RADIO TEST REPORT

Test Report No.: 4786002010S-A

Applicant	:	**PIONEER CORPORATION**
Type of Equipment	:	**Smartphone Receiver**
Model No.	:	**SPH-DA210**
FCC ID	:	**AJDK064**
Test regulation	:	**FCC Part15 Subpart C: 2012**
Test result	:	**Complied**

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3. This sample tested is in compliance with the limits of the above regulation.
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6. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.

Date of test: December 19, 2012 to January 10, 2013

Tested by: T. Arai

Tatsuya Arai
Engineer of WiSE Japan,
UL Verification Service

Approved by : T. Imamura

Toyokazu Imamura
Leader of WiSE Japan,
UL Verification Service

☐ 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

REVISION HISTORY

Original Test Report No.: 4786002010S-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	4786002010S-A	January 31, 2013	-	-

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SECTION 1: Customer information

Company Name	:	PIONEER CORPORATION
Brand name	:	Pioneer
Address	:	25-1 Aza-Nishi-machi, Yamada, Kawagoe-shi, Saitama, 350-8555, JAPAN
Telephone Number	:	+81-49-228-6286
Facsimile Number	:	+81-49-228-6497
Contact Person	:	Kenji Kubo

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

2.1 Identification of E.U.T.

Type of Equipment	:	Smartphone Receiver
Model No.	:	SPH-DA210
Serial No.	:	See Section 4.
Rating	:	DC 10.8V to 15.1V
Country of Mass-production	:	Thailand
Condition of EUT	:	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No modification by the test lab.
Receipt date of Sample	:	December 19, 2012

2.2 Product description

Model: SPH-DA210 (referred to as the EUT in this report) is a Smartphone Receiver.

Derived models and the difference:

	SPH-DA110	SPH-DA210
DVD/CD Mecha	No	Yes
Monitor	FIX	FLAP
KEY	Five VOL-, VOL+, HOME, MENU, BACK	Six OPEN, VOL-, VOL+, HOME, MENU, BACK

Clock Frequency:
System microcomputer: 3.93216MHz,
DC/DC converter (5V8V): 365.78kHz/413.91kHz,
DC/DC converter (MirrorLink): 365.78kHz/413.91kHz,
FM/AM tuner: 36.48MHz,
GPS clock: 26MHz, 32.768kHz,
CPU: 500MHz, 166.7MHz, 41.7MHz, 27MHz, 22.5792MHz, 48MHz, 33.333MHz,
DC/DC converter (1.8V): 365.78kHz/413.91kHz,
DC/DC converter (USB): 365.78kHz/413.91kHz,
VIDEO DECORDER: 27MHz, 33.231MHz, 33.333MHz, 32MHz,
HDMI Receiver: 27MHz,
DC/DC converter (LCD): 723kHz/1000kHz,
LCD BACK LIGHT DRIVER: 476.57kHz/ 514.81kHz,
Bluetooth module Clock: 26MHz

Radio specification:

Equipment type	:	Transceiver
Frequency of operation	:	2402-2480MHz
Bandwidth & channel spacing	:	79MHz & 1MHz
Type of modulation	:	GFSK, π/4DQPSK, 8DPSK
Antenna type	:	Pattern
Antenna gain with cable loss	:	-2.3dBi (max)
Antenna connector type	:	None
Operation temperature range	:	-10 to +60 deg.C.

FCC 15.31 (e)
The equipment provides the wireless transmitter with stable power supply (DC3.3V/DC1.8V). Therefore, the equipment complies with the requirement.

FCC 15.203
The equipment and its antenna comply with this requirement since this antenna is built in the equipment and it cannot be replaced by end users.

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : Test specification: FCC Part 15 Subpart C: 2012,
final revised on December 27, 2012 and effective January 28, 2013

Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.209 Radiated emission limits, general requirements
Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz

* The revision on December 27, 2012 does not affect the test specification applied to the EUT.

The EUT has been tested for compliance with FCC Part 15 Subpart B by the customer.

3.2 Procedures & Results

Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
Conducted emission	ANSI C63.4:2009 7. AC powerline conducted emission measurements	FCC 15.207	-	N/A *1)	-	N/A
Carrier frequency separation	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)	Conducted	N/A	*See data.	Complied
20dB bandwidth	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)	Conducted	N/A		-
Number of hopping frequency	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)(iii)	Conducted	N/A		Complied
Dwell time	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)(iii)	Conducted	N/A		Complied
Maximum peak output power	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (b)(1)	Conducted	N/A		Complied
Band edge compliance & Spurious emission	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (d) 15.209	Conducted/ Radiated	N/A	6.3dB Freq.: 215.983MHz Polarization: Horizontal Detection: Quasi Peak Mode: Tx 2441MHz, 3-DH5	Complied

Note: UL Japan's Work Procedures No. 13-EM-W0420 and 13-EM-W0422
*1) The test is not applicable since the EUT has no AC mains.

3.3 Addition to standard

Item	Test Procedure	Specification	Remarks	Worst Margin	Results
Occupied Bandwidth (99%)	ANSI C63.4:2009 13. Measurement of intentional radiators, RSS-Gen 4.6.1	-	Conducted	-	-
Note: UL Japan's Work Procedures No. 13-EM-W0420 and 13-EM-W0422					

* 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.

Item	Frequency range	No.1 SAC*1/SR*2 (±)	No.2 SAC/SR (±)	No.3 SAC/SR (±)
Radiated emission (Measurement distance: 3m)	9kHz-30MHz	3.7 dB	3.7 dB	3.6 dB
	30MHz-300MHz	4.9 dB	5.1 dB	4.9 dB
	300MHz-1GHz	5.0 dB	5.2 dB	4.9 dB
	1GHz-15GHz	4.8 dB	4.8 dB	4.9 dB
Radiated emission (Measurement distance: 1m)	15GHz-18GHz	5.6 dB	5.6 dB	5.6 dB
	18GHz-40GHz	4.6 dB	4.3 dB	4.4 dB

*1: SAC=Semi-Anechoic Chamber
*2: SR= Shielded Room is applied besides radiated emission

Radiated emission

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

Antenna port conducted test

Power measurement uncertainty above 1GHz for this test was: (±) 1.5dB
Spurious emission (Conducted) measurement (below 1GHz) uncertainty for this test was: (±) 1.7dB
Spurious emission (Conducted) measurement (1G-3GHz) uncertainty for this test was: (±) 2.3dB
Spurious emission (Conducted) measurement (3G-18GHz) uncertainty for this test was: (±) 3.0dB
Spurious emission (Conducted) measurement (18G-26.5GHz) uncertainty for this test was: (±) 2.9dB
Bandwidth measurement uncertainty for this test was: (±) 5.4%

3.5 Test location

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Telephone number : +81 463 50 6400
Facsimile number : +81 463 50 6401
JAB Accreditation No. : RTL02610

	FCC Registration No.	IC Registration No.	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
☐ No.1 Semi-anechoic chamber	697847	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☐ No.2 Semi-anechoic chamber	697847	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☒ No.3 Semi-anechoic chamber	697847	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	-

3.6 Test setup, Data of test & Test instruments

Refer to APPENDIX 1 to 3.

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

4.1 Operating mode

Test item	Operating mode	Tested frequency
Carrier frequency separation	Transmitting Hopping ON (DH5 / 3-DH5)/Inquiry, Payload: PRBS9	-
20dB bandwidth	Transmitting Hopping OFF (DH5 / 3-DH5) / Inquiry, Payload: PRBS9	2402MHz, 2441MHz, 2480MHz
Number of hopping frequency	Transmitting Hopping ON (DH5 / 3-DH5)/Inquiry, Payload: PRBS9	-
Dwell time	Transmitting (Hopping ON), Payload: PRBS9 - DH1, - DH3, - DH5 - 3-DH1, - 3-DH3, - 3-DH5	-
	-Inquiry	
Maximum peak output power	Transmitting Hopping OFF , Payload: PRBS9 - DH5, - 2-DH5, - 3-DH5	2402MHz, 2441MHz, 2480MHz
Band edge compliance & Spurious emission (Conducted)	Transmitting (DH5 / 3-DH5), Payload: PRBS9 -Hopping ON -Hopping OFF	Band edge compliance: 2402MHz, 2480MHz Spurious emission: 2402MHz, 2441MHz, 2480MHz
(Radiated)	Transmitting (DH5 / 3-DH5), Payload: PRBS9 -Hopping OFF	
99% occupied bandwidth	Transmitting (DH5 / 3-DH5), Payload: PRBS9 / Inquiry -Hopping ON -Hopping OFF	2402MHz, 2441MHz, 2480MHz

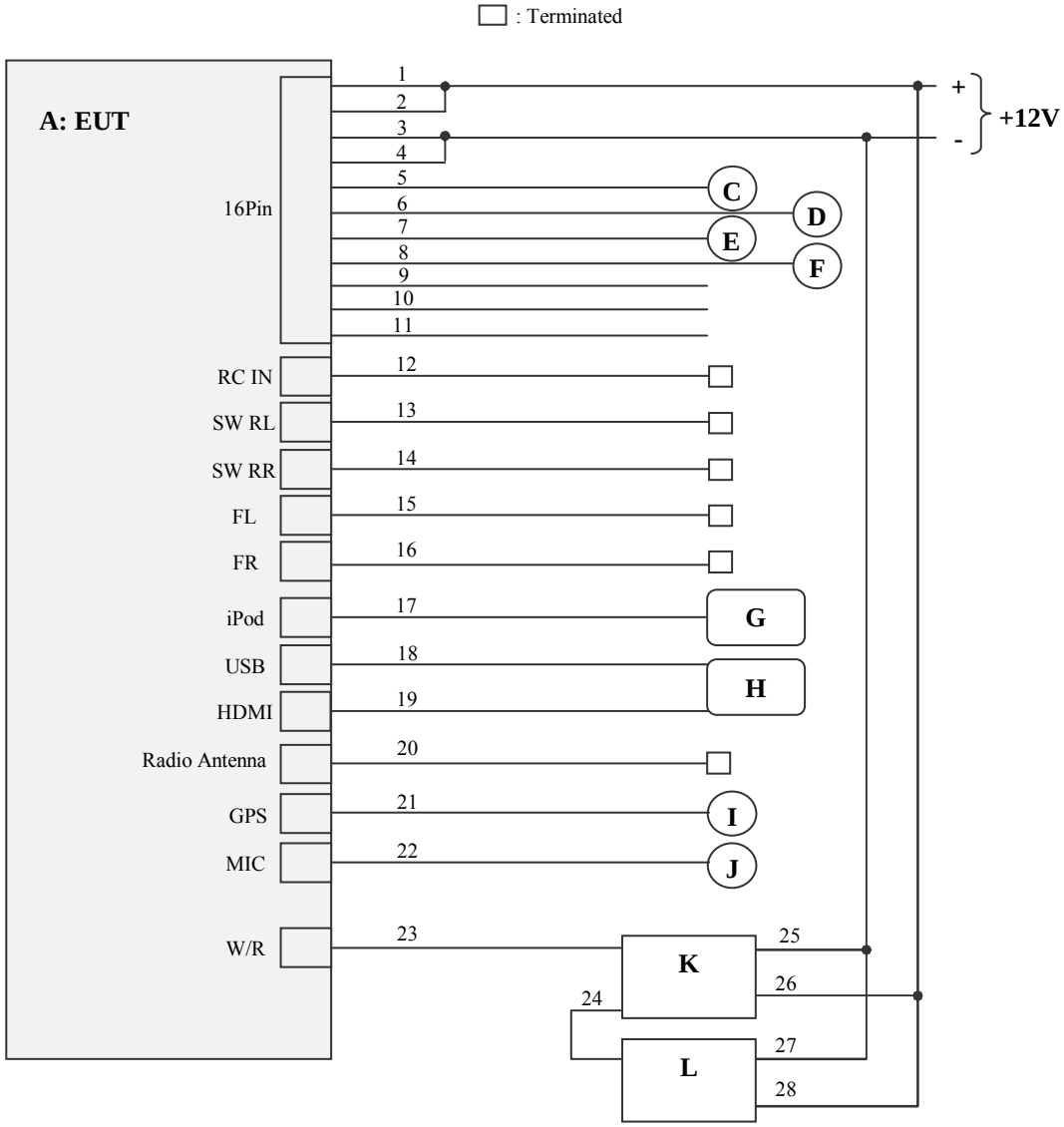
*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload (except Dwell time test).

*Remarks: Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not affect 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.

Software: Test Program ver. 01.37.00 (supplied by the customer)
(Power setting: level 4)

Justification: The system was configured in typical fashion (as customer would normally use it) for testing.

4.2 Configuration of and peripherals



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Smartphone Receiver	SPH-DA210	*1)	PIONEER	EUT
C	Resistor	RHA100N 4Ω	-	-	-
D	Resistor	RHA100N 4Ω	-	-	-
E	Resistor	RHA100N 4Ω	-	-	-
F	Resistor	RHA100N 4Ω	-	-	-
G	i-Pod touch	A1288	18840KU0203	Apple	-
H	Cell-phone	IS05	-	SHARP	-
I	GPS Antenna	CZX5496-A	-	PIONEER	-
J	Microphone	CPM1083-C	-	PIONEER	-
K	Hide-away Unit	CD-MR80D	CZX5157	PIONEER	-
L	Marine Wired Remote	CD-MR80D	CZX5156	PIONEER	-

*1) Antenna terminal conducted tests: 01LI005, Radiated emission tests: 01LI004

List of cables used

No.	Cable name	Length(m)	Shield		Remarks
			Cable	Connector	
1	ACC	0.15+1.6	Unshielded	Unshielded	16Pin connector
2	+B	0.15+1.6	Unshielded	Unshielded	
3	GND	0.15+1.6	Unshielded	Unshielded	
4	Parking Brake	0.35	Unshielded	Unshielded	
5	FL	0.15+1.5+0.9	Unshielded	Unshielded	
6	FR	0.15+1.5+0.9	Unshielded	Unshielded	
7	RL	0.15+1.0+0.9	Unshielded	Unshielded	
8	RR	0.15+1.0+0.9	Unshielded	Unshielded	
9	Reverse-Gear Signal Input	0.15+1.5	Unshielded	Unshielded	
10	Antenna /System Control	0.15+1.5	Unshielded	Unshielded	
11	Illumination	0.15+1.5	Unshielded	Unshielded	
12	RC IN	1.5	Shielded	Shielded	-
13	RCA(SW-RL OUT)	1.0	Shielded	Shielded	-
14	RCA(SW-RR OUT)	1.0	Shielded	Shielded	-
15	RCA(FL OUT)	1.0	Shielded	Shielded	-
16	RCA(FR OUT)	1.0	Shielded	Shielded	-
17	i-Pod	2.3	Shielded	Shielded	-
18	USB(Extension)	0.2+2.0	Shielded	Shielded	-
19	HDMI	2.3	Shielded	Shielded	-
20	Radio Antenna	0.4+2.0	Shielded	Shielded	-
21	GPS	3.5	Shielded	Shielded	-
22	Microphone	4.0	Shielded	Shielded	-
23	W/R	1.6	Shielded	Shielded	-
24	DC	1.2	Unshielded	Unshielded	-
25	DC	1.2	Unshielded	Unshielded	-
26	DC	1.5	Unshielded	Unshielded	-
27	DC	1.2	Unshielded	Unshielded	-
28	DC	1.3	Unshielded	Unshielded	-

*All cables used for the measurement are exclusive use or marketed.

SECTION 5: Carrier frequency separation

Test procedure
The carrier frequency separation was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass
Refer to APPENDIX

SECTION 6: 20dB bandwidth & Occupied bandwidth (99%)

Test procedure
The bandwidth was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass
Refer to APPENDIX

SECTION 7: Number of hopping frequency

Test procedure
The Number of Hopping Frequency was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass
Refer to APPENDIX

SECTION 8: Dwell time

Test procedure
The Dwell time was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass
Refer to APPENDIX

SECTION 9: Maximum peak output power

Test procedure
The Maximum Peak Output Power was measured with a power meter connected to the antenna port.

Summary of the test results: Pass
Refer to APPENDIX

SECTION 10: Spurious emissions (Antenna port conducted)

Test procedure
The Out of Band Emissions was measured with a spectrum analyzer connected to the antenna port.
In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.
In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.
Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.
(9kHz-150kHz:RBW=200Hz, 150kHz-30MHz:RBW=10kHz)

Summary of the test results: Pass
Refer to APPENDIX

SECTION 11: Radiated emission

11.1 Operating environment

Test room : See test data (APPENDIX)
Temperature : See test data (APPENDIX)
Humidity : See test data (APPENDIX)

11.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 0.8m above the conducting ground plane.
The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.
The rear of EUT, including its peripherals was aligned and flushed with rear of tabletop. I/O cables that were connected to the peripherals were bundled in center. They were folded back and for the forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane.
Photographs of the set up are shown in APPENDIX.

11.3 Test conditions

Frequency range : 30MHz to 25GHz
EUT position : Table top

11.4 Test procedure

The Radiated Electric Field Strength intensity has been measured on a semi-anechoic chamber with a ground plane and at a distance of 3m (below 15GHz) / 1m (above 15GHz) (Refer to Figure 1). Measurements were performed with quasi-peak, peak and average detector. The measuring antenna height was varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity. The measurements were performed for both vertical and horizontal antenna polarization.

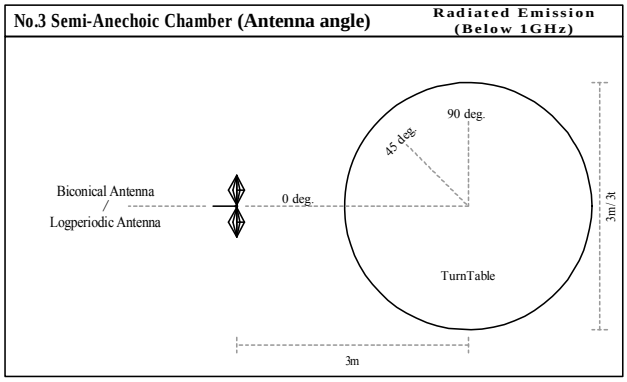
The radiated emission measurements were made with the following detection of the test receiver.

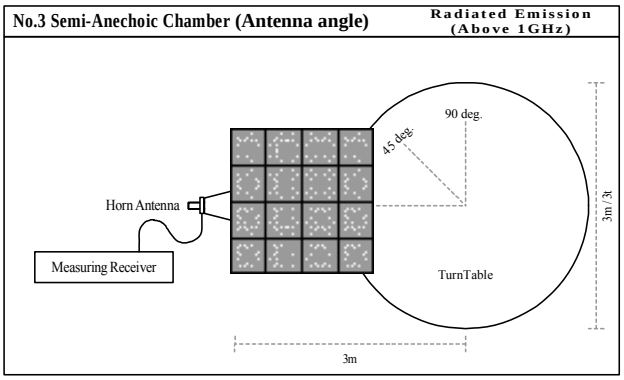
Frequency		30 - 1000MHz	1 - 25GHz		20dBc
Detection Type	:	Quasi-Peak	Peak	* Average	Peak
IF Bandwidth	:	120kHz	RBW:1MHz VBW:3MHz	RBW:1MHz VBW:10Hz	RBW: 100kHz, VBW: 300kHz

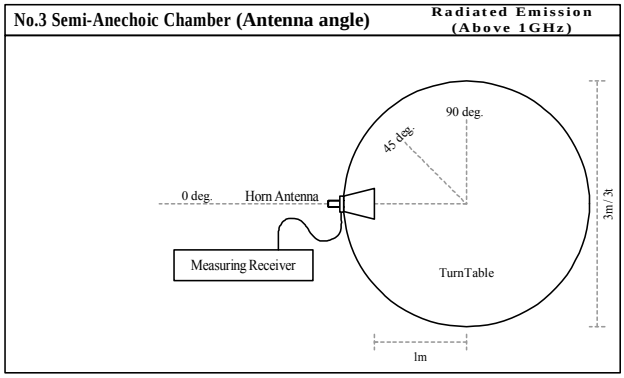
* When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.
Although 00-705 accepts VBW=10Hz for AV measurements, confirmed that superfluous smoothing was not performed.

The carrier level and noise levels were confirmed at angle of 0 to 60 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.

Figure 1. Antenna angle







11.5 Band edge

Band edge level at 2390MHz and 2483.5MHz is below the limits of FCC 15.209 and band edge level at 2400MHz is below the 20dBc. Refer to the data.

11.6 Results

Summary of the test results : Pass *No noise was detected above the 5th order harmonics.

Refer to APPENDIX

Contents of APPENDIXES

APPENDIX 1: Data of Radio tests

20dB bandwidth and Carrier frequency separation
Number of hopping frequency
Dwell time
Maximum peak output power
Radiated emission
Spurious emission (Antenna port conducted)
Occupied bandwidth

APPENDIX 2: Test instruments

Test instruments

APPENDIX 3: Photographs of test setup

Radiated emission

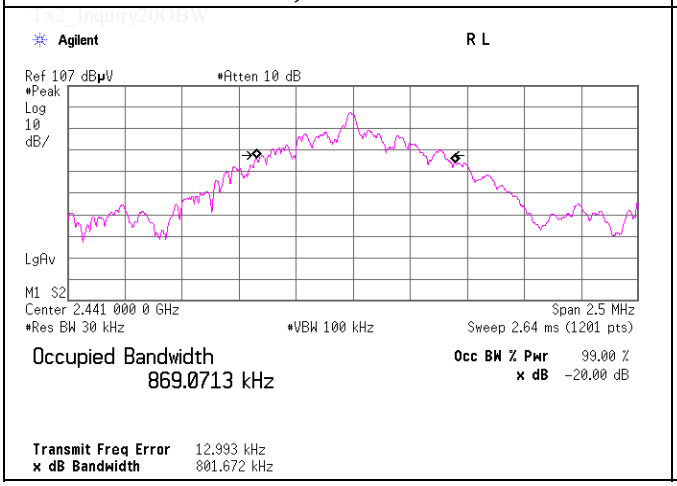
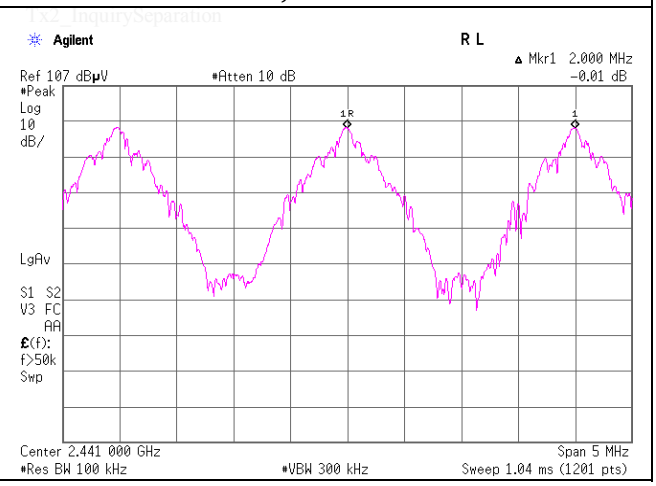
APPENDIX 1: Data of Radio tests

20dB Bandwidth and Carrier Frequency Separation

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	December 19, 2012	December 20, 2012
Temperature / Humidity	23 deg.C , 55 %RH	23 deg.C , 47 %RH
Engineer	Tatsuya Arai	Kenichi Adachi
Mode	Tx, Bluetooth, BDR, PRBS9	

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency Separation [MHz]
DH5	2402.0	0.934	1.000	>= 0.623
DH5	2441.0	0.925	1.000	>= 0.617
DH5	2480.0	0.926	1.000	>= 0.617
Inquiry	2441.0	0.802	2.000	>= 0.534

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

Inquiry	
20dB Bandwidth	**Carrier Frequency Separation**
Tx, 2441MHz	**Tx, 2441MHz**
	

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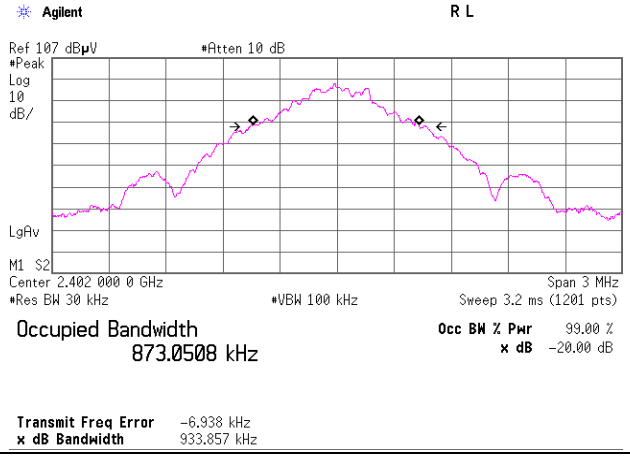
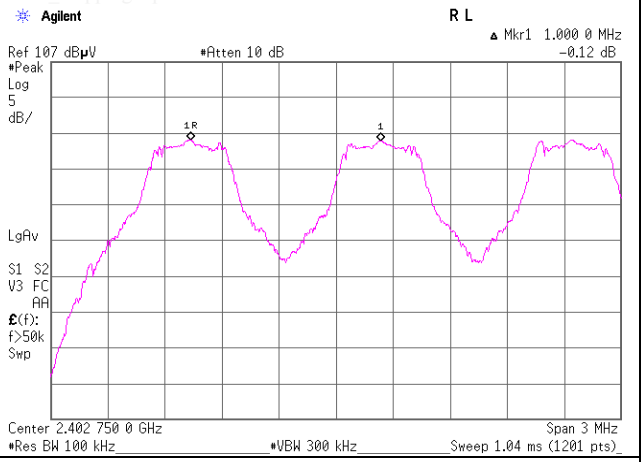
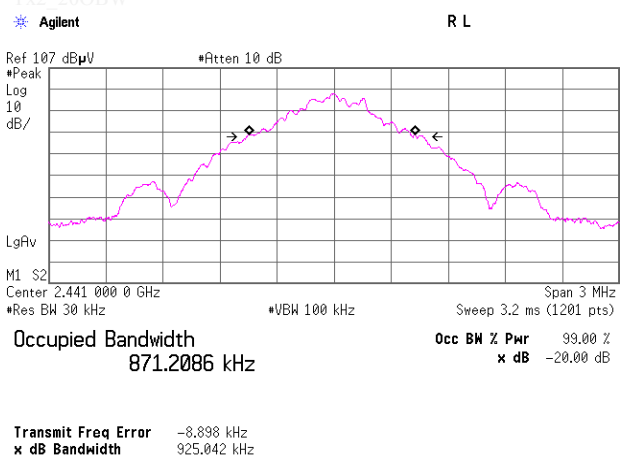
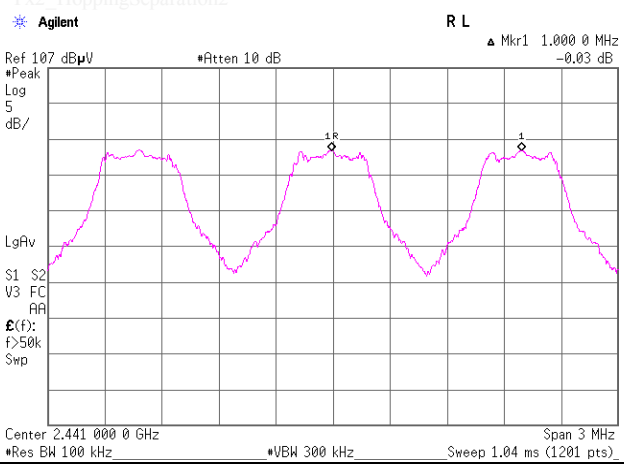
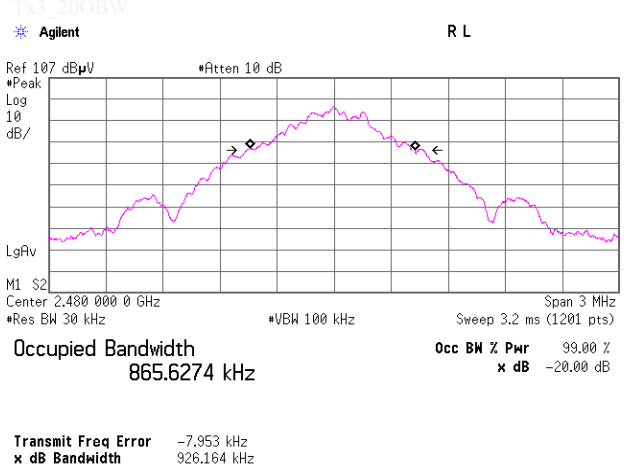
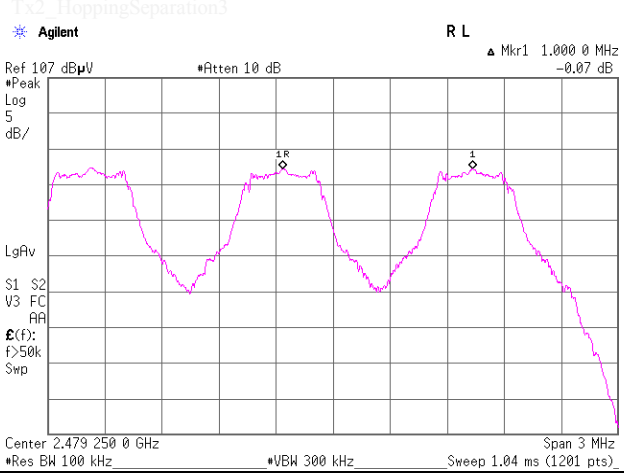
20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, BDR, PRBS9

20dB Bandwidth	Carrier Frequency Separation
Tx, 2402MHz	**Tx, 2402MHz**
	
Tx, 2441MHz	**Tx, 2441MHz**
	
Tx, 2480MHz	**Tx, 2480MHz**
	

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20dB Bandwidth and Carrier Frequency Separation

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	December 19, 2012	
Temperature / Humidity	23 deg.C , 55 %RH	
Engineer	Tatsuya Arai	
Mode	Tx, Bluetooth, EDR, PRBS9	

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency Separation [MHz]
3-DH5	2402.0	1.296	1.000	>= 0.864
3-DH5	2441.0	1.286	1.000	>= 0.857
3-DH5	2480.0	1.286	1.000	>= 0.857

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

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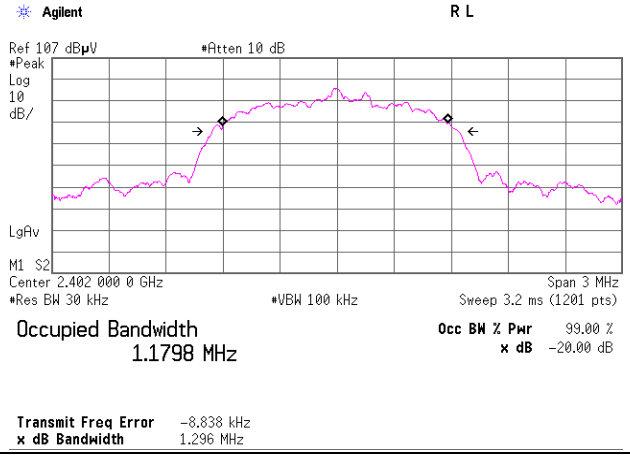
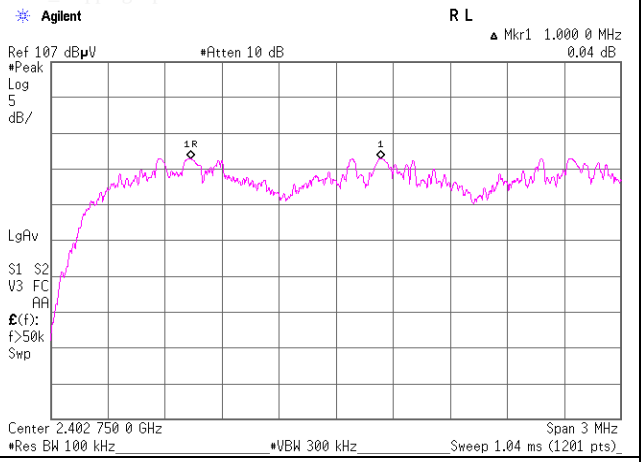
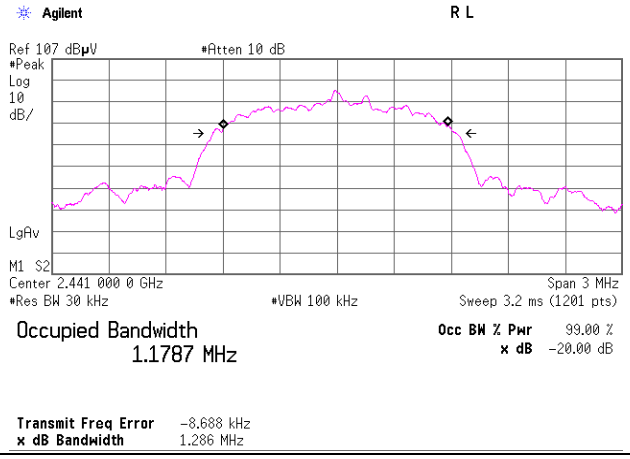
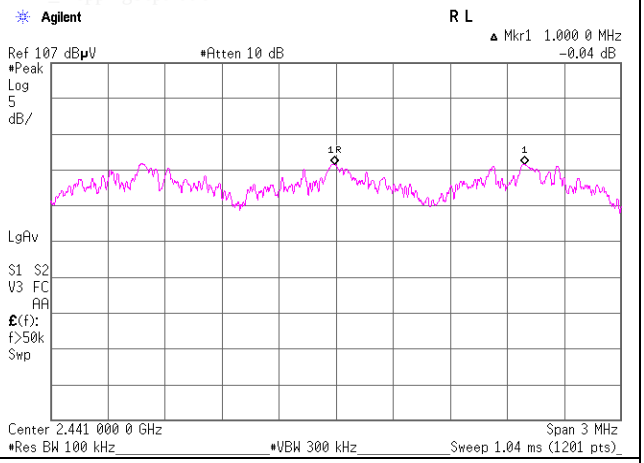
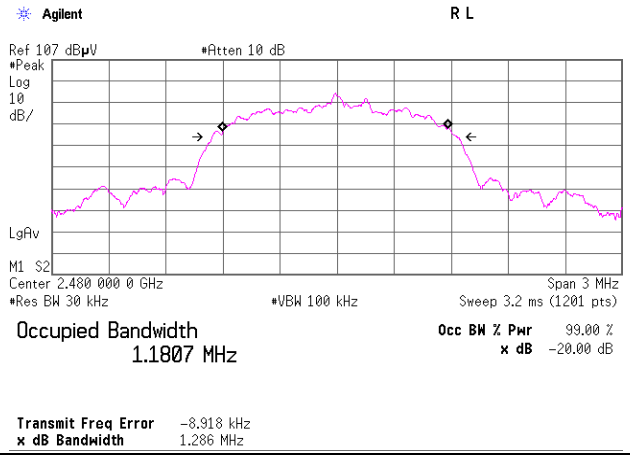
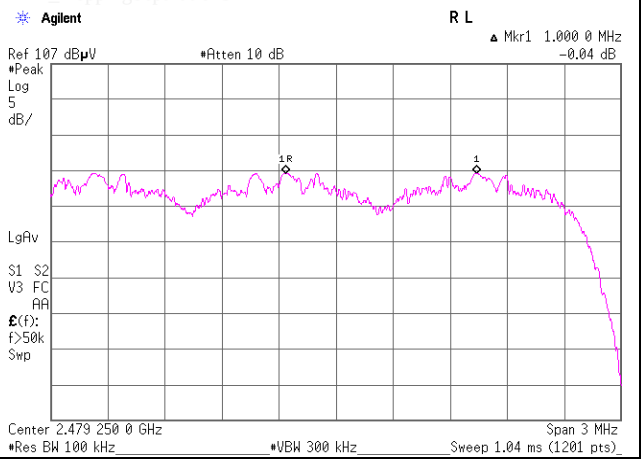
20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, EDR, PRBS9

20dB Bandwidth	Carrier Frequency Separation
Tx, 2402MHz	**Tx, 2402MHz**
	
Tx, 2441MHz	**Tx, 2441MHz**
	
Tx, 2480MHz	**Tx, 2480MHz**
	

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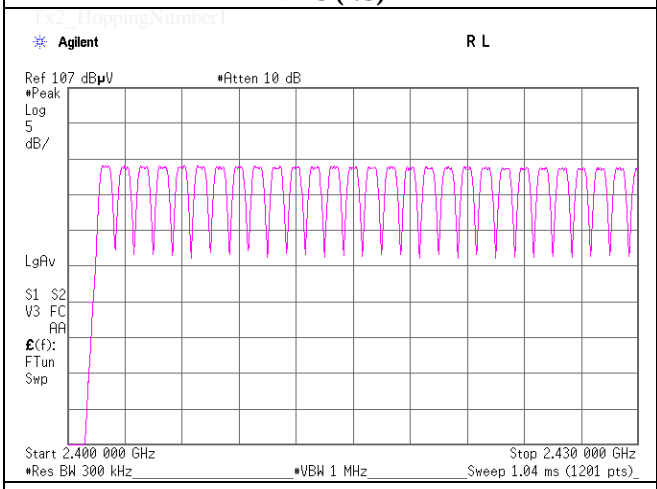
Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	December 19, 2012	
Temperature / Humidity	23 deg.C , 55 %RH	
Engineer	Tatsuya Arai	
Mode	Tx, Bluetooth, BDR, PRBS9	

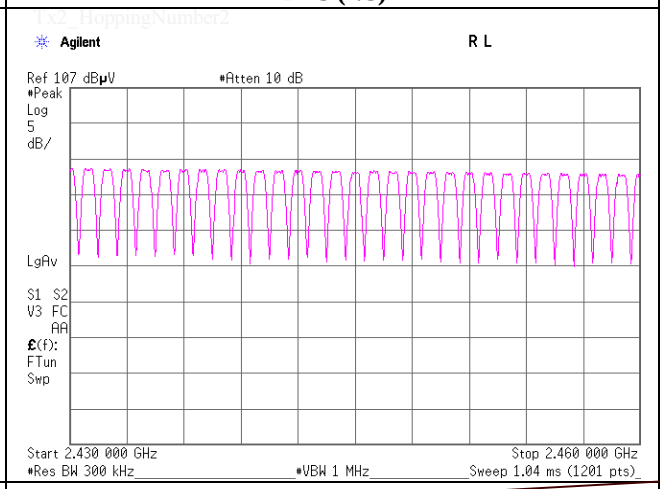
Mode	Number of Channel [times]	Limit [times]
DH5	79	>= 15

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

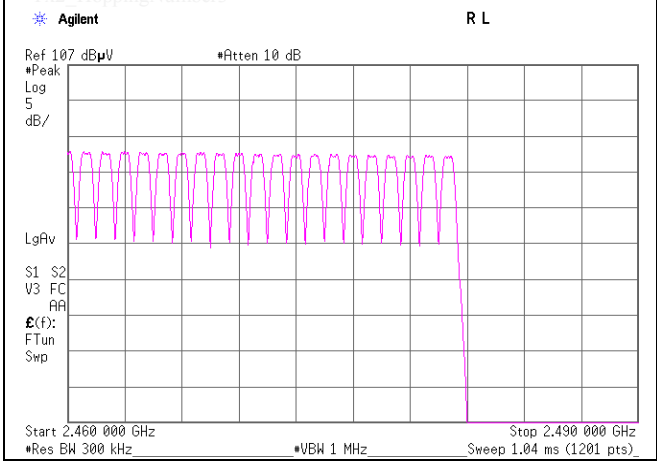
DH5 (1/3)



DH5 (2/3)



DH5 (3/3)



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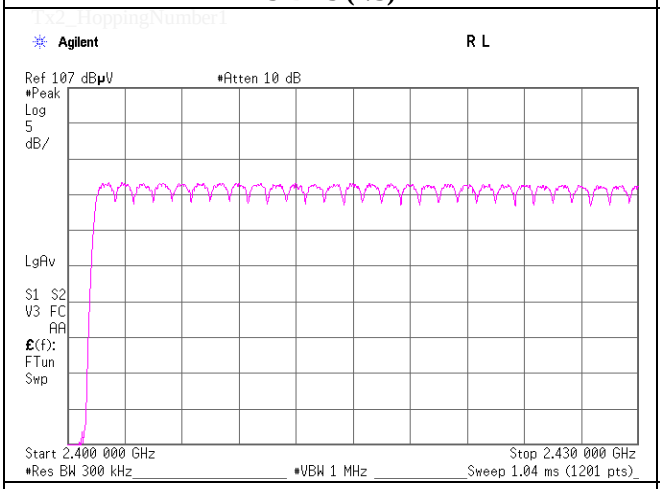
Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	December 19, 2012	
Temperature / Humidity	23 deg.C , 55 %RH	
Engineer	Tatsuya Arai	
Mode	Tx, Bluetooth, EDR, PRBS9	

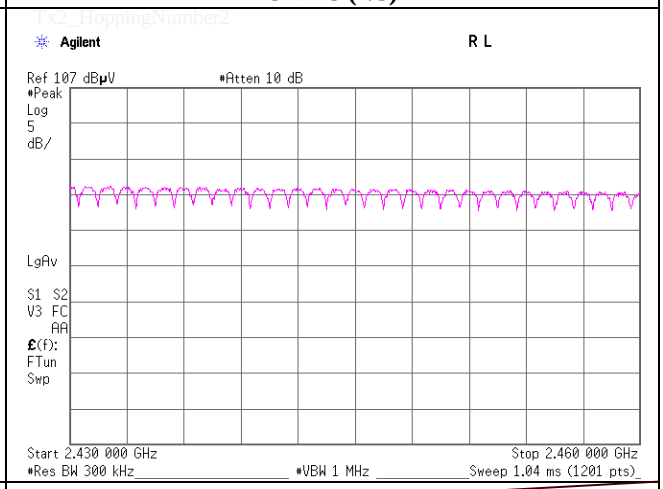
Mode	Number of Channel [times]	Limit [times]
3-DH5	79	>= 15

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

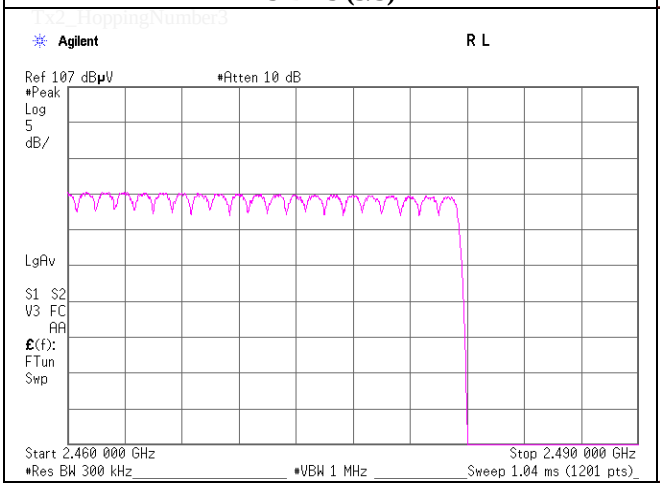
3-DH5 (1/3)



3-DH5 (2/3)



3-DH5 (3/3)



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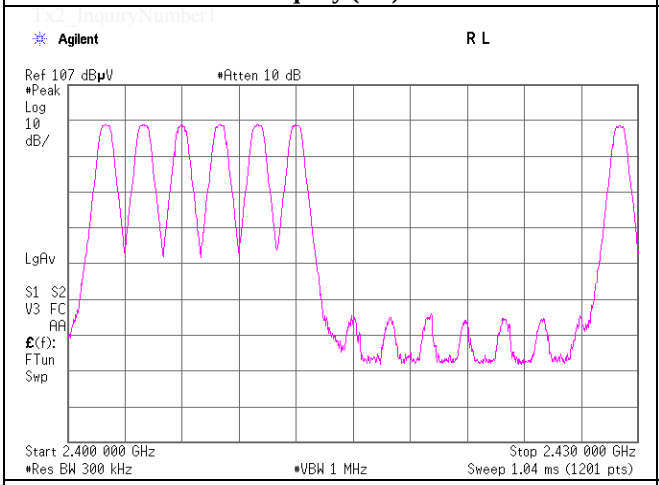
Number of Hopping Frequency

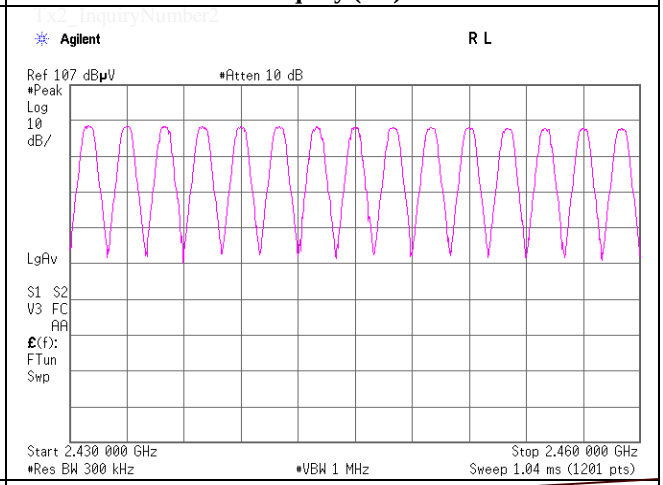
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	December 20, 2012	
Temperature / Humidity	23 deg.C , 47 %RH	
Engineer	Kenichi Adachi	
Mode	Tx, Bluetooth, Inquiry	

Mode	Number of Channel [times]	Limit [times]
Inquiry	32	>= 15

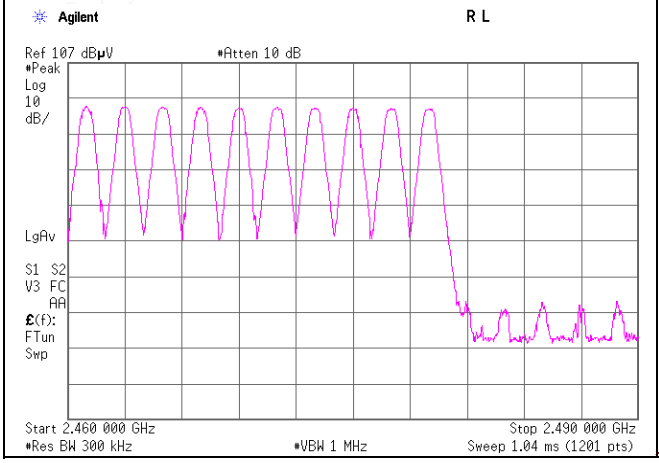
Inquiry (1/3)

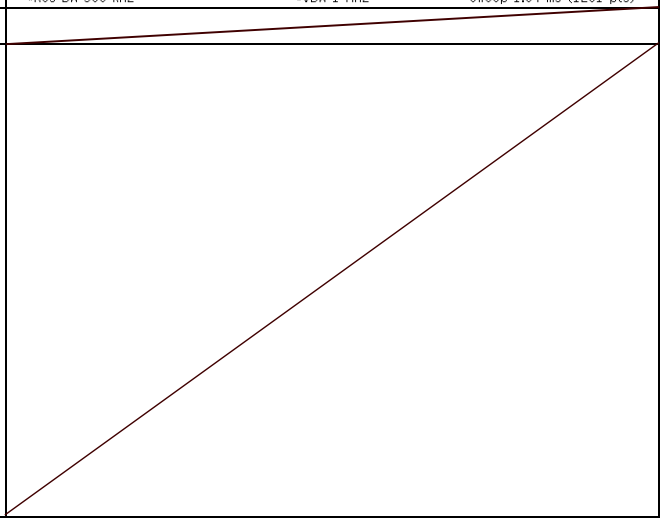


Inquiry (2/3)



Inquiry (3/3)





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Dwell Time

Test place	UL Japan, Inc. Shonan EMC Lab.		No.5 Shielded Room
Date	December 19, 2012	December 20, 2012	
Temperature / Humidity	23 deg.C , 55 %RH	23 deg.C , 47 %RH	
Engineer	Tatsuya Arai	Kenichi Adachi	
Mode	Tx, Bluetooth, BDR, PRBS9		

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4) / 12.8 (32 Hopping x 0.4) second period	Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	14.8 / 5.0 sec. x 31.6 sec. = 94 times	0.396	37	400
DH3	19.2 / 5.0 sec. x 31.6 sec. = 122 times	1.653	202	400
DH5	18.8 / 5.0 sec. x 31.6 sec. = 119 times	2.901	345	400
Inquiry	100.0 / 1.0 sec. x 12.8 sec. = 1280 times	0.100	128	400

Sample Calculation

Result = Number of transmission x Length of transmition time

*Average data of 5 tests.(except Inquiry)

Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	15	15	14	12	18	14.8
DH3	25	11	22	18	20	19.2
DH5	19	18	21	21	15	18.8
Inquiry	100	100	100	100	100	100.0

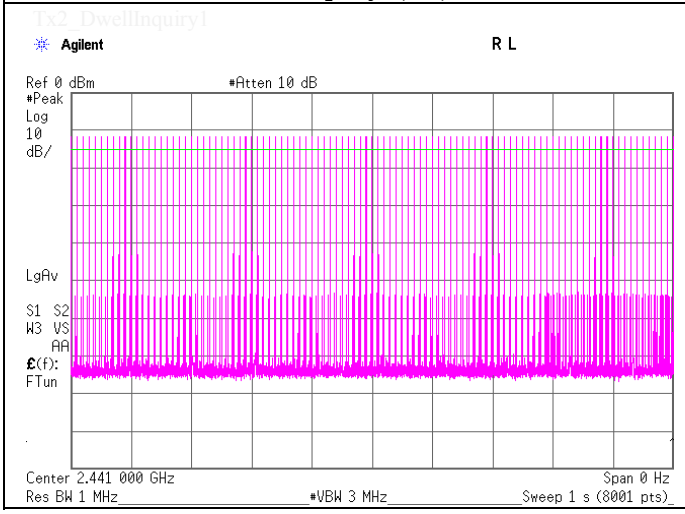
Sample Calculation

Average= Summation(Sampling 1 to 5) / 5

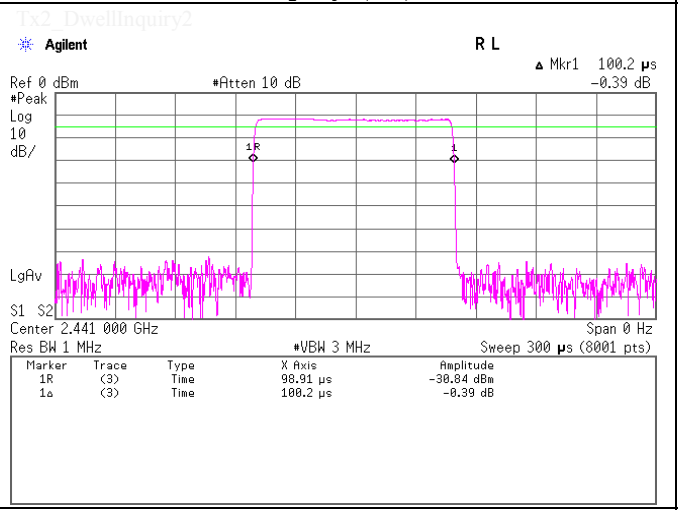
* This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in N x 0.4s, where N is the number of channels being used in the hopping sequence (20 ≤ N ≤ 79), is always less than 0.4s regardless of packet size (DH1, DH3 or DH5). This is confirmed in the test report for N=79.

Inquiry

Inquiry (1/2)



Inquiry (2/2)



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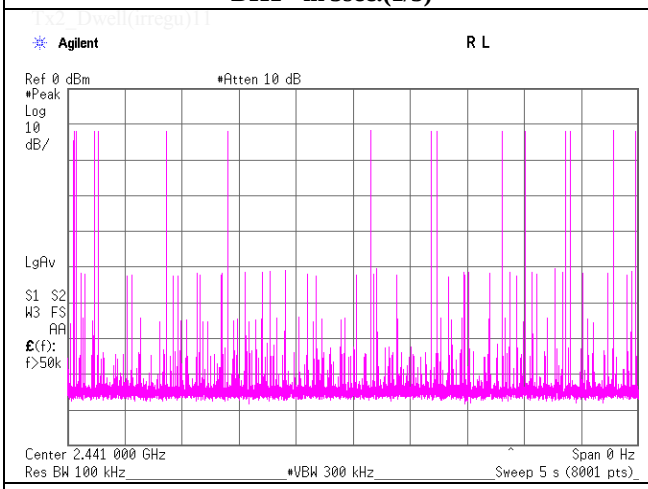
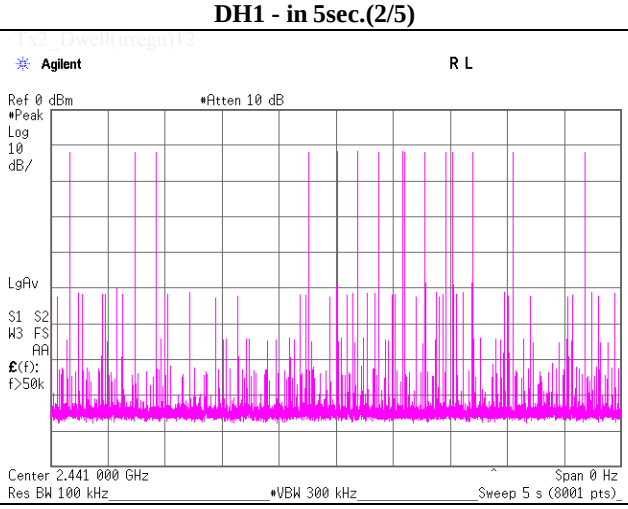
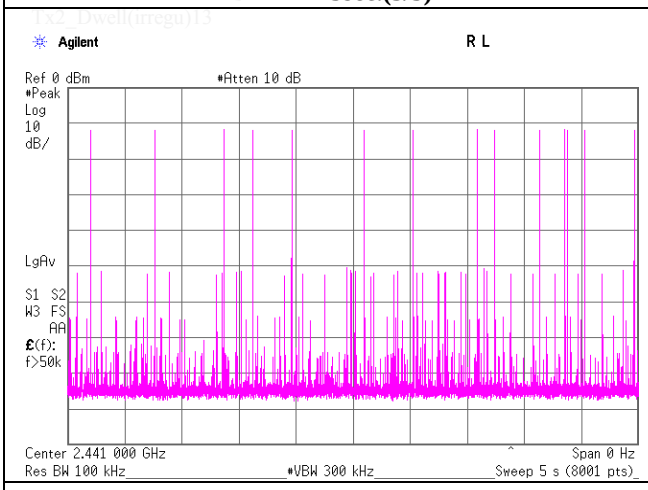
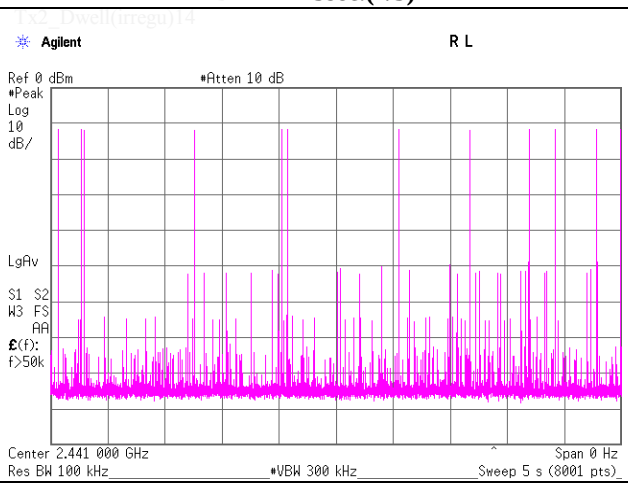
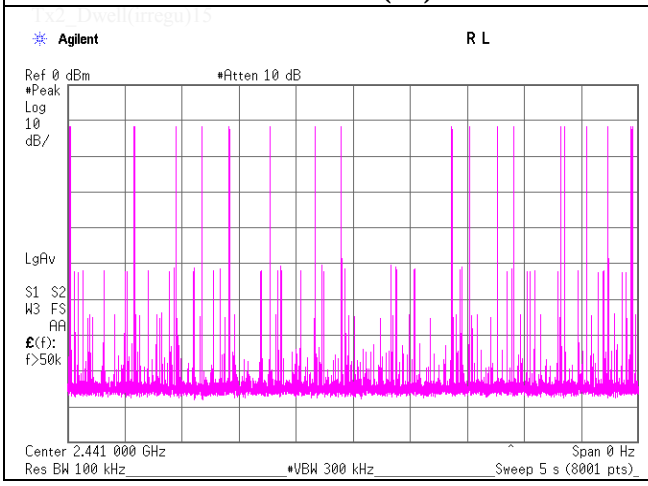
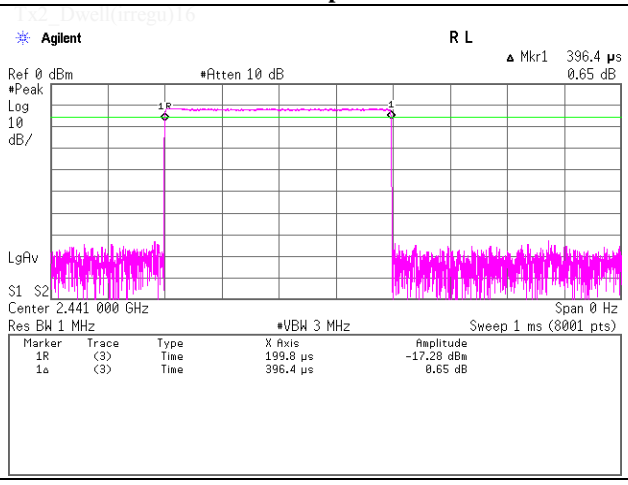
Dwell time

Tx, Bluetooth, BDR, PRBS9

DH1 - in 5sec.(1/5)	DH1 - in 5sec.(2/5)
	
DH1 - in 5sec.(3/5)	**DH1 - in 5sec.(4/5)**
	
DH1 - in 5sec.(5/5)	**DH1 - 1pulse**
	

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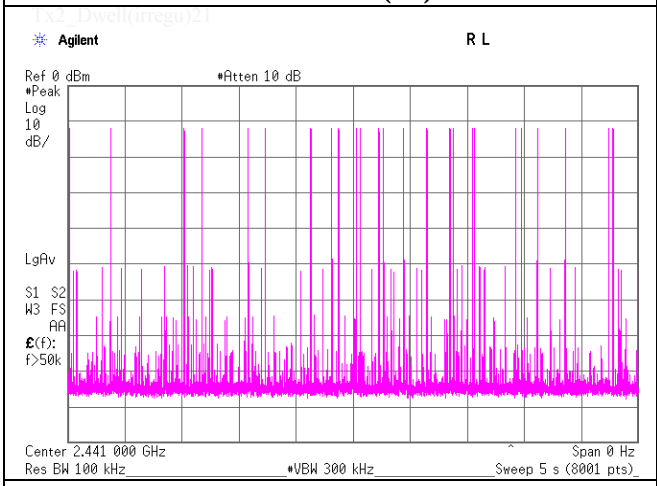
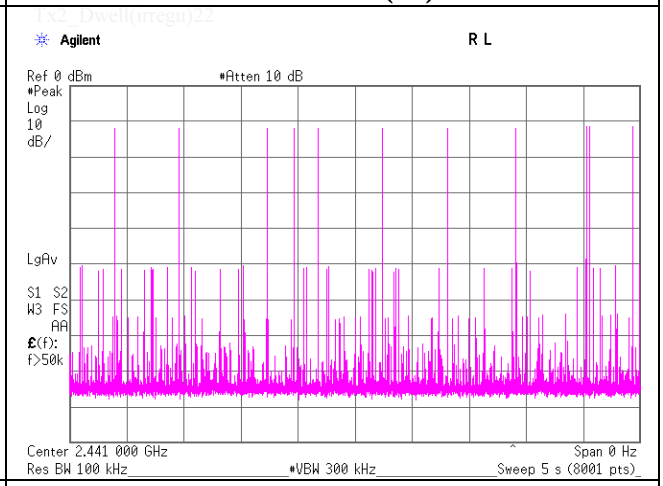
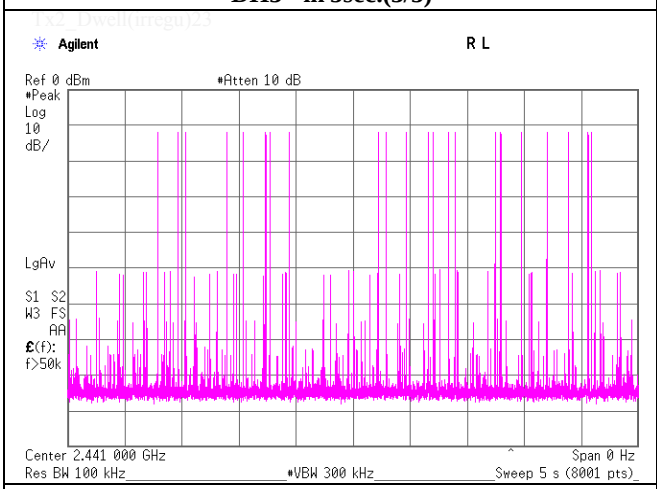
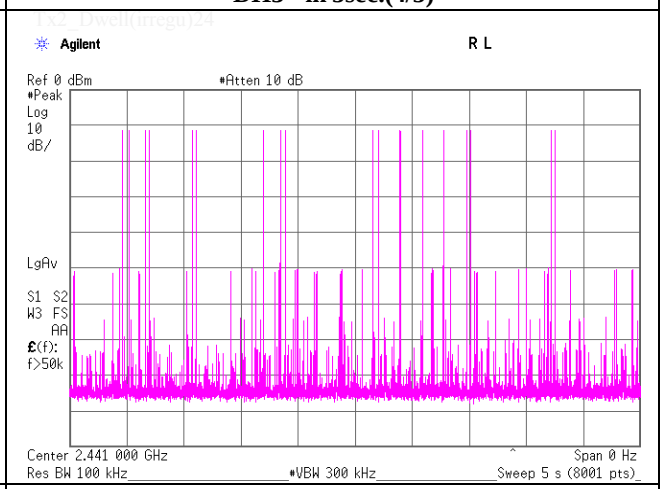
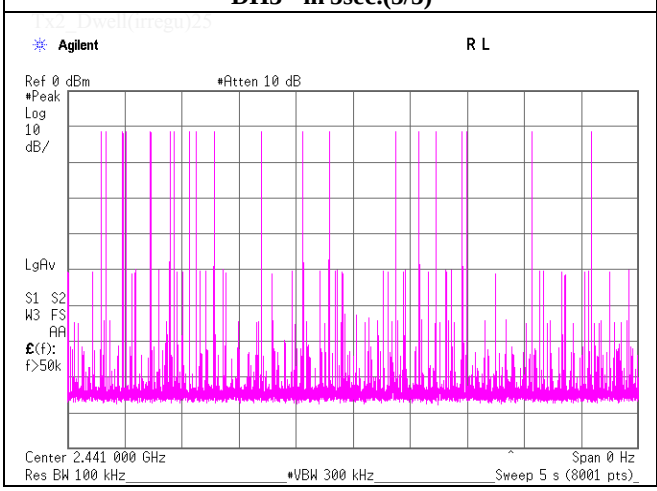
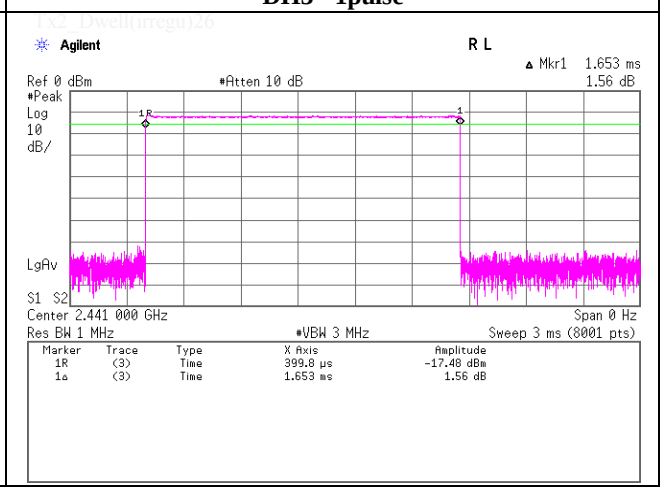
Dwell time

Tx, Bluetooth, BDR, PRBS9

DH3 - in 5sec.(1/5)	DH3 - in 5sec.(2/5)
	
DH3 - in 5sec.(3/5)	**DH3 - in 5sec.(4/5)**
	
DH3 - in 5sec.(5/5)	**DH3 - 1pulse**
	

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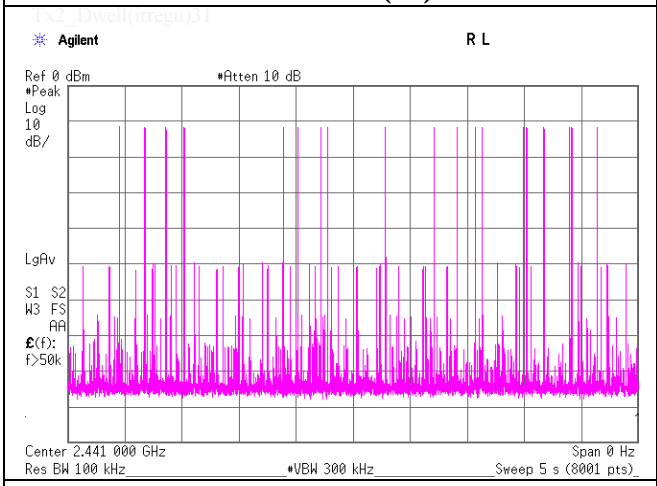
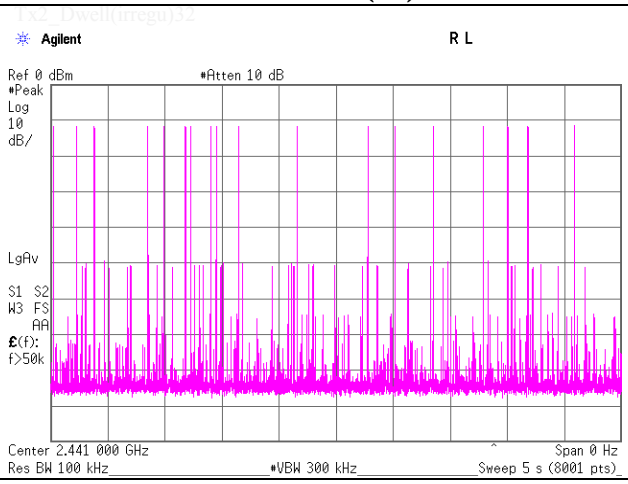
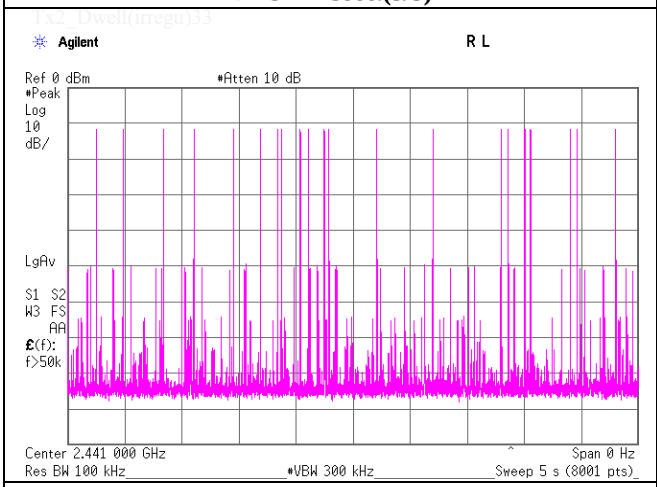
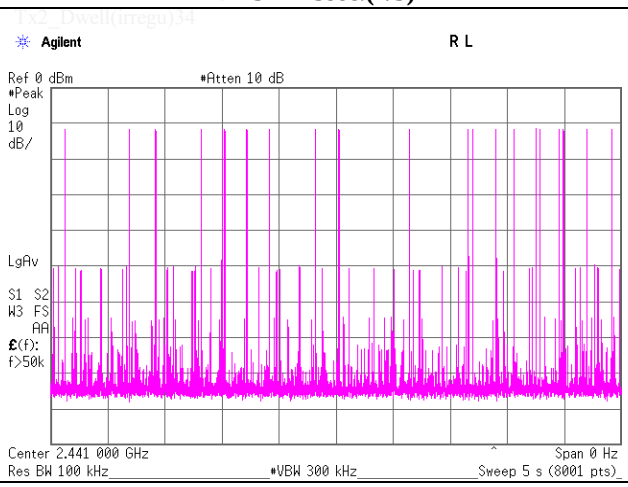
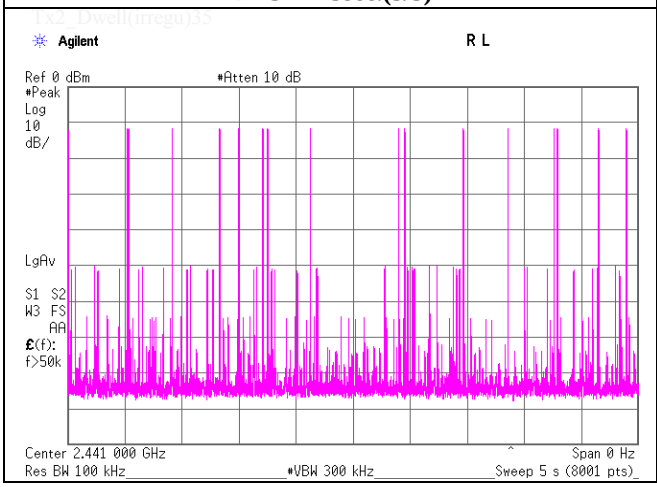
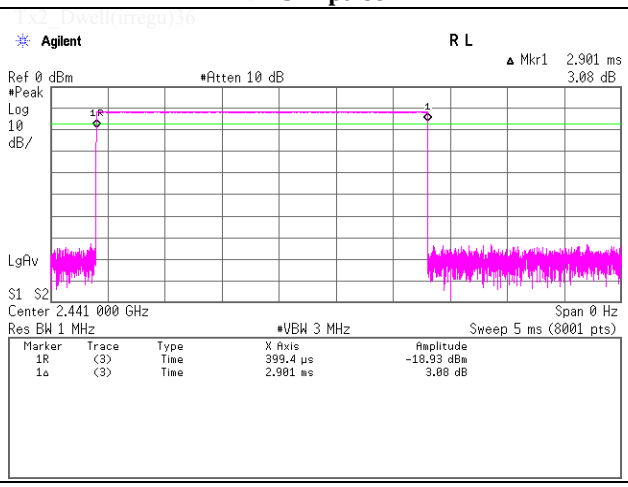
Dwell time

Tx, Bluetooth, BDR, PRBS9

DH5 - in 5sec.(1/5)	DH5 - in 5sec.(2/5)
	
DH5 - in 5sec.(3/5)	**DH5 - in 5sec.(4/5)**
	
DH5 - in 5sec.(5/5)	**DH5 - 1pulse**
	

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Dwell Time

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date December 19, 2012
Temperature / Humidity 23 deg.C , 55 %RH
Engineer Tatsuya Arai
Mode Tx, Bluetooth, EDR, PRBS9

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4) second	Length of transmission time [msec]	Result [msec]	Limit [msec]
3-DH1	20.2 / 5.0 sec. x 31.6 sec. = 128 times	0.406	52	400
3-DH3	18.8 / 5.0 sec. x 31.6 sec. = 119 times	1.657	197	400
3-DH5	21.6 / 5.0 sec. x 31.6 sec. = 137 times	2.909	398	400

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

*Average data of 5 tests.

Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
3-DH1	22	24	18	19	18	20.2
3-DH3	19	18	19	18	20	18.8
3-DH5	26	20	24	16	22	21.6

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 (3-DH1, 3-DH3 or 3-DH5). This is confirmed in the test report for N=79.

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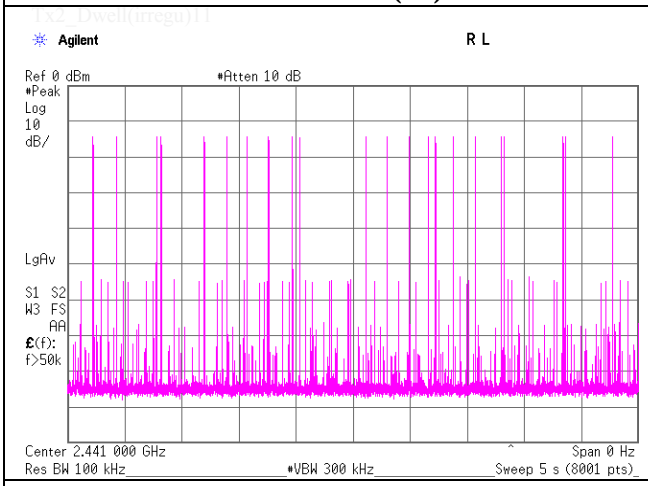
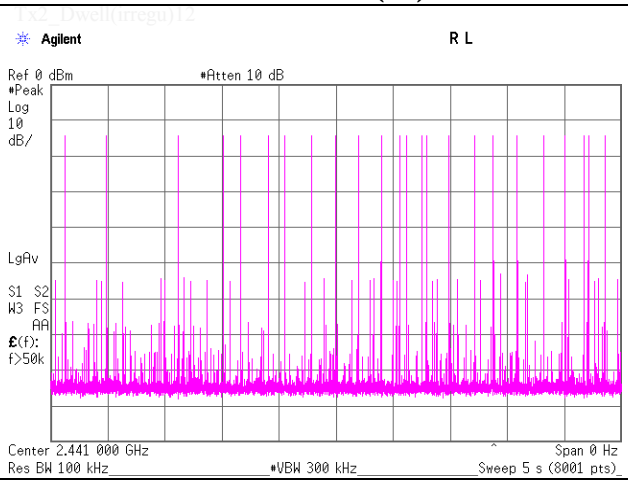
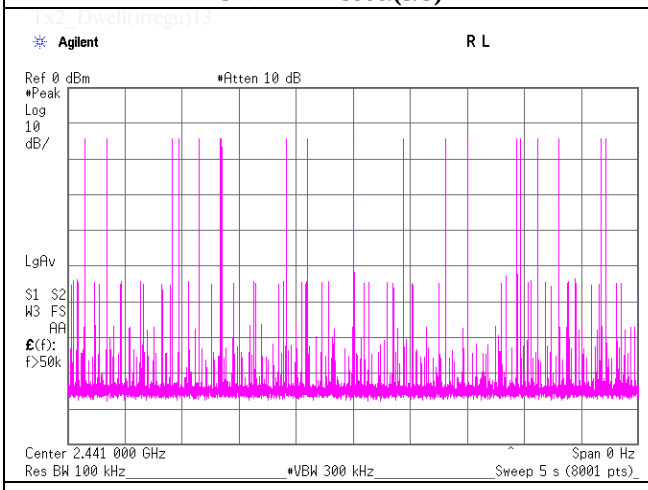
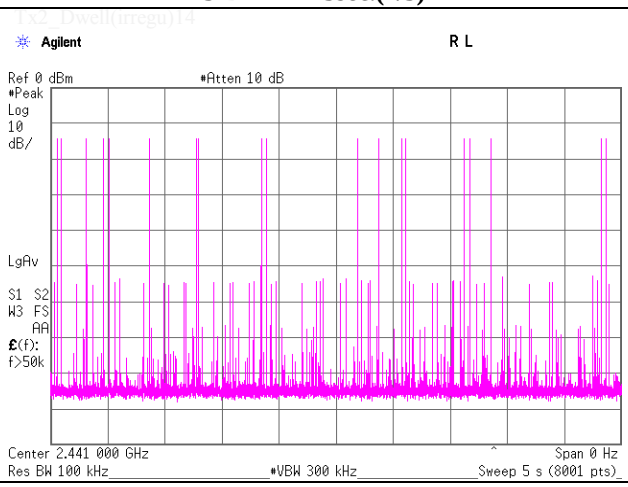
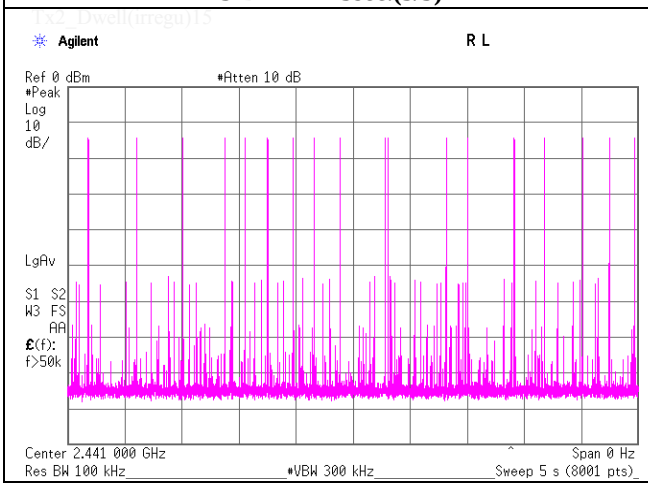
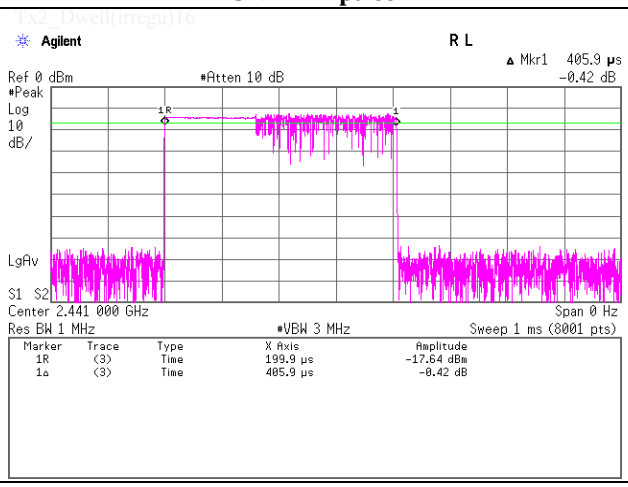
Dwell time

Tx, Bluetooth, EDR, PRBS9

3-DH1 - in 5sec.(1/5)	3-DH1 - in 5sec.(2/5)
	
3-DH1 - in 5sec.(3/5)	**3-DH1 - in 5sec.(4/5)**
	
3-DH1 - in 5sec.(5/5)	**3-DH1 - 1pulse**
	

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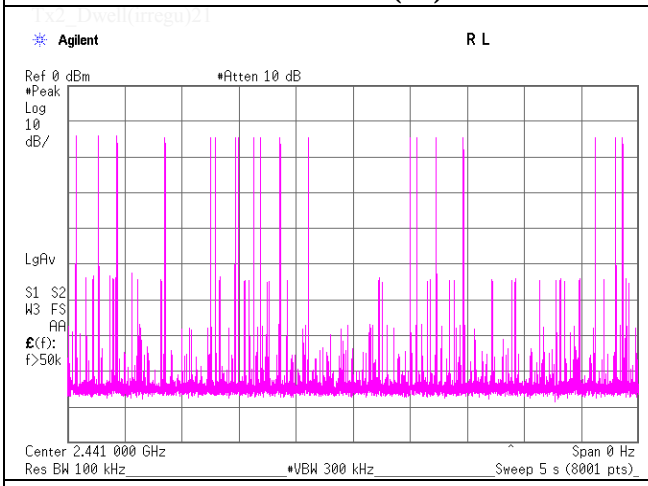
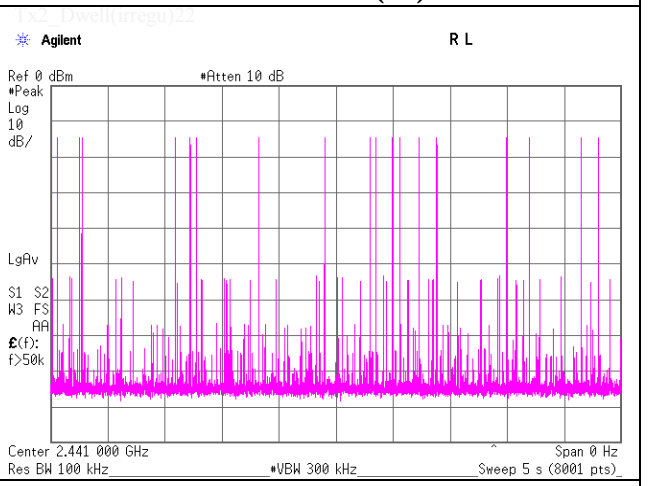
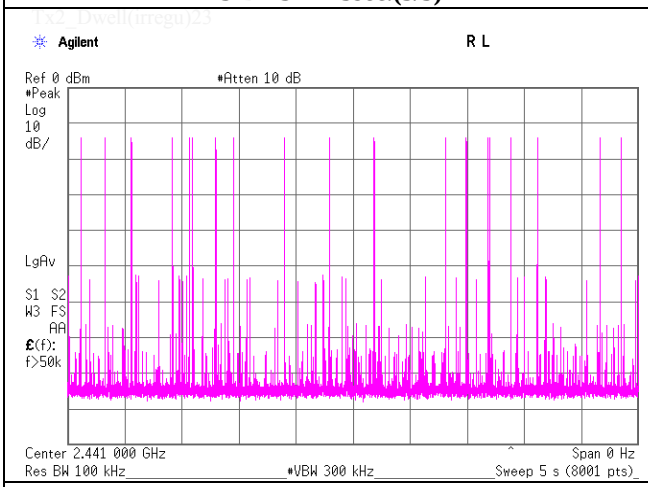
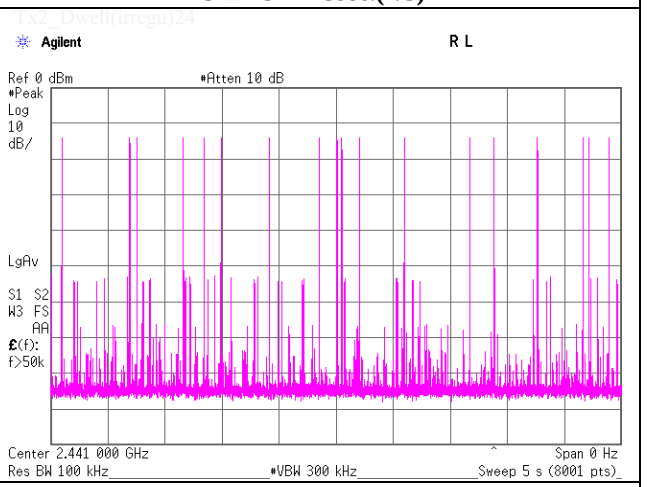
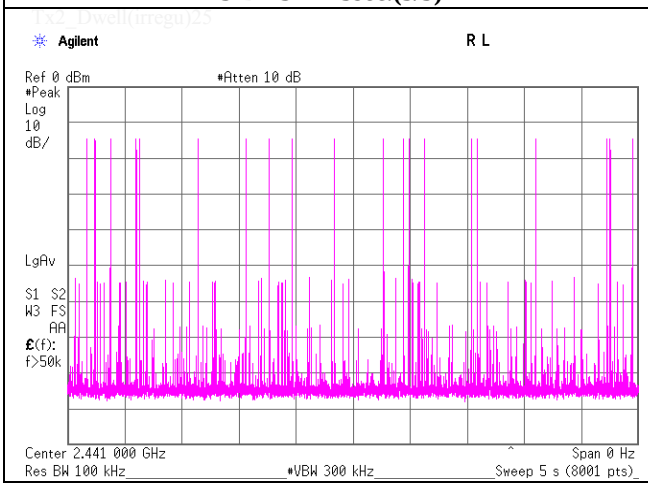
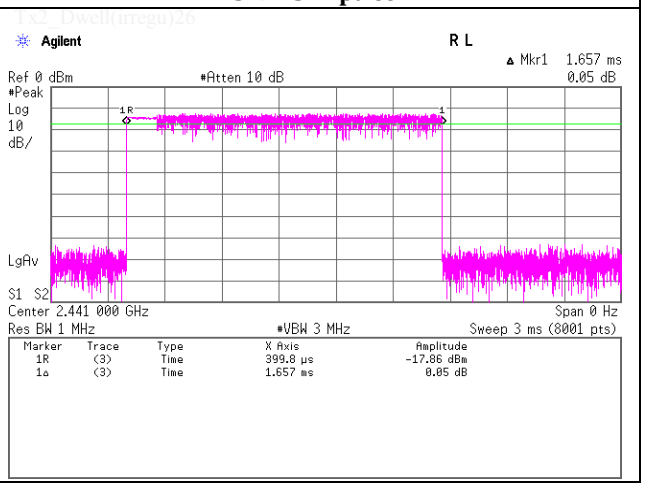
Dwell time

Tx, Bluetooth, EDR, PRBS9

3-DH3 - in 5sec.(1/5)	3-DH3 - in 5sec.(2/5)
	
3-DH3 - in 5sec.(3/5)	**3-DH3 - in 5sec.(4/5)**
	
3-DH3 - in 5sec.(5/5)	**3-DH3 - 1pulse**
	

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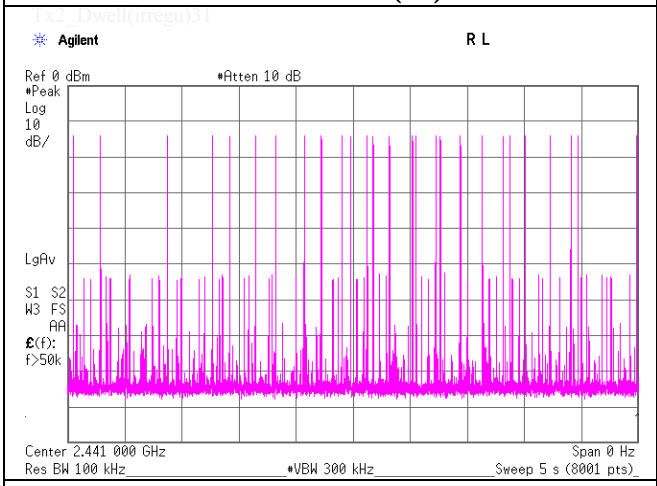
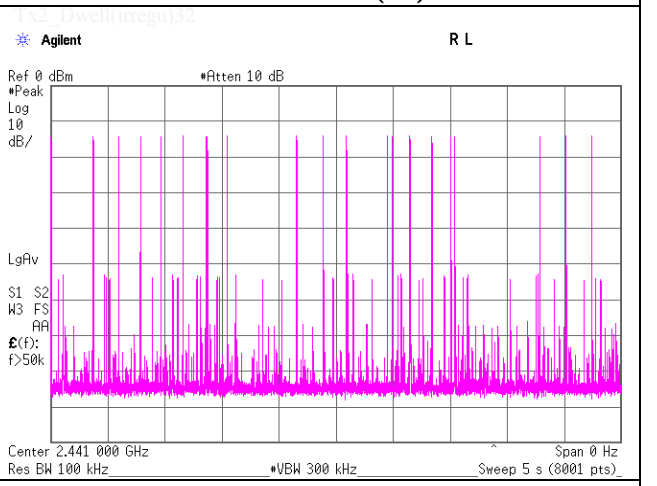
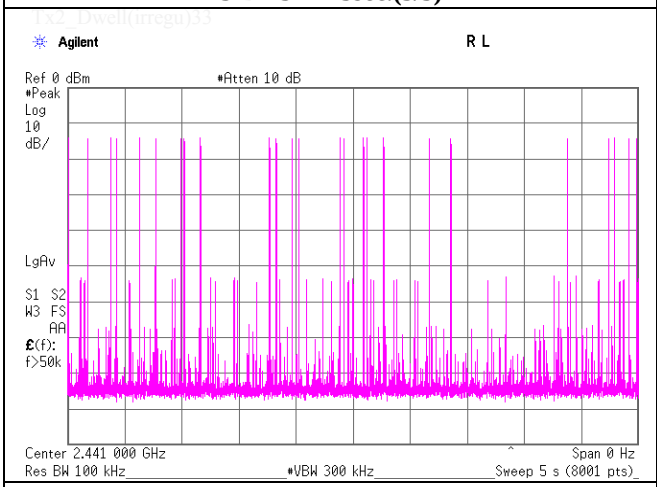
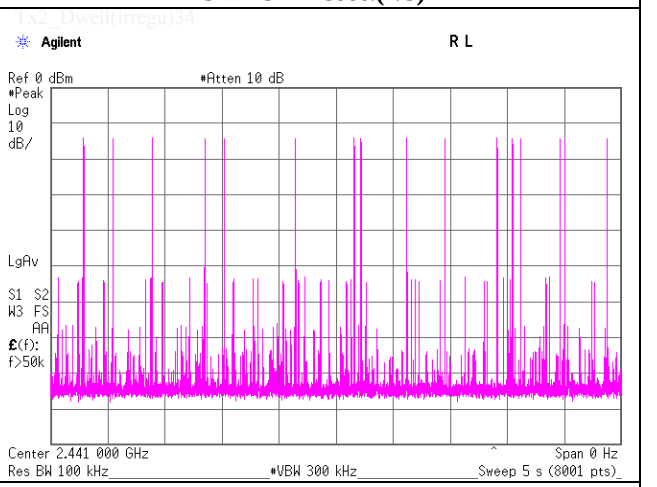
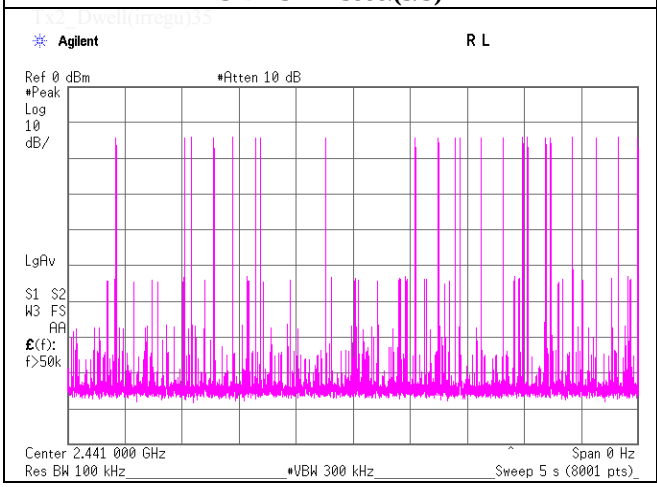
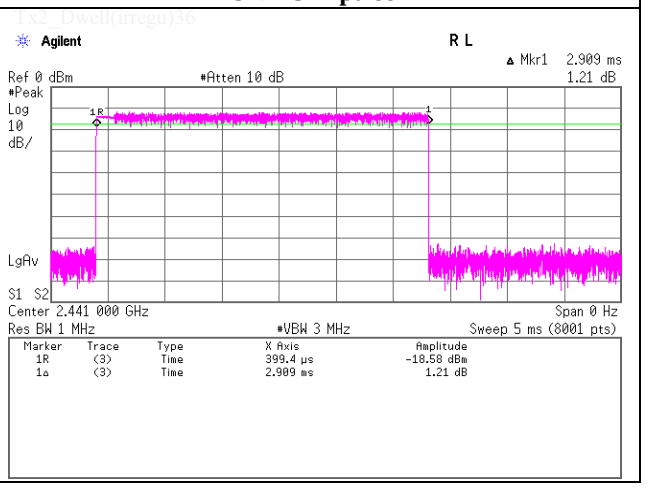
Dwell time

Tx, Bluetooth, EDR, PRBS9

3-DH5 - in 5sec.(1/5)	3-DH5 - in 5sec.(2/5)
	
3-DH5 - in 5sec.(3/5)	**3-DH5 - in 5sec.(4/5)**
	
3-DH5 - in 5sec.(5/5)	**3-DH5 - 1pulse**
	

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Maximum Peak Conducted Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date	December 19, 2012
Temperature / Humidity	23 deg.C , 55 %RH
Engineer	Tatsuya Arai
Mode	Tx, Bluetooth

(* P/M: Power Meter with power sensor)

	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
DH5	2402.0	-10.93	1.67	10.00	0.74	1.19	20.97	125	20.23
DH5	2441.0	-11.01	1.69	10.00	0.68	1.17	20.97	125	20.29
DH5	2480.0	-12.19	1.71	10.00	-0.48	0.90	20.97	125	21.45
2-DH5	2402.0	-11.10	1.67	10.00	0.57	1.14	20.97	125	20.40
2-DH5	2441.0	-12.18	1.69	10.00	-0.49	0.89	20.97	125	21.46
2-DH5	2480.0	-12.83	1.71	10.00	-1.12	0.77	20.97	125	22.09
3-DH5	2402.0	-10.77	1.67	10.00	0.90	1.23	20.97	125	20.07
3-DH5	2441.0	-11.83	1.69	10.00	-0.14	0.97	20.97	125	21.11
3-DH5	2480.0	-12.54	1.71	10.00	-0.83	0.83	20.97	125	21.80

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber
Date	January 9, 2013	January 10, 2013
Temperature / Humidity	25 deg.C, 31 %RH	26 deg.C, 34 %RH
Engineer	Akio Hayashi	Akio Hayashi
Mode	Tx, 2402 MHz	
	Tx, Bluetooth, BDR, PRBS9	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	99.981	QP	46.3	10.2	7.3	32.2	31.6	43.5	11.9	309	108	
Hori.	215.974	QP	43.5	16.6	8.0	32.0	36.1	43.5	7.4	142	58	
Hori.	699.994	QP	40.2	20.3	10.1	31.9	38.7	46.0	7.3	155	55	
Hori.	1066.693	PK	48.0	25.0	12.7	40.7	45.0	73.9	28.9	100	118	
Hori.	2390.000	PK	45.8	27.4	14.2	41.4	46.0	73.9	27.9	100	144	
Hori.	3144.840	PK	50.4	28.7	5.8	41.5	43.4	73.9	30.5	109	171	
Hori.	4804.000	PK	49.1	31.1	6.8	41.2	45.8	73.9	28.1	100	221	
Hori.	7206.000	PK	46.8	36.6	8.3	41.4	50.3	73.9	23.6	100	0	Not Detect
Hori.	9608.000	PK	42.6	38.5	9.5	38.9	51.7	73.9	22.2	100	0	Not Detect
Hori.	12010.000	PK	44.1	39.4	10.9	39.4	55.0	73.9	18.9	100	0	Not Detect
Hori.	1066.693	AV	39.5	25.0	12.7	40.7	36.5	53.9	17.4	100	118	
Hori.	2390.000	AV	34.0	27.4	14.2	41.4	34.2	53.9	19.7	100	144	
Hori.	3144.840	AV	44.7	28.7	5.8	41.5	37.7	53.9	16.2	109	171	
Hori.	4804.000	AV	36.6	31.1	6.8	41.2	33.3	53.9	20.6	100	221	
Hori.	7206.000	AV	34.1	36.6	8.3	41.4	37.6	53.9	16.3	100	0	Not Detect
Hori.	9608.000	AV	30.6	38.5	9.5	38.9	39.7	53.9	14.2	100	0	Not Detect
Hori.	12010.000	AV	31.6	39.4	10.9	39.4	42.5	53.9	11.4	100	0	Not Detect
Vert.	161.983	QP	35.8	15.3	7.8	32.1	26.8	43.5	16.7	100	358	
Vert.	833.327	QP	36.6	21.3	10.5	31.5	36.9	46.0	9.1	100	328	
Vert.	966.661	QP	35.6	22.8	10.9	30.5	38.8	53.9	15.1	101	359	
Vert.	1066.693	PK	48.3	25.0	12.7	40.7	45.3	73.9	28.6	100	0	
Vert.	2390.000	PK	46.2	27.4	14.2	41.4	46.4	73.9	27.5	100	212	
Vert.	3144.840	PK	49.7	28.7	5.8	41.5	42.7	73.9	31.2	100	171	
Vert.	4804.000	PK	50.6	31.1	6.8	41.2	47.3	73.9	26.6	113	179	
Vert.	7206.000	PK	46.2	36.6	8.3	41.4	49.7	73.9	24.2	100	0	Not Detect
Vert.	9608.000	PK	42.7	38.5	9.5	38.9	51.8	73.9	22.1	100	0	Not Detect
Vert.	12010.000	PK	43.4	39.4	10.9	39.4	54.3	73.9	19.6	100	0	Not Detect
Vert.	1066.693	AV	40.3	25.0	12.7	40.7	37.3	53.9	16.6	100	0	
Vert.	2390.000	AV	33.1	27.4	14.2	41.4	33.3	53.9	20.6	100	212	
Vert.	3144.840	AV	42.7	28.7	5.8	41.5	35.7	53.9	18.2	100	171	
Vert.	4804.000	AV	39.9	31.1	6.8	41.2	36.6	53.9	17.3	113	179	
Vert.	7206.000	AV	34.1	36.6	8.3	41.4	37.6	53.9	16.3	100	0	Not Detect
Vert.	9608.000	AV	30.6	38.5	9.5	38.9	39.7	53.9	14.2	100	0	Not Detect
Vert.	12010.000	AV	31.7	39.4	10.9	39.4	42.6	53.9	11.3	100	0	Not Detect

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	86.0	27.4	14.2	41.4	86.2	-	-	Carrier(100k/300k)
Hori.	2400.000	PK	37.9	27.4	14.2	41.4	38.1	66.2	28.1	20dBc(100k/300k)
Vert.	2402.000	PK	78.6	27.4	14.2	41.4	78.8	-	-	Carrier(100k/300k)
Vert.	2400.000	PK	38.2	27.4	14.2	41.4	38.4	58.8	20.4	20dBc(100k/300k)

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber
Date	January 9, 2013	January 10, 2013
Temperature / Humidity	25 deg.C, 31 %RH	26 deg.C, 34 %RH
Engineer	Akio Hayashi	Akio Hayashi
Mode	Tx, 2441 MHz	
	Tx, Bluetooth, BDR, PRBS9	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	99.979	QP	47.2	10.2	7.3	32.2	32.5	43.5	11.0	309	76	
Hori.	215.982	QP	44.2	16.6	8.0	32.0	36.8	43.5	6.7	139	58	
Hori.	699.996	QP	38.4	20.3	10.1	31.9	36.9	46.0	9.1	155	335	
Hori.	766.666	QP	37.2	20.7	10.3	31.8	36.4	46.0	9.6	148	55	
Hori.	1066.678	PK	47.5	25.0	12.7	40.7	44.5	73.9	29.4	141	2	
Hori.	1133.396	PK	47.8	24.9	12.8	40.7	44.8	73.9	29.1	100	169	
Hori.	3144.844	PK	51.0	28.7	5.8	41.5	44.0	73.9	29.9	108	172	
Hori.	4882.000	PK	46.0	31.3	6.9	41.1	43.1	73.9	30.8	138	196	
Hori.	7323.000	PK	46.8	36.6	8.4	41.4	50.4	73.9	23.5	100	0	Not Detect
Hori.	9764.000	PK	43.0	38.7	9.5	38.9	52.3	73.9	21.6	100	0	Not Detect
Hori.	12205.000	PK	44.1	39.5	10.9	39.3	55.2	73.9	18.7	100	0	Not Detect
Hori.	1066.678	AV	39.7	25.0	12.7	40.7	36.7	53.9	17.2	141	2	
Hori.	1133.396	AV	38.9	24.9	12.8	40.7	35.9	53.9	18.0	100	169	
Hori.	3144.844	AV	44.1	28.7	5.8	41.5	37.1	53.9	16.8	108	172	
Hori.	4882.000	AV	35.9	31.3	6.9	41.1	33.0	53.9	20.9	138	196	
Hori.	7323.000	AV	34.8	36.6	8.4	41.4	38.4	53.9	15.5	100	0	Not Detect
Hori.	9764.000	AV	31.5	38.7	9.5	38.9	40.8	53.9	13.1	100	0	Not Detect
Hori.	12205.000	AV	32.5	39.5	10.9	39.3	43.6	53.9	10.3	100	0	Not Detect
Vert.	166.647	QP	37.2	15.4	7.8	32.1	28.3	43.5	15.2	100	250	
Vert.	966.671	QP	34.5	22.8	10.9	30.5	37.7	53.9	16.2	152	35	
Vert.	1066.678	PK	49.5	25.0	12.7	40.7	46.5	73.9	27.4	100	51	
Vert.	1133.396	PK	49.0	24.9	12.8	40.7	46.0	73.9	27.9	219	19	
Vert.	3144.844	PK	50.1	28.7	5.8	41.5	43.1	73.9	30.8	100	171	
Vert.	4882.000	PK	48.4	31.3	6.9	41.1	45.5	73.9	28.4	100	184	
Vert.	7323.000	PK	47.4	36.6	8.4	41.4	51.0	73.9	22.9	100	0	Not Detect
Vert.	9764.000	PK	44.0	38.7	9.5	38.9	53.3	73.9	20.6	100	0	Not Detect
Vert.	12205.000	PK	45.4	39.5	10.9	39.3	56.5	73.9	17.4	100	0	Not Detect
Vert.	1066.678	AV	41.7	25.0	12.7	40.7	38.7	53.9	15.2	100	51	
Vert.	1133.396	AV	40.7	24.9	12.8	40.7	37.7	53.9	16.2	219	19	
Vert.	3144.844	AV	43.0	28.7	5.8	41.5	36.0	53.9	17.9	100	171	
Vert.	4882.000	AV	37.0	31.3	6.9	41.1	34.1	53.9	19.8	100	184	
Vert.	7323.000	AV	34.5	36.6	8.4	41.4	38.1	53.9	15.8	100	0	Not Detect
Vert.	9764.000	AV	31.4	38.7	9.5	38.9	40.7	53.9	13.2	100	0	Not Detect
Vert.	12205.000	AV	32.5	39.5	10.9	39.3	43.6	53.9	10.3	100	0	Not Detect

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber
Date	January 9, 2013	January 10, 2013
Temperature / Humidity	25 deg.C, 31 %RH	26 deg.C, 34 %RH
Engineer	Akio Hayashi	Akio Hayashi
Mode	Tx, 2480 MHz	
	Tx, Bluetooth, BDR, PRBS9	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	99.982	QP	47.7	10.2	7.3	32.2	33.0	43.5	10.5	305	81	
Hori.	215.984	QP	43.2	16.6	8.0	32.0	35.8	43.5	7.7	147	55	
Hori.	699.993	QP	38.8	20.3	10.1	31.9	37.3	46.0	8.7	175	340	
Hori.	900.003	QP	35.6	22.3	10.7	31.1	37.5	46.0	8.5	100	226	
Hori.	1066.691	PK	48.8	25.0	12.7	40.7	45.8	73.9	28.1	100	119	
Hori.	2483.500	PK	46.6	27.5	14.3	41.4	47.0	73.9	26.9	100	147	
Hori.	3144.845	PK	50.7	28.7	5.8	41.5	43.7	73.9	30.2	109	171	
Hori.	4960.000	PK	46.9	31.6	6.9	41.0	44.4	73.9	29.5	113	198	
Hori.	7440.000	PK	46.6	36.7	8.5	41.5	50.3	73.9	23.6	100	0	Not Detect
Hori.	9920.000	PK	43.3	39.0	9.7	38.9	53.1	73.9	20.8	100	0	Not Detect
Hori.	12400.000	PK	44.2	39.5	10.8	39.3	55.2	73.9	18.7	100	0	Not Detect
Hori.	1066.691	AV	39.5	25.0	12.7	40.7	36.5	53.9	17.4	100	119	
Hori.	2483.500	AV	34.5	27.5	14.3	41.4	34.9	53.9	19.0	100	147	
Hori.	3144.845	AV	44.8	28.7	5.8	41.5	37.8	53.9	16.1	109	171	
Hori.	4960.000	AV	35.4	31.6	6.9	41.0	32.9	53.9	21.0	113	198	
Hori.	7440.000	AV	34.8	36.7	8.5	41.5	38.5	53.9	15.4	100	0	Not Detect
Hori.	9920.000	AV	31.3	39.0	9.7	38.9	41.1	53.9	12.8	100	0	Not Detect
Hori.	12400.000	AV	32.4	39.5	10.8	39.3	43.4	53.9	10.5	100	0	Not Detect
Vert.	166.654	QP	37.0	15.4	7.8	32.1	28.1	43.5	15.4	100	197	
Vert.	966.663	QP	36.5	22.8	10.9	30.5	39.7	53.9	14.2	100	358	
Vert.	1066.691	PK	48.3	25.0	12.7	40.7	45.3	73.9	28.6	100	57	
Vert.	2483.500	PK	46.4	27.5	14.3	41.4	46.8	73.9	27.1	124	197	
Vert.	3144.845	PK	50.1	28.7	5.8	41.5	43.1	73.9	30.8	100	173	
Vert.	4960.000	PK	47.4	31.6	6.9	41.0	44.9	73.9	29.0	100	177	
Vert.	7440.000	PK	47.7	36.7	8.5	41.5	51.4	73.9	22.5	100	0	Not Detect
Vert.	9920.000	PK	43.2	39.0	9.7	38.9	53.0	73.9	20.9	100	0	Not Detect
Vert.	12400.000	PK	44.6	39.5	10.8	39.3	55.6	73.9	18.3	100	0	Not Detect
Vert.	1066.691	AV	40.7	25.0	12.7	40.7	37.7	53.9	16.2	100	57	
Vert.	2483.500	AV	33.9	27.5	14.3	41.4	34.3	53.9	19.6	124	197	
Vert.	3144.845	AV	42.7	28.7	5.8	41.5	35.7	53.9	18.2	100	173	
Vert.	4960.000	AV	35.5	31.6	6.9	41.0	33.0	53.9	20.9	100	177	
Vert.	7440.000	AV	34.8	36.7	8.5	41.5	38.5	53.9	15.4	100	0	Not Detect
Vert.	9920.000	AV	31.3	39.0	9.7	38.9	41.1	53.9	12.8	100	0	Not Detect
Vert.	12400.000	AV	32.5	39.5	10.8	39.3	43.5	53.9	10.4	100	0	Not Detect

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber
Date	January 9, 2013	January 10, 2013
Temperature / Humidity	25 deg.C, 31 %RH	26 deg.C, 34 %RH
Engineer	Akio Hayashi	Akio Hayashi
Mode	Tx, 2402 MHz	
	Tx, Bluetooth, EDR, PRBS9	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	99.982	QP	47.2	10.2	7.3	32.2	32.5	43.5	11.0	303	71	
Hori.	215.974	QP	42.6	16.6	8.0	32.0	35.2	43.5	8.3	138	103	
Hori.	699.994	QP	39.3	20.3	10.1	31.9	37.8	46.0	8.2	147	51	
Hori.	1066.703	PK	48.2	25.0	12.7	40.7	45.2	73.9	28.7	100	119	
Hori.	2390.000	PK	45.6	27.4	14.2	41.4	45.8	73.9	28.1	132	145	
Hori.	3144.806	PK	49.9	28.7	5.8	41.5	42.9	73.9	31.0	100	226	
Hori.	4804.000	PK	47.0	31.1	6.8	41.2	43.7	73.9	30.2	100	127	
Hori.	7206.000	PK	45.3	36.6	8.3	41.4	48.8	73.9	25.1	100	0	Not Detect
Hori.	9608.000	PK	42.4	38.5	9.5	38.9	51.5	73.9	22.4	100	0	Not Detect
Hori.	12010.000	PK	42.4	39.4	10.9	39.4	53.3	73.9	20.6	100	0	Not Detect
Hori.	1066.703	AV	40.7	25.0	12.7	40.7	37.7	53.9	16.2	100	119	
Hori.	2390.000	AV	34.0	27.4	14.2	41.4	34.2	53.9	19.7	132	145	
Hori.	3144.806	AV	43.4	28.7	5.8	41.5	36.4	53.9	17.5	100	226	
Hori.	4804.000	AV	35.3	31.1	6.8	41.2	32.0	53.9	21.9	100	127	
Hori.	7206.000	AV	33.8	36.6	8.3	41.4	37.3	53.9	16.6	100	0	Not Detect
Hori.	9608.000	AV	30.4	38.5	9.5	38.9	39.5	53.9	14.4	100	0	Not Detect
Hori.	12010.000	AV	31.5	39.4	10.9	39.4	42.4	53.9	11.5	100	0	Not Detect
Vert.	166.647	QP	37.3	15.4	7.8	32.1	28.4	43.5	15.1	100	192	
Vert.	833.332	QP	33.4	21.3	10.5	31.5	33.7	46.0	12.3	100	178	
Vert.	966.661	QP	36.2	22.8	10.9	30.5	39.4	53.9	14.5	101	0	
Vert.	1066.703	PK	48.7	25.0	12.7	40.7	45.7	73.9	28.2	100	32	
Vert.	2390.000	PK	45.6	27.4	14.2	41.4	45.8	73.9	28.1	100	149	
Vert.	3144.806	PK	49.1	28.7	5.8	41.5	42.1	73.9	31.8	100	170	
Vert.	4804.000	PK	48.0	31.1	6.8	41.2	44.7	73.9	29.2	109	175	
Vert.	7206.000	PK	45.5	36.6	8.3	41.4	49.0	73.9	24.9	100	0	Not Detect
Vert.	9608.000	PK	41.6	38.5	9.5	38.9	50.7	73.9	23.2	100	0	Not Detect
Vert.	12010.000	PK	43.9	39.4	10.9	39.4	54.8	73.9	19.1	100	0	Not Detect
Vert.	1066.703	AV	40.4	25.0	12.7	40.7	37.4	53.9	16.5	100	32	
Vert.	2390.000	AV	34.0	27.4	14.2	41.4	34.2	53.9	19.7	100	149	
Vert.	3144.806	AV	42.0	28.7	5.8	41.5	35.0	53.9	18.9	100	170	
Vert.	4804.000	AV	36.9	31.1	6.8	41.2	33.6	53.9	20.3	109	175	
Vert.	7206.000	AV	33.9	36.6	8.3	41.4	37.4	53.9	16.5	100	0	Not Detect
Vert.	9608.000	AV	30.4	38.5	9.5	38.9	39.5	53.9	14.4	100	0	Not Detect
Vert.	12010.000	AV	31.5	39.4	10.9	39.4	42.4	53.9	11.5	100	0	Not Detect

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	82.0	27.4	14.2	41.4	82.2	-	-	Carrier(100k/300k)
Hori.	2400.000	PK	38.7	27.4	14.2	41.4	38.9	62.2	23.3	20dBc(100k/300k)
Vert.	2402.000	PK	79.8	27.4	14.2	41.4	80.0	-	-	Carrier(100k/300k)
Vert.	2400.000	PK	38.0	27.4	14.2	41.4	38.2	60.0	21.8	20dBc(100k/300k)

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber
Date	January 9, 2013	January 10, 2013
Temperature / Humidity	25 deg.C, 31 %RH	26 deg.C, 34 %RH
Engineer	Akio Hayashi	Akio Hayashi
Mode	Tx, 2441 MHz	
	Tx, Bluetooth, EDR, PRBS9	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	99.980	QP	46.5	10.2	7.3	32.2	31.8	43.5	11.7	306	69	
Hori.	215.983	QP	44.6	16.6	8.0	32.0	37.2	43.5	6.3	128	63	
Hori.	699.991	QP	39.2	20.3	10.1	31.9	37.7	46.0	8.3	147	51	
Hori.	766.666	QP	37.7	20.7	10.3	31.8	36.9	46.0	9.1	156	61	
Hori.	1066.700	PK	47.9	25.0	12.7	40.7	44.9	73.9	29.0	121	3	
Hori.	3144.831	PK	50.6	28.7	5.8	41.5	43.6	73.9	30.3	111	172	
Hori.	4882.000	PK	46.9	31.3	6.9	41.1	44.0	73.9	29.9	138	197	
Hori.	7323.000	PK	45.6	36.6	8.4	41.4	49.2	73.9	24.7	100	0	Not Detect
Hori.	9764.000	PK	42.5	38.7	9.5	38.9	51.8	73.9	22.1	100	0	Not Detect
Hori.	12205.000	PK	44.3	39.5	10.9	39.3	55.4	73.9	18.5	100	0	Not Detect
Hori.	1066.700	AV	39.6	25.0	12.7	40.7	36.6	53.9	17.3	121	3	
Hori.	3144.831	AV	44.7	28.7	5.8	41.5	37.7	53.9	16.2	111	172	
Hori.	4882.000	AV	35.5	31.3	6.9	41.1	32.6	53.9	21.3	138	197	
Hori.	7323.000	AV	34.1	36.6	8.4	41.4	37.7	53.9	16.2	100	0	Not Detect
Hori.	9764.000	AV	30.9	38.7	9.5	38.9	40.2	53.9	13.7	100	0	Not Detect
Hori.	12205.000	AV	32.2	39.5	10.9	39.3	43.3	53.9	10.6	100	0	Not Detect
Vert.	166.648	QP	37.8	15.4	7.8	32.1	28.9	43.5	14.6	100	262	
Vert.	966.661	QP	33.7	22.8	10.9	30.5	36.9	53.9	17.0	158	18	
Vert.	1066.700	PK	48.7	25.0	12.7	40.7	45.7	73.9	28.2	100	54	
Vert.	3144.831	PK	50.1	28.7	5.8	41.5	43.1	73.9	30.8	100	173	
Vert.	4882.000	PK	47.2	31.3	6.9	41.1	44.3	73.9	29.6	100	183	
Vert.	7323.000	PK	46.8	36.6	8.4	41.4	50.4	73.9	23.5	100	0	Not Detect
Vert.	9764.000	PK	42.6	38.7	9.5	38.9	51.9	73.9	22.0	100	0	Not Detect
Vert.	12205.000	PK	43.5	39.5	10.9	39.3	54.6	73.9	19.3	100	0	Not Detect
Vert.	1066.700	AV	40.8	25.0	12.7	40.7	37.8	53.9	16.1	100	54	
Vert.	3144.831	AV	42.7	28.7	5.8	41.5	35.7	53.9	18.2	100	173	
Vert.	4882.000	AV	36.7	31.3	6.9	41.1	33.8	53.9	20.1	100	183	
Vert.	7323.000	AV	34.1	36.6	8.4	41.4	37.7	53.9	16.2	100	0	Not Detect
Vert.	9764.000	AV	30.9	38.7	9.5	38.9	40.2	53.9	13.7	100	0	Not Detect
Vert.	12205.000	AV	31.7	39.5	10.9	39.3	42.8	53.9	11.1	100	0	Not Detect

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber
Date	January 9, 2013	January 10, 2013
Temperature / Humidity	25 deg.C, 31 %RH	26 deg.C, 34 %RH
Engineer	Akio Hayashi	Akio Hayashi
Mode	Tx, 2480 MHz	
	Tx, Bluetooth, EDR, PRBS9	

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	99.983	QP	46.9	10.2	7.3	32.2	32.2	43.5	11.3	286	76	
Hori.	215.982	QP	44.0	16.6	8.0	32.0	36.6	43.5	6.9	150	58	
Hori.	699.991	QP	39.2	20.3	10.1	31.9	37.7	46.0	8.3	172	351	
Hori.	900.001	QP	36.1	22.3	10.7	31.1	38.0	46.0	8.0	100	238	
Hori.	1066.694	PK	48.1	25.0	12.7	40.7	45.1	73.9	28.8	125	3	
Hori.	2483.500	PK	46.3	27.5	14.3	41.4	46.7	73.9	27.2	100	148	
Hori.	3144.832	PK	51.1	28.7	5.8	41.5	44.1	73.9	29.8	112	171	
Hori.	4960.000	PK	46.9	31.6	6.9	41.0	44.4	73.9	29.5	110	197	
Hori.	7440.000	PK	46.7	36.7	8.5	41.5	50.4	73.9	23.5	100	0	Not Detect
Hori.	9920.000	PK	42.8	39.0	9.7	38.9	52.6	73.9	21.3	100	0	Not Detect
Hori.	12400.000	PK	45.3	39.5	10.8	39.3	56.3	73.9	17.6	100	0	Not Detect
Hori.	1066.694	AV	39.6	25.0	12.7	40.7	36.6	53.9	17.3	125	3	
Hori.	2483.500	AV	33.9	27.5	14.3	41.4	34.3	53.9	19.6	100	148	
Hori.	3144.832	AV	44.5	28.7	5.8	41.5	37.5	53.9	16.4	112	171	
Hori.	4960.000	AV	35.3	31.6	6.9	41.0	32.8	53.9	21.1	110	197	
Hori.	7440.000	AV	34.6	36.7	8.5	41.5	38.3	53.9	15.6	100	0	Not Detect
Hori.	9920.000	AV	31.3	39.0	9.7	38.9	41.1	53.9	12.8	100	0	Not Detect
Hori.	12400.000	AV	32.5	39.5	10.8	39.3	43.5	53.9	10.4	100	0	Not Detect
Vert.	166.651	QP	37.2	15.4	7.8	32.1	28.3	43.5	15.2	100	156	
Vert.	966.663	QP	36.8	22.8	10.9	30.5	40.0	53.9	13.9	100	348	
Vert.	1066.694	PK	48.7	25.0	12.7	40.7	45.7	73.9	28.2	100	54	
Vert.	2483.500	PK	45.5	27.5	14.3	41.4	45.9	73.9	28.0	125	195	
Vert.	3144.832	PK	49.7	28.7	5.8	41.5	42.7	73.9	31.2	100	173	
Vert.	4960.000	PK	46.7	31.6	6.9	41.0	44.2	73.9	29.7	100	178	
Vert.	7440.000	PK	46.5	36.7	8.5	41.5	50.2	73.9	23.7	100	0	Not Detect
Vert.	9920.000	PK	42.7	39.0	9.7	38.9	52.5	73.9	21.4	100	0	Not Detect
Vert.	12400.000	PK	44.2	39.5	10.8	39.3	55.2	73.9	18.7	100	0	Not Detect
Vert.	1066.694	AV	40.7	25.0	12.7	40.7	37.7	53.9	16.2	100	54	
Vert.	2483.500	AV	34.1	27.5	14.3	41.4	34.5	53.9	19.4	125	195	
Vert.	3144.832	AV	42.7	28.7	5.8	41.5	35.7	53.9	18.2	100	173	
Vert.	4960.000	AV	35.5	31.6	6.9	41.0	33.0	53.9	20.9	100	178	
Vert.	7440.000	AV	34.6	36.7	8.5	41.5	38.3	53.9	15.6	100	0	Not Detect
Vert.	9920.000	AV	31.3	39.0	9.7	38.9	41.1	53.9	12.8	100	0	Not Detect
Vert.	12400.000	AV	32.5	39.5	10.8	39.3	43.5	53.9	10.4	100	0	Not Detect

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)

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

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

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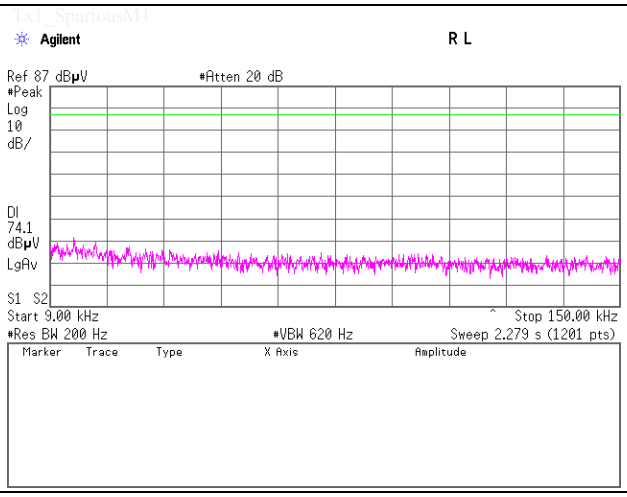
Spurious emission (Conducted)

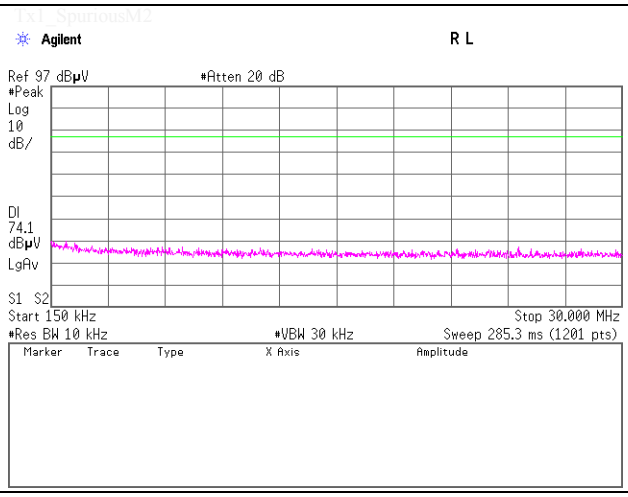
Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (below 1GHz)

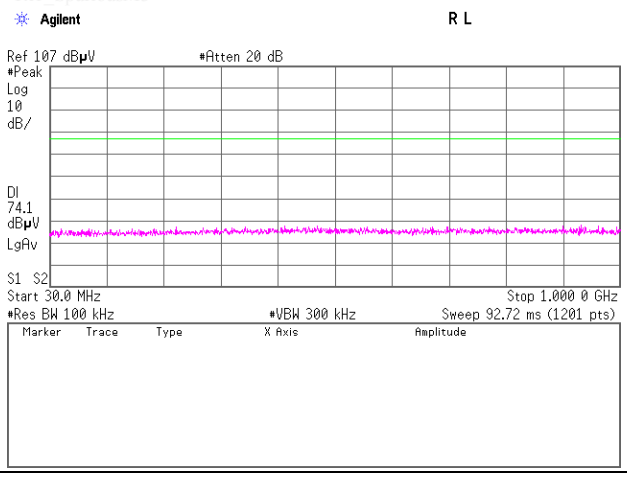
9kHz - 150kHz



150kHz - 30MHz



30MHz - 1GHz



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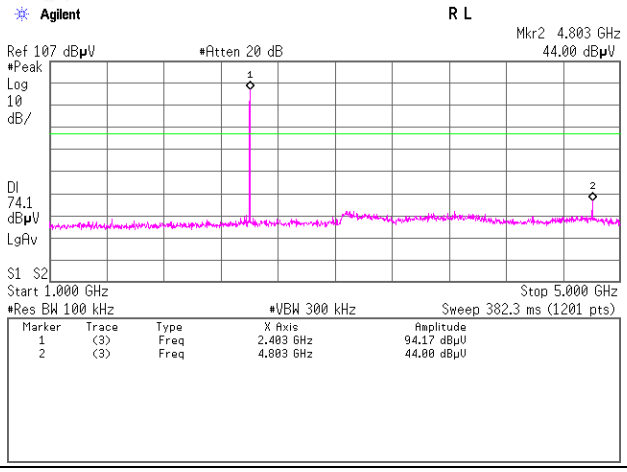
Spurious emission (Conducted)

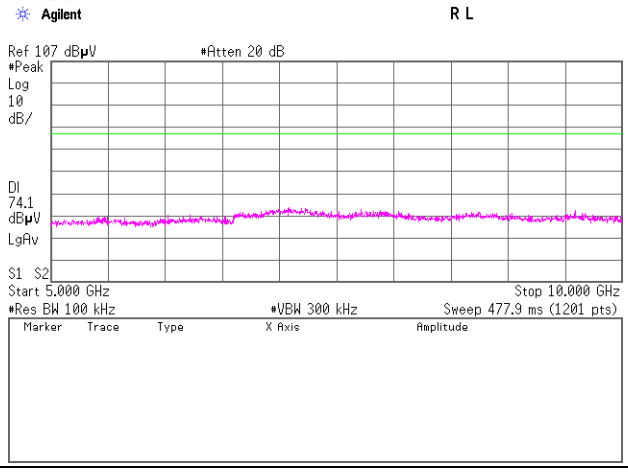
Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (above 1GHz)

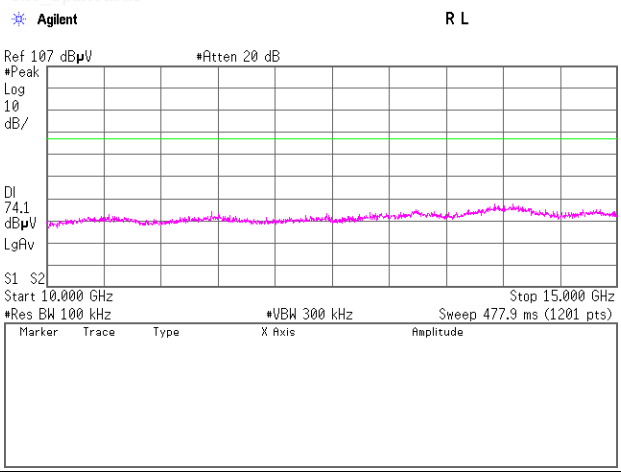
1GHz - 5GHz



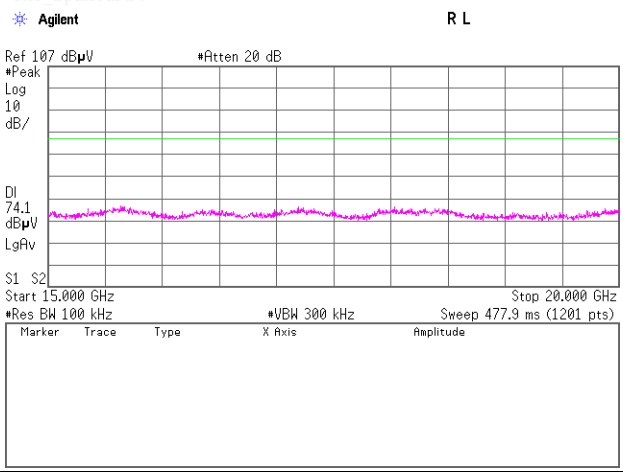
5GHz - 10GHz



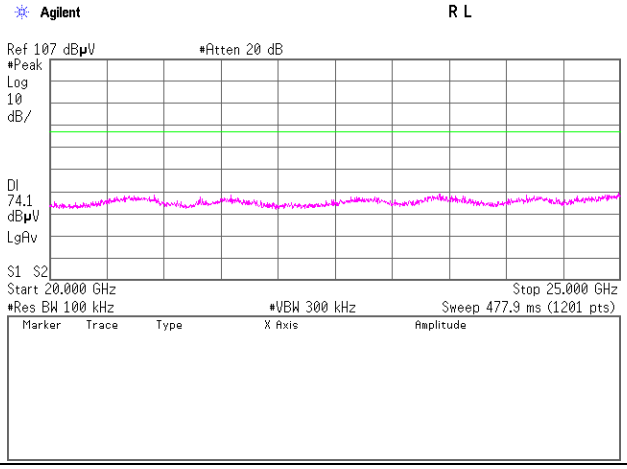
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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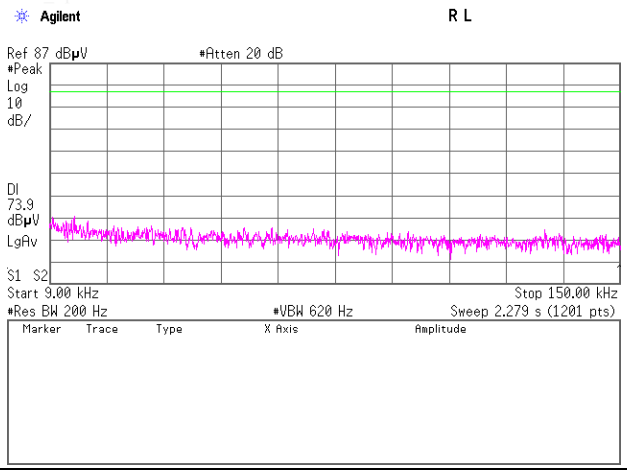
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2441MHz (below 1GHz)

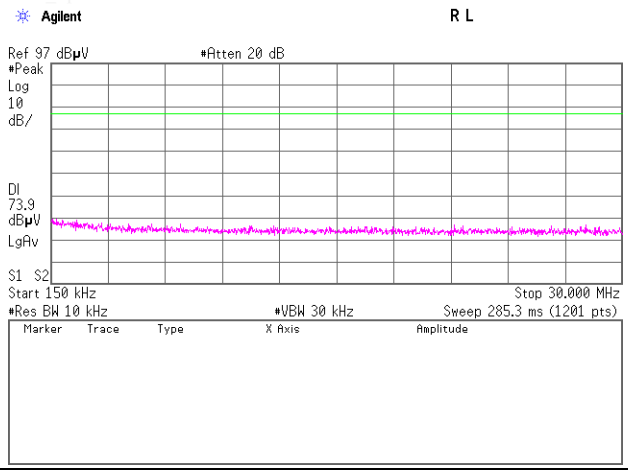
9kHz - 150kHz

Tx2_SpuriousM1



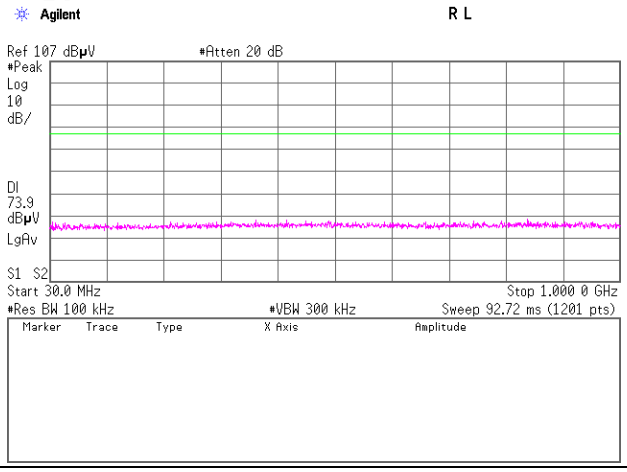
150kHz - 30MHz

Tx2_SpuriousM2



30MHz - 1GHz

Tx2_SpuriousM3



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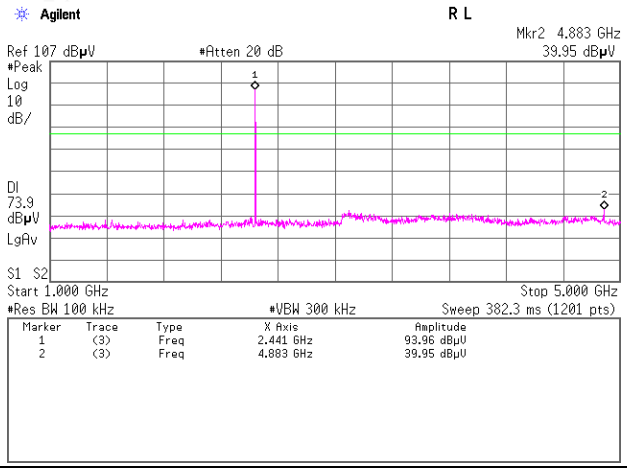
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2441MHz (above 1GHz)

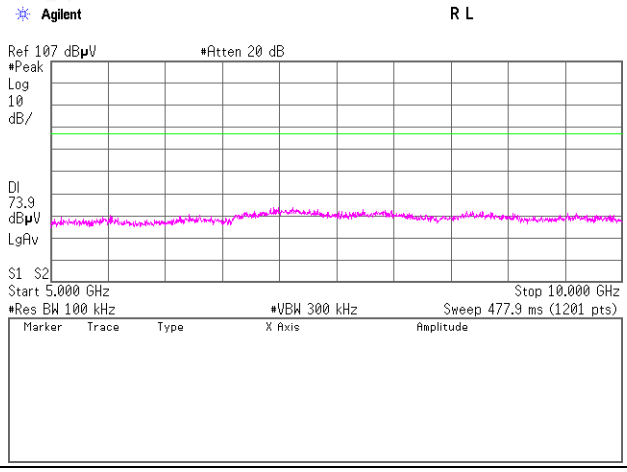
1GHz - 5GHz

Tx2_SpuriousG1



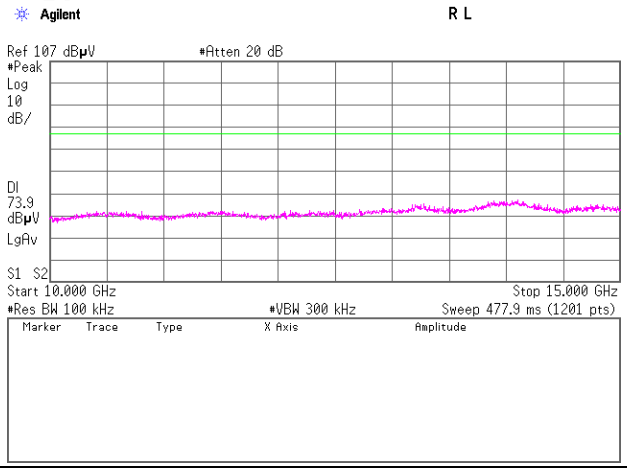
5GHz - 10GHz

Tx2_SpuriousG2



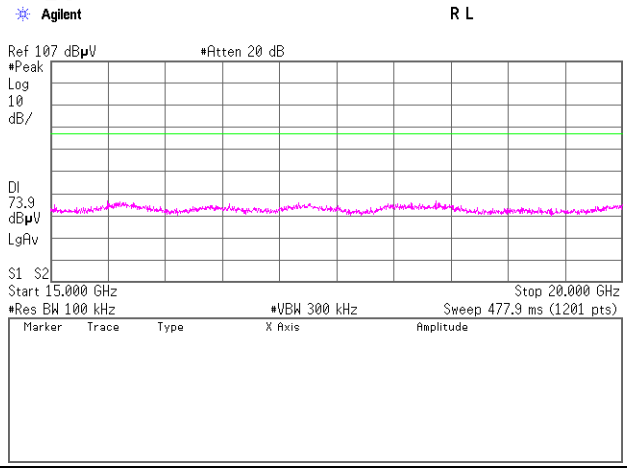
10GHz - 15GHz

Tx2_SpuriousG3



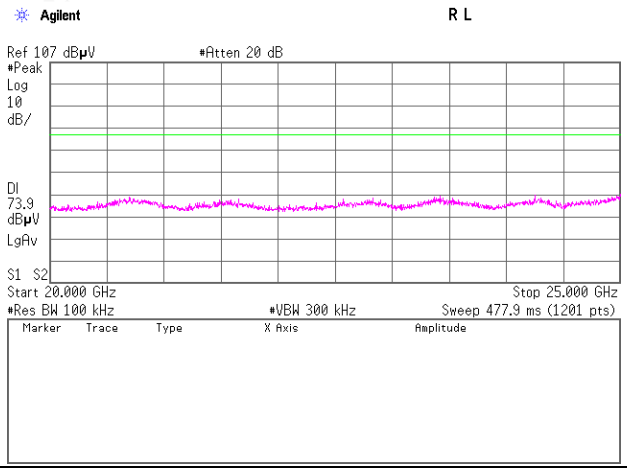
15GHz - 20GHz

Tx2_SpuriousG4



20GHz - 25GHz

Tx2_SpuriousG5



Tx2_SpuriousG6

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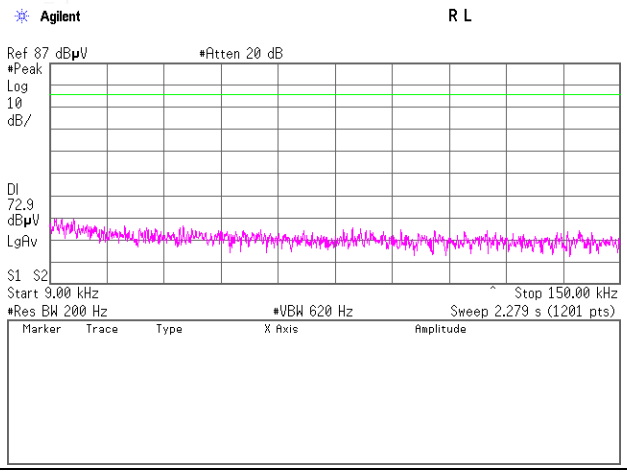
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (below 1GHz)

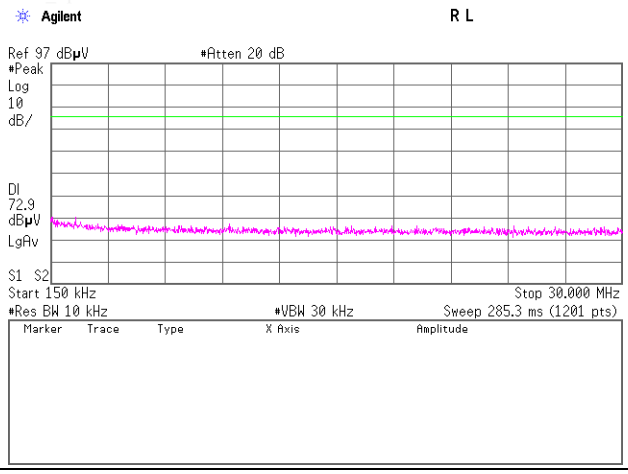
9kHz - 150kHz

Tx3_SpuriousM1



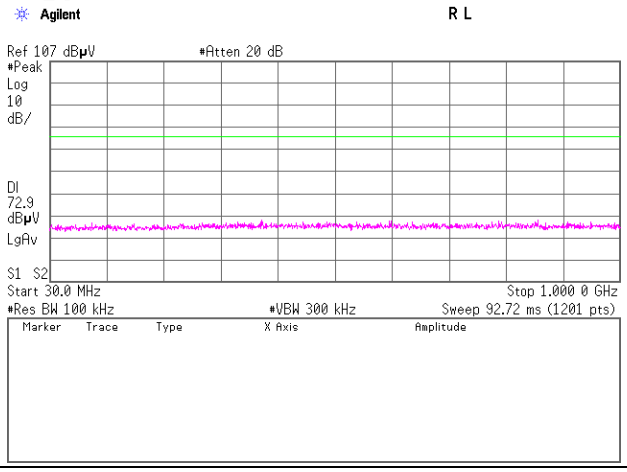
150kHz - 30MHz

Tx3_SpuriousM2



30MHz - 1GHz

Tx3_SpuriousM3



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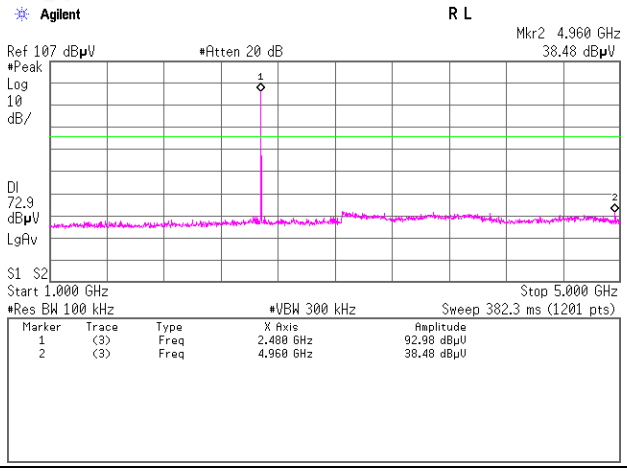
Spurious emission (Conducted)

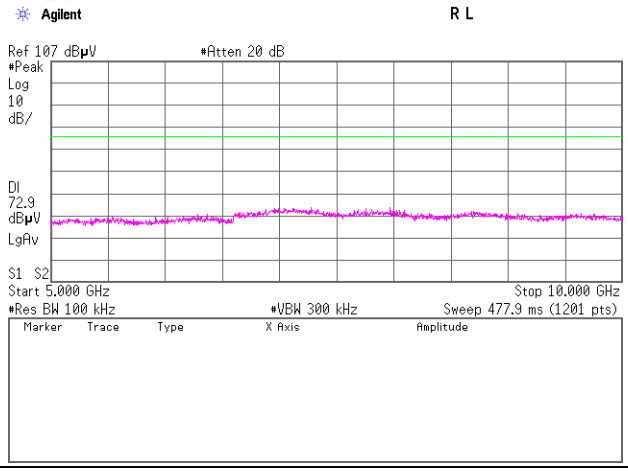
Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (above 1GHz)

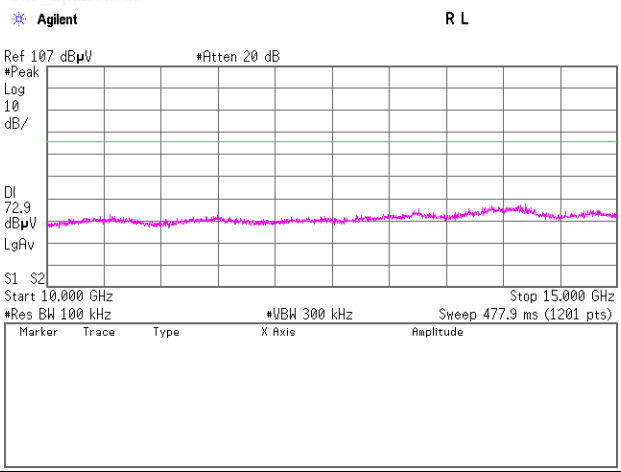
1GHz - 5GHz



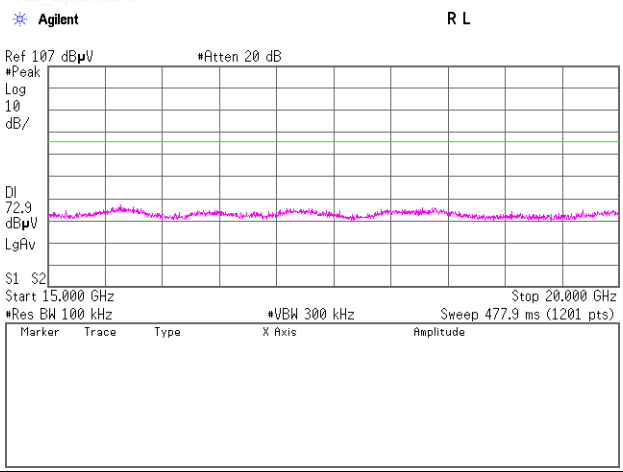
5GHz - 10GHz



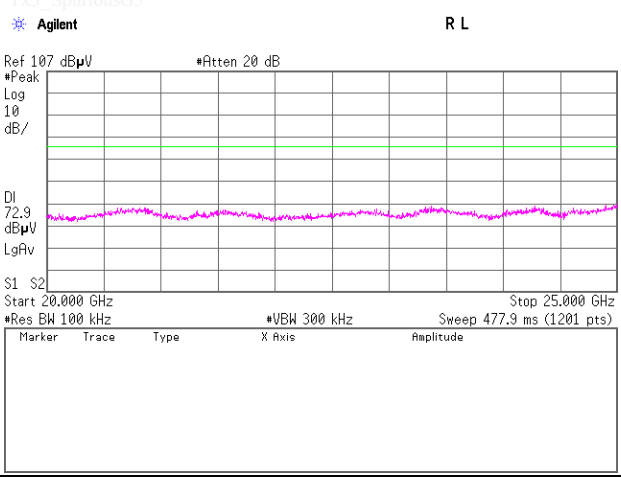
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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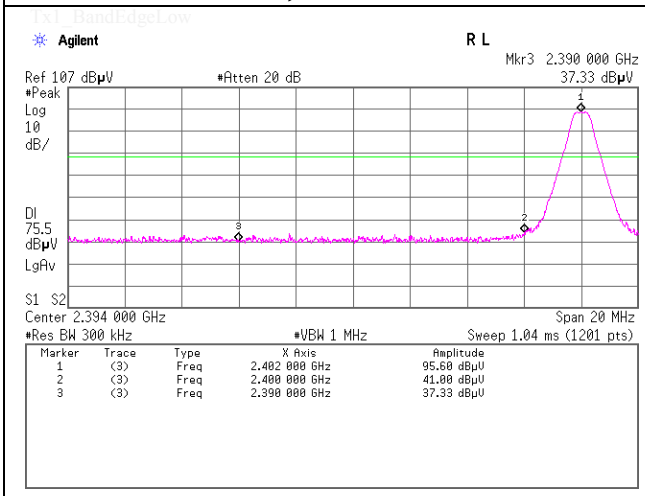
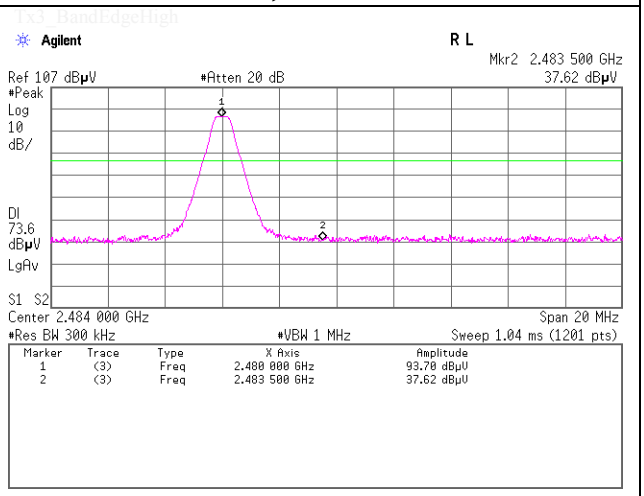
Spurious emission (Conducted)

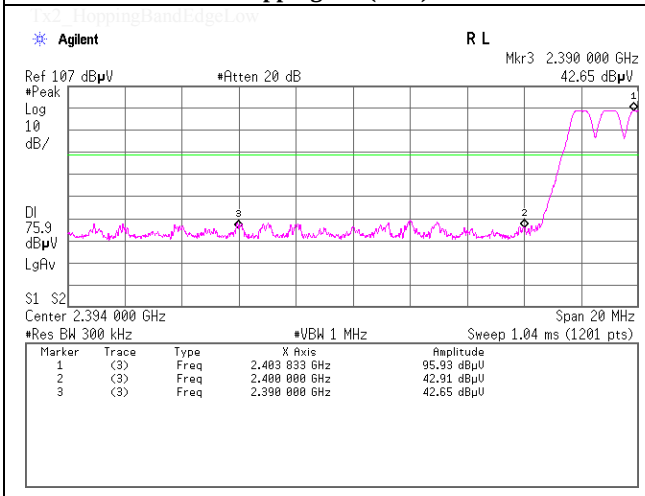
Band Edge compliance

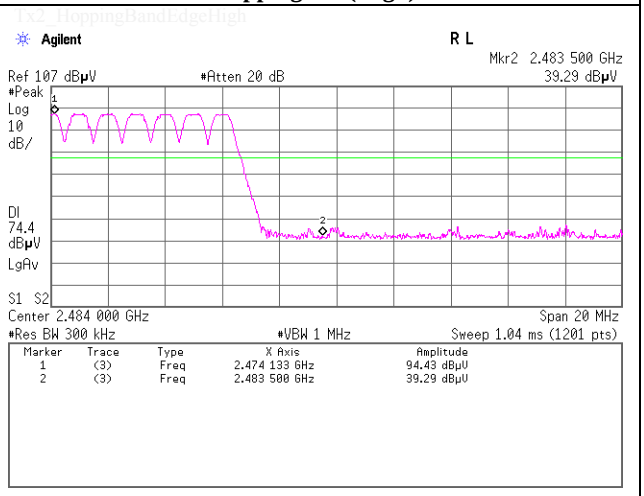
Tx, Bluetooth, BDR, PRBS9	
Tx, 2402MHz	**Tx, 2480MHz**





Tx, Bluetooth, BDR, PRBS9	
Hopping On (Low)	**Hopping On (High)**





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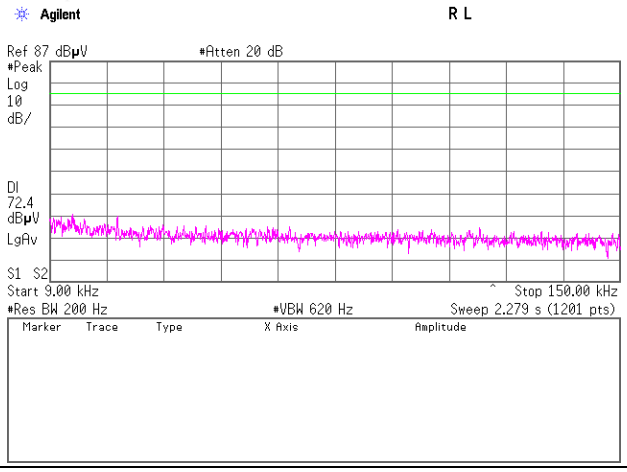
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (below 1GHz)

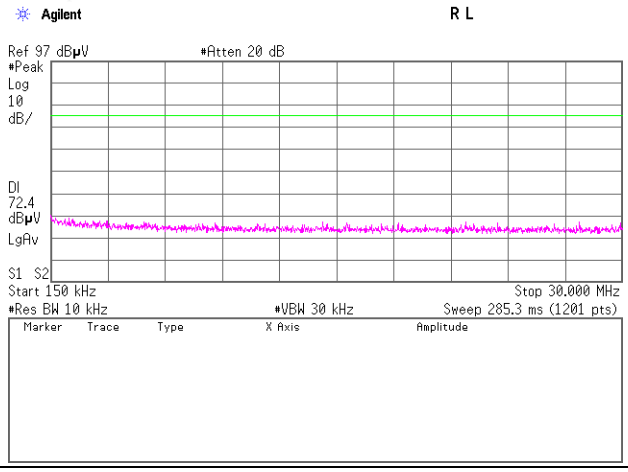
9kHz - 150kHz

Tx1_SpuriousM1



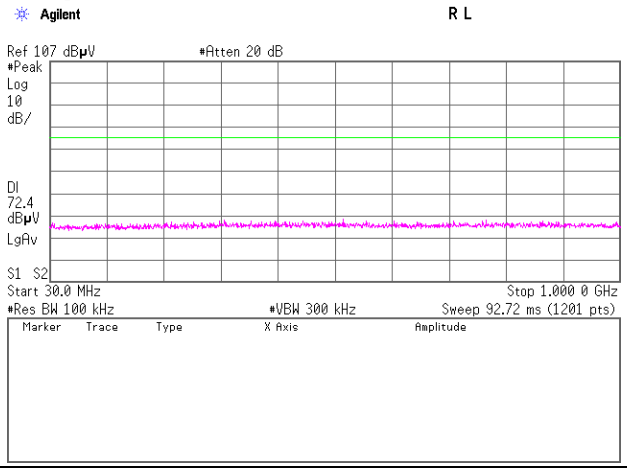
150kHz - 30MHz

Tx1_SpuriousM2



30MHz - 1GHz

Tx1_SpuriousM3



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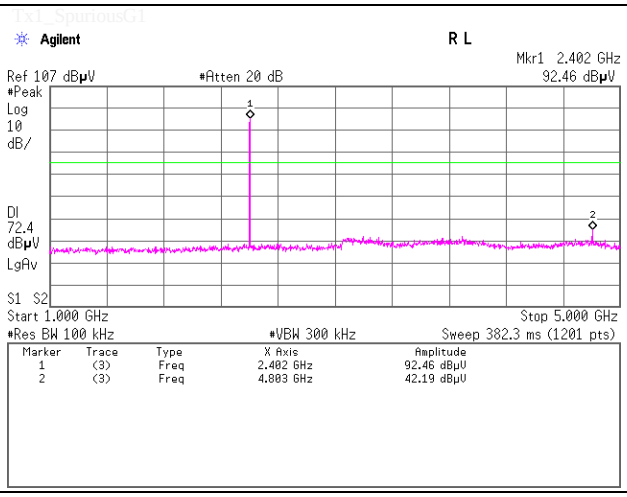
Spurious emission (Conducted)

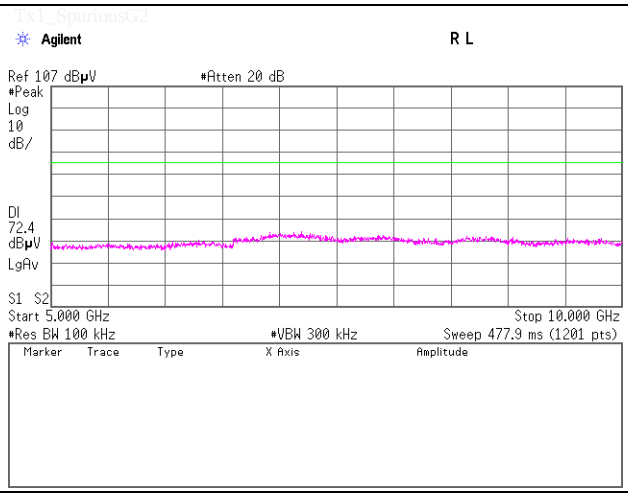
Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (above 1GHz)

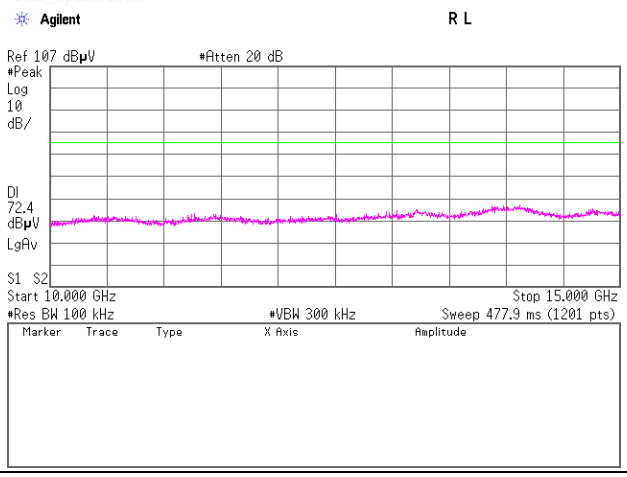
1GHz - 5GHz



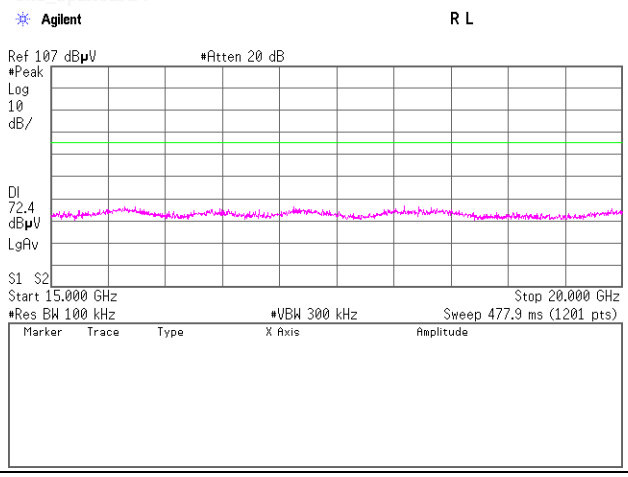
5GHz - 10GHz



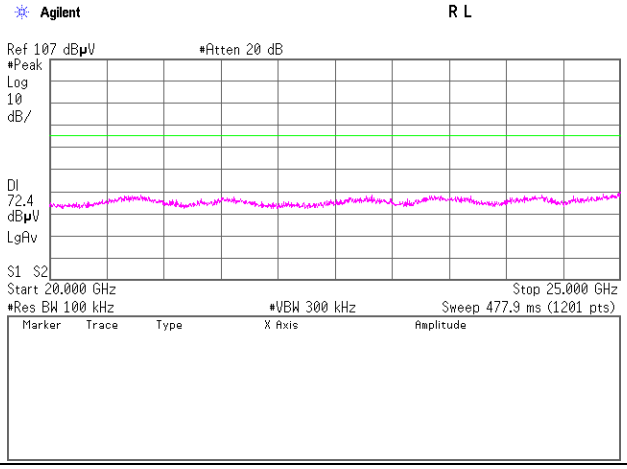
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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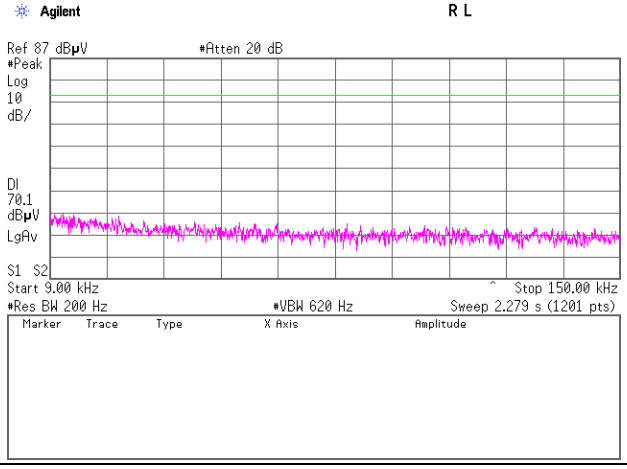
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (below 1GHz)

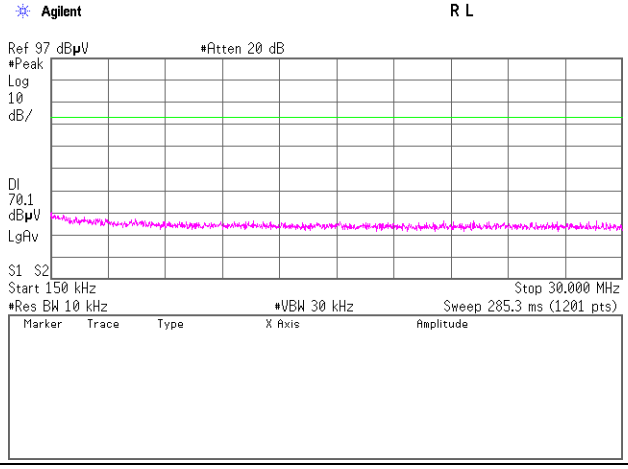
9kHz - 150kHz

Tx2_SpuriousM1



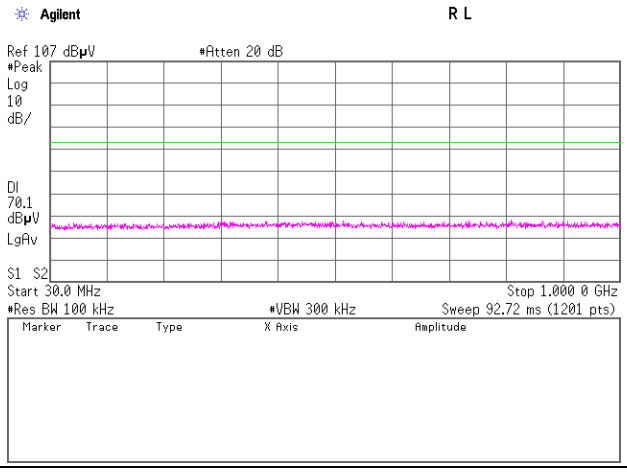
150kHz - 30MHz

Tx2_SpuriousM2



30MHz - 1GHz

Tx2_SpuriousM3



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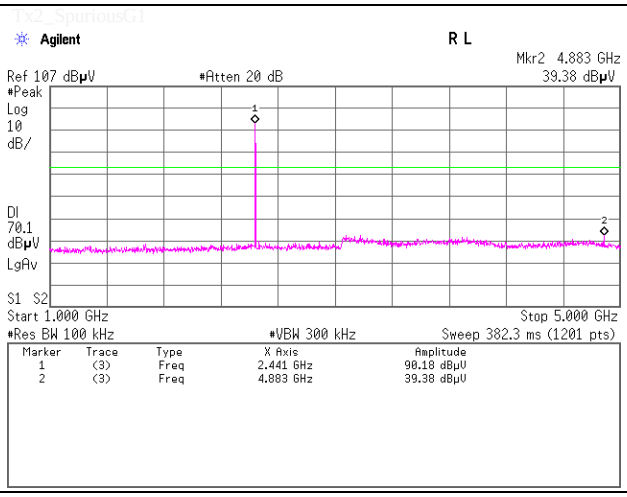
Spurious emission (Conducted)

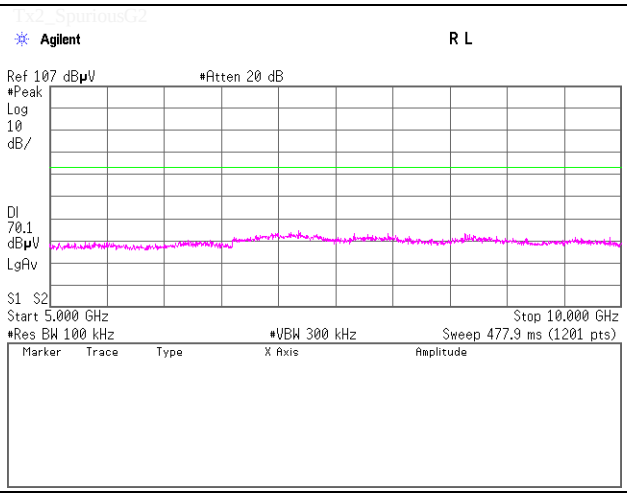
Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (above 1GHz)

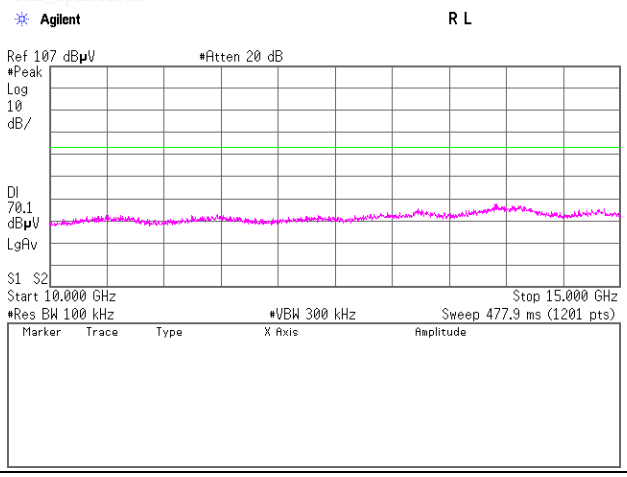
1GHz - 5GHz



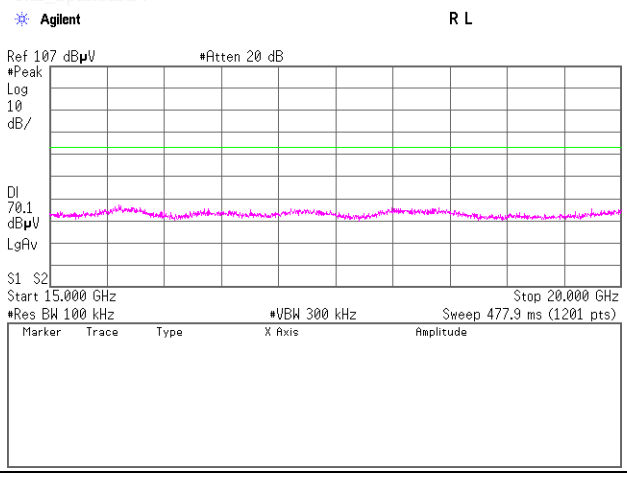
5GHz - 10GHz



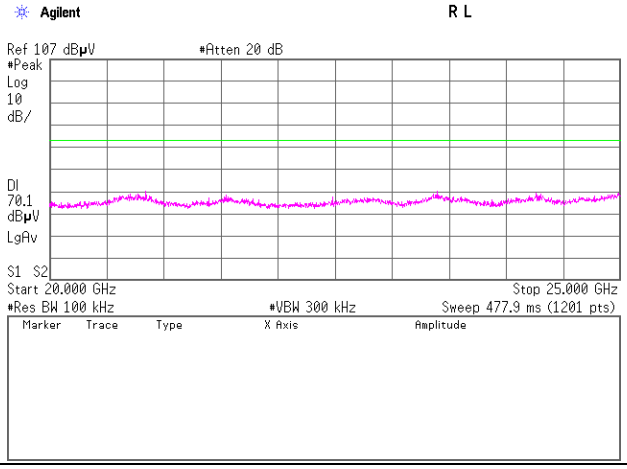
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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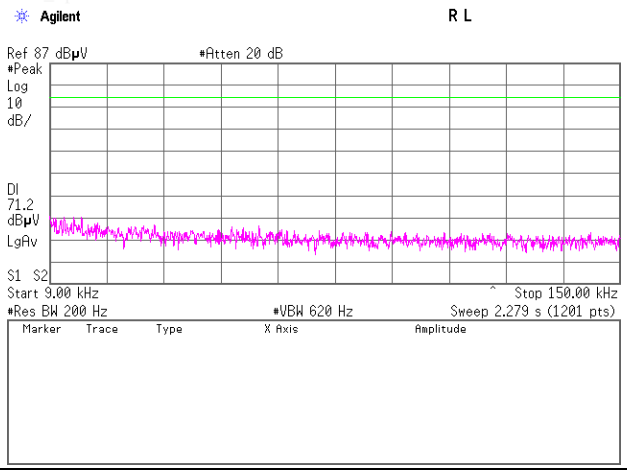
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (below 1GHz)

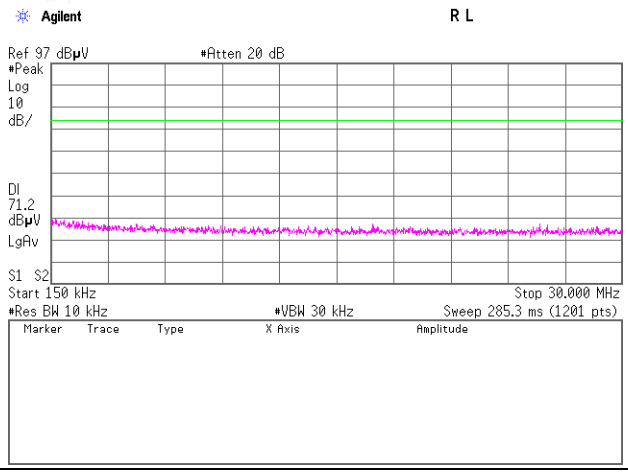
9kHz - 150kHz

Tx3_SpuriousM1



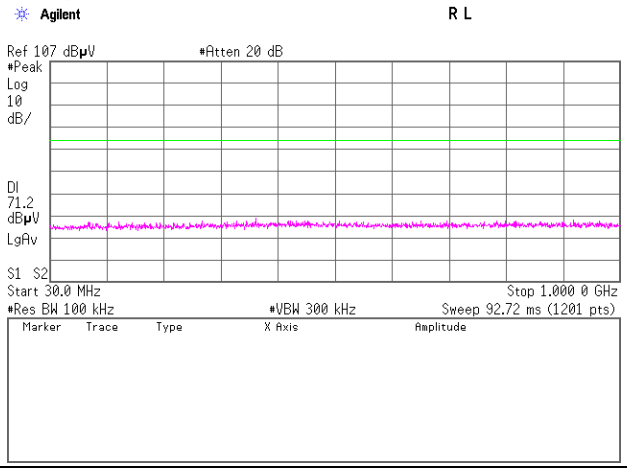
150kHz - 30MHz

Tx3_SpuriousM2



30MHz - 1GHz

Tx3_SpuriousM3



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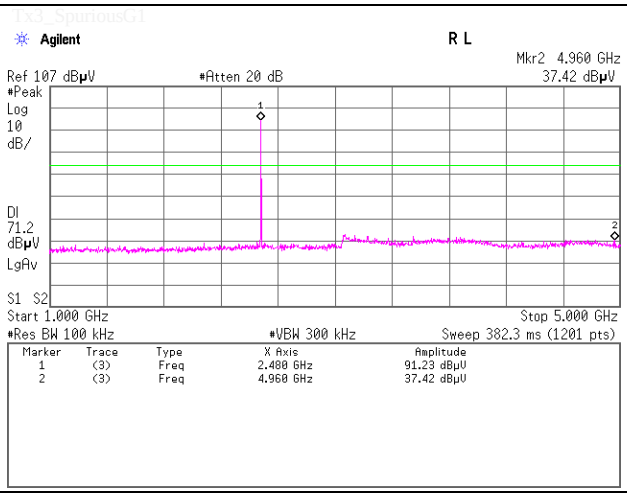
Spurious emission (Conducted)

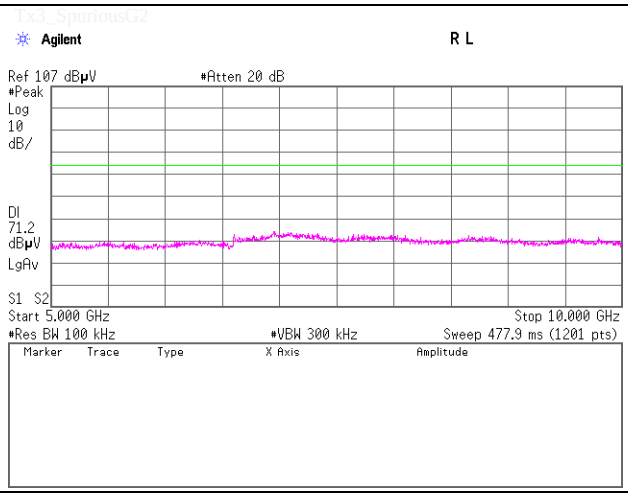
Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (above 1GHz)

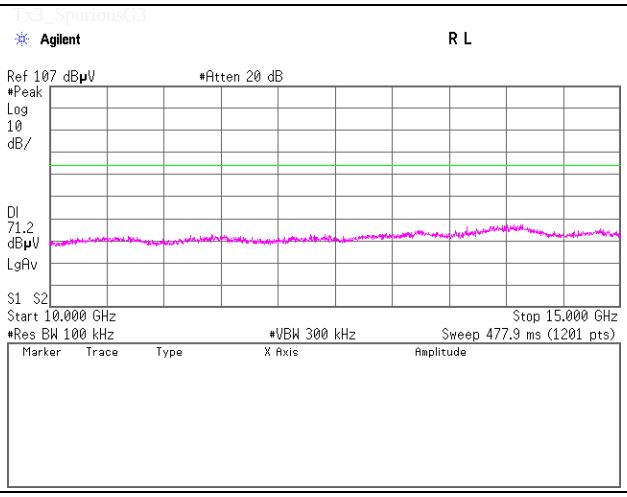
1GHz - 5GHz



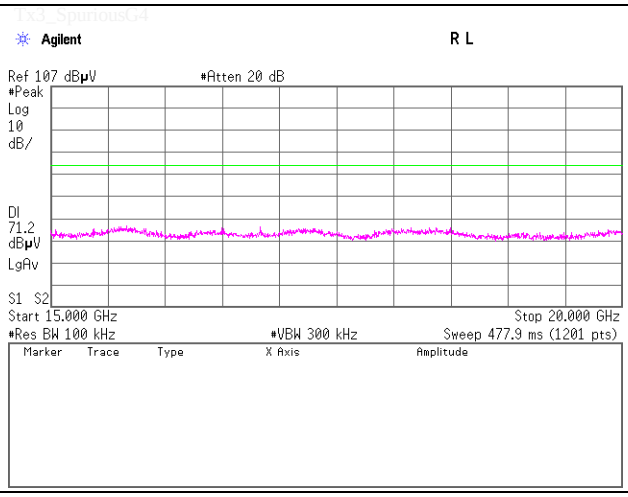
5GHz - 10GHz



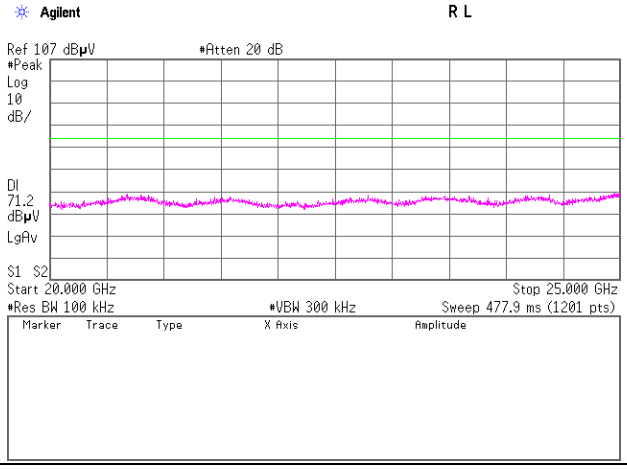
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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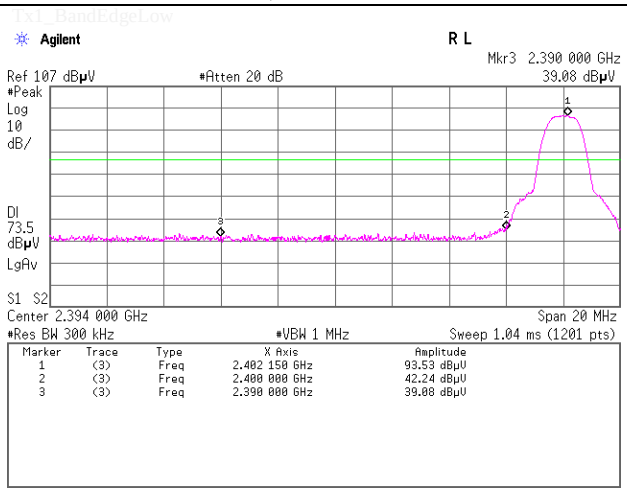
Spurious emission (Conducted)

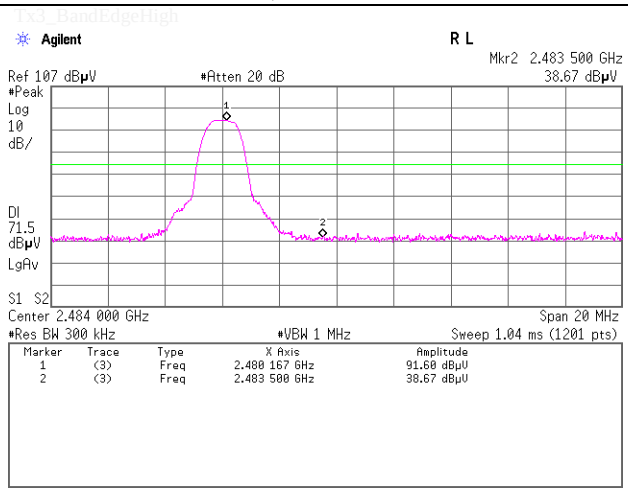
Band Edge compliance

Tx, Bluetooth, EDR, PRBS9	
Tx, 2402MHz	**Tx, 2480MHz**

Tx1_BandEdgeLow

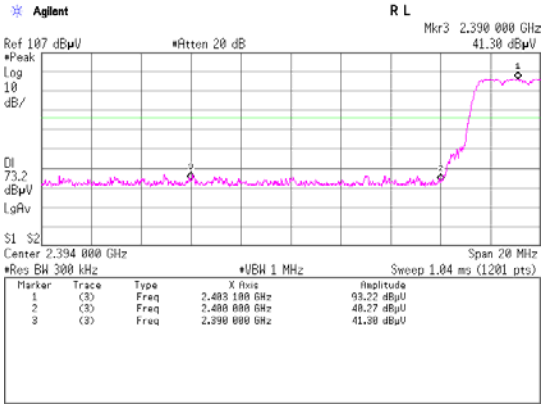


Tx3_BandEdgeHigh

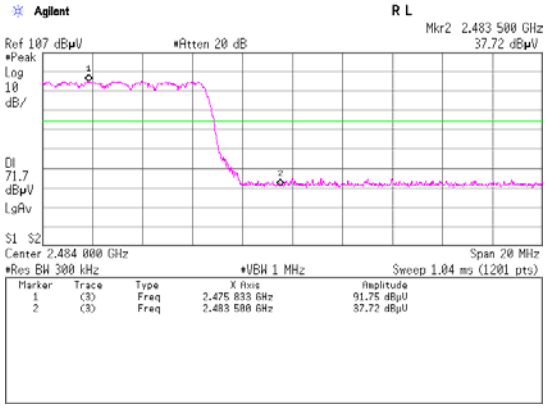


Tx, Bluetooth, EDR, PRBS9	
Hopping On (Low)	**Hopping On (High)**

Tx2_HoppingBandEdgeLow



Tx2_HoppingBandEdgeHigh



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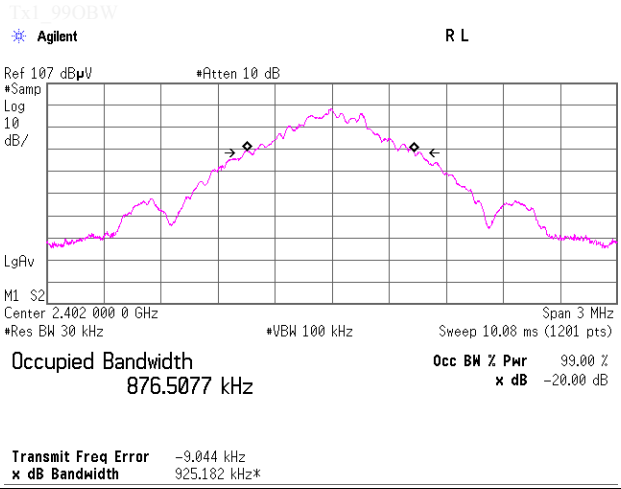
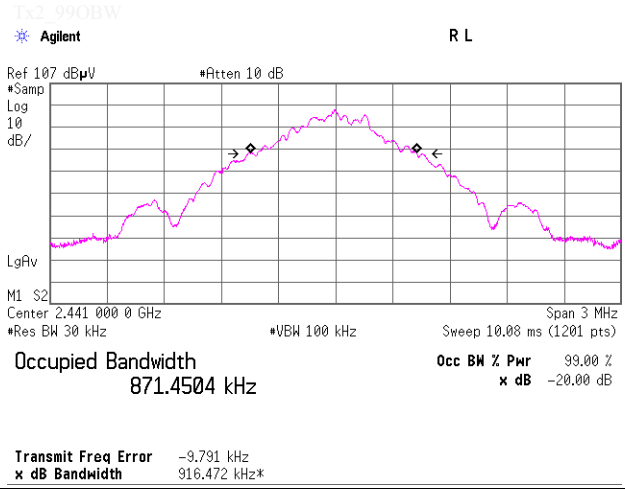
99% Occupied Bandwidth

Tx, Bluetooth, BDR, PRBS9

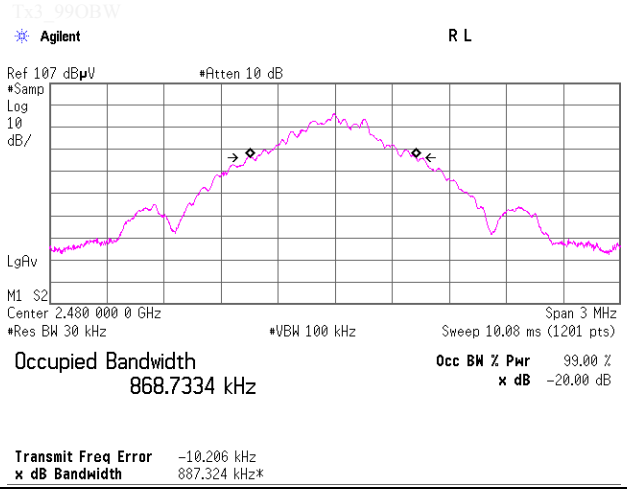
Tx, 2402MHz



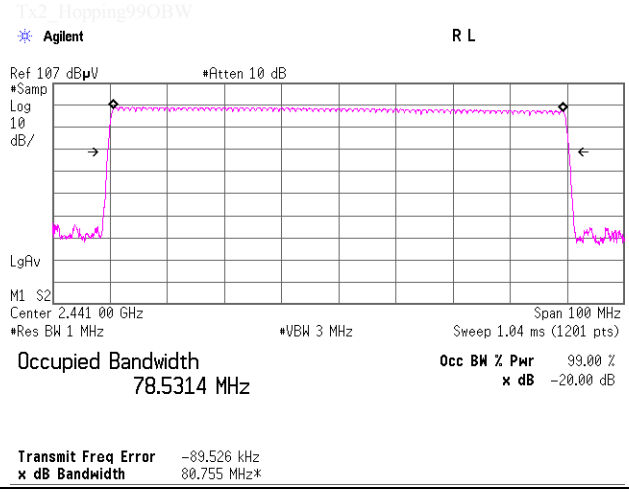
Tx, 2441MHz



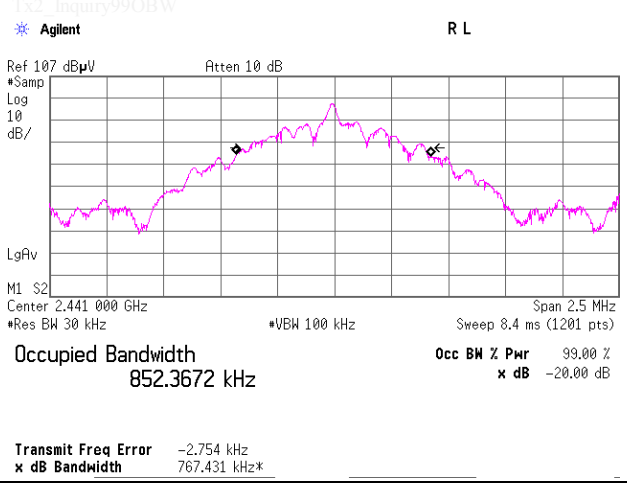
Tx, 2480MHz



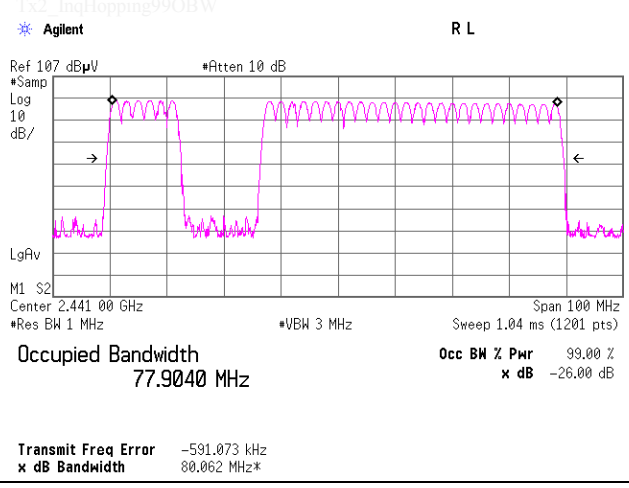
Tx, Hopping On



(Reference) Tx, Inquiry



(Reference) Tx, Inquiry, Hopping



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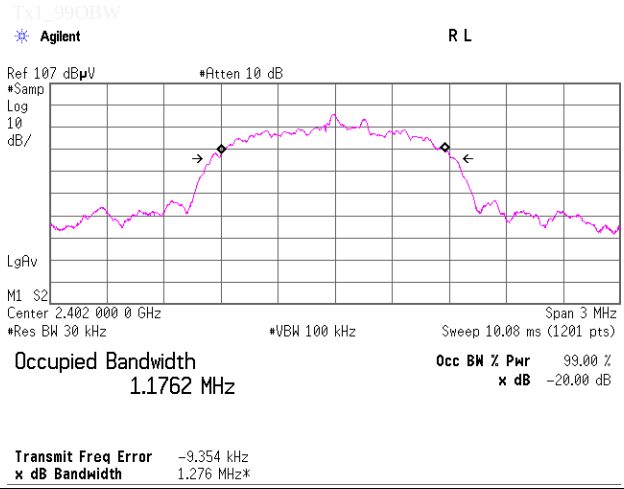
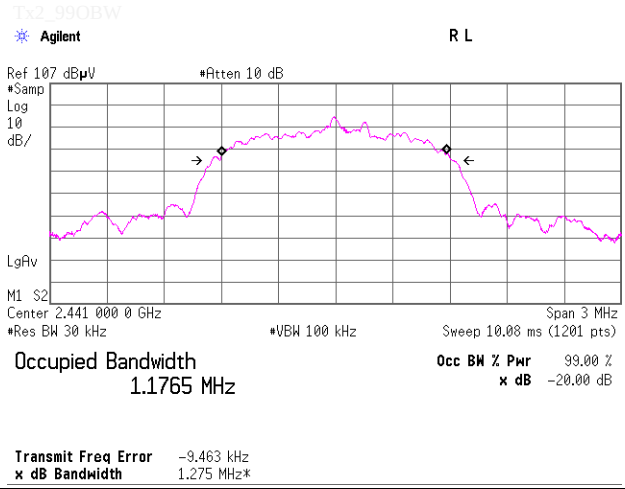
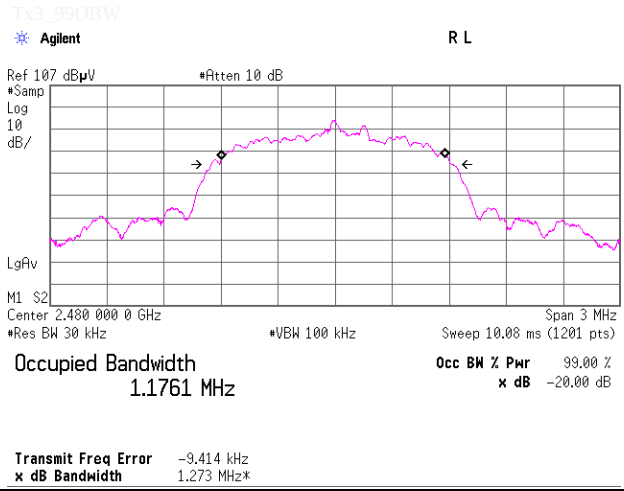
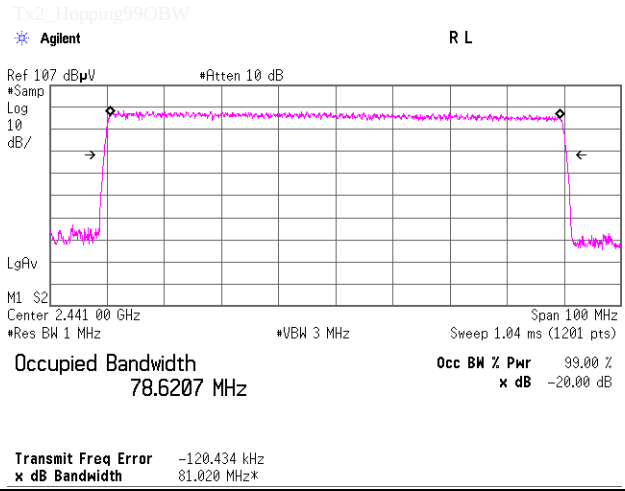
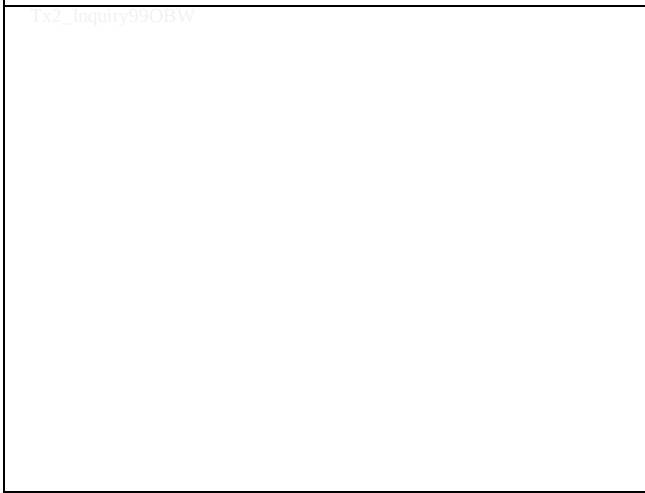
99% Occupied Bandwidth

Tx, Bluetooth, EDR, PRBS9	
Tx, 2402MHz	**Tx, 2441MHz**
	
Tx, 2480MHz	**Tx, Hopping On**
	
	

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APPENDIX 2
Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2012/04/19 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2012/04/19 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	AT	2013/01/08 * 12
SCC-G27	Coaxial Cable	Junkosha	MWX241-01000KM SKMS	SEP-20-12-00 1	AT	2012/09/26 * 12
SAT10-11	Attenuator	Weinschel Corp.	54A-10	37588	AT	2012/04/06 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2012/03/26 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2012/09/21 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2012/07/18 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2012/04/10 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2012/05/22 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2012/08/17 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2012/02/06 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	RE	2012/02/16 * 12
SJM-11	Measure	PROMART	SEN1935	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RFI,MF)	-	RE	-
SAT10-06	Attenuator	Agilent	8493C-010	74865	RE	2012/12/18 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2012/12/18 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2012/03/30 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2012/03/12 * 12
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104A	46291/4A	RE	2012/03/12 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2012/02/10 * 12
SAT6-03	Attenuator	JFW	50HF-006N	-	RE	2012/02/10 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2012/10/08 * 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	2012/04/10 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2012/10/08 * 12
STR-03	Test Receiver	Rohde & Schwarz	ESI40	100054/040	RE	2012/06/14 * 12

The expiration date of the calibration is the end of the expired month .
As for some calibrations performed after the tested dates , those test equipment have been controlled by means of an unbroken chains of calibrations .

All equipment is calibrated with valid calibrations . Each measurement data is traceable to the national or international standards .
Test Item :
RE: Radiated emission ,
AT: Antenna terminal conducted test