



RADIO TEST REPORT

Test Report No. : 33BE0184-HO-03-A

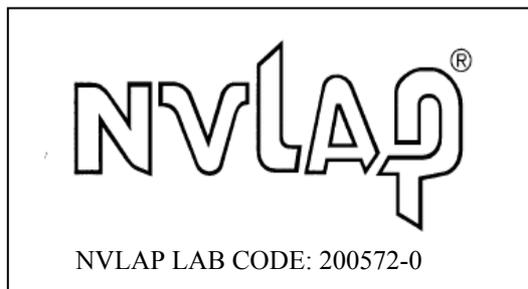
Applicant : **Panasonic Corporation of North America**
Type of Equipment : **CD Player System**
Model No. : **SL-NE5**
FCC ID : **ACJ-SL-NE5**
Test regulation : **FCC Part 15 Subpart C: 2012**
Test Result : **Complied**

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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 above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Date of test: October 16 to December 4, 2012

Representative test engineer: T. Sasagawa
Tomotaka Sasagawa
Engineer of WiSE Japan,
UL Verification Service

Approved by: Takahiro Hatakeda
Leader of WiSE Japan,
UL Verification Service



This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation. *As for the range of Accreditation in NVLAP, you may refer to the WEB address, <http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap>

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SECTION 1: Customer information

Company Name : Panasonic Corporation *
Address : 1006 Oaza Kadoma, Kadoma-shi, Osaka 571-8501 Japan
Telephone Number : +81-50-3487-3469
Facsimile Number : +81-6-6906-8800
Contact Person : Kazuo Taniguchi

*Panasonic Corporation is on behalf of the applicant: Panasonic Corporation of North America.

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

2.1 Identification of E.U.T.

Type of Equipment : CD Player System
Model No. : SL-NE5
Serial No. : Refer to Clause 4.2
Rating : AC120V
Receipt Date of Sample : October 16, 2012
Country of Mass-production : Malaysia
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

2.2 Product Description

Radio Specification

Radio Type : Transceiver
Frequency of Operation : 2402-2480MHz
Modulation : FHSS
Power Supply (inner) : DC 3.3V
Antenna type : Pattern Antenna
Antenna Gain : 2.85dBi

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SECTION 3: Test specification, procedures & results

3.1 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 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz

3.2 Procedures and results

Item	Test Procedure	Specification	Worst Margin	Results	Remarks	
Conducted Emission	FCC: ANSI C63.4:2003 7. AC powerline conducted emission measurements IC: RSS-Gen 7.2.4	FCC: Section 15.207 IC: RSS-Gen 7.2.4	QP 23.5dB, 0.54585MHz, N AV 32.9dB, 0.52890MHz, N	Complied	-	
Carrier Frequency Separation	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1) IC: RSS-210 A8.1 (b)	See data.	Complied	Conducted	
20dB Bandwidth	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1) IC: RSS-210 A8.1 (a)		Complied	Conducted	
Number of Hopping Frequency	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1)(iii) IC: RSS-210 A8.1 (d)		Complied	Conducted	
Dwell time	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1)(iii) IC: RSS-210 A8.1 (d)		Complied	Conducted	
Maximum Peak Output Power	FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 4.8	FCC: Section15.247(a)(b)(1) IC: RSS-210 A8.4 (2)		Complied	Conducted	
Spurious Emission & Band Edge Compliance	FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 4.9	FCC: Section15.247(d) IC: RSS-210 A8.5 RSS-Gen 6 and 7.2.3		5.7dB 2483.500MHz, AV, Vertical	Complied	Conducted/ Radiated

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.

* In case any questions arise about test procedure, ANSI C63.4: 2003 is also referred.

FCC 15.31 (e)

This EUT provides stable voltage (DC3.3V) constantly to RF Module regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

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3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99% Occupied Bandwidth	IC: RSS-Gen 4.6.1	IC: RSS-Gen 4.6.1	N/A	-	Conducted

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

3.4 Uncertainty

EMI

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

Test room (semi-anechoic chamber)	Conducted emission (+dB)
	150kHz-30MHz
No.1	3.5dB
No.2	3.6dB
No.3	3.6dB
No.4	3.6dB

Test room (semi-anechoic chamber)	Radiated emission						
	(3m*)(+dB)				(1m*)(+dB)		(0.5m*)(+dB)
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz	1GHz -10GHz	10GHz -18GHz	18GHz -26.5GHz	26.5GHz -40GHz
No.1	4.3dB	5.0dB	5.1dB	4.9dB	5.8dB	4.4dB	4.3dB
No.2	4.3dB	5.2dB	5.1dB	5.0dB	5.7dB	4.3dB	4.2dB
No.3	4.6dB	5.0dB	5.1dB	5.0dB	5.7dB	4.5dB	4.2dB
No.4	4.8dB	5.2dB	5.0dB	5.0dB	5.7dB	5.2dB	4.2dB

*3m/1m/0.5m = Measurement distance

Power meter (+dB)	
Below 1GHz	Above 1GHz
1.0dB	1.0dB

Antenna terminal conducted emission and Power density (+dB)			Antenna terminal conducted emission (+dB)		Channel power (+dB)
Below 1GHz	1GHz-3GHz	3GHz-18GHz	18GHz-26.5GHz	26.5GHz-40GHz	
1.0dB	1.1dB	2.7dB	3.2dB	3.3dB	1.5dB

Conducted Emission test

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

Radiated emission test(3m)

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

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3.5 Test Location

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	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	2973C-1	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	2973C-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	2973C-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	4.75 x 5.4 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	-	8.0 x 4.5 x 2.8m	2.0 x 2.0m	-
No.10 measurement room	-	-	2.6 x 2.8 x 2.5m	2.4 x 2.4m	-
No.11 measurement room	-	-	3.1 x 3.4 x 3.0m	2.4 x 3.4m	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.6 Data of EMI, Test instruments, and Test set up

Refer to APPENDIX.

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

4.1 Operating Mode(s)

Bluetooth (BT): Transmitting (Tx), Payload: PRBS9
*EUT does not have the inquiry mode.

Details of Operating Mode(s)

Test Item	Mode	Tested frequency
Conducted Emission, Spurious Emission (Conducted/Radiated)	Tx (Hopping off) DH5, 3DH5	2402MHz 2441MHz 2480MHz
Carrier Frequency Separation	Tx (Hopping on) DH5, 3DH5	2402MHz 2441MHz 2480MHz
20dB Bandwidth	Tx (Hopping off) DH5, 3DH5	2402MHz 2441MHz 2480MHz
Number of Hopping Frequency	Tx (Hopping on) DH5, 3DH5	-
Dwell time	Tx (Hopping on), -DH1, DH3, DH5 -3DH1, 3DH3, 3DH5	-
Maximum Peak Output Power	Tx (Hopping off) DH5, 3DH5	2402MHz 2441MHz 2480MHz
Band Edge Compliance (Conducted)	Tx DH5, 3DH5 -Hopping on -Hopping off	2402MHz 2480MHz
99% Occupied Bandwidth	Tx DH5, 3DH5 -Hopping on -Hopping off	2402MHz 2441MHz 2480MHz
<p>*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload length (except Dwell time test) *EUT has the power settings by the software as follows; - Power settings: CSR Blue Test 3 Version 2.2.0.0 - Software: Ext 255 Int 50 *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.</p>		

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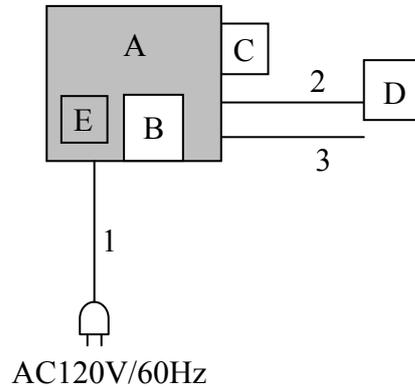
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4.2 Configuration and peripherals



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

Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remark
A	CD Player System	SL-NE5	001	Panasonic	EUT
B	iPhone	A1429	DNPJF2D7F39D	Apple	-
C	USB Memory	MF-SU202GWH	017	ELECOM	-
D	iPod nano	MC525J/A	-	Apple	-
E	Bluetooth Module	RJB3603A	1011 15 102012 *1) 001 *2)	CSR	EUT

*1) Used for Antenna Terminal Conducted test

*2) Used for Conducted and Radiated Emission test

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	AC Cable	1.6	Unshielded	Unshielded	-
2	Audio Cable	3.0	Shielded	Shielded	-
3	Audio Cable	3.0	Shielded	Shielded	-

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SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 0.8m above the conducting ground plane.

The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

For the tests on EUT with other peripherals (as a whole system)

I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. All unused 50ohm connectors of the LISN (AMN) were resistivity terminated in 50ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber.

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

The test results and limit are rounded off to one decimal place, so some differences might be observed.

Detector	: QP and AV
Measurement range	: 0.15-30MHz
Test data	: APPENDIX
Test result	: Pass

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SECTION 6: Radiated Spurious Emission

Test Procedure

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 0.8m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

The height of the measuring antenna varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.

The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).

The test was made with the detector (RBW/VBW) in the following table.

When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Test Antennas are used as below;

Frequency	30MHz to 300MHz	300MHz to 1GHz	Above 1GHz
Antenna Type	Biconical	Logperiodic	Horn

In any 100kHz bandwidth outside the restricted 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.

20dBc was applied to the frequency over the limit of FCC 15.209 / Table 5 of RSS-Gen 7.2.5 (IC) and outside the restricted band of FCC15.205 / Table 3 of RSS-Gen 7.2.2 (IC).

Frequency	Below 1GHz	Above 1GHz		20dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV	PK
IF Bandwidth	BW 120kHz(T/R)	RBW: 1MHz VBW: 3MHz	RBW: 1MHz VBW: 10Hz *1)	RBW: 100kHz VBW: 300kHz (S/A)
Test Distance	3m	3m (below 10GHz), 1m *2) (above 10GHz)		3m (below 10GHz), 1m *2) (above 10GHz)

*1) Although 00-705 accepts VBW=10Hz for AV measurements, it was confirmed that superfluous smoothing was not performed.

*2) Distance Factor: $20 \times \log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

The test was made on EUT at the normal use position.

The test results and limit are rounded off to one decimal place, so some differences might be observed.

Measurement range : 30M-25GHz
Test data : APPENDIX
Test result : Pass

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SECTION 7: Antenna Terminal Conducted Tests

Test Procedure

The tests were made with below setting connected to the antenna port.

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used
20dB Bandwidth	3MHz	30kHz	100kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99% Occupied Bandwidth	Enough width to display 20dB Bandwidth	1 to 3% of Span	Three times of RBW	Auto	Peak	Max Hold *1)	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak	-	Power Meter (Sensor: 50MHz BW)
Carrier Frequency Separation	3MHz	30kHz	100kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Number of Hopping Frequency	30MHz	300kHz	1MHz	Auto	Peak	Max Hold	Spectrum Analyzer
Dwell Time	Zero Span	100kHz, 1MHz	300kHz, 3MHz	As necessary capture the entire dwell time per hopping channel	Peak	Max Hold	Spectrum Analyzer
Conducted Spurious Emission *2)	9kHz to 150kHz	200Hz	620Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150kHz to 30MHz	9.1kHz	27kHz				
	30MHz to 25GHz (Less or equal to 5GHz)	100kHz	300kHz				
Conducted Spurious Emission Band Edge compliance	10MHz	100kHz	300kHz	Auto	Peak	Max Hold	Spectrum Analyzer
*1) The measurement was performed with Max Hold since the duty cycle was not 100%.							
*2) 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=9.1kHz)							

The test results and limit are rounded off to two decimals place, so some differences might be observed.

Test data : **APPENDIX**
Test result : **Pass**

APPENDIX 1: Data of EMI test

Conducted Emission

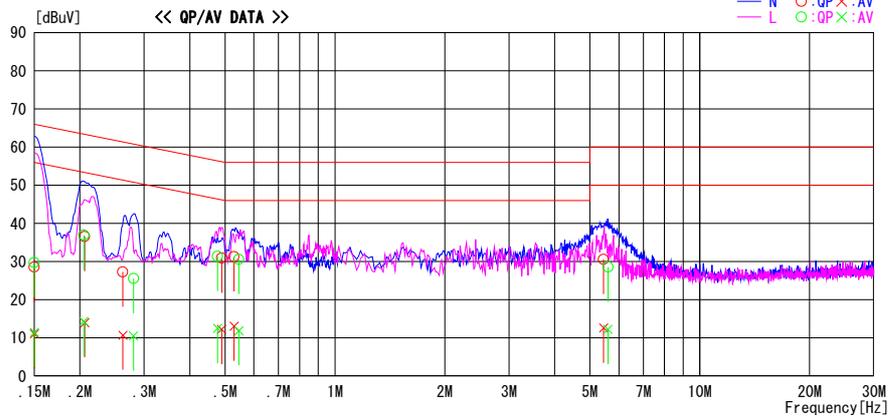
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2012/12/04

Report No. : 33BE0184-HO-03
Temp./Humi. : 22deg. C / 47% RH
Engineer : Tomotaka Sasagawa

Mode / Remarks : DHS 2480MHz

LIMIT : FCC15.207 QP
FCC15.207 AV

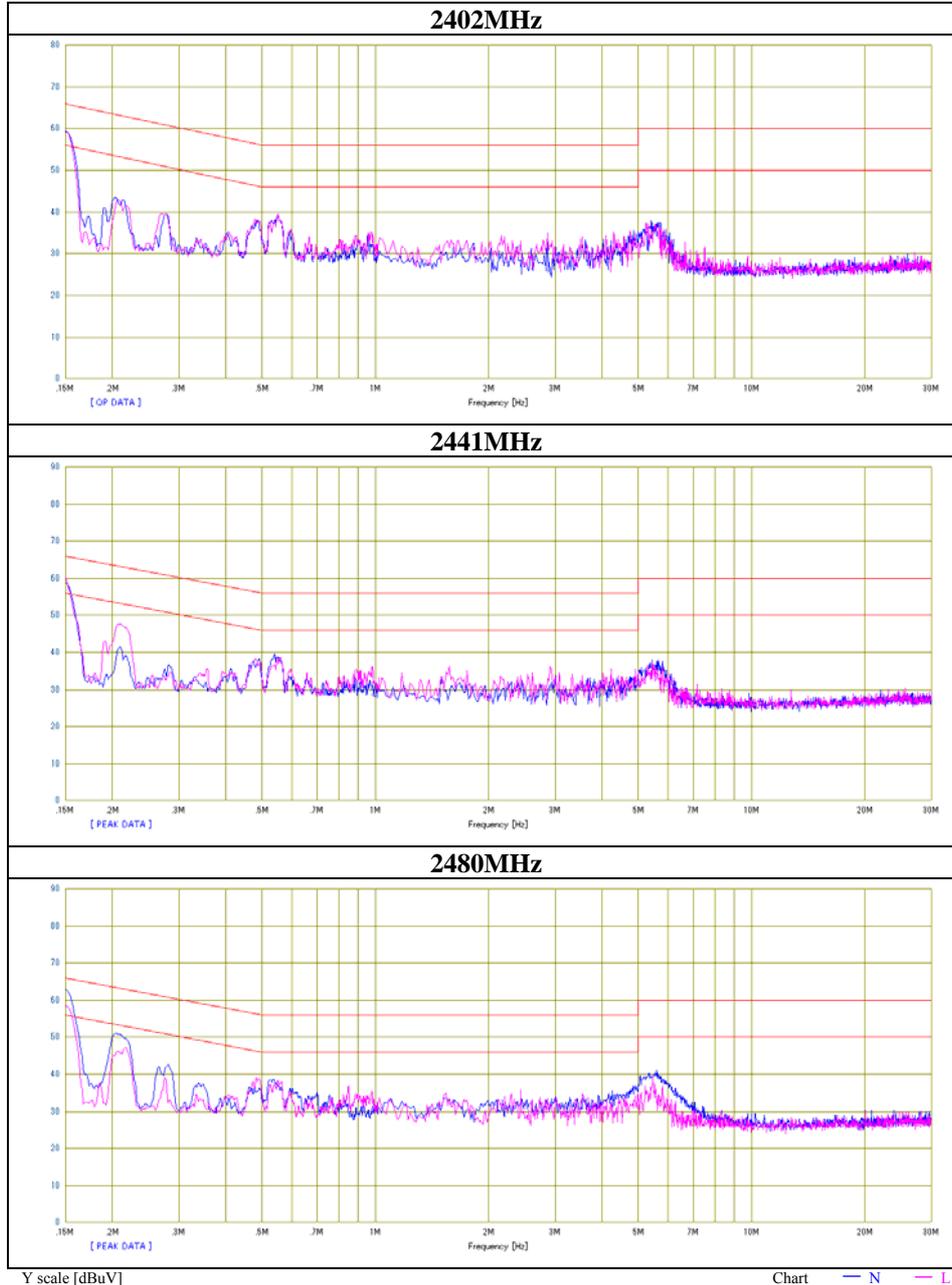


Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15000	15.4	-2.1	13.2	28.6	11.1	66.0	56.0	37.4	44.9	N	
0.20615	23.4	0.8	13.2	36.6	14.0	63.4	53.4	26.8	39.4	N	
0.26226	14.1	-2.5	13.2	27.3	10.7	61.4	51.4	34.1	40.7	N	
0.48930	17.7	-1.0	13.2	30.9	12.2	56.2	46.2	25.3	34.0	N	
0.52890	18.1	-0.1	13.2	31.3	13.1	56.0	46.0	24.7	32.9	N	
5.44769	16.7	-1.3	13.9	30.6	12.6	60.0	50.0	29.4	37.4	N	
0.15000	16.5	-1.8	13.2	29.7	11.4	66.0	56.0	36.3	44.6	L	
0.20510	23.7	1.1	13.2	36.9	14.3	63.4	53.4	26.5	39.1	L	
0.28040	12.4	-2.7	13.2	25.6	10.5	60.8	50.8	35.2	40.3	L	
0.47690	18.2	-0.7	13.2	31.4	12.5	56.4	46.4	25.0	33.9	L	
0.54582	17.4	-1.3	13.2	30.6	11.9	56.0	46.0	25.4	34.1	L	
5.60039	14.7	-1.7	13.9	28.6	12.2	60.0	50.0	31.4	37.8	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT [dBuV] = READING [dBuV] + C. F [dB] (LISN LOSS + CABLE LOSS)
Except for the above table : adequate margin data below the limits.

Conducted Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	33BE0184-HO-03
Date	12/03/2012
Temperature/ Humidity	22 deg. C / 47% RH
Engineer	Tomotaka Sasagawa
Mode	Tx DH5



Conducted Emission

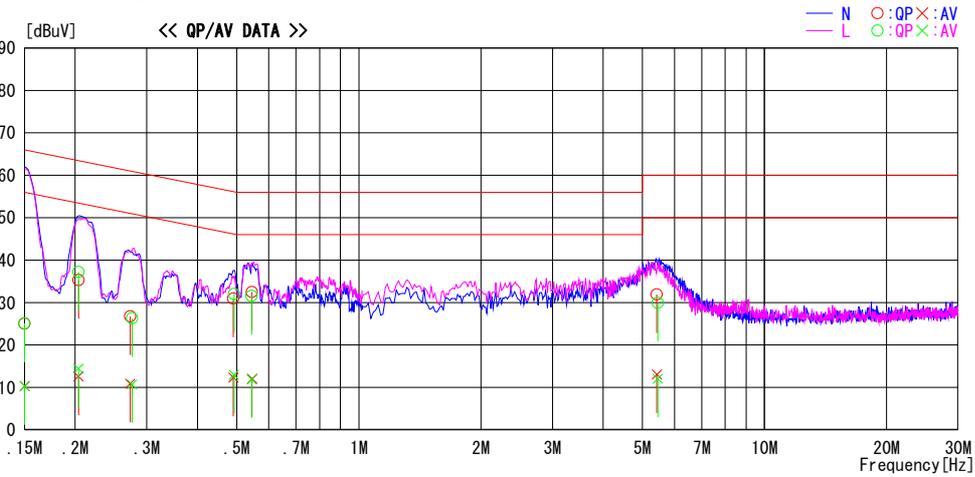
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2012/12/04

Report No. : 33BE0184-HO-03
Temp./Humi. : 22deg. C / 47% RH
Engineer : Tomotaka Sasagawa

Mode / Remarks : 3DH5 2402MHz

LIMIT : FCC15.207 QP
FCC15.207 AV

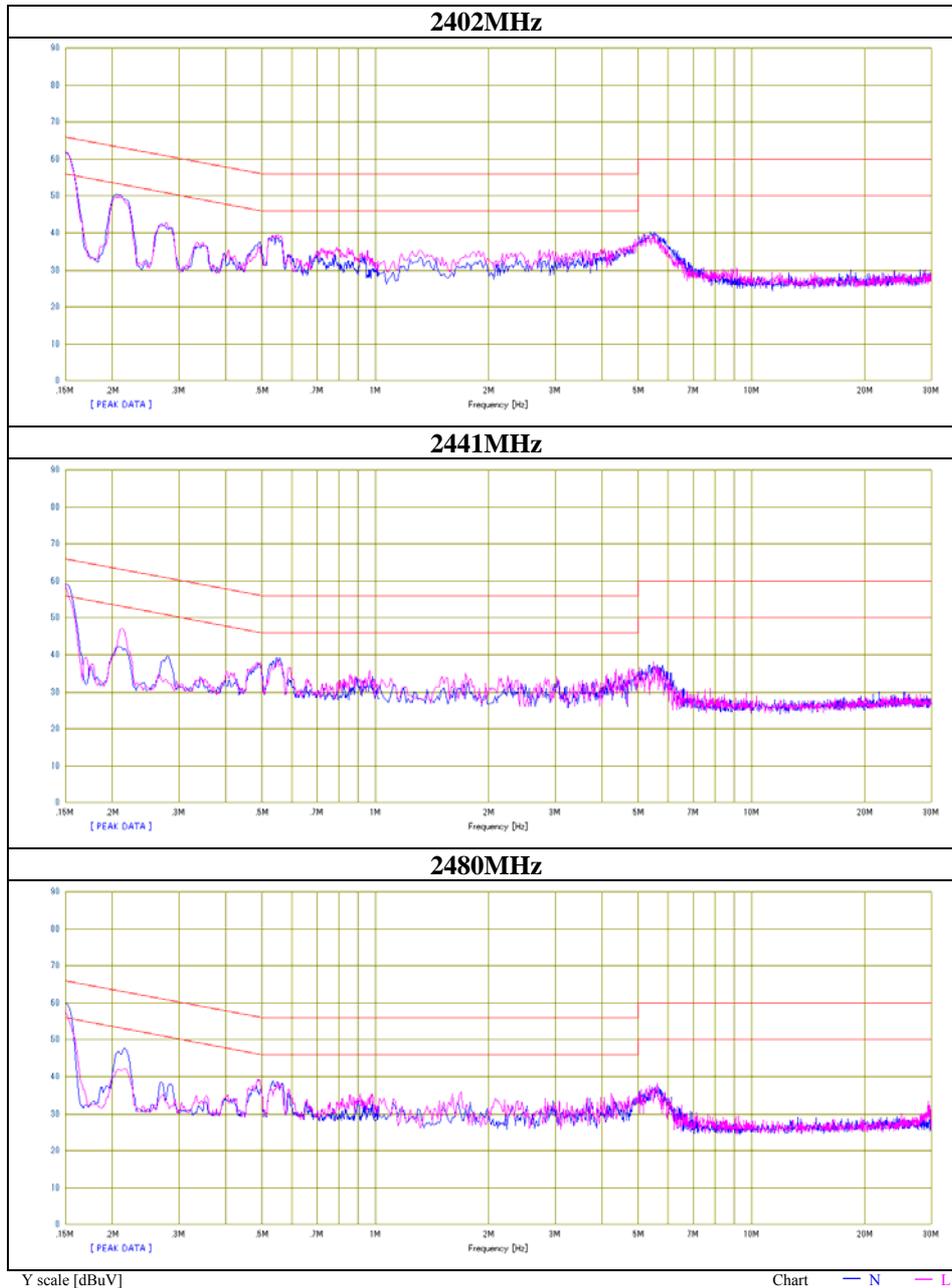


Frequency [MHz]	Reading Level		Corr. Factor [dB]	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15000	11.8	-2.9	13.2	25.0	10.3	66.0	56.0	41.0	45.7	N	
0.20365	22.1	-0.6	13.2	35.3	12.6	63.5	53.5	28.2	40.9	N	
0.27325	13.5	-2.3	13.2	26.7	10.9	61.0	51.0	34.3	40.1	N	
0.49075	17.7	-0.9	13.2	30.9	12.3	56.2	46.2	25.3	33.9	N	
0.54585	19.3	-1.1	13.2	32.5	12.1	56.0	46.0	23.5	33.9	N	
5.42431	18.0	-0.8	13.9	31.9	13.1	60.0	50.0	28.1	36.9	N	
0.15000	11.9	-2.9	13.2	25.1	10.3	66.0	56.0	40.9	45.7	L	
0.20365	24.0	1.2	13.2	37.2	14.4	63.5	53.5	26.3	39.1	L	
0.27615	13.1	-2.5	13.2	26.3	10.7	60.9	50.9	34.6	40.2	L	
0.49220	18.8	-0.2	13.2	32.0	13.0	56.1	46.1	24.1	33.1	L	
0.54440	18.4	-1.3	13.2	31.6	11.9	56.0	46.0	24.4	34.1	L	
5.45454	16.0	-1.8	13.9	29.9	12.1	60.0	50.0	30.1	37.9	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT [dBuV] = READING [dBuV] + C. F [dB] (LISN LOSS + CABLE LOSS)
Except for the above table : adequate margin data below the limits.

Conducted Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	33BE0184-HO-03
Date	12/03/2012
Temperature/ Humidity	22 deg. C / 47% RH
Engineer	Tomotaka Sasagawa
Mode	Tx 3DH5



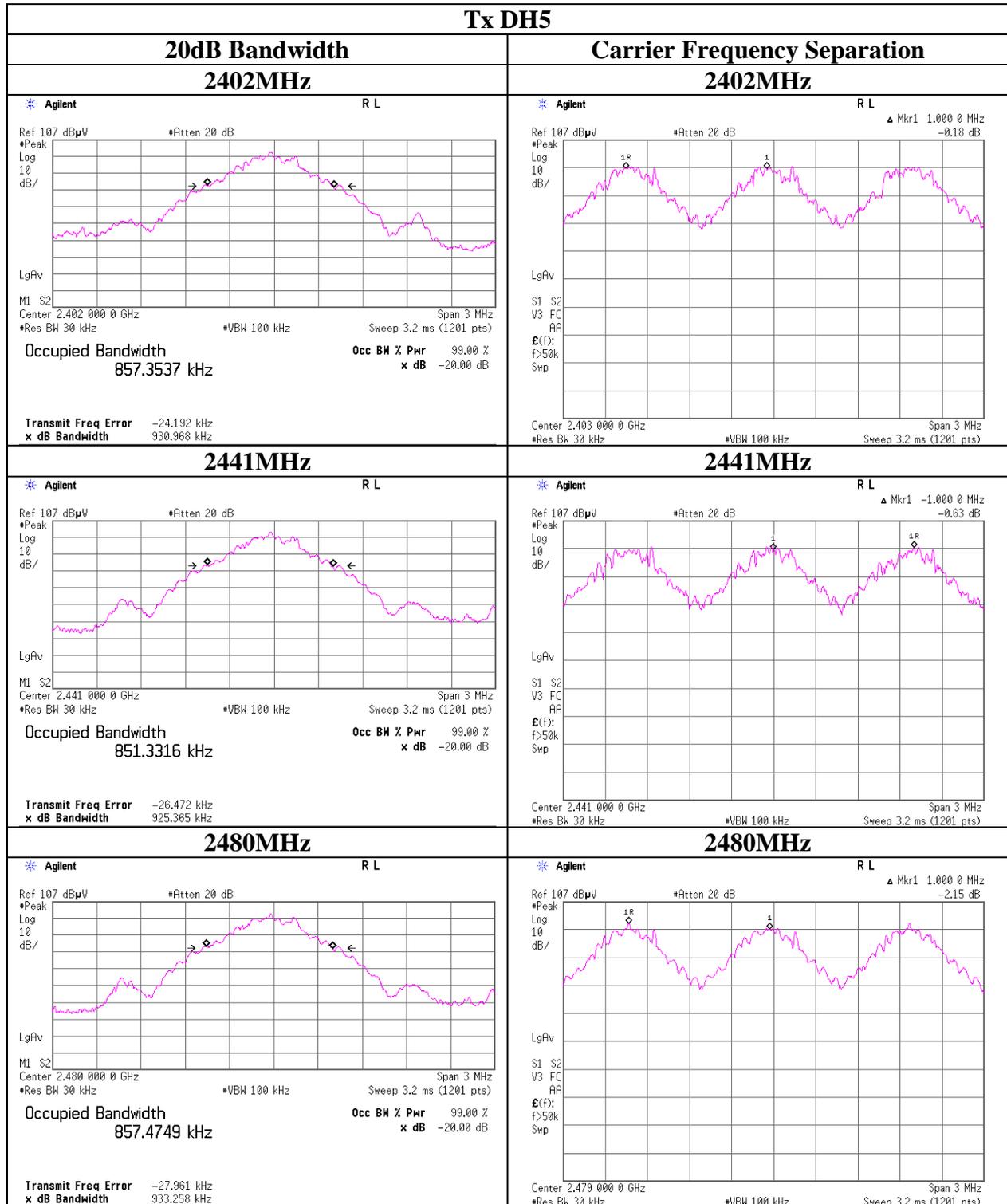
20dB Bandwidth and Carrier Frequency Separation

Test place Head Office EMC Lab. No.6 Shielded Room
Report No. 33BE0184-HO-03
Date 10/16/2012
Temperature/ Humidity 25 deg. C / 43% RH
Engineer Tomohisa Nakagawa
Mode Tx (Hopping on) DH5/3DH5

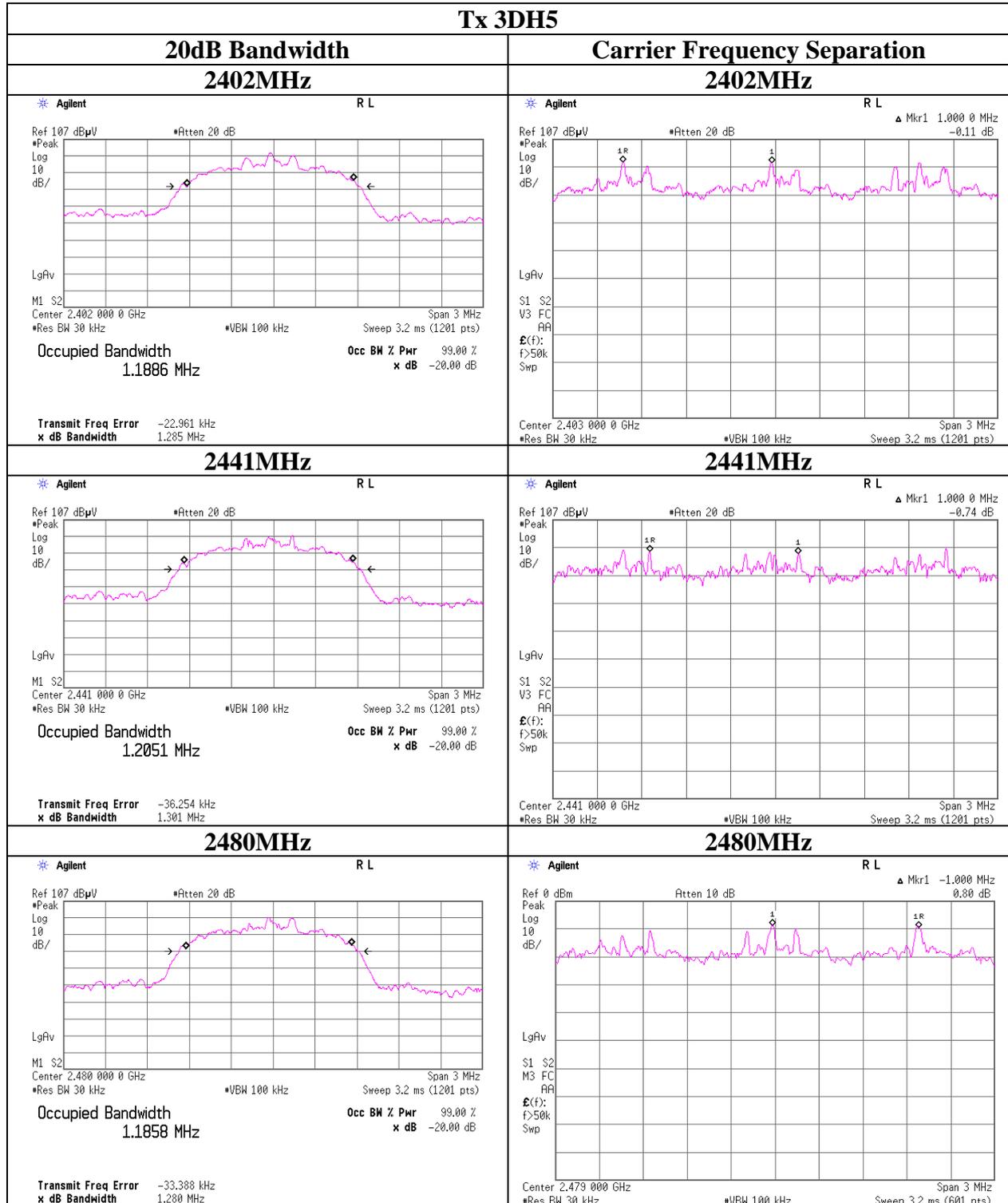
Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.931	1.000	≥ 0.621
DH5	2441.0	0.925	1.000	≥ 0.617
DH5	2480.0	0.933	1.000	≥ 0.622
3DH5	2402.0	1.285	1.000	≥ 0.857
3DH5	2441.0	1.301	1.000	≥ 0.867
3DH5	2480.0	1.280	1.000	≥ 0.853

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

20dB Bandwidth and Carrier Frequency Separation



20dB Bandwidth and Carrier Frequency Separation



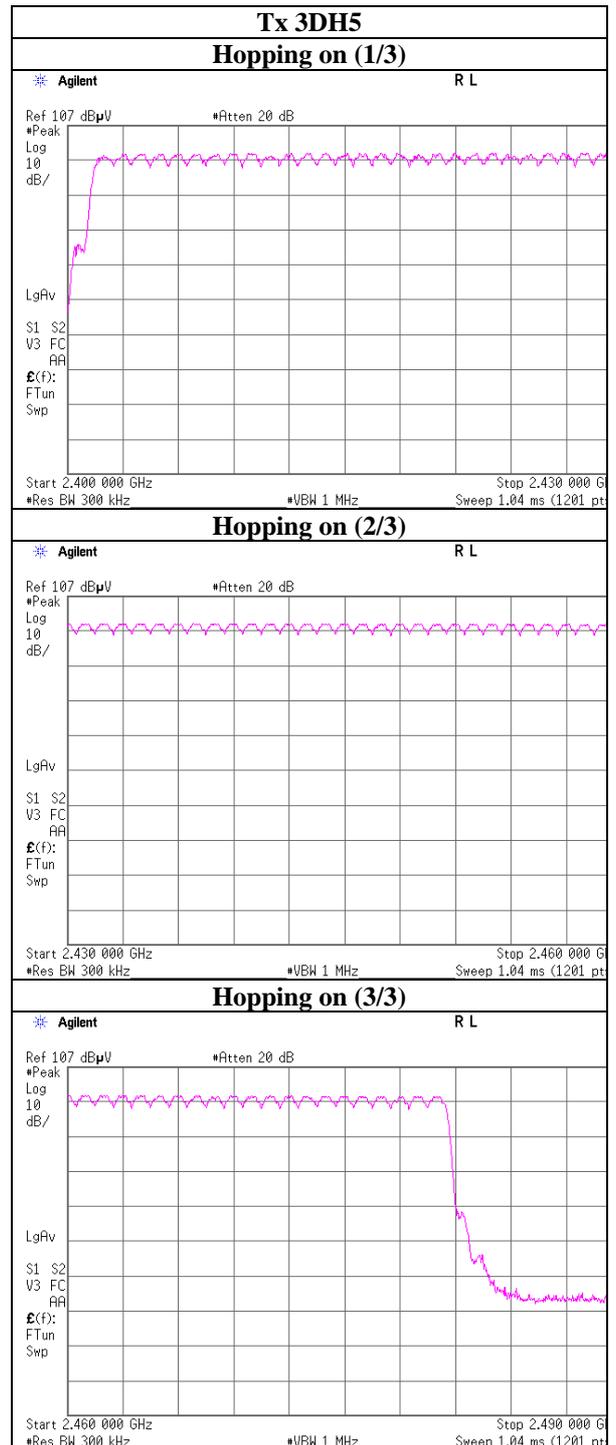
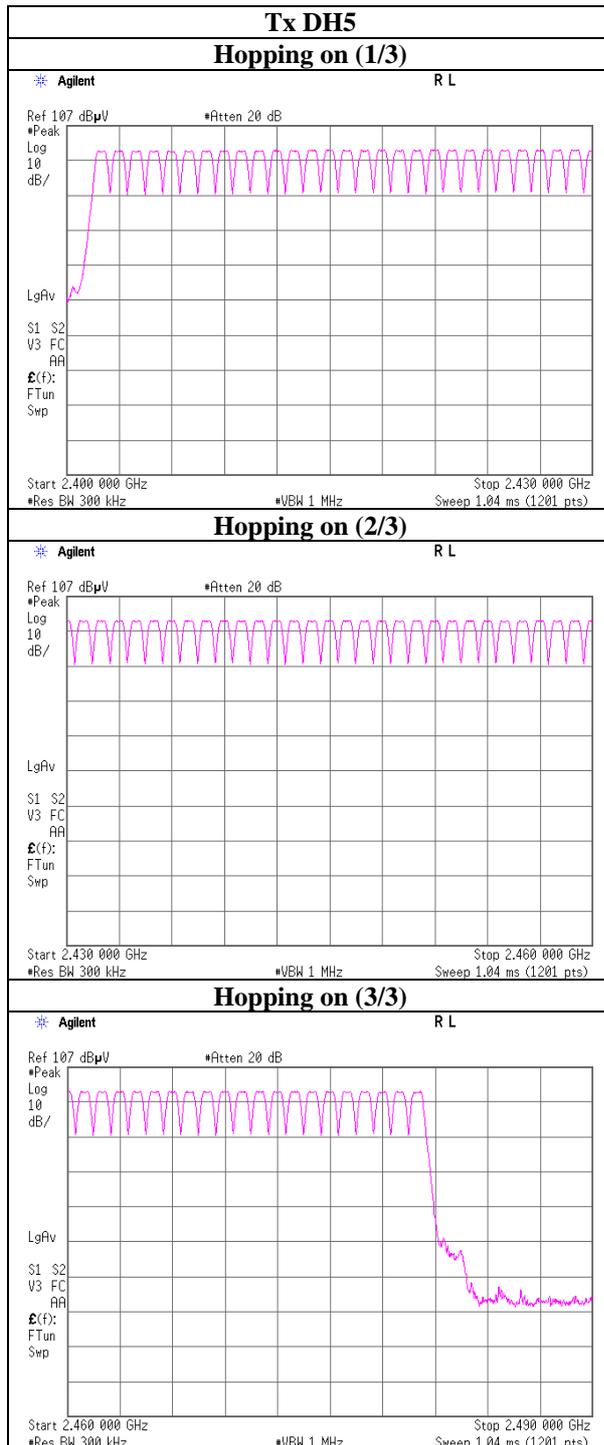
Number of Hopping Frequency

Test place Head Office EMC Lab. No.6 Shielded Room
Report No. 33BE0184-HO-03
Date 10/16/2012
Temperature/ Humidity 25 deg. C / 43% RH
Engineer Tomohisa Nakagawa
Mode Tx (Hopping on) DH5/3DH5

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

Number of Hopping Frequency



Dwell time

Test place Head Office EMC Lab. No.6 Shielded Room
Report No. 33BE0184-HO-03
Date 10/16/2012
Temperature/ Humidity 25 deg. C / 43% RH
Engineer Tomohisa Nakagawa
Mode Tx (Hopping on) DH5/3DH5

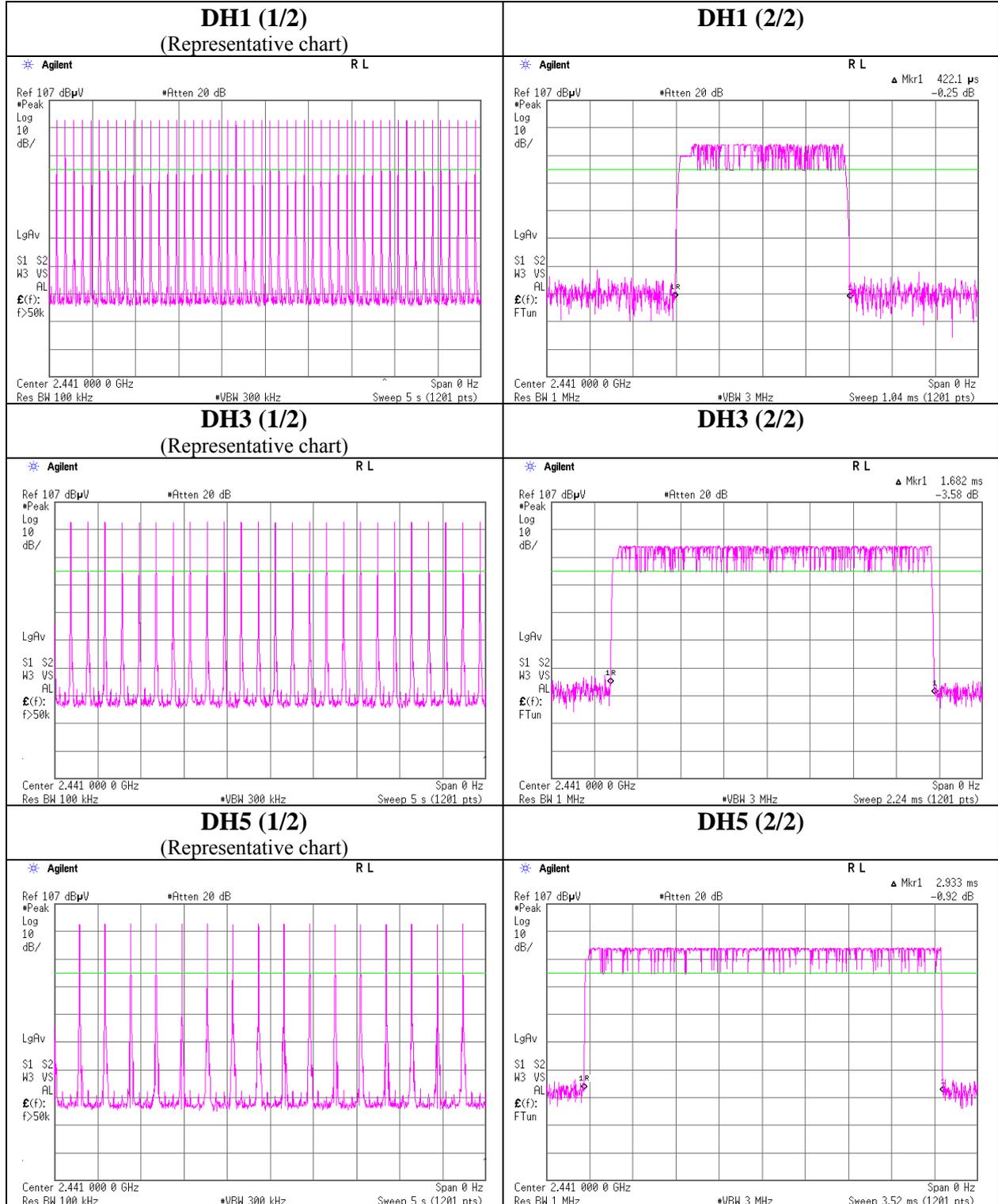
Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period				Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	50.0 times /	5 sec. x	31.6 sec. =	316 times	0.422	133	400
DH3	25.0 times /	5 sec. x	31.6 sec. =	158 times	1.682	266	400
DH5	16.0 times /	5 sec. x	31.6 sec. =	102 times	2.933	299	400
3DH1	50.0 times /	5 sec. x	31.6 sec. =	316 times	0.435	137	400
3DH3	25.0 times /	5 sec. x	31.6 sec. =	158 times	1.689	267	400
3DH5	16.0 times /	5 sec. x	31.6 sec. =	102 times	2.939	300	400

Sample Calculation

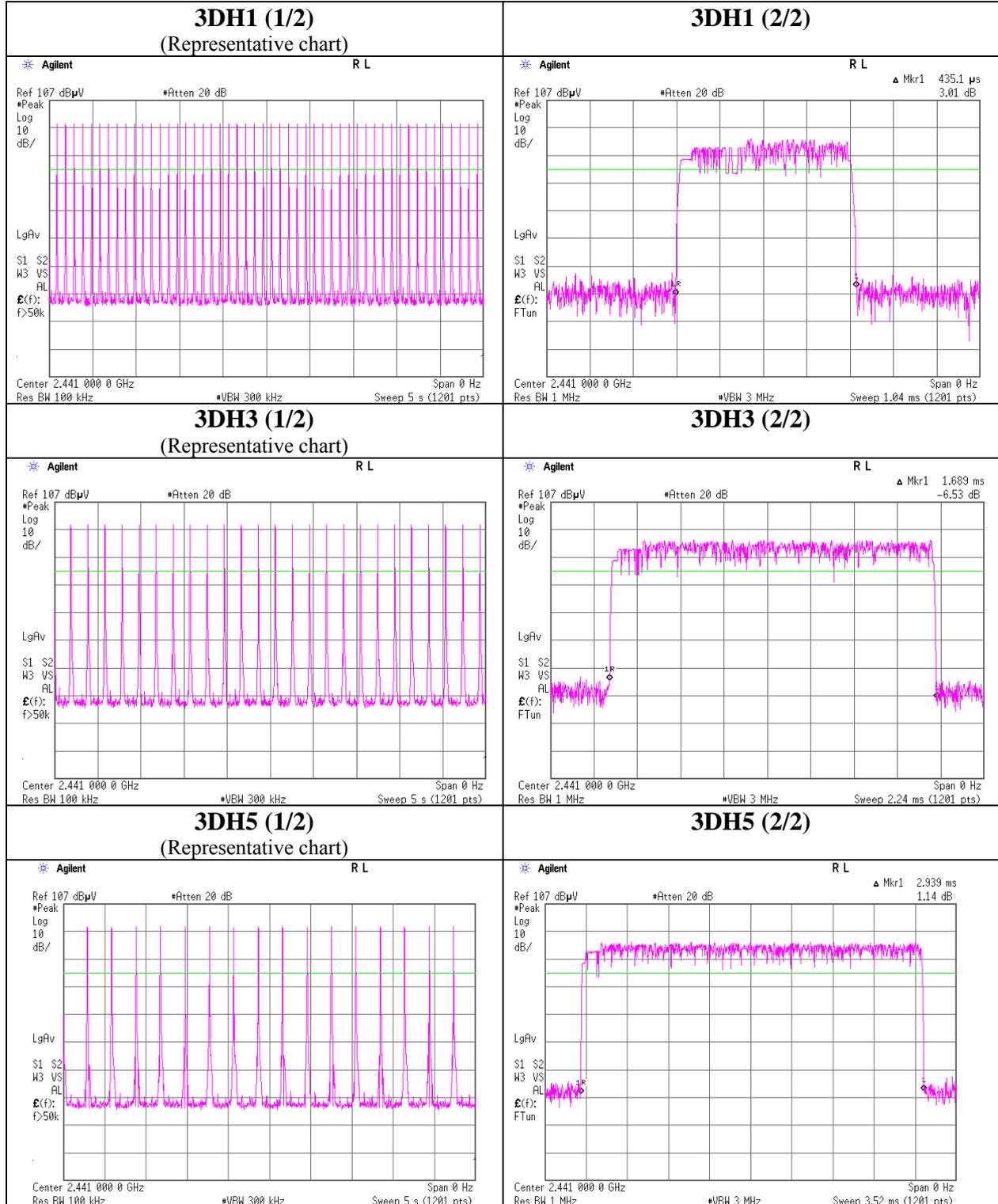
Result = Number of transmission x Length of transmission time

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 $N \times 0.4s$, 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. This is confirmed in the test report for $N=79$.

Dwell time



Dwell time



Maximum Peak Output Power

Test place Head Office EMC Lab. No.6 Shielded Room
Report No. 33BE0184-HO-03
Date 10/16/2012
Temperature/ Humidity 25 deg. C / 43% RH
Engineer Tomohisa Nakagawa
Mode Tx (Hopping off) DH5/3DH5

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-8.21	0.77	10.03	2.59	1.82	20.96	125	18.37
DH5	2441.0	-8.04	0.77	10.03	2.76	1.89	20.96	125	18.20
DH5	2480.0	-8.21	0.78	10.03	2.60	1.82	20.96	125	18.36
3DH5	2402.0	-10.28	0.77	10.03	0.52	1.13	20.96	125	20.44
3DH5	2441.0	-10.15	0.77	10.03	0.65	1.16	20.96	125	20.31
3DH5	2480.0	-10.19	0.78	10.03	0.62	1.15	20.96	125	20.34

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

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.

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.

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 33BE0184-HO-03
Date 12/03/2012 12/03/2012
Temperature/ Humidity 22 deg. C / 31% RH 22 deg. C / 47% RH
Engineer Takayuki Shimada Tomotaka Sasagawa
(Above 1GHz) (Below 1GHz)
Mode Tx, DH5 2402MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	46.509	QP	22.8	11.9	6.9	28.6	13.0	40.0	27.0	
Hori	82.051	QP	22.7	6.8	7.3	28.5	8.3	40.0	31.7	
Hori	192.448	QP	22.5	16.4	8.1	27.9	19.1	43.5	24.4	
Hori	256.010	QP	32.4	17.5	8.6	27.5	31.0	46.0	15.0	
Hori	288.002	QP	29.0	19.2	8.8	27.6	29.4	46.0	16.6	
Hori	456.465	QP	29.7	17.7	9.6	28.6	28.4	46.0	17.6	
Hori	2390.000	PK	47.5	27.4	2.4	34.8	42.5	73.9	31.4	
Hori	4804.000	PK	55.2	31.2	4.2	34.0	56.6	73.9	17.3	
Hori	7206.000	PK	43.5	35.9	4.9	34.2	50.1	73.9	23.8	
Hori	9608.000	PK	43.1	38.8	5.7	34.7	52.9	73.9	21.0	
Hori	2390.000	AV	34.4	27.4	2.4	34.8	29.4	53.9	24.5	
Hori	7206.000	AV	31.7	35.9	4.9	34.2	38.3	53.9	15.6	
Hori	9608.000	AV	32.2	38.8	5.7	34.7	42.0	53.9	11.9	
Vert	46.509	QP	32.2	11.9	6.9	28.6	22.4	40.0	17.6	
Vert	82.051	QP	31.0	6.8	7.3	28.5	16.6	40.0	23.4	
Vert	192.448	QP	24.4	16.4	8.1	27.9	21.0	43.5	22.5	
Vert	256.010	QP	22.4	17.5	8.6	27.5	21.0	46.0	25.0	
Vert	288.002	QP	22.5	19.2	8.8	27.6	22.9	46.0	23.1	
Vert	456.465	QP	30.1	17.7	9.6	28.6	28.8	46.0	17.2	
Vert	2390.000	PK	47.2	27.4	2.4	34.8	42.2	73.9	31.7	
Vert	4804.000	PK	55.3	31.2	4.2	34.0	56.7	73.9	17.2	
Vert	7206.000	PK	42.8	35.9	4.9	34.2	49.4	73.9	24.5	
Vert	9608.000	PK	44.1	38.8	5.7	34.7	53.9	73.9	20.0	
Vert	2390.000	AV	34.4	27.4	2.4	34.8	29.4	53.9	24.5	
Vert	7206.000	AV	30.0	35.9	4.9	34.2	36.6	53.9	17.3	
Vert	9608.000	AV	31.7	38.8	5.7	34.7	41.5	53.9	12.4	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	33BE0184-HO-03	
Date	12/03/2012	12/03/2012
Temperature/ Humidity	22 deg. C / 31% RH	22 deg. C / 47% RH
Engineer	Takayuki Shimada (Above 1GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	Tx, DH5 2441MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	46.509	QP	23.1	11.9	6.9	28.6	13.3	40.0	26.7	
Hori	81.851	QP	24.4	6.7	7.3	28.5	9.9	40.0	30.1	
Hori	191.996	QP	22.3	16.4	8.1	27.9	18.9	43.5	24.6	
Hori	255.990	QP	33.2	17.5	8.6	27.5	31.8	46.0	14.2	
Hori	287.996	QP	28.9	19.2	8.8	27.6	29.3	46.0	16.7	
Hori	456.432	QP	29.6	17.7	9.6	28.6	28.3	46.0	17.7	
Hori	4882.000	PK	57.4	31.4	4.2	34.0	59.0	73.9	14.9	
Hori	7323.000	PK	42.7	36.0	4.9	34.2	49.4	73.9	24.5	
Hori	9764.000	PK	42.9	39.0	5.7	34.7	52.9	73.9	21.0	
Hori	7323.000	AV	31.3	36.0	4.9	34.2	38.0	53.9	15.9	
Hori	9764.000	AV	31.7	39.0	5.7	34.7	41.7	53.9	12.2	
Vert	46.509	QP	32.4	11.9	6.9	28.6	22.6	40.0	17.4	
Vert	81.851	QP	34.4	6.7	7.3	28.5	19.9	40.0	20.1	
Vert	191.996	QP	23.7	16.4	8.1	27.9	20.3	43.5	23.2	
Vert	255.990	QP	22.4	17.5	8.6	27.5	21.0	46.0	25.0	
Vert	287.996	QP	22.4	19.2	8.8	27.6	22.8	46.0	23.2	
Vert	456.432	QP	30.1	17.7	9.6	28.6	28.8	46.0	17.2	
Vert	4882.000	PK	56.3	31.4	4.2	34.0	57.9	73.9	16.1	
Vert	7323.000	PK	42.9	36.0	4.9	34.2	49.6	73.9	24.3	
Vert	9764.000	PK	43.1	39.0	5.7	34.7	53.1	73.9	20.8	
Vert	7323.000	AV	31.2	36.0	4.9	34.2	37.9	53.9	16.0	
Vert	9764.000	AV	31.3	39.0	5.7	34.7	41.3	53.9	12.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
 26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 33BE0184-HO-03
Date 12/03/2012 12/03/2012
Temperature/ Humidity 22 deg. C / 31% RH 22 deg. C / 47% RH
Engineer Takayuki Shimada Tomotaka Sasagawa
(Above 1GHz) (Below 1GHz)
Mode Tx, DH5 2480MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	46.200	QP	23.0	12.0	6.9	28.6	13.3	40.0	26.7	
Hori	83.400	QP	23.0	7.0	7.3	28.5	8.8	40.0	31.2	
Hori	191.988	QP	22.9	16.4	8.1	27.9	19.5	43.5	24.0	
Hori	256.010	QP	34.2	17.5	8.6	27.5	32.8	46.0	13.2	
Hori	288.009	QP	29.9	19.2	8.8	27.6	30.3	46.0	15.7	
Hori	451.665	QP	29.1	17.7	9.6	28.6	27.8	46.0	18.2	
Hori	2483.500	PK	57.6	27.5	2.4	34.8	52.7	73.9	21.2	
Hori	4960.000	PK	55.9	31.6	4.2	34.0	57.7	73.9	16.2	
Hori	7440.000	PK	42.3	36.2	5.0	34.3	49.2	73.9	24.7	
Hori	9920.000	PK	42.8	39.1	5.8	34.7	53.0	73.9	20.9	
Hori	2483.500	AV	47.8	27.5	2.4	34.8	42.9	53.9	11.0	
Hori	7440.000	AV	30.8	36.2	5.0	34.3	37.7	53.9	16.2	
Hori	9920.000	AV	31.4	39.1	5.8	34.7	41.6	53.9	12.3	
Vert	46.200	QP	33.0	12.0	6.9	28.6	23.3	40.0	16.7	
Vert	83.400	QP	34.8	7.0	7.3	28.5	20.6	40.0	19.4	
Vert	191.988	QP	23.9	16.4	8.1	27.9	20.5	43.5	23.0	
Vert	256.010	QP	23.4	17.5	8.6	27.5	22.0	46.0	24.0	
Vert	288.009	QP	22.0	19.2	8.8	27.6	22.4	46.0	23.6	
Vert	451.665	QP	29.2	17.7	9.6	28.6	27.9	46.0	18.1	
Vert	2483.500	PK	62.2	27.5	2.4	34.8	57.3	73.9	16.6	
Vert	4960.000	PK	54.7	31.6	4.2	34.0	56.5	73.9	17.4	
Vert	7440.000	PK	43.0	36.2	5.0	34.3	49.9	73.9	24.0	
Vert	9920.000	PK	42.9	39.1	5.8	34.7	53.1	73.9	20.8	
Vert	2483.500	AV	52.4	27.5	2.4	34.8	47.5	53.9	6.4	
Vert	7440.000	AV	30.9	36.2	5.0	34.3	37.8	53.9	16.1	
Vert	9920.000	AV	31.0	39.1	5.8	34.7	41.2	53.9	12.7	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 33BE0184-HO-03
Date 12/03/2012 12/03/2012
Temperature/ Humidity 22 deg. C / 31% RH 22 deg. C / 47% RH
Engineer Takayuki Shimada Tomotaka Sasagawa
(Above 1GHz) (Below 1GHz)
Mode Tx, 3DH5 2402MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	45.750	QP	23.1	12.1	6.9	28.6	13.5	40.0	26.5	
Hori	82.200	QP	24.2	6.8	7.3	28.5	9.8	40.0	30.2	
Hori	192.910	QP	25.2	16.4	8.1	27.9	21.8	43.5	21.7	
Hori	256.018	QP	36.4	17.5	8.6	27.5	35.0	46.0	11.0	
Hori	287.982	QP	34.5	19.2	8.8	27.6	34.9	46.0	11.1	
Hori	456.526	QP	29.5	17.7	9.6	28.6	28.2	46.0	17.8	
Hori	2390.000	PK	46.9	27.4	2.4	34.8	41.9	73.9	32.1	
Hori	4804.000	PK	50.3	31.2	4.2	34.0	51.7	73.9	22.2	
Hori	7206.000	PK	43.3	35.9	4.9	34.2	49.9	73.9	24.0	
Hori	9608.000	PK	44.4	38.8	5.7	34.7	54.2	73.9	19.7	
Hori	2390.000	AV	34.3	27.4	2.4	34.8	29.3	53.9	24.6	
Hori	4804.000	AV	40.1	31.2	4.2	34.0	41.5	53.9	12.4	
Hori	7206.000	AV	30.9	35.9	4.9	34.2	37.5	53.9	16.4	
Hori	9608.000	AV	31.6	38.8	5.7	34.7	41.4	53.9	12.5	
Vert	46.046	QP	33.3	12.0	6.9	28.6	23.6	40.0	16.4	
Vert	81.940	QP	34.1	6.8	7.3	28.5	19.7	40.0	20.3	
Vert	192.910	QP	25.5	16.4	8.1	27.9	22.1	43.5	21.4	
Vert	256.018	QP	23.1	17.5	8.6	27.5	21.7	46.0	24.3	
Vert	287.982	QP	24.8	19.2	8.8	27.6	25.2	46.0	20.8	
Vert	456.526	QP	30.1	17.7	9.6	28.6	28.8	46.0	17.2	
Vert	2390.000	PK	47.3	27.4	2.4	34.8	42.3	73.9	31.6	
Vert	4804.000	PK	50.5	31.2	4.2	34.0	51.9	73.9	22.0	
Vert	7206.000	PK	43.4	35.9	4.9	34.2	50.0	73.9	23.9	
Vert	9608.000	PK	44.4	38.8	5.7	34.7	54.2	73.9	19.7	
Vert	2390.000	AV	34.3	27.4	2.4	34.8	29.3	53.9	24.6	
Vert	4804.000	AV	41.8	31.2	4.2	34.0	43.2	53.9	10.7	
Vert	7206.000	AV	31.1	35.9	4.9	34.2	37.7	53.9	16.2	
Vert	9608.000	AV	31.7	38.8	5.7	34.7	41.5	53.9	12.4	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 33BE0184-HO-03
Date 12/03/2012 12/03/2012
Temperature/ Humidity 22 deg. C / 31% RH 22 deg. C / 47% RH
Engineer Takayuki Shimada Tomotaka Sasagawa
(Above 1GHz) (Below 1GHz)
Mode Tx, 3DH5 2441MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	46.160	QP	23.0	12.0	6.9	28.6	13.3	40.0	26.7	
Hori	83.150	QP	23.0	7.0	7.3	28.5	8.8	40.0	31.2	
Hori	191.977	QP	26.2	16.4	8.1	27.9	22.8	43.5	20.7	
Hori	256.008	QP	35.7	17.5	8.6	27.5	34.3	46.0	11.7	
Hori	288.004	QP	30.4	19.2	8.8	27.6	30.8	46.0	15.2	
Hori	454.295	QP	26.0	17.7	9.6	28.6	24.7	46.0	21.3	
Hori	4882.000	PK	51.7	31.4	4.2	34.0	53.3	73.9	20.6	
Hori	7323.000	PK	42.2	36.0	4.9	34.2	48.9	73.9	25.1	
Hori	9764.000	PK	42.6	39.0	5.7	34.7	52.6	73.9	21.3	
Hori	4882.000	AV	41.8	31.4	4.2	34.0	43.4	53.9	10.5	
Hori	7323.000	AV	30.8	36.0	4.9	34.2	37.5	53.9	16.4	
Hori	9764.000	AV	31.4	39.0	5.7	34.7	41.4	53.9	12.5	
Vert	46.160	QP	33.8	12.0	6.9	28.6	24.1	40.0	15.9	
Vert	83.150	QP	33.7	7.0	7.3	28.5	19.5	40.0	20.5	
Vert	191.990	QP	24.0	16.4	8.1	27.9	20.6	43.5	22.9	
Vert	255.994	QP	25.0	17.5	8.6	27.5	23.6	46.0	22.4	
Vert	287.984	QP	27.3	19.2	8.8	27.6	27.7	46.0	18.3	
Vert	455.415	QP	29.3	17.7	9.6	28.6	28.0	46.0	18.0	
Vert	4882.000	PK	52.5	31.4	4.2	34.0	54.1	73.9	19.8	
Vert	7323.000	PK	43.5	36.0	4.9	34.2	50.2	73.9	23.7	
Vert	9764.000	PK	42.5	39.0	5.7	34.7	52.5	73.9	21.4	
Vert	4882.000	AV	44.2	31.4	4.2	34.0	45.8	53.9	8.1	
Vert	7323.000	AV	30.8	36.0	4.9	34.2	37.5	53.9	16.4	
Vert	9764.000	AV	31.3	39.0	5.7	34.7	41.3	53.9	12.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz $20\log(3.0\text{m}/1.0\text{m})= 9.5\text{dB}$
26.5GHz-40GHz $20\log(3.0\text{m}/0.5\text{m})=15.6\text{dB}$

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 33BE0184-HO-03
Date 12/03/2012 12/03/2012
Temperature/ Humidity 22 deg. C / 31% RH 22 deg. C / 47% RH
Engineer Takayuki Shimada Tomotaka Sasagawa
(Above 1GHz) (Below 1GHz)
Mode Tx, 3DH5 2480MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	46.580	QP	22.9	11.9	6.9	28.6	13.1	40.0	26.9	
Hori	92.720	QP	23.1	8.7	7.4	28.4	10.8	43.5	32.7	
Hori	192.000	QP	26.4	16.4	8.1	27.9	23.0	43.5	20.5	
Hori	256.014	QP	36.0	17.5	8.6	27.5	34.6	46.0	11.4	
Hori	288.014	QP	31.1	19.2	8.8	27.6	31.5	46.0	14.5	
Hori	458.212	QP	26.0	17.8	9.6	28.7	24.7	46.0	21.3	
Hori	2483.500	PK	61.3	27.5	2.4	34.8	56.4	73.9	17.5	
Hori	4960.000	PK	49.8	31.6	4.2	34.0	51.6	73.9	22.3	
Hori	7440.000	PK	42.4	36.2	5.0	34.3	49.3	73.9	24.6	
Hori	9920.000	PK	43.2	39.1	5.8	34.7	53.4	73.9	20.5	
Hori	2483.500	AV	48.0	27.5	2.4	34.8	43.1	53.9	10.8	
Hori	4960.000	AV	40.1	31.6	4.2	34.0	41.9	53.9	12.0	
Hori	7440.000	AV	30.8	36.2	5.0	34.3	37.7	53.9	16.2	
Hori	9920.000	AV	31.4	39.1	5.8	34.7	41.6	53.9	12.3	
Vert	46.580	QP	33.1	11.9	6.9	28.6	23.3	40.0	16.7	
Vert	92.720	QP	30.2	8.7	7.4	28.4	17.9	43.5	25.6	
Vert	192.050	QP	22.5	16.4	8.1	27.9	19.1	43.5	24.4	
Vert	255.986	QP	25.1	17.5	8.6	27.5	23.7	46.0	22.3	
Vert	287.998	QP	27.9	19.2	8.8	27.6	28.3	46.0	17.7	
Vert	454.017	QP	29.2	17.7	9.6	28.6	27.9	46.0	18.1	
Vert	2483.500	PK	66.6	27.5	2.4	34.8	61.7	73.9	12.2	
Vert	4960.000	PK	51.5	31.6	4.2	34.0	53.3	73.9	20.6	
Vert	7440.000	PK	42.4	36.2	5.0	34.3	49.3	73.9	24.6	
Vert	9920.000	PK	43.6	39.1	5.8	34.7	53.8	73.9	20.1	
Vert	2483.500	AV	53.1	27.5	2.4	34.8	48.2	53.9	5.7	
Vert	4960.000	AV	42.3	31.6	4.2	34.0	44.1	53.9	9.8	
Vert	7440.000	AV	31.2	36.2	5.0	34.3	38.1	53.9	15.9	
Vert	9920.000	AV	31.8	39.1	5.8	34.7	42.0	53.9	11.9	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

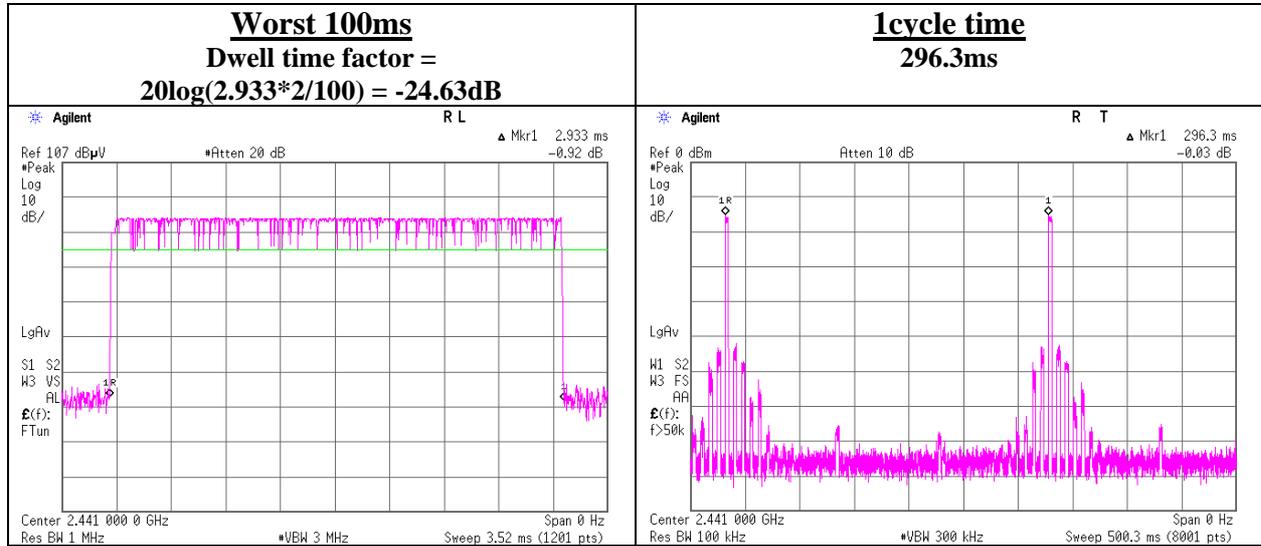
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

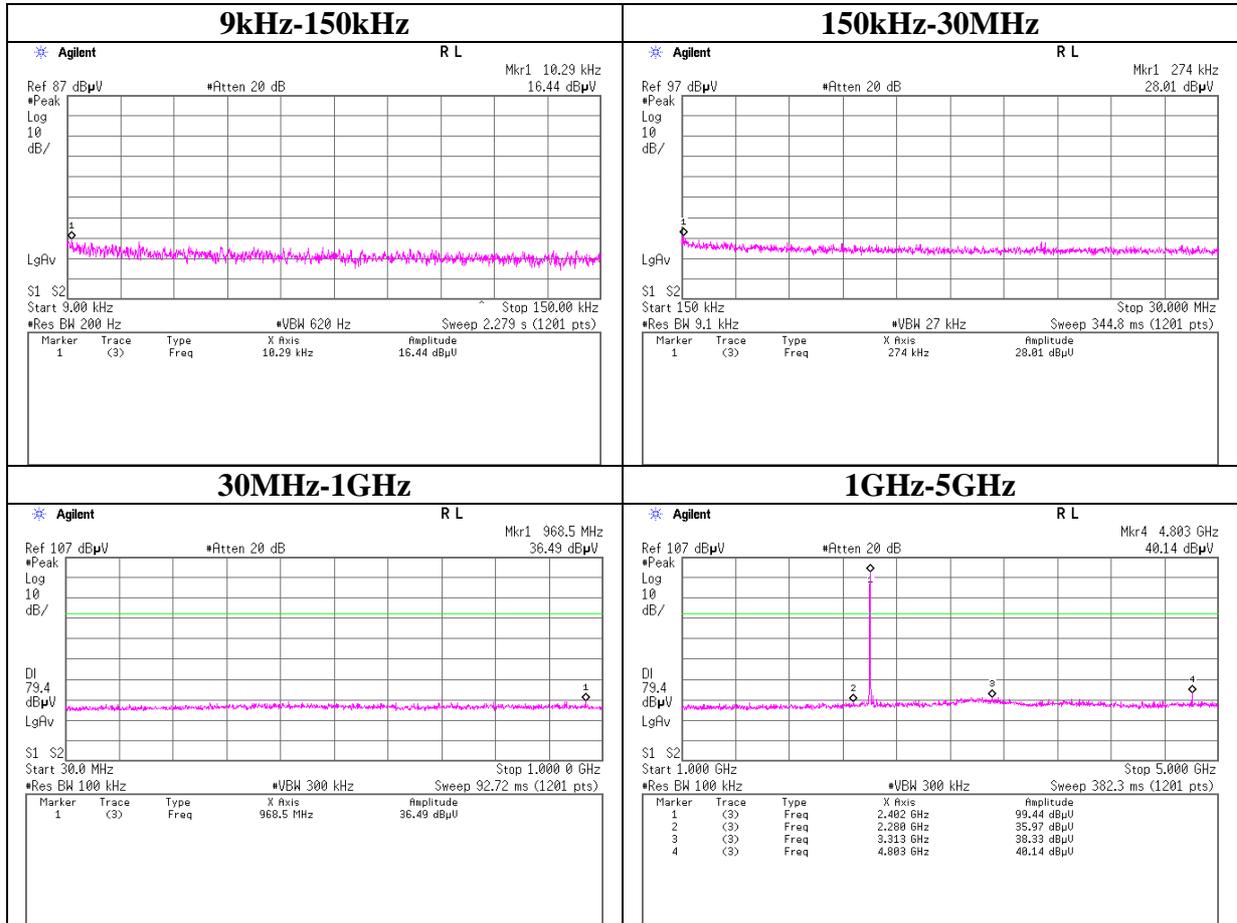
Dwell time factor

DH5



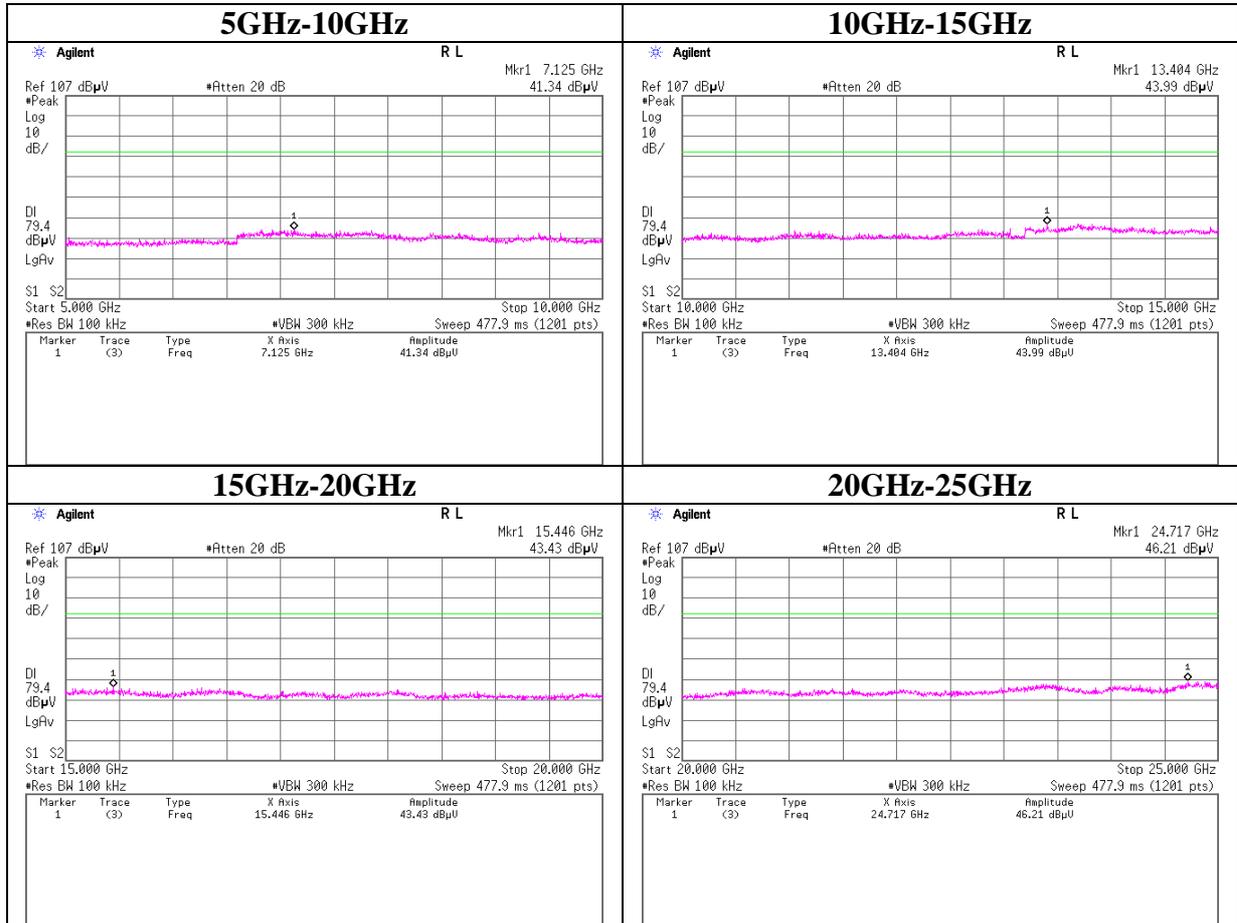
Conducted Spurious Emission

Tx DH5 2402MHz



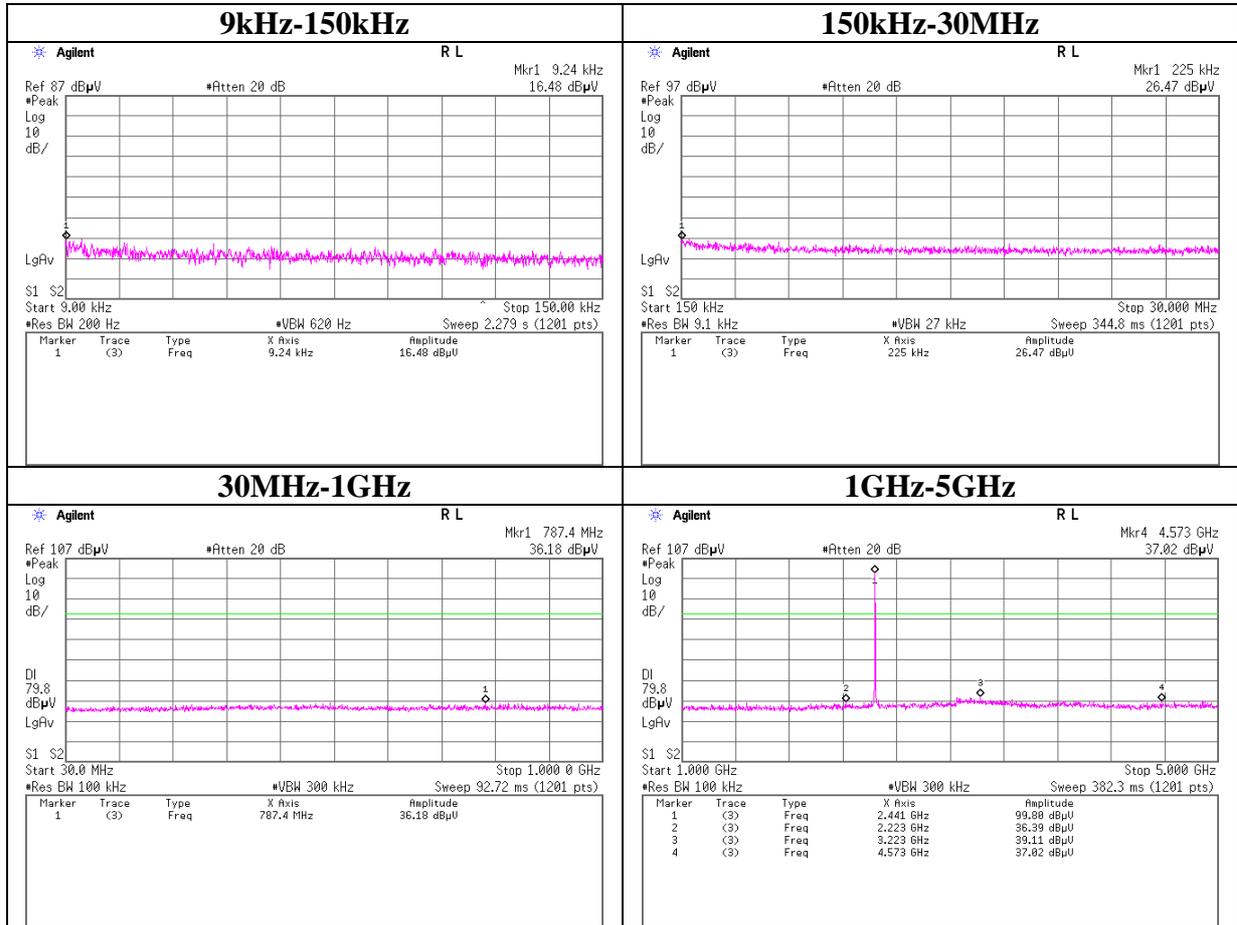
Conducted Spurious Emission

Tx DH5 2402MHz



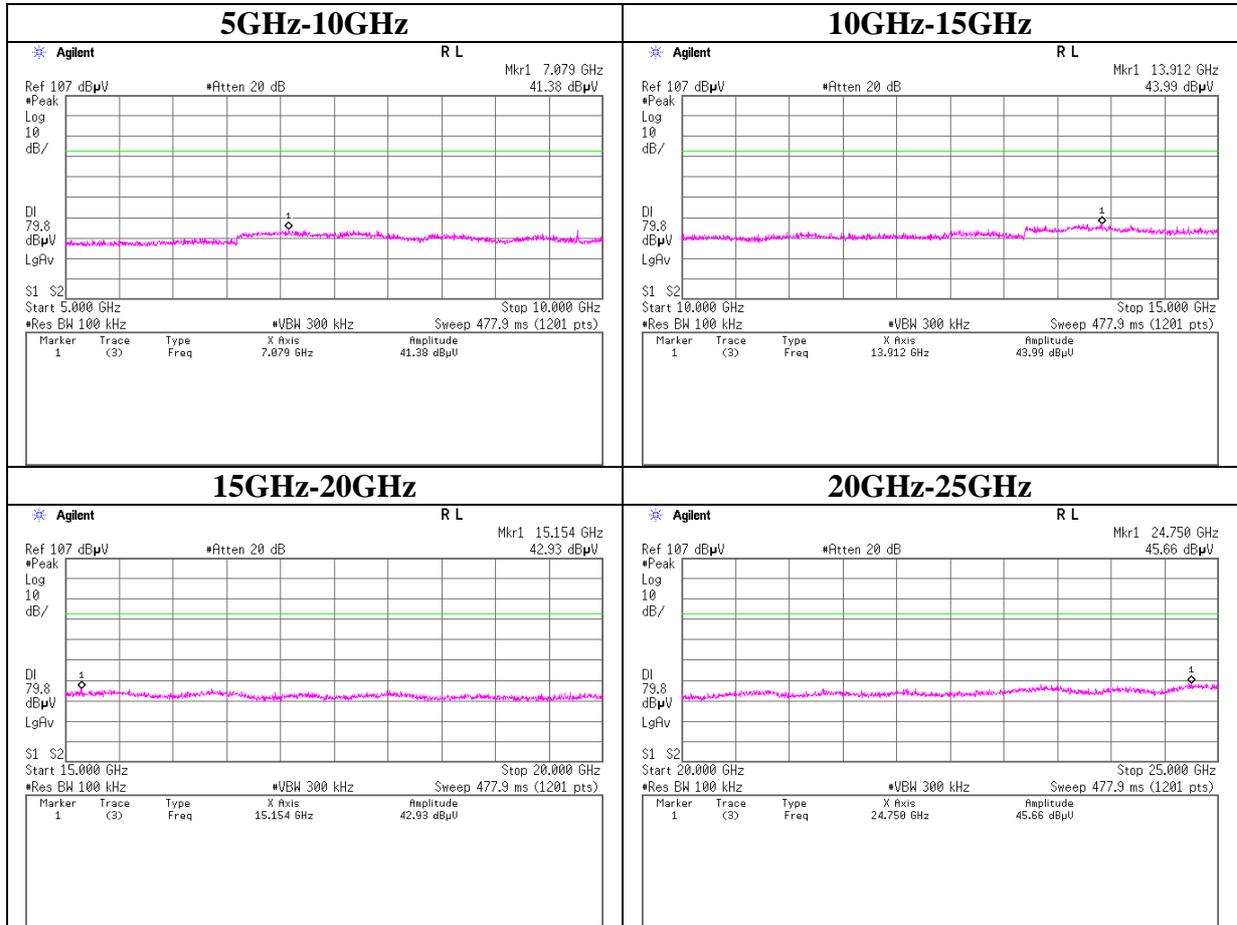
Conducted Spurious Emission

Tx DH5 2441MHz



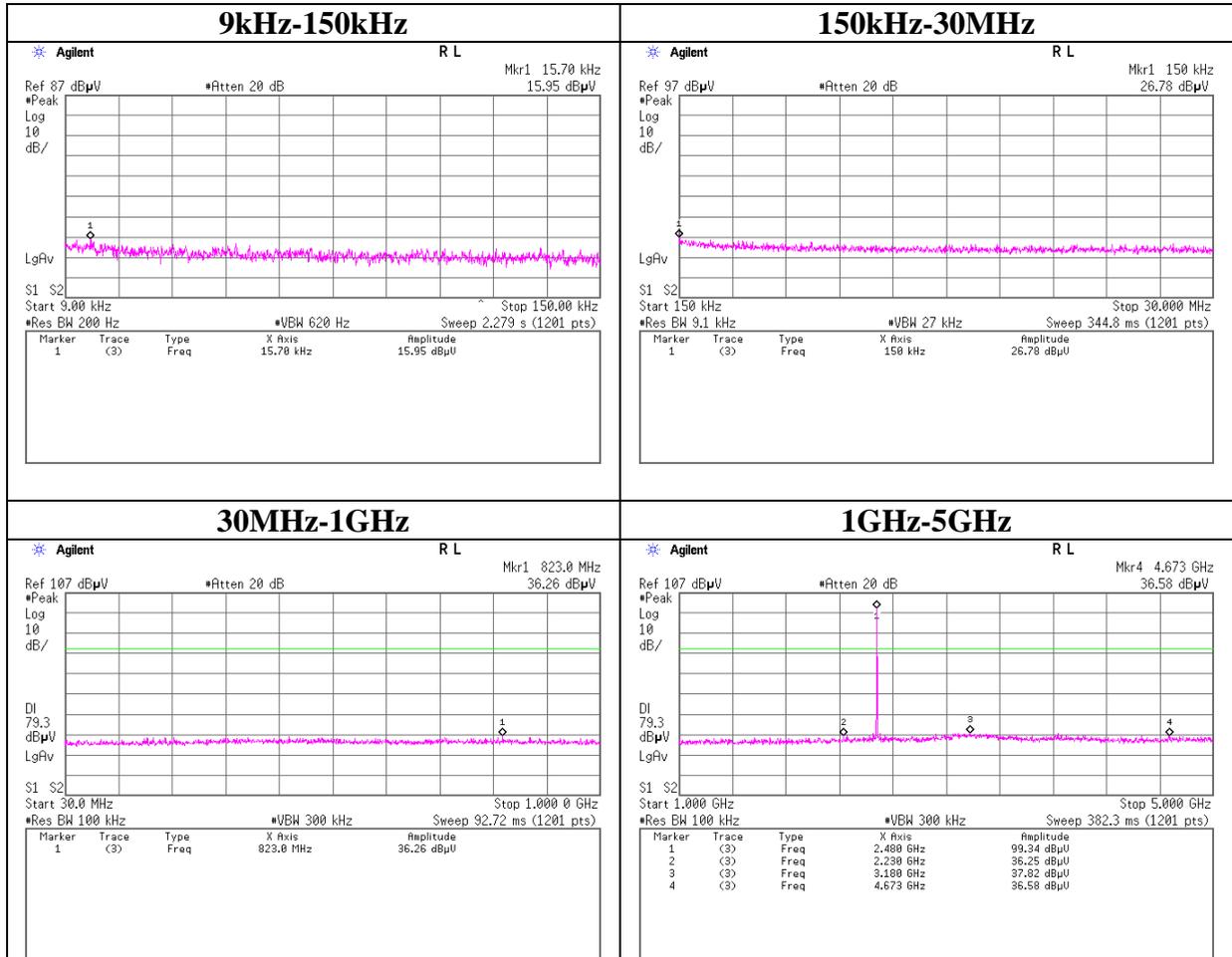
Conducted Spurious Emission

Tx DH5 2441MHz



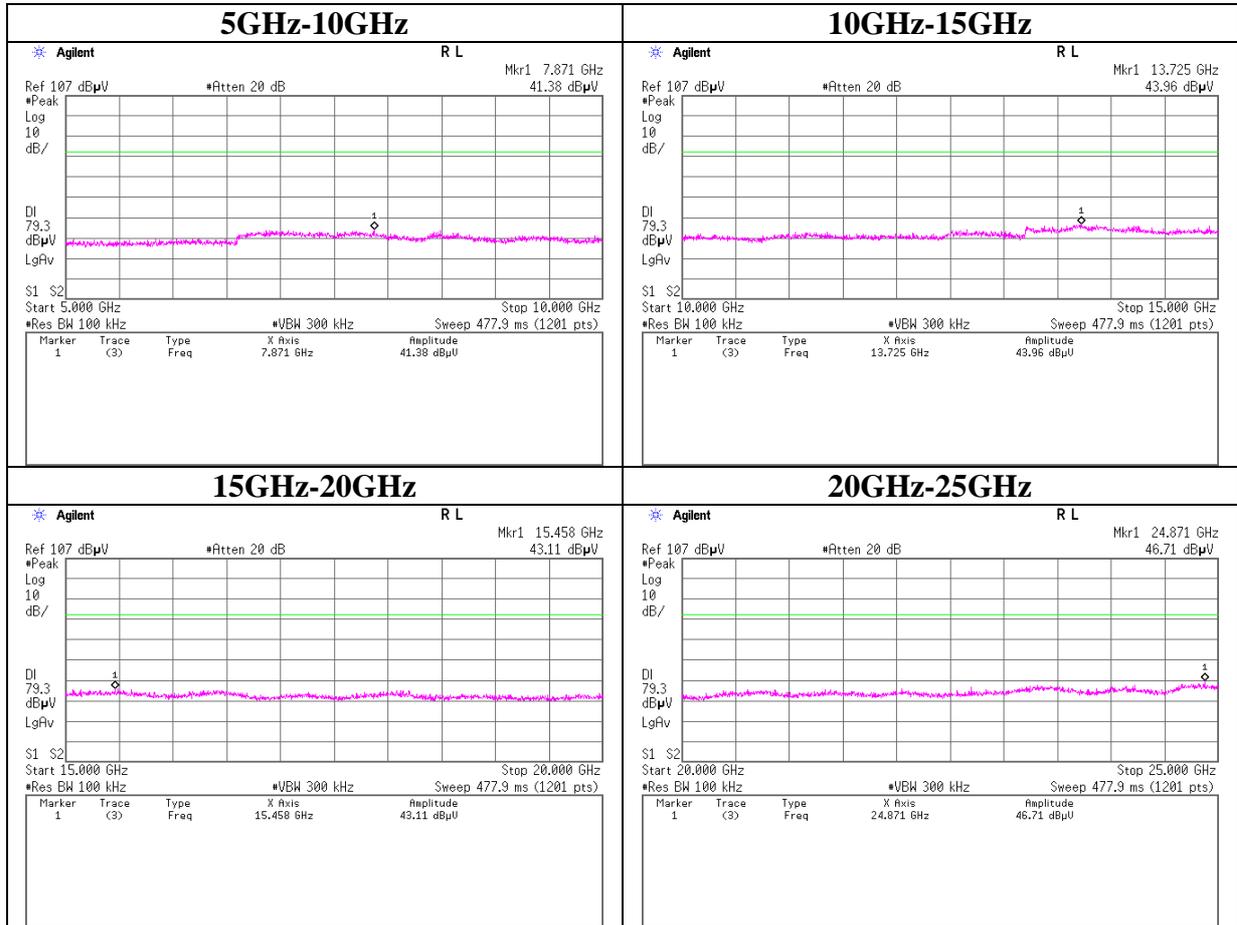
Conducted Spurious Emission

Tx DH5 2480MHz



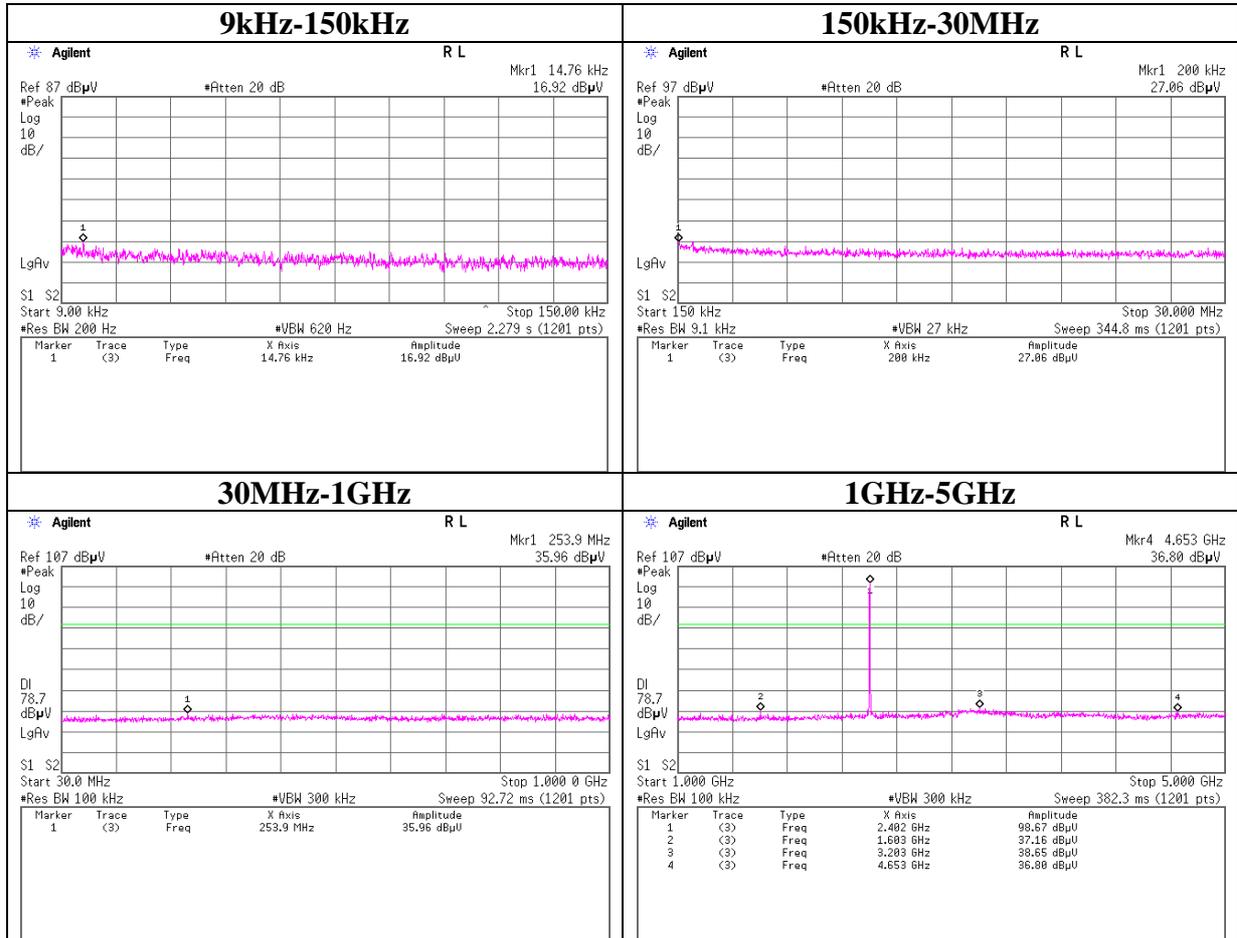
Conducted Spurious Emission

Tx DH5 2480MHz



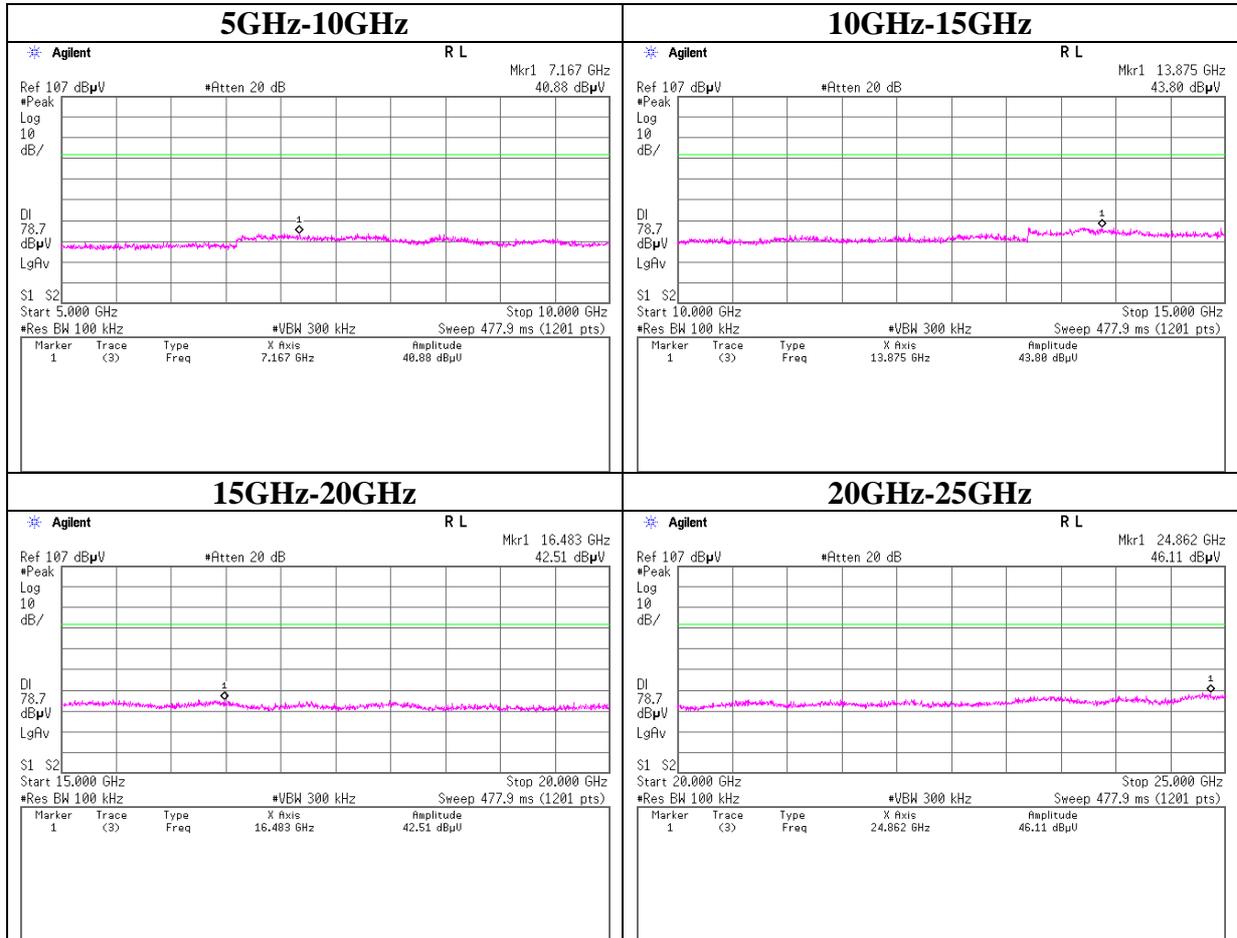
Conducted Spurious Emission

Tx 3DH5 2402MHz



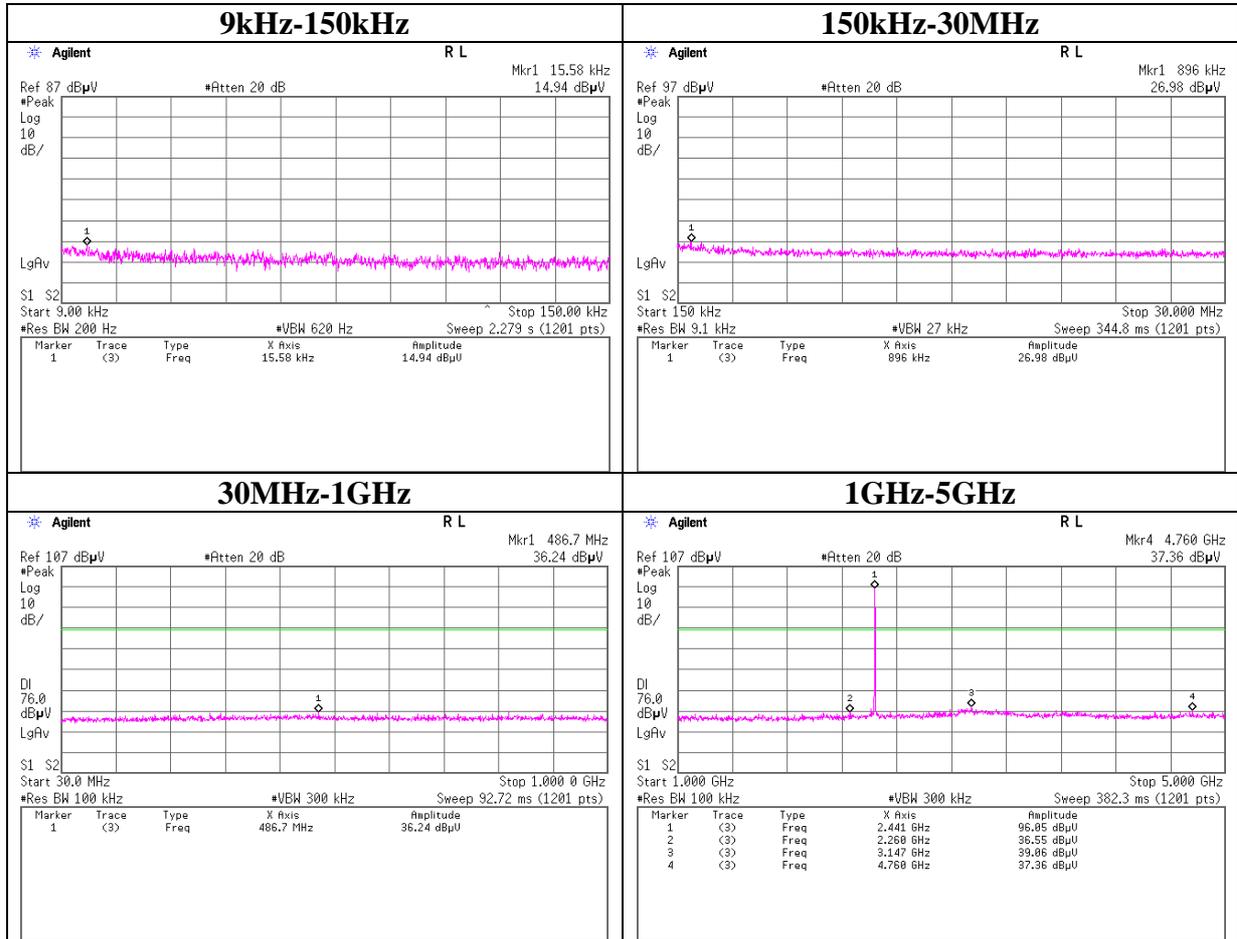
Conducted Spurious Emission

Tx 3DH5 2402MHz



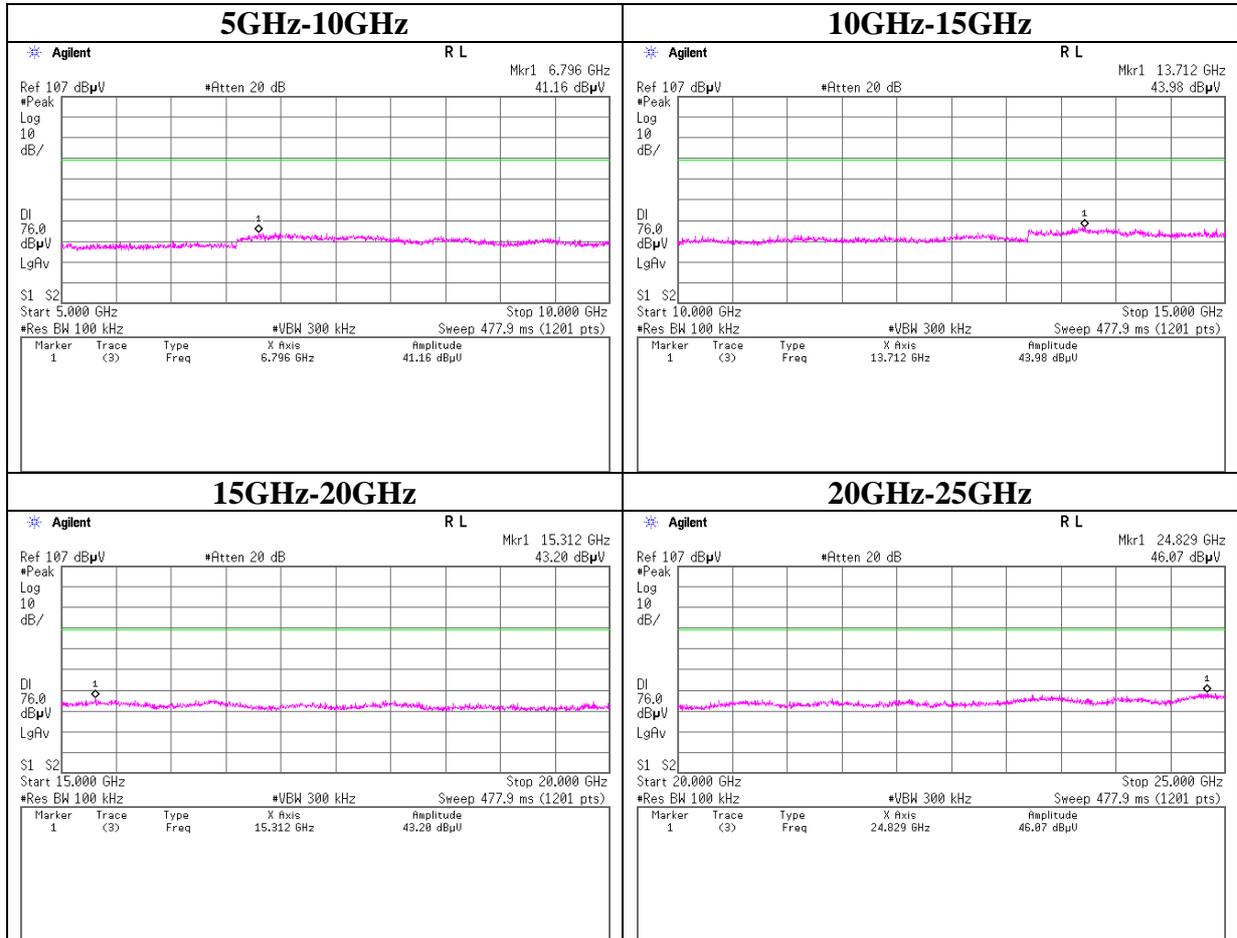
Conducted Spurious Emission

Tx 3DH5 2441MHz



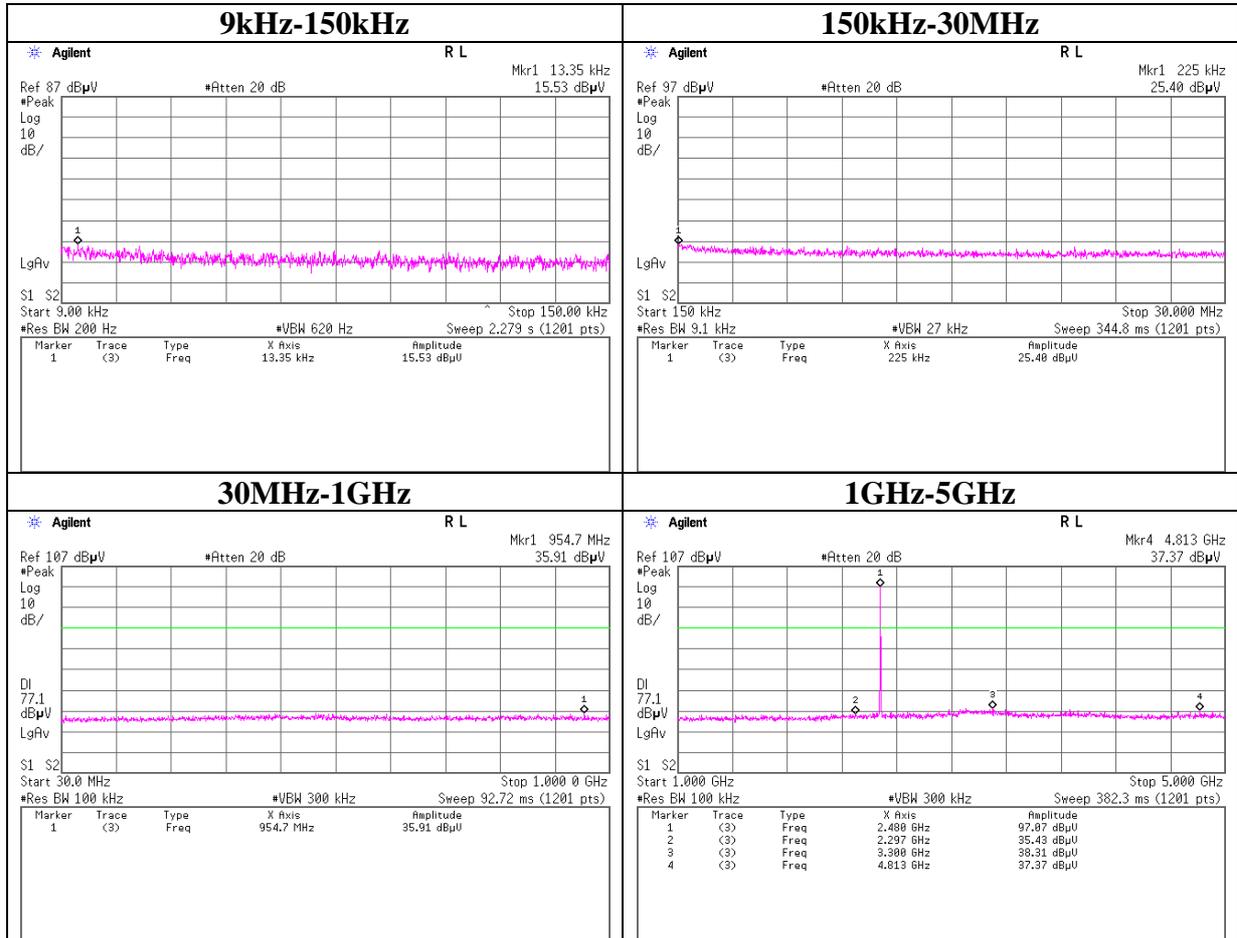
Conducted Spurious Emission

Tx 3DH5 2441MHz



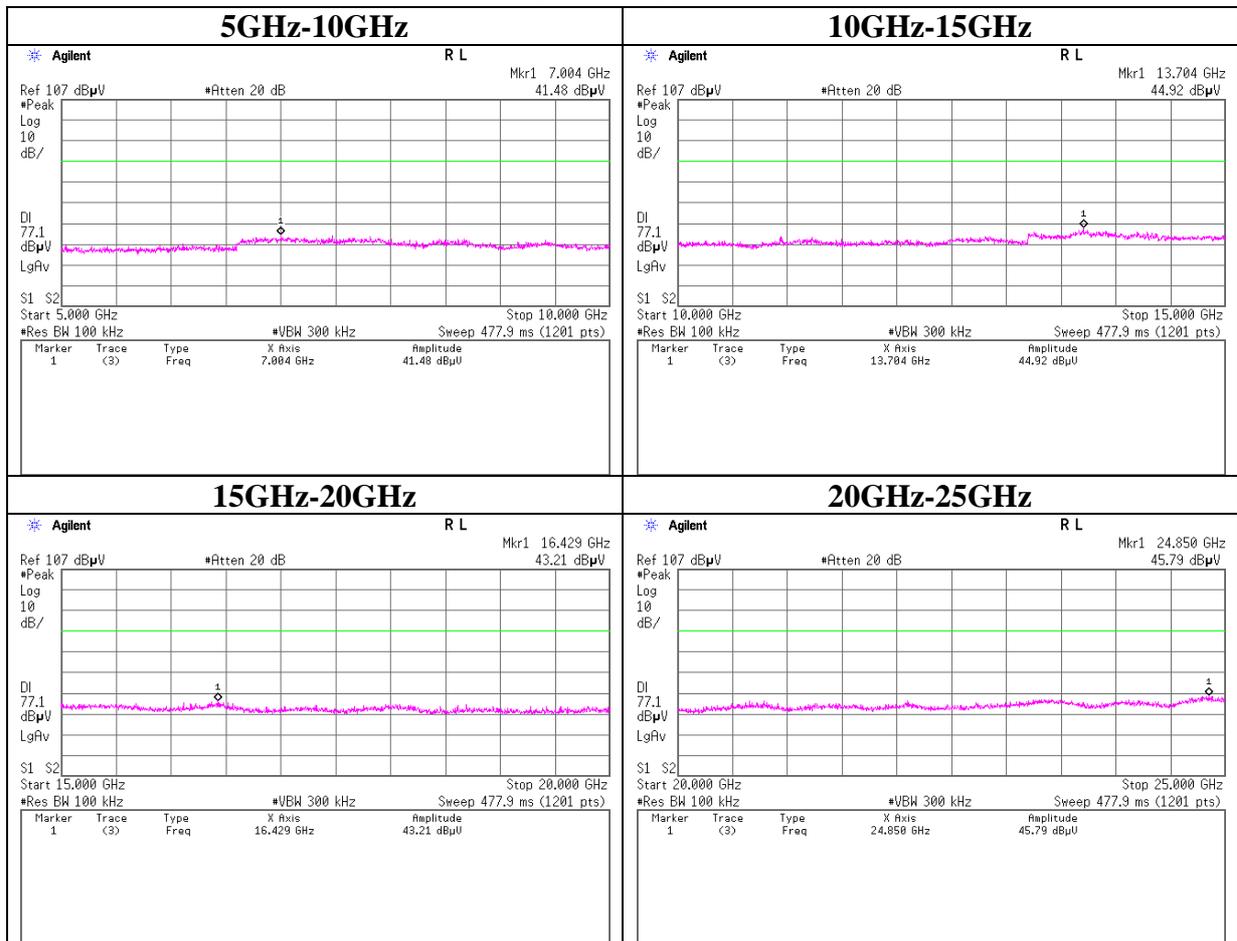
Conducted Spurious Emission

Tx 3DH5 2480MHz



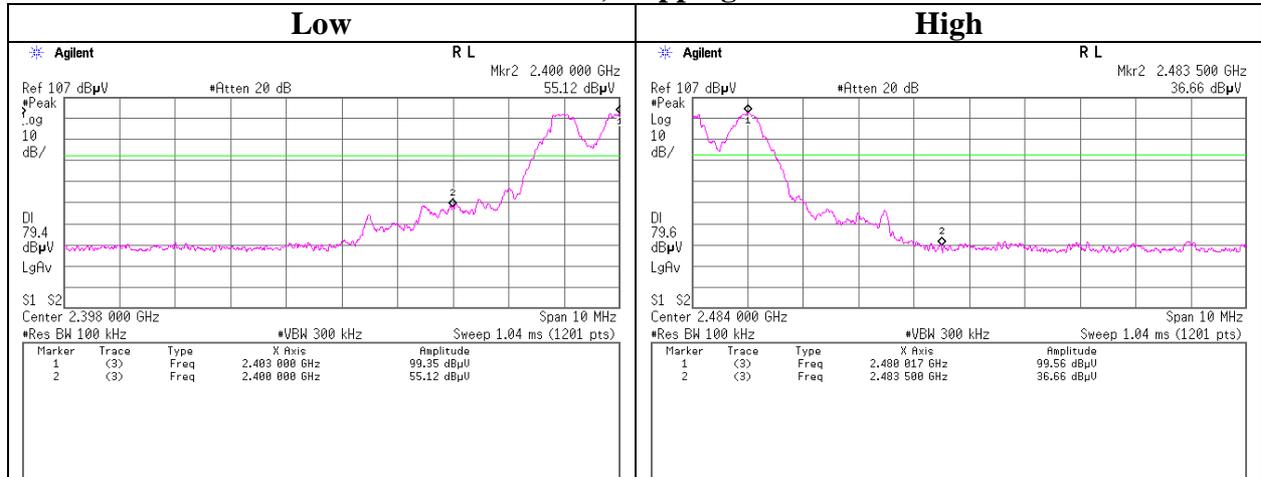
Conducted Spurious Emission

Tx 3DH5 2480MHz

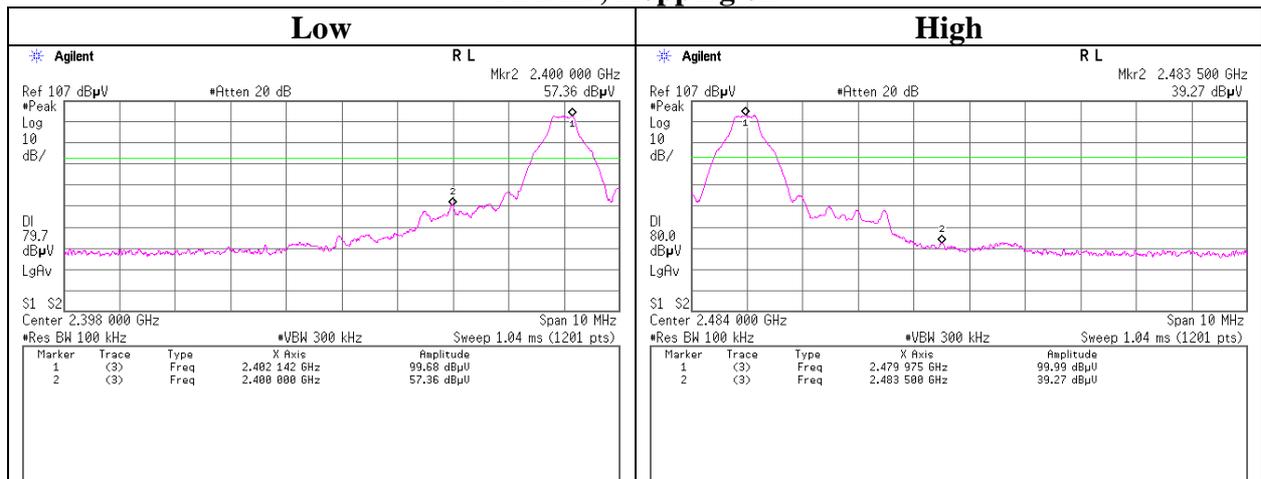


Conducted Emission Band Edge compliance

Tx DH5, Hopping on

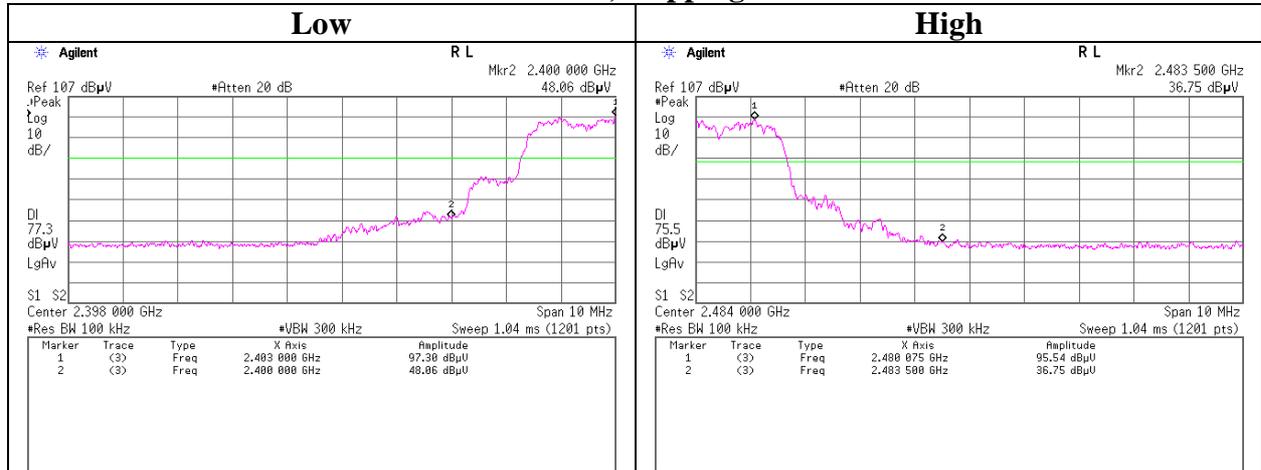


Tx DH5, Hopping off

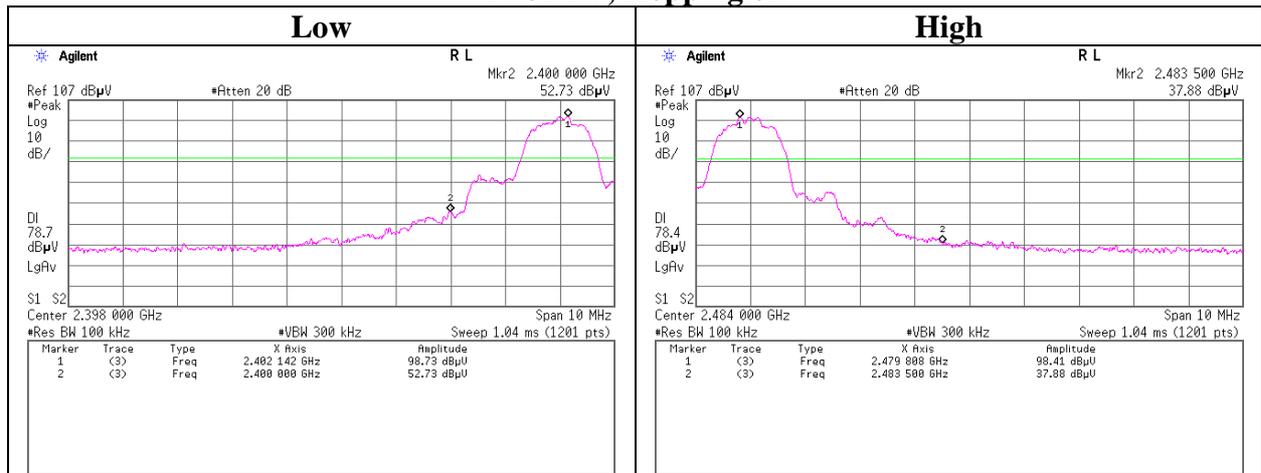


Conducted Emission Band Edge compliance

Tx 3DH5, Hopping on



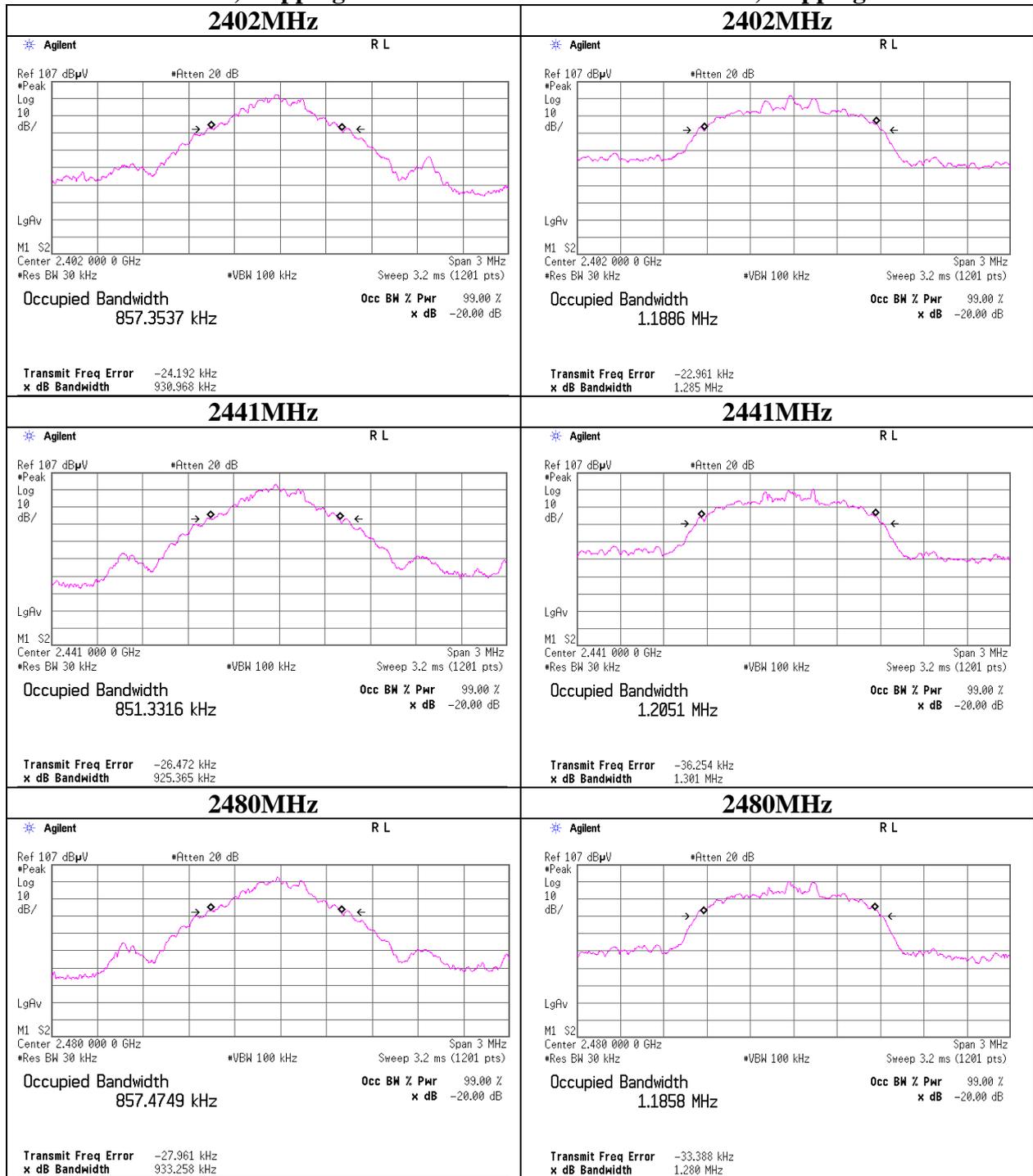
Tx 3DH5, Hopping off



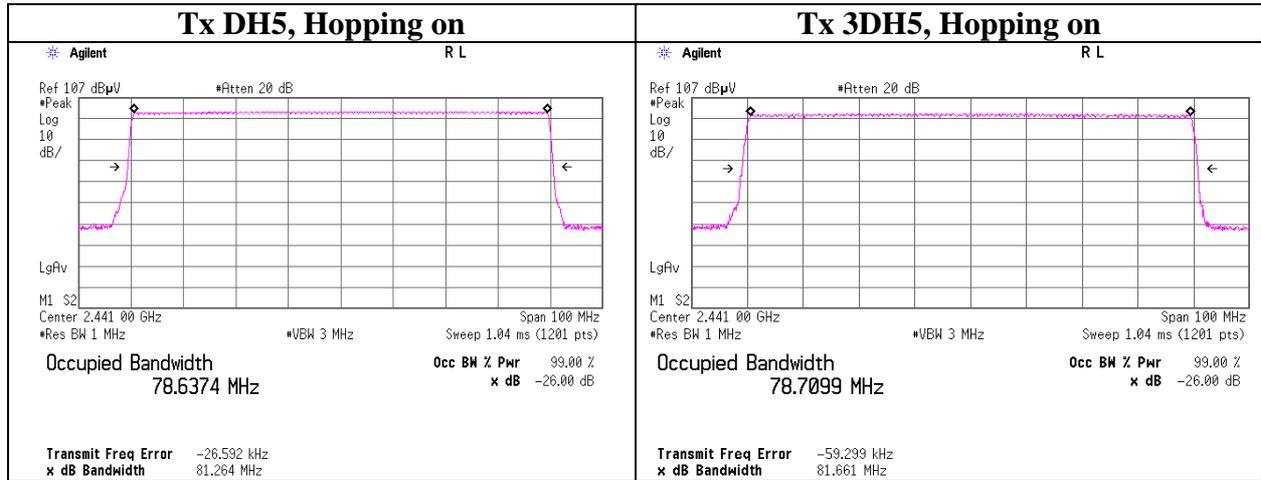
99% Occupied Bandwidth

Tx DH5, Hopping off

Tx 3DH5, Hopping off



99% Occupied Bandwidth



APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE/CE	2012/06/29 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE/CE	2012/02/06 * 12
MJM-14	Measure	KOMELON	KMC-36	-	RE/CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	RE/CE	2012/04/06 * 12
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2012/02/22 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2012/01/25 * 12
MHA-02	Horn Antenna 18-26.5GHz	EMCO	3160-09	1265	RE	2012/02/22 * 12
MCC-132	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336161/4(1m) / 340639(5m)	RE	2012/09/05 * 12
MHF-06	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	RE	2012/05/30 * 12
MAT-24	Attenuator(10dB) (above1GHz)	Agilent	8493C	71389	RE	2012/06/27 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	CE/RE	2012/04/03 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(EUT)	2012/02/06 * 12
MTA-31	Terminator	TME	CT-01	-	CE	2012/01/11 * 12
MCC-13	Coaxial Cable	Fujikura	3D-2W(12m)/ 5D-2W(5m)/ 5D-2W(0.8m)/ 5D-2W(1m)	-	CE	2012/02/16 * 12
MAT-65	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2012/01/28 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	2012/10/08 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2012/10/08 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2012/02/16 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2012/11/06 * 12
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2012/09/11 * 12
MOS-04	Digital Humidity Indicator	N.T	NT-1800	MOS04	AT	2012/02/06 * 12
MBM-11	Barometer	Sunoh	SBR121	839	AT	2010/12/13 * 36
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	AT	2012/02/03 * 12
MFC-01	Microwave Counter	Advantest	R5373	120100309	AT	2012/08/16 * 12
MPSE-18	Power sensor	Anritsu	MA2411B	0738174	AT	2011/11/07 * 12 *1)
MPM-13	Power Meter	Anritsu	ML2495A	0824014	AT	2011/11/07 * 12 *1)
MCC-103	Microwave Cable	Hirose Electric	U.FL-2LP-066J1-A(200)	-	AT	2012/06/27 * 12
MAT-25	Attenuator(10dB) (above1GHz)	Agilent	8493C	71642	AT	2012/06/27 * 12

*1) This test equipment was used for the tests before the expiration date of the calibration.

The expiration date of the calibration is the end of the expired month.

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

Test Item: CE: Conducted Emission

RE: Radiated Emission

AT: Antenna Terminal Conducted test

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