



RADIO TEST REPORT

Test Report No. : 10832565S-E

Applicant : Sony Corporation
Type of Equipment : AV Center
Model No. : XAV-W650BT
FCC ID : AK8XAVW650BT
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: June 14 to 28, 2015

Representative test engineer: 
Shinichi Takano
Engineer
Consumer Technology Division

Approved by: 
Toyokazu Imamura
Leader
Consumer Technology Division



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 There is no testing item of "Non-accreditation".

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13-EM-F0429

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SECTION 1: Customer information

Company Name : Sony Corporation
Address : 2-10-1 Osaki, Shinagawa-ku, Tokyo 141-8610 Japan
Telephone Number : +81-50-3750-7634
Facsimile Number : +81-50-3750-6574
Contact Person : Kazunaga Kinjo

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

2.1 Identification of E.U.T.

Type of Equipment : AV Center
Model No. : XAV-W650BT
Serial No. : Refer to Section 4, Clause 4.2
Rating : DC 12 V (car battery)
Receipt Date of Sample : June 7, 2015
Country of Mass-production : China
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No Modification by the test lab.

2.2 Product Description

Model: XAV-W650BT (referred to as the EUT in this report) is an AV Center.

General Specification

Clock frequency(ies) in the system : 27 MHz, 26 MHz, 8 MHz, 37.05 MHz

Radio Specification

Radio Type : Transceiver
Frequency of Operation : 2402 MHz - 2480 MHz
Modulation : FHSS
Power Supply (radio part input) : DC 3.3 V
Antenna type : Wire Antenna
Antenna Gain : -0.17 dBi
Operating Temperature : 0 deg. C to +40 deg. C

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C: 2015, final revised on January 21, 2015
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz

* The EUT has been tested for compliance with FCC Part 15 Subpart B. Refer to the test report 10832565S-G.

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	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		5.0 dB Tx DH5 2441 MHz 4882.000 MHz, AV, Vert.	Complied

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.

*2) Radiated test was selected over 30 MHz based on section 15.247(d) and KDB 558074 D01 12.2.7.

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

FCC Part 15.31 (e)

The equipment provides the wireless transmitter with stable power supply (DC 3.3 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.

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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 $k = 2$.
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Item	Frequency range	Uncertainty (+/-)		
		No. 1 SAC / SR	No. 2 SAC / SR	No. 3 SAC / SR
Conducted emission (AC Mains) LISN	150kHz - 30MHz	3.6 dB	3.4 dB	3.4 dB
Radiated emission (Measurement distance: 3m)	9kHz - 30MHz	3.7 dB	3.5 dB	3.5 dB
	30MHz - 300MHz	4.9 dB	4.9 dB	4.7 dB
	300MHz - 1GHz	5.0 dB	5.0 dB	4.8 dB
	1GHz - 15GHz	4.9 dB	4.9 dB	4.9 dB
Radiated emission (Measurement distance: 1m)	15GHz - 18GHz	5.7 dB	5.7 dB	5.7 dB
	18GHz - 40GHz	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 1GHz	0.68dB
Spurious emission (Conducted) below 1GHz	1.5dB
Spurious emission (Conducted) 1GHz - 3GHz	1.7dB
Spurious emission (Conducted) 3GHz - 18GHz	2.4dB
Spurious emission (Conducted) 18GHz - 26.5GHz	2.5dB
Bandwidth Measurement	0.66%

Radiated emission test

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

3.5 Test Location

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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

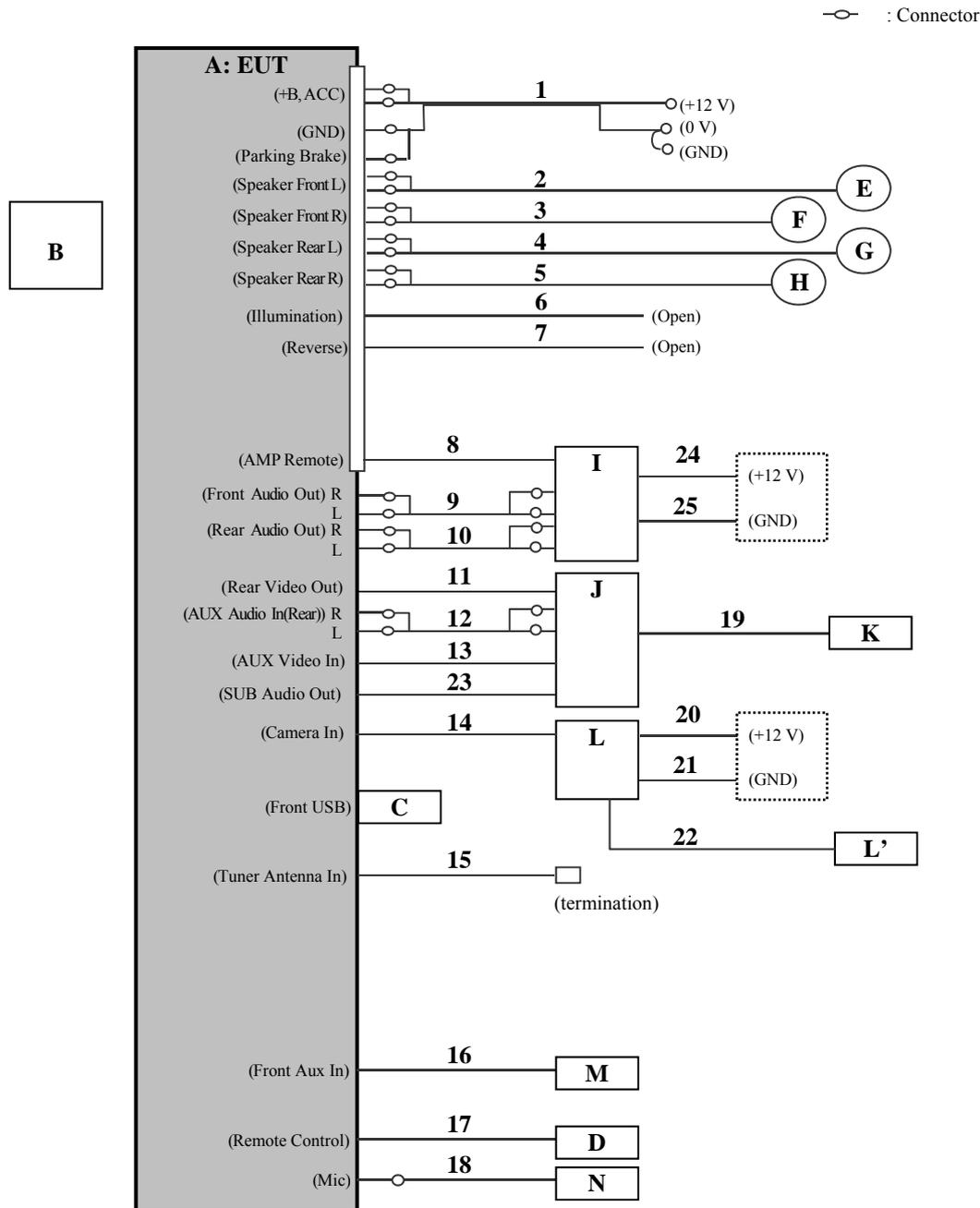
4.1 Operating Mode(s)

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
<p>*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)</p> <p>*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.</p> <p>*EUT has the power settings by the software as follows; Power settings: BDR: Ext.=255, Int.=41 EDR: Ext.=255, Int.=43 Software: CSR BlueSuite BlueTest Version 1.24.0.0 CSR BlueSuite BtCliCtrl Version 2.5.0.93 (Inquiry mode only)</p> <p>*This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.</p>		

4.2 Configuration and peripherals



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

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	AV Center	XAV-W650BT	*1)	Sony	EUT
B	Remote commander	RM-X170	-	Sony	-
C	USB memory	SDK-USM4GL(B)	-	Sony	-
D	Wired Remote Controller	RM-X4S	-	Sony	-
E	Speaker 1	IS-10	-	Sony	-
F	Speaker 2	IS-10	-	Sony	-
G	Speaker 3	XS-GTF1625R	-	Sony	-
H	Speaker 4	XS-GTF1625R	-	Sony	-
I	Monaural Power Amplifier	XM-1S	1520145	Sony	-
J	Connection Box	XA-124	3509530	Sony	-
K	MOBILE MONITOR	XVM-F65	350934	Sony	-
L	Camera unit	XA-R800C	100114	Sony	-
L'					
M	Walkman	NW-A828	5072265	Sony	-
N	Mic	-	-	-	-

*1) Antenna port conducted tests: ET00013, Radiated emission tests: ET00012

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Power+Parking brake	1.8	Unshielded	Unshielded	-
2	Speaker (1)	0.15+2.6	Unshielded	Unshielded	-
3	Speaker (2)	0.15+2.6	Unshielded	Unshielded	-
4	Speaker (3)	0.15+2.0	Unshielded	Unshielded	-
5	Speaker (4)	0.15+2.0	Unshielded	Unshielded	-
6	Illumination	0.15+1.9	Unshielded	Unshielded	-
7	Reverse	0.15+1.9	Unshielded	Unshielded	-
8	AMP Remote	0.15+1.7	Unshielded	Unshielded	-
9	RCA (Front Audio Out)	5.2	Shielded	Shielded	-
10	RCA (Rear Audio Out)	5.2	Shielded	Shielded	-
11	RCA (Rear VIDEO Out)	5.0	Shielded	Shielded	-
12	RCA (AUX Audio In)	2.8	Shielded	Shielded	-
13	RCA (AUX Video In)	6.0	Shielded	Shielded	-
14	RCA (Camera In)	3.0	Shielded	Shielded	-
15	Tuner Antenna In	2.0	Shielded	Shielded	-
16	Stereo mini(Front AUX)	2.0	Shielded	Shielded	-
17	REMOTE Control	2.0	Shielded	Shielded	-
18	Mic	0.2+3.5	Shielded	Shielded	-
19	Signal	3.0	Shielded	Shielded	-
20	DC Power (+)	1.0	Unshielded	Unshielded	-
21	DC Power (-)	1.0	Unshielded	Unshielded	-
22	Camera	3.0	Shielded	Shielded	-
23	RCA (SUB Audio Out)	2.0	Shielded	Shielded	-
24	DC Power (+)	1.9	Unshielded	Unshielded	-
25	DC Power (-)	1.9	Unshielded	Unshielded	-

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SECTION 5: Radiated Spurious Emission

Test Procedure

EUT was placed on a platform of nominal size, 1.0 m by 1.5 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 10 GHz), 1 m*2) (above 15 GHz)		3 m (below 10 GHz), 1 m*2) (above 15 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: $20 \times \log(3.0 \text{ m} / 1.0 \text{ m}) = 9.5 \text{ dB}$

The carrier level and noise levels were confirmed at angle of 0 to 45 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 M - 25 GHz
Test data : APPENDIX
Test result : Pass

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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	2.5 MHz or 3 MHz	30 kHz	100 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99% Occupied Bandwidth *1)	Enough width to display emission skirts	1 to 5 % of OBW	Three times of RBW	Auto	Sample	Max Hold *1)	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak Average *3)	-	Power Meter (Sensor: 160MHz BW)
Carrier Frequency Separation	5 MHz or 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

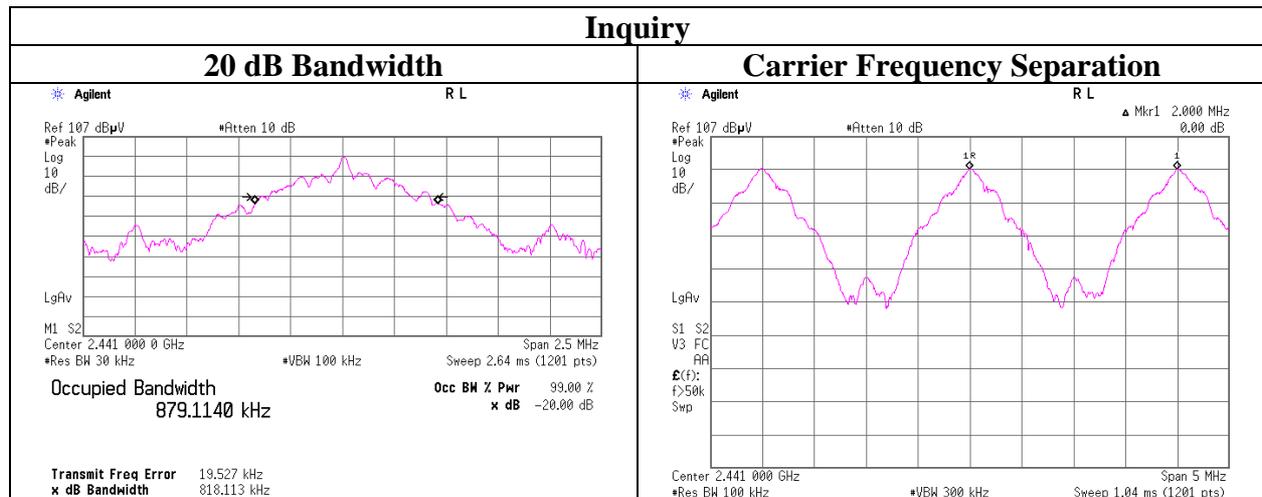
20dB Bandwidth and Carrier Frequency Separation

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	10832565S-E
Date	June 14, 2015
Temperature / Humidity	26 deg. C / 58 % RH
Engineer	Kenichi Adachi
Mode	Tx Hopping On

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.990	1.000	≥ 0.660
DH5	2441.0	0.961	1.000	≥ 0.641
DH5	2480.0	0.960	1.000	≥ 0.640
3DH5	2402.0	1.292	1.000	≥ 0.862
3DH5	2441.0	1.285	1.000	≥ 0.857
3DH5	2480.0	1.290	1.000	≥ 0.860
Inquiry	2441.0	0.818	2.000	≥ 0.545

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

No limit applies to 20dB Bandwidth.



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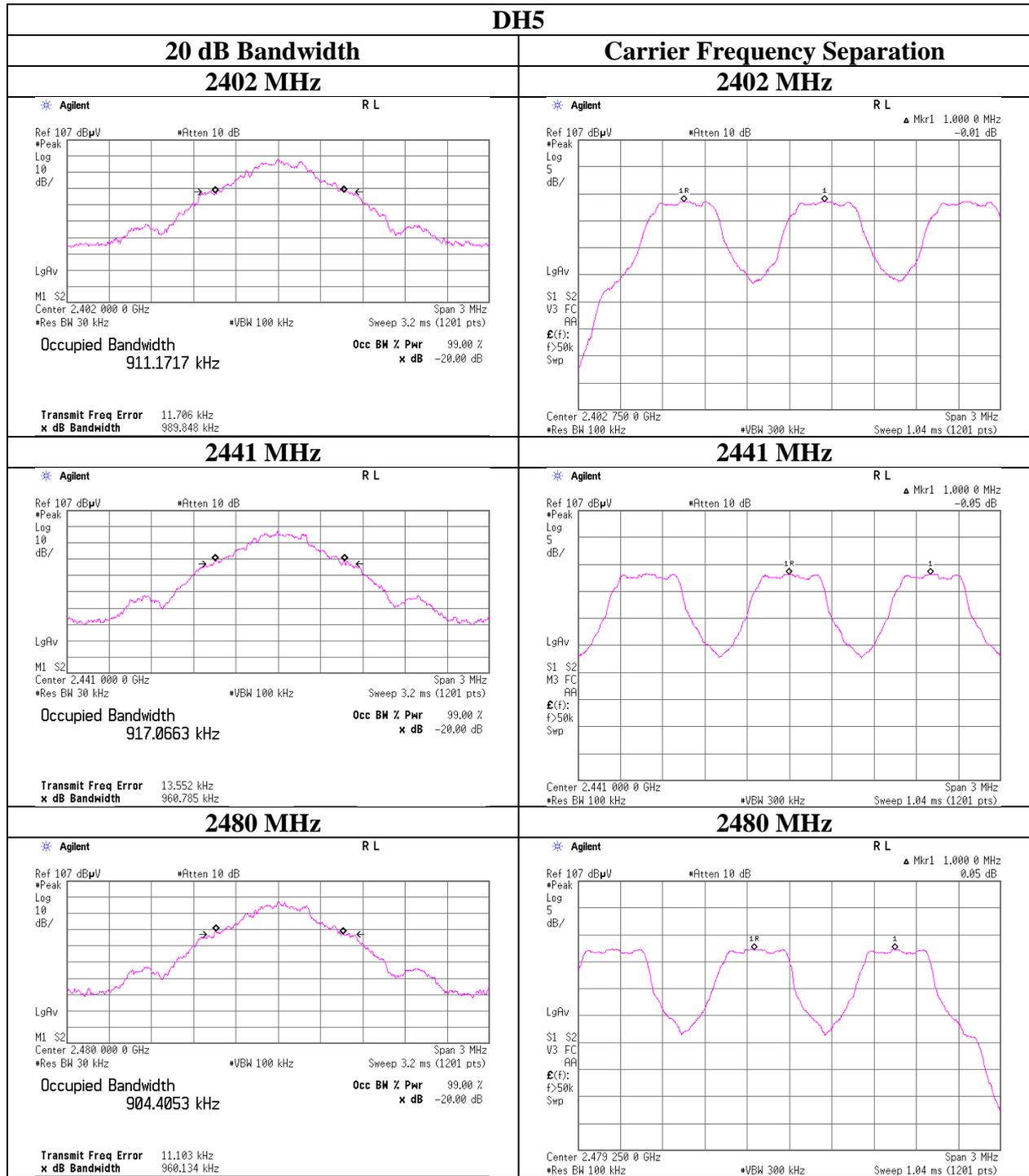
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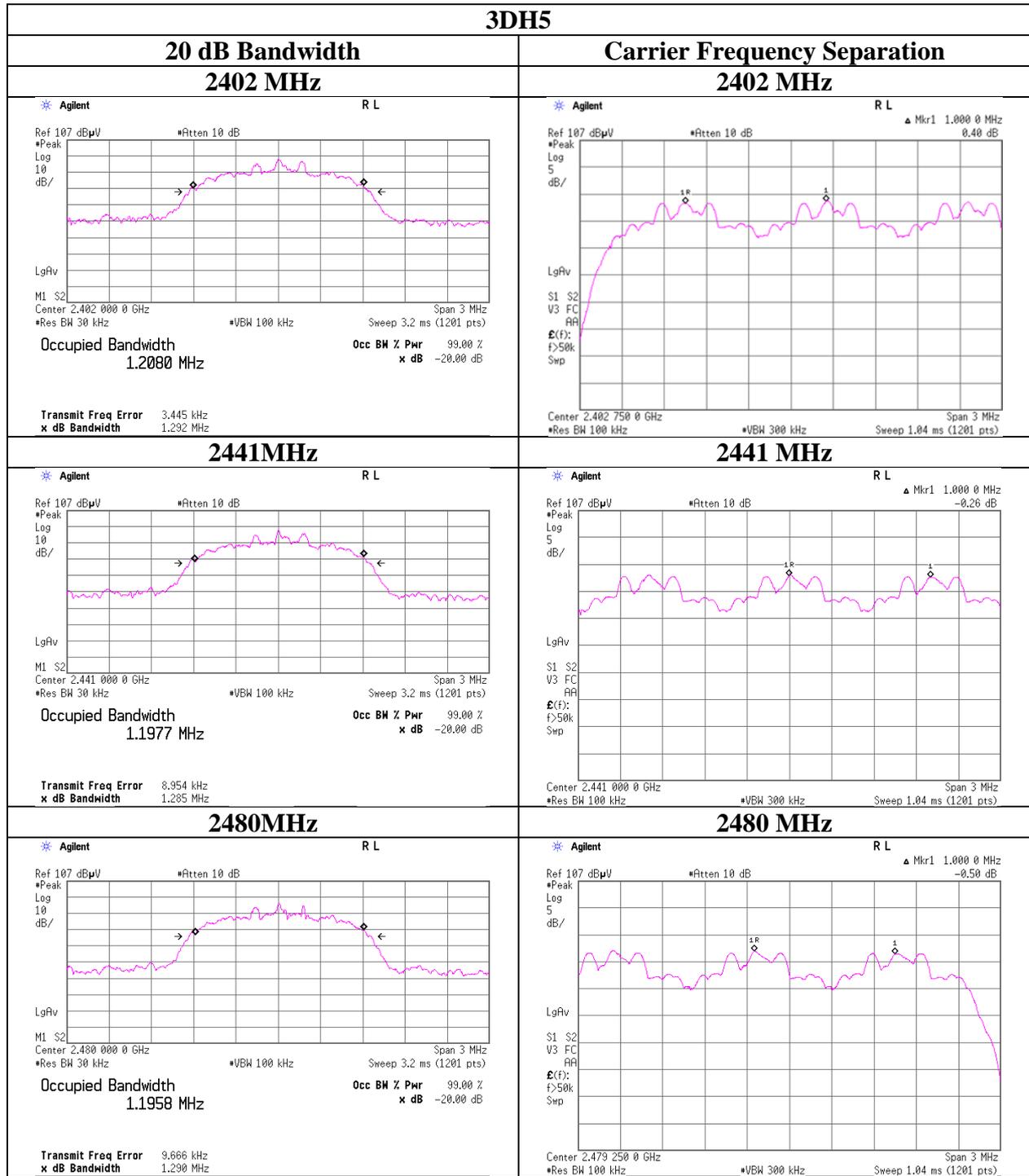
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20dB Bandwidth and Carrier Frequency Separation



20dB Bandwidth and Carrier Frequency Separation



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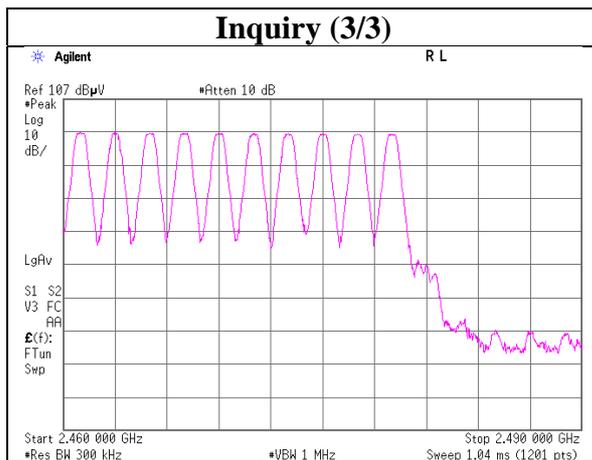
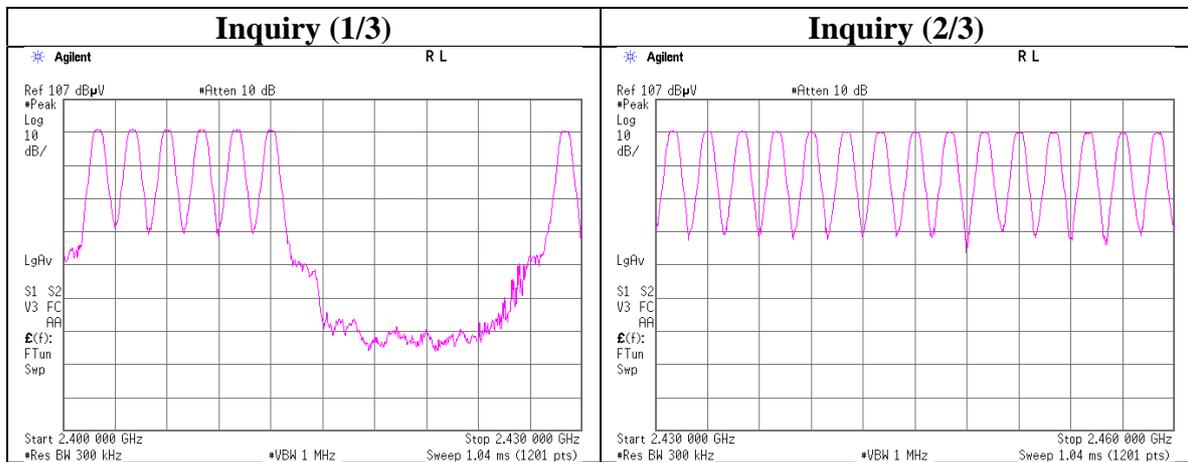
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Number of Hopping Frequency

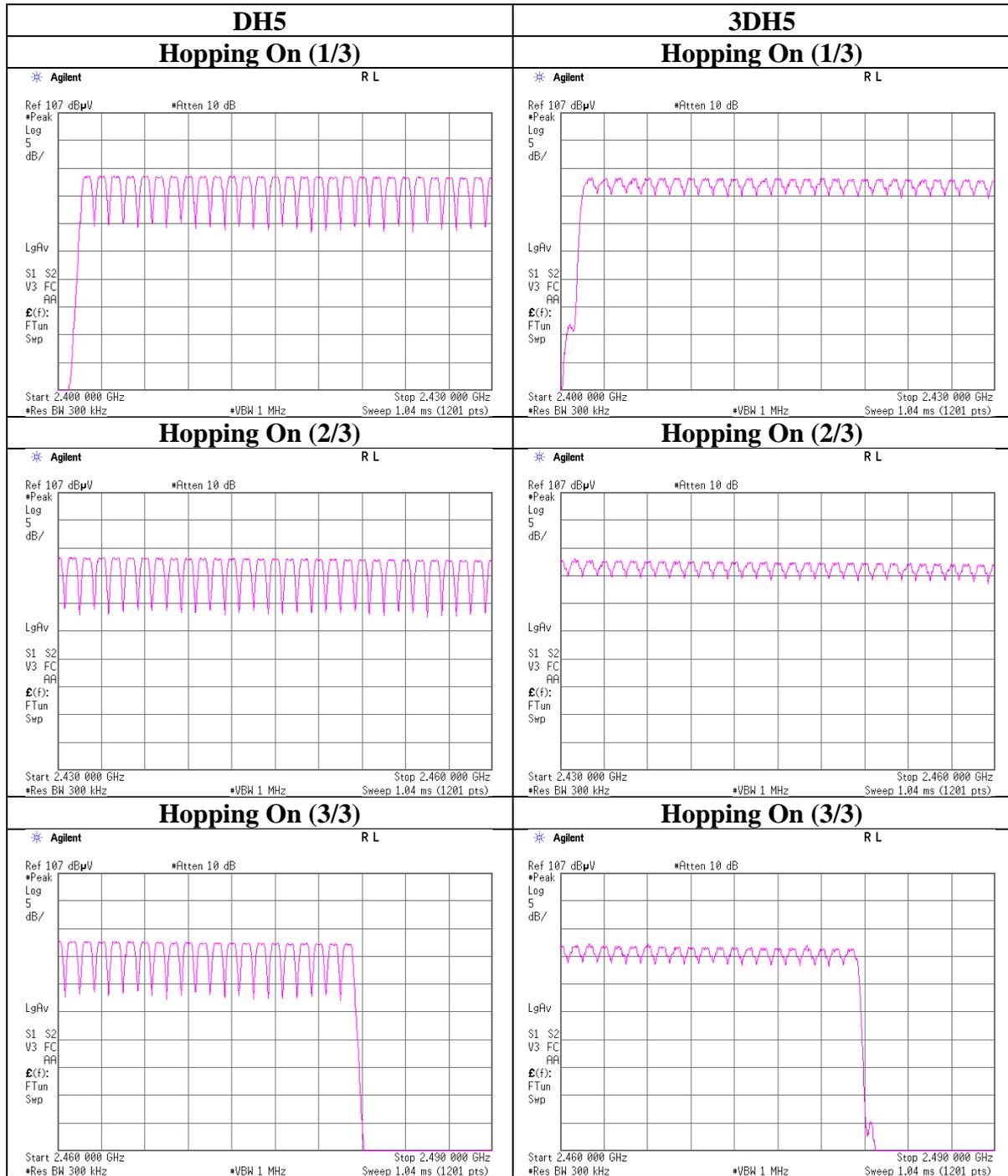
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	10832565S-E
Date	June 14, 2015
Temperature / Humidity	26 deg. C / 58 % RH
Engineer	Kenichi Adachi
Mode	Tx Hopping On

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.



Number of Hopping Frequency



Dwell time

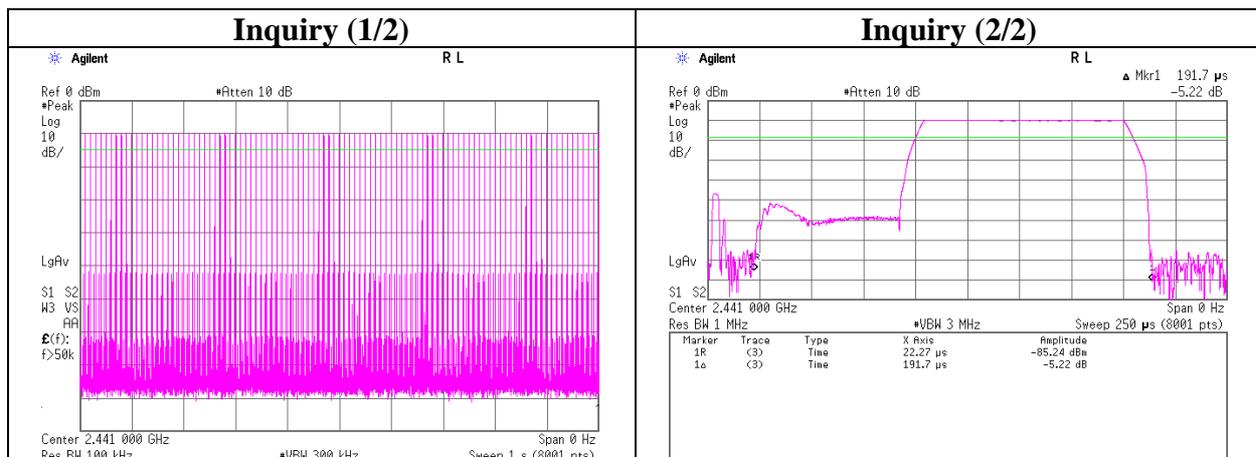
Test place : Shonan EMC Lab. No.5 Shielded Room
Report No. : 10832565S-E
Date : June 14, 2015
Temperature / Humidity : 26 deg. C / 58 % RH
Engineer : Kenichi Adachi
Mode : Tx Hopping On

Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8 (32 Hopping x 0.4) second period			Length of transmission [msec]	Result [msec]	Limit [msec]
DH1	50.0 times / 5 sec. x	31.6 sec. =	316 times	0.513	162	400
DH3	26.0 times / 5 sec. x	31.6 sec. =	165 times	1.773	293	400
DH5	17.0 times / 5 sec. x	31.6 sec. =	108 times	3.017	326	400
3DH1	50.0 times / 5 sec. x	31.6 sec. =	316 times	0.527	167	400
3DH3	26.0 times / 5 sec. x	31.6 sec. =	165 times	1.787	295	400
3DH5	17.0 times / 5 sec. x	31.6 sec. =	108 times	3.030	327	400
Inquiry	100.0 times / 1 sec. x	12.8 sec. =	1280 times	0.192	246	400

Sample Calculation

Result = Number of transmission x Length of transmission

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



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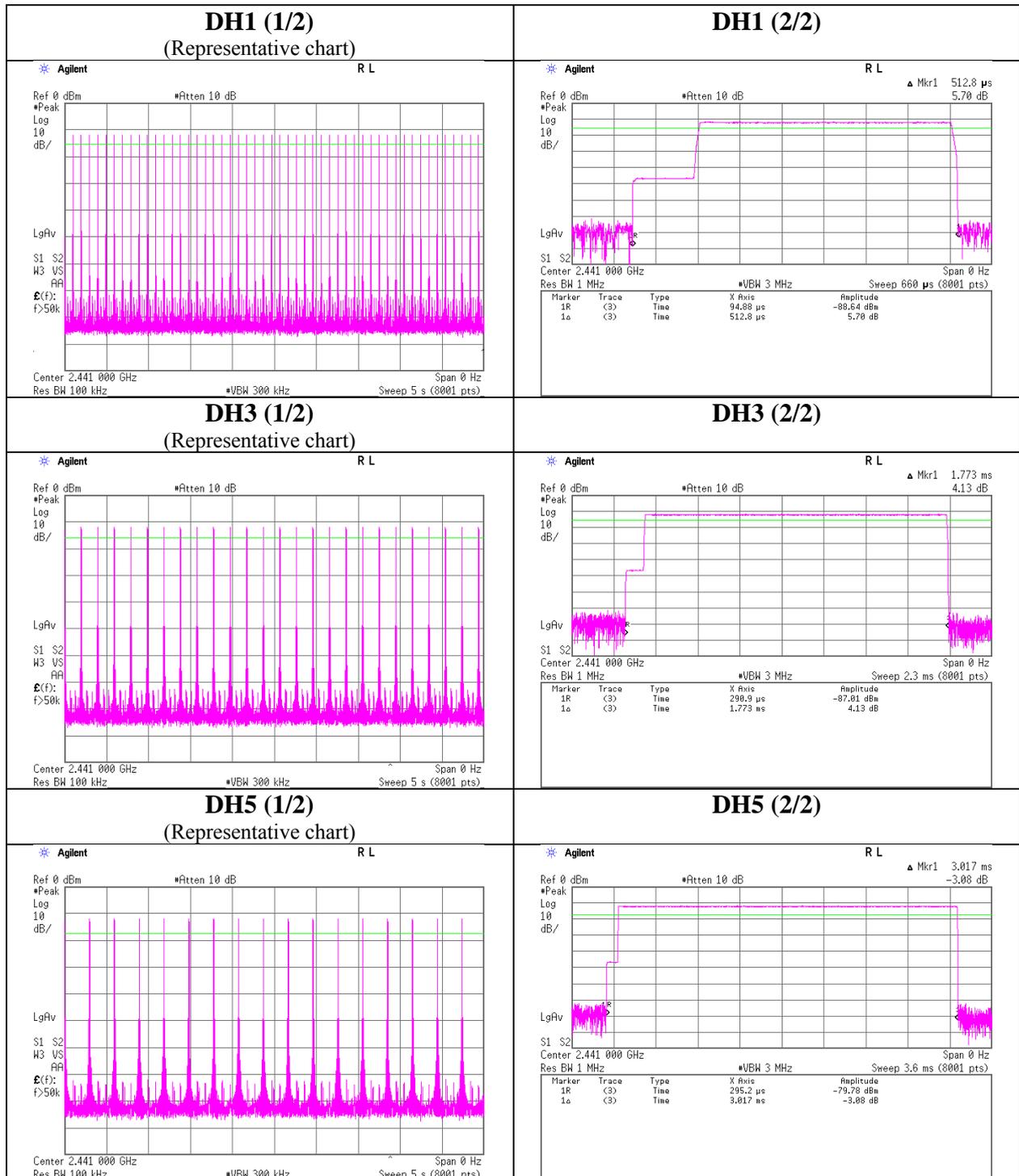
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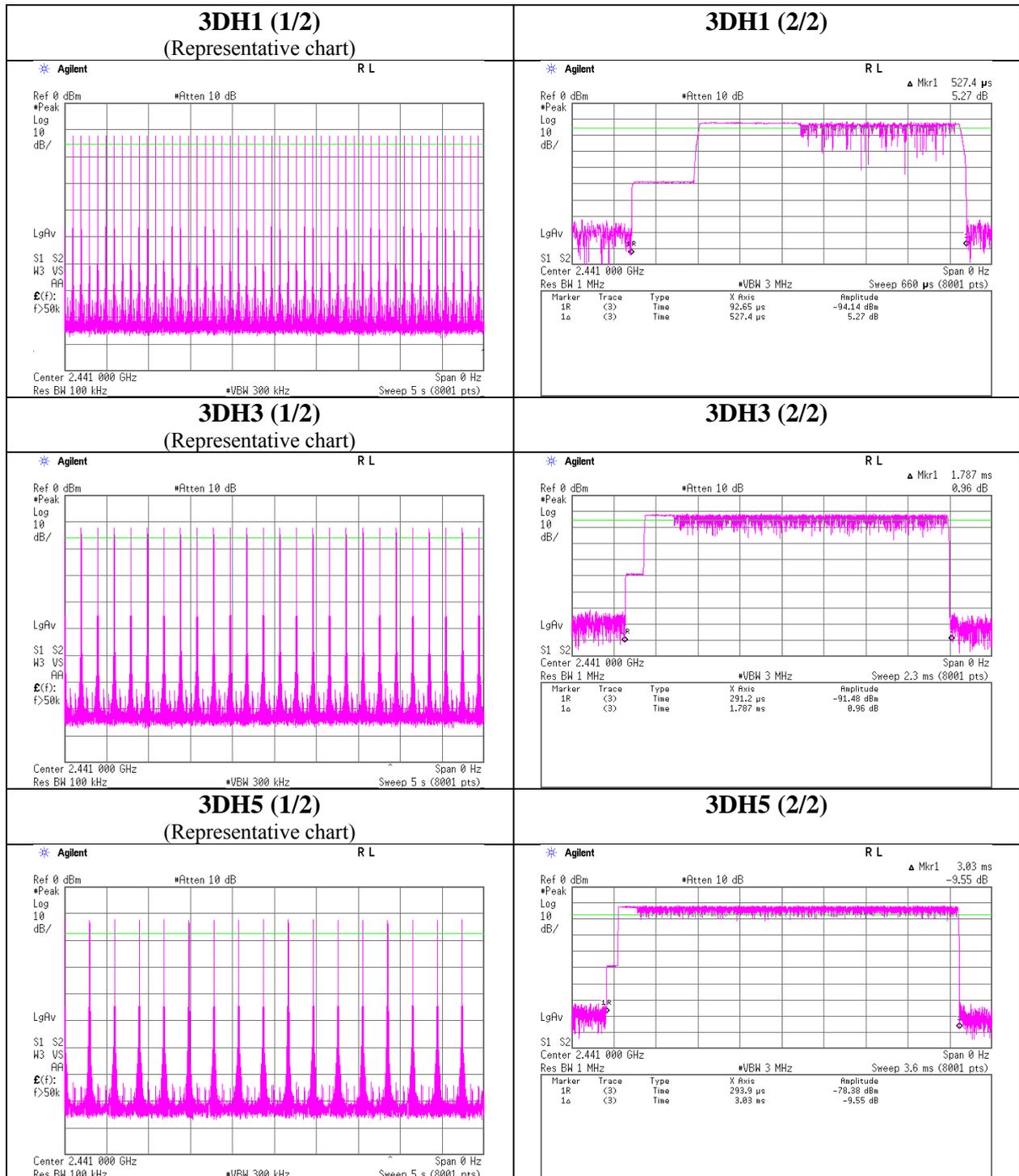
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Dwell time



Dwell time



Maximum Peak Output Power

Test place : Shonan EMC Lab. No.5 Shielded Room
Report No. : 10832565S-E
Date : June 14, 2015
Temperature / Humidity : 26 deg. C / 58 % RH
Engineer : Kenichi Adachi
Mode : Tx Hopping Off

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-10.99	1.78	9.63	0.42	1.10	20.96	125	20.54
DH5	2441.0	-11.46	1.79	9.63	-0.04	0.99	20.96	125	21.00
DH5	2480.0	-12.22	1.80	9.63	-0.79	0.83	20.96	125	21.75
2DH5	2402.0	-10.35	1.78	9.63	1.06	1.28	20.96	125	19.90
2DH5	2441.0	-10.97	1.79	9.63	0.45	1.11	20.96	125	20.51
2DH5	2480.0	-12.03	1.80	9.63	-0.60	0.87	20.96	125	21.56
3DH5	2402.0	-10.23	1.78	9.63	1.18	1.31	20.96	125	19.78
3DH5	2441.0	-10.92	1.79	9.63	0.50	1.12	20.96	125	20.46
3DH5	2480.0	-11.96	1.80	9.63	-0.53	0.89	20.96	125	21.49

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.

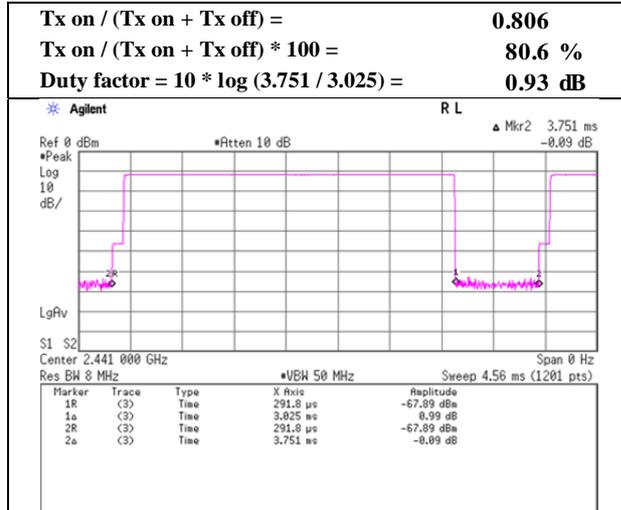
Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power and bandwidth of the EUT.

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.

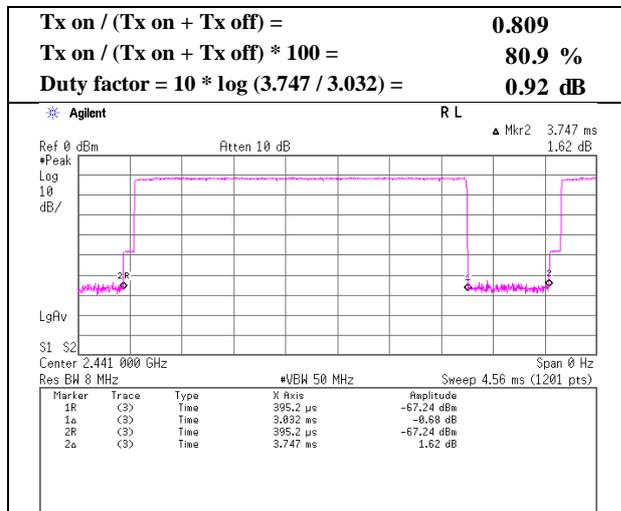
Duty Factor Calculation Chart

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	10832565S-E
Date	June 14, 2015
Temperature / Humidity	26 deg. C / 58 % RH
Engineer	Kenichi Adachi
Mode	Tx Hopping Off

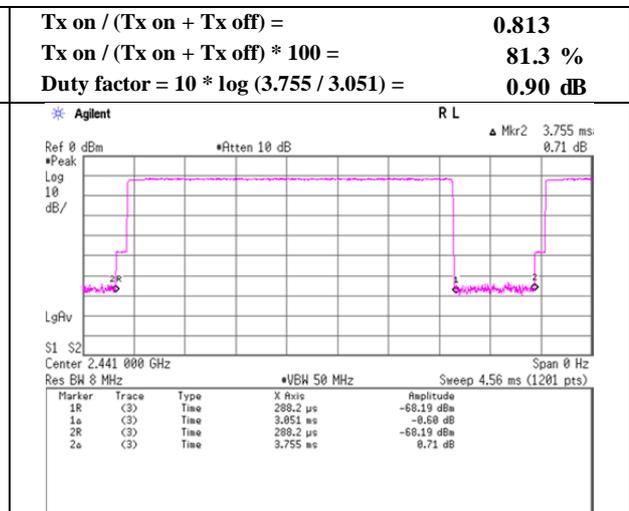
DH5



2DH5

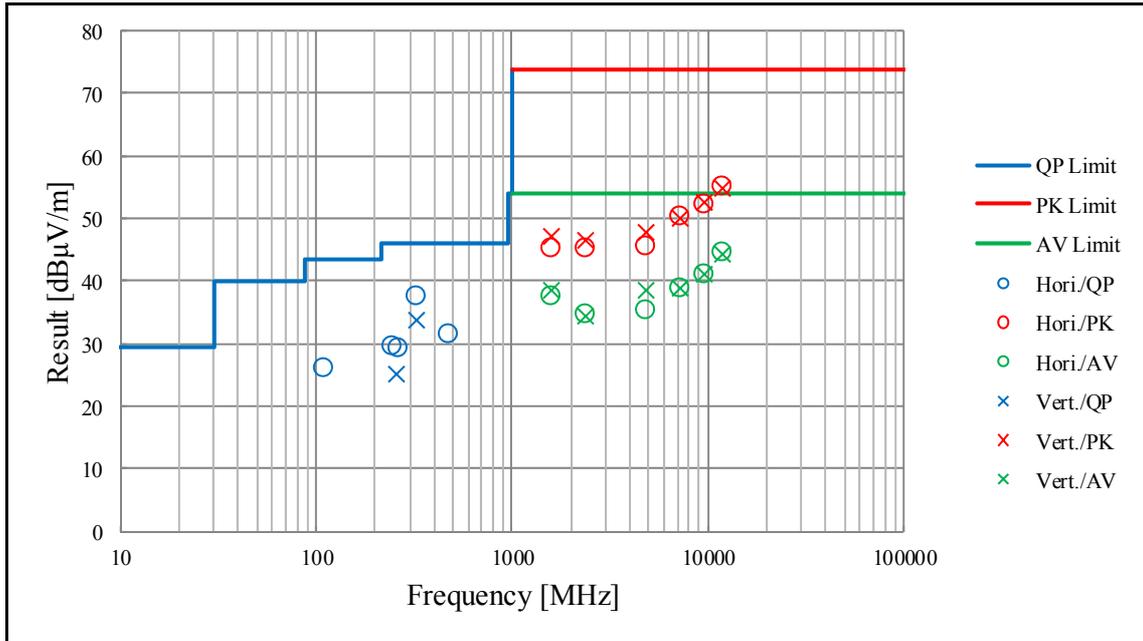


3DH5



Radiated Spurious Emission (Plot data, Worst case)

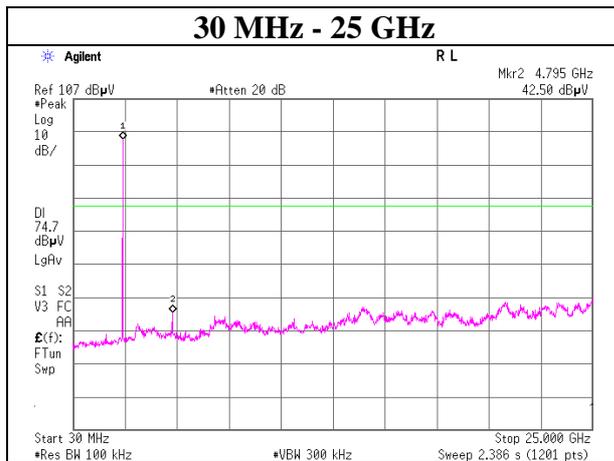
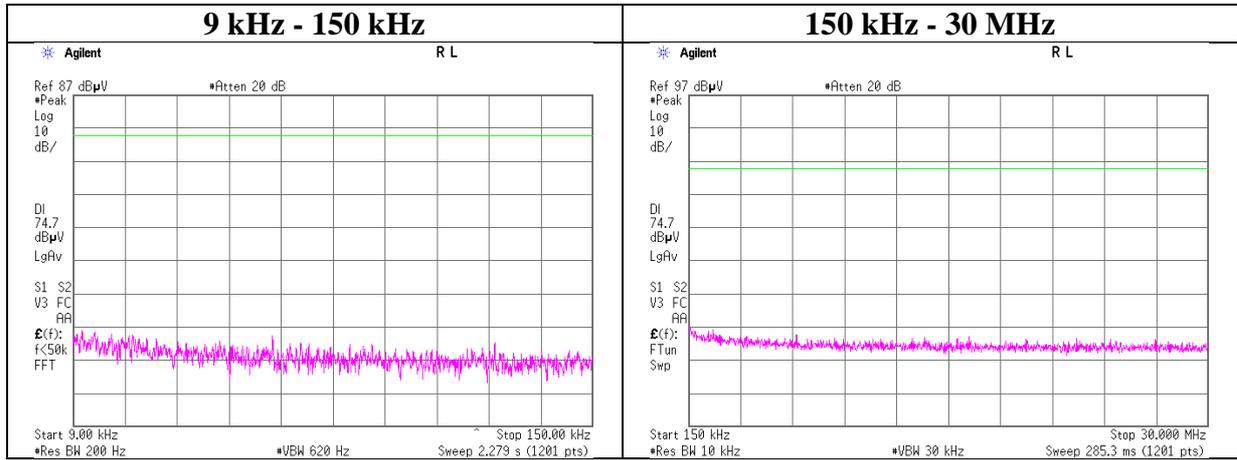
Test place	Shonan EMC Lab. No.3 Semi Anechoic Chamber	
Report No.	10832565S-E	
Date	June 27, 2015	June 28, 2015
Temperature / Humidity	26 deg. C / 57 % RH	25 deg. C / 55 % RH
Engineer	Yosuke Ishikawa (1-18 GHz)	Shinichi Takano (18-26.5 GHz 30-1000 MHz)
Mode	Tx 3DH5 2402 MHz	



Conducted Spurious Emission

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	10832565S-E
Date	June 14, 2015
Temperature / Humidity	26 deg. C / 58 % RH
Engineer	Kenichi Adachi
Mode	Tx DH5

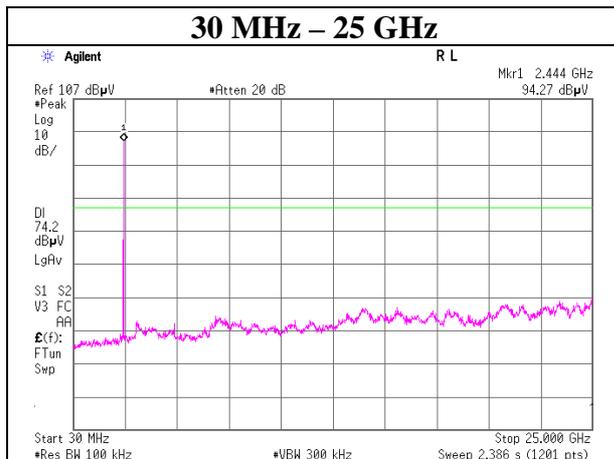
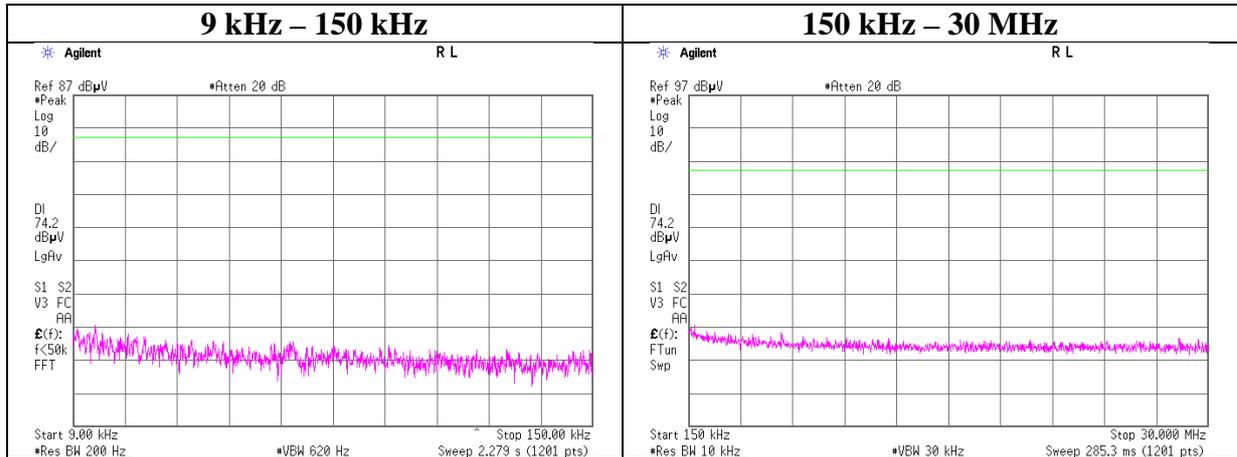
2402 MHz



Conducted Spurious Emission

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	10832565S-E
Date	June 14, 2015
Temperature / Humidity	26 deg. C / 58 % RH
Engineer	Kenichi Adachi
Mode	Tx DH5

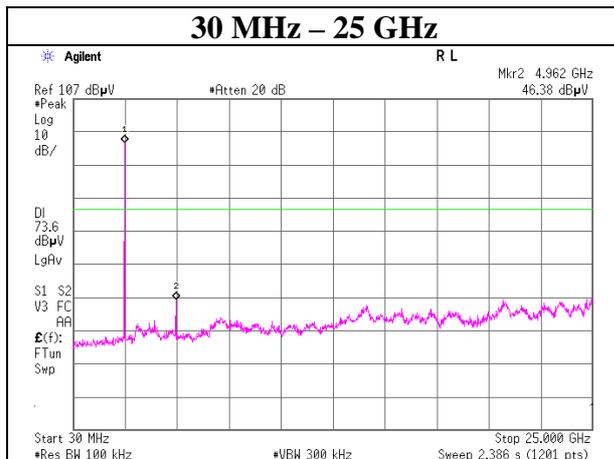
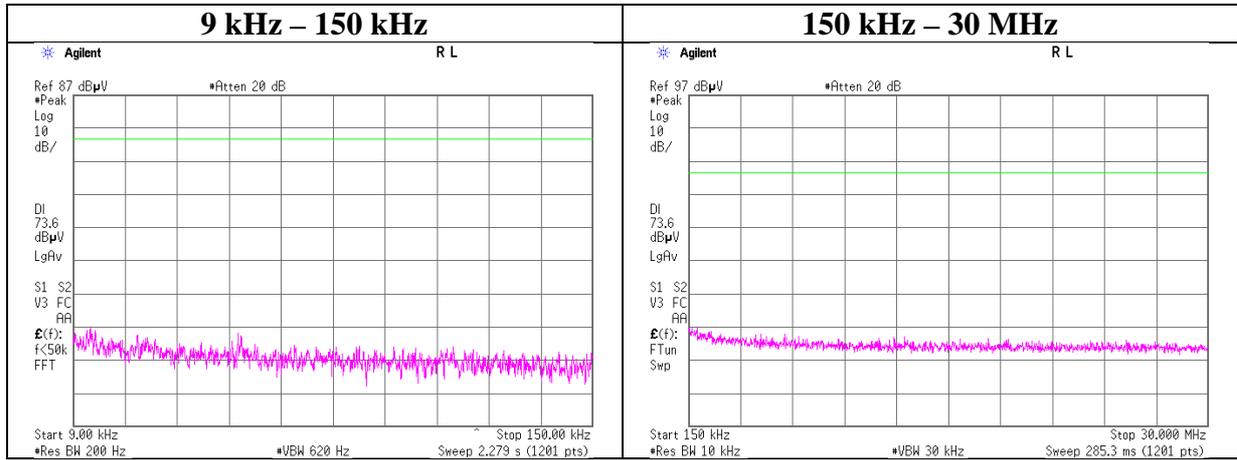
2441 MHz



Conducted Spurious Emission

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	10832565S-E
Date	June 14, 2015
Temperature / Humidity	26 deg. C / 58 % RH
Engineer	Kenichi Adachi
Mode	Tx DH5

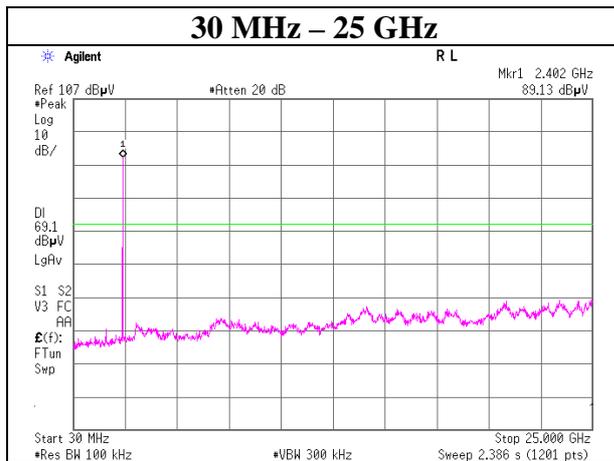
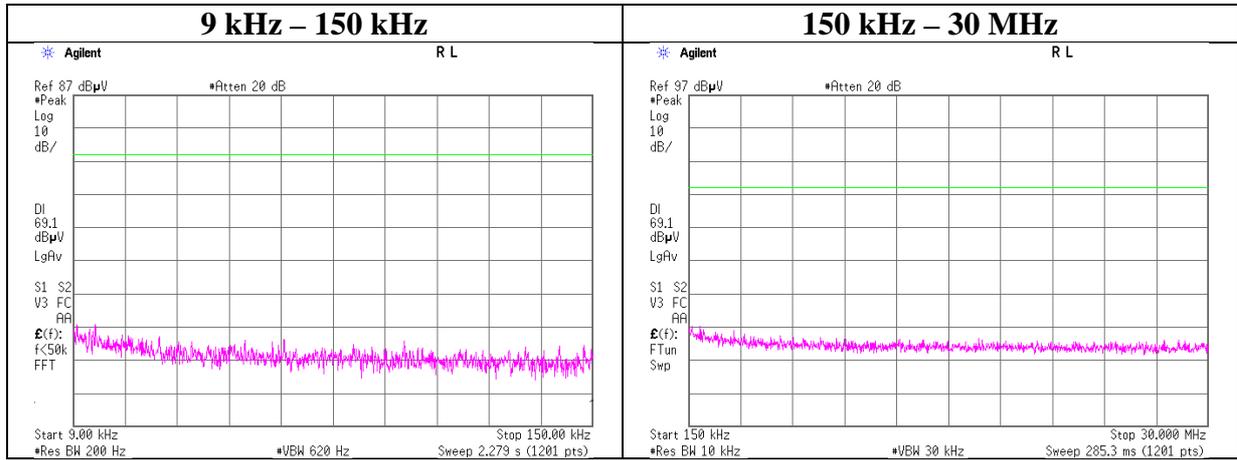
2480 MHz



Conducted Spurious Emission

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	10832565S-E
Date	June 14, 2015
Temperature / Humidity	26 deg. C / 58 % RH
Engineer	Kenichi Adachi
Mode	Tx 3DH5

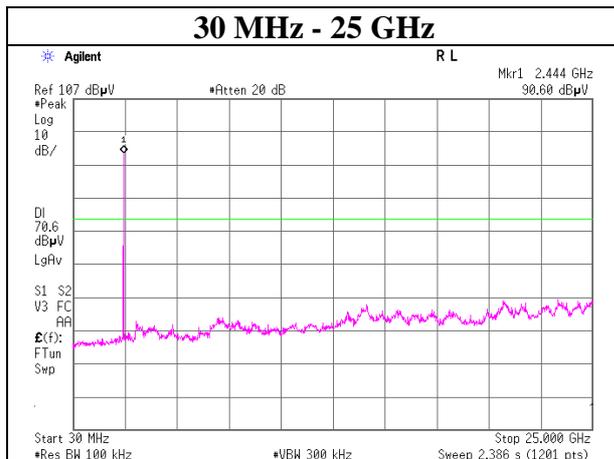
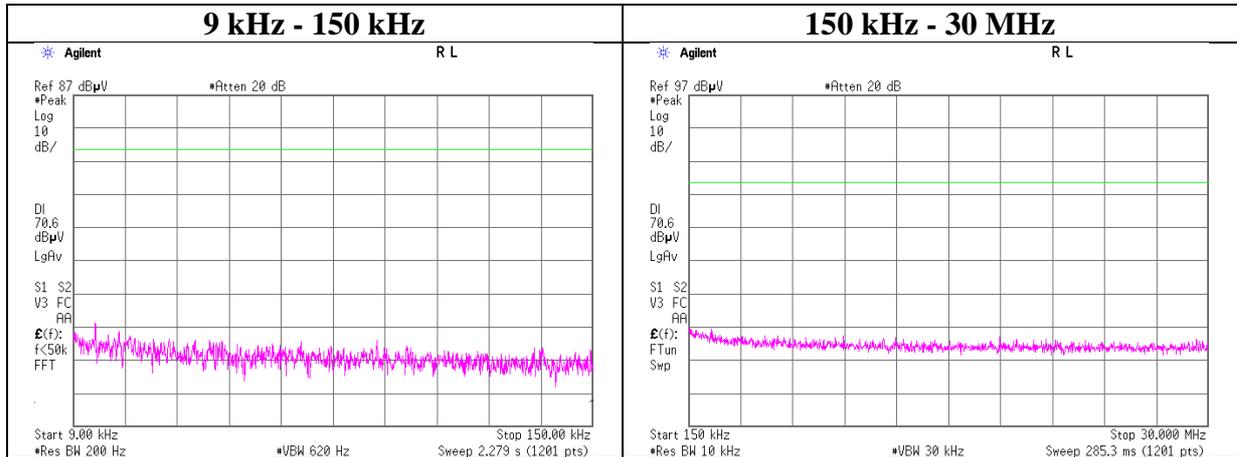
2402 MHz



Conducted Spurious Emission

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	10832565S-E
Date	June 14, 2015
Temperature / Humidity	26 deg. C / 58 % RH
Engineer	Kenichi Adachi
Mode	Tx 3DH5

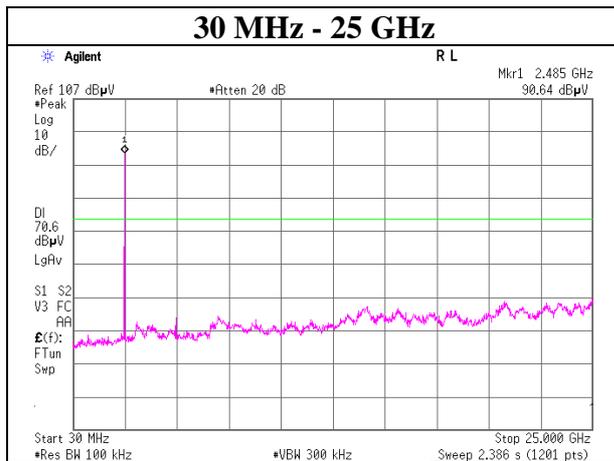
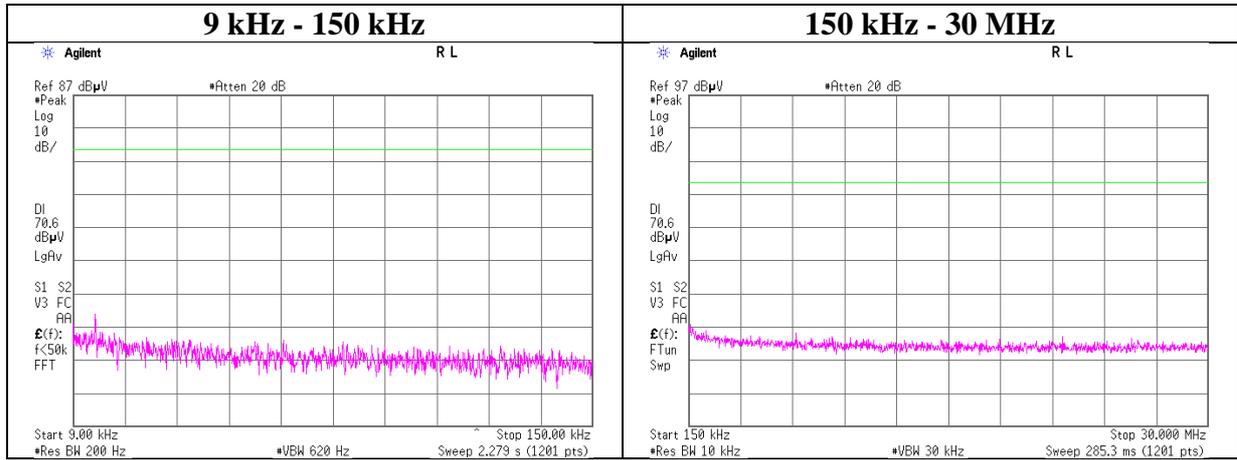
2441 MHz



Conducted Spurious Emission

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	10832565S-E
Date	June 14, 2015
Temperature / Humidity	26 deg. C / 58 % RH
Engineer	Kenichi Adachi
Mode	Tx 3DH5

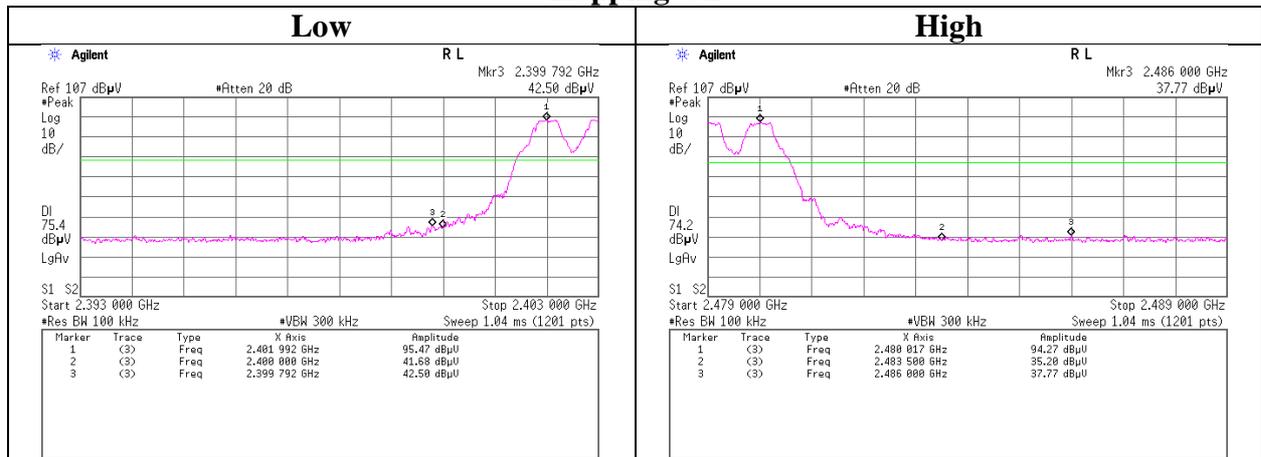
2480 MHz



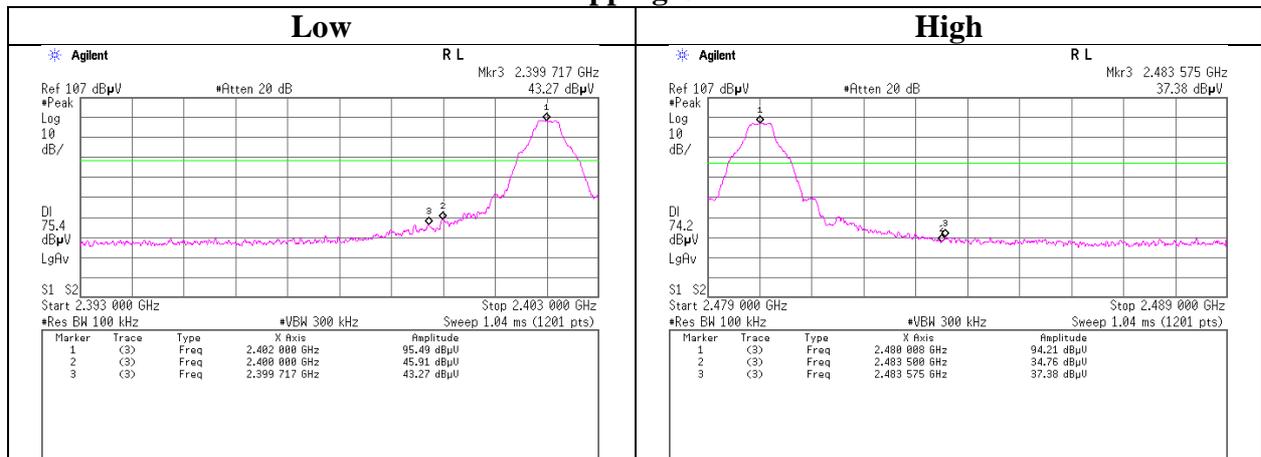
Conducted Emission Band Edge compliance

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	10832565S-E
Date	June 14, 2015
Temperature / Humidity	26 deg. C / 58 % RH
Engineer	Kenichi Adachi
Mode	Tx DH5

Hopping On



Hopping Off

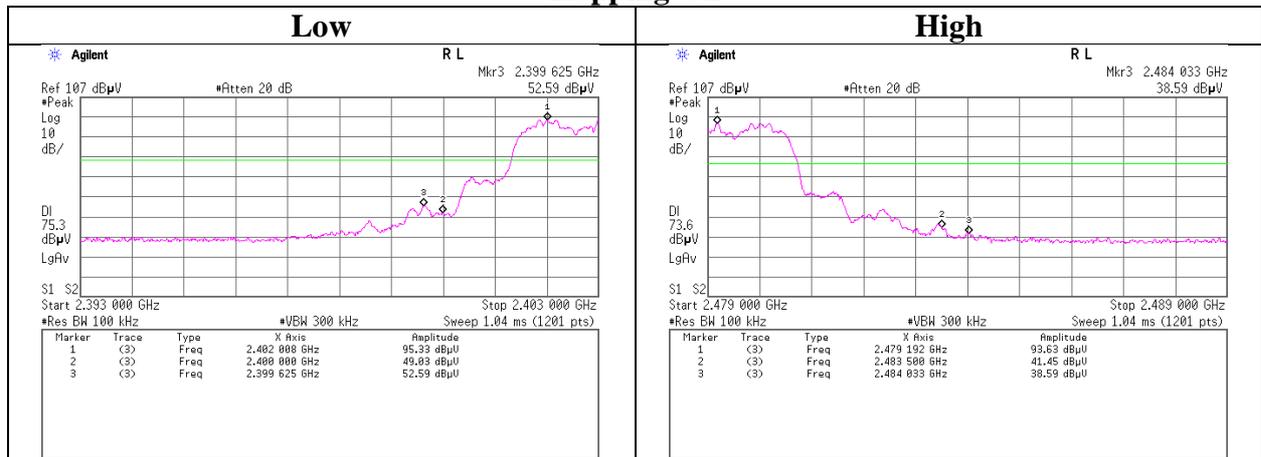


* Points except for 2400 MHz and 2483.5 MHz are floor noise in radiated measurement.

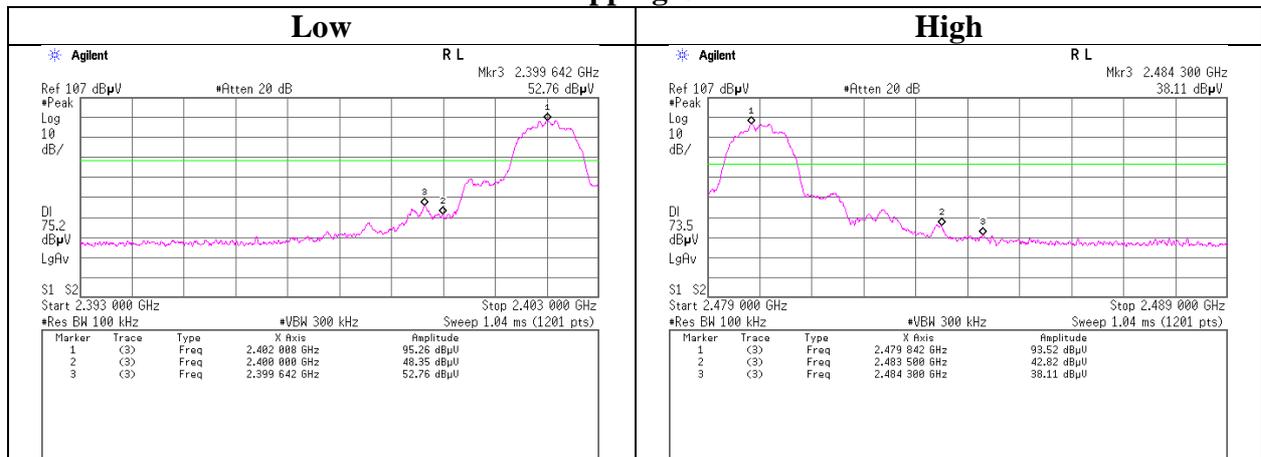
Conducted Emission Band Edge compliance

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	10832565S-E
Date	June 14, 2015
Temperature / Humidity	26 deg. C / 58 % RH
Engineer	Kenichi Adachi
Mode	Tx 3DH5

Hopping On



Hopping Off



* Points except for 2400 MHz and 2483.5 MHz are floor noise in radiated measurement.

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Shonan EMC Lab.

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Telephone : +81 463 50 6400

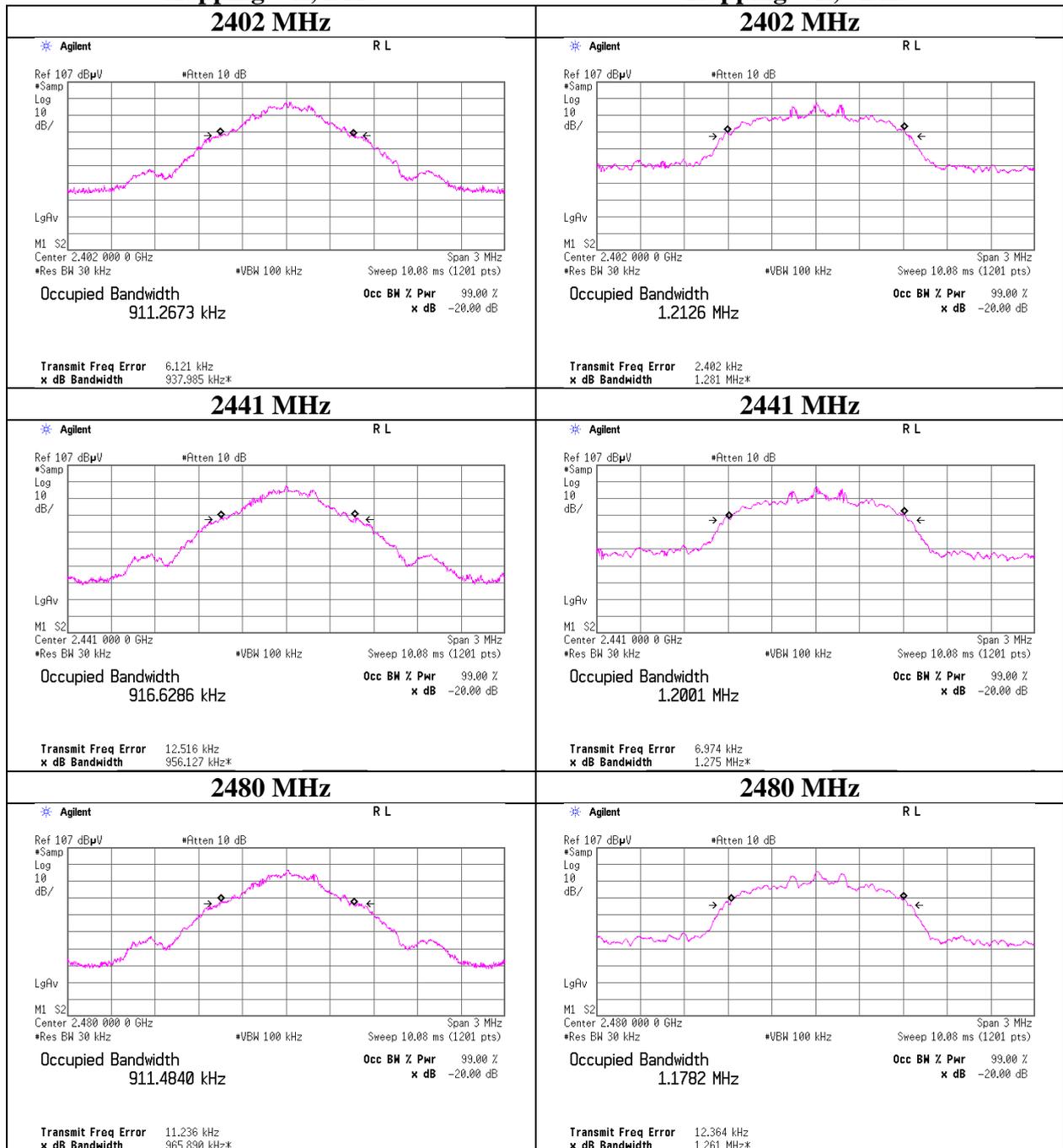
Facsimile : +81 463 50 6401

99% Occupied Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	10832565S-E
Date	June 14, 2015
Temperature / Humidity	26 deg. C / 58 % RH
Engineer	Kenichi Adachi
Mode	Tx Hopping Off

Hopping Off, DH5

Hopping Off, 3DH5



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Shonan EMC Lab.

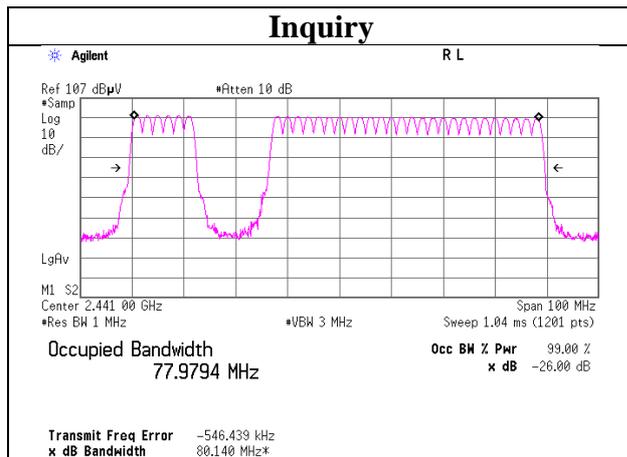
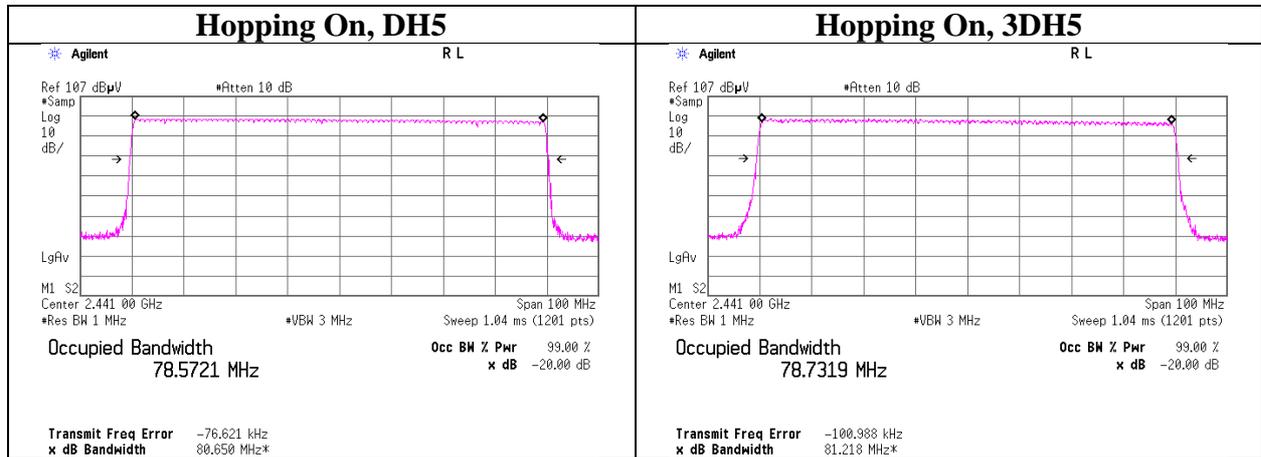
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

99% Occupied Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	10832565S-E
Date	June 14, 2015
Temperature / Humidity	26 deg. C / 58 % RH
Engineer	Kenichi Adachi
Mode	Tx Hopping On



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APPENDIX 2: Test instruments

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	AT	2015/02/24 * 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-G13	Coaxial Cable	Suhner	SUCOFLEX 102	31599/2	AT	2015/03/11 * 12
SAT10-09	Attenuator	Weinschel Corp.	54A-10	W5692	AT	2014/11/21 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2014/12/24 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2014/07/14 * 12
SAEC-03 (SVSWR)	Semi-Anechoic Chamber	TDK	SAEC-03 (SVSWR)	3	RE	2015/03/11 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2015/05/27 * 12
SCC-G04	Coaxial Cable	Junkosha	J12J102207-00	JUN-12-14-0 18	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	2014/08/12 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2014/10/30 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	RE	2015/03/23 * 12
SJM-15	Measure	ASKUL	-	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE, CE,RFL,MF)	-	RE	-
SAT10-05	Attenuator(above1GHz)	Agilent	8493C-010	74864	RE	2014/11/21 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2014/11/21 * 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
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2014/10/18 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2014/10/18 * 12
SAT6-08	Attenuator	HIROSE ELECTRIC CO.,LTD.	AT-406(40)	-	RE	2014/08/27 * 12
SCC-C1/C2/C3/C 4/C5/C10/SRSE- 03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhne r/Suhner/Suhner/Suhner/ TOYO	8D2W/12DSFA/ 141PE/141PE/1 41PE/141PE/NS 4906	-/0901-271(R F 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

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**

UL Japan, Inc.

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