RADIO TEST REPORT

Test Report No.: 32FE0186-SH-01

Applicant	:	**PIONEER CORPORATION**
Type of Equipment	:	**Receiver Ass'y**
Model No.	:	**PVH-2528**
FCC ID	:	**AJDK051**
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: February 2 to 6, 2012

Tested by: H. Shirasawa

Hikaru Shirasawa
Engineer of WiSE Japan,
UL Verification Service

Approved by : I. Isozaki

Ichiro Isozaki
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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Shonan EMC Lab.
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REVISION HISTORY

Original Test Report No.: 32FE0186-SH-01

Revision	Test report No.	Date	Page revised	Contents
- (Original)	32FE0186-SH-01	February 17, 2012	-	-

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SECTION 1: Customer information

Company Name	:	PIONEER CORPORATION
Brand name	:	Pioneer
Address	:	25-1 Aza-Nishi-machi, Yamada, Kawagoe-shi, Saitama, 350-8555, JAPAN
Telephone Number	:	+81-49-228-6415
Facsimile Number	:	+81-49-228-6493
Contact Person	:	Makoto Kaieda

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

2.1 Identification of E.U.T.

Type of Equipment	:	Receiver Ass'y
Model No.	:	PVH-2528
Serial No.	:	See Section 4
Rating	:	DC 12.0V(DC 10.5V to 16V)
Country of Mass-production	:	Thailand
Condition of EUT	:	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No modification by the test lab.
Receipt Date of Sample	:	February 1, 2012

2.2 Product description

Model: PVH-2528 (referred to as the EUT in this report) is a Receiver Ass'y.

Clock Frequency:
SYSTEM u - COM: 3.93216MHz, 47.18592 - 45.29848MHz
Tuner: 74.1MHz, 37.05MHz, 14.82MHz, 11.4MHz, 5.7MHz, 2.85MHz, 1.14MHz, 570kHz
DVD DRIVE: 2.25MHz, 27MHz, 48MHz, 33.8688MHz, 36.864MHz, 40.5MHz, 67.5MHz, 108MHz,121.5MHz, 405MHz, 100kHz
SoC: 27MHz, 48MHz, 33.8688MHz, 36.864MHz, 40.5MHz, 67.5MHz, 108MHz, 121.5MHz, 405MHz
LCD BACK LIGHT DRIVER: 476.63kHz, 524.29kHz
Graphic-IC: 33MHz, 9.597MHz, 264MHz
Bluetooth: 26MHz, 3.93216MHz

Equipment type	:	Transceiver
Frequency of operation	:	2402-2480MHz
Bandwidth & channel spacing	:	79MHz & 1MHz
Type of modulation	:	GFSK, π/4DQPSK, 8DPSK
Antenna type	:	Inverted F type
Antenna gain with cable loss	:	-3.3dBi (max)
Antenna connector type	:	Wiring pattern on PCB
Operation temperature range	:	-10 to +60 deg.C.

FCC 15.31 (e)
The equipment provides the Bluetooth transmitter with stable power supply (DC1.8V and 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 complies with FCC Part 15 Subpart B. The test is performed by the customer.

3.2 Procedures & Results

Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
Conducted emission	ANSI C63.4:2009 7. AC powerline conducted emission measurements	FCC 15.207	-	N/A *1)	-	N/A
Carrier frequency separation	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)	Conducted	N/A	*See data.	Complied
20dB bandwidth	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)	Conducted	N/A		-
Number of hopping frequency	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)(iii)	Conducted	N/A		Complied
Dwell time	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)(iii)	Conducted	N/A		Complied
Maximum peak output power	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (b)(1)	Conducted	N/A		Complied
Band edge compliance & Spurious emission	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (d) 15.209	Conducted/ Radiated	N/A	5.1dB Freq.: 241.535MHz Polarization: Horizontal Detection: Quasi-Peak Mode: Tx 2441MHz, DH5	Complied
Note: UL Japan's Work Procedures No. 13-EM-W0420 and 13-EM-W0422 *1) The test is not applicable since the EUT has no AC mains.						

3.3 Addition to standard

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

* Other than above, no addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

Item	Frequency range	No.1 SAC*1/SR*2 (±)	No.2 SAC/SR (±)	No.3 SAC/SR (±)
Radiated emission (Measurement distance: 3m)	9kHz-30MHz	3.7 dB	3.7 dB	3.6 dB
	30MHz-300MHz	4.9 dB	5.1 dB	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

Radiated emission test

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

Antenna port conducted test

Power measurement uncertainty above 1GHz for this test was: (±) 1.5dB
Conducted emissions, Power Density Measurement (below 1GHz) uncertainty for this test was: (±) 1.7dB
Conducted emissions, Power Density Measurement (1G-3GHz) uncertainty for this test was: (±) 2.3dB
Conducted emissions, Power Density Measurement (3G-18GHz) uncertainty for this test was: (±) 3.0dB
Conducted emissions Measurement (18G-26.5GHz) uncertainty for this test was: (±) 2.9dBBandwidth 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 EMI & Test instruments

Refer to APPENDIX 1 to 3.

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

4.1 Operating mode

Test item	Operating mode	Tested frequency
Carrier frequency separation	Transmitting Hopping ON (DH5/3DH5)/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:
(Radiated)	Transmitting (DH5/3DH5), Payload: PRBS9	2402MHz, 2441MHz, 2480MHz
99% occupied bandwidth	Transmitting (DH5/3DH5), Payload: PRBS9 -Hopping ON -Hopping OFF	2402MHz, 2441MHz, 2480MHz

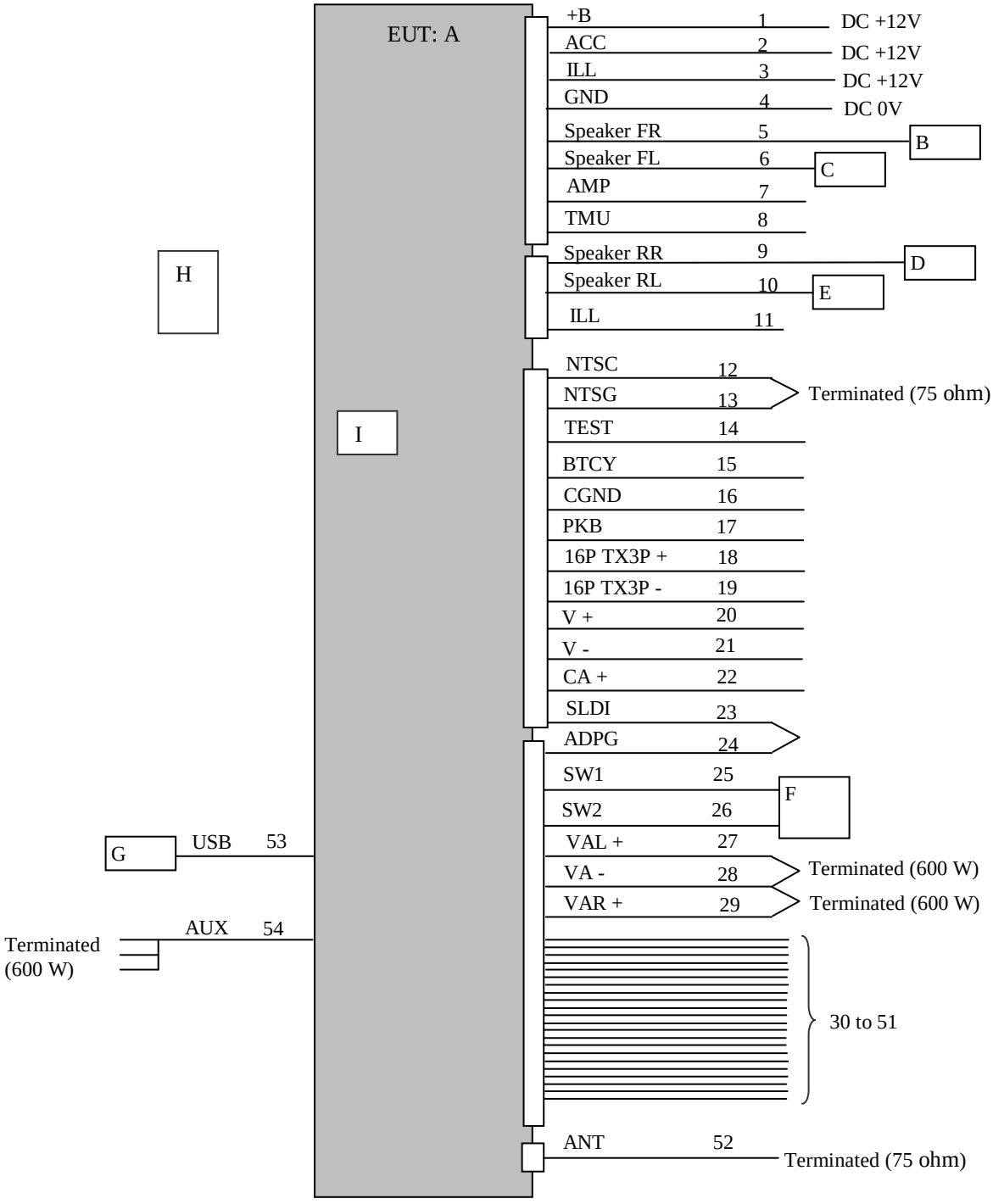
*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload (except Dwell time test).

*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: 4
Software: BT module only Control software manufactured by Parrot ver: 1.07.22

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

4.2 Configuration of tested system



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Receiver Ass'y	PVH-2528	AABB999996RC *1) AABB999995RC *2)	Pioneer	EUT
B	Speaker	KFC-RS160	-	Kenwood	-
C	Speaker	KFC-RS160	-	Kenwood	-
D	Speaker	KFC-RS160	-	Kenwood	-
E	Speaker	KFC-RS160	-	Kenwood	-
F	Steering Switches jig	-	-	Pioneer	-
G	USB Memory	MB-RUF2-4GB	-	Buffalo	-
H	Remote Controller	CXE3660	-	Pioneer	-
I	SDHC MEMORY CARD (4GB)	BH1130621908D	120317781B	Verbatim	-

*1) Used for Antenna terminal conducted tests
*2) Used for Radiated emission tests

List of cables used (1/2)

No.	Cable name	Length (m)	Shield		Remark
			Cable	Connector	
1	+B	3.0	Unshielded	Unshielded	-
2	ACC	3.0	Unshielded	Unshielded	-
3	ILL	3.0	Unshielded	Unshielded	-
4	GND	3.0	Unshielded	Unshielded	-
5	Speaker FR	5.0	Unshielded	Unshielded	-
6	Speaker FL	5.0	Unshielded	Unshielded	-
7	AMP	3.0	Unshielded	Unshielded	-
8	TMU	3.0	Unshielded	Unshielded	-
9	Speaker RR	5.0	Unshielded	Unshielded	-
10	Speaker RL	5.0	Unshielded	Unshielded	-
11	ILL	3.0	Unshielded	Unshielded	-
12	NTSC	3.0	Unshielded	Unshielded	-
13	NTSG	3.0	Unshielded	Unshielded	-
14	TEST	3.0	Unshielded	Unshielded	-
15	BTCY	3.0	Unshielded	Unshielded	-
16	CGND	3.0	Unshielded	Unshielded	-
17	PKB	3.0	Unshielded	Unshielded	-
18	16P TX3P +	3.0	Unshielded	Unshielded	-
19	16P TX3P -	3.0	Unshielded	Unshielded	-
20	V+	3.0	Unshielded	Unshielded	-
21	V-	3.0	Unshielded	Unshielded	-
22	CA +	3.0	Unshielded	Unshielded	-
23	SLDI	3.0	Unshielded	Unshielded	-
24	ADPG	3.0	Unshielded	Unshielded	-
25	SW1	3.0	Unshielded	Unshielded	-
26	SW2	3.0	Unshielded	Unshielded	-
27	VAL +	3.0	Unshielded	Unshielded	-
28	VA -	3.0	Unshielded	Unshielded	-
29	VAL +	3.0	Unshielded	Unshielded	-

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

List of cables used (2/2)

No.	Cable name	Length (m)	Shield		Remark
			Cable	Connector	
30	REV	3.0	Unshielded	Unshielded	Packaged with EUT
31	TXI -	3.0	Unshielded	Unshielded	-
32	SPD	3.0	Unshielded	Unshielded	-
33	TXI +	3.0	Unshielded	Unshielded	-
34	LRHD	3.0	Unshielded	Unshielded	-
35	SW3	3.0	Unshielded	Unshielded	-
36	SNSZ	3.0	Unshielded	Unshielded	-
37	CANL	3.0	Unshielded	Unshielded	-
38	CANH	3.0	Unshielded	Unshielded	-
39	AGND	3.0	Unshielded	Unshielded	-
40	AD1M	3.0	Unshielded	Unshielded	-
41	IG	3.0	Unshielded	Unshielded	-
42	IVI +	3.0	Unshielded	Unshielded	-
43	IVI SLD	3.0	Unshielded	Unshielded	-
44	IVI -	3.0	Unshielded	Unshielded	-
45	MIN +	3.0	Unshielded	Unshielded	-
46	MIN -	3.0	Unshielded	Unshielded	-
47	SGND	3.0	Unshielded	Unshielded	-
48	NACC	3.0	Unshielded	Unshielded	-
49	VV +	3.0	Unshielded	Unshielded	-
50	VV -	3.0	Unshielded	Unshielded	-
51	VSG	3.0	Unshielded	Unshielded	-
52	ANT	1.7	Unshielded	Unshielded	-
53	USB	3.0	Shielded	Shielded	-
54	AUX	4.0	Shielded	Shielded	-

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

SECTION 5: Carrier frequency separation

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

Summary of the test results: Pass
Refer to APPENDIX

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

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

Summary of the test results: Pass
Refer to APPENDIX

SECTION 7: Number of hopping frequency

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

Summary of the test results: Pass
Refer to APPENDIX

SECTION 8: Dwell time

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

Summary of the test results: Pass
Refer to APPENDIX

SECTION 9: Maximum peak output power

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

Summary of the test results: Pass
Refer to APPENDIX

SECTION 10: Spurious emissions (Antenna port conducted)

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

Summary of the test results: Pass
Refer to APPENDIX

SECTION 11: Radiated emission

11.1 Operating environment

The test was carried out in No. 2 and No. 3 Semi-Anechoic Chamber.

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

11.2 Test configuration

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

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

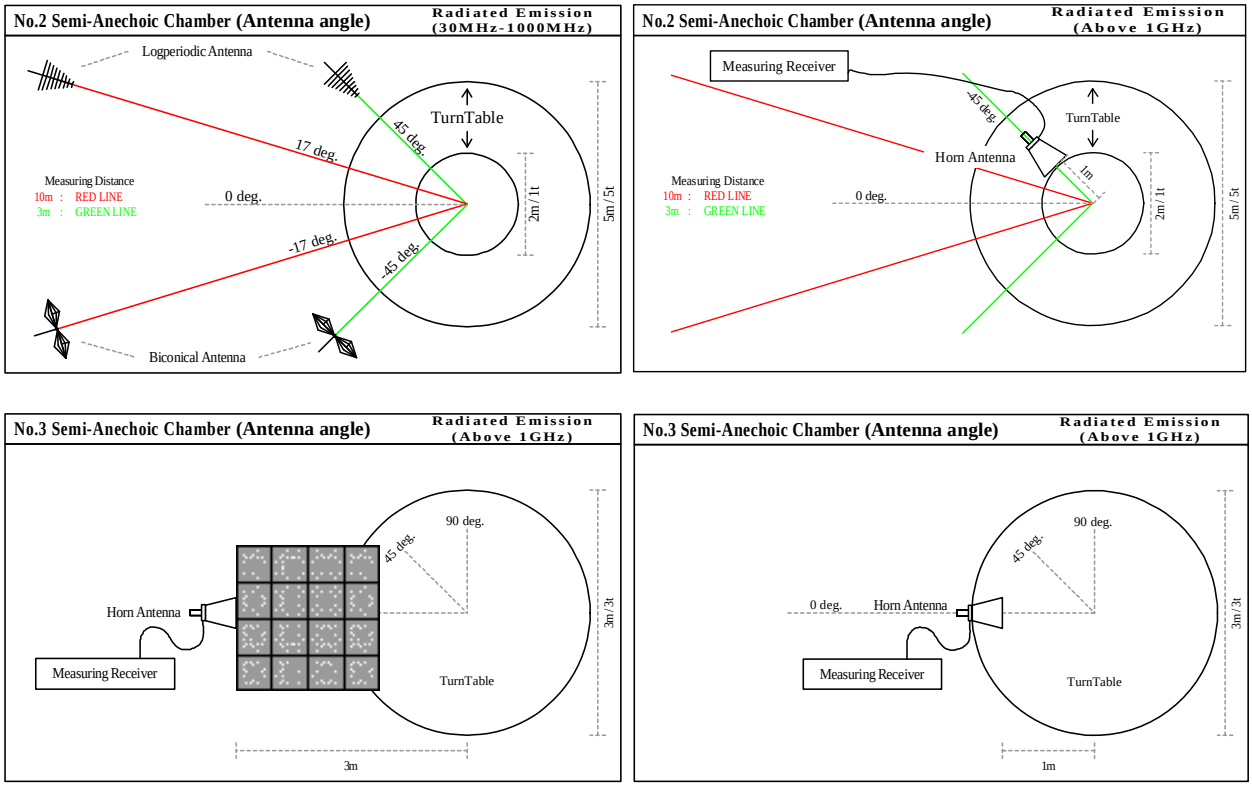
The Radiated Electric Field Strength intensity has been measured on a semi-anechoic chamber with a ground plane and at a distance of 3m (below 15GHz) / 1m (above 15GHz) (Refer to Figure 1). Measurements were performed with quasi-peak, peak and average detector. The measuring antenna height was varied 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	
Detection Type	:	Quasi-Peak	Peak	* Average
IF Bandwidth	:	120kHz	RBW:1MHz/VBW:3MHz	RBW:1MHz/VBW:10Hz

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

The carrier level and noise levels were confirmed at angle of 0 to 40 deg. based on the product specification to see the position of maximum noise, and the test was made at the position (0 deg.) that has the maximum noise.

Figure 1. Antenna angle



11.5 Band edge

Band edge level is below the limits of FCC 15.209. Refer to the data.

11.6 Results

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

Contents of APPENDIXES

APPENDIX 1: Data of Radio tests

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

APPENDIX 2: Test instruments

Test instruments

APPENDIX 3: Photographs of test setup

Radiated emission

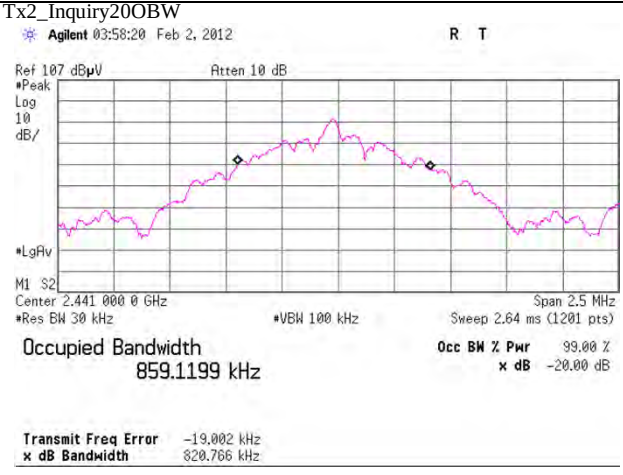
20dB Bandwidth and Carrier Frequency Separation

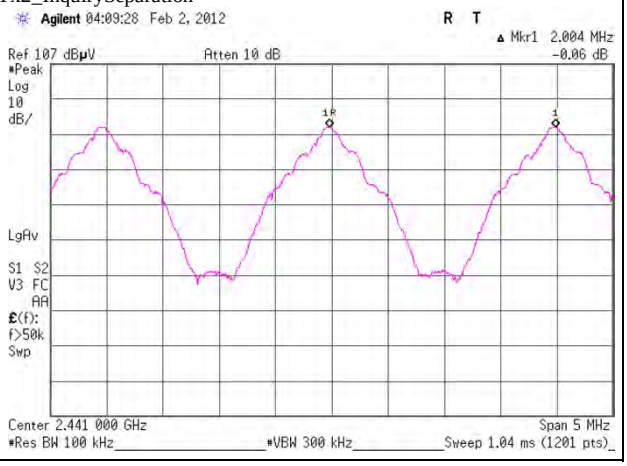
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	February 2, 2012	
Temperature / Humidity	23deg.C , 50%RH	
Engineer	Hikaru Shirasawa	
Mode	Tx, Bluetooth, BDR, PRBS9	

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency Separation [MHz]
DH5	2402.0	0.937	1.000	>= 0.625
DH5	2441.0	0.935	1.003	>= 0.623
DH5	2480.0	0.936	1.000	>= 0.624
Inquiry	2441.0	0.821	2.004	>= 0.547

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**
Tx2_Inquiry20OBW	Tx2_InquirySeparation





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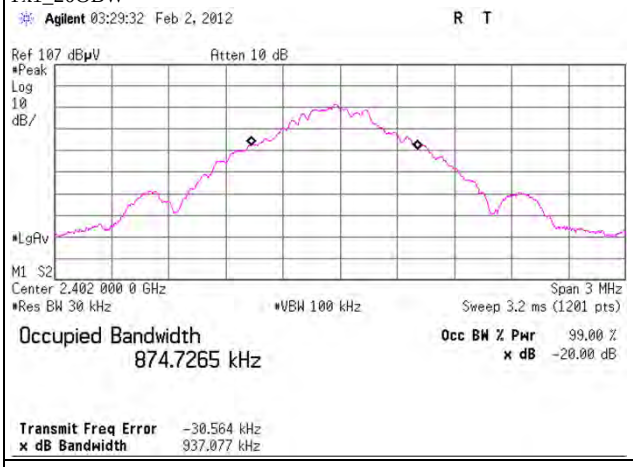
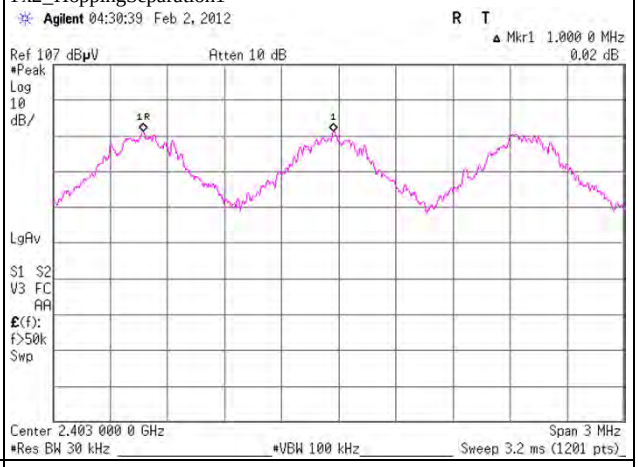
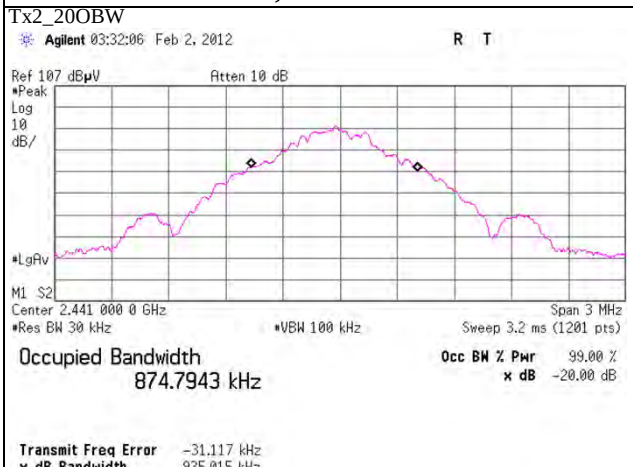
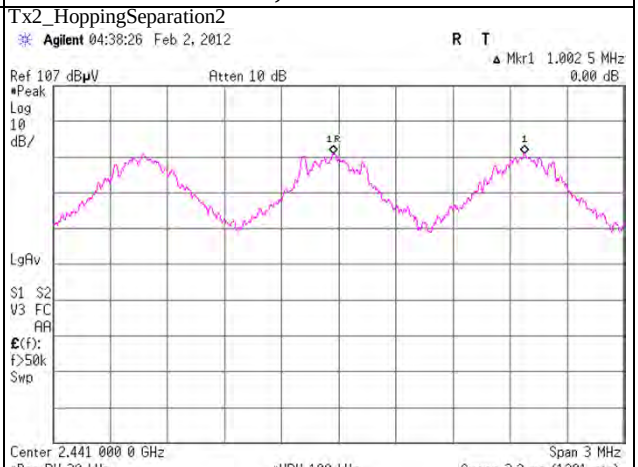
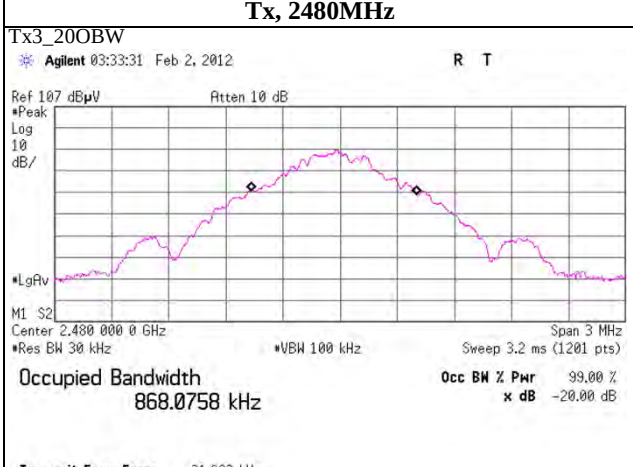
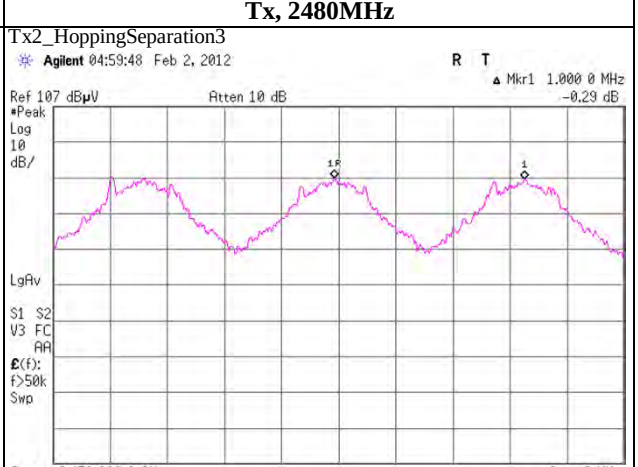
20dB Bandwidth and Carrier Frequency Separation

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 

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20dB Bandwidth and Carrier Frequency Separation

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	February 2, 2012	
Temperature / Humidity	23deg.C , 50%RH	
Engineer	Hikaru Shirasawa	
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	1.287	1.000	>= 0.858
3-DH5	2441.0	1.291	1.000	>= 0.861
3-DH5	2480.0	1.292	1.008	>= 0.861

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

No limit applies to 20dB Bandwidth.

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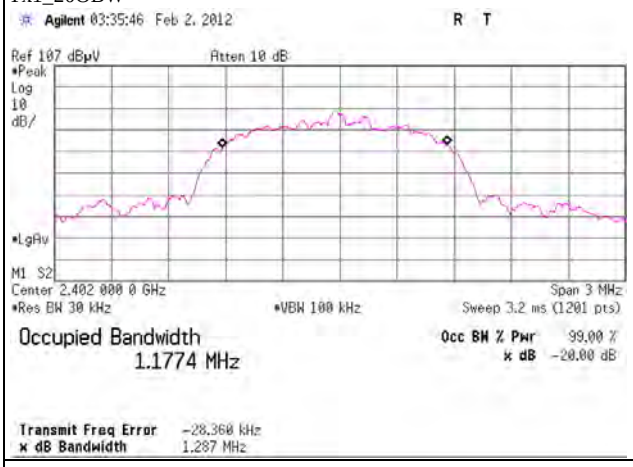
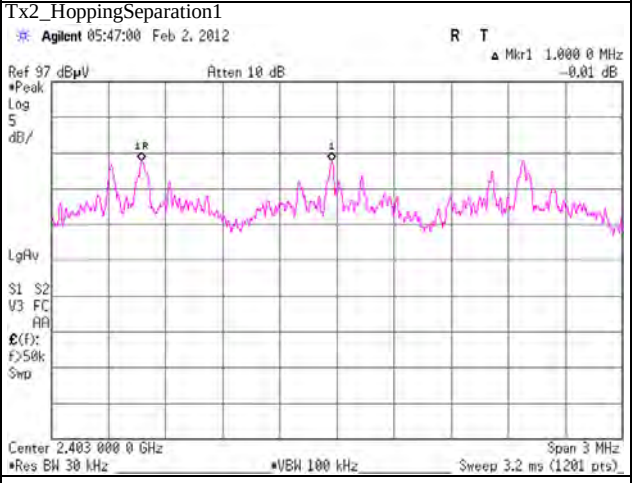
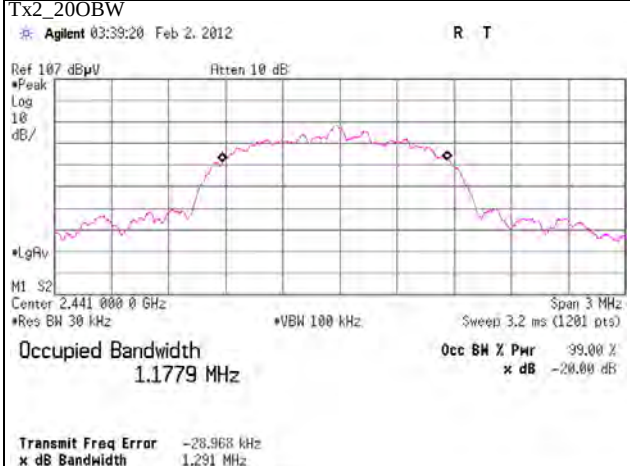
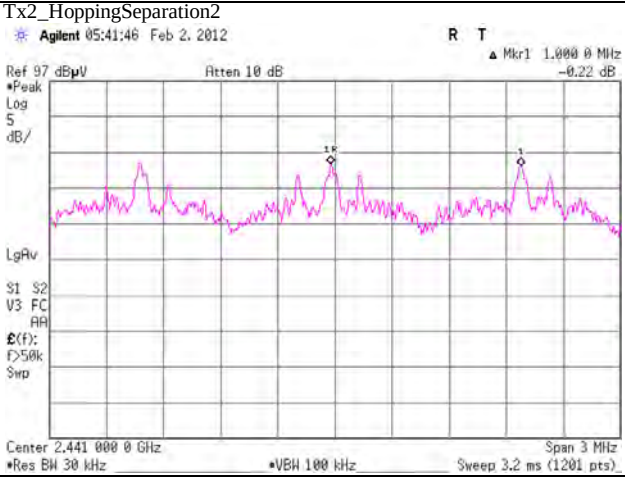
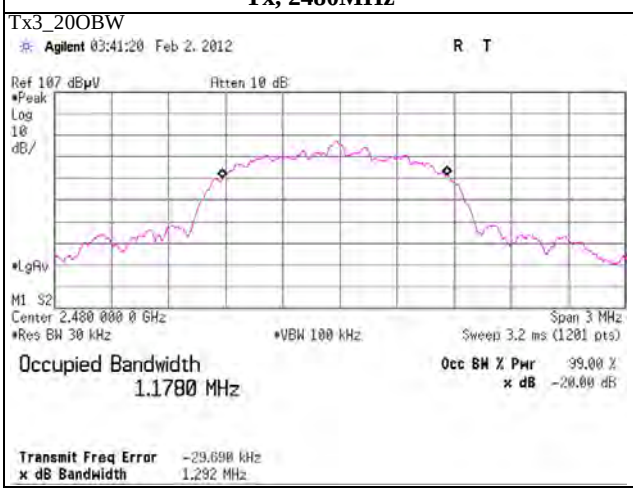
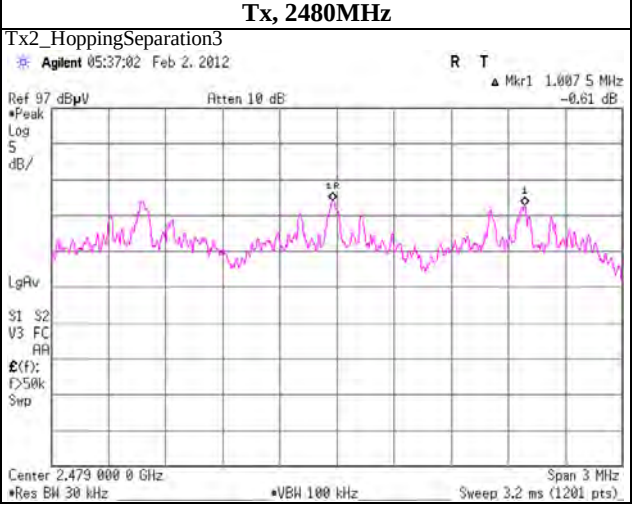
20dB Bandwidth and Carrier Frequency Separation

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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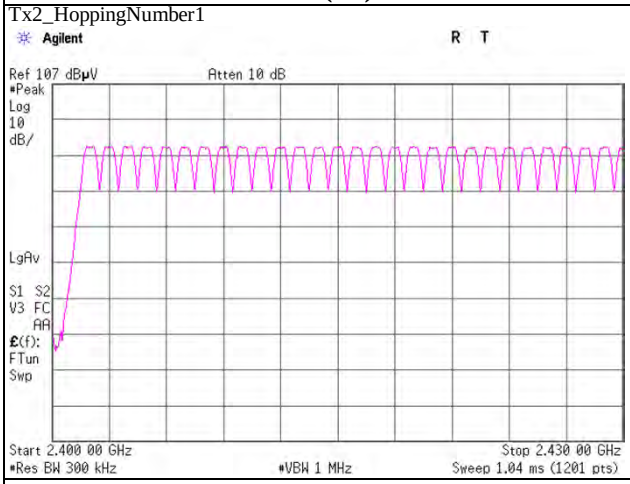
Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab. No.2 Shielded Room
Date	February 3, 2012
Temperature / Humidity	20deg.C , 30%RH
Engineer	Hikaru Shirasawa
Mode	Tx, Bluetooth, BDR, PRBS9

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

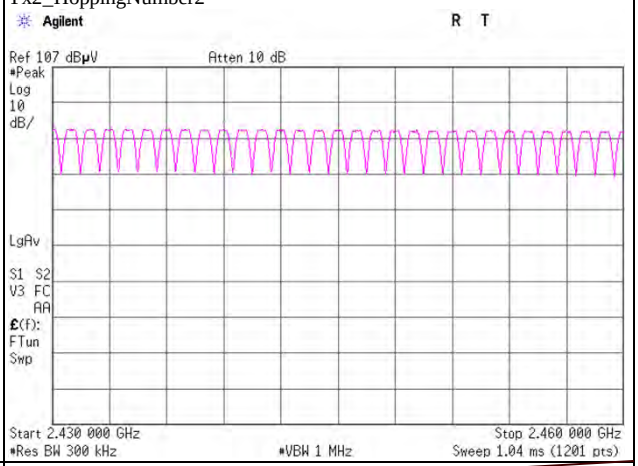
DH5 (1/3)

Tx2_HoppingNumber1



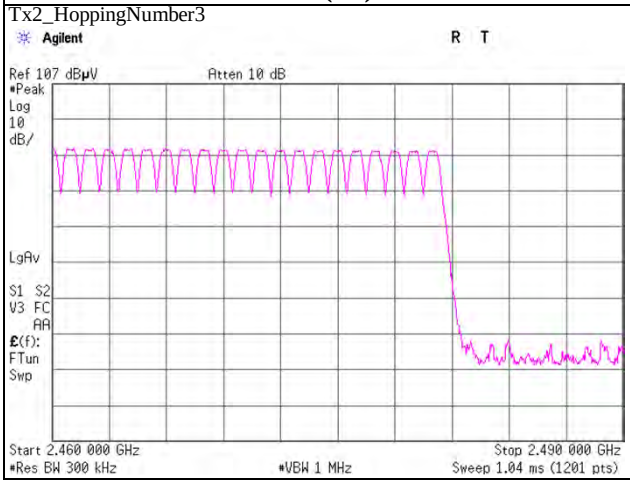
DH5 (2/3)

Tx2_HoppingNumber2



DH5 (3/3)

Tx2_HoppingNumber3



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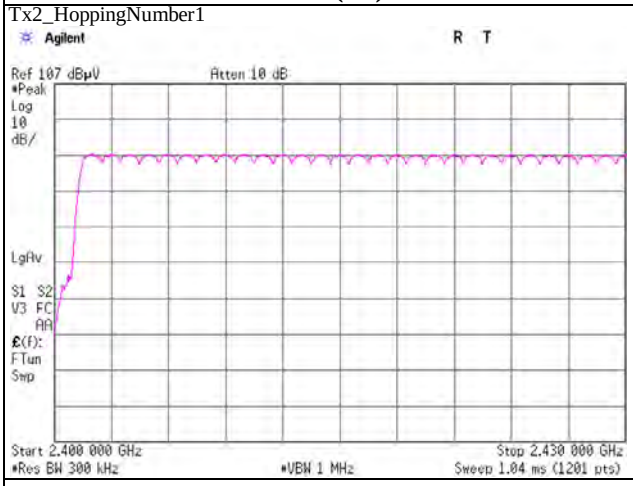
Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab. No.2 Shielded Room
Date	February 3, 2012
Temperature / Humidity	20deg.C , 30%RH
Engineer	Hikaru Shirasawa
Mode	Tx, Bluetooth, EDR, PRBS9

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

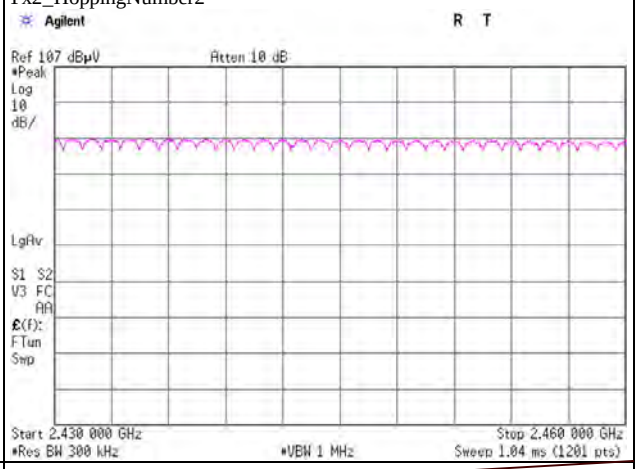
3-DH5 (1/3)

Tx2_HoppingNumber1



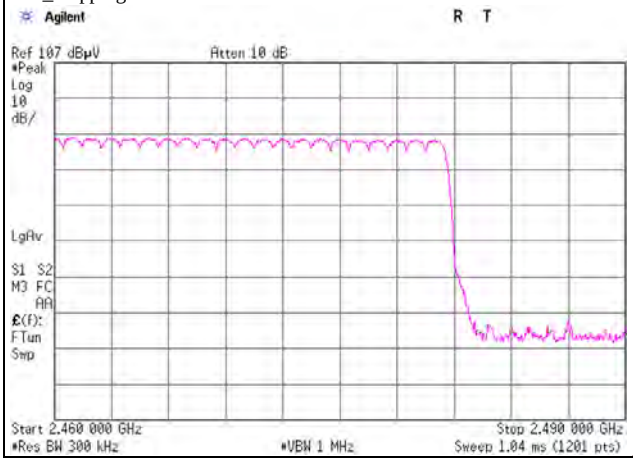
3-DH5 (2/3)

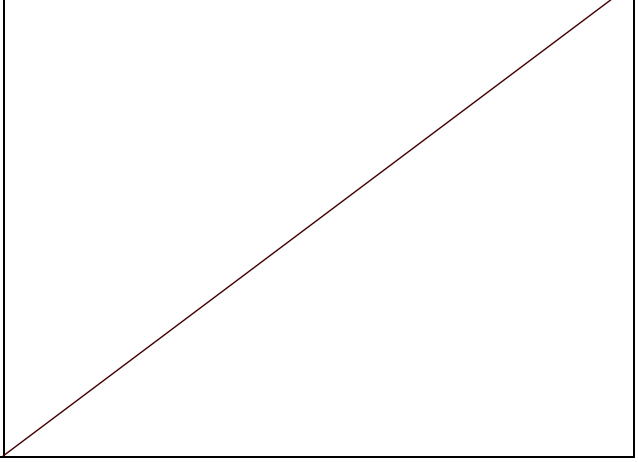
Tx2_HoppingNumber2



3-DH5 (3/3)

Tx2_HoppingNumber3





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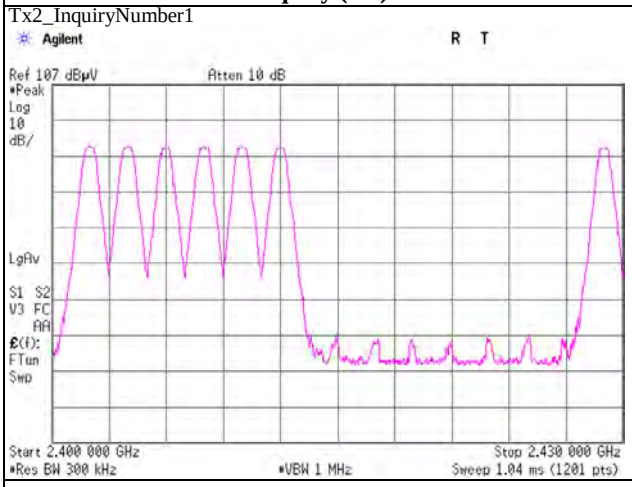
Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab. No.2 Shielded Room
Date	February 3, 2012
Temperature / Humidity	20deg.C , 30%RH
Engineer	Hikaru Shirasawa
Mode	Tx, Bluetooth, EDR, Inquiry

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

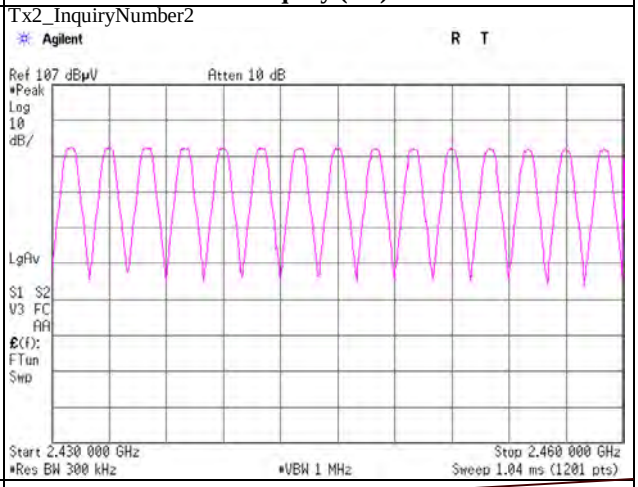
Inquiry (1/3)

Tx2_InquiryNumber1



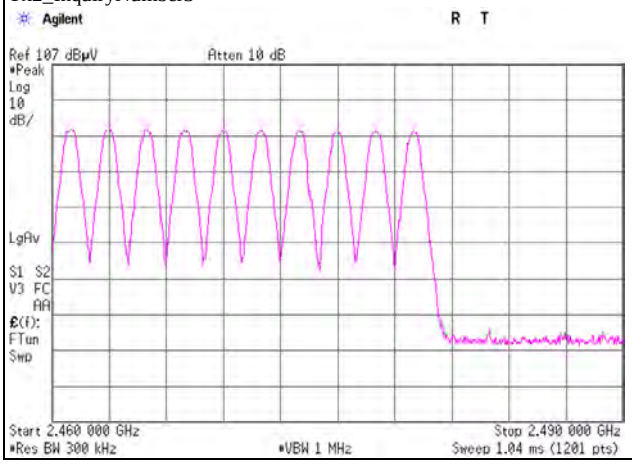
Inquiry (2/3)

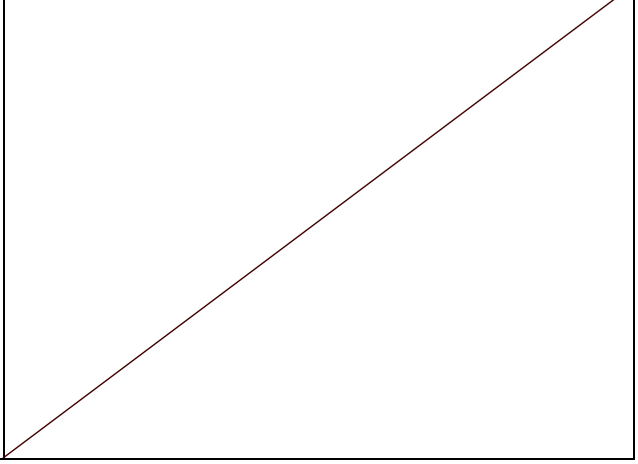
Tx2_InquiryNumber2



Inquiry (3/3)

Tx2_InquiryNumber3





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Dwell Time

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 Shielded Room
Date	February 3, 2012	
Temperature / Humidity	20deg.C , 30%RH	
Engineer	Hikaru Shirasawa	
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	18.2 / 5.0 sec. x 31.6 sec. = 116 times	0.396	46	400
DH3	15.0 / 5.0 sec. x 31.6 sec. = 95 times	1.652	157	400
DH5	17.8 / 5.0 sec. x 31.6 sec. = 113 times	2.900	328	400
Inquiry	101.0 / 1.0 sec. x 12.8 sec. = 1293 times	0.098	127	400

Sample Calculation

Result = Number of transmission x Length of transmition time

*Average data of 5 tests.(except Inquiry)

Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	18	18	15	23	17	18.2
DH3	15	20	13	15	12	15.0
DH5	23	13	19	17	17	17.8
Inquiry	101	101	101	101	101	101.0

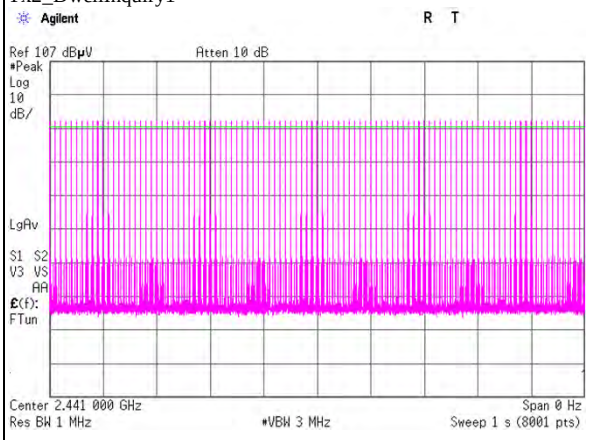
Sample Calculation

Average= Summation(Sampling 1 to 5) / 5

Inquiry

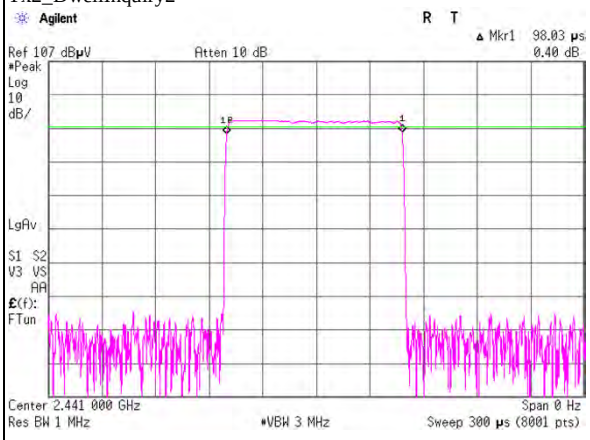
Inquiry (1/2)

Tx2_DwellInquiry1



Inquiry (2/2)

Tx2_DwellInquiry2



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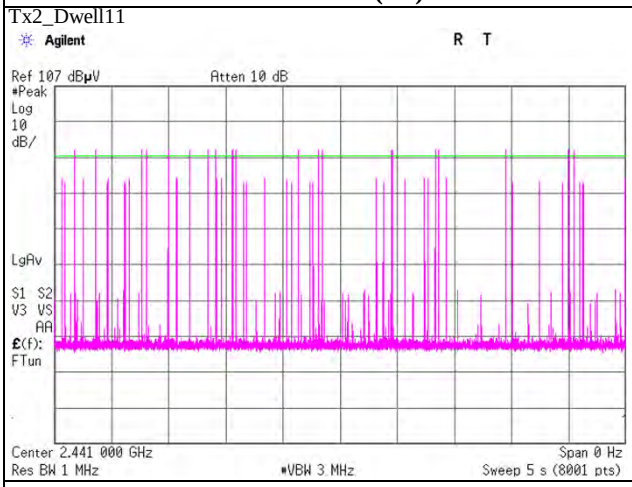
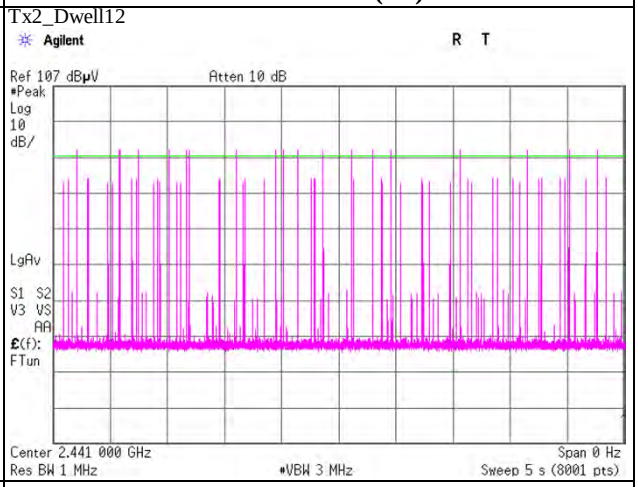
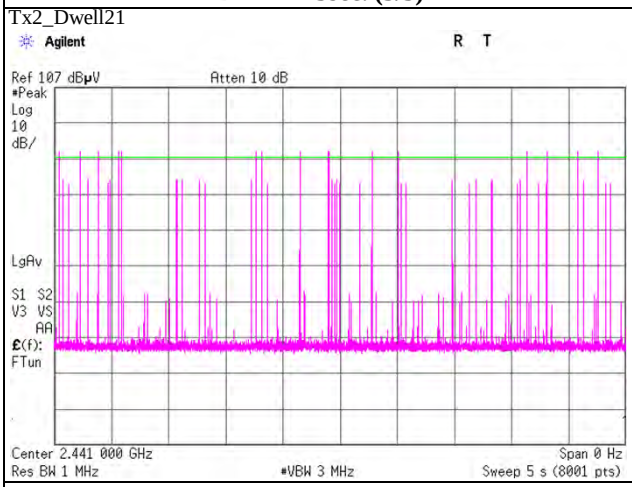
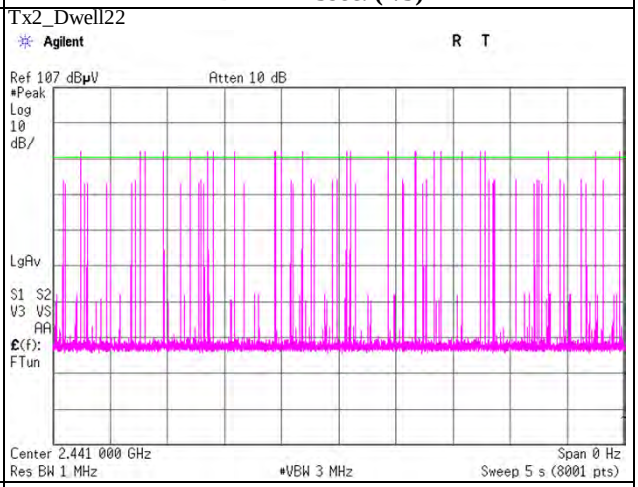
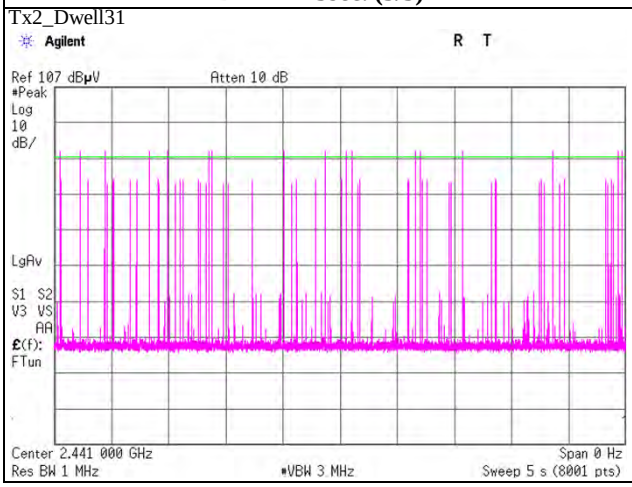
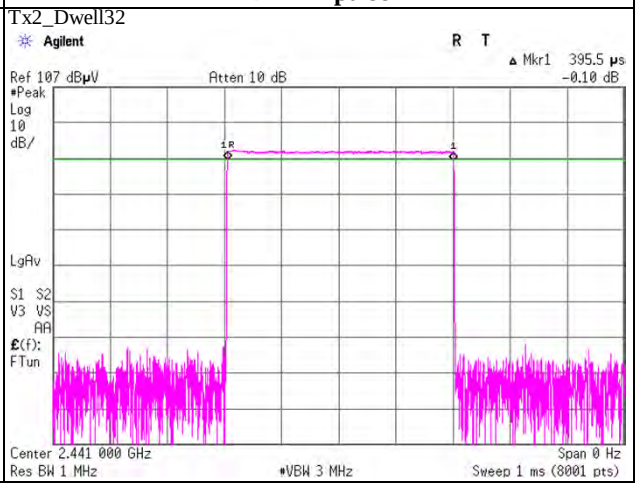
Dwell time

Tx, Bluetooth, BDR, PRBS9

DH1 - in 5sec. (1/5)	DH1 - in 5sec. (2/5)
Tx2_Dwell11 	Tx2_Dwell12 
DH1 - in 5sec. (3/5)	**DH1 - in 5sec. (4/5)**
Tx2_Dwell21 	Tx2_Dwell22 
DH1 - in 5sec. (5/5)	**DH1 - 1pulse**
Tx2_Dwell31 	Tx2_Dwell32 

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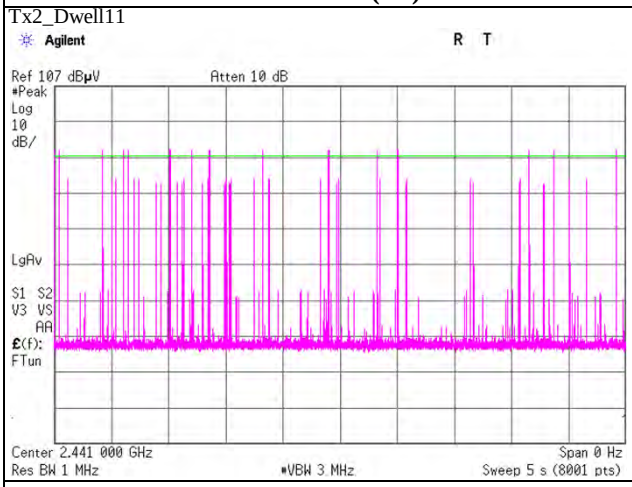
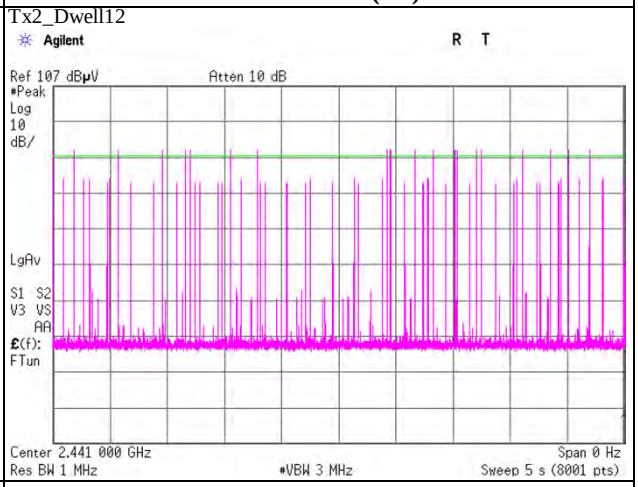
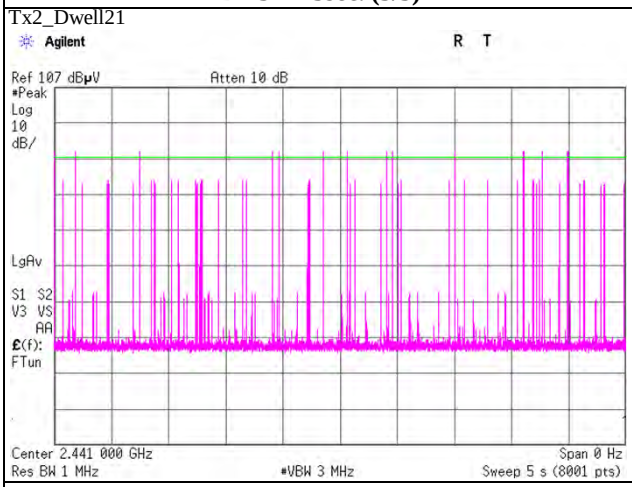
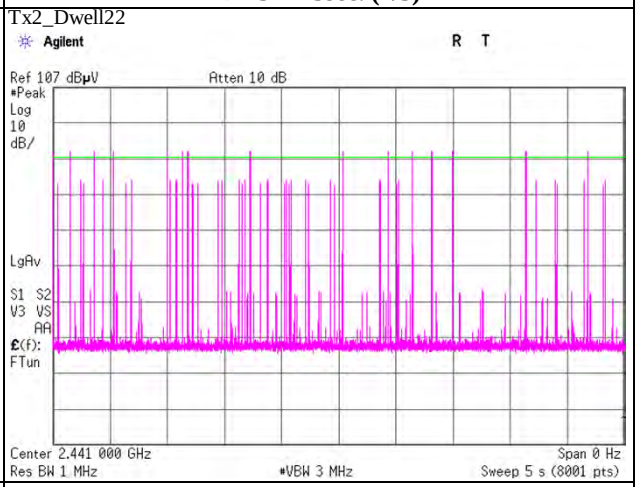
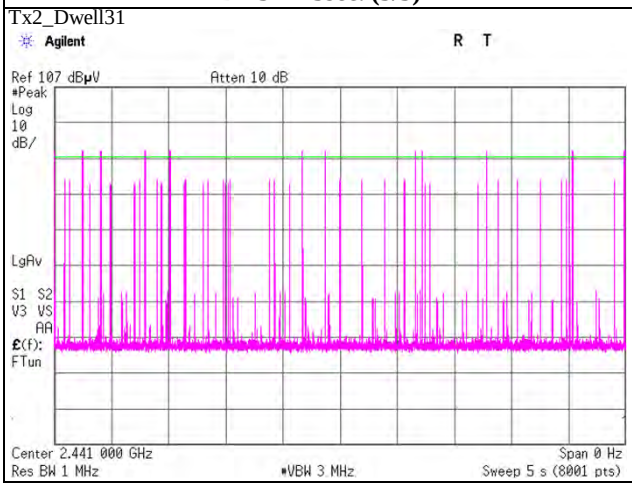
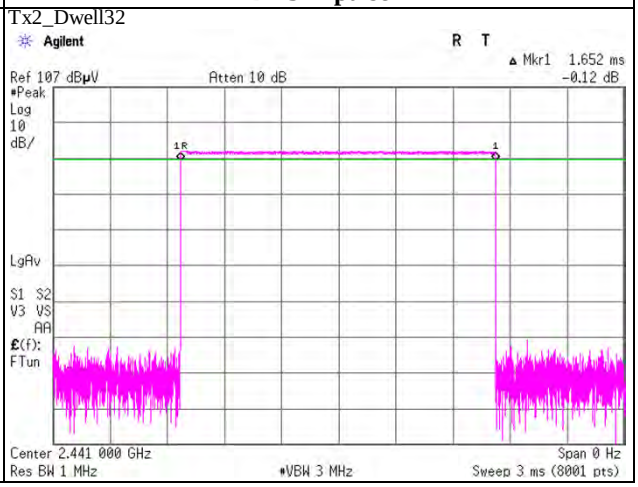
Dwell time

Tx, Bluetooth, BDR, PRBS9

DH3- in 5sec. (1/5)	DH3- in 5sec. (2/5)
Tx2_Dwell11	Tx2_Dwell12
	
DH3- in 5sec. (3/5)	**DH3- in 5sec. (4/5)**
Tx2_Dwell21	Tx2_Dwell22
	
DH3- in 5sec. (5/5)	**DH3 - 1pulse**
Tx2_Dwell31	Tx2_Dwell32
	

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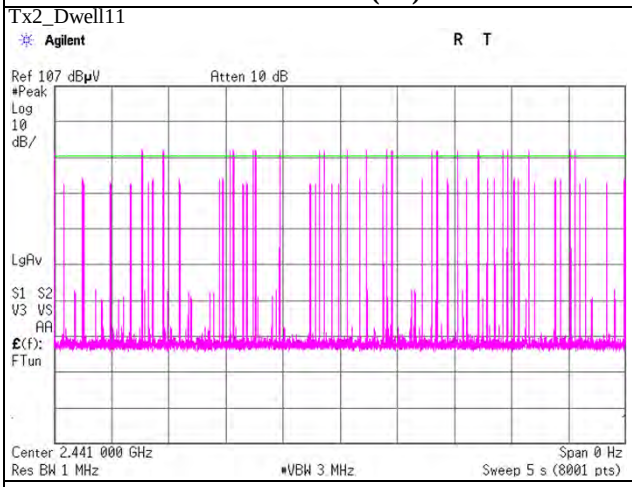
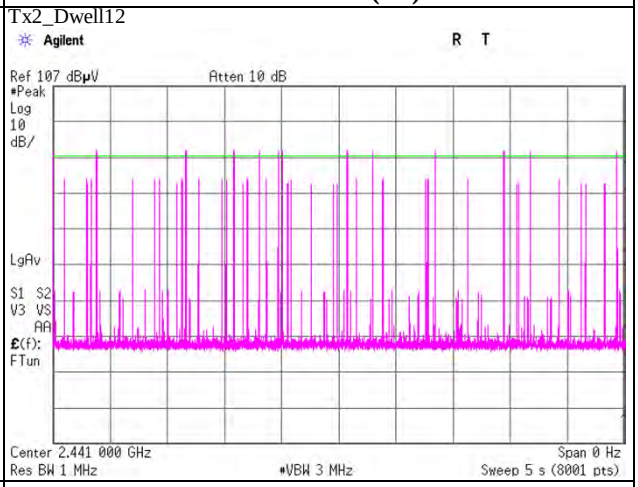
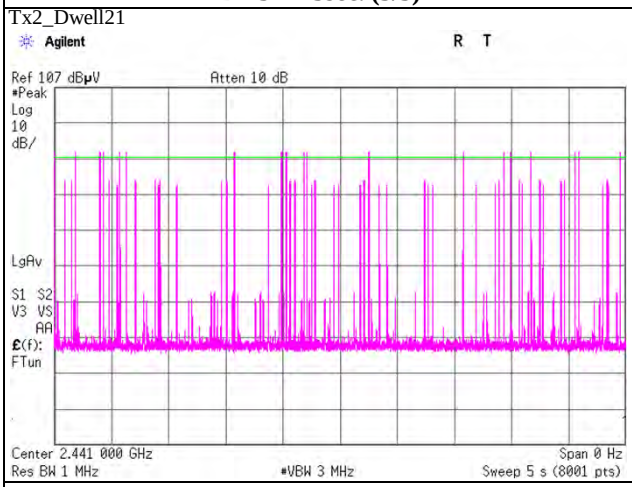
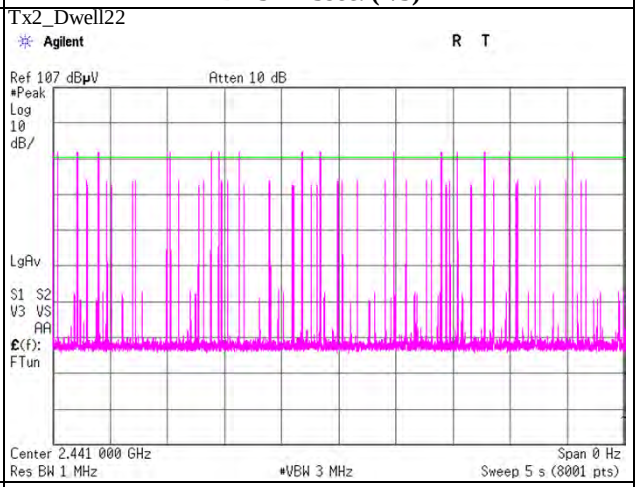
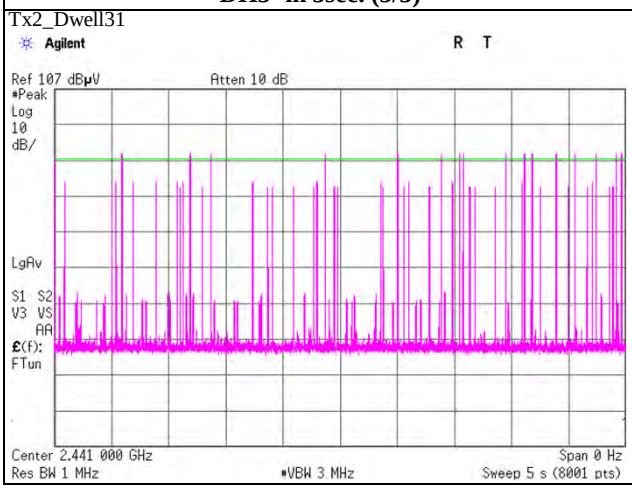
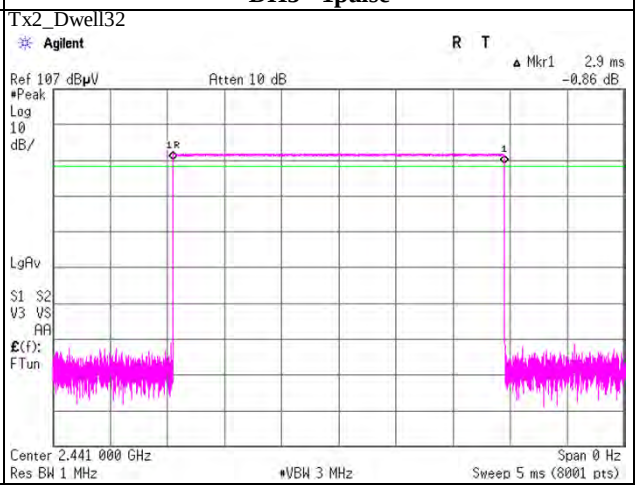
Dwell time

Tx, Bluetooth, BDR, PRBS9

DH5- in 5sec. (1/5)	DH5- in 5sec. (2/5)
Tx2_Dwell11 	Tx2_Dwell12 
DH5- in 5sec. (3/5)	**DH5- in 5sec. (4/5)**
Tx2_Dwell21 	Tx2_Dwell22 
DH5- in 5sec. (5/5)	**DH5 - 1pulse**
Tx2_Dwell31 	Tx2_Dwell32 

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Dwell Time

Test place	UL Japan, Inc. Shonan EMC Lab. No.2 Shielded Room
Date	February 3, 2012
Temperature / Humidity	20deg.C , 30%RH
Engineer	Hikaru Shirasawa
Mode	Tx, Bluetooth, EDR, 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]
3-DH1	18.8 / 5.0 sec. x 31.6 sec. = 119 times	0.405	48	400
3-DH3	18.0 / 5.0 sec. x 31.6 sec. = 114 times	1.657	189	400
3-DH5	19.6 / 5.0 sec. x 31.6 sec. = 124 times	2.908	361	400

Sample Calculation

Result = Number of transmission x Length of transmition time

*Average data of 5 tests.(except Inquiry)

Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
3-DH1	21	20	15	18	20	18.8
3-DH3	20	20	14	13	23	18.0
3-DH5	19	18	20	22	19	19.6

Sample Calculation

Average= Summation(Sampling 1 to 5) / 5

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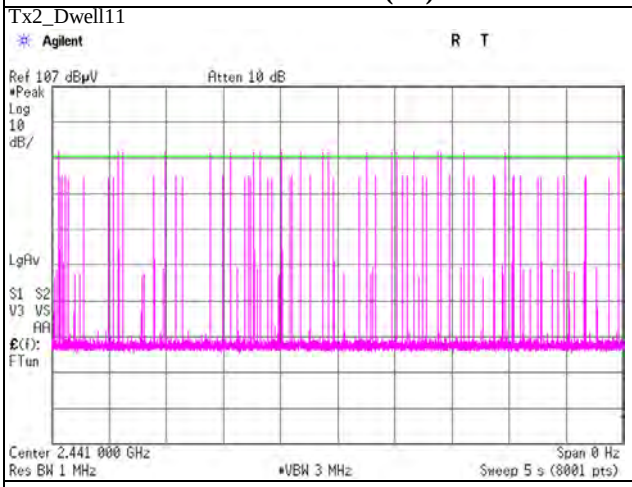
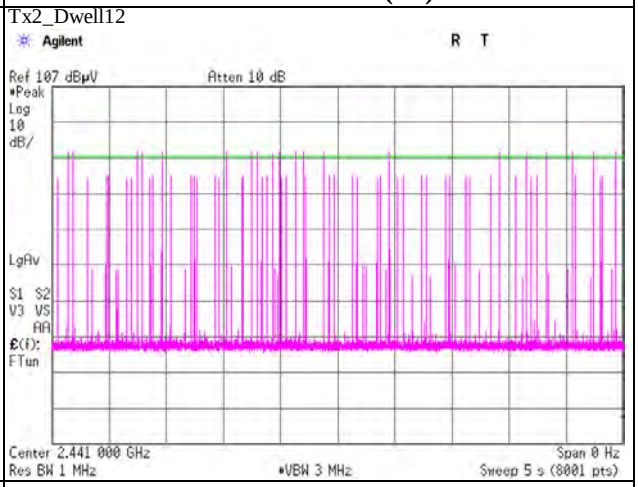
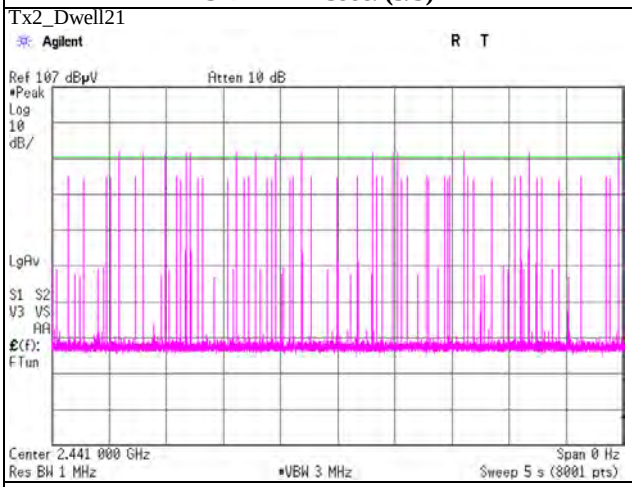
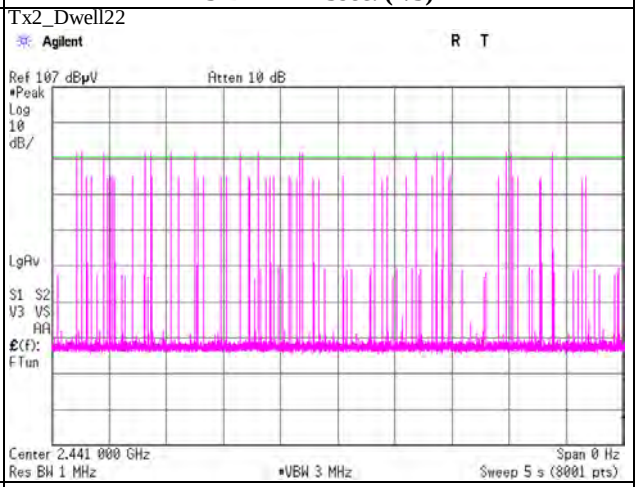
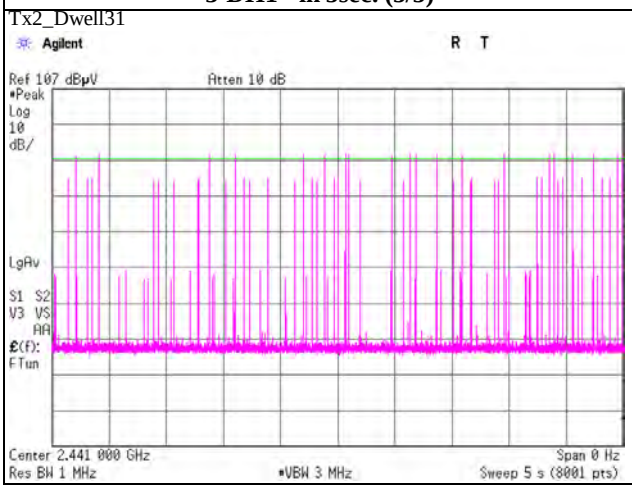
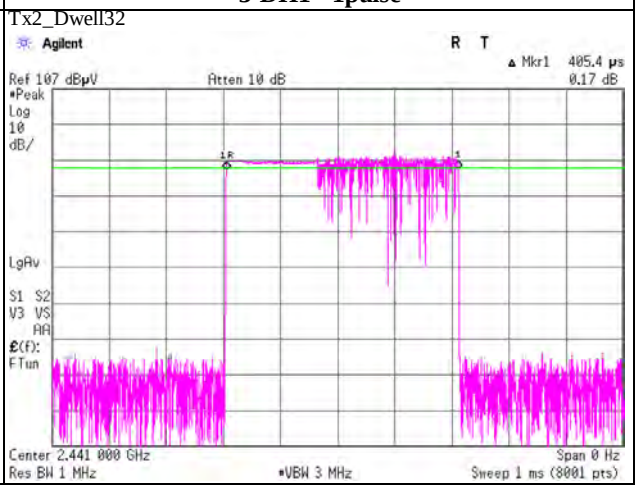
Dwell time

Tx, Bluetooth, EDR, PRBS9

3-DH1 - in 5sec. (1/5)	3-DH1 - in 5sec. (2/5)
Tx2_Dwell11 	Tx2_Dwell12 
3-DH1 - in 5sec. (3/5)	**3-DH1 - in 5sec. (4/5)**
Tx2_Dwell21 	Tx2_Dwell22 
3-DH1 - in 5sec. (5/5)	**3-DH1 - 1pulse**
Tx2_Dwell31 	Tx2_Dwell32 

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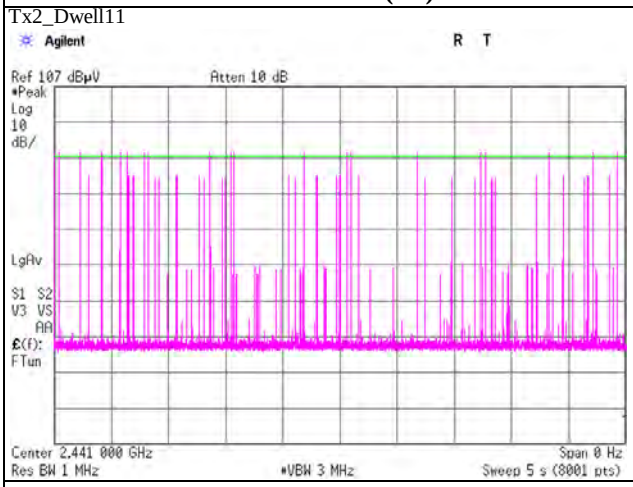
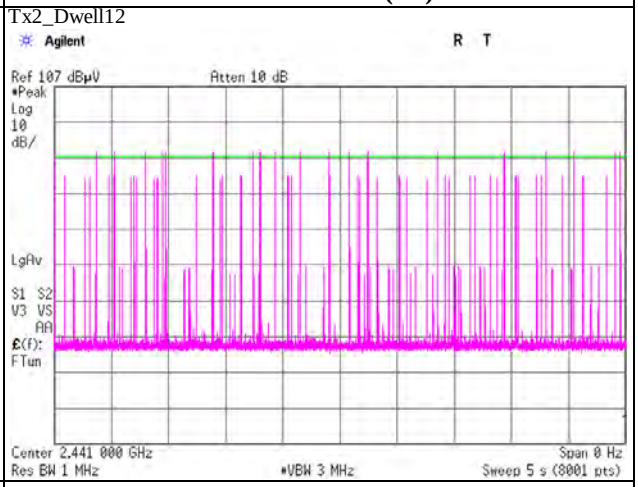
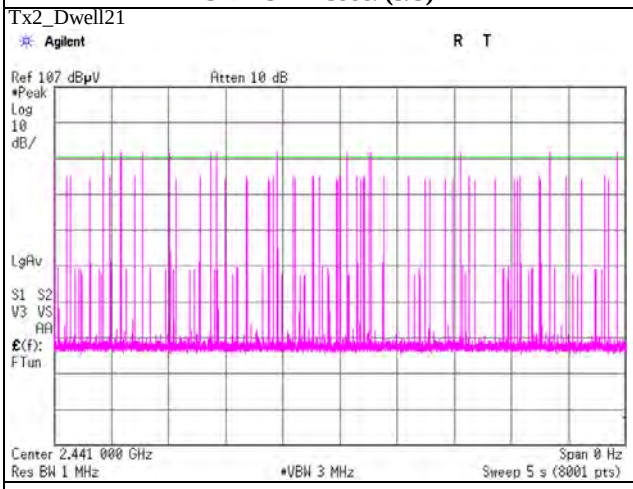
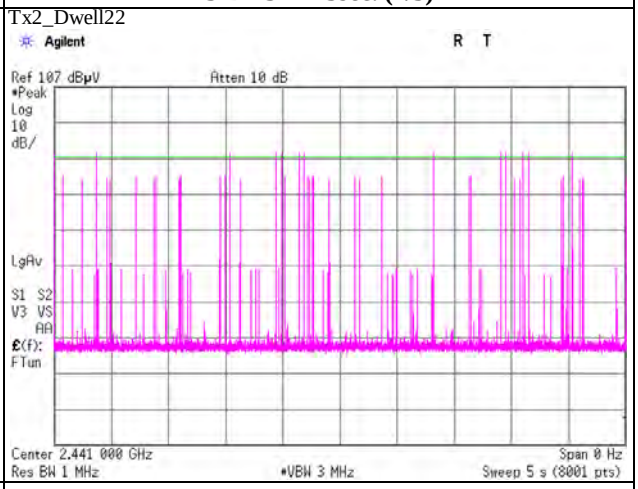
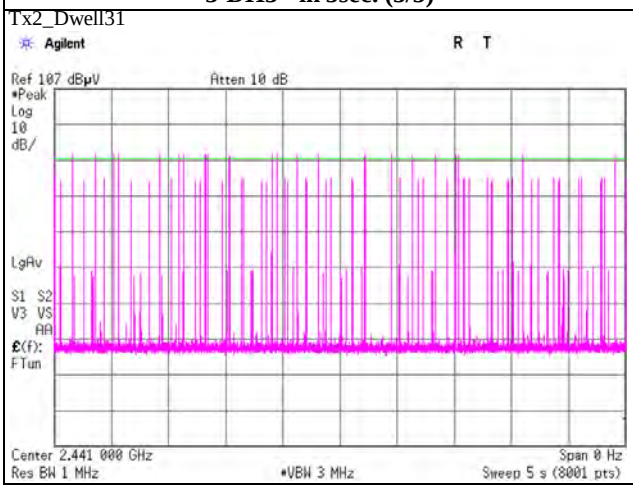
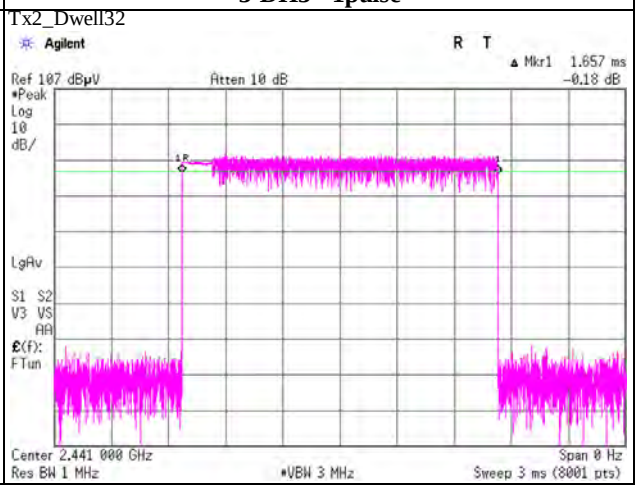
Dwell time

Tx, Bluetooth, EDR, PRBS9

3-DH3 - in 5sec. (1/5)	3-DH3 - in 5sec. (2/5)
Tx2_Dwell11 	Tx2_Dwell12 
3-DH3 - in 5sec. (3/5)	**3-DH3 - in 5sec. (4/5)**
Tx2_Dwell21 	Tx2_Dwell22 
3-DH3 - in 5sec. (5/5)	**3-DH3 - 1pulse**
Tx2_Dwell31 	Tx2_Dwell32 

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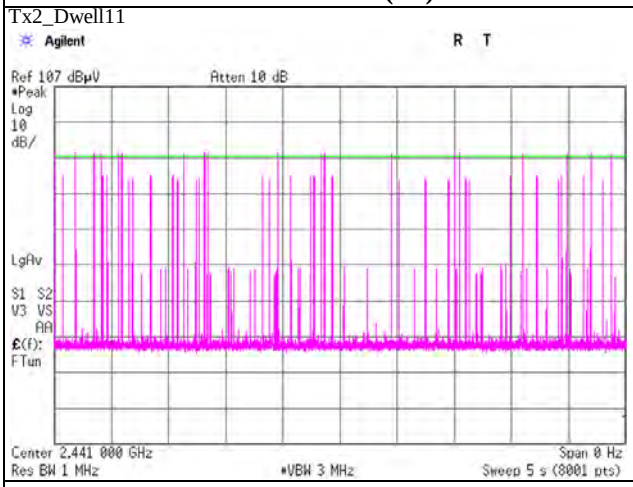
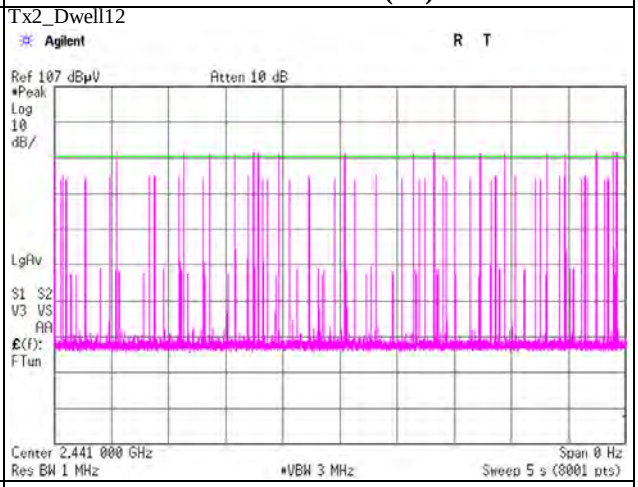
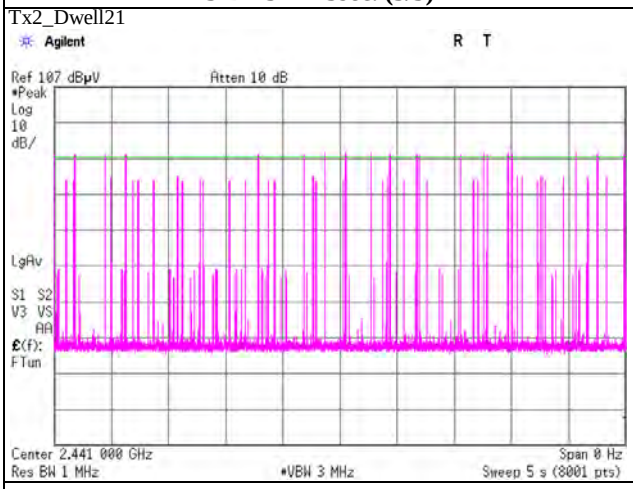
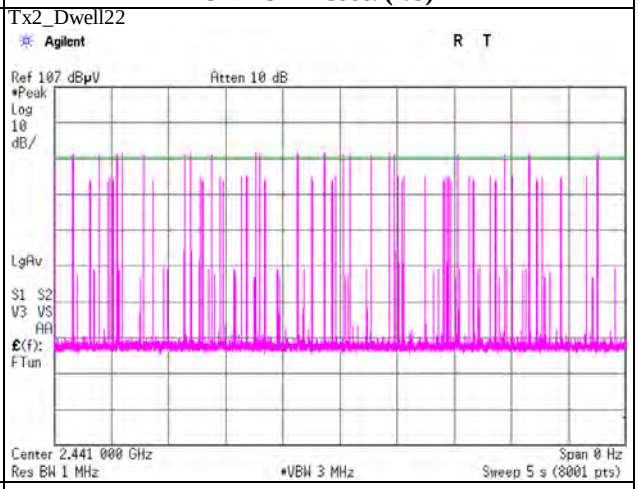
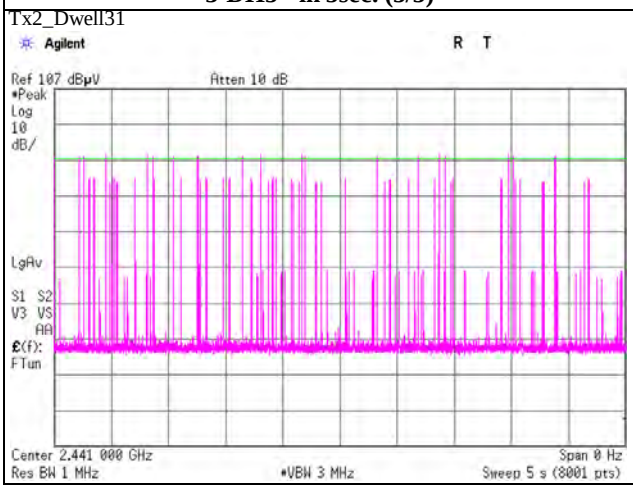
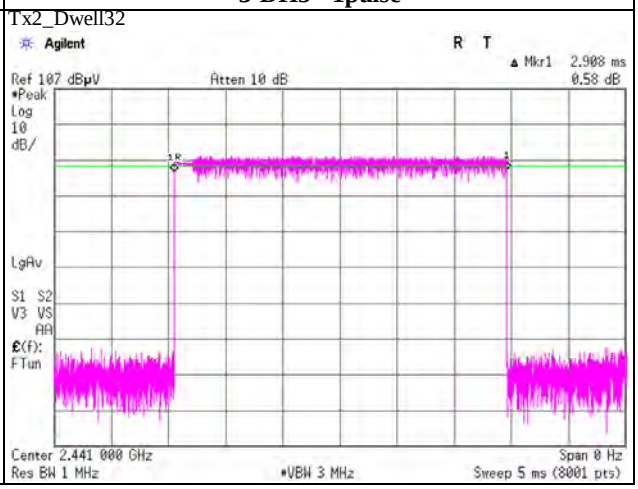
Dwell time

Tx, Bluetooth, EDR, PRBS9

3-DH5 - in 5sec. (1/5)	3-DH5 - in 5sec. (2/5)
Tx2_Dwell11 	Tx2_Dwell12 
3-DH5 - in 5sec. (3/5)	**3-DH5 - in 5sec. (4/5)**
Tx2_Dwell21 	Tx2_Dwell22 
3-DH5 - in 5sec. (5/5)	**3-DH5 - 1pulse**
Tx2_Dwell31 	Tx2_Dwell32 

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab. No.2 Shielded Room
Date	February 3, 2012
Temperature / Humidity	20deg.C , 30%RH
Engineer	Hikaru Shirasawa
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	-16.89	0.98	20.01	4.10	2.57	20.97	125	16.87
DH5	2441.0	-17.14	0.99	20.01	3.86	2.43	20.97	125	17.11
DH5	2480.0	-17.93	1.00	20.01	3.08	2.03	20.97	125	17.89
2-DH5	2402.0	-17.26	0.98	20.01	3.73	2.36	20.97	125	17.24
2-DH5	2441.0	-17.64	0.99	20.01	3.36	2.17	20.97	125	17.61
2-DH5	2480.0	-18.34	1.00	20.01	2.67	1.85	20.97	125	18.30
3-DH5	2402.0	-17.12	0.98	20.01	3.87	2.44	20.97	125	17.10
3-DH5	2441.0	-17.52	0.99	20.01	3.48	2.23	20.97	125	17.49
3-DH5	2480.0	-18.13	1.00	20.01	2.88	1.94	20.97	125	18.09

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.2 & No.3 Semi Anechoic Chamber
Date	February 4, 2012	February 6, 2012
Temperature / Humidity	20deg.C , 33%RH	23deg.C , 25%RH
Engineer	Akira Sato	Makoto Hosaka
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.	175.682	QP	39.2	15.8	8.9	31.8	32.1	43.5	11.4	194	56	PK:VBW 3MHz
Hori.	209.529	QP	43.3	16.6	9.3	31.7	37.5	43.5	6.0	158	305	AV:VBW 10Hz
Hori.	222.349	QP	43.8	16.7	9.5	31.7	38.3	46.0	7.7	156	277	
Hori.	236.706	QP	44.2	16.9	9.7	31.7	39.1	46.0	6.9	137	143	
Hori.	241.527	QP	45.7	16.9	9.7	31.7	40.6	46.0	5.4	129	209	
Hori.	443.056	QP	44.2	16.8	7.8	31.6	37.2	46.0	8.8	100	175	
Hori.	1919.800	PK	54.7	26.0	13.4	41.1	53.0	73.9	20.9	100	271	
Hori.	2375.875	PK	47.1	27.2	13.8	41.1	47.0	73.9	26.9	100	210	
Hori.	2388.920	PK	45.5	27.2	13.8	41.1	45.4	73.9	28.5	100	210	
Hori.	2390.000	PK	44.6	27.2	13.8	41.1	44.5	73.9	29.4	100	210	
Hori.	2400.000	PK	45.2	27.3	13.8	41.1	45.2	73.9	28.7	100	210	
Hori.	2427.965	PK	46.5	27.3	13.8	41.1	46.5	73.9	27.4	100	210	
Hori.	4804.000	PK	47.3	31.1	5.9	41.1	43.2	73.9	30.7	164	178	
Hori.	7206.000	PK	46.7	36.5	7.4	41.3	49.3	73.9	24.6	100	13	
Hori.	9608.000	PK	43.8	38.2	8.6	38.8	51.8	73.9	22.1	100	355	
Hori.	12010.000	PK	45.9	39.3	10.2	39.2	56.2	73.9	17.7	100	2	
Hori.	1919.800	AV	49.0	26.0	13.4	41.1	47.3	53.9	6.6	100	271	
Hori.	2375.875	AV	33.5	27.2	13.8	41.1	33.4	53.9	20.5	100	210	
Hori.	2388.920	AV	34.8	27.2	13.8	41.1	34.7	53.9	19.2	100	210	
Hori.	2390.000	AV	34.2	27.2	13.8	41.1	34.1	53.9	19.8	100	210	
Hori.	2400.000	AV	34.7	27.3	13.8	41.1	34.7	53.9	19.2	100	210	
Hori.	2427.965	AV	33.4	27.3	13.8	41.1	33.4	53.9	20.5	100	210	
Hori.	4804.000	AV	36.7	31.1	5.9	41.1	32.6	53.9	21.3	164	178	
Hori.	7206.000	AV	35.6	36.5	7.4	41.3	38.2	53.9	15.7	100	13	
Hori.	9608.000	AV	32.8	38.2	8.6	38.8	40.8	53.9	13.1	100	355	
Hori.	12010.000	AV	33.8	39.3	10.2	39.2	44.1	53.9	9.8	100	2	
Vert.	141.707	QP	37.2	14.6	8.5	31.8	28.5	43.5	15.0	100	334	
Vert.	1919.952	PK	50.2	26.0	13.4	41.1	48.5	73.9	25.4	100	344	
Vert.	2375.880	PK	44.7	27.2	13.8	41.1	44.6	73.9	29.3	100	294	
Vert.	2388.824	PK	46.6	27.2	13.8	41.1	46.5	73.9	27.4	100	294	
Vert.	2390.000	PK	46.0	27.2	13.8	41.1	45.9	73.9	28.0	100	294	
Vert.	2400.000	PK	44.1	27.3	13.8	41.1	44.1	73.9	29.8	100	294	
Vert.	2427.860	PK	43.9	27.3	13.8	41.1	43.9	73.9	30.0	100	294	
Vert.	4804.000	PK	47.6	31.1	5.9	41.1	43.5	73.9	30.4	100	304	
Vert.	7206.000	PK	47.6	36.5	7.4	41.3	50.2	73.9	23.7	100	12	
Vert.	9608.000	PK	43.9	38.2	8.6	38.8	51.9	73.9	22.0	100	357	
Vert.	12010.000	PK	44.9	39.3	10.2	39.2	55.2	73.9	18.7	100	3	
Vert.	1919.952	AV	44.2	26.0	13.4	41.1	42.5	53.9	11.4	100	344	
Vert.	2375.880	AV	34.9	27.2	13.8	41.1	34.8	53.9	19.1	100	294	
Vert.	2388.824	AV	34.2	27.2	13.8	41.1	34.1	53.9	19.8	100	294	
Vert.	2390.000	AV	34.2	27.2	13.8	41.1	34.1	53.9	19.8	100	294	
Vert.	2400.000	AV	34.4	27.3	13.8	41.1	34.4	53.9	19.5	100	294	
Vert.	2427.860	AV	34.8	27.3	13.8	41.1	34.8	53.9	19.1	100	294	
Vert.	4804.000	AV	35.9	31.1	5.9	41.1	31.8	53.9	22.1	100	304	
Vert.	7206.000	AV	35.6	36.5	7.4	41.3	38.2	53.9	15.7	100	12	
Vert.	9608.000	AV	32.6	38.2	8.6	38.8	40.6	53.9	13.3	100	357	
Vert.	12010.000	AV	33.6	39.3	10.2	39.2	43.9	53.9	10.0	100	3	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 & No.3 Semi Anechoic Chamber
Date	February 4, 2012	February 6, 2012
Temperature / Humidity	20deg.C , 33%RH	23deg.C , 25%RH
Engineer	Akira Sato	Makoto Hosaka
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.	176.157	QP	39.4	15.8	8.9	31.8	32.3	43.5	11.2	195	58	PK:VBW 3MHz
Hori.	211.243	QP	43.7	16.6	9.3	31.7	37.9	43.5	5.6	160	310	AV:VBW 10Hz
Hori.	231.941	QP	44.0	16.8	9.6	31.7	38.7	46.0	7.3	157	279	
Hori.	236.741	QP	44.4	16.9	9.7	31.7	39.3	46.0	6.7	141	144	
Hori.	241.535	QP	46.0	16.9	9.7	31.7	40.9	46.0	5.1	130	210	
Hori.	430.281	QP	44.5	16.7	7.8	31.6	37.4	46.0	8.6	100	177	
Hori.	1920.016	PK	54.1	26.0	13.4	41.1	52.4	73.9	21.5	100	268	
Hori.	2415.008	PK	46.5	27.3	13.8	41.1	46.5	73.9	27.4	100	213	
Hori.	2466.912	PK	46.1	27.4	13.8	41.1	46.2	73.9	27.7	100	213	
Hori.	4882.000	PK	46.3	31.2	5.9	40.9	42.5	73.9	31.4	100	156	
Hori.	7323.000	PK	46.5	36.8	7.5	41.4	49.4	73.9	24.5	100	3	
Hori.	9764.000	PK	42.9	38.5	8.6	38.8	51.2	73.9	22.7	100	351	
Hori.	12205.000	PK	45.9	39.3	10.2	39.2	56.2	73.9	17.7	100	15	
Hori.	1920.016	AV	49.5	26.0	13.4	41.1	47.8	53.9	6.1	100	268	
Hori.	2415.008	AV	34.9	27.3	13.8	41.1	34.9	53.9	19.0	100	213	
Hori.	2466.912	AV	34.9	27.4	13.8	41.1	35.0	53.9	18.9	100	213	
Hori.	4882.000	AV	36.3	31.2	5.9	40.9	32.5	53.9	21.4	100	156	
Hori.	7323.000	AV	35.2	36.8	7.5	41.4	38.1	53.9	15.8	100	3	
Hori.	9764.000	AV	32.5	38.5	8.6	38.8	40.8	53.9	13.1	100	351	
Hori.	12205.000	AV	33.0	39.3	10.2	39.2	43.3	53.9	10.6	100	15	
Vert.	140.587	QP	37.1	14.6	8.5	31.8	28.4	43.5	15.1	100	330	
Vert.	1920.039	PK	49.7	26.0	13.4	41.1	48.0	73.9	25.9	100	347	
Vert.	2414.975	PK	47.3	27.3	13.8	41.1	47.3	73.9	26.6	100	289	
Vert.	2467.066	PK	46.4	27.4	13.8	41.1	46.5	73.9	27.4	100	289	
Vert.	4882.000	PK	47.5	31.2	5.9	40.9	43.7	73.9	30.2	100	182	
Vert.	7323.000	PK	46.9	36.8	7.5	41.4	49.8	73.9	24.1	100	343	
Vert.	9764.000	PK	44.5	38.5	8.6	38.8	52.8	73.9	21.1	100	16	
Vert.	12205.000	PK	45.6	39.3	10.2	39.2	55.9	73.9	18.0	100	200	
Vert.	1920.039	AV	43.2	26.0	13.4	41.1	41.5	53.9	12.4	100	347	
Vert.	2414.975	AV	34.8	27.3	13.8	41.1	34.8	53.9	19.1	100	289	
Vert.	2467.066	AV	34.8	27.4	13.8	41.1	34.9	53.9	19.0	100	289	
Vert.	4882.000	AV	36.6	31.2	5.9	40.9	32.8	53.9	21.1	100	182	
Vert.	7323.000	AV	35.2	36.8	7.5	41.4	38.1	53.9	15.8	100	343	
Vert.	9764.000	AV	32.6	38.5	8.6	38.8	40.9	53.9	13.0	100	16	
Vert.	12205.000	AV	33.3	39.3	10.2	39.2	43.6	53.9	10.3	100	200	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 & No.3 Semi Anechoic Chamber
Date	February 4, 2012	February 6, 2012
Temperature / Humidity	20deg.C , 33%RH	23deg.C , 25%RH
Engineer	Akira Sato	Makoto Hosaka
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.	176.066	QP	39.4	15.8	8.9	31.8	32.3	43.5	11.2	198	55	PK:VBW 3MHz
Hori.	213.252	QP	43.4	16.6	9.4	31.7	37.7	43.5	5.8	159	307	AV:VBW 10Hz
Hori.	228.738	QP	44.5	16.8	9.6	31.7	39.2	46.0	6.8	158	180	
Hori.	236.719	QP	44.5	16.9	9.7	31.7	39.4	46.0	6.6	144	140	
Hori.	241.523	QP	45.9	16.9	9.7	31.7	40.8	46.0	5.2	130	208	
Hori.	428.856	QP	44.4	16.7	7.7	31.6	37.2	46.0	8.8	100	179	
Hori.	1920.070	PK	52.6	26.0	13.4	41.1	50.9	73.9	23.0	100	248	
Hori.	2454.000	PK	47.4	27.4	13.8	41.1	47.5	73.9	26.4	156	212	
Hori.	2483.500	PK	46.1	27.5	13.8	41.1	46.3	73.9	27.6	156	212	
Hori.	2505.924	PK	47.3	27.5	14.0	41.1	47.7	73.9	26.2	156	212	
Hori.	4960.000	PK	46.9	31.4	5.9	40.8	43.4	73.9	30.5	100	91	
Hori.	7440.000	PK	47.4	37.0	7.5	41.5	50.4	73.9	23.5	100	43	
Hori.	9880.000	PK	44.7	38.7	8.6	38.8	53.2	73.9	20.7	100	345	
Hori.	12360.000	PK	44.7	39.4	10.2	39.2	55.1	73.9	18.8	100	23	
Hori.	1920.070	AV	48.9	26.0	13.4	41.1	47.2	53.9	6.7	100	248	
Hori.	2454.000	AV	34.9	27.4	13.8	41.1	35.0	53.9	18.9	156	212	
Hori.	2483.500	AV	34.6	27.5	13.8	41.1	34.8	53.9	19.1	156	212	
Hori.	2505.924	AV	34.7	27.5	14.0	41.1	35.1	53.9	18.8	156	212	
Hori.	4960.000	AV	35.0	31.4	5.9	40.8	31.5	53.9	22.4	100	91	
Hori.	7440.000	AV	35.5	37.0	7.5	41.5	38.5	53.9	15.4	100	43	
Hori.	9880.000	AV	32.8	38.7	8.6	38.8	41.3	53.9	12.6	100	345	
Hori.	12360.000	AV	33.2	39.4	10.2	39.2	43.6	53.9	10.3	100	23	
Vert.	140.932	QP	37.2	14.6	8.5	31.8	28.5	43.5	15.0	100	333	
Vert.	1920.038	PK	49.9	26.0	13.4	41.1	48.2	73.9	25.7	100	112	
Vert.	2454.008	PK	47.2	27.4	13.8	41.1	47.3	73.9	26.6	100	288	
Vert.	2483.500	PK	44.9	27.5	13.8	41.1	45.1	73.9	28.8	100	288	
Vert.	2505.994	PK	46.6	27.5	14.0	41.1	47.0	73.9	26.9	100	288	
Vert.	4960.000	PK	47.6	31.4	5.9	40.8	44.1	73.9	29.8	100	184	
Vert.	7440.000	PK	46.7	37.0	7.5	41.5	49.7	73.9	24.2	100	33	
Vert.	9880.000	PK	44.2	38.7	8.6	38.8	52.7	73.9	21.2	100	2	
Vert.	12360.000	PK	44.5	39.4	10.2	39.2	54.9	73.9	19.0	100	17	
Vert.	1920.038	AV	41.4	26.0	13.4	41.1	39.7	53.9	14.2	100	112	
Vert.	2454.008	AV	34.9	27.4	13.8	41.1	35.0	53.9	18.9	100	288	
Vert.	2483.500	AV	34.6	27.5	13.8	41.1	34.8	53.9	19.1	100	288	
Vert.	2505.994	AV	34.7	27.5	14.0	41.1	35.1	53.9	18.8	100	288	
Vert.	4960.000	AV	36.2	31.4	5.9	40.8	32.7	53.9	21.2	100	184	
Vert.	7440.000	AV	35.5	37.0	7.5	41.5	38.5	53.9	15.4	100	33	
Vert.	9880.000	AV	32.7	38.7	8.6	38.8	41.2	53.9	12.7	100	2	
Vert.	12360.000	AV	33.1	39.4	10.2	39.2	43.5	53.9	10.4	100	17	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 & No.3 Semi Anechoic Chamber
Date	February 4, 2012	February 6, 2012
Temperature / Humidity	20deg.C , 33%RH	23deg.C , 25%RH
Engineer	Akira Sato	Makoto Hosaka
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.	176.028	QP	40.3	15.8	8.9	31.8	33.2	43.5	10.3	194	56	PK:VBW 3MHz
Hori.	213.638	QP	43.7	16.6	9.4	31.7	38.0	43.5	5.5	155	318	AV:VBW 10Hz
Hori.	231.934	QP	44.6	16.8	9.6	31.7	39.3	46.0	6.7	160	197	
Hori.	237.604	QP	44.4	16.9	9.7	31.7	39.3	46.0	6.7	155	138	
Hori.	241.517	QP	45.9	16.9	9.7	31.7	40.8	46.0	5.2	132	211	
Hori.	425.486	QP	44.3	16.6	7.7	31.6	37.0	46.0	9.0	100	178	
Hori.	1919.815	PK	53.8	26.0	13.4	41.1	52.1	73.9	21.8	100	237	
Hori.	2375.860	PK	47.8	27.2	13.8	41.1	47.7	73.9	26.2	125	212	
Hori.	2388.800	PK	48.1	27.2	13.8	41.1	48.0	73.9	25.9	125	212	
Hori.	2390.000	PK	45.0	27.2	13.8	41.1	44.9	73.9	29.0	125	212	
Hori.	2400.000	PK	53.7	27.3	13.8	41.1	53.7	73.9	20.2	125	212	
Hori.	2427.690	PK	48.6	27.3	13.8	41.1	48.6	73.9	25.3	125	212	
Hori.	4804.000	PK	46.6	31.1	5.9	41.1	42.5	73.9	31.4	100	183	
Hori.	7206.000	PK	46.6	36.5	7.4	41.3	49.2	73.9	24.7	100	123	
Hori.	9608.000	PK	43.3	38.2	8.6	38.8	51.3	73.9	22.6	100	26	
Hori.	12010.000	PK	44.8	39.3	10.2	39.2	55.1	73.9	18.8	100	11	
Hori.	1919.815	AV	49.3	26.0	13.4	41.1	47.6	53.9	6.3	100	237	
Hori.	2375.860	AV	36.4	27.2	13.8	41.1	36.3	53.9	17.6	125	212	
Hori.	2388.800	AV	36.2	27.2	13.8	41.1	36.1	53.9	17.8	125	212	
Hori.	2390.000	AV	36.3	27.2	13.8	41.1	36.2	53.9	17.7	125	212	
Hori.	2400.000	AV	45.5	27.3	13.8	41.1	45.5	53.9	8.4	125	212	
Hori.	2427.690	AV	36.4	27.3	13.8	41.1	36.4	53.9	17.5	125	212	
Hori.	4804.000	AV	37.2	31.1	5.9	41.1	33.1	53.9	20.8	100	183	
Hori.	7206.000	AV	35.5	36.5	7.4	41.3	38.1	53.9	15.8	100	123	
Hori.	9608.000	AV	32.6	38.2	8.6	38.8	40.6	53.9	13.3	100	26	
Hori.	12010.000	AV	33.7	39.3	10.2	39.2	44.0	53.9	9.9	100	11	
Vert.	141.757	QP	37.1	14.6	8.5	31.8	28.4	43.5	15.1	100	325	
Vert.	1919.820	PK	50.8	26.0	13.4	41.1	49.1	73.9	24.8	128	232	
Vert.	2375.960	PK	48.6	27.2	13.8	41.1	48.5	73.9	25.4	100	219	
Vert.	2388.800	PK	47.8	27.2	13.8	41.1	47.7	73.9	26.2	100	219	
Vert.	2390.000	PK	47.2	27.2	13.8	41.1	47.1	73.9	26.8	100	219	
Vert.	2400.000	PK	51.7	27.3	13.8	41.1	51.7	73.9	22.2	100	219	
Vert.	2427.980	PK	48.4	27.3	13.8	41.1	48.4	73.9	25.5	100	219	
Vert.	4804.000	PK	46.0	31.1	5.9	41.1	41.9	73.9	32.0	100	123	
Vert.	7206.000	PK	47.2	36.5	7.4	41.3	49.8	73.9	24.1	100	344	
Vert.	9608.000	PK	44.4	38.2	8.6	38.8	52.4	73.9	21.5	100	231	
Vert.	12010.000	PK	46.5	39.3	10.2	39.2	56.8	73.9	17.1	100	2	
Vert.	1919.820	AV	44.1	26.0	13.4	41.1	42.4	53.9	11.5	128	232	
Vert.	2375.960	AV	36.3	27.2	13.8	41.1	36.2	53.9	17.7	100	219	
Vert.	2388.800	AV	36.2	27.2	13.8	41.1	36.1	53.9	17.8	100	219	
Vert.	2390.000	AV	34.9	27.2	13.8	41.1	34.8	53.9	19.1	100	219	
Vert.	2400.000	AV	39.6	27.3	13.8	41.1	39.6	53.9	14.3	100	219	
Vert.	2427.980	AV	36.3	27.3	13.8	41.1	36.3	53.9	17.6	100	219	
Vert.	4804.000	AV	36.1	31.1	5.9	41.1	32.0	53.9	21.9	100	123	
Vert.	7206.000	AV	35.7	36.5	7.4	41.3	38.3	53.9	15.6	100	344	
Vert.	9608.000	AV	33.1	38.2	8.6	38.8	41.1	53.9	12.8	100	231	
Vert.	12010.000	AV	35.5	39.3	10.2	39.2	45.8	53.9	8.1	100	2	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 & No.3 Semi Anechoic Chamber
Date	February 4, 2012	February 6, 2012
Temperature / Humidity	20deg.C , 33%RH	23deg.C , 25%RH
Engineer	Akira Sato	Makoto Hosaka
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.	175.637	QP	40.0	15.8	8.9	31.8	32.9	43.5	10.6	197	60	PK:VBW 3MHz
Hori.	212.401	QP	43.6	16.6	9.4	31.7	37.9	43.5	5.6	156	314	AV:VBW 10Hz
Hori.	231.933	QP	43.6	16.8	9.6	31.7	38.3	46.0	7.7	158	199	
Hori.	236.755	QP	44.3	16.9	9.7	31.7	39.2	46.0	6.8	146	141	
Hori.	241.543	QP	45.8	16.9	9.7	31.7	40.7	46.0	5.3	131	215	
Hori.	435.076	QP	44.6	16.7	7.8	31.6	37.5	46.0	8.5	100	178	
Hori.	1919.796	PK	53.4	26.0	13.4	41.1	51.7	73.9	22.2	100	270	
Hori.	2414.922	PK	46.0	27.3	13.8	41.1	46.0	73.9	27.9	100	280	
Hori.	2466.841	PK	46.2	27.4	13.8	41.1	46.3	73.9	27.6	100	280	
Hori.	4882.000	PK	46.2	31.2	5.9	40.9	42.4	73.9	31.5	100	150	
Hori.	7323.000	PK	46.1	36.8	7.5	41.4	49.0	73.9	24.9	100	121	
Hori.	9764.000	PK	44.0	38.5	8.6	38.8	52.3	73.9	21.6	100	344	
Hori.	12205.000	PK	44.8	39.3	10.2	39.2	55.1	73.9	18.8	100	34	
Hori.	1919.796	AV	49.2	26.0	13.4	41.1	47.5	53.9	6.4	100	270	
Hori.	2414.922	AV	34.8	27.3	13.8	41.1	34.8	53.9	19.1	100	280	
Hori.	2466.841	AV	34.8	27.4	13.8	41.1	34.9	53.9	19.0	100	280	
Hori.	4882.000	AV	36.0	31.2	5.9	40.9	32.2	53.9	21.7	100	150	
Hori.	7323.000	AV	35.1	36.8	7.5	41.4	38.0	53.9	15.9	100	121	
Hori.	9764.000	AV	32.5	38.5	8.6	38.8	40.8	53.9	13.1	100	344	
Hori.	12205.000	AV	33.0	39.3	10.2	39.2	43.3	53.9	10.6	100	34	
Vert.	141.792	QP	37.0	14.6	8.5	31.8	28.3	43.5	15.2	100	322	
Vert.	1919.984	PK	49.8	26.0	13.4	41.1	48.1	73.9	25.8	100	61	
Vert.	2414.958	PK	46.7	27.3	13.8	41.1	46.7	73.9	27.2	100	286	
Vert.	2466.837	PK	46.4	27.4	13.8	41.1	46.5	73.9	27.4	100	286	
Vert.	4882.000	PK	47.2	31.2	5.9	40.9	43.4	73.9	30.5	100	187	
Vert.	7323.000	PK	46.8	36.8	7.5	41.4	49.7	73.9	24.2	100	11	
Vert.	9764.000	PK	44.4	38.5	8.6	38.8	52.7	73.9	21.2	100	13	
Vert.	12205.000	PK	45.1	39.3	10.2	39.2	55.4	73.9	18.5	100	223	
Vert.	1919.984	AV	42.9	26.0	13.4	41.1	41.2	53.9	12.7	100	61	
Vert.	2414.958	AV	34.8	27.3	13.8	41.1	34.8	53.9	19.1	100	286	
Vert.	2466.837	AV	34.7	27.4	13.8	41.1	34.8	53.9	19.1	100	286	
Vert.	4882.000	AV	36.4	31.2	5.9	40.9	32.6	53.9	21.3	100	187	
Vert.	7323.000	AV	35.2	36.8	7.5	41.4	38.1	53.9	15.8	100	11	
Vert.	9764.000	AV	32.7	38.5	8.6	38.8	41.0	53.9	12.9	100	13	
Vert.	12205.000	AV	33.6	39.3	10.2	39.2	43.9	53.9	10.0	100	223	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 & No.3 Semi Anechoic Chamber
Date	February 4, 2012	February 6, 2012
Temperature / Humidity	20deg.C , 33%RH	23deg.C , 25%RH
Engineer	Akira Sato	Makoto Hosaka
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.	175.659	QP	39.8	15.8	8.9	31.8	32.7	43.5	10.8	196	63	PK:VBW 3MHz
Hori.	212.803	QP	43.5	16.6	9.4	31.7	37.8	43.5	5.7	157	315	AV:VBW 10Hz
Hori.	231.943	QP	43.9	16.8	9.6	31.7	38.6	46.0	7.4	157	218	
Hori.	238.339	QP	44.6	16.9	9.7	31.7	39.5	46.0	6.5	150	221	
Hori.	241.551	QP	45.9	16.9	9.7	31.7	40.8	46.0	5.2	131	211	
Hori.	423.872	QP	44.3	16.6	7.7	31.6	37.0	46.0	9.0	100	180	
Hori.	1919.775	PK	53.4	26.0	13.4	41.1	51.7	73.9	22.2	100	247	
Hori.	2453.000	PK	46.6	27.4	13.8	41.1	46.7	73.9	27.2	153	212	
Hori.	2483.500	PK	44.6	27.5	13.8	41.1	44.8	73.9	29.1	153	212	
Hori.	2506.004	PK	46.7	27.5	14.0	41.1	47.1	73.9	26.8	153	212	
Hori.	4960.000	PK	47.0	31.4	5.9	40.8	43.5	73.9	30.4	100	149	
Hori.	7440.000	PK	46.3	37.0	7.5	41.5	49.3	73.9	24.6	100	54	
Hori.	9880.000	PK	44.2	38.7	8.6	38.8	52.7	73.9	21.2	100	344	
Hori.	12360.000	PK	44.3	39.4	10.2	39.2	54.7	73.9	19.2	100	5	
Hori.	1919.775	AV	48.9	26.0	13.4	41.1	47.2	53.9	6.7	100	247	
Hori.	2453.000	AV	34.9	27.4	13.8	41.1	35.0	53.9	18.9	153	212	
Hori.	2483.500	AV	34.8	27.5	13.8	41.1	35.0	53.9	18.9	153	212	
Hori.	2506.004	AV	34.8	27.5	14.0	41.1	35.2	53.9	18.7	153	212	
Hori.	4960.000	AV	35.1	31.4	5.9	40.8	31.6	53.9	22.3	100	149	
Hori.	7440.000	AV	35.4	37.0	7.5	41.5	38.4	53.9	15.5	100	54	
Hori.	9880.000	AV	32.8	38.7	8.6	38.8	41.3	53.9	12.6	100	344	
Hori.	12360.000	AV	33.1	39.4	10.2	39.2	43.5	53.9	10.4	100	5	
Vert.	144.254	QP	37.0	14.7	8.5	31.8	28.4	43.5	15.1	100	329	
Vert.	1919.970	PK	49.9	26.0	13.4	41.1	48.2	73.9	25.7	100	102	
Vert.	2454.070	PK	46.6	27.4	13.8	41.1	46.7	73.9	27.2	100	290	
Vert.	2483.500	PK	44.8	27.5	13.8	41.1	45.0	73.9	28.9	100	290	
Vert.	2505.490	PK	45.7	27.5	14.0	41.1	46.1	73.9	27.8	100	290	
Vert.	4960.000	PK	47.1	31.4	5.9	40.8	43.6	73.9	30.3	100	188	
Vert.	7440.000	PK	47.3	37.0	7.5	41.5	50.3	73.9	23.6	100	22	
Vert.	9880.000	PK	45.0	38.7	8.6	38.8	53.5	73.9	20.4	100	244	
Vert.	12360.000	PK	44.4	39.4	10.2	39.2	54.8	73.9	19.1	100	224	
Vert.	1919.970	AV	42.2	26.0	13.4	41.1	40.5	53.9	13.4	100	102	
Vert.	2454.070	AV	34.8	27.4	13.8	41.1	34.9	53.9	19.0	100	290	
Vert.	2483.500	AV	34.7	27.5	13.8	41.1	34.9	53.9	19.0	100	290	
Vert.	2505.490	AV	34.7	27.5	14.0	41.1	35.1	53.9	18.8	100	290	
Vert.	4960.000	AV	35.6	31.4	5.9	40.8	32.1	53.9	21.8	100	188	
Vert.	7440.000	AV	35.3	37.0	7.5	41.5	38.3	53.9	15.6	100	22	
Vert.	9880.000	AV	32.8	38.7	8.6	38.8	41.3	53.9	12.6	100	244	
Vert.	12360.000	AV	33.2	39.4	10.2	39.2	43.6	53.9	10.3	100	224	

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

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

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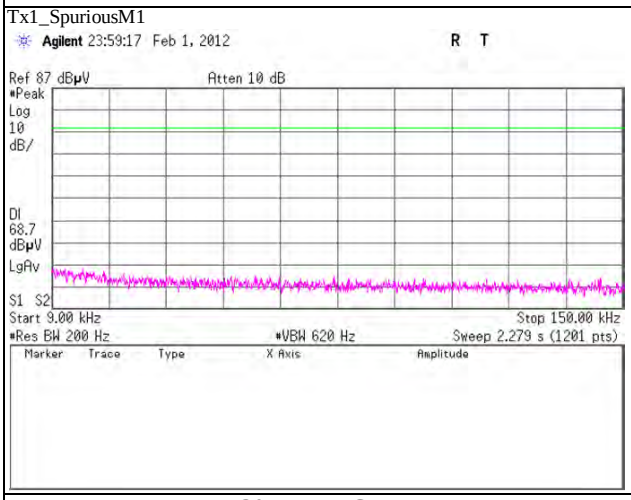
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (1/2)

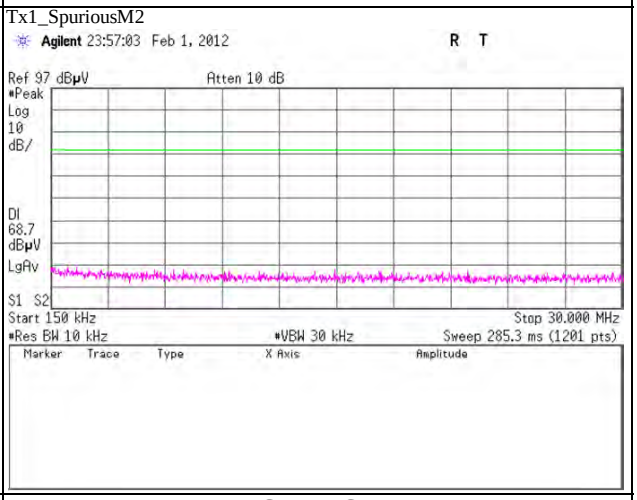
9kHz - 150kHz

Tx1_SpuriousM1



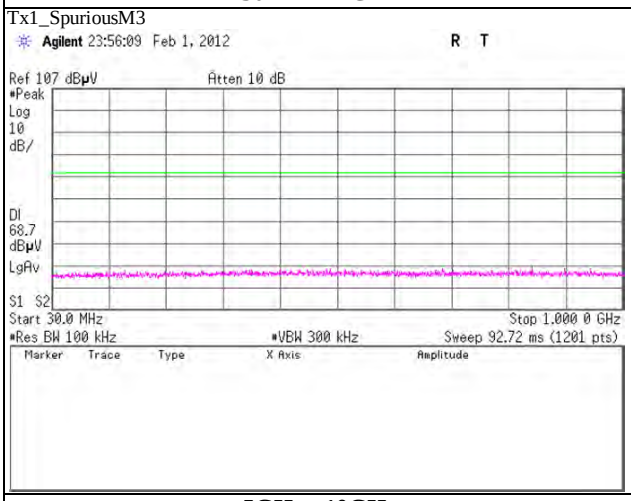
150kHz - 30MHz

Tx1_SpuriousM2



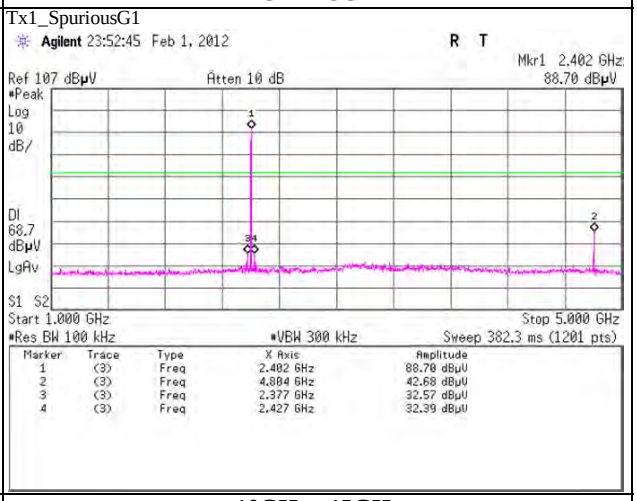
30MHz - 1GHz

Tx1_SpuriousM3



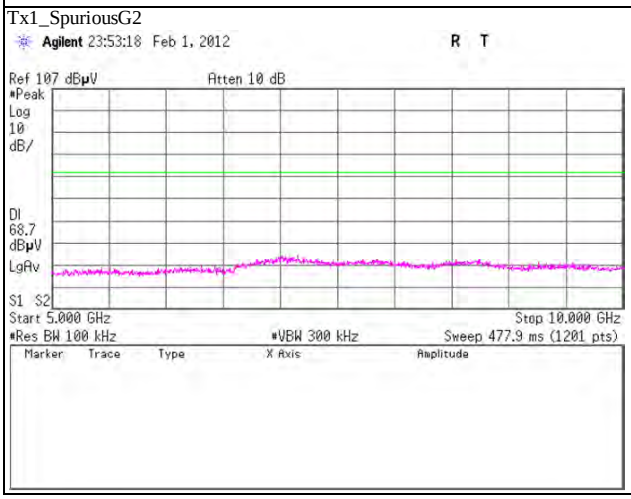
1GHz - 5GHz

Tx1_SpuriousG1



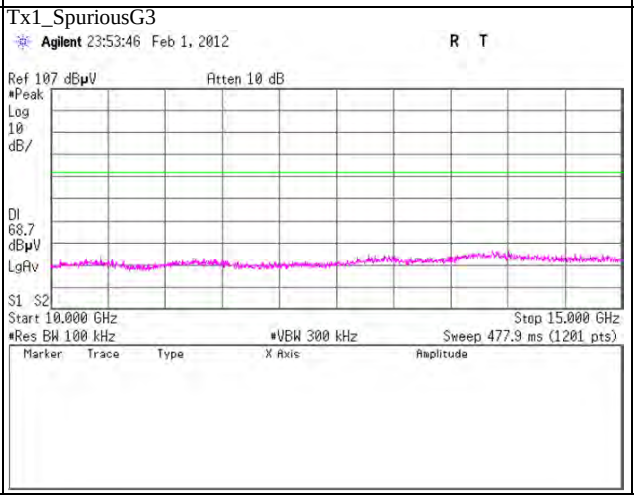
5GHz - 10GHz

Tx1_SpuriousG2



10GHz - 15GHz

Tx1_SpuriousG3



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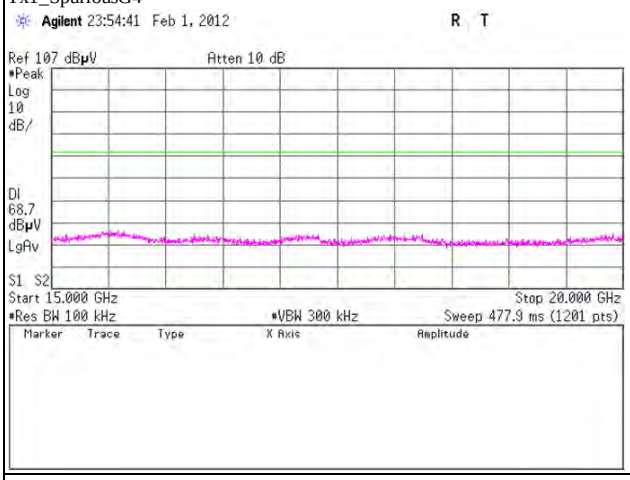
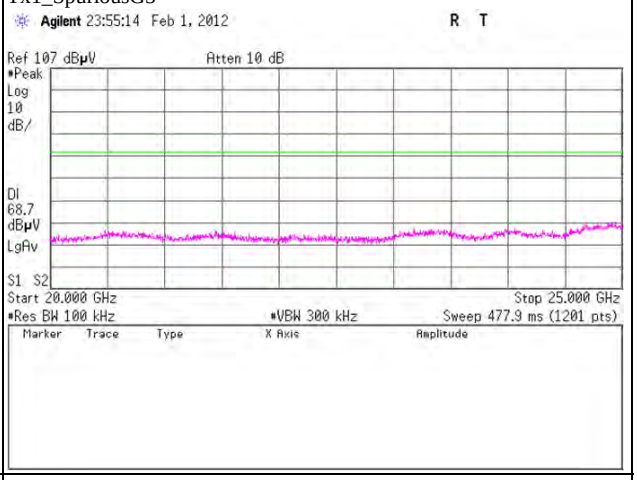
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

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

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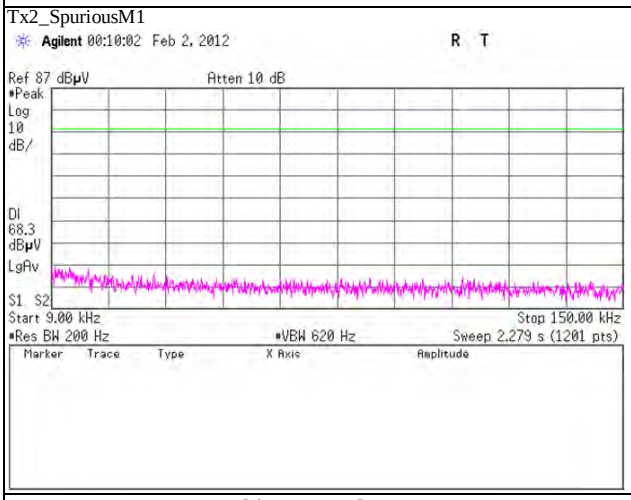
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2441MHz (1/2)

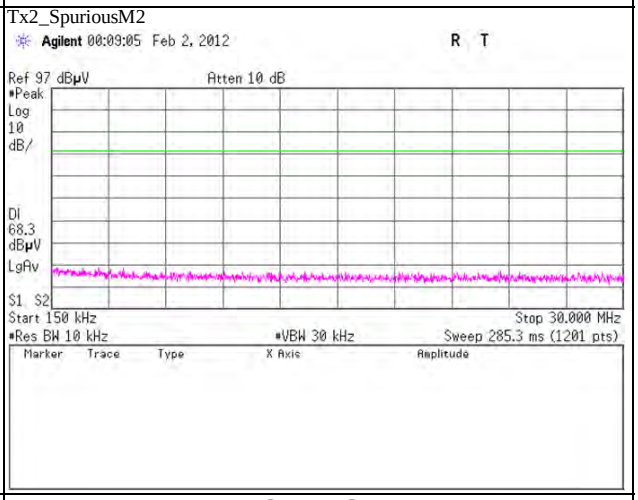
9kHz - 150kHz

Tx2_SpuriousM1



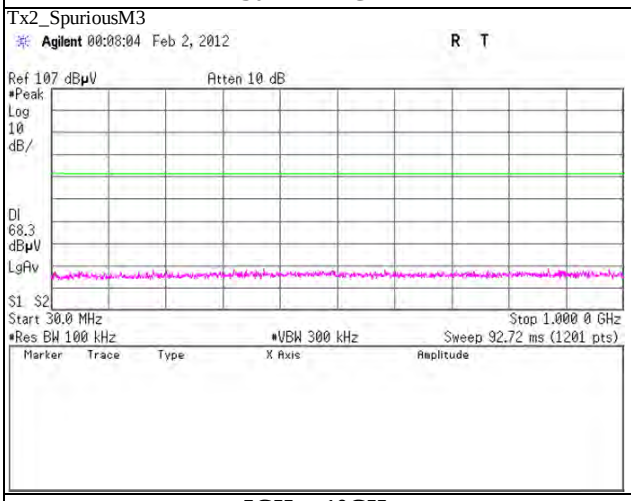
150kHz - 30MHz

Tx2_SpuriousM2



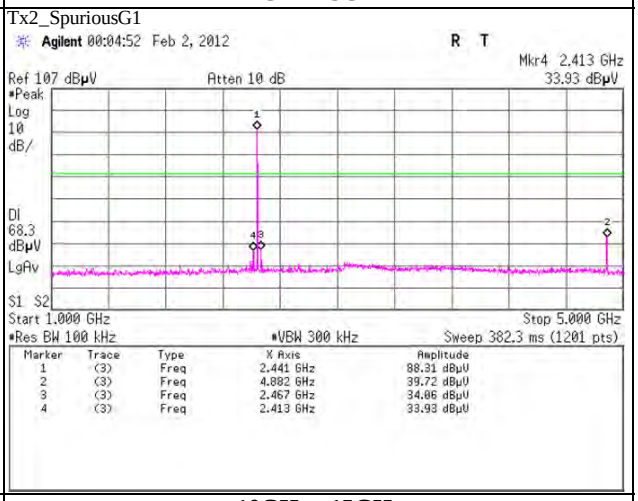
30MHz - 1GHz

Tx2_SpuriousM3



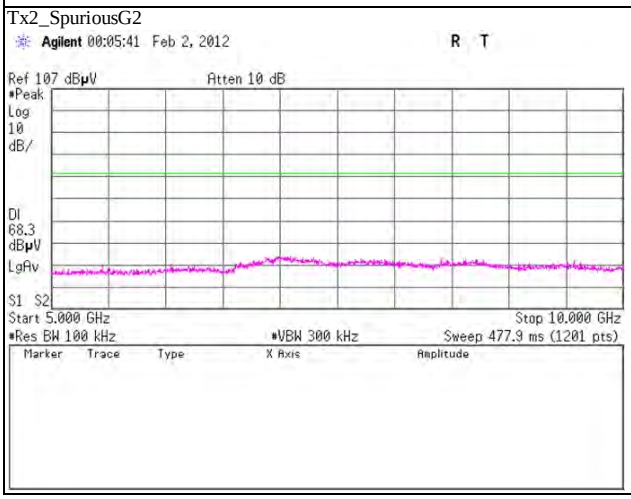
1GHz - 5GHz

Tx2_SpuriousG1



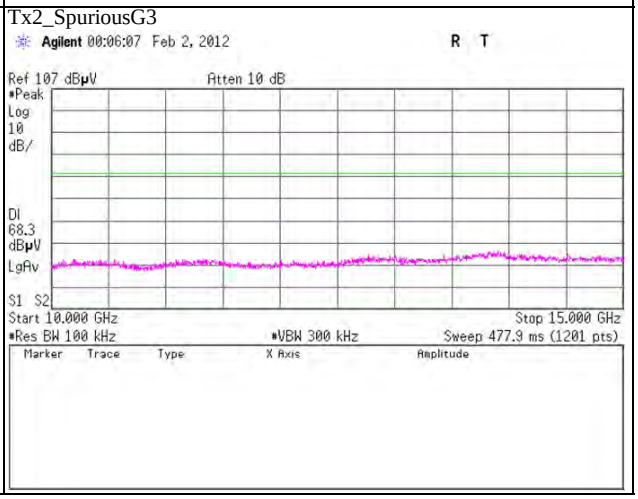
5GHz - 10GHz

Tx2_SpuriousG2



10GHz - 15GHz

Tx2_SpuriousG3



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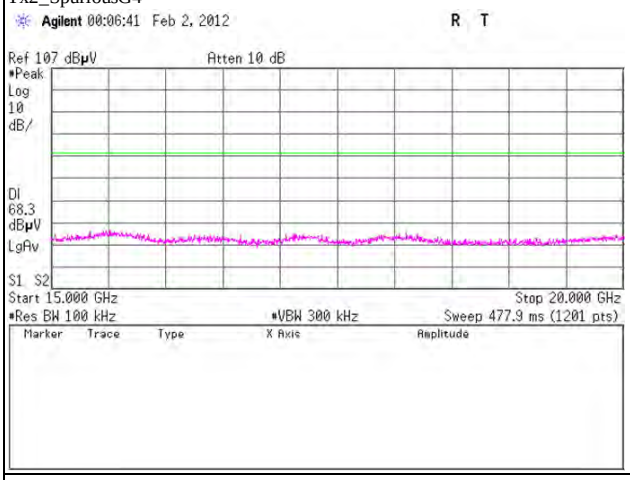
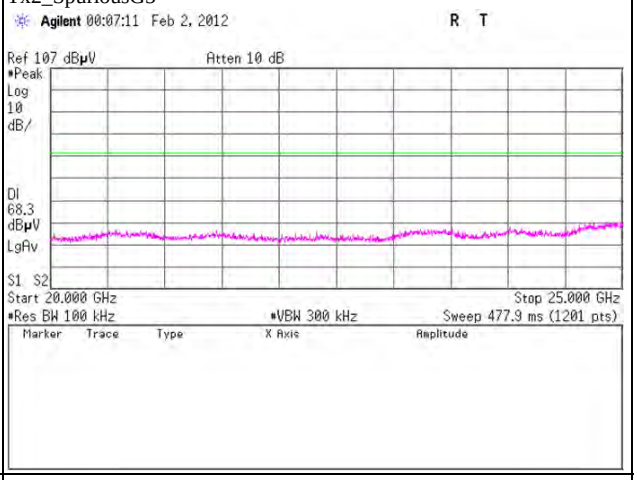
Spurious emission (Conducted)

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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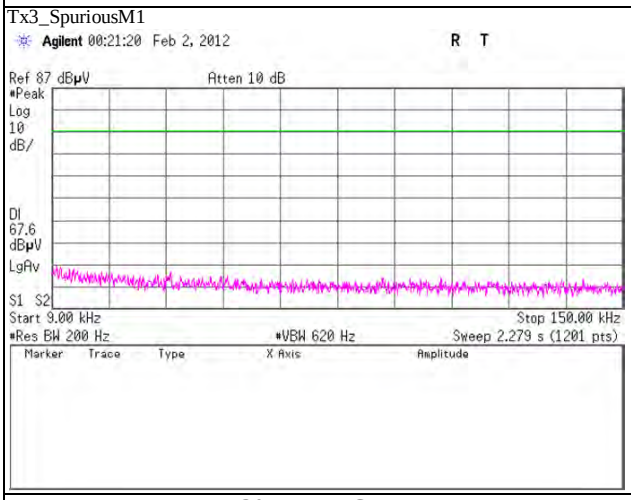
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (1/2)

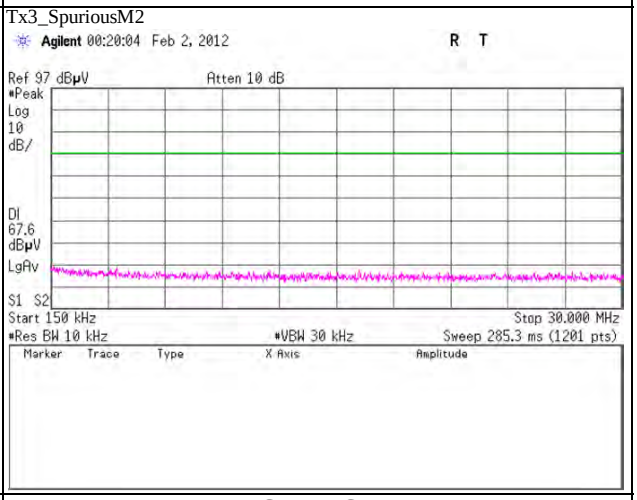
9kHz - 150kHz

Tx3_SpuriousM1



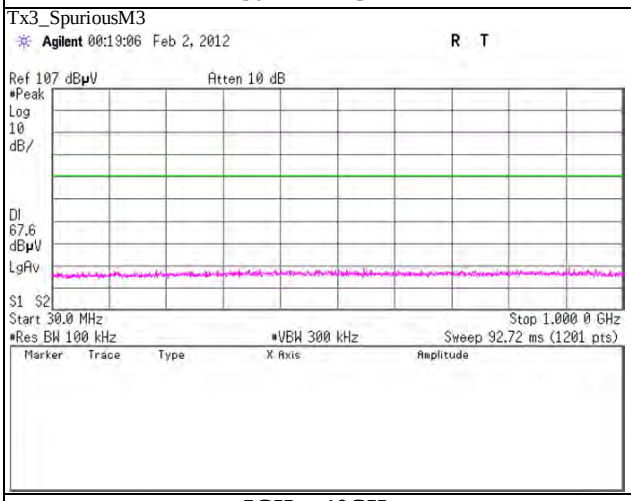
150kHz - 30MHz

Tx3_SpuriousM2



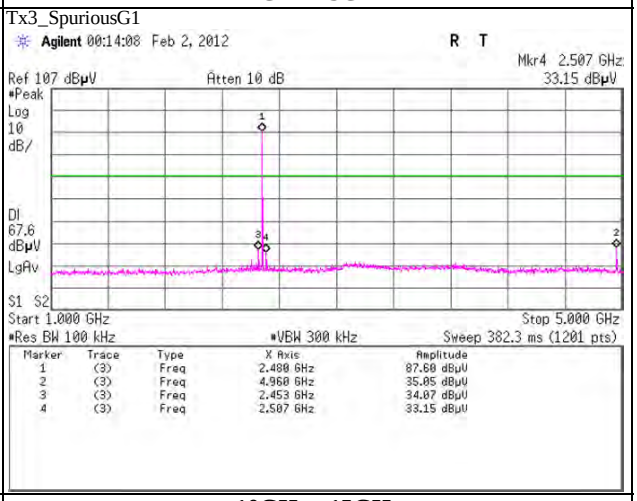
30MHz - 1GHz

Tx3_SpuriousM3



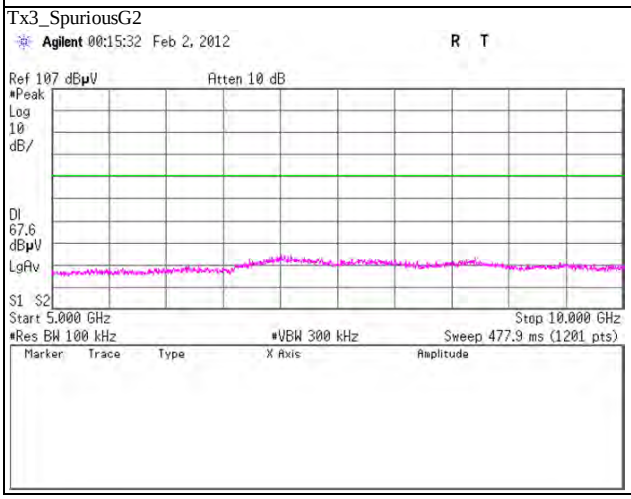
1GHz - 5GHz

Tx3_SpuriousG1



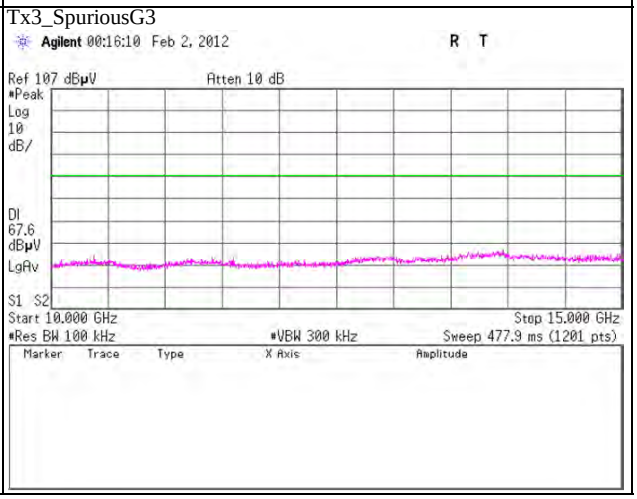
5GHz - 10GHz

Tx3_SpuriousG2



10GHz - 15GHz

Tx3_SpuriousG3



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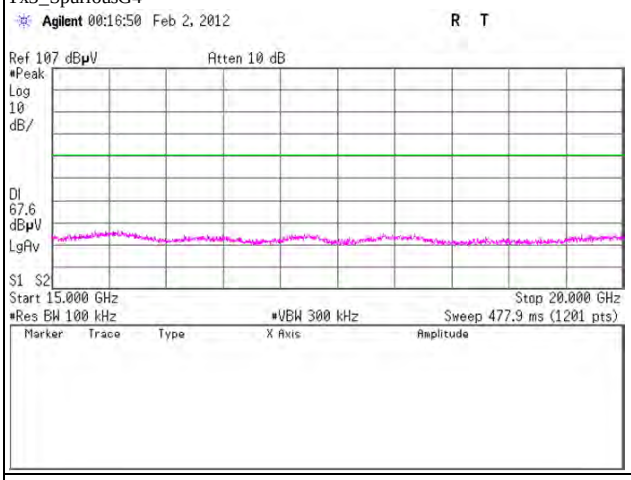
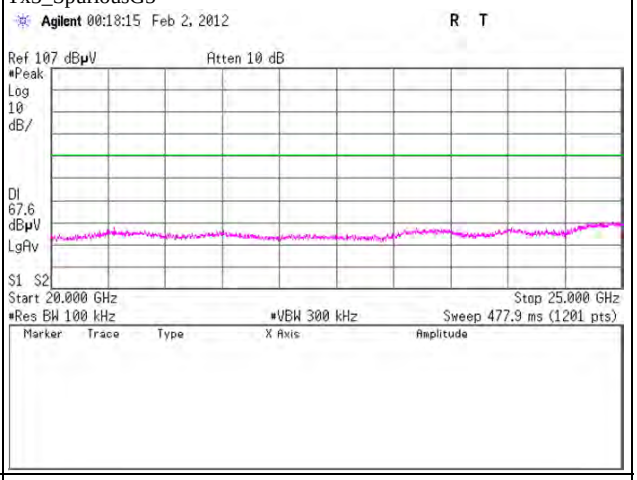
Spurious emission (Conducted)

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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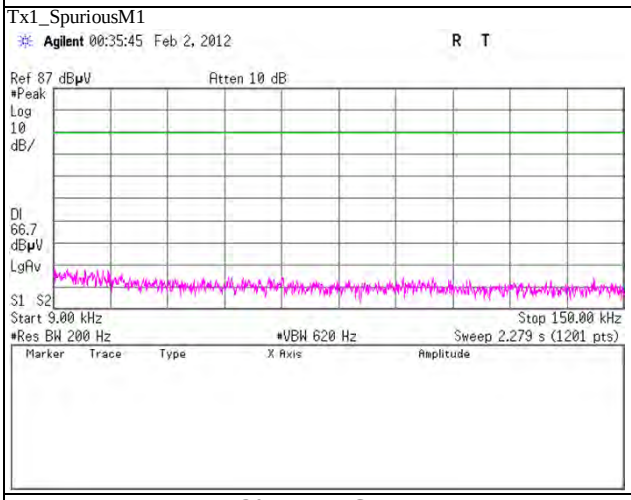
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (1/2)

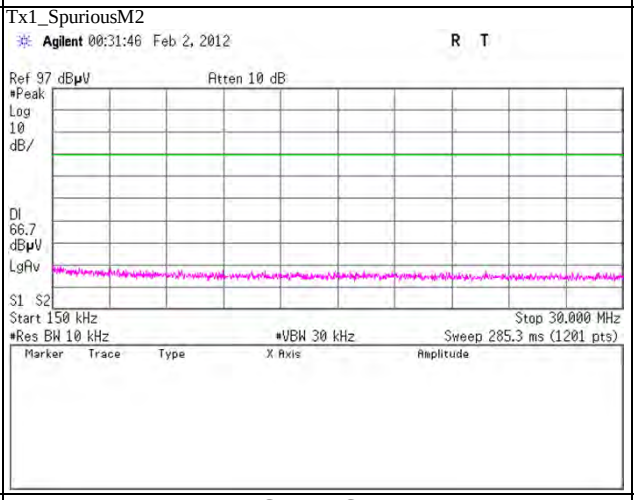
9kHz - 150kHz

Tx1_SpuriousM1



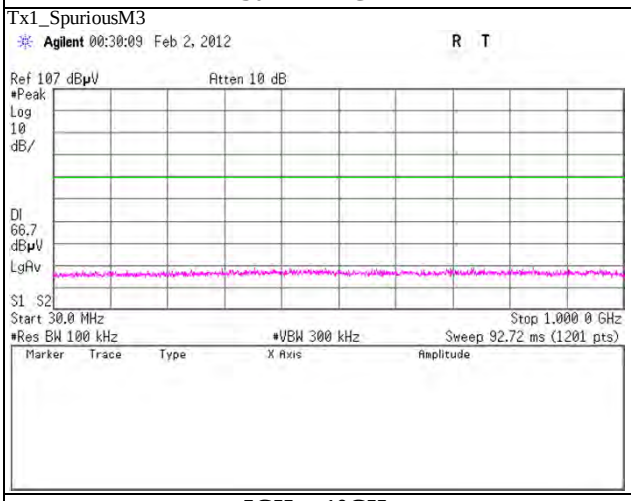
150kHz - 30MHz

Tx1_SpuriousM2



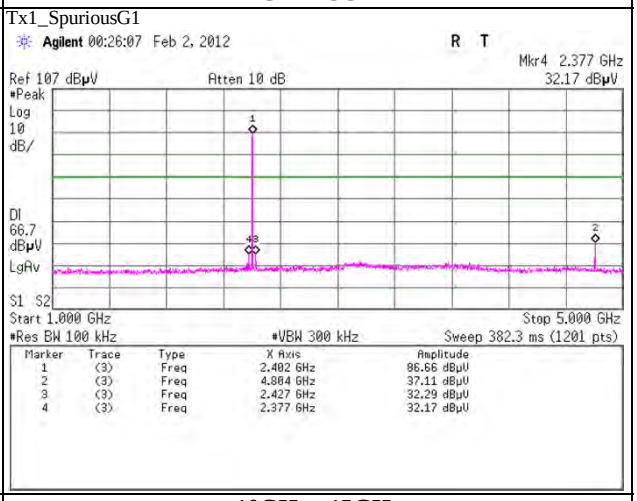
30MHz - 1GHz

Tx1_SpuriousM3



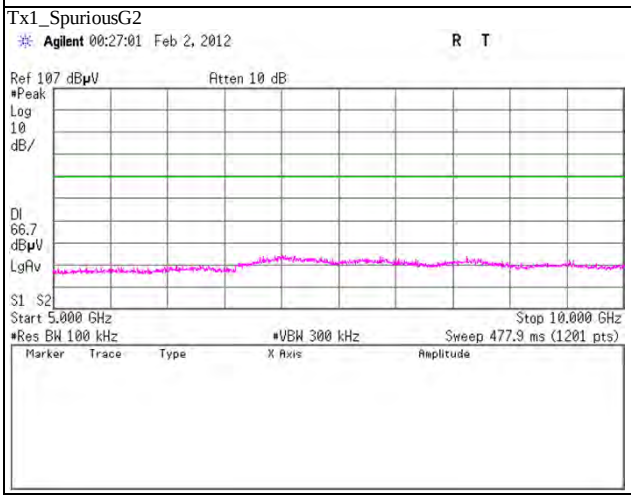
1GHz - 5GHz

Tx1_SpuriousG1



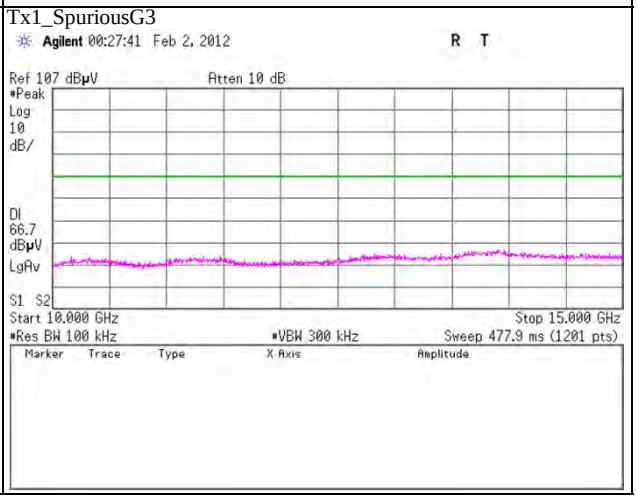
5GHz - 10GHz

Tx1_SpuriousG2



10GHz - 15GHz

Tx1_SpuriousG3



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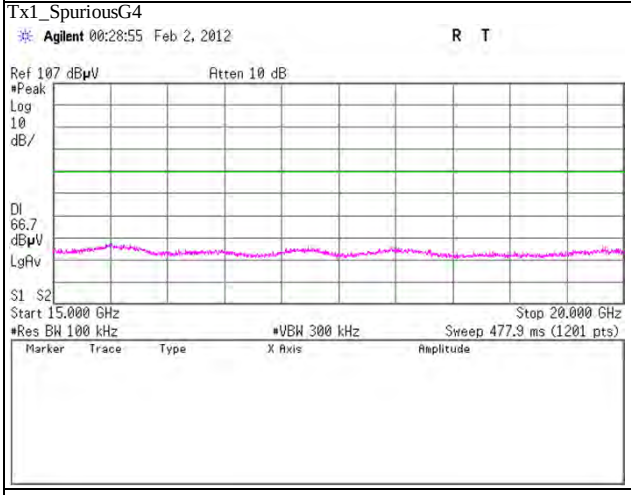
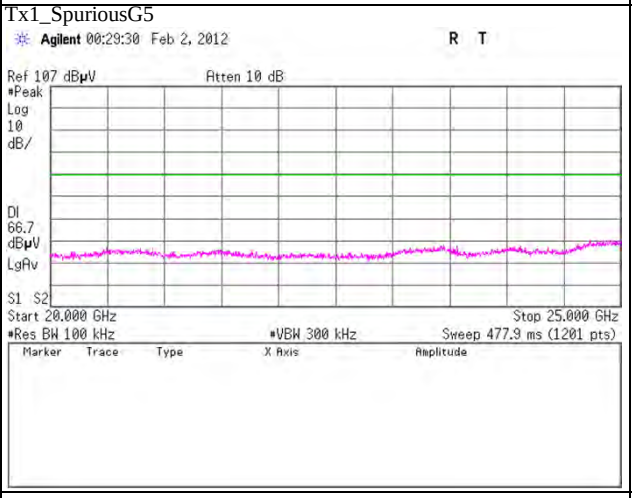
Spurious emission (Conducted)

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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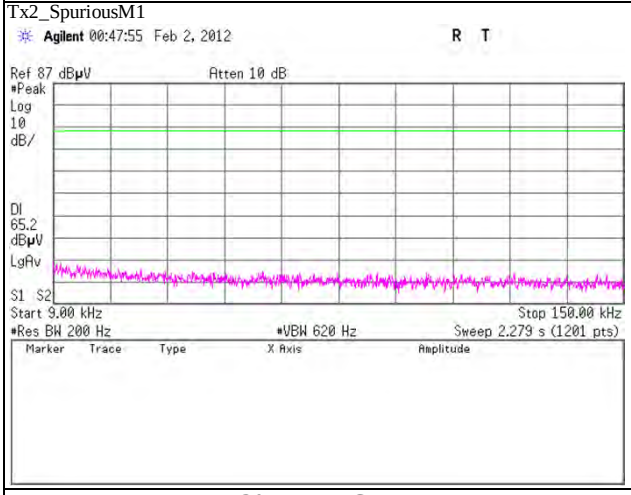
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (1/2)

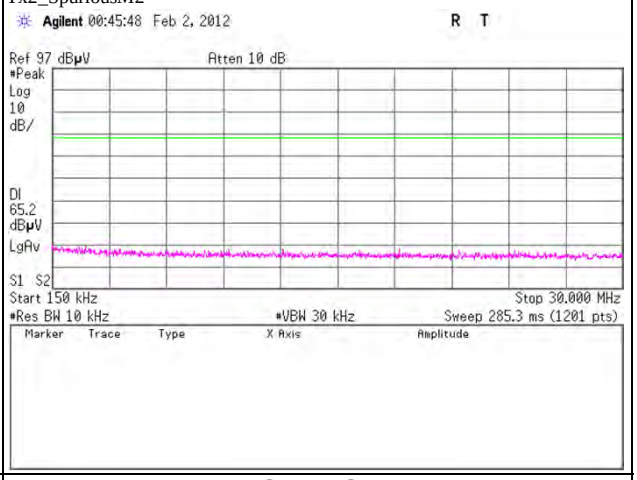
9kHz - 150kHz

Tx2_SpuriousM1



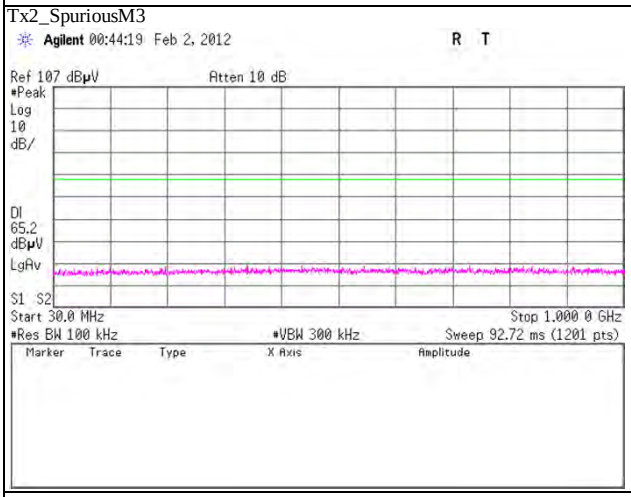
150kHz - 30MHz

Tx2_SpuriousM2



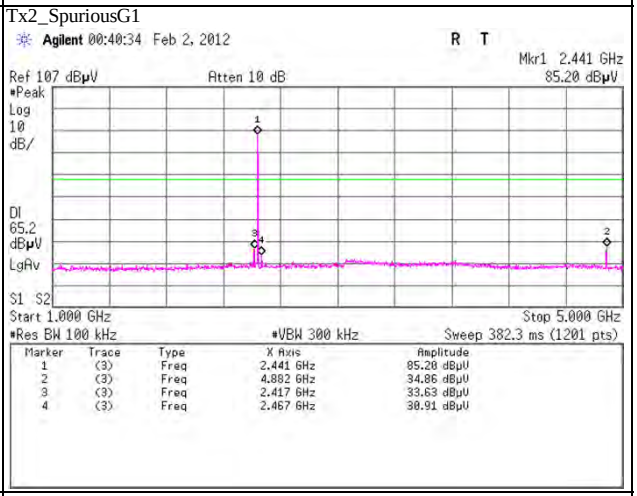
30MHz - 1GHz

Tx2_SpuriousM3



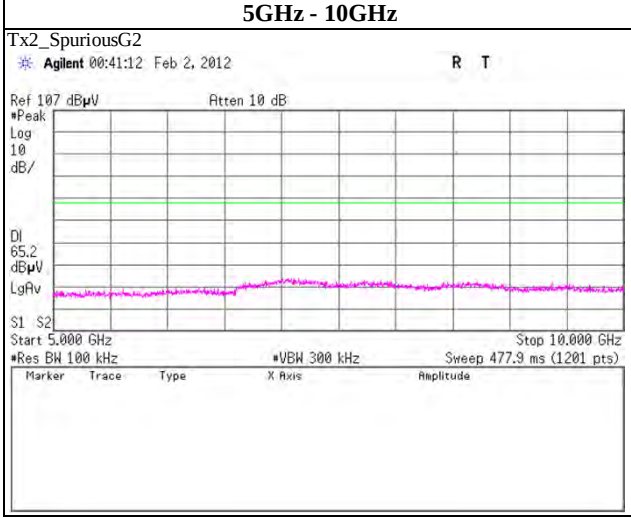
1GHz - 5GHz

Tx2_SpuriousG1



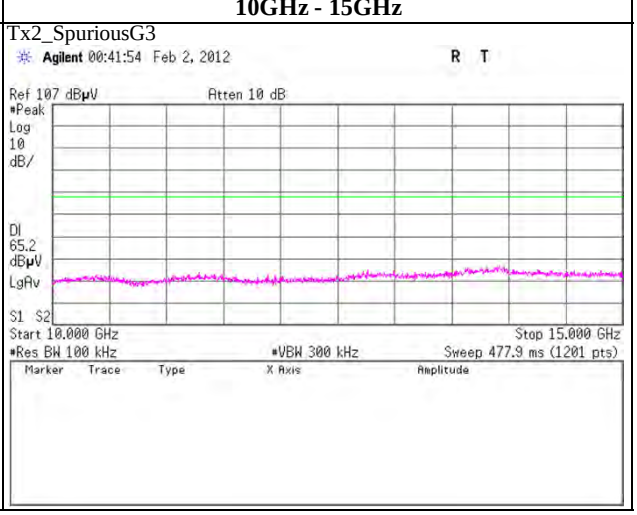
5GHz - 10GHz

Tx2_SpuriousG2



10GHz - 15GHz

Tx2_SpuriousG3



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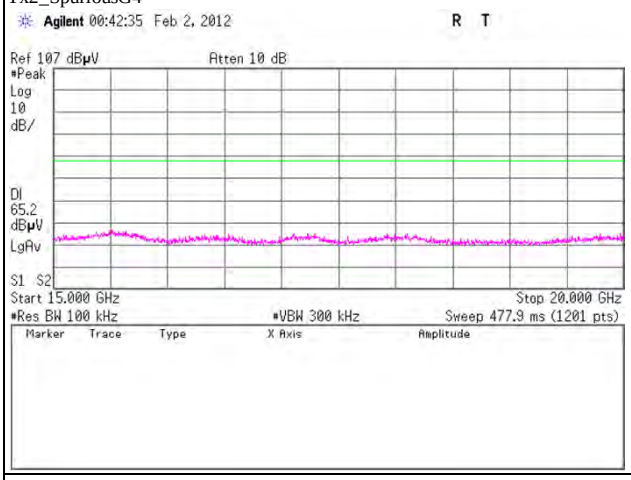
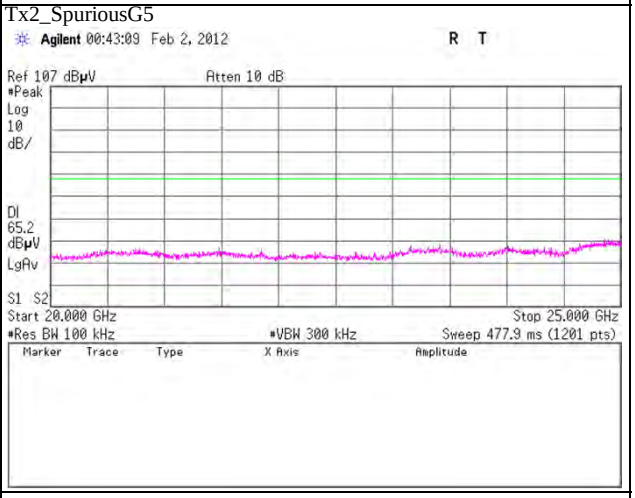
Spurious emission (Conducted)

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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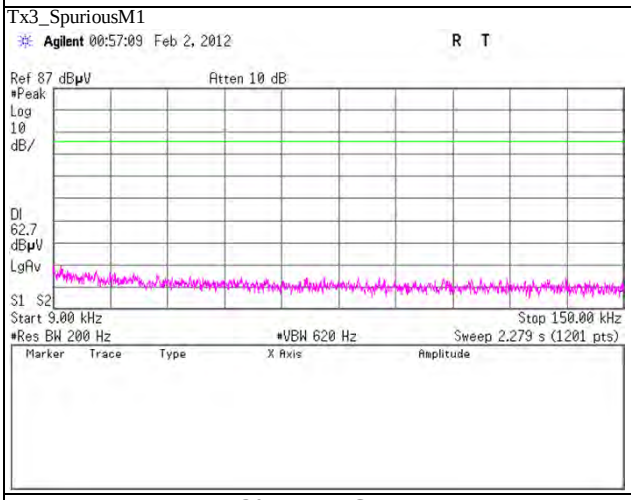
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (1/2)

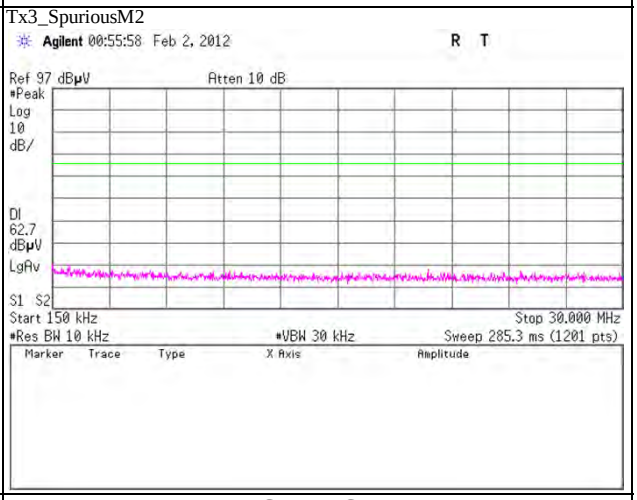
9kHz - 150kHz

Tx3_SpuriousM1



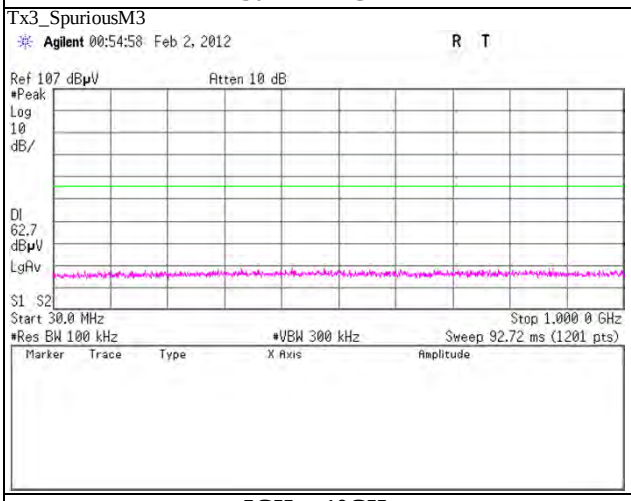
150kHz - 30MHz

Tx3_SpuriousM2



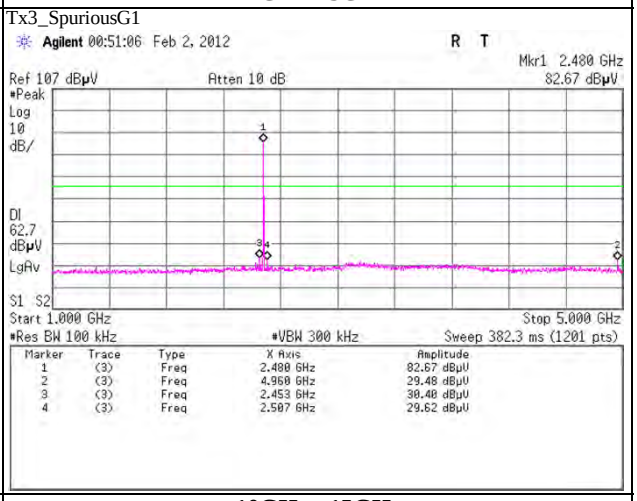
30MHz - 1GHz

Tx3_SpuriousM3



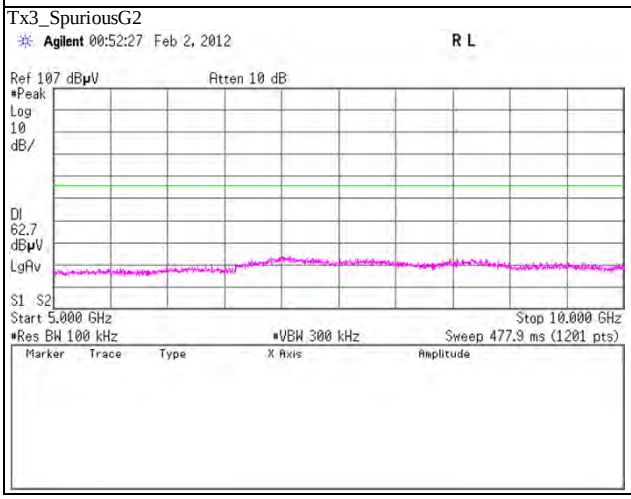
1GHz - 5GHz

Tx3_SpuriousG1



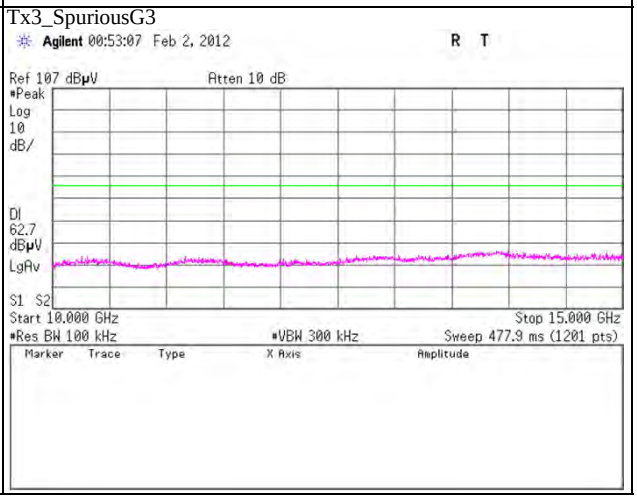
5GHz - 10GHz

Tx3_SpuriousG2



10GHz - 15GHz

Tx3_SpuriousG3



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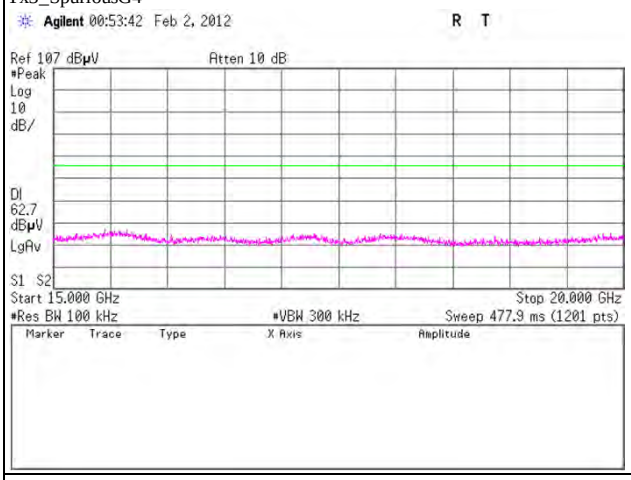
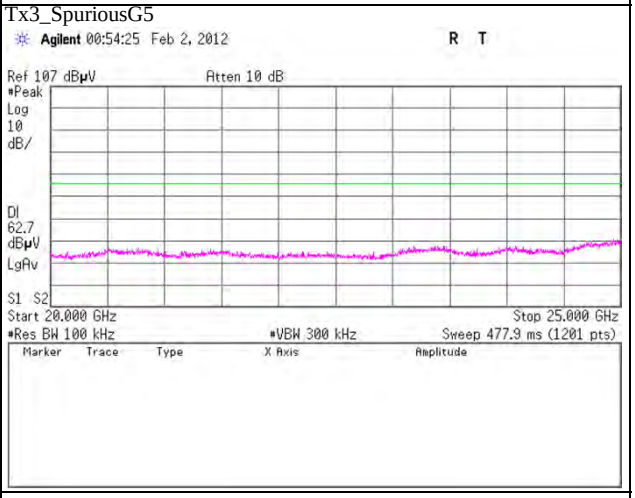
Spurious emission (Conducted)

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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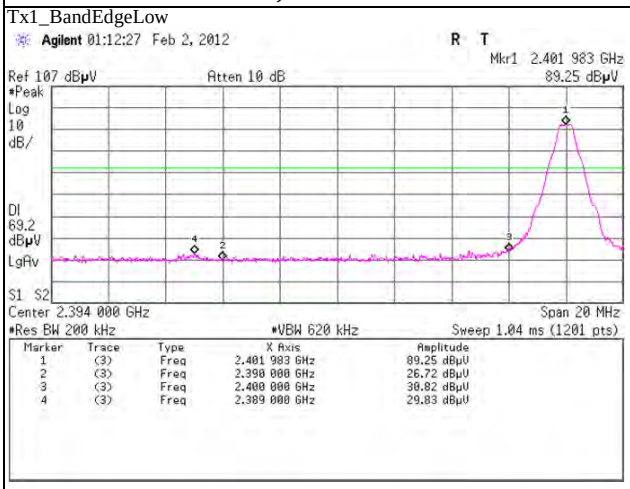
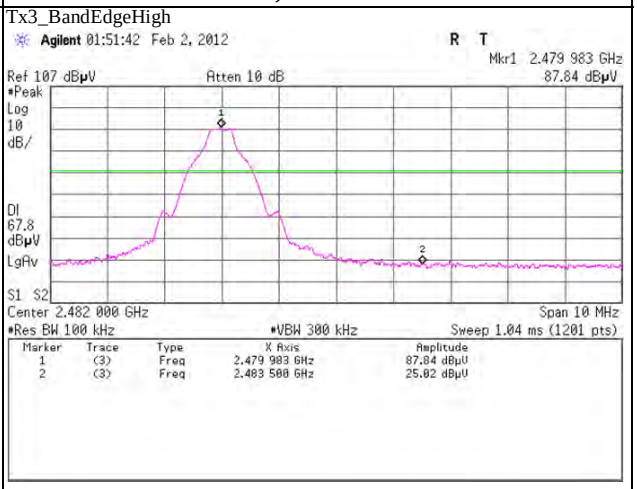
Spurious emission (Conducted)

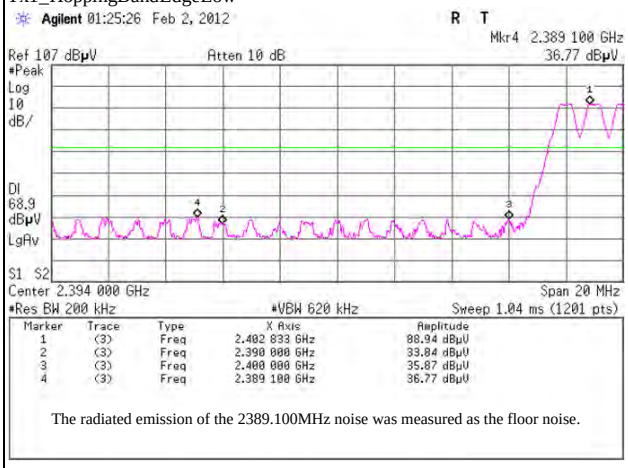
Band Edge compliance

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

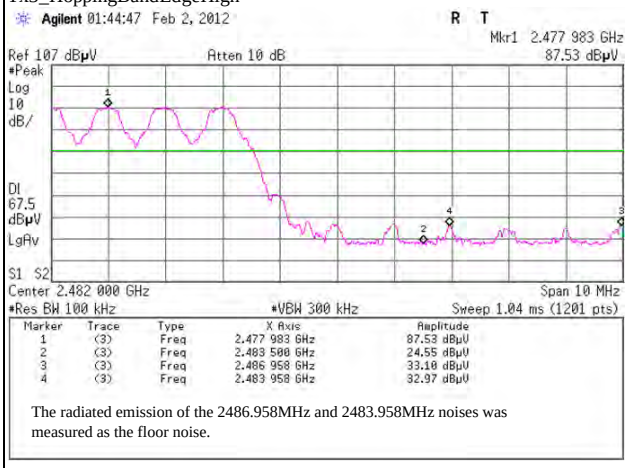




Tx, Bluetooth, BDR, PRBS9	
Hopping On (Low)	**Hopping On (High)**
Tx1_HoppingBandEdgeLow	Tx3_HoppingBandEdgeHigh



The radiated emission of the 2389.100MHz noise was measured as the floor noise.



The radiated emission of the 2486.958MHz and 2483.958MHz noises was measured as the floor noise.

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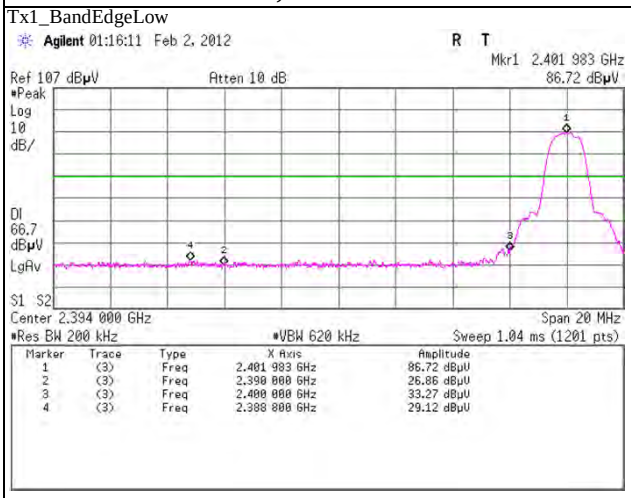
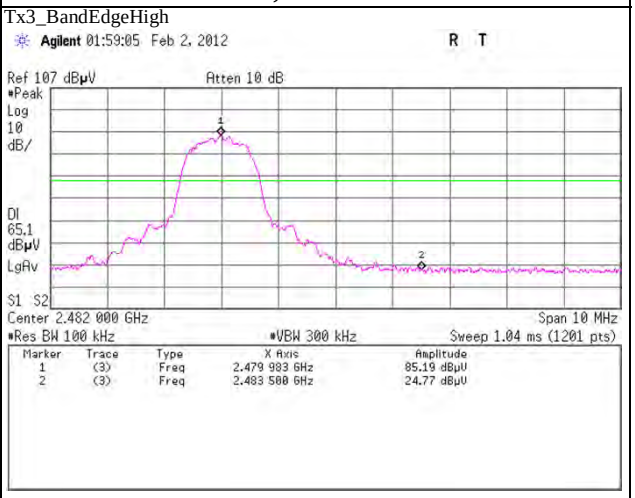
Spurious emission (Conducted)

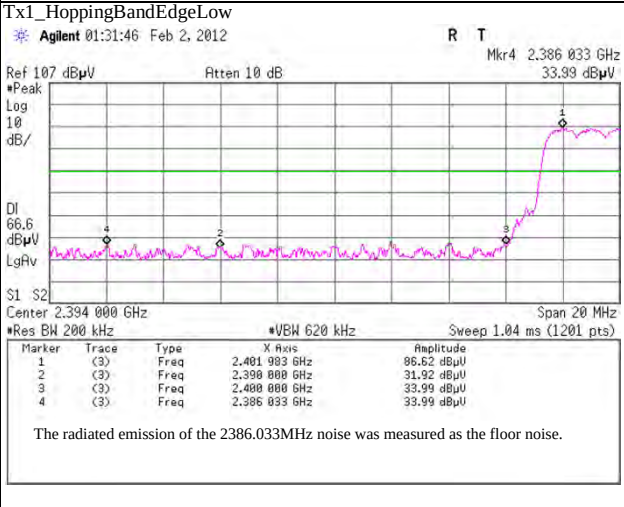
Band Edge compliance

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

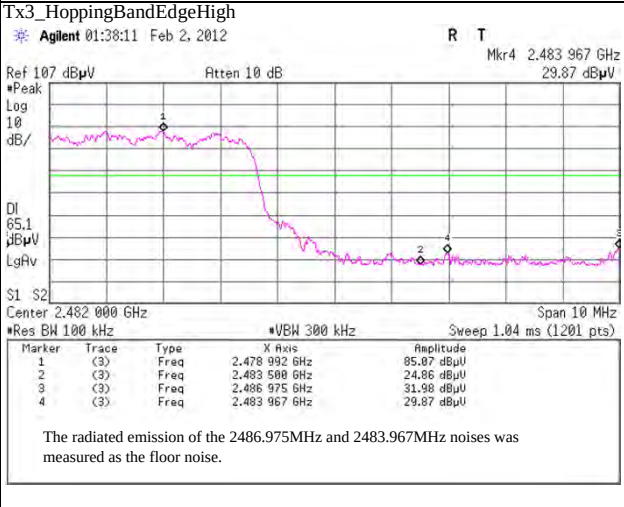




Tx, Bluetooth, EDR, PRBS9	
Hopping On (Low)	**Hopping On (High)**
Tx1_HoppingBandEdgeLow	Tx3_HoppingBandEdgeHigh



The radiated emission of the 2386.033MHz noise was measured as the floor noise.



The radiated emission of the 2486.975MHz and 2483.967MHz noises was measured as the floor noise.

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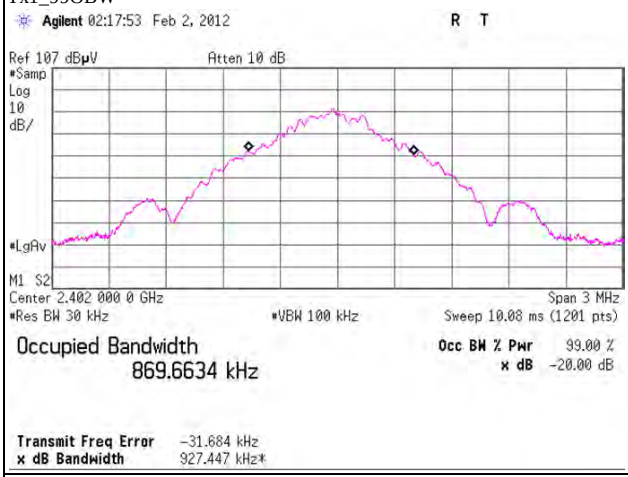
99% Occupied Bandwidth

Tx, Bluetooth, BDR, PRBS9

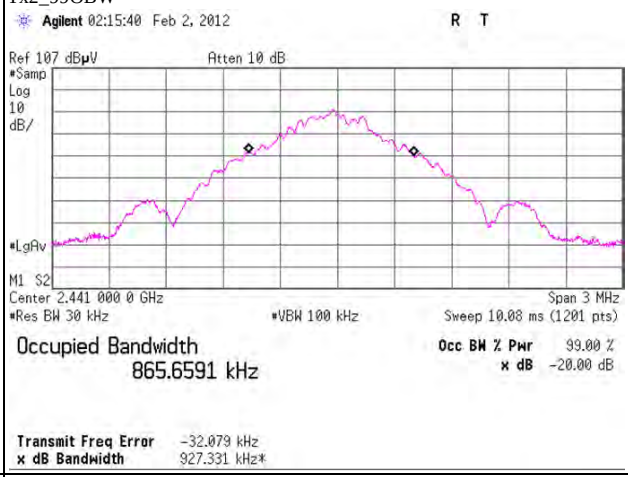
Tx, 2402MHz

Tx1_99OBW



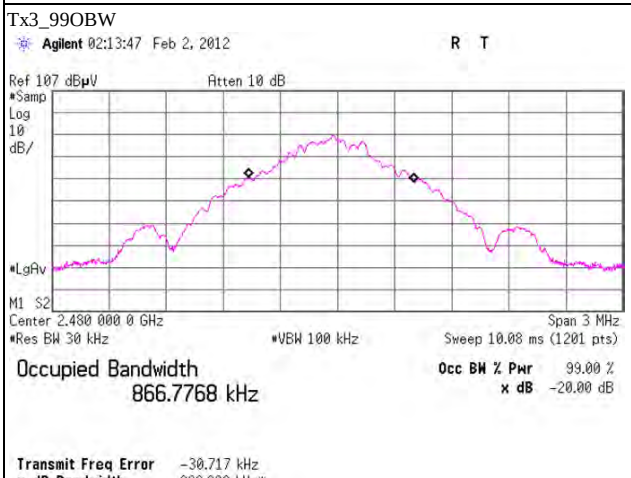
Tx, 2441MHz

Tx2_99OBW



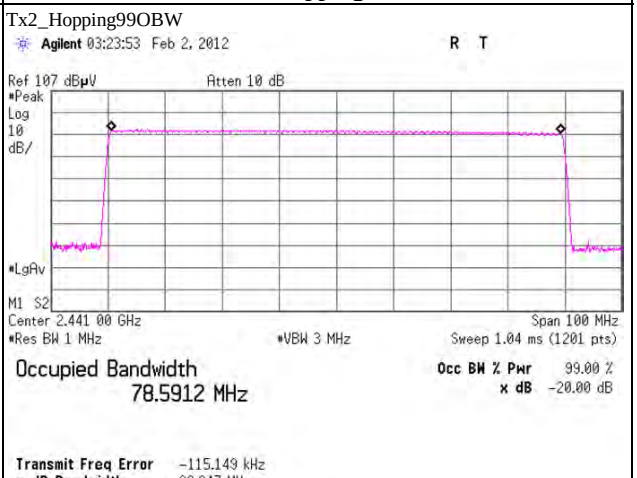
Tx, 2480MHz

Tx3_99OBW

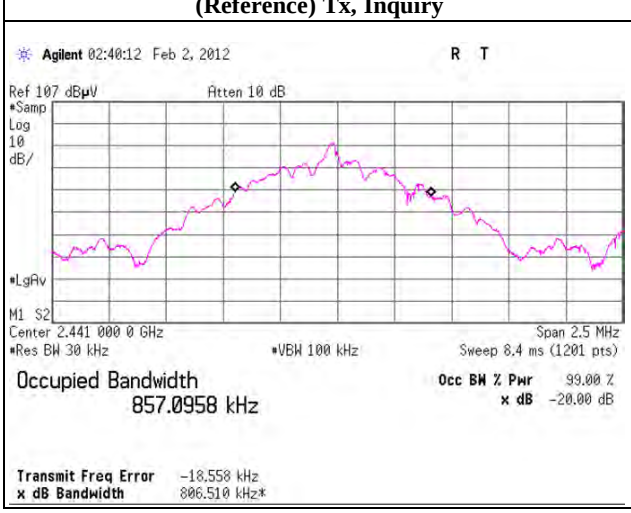


Tx, Hopping On

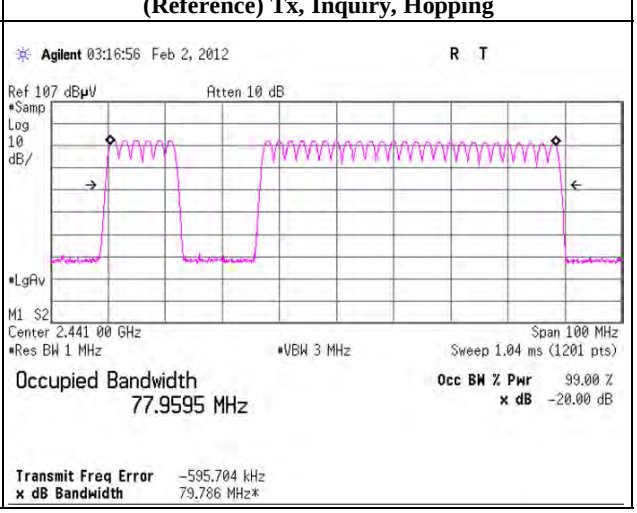
Tx2_Hopping99OBW



(Reference) Tx, Inquiry



(Reference) Tx, Inquiry, Hopping



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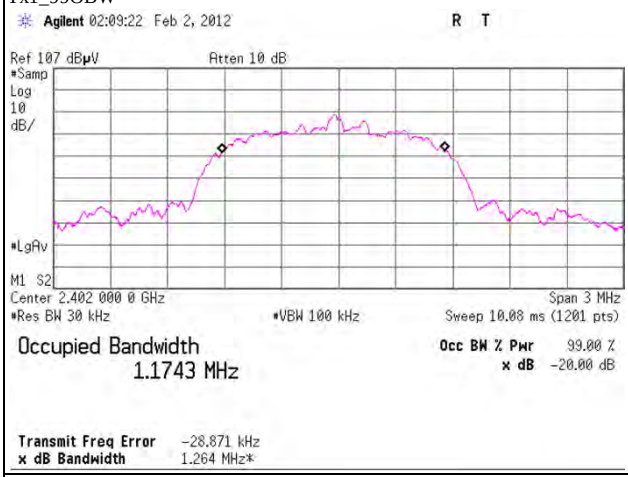
99% Occupied Bandwidth

Tx, Bluetooth, EDR, PRBS9

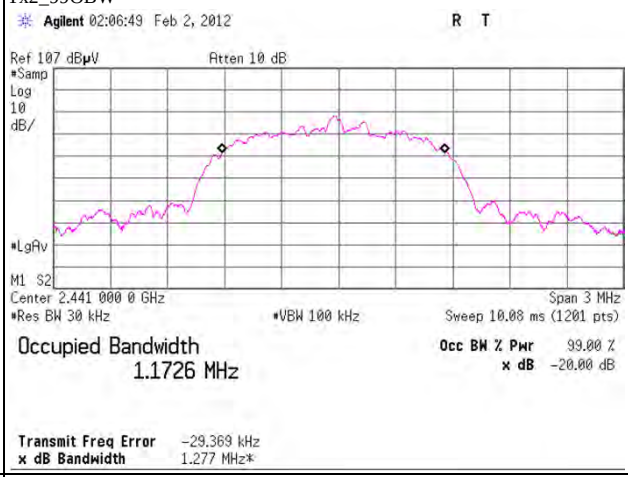
Tx, 2402MHz

Tx1_99OBW



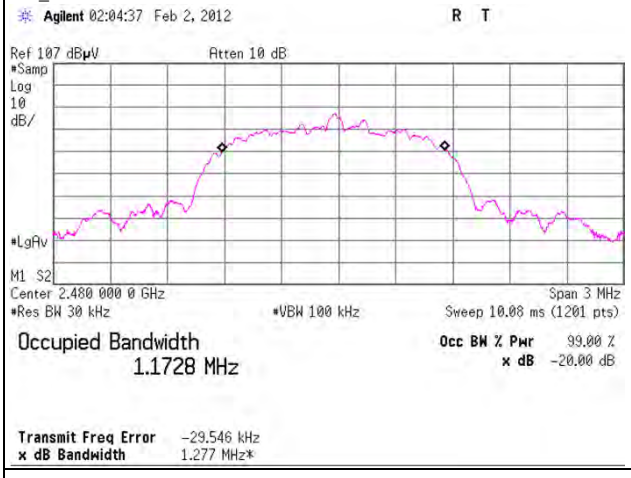
Tx, 2441MHz

Tx2_99OBW



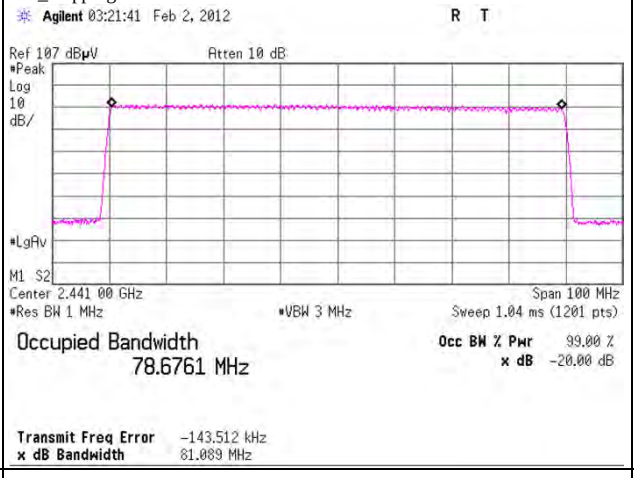
Tx, 2480MHz

Tx3_99OBW



Tx, Hopping On

Tx2_Hopping99OBW



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Test Report No :32FE0186-SH-01

APPENDIX 2
Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	AT	2011/02/02 * 12
SAT20-02	Attenuator	Agilent	8493C-020	74890	AT	2011/03/23 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT	2011/03/23 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2011/03/02 * 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-04	Humidity Indicator	A&D	AD-5681	4061512	AT	2011/03/02 * 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	2011/04/28 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2011/05/27 * 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
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2011/03/07 * 12
SJM-10	Measure	PROMART	SEN1935	-	RE	-
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2011/09/23 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RFI,MF)	-	RE	-
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
SAF-02	Pre Amplifier	SONOMA	310N	290212	RE	2011/02/17 * 12
SAT6-02	Attenuator	JFW	50HF-006N	-	RE	2011/02/17 * 12
SAT3-02	Attenuator	JFW	50HF-003N	-	RE	2011/02/17 * 12
SBA-02	Biconical Antenna	Schwarzbeck	BBA9106	91032665	RE	2011/11/16 * 12
SCC-B1/B3/B5 /B7/B8/B13/S RSE-02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/14 1PE/141PE/141PE /141PE/NS4906	-/0901-270(RF Selector)	RE	2011/04/28 * 12
SCC-B2/B4/B6 /B7/B8/B13/S RSE-02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/14 1PE/141PE/141PE /141PE/NS4906	-/0901-270(RF Selector)	RE	2011/04/28 * 12
SLA-02	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0893	RE	2011/11/16 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2012/02/06 * 12
STR-02	Test Receiver	Rohde & Schwarz	ESCI	100575	RE	2011/08/04 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE	-
SAEC-02(NSA)	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	RE	2011/09/25 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2011/03/16 * 12
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104A	46291/4A	RE	2011/03/16 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2011/03/15 * 12
SSA-01	Spectrum Analyzer	Agilent	N9010A-526	MY48031482	RE	2011/04/20 * 12

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

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