



RADIO TEST REPORT

Test Report No. : 32BE0278-HO-B

Applicant : SAMSUNG ELECTRONICS CO., LTD.
Type of Equipment : Cellular/PCS GSM/GPRS/EDGE Tablet with 802.11abgn, BT3.0
Model No. : SC-02D
FCC ID : A3LSWDSC02D
Test regulation : FCC Part 15 Subpart C: 2011
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: September 29 to October 7, 2011

Representative test engineer:

T. Shimada

Takumi Shimada

Engineer of WiSE Japan,
UL Verification Service

Approved by:

T. Hatakeda

Takahiro Hatakeda

Leader of WiSE Japan,
UL Verification Service



NVLAP LAB CODE: 200572-0

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 : SAMSUNG ELECTRONICS CO., LTD.
Address : 416, MAETAN 3-DONG, YEONGTONG-GU SUWON-CITY,
GYEONGGI-DO 443-742, SOUTH KOREA

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

2.1 Identification of E.U.T.

Type of Equipment : Cellular/PCS GSM/GPRS/EDGE Tablet with 802.11abgn, BT3.0
Model No. : SC-02D
Serial No. : Refer to Section 4, Clause 4.2
Rating : DC4.0V
Receipt Date of Sample : September 27, 2011
Modification of EUT : No Modification by the test lab

2.2 Product Description

Radio Specification

Bluetooth

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Type of Modulation	FHSS
Bandwidth & Channel spacing	1MHz & 1MHz
Antenna Type	PIFA
Antenna Gain	-0.63 dBi

WLAN (IEEE802.11a/b/g/n-20)

Equipment Type	Transceiver	
Frequency of Operation	2412-2462MHz	5180-5240MHz 5260-5320MHz 5500-5700MHz 5745-5825MHz
Type of Modulation	DSSS, OFDM	OFDM
Bandwidth & Channel spacing	20MHz & 5MHz	20MHz & 20MHz
Antenna Type	SEMI-PIFA	
Antenna Gain	2.4G: -0.4dBi	5G: -3.8dBi

WLAN (IEEE802.11n-40)

Equipment Type	Transceiver
Frequency of Operation	5190-5230MHz 5270-5310MHz 5510-5670MHz 5755-5795MHz
Type of Modulation	OFDM
Bandwidth & Channel spacing	40MHz & 40MHz
Antenna Type	SEMI-PIFA
Antenna Gain	-3.8dBi

UL Japan, Inc.

Head Office EMC Lab.

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GSM

Equipment Type	Transceiver
Frequency of Operation	[Up Link] GSM850: 824 – 849MHz PCS: 1850 – 1910MHz [Down Link] GSM850: 869 – 894MHz PCS: 1930 – 1990MHz
Type of Modulation	GMSK , 8PSK
Antenna Type	PIFA
Antenna Gain	GSM850: -5.0dBi PCS: -1.5dBi

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

*The EUT complies with FCC Part 15 Subpart B: 2011, final revised on July 8, 2011 and effective August 8, 2011.

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 13.9dB, 25.57310MHz, N AV 18.7dB, 25.57310MHz, 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)		-	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	5.5dB 43.370MHz, QP, 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.

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	4.2dB	5.0dB	5.1dB	5.6dB	5.9dB	4.4dB	4.3dB
No.2	4.1dB	5.2dB	5.1dB	5.7dB	5.8dB	4.3dB	4.2dB
No.3	4.5dB	5.0dB	5.2dB	5.7dB	5.8dB	4.5dB	4.2dB
No.4	4.7dB	5.2dB	5.2dB	5.7dB	5.8dB	5.1dB	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

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

3.5 Test Location

UL Japan, Inc. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116 Facsimile : +81 596 24 8124

	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
Inquiry

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 20dB Bandwidth	Tx (Hopping on) DH5, 3DH5 Inquiry	2402MHz 2441MHz 2480MHz
Number of Hopping Frequency	Tx (Hopping on) DH5, 3DH5 Inquiry	-
Dwell time	Tx (Hopping on), -DH1, DH3, DH5 -3DH1, 3DH3, 3DH5 Inquiry	-
Maximum Peak Output Power	Tx (Hopping off) DH5, 3DH5 Inquiry	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
*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) *The EUT support AFH with a minimum of 20 channels, following the Bluetooth protocol to ensure compliance with the pseudo-hopping sequence and dwell time requirements of FCC 15.247.		

***Power of the EUT was set by the software as follows:**

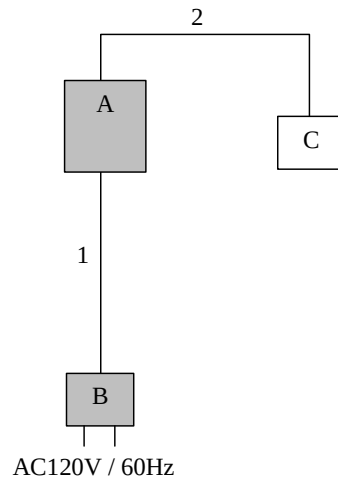
Power settings: Maximum power of the EUT was transmitted on Bluetooth testing mode.
Software: HW: REV0.0, SW: N024.001

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.

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 and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Cellular/PCS GSM/GPRS/EDGE Tablet with 802.11abgn, BT3.0	SC-02D	R24B976664D *1) R24B976670T *2)	SAMSUNG	EUT
B	AC Adapter	SC02	-	SAMSUNG	EUT
C	Ear phone	-	-	SAMSUNG	-

*1) Used for Antenna Terminal conducted test

*2) Used for Conducted Emission and Radiated Emission tests

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB Cable	1.0	Shielded	Shielded	-
2	Ear phone Cable	1.2	Unshielded	Unshielded	-

SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a urethane platform of nominal size, 0.5m by 1.0m, 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, 0.5m by 1.0m, 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	Below 30MHz	30MHz to 300MHz	300MHz to 1GHz	Above 1GHz
Antenna Type	Loop	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) The test was performed with VBW 10Hz since the EUT had no intervals during which the transmitter was off (see Appendix)

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

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

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	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak	-	Power Meter (Sensor: 50MHz BW)
Carrier Frequency Separation	3MHz / 5MHz	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 *1)	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	20MHz	300kHz	1MHz	Auto	Peak	Max Hold	Spectrum Analyzer
*1) 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

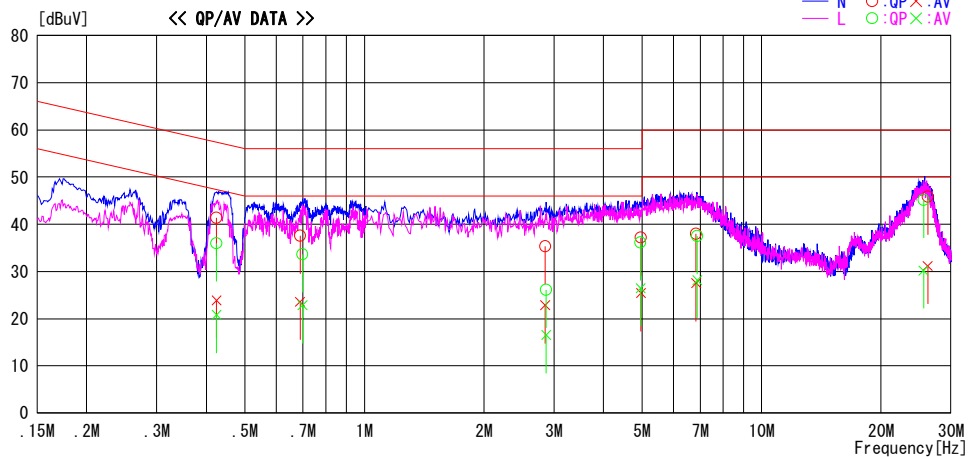
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2011/10/06

Report No. : 32BE0278-H0

Temp./Humi. : 24deg.C / 52%RH
Engineer : Hisayoshi Sato

Mode / Remarks : Tx BT 2441MHz DH5

LIMIT : FCC15.207 QP
FCC15.207 AV

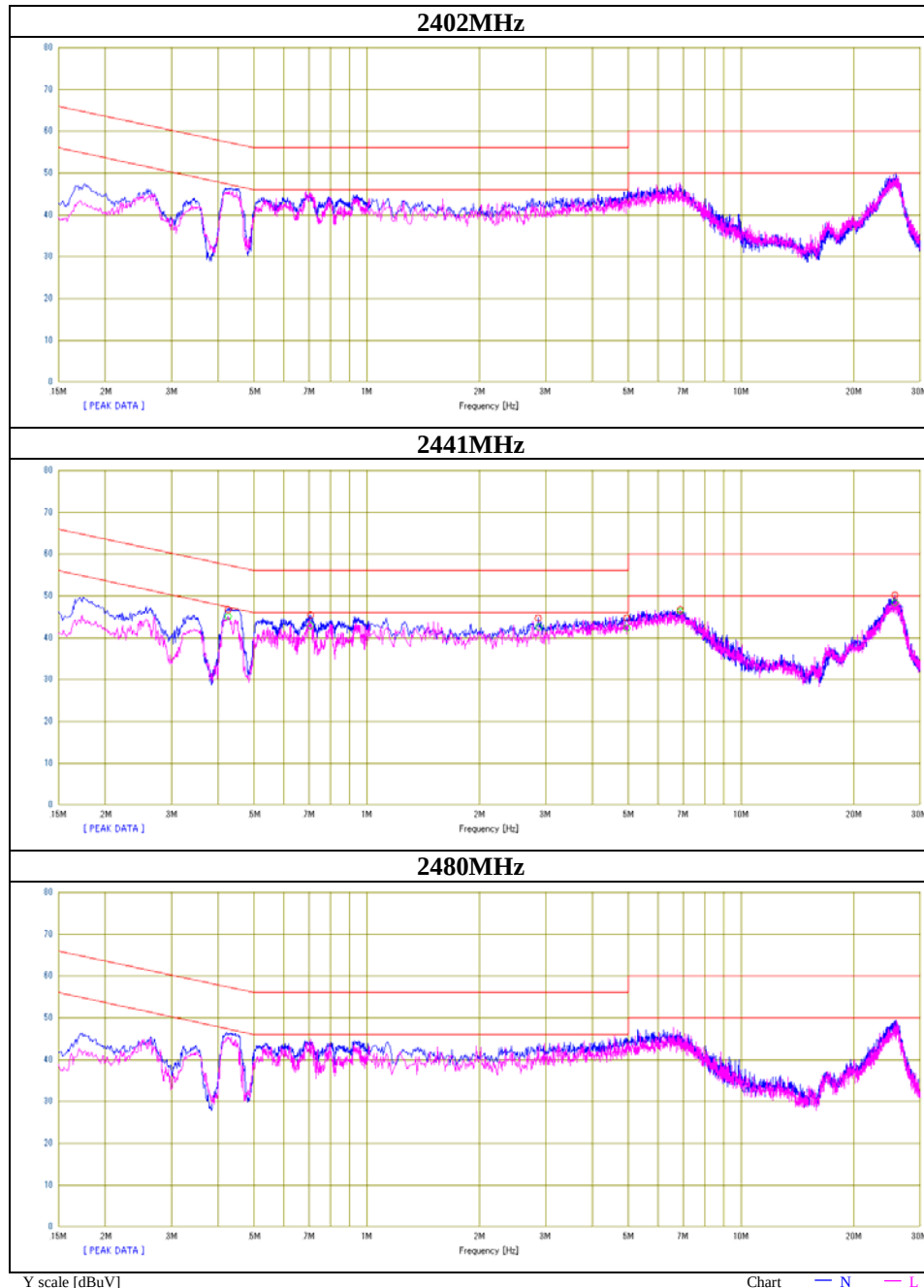


Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV		QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.42434	28.1	10.6	13.3	41.4	23.9	57.4	47.4	16.0	23.5	N	
0.68892	24.1	10.1	13.5	37.6	23.6	56.0	46.0	18.4	22.4	N	
2.85110	21.4	8.9	13.9	35.3	22.8	56.0	46.0	20.7	23.2	N	
4.96940	22.7	10.9	14.5	37.2	25.4	56.0	46.0	18.8	20.6	N	
6.84110	23.2	12.7	14.8	38.0	27.5	60.0	50.0	22.0	22.5	N	
26.18904	27.5	12.9	18.3	45.8	31.2	60.0	50.0	14.2	18.8	N	
0.42406	22.7	7.5	13.3	36.0	20.8	57.4	47.4	21.4	26.6	L	
0.69842	20.1	9.3	13.5	33.6	22.8	56.0	46.0	22.4	23.2	L	
2.86918	12.2	2.6	13.9	26.1	16.5	56.0	46.0	29.9	29.5	L	
4.95701	21.6	12.0	14.5	36.1	26.5	56.0	46.0	19.9	19.5	L	
6.88830	22.7	13.4	14.8	37.5	28.2	60.0	50.0	22.5	21.8	L	
25.56500	27.0	12.0	18.2	45.2	30.2	60.0	50.0	14.8	19.8	L	

CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT=READING+C.F(LISN LOSS + ATT 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.	32BE0278-HO
Date	10/06/2011
Temperature/ Humidity	24 deg.C./ 52%
Engineer	Hisayoshi Sato
Mode	Tx DH5



Conducted Emission

DATA OF CONDUCTED EMISSION TEST

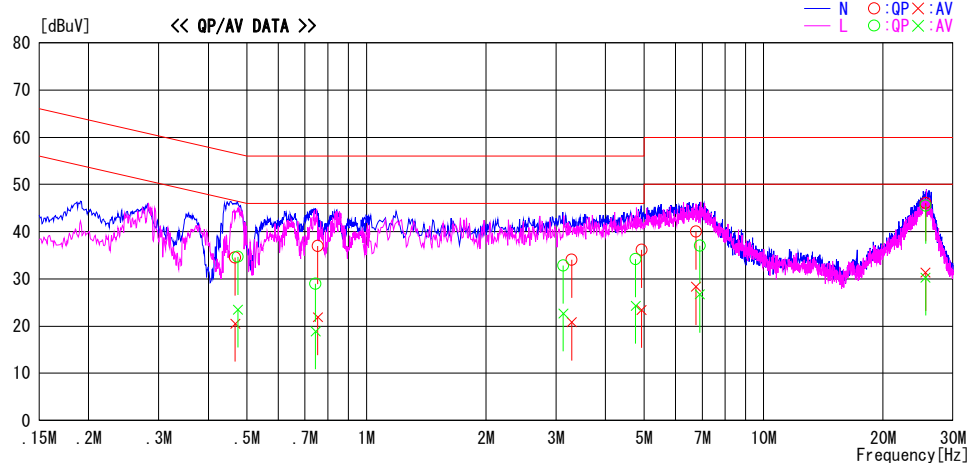
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2011/10/06

Report No. : 32BE0278-H0

Temp./Humi. : 24deg.C / 52%RH
Engineer : Hisayoshi Sato

Mode / Remarks : Tx BT 2441MHz 3DH5

LIMIT : FCC15.207 QP
FCC15.207 AV

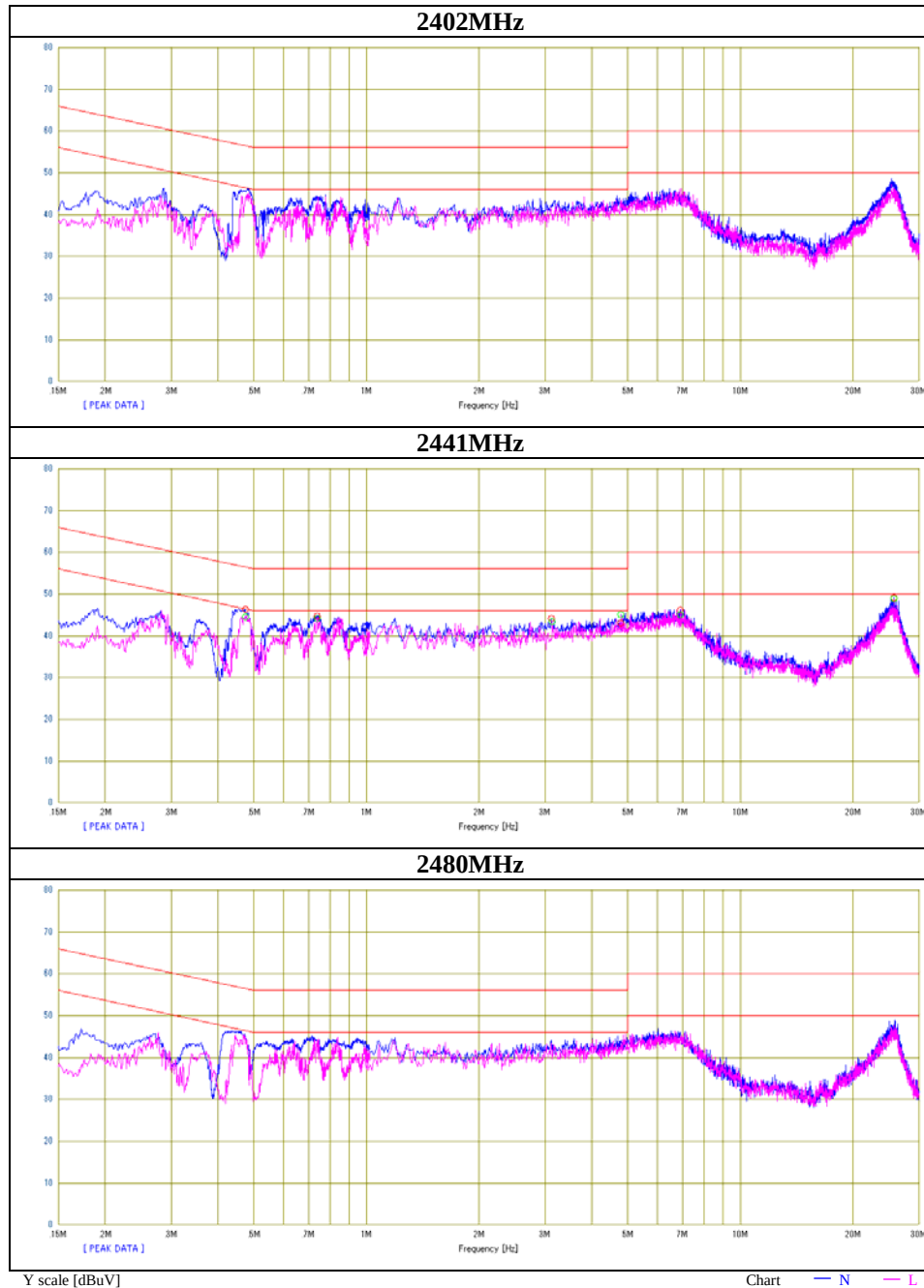


Frequency [MHz]	Reading Level		Corr. Factor [dB]	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.46749	21.2	7.2	13.3	34.5	20.5	56.6	46.6	22.1	26.1	N	
0.75448	23.4	8.4	13.5	36.9	21.9	56.0	46.0	19.1	24.1	N	
3.28752	20.1	6.9	13.9	34.0	20.8	56.0	46.0	22.0	25.2	N	
4.93240	21.6	8.9	14.5	36.1	23.4	56.0	46.0	19.9	22.6	N	
6.75761	25.3	13.6	14.7	40.0	28.3	60.0	50.0	20.0	21.7	N	
25.57310	27.9	13.1	18.2	46.1	31.3	60.0	50.0	13.9	18.7	N	
0.47454	21.4	10.2	13.3	34.7	23.5	56.4	46.4	21.7	22.9	L	
0.74510	15.4	5.4	13.5	28.9	18.9	56.0	46.0	27.1	27.1	L	
3.13412	18.9	8.8	13.9	32.8	22.7	56.0	46.0	23.2	23.3	L	
4.76330	19.9	10.0	14.3	34.2	24.3	56.0	46.0	21.8	21.7	L	
6.90621	22.2	11.9	14.8	37.0	26.7	60.0	50.0	23.0	23.3	L	
25.57300	27.3	12.1	18.2	45.5	30.3	60.0	50.0	14.5	19.7	L	

CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT=READING+C.F(LISN LOSS + ATT 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.	32BE0278-HO
Date	10/06/2011
Temperature/ Humidity	24 deg.C./ 52%
Engineer	Hisayoshi Sato
Mode	Tx 3DH5



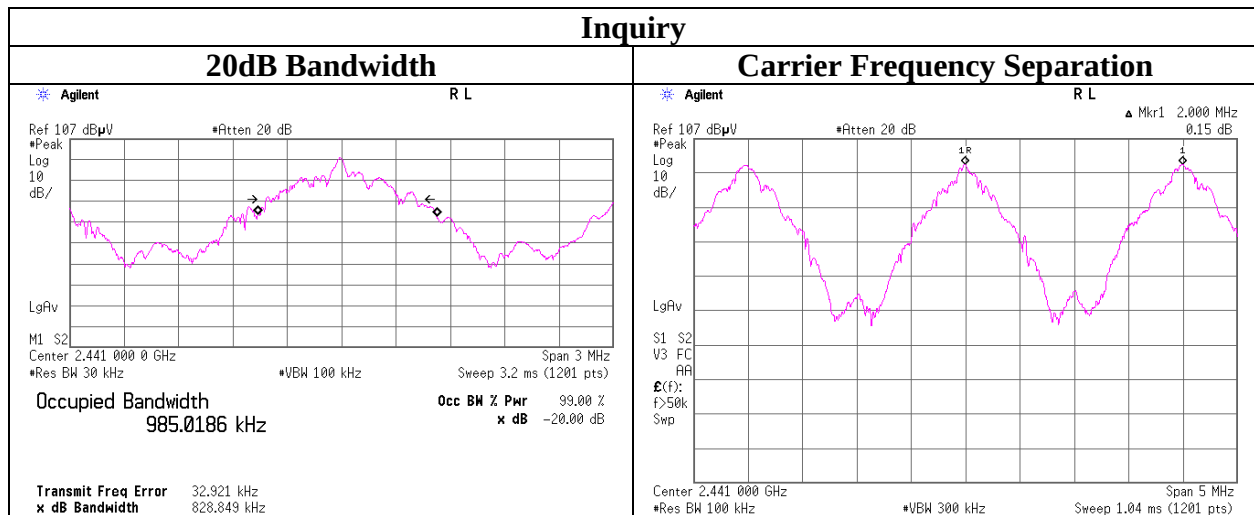
20dB Bandwidth and Carrier Frequency Separation

Test place	Head Office EMC Lab. No.7 Shielded Room
Report No.	32BE0278-HO
Date	10/07/2011
Temperature/ Humidity	25 deg.C/ 44% RH
Engineer	Takayuki Shimada
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

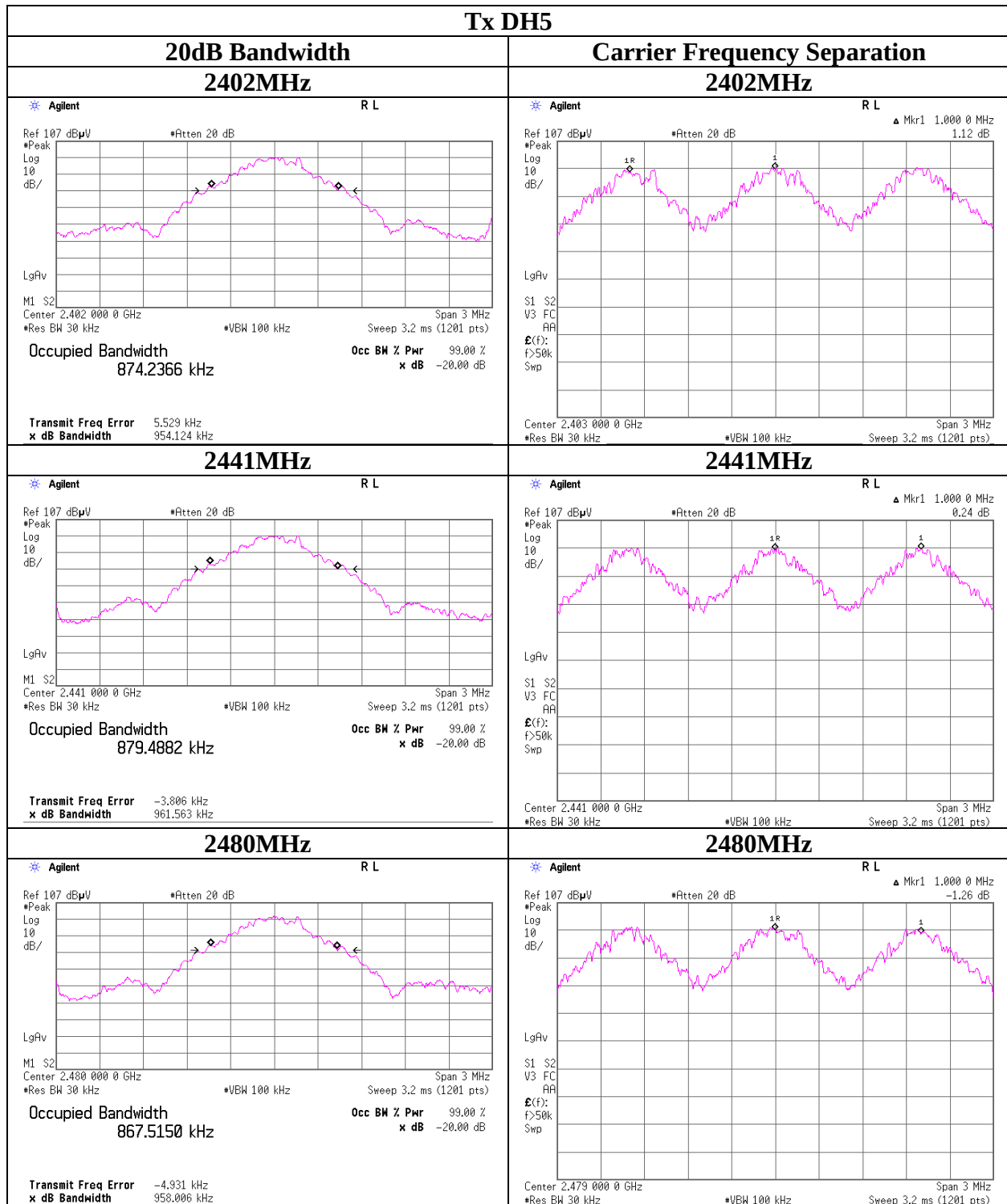
Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.954	1.000	>= 0.636
DH5	2441.0	0.962	1.000	>= 0.641
DH5	2480.0	0.958	1.000	>= 0.639
3DH5	2402.0	1.285	1.000	>= 0.857
3DH5	2441.0	1.291	1.000	>= 0.861
3DH5	2480.0	1.282	1.000	>= 0.855
Inquiry	2441.0	0.829	2.000	>= 0.553

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

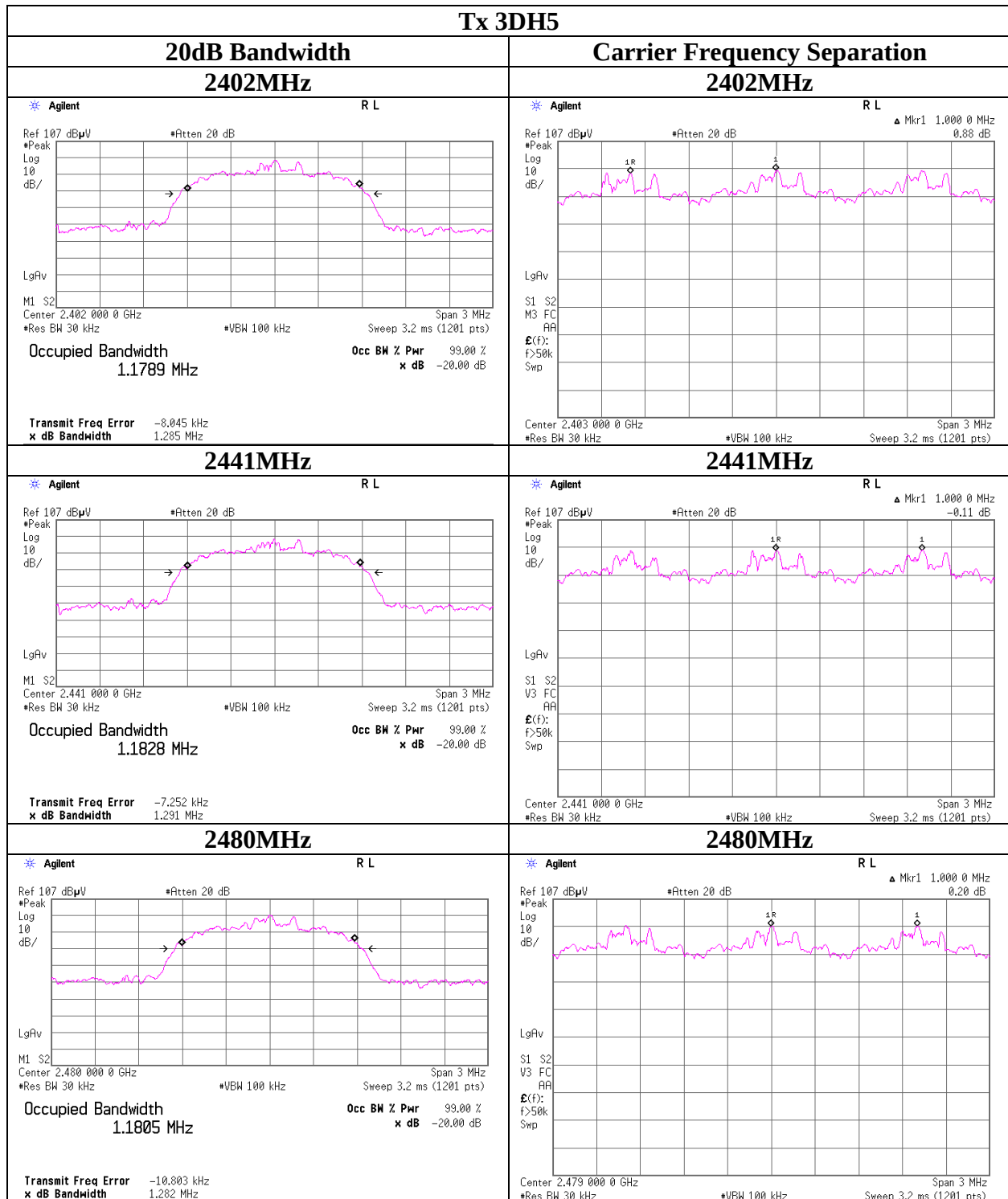
No limit applies to 20dB Bandwidth.



20dB Bandwidth and Carrier Frequency Separation



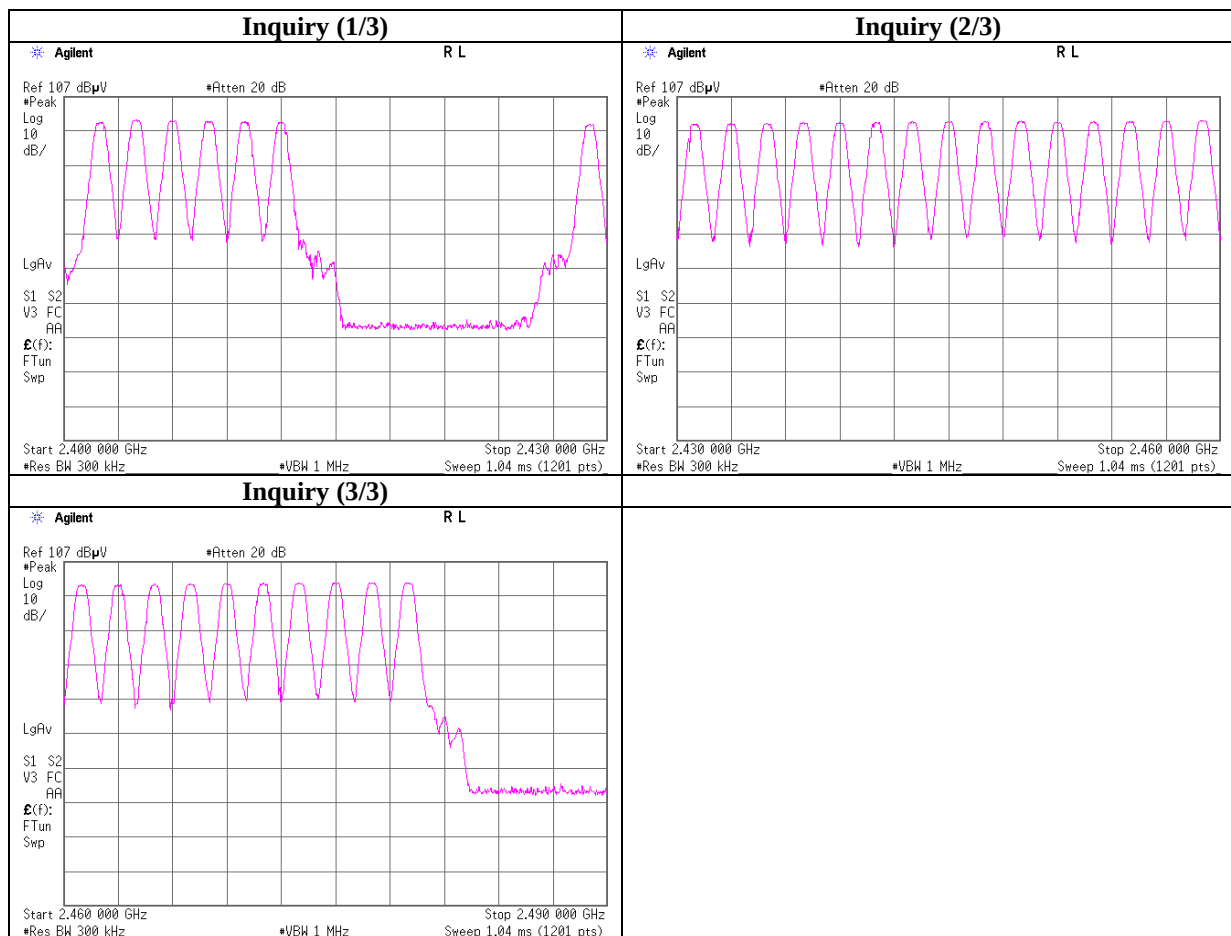
20dB Bandwidth and Carrier Frequency Separation



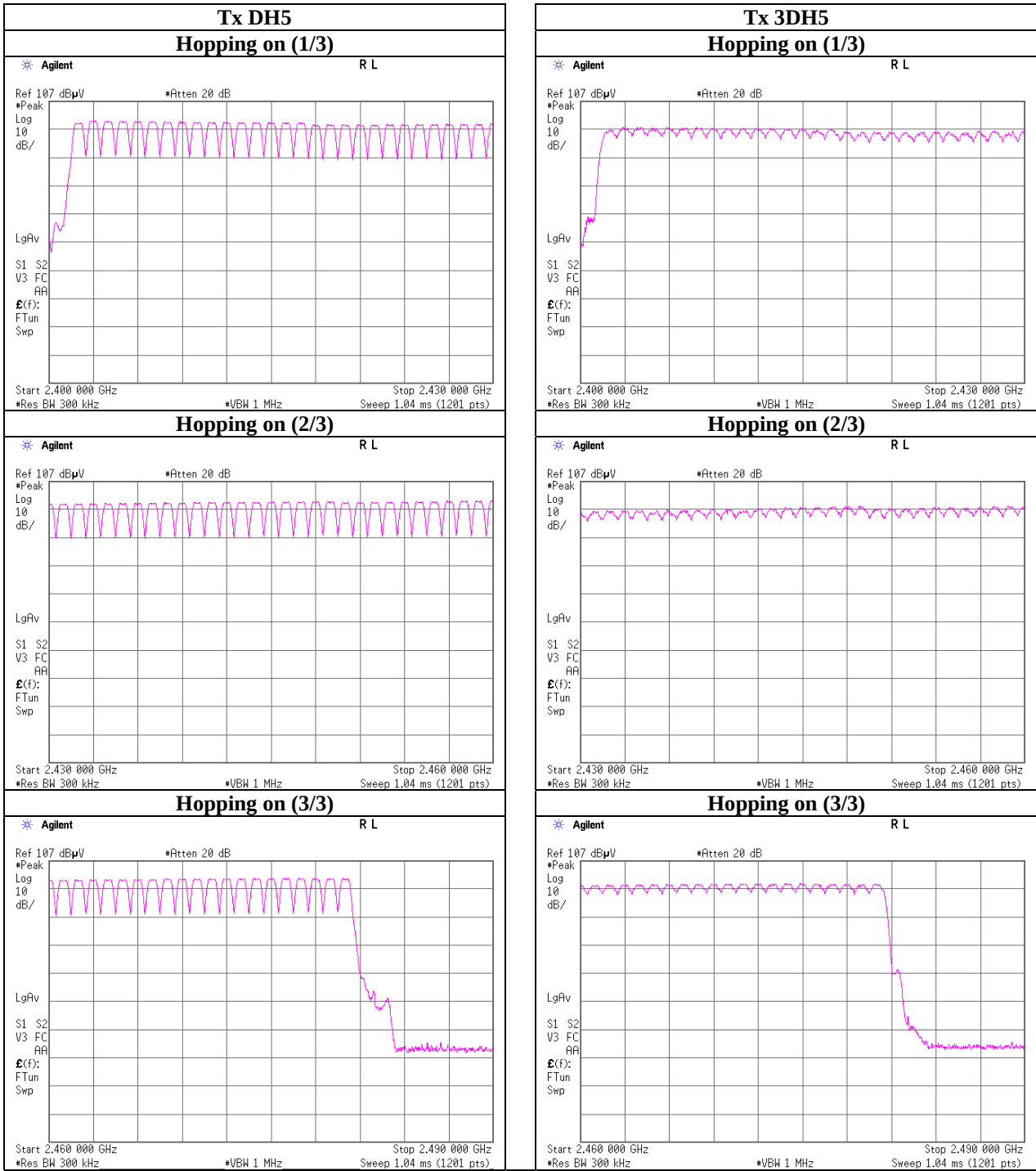
Number of Hopping Frequency

Test place	Head Office EMC Lab. No.7 Shielded Room
Report No.	32BE0278-HO
Date	10/07/2011
Temperature/ Humidity	25 deg.C/ 44% RH
Engineer	Takayuki Shimada
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

Mode	Number of channel [times]	Limit [times]
DH5	79	>= 15
3DH5	79	>= 15
Inquiry	32	>= 15



Number of Hopping Frequency



Dwell time

Test place Head Office EMC Lab. No.7 Shielded Room
Report No. 32BE0278-HO
Date 10/07/2011
Temperature/ Humidity 25 deg.C/ 44% RH
Engineer Takayuki Shimada
Mode Tx (Hopping on) DH5/3DH5/Inquiry

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	50.2 times	/	5 sec. x	31.6 sec. = 318 times	0.431	137	400
DH3	26.8 times	/	5 sec. x	31.6 sec. = 170 times	1.692	288	400
DH5	20.2 times	/	5 sec. x	31.6 sec. = 128 times	2.953	378	400
3DH1	50.2 times	/	5 sec. x	31.6 sec. = 318 times	0.444	141	400
3DH3	25.0 times	/	5 sec. x	31.6 sec. = 158 times	1.695	268	400
3DH5	20.0 times	/	5 sec. x	31.6 sec. = 127 times	2.948	374	400
Inquiry	100.0 times	/	1 sec. x	12.8 sec. = 1280 times	0.130	166	400

Sample Calculation

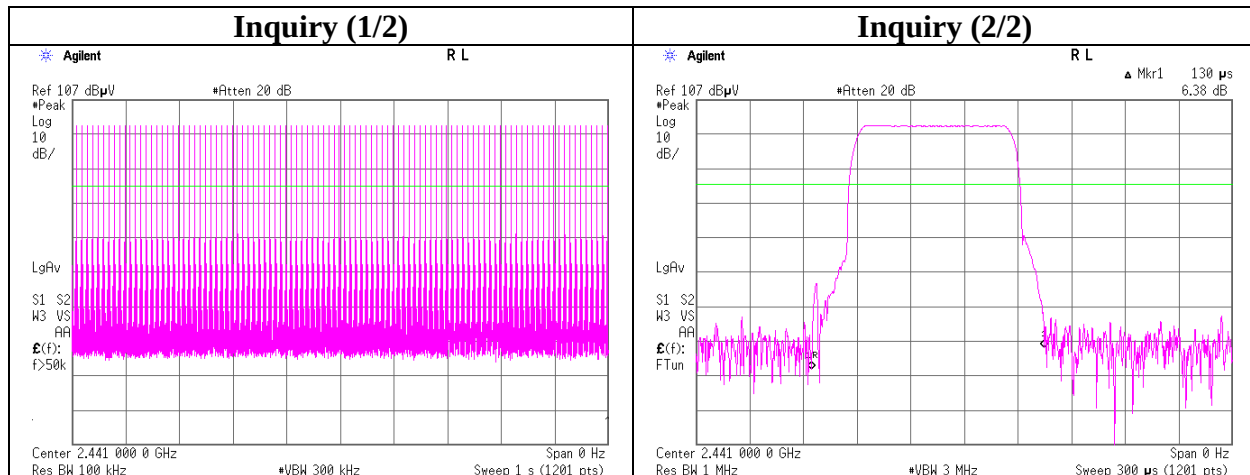
Result = Number of transmission x Length of transmittion time

*Average data of 5 tests.(except Inquiry)

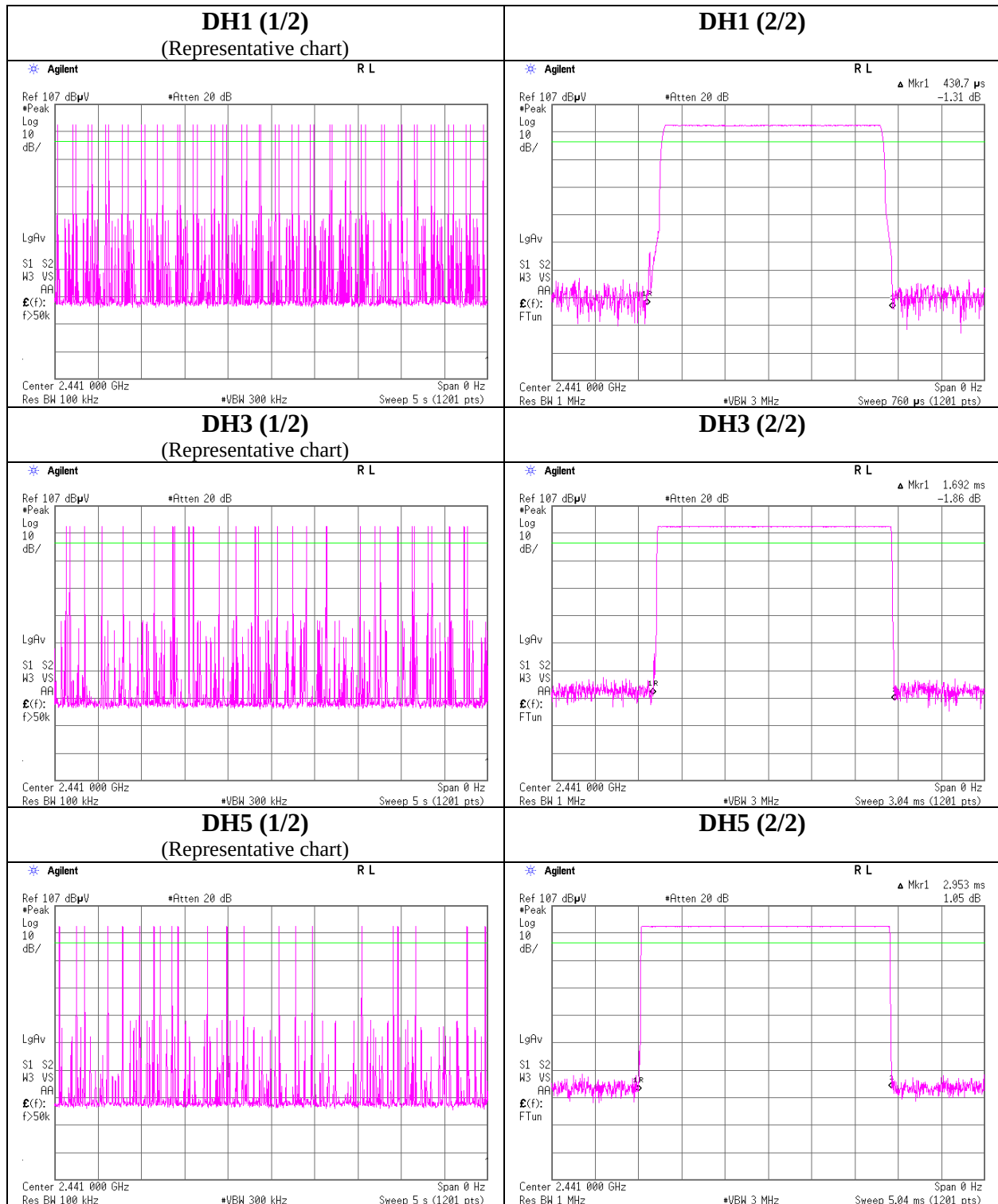
Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	51	49	51	50	50	50.2
DH3	29	28	26	26	25	26.8
DH5	22	19	19	20	21	20.2
3DH1	49	49	50	51	52	50.2
3DH3	25	24	25	25	26	25
3DH5	20	21	19	19	21	20

Sample Calculation

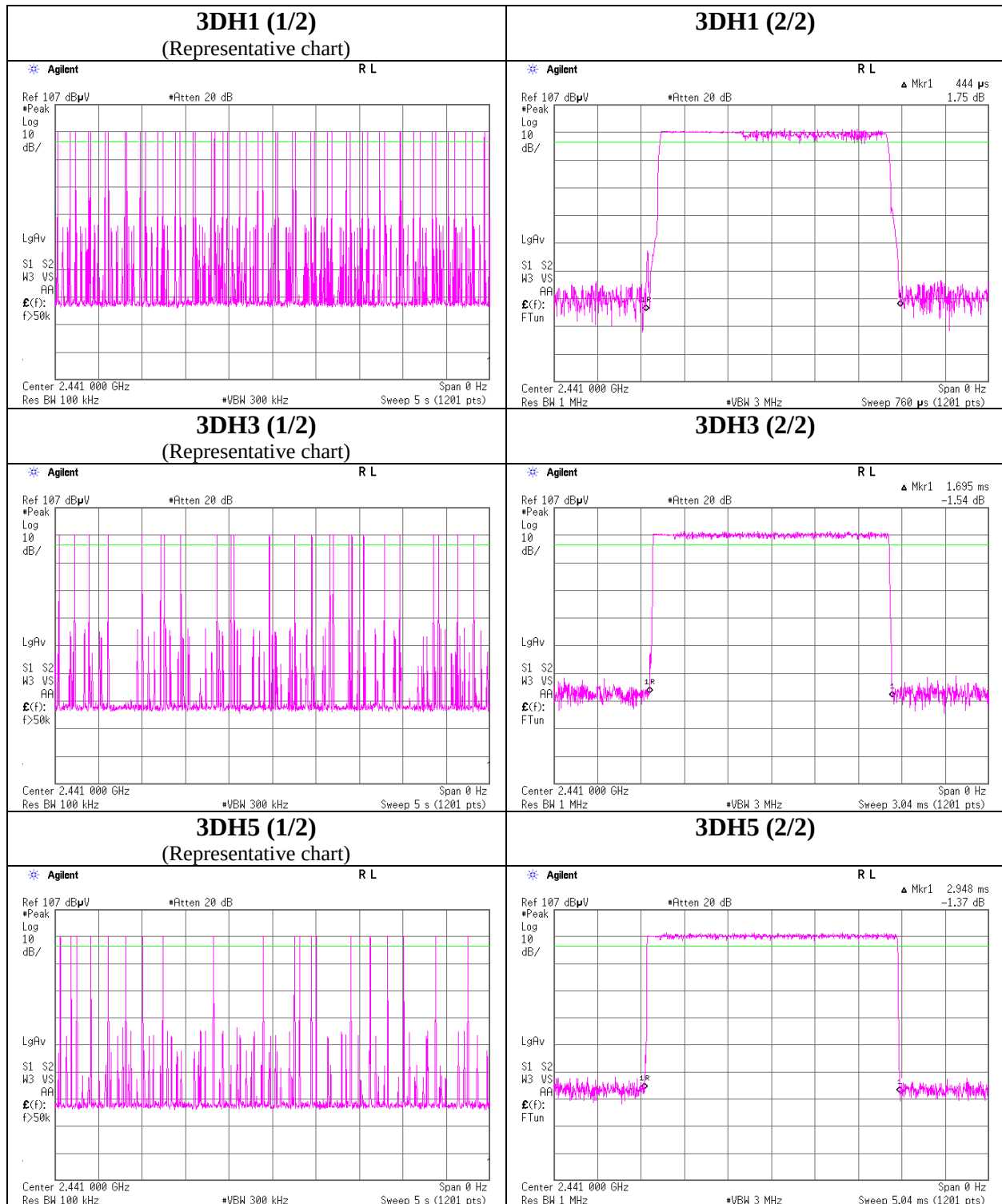
Average= Summation(Sampling 1 to 5) / 5



Dwell time



Dwell time



Maximum Peak Output Power

Test place Head Office EMC Lab. No.7 Shielded Room
Report No. 32BE0278-HO
Date 10/07/2011
Temperature/ Humidity 25 deg.C/ 44% RH
Engineer Takayuki Shimada
Mode Tx (Hopping on) DH5/3DH5/Inquiry

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-7.49	4.30	10.01	6.82	4.81	20.97	125	14.15
DH5	2441.0	-7.51	4.32	10.01	6.82	4.81	20.97	125	14.15
DH5	2480.0	-6.21	4.33	10.01	8.13	6.50	20.97	125	12.84
3DH5	2402.0	-8.70	4.30	10.01	5.61	3.64	20.97	125	15.36
3DH5	2441.0	-8.48	4.32	10.01	5.85	3.85	20.97	125	15.12
3DH5	2480.0	-7.20	4.33	10.01	7.14	5.18	20.97	125	13.83
Inquiry	2441.0	-6.18	4.32	10.01	8.15	6.53	20.97	125	12.82

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied)+ 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.	32BE0278-HO		
Date	09/29/2011	10/02/2011	10/02/2011
Temperature/ Humidity	24 deg. C / 58% RH	20 deg. C / 52% RH	20 deg. C / 52% RH
Engineer	Tomohisa Nakagawa (1-10GHz)	Takumi Shimada (10-26.5GHz)	Takumi Shimada (30-1000MHz)
Mode	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	37.487	QP	25.2	15.6	6.8	28.5	19.1	40.0	20.9	
Hori	106.614	QP	29.4	11.1	7.5	28.4	19.6	43.5	23.9	
Hori	177.721	QP	31.6	16.1	8.0	28.1	27.6	43.5	15.9	
Hori	320.012	QP	30.9	14.7	8.9	27.8	26.7	46.0	19.3	
Hori	373.345	QP	31.9	16.4	9.2	28.1	29.4	46.0	16.6	
Hori	480.002	QP	30.1	18.1	9.7	28.7	29.2	46.0	16.8	
Hori	2390.000	PK	38.3	27.4	2.2	32.4	35.5	73.9	38.4	
Hori	2400.000	PK	68.9	27.4	2.2	32.4	66.1	-	-	See 20dBc Data Sheet
Hori	4804.000	PK	39.0	31.3	4.4	31.6	43.1	73.9	30.8	
Hori	7206.000	PK	41.0	35.5	5.2	31.5	50.2	73.9	23.7	
Hori	9608.000	PK	41.7	38.4	5.9	31.9	54.1	73.9	19.8	
Hori	24020.000	PK	46.4	40.5	-1.7	30.5	54.7	73.9	19.2	
Hori	2390.000	AV	32.5	27.4	2.2	32.4	29.7	53.9	24.2	
Hori	2400.000	AV	57.8	27.4	2.2	32.4	55.0	-	-	See 20dBc Data Sheet
Hori	4804.000	AV	28.6	31.3	4.4	31.6	32.7	53.9	21.2	
Hori	7206.000	AV	29.1	35.5	5.2	31.5	38.3	53.9	15.6	
Hori	9608.000	AV	29.8	38.4	5.9	31.9	42.2	53.9	11.7	
Hori	24020.000	AV	34.8	40.5	-1.7	30.5	43.1	53.9	10.9	
Vert	37.340	QP	38.6	15.7	6.8	28.5	32.6	40.0	7.4	
Vert	106.682	QP	30.5	11.1	7.5	28.4	20.7	43.5	22.8	
Vert	177.735	QP	29.7	16.1	8.0	28.1	25.7	43.5	17.8	
Vert	320.003	QP	28.4	14.7	8.9	27.8	24.2	46.0	21.8	
Vert	373.351	QP	28.3	16.4	9.2	28.1	25.8	46.0	20.2	
Vert	480.017	QP	29.0	18.1	9.7	28.7	28.1	46.0	17.9	
Vert	2390.000	PK	38.2	27.4	2.2	32.4	35.4	73.9	38.5	
Vert	2400.000	PK	68.6	27.4	2.2	32.4	65.8	-	-	See 20dBc Data Sheet
Vert	4804.000	PK	41.2	31.3	4.4	31.6	45.3	73.9	28.6	
Vert	7206.000	PK	40.9	35.5	5.2	31.5	50.1	73.9	23.8	
Vert	9608.000	PK	41.8	38.4	5.9	31.9	54.2	73.9	19.7	
Vert	24020.000	PK	46.2	40.5	-1.7	30.5	54.5	73.9	19.4	
Vert	2390.000	AV	32.4	27.4	2.2	32.4	29.6	53.9	24.3	
Vert	2400.000	AV	56.9	27.4	2.2	32.4	54.1	-	-	See 20dBc Data Sheet
Vert	4804.000	AV	28.6	31.3	4.4	31.6	32.7	53.9	21.2	
Vert	7206.000	AV	29.1	35.5	5.2	31.5	38.3	53.9	15.6	
Vert	9608.000	AV	29.8	38.4	5.9	31.9	42.2	53.9	11.7	
Vert	24020.000	AV	34.8	40.5	-1.7	30.5	43.1	53.9	10.8	

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 20dBc Data Sheet

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	32BE0278-HO
Date	09/29/2011
Temperature/ Humidity	24 deg. C / 58% RH
Engineer	Tomohisa Nakagawa (1-10GHz)
Mode	DH5 2402MHz

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2402.000	PK	109.5	27.4	2.2	32.4	106.7	-	-	Carrier
	2440.000	PK	66.3	27.4	2.2	32.4	63.5	86.7	23.2	
Vert	2402.000	PK	109.5	27.4	2.2	32.4	106.7	-	-	Carrier
	2440.000	PK	65.6	27.4	2.2	32.4	62.8	86.7	23.9	

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber		
Report No.	32BE0278-HO		
Date	09/29/2011	10/02/2011	10/02/2011
Temperature/ Humidity	24 deg. C / 58% RH	20 deg. C / 52% RH	20 deg. C / 52% RH
Engineer	Tomohisa Nakagawa (1-10GHz)	Takumi Shimada (10-26.5GHz)	Takumi Shimada (30-1000MHz)
Mode	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	37.438	QP	25.5	15.7	6.8	28.5	19.5	40.0	20.5	
Hori	106.663	QP	29.6	11.1	7.5	28.4	19.8	43.5	23.7	
Hori	177.703	QP	30.9	16.1	8.0	28.1	26.9	43.5	16.6	
Hori	320.007	QP	31.1	14.7	8.9	27.8	26.9	46.0	19.1	
Hori	373.353	QP	32.0	16.4	9.2	28.1	29.5	46.0	16.5	
Hori	480.001	QP	30.8	18.1	9.7	28.7	29.9	46.0	16.1	
Hori	4882.000	PK	40.9	31.5	4.4	31.5	45.3	73.9	28.6	
Hori	7323.000	PK	41.3	35.7	5.4	31.6	50.8	73.9	23.1	
Hori	9764.000	PK	41.5	38.5	6.0	31.9	54.1	73.9	19.8	
Hori	24410.000	PK	45.3	40.4	-1.7	30.5	53.5	73.9	20.4	
Hori	4882.000	AV	29.0	31.5	4.4	31.5	33.4	53.9	20.5	
Hori	7323.000	AV	29.3	35.7	5.4	31.6	38.8	53.9	15.1	
Hori	9764.000	AV	29.8	38.5	6.0	31.9	42.4	53.9	11.5	
Hori	24410.000	AV	33.9	40.4	-1.7	30.5	42.1	53.9	11.9	
Vert	37.343	QP	39.9	15.7	6.8	28.5	33.9	40.0	6.1	
Vert	106.637	QP	30.3	11.1	7.5	28.4	20.5	43.5	23.0	
Vert	177.718	QP	29.9	16.1	8.0	28.1	25.9	43.5	17.6	
Vert	320.103	QP	28.7	14.7	8.9	27.8	24.5	46.0	21.5	
Vert	373.344	QP	28.7	16.4	9.2	28.1	26.2	46.0	19.8	
Vert	480.009	QP	29.1	18.1	9.7	28.7	28.2	46.0	17.8	
Vert	4882.000	PK	41.0	31.5	4.4	31.5	45.4	73.9	28.5	
Vert	7323.000	PK	41.2	35.7	5.4	31.6	50.7	73.9	23.2	
Vert	9764.000	PK	41.8	38.5	6.0	31.9	54.4	73.9	19.5	
Vert	24410.000	PK	46.0	40.4	-1.7	30.5	54.2	73.9	19.7	
Vert	4882.000	AV	29.0	31.5	4.4	31.5	33.4	53.9	20.5	
Vert	7323.000	AV	29.3	35.7	5.4	31.6	38.8	53.9	15.1	
Vert	9764.000	AV	29.8	38.5	6.0	31.9	42.4	53.9	11.5	
Vert	24410.000	AV	33.9	40.4	-1.7	30.5	42.1	53.9	11.8	

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.	32BE0278-HO		
Date	09/29/2011	10/02/2011	10/02/2011
Temperature/ Humidity	24 deg. C / 58% RH	20 deg. C / 52% RH	20 deg. C / 52% RH
Engineer	Tomohisa Nakagawa (1-10GHz)	Takumi Shimada (10-26.5GHz)	Takumi Shimada (30-1000MHz)
Mode	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	43.480	QP	31.4	13.4	6.9	28.6	23.1	40.0	16.9	
Hori	106.615	QP	29.8	11.1	7.5	28.4	20.0	43.5	23.5	
Hori	177.774	QP	29.6	16.1	8.0	28.1	25.6	43.5	17.9	
Hori	320.010	QP	30.5	14.7	8.9	27.8	26.3	46.0	19.7	
Hori	373.341	QP	31.8	16.4	9.2	28.1	29.3	46.0	16.7	
Hori	480.013	QP	30.9	18.1	9.7	28.7	30.0	46.0	16.0	
Hori	2483.500	PK	58.3	27.6	2.3	32.4	55.8	73.9	18.1	
Hori	4960.000	PK	40.6	31.7	4.5	31.5	45.3	73.9	28.6	
Hori	7440.000	PK	43.0	35.8	5.5	31.6	52.7	73.9	21.2	
Hori	9920.000	PK	41.8	38.7	6.1	32.0	54.6	73.9	19.3	
Hori	24800.000	PK	48.8	40.3	-1.6	30.5	57.0	73.9	16.9	
Hori	2483.500	AV	44.9	27.6	2.3	32.4	42.4	53.9	11.5	
Hori	4960.000	AV	28.2	31.7	4.5	31.5	32.9	53.9	21.0	
Hori	7440.000	AV	29.7	35.8	5.5	31.6	39.4	53.9	14.5	
Hori	9920.000	AV	29.3	38.7	6.1	32.0	42.1	53.9	11.8	
Hori	24800.000	AV	35.9	40.3	-1.6	30.5	44.1	53.9	9.9	
Vert	43.470	QP	42.5	13.4	6.9	28.6	34.2	40.0	5.8	
Vert	106.641	QP	29.9	11.1	7.5	28.4	20.1	43.5	23.4	
Vert	177.721	QP	30.1	16.1	8.0	28.1	26.1	43.5	17.4	
Vert	320.101	QP	29.1	14.7	8.9	27.8	24.9	46.0	21.1	
Vert	373.344	QP	28.8	16.4	9.2	28.1	26.3	46.0	19.7	
Vert	480.009	QP	29.2	18.1	9.7	28.7	28.3	46.0	17.7	
Vert	2483.500	PK	59.3	27.6	2.3	32.4	56.8	73.9	17.1	
Vert	4960.000	PK	40.5	31.7	4.5	31.5	45.2	73.9	28.7	
Vert	7440.000	PK	42.1	35.8	5.5	31.6	51.8	73.9	22.1	
Vert	9920.000	PK	41.4	38.7	6.1	32.0	54.2	73.9	19.7	
Vert	24800.000	PK	49.1	40.3	-1.6	30.5	57.3	73.9	16.6	
Vert	2483.500	AV	45.3	27.6	2.3	32.4	42.8	53.9	11.1	
Vert	4960.000	AV	28.3	31.7	4.5	31.5	33.0	53.9	20.9	
Vert	7440.000	AV	29.7	35.8	5.5	31.6	39.4	53.9	14.5	
Vert	9920.000	AV	29.3	38.7	6.1	32.0	42.1	53.9	11.8	
Vert	24800.000	AV	35.9	40.3	-1.6	30.5	44.1	53.9	9.8	

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.	32BE0278-HO
Date	10/02/2011
Temperature/ Humidity	20 deg. C / 52% RH
Engineer	Takumi Shimada
Mode	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	43.448	QP	31.3	13.4	6.9	28.6	23.0	40.0	17.0	
Hori	106.618	QP	30.0	11.1	7.5	28.4	20.2	43.5	23.3	
Hori	266.671	QP	36.6	18.3	8.6	27.6	35.9	46.0	10.1	
Hori	320.110	QP	30.9	14.7	8.9	27.8	26.7	46.0	19.3	
Hori	373.342	QP	31.3	16.4	9.2	28.1	28.8	46.0	17.2	
Hori	480.041	QP	30.4	18.1	9.7	28.7	29.5	46.0	16.5	
Hori	2390.000	PK	42.2	27.4	2.2	32.4	39.4	73.9	34.5	
Hori	2400.000	PK	68.1	27.4	2.2	32.4	65.3	-	-	See 20dBc Data Sheet
Hori	4804.000	PK	41.5	31.3	4.8	31.6	46.0	73.9	27.9	
Hori	7206.000	PK	42.0	35.5	5.6	31.5	51.6	73.9	22.3	
Hori	9608.000	PK	41.2	38.4	6.3	31.9	54.0	73.9	19.9	
Hori	24020.000	PK	46.3	40.5	-1.7	30.5	54.6	73.9	19.3	
Hori	2390.000	AV	30.3	27.4	2.2	32.4	27.5	53.9	26.4	
Hori	2400.000	AV	51.4	27.4	2.2	32.4	48.6	-	-	See 20dBc Data Sheet
Hori	4804.000	AV	28.9	31.3	4.8	31.6	33.4	53.9	20.5	
Hori	7206.000	AV	29.2	35.5	5.6	31.5	38.8	53.9	15.1	
Hori	9608.000	AV	29.4	38.4	6.3	31.9	42.2	53.9	11.7	
Hori	24020.000	AV	34.8	40.5	-1.7	30.5	43.1	53.9	10.9	
Vert	43.370	QP	42.8	13.4	6.9	28.6	34.5	40.0	5.5	
Vert	106.637	QP	29.8	11.1	7.5	28.4	20.0	43.5	23.5	
Vert	266.672	QP	28.8	18.3	8.6	27.6	28.1	46.0	17.9	
Vert	320.104	QP	29.1	14.7	8.9	27.8	24.9	46.0	21.1	
Vert	373.344	QP	29.1	16.4	9.2	28.1	26.6	46.0	19.4	
Vert	480.021	QP	29.0	18.1	9.7	28.7	28.1	46.0	17.9	
Vert	2390.000	PK	42.3	27.4	2.2	32.4	39.5	73.9	34.4	
Vert	2400.000	PK	68.2	27.4	2.2	32.4	65.4	-	-	See 20dBc Data Sheet
Vert	4804.000	PK	40.7	31.3	4.8	31.6	45.2	73.9	28.7	
Vert	7206.000	PK	41.6	35.5	5.6	31.5	51.2	73.9	22.7	
Vert	9608.000	PK	41.4	38.4	6.3	31.9	54.2	73.9	19.7	
Vert	24020.000	PK	46.4	40.5	-1.7	30.5	54.7	73.9	19.2	
Vert	2390.000	AV	30.4	27.4	2.2	32.4	27.6	53.9	26.3	
Vert	2400.000	AV	50.0	27.4	2.2	32.4	47.2	-	-	See 20dBc Data Sheet
Vert	4804.000	AV	28.7	31.3	4.8	31.6	33.2	53.9	20.7	
Vert	7206.000	AV	29.3	35.5	5.6	31.5	38.9	53.9	15.0	
Vert	9608.000	AV	29.3	38.4	6.3	31.9	42.1	53.9	11.8	
Vert	24020.000	AV	34.8	40.5	-1.7	30.5	43.1	53.9	10.8	

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

20dBc data sheet

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	32BE0278-HO
Date	10/02/2011
Temperature/ Humidity	20 deg. C / 52% RH
Engineer	Takumi Shimada
Mode	3DH5 2402MHz

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	102.8	27.4	2.2	32.4	100.0	-	-	Carrier
Hori	2400.000	PK	63.5	27.4	2.2	32.4	65.3	80.0	14.7	
Vert	2402.000	PK	103.7	27.4	2.2	32.4	100.9	-	-	Carrier
Vert	2400.000	PK	62.2	27.4	2.2	32.4	59.4	80.9	21.5	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 32BE0278-HO
Date 10/02/2011
Temperature/ Humidity 20 deg. C / 52% RH
Engineer Takumi Shimada
Mode 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	43.510	QP	31.7	13.4	6.9	28.6	23.4	40.0	16.6	
Hori	106.613	QP	29.9	11.1	7.5	28.4	20.1	43.5	23.4	
Hori	266.672	QP	36.5	18.3	8.6	27.6	35.8	46.0	10.2	
Hori	320.110	QP	30.5	14.7	8.9	27.8	26.3	46.0	19.7	
Hori	373.297	QP	30.9	16.4	9.2	28.1	28.4	46.0	17.6	
Hori	480.008	QP	30.1	18.1	9.7	28.7	29.2	46.0	16.8	
Hori	4882.000	PK	41.2	31.5	4.8	31.5	46.0	73.9	27.9	
Hori	7323.000	PK	41.7	35.7	5.8	31.6	51.6	73.9	22.3	
Hori	9764.000	PK	41.1	38.5	6.4	31.9	54.1	73.9	19.8	
Hori	24410.000	PK	45.6	40.4	-1.7	30.5	53.8	73.9	20.1	
Hori	4882.000	AV	28.9	31.5	4.8	31.5	33.7	53.9	20.2	
Hori	7323.000	AV	29.2	35.7	5.8	31.6	39.1	53.9	14.8	
Hori	9764.000	AV	29.4	38.5	6.4	31.9	42.4	53.9	11.5	
Hori	24410.000	AV	33.9	40.4	-1.7	30.5	42.1	53.9	11.9	
Vert	43.460	QP	42.6	13.4	6.9	28.6	34.3	40.0	5.7	
Vert	106.638	QP	30.1	11.1	7.5	28.4	20.3	43.5	23.2	
Vert	266.672	QP	28.5	18.3	8.6	27.6	27.8	46.0	18.2	
Vert	320.151	QP	28.9	14.7	8.9	27.8	24.7	46.0	21.3	
Vert	373.319	QP	29.0	16.4	9.2	28.1	26.5	46.0	19.5	
Vert	480.012	QP	29.2	18.1	9.7	28.7	28.3	46.0	17.7	
Vert	4882.000	PK	41.7	31.5	4.8	31.5	46.5	73.9	27.4	
Vert	7323.000	PK	41.7	35.7	5.8	31.6	51.6	73.9	22.3	
Vert	9764.000	PK	41.8	38.5	6.4	31.9	54.8	73.9	19.1	
Vert	24410.000	PK	45.8	40.4	-1.7	30.5	54.0	73.9	19.9	
Vert	4882.000	AV	28.9	31.5	4.8	31.5	33.7	53.9	20.2	
Vert	7323.000	AV	29.2	35.7	5.8	31.6	39.1	53.9	14.8	
Vert	9764.000	AV	29.4	38.5	6.4	31.9	42.4	53.9	11.5	
Vert	24410.000	AV	33.9	40.4	-1.7	30.5	42.1	53.9	11.8	

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. 32BE0278-HO
Date 10/02/2011
Temperature/ Humidity 20 deg. C / 52% RH
Engineer Takumi Shimada
Mode 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	43.470	QP	31.7	13.4	6.9	28.6	23.4	40.0	16.6	
Hori	106.622	QP	29.9	11.1	7.5	28.4	20.1	43.5	23.4	
Hori	177.712	QP	29.4	16.1	8.0	28.1	25.4	43.5	18.1	
Hori	320.009	QP	30.7	14.7	8.9	27.8	26.5	46.0	19.5	
Hori	373.345	QP	31.5	16.4	9.2	28.1	29.0	46.0	17.0	
Hori	480.016	QP	30.2	18.1	9.7	28.7	29.3	46.0	16.7	
Hori	2483.500	PK	52.9	27.6	2.3	32.4	50.4	73.9	23.5	
Hori	4960.000	PK	40.9	31.7	4.9	31.5	46.0	73.9	27.9	
Hori	7440.000	PK	41.1	35.8	5.9	31.6	51.2	73.9	22.7	
Hori	9920.000	PK	41.8	38.7	6.6	32.0	55.1	73.9	18.8	
Hori	24800.000	PK	48.9	40.3	-1.6	30.5	57.1	73.9	16.8	
Hori	2483.500	AV	35.1	27.6	2.3	32.4	32.6	53.9	21.4	
Hori	4960.000	AV	28.8	31.7	4.9	31.5	33.9	53.9	20.0	
Hori	7440.000	AV	29.2	35.8	5.9	31.6	39.3	53.9	14.6	
Hori	9920.000	AV	29.5	38.7	6.6	32.0	42.8	53.9	11.1	
Hori	24800.000	AV	35.9	40.3	-1.6	30.5	44.1	53.9	9.9	
Vert	43.440	QP	42.6	13.4	6.9	28.6	34.3	40.0	5.7	
Vert	106.642	QP	30.1	11.1	7.5	28.4	20.3	43.5	23.2	
Vert	177.781	QP	29.5	16.1	8.0	28.1	25.5	43.5	18.0	
Vert	320.103	QP	29.3	14.7	8.9	27.8	25.1	46.0	20.9	
Vert	373.342	QP	28.9	16.4	9.2	28.1	26.4	46.0	19.6	
Vert	480.011	QP	29.1	18.1	9.7	28.7	28.2	46.0	17.8	
Vert	2483.500	PK	51.3	27.6	2.3	32.4	48.8	73.9	25.1	
Vert	4960.000	PK	41.4	31.7	4.9	31.5	46.5	73.9	27.5	
Vert	7440.000	PK	41.1	35.8	5.9	31.6	51.2	73.9	22.7	
Vert	9920.000	PK	41.6	38.7	6.6	32.0	54.9	73.9	19.0	
Vert	24800.000	PK	49.1	40.3	-1.6	30.5	57.3	73.9	16.6	
Vert	2483.500	AV	35.1	27.6	2.3	32.4	32.6	53.9	21.3	
Vert	4960.000	AV	29.1	31.7	4.9	31.5	34.2	53.9	19.7	
Vert	7440.000	AV	29.2	35.8	5.9	31.6	39.3	53.9	14.6	
Vert	9920.000	AV	29.5	38.7	6.6	32.0	42.8	53.9	11.2	
Vert	24800.000	AV	35.9	40.3	-1.6	30.5	44.1	53.9	9.8	

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

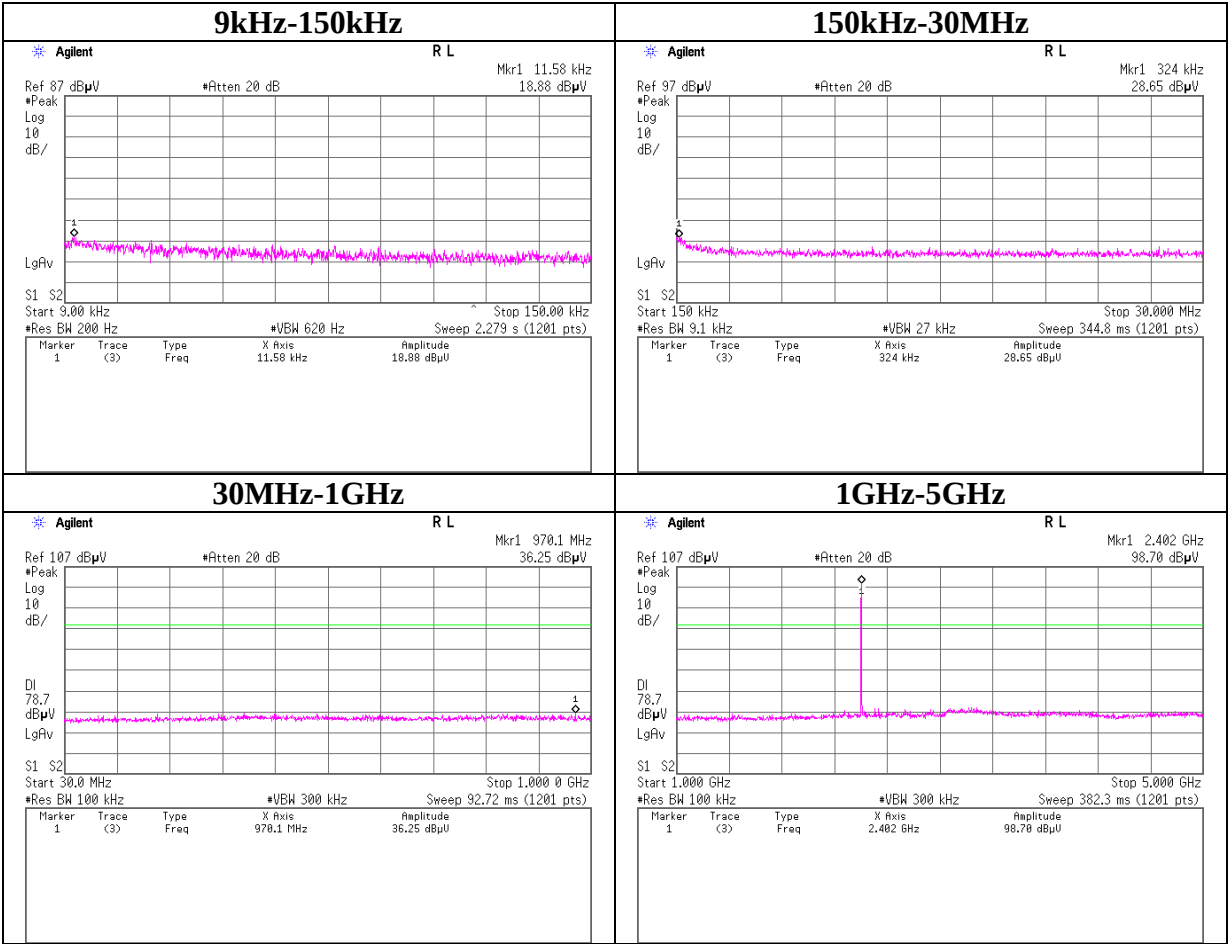
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*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

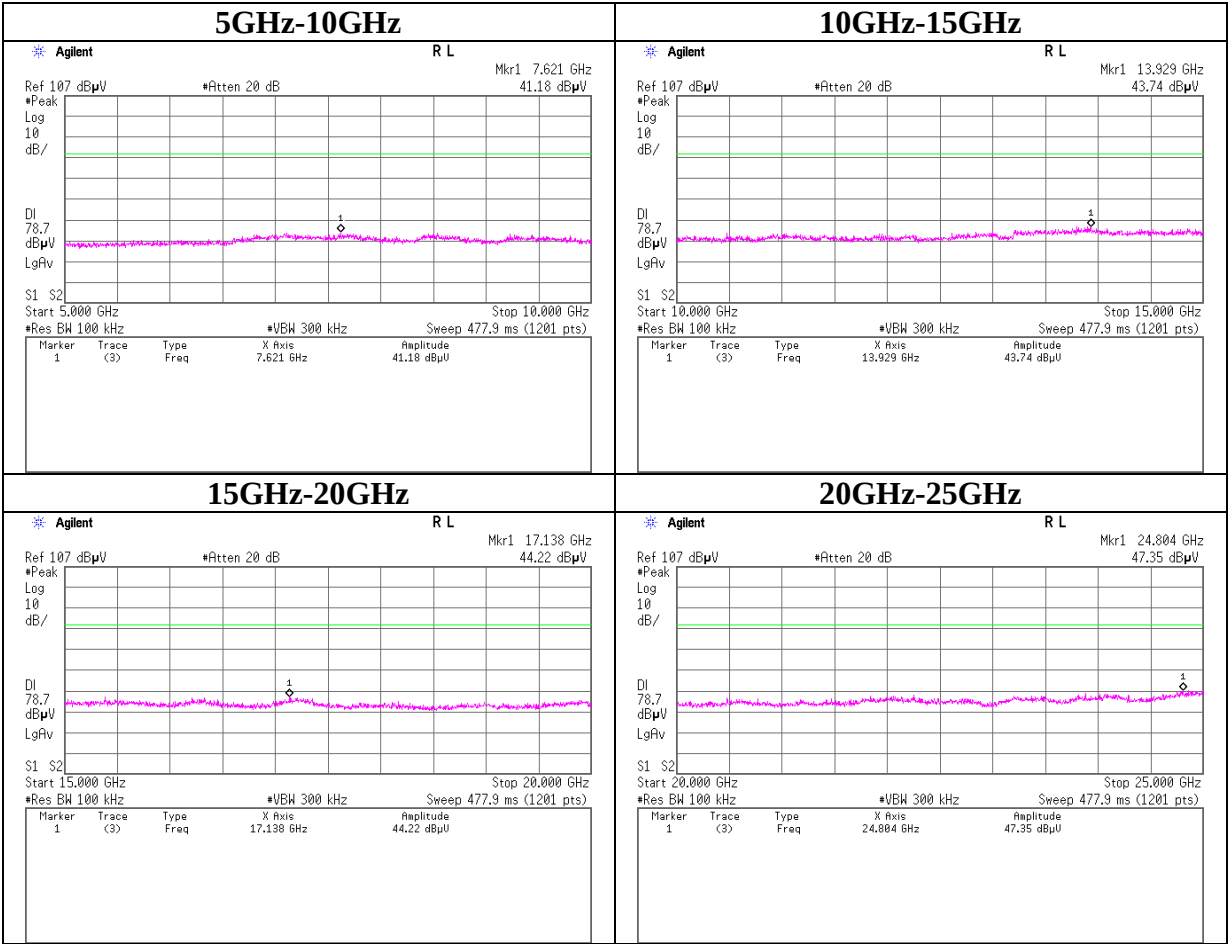
Conducted Spurious Emission

Tx DH5 2402MHz



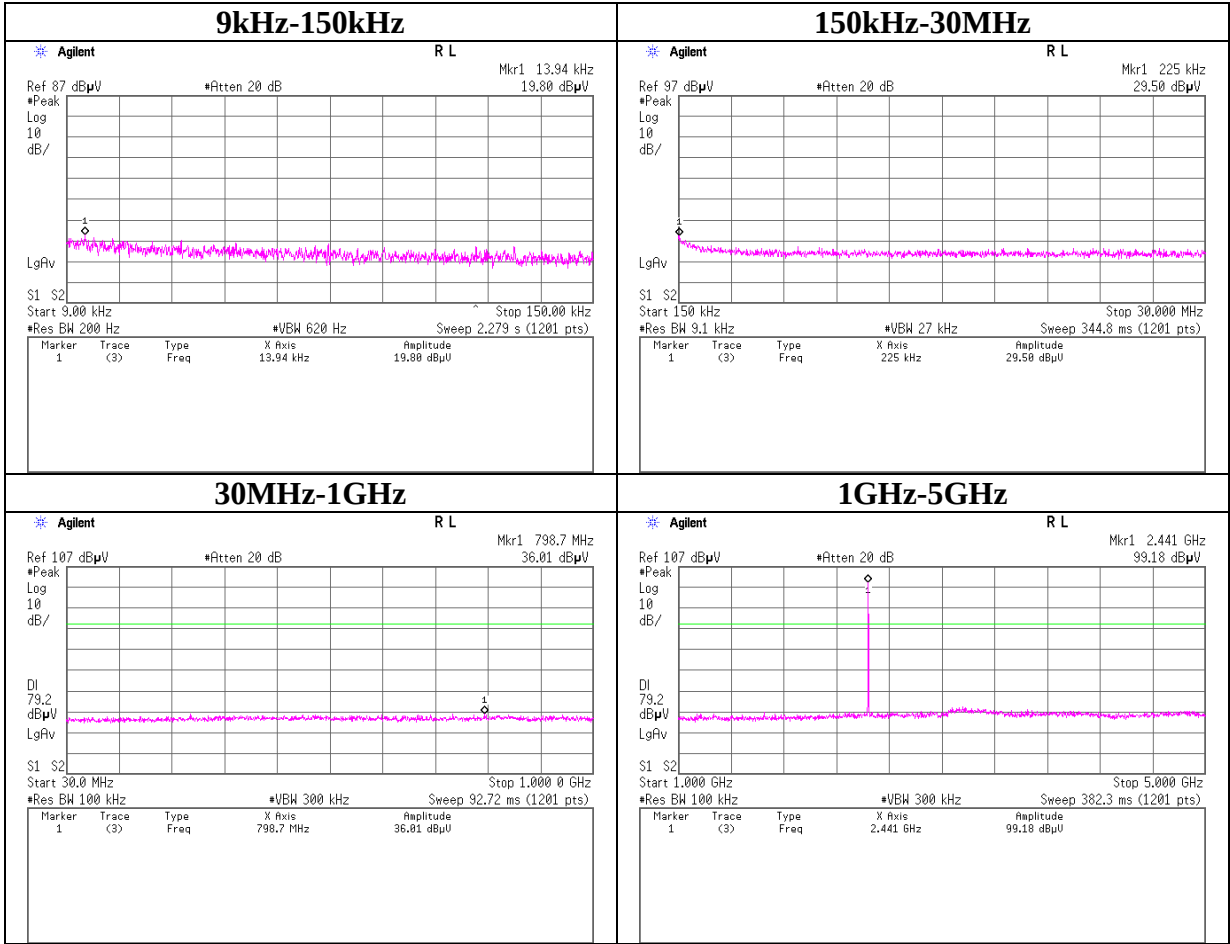
Conducted Spurious Emission

Tx DH5 2402MHz



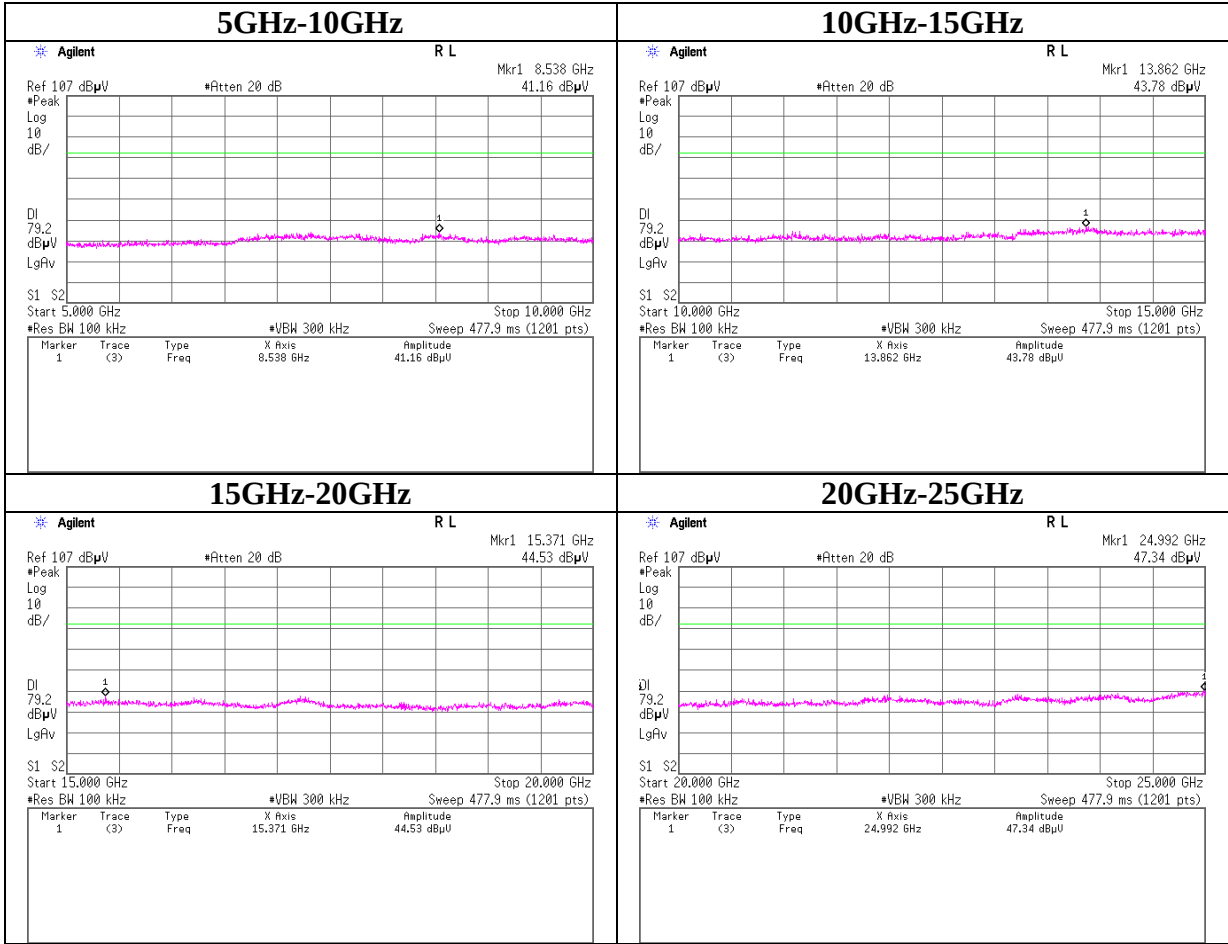
Conducted Spurious Emission

Tx DH5 2441MHz



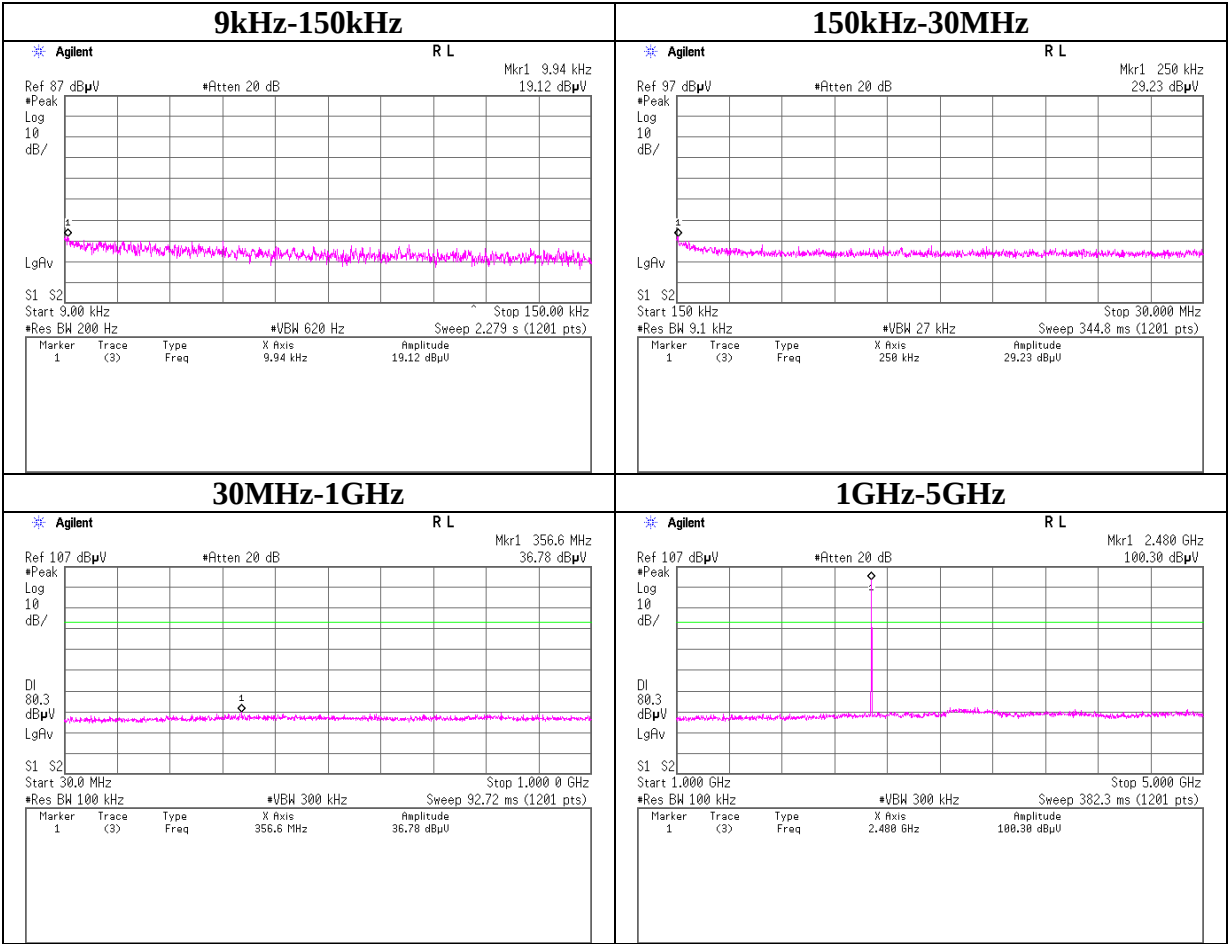
Conducted Spurious Emission

Tx DH5 2441MHz



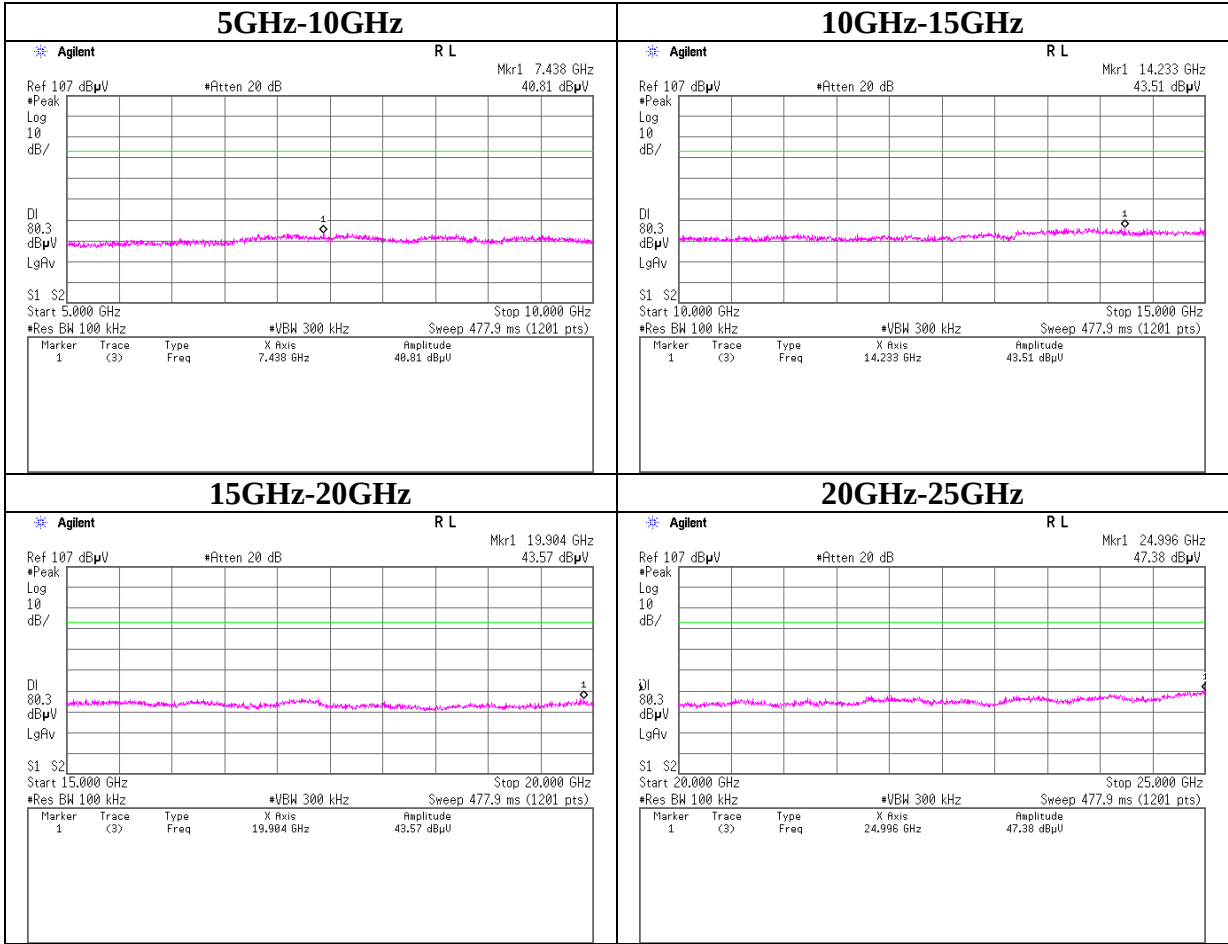
Conducted Spurious Emission

Tx DH5 2480MHz



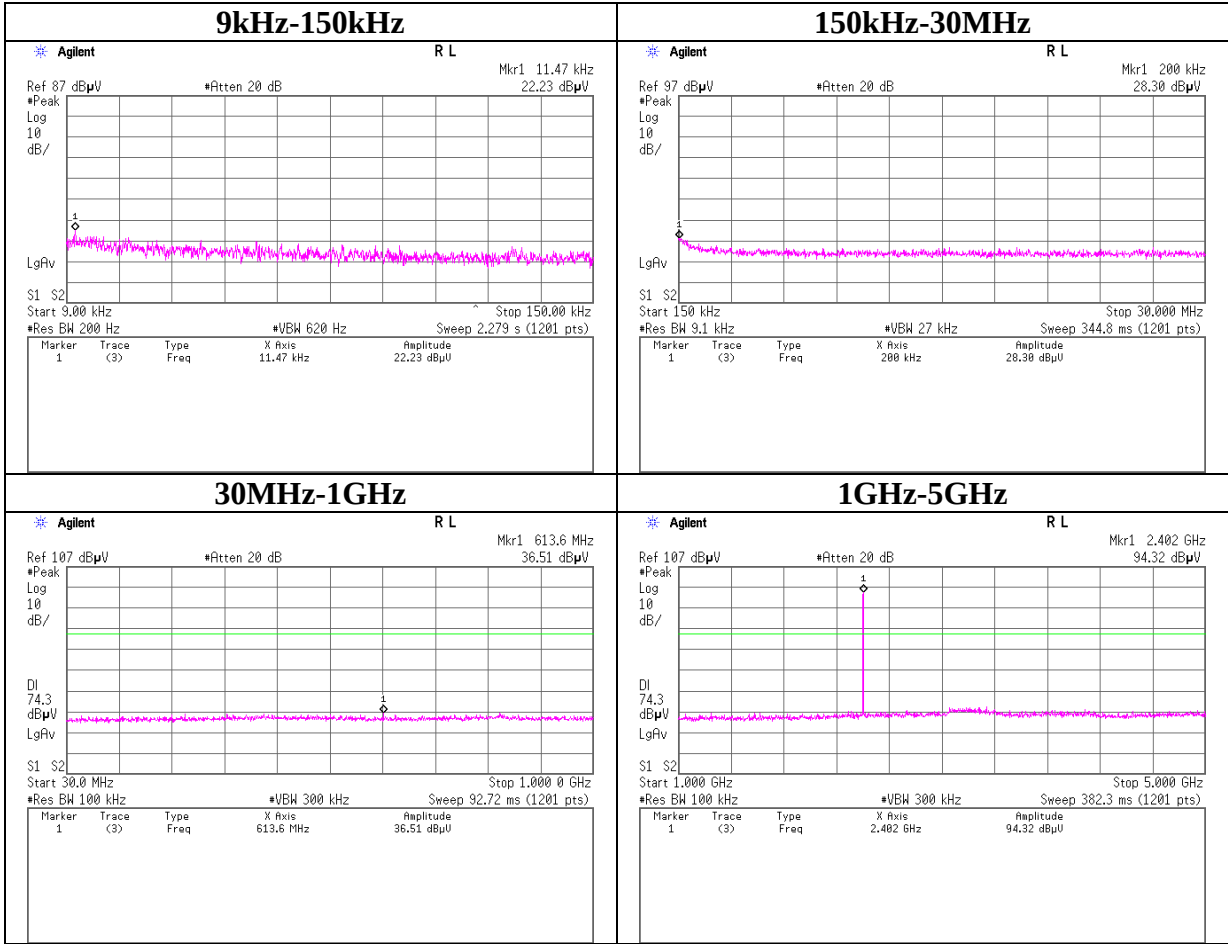
Conducted Spurious Emission

Tx DH5 2480MHz



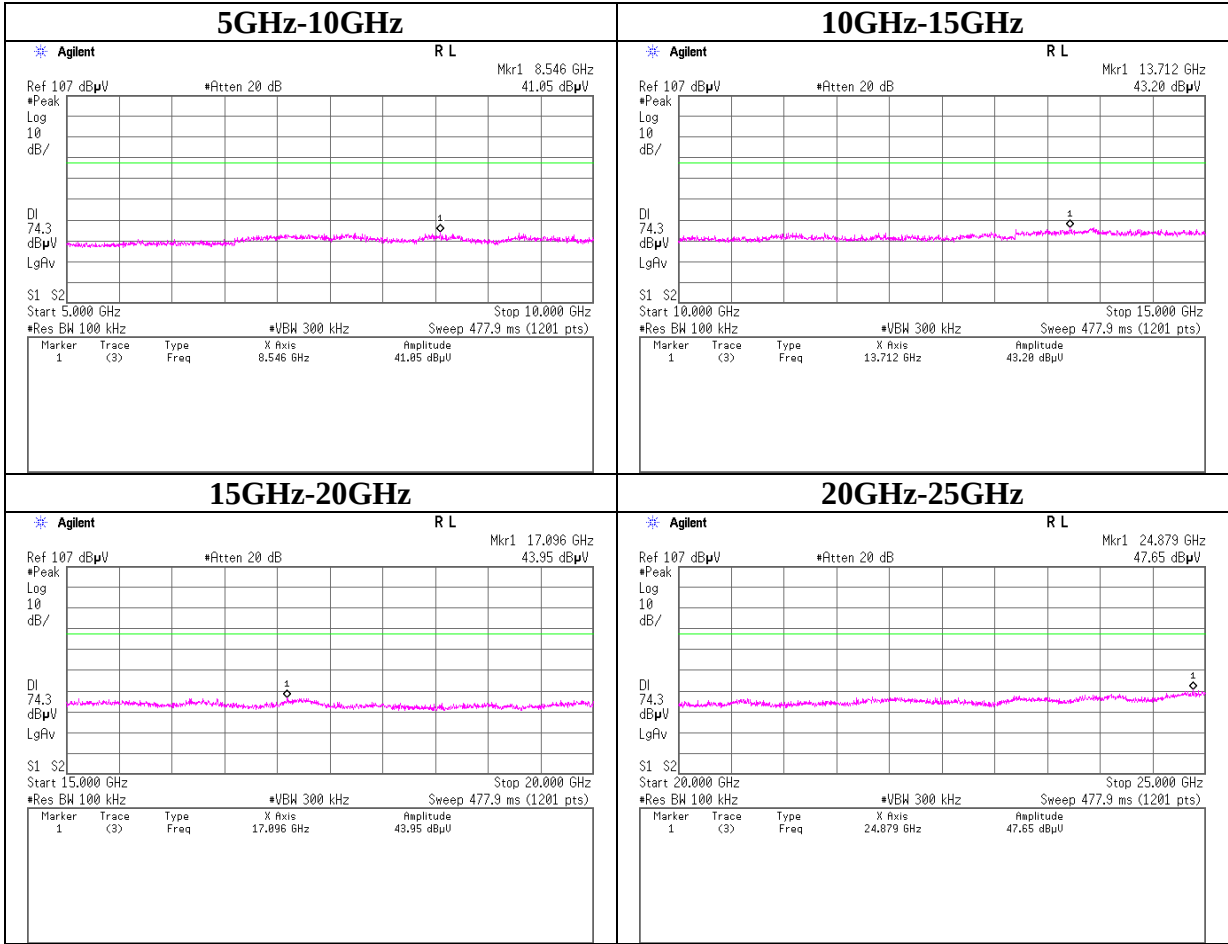
Conducted Spurious Emission

Tx 3DH5 2402MHz



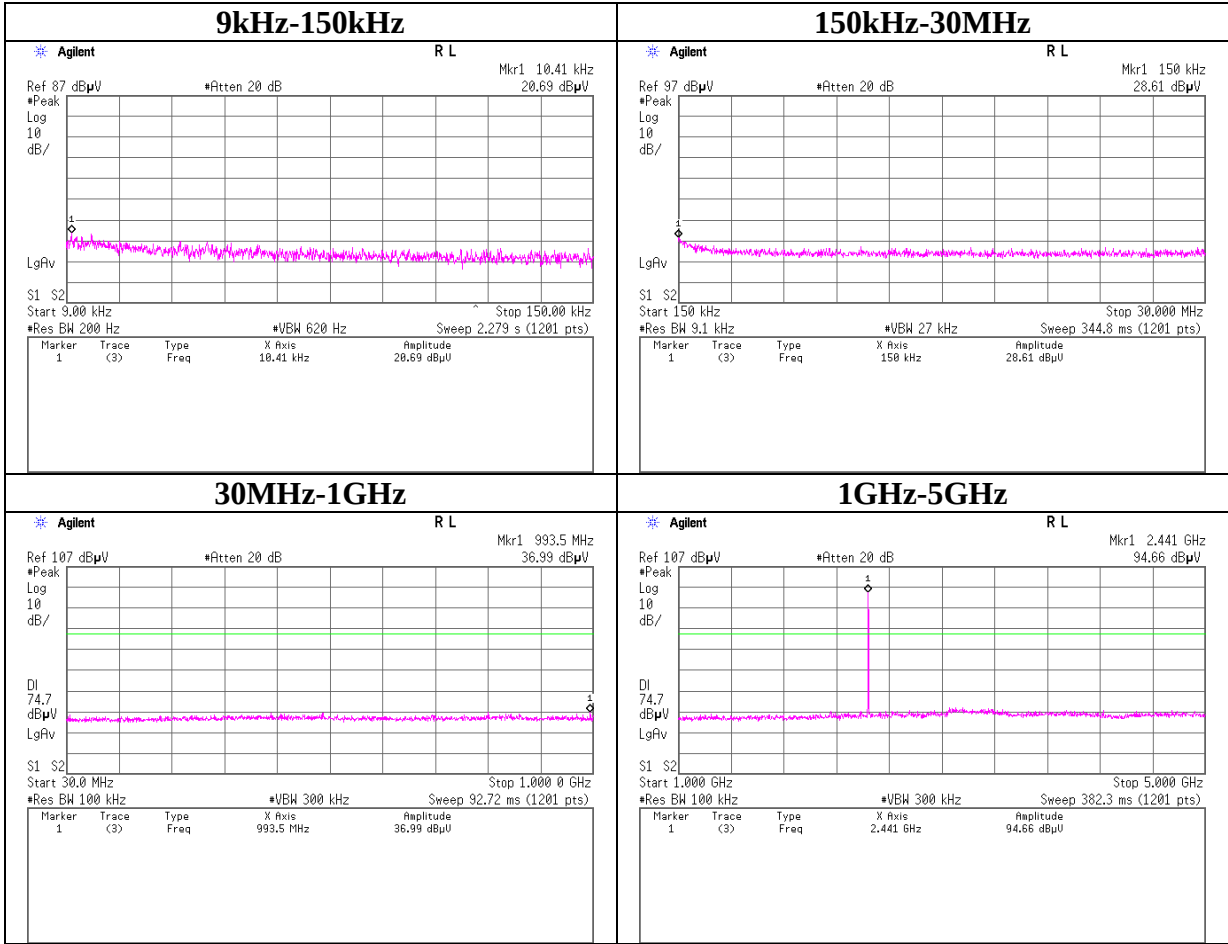
Conducted Spurious Emission

Tx 3DH5 2402MHz



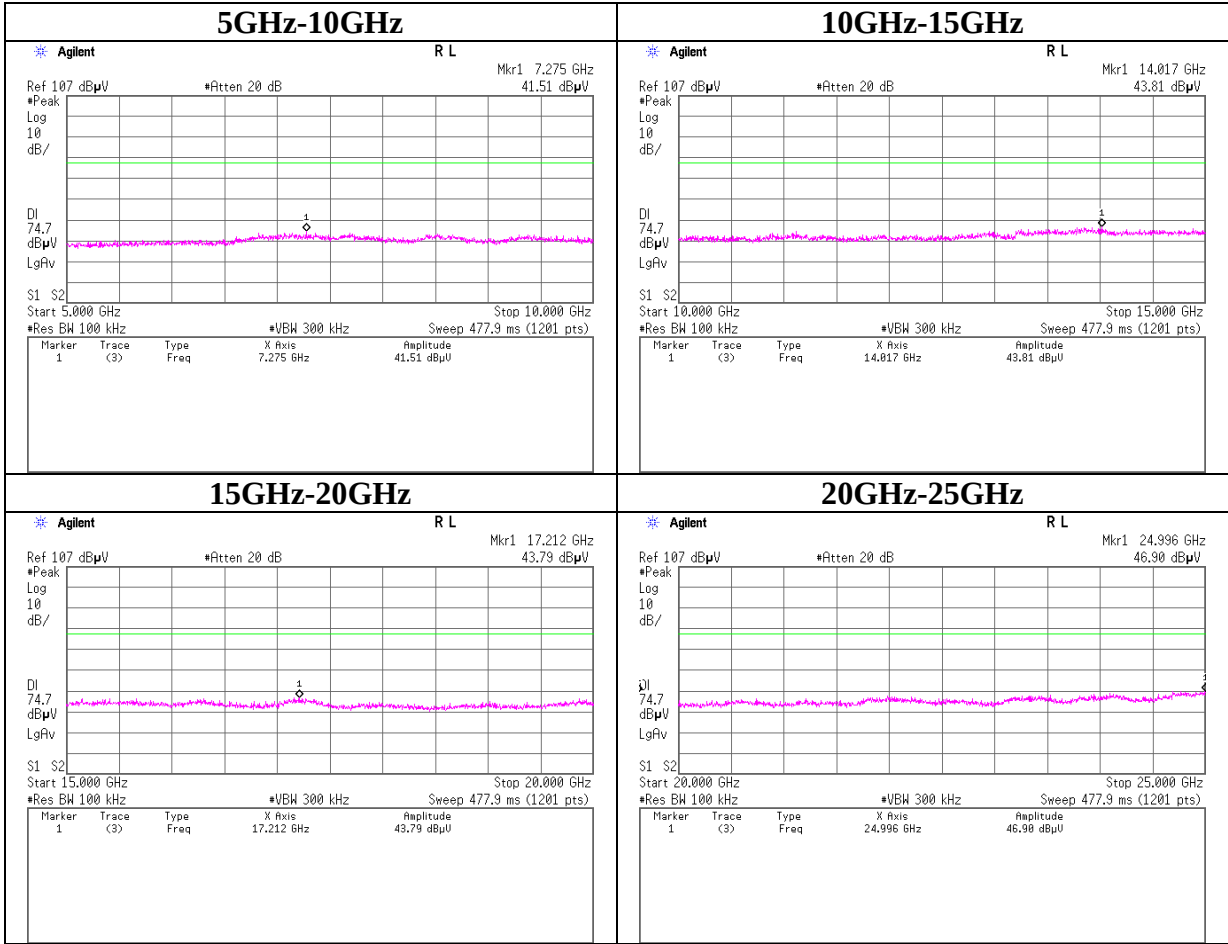
Conducted Spurious Emission

Tx 3DH5 2441MHz



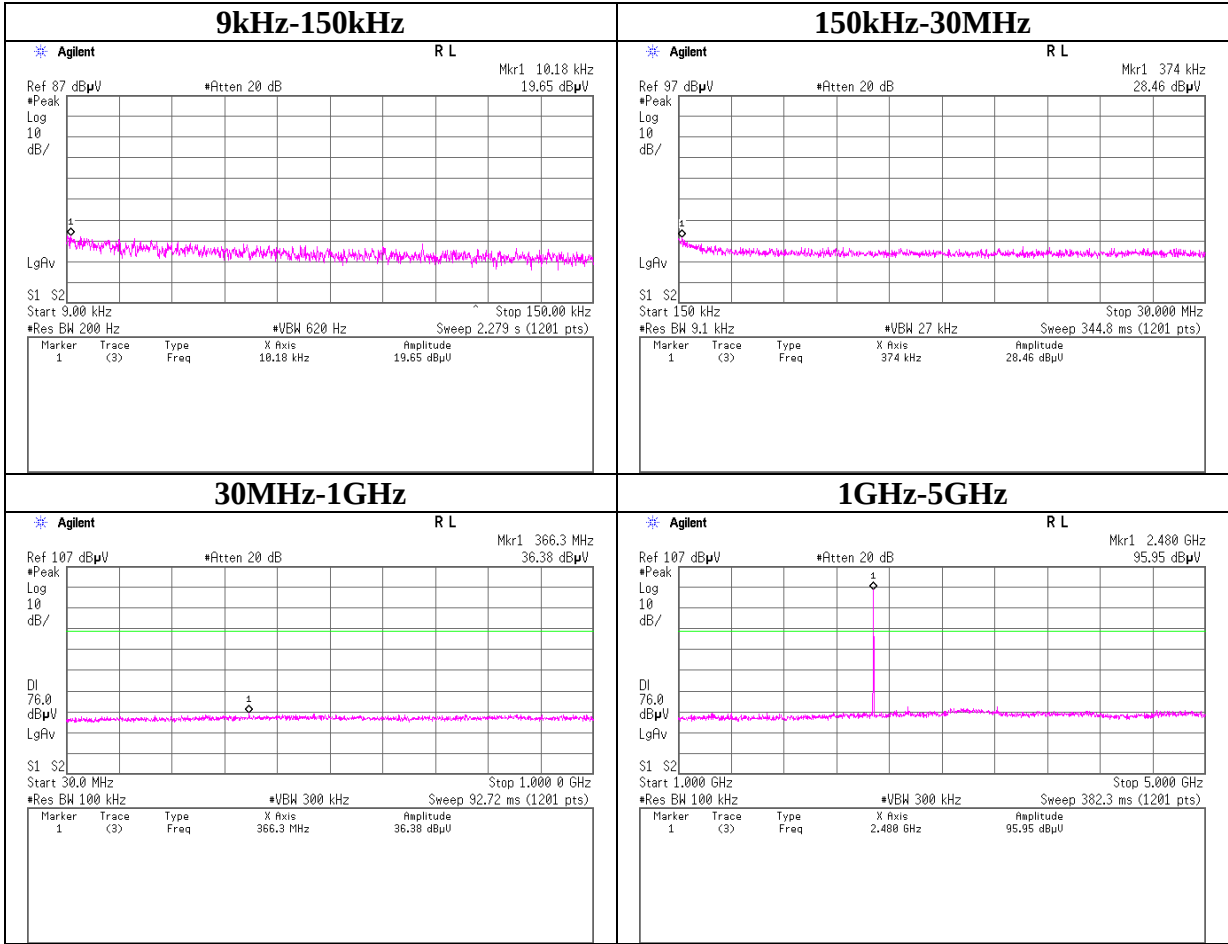
Conducted Spurious Emission

Tx 3DH5 2441MHz



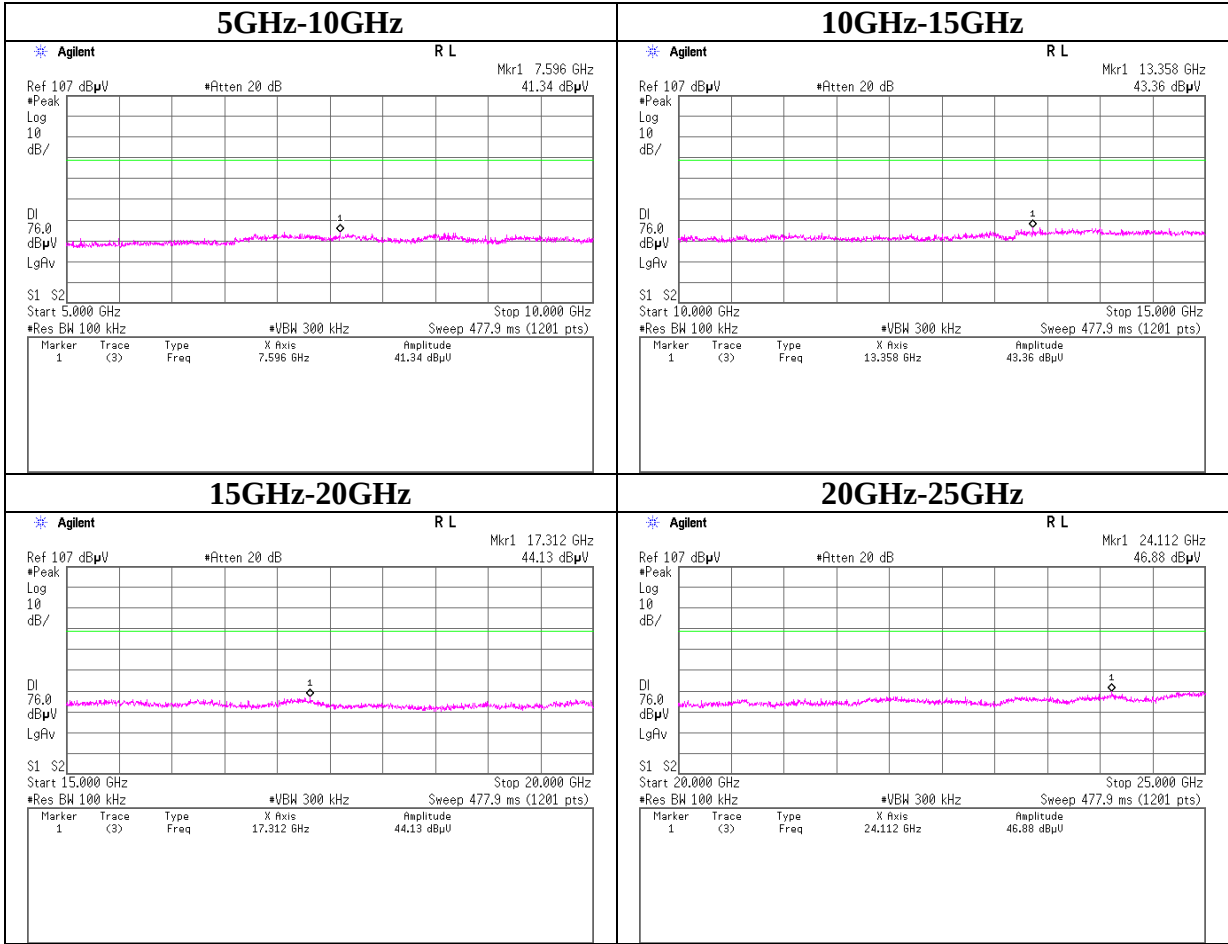
Conducted Spurious Emission

Tx 3DH5 2480MHz



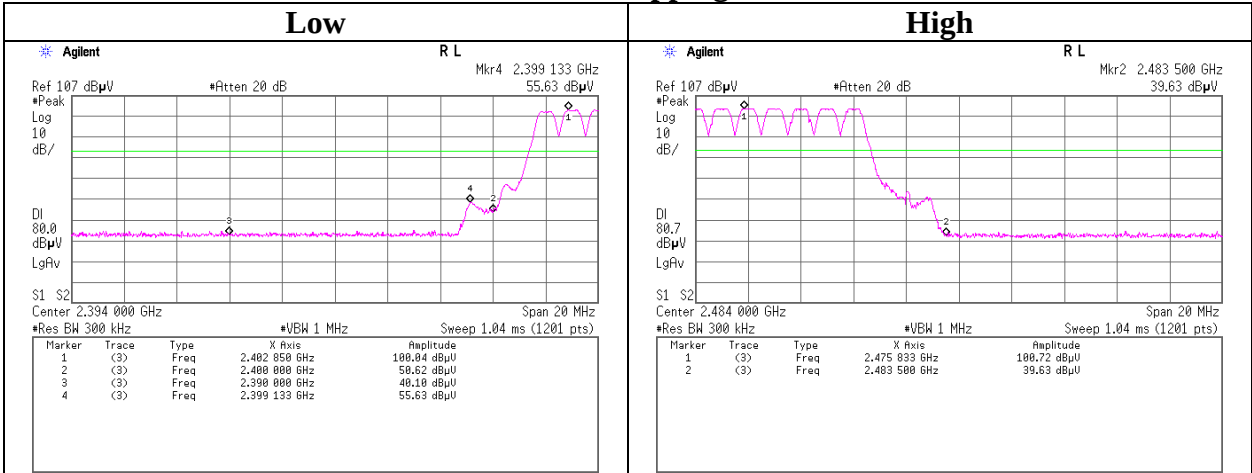
Conducted Spurious Emission

Tx 3DH5 2480MHz

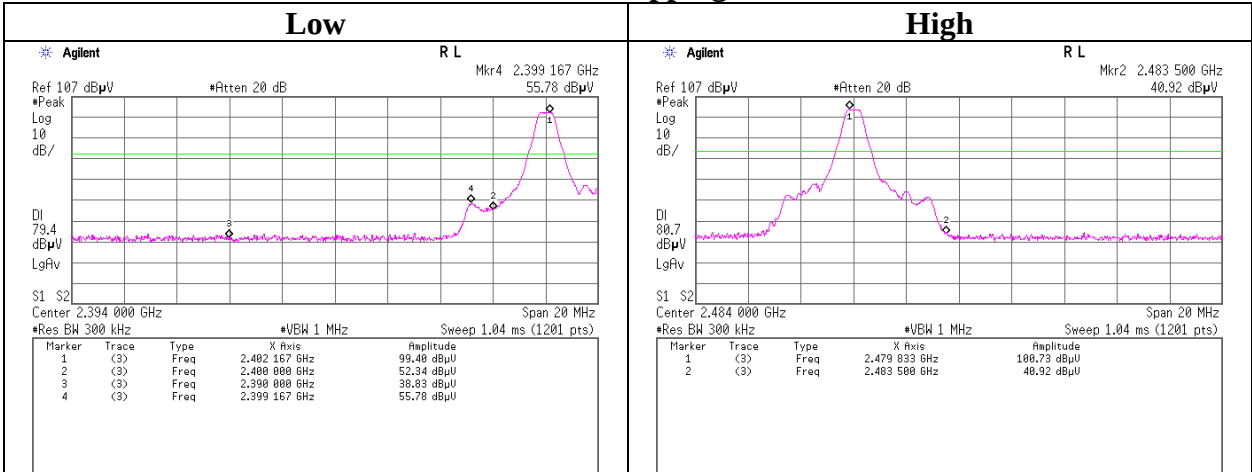


Conducted Emission Band Edge compliance

Tx DH5, Hopping on

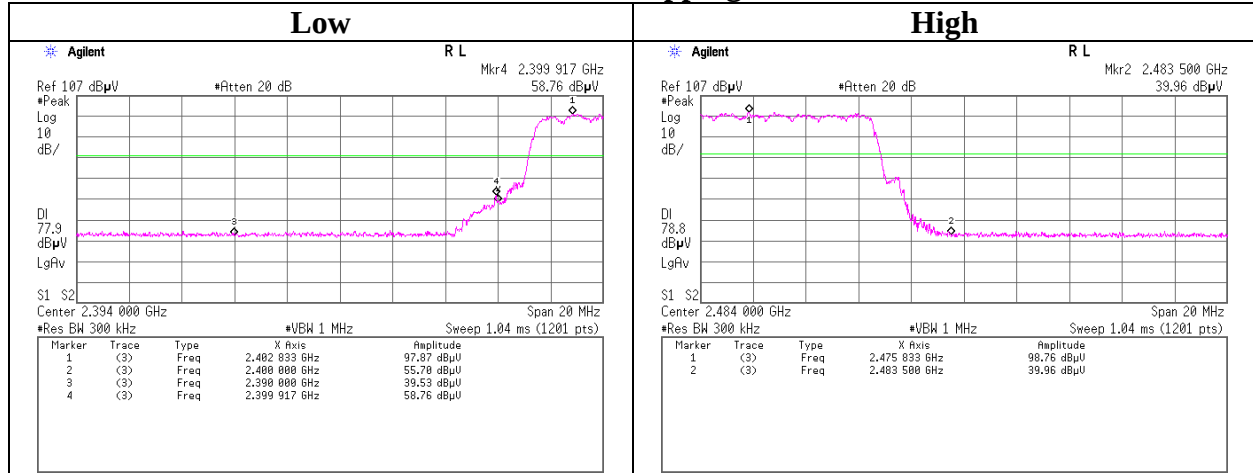


Tx DH5, Hopping off

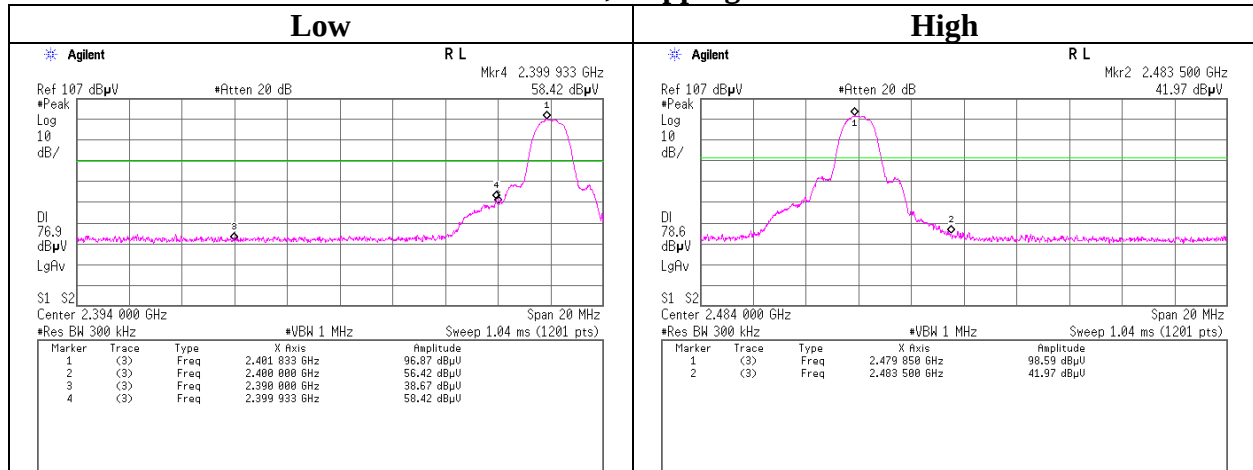


Conducted Emission Band Edge compliance

Tx 3DH5, Hopping on



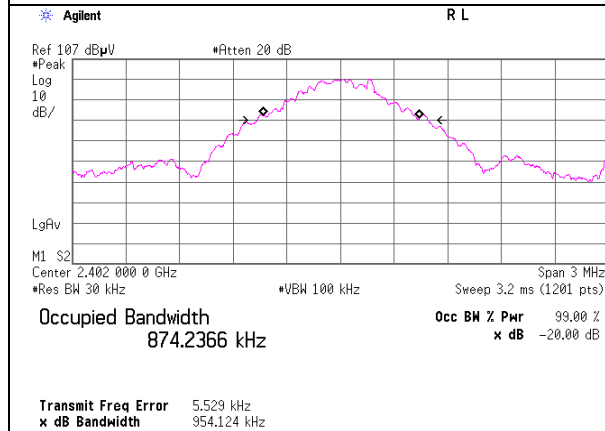
Tx 3DH5, Hopping off



99% Occupied Bandwidth

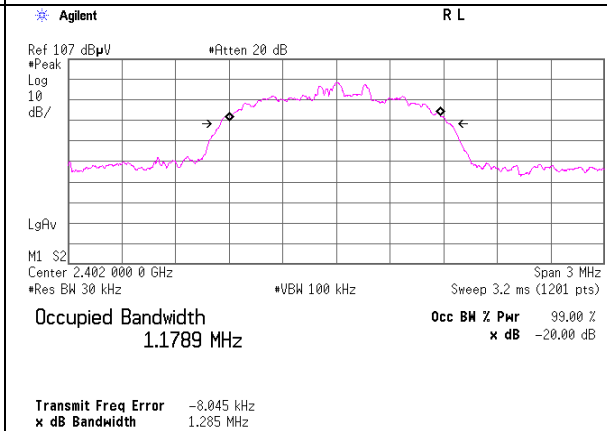
Tx DH5, Hopping off

2402MHz

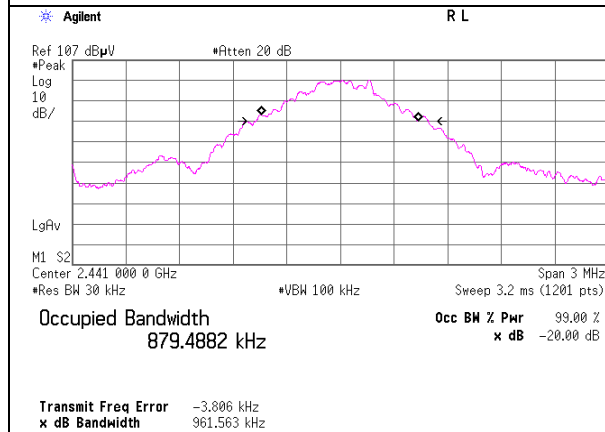


Tx 3DH5, Hopping off

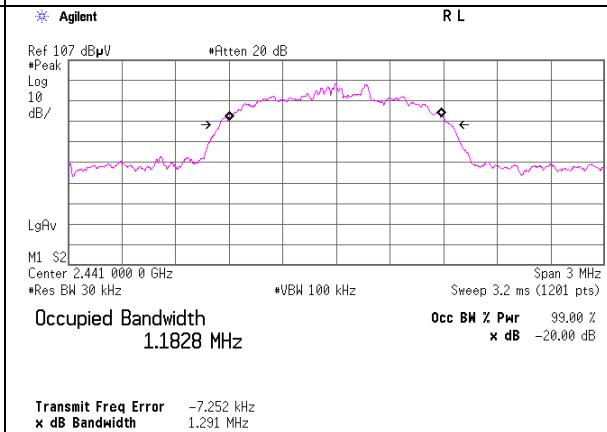
2402MHz



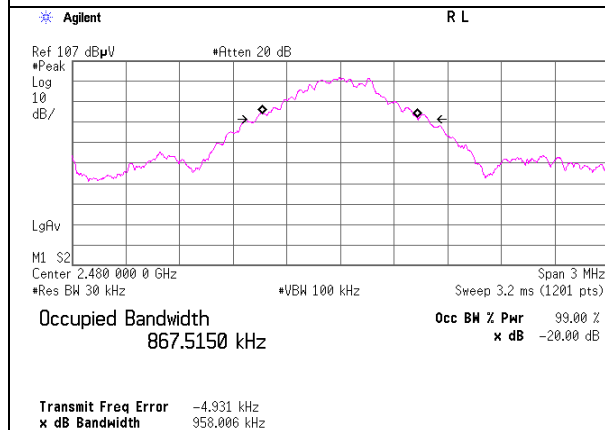
2441MHz



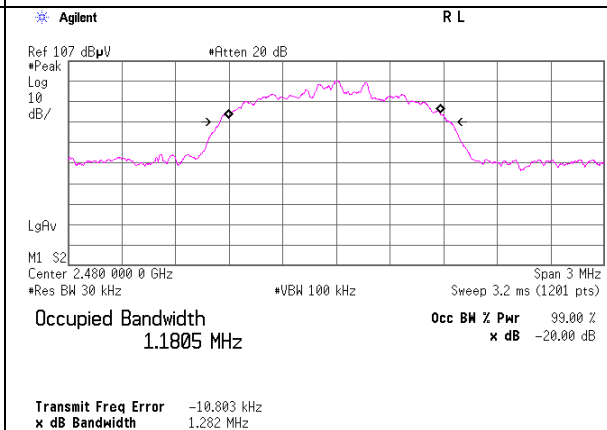
2441MHz



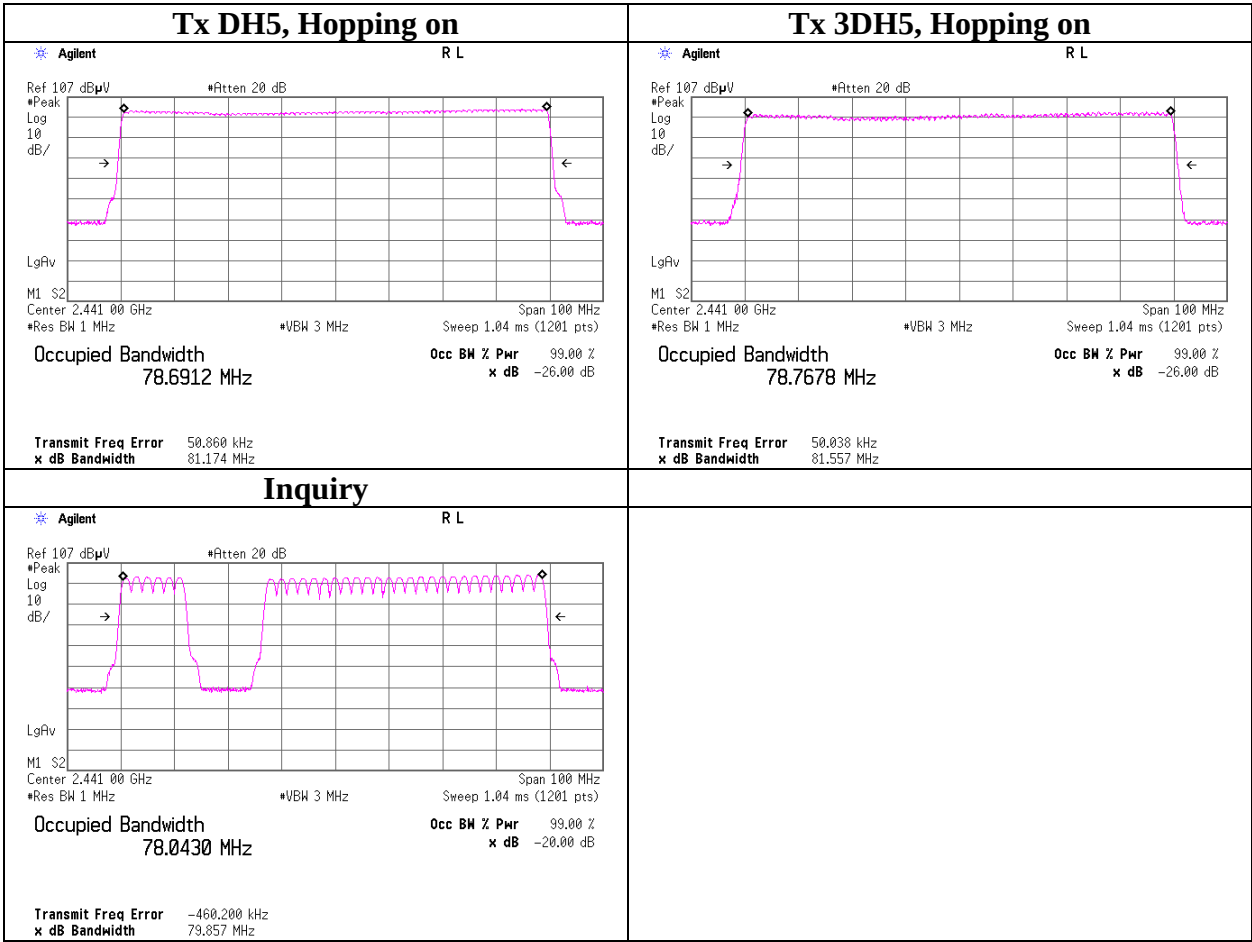
2480MHz



2480MHz



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	2011/06/21 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE/CE	2011/02/23 * 12
MJM-14	Measure	KOMELON	KMC-36	-	RE/CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MRENT-95	Spectrum Analyzer	Agilent	E4440A	MY46185820	RE	2011/06/30 * 12
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2011/01/16 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2011/09/21 * 12
MHF-18	High Pass Filter 3.5-18.0GHz	TOKIMEC	TF323DCA	7002	RE	2011/09/08 * 12
MCC-132	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336161/4(1m) / 340639(5m)	RE	2011/09/06 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	RE	2010/11/30 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE/CE	2011/04/15 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	2011/09/10 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2011/09/10 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2011/02/18 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2010/11/05 * 12
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2011/09/26 * 12
MHA-02	Horn Antenna 18-26.5GHz	EMCO	3160-09	1265	RE	2011/01/16 * 12
MCC-77	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278942/4	RE	2010/12/02 * 12
MOS-04	Digital Humidity Indicator	N.T	NT-1800	MOS04	AT	2011/02/23 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	AT	2010/11/30 * 12
MPM-08	Power Meter	Anritsu	ML2495A	6K00003338	AT	2011/09/13 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	011737	AT	2011/09/13 * 12
MCC-93	Microwave Cable 1G-40GHz	Schnr	SUCOFLEX102	30814/2	AT	2011/05/27 * 12
MAT-25	Attenuator(10dB)(above1 GHz)	Agilent	8493C	71642	AT	2011/06/23 * 12
MPSC-01	Power splitters/Combiners	Mini-Circuit	ZFSC-2-2500	0124	AT	2011/09/27 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(EUT)	2011/02/20 * 12
MTA-31	Terminator	TME	CT-01	-	CE	2011/01/05 * 12
MCC-13	Coaxial Cable	Fujikura	3D-2W(12m)/5D-2W(5m)/5D-2W(0.8m)/5D-2W(1m)	-	CE	2011/02/18 * 12
MAT-65	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2011/02/21 * 12
MSA-05	Spectrum Analyzer	Advantest	R3273	160400285	CE	2010/11/18 * 12

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

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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