RADIO TEST REPORT

Test Report No. : 11008648S-A

Applicant	:	**Panasonic Corporation**
Type of Equipment	:	**Car Audio System**
Model No.	:	**AT1603**
FCC ID	:	**ACJ932AT1603**
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.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
6. This test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)

Date of test: October 29 to November 26, 2015

Representative test engineer:
Yosuke Ishikawa
Engineer
Consumer Technology Division

Approved by:
Ichiro Isozaki
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☒ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan.
☐ There is no testing item of "Non-accreditation".

RTL02610

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REVISION HISTORY

Original Test Report No.: 11008648S-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	11008648S-A	December 11, 2015	-	-

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SECTION 1: Customer information

Company Name	:	Panasonic Corporation
Address	:	4261 Ikonobe-cho, Tsuzuki-ku, Yokohama-city, 224-8520, Japan
Telephone Number	:	+81-50-3689-6981
Contact Person	:	Hiroyuki Ishikawa

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

2.1 Identification of E.U.T.

Type of Equipment	:	Car Audio System
Model No.	:	AT1603
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 13.2 V
Receipt Date of Sample	:	October 27, 2015
Country of Mass-production	:	Japan, Czech, Mexico, Thailand
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: AT1603 (referred to as the EUT in this report) is a Car Audio System.

General Specification

Clock frequency(ies) in the system	:	37 MHz, 48 MHz, 54.9 MHz, 194 MHz, 795 MHz, 1.56 GHz

Radio Specification

Radio Type	:	Transceiver
Frequency of Operation	:	2402 MHz - 2480 MHz
Modulation	:	FHSS
Power Supply (radio part input)	:	DC 3.3 V, DC 1.8 V
Antenna type	:	Dipole Antenna
Antenna gain with cable loss	:	-0.525 dBi

There are 2 types for AT1603; Display Combined Type (T2)) and Display Separated Type (L2)). The same radio module and antenna are installed in these models, however the substrate pattern and antenna arrangement are different.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart C: 2015, final revised on November 23, 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

*Some parts are effective on and after December 17, 2015 or December 23, 2015. The revision 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	-	N/A *1)	-
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)		-	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	Display Combined Type (T2) 7.7 dB 930.000 MHz, QP, Vertical Tx 2441 MHz, DH5 Display Separated Type(L2) 10.3 dB 9608.000 MHz, AV, Horizontal, Vertical Tx 2402 MHz, DH5,3DH5	Complied	Conducted/ Radiated
Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422. *1) The test is not applicable since the EUT has no AC mains.					

* In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred.
However, there is one deviation from ANSI C 63.10:2013. (ANSI C63.10:2013 is Non-accreditation)
Measurement height is not 1.5 m, but 0.8 m.

FCC Part 15.31 (e)

The equipment provides the wireless transmitter with stable power supply (RF: 3.3 V, I/O: 1.8 V).
Instead of a new battery, DC power supply was used for the test. That does not affect the test result, therefore the EUT complies with the requirement.

FCC Part 15.203

The equipment and its antenna comply with the requirement since the antenna is built in the equipment and it cannot be replaced by end users.

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

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k = 2$.
Shonan EMC Lab.

Item	Frequency range	Uncertainty (+/-)		
		No. 1 SAC / SR	No. 2 SAC / SR	No. 3 SAC / SR
Conducted emission (AC Mains) LISN	150 kHz-30 MHz	3.6 dB	3.4 dB	3.4 dB
Radiated emission (Measurement distance: 3 m)	9 kHz-30 MHz	3.7 dB	3.5 dB	3.5 dB
	30 MHz-300 MHz	4.9 dB	4.9 dB	4.7 dB
	300 MHz-1 GHz	5.0 dB	5.0 dB	4.8 dB
	1 GHz-13 GHz	4.9 dB	4.9 dB	4.9 dB
Radiated emission (Measurement distance: 1 m)	13 GHz-18 GHz	5.7 dB	5.7 dB	5.7 dB
	18 GHz-40 GHz	4.5 dB	4.3 dB	4.3 dB

SAC=Semi-Anechoic Chamber
SR= Shielded Room is applied besides radiated emission

Antenna terminal test	Uncertainty (+/-)
Power Measurement above 1 GHz (Average Detector)_SPM-06	0.76 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-06	0.79 dB
Power Measurement above 1 GHz (Average Detector)_SPM-07	0.74 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-07	1.08 dB
Spurious emission (Conducted) below 1GHz	1.5 dB
Spurious emission (Conducted) 1 GHz-3 GHz	1.7 dB
Spurious emission (Conducted) 3 GHz-18 GHz	2.4 dB
Spurious emission (Conducted) 18 GHz-26.5 GHz	2.5 dB
Spurious emission (Conducted) 26.5 GHz-40 GHz	2.5 dB
Bandwidth Measurement	0.66 %
Duty cycle and Time Measurement	0.012 %

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

3.5 Test Location

UL Japan, Inc. Shonan EMC Lab.
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Telephone: +81 463 50 6400, Facsimile: +81 463 50 6401
JAB Accreditation No. RTL02610

Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
No.2 Semi-anechoic chamber	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
No.3 Semi-anechoic chamber	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5m
No.4 Semi-anechoic chamber	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
No.1 Shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.2 Shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.3 Shielded room	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
No.4 Shielded room	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
No.5 Shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.6 Shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.8 shielded room	-	3.45 x 5.5 x 2.4	3.45 x 5.5	-
No.1 Measurement room	-	2.55 x 4.1 x 2.5	-	-

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

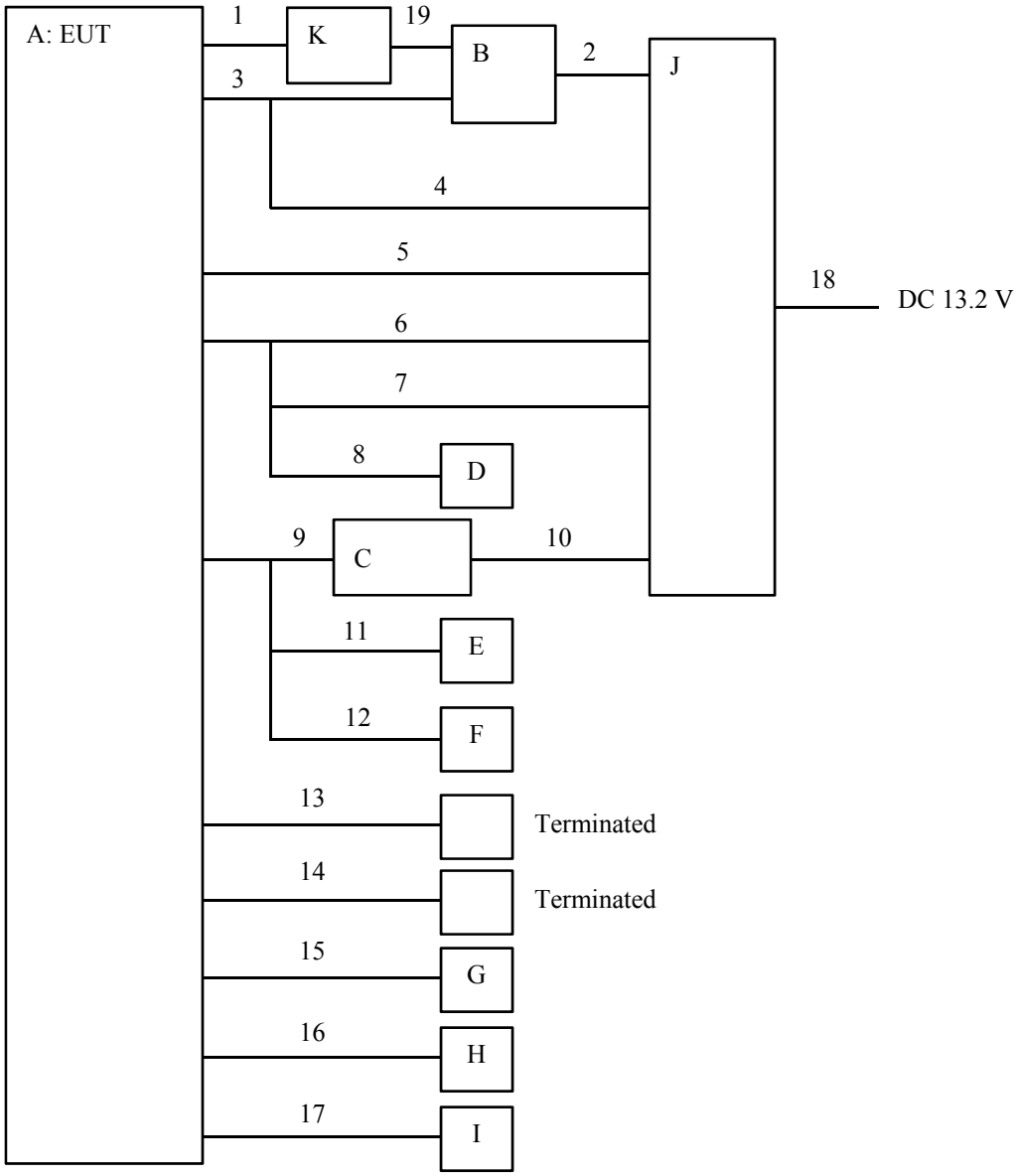
Details of Operating Mode(s)

Test Item	Mode	Tested frequency
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. Power settings: Fixed Software (Firmware): D17517010700001V0, Ver. 1.0		

Since the substrate pattern and antenna arrangement are different, the test has been performed with Display Combined Type (T2)) and Display Separated Type (L2)).

4.2 Configuration and peripherals

Display Combined Type (T2)



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

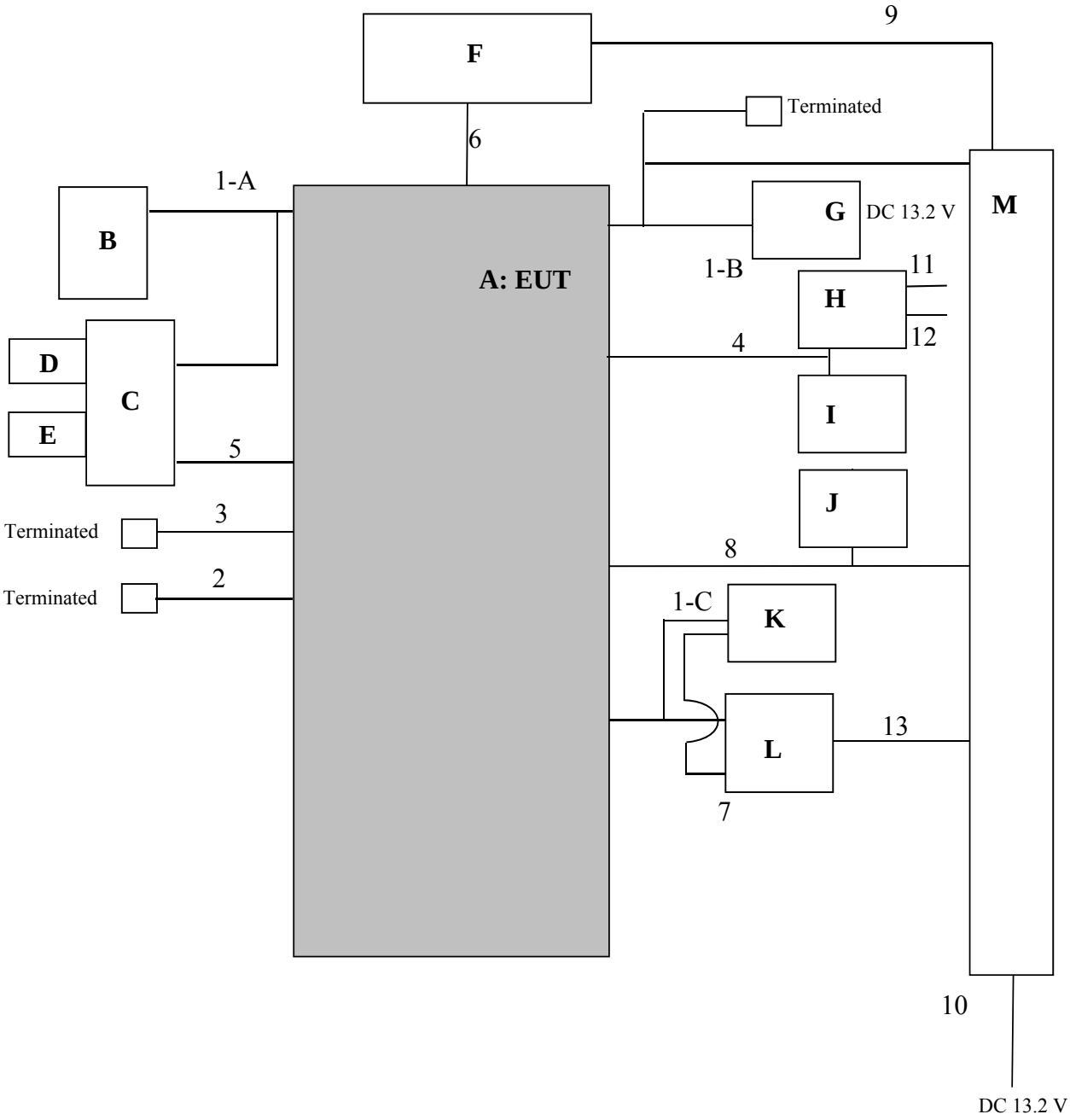
Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Car Audio System	AT1603 (Display Combined Type (T2))	CV-CS87N08X No.180	Panasonic	EUT
B	MEU	-	-	-	-
C	AIR-con ECU	-	-	-	-
D	Steering Switch	ST-SW-IF	31	Panasonic	-
E	Microphone	-	86730-28040	-	-
F	Back Camera	-	86730-28040	-	-
G	USB Memory	USM4GU	-	Sony	-
H	XM Antenna	-	-	-	-
I	GPS Antenna	-	-	Panasonic	-
J	Vehicle Signal Simulator	-	-	Panasonic	-
K	DCM	-	86741-53054	DENSO	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Signal Cable	0.9	Unshielded	Unshielded	-
2	DC Cable	0.9	Unshielded	Unshielded	-
3	Signal Cable	2.3	Unshielded	Unshielded	-
4	DC Cable	0.9	Unshielded	Unshielded	-
5	DC Cable	0.9	Unshielded	Unshielded	-
6	DC Cable	1.5	Unshielded	Unshielded	-
7	DC Cable	2.5	Unshielded	Unshielded	-
8	Signal Cable	2.0	Unshielded	Unshielded	-
9	Signal Cable	1.5	Unshielded	Unshielded	-
10	DC Cable	0.9	Unshielded	Unshielded	-
11	Signal Cable	2.0	Shielded	Shielded	-
12	Signal Cable	2.5	Unshielded	Unshielded	-
13	Speaker Cable	1.1	Unshielded	Unshielded	-
14	Radio Cable	2.8	Shielded	Shielded	-
15	USB Cable	2.0	Shielded	Shielded	-
16	XM Antenna Cable	1.1	Unshielded	Unshielded	-
17	GPS Antenna Cable	2.0	Unshielded	Unshielded	-
18	DC Cable	1.5	Unshielded	Unshielded	-
19	Signal Cable	2.0	Shielded	Shielded	-

Display Separated Type (L2)



* 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	Car Audio System	AT1603 (Display Separated Type (L2))	CV-DL56N0AJ No.13	Panasonic	EUT
B	Steering SW	-	0009	-	-
C	IF-Box	-	3	-	-
D	USB memory	USM-4GU	-	SONY	-
E	USB memory	USM-4GU	-	SONY	-
F	Display	-	83290-48130	-	-
G	Microphone	-	-	-	-
H	AMP	86280-76050	521342	Panasonic	-
I	Back Camera	-	-	-	-
J	RSE	-	15_ECU-1S-053	-	-
K	DCM	OGTT86	8KYLK327398	DENSO	-
L	MEU	17CY MEU T2	3	-	-
M	Vehicle signal simulator	EPS-01	19	-	-

List of cables usedList of cables used

No.		Name			
1-A		General-purpus connector			
Pin No.	Terminal name	W/H type	W/H length (mm)	Load simulator	Remark
A-1	GND1	Single	2000	Battery -	-
A-2	GND2	Single	2000	IF-BOX	-
A-3	+B	Single	2000	IF-BOX	-
A-4	+B1	Single	2000	Battery +	-
A-5	TX1+	Twisted	2000	OPEN (DISPLAY)	-
A-6	TX1-	Twisted	2000	OPEN (DISPLAY)	-
A-7	VV+	Shielded	-	-	-
A-8	VV-	Shielded	-	-	-
A-9	SG	Shielded	-	-	-
A-10	AGND	Shielded	2000	IF-BOX	-
A-11	VAL+	Shielded	2000	IF-BOX	-
A-12	VAR+	Shielded	2000	IF-BOX	-
A-13	VA-	Shielded	2000	IF-BOX	-
A-14	ADPG	Shielded	2000	IF-BOX	-
A-15	ACC1	Single	2000	Battery +	-
A-16	ACC	Single	2000	IF-BOX	-
A-17	TX2+	Twisted	2000	OPEN	-
A-18	TX2-	Twisted	2000	OPEN	-
A-19	TX+	Twisted	2000	OPEN	-
A-20	TX-	Twisted	2000	OPEN	-
A-21	SW1	Single	2000	Steering SW	-
A-22	SW2	Single	2000	Steering SW	-
A-23	SW3	-	-	-	-
A-24	SWG	Single	2000	Steering SW	-
A-25	MUT1	-	-	-	-
A-26	-	-	-	-	-
A-27	SPD	Single	2000	Vehicle signal simulator	-
A-28	REV	Single	2000	Vehicle signal simulator	-

No.	Name				
1-B	General-purpus connector				
Pin No.	Terminal name	W/H type	W/H length (mm)	Load simulator	Remark
B-1	VMTF	Single	2000	DISPLAY	-
B-2	SECH	Single	2000	OPEN	-
B-3	TMUT	-	-	-	-
B-4	ADIM	Single	2000	Battery +	-
B-5	CNH1	Twisted	2000	Terminated	-
B-6	CNL1	Twisted	2000	Terminated	-
B-7	PBEW	Single	2000	OPEN	-
B-8	AIR	Single	2000	OPEN	-
B-9	ARON	Single	2000	OPEN	-
B-10	HAZ	Single	2000	OPEN	-
B-11	LJB	Single	2000	OPEN	-
B-12	SEUC	Single	2000	OPEN	-
B-13	CANH	Twisted	2000	DCM	-
B-14	CANL	Twisted	2000	DCM	-
B-15	ILL+	Single	2000	Battery +	-
B-16	ILL-	Single	2000	OPEN	-
B-17	CNH2	Twisted	2000	OPEN	-
B-18	CNL2	Twisted	2000	OPEN	-
B-19	IG	Single	2000	Vehicle signal simulator	-
B -20	PKB	Single	2000	Vehicle signal simulator	-
B -21	MIN+	Shielded	2000	Microphone	-
B -22	MIN-	Shielded	2000	Microphone	-
B -23	MACC	Shielded	2000	Microphone	-
B -24	SGND	Shielded	2000	Microphone	-
B -25	SNS2	Single	2000	Microphone	-
B -26	HFL	Single	2000	OPEN	-
B -27	FLSW	Single	2000	OPEN	-
B -28	-	-	-	-	-
B -29	CNH3	Twisted	2000	OPEN	-
B -30	CNL3	Twisted	2000	OPEN	-

No.	Name				
1-C	General-purpus connector				
Pin No.	Terminal name	W/H type	W/H length (mm)	Load simulator	Remark
C-1	TEST	Single	2000	OPEN	-
C-2	-	-	-	-	-
C-3	-	-	-	-	-
C-4	-	-	-	-	-
C-5	TX3+	Twisted	300	MEU	-
C-6	TX3-	Twisted	300	MEU	-
C-7	SUP	Single	300	MEU	-
C-8	UIND	Single	2000	OPEN (DISPLAY)	-
C-9	UPSW	Single	2000	OPEN (DISPLAY)	-
C-10	USBV	Single	2000	DCM	-
C-11	USBG	Single	2000	DCM	-
C-12	SGND	Shielded	2000	DCM	-
C-13	VOR+	Shielded	2000	DCM	-
C-14	VOR-	Shielded	2000	DCM	-
C-15	VOT+	Shielded	2000	DCM	-
C-16	VOT-	Shielded	2000	DCM	-
C-17	TX4+	Twisted	2000	OPEN	-
C-18	TX4-	Twisted	2000	OPEN	-
C-19	RST	Single	300	MEU	-
C-20	VMTR	Single	2000	OPEN（RSE）	-
C-21	SIGD	Shielded	300	MEU	-
C-22	SI+	Shielded	300	MEU	-
C-23	SI-	Shielded	300	MEU	-
C-24	SGND	Shielded	300	MEU	-
C-25	MCO+	Shielded	300	MEU	-
C-26	MCO-	Shielded	300	MEU	-
C-27	-	-	-		-
C-28	REV2	Single	300	MEU	-

No.		Name			
2		Radio/D-Radio antenna			
Pin No.	Terminal name	W/H type	W/H length (mm)	Load simulator	Remark
Radio-1	SUB	Shielded	2000	Radio antenna amp	-
Radio-2	GND	Shielded	2000	Radio antenna amp	-
Radio-3	MAIN	Shielded	2000	Radio antenna amp	-
Radio-4	GND	Shielded	2000	Radio antenna amp	-
Radio-5	ANT+	Single	2000	Radio antenna amp	-

No.		Name			
3		XM antenna connector			
Pin No.	Terminal name	W/H type	W/H length (mm)	Load simulator	Remark
XM-1	XM	Shielded	2000	XM antenna	-
XM-2	GND	Shielded	2000	XM antenna	-

No.		Name			
4		AVC-LAN Step3			
Pin No.	Terminal name	W/H type	W/H length (mm)	Load simulator	Remark
MOST-1	MI+	Shielded	2000	Short circuit	-
MOST-2	MI-	Shielded	2000	Short circuit	-
MOST-3	SLDI	Shielded	2000	Short circuit	-
MOST-4	WUO	Single	2000	Short circuit	-
MOST-5	NC	-	-	-	-
MOST-6	MO+	Shielded	2000	AMP	-
MOST-7	MO-	Shielded	2000	AMP	-
MOST-8	SLDO	Shielded	2000	AMP	-

No.		Name			
5		USB connector (IF-BOX)			
Pin No.	Terminal name	W/H type	W/H length (mm)	Load simulator	Remark
USB1-1	USV1	Shielded	2000	IF-BOX	-
USB1-2	US1-	Shielded	2000	IF-BOX	-
USB1-3	US1+	Shielded	2000	IF-BOX	-
USB1-4	UGD1	Shielded	2000	IF-BOX	-
USB1-5	USG1	Shielded	2000	IF-BOX	-

No.	Name				
6	GVIF connector				
Pin No.	Terminal name	W/H type	W/H length (mm)	Load simulator	Remark
GVIF1-1	GVI-	Shielded	2000	DISPLAY	-
GVIF1-2	GVI+	Shielded	2000	DISPLAY	-
GVIF1-3	GVG3	Shielded	2000	DISPLAY	-

No.	Name				
7	GVIF,USB from MEU				
Pin No.	Terminal name	W/H type	W/H length (mm)	Load simulator	Remark
GVIF2-1	GV2-	Shielded	300	MEU	-
GVIF2-2	GV2+	Shielded	300	MEU	-
GVIF2-3	GVG2	Shielded	300	MEU	-
USB4-4	US4+	Shielded	300	MEU	-
USB4-5	US4-	Shielded	300	MEU	-
USB4-6	UDG4	Shielded	300	MEU	

No.	Name				
8	GVIF connector				
Pin No.	Terminal name	W/H type	W/H length (mm)	Load simulator	Remark
GVIF3-1	GVO-	Shielded	2000	RSE	-
GVIF3-2	GVO+	Shielded	2000	RSE	-
GVIF3-3	GVG2	Shielded	2000	RSE	-

No.	Name	Length (m)	Cable Shield	Connector Shield	Remark
9	Signal	0.7	Unshielded	Unshielded	-
10	DC Power	0.8	Unshielded	Unshielded	-
11	DC Power	1.0	Unshielded	Unshielded	-
12	Signal	1.0	Unshielded	Unshielded	-
13	Signal	0.6	Unshielded	Unshielded	-

SECTION 5: Radiated Spurious Emission

EUT was placed on a platform of nominal size, 1.0 m by 2.0 m, raised 0.8 m above the conducting ground plane.
The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.

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 13 GHz), 1 m*2) (above 13 GHz)		3 m (below 13 GHz), 1 m*2) (above 13 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 angle of 0 to 30 deg. based on the product specification to see the position of maximum noise, and the test was made at the position (0 deg.) 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 MHz – 26.5 GHz
Test data : APPENDIX
Test result : Pass

SECTION 6: Antenna Terminal Conducted Tests

Test Procedure

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

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

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

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

20dB Bandwidth and Carrier Frequency Separation

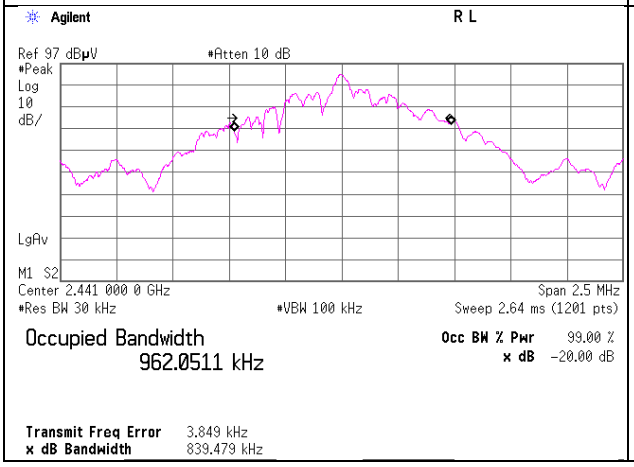
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off, DH5 Display Combined Type(T2)

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.958	1.000	>= 0.639
DH5	2441.0	1.033	1.000	>= 0.688
DH5	2480.0	0.956	1.000	>= 0.638
3DH5	2402.0	1.299	1.000	>= 0.866
3DH5	2441.0	1.295	1.000	>= 0.863
3DH5	2480.0	1.299	1.000	>= 0.866
Inquiry	2441.0	0.839	1.996	>= 0.560

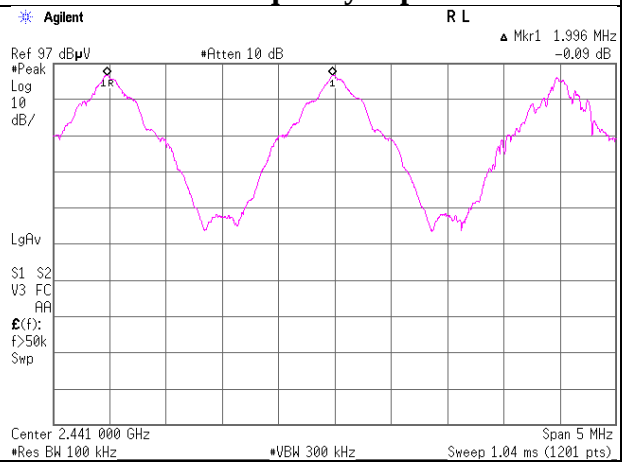
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
No limit applies to 20dB Bandwidth.

Inquiry

20 dB Bandwidth



Carrier Frequency Separation

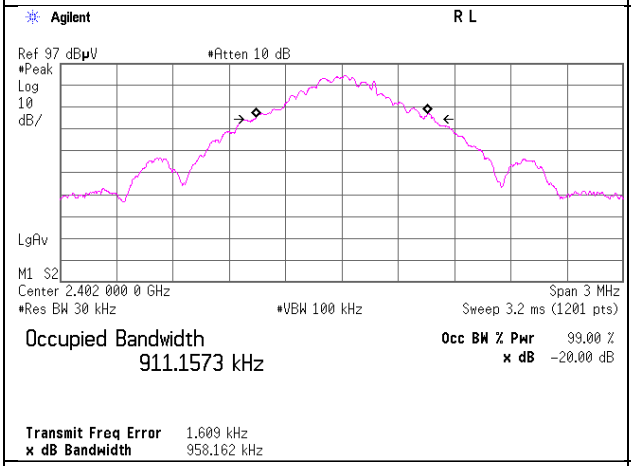


20dB Bandwidth and Carrier Frequency Separation

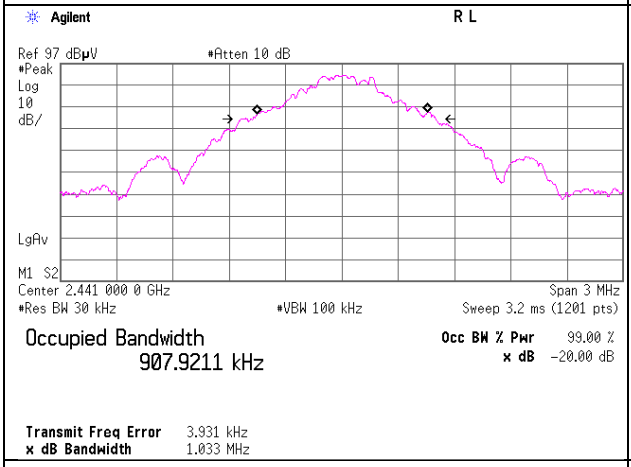
DH5

20 dB Bandwidth

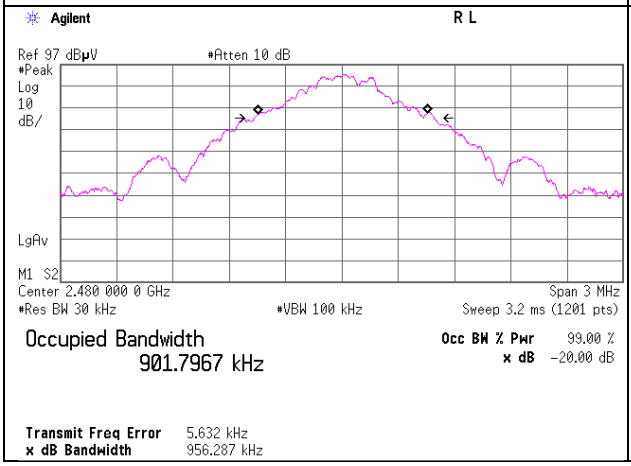
2402 MHz



2441 MHz

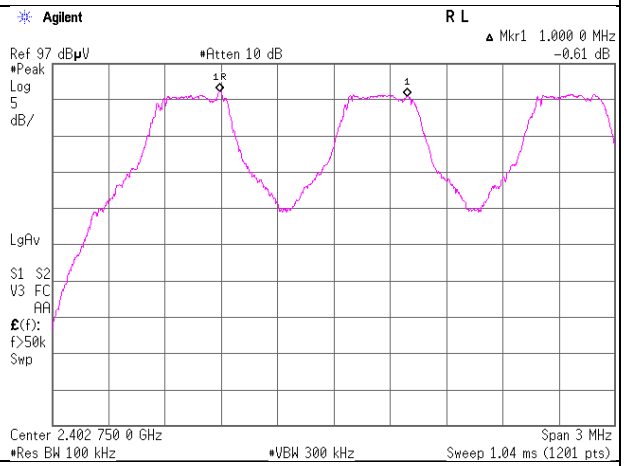


2480 MHz

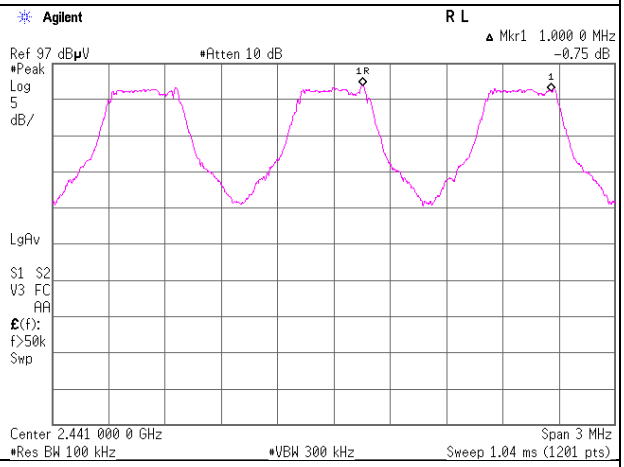


Carrier Frequency Separation

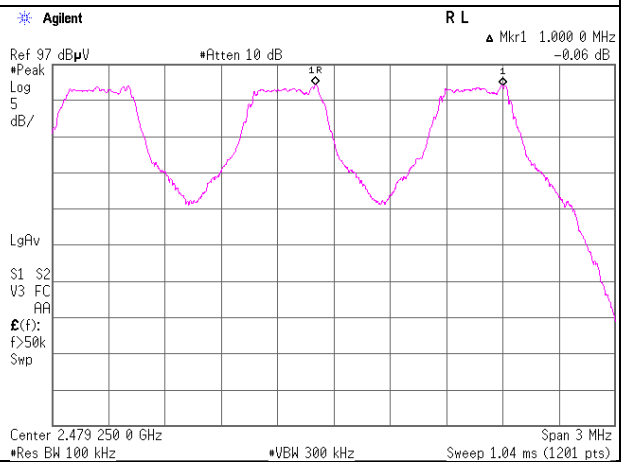
2402 MHz



2441 MHz



2480 MHz

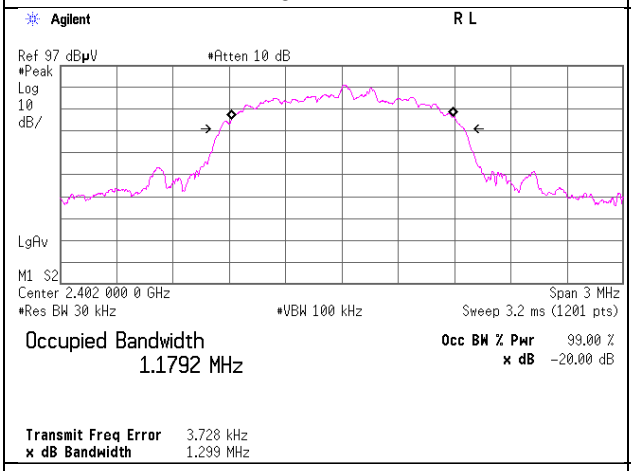


20dB Bandwidth and Carrier Frequency Separation

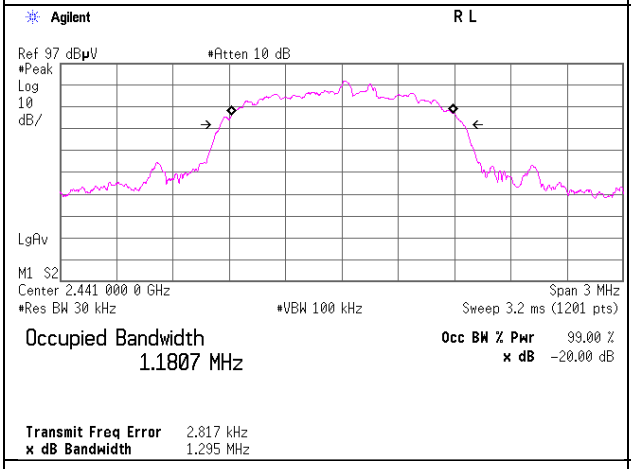
3DH5

20 dB Bandwidth

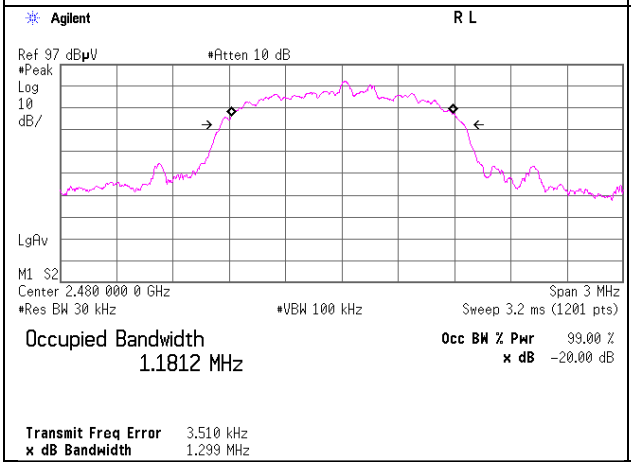
2402 MHz



2441MHz

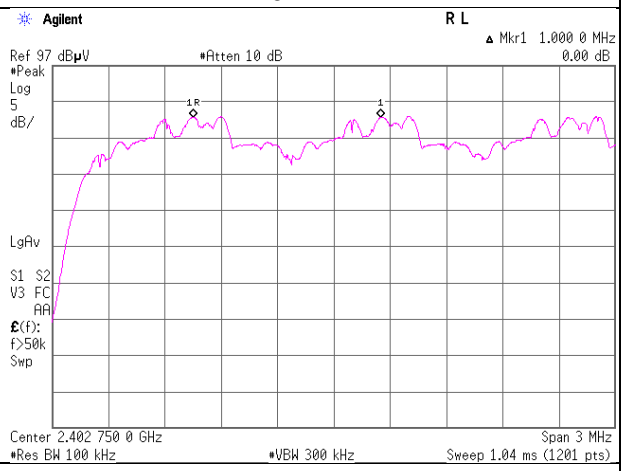


2480MHz

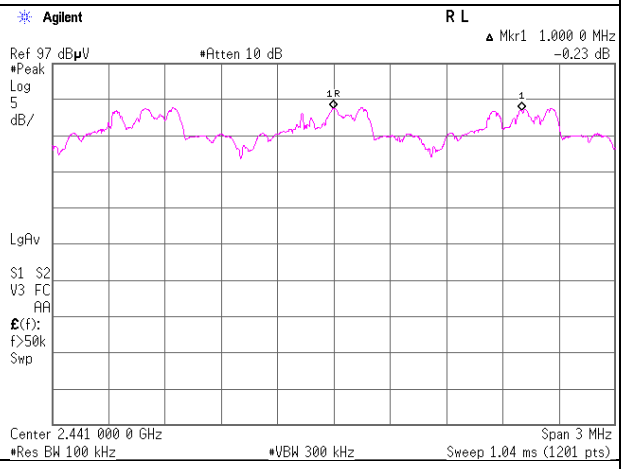


Carrier Frequency Separation

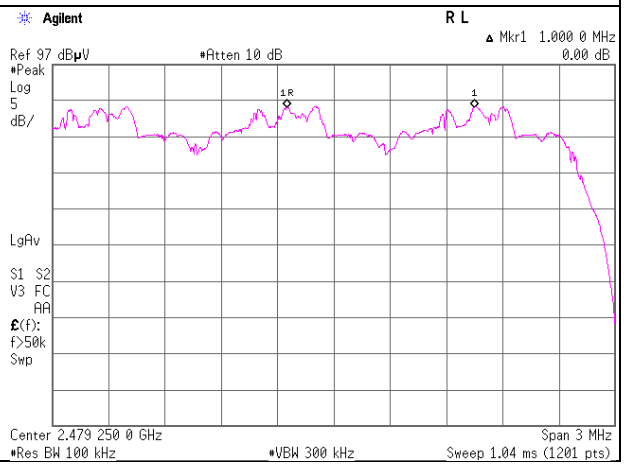
2402 MHz



2441 MHz



2480 MHz



20dB Bandwidth and Carrier Frequency Separation

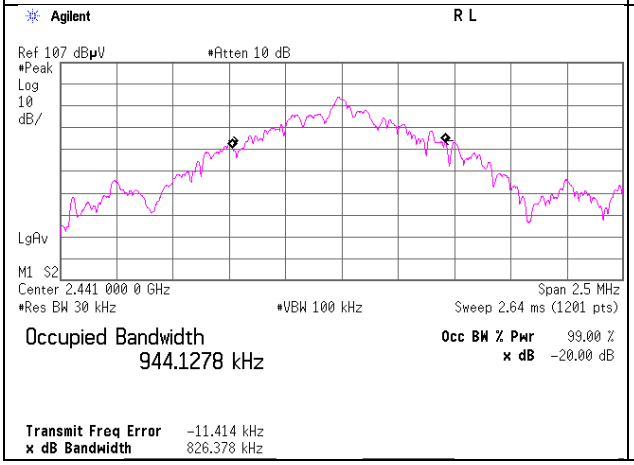
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	November 10, 2015
Temperature / Humidity	25 deg. C / 44 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off, DH5 Display Separated Type(L2)

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.970	1.000	>= 0.646
DH5	2441.0	0.964	1.000	>= 0.643
DH5	2480.0	0.973	1.000	>= 0.649
3DH5	2402.0	1.295	1.000	>= 0.863
3DH5	2441.0	1.301	1.000	>= 0.867
3DH5	2480.0	1.297	1.000	>= 0.865
Inquiry	2441.0	0.826	2.000	>= 0.551

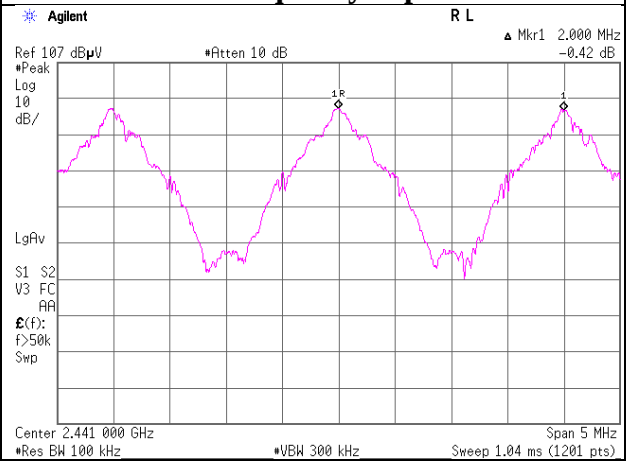
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
No limit applies to 20dB Bandwidth.

Inquiry

20 dB Bandwidth



Carrier Frequency Separation

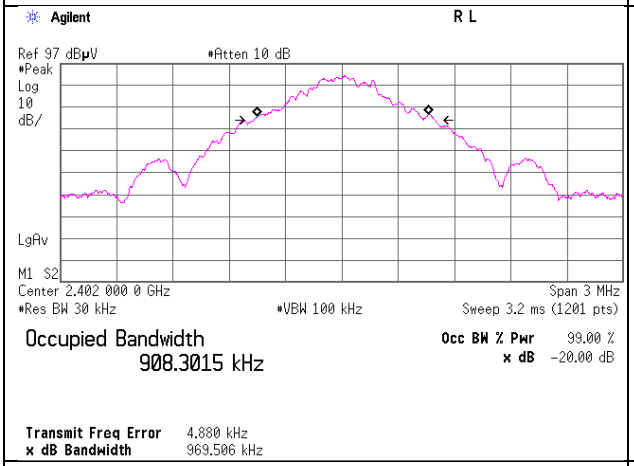


20dB Bandwidth and Carrier Frequency Separation

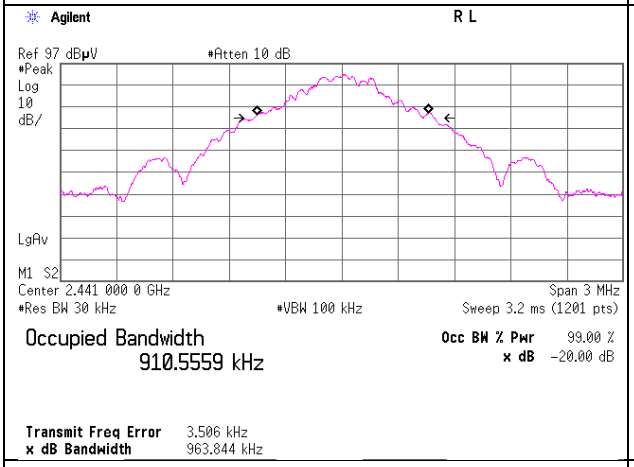
DH5

20 dB Bandwidth

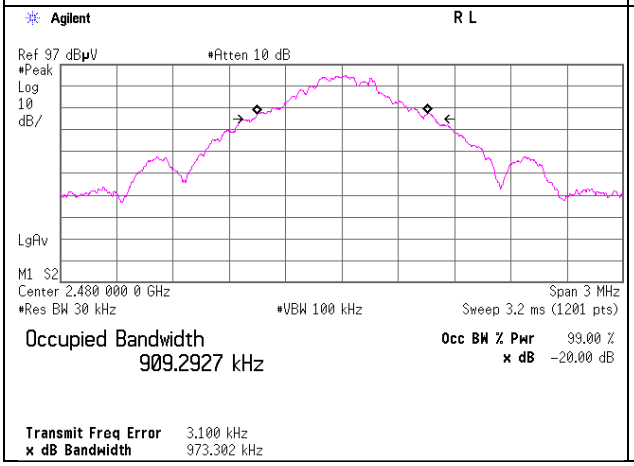
2402 MHz



2441 MHz

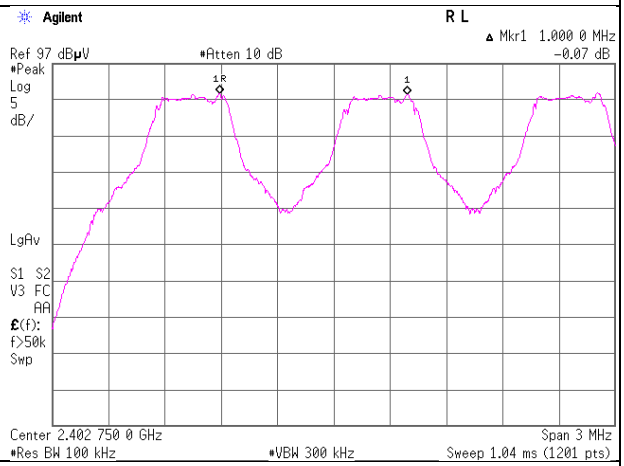


2480 MHz

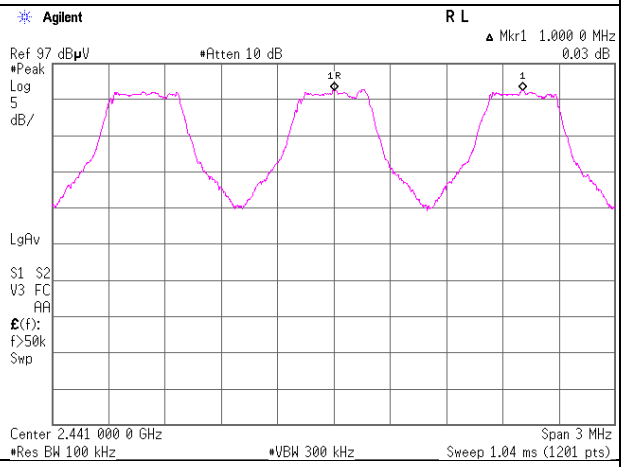


Carrier Frequency Separation

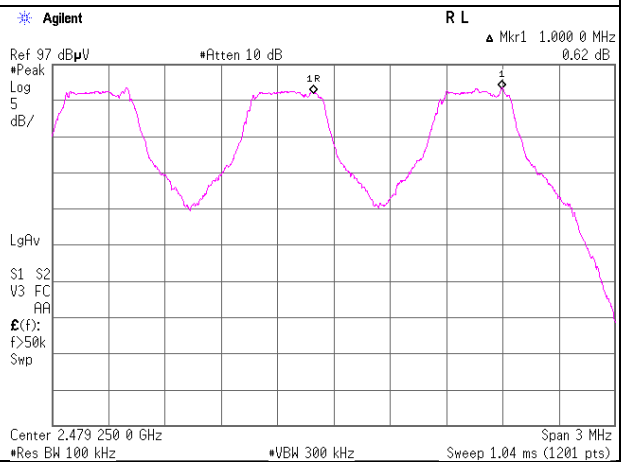
2402 MHz



2441 MHz



2480 MHz

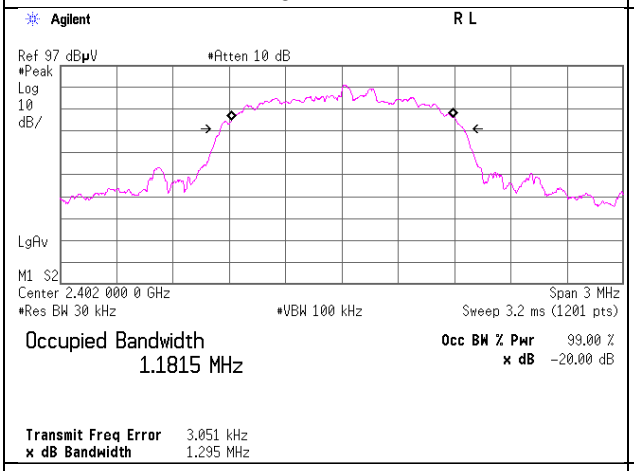


20dB Bandwidth and Carrier Frequency Separation

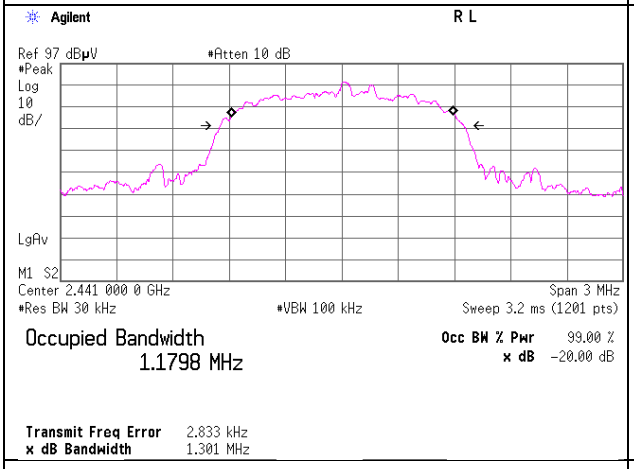
3DH5

20 dB Bandwidth

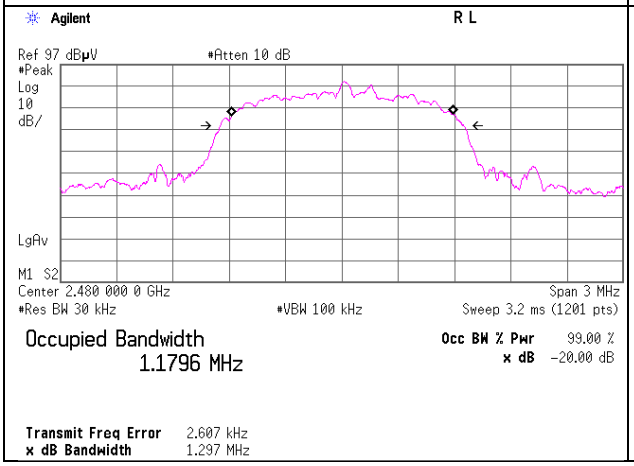
2402 MHz



2441MHz

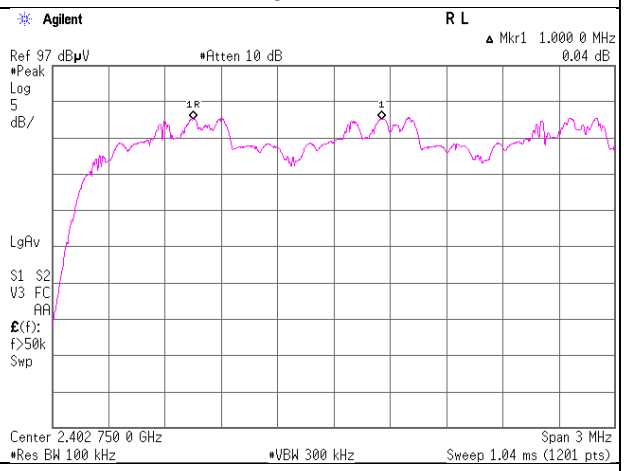


2480MHz

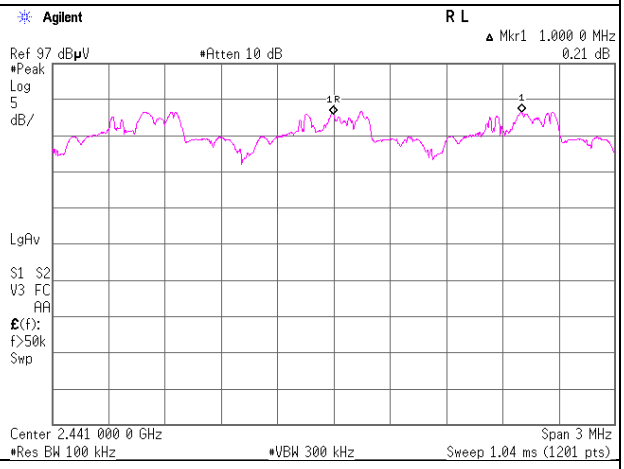


Carrier Frequency Separation

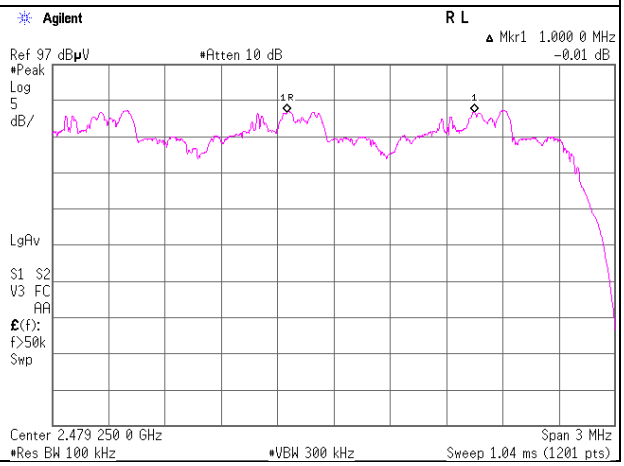
2402 MHz



2441 MHz



2480 MHz



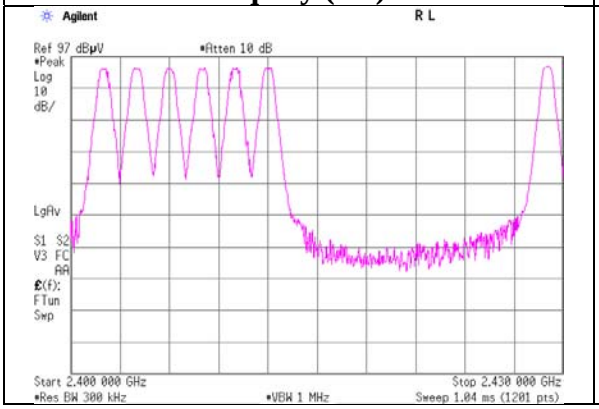
Number of Hopping Frequency

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping On Display Combined Type(T2)

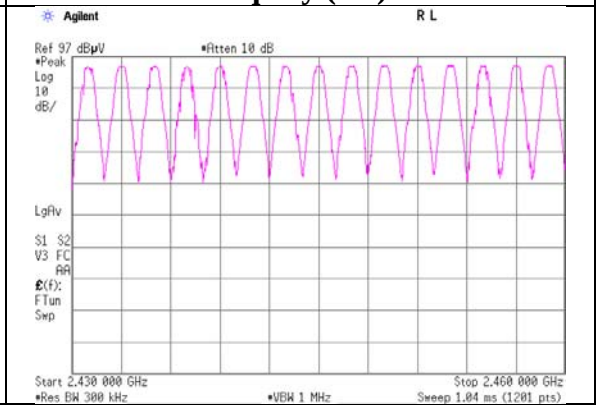
Mode	Number of channel [channels]	Limit [channels]
DH5	79	>= 15
3DH5	79	>= 15
Inquiry	32	>= 15

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.

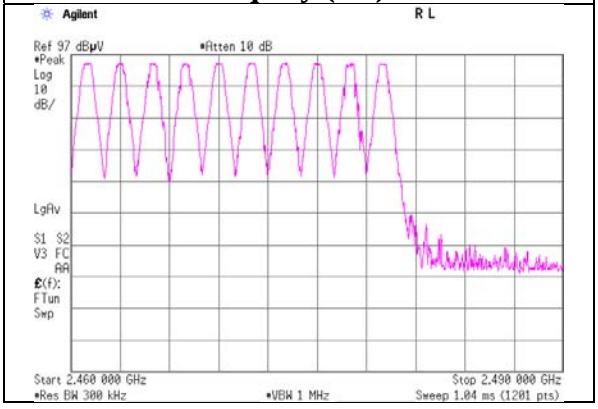
Inquiry (1/3)



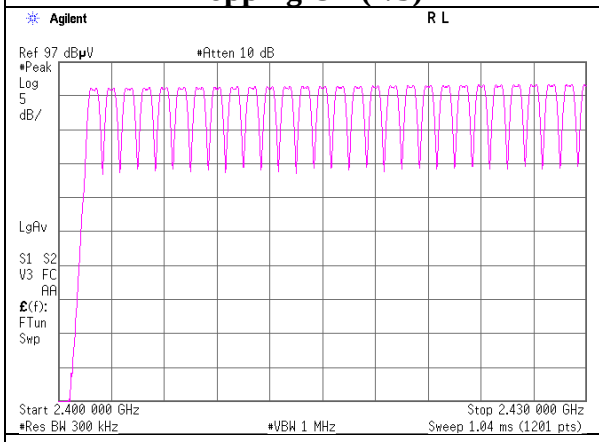
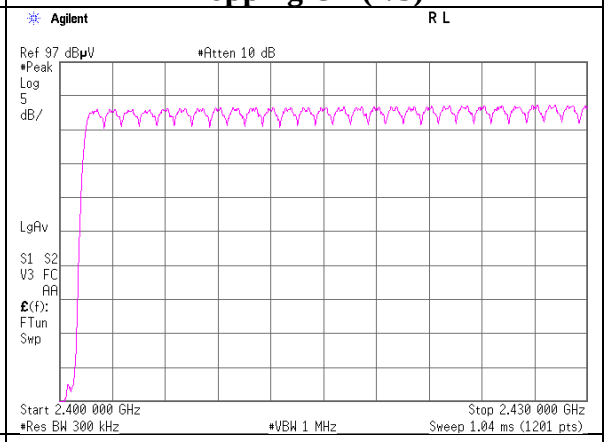
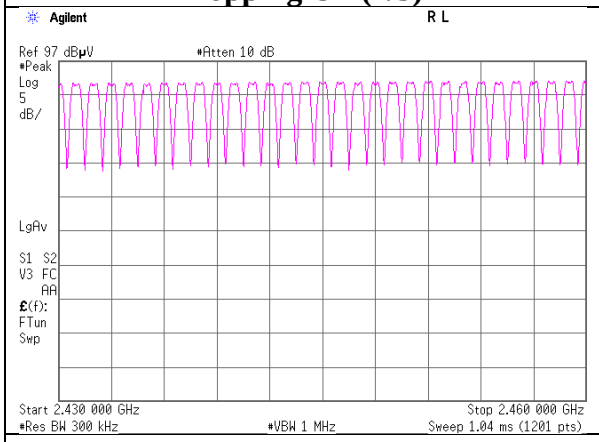
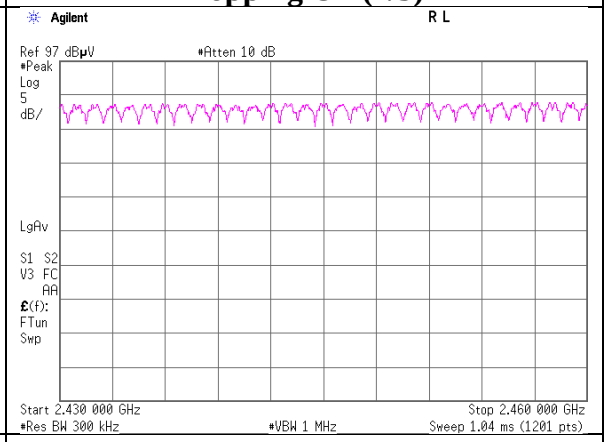
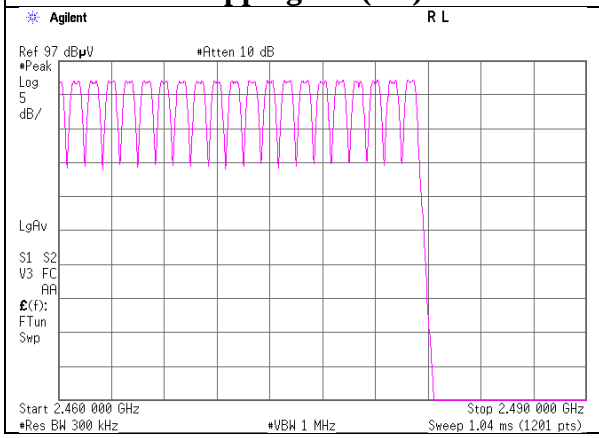
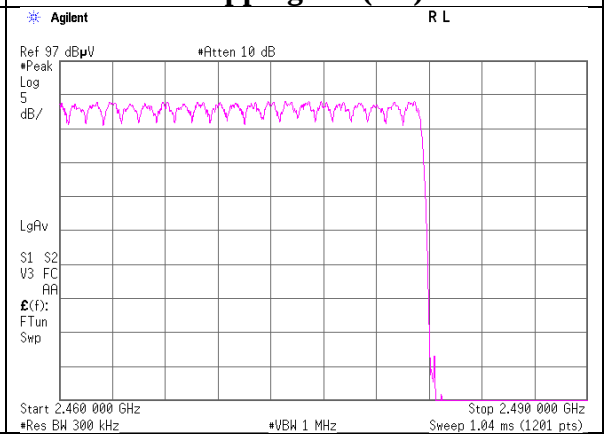
Inquiry (2/3)



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)**
	

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Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

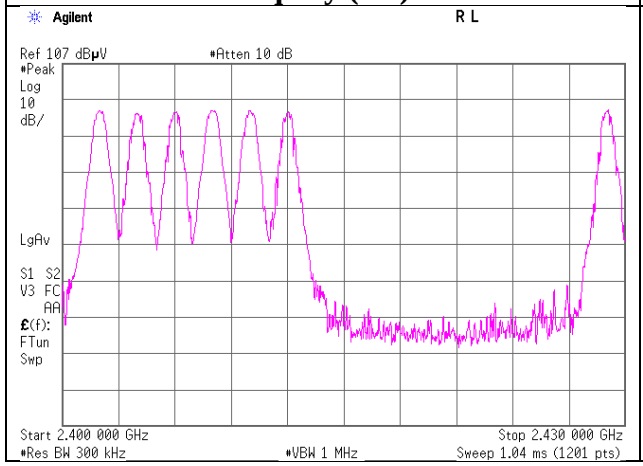
Number of Hopping Frequency

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	November 10, 2015
Temperature / Humidity	25 deg. C / 44 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping On Display Separated Type(L2)

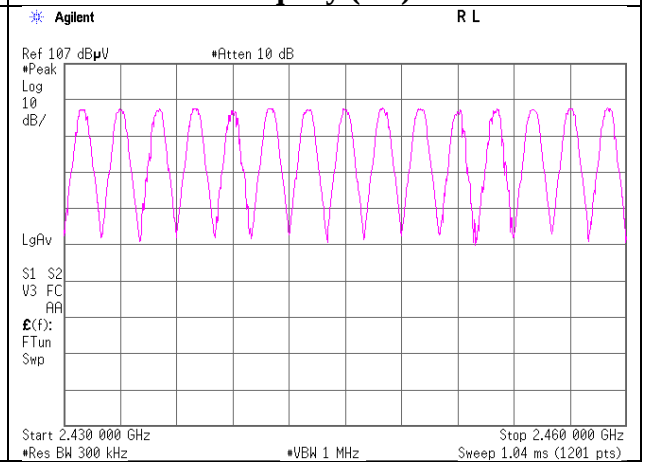
Mode	Number of channel [channels]	Limit [channels]
DH5	79	>= 15
3DH5	79	>= 15
Inquiry	32	>= 15

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.

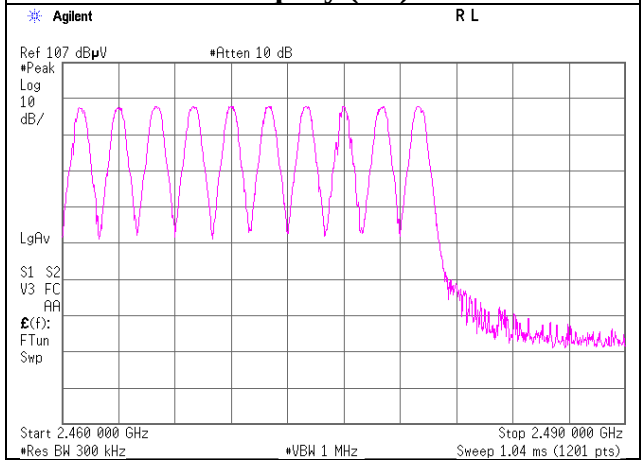
Inquiry (1/3)



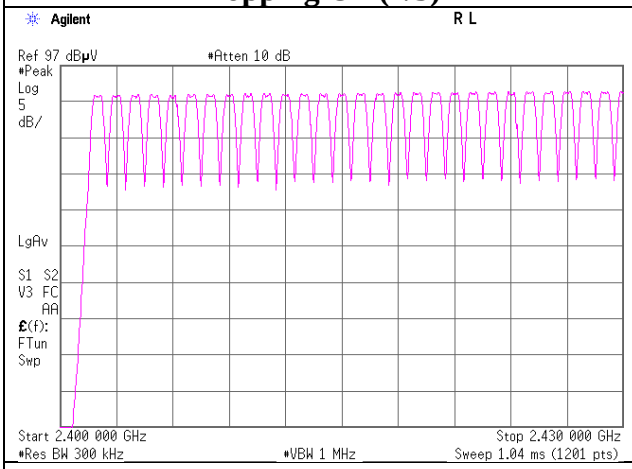
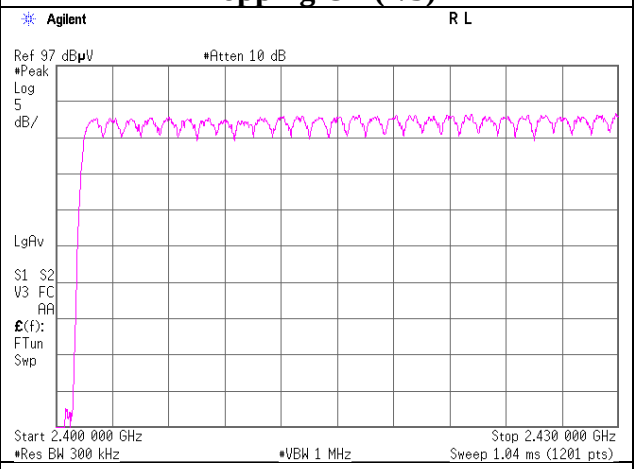
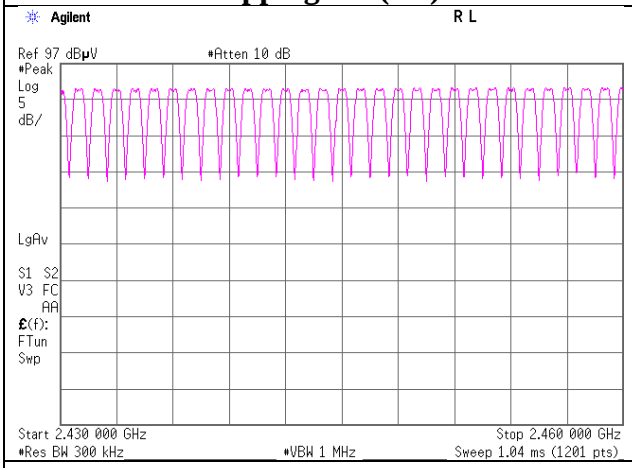
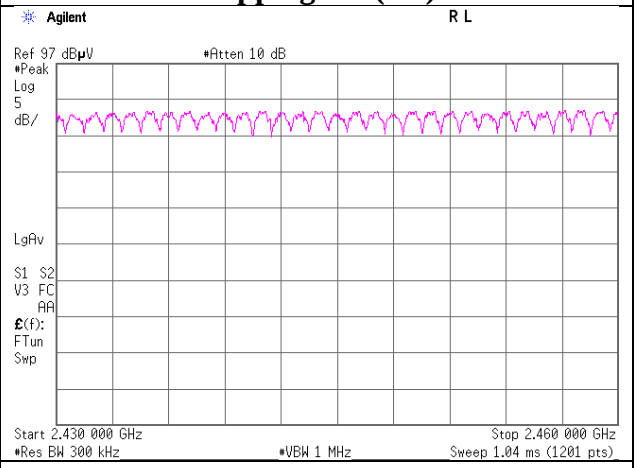
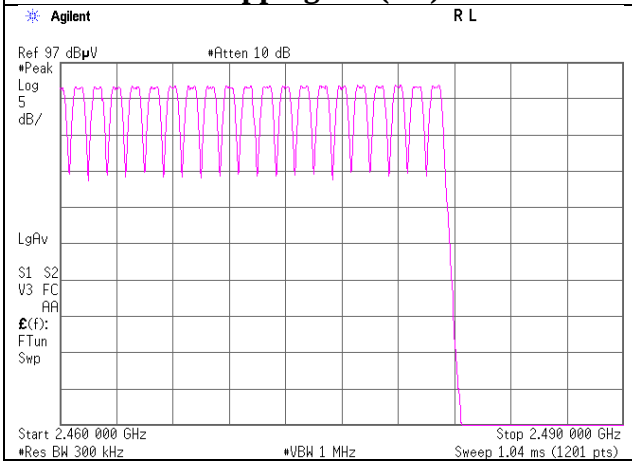
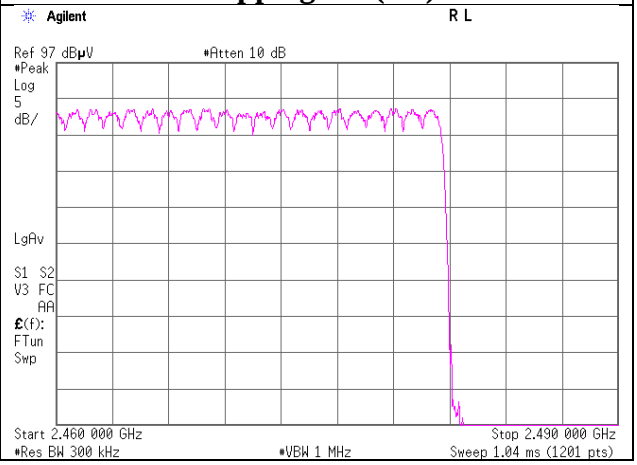
Inquiry (2/3)



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)**
	

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Dwell time

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping On Display Combined Type(T2)

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	49.6 times / 5 sec. x 31.6 sec. = 314 times	0.401	126	400
DH3	28.2 times / 5 sec. x 31.6 sec. = 179 times	1.658	297	400
DH5	19.0 times / 5 sec. x 31.6 sec. = 121 times	2.909	352	400
3DH1	51.6 times / 5 sec. x 31.6 sec. = 327 times	0.406	133	400
3DH3	25.0 times / 5 sec. x 31.6 sec. = 158 times	1.659	262	400
3DH5	19.4 times / 5 sec. x 31.6 sec. = 123 times	2.910	358	400
Inquiry	100.0 times / 1 sec. x 12.8 sec. = 1280 times	0.102	131	400

Sample Calculation
Result = Number of transmission x Length of transmission

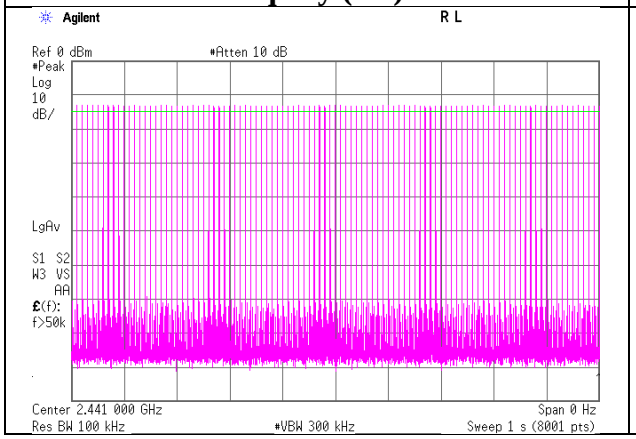
*Average data of 5 tests.(except Inquiry)

Mode	Sampling [times] 1	2	3	4	5	Average [times]
DH1	49	48	48	51	52	49.6
DH3	30	28	30	24	29	28.2
DH5	20	15	17	19	24	19
3DH1	49	59	49	51	50	51.6
3DH3	22	25	24	26	28	25
3DH5	17	25	17	15	23	19.4

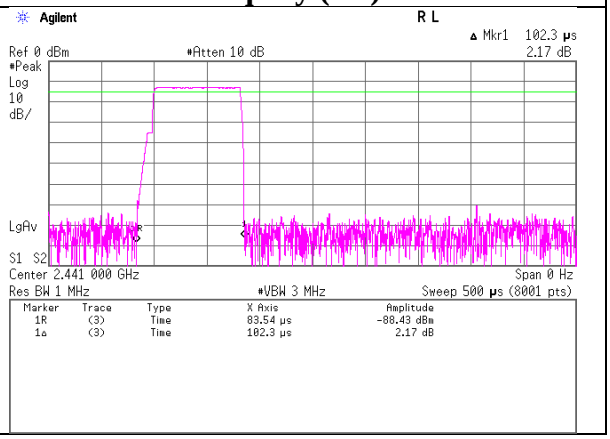
Sample Calculation
Average = Summation (Sampling 1 to 5) / 5

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.

Inquiry (1/2)

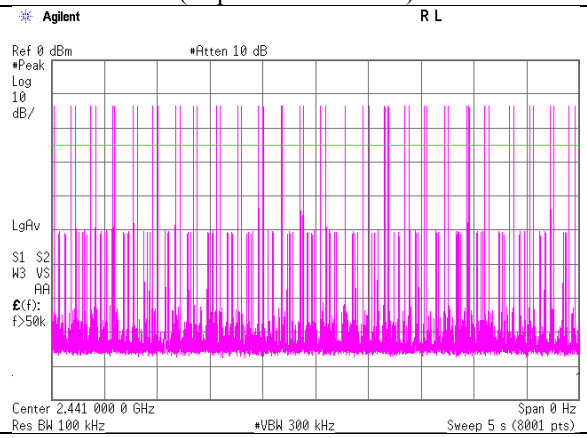


Inquiry (2/2)

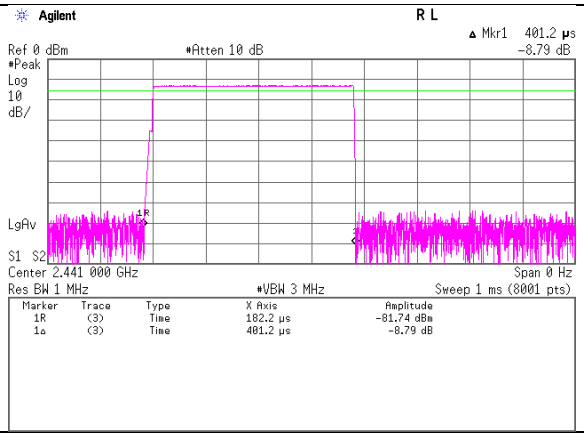


Dwell time

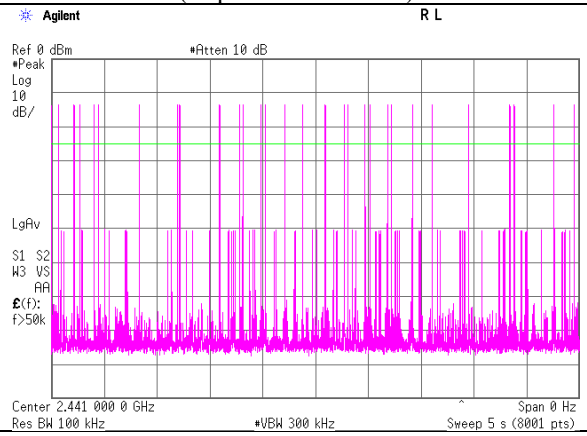
DH1 (1/2)
(Representative chart)



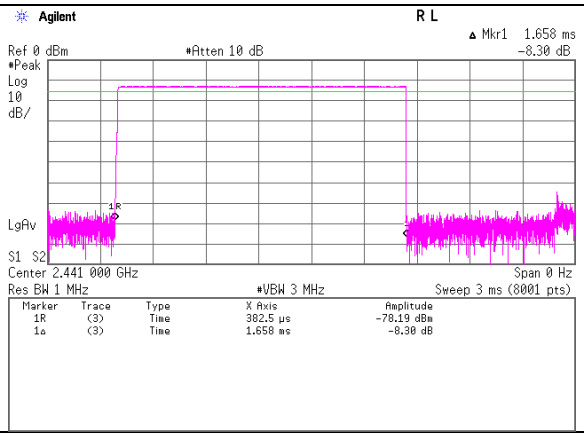
DH1 (2/2)



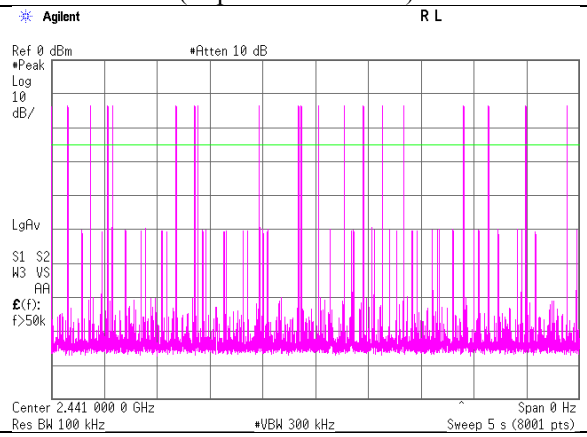
DH3 (1/2)
(Representative chart)



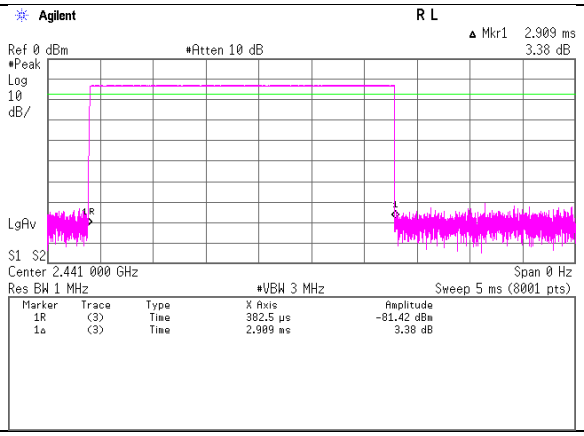
DH3 (2/2)



DH5 (1/2)
(Representative chart)

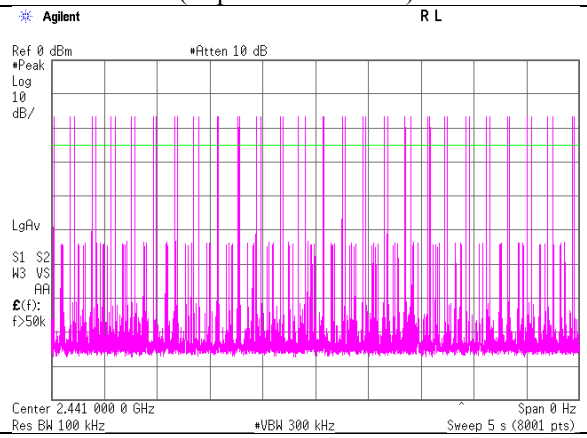


DH5 (2/2)

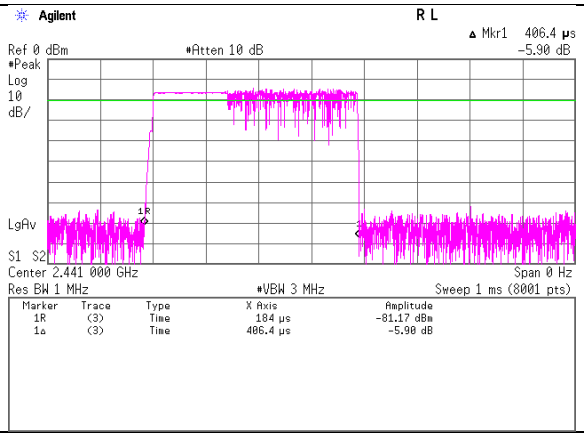


Dwell time

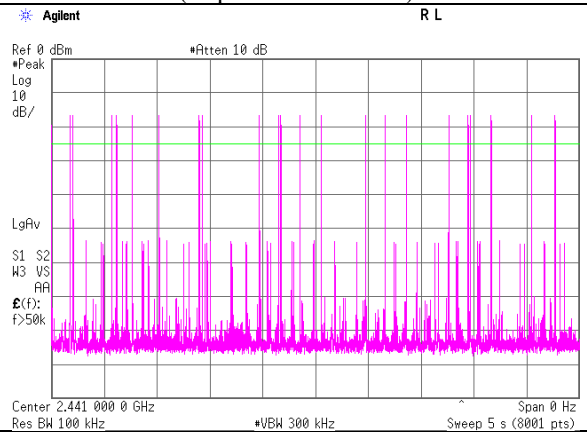
3DH1 (1/2)
(Representative chart)



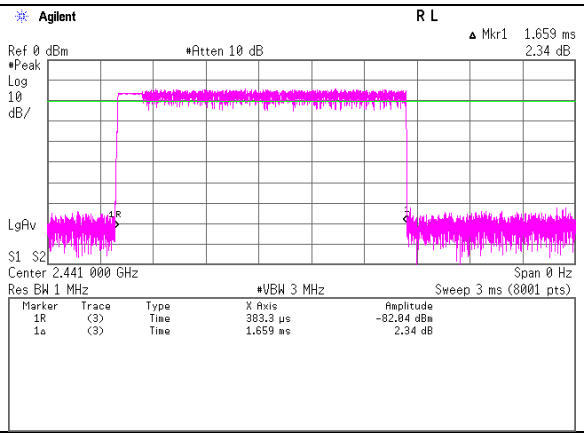
3DH1 (2/2)



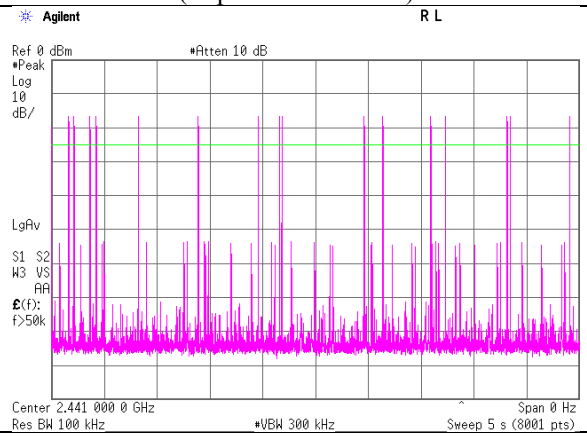
3DH3 (1/2)
(Representative chart)



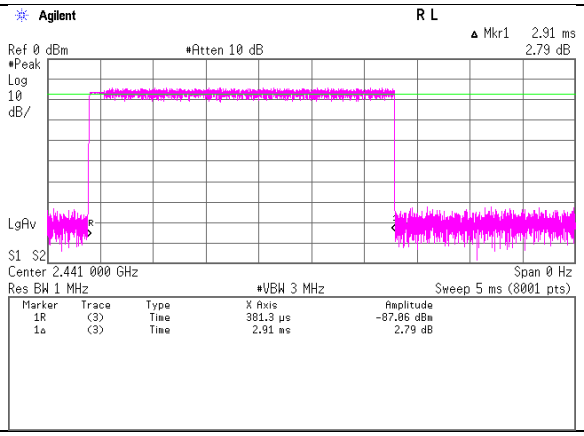
3DH3 (2/2)



3DH5 (1/2)
(Representative chart)



3DH5 (2/2)



Dwell time

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	November 10, 2015
Temperature / Humidity	25 deg. C / 44 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping On Display Separated Type(L2)

Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8 (32 Hopping x 0.4) second period	Length of transmission [msec]	Result [msec]	Limit [msec]
DH1	50.2 times / 5 sec. x 31.6 sec. = 318 times	0.401	128	400
DH3	24.4 times / 5 sec. x 31.6 sec. = 155 times	1.658	257	400
DH5	18.2 times / 5 sec. x 31.6 sec. = 116 times	2.906	337	400
3DH1	48.2 times / 5 sec. x 31.6 sec. = 305 times	0.406	124	400
3DH3	26.6 times / 5 sec. x 31.6 sec. = 169 times	1.660	281	400
3DH5	20.2 times / 5 sec. x 31.6 sec. = 128 times	2.910	372	400
Inquiry	100.0 times / 1 sec. x 12.8 sec. = 1280 times	0.103	132	400

Sample Calculation
Result = Number of transmission x Length of transmission

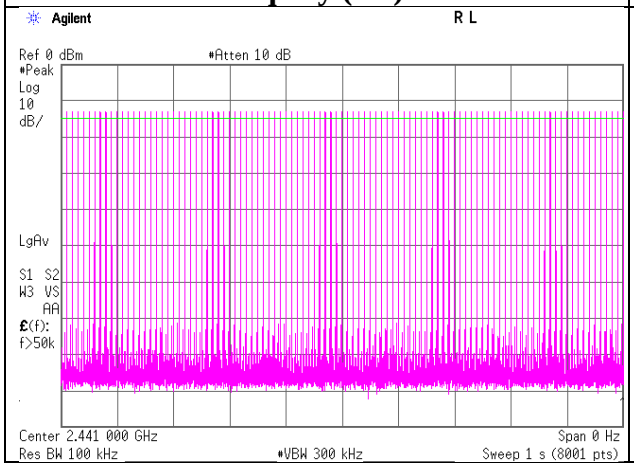
*Average data of 5 tests.(except Inquiry)

Mode	Sampling [times] 1	2	3	4	5	Average [times]
DH1	50	50	50	50	51	50.2
DH3	28	25	24	23	22	24.4
DH5	15	15	24	17	20	18.2
3DH1	50	49	46	48	48	48.2
3DH3	29	28	27	26	23	26.6
3DH5	22	25	19	18	17	20.2

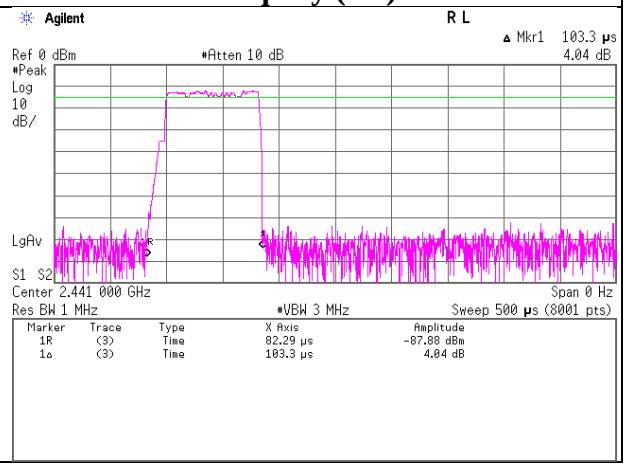
Sample Calculation
Average = Summation (Sampling 1 to 5) / 5

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.

Inquiry (1/2)

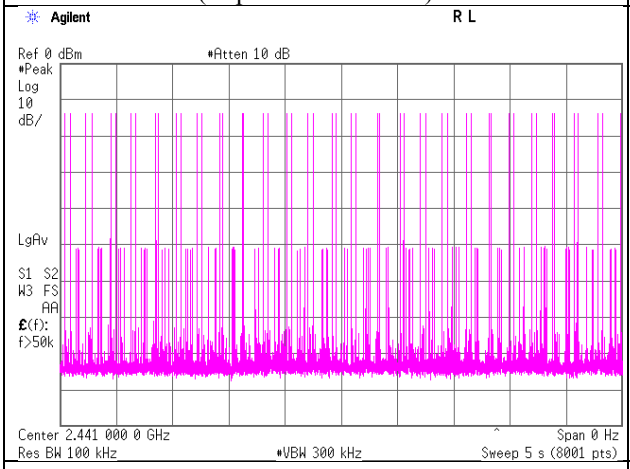


Inquiry (2/2)

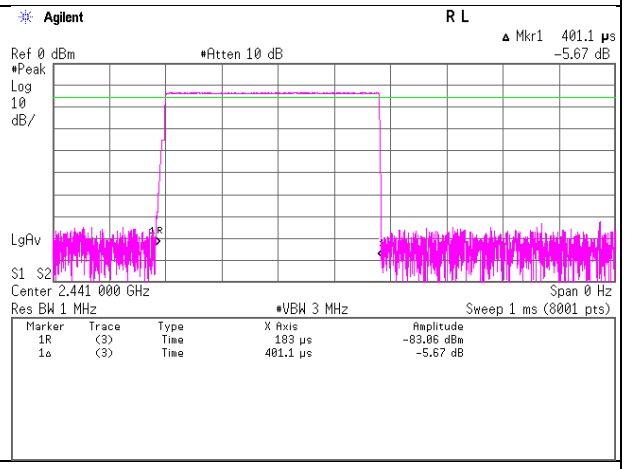


Dwell time

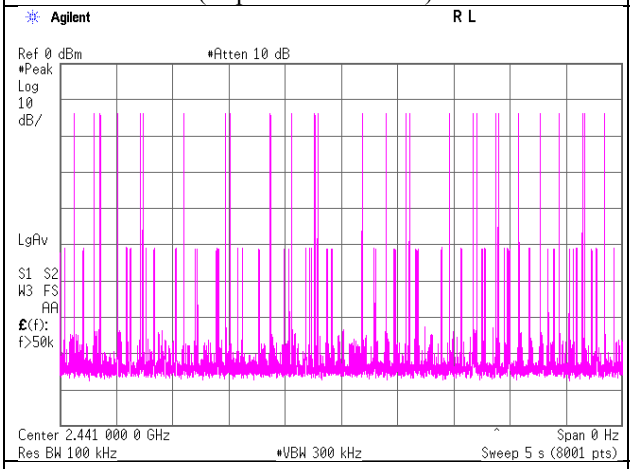
DH1 (1/2)
(Representative chart)



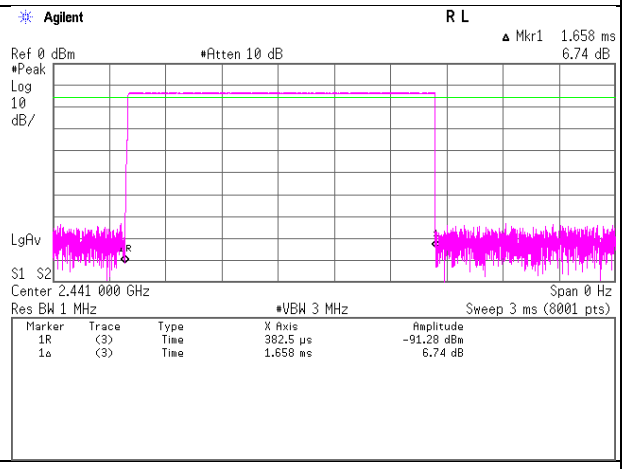
DH1 (2/2)



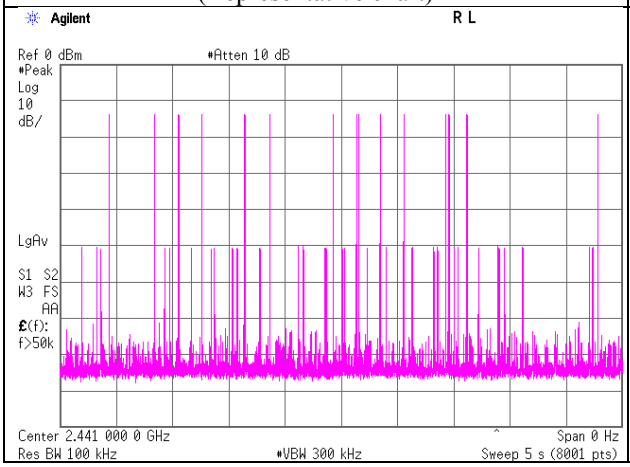
DH3 (1/2)
(Representative chart)



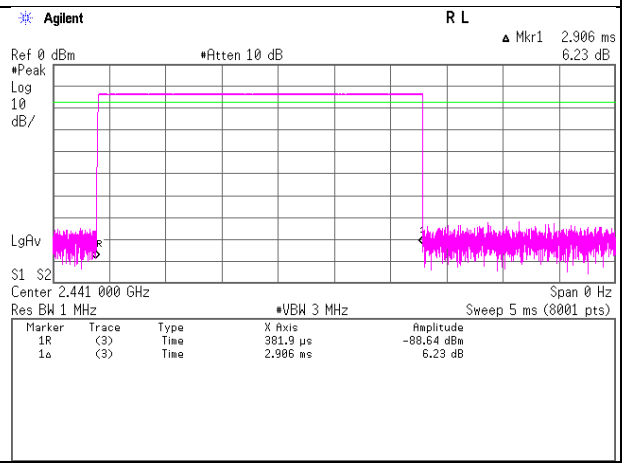
DH3 (2/2)



DH5 (1/2)
(Representative chart)

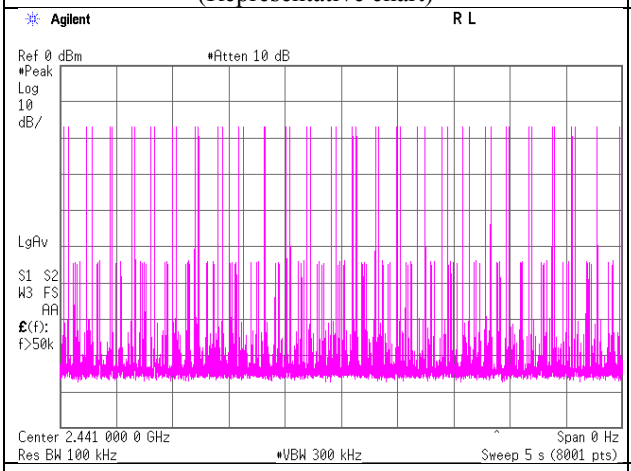


DH5 (2/2)

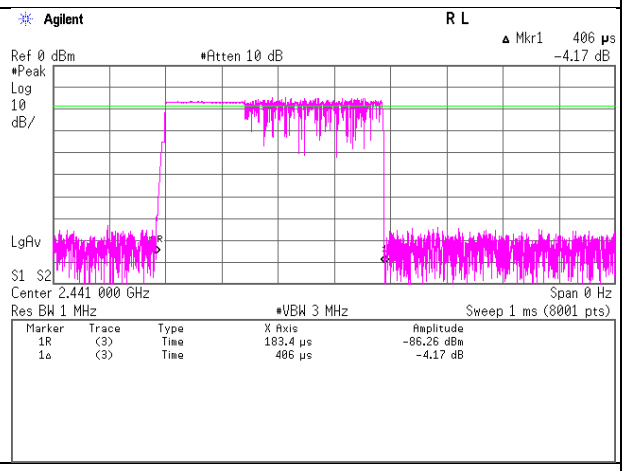


Dwell time

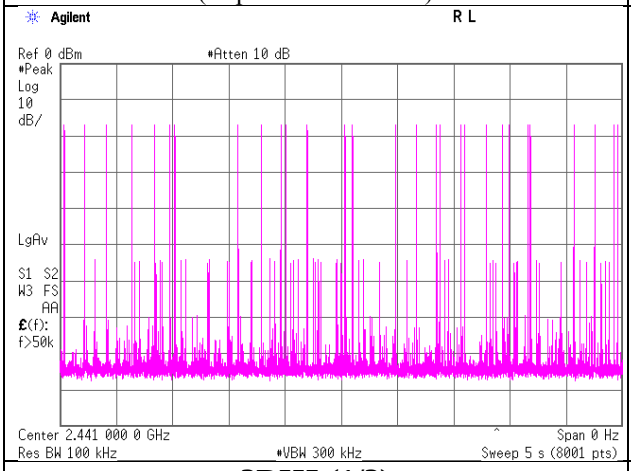
3DH1 (1/2)
(Representative chart)



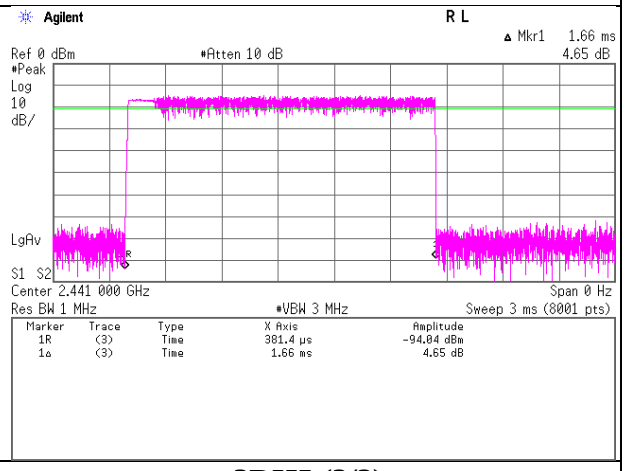
3DH1 (2/2)



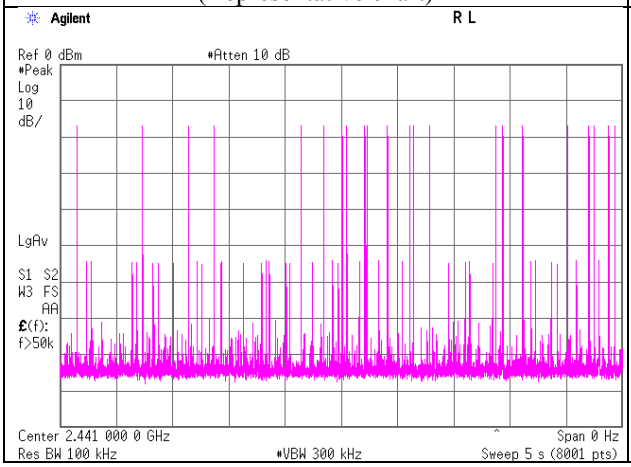
3DH3 (1/2)
(Representative chart)



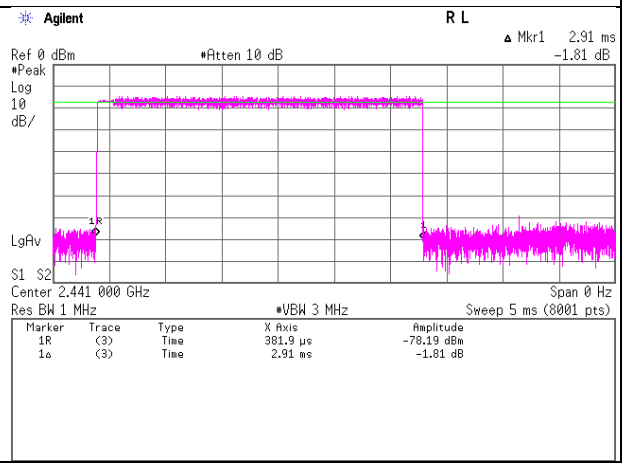
3DH3 (2/2)



3DH5 (1/2)
(Representative chart)



3DH5 (2/2)



Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off Display Combined Type(T2)

Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
DH5	2402.0	-13.06	2.03	9.63	-1.40	0.72	20.96	125	22.36
DH5	2441.0	-12.39	2.04	9.63	-0.72	0.85	20.96	125	21.68
DH5	2480.0	-12.12	2.05	9.63	-0.44	0.90	20.96	125	21.40
2DH5	2402.0	-14.30	2.03	9.63	-2.64	0.54	20.96	125	23.60
2DH5	2441.0	-13.60	2.04	9.63	-1.93	0.64	20.96	125	22.89
2DH5	2480.0	-13.37	2.05	9.63	-1.69	0.68	20.96	125	22.65
3DH5	2402.0	-13.75	2.03	9.63	-2.09	0.62	20.96	125	23.05
3DH5	2441.0	-13.03	2.04	9.63	-1.36	0.73	20.96	125	22.32
3DH5	2480.0	-12.90	2.05	9.63	-1.22	0.76	20.96	125	22.18

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.

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	November 10, 2015
Temperature / Humidity	25 deg. C / 44 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off Display Separated Type(L2)

Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
DH5	2402.0	-13.31	2.03	10.01	-1.27	0.75	20.96	125	22.23
DH5	2441.0	-12.88	2.04	10.01	-0.83	0.83	20.96	125	21.79
DH5	2480.0	-12.51	2.05	10.01	-0.45	0.90	20.96	125	21.41
2DH5	2402.0	-14.50	2.03	10.01	-2.46	0.57	20.96	125	23.42
2DH5	2441.0	-13.99	2.04	10.01	-1.94	0.64	20.96	125	22.90
2DH5	2480.0	-13.64	2.05	10.01	-1.58	0.70	20.96	125	22.54
3DH5	2402.0	-14.17	2.03	10.01	-2.13	0.61	20.96	125	23.09
3DH5	2441.0	-13.54	2.04	10.01	-1.49	0.71	20.96	125	22.45
3DH5	2480.0	-13.28	2.05	10.01	-1.22	0.76	20.96	125	22.18

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)

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off Display Combined Type(T2)

Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
DH5	2402.0	-15.02	2.03	9.63	-3.36	0.46	1.11	-2.25	0.60
DH5	2441.0	-14.27	2.04	9.63	-2.60	0.55	1.11	-1.49	0.71
DH5	2480.0	-13.98	2.05	9.63	-2.30	0.59	1.11	-1.19	0.76
2DH5	2402.0	-18.74	2.03	9.63	-7.08	0.20	1.11	-5.97	0.25
2DH5	2441.0	-18.00	2.04	9.63	-6.33	0.23	1.11	-5.22	0.30
2DH5	2480.0	-17.72	2.05	9.63	-6.04	0.25	1.11	-4.93	0.32
3DH5	2402.0	-18.69	2.03	9.63	-7.03	0.20	1.11	-5.92	0.26
3DH5	2441.0	-17.93	2.04	9.63	-6.26	0.24	1.11	-5.15	0.31
3DH5	2480.0	-17.68	2.05	9.63	-6.00	0.25	1.11	-4.89	0.32

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.

Average Output Power
(Reference data)

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	November 10, 2015
Temperature / Humidity	25 deg. C / 44 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off Display Separated Type(L2)

Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
DH5	2402.0	-15.36	2.03	10.01	-3.32	0.47	1.11	-2.21	0.60
DH5	2441.0	-14.75	2.04	10.01	-2.70	0.54	1.11	-1.59	0.69
DH5	2480.0	-14.42	2.05	10.01	-2.36	0.58	1.11	-1.25	0.75
2DH5	2402.0	-19.09	2.03	10.01	-7.05	0.20	1.11	-5.94	0.25
2DH5	2441.0	-18.48	2.04	10.01	-6.43	0.23	1.11	-5.32	0.29
2DH5	2480.0	-18.18	2.05	10.01	-6.12	0.24	1.11	-5.01	0.32
3DH5	2402.0	-19.09	2.03	10.01	-7.05	0.20	1.11	-5.94	0.25
3DH5	2441.0	-18.51	2.04	10.01	-6.46	0.23	1.11	-5.35	0.29
3DH5	2480.0	-18.20	2.05	10.01	-6.14	0.24	1.11	-5.03	0.31

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

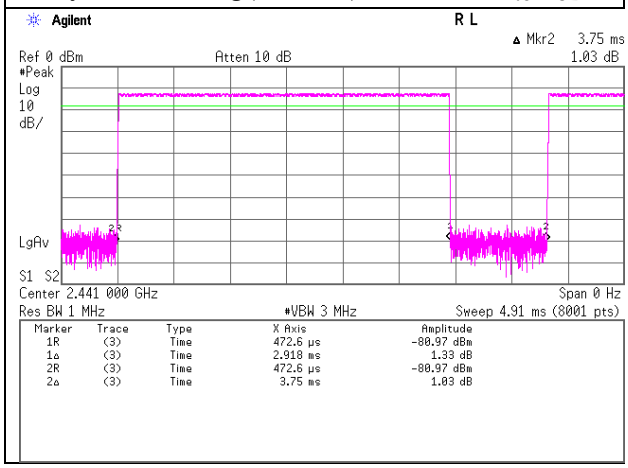
*The equipment and cables were not used for factor 0 dB of the data sheets.

Burst Rate Confirmation

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off Display Combined Type(T2)

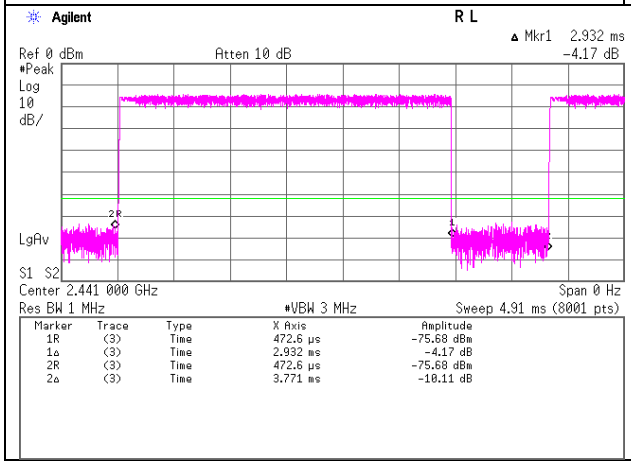
DH5

Tx on / (Tx on + Tx off) =	**0.787**
Tx on / (Tx on + Tx off) * 100 =	**78.7 %**
Duty factor = 10 * log (3.75 / 2.95) =	**1.04 dB**



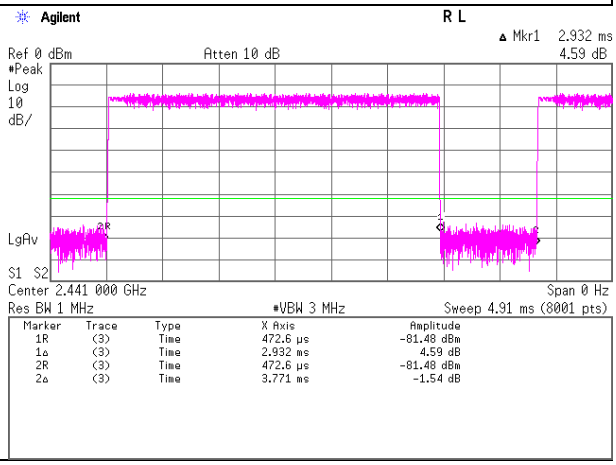
2DH5

Tx on / (Tx on + Tx off) =	**0.787**
Tx on / (Tx on + Tx off) * 100 =	**78.7 %**
Duty factor = 10 * log (3.75 / 2.95) =	**1.04 dB**



3DH5

Tx on / (Tx on + Tx off) =	**0.787**
Tx on / (Tx on + Tx off) * 100 =	**78.7 %**
Duty factor = 10 * log (3.75 / 2.95) =	**1.04 dB**

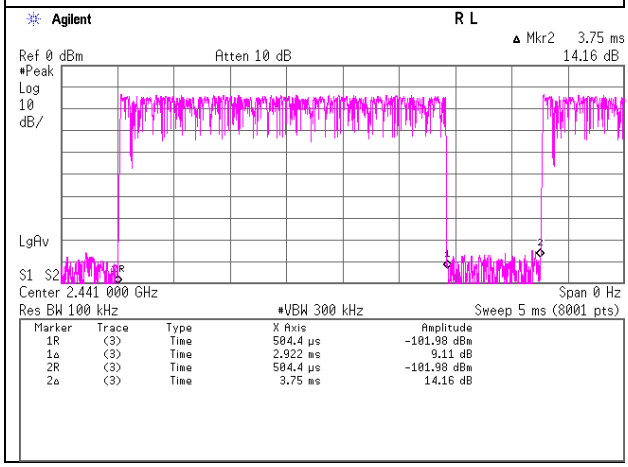


Burst Rate Confirmation

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	November 10, 2015
Temperature / Humidity	25 deg. C / 44 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off Display Separated Type(L2)

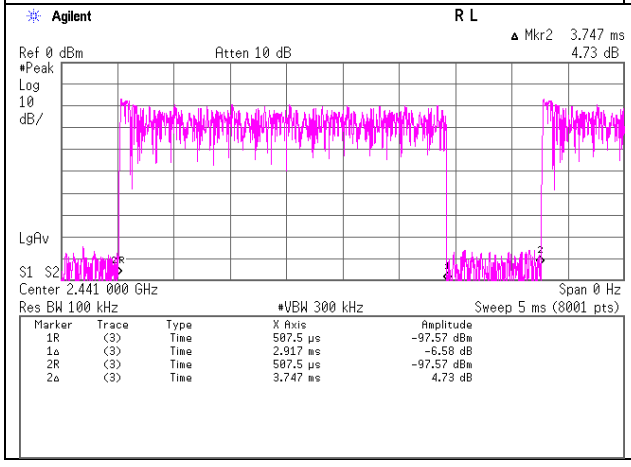
DH5

Tx on / (Tx on + Tx off) =	**0.779**
Tx on / (Tx on + Tx off) * 100 =	**77.9 %**
Duty factor = 10 * log (3.75 / 2.922) =	**1.08 dB**



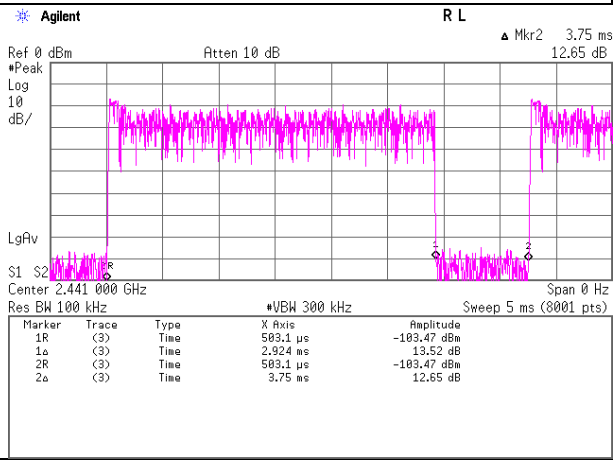
2DH5

Tx on / (Tx on + Tx off) =	**0.779**
Tx on / (Tx on + Tx off) * 100 =	**77.9 %**
Duty factor = 10 * log (3.747 / 2.918) =	**1.09 dB**



3DH5

Tx on / (Tx on + Tx off) =	**0.780**
Tx on / (Tx on + Tx off) * 100 =	**78.0 %**
Duty factor = 10 * log (3.75 / 2.924) =	**1.08 dB**



Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 7, 2015	November 10, 2015	November 14, 2015
Temperature / Humidity	25 deg. C / 39 % RH	24 deg. C / 55 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima (1-13 GHz)	Hiroyuki Morikawa (13-26 GHz)	Kenichi Adachi (30-1000 MHz)
Mode	Tx, Hopping Off, DH5 2402 MHz Display Combined Type(T2)		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	273.029	QP	29.6	18.1	8.5	32.0	0.0	24.2	46.0	21.8	199	96	
Hori.	378.000	QP	37.7	15.5	9.0	31.9	0.0	30.3	46.0	15.7	100	183	
Hori.	394.456	QP	31.7	15.9	9.1	31.9	0.0	24.8	46.0	21.2	100	65	
Hori.	402.263	QP	33.6	16.0	9.1	31.9	0.0	26.8	46.0	19.2	100	64	
Hori.	948.000	QP	33.8	22.6	11.1	30.6	0.0	36.9	46.0	9.1	149	135	
Hori.	2390.000	PK	45.7	27.8	13.7	41.0	1.8	48.0	73.9	25.9	100	37	
Hori.	4804.000	PK	49.2	31.4	5.7	39.6	1.8	48.5	73.9	25.4	100	234	
Hori.	7206.000	PK	43.7	36.9	7.1	40.1	1.8	49.4	73.9	24.5	100	0	
Hori.	9608.000	PK	44.6	38.5	8.2	39.6	1.8	53.5	73.9	20.4	100	0	
Hori.	2390.000	AV	34.2	27.8	13.7	41.0	1.8	36.5	53.9	17.4	100	37	
Hori.	4804.000	AV	38.9	31.4	5.7	39.6	1.8	38.2	53.9	15.7	100	234	
Hori.	7206.000	AV	32.5	36.9	7.1	40.1	1.8	38.2	53.9	15.7	100	0	
Hori.	9608.000	AV	32.9	38.5	8.2	39.6	1.8	41.8	53.9	12.1	100	0	
Vert.	912.000	QP	34.7	22.4	11.0	30.8	0.0	37.3	46.0	**8.7**	107	231	
Vert.	918.001	QP	32.4	22.4	11.0	30.8	0.0	35.0	46.0	11.0	100	234	
Vert.	948.000	QP	30.1	22.6	11.1	30.6	0.0	33.2	46.0	12.8	100	151	
Vert.	2390.000	PK	46.4	27.8	13.7	41.0	1.8	48.7	73.9	25.2	100	6	
Vert.	4804.000	PK	45.8	31.4	5.7	39.6	1.8	45.1	73.9	28.8	100	236	
Vert.	7206.000	PK	44.1	36.9	7.1	40.1	1.8	49.8	73.9	24.1	100	0	
Vert.	9608.000	PK	43.7	38.5	8.2	39.6	1.8	52.6	73.9	21.3	100	0	
Vert.	2390.000	AV	34.2	27.8	13.7	41.0	1.8	36.5	53.9	17.4	100	6	
Vert.	4804.000	AV	35.3	31.4	5.7	39.6	1.8	34.6	53.9	19.3	100	236	
Vert.	7206.000	AV	32.3	36.9	7.1	40.1	1.8	38.0	53.9	15.9	100	0	
Vert.	9608.000	AV	32.5	38.5	8.2	39.6	1.8	41.4	53.9	12.5	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.65 m / 3.0 m) = 1.8 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

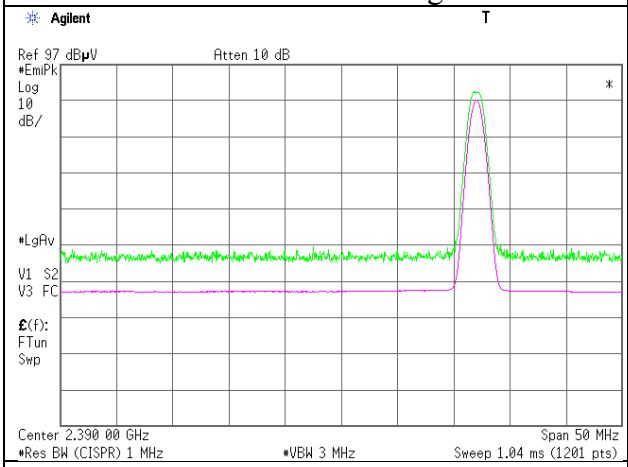
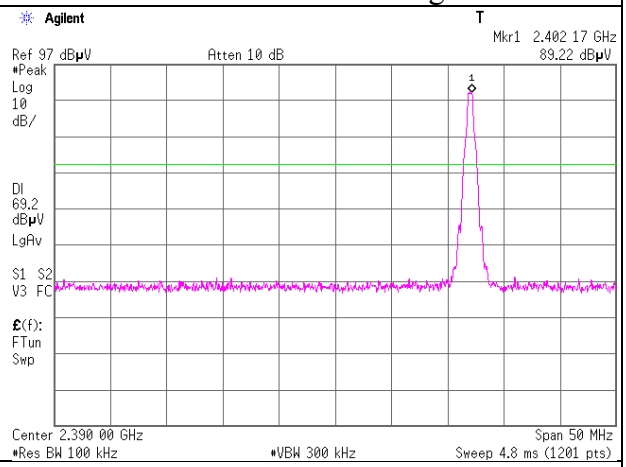
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	89.2	27.8	13.7	41.0	1.8	91.5	-	-	Carrier
Hori.	2400.000	PK	37.3	27.8	13.7	41.0	1.8	39.6	71.5	31.9	
Vert.	2402.000	PK	87.5	27.8	13.7	41.0	1.8	89.8	-	-	Carrier
Vert.	2400.000	PK	36.6	27.8	13.7	41.0	1.8	38.9	69.8	30.9	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.65 m / 3.0 m) = 1.8 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

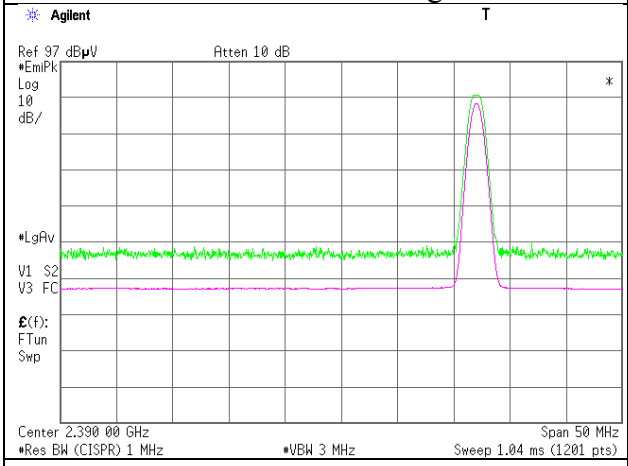
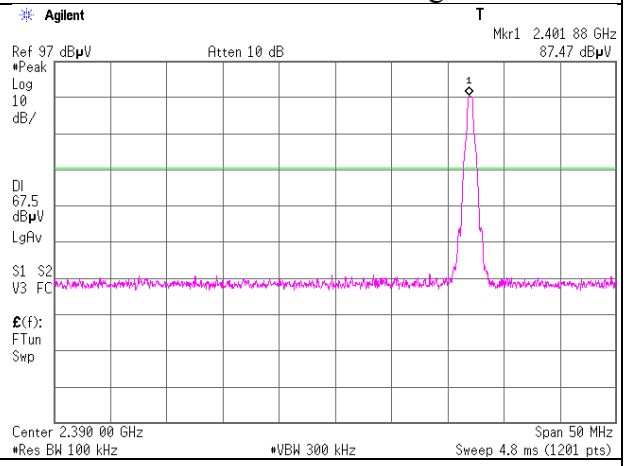
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11008648S-A
Date	November 7, 2015
Temperature / Humidity	25 deg. C / 39 % RH
Engineer	Wataru Kojima
	(1-13 GHz)
Mode	Tx, Hopping Off, DH5 2402 MHz Display Combined Type(T2)

Horizontal

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

Vertical

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

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

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 7, 2015	November 10, 2015	November 14, 2015
Temperature / Humidity	25 deg. C / 39 % RH	24 deg. C / 55 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima (1-13 GHz)	Hiroyuki Morikawa (13-26 GHz)	Kenichi Adachi (30-1000 MHz)
Mode	Tx, Hopping Off, DH5 2441 MHz Display Combined Type(T2)		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	378.000	QP	37.4	15.5	9.0	31.9	0.0	30.0	46.0	16.0	100	189	
Hori.	394.156	QP	31.5	15.9	9.1	31.9	0.0	24.6	46.0	21.4	100	195	
Hori.	402.277	QP	33.9	16.0	9.1	31.9	0.0	27.1	46.0	18.9	100	335	
Hori.	948.000	QP	33.5	22.6	11.1	30.6	0.0	36.6	46.0	9.4	100	130	
Hori.	2115.312	PK	48.2	27.3	13.5	41.0	1.8	49.8	73.9	24.1	100	307	
Hori.	3531.503	PK	51.3	28.3	5.4	40.8	1.8	46.0	73.9	27.9	100	190	
Hori.	4230.587	PK	49.1	29.7	5.5	40.2	1.8	45.9	73.9	28.0	100	187	
Hori.	4882.000	PK	45.9	31.7	5.8	39.5	1.8	45.7	73.9	28.2	100	235	
Hori.	7323.000	PK	43.8	36.9	7.2	40.2	1.8	49.5	73.9	24.4	100	0	
Hori.	9764.000	PK	44.1	38.5	8.2	39.5	1.8	53.1	73.9	20.8	100	0	
Hori.	2115.312	AV	42.6	27.3	13.5	41.0	1.8	44.2	53.9	9.7	100	307	
Hori.	3531.503	AV	47.9	28.3	5.4	40.8	1.8	42.6	53.9	11.3	100	190	
Hori.	4230.587	AV	42.3	29.7	5.5	40.2	1.8	39.1	53.9	14.8	100	187	
Hori.	4882.000	AV	37.7	31.7	5.8	39.5	1.8	37.5	53.9	16.4	100	235	
Hori.	7323.000	AV	32.7	36.9	7.2	40.2	1.8	38.4	53.9	15.5	100	0	
Hori.	9764.000	AV	33.1	38.5	8.2	39.5	1.8	42.1	53.9	11.8	100	0	
Vert.	912.000	QP	34.2	22.4	11.0	30.8	0.0	36.8	46.0	9.2	107	231	
Vert.	918.000	QP	32.4	22.4	11.0	30.8	0.0	35.0	46.0	11.0	100	237	
Vert.	930.000	QP	35.4	22.5	11.1	30.7	0.0	38.3	46.0	**7.7**	170	241	
Vert.	948.000	QP	31.1	22.6	11.1	30.6	0.0	34.2	46.0	11.8	100	223	
Vert.	2115.312	PK	48.3	27.3	13.5	41.0	1.8	49.9	73.9	24.0	100	356	
Vert.	3531.508	PK	50.6	28.3	5.4	40.8	1.8	45.3	73.9	28.6	100	156	
Vert.	4230.597	PK	46.9	29.7	5.5	40.2	1.8	43.7	73.9	30.2	157	200	
Vert.	4882.000	PK	45.3	31.7	5.8	39.5	1.8	45.1	73.9	28.8	100	237	
Vert.	7323.000	PK	44.3	36.9	7.2	40.2	1.8	50.0	73.9	23.9	100	0	
Vert.	9764.000	PK	43.9	38.5	8.2	39.5	1.8	52.9	73.9	21.0	100	0	
Vert.	2115.312	AV	38.2	27.3	13.5	41.0	1.8	39.8	53.9	14.1	100	356	
Vert.	3531.508	AV	46.1	28.3	5.4	40.8	1.8	40.8	53.9	13.1	100	156	
Vert.	4230.597	AV	42.1	29.7	5.5	40.2	1.8	38.9	53.9	15.0	157	200	
Vert.	4882.000	AV	37.6	31.7	5.8	39.5	1.8	37.4	53.9	16.5	100	237	
Vert.	7323.000	AV	32.8	36.9	7.2	40.2	1.8	38.5	53.9	15.4	100	0	
Vert.	9764.000	AV	33.1	38.5	8.2	39.5	1.8	42.1	53.9	11.8	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.65 m / 3.0 m) = 1.8 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 7, 2015	November 10, 2015	November 14, 2015
Temperature / Humidity	25 deg. C / 39 % RH	24 deg. C / 55 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima (1-13 GHz)	Hiroyuki Morikawa (13-26 GHz)	Kenichi Adachi (30-1000 MHz)
Mode	Tx, Hopping Off, DH5 2480 MHz Display Combined Type(T2)		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	378.001	QP	37.3	15.5	9.0	31.9	0.0	29.9	46.0	16.1	100	191	
Hori.	394.172	QP	31.4	15.9	9.1	31.9	0.0	24.5	46.0	21.5	100	311	
Hori.	402.251	QP	33.7	16.0	9.1	31.9	0.0	26.9	46.0	19.1	100	67	
Hori.	948.001	QP	33.1	22.6	11.1	30.6	0.0	36.2	46.0	9.8	151	139	
Hori.	2483.500	PK	46.4	27.9	13.8	41.0	1.8	48.9	73.9	25.0	240	42	
Hori.	4960.000	PK	45.3	32.0	5.8	39.4	1.8	45.5	73.9	28.4	153	183	
Hori.	7440.000	PK	46.3	37.0	7.2	40.4	1.8	51.9	73.9	22.0	100	0	
Hori.	9920.000	PK	44.9	38.4	8.2	39.4	1.8	53.9	73.9	20.0	100	0	
Hori.	2483.500	AV	33.6	27.9	13.8	41.0	1.8	36.1	53.9	17.8	240	42	
Hori.	4960.000	AV	34.9	32.0	5.8	39.4	1.8	35.1	53.9	18.8	153	183	
Hori.	7440.000	AV	34.1	37.0	7.2	40.4	1.8	39.7	53.9	14.2	100	0	
Hori.	9920.000	AV	33.7	38.4	8.2	39.4	1.8	42.7	53.9	11.2	100	0	
Vert.	912.001	QP	34.4	22.4	11.0	30.8	0.0	37.0	46.0	9.0	106	231	
Vert.	918.001	QP	32.7	22.4	11.0	30.8	0.0	35.3	46.0	10.7	100	201	
Vert.	930.000	QP	34.6	22.5	11.1	30.7	0.0	37.5	46.0	**8.5**	115	238	
Vert.	948.000	QP	31.2	22.6	11.1	30.6	0.0	34.3	46.0	11.7	100	211	
Vert.	2483.500	PK	48.9	27.9	13.8	41.0	1.8	51.4	73.9	22.5	134	0	
Vert.	4960.000	PK	45.8	32.0	5.8	39.4	1.8	46.0	73.9	27.9	100	253	
Vert.	7440.000	PK	44.9	37.0	7.2	40.4	1.8	50.5	73.9	23.4	100	0	
Vert.	9920.000	PK	45.1	38.4	8.2	39.4	1.8	54.1	73.9	19.8	100	0	
Vert.	2483.500	AV	36.7	27.9	13.8	41.0	1.8	39.2	53.9	14.7	134	0	
Vert.	4960.000	AV	35.4	32.0	5.8	39.4	1.8	35.6	53.9	18.3	100	253	
Vert.	7440.000	AV	33.6	37.0	7.2	40.4	1.8	39.2	53.9	14.7	100	0	
Vert.	9920.000	AV	33.7	38.4	8.2	39.4	1.8	42.7	53.9	11.2	100	0	

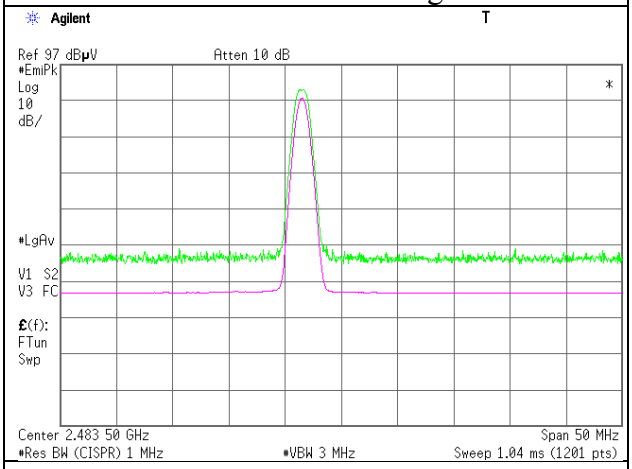
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.65 m / 3.0 m) = 1.8 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11008648S-A
Date	November 7, 2015
Temperature / Humidity	25 deg. C / 39 % RH
Engineer	Wataru Kojima
	(1-13 GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz Display Combined Type(T2)

Horizontal

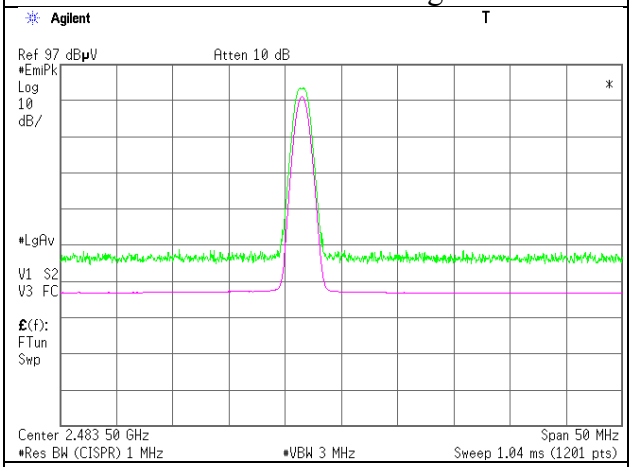
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

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

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 7, 2015	November 10, 2015	November 14, 2015
Temperature / Humidity	25 deg. C / 39 % RH	24 deg. C / 55 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima (1-13 GHz)	Hiroyuki Morikawa (13-26 GHz)	Kenichi Adachi (30-1000 MHz)
Mode	Tx, Hopping Off, 3DH5 2402 MHz Display Combined Type(T2)		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	377.999	QP	37.4	15.5	9.0	31.9	0.0	30.0	46.0	16.0	100	189	
Hori.	394.152	QP	31.1	15.9	9.1	31.9	0.0	24.2	46.0	21.8	100	324	
Hori.	402.413	QP	34.0	16.0	9.1	31.9	0.0	27.2	46.0	18.8	100	72	
Hori.	948.000	QP	32.2	22.6	11.1	30.6	0.0	35.3	46.0	10.7	148	122	
Hori.	2390.000	PK	46.6	27.8	13.7	41.0	1.8	48.9	73.9	25.0	212	80	
Hori.	4804.000	PK	47.3	31.4	5.7	39.6	1.8	46.6	73.9	27.3	142	230	
Hori.	7206.000	PK	45.1	36.9	7.1	40.1	1.8	50.8	73.9	23.1	100	0	
Hori.	9608.000	PK	43.8	38.5	8.2	39.6	1.8	52.7	73.9	21.2	100	0	
Hori.	2390.000	AV	33.7	27.8	13.7	41.0	1.8	36.0	53.9	17.9	212	80	
Hori.	4804.000	AV	38.5	31.4	5.7	39.6	1.8	37.8	53.9	16.1	142	230	
Hori.	7206.000	AV	33.3	36.9	7.1	40.1	1.8	39.0	53.9	14.9	100	0	
Hori.	9608.000	AV	33.0	38.5	8.2	39.6	1.8	41.9	53.9	12.0	100	0	
Vert.	912.000	QP	35.0	22.4	11.0	30.8	0.0	37.6	46.0	**8.4**	100	212	
Vert.	918.000	QP	33.4	22.4	11.0	30.8	0.0	36.0	46.0	10.0	100	228	
Vert.	930.000	QP	34.5	22.5	11.1	30.7	0.0	37.4	46.0	8.6	104	235	
Vert.	948.001	QP	31.2	22.6	11.1	30.6	0.0	34.3	46.0	11.7	100	117	
Vert.	2390.000	PK	45.4	27.8	13.7	41.0	1.8	47.7	73.9	26.2	100	299	
Vert.	4804.000	PK	45.5	31.4	5.7	39.6	1.8	44.8	73.9	29.1	100	236	
Vert.	7206.000	PK	44.9	36.9	7.1	40.1	1.8	50.6	73.9	23.3	100	0	
Vert.	9608.000	PK	43.8	38.5	8.2	39.6	1.8	52.7	73.9	21.2	100	0	
Vert.	2390.000	AV	34.1	27.8	13.7	41.0	1.8	36.4	53.9	17.5	100	299	
Vert.	4804.000	AV	35.2	31.4	5.7	39.6	1.8	34.5	53.9	19.4	100	236	
Vert.	7206.000	AV	33.4	36.9	7.1	40.1	1.8	39.1	53.9	14.8	100	0	
Vert.	9608.000	AV	33.1	38.5	8.2	39.6	1.8	42.0	53.9	11.9	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.65 m / 3.0 m) = 1.8 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

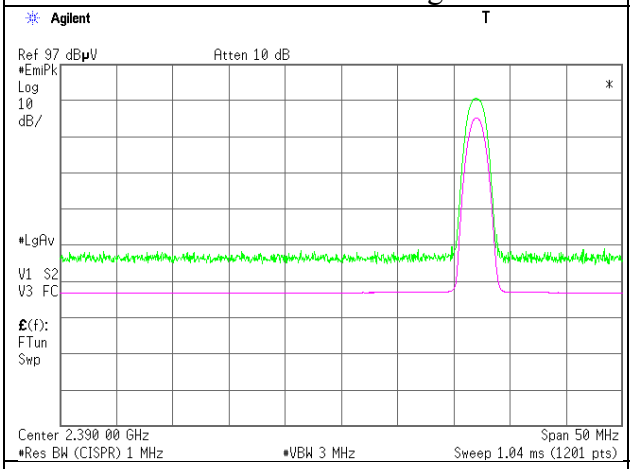
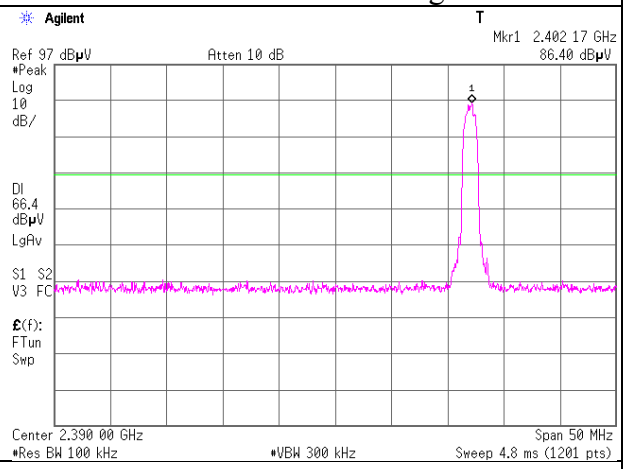
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	85.9	27.8	13.7	41.0	1.8	88.2	-	-	Carrier
Hori.	2400.000	PK	36.0	27.8	13.7	41.0	1.8	38.3	68.2	29.9	
Vert.	2402.000	PK	85.4	27.8	13.7	41.0	1.8	87.7	-	-	Carrier
Vert.	2400.000	PK	36.8	27.8	13.7	41.0	1.8	39.1	67.7	28.6	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.65 m / 3.0 m) = 1.8 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

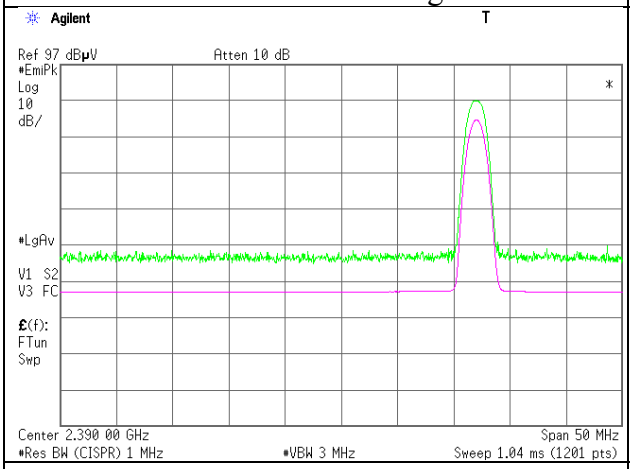
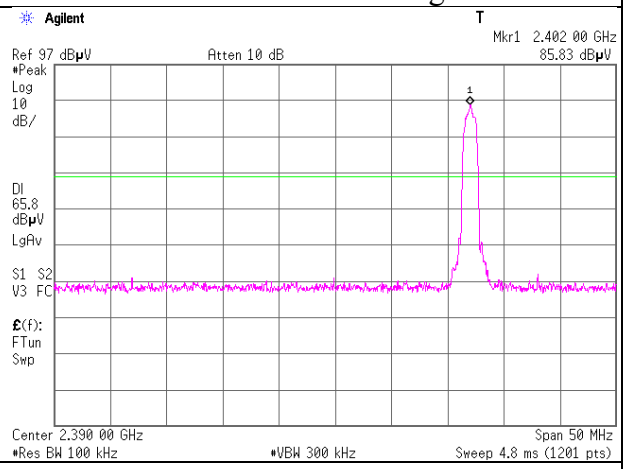
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11008648S-A
Date	November 7, 2015
Temperature / Humidity	25 deg. C / 39 % RH
Engineer	Wataru Kojima
	(1-13 GHz)
Mode	Tx, Hopping Off, 3DH5 2402 MHz Display Combined Type(T2)

Horizontal

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

Vertical

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

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

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 7, 2015	November 10, 2015	November 14, 2015
Temperature / Humidity	25 deg. C / 39 % RH	24 deg. C / 55 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima (1-13 GHz)	Hiroyuki Morikawa (13-26 GHz)	Kenichi Adachi (30-1000 MHz)
Mode	Tx, Hopping Off, 3DH5 2441 MHz Display Combined Type(T2)		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	378.000	QP	35.4	15.5	9.0	31.9	0.0	28.0	46.0	18.0	100	309	
Hori.	394.554	QP	31.3	15.9	9.1	31.9	0.0	24.4	46.0	21.6	100	327	
Hori.	402.373	QP	33.8	16.0	9.1	31.9	0.0	27.0	46.0	19.0	100	57	
Hori.	948.000	QP	32.3	22.6	11.1	30.6	0.0	35.4	46.0	10.6	100	327	
Hori.	4882.000	PK	47.9	31.7	5.8	39.5	1.8	47.7	73.9	26.2	100	233	
Hori.	7323.000	PK	45.4	36.9	7.2	40.2	1.8	51.1	73.9	22.8	100	0	
Hori.	9764.000	PK	45.4	38.5	8.2	39.5	1.8	54.4	73.9	19.5	100	0	
Hori.	4882.000	AV	37.5	31.7	5.8	39.5	1.8	37.3	53.9	16.6	100	233	
Hori.	7323.000	AV	33.8	36.9	7.2	40.2	1.8	39.5	53.9	14.4	100	0	
Hori.	9764.000	AV	33.4	38.5	8.2	39.5	1.8	42.4	53.9	11.5	100	0	
Vert.	912.000	QP	35.0	22.4	11.0	30.8	0.0	37.6	46.0	8.4	111	231	
Vert.	918.000	QP	33.1	22.4	11.0	30.8	0.0	35.7	46.0	10.3	100	235	
Vert.	930.000	QP	35.1	22.5	11.1	30.7	0.0	38.0	46.0	**8.0**	107	237	
Vert.	948.000	QP	31.4	22.6	11.1	30.6	0.0	34.5	46.0	11.5	100	237	
Vert.	4882.000	PK	45.8	31.7	5.8	39.5	1.8	45.6	73.9	28.3	100	237	
Vert.	7323.000	PK	45.3	36.9	7.2	40.2	1.8	51.0	73.9	22.9	100	0	
Vert.	9764.000	PK	44.7	38.5	8.2	39.5	1.8	53.7	73.9	20.2	100	0	
Vert.	4882.000	AV	37.1	31.7	5.8	39.5	1.8	36.9	53.9	17.0	100	237	
Vert.	7323.000	AV	33.9	36.9	7.2	40.2	1.8	39.6	53.9	14.3	100	0	
Vert.	9764.000	AV	33.5	38.5	8.2	39.5	1.8	42.5	53.9	11.4	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.65 m / 3.0 m) = 1.8 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 7, 2015	November 10, 2015	November 14, 2015
Temperature / Humidity	25 deg. C / 39 % RH	24 deg. C / 55 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima (1-13 GHz)	Hiroyuki Morikawa (13-26 GHz)	Kenichi Adachi (30-1000 MHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz Display Combined Type(T2)		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	378.000	QP	34.7	15.5	9.0	31.9	0.0	27.3	46.0	18.7	100	311	
Hori.	394.570	QP	31.1	15.9	9.1	31.9	0.0	24.2	46.0	21.8	100	41	
Hori.	402.327	QP	33.1	16.0	9.1	31.9	0.0	26.3	46.0	19.7	100	82	
Hori.	948.247	QP	32.1	22.6	11.1	30.6	0.0	35.2	46.0	10.8	100	299	
Hori.	2483.500	PK	45.8	27.9	13.8	41.0	1.8	48.3	73.9	25.6	197	15	
Hori.	4960.000	PK	45.1	32.0	5.8	39.4	1.8	45.3	73.9	28.6	158	226	
Hori.	7440.000	PK	45.3	37.0	7.2	40.4	1.8	50.9	73.9	23.0	100	0	
Hori.	9920.000	PK	45.1	38.4	8.2	39.4	1.8	54.1	73.9	19.8	100	0	
Hori.	2483.500	AV	33.7	27.9	13.8	41.0	1.8	36.2	53.9	17.7	197	15	
Hori.	4960.000	AV	35.7	32.0	5.8	39.4	1.8	35.9	53.9	18.0	158	226	
Hori.	7440.000	AV	34.2	37.0	7.2	40.4	1.8	39.8	53.9	14.1	100	0	
Hori.	9920.000	AV	33.7	38.4	8.2	39.4	1.8	42.7	53.9	11.2	100	0	
Vert.	912.000	QP	34.9	22.4	11.0	30.8	0.0	37.5	46.0	8.5	100	236	
Vert.	918.000	QP	33.3	22.4	11.0	30.8	0.0	35.9	46.0	10.1	111	234	
Vert.	930.000	QP	35.0	22.5	11.1	30.7	0.0	37.9	46.0	**8.1**	105	234	
Vert.	948.000	QP	31.2	22.6	11.1	30.6	0.0	34.3	46.0	11.7	100	246	
Vert.	2483.500	PK	45.4	27.9	13.8	41.0	1.8	47.9	73.9	26.0	100	0	
Vert.	4960.000	PK	45.7	32.0	5.8	39.4	1.8	45.9	73.9	28.0	100	252	
Vert.	7440.000	PK	45.8	37.0	7.2	40.4	1.8	51.4	73.9	22.5	100	0	
Vert.	9920.000	PK	45.0	38.4	8.2	39.4	1.8	54.0	73.9	19.9	100	0	
Vert.	2483.500	AV	33.7	27.9	13.8	41.0	1.8	36.2	53.9	17.7	100	0	
Vert.	4960.000	AV	35.5	32.0	5.8	39.4	1.8	35.7	53.9	18.2	100	252	
Vert.	7440.000	AV	34.2	37.0	7.2	40.4	1.8	39.8	53.9	14.1	100	0	
Vert.	9920.000	AV	33.7	38.4	8.2	39.4	1.8	42.7	53.9	11.2	100	0	

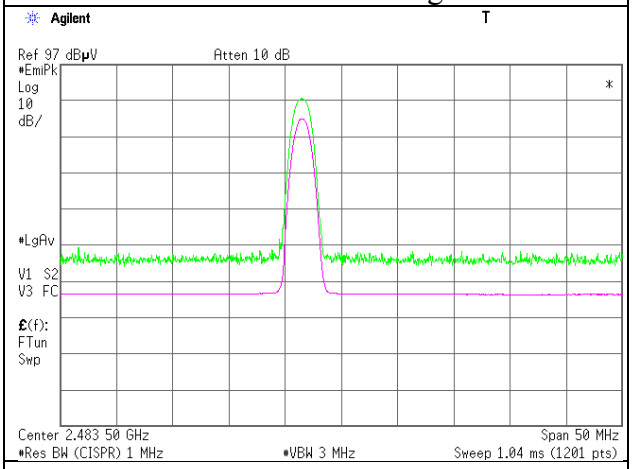
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.65 m / 3.0 m) = 1.8 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11008648S-A
Date	November 7, 2015
Temperature / Humidity	25 deg. C / 39 % RH
Engineer	Wataru Kojima
	(1-13 GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz Display Combined Type(T2)

Horizontal

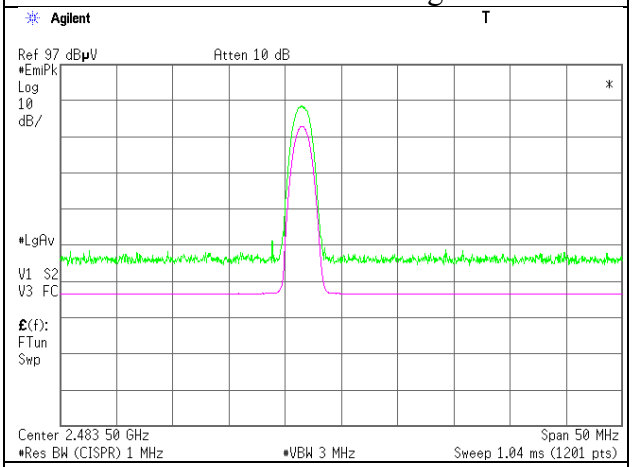
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot

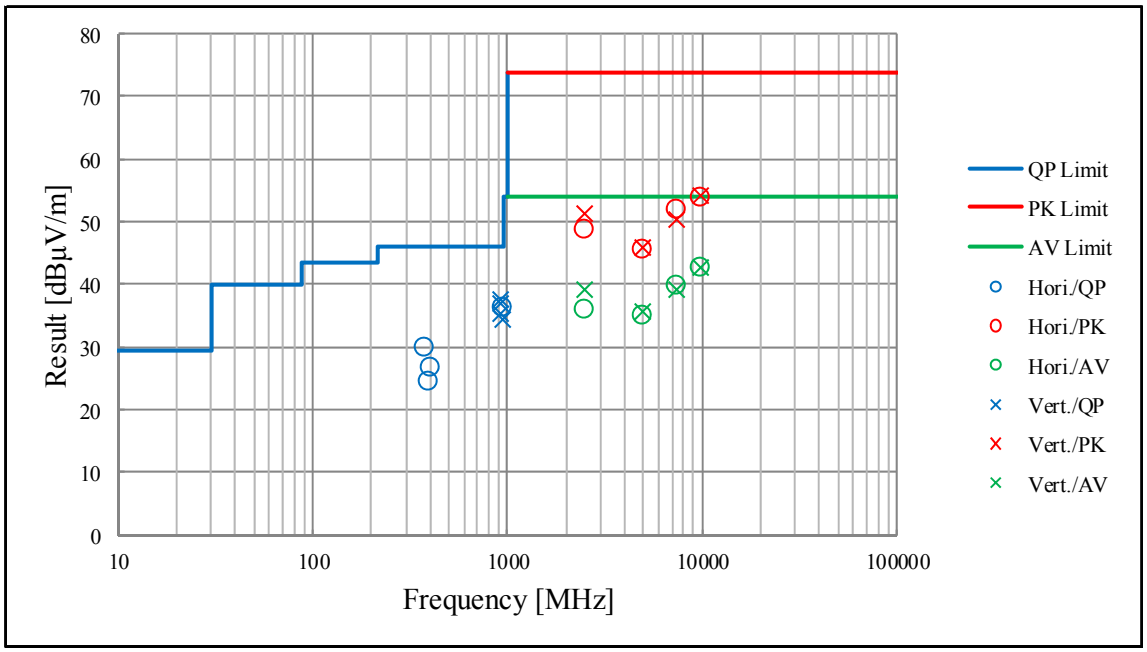


Trace Green : Peak Plot
Trace Purple : Average Plot

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

Radiated Spurious Emission
(Plot data, Worst case)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 7, 2015	November 10, 2015	November 14, 2015
Temperature / Humidity	25 deg. C / 39 % RH	24 deg. C / 55 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima (1-13 GHz)	Hiroyuki Morikawa (13-26 GHz)	Kenichi Adachi (30-1000 MHz)
Mode	Tx, Hopping Off, DH5 2480 MHz Display Combined Type(T2)		



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

Radiated Spurious Emission

Test place	Shonan EMC Lab. No. 1 and 3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 26, 2015	November 24, 2015	November 25, 2015
Temperature / Humidity	25 deg. C / 37 % RH	24 deg. C / 41 % RH	23 deg. C / 40 % RH
Engineer	Shinichi Takano (1-13 GHz)	Wataru Kojima (13-26 GHz)	Wataru Kojima (30-1000 MHz)
Mode	Tx, Hopping Off, DH5 2402 MHz Display Separated Type(L2)		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	202.493	QP	28.5	16.2	9.1	31.8	0.0	22.0	43.5	21.5	150	333	
Hori.	480.582	QP	33.3	17.1	7.6	31.9	0.0	26.1	46.0	19.9	100	149	
Hori.	797.265	QP	27.8	21.0	9.1	31.8	0.0	26.1	46.0	19.9	120	22	
Hori.	2390.000	PK	47.1	27.8	13.7	41.0	1.1	48.7	73.9	25.2	100	358	
Hori.	4804.000	PK	46.1	31.4	5.7	39.6	1.1	44.7	73.9	29.2	100	150	
Hori.	7206.000	PK	46.3	36.9	7.1	40.1	1.1	51.3	73.9	22.6	100	358	
Hori.	9608.000	PK	46.6	38.5	8.2	39.6	1.1	54.8	73.9	19.1	100	8	
Hori.	2390.000	AV	33.9	27.8	13.7	41.0	1.1	35.5	53.9	18.4	100	358	
Hori.	4804.000	AV	35.3	31.4	5.7	39.6	1.1	33.9	53.9	20.0	100	150	
Hori.	7206.000	AV	35.3	36.9	7.1	40.1	1.1	40.3	53.9	13.6	100	358	
Hori.	9608.000	AV	35.4	38.5	8.2	39.6	1.1	43.6	53.9	**10.3**	100	8	
Vert.	198.899	QP	28.2	16.2	9.0	31.8	0.0	21.6	43.5	21.9	100	225	
Vert.	552.828	QP	27.1	18.2	8.0	32.0	0.0	21.3	46.0	24.7	100	221	
Vert.	677.410	QP	26.3	20.0	8.6	32.0	0.0	22.9	46.0	23.1	100	165	
Vert.	903.588	QP	33.0	22.3	9.7	31.3	0.0	33.7	46.0	12.3	100	332	
Vert.	2390.000	PK	47.5	27.8	13.7	41.0	1.1	49.1	73.9	24.8	165	343	
Vert.	4804.000	PK	47.0	31.4	5.7	39.6	1.1	45.6	73.9	28.3	100	161	
Vert.	7206.000	PK	47.6	36.9	7.1	40.1	1.1	52.6	73.9	21.3	100	14	
Vert.	9608.000	PK	46.2	38.5	8.2	39.6	1.1	54.4	73.9	19.5	100	32	
Vert.	2390.000	AV	34.0	27.8	13.7	41.0	1.1	35.6	53.9	18.3	165	343	
Vert.	4804.000	AV	36.2	31.4	5.7	39.6	1.1	34.8	53.9	19.1	100	161	
Vert.	7206.000	AV	35.4	36.9	7.1	40.1	1.1	40.4	53.9	13.5	100	14	
Vert.	9608.000	AV	35.4	38.5	8.2	39.6	1.1	43.6	53.9	**10.3**	100	32	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.39 m / 3.0 m) = 1.1 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

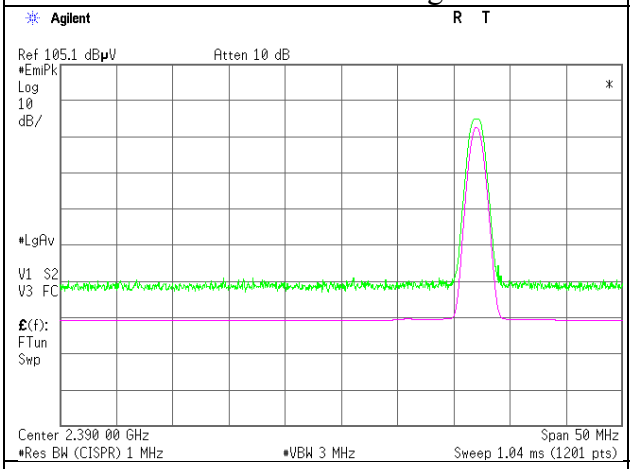
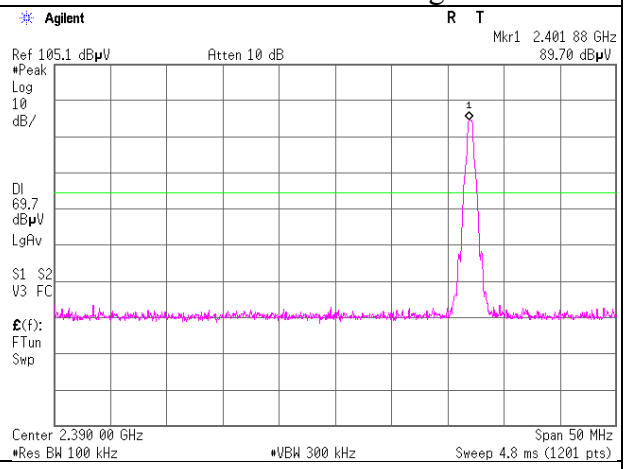
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	89.6	27.8	13.7	41.0	1.1	91.2	-	-	Carrier
Hori.	2400.000	PK	38.1	27.8	13.7	41.0	1.1	39.7	71.2	31.5	
Vert.	2402.000	PK	82.2	27.8	13.7	41.0	1.1	83.8	-	-	Carrier
Vert.	2400.000	PK	38.0	27.8	13.7	41.0	1.1	39.6	63.8	24.2	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.39 m / 3.0 m) = 1.1 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

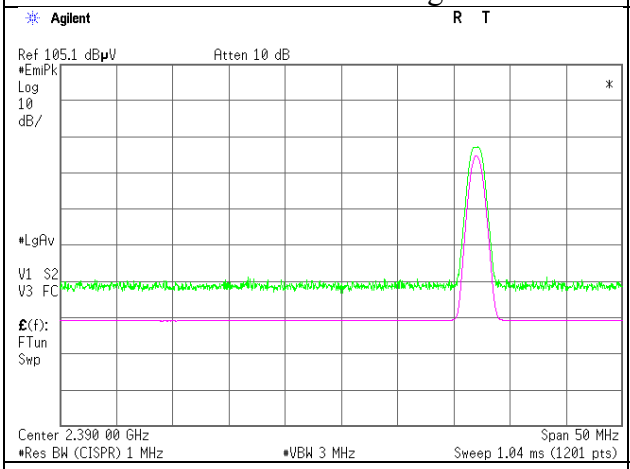
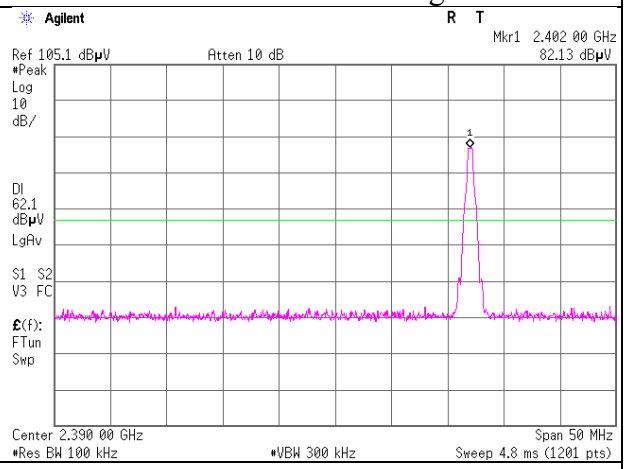
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No. 1 and 3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 26, 2015	November 24, 2015	November 25, 2015
Temperature / Humidity	25 deg. C / 37 % RH	24 deg. C / 41 % RH	23 deg. C / 40 % RH
Engineer	Shinichi Takano	Wataru Kojima	Wataru Kojima
	(1-13 GHz)	(13-26 GHz)	(30-1000 MHz)
Mode	Tx, Hopping Off, DH5 2402 MHz Display Separated Type(L2)		

Horizontal

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

Vertical

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

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

Radiated Spurious Emission

Test place	Shonan EMC Lab. No. 1 and 3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 26, 2015	November 24, 2015	November 25, 2015
Temperature / Humidity	25 deg. C / 37 % RH	24 deg. C / 41 % RH	23 deg. C / 40 % RH
Engineer	Shinichi Takano	Wataru Kojima	Wataru Kojima
	(1-13 GHz)	(13-26 GHz)	(30-1000 MHz)
Mode	Tx, Hopping Off, DH5 2441 MHz Display Separated Type(L2)		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	202.502	QP	28.6	16.2	9.1	31.8	0.0	22.1	43.5	21.4	150	338	
Hori.	481.086	QP	33.3	17.1	7.6	31.9	0.0	26.1	46.0	19.9	100	142	
Hori.	542.424	QP	30.7	18.1	7.9	32.0	0.0	24.7	46.0	21.3	100	125	
Hori.	4882.000	PK	45.4	31.7	5.8	39.5	1.1	44.5	73.9	29.4	121	168	
Hori.	7323.000	PK	46.3	36.9	7.2	40.2	1.1	51.3	73.9	22.6	100	322	
Hori.	9764.000	PK	46.4	38.5	8.2	39.5	1.1	54.7	73.9	19.2	100	21	
Hori.	4882.000	AV	35.1	31.7	5.8	39.5	1.1	34.2	53.9	19.7	121	168	
Hori.	7323.000	AV	35.0	36.9	7.2	40.2	1.1	40.0	53.9	13.9	100	322	
Hori.	9764.000	AV	34.7	38.5	8.2	39.5	1.1	43.0	53.9	10.9	100	21	
Vert.	198.896	QP	28.4	16.2	9.0	31.8	0.0	21.8	43.5	21.7	100	224	
Vert.	554.549	QP	27.0	18.3	8.0	32.0	0.0	21.3	46.0	24.7	100	215	
Vert.	850.432	QP	29.6	21.7	9.4	31.6	0.0	29.1	46.0	16.9	100	349	
Vert.	903.584	QP	33.2	22.3	9.7	31.3	0.0	33.9	46.0	12.1	100	341	
Vert.	4882.000	PK	47.3	31.7	5.8	39.5	1.1	46.4	73.9	27.5	100	204	
Vert.	7323.000	PK	46.0	36.9	7.2	40.2	1.1	51.0	73.9	22.9	100	23	
Vert.	9764.000	PK	46.4	38.5	8.2	39.5	1.1	54.7	73.9	19.2	100	342	
Vert.	4882.000	AV	36.0	31.7	5.8	39.5	1.1	35.1	53.9	18.8	100	204	
Vert.	7323.000	AV	34.9	36.9	7.2	40.2	1.1	39.9	53.9	14.0	100	23	
Vert.	9764.000	AV	35.2	38.5	8.2	39.5	1.1	43.5	53.9	**10.4**	100	342	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

Distance factor : 1 GHz - 13 GHz : 20log (3.39 m / 3.0 m) = 1.1 dB

13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No. 1 and 3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 26, 2015	November 24, 2015	November 25, 2015
Temperature / Humidity	25 deg. C / 37 % RH	24 deg. C / 41 % RH	23 deg. C / 40 % RH
Engineer	Shinichi Takano	Wataru Kojima	Wataru Kojima
	(1-13 GHz)	(13-26 GHz)	(30-1000 MHz)
Mode	Tx, Hopping Off, DH5 2480 MHz Display Separated Type(L2)		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	202.508	QP	28.5	16.2	9.1	31.8	0.0	22.0	43.5	21.5	150	338	
Hori.	481.086	QP	33.4	17.1	7.6	31.9	0.0	26.2	46.0	19.8	100	149	
Hori.	542.436	QP	30.4	18.1	7.9	32.0	0.0	24.4	46.0	21.6	100	111	
Hori.	797.277	QP	28.2	21.0	9.1	31.8	0.0	26.5	46.0	19.5	120	13	
Hori.	2483.500	PK	46.6	27.9	13.8	41.0	1.1	48.4	73.9	25.5	207	15	
Hori.	4960.000	PK	47.0	32.0	5.8	39.4	1.1	46.5	73.9	27.4	100	205	
Hori.	7440.000	PK	46.0	37.0	7.2	40.4	1.1	50.9	73.9	23.0	100	353	
Hori.	9920.000	PK	45.9	38.4	8.2	39.4	1.1	54.2	73.9	19.7	100	3	
Hori.	2483.500	AV	32.4	27.9	13.8	41.0	1.1	34.2	53.9	19.7	207	15	
Hori.	4960.000	AV	36.0	32.0	5.8	39.4	1.1	35.5	53.9	18.4	100	205	
Hori.	7440.000	AV	34.8	37.0	7.2	40.4	1.1	39.7	53.9	14.2	100	353	
Hori.	9920.000	AV	34.0	38.4	8.2	39.4	1.1	42.3	53.9	**11.6**	100	3	
Vert.	199.068	QP	28.6	16.2	9.0	31.8	0.0	22.0	43.5	21.5	100	227	
Vert.	552.962	QP	27.3	18.2	8.0	32.0	0.0	21.5	46.0	24.5	100	221	
Vert.	903.578	QP	33.3	22.3	9.7	31.3	0.0	34.0	46.0	12.0	100	345	
Vert.	2483.500	PK	47.6	27.9	13.8	41.0	1.1	49.4	73.9	24.5	100	232	
Vert.	4960.000	PK	45.1	32.0	5.8	39.4	1.1	44.6	73.9	29.3	100	228	
Vert.	7440.000	PK	46.1	37.0	7.2	40.4	1.1	51.0	73.9	22.9	100	69	
Vert.	9920.000	PK	45.1	38.4	8.2	39.4	1.1	53.4	73.9	20.5	100	358	
Vert.	2483.500	AV	33.8	27.9	13.8	41.0	1.1	35.6	53.9	18.3	100	232	
Vert.	4960.000	AV	34.4	32.0	5.8	39.4	1.1	33.9	53.9	20.0	100	228	
Vert.	7440.000	AV	34.5	37.0	7.2	40.4	1.1	39.4	53.9	14.5	100	69	
Vert.	9920.000	AV	34.0	38.4	8.2	39.4	1.1	42.3	53.9	**11.6**	100	358	

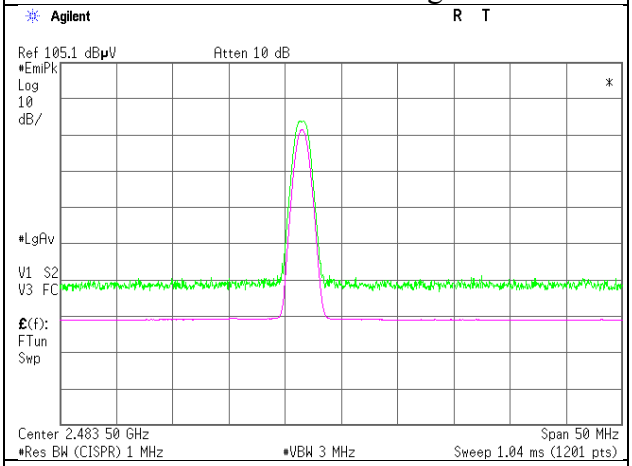
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.39 m / 3.0 m) = 1.1 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No. 1 and 3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 26, 2015	November 24, 2015	November 25, 2015
Temperature / Humidity	25 deg. C / 37 % RH	24 deg. C / 41 % RH	23 deg. C / 40 % RH
Engineer	Shinichi Takano	Wataru Kojima	Wataru Kojima
	(1-13 GHz)	(13-26 GHz)	(30-1000 MHz)
Mode	Tx, Hopping Off, DH5 2480 MHz Display Separated Type(L2)		

Horizontal

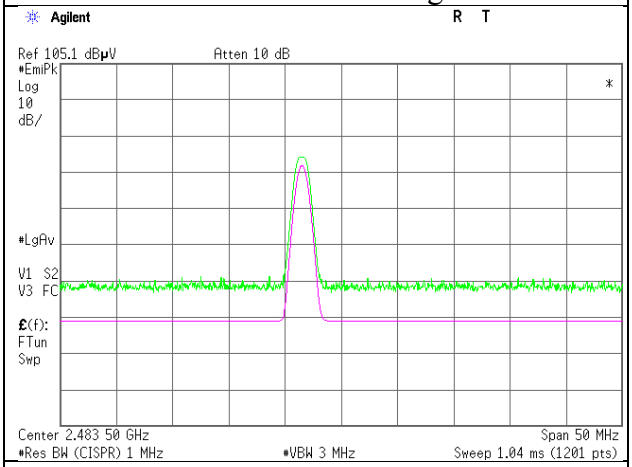
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

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

Radiated Spurious Emission

Test place	Shonan EMC Lab. No. 1 and 3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 26, 2015	November 24, 2015	November 25, 2015
Temperature / Humidity	25 deg. C / 37 % RH	24 deg. C / 41 % RH	23 deg. C / 40 % RH
Engineer	Shinichi Takano	Wataru Kojima	Wataru Kojima
	(1-13 GHz)	(13-26 GHz)	(30-1000 MHz)
Mode	Tx, Hopping Off, 3DH5 2402 MHz Display Separated Type(L2)		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	202.494	QP	28.8	16.2	9.1	31.8	0.0	22.3	43.5	21.2	150	329	
Hori.	480.573	QP	32.0	17.1	7.6	31.9	0.0	24.8	46.0	21.2	100	140	
Hori.	542.431	QP	29.0	18.1	7.9	32.0	0.0	23.0	46.0	23.0	100	117	
Hori.	797.279	QP	28.2	21.0	9.1	31.8	0.0	26.5	46.0	19.5	125	18	
Hori.	2390.000	PK	48.1	27.8	13.7	41.0	1.1	49.7	73.9	24.2	271	356	
Hori.	4804.000	PK	46.1	31.4	5.7	39.6	1.1	44.7	73.9	29.2	100	177	
Hori.	7206.000	PK	47.1	36.9	7.1	40.1	1.1	52.1	73.9	21.8	100	351	
Hori.	9608.000	PK	46.8	38.5	8.2	39.6	1.1	55.0	73.9	18.9	100	344	
Hori.	2390.000	AV	33.8	27.8	13.7	41.0	1.1	35.4	53.9	18.5	271	356	
Hori.	4804.000	AV	35.0	31.4	5.7	39.6	1.1	33.6	53.9	20.3	100	177	
Hori.	7206.000	AV	35.4	36.9	7.1	40.1	1.1	40.4	53.9	13.5	100	351	
Hori.	9608.000	AV	35.4	38.5	8.2	39.6	1.1	43.6	53.9	**10.3**	100	344	
Vert.	198.893	QP	28.7	16.2	9.0	31.8	0.0	22.1	43.5	21.4	100	222	
Vert.	554.586	QP	25.0	18.3	8.0	32.0	0.0	19.3	46.0	26.7	100	236	
Vert.	646.382	QP	26.8	19.6	8.4	32.0	0.0	22.8	46.0	23.2	100	259	
Vert.	903.587	QP	33.2	22.3	9.7	31.3	0.0	33.9	46.0	12.1	100	331	
Vert.	2390.000	PK	47.4	27.8	13.7	41.0	1.1	49.0	73.9	24.9	100	94	
Vert.	4804.000	PK	46.3	31.4	5.7	39.6	1.1	44.9	73.9	29.0	100	156	
Vert.	7206.000	PK	46.6	36.9	7.1	40.1	1.1	51.6	73.9	22.3	100	357	
Vert.	9608.000	PK	47.0	38.5	8.2	39.6	1.1	55.2	73.9	18.7	100	5	
Vert.	2390.000	AV	33.9	27.8	13.7	41.0	1.1	35.5	53.9	18.4	100	94	
Vert.	4804.000	AV	36.6	31.4	5.7	39.6	1.1	35.2	53.9	18.7	100	156	
Vert.	7206.000	AV	35.4	36.9	7.1	40.1	1.1	40.4	53.9	13.5	100	357	
Vert.	9608.000	AV	35.4	38.5	8.2	39.6	1.1	43.6	53.9	**10.3**	100	5	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.39 m / 3.0 m) = 1.1 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	87.9	27.8	13.7	41.0	1.1	89.5	-	-	Carrier
Hori.	2400.000	PK	38.1	27.8	13.7	41.0	1.1	39.7	69.5	29.8	
Vert.	2402.000	PK	76.8	27.8	13.7	41.0	1.1	78.4	-	-	Carrier
Vert.	2400.000	PK	36.5	27.8	13.7	41.0	1.1	38.1	58.4	20.3	

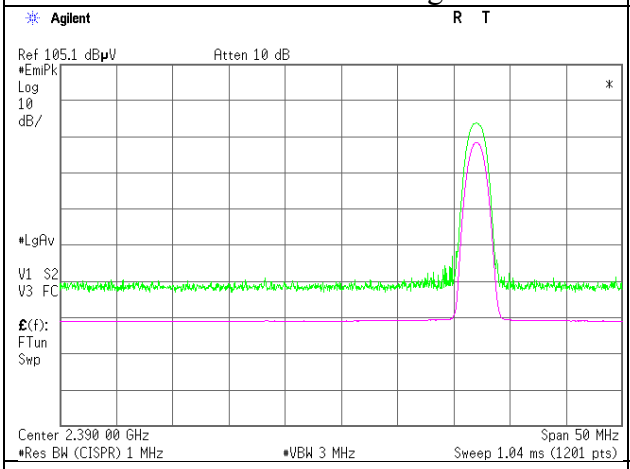
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.39 m / 3.0 m) = 1.1 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No. 1 and 3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 26, 2015	November 24, 2015	November 25, 2015
Temperature / Humidity	25 deg. C / 37 % RH	24 deg. C / 41 % RH	23 deg. C / 40 % RH
Engineer	Shinichi Takano	Wataru Kojima	Wataru Kojima
	(1-13 GHz)	(13-26 GHz)	(30-1000 MHz)
Mode	Tx, Hopping Off, 3DH5 2402 MHz Display Separated Type(L2)		

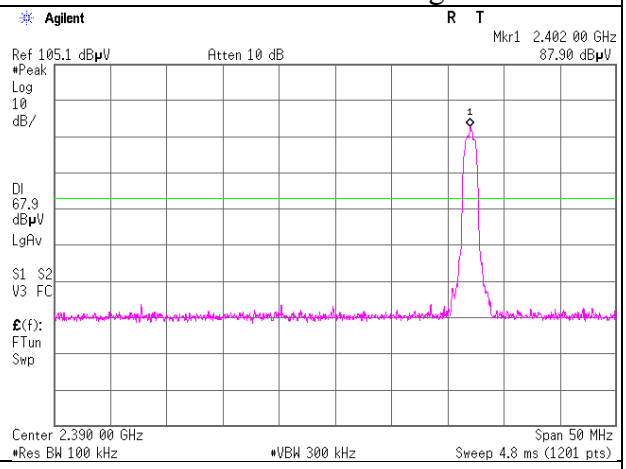
Horizontal

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

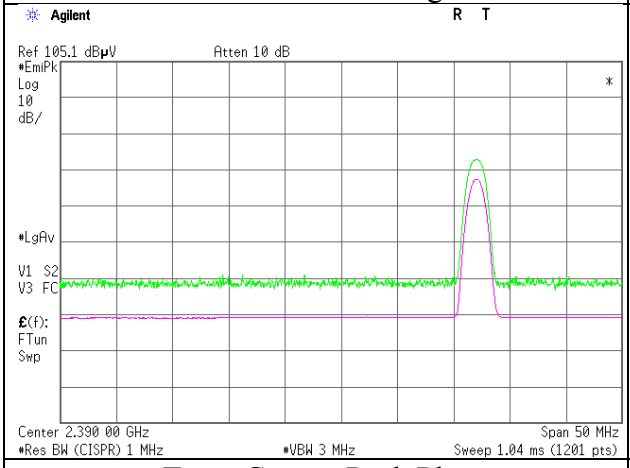
Authorized-band band-edge Plot



20dBc Plot

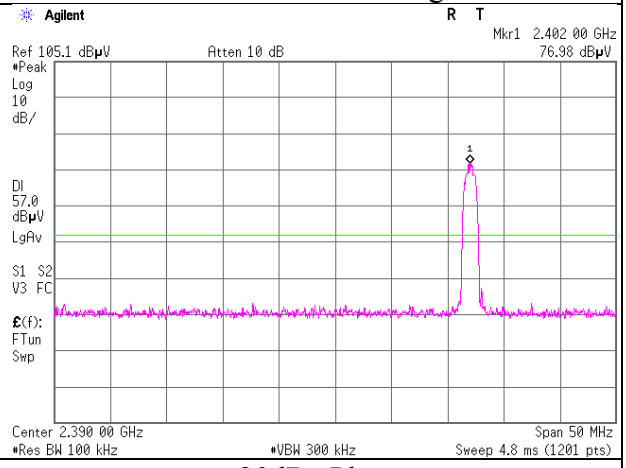
Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Authorized-band band-edge Plot



20dBc Plot

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

Radiated Spurious Emission

Test place	Shonan EMC Lab. No. 1 and 3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 26, 2015	November 24, 2015	November 25, 2015
Temperature / Humidity	25 deg. C / 37 % RH	24 deg. C / 41 % RH	23 deg. C / 40 % RH
Engineer	Shinichi Takano	Wataru Kojima	Wataru Kojima
	(1-13 GHz)	(13-26 GHz)	(30-1000 MHz)
Mode	Tx, Hopping Off, 3DH5 2441 MHz Display Separated Type(L2)		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	202.500	QP	28.4	16.2	9.1	31.8	0.0	21.9	43.5	21.6	151	332	
Hori.	240.006	QP	27.7	16.9	9.5	31.7	0.0	22.4	46.0	23.6	200	190	
Hori.	797.701	QP	28.0	21.0	9.1	31.8	0.0	26.3	46.0	19.7	120	23	
Hori.	802.593	QP	24.0	21.1	9.2	31.8	0.0	22.5	46.0	23.5	150	61	
Hori.	4882.000	PK	45.6	31.7	5.8	39.5	1.1	44.7	73.9	29.2	100	148	
Hori.	7323.000	PK	47.0	36.9	7.2	40.2	1.1	52.0	73.9	21.9	100	3	
Hori.	9764.000	PK	47.1	38.5	8.2	39.5	1.1	55.4	73.9	18.5	100	348	
Hori.	4882.000	AV	34.6	31.7	5.8	39.5	1.1	33.7	53.9	20.2	100	148	
Hori.	7323.000	AV	35.1	36.9	7.2	40.2	1.1	40.1	53.9	13.8	100	3	
Hori.	9764.000	AV	34.8	38.5	8.2	39.5	1.1	43.1	53.9	**10.8**	100	348	
Vert.	174.653	QP	24.0	16.0	8.9	31.8	0.0	17.1	43.5	26.4	100	12	
Vert.	552.971	QP	27.5	18.2	8.0	32.0	0.0	21.7	46.0	24.3	100	222	
Vert.	677.406	QP	25.7	20.0	8.6	32.0	0.0	22.3	46.0	23.7	100	165	
Vert.	782.853	QP	26.0	20.9	9.1	31.8	0.0	24.2	46.0	21.8	100	324	
Vert.	903.585	QP	33.1	22.3	9.7	31.3	0.0	33.8	46.0	12.2	100	342	
Vert.	4882.000	PK	46.6	31.7	5.8	39.5	1.1	45.7	73.9	28.2	100	154	
Vert.	7323.000	PK	46.4	36.9	7.2	40.2	1.1	51.4	73.9	22.5	100	312	
Vert.	9764.000	PK	45.8	38.5	8.2	39.5	1.1	54.1	73.9	19.8	100	69	
Vert.	4882.000	AV	35.6	31.7	5.8	39.5	1.1	34.7	53.9	19.2	100	154	
Vert.	7323.000	AV	35.8	36.9	7.2	40.2	1.1	40.8	53.9	13.1	100	312	
Vert.	9764.000	AV	34.7	38.5	8.2	39.5	1.1	43.0	53.9	10.9	100	69	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.39 m / 3.0 m) = 1.1 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No. 1 and 3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 26, 2015	November 24, 2015	November 25, 2015
Temperature / Humidity	25 deg. C / 37 % RH	24 deg. C / 41 % RH	23 deg. C / 40 % RH
Engineer	Shinichi Takano	Wataru Kojima	Wataru Kojima
	(1-13 GHz)	(13-26 GHz)	(30-1000 MHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz Display Separated Type(L2)		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	202.501	QP	28.3	16.2	9.1	31.8	0.0	21.8	43.5	21.7	150	331	
Hori.	480.563	QP	33.4	17.1	7.6	31.9	0.0	26.2	46.0	19.8	100	128	
Hori.	542.434	QP	30.3	18.1	7.9	32.0	0.0	24.3	46.0	21.7	100	118	
Hori.	797.298	QP	27.8	21.0	9.1	31.8	0.0	26.1	46.0	19.9	120	14	
Hori.	803.265	QP	24.0	21.1	9.2	31.8	0.0	22.5	46.0	23.5	150	39	
Hori.	2483.500	PK	48.3	27.9	13.8	41.0	1.1	50.1	73.9	23.8	248	345	
Hori.	4960.000	PK	47.0	32.0	5.8	39.4	1.1	46.5	73.9	27.4	100	208	
Hori.	7440.000	PK	46.2	37.0	7.2	40.4	1.1	51.1	73.9	22.8	100	14	
Hori.	9920.000	PK	45.4	38.4	8.2	39.4	1.1	53.7	73.9	20.2	100	22	
Hori.	2483.500	AV	33.8	27.9	13.8	41.0	1.1	35.6	53.9	18.3	248	345	
Hori.	4960.000	AV	35.8	32.0	5.8	39.4	1.1	35.3	53.9	18.6	100	208	
Hori.	7440.000	AV	34.9	37.0	7.2	40.4	1.1	39.8	53.9	14.1	100	14	
Hori.	9920.000	AV	34.1	38.4	8.2	39.4	1.1	42.4	53.9	**11.5**	100	22	
Vert.	198.890	QP	28.0	16.2	9.0	31.8	0.0	21.4	43.5	22.1	100	222	
Vert.	551.356	QP	26.1	18.2	8.0	32.0	0.0	20.3	46.0	25.7	100	220	
Vert.	903.574	QP	33.0	22.3	9.7	31.3	0.0	33.7	46.0	12.3	100	333	
Vert.	2483.500	PK	48.1	27.9	13.8	41.0	1.1	49.9	73.9	24.0	100	313	
Vert.	4960.000	PK	47.0	32.0	5.8	39.4	1.1	46.5	73.9	27.4	100	197	
Vert.	7440.000	PK	47.5	37.0	7.2	40.4	1.1	52.4	73.9	21.5	100	20	
Vert.	9920.000	PK	45.4	38.4	8.2	39.4	1.1	53.7	73.9	20.2	100	357	
Vert.	2483.500	AV	34.1	27.9	13.8	41.0	1.1	35.9	53.9	18.0	100	313	
Vert.	4960.000	AV	35.1	32.0	5.8	39.4	1.1	34.6	53.9	19.3	100	197	
Vert.	7440.000	AV	34.7	37.0	7.2	40.4	1.1	39.6	53.9	14.3	100	20	
Vert.	9920.000	AV	34.0	38.4	8.2	39.4	1.1	42.3	53.9	11.6	100	357	

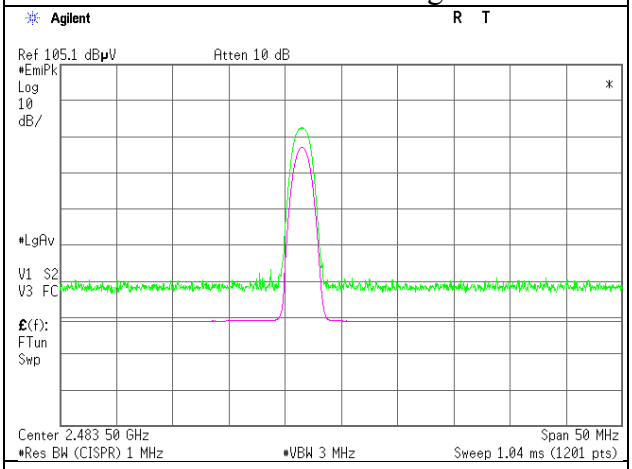
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.39 m / 3.0 m) = 1.1 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.1 and 3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 26, 2015	November 24, 2015	November 25, 2015
Temperature / Humidity	25 deg. C / 37 % RH	24 deg. C / 41 % RH	23 deg. C / 40 % RH
Engineer	Shinichi Takano	Wataru Kojima	Wataru Kojima
	(1-13 GHz)	(13-26 GHz)	(30-1000 MHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz Display Separated Type(L2)		

Horizontal

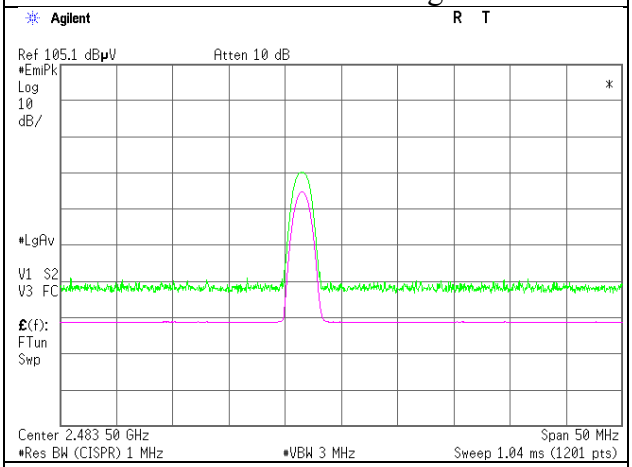
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot

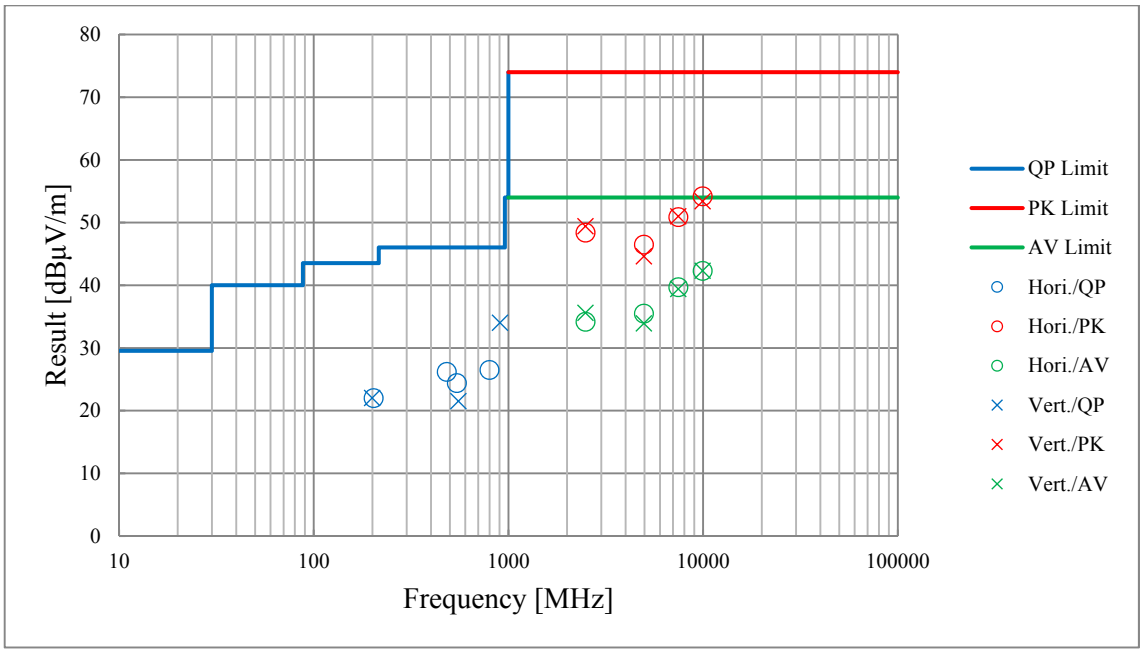


Trace Green : Peak Plot
Trace Purple : Average Plot

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

Radiated Spurious Emission
(Plot data, Worst case)

Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11008648S-A		
Date	November 26, 2015	November 24, 2015	November 25, 2015
Temperature / Humidity	25 deg. C / 37 % RH	24 deg. C / 41 % RH	23 deg. C / 40 % RH
Engineer	Shinichi Takano	Wataru Kojima	Wataru Kojima
	(1-13 GHz)	(13-26 GHz)	(30-1000 MHz)
Mode	Tx, Hopping Off, DH5 2480 MHz Display Separated Type(L2)		



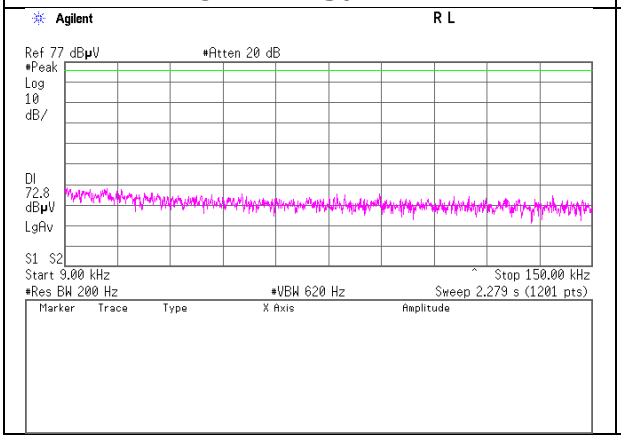
*These plots data contains sufficient number to show the trend of characteristic features for EUT.

Conducted Spurious Emission

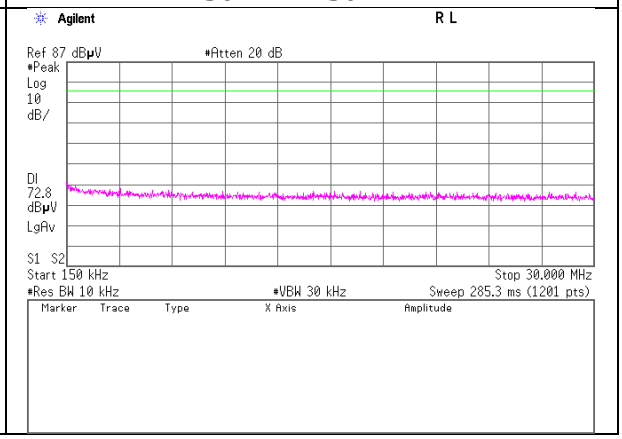
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off, DH5 Display Combined Type(T2)

2402 MHz

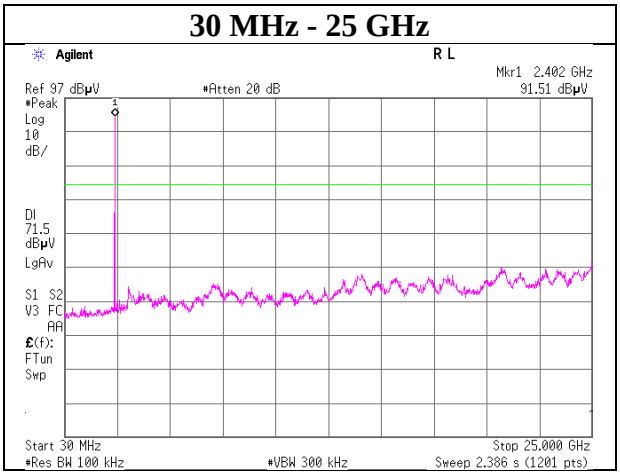
9 kHz - 150 kHz



150 kHz - 30 MHz



30 MHz - 25 GHz

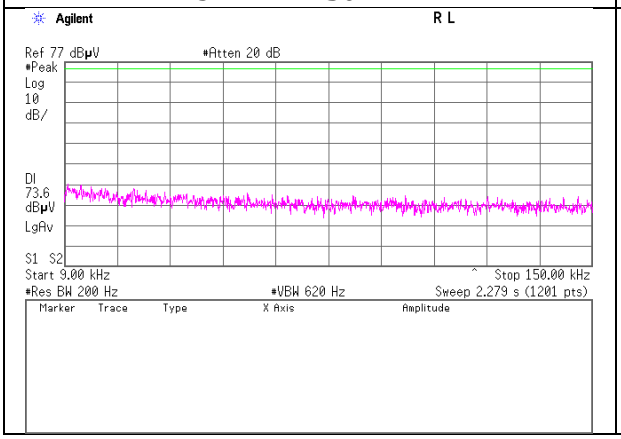


Conducted Spurious Emission

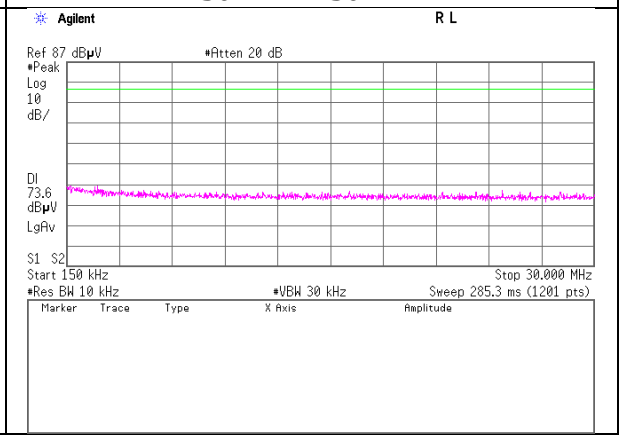
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off, DH5 Display Combined Type(T2)

2441 MHz

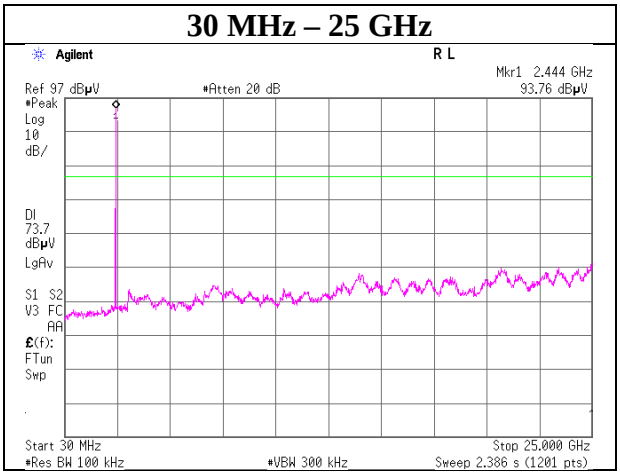
9 kHz – 150 kHz



150 kHz – 30 MHz



30 MHz – 25 GHz

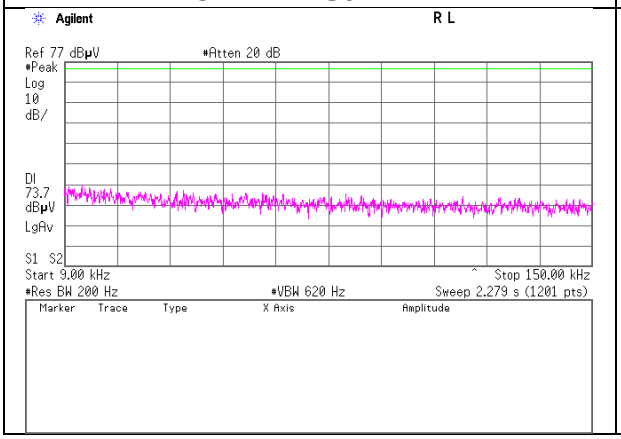


Conducted Spurious Emission

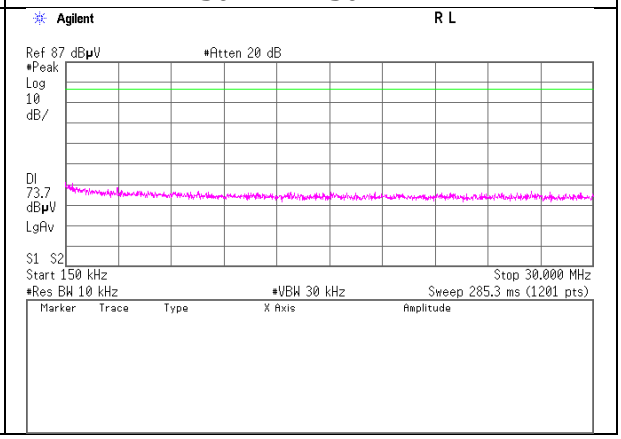
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off, DH5 Display Combined Type(T2)

2480 MHz

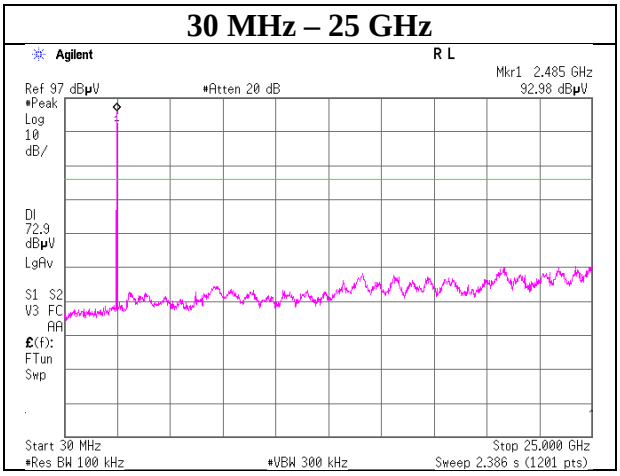
9 kHz – 150 kHz



150 kHz – 30 MHz



30 MHz – 25 GHz

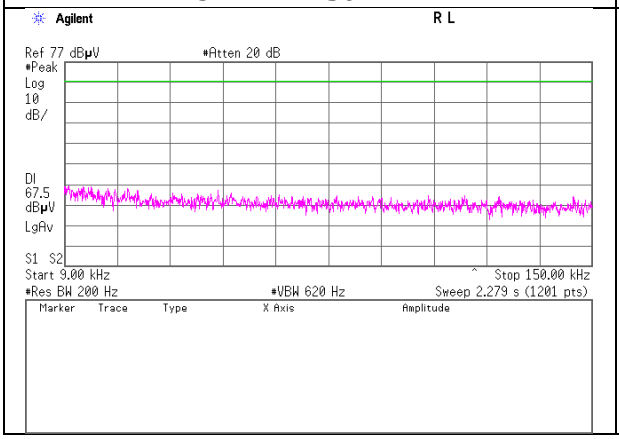


Conducted Spurious Emission

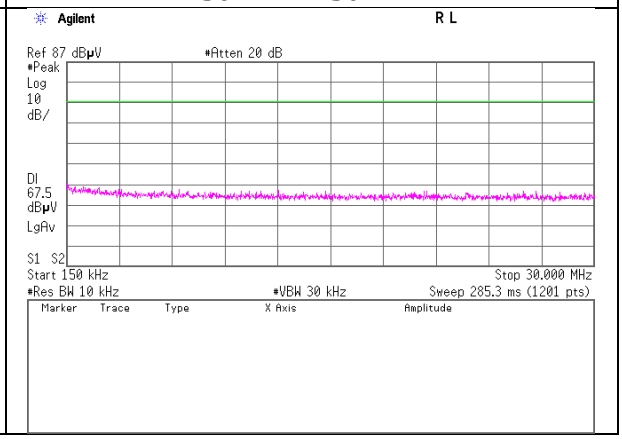
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off, 3DH5 Display Combined Type(T2)

2402 MHz

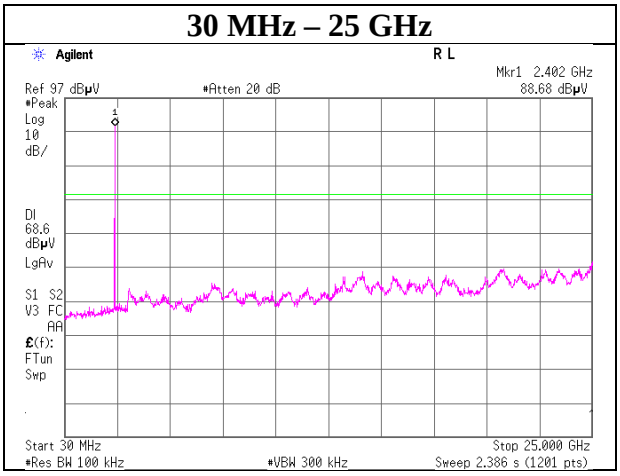
9 kHz – 150 kHz



150 kHz – 30 MHz



30 MHz – 25 GHz

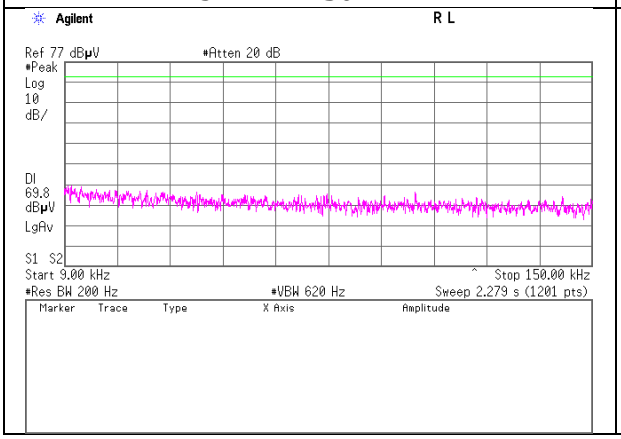


Conducted Spurious Emission

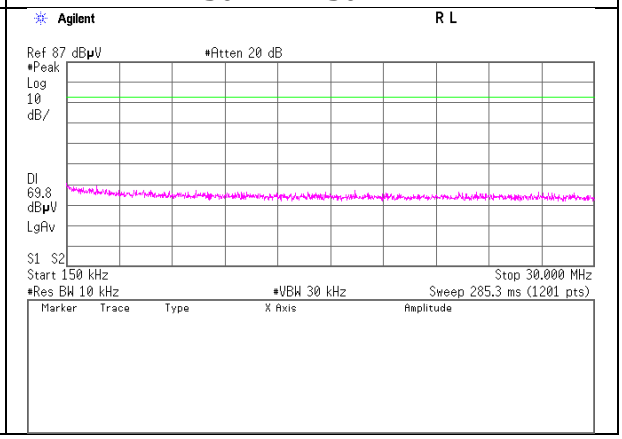
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off, 3DH5 Display Combined Type(T2)

2441 MHz

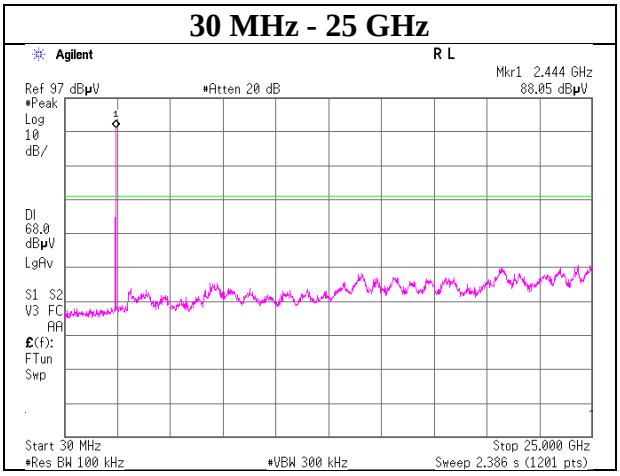
9 kHz - 150 kHz



150 kHz - 30 MHz



30 MHz - 25 GHz

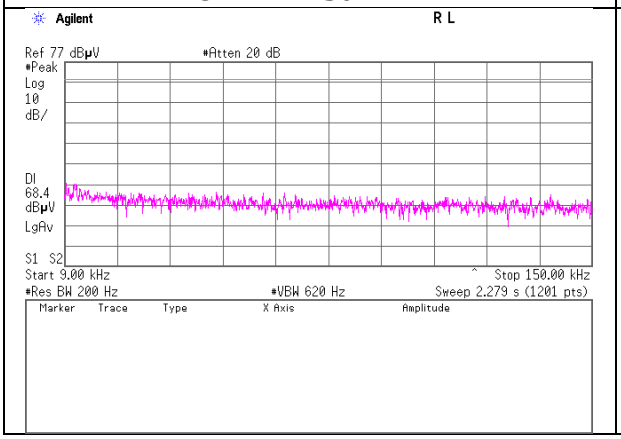


Conducted Spurious Emission

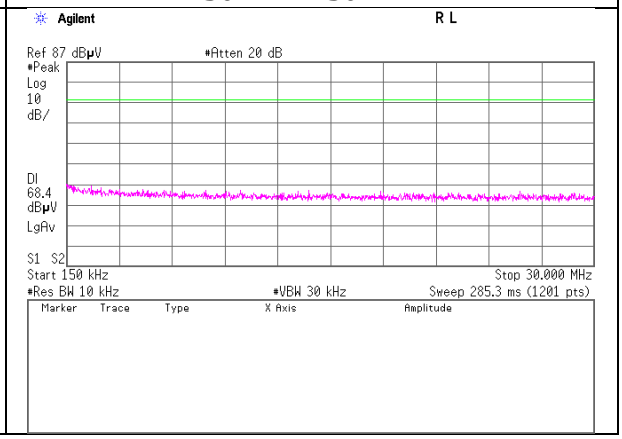
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off, 3DH5 Display Combined Type(T2)

2480 MHz

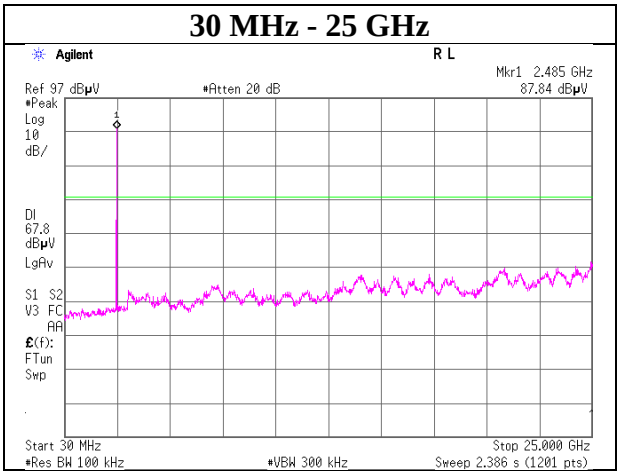
9 kHz - 150 kHz



150 kHz - 30 MHz



30 MHz - 25 GHz



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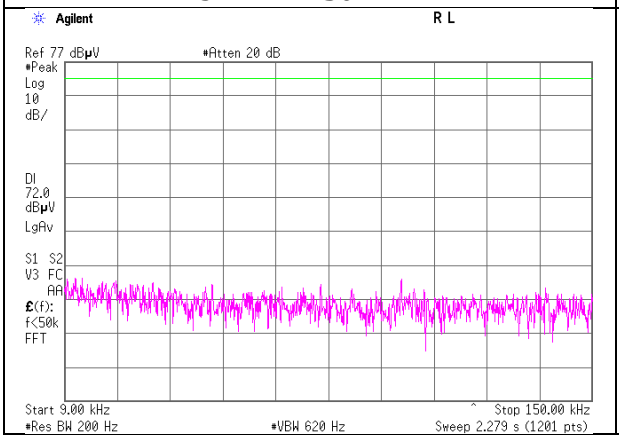
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Conducted Spurious Emission

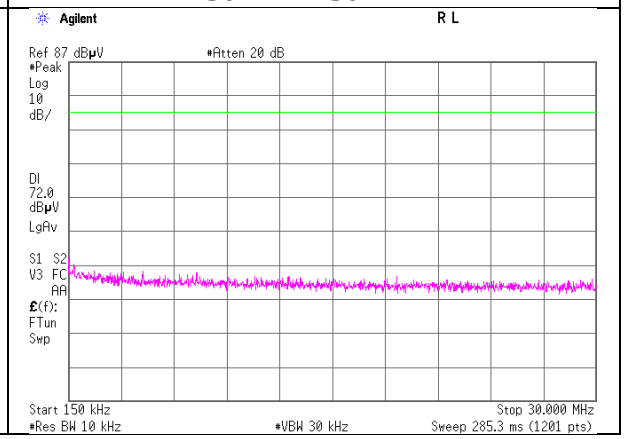
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	November 10, 2015
Temperature / Humidity	25 deg. C / 44 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off, DH5 Display Separated Type(L2)

2402 MHz

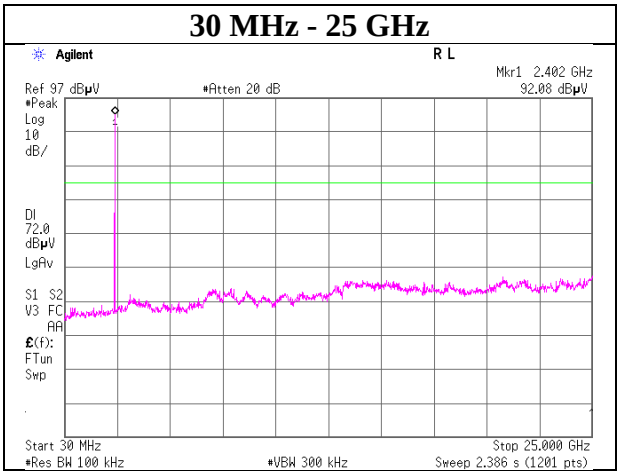
9 kHz - 150 kHz



150 kHz - 30 MHz



30 MHz - 25 GHz

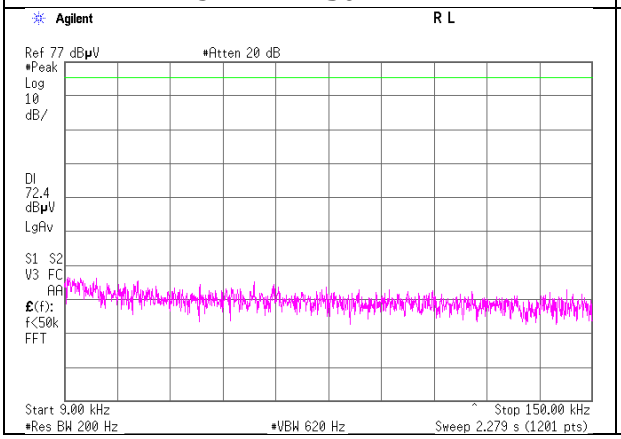


Conducted Spurious Emission

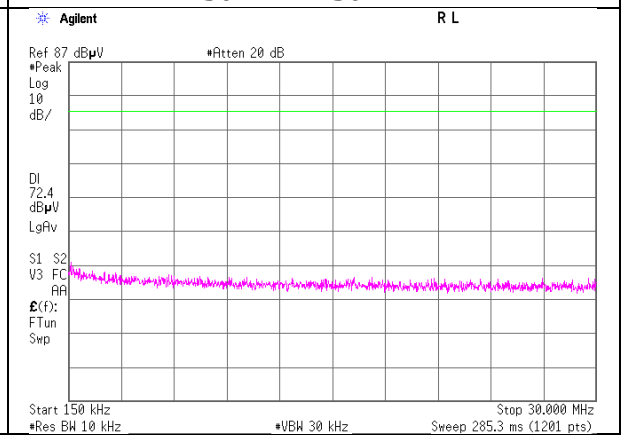
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	November 10, 2015
Temperature / Humidity	25 deg. C / 44 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off, DH5 Display Separated Type(L2)

2441 MHz

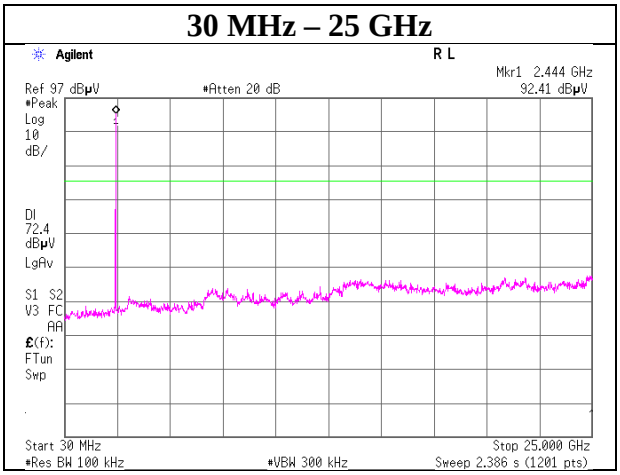
9 kHz – 150 kHz



150 kHz – 30 MHz



30 MHz – 25 GHz

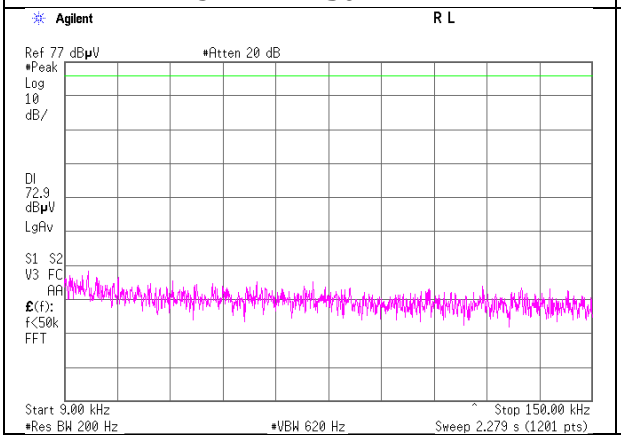


Conducted Spurious Emission

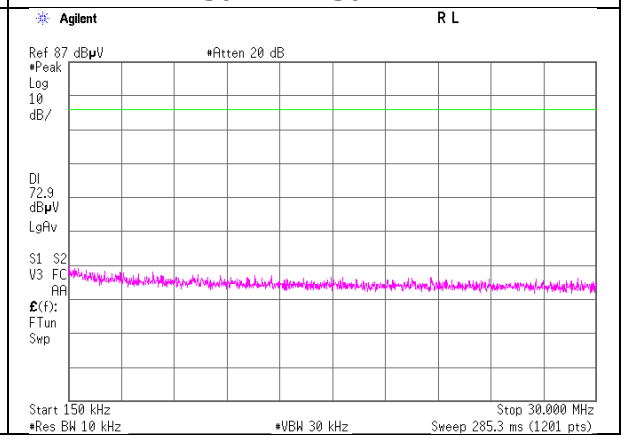
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	November 10, 2015
Temperature / Humidity	25 deg. C / 44 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off, DH5 Display Separated Type(L2)

2480 MHz

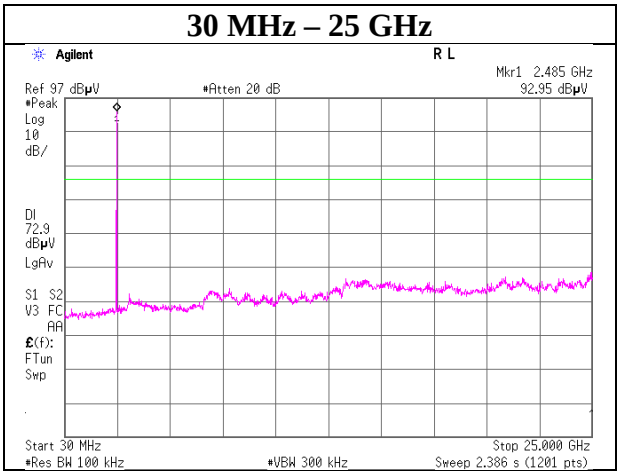
9 kHz – 150 kHz



150 kHz – 30 MHz



30 MHz – 25 GHz

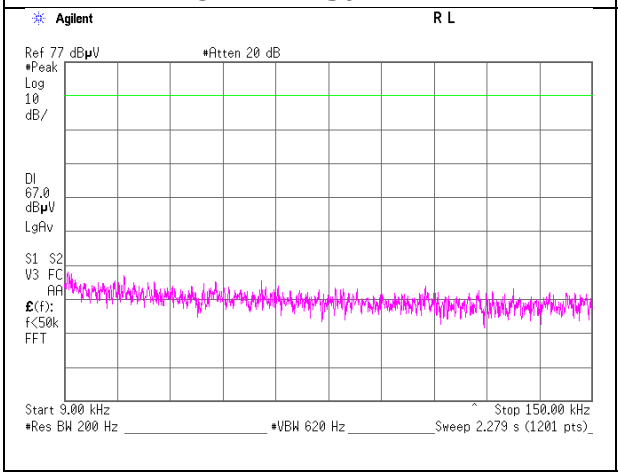


Conducted Spurious Emission

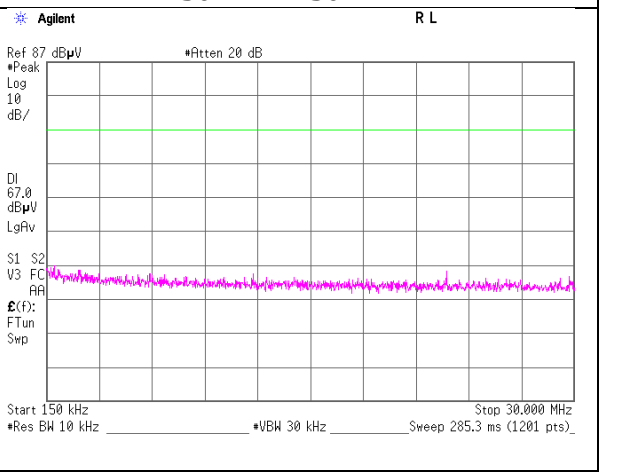
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	November 10, 2015
Temperature / Humidity	25 deg. C / 44 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off, 3DH5 Display Separated Type(L2)

2402 MHz

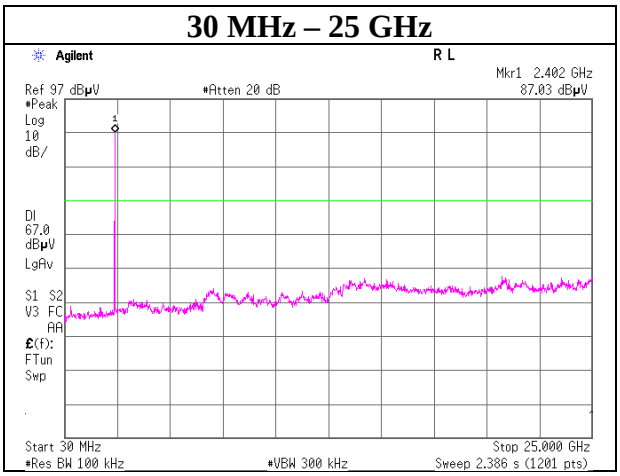
9 kHz – 150 kHz



150 kHz – 30 MHz



30 MHz – 25 GHz



Conducted Spurious Emission

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Report No.	11008648S-A
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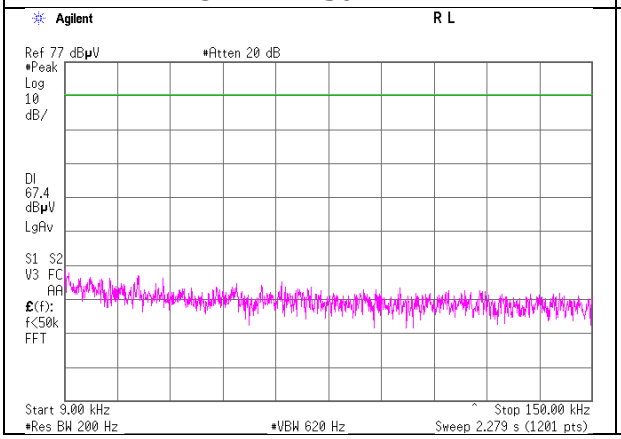
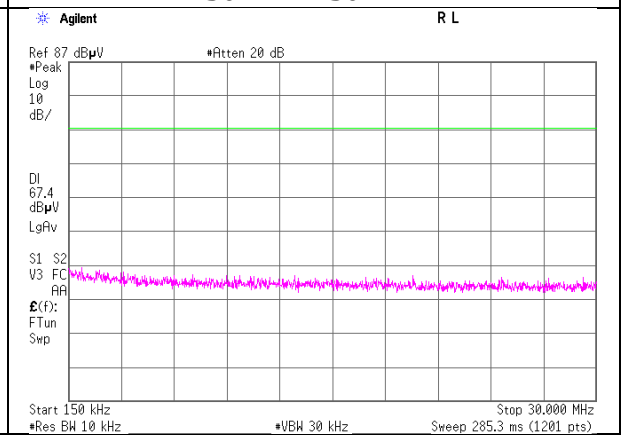
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off, 3DH5 Display Separated Type(L2)

2441 MHz

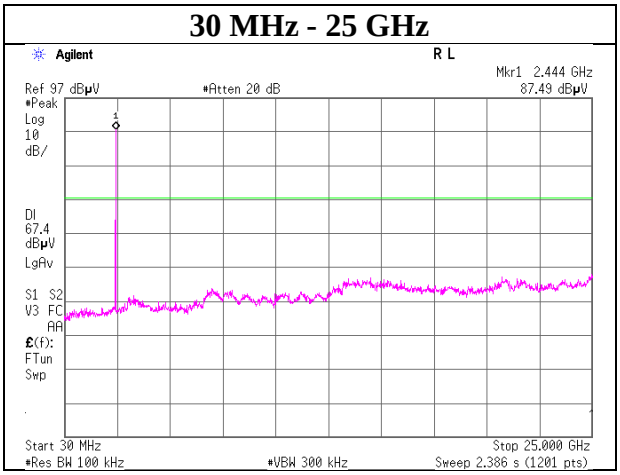
9 kHz - 150 kHz



150 kHz - 30 MHz



30 MHz - 25 GHz



UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Conducted Spurious Emission

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
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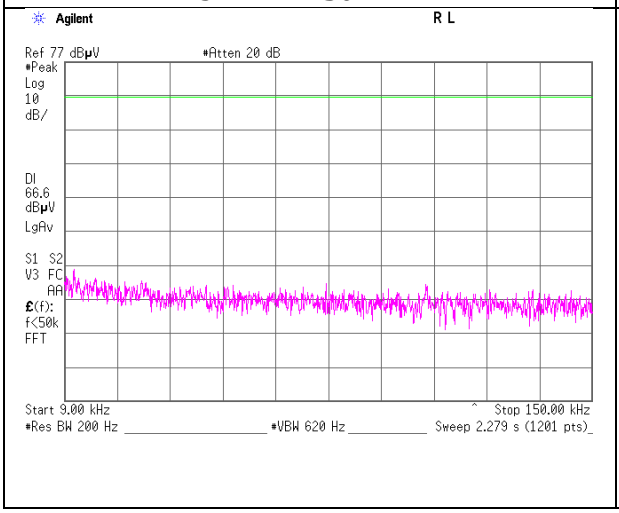
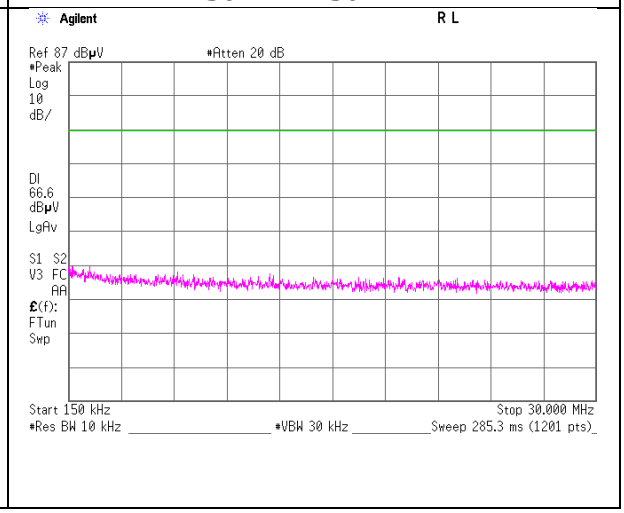
Temperature / Humidity	25 deg. C / 44 % RH
Engineer	Yosuke Ishikawa
Mode	Tx, Hopping Off, 3DH5 Display Separated Type(L2)

2480 MHz

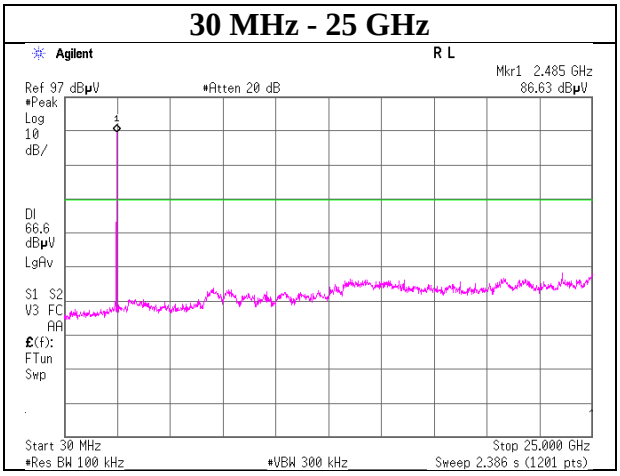
9 kHz - 150 kHz



150 kHz - 30 MHz



30 MHz - 25 GHz

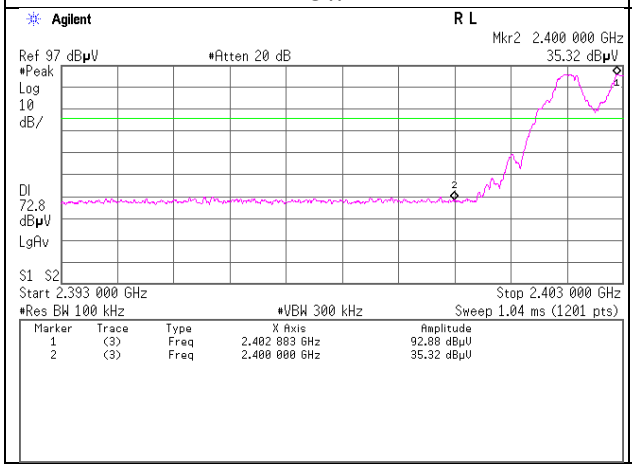


Conducted Emission Band Edge compliance

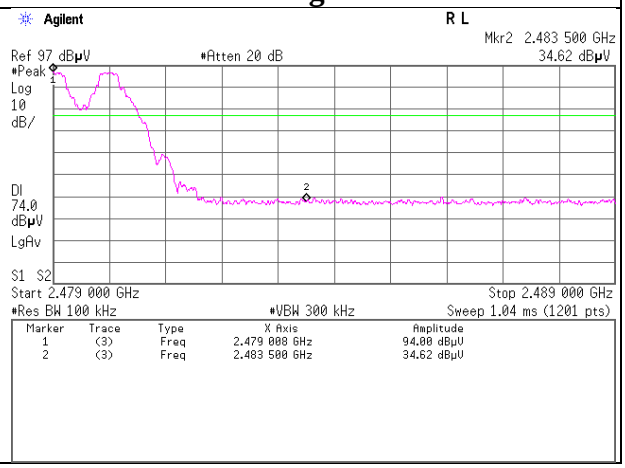
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx DH5 Display Combined Type(T2)

Hopping On

Low

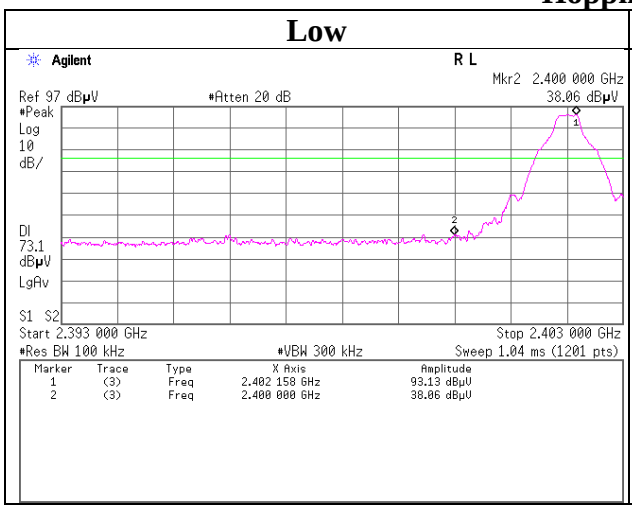


High

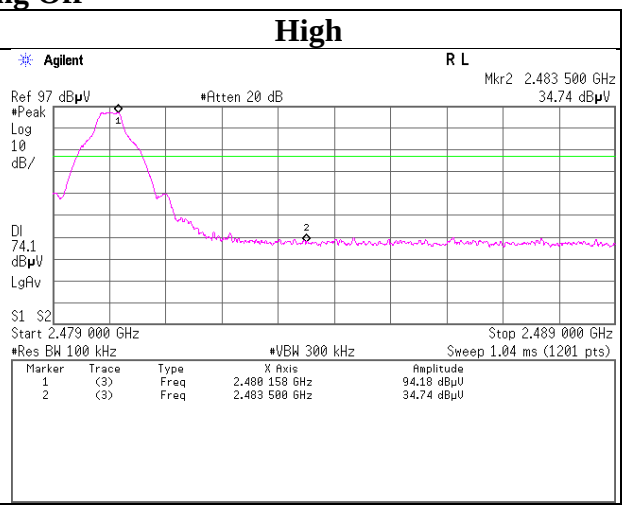


Hopping Off

Low



High



Conducted Emission Band Edge compliance

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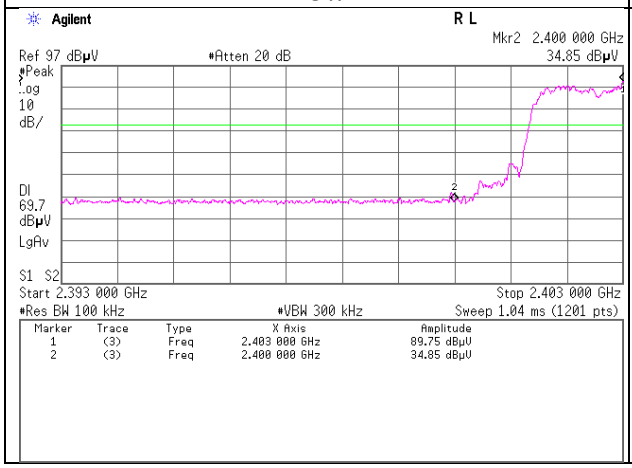
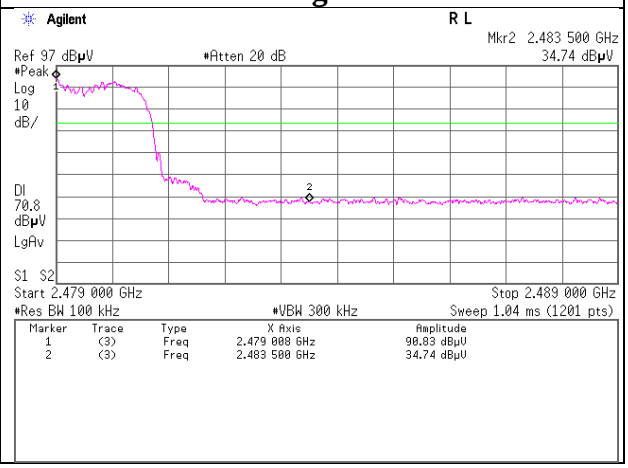
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx 3DH5 Display Combined Type(T2)

Hopping On

Low

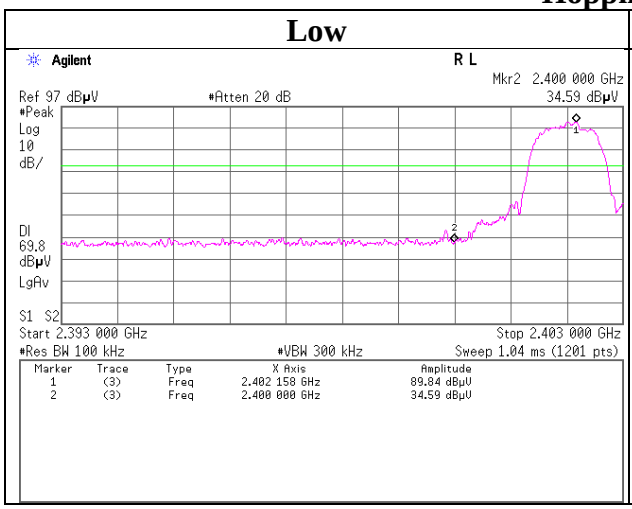


High

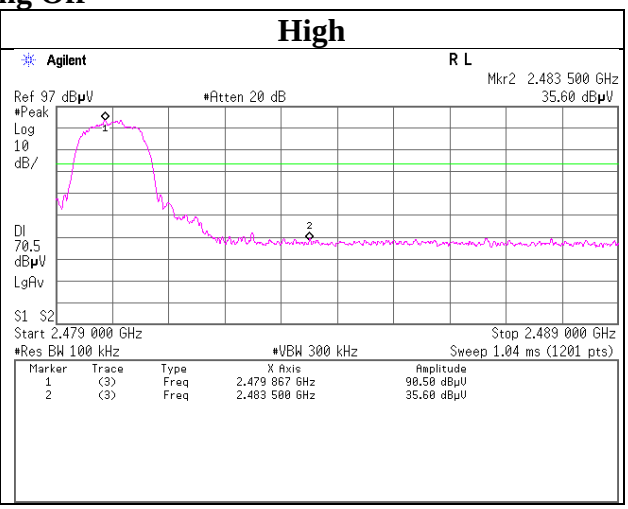


Hopping Off

Low



High

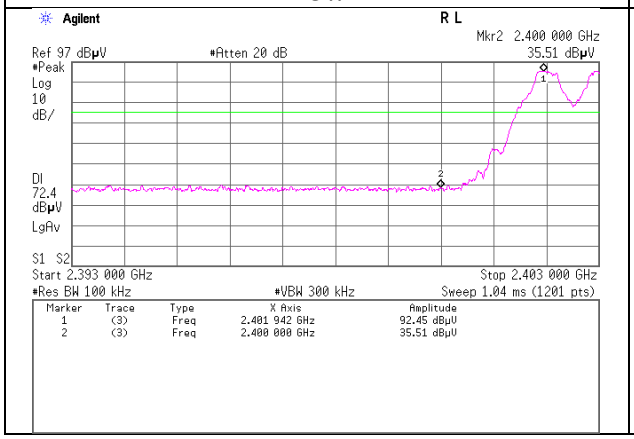


Conducted Emission Band Edge compliance

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	November 10, 2015
Temperature / Humidity	25 deg. C / 44 % RH
Engineer	Yosuke Ishikawa
Mode	Tx DH5 Display Separated Type(L2)

Hopping On

Low



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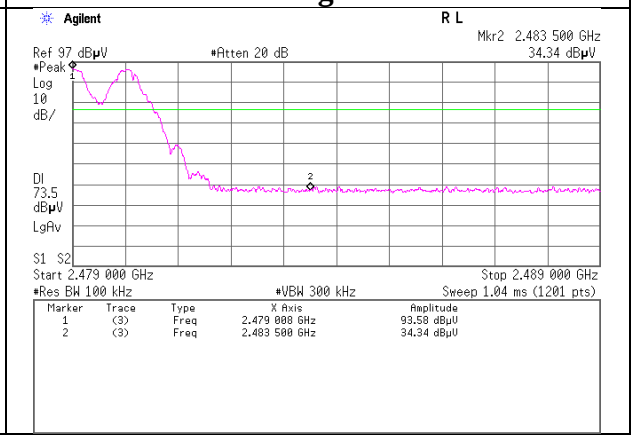
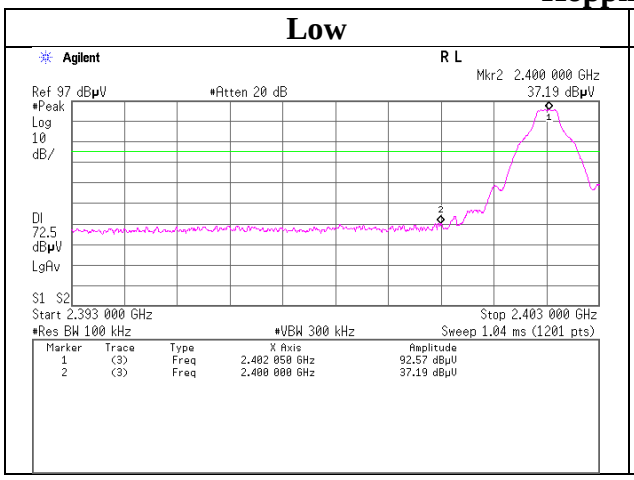
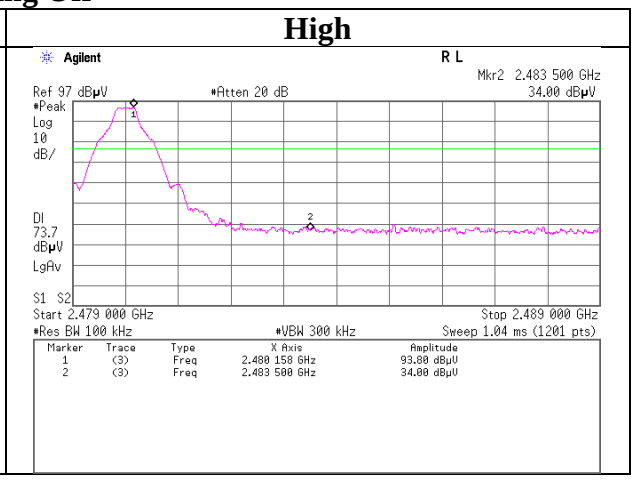


Hopping Off

Low



High

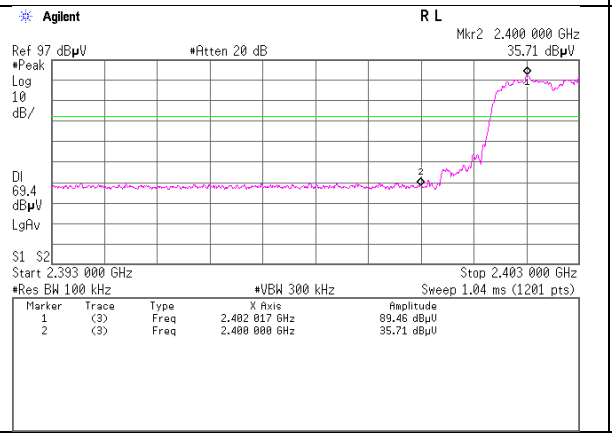


Conducted Emission Band Edge compliance

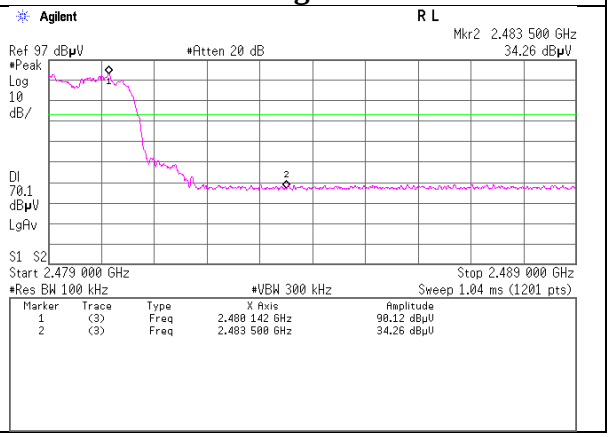
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	November 10, 2015
Temperature / Humidity	25 deg. C / 44 % RH
Engineer	Yosuke Ishikawa
Mode	Tx 3DH5 Display Separated Type(L2)

Hopping On

Low

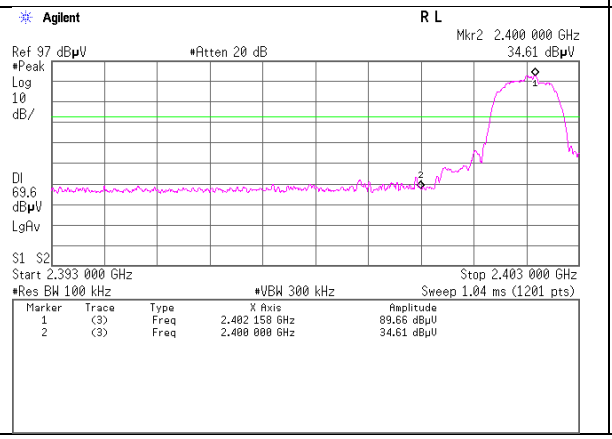


High

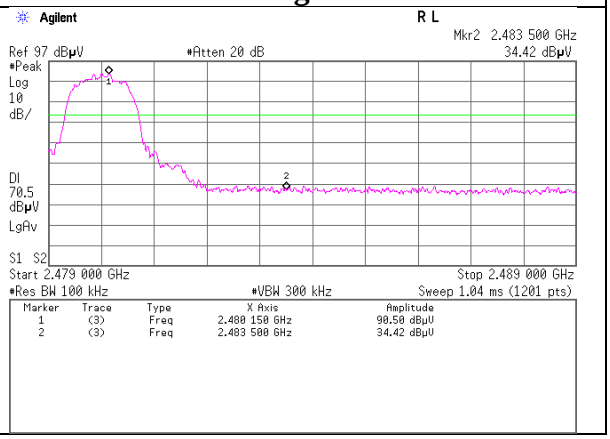


Hopping Off

Low



High

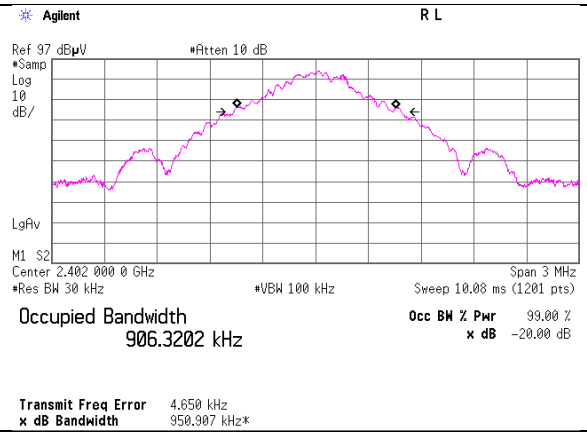


99%Occupied Bandwidth

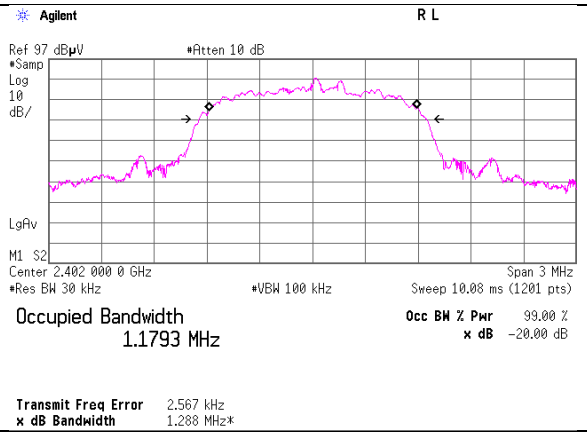
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx Hopping Off Display Combined Type(T2)

Hopping Off, DH5

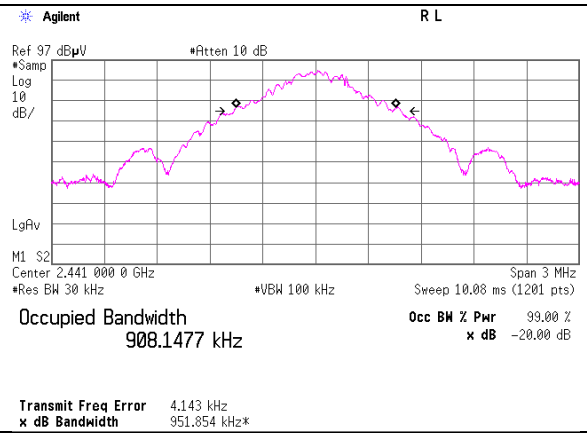
2402 MHz



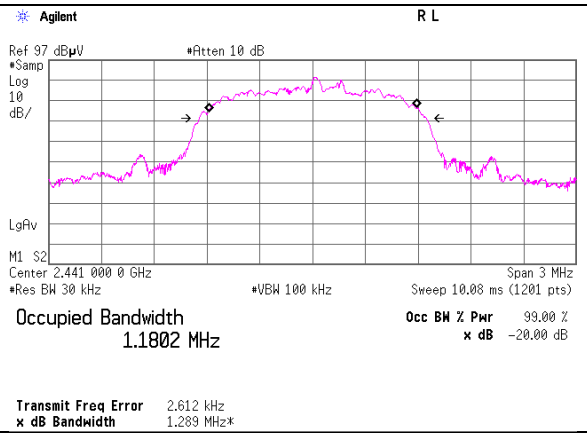
2402 MHz



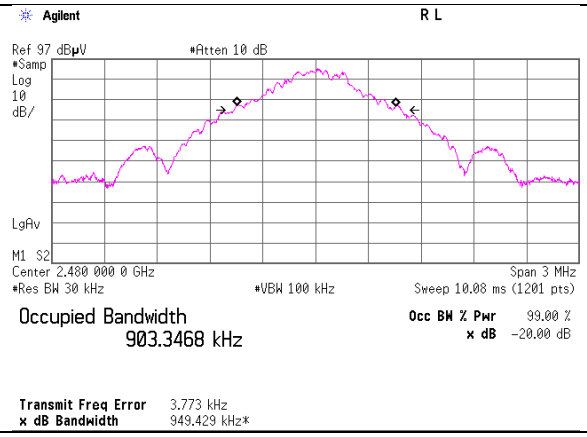
2441 MHz



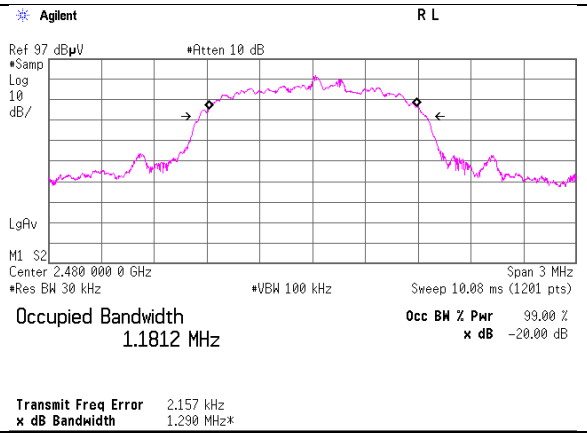
2441 MHz



2480 MHz



2480 MHz

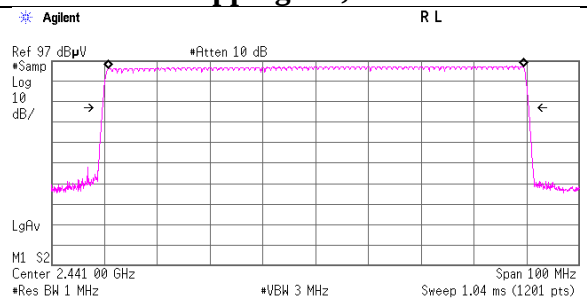


Hopping Off, 3DH5

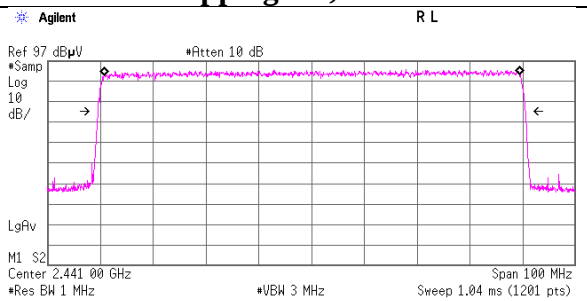
99% Occupied Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11008648S-A
Date	October 29, 2015
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Yosuke Ishikawa
Mode	Tx Hopping On Display Combined Type(T2)

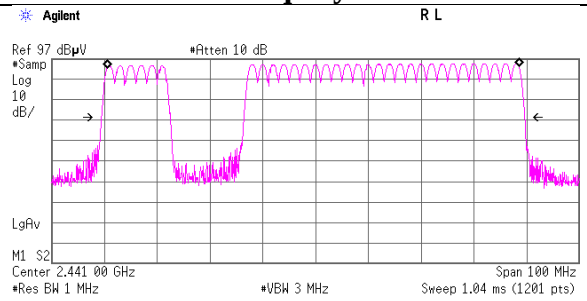
Hopping On, DH5



Hopping On, 3DH5



Inquiry



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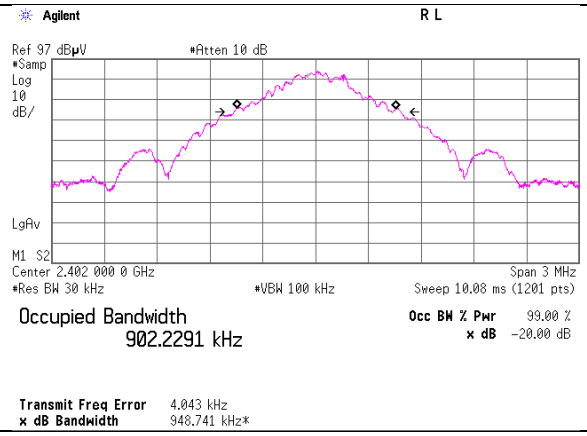
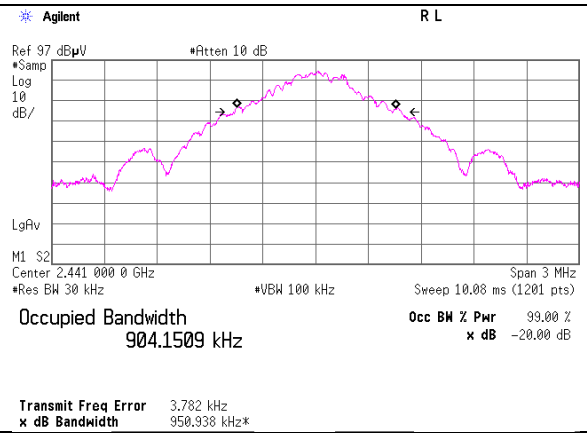
Engineer	Yosuke Ishikawa
Mode	Tx Hopping Off Display Separated Type(L2)

Hopping Off, DH5

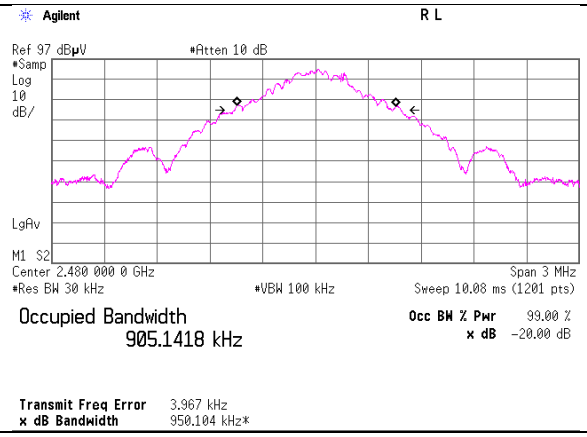
2402 MHz



2441 MHz

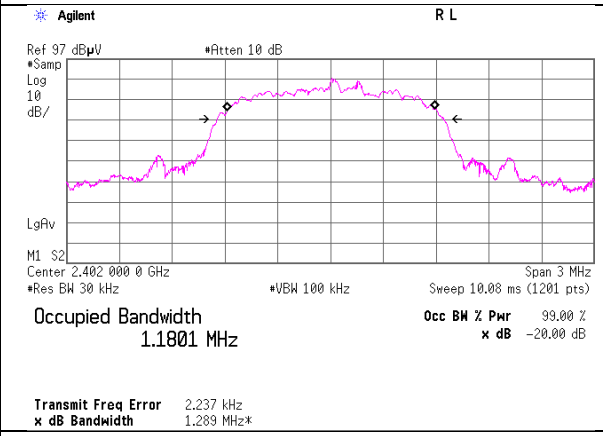


2480 MHz

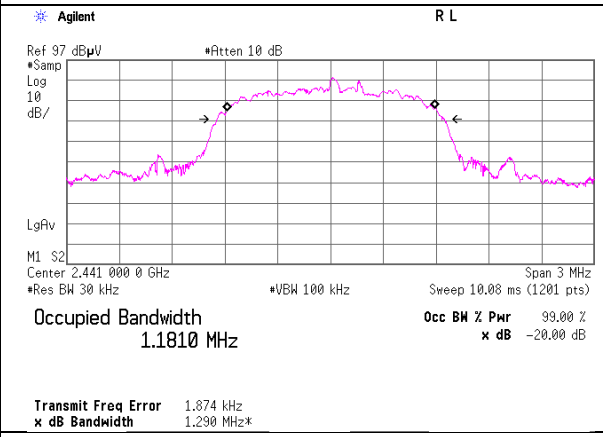


Hopping Off, 3DH5

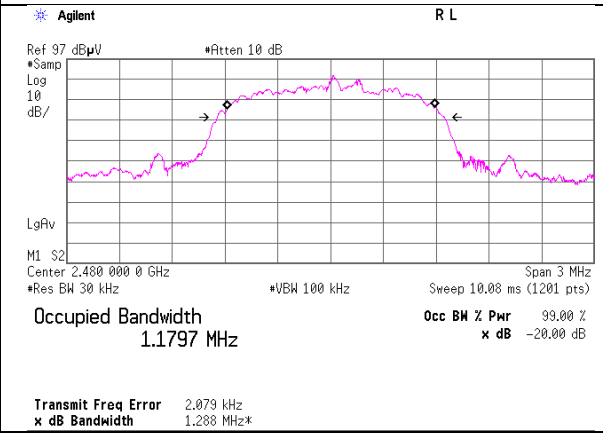
2402 MHz



2441 MHz



2480 MHz



99% Occupied Bandwidth

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Report No.	11008648S-A
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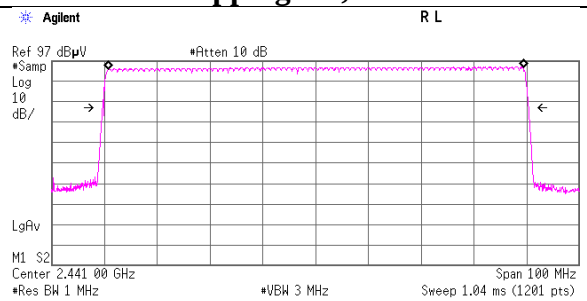
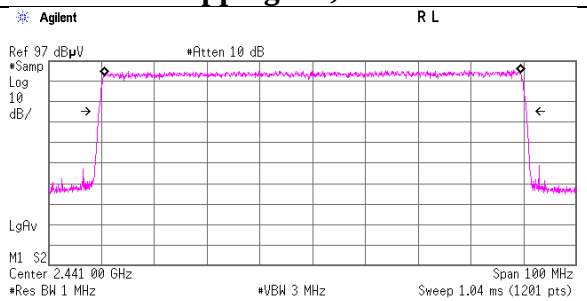
Engineer	Yosuke Ishikawa
Mode	Tx Hopping On Display Separated Type(L2)

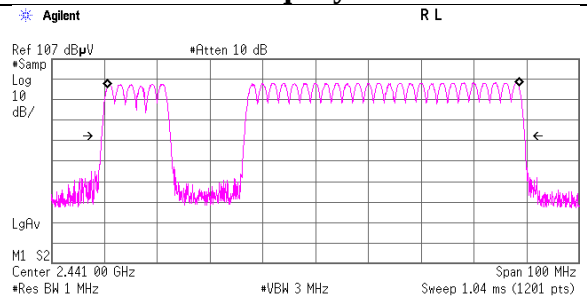
Hopping On, DH5



Hopping On, 3DH5



Inquiry



APPENDIX 2: Test instruments

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2015/05/27 * 12
SCC-G04	Coaxial Cable	Junkosha	J12J102207-00	JUN-12-14-018	RE	2015/06/08 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2015/05/19 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2015/08/11 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2015/10/22 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	RE	2015/03/23 * 12
SJM-15	Measure	ASKUL	-	-	RE	-
SAEC-03(SVSWR)	Semi-Anechoic Chamber	TDK	SAEC-03(SVSWR)	3	RE	2015/08/28 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE	-
STS-03	Digital Hitester	Hioki	3805-50	080997823	RE	2015/11/18 * 12
SAT10-05	Attenuator(above1GHz)	Agilent	8493C-010	74864	RE	2015/11/04 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2015/11/16 * 12
STR-07	Test Receiver	Rohde & Schwarz	ESU26	100484	RE	2015/09/04 * 12
SJM-14	Measure	ASKUL	-	-	RE	-
SAEC-02(NSA)	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	RE	2015/07/15 * 12
STS-02	Digital Hitester	Hioki	3805-50	080997819	RE	2015/03/10 * 12
SAF-05	Pre Amplifier	TOYO Corporation	TPA0118-36	1440490	RE	2015/09/08 * 12
SCC-G05	Coaxial Cable	Junkosha	J12J102207-00	APR-30-15-037	RE	2015/05/11 * 12
SCC-G22	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	RE	2015/05/19 * 12
SHA-02	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-726	RE	2015/08/10 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2015/03/17 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2015/03/23 * 12
SCC-G15	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	RE	2015/03/11 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2015/07/16 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2015/10/11 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2015/10/11 * 12
SAT6-08	Attenuator	HIROSE ELECTRIC CO.,LTD.	AT-406(40)	-	RE	2015/08/31 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	RE	2015/04/17 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2015/02/18 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	RE	2015/03/24 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	AT	2015/09/16 * 12
SPM-07	Power Meter	Agilent	8990B	MY5100272	AT	2015/04/02 * 12
SPSS-04	Power sensor	Agilent	N1923A	MY5326009	AT	2015/04/02 * 12
SCC-G14	Coaxial Cable	Suhner	SUCOFLEX 102	31600/2	AT	2015/03/11 * 12
SAT10-09	Attenuator	Weinschel Corp.	54A-10	W5692	AT	2015/11/04 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2014/12/24 * 12
STS-05	Digital Hitester	Hioki	3805-50	080997828	AT	2015/11/18 * 12
SAF-01	Pre Amplifier	SONOMA	310N	290211	RE	2015/02/18 * 12
KAT6-04	Attenuator	INMET	18N-6dB	-	RE	2014/12/19 * 12
SAT3-09	Attenuator	JFW	50HF-003N	-	RE	2015/08/31 * 12
SBA-01	Biconical Antenna	Schwarzbeck	BBA9106	91032664	RE	2015/10/11 * 12
SCC-A1/A3/A5/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	2015/04/17 * 12
SCC-A2/A4/A6/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	2015/04/17 * 12
SLA-01	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0888	RE	2015/10/11 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2015/10/22 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	RE	2015/11/06 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE	-
SAEC-01(NSA)	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	RE	2015/07/13 * 12
STS-01	Digital Hitester	Hioki	3805-50	080997812	RE	2015/11/18 * 12
SAT10-06	Attenuator	Agilent	8493C-010	74865	RE	2015/11/04 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2015/03/26 * 12

The expiration date of the calibration is the end of the expired month.
All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

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

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