RADIO TEST REPORT

Test Report No.: 32JE0056-SH-03-B

Applicant	:	**Sony Corporation**
Type of Equipment	:	**Digital Media Player**
Model No.	:	**NWZ-F804**
FCC ID	:	**AK8NWZF800**
Test regulation	:	**FCC Part15 Subpart C: 2012**
Test result	:	**Complied**

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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: June 7 to 11, 2012

Tested by:

Tatsuya Arai
Engineer of WiSE Japan,
UL Verification Service

Approved by :

Toyokazu Imamura
Leader of EMC Service,
UL Verification Service

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JAB Testing RTL02610

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REVISION HISTORY

Original Test Report No.: 32JE0056-SH-03-B

Revision	Test report No.	Date	Page revised	Contents
- (Original)	32JE0056-SH-03-B	July 4, 2012	-	-
1	32JE0056-SH-03-B	July 9, 2012	1-2,4	Deletion of the derived model
2	32JE0056-SH-03-B	July 11, 2012	1-2,4	Correction of the description about Supplied voltage

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SECTION 1: Customer information

Company Name	:	Sony Corporation
Address	:	Shinagawa INTERCITY C Tower 2-15-3, Konan Minato-ku, Tokyo, Japan
Telephone Number	:	+81-3-5769-5640
Facsimile Number	:	+81-3-5769-5901
Contact Person	:	Shinichi Maru

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

2.1 Identification of E.U.T.

Type of Equipment	:	Digital Media Player
Model Number	:	NWZ-F804
Serial Number	:	Refer to clause 4.2
Rating	:	DC3.7V
Country of Mass-production	:	Malaysia
Condition of EUT	:	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Receipt Date of Sample	:	June 6, 2012
Modification of EUT	:	No modification by the test lab.

2.2 Product description

Model: NWZ-F804 (referred to as the EUT in this report) is a Digital Media Player.

The EUT has some derived models:

	NWZ-F804 (EUT)	NWZ-F805	NWZ-F806
NAND memory	8GB	16GB	32GB

Clock frequency(ies) in the system : 22.5792MHz (Audio), 26MHz (CPU), 32.768kHz (RTC), 26MHz (GPS), 26MHz (Wifi), 26MHz (Bluetooth)

<Radio part>

Equipment type	:	Transceiver
Frequency of operation	:	2402-2480MHz
Bandwidth / Channel spacing	:	79MHz & 1MHz
Type of modulation	:	FHSS (GFSK, π/4-DQPSK, 8DPSK)
Antenna type	:	Chip Antenna
Antenna connector type	:	None
Antenna gain	:	0.9dBi
ITU code	:	F1D, G1D
Operation temperature range	:	+5 to +35 deg.C.

* For Wireless LAN part, Refer to the test report: 32JE0056-SH-03-A.

FCC 15.31 (e)
The RF transmitter has its own regulator. The RF transmitter is constantly provided voltage (DC1.8V and DC3.3V) through the regulator regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC 15.203
Since the antenna used is a type of chip component and is permanently mounted by soldering on a printed circuit board in the equipment, it is impossible for end users to replace it without assistance of professionals. Therefore, the equipment complies with the requirement.

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : FCC Part 15 Subpart C: 2012, final revised on May 17, 2012 and effective June 18, 2012
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 May 17, 2012 does not affect the test specification applied to the EUT.

The EUT complies with FCC Part 15 Subpart B. Refer to the test report: 32JE0056-SH-03-C.

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	22.2dB Freq.: 0.15000MHz Phase: L1 Detection: Quasi-Peak Mode: Tx 2441MHz, DH5 & Tx 2441MHz, 3DH5	Complied
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)	Radiated	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	7.0dB Freq.: 4804.000MHz Polarization: Horizontal Detection: Average Mode: Tx 2402MHz, DH5	Complied
Note: UL Japan's Work Procedures No. 13-EM-W0420 and 13-EM-W0422						

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 (±)
Conducted emission (AC Mains) AMN/LISN	9kHz-150kHz	4.0 dB	4.0 dB	3.9 dB
	150kHz-30MHz	3.6 dB	3.6 dB	3.6 dB
Radiated emission (Measurement distance: 3m)	9kHz-30MHz	3.7 dB	3.7 dB	3.6 dB
	30MHz-300MHz	4.9 dB	5.1 dB	5.0 dB
	300MHz-1GHz	5.0 dB	5.2 dB	5.0 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	4.8 dB	4.3 dB	4.4 dB

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

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

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

Antenna port conducted test
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

UL Japan, Inc. Shonan EMC Lab.
1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 JAPAN
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 Full-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
Conducted emission	Transmitting (DH5/3DH5), Payload: PRBS9	2402MHz, 2441MHz, 2480MHz
Carrier frequency separation	Transmitting Hopping ON (DH5/3DH5)/Inquiry, Payload: PRBS9	-
20dB bandwidth	Transmitting Hopping OFF (DH5/3DH5)/Inquiry, Payload: PRBS9	2402MHz, 2441MHz, 2480MHz
Number of hopping frequency	Transmitting Hopping ON (DH5/3DH5)/Inquiry, Payload: PRBS9	-
Dwell time	Transmitting (Hopping ON), Payload: PRBS9 -DH1, -DH3, -DH5 -3DH1, -3DH3, -3DH5	-
	-Inquiry	
Maximum peak output power	Transmitting (Hopping OFF), Payload: PRBS9 -DH5, -2DH5, -3DH5	2402MHz, 2441MHz, 2480MHz
Band edge compliance & Spurious emission (Conducted)	Transmitting (DH5/3DH5), Payload: PRBS9 -Hopping ON -Hopping OFF	Band edge compliance: 2402MHz, 2480MHz Spurious emission: 2402MHz, 2441MHz, 2480MHz
(Radiated)	Transmitting (DH5/3DH5), Payload: PRBS9	
99% occupied bandwidth	Transmitting (DH5/3DH5), Payload: PRBS9 -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.

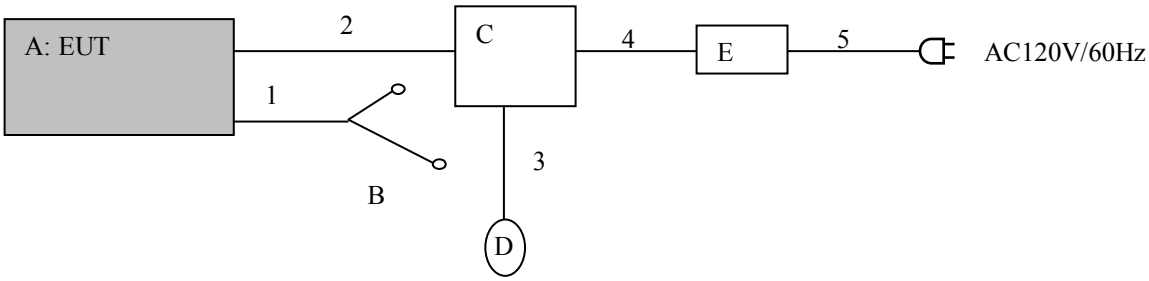
EUT has the power settings by the software as follows;

Power settings	BDR: 0xff2e, EDR: 0xff2e
Software	Test software: bccmd Ver. 4.93 Device driver: adb driver Ver.1.0.29

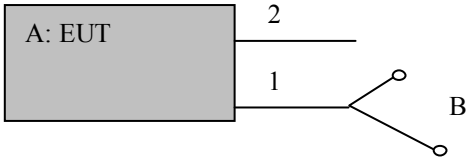
Justification: The system was configured in typical fashion (as customer would normally use it) for testing.

4.2 Configuration and peripherals

4.2.1 Conducted emission test



4.2.2 Other test



* 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	NWZ-F804	*1)	SONY	-
B	Headphones	MDR-EX0300	-	SONY	-
C	Laptop PC	HP ProBook 4420s	CNF1062V3N	HP	-
D	Mouse	MO28UOL	23-453859	lenovo	-
E	AC adapter	PA-1650-32HT	PPP009L-E	HP	-

*1) Conducted / Radiated emission: 2000196, Other test: 2000192

List of cables used

No.	Cable Name	Length (m)	Shield		Remark
			Cable	Connector	
1	Headphones	1.5	Unshielded	Unshielded	-
2	WM-PORT Jack: USB conversion	1.0	Shielded	Shielded	-
3	USB	1.8	Shielded	Shielded	-
4	DC	1.8	Unshielded	Unshielded	-
5	AC	1.7	Unshielded	Unshielded	-

SECTION 5: Conducted emission

5.1 Operating environment

Test place : See test data (APPENDIX 1)
Temperature : See test data (APPENDIX 1)
Humidity : See test data (APPENDIX 1)

5.2 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 tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals was aligned and was flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from LISN and excess AC cable was bundled in center. 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.
Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source. All unused 50ohm connectors of the LISN were resistively terminated in 50ohm when not connected to the measuring equipment.
Photographs of the set up are shown in APPENDIX 3.

5.3 Test conditions

Frequency range : 0.15 - 30MHz
EUT position : Table top

5.4 Test procedure

The AC Mains Terminal Continuous disturbance Voltage had been measured with the EUT via Host device within a Shielded room. The Host device was connected to a Line Impedance Stabilization Network (LISN).
An overview sweep with peak detection has been performed.
The measurements had been performed with a quasi-peak detector and if required, an average detector.
The conducted emission measurements were made with the following detection of the test receiver.

Detection Type : Quasi-Peak/ Average
IF Bandwidth : 9kHz

5.5 Results

Summary of the test results : Pass
Refer to APPENDIX 1

SECTION 6: 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 1

SECTION 7: 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 1

SECTION 8: 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 1

SECTION 9: 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 1

SECTION 10: Maximum peak output power (Radiated)

10.1 Operating environment

Test place : See test data (APPENDIX 1)
Temperature : See test data (APPENDIX 1)
Humidity : See test data (APPENDIX 1)

10.2 Test configuration

EUT was placed on a urethane platform of nominal size, 0.5m by 0.5m, raised 0.8m above the conducting ground plane. Photographs of the set up are shown in APPENDIX 3.

10.3 Test conditions

Bandwidth of the Power Sensor : 50MHz
Detection type : Peak

10.4 Test procedure

The Maximum peak output power has been measured on a semi-anechoic chamber with a ground plane and at a distance of 3m. Measurements were performed with Power Meter and Power Sensor (50MHz Bandwidth) using peak 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 carrier level was confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.
Worst position:

Frequency / Antenna polarization	Carrier
Horizontal	X
Vertical	Y

10.5 Results

Summary of the test results : Pass
Refer to APPENDIX 1

SECTION 11: Radiated emission

11.1 Operating environment

Test place : See test data (APPENDIX 1)
Temperature : See test data (APPENDIX 1)
Humidity : See test data (APPENDIX 1)

11.2 Test configuration

EUT was placed on a urethane platform of nominal size, 0.5m by 0.5m, raised 0.8m above the conducting ground plane. Photographs of the set up are shown in APPENDIX 3.

11.3 Test conditions

Frequency range : 30MHz to 25GHz
Test distance : 3m (below 15GHz) / 1m (above 15GHz)
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.

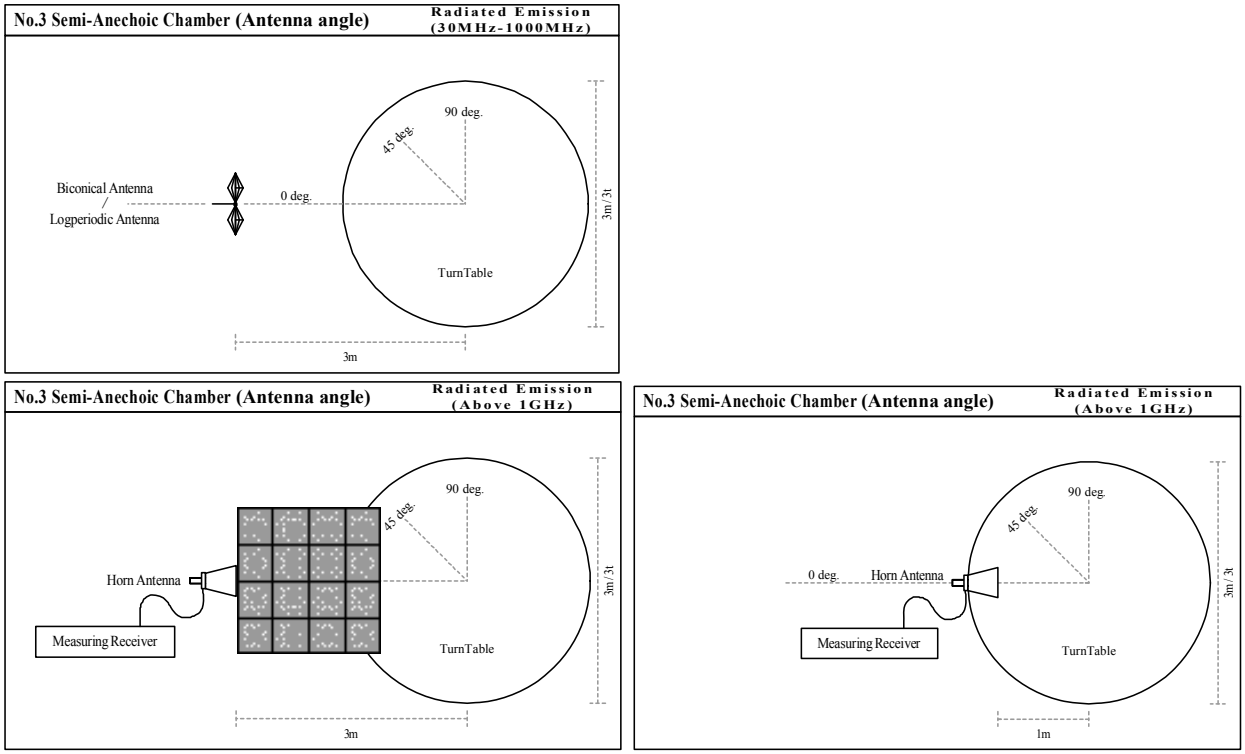
The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Worst position:

Frequency / Antenna polarization	Carrier *1)	Spurious			
		Below 1GHz	1-15GHz	15-18GHz	15-25GHz
Horizontal	X	Y	Z	Z	Y
Vertical	Y	Z	X	X	Z

*2) including spurious emissions near carrier frequency.

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 8th order harmonics.
Refer to APPENDIX 1

SECTION 12: 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 1

Contents of APPENDIXES

APPENDIX 1: Data of Radio tests

Conducted emission
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

Conducted emission
Radiated emission
Pre-check of worst position

APPENDIX 1: Data of Radio tests

DATA OF CONDUCTED EMISSION TEST

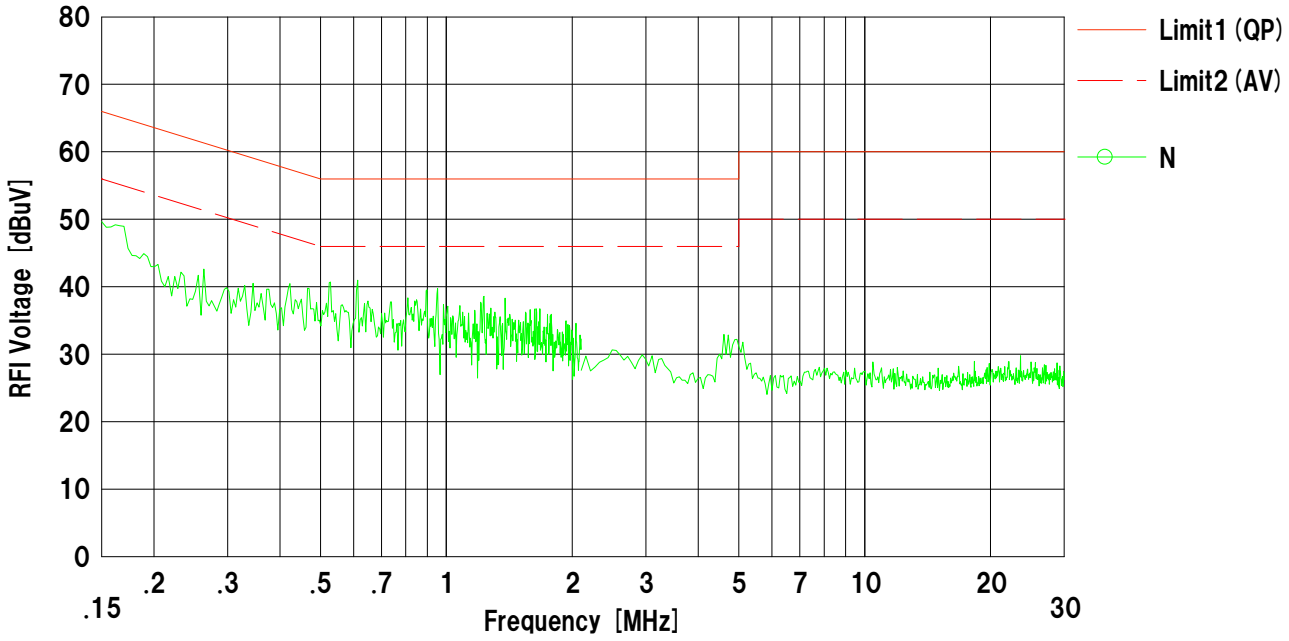
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/06/11

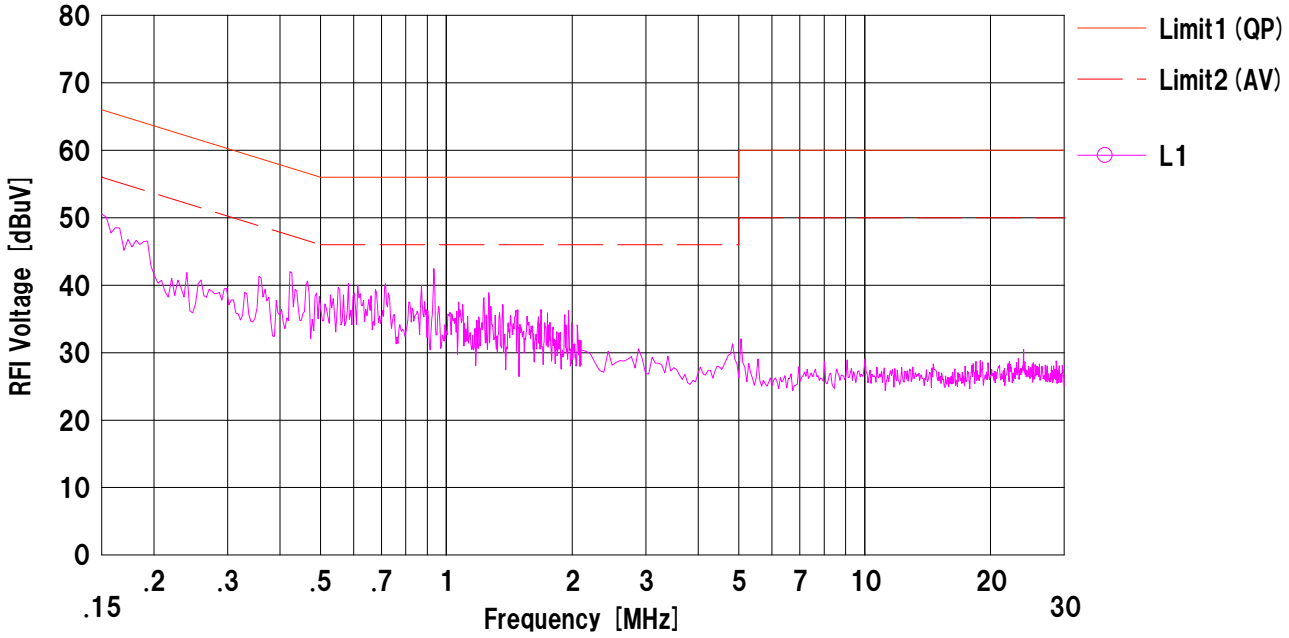
Company	: Sony Corporation	Mode	: Bluetooth, DH5, Tx 2402MHz
Kind of EUT	: Digital Media Player	Report No.	: 32JE0056-SH-03-B
Model No.	: NWZ-F804	Power	: AC120V/60Hz
Serial No.	: 2000196	Temp./Humi.	: 25deg.C /60%RH

Remarks : -

Limit1 : FCC 15C(15.207) QP
Limit2 : FCC 15C(15.207) AV

Engineer : Shinichi Takano





Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-05

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/06/11

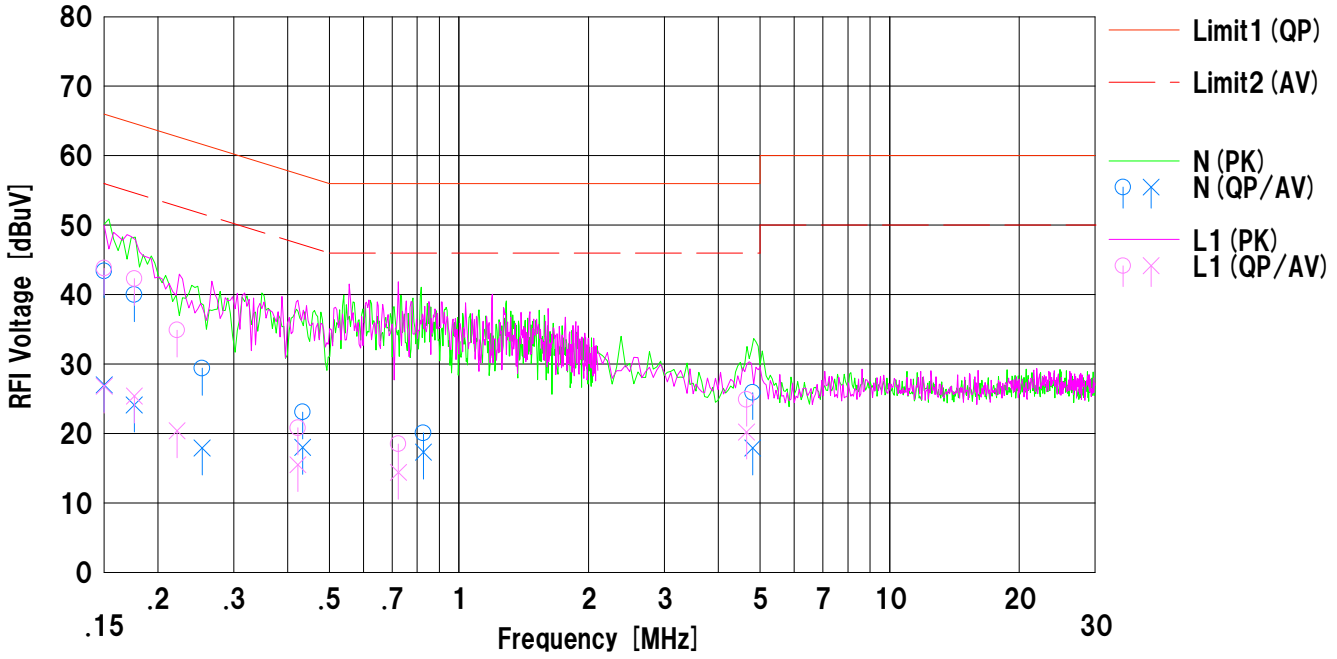
Company : Sony Corporation
Kind of EUT : Digital Media Player
Model No. : NWZ-F804
Serial No. : 2000196

Mode : Bluetooth, DH5, Tx 2441MHz
Report No. : 32JE0056-SH-03-B
Power : AC120V/60Hz
Temp./Humi. : 25deg.C /60%RH

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Shinichi Takano



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	30.7	14.3	12.7	43.4	27.0	66.0	56.0	22.6	29.0	N	
2	0.17614	27.3	11.4	12.7	40.0	24.1	64.6	54.6	24.6	30.5	N	
3	0.25321	16.7	5.2	12.7	29.4	17.9	61.6	51.6	32.2	33.7	N	
4	0.43352	10.4	5.3	12.7	23.1	18.0	57.1	47.1	34.0	29.1	N	
5	0.82680	7.4	4.6	12.7	20.1	17.3	56.0	46.0	35.9	28.7	N	
6	4.80902	13.0	5.0	12.9	25.9	17.9	56.0	46.0	30.1	28.1	N	
7	0.15000	31.1	14.1	12.7	43.8	26.8	66.0	56.0	22.2	29.2	L1	
8	0.17642	29.6	12.7	12.7	42.3	25.4	64.6	54.6	22.3	29.2	L1	
9	0.22146	22.2	7.7	12.7	34.9	20.4	62.7	52.7	27.8	32.3	L1	
10	0.42304	8.1	2.8	12.7	20.8	15.5	57.3	47.3	36.5	31.8	L1	
11	0.72330	5.8	1.7	12.7	18.5	14.4	56.0	46.0	37.5	31.6	L1	
12	4.65309	12.0	7.3	12.9	24.9	20.2	56.0	46.0	31.1	25.8	L1	

Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-05

DATA OF CONDUCTED EMISSION TEST

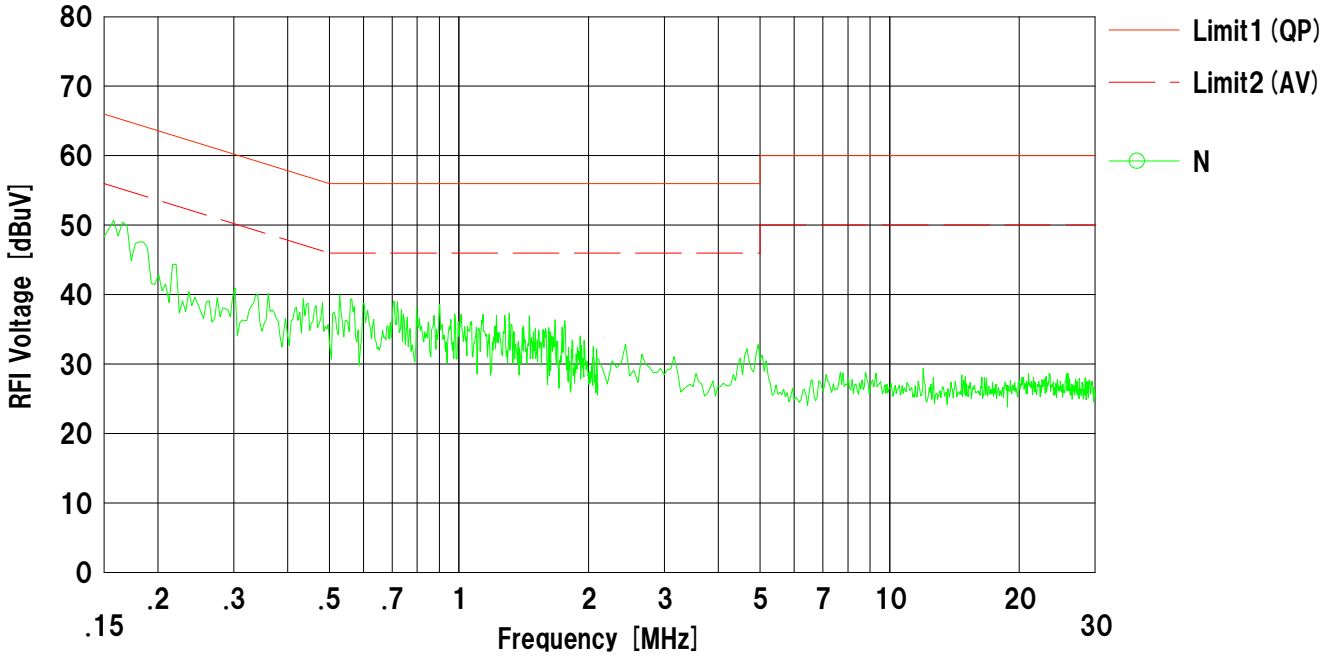
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/06/11

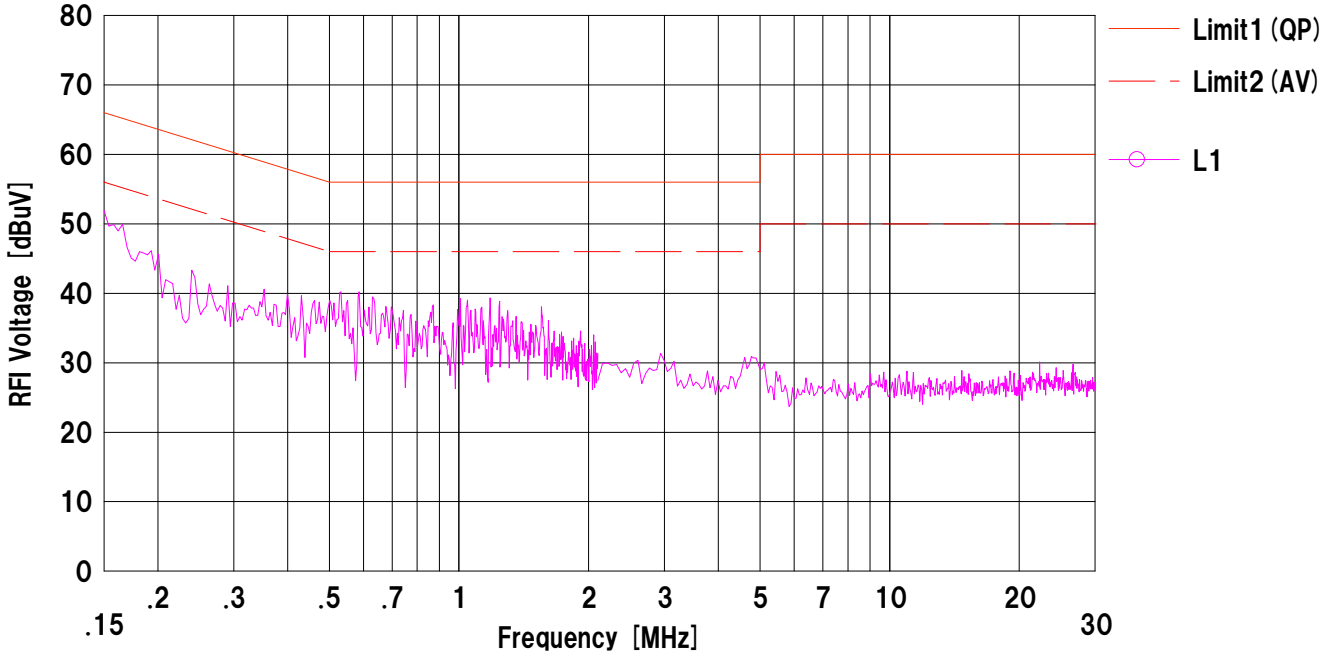
Company	: Sony Corporation	Mode	: Bluetooth, DH5, Tx 2480MHz
Kind of EUT	: Digital Media Player	Report No.	: 32JE0056-SH-03-B
Model No.	: NWZ-F804	Power	: AC120V/60Hz
Serial No.	: 2000196	Temp./Humi.	: 25deg.C /60%RH

Remarks : -

Limit1 : FCC 15C(15.207) QP
Limit2 : FCC 15C(15.207) AV

Engineer : Shinichi Takano





Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-05

DATA OF CONDUCTED EMISSION TEST

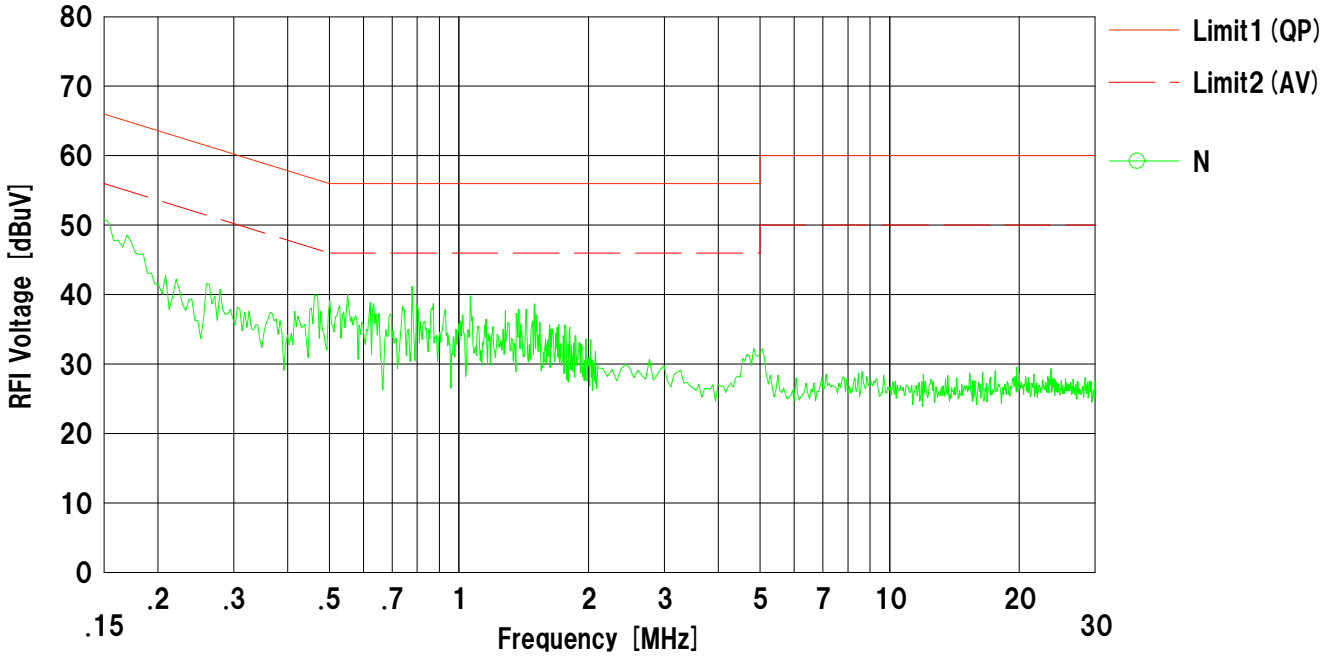
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/06/11

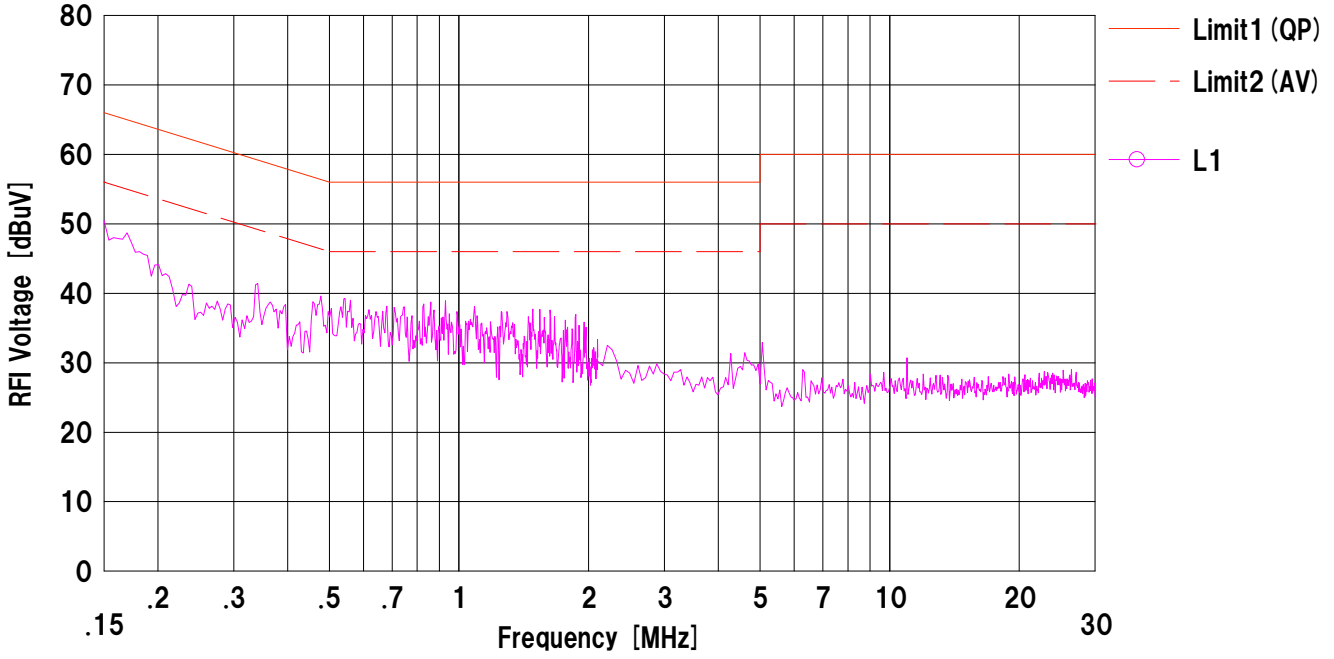
Company	: Sony Corporation	Mode	: Bluetooth, 3-DH5, Tx 2402MHz
Kind of EUT	: Digital Media Player	Report No.	: 32JE0056-SH-03-B
Model No.	: NWZ-F804	Power	: AC120V/60Hz
Serial No.	: 2000196	Temp./Humi.	: 25deg.C /60%RH

Remarks : -

Limit1 : FCC 15C(15.207) QP
Limit2 : FCC 15C(15.207) AV

Engineer : Shinichi Takano





Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-05

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/06/11

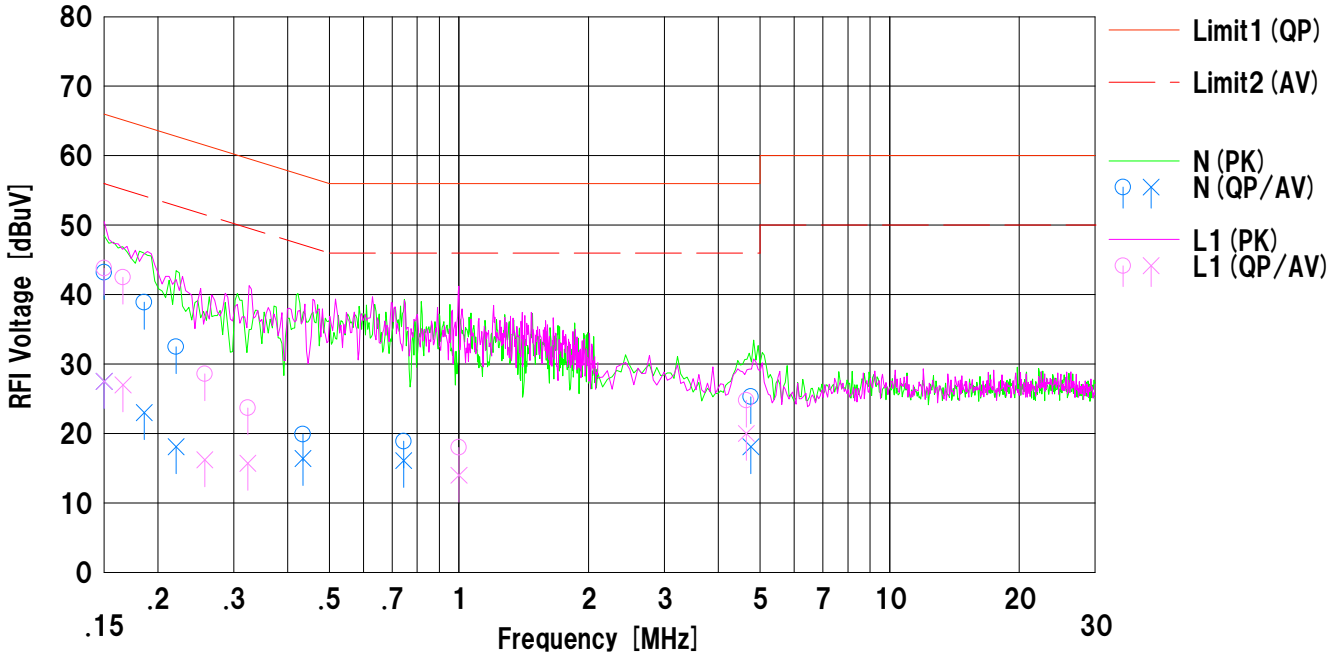
Company : Sony Corporation
Kind of EUT : Digital Media Player
Model No. : NWZ-F804
Serial No. : 2000196

Mode : Bluetooth, 3-DH5, Tx 2441MHz
Report No. : 32JE0056-SH-03-B
Power : AC120V/60Hz
Temp./Humi. : 25deg.C /60%RH

Remarks : -

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Shinichi Takano



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	30.5	14.8	12.7	43.2	27.5	66.0	56.0	22.8	28.5	N	
2	0.18584	26.2	10.3	12.7	38.9	23.0	64.2	54.2	25.3	31.2	N	
3	0.22043	19.8	5.4	12.7	32.5	18.1	62.8	52.8	30.3	34.7	N	
4	0.43410	7.2	3.7	12.7	19.9	16.4	57.1	47.1	37.2	30.7	N	
5	0.74462	6.2	3.4	12.7	18.9	16.1	56.0	46.0	37.1	29.9	N	
6	4.76280	12.4	5.2	12.9	25.3	18.1	56.0	46.0	30.7	27.9	N	
7	0.15000	31.1	14.8	12.7	43.8	27.5	66.0	56.0	22.2	28.5	L1	
8	0.16592	29.8	14.3	12.7	42.5	27.0	65.1	55.1	22.6	28.1	L1	
9	0.25708	15.9	3.5	12.7	28.6	16.2	61.5	51.5	32.9	35.3	L1	
10	0.32314	11.0	3.0	12.7	23.7	15.7	59.6	49.6	35.9	33.9	L1	
11	1.00018	5.3	1.3	12.7	18.0	14.0	56.0	46.0	38.0	32.0	L1	
12	4.65023	11.9	7.1	12.9	24.8	20.0	56.0	46.0	31.2	26.0	L1	

Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-05

DATA OF CONDUCTED EMISSION TEST

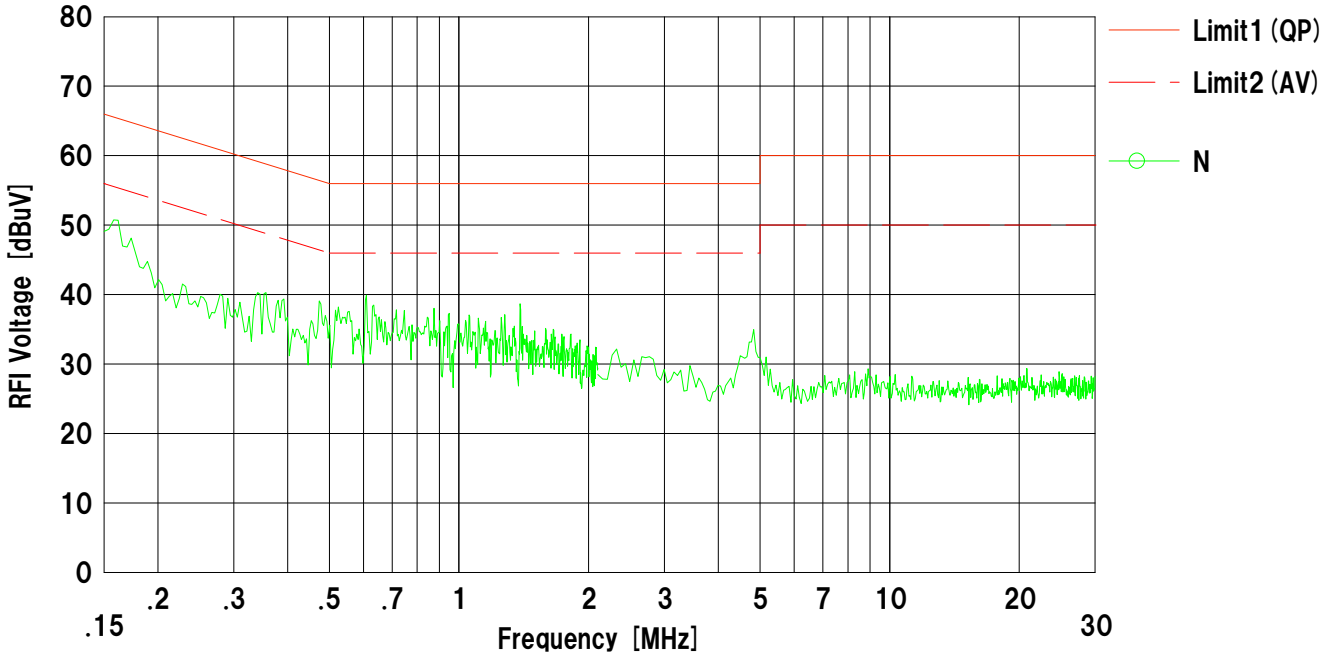
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/06/11

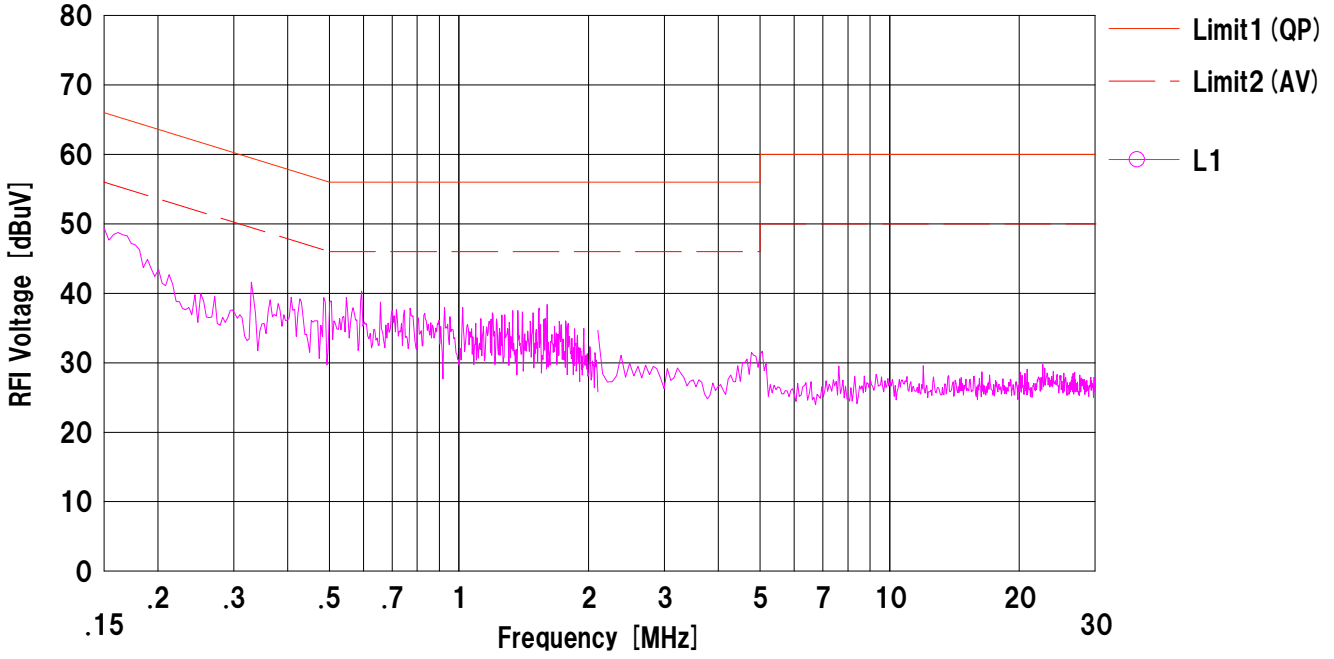
Company	: Sony Corporation	Mode	: Bluetooth, 3-DH5, Tx 2480MHz
Kind of EUT	: Digital Media Player	Report No.	: 32JE0056-SH-03-B
Model No.	: NWZ-F804	Power	: AC120V/60Hz
Serial No.	: 2000196	Temp./Humi.	: 25deg.C /60%RH

Remarks : -

Limit1 : FCC 15C(15.207) QP
Limit2 : FCC 15C(15.207) AV

Engineer : Shinichi Takano





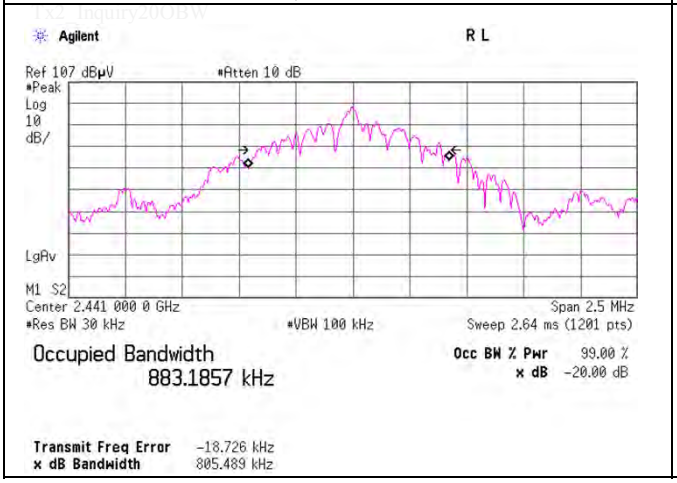
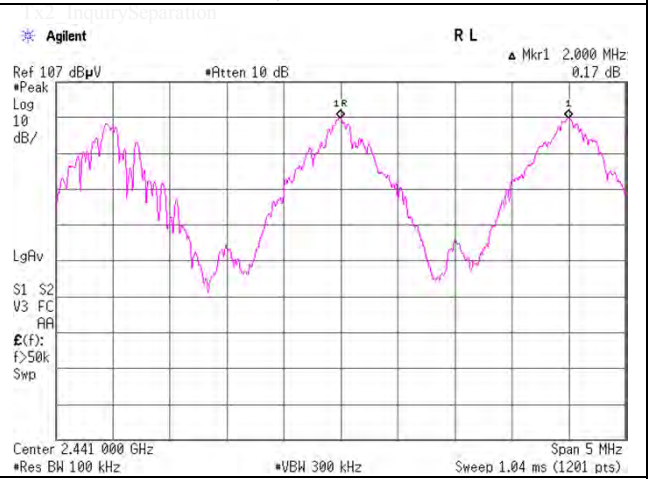
Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-05

20dB Bandwidth and Carrier Frequency Separation

Test place	UL Japan, Inc. Shonan EMC Lab.		No.5 Shielded Room
Date	June 7, 2012	, June 10, 2012	
Temperature / Humidity	27deg.C	, 53%RH	, 25deg.C , 61%RH
Engineer	Kenichi Adachi	, 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	0.962	1.000	>= 0.641
DH5	2441.0	0.961	1.000	>= 0.641
DH5	2480.0	0.963	1.000	>= 0.642
Inquiry	2441.0	0.805	2.000	>= 0.537

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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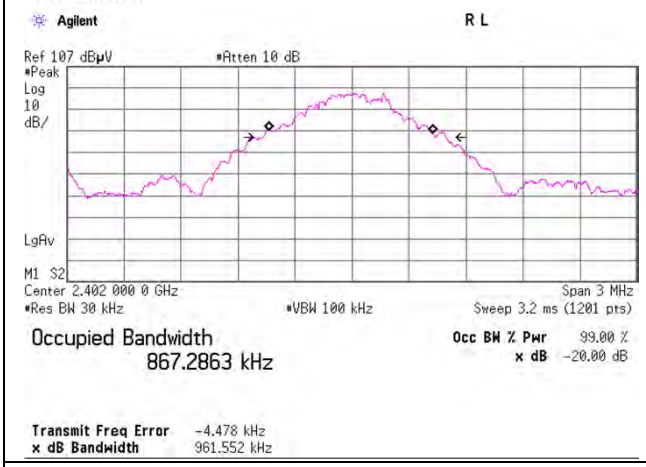
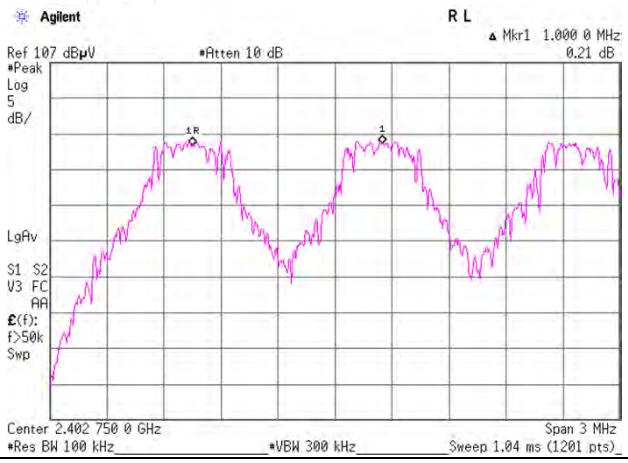
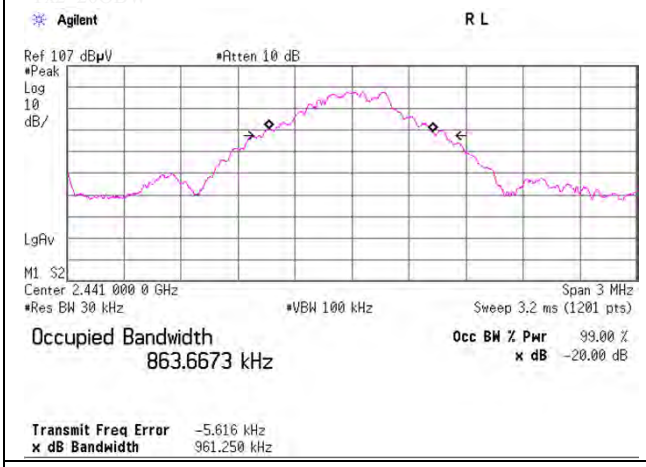
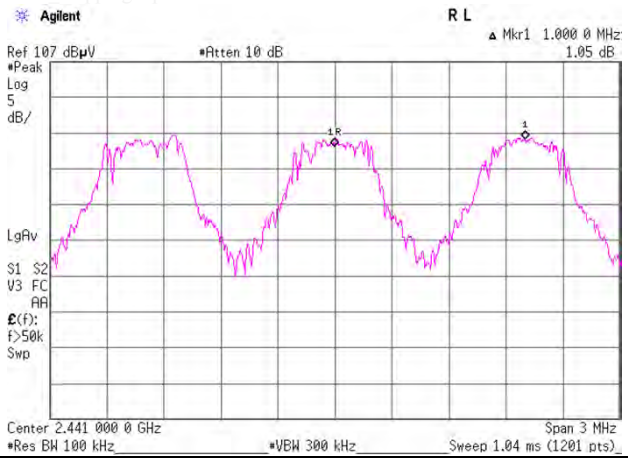
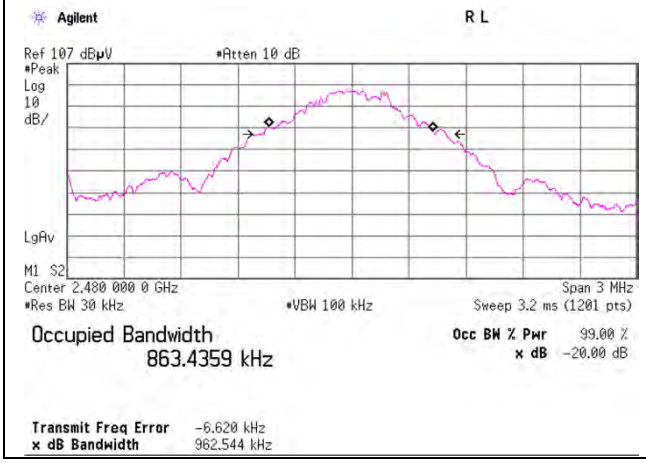
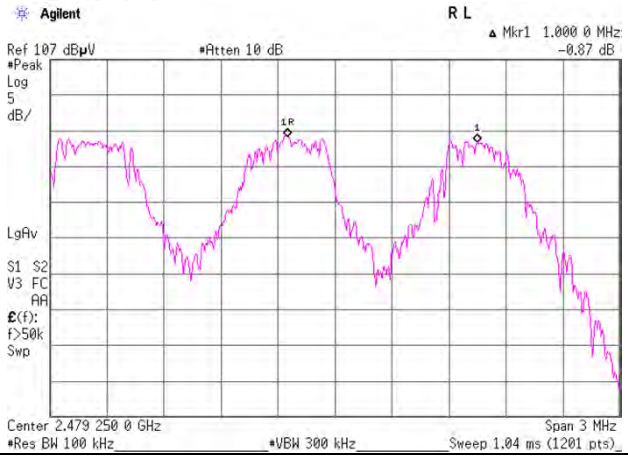
20dB Bandwidth and Carrier Frequency Separation

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	June 7, 2012	
Temperature / Humidity	27deg.C , 53%RH	
Engineer	Kenichi Adachi	
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	1.276	1.000	>= 0.850
3-DH5	2441.0	1.280	1.000	>= 0.853
3-DH5	2480.0	1.280	1.000	>= 0.854

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

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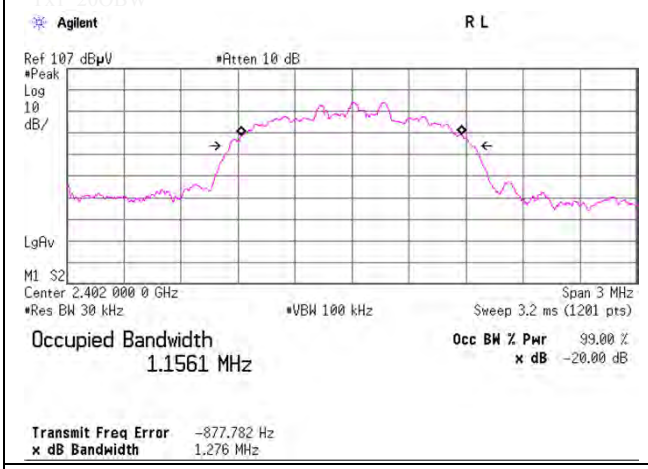
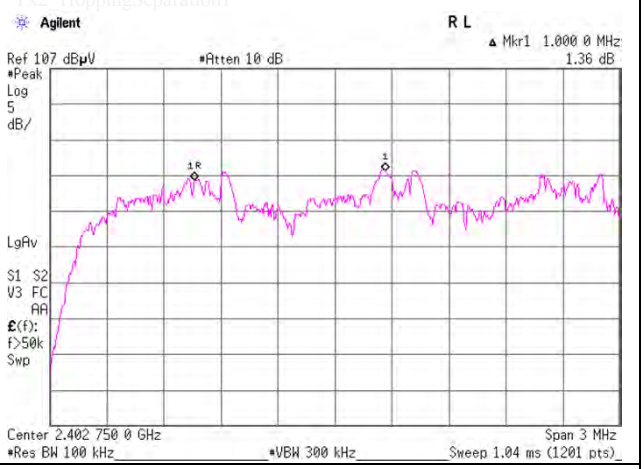
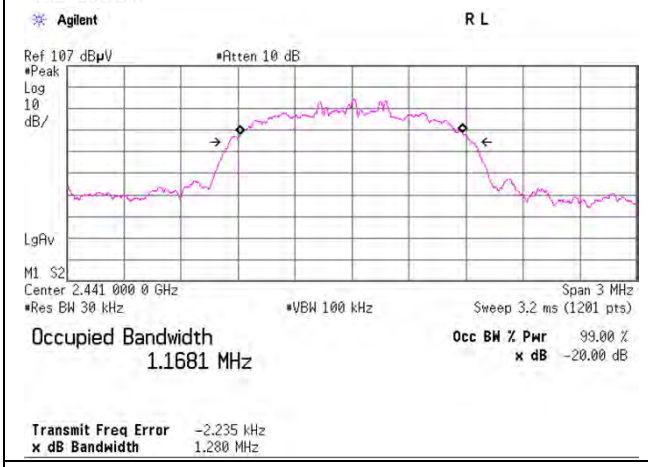
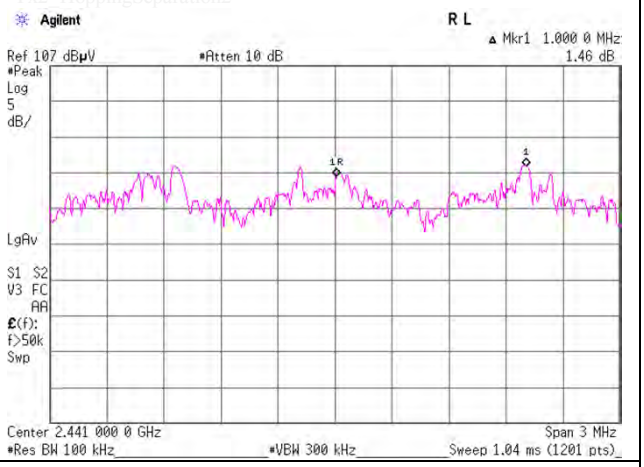
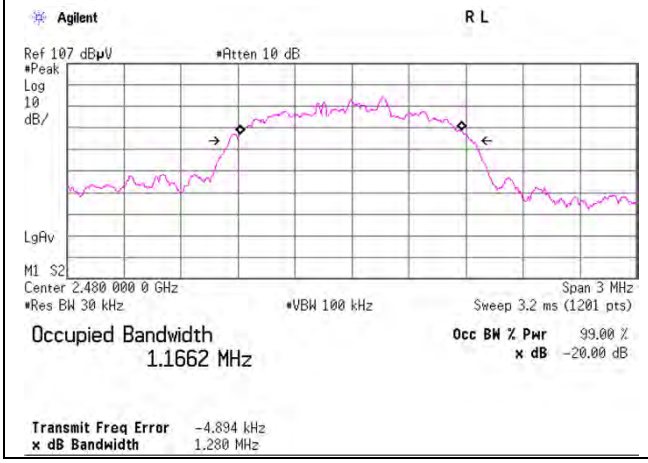
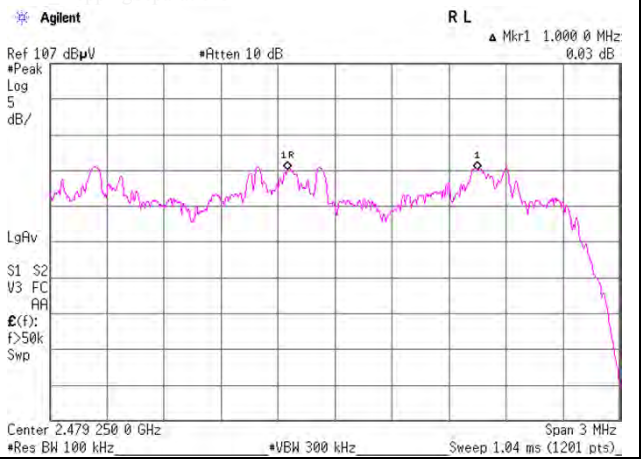
20dB Bandwidth and Carrier Frequency Separation

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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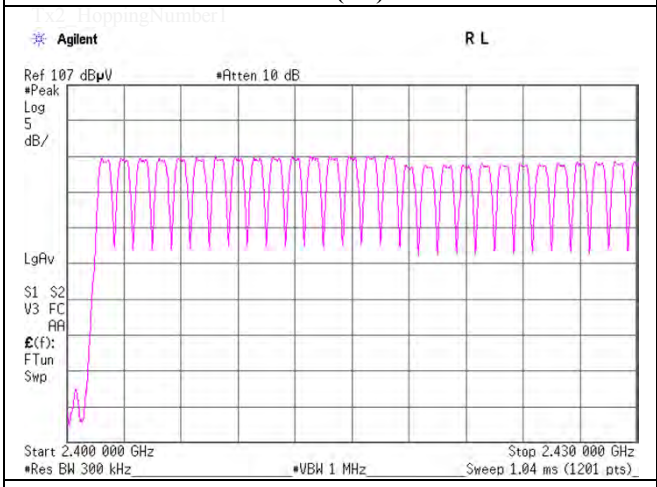
Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	June 7, 2012	
Temperature / Humidity	27deg.C , 53%RH	
Engineer	Kenichi Adachi	
Mode	Tx, Bluetooth, BDR, PRBS9	

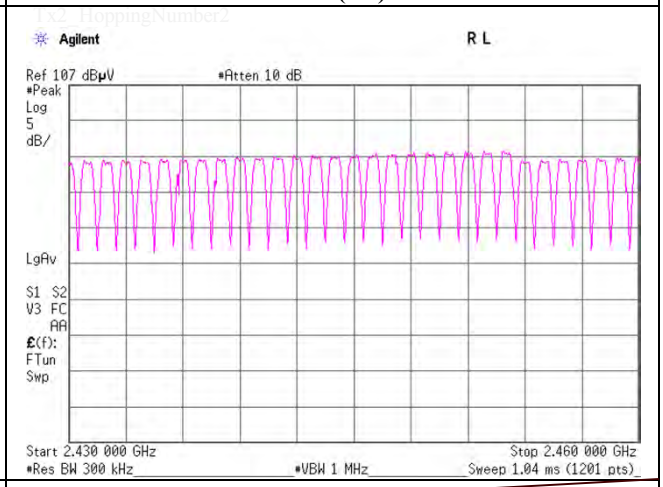
Mode	Number of Channel [times]	Limit [times]
DH5	79	>= 15

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 3.0.

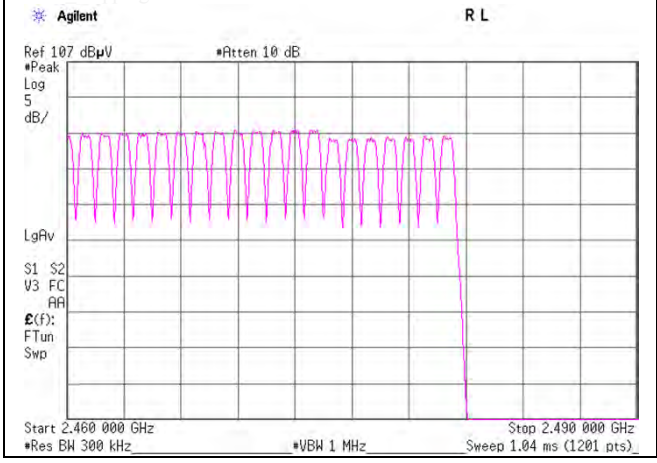
DH5 (1/3)



DH5 (2/3)



DH5 (3/3)



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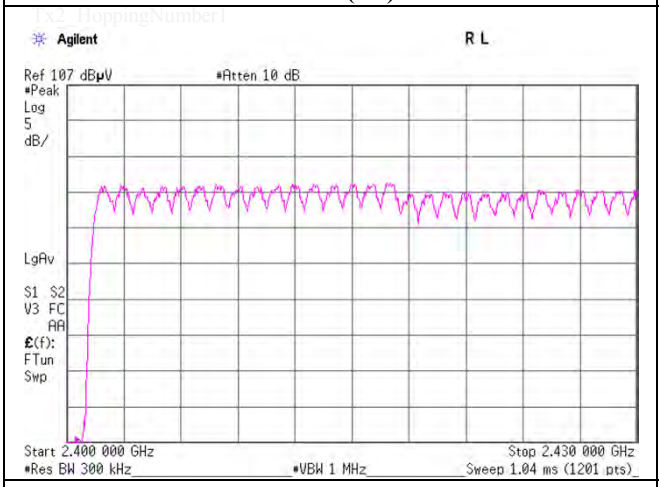
Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	June 7, 2012	
Temperature / Humidity	27deg.C , 53%RH	
Engineer	Kenichi Adachi	
Mode	Tx, Bluetooth, EDR, PRBS9	

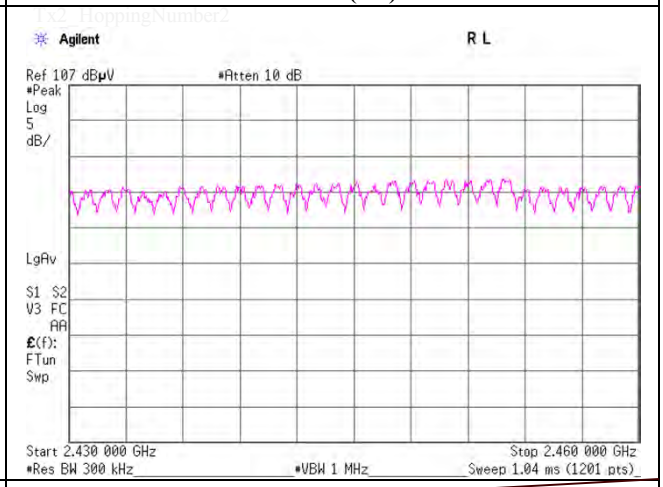
Mode	Number of Channel [times]	Limit [times]
3-DH5	79	>= 15

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 3.0.

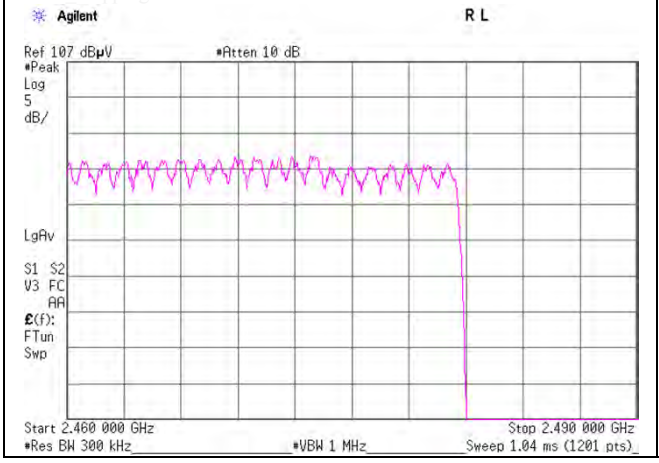
3-DH5 (1/3)



3-DH5 (2/3)



3-DH5 (3/3)



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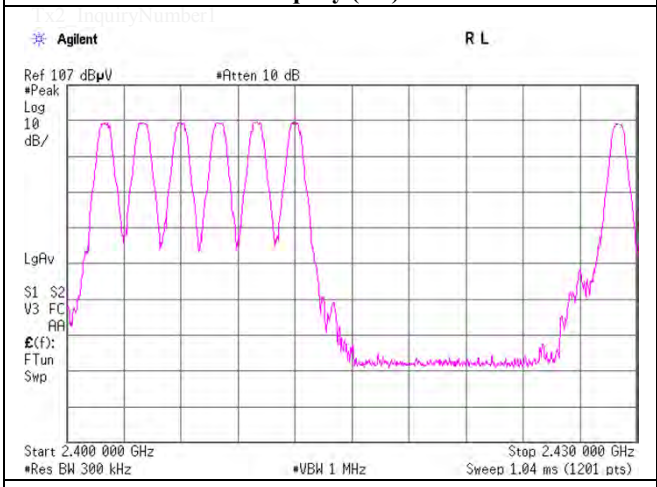
Number of Hopping Frequency

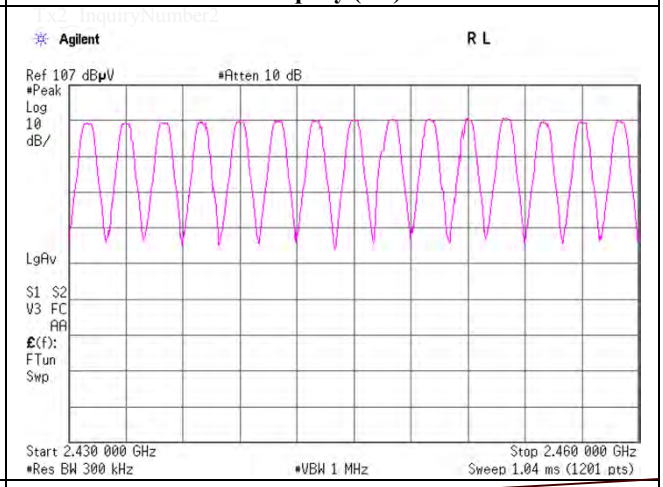
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	June 10, 2012	
Temperature / Humidity	25 deg.C , 61 %RH	
Engineer	Kenichi Adachi	
Mode	Tx, Bluetooth, Inquiry	

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

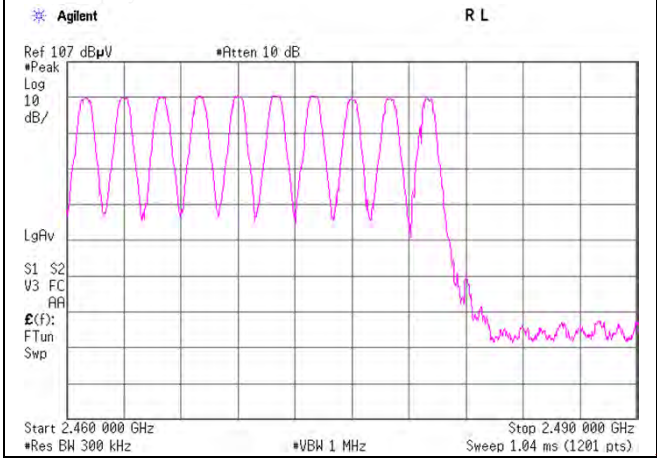
Inquiry (1/3)



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	June 7, 2012	, June 10, 2012
Temperature / Humidity	27deg.C , 53%RH	, 25deg.C , 61%RH
Engineer	Kenichi Adachi	, 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	51.0 / 5.0 sec. x 31.6 sec. = 323 times	0.397	128	400
DH3	26.0 / 5.0 sec. x 31.6 sec. = 165 times	1.653	273	400
DH5	17.0 / 5.0 sec. x 31.6 sec. = 108 times	2.904	314	400
Inquiry	100.0 / 1.0 sec. x 12.8 sec. = 1280 times	0.128	163	400

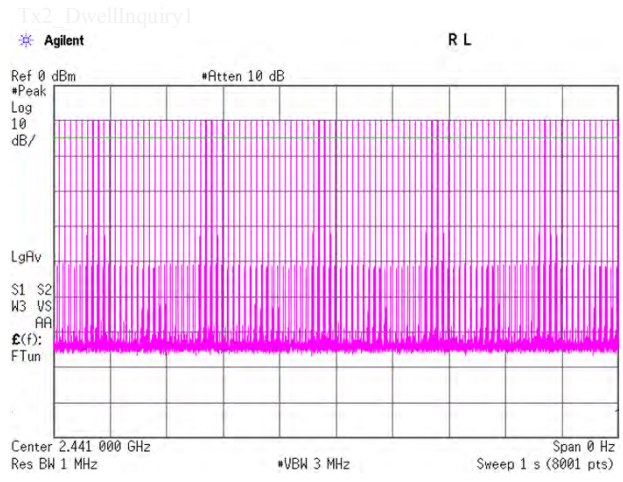
Sample Calculation

Result = Number of transmission x Length of transmition time

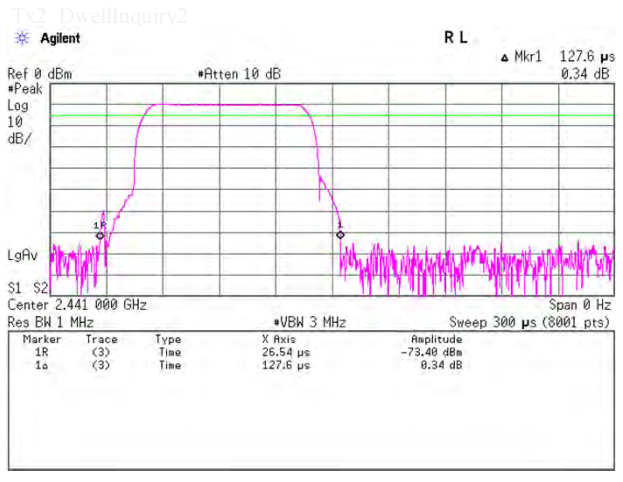
This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in N x 0.4s, where N is the number of channels being used in the hopping sequence ($20 \leq N \leq 79$), is always less than 0.4s regardless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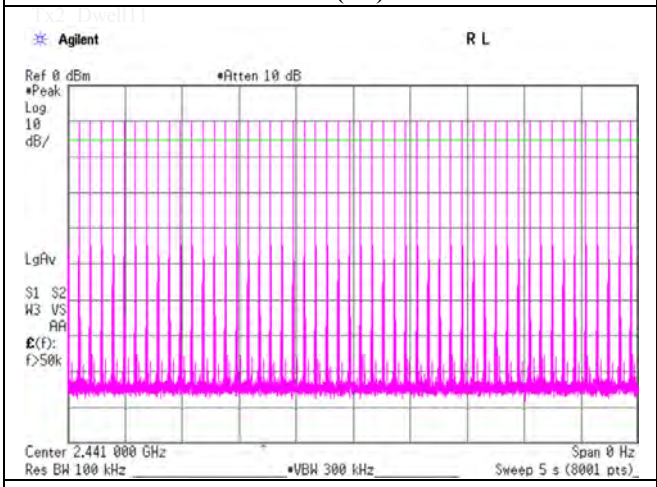
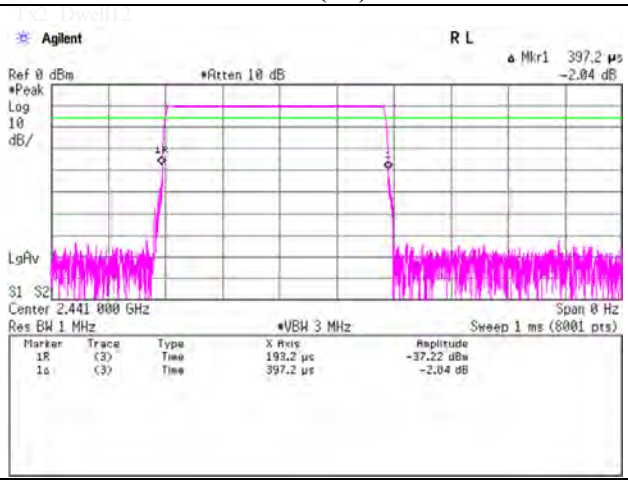
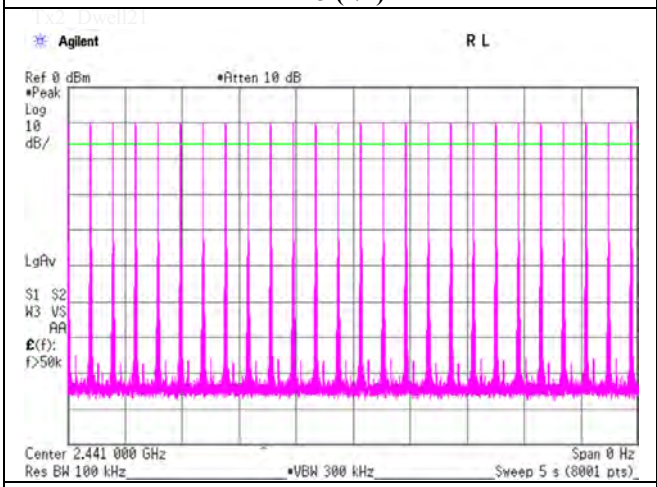
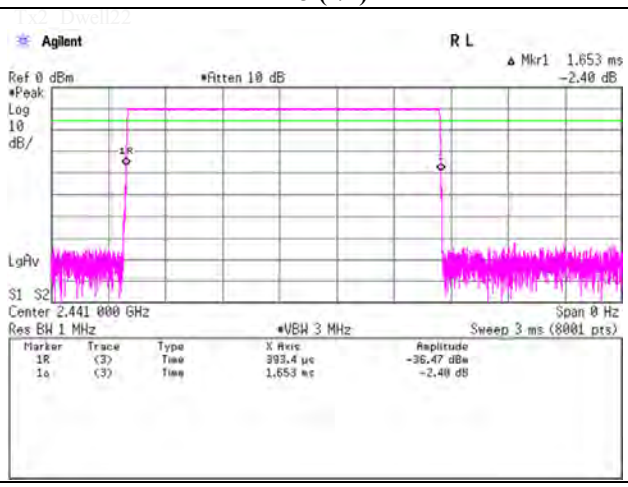
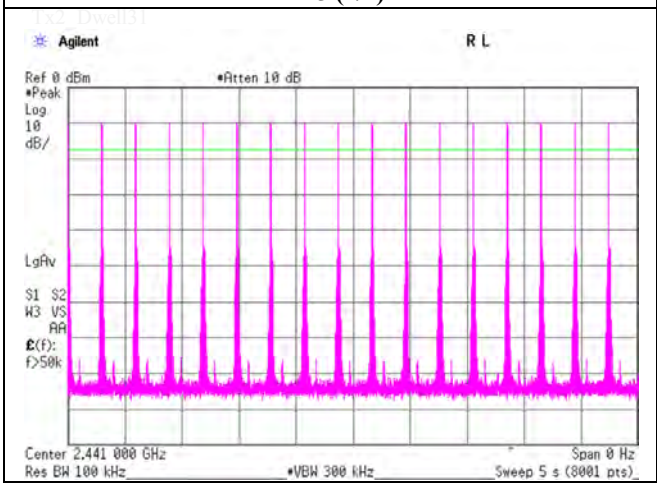
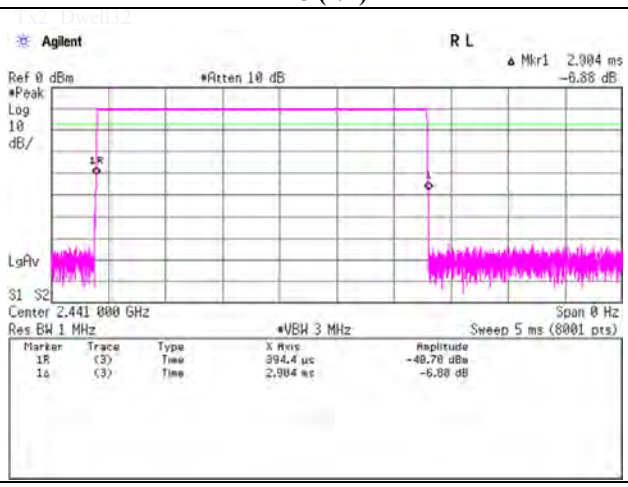
Dwell time

Tx, Bluetooth, BDR, PRBS9

DH1 (1/2)	DH1 (2/2)
	
DH3 (1/2)	**DH3 (2/2)**
	
DH5 (1/2)	**DH5 (2/2)**
	

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Dwell Time

Test place	UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date	June 7, 2012
Temperature / Humidity	27deg.C , 53%RH
Engineer	Kenichi Adachi
Mode	Tx, Bluetooth, EDR, PRBS9

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4) second period	Length of transmission time [msec]	Result [msec] [	Limit msec]
3-DH1	51.0 / 5.0 sec. x 31.6 sec. = 323 times	0.408	132	400
3-DH3	26.0 / 5.0 sec. x 31.6 sec. = 165 times	1.661	274	400
3-DH5	17.0 / 5.0 sec. x 31.6 sec. = 108 times	2.913	315	400

Sample Calculation

Result = Number of transmission x Length of transmition time

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

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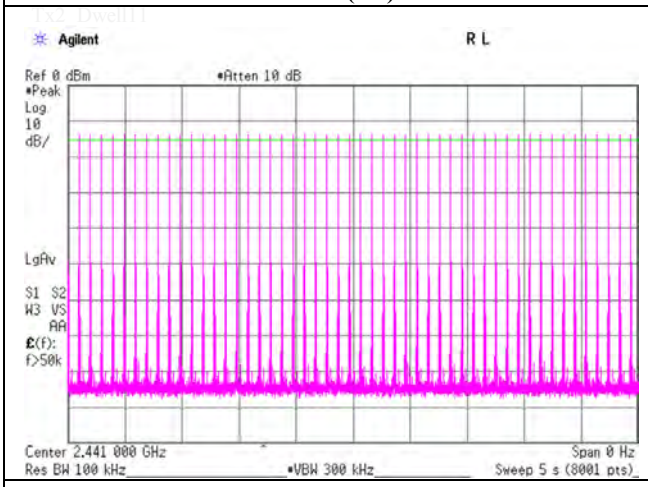
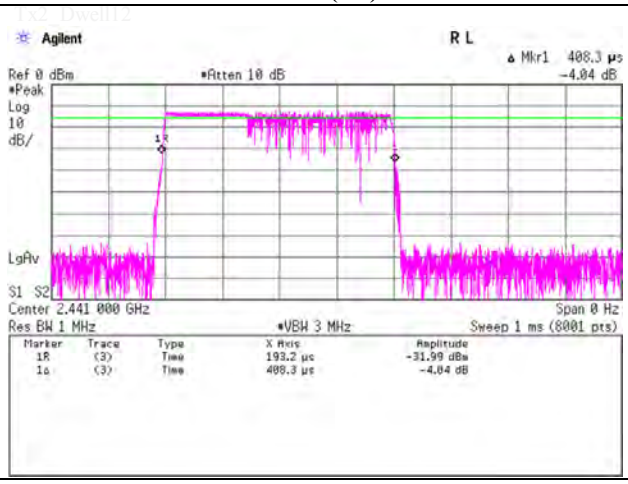
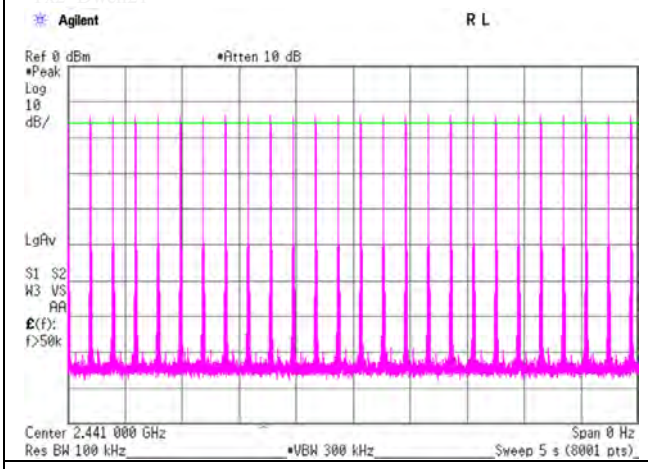
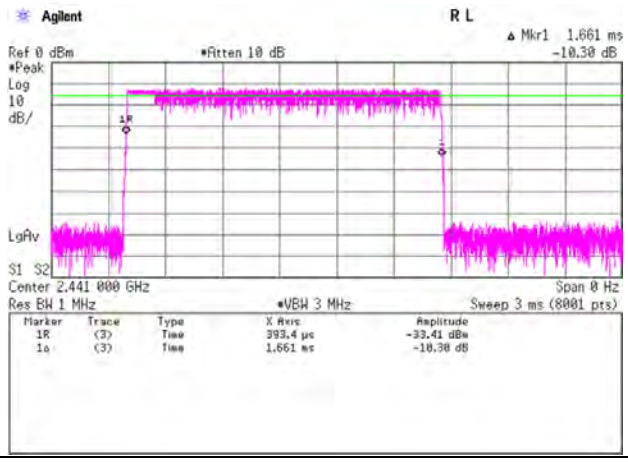
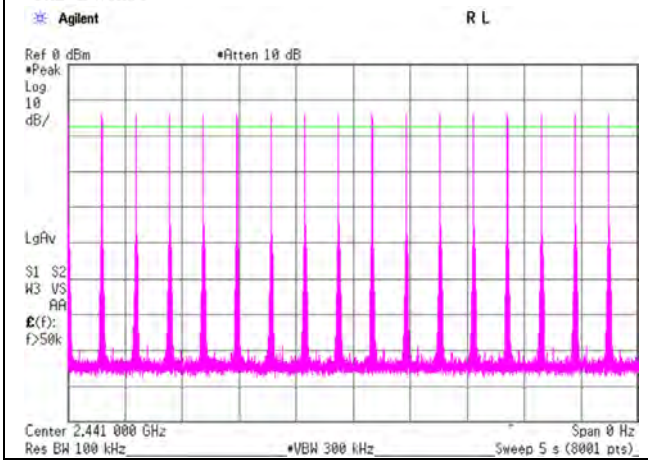
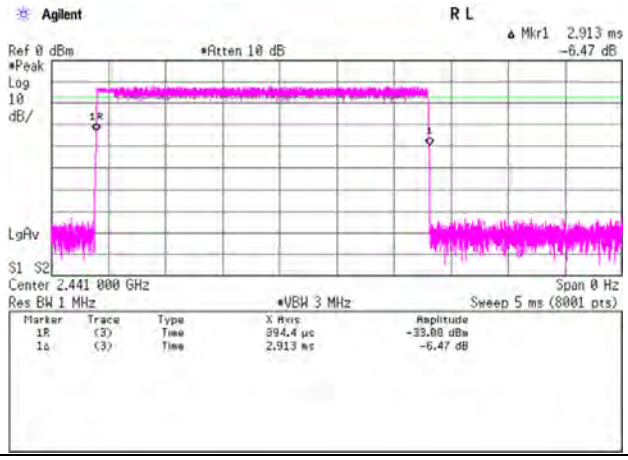
Dwell time

Tx, Bluetooth, EDR, PRBS9

3-DH1 (1/2)	3-DH1 (2/2)
	
3-DH3 (1/2)	**3-DH3 (2/2)**
	
3-DH5 (1/2)	**3-DH5 (2/2)**
	

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Peak Output Power (Radiated)

Test place	UL Japan, Inc. Shonan EMC Lab.	No2 Semi-Anechoic Chamber	
Date	June 7, 2012		
Temperature / Humidity	26deg.C	, 58%RH	
Engineer	Tatsuya Arai		
Mode	Tx		

Test Distance: 3 m
EUT Antenna Gain: 1.230 (= 0.90dBi)

DH5 (* P/M: Power Meter with power sensor)

Ch	Freq.	P/M (Peak) Reading		Ant Factor	Att+Cable Loss	Amp Gain	Result 1:*1		Result 2:*2				Limit		Margin	
		HOR	VER				HOR	VER	HOR		VER				HOR	VER
	[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV]		[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
Low	2402.0	83.85	87.98	27.26	14.05	38.16	87.00	91.13	-9.13	0.12	-5.00	0.32	30.00	1000	39.13	35.00
Mid	2441.0	84.36	88.29	27.39	14.08	38.13	87.70	91.63	-8.43	0.14	-4.50	0.35	30.00	1000	38.43	34.50
High	2480.0	85.88	88.37	27.52	14.11	38.10	89.41	91.90	-6.72	0.21	-4.23	0.38	30.00	1000	36.72	34.23

2-DH5 (* P/M: Power Meter with power sensor)

Ch	Freq.	P/M (Peak) Reading		Ant Factor	Att+Cable Loss	Amp Gain	Result 1:*1		Result 2:*2				Limit		Margin	
		HOR	VER				HOR	VER	HOR		VER				HOR	VER
	[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV]		[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
Low	2402.0	82.05	85.21	27.26	14.05	38.16	85.20	88.36	-10.93	0.08	-7.77	0.17	30.00	1000	40.93	37.77
Mid	2441.0	82.62	85.72	27.39	14.08	38.13	85.96	89.06	-10.17	0.10	-7.07	0.20	30.00	1000	40.17	37.07
High	2480.0	83.56	86.25	27.52	14.11	38.10	87.09	89.78	-9.04	0.12	-6.35	0.23	30.00	1000	39.04	36.35

3-DH5 (* P/M: Power Meter with power sensor)

Ch	Freq.	P/M (Peak) Reading		Ant Factor	Att+Cable Loss	Amp Gain	Result 1:*1		Result 2:*2				Limit		Margin	
		HOR	VER				HOR	VER	HOR		VER				HOR	VER
	[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV]		[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
Low	2402.0	82.13	85.23	27.26	14.05	38.16	85.28	88.38	-10.85	0.08	-7.75	0.17	30.00	1000	40.85	37.75
Mid	2441.0	82.60	85.73	27.39	14.08	38.13	85.94	89.07	-10.19	0.10	-7.06	0.20	30.00	1000	40.19	37.06
High	2480.0	83.61	86.29	27.52	14.11	38.10	87.14	89.82	-8.99	0.13	-6.31	0.23	30.00	1000	38.99	36.31

Sample Calculation:
*1: Result 1=>Reading+Antenna Factor+Cable Loss+Atten.Loss-Amp Gain
*2: Result 2=>P=$(ED)^2$/30G, E=Result1, D=3m, G=1.230

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber	
Date	June 7, 2012	June 8, 2012	June 10, 2012	June 11, 2012
Temperature / Humidity	26 deg.C , 58%RH	25 deg.C , 59%RH	25 deg.C , 60%RH	24 deg.C , 65%RH
Engineer	Tatsuya Arai	Tatsuya Arai	Shinichi Takano	Shinichi Takano
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.	158.054	QP	38.3	15.1	7.8	32.1	29.1	43.5	14.4	203	51	PK:VBW 3MHz
Hori.	526.410	QP	25.0	18.1	9.5	32.0	20.6	46.0	25.4	100	301	AV:VBW 10Hz
Hori.	873.950	QP	25.3	22.1	10.6	31.2	26.8	46.0	19.2	152	308	
Hori.	2390.000	PK	46.7	27.2	14.2	41.1	47.0	73.9	26.9	100	316	
Hori.	2533.000	PK	46.9	27.6	14.3	41.1	47.7	73.9	26.2	100	243	
Hori.	4804.000	PK	55.7	31.1	6.8	41.1	52.5	73.9	21.4	100	149	
Hori.	7206.000	PK	49.0	36.5	8.3	41.3	52.5	73.9	21.4	126	216	
Hori.	9608.000	PK	44.6	38.2	9.4	38.8	53.4	73.9	20.5	100	0	
Hori.	12010.000	PK	45.1	39.3	10.7	39.2	55.9	73.9	18.0	100	0	
Hori.	19211.870	PK	53.7	40.8	-2.6	47.6	44.3	73.9	29.6	111	116	
Hori.	2390.000	AV	34.2	27.2	14.2	41.1	34.5	53.9	19.4	100	316	
Hori.	2533.000	AV	35.5	27.6	14.3	41.1	36.3	53.9	17.6	100	243	
Hori.	4804.000	AV	50.1	31.1	6.8	41.1	46.9	53.9	**7.0**	100	149	
Hori.	7206.000	AV	38.5	36.5	8.3	41.3	42.0	53.9	11.9	126	216	
Hori.	9608.000	AV	32.4	38.2	9.4	38.8	41.2	53.9	12.7	100	0	
Hori.	12010.000	AV	33.9	39.3	10.7	39.2	44.7	53.9	9.2	100	0	
Hori.	19211.870	AV	47.9	40.8	-2.6	47.6	38.5	53.9	15.4	111	116	
Vert.	158.041	QP	30.0	15.1	7.8	32.1	20.8	43.5	22.7	100	335	
Vert.	873.972	QP	24.1	22.1	10.6	31.2	25.6	46.0	20.4	100	356	
Vert.	2390.000	PK	46.2	27.2	14.2	41.1	46.5	73.9	27.4	123	114	
Vert.	4804.000	PK	55.1	31.1	6.8	41.1	51.9	73.9	22.0	106	305	
Vert.	7206.000	PK	49.2	36.5	8.3	41.3	52.7	73.9	21.2	100	32	
Vert.	9608.000	PK	45.7	38.2	9.4	38.8	54.5	73.9	19.4	100	0	
Vert.	12010.000	PK	46.3	39.3	10.7	39.2	57.1	73.9	16.8	100	0	
Vert.	19211.880	PK	53.0	40.8	-2.6	47.6	43.6	73.9	30.3	100	126	
Vert.	2390.000	AV	34.2	27.2	14.2	41.1	34.5	53.9	19.4	123	114	
Vert.	4804.000	AV	49.2	31.1	6.8	41.1	46.0	53.9	7.9	106	305	
Vert.	7206.000	AV	37.3	36.5	8.3	41.3	40.8	53.9	13.1	100	32	
Vert.	9608.000	AV	32.5	38.2	9.4	38.8	41.3	53.9	12.6	100	0	
Vert.	12010.000	AV	33.9	39.3	10.7	39.2	44.7	53.9	9.2	100	0	
Vert.	19211.880	AV	47.5	40.8	-2.6	47.6	38.1	53.9	15.8	100	126	

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	83.9	27.3	14.2	41.1	84.3	-	-	Carrier
Hori.	2399.467	PK	51.1	27.3	14.2	41.1	51.5	64.3	12.8	
Hori.	2400.000	PK	52.3	27.3	14.2	41.1	52.7	64.3	11.6	
Vert.	2402.000	PK	89.4	27.3	14.2	41.1	89.8	-	-	Carrier
Vert.	2399.467	PK	57.9	27.3	14.2	41.1	58.3	69.8	11.5	
Vert.	2400.000	PK	57.2	27.3	14.2	41.1	57.6	69.8	12.2	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amprifier)

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber	
Date	June 7, 2012	June 8, 2012	June 10, 2012	June 11, 2012
Temperature / Humidity	26 deg.C , 58%RH	25 deg.C , 59%RH	25 deg.C , 60%RH	24 deg.C , 65%RH
Engineer	Tatsuya Arai	Tatsuya Arai	Shinichi Takano	Shinichi Takano
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.	158.033	QP	37.2	15.1	7.8	32.1	28.0	43.5	15.5	202	225	PK:VBW 3MHz
Hori.	526.472	QP	24.8	18.1	9.5	32.0	20.4	46.0	25.6	100	359	AV:VBW 10Hz
Hori.	873.081	QP	24.8	22.1	10.6	31.2	26.3	46.0	19.7	150	134	
Hori.	2283.000	PK	46.0	26.9	14.1	41.1	45.9	73.9	28.0	100	0	
Hori.	2596.994	PK	47.4	27.8	14.4	41.2	48.4	73.9	25.5	100	59	
Hori.	4882.000	PK	54.7	31.2	6.9	40.9	51.9	73.9	22.0	100	164	
Hori.	7323.000	PK	49.8	36.8	8.6	41.4	53.8	73.9	20.1	100	219	
Hori.	9764.000	PK	45.1	38.5	9.5	38.8	54.3	73.9	19.6	100	0	
Hori.	12205.000	PK	46.1	39.3	10.8	39.2	57.0	73.9	16.9	100	0	
Hori.	19523.850	PK	53.2	40.8	-2.5	47.3	44.2	73.9	29.7	113	119	
Hori.	2283.000	AV	34.7	26.9	14.1	41.1	34.6	53.9	19.3	100	0	
Hori.	2596.994	AV	36.3	27.8	14.4	41.2	37.3	53.9	16.6	100	59	
Hori.	4882.000	AV	48.2	31.2	6.9	40.9	45.4	53.9	**8.5**	100	164	
Hori.	7323.000	AV	38.3	36.8	8.6	41.4	42.3	53.9	11.6	100	219	
Hori.	9764.000	AV	32.6	38.5	9.5	38.8	41.8	53.9	12.1	100	0	
Hori.	12205.000	AV	33.6	39.3	10.8	39.2	44.5	53.9	9.4	100	0	
Hori.	19523.850	AV	47.8	40.8	-2.5	47.3	38.8	53.9	15.1	113	119	
Vert.	158.027	QP	30.1	15.1	7.8	32.1	20.9	43.5	22.6	100	95	
Vert.	873.961	QP	24.2	22.1	10.6	31.2	25.7	46.0	20.3	100	65	
Vert.	2283.000	PK	46.6	26.9	14.1	41.1	46.5	73.9	27.4	100	0	
Vert.	2596.994	PK	48.4	27.8	14.4	41.2	49.4	73.9	24.5	100	223	
Vert.	4882.000	PK	54.7	31.2	6.9	40.9	51.9	73.9	22.0	100	270	
Vert.	7323.000	PK	49.2	36.8	8.6	41.4	53.2	73.9	20.7	104	331	
Vert.	9764.000	PK	45.3	38.5	9.5	38.8	54.5	73.9	19.4	100	0	
Vert.	12205.000	PK	47.2	39.3	10.8	39.2	58.1	73.9	15.8	100	0	
Vert.	19523.860	PK	52.3	40.8	-2.5	47.3	43.3	73.9	30.6	100	198	
Vert.	2283.000	AV	34.8	26.9	14.1	41.1	34.7	53.9	19.2	100	0	
Vert.	2596.994	AV	36.1	27.8	14.4	41.2	37.1	53.9	16.8	100	223	
Vert.	4882.000	AV	48.0	31.2	6.9	40.9	45.2	53.9	8.7	100	270	
Vert.	7323.000	AV	38.0	36.8	8.6	41.4	42.0	53.9	11.9	104	331	
Vert.	9764.000	AV	33.2	38.5	9.5	38.8	42.4	53.9	11.5	100	0	
Vert.	12205.000	AV	34.0	39.3	10.8	39.2	44.9	53.9	9.0	100	0	
Vert.	19523.860	AV	45.8	40.8	-2.5	47.3	36.8	53.9	17.1	100	198	

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	June 7, 2012	June 8, 2012	June 10, 2012	June 11, 2012
Temperature / Humidity	26 deg.C , 58%RH	25 deg.C , 59%RH	25 deg.C , 60%RH	24 deg.C , 65%RH
Engineer	Tatsuya Arai	Tatsuya Arai	Shinichi Takano	Shinichi Takano
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.	158.043	QP	38.1	15.1	7.8	32.1	28.9	43.5	14.6	201	47	PK:VBW 3MHz
Hori.	526.456	QP	25.3	18.1	9.5	32.0	20.9	46.0	25.1	100	291	AV:VBW 10Hz
Hori.	873.081	QP	24.8	22.1	10.6	31.2	26.3	46.0	19.7	157	134	
Hori.	2323.000	PK	46.6	27.1	14.1	41.1	46.7	73.9	27.2	100	0	
Hori.	2483.500	PK	46.2	27.5	14.3	41.1	46.9	73.9	27.0	100	327	
Hori.	2635.985	PK	46.8	27.8	14.4	41.2	47.8	73.9	26.1	100	289	
Hori.	4960.000	PK	52.0	31.4	6.9	40.8	49.5	73.9	24.4	100	83	
Hori.	7440.000	PK	50.9	37.0	8.8	41.5	55.2	73.9	18.7	144	233	
Hori.	9920.000	PK	44.9	38.8	9.7	38.8	54.6	73.9	19.3	100	0	
Hori.	12400.000	PK	44.8	39.4	10.8	39.2	55.8	73.9	18.1	100	0	
Hori.	19835.880	PK	52.5	40.8	-2.4	47.1	43.8	73.9	30.1	100	123	
Hori.	2323.000	AV	34.2	27.1	14.1	41.1	34.3	53.9	19.6	100	0	
Hori.	2483.500	AV	34.3	27.5	14.3	41.1	35.0	53.9	18.9	100	327	
Hori.	2635.985	AV	35.6	27.8	14.4	41.2	36.6	53.9	17.3	100	289	
Hori.	4960.000	AV	44.6	31.4	6.9	40.8	42.1	53.9	11.8	100	83	
Hori.	7440.000	AV	38.6	37.0	8.8	41.5	42.9	53.9	11.0	144	233	
Hori.	9920.000	AV	32.3	38.8	9.7	38.8	42.0	53.9	11.9	100	0	
Hori.	12400.000	AV	32.8	39.4	10.8	39.2	43.8	53.9	**10.1**	100	0	
Hori.	19835.880	AV	46.4	40.8	-2.4	47.1	37.7	53.9	16.2	100	123	
Vert.	158.037	QP	30.7	15.1	7.8	32.1	21.5	43.5	22.0	100	355	
Vert.	873.993	QP	24.5	22.1	10.6	31.2	26.0	46.0	20.0	100	132	
Vert.	2323.000	PK	46.3	27.1	14.1	41.1	46.4	73.9	27.5	100	0	
Vert.	2483.500	PK	46.4	27.5	14.3	41.1	47.1	73.9	26.8	124	185	
Vert.	2635.985	PK	46.7	27.8	14.4	41.2	47.7	73.9	26.2	141	183	
Vert.	4960.000	PK	51.1	31.4	6.9	40.8	48.6	73.9	25.3	110	264	
Vert.	7440.000	PK	48.6	37.0	8.8	41.5	52.9	73.9	21.0	139	247	
Vert.	9920.000	PK	42.2	38.8	9.7	38.8	51.9	73.9	22.0	100	0	
Vert.	12400.000	PK	43.7	39.4	10.8	39.2	54.7	73.9	19.2	100	0	
Vert.	19835.830	PK	51.1	40.8	-2.4	47.1	42.4	73.9	31.5	100	144	
Vert.	2323.000	AV	34.8	27.1	14.1	41.1	34.9	53.9	19.0	100	0	
Vert.	2483.500	AV	34.4	27.5	14.3	41.1	35.1	53.9	18.8	124	185	
Vert.	2635.985	AV	34.4	27.8	14.4	41.2	35.4	53.9	18.5	141	183	
Vert.	4960.000	AV	43.7	31.4	6.9	40.8	41.2	53.9	12.7	110	264	
Vert.	7440.000	AV	36.5	37.0	8.8	41.5	40.8	53.9	13.1	139	247	
Vert.	9920.000	AV	30.7	38.8	9.7	38.8	40.4	53.9	13.5	100	0	
Vert.	12400.000	AV	31.2	39.4	10.8	39.2	42.2	53.9	11.7	100	0	
Vert.	19835.830	AV	44.1	40.8	-2.4	47.1	35.4	53.9	18.5	100	144	

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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Facsimile : +81 463 50 6401

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber	
Date	June 7, 2012	June 8, 2012	June 10, 2012	June 11, 2012
Temperature / Humidity	26 deg.C , 58%RH	25 deg.C , 59%RH	25 deg.C , 60%RH	24 deg.C , 65%RH
Engineer	Tatsuya Arai	Tatsuya Arai	Shinichi Takano	Shinichi Takano
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.	158.039	QP	37.5	15.1	7.8	32.1	28.3	43.5	15.2	201	56	PK:VBW 3MHz
Hori.	527.081	QP	25.3	18.1	9.5	32.0	20.9	46.0	25.1	100	326	AV:VBW 10Hz
Hori.	873.927	QP	25.0	22.1	10.6	31.2	26.5	46.0	19.5	158	328	
Hori.	2390.000	PK	46.4	27.2	14.2	41.1	46.7	73.9	27.2	131	154	
Hori.	2558.000	PK	46.2	27.7	14.3	41.1	47.1	73.9	26.8	100	245	
Hori.	4804.000	PK	52.7	31.1	6.8	41.1	49.5	73.9	24.4	100	149	
Hori.	7206.000	PK	48.2	36.5	8.3	41.3	51.7	73.9	22.2	134	222	
Hori.	9608.000	PK	45.3	38.2	9.4	38.8	54.1	73.9	19.8	100	0	
Hori.	12010.000	PK	46.0	39.3	10.7	39.2	56.8	73.9	17.1	100	0	
Hori.	19211.880	PK	53.4	40.8	-2.6	47.6	44.0	73.9	29.9	110	125	
Hori.	2390.000	AV	34.2	27.2	14.2	41.1	34.5	53.9	19.4	131	154	
Hori.	2558.000	AV	35.4	27.7	14.3	41.1	36.3	53.9	17.6	100	245	
Hori.	4804.000	AV	43.2	31.1	6.8	41.1	40.0	53.9	13.9	100	149	
Hori.	7206.000	AV	36.1	36.5	8.3	41.3	39.6	53.9	14.3	134	222	
Hori.	9608.000	AV	32.5	38.2	9.4	38.8	41.3	53.9	12.6	100	0	
Hori.	12010.000	AV	33.9	39.3	10.7	39.2	44.7	53.9	**9.2**	100	0	
Hori.	19211.880	AV	47.9	40.8	-2.6	47.6	38.5	53.9	15.4	110	125	
Vert.	158.036	QP	30.3	15.1	7.8	32.1	21.1	43.5	22.4	100	318	
Vert.	872.979	QP	24.8	22.1	10.6	31.2	26.3	46.0	19.7	100	135	
Vert.	2390.000	PK	46.0	27.2	14.2	41.1	46.3	73.9	27.6	130	132	
Vert.	2558.000	PK	47.3	27.7	14.3	41.1	48.2	73.9	25.7	107	217	
Vert.	4804.000	PK	51.6	31.1	6.8	41.1	48.4	73.9	25.5	102	88	
Vert.	7206.000	PK	47.9	36.5	8.3	41.3	51.4	73.9	22.5	101	36	
Vert.	9608.000	PK	44.9	38.2	9.4	38.8	53.7	73.9	20.2	100	0	
Vert.	12010.000	PK	46.0	39.3	10.7	39.2	56.8	73.9	17.1	100	0	
Vert.	19211.880	PK	53.6	40.8	-2.6	47.6	44.2	73.9	29.7	109	121	
Vert.	2390.000	AV	34.2	27.2	14.2	41.1	34.5	53.9	19.4	130	132	
Vert.	2558.000	AV	35.3	27.7	14.3	41.1	36.2	53.9	17.7	107	217	
Vert.	4804.000	AV	41.0	31.1	6.8	41.1	37.8	53.9	16.1	102	88	
Vert.	7206.000	AV	35.5	36.5	8.3	41.3	39.0	53.9	14.9	101	36	
Vert.	9608.000	AV	32.5	38.2	9.4	38.8	41.3	53.9	12.6	100	0	
Vert.	12010.000	AV	33.9	39.3	10.7	39.2	44.7	53.9	**9.2**	100	0	
Vert.	19211.880	AV	47.9	40.8	-2.6	47.6	38.5	53.9	15.4	109	121	

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	80.0	27.3	14.2	41.1	80.4	-	-	Carrier
Hori.	2399.500	PK	45.6	27.3	14.2	41.1	46.0	60.4	14.4	
Hori.	2400.000	PK	46.2	27.3	14.2	41.1	46.6	60.4	13.8	
Vert.	2402.000	PK	85.8	27.3	14.2	41.1	86.2	-	-	Carrier
Vert.	2399.500	PK	49.7	27.3	14.2	41.1	50.1	66.2	16.1	
Vert.	2400.000	PK	50.5	27.3	14.2	41.1	50.9	66.2	15.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amprifier)

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber	
Date	June 7, 2012	June 8, 2012	June 10, 2012	June 11, 2012
Temperature / Humidity	26 deg.C , 58%RH	25 deg.C , 59%RH	25 deg.C , 60%RH	24 deg.C , 65%RH
Engineer	Tatsuya Arai	Tatsuya Arai	Shinichi Takano	Shinichi Takano
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.	158.059	QP	37.7	15.1	7.8	32.1	28.5	43.5	15.0	204	32	PK:VBW 3MHz
Hori.	526.759	QP	24.7	18.1	9.5	32.0	20.3	46.0	25.7	100	11	AV:VBW 10Hz
Hori.	873.837	QP	24.8	22.1	10.6	31.2	26.3	46.0	19.7	153	95	
Hori.	2283.000	PK	46.4	26.9	14.1	41.1	46.3	73.9	27.6	100	0	
Hori.	2597.000	PK	47.0	27.8	14.4	41.2	48.0	73.9	25.9	100	239	
Hori.	4882.000	PK	51.4	31.2	6.9	40.9	48.6	73.9	25.3	115	162	
Hori.	7323.000	PK	48.0	36.8	8.6	41.4	52.0	73.9	21.9	134	223	
Hori.	9764.000	PK	43.6	38.5	9.5	38.8	52.8	73.9	21.1	100	0	
Hori.	12205.000	PK	44.6	39.3	10.8	39.2	55.5	73.9	18.4	100	0	
Hori.	19523.990	PK	53.5	40.8	-2.5	47.3	44.5	73.9	29.4	114	118	
Hori.	2283.000	AV	34.8	26.9	14.1	41.1	34.7	53.9	19.2	100	0	
Hori.	2597.000	AV	34.9	27.8	14.4	41.2	35.9	53.9	18.0	100	239	
Hori.	4882.000	AV	41.6	31.2	6.9	40.9	38.8	53.9	15.1	115	162	
Hori.	7323.000	AV	34.8	36.8	8.6	41.4	38.8	53.9	15.1	134	223	
Hori.	9764.000	AV	31.8	38.5	9.5	38.8	41.0	53.9	12.9	100	0	
Hori.	12205.000	AV	32.3	39.3	10.8	39.2	43.2	53.9	10.7	100	0	
Hori.	19523.990	AV	47.9	40.8	-2.5	47.3	38.9	53.9	15.0	114	118	
Vert.	158.042	QP	30.3	15.1	7.8	32.1	21.1	43.5	22.4	100	326	
Vert.	874.032	QP	25.2	22.1	10.6	31.2	26.7	46.0	19.3	100	352	
Vert.	2283.000	PK	45.7	26.9	14.1	41.1	45.6	73.9	28.3	100	0	
Vert.	2597.000	PK	46.2	27.8	14.4	41.2	47.2	73.9	26.7	152	220	
Vert.	4882.000	PK	49.4	31.2	6.9	40.9	46.6	73.9	27.3	100	268	
Vert.	7323.000	PK	46.4	36.8	8.6	41.4	50.4	73.9	23.5	152	328	
Vert.	9764.000	PK	43.0	38.5	9.5	38.8	52.2	73.9	21.7	152	220	
Vert.	12205.000	PK	45.4	39.3	10.8	39.2	56.3	73.9	17.6	152	220	
Vert.	19523.880	PK	52.6	40.8	-2.5	47.3	43.6	73.9	30.3	100	154	
Vert.	2283.000	AV	34.8	26.9	14.1	41.1	34.7	53.9	19.2	100	0	
Vert.	2597.000	AV	34.4	27.8	14.4	41.2	35.4	53.9	18.5	152	220	
Vert.	4882.000	AV	39.1	31.2	6.9	40.9	36.3	53.9	17.6	100	268	
Vert.	7323.000	AV	34.5	36.8	8.6	41.4	38.5	53.9	15.4	152	328	
Vert.	9764.000	AV	31.3	38.5	9.5	38.8	40.5	53.9	13.4	152	220	
Vert.	12205.000	AV	32.5	39.3	10.8	39.2	43.4	53.9	**10.5**	152	220	
Vert.	19523.880	AV	46.0	40.8	-2.5	47.3	37.0	53.9	16.9	100	154	

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	June 7, 2012	June 8, 2012	June 10, 2012	June 11, 2012
Temperature / Humidity	26 deg.C , 58%RH	25 deg.C , 59%RH	25 deg.C , 60%RH	24 deg.C , 65%RH
Engineer	Tatsuya Arai	Tatsuya Arai	Shinichi Takano	Shinichi Takano
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.	158.044	QP	38.1	15.1	7.8	32.1	28.9	43.5	14.6	208	18	PK:VBW 3MHz
Hori.	526.527	QP	24.8	18.1	9.5	32.0	20.4	46.0	25.6	151	357	AV:VBW 10Hz
Hori.	873.925	QP	24.6	22.1	10.6	31.2	26.1	46.0	19.9	157	318	
Hori.	2323.000	PK	46.8	27.1	14.1	41.1	46.9	73.9	27.0	100	0	
Hori.	2483.500	PK	46.3	27.5	14.3	41.1	47.0	73.9	26.9	100	16	
Hori.	2636.025	PK	46.5	27.8	14.4	41.2	47.5	73.9	26.4	100	171	
Hori.	4960.000	PK	48.4	31.4	6.9	40.8	45.9	73.9	28.0	100	92	
Hori.	7440.000	PK	46.8	37.0	8.8	41.5	51.1	73.9	22.8	115	232	
Hori.	9920.000	PK	43.5	38.8	9.7	38.8	53.2	73.9	20.7	100	0	
Hori.	12400.000	PK	44.2	39.4	10.8	39.2	55.2	73.9	18.7	100	0	
Hori.	19835.970	PK	52.1	40.8	-2.4	47.1	43.4	73.9	30.5	100	123	
Hori.	2323.000	AV	34.2	27.1	14.1	41.1	34.3	53.9	19.6	100	0	
Hori.	2483.500	AV	34.2	27.5	14.3	41.1	34.9	53.9	19.0	100	16	
Hori.	2636.025	AV	34.6	27.8	14.4	41.2	35.6	53.9	18.3	100	171	
Hori.	4960.000	AV	37.9	31.4	6.9	40.8	35.4	53.9	18.5	100	92	
Hori.	7440.000	AV	35.2	37.0	8.8	41.5	39.5	53.9	14.4	115	232	
Hori.	9920.000	AV	31.0	38.8	9.7	38.8	40.7	53.9	13.2	100	0	
Hori.	12400.000	AV	31.3	39.4	10.8	39.2	42.3	53.9	**11.6**	100	0	
Hori.	19835.970	AV	46.6	40.8	-2.4	47.1	37.9	53.9	16.0	100	123	
Vert.	158.047	QP	30.1	15.1	7.8	32.1	20.9	43.5	22.6	100	331	
Vert.	873.982	QP	24.7	22.1	10.6	31.2	26.2	46.0	19.8	100	358	
Vert.	2323.000	PK	45.8	27.1	14.1	41.1	45.9	73.9	28.0	100	0	
Vert.	2483.500	PK	46.6	27.5	14.3	41.1	47.3	73.9	26.6	117	180	
Vert.	2636.025	PK	45.7	27.8	14.4	41.2	46.7	73.9	27.2	100	239	
Vert.	4960.000	PK	49.1	31.4	6.9	40.8	46.6	73.9	27.3	118	92	
Vert.	7440.000	PK	46.9	37.0	8.8	41.5	51.2	73.9	22.7	151	249	
Vert.	9920.000	PK	42.7	38.8	9.7	38.8	52.4	73.9	21.5	100	0	
Vert.	12400.000	PK	42.9	39.4	10.8	39.2	53.9	73.9	20.0	100	0	
Vert.	19835.840	PK	50.9	40.8	-2.4	47.1	42.2	73.9	31.7	100	143	
Vert.	2323.000	AV	34.2	27.1	14.1	41.1	34.3	53.9	19.6	100	0	
Vert.	2483.500	AV	34.3	27.5	14.3	41.1	35.0	53.9	18.9	117	180	
Vert.	2636.025	AV	34.2	27.8	14.4	41.2	35.2	53.9	18.7	100	239	
Vert.	4960.000	AV	37.4	31.4	6.9	40.8	34.9	53.9	19.0	118	92	
Vert.	7440.000	AV	35.0	37.0	8.8	41.5	39.3	53.9	14.6	151	249	
Vert.	9920.000	AV	30.9	38.8	9.7	38.8	40.6	53.9	13.3	100	0	
Vert.	12400.000	AV	31.3	39.4	10.8	39.2	42.3	53.9	**11.6**	100	0	
Vert.	19835.840	AV	44.1	40.8	-2.4	47.1	35.4	53.9	18.5	100	143	

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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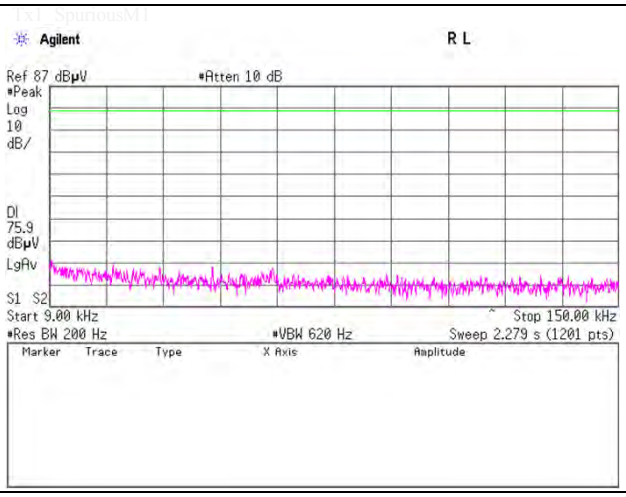
Spurious emission (Conducted)

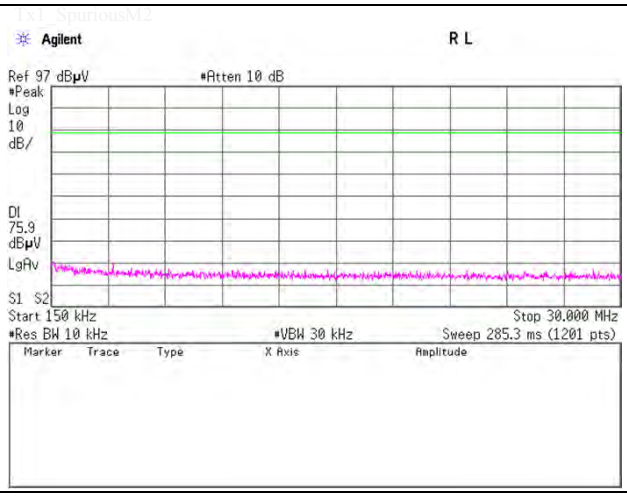
Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (1/2)

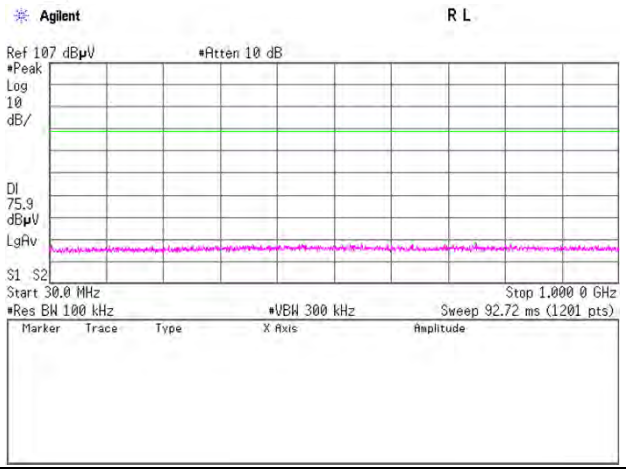
9kHz - 150kHz



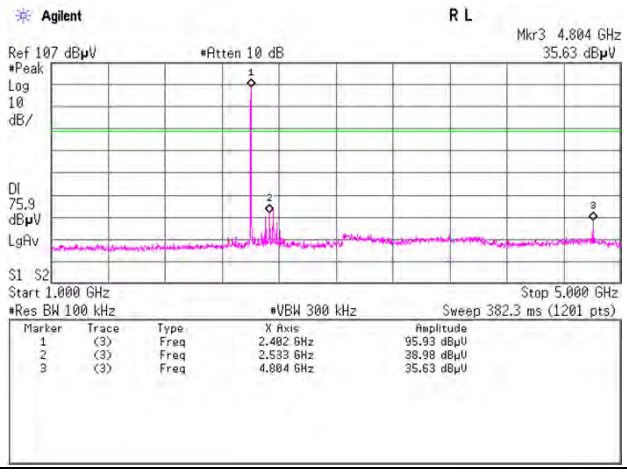
150kHz - 30MHz



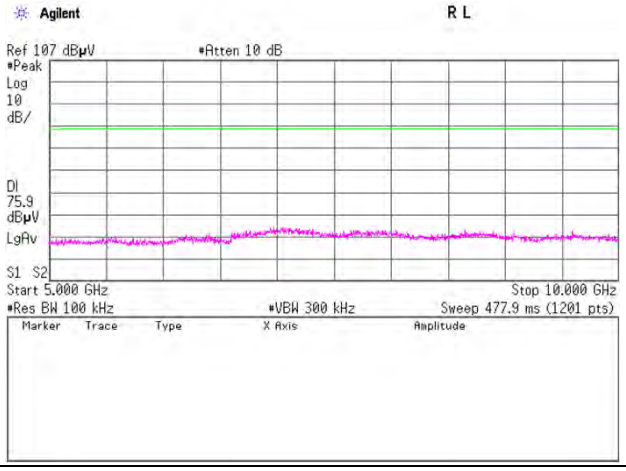
30MHz - 1GHz



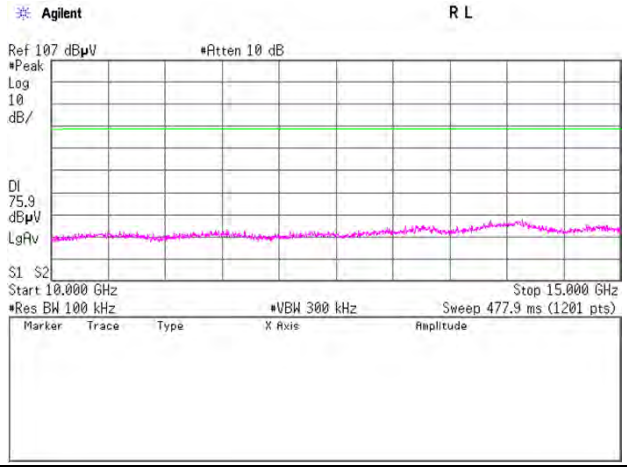
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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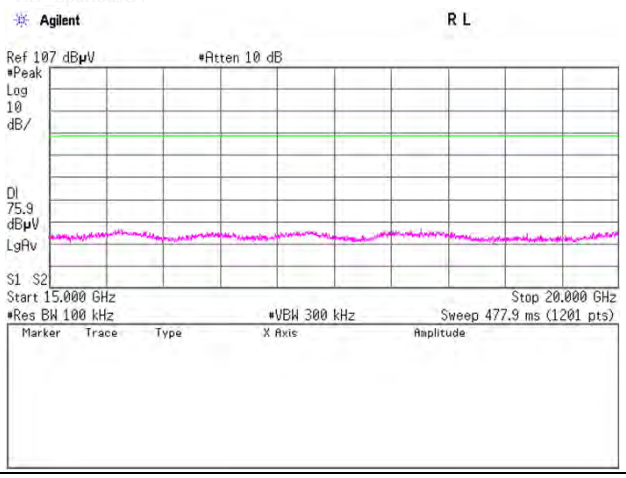
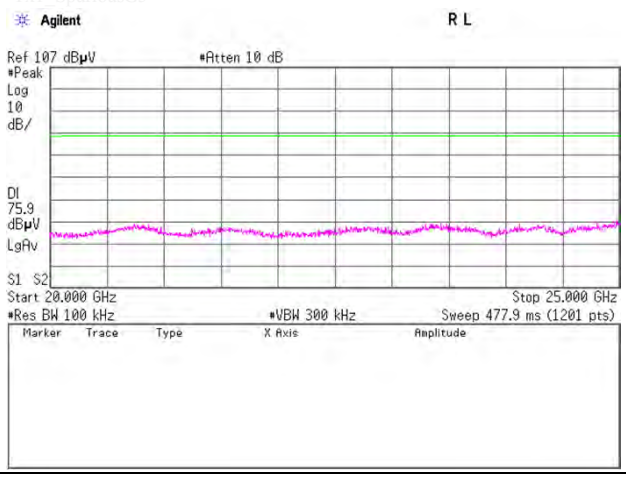
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (2/2)

15GHz - 20GHz	20GHz - 25GHz
	

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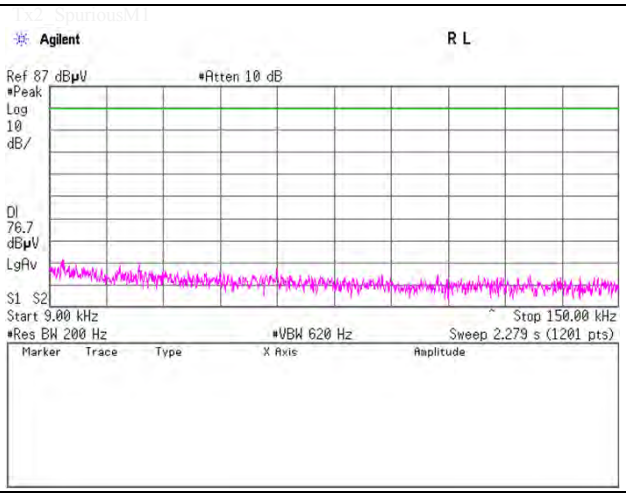
Spurious emission (Conducted)

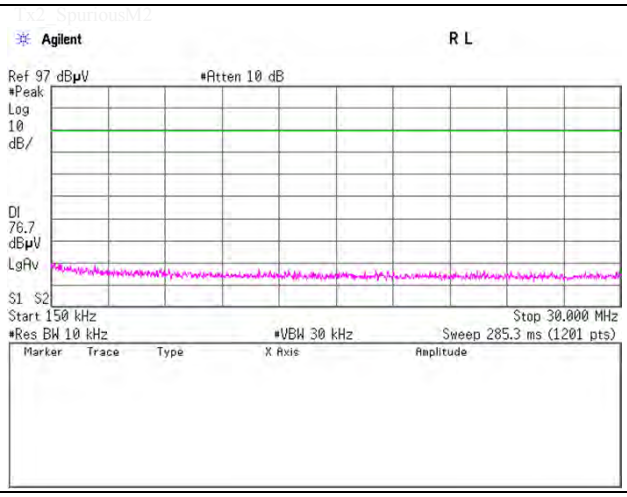
Tx, Bluetooth, BDR, PRBS9

Tx, 2441MHz (1/2)

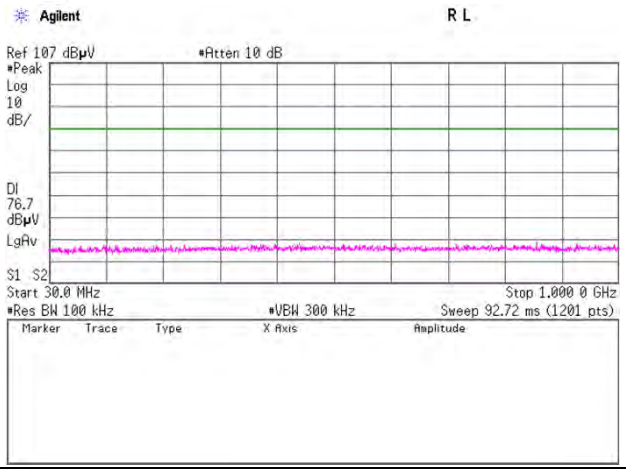
9kHz - 150kHz



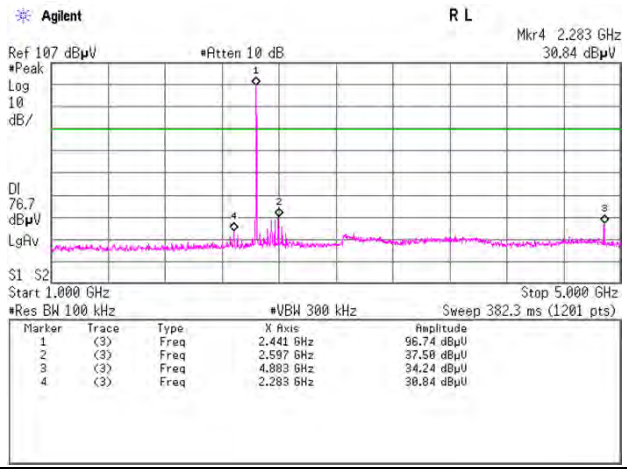
150kHz - 30MHz



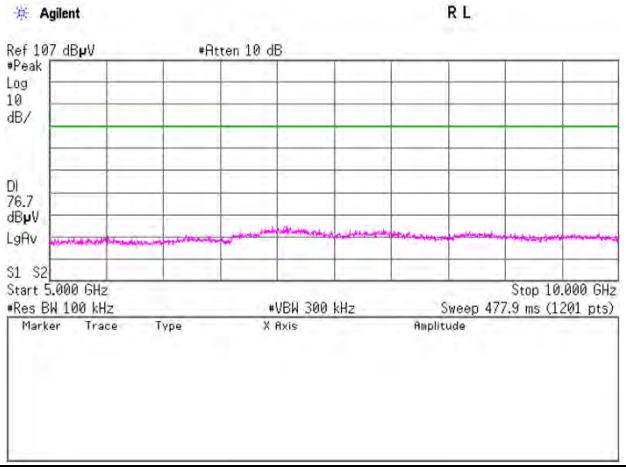
30MHz - 1GHz



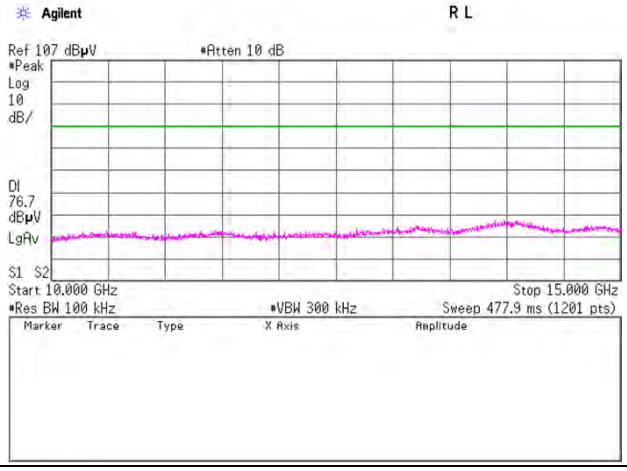
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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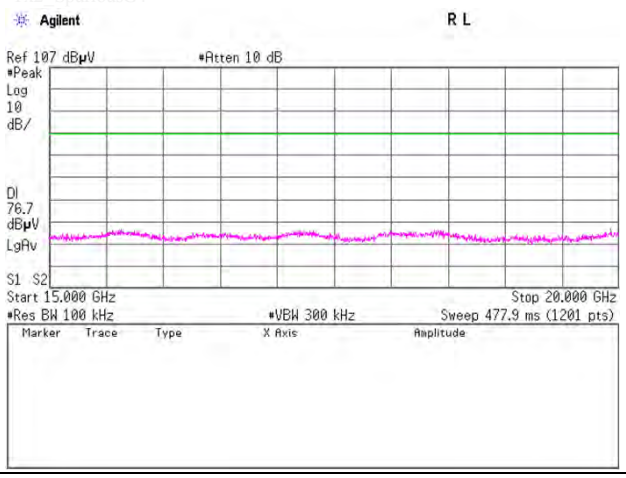
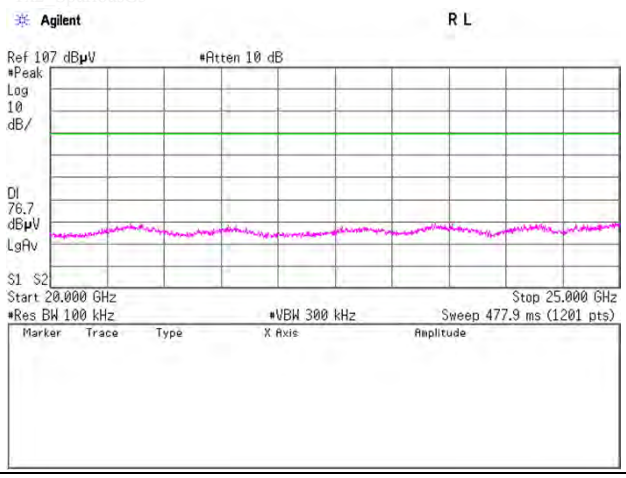
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2441MHz (2/2)

15GHz - 20GHz	20GHz - 25GHz
	

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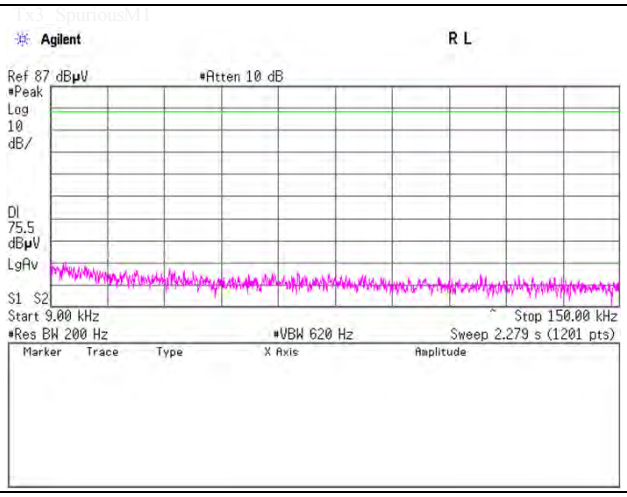
Spurious emission (Conducted)

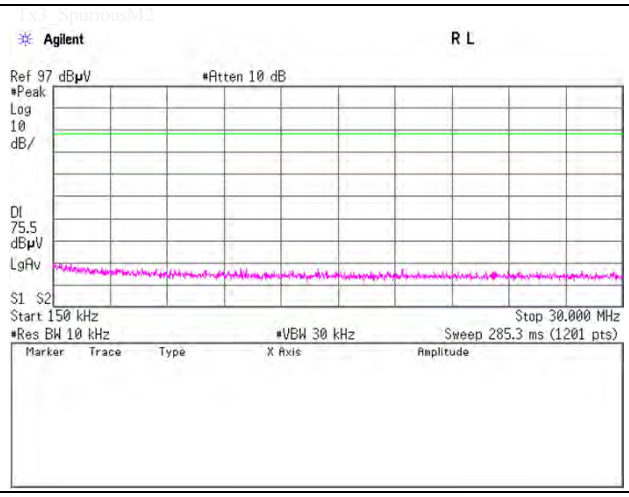
Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (1/2)

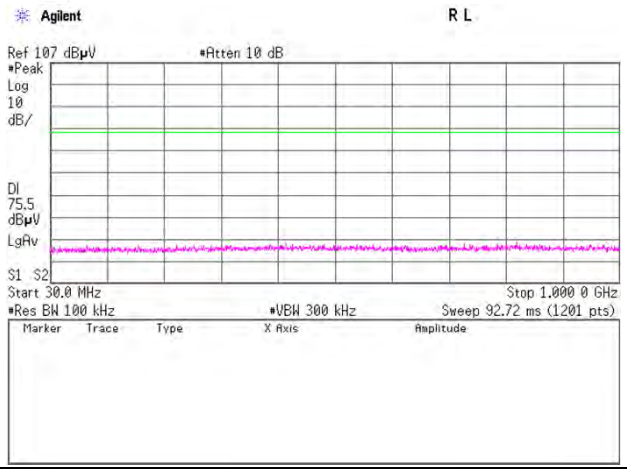
9kHz - 150kHz



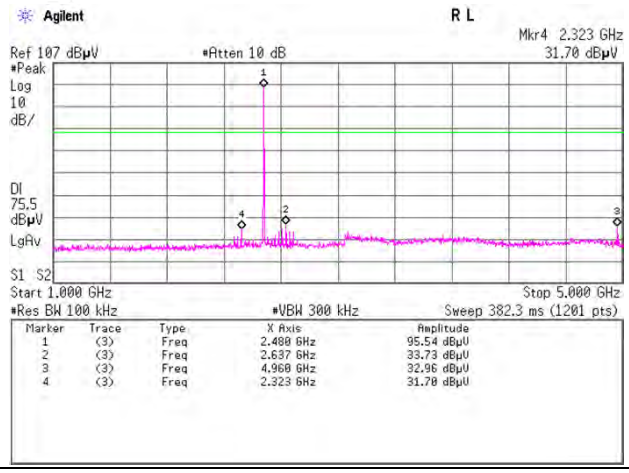
150kHz - 30MHz



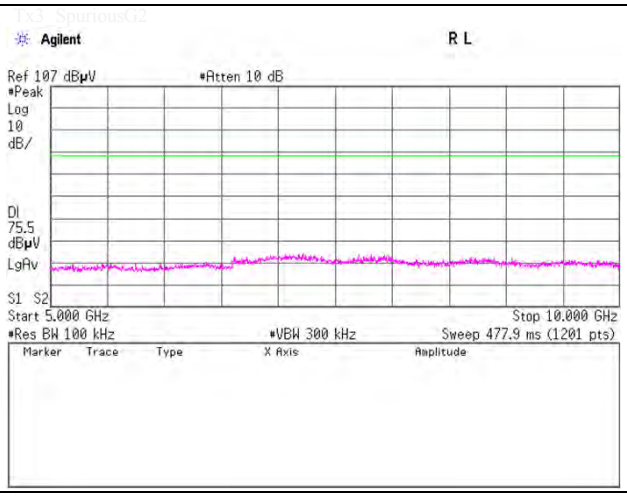
30MHz - 1GHz



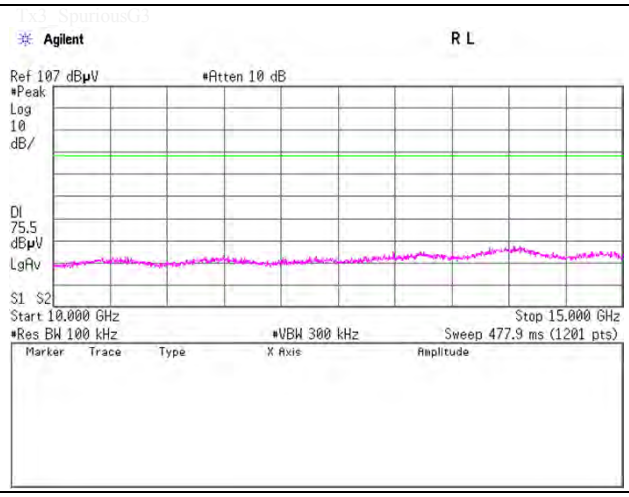
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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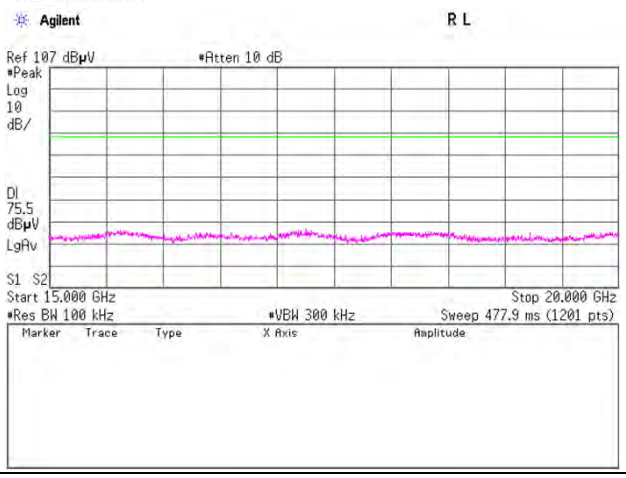
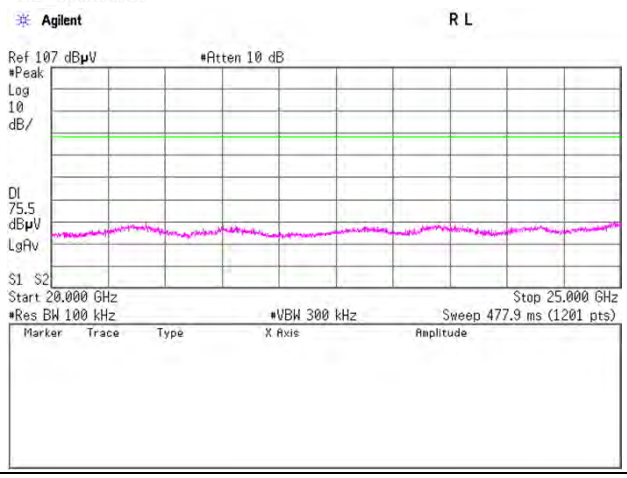
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	

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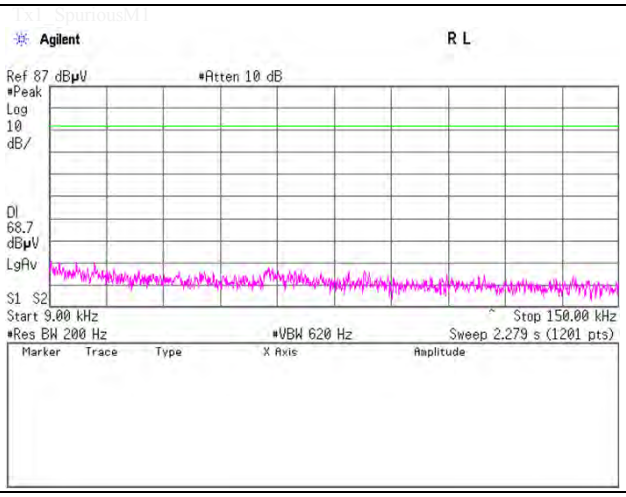
Spurious emission (Conducted)

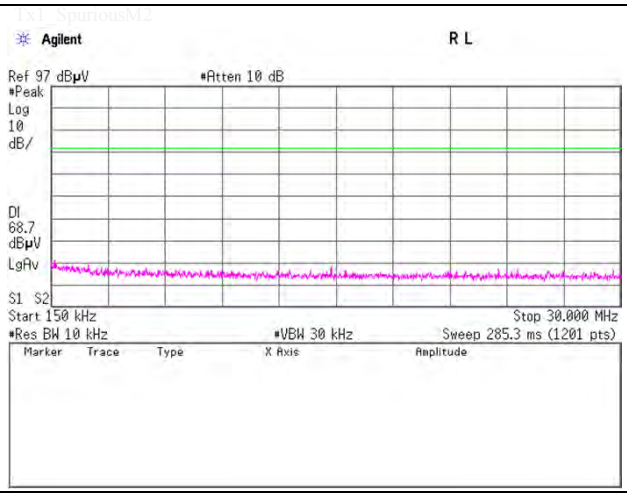
Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (1/2)

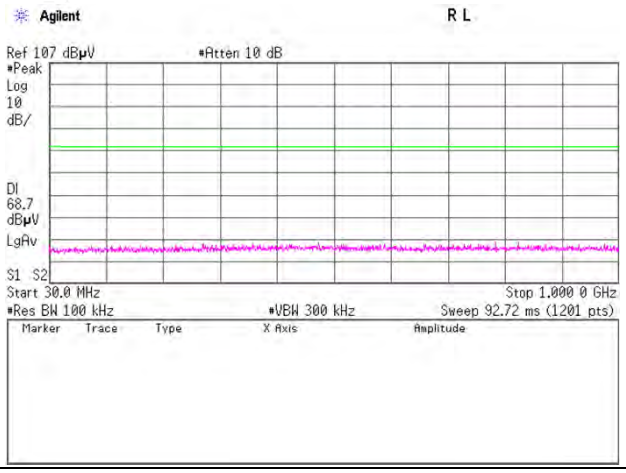
9kHz - 150kHz



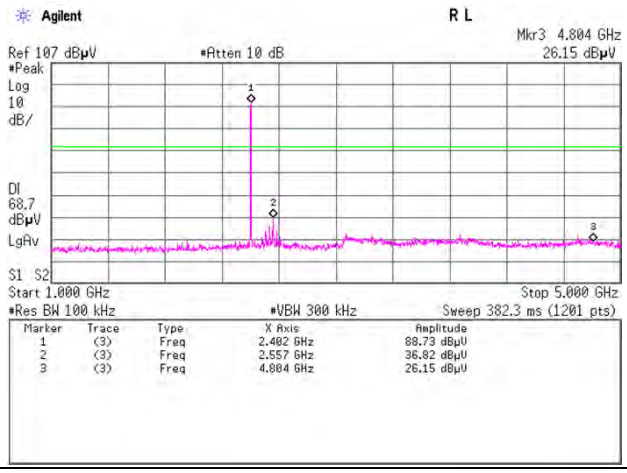
150kHz - 30MHz



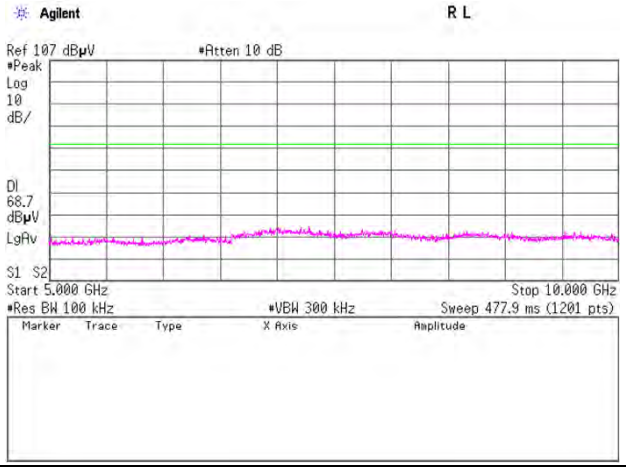
30MHz - 1GHz



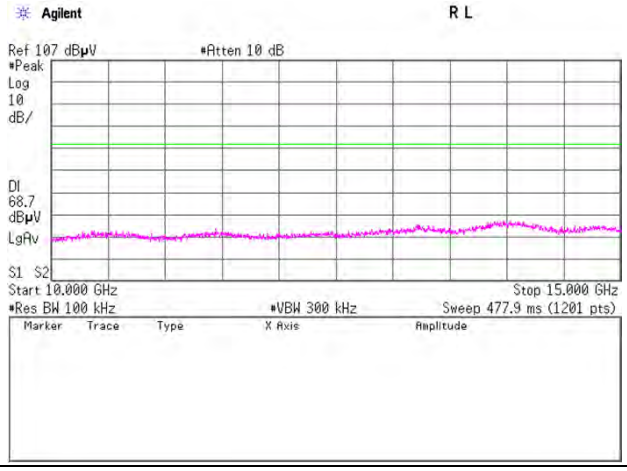
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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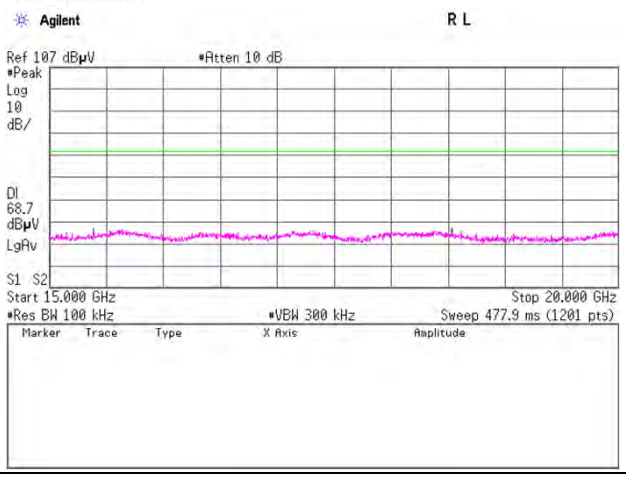
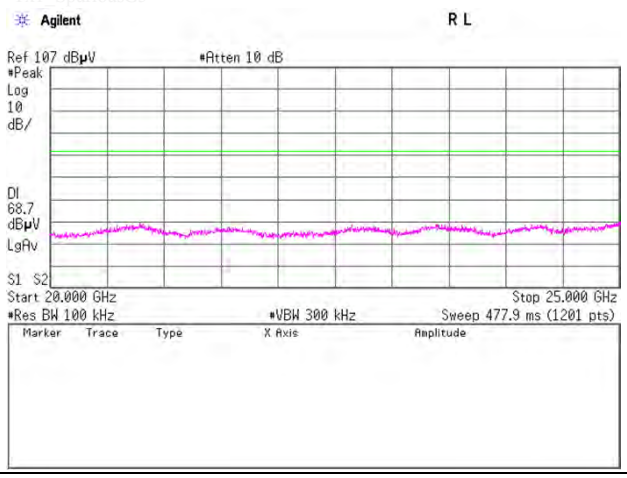
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (2/2)

15GHz - 20GHz	20GHz - 25GHz
	

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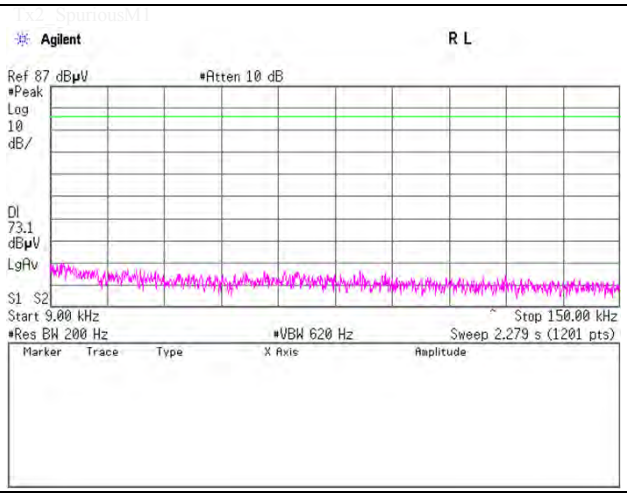
Spurious emission (Conducted)

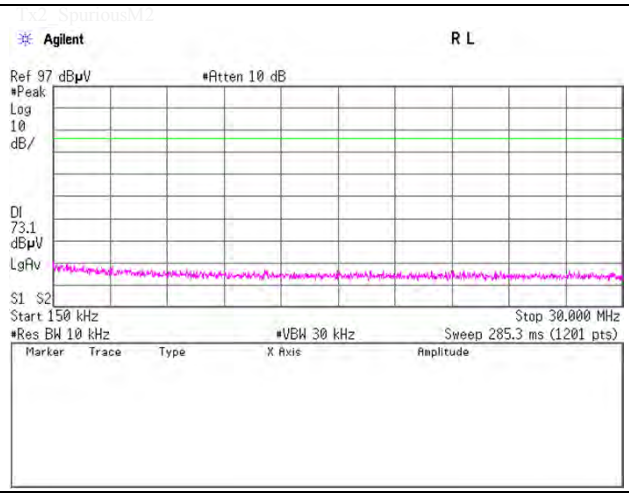
Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (1/2)

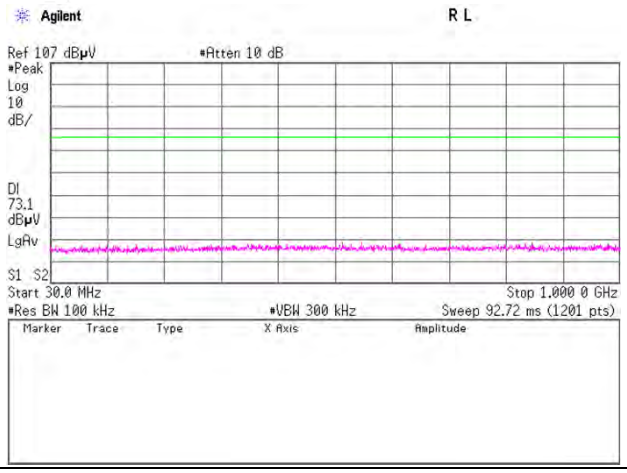
9kHz - 150kHz



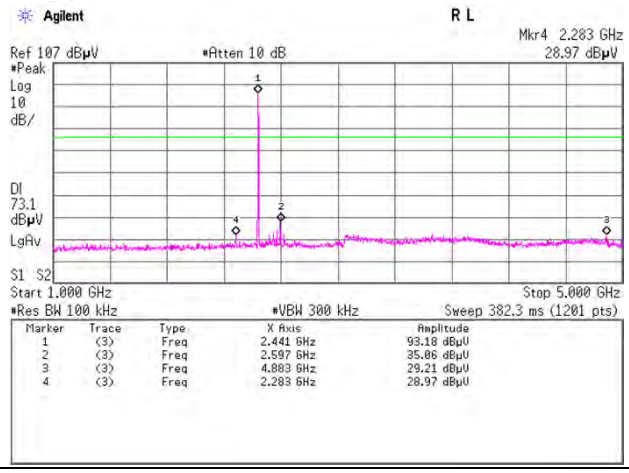
150kHz - 30MHz



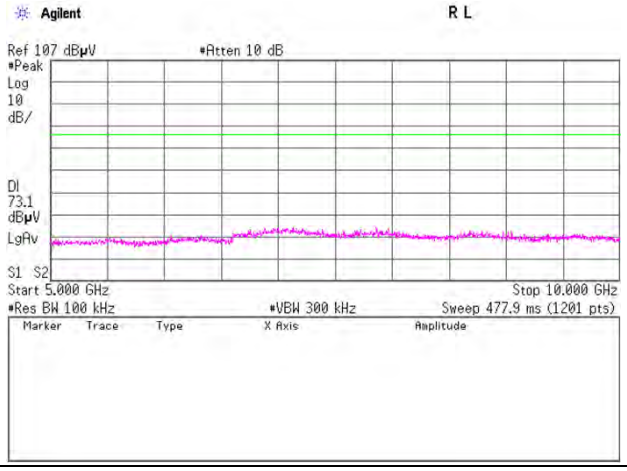
30MHz - 1GHz



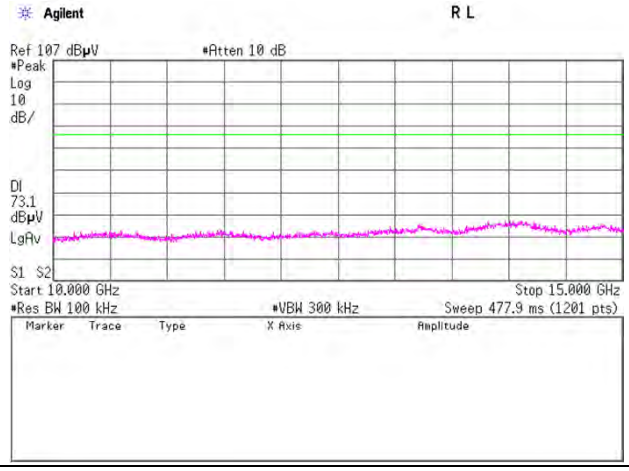
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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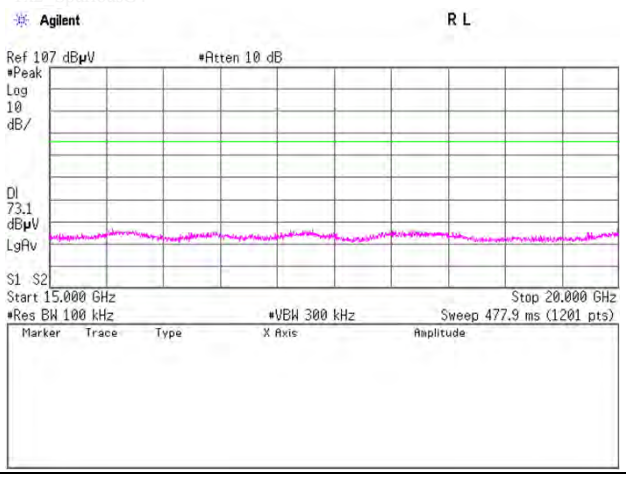
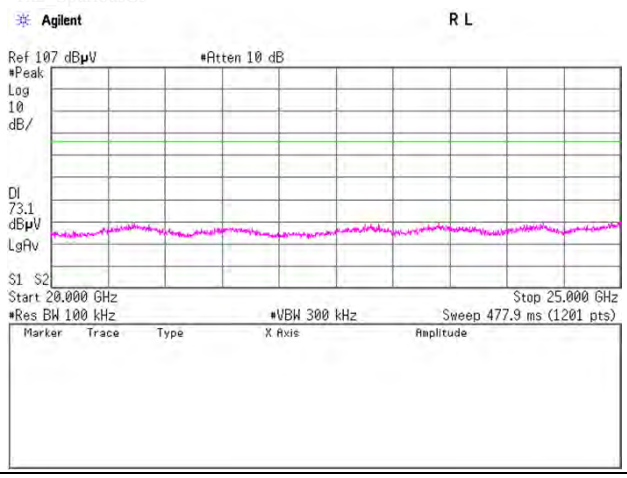
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	

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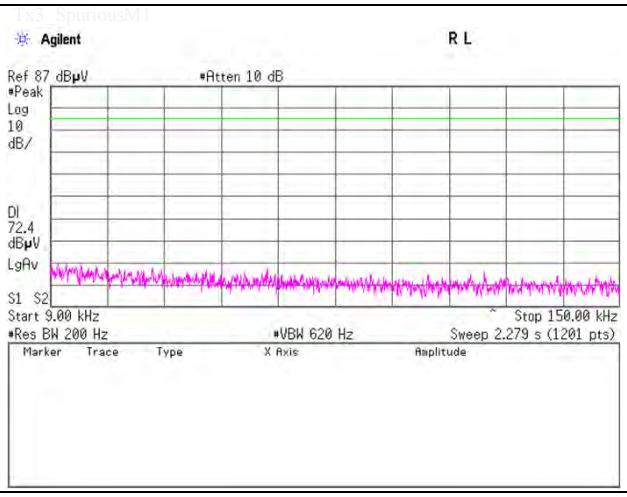
Spurious emission (Conducted)

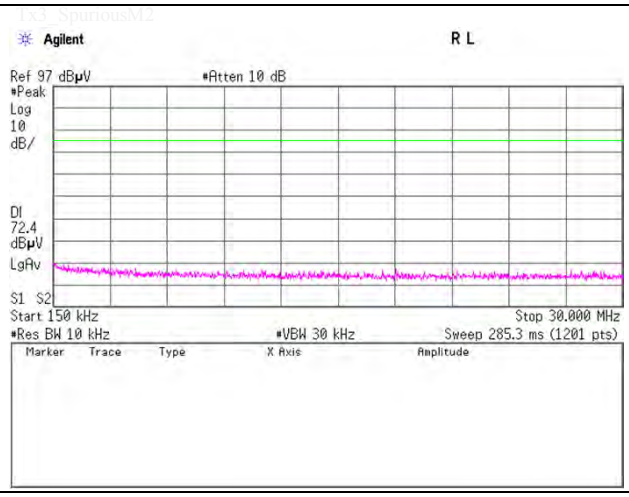
Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (1/2)

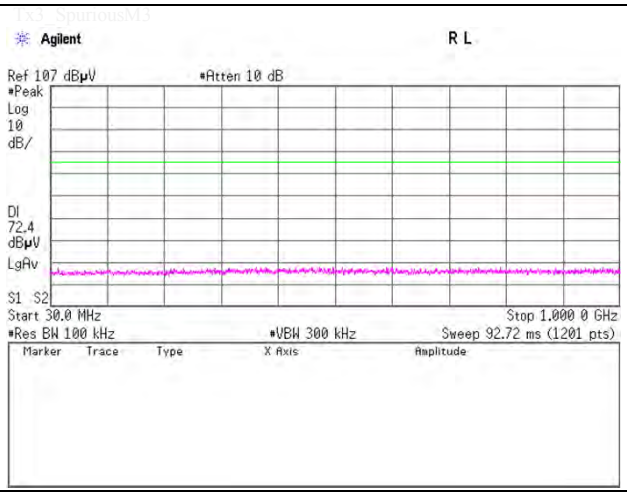
9kHz - 150kHz



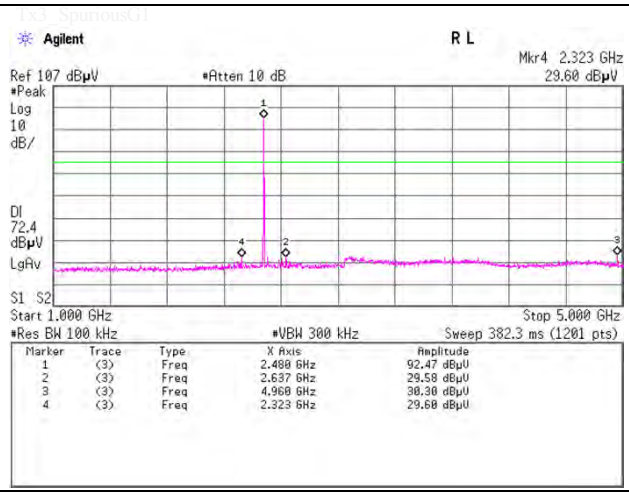
150kHz - 30MHz



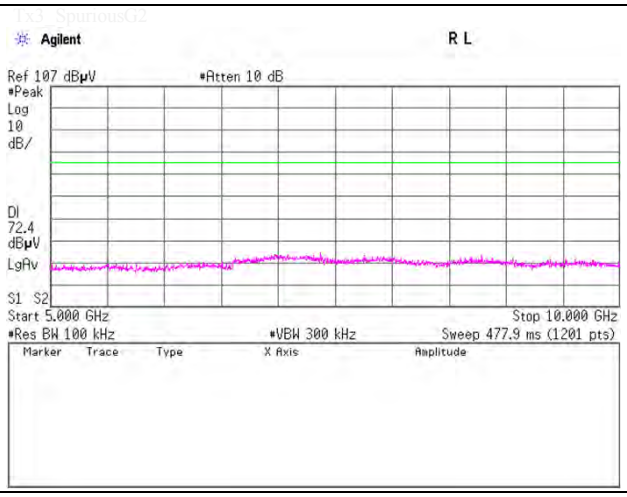
30MHz - 1GHz



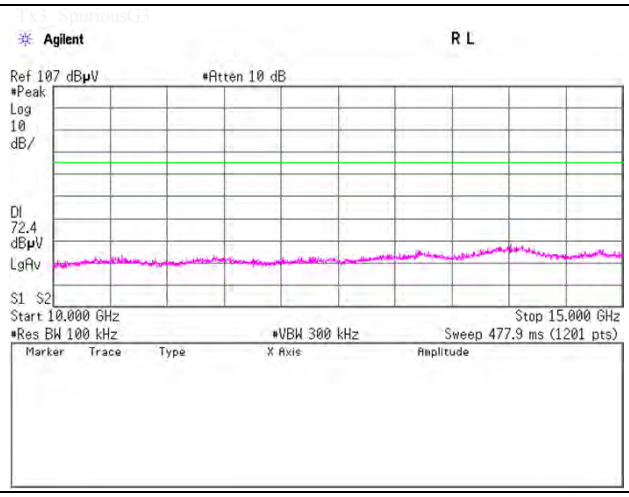
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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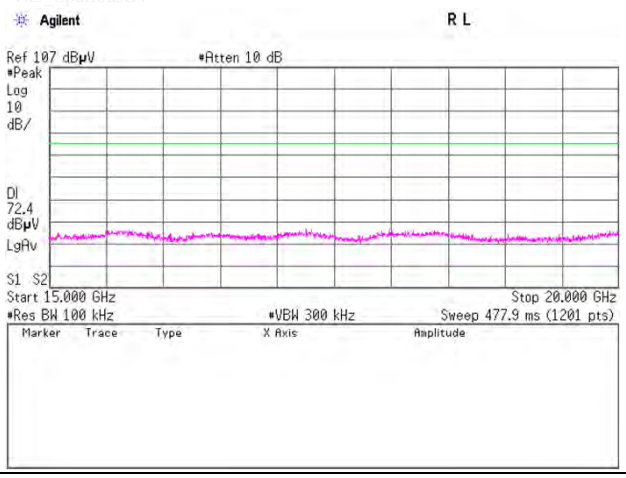
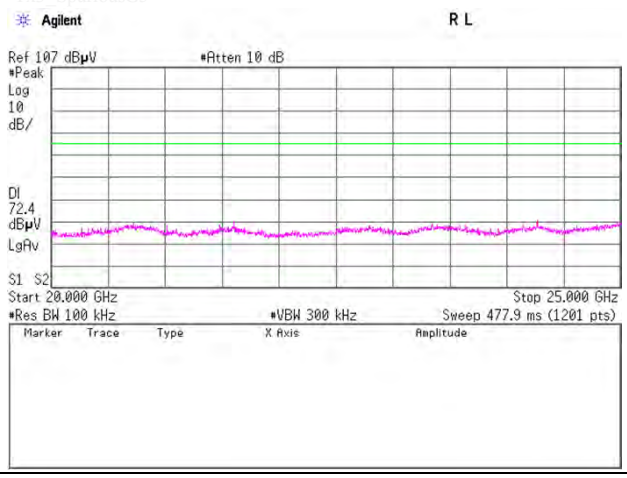
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	

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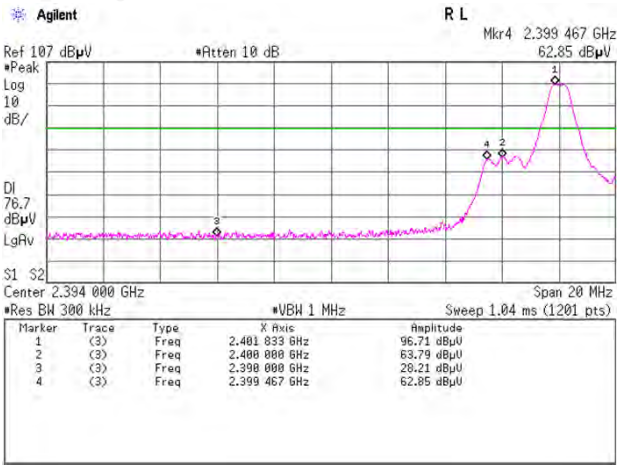
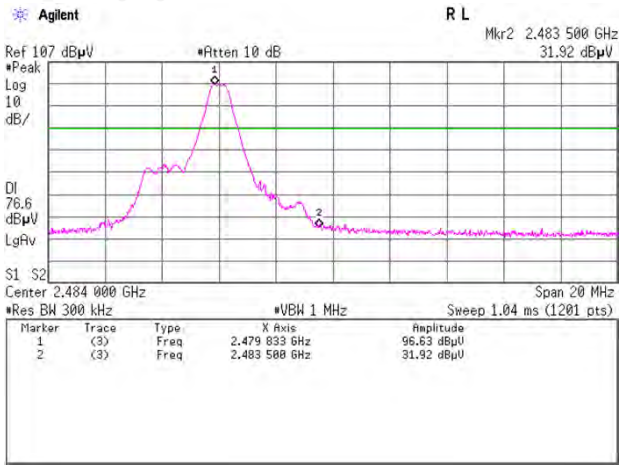
Spurious emission (Conducted)

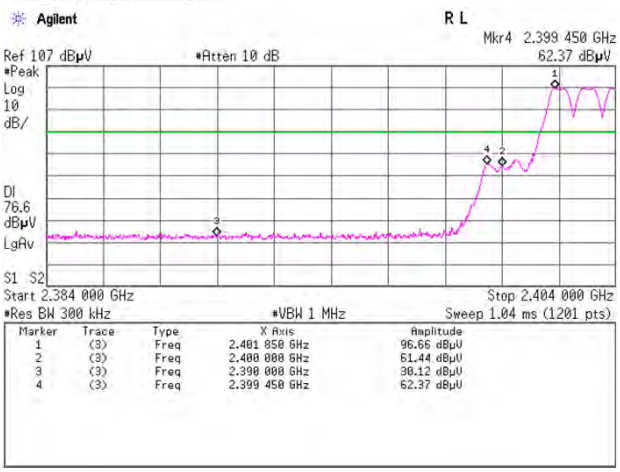
Band Edge compliance

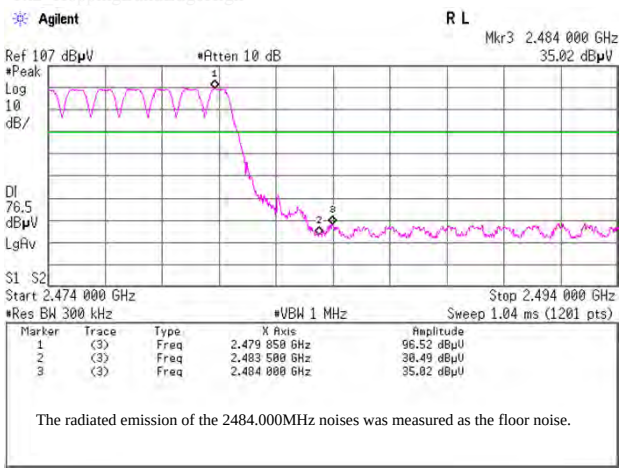
Tx, Bluetooth, BDR, PRBS9	
Tx, 2402MHz	**Tx, 2480MHz**





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





The radiated emission of the 2484.000MHz noises was measured as the floor noise.

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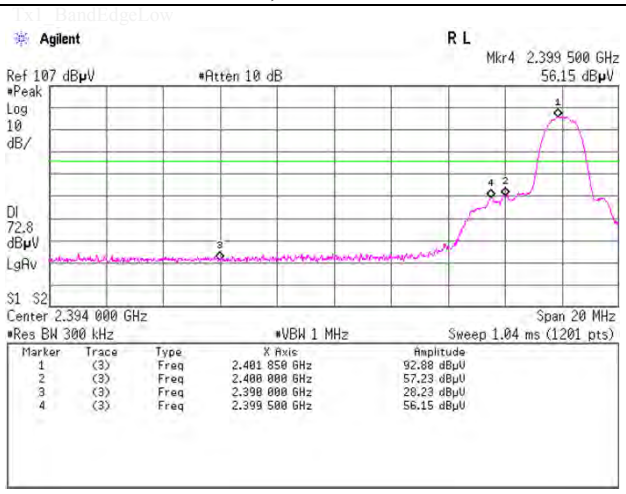
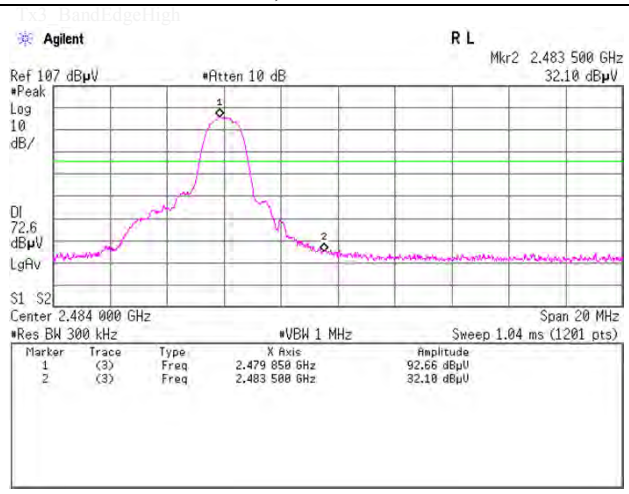
Spurious emission (Conducted)

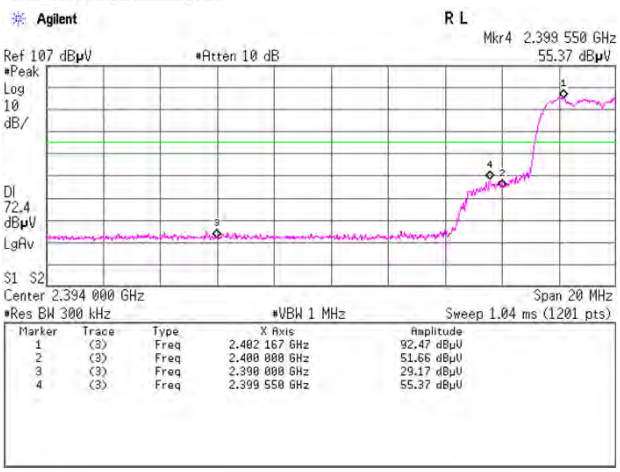
Band Edge compliance

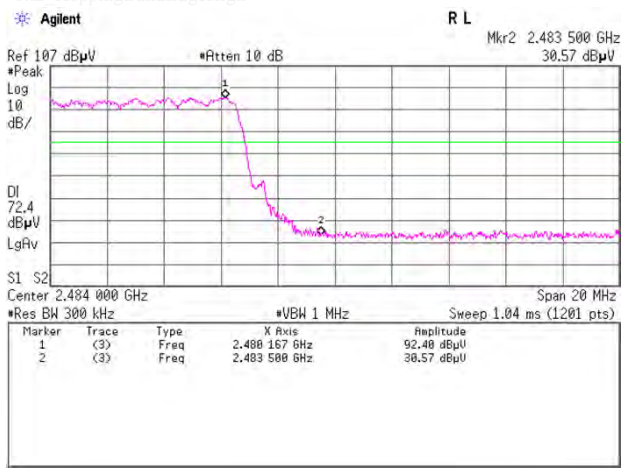
Tx, Bluetooth, EDR, PRBS9	
Tx, 2402MHz	**Tx, 2480MHz**





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





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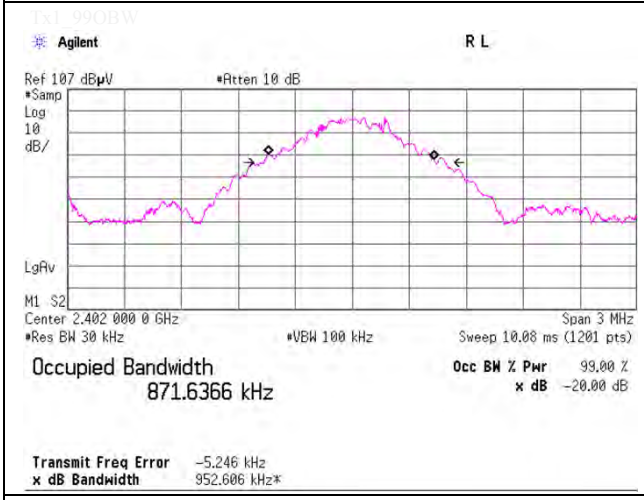
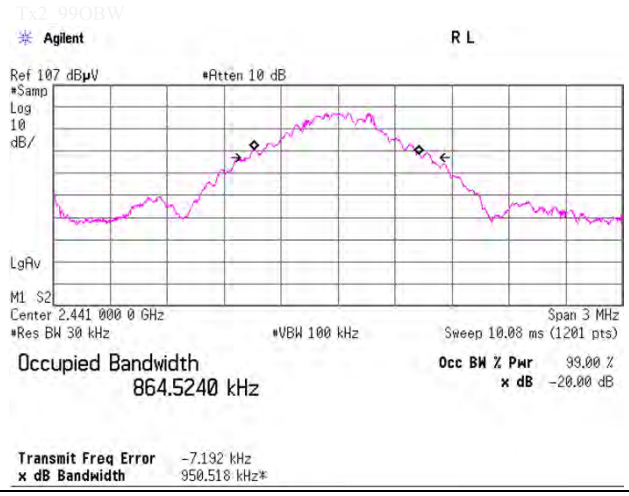
99% Occupied Bandwidth

Tx, Bluetooth, BDR, PRBS9

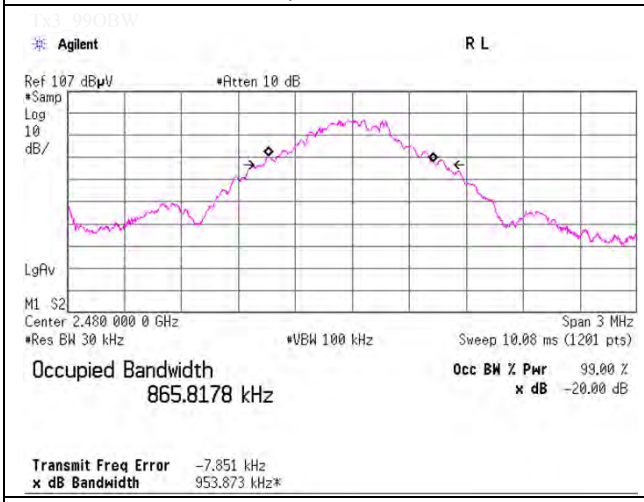
Tx, 2402MHz



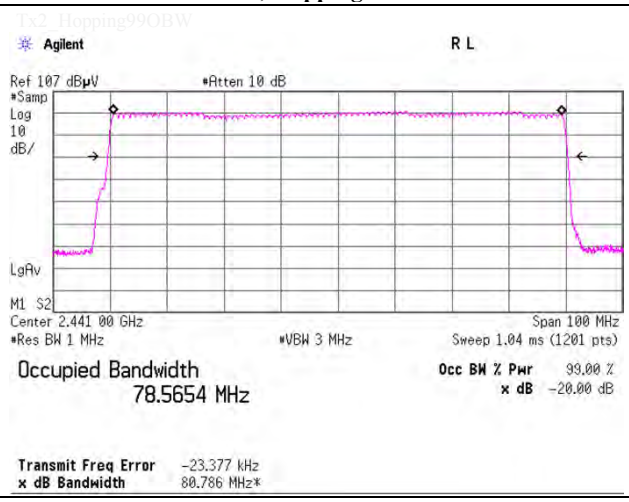
Tx, 2441MHz



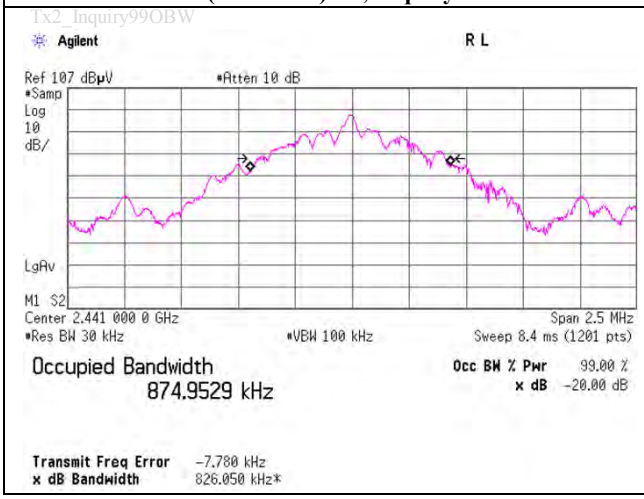
Tx, 2480MHz



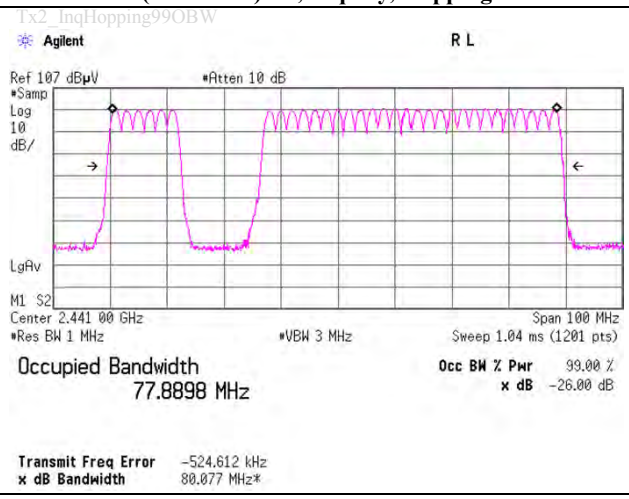
Tx, Hopping On



(Reference) Tx, Inquiry



(Reference) Tx, Inquiry, Hopping



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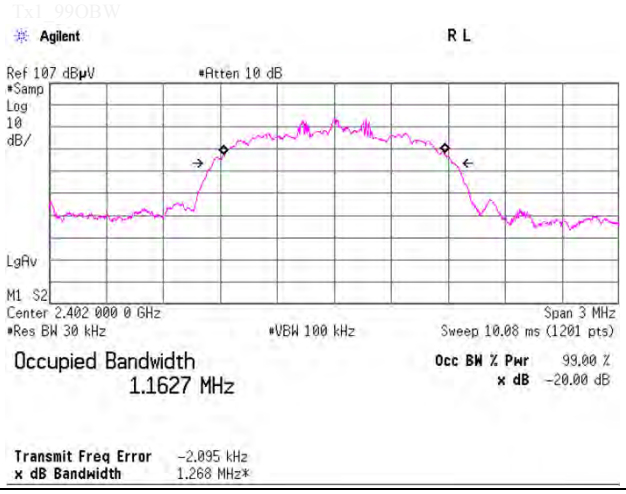
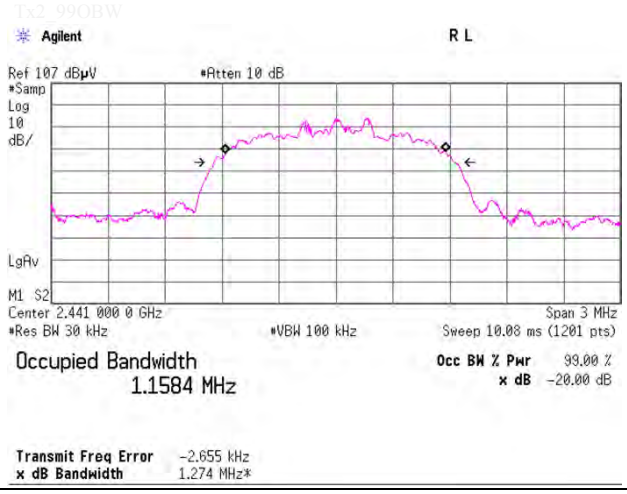
99% Occupied Bandwidth

Tx, Bluetooth, EDR, PRBS9

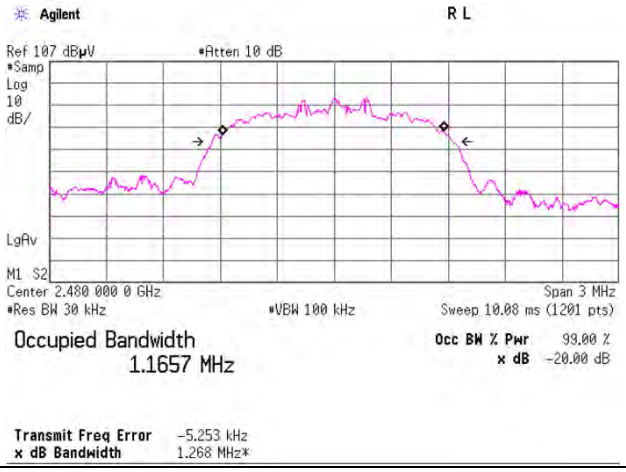
Tx, 2402MHz



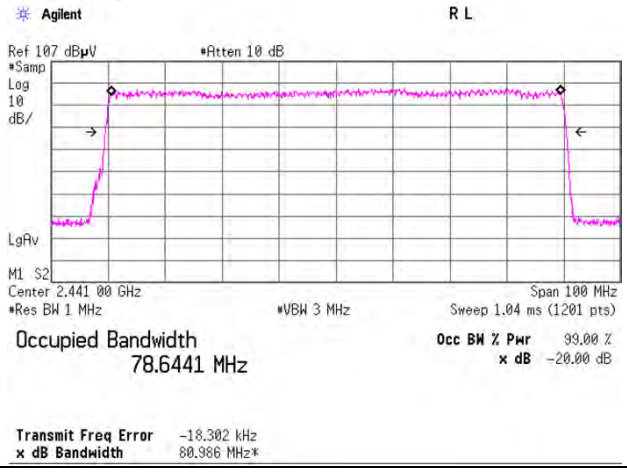
Tx, 2441MHz



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	RE	2012/04/19 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	RE	2012/04/19 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	RE,AT	2011/12/05 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2012/03/16 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2011/07/19 * 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
SAT10-06	Attenuator	Agilent	8493C-010	74865	RE	2011/12/27 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2011/12/27 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2011/08/28 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2012/02/06 * 12
SJM-10	Measure	PROMART	SEN1935	-	RE,CE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RFI,MF)	-	RE	-
SAT10-08	Attenuator	Weinschel	W54-10	-	AT	2012/03/12 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT	2012/03/12 * 12
SAF-05	Pre Amplifier	TOYO Corporation	TPA0118-36	1440490	AT	2012/03/12 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2012/03/26 * 12
SCC-G02	Coaxial Cable	Suhner	SUCOFLEX 104A	46498/4A	RE	2012/04/10 * 12
SCC-G22	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	RE	2012/05/22 * 12
SHA-02	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-726	RE	2011/08/28 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2012/02/06 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE,CE	-
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	2011/10/23 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/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	2011/10/23 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	RE,CE	2012/02/07 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2011/09/23 * 12
SCC-C9/C10/SRSE-03	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	CE	2012/04/10 * 12
SLS-05	LISN	Rohde & Schwarz	ENV216	100516	CE	2012/02/23 * 12
SAT3-03	Attenuator	JFW	50HF-003N	-	CE	2012/02/17 * 12
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	CE	2012/03/26 * 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 :
CE: Conducted emission ,
RE: Radiated emission ,
AT: Antenna terminal disturbance voltage