



RADIO TEST REPORT

Test Report No. : 10860279S-E

Applicant : Sony Corporation
Type of Equipment : Digital Media Player
Model No. : RSX-GS9
FCC ID : AK8RSXGS9
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: July 5 to August 17, 2015

Representative test engineer:

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Engineer
Consumer Technology Division

Approved by:

Toyokazu Imamura
Leader
Consumer Technology Division



- The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan.
 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 : Digital Media Player
Model No. : RSX-GS9
Serial No. : Refer to Section 4, Clause 4.2
Rating : DC 12 V
Receipt Date of Sample : June 26, 2015
Country of Mass-production : 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: RSX-GS9 (referred to as the EUT in this report) is an Digital Media Player.

General Specification

Clock frequency(ies) in the system : 26 MHz(Module)

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 : Multilayer chip
Antenna Gain : +1.6 dBi
Operating Temperature : -20 deg. C to +60 deg. C

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C: 2015, final revised on June 12, 2015 and effective July 13, 2015
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz

* The revision on June 12, 2015 does not affect the test specification applied to the EUT.

The EUT has been tested for compliance with FCC Part 15 Subpart B. Refer to the test report 10860279S-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		4.6 dB Tx DH5 2402 MHz 719.996 MHz, QP, Horizontal	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 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 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

EMI

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 report meets the limits unless the uncertainty is taken into consideration.

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)

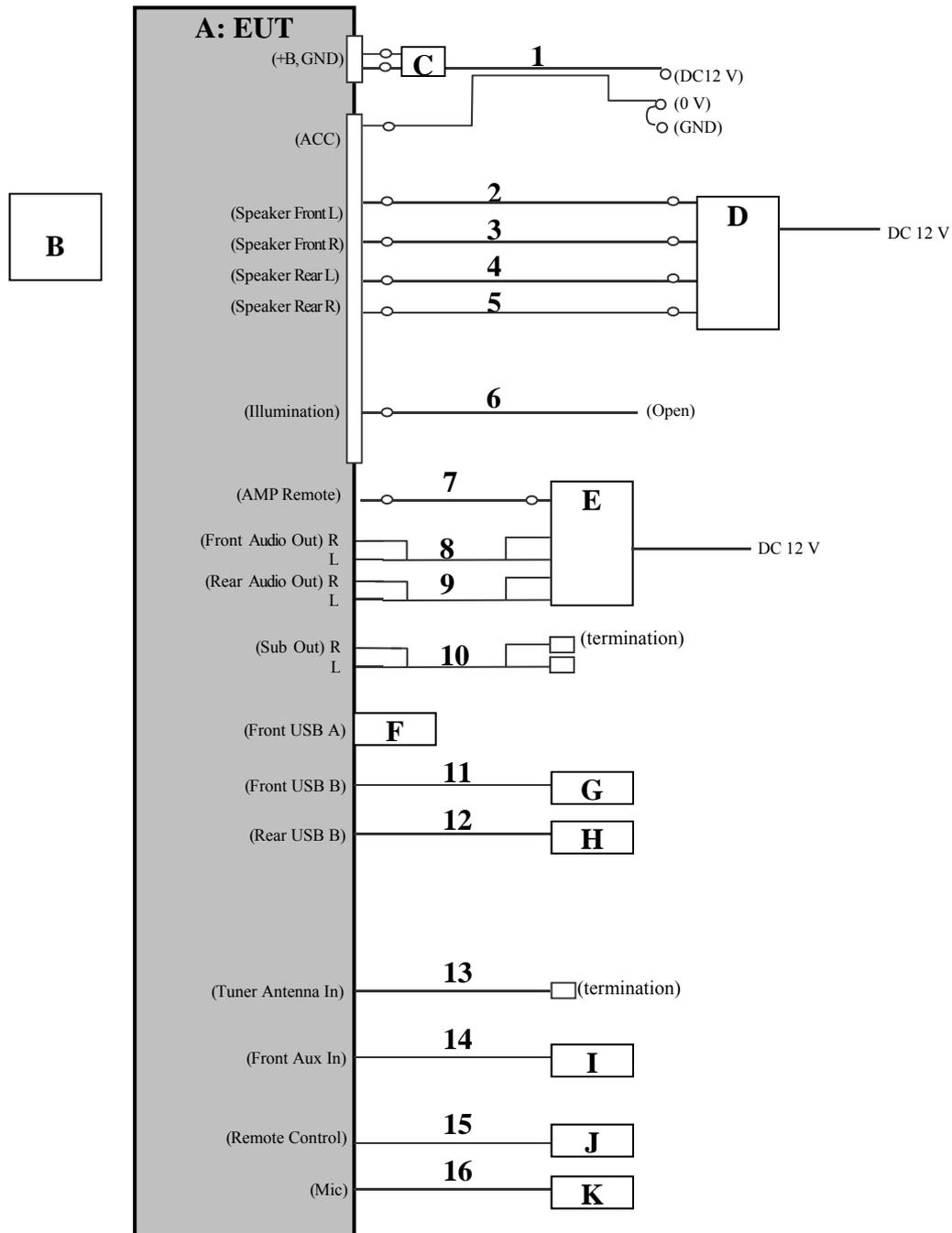
Bluetooth (BT): Transmitting (Tx), Payload: PRBS9
Inquiry

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.=23, Int.=39 EDR: Ext.=48, Int.=73 Software: CSR BlueSuite Blue Test3 Ver. 2.5.0.93 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

○ : Connector



* 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	Digital Media Player	RSX-GS9	60 *1), 44 *2)	Sony	EUT
B	Remote commander	RM-X262	-	Sony	-
C	Fuse Box	-	-	Sony	-
D	Car Audio Unit	DSX-A35U	0000004	Sony	-
E	External Amplifier	XM-4S-020	-	Sony	-
F	USB Memory	-	-	Sony	-
G	Surface Pro	1631	004899550453	Microsoft	-
H	USB Memory	-	-	Sony	-
I	Walkman	NW-A289	5017289	Sony	-
J	Wired Remote Controller	RM-X2S	-	Sony	-
K	Mic	-	-	Sony	-

*1) Used for Antenna Terminal conducted test

*2) Used for Radiated Emission test

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Power	0.15+3.0	Unshielded	Unshielded	-
2	Speaker (1)	0.15+1.7+0.15	Unshielded	Unshielded	-
3	Speaker (2)	0.15+1.7+0.15	Unshielded	Unshielded	-
4	Speaker (3)	0.15+1.7+0.15	Unshielded	Unshielded	-
5	Speaker (4)	0.15+1.7+0.15	Unshielded	Unshielded	-
6	Illumination	0.15+1.0	Unshielded	Unshielded	-
7	AMP Remote	0.15+0.15+1.5	Unshielded	Unshielded	-
8	RCA (Front Audio Out)	5.2	Shielded	Shielded	-
9	RCA (Rear Audio Out)	5.2	Shielded	Shielded	-
10	RCA (Sub Out)	2.5	Shielded	Shielded	-
11	USB	1.0	Shielded	Shielded	-
12	USB	0.15+3.0	Shielded	Shielded	-
13	Tuner Antenna In	1.5	Shielded	Shielded	-
14	Stereo mini(Front AUX)	2.0	Shielded	Shielded	-
15	REMOTE Control	2.0	Shielded	Shielded	-
16	Mic	4.0	Shielded	Shielded	-

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SECTION 5: Radiated Spurious Emission

Test Procedure

EUT was placed on a urethane platform of nominal size, 1.5 m by 1.0 m, raised 0.8 m above the conducting ground plane.

The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

The height of the measuring antenna varied between 1 m and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.

The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).

The test was made with the detector (RBW/VBW) in the following table.

When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Test Antennas are used as below;

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

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

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

Frequency	Below 1 GHz	Above 1 GHz		20 dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	RBW: 1 MHz VBW: 10 Hz *1)	RBW: 100 kHz VBW: 300 kHz
Test Distance	3 m	3 m (below 15 GHz), 1 m*2) (above 15 GHz),		3 m (below 15 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 90 deg. based on the product specification to see the position of maximum noise, and the test was made at the position (below 1GHz: 45 deg., above 1GHz: 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 - 26.5 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	3 MHz or 2.5 MHz	30 kHz	100 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99% Occupied Bandwidth *1)	Enough width to display emission skirts	1 to 5 % of OBW	Three times of RBW	Auto	Peak	Max Hold *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) Peak hold was applied as Worst-case measurement.

*2) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.

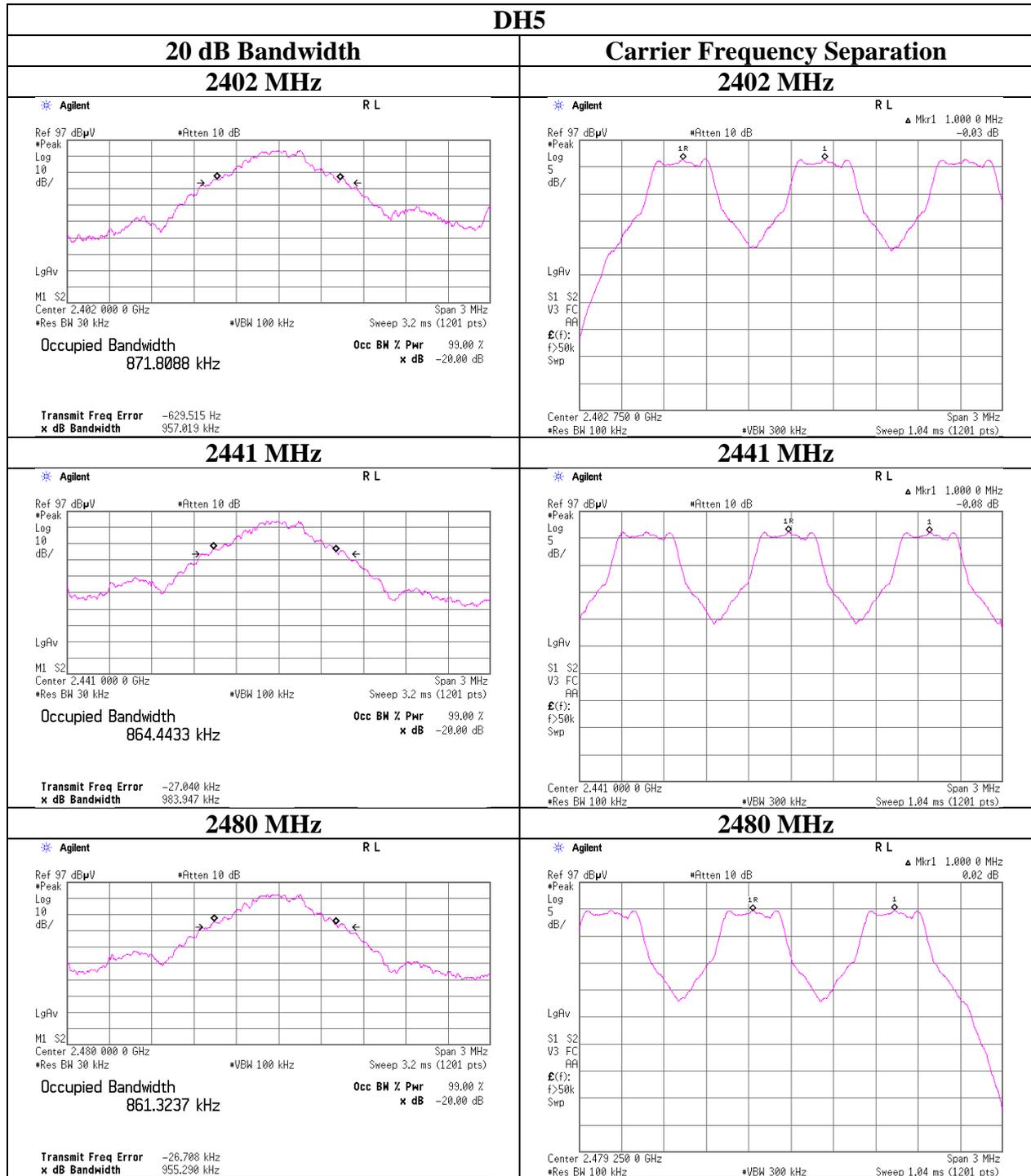
Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.

*3) Reference data

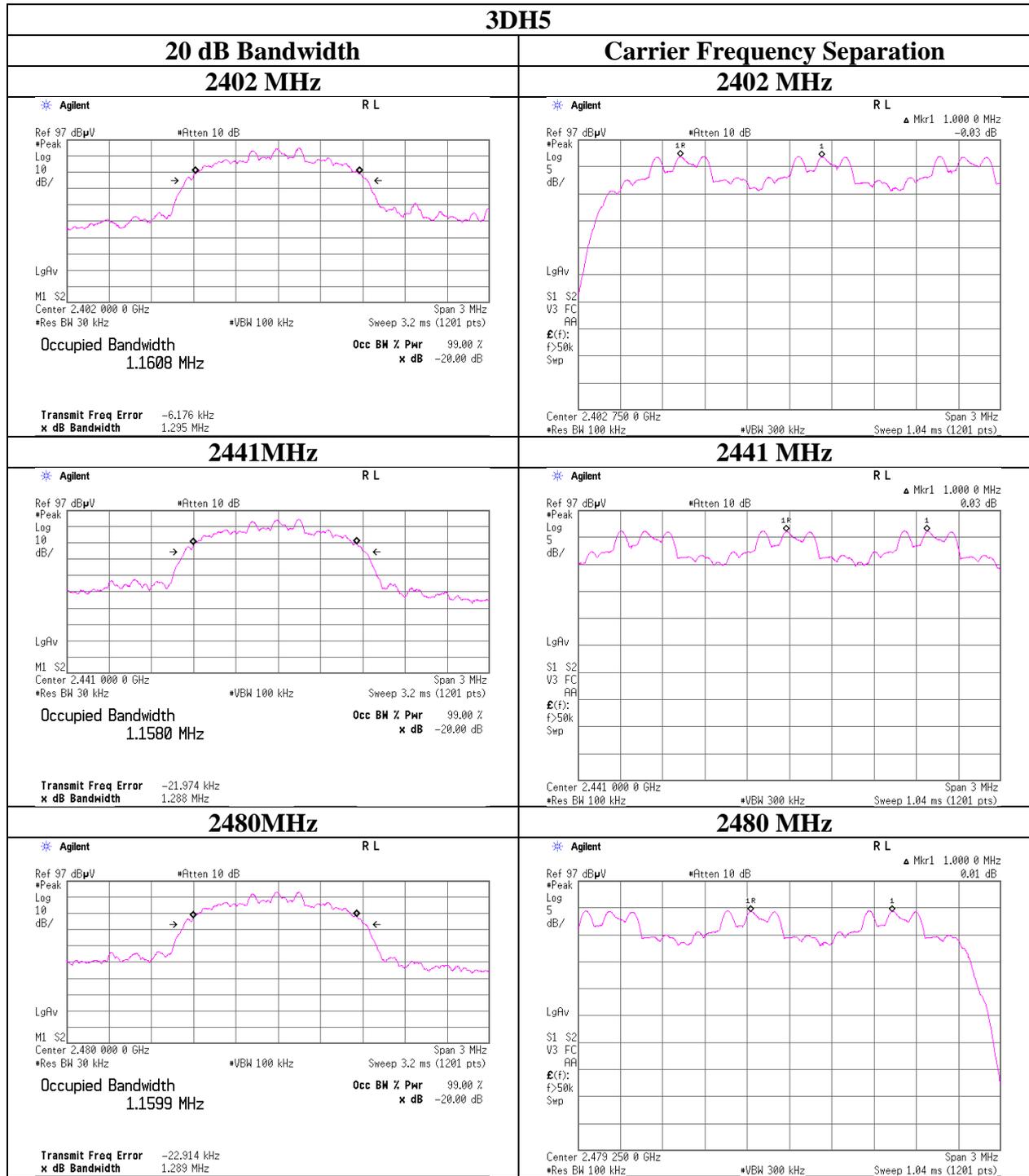
The test results and limit are rounded off to two decimals place, so some differences might be observed.

Test data : APPENDIX
Test result : Pass

20dB Bandwidth and Carrier Frequency Separation



20dB Bandwidth and Carrier Frequency Separation



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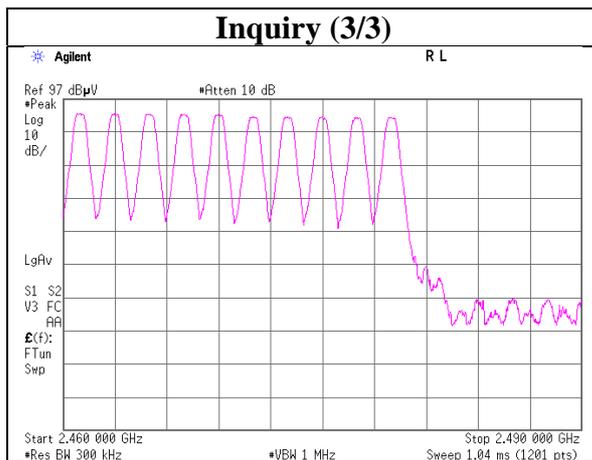
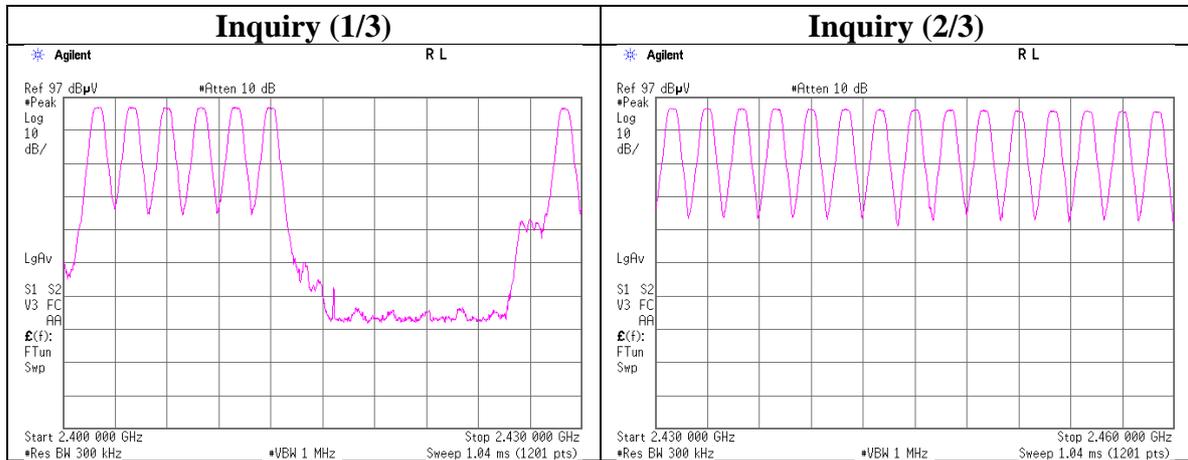
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Number of Hopping Frequency

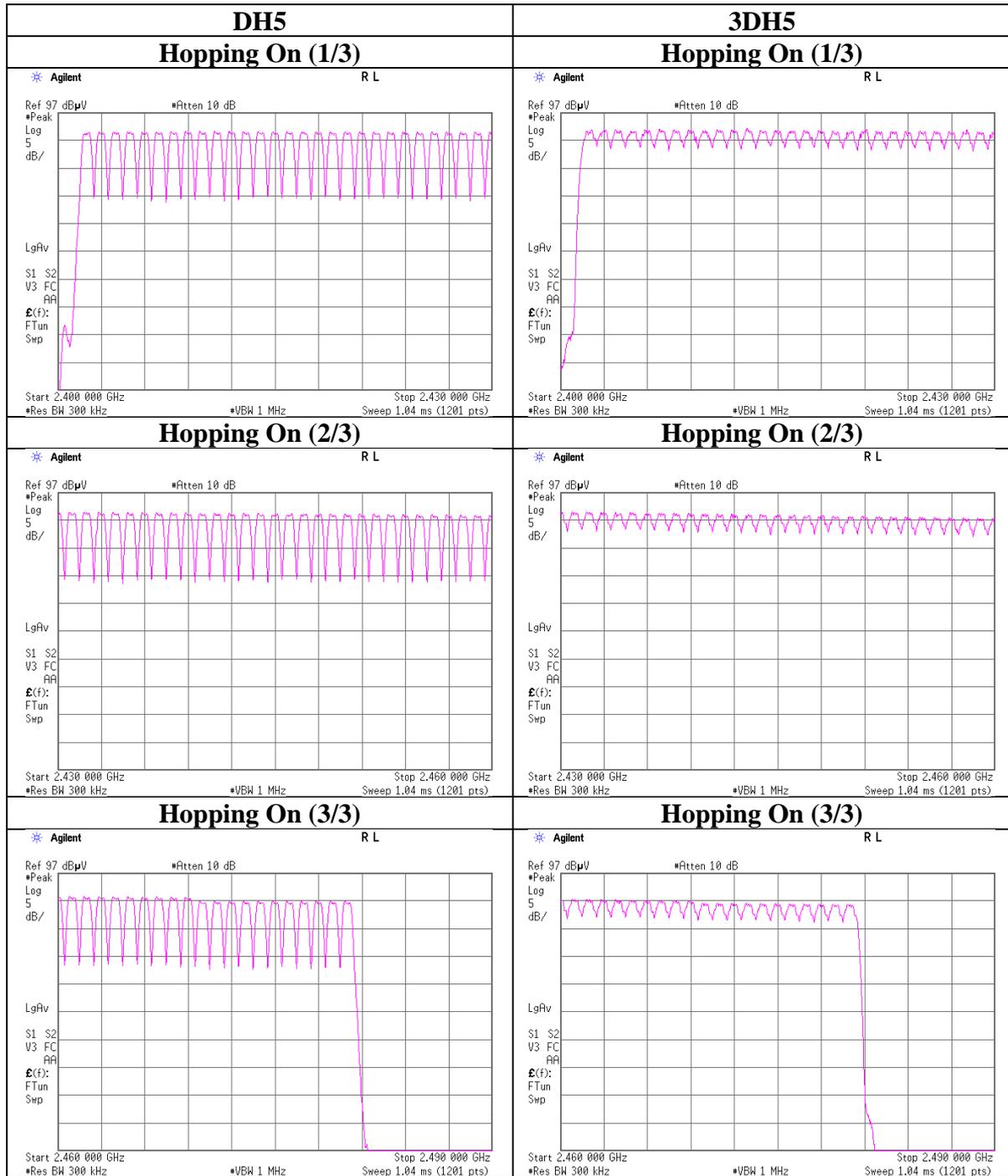
Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	10860279S-E
Date	July 5, 2015
Temperature / Humidity	24 deg. C / 63 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx, Hopping On

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

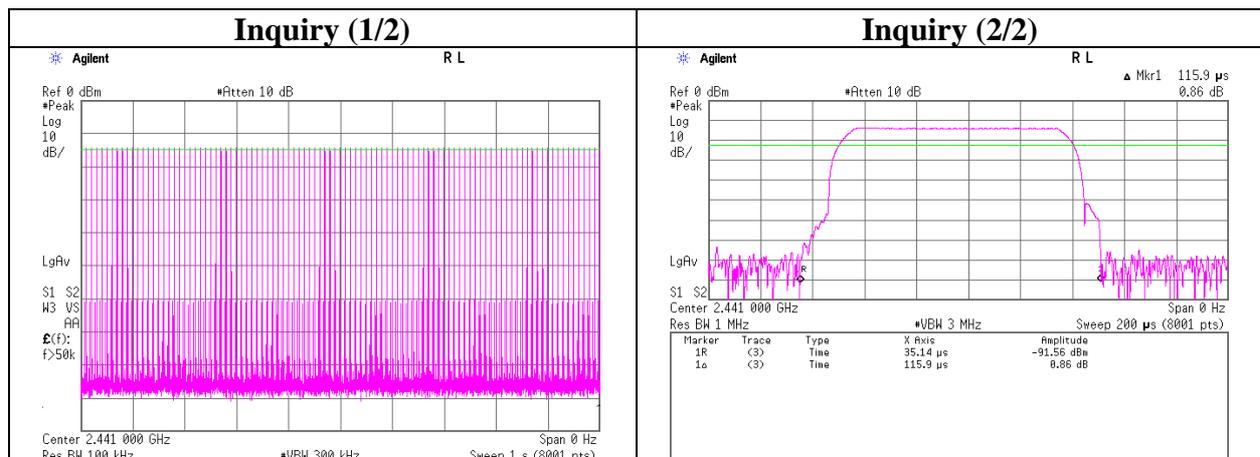
Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	10860279S-E
Date	July 5, 2015
Temperature / Humidity	24 deg. C / 63 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx, Hopping On

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	0.414	131	400
DH3	26.0 times / 5 sec. x 31.6 sec. = 165 times	1.676	277	400
DH5	17.0 times / 5 sec. x 31.6 sec. = 108 times	2.921	315	400
3DH1	50.0 times / 5 sec. x 31.6 sec. = 316 times	0.433	137	400
3DH3	26.0 times / 5 sec. x 31.6 sec. = 165 times	1.683	278	400
3DH5	17.0 times / 5 sec. x 31.6 sec. = 108 times	2.944	318	400
Inquiry	100.0 times / 1 sec. x 12.8 sec. = 1280 times	0.116	148	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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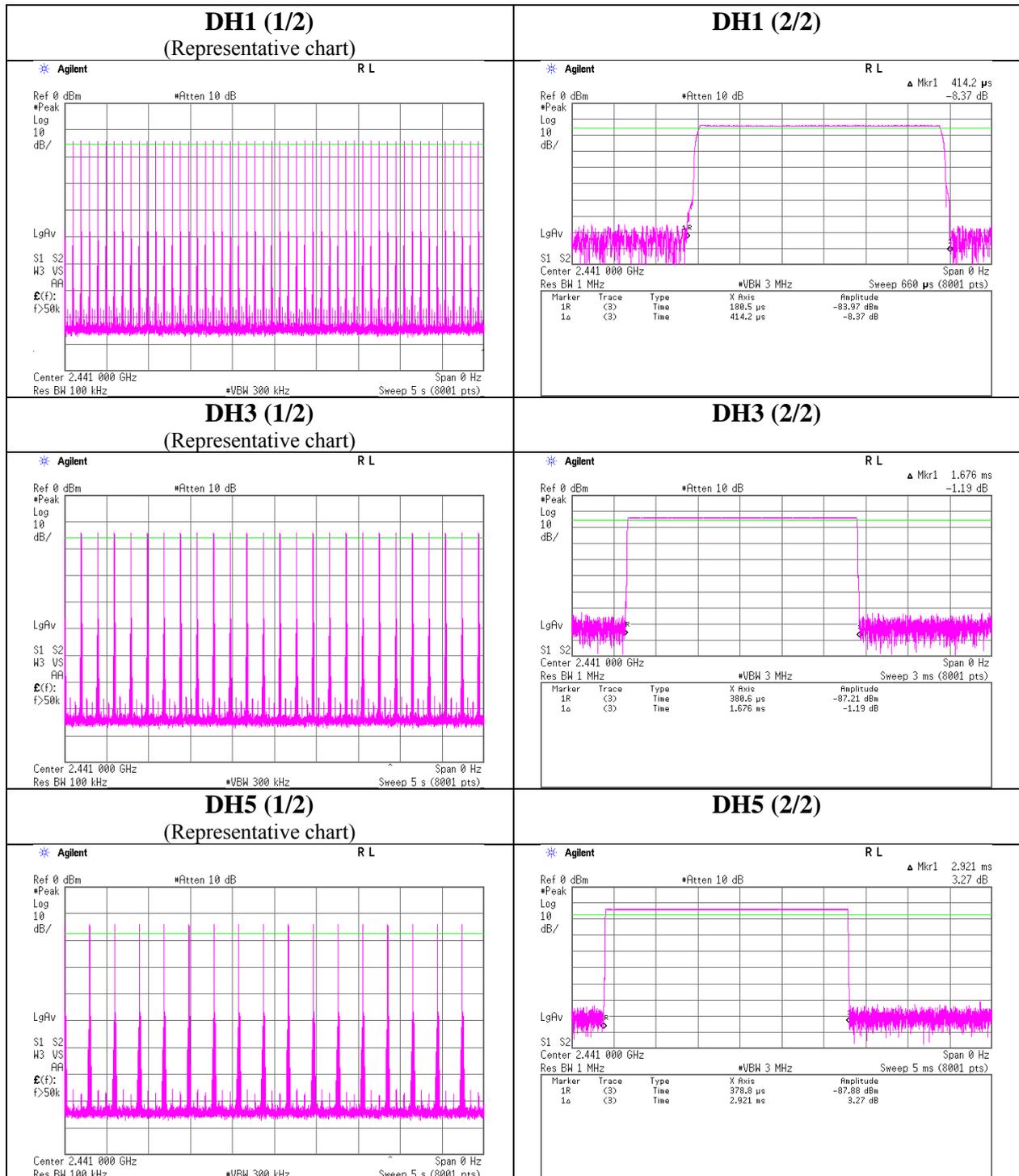
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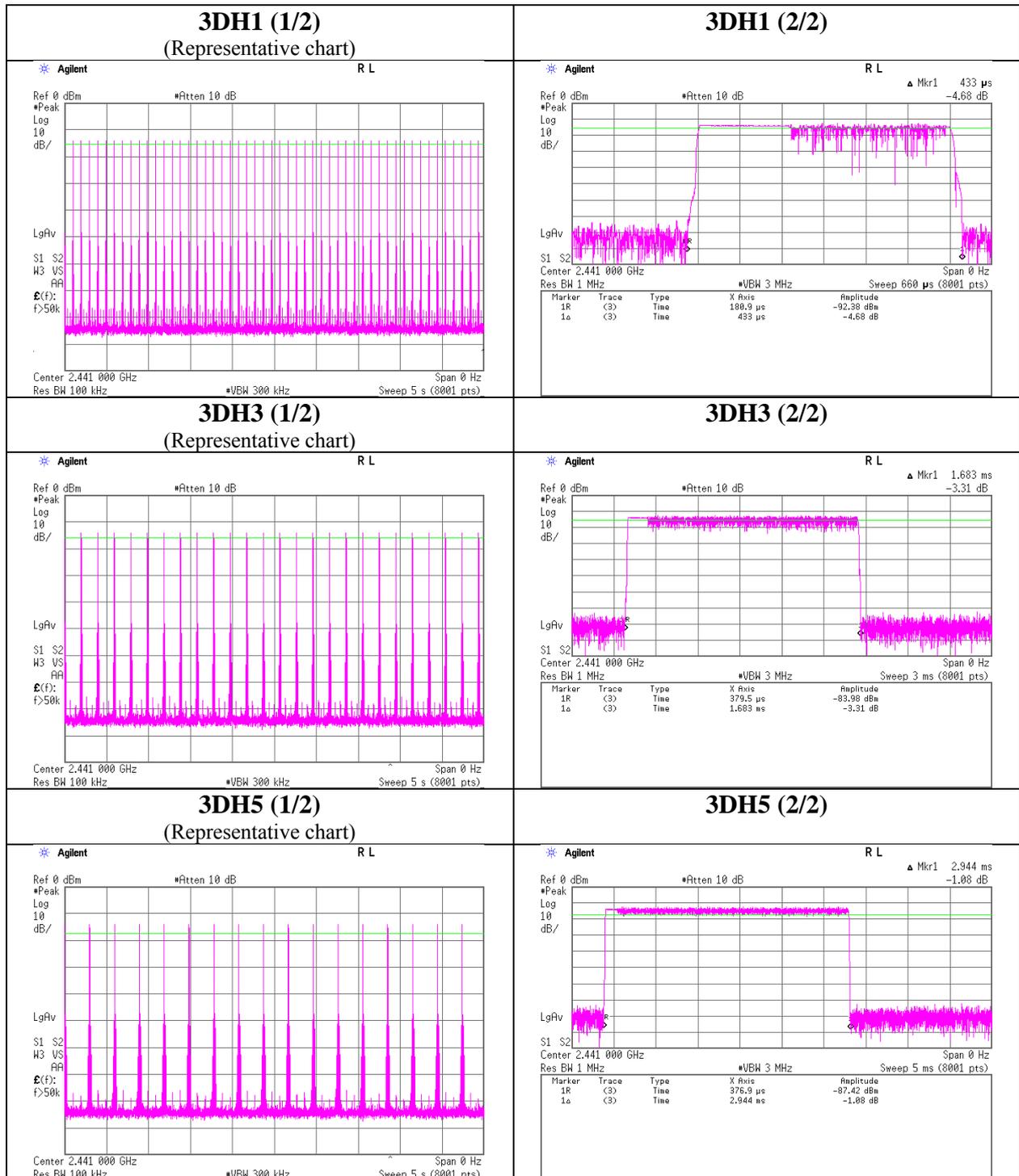
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Dwell time



Dwell time



Maximum Peak Output Power

Test place : Shonan EMC Lab. No.1 Measurement Room
Report No. : 10860279S-E
Date : July 5, 2015
Temperature / Humidity : 24 deg. C / 63 % RH
Engineer : Hiroyuki Morikawa
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	-12.86	1.93	9.93	-1.00	0.79	20.96	125	21.96
DH5	2441.0	-13.09	1.94	9.93	-1.22	0.76	20.96	125	22.18
DH5	2480.0	-14.17	1.96	9.93	-2.28	0.59	20.96	125	23.24
2DH5	2402.0	-11.86	1.93	9.93	0.00	1.00	20.96	125	20.96
2DH5	2441.0	-12.14	1.94	9.93	-0.27	0.94	20.96	125	21.23
2DH5	2480.0	-13.49	1.96	9.93	-1.60	0.69	20.96	125	22.56
3DH5	2402.0	-11.51	1.93	9.93	0.35	1.08	20.96	125	20.61
3DH5	2441.0	-11.79	1.94	9.93	0.08	1.02	20.96	125	20.88
3DH5	2480.0	-12.98	1.96	9.93	-1.09	0.78	20.96	125	22.05
Inquiry	2441.0	-12.88	1.94	9.93	-1.01	0.79	20.96	125	21.97

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.1 Measurement Room
Report No. 10860279S-E
Date July 5, 2015
Temperature / Humidity 24 deg. C / 63 % RH
Engineer Hiroyuki Morikawa
Mode Tx, Hopping Off

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Frame power)		Duty factor [dB]	Result (Burst power)	
					[dBm]	[mW]		[dBm]	[mW]
DH5	2402.0	-14.99	1.93	9.93	-3.13	0.49	1.07	-2.06	0.62
DH5	2441.0	-15.23	1.94	9.93	-3.36	0.46	1.07	-2.29	0.59
DH5	2480.0	-16.48	1.96	9.93	-4.59	0.35	1.07	-3.52	0.44
2DH5	2402.0	-15.96	1.93	9.93	-4.10	0.39	1.05	-3.05	0.50
2DH5	2441.0	-16.44	1.94	9.93	-4.57	0.35	1.05	-3.52	0.44
2DH5	2480.0	-17.78	1.96	9.93	-5.89	0.26	1.05	-4.84	0.33
3DH5	2402.0	-16.02	1.93	9.93	-4.16	0.38	1.05	-3.11	0.49
3DH5	2441.0	-16.49	1.94	9.93	-4.62	0.35	1.05	-3.57	0.44
3DH5	2480.0	-17.82	1.96	9.93	-5.93	0.26	1.05	-4.88	0.33

Sample Calculation:

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

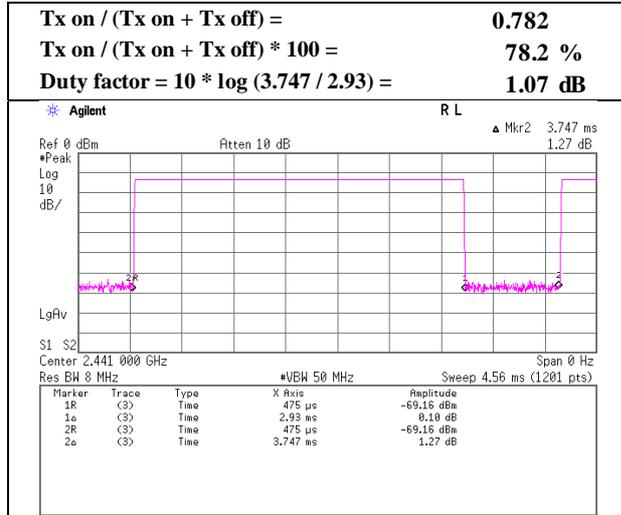
Result (Burst power) = Frame power + Duty factor

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

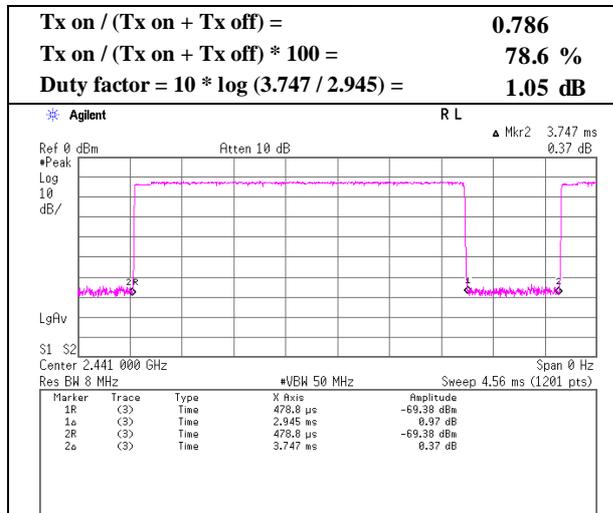
Burst Rate Confirmation

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	10860279S-E
Date	July 5, 2015
Temperature / Humidity	24 deg. C / 63 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx, Hopping Off

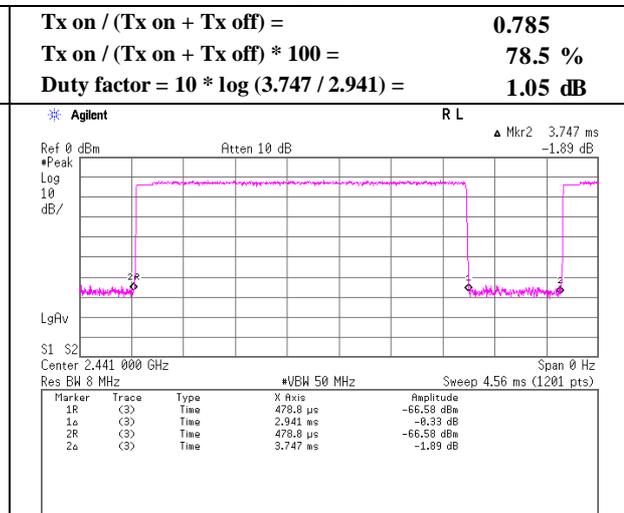
DH5



2DH5



3DH5



Radiated Spurious Emission

Test place : Shonan EMC Lab. No.1 and No.2 Semi Anechoic Chamber
Report No. : 10860279S-E
Date : August 12, 2015 August 17, 2015
Temperature / Humidity : 25 deg. C / 65 % RH 24 deg. C / 63 % RH
Engineer : Shinichi Takano Akira Sato
 (1-18GHz) (30-1GHz, 18-26.5GHz)
Mode : Tx, Hopping Off, DH5 2402 MHz

(* 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.	239.999	QP	46.6	16.8	8.9	31.7	0.0	40.6	46.0	5.4	143	91	
Hori.	270.339	QP	43.1	18.0	9.2	31.7	0.0	38.6	46.0	7.4	129	219	
Hori.	712.706	QP	42.8	20.4	8.8	31.5	0.0	40.5	46.0	5.5	130	352	
Hori.	719.996	QP	43.6	20.4	8.9	31.5	0.0	41.4	46.0	4.6	150	349	
Hori.	879.994	QP	37.4	22.1	9.6	30.9	0.0	38.2	46.0	7.8	100	353	
Hori.	2390.000	PK	46.3	27.8	14.8	40.7	0.7	48.9	73.9	25.0	100	273	
Hori.	4804.000	PK	48.6	31.7	7.4	41.7	0.7	46.7	73.9	27.2	100	276	
Hori.	7206.000	PK	48.1	36.9	9.0	41.2	0.7	53.5	73.9	20.4	100	0	
Hori.	9608.000	PK	46.4	39.1	9.9	40.1	0.7	56.0	73.9	17.9	100	0	
Hori.	12010.000	PK	46.0	40.0	11.1	39.4	0.7	58.4	73.9	15.5	100	0	
Hori.	2390.000	AV	33.5	27.8	14.8	40.7	0.7	36.1	53.9	17.8	100	273	
Hori.	4804.000	AV	36.0	31.7	7.4	41.7	0.7	34.1	53.9	19.8	100	276	
Hori.	7206.000	AV	34.2	36.9	9.0	41.2	0.7	39.6	53.9	14.3	100	0	
Hori.	9608.000	AV	33.7	39.1	9.9	40.1	0.7	43.3	53.9	10.6	100	0	
Hori.	12010.000	AV	33.0	40.0	11.1	39.4	0.7	45.4	53.9	8.5	100	0	
Vert.	712.704	QP	40.7	20.4	8.8	31.5	0.0	38.4	46.0	7.6	100	84	
Vert.	761.856	QP	36.3	20.5	9.1	31.4	0.0	34.5	46.0	11.5	138	198	
Vert.	909.312	QP	35.5	22.5	9.8	30.7	0.0	37.1	46.0	8.9	100	19	
Vert.	2390.000	PK	47.3	27.8	14.8	40.7	0.7	49.9	73.9	24.0	100	273	
Vert.	4804.000	PK	48.5	31.7	7.4	41.7	0.7	46.6	73.9	27.3	100	216	
Vert.	7206.000	PK	48.0	36.9	9.0	41.2	0.7	53.4	73.9	20.5	100	0	
Vert.	9608.000	PK	46.5	39.1	9.9	40.1	0.7	56.1	73.9	17.8	100	0	
Vert.	12010.000	PK	45.6	40.0	11.1	39.4	0.7	58.0	73.9	15.9	100	0	
Vert.	2390.000	AV	34.3	27.8	14.8	40.7	0.7	36.9	53.9	17.0	100	273	
Vert.	4804.000	AV	36.9	31.7	7.4	41.7	0.7	35.0	53.9	18.9	100	216	
Vert.	7206.000	AV	34.2	36.9	9.0	41.2	0.7	39.6	53.9	14.3	100	0	
Vert.	9608.000	AV	33.6	39.1	9.9	40.1	0.7	43.2	53.9	10.7	100	0	
Vert.	12010.000	AV	33.0	40.0	11.1	39.4	0.7	45.4	53.9	8.5	100	0	

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

Distance factor : 1 GHz - 15 GHz : 20log(3.3 m / 3.0 m) = 0.9 dB

15 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	86.9	27.8	14.8	40.7	0.7	89.5	-	-	Carrier
Hori.	2399.114	PK	37.4	27.8	14.8	40.7	0.7	40.0	69.5	29.5	
Hori.	2400.000	PK	39.3	27.8	14.8	40.7	0.7	41.9	69.5	27.6	
Vert.	2402.000	PK	89.2	27.8	14.8	40.7	0.7	91.8	-	-	Carrier
Vert.	2399.114	PK	38.9	27.8	14.8	40.7	0.7	41.5	71.8	30.3	
Vert.	2400.000	PK	40.3	27.8	14.8	40.7	0.7	42.9	71.8	28.9	

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

Distance factor : 1 GHz - 15 GHz : 20log(3.3 m / 3.0 m) = 0.9 dB

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

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Radiated Spurious Emission

Test place : Shonan EMC Lab. No.1 and No.2 Semi Anechoic Chamber
Report No. : 10860279S-E
Date : August 12, 2015 August 17, 2015
Temperature / Humidity : 25 deg. C / 65 % RH 24 deg. C / 63 % RH
Engineer : Shinichi Takano Akira Sato
 (1-18GHz) (30-1GHz, 18-26.5GHz)
Mode : Tx, Hopping Off, DH5 2441 MHz

(* 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.	239.998	QP	44.1	16.8	8.9	31.7	0.0	38.1	46.0	7.9	146	95	
Hori.	270.337	QP	40.7	18.0	9.2	31.7	0.0	36.2	46.0	9.8	126	349	
Hori.	399.999	QP	44.8	16.2	7.2	31.7	0.0	36.5	46.0	9.5	100	129	
Hori.	663.553	QP	38.5	19.9	8.6	31.5	0.0	35.5	46.0	10.5	144	172	
Hori.	712.707	QP	40.6	20.4	8.8	31.5	0.0	38.3	46.0	7.7	142	343	
Hori.	719.996	QP	42.5	20.4	8.9	31.5	0.0	40.3	46.0	5.7	144	340	
Hori.	879.995	QP	35.7	22.1	9.6	30.9	0.0	36.5	46.0	9.5	108	351	
Hori.	909.313	QP	36.1	22.5	9.8	30.7	0.0	37.7	46.0	8.3	163	242	
Hori.	4882.000	PK	49.4	31.9	7.4	41.6	0.7	47.8	73.9	26.1	100	278	
Hori.	7323.000	PK	47.4	37.0	8.9	41.3	0.7	52.7	73.9	21.2	100	0	
Hori.	9764.000	PK	46.4	39.2	9.9	40.1	0.7	56.1	73.9	17.8	100	0	
Hori.	12205.000	PK	46.3	40.0	11.2	39.2	0.7	59.0	73.9	14.9	100	0	
Hori.	4882.000	AV	36.9	31.9	7.4	41.6	0.7	35.3	53.9	18.6	100	278	
Hori.	7323.000	AV	34.9	37.0	8.9	41.3	0.7	40.2	53.9	13.7	100	0	
Hori.	9764.000	AV	33.6	39.2	9.9	40.1	0.7	43.3	53.9	10.6	100	0	
Hori.	12205.000	AV	33.7	40.0	11.2	39.2	0.7	46.4	53.9	7.5	100	0	
Vert.	239.998	QP	40.3	16.8	8.9	31.7	0.0	34.3	46.0	11.7	119	151	
Vert.	719.995	QP	41.4	20.4	8.9	31.5	0.0	39.2	46.0	6.8	200	1	
Vert.	4882.000	PK	49.8	31.9	7.4	41.6	0.7	48.2	73.9	25.7	100	340	
Vert.	7323.000	PK	47.9	37.0	8.9	41.3	0.7	53.2	73.9	20.7	100	0	
Vert.	9764.000	PK	46.7	39.2	9.9	40.1	0.7	56.4	73.9	17.5	100	0	
Vert.	12205.000	PK	46.8	40.0	11.2	39.2	0.7	59.5	73.9	14.4	100	0	
Vert.	4882.000	AV	38.0	31.9	7.4	41.6	0.7	36.4	53.9	17.5	100	340	
Vert.	7323.000	AV	34.9	37.0	8.9	41.3	0.7	40.2	53.9	13.7	100	0	
Vert.	9764.000	AV	33.6	39.2	9.9	40.1	0.7	43.3	53.9	10.6	100	0	
Vert.	12205.000	AV	33.7	40.0	11.2	39.2	0.7	46.4	53.9	7.5	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 15 GHz : 20log(3.3 m / 3.0 m) = 0.9 dB
15 GHz - 40 GHz : 20log(1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place : Shonan EMC Lab. No.1 and No.2 Semi Anechoic Chamber
Report No. : 10860279S-E
Date : August 12, 2015 August 17, 2015
Temperature / Humidity : 25 deg. C / 65 % RH 24 deg. C / 63 % RH
Engineer : Shinichi Takano Akira Sato
 (1-18GHz) (30-1GHz, 18-26.5GHz)
Mode : Tx, Hopping Off, DH5 2480 MHz

(* 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.	240.000	QP	44.1	16.8	8.9	31.7	0.0	38.1	46.0	7.9	140	109	
Hori.	270.337	QP	40.7	18.0	9.2	31.7	0.0	36.2	46.0	9.8	123	349	
Hori.	399.997	QP	44.6	16.2	7.2	31.7	0.0	36.3	46.0	9.7	100	131	
Hori.	712.709	QP	40.5	20.4	8.8	31.5	0.0	38.2	46.0	7.8	150	343	
Hori.	719.995	QP	42.4	20.4	8.9	31.5	0.0	40.2	46.0	5.8	136	342	
Hori.	879.997	QP	36.2	22.1	9.6	30.9	0.0	37.0	46.0	9.0	110	356	
Hori.	2483.500	PK	47.3	27.9	14.9	40.7	0.7	50.1	73.9	23.8	100	275	
Hori.	2485.083	PK	46.8	27.9	14.9	40.7	0.7	49.6	73.9	24.3	100	275	
Hori.	2486.233	PK	47.4	27.9	14.9	40.7	0.7	50.2	73.9	23.7	100	275	
Hori.	4960.000	PK	49.4	32.2	7.5	41.6	0.7	48.2	73.9	25.7	100	185	
Hori.	7440.000	PK	47.0	37.1	8.9	41.3	0.7	52.4	73.9	21.5	100	0	
Hori.	9920.000	PK	46.1	39.2	10.0	40.0	0.7	56.0	73.9	17.9	100	0	
Hori.	12400.000	PK	45.9	40.1	11.3	39.0	0.7	59.0	73.9	14.9	100	0	
Hori.	2483.500	AV	33.9	27.9	14.9	40.7	0.7	36.7	53.9	17.2	100	275	
Hori.	2485.083	AV	33.8	27.9	14.9	40.7	0.7	36.6	53.9	17.3	100	275	
Hori.	2486.233	AV	33.7	27.9	14.9	40.7	0.7	36.5	53.9	17.4	100	275	
Hori.	4960.000	AV	37.4	32.2	7.5	41.6	0.7	36.2	53.9	17.7	100	185	
Hori.	7440.000	AV	34.7	37.1	8.9	41.3	0.7	40.1	53.9	13.8	100	0	
Hori.	9920.000	AV	33.5	39.2	10.0	40.0	0.7	43.4	53.9	10.5	100	0	
Hori.	12400.000	AV	32.8	40.1	11.3	39.0	0.7	45.9	53.9	8.0	100	0	
Vert.	240.001	QP	40.2	16.8	8.9	31.7	0.0	34.2	46.0	11.8	112	155	
Vert.	719.994	QP	41.1	20.4	8.9	31.5	0.0	38.9	46.0	7.1	100	358	
Vert.	909.317	QP	35.3	22.5	9.8	30.7	0.0	36.9	46.0	9.1	100	213	
Vert.	2483.500	PK	46.6	27.9	14.9	40.7	0.7	49.4	73.9	24.5	100	43	
Vert.	2485.083	PK	46.2	27.9	14.9	40.7	0.7	49.0	73.9	24.9	100	43	
Vert.	2486.233	PK	46.3	27.9	14.9	40.7	0.7	49.1	73.9	24.8	100	43	
Vert.	4960.000	PK	49.9	32.2	7.5	41.6	0.7	48.7	73.9	25.2	100	342	
Vert.	7440.000	PK	47.6	37.1	8.9	41.3	0.7	53.0	73.9	20.9	100	0	
Vert.	9920.000	PK	47.4	39.2	10.0	40.0	0.7	57.3	73.9	16.6	100	0	
Vert.	12400.000	PK	45.2	40.1	11.3	39.0	0.7	58.3	73.9	15.6	100	0	
Vert.	2483.500	AV	34.1	27.9	14.9	40.7	0.7	36.9	53.9	17.0	100	43	
Vert.	2485.083	AV	33.9	27.9	14.9	40.7	0.7	36.7	53.9	17.2	100	43	
Vert.	2486.233	AV	33.8	27.9	14.9	40.7	0.7	36.6	53.9	17.3	100	43	
Vert.	4960.000	AV	39.3	32.2	7.5	41.6	0.7	38.1	53.9	15.8	100	342	
Vert.	7440.000	AV	34.7	37.1	8.9	41.3	0.7	40.1	53.9	13.8	100	0	
Vert.	9920.000	AV	33.5	39.2	10.0	40.0	0.7	43.4	53.9	10.5	100	0	
Vert.	12400.000	AV	32.8	40.1	11.3	39.0	0.7	45.9	53.9	8.0	100	0	

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

Distance factor : 1 GHz - 15 GHz : 20log(3.3 m / 3.0 m) = 0.9 dB

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

Radiated Spurious Emission

Test place : Shonan EMC Lab. No.1 and No.2 Semi Anechoic Chamber
Report No. : 10860279S-E
Date : August 12, 2015 August 17, 2015
Temperature / Humidity : 25 deg. C / 65 % RH 24 deg. C / 63 % RH
Engineer : Shinichi Takano Akira Sato
 (1-18GHz) (30-1GHz, 18-26.5GHz)
Mode : Tx, Hopping Off, 3DH5 2402 MHz

(* 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.	240.000	QP	44.2	16.8	8.9	31.7	0.0	38.2	46.0	7.8	142	107	
Hori.	270.336	QP	40.8	18.0	9.2	31.7	0.0	36.3	46.0	9.7	122	345	
Hori.	399.995	QP	44.4	16.2	7.2	31.7	0.0	36.1	46.0	9.9	100	133	
Hori.	712.706	QP	40.2	20.4	8.8	31.5	0.0	37.9	46.0	8.1	150	344	
Hori.	719.995	QP	42.3	20.4	8.9	31.5	0.0	40.1	46.0	5.9	139	343	
Hori.	879.994	QP	35.8	22.1	9.6	30.9	0.0	36.6	46.0	9.4	119	359	
Hori.	909.313	QP	34.2	22.5	9.8	30.7	0.0	35.8	46.0	10.2	162	248	
Hori.	2390.000	PK	46.2	27.8	14.8	40.7	0.7	48.8	73.9	25.1	100	274	
Hori.	4804.000	PK	48.1	31.7	7.4	41.7	0.7	46.2	73.9	27.7	100	273	
Hori.	7206.000	PK	46.8	36.9	9.0	41.2	0.7	52.2	73.9	21.7	100	0	
Hori.	9608.000	PK	45.9	39.1	9.9	40.1	0.7	55.5	73.9	18.4	100	0	
Hori.	12010.000	PK	45.6	40.0	11.1	39.4	0.7	58.0	73.9	15.9	100	0	
Hori.	2390.000	AV	32.7	27.8	14.8	40.7	0.7	35.3	53.9	18.6	100	274	
Hori.	4804.000	AV	35.3	31.7	7.4	41.7	0.7	33.4	53.9	20.5	100	273	
Hori.	7206.000	AV	34.3	36.9	9.0	41.2	0.7	39.7	53.9	14.2	100	0	
Hori.	9608.000	AV	33.5	39.1	9.9	40.1	0.7	43.1	53.9	10.8	100	0	
Hori.	12010.000	AV	33.0	40.0	11.1	39.4	0.7	45.4	53.9	8.5	100	0	
Vert.	719.999	QP	41.2	20.4	8.9	31.5	0.0	39.0	46.0	7.0	100	1	
Vert.	909.314	QP	35.4	22.5	9.8	30.7	0.0	37.0	46.0	9.0	100	215	
Vert.	2390.000	PK	45.3	27.8	14.8	40.7	0.7	47.9	73.9	26.0	100	345	
Vert.	4804.000	PK	48.4	31.7	7.4	41.7	0.7	46.5	73.9	27.4	100	306	
Vert.	7206.000	PK	47.0	36.9	9.0	41.2	0.7	52.4	73.9	21.5	100	0	
Vert.	9608.000	PK	46.8	39.1	9.9	40.1	0.7	56.4	73.9	17.5	100	0	
Vert.	12010.000	PK	45.6	40.0	11.1	39.4	0.7	58.0	73.9	15.9	100	0	
Vert.	2390.000	AV	33.1	27.8	14.8	40.7	0.7	35.7	53.9	18.2	100	345	
Vert.	4804.000	AV	35.6	31.7	7.4	41.7	0.7	33.7	53.9	20.2	100	306	
Vert.	7206.000	AV	34.2	36.9	9.0	41.2	0.7	39.6	53.9	14.3	100	0	
Vert.	9608.000	AV	33.7	39.1	9.9	40.1	0.7	43.3	53.9	10.6	100	0	
Vert.	12010.000	AV	33.0	40.0	11.1	39.4	0.7	45.4	53.9	8.5	100	0	

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

Distance factor : 1 GHz - 15 GHz : $20\log(3.3\text{ m} / 3.0\text{ m}) = 0.9\text{ dB}$

15 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

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	86.8	27.8	14.8	40.7	0.7	89.4	-	-	Carrier
Hori.	2399.842	PK	36.8	27.8	14.8	40.7	0.7	39.4	69.4	30.0	
Hori.	2400.000	PK	38.1	27.8	14.8	40.7	0.7	40.7	69.4	28.7	
Vert.	2402.000	PK	89.7	27.8	14.8	40.7	0.7	92.3	-	-	Carrier
Vert.	2399.842	PK	37.7	27.8	14.8	40.7	0.7	40.3	72.3	32.0	
Vert.	2400.000	PK	40.9	27.8	14.8	40.7	0.7	43.5	72.3	28.8	

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

Distance factor : 1 GHz - 15 GHz : $20\log(3.3\text{ m} / 3.0\text{ m}) = 0.9\text{ dB}$

15 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

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Radiated Spurious Emission

Test place : Shonan EMC Lab. No.1 and No.2 Semi Anechoic Chamber
Report No. : 10860279S-E
Date : August 12, 2015 August 17, 2015
Temperature / Humidity : 25 deg. C / 65 % RH 24 deg. C / 63 % RH
Engineer : Shinichi Takano Akira Sato
 (1-18GHz) (30-1GHz, 18-26.5GHz)
Mode : Tx, Hopping Off, 3DH5 2441 MHz

(* 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.	240.000	QP	44.0	16.8	8.9	31.7	0.0	38.0	46.0	8.0	146	97	
Hori.	270.337	QP	40.0	18.0	9.2	31.7	0.0	35.5	46.0	10.5	119	348	
Hori.	399.999	QP	43.1	16.2	7.2	31.7	0.0	34.8	46.0	11.2	100	130	
Hori.	712.702	QP	39.2	20.4	8.8	31.5	0.0	36.9	46.0	9.1	154	347	
Hori.	719.996	QP	40.8	20.4	8.9	31.5	0.0	38.6	46.0	7.4	151	351	
Hori.	879.993	QP	36.0	22.1	9.6	30.9	0.0	36.8	46.0	9.2	102	354	
Hori.	4882.000	PK	47.8	31.9	7.4	41.6	0.7	46.2	73.9	27.7	100	274	
Hori.	7323.000	PK	47.4	37.0	8.9	41.3	0.7	52.7	73.9	21.2	100	0	
Hori.	9764.000	PK	46.1	39.2	9.9	40.1	0.7	55.8	73.9	18.1	100	0	
Hori.	12205.000	PK	46.2	40.0	11.2	39.2	0.7	58.9	73.9	15.0	100	0	
Hori.	4882.000	AV	35.4	31.9	7.4	41.6	0.7	33.8	53.9	20.1	100	274	
Hori.	7323.000	AV	34.8	37.0	8.9	41.3	0.7	40.1	53.9	13.8	100	0	
Hori.	9764.000	AV	33.6	39.2	9.9	40.1	0.7	43.3	53.9	10.6	100	0	
Hori.	12205.000	AV	33.7	40.0	11.2	39.2	0.7	46.4	53.9	7.5	100	0	
Vert.	719.995	QP	40.5	20.4	8.9	31.5	0.0	38.3	46.0	7.7	190	1	
Vert.	909.320	QP	33.9	22.5	9.8	30.7	0.0	35.5	46.0	10.5	176	231	
Vert.	4882.000	PK	48.9	31.9	7.4	41.6	0.7	47.3	73.9	26.6	100	341	
Vert.	7323.000	PK	47.9	37.0	8.9	41.3	0.7	53.2	73.9	20.7	100	0	
Vert.	9764.000	PK	46.0	39.2	9.9	40.1	0.7	55.7	73.9	18.2	100	0	
Vert.	12205.000	PK	46.6	40.0	11.2	39.2	0.7	59.3	73.9	14.6	100	0	
Vert.	4882.000	AV	36.2	31.9	7.4	41.6	0.7	34.6	53.9	19.3	100	341	
Vert.	7323.000	AV	34.8	37.0	8.9	41.3	0.7	40.1	53.9	13.8	100	0	
Vert.	9764.000	AV	33.5	39.2	9.9	40.1	0.7	43.2	53.9	10.7	100	0	
Vert.	12205.000	AV	33.7	40.0	11.2	39.2	0.7	46.4	53.9	7.5	100	0	
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor													
Distance factor : 1 GHz - 15 GHz : 20log(3.3 m / 3.0 m) = 0.9 dB													
15 GHz - 40 GHz : 20log(1.0 m / 3.0 m) = -9.5 dB													

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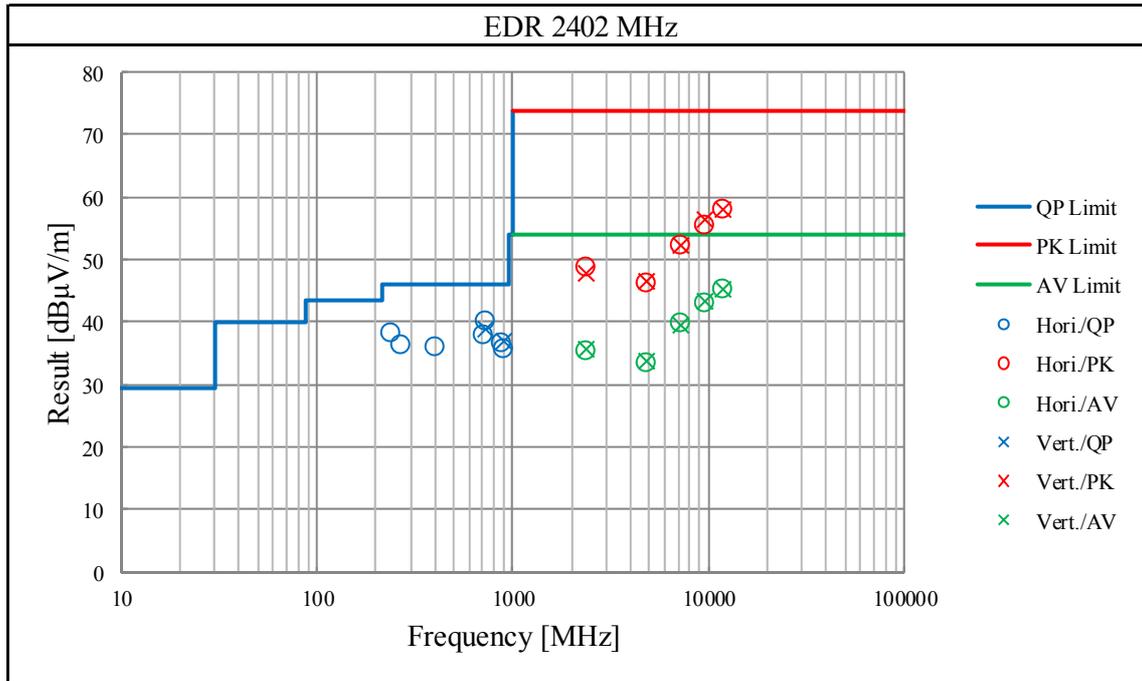
Radiated Spurious Emission

Test place : Shonan EMC Lab. No.1 and No.2 Semi Anechoic Chamber
Report No. : 10860279S-E
Date : August 12, 2015 August 17, 2015
Temperature / Humidity : 25 deg. C / 65 % RH 24 deg. C / 63 % RH
Engineer : Shinichi Takano Akira Sato
 (1-18GHz) (30-1GHz, 18-26.5GHz)
Mode : Tx, Hopping Off, 3DH5 2480 MHz

(* 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.	240.000	QP	44.1	16.8	8.9	31.7	0.0	38.1	46.0	7.9	139	109	
Hori.	270.337	QP	41.8	18.0	9.2	31.7	0.0	37.3	46.0	8.7	128	209	
Hori.	399.998	QP	43.6	16.2	7.2	31.7	0.0	35.3	46.0	10.7	100	132	
Hori.	712.706	QP	39.8	20.4	8.8	31.5	0.0	37.5	46.0	8.5	137	343	
Hori.	719.996	QP	42.3	20.4	8.9	31.5	0.0	40.1	46.0	5.9	138	345	
Hori.	909.312	QP	34.9	22.5	9.8	30.7	0.0	36.5	46.0	9.5	157	239	
Hori.	2483.500	PK	45.9	27.9	14.9	40.7	0.7	48.7	73.9	25.2	100	276	
Hori.	2486.392	PK	45.5	27.9	14.9	40.7	0.7	48.3	73.9	25.6	100	276	
Hori.	4960.000	PK	50.0	32.2	7.5	41.6	0.7	48.8	73.9	25.1	100	201	
Hori.	7440.000	PK	49.4	37.1	8.9	41.3	0.7	54.8	73.9	19.1	100	0	
Hori.	9920.000	PK	48.5	39.2	10.0	40.0	0.7	58.4	73.9	15.5	100	0	
Hori.	12400.000	PK	47.8	40.1	11.3	39.0	0.7	60.9	73.9	13.0	100	0	
Hori.	2483.500	AV	33.5	27.9	14.9	40.7	0.7	36.3	53.9	17.6	100	276	
Hori.	2486.392	AV	33.5	27.9	14.9	40.7	0.7	36.3	53.9	17.6	100	276	
Hori.	4960.000	AV	36.0	32.2	7.5	41.6	0.7	34.8	53.9	19.1	100	201	
Hori.	7440.000	AV	35.1	37.1	8.9	41.3	0.7	40.5	53.9	13.4	100	0	
Hori.	9920.000	AV	33.8	39.2	10.0	40.0	0.7	43.7	53.9	10.2	100	0	
Hori.	12400.000	AV	33.1	40.1	11.3	39.0	0.7	46.2	53.9	7.7	100	0	
Vert.	719.997	QP	40.3	20.4	8.9	31.5	0.0	38.1	46.0	7.9	199	0	
Vert.	879.996	QP	34.1	22.1	9.6	30.9	0.0	34.9	46.0	11.1	100	207	
Vert.	2483.500	PK	46.6	27.9	14.9	40.7	0.7	49.4	73.9	24.5	100	48	
Vert.	2486.392	PK	47.2	27.9	14.9	40.7	0.7	50.0	73.9	23.9	100	48	
Vert.	4960.000	PK	50.8	32.2	7.5	41.6	0.7	49.6	73.9	24.3	100	342	
Vert.	7440.000	PK	49.2	37.1	8.9	41.3	0.7	54.6	73.9	19.3	100	0	
Vert.	9920.000	PK	48.2	39.2	10.0	40.0	0.7	58.1	73.9	15.8	100	0	
Vert.	12400.000	PK	47.1	40.1	11.3	39.0	0.7	60.2	73.9	13.7	100	0	
Vert.	2483.500	AV	33.5	27.9	14.9	40.7	0.7	36.3	53.9	17.6	100	48	
Vert.	2486.392	AV	33.4	27.9	14.9	40.7	0.7	36.2	53.9	17.7	100	48	
Vert.	4960.000	AV	36.6	32.2	7.5	41.6	0.7	35.4	53.9	18.5	100	342	
Vert.	7440.000	AV	35.1	37.1	8.9	41.3	0.7	40.5	53.9	13.4	100	0	
Vert.	9920.000	AV	33.8	39.2	10.0	40.0	0.7	43.7	53.9	10.2	100	0	
Vert.	12400.000	AV	33.1	40.1	11.3	39.0	0.7	46.2	53.9	7.7	100	0	
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor													
Distance factor : 1 GHz - 15 GHz : 20log(3.3 m / 3.0 m) = 0.9 dB													
15 GHz - 40 GHz : 20log(1.0 m / 3.0 m) = -9.5 dB													

Radiated Spurious Emission
(Plot data, Worst case)

Test place	Shonan EMC Lab. No.1 and No.2 Semi Anechoic Chamber		
Report No.	10860279S-E		
Date	August 12, 2015	August 17, 2015	
Temperature / Humidity	25 deg. C / 65 % RH	24 deg. C / 63 % RH	
Engineer	Shinichi Takano	Akira Sato	
	(1-18GHz)	(30-1GHz, 18-26.5GHz)	
Mode	Tx, Hopping Off, 3DH5 2402 MHz		

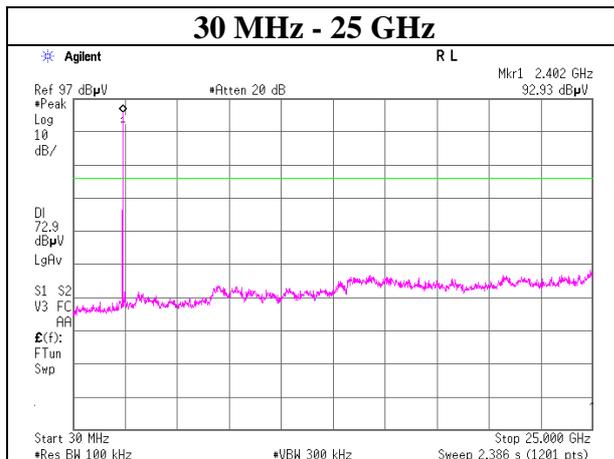
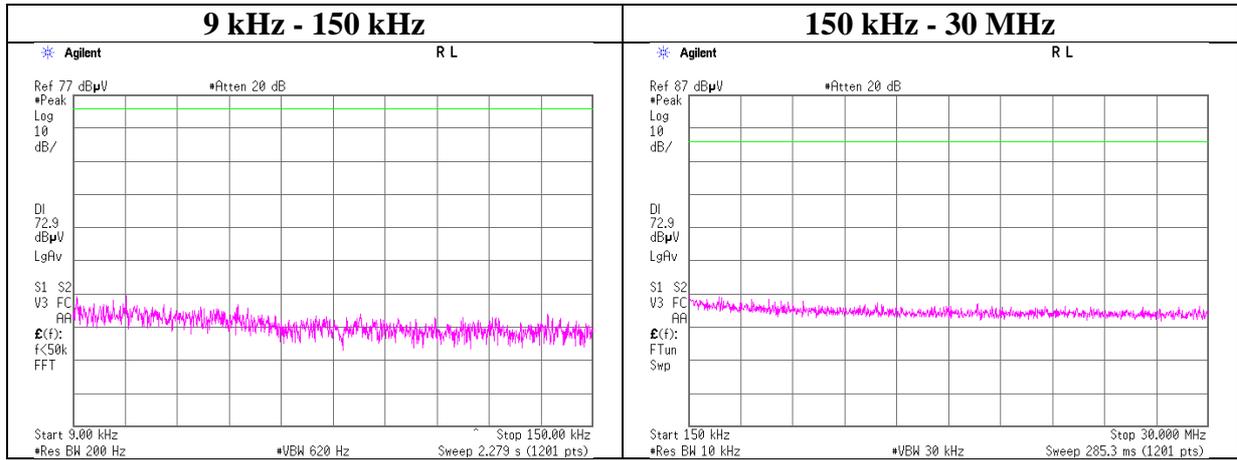


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

Conducted Spurious Emission

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	10860279S-E
Date	July 5, 2015
Temperature / Humidity	24 deg. C / 63 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx, Hopping Off, DH5

2402 MHz



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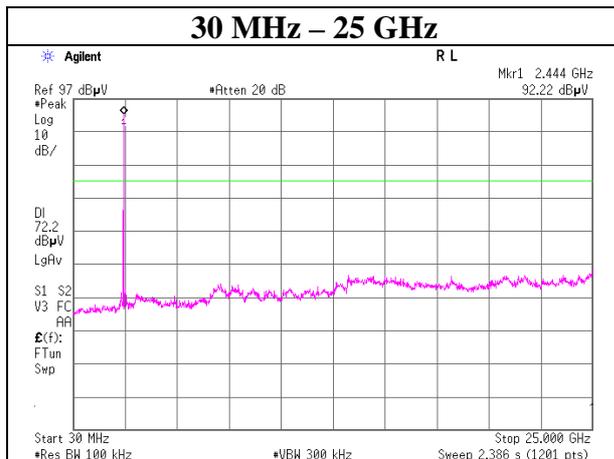
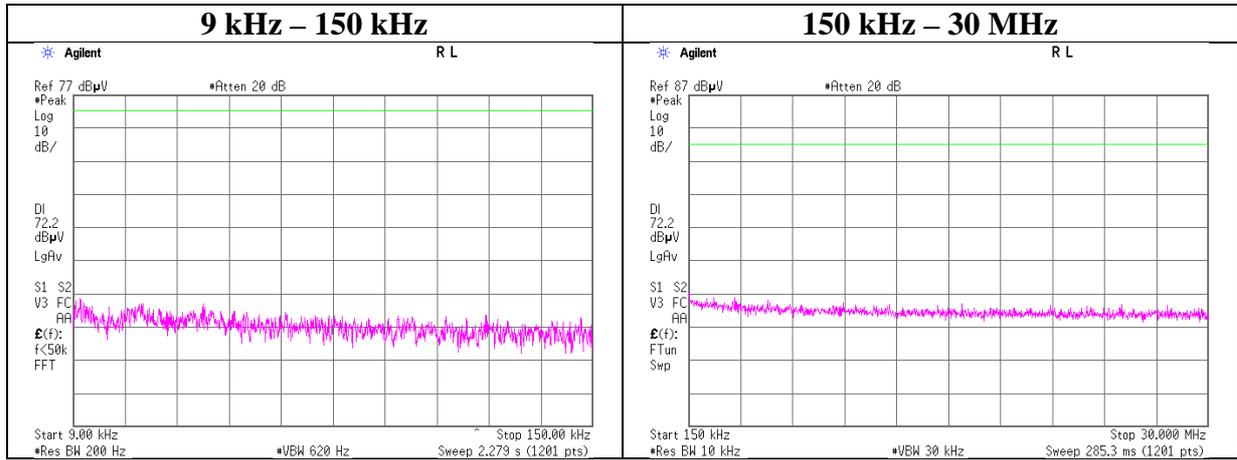
Telephone : +81 463 50 6400

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Conducted Spurious Emission

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	10860279S-E
Date	July 5, 2015
Temperature / Humidity	24 deg. C / 63 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx, Hopping Off, DH5

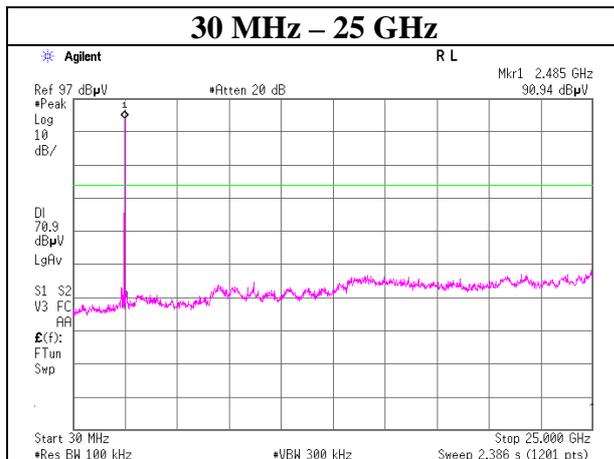
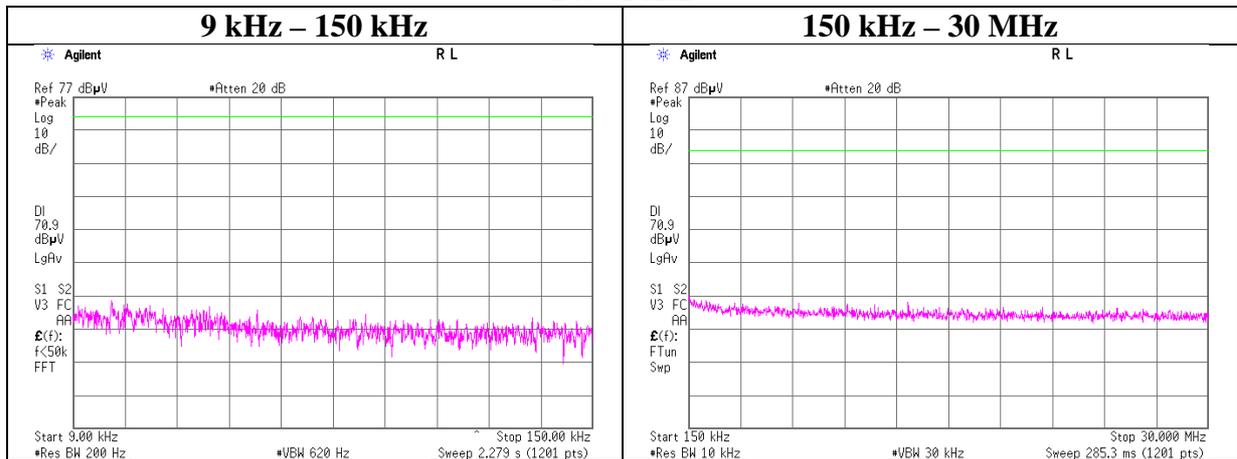
2441 MHz



Conducted Spurious Emission

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	10860279S-E
Date	July 5, 2015
Temperature / Humidity	24 deg. C / 63 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx, Hopping Off, DH5

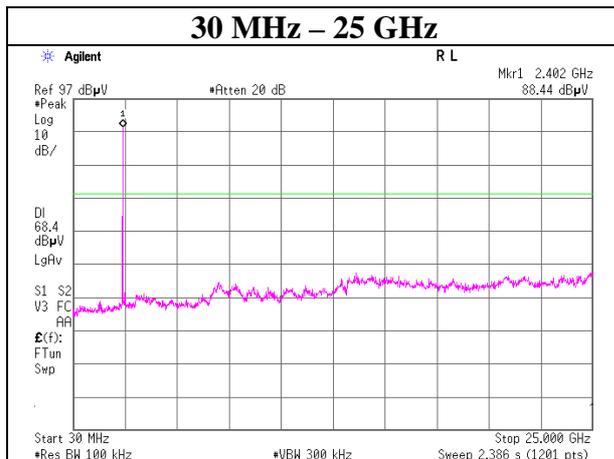
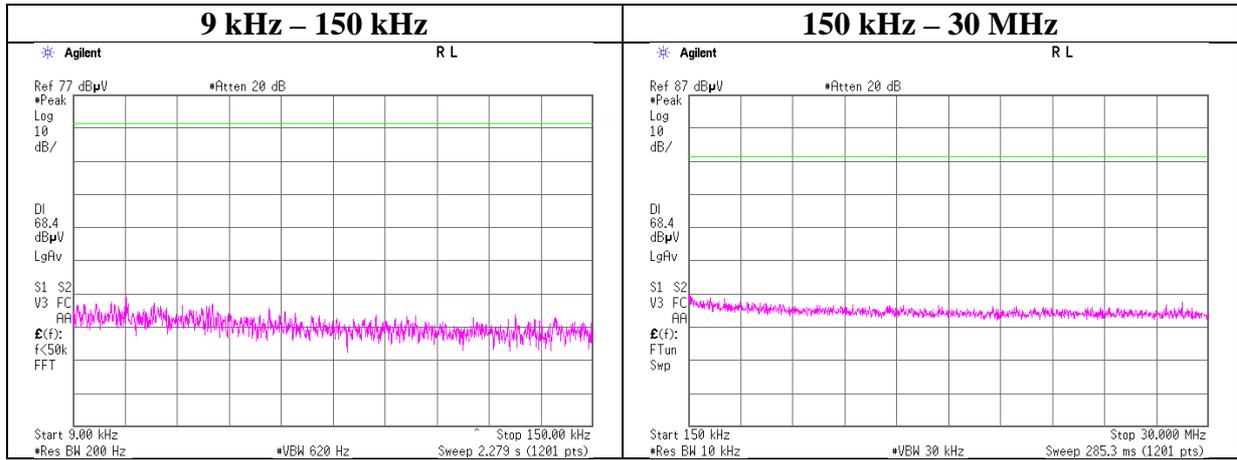
2480 MHz



Conducted Spurious Emission

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	10860279S-E
Date	July 5, 2015
Temperature / Humidity	24 deg. C / 63 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx, Hopping Off, 3DH5

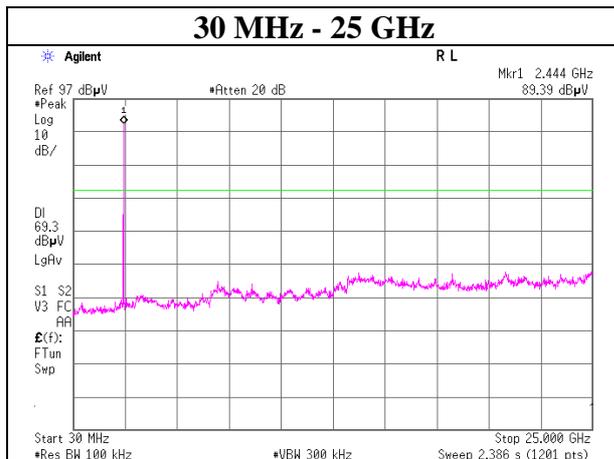
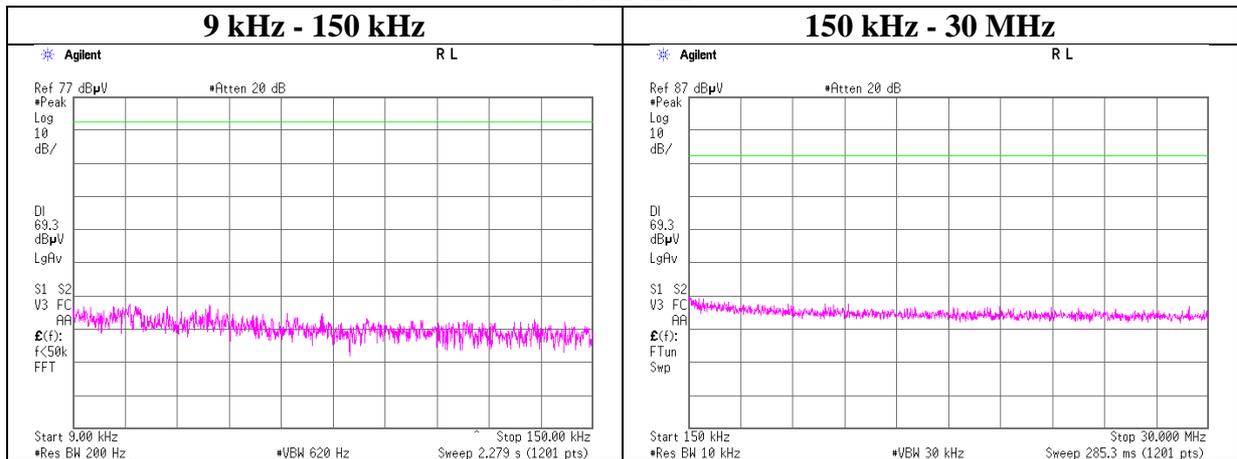
2402 MHz



Conducted Spurious Emission

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	10860279S-E
Date	July 5, 2015
Temperature / Humidity	24 deg. C / 63 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx, Hopping Off, 3DH5

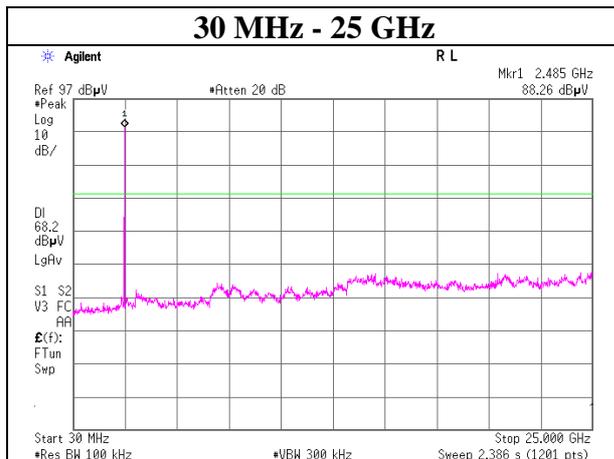
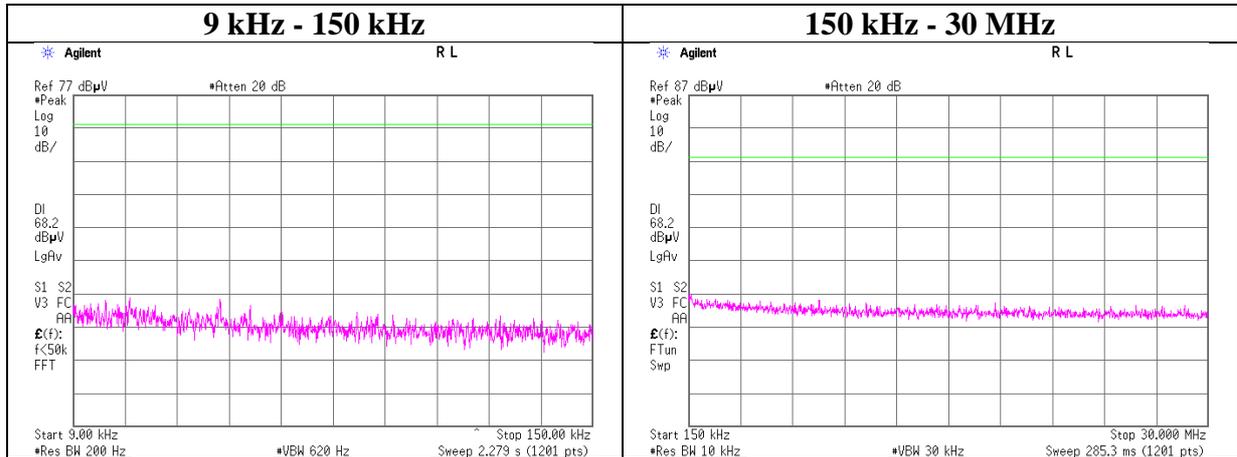
2441 MHz



Conducted Spurious Emission

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	10860279S-E
Date	July 5, 2015
Temperature / Humidity	24 deg. C / 63 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx, Hopping Off, 3DH5

2480 MHz



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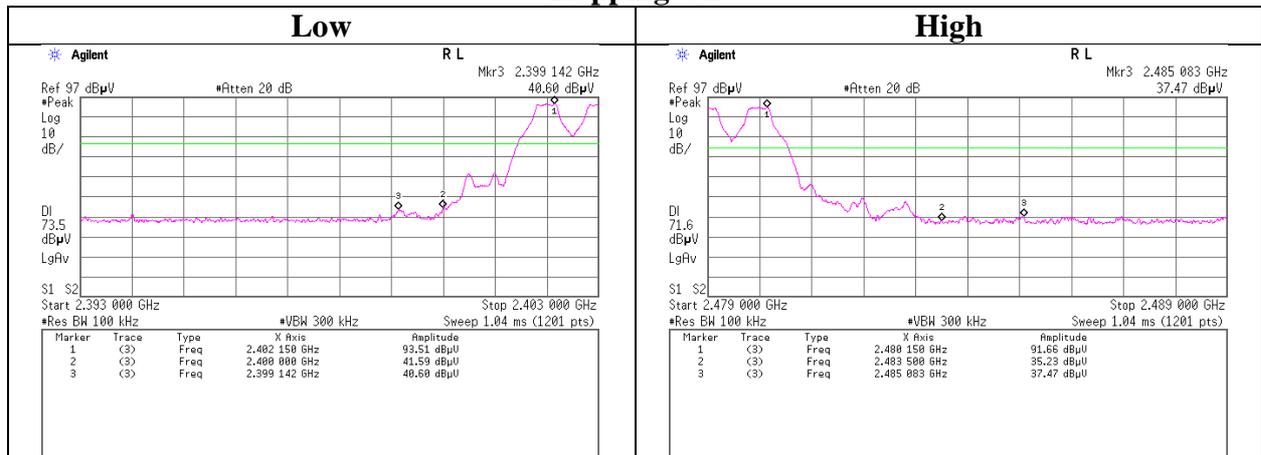
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

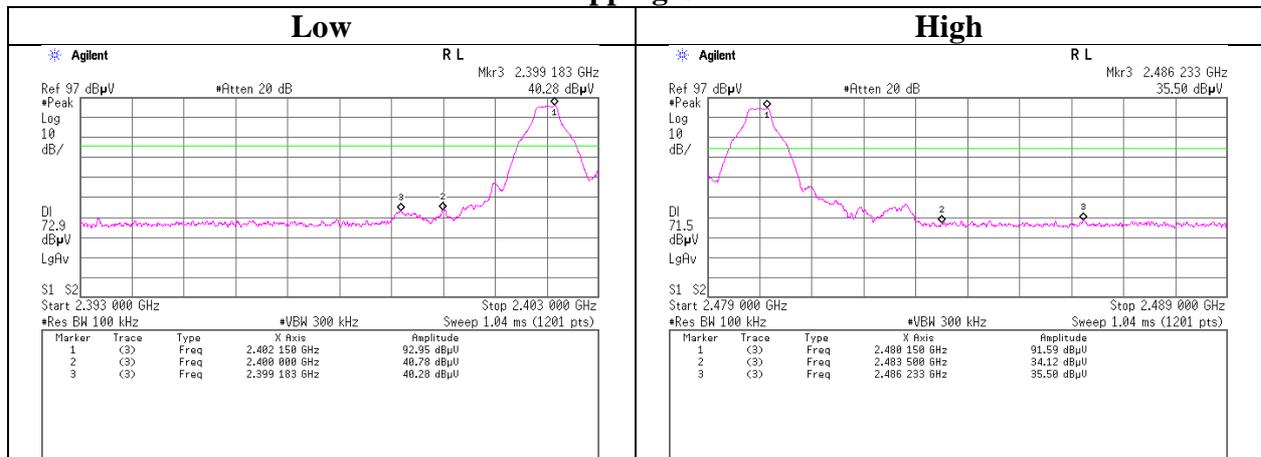
Conducted Emission Band Edge compliance

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	10860279S-E
Date	July 5, 2015
Temperature / Humidity	24 deg. C / 63 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx DH5

Hopping On



Hopping Off



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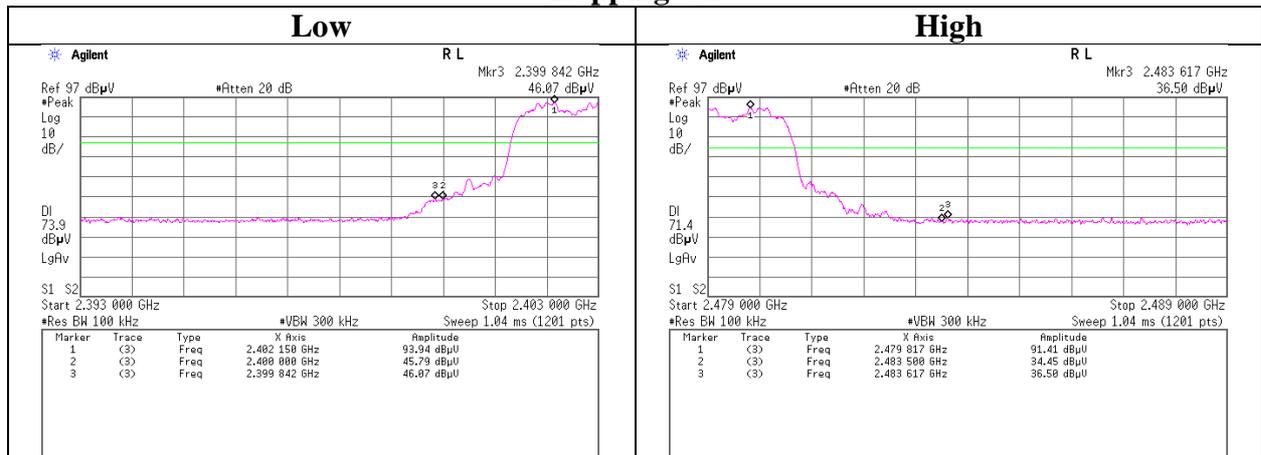
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Facsimile : +81 463 50 6401

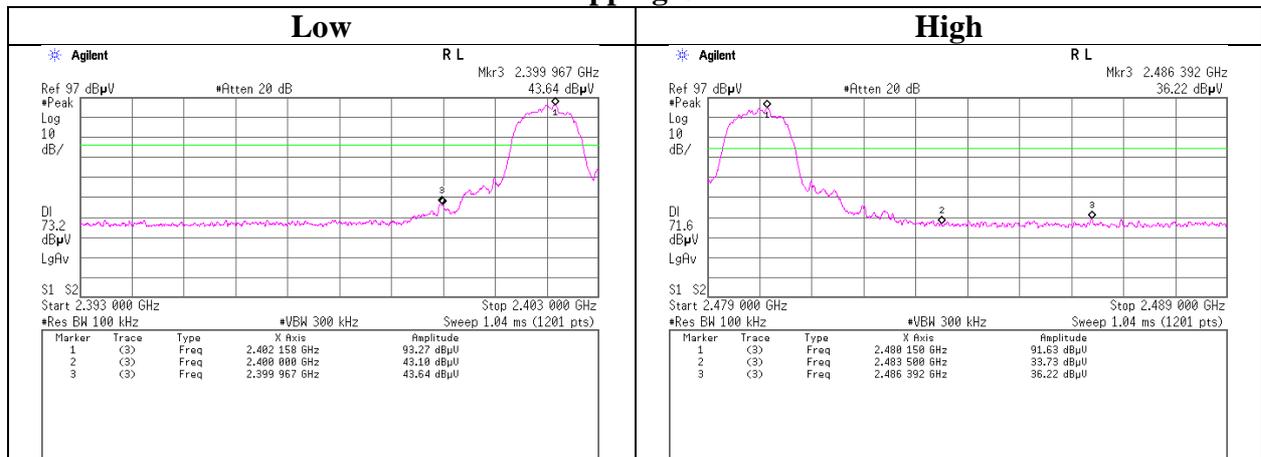
Conducted Emission Band Edge compliance

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	10860279S-E
Date	July 5, 2015
Temperature / Humidity	24 deg. C / 63 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 3DH5

Hopping On



Hopping Off



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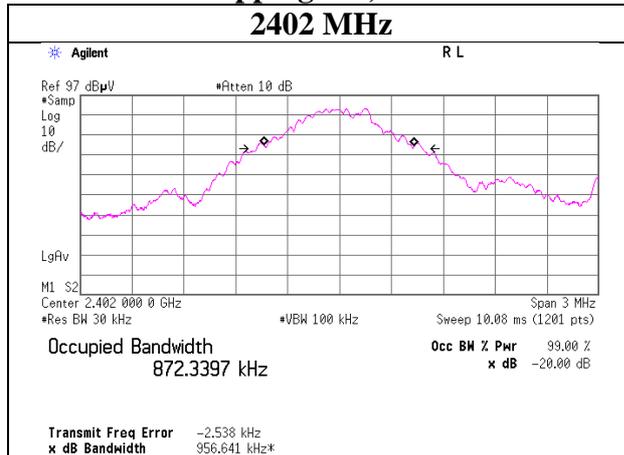
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Facsimile : +81 463 50 6401

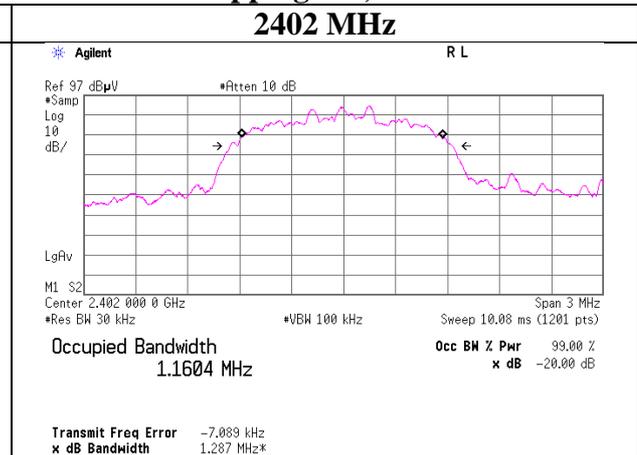
99% Occupied Bandwidth

Test place Report No. Date Temperature / Humidity Engineer Mode	Shonan EMC Lab. No.1 Measurement Room 10860279S-E July 5, 2015 24 deg. C / 63 % RH Hiroyuki Morikawa Tx Hopping Off
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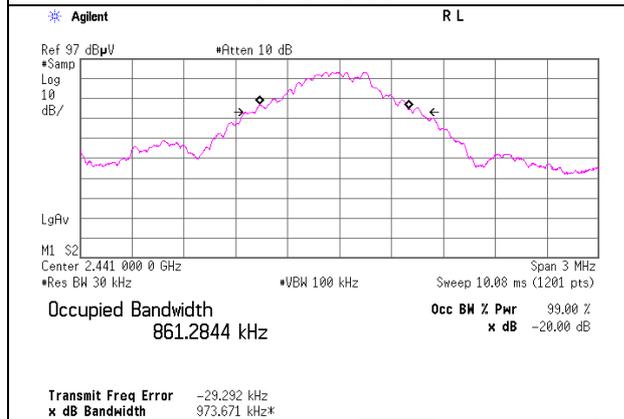
Hopping Off, DH5



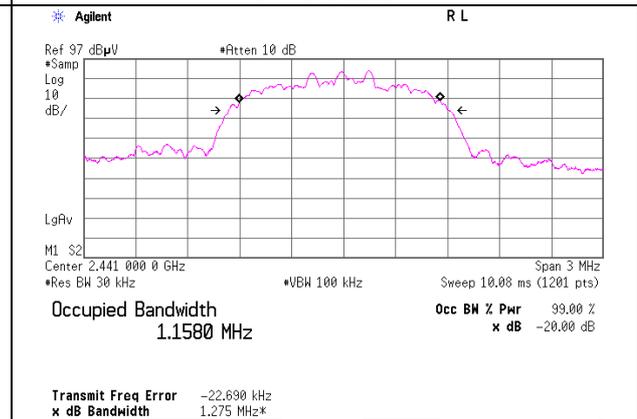
Hopping Off, 3DH5



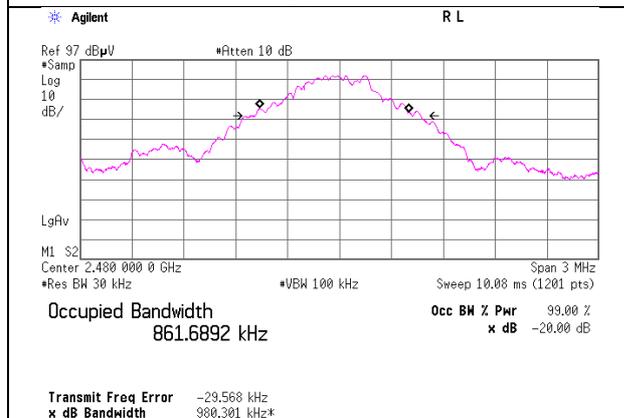
2441 MHz



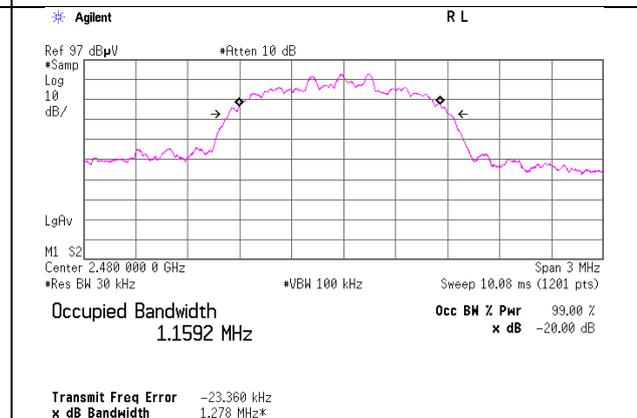
2441 MHz



2480 MHz



2480 MHz



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Shonan EMC Lab.

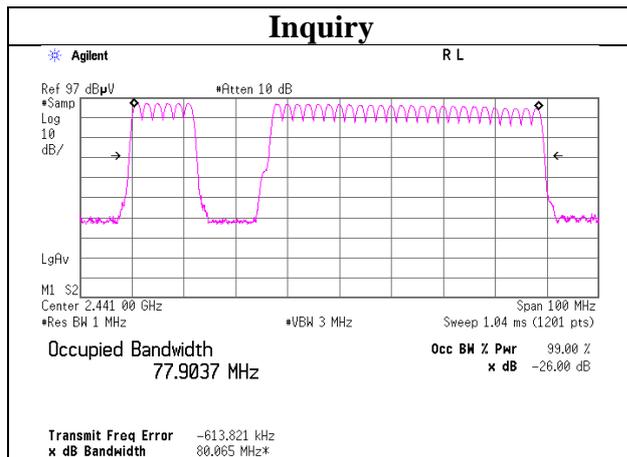
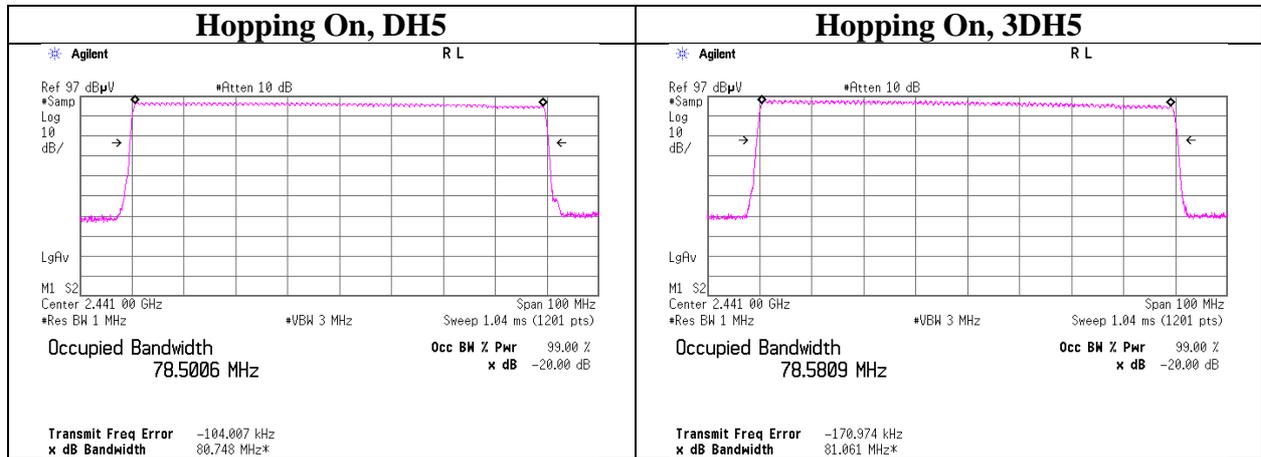
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99% Occupied Bandwidth

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	10860279S-E
Date	July 5, 2015
Temperature / Humidity	24 deg. C / 63 % RH
Engineer	Hiroyuki Morikawa
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-02	Spectrum Analyzer	Agilent	E4448A	MY4825010 6	AT	2015/03/26 * 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
SAT10-10	Attenuator	Weinschel Corp.	54A-10	37584	AT	2015/04/09 * 12
SCC-G13	Coaxial Cable	Suhner	SUCOFLEX 102	31599/2	AT	2015/03/11 * 12
STS-06	Digital Hitester	Hioki	3805-50	080997830	AT	2015/03/10 * 12
SOS-13	Humidity Indicator	Custom	CTH-202	Q.C.17	AT	2015/04/28 * 12
SAEC-01(SVSW R)	Semi-Anechoic Chamber	TDK	SAEC-01(SVSW WR)	1	RE	2015/07/08 * 12
HA-05	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120 D	257	RE	2015/04/18 * 12
SCC-G01	Coaxial Cable	Suhner	SUCOFLEX 104A	46497/4A	RE	2015/04/17 * 12
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
SAF-04	Pre Amplifier	TOYO Corporation	TPA0118-36	1440489	RE	2015/03/23 * 12
SCC-G21	Coaxial Cable	Suhner	SUCOFLEX 104	296169/4	RE	2015/05/19 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	RE	2014/11/11 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2014/10/30 * 12
SJM-13	Measure	ASKUL	-	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE ,CE,RFI,MF)	-	RE	-
SAF-02	Pre Amplifier	SONOMA	310N	290212	RE	2015/02/18 * 12
SAT6-02	Attenuator	JFW	50HF-006N	-	RE	2015/02/18 * 12
KAT3-11	Attenuator	JFW IND. INC.	50HF-003N	-	RE	2014/08/27 * 12
SBA-02	Biconical Antenna	Schwarzbeck	BBA9106	91032665	RE	2014/11/22 * 12
SCC-B2/B4/B6/B 7/B8/B13/SRSE- 02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner /Suhner/Suhner/Suhner/T OYO	8D2W/12DSFA /141PE/141PE/ 141PE/141PE/ NS4906	-/0901-270(R F Selector)	RE	2015/04/17 * 12
SLA-02	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0893	RE	2014/11/22 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2014/10/30 * 12
STR-07	Test Receiver	Rohde & Schwarz	ESU26	100484	RE	2014/09/03 * 12
SJM-14	Measure	ASKUL	-	-	RE	-
SAEC-02(NSA)	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	RE	2015/07/15 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2015/03/26 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2015/03/23 * 12
SCC-G14	Coaxial Cable	Suhner	SUCOFLEX 102	31600/2	RE	2015/03/11 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2015/03/17 * 12

The expiration date of the calibration is the end of the expired month.

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

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

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

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