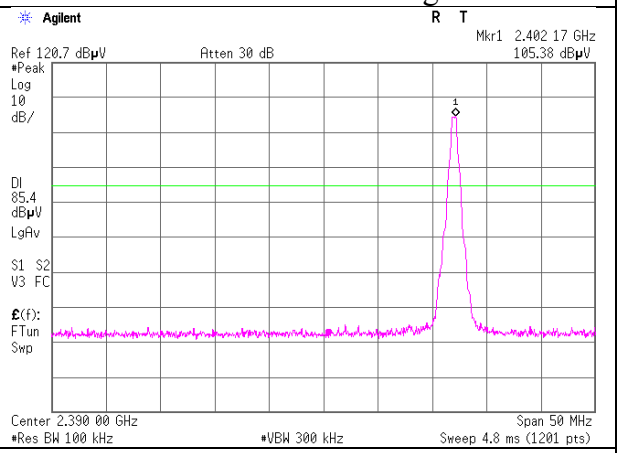
Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Authorized-band band-edge Plot



20dBc Plot

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

Radiated Spurious Emission

Internal antenna

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.2
Report No.	10953040H		
Date	October 2, 2015	October 3, 2015	October 5, 2015
Temperature / Humidity	22 deg. C / 61 % RH	22 deg. C / 57 % RH	23 deg. C / 47 % RH
Engineer	Tomoki Matsui (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Kazuya Yoshioka (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	100.000	QP	22.3	10.1	7.5	28.2	11.7	43.5	31.8	
Hori	163.200	QP	21.6	15.6	7.9	27.9	17.2	43.5	26.3	
Hori	288.001	QP	25.4	19.1	8.8	27.4	25.9	46.0	20.1	
Hori	326.000	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Hori	402.000	QP	21.5	17.6	9.4	28.2	20.3	46.0	25.7	
Hori	489.600	QP	21.8	18.5	9.7	28.5	21.5	46.0	24.5	
Hori	4882.000	PK	44.5	31.9	4.7	31.3	49.8	73.9	24.1	
Hori	7323.000	PK	41.3	36.0	6.8	32.0	52.1	73.9	21.8	
Hori	9764.000	PK	41.3	38.2	7.5	32.5	54.5	73.9	19.4	
Hori	4882.000	AV	36.9	31.9	4.7	31.3	42.2	53.9	11.7	
Hori	7323.000	AV	30.2	36.0	6.8	32.0	41.0	53.9	12.9	
Hori	9764.000	AV	30.3	38.2	7.5	32.5	43.5	53.9	10.4	
Vert	100.000	QP	22.3	10.1	7.5	28.2	11.7	43.5	31.8	
Vert	163.200	QP	21.6	15.6	7.9	27.9	17.2	43.5	26.3	
Vert	288.001	QP	25.3	19.1	8.8	27.4	25.8	46.0	20.2	
Vert	326.000	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Vert	402.000	QP	21.5	17.6	9.4	28.2	20.3	46.0	25.7	
Vert	489.600	QP	21.8	18.5	9.7	28.5	21.5	46.0	24.5	
Vert	4882.000	PK	42.3	31.9	4.7	31.3	47.6	73.9	26.3	
Vert	7323.000	PK	41.6	36.0	6.0	32.0	51.6	73.9	22.3	
Vert	9764.000	PK	42.2	38.2	6.9	32.5	54.8	73.9	19.1	
Vert	4882.000	AV	33.0	31.9	4.7	31.3	38.3	53.9	15.6	
Vert	7323.000	AV	30.2	36.0	6.0	32.0	40.2	53.9	13.7	
Vert	9764.000	AV	30.7	38.2	6.9	32.5	43.3	53.9	10.6	

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

Radiated Spurious Emission

Internal antenna

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.2
Report No.	10953040H		
Date	October 2, 2015	October 3, 2015	October 5, 2015
Temperature / Humidity	22 deg. C / 61 % RH	22 deg. C / 57 % RH	23 deg. C / 47 % RH
Engineer	Tomoki Matsui (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Kazuya Yoshioka (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	100.000	QP	22.3	10.1	7.5	28.2	11.7	43.5	31.8	
Hori	163.200	QP	21.6	15.6	7.9	27.9	17.2	43.5	26.3	
Hori	288.001	QP	25.3	19.1	8.8	27.4	25.8	46.0	20.2	
Hori	326.000	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Hori	402.000	QP	21.5	17.6	9.4	28.2	20.3	46.0	25.7	
Hori	489.600	QP	21.8	18.5	9.7	28.5	21.5	46.0	24.5	
Hori	2483.500	PK	52.4	26.9	3.3	32.0	50.6	73.9	23.3	
Hori	4960.000	PK	43.3	32.1	5.4	31.2	49.6	73.9	24.3	
Hori	7440.000	PK	41.9	36.0	6.7	32.1	52.5	73.9	21.4	
Hori	9920.000	PK	41.3	38.2	7.6	32.5	54.6	73.9	19.3	
Hori	2483.500	AV	40.3	26.9	3.3	32.0	38.5	53.9	15.4	
Hori	4960.000	AV	35.3	32.1	5.4	31.2	41.6	53.9	12.3	
Hori	7440.000	AV	30.1	36.0	6.7	32.1	40.7	53.9	13.2	
Hori	9920.000	AV	30.2	38.2	7.6	32.5	43.5	53.9	10.4	
Vert	100.000	QP	22.3	10.1	7.5	28.2	11.7	43.5	31.8	
Vert	163.200	QP	21.6	15.6	7.9	27.9	17.2	43.5	26.3	
Vert	288.001	QP	25.3	19.1	8.8	27.4	25.8	46.0	20.2	
Vert	326.000	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Vert	402.000	QP	21.5	17.6	9.4	28.2	20.3	46.0	25.7	
Vert	489.600	QP	21.8	18.5	9.7	28.5	21.5	46.0	24.5	
Vert	2483.500	PK	50.7	26.9	3.3	32.0	48.9	73.9	25.0	
Vert	4960.000	PK	42.3	32.1	5.4	31.2	48.6	73.9	25.3	
Vert	7440.000	PK	41.7	36.0	6.7	32.1	52.3	73.9	21.6	
Vert	9920.000	PK	42.2	38.2	7.6	32.5	55.5	73.9	18.4	
Vert	2483.500	AV	38.8	26.9	3.3	32.0	37.0	53.9	16.9	
Vert	4960.000	AV	32.2	32.1	4.7	31.2	37.8	53.9	16.1	
Vert	7440.000	AV	30.2	36.0	6.0	32.1	40.1	53.9	13.8	
Vert	9920.000	AV	30.1	38.2	7.1	32.5	42.9	53.9	11.0	

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).

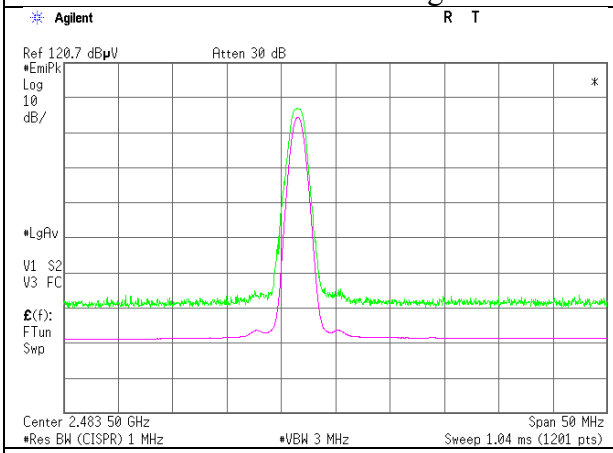
Distance factor: 10 GHz - 26.5 GHz 20log (3.0 m / 1.0 m) = 9.5 dB
26.5 GHz - 40 GHz 20log (3.0 m / 0.5 m) = 15.6 dB

Radiated Spurious Emission
(Reference Plot for band-edge)
Internal antenna

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10953040H
Date	October 2, 2015
Temperature / Humidity	22 deg. C / 67 % RH
Engineer	Kazuya Yoshioka
	(1-10GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz

Horizontal

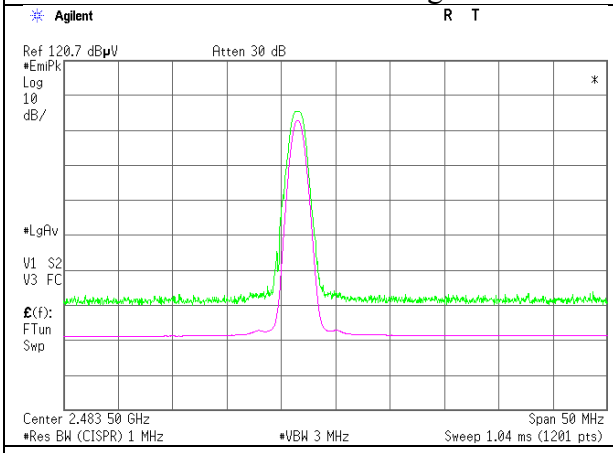
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

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

Radiated Spurious Emission

Internal antenna

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.2
Report No.	10953040H		
Date	October 2, 2015	October 3, 2015	October 5, 2015
Temperature / Humidity	22 deg. C / 61 % RH	22 deg. C / 57 % RH	23 deg. C / 47 % RH
Engineer	Tomoki Matsui (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Kazuya Yoshioka (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	100.000	QP	22.3	10.1	7.5	28.2	11.7	43.5	31.8	
Hori	163.200	QP	21.6	15.6	7.9	27.9	17.2	43.5	26.3	
Hori	288.001	QP	25.3	19.1	8.8	27.4	25.8	46.0	20.2	
Hori	326.000	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Hori	402.000	QP	21.5	17.6	9.4	28.2	20.3	46.0	25.7	
Hori	489.600	QP	21.8	18.5	9.7	28.5	21.5	46.0	24.5	
Hori	2390.000	PK	44.1	26.9	3.3	32.0	42.3	73.9	31.6	
Hori	4804.000	PK	43.8	31.8	5.5	31.3	49.8	73.9	24.1	
Hori	7206.000	PK	41.0	36.0	6.7	32.0	51.7	73.9	22.2	
Hori	9608.000	PK	42.2	38.2	7.5	32.4	55.5	73.9	18.4	
Hori	2390.000	AV	31.1	26.9	3.3	32.0	29.3	53.9	24.6	
Hori	4804.000	AV	33.0	31.8	5.5	31.3	39.0	53.9	14.9	
Hori	7206.000	AV	30.1	36.0	6.7	32.0	40.8	53.9	13.1	
Hori	9608.000	AV	30.5	38.2	7.5	32.4	43.8	53.9	10.1	
Vert	100.000	QP	22.3	10.1	7.5	28.2	11.7	43.5	31.8	
Vert	163.200	QP	21.6	15.6	7.9	27.9	17.2	43.5	26.3	
Vert	288.001	QP	25.4	19.1	8.8	27.4	25.9	46.0	20.1	
Vert	326.000	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Vert	402.000	QP	21.5	17.6	9.4	28.2	20.3	46.0	25.7	
Vert	489.600	QP	21.8	18.5	9.7	28.5	21.5	46.0	24.5	
Vert	2390.000	PK	42.9	26.9	3.3	32.0	41.1	73.9	32.8	
Vert	4804.000	PK	43.0	31.8	5.5	31.3	49.0	73.9	24.9	
Vert	7206.000	PK	41.1	36.0	6.7	32.0	51.8	73.9	22.1	
Vert	9608.000	PK	41.1	38.2	7.5	32.4	54.4	73.9	19.5	
Vert	2390.000	AV	31.2	26.9	3.3	32.0	29.4	53.9	24.5	
Vert	4804.000	AV	32.3	31.8	5.5	31.3	38.3	53.9	15.6	
Vert	7206.000	AV	30.1	36.0	6.7	32.0	40.8	53.9	13.1	
Vert	9608.000	AV	30.3	38.2	7.5	32.4	43.6	53.9	10.3	

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

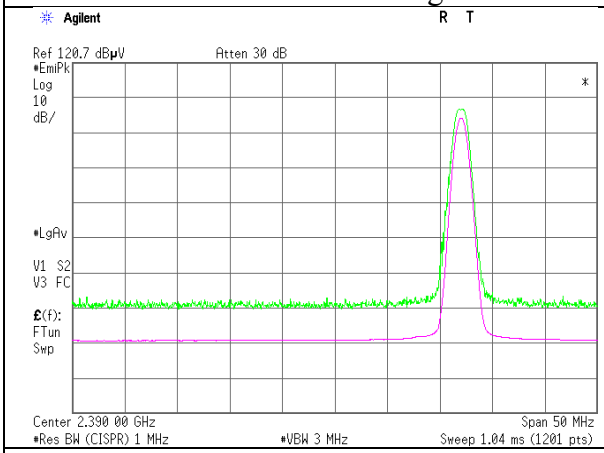
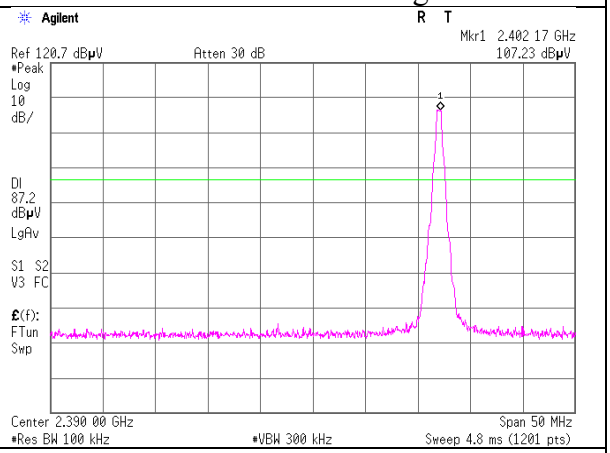
20dBc Data Sheet

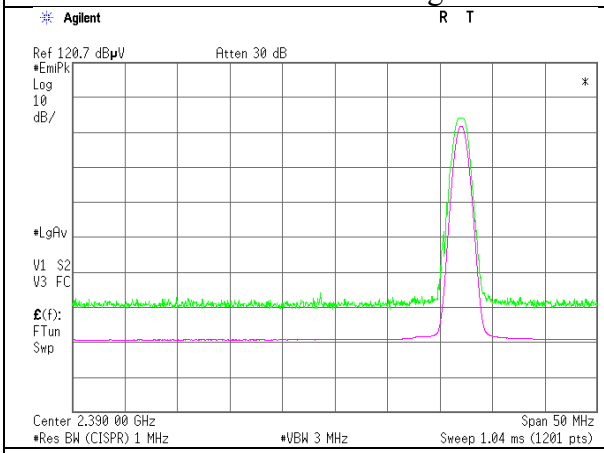
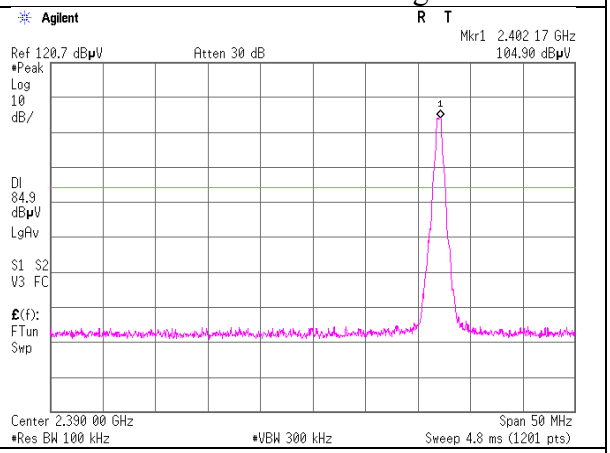
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	107.2	26.9	3.3	32.0	105.4	-	-	Carrier
Hori	2400.000	PK	47.0	26.9	3.3	32.0	45.2	85.4	40.2	
Vert	2402.000	PK	104.9	26.9	65.1	32.0	164.9	-	-	Carrier
Vert	2400.000	PK	44.2	26.9	65.2	32.0	104.3	144.9	40.6	

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

Radiated Spurious Emission
(Reference Plot for band-edge)
Internal antenna

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10953040H
Date	October 2, 2015
Temperature / Humidity	22 deg. C / 61 % RH
Engineer	Tomoki Matsui (1-10GHz)
Mode	Tx, Hopping Off, 3DH5 2402 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

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

Radiated Spurious Emission

Internal antenna

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.2
Report No.	10953040H		
Date	October 2, 2015	October 3, 2015	October 5, 2015
Temperature / Humidity	22 deg. C / 61 % RH	22 deg. C / 57 % RH	23 deg. C / 47 % RH
Engineer	Tomoki Matsui (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Kazuya Yoshioka (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	100.000	QP	22.3	10.1	7.5	28.2	11.7	43.5	31.8	
Hori	163.200	QP	21.6	15.6	7.9	27.9	17.2	43.5	26.3	
Hori	288.001	QP	25.2	19.1	8.8	27.4	25.7	46.0	20.3	
Hori	326.000	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Hori	402.000	QP	21.5	17.6	9.4	28.2	20.3	46.0	25.7	
Hori	489.600	QP	21.8	18.5	9.7	28.5	21.5	46.0	24.5	
Hori	4882.000	PK	44.3	31.9	5.5	31.3	50.4	73.9	23.5	
Hori	7323.000	PK	41.2	36.0	6.8	32.0	52.0	73.9	21.9	
Hori	9764.000	PK	41.0	38.2	7.5	32.5	54.2	73.9	19.7	
Hori	4882.000	AV	35.2	31.9	5.5	31.3	41.3	53.9	12.6	
Hori	7323.000	AV	30.2	36.0	6.8	32.0	41.0	53.9	12.9	
Hori	9764.000	AV	30.1	38.2	7.5	32.5	43.3	53.9	10.6	
Vert	100.000	QP	22.3	10.1	7.5	28.2	11.7	43.5	31.8	
Vert	163.200	QP	21.6	15.6	7.9	27.9	17.2	43.5	26.3	
Vert	288.001	QP	25.3	19.1	8.8	27.4	25.8	46.0	20.2	
Vert	326.000	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Vert	402.000	QP	21.5	17.6	9.4	28.2	20.3	46.0	25.7	
Vert	489.600	QP	21.8	18.5	9.7	28.5	21.5	46.0	24.5	
Vert	4882.000	PK	42.4	31.9	5.5	31.3	48.5	73.9	25.4	
Vert	7323.000	PK	41.9	36.0	6.8	32.0	52.7	73.9	21.2	
Vert	9764.000	PK	41.3	38.2	7.5	32.5	54.5	73.9	19.4	
Vert	4882.000	AV	33.0	31.9	5.5	31.3	39.1	53.9	14.8	
Vert	7323.000	AV	30.1	36.0	6.8	32.0	40.9	53.9	13.0	
Vert	9764.000	AV	30.2	38.2	7.5	32.5	43.4	53.9	10.5	

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

Radiated Spurious Emission

Internal antenna

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.2
Report No.	10953040H		
Date	October 2, 2015	October 3, 2015	October 5, 2015
Temperature / Humidity	22 deg. C / 61 % RH	22 deg. C / 57 % RH	23 deg. C / 47 % RH
Engineer	Tomoki Matsui (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Kazuya Yoshioka (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	100.000	QP	22.3	10.1	7.5	28.2	11.7	43.5	31.8	
Hori	163.200	QP	21.6	15.6	7.9	27.9	17.2	43.5	26.3	
Hori	288.001	QP	25.2	19.1	8.8	27.4	25.7	46.0	20.3	
Hori	326.000	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Hori	402.000	QP	21.5	17.6	9.4	28.2	20.3	46.0	25.7	
Hori	489.600	QP	21.8	18.5	9.7	28.5	21.5	46.0	24.5	
Hori	2483.500	PK	53.0	26.9	3.3	32.0	51.2	73.9	22.7	
Hori	4960.000	PK	43.8	32.1	5.4	31.2	50.1	73.9	23.8	
Hori	7440.000	PK	41.1	36.0	6.7	32.1	51.7	73.9	22.2	
Hori	9920.000	PK	41.3	38.2	7.6	32.5	54.6	73.9	19.3	
Hori	2483.500	AV	40.9	26.9	3.3	32.0	39.1	53.9	14.8	
Hori	4960.000	AV	33.7	32.1	5.4	31.2	40.0	53.9	13.9	
Hori	7440.000	AV	30.1	36.0	6.7	32.1	40.7	53.9	13.2	
Hori	9920.000	AV	30.4	38.2	7.6	32.5	43.7	53.9	10.2	
Vert	100.000	QP	22.3	10.1	7.5	28.2	11.7	43.5	31.8	
Vert	163.200	QP	21.6	15.6	7.9	27.9	17.2	43.5	26.3	
Vert	288.001	QP	25.3	19.1	8.8	27.4	25.8	46.0	20.2	
Vert	326.000	QP	21.0	15.4	9.0	27.6	17.8	46.0	28.2	
Vert	402.000	QP	21.5	17.6	9.4	28.2	20.3	46.0	25.7	
Vert	489.600	QP	21.8	18.5	9.7	28.5	21.5	46.0	24.5	
Vert	2483.500	PK	50.4	26.9	3.3	32.0	48.6	73.9	25.3	
Vert	4960.000	PK	42.0	32.1	5.4	31.2	48.3	73.9	25.6	
Vert	7440.000	PK	41.6	36.0	6.7	32.1	52.2	73.9	21.7	
Vert	9920.000	PK	42.1	38.2	7.6	32.5	55.4	73.9	18.5	
Vert	2483.500	AV	40.1	26.9	3.3	32.0	38.3	53.9	15.6	
Vert	4960.000	AV	31.4	32.1	5.4	31.2	37.7	53.9	16.2	
Vert	7440.000	AV	30.1	36.0	6.7	32.1	40.7	53.9	13.2	
Vert	9920.000	AV	30.3	38.2	7.6	32.5	43.6	53.9	10.3	

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).

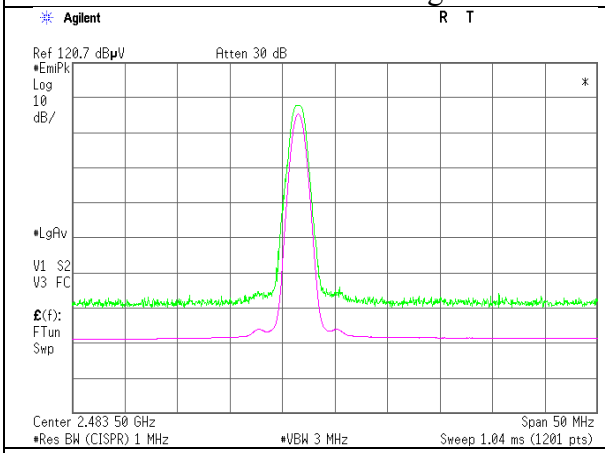
Distance factor: 10 GHz - 26.5 GHz 20log (3.0 m / 1.0 m) = 9.5 dB
26.5 GHz - 40 GHz 20log (3.0 m / 0.5 m) = 15.6 dB

Radiated Spurious Emission
(Reference Plot for band-edge)
Internal antenna

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10953040H
Date	October 2, 2015
Temperature / Humidity	22 deg. C / 67 % RH
Engineer	Kazuya Yoshioka
	(1-10GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz

Horizontal

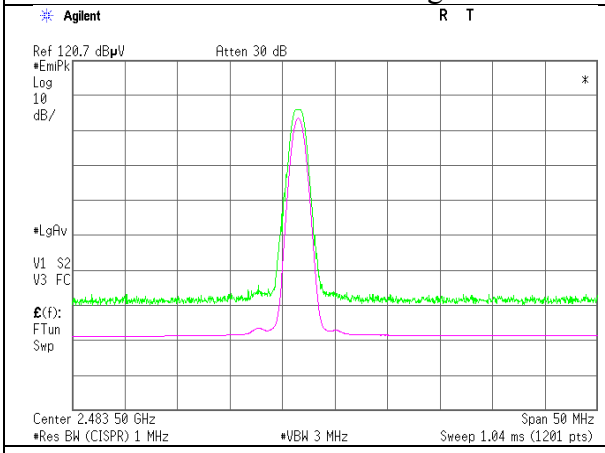
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot

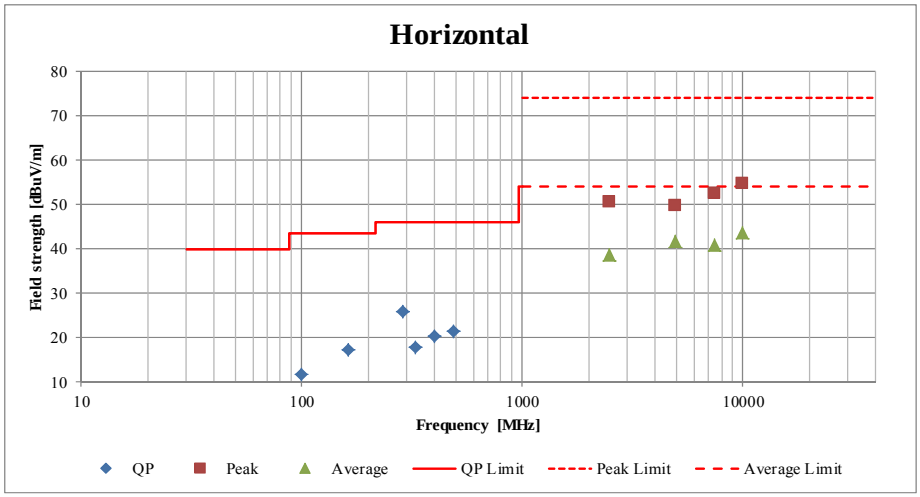


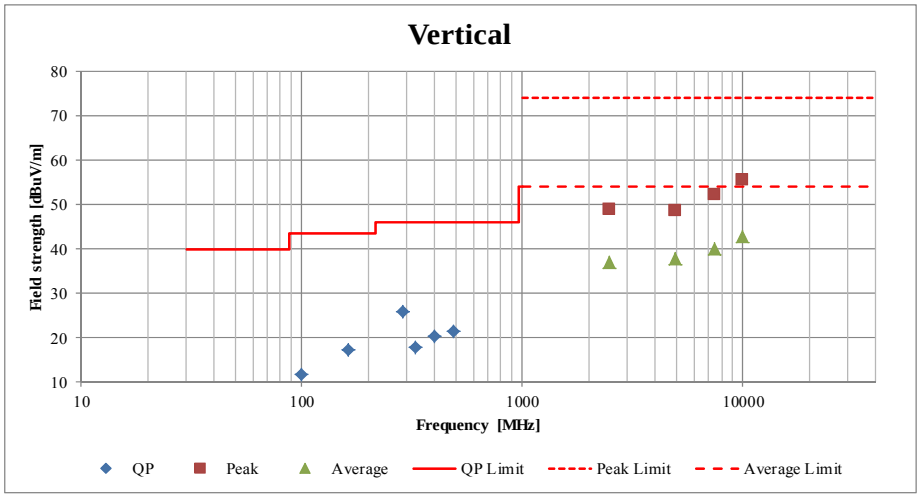
Trace Green : Peak Plot
Trace Purple : Average Plot

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

Radiated Spurious Emission
(Plot data, Worst case)
Internal antenna

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.2
Report No.	10953040H		
Date	October 2, 2015	October 3, 2015	October 5, 2015
Temperature / Humidity	22 deg. C / 61 % RH	22 deg. C / 57 % RH	23 deg. C / 47 % RH
Engineer	Tomoki Matsui (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Kazuya Yoshioka (Below 1GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz		





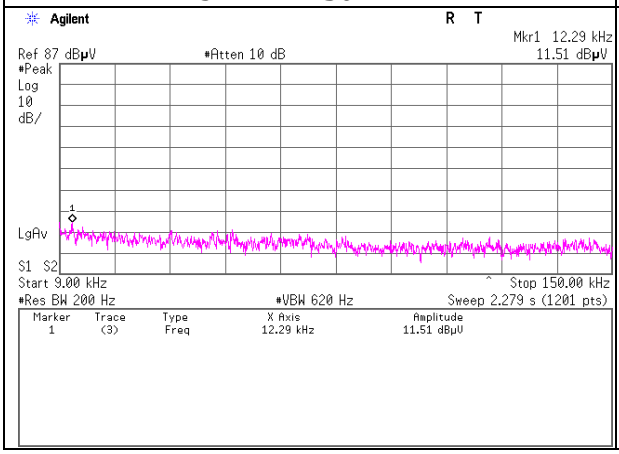
*These plots data contains sufficient number to show the trend of characteristic features for EUT.

Conducted Spurious Emission

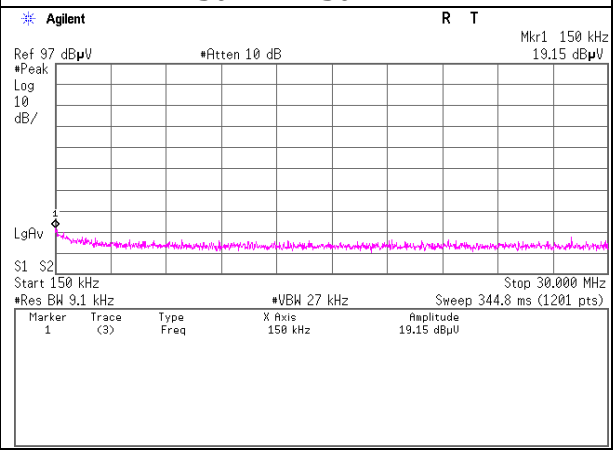
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off, DH5

2402 MHz

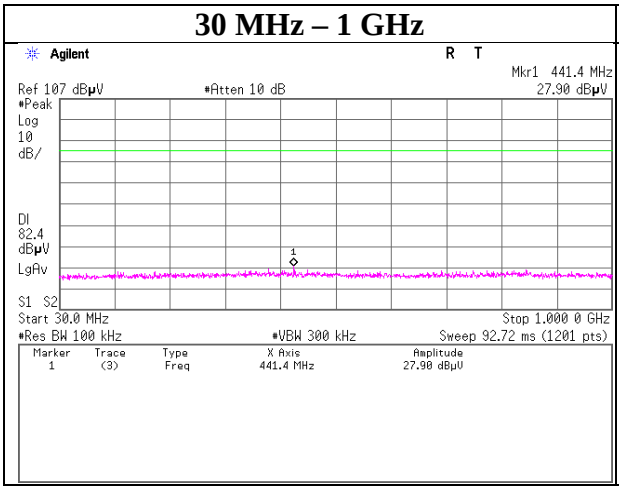
9 kHz - 150 kHz



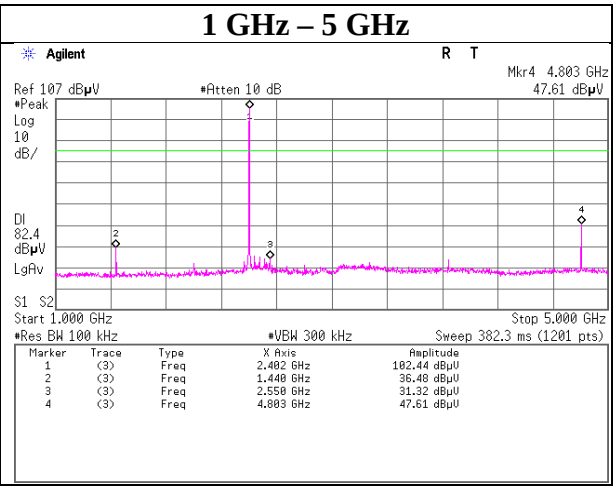
150 kHz - 30 MHz



30 MHz – 1 GHz



1 GHz – 5 GHz

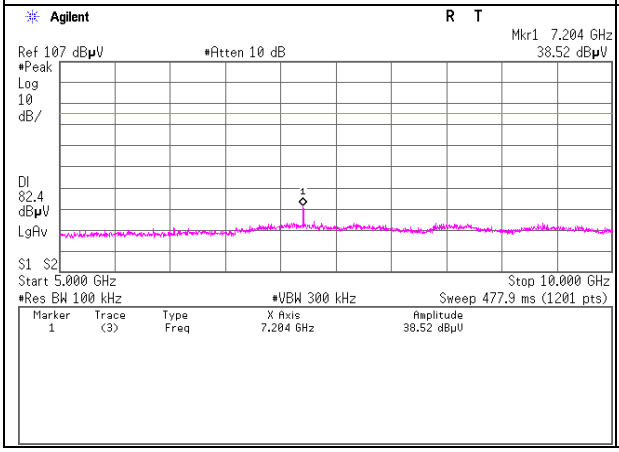


Conducted Spurious Emission

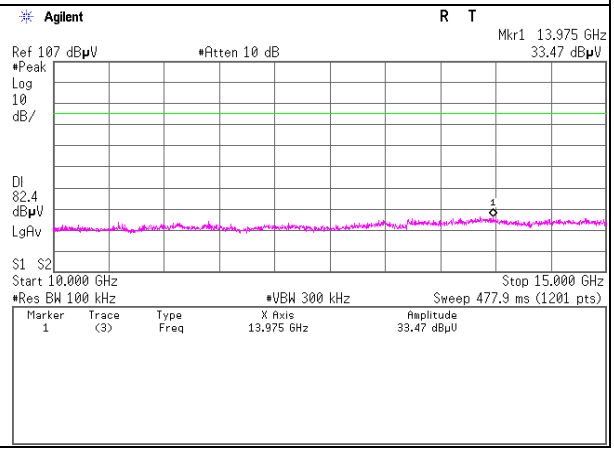
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off, DH5

2402 MHz

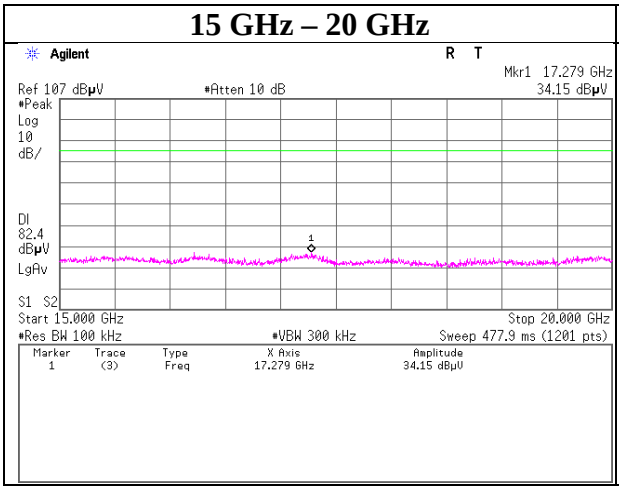
5 GHz – 10 GHz



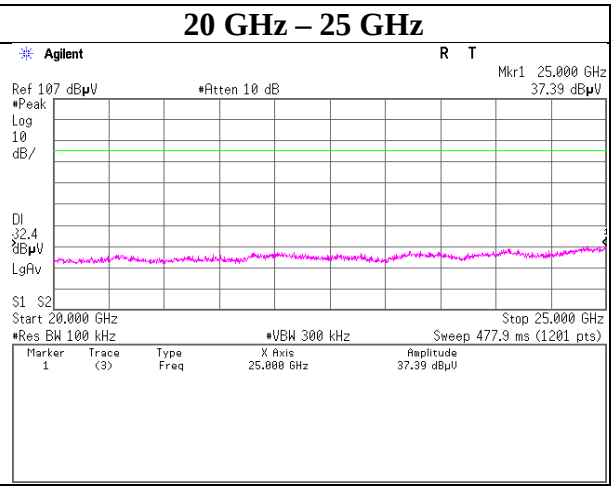
10 GHz - 15 GHz



15 GHz – 20 GHz



20 GHz – 25 GHz

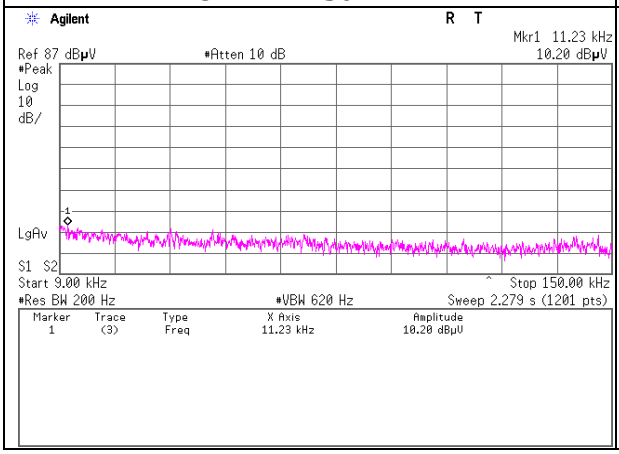


Conducted Spurious Emission

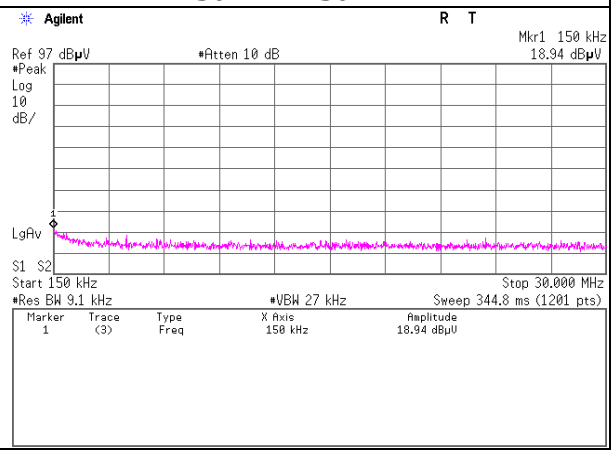
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off, DH5

2441 MHz

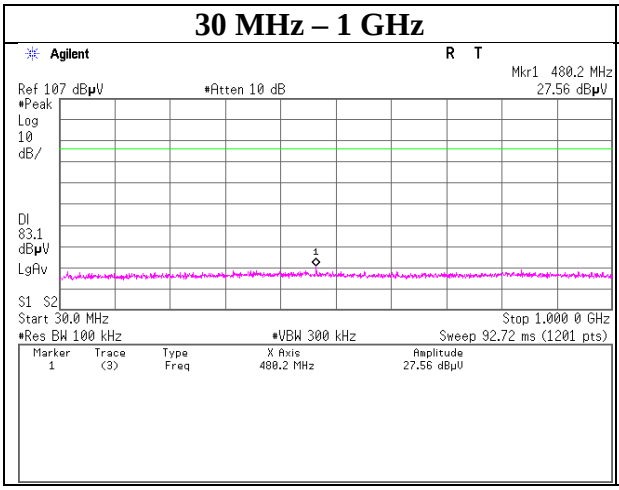
9 kHz - 150 kHz



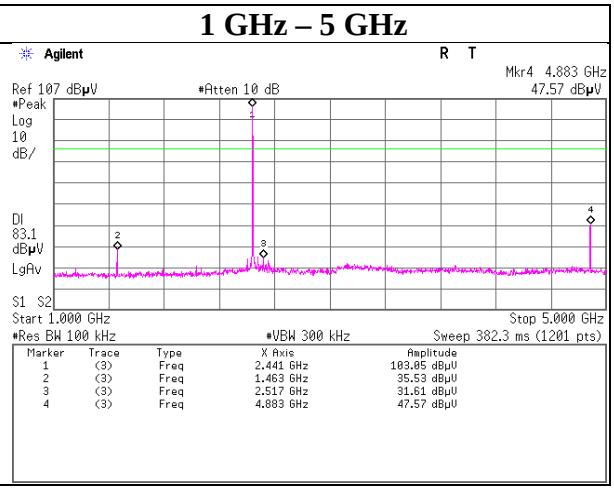
150 kHz - 30 MHz



30 MHz – 1 GHz



1 GHz – 5 GHz

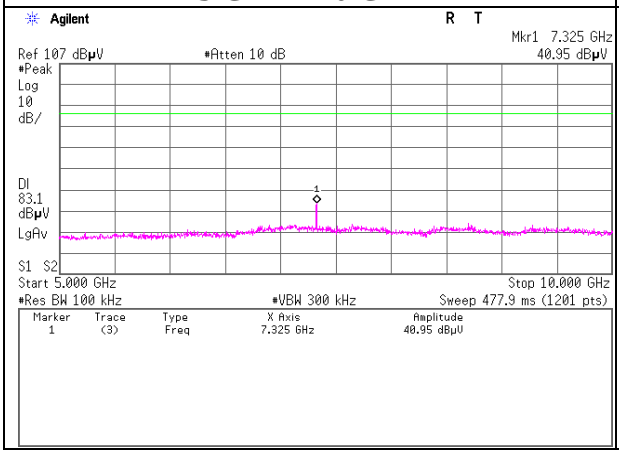


Conducted Spurious Emission

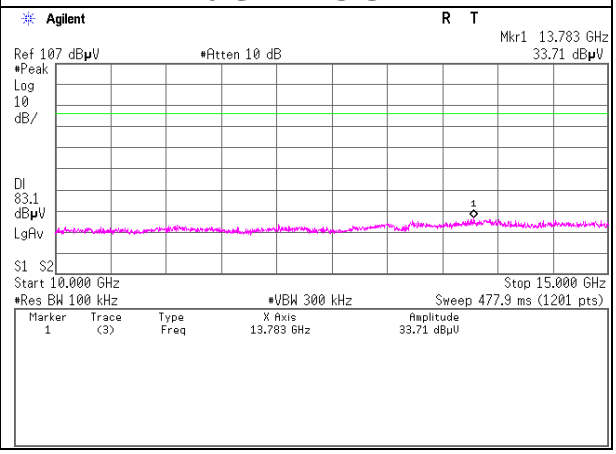
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off, DH5

2441 MHz

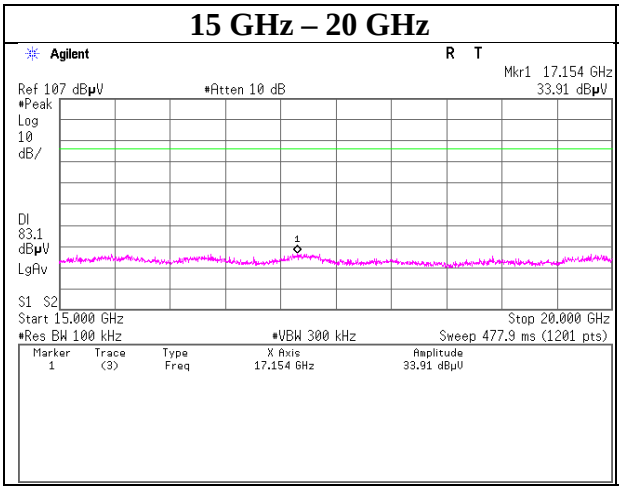
5 GHz – 10 GHz



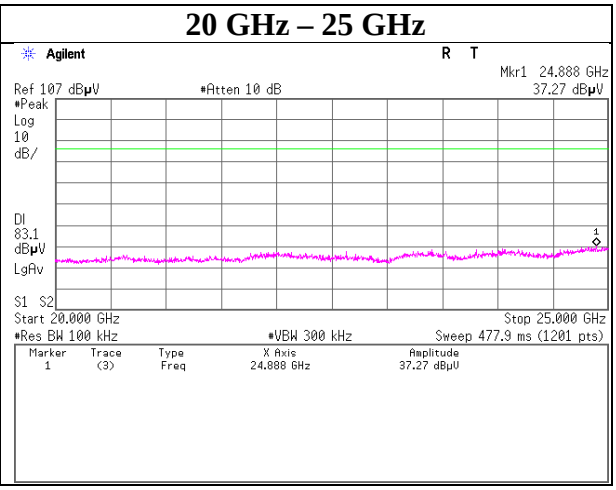
10 GHz - 15 GHz



15 GHz – 20 GHz



20 GHz – 25 GHz

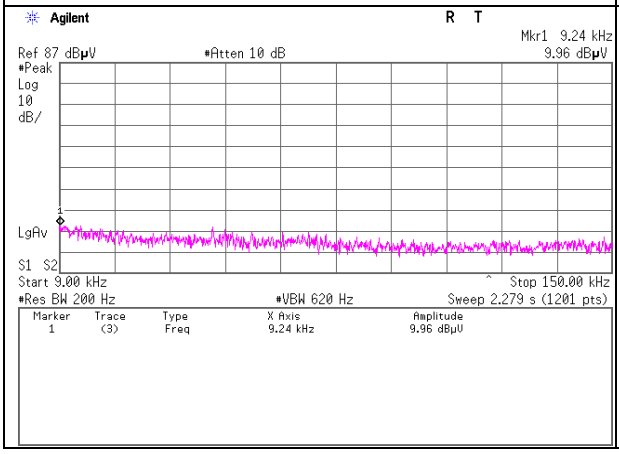


Conducted Spurious Emission

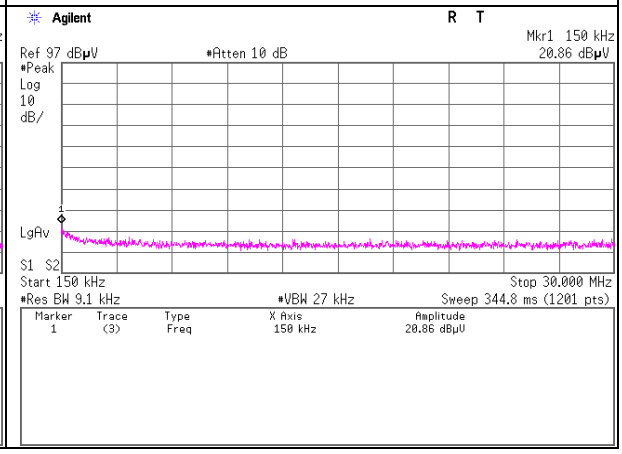
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off, DH5

2480 MHz

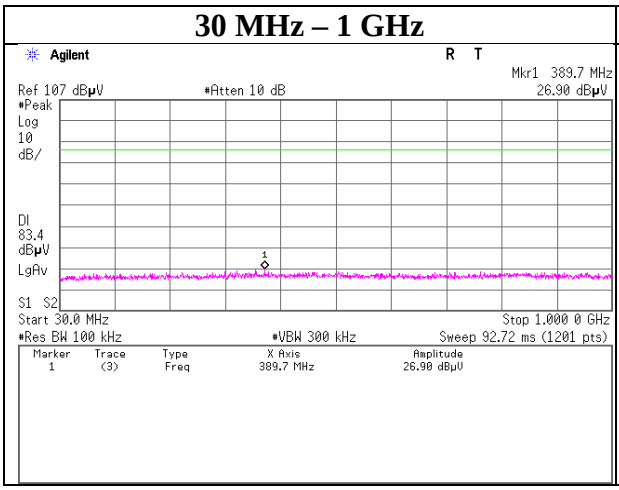
9 kHz – 150 kHz



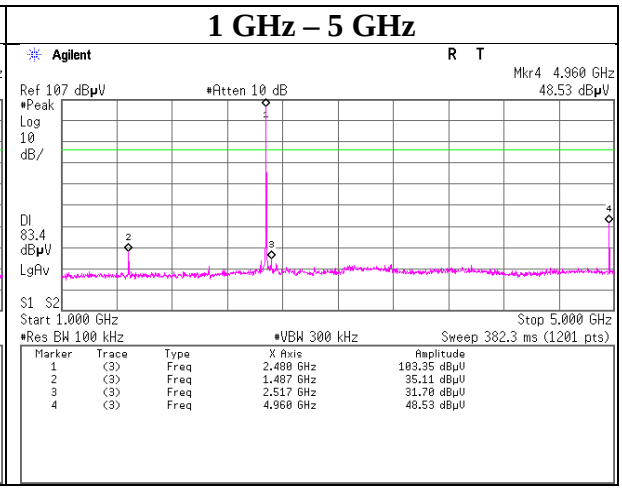
150 kHz – 30 MHz



30 MHz – 1 GHz



1 GHz – 5 GHz

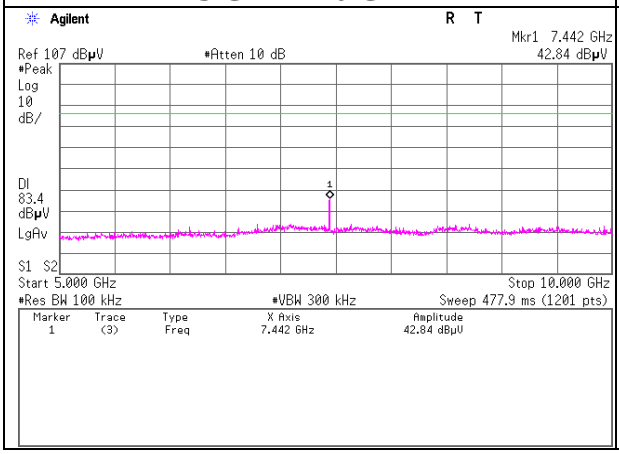


Conducted Spurious Emission

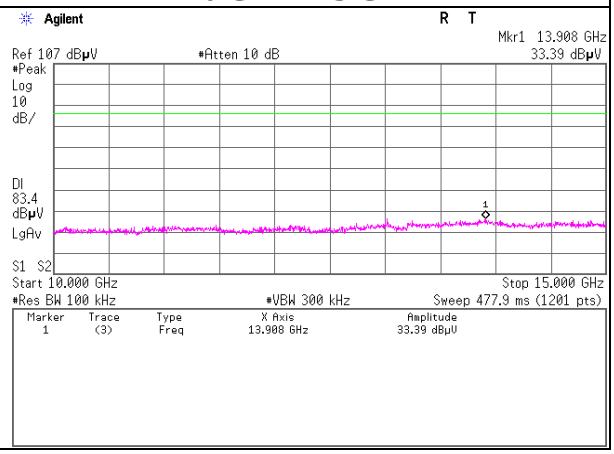
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off, DH5

2480 MHz

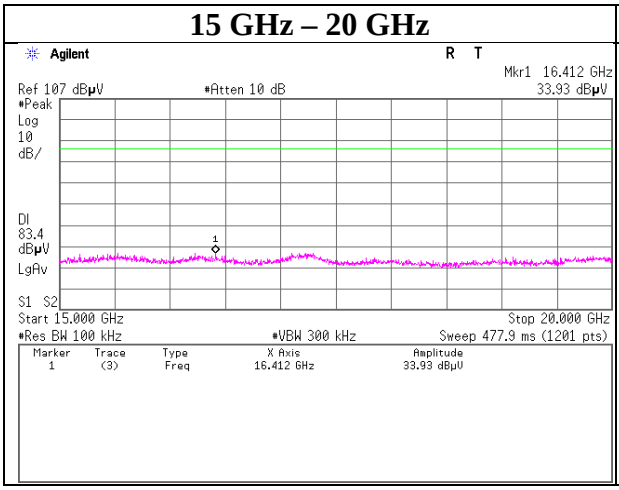
5 GHz – 10 GHz



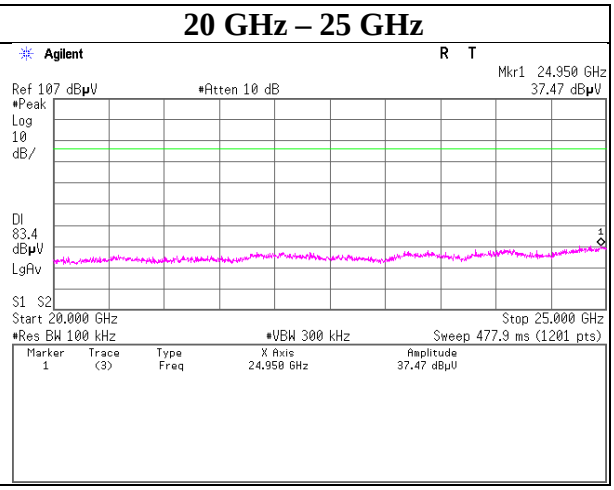
10 GHz - 15 GHz



15 GHz – 20 GHz



20 GHz – 25 GHz

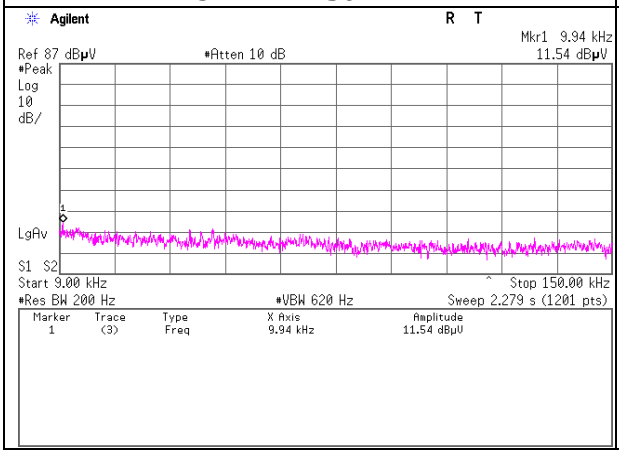


Conducted Spurious Emission

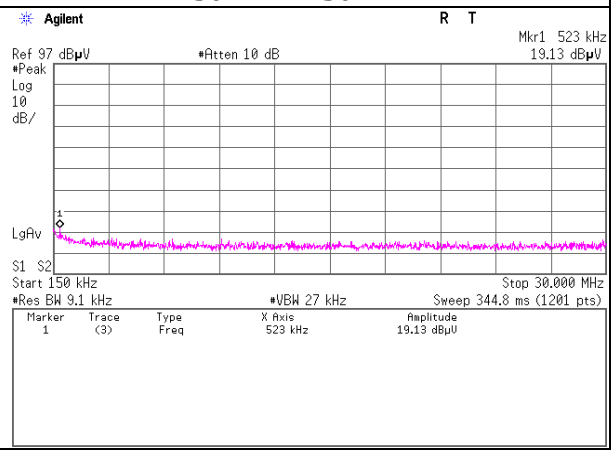
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off, 3DH5

2402 MHz

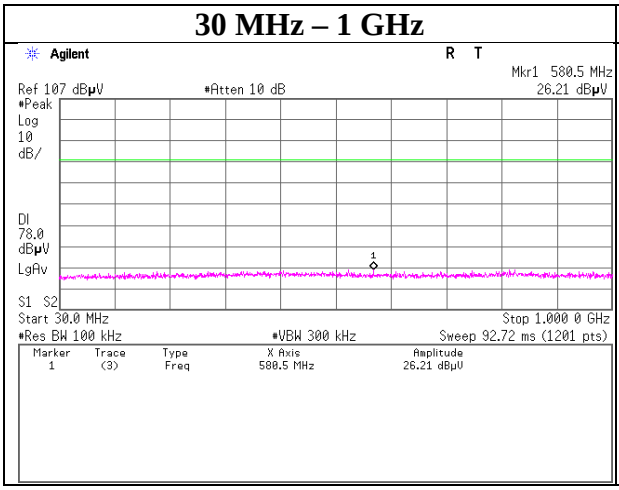
9 kHz – 150 kHz



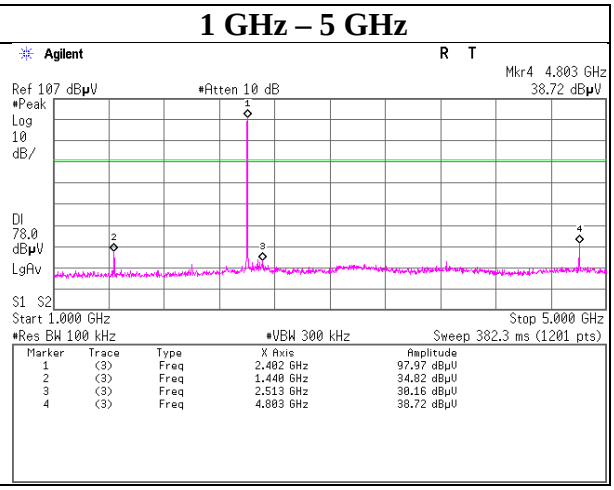
150 kHz – 30 MHz



30 MHz – 1 GHz



1 GHz – 5 GHz

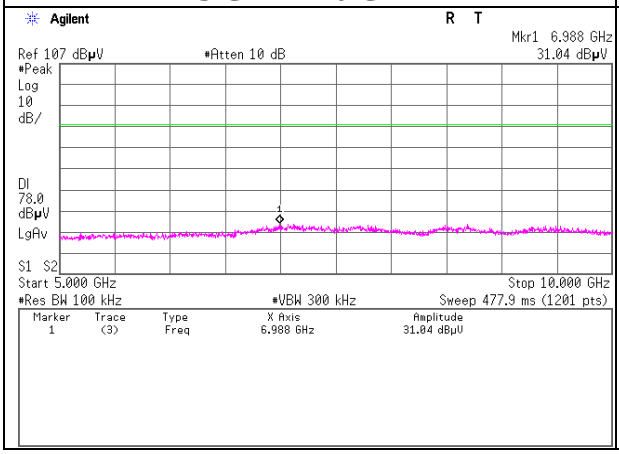


Conducted Spurious Emission

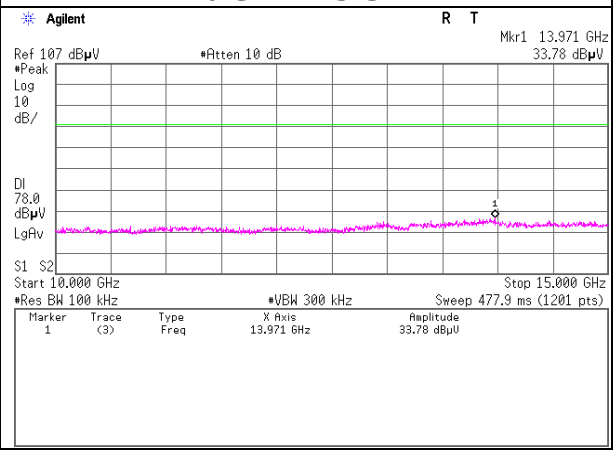
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off, 3DH5

2402 MHz

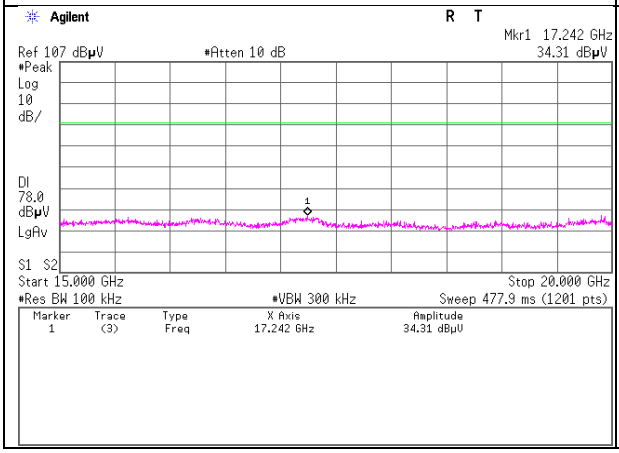
5 GHz – 10 GHz



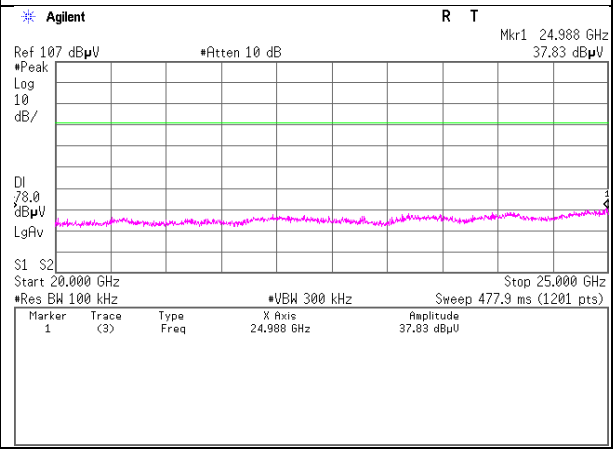
10 GHz - 15 GHz



15 GHz – 20 GHz



20 GHz – 25 GHz

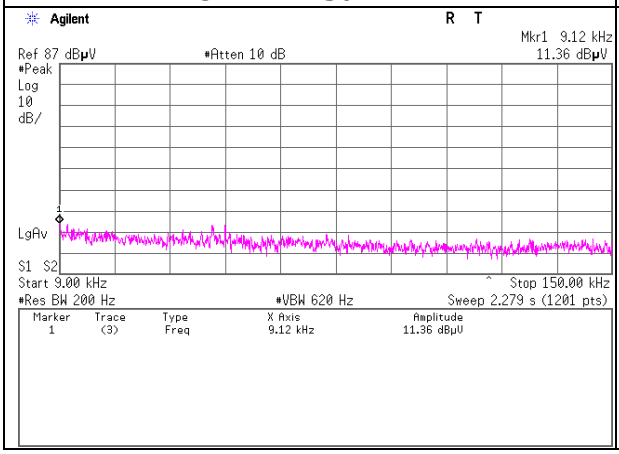


Conducted Spurious Emission

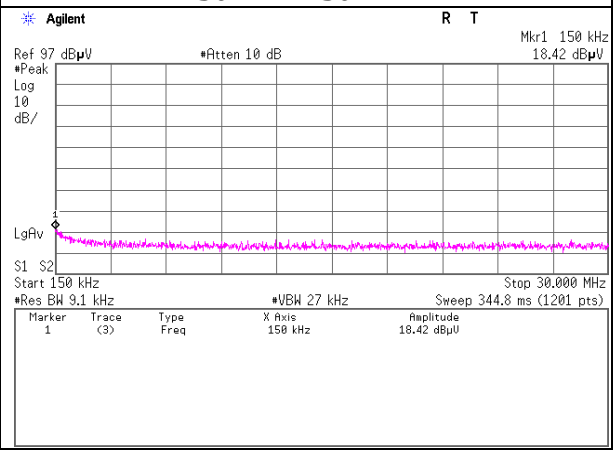
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off, 3DH5

2441 MHz

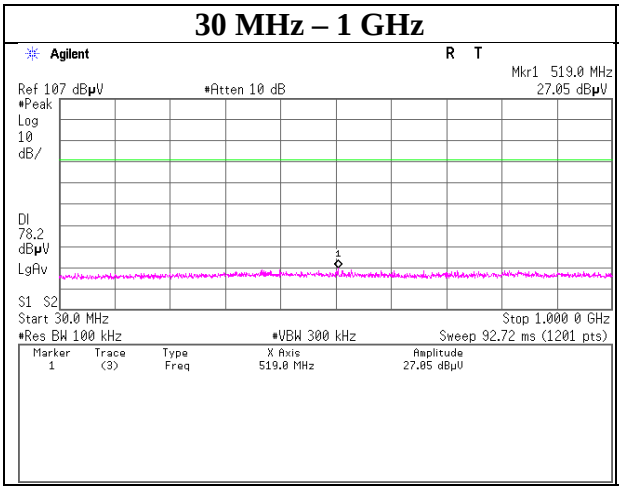
9 kHz - 150 kHz



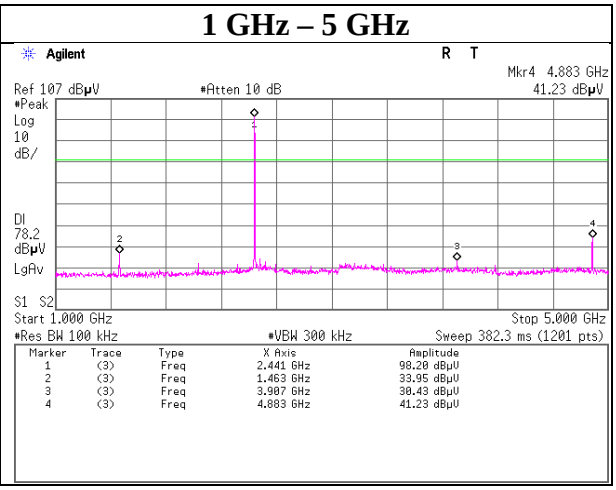
150 kHz - 30 MHz



30 MHz – 1 GHz



1 GHz – 5 GHz

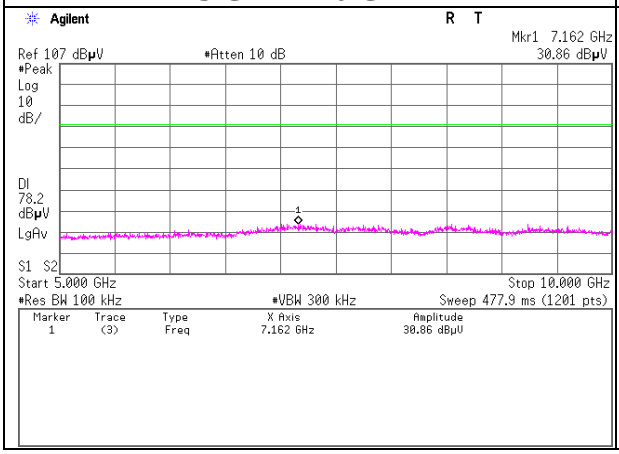


Conducted Spurious Emission

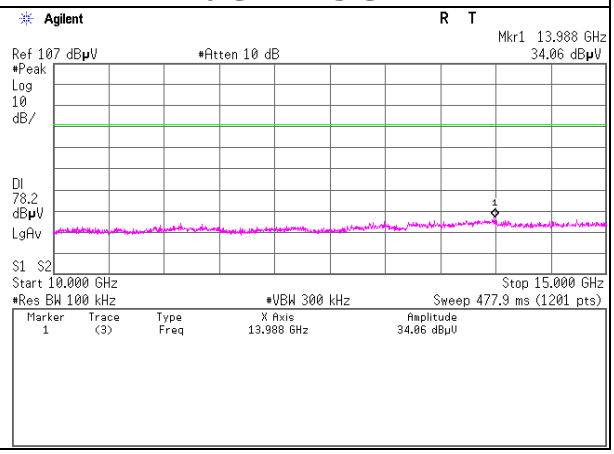
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off, 3DH5

2441 MHz

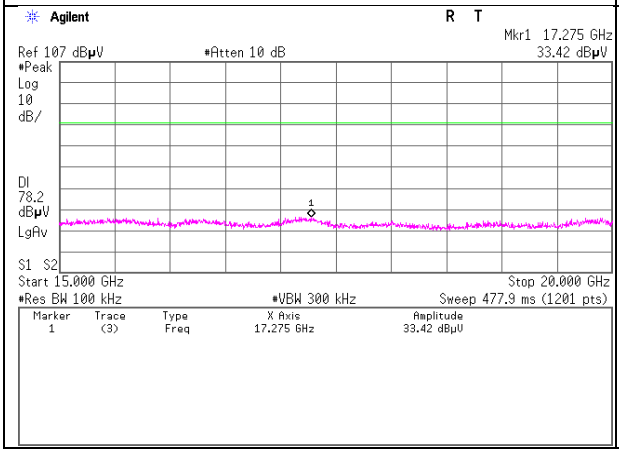
5 GHz – 10 GHz



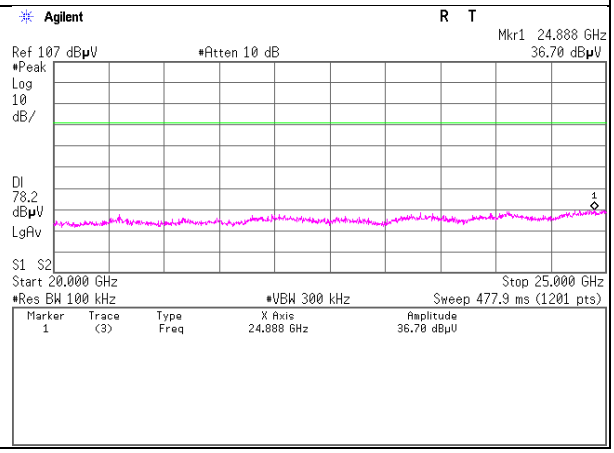
10 GHz - 15 GHz



15 GHz – 20 GHz



20 GHz – 25 GHz

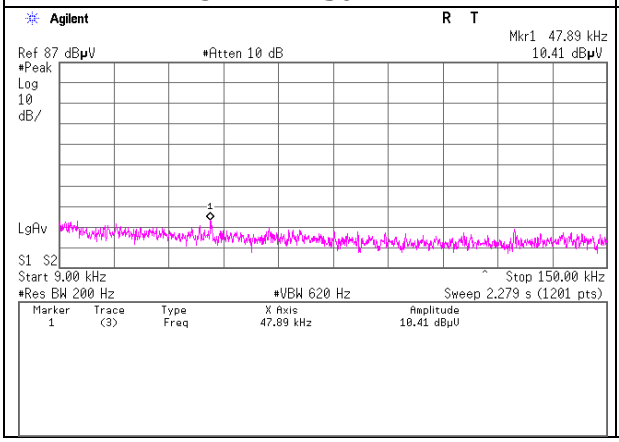


Conducted Spurious Emission

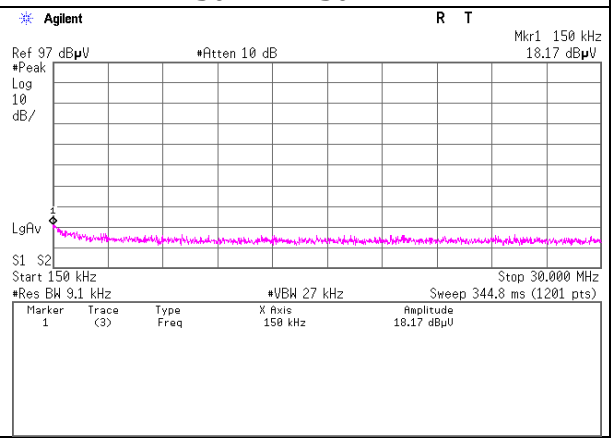
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off, 3DH5

2480 MHz

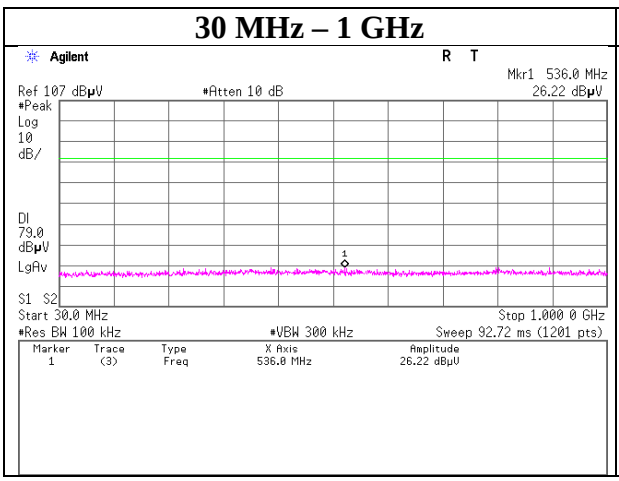
9 kHz - 150 kHz



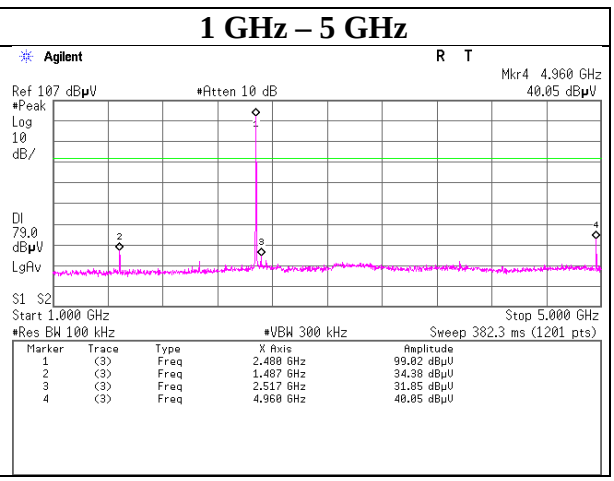
150 kHz - 30 MHz



30 MHz – 1 GHz



1 GHz – 5 GHz

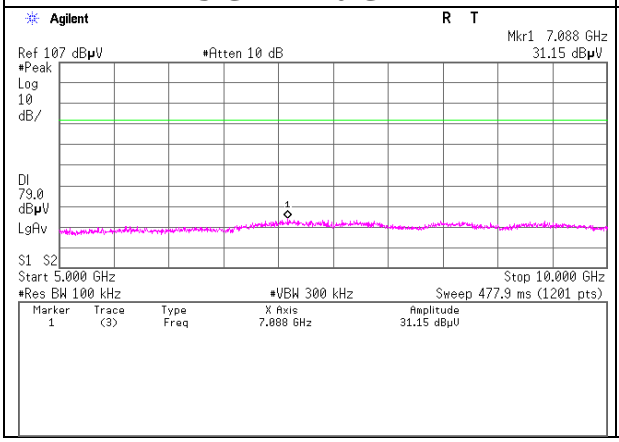


Conducted Spurious Emission

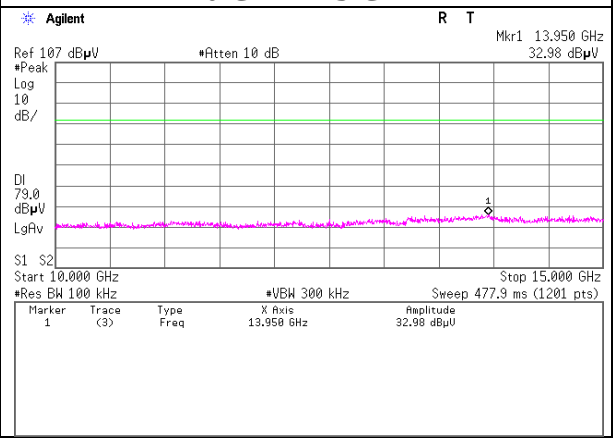
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx, Hopping Off, 3DH5

2480 MHz

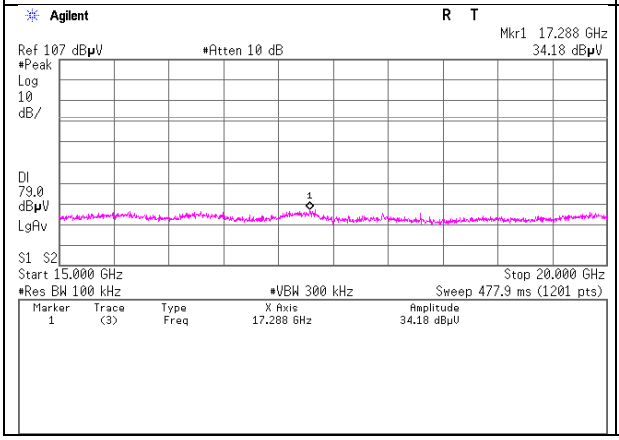
5 GHz – 10 GHz



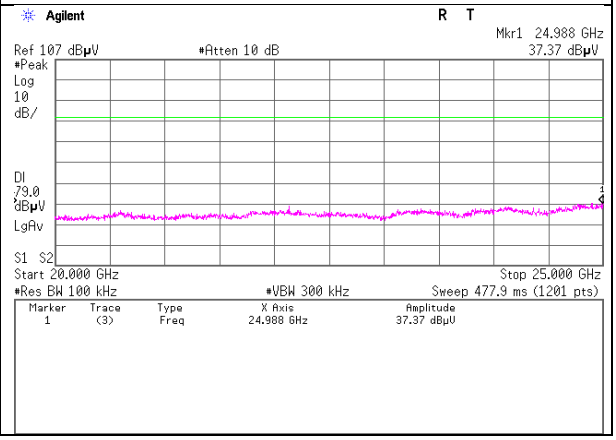
10 GHz - 15 GHz



15 GHz – 20 GHz



20 GHz – 25 GHz

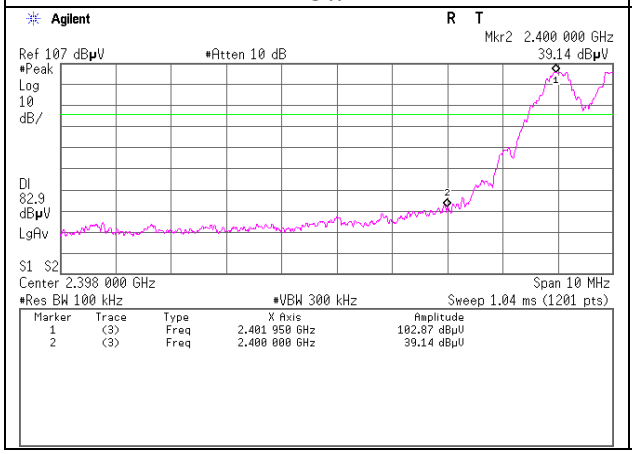


Conducted Emission Band Edge compliance

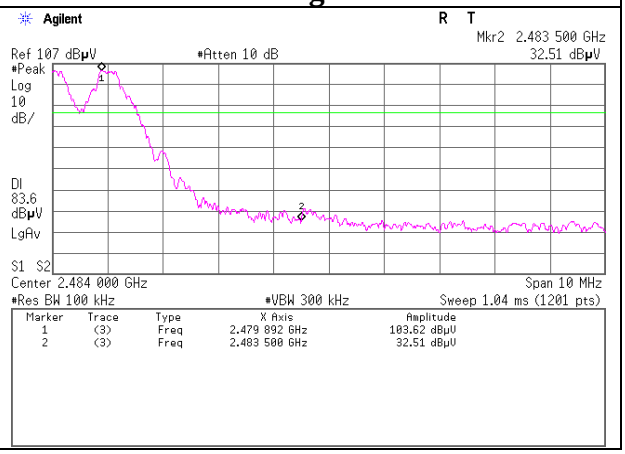
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx DH5

Hopping On

Low

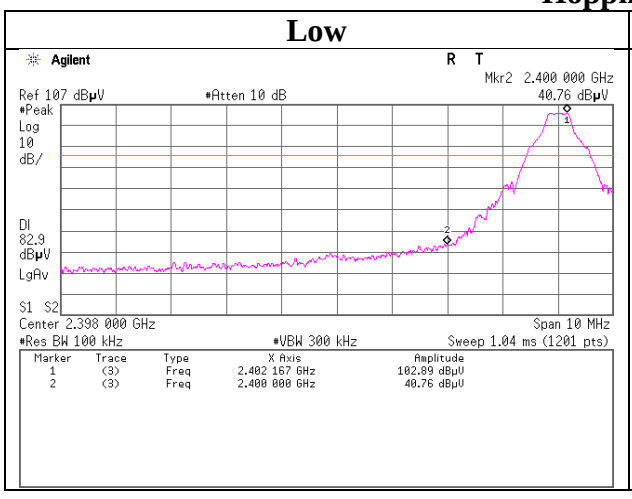


High

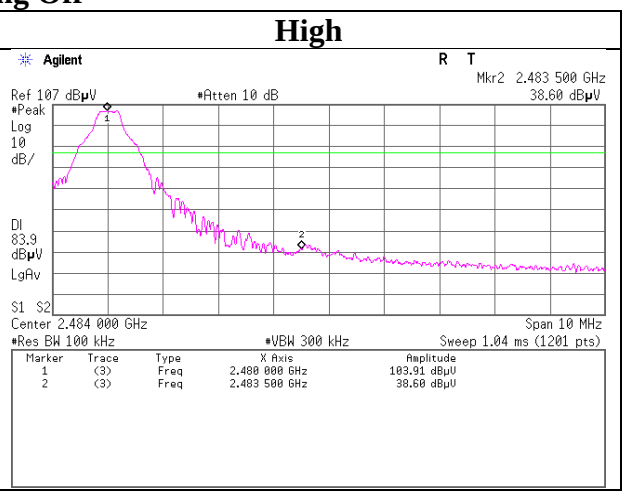


Hopping Off

Low



High

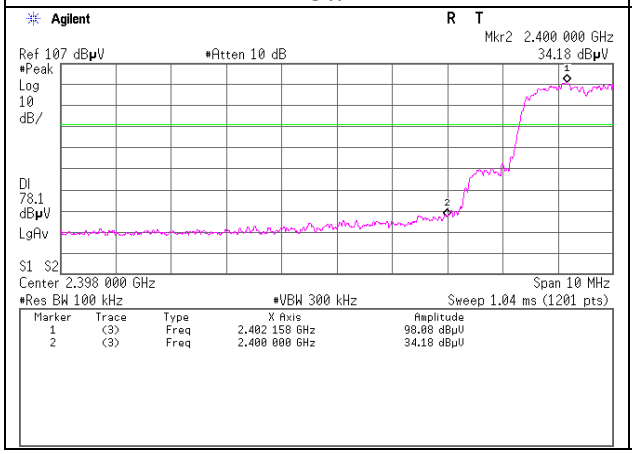


Conducted Emission Band Edge compliance

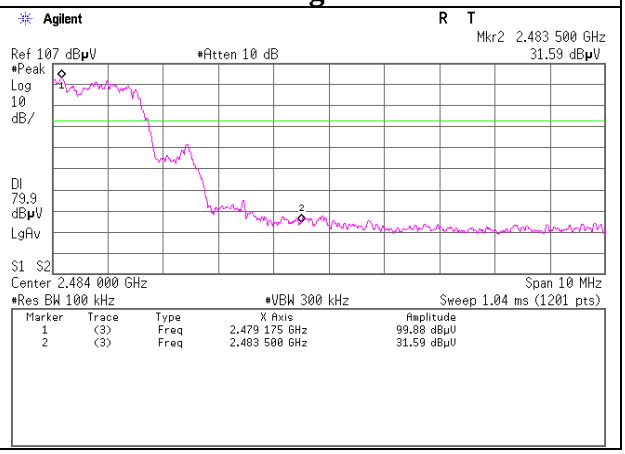
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx 3DH5

Hopping On

Low

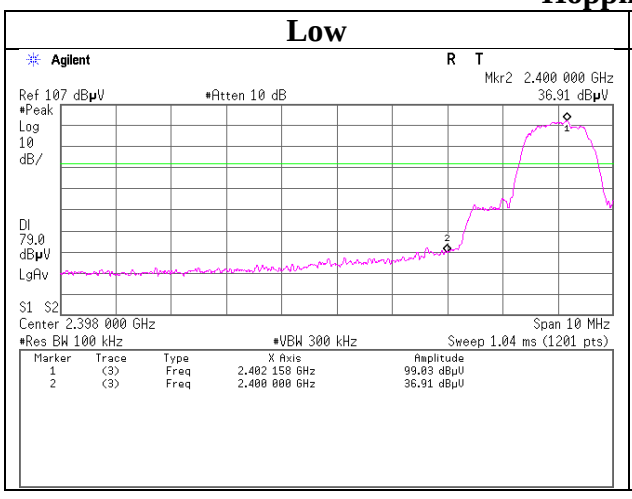


High

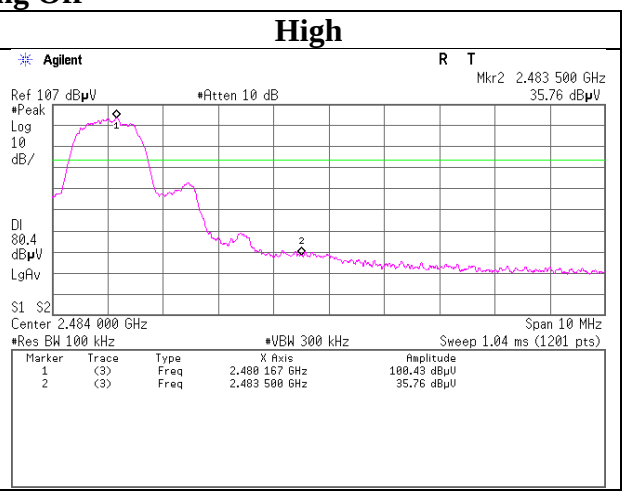


Hopping Off

Low



High

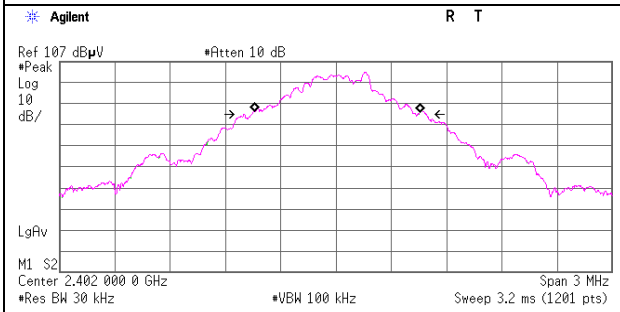


99%Occupied Bandwidth

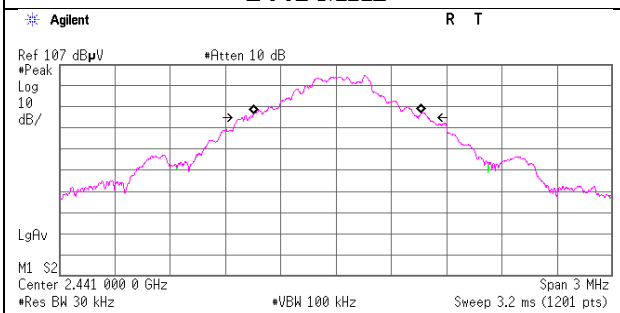
Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx Hopping Off

Hopping Off, DH5

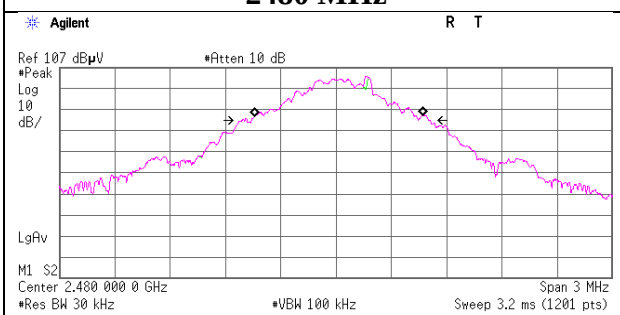
2402 MHz



2441 MHz

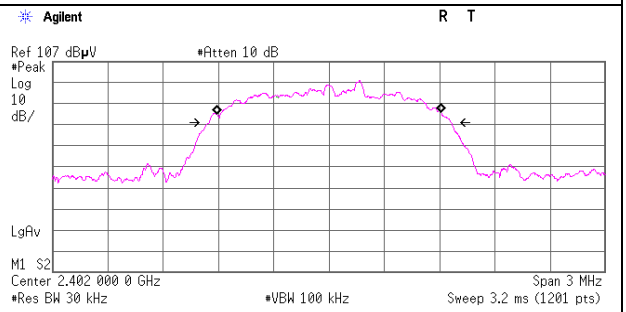


2480 MHz

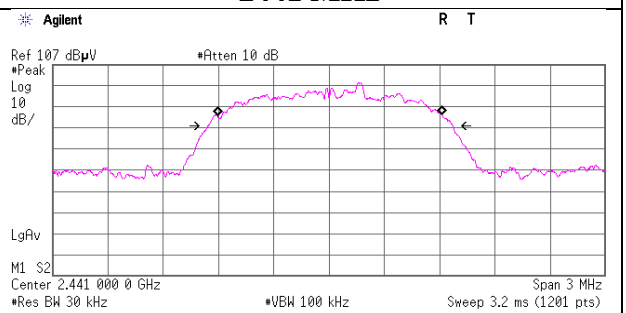


Hopping Off, 3DH5

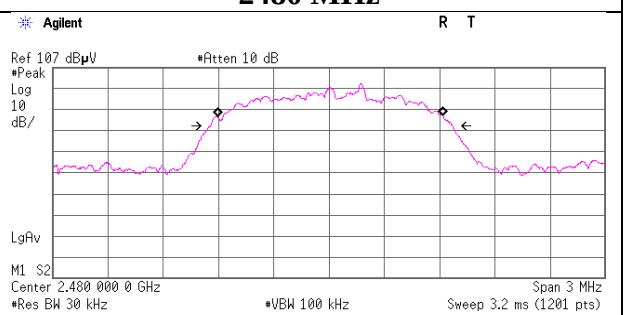
2402 MHz



2441 MHz



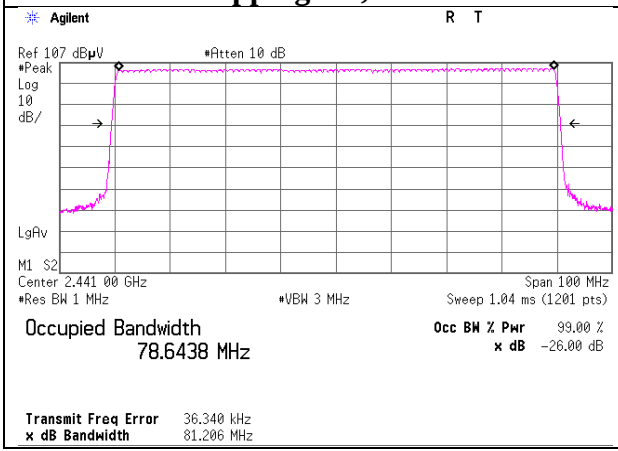
2480 MHz



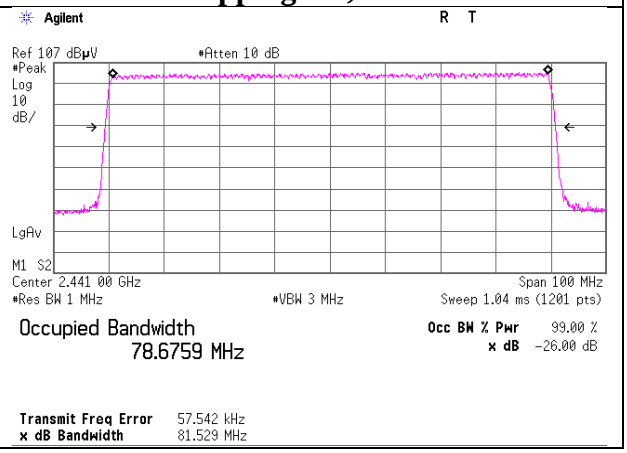
99% Occupied Bandwidth

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	10953040H
Date	October 1, 2015
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Takafumi Noguchi
Mode	Tx Hopping On

Hopping On, DH5



Hopping On, 3DH5



APPENDIX 2: Test instruments

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAT-89	Attenuator	Weinschel Associates	WA56-10	56100305	AT	2015/06/01 * 12
MCC-137	Microwave cable	HUBER+SUHNER	SUCOFLEX 102	37954/2	AT	2014/10/02 * 12
MOS-19	Thermo-Hygrometer	Custom	CTH-201	0001	AT	2014/12/22 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	AT	2015/05/18 * 12
MPM-08	Power Meter	Anritsu	ML2495A	6K00003338	AT	2014/10/16 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	011737	AT	2014/10/15 * 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	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MRENT-122	Spectrum Analyzer	KEYSIGHT	E4440A	MY46187096	RE	2015/06/01 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2015/05/18 * 12
MCC-167	Microwave Cable	Junkosha	MWX221	1404S374(1m) / 1405S074(5m)	RE	2015/05/21 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2015/03/19 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2015/05/19 * 12
MMM-08	DIGITAL HiTESTER	Hioki	3805	051201197	RE	2015/01/16 * 12
MHF-25	High Pass Filter 3.5-18.0GHz	UL Japan	HPF SELECTOR	001	RE	2015/09/16 * 12
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE,CE	2015/07/01 * 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
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE,CE	2015/09/02 * 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	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	2015/09/04 * 12
MMM-01	Digital Tester	Fluke	FLUKE 26-3	78030611	RE	2015/08/19 * 12
MLS-23	LISN(AMN)	Schwarzbeck	NSLK8127	8127-729	CE(EUT)	2015/07/10 * 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

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