RADIO TEST REPORT

Test Report No.: 10009182S-A

Applicant	:	**PIONEER CORPORATION**
Type of Equipment	:	**CD RDS RECEIVER**
Model No.	:	**DEH-X6600BT**
FCC ID	:	**AJDK072**
Test regulation	:	**FCC Part15 Subpart C: 2012**
Test result	:	**Complied**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
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6. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.

Date of test: June 14 to 25, 2013

Tested by:

Makoto Hosaka
Engineer of WiSE Japan,
UL Verification Service

Approved by :

Toyokazu Imamura
Leader of WiSE Japan,
UL Verification Service

☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan.
☒ There is no testing item of "Non-accreditation".

RTL02610

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REVISION HISTORY

Original Test Report No.: 10009182S-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	10009182S-A	July 4, 2013	-	-

Contents

Page

SECTION 1: Customer information **4**
SECTION 2: Equipment under test (E.U.T.) **4**
SECTION 3: Test specification, procedures & results **6**
SECTION 4: Operation of E.U.T. during testing **9**
SECTION 5: Carrier frequency separation **12**
SECTION 6: 20dB bandwidth & Occupied bandwidth (99%) **12**
SECTION 7: Number of hopping frequency **12**
SECTION 8: Dwell time **12**
SECTION 9: Maximum peak output power **12**
SECTION 10: Spurious emissions (Antenna port conducted) **12**
SECTION 11: Radiated emission **13**
Contents of APPENDIXES **15**
APPENDIX 1: Data of radio tests **16**
APPENDIX 2: Test instruments **50**
APPENDIX 3: Photographs of test setup **51**

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	:	CD RDS RECEIVER
Model No.	:	DEH-X6600BT
Serial No.	:	See Section 4.
Rating	:	DC 14.4V
Country of Mass-production	:	Thailand
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No modification by the test lab.
Receipt date of Sample	:	June 14, 2013

2.2 Product description

Model: DEH-X6600BT (referred to as the EUT in this report) is a CD RDS RECEIVER.

Derived models and the difference:

Model	DEH-X6600BT	DEH-X66BT	DEH-X6600BS	DEH-X4600BT	MVH-X360BT
Bluetooth	○	○	○	○	○
RDS	○	○	○	○	○
Sxi Bus	x	x	○	x	x
CD Slot Mecha S11.6STD	○	○	○	○	x
Illumination	RGB	RGB	RGB	BLUE	BLUE
Display	LCD 13 digit	LCD 13 digit	LCD 13 digit	LCD 12 digit	LCD 12 digit
Pre Out	2 P/O	2 P/O	3 P/O	2 P/O	1P/O
Wire remote	○	○	○	○	○

○ : Applied
x : Not Applied

Clock Frequency:
SYSTEM MICRO:16.93MHz, 12MHz
GRILL MICRO:4.97MHz
CD mecha:16.93MHz
Tuner:36.48MHz(VCO: 2.5-3.3GHz)
Bluetooth Module:26MHz
DC-DC CONVERTER:367.347/439.024kHz

Radio specification:

Equipment type	:	Transceiver
Frequency of operation	:	2402-2480MHz
Bandwidth & channel spacing	:	79MHz & 1MHz
Type of modulation	:	GFSK, π/4DQPSK, 8DPSK
Antenna type	:	F pattern antenna
Antenna gain with cable loss	:	3.3dBi
Antenna connector type	:	None
Operation temperature range	:	-10 to +60 deg.C.

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

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

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : Test specification: FCC Part 15 Subpart C: 2012,
final revised on August 13, 2012 and effective September 12, 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 has been tested for compliance with FCC Part 15 Subpart B by the customer.

3.2 Procedures & Results

Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
Conducted emission	ANSI C63.4:2009 7. AC powerline conducted emission measurements	FCC 15.207	-	N/A *1)	-	N/A
Carrier frequency separation	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)	Conducted	N/A	*See data.	Complied
20dB bandwidth	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)	Conducted	N/A		-
Number of hopping frequency	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)(iii)	Conducted	N/A		Complied
Dwell time	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)(iii)	Conducted	N/A		Complied
Maximum peak output power	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (b)(1)	Conducted	N/A		Complied
Band edge compliance & Spurious emission	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (d) 15.209	Conducted/ Radiated	N/A	1.7dB Freq.: 359.995MHz Polarization: Horizontal Detection: Quasi Peak Mode: Tx 2402MHz, DH5	Complied

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

3.3 Addition to standard

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

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

3.4 Uncertainty

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

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

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

Radiated emission

The data listed in this 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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JAB Accreditation No. : RTL02610

	FCC Registration No.	IC Registration No.	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
☐ No.1 Semi-anechoic chamber	697847	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☐ No.2 Semi-anechoic chamber	697847	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☒ No.3 Semi-anechoic chamber	697847	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5m
☐ No.4 Semi-anechoic chamber	-	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
☐ No.1 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☐ No.2 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☐ No.3 shielded room	-	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
☐ No.4 shielded room	-	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
☒ No.5 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
☐ No.6 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-

3.6 Test setup, Data of test & Test instruments

Refer to APPENDIX 1 to 3.

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

4.1 Operating mode

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

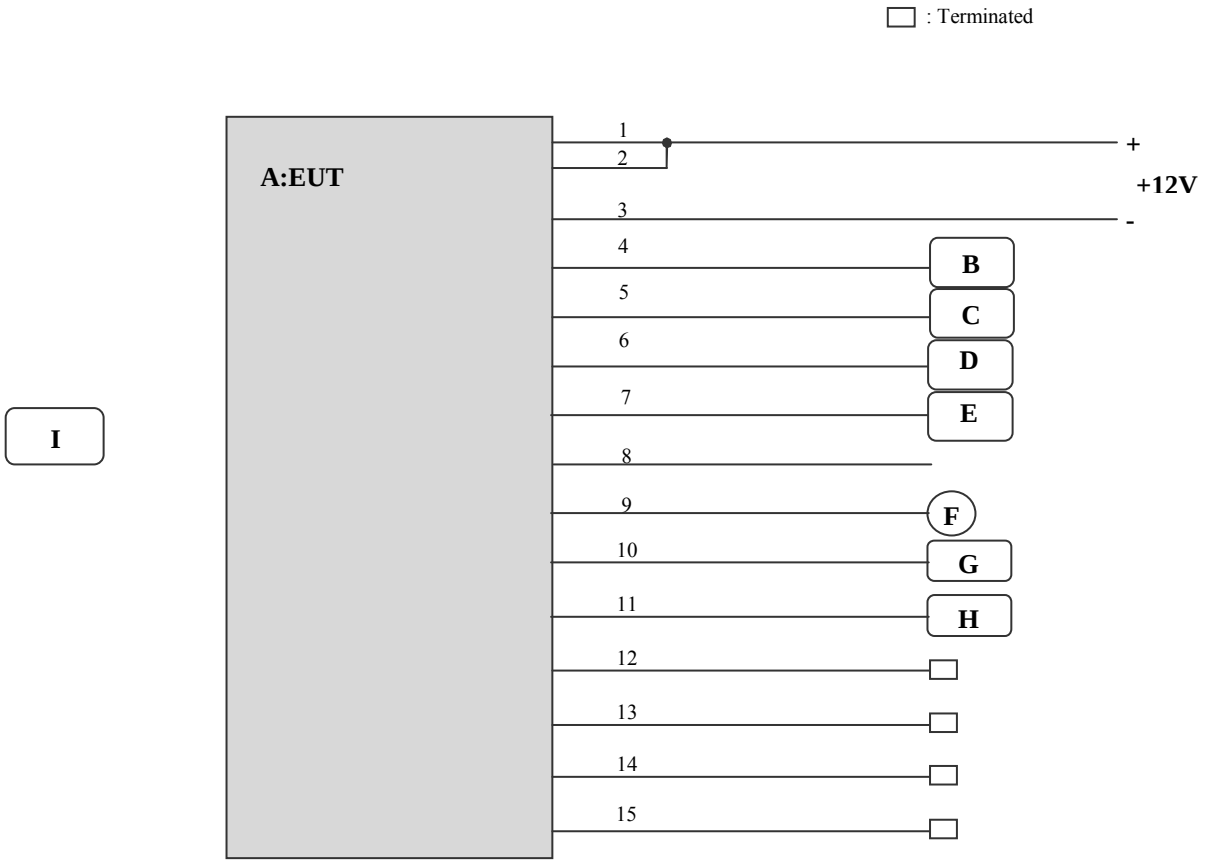
*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload (except Dwell time test).

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

*EUT has the power settings by the software as follows;
Power settings: 4
Software: BT module only Control software: HW05-SW01.27.20

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

4.2 Configuration of and peripherals



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	CD RDS RECEIVER	DEH-X6600BT	*1)	PIONEER	EUT
B	Dummy Load	RHA100N	-	CHIBA TECNO Co., Ltd.	-
C	Dummy Load	RHA100N	-	CHIBA TECNO Co., Ltd.	-
D	Speaker	TS-X350	BO100047	PIONEER	-
E	Speaker	TS-X350	BO100048	PIONEER	-
F	Microphone	-	-	PIONEER	-
G	USB Memory	Easy Disk Cute	CHA1109176UE	IO Data	-
H	Wired remote controller	RM-X2S	-	SONY	-
I	Remote controller	QXE1044	-	PIONEER	-

*1) MCTM000006UC: Antenna port conducted tests, MCTM000005UC: Radiated emission

List of cables used

No.	Cable name	Length(m)	Shield		Remarks
			Cable	Connector	
1	+B	0.15+2.0	Unshielded	Unshielded	-
2	ACC	0.15+2.0	Unshielded	Unshielded	-
3	GND	0.15+2.0	Unshielded	Unshielded	-
4	Speaker Front L	0.15+5.0	Unshielded	Unshielded	-
5	Speaker Front R	0.15+5.0	Unshielded	Unshielded	-
6	Speaker Rear L	0.15+6.3	Unshielded	Unshielded	-
7	Speaker Rear R	0.15+6.3	Unshielded	Unshielded	-
8	System Control	0.15	Unshielded	Unshielded	-
9	Mic	4.0	Shield	Shield	-
10	USB	2.0	Shield	Shield	-
11	Wired remote control	2.0	Shield	Shield	-
12	Audio Out F	1.7	Shield	Shield	-
13	Audio Out R S/W	1.7	Shield	Shield	-
14	FM Antenna	2.0	Shield	Shield	-
15	AUX In	3.0	Shield	Shield	-

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

SECTION 5: Carrier frequency separation

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

Summary of the test results: Pass
Refer to APPENDIX

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

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

Summary of the test results: Pass
Refer to APPENDIX

SECTION 7: Number of hopping frequency

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

Summary of the test results: Pass
Refer to APPENDIX

SECTION 8: Dwell time

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

Summary of the test results: Pass
Refer to APPENDIX

SECTION 9: Maximum peak output power

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

Summary of the test results: Pass
Refer to APPENDIX

SECTION 10: Spurious emissions (Antenna port conducted)

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

Summary of the test results: Pass
Refer to APPENDIX

SECTION 11: Radiated emission

11.1 Operating environment

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

11.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 0.8m (below 15GHz) / 1m (above 15GHz) above the conducting ground plane.
The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.
The rear of EUT, including its peripherals was aligned and flushed with rear of tabletop. I/O cables that were connected to the peripherals were bundled in center. They were folded back and for the forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane.
Photographs of the set up are shown in APPENDIX.

11.3 Test conditions

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

11.4 Test procedure

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

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

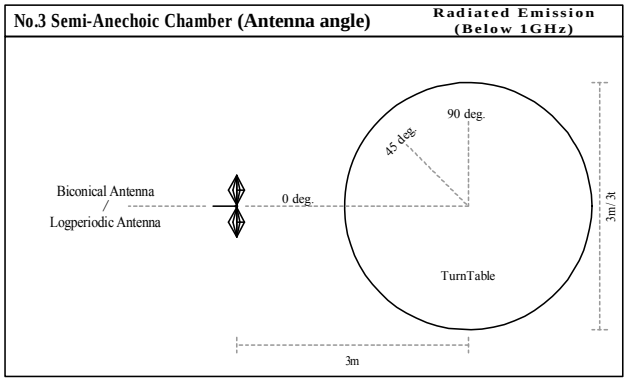
Frequency		30 - 1000MHz	1 - 25GHz		20dBc
Detection Type	:	Quasi-Peak	Peak	* Average	Peak
IF Bandwidth	:	120kHz	RBW:1MHz VBW:3MHz	RBW:1MHz VBW:10Hz	RBW: 100kHz, VBW: 300kHz

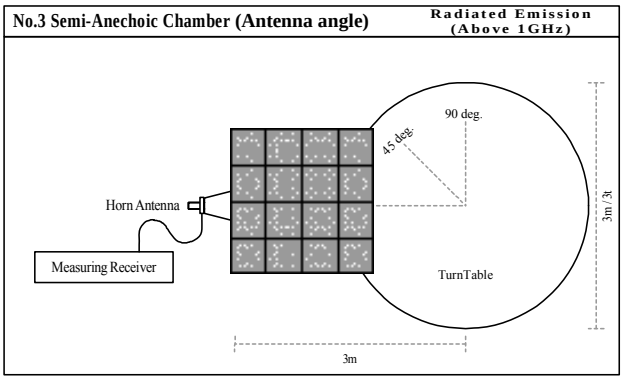
* When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.
Although 00-705 accepts VBW=10Hz for AV measurements, confirmed that superfluous smoothing was not performed.

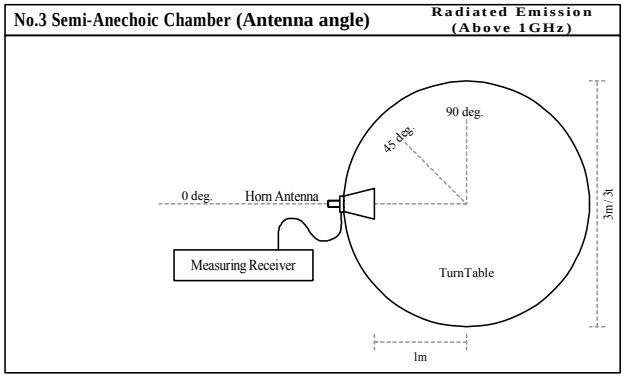
The carrier level and noise levels were confirmed at mounting angle of 0 to 60 deg. based on the product specification to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Antenna polarization \ Test item	Carrier	Spurious emission (Below 1GHz)	Spurious emission (1-15GHz)	Spurious emission (Above 15GHz)
Horizontal	0 deg.	60 deg.	0 deg.	0 deg.
Vertical	0 deg.	60 deg.	0 deg.	0 deg.

Figure 1. Antenna angle







11.5 Band edge

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

11.6 Results

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

Refer to APPENDIX

Contents of APPENDIXES

APPENDIX 1: Data of Radio tests

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

APPENDIX 2: Test instruments

Test instruments

APPENDIX 3: Photographs of test setup

Radiated emission

APPENDIX 1: Data of Radio tests

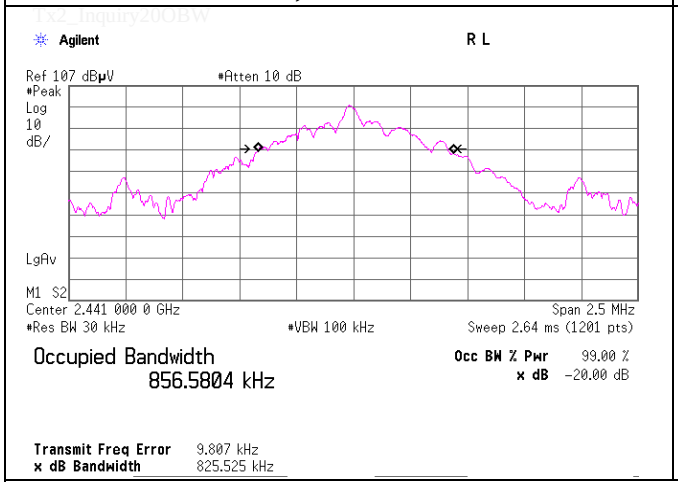
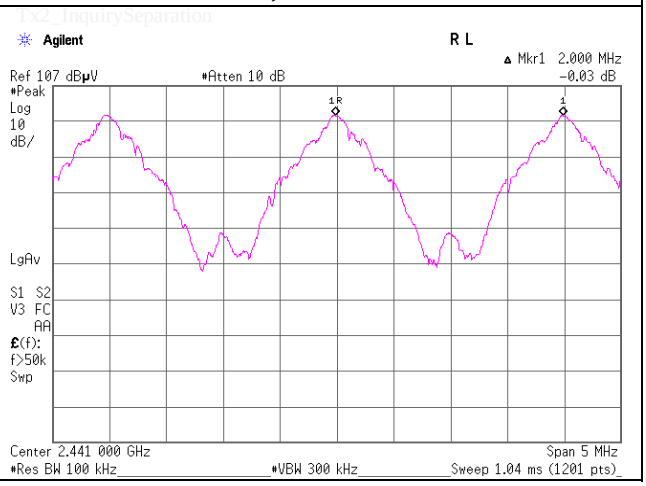
20dB Bandwidth and Carrier Frequency Separation

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	June 14, 2013	
Temperature / Humidity	26 deg.C , 59 %RH	
Engineer	Shinichi Takano	
Mode	Tx, Bluetooth, BDR, PRBS9	

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency Separation [MHz]
DH5	2402.0	0.958	1.000	>= 0.638
DH5	2441.0	0.937	1.000	>= 0.625
DH5	2480.0	0.929	1.000	>= 0.619
Inquiry	2441.0	0.826	2.000	>= 0.550

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

Inquiry

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

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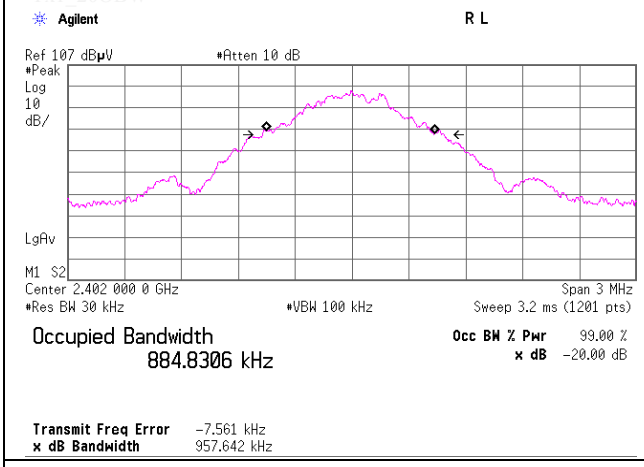
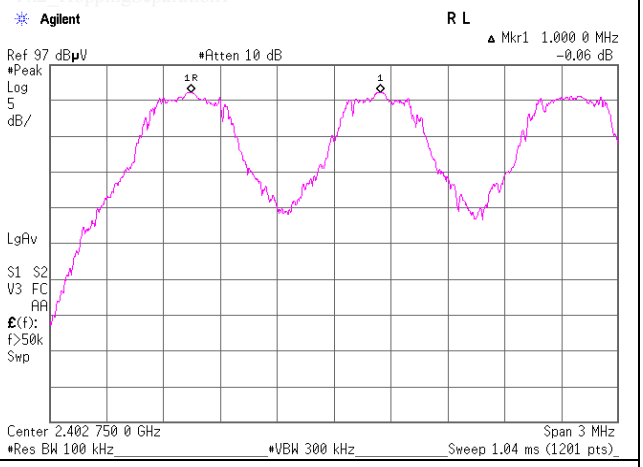
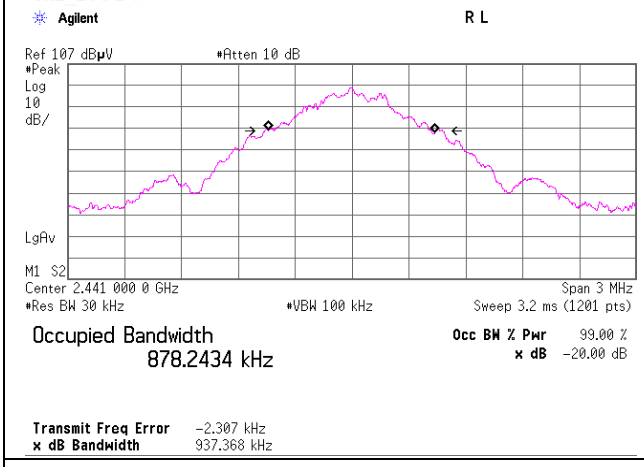
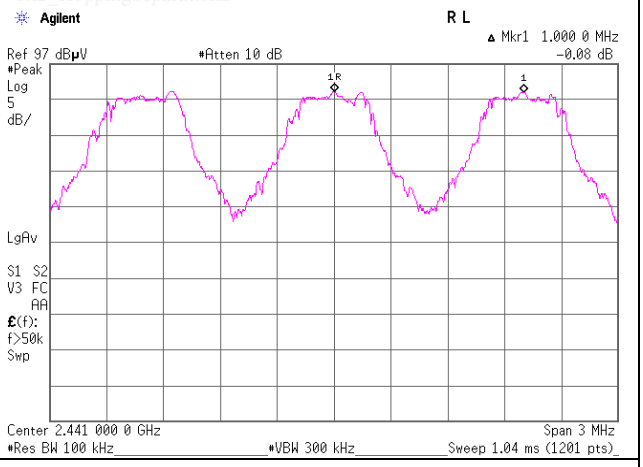
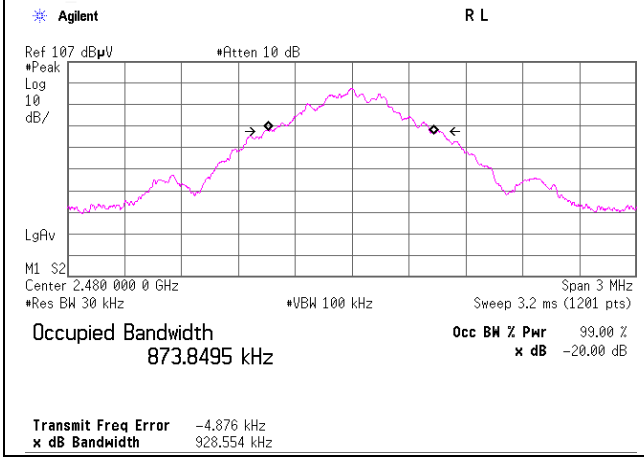
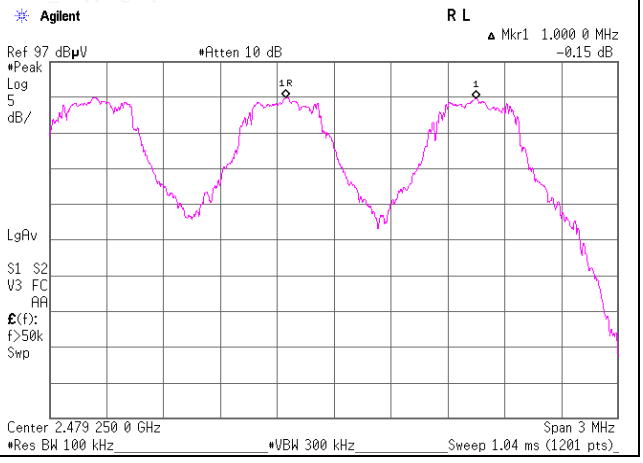
20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, BDR, PRBS9

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

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20dB Bandwidth and Carrier Frequency Separation

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	June 14, 2013	
Temperature / Humidity	26 deg.C , 59 %RH	
Engineer	Shinichi Takano	
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	1.286	1.000	>= 0.858
3-DH5	2441.0	1.300	1.000	>= 0.867
3-DH5	2480.0	1.292	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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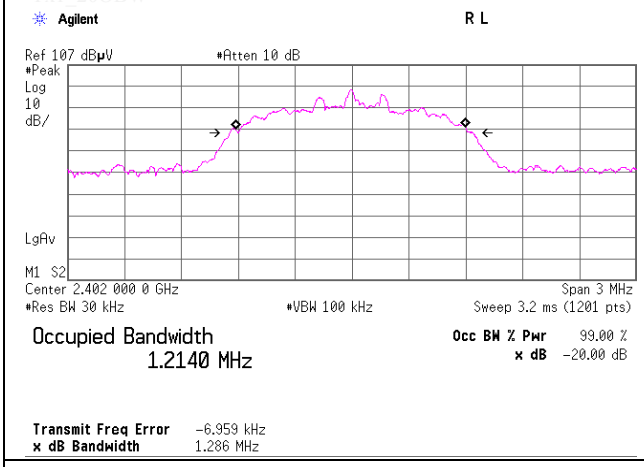
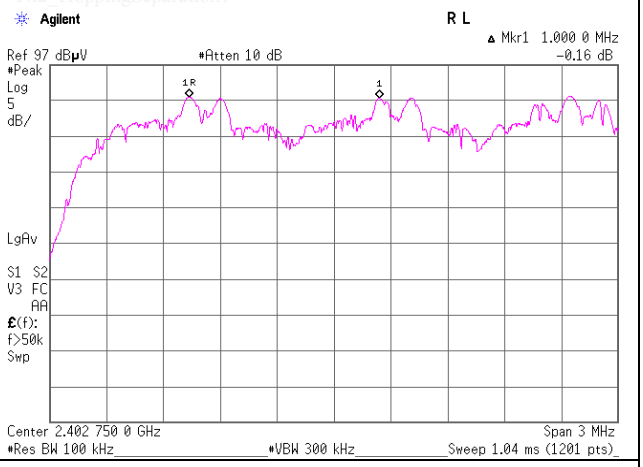
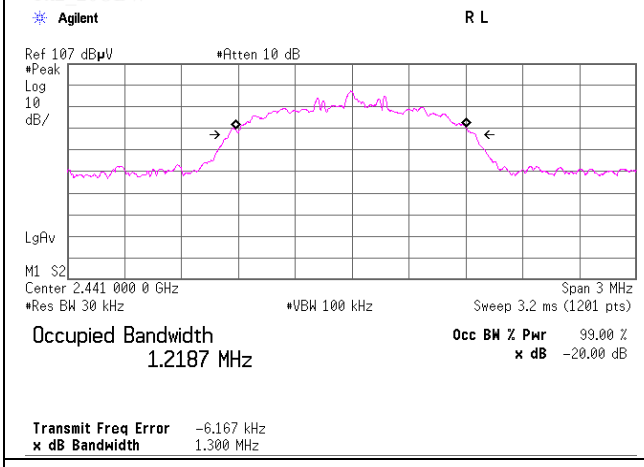
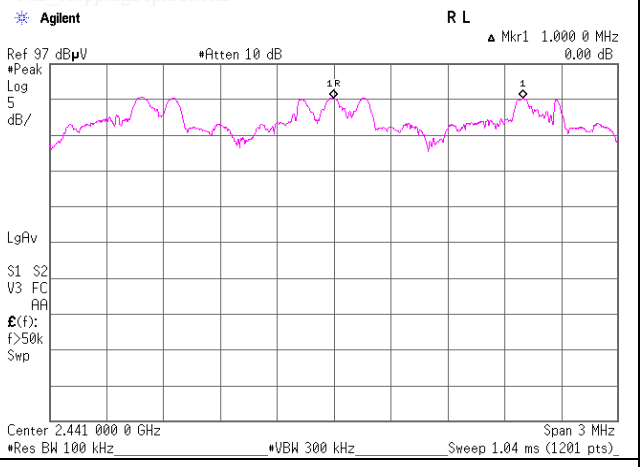
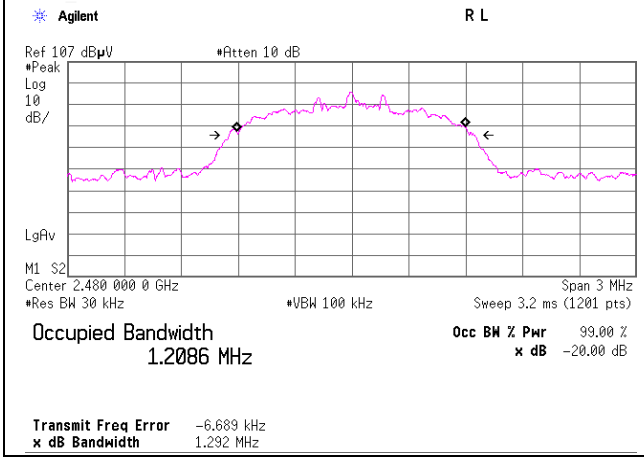
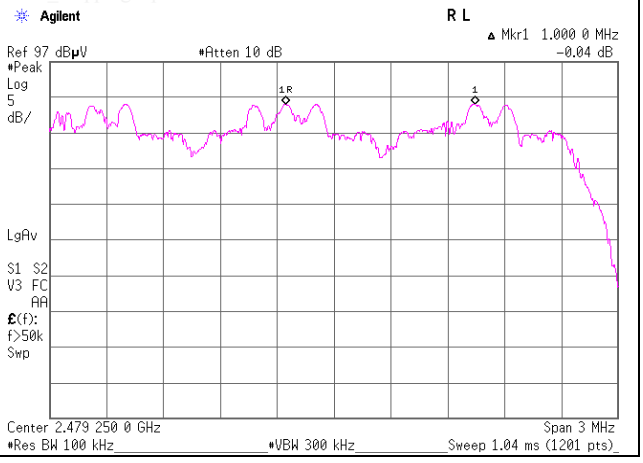
20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, EDR, PRBS9

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

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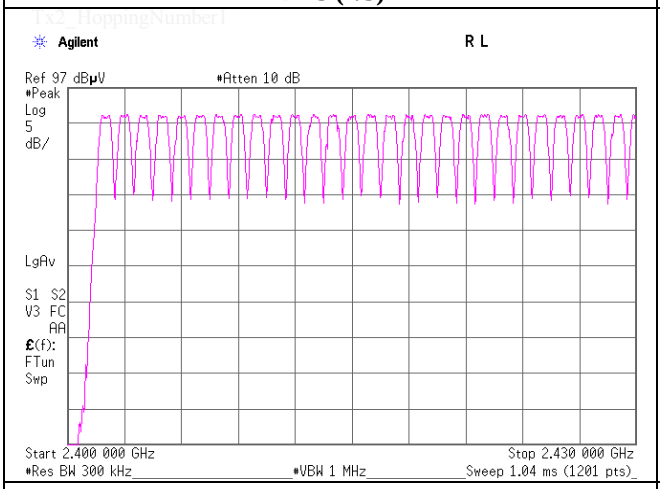
Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	June 14, 2013	
Temperature / Humidity	26 deg.C , 59 %RH	
Engineer	Shinichi Takano	
Mode	Tx, Bluetooth, BDR, PRBS9	

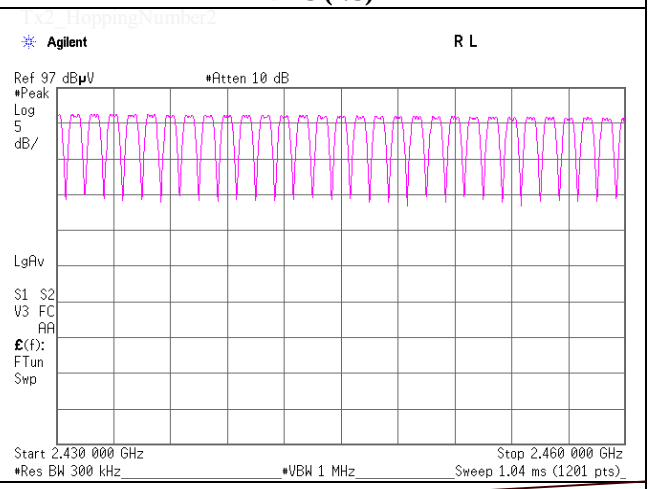
Mode	Number of Channel [times]	Limit [times]
DH5	79	>= 15

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

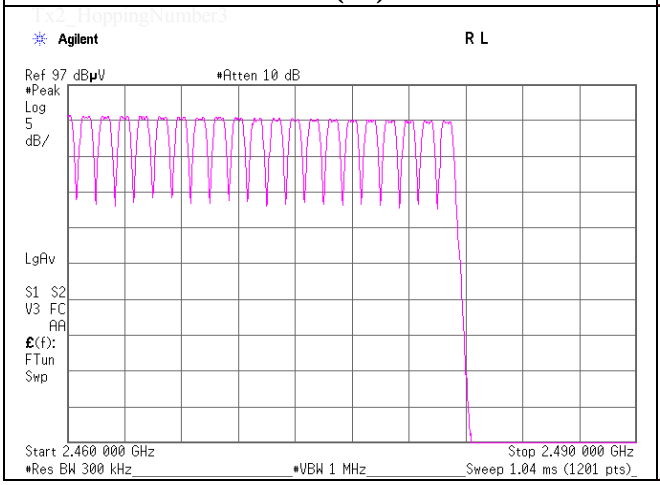
DH5 (1/3)



DH5 (2/3)



DH5 (3/3)



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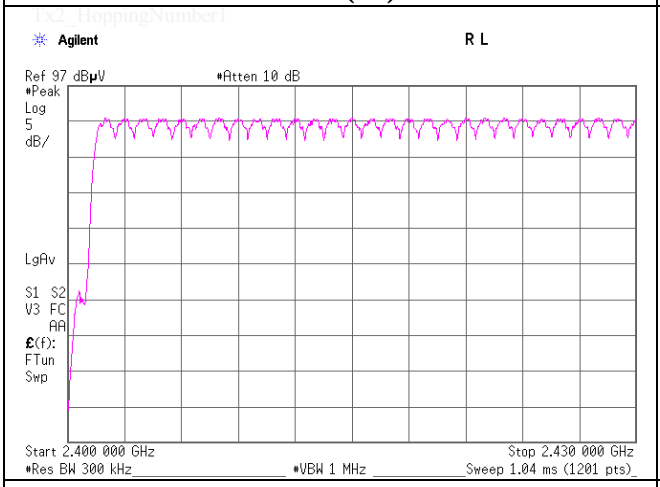
Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	June 14, 2013	
Temperature / Humidity	26 deg.C , 59 %RH	
Engineer	Shinichi Takano	
Mode	Tx, Bluetooth, EDR, PRBS9	

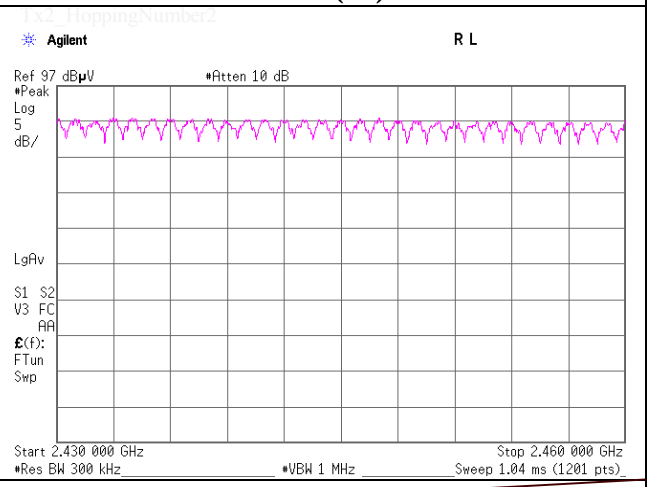
Mode	Number of Channel [times]	Limit [times]
3-DH5	79	>= 15

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

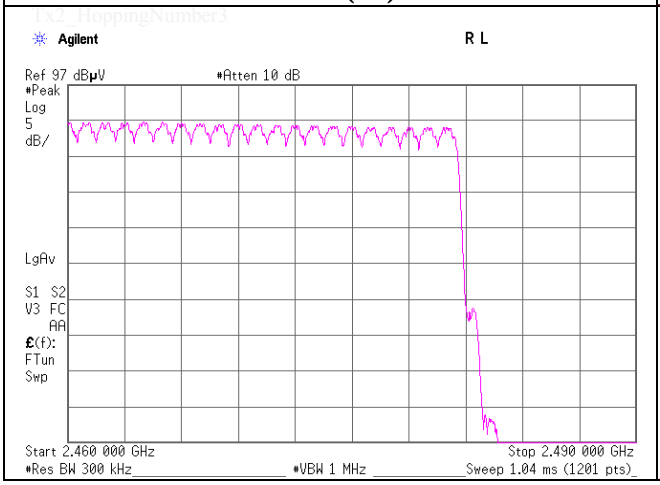
3-DH5 (1/3)



3-DH5 (2/3)



3-DH5 (3/3)



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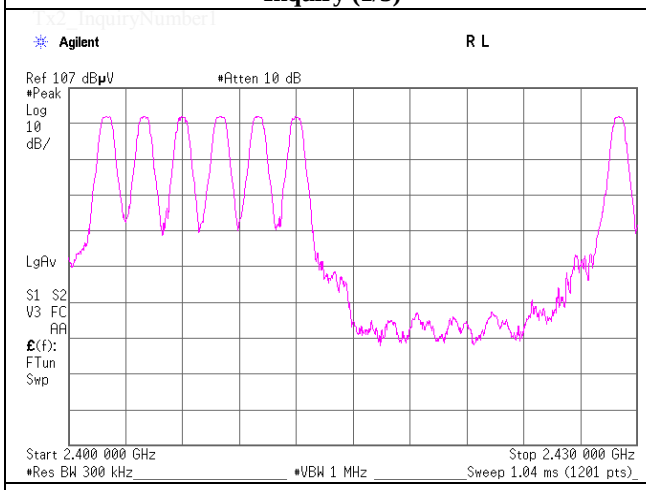
Number of Hopping Frequency

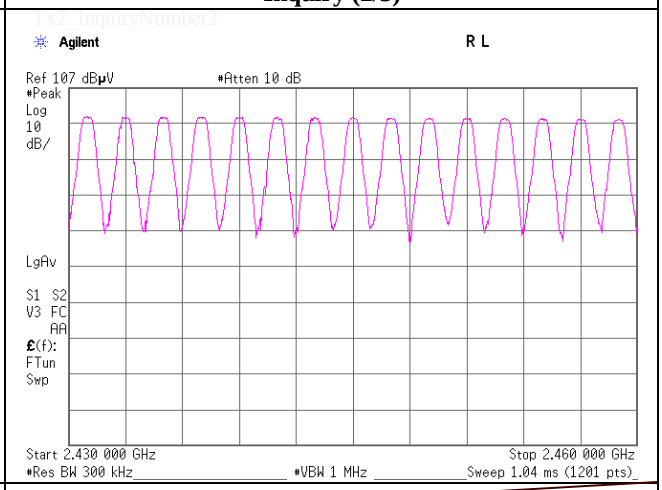
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	June 14, 2013	
Temperature / Humidity	26 deg.C , 59 %RH	
Engineer	Shinichi Takano	
Mode	Tx, Bluetooth, Inquiry	

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

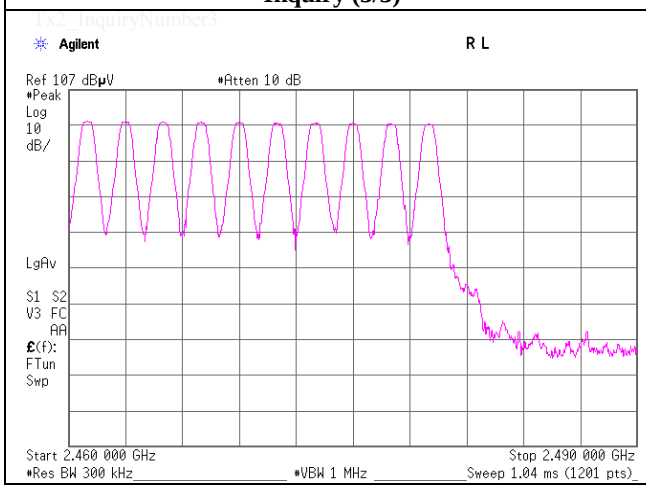
Inquiry (1/3)



Inquiry (2/3)



Inquiry (3/3)



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Dwell Time

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	June 25, 2013	
Temperature / Humidity	26 deg.C , 54 %RH	
Engineer	Shinichi Takano	
Mode	Tx, Bluetooth, BDR, PRBS9	

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4) / 12.8 (32 Hopping x 0.4) second period	Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	51.0 / 5.0 sec. x 31.6 sec. = 323 times	0.403	130	400
DH3	26.0 / 5.0 sec. x 31.6 sec. = 165 times	1.660	274	400
DH5	17.0 / 5.0 sec. x 31.6 sec. = 108 times	2.908	314	400
Inquiry	100.0 / 1.0 sec. x 12.8 sec. = 1280 times	0.107	137	400

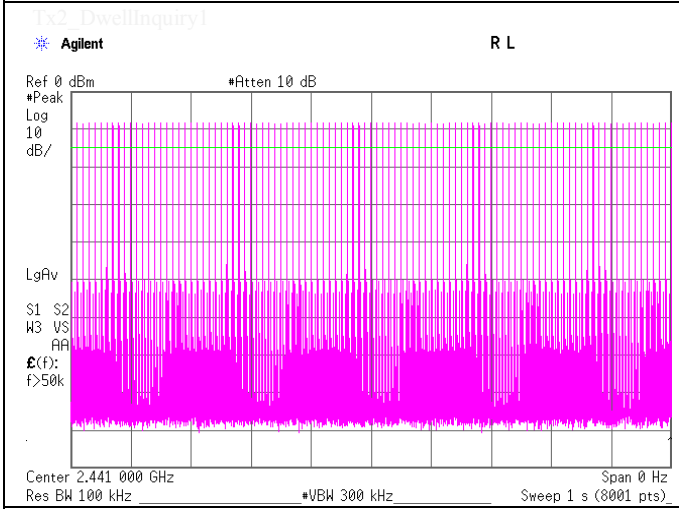
Sample Calculation

Result = Number of transmission x Length of transmition time

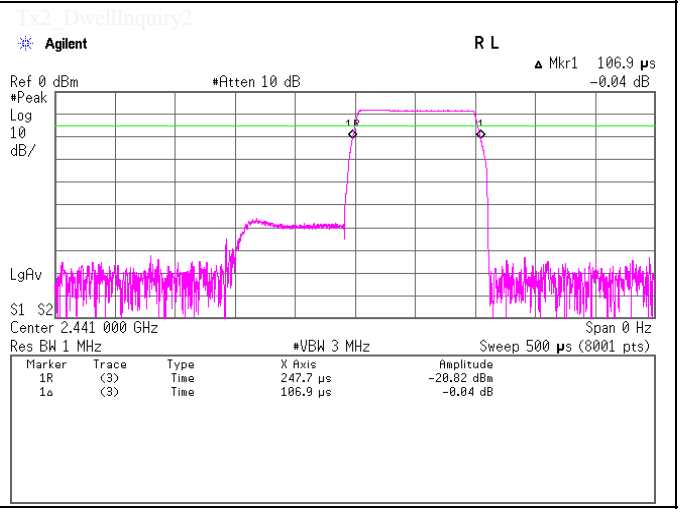
* This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in N x 0.4s, where N is the number of channels being used in the hopping sequence (20 ≤ N ≤ 79), is always less than 0.4s regardless of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

Inquiry

Inquiry (1/2)



Inquiry (2/2)



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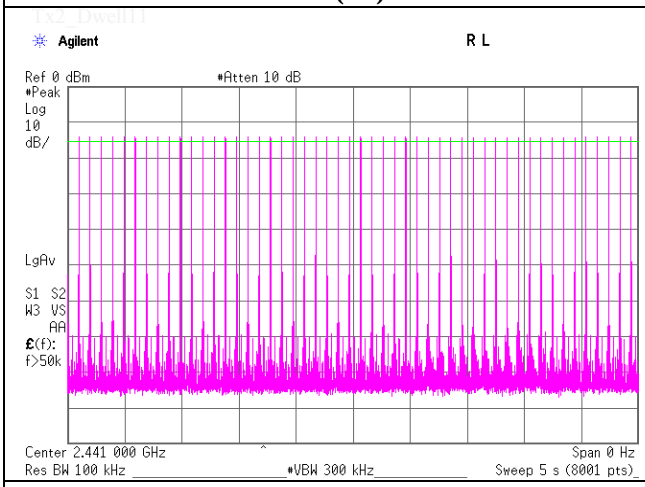
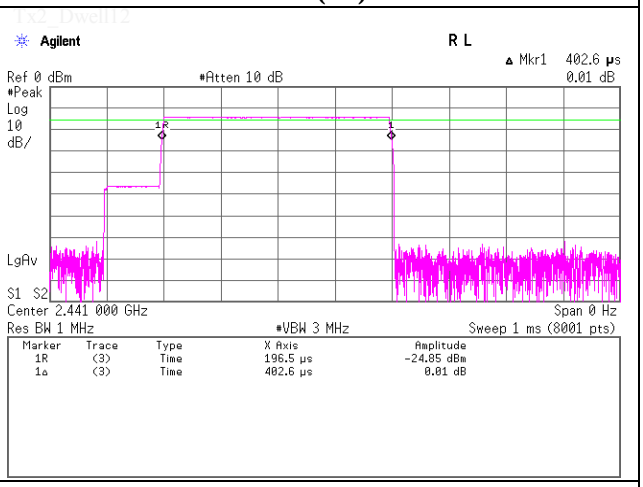
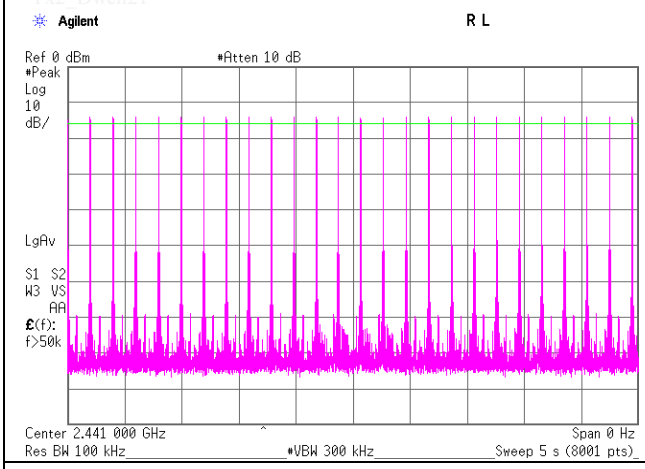
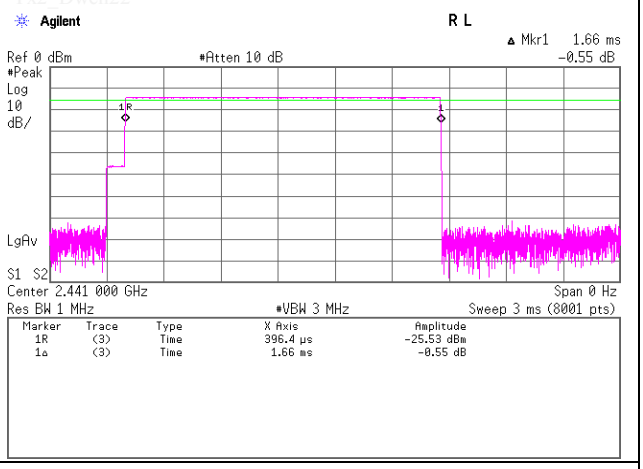
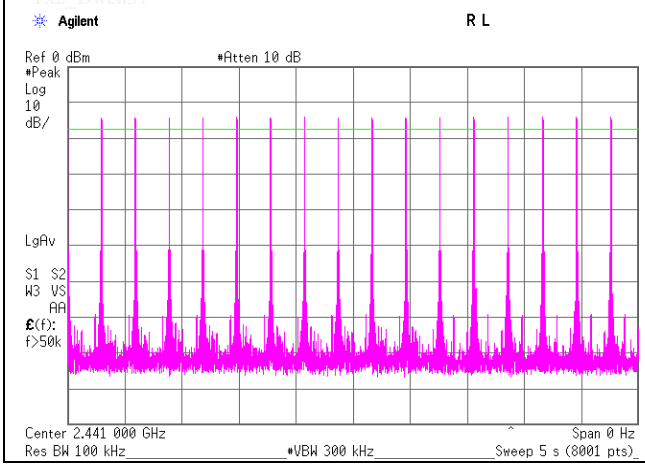
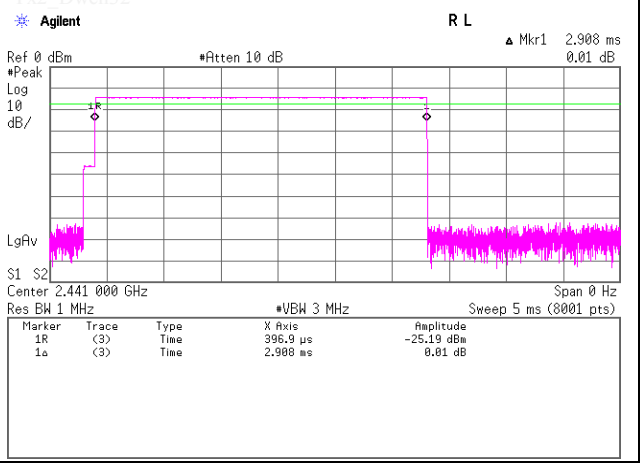
Dwell time

Tx, Bluetooth, BDR, PRBS9

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

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Dwell Time

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	June 25, 2013	
Temperature / Humidity	26 deg.C , 54 %RH	
Engineer	Shinichi Takano	
Mode	Tx, Bluetooth, EDR, PRBS9	

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4) second	Length of transmission time [msec]	Result [msec]	Limit [msec]
3-DH1	51.0 / 5.0 sec. x 31.6 sec. = 323 times	0.416	134	400
3-DH3	26.0 / 5.0 sec. x 31.6 sec. = 165 times	1.667	275	400
3-DH5	17.0 / 5.0 sec. x 31.6 sec. = 108 times	2.917	315	400

Sample Calculation

Result = Number of transmission x Length of transmition time

* This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in N x 0.4s, where N is the number of channels being used in the hopping sequence ($20 \leq N \leq 79$), is always less than 0.4s regardless of packet size (3-DH1, 3-DH3 or 3-DH5). This is confirmed in the test report for N=79.

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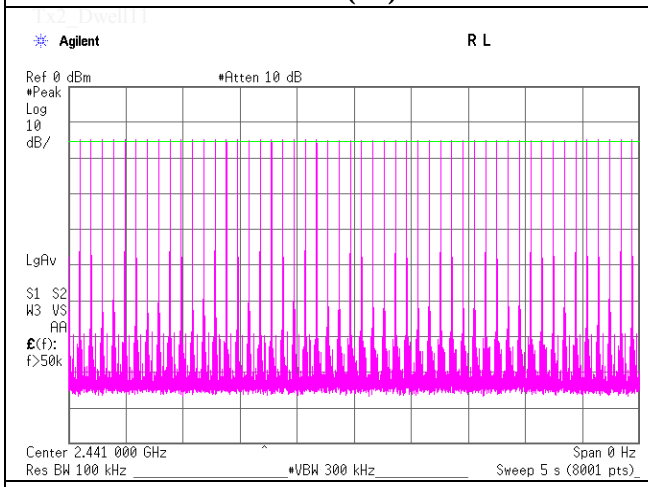
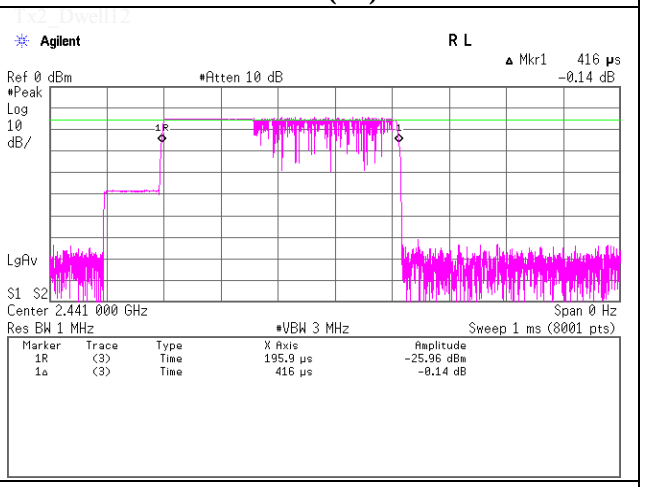
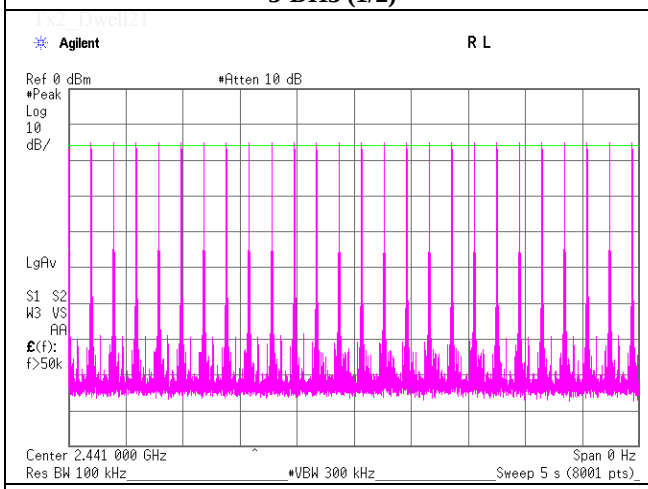
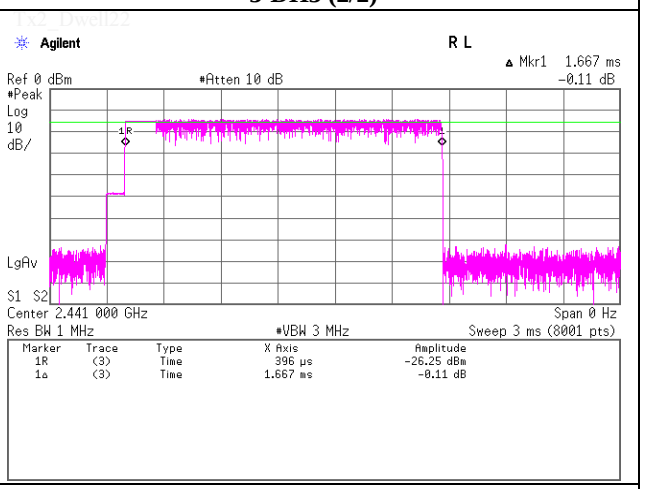
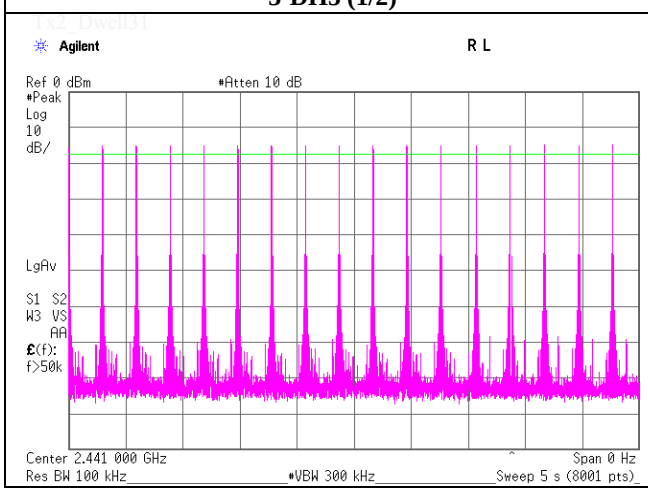
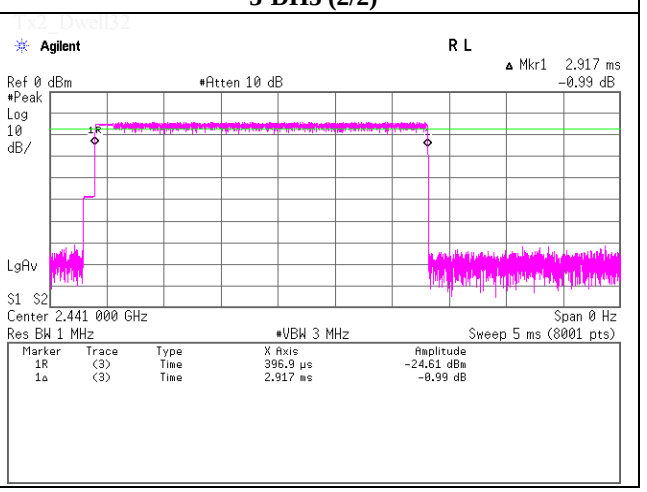
Dwell time

Tx, Bluetooth, EDR, PRBS9

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

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Maximum Peak Conducted Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date	June 14, 2013
Temperature / Humidity	26 deg.C , 59 %RH
Engineer	Shinichi Takano
Mode	Tx, Bluetooth

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

	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
DH5	2402.0	-10.83	1.15	9.98	0.30	1.07	20.97	125	20.67
DH5	2441.0	-10.85	1.18	9.98	0.31	1.07	20.97	125	20.66
DH5	2480.0	-11.92	1.23	9.98	-0.71	0.85	20.97	125	21.68
2-DH5	2402.0	-10.66	1.15	9.98	0.47	1.11	20.97	125	20.50
2-DH5	2441.0	-10.86	1.18	9.98	0.30	1.07	20.97	125	20.67
2-DH5	2480.0	-12.16	1.23	9.98	-0.95	0.80	20.97	125	21.92
3-DH5	2402.0	-10.58	1.15	9.98	0.55	1.14	20.97	125	20.42
3-DH5	2441.0	-10.77	1.18	9.98	0.39	1.09	20.97	125	20.58
3-DH5	2480.0	-12.07	1.23	9.98	-0.86	0.82	20.97	125	21.83

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

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber	
Date	June 15, 2013	June 16, 2013
Temperature / Humidity	25 deg.C, 62 %RH	24 deg.C, 66 %RH
Engineer	Tatsuya Arai	Makoto Hosaka
Mode	Tx, 2402 MHz	
	Tx, Bluetooth, DH5, 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.	78.217	QP	45.2	6.4	7.3	32.1	26.8	40.0	13.2	400	81	
Hori.	321.759	QP	46.7	14.4	8.7	31.9	37.9	46.0	8.1	100	133	
Hori.	359.995	QP	52.0	15.3	8.9	31.9	44.3	46.0	**1.7**	100	44	
Hori.	935.994	QP	35.9	22.5	10.9	30.7	38.6	46.0	7.4	100	183	
Hori.	1601.333	PK	47.8	25.1	13.8	40.8	45.9	73.9	28.0	100	42	
Hori.	2386.217	PK	47.0	27.4	14.7	41.4	47.7	73.9	26.2	108	264	
Hori.	2390.000	PK	47.5	27.4	14.7	41.4	48.2	73.9	25.7	108	264	
Hori.	3202.667	PK	47.9	28.8	6.6	41.6	41.7	73.9	32.2	118	18	
Hori.	4804.000	PK	48.9	31.1	7.5	41.2	46.3	73.9	27.6	100	285	
Hori.	6405.333	PK	46.8	34.8	8.3	40.6	49.3	73.9	24.6	100	0	
Hori.	7206.000	PK	47.2	36.6	9.1	41.4	51.5	73.9	22.4	100	0	
Hori.	9608.000	PK	45.6	38.5	10.2	38.9	55.4	73.9	18.5	100	0	
Hori.	12010.000	PK	46.2	39.4	11.5	39.4	57.7	73.9	16.2	100	0	
Hori.	1601.333	AV	34.9	25.1	13.8	40.8	33.0	53.9	20.9	100	42	
Hori.	2386.217	AV	34.3	27.4	14.7	41.4	35.0	53.9	18.9	108	264	
Hori.	2390.000	AV	34.1	27.4	14.7	41.4	34.8	53.9	19.1	108	264	
Hori.	3202.667	AV	35.8	28.8	6.6	41.6	29.6	53.9	24.3	118	18	
Hori.	4804.000	AV	38.5	31.1	7.5	41.2	35.9	53.9	18.0	100	285	
Hori.	6405.333	AV	34.2	34.8	8.3	40.6	36.7	53.9	17.2	100	0	
Hori.	7206.000	AV	35.3	36.6	9.1	41.4	39.6	53.9	14.3	100	0	
Hori.	9608.000	AV	32.5	38.5	10.2	38.9	42.3	53.9	11.6	100	0	
Hori.	12010.000	AV	34.0	39.4	11.5	39.4	45.5	53.9	8.4	100	0	
Vert.	359.995	QP	43.4	15.3	8.9	31.9	35.7	46.0	10.3	110	17	
Vert.	647.994	QP	38.4	19.6	10.0	32.0	36.0	46.0	10.0	100	176	
Vert.	935.994	QP	34.5	22.5	10.9	30.7	37.2	46.0	8.8	100	5	
Vert.	1601.333	PK	48.3	25.1	13.8	40.8	46.4	73.9	27.5	100	24	
Vert.	2386.217	PK	47.1	27.4	14.7	41.4	47.8	73.9	26.1	100	47	
Vert.	2390.000	PK	46.5	27.4	14.7	41.4	47.2	73.9	26.7	100	47	
Vert.	3202.667	PK	48.9	28.8	6.6	41.6	42.7	73.9	31.2	100	358	
Vert.	4804.000	PK	50.6	31.1	7.5	41.2	48.0	73.9	25.9	100	150	
Vert.	6405.333	PK	46.6	34.8	8.3	40.6	49.1	73.9	24.8	100	0	
Vert.	7206.000	PK	47.7	36.6	9.1	41.4	52.0	73.9	21.9	100	0	
Vert.	9608.000	PK	45.1	38.5	10.2	38.9	54.9	73.9	19.0	100	0	
Vert.	12010.000	PK	46.9	39.4	11.5	39.4	58.4	73.9	15.5	100	0	
Vert.	1601.333	AV	38.1	25.1	13.8	40.8	36.2	53.9	17.7	100	24	
Vert.	2386.217	AV	35.0	27.4	14.7	41.4	35.7	53.9	18.2	100	47	
Vert.	2390.000	AV	34.1	27.4	14.7	41.4	34.8	53.9	19.1	100	47	
Vert.	3202.667	AV	37.5	28.8	6.6	41.6	31.3	53.9	22.6	100	358	
Vert.	4804.000	AV	42.3	31.1	7.5	41.2	39.7	53.9	14.2	100	150	
Vert.	6405.333	AV	34.5	34.8	8.3	40.6	37.0	53.9	16.9	100	0	
Vert.	7206.000	AV	35.5	36.6	9.1	41.4	39.8	53.9	14.1	100	0	
Vert.	9608.000	AV	33.0	38.5	10.2	38.9	42.8	53.9	11.1	100	0	
Vert.	12010.000	AV	34.1	39.4	11.5	39.4	45.6	53.9	8.3	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)
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.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	82.4	27.4	14.7	41.4	83.1	-	-	
Hori.	2400.000	PK	38.5	27.4	14.7	41.4	39.2	63.1	23.9	
Vert.	2402.000	PK	87.4	27.4	14.7	41.4	88.1	-	-	
Vert.	2400.000	PK	41.4	27.4	14.7	41.4	42.1	68.1	26.0	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber	
Date	June 15, 2013	June 16, 2013
Temperature / Humidity	25 deg.C, 62 %RH	24 deg.C, 66 %RH
Engineer	Tatsuya Arai	Makoto Hosaka
Mode	Tx, 2441 MHz	
	Tx, Bluetooth, DH5, 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.	78.219	QP	45.4	6.4	7.3	32.1	27.0	40.0	13.0	200	259	
Hori.	321.759	QP	46.9	14.4	8.7	31.9	38.1	46.0	7.9	106	133	
Hori.	359.996	QP	51.9	15.3	8.9	31.9	44.2	46.0	**1.8**	100	48	
Hori.	935.994	QP	36.1	22.5	10.9	30.7	38.8	46.0	7.2	100	183	
Hori.	1627.333	PK	46.8	25.3	13.8	40.8	45.1	73.9	28.8	120	39	
Hori.	3254.667	PK	48.5	28.9	6.6	41.6	42.4	73.9	31.5	100	216	
Hori.	4882.000	PK	49.0	31.3	7.5	41.1	46.7	73.9	27.2	100	88	
Hori.	6509.333	PK	45.9	35.2	8.4	40.7	48.8	73.9	25.1	100	0	
Hori.	7323.000	PK	46.6	36.6	9.0	41.4	50.8	73.9	23.1	100	0	
Hori.	9764.000	PK	43.8	38.7	10.1	38.9	53.7	73.9	20.2	100	0	
Hori.	12205.000	PK	44.2	39.5	11.4	39.3	55.8	73.9	18.1	100	0	
Hori.	1627.333	AV	35.4	25.3	13.8	40.8	33.7	53.9	20.2	120	39	
Hori.	3254.667	AV	36.6	28.9	6.6	41.6	30.5	53.9	23.4	100	216	
Hori.	4882.000	AV	39.4	31.3	7.5	41.1	37.1	53.9	16.8	100	88	
Hori.	6509.333	AV	33.9	35.2	8.4	40.7	36.8	53.9	17.1	100	0	
Hori.	7323.000	AV	34.2	36.6	9.0	41.4	38.4	53.9	15.5	100	0	
Hori.	9764.000	AV	31.4	38.7	10.1	38.9	41.3	53.9	12.6	100	0	
Hori.	12205.000	AV	32.1	39.5	11.4	39.3	43.7	53.9	10.2	100	0	
Vert.	359.996	QP	43.4	15.3	8.9	31.9	35.7	46.0	10.3	100	15	
Vert.	647.998	QP	38.5	19.6	10.0	32.0	36.1	46.0	9.9	100	179	
Vert.	935.994	QP	34.3	22.5	10.9	30.7	37.0	46.0	9.0	100	4	
Vert.	1627.333	PK	49.1	25.3	13.8	40.8	47.4	73.9	26.5	100	34	
Vert.	3254.667	PK	49.5	28.9	6.6	41.6	43.4	73.9	30.5	100	295	
Vert.	4882.000	PK	50.0	31.3	7.5	41.1	47.7	73.9	26.2	105	235	
Vert.	6509.333	PK	46.8	35.2	8.4	40.7	49.7	73.9	24.2	100	0	
Vert.	7323.000	PK	46.5	36.6	9.0	41.4	50.7	73.9	23.2	100	0	
Vert.	9764.000	PK	44.7	38.7	10.1	38.9	54.6	73.9	19.3	100	0	
Vert.	12205.000	PK	45.2	39.5	11.4	39.3	56.8	73.9	17.1	100	0	
Vert.	1627.333	AV	38.6	25.3	13.8	40.8	36.9	53.9	17.0	100	34	
Vert.	3254.667	AV	38.4	28.9	6.6	41.6	32.3	53.9	21.6	100	295	
Vert.	4882.000	AV	40.0	31.3	7.5	41.1	37.7	53.9	16.2	105	235	
Vert.	6509.333	AV	34.1	35.2	8.4	40.7	37.0	53.9	16.9	100	0	
Vert.	7323.000	AV	34.7	36.6	9.0	41.4	38.9	53.9	15.0	100	0	
Vert.	9764.000	AV	31.9	38.7	10.1	38.9	41.8	53.9	12.1	100	0	
Vert.	12205.000	AV	32.2	39.5	11.4	39.3	43.8	53.9	10.1	100	0	

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

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber	
Date	June 15, 2013	June 16, 2013
Temperature / Humidity	25 deg.C, 62 %RH	24 deg.C, 66 %RH
Engineer	Tatsuya Arai	Makoto Hosaka
Mode	Tx, 2480 MHz	
	Tx, Bluetooth, DH5, 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.	78.300	QP	43.3	6.4	7.3	32.1	24.9	40.0	15.1	244	81	
Hori.	321.756	QP	46.9	14.4	8.7	31.9	38.1	46.0	7.9	112	130	
Hori.	359.993	QP	51.9	15.3	8.9	31.9	44.2	46.0	**1.8**	100	47	
Hori.	935.997	QP	35.6	22.5	10.9	30.7	38.3	46.0	7.7	100	185	
Hori.	1653.333	PK	48.2	25.4	13.9	40.9	46.6	73.9	27.3	100	204	
Hori.	2483.500	PK	46.3	27.5	14.8	41.4	47.2	73.9	26.7	100	56	
Hori.	3306.667	PK	48.9	29.0	6.6	41.7	42.8	73.9	31.1	100	260	
Hori.	4960.000	PK	48.2	31.6	7.5	41.0	46.3	73.9	27.6	100	88	
Hori.	6613.333	PK	45.9	35.5	8.6	40.8	49.2	73.9	24.7	100	0	
Hori.	7440.000	PK	46.6	36.7	9.0	41.5	50.8	73.9	23.1	100	0	
Hori.	9920.000	PK	43.5	39.0	10.0	38.9	53.6	73.9	20.3	100	0	
Hori.	12400.000	PK	43.8	39.5	11.3	39.3	55.3	73.9	18.6	100	0	
Hori.	1653.333	AV	35.7	25.4	13.9	40.9	34.1	53.9	19.8	100	204	
Hori.	2483.500	AV	34.3	27.5	14.8	41.4	35.2	53.9	18.7	100	56	
Hori.	3306.667	AV	37.7	29.0	6.6	41.7	31.6	53.9	22.3	100	260	
Hori.	4960.000	AV	37.8	31.6	7.5	41.0	35.9	53.9	18.0	100	88	
Hori.	6613.333	AV	33.8	35.5	8.6	40.8	37.1	53.9	16.8	100	0	
Hori.	7440.000	AV	34.0	36.7	9.0	41.5	38.2	53.9	15.7	100	0	
Hori.	9920.000	AV	31.0	39.0	10.0	38.9	41.1	53.9	12.8	100	0	
Hori.	12400.000	AV	31.4	39.5	11.3	39.3	42.9	53.9	11.0	100	0	
Vert.	359.993	QP	43.5	15.3	8.9	31.9	35.8	46.0	10.2	112	13	
Vert.	647.996	QP	38.6	19.6	10.0	32.0	36.2	46.0	9.8	100	174	
Vert.	935.997	QP	34.0	22.5	10.9	30.7	36.7	46.0	9.3	100	4	
Vert.	1653.333	PK	48.5	25.4	13.9	40.9	46.9	73.9	27.0	100	40	
Vert.	2483.500	PK	47.3	27.5	14.8	41.4	48.2	73.9	25.7	116	64	
Vert.	3306.667	PK	50.4	29.0	6.6	41.7	44.3	73.9	29.6	100	57	
Vert.	4960.000	PK	51.4	31.6	7.5	41.0	49.5	73.9	24.4	174	59	
Vert.	6613.333	PK	47.2	35.5	8.6	40.8	50.5	73.9	23.4	100	0	
Vert.	7440.000	PK	47.3	36.7	9.0	41.5	51.5	73.9	22.4	100	0	
Vert.	9920.000	PK	44.0	39.0	10.0	38.9	54.1	73.9	19.8	100	0	
Vert.	12400.000	PK	44.7	39.5	11.3	39.3	56.2	73.9	17.7	100	0	
Vert.	1653.333	AV	38.7	25.4	13.9	40.9	37.1	53.9	16.8	100	40	
Vert.	2483.500	AV	34.5	27.5	14.8	41.4	35.4	53.9	18.5	116	64	
Vert.	3306.667	AV	39.8	29.0	6.6	41.7	33.7	53.9	20.2	100	57	
Vert.	4960.000	AV	43.6	31.6	7.5	41.0	41.7	53.9	12.2	174	59	
Vert.	6613.333	AV	34.0	35.5	8.6	40.8	37.3	53.9	16.6	100	0	
Vert.	7440.000	AV	34.2	36.7	9.0	41.5	38.4	53.9	15.5	100	0	
Vert.	9920.000	AV	31.1	39.0	10.0	38.9	41.2	53.9	12.7	100	0	
Vert.	12400.000	AV	31.5	39.5	11.3	39.3	43.0	53.9	10.9	100	0	

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

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber	
Date	June 15, 2013	June 16, 2013
Temperature / Humidity	25 deg.C, 62 %RH	24 deg.C, 66 %RH
Engineer	Tatsuya Arai	Makoto Hosaka
Mode	Tx, 2402 MHz	
	Tx, Bluetooth, 3-DH5, 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.	78.130	QP	44.0	6.4	7.3	32.1	25.6	40.0	14.4	400	87	
Hori.	321.761	QP	46.9	14.4	8.7	31.9	38.1	46.0	7.9	111	131	
Hori.	359.923	QP	51.8	15.3	8.9	31.9	44.1	46.0	**1.9**	100	49	
Hori.	935.990	QP	35.7	22.5	10.9	30.7	38.4	46.0	7.6	100	183	
Hori.	1601.333	PK	47.5	25.1	13.8	40.8	45.6	73.9	28.3	100	41	
Hori.	2385.917	PK	47.4	27.4	14.7	41.4	48.1	73.9	25.8	100	87	
Hori.	2390.000	PK	46.6	27.4	14.7	41.4	47.3	73.9	26.6	100	87	
Hori.	3202.667	PK	48.3	28.8	6.6	41.6	42.1	73.9	31.8	110	41	
Hori.	4804.000	PK	47.8	31.1	7.5	41.2	45.2	73.9	28.7	100	75	
Hori.	6405.333	PK	46.8	34.8	8.3	40.6	49.3	73.9	24.6	100	0	
Hori.	7206.000	PK	48.1	36.6	9.1	41.4	52.4	73.9	21.5	100	0	
Hori.	9608.000	PK	46.4	38.5	10.2	38.9	56.2	73.9	17.7	100	0	
Hori.	12010.000	PK	47.6	39.4	11.5	39.4	59.1	73.9	14.8	100	0	
Hori.	1601.333	AV	35.5	25.1	13.8	40.8	33.6	53.9	20.3	100	41	
Hori.	2385.917	AV	34.4	27.4	14.7	41.4	35.1	53.9	18.8	100	87	
Hori.	2390.000	AV	34.2	27.4	14.7	41.4	34.9	53.9	19.0	100	87	
Hori.	3202.667	AV	36.2	28.8	6.6	41.6	30.0	53.9	23.9	110	41	
Hori.	4804.000	AV	36.0	31.1	7.5	41.2	33.4	53.9	20.5	100	75	
Hori.	6405.333	AV	34.3	34.8	8.3	40.6	36.8	53.9	17.1	100	0	
Hori.	7206.000	AV	35.4	36.6	9.1	41.4	39.7	53.9	14.2	100	0	
Hori.	9608.000	AV	32.7	38.5	10.2	38.9	42.5	53.9	11.4	100	0	
Hori.	12010.000	AV	34.2	39.4	11.5	39.4	45.7	53.9	8.2	100	0	
Vert.	359.985	QP	43.6	15.3	8.9	31.9	35.9	46.0	10.1	100	11	
Vert.	647.995	QP	38.6	19.6	10.0	32.0	36.2	46.0	9.8	100	172	
Vert.	935.990	QP	34.0	22.5	10.9	30.7	36.7	46.0	9.3	100	3	
Vert.	1601.333	PK	48.3	25.1	13.8	40.8	46.4	73.9	27.5	104	29	
Vert.	2385.917	PK	48.3	27.4	14.7	41.4	49.0	73.9	24.9	100	54	
Vert.	2390.000	PK	46.2	27.4	14.7	41.4	46.9	73.9	27.0	100	54	
Vert.	3202.667	PK	48.9	28.8	6.6	41.6	42.7	73.9	31.2	100	357	
Vert.	4804.000	PK	48.3	31.1	7.5	41.2	45.7	73.9	28.2	100	149	
Vert.	6405.333	PK	47.1	34.8	8.3	40.6	49.6	73.9	24.3	100	0	
Vert.	7206.000	PK	48.3	36.6	9.1	41.4	52.6	73.9	21.3	100	0	
Vert.	9608.000	PK	46.2	38.5	10.2	38.9	56.0	73.9	17.9	100	0	
Vert.	12010.000	PK	46.1	39.4	11.5	39.4	57.6	73.9	16.3	100	0	
Vert.	1601.333	AV	38.8	25.1	13.8	40.8	36.9	53.9	17.0	104	29	
Vert.	2385.917	AV	35.2	27.4	14.7	41.4	35.9	53.9	18.0	100	54	
Vert.	2390.000	AV	34.2	27.4	14.7	41.4	34.9	53.9	19.0	100	54	
Vert.	3202.667	AV	38.6	28.8	6.6	41.6	32.4	53.9	21.5	100	357	
Vert.	4804.000	AV	37.7	31.1	7.5	41.2	35.1	53.9	18.8	100	149	
Vert.	6405.333	AV	34.4	34.8	8.3	40.6	36.9	53.9	17.0	100	0	
Vert.	7206.000	AV	35.4	36.6	9.1	41.4	39.7	53.9	14.2	100	0	
Vert.	9608.000	AV	32.8	38.5	10.2	38.9	42.6	53.9	11.3	100	0	
Vert.	12010.000	AV	34.1	39.4	11.5	39.4	45.6	53.9	8.3	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)
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.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	81.8	27.4	14.7	41.4	82.5	-	-	
Hori.	2399.350	PK	41.4	27.4	14.7	41.4	42.1	62.5	20.4	
Hori.	2400.000	PK	42.8	27.4	14.7	41.4	43.5	62.5	19.0	
Vert.	2402.000	PK	86.7	27.4	14.7	41.4	87.4	-	-	
Vert.	2399.350	PK	45.2	27.4	14.7	41.4	45.9	67.4	21.5	
Vert.	2400.000	PK	48.2	27.4	14.7	41.4	48.9	67.4	18.5	

Result = Reading + Ant.Fac. + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber	
Date	June 15, 2013	June 16, 2013
Temperature / Humidity	25 deg.C, 62 %RH	24 deg.C, 66 %RH
Engineer	Tatsuya Arai	Makoto Hosaka
Mode	Tx, 2441 MHz	
	Tx, Bluetooth, 3-DH5, 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.	78.058	QP	44.4	6.4	7.3	32.1	26.0	40.0	14.0	400	87	
Hori.	321.755	QP	46.9	14.4	8.7	31.9	38.1	46.0	7.9	107	134	
Hori.	359.995	QP	51.9	15.3	8.9	31.9	44.2	46.0	**1.8**	100	44	
Hori.	935.996	QP	35.5	22.5	10.9	30.7	38.2	46.0	7.8	100	184	
Hori.	1627.333	PK	47.8	25.3	13.8	40.8	46.1	73.9	27.8	122	212	
Hori.	3254.667	PK	48.4	28.9	6.6	41.6	42.3	73.9	31.6	100	216	
Hori.	4882.000	PK	47.9	31.3	7.5	41.1	45.6	73.9	28.3	100	204	
Hori.	6509.333	PK	46.3	35.2	8.4	40.7	49.2	73.9	24.7	100	0	
Hori.	7323.000	PK	47.3	36.6	9.0	41.4	51.5	73.9	22.4	100	0	
Hori.	9764.000	PK	44.2	38.7	10.1	38.9	54.1	73.9	19.8	100	0	
Hori.	12205.000	PK	45.0	39.5	11.4	39.3	56.6	73.9	17.3	100	0	
Hori.	1627.333	AV	36.2	25.3	13.8	40.8	34.5	53.9	19.4	122	212	
Hori.	3254.667	AV	37.0	28.9	6.6	41.6	30.9	53.9	23.0	100	216	
Hori.	4882.000	AV	35.5	31.3	7.5	41.1	33.2	53.9	20.7	100	204	
Hori.	6509.333	AV	33.9	35.2	8.4	40.7	36.8	53.9	17.1	100	0	
Hori.	7323.000	AV	34.3	36.6	9.0	41.4	38.5	53.9	15.4	100	0	
Hori.	9764.000	AV	31.7	38.7	10.1	38.9	41.6	53.9	12.3	100	0	
Hori.	12205.000	AV	32.6	39.5	11.4	39.3	44.2	53.9	9.7	100	0	
Vert.	359.995	QP	43.9	15.3	8.9	31.9	36.2	46.0	9.8	100	16	
Vert.	647.993	QP	38.9	19.6	10.0	32.0	36.5	46.0	9.5	100	173	
Vert.	935.996	QP	34.1	22.5	10.9	30.7	36.8	46.0	9.2	100	357	
Vert.	1627.333	PK	48.7	25.3	13.8	40.8	47.0	73.9	26.9	100	30	
Vert.	3254.667	PK	50.4	28.9	6.6	41.6	44.3	73.9	29.6	100	296	
Vert.	4882.000	PK	47.6	31.3	7.5	41.1	45.3	73.9	28.6	100	232	
Vert.	6509.333	PK	46.1	35.2	8.4	40.7	49.0	73.9	24.9	100	0	
Vert.	7323.000	PK	46.9	36.6	9.0	41.4	51.1	73.9	22.8	100	0	
Vert.	9764.000	PK	44.1	38.7	10.1	38.9	54.0	73.9	19.9	100	0	
Vert.	12205.000	PK	44.5	39.5	11.4	39.3	56.1	73.9	17.8	100	0	
Vert.	1627.333	AV	39.0	25.3	13.8	40.8	37.3	53.9	16.6	100	30	
Vert.	3254.667	AV	38.7	28.9	6.6	41.6	32.6	53.9	21.3	100	296	
Vert.	4882.000	AV	35.5	31.3	7.5	41.1	33.2	53.9	20.7	100	232	
Vert.	6509.333	AV	34.0	35.2	8.4	40.7	36.9	53.9	17.0	100	0	
Vert.	7323.000	AV	34.4	36.6	9.0	41.4	38.6	53.9	15.3	100	0	
Vert.	9764.000	AV	31.8	38.7	10.1	38.9	41.7	53.9	12.2	100	0	
Vert.	12205.000	AV	32.7	39.5	11.4	39.3	44.3	53.9	9.6	100	0	

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

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Radiated Emission

Test place	No.3 Semi Anechoic Chamber	
Date	June 15, 2013	June 16, 2013
Temperature / Humidity	25 deg.C, 62 %RH	24 deg.C, 66 %RH
Engineer	Tatsuya Arai	Makoto Hosaka
Mode	Tx, 2480 MHz	
	Tx, Bluetooth, 3-DH5, 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.	78.323	QP	45.2	6.4	7.3	32.1	26.8	40.0	13.2	400	87	
Hori.	321.757	QP	46.9	14.4	8.7	31.9	38.1	46.0	7.9	102	129	
Hori.	359.999	QP	51.8	15.3	8.9	31.9	44.1	46.0	**1.9**	100	48	
Hori.	935.990	QP	35.3	22.5	10.9	30.7	38.0	46.0	8.0	100	186	
Hori.	1653.333	PK	47.3	25.4	13.9	40.9	45.7	73.9	28.2	100	204	
Hori.	2483.500	PK	47.1	27.5	14.8	41.4	48.0	73.9	25.9	100	55	
Hori.	3306.667	PK	49.8	29.0	6.6	41.7	43.7	73.9	30.2	100	260	
Hori.	4960.000	PK	46.7	31.6	7.5	41.0	44.8	73.9	29.1	100	89	
Hori.	6613.333	PK	45.8	35.5	8.6	40.8	49.1	73.9	24.8	100	0	
Hori.	7440.000	PK	46.6	36.7	9.0	41.5	50.8	73.9	23.1	100	0	
Hori.	9920.000	PK	44.2	39.0	10.0	38.9	54.3	73.9	19.6	100	0	
Hori.	12400.000	PK	43.8	39.5	11.3	39.3	55.3	73.9	18.6	100	0	
Hori.	1653.333	AV	36.2	25.4	13.9	40.9	34.6	53.9	19.3	100	204	
Hori.	2483.500	AV	34.8	27.5	14.8	41.4	35.7	53.9	18.2	100	55	
Hori.	3306.667	AV	38.6	29.0	6.6	41.7	32.5	53.9	21.4	100	260	
Hori.	4960.000	AV	34.9	31.6	7.5	41.0	33.0	53.9	20.9	100	89	
Hori.	6613.333	AV	33.6	35.5	8.6	40.8	36.9	53.9	17.0	100	0	
Hori.	7440.000	AV	33.9	36.7	9.0	41.5	38.1	53.9	15.8	100	0	
Hori.	9920.000	AV	30.9	39.0	10.0	38.9	41.0	53.9	12.9	100	0	
Hori.	12400.000	AV	31.4	39.5	11.3	39.3	42.9	53.9	11.0	100	0	
Vert.	359.999	QP	43.7	15.3	8.9	31.9	36.0	46.0	10.0	100	13	
Vert.	647.994	QP	38.4	19.6	10.0	32.0	36.0	46.0	10.0	100	176	
Vert.	935.990	QP	33.9	22.5	10.9	30.7	36.6	46.0	9.4	100	4	
Vert.	1653.333	PK	49.1	25.4	13.9	40.9	47.5	73.9	26.4	100	36	
Vert.	2483.500	PK	48.2	27.5	14.8	41.4	49.1	73.9	24.8	112	66	
Vert.	3306.667	PK	49.9	29.0	6.6	41.7	43.8	73.9	30.1	100	57	
Vert.	4960.000	PK	48.0	31.6	7.5	41.0	46.1	73.9	27.8	100	59	
Vert.	6613.333	PK	46.9	35.5	8.6	40.8	50.2	73.9	23.7	100	0	
Vert.	7440.000	PK	46.4	36.7	9.0	41.5	50.6	73.9	23.3	100	0	
Vert.	9920.000	PK	43.4	39.0	10.0	38.9	53.5	73.9	20.4	100	0	
Vert.	12400.000	PK	43.2	39.5	11.3	39.3	54.7	73.9	19.2	100	0	
Vert.	1653.333	AV	39.4	25.4	13.9	40.9	37.8	53.9	16.1	100	36	
Vert.	2483.500	AV	35.4	27.5	14.8	41.4	36.3	53.9	17.6	112	66	
Vert.	3306.667	AV	41.0	29.0	6.6	41.7	34.9	53.9	19.0	100	57	
Vert.	4960.000	AV	37.2	31.6	7.5	41.0	35.3	53.9	18.6	100	59	
Vert.	6613.333	AV	33.8	35.5	8.6	40.8	37.1	53.9	16.8	100	0	
Vert.	7440.000	AV	34.4	36.7	9.0	41.5	38.6	53.9	15.3	100	0	
Vert.	9920.000	AV	31.3	39.0	10.0	38.9	41.4	53.9	12.5	100	0	
Vert.	12400.000	AV	31.5	39.5	11.3	39.3	43.0	53.9	10.9	100	0	

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

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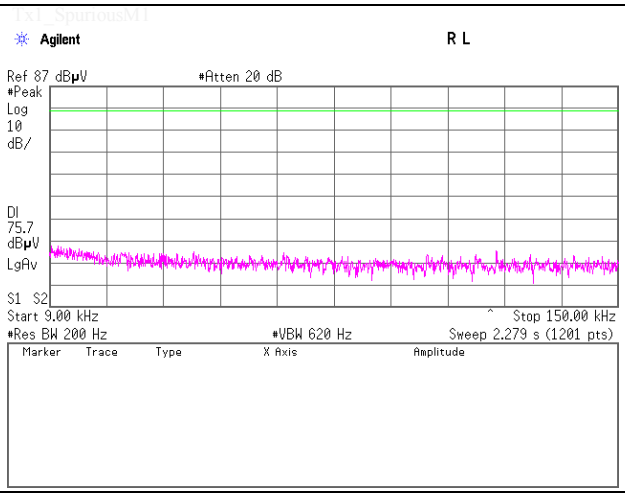
Spurious emission (Conducted)

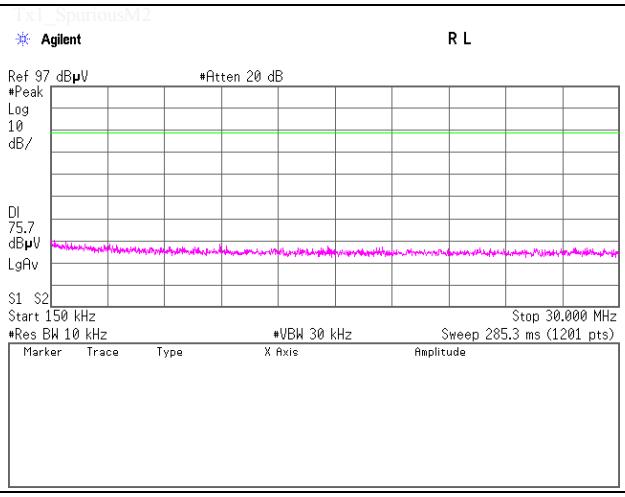
Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (below 1GHz)

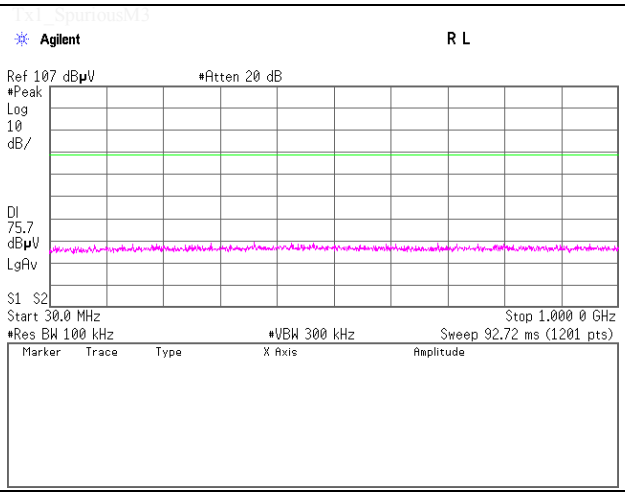
9kHz - 150kHz



150kHz - 30MHz



30MHz - 1GHz



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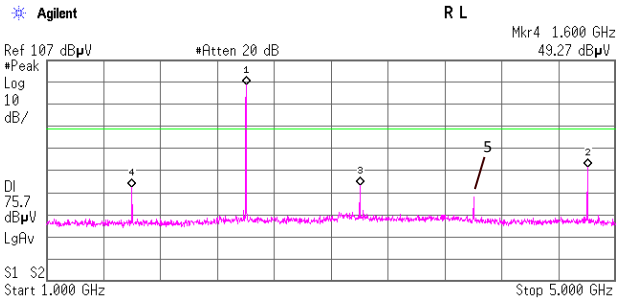
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (above 1GHz)

1GHz - 5GHz

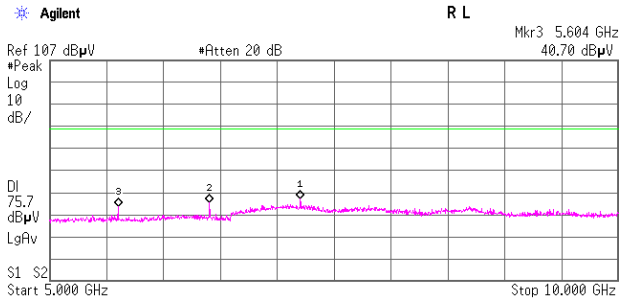
Tx1_SpuriousG1



The 4003MHz noise has margin more than the 20dB in the radiated emission.
Therefore it is excluded from the radiated emission datalist.

5GHz - 10GHz

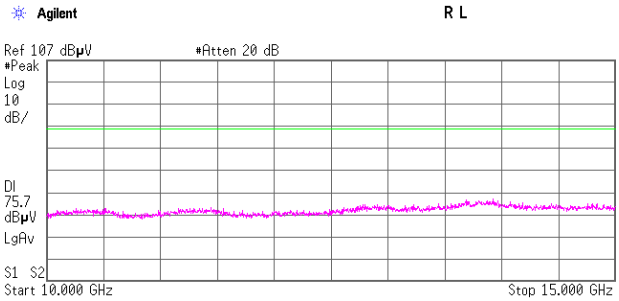
Tx1_SpuriousG2



The 5604MHz noise has margin more than the 20dB in the radiated emission.
Therefore it is excluded from the radiated emission datalist.

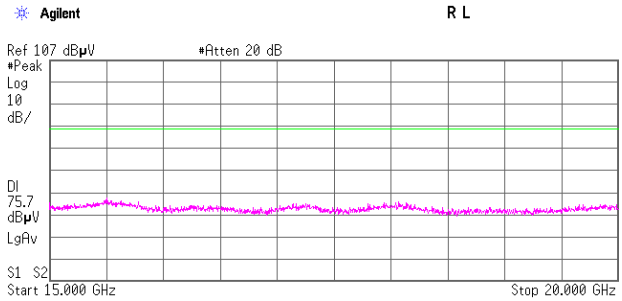
10GHz - 15GHz

Tx1_SpuriousG3



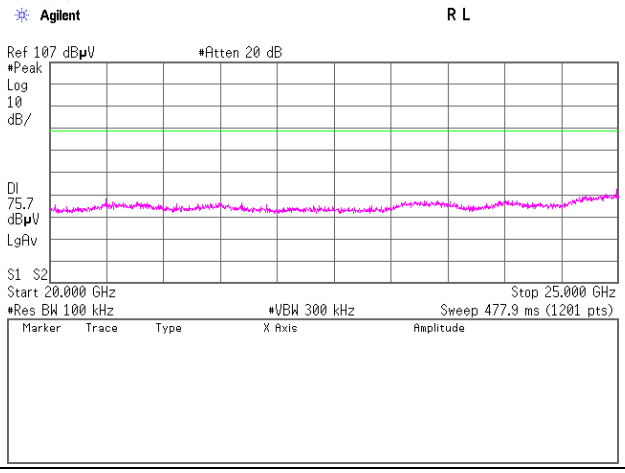
15GHz - 20GHz

Tx1_SpuriousG4



20GHz - 25GHz

Tx1_SpuriousG5



Tx1_SpuriousG6

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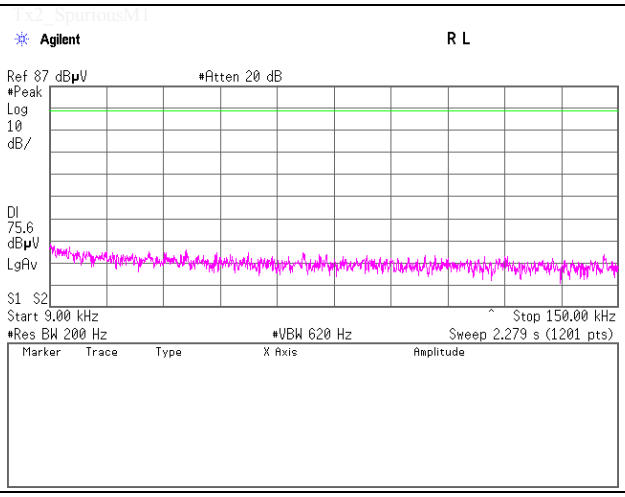
Spurious emission (Conducted)

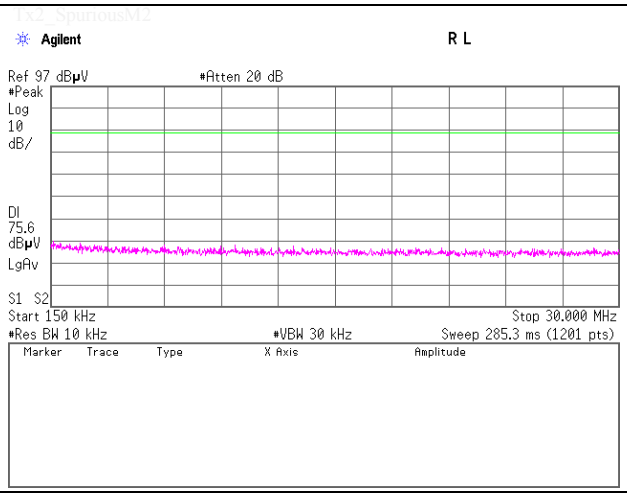
Tx, Bluetooth, BDR, PRBS9

Tx, 2441MHz (below 1GHz)

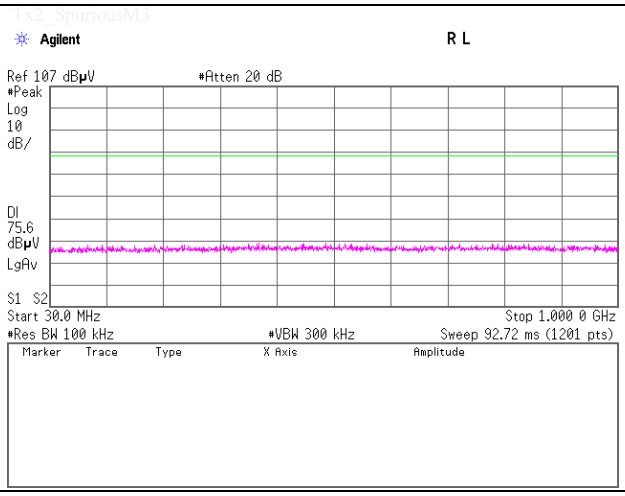
9kHz - 150kHz



150kHz - 30MHz



30MHz - 1GHz



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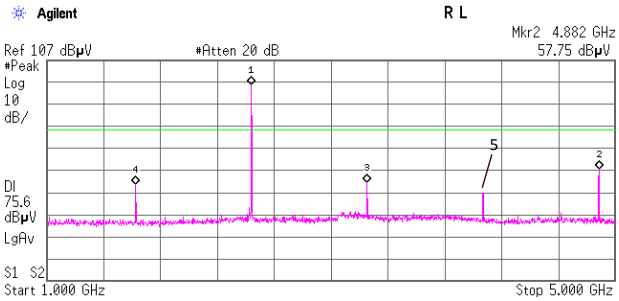
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2441MHz (above 1GHz)

1GHz - 5GHz

Tx2_SpuriousG1

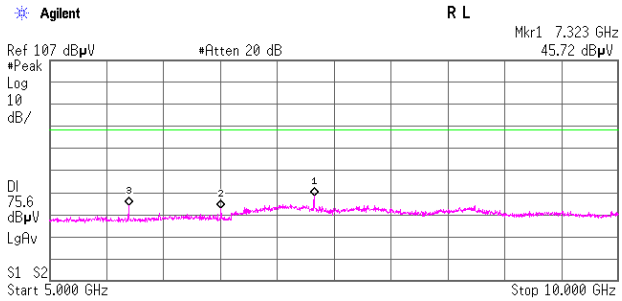


Marker	Trace	Type	X Axis	Amplitude
1	(3)	Freq	2.441 GHz	95.66 dBµV
2	(3)	Freq	4.882 GHz	57.75 dBµV
3	(3)	Freq	3.253 GHz	51.41 dBµV
4	(3)	Freq	1.627 GHz	50.75 dBµV
5	(3)	Freq	4.067 GHz	46.82 dBuV

The 4067MHz noise has margin more than the 20dB in the radiated emission.
Therefore it is excluded from the radiated emission datalist.

5GHz - 10GHz

Tx2_SpuriousG2

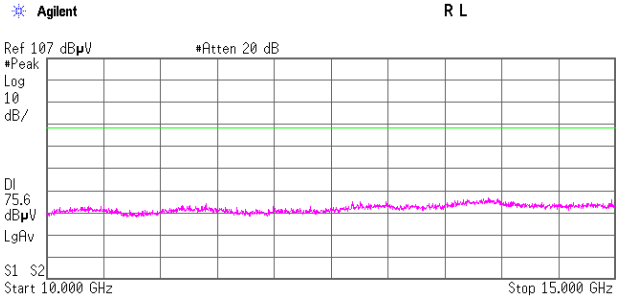


Marker	Trace	Type	X Axis	Amplitude
1	(3)	Freq	7.323 GHz	45.72 dBµV
2	(3)	Freq	6.508 GHz	39.76 dBµV
3	(3)	Freq	5.696 GHz	40.99 dBµV

The 5696MHz noise has margin more than the 20dB in the radiated emission.
Therefore it is excluded from the radiated emission datalist.

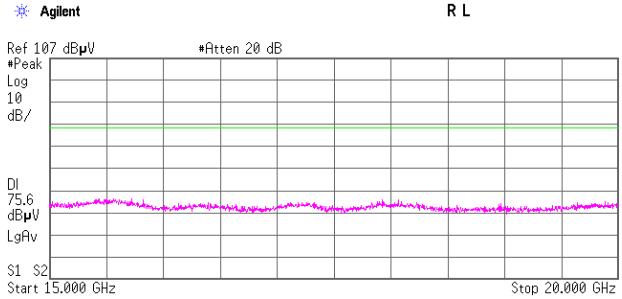
10GHz - 15GHz

Tx2_SpuriousG3



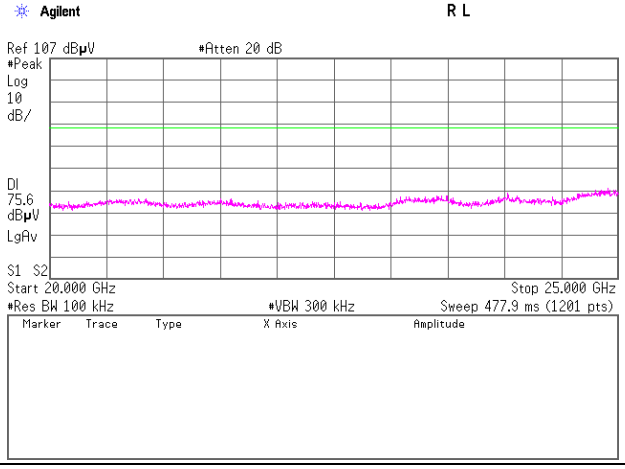
15GHz - 20GHz

Tx2_SpuriousG4



20GHz - 25GHz

Tx2_SpuriousG5



Tx2_SpuriousG6

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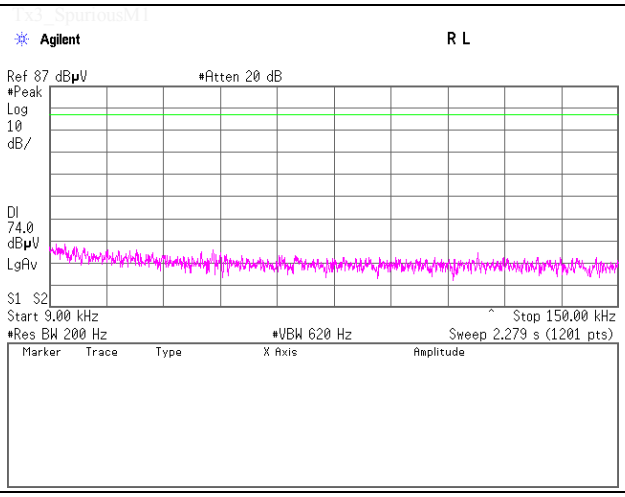
Spurious emission (Conducted)

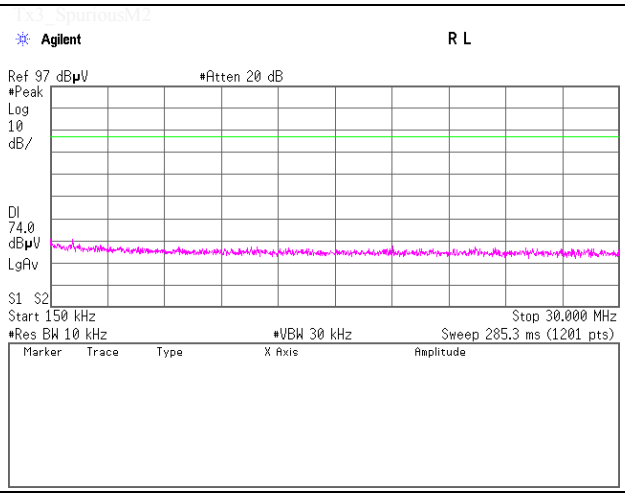
Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (below 1GHz)

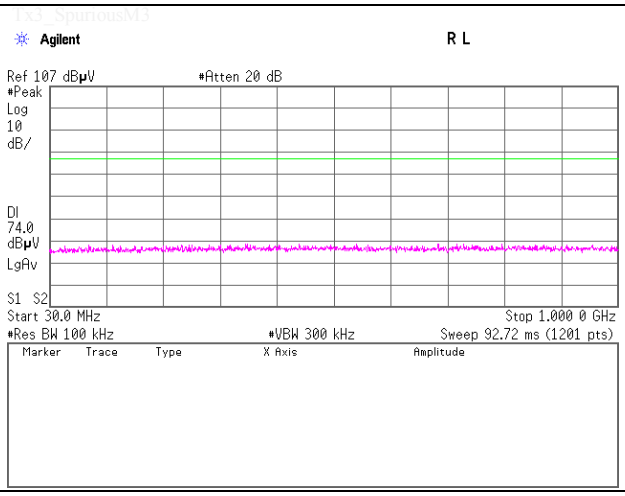
9kHz - 150kHz



150kHz - 30MHz



30MHz - 1GHz



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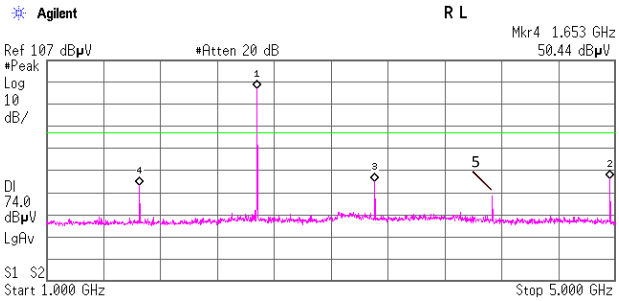
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (above 1GHz)

1GHz - 5GHz

Tx3_SpuriousG1

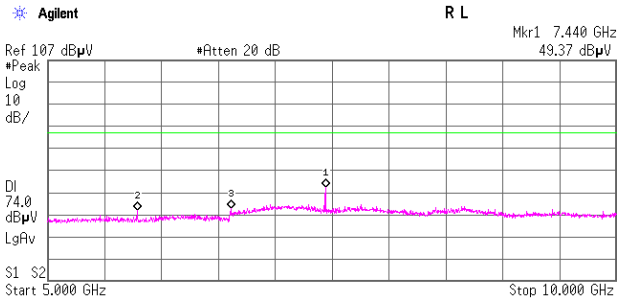


Marker	Trace	Type	X Axis	Amplitude
1	(3)	Freq	2.480 GHz	94.02 dBµV
2	(3)	Freq	4.960 GHz	53.43 dBµV
3	(3)	Freq	3.307 GHz	51.88 dBµV
4	(3)	Freq	1.653 GHz	50.44 dBµV
5	(3)	Freq	4.133 GHz	45.36 dBuV

The 4133MHz noise has margin more than the 20dB in the radiated emission.
Therefore it is excluded from the radiated emission datalist.

5GHz - 10GHz

Tx3_SpuriousG2

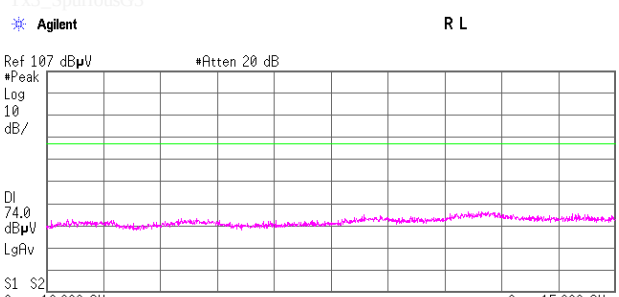


Marker	Trace	Type	X Axis	Amplitude
1	(3)	Freq	7.440 GHz	49.37 dBµV
2	(3)	Freq	5.788 GHz	38.86 dBµV
3	(3)	Freq	6.612 GHz	39.77 dBµV

The 5788MHz noise has margin more than the 20dB in the radiated emission.
Therefore it is excluded from the radiated emission datalist.

10GHz - 15GHz

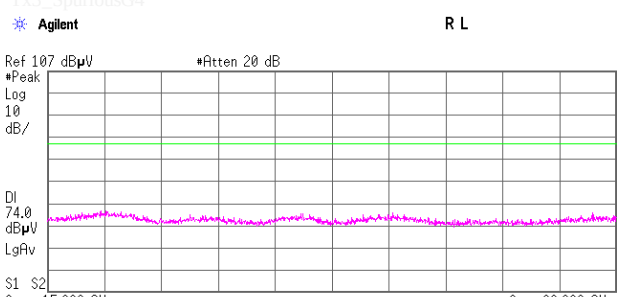
Tx3_SpuriousG3



Marker	Trace	Type	X Axis	Amplitude

15GHz - 20GHz

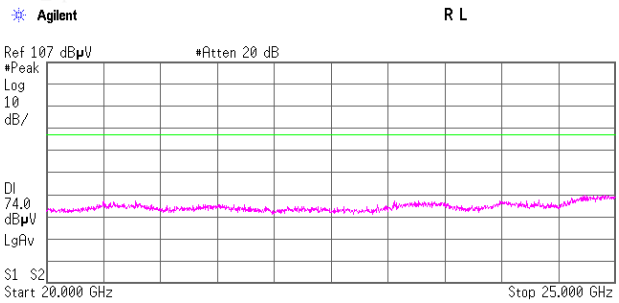
Tx3_SpuriousG4



Marker	Trace	Type	X Axis	Amplitude

20GHz - 25GHz

Tx3_SpuriousG5



Marker	Trace	Type	X Axis	Amplitude

Tx3_SpuriousG6

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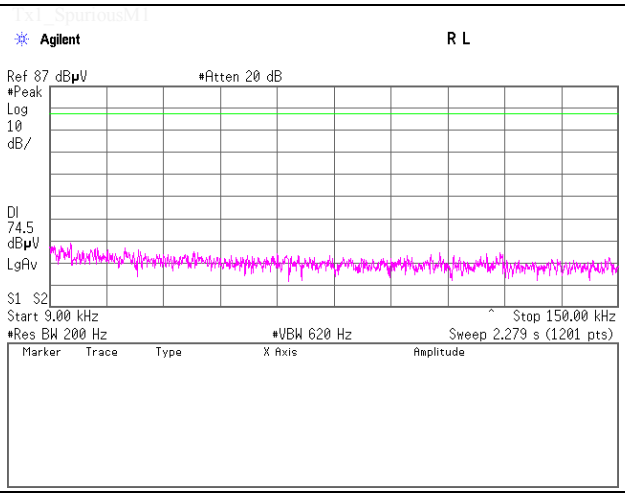
Spurious emission (Conducted)

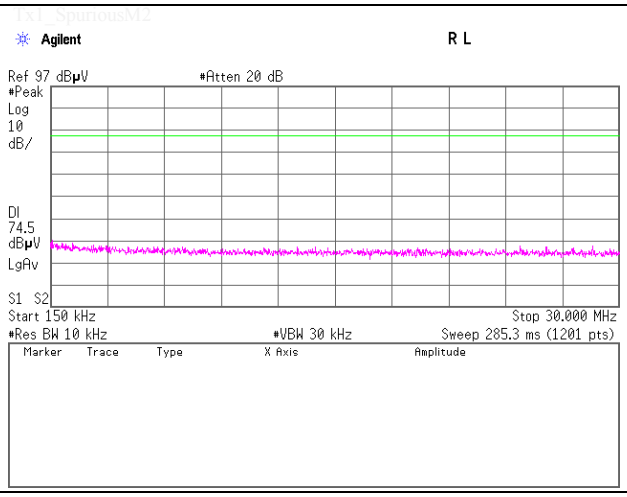
Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (below 1GHz)

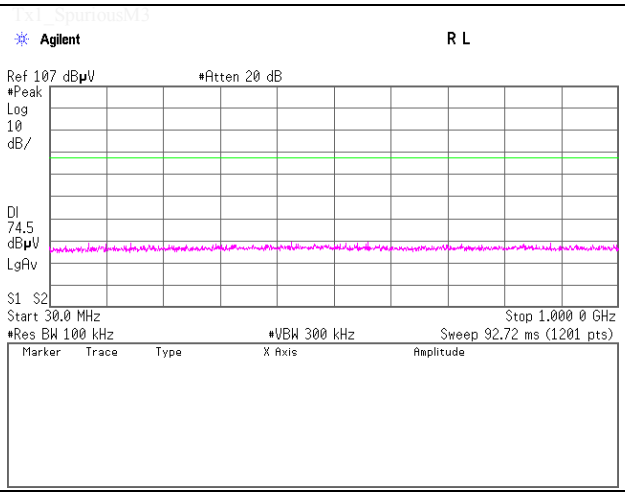
9kHz - 150kHz



150kHz - 30MHz



30MHz - 1GHz



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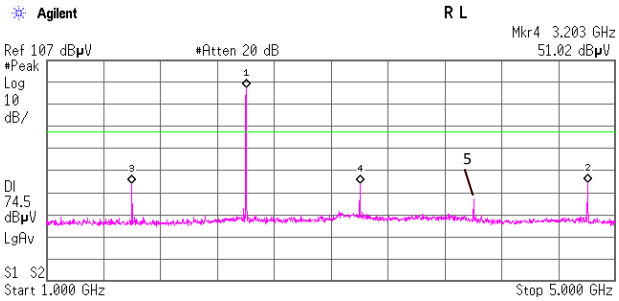
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (above 1GHz)

1GHz - 5GHz

Tx1_SpuriousG1

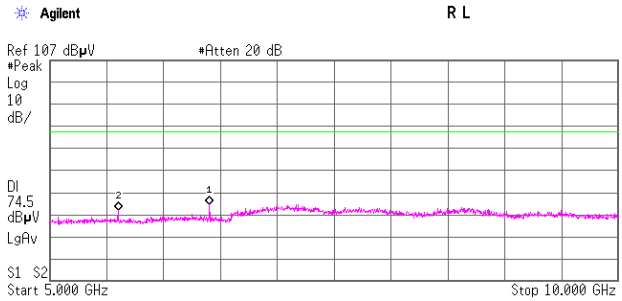


Marker	Trace	Type	X Axis	Amplitude
1	(3)	Freq	2.402 GHz	94.58 dBµV
2	(3)	Freq	4.804 GHz	51.57 dBµV
3	(3)	Freq	1.600 GHz	51.06 dBµV
4	(3)	Freq	3.203 GHz	51.02 dBµV
5	(3)	Freq	4.003 GHz	44.45 dBuV

The 4003MHz noise has margin more than the 20dB in the radiated emission.
Therefore it is excluded from the radiated emission datalist.

5GHz - 10GHz

Tx1_SpuriousG2

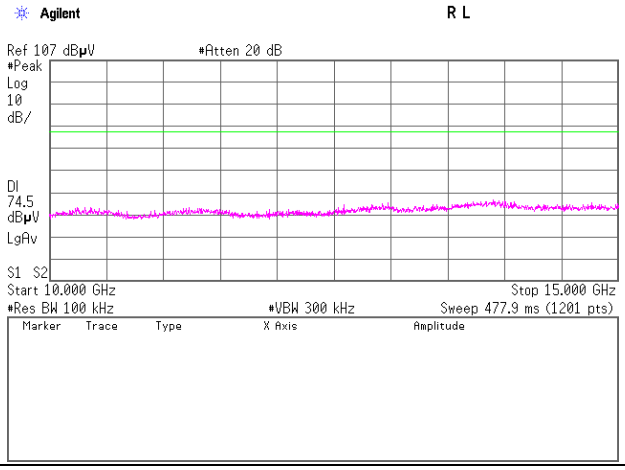


Marker	Trace	Type	X Axis	Amplitude
1	(3)	Freq	6.404 GHz	41.55 dBµV
2	(3)	Freq	5.604 GHz	38.92 dBµV

The 5604MHz noise has margin more than the 20dB in the radiated emission.
Therefore it is excluded from the radiated emission datalist.

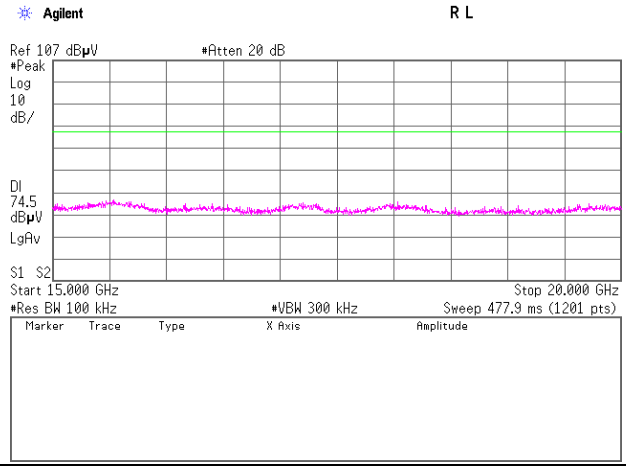
10GHz - 15GHz

Tx1_SpuriousG3



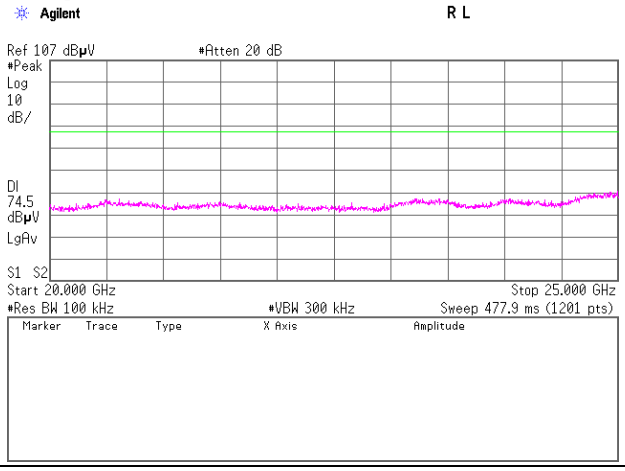
15GHz - 20GHz

Tx1_SpuriousG4



20GHz - 25GHz

Tx1_SpuriousG5



Tx1_SpuriousG6

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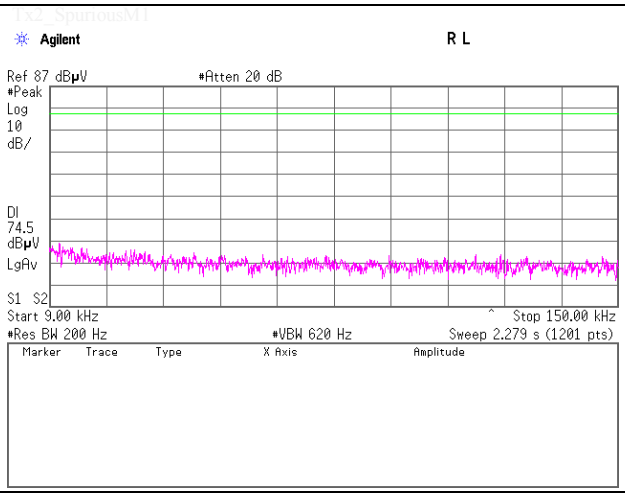
Spurious emission (Conducted)

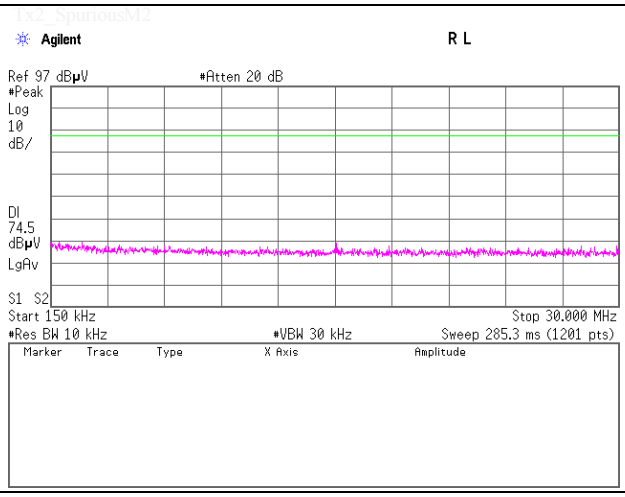
Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (below 1GHz)

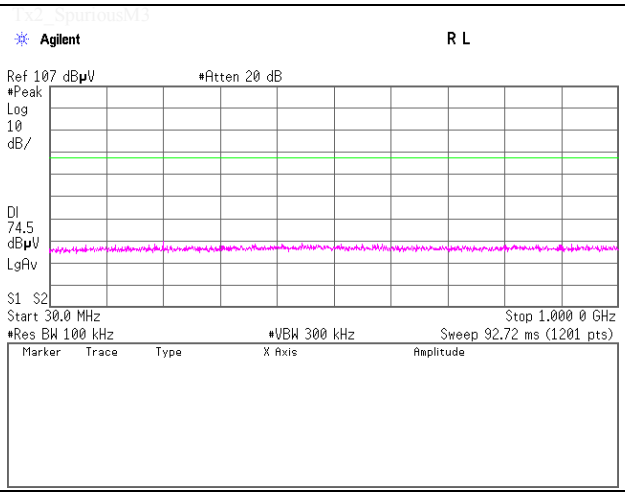
9kHz - 150kHz



150kHz - 30MHz



30MHz - 1GHz



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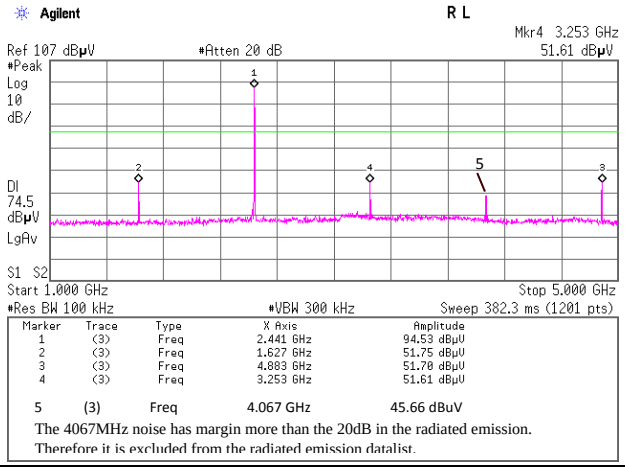
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (above 1GHz)

1GHz - 5GHz

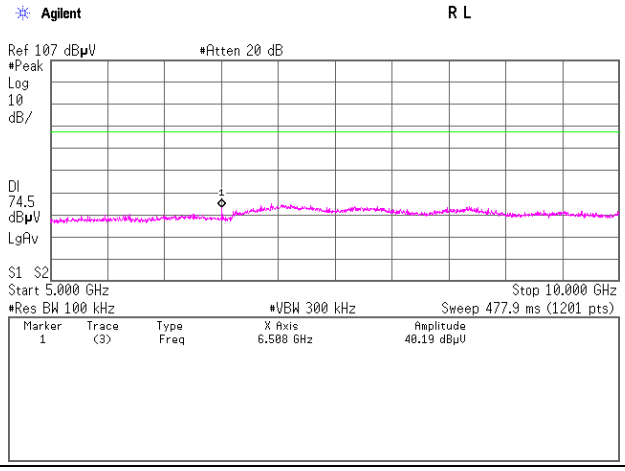
Tx2_SpuriousG1



The 4067MHz noise has margin more than the 20dB in the radiated emission.
Therefore it is excluded from the radiated emission datalist.

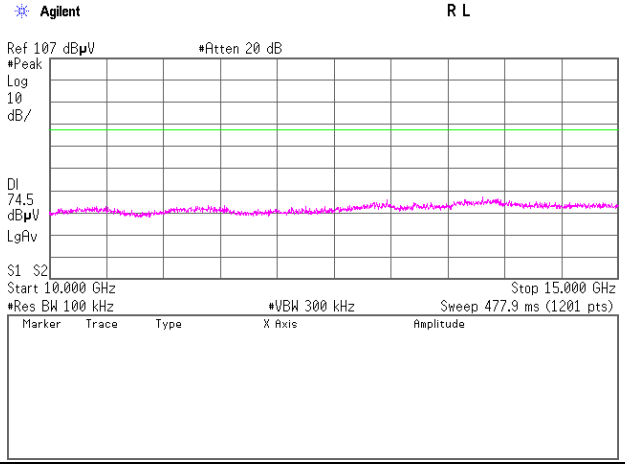
5GHz - 10GHz

Tx2_SpuriousG2



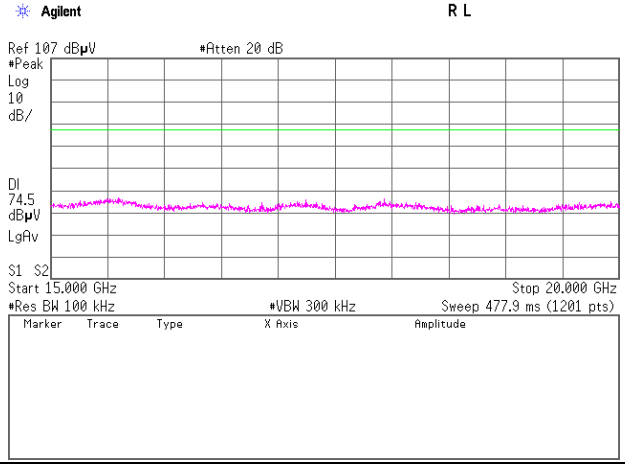
10GHz - 15GHz

Tx2_SpuriousG3



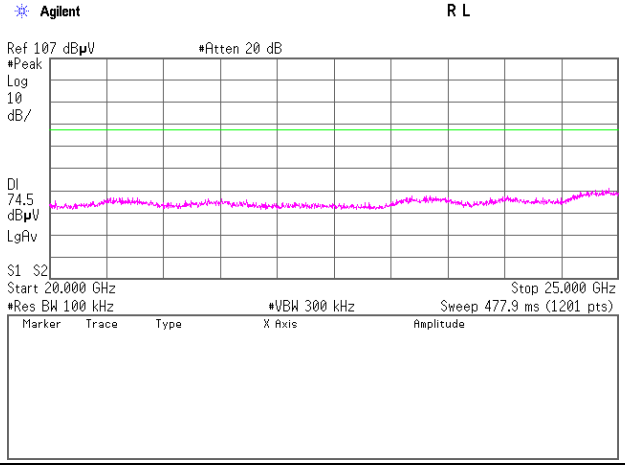
15GHz - 20GHz

Tx2_SpuriousG4



20GHz - 25GHz

Tx2_SpuriousG5



Tx2_SpuriousG6

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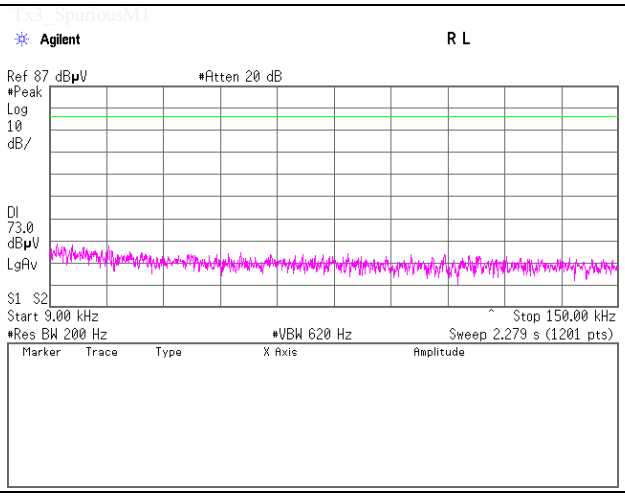
Spurious emission (Conducted)

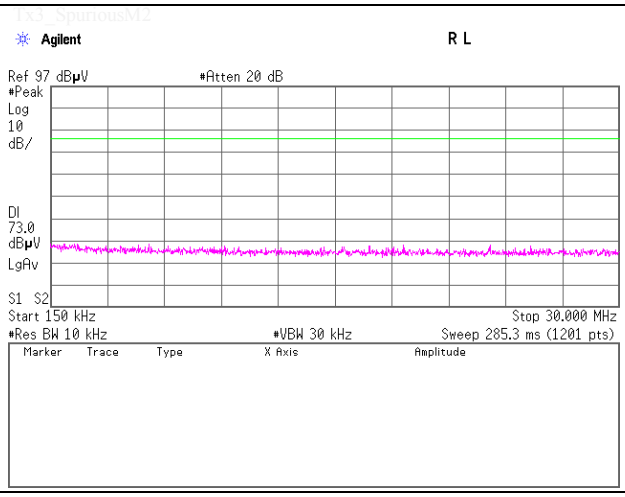
Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (below 1GHz)

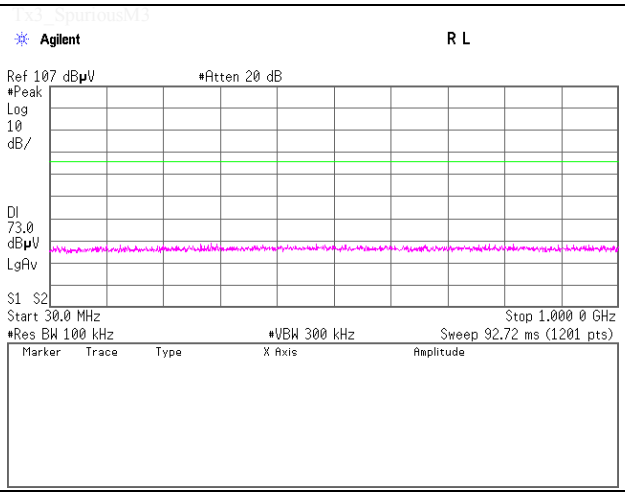
9kHz - 150kHz



150kHz - 30MHz



30MHz - 1GHz



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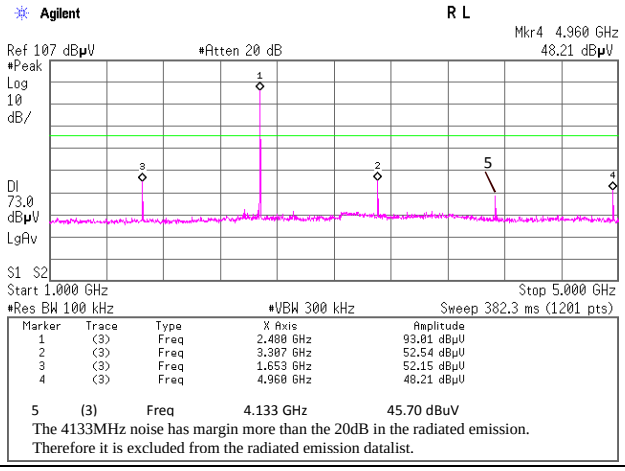
Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (above 1GHz)

1GHz - 5GHz

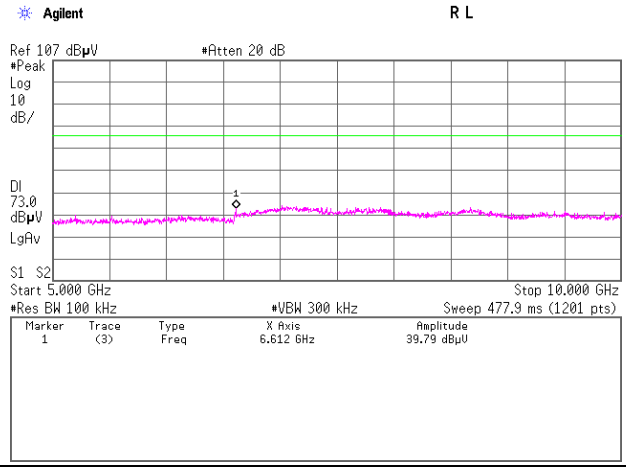
Tx3_SpuriousG1



The 4133MHz noise has margin more than the 20dB in the radiated emission.
Therefore it is excluded from the radiated emission datalist.

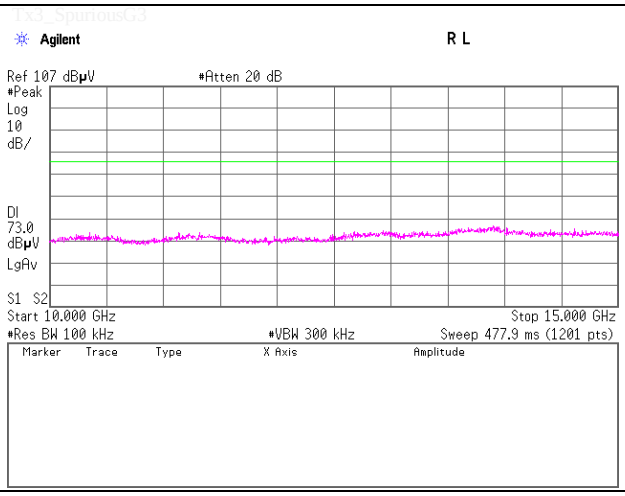
5GHz - 10GHz

Tx3_SpuriousG2



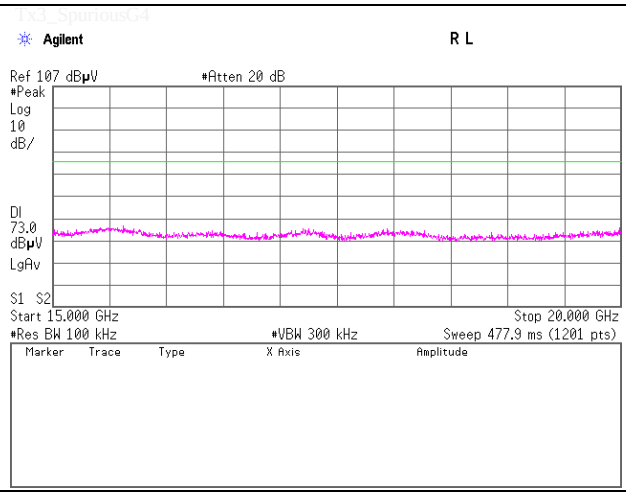
10GHz - 15GHz

Tx3_SpuriousG3



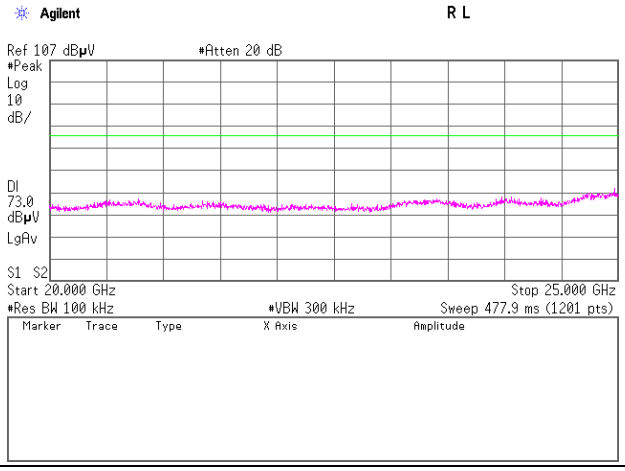
15GHz - 20GHz

Tx3_SpuriousG4



20GHz - 25GHz

Tx3_SpuriousG5



Tx3_SpuriousG6

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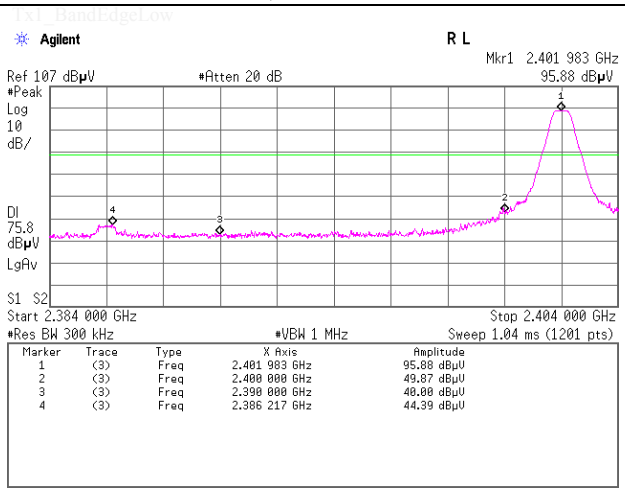
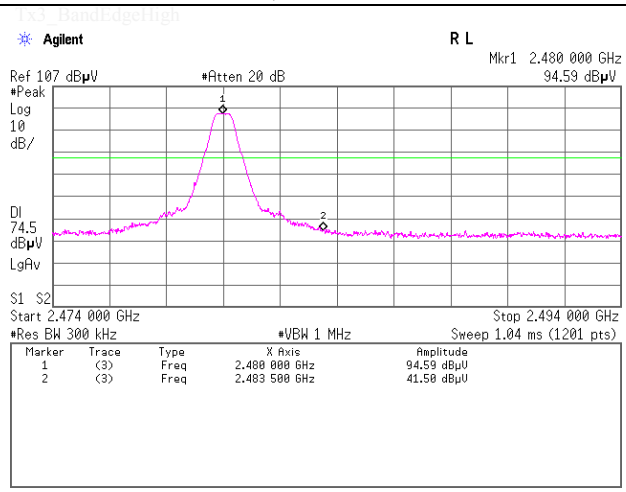
Spurious emission (Conducted)

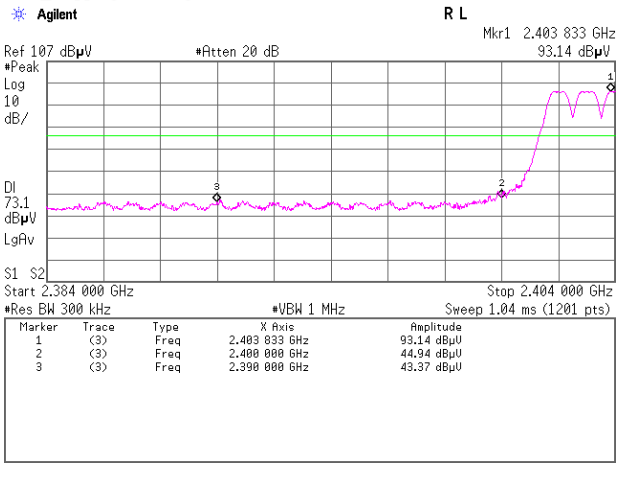
Band Edge compliance

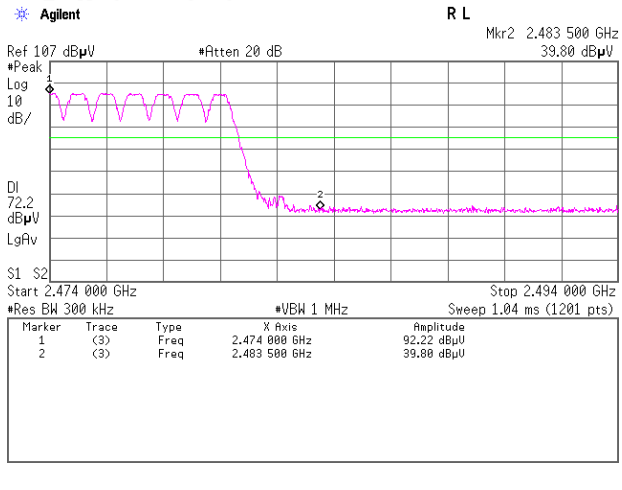
Tx, Bluetooth, BDR, PRBS9	
Tx, 2402MHz	**Tx, 2480MHz**





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





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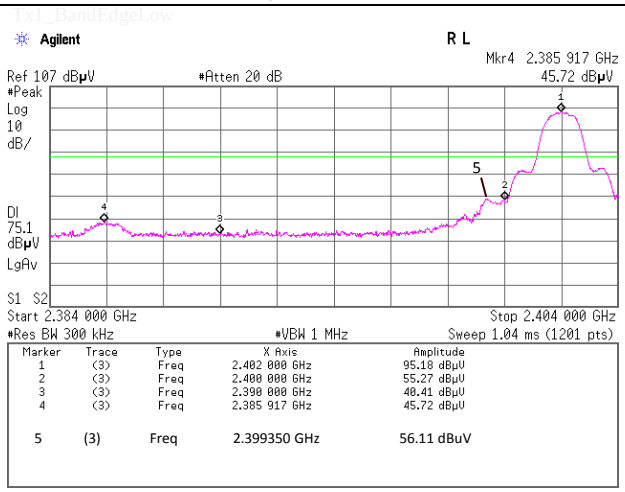
Spurious emission (Conducted)

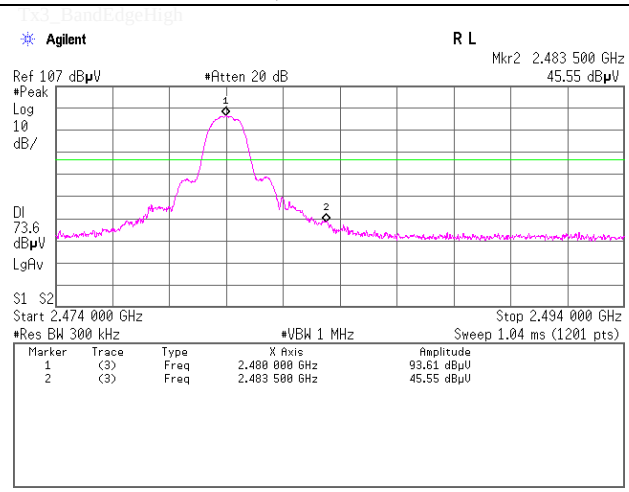
Band Edge compliance

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz

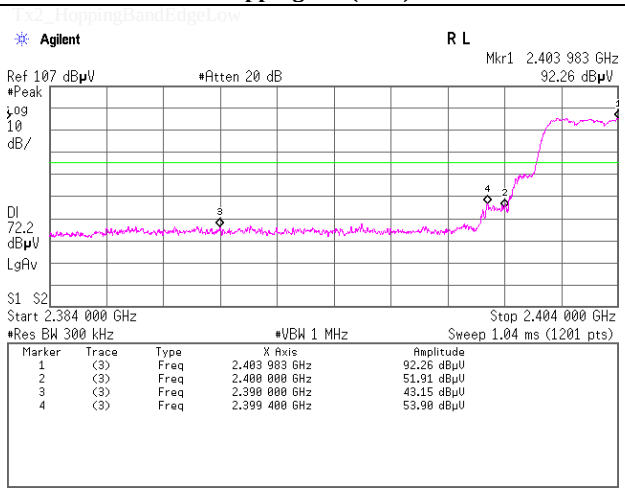


Tx, 2480MHz

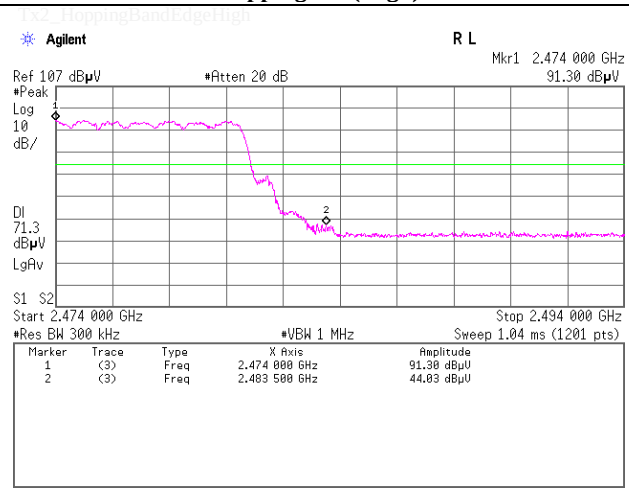


Tx, Bluetooth, EDR, PRBS9

Hopping On (Low)



Hopping On (High)



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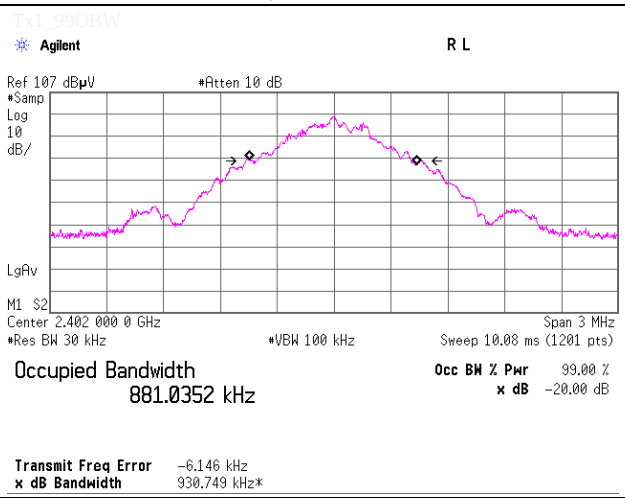
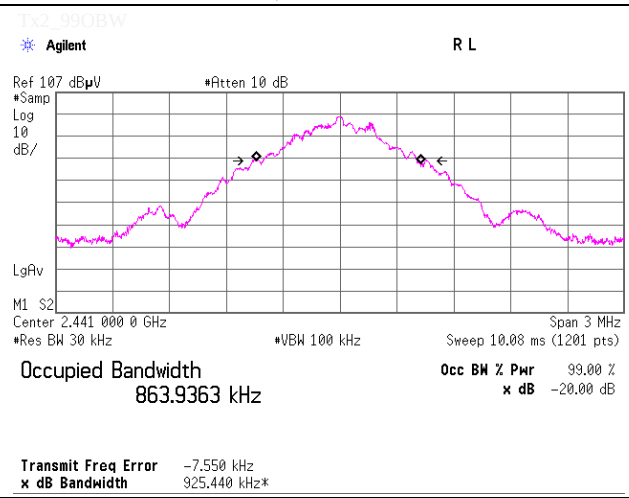
99% Occupied Bandwidth

Tx, Bluetooth, BDR, PRBS9

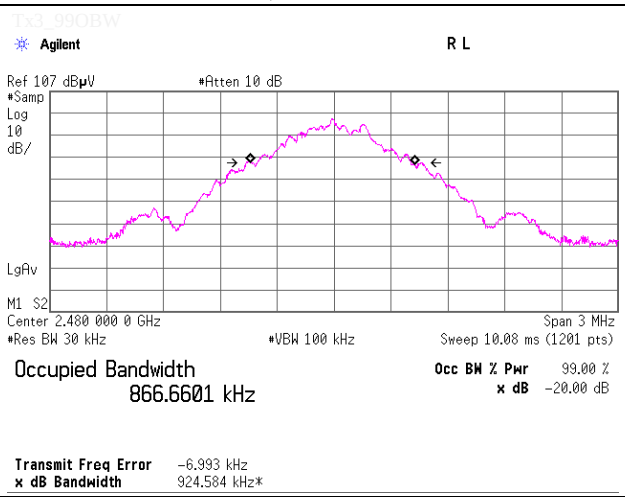
Tx, 2402MHz



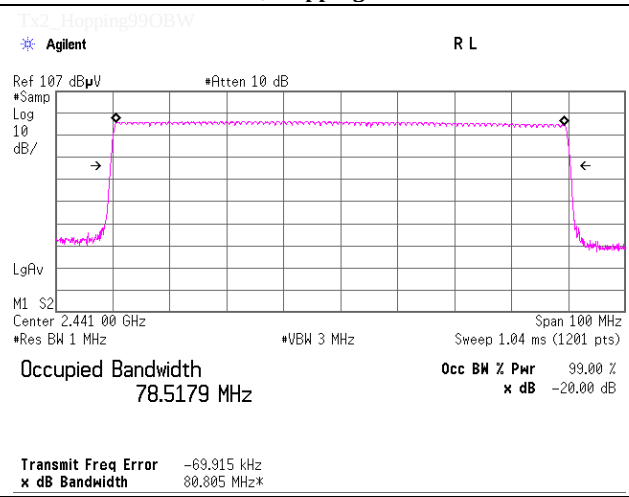
Tx, 2441MHz



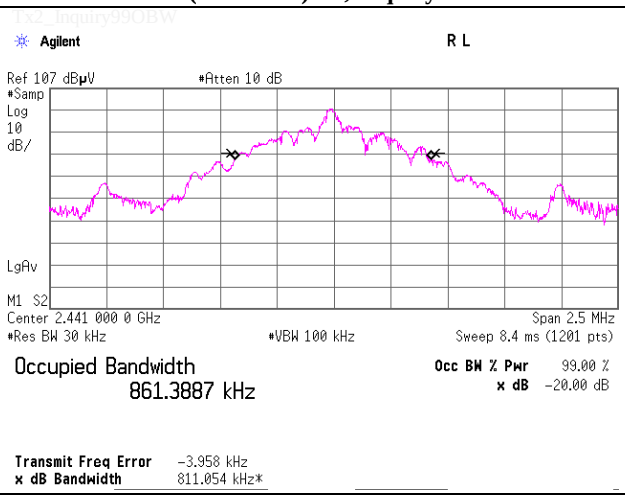
Tx, 2480MHz



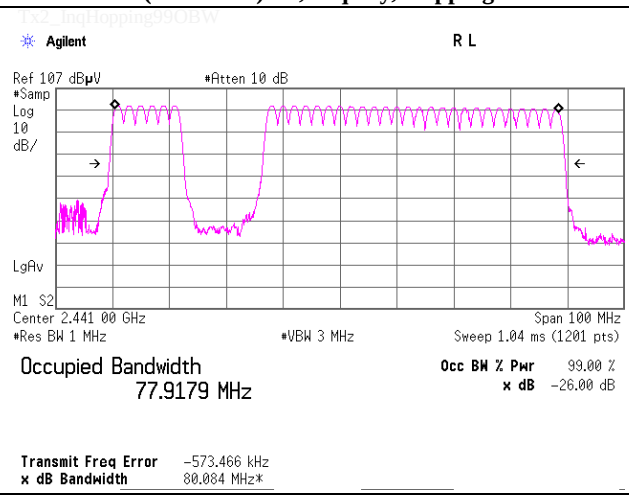
Tx, Hopping On



(Reference) Tx, Inquiry



(Reference) Tx, Inquiry, Hopping



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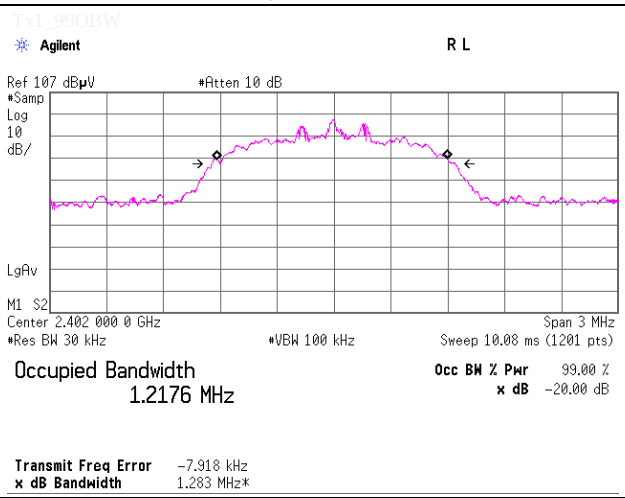
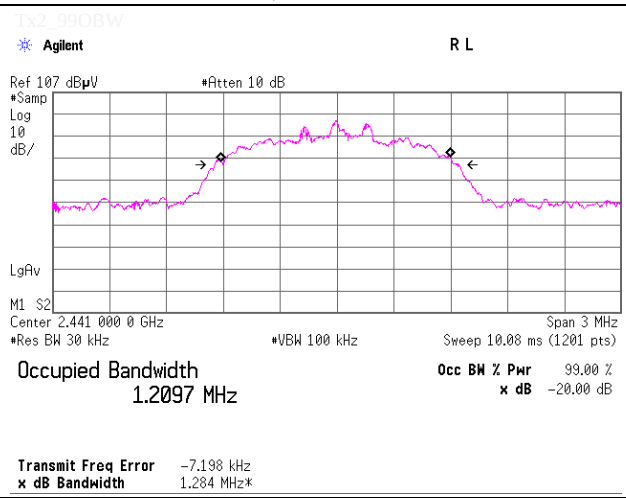
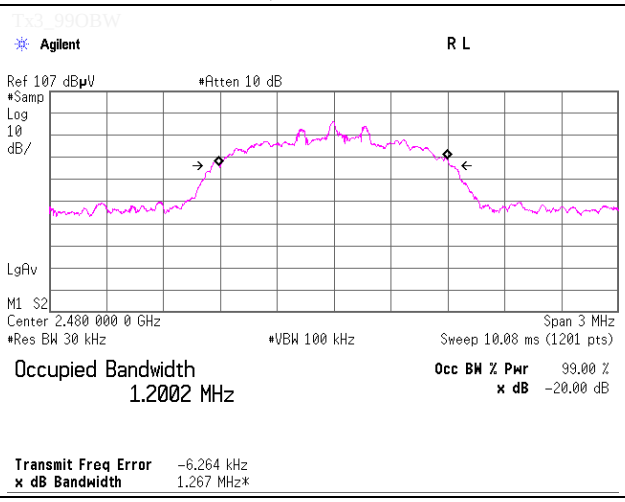
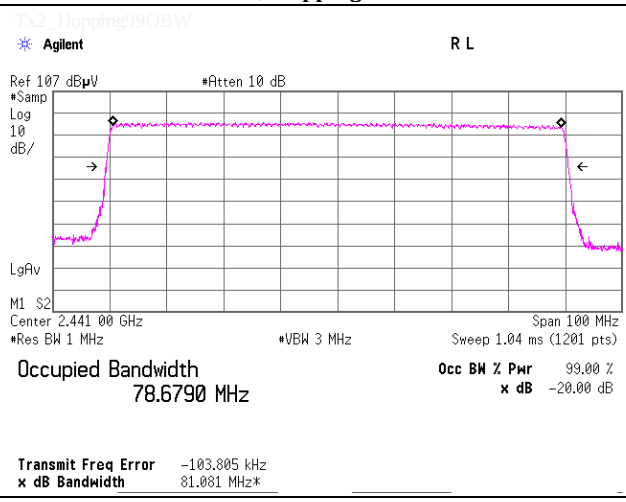
99% Occupied Bandwidth

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

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APPENDIX 2
Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	AT	2013/03/04 * 12
SCC-G11	Coaxial Cable	Suhner	SUCOFLEX 102	31595/2	AT	2013/03/16 * 12
SAT10-10	Attenuator	Weinschel Corp.	54A-10	37584	AT	2013/04/09 * 12
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2013/04/09 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2013/04/09 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2013/03/07 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2013/02/12 * 12
SAT6-06	Attenuator	JFW	50HF-006N	-	RE	2013/02/12 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2012/10/08 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	RE	2013/04/03 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2012/10/08 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2013/02/27 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	RE	2013/02/27 * 12
SJM-11	Measure	PROMART	SEN1935	-	RE	-
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2012/09/21 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE	-
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2012/07/18 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2013/04/11 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2013/05/22 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2012/08/17 * 12
SAT10-06	Attenuator	Agilent	8493C-010	74865	RE	2012/12/18 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2012/12/18 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2013/03/28 * 12
SHA-05	Horn Antenna	ETS LINDGREN	3160-09	LM4210	RE	2013/03/14 * 12
SCC-G18	Coaxial Cable	Suhner	SUCOFLEX 104A	46292/4A	RE	2013/03/16 * 12
SAF-09	Pre Amplifier	TOYO Corporation	HAP18-26W	00000018	RE	2013/03/19 * 12

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

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