RADIO TEST REPORT

Test Report No. : 10833040H-A-R2

Applicant	:	**Olympus Corporation**
Type of Equipment	:	**The Module for Linear PCM Recorder**
Model No.	:	**T4059M-PCA**
FCC ID	:	**YSKA02**
Test regulation	:	**FCC Part 15 Subpart C: 2015**
Test Result	:	**Complied**

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2. The results in this report apply only to the sample tested.
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6. This test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. This report is a revised version of 10833040H-A-R1. 10833040H-A-R1 is replaced with this report.

Date of test: June 15 to August 27, 2015

Representative test engineer:
T. matsui
Tomoki Matsui
Engineer
Consumer Technology Division

Approved by:
T. Hatakeda
Takahiro Hatakeda
Leader
Consumer Technology Division

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REVISION HISTORY

Original Test Report No.: 10833040H-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	10833040H-A	June 26, 2015	-	-
1	10833040H-A-R1	August 21, 2015	P.8	Addition of explanatory note for test voltage
1	10833040H-A-R1	August 21, 2015	P.26	Correction of test data
2	10833040H-A-R2	August 25, 2015	P.17-20	Addition of conducted emission data

CONTENTS PAGE

SECTION 1: Customer information

Company Name	:	Olympus Corporation
Address	:	2951 Ishikawa-machi, Hachioji-shi, Tokyo 192-8507, Japan
Telephone Number	:	+81-42-642-3154
Contact Person	:	Tetsuo Kida

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

2.1 Identification of E.U.T.

Type of Equipment	:	The Module for Linear PCM Recorder
Model No.	:	T4059M-PCA
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 1.5 V (Battery) DC 5.0 V (USB)
Receipt Date of Sample	:	June 12, 2015
Country of Mass-production	:	Vietnam
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No Modification by the test lab

2.2 Product Description

Model: T4059M-PCA (referred to as the EUT in this report) is a The Module for Linear PCM Recorder.

General Specification

Clock frequency(ies) in the system	:	26 MHz, 12 MHz, 32.768 kHz

Radio Specification

[Bluetooth (Ver. 2.1 with EDR function)]

Radio Type	:	Transceiver
Frequency of Operation	:	2402 MHz - 2480 MHz
Modulation	:	FHSS
Power Supply (radio part input)	:	DC 1.8 V, DC 1.85 V
Antenna type	:	Chip Antenna
Antenna Gain	:	-4.0 dBi

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart C: 2015, final revised on January 21, 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	**QP** 29.9 dB, 0.15349 MHz, N **AV** 28.4 dB, 0.54054 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	2.6 dB 4804.000 MHz, AV, Vert.	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)

This EUT provides stable voltage (DC 1.8 V / DC 1.85 V) constantly to RF Module regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203/212 Antenna requirement

It is impossible for end users to replace the antenna, because it is soldered on the circuit board. Therefore the equipment complies with the requirement of 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	5.5 dB	6.3 dB	5.5 dB	5.8 dB	5.8 dB	4.3 dB
No. 2	4.2 dB	5.4 dB	6.3 dB	5.4 dB	5.7 dB	5.9 dB	5.6 dB
No. 3	4.4 dB	5.4 dB	6.4 dB	5.2 dB	5.5 dB	5.8 dB	5.5 dB
No. 4	4.7 dB	5.6 dB	6.4 dB	5.3 dB	5.7 dB	5.9 dB	5.5 dB

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

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 Inquiry	2402 MHz 2441 MHz 2480 MHz
20dB Bandwidth	Tx (Hopping Off) DH5, 3DH5 Inquiry	2402 MHz 2441 MHz 2480 MHz
Number of Hopping Frequency	Tx (Hopping On) DH5, 3DH5 Inquiry	-
Dwell time	Tx (Hopping On), -DH1, DH3, DH5 -3DH1, 3DH3, 3DH5 Inquiry	-
Maximum Peak Output Power	Tx (Hopping Off) DH5, 2DH5, 3DH5 Inquiry	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.

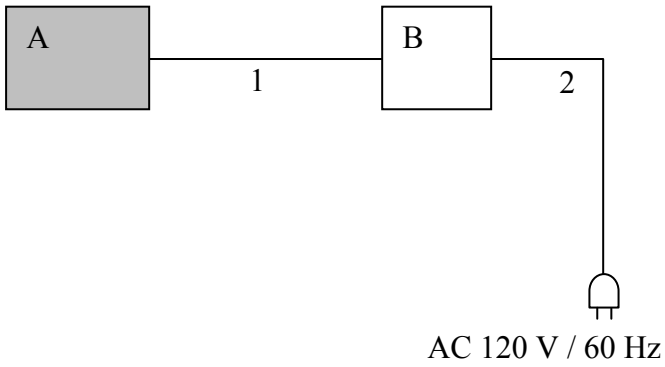
*EUT has the power settings by the software as follows;

Power settings:	DH5:	Ext 26,	Int 42
	2DH5:	Ext 42,	Int 48
	3DH5:	Ext 42,	Int 48
Software:	Blue Test3		

*This setting of software is the worst case.
Any conditions under the normal use do not exceed the condition of setting.
In addition, end users cannot change the settings of the output power of the product.

*This EUT has two ratings: DC 1.5 V (Battery) or DC 5.0 V (USB).
However this EUT has own regulator.
After the comparison between above ratings (DC 1.5 V and DC 5.0V), the tests were performed with rating (DC 1.5 V) as a representative.

4.2 Configuration and peripherals



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

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	The Module for Linear PCM Recorder	T4059M-PCA	001 for AT* 002 for other tests	Olympus Corporation	EUT
B	DC Power Supply	PMC35-2A	13090501	KIKUSUI	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	1.0	Unshielded	Unshielded	-
2	AC Cable	2.0	Unshielded	Unshielded	-

*AT: Antenna Terminal conducted test

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 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 *2)	-	Power Meter (Sensor: 50MHz BW)
Carrier Frequency Separation	5 MHz or 3 MHz	100 kHz or 30 kHz	300 kHz or 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 *3)	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) Reference data
*3) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.
Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.
(9 kHz -150 kHz: RBW = 200 Hz, 150 kHz - 30 MHz: RBW = 9.1 kHz)

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

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Conducted Emission

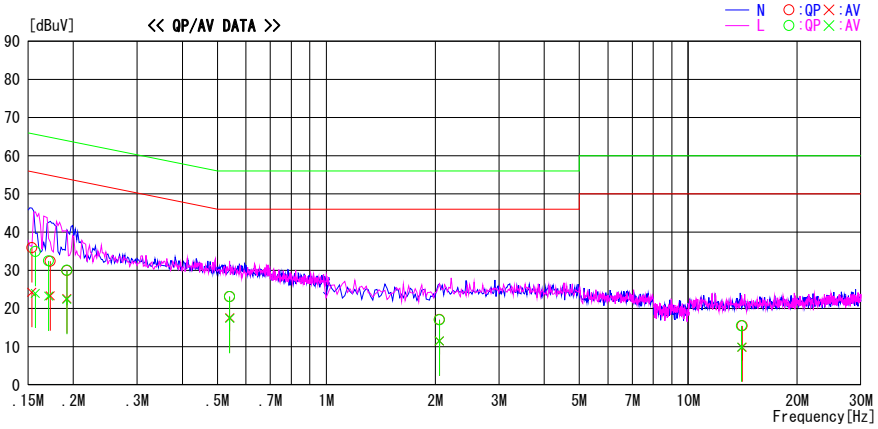
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Ise EMC Lab. No.1 Semi Anechoic Chamber
Date: 2015/06/16

Report No. : 10833040H
Power : DC 1.5V
Temp./Humi. : 19deg. C / 61% RH
Engineer : Takumi Shimada

Mode / Remarks : Tx DH5 2441MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



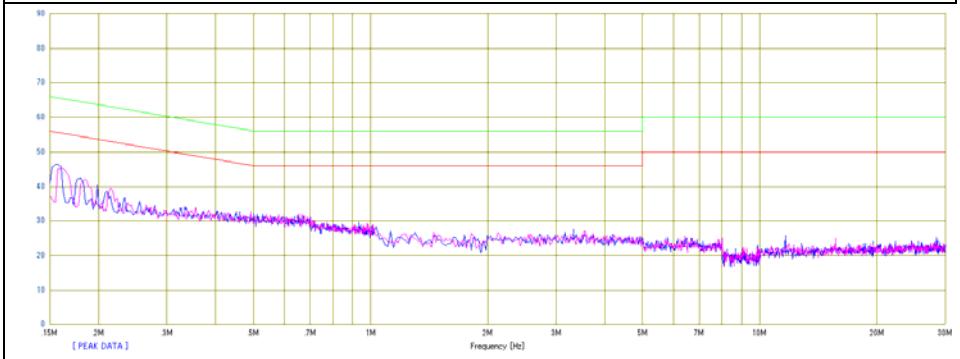
Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.15349	22.7	11.0	13.2	35.9	24.2	65.8	55.8	29.9	31.6	N	
0.17267	19.2	10.1	13.2	32.4	23.3	64.8	54.8	32.4	31.5	N	
0.19184	16.7	9.4	13.2	29.9	22.6	64.0	54.0	34.1	31.4	N	
0.54054	9.8	4.3	13.3	23.1	17.6	56.0	46.0	32.9	28.4	N	
2.05240	3.5	-2.1	13.6	17.1	11.5	56.0	46.0	38.9	34.5	N	
14.08856	0.7	-4.9	14.8	15.5	9.9	60.0	50.0	44.5	40.1	N	
0.15697	21.7	10.8	13.2	34.9	24.0	65.6	55.6	30.7	31.6	L	
0.17092	19.3	10.0	13.2	32.5	23.2	64.9	54.9	32.4	31.7	L	
0.19184	16.8	9.2	13.2	30.0	22.4	64.0	54.0	34.0	31.6	L	
0.54054	9.8	4.1	13.3	23.1	17.4	56.0	46.0	32.9	28.6	L	
2.05240	3.4	-2.1	13.6	17.0	11.5	56.0	46.0	39.0	34.5	L	
14.04838	0.7	-4.9	14.8	15.5	9.9	60.0	50.0	44.5	40.1	L	

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

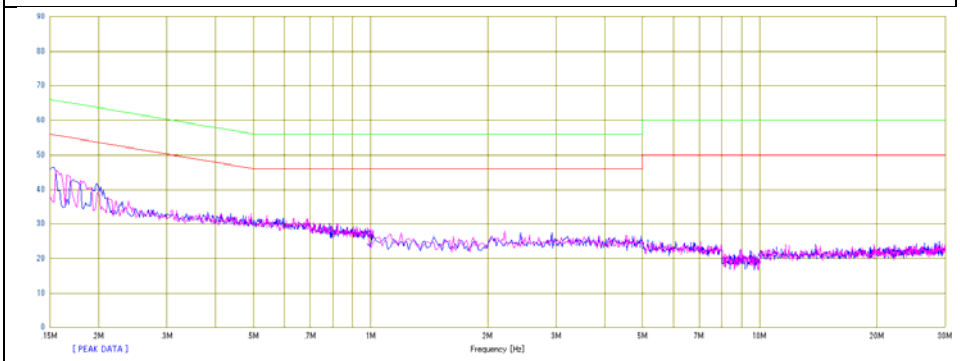
Conducted Emission

Test place	Ise EMC Lab. No.1 Semi Anechoic Chamber
Report No.	10833040H
Date	June 16, 2015
Temperature / Humidity	19 deg. C / 61 % RH
Engineer	Takumi Shimada
Mode	Tx Hopping Off DH5 DC 1.5V

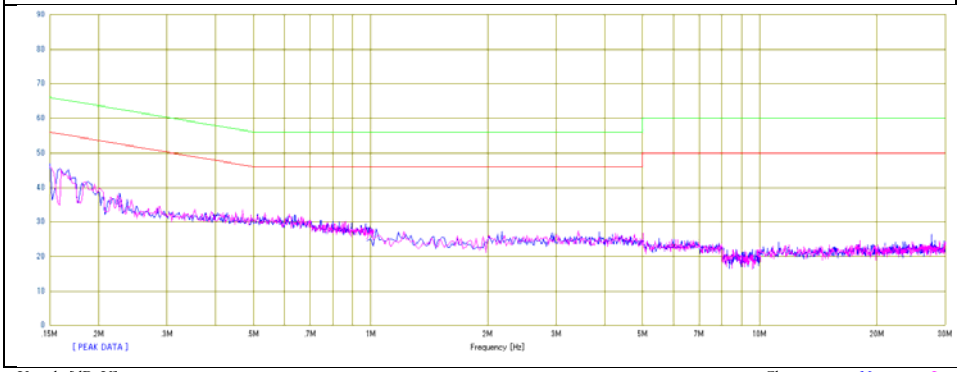
2402 MHz



2441 MHz



2480 MHz



Y scale [dBuV] Chart — N — L

Conducted Emission

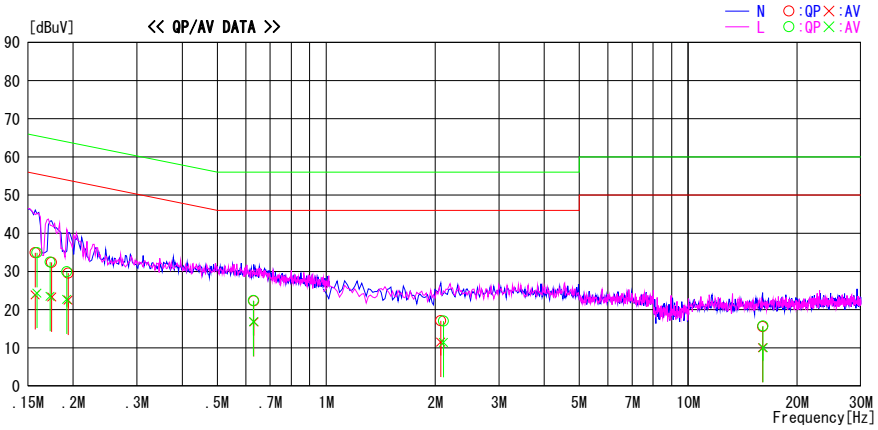
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Ise EMC Lab. No.1 Semi Anechoic Chamber
Date: 2015/06/16

Report No. : 10833040H
Power : DC 1.5V
Temp./Humi. : 19deg. C / 61% RH
Engineer : Takumi Shimada

Mode / Remarks : Tx 3DH5 2441MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



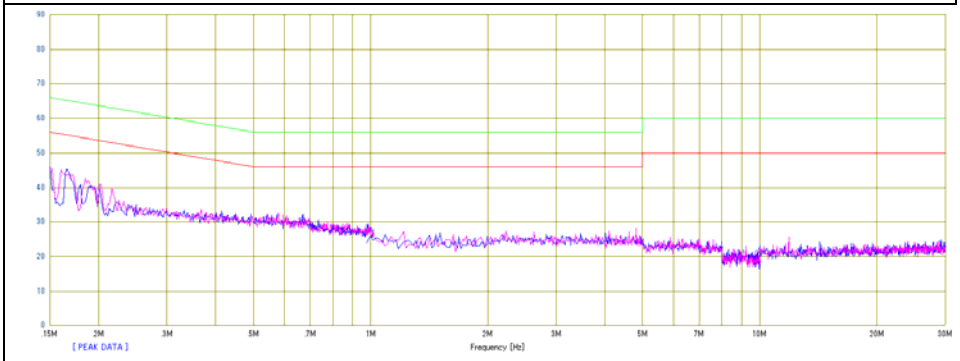
Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.15697	21.7	10.7	13.2	34.9	23.9	65.6	55.6	30.7	31.7	N	
0.17441	19.2	10.1	13.2	32.4	23.3	64.7	54.7	32.3	31.4	N	
0.19359	16.4	9.3	13.2	29.6	22.5	63.9	53.9	34.3	31.4	N	
0.63120	9.0	3.5	13.3	22.3	16.8	56.0	46.0	33.7	29.2	N	
2.07058	3.4	-2.2	13.7	17.1	11.5	56.0	46.0	38.9	34.5	N	
16.05739	0.7	-4.8	14.9	15.6	10.1	60.0	50.0	44.4	39.9	N	
0.15872	21.7	11.1	13.2	34.9	24.3	65.5	55.5	30.6	31.2	L	
0.17267	19.3	10.3	13.2	32.5	23.5	64.8	54.8	32.3	31.3	L	
0.19184	16.7	9.5	13.2	29.9	22.7	64.0	54.0	34.1	31.3	L	
0.62946	9.1	3.6	13.3	22.4	16.9	56.0	46.0	33.6	29.1	L	
2.10693	3.3	-2.3	13.7	17.0	11.4	56.0	46.0	39.0	34.6	L	
16.09757	0.8	-4.8	14.9	15.7	10.1	60.0	50.0	44.3	39.9	L	

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

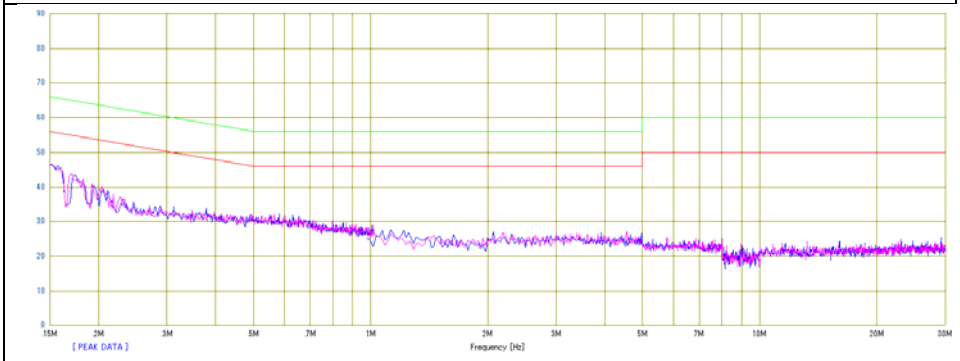
Conducted Emission

Test place	Ise EMC Lab. No.1 Semi Anechoic Chamber
Report No.	10833040H
Date	June 16, 2015
Temperature / Humidity	19 deg. C / 61 % RH
Engineer	Takumi Shimada
Mode	Tx Hopping Off 3DH5 DC 1.5V

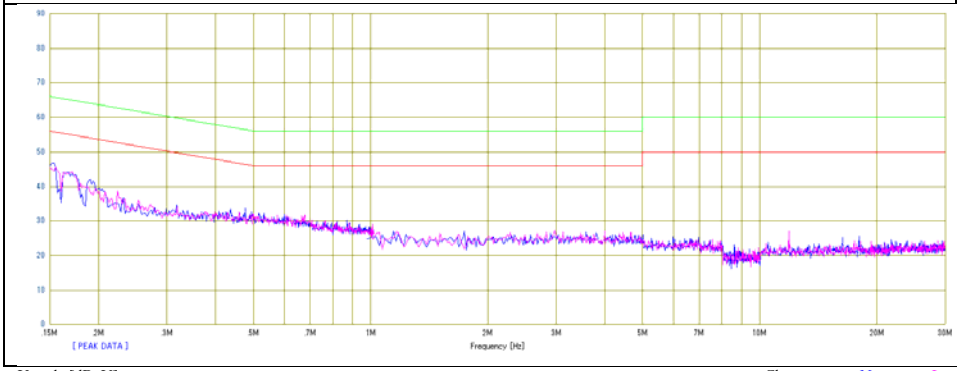
2402 MHz



2441 MHz



2480 MHz



Y scale [dBuV] Chart N L

Conducted Emission

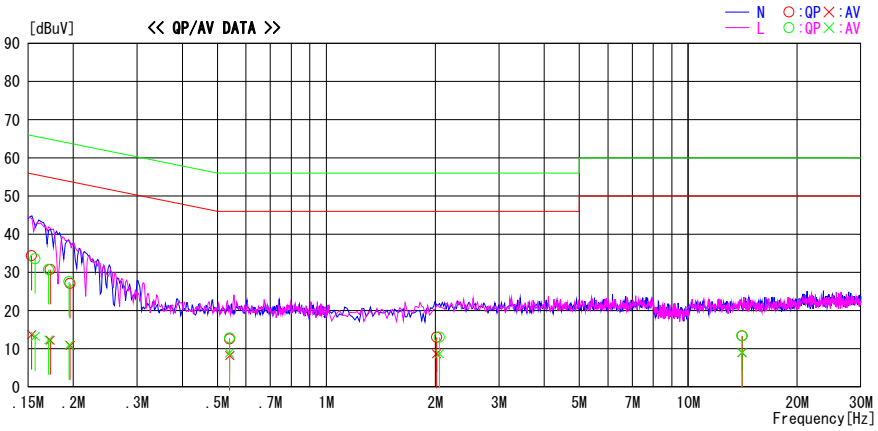
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Ise EMC Lab. No.2 Semi Anechoic Chamber
Date : 2015/08/27

Report No. : 10833040H
Power : DC 5V
Temp./Humi. : 22deg. C / 59% RH
Engineer : Tomoki Matsui

Mode / Remarks : Tx DH5 2441MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



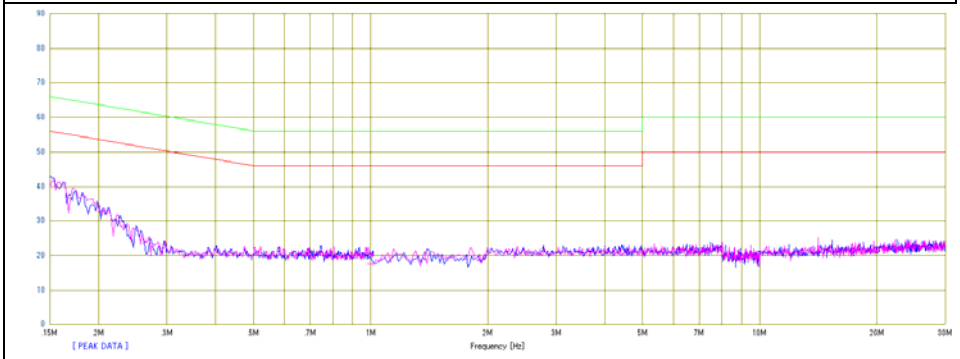
Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.15338	21.2	0.5	13.2	34.4	13.7	65.8	55.8	31.4	42.1	N	
0.15689	20.4	0.0	13.2	33.6	13.2	65.6	55.6	32.0	42.4	L	
0.17086	17.5	-0.9	13.2	30.7	12.3	64.9	54.9	34.2	42.6	L	
0.17256	17.6	-0.9	13.2	30.8	12.3	64.8	54.8	34.0	42.5	N	
0.19598	13.9	-2.3	13.2	27.1	10.9	63.8	53.8	36.7	42.9	N	
0.19463	14.4	-2.2	13.2	27.6	11.0	63.8	53.8	36.2	42.8	L	
0.54034	-0.4	-4.3	13.2	12.8	8.9	56.0	46.0	43.2	37.1	L	
0.54060	-0.7	-5.0	13.2	12.5	8.2	56.0	46.0	43.5	37.8	N	
2.05231	-0.5	-4.8	13.5	13.0	8.7	56.0	46.0	43.0	37.3	L	
2.01780	-0.5	-4.8	13.5	13.0	8.7	56.0	46.0	43.0	37.3	N	
14.07510	-1.1	-5.6	14.5	13.4	8.9	60.0	50.0	46.6	41.1	L	
14.08798	-1.1	-5.5	14.5	13.4	9.0	60.0	50.0	46.6	41.0	N	

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

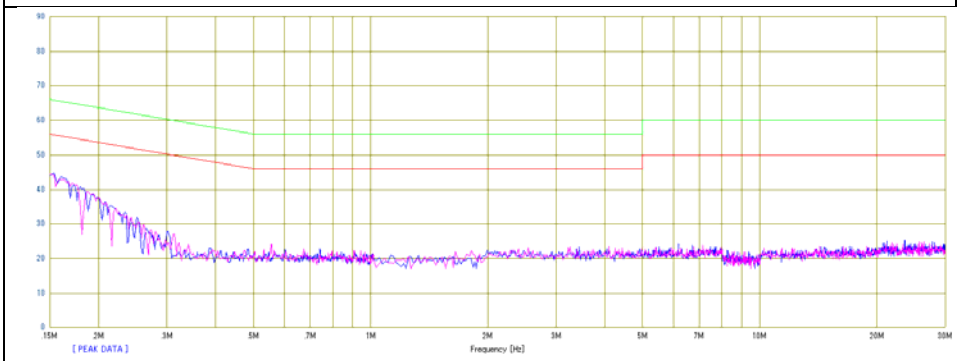
Conducted Emission

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10833040H
Date	August 27, 2015
Temperature / Humidity	22 deg. C / 59 % RH
Engineer	Tomoki Matsui
Mode	Tx Hopping Off DH5 DC 5V

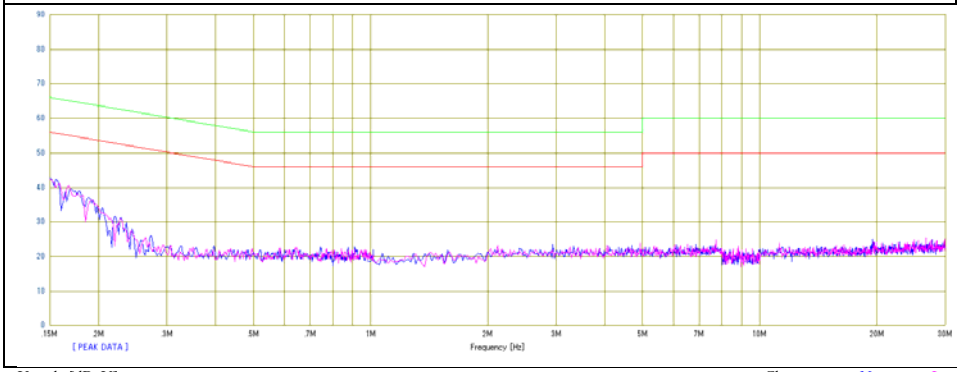
2402 MHz



2441 MHz



2480 MHz



Y scale [dBuV] Chart — N — L

Conducted Emission

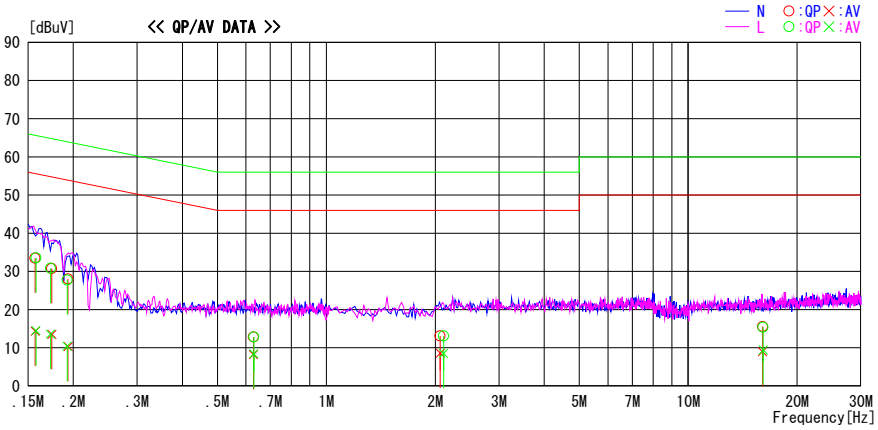
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Ise EMC Lab. No.2 Semi Anechoic Chamber
Date : 2015/08/27

Report No. : 10833040H
Power : DC 5V
Temp./Humi. : 22deg. C / 59% RH
Engineer : Tomoki Matsui

Mode / Remarks : Tx 3DH5 2441MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



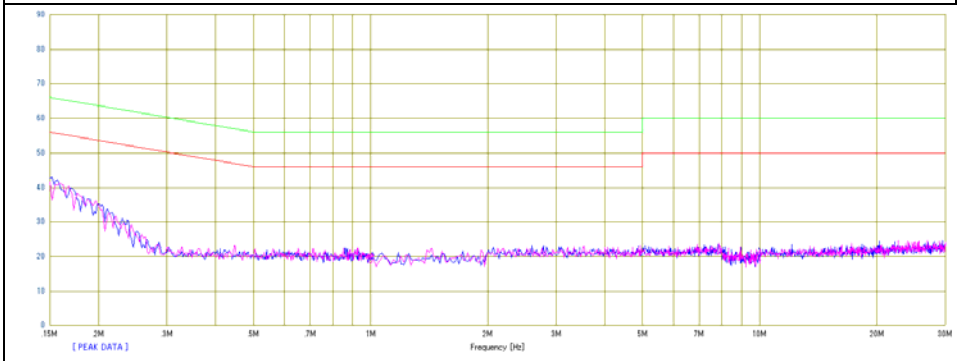
Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.15680	20.3	1.1	13.2	33.5	14.3	65.6	55.6	32.1	41.3	N	
0.15765	20.4	1.3	13.2	33.6	14.5	65.6	55.6	32.0	41.1	L	
0.17307	17.6	0.4	13.2	30.8	13.6	64.8	54.8	34.0	41.2	L	
0.17432	17.5	0.3	13.2	30.7	13.5	64.8	54.8	34.1	41.3	N	
0.19235	14.5	-2.8	13.2	27.7	10.4	63.9	53.9	36.2	43.5	L	
0.19342	14.8	-2.9	13.2	28.0	10.3	63.9	53.9	35.9	43.6	N	
0.62920	-0.5	-5.1	13.3	12.8	8.2	56.0	46.0	43.2	37.8	N	
0.63076	-0.5	-4.9	13.3	12.8	8.4	56.0	46.0	43.2	37.6	L	
2.06378	-0.4	-4.9	13.5	13.1	8.6	56.0	46.0	42.9	37.4	N	
2.10760	-0.4	-5.0	13.5	13.1	8.5	56.0	46.0	42.9	37.5	L	
16.04553	1.0	-5.6	14.6	15.6	9.0	60.0	50.0	44.4	41.0	N	
16.10453	0.8	-5.2	14.6	15.4	9.4	60.0	50.0	44.6	40.6	L	

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

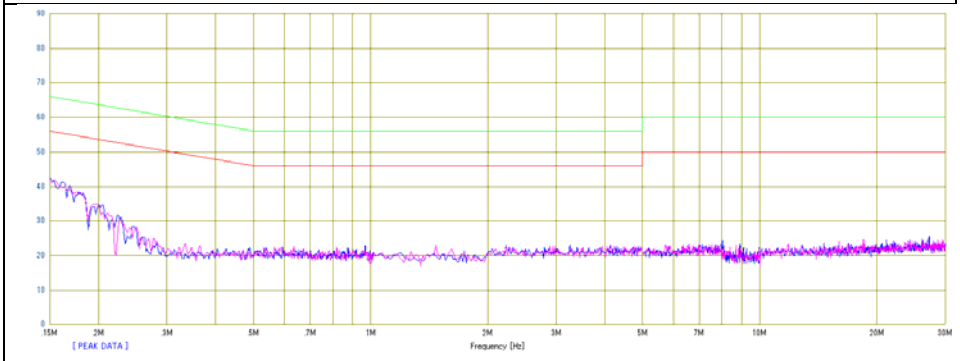
Conducted Emission

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10833040H
Date	August 27, 2015
Temperature / Humidity	22 deg. C / 59 % RH
Engineer	Tomoki Matsui
Mode	Tx Hopping Off 3DH5 DC 5V

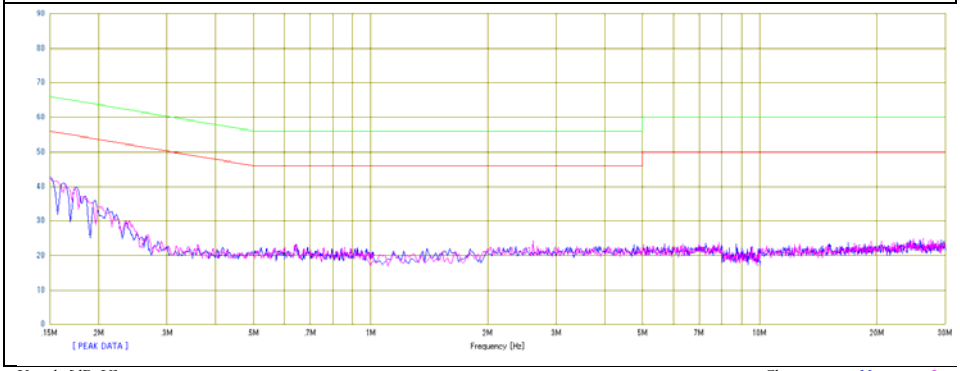
2402 MHz



2441 MHz



2480 MHz



Y scale [dBuV] Chart N L

20dB Bandwidth and Carrier Frequency Separation

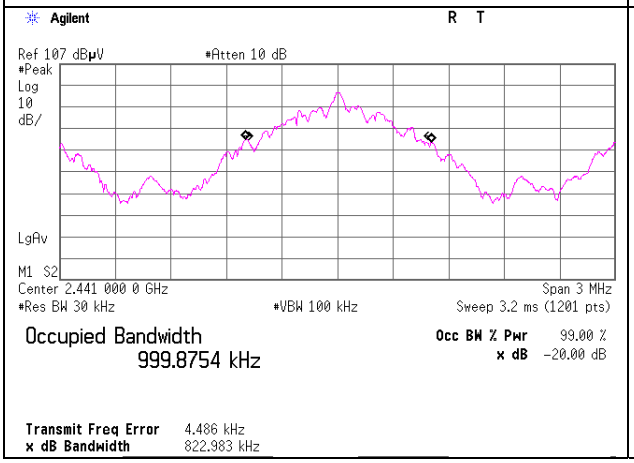
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off / On / Inquiry

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.962	1.000	>= 0.641
DH5	2441.0	1.016	1.000	>= 0.677
DH5	2480.0	0.981	1.000	>= 0.654
3DH5	2402.0	1.291	1.000	>= 0.861
3DH5	2441.0	1.280	1.000	>= 0.853
3DH5	2480.0	1.295	1.000	>= 0.863
Inquiry	2441.0	0.823	2.000	>= 0.549

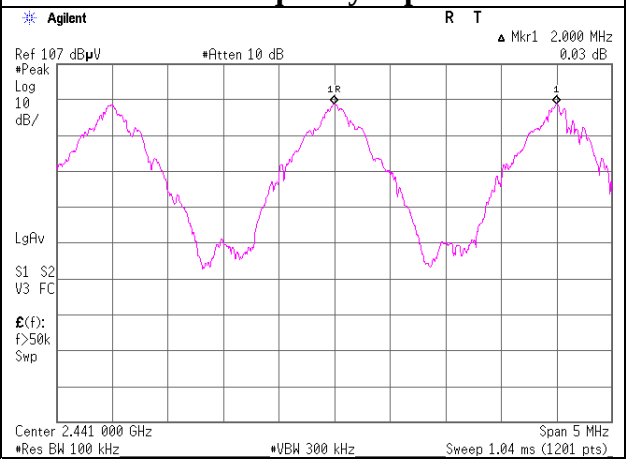
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
No limit applies to 20dB Bandwidth.

Inquiry

20dB Bandwidth



Carrier Frequency Separation

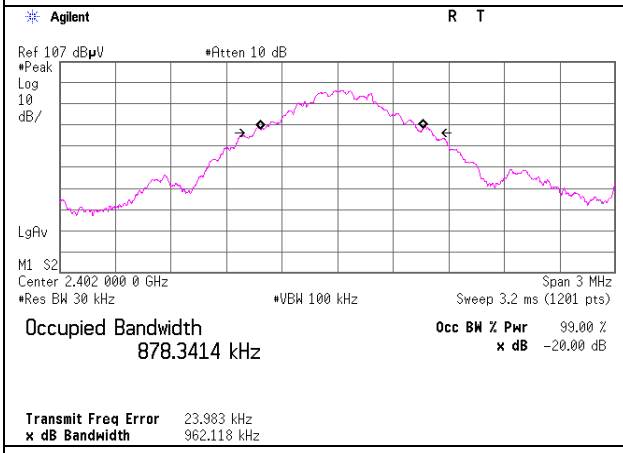


20dB Bandwidth and Carrier Frequency Separation

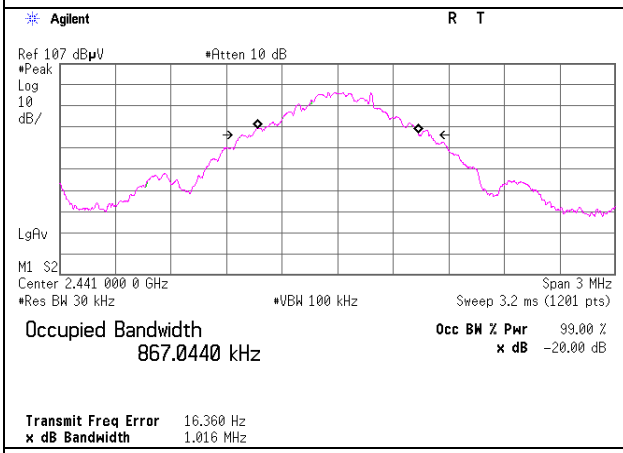
DH5

20 dB Bandwidth

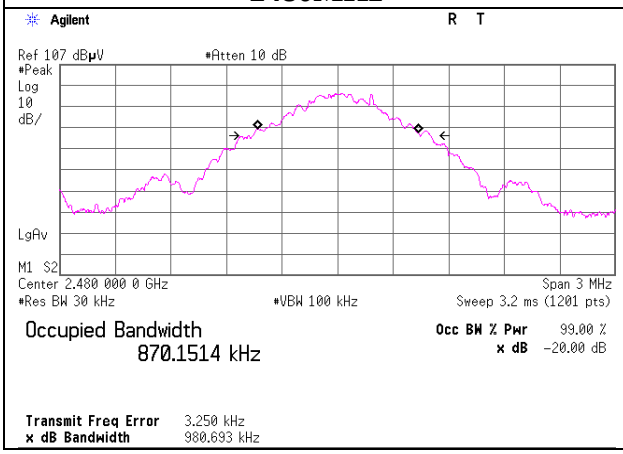
2402MHz



2441MHz

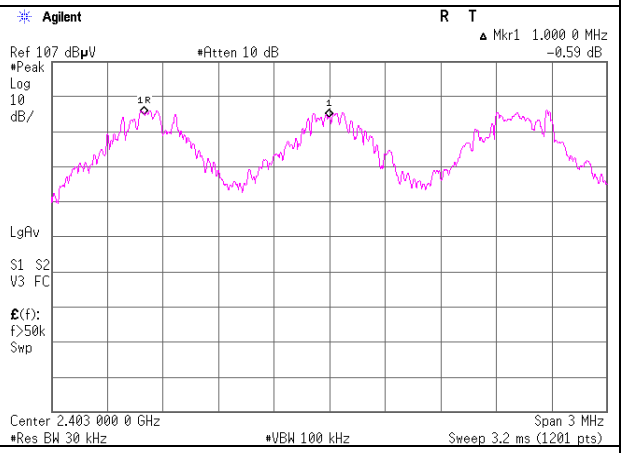


2480MHz

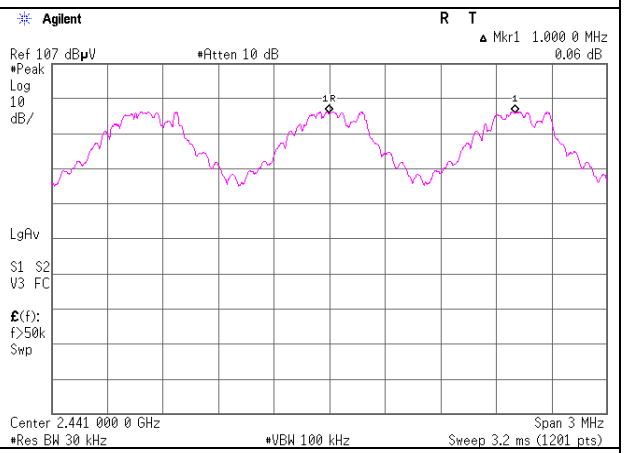


Carrier Frequency Separation

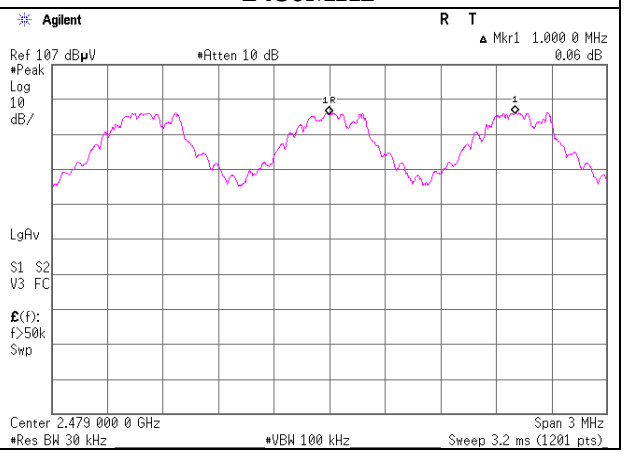
2402MHz



2441MHz



2480MHz

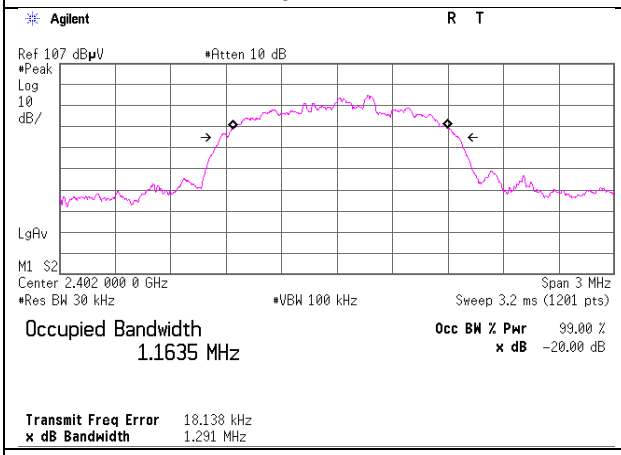


20dB Bandwidth and Carrier Frequency Separation

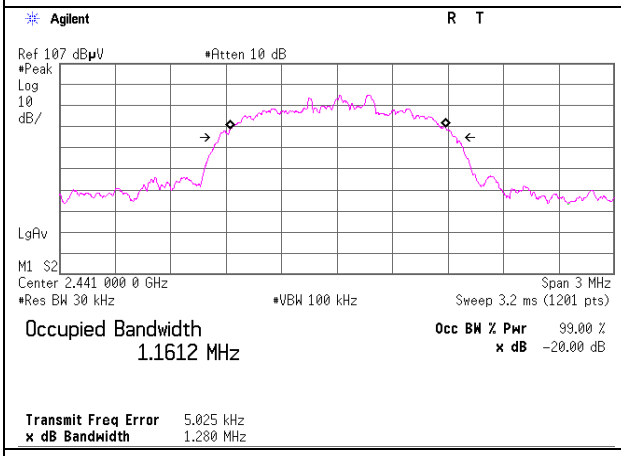
3DH5

20 dB Bandwidth

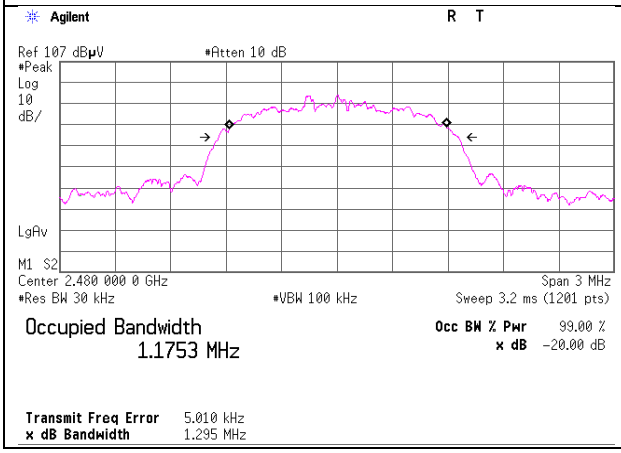
2402 MHz



2441 MHz

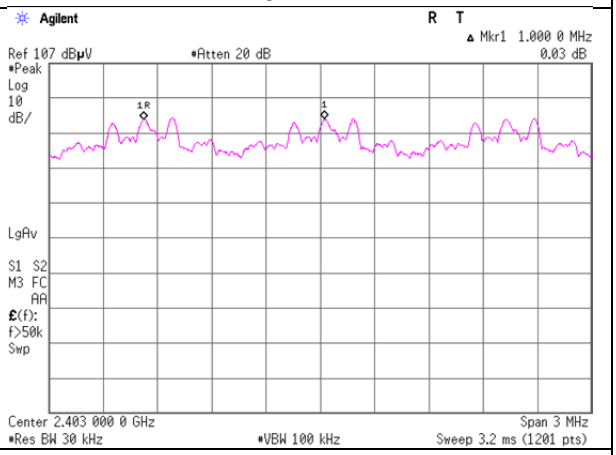


2480 MHz

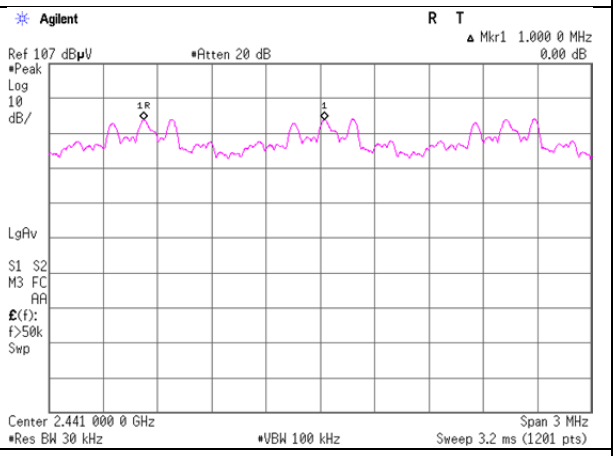


Carrier Frequency Separation

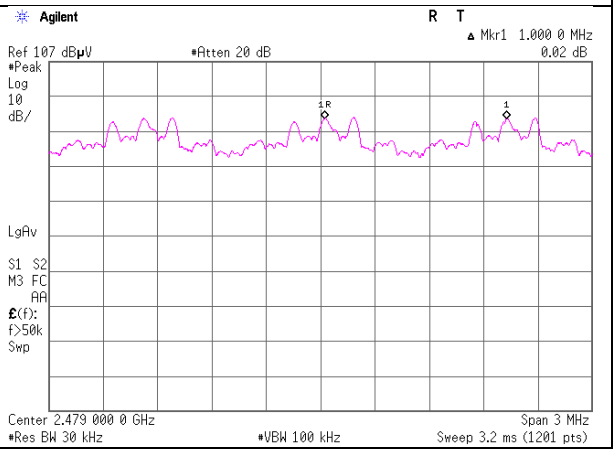
2402 MHz



2441 MHz



2480 MHz



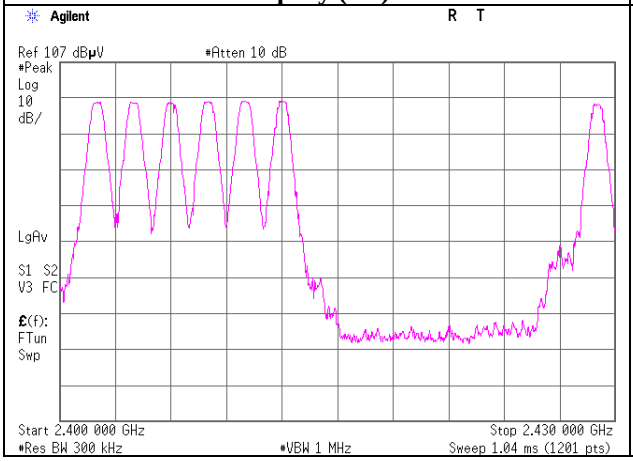
Number of Hopping Frequency

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping On / Inquiry

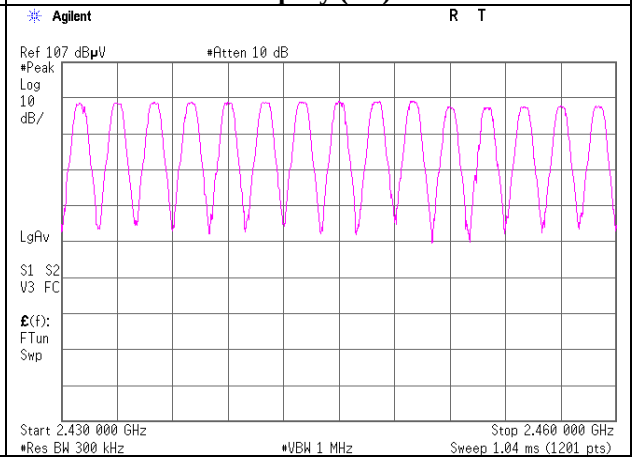
Mode	Number of channel [channels]	Limit [channels]
DH5	79	>= 15
3DH5	79	>= 15
Inquiry	32	>= 15

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

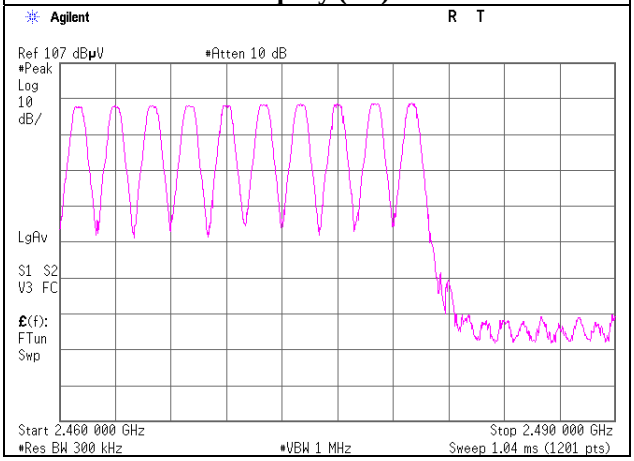
Inquiry (1/3)



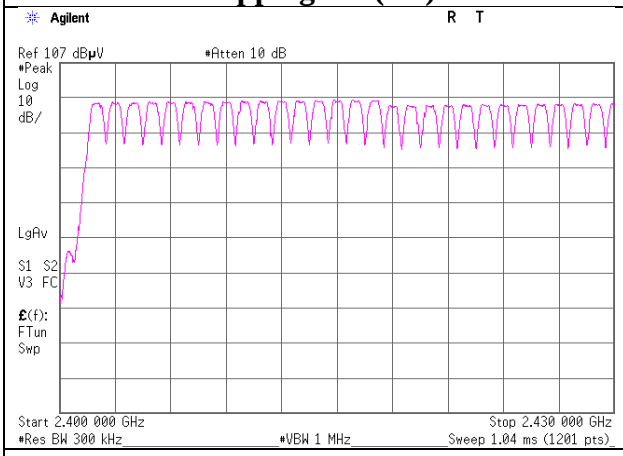
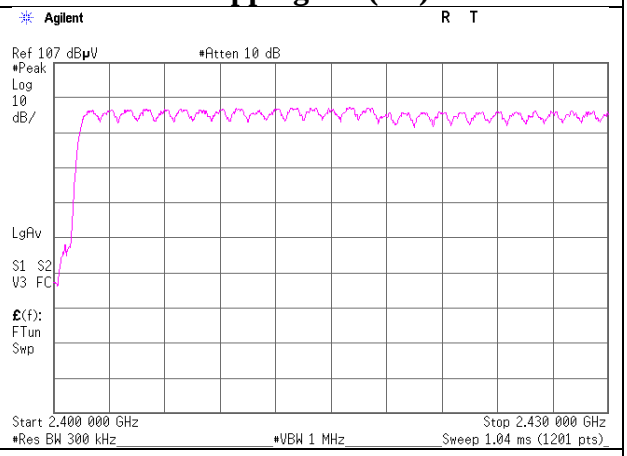
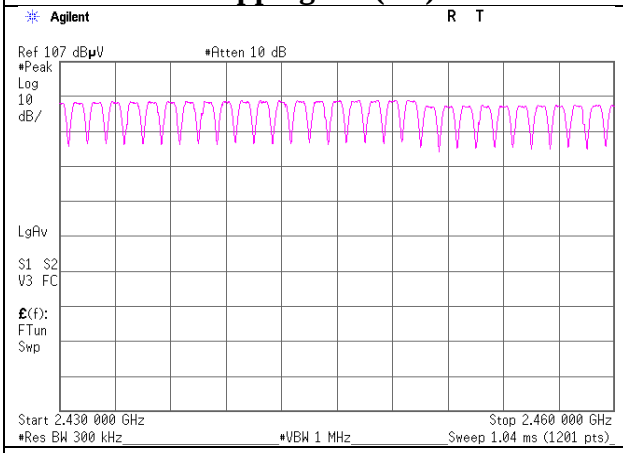
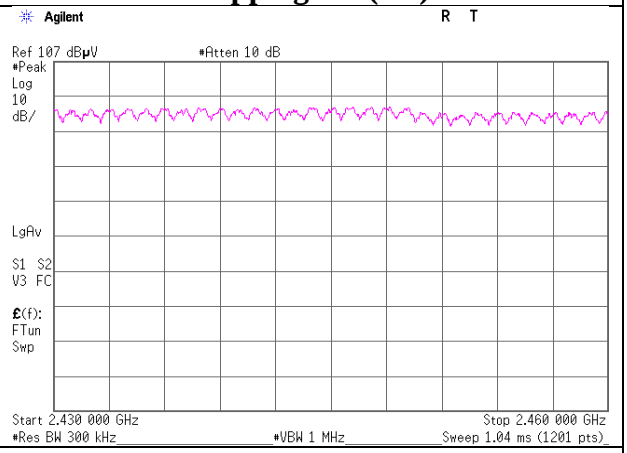
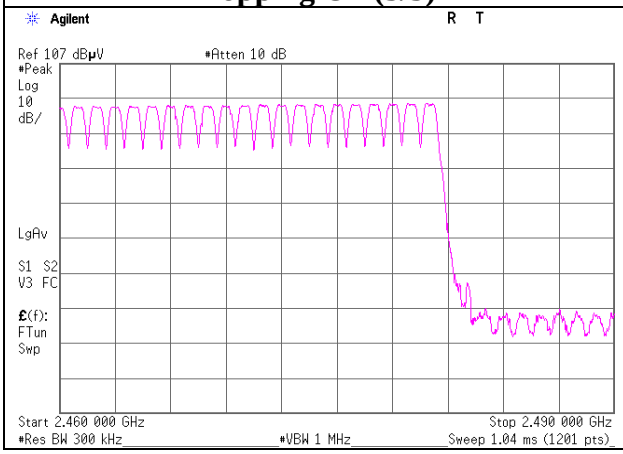
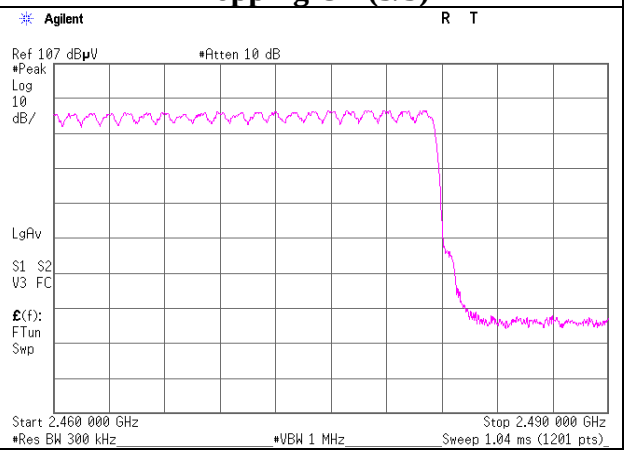
Inquiry (2/3)



Inquiry (3/3)



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

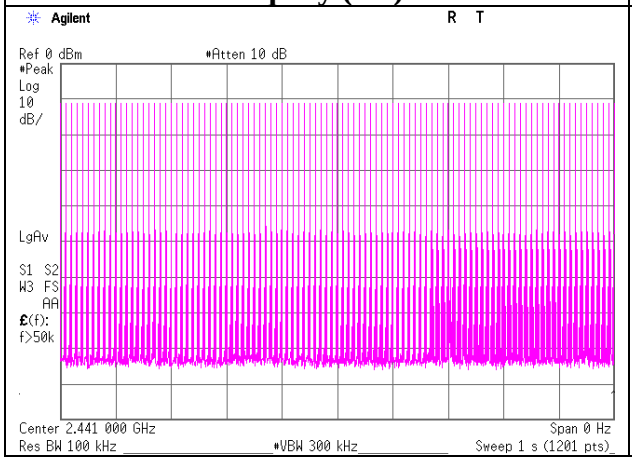
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping On / Inquiry

Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8 (32 Hopping x 0.4) second period	Length of transmission [msec]	Result [msec]	Limit [msec]
DH1	51.0 times / 5 sec. x 31.6 sec. = 323 times	0.418	135	400
DH3	26.0 times / 5 sec. x 31.6 sec. = 165 times	1.678	277	400
DH5	17.0 times / 5 sec. x 31.6 sec. = 108 times	2.938	317	400
3DH1	51.0 times / 5 sec. x 31.6 sec. = 323 times	0.434	140	400
3DH3	26.0 times / 5 sec. x 31.6 sec. = 165 times	1.686	278	400
3DH5	17.0 times / 5 sec. x 31.6 sec. = 108 times	2.940	318	400
Inquiry	100.0 times / 1 sec. x 12.8 sec. = 1280 times	0.119	153	400

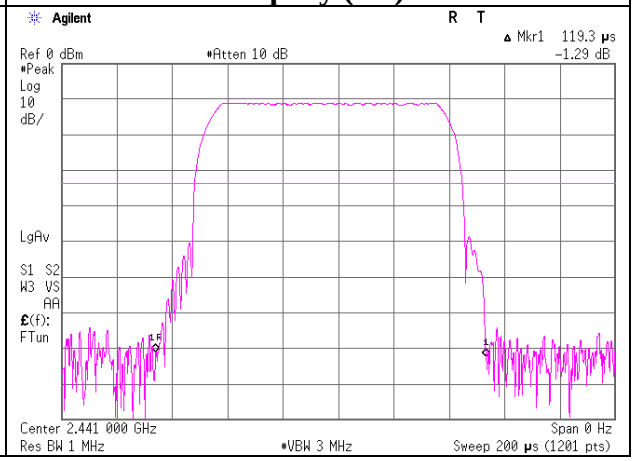
Sample Calculation
Result = Number of transmission x Length of transmition

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.

Inquiry (1/2)

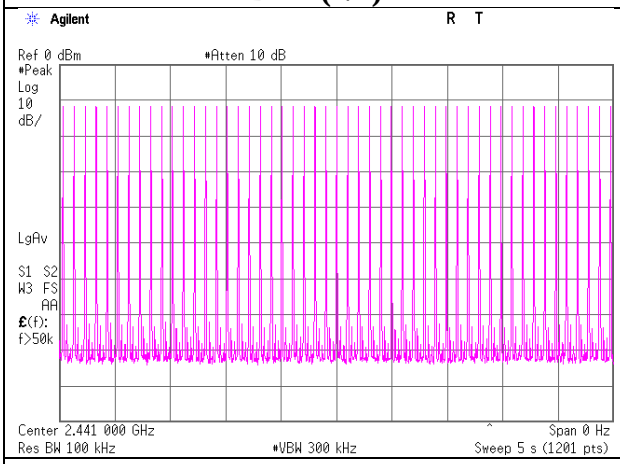


Inquiry (2/2)

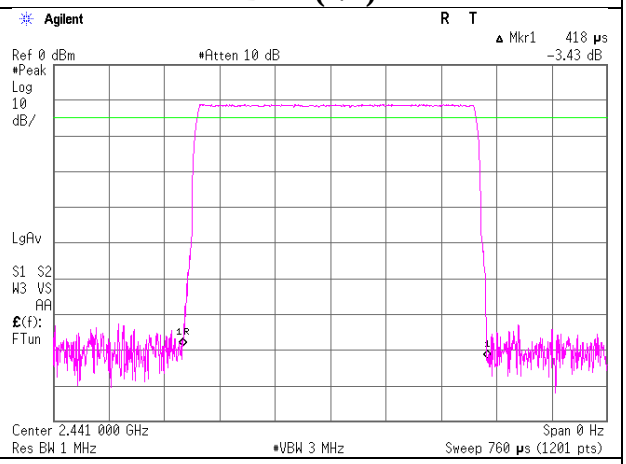


Dwell time

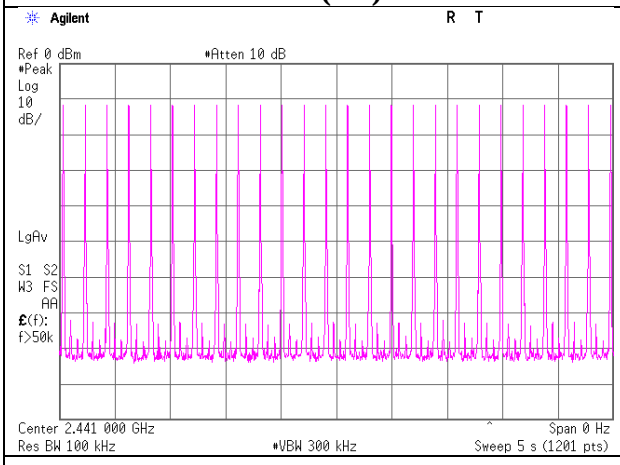
DH1 (1/2)



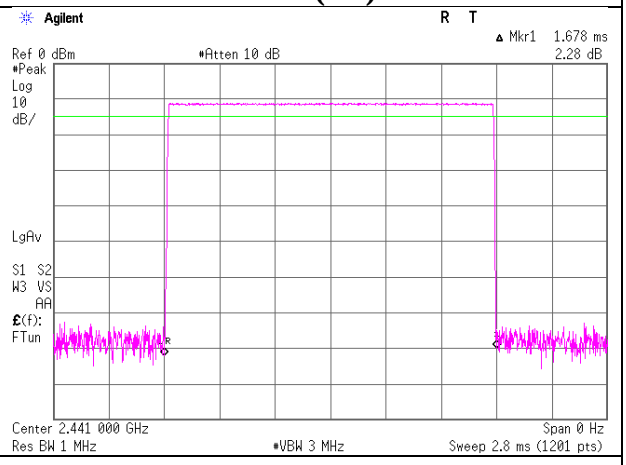
DH1 (2/2)



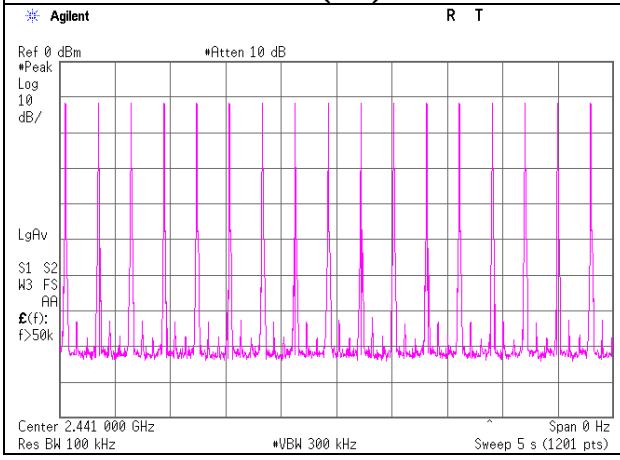
DH3 (1/2)



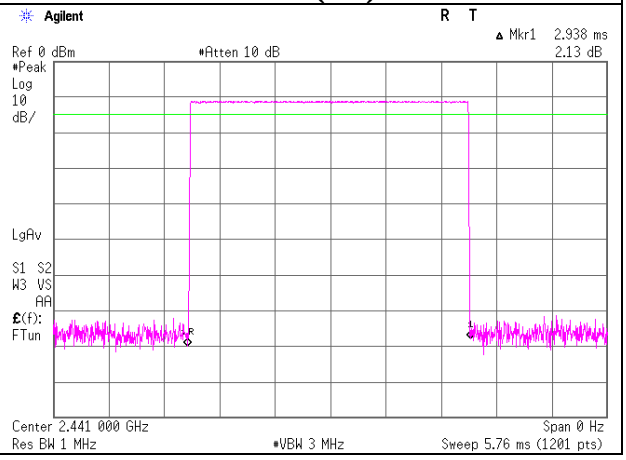
DH3 (2/2)



DH5 (1/2)

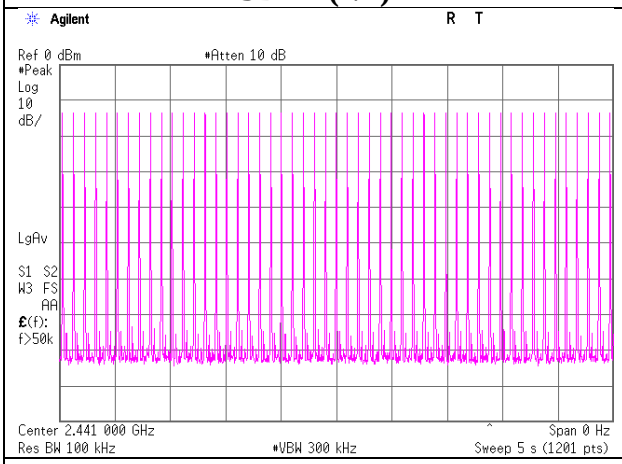


DH5 (2/2)

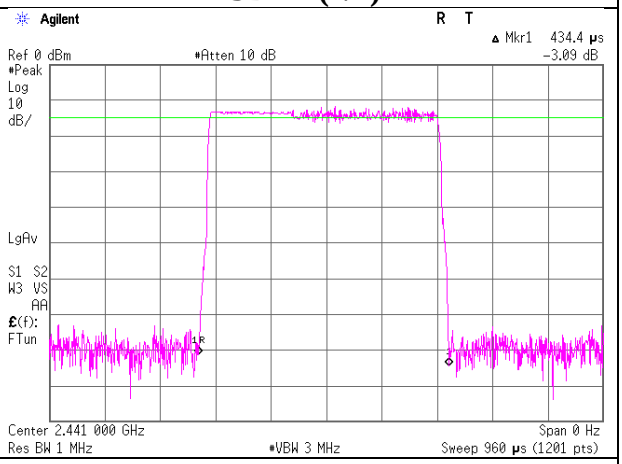


Dwell time

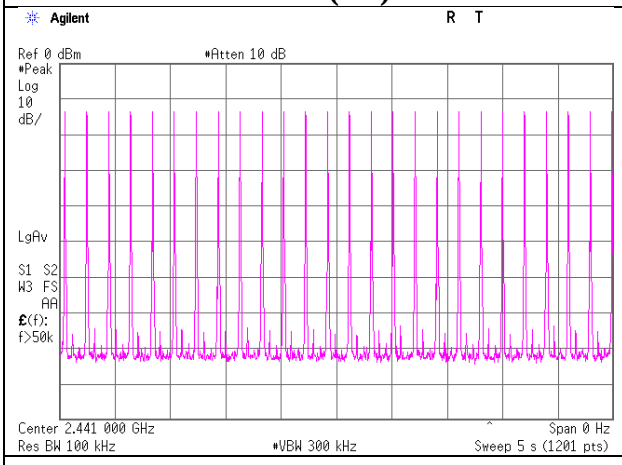
3DH1 (1/2)



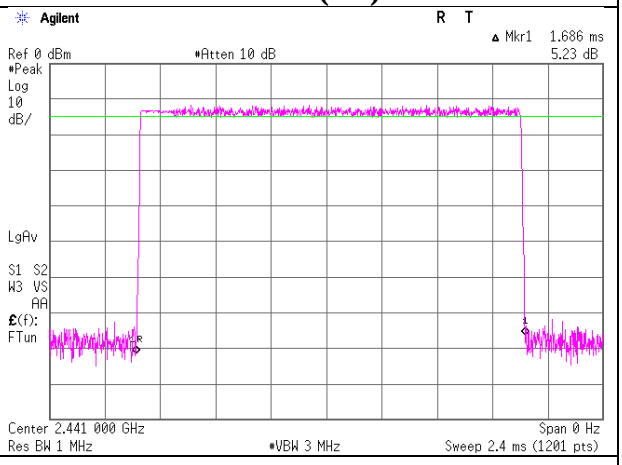
3DH1 (2/2)



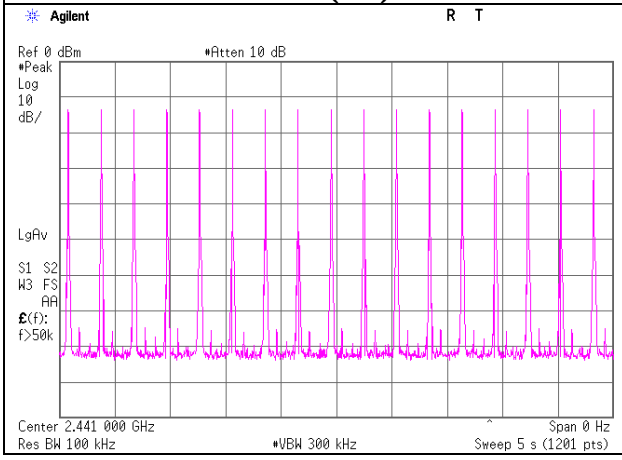
3DH3 (1/2)



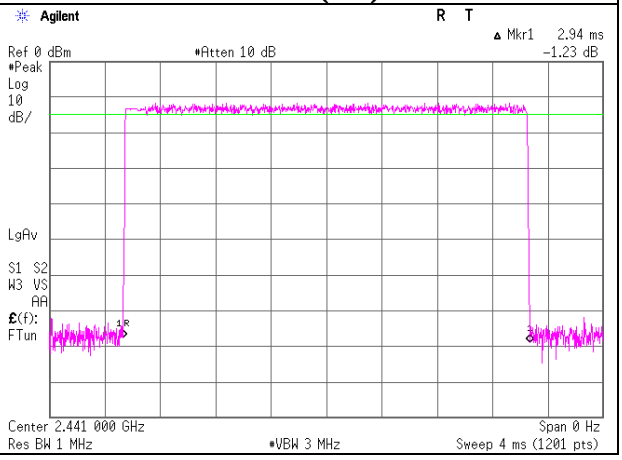
3DH3 (2/2)



3DH5 (1/2)



3DH5 (2/2)



Maximum Peak Output Power

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off / Inquiry

Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
DH5	2402.0	-11.39	0.86	9.74	-0.79	0.83	20.96	125	21.75
DH5	2441.0	-11.37	0.86	9.74	-0.77	0.84	20.96	125	21.73
DH5	2480.0	-11.50	0.87	9.74	-0.89	0.81	20.96	125	21.85
2DH5	2402.0	-12.19	0.86	9.74	-1.59	0.69	20.96	125	22.55
2DH5	2441.0	-12.14	0.86	9.74	-1.54	0.70	20.96	125	22.50
2DH5	2480.0	-12.22	0.87	9.74	-1.61	0.69	20.96	125	22.57
3DH5	2402.0	-11.67	0.86	9.74	-1.07	0.78	20.96	125	22.03
3DH5	2441.0	-11.59	0.86	9.74	-0.99	0.80	20.96	125	21.95
3DH5	2480.0	-11.69	0.87	9.74	-1.08	0.78	20.96	125	22.04
Inquiry	2441.0	-11.41	0.86	9.74	-0.81	0.83	20.96	125	21.77

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.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off

Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)	
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
DH5	2402.0	-11.75	0.86	9.74	-1.15	0.77
DH5	2441.0	-11.68	0.86	9.74	-1.08	0.78
DH5	2480.0	-11.79	0.87	9.74	-1.18	0.76
2DH5	2402.0	-14.89	0.86	9.74	-4.29	0.37
2DH5	2441.0	-14.79	0.86	9.74	-4.19	0.38
2DH5	2480.0	-14.88	0.87	9.74	-4.27	0.37
3DH5	2402.0	-14.85	0.86	9.74	-4.25	0.38
3DH5	2441.0	-14.78	0.86	9.74	-4.18	0.38
3DH5	2480.0	-14.85	0.87	9.74	-4.24	0.38

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

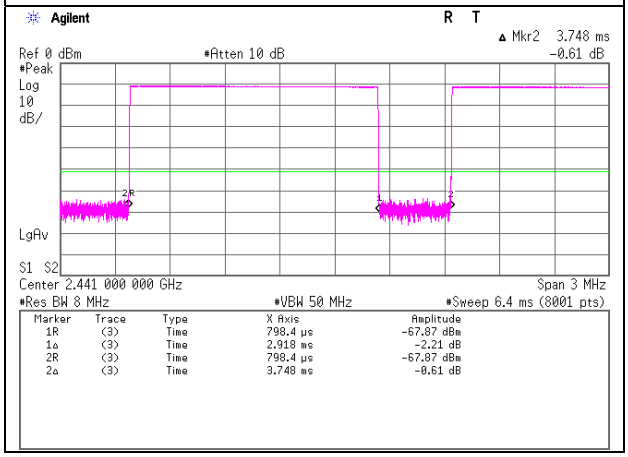
*The equipment and cables were not used for factor 0 dB of the data sheets.

Burst Rate Confirmation

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off

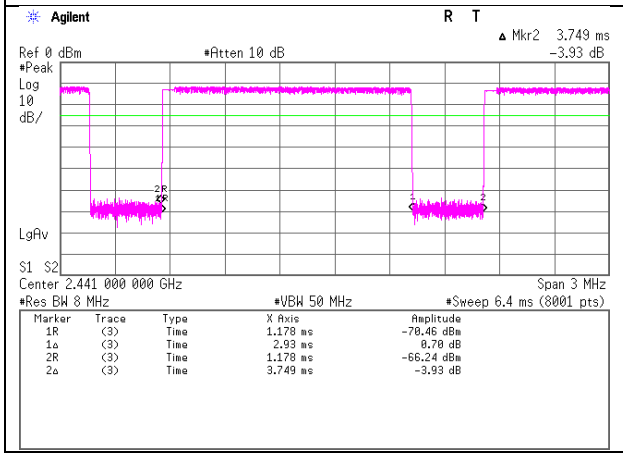
DH5

Tx on / (Tx on + Tx off) =	**0.779**
Tx on / (Tx on + Tx off) * 100 =	**77.9 %**
Duty factor = 10 * log (3.748 / 2.918) =	**1.09 dB**



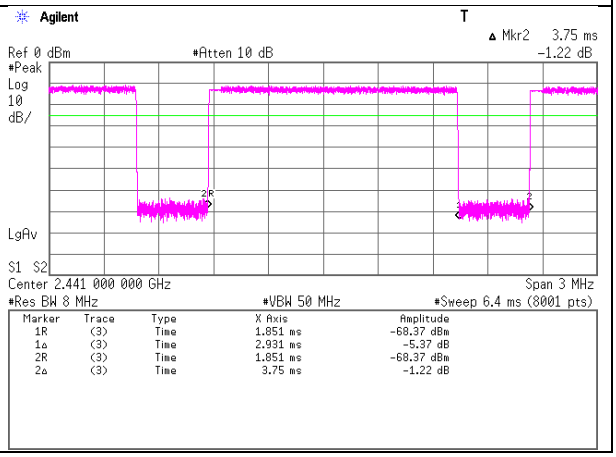
2DH5

Tx on / (Tx on + Tx off) =	**0.782**
Tx on / (Tx on + Tx off) * 100 =	**78.2 %**
Duty factor = 10 * log (3.749 / 2.93) =	**1.07 dB**



3DH5

Tx on / (Tx on + Tx off) =	**0.782**
Tx on / (Tx on + Tx off) * 100 =	**78.2 %**
Duty factor = 10 * log (3.75 / 2.931) =	**1.07 dB**



Radiated Spurious Emission

Test place	Ise EMC Lab. No.1 Semi Anechoic Chamber	
Report No.	10833040H	
Date	June 15, 2015	June 16, 2015
Temperature / Humidity	20 deg. C / 57 % RH	19 deg. C / 61 % RH
Engineer	Takumi Shimada (Above 1GHz)	Takumi Shimada (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	49.168	QP	32.3	10.9	7.7	38.8	12.1	40.0	27.9	
Hori	98.331	QP	30.1	9.7	8.4	38.8	9.4	43.5	34.1	
Hori	250.000	QP	28.5	17.1	10.0	38.9	16.7	46.0	29.3	
Hori	400.000	QP	28.2	17.5	11.2	38.6	18.3	46.0	27.7	
Hori	500.000	QP	28.2	18.0	12.0	38.2	20.0	46.0	26.0	
Hori	600.000	QP	27.7	19.5	12.5	38.1	21.6	46.0	24.4	
Hori	2390.000	PK	46.3	26.8	3.3	36.1	40.3	73.9	33.6	
Hori	2558.170	PK	59.1	27.1	3.4	36.1	53.5	73.9	20.5	
Hori	4804.000	PK	55.5	31.8	5.4	35.6	57.1	73.9	16.8	
Hori	7206.000	PK	44.7	36.1	6.6	35.6	51.8	73.9	22.1	
Hori	9608.000	PK	45.6	38.6	7.1	36.3	55.0	73.9	18.9	
Hori	2390.000	AV	32.5	26.8	3.3	36.1	26.5	53.9	27.4	
Hori	2558.170	AV	54.7	27.1	3.4	36.1	49.1	53.9	4.8	
Hori	4804.000	AV	49.5	31.8	5.4	35.6	51.1	53.9	2.8	
Hori	7206.000	AV	31.2	36.1	6.6	35.6	38.3	53.9	15.6	
Hori	9608.000	AV	31.8	38.6	7.1	36.3	41.2	53.9	12.7	
Vert	49.168	QP	35.9	10.9	7.7	38.8	15.7	40.0	24.3	
Vert	98.331	QP	38.6	9.7	8.4	38.8	17.9	43.5	25.6	
Vert	250.000	QP	28.5	17.1	10.0	38.9	16.7	46.0	29.3	
Vert	400.000	QP	28.1	17.5	11.2	38.6	18.2	46.0	27.8	
Vert	500.000	QP	28.0	18.0	12.0	38.2	19.8	46.0	26.2	
Vert	600.000	QP	27.7	19.5	12.5	38.1	21.6	46.0	24.4	
Vert	2390.000	PK	45.6	26.8	3.3	36.1	39.6	73.9	34.3	
Vert	2558.144	PK	57.8	27.1	3.4	36.1	52.2	73.9	21.7	
Vert	4804.000	PK	55.3	31.8	5.4	35.6	56.9	73.9	17.0	
Vert	7206.000	PK	45.0	36.1	6.6	35.6	52.1	73.9	21.8	
Vert	9608.000	PK	45.9	38.6	7.1	36.3	55.3	73.9	18.6	
Vert	2390.000	AV	32.4	26.8	3.3	36.1	26.4	53.9	27.5	
Vert	2558.144	AV	53.3	27.1	3.4	36.1	47.7	53.9	6.2	
Vert	4804.000	AV	49.7	31.8	5.4	35.6	51.3	53.9	2.6	
Vert	7206.000	AV	31.7	36.1	6.6	35.6	38.8	53.9	15.1	
Vert	9608.000	AV	31.3	38.6	7.1	36.3	40.7	53.9	13.2	

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

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	97.3	26.8	3.3	36.1	91.3	-	-	Carrier
Hori	2400.000	PK	47.0	26.8	3.3	36.1	41.0	71.3	30.3	
Vert	2402.000	PK	96.6	26.8	3.3	36.1	90.6	-	-	Carrier
Vert	2400.000	PK	42.0	26.8	3.3	36.1	36.0	70.6	34.6	

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

Radiated Spurious Emission

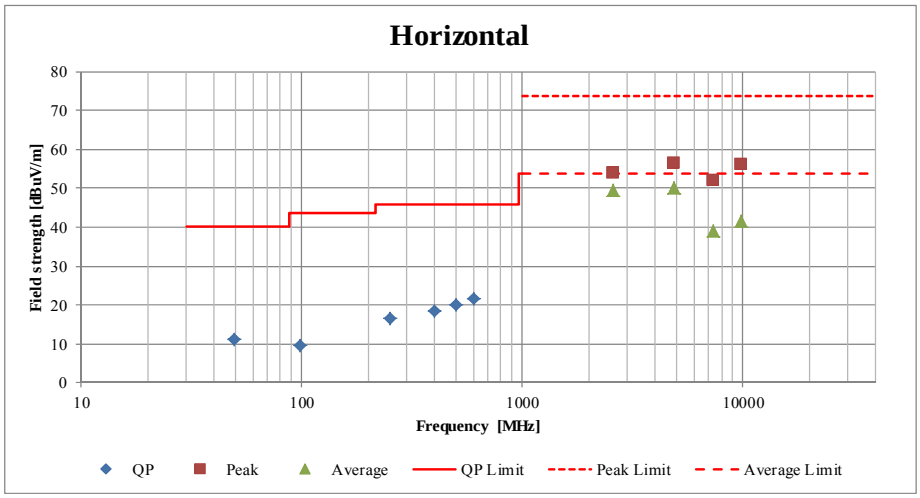
Test place	Ise EMC Lab. No.1 Semi Anechoic Chamber	
Report No.	10833040H	
Date	June 15, 2015	June 16, 2015
Temperature / Humidity	20 deg. C / 57 % RH	19 deg. C / 61 % RH
Engineer	Takumi Shimada	Takumi Shimada
	(Above 1GHz)	(Below 1GHz)
Mode	Tx Hopping Off DH5 2441 MHz	

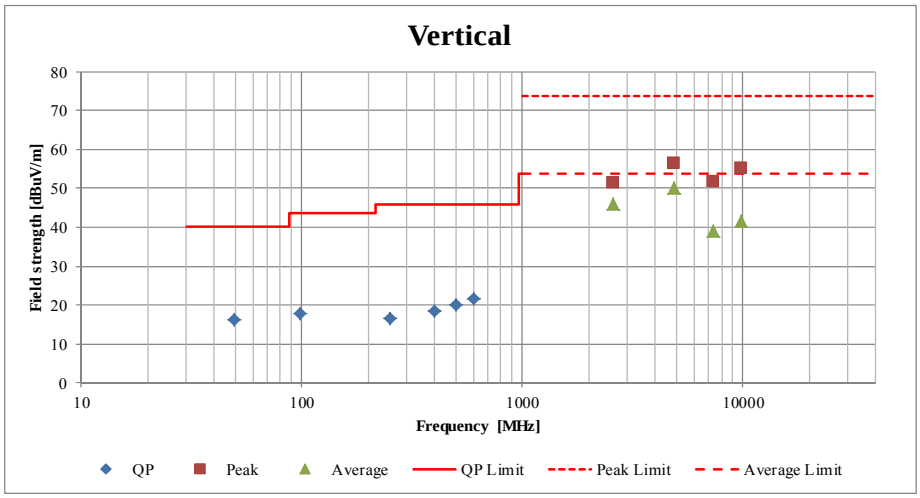
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	49.163	QP	31.3	10.9	7.7	38.8	11.1	40.0	28.9	
Hori	98.331	QP	30.2	9.7	8.4	38.8	9.5	43.5	34.0	
Hori	250.000	QP	28.4	17.1	10.0	38.9	16.6	46.0	29.4	
Hori	400.000	QP	28.2	17.5	11.2	38.6	18.3	46.0	27.7	
Hori	500.000	QP	28.2	18.0	12.0	38.2	20.0	46.0	26.0	
Hori	600.000	QP	27.7	19.5	12.5	38.1	21.6	46.0	24.4	
Hori	2596.963	PK	59.3	27.2	3.5	36.1	53.9	73.9	20.0	
Hori	4882.000	PK	54.6	32.0	5.4	35.6	56.4	73.9	17.5	
Hori	7323.000	PK	44.9	36.1	6.6	35.6	52.0	73.9	21.9	
Hori	9764.000	PK	46.7	38.6	7.1	36.3	56.1	73.9	17.8	
Hori	2596.963	AV	55.0	27.2	3.5	36.1	49.6	53.9	4.3	
Hori	4882.000	AV	48.3	32.0	5.4	35.6	50.1	53.9	3.8	
Hori	7323.000	AV	32.1	36.1	6.6	35.6	39.2	53.9	14.7	
Hori	9764.000	AV	32.1	38.6	7.1	36.3	41.5	53.9	12.4	
Vert	49.163	QP	36.5	10.9	7.7	38.8	16.3	40.0	23.7	
Vert	98.331	QP	38.5	9.7	8.4	38.8	17.8	43.5	25.7	
Vert	250.000	QP	28.5	17.1	10.0	38.9	16.7	46.0	29.3	
Vert	400.000	QP	28.2	17.5	11.2	38.6	18.3	46.0	27.7	
Vert	500.000	QP	28.1	18.0	12.0	38.2	19.9	46.0	26.1	
Vert	600.000	QP	27.7	19.5	12.5	38.1	21.6	46.0	24.4	
Vert	2596.768	PK	56.8	27.2	3.5	36.1	51.4	73.9	22.5	
Vert	4882.000	PK	54.7	32.0	5.4	35.6	56.5	73.9	17.4	
Vert	7323.000	PK	44.5	36.1	6.6	35.6	51.6	73.9	22.3	
Vert	9764.000	PK	45.9	38.6	7.1	36.3	55.3	73.9	18.6	
Vert	2596.768	AV	51.5	27.2	3.5	36.1	46.1	53.9	7.8	
Vert	4882.000	AV	48.3	32.0	5.4	35.6	50.1	53.9	3.8	
Vert	7323.000	AV	32.1	36.1	6.6	35.6	39.2	53.9	14.7	
Vert	9764.000	AV	32.2	38.6	7.1	36.3	41.6	53.9	12.3	

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

Radiated Spurious Emission
(Plot data, Worst case)

Test place	Ise EMC Lab. No.1 Semi Anechoic Chamber	
Report No.	10833040H	
Date	June 15, 2015	June 16, 2015
Temperature / Humidity	20 deg. C / 57 % RH	19 deg. C / 61 % RH
Engineer	Takumi Shimada (Above 1GHz)	Takumi Shimada (Below 1GHz)
Mode	Tx DH5 2441 MHz	





*These plots data contains sufficient number to show the trend of characteristic features for EUT.
ANSI C63.10:2013 Clause 6.3.4 states “For radiated emission test data reporting, both plots and tabular data shall be included”.

Radiated Spurious Emission

Test place	Ise EMC Lab. No.1 Semi Anechoic Chamber	
Report No.	10833040H	
Date	June 15, 2015	June 16, 2015
Temperature / Humidity	20 deg. C / 57 % RH	19 deg. C / 61 % RH
Engineer	Takumi Shimada	Takumi Shimada
	(Above 1GHz)	(Below 1GHz)
Mode	Tx Hopping Off DH5 2480 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	49.165	QP	32.1	10.9	7.7	38.8	11.9	40.0	28.1	
Hori	98.332	QP	30.3	9.7	8.4	38.8	9.6	43.5	33.9	
Hori	250.000	QP	28.4	17.1	10.0	38.9	16.6	46.0	29.4	
Hori	400.000	QP	28.2	17.5	11.2	38.6	18.3	46.0	27.7	
Hori	500.000	QP	28.2	18.0	12.0	38.2	20.0	46.0	26.0	
Hori	600.000	QP	27.8	19.5	12.5	38.1	21.7	46.0	24.3	
Hori	2483.500	PK	46.4	26.9	3.3	36.1	40.5	73.9	33.4	
Hori	2636.145	PK	59.3	27.3	3.5	36.2	53.9	73.9	20.0	
Hori	4960.000	PK	51.3	32.1	5.3	35.6	53.1	73.9	20.8	
Hori	7440.000	PK	44.6	36.1	6.6	35.6	51.7	73.9	22.2	
Hori	9920.000	PK	45.9	38.6	7.1	36.4	55.2	73.9	18.7	
Hori	2483.500	AV	31.4	26.9	3.3	36.1	25.5	53.9	28.4	
Hori	2636.145	AV	54.8	27.3	3.5	36.2	49.4	53.9	4.5	
Hori	4960.000	AV	43.0	32.1	5.3	35.6	44.8	53.9	9.1	
Hori	7440.000	AV	31.3	36.1	6.6	35.6	38.4	53.9	15.5	
Hori	9920.000	AV	31.9	38.6	7.1	36.4	41.2	53.9	12.7	
Vert	49.165	QP	36.0	10.9	7.7	38.8	15.8	40.0	24.2	
Vert	98.332	QP	38.4	9.7	8.4	38.8	17.7	43.5	25.8	
Vert	250.000	QP	28.5	17.1	10.0	38.9	16.7	46.0	29.3	
Vert	400.000	QP	28.2	17.5	11.2	38.6	18.3	46.0	27.7	
Vert	500.000	QP	28.1	18.0	12.0	38.2	19.9	46.0	26.1	
Vert	600.000	QP	27.7	19.5	12.5	38.1	21.6	46.0	24.4	
Vert	2483.500	PK	46.8	26.9	3.3	36.1	40.9	73.9	33.0	
Vert	2636.145	PK	59.3	27.3	3.5	36.2	53.9	73.9	20.0	
Vert	4960.000	PK	51.7	32.1	5.3	35.6	53.5	73.9	20.4	
Vert	7440.000	PK	45.3	36.1	6.6	35.6	52.4	73.9	21.5	
Vert	9920.000	PK	45.6	38.6	7.1	36.4	54.9	73.9	19.0	
Vert	2483.500	AV	31.4	26.9	3.3	36.1	25.5	53.9	28.4	
Vert	2636.145	AV	53.8	27.3	3.5	36.2	48.4	53.9	5.5	
Vert	4960.000	AV	44.4	32.1	5.3	35.6	46.2	53.9	7.7	
Vert	7440.000	AV	31.4	36.1	6.6	35.6	38.5	53.9	15.4	
Vert	9920.000	AV	31.9	38.6	7.1	36.4	41.2	53.9	12.8	

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

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

Distance factor: 10 GHz - 26.5 GHz 20log (3.0 m / 1. 0 m) = 9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.1 Semi Anechoic Chamber	
Report No.	10833040H	
Date	June 15, 2015	June 16, 2015
Temperature / Humidity	20 deg. C / 57 % RH	19 deg. C / 61 % RH
Engineer	Takumi Shimada (Above 1GHz)	Takumi Shimada (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	49.163	QP	32.2	10.9	7.7	38.8	12.0	40.0	28.0	
Hori	98.331	QP	30.1	9.7	8.4	38.8	9.4	43.5	34.1	
Hori	250.000	QP	28.5	17.1	10.0	38.9	16.7	46.0	29.3	
Hori	400.000	QP	28.2	17.5	11.2	38.6	18.3	46.0	27.7	
Hori	500.000	QP	28.2	18.0	12.0	38.2	20.0	46.0	26.0	
Hori	600.000	QP	27.7	19.5	12.5	38.1	21.6	46.0	24.4	
Hori	2390.000	PK	45.3	26.8	3.3	36.1	39.3	73.9	34.6	
Hori	2558.017	PK	55.9	27.1	3.4	36.1	50.3	73.9	23.6	
Hori	4804.000	PK	49.9	31.8	5.4	35.6	51.5	73.9	22.4	
Hori	7206.000	PK	44.8	36.1	6.6	35.6	51.9	73.9	22.0	
Hori	9608.000	PK	45.5	38.6	7.1	36.3	54.9	73.9	19.0	
Hori	2390.000	AV	32.4	26.8	3.3	36.1	26.4	53.9	27.5	
Hori	2558.017	AV	48.3	27.1	3.4	36.1	42.7	53.9	11.2	
Hori	4804.000	AV	38.3	31.8	5.4	35.6	39.9	53.9	14.0	
Hori	7206.000	AV	31.4	36.1	6.6	35.6	38.5	53.9	15.4	
Hori	9608.000	AV	31.7	38.6	7.1	36.3	41.1	53.9	12.8	
Vert	49.163	QP	36.0	10.9	7.7	38.8	15.8	40.0	24.2	
Vert	98.331	QP	38.5	9.7	8.4	38.8	17.8	43.5	25.7	
Vert	250.000	QP	28.5	17.1	10.0	38.9	16.7	46.0	29.3	
Vert	400.000	QP	28.1	17.5	11.2	38.6	18.2	46.0	27.8	
Vert	500.000	QP	28.1	18.0	12.0	38.2	19.9	46.0	26.1	
Vert	600.000	QP	27.7	19.5	12.5	38.1	21.6	46.0	24.4	
Vert	2390.000	PK	45.4	26.8	3.3	36.1	39.4	73.9	34.5	
Vert	2558.117	PK	55.3	27.1	3.4	36.1	49.7	73.9	24.2	
Vert	4804.000	PK	50.4	31.8	5.4	35.6	52.0	73.9	21.9	
Vert	7206.000	PK	45.1	36.1	6.6	35.6	52.2	73.9	21.7	
Vert	9608.000	PK	45.7	38.6	7.1	36.3	55.1	73.9	18.8	
Vert	2390.000	AV	32.4	26.8	3.3	36.1	26.4	53.9	27.5	
Vert	2558.117	AV	48.4	27.1	3.4	36.1	42.8	53.9	11.1	
Vert	4804.000	AV	39.5	31.8	5.4	35.6	41.1	53.9	12.8	
Vert	7206.000	AV	31.6	36.1	6.6	35.6	38.7	53.9	15.2	
Vert	9608.000	AV	31.3	38.6	7.1	36.3	40.7	53.9	13.2	

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

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	94.3	26.8	3.3	36.1	88.3	-	-	Carrier
Hori	2400.000	PK	44.1	26.8	3.3	36.1	38.1	68.3	30.2	
Vert	2402.000	PK	93.9	26.8	3.3	36.1	87.9	-	-	Carrier
Vert	2400.000	PK	42.7	26.8	3.3	36.1	36.7	67.9	31.2	

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.1 Semi Anechoic Chamber	
Report No.	10833040H	
Date	June 15, 2015	June 16, 2015
Temperature / Humidity	20 deg. C / 57 % RH	19 deg. C / 61 % RH
Engineer	Takumi Shimada	Takumi Shimada
	(Above 1GHz)	(Below 1GHz)
Mode	Tx Hopping Off 3DH5 2441 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	49.164	QP	32.0	10.9	7.7	38.8	11.8	40.0	28.2	
Hori	98.332	QP	30.0	9.7	8.4	38.8	9.3	43.5	34.2	
Hori	250.000	QP	28.4	17.1	10.0	38.9	16.6	46.0	29.4	
Hori	400.000	QP	28.2	17.5	11.2	38.6	18.3	46.0	27.7	
Hori	500.000	QP	28.2	18.0	12.0	38.2	20.0	46.0	26.0	
Hori	600.000	QP	27.7	19.5	12.5	38.1	21.6	46.0	24.4	
Hori	2596.963	PK	58.2	27.2	3.5	36.1	52.8	73.9	21.1	
Hori	4882.000	PK	48.9	32.0	5.4	35.6	50.7	73.9	23.2	
Hori	7323.000	PK	45.0	36.1	6.6	35.6	52.1	73.9	21.8	
Hori	9764.000	PK	46.4	38.6	7.1	36.3	55.8	73.9	18.1	
Hori	2596.963	AV	51.5	27.2	3.5	36.1	46.1	53.9	7.8	
Hori	4882.000	AV	37.6	32.0	5.4	35.6	39.4	53.9	14.6	
Hori	7323.000	AV	32.2	36.1	6.6	35.6	39.3	53.9	14.6	
Hori	9764.000	AV	32.3	38.6	7.1	36.3	41.7	53.9	12.2	
Vert	49.164	QP	35.8	10.9	7.7	38.8	15.6	40.0	24.4	
Vert	98.332	QP	37.9	9.7	8.4	38.8	17.2	43.5	26.3	
Vert	250.000	QP	28.5	17.1	10.0	38.9	16.7	46.0	29.3	
Vert	400.000	QP	28.1	17.5	11.2	38.6	18.2	46.0	27.8	
Vert	500.000	QP	28.2	18.0	12.0	38.2	20.0	46.0	26.0	
Vert	600.000	QP	27.7	19.5	12.5	38.1	21.6	46.0	24.4	
Vert	2596.768	PK	56.7	27.2	3.5	36.1	51.3	73.9	22.6	
Vert	4882.000	PK	50.6	32.0	5.4	35.6	52.4	73.9	21.5	
Vert	7323.000	PK	44.6	36.1	6.6	35.6	51.7	73.9	22.2	
Vert	9764.000	PK	45.7	38.6	7.1	36.3	55.1	73.9	18.8	
Vert	2596.768	AV	49.1	27.2	3.5	36.1	43.7	53.9	10.2	
Vert	4882.000	AV	39.0	32.0	5.4	35.6	40.8	53.9	13.1	
Vert	7323.000	AV	32.3	36.1	6.6	35.6	39.4	53.9	14.5	
Vert	9764.000	AV	32.1	38.6	7.1	36.3	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) = 9.5dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.1 Semi Anechoic Chamber	
Report No.	10833040H	
Date	June 15, 2015	June 16, 2015
Temperature / Humidity	20 deg. C / 57 % RH	19 deg. C / 61 % RH
Engineer	Takumi Shimada (Above 1GHz)	Takumi Shimada (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	49.161	QP	32.2	10.9	7.7	38.8	12.0	40.0	28.0	
Hori	98.333	QP	30.1	9.7	8.4	38.8	9.4	43.5	34.1	
Hori	250.000	QP	28.5	17.1	10.0	38.9	16.7	46.0	29.3	
Hori	400.000	QP	28.2	17.5	11.2	38.6	18.3	46.0	27.7	
Hori	500.000	QP	28.1	18.0	12.0	38.2	19.9	46.0	26.1	
Hori	600.000	QP	27.7	19.5	12.5	38.1	21.6	46.0	24.4	
Hori	2483.500	PK	46.3	27.6	3.3	32.3	44.9	73.9	29.0	
Hori	2636.040	PK	55.1	27.8	3.4	32.2	54.1	73.9	19.8	
Hori	4960.000	PK	47.9	32.1	5.3	35.6	49.7	73.9	24.2	
Hori	7440.000	PK	44.3	36.1	6.6	35.6	51.4	73.9	22.5	
Hori	9920.000	PK	45.7	38.6	7.1	36.4	55.0	73.9	18.9	
Hori	2483.500	AV	31.4	26.9	3.3	36.1	25.5	53.9	28.4	
Hori	2636.040	AV	48.4	27.8	3.4	32.2	47.4	53.9	6.5	
Hori	4960.000	AV	34.5	32.1	5.3	35.6	36.3	53.9	17.6	
Hori	7440.000	AV	31.3	36.1	6.6	35.6	38.4	53.9	15.5	
Hori	9920.000	AV	31.6	38.6	7.1	36.4	40.9	53.9	13.0	
Vert	49.161	QP	35.9	10.9	7.7	38.8	15.7	40.0	24.3	
Vert	98.333	QP	38.1	9.7	8.4	38.8	17.4	43.5	26.1	
Vert	250.000	QP	28.5	17.1	10.0	38.9	16.7	46.0	29.3	
Vert	400.000	QP	28.2	17.5	11.2	38.6	18.3	46.0	27.7	
Vert	500.000	QP	28.2	18.0	12.0	38.2	20.0	46.0	26.0	
Vert	600.000	QP	27.7	19.5	12.5	38.1	21.6	46.0	24.4	
Vert	2483.500	PK	45.6	26.9	3.3	36.1	39.7	73.9	34.2	
Vert	2636.040	PK	55.6	27.3	3.5	36.2	50.2	73.9	23.8	
Vert	4960.000	PK	47.9	32.1	5.3	35.6	49.7	73.9	24.2	
Vert	7440.000	PK	45.2	36.1	6.6	35.6	52.3	73.9	21.6	
Vert	9920.000	PK	45.7	38.6	7.1	36.4	55.0	73.9	18.9	
Vert	2483.500	AV	31.0	26.9	3.3	36.1	25.1	53.9	28.8	
Vert	2636.040	AV	48.6	27.3	3.5	36.2	43.2	53.9	10.7	
Vert	4960.000	AV	36.4	32.1	5.3	35.6	38.2	53.9	15.7	
Vert	7440.000	AV	31.3	36.1	6.6	35.6	38.4	53.9	15.5	
Vert	9920.000	AV	31.5	38.6	7.1	36.4	40.8	53.9	13.1	

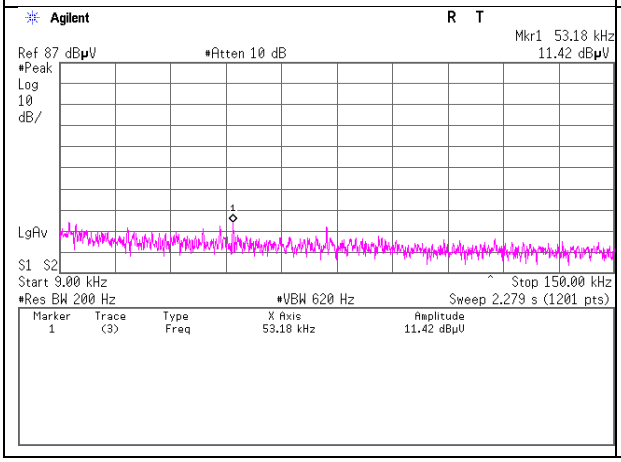
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).
Distance factor: 10 GHz - 26.5 GHz 20log (3.0 m / 1.0 m) = 9.5dB

Conducted Spurious Emission

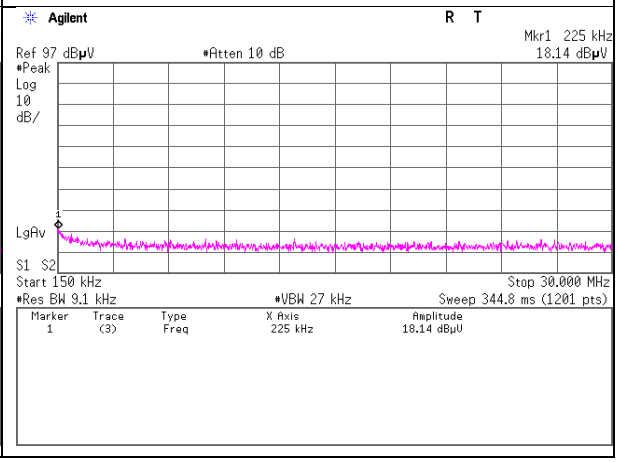
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off DH5

2402 MHz

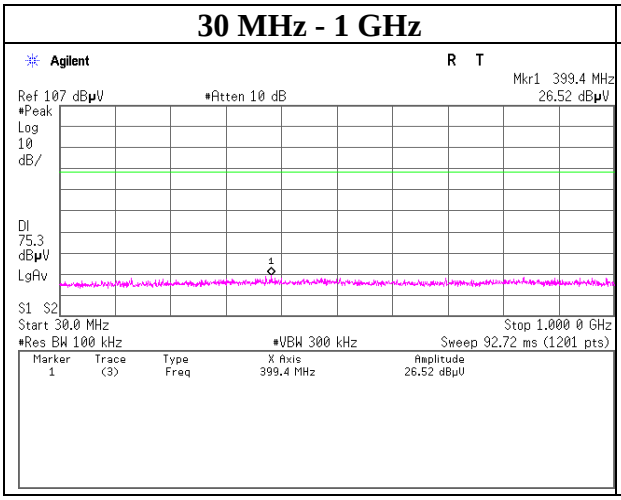
9 kHz - 150 kHz



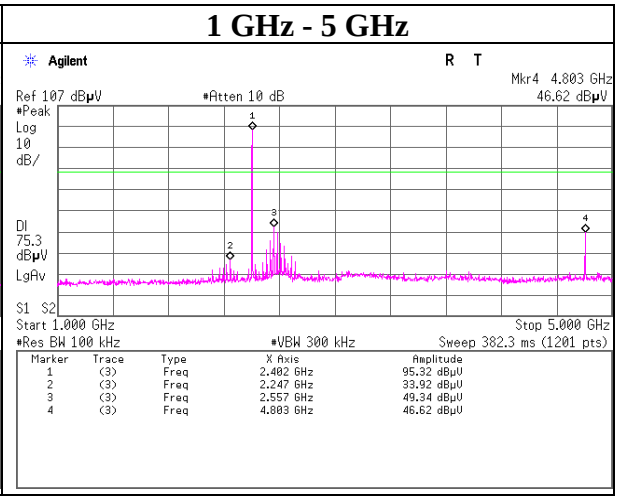
150 kHz - 30 MHz



30 MHz - 1 GHz



1 GHz - 5 GHz

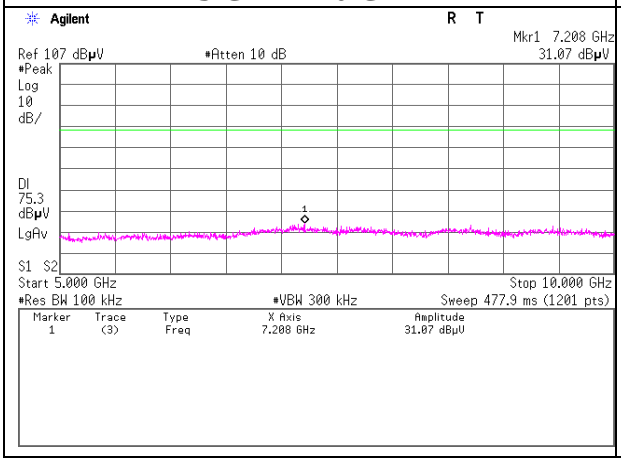


Conducted Spurious Emission

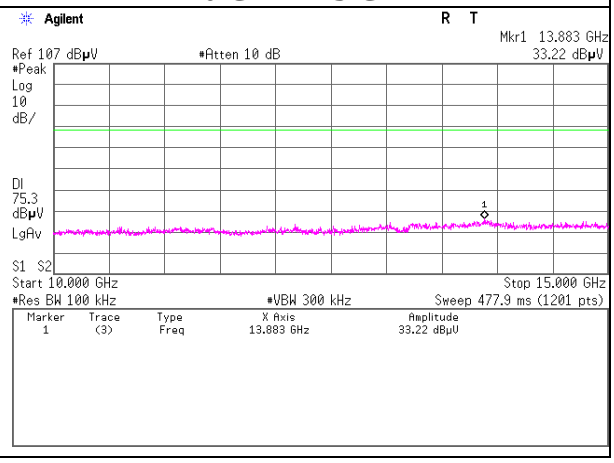
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off DH5

2402 MHz

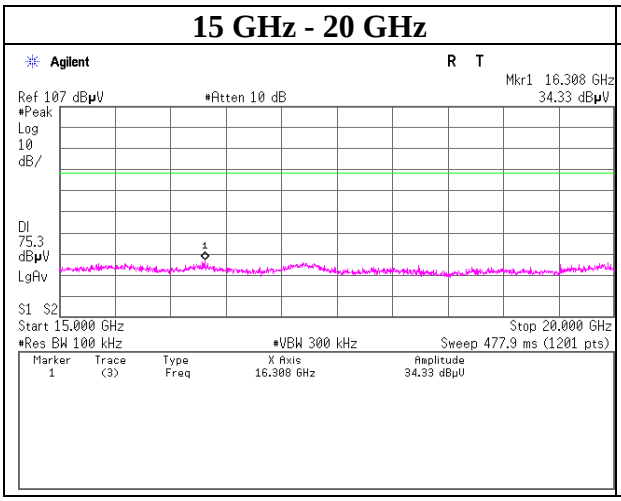
5 GHz – 10 GHz



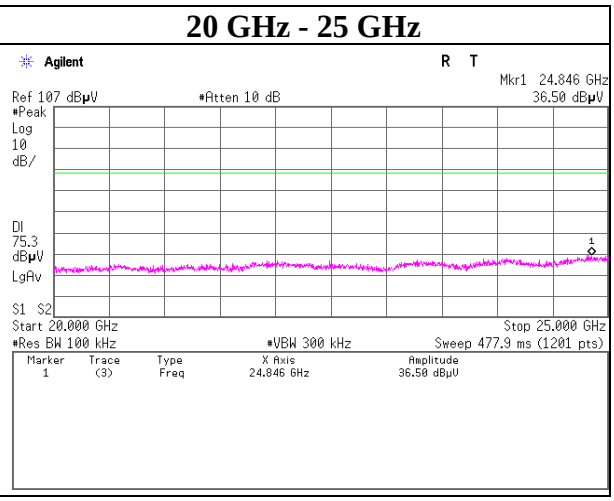
10 GHz - 15 GHz



15 GHz - 20 GHz



20 GHz - 25 GHz

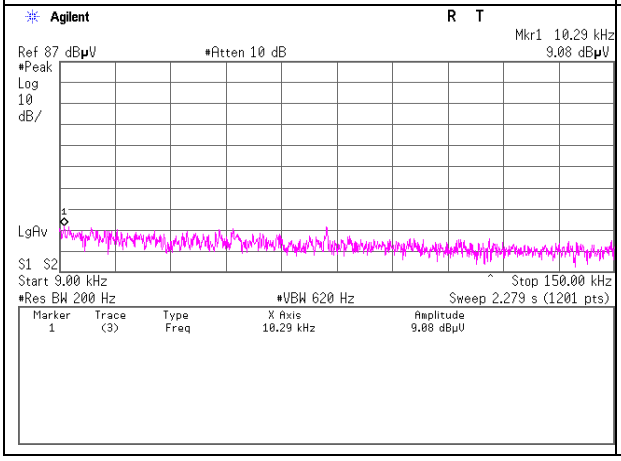


Conducted Spurious Emission

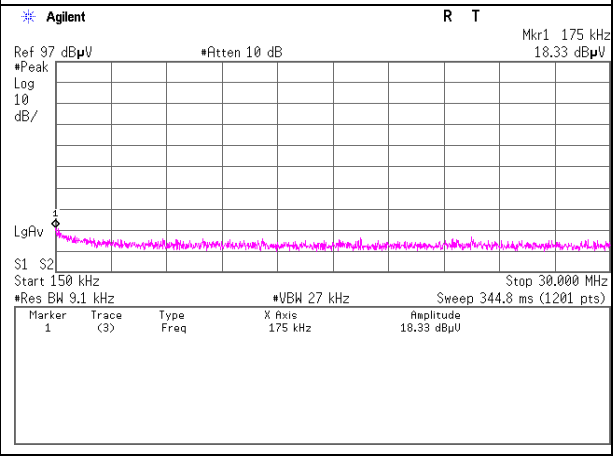
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off DH5

2441 MHz

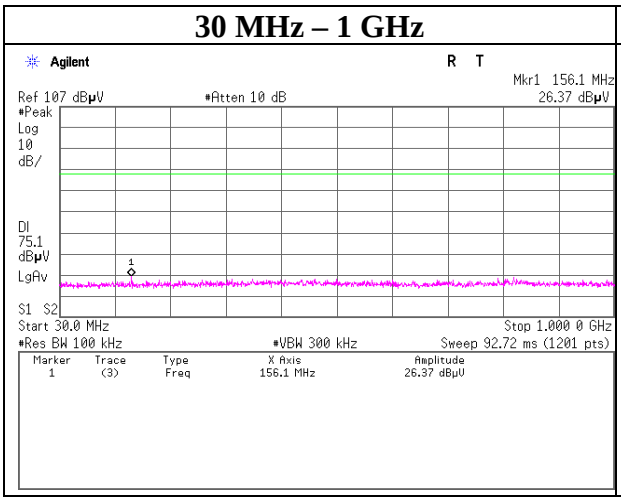
9 kHz – 150 kHz



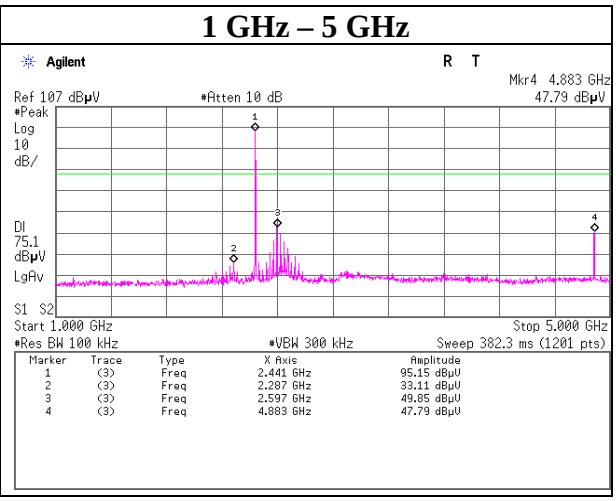
150 kHz – 30 MHz



30 MHz – 1 GHz



1 GHz – 5 GHz

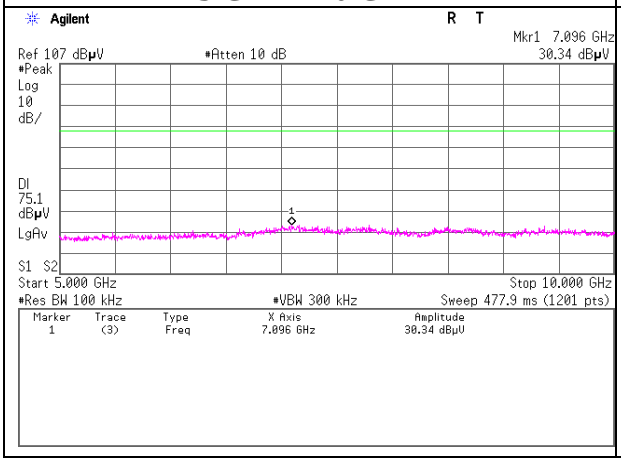


Conducted Spurious Emission

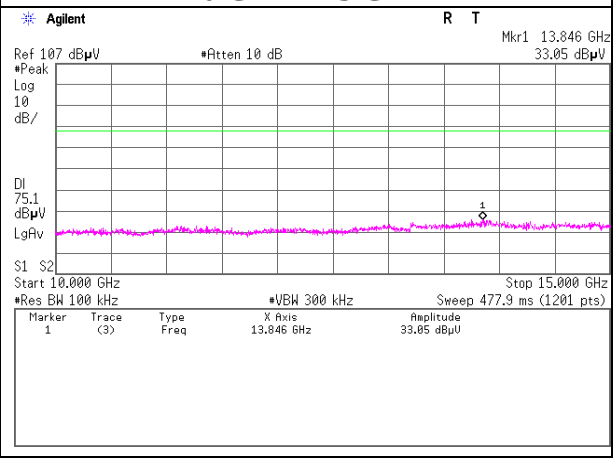
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off DH5

2441 MHz

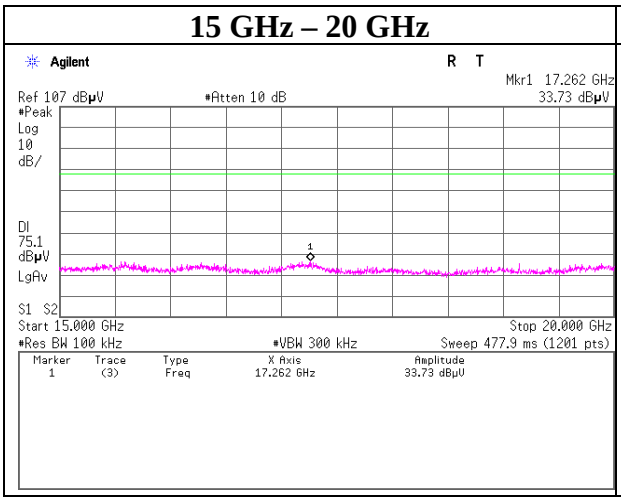
5 GHz – 10 GHz



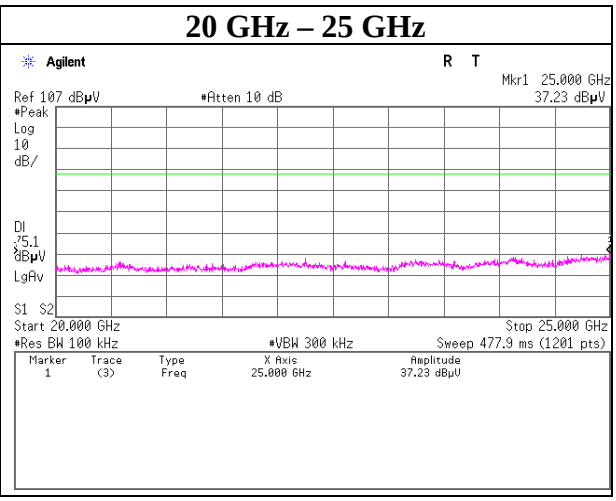
10 GHz – 15 GHz



15 GHz – 20 GHz



20 GHz – 25 GHz

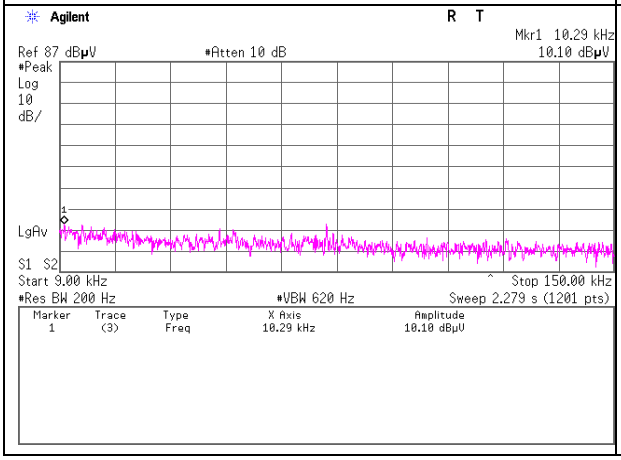


Conducted Spurious Emission

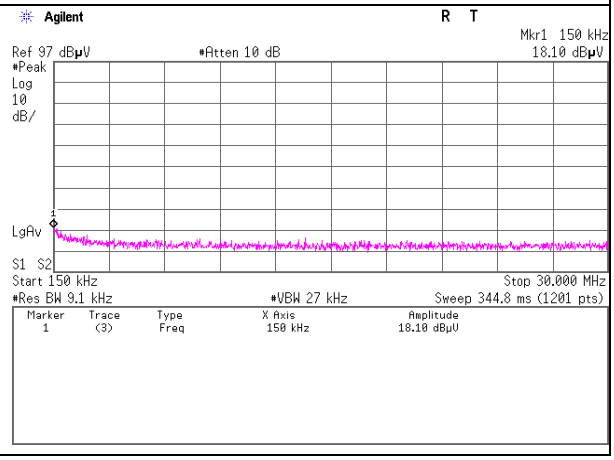
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off DH5

2480 MHz

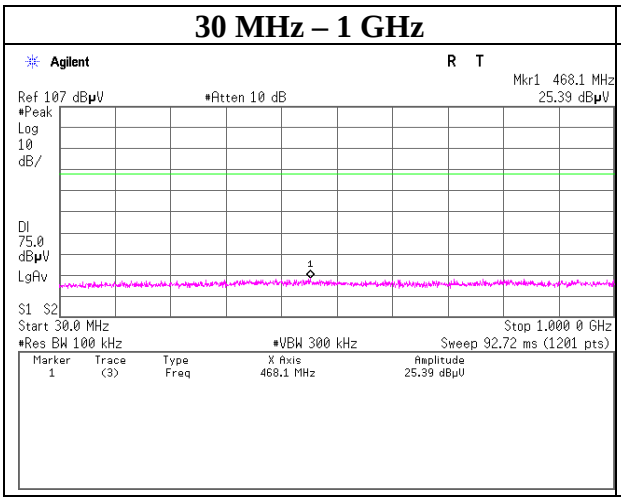
9 kHz – 150 kHz



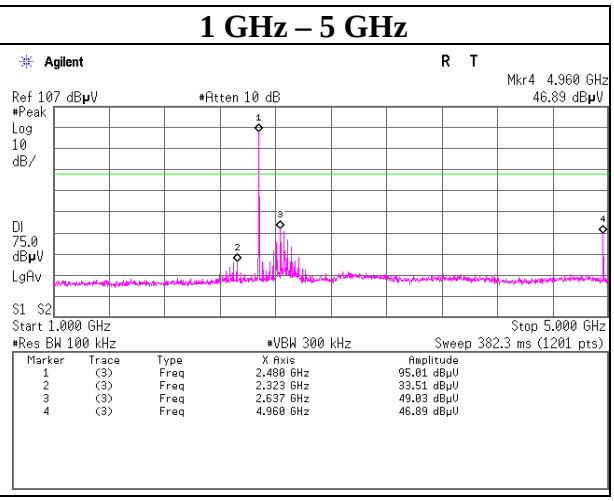
150 kHz – 30 MHz



30 MHz – 1 GHz



1 GHz – 5 GHz

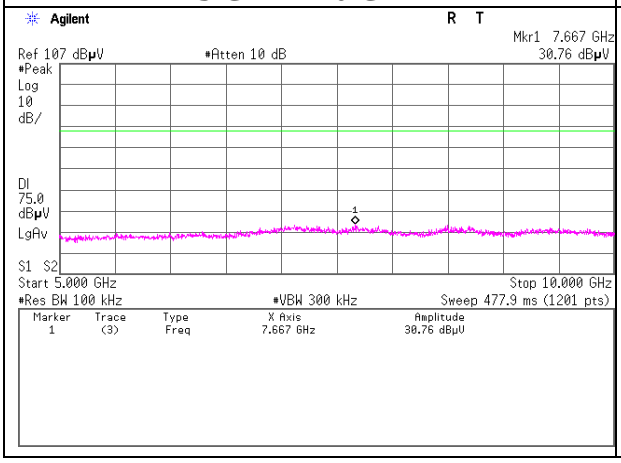


Conducted Spurious Emission

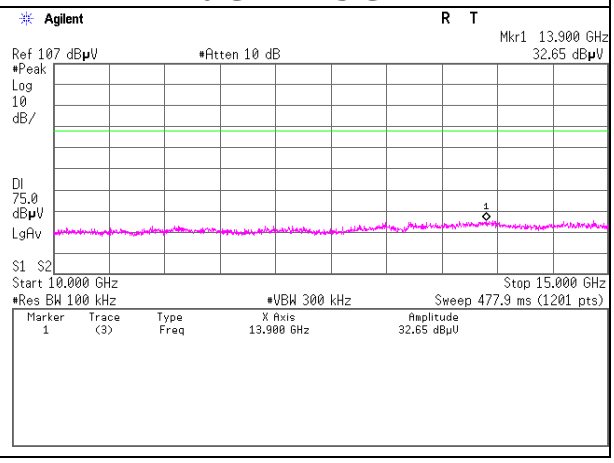
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off DH5

2480 MHz

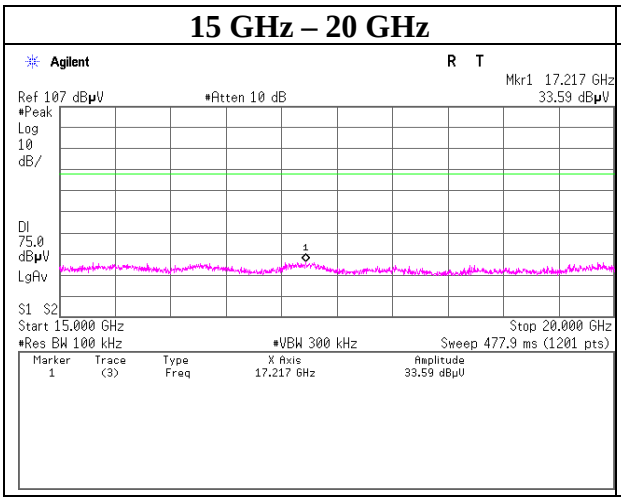
5 GHz – 10 GHz



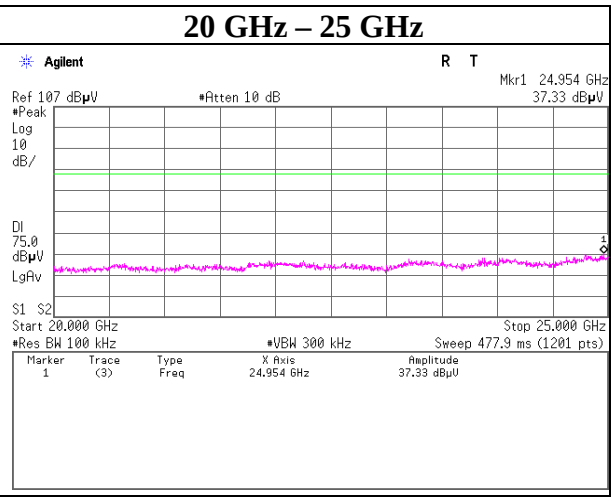
10 GHz – 15 GHz



15 GHz – 20 GHz



20 GHz – 25 GHz

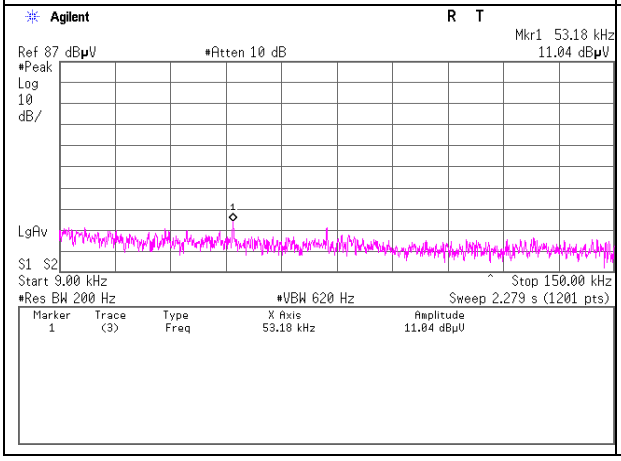


Conducted Spurious Emission

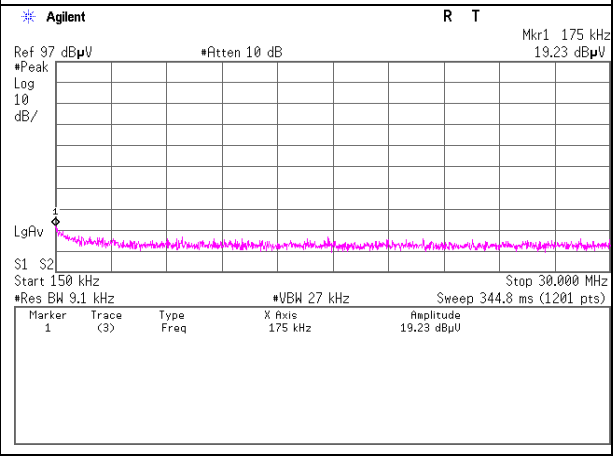
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off 3DH5

2402 MHz

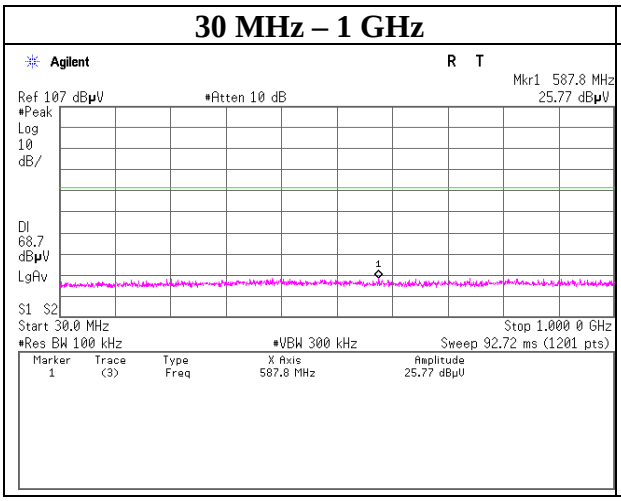
9 kHz – 150 kHz



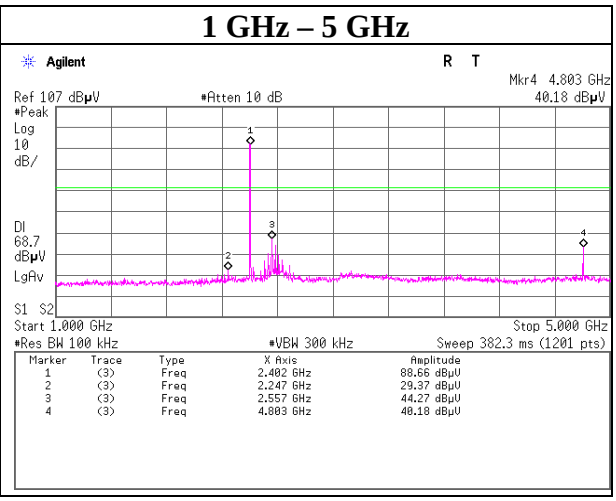
150 kHz – 30 MHz



30 MHz – 1 GHz



1 GHz – 5 GHz

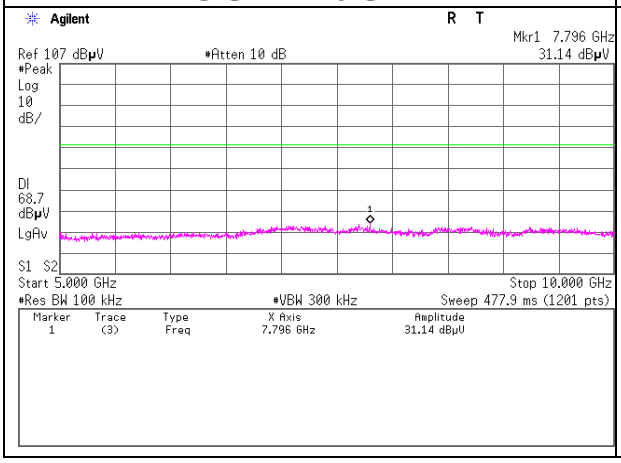


Conducted Spurious Emission

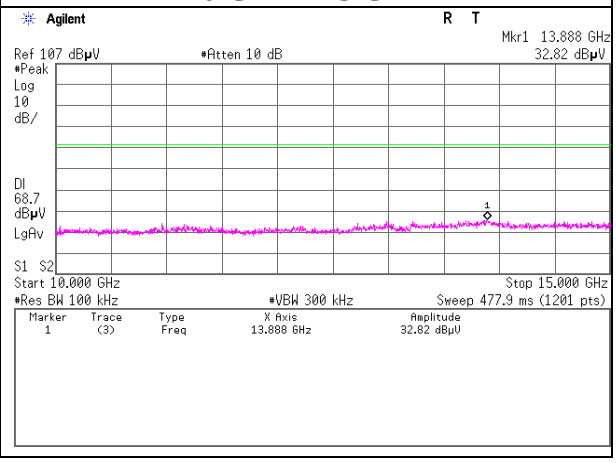
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off 3DH5

2402 MHz

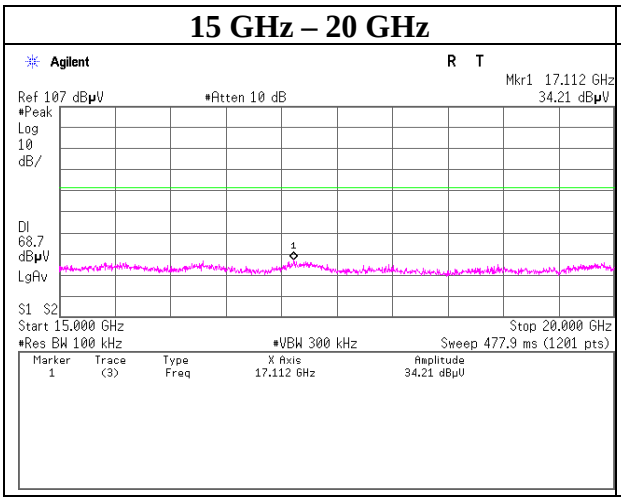
5 GHz – 10 GHz



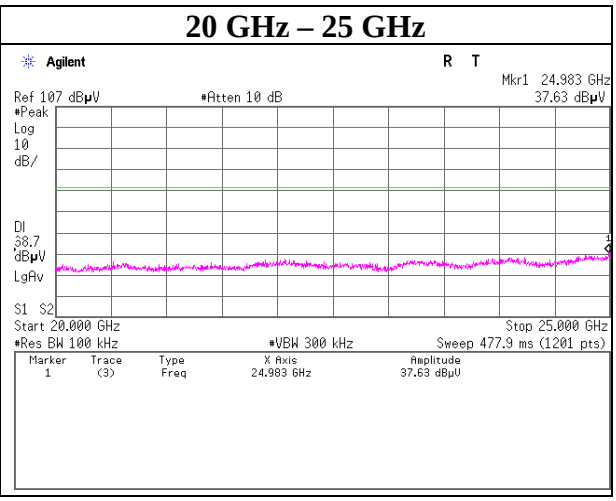
10 GHz – 15 GHz



15 GHz – 20 GHz



20 GHz – 25 GHz

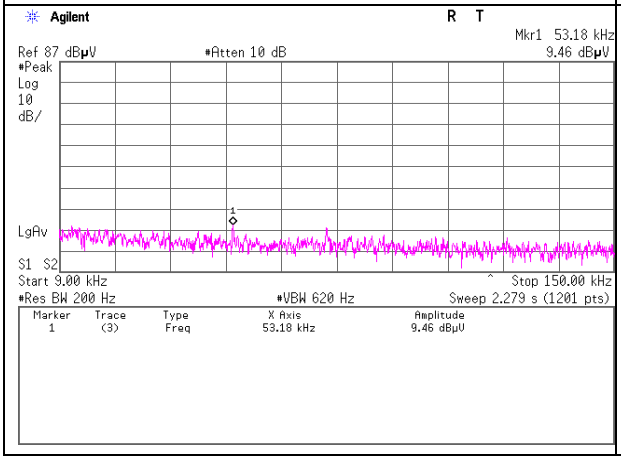


Conducted Spurious Emission

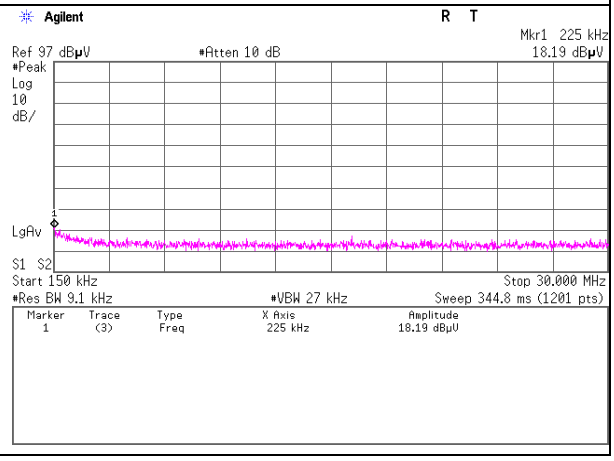
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off 3DH5

2441 MHz

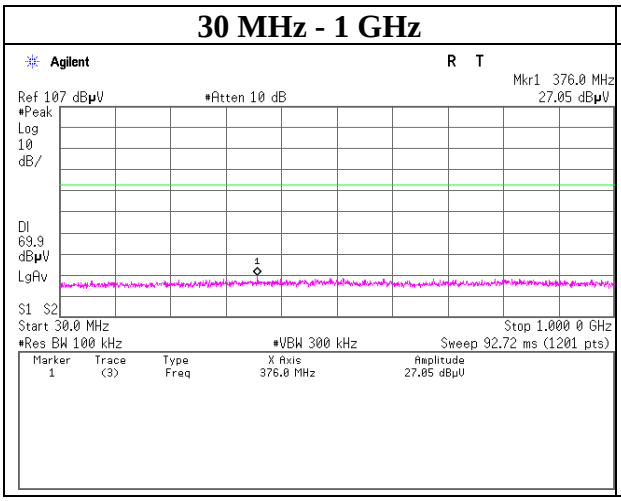
9 kHz - 150 kHz



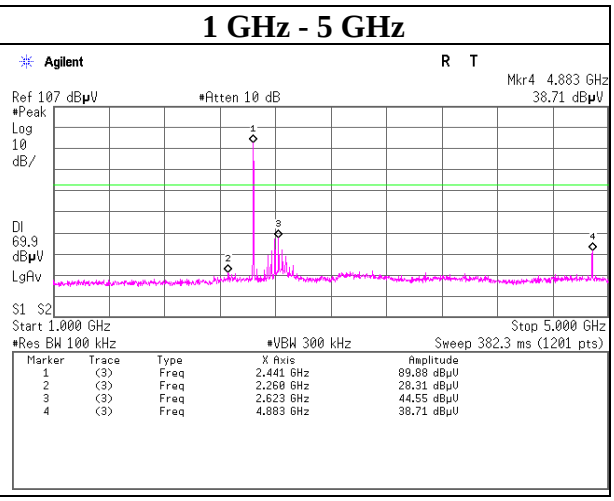
150 kHz - 30 MHz



30 MHz - 1 GHz



1 GHz - 5 GHz

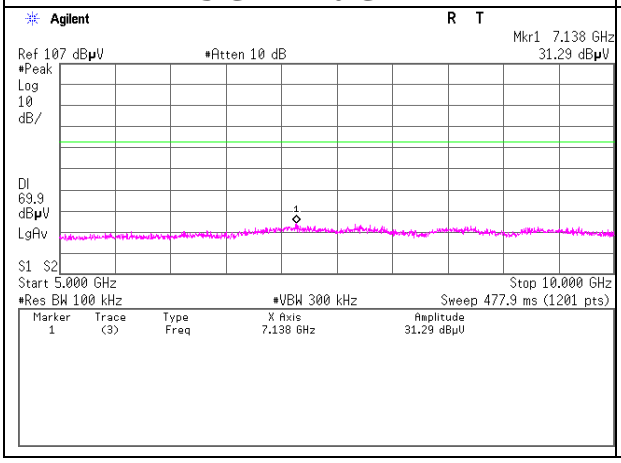


Conducted Spurious Emission

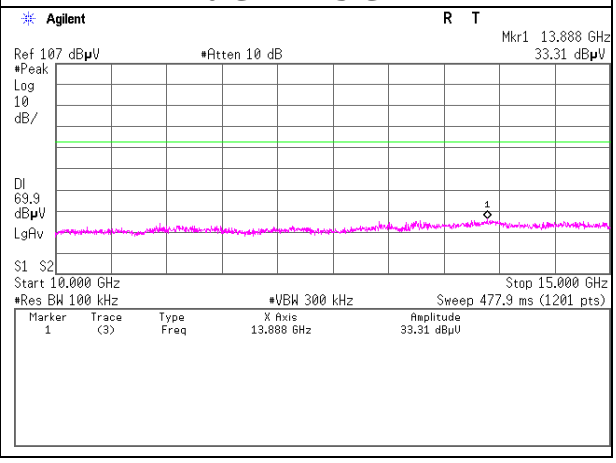
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off 3DH5

2441 MHz

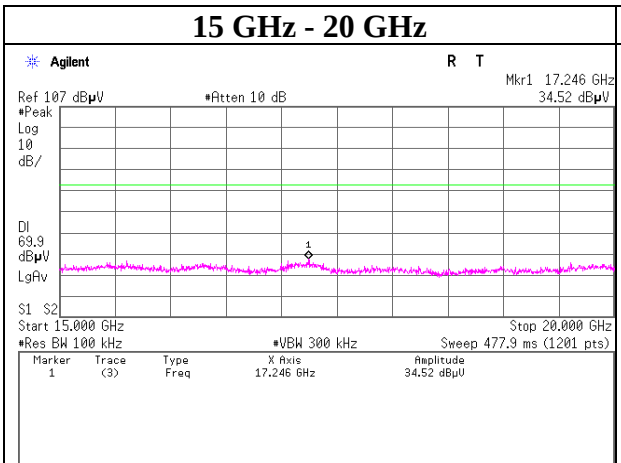
5 GHz - 10 GHz



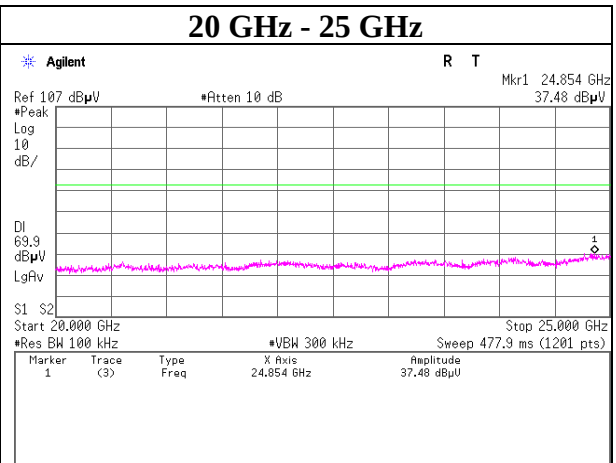
10 GHz - 15 GHz



15 GHz - 20 GHz



20 GHz - 25 GHz

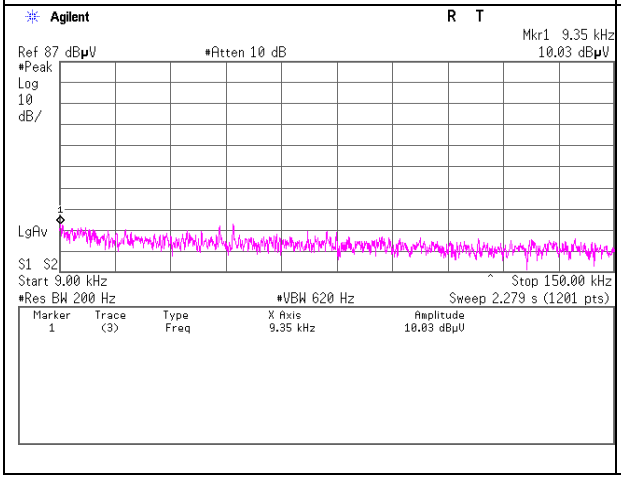


Conducted Spurious Emission

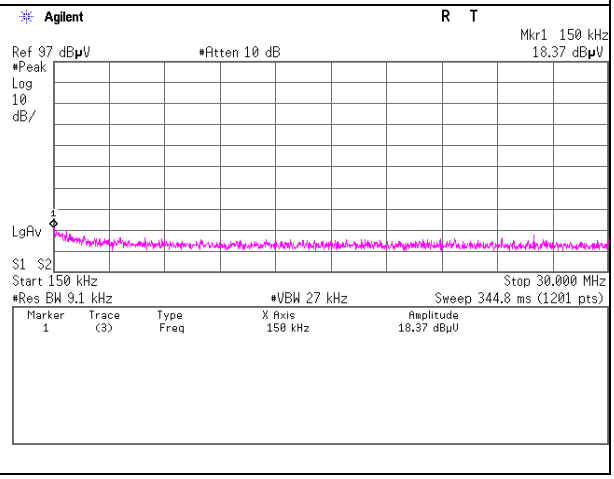
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off 3DH5

2480 MHz

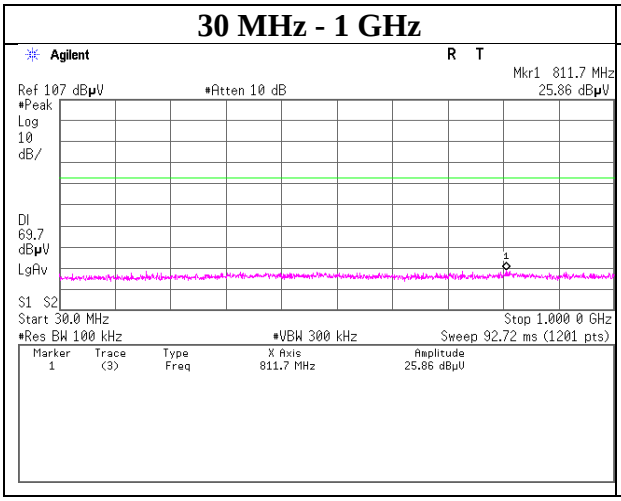
9 kHz - 150 kHz



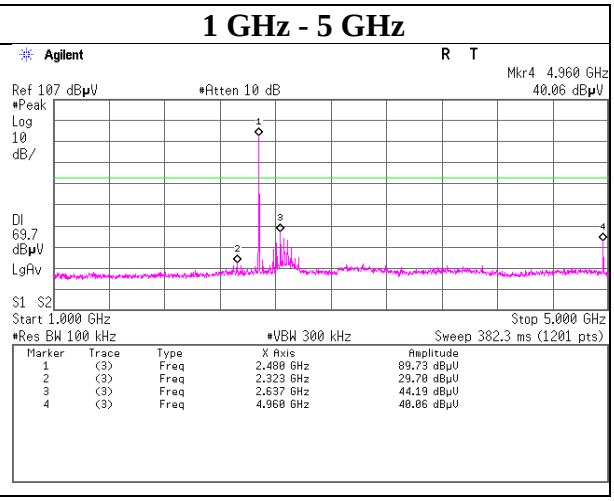
150 kHz - 30 MHz



30 MHz - 1 GHz



1 GHz - 5 GHz

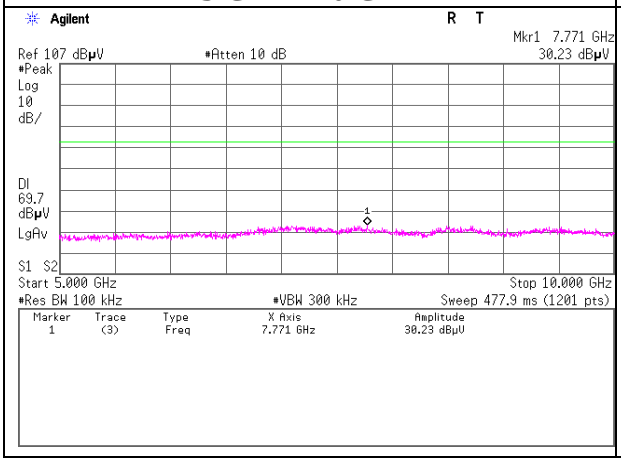


Conducted Spurious Emission

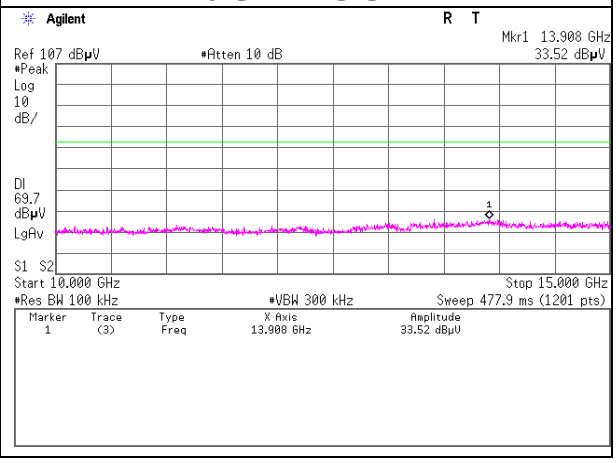
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off 3DH5

2480 MHz

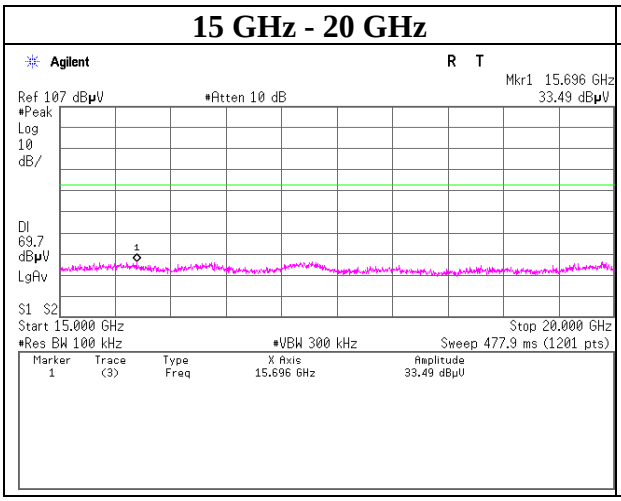
5 GHz - 10 GHz



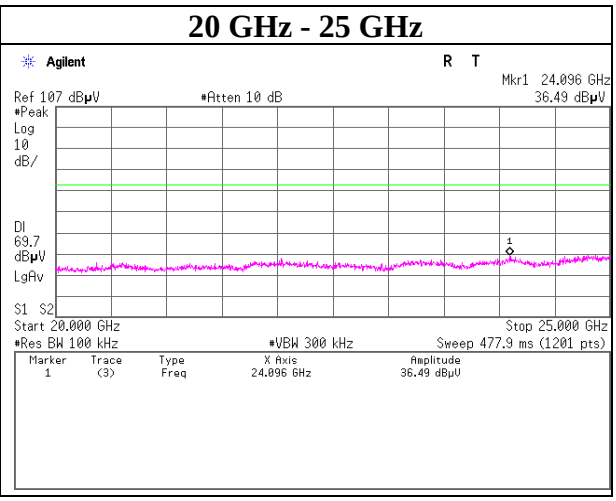
10 GHz - 15 GHz



15 GHz - 20 GHz



20 GHz - 25 GHz

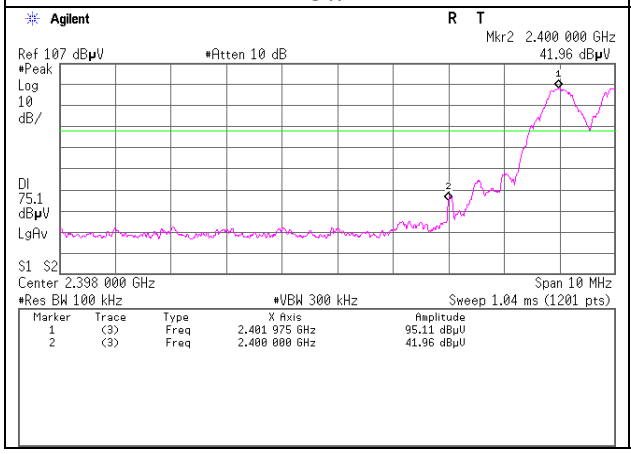


Conducted Emission Band Edge compliance

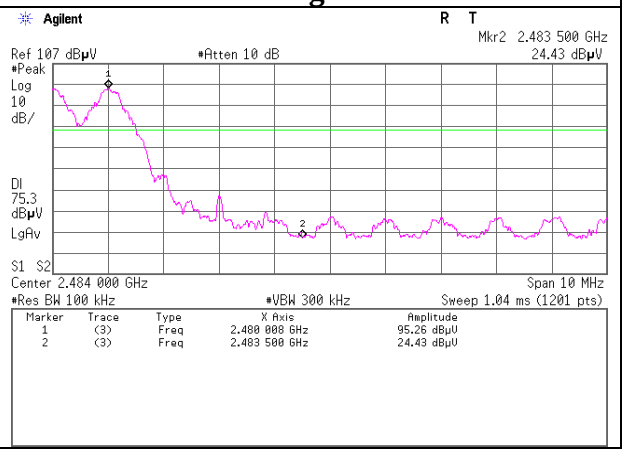
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off DH5

Hopping On

Low

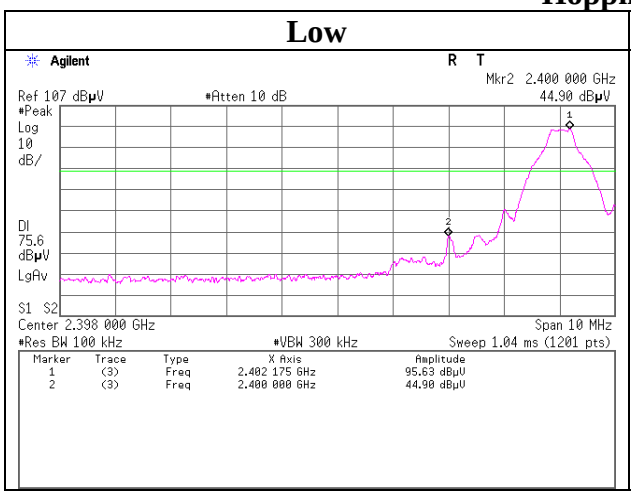


High

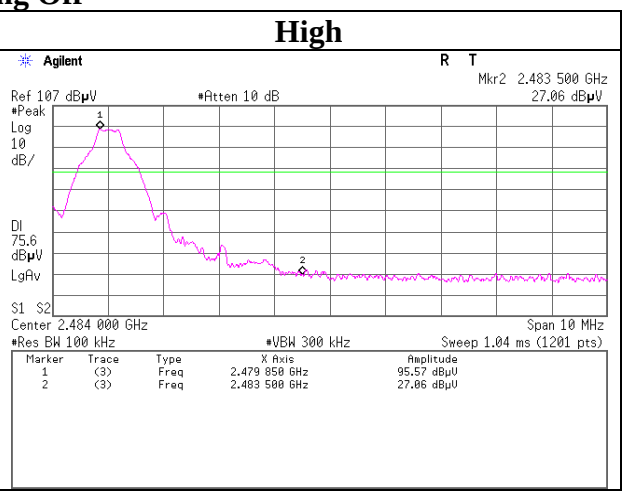


Hopping Off

Low



High

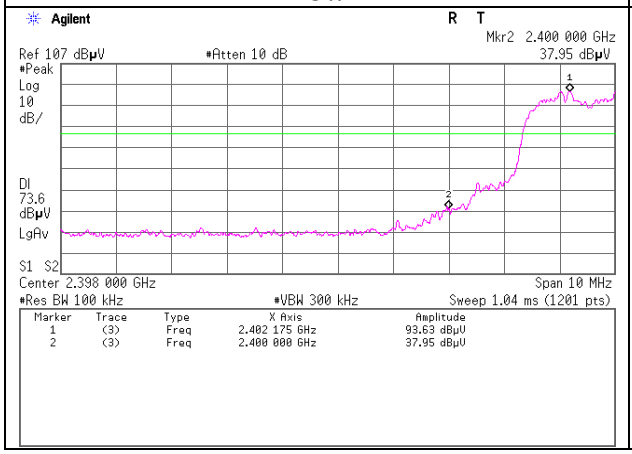


Conducted Emission Band Edge compliance

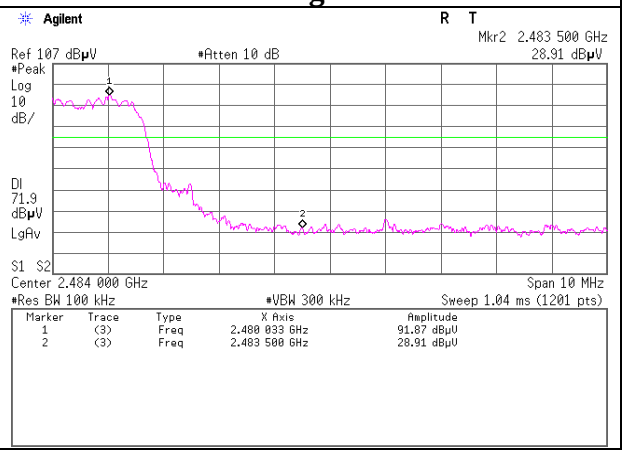
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off 3DH5

Hopping On

Low

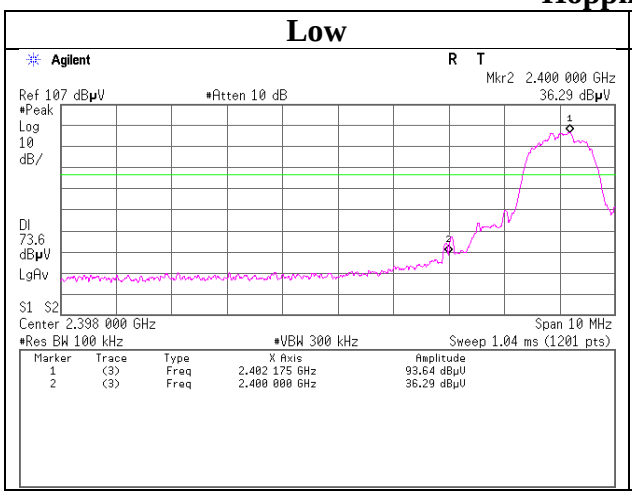


High

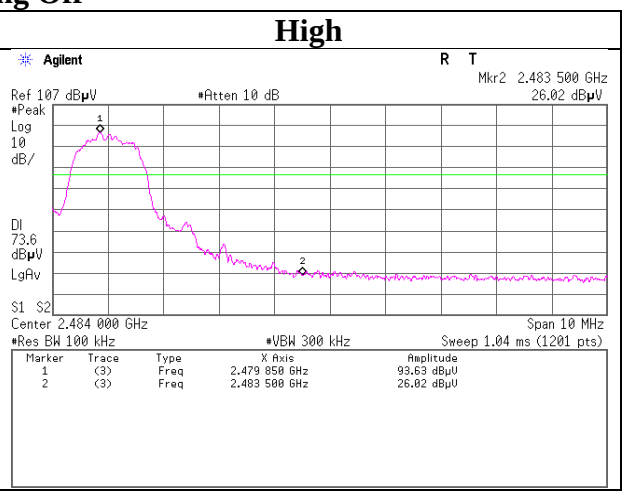


Hopping Off

Low



High

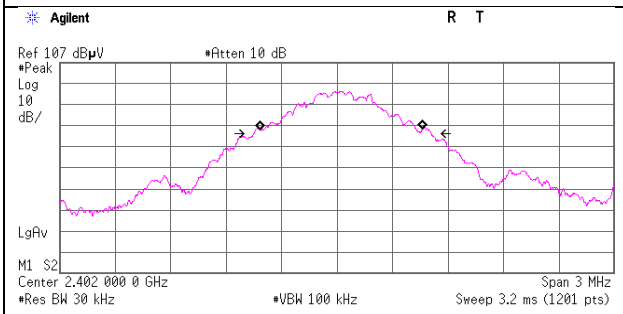


99%Occupied Bandwidth

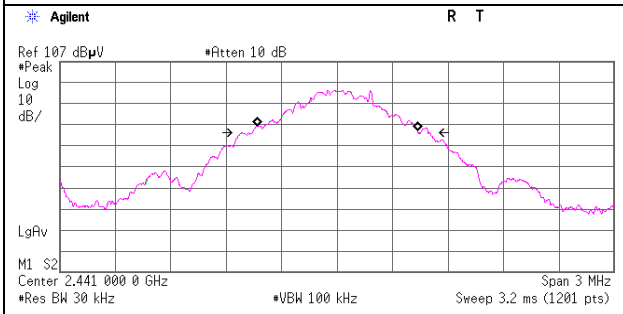
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping Off

Hopping Off, DH5

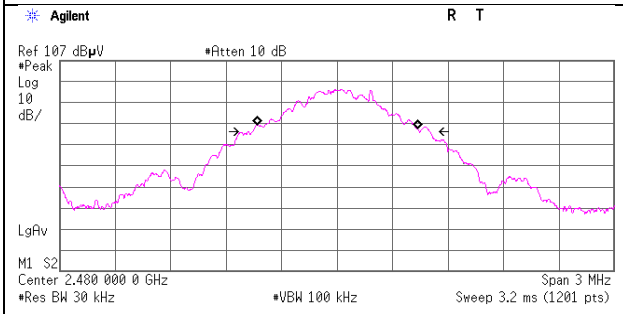
2402 MHz



2441 MHz

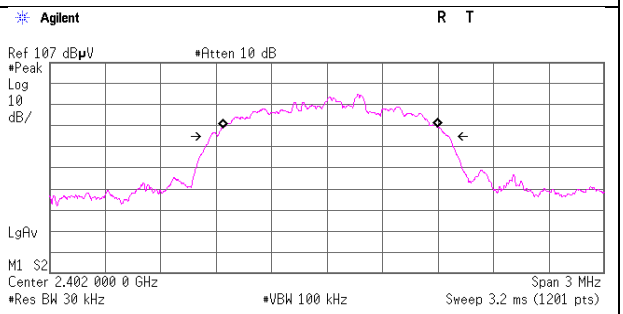


2480 MHz

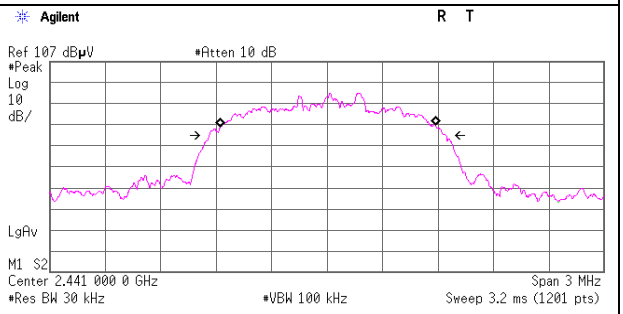


Hopping Off, 3DH5

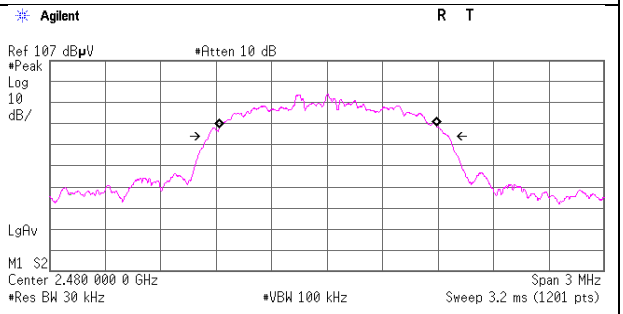
2402 MHz



2441 MHz



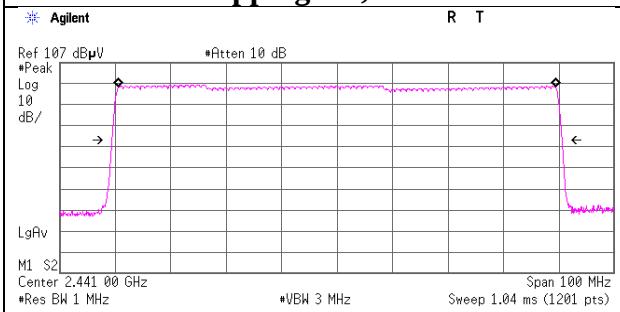
2480 MHz



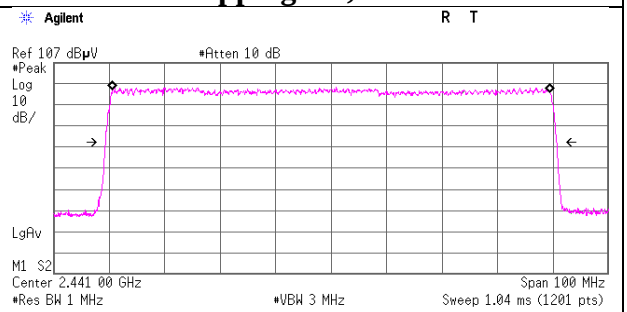
99% Occupied Bandwidth

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10833040H
Date	June 17, 2015
Temperature / Humidity	23 deg. C / 54 % RH
Engineer	Kazuya Yoshioka
Mode	Tx Hopping On

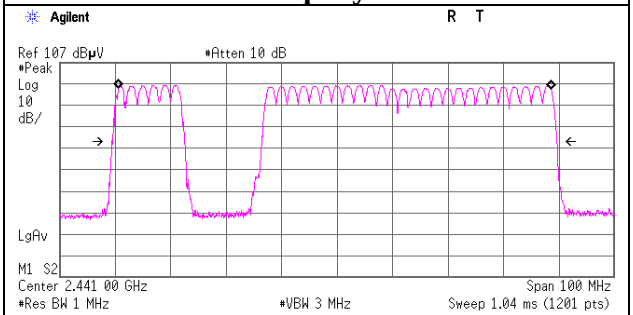
Hopping On, DH5



Hopping On, 3DH5



Inquiry



APPENDIX 2: Test instruments

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-01	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 10m	DA-06881	RE/CE	2014/09/01 * 12
MOS-27	Thermo-Hygrometer	CUSTOM	CTH-201	A08Q26	RE/CE	2015/01/13 * 12
MJM-21	Measure	KOMELON	KMC-36	-	RE/CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MHA-05	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	253	RE	2015/05/18 * 12
MHA-01	Horn Antenna 18-26.5GHz	EMCO	3160-09	1266	RE	2014/06/11 * 12
MPA-01	Pre Amplifier	Agilent	8449B	3008A01671	RE	2015/02/04 * 12
MCC-165	Microwave Cable	Junkosha	MWX221	1203S213(1m) / 1311S166(5m)	RE	2014/11/11 * 12
MTR-09	EMI Test Receiver	Rohde & Schwarz	ESU26	100412	RE/CE	2014/06/06 * 12
MHF-25	High Pass Filter 3.5-18.0GHz	UL Japan	HPF SELECTOR	001	RE	2014/09/22 * 12
KBA-05	Biconical Antenna	Schwarzbeck	BBA9106	2513	RE	2014/11/22 * 12
KLA-04	Logperiodic Antenna	Schwarzbeck	USLP9143	361	RE	2014/11/22 * 12
MAT-08	Attenuator(6dB)	Weinschel Corp	2	BK7971	RE	2014/11/20 * 12
MCC-02	Coaxial Cable	Suhner/storm/Agilent/TSJ	-	-	RE	2014/09/12 * 12
MPA-19	Pre Amplifier	MITEQ	MLA-10K01-B01-35	1237616	RE	2015/02/03 * 12
MLS-25	LISN(AMN)	Schwarzbeck	NSLK8127	8127-731	CE(EUT)	2014/07/09 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/TSJ	5D-2W(20m)/3D-2W(7.5m)/RG400u(1.5m)/RFM-E421(Switcher)	-/01068(Switcher)	CE	2014/09/12 * 12
MAT-64	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2015/01/29 * 12
MSA-08	Spectrum Analyzer	Rohde & Schwarz	FSL3	100446	AT	2014/10/17 * 12
MAT-88	Attenuator	Weinschel Associates	WA56-10	56100304	AT	2015/06/01 * 12
MCC-173	Microwave Cable	Junkosha	MWX221	1409S496	AT	2015/03/04 * 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
MOS-14	Thermo-Hygrometer	Custom	CTH-201	1401	AT	2015/01/13 * 12
MOTS-MATM	Antenna Terminal Measurement Software	UL Japan	-	-	AT	-

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