RADIO TEST REPORT

Test Report No. : 10636726H-B-R1

Applicant	:	**Panasonic Mobile Communications Development of Europe Ltd**
Type of Equipment	:	**Digital Camera**
Model No.	:	**DMC-CM1**
FCC ID	:	**UCE314062A**
Test regulation	:	**FCC Part 15 Subpart C: 2015 [Bluetooth part]**
Test Result	:	**Complied**

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3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
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6. This test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. This report is a revised version of 10636726H-B. 10636726H-B is replaced with this report.

Date of test: January 12 to February 2, 2015

Representative test engineer:
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Approved by:
Takayuki. S
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, http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap

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REVISION HISTORY

Original Test Report No.: 10636726H-B

Revision	Test report No.	Date	Page revised	Contents
- (Original)	10636726H-B	February 20, 2015	-	-
1	10636726H-B-R1	March 5, 2015	P.4	Correction of rating
1	10636726H-B-R1	March 5, 2015	P.7	Correction of FCC 15.31 (e) sentence
1	10636726H-B-R1	March 5, 2015	P.9	Correction of explanatory note for software
1	10636726H-B-R1	March 5, 2015	P.9	Addition of explanatory note for Bluetooth inquiry mode

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SECTION 1: Customer information

Company Name	:	Panasonic Mobile Communications Development of Europe Ltd
Address	:	Willoughby Road, Bracknell Berkshire RG12 8FP, UK
Telephone Number	:	+44 (0) 1344 706774
Facsimile Number	:	+44 (0) 1344 706796
Contact Person	:	Andrew James

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

2.1 Identification of E.U.T.

Type of Equipment	:	Digital Camera
Model No.	:	DMC-CM1
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	AC120V/60Hz (AC Adaptor) DC3.8V (Battery)
Receipt Date of Sample	:	January 7, 2015
Country of Mass-production	:	China
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No Modification by the test lab

2.2 Product Description

General Specification

Power Supply (radio part input)	:	Cellular PA: 3.0V-4.2V (Depend on Battery voltage) Cellular other RF part: 1.3V, 1.8V, 2.05V, 2.7V (Regulated voltage) WLAN 5GHz Front-end module: 3.0V-4.2V (Depend on Battery voltage) WLAN/BT other RF part: 1.3V, 1.8V, 3.0V (Regulated voltage)
Clock frequency(ies) in the system	:	2.26GHz (Max) See below table for other clock frequencies

Frequency	Device
32.768kHz	MSM8974AB
32.768kHz (X'tal)	BUYD2206
27.0MHz	TC358764AXBG, XO2-256-64UCBGA, BUYD2206
48.0MHz (X'tal)	WCN3680
24.0MHz	MSM8974AB, Sub Camera
19.2MHz	WTR1625L, MSM8974AB
19.2MHz (X'tal)	PM8941
9.6MHz	WCD9320
72MHz	Main Camera
27.12MHz	NFC IC

Hardware / Software version	:	Rev. PR / QRCT Version 3.0.32.0

Radio Specification

	IEEE802.11b	**IEEE802.11g/n (20 M band)**	**IEEE802.11a/n/ac (20 M band)**	**IEEE802.11n/ac (40 M band)**	**IEEE802.11ac (80 M band)**
Frequency of operation	2412-2462MHz	2412-2462MHz	5180-5240MHz 5260-5320MHz 5500-5700MHz 5745-5825MHz	5190-5230MHz 5270-5310MHz 5510-5670MHz 5755-5795MHz	5210MHz 5290MHz 5530-5610MHz 5775MHz
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)		OFDM (64QAM, 16QAM, QPSK, BPSK, 256QAM)
Channel spacing	5MHz		20MHz	40MHz	80MHz
Antenna type	Monopole				
Antenna Connector type	Spring type				
Antenna Gain	2.4GHz: -5.40dBi W52: -3.0dBi, W53: -3.5dBi, W56: -1.5dBi, W58: -1.8dBi				

	Bluetooth Ver.4.0 with EDR function	**GSM**	**W-CDMA**	**LTE**
Frequency of operation	2402-2480MHz	[Up Link] GSM850: 824 – 849MHz PCS: 1850 – 1910MHz [Down Link] GSM850: 869 – 894MHz PCS: 1930 – 1990MHz	[Up Link] Band II: 1850 – 1910MHz Band IV: 1710 – 1755MHz Band V: 824 – 849MHz [Down Link] Band II: 1930 – 1990MHz Band IV: 2110 – 2155MHz Band V: 869 – 894MHz	[Up Link] Band II: 1850 – 1910MHz Band IV: 1710 – 1755MHz Band V: 824 – 849MHz Band VII: 2500 – 2570MHz Band X VII: 704 – 716MHz [Down Link] Band II: 1930 – 1990MHz Band IV: 2110 – 2155MHz Band V: 869 – 894MHz Band VII: 2620 – 2690MHz Band X VII: 734 – 746MHz
Type of modulation	BT: FHSS (GFSK, π/4-DQPSK, 8-DPSK) LE: GFSK	GMSK , 8PSK	QPSK	QPSK, 16QAM
Channel spacing	BT: 1MHz LE: 2MHz	200kHz	200kHz	100kHz
Antenna type	Monopole	Monopole	Main: Monopole Sub: Monopole	
Antenna Connector type	Spring type	Spring type	Main: Spring type Sub: Spring type	
Antenna Gain	-5.40dBi	GSM850: -0.9dBi PCS: 0.5dBi	Band II: 0.5dBi Band IV: 0.6dBi Band V: -0.9dBi	Band II: 0.5dBi Band IV: 0.6dBi Band V: -0.9dBi Band VII: -0.2dBi Band X VII: -1.5dBi

	NFC	**GPS/GLONASS**
Frequency of operation	13.56MHz	GPS: 1575.42MHz GLONASS: 1597.55-1605.89MHz
Type of modulation	ASK	GPS: BPSK GLONASS: BPSK
Channel spacing	-	GLONASS: 0.5625MHz
Antenna type	Loop	Monopole
Antenna Connector type	Spring type	Spring type
Antenna Gain	N/A	-2.9dBi

*This test report applies for Bluetooth Ver.4.0 with EDR function.

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

* The revision on January 21, 2015 does not affect the test specification applied to the EUT.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.4:2009 7. AC powerline conducted emission measurements **IC:** RSS-Gen 8.8	**FCC:** Section 15.207 **IC:** RSS-Gen 8.8	**QP** 29.2dB, 0.54752MHz, N **AV** 24.5dB, 0.54779MHz, N	Complied	-
Carrier Frequency Separation	**FCC:** FCC Public Notice DA 00-705 **IC:** -	**FCC:** Section15.247(a)(1) **IC:** RSS-210 A8.1 (b)	See data.	Complied	Conducted
20dB Bandwidth	**FCC:** FCC Public Notice DA 00-705 **IC:** -	**FCC:** Section15.247(a)(1) **IC:** RSS-210 A8.1 (a)		Complied	Conducted
Number of Hopping Frequency	**FCC:** FCC Public Notice DA 00-705 **IC:** -	**FCC:** Section15.247(a)(1)(iii) **IC:** RSS-210 A8.1 (d)		Complied	Conducted
Dwell time	**FCC:** FCC Public Notice DA 00-705 **IC:** -	**FCC:** Section15.247(a)(1)(iii) **IC:** RSS-210 A8.1 (d)		Complied	Conducted
Maximum Peak Output Power	**FCC:** FCC Public Notice DA 00-705 **IC:** RSS-Gen 6.12	**FCC:** Section15.247(a)(b)(1) **IC:** RSS-210 A8.4 (2)		Complied	Conducted
Spurious Emission & Band Edge Compliance	**FCC:** FCC Public Notice DA 00-705 **IC:** RSS-Gen 6.13	**FCC:** Section15.247(d) **IC:** RSS-210 A8.5 RSS-Gen 8.9 RSS-Gen 8.10	6.1dB 2483.500MHz, AV, Horizontal	Complied	Conducted/ Radiated
Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.					

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

FCC 15.31 (e)
The EUT is a battery-operated device and test was performed with the full-charged battery.
During the test, the battery was charged from AC Adaptor.
Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement
It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99% Occupied Bandwidth	**IC:** RSS-Gen 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.

Test room (semi-anechoic chamber)	Conducted emission (±dB)
	150kHz-30MHz
No.1	3.5dB
No.2	3.5dB
No.3	3.6dB
No.4	3.5dB

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

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

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

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

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

Radiated emission test(3m)
The data listed in this test report has enough margin, more than the site margin.

3.5 Test Location

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

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

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

Refer to APPENDIX.

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

4.1 Operating Mode(s)

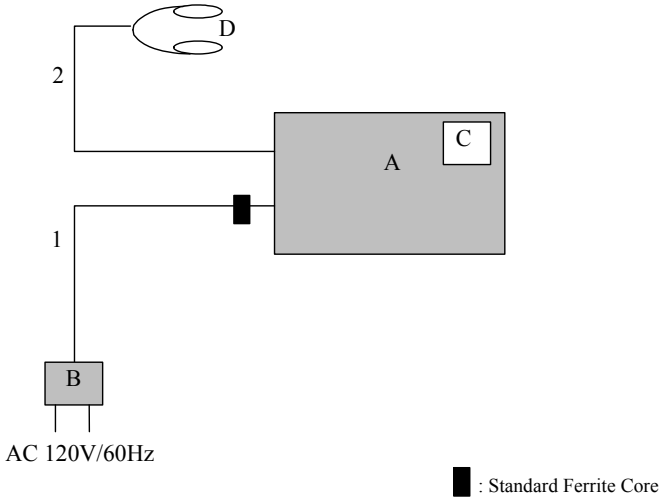
Bluetooth (BT): Transmitting (Tx), Payload: PRBS9

Details of Operating Mode(s)

Test Item	Mode	Tested frequency
Conducted Emission, Spurious Emission (Conducted/Radiated)	Tx (Hopping off) DH5, 3DH5	2402MHz 2441MHz 2480MHz
Carrier Frequency Separation	Tx (Hopping on) DH5, 3DH5	2402MHz 2441MHz 2480MHz
20dB Bandwidth	Tx (Hopping off) DH5, 3DH5	2402MHz 2441MHz 2480MHz
Number of Hopping Frequency	Tx (Hopping on) DH5, 3DH5	-
Dwell time	Tx (Hopping on), -DH1, DH3, DH5 -3DH1, 3DH3, 3DH5	-
Maximum Peak Output Power, Average Output Power	Tx (Hopping off) DH5, 2DH5, 3DH5	2402MHz 2441MHz 2480MHz
Band Edge Compliance (Conducted)	Tx DH5, 3DH5 -Hopping on -Hopping off	2402MHz 2480MHz
99% Occupied Bandwidth	Tx DH5, 3DH5 -Hopping on -Hopping off	2402MHz 2441MHz 2480MHz

*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).
* It is considered that the non-tested packet type (e.g. inquiry) can be omitted as it is complied with above all the test items based on Bluetooth Core specification.
*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.
*The power value of the EUT was set for testing as follows (setting value might be different from product specification value);
Power settings: 9
Software: QRCT Version 3.0.32.0
*This setting of software is the worst case.
Any conditions under the normal use do not exceed the condition of setting.
In addition, end users cannot change the settings of the output power of the product.

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

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Digital Camera	DMC-CM1	004401221415512	Panasonic	EUT
B	AC Adaptor	VSK0825	k4000106PH	Panasonic	EUT
C	Micro SD Card	02GUECA-MB	-	Panasonic	-
D	Earphone	-	-	Panasonic	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	1.2	Unshielded	Unshielded	-
2	Earphone Cable	1.2	Unshielded	Unshielded	-

SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 0.8m above the conducting ground plane.
The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

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

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber .
The EUT was connected to a LISN (AMN).
An overview sweep with peak detection has been performed.

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

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

SECTION 6: Radiated Spurious Emission

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

Test Antennas are used as below;

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

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

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

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

*1) Although 00-705 accepts VBW=10Hz for AV measurements, it was confirmed that superfluous smoothing was not performed.
*2) Distance Factor: 20 x log (3.0m/1.0m) = 9.5dB

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

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

Measurement range : 30M-26.5GHz
Test data : APPENDIX
Test result : Pass

SECTION 7: Antenna Terminal Conducted Tests

Test Procedure

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

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

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

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

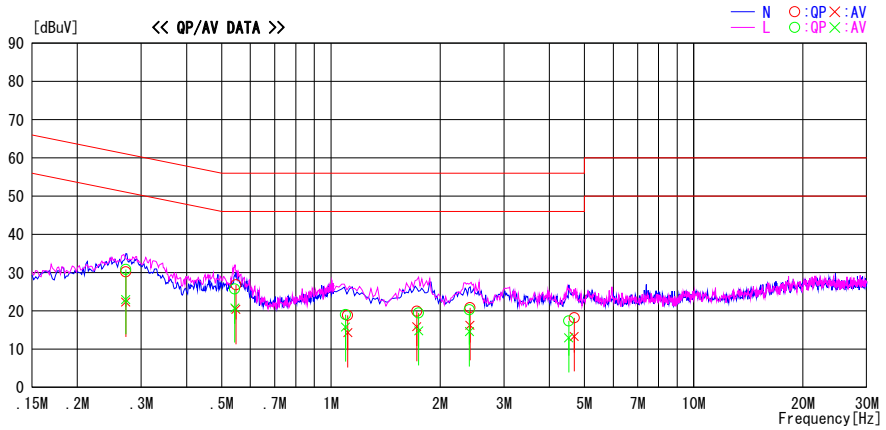
UL Japan, Inc. Ise EMC Lab. No.4 Semi Anechoic Chamber
Date : 2015/01/20

Report No. : 10636726H

Temp./Humi. : 23deg. C / 35% RH
Engineer : Koji Yamamoto

Mode / Remarks : BT Tx DH5 2402MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



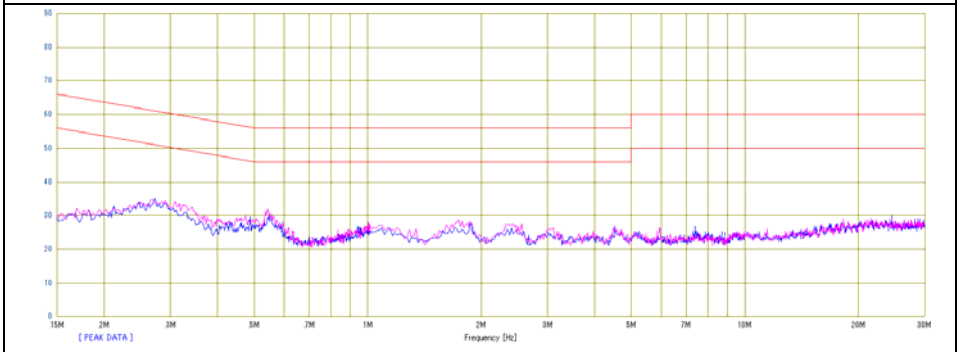
Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.27204	16.8	8.9	13.4	30.2	22.3	61.1	51.1	30.9	28.8	N	
0.54752	13.3	6.9	13.5	26.8	20.4	56.0	46.0	29.2	25.6	N	
1.11219	5.3	0.8	13.5	18.8	14.3	56.0	46.0	37.2	31.7	N	
1.72523	6.2	2.2	13.7	19.9	15.9	56.0	46.0	36.1	30.1	N	
2.41593	7.1	2.5	13.7	20.8	16.2	56.0	46.0	35.2	29.8	N	
4.68580	4.1	-0.8	14.1	18.2	13.3	56.0	46.0	37.8	32.7	N	
0.27188	17.4	9.6	13.4	30.8	23.0	61.1	51.1	30.3	28.1	L	
0.54309	12.2	7.3	13.5	25.7	20.8	56.0	46.0	30.3	25.2	L	
1.09632	5.5	2.3	13.5	19.0	15.8	56.0	46.0	37.0	30.2	L	
1.74593	5.8	1.1	13.7	19.5	14.8	56.0	46.0	36.5	31.2	L	
2.40952	6.6	0.9	13.7	20.3	14.6	56.0	46.0	35.7	31.4	L	
4.52439	3.3	-1.1	14.1	17.4	13.0	56.0	46.0	38.6	33.0	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.

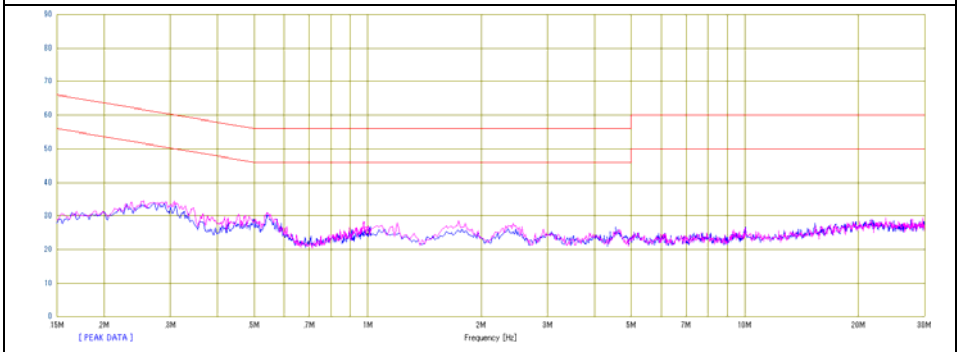
Conducted Emission

Test place	Ise EMC Lab. No.4 Semi Anechoic Chamber
Report No.	10636726H
Date	01/20/2015
Temperature/ Humidity	23 deg. C / 35% RH
Engineer	Koji Yamamoto
Mode	Tx DH5

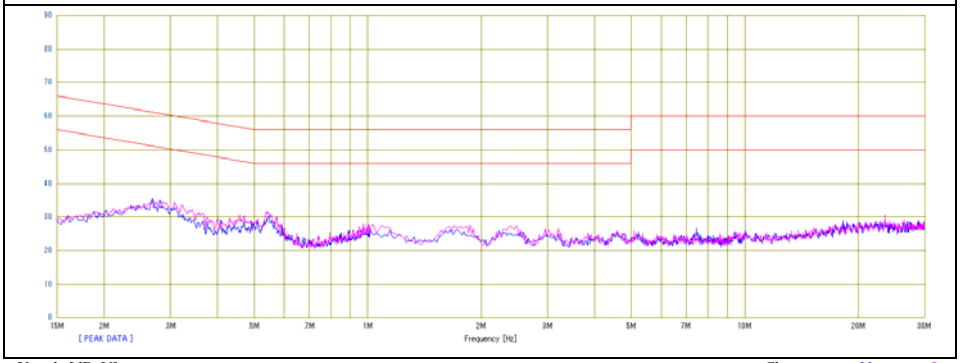
2402MHz



2441MHz



2480MHz



Y scale [dBuV] Chart — N — L

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

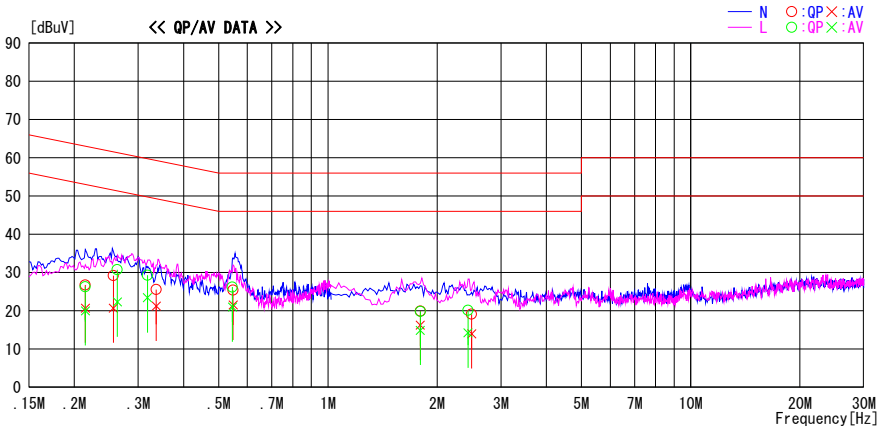
UL Japan, Inc. Ise EMC Lab. No.4 Semi Anechoic Chamber
Date : 2015/01/20

Report No. : 10636726H

Temp./Humi. : 23deg. C / 35% RH
Engineer : Koji Yamamoto

Mode / Remarks : BT Tx 3DH5 2402MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



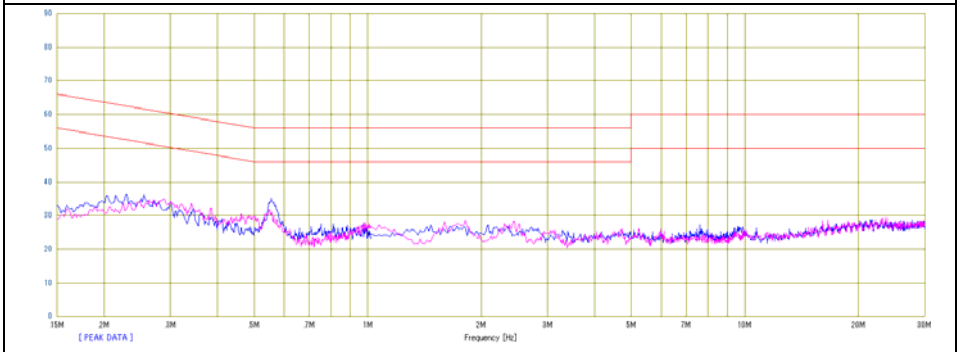
Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.21451	13.3	7.3	13.4	26.7	20.7	63.0	53.0	36.3	32.3	N	
0.25635	15.8	7.3	13.4	29.2	20.7	61.5	51.5	32.3	30.8	N	
0.33642	12.2	7.8	13.4	25.6	21.2	59.3	49.3	33.7	28.1	N	
0.54779	11.9	8.0	13.5	25.4	21.5	56.0	46.0	30.6	24.5	N	
1.79793	6.2	2.5	13.7	19.9	16.2	56.0	46.0	36.1	29.8	N	
2.48887	5.4	0.3	13.7	19.1	14.0	56.0	46.0	36.9	32.0	N	
0.21451	12.9	6.6	13.4	26.3	20.0	63.0	53.0	36.7	33.0	L	
0.26285	17.3	8.9	13.4	30.7	22.3	61.3	51.3	30.6	29.0	L	
0.31815	15.9	10.0	13.4	29.3	23.4	59.8	49.8	30.5	26.4	L	
0.54560	12.7	7.5	13.5	26.2	21.0	56.0	46.0	29.8	25.0	L	
1.79793	6.1	1.2	13.7	19.8	14.9	56.0	46.0	36.2	31.1	L	
2.43411	6.4	0.5	13.7	20.1	14.2	56.0	46.0	35.9	31.8	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.

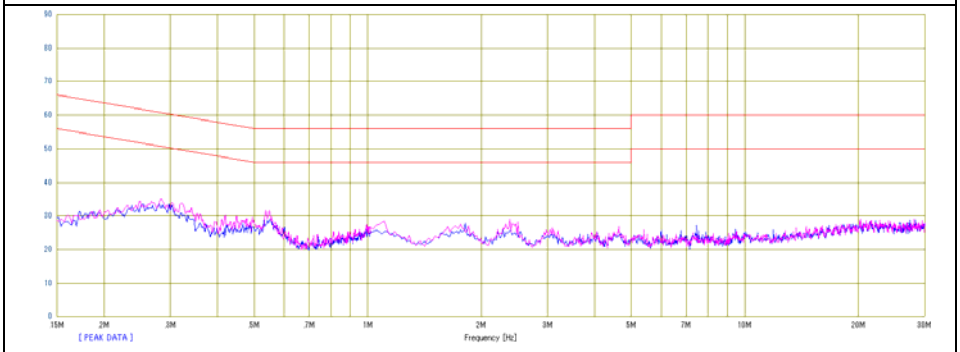
Conducted Emission

Test place	Ise EMC Lab. No.4 Semi Anechoic Chamber
Report No.	10636726H
Date	01/20/2015
Temperature/ Humidity	23 deg. C / 35% RH
Engineer	Koji Yamamoto
Mode	Tx 3DH5

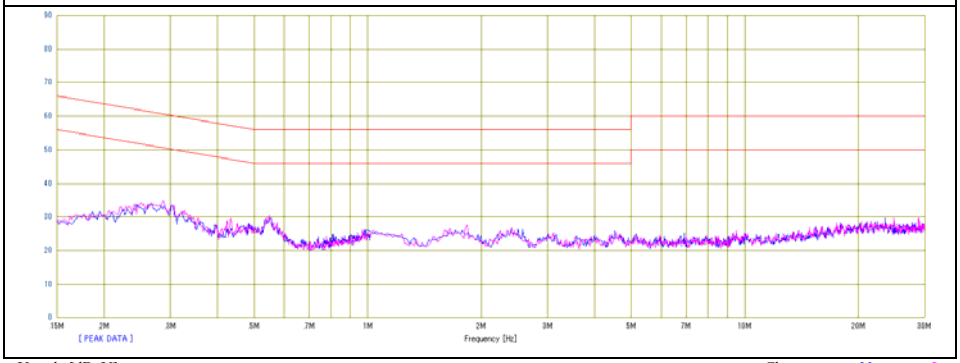
2402MHz



2441MHz



2480MHz



Y scale [dBuV] Chart — N — L

20dB Bandwidth and Carrier Frequency Separation

Report No.	10636726H	
Test place	Ise EMC Lab.	
Measurement Room	No.6	No.3
Date	01/15/2015	02/02/2015
Temperature / Humidity	23 deg. C / 38% RH	25 deg. C / 27% RH
Engineer	Takumi Shimada	Tomoki Matsui
Mode	Tx (Hopping on/off) DH5/3DH5	

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	1.017	1.000	>= 0.678
DH5	2441.0	0.999	1.000	>= 0.666
DH5	2480.0	1.070	1.000	>= 0.713
3DH5	2402.0	1.278	1.000	>= 0.852
3DH5	2441.0	1.284	1.000	>= 0.856
3DH5	2480.0	1.276	1.000	>= 0.851

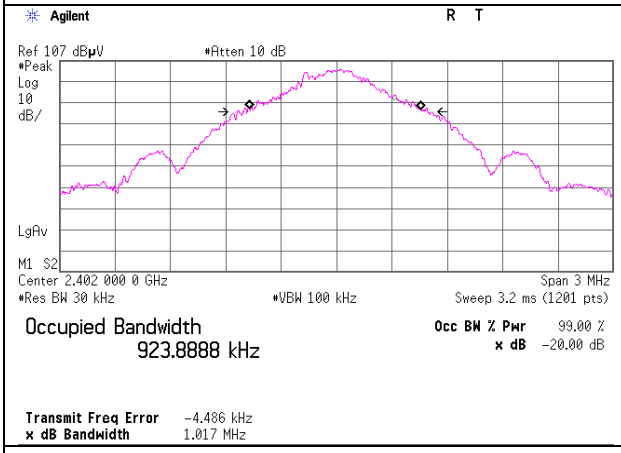
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
No limit applies to 20dB Bandwidth.

20dB Bandwidth and Carrier Frequency Separation

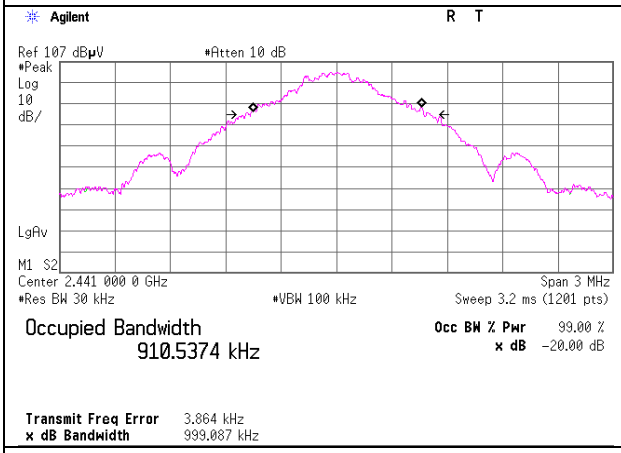
Tx DH5

20dB Bandwidth

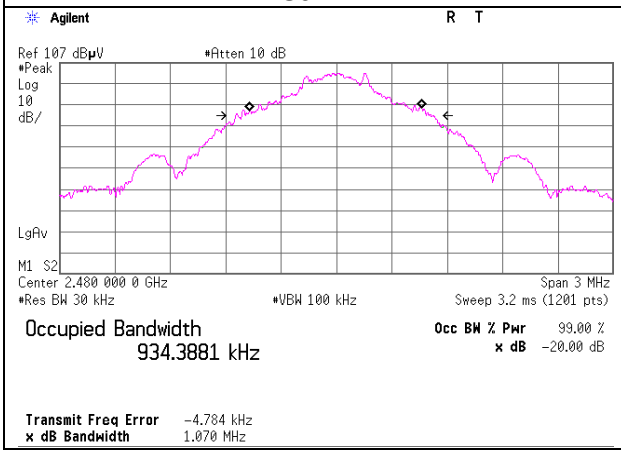
2402MHz



2441MHz

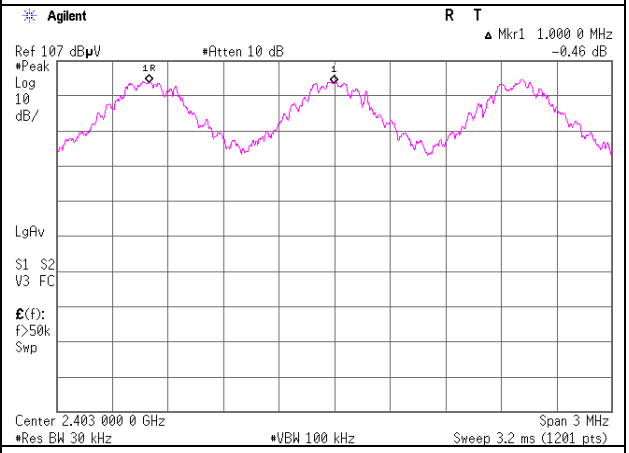


2480MHz

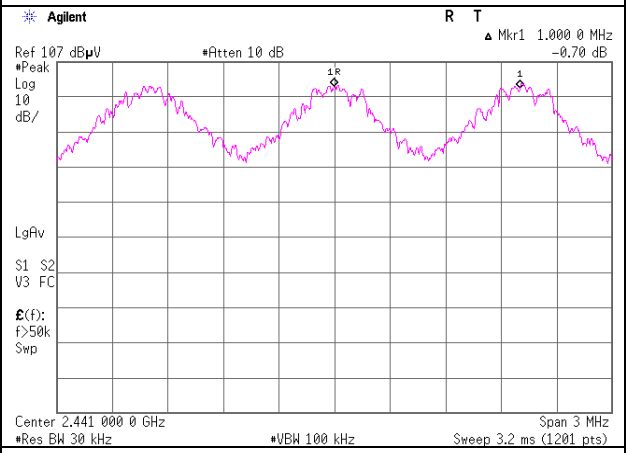


Carrier Frequency Separation

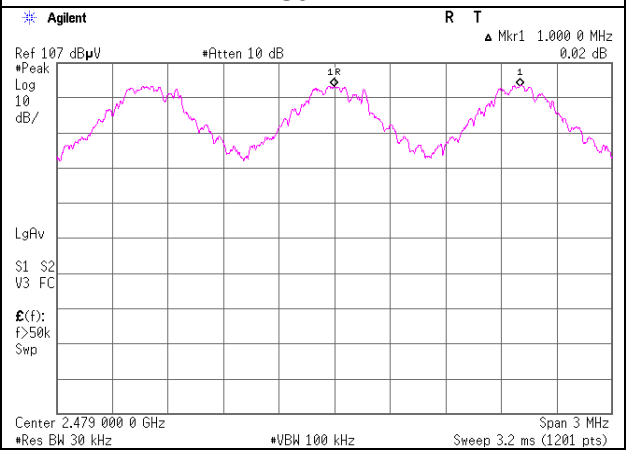
2402MHz



2441MHz



2480MHz

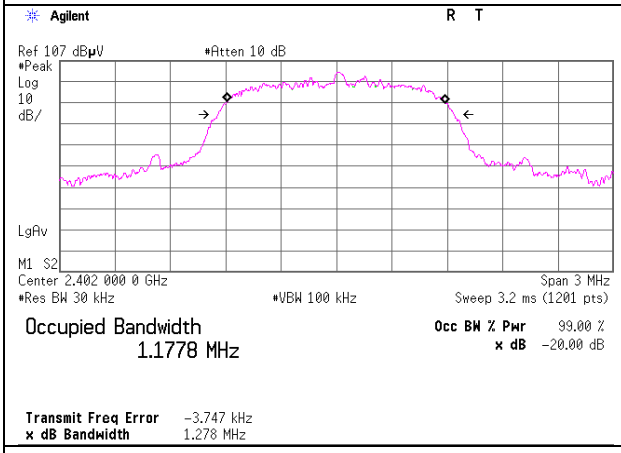


20dB Bandwidth and Carrier Frequency Separation

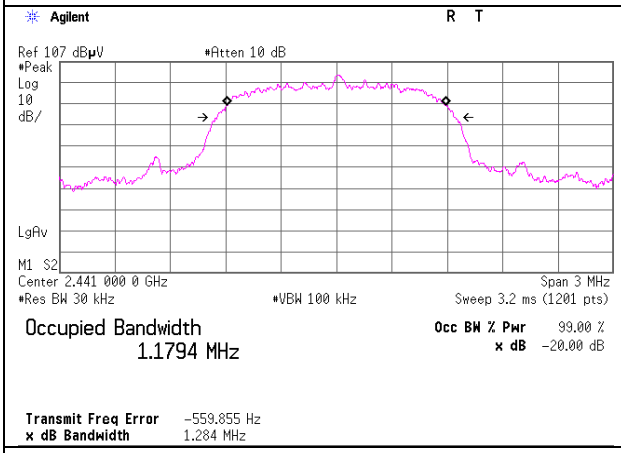
Tx 3DH5

20dB Bandwidth

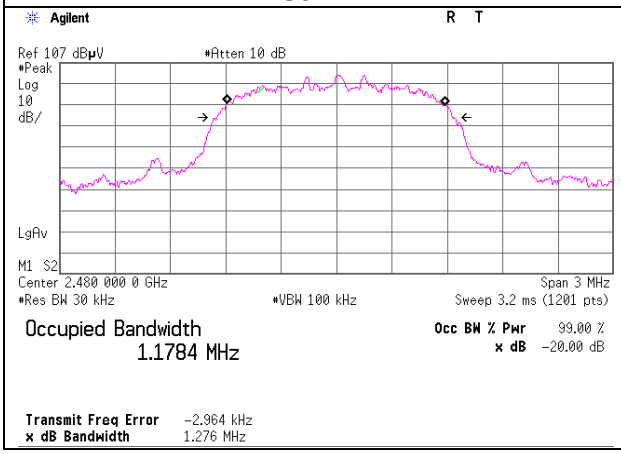
2402MHz



2441MHz

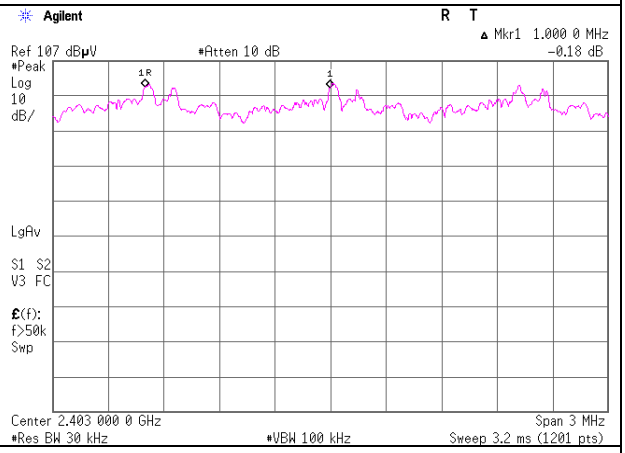


2480MHz

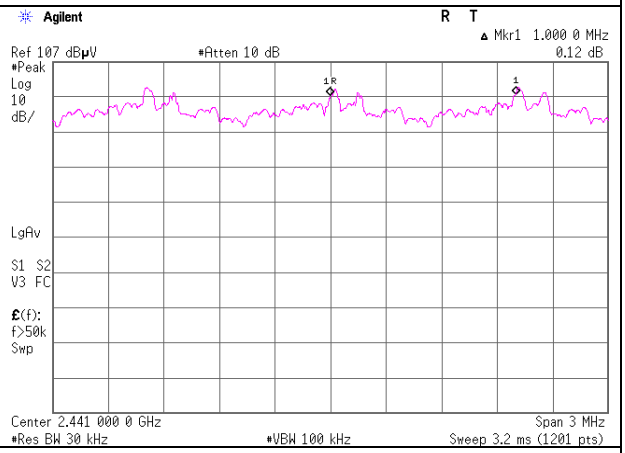


Carrier Frequency Separation

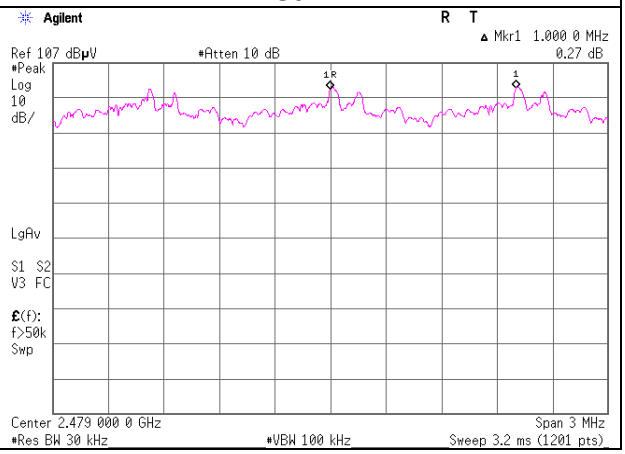
2402MHz



2441MHz



2480MHz



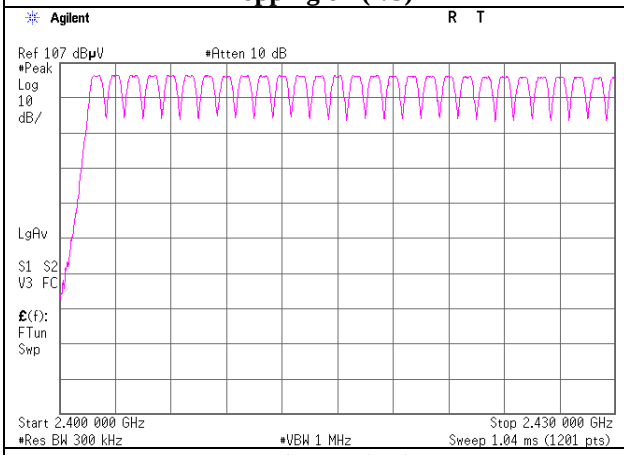
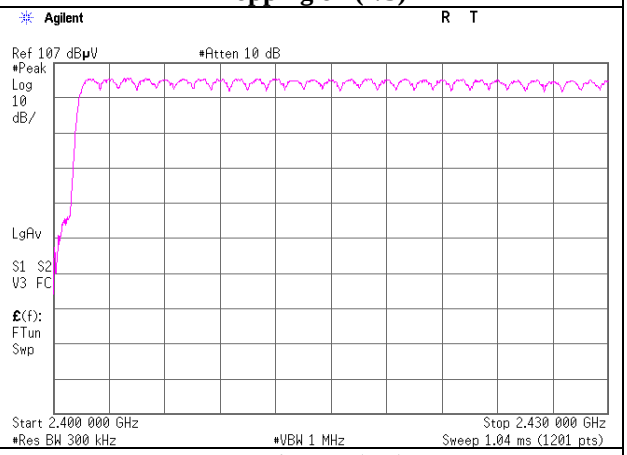
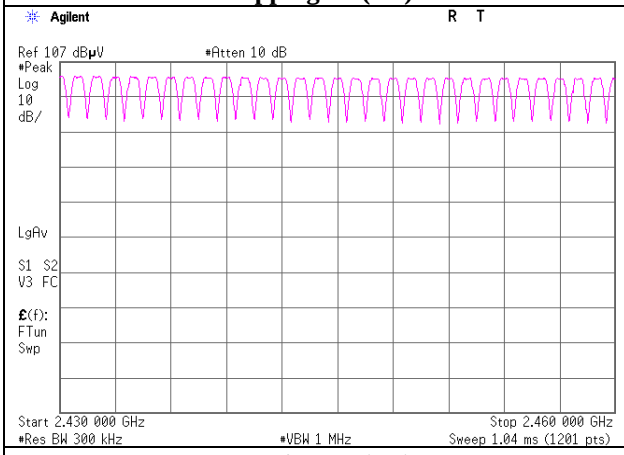
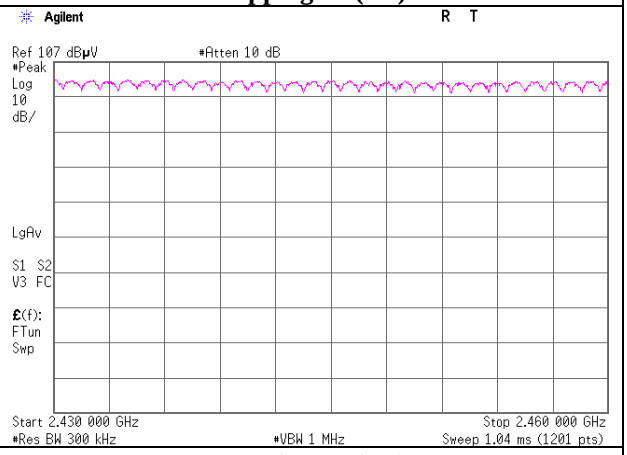
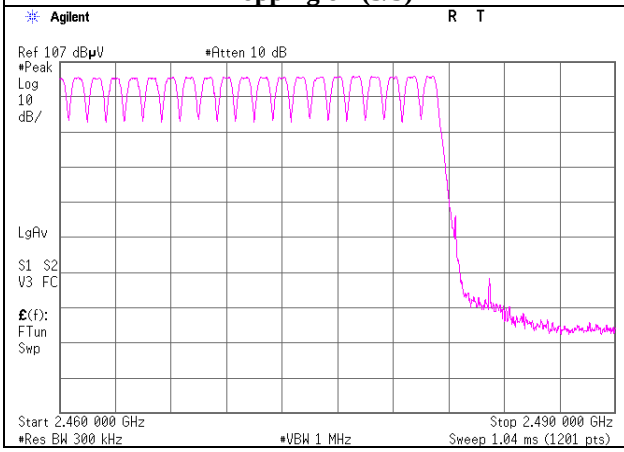
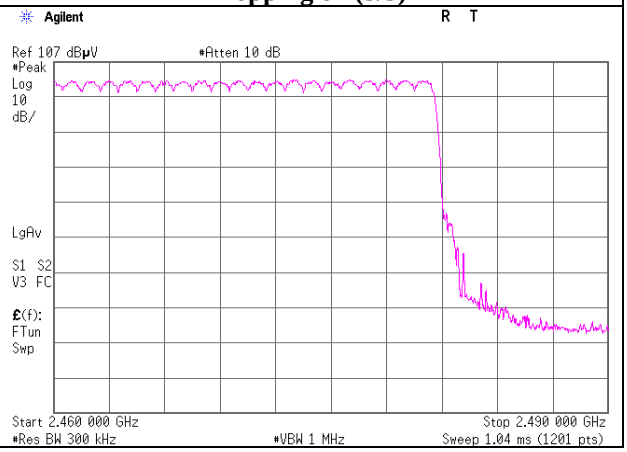
Number of Hopping Frequency

Test place	Ise EMC Lab. No.3 Measurement Room
Report No.	10636726H
Date	02/02/2015
Temperature/ Humidity	25 deg. C / 27% RH
Engineer	Tomoki Matsui
Mode	Tx (Hopping on) DH5/3DH5

Mode	Number of channel [times]	Limit [times]
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

Tx DH5	Tx 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)**
	

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

Dwell time

Test place	Ise EMC Lab. No.3 Measurement Room
Report No.	10636726H
Date	02/02/2015
Temperature/ Humidity	25 deg. C / 27% RH
Engineer	Tomoki Matsui
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	50.0 times /	5 sec. x	31.6 sec. =	316 times	0.413	131	400
DH3	24.6 times /	5 sec. x	31.6 sec. =	156 times	1.678	262	400
DH5	16.8 times /	5 sec. x	31.6 sec. =	107 times	2.942	315	400
3DH1	49.6 times /	5 sec. x	31.6 sec. =	314 times	0.411	129	400
3DH3	25.6 times /	5 sec. x	31.6 sec. =	162 times	1.672	271	400
3DH5	18.2 times /	5 sec. x	31.6 sec. =	116 times	2.925	339	400

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

*Average data of 5 tests.

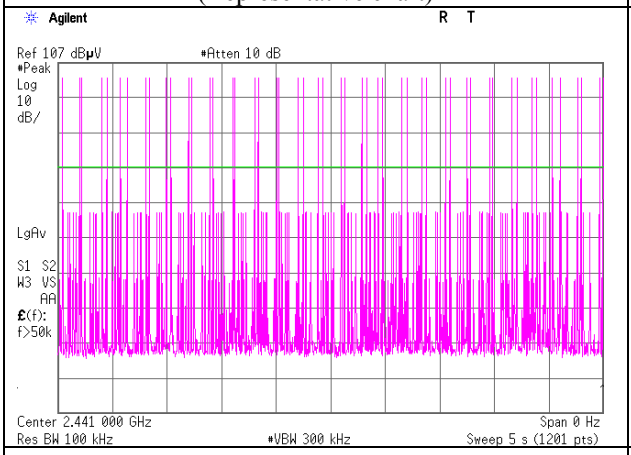
Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	51	50	50	50	49	50
DH3	25	25	28	24	21	24.6
DH5	14	17	19	21	13	16.8
3DH1	49	51	51	48	49	49.6
3DH3	27	18	24	29	30	25.6
3DH5	15	17	24	15	20	18.2

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

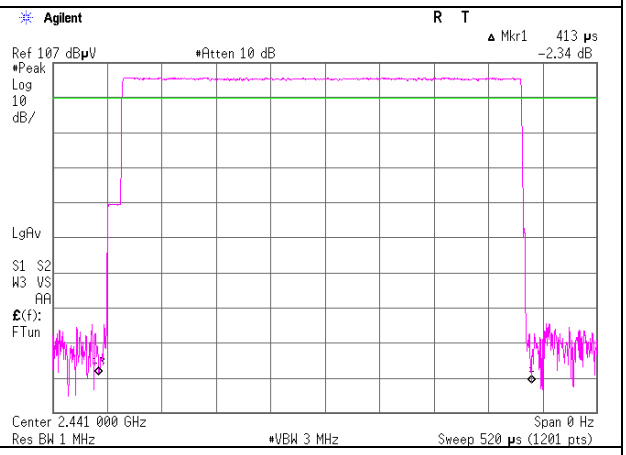
This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in N x 0.4s, where N is the number of channels being used in the hopping sequence ($20 \leq N \leq 79$), is always less than 0.4s regardless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

Dwell time

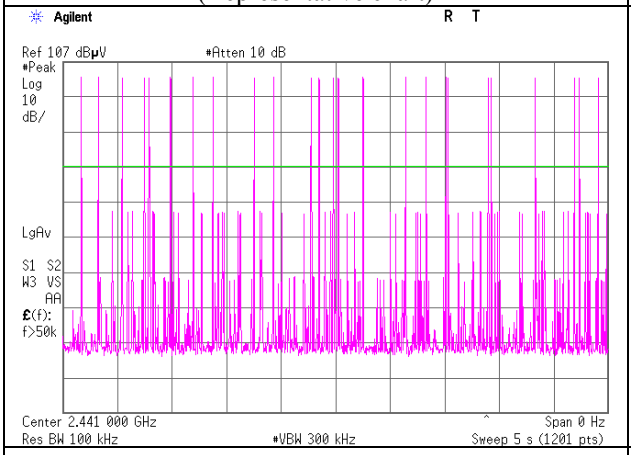
DH1 (1/2)
(Representative chart)



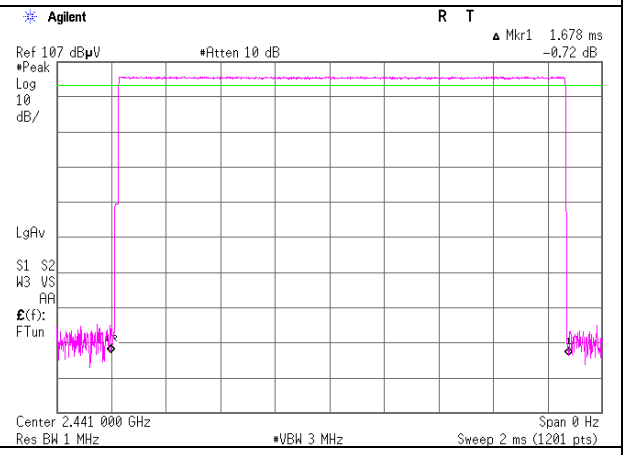
DH1 (2/2)



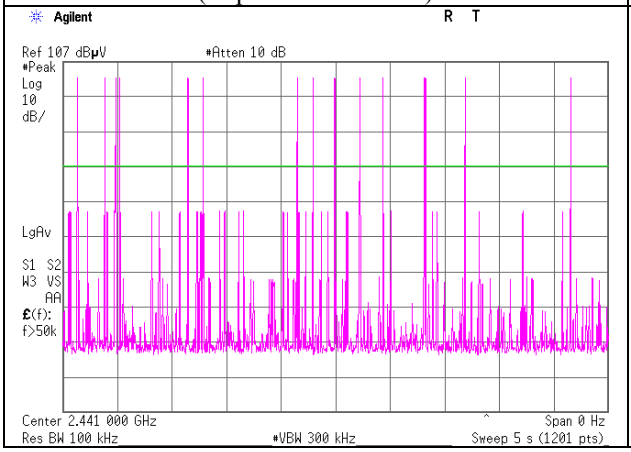
DH3 (1/2)
(Representative chart)



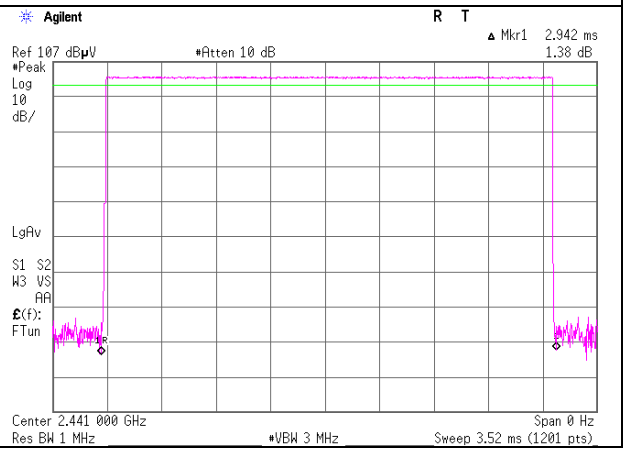
DH3 (2/2)



DH5 (1/2)
(Representative chart)

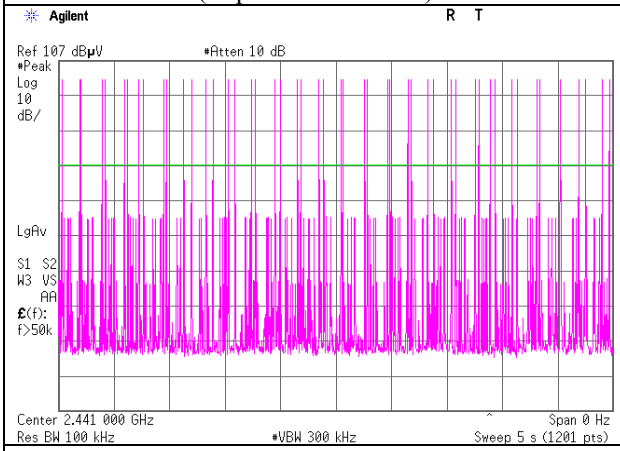


DH5 (2/2)

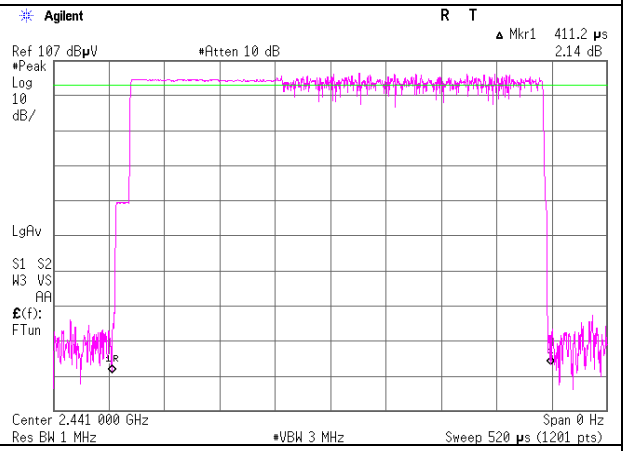


Dwell time

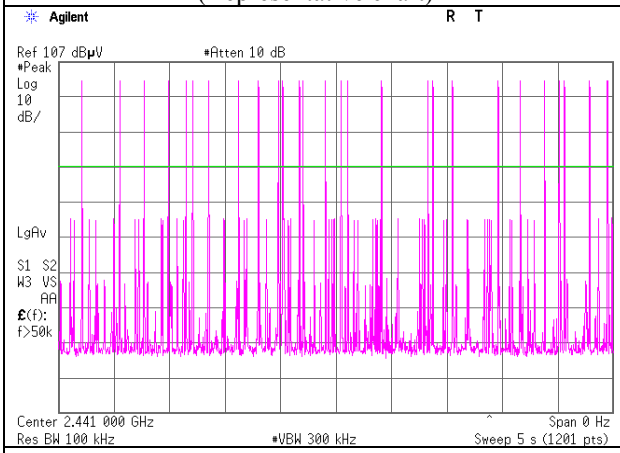
3DH1 (1/2)
(Representative chart)



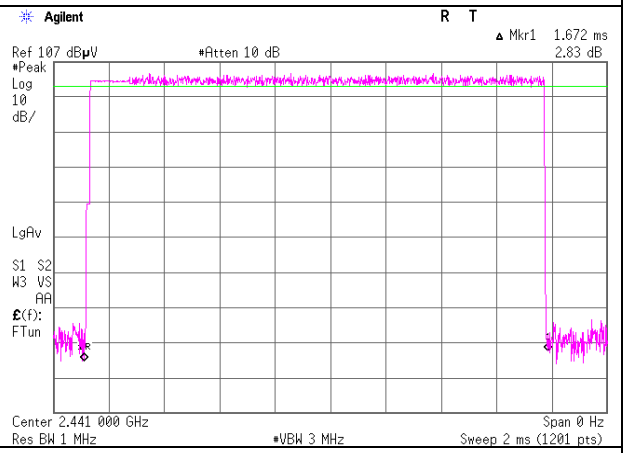
3DH1 (2/2)



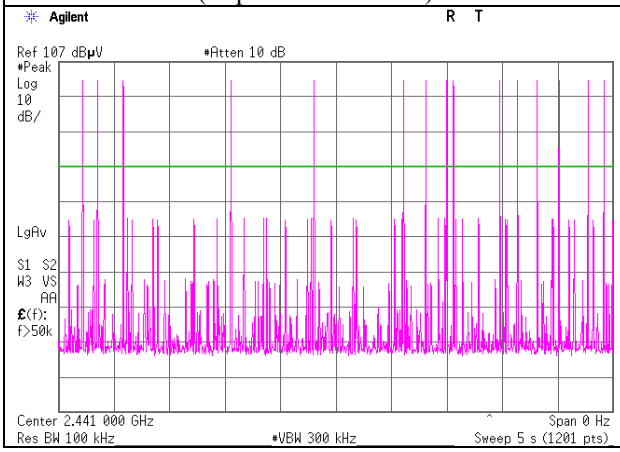
3DH3 (1/2)
(Representative chart)



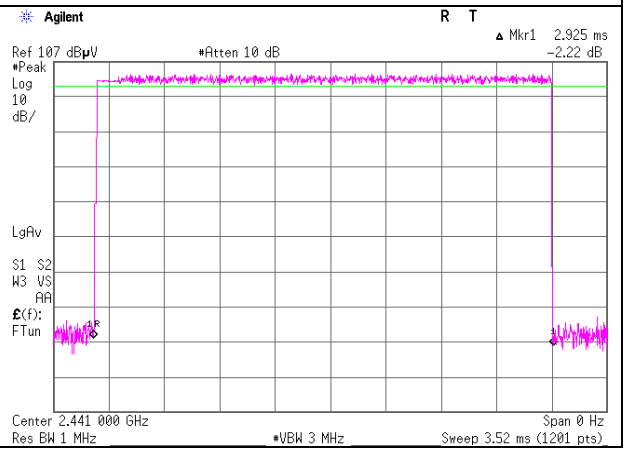
3DH3 (2/2)



3DH5 (1/2)
(Representative chart)



3DH5 (2/2)



Maximum Peak Output Power

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5/2DH5/3DH5

Mode	Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
DH5	2402.0	-2.57	0.39	10.04	7.86	6.11	20.96	125	13.10
DH5	2441.0	-3.60	0.39	10.04	6.83	4.82	20.96	125	14.13
DH5	2480.0	-3.25	0.39	10.04	7.18	5.22	20.96	125	13.78
2DH5	2402.0	-1.61	0.39	10.04	8.82	7.62	20.96	125	12.14
2DH5	2441.0	-2.63	0.39	10.04	7.80	6.03	20.96	125	13.16
2DH5	2480.0	-2.28	0.39	10.04	8.15	6.53	20.96	125	12.81
3DH5	2402.0	-1.07	0.39	10.04	9.36	8.63	20.96	125	11.60
3DH5	2441.0	-2.14	0.39	10.04	8.29	6.75	20.96	125	12.67
3DH5	2480.0	-1.79	0.39	10.04	8.64	7.31	20.96	125	12.32

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

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

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5/2DH5/3DH5

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
DH5	2402.0	-3.99	0.39	10.04	6.44	4.41
DH5	2441.0	-4.94	0.39	10.04	5.49	3.54
DH5	2480.0	-4.59	0.39	10.04	5.84	3.84
2DH5	2402.0	-5.37	0.39	10.04	5.06	3.21
2DH5	2441.0	-6.45	0.39	10.04	3.98	2.50
2DH5	2480.0	-6.08	0.39	10.04	4.35	2.72
3DH5	2402.0	-5.36	0.39	10.04	5.07	3.21
3DH5	2441.0	-6.42	0.39	10.04	4.01	2.52
3DH5	2480.0	-6.06	0.39	10.04	4.37	2.74

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Radiated Spurious Emission

Test place	Ise EMC Lab. No.4 Semi Anechoic Chamber		
Report No.	10636726H		
Date	01/12/2015	01/13/2015	01/13/2015
Temperature/ Humidity	20 deg. C / 41% RH	24 deg. C / 32% RH	24 deg. C / 32% RH
Engineer	Shinya Watanabe (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Takafumi Noguchi (Below 1GHz)
Mode	Tx, DH5 2402MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	63.283	QP	30.0	7.3	7.6	32.1	12.8	40.0	27.2	
Hori	69.225	QP	31.0	6.5	7.7	32.1	13.1	40.0	26.9	
Hori	76.813	QP	33.5	6.3	7.8	32.1	15.5	40.0	24.5	
Hori	81.943	QP	30.0	6.7	7.9	32.1	12.5	40.0	27.5	
Hori	95.993	QP	42.7	9.3	8.1	32.1	28.0	43.5	15.5	
Hori	105.062	QP	31.0	10.8	8.2	32.1	17.9	43.5	25.6	
Hori	2390.000	PK	42.9	27.4	3.2	32.8	40.7	73.9	33.2	
Hori	4804.000	PK	40.8	31.5	5.4	31.9	45.8	73.9	28.1	Floor Noise
Hori	7206.000	PK	42.5	36.8	6.6	33.0	52.9	73.9	21.0	Floor Noise
Hori	4804.000	AV	32.2	31.5	5.4	31.9	37.2	53.9	16.7	Floor Noise
Hori	7206.000	AV	30.2	36.8	6.6	33.0	40.6	53.9	13.3	Floor Noise
Hori	9608.000	AV	30.5	38.8	7.3	33.4	43.2	53.9	10.7	Floor Noise
Vert	48.612	QP	32.9	11.1	7.4	32.1	19.3	40.0	20.7	
Vert	69.425	QP	30.8	6.4	7.7	32.1	12.8	40.0	27.2	
Vert	74.647	QP	38.6	6.3	7.8	32.1	20.6	40.0	19.4	
Vert	82.017	QP	30.4	6.7	7.9	32.1	12.9	40.0	27.1	
Vert	96.002	QP	38.7	9.3	8.1	32.1	24.0	43.5	19.5	
Vert	104.128	QP	26.0	10.7	8.2	32.1	12.8	43.5	30.7	
Vert	2390.000	PK	43.7	27.4	3.2	32.8	41.5	73.9	32.4	
Vert	4804.000	PK	44.4	31.5	5.4	31.9	49.4	73.9	24.5	
Vert	7206.000	PK	43.2	36.8	6.6	33.0	53.6	73.9	20.3	Floor Noise
Vert	9608.000	PK	43.3	38.8	7.3	33.4	56.0	73.9	17.9	Floor Noise
Vert	2390.000	AV	34.0	27.4	3.2	32.8	31.8	53.9	22.1	
Vert	4804.000	AV	35.9	31.5	5.4	31.9	40.9	53.9	13.0	
Vert	7206.000	AV	30.3	36.8	6.6	33.0	40.7	53.9	13.2	Floor Noise
Vert	9608.000	AV	30.5	38.8	7.3	33.4	43.2	53.9	10.7	Floor Noise

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

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.4 Semi Anechoic Chamber
Report No.	10636726H
Date	01/12/2015
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Shinya Watanabe
	(1-10GHz)
Mode	Tx, DH5 2402MHz

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	97.8	27.4	3.2	32.8	95.6	-	-	Carrier
Hori	2400.000	PK	42.1	27.4	3.2	32.8	39.9	75.6	35.7	
Vert	2402.000	PK	100.8	27.4	3.2	32.8	98.6	-	-	Carrier
Vert	2400.000	PK	43.3	27.4	3.2	32.8	41.1	78.6	37.5	

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.4 Semi Anechoic Chamber		
Report No.	10636726H		
Date	01/12/2015	01/13/2015	01/13/2015
Temperature/ Humidity	20 deg. C / 41% RH	24 deg. C / 32% RH	24 deg. C / 32% RH
Engineer	Shinya Watanabe (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Takafumi Noguchi (Below 1GHz)
Mode	Tx, DH5 2441MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	64.063	QP	30.0	7.2	7.7	32.1	12.8	40.0	27.2	
Hori	76.471	QP	33.7	6.3	7.8	32.1	15.7	40.0	24.3	
Hori	95.995	QP	43.1	9.3	8.1	32.1	28.4	43.5	15.1	
Hori	138.101	QP	24.4	14.3	8.6	32.0	15.3	43.5	28.2	
Hori	172.904	QP	27.0	15.9	8.9	32.0	19.8	43.5	23.7	
Hori	203.827	QP	26.3	16.7	9.1	31.9	20.2	43.5	23.3	
Hori	4882.000	PK	42.2	31.8	5.5	31.9	47.6	73.9	26.3	Floor Noise
Hori	7323.000	PK	44.4	37.0	6.5	33.0	54.9	73.9	19.0	Floor Noise
Hori	9764.000	PK	43.1	38.9	7.4	33.4	56.0	73.9	17.9	Floor Noise
Hori	4882.000	AV	30.3	31.8	5.5	31.9	35.7	53.9	18.2	Floor Noise
Hori	7323.000	AV	31.8	37.0	6.5	33.0	42.3	53.9	11.6	Floor Noise
Hori	9764.000	AV	30.8	38.9	7.4	33.4	43.7	53.9	10.2	Floor Noise
Vert	57.599	QP	29.4	8.4	7.6	32.1	13.3	40.0	26.7	
Vert	75.104	QP	38.2	6.3	7.8	32.1	20.2	40.0	19.8	
Vert	96.002	QP	38.9	9.3	8.1	32.1	24.2	43.5	19.3	
Vert	139.023	QP	26.2	14.3	8.6	32.0	17.1	43.5	26.4	
Vert	172.784	QP	26.1	15.9	8.9	32.0	18.9	43.5	24.6	
Vert	204.689	QP	26.1	16.7	9.1	31.9	20.0	43.5	23.5	
Vert	4882.000	PK	42.1	31.8	5.5	31.9	47.5	73.9	26.4	Floor Noise
Vert	7323.000	PK	43.9	37.0	6.5	33.0	54.4	73.9	19.5	Floor Noise
Vert	9764.000	PK	44.0	38.9	7.4	33.4	56.9	73.9	17.0	Floor Noise
Vert	4882.000	AV	30.2	31.8	5.5	31.9	35.6	53.9	18.3	Floor Noise
Vert	7323.000	AV	31.8	37.0	6.5	33.0	42.3	53.9	11.6	Floor Noise
Vert	9764.000	AV	30.8	38.9	7.4	33.4	43.7	53.9	10.2	Floor Noise

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

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

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.4 Semi Anechoic Chamber		
Report No.	10636726H		
Date	01/12/2015	01/13/2015	01/13/2015
Temperature/ Humidity	20 deg. C / 41% RH	24 deg. C / 32% RH	24 deg. C / 32% RH
Engineer	Shinya Watanabe (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Takafumi Noguchi (Below 1GHz)
Mode	Tx, DH5 2480MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	66.622	QP	30.0	6.8	7.7	32.1	12.4	40.0	27.6	
Hori	76.782	QP	33.7	6.3	7.8	32.1	15.7	40.0	24.3	
Hori	95.997	QP	41.6	9.3	8.1	32.1	26.9	43.5	16.6	
Hori	147.441	QP	23.7	14.8	8.7	32.0	15.2	43.5	28.3	
Hori	174.489	QP	25.2	16.0	8.9	32.0	18.1	43.5	25.4	
Hori	205.936	QP	26.5	16.7	9.2	31.9	20.5	43.5	23.0	
Hori	2483.500	PK	52.7	27.6	3.3	32.7	50.9	73.9	23.0	
Hori	4960.000	PK	41.9	32.0	5.5	31.9	47.5	73.9	26.4	Floor Noise
Hori	7440.000	PK	43.0	37.2	6.5	33.1	53.6	73.9	20.3	Floor Noise
Hori	9920.000	PK	42.8	39.0	7.4	33.5	55.7	73.9	18.2	Floor Noise
Hori	2483.500	AV	34.3	27.6	3.3	32.7	32.5	53.9	21.4	
Hori	4960.000	AV	29.1	32.0	5.5	31.9	34.7	53.9	19.2	Floor Noise
Hori	7440.000	AV	30.7	37.2	6.5	33.1	41.3	53.9	12.6	Floor Noise
Hori	9920.000	AV	30.4	39.0	7.4	33.5	43.3	53.9	10.6	Floor Noise
Vert	57.596	QP	28.9	8.4	7.6	32.1	12.8	40.0	27.2	
Vert	75.094	QP	38.3	6.3	7.8	32.1	20.3	40.0	19.7	
Vert	96.002	QP	37.7	9.3	8.1	32.1	23.0	43.5	20.5	
Vert	129.564	QP	25.7	13.6	8.5	32.0	15.8	43.5	27.7	
Vert	161.629	QP	24.0	15.5	8.8	32.0	16.3	43.5	27.2	
Vert	196.112	QP	24.6	16.5	9.1	32.0	18.2	43.5	25.3	
Vert	2483.500	PK	53.1	27.6	3.3	32.7	51.3	73.9	22.6	
Vert	4960.000	PK	44.0	32.0	5.5	31.9	49.6	73.9	24.3	
Vert	7440.000	PK	42.7	37.2	6.5	33.1	53.3	73.9	20.6	Floor Noise
Vert	9920.000	PK	43.6	39.0	7.4	33.5	56.5	73.9	17.4	Floor Noise
Vert	2483.500	AV	34.6	27.6	3.3	32.7	32.8	53.9	21.1	
Vert	4960.000	AV	34.5	32.0	5.5	31.9	40.1	53.9	13.8	
Vert	7440.000	AV	30.7	37.2	6.5	33.1	41.3	53.9	12.6	Floor Noise
Vert	9920.000	AV	30.5	39.0	7.4	33.5	43.4	53.9	10.5	Floor Noise

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

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

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Radiated Spurious Emission

Test place	Ise EMC Lab. No.4 Semi Anechoic Chamber		
Report No.	10636726H		
Date	01/12/2015	01/13/2015	01/13/2015
Temperature/ Humidity	20 deg.C/ 41% RH	24 deg.C/ 32% RH	24 deg.C/ 32% RH
Engineer	Shinya Watanabe (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Takafumi Noguchi (Below 1GHz)
Mode	Tx, 3DH5 2402MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	63.545	QP	30.2	7.2	7.6	32.1	12.9	40.0	27.1	
Hori	163.106	QP	23.7	15.5	8.8	32.0	16.0	43.5	27.5	
Hori	172.802	QP	26.4	15.9	8.9	32.0	19.2	43.5	24.3	
Hori	206.071	QP	27.9	16.7	9.2	31.9	21.9	43.5	21.6	
Hori	2390.000	PK	43.1	27.4	3.2	32.8	40.9	73.9	33.0	
Hori	4804.000	PK	42.5	31.5	5.4	31.9	47.5	73.9	26.4	Floor Noise
Hori	7206.000	PK	42.4	36.8	6.6	33.0	52.8	73.9	21.1	Floor Noise
Hori	4804.000	AV	28.9	31.5	5.4	31.9	33.9	53.9	20.0	Floor Noise
Hori	7206.000	AV	30.3	36.8	6.6	33.0	40.7	53.9	13.2	Floor Noise
Hori	9608.000	AV	30.4	38.8	7.3	33.4	43.1	53.9	10.8	Floor Noise
Vert	54.869	QP	30.1	9.2	7.5	32.1	14.7	40.0	25.3	
Vert	76.812	QP	36.6	6.3	7.8	32.1	18.6	40.0	21.4	
Vert	96.005	QP	37.5	9.3	8.1	32.1	22.8	43.5	20.7	
Vert	138.225	QP	25.0	14.3	8.6	32.0	15.9	43.5	27.6	
Vert	180.421	QP	25.0	16.2	8.9	32.0	18.1	43.5	25.4	
Vert	206.376	QP	24.5	16.7	9.2	31.9	18.5	43.5	25.0	
Vert	2390.000	PK	43.9	27.4	3.2	32.8	41.7	73.9	32.2	
Vert	4804.000	PK	42.4	31.5	5.4	31.9	47.4	73.9	26.5	Floor Noise
Vert	7206.000	PK	42.6	36.8	6.6	33.0	53.0	73.9	20.9	Floor Noise
Vert	9608.000	PK	43.0	38.8	7.3	33.4	55.7	73.9	18.2	Floor Noise
Vert	2390.000	AV	36.1	27.4	3.2	32.8	33.9	53.9	20.0	
Vert	4804.000	AV	30.2	31.5	5.4	31.9	35.2	53.9	18.7	Floor Noise
Vert	7206.000	AV	30.3	36.8	6.6	33.0	40.7	53.9	13.2	Floor Noise
Vert	9608.000	AV	30.5	38.8	7.3	33.4	43.2	53.9	10.7	Floor Noise

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

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.4 Semi Anechoic Chamber
Report No.	10636726H
Date	01/12/2015
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Shinya Watanabe
	(1-10GHz)
Mode	Tx, 3DH5 2402MHz

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	100.6	27.4	3.2	32.8	98.4	-	-	Carrier
Hori	2400.000	PK	44.1	27.4	3.2	32.8	41.9	78.4	36.5	
Vert	2402.000	PK	102.4	27.4	3.2	32.8	100.2	-	-	Carrier
Vert	2400.000	PK	45.5	27.4	3.2	32.8	43.3	80.2	36.9	

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.4 Semi Anechoic Chamber		
Report No.	10636726H		
Date	01/12/2015	01/13/2015	01/13/2015
Temperature/ Humidity	20 deg. C / 41% RH	24 deg. C / 32% RH	24 deg. C / 32% RH
Engineer	Shinya Watanabe (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Takafumi Noguchi (Below 1GHz)
Mode	Tx, 3DH5 2441MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	54.941	QP	24.1	9.2	7.5	32.1	8.7	40.0	31.3	
Hori	76.806	QP	33.4	6.3	7.8	32.1	15.4	40.0	24.6	
Hori	96.002	QP	40.8	9.3	8.1	32.1	26.1	43.5	17.4	
Hori	131.747	QP	23.4	13.8	8.5	32.0	13.7	43.5	29.8	
Hori	176.659	QP	25.5	16.0	8.9	32.0	18.4	43.5	25.1	
Hori	203.678	QP	23.1	16.7	9.1	31.9	17.0	43.5	26.5	
Hori	4882.000	PK	42.0	31.8	5.5	31.9	47.4	73.9	26.5	Floor Noise
Hori	7323.000	PK	43.1	37.0	6.5	33.0	53.6	73.9	20.3	Floor Noise
Hori	9764.000	PK	43.6	38.9	7.4	33.4	56.5	73.9	17.4	Floor Noise
Hori	4882.000	AV	29.1	31.8	5.5	31.9	34.5	53.9	19.4	Floor Noise
Hori	7323.000	AV	30.6	37.0	6.5	33.0	41.1	53.9	12.8	Floor Noise
Hori	9764.000	AV	30.8	38.9	7.4	33.4	43.7	53.9	10.2	Floor Noise
Vert	54.849	QP	30.8	9.2	7.5	32.1	15.4	40.0	24.6	
Vert	76.788	QP	36.8	6.3	7.8	32.1	18.8	40.0	21.2	
Vert	95.999	QP	37.3	9.3	8.1	32.1	22.6	43.5	20.9	
Vert	132.842	QP	23.8	13.9	8.5	32.0	14.2	43.5	29.3	
Vert	176.085	QP	24.9	16.0	8.9	32.0	17.8	43.5	25.7	
Vert	204.239	QP	23.9	16.7	9.1	31.9	17.8	43.5	25.7	
Vert	4882.000	PK	41.9	31.8	5.5	31.9	47.3	73.9	26.6	Floor Noise
Vert	7323.000	PK	43.7	37.0	6.5	33.0	54.2	73.9	19.7	Floor Noise
Vert	9764.000	PK	43.5	38.9	7.4	33.4	56.4	73.9	17.5	Floor Noise
Vert	4882.000	AV	29.2	31.8	5.5	31.9	34.6	53.9	19.3	Floor Noise
Vert	7323.000	AV	30.6	37.0	6.5	33.0	41.1	53.9	12.8	Floor Noise
Vert	9764.000	AV	30.8	38.9	7.4	33.4	43.7	53.9	10.2	Floor Noise

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

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.4 Semi Anechoic Chamber		
Report No.	10636726H		
Date	01/12/2015	01/13/2015	01/13/2015
Temperature/ Humidity	20 deg. C / 41% RH	24 deg. C / 32% RH	24 deg. C / 32% RH
Engineer	Shinya Watanabe (1-10GHz)	Takafumi Noguchi (10-26.5GHz)	Takafumi Noguchi (Below 1GHz)
Mode	Tx, 3DH5 2480MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	67.302	QP	30.8	6.7	7.7	32.1	13.1	40.0	26.9	
Hori	76.803	QP	34.2	6.3	7.8	32.1	16.2	40.0	23.8	
Hori	96.004	QP	43.4	9.3	8.1	32.1	28.7	43.5	14.8	
Hori	131.766	QP	23.6	13.8	8.5	32.0	13.9	43.5	29.6	
Hori	153.599	QP	27.2	15.1	8.7	32.0	19.0	43.5	24.5	
Hori	235.105	QP	22.9	17.0	9.4	31.9	17.4	46.0	28.6	
Hori	2483.500	PK	54.0	27.6	3.3	32.7	52.2	73.9	21.6	
Hori	4960.000	PK	43.1	32.0	5.5	31.9	48.7	73.9	25.2	Floor Noise
Hori	7440.000	PK	44.1	37.2	6.5	33.1	54.7	73.9	19.2	Floor Noise
Hori	9920.000	PK	43.7	39.0	7.4	33.5	56.6	73.9	17.3	Floor Noise
Hori	2483.500	AV	49.5	27.6	3.3	32.7	47.7	53.9	6.1	
Hori	4960.000	AV	29.2	32.0	5.5	31.9	34.8	53.9	19.1	Floor Noise
Hori	7440.000	AV	30.6	37.2	6.5	33.1	41.2	53.9	12.7	Floor Noise
Hori	9920.000	AV	30.8	39.0	7.4	33.5	43.7	53.9	10.2	Floor Noise
Vert	47.994	QP	33.9	11.3	7.4	32.1	20.5	40.0	19.5	
Vert	76.806	QP	36.5	6.3	7.8	32.1	18.5	40.0	21.5	
Vert	96.004	QP	38.2	9.3	8.1	32.1	23.5	43.5	20.0	
Vert	132.282	QP	24.4	13.8	8.5	32.0	14.7	43.5	28.8	
Vert	153.598	QP	28.0	15.1	8.7	32.0	19.8	43.5	23.7	
Vert	230.403	QP	27.3	17.0	9.4	31.9	21.8	46.0	24.2	
Vert	2483.500	PK	52.6	27.6	3.3	32.7	50.8	73.9	23.0	
Vert	4960.000	PK	44.0	32.0	5.5	31.9	49.6	73.9	24.3	Floor Noise
Vert	7440.000	PK	43.5	37.2	6.5	33.1	54.1	73.9	19.8	Floor Noise
Vert	9920.000	PK	43.3	39.0	7.4	33.5	56.2	73.9	17.7	Floor Noise
Vert	2483.500	AV	48.1	27.6	3.3	32.7	46.3	53.9	7.5	
Vert	4960.000	AV	30.7	32.0	5.5	31.9	36.3	53.9	17.6	Floor Noise
Vert	7440.000	AV	30.6	37.2	6.5	33.1	41.2	53.9	12.7	Floor Noise
Vert	9920.000	AV	30.7	39.0	7.4	33.5	43.6	53.9	10.3	Floor Noise

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

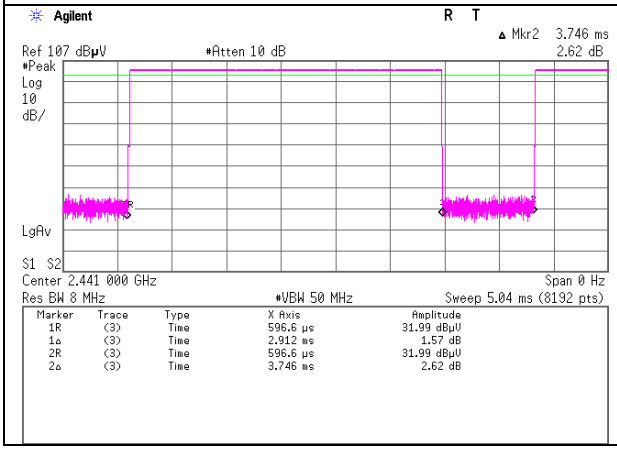
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

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

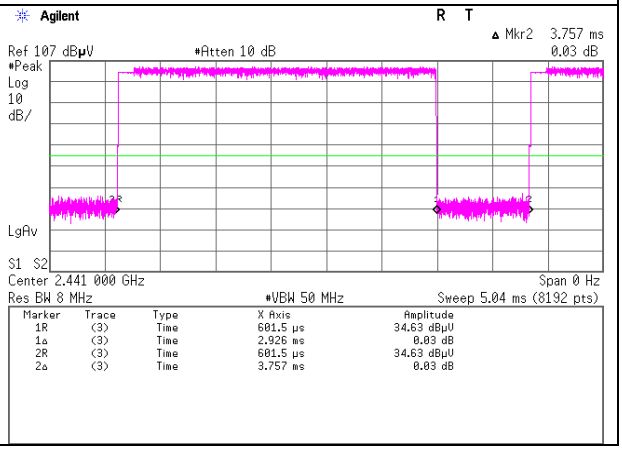
Burst Rate Confirmation

Test place	Ise EMC Lab. No.3 Measurement Room
Report No.	10636726H
Date	02/02/2015
Temperature/ Humidity	25 deg. C / 27% RH
Engineer	Tomoki Matsui
Mode	Tx (Hopping off) DH5/3DH5

DH5



3DH5

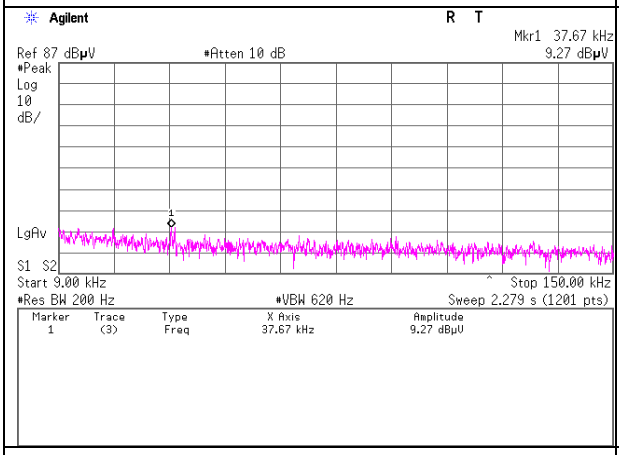


Conducted Spurious Emission

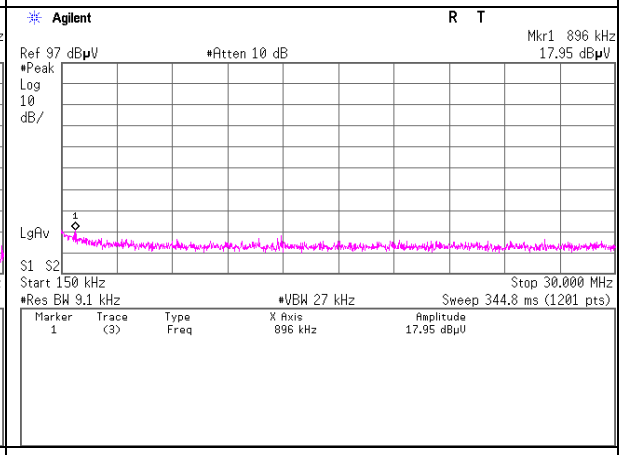
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5

Tx DH5 2402MHz

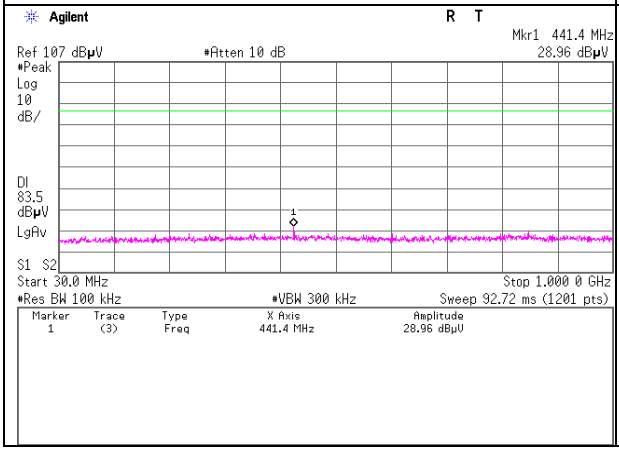
9kHz-150kHz



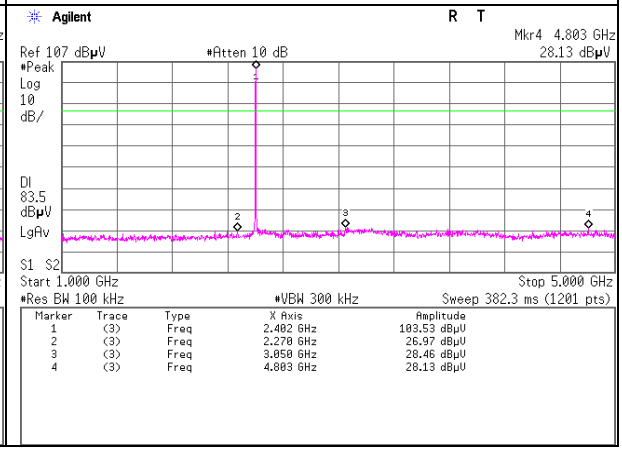
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



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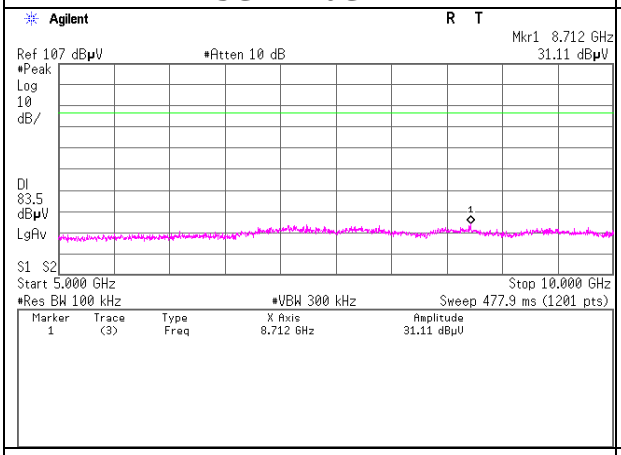
Facsimile : +81 596 24 8124

Conducted Spurious Emission

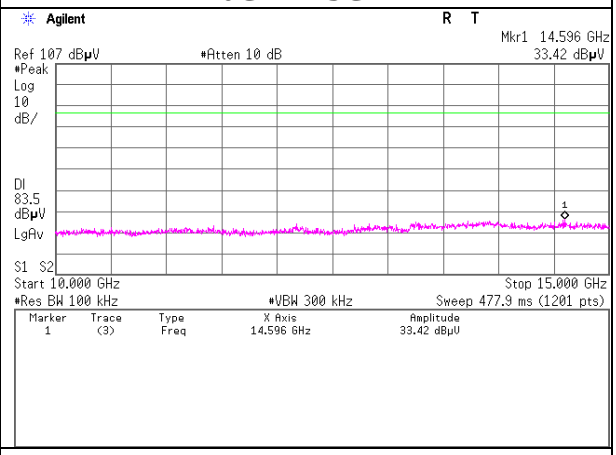
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5

Tx DH5 2402MHz

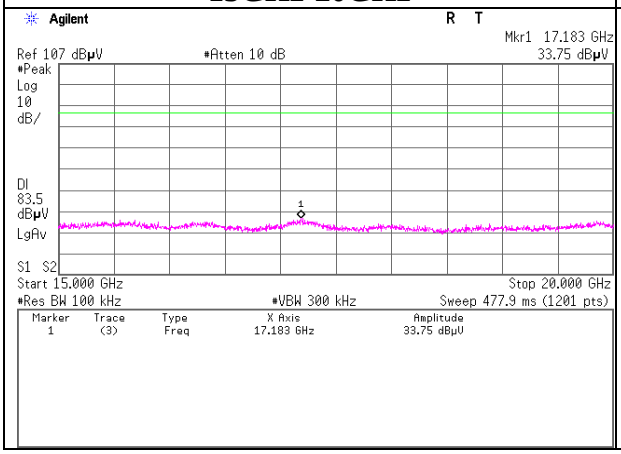
5GHz-10GHz



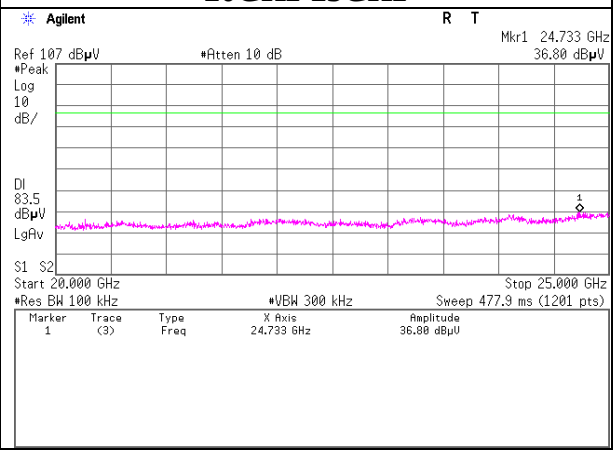
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

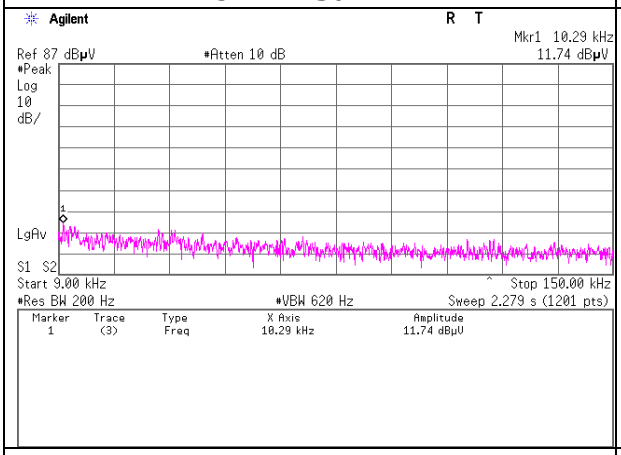


Conducted Spurious Emission

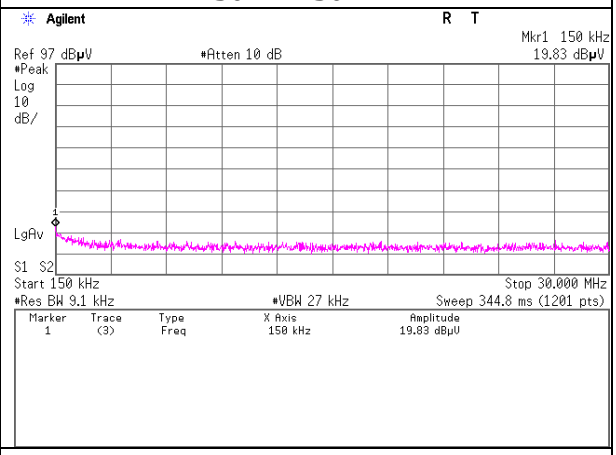
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5

Tx DH5 2441MHz

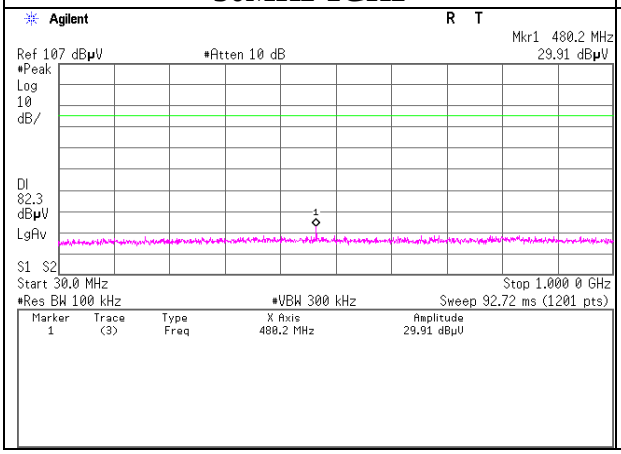
9kHz-150kHz



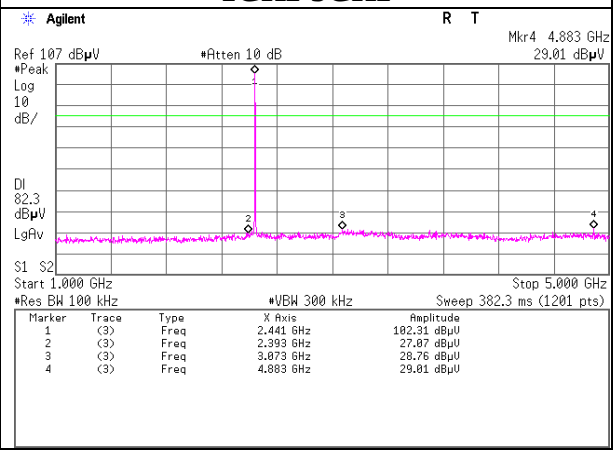
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz

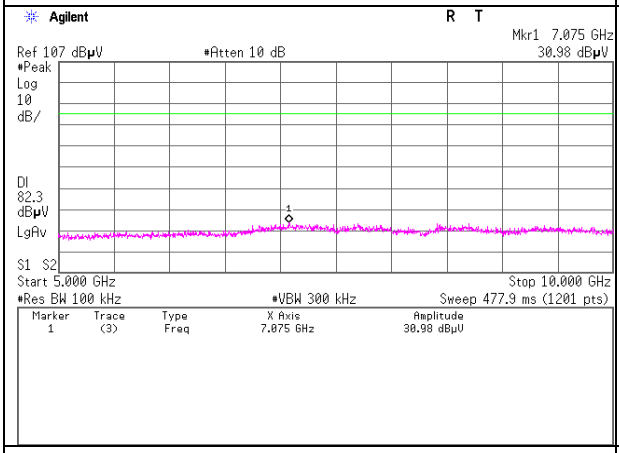


Conducted Spurious Emission

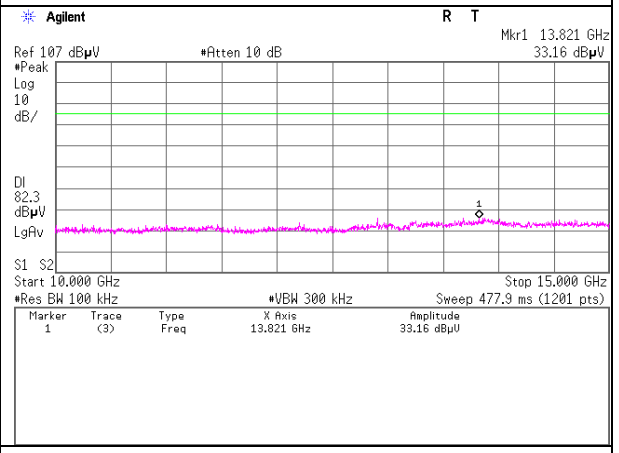
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5

Tx DH5 2441MHz

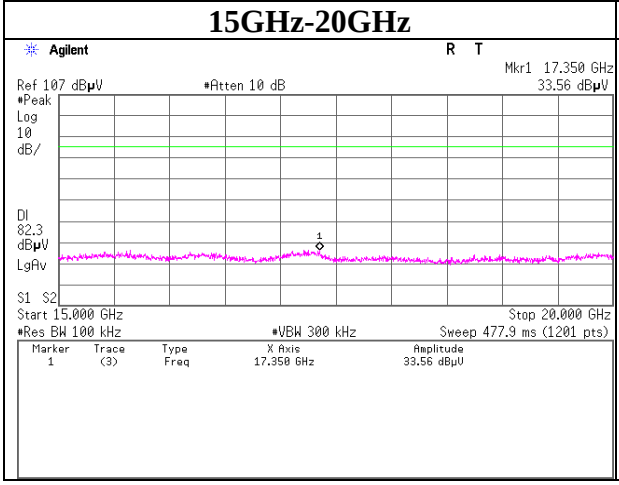
5GHz-10GHz



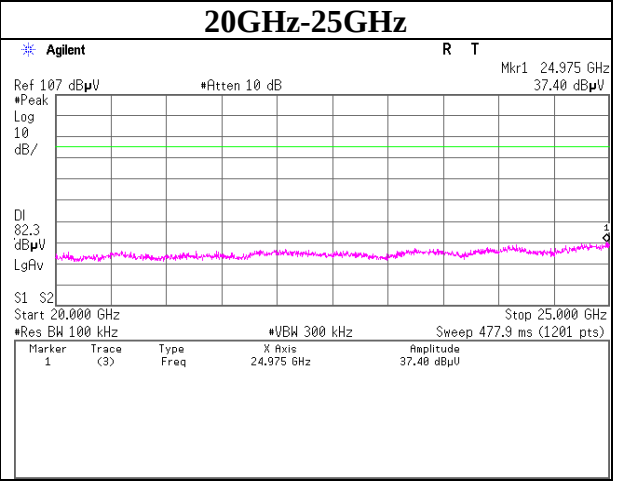
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

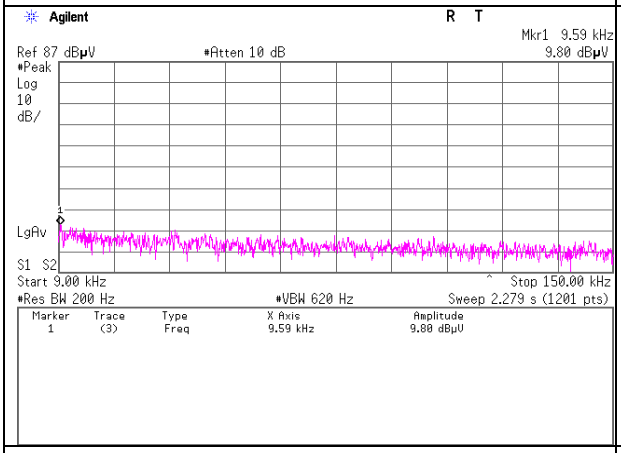


Conducted Spurious Emission

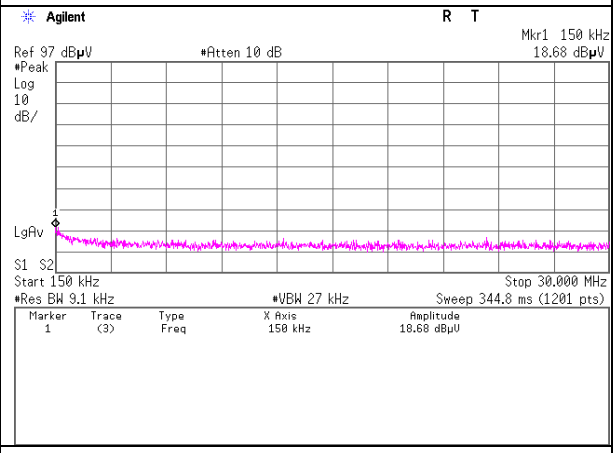
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5

Tx DH5 2480MHz

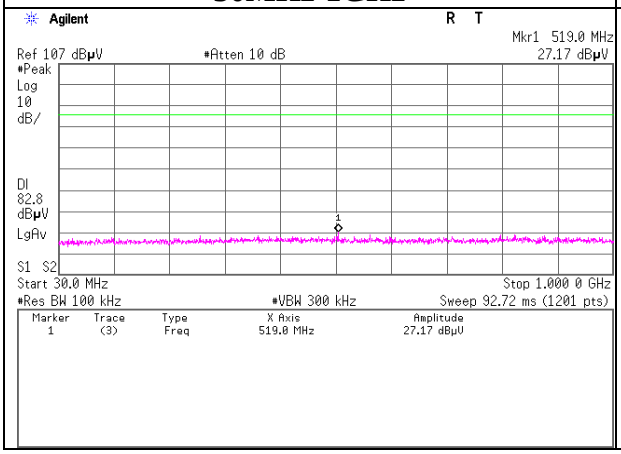
9kHz-150kHz



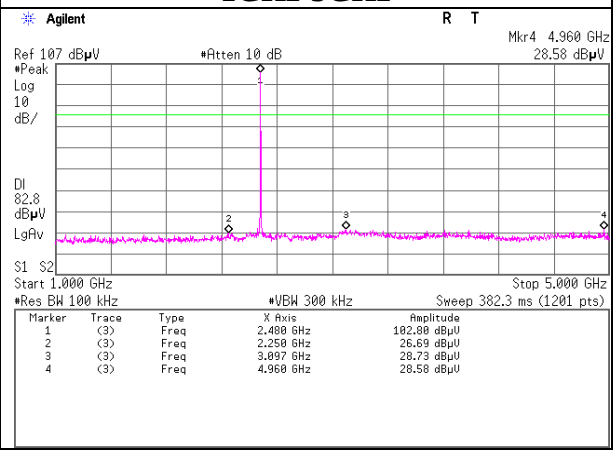
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



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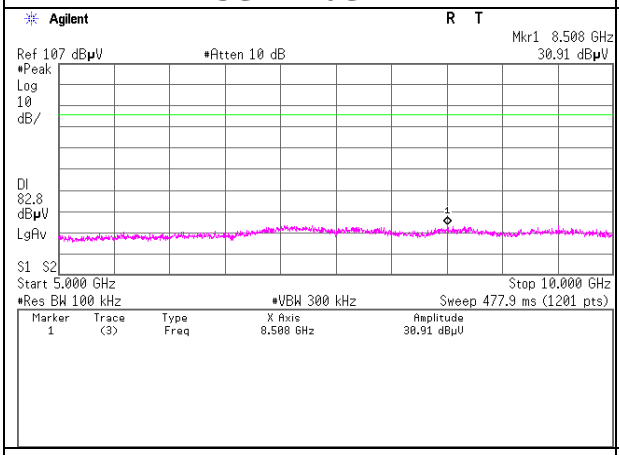
Conducted Spurious Emission

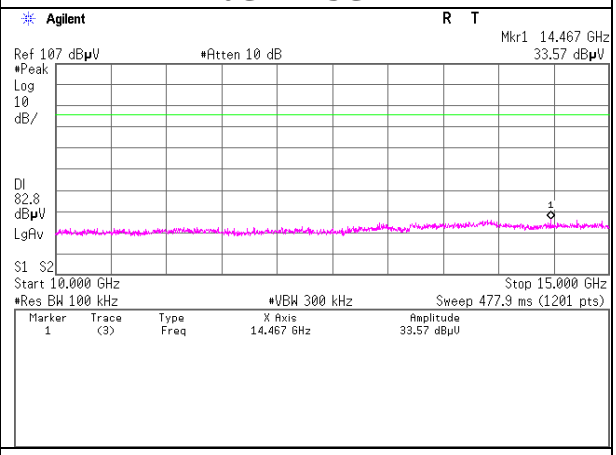
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5

Tx DH5 2480MHz

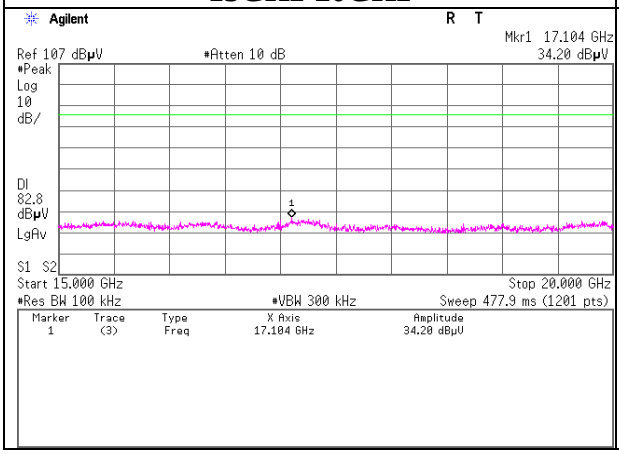
5GHz-10GHz



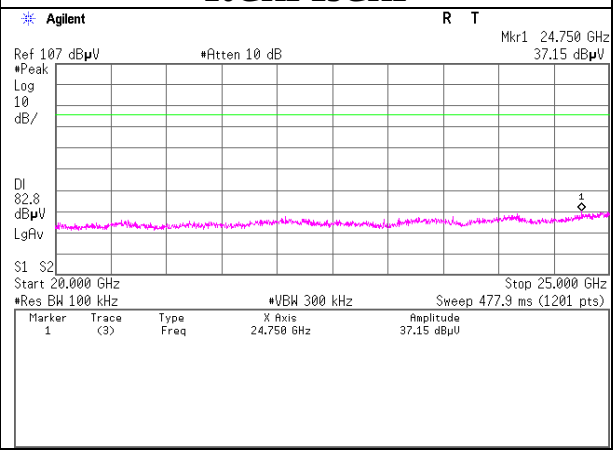
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

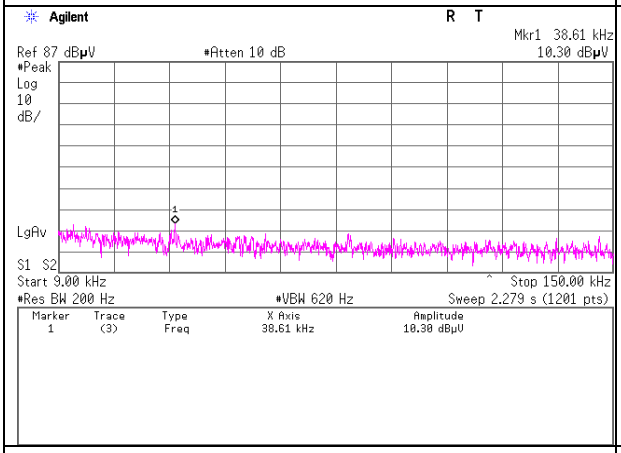


Conducted Spurious Emission

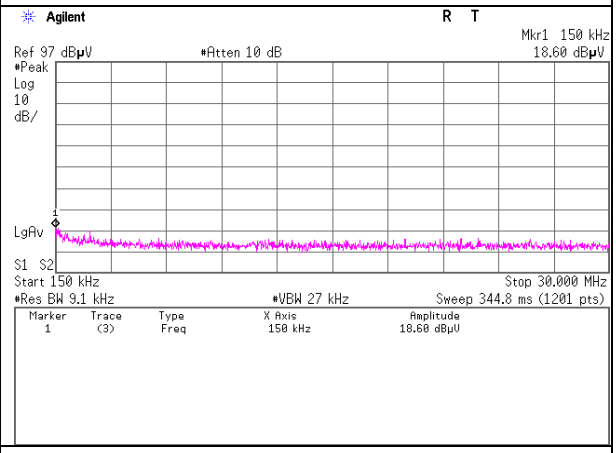
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) 3DH5

Tx 3DH5 2402MHz

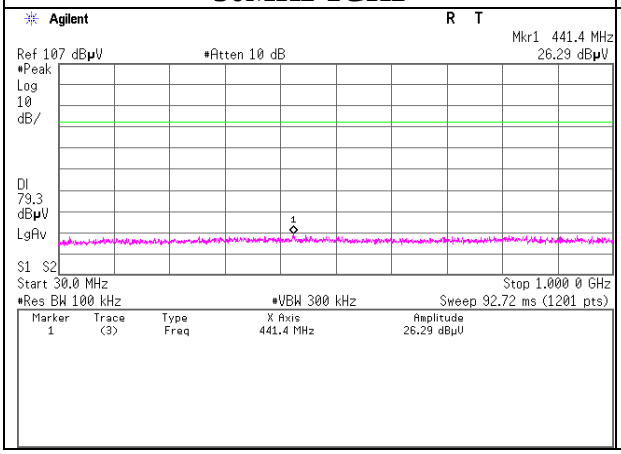
9kHz-150kHz



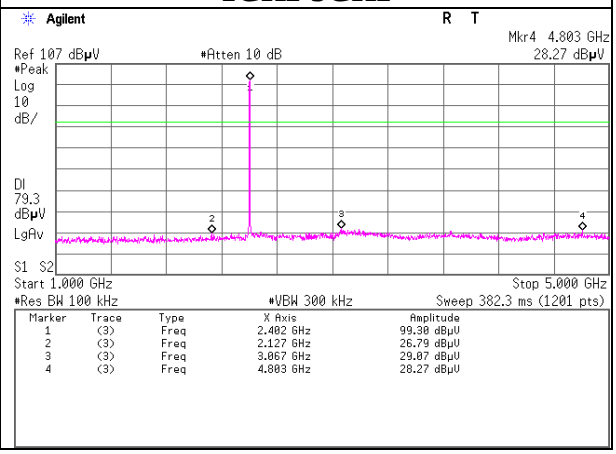
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



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Telephone : +81 596 24 8999
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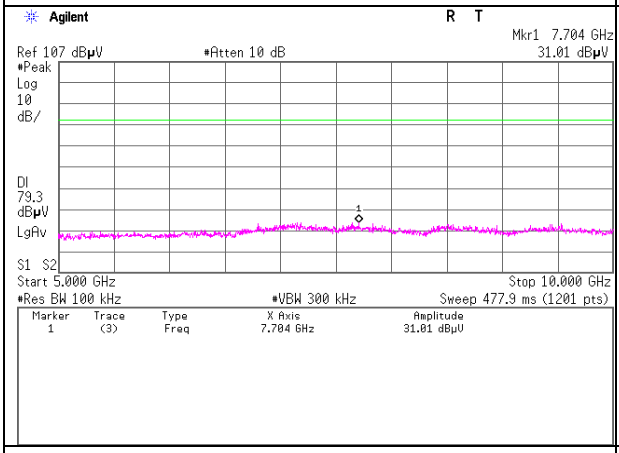
Conducted Spurious Emission

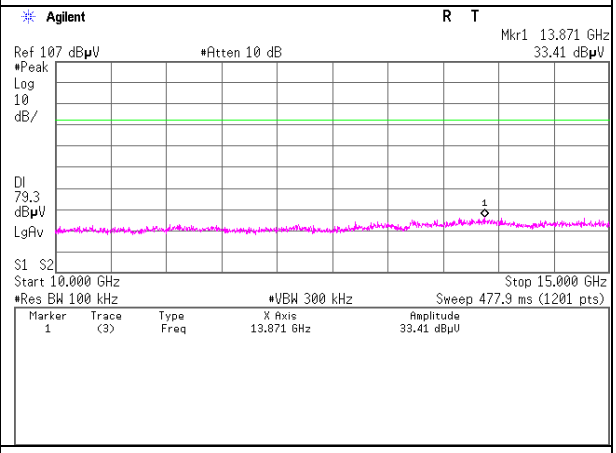
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) 3DH5

Tx 3DH5 2402MHz

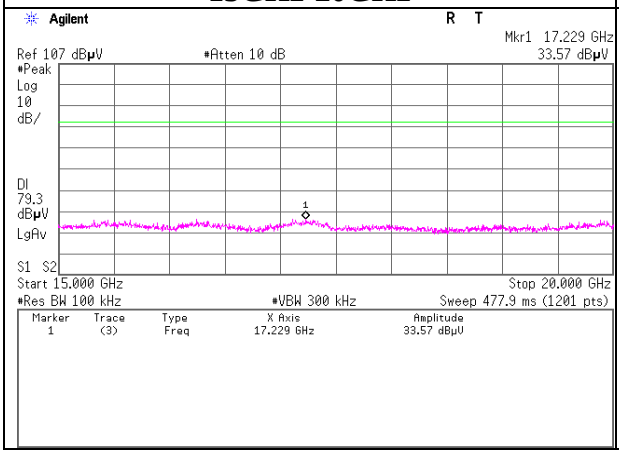
5GHz-10GHz



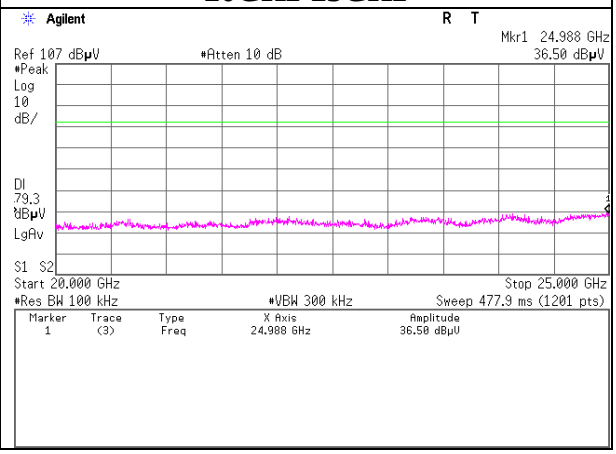
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

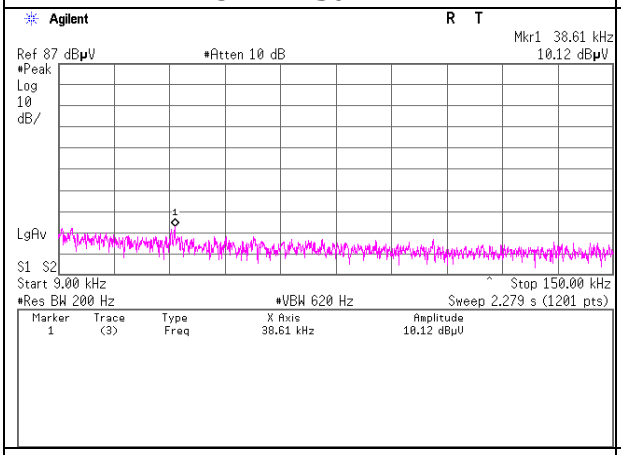


Conducted Spurious Emission

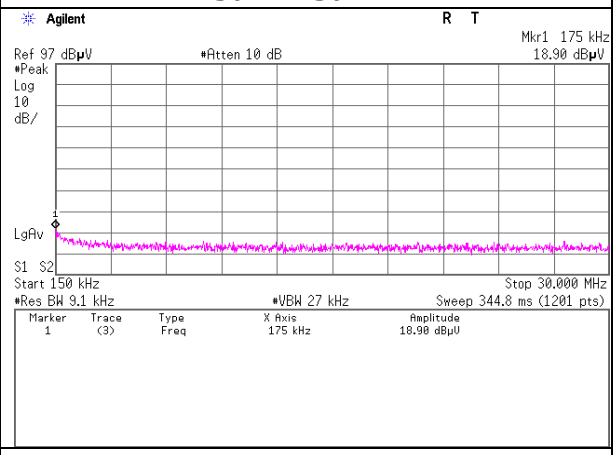
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) 3DH5

Tx 3DH5 2441MHz

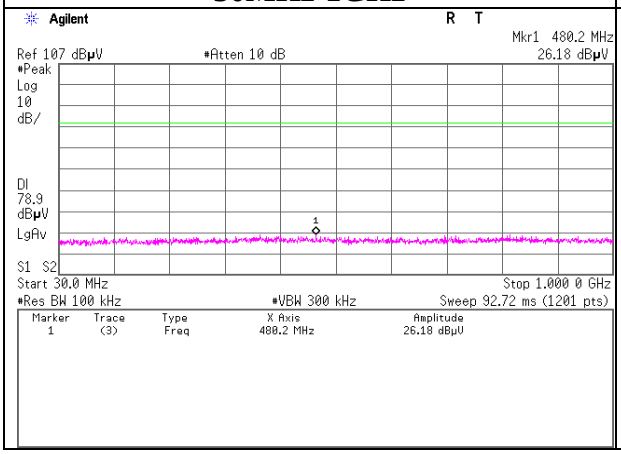
9kHz-150kHz



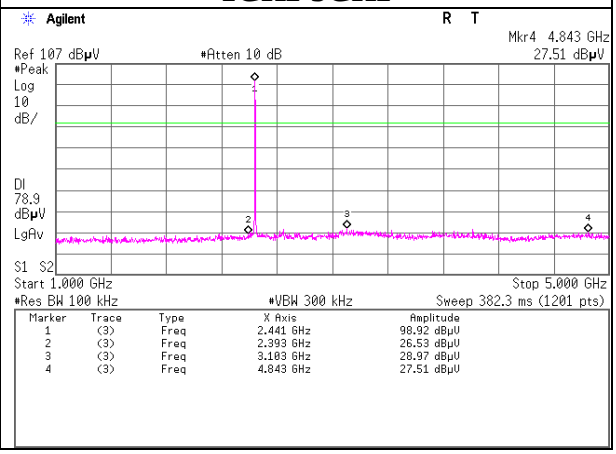
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz

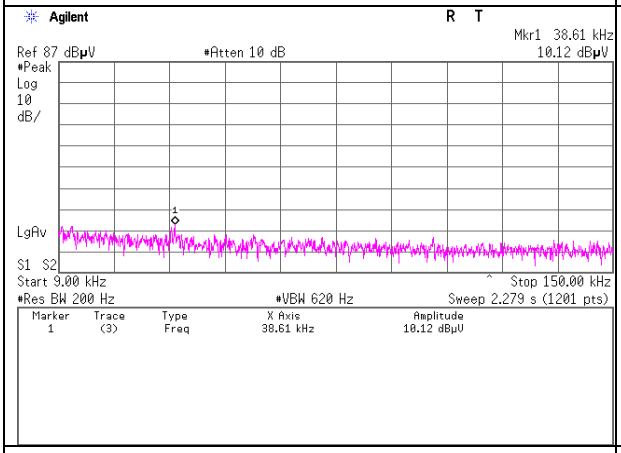


Conducted Spurious Emission

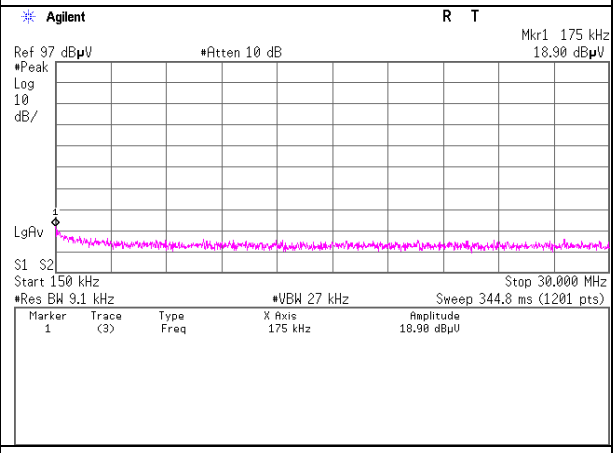
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) 3DH5

Tx 3DH5 2441MHz

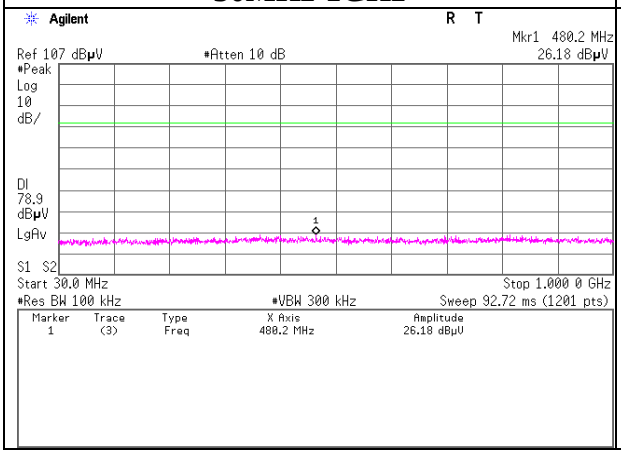
9kHz-150kHz



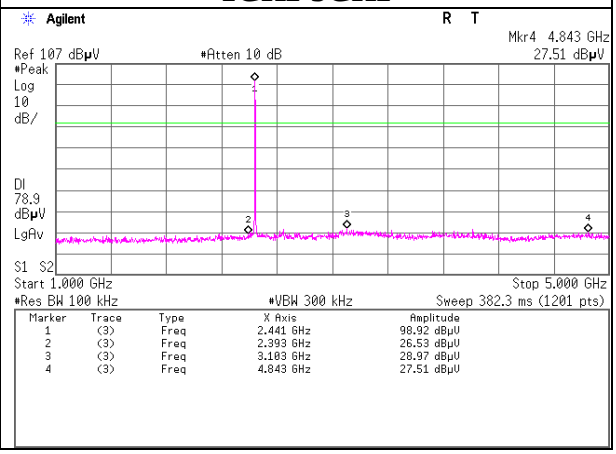
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz

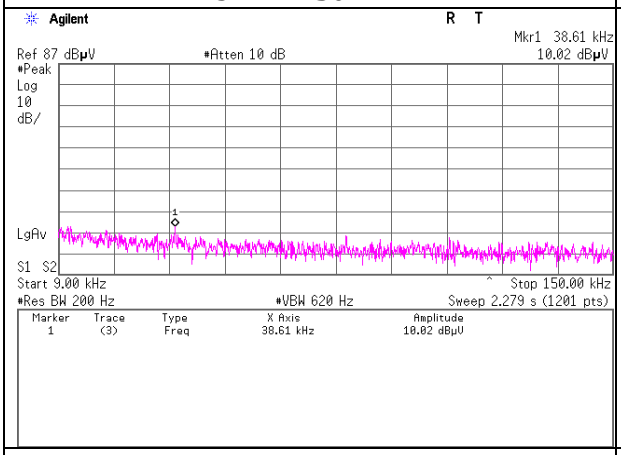


Conducted Spurious Emission

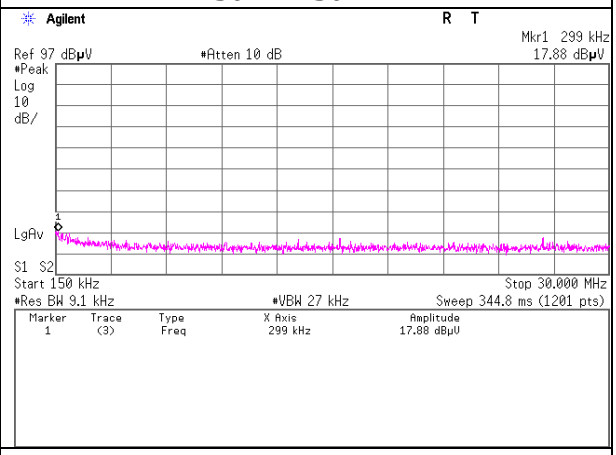
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) 3DH5

Tx 3DH5 2480MHz

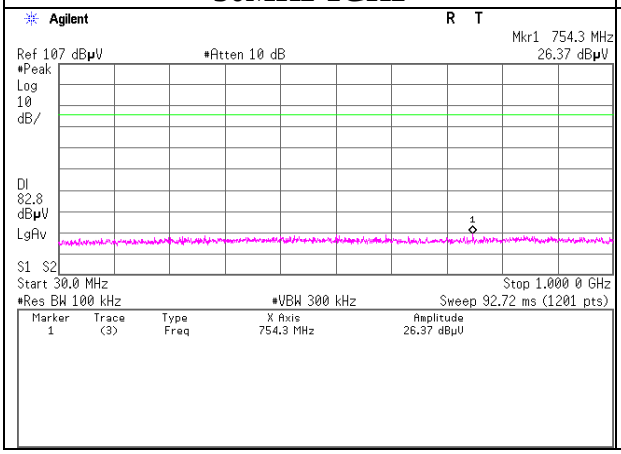
9kHz-150kHz



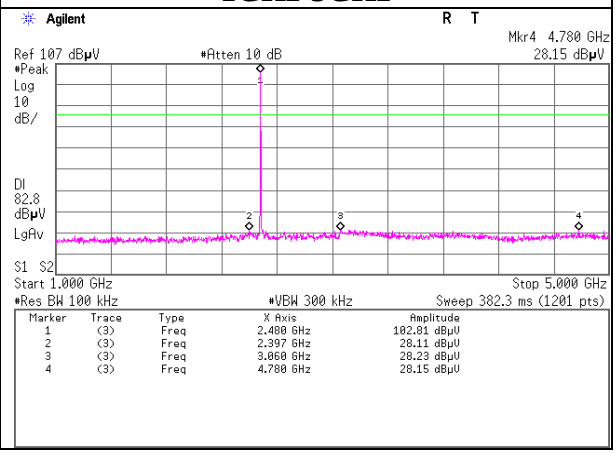
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



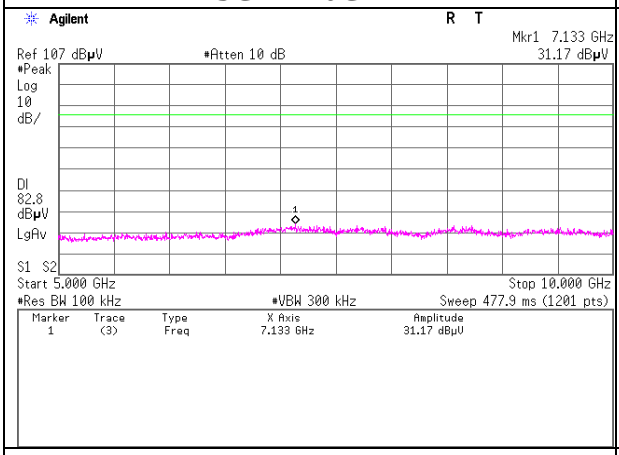
UL Japan, Inc.
Ise EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8999
Facsimile : +81 596 24 8124

Conducted Spurious Emission

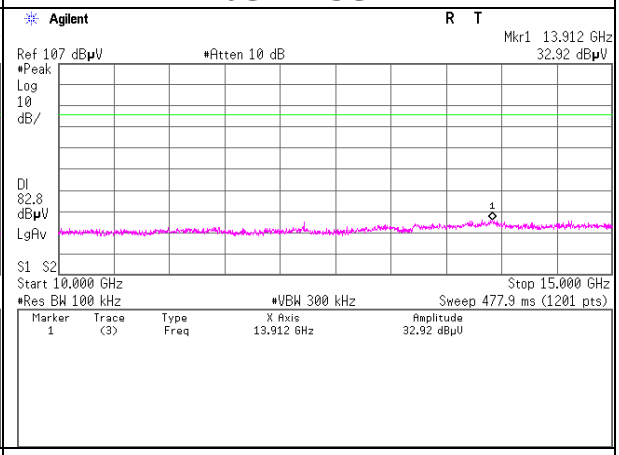
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) 3DH5

Tx 3DH5 2480MHz

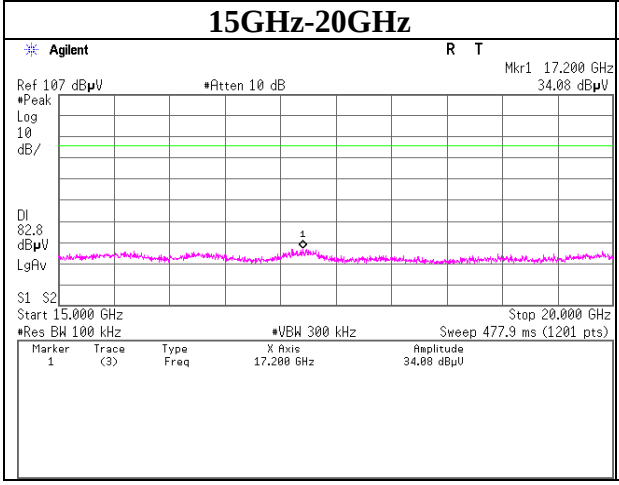
5GHz-10GHz



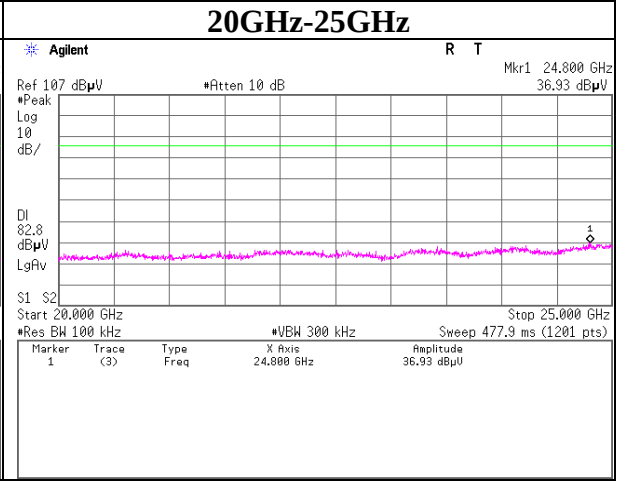
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

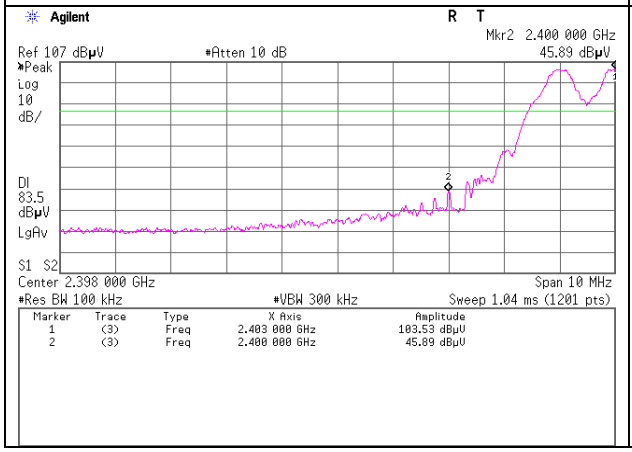


Conducted Emission Band Edge compliance

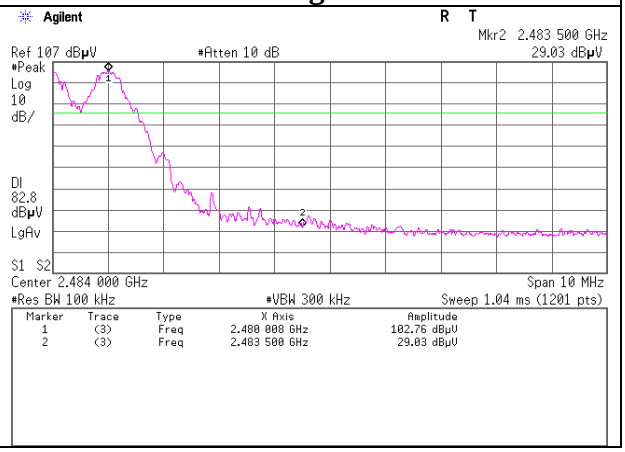
Report No.	10636726H	
Test place	Ise EMC Lab.	
Measurement Room	No.6	No.3
Date	01/15/2015	02/02/2015
Temperature / Humidity	23 deg. C / 38% RH	25 deg. C / 27% RH
Engineer	Takumi Shimada	Tomoki Matsui
Mode	Tx (Hopping on/off) DH5	

Tx DH5, Hopping on

Low

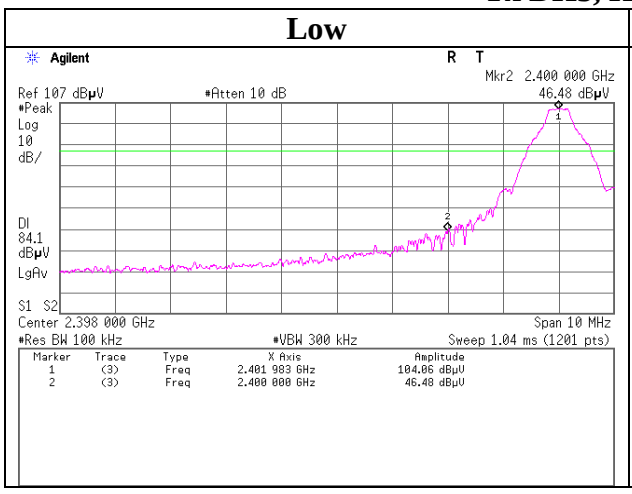


High

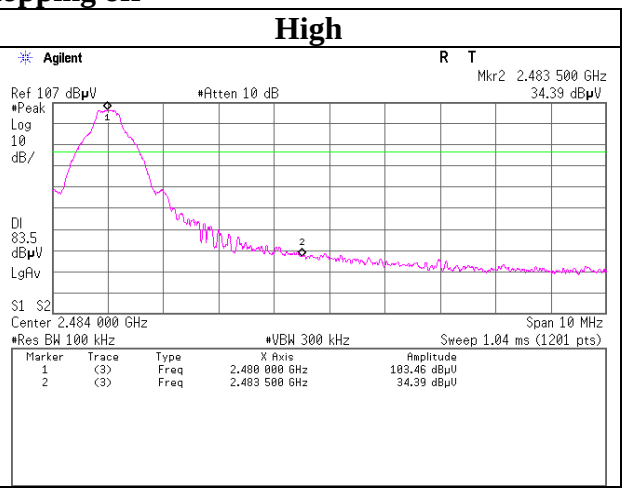


Tx DH5, Hopping off

Low



High

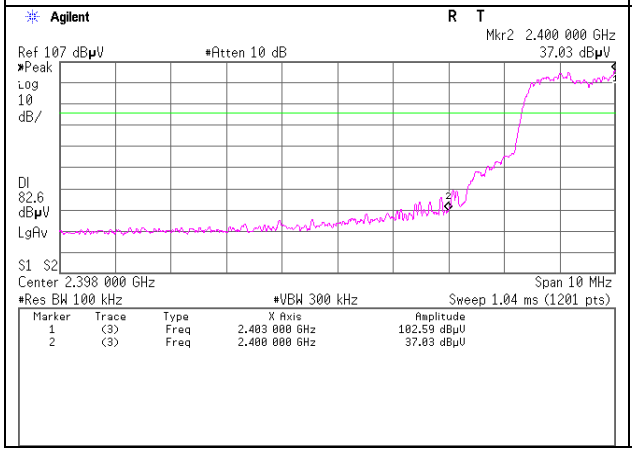


Conducted Emission Band Edge compliance

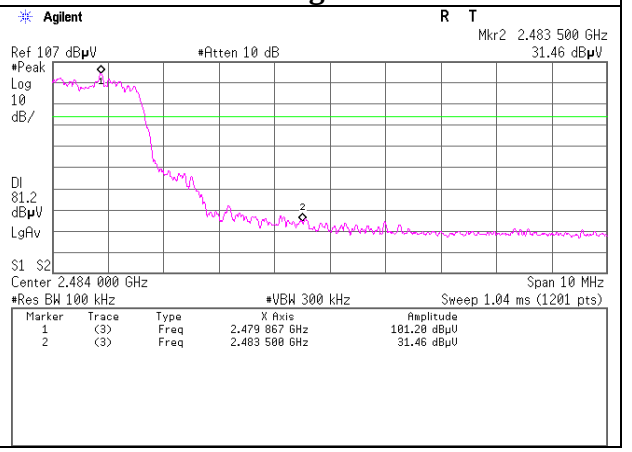
Report No.	10636726H	
Test place	Ise EMC Lab.	
Measurement Room	No.6	No.3
Date	01/15/2015	02/02/2015
Temperature / Humidity	23 deg. C / 38% RH	25 deg. C / 27% RH
Engineer	Takumi Shimada	Tomoki Matsui
Mode	Tx (Hopping on/off) 3DH5	

Tx 3DH5, Hopping on

Low

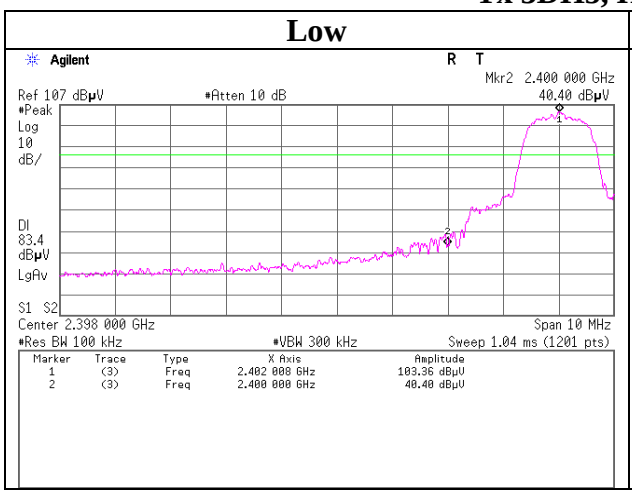


High

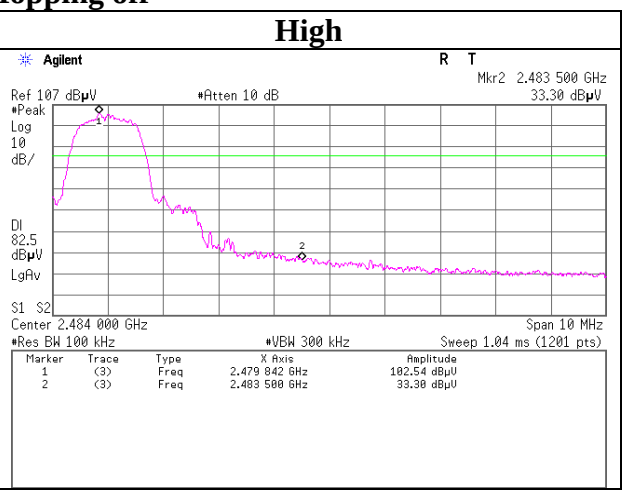


Tx 3DH5, Hopping off

Low



High

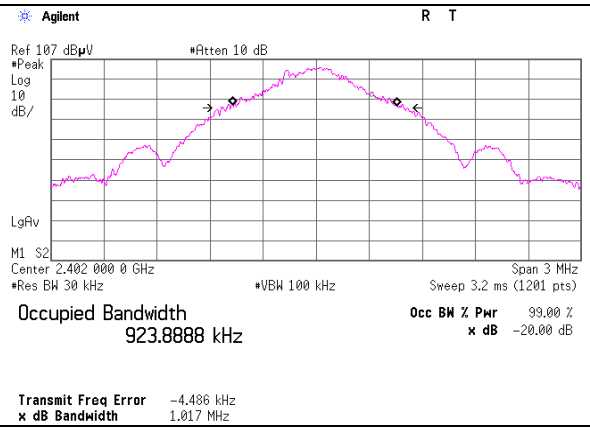


99%Occupied Bandwidth

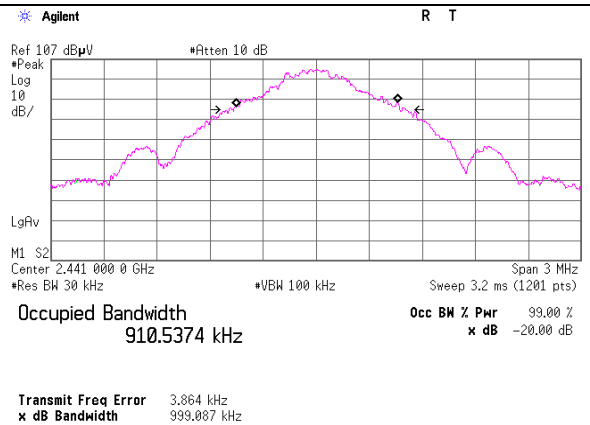
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10636726H
Date	01/15/2015
Temperature/ Humidity	23 deg. C / 38% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5/3DH5

Tx DH5, Hopping off

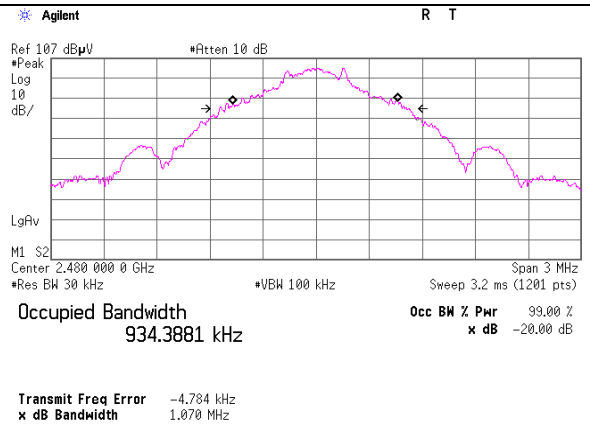
2402MHz



2441MHz

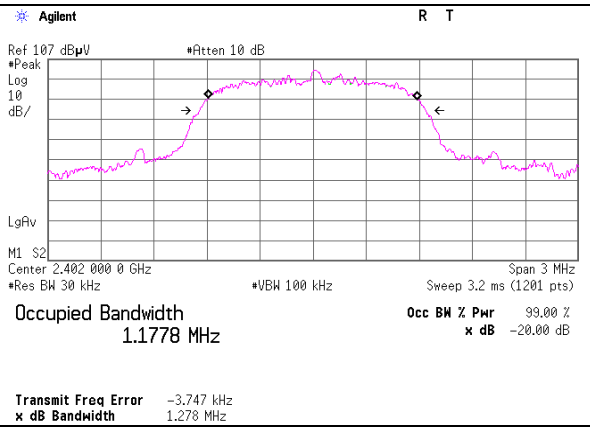


2480MHz

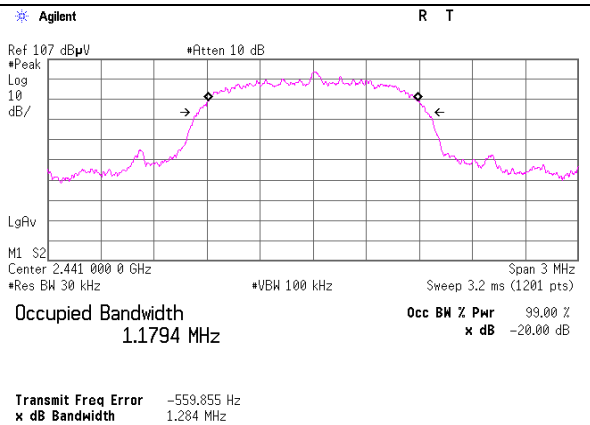


Tx 3DH5, Hopping off

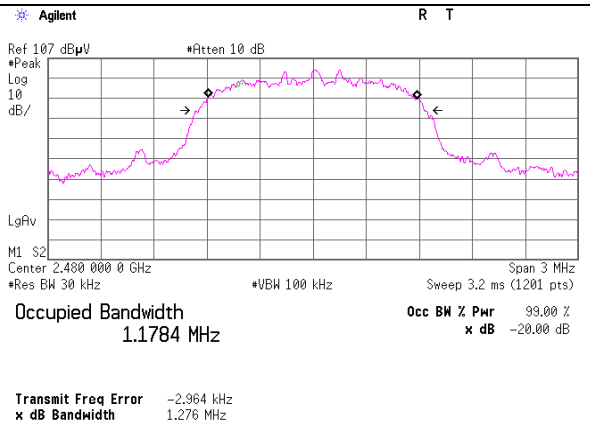
2402MHz



2441MHz



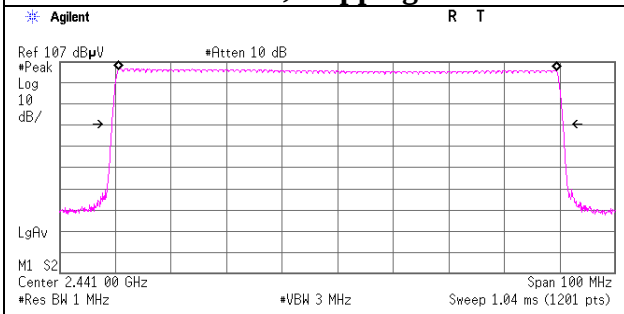
2480MHz



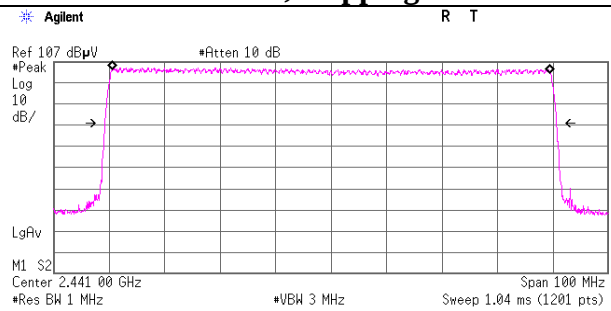
99% Occupied Bandwidth

Test place	Ise EMC Lab. No.3 Measurement Room
Report No.	10636726H
Date	02/02/2015
Temperature/ Humidity	25 deg. C / 27% RH
Engineer	Tomoki Matsui
Mode	Tx (Hopping on) DH5/3DH5

Tx DH5, Hopping on



Tx 3DH5, Hopping on



APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE/CE	2014/02/28 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	1501	RE/CE	2015/01/13 * 12
MJM-23	Measure	ASKUL	-	-	RE/CE	-
MHF-26	High Pass Filter 3.5-18.0GHz	UL Japan	HPF SELECTOR	002	RE	2014/09/24 * 12
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MSA-13	Spectrum Analyzer	Agilent	E4440A	MY46185823	RE	2014/06/06 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2014/08/12 * 12
MCC-141	Microwave Cable	Junkosha	MWX221	1305S002R(1m) / 1405S146(5m)	RE	2014/06/11 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2014/03/11 * 12
MHA-17	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170307	RE	2014/06/11 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	100084	RE/CE	2014/11/10 * 12
MBA-05	Biconical Antenna	Schwarzbeck	BBA9106	1302	RE	2014/11/22 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	N/A	RE	2014/11/22 * 12
MCC-50	Coaxial Cable	UL Japan	-	-	RE	2014/06/02 * 12
MAT-68	Attenuator	Anritsu	MP721B	6200961025	RE	2014/11/11 * 12
MPA-14	Pre Amplifier	SONOMA INSTRUMENT	310	260833	RE	2014/03/14 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	AT	2014/04/08 * 12
MCC-96	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX102	30817/2	AT	2014/05/16 * 12
MAT-58	Attenuator(10dB)	Suhner	6810.19.A	-	AT	2015/01/09 * 12
MPM-09	Power Meter	Anritsu	ML2495A	6K00003348	AT	2014/10/06 * 12
MPSE-12	Power sensor	Anritsu	MA2411B	011598	AT	2014/10/06 * 12
MOS-14	Thermo-Hygrometer	Custom	CTH-201	1401	AT	2015/01/13 * 12
MLS-23	LISN(AMN)	Schwarzbeck	NSLK8127	8127-729	CE(EUT)	2014/07/10 * 12
MAT-67	Attenuator	JFW Industries, Inc.	50FP-013H2 N	-	CE	2015/01/29 * 12
MCC-113	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W(10m)/SFM141(5m)/421-010(1m)/sucoform141-PE(1m)/RFM-E121(Switcher)	-/04178	CE	2014/07/15 * 12
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	AT	2014/02/20 * 12
MCC-67	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX102	28635/2	AT	2014/04/14 * 12
MAT-23	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2014/03/13 * 12
MOS-12	Thermo-Hygrometer	Custom	CTH-180	1201	AT	2015/01/13 * 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
RE: Radiated Emission
AT: Antenna Terminal Conducted test