RADIO TEST REPORT

Test Report No.: 32CE0258-SH-04-A

Applicant	:	**JVC KENWOOD Corporation**
Type of Equipment	:	**POWERED WOOFER CD SYSTEM**
Model No.	:	**RV-NB90B**
FCC ID	:	**ASIVCB008**
Test regulation	:	**FCC Part15 Subpart C: 2012**
Test result	:	**Complied**

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Date of test: April 3 to 6, 2012

Tested by:
Wataru Kojima
Engineer of WiSE Japan,
UL Verification Service

Approved by :
Toyokazu Imamura
Leader of WiSE Japan,
UL Verification Service

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

JAB Testing RTL02610

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REVISION HISTORY

Original Test Report No.: 32CE0258-SH-04-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	32CE0258-SH-04-A	April 13, 2012	-	-
1	32CE0258-SH-04-A	April 16, 2012	1-2, 7, 37-38, 45	P7: Addition of uncertainties for Conducted emission P37-38, 45: Correction of error

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SECTION 1: Customer information

Company Name	:	JVC KENWOOD Corporation
Brand Name		JVC
Address	:	3-12, Moriya-cho, Kanagawa-ku, Yokohama-shi, Kanagawa, 221-0022, Japan
Telephone Number	:	+81-45-450-4536
Facsimile Number	:	+81-45-450-4537
Contact Person	:	Hiromitsu Takano

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

2.1 Identification of E.U.T.

Type of Equipment	:	POWERED WOOFER CD SYSTEM
Model Number	:	RV-NB90B
Serial Number	:	Refer to 4.2 of this report.
Rating	:	AC120V, 60Hz DC15V (Size D, R20 battery x 10) DC12V (External DC in)
Country of Mass-production	:	China
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Receipt Date of Sample	:	April 3, 2012
Modification of EUT	:	No modification by the test lab.

2.2 Product description

Model: RV-NB90B (referred to as the EUT in this report) is a POWERED WOOFER CD SYSTEM.

Clock frequencies:
3.64MHz: Remote control, 60kHz or 70kHz: Switching power supply
12MHz: System micro computer, 8MHz: Sub-system micro computer
32.768kHz: Sub-system micro computer for battery standby mode, Clock oscillator for timer, Tuner FM
16.9344MHz: USB/CD, 26MHz: Bluetooth module

<Radio part>

Equipment type	:	Transceiver
Frequency of operation	:	2402-2480MHz
Bandwidth & channel spacing	:	79MHz & 1MHz
Type of modulation	:	FHSS
Antenna type	:	PCB
Antenna connector type	:	PCB layout
Antenna gain with cable loss	:	0dBi
ITU code	:	F1D, G1D
Operation temperature range	:	-10 to +80 deg.C.

FCC 15.31 (e)
The equipment provides the Bluetooth transmitter with stable power supply (DC3.3V). 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	:	FCC Part 15 Subpart C: 2012, final revised on February 1, 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 EUT will be tested for the 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	12.2dB Freq.: 7.86015MHz Phase: L1 Detection: Average Mode: Tx 2480MHz, DH5	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)	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	3.0dB Freq.: 192.018MHz Polarization: Vertical Detection: Quasi-Peak Mode: Tx 2402MHz, DH5 3.0dB Freq.: 192.018MHz Polarization: Horizontal Detection: Quasi-Peak Mode: Tx 2480MHz, DH5 3.0dB Freq.: 192.018MHz Polarization: Horizontal Detection: Quasi-Peak Mode: Tx 2402MHz, 3DH5	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	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 report meets the limits unless the uncertainty is taken into consideration.

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 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 radio 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 *1)	Tested frequency
Conducted emission *2)	Transmitting Hopping OFF (DH5) Payload: PRBS9	2480MHz
Carrier frequency separation	Transmitting Hopping ON (DH5/3DH5) Payload: PRBS9	-
20dB bandwidth	Transmitting Hopping OFF (DH5/3DH5) Payload: PRBS9	2402MHz, 2441MHz, 2480MHz
Number of hopping frequency	Transmitting Hopping ON (DH5/3DH5) Payload: PRBS9	-
Dwell time	Transmitting (Hopping ON), Payload: PRBS9 -DH1, -DH3, -DH5 -3DH1, -3DH3, -3DH5	-
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

*1) As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload (except Dwell time test).
*2) The test was performed with the mode which had the maximum output power, based on the measurement of maximum peak output power.

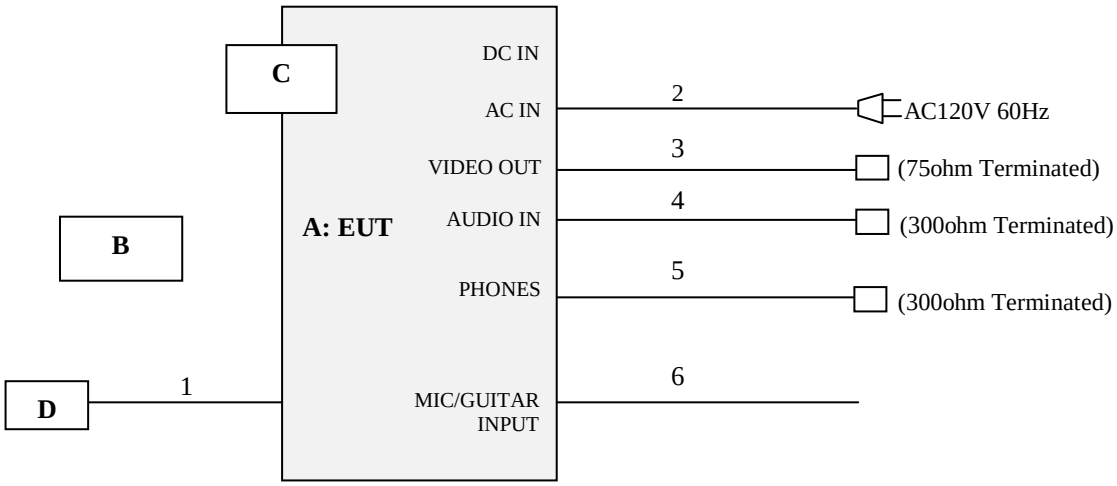
Remarks: Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not affect the output power and bandwidth of the EUT.
As this device had AFH mode and frequency separation could not meet the requirement of over 20dB BW without 2/3 relaxation, 125mW power limit was applied to it.

EUT has the power settings by the software as follows;
BDR (GFSK): Power EXT: 255, Int: 63
EDR (8DPSK): Power Ext: 255, Int: 100
Software: Blue test 3, Ver.2.3.0.15

The EUT has no Inquiry mode.

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

4.2 Configuration and peripherals



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

The EUT operates with supplied power of AC or DC. Carrier power of the EUT was compared at AC120V and DC12V and there were no difference. Therefore, the test has been performed with AC120V only.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	POWERED WOOFER CD SYSTEM	RV-NB90B	*1)	JVC KENWOOD Corporation	EUT
B	Remote controller	RM-SRVN90E	-	JVC KENWOOD Corporation	-
C	iPod	A1367	C3LH1SZ4DT75	Apple	-
D	USB memory	-	-	TDK	-

*1) 087V0033: Antenna terminal conducted tests, 087V0035: Conducted / Radiated emission tests

List of cables used

No.	Cable name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB	3.0	Shielded	Shielded	-
2	AC	1.75	Unshielded	Unshielded	-
3	Video (VIDEO OUT)	3.0	Shielded	Shielded	-
4	Stereo Microphone (AUDIO IN)	3.0	Shielded	Shielded	-
5	Stereo Microphone (PHONES)	3.0	Shielded	Shielded	-
6	Audio (MIC/GUITAR INPUT)	3.0	Shielded	Shielded	-

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

SECTION 5: Conducted emission

5.1 Operating environment

The test was carried out in No.1 shielded room.

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

5.2 Test configuration

EUT was placed on a platform of nominal size, 1.0m by 2.0m, 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 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.
Photographs of the set up are shown in APPENDIX.

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 within a screened room.
The EUT 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 detector of the test receiver.

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

5.5 Results

Summary of the test results : Pass
Refer to APPENDIX

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

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

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

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

SECTION 10: 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 11: 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 12: Radiated emission

12.1 Operating environment

The test was carried out in No.1 Semi-Anechoic Chamber.

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

12.2 Test configuration

EUT was placed on a platform of nominal size, 1.0m by 2.0m (for 30-1000MHz) or 1m by 1.8m (for 1-25GHz), raised 0.8m above the conducting ground plane.
The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.
Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.
Photographs of the set up are shown in APPENDIX.

12.3 Test conditions

Frequency range : 30MHz to 25GHz
Test distance : 3m (below 15GHz) / 1m (above 15GHz)
EUT position : Table top

12.4 Test procedure

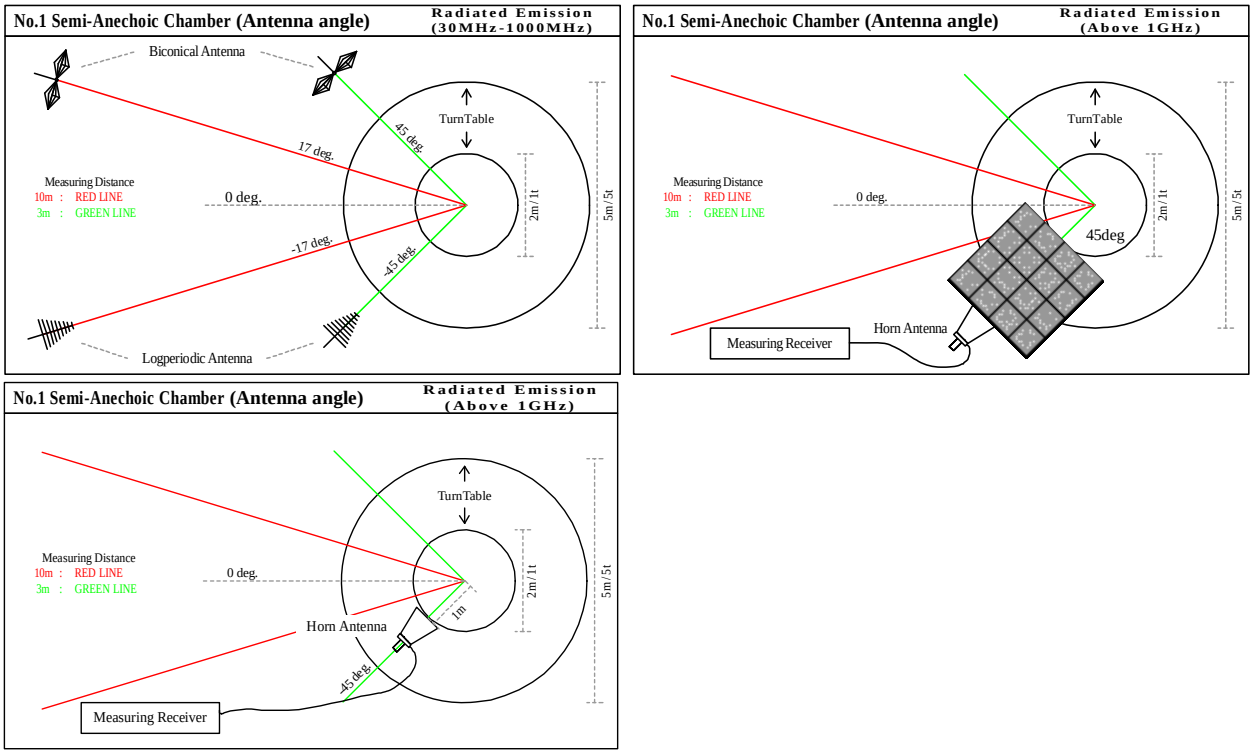
The Radiated Electric Field Strength intensity has been measured on a semi-anechoic chamber with a ground plane and at a distance of 3m (below 15GHz) / 1m (above 15GHz) (Refer to Figure 1). Measurements were performed with quasi-peak, peak and average detector. The measuring antenna height was varied 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 EUT was tested in the direction normally used.

Figure 1. Antenna angle



12.5 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.

12.6 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

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

DATA OF CONDUCTED EMISSION TEST

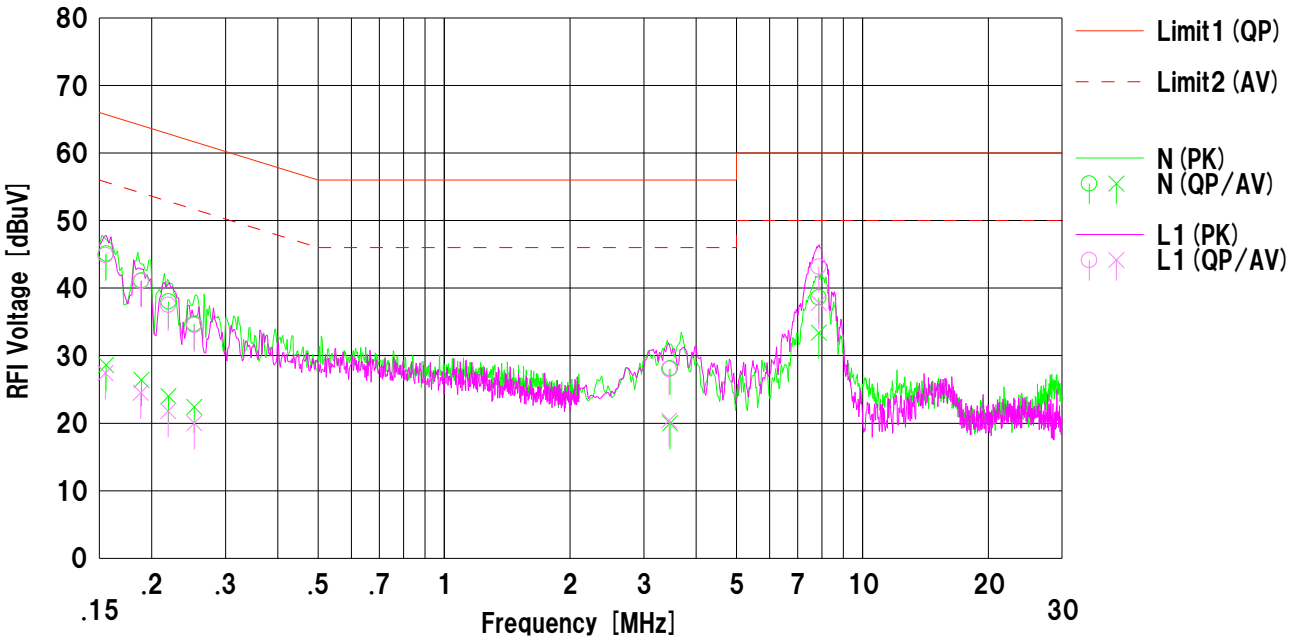
UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room
Date : 2012/04/04

Company	: JVC KENWOOD Corporation	Mode	: Tx DH5 2480MHz
Kind of EUT	: POWERED WOOFER CD SYSTEM	Report No.	: 32CE0258-SH-04-A
Model No.	: RV-NB90B	Power	: AC120V/60Hz
Serial No.	: 087V0035	Temp./Humi.	: 21deg.C/42%RH

Remarks : -

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

Engineer : Tomochika Sato



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	0.15543	32.5	16.0	12.6	45.1	28.6	65.7	55.7	20.6	27.1	N	
2	0.18887	28.5	13.8	12.6	41.1	26.4	64.0	54.0	22.9	27.6	N	
3	0.21917	25.4	11.4	12.6	38.0	24.0	62.8	52.8	24.8	28.8	N	
4	0.25251	22.1	9.8	12.6	34.7	22.4	61.6	51.6	26.9	29.2	N	
5	3.46516	15.3	7.2	12.8	28.1	20.0	56.0	46.0	27.9	26.0	N	
6	7.85956	25.6	20.4	13.0	38.6	33.4	60.0	50.0	21.4	16.6	N	
7	0.15491	32.3	14.8	12.6	44.9	27.4	65.7	55.7	20.8	28.3	L1	
8	0.18827	28.4	11.9	12.6	41.0	24.5	64.1	54.1	23.1	29.6	L1	
9	0.21887	24.9	9.2	12.6	37.5	21.8	62.8	52.8	25.3	31.0	L1	
10	0.25273	21.9	7.4	12.6	34.5	20.0	61.6	51.6	27.1	31.6	L1	
11	3.45193	15.2	7.6	12.8	28.0	20.4	56.0	46.0	28.0	25.6	L1	
12	7.86015	30.2	24.8	13.0	43.2	37.8	60.0	50.0	16.8	12.2	L1	

Calculation:Result [dBuV/m] =Reading [dBuV] +C.Fac (Cable+Att) [dB]
LISN:SLS-01

20dB Bandwidth and Carrier Frequency Separation

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Shielded Room
Date	April 6, 2012	
Temperature / Humidity	20 deg.C , 32 %RH	
Engineer	Akira Sato	
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	>= 0.642
DH5	2441.0	0.965	1.000	>= 0.643
DH5	2480.0	0.962	1.000	>= 0.641

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

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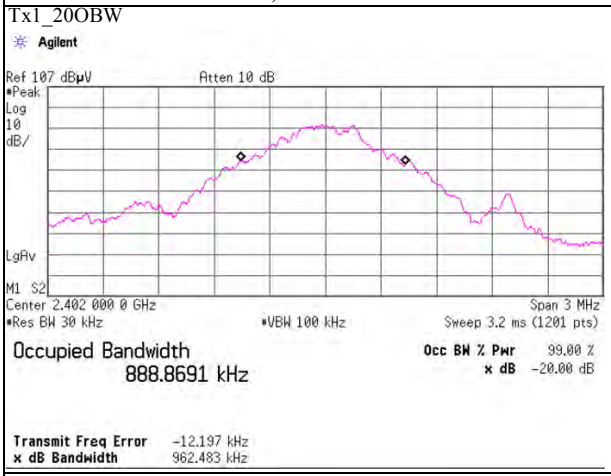
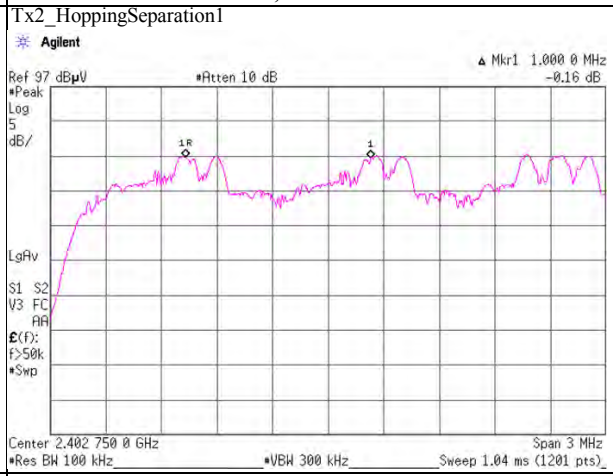
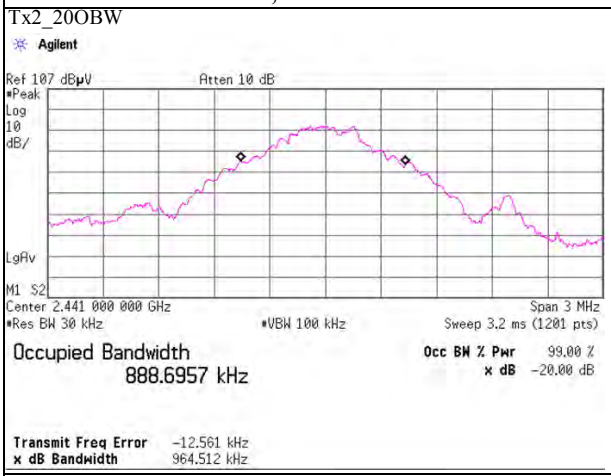
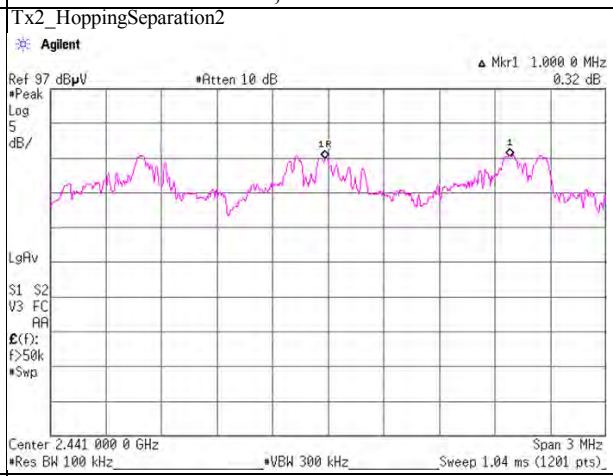
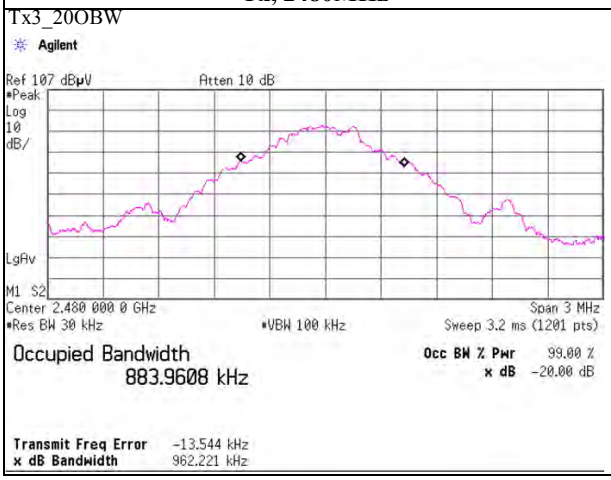
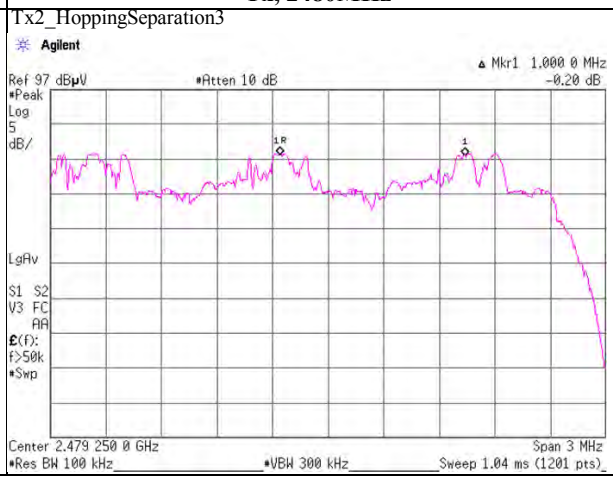
20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, BDR, PRBS9

20dB Bandwidth	Carrier Frequency Separation
Tx, 2402MHz	**Tx, 2402MHz**
Tx1_20OBW 	Tx2_HoppingSeparation1 
Tx, 2441MHz	**Tx, 2441MHz**
Tx2_20OBW 	Tx2_HoppingSeparation2 
Tx, 2480MHz	**Tx, 2480MHz**
Tx3_20OBW 	Tx2_HoppingSeparation3 

20dB Bandwidth and Carrier Frequency Separation

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Shielded Room
Date	April 6, 2012	
Temperature / Humidity	20 deg.C , 32 %RH	
Engineer	Akira Sato	
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	1.288	1.000	>= 0.859
3-DH5	2441.0	1.290	1.000	>= 0.860
3-DH5	2480.0	1.293	1.000	>= 0.862

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

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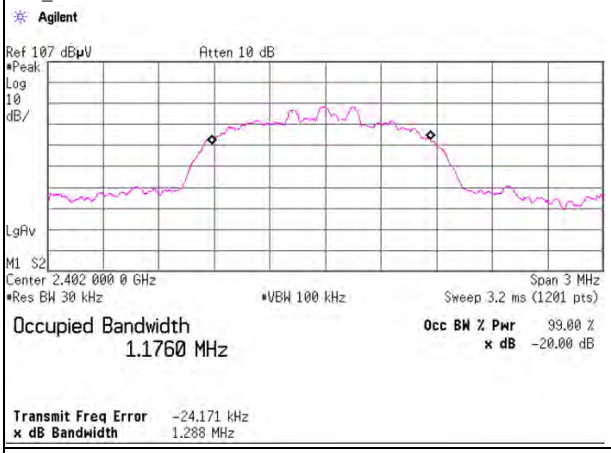
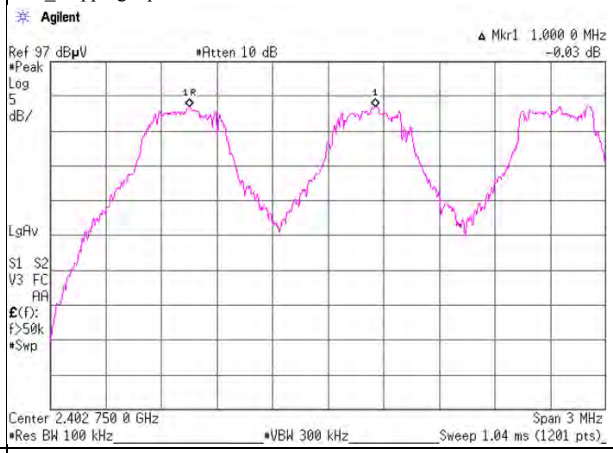
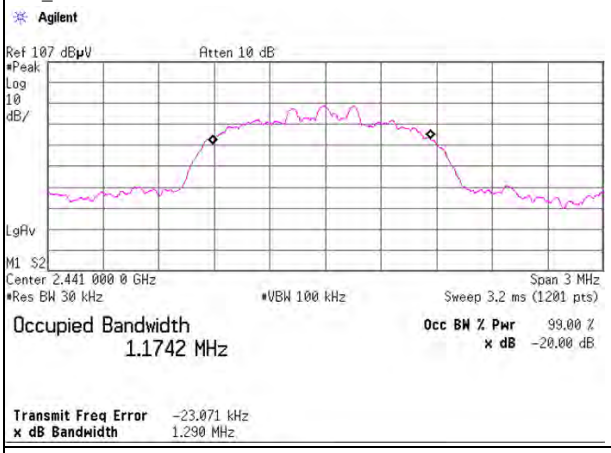
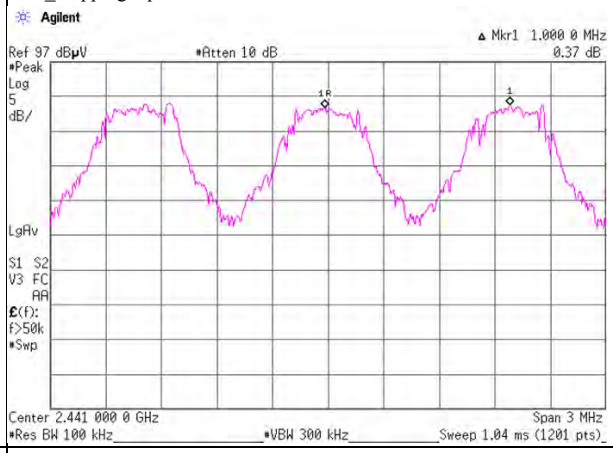
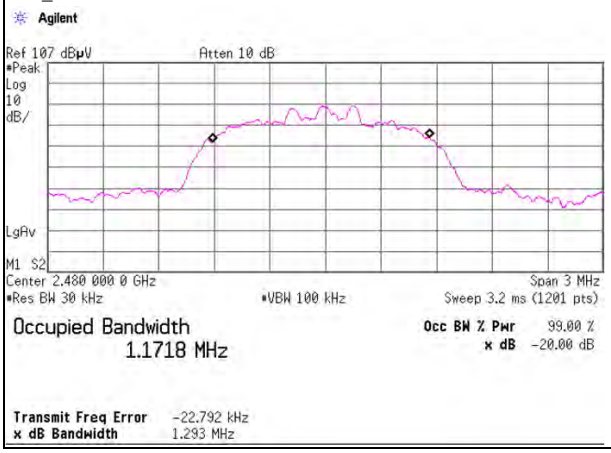
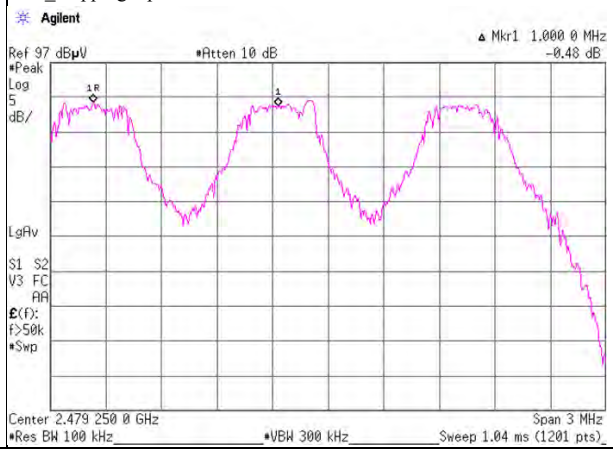
20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, EDR, PRBS9

20dB Bandwidth	Carrier Frequency Separation
Tx, 2402MHz	**Tx, 2402MHz**
Tx1_20OBW	Tx2_HoppingSeparation1
	
Tx, 2441MHz	**Tx, 2441MHz**
Tx2_20OBW	Tx2_HoppingSeparation2
	
Tx, 2480MHz	**Tx, 2480MHz**
Tx3_20OBW	Tx2_HoppingSeparation3
	

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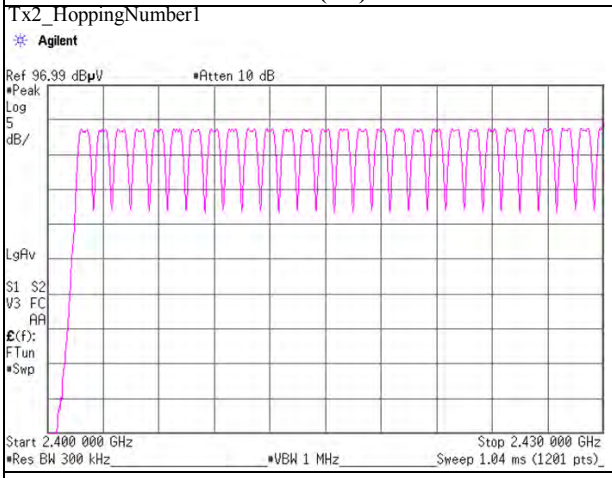
Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Shielded Room
Date	April 6, 2012	
Temperature / Humidity	20 deg.C , 32 %RH	
Engineer	Akira Sato	
Mode	Tx, Bluetooth, BDR, PRBS9	

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

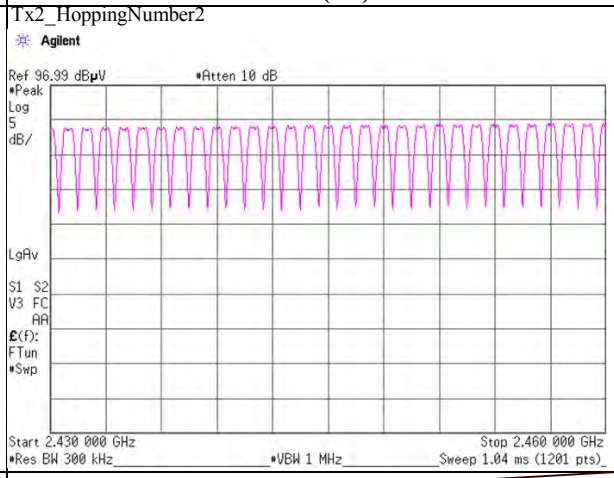
DH5 (1/3)

Tx2_HoppingNumber1



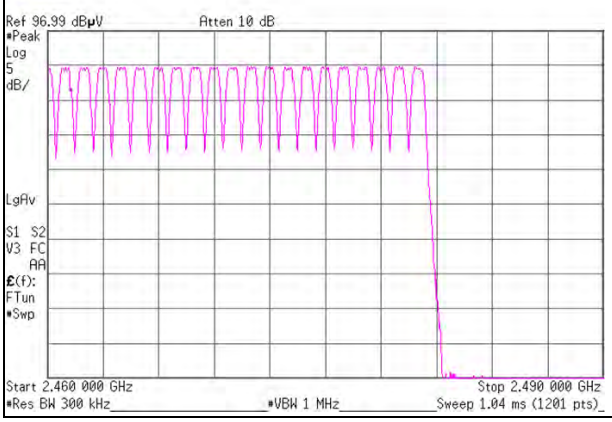
DH5 (2/3)

Tx2_HoppingNumber2



DH5 (3/3)

Tx2_HoppingNumber3



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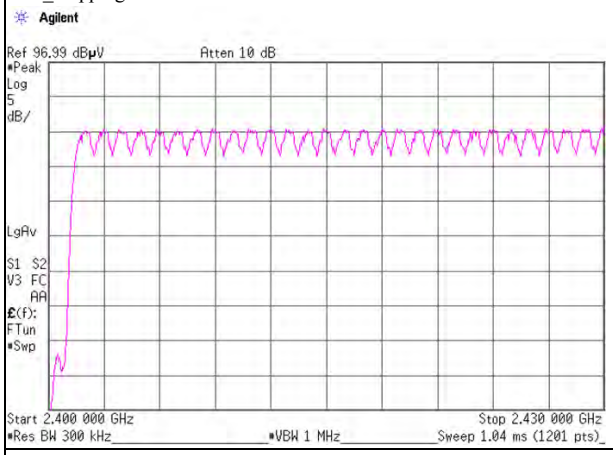
Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Shielded Room
Date	April 6, 2012	
Temperature / Humidity	20 deg.C , 32 %RH	
Engineer	Akira Sato	
Mode	Tx, Bluetooth, EDR, PRBS9	

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

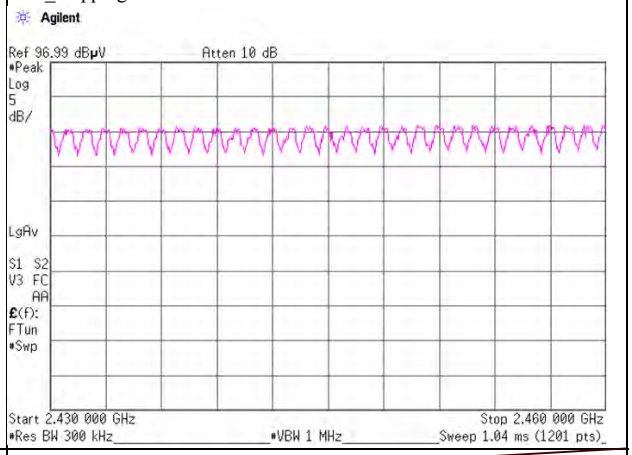
3DH5 (1/3)

Tx2_HoppingNumber1



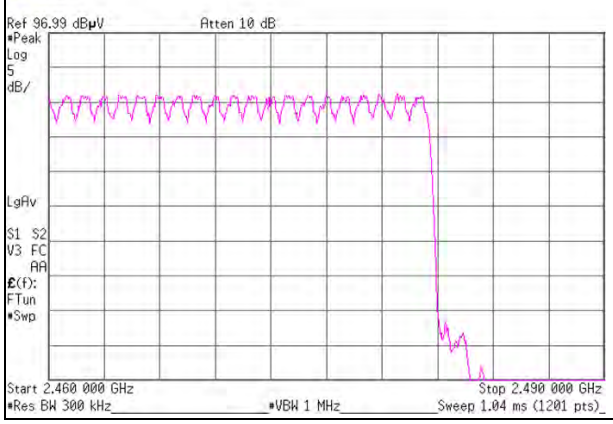
3DH5 (2/3)

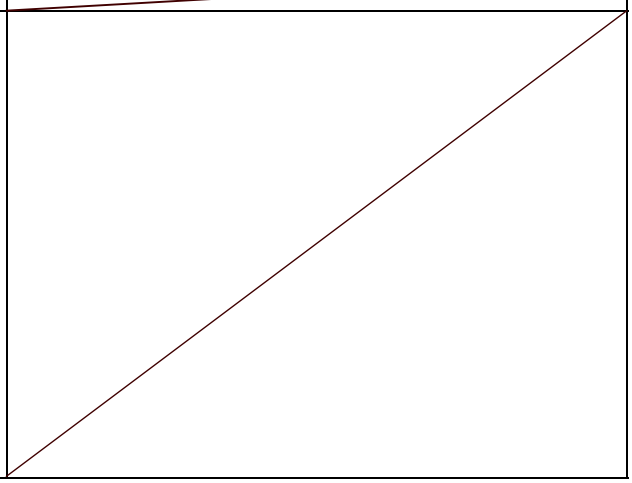
Tx2_HoppingNumber2



3DH5 (3/3)

Tx2_HoppingNumber3





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Dwell Time

Test place	UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room
Date	April 6, 2012
Temperature / Humidity	20 deg.C , 32 %RH
Engineer	Akira Sato
Mode	Tx, Bluetooth, BDR, PRBS9

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4)	Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	17.0 / 5.0 sec. x 31.6 sec. = 108 times	0.407	44	400
DH3	17.0 / 5.0 sec. x 31.6 sec. = 108 times	1.663	180	400
DH5	17.0 / 5.0 sec. x 31.6 sec. = 108 times	2.912	314	400

Sample Calculation

Result = Number of transmission x Length of transmition time

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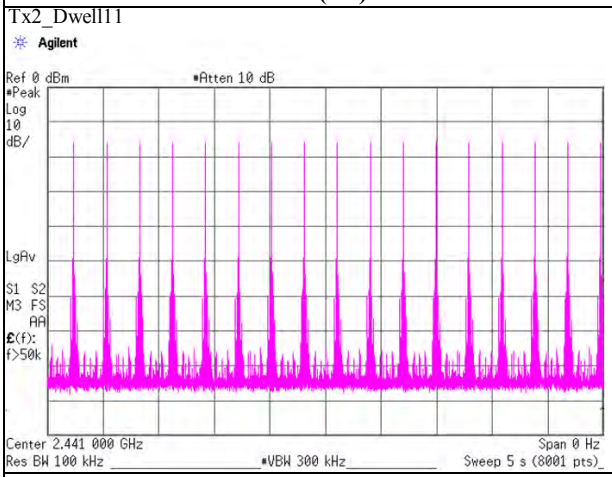
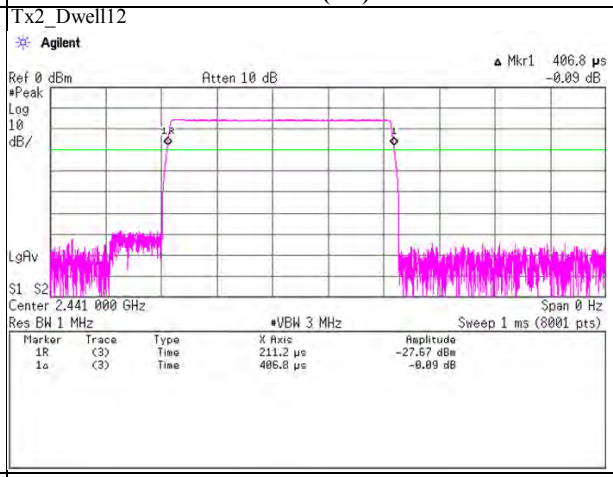
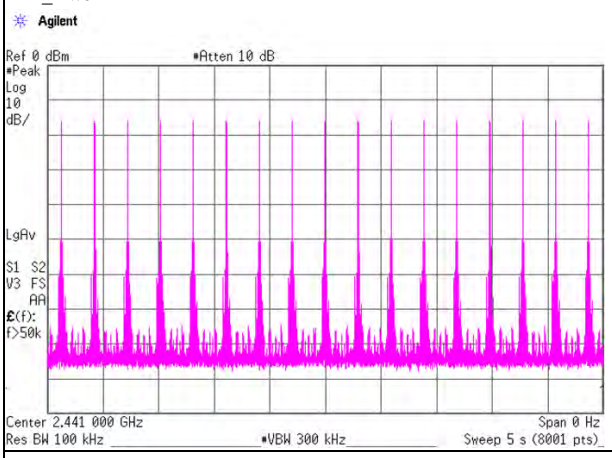
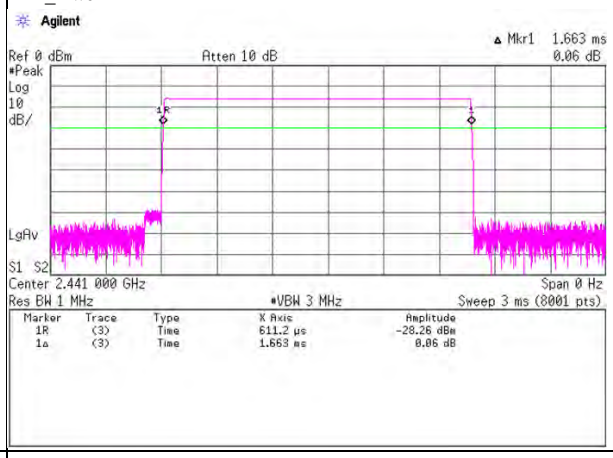
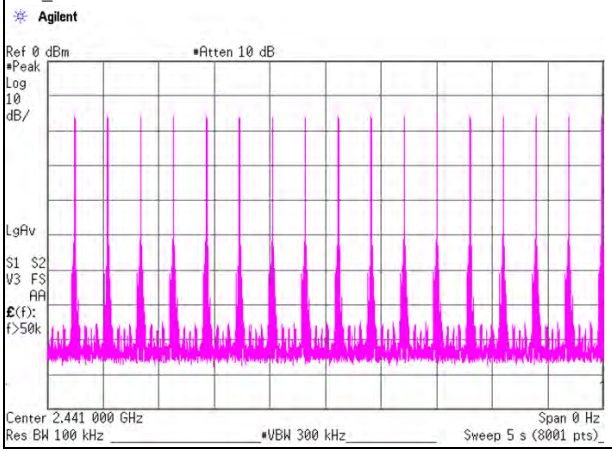
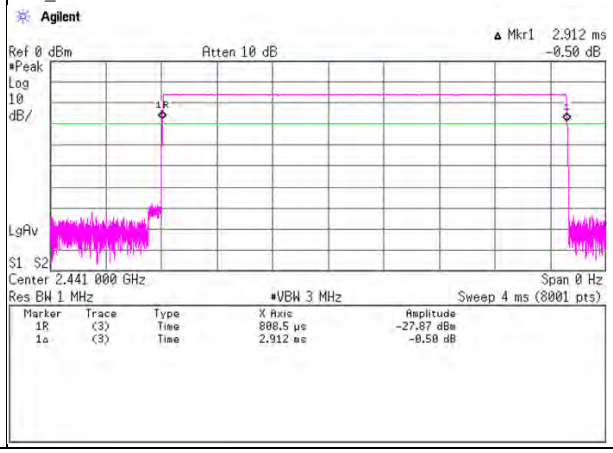
Dwell time

Tx, Bluetooth, BDR, PRBS9

DH1 (1/2)	DH1 (2/2)
Tx2_Dwell11 	Tx2_Dwell12 
DH3 (1/2)	**DH3 (2/2)**
Tx2_Dwell21 	Tx2_Dwell22 
DH5 (1/2)	**DH5 (2/2)**
Tx2_Dwell31 	Tx2_Dwell32 

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Dwell Time

Test place	UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room
Date	April 6, 2012
Temperature / Humidity	20 deg.C , 32 %RH
Engineer	Akira Sato
Mode	Tx, Bluetooth, EDR, PRBS9

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4)	Length of transmission time [msec]	Result [msec]	Limit [msec]
3-DH1	17.0 / 5.0 sec. x 31.6 sec. = 108 times	0.420	45	400
3-DH3	17.0 / 5.0 sec. x 31.6 sec. = 108 times	1.670	180	400
3-DH5	17.0 / 5.0 sec. x 31.6 sec. = 108 times	2.920	315	400

Sample Calculation

Result = Number of transmission x Length of transmition time

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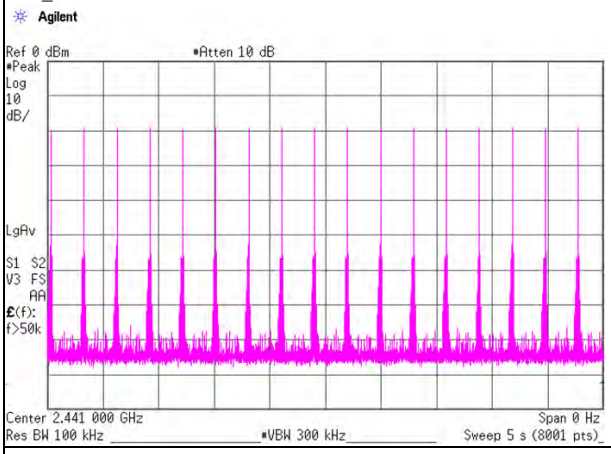
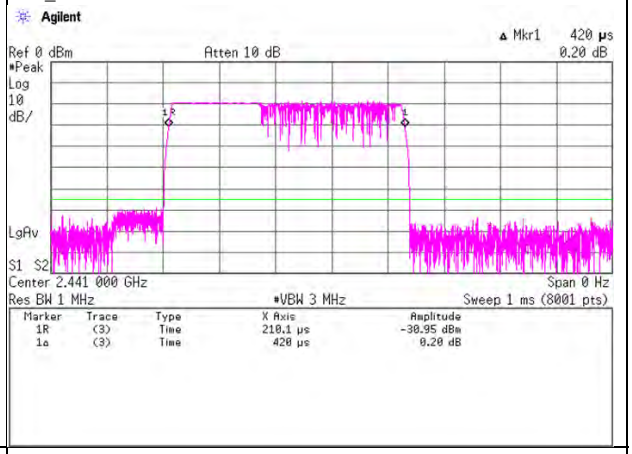
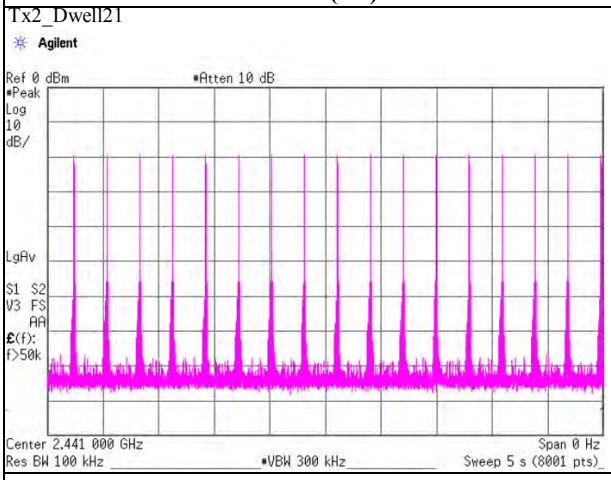
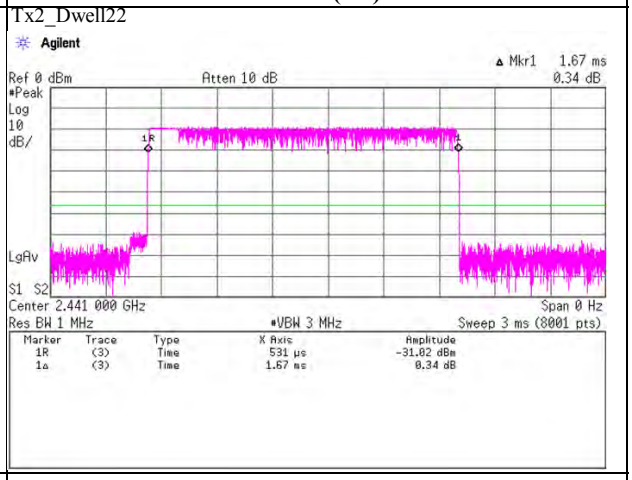
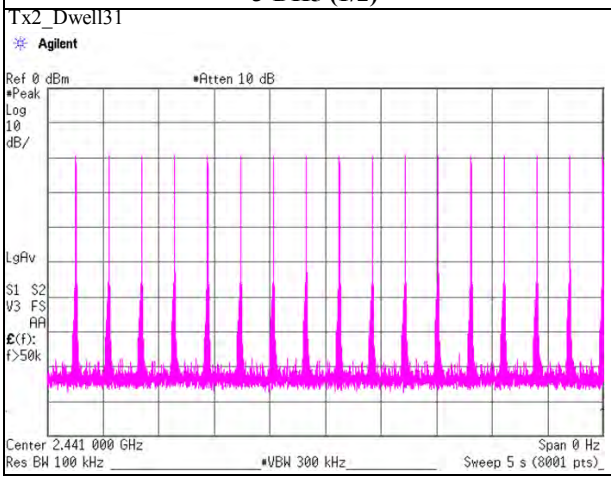
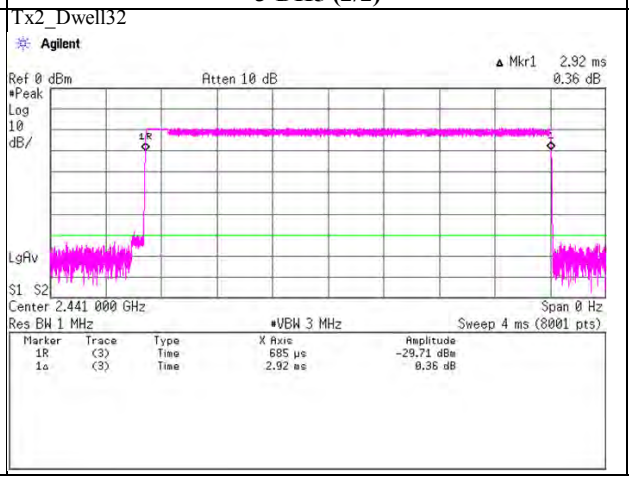
Dwell time

Tx, Bluetooth, EDR, PRBS9

3-DH1 (1/2)	3-DH1 (2/2)
Tx2_Dwell11	Tx2_Dwell12
	
3-DH3 (1/2)	**3-DH3 (2/2)**
Tx2_Dwell21	Tx2_Dwell22
	
3-DH5 (1/2)	**3-DH5 (2/2)**
Tx2_Dwell31	Tx2_Dwell32
	

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room
Date	2012/4/6
Temperature / Humidity	22 deg.C , 32 %RH
Engineer	Akira Sato
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	-14.54	1.10	9.99	-3.45	0.45	20.97	125	24.42
DH5	2441.0	-14.20	1.10	9.99	-3.11	0.49	20.97	125	24.08
DH5	2480.0	-13.69	1.10	10.00	-2.59	0.55	20.97	125	23.56
2-DH5	2402.0	-17.09	1.10	9.99	-6.00	0.25	20.97	125	26.97
2-DH5	2441.0	-16.84	1.10	9.99	-5.75	0.27	20.97	125	26.72
2-DH5	2480.0	-16.51	1.10	10.00	-5.41	0.29	20.97	125	26.38
3-DH5	2402.0	-16.98	1.10	9.99	-5.89	0.26	20.97	125	26.86
3-DH5	2441.0	-16.88	1.10	9.99	-5.79	0.26	20.97	125	26.76
3-DH5	2480.0	-16.29	1.10	10.00	-5.19	0.30	20.97	125	26.16

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.1 Semi Anechoic Chamber
Date	2012/4/3	2012/4/6
Temperature / Humidity	22 deg.C , 38 %RH	22 deg.C ,28 %RH
Engineer	Wataru Kojima	
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.	71.997	QP	46.2	6.4	7.6	31.8	28.4	40	11.6	262	230	
Hori.	139.466	QP	37.7	14.2	8.4	31.8	28.5	43.5	15	237	175	
Hori.	192.02	QP	43.2	16.1	8.9	31.8	36.4	43.5	7.1	167	153	
Hori.	744.943	QP	35.5	20.5	9.3	31.9	33.4	46	12.6	100	310	
Hori.	1602	PK	49.3	25.4	13	40.8	46.9	73.9	27	100	272	
Hori.	1856.214	PK	46.4	25.9	13.2	40.8	44.7	73.9	29.2	100	0	
Hori.	2390	PK	46.8	28.2	13.8	40.7	48.1	73.9	25.8	100	19	
Hori.	2397.183	PK	49.3	28.2	13.8	40.7	50.6	73.9	23.3	100	243	
Hori.	2397.917	PK	47.4	28.2	13.8	40.7	48.7	73.9	25.2	100	163	
Hori.	4095.992	PK	52.9	30	5.6	41.9	46.6	73.9	27.3	100	329	
Hori.	4804	PK	52	31.2	5.9	41.6	47.5	73.9	26.4	100	123	
Hori.	7206	PK	50.2	36.1	7.6	41.2	52.7	73.9	21.2	100	317	
Hori.	9608	PK	45.2	38.6	8.6	40.4	52	73.9	21.9	100	0	
Hori.	12010	PK	47.3	39.5	10.3	39.4	57.7	73.9	16.2	100	0	
Hori.	1602	AV	41.6	25.4	13	40.8	39.2	53.9	14.7	100	272	
Hori.	1856.214	AV	34	25.9	13.2	40.8	32.3	53.9	21.6	100	0	
Hori.	2390	AV	34	28.2	13.8	40.7	35.3	53.9	18.6	100	19	
Hori.	2397.183	AV	35.7	28.2	13.8	40.7	37	53.9	16.9	100	243	
Hori.	2397.917	AV	34.5	28.2	13.8	40.7	35.8	53.9	18.1	100	163	
Hori.	4095.992	AV	50	30	5.6	41.9	43.7	53.9	10.2	100	329	
Hori.	4804	AV	41.8	31.2	5.9	41.6	37.3	53.9	16.6	100	123	
Hori.	7206	AV	38.6	36.1	7.6	41.2	41.1	53.9	12.8	100	317	
Hori.	9608	AV	32.7	38.6	8.6	40.4	39.5	53.9	14.4	100	0	
Hori.	12010	AV	32.8	39.5	10.3	39.4	43.2	53.9	10.7	100	0	
Vert.	71.985	QP	52.1	6.4	7.6	31.8	34.3	40	5.7	124	334	
Vert.	186.208	QP	40.8	16	8.8	31.8	33.8	43.5	9.7	100	242	
Vert.	192.018	QP	47.3	16.1	8.9	31.8	40.5	43.5	3	100	248	
Vert.	457.117	QP	41	16.9	7.9	31.8	34	46	12	100	205	
Vert.	1602.882	PK	51.6	25.4	13	40.8	49.2	73.9	24.7	100	157	
Vert.	1856.214	PK	46.5	25.9	13.2	40.8	44.8	73.9	29.1	100	0	
Vert.	2390	PK	48.7	28.2	13.8	40.7	50	73.9	23.9	100	45	
Vert.	2390	PK	38.2	28.2	13.8	40.7	39.5	73.9	34.4	100	45	
Vert.	2397.183	PK	49	28.2	13.8	40.7	50.3	73.9	23.6	100	0	
Vert.	2397.917	PK	49.4	28.2	13.8	40.7	50.7	73.9	23.2	100	342	
Vert.	4095.992	PK	52.7	30	5.6	41.9	46.4	73.9	27.5	100	200	
Vert.	4804	PK	54	31.2	5.9	41.6	49.5	73.9	24.4	100	321	
Vert.	7206	PK	51.3	36.1	7.6	41.2	53.8	73.9	20.1	100	77	
Vert.	9608	PK	45.8	38.6	8.6	40.4	52.6	73.9	21.3	100	0	
Vert.	12010	PK	45.6	39.5	10.3	39.4	56	73.9	17.9	100	0	

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).

*The 4th harmonic was not seen so the result was its base noise level.

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	PK	84.5	28.2	13.8	40.7		85.8	-	-	Carrier
Hori.	2398.883	PK	37.5	28.2	13.8	40.7		38.8	65.8	27	
Hori.	2400	PK	44.8	28.2	13.8	40.7		46.1	65.8	19.7	
Vert.	2402	PK	84.2	28.2	13.8	40.7		85.5	-	-	Carrier
Vert.	2398.883	PK	39.9	28.2	13.8	40.7		41.2	65.5	24.3	
Vert.	2400	PK	41.4	28.2	13.8	40.7		42.7	65.5	22.8	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amprifier)

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

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Semi Anechoic Chamber
Date	2012/4/3	2012/4/6
Temperature / Humidity	22 deg.C , 38 %RH	22 deg.C ,28 %RH
Engineer	Wataru Kojima	Wataru Kojima
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
Vert.	1602.882	AV	43.6	25.4	13	40.8	41.2	53.9	12.7	100	157	
Vert.	1856.214	AV	34.5	25.9	13.2	40.8	32.8	53.9	21.1	100	0	
Vert.	2390	AV	35.8	28.2	13.8	40.7	37.1	53.9	16.8	100	45	
Vert.	2397.183	AV	36.6	28.2	13.8	40.7	37.9	53.9	16	100	0	
Vert.	2397.917	AV	36.8	28.2	13.8	40.7	38.1	53.9	15.8	100	342	
Vert.	4095.992	AV	46	30	5.6	41.9	39.7	53.9	14.2	100	200	
Vert.	4804	AV	45.3	31.2	5.9	41.6	40.8	53.9	13.1	100	321	
Vert.	7206	AV	41.5	36.1	7.6	41.2	44	53.9	9.9	100	77	
Vert.	9608	AV	32.9	38.6	8.6	40.4	39.7	53.9	14.2	100	0	
Vert.	12010	AV	32.9	39.5	10.3	39.4	43.3	53.9	10.6	100	0	

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).

*The 5th harmonic was not seen so the result was its base noise level.

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

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

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Semi Anechoic Chamber
Date	2012/4/3	2012/4/6
Temperature / Humidity	22 deg.C , 38 %RH	22 deg.C ,28 %RH
Engineer	Wataru Kojima	Wataru Kojima
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.	135.404	QP	39.8	13.9	8.3	31.8	30.2	43.5	13.3	164	347	
Hori.	169.271	QP	40.8	15.4	8.7	31.8	33.1	43.5	10.4	183	143	
Hori.	192.021	QP	46.2	16.1	8.9	31.8	39.4	43.5	4.1	167	287	
Hori.	220.086	QP	40.2	16.7	9.2	31.7	34.4	46	11.6	100	275	
Hori.	960.089	QP	31.8	22.5	10.3	30.8	33.8	53.9	20.1	173	94	
Hori.	1628	PK	52.3	25.5	13	40.8	50	73.9	23.9	100	66	
Hori.	1857.008	PK	48.4	25.9	13.2	40.8	46.7	73.9	27.2	100	0	
Hori.	4096.08	PK	54.3	30	5.6	41.9	48	73.9	25.9	100	331	
Hori.	4882	PK	54	31.4	6	41.5	49.9	73.9	24	100	248	
Hori.	7323	PK	51.6	36.2	7.7	41.2	54.3	73.9	19.6	100	349	
Hori.	9764	PK	47.8	38.7	8.6	40.4	54.7	73.9	19.2	100	0	
Hori.	12205	PK	47.2	39.6	10.2	39.2	57.8	73.9	16.1	100	0	
Hori.	1628	AV	43.9	25.5	13	40.8	41.6	53.9	12.3	100	66	
Hori.	1857.008	AV	35.8	25.9	13.2	40.8	34.1	53.9	19.8	100	0	
Hori.	4096.08	AV	47.6	30	5.6	41.9	41.3	53.9	12.6	100	331	
Hori.	4882	AV	46.5	31.4	6	41.5	42.4	53.9	11.5	100	248	
Hori.	7323	AV	40.3	36.2	7.7	41.2	43	53.9	10.9	100	349	
Hori.	9764	AV	33.5	38.7	8.6	40.4	40.4	53.9	13.5	100	0	
Hori.	12205	AV	32.7	39.6	10.2	39.2	43.3	53.9	10.6	100	0	
Vert.	71.994	QP	49.2	6.4	7.6	31.8	31.4	40	8.6	100	313	
Vert.	152.417	QP	39.5	14.7	8.5	31.8	30.9	43.5	12.6	100	213	
Vert.	169.272	QP	43.3	15.4	8.7	31.8	35.6	43.5	7.9	100	16	
Vert.	192.019	QP	47.2	16.1	8.9	31.8	40.4	43.5	3.1	100	273	
Vert.	496.784	QP	36.7	17.6	8.1	31.9	30.5	46	15.5	100	191	
Vert.	1628	PK	51.3	25.5	13	40.8	49	73.9	24.9	100	0	
Vert.	1857.008	PK	48.5	25.9	13.2	40.8	46.8	73.9	27.1	100	0	
Vert.	4095.051	PK	54.6	30	5.6	41.9	48.3	73.9	25.6	100	317	
Vert.	4882	PK	57	31.4	6	41.5	52.9	73.9	21	100	318	
Vert.	7323	PK	51.5	36.2	7.7	41.2	54.2	73.9	19.7	100	77	
Vert.	9764	PK	44	38.7	8.6	40.4	50.9	73.9	23	100	0	
Vert.	12205	PK	47.4	39.6	10.2	39.2	58	73.9	15.9	100	0	
Vert.	1628	AV	42.8	25.5	13	40.8	40.5	53.9	13.4	100	0	
Vert.	1857.008	AV	36	25.9	13.2	40.8	34.3	53.9	19.6	100	0	
Vert.	4095.051	AV	47.6	30	5.6	41.9	41.3	53.9	12.6	100	317	
Vert.	4882	AV	48.4	31.4	6	41.5	44.3	53.9	9.6	100	318	
Vert.	7323	AV	40.4	36.2	7.7	41.2	43.1	53.9	10.8	100	77	
Vert.	9764	AV	33.5	38.7	8.6	40.4	40.4	53.9	13.5	100	0	
Vert.	12205	AV	32.9	39.6	10.2	39.2	43.5	53.9	10.4	100	0	

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).

*The 4th harmonic was not seen so the result was its base noise level.

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.1 Semi Anechoic Chamber
Date	2012/4/3	2012/4/6
Temperature / Humidity	22 deg.C , 38 %RH	22 deg.C ,28 %RH
Engineer	Wataru Kojima	Wataru Kojima
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.	135.405	QP	40.2	13.9	8.3	31.8	30.6	43.5	12.9	217	15	
Hori.	169.273	QP	40.7	15.4	8.7	31.8	33	43.5	10.5	192	277	
Hori.	186.211	QP	38.7	16	8.8	31.8	31.7	43.5	11.8	121	272	
Hori.	192.018	QP	47.3	16.1	8.9	31.8	40.5	43.5	3	173	297	
Hori.	220.083	QP	40.4	16.7	9.2	31.7	34.6	46	11.4	143	281	
Hori.	960.091	QP	35.7	22.5	10.3	30.8	37.7	53.9	16.2	127	90	
Hori.	1654.08	PK	53.1	25.5	13.1	40.8	50.9	73.9	23	100	20	
Hori.	1857.22	PK	48.9	25.9	13.2	40.8	47.2	73.9	26.7	100	0	
Hori.	2483.5	PK	53.5	28.7	13.8	40.7	55.3	73.9	18.6	100	222	
Hori.	2484.5	PK	51.8	28.7	13.8	40.7	53.6	73.9	20.3	100	222	
Hori.	4094.775	PK	54.2	30	5.6	41.9	47.9	73.9	26	100	335	
Hori.	4960	PK	54.7	31.6	6	41.4	50.9	73.9	23	100	250	
Hori.	7440	PK	51.3	36.3	7.7	41.3	54	73.9	19.9	100	348	
Hori.	9920	PK	48.6	38.9	8.5	40.3	55.7	73.9	18.2	100	0	
Hori.	12400	PK	46.6	39.7	10.1	39	57.4	73.9	16.5	100	0	
Hori.	1654.08	AV	45	25.5	13.1	40.8	42.8	53.9	11.1	100	20	
Hori.	1857.22	AV	35.9	25.9	13.2	40.8	34.2	53.9	19.7	100	0	
Hori.	2483.5	AV	42.3	28.7	13.8	40.7	44.1	53.9	9.8	100	222	
Hori.	2484.5	AV	39.7	28.7	13.8	40.7	41.5	53.9	12.4	100	222	
Hori.	4094.775	AV	47.1	30	5.6	41.9	40.8	53.9	13.1	100	335	
Hori.	4960	AV	45.3	31.6	6	41.4	41.5	53.9	12.4	100	250	
Hori.	7440	AV	39.6	36.3	7.7	41.3	42.3	53.9	11.6	100	348	
Hori.	9920	AV	34.3	38.9	8.5	40.3	41.4	53.9	12.5	100	0	
Hori.	12400	AV	31.5	39.7	10.1	39	42.3	53.9	11.6	100	0	
Vert.	71.98	QP	49.2	6.4	7.6	31.8	31.4	40	8.6	100	322	
Vert.	152.414	QP	39.2	14.7	8.5	31.8	30.6	43.5	12.9	100	213	
Vert.	169.274	QP	43.2	15.4	8.7	31.8	35.5	43.5	8	100	19	
Vert.	192.019	QP	47.2	16.1	8.9	31.8	40.4	43.5	3.1	100	270	
Vert.	457.115	QP	41	16.9	7.9	31.8	34	46	12	100	177	
Vert.	1654.08	PK	50.7	25.5	13.1	40.8	48.5	73.9	25.4	100	280	
Vert.	1857.22	PK	48.3	25.9	13.2	40.8	46.6	73.9	27.3	100	0	
Vert.	2483.5	PK	52.3	28.7	13.8	40.7	54.1	73.9	19.8	100	356	
Vert.	2484.5	PK	50.6	28.7	13.8	40.7	52.4	73.9	21.5	100	0	
Vert.	4094.775	PK	55.2	30	5.6	41.9	48.9	73.9	25	100	318	
Vert.	4960	PK	57.8	31.6	6	41.4	54	73.9	19.9	100	326	
Vert.	7440	PK	52.2	36.3	7.7	41.3	54.9	73.9	19	100	100	
Vert.	9920	PK	49.1	38.9	8.5	40.3	56.2	73.9	17.7	100	0	
Vert.	12400	PK	47.1	39.7	10.1	39	57.9	73.9	16	100	0	
Vert.	1654.08	AV	41.7	25.5	13.1	40.8	39.5	53.9	14.4	100	280	
Vert.	1857.22	AV	35.2	25.9	13.2	40.8	33.5	53.9	20.4	100	0	
Vert.	2483.5	AV	40.7	28.7	13.8	40.7	42.5	53.9	11.4	100	356	
Vert.	2484.5	AV	37.2	28.7	13.8	40.7	39	53.9	14.9	100	0	
Vert.	4094.775	AV	47.8	30	5.6	41.9	41.5	53.9	12.4	100	318	
Vert.	4960	AV	49.2	31.6	6	41.4	45.4	53.9	8.5	100	326	
Vert.	7440	AV	40	36.3	7.7	41.3	42.7	53.9	11.2	100	100	
Vert.	9920	AV	34.5	38.9	8.5	40.3	41.6	53.9	12.3	100	0	
Vert.	12400	AV	32.6	39.7	10.1	39	43.4	53.9	10.5	100	0	

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).

*The 4th harmonic was not seen so the result was its base noise level.

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.1 Semi Anechoic Chamber
Date	2012/4/3	2012/4/6
Temperature / Humidity	22 deg.C , 38 %RH	22 deg.C ,28 %RH
Engineer	Wataru Kojima	Wataru Kojima
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.	135.401	QP	40.3	13.9	8.3	31.8	30.7	43.5	12.8	223	19	
Hori.	169.37	QP	40.4	15.4	8.7	31.8	32.7	43.5	10.8	182	272	
Hori.	186.218	QP	40	16	8.8	31.8	33	43.5	10.5	169	152	
Hori.	192.018	QP	47.3	16.1	8.9	31.8	40.5	43.5	3	167	294	
Hori.	960.092	QP	35.4	22.5	10.3	30.8	37.4	53.9	16.5	135	99	
Hori.	1601.984	PK	51.9	25.4	13	40.8	49.5	73.9	24.4	100	275	
Hori.	1860.216	PK	48.7	25.9	13.2	40.8	47	73.9	26.9	100	0	
Hori.	2390	PK	49.2	28.2	13.8	40.7	50.5	73.9	23.4	100	314	
Hori.	4094.471	PK	53.3	30	5.6	41.9	47	73.9	26.9	100	15	
Hori.	4804	PK	51.1	31.2	5.9	41.6	46.6	73.9	27.3	100	238	
Hori.	7206	PK	49.4	36.1	7.6	41.2	51.9	73.9	22	100	0	
Hori.	9608	PK	47.5	38.6	8.6	40.4	54.3	73.9	19.6	100	0	
Hori.	12010	PK	48	39.5	10.3	39.4	58.4	73.9	15.5	100	0	
Hori.	1601.984	AV	43.6	25.4	13	40.8	41.2	53.9	12.7	100	275	
Hori.	1860.216	AV	34.4	25.9	13.2	40.8	32.7	53.9	21.2	100	0	
Hori.	2390	AV	36.1	28.2	13.8	40.7	37.4	53.9	16.5	100	314	
Hori.	4094.471	AV	45.2	30	5.6	41.9	38.9	53.9	15	100	15	
Hori.	4804	AV	37.7	31.2	5.9	41.6	33.2	53.9	20.7	100	238	
Hori.	7206	AV	34.8	36.1	7.6	41.2	37.3	53.9	16.6	100	0	
Hori.	9608	AV	33.1	38.6	8.6	40.4	39.9	53.9	14	100	0	
Hori.	12010	AV	33.3	39.5	10.3	39.4	43.7	53.9	10.2	100	0	
Vert.	71.983	QP	49	6.4	7.6	31.8	31.2	40	8.8	100	328	
Vert.	152.419	QP	39.4	14.7	8.5	31.8	30.8	43.5	12.7	100	213	
Vert.	169.27	QP	43.2	15.4	8.7	31.8	35.5	43.5	8	100	242	
Vert.	192.016	QP	47.2	16.1	8.9	31.8	40.4	43.5	3.1	100	275	
Vert.	1601.984	PK	52.3	25.4	13	40.8	49.9	73.9	24	100	147	
Vert.	1860.216	PK	49.7	25.9	13.2	40.8	48	73.9	25.9	100	0	
Vert.	2390	PK	48.8	28.2	13.8	40.7	50.1	73.9	23.8	100	44	
Vert.	4094.471	PK	54.4	30	5.6	41.9	48.1	73.9	25.8	100	351	
Vert.	4804	PK	51.5	31.2	5.9	41.6	47	73.9	26.9	100	321	
Vert.	7206	PK	49.2	36.1	7.6	41.2	51.7	73.9	22.2	100	0	
Vert.	9608	PK	47.5	38.6	8.6	40.4	54.3	73.9	19.6	100	0	
Vert.	12010	PK	48.5	39.5	10.3	39.4	58.9	73.9	15	100	0	
Vert.	1601.984	AV	43.8	25.4	13	40.8	41.4	53.9	12.5	100	147	
Vert.	1860.216	AV	34.2	25.9	13.2	40.8	32.5	53.9	21.4	100	0	
Vert.	2390	AV	36	28.2	13.8	40.7	37.3	53.9	16.6	100	44	
Vert.	4094.471	AV	46.5	30	5.6	41.9	40.2	53.9	13.7	100	351	
Vert.	4804	AV	38.5	31.2	5.9	41.6	34	53.9	19.9	100	321	
Vert.	7206	AV	34.7	36.1	7.6	41.2	37.2	53.9	16.7	100	0	
Vert.	9608	AV	33.1	38.6	8.6	40.4	39.9	53.9	14	100	0	
Vert.	12010	AV	33.3	39.5	10.3	39.4	43.7	53.9	10.2	100	0	

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).

*The 4th harmonic was not seen so the result was its base noise level.

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	PK	81.1	28.2	13.8	40.7		82.4	-	-	Carrier
Hori.	2400	PK	39.6	28.2	13.8	40.7		40.9	62.4	21.5	
Vert.	2402	PK	80.7	28.2	13.8	40.7		82	-	-	Carrier
Vert.	2400	PK	40.3	28.2	13.8	40.7		41.6	62	20.4	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amprifier)

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Semi Anechoic Chamber
Date	2012/4/3	2012/4/6
Temperature / Humidity	22 deg.C , 38 %RH	22 deg.C ,28 %RH
Engineer	Wataru Kojima	Wataru Kojima
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.	135.402	QP	40.4	13.9	8.3	31.8	30.8	43.5	12.7	215	12	
Hori.	169.266	QP	40.6	15.4	8.7	31.8	32.9	43.5	10.6	182	149	
Hori.	192.017	QP	46.5	16.1	8.9	31.8	39.7	43.5	3.8	100	296	
Hori.	220.089	QP	40.4	16.7	9.2	31.7	34.6	46	11.4	145	283	
Hori.	960.094	QP	35.5	22.5	10.3	30.8	37.5	53.9	16.4	131	91	
Hori.	1627.971	PK	52.1	25.5	13	40.8	49.8	73.9	24.1	100	272	
Hori.	1850.083	PK	49	25.9	13.2	40.8	47.3	73.9	26.6	100	0	
Hori.	4094.417	PK	53.8	30	5.6	41.9	47.5	73.9	26.4	100	337	
Hori.	4882	PK	52	31.4	6	41.5	47.9	73.9	26	100	238	
Hori.	7323	PK	49.9	36.2	7.7	41.2	52.6	73.9	21.3	100	0	
Hori.	9764	PK	48.4	38.7	8.6	40.4	55.3	73.9	18.6	100	0	
Hori.	12205	PK	47.9	39.6	10.2	39.2	58.5	73.9	15.4	100	0	
Hori.	1627.971	AV	44.1	25.5	13	40.8	41.8	53.9	12.1	100	272	
Hori.	1850.083	AV	34.2	25.9	13.2	40.8	32.5	53.9	21.4	100	0	
Hori.	4094.417	AV	46.6	30	5.6	41.9	40.3	53.9	13.6	100	337	
Hori.	4882	AV	37.8	31.4	6	41.5	33.7	53.9	20.2	100	238	
Hori.	7323	AV	35.6	36.2	7.7	41.2	38.3	53.9	15.6	100	0	
Hori.	9764	AV	34	38.7	8.6	40.4	40.9	53.9	13	100	0	
Hori.	12205	AV	33.4	39.6	10.2	39.2	44	53.9	9.9	100	0	
Vert.	71.981	QP	49	6.4	7.6	31.8	31.2	40	8.8	100	331	
Vert.	152.423	QP	39.7	14.7	8.5	31.8	31.1	43.5	12.4	100	12	
Vert.	169.269	QP	43.2	15.4	8.7	31.8	35.5	43.5	8	100	229	
Vert.	192.016	QP	47.2	16.1	8.9	31.8	40.4	43.5	3.1	100	277	
Vert.	1627.971	PK	53.7	25.5	13	40.8	51.4	73.9	22.5	100	149	
Vert.	1850.083	PK	48.4	25.9	13.2	40.8	46.7	73.9	27.2	100	0	
Vert.	4094.417	PK	54	30	5.6	41.9	47.7	73.9	26.2	100	318	
Vert.	4882	PK	52.8	31.4	6	41.5	48.7	73.9	25.2	100	323	
Vert.	7323	PK	50.6	36.2	7.7	41.2	53.3	73.9	20.6	100	0	
Vert.	9764	PK	48.5	38.7	8.6	40.4	55.4	73.9	18.5	100	0	
Vert.	12205	PK	47.8	39.6	10.2	39.2	58.4	73.9	15.5	100	0	
Vert.	1627.971	AV	47.4	25.5	13	40.8	45.1	53.9	8.8	100	149	
Vert.	1850.083	AV	34.2	25.9	13.2	40.8	32.5	53.9	21.4	100	0	
Vert.	4094.417	AV	47.4	30	5.6	41.9	41.1	53.9	12.8	100	318	
Vert.	4882	AV	39.8	31.4	6	41.5	35.7	53.9	18.2	100	323	
Vert.	7323	AV	35.8	36.2	7.7	41.2	38.5	53.9	15.4	100	0	
Vert.	9764	AV	34.2	38.7	8.6	40.4	41.1	53.9	12.8	100	0	
Vert.	12205	AV	33.8	39.6	10.2	39.2	44.4	53.9	9.5	100	0	

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).

*The 4th harmonic was not seen so the result was its base noise level.

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.1 Semi Anechoic Chamber
Date	2012/4/3	2012/4/6
Temperature / Humidity	22 deg.C , 38 %RH	22 deg.C ,28 %RH
Engineer	Wataru Kojima	Wataru Kojima
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.	60.004	QP	38.9	7.9	7.4	31.8	22.4	40	17.6	292	236	
Hori.	169.277	QP	40.6	15.4	8.7	31.8	32.9	43.5	10.6	180	142	
Hori.	192.016	QP	47.1	16.1	8.9	31.8	40.3	43.5	3.2	166	293	
Hori.	220.084	QP	40.4	16.7	9.2	31.7	34.6	46	11.4	136	285	
Hori.	1653.99	PK	54.4	25.5	13.1	40.8	52.2	73.9	21.7	100	337	
Hori.	1860.047	PK	49.2	25.9	13.2	40.8	47.5	73.9	26.4	100	0	
Hori.	2483.5	PK	52.5	28.7	13.8	40.7	54.3	73.9	19.6	100	147	
Hori.	4094.479	PK	54.3	30	5.6	41.9	48	73.9	25.9	100	332	
Hori.	4960	PK	50.3	31.6	6	41.4	46.5	73.9	27.4	100	18	
Hori.	7440	PK	49.7	36.3	7.7	41.3	52.4	73.9	21.5	100	0	
Hori.	9920	PK	48.7	38.9	8.5	40.3	55.8	73.9	18.1	100	0	
Hori.	12400	PK	46.7	39.7	10.1	39	57.5	73.9	16.4	100	0	
Hori.	1653.99	AV	50.2	25.5	13.1	40.8	48	53.9	5.9	100	337	
Hori.	1860.047	AV	35.5	25.9	13.2	40.8	33.8	53.9	20.1	100	0	
Hori.	2483.5	AV	39.1	28.7	13.8	40.7	40.9	53.9	13	100	147	
Hori.	4094.479	AV	47.1	30	5.6	41.9	40.8	53.9	13.1	100	332	
Hori.	4960	AV	37.8	31.6	6	41.4	34	53.9	19.9	100	18	
Hori.	7440	AV	35.2	36.3	7.7	41.3	37.9	53.9	16	100	0	
Hori.	9920	AV	34.8	38.9	8.5	40.3	41.9	53.9	12	100	0	
Hori.	12400	AV	32.7	39.7	10.1	39	43.5	53.9	10.4	100	0	
Vert.	71.997	QP	49	6.4	7.6	31.8	31.2	40	8.8	100	340	
Vert.	152.425	QP	39.8	14.7	8.5	31.8	31.2	43.5	12.3	100	206	
Vert.	169.269	QP	43.4	15.4	8.7	31.8	35.7	43.5	7.8	100	24	
Vert.	192.017	QP	47.2	16.1	8.9	31.8	40.4	43.5	3.1	100	272	
Vert.	960.1	QP	31.4	22.5	10.3	30.8	33.4	53.9	20.5	104	142	
Vert.	1653.99	PK	54.2	25.5	13.1	40.8	52	73.9	21.9	100	333	
Vert.	1860.047	PK	48	25.9	13.2	40.8	46.3	73.9	27.6	100	0	
Vert.	2483.5	PK	52.4	28.7	13.8	40.7	54.2	73.9	19.7	100	148	
Vert.	4094.479	PK	54.6	30	5.6	41.9	48.3	73.9	25.6	100	316	
Vert.	4960	PK	51.7	31.6	6	41.4	47.9	73.9	26	100	324	
Vert.	7440	PK	50.3	36.3	7.7	41.3	53	73.9	20.9	100	0	
Vert.	9920	PK	48.9	38.9	8.5	40.3	56	73.9	17.9	100	0	
Vert.	12400	PK	46.3	39.7	10.1	39	57.1	73.9	16.8	100	0	
Vert.	1653.99	AV	49.9	25.5	13.1	40.8	47.7	53.9	6.2	100	333	
Vert.	1860.047	AV	35.3	25.9	13.2	40.8	33.6	53.9	20.3	100	0	
Vert.	2483.5	AV	39.2	28.7	13.8	40.7	41	53.9	12.9	100	148	
Vert.	4094.479	AV	47.2	30	5.6	41.9	40.9	53.9	13	100	316	
Vert.	4960	AV	40	31.6	6	41.4	36.2	53.9	17.7	100	324	
Vert.	7440	AV	36.6	36.3	7.7	41.3	39.3	53.9	14.6	100	0	
Vert.	9920	AV	35.7	38.9	8.5	40.3	42.8	53.9	11.1	100	0	
Vert.	12400	AV	31.9	39.7	10.1	39	42.7	53.9	11.2	100	0	

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

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).

*The 4th harmonic was not seen so the result was its base noise level.

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

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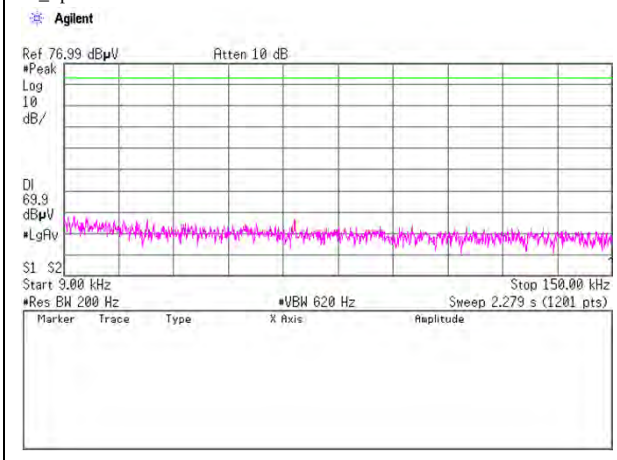
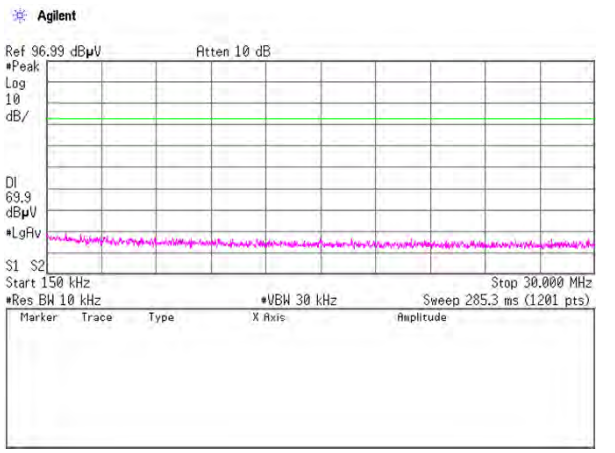
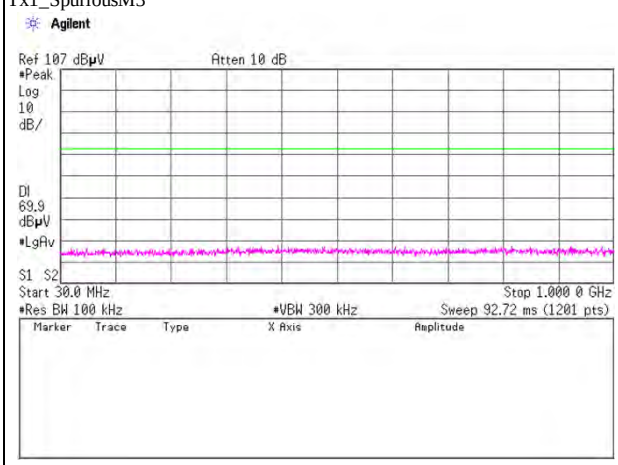
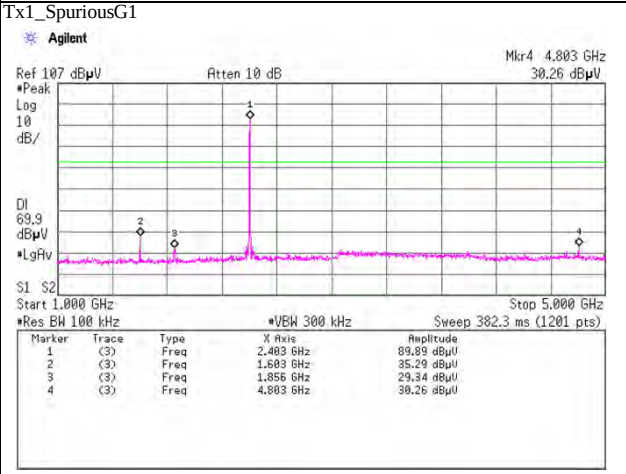
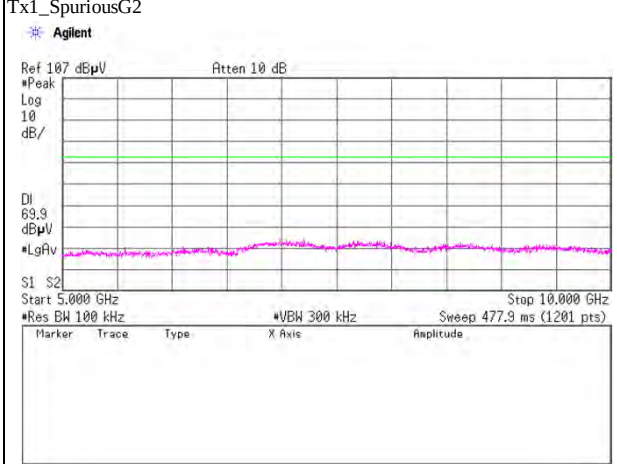
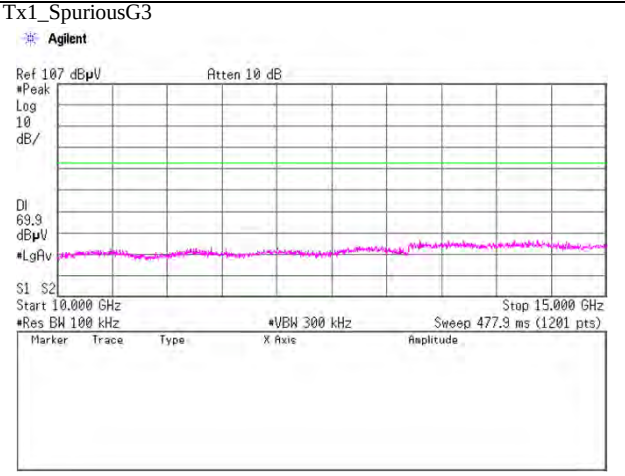
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (1/2)

9kHz - 150kHz	150kHz - 30MHz
Tx1_SpuriousM1	Tx1_SpuriousM2
	
30MHz - 1GHz	**1GHz - 5GHz**
Tx1_SpuriousM3	Tx1_SpuriousG1
	
5GHz - 10GHz	**10GHz - 15GHz**
Tx1_SpuriousG2	Tx1_SpuriousG3
	

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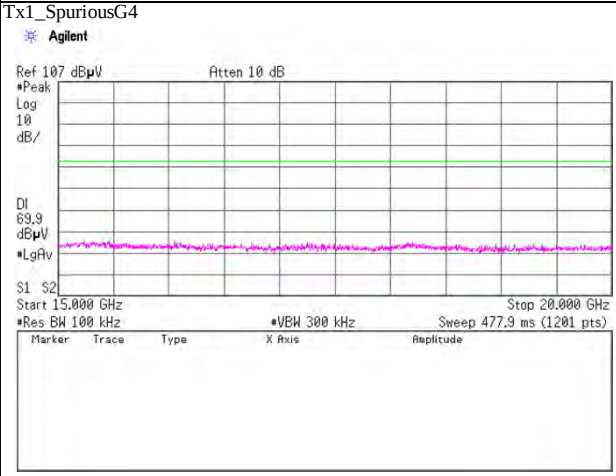
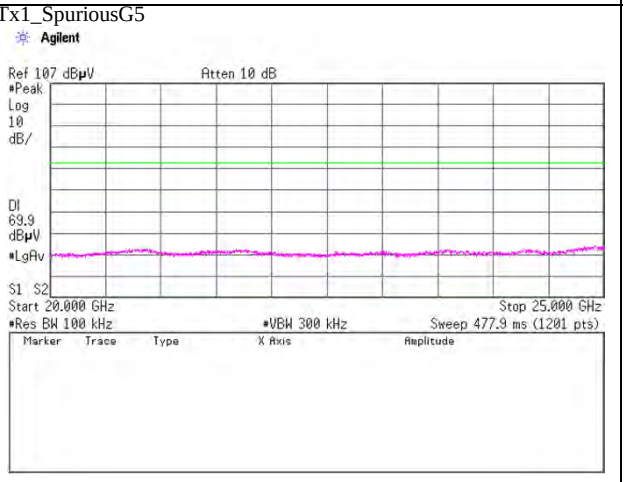
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
Tx1_SpuriousG4 	Tx1_SpuriousG5 
Tx1_SpuriousG6	Tx1_SpuriousG7
Tx1_SpuriousG8	

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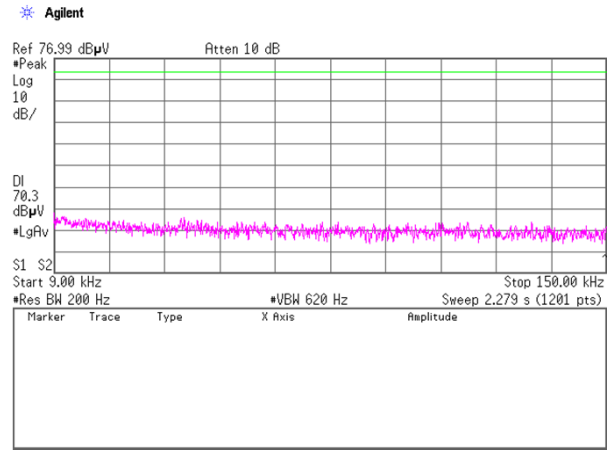
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2441MHz (1/2)

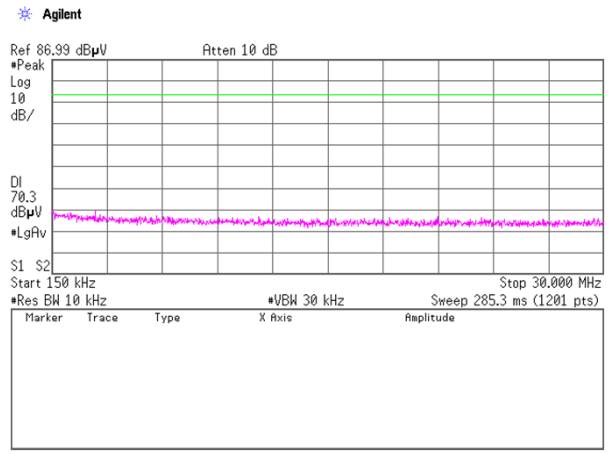
9kHz - 150kHz

Tx2_SpuriousM1



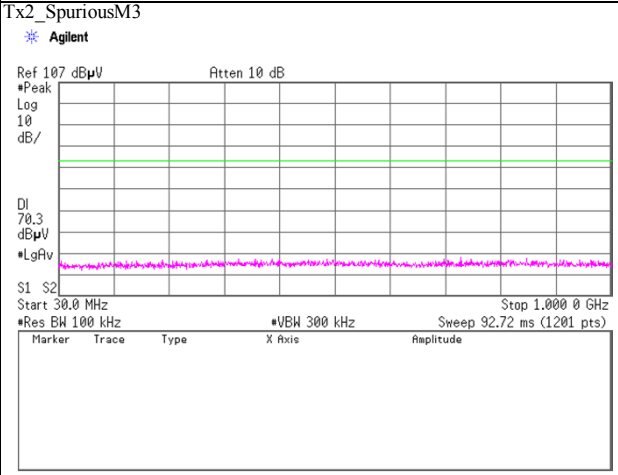
150kHz - 30MHz

Tx2_SpuriousM2



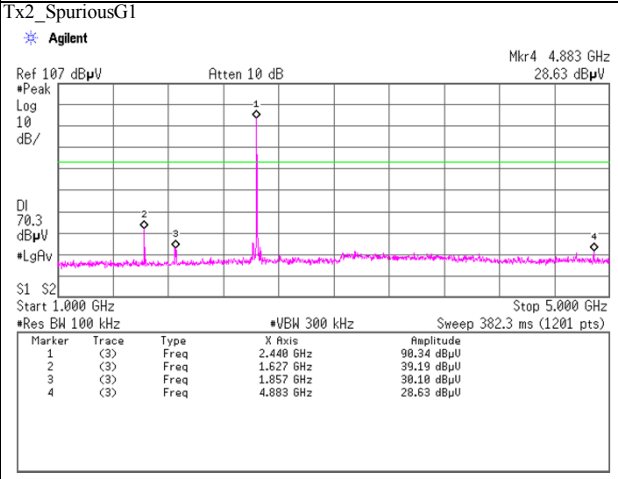
30MHz - 1GHz

Tx2_SpuriousM3



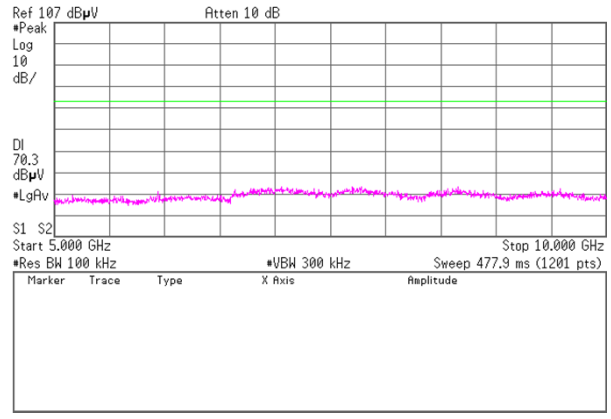
1GHz - 5GHz

Tx2_SpuriousG1



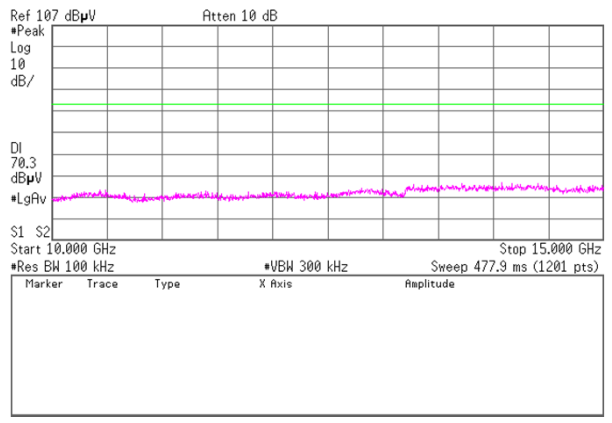
5GHz - 10GHz

Tx2_SpuriousG2



10GHz - 15GHz

Tx2_SpuriousG3



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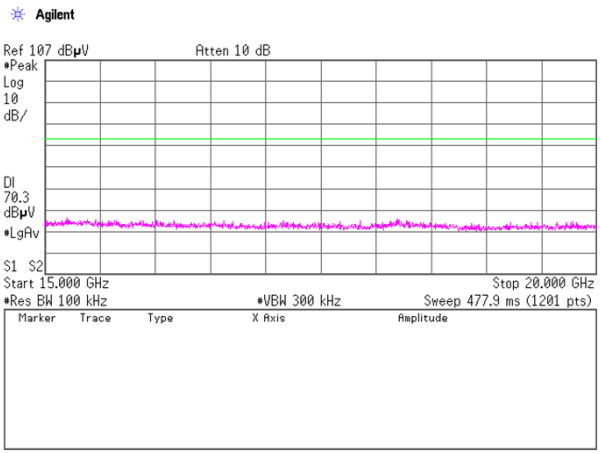
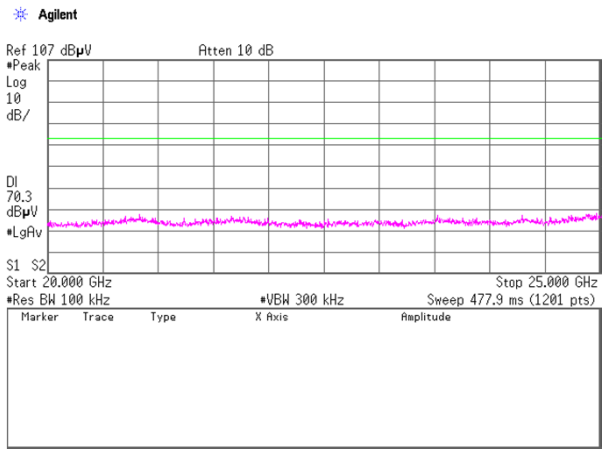
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2441MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
Tx2_SpuriousG4 	Tx2_SpuriousG5 
Tx2_SpuriousG6	Tx2_SpuriousG7
Tx2_SpuriousG8	

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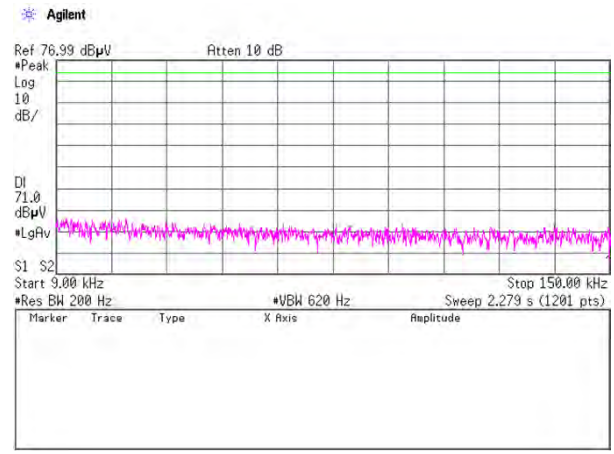
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (1/2)

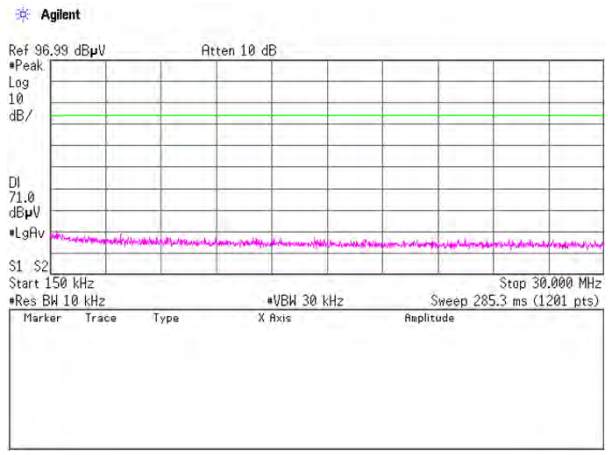
9kHz - 150kHz

Tx3_SpuriousM1



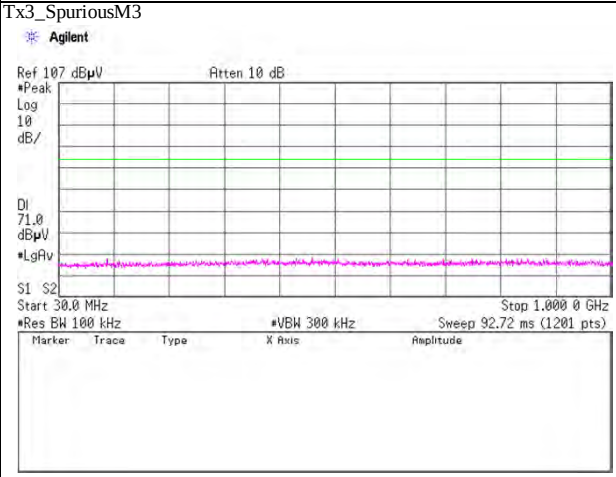
150kHz - 30MHz

Tx3_SpuriousM2



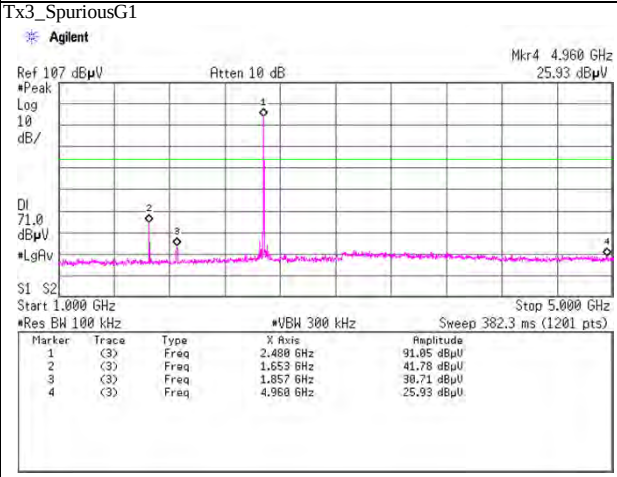
30MHz - 1GHz

Tx3_SpuriousM3



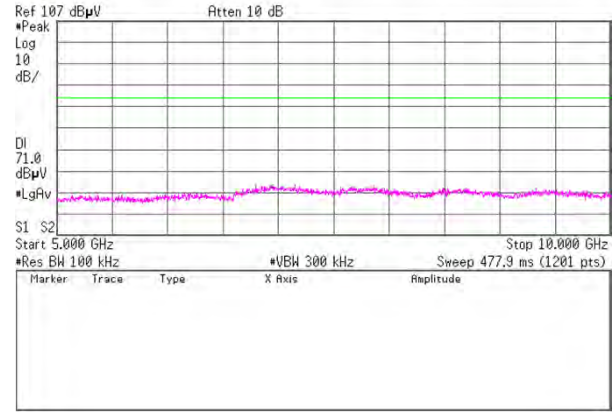
1GHz - 5GHz

Tx3_SpuriousG1



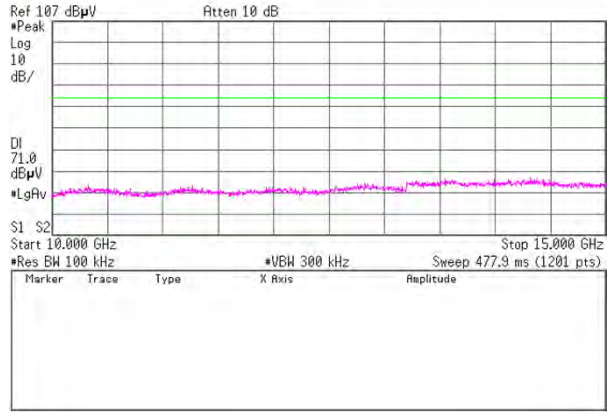
5GHz - 10GHz

Tx3_SpuriousG2



10GHz - 15GHz

Tx3_SpuriousG3



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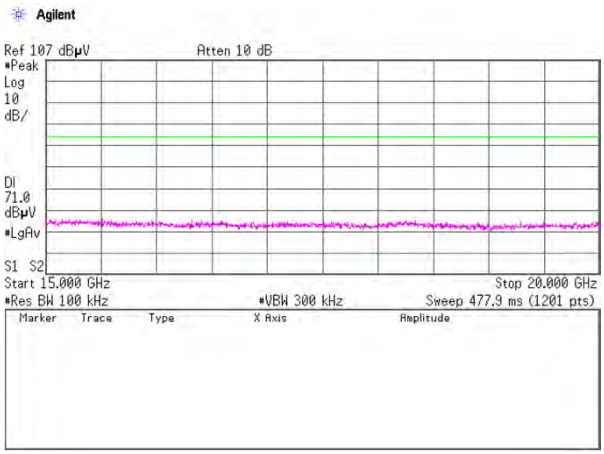
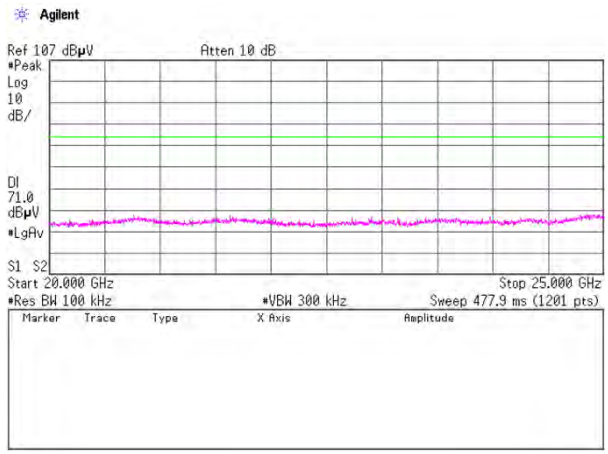
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
Tx3_SpuriousG4 	Tx3_SpuriousG5 
Tx3_SpuriousG6	Tx3_SpuriousG7
Tx3_SpuriousG8	

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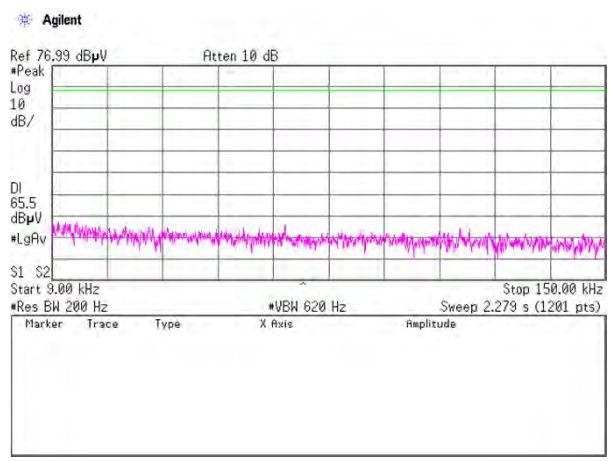
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (1/2)

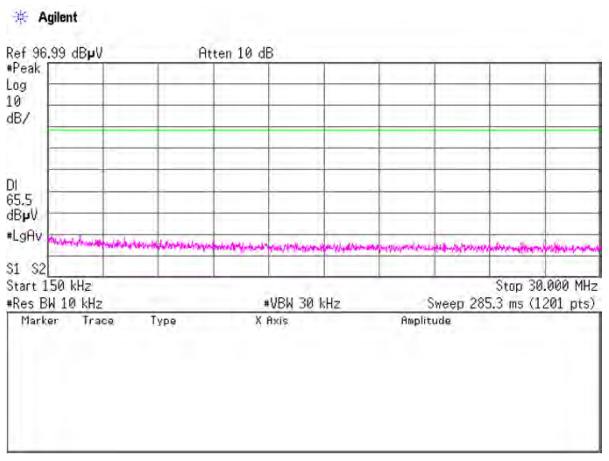
9kHz - 150kHz

Tx1_SpuriousM1



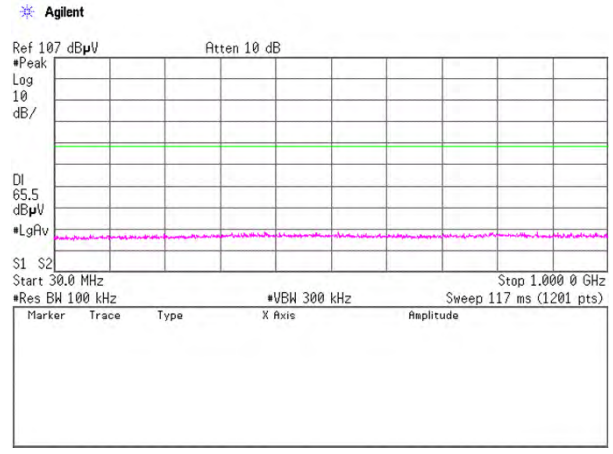
150kHz - 30MHz

Tx1_SpuriousM2



30MHz - 1GHz

Tx1_SpuriousM3

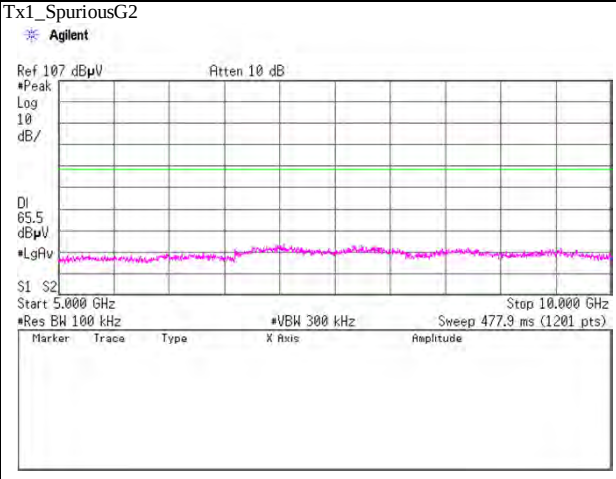


1GHz - 5GHz

Tx1_SpuriousG1

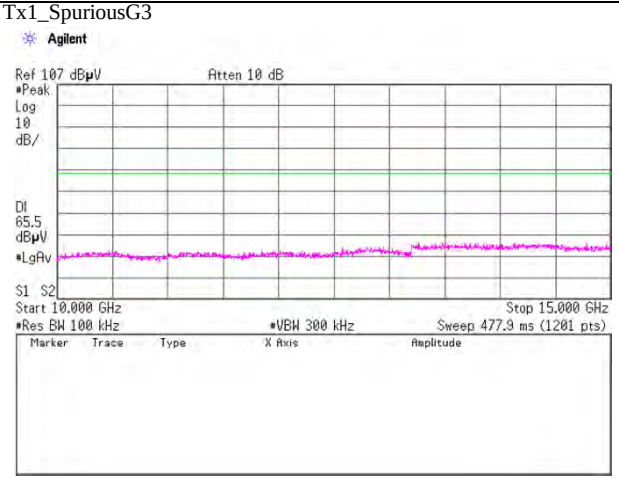
5GHz - 10GHz

Tx1_SpuriousG2



10GHz - 15GHz

Tx1_SpuriousG3



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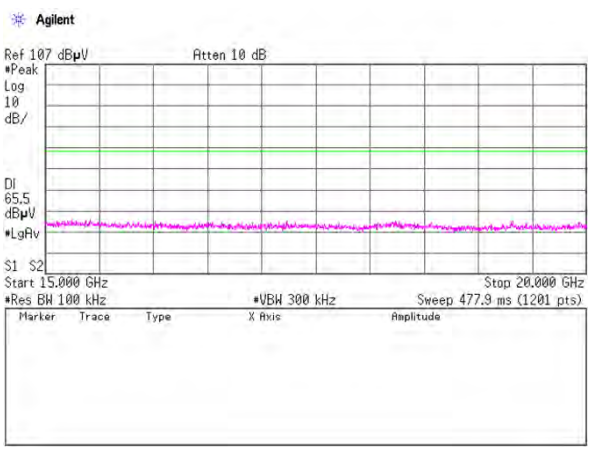
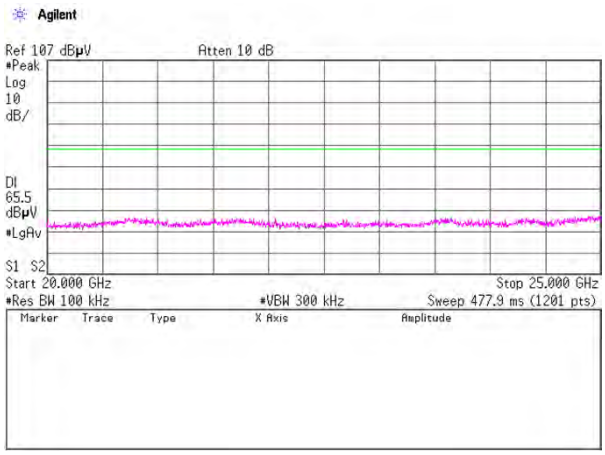
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
Tx1_SpuriousG4 	Tx1_SpuriousG5 
Tx1_SpuriousG6	Tx1_SpuriousG7
Tx1_SpuriousG8	

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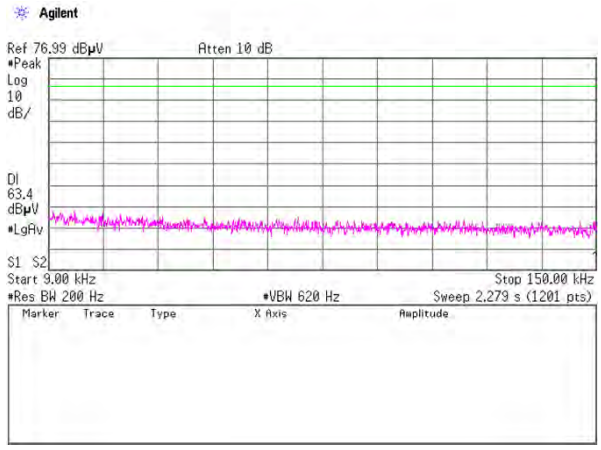
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (1/2)

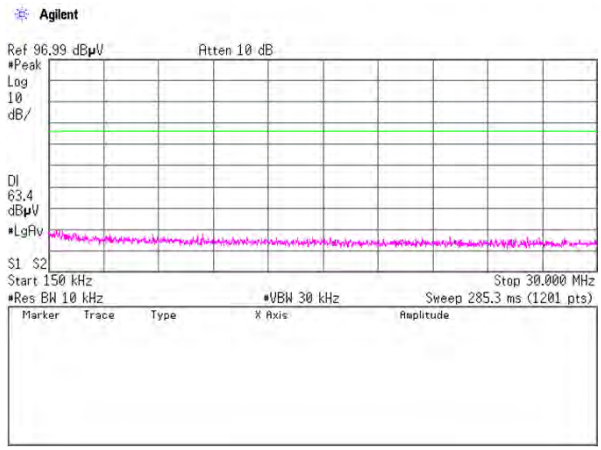
9kHz - 150kHz

Tx2_SpuriousM1



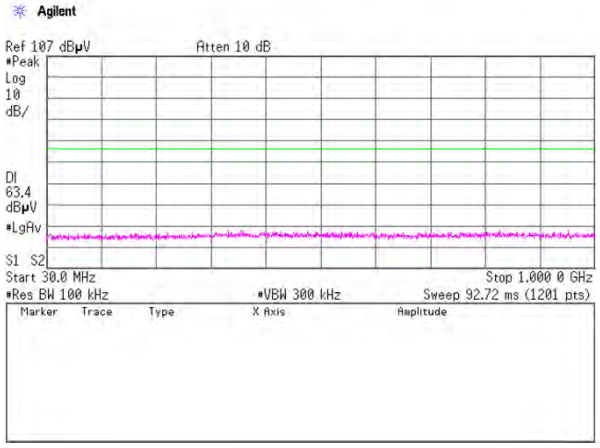
150kHz - 30MHz

Tx2_SpuriousM2



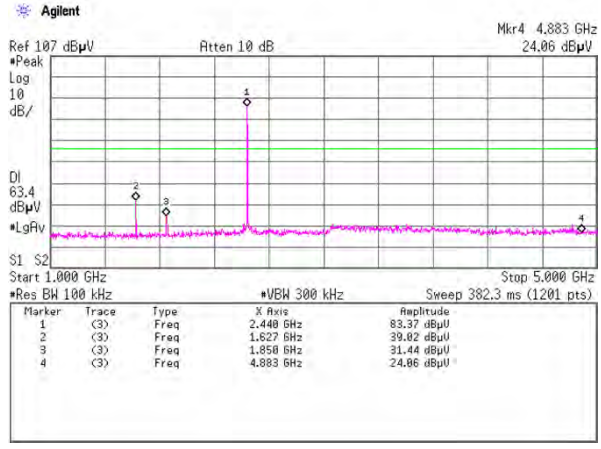
30MHz - 1GHz

Tx2_SpuriousM3



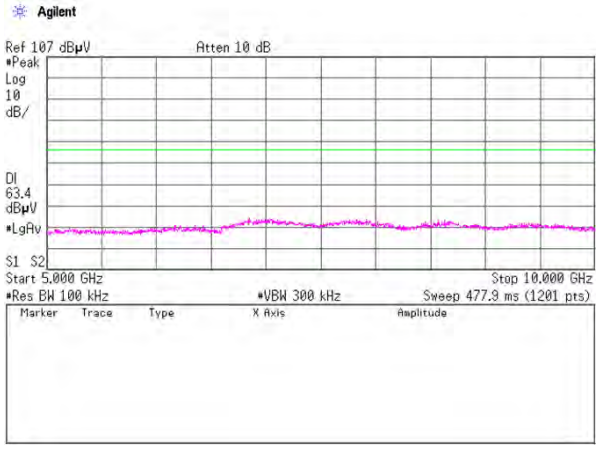
1GHz - 5GHz

Tx2_SpuriousG1



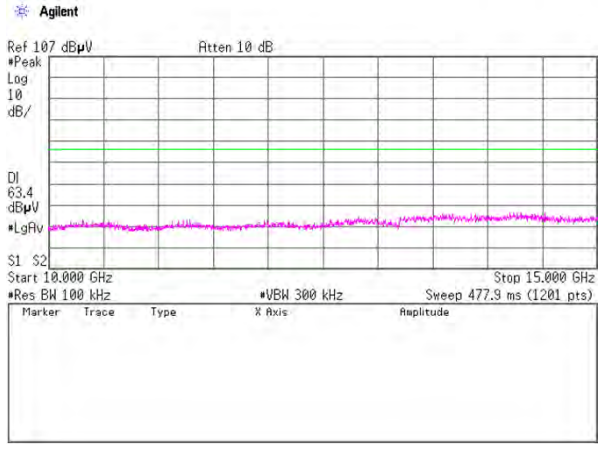
5GHz - 10GHz

Tx2_SpuriousG2



10GHz - 15GHz

Tx2_SpuriousG3



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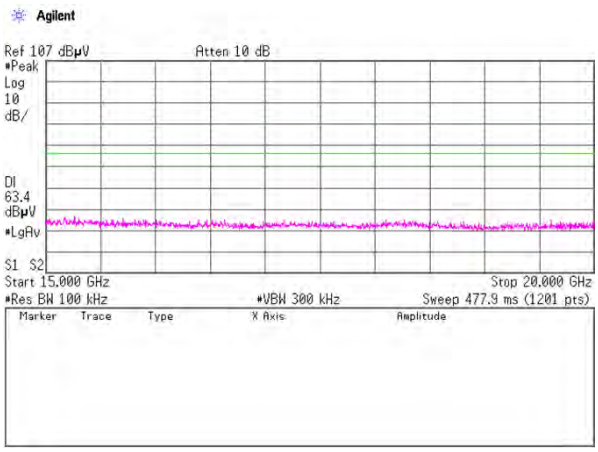
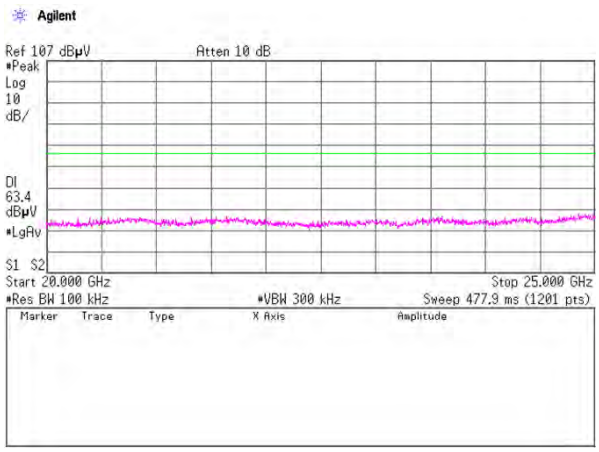
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
Tx2_SpuriousG4 	Tx2_SpuriousG5 
Tx2_SpuriousG6	Tx2_SpuriousG7
Tx2_SpuriousG8	

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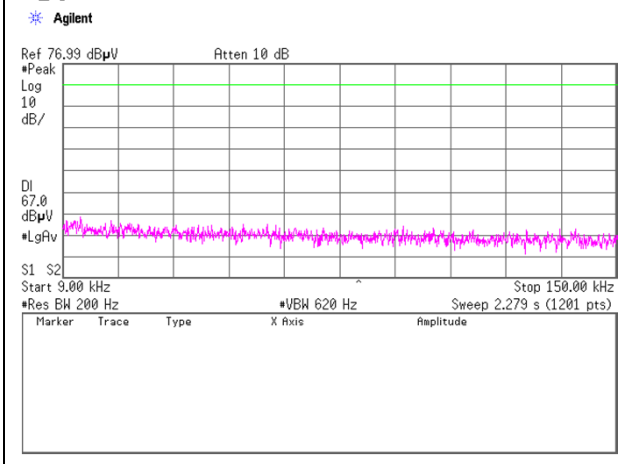
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (1/2)

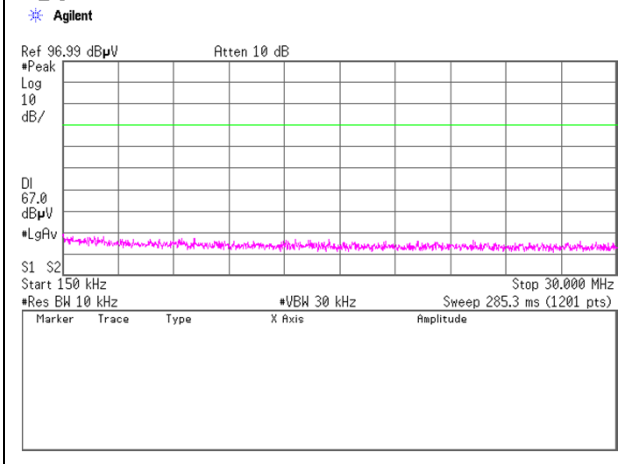
9kHz - 150kHz

Tx3_SpuriousM1



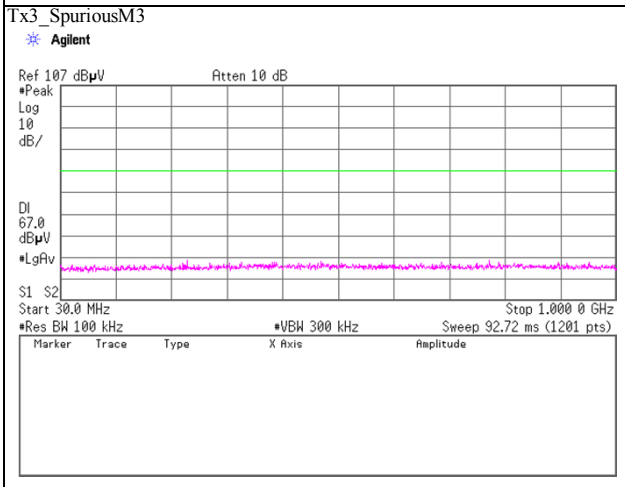
150kHz - 30MHz

Tx3_SpuriousM2



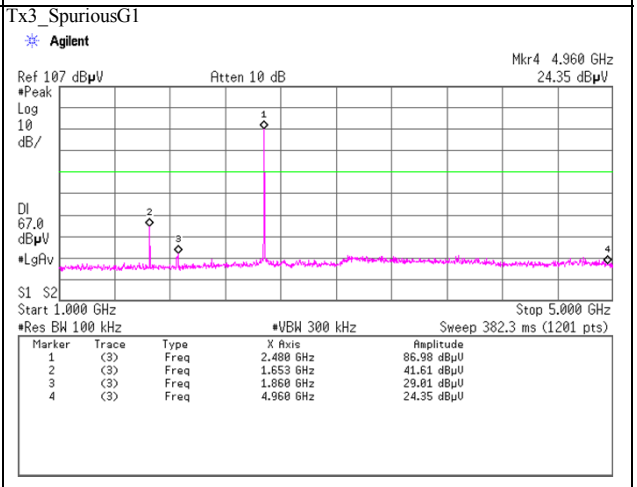
30MHz - 1GHz

Tx3_SpuriousM3



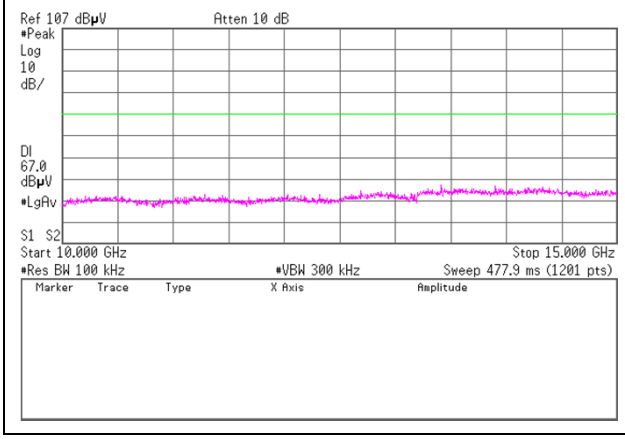
1GHz - 5GHz

Tx3_SpuriousG1



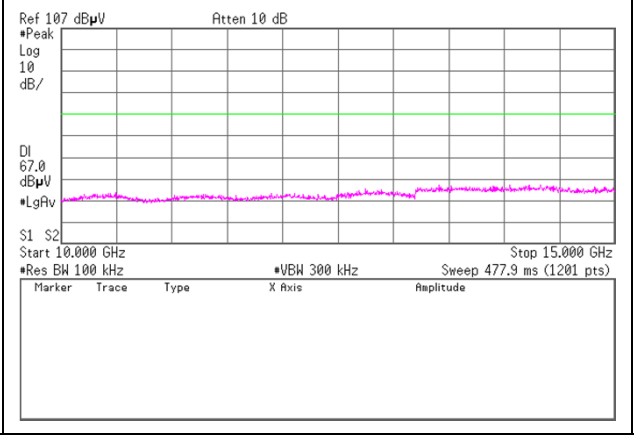
5GHz - 10GHz

Tx3_SpuriousG2



10GHz - 15GHz

Tx3_SpuriousG3



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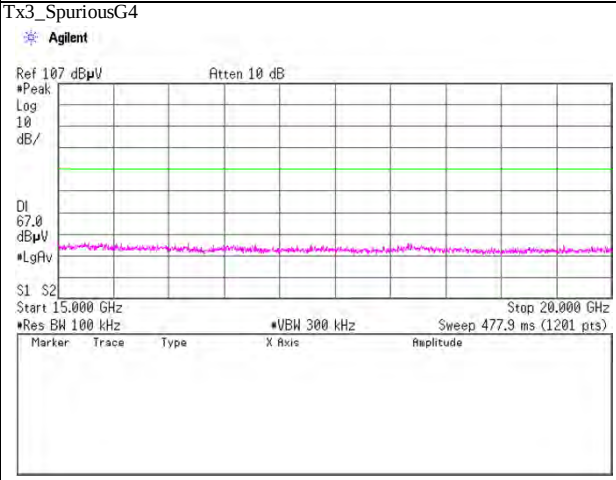
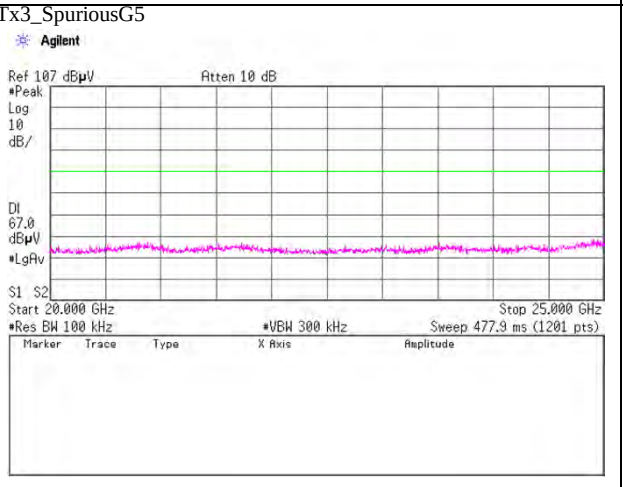
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
Tx3_SpuriousG4 	Tx3_SpuriousG5 
Tx3_SpuriousG6	Tx3_SpuriousG7
Tx3_SpuriousG8	

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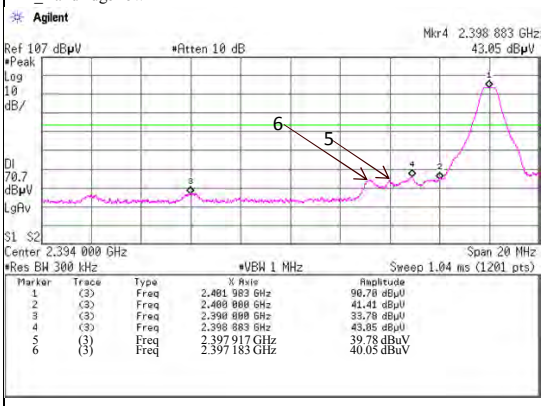
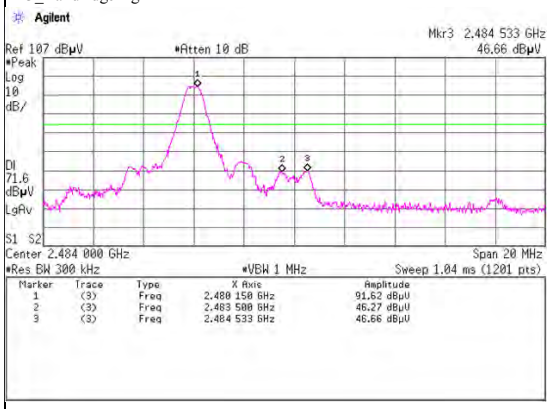
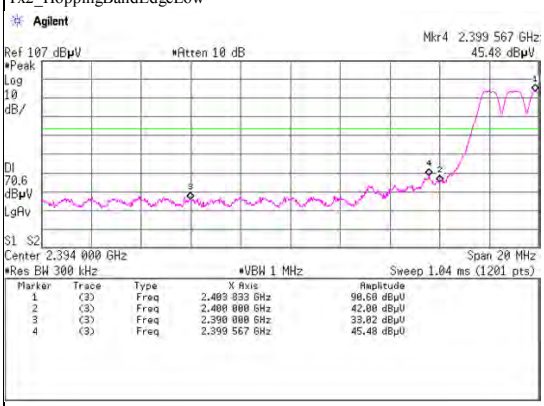
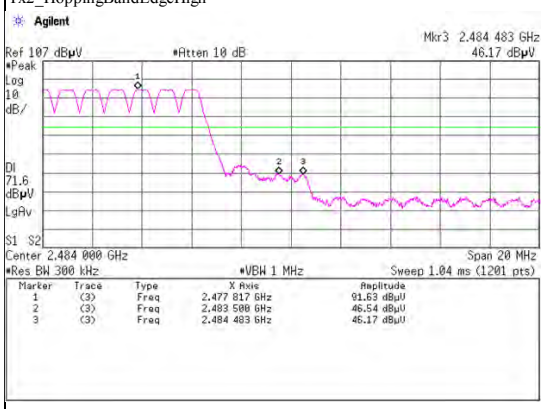
Spurious emission (Conducted)

Band Edge compliance

Tx, Bluetooth, BDR, PRBS9	
Tx, 2402MHz	**Tx, 2480MHz**
Tx1_BandEdgeLow-1	Tx3_BandEdgeHigh-1
	

Tx, Bluetooth, BDR, PRBS9	
Hopping On (Low)	**Hopping On (High)**
Tx2_HoppingBandEdgeLow	Tx2_HoppingBandEdgeHigh
	

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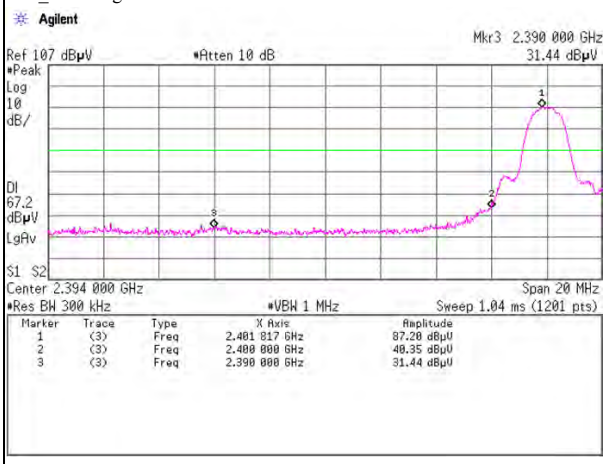
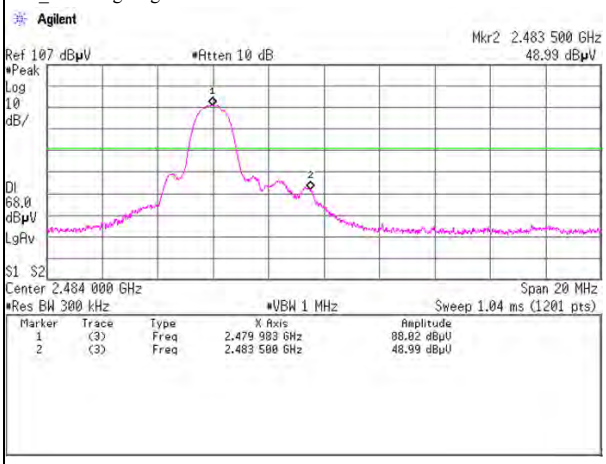
Spurious emission (Conducted)

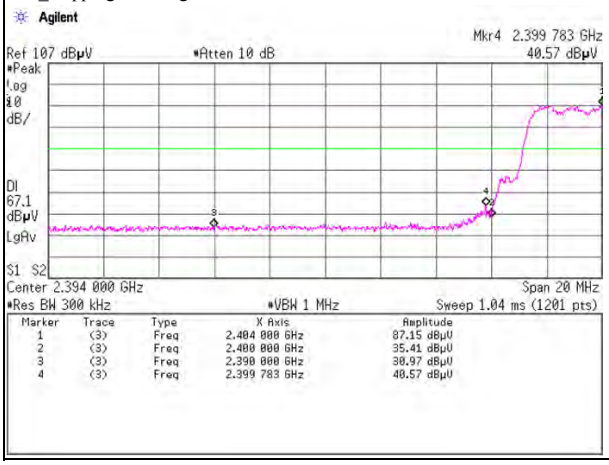
Band Edge compliance

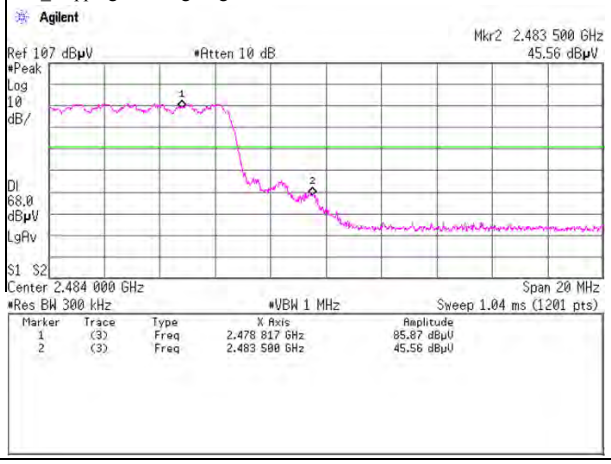
Tx, Bluetooth, EDR, PRBS9	
Tx, 2402MHz	**Tx, 2480MHz**
Tx1_BandEdgeLow	Tx3_BandEdgeHigh





Tx, Bluetooth, EDR, PRBS9	
Hopping On (Low)	**Hopping On (High)**
Tx2_HoppingBandEdgeLow	Tx2_HoppingBandEdgeHigh





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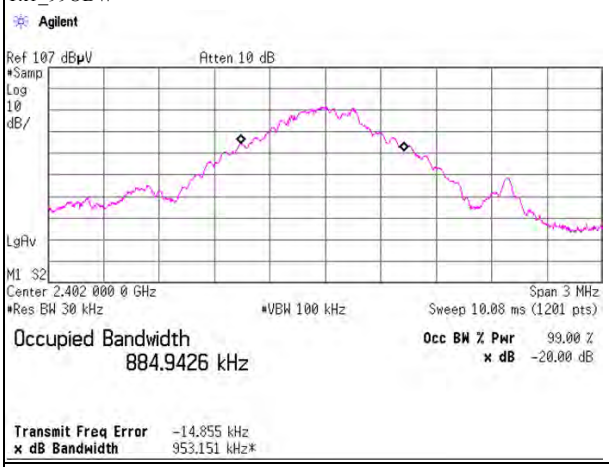
99% Occupied Bandwidth

Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz

Tx1_99OBW

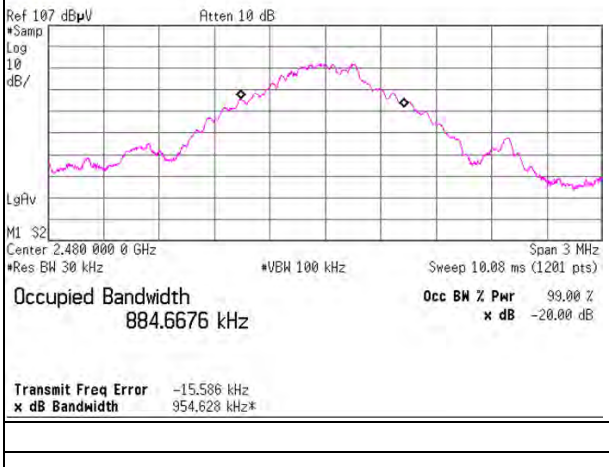


Tx, 2441MHz

Tx2_99OBW

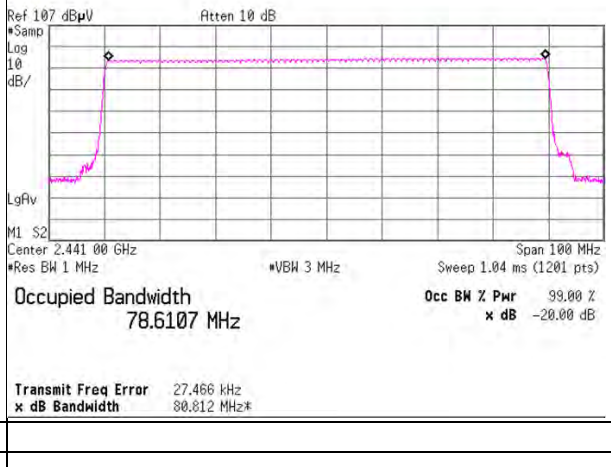
Tx, 2480MHz

Tx3_99OBW



Tx, Hopping On

Tx2_Hopping99OBW



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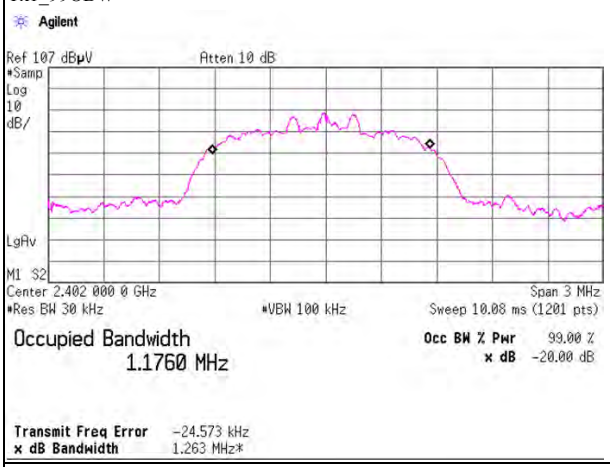
99% Occupied Bandwidth

Tx, Bluetooth, EDR, PRBS9

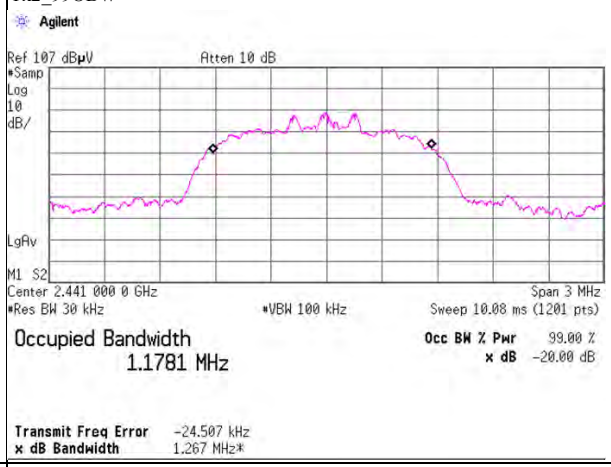
Tx, 2402MHz

Tx1_99OBW



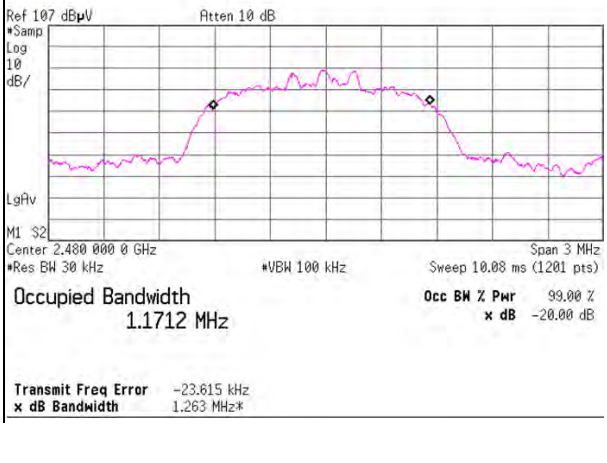
Tx, 2441MHz

Tx2_99OBW



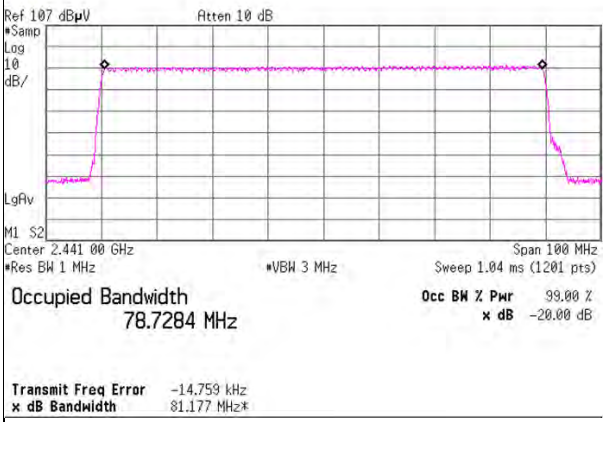
Tx, 2480MHz

Tx3_99OBW



Tx, Hopping On

Tx2_Hopping99OBW



APPENDIX 2
Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	AT	2012/03/16 * 12
SCC-G14	Coaxial Cable	Suhner	SUCOFLEX 102	31600/2	AT	2012/03/12 * 12
SAT10-05	Attenuator(above1GHz)	Agilent	8493C-010	74864	AT	2011/12/27 * 12
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2011/04/12 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2011/04/12 * 12
SOS-02	Humidity Indicator	A&D	AD-5681	4063343	AT,CE	2012/03/26 * 12
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	AT	2012/03/26 * 12
SAF-01	Pre Amplifier	SONOMA	310N	290211	RE	2012/02/10 * 12
SAT6-05	Attenuator	JFW	50HF-006N	-	RE	2012/02/10 * 12
SAT3-04	Attenuator	JFW	50HF-003N	-	RE	2012/02/10 * 12
SBA-01	Biconical Antenna	Schwarzbeck	BBA9106	91032664	RE	2011/10/15 * 12
SCC-A1/A3/A5/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	2012/04/10 * 12
SCC-A2/A4/A6/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	2012/04/10 * 12
SLA-01	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0888	RE	2011/11/23 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2012/02/06 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	RE,CE	2011/10/22 * 12
SJM-12	Measure	PROMART	SEN1935	-	RE,CE	-
SAEC-01(NSA)	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	RE	2011/09/01 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE,CE	-
SAF-04	Pre Amplifier	TOYO Corporation	TPA0118-36	1440489	RE	2012/03/12 * 12
SCC-G01	Coaxial Cable	Suhner	SUCOFLEX 104A	46497/4A	RE	2012/04/10 * 12
SCC-G21	Coaxial Cable	Suhner	SUCOFLEX 104	296169/4	RE	2011/05/27 * 12
SHA-01	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-725	RE	2011/08/11 * 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-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2012/03/30 * 12
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104A	46291/4A	RE	2012/03/12 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2012/03/12 * 12
SCC-A12/A13/SRSE-01	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-269(RF Selector)	CE	2012/04/10 * 12
SLS-01	LISN	Rohde & Schwarz	ENV216	100511	CE	2012/02/20 * 12
SAT3-03	Attenuator	JFW	50HF-003N	-	CE	2012/02/17 * 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