



RADIO TEST REPORT

Test Report No. : 32FE0253-HO-H

Applicant : SAMSUNG ELECTRONICS CO., LTD.
Type of Equipment : Tablet with 802.11bgn, BT3.0+EDR
Model No. : GT-P5110
FCC ID : A3LGTP5110
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: February 8 to 20, 2012

Representative test engineer:

Katsunori Okai
Engineer of WiSE Japan,
UL Verification Service

Approved by:

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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13-EM-F0429

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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 : Tablet with 802.11bgn, BT3.0+EDR
Model No. : GT-P5110
Serial No. : Refer to Section 4, Clause 4.2
Rating : DC5.0V
Receipt Date of Sample : February 6, 2012
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	-0.31 dBi (MAX)

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

Equipment Type	Transceiver
Frequency of Operation	2412-2462MHz
Type of Modulation	DSSS, OFDM
Bandwidth & Channel spacing	20MHz & 5MHz
Antenna Type	PIFA
Antenna Gain	-0.31 dBi (MAX)

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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 February 1, 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 18.6dB, 0.51989MHz, N AV 23.0dB, 7.99164MHz, N 8.18024MHz, L	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	4.1dB 30.000MHz, QP, Vert.	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	4.7dB	5.7dB	4.4dB	4.3dB
No.2	4.1dB	5.2dB	5.1dB	4.8dB	5.6dB	4.3dB	4.2dB
No.3	4.5dB	5.0dB	5.2dB	4.8dB	5.6dB	4.5dB	4.2dB
No.4	4.7dB	5.2dB	5.2dB	4.8dB	5.6dB	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 (3m)

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

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3.5 Test Location

UL Japan, Inc. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
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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
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 Inquiry	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.

H/W version: Rev 1.0

S/W version: P5110.001

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.

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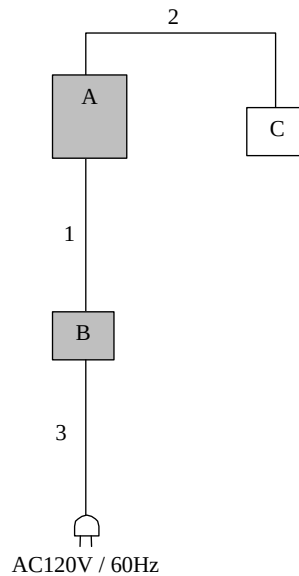
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4.2 Configuration and peripherals



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

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Tablet with 802.11bgn, BT3.0+EDR	GT-P5110	R32C200S11T *1) R31C10LKEYR *2)	SAMSUNG	EUT
B	AC Adapter	ETA-P11X	-	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	-
3	AC Cable	0.9	Unshielded	Unshielded	-

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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 0.5m, 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 0.5m, 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

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

*1) 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 2.5MHz (Inquiry mode)	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	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

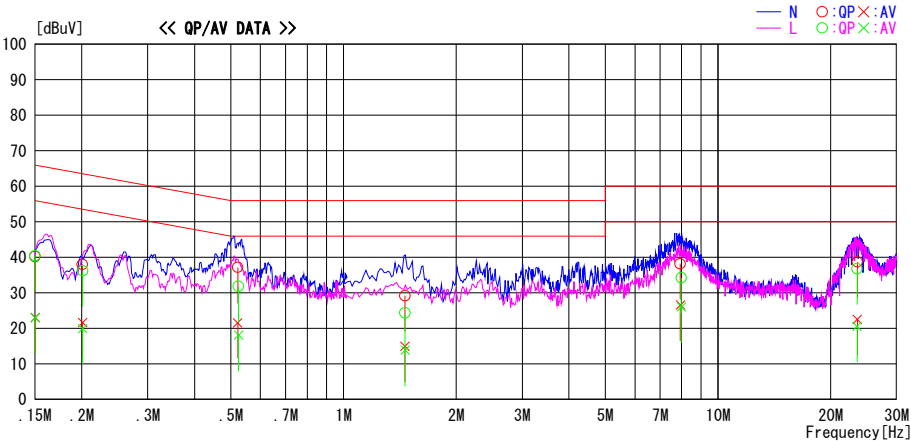
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2012/02/09

Report No. : 32FE0253-HO
Temp./Humi. : 23 deg. C / 33% RH
Engineer : Katsunori Okai

Mode / Remarks : BT Tx DH5 2441MHz

LIMIT : FCC15.207 QP
FCC15.207 AV

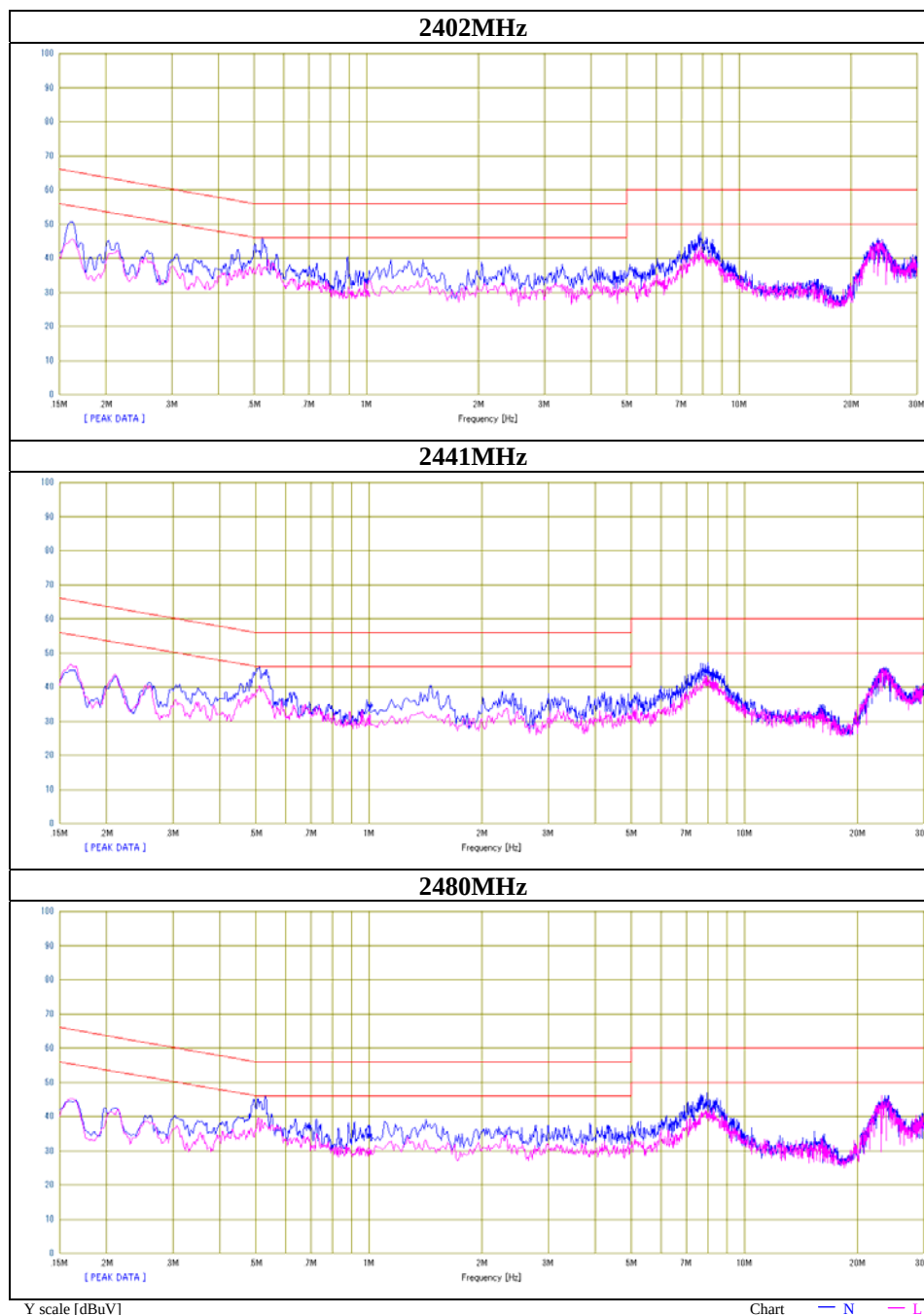


Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15000	27.0	9.9	13.2	40.2	23.1	66.0	56.0	25.8	32.9	N	
0.20081	24.8	8.5	13.2	38.0	21.7	63.6	53.6	25.6	31.9	N	
0.52125	24.0	8.4	13.2	37.2	21.6	56.0	46.0	18.8	24.4	N	
1.45803	15.8	1.6	13.4	29.2	15.0	56.0	46.0	26.8	31.0	N	
7.92873	24.1	12.5	14.1	38.2	26.6	60.0	50.0	21.8	23.4	N	
23.56484	23.3	7.2	15.4	38.7	22.6	60.0	50.0	21.3	27.4	N	
0.15000	27.2	9.8	13.2	40.4	23.0	66.0	56.0	25.6	33.0	L	
0.20095	23.0	6.8	13.2	36.2	20.0	63.6	53.6	27.4	33.6	L	
0.52413	18.6	4.9	13.2	31.8	18.1	56.0	46.0	24.2	27.9	L	
1.46033	11.0	0.5	13.4	24.4	13.9	56.0	46.0	31.6	32.1	L	
7.98430	20.2	11.9	14.1	34.3	26.0	60.0	50.0	25.7	24.0	L	
23.50506	21.5	5.3	15.3	36.8	20.6	60.0	50.0	23.2	29.4	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT [dBuV] = READING [dBuV] + C. F [dB] (LISN LOSS + CABLE LOSS + ATTEN 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.	32FE0253-HO
Date	02/09/2012
Temperature/ Humidity	23 deg.C/ 33% RH
Engineer	Katsunori Okai
Mode	Tx DH5



Conducted Emission

DATA OF CONDUCTED EMISSION TEST

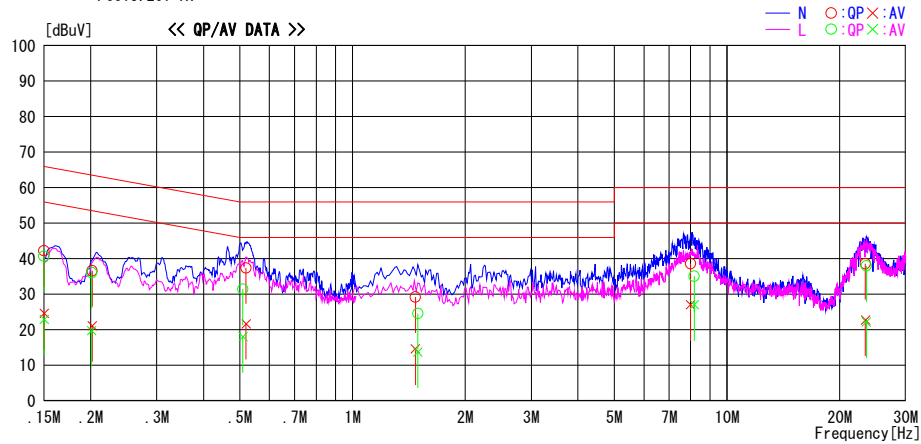
UL Japan, Inc. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
Date : 2012/02/09

Report No. : 32FE0253-H0

Temp./Humi. : 23 deg. C / 33% RH
Engineer : Katsunori Okai

Mode / Remarks : BT Tx 3DH5 2441MHz

LIMIT : FCC15.207 QP
FCC15.207 AV

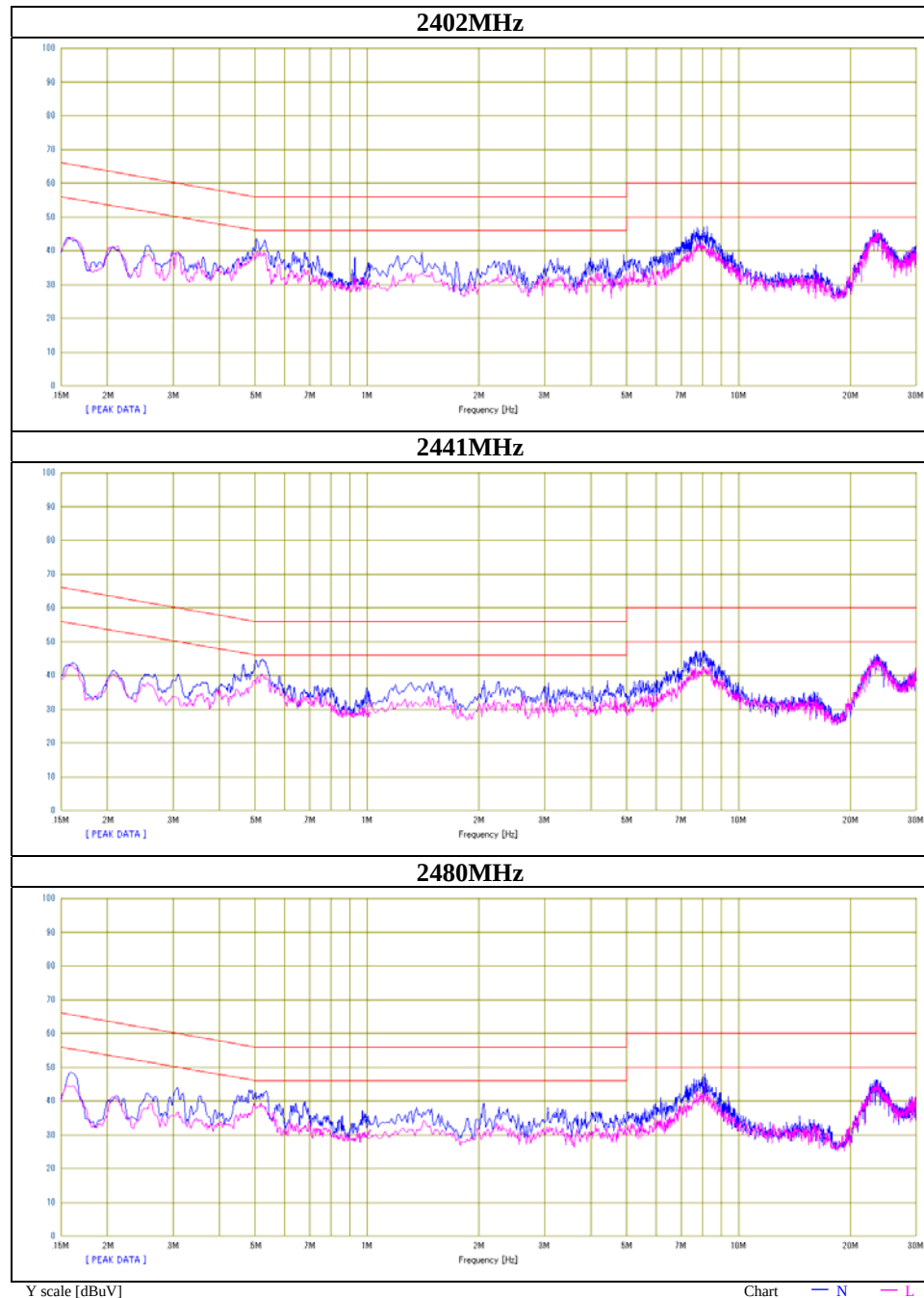


Frequency	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP	AV		QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.15000	29.0	11.4	13.2	42.2	24.6	66.0	56.0	23.8	31.4	N	
0.20166	23.4	7.9	13.2	36.6	21.1	63.5	53.5	26.9	32.4	N	
0.51989	24.2	8.5	13.2	37.4	21.7	56.0	46.0	18.6	24.3	N	
1.47034	15.8	1.2	13.4	29.2	14.6	56.0	46.0	26.8	31.4	N	
7.99164	24.5	12.9	14.1	38.6	27.0	60.0	50.0	21.4	23.0	N	
23.44551	23.3	7.4	15.3	38.6	22.7	60.0	50.0	21.4	27.3	N	
0.15000	27.5	9.7	13.2	40.7	22.9	66.0	56.0	25.3	33.1	L	
0.20108	22.9	6.6	13.2	36.1	19.8	63.6	53.6	27.5	33.8	L	
0.50962	18.2	4.8	13.2	31.4	18.0	56.0	46.0	24.6	28.0	L	
1.49335	11.2	0.3	13.4	24.6	13.7	56.0	46.0	31.4	32.3	L	
8.18024	21.0	12.9	14.1	35.1	27.0	60.0	50.0	24.9	23.0	L	
23.55468	22.6	6.8	15.4	38.0	22.2	60.0	50.0	22.0	27.8	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT[dBuV]=READING[dBuV]+C.F[dB] (LISN LOSS+CABLE LOSS+ATTEN 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.	32FE0253-HO
Date	02/09/2012
Temperature/ Humidity	23 deg.C/ 33% RH
Engineer	Katsunori Okai
Mode	Tx 3DH5



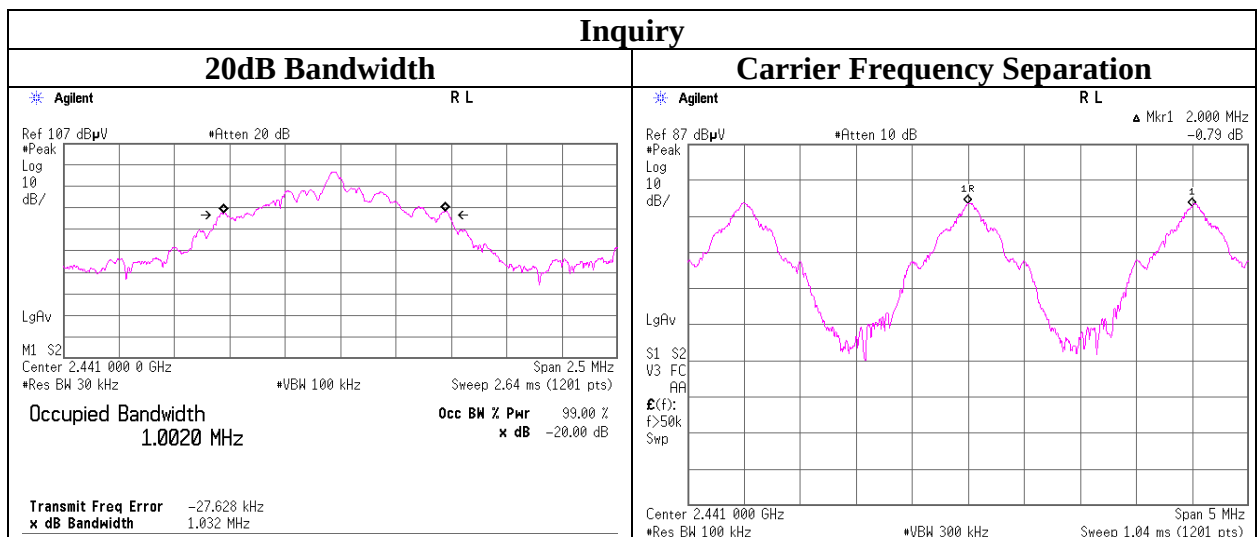
20dB Bandwidth and Carrier Frequency Separation

Test place Head Office EMC Lab. No.6 Shielded Room
and No.11 measurement room
Report No. 32FE0253-HO
Date 02/15/2012 02/20/2012
Temperature/ Humidity 22 deg.C/ 42% RH 21deg.C/ 35% RH
Engineer Yutaka Yoshida Katsunori Okai
Mode Tx (Hopping on) DH5/3DH5/Inquiry

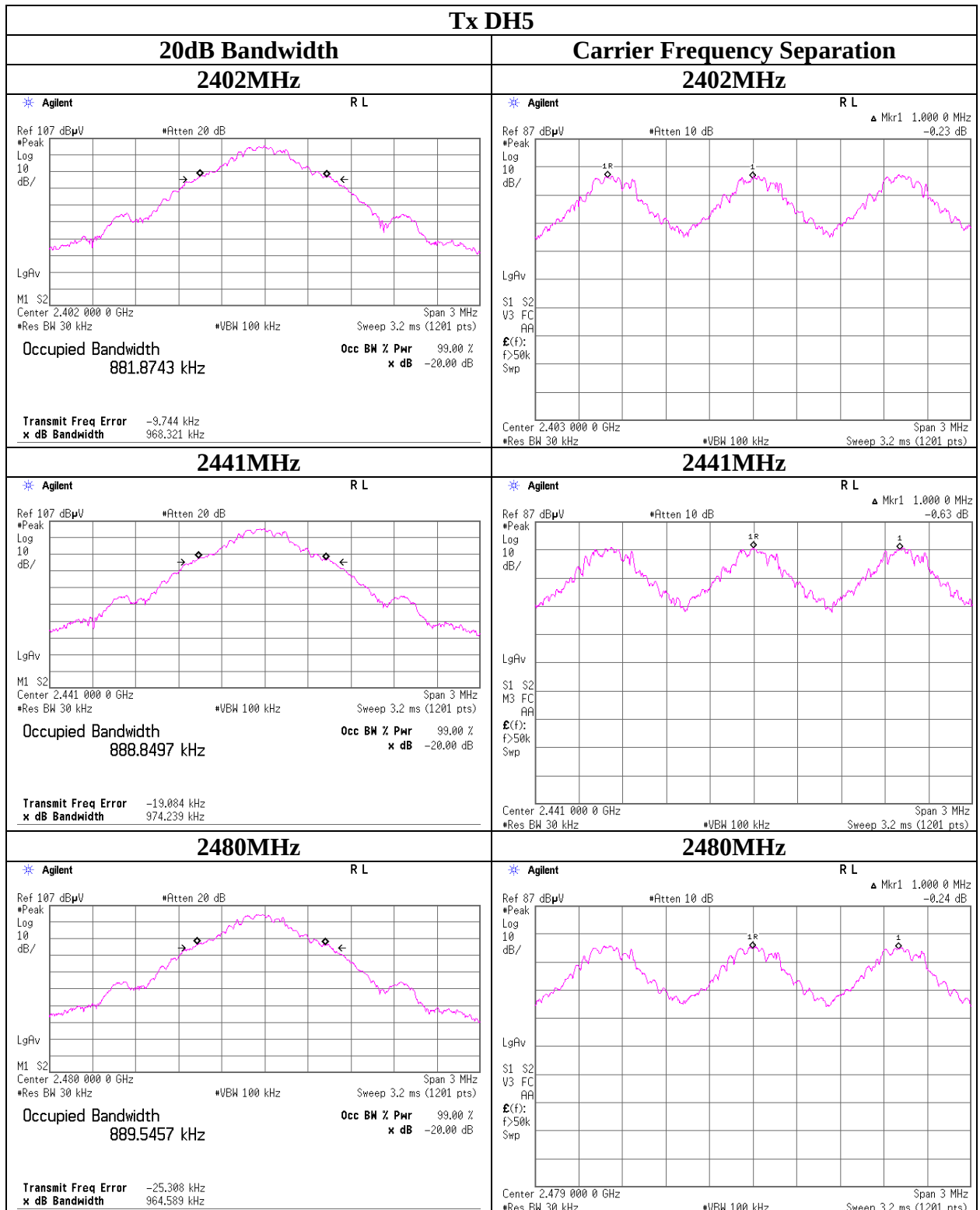
Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.968	1.000	>= 0.646
DH5	2441.0	0.974	1.000	>= 0.649
DH5	2480.0	0.965	1.000	>= 0.643
3DH5	2402.0	1.330	1.000	>= 0.887
3DH5	2441.0	1.344	1.000	>= 0.896
3DH5	2480.0	1.333	1.000	>= 0.889
Inquiry	2441.0	1.032	2.000	>= 0.688

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

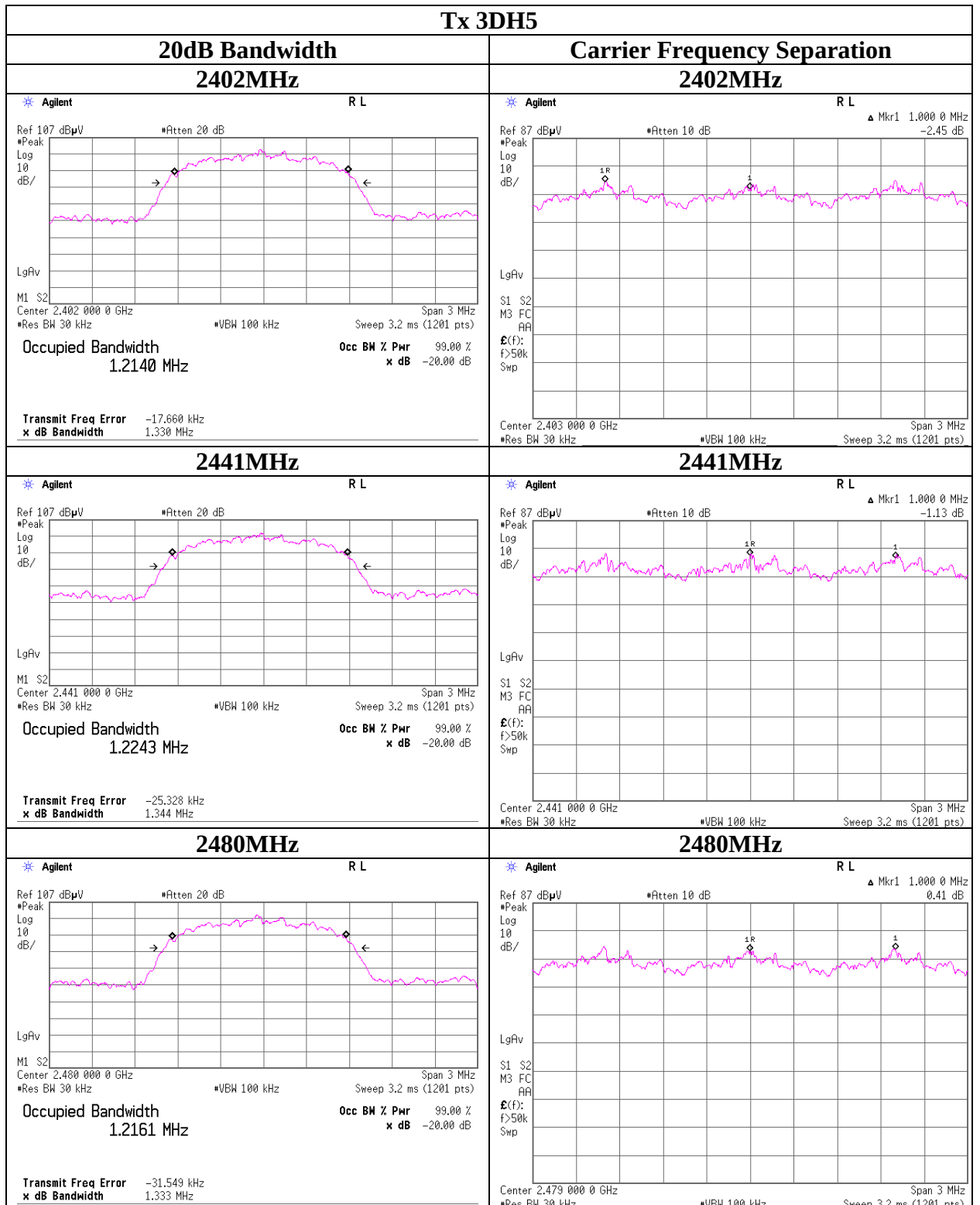
No limit applies to 20dB Bandwidth.



20dB Bandwidth and Carrier Frequency Separation



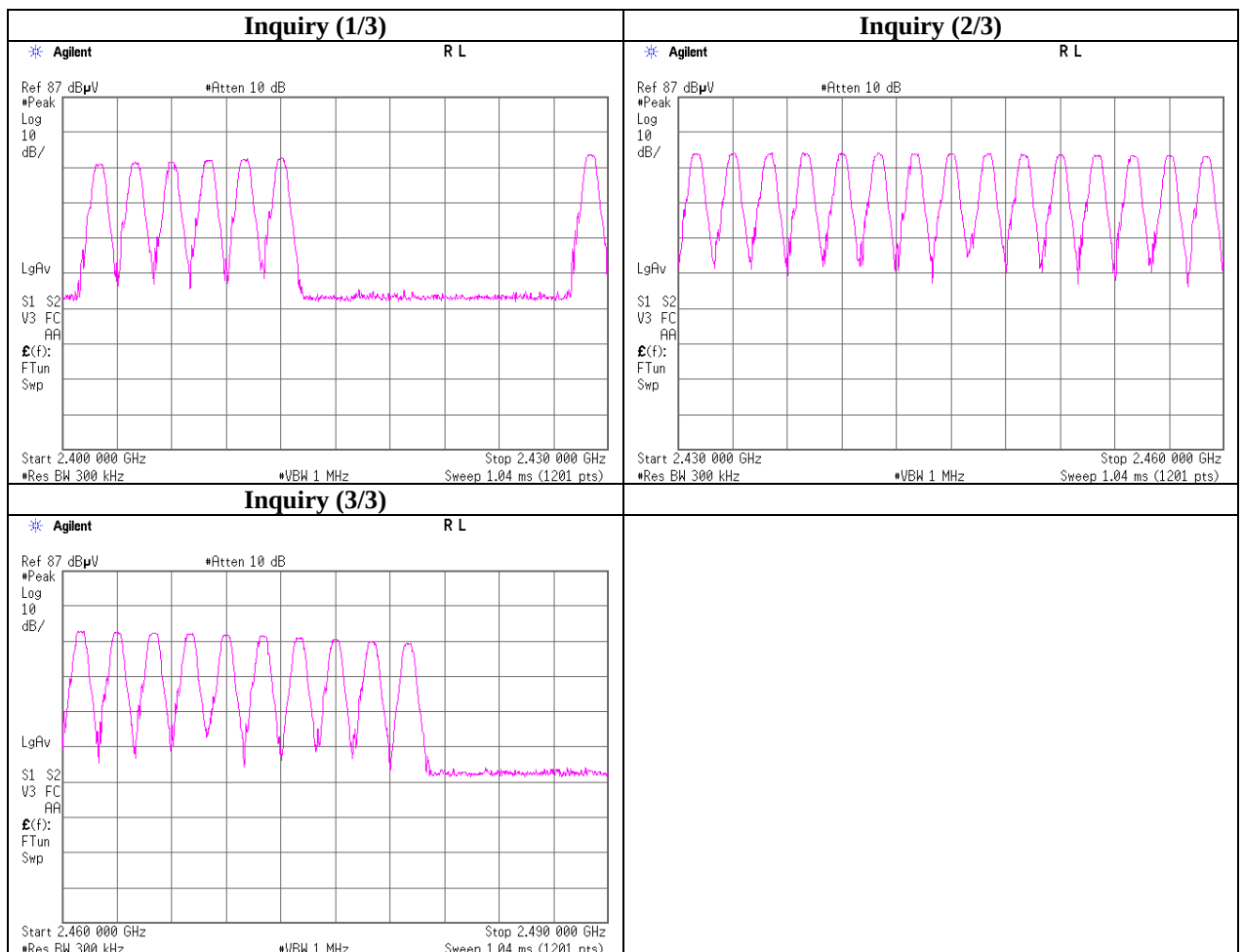
20dB Bandwidth and Carrier Frequency Separation



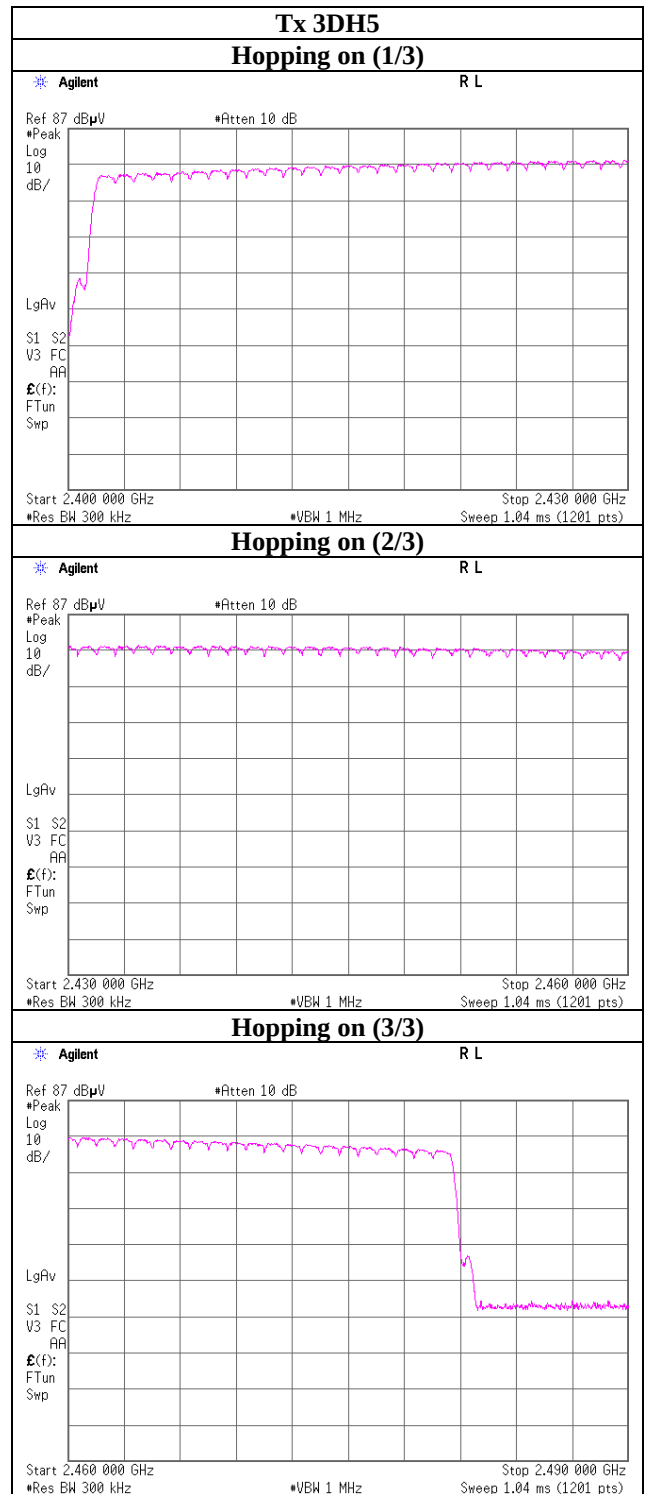
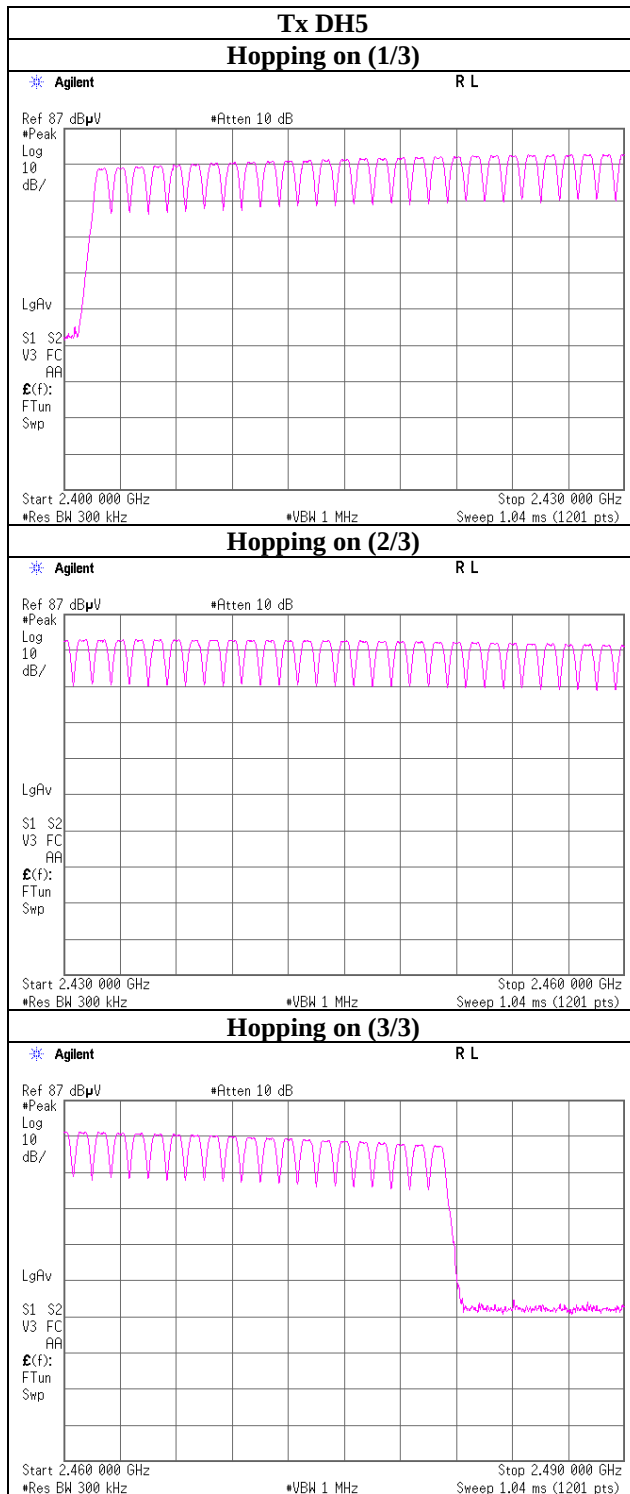
Number of Hopping Frequency

Test place	Head Office EMC Lab. No.6 Shielded Room
Report No.	32FE0253-HO
Date	02/15/2012
Temperature/ Humidity	22 deg.C/ 42% RH
Engineer	Yutaka Yoshida
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.6 Shielded Room
Report No.	32FE0253-HO
Date	02/15/2012
Temperature/ Humidity	22deg.C/ 42% RH
Engineer	Yutaka Yoshida
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	49.2 times	/	5 sec. x	31.6 sec. = 311 times	0.394	123	400
DH3	26.4 times	/	5 sec. x	31.6 sec. = 167 times	1.650	276	400
DH5	15.0 times	/	5 sec. x	31.6 sec. = 95 times	2.906	276	400
3DH1	48.6 times	/	5 sec. x	31.6 sec. = 308 times	0.399	123	400
3DH3	26.2 times	/	5 sec. x	31.6 sec. = 166 times	1.653	274	400
3DH5	19.6 times	/	5 sec. x	31.6 sec. = 124 times	2.918	362	400
Inquiry	100.0 times	/	1 sec. x	12.8 sec. = 1280 times	0.093	119	400

Sample Calculation

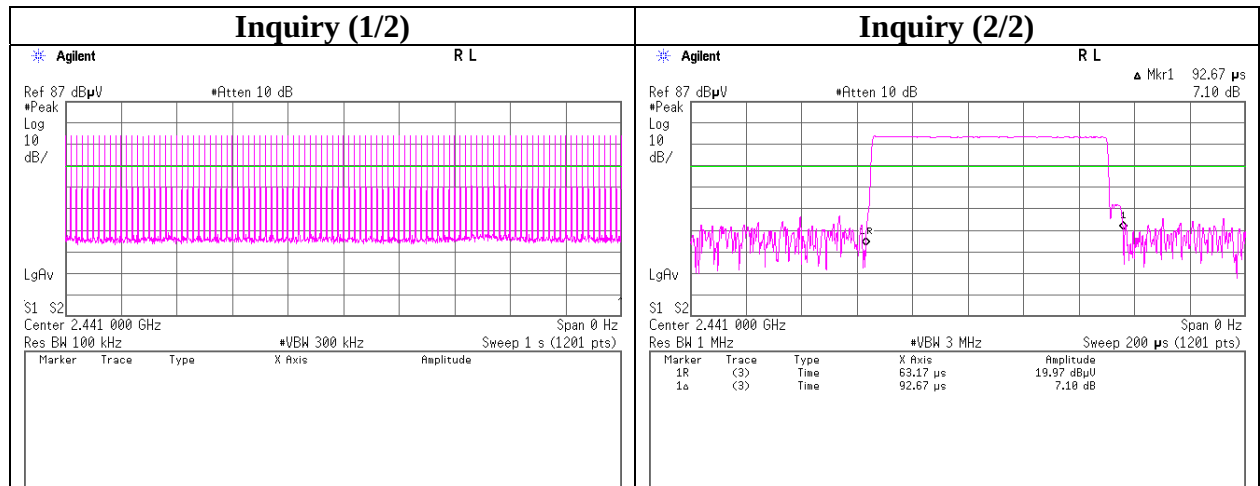
Result = Number of transmission x Length of transmission time

*Average data of 5 tests.(except Inquiry)

Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	49	48	50	50	49	49.2
DH3	28	26	27	25	26	26.4
DH5	17	13	16	15	14	15
3DH1	49	49	48	48	49	48.6
3DH3	27	29	28	22	25	26.2
3DH5	22	18	19	21	18	19.6

Sample Calculation

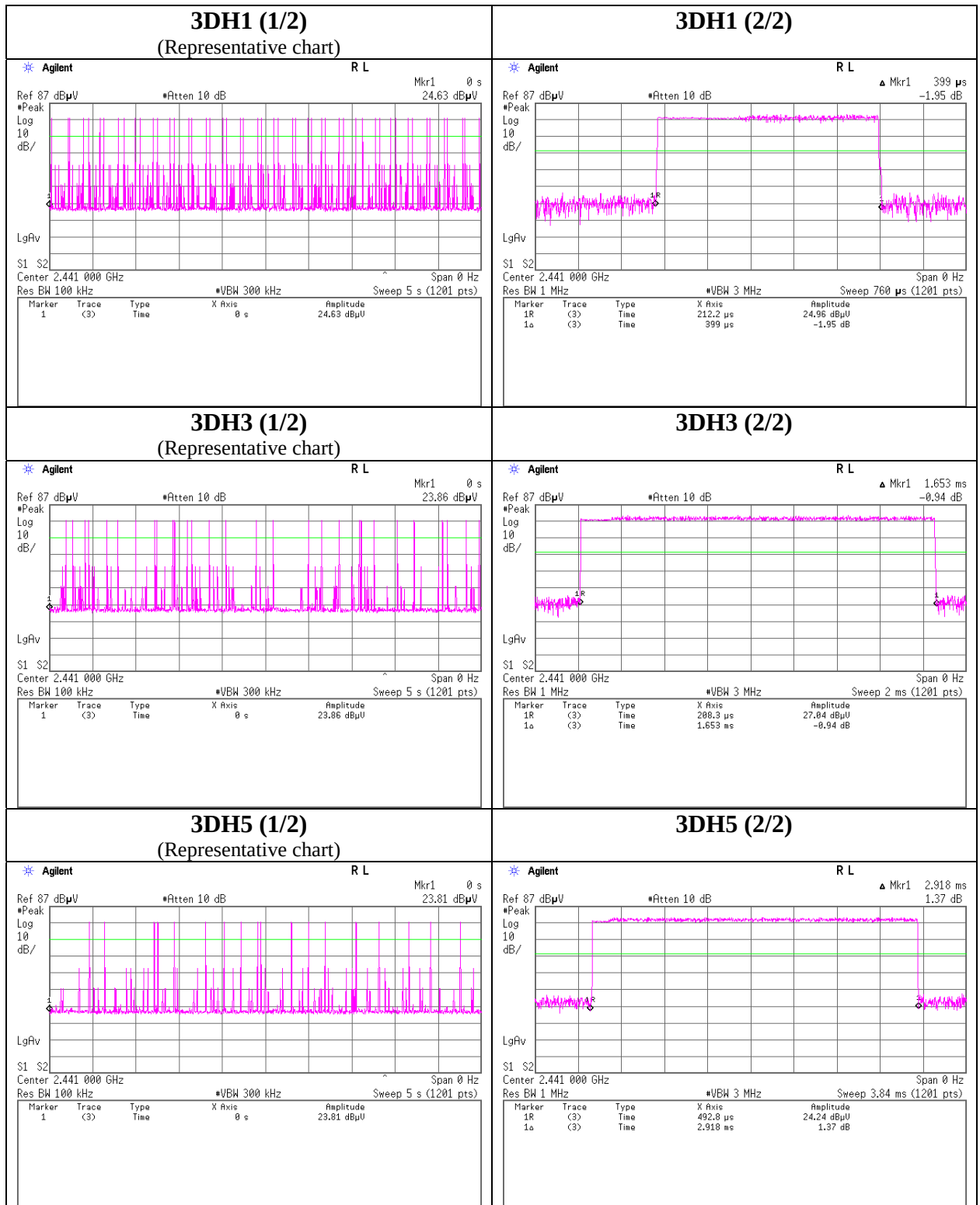
Average= Summation(Sampling 1 to 5) / 5



Dwell time



Dwell time



Maximum Peak Output Power

Test place : Head Office EMC Lab. No.11 measurement room
Report No. : 32FE0253-HO
Date : 02/20/2012
Temperature/ Humidity : 21deg.C/ 35% RH
Engineer : Katsunori Okai
Mode : Tx (Hopping off) DH5/3DH5/Inquiry

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-1.75	6.82	10.07	15.14	32.66	20.97	125	5.83
DH5	2441.0	-1.90	6.85	10.07	15.02	31.77	20.97	125	5.95
DH5	2480.0	-2.45	6.87	10.07	14.49	28.12	20.97	125	6.48
2DH5	2402.0	-1.66	6.82	10.07	15.23	33.34	20.97	125	5.74
2DH5	2441.0	-1.81	6.85	10.07	15.11	32.43	20.97	125	5.86
2DH5	2480.0	-2.36	6.87	10.07	14.58	28.71	20.97	125	6.39
3DH5	2402.0	-1.36	6.82	10.07	15.53	35.73	20.97	125	5.44
3DH5	2441.0	-1.53	6.85	10.07	15.39	34.59	20.97	125	5.58
3DH5	2480.0	-2.06	6.87	10.07	14.88	30.76	20.97	125	6.09
Inquiry	2441.0	-10.49	6.85	10.07	6.43	4.40	20.97	125	14.54

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. : 32FE0253-HO
Date : 02/08/2012
Temperature/ Humidity : 22 deg.C/ 32% RH
Engineer : Satofumi Matsuyama
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	30.000	QP	25.5	18.0	6.7	28.5	21.7	40.0	18.3	
Hori	37.410	QP	34.1	15.2	6.8	28.5	27.6	40.0	12.4	
Hori	51.616	QP	24.7	10.6	7.0	28.6	13.7	40.0	26.3	
Hori	91.738	QP	30.5	7.9	7.4	28.4	17.4	43.5	26.1	
Hori	156.005	QP	27.4	15.2	7.9	28.1	22.4	43.5	21.1	
Hori	417.624	QP	24.1	17.5	9.4	28.4	22.6	46.0	23.4	
Hori	2390.000	PK	48.9	26.4	2.2	34.8	42.7	73.9	31.2	
Hori	2400.000	PK	59.3	26.4	2.2	34.8	53.1	73.9	20.8	
Hori	4804.000	PK	52.0	30.4	3.9	34.0	52.3	73.9	21.6	
Hori	7206.000	PK	41.2	35.2	4.5	34.2	46.7	73.9	27.2	NS
Hori	9608.000	PK	42.2	38.1	5.3	34.7	50.9	73.9	23.0	NS
Hori	24020.000	PK	45.0	40.5	-1.7	31.7	52.1	73.9	21.8	NS
Hori	2390.000	AV	32.8	26.4	2.2	34.8	26.6	53.9	27.3	
Hori	2400.000	AV	39.3	26.4	2.2	34.8	33.1	53.9	20.8	
Hori	4804.000	AV	46.6	30.4	3.9	34.0	46.9	53.9	7.0	
Hori	7206.000	AV	29.0	35.2	4.5	34.2	34.5	53.9	19.4	NS
Hori	9608.000	AV	29.9	38.1	5.3	34.7	38.6	53.9	15.3	NS
Hori	24020.000	AV	33.1	40.5	-1.7	31.7	40.2	53.9	13.7	NS
Vert	30.000	QP	36.9	18.0	6.7	28.5	33.1	40.0	6.9	
Vert	36.925	QP	40.6	15.4	6.8	28.5	34.3	40.0	5.7	
Vert	52.005	QP	30.4	10.5	7.0	28.6	19.3	40.0	20.7	
Vert	89.993	QP	33.0	7.6	7.4	28.4	19.6	43.5	23.9	
Vert	156.004	QP	24.6	15.2	7.9	28.1	19.6	43.5	23.9	
Vert	417.623	QP	25.1	17.5	9.4	28.4	23.6	46.0	22.4	
Vert	2390.000	PK	45.8	26.4	2.2	34.8	39.6	73.9	34.3	
Vert	2400.000	PK	61.5	26.4	2.2	34.8	55.3	73.9	18.6	
Vert	4804.000	PK	54.3	30.4	3.9	34.0	54.6	73.9	19.3	
Vert	7206.000	PK	41.8	35.2	4.5	34.2	47.3	73.9	26.6	NS
Vert	9608.000	PK	43.3	38.1	5.3	34.7	52.0	73.9	21.9	NS
Vert	24020.000	PK	45.0	40.5	-1.7	31.7	52.1	73.9	21.8	NS
Vert	2390.000	AV	32.7	26.4	2.2	34.8	26.5	53.9	27.4	
Vert	2400.000	AV	39.2	26.4	2.2	34.8	33.0	53.9	20.9	
Vert	4804.000	AV	48.5	30.4	3.9	34.0	48.8	53.9	5.1	
Vert	7206.000	AV	29.0	35.2	4.5	34.2	34.5	53.9	19.4	NS
Vert	9608.000	AV	30.3	38.1	5.3	34.7	39.0	53.9	14.9	NS
Vert	24020.000	AV	33.1	40.5	-1.7	31.7	40.2	53.9	13.7	NS

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

*NS: No Signal detect

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 32FE0253-HO
Date 02/08/2012
Temperature/ Humidity 22 deg.C/ 32% RH
Engineer Satofumi Matsuyama
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	30.000	QP	25.7	18.0	6.7	28.5	21.9	40.0	18.1	
Hori	37.410	QP	34.3	15.2	6.8	28.5	27.8	40.0	12.2	
Hori	52.002	QP	24.9	10.5	7.0	28.6	13.8	40.0	26.2	
Hori	91.729	QP	30.9	7.9	7.4	28.4	17.8	43.5	25.7	
Hori	156.001	QP	27.5	15.2	7.9	28.1	22.5	43.5	21.0	
Hori	417.872	QP	24.6	17.5	9.4	28.4	23.1	46.0	22.9	
Hori	4882.000	PK	48.0	30.5	3.8	34.0	48.3	73.9	25.6	
Hori	7323.000	PK	44.0	35.2	4.6	34.2	49.6	73.9	24.3	NS
Hori	9764.000	PK	45.3	38.3	5.3	34.7	54.2	73.9	19.7	NS
Hori	24410.000	PK	46.0	40.4	-1.7	32.2	52.5	73.9	21.4	NS
Hori	4882.000	AV	40.7	30.5	3.8	34.0	41.0	53.9	12.9	
Hori	7323.000	AV	32.3	35.2	4.6	34.2	37.9	53.9	16.0	NS
Hori	9764.000	AV	33.8	38.3	5.3	34.7	42.7	53.9	11.2	NS
Hori	24410.000	AV	34.6	40.4	-1.7	32.2	41.1	53.9	12.8	NS
Vert	30.000	QP	36.8	18.0	6.7	28.5	33.0	40.0	7.0	
Vert	36.984	QP	40.7	15.4	6.8	28.5	34.4	40.0	5.6	
Vert	51.998	QP	30.7	10.5	7.0	28.6	19.6	40.0	20.4	
Vert	89.995	QP	33.4	7.6	7.4	28.4	20.0	43.5	23.5	
Vert	156.001	QP	24.6	15.2	7.9	28.1	19.6	43.5	23.9	
Vert	417.623	QP	26.5	17.5	9.4	28.4	25.0	46.0	21.0	
Vert	4882.000	PK	46.5	30.5	3.8	34.0	46.8	73.9	27.1	
Vert	7323.000	PK	44.0	35.2	4.6	34.2	49.6	73.9	24.3	NS
Vert	9764.000	PK	44.5	38.3	5.3	34.7	53.4	73.9	20.5	NS
Vert	24410.000	PK	46.9	40.4	-1.7	32.2	53.4	73.9	20.5	NS
Vert	4882.000	AV	38.4	30.5	3.8	34.0	38.7	53.9	15.2	
Vert	7323.000	AV	32.4	35.2	4.6	34.2	38.0	53.9	15.9	NS
Vert	9764.000	AV	33.8	38.3	5.3	34.7	42.7	53.9	11.2	NS
Vert	24410.000	AV	34.6	40.4	-1.7	32.2	41.1	53.9	12.8	NS

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

*NS: No Signal detect

Radiated Spurious Emission

Test place : Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. : 32FE0253-HO
Date : 02/08/2012
Temperature/ Humidity : 22 deg.C/ 32% RH
Engineer : Satofumi Matsuyama
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	30.000	QP	26.2	18.0	6.7	28.5	22.4	40.0	17.6	
Hori	37.629	QP	35.4	15.1	6.8	28.6	28.7	40.0	11.3	
Hori	50.391	QP	23.8	11.0	7.0	28.6	13.2	40.0	26.8	
Hori	91.798	QP	29.3	8.0	7.4	28.4	16.3	43.5	27.2	
Hori	156.001	QP	27.5	15.2	7.9	28.1	22.5	43.5	21.0	
Hori	417.801	QP	24.5	17.5	9.4	28.4	23.0	46.0	23.0	
Hori	2483.500	PK	59.0	26.5	2.3	34.8	53.0	73.9	20.9	
Hori	4960.000	PK	53.8	30.6	3.9	34.0	54.3	73.9	19.6	
Hori	7440.000	PK	42.3	35.1	4.6	34.3	47.7	73.9	26.2	NS
Hori	9920.000	PK	42.4	38.6	5.4	34.7	51.7	73.9	22.2	NS
Hori	24800.000	PK	47.6	40.3	-1.6	32.7	53.6	73.9	20.3	NS
Hori	2483.500	AV	37.8	26.5	2.3	34.8	31.8	53.9	22.1	
Hori	4960.000	AV	49.2	30.6	3.9	34.0	49.7	53.9	4.2	
Hori	7440.000	AV	31.2	35.1	4.6	34.3	36.6	53.9	17.3	NS
Hori	9920.000	AV	32.4	38.6	5.4	34.7	41.7	53.9	12.2	NS
Hori	24800.000	AV	36.2	40.3	-1.6	32.7	42.2	53.9	11.7	NS
Vert	30.000	QP	36.7	18.0	6.7	28.5	32.9	40.0	7.1	
Vert	37.569	QP	41.8	15.2	6.8	28.6	35.2	40.0	4.8	
Vert	52.001	QP	28.4	10.5	7.0	28.6	17.3	40.0	22.7	
Vert	89.993	QP	31.9	7.6	7.4	28.4	18.5	43.5	25.0	
Vert	156.001	QP	24.7	15.2	7.9	28.1	19.7	43.5	23.8	
Vert	417.753	QP	26.2	17.5	9.4	28.4	24.7	46.0	21.3	
Vert	2483.500	PK	56.3	26.5	2.3	34.8	50.3	73.9	23.6	
Vert	4960.000	PK	52.3	30.6	3.9	34.0	52.8	73.9	21.1	
Vert	7440.000	PK	42.2	35.1	4.6	34.3	47.6	73.9	26.3	NS
Vert	9920.000	PK	42.3	38.6	5.4	34.7	51.6	73.9	22.3	NS
Vert	24800.000	PK	48.8	40.3	-1.6	32.7	54.8	73.9	19.1	NS
Vert	2483.500	AV	39.0	26.5	2.3	34.8	33.0	53.9	20.9	
Vert	4960.000	AV	41.8	30.6	3.9	34.0	42.3	53.9	11.6	
Vert	7440.000	AV	31.2	35.1	4.6	34.3	36.6	53.9	17.3	NS
Vert	9920.000	AV	32.3	38.6	5.4	34.7	41.6	53.9	12.3	NS
Vert	24800.000	AV	36.2	40.3	-1.6	32.7	42.2	53.9	11.7	NS

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

*NS: No Signal detect

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	32FE0253-HO	
Date	02/08/2012	02/09/2012
Temperature/ Humidity	22 deg.C/ 32% RH	23 deg.C/ 33% RH
Engineer	Satofumi Matsuyama	Katsunori Okai
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	30.000	QP	26.1	18.0	6.7	28.5	22.3	40.0	17.7	
Hori	38.725	QP	34.5	14.7	6.8	28.6	27.4	40.0	12.6	
Hori	52.005	QP	25.5	10.5	7.0	28.6	14.4	40.0	25.6	
Hori	92.444	QP	31.0	8.1	7.4	28.4	18.1	43.5	25.4	
Hori	190.001	QP	27.1	16.2	8.1	28.0	23.4	43.5	20.1	
Hori	450.412	QP	27.8	17.9	9.5	28.5	26.7	46.0	19.3	
Hori	2390.000	PK	45.6	26.4	2.2	34.8	39.4	73.9	34.5	
Hori	2400.000	PK	63.6	26.4	2.2	34.8	57.4	73.9	16.5	
Hori	4804.000	PK	50.3	30.4	3.9	34.0	50.6	73.9	23.3	
Hori	7206.000	PK	42.1	35.2	4.5	34.2	47.6	73.9	26.3	NS
Hori	9608.000	PK	42.8	38.1	5.3	34.7	51.5	73.9	22.4	NS
Hori	24020.000	PK	44.8	40.5	-1.7	31.7	51.9	73.9	22.0	NS
Hori	2390.000	AV	32.6	26.4	2.2	34.8	26.4	53.9	27.5	
Hori	2400.000	AV	47.0	26.4	2.2	34.8	40.8	53.9	13.1	
Hori	4804.000	AV	41.8	30.4	3.9	34.0	42.1	53.9	11.8	
Hori	7206.000	AV	30.9	35.2	4.5	34.2	36.4	53.9	17.5	NS
Hori	9608.000	AV	31.9	38.1	5.3	34.7	40.6	53.9	13.3	NS
Hori	24020.000	AV	33.1	40.5	-1.7	31.7	40.2	53.9	13.7	NS
Vert	30.000	QP	39.7	18.0	6.7	28.5	35.9	40.0	4.1	
Vert	39.271	QP	41.8	14.5	6.9	28.6	34.6	40.0	5.4	
Vert	52.002	QP	35.0	10.5	7.0	28.6	23.9	40.0	16.1	
Vert	89.850	QP	33.0	7.6	7.4	28.4	19.6	43.5	23.9	
Vert	190.003	QP	26.2	16.2	8.1	28.0	22.5	43.5	21.0	
Vert	450.411	QP	27.2	17.9	9.5	28.5	26.1	46.0	19.9	
Vert	2390.000	PK	47.4	26.4	2.2	34.8	41.2	73.9	32.7	
Vert	2400.000	PK	62.7	26.4	2.2	34.8	56.5	73.9	17.4	
Vert	4804.000	PK	54.0	30.4	3.9	34.0	54.3	73.9	19.6	
Vert	7206.000	PK	42.2	35.2	4.5	34.2	47.7	73.9	26.2	NS
Vert	9608.000	PK	42.4	38.1	5.3	34.7	51.1	73.9	22.8	NS
Vert	24020.000	PK	45.9	40.5	-1.7	31.7	53.0	73.9	20.9	NS
Vert	2390.000	AV	32.6	26.4	2.2	34.8	26.4	53.9	27.5	
Vert	2400.000	AV	46.4	26.4	2.2	34.8	40.2	53.9	13.7	
Vert	4804.000	AV	45.3	30.4	3.9	34.0	45.6	53.9	8.3	
Vert	7206.000	AV	30.9	35.2	4.5	34.2	36.4	53.9	17.5	NS
Vert	9608.000	AV	31.9	38.1	5.3	34.7	40.6	53.9	13.3	NS
Vert	24020.000	AV	33.1	40.5	-1.7	31.7	40.2	53.9	13.7	NS

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

*NS: No Signal detect

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 32FE0253-HO
Date 02/08/2012 02/09/2012
Temperature/ Humidity 22 deg.C/ 32% RH 23 deg.C/ 33% RH
Engineer Satofumi Matsuyama Katsunori Okai
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	30.000	QP	26.1	18.0	6.7	28.5	22.3	40.0	17.7	
Hori	39.681	QP	34.0	14.4	6.9	28.6	26.7	40.0	13.3	
Hori	52.005	QP	24.9	10.5	7.0	28.6	13.8	40.0	26.2	
Hori	90.622	QP	33.0	7.7	7.4	28.4	19.7	43.5	23.8	
Hori	190.199	QP	27.1	16.2	8.1	28.0	23.4	43.5	20.1	
Hori	450.333	QP	30.2	17.9	9.5	28.5	29.1	46.0	16.9	
Hori	4882.000	PK	48.7	30.5	3.8	34.0	49.0	73.9	24.9	
Hori	7323.000	PK	43.8	35.2	4.6	34.2	49.4	73.9	24.5	NS
Hori	9764.000	PK	44.4	38.3	5.3	34.7	53.3	73.9	20.6	NS
Hori	24410.000	PK	46.8	40.4	-1.7	32.2	53.3	73.9	20.6	NS
Hori	4882.000	AV	38.9	30.5	3.8	34.0	39.2	53.9	14.7	
Hori	7323.000	AV	30.3	35.2	4.6	34.2	35.9	53.9	18.0	NS
Hori	9764.000	AV	31.4	38.3	5.3	34.7	40.3	53.9	13.6	NS
Hori	24410.000	AV	34.6	40.4	-1.7	32.2	41.1	53.9	12.8	NS
Vert	30.000	QP	39.6	18.0	6.7	28.5	35.8	40.0	4.2	
Vert	39.665	QP	41.6	14.4	6.9	28.6	34.3	40.0	5.7	
Vert	52.722	QP	34.0	10.3	7.0	28.6	22.7	40.0	17.3	
Vert	90.241	QP	35.7	7.6	7.4	28.4	22.3	43.5	21.2	
Vert	190.011	QP	26.7	16.2	8.1	28.0	23.0	43.5	20.5	
Vert	450.332	QP	25.7	17.9	9.5	28.5	24.6	46.0	21.4	
Vert	4882.000	PK	51.9	30.5	3.8	34.0	52.2	73.9	21.7	
Vert	7323.000	PK	42.6	35.2	4.6	34.2	48.2	73.9	25.7	NS
Vert	9764.000	PK	44.2	38.3	5.3	34.7	53.1	73.9	20.8	NS
Vert	24410.000	PK	47.2	40.4	-1.7	32.2	53.7	73.9	20.2	NS
Vert	4882.000	AV	43.3	30.5	3.8	34.0	43.6	53.9	10.3	
Vert	7323.000	AV	30.3	35.2	4.6	34.2	35.9	53.9	18.0	NS
Vert	9764.000	AV	31.4	38.3	5.3	34.7	40.3	53.9	13.6	NS
Vert	24410.000	AV	34.6	40.4	-1.7	32.2	41.1	53.9	12.8	NS

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

*NS: No Signal detect

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	32FE0253-HO	
Date	02/08/2012	02/09/2012
Temperature/ Humidity	22 deg.C/ 32% RH	23 deg.C/ 33% RH
Engineer	Satofumi Matsuyama	Katsunori Okai
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	30.000	QP	25.5	18.0	6.7	28.5	21.7	40.0	18.3	
Hori	39.381	QP	33.9	14.5	6.9	28.6	26.7	40.0	13.3	
Hori	52.068	QP	26.3	10.5	7.0	28.6	15.2	40.0	24.8	
Hori	91.022	QP	32.7	7.8	7.4	28.4	19.5	43.5	24.0	
Hori	190.002	QP	26.8	16.2	8.1	28.0	23.1	43.5	20.4	
Hori	450.314	QP	30.1	17.9	9.5	28.5	29.0	46.0	17.0	
Hori	2483.500	PK	52.4	26.5	2.3	34.8	46.4	73.9	27.5	
Hori	4960.000	PK	53.5	30.6	3.9	34.0	54.0	73.9	19.9	
Hori	7440.000	PK	43.5	35.1	4.6	34.3	48.9	73.9	25.0	NS
Hori	9920.000	PK	44.8	38.6	5.4	34.7	54.1	73.9	19.8	NS
Hori	24800.000	PK	47.6	40.3	-1.6	32.7	53.6	73.9	20.3	NS
Hori	2483.500	AV	36.4	26.5	2.3	34.8	30.4	53.9	23.5	
Hori	4960.000	AV	45.5	30.6	3.9	34.0	46.0	53.9	7.9	
Hori	7440.000	AV	30.6	35.1	4.6	34.3	36.0	53.9	17.9	NS
Hori	9920.000	AV	31.7	38.6	5.4	34.7	41.0	53.9	12.9	NS
Hori	24800.000	AV	36.2	40.3	-1.6	32.7	42.2	53.9	11.7	NS
Vert	30.000	QP	39.7	18.0	6.7	28.5	35.9	40.0	4.1	
Vert	39.365	QP	42.0	14.5	6.9	28.6	34.8	40.0	5.2	
Vert	52.821	QP	33.9	10.3	7.0	28.6	22.6	40.0	17.4	
Vert	89.744	QP	35.7	7.5	7.4	28.4	22.2	43.5	21.3	
Vert	190.002	QP	26.7	16.2	8.1	28.0	23.0	43.5	20.5	
Vert	450.315	QP	25.7	17.9	9.5	28.5	24.6	46.0	21.4	
Vert	2483.500	PK	53.8	26.5	2.3	34.8	47.8	73.9	26.1	
Vert	4960.000	PK	56.6	30.6	3.9	34.0	57.1	73.9	16.8	
Vert	7440.000	PK	43.1	35.1	4.6	34.3	48.5	73.9	25.4	NS
Vert	9920.000	PK	44.6	38.6	5.4	34.7	53.9	73.9	20.0	NS
Vert	24800.000	PK	48.1	40.3	-1.6	32.7	54.1	73.9	19.8	NS
Vert	2483.500	AV	36.0	26.5	2.3	34.8	30.0	53.9	23.9	
Vert	4960.000	AV	48.7	30.6	3.9	34.0	49.2	53.9	4.7	
Vert	7440.000	AV	30.6	35.1	4.6	34.3	36.0	53.9	17.9	NS
Vert	9920.000	AV	31.7	38.6	5.4	34.7	41.0	53.9	12.9	NS
Vert	24800.000	AV	36.2	40.3	-1.6	32.7	42.2	53.9	11.7	NS

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.

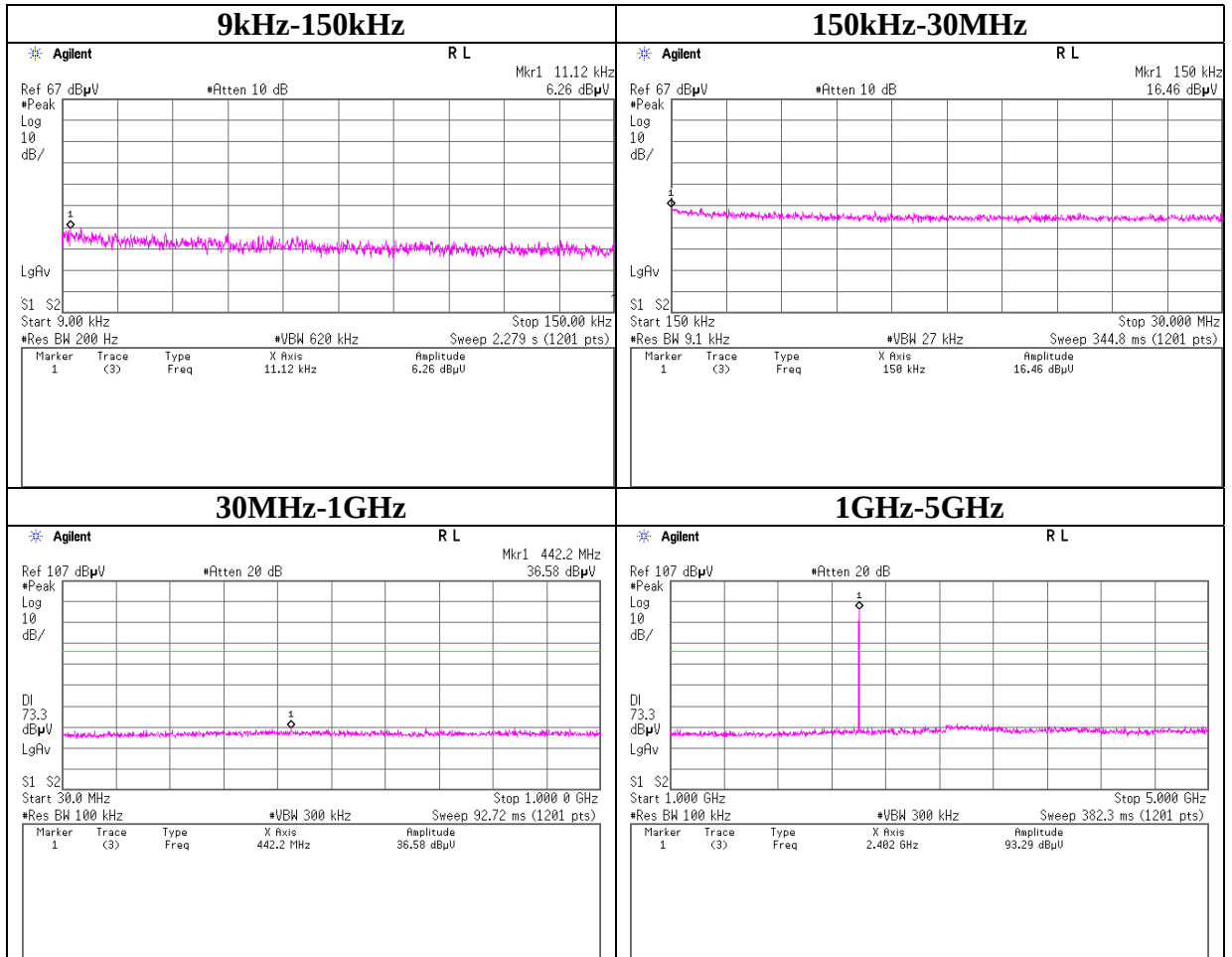
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

*NS: No Signal detect

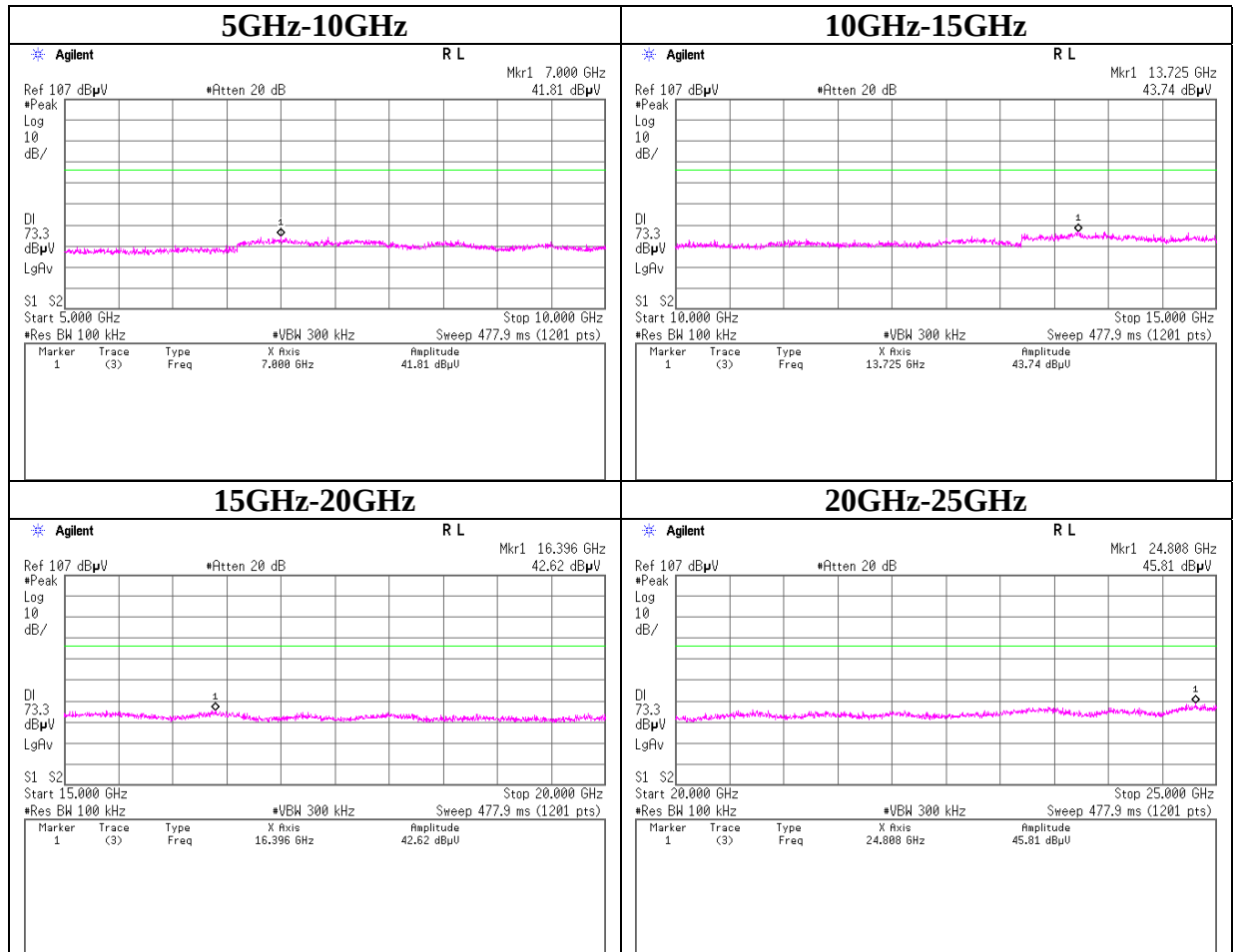
Conducted Spurious Emission

Tx DH5 2402MHz



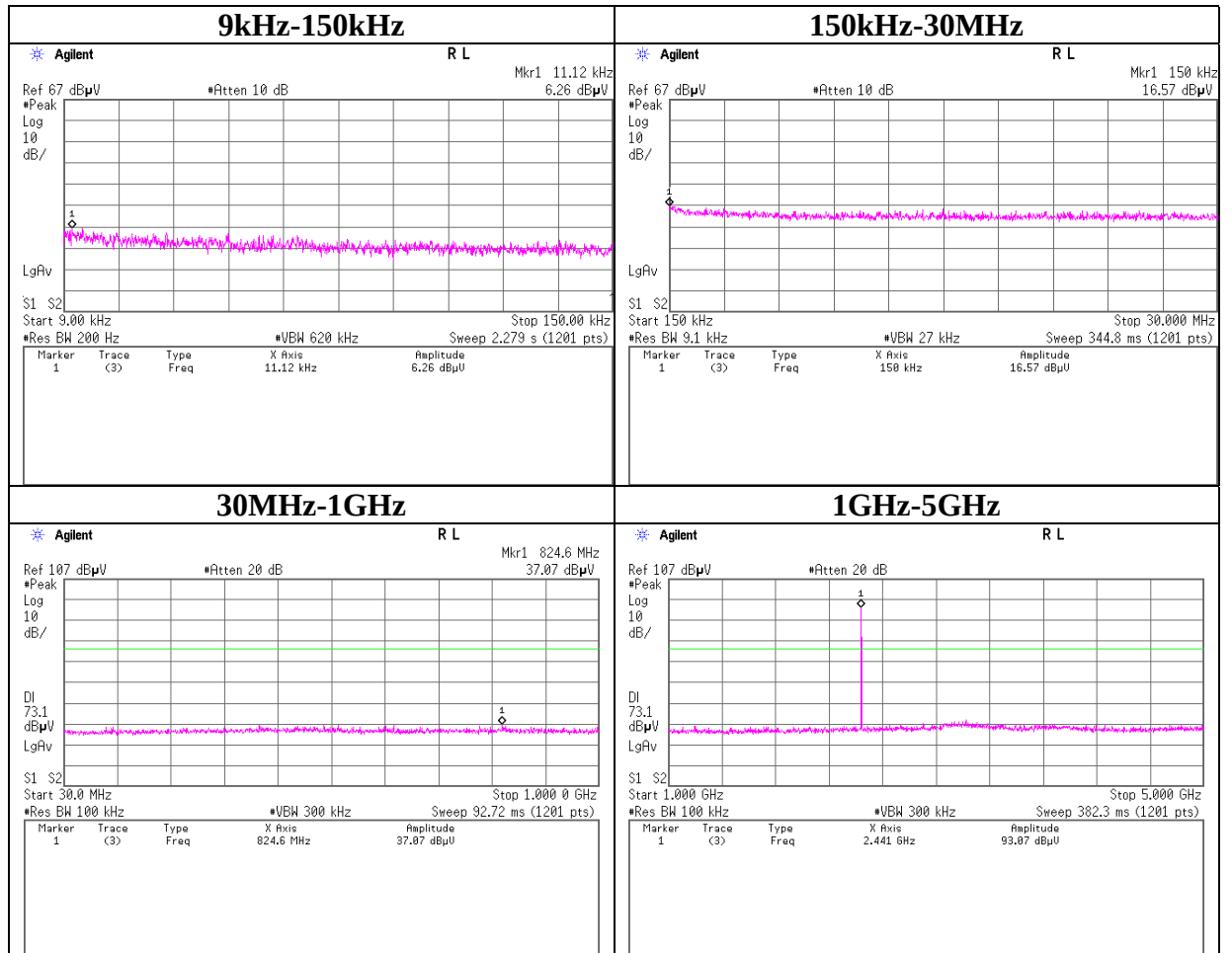
Conducted Spurious Emission

Tx DH5 2402MHz



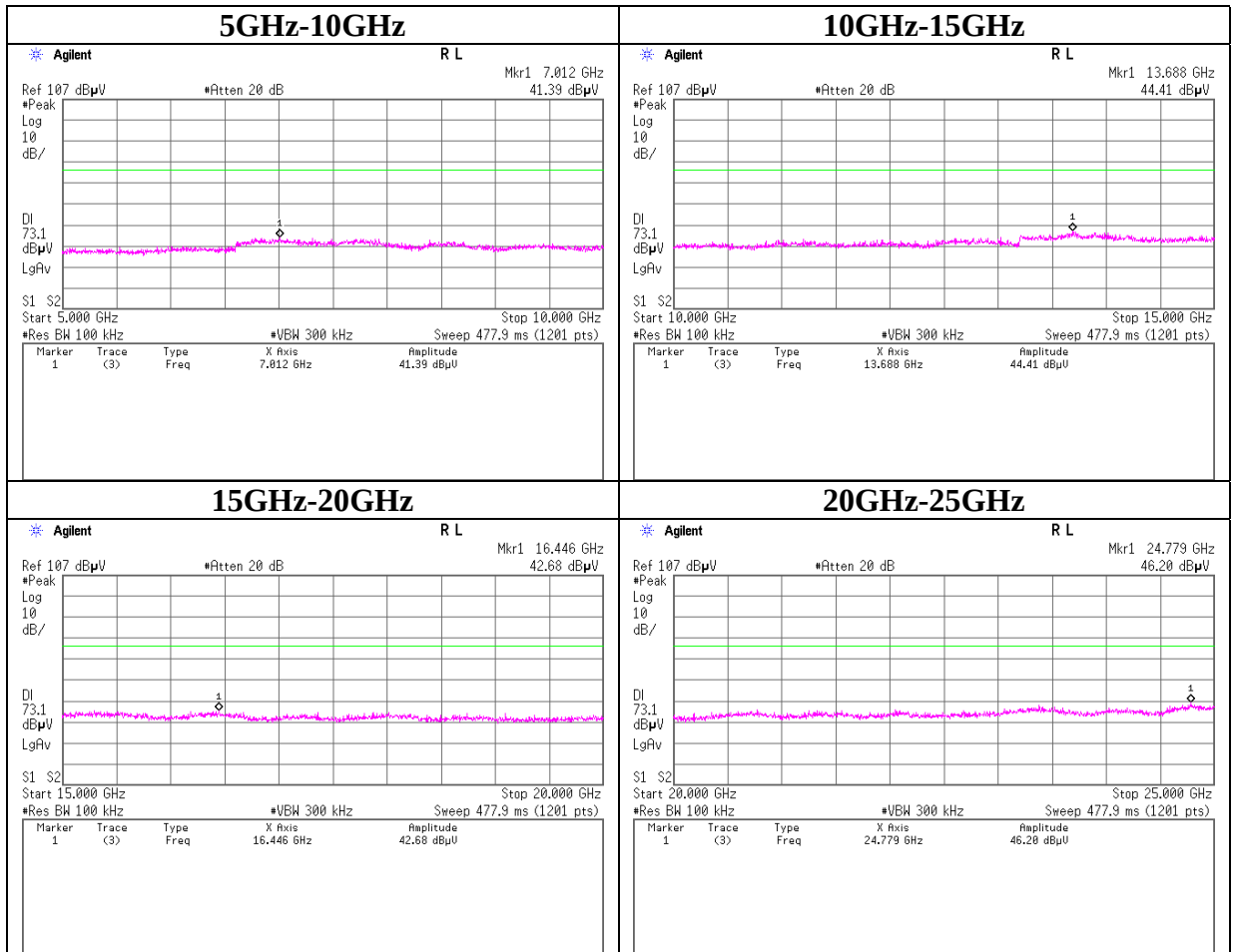
Conducted Spurious Emission

Tx DH5 2441MHz



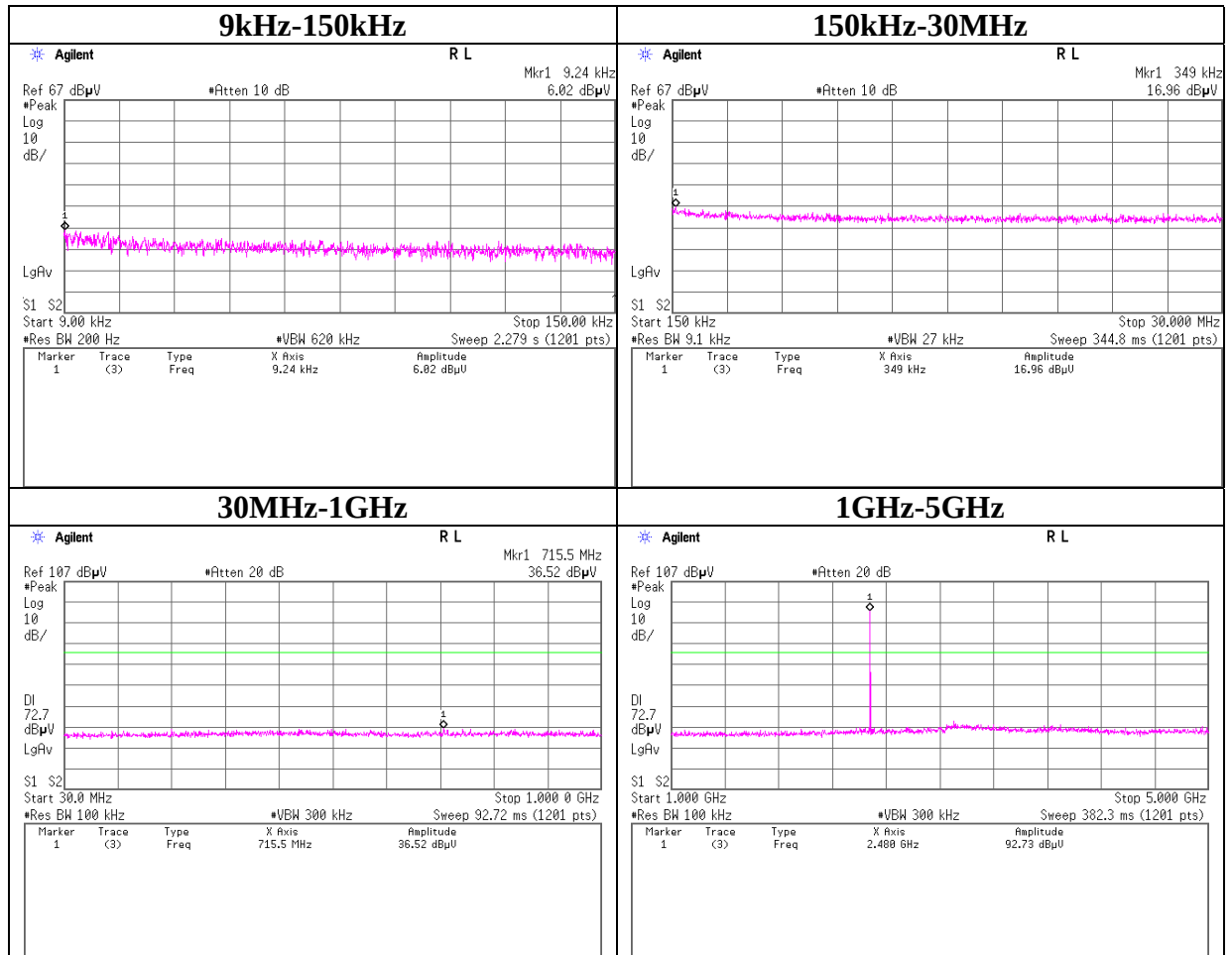
Conducted Spurious Emission

Tx DH5 2441MHz



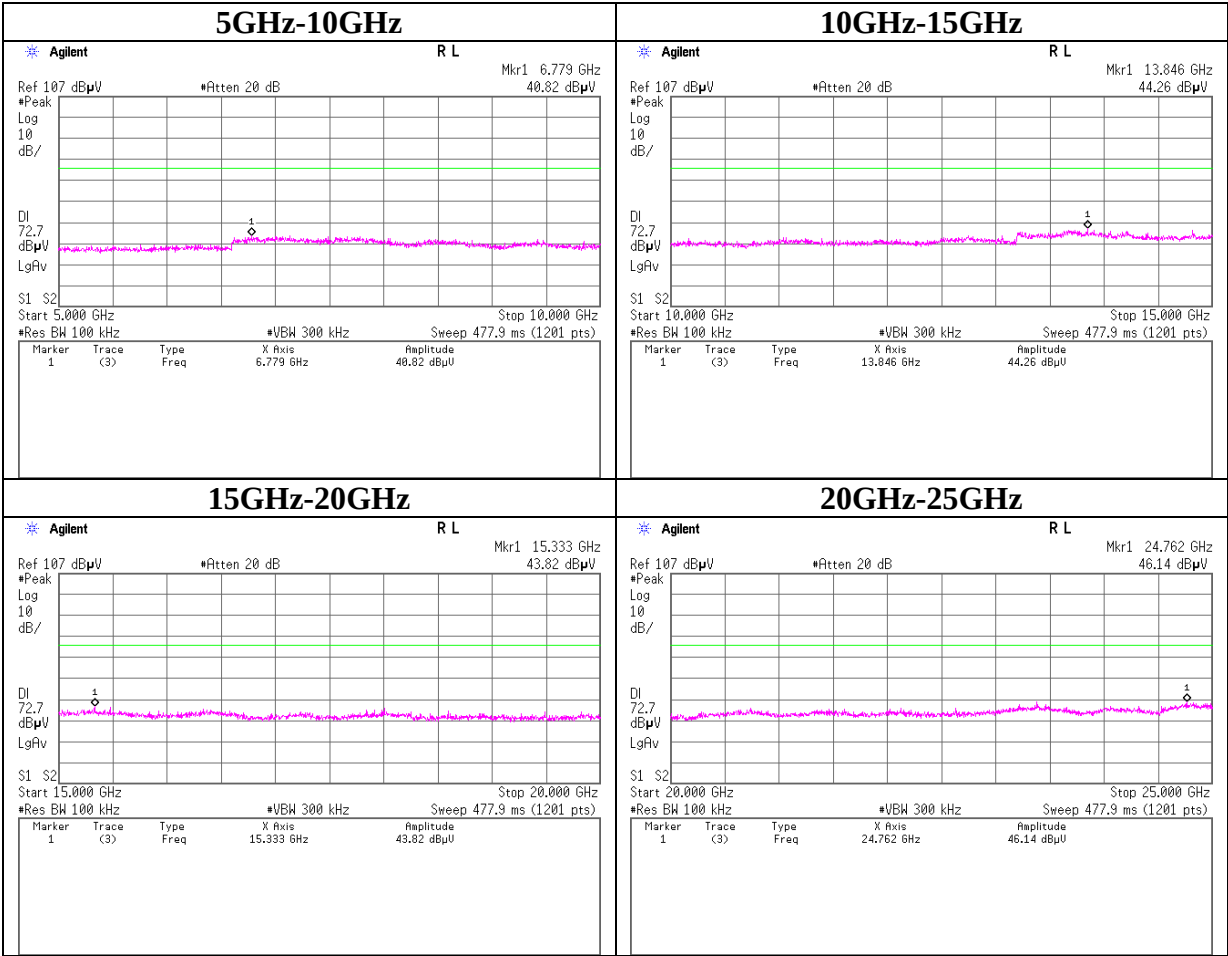
Conducted Spurious Emission

Tx DH5 2480MHz



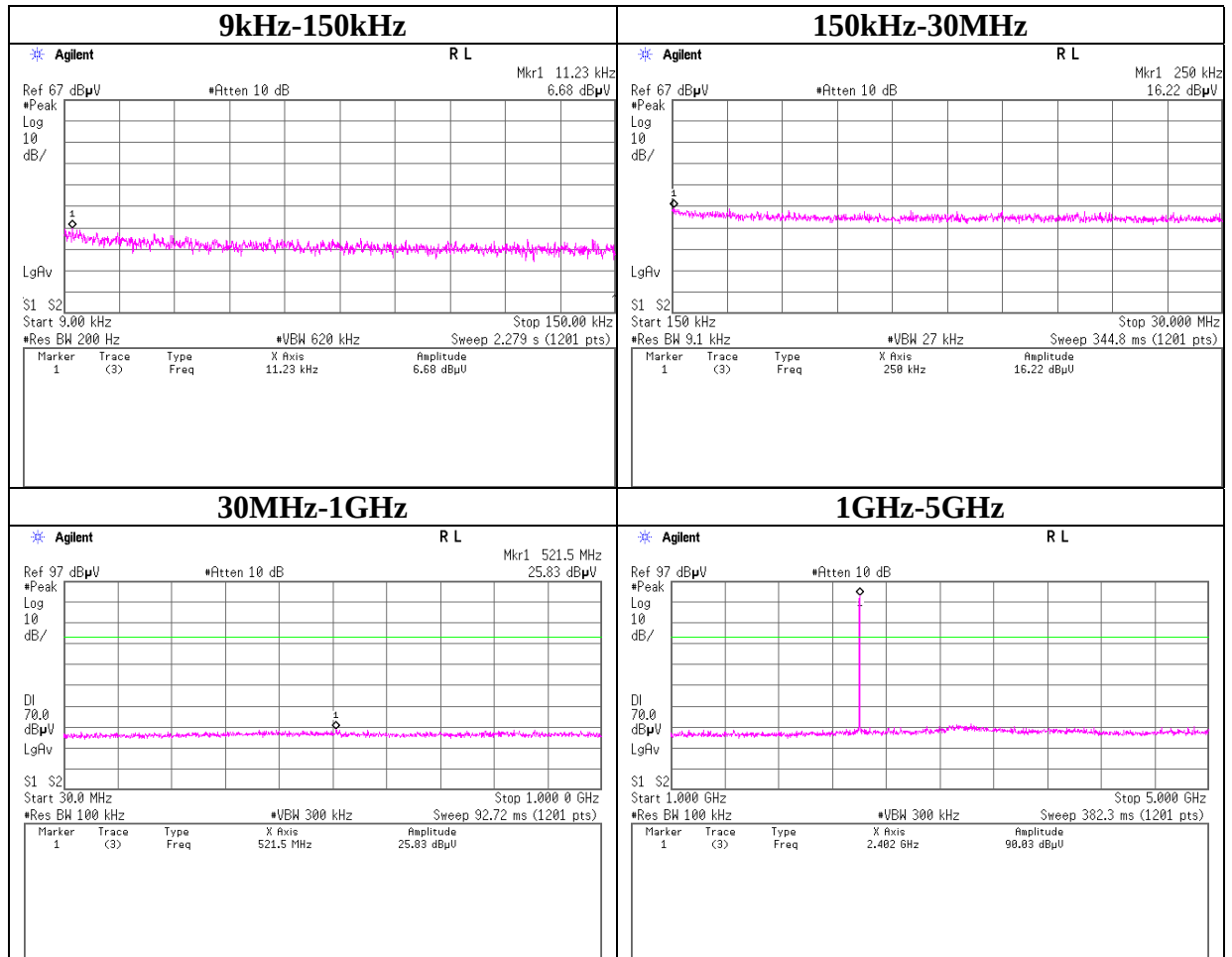
Conducted Spurious Emission

Tx DH5 2480MHz



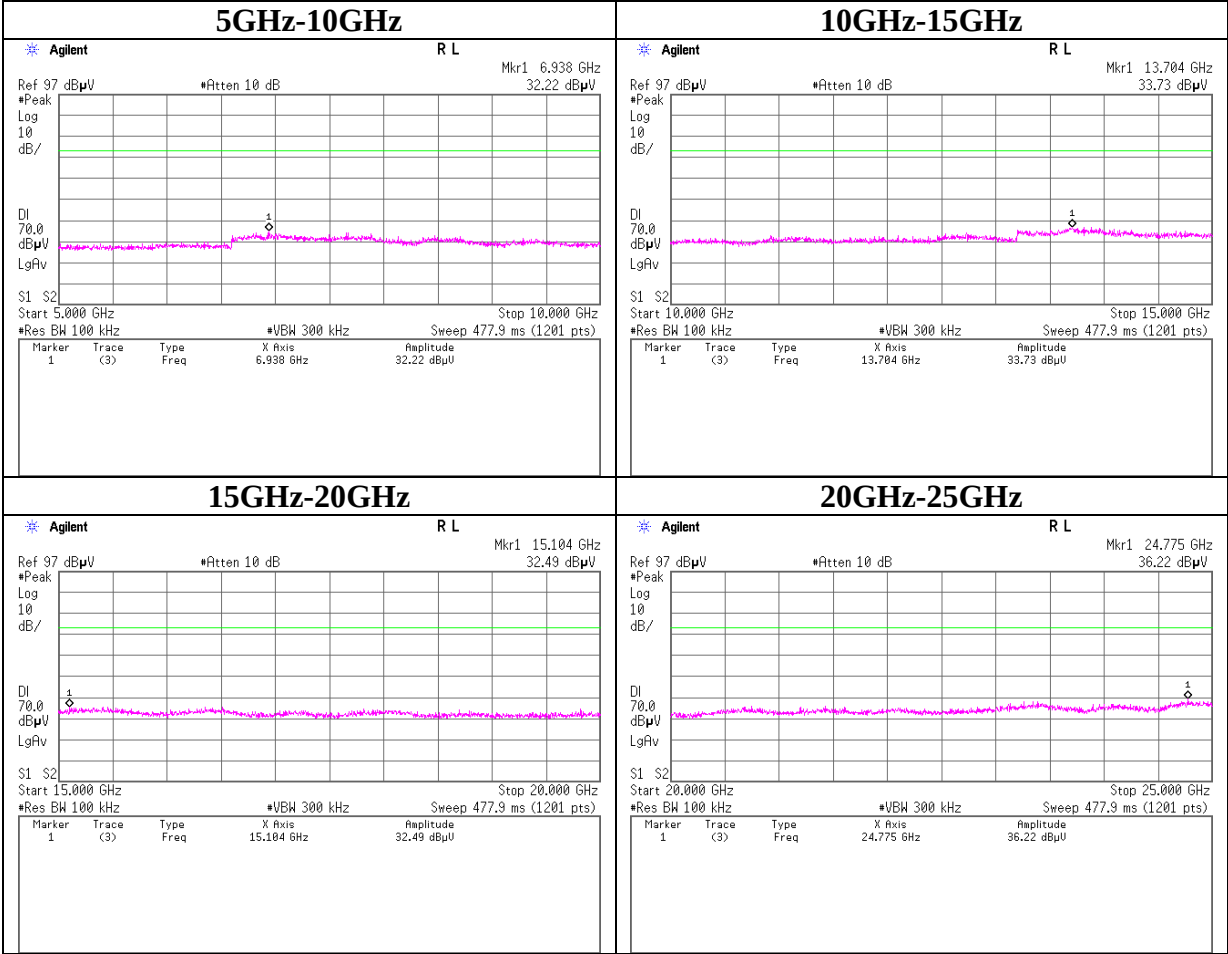
Conducted Spurious Emission

Tx 3DH5 2402MHz



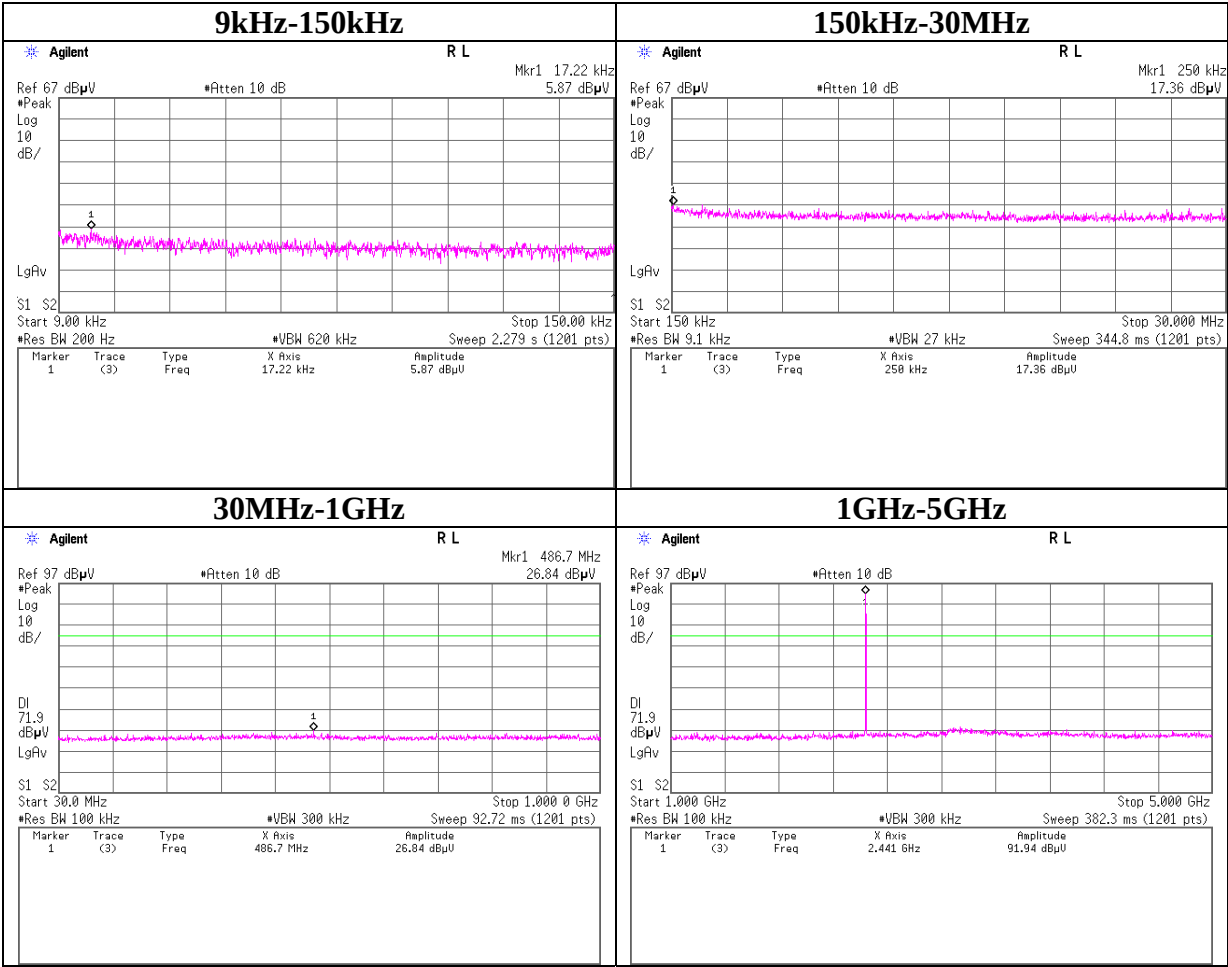
Conducted Spurious Emission

Tx 3DH5 2402MHz



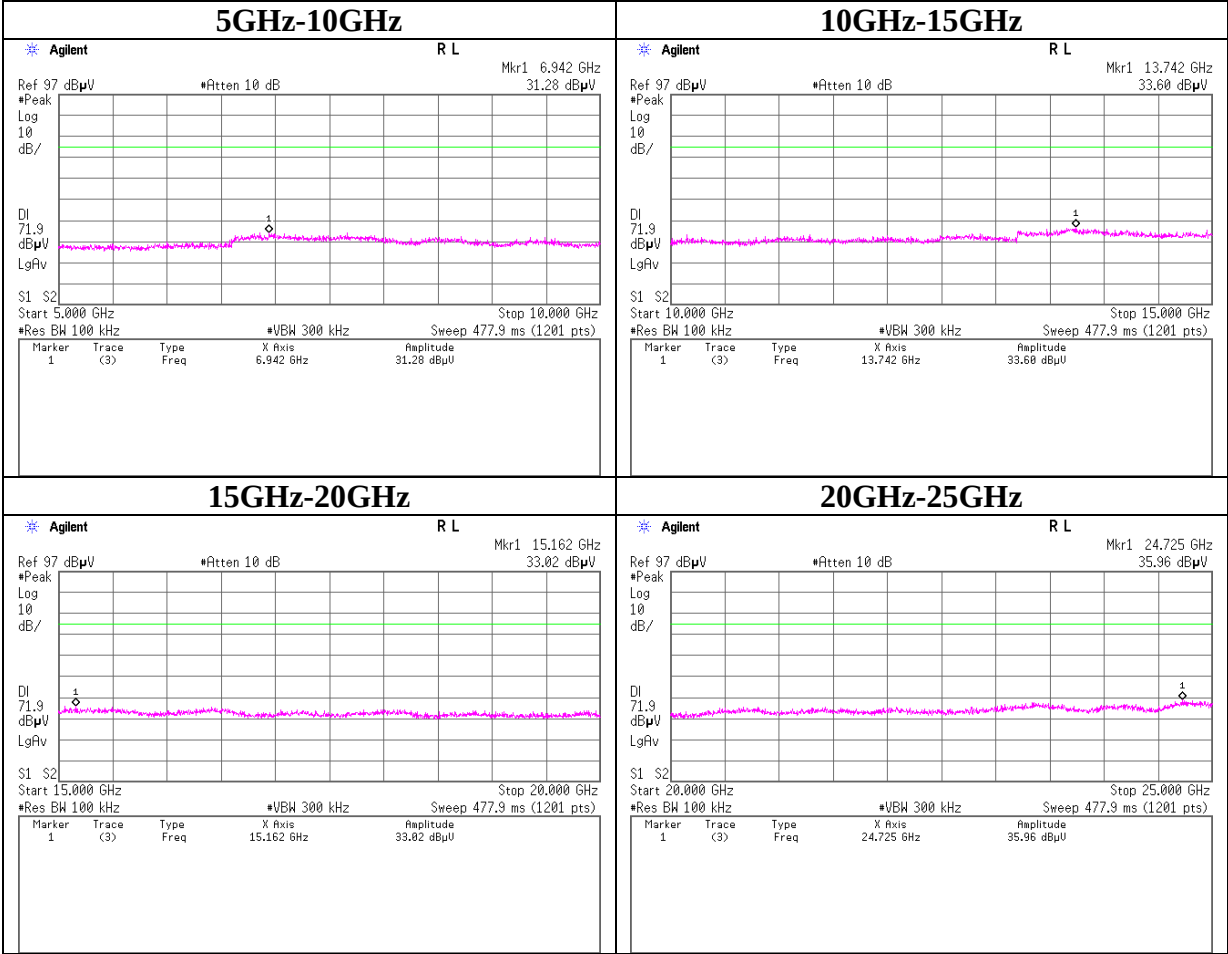
Conducted Spurious Emission

Tx 3DH5 2441MHz



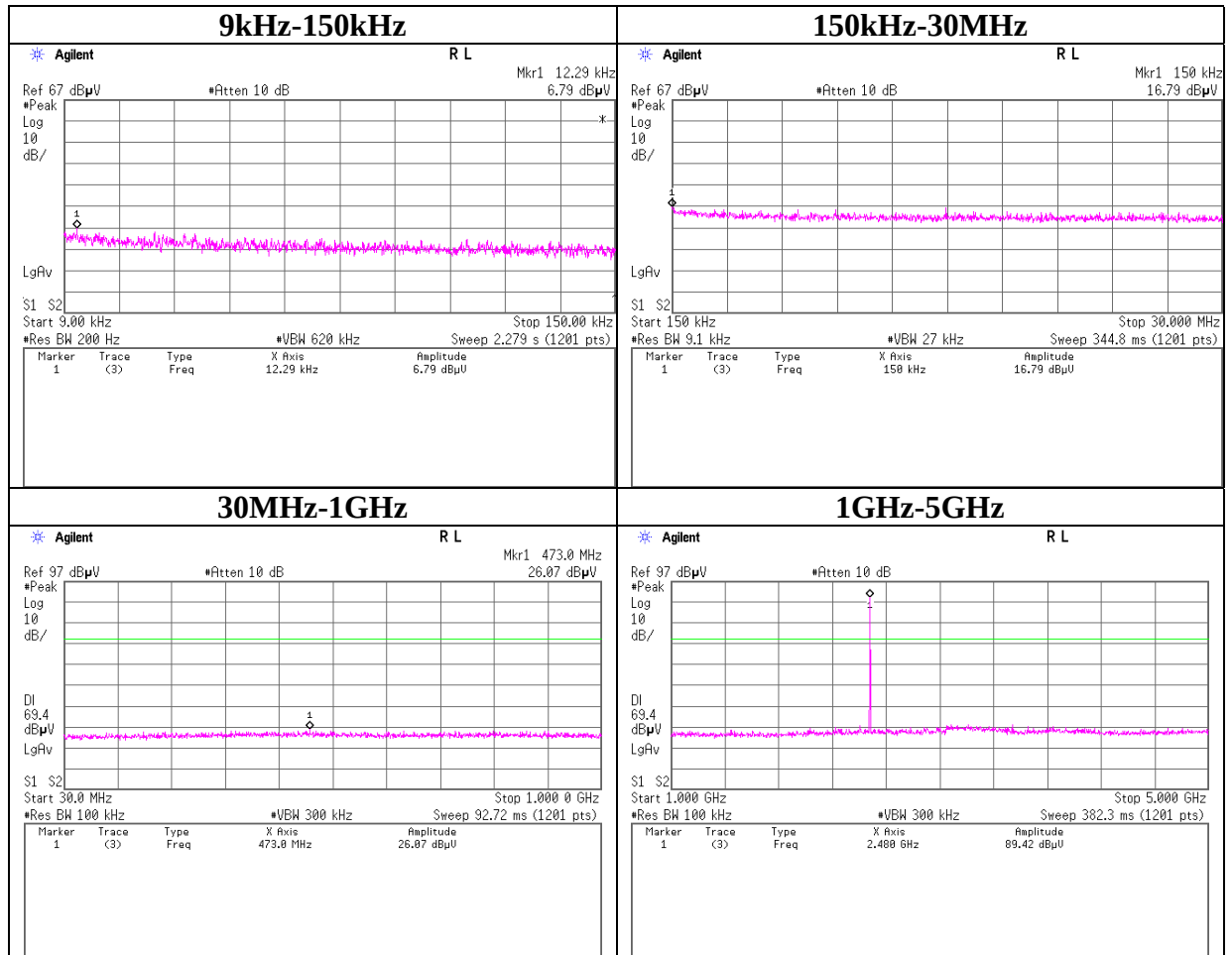
Conducted Spurious Emission

Tx 3DH5 2441MHz



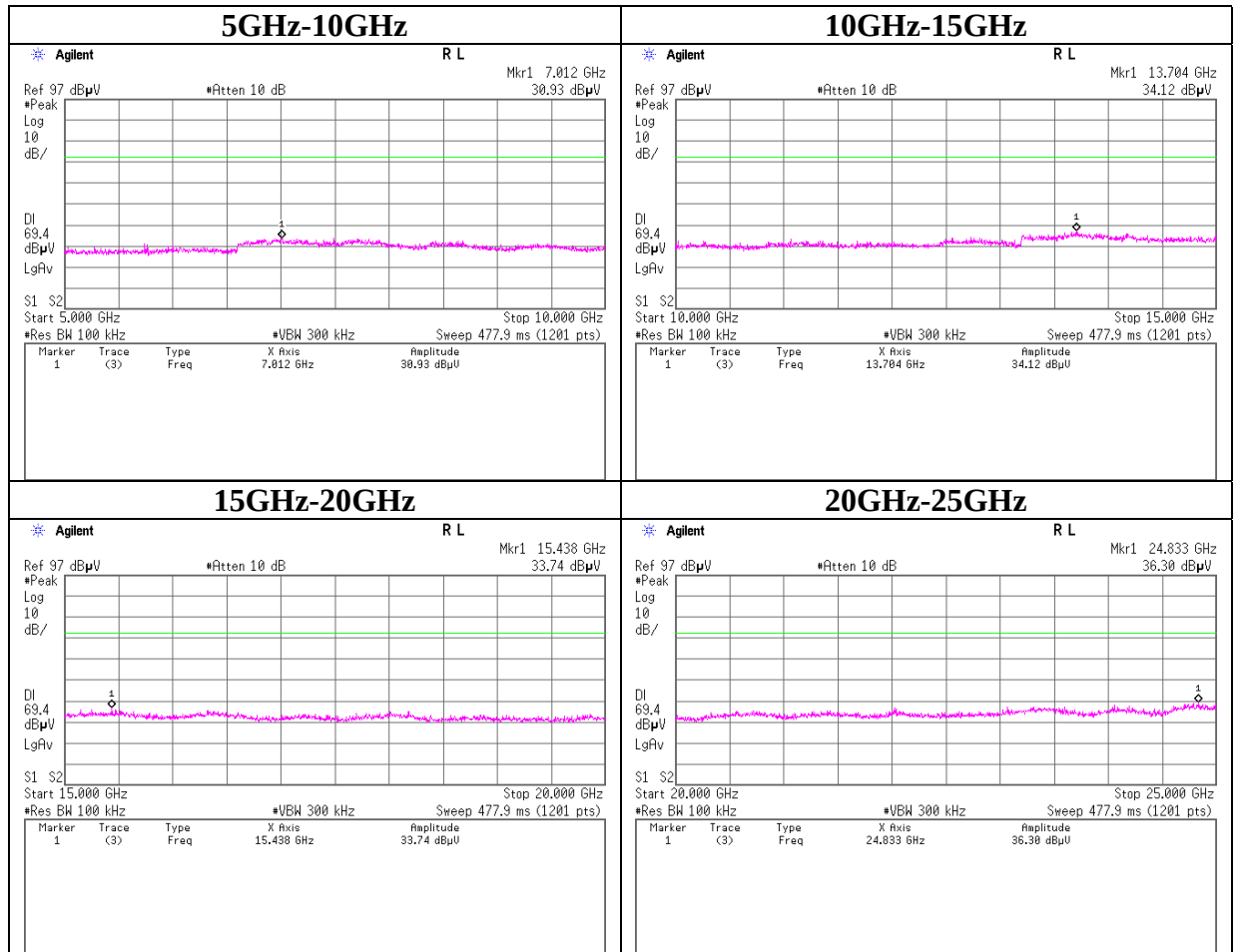
Conducted Spurious Emission

Tx 3DH5 2480MHz



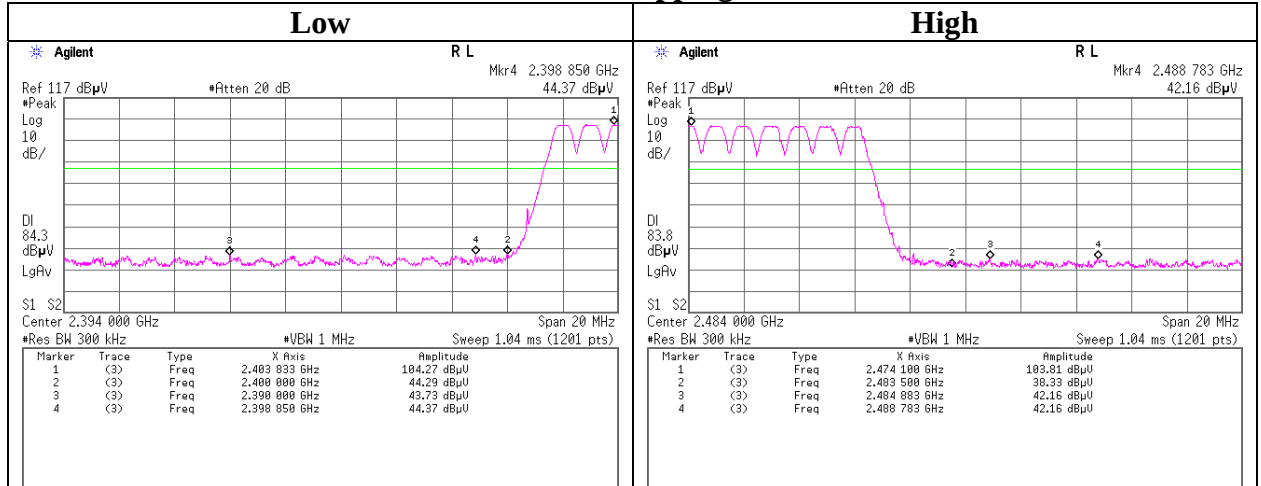
Conducted Spurious Emission

Tx 3DH5 2480MHz

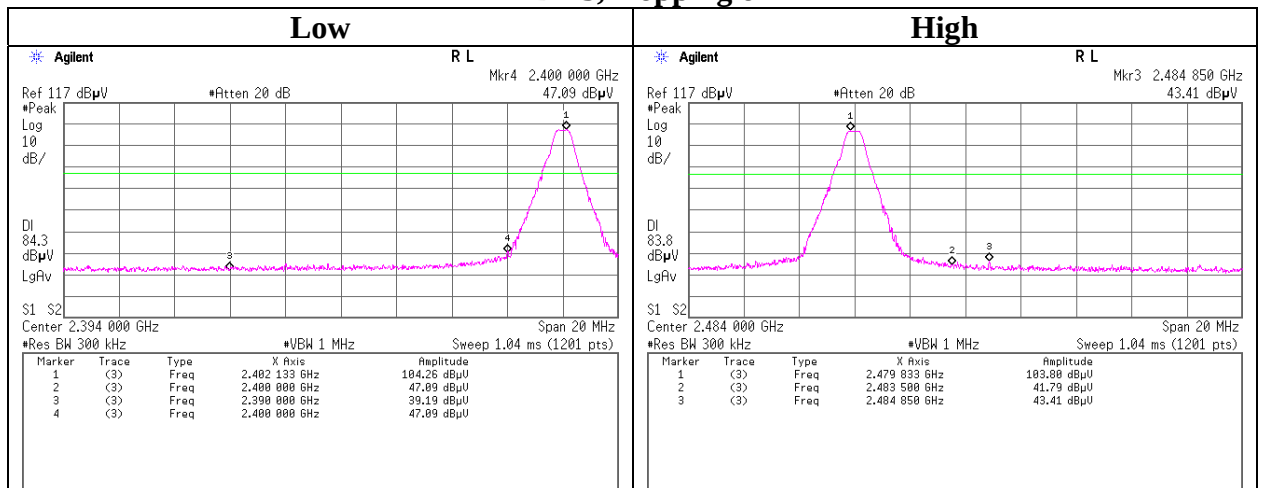


Conducted Emission Band Edge compliance

Tx DH5, Hopping on

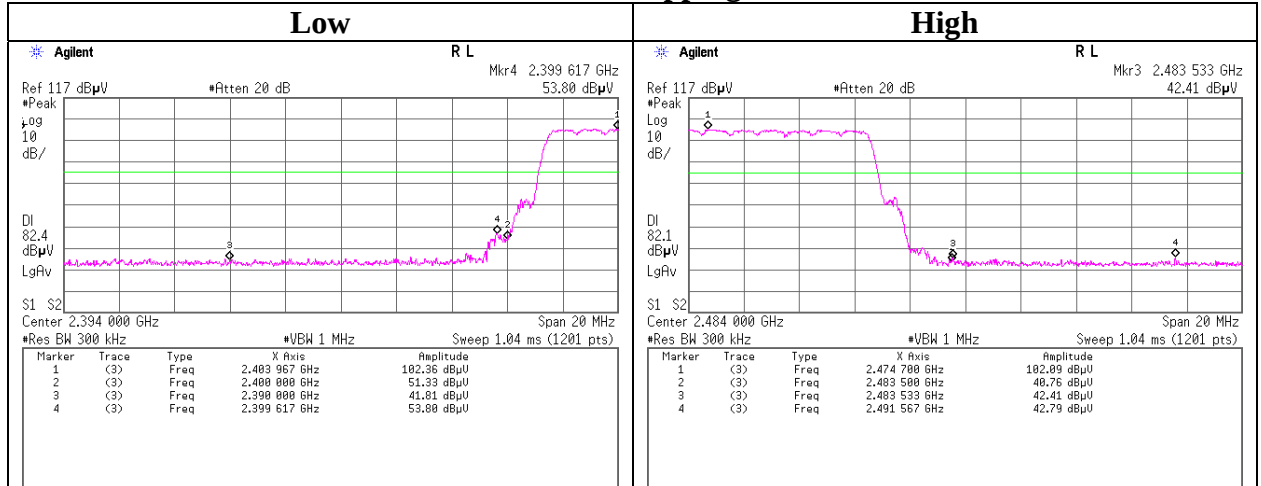


Tx DH5, Hopping off

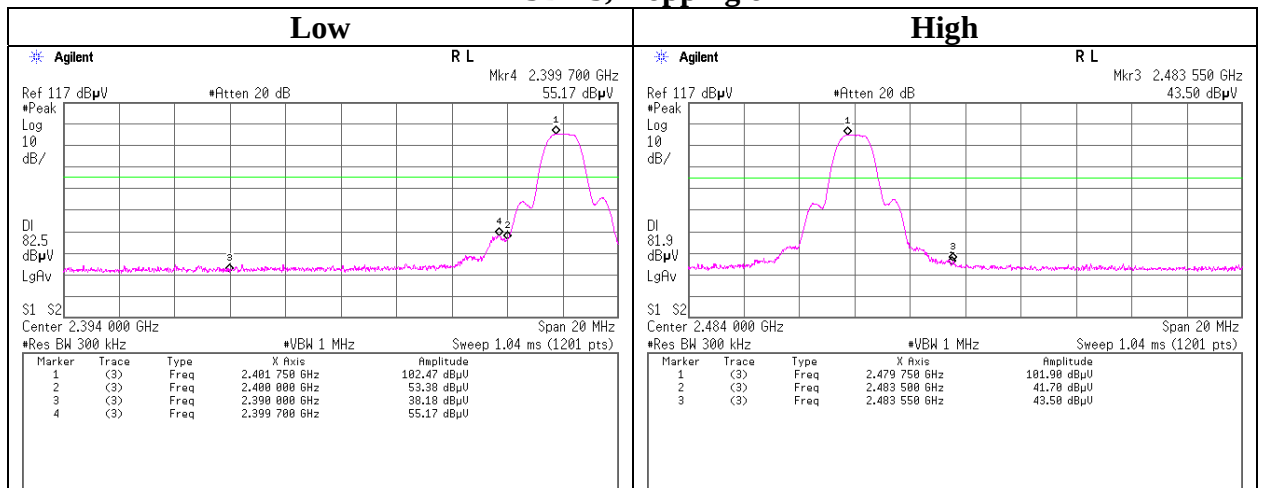


Conducted Emission Band Edge compliance

Tx 3DH5, Hopping on



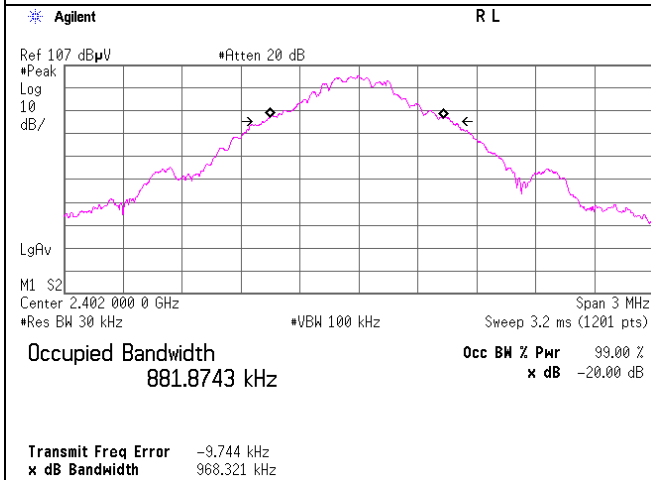
Tx 3DH5, Hopping off



99% Occupied Bandwidth

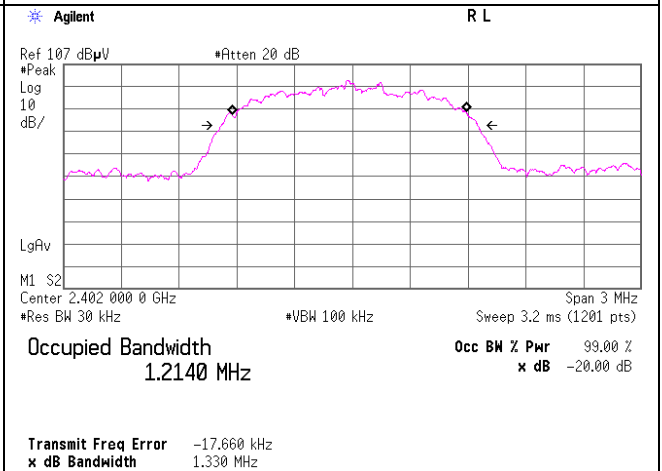
Tx DH5, Hopping off

2402MHz

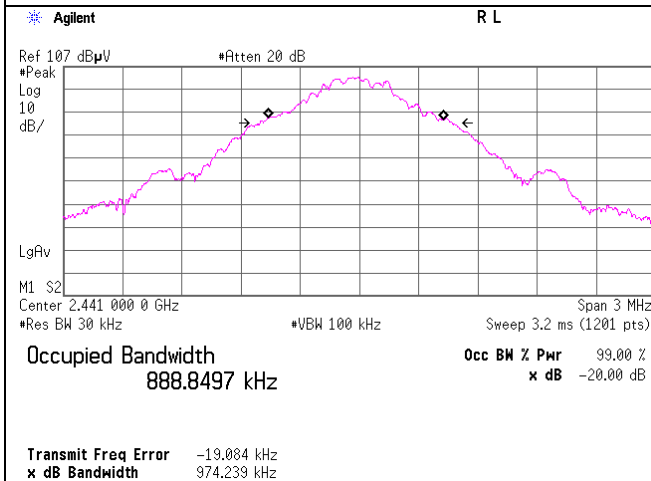


Tx 3DH5, Hopping off

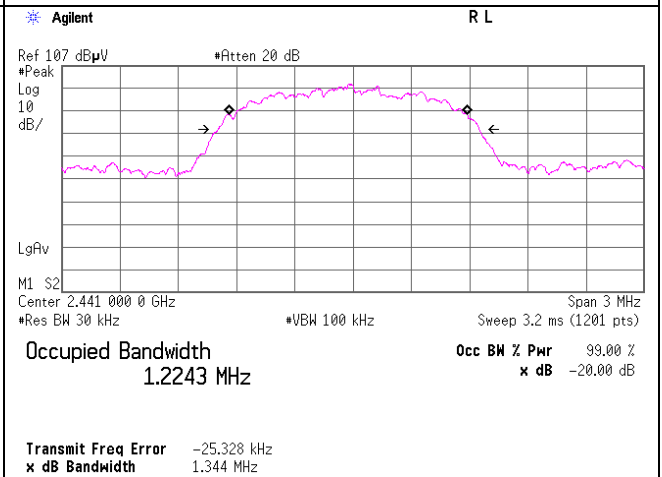
2402MHz



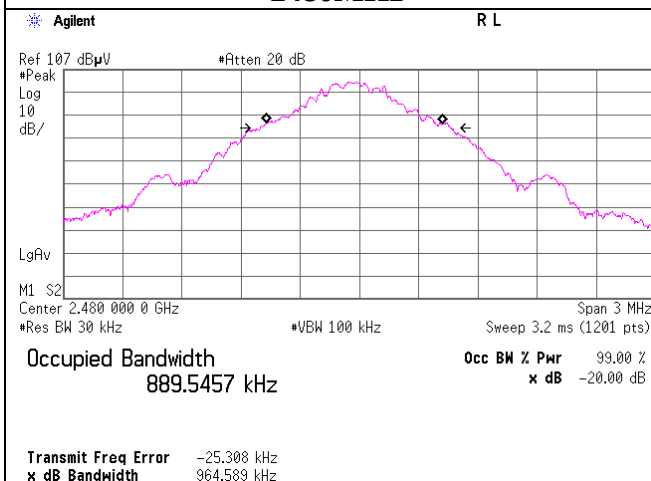
2441MHz



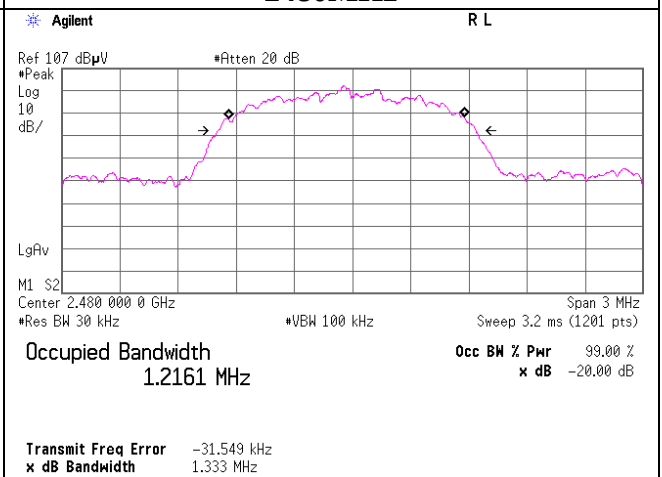
2441MHz



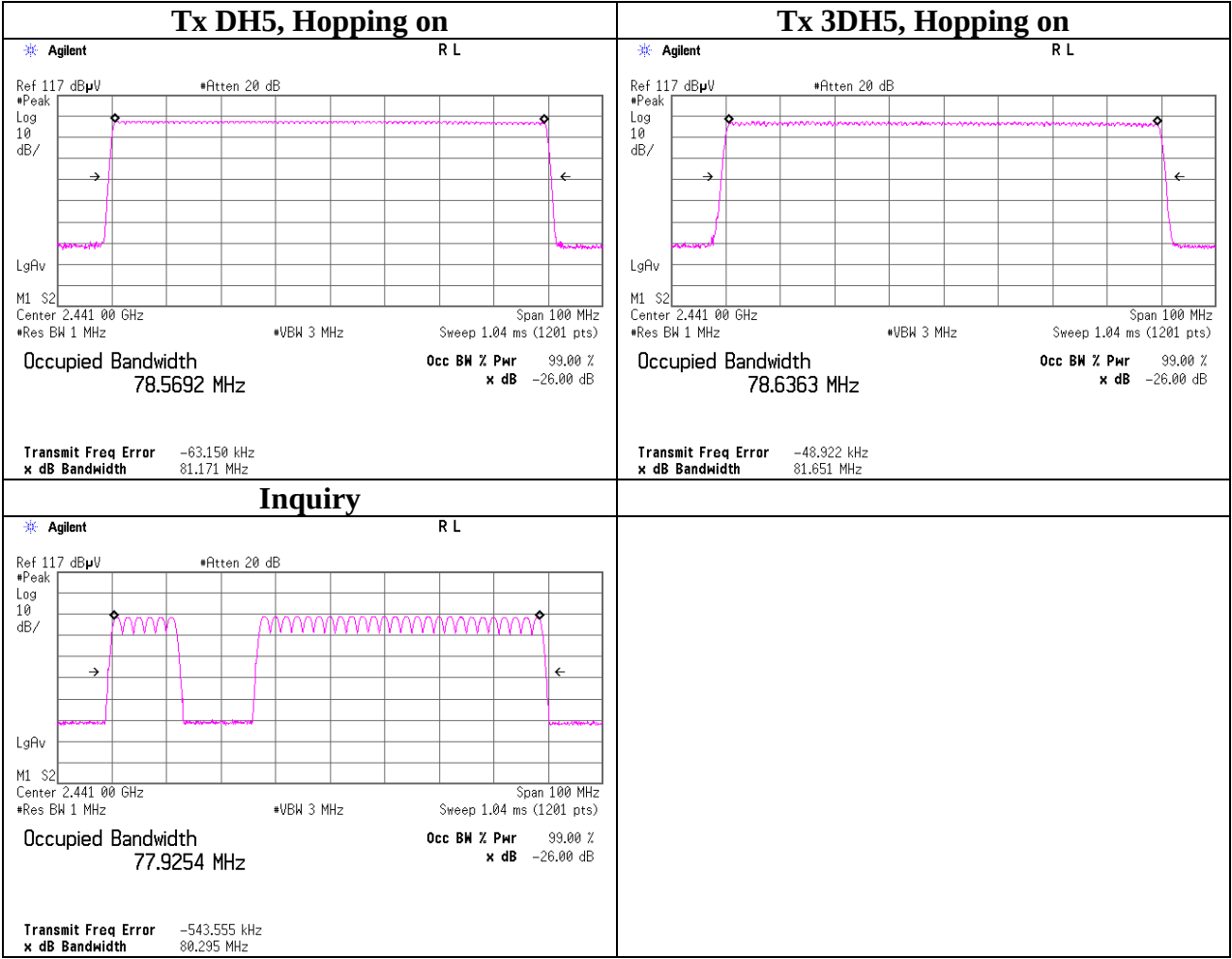
2480MHz



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	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	2011/04/08 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2011/05/23 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2012/01/25 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2011/05/23 * 12
MCC-132	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336161/4(1m) / 340639(5m)	RE	2011/09/06 * 12
MHF-06	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	RE	2011/05/16 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE	2011/08/11 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	2011/10/23 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2011/10/23 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2012/02/16 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2011/11/02 * 12
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2011/09/26 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	CE	2011/04/15 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE	2012/02/06 * 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
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE/CE	2011/08/11 * 12
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	AT	2012/02/03 * 12
MPM-09	Power Meter	Anritsu	ML2495A	6K00003348	AT	2011/09/12 * 12
MPSE-12	Power sensor	Anritsu	MA2411B	011598	AT	2011/09/12 * 12
MCC-96	Microwave Cable 1G-40GHz	Schner	SUCOFLEX102	30817/2	AT	2011/05/27 * 12
MPD-02	Power Divider DC-12.4GHz	SUHNER	4901.19.A	-	AT	2011/05/23 * 12
MCC-138	Microwave cable	HUBER+SUHNER	SUCOFLEX 102	37953/2	AT	2011/10/28 * 12
MBTR15	CBT Bluetooth Tester	Rohde & Schwarz	CBT	100401	AT	2011/05/12 * 24
MOS-14	Thermo-Hygrometer	Custom	CTH-201	-	AT	2012/02/06 * 12
MOS-19	Thermo-Hygrometer	Custom	CTH-201	0001	AT	2011/12/09 * 12
MCC-137	Microwave cable	HUBER+SUHNER	SUCOFLEX 102	37954/2	AT	2011/10/28 * 12
MAT-23	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2011/03/14 * 12
MPSC-01	Power splitters/Combiners	Mini-Circuit	ZFSC-2-2500	0124	AT	2011/09/27 * 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