RADIO TEST REPORT

Test Report No.: 31IE0075-SH-01-A

Applicant	:	**PIONEER CORPORATION**
Type of Equipment	:	**DVD RDS AV RECEIVER**
Model No.	:	**AVH-P4400BH**
FCC ID	:	**AJDK044**
Test regulation	:	**FCC Part15 Subpart C: 2011**
Test result	:	**Complied**

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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: September 14 to 16, 2011

Tested by:

Makoto Hosaka
Engineer of WiSE Japan,
UL Verification Service

Approved by :

Ichiro Isozaki
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".

JAB Testing RTL02610

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Contents

SECTION 1: Customer information

Company Name	:	PIONEER CORPORATION
Brand name	:	Pioneer
Address	:	25-1 Nishi-machi, Yamada-aza, Kawagoe-shi, Saitama, 350-8555, JAPAN
Telephone Number	:	+81-49-228-6285
Facsimile Number	:	+81-49-228-6497
Contact Person	:	Fumito Inaba

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

2.1 Identification of E.U.T.

Type of Equipment	:	DVD RDS AV RECEIVER
Model No.	:	AVH-P4400BH
Serial No.	:	See Section 4
Rating	:	DC 12.0V
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	:	September 9, 2011

2.2 Product description

Model: AVH-P4400BH (referred to as the EUT in this report) is a DVD RDS AV RECEIVER.

The EUT has similar models:

	Feature			
	Monitor size	IP-BUS	Blue tooth	SPDIF OUT
AVH-P4400BH	6.95inch	A	A	NA
AVH-P3400BH	5.8inch	A	A	NA
AVH-P2400BT	5.8inch	A	A	NA

A: application, NA: Not application

Clock Frequency:
(1) FM/AM TUNER: 36.48MHz
(2) DVD DRIVE DVD DECODER: 27MHz, 33.8688MHz, 36.864MHz, 40.5MHz, 67.5MHz, 108MHz, 121.5MHz, 405MHz, 48MHz
(3) DC-DC CONVERTER: 365.8kHz/413.9kHz, 477 kHz/524kHz
DC-DC CONVERTER (USB): 365.8kHz/413.9kHz, 477 kHz/524kHz
(4) SYSTEM MICRO COMPUTER: 45.29848MHz-47.18592MHz/3.93216MHz
(5) DISPLAY CONTROLLER: 9.597MHz, 33MHz, 264MHz
(6) Blue tooth module OSC: 26MHz
(7) LCD BACK LIGHT DRIVER: 476.6 kHz/ 515.7kHz

Equipment type	:	Transceiver
Frequency of operation	:	2402-2480.0MHz
Bandwidth & channel spacing	:	1MHz
Type of modulation	:	GFSK, π/4DQPSK, 8DPSK
Antenna type	:	PWB pattern antenna
Antenna gain with cable loss	:	-2.3dBi (max)
Antenna connector type	:	None
Operation temperature range	:	-10 to +60 deg.C.

FCC 15.31 (e)
The equipment provides the Bluetooth transmitter with stable power supply (DC1.8V and DC3.3V (typical)), therefore, the equipment complies with the requirement.

FCC Part 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: 2011, final revised on July 8, 2011 and effective August 8, 2011

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 C63.4:2003 7. AC powerline conducted emission measurements	FCC Section 15.207	-	N/A *1)	-	N/A *1)
Carrier frequency separation	FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators	FCC Section15.247 (a)(1)	Conducted	N/A	*See data.	Complied
20dB bandwidth	FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators	FCC Section15.247 (a)(1)	Conducted	N/A		Complied
Number of hopping frequency	FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators	FCC Section15.247 (a)(1)(iii)	Conducted	N/A		Complied
Dwell time	FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators	FCC Section15.247 (a)(1)(iii)	Conducted	N/A		Complied
Maximum peak output power	FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators	FCC Section15.247 (b)(1)	Conducted	N/A		Complied
Band edge compliance & Spurious emission	FCC Public Notice DA 00-705 & ANSI C63.4:2003 13. Measurement of intentional radiators	FCC Section15.247 (d) Section15.209	Conducted/ Radiated	N/A	6.2dB (55.302MHz, Quasi Peak, Vertical, Tx 2402MHz, DH5) (55.302MHz, Quasi Peak, Vertical, 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 C63.4:2003 13. Measurement of intentional radiators, RSS-Gen 4.6.1	RSS-Gen 4.6.1	Conducted	-	N/A
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)	30MHz-300MHz	4.9 dB	5.1 dB	5.0 dB
	300MHz-1GHz	5.0 dB	5.2 dB	5.0 dB
	1GHz-18GHz	4.8 dB	4.8 dB	4.9 dB
Radiated emission (Measurement distance: 1m)	1GHz-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
*3: Value of Antenna Terminal Voltage measurement is also applies to the No.5 and No.6 Shielded Room.

Radiated emission test

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

Antenna port conducted test

Conducted emissions, Power Density Measurement (below 1GHz) uncertainty for this test was: (±) 1.8dB
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: (±) 3.6dB
Conducted emissions Measurement (18G-26.5GHz) uncertainty for this test was: (±) 4.0dB
Conducted emissions Measurement (26.5G-50GHz) uncertainty for this test was: (±) 4.2dB
Bandwidth Measurement uncertainty for this test was: (±) 5.4%

3.5 Test location

UL Japan, Inc. Shonan EMC Lab.
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Telephone number : +81 463 50 6400
Facsimile number : +81 463 50 6401
JAB Accreditation No. : RTL02610

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

3.6 Test setup, Data of 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: 2402MHz, 2441MHz, 2480MHz
(Radiated)	Transmitting (DH5/3DH5), Payload: PRBS9	
99% occupied bandwidth	Transmitting (DH5/3DH5), Payload: PRBS9 Hopping ON Hopping OFF	2402MHz, 2441MHz, 2480MHz

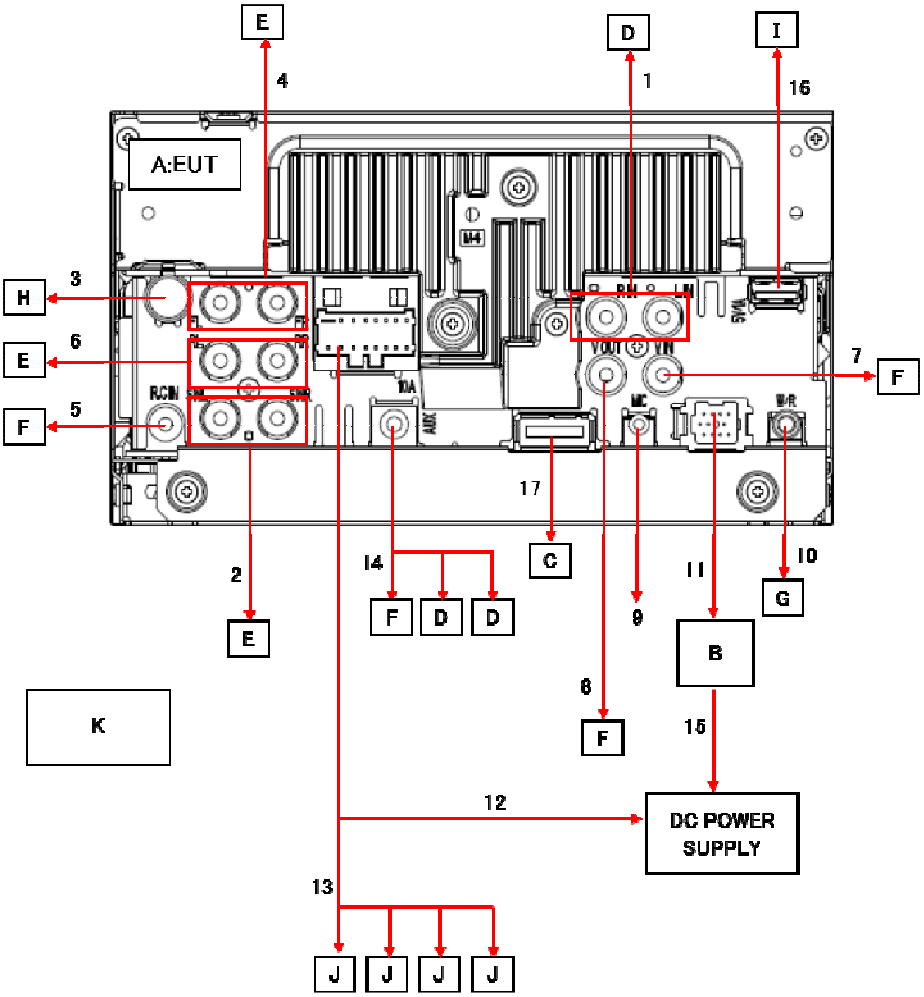
*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload (except Dwell time test).

*Remarks: Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power and bandwidth of the EUT.
However, the limit level 125mWof AFH mode was used for the test.

*EUT has the power settings by the software as follows;
Power settings: 4
Software : CWW4208

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	DVD RDS AV RECEIVER	AVH-P4400BH	KHTM000003UC *1) KHTM000002UC *2)	PIONEER	EUT
B	HIDE-AWAY UNIT	XDV-P6	FAMD000017UC	PIONEER	-
C	Terminal resister	-	-	-	-
D	Terminal resister (1k ohm)	-	-	-	-
E	Terminal register (15k ohm)	-	-	-	-
F	Terminal register (75 ohm)	-	-	-	-
G	Wired Remote	RM-X2S	-	Sony	-
H	Terminal register (75 ohm)	-	-	-	-
I	USB Memory	RUF3-S16GS-BK	A0000007199	Buffalo	-
J	Terminal register (4 ohm)	-	-	-	-
K	Remote controller	CXE5116	-	PIONEER	-

*1) Used for Antenna Terminal conducted tests.
*2) Used for Radiated Emission tests.

List of cables used

No.	Cable name	Length (m)	Shield		Remark
			Cable	Connector	
1	Audio	2.1	Unshielded	Unshielded	-
2	Audio	6.0	Unshielded	Unshielded	-
3	ANT	0.2	Shielded	Shielded	-
4	Audio	6.0	Unshielded	Unshielded	-
5	Video	1.7	Unshielded	Unshielded	-
6	Audio	6.0	Unshielded	Unshielded	-
7	Video	1.3	Unshielded	Unshielded	-
8	Video	1.3	Unshielded	Unshielded	-
9	MIC	3.5	Unshielded	Unshielded	Packages it with EUT
10	Wired remote	1.7	Unshielded	Unshielded	-
11	IP BUS	2.5	Shielded	Unshielded	-
12	DC	3.0	Unshielded	Unshielded	Packages it with EUT
13	Speaker	3.8-4.8	Unshielded	Unshielded	-
14	Quads mini Jack	1.5	Shielded	Shielded	-
15	DC	2.6 +5.5	Unshielded	Unshielded	-
16	USB extension	1.5	Shielded	Shielded	Packages it with EUT
17	Navigation unit	0.4	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.1 and 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 2.0m, raised 80cm 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 13GHz) / 1m(above13GHz)
EUT position : Table top

11.4 Test procedure

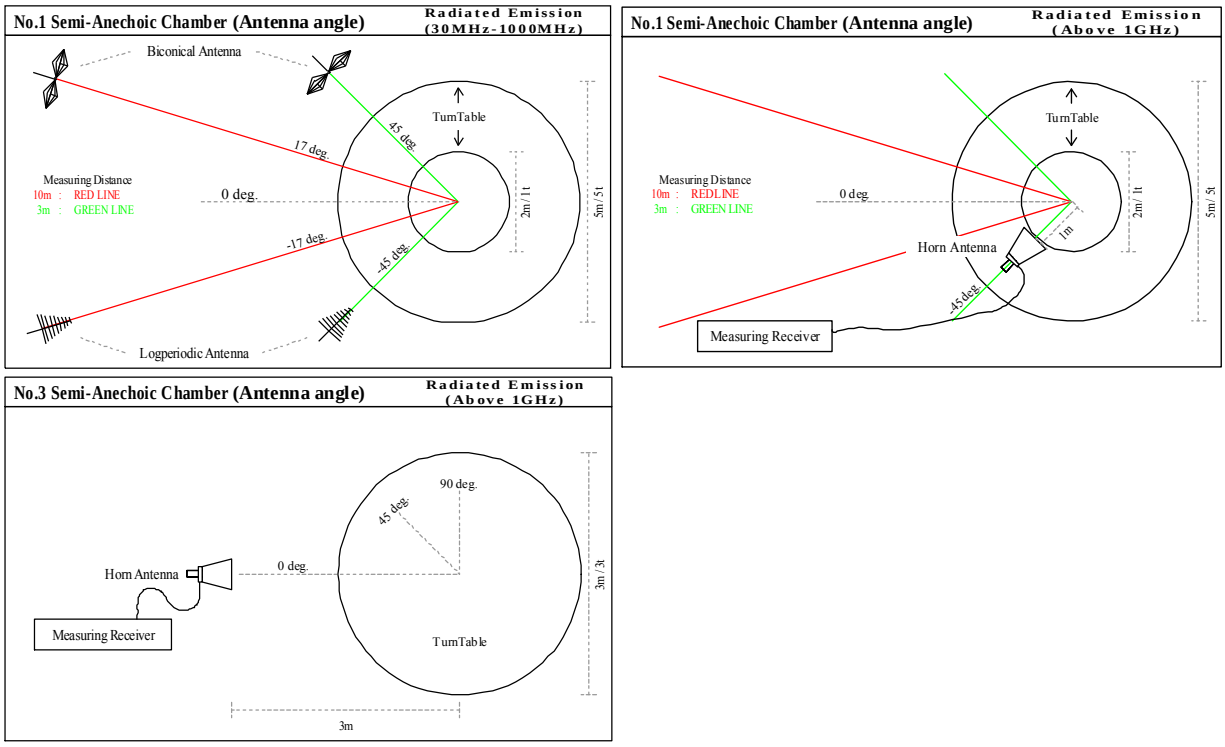
The Radiated Electric Field Strength intensity has been measured on a semi-anechoic chamber with a ground plane and at a distance of 3m(below 13GHz) / 1m(above 13GHz) (Refer to Figure 1). Measurements were performed with quasi-peak, peak and average detector. The measuring antenna height was varied between 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	:	30-1,000MHz	1,000-25,000MHz	
Detection Type	:	Quasi-Peak	Peak	* Average
IF Bandwidth	:	120kHz	RBW:1MHz/VBW:3MHz	RBW:1MHz/VBW:See data

* When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.
* The VBW was based on the inverse of the duty cycle (Refer to Appendix).

The EUT was tested in the direction normally used.

Figure 1. Antenna angle



11.5 Band edge

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

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 EMI test

20dB Bandwidth and Carrier Frequency Separation

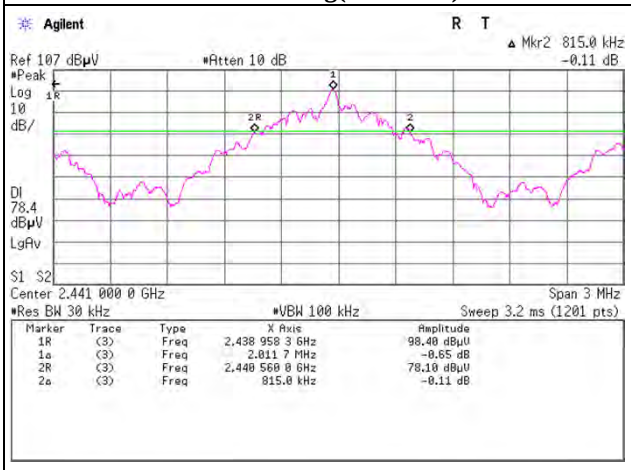
Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Shielded Room
Date	September 15, 2011	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Shinichi Takano	
Mode	Tx, Bluetooth, BDR(DH5), PRBS9	

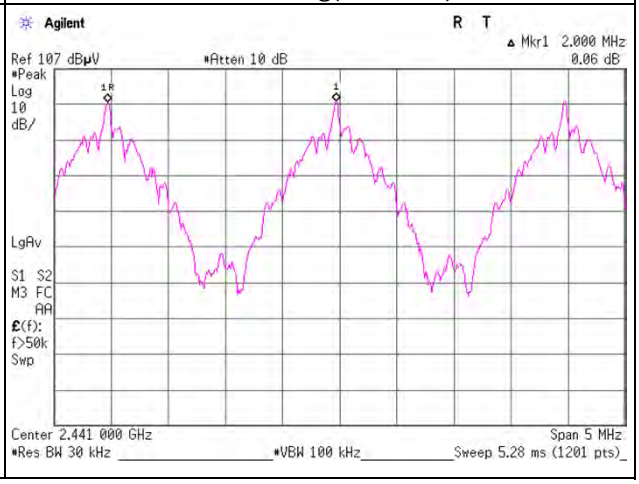
Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency Separation [MHz]
DH5	2402.0	0.963	1.003	>= 0.642
DH5	2441.0	0.950	1.003	>= 0.633
DH5	2480.0	0.955	1.003	>= 0.637
Inquiry	2441.0	0.815	2.000	>= 0.543

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

Inquiry

20dB Bandwidth	Carrier Frequency Separation
Transmitting(2441MHz)	Transmitting(2441MHz)





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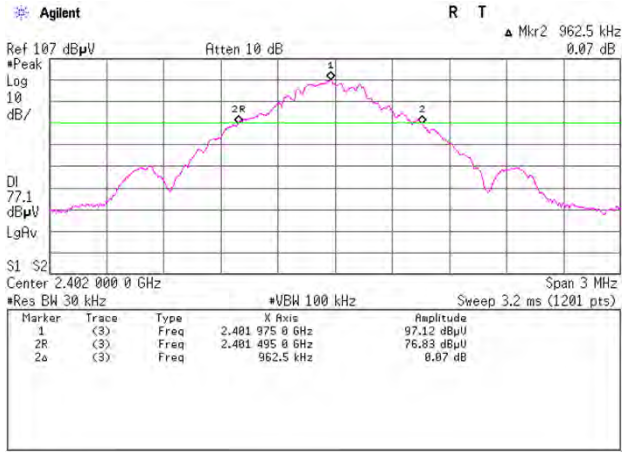
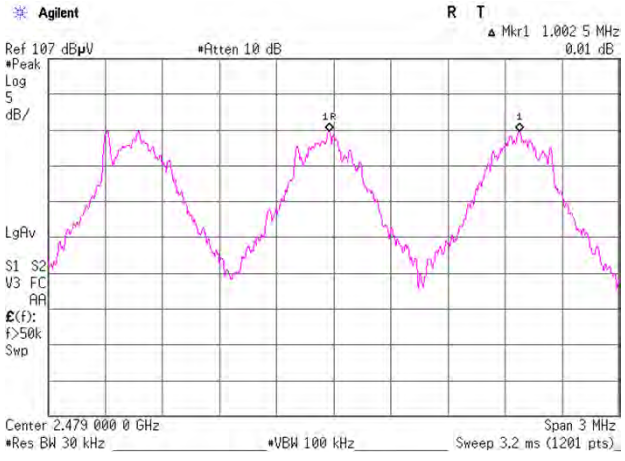
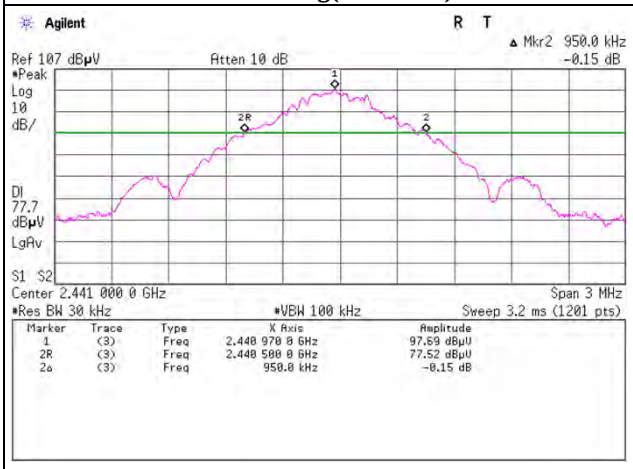
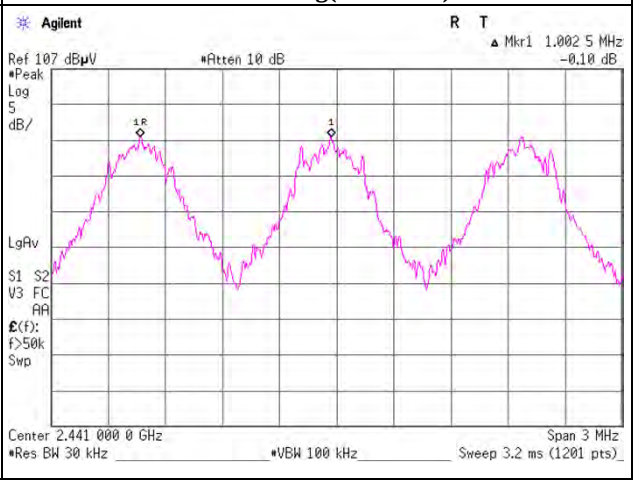
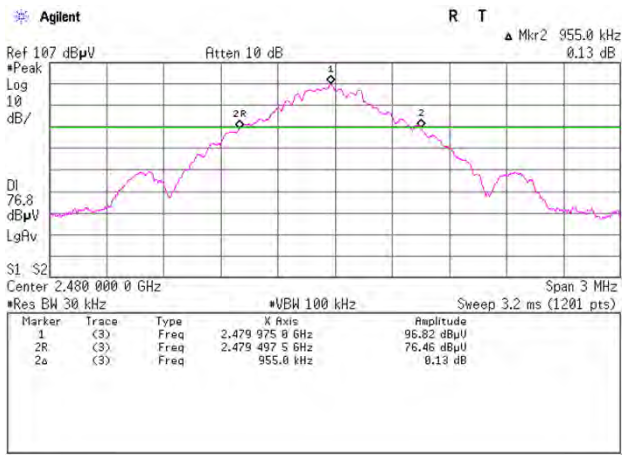
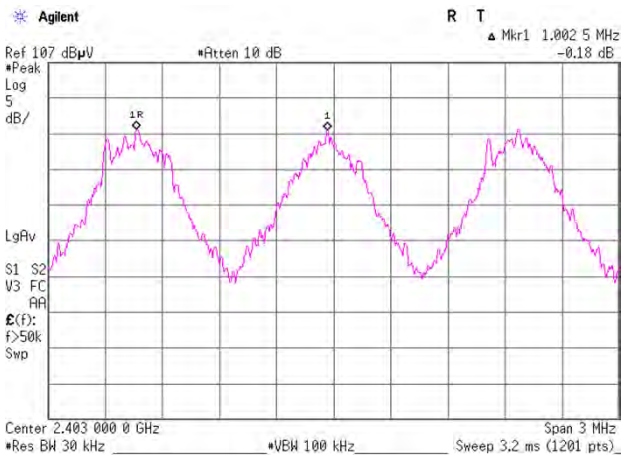
20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, BDR(DH5), PRBS9

20dB Bandwidth	Carrier Frequency Separation
Transmitting(2402MHz)	**Transmitting(2402MHz)**
	
Transmitting(2441MHz)	**Transmitting(2441MHz)**
	
Transmitting(2480MHz)	**Transmitting(2480MHz)**
	

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20dB Bandwidth and Carrier Frequency Separation

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Shielded Room
Date	September 15, 2011	
Temperature / Humidity	26deg.C , 51%RH	
Engineer	Shinichi Takano	
Mode	Tx, Bluetooth, EDR(3-DH5), PRBS9	

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency Separation [MHz]
3-DH5	2402.0	1.303	1.003	>= 0.868
3-DH5	2441.0	1.298	1.000	>= 0.865
3-DH5	2480.0	1.295	1.000	>= 0.863

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

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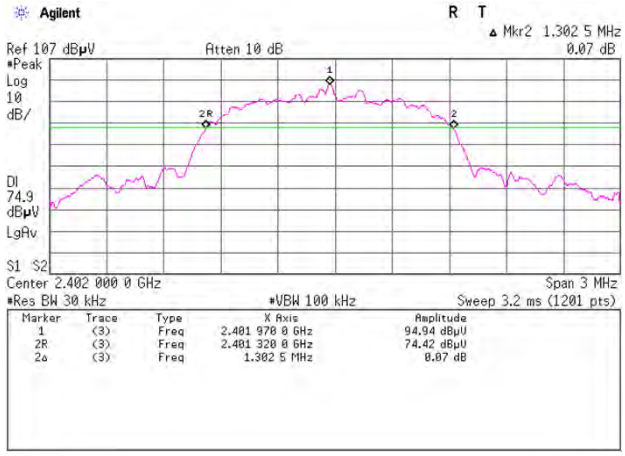
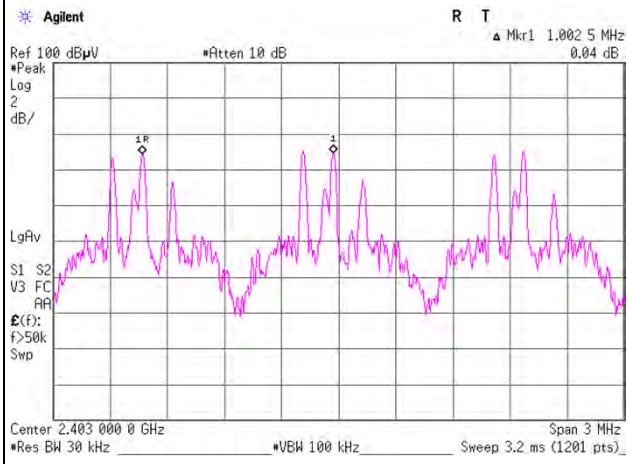
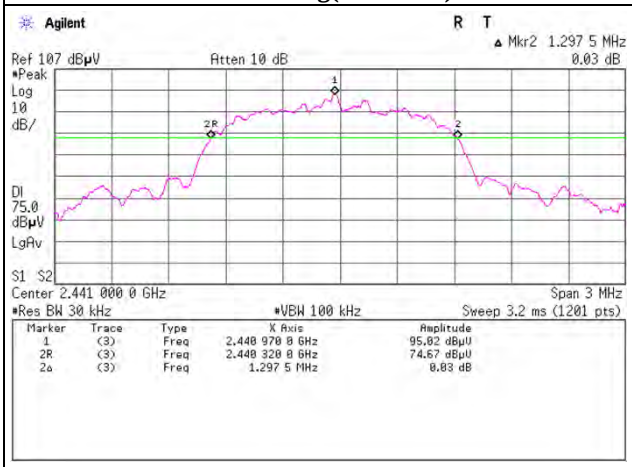
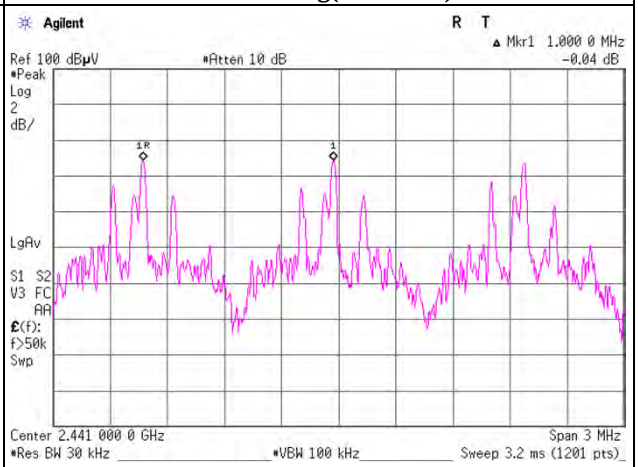
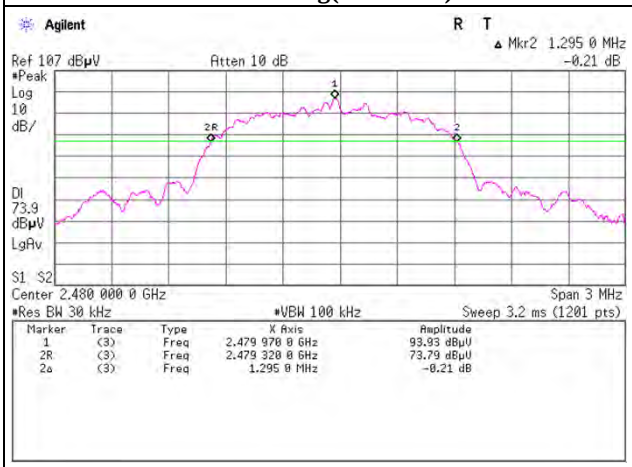
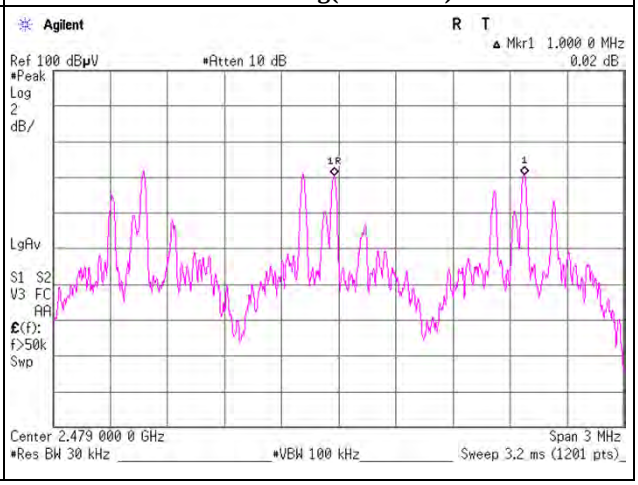
20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, EDR(3-DH5), PRBS9

20dB Bandwidth	Carrier Frequency Separation
Transmitting(2402MHz)	**Transmitting(2402MHz)**
	
Transmitting(2441MHz)	**Transmitting(2441MHz)**
	
Transmitting(2480MHz)	**Transmitting(2480MHz)**
	

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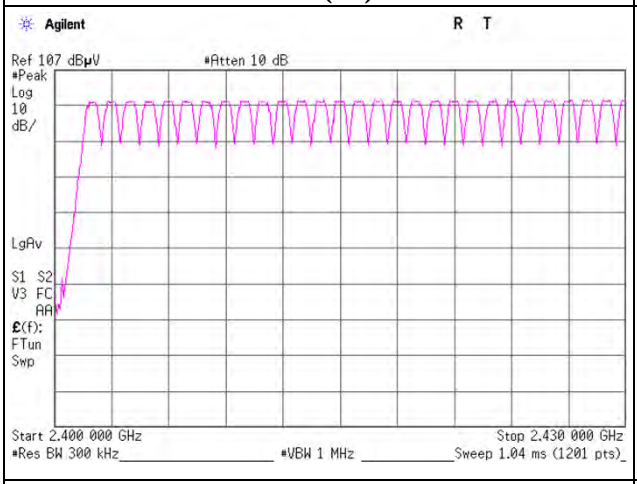
Number of Hopping Frequency

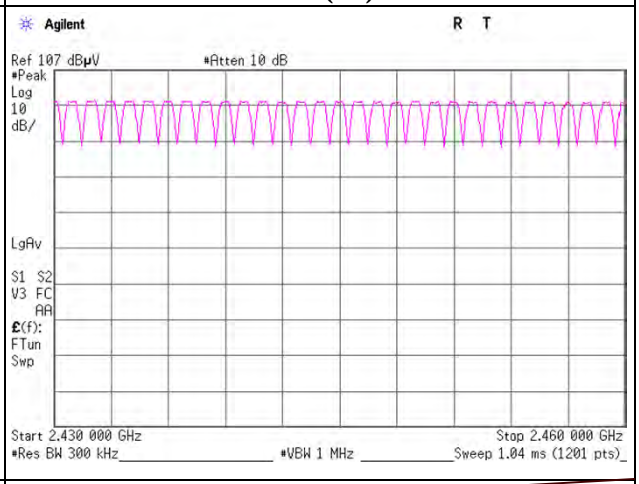
Test place	UL Japan, Inc. Shonan EMC Lab.
Date	September 15, 2011
Temperature / Humidity	26deg.C , 51%RH
Engineer	Shinichi Takano
Mode	Tx, Bluetooth, BDR(DH5), PRBS9

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

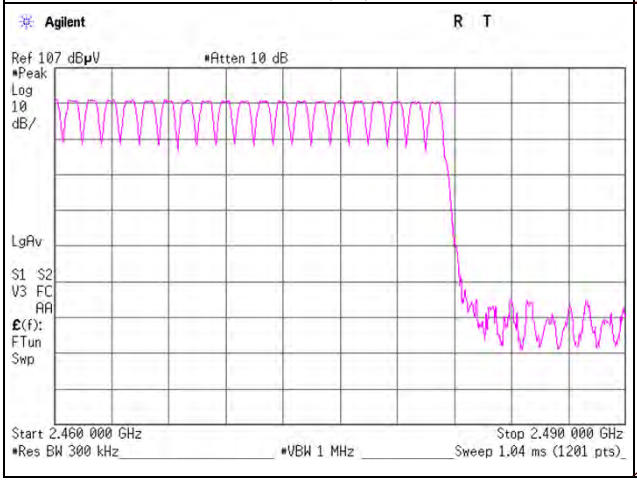
DH5 (1/3)



DH5 (2/3)



DH5 (3/3)



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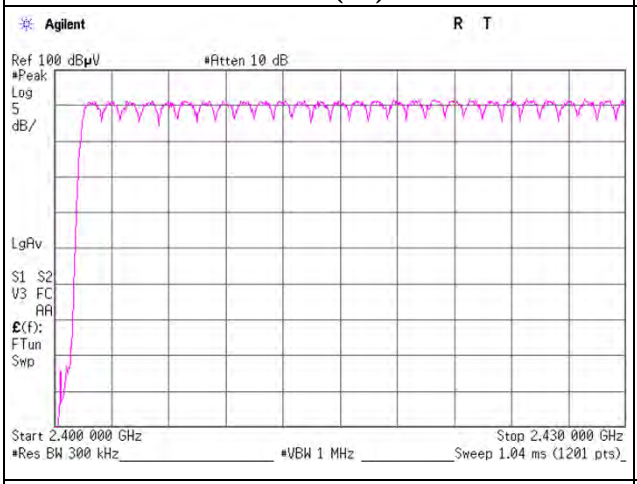
Number of Hopping Frequency

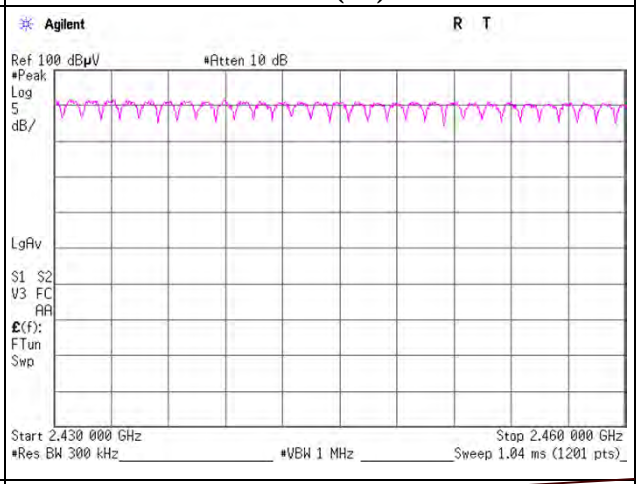
Test place	UL Japan, Inc. Shonan EMC Lab.
Date	September 15, 2011
Temperature / Humidity	26deg.C , 51%RH
Engineer	Shinichi Takano
Mode	Tx, Bluetooth, EDR(3-DH5), PRBS9

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

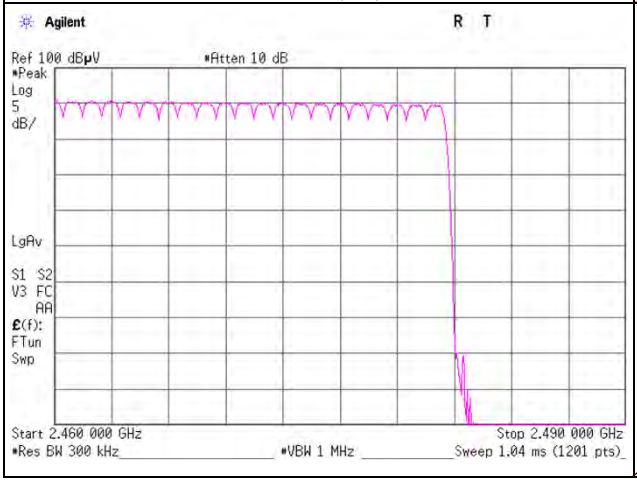
3-DH5 (1/3)



3-DH5 (2/3)



3-DH5 (3/3)



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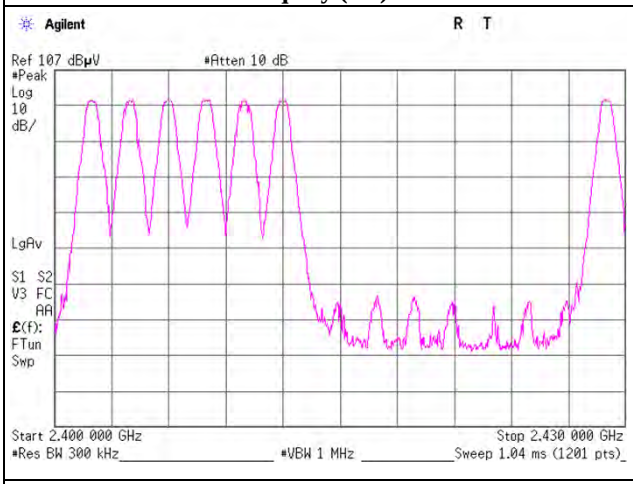
Number of Hopping Frequency

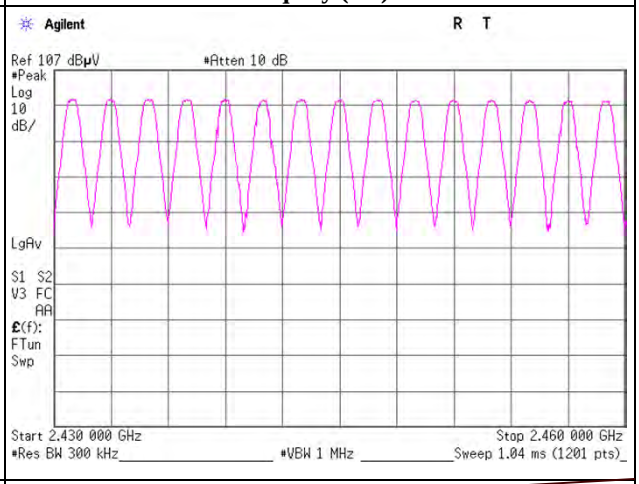
Test place	UL Japan, Inc. Shonan EMC Lab.
Date	September 15, 2011
Temperature / Humidity	26deg.C , 51%RH
Engineer	Shinichi Takano
Mode	Tx, Bluetooth, BDR(DH5), Inquiry

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

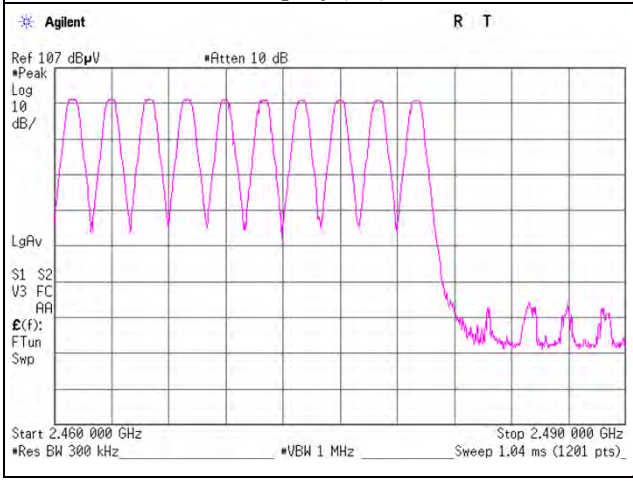
Inquiry (1/3)



Inquiry (2/3)



Inquiry (3/3)



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Dwell Time

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Shielded Room
Date	September 15, 2011	
Temperature / Humidity	26deg.C , 51%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	20.6 / 5.0 sec. x 31.6 sec. = 131 times	0.399	52	400
DH3	19.2 / 5.0 sec. x 31.6 sec. = 122 times	1.657	202	400
DH5	19.4 / 5.0 sec. x 31.6 sec. = 123 times	2.906	357	400
Inquiry	100.0 / 1.0 sec. x 12.8 sec. = 1280 times	0.100	127	400

Sample Calculation

Result = Number of transmission x Length of transmition time

*Average data of 5 tests.(except Inquiry)

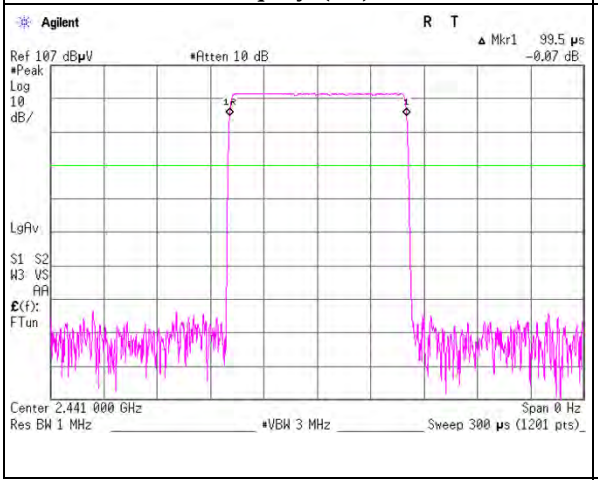
Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	20	24	21	19	19	20.6
DH3	20	22	17	18	19	19.2
DH5	19	21	19	20	18	19.4
Inquiry	100	100	100	100	100	100.0

Sample Calculation

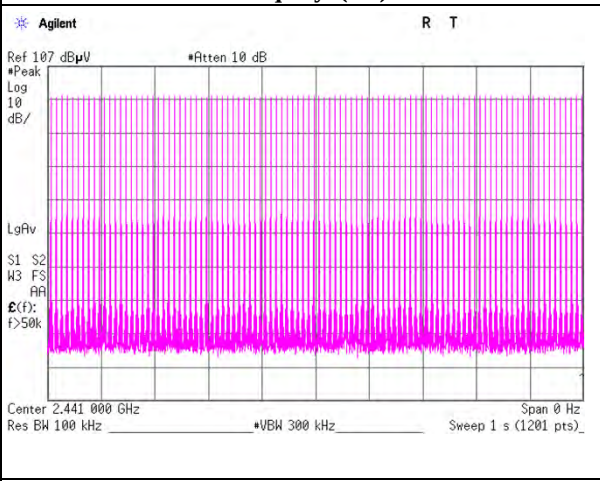
Average= Summation(Sampling 1 to 5) / 5

Inquiry

Inquiry (1/2)



Inquiry (2/2)



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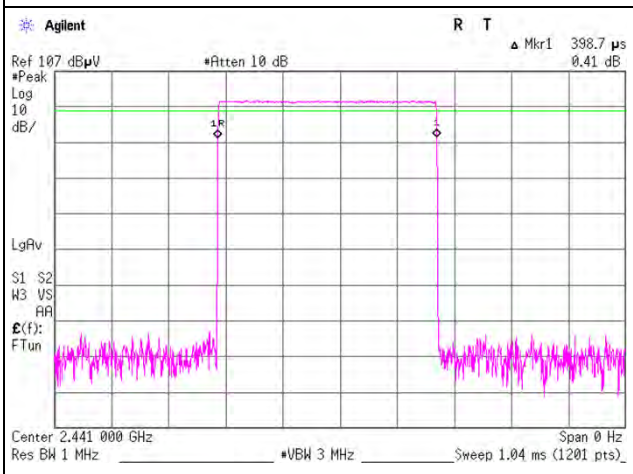
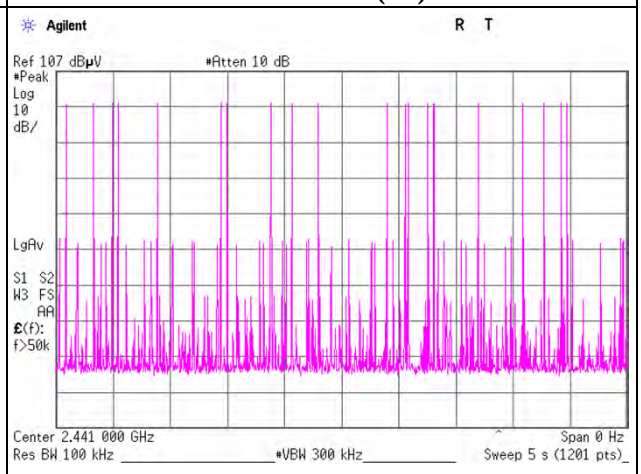
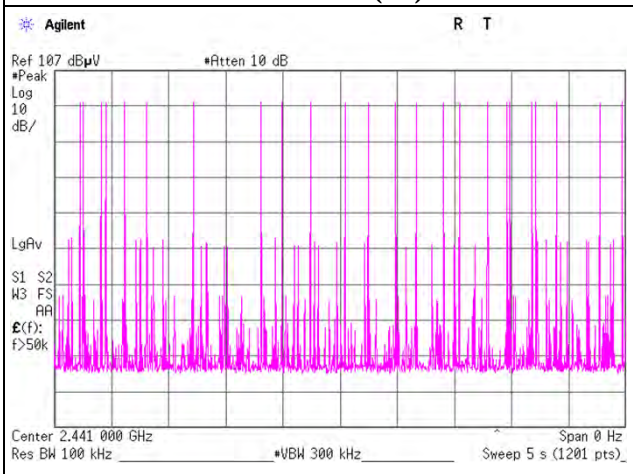
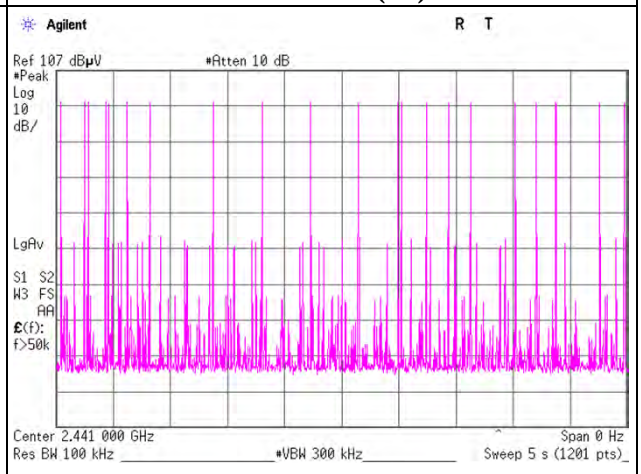
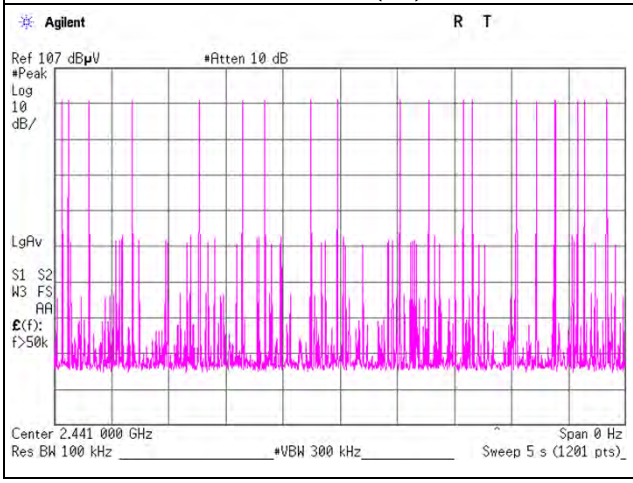
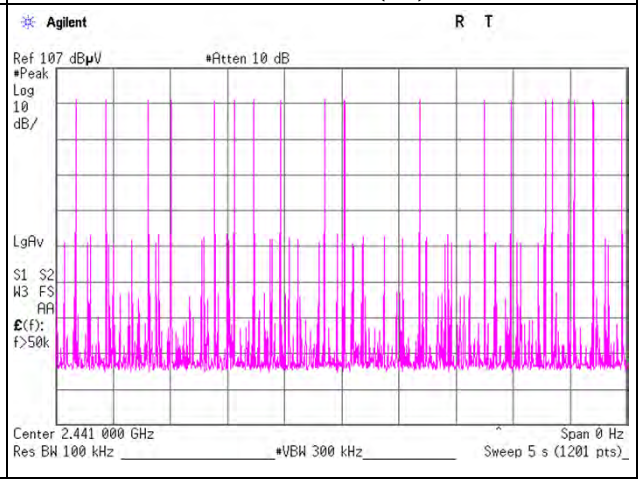
Dwell time

Tx, Bluetooth, BDR, PRBS9

DH1 On Time	DH1 5Seconds(1/5)
	
DH1 5Seconds(2/5)	**DH1 5Seconds(3/5)**
	
DH1 5Seconds(4/5)	**DH1 5Seconds(5/5)**
	

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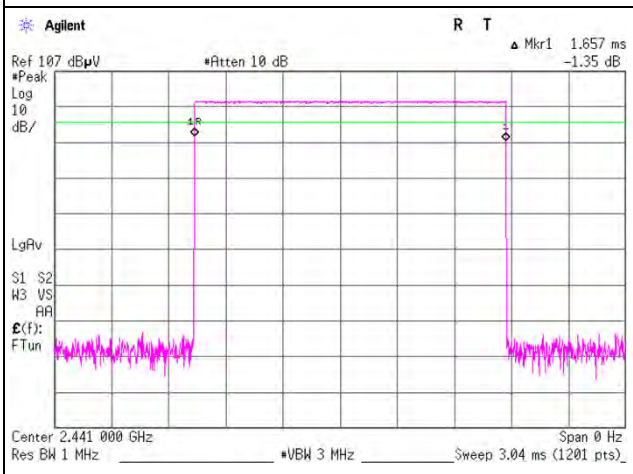
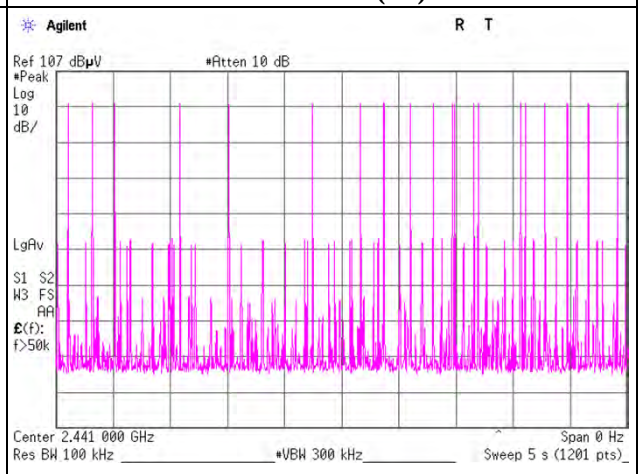
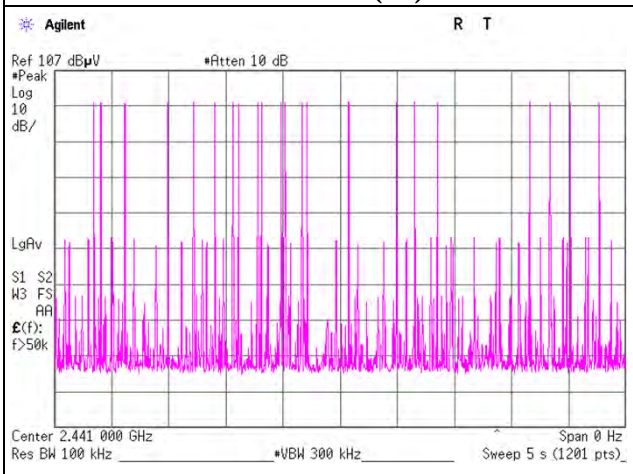
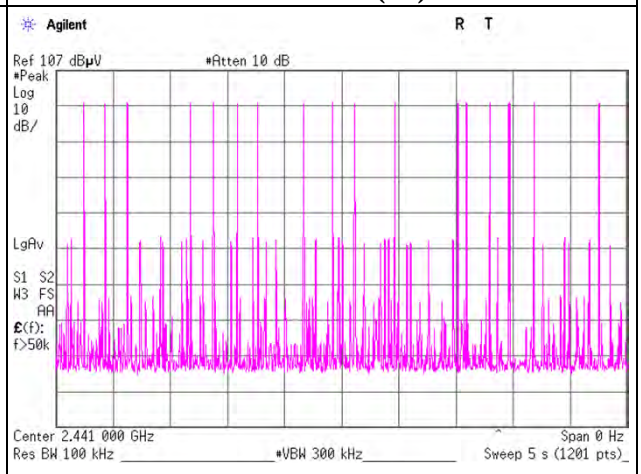
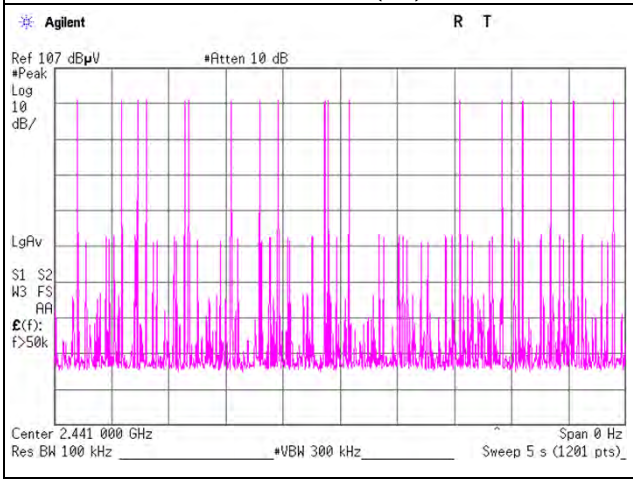
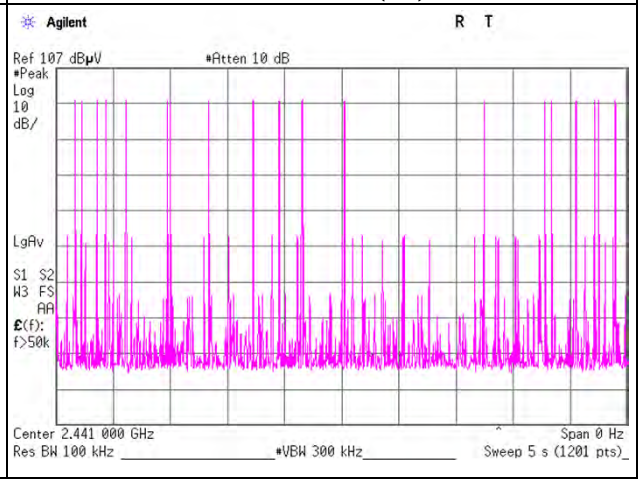
Dwell time

Tx, Bluetooth, BDR, PRBS9

DH3 On Time	DH3 5Seconds(1/5)
	
DH3 5Seconds(2/5)	**DH3 5Seconds(3/5)**
	
DH3 5Seconds(4/5)	**DH3 5Seconds(5/5)**
	

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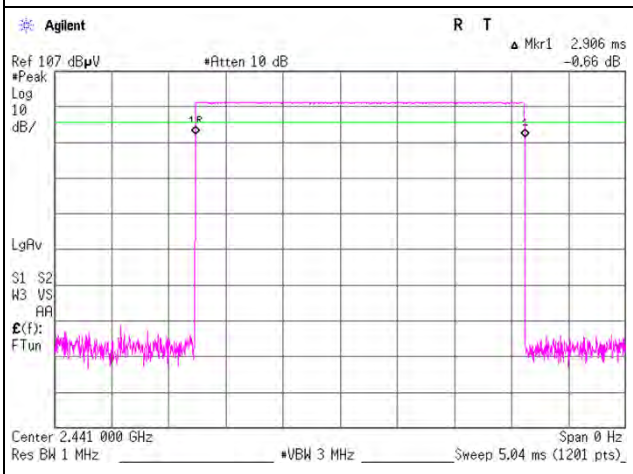
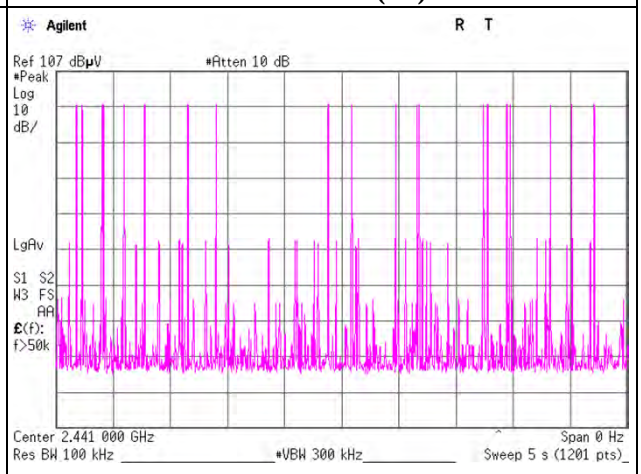
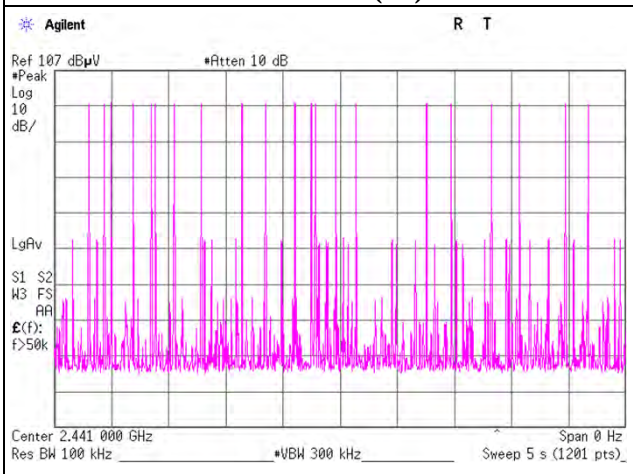
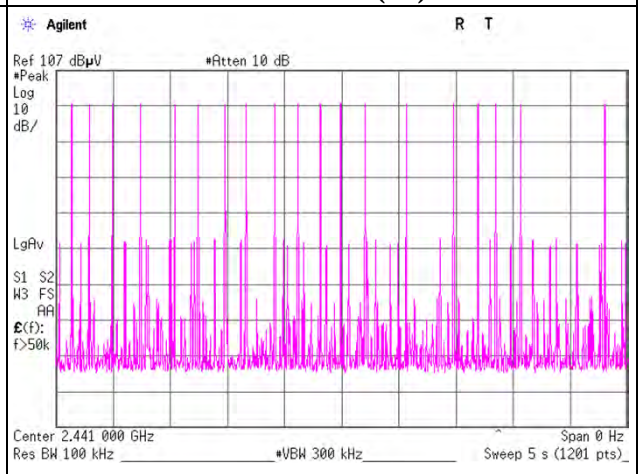
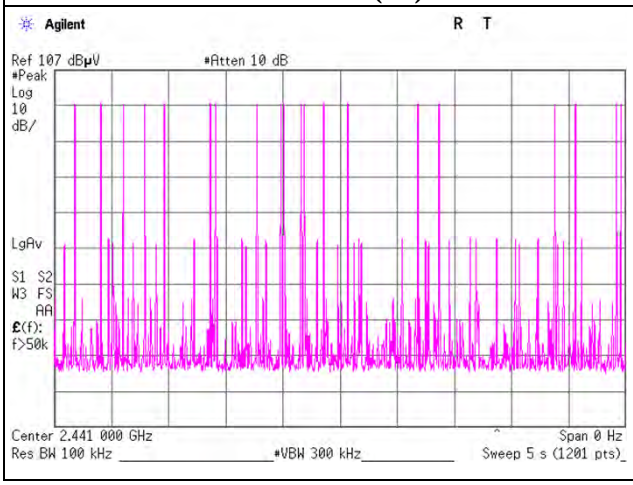
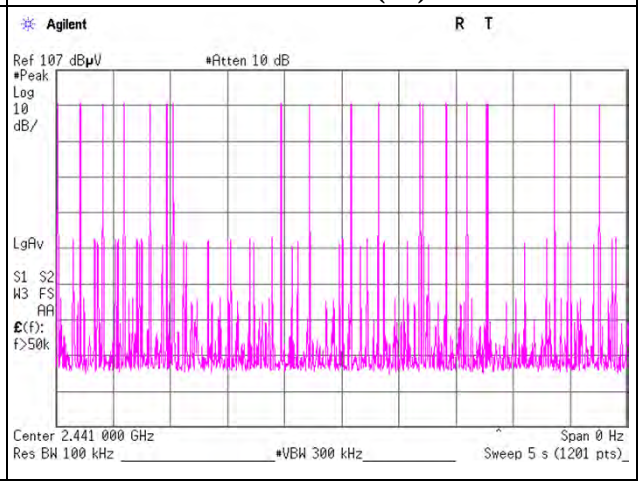
Dwell time

Tx, Bluetooth, BDR, PRBS9

DH5 On Time	DH5 5Seconds(1/5)
	
DH5 5Seconds(2/5)	**DH5 5Seconds(3/5)**
	
DH5 5Seconds(4/5)	**DH5 5Seconds(5/5)**
	

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Dwell Time

Test place	UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date	September 15, 2011
Temperature / Humidity	26deg.C , 51%RH
Engineer	Shinichi Takano
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	19.0 / 5.0 sec. x 31.6 sec. = 121 times	0.409	50	400
3-DH3	20.4 / 5.0 sec. x 31.6 sec. = 129 times	1.659	214	400
3-DH5	19.2 / 5.0 sec. x 31.6 sec. = 122 times	2.915	356	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	18	17	22	20	18	19.0
3-DH3	24	18	19	22	19	20.4
3-DH5	19	17	20	18	22	19.2

Sample Calculation

Average= Summation(Sampling 1 to 5) / 5

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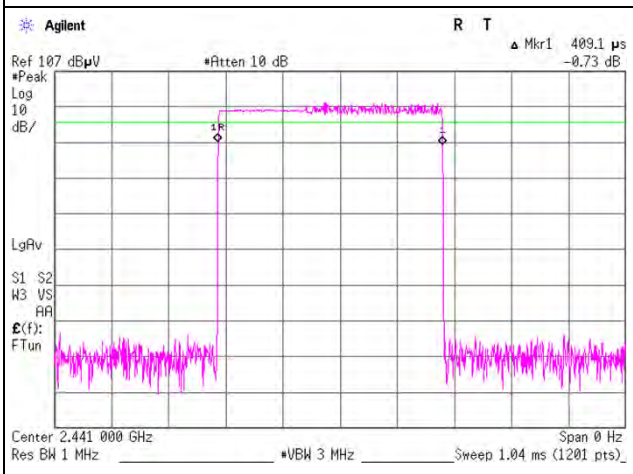
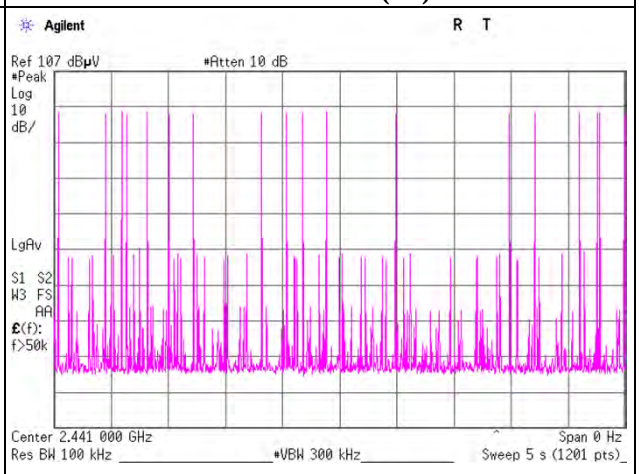
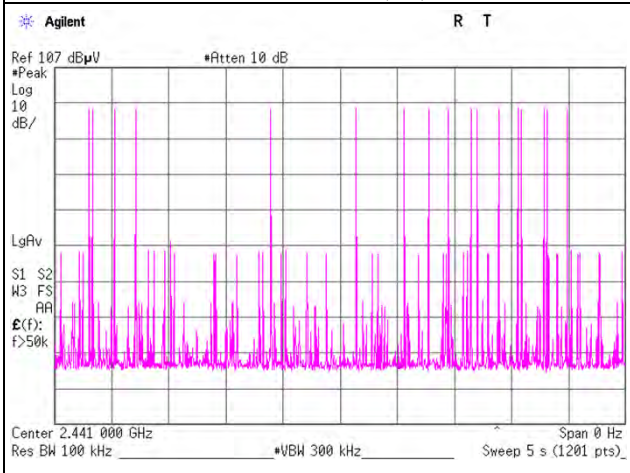
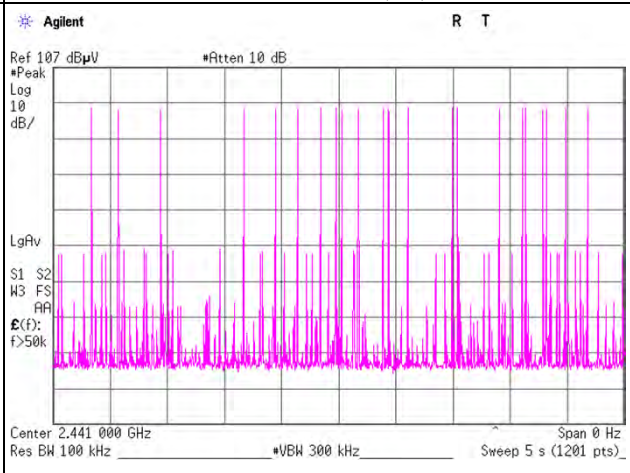
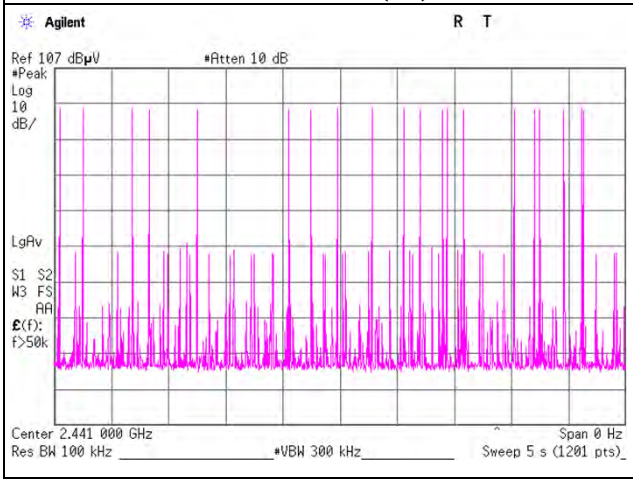
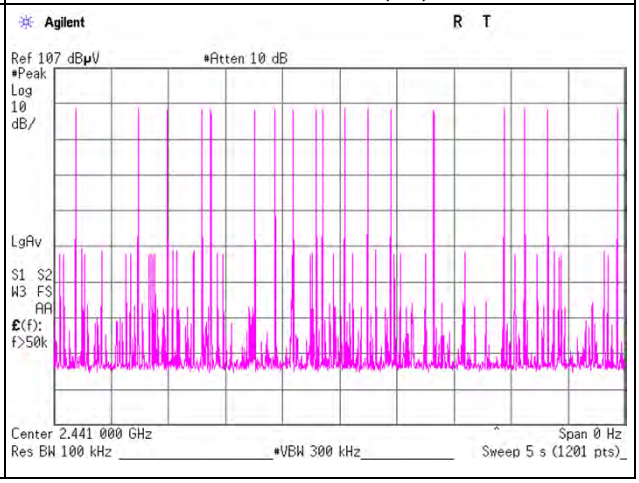
Dwell time

Tx, Bluetooth, EDR, PRBS9

3DH1 On Time	3DH1 5Seconds(1/5)
	
3DH1 5Seconds(2/5)	**3DH1 5Seconds(3/5)**
	
3DH1 5Seconds(4/5)	**3DH1 5Seconds(5/5)**
	

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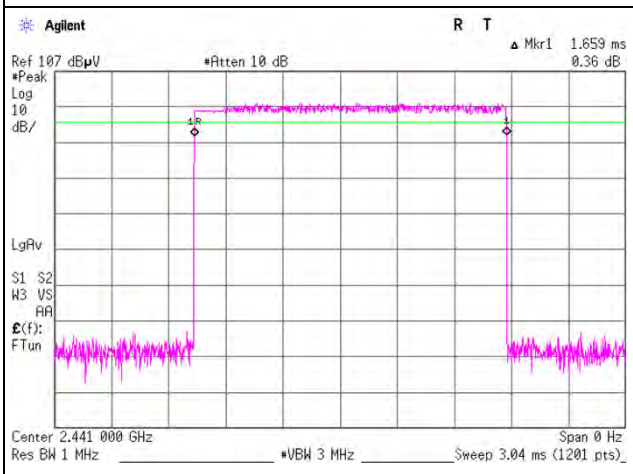
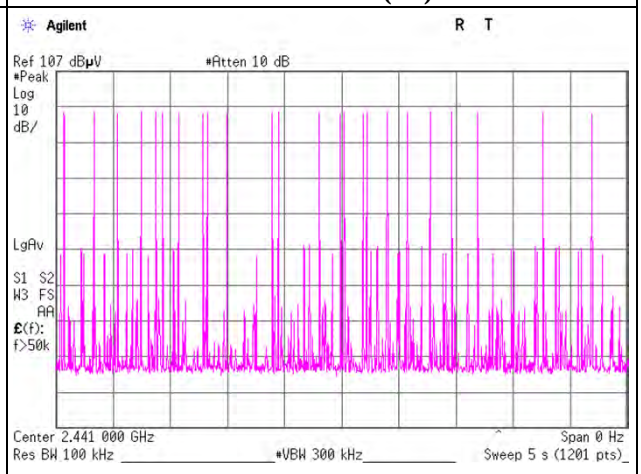
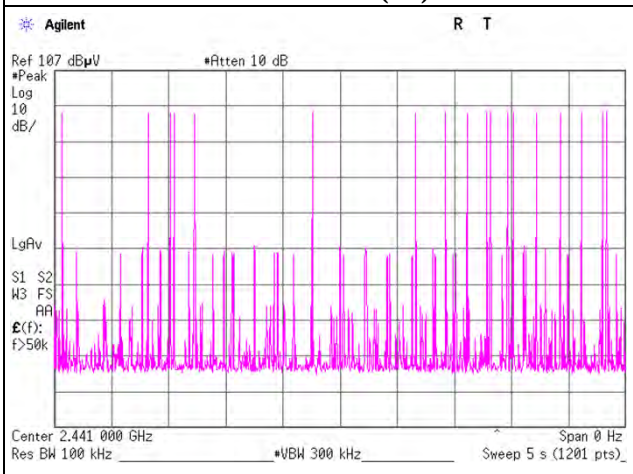
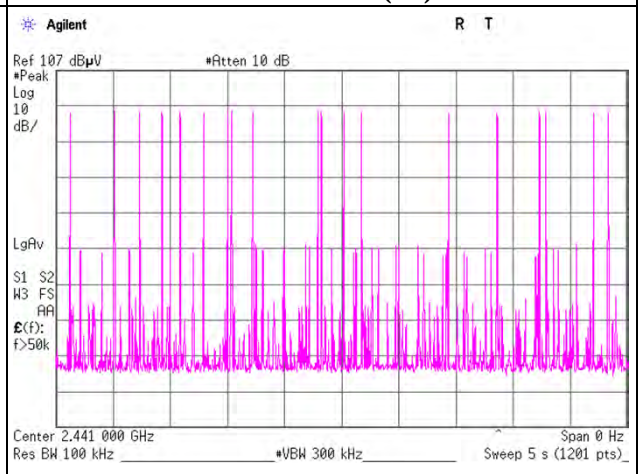
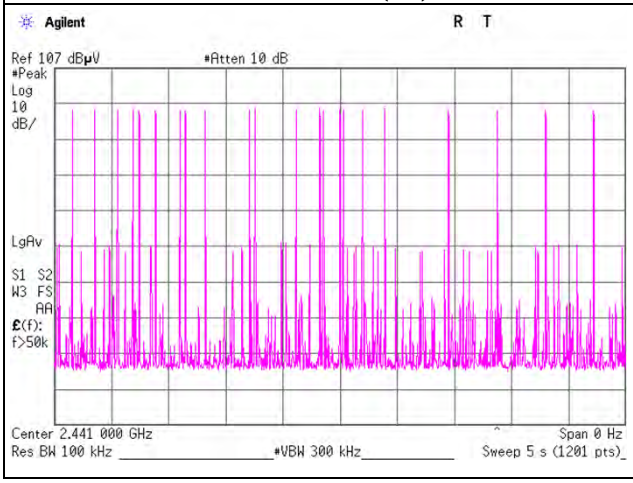
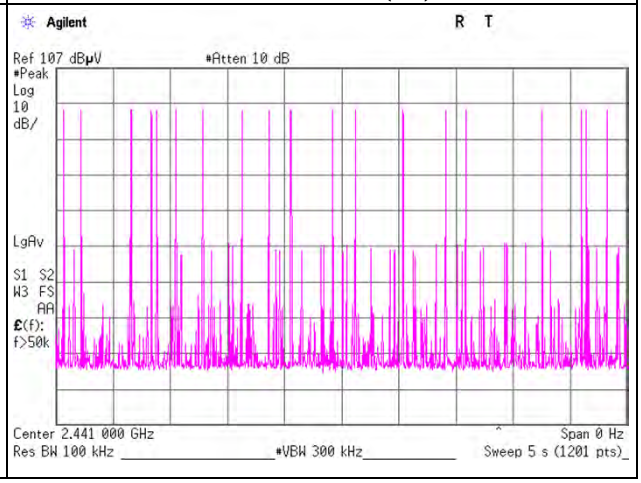
Dwell time

Tx, Bluetooth, EDR, PRBS9

3DH3 On Time	3DH3 5Seconds(1/5)
	
3DH3 5Seconds(2/5)	**3DH3 5Seconds(3/5)**
	
3DH3 5Seconds(4/5)	**3DH3 5Seconds(5/5)**
	

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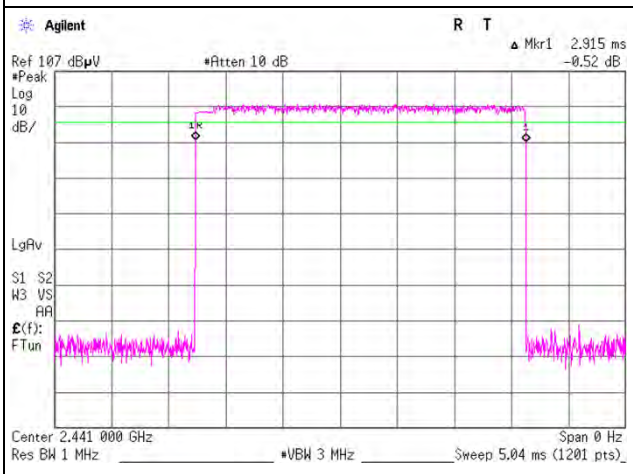
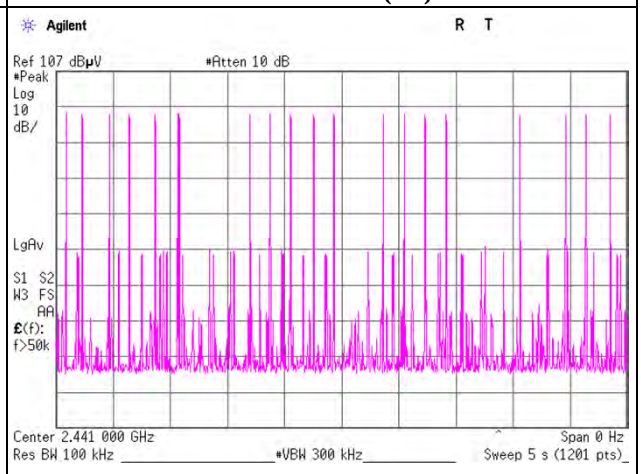
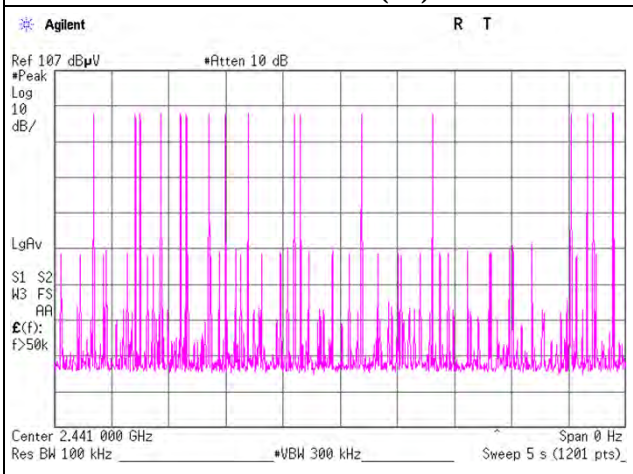
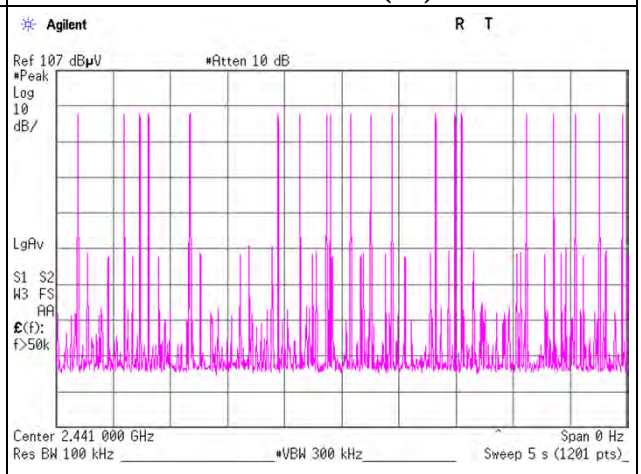
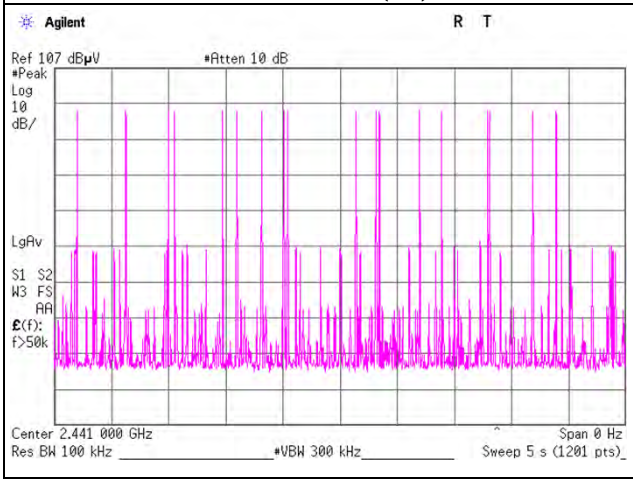
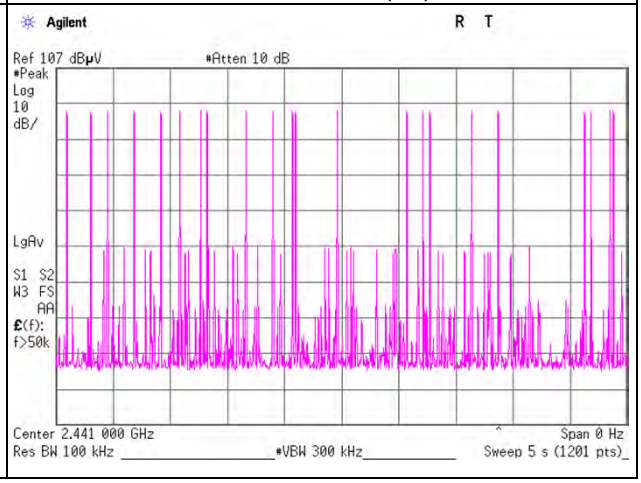
Dwell time

Tx, Bluetooth, EDR, PRBS9

3DH5 On Time	3DH5 5Seconds(1/5)
	
3DH5 5Seconds(2/5)	**3DH5 5Seconds(3/5)**
	
3DH5 5Seconds(4/5)	**3DH5 5Seconds(5/5)**
	

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date	September 14, 2011
Temperature / Humidity	25deg.C , 56%RH
Engineer	Makoto Hosaka
Mode	Tx, Bluetooth, BDR (Worst: DH5)
	Tx, Bluetooth, EDR (Worst: 2-DH5, 3-DH5)

	Freq.	P/M (PK) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
DH5	2402.0	-8.56	1.04	9.57	2.05	1.60	20.97	125	18.92
DH5	2441.0	-8.44	1.05	9.57	2.18	1.65	20.97	125	18.79
DH5	2480.0	-9.16	1.05	9.57	1.46	1.40	20.97	125	19.51
2-DH5	2402.0	-9.17	1.04	9.57	1.44	1.39	20.97	125	19.53
2-DH5	2441.0	-9.05	1.05	9.57	1.57	1.44	20.97	125	19.40
2-DH5	2480.0	-9.79	1.05	9.57	0.83	1.21	20.97	125	20.14
3-DH5	2402.0	-8.69	1.04	9.57	1.92	1.56	20.97	125	19.05
3-DH5	2441.0	-8.53	1.05	9.57	2.09	1.62	20.97	125	18.88
3-DH5	2480.0	-9.27	1.05	9.57	1.35	1.36	20.97	125	19.62

Sample Calculation:
Result = Reading + Cable Loss (supplied by customer) + Atten. Loss
*P/M(PK)=Power meter and Power sensor (Peak)

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1,3 Semi Anechoic Chamber
Date	September 15, 2011(No.1AC)	September 16, 2011(No.3AC)
Temperature / Humidity	26deg.C , 67%RH	26deg.C , 58%RH
Engineer	Makoto Hosaka	Shinichi Takano
Mode	Tx, 2402 MHz	
	Tx, Bluetooth, BDR(DH5), PRBS9	

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.	41.328	QP	41.9	14.3	7.1	31.8	31.5	40.0	8.5	306	253	
Hori.	83.462	QP	49.1	7.1	7.7	31.8	32.1	40.0	7.9	239	308	
Hori.	108.480	QP	45.7	11.3	8.0	31.8	33.2	43.5	10.3	301	295	
Hori.	215.533	QP	38.1	17.0	9.1	31.7	32.5	43.5	11.0	152	163	
Hori.	225.895	QP	42.9	17.1	9.2	31.7	37.5	46.0	8.5	148	161	
Hori.	240.838	QP	43.2	17.2	9.3	31.7	38.0	46.0	8.0	141	132	
Hori.	2377.000	PK	46.9	27.2	13.8	41.1	46.8	73.9	27.1	105	177	
Hori.	2388.983	PK	46.7	27.2	13.8	41.1	46.6	73.9	27.3	105	177	
Hori.	2390.000	PK	47.1	27.2	13.8	41.1	47.0	73.9	26.9	105	177	
Hori.	2400.000	PK	48.4	27.3	13.8	41.1	48.4	73.9	25.5	105	177	
Hori.	4804.000	PK	48.0	31.1	6.0	41.1	44.0	73.9	29.9	100	144	
Hori.	7206.000	PK	48.2	36.5	7.4	41.3	50.8	73.9	23.1	100	0	
Hori.	9608.000	PK	45.1	38.2	8.7	38.8	53.2	73.9	20.7	100	0	
Hori.	12010.000	PK	46.5	39.3	10.2	39.2	56.8	73.9	17.1	100	0	
Hori.	2377.000	AV	35.7	27.2	13.8	41.1	35.6	53.9	18.3	105	177	VBW:270Hz
Hori.	2388.983	AV	35.7	27.2	13.8	41.1	35.6	53.9	18.3	105	177	VBW:270Hz
Hori.	2390.000	AV	35.7	27.2	13.8	41.1	35.6	53.9	18.3	105	177	VBW:270Hz
Hori.	2400.000	AV	36.9	27.3	13.8	41.1	36.9	53.9	17.0	105	177	VBW:270Hz
Hori.	4804.000	AV	39.4	31.1	6.0	41.1	35.4	53.9	18.5	100	144	VBW:270Hz
Hori.	7206.000	AV	37.7	36.5	7.4	41.3	40.3	53.9	13.6	100	0	VBW:270Hz
Hori.	9608.000	AV	35.4	38.2	8.7	38.8	43.5	53.9	10.4	100	0	VBW:270Hz
Hori.	12010.000	AV	36.7	39.3	10.2	39.2	47.0	53.9	6.9	100	0	VBW:270Hz
Vert.	41.344	QP	43.7	14.4	7.1	31.8	33.4	40.0	6.6	100	14	
Vert.	55.302	QP	48.6	9.7	7.3	31.8	33.8	40.0	6.2	100	117	
Vert.	58.374	QP	49.0	8.8	7.4	31.8	33.4	40.0	6.6	100	284	
Vert.	84.654	QP	45.5	7.3	7.7	31.8	28.7	40.0	11.3	100	120	
Vert.	2377.000	PK	46.3	27.2	13.8	41.1	46.2	73.9	27.7	100	300	
Vert.	2388.983	PK	46.0	27.2	13.8	41.1	45.9	73.9	28.0	100	300	
Vert.	2390.000	PK	45.9	27.2	13.8	41.1	45.8	73.9	28.1	100	300	
Vert.	2400.000	PK	46.5	27.3	13.8	41.1	46.5	73.9	27.4	100	300	
Vert.	4804.000	PK	48.2	31.1	6.0	41.1	44.2	73.9	29.7	105	164	
Vert.	7206.000	PK	47.9	36.5	7.4	41.3	50.5	73.9	23.4	100	0	
Vert.	9608.000	PK	45.4	38.2	8.7	38.8	53.5	73.9	20.4	100	0	
Vert.	12010.000	PK	47.0	39.3	10.2	39.2	57.3	73.9	16.6	100	0	
Vert.	2377.000	AV	36.2	27.2	13.8	41.1	36.1	53.9	17.8	100	300	VBW:270Hz
Vert.	2388.983	AV	35.8	27.2	13.8	41.1	35.7	53.9	18.2	100	300	VBW:270Hz
Vert.	2390.000	AV	36.2	27.2	13.8	41.1	36.1	53.9	17.8	100	300	VBW:270Hz
Vert.	2400.000	AV	35.9	27.3	13.8	41.1	35.9	53.9	18.0	100	300	VBW:270Hz
Vert.	4804.000	AV	39.5	31.1	6.0	41.1	35.5	53.9	18.4	105	164	VBW:270Hz
Vert.	7206.000	AV	37.8	36.5	7.4	41.3	40.4	53.9	13.5	100	0	VBW:270Hz
Vert.	9608.000	AV	35.1	38.2	8.7	38.8	43.2	53.9	10.7	100	0	VBW:270Hz
Vert.	12010.000	AV	36.7	39.3	10.2	39.2	47.0	53.9	6.9	100	0	VBW:270Hz

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

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

*QP Quasi peak, PK: Peak, AV: Average

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1,3 Semi Anechoic Chamber
Date	September 15, 2011(No.1AC)	September 16, 2011(No.3AC)
Temperature / Humidity	26deg.C , 67%RH	26deg.C , 58%RH
Engineer	Makoto Hosaka	Shinichi Takano
Mode	Tx, 2441 MHz	
	Tx, Bluetooth, BDR(DH5), PRBS9	

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.	41.328	QP	42.0	14.4	7.1	31.8	31.7	40.0	8.3	306	253	
Hori.	83.462	QP	48.9	7.1	7.7	31.8	31.9	40.0	8.1	239	308	
Hori.	108.480	QP	45.8	11.3	8.0	31.8	33.3	43.5	10.2	301	295	
Hori.	215.533	QP	38.4	17.0	9.1	31.7	32.8	43.5	10.7	152	163	
Hori.	225.895	QP	42.7	17.1	9.2	31.7	37.3	46.0	8.7	148	161	
Hori.	240.838	QP	43.6	17.2	9.3	31.7	38.4	46.0	7.6	141	132	
Hori.	4882.000	PK	48.1	31.2	6.0	40.9	44.4	73.9	29.5	100	158	
Hori.	7323.000	PK	47.0	36.8	7.4	41.4	49.8	73.9	24.1	100	0	
Hori.	9764.000	PK	45.0	38.5	8.7	38.8	53.4	73.9	20.5	100	0	
Hori.	12205.000	PK	46.0	39.3	10.3	39.2	56.4	73.9	17.5	100	0	
Hori.	4882.000	AV	39.9	31.2	6.0	40.9	36.2	53.9	17.7	100	158	VBW:270Hz
Hori.	7323.000	AV	36.2	36.8	7.4	41.4	39.0	53.9	14.9	100	0	VBW:270Hz
Hori.	9764.000	AV	34.3	38.5	8.7	38.8	42.7	53.9	11.2	100	0	VBW:270Hz
Hori.	12205.000	AV	35.5	39.3	10.3	39.2	45.9	53.9	8.0	100	0	VBW:270Hz
Vert.	41.344	QP	43.9	14.4	7.1	31.8	33.6	40.0	6.4	100	14	
Vert.	55.302	QP	48.6	9.7	7.3	31.8	33.8	40.0	6.2	100	117	
Vert.	58.374	QP	49.1	8.8	7.4	31.8	33.5	40.0	6.5	100	284	
Vert.	84.654	QP	45.0	7.3	7.7	31.8	28.2	40.0	11.8	100	120	
Vert.	4882.000	PK	48.7	31.2	6.0	40.9	45.0	73.9	28.9	131	334	
Vert.	7323.000	PK	47.2	36.8	7.4	41.4	50.0	73.9	23.9	100	0	
Vert.	9764.000	PK	44.5	38.5	8.7	38.8	52.9	73.9	21.0	100	0	
Vert.	12205.000	PK	44.8	39.3	10.3	39.2	55.2	73.9	18.7	100	0	
Vert.	4882.000	AV	40.9	31.2	6.0	40.9	37.2	53.9	16.7	131	334	VBW:270Hz
Vert.	7323.000	AV	36.8	36.8	7.4	41.4	39.6	53.9	14.3	100	0	VBW:270Hz
Vert.	9764.000	AV	34.4	38.5	8.7	38.8	42.8	53.9	11.1	100	0	VBW:270Hz
Vert.	12205.000	AV	35.2	39.3	10.3	39.2	45.6	53.9	8.3	100	0	VBW:270Hz

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

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

*QP Quasi peak, PK: Peak, AV: Average

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1,3 Semi Anechoic Chamber
Date	September 15, 2011(No.1AC)	September 16, 2011(No.3AC)
Temperature / Humidity	26deg.C , 67%RH	26deg.C , 58%RH
Engineer	Makoto Hosaka	Shinichi Takano
Mode	Tx, 2480 MHz	
	Tx, Bluetooth, BDR(DH5), PRBS9	

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.	41.328	QP	42.0	14.4	7.1	31.8	31.7	40.0	8.3	306	253	
Hori.	83.462	QP	49.5	7.1	7.7	31.8	32.5	40.0	7.5	239	308	
Hori.	108.480	QP	45.8	11.3	8.0	31.8	33.3	43.5	10.2	301	295	
Hori.	215.533	QP	38.2	17.0	9.1	31.7	32.6	43.5	10.9	152	163	
Hori.	225.895	QP	42.6	17.1	9.2	31.7	37.2	46.0	8.8	148	161	
Hori.	240.838	QP	42.7	17.2	9.3	31.7	37.5	46.0	8.5	141	132	
Hori.	2483.500	PK	46.0	27.5	13.7	41.1	46.1	73.9	27.8	112	170	
Hori.	2507.000	PK	46.2	27.5	13.9	41.1	46.5	73.9	27.4	112	170	
Hori.	4960.000	PK	46.5	31.4	6.0	40.8	43.1	73.9	30.8	100	246	
Hori.	7440.000	PK	46.5	37.0	7.3	41.5	49.3	73.9	24.6	100	0	
Hori.	9920.000	PK	42.8	38.8	8.8	38.8	51.6	73.9	22.3	100	0	
Hori.	12400.000	PK	43.4	39.4	10.3	39.2	53.9	73.9	20.0	100	0	
Hori.	2483.500	AV	36.2	27.5	13.7	41.1	36.3	53.9	17.6	112	170	VBW:270Hz
Hori.	2507.000	AV	36.2	27.5	13.9	41.1	36.5	53.9	17.4	112	170	VBW:270Hz
Hori.	4960.000	AV	36.8	31.4	6.0	40.8	33.4	53.9	20.5	100	246	VBW:270Hz
Hori.	7440.000	AV	36.5	37.0	7.3	41.5	39.3	53.9	14.6	100	0	VBW:270Hz
Hori.	9920.000	AV	33.6	38.8	8.8	38.8	42.4	53.9	11.5	100	0	VBW:270Hz
Hori.	12400.000	AV	33.8	39.4	10.3	39.2	44.3	53.9	9.6	100	0	VBW:270Hz
Vert.	41.344	QP	43.7	14.4	7.1	31.8	33.4	40.0	6.6	100	14	
Vert.	55.302	QP	48.4	9.7	7.3	31.8	33.6	40.0	6.4	100	117	
Vert.	58.374	QP	48.7	8.8	7.4	31.8	33.1	40.0	6.9	100	284	
Vert.	84.654	QP	46.1	7.3	7.7	31.8	29.3	40.0	10.7	100	120	
Vert.	2483.500	PK	46.6	27.5	13.7	41.1	46.7	73.9	27.2	104	45	
Vert.	2507.000	PK	46.2	27.5	13.9	41.1	46.5	73.9	27.4	104	45	
Vert.	4960.000	PK	47.7	31.4	6.0	40.8	44.3	73.9	29.6	102	302	
Vert.	7440.000	PK	46.4	37.0	7.3	41.5	49.2	73.9	24.7	100	0	
Vert.	9920.000	PK	43.5	38.8	8.8	38.8	52.3	73.9	21.6	100	0	
Vert.	12400.000	PK	43.3	39.4	10.3	39.2	53.8	73.9	20.1	100	0	
Vert.	2483.500	AV	36.1	27.5	13.7	41.1	36.2	53.9	17.7	104	45	VBW:270Hz
Vert.	2507.000	AV	36.1	27.5	13.9	41.1	36.4	53.9	17.5	104	45	VBW:270Hz
Vert.	4960.000	AV	37.3	31.4	6.0	40.8	33.9	53.9	20.0	102	302	VBW:270Hz
Vert.	7440.000	AV	36.1	37.0	7.3	41.5	38.9	53.9	15.0	100	0	VBW:270Hz
Vert.	9920.000	AV	33.2	38.8	8.8	38.8	42.0	53.9	11.9	100	0	VBW:270Hz
Vert.	12400.000	AV	33.7	39.4	10.3	39.2	44.2	53.9	9.7	100	0	VBW:270Hz

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

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

*QP Quasi peak, PK: Peak, AV: Average

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1,3 Semi Anechoic Chamber
Date	September 15, 2011(No.1AC)	September 16, 2011(No.3AC)
Temperature / Humidity	26deg.C , 67%RH	26deg.C , 58%RH
Engineer	Makoto Hosaka	Shinichi Takano
Mode	Tx, 2402 MHz	
	Tx, Bluetooth, EDR(3-DH5), PRBS9	

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.	41.288	QP	41.3	14.4	7.1	31.8	31.0	40.0	9.0	285	257	
Hori.	84.261	QP	50.6	7.2	7.7	31.8	33.7	40.0	6.3	232	305	
Hori.	112.251	QP	45.2	11.8	8.1	31.8	33.3	43.5	10.2	288	303	
Hori.	222.781	QP	42.6	17.1	9.2	31.7	37.2	46.0	8.8	150	164	
Hori.	240.841	QP	41.8	17.2	9.3	31.7	36.6	46.0	9.4	145	203	
Hori.	2377.000	PK	46.9	27.2	13.8	41.1	46.8	73.9	27.1	102	178	
Hori.	2389.383	PK	47.2	27.2	13.8	41.1	47.1	73.9	26.8	102	178	
Hori.	2390.000	PK	47.0	27.2	13.8	41.1	46.9	73.9	27.0	102	178	
Hori.	2400.000	PK	50.1	27.3	13.8	41.1	50.1	73.9	23.8	102	178	
Hori.	4804.000	PK	46.8	31.1	6.0	41.1	42.8	73.9	31.1	100	0	
Hori.	7206.000	PK	48.0	36.5	7.4	41.3	50.6	73.9	23.3	100	0	
Hori.	9608.000	PK	45.2	38.2	8.7	38.8	53.3	73.9	20.6	100	0	
Hori.	12010.000	PK	46.6	39.3	10.2	39.2	56.9	73.9	17.0	100	0	
Hori.	2377.000	AV	35.7	27.2	13.8	41.1	35.6	53.9	18.3	102	178	VBW:270Hz
Hori.	2389.383	AV	35.6	27.2	13.8	41.1	35.5	53.9	18.4	102	178	VBW:270Hz
Hori.	2390.000	AV	35.6	27.2	13.8	41.1	35.5	53.9	18.4	102	178	VBW:270Hz
Hori.	2400.000	AV	38.6	27.3	13.8	41.1	38.6	53.9	15.3	102	178	VBW:270Hz
Hori.	4804.000	AV	37.7	31.1	6.0	41.1	33.7	53.9	20.2	100	0	VBW:270Hz
Hori.	7206.000	AV	37.6	36.5	7.4	41.3	40.2	53.9	13.7	100	0	VBW:270Hz
Hori.	9608.000	AV	35.1	38.2	8.7	38.8	43.2	53.9	10.7	100	0	VBW:270Hz
Hori.	12010.000	AV	36.5	39.3	10.2	39.2	46.8	53.9	7.1	100	0	VBW:270Hz
Vert.	41.320	QP	43.8	14.4	7.1	31.8	33.5	40.0	6.5	100	0	
Vert.	55.301	QP	48.1	9.7	7.3	31.8	33.3	40.0	6.7	100	109	
Vert.	58.373	QP	48.7	8.8	7.4	31.8	33.1	40.0	6.9	100	269	
Vert.	84.656	QP	46.7	7.3	7.7	31.8	29.9	40.0	10.1	100	114	
Vert.	2377.000	PK	46.3	27.2	13.8	41.1	46.2	73.9	27.7	100	300	
Vert.	2389.383	PK	46.4	27.2	13.8	41.1	46.3	73.9	27.6	100	300	
Vert.	2390.000	PK	46.8	27.2	13.8	41.1	46.7	73.9	27.2	100	300	
Vert.	2400.000	PK	47.7	27.3	13.8	41.1	47.7	73.9	26.2	100	300	
Vert.	4804.000	PK	48.4	31.1	6.0	41.1	44.4	73.9	29.5	100	317	
Vert.	7206.000	PK	47.0	36.5	7.4	41.3	49.6	73.9	24.3	100	0	
Vert.	9608.000	PK	45.0	38.2	8.7	38.8	53.1	73.9	20.8	100	0	
Vert.	12010.000	PK	46.6	39.3	10.2	39.2	56.9	73.9	17.0	100	0	
Vert.	2377.000	AV	36.1	27.2	13.8	41.1	36.0	53.9	17.9	100	300	VBW:270Hz
Vert.	2389.383	AV	35.6	27.2	13.8	41.1	35.5	53.9	18.4	100	300	VBW:270Hz
Vert.	2390.000	AV	35.6	27.2	13.8	41.1	35.5	53.9	18.4	100	300	VBW:270Hz
Vert.	2400.000	AV	36.5	27.3	13.8	41.1	36.5	53.9	17.4	100	300	VBW:270Hz
Vert.	4804.000	AV	37.7	31.1	6.0	41.1	33.7	53.9	20.2	100	317	VBW:270Hz
Vert.	7206.000	AV	37.5	36.5	7.4	41.3	40.1	53.9	13.8	100	0	VBW:270Hz
Vert.	9608.000	AV	35.0	38.2	8.7	38.8	43.1	53.9	10.8	100	0	VBW:270Hz
Vert.	12010.000	AV	36.5	39.3	10.2	39.2	46.8	53.9	7.1	100	0	VBW:270Hz

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

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

*QP Quasi peak, PK: Peak, AV: Average

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Facsimile : +81 463 50 6401

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1,3 Semi Anechoic Chamber
Date	September 15, 2011(No.1AC)	September 16, 2011(No.3AC)
Temperature / Humidity	26deg.C , 67%RH	26deg.C , 58%RH
Engineer	Makoto Hosaka	Shinichi Takano
Mode	Tx, 2441 MHz	
	Tx, Bluetooth, EDR(3-DH5), PRBS9	

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.	41.288	QP	41.3	14.4	7.1	31.8	31.0	40.0	9.0	285	257	
Hori.	84.261	QP	50.6	7.2	7.7	31.8	33.7	40.0	6.3	232	305	
Hori.	112.251	QP	45.1	11.8	8.1	31.8	33.2	43.5	10.3	288	303	
Hori.	222.781	QP	42.6	17.1	9.2	31.7	37.2	46.0	8.8	150	164	
Hori.	240.841	QP	41.7	17.2	9.3	31.7	36.5	46.0	9.5	145	203	
Hori.	4882.000	PK	48.1	31.2	6.0	40.9	44.4	73.9	29.5	100	157	
Hori.	7323.000	PK	46.6	36.8	7.4	41.4	49.4	73.9	24.5	100	0	
Hori.	9764.000	PK	44.3	38.5	8.7	38.8	52.7	73.9	21.2	100	0	
Hori.	12205.000	PK	45.2	39.3	10.3	39.2	55.6	73.9	18.3	100	0	
Hori.	4882.000	AV	37.5	31.2	6.0	40.9	33.8	53.9	20.1	100	157	VBW:270Hz
Hori.	7323.000	AV	36.7	36.8	7.4	41.4	39.5	53.9	14.4	100	0	VBW:270Hz
Hori.	9764.000	AV	34.4	38.5	8.7	38.8	42.8	53.9	11.1	100	0	VBW:270Hz
Hori.	12205.000	AV	34.9	39.3	10.3	39.2	45.3	53.9	8.6	100	0	VBW:270Hz
Vert.	41.320	QP	44.0	14.4	7.1	31.8	33.7	40.0	6.3	100	0	
Vert.	55.301	QP	48.1	9.7	7.3	31.8	33.3	40.0	6.7	100	109	
Vert.	58.373	QP	47.8	8.8	7.4	31.8	32.2	40.0	7.8	100	269	
Vert.	84.656	QP	46.7	7.3	7.7	31.8	29.9	40.0	10.1	100	114	
Vert.	4882.000	PK	47.3	31.2	6.0	40.9	43.6	73.9	30.3	115	216	
Vert.	7323.000	PK	46.6	36.8	7.4	41.4	49.4	73.9	24.5	100	0	
Vert.	9764.000	PK	44.0	38.5	8.7	38.8	52.4	73.9	21.5	100	0	
Vert.	12205.000	PK	44.6	39.3	10.3	39.2	55.0	73.9	18.9	100	0	
Vert.	4882.000	AV	37.8	31.2	6.0	40.9	34.1	53.9	19.8	115	216	VBW:270Hz
Vert.	7323.000	AV	36.4	36.8	7.4	41.4	39.2	53.9	14.7	100	0	VBW:270Hz
Vert.	9764.000	AV	34.0	38.5	8.7	38.8	42.4	53.9	11.5	100	0	VBW:270Hz
Vert.	12205.000	AV	34.7	39.3	10.3	39.2	45.1	53.9	8.8	100	0	VBW:270Hz

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

*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.1,3 Semi Anechoic Chamber
Date	September 15, 2011(No.1AC)	September 16, 2011(No.3AC)
Temperature / Humidity	26deg.C , 67%RH	26deg.C , 58%RH
Engineer	Makoto Hosaka	Shinichi Takano
Mode	Tx, 2480 MHz	
	Tx, Bluetooth, EDR(3-DH5), PRBS9	

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.	41.288	QP	41.3	14.4	7.1	31.8	31.0	40.0	9.0	285	257	
Hori.	84.261	QP	50.6	7.2	7.7	31.8	33.7	40.0	6.3	232	305	
Hori.	112.251	QP	45.1	11.8	8.1	31.8	33.2	43.5	10.3	288	303	
Hori.	222.781	QP	42.7	17.1	9.2	31.7	37.3	46.0	8.7	150	164	
Hori.	240.841	QP	41.9	17.2	9.3	31.7	36.7	46.0	9.3	145	203	
Hori.	2483.500	PK	46.2	27.5	13.7	41.1	46.3	73.9	27.6	108	172	
Hori.	2507.000	PK	46.6	27.5	13.9	41.1	46.9	73.9	27.0	108	172	
Hori.	4960.000	PK	47.1	31.4	6.0	40.8	43.7	73.9	30.2	114	212	
Hori.	7440.000	PK	46.9	37.0	7.3	41.5	49.7	73.9	24.2	100	0	
Hori.	9920.000	PK	43.5	38.8	8.8	38.8	52.3	73.9	21.6	100	0	
Hori.	12400.000	PK	44.0	39.4	10.3	39.2	54.5	73.9	19.4	100	0	
Hori.	2483.500	AV	35.8	27.5	13.7	41.1	35.9	53.9	18.0	108	172	VBW:270Hz
Hori.	2507.000	AV	35.6	27.5	13.9	41.1	35.9	53.9	18.0	108	172	VBW:270Hz
Hori.	4960.000	AV	37.0	31.4	6.0	40.8	33.6	53.9	20.3	114	212	VBW:270Hz
Hori.	7440.000	AV	36.2	37.0	7.3	41.5	39.0	53.9	14.9	100	0	VBW:270Hz
Hori.	9920.000	AV	33.3	38.8	8.8	38.8	42.1	53.9	11.8	100	0	VBW:270Hz
Hori.	12400.000	AV	33.6	39.4	10.3	39.2	44.1	53.9	9.8	100	0	VBW:270Hz
Vert.	41.320	QP	43.9	14.4	7.1	31.8	33.6	40.0	6.4	100	0	
Vert.	55.301	QP	48.0	9.7	7.3	31.8	33.2	40.0	6.8	100	109	
Vert.	58.373	QP	47.7	8.8	7.4	31.8	32.1	40.0	7.9	100	269	
Vert.	84.656	QP	46.7	7.3	7.7	31.8	29.9	40.0	10.1	100	114	
Vert.	2483.500	PK	46.1	27.5	13.7	41.1	46.2	73.9	27.7	105	46	
Vert.	2507.000	PK	46.0	27.5	13.9	41.1	46.3	73.9	27.6	105	46	
Vert.	4960.000	PK	47.3	31.4	6.0	40.8	43.9	73.9	30.0	100	302	
Vert.	7440.000	PK	46.7	37.0	7.3	41.5	49.5	73.9	24.4	100	0	
Vert.	9920.000	PK	44.2	38.8	8.8	38.8	53.0	73.9	20.9	100	0	
Vert.	12400.000	PK	44.3	39.4	10.3	39.2	54.8	73.9	19.1	100	0	
Vert.	2483.500	AV	36.1	27.5	13.7	41.1	36.2	53.9	17.7	105	46	VBW:270Hz
Vert.	2507.000	AV	36.0	27.5	13.9	41.1	36.3	53.9	17.6	105	46	VBW:270Hz
Vert.	4960.000	AV	37.5	31.4	6.0	40.8	34.1	53.9	19.8	100	302	VBW:270Hz
Vert.	7440.000	AV	36.5	37.0	7.3	41.5	39.3	53.9	14.6	100	0	VBW:270Hz
Vert.	9920.000	AV	33.7	38.8	8.8	38.8	42.5	53.9	11.4	100	0	VBW:270Hz
Vert.	12400.000	AV	33.9	39.4	10.3	39.2	44.4	53.9	9.5	100	0	VBW:270Hz

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

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

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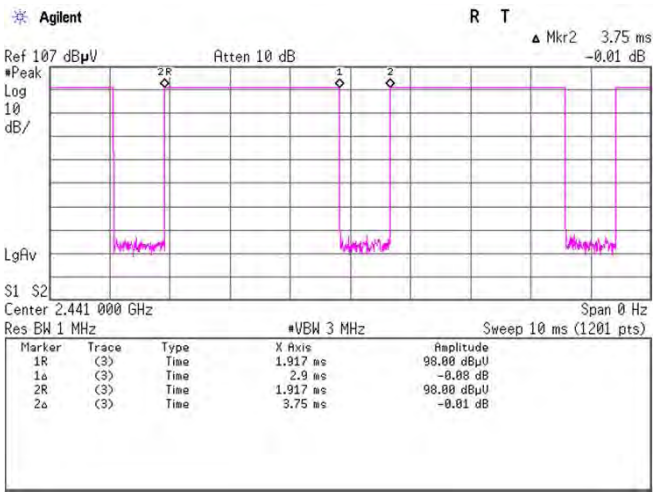
Spurious emission (Radiated)

Tx, Bluetooth, BDR(DH5), PRBS9

VBW (AV) Calculation	
VBW: 1/x = 267Hz < 270Hz **x: (Tx on+Tx off) =3.75ms**	
	

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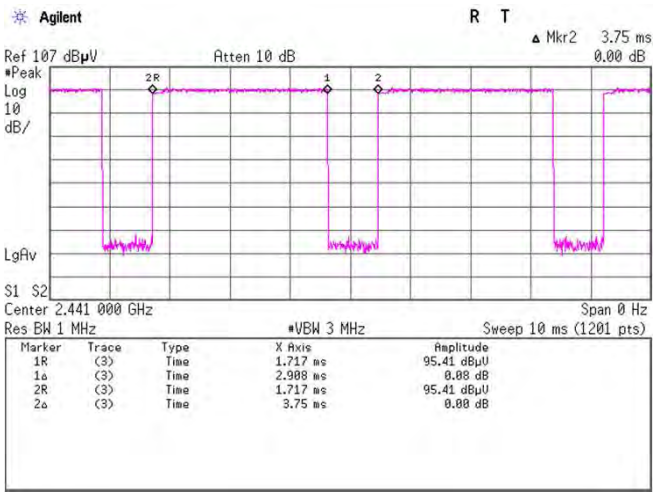
Spurious emission (Radiated)

Tx, Bluetooth, EDR(3-DH5), PRBS9

VBW (AV) Calculation	
VBW: 1/x = 267Hz<270Hz **x: (Tx on+Tx off) =3.75ms**	
	

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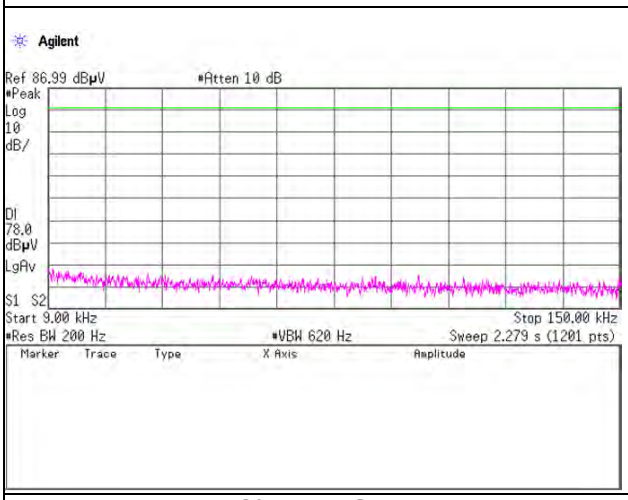
Spurious emission (Conducted)

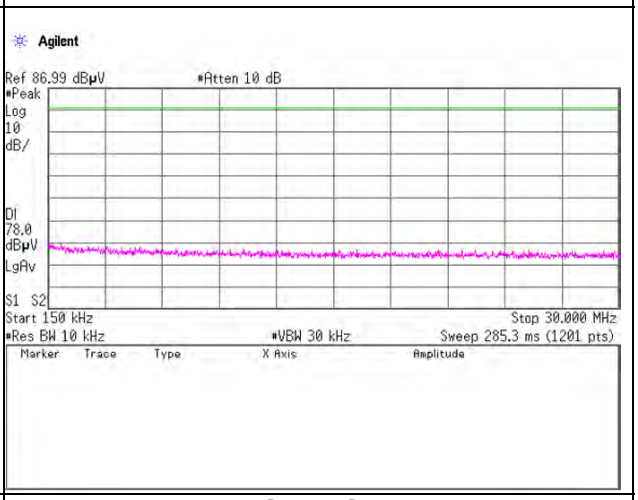
Tx, Bluetooth, BDR(DH5), PRBS9

Tx 2402MHz (1/2)

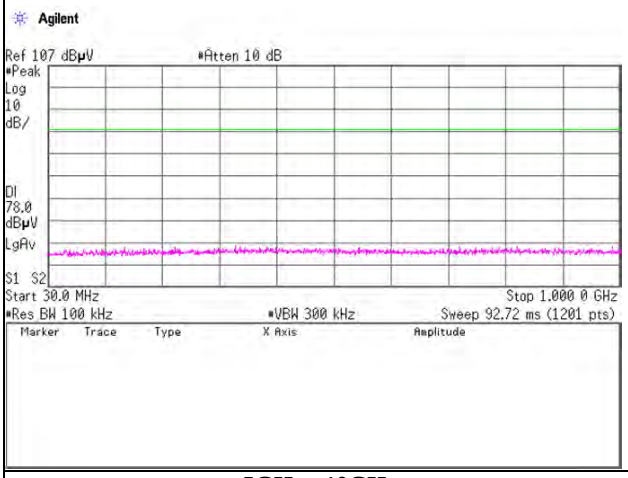
9kHz - 150kHz



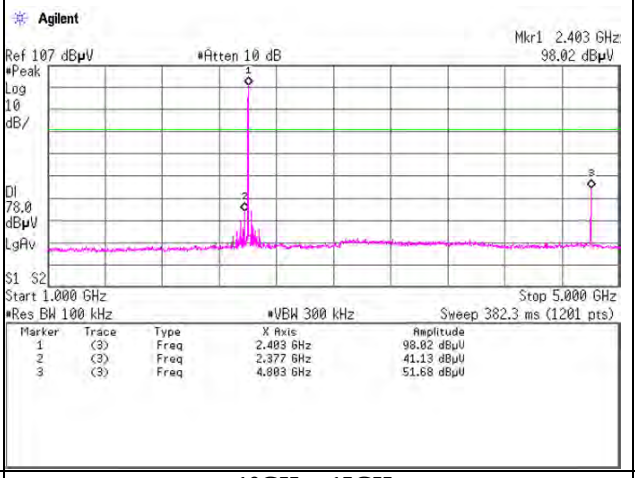
150kHz - 30MHz



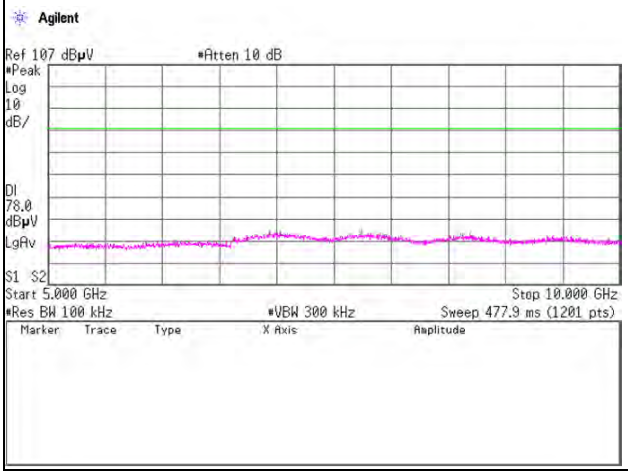
30MHz - 1GHz



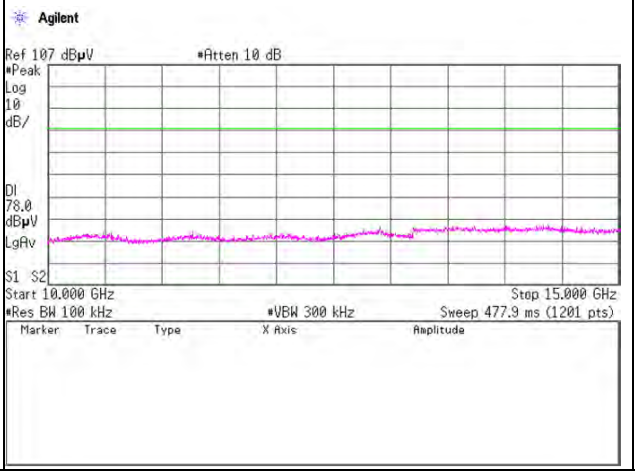
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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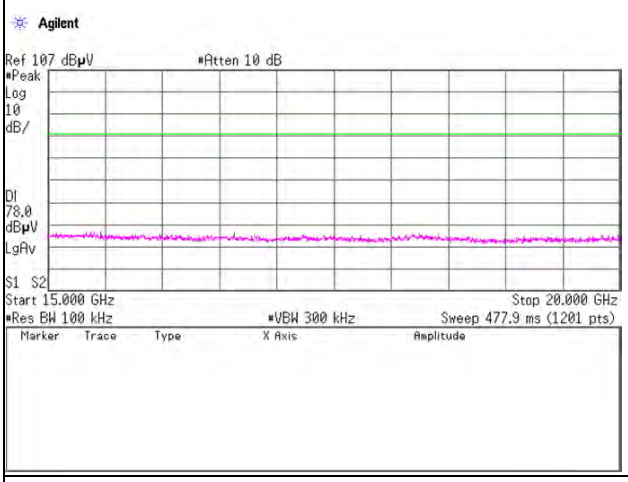
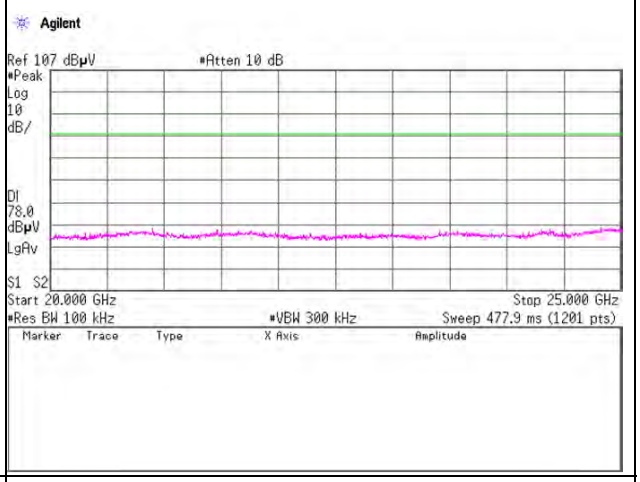
Spurious emission (Conducted)

Tx, Bluetooth, BDR(DH5), PRBS9

Tx 2402MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	

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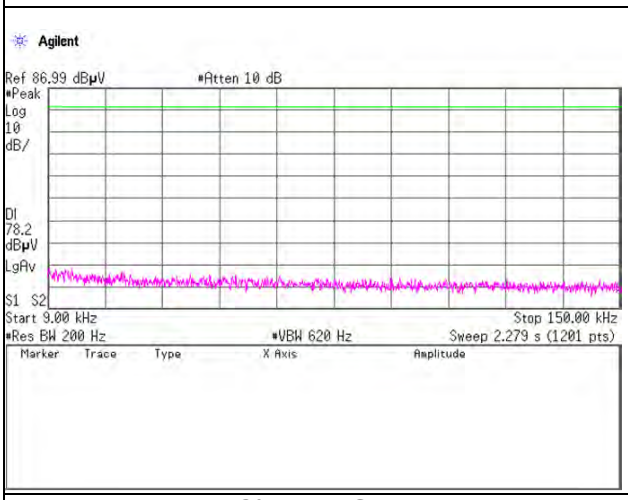
Spurious emission (Conducted)

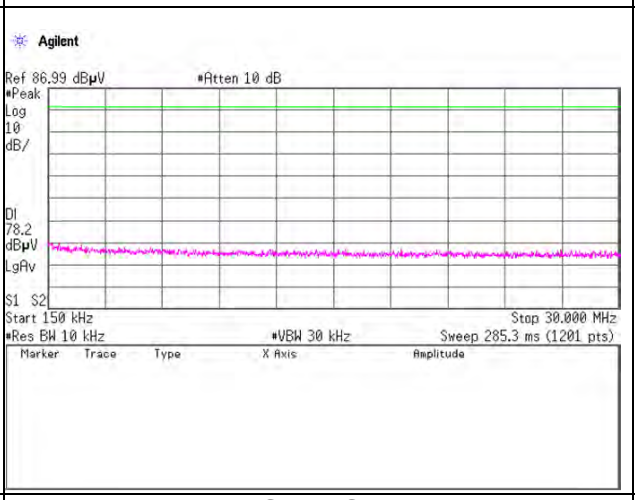
Tx, Bluetooth, BDR(DH5), PRBS9

Tx 2441MHz (1/2)

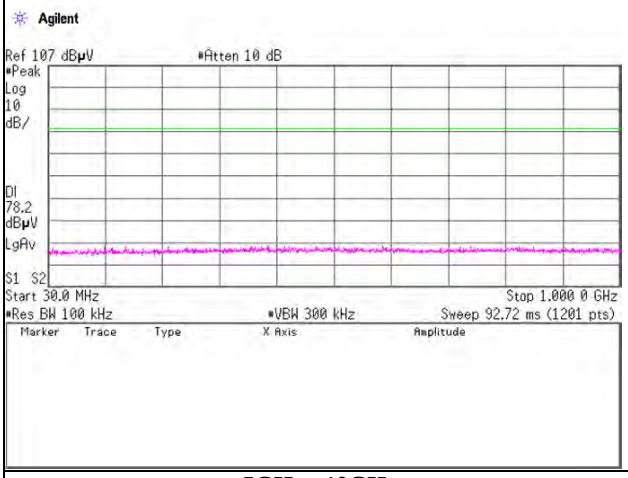
9kHz - 150kHz



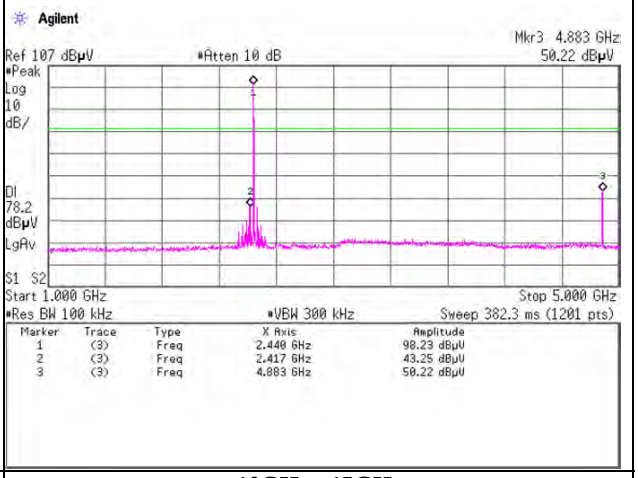
150kHz - 30MHz



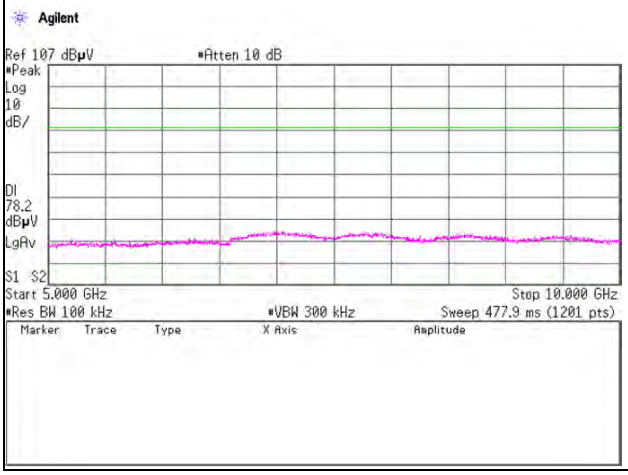
30MHz - 1GHz



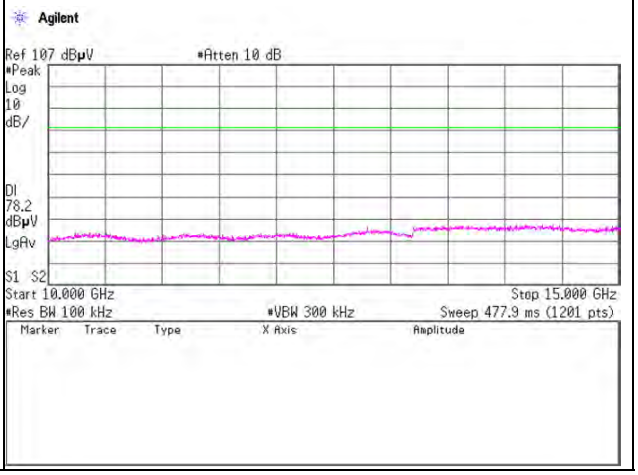
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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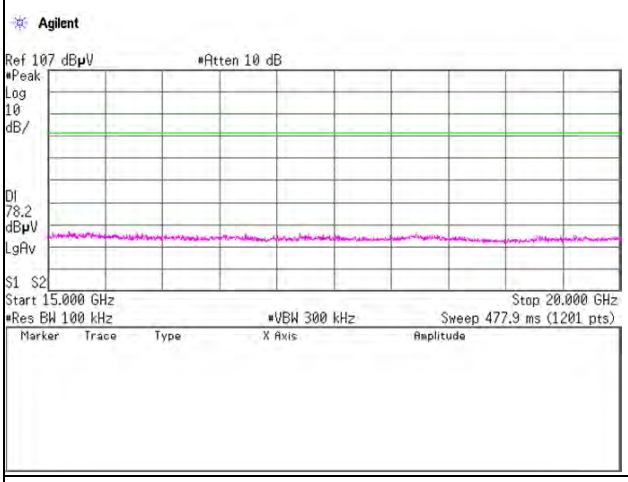
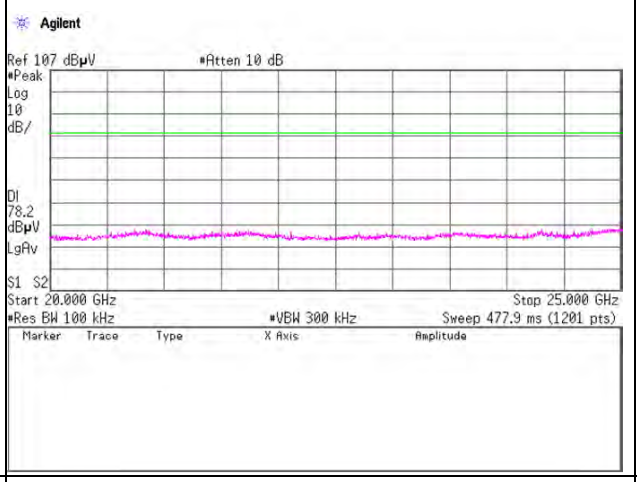
Spurious emission (Conducted)

Tx, Bluetooth, BDR(DH5), PRBS9

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

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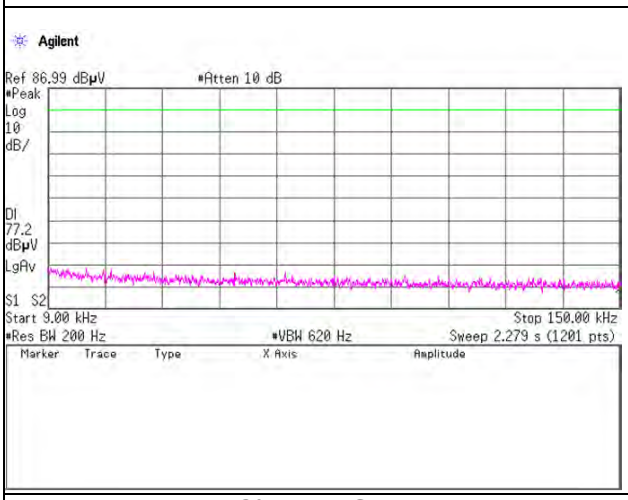
Spurious emission (Conducted)

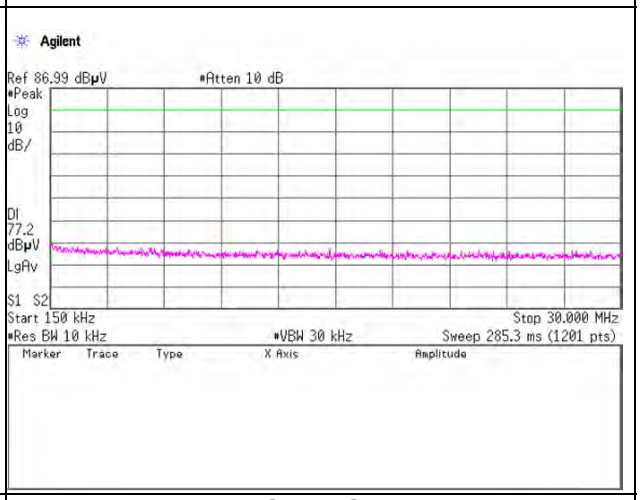
Tx, Bluetooth, BDR(DH5), PRBS9

Tx 2480MHz (1/2)

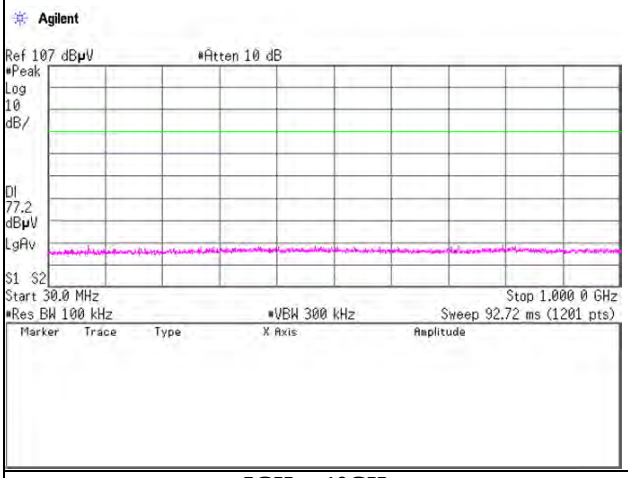
9kHz - 150kHz



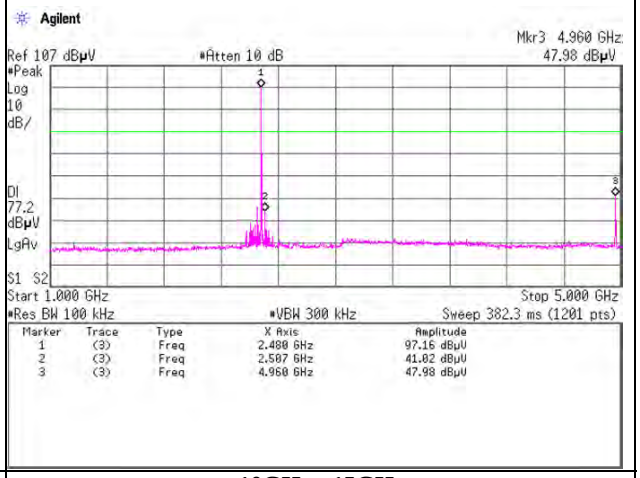
150kHz - 30MHz



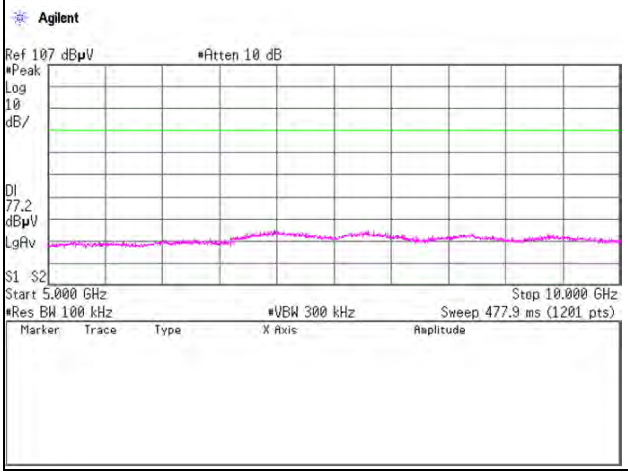
30MHz - 1GHz



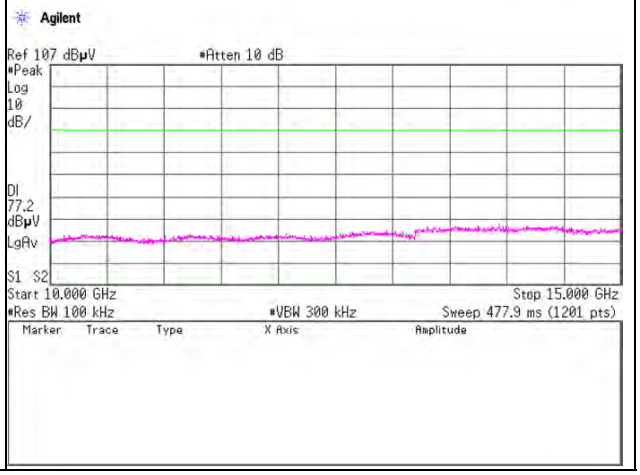
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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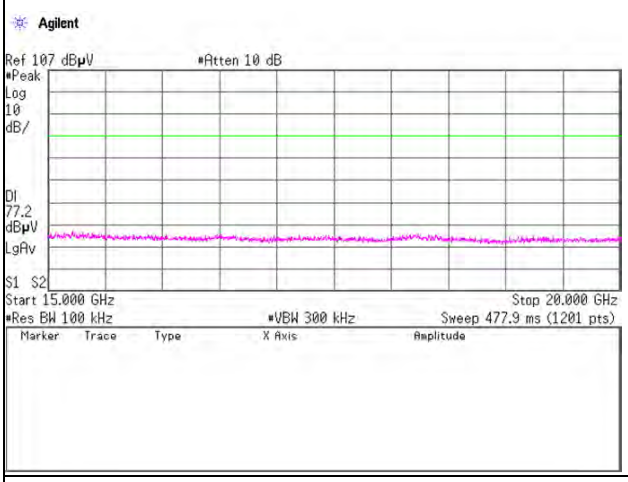
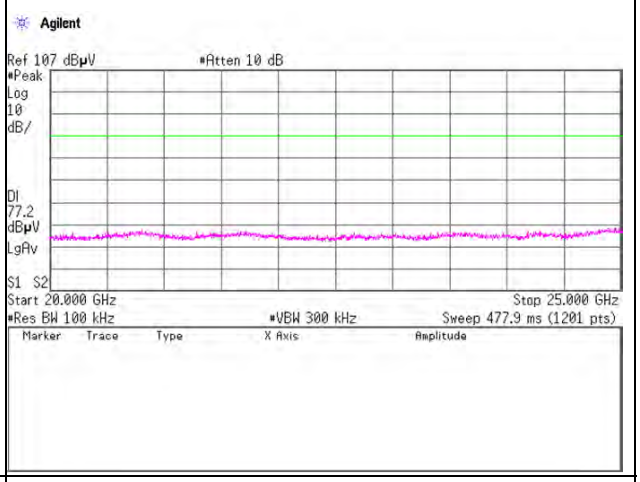
Spurious emission (Conducted)

Tx, Bluetooth, BDR(DH5), PRBS9

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

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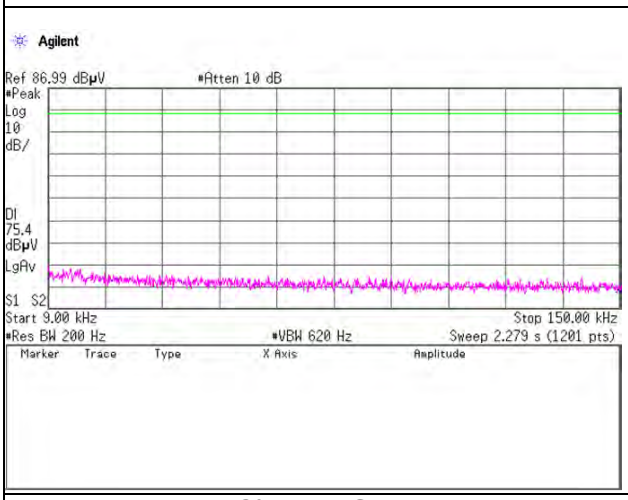
Spurious emission (Conducted)

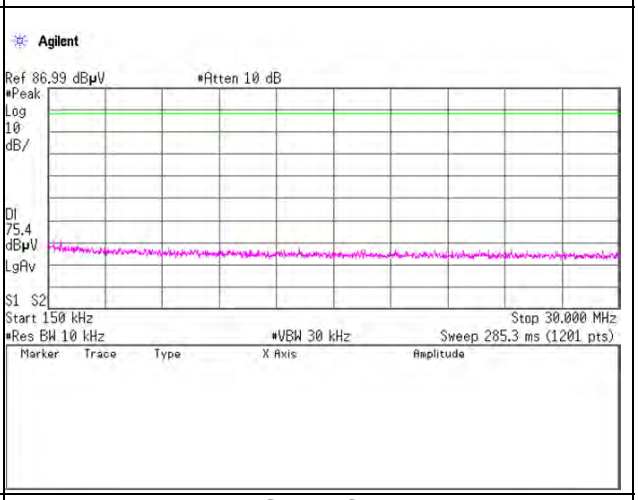
Tx, Bluetooth, EDR(3-DH5), PRBS9

Tx 2402MHz (1/2)

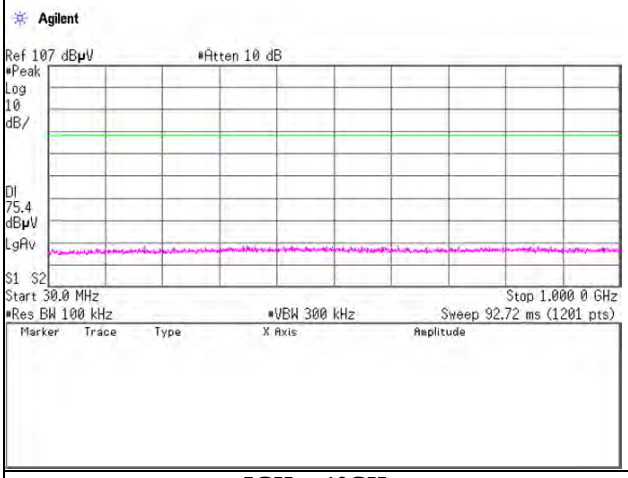
9kHz - 150kHz



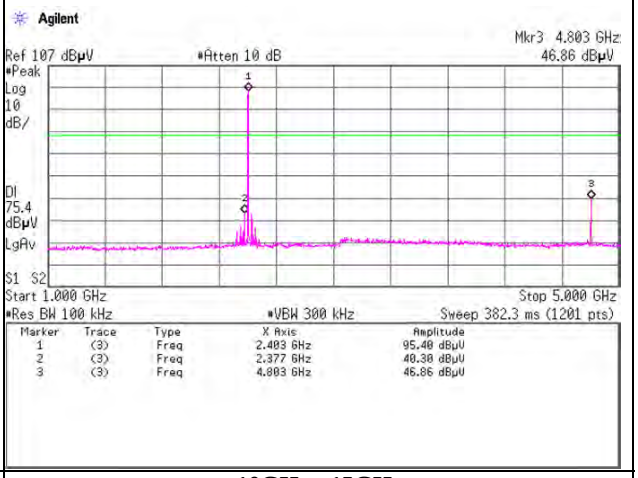
150kHz - 30MHz



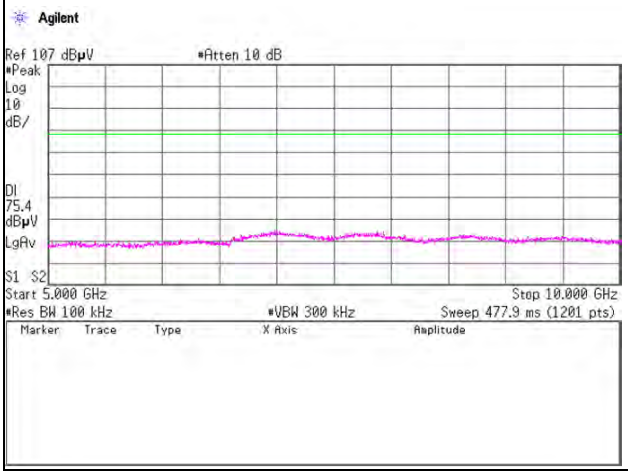
30MHz - 1GHz



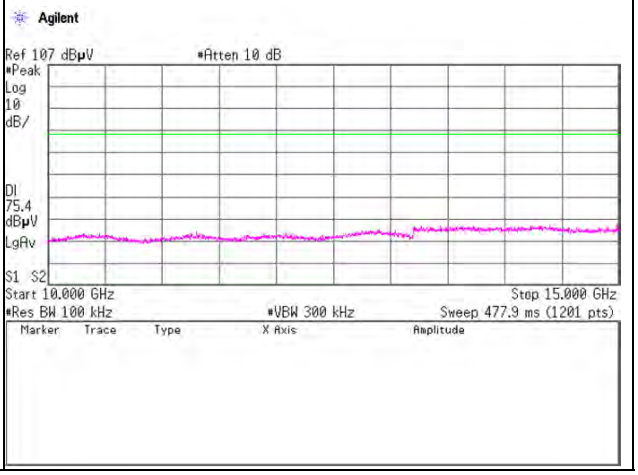
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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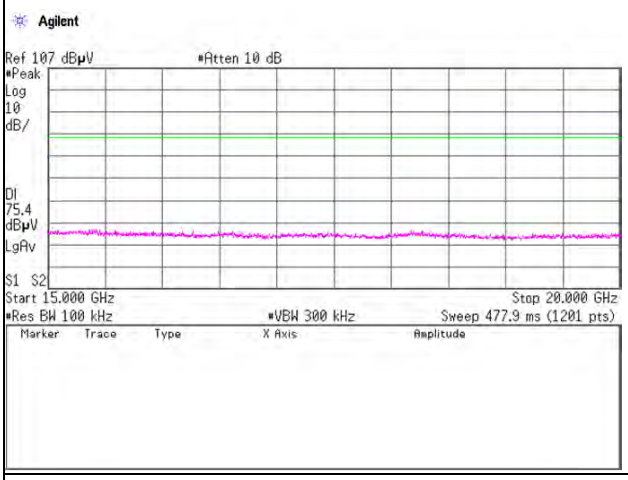
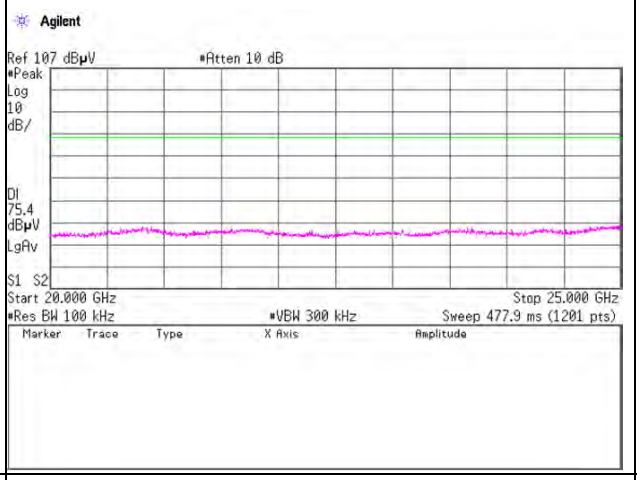
Spurious emission (Conducted)

Tx, Bluetooth, EDR(3-DH5), PRBS9

Tx 2402MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	

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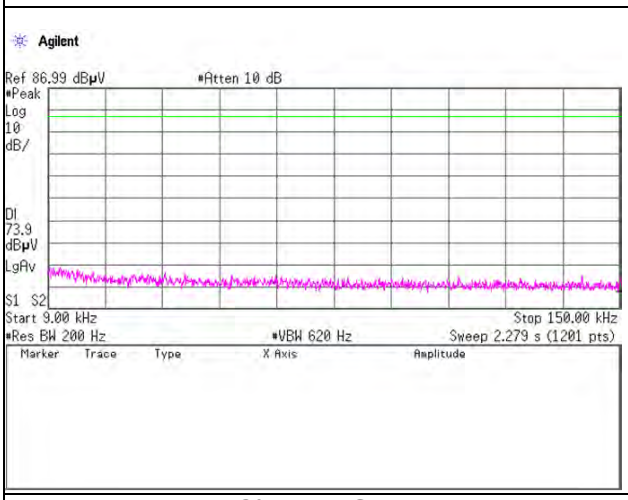
Spurious emission (Conducted)

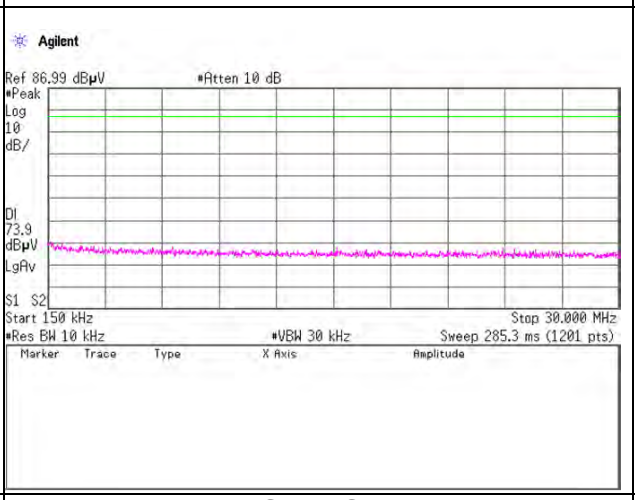
Tx, Bluetooth, EDR(3-DH5), PRBS9

Tx 2441MHz (1/2)

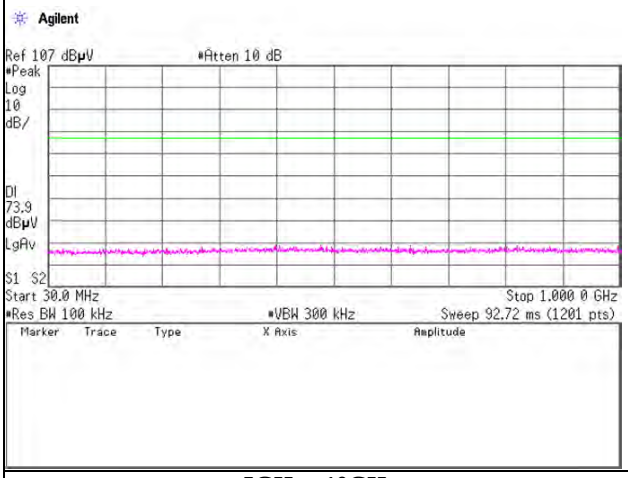
9kHz - 150kHz



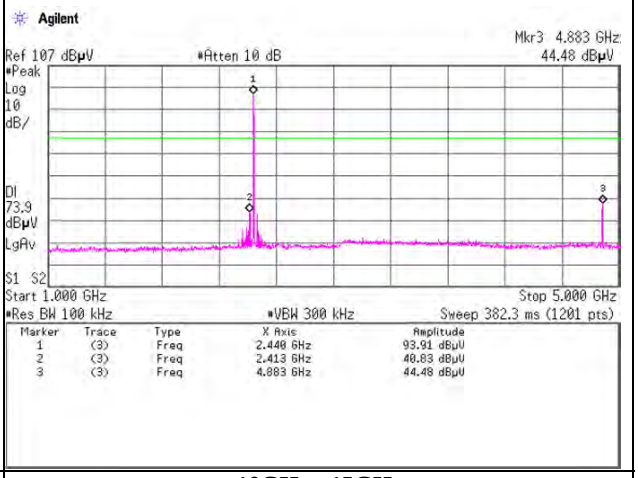
150kHz - 30MHz



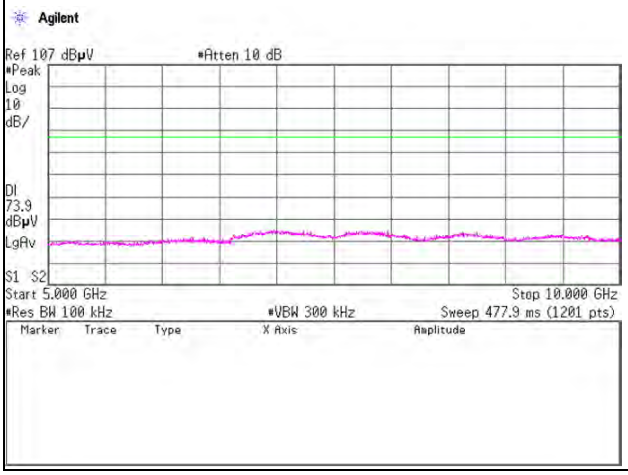
30MHz - 1GHz



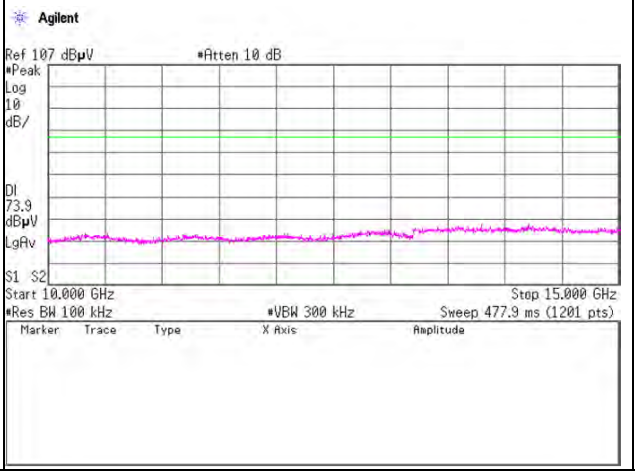
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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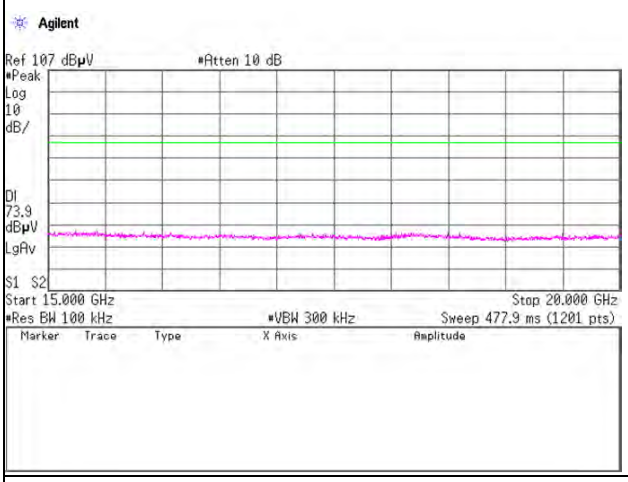
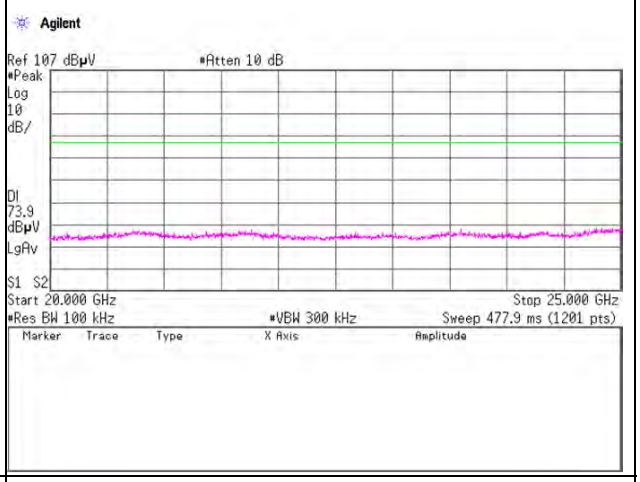
Spurious emission (Conducted)

Tx, Bluetooth, EDR(3-DH5), PRBS9

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

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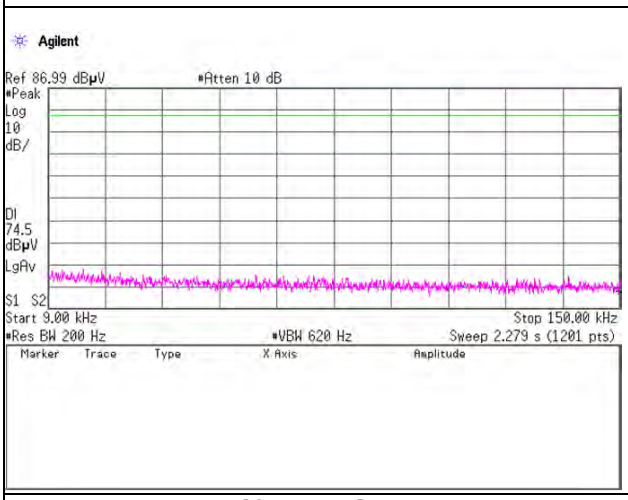
Spurious emission (Conducted)

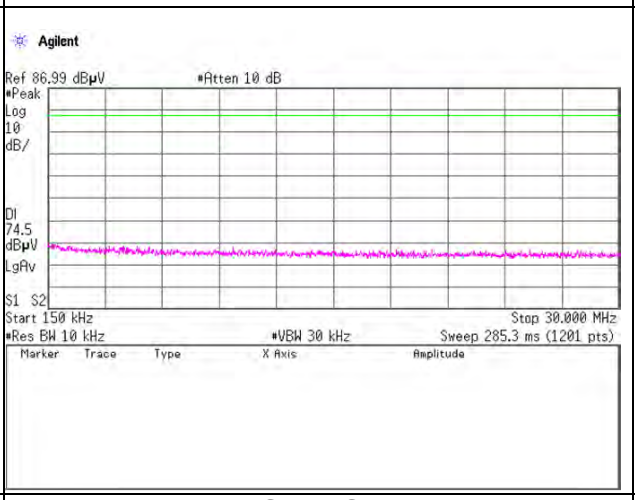
Tx, Bluetooth, EDR(3-DH5), PRBS9

Tx 2480MHz (1/2)

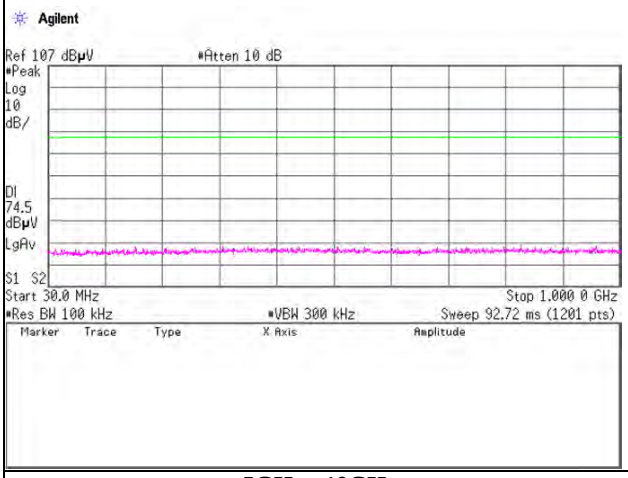
9kHz - 150kHz



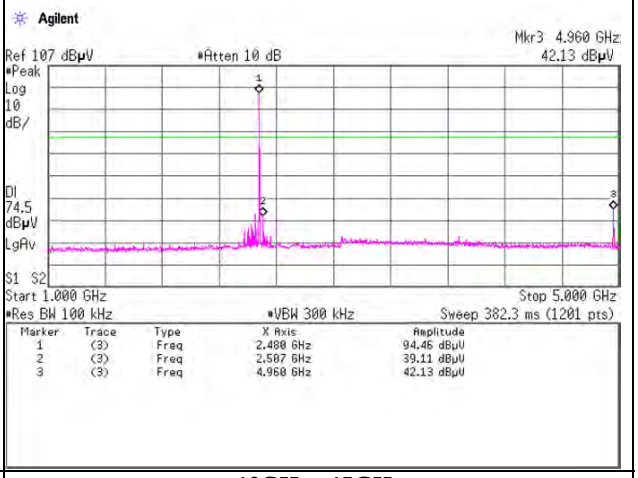
150kHz - 30MHz



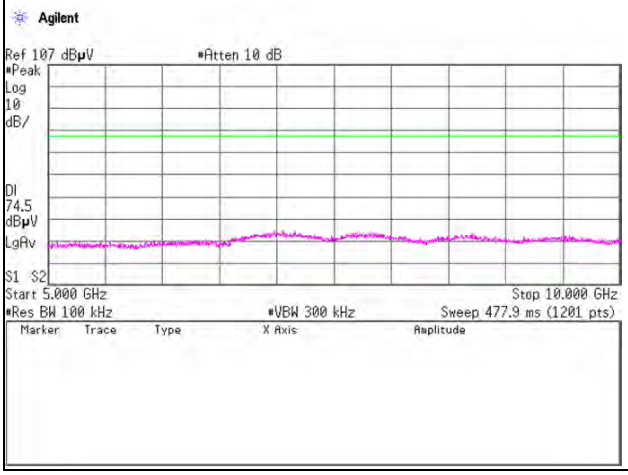
30MHz - 1GHz



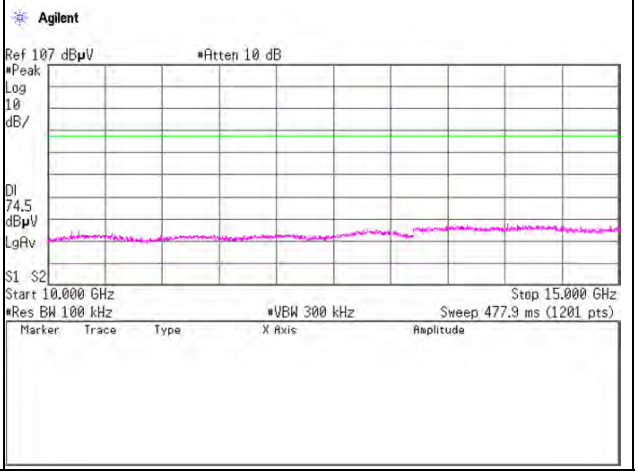
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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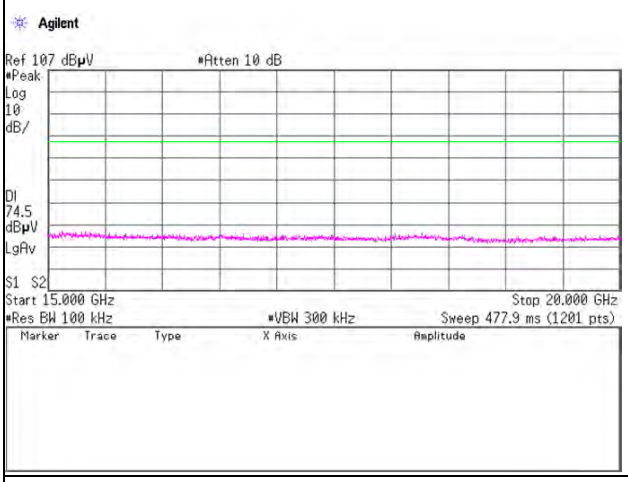
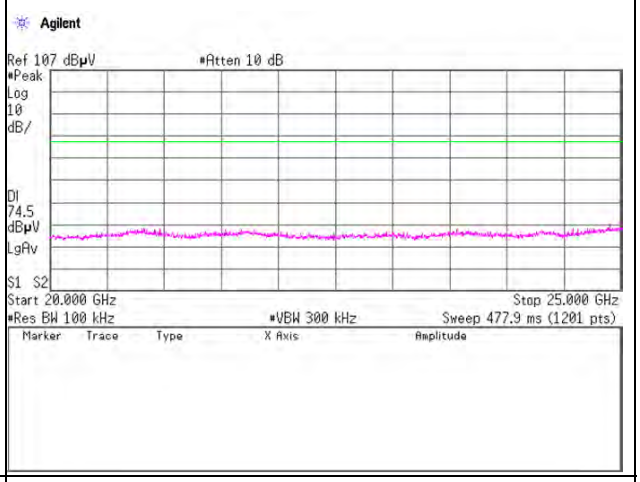
Spurious emission (Conducted)

Tx, Bluetooth, EDR(3-DH5), PRBS9

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

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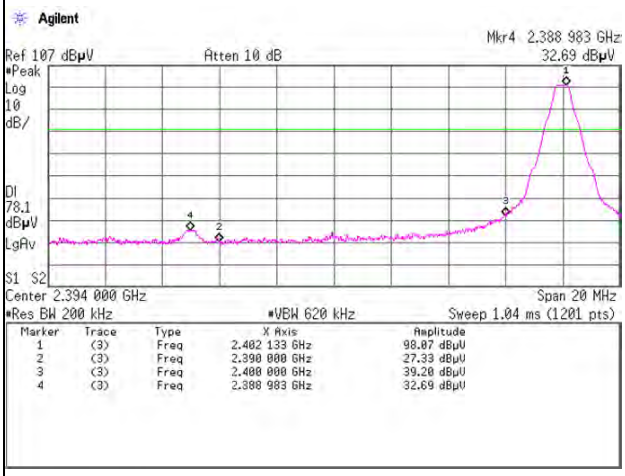
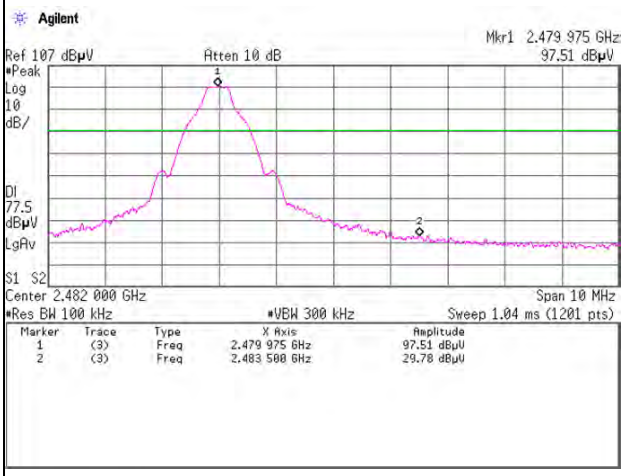
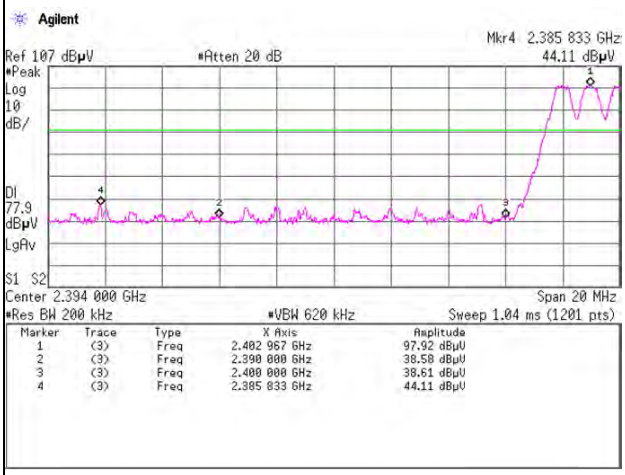
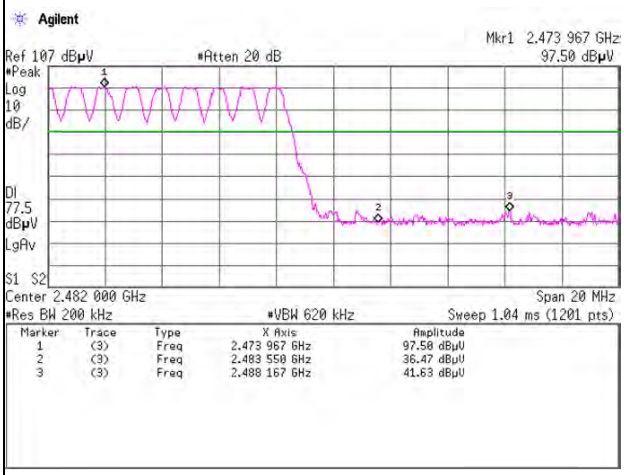
Spurious emission (Conducted)

Band Edge compliance

Tx, Bluetooth, BDR(DH5), PRBS9	
Tx 2402MHz	**Tx 2480MHz**
	

Hopping On (Low)	**Hopping On (High)**
	

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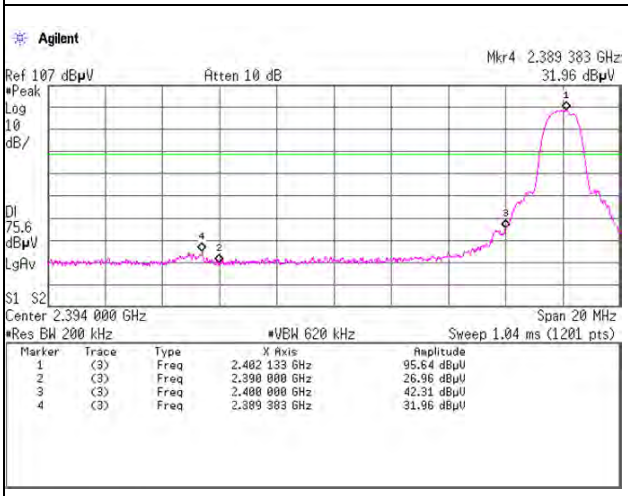
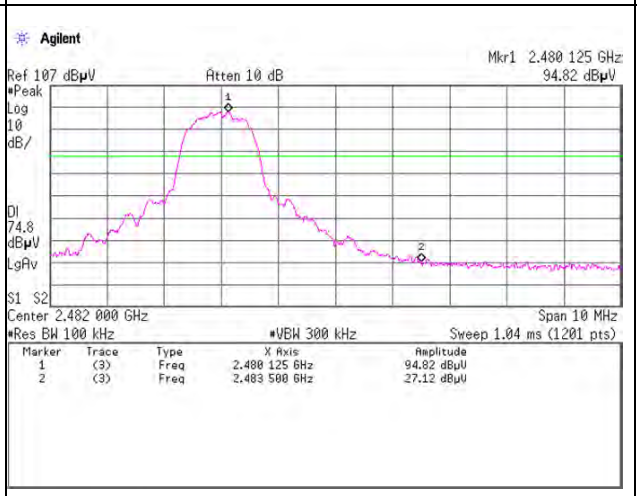
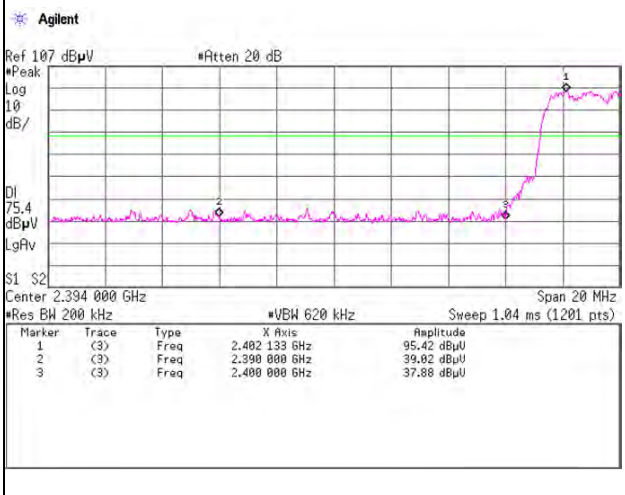
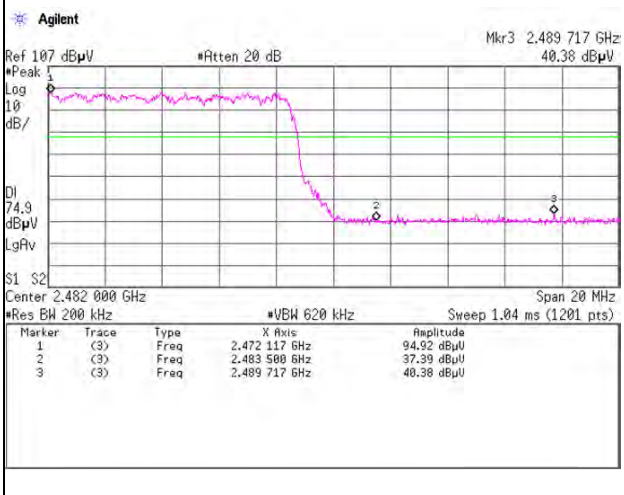
Spurious emission (Conducted)

Band Edge compliance

Tx, Bluetooth, EDR(3-DH5), PRBS9	
Tx 2402MHz	**Tx 2480MHz**
	

Hopping On (Low)	**Hopping On (High)**
	

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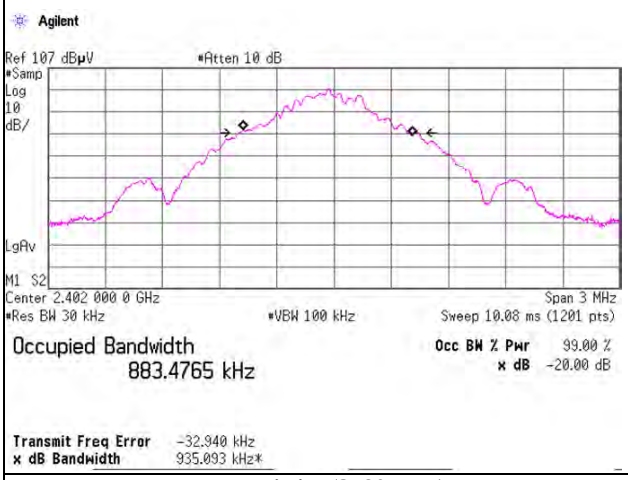
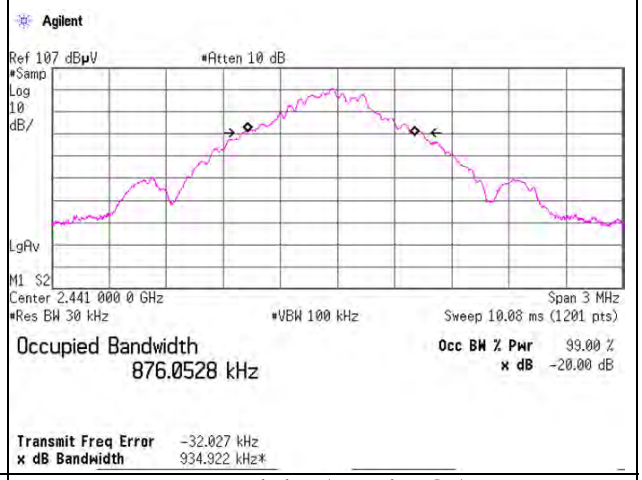
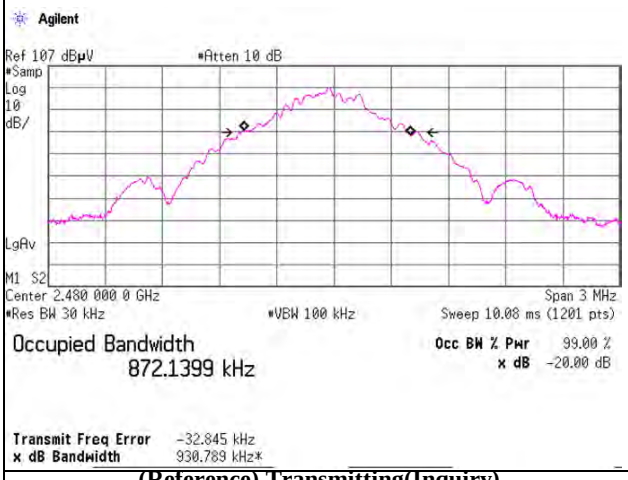
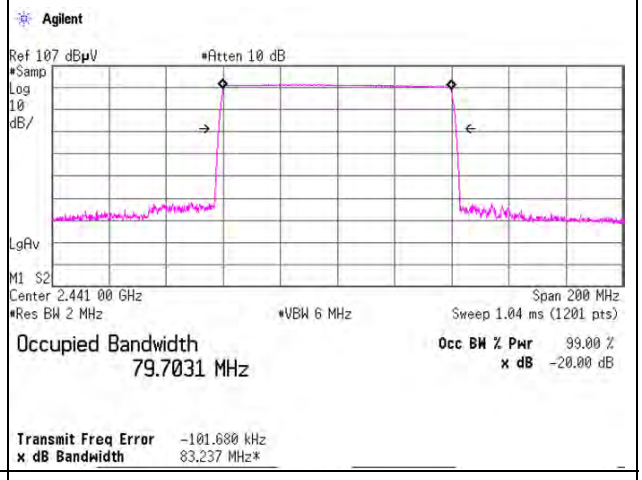
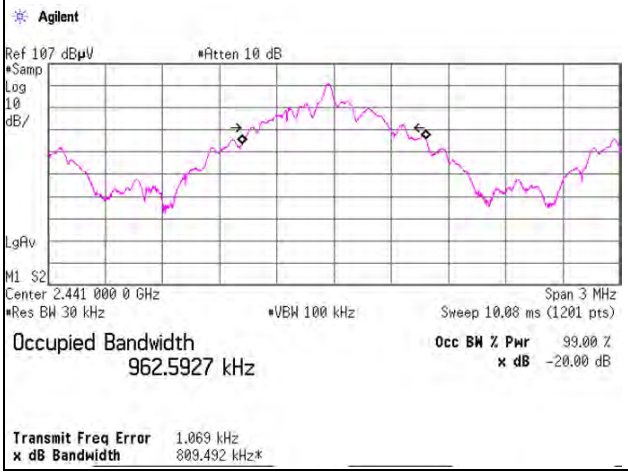
99% Occupied Bandwidth

Tx, Bluetooth, BDR(DH5), PRBS9	
Transmitting(2402MHz)	**Transmitting(2441MHz)**
	
Transmitting(2480MHz)	**Transmitting (Hopping On)**
	
(Reference) Transmitting(Inquiry)	
	

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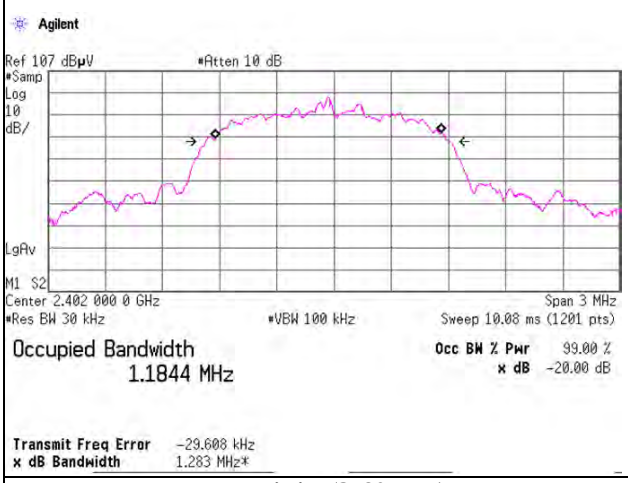
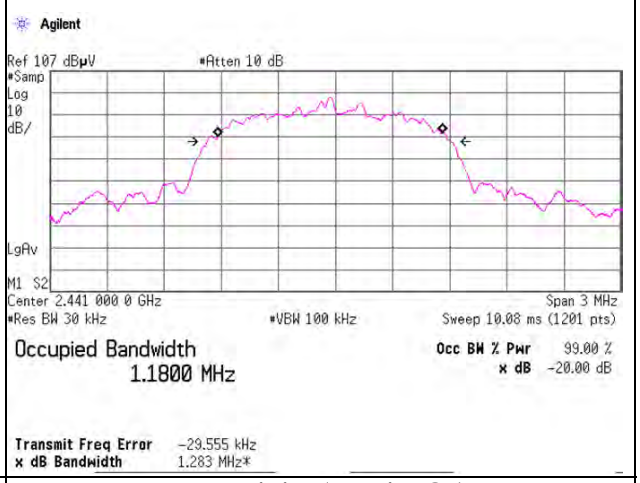
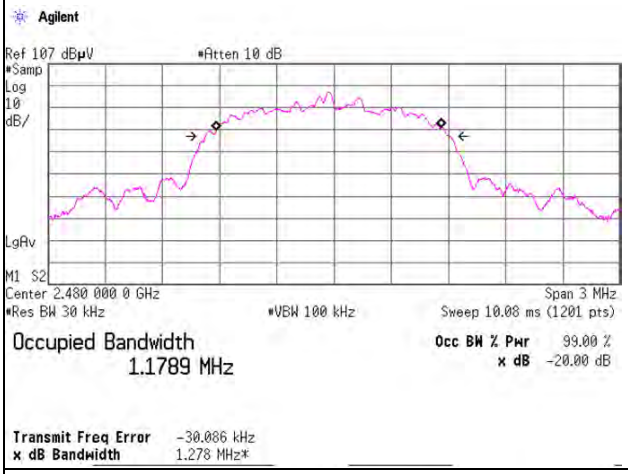
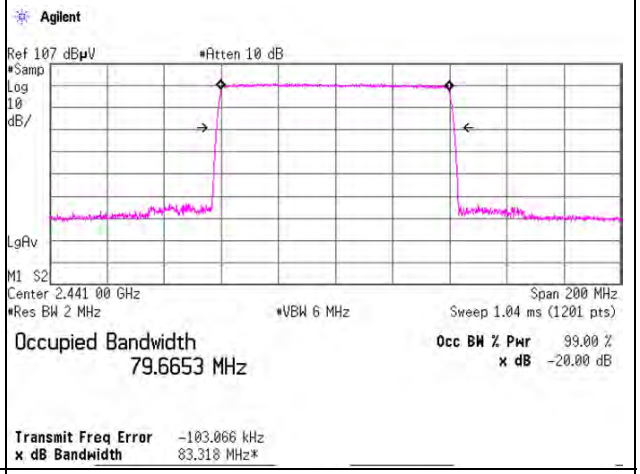
99% Occupied Bandwidth

Tx, Bluetooth, EDR(3-DH5), PRBS9	
Transmitting(2402MHz)	**Transmitting(2441MHz)**
	
Transmitting(2480MHz)	**Transmitting (Hopping On)**
	

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APPENDIX
Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2011/04/12 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2011/04/12 * 12
SCC-G11	Coaxial Cable	Suhner	SUCOFLEX 102	31595/2	AT	2011/03/23 * 12
SAT10-09	Attenuator	Weinschel Corp.	54A-10	W5692	AT	2010/11/24 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	AT	2011/03/07 * 12
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	AT	2011/03/02 * 12
SAF-01	Pre Amplifier	SONOMA	310N	290211	RE	2011/02/17 * 12
SAT6-01	Attenuator	JFW	50HF-006N	-	RE	2011/02/17 * 12
SAT3-04	Attenuator	JFW	50HF-003N	-	RE	2011/02/17 * 12
SBA-01	Biconical Antenna	Schwarzbeck	BBA9106	91032664	RE	2011/08/17 * 12
SCC-A1/A3/A5/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269 (RF Selector)	RE	2011/04/28 * 12
SCC-A2/A4/A6/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269 (RF Selector)	RE	2011/04/28 * 12
SLA-01	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0888	RE	2011/08/17 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2011/02/23 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	RE	2010/10/29 * 12
SJM-12	Measure	PROMART	SEN1935	-	RE	-
SAEC-01(NSA)	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	RE	2010/09/11 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE	-
SAF-09	Pre Amplifier	TOYO Corporation	HAP18-26W	00000018	RE	2011/03/16 * 12
SHA-05	Horn Antenna	ETS LINDGREN	3160-09	LM4210	RE	2011/03/15 * 12
SCC-G18	Coaxial Cable	Suhner	SUCOFLEX 104A	46292/4A	RE	2011/03/16 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2011/07/19 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	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	2011/02/23 * 12
SJM-10	Measure	PROMART	SEN1935	-	RE	-

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