



RADIO TEST REPORT

Test Report No. : 32CE0141-HO-01-D-R1

Applicant : UNIPULSE Corporation
Type of Equipment : ZEAL-C01
Model No. : ZEAL-C01
FCC ID : F3OUPCR2356
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.
6. This report is a revised version of 32CE0141-HO-01-D. 32CE0141-HO-01-D is replaced with this report.

Date of test: March 9 to 21, 2012

Representative test engineer:


Satofumi Matsuyama
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.
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<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	:	UNIPULSE Corporation
Address	:	1-3 Sengendai-nishi, Koshigaya-shi, Saitama, 343-0041 Japan
Telephone Number	:	+81-48-977-1111
Facsimile Number	:	+81-48-976-5024
Contact Person	:	Yoshinobu Ishimaru

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

2.1 Identification of E.U.T.

Type of Equipment	:	ZEAL-C01
Model No.	:	ZEAL-C01
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC3.0-3.6V
Receipt Date of Sample	:	March 8, 2012
Country of Mass-production	:	Japan
Condition of EUT	:	Production model
Modification of EUT	:	No Modification by the test lab

2.2 Product Description

General Specification

Clock frequency(ies) in the system	:	16MHz
------------------------------------	---	-------

Radio Specification

[Bluetooth (Ver. 2.0 with EDR function)]

Radio Type	:	Transceiver
Frequency of Operation	:	2402-2480MHz
Modulation	:	FHSS
Power Supply (radio part input)	:	DC3.3V (1.8V)
Antenna type	:	Chip Antenna
Antenna Gain	:	Max: -3.9dBi

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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 10.9dB, 0.48205MHz, L AV 16.5dB, 0.48205MHz, 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	3.2dB 2400.000MHz, AV, Horizontal	Complied	Conducted/ Radiated

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

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

FCC 15.31 (e)

The RF Module has its own regulator.

The RF Module is constantly provided voltage (DC1.8V) to the RF Chip through the regulator regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203/212 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203/212.

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3.3 Addition to standard

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

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

3.4 Uncertainty

EMI

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

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

Test room (semi-anechoic chamber)	Radiated emission						
	(3m*)(+dB)				(1m*)(+dB)		(0.5m*)(+dB)
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz	1GHz -10GHz	10GHz -18GHz	18GHz -26.5GHz	26.5GHz -40GHz
No.1	4.2dB	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

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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) *EUT has the power settings by the software as follows; Power settings: BDR: 54 EDR: 103 Software: Version 2.0.1.14 *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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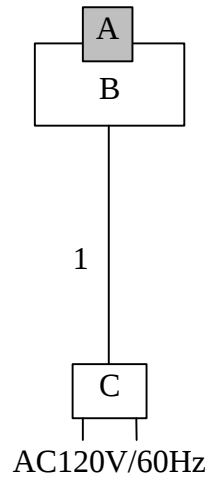
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4.2 Configuration and peripherals



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

Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	ZEAL-C01	ZEAL-C01	A07971 *1) A05393 *2)	UNIPULSE Corporation	EUT
B	Jig Board	-	-	BestTechnology Co.,Ltd.	-
C	AC Adapter	GF12-US0520	0779-01	GO FORWARD ENTERPRISE CORP.	-

*1) Used for Antenna Terminal conducted test

*2) Used for Conducted Emission test and Radiated Emission test

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	1.6	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 1.5m, raised 0.8m above the conducting ground plane.

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

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

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

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

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

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

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

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SECTION 6: Radiated Spurious Emission

Test Procedure

EUT was placed on a urethane platform of nominal size, 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	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 *2)
Test Distance	3m	3m (below 10GHz), 1m*1) (above 10GHz)	

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

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

- 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

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	5MHz, 3MHz	100kHz	300kHz	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

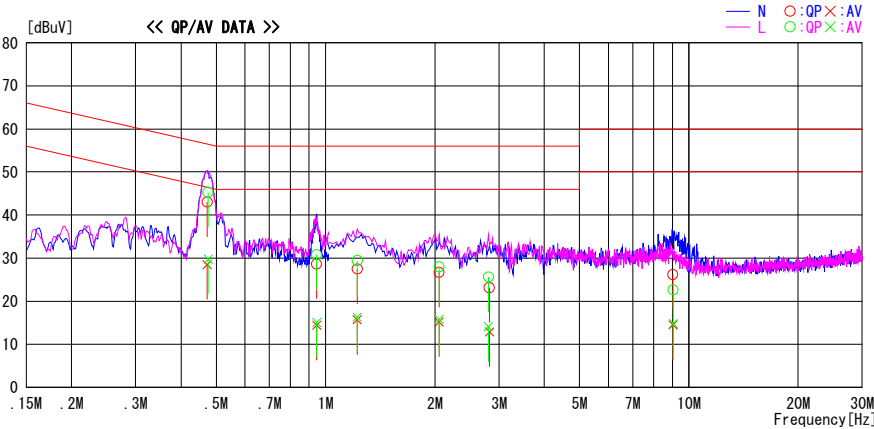
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2012/03/21

Report No. : 32CE0141-H0-01
Temp./Humi. : 22deg. C / 35% RH
Engineer : Tomohisa Nakagawa

Mode / Remarks : BT Tx DH5 2402MHz

LIMIT : FCC15.207 QP
FCC15.207 AV

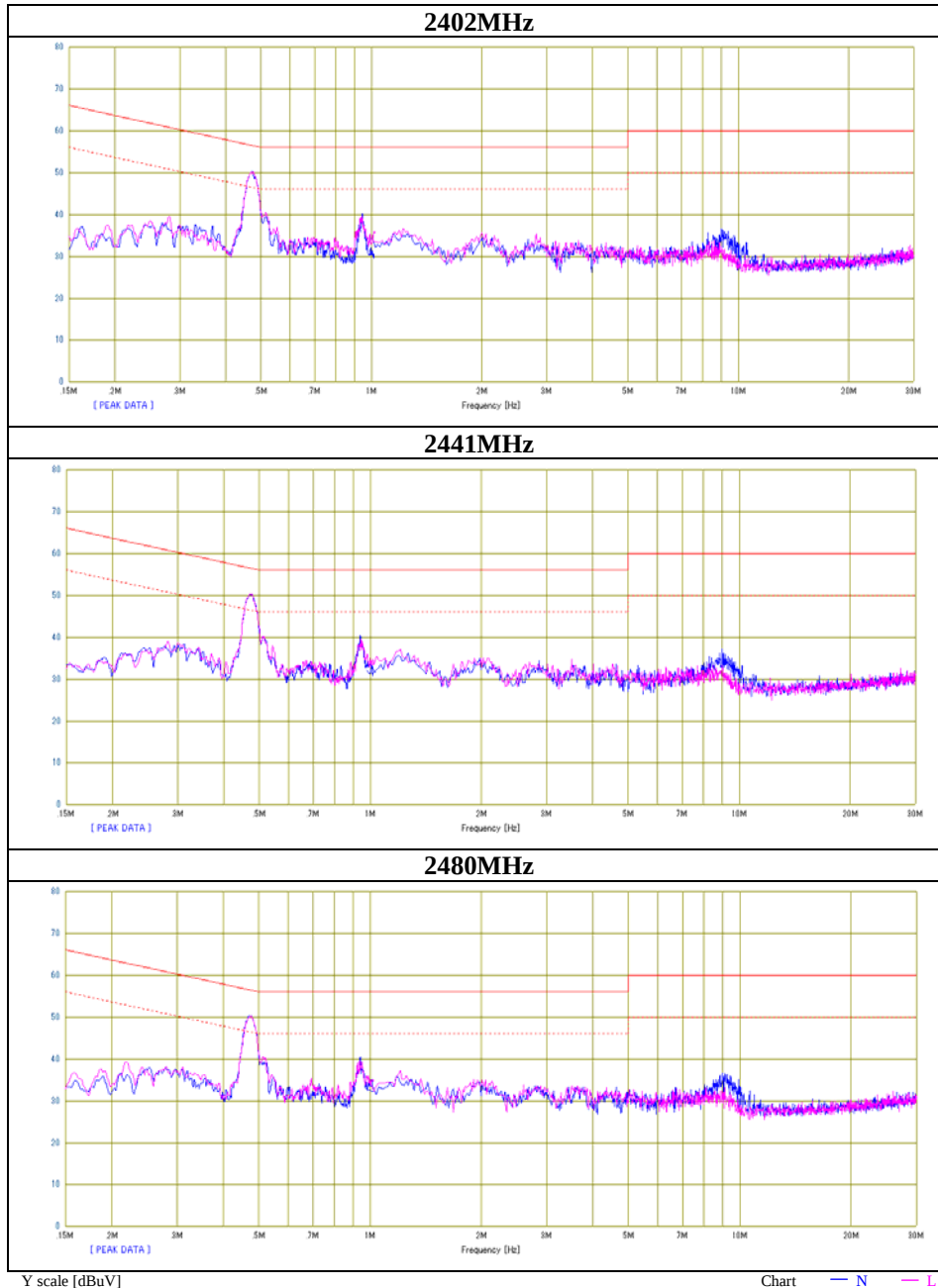


Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.47190	29.7	15.2	13.3	43.0	28.5	56.5	46.5	13.5	18.0	N	
0.94460	15.2	1.0	13.4	28.6	14.4	56.0	46.0	27.4	31.6	N	
1.22187	14.0	2.2	13.5	27.5	15.7	56.0	46.0	28.5	30.3	N	
2.05329	13.0	1.5	13.7	26.7	15.2	56.0	46.0	29.3	30.8	N	
2.82424	9.3	-0.9	13.8	23.1	12.9	56.0	46.0	32.9	33.1	N	
9.03720	11.0	-0.7	15.2	26.2	14.5	60.0	50.0	33.8	35.5	N	
0.47480	32.0	16.5	13.3	45.3	29.8	56.4	46.4	11.1	16.6	L	
0.94460	17.4	1.7	13.4	30.8	15.1	56.0	46.0	25.2	30.9	L	
1.22187	15.9	2.8	13.5	29.4	16.3	56.0	46.0	26.6	29.7	L	
2.05329	14.3	2.1	13.7	28.0	15.8	56.0	46.0	28.0	30.2	L	
2.80912	11.8	0.3	13.8	25.6	14.1	56.0	46.0	30.4	31.9	L	
9.05231	7.4	-0.4	15.2	22.6	14.8	60.0	50.0	37.4	35.2	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.

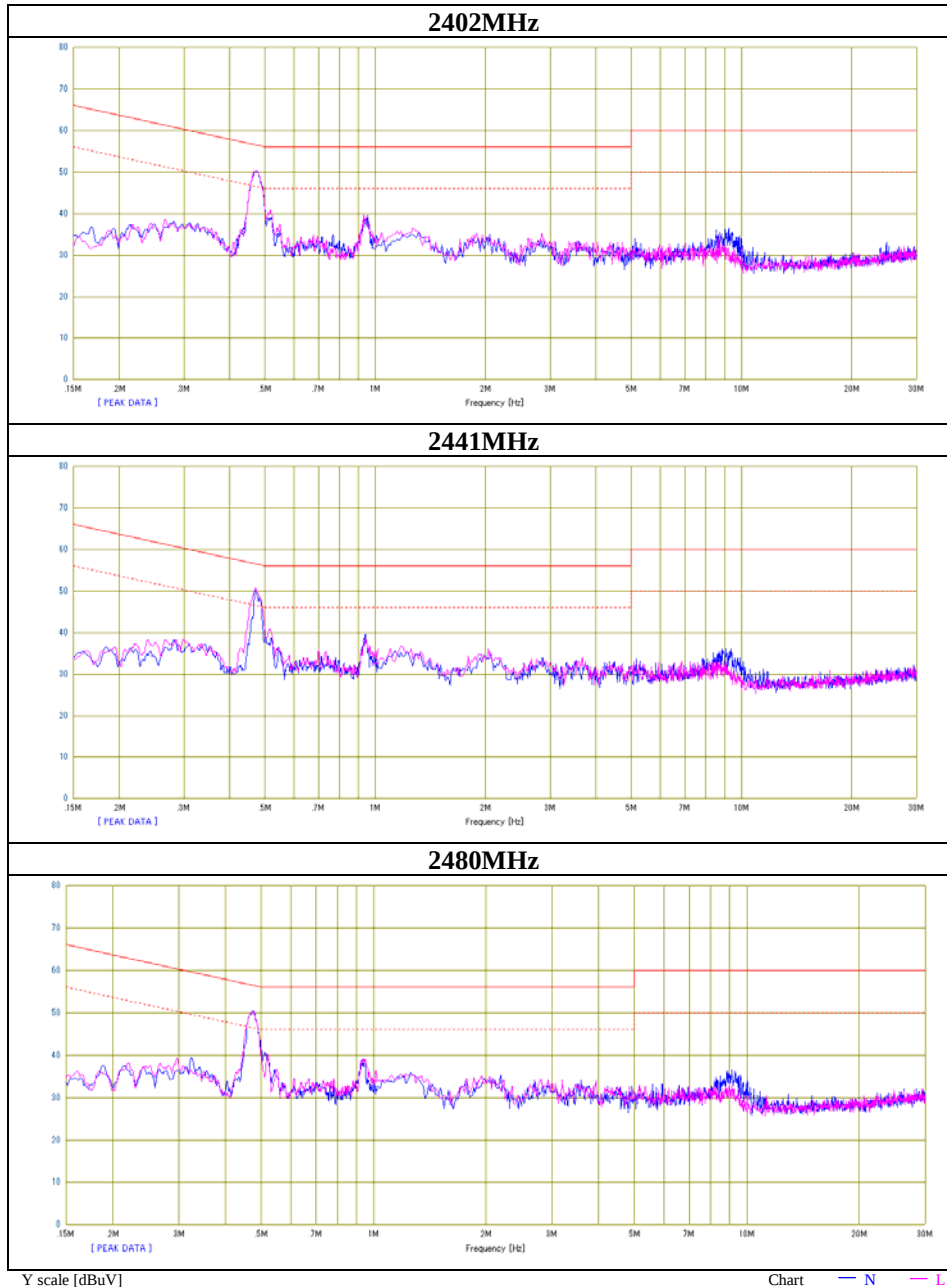
Conducted Emission

Test place	Head Office EMC Lab. No.2Semi Anechoic Chamber
Report No.	32CE0141-HO-01
Date	03/21/2012
Temperature/ Humidity	22 deg. C / 35% RH
Engineer	Tomohisa Nakagawa
Mode	Tx DH5



Conducted Emission

Test place	Head Office EMC Lab. No.2Semi Anechoic Chamber
Report No.	32CE0141-HO-01
Date	03/21/2012
Temperature/ Humidity	22 deg. C / 35% RH
Engineer	Tomohisa Nakagawa
Mode	Tx 3DH5

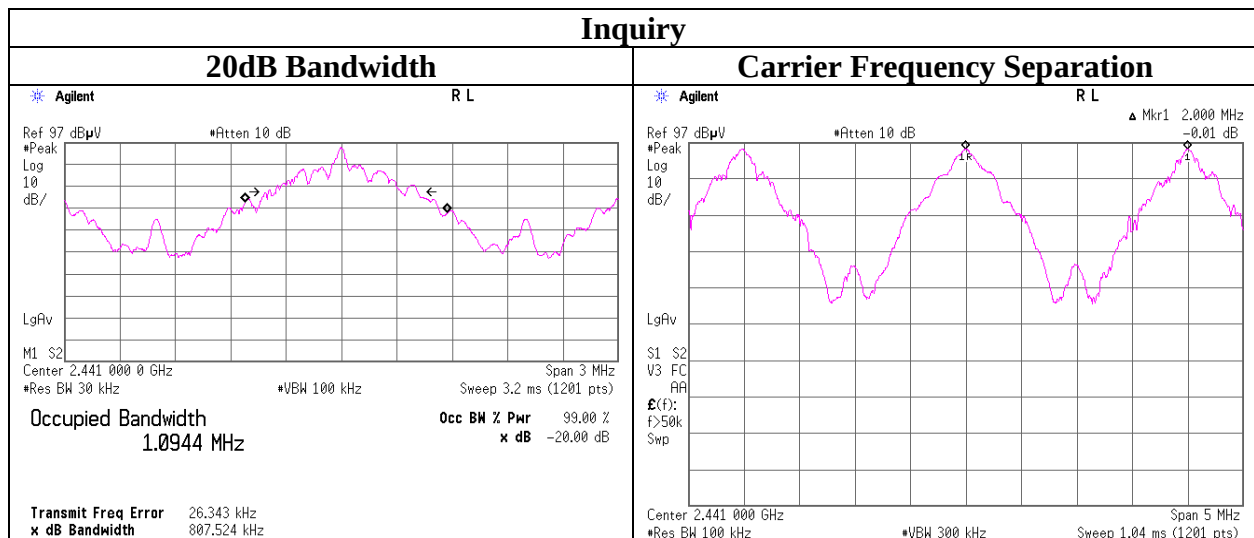


20dB Bandwidth and Carrier Frequency Separation

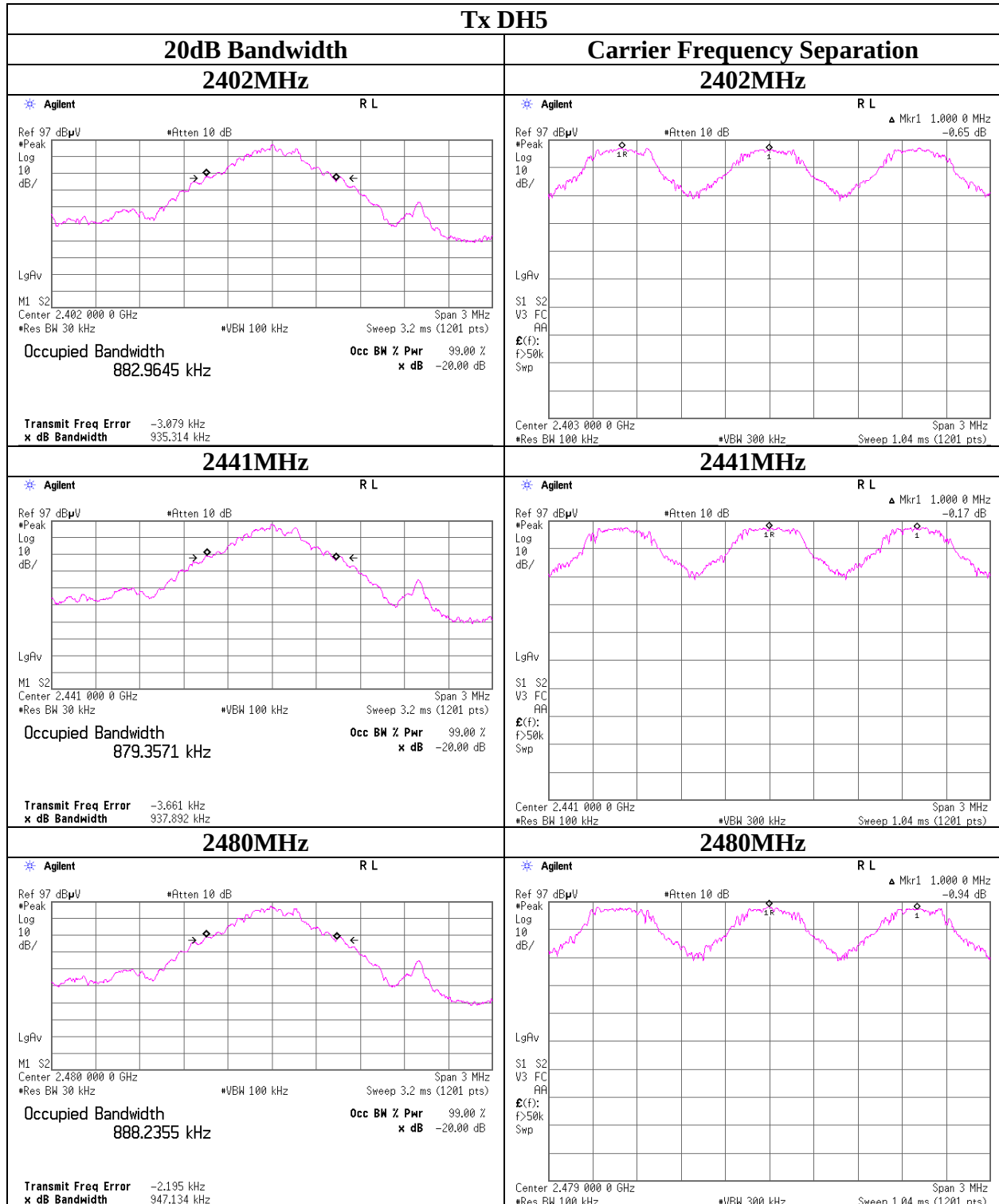
Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 32CE0141-HO-01
Date 03/09/2012
Temperature/ Humidity 22deg. C / 44% RH
Engineer Takayuki Shimada
Mode Tx (Hopping on) DH5/3DH5/Inquiry

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.935	1.000	>= 0.623
DH5	2441.0	0.938	1.000	>= 0.625
DH5	2480.0	0.947	1.000	>= 0.631
3DH5	2402.0	1.263	1.000	>= 0.842
3DH5	2441.0	1.261	1.000	>= 0.841
3DH5	2480.0	1.259	1.000	>= 0.839
Inquiry	2441.0	0.808	2.000	>= 0.538

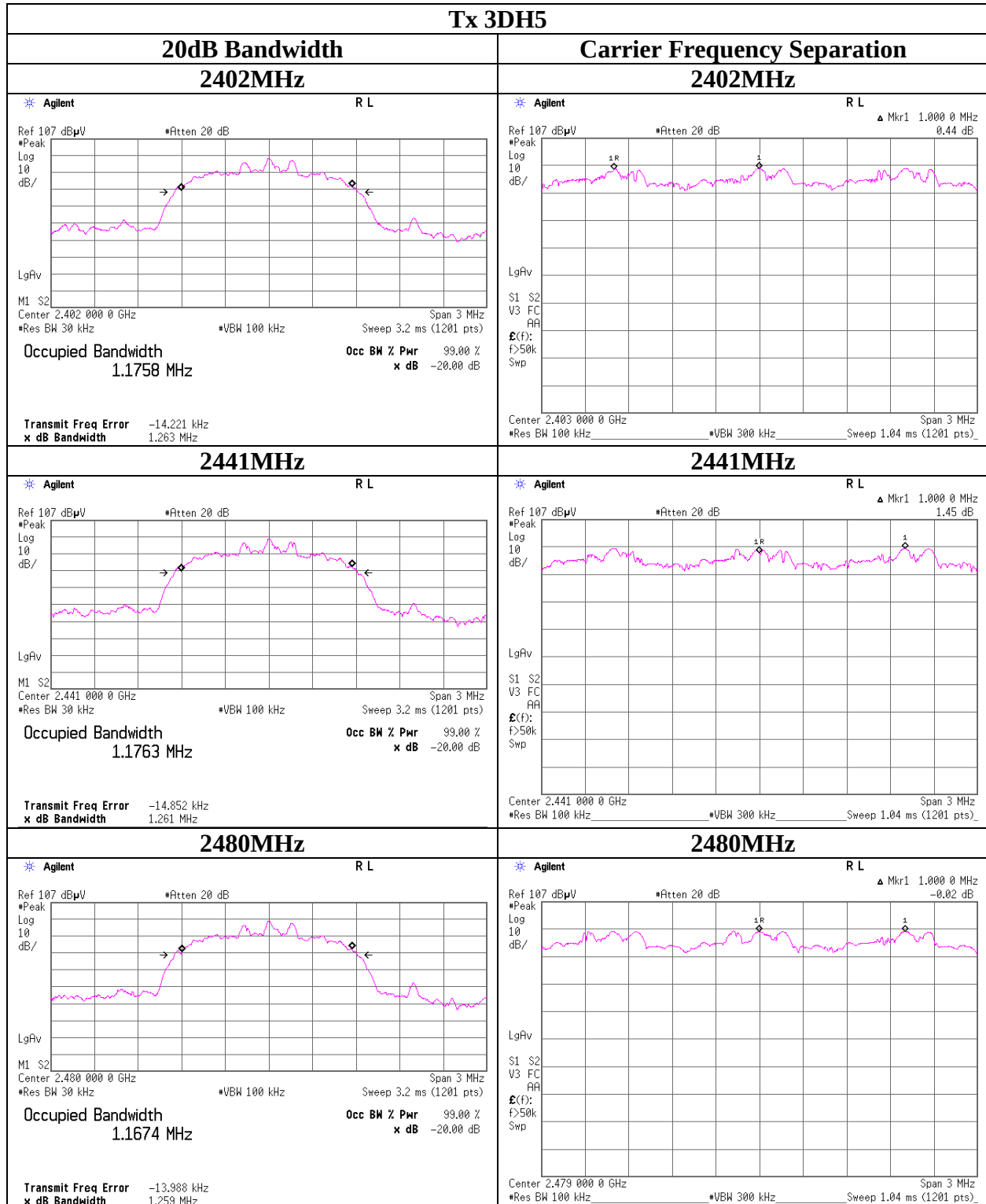
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
No limit applies to 20dB Bandwidth.



20dB Bandwidth and Carrier Frequency Separation



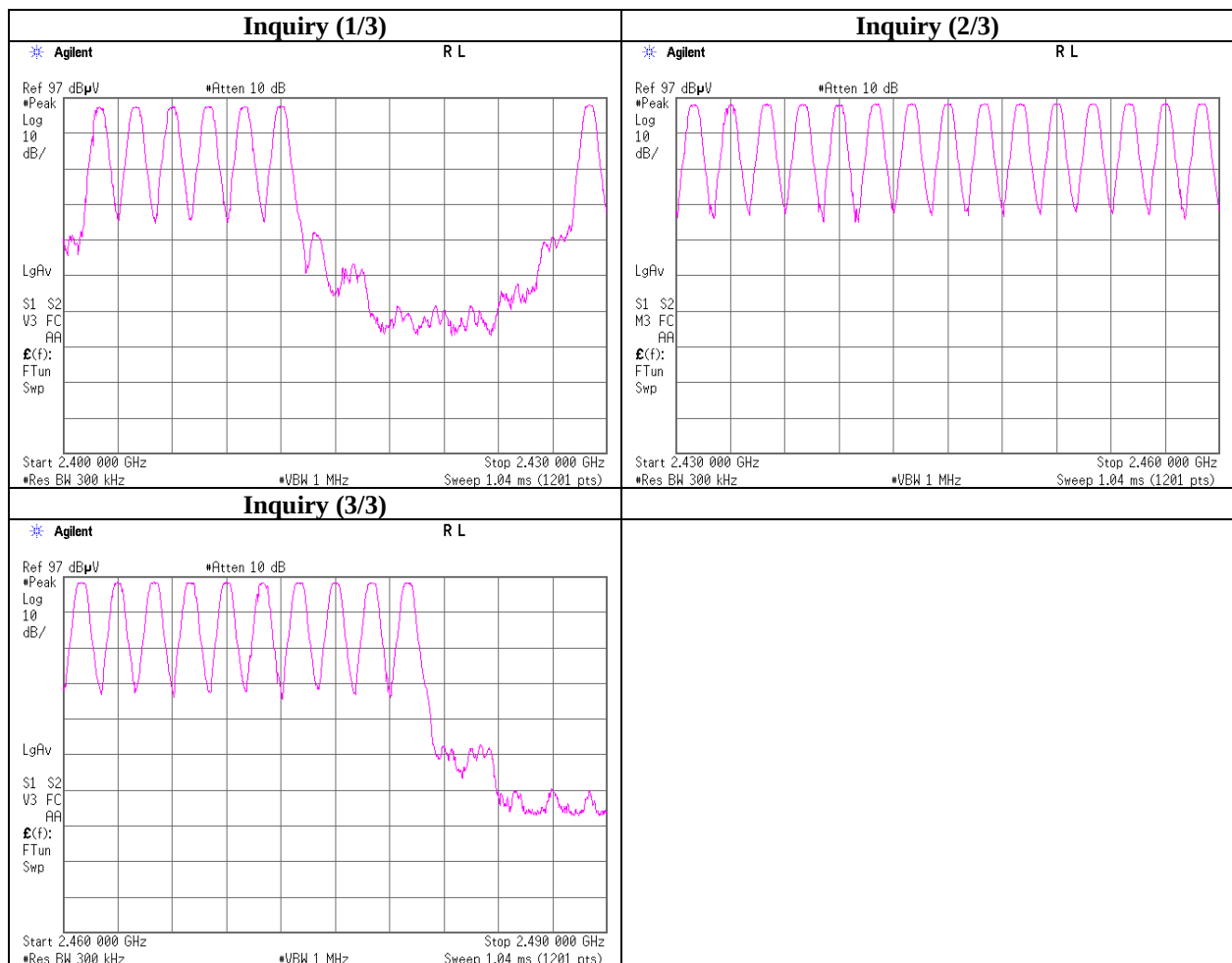
20dB Bandwidth and Carrier Frequency Separation



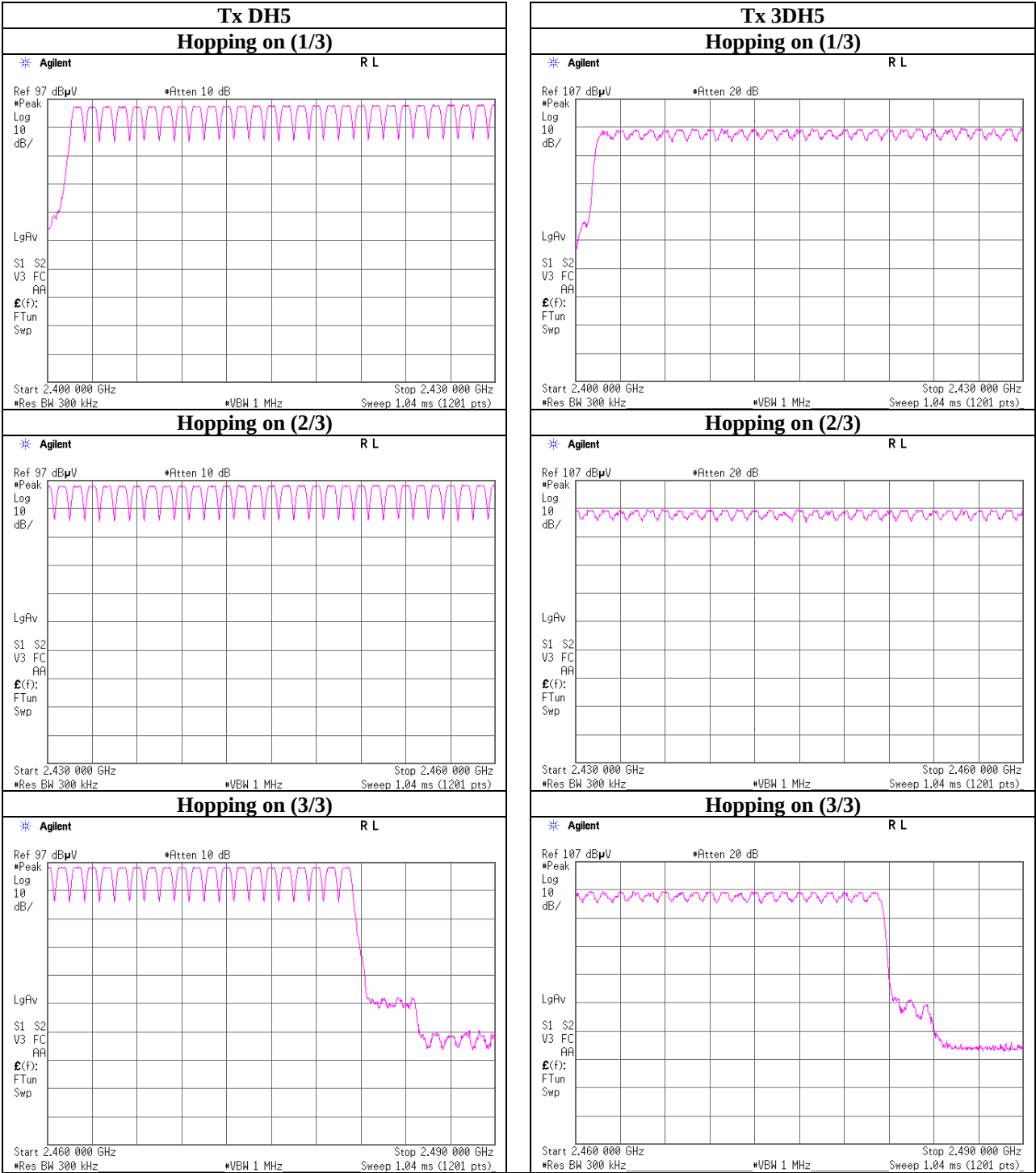
Number of Hopping Frequency

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32CE0141-HO-01
Date	03/09/2012
Temperature/ Humidity	22deg. 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



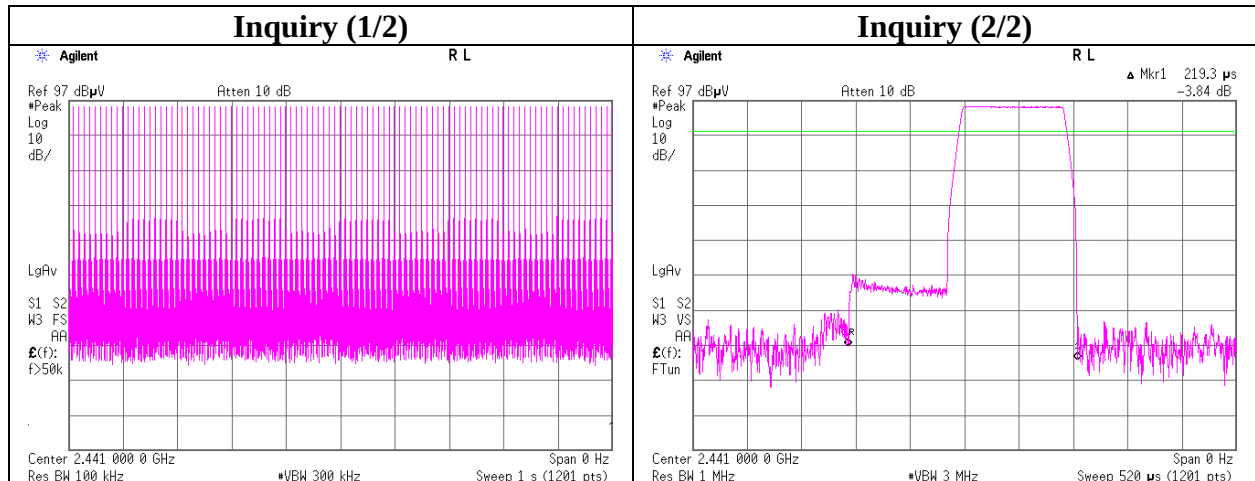
Dwell time

Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 32CE0141-HO-01
Date 03/09/2012
Temperature/ Humidity 22deg. C / 44% RH
Engineer Takayuki Shimada
Mode Tx (Hopping on) DH5/3DH5/Inquiry

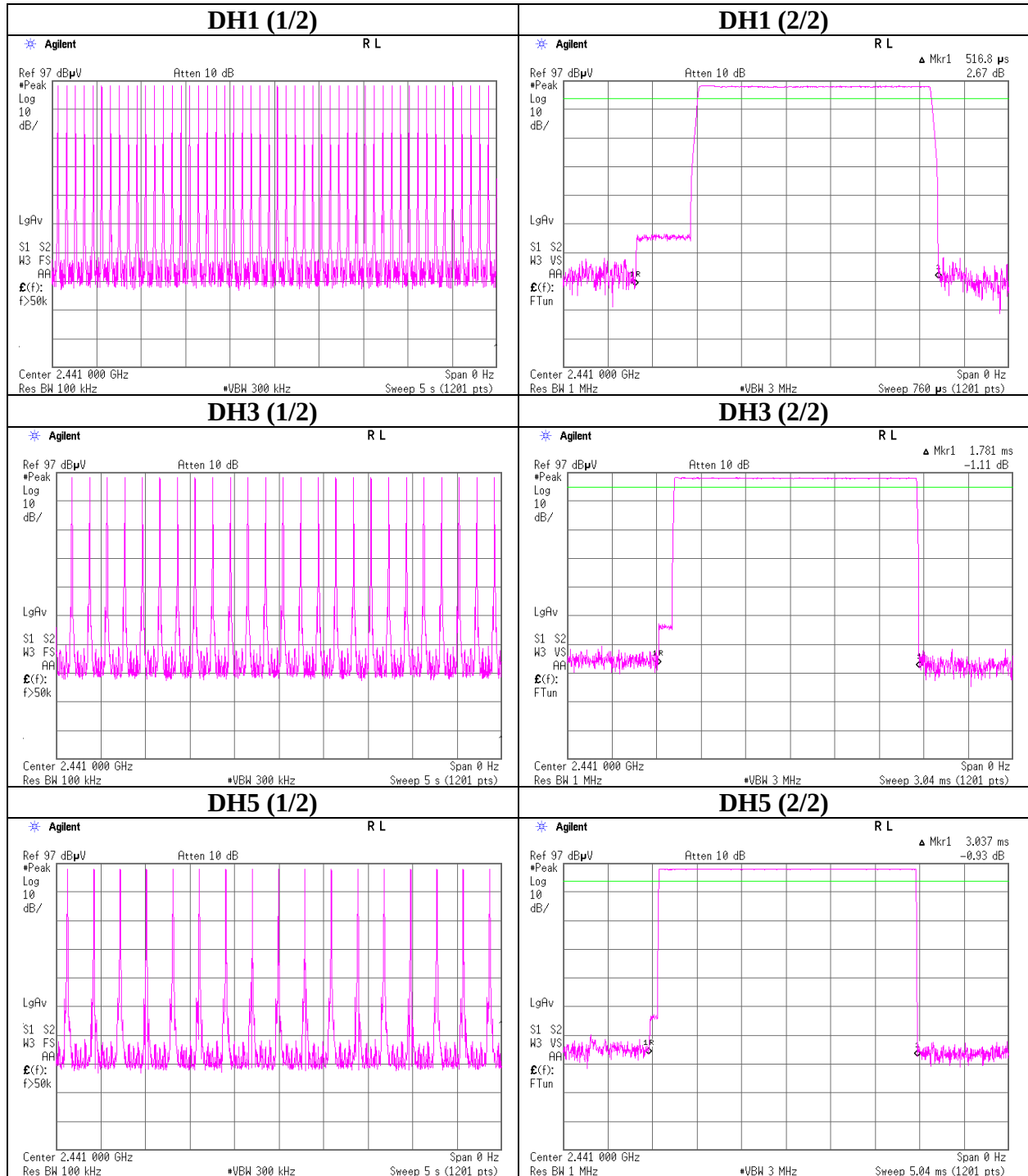
Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period				Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	50.0 times	/	5 sec.	x 31.6 sec. = 316 times	0.517	163	400
DH3	25.0 times	/	5 sec.	x 31.6 sec. = 158 times	1.781	281	400
DH5	17.0 times	/	5 sec.	x 31.6 sec. = 108 times	3.037	328	400
3DH1	50.0 times	/	5 sec.	x 31.6 sec. = 316 times	0.534	169	400
3DH3	25.0 times	/	5 sec.	x 31.6 sec. = 158 times	1.789	283	400
3DH5	17.0 times	/	5 sec.	x 31.6 sec. = 108 times	3.041	328	400
Inquiry	100.0 times	/	1 sec.	x 12.8 sec. = 1280 times	0.219	281	400

Sample Calculation

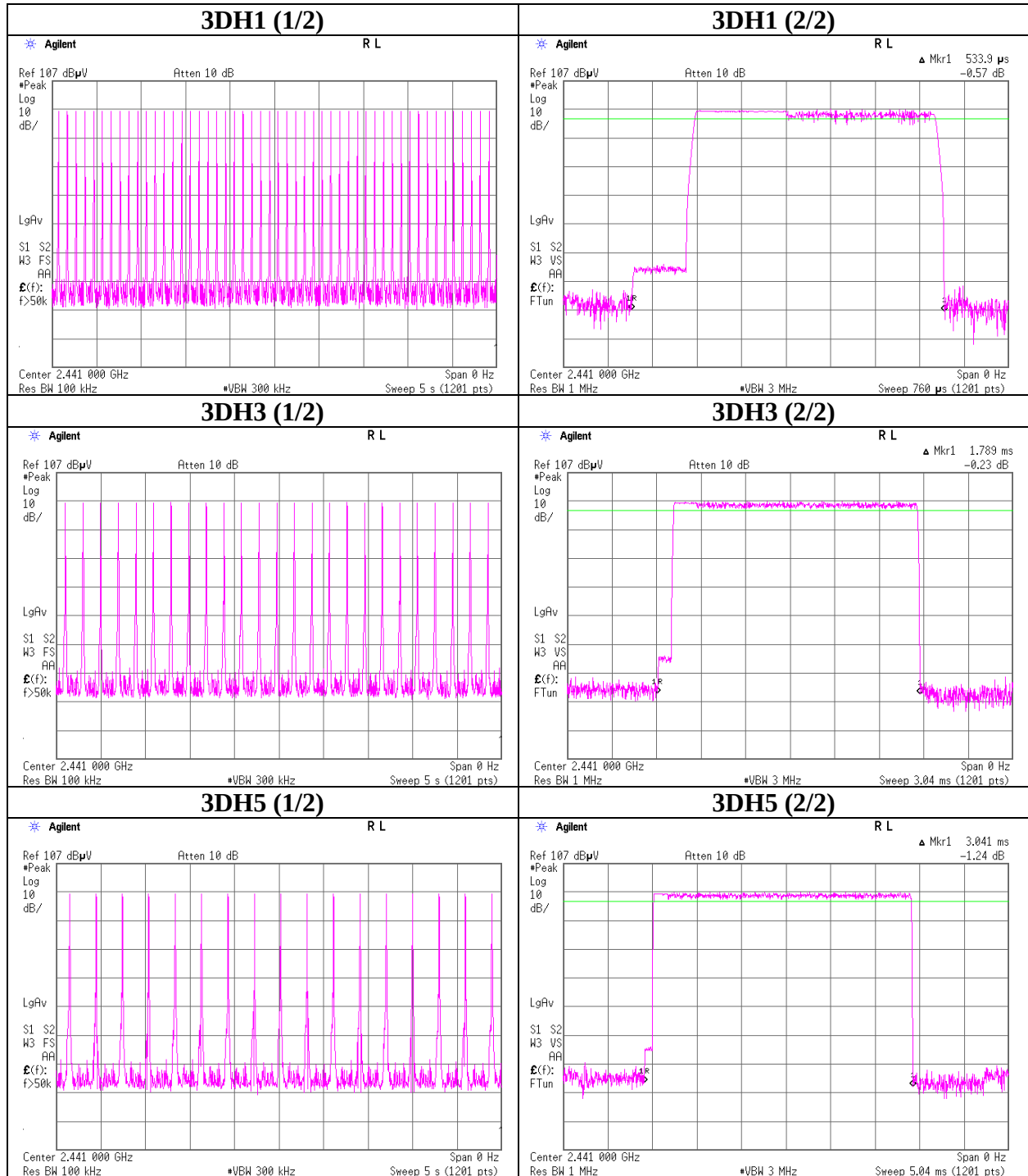
Result = Number of transmission x Length of transmittion time



Dwell time



Dwell time



Maximum Peak Output Power

Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 32CE0141-HO-01
Date 03/09/2012
Temperature/ Humidity 22deg. C / 44% RH
Engineer Takayuki Shimada
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	-12.26	1.33	10.08	-0.85	0.82	20.96	125	21.81
DH5	2441.0	-11.53	1.34	10.08	-0.11	0.97	20.96	125	21.07
DH5	2480.0	-11.43	1.34	10.09	0.00	1.00	20.96	125	20.96
3DH5	2402.0	-9.73	1.33	10.08	1.68	1.47	20.96	125	19.28
3DH5	2441.0	-9.48	1.34	10.08	1.94	1.56	20.96	125	19.02
3DH5	2480.0	-9.39	1.34	10.09	2.04	1.60	20.96	125	18.92
Inquiry	2441.0	-11.30	1.34	10.08	0.12	1.03	20.96	125	20.84

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power and bandwidth of the EUT.

As this device had AFH mode and frequency separation could not meet the requirement of over 20dB BW without 2/3 relaxation, 125mW power limit was applied to it.

Radiated Spurious Emission

Test place : Head Office EMC Lab. No. 4 and 2 Semi Anechoic Chamber
Report No. : 32CE0141-HO-01
Date : 03/13/2012 03/21/2012
Temperature/ Humidity : 24 deg. C / 38% RH 22 deg. C / 35% RH
Engineer : Satofumi Matsuyama Tomohisa Nakagawa
Mode : Above 1GHz Below 1GHz
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	61.810	QP	22.6	8.0	7.1	28.6	9.1	40.0	30.9	
Hori	802.000	QP	21.4	22.1	10.9	28.0	26.4	46.0	19.6	
Hori	1602.021	PK	51.7	25.5	2.1	33.2	46.1	73.9	27.8	
Hori	2390.000	PK	45.8	28.1	2.5	32.2	44.2	73.9	29.7	
Hori	2400.000	PK	60.2	28.1	2.5	32.2	58.6	73.9	15.3	
Hori	4804.000	PK	43.5	31.2	5.3	31.4	48.6	73.9	25.3	
Hori	7206.000	PK	41.7	35.6	6.1	32.4	51.0	73.9	22.9	
Hori	9608.000	PK	42.0	38.3	7.2	33.2	54.3	73.9	19.6	
Hori	24020.000	PK	44.7	38.8	-0.2	31.6	51.7	73.9	22.2	
Hori	1602.021	AV	49.1	25.5	2.1	33.2	43.5	53.9	10.4	
Hori	2390.000	AV	34.8	28.1	2.5	32.2	33.2	53.9	20.7	
Hori	2400.000	AV	52.3	28.1	2.5	32.2	50.7	53.9	3.2	
Hori	4804.000	AV	34.0	31.2	5.3	31.4	39.1	53.9	14.8	
Hori	7206.000	AV	30.3	35.6	6.1	32.4	39.6	53.9	14.3	
Hori	9608.000	AV	30.7	38.3	7.2	33.2	43.0	53.9	10.9	
Hori	24020.000	AV	32.9	38.8	-0.2	31.6	39.9	53.9	14.0	
Vert	61.810	QP	30.8	8.0	7.1	28.6	17.3	40.0	22.7	
Vert	802.000	QP	21.4	22.1	10.9	28.0	26.4	46.0	19.6	
Vert	1601.993	PK	51.2	25.5	2.1	33.2	45.6	73.9	28.3	
Vert	2390.000	PK	43.6	28.1	2.5	32.2	42.0	73.9	31.9	
Vert	2400.000	PK	57.8	28.1	2.5	32.2	56.2	73.9	17.7	
Vert	4804.000	PK	42.0	31.2	5.3	31.4	47.1	73.9	26.8	
Vert	7206.000	PK	41.1	35.6	6.1	32.4	50.4	73.9	23.5	
Vert	9608.000	PK	42.6	38.3	7.2	33.2	54.9	73.9	19.0	
Vert	24020.000	PK	44.6	38.8	-0.2	31.6	51.6	73.9	22.3	
Vert	1601.993	AV	48.3	25.5	2.1	33.2	42.7	53.9	11.2	
Vert	2390.000	AV	32.8	28.1	2.5	32.2	31.2	53.9	22.7	
Vert	2400.000	AV	49.9	28.1	2.5	32.2	48.3	53.9	5.6	
Vert	4804.000	AV	31.3	31.2	5.3	31.4	36.4	53.9	17.5	
Vert	7206.000	AV	30.3	35.6	6.1	32.4	39.6	53.9	14.3	
Vert	9608.000	AV	30.7	38.3	7.2	33.2	43.0	53.9	10.9	
Vert	24020.000	AV	32.9	38.8	-0.2	31.6	39.9	53.9	14.0	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No. 4 and 2 Semi Anechoic Chamber
Report No. 32CE0141-HO-01
Date 03/13/2012 03/21/2012
Temperature/ Humidity 24 deg. C / 38% RH 22 deg. C / 35% RH
Engineer Satofumi Matsuyama Tomohisa Nakagawa
Above 1GHz Below 1GHz
Mode Tx, DH5 2441MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	62.052	QP	22.6	8.0	7.1	28.6	9.1	40.0	30.9	
Hori	114.800	QP	22.3	11.9	7.6	28.3	13.5	43.5	30.0	
Hori	814.900	QP	21.5	22.1	11.0	28.0	26.6	46.0	19.4	
Hori	1627.893	PK	52.0	25.5	2.1	33.1	46.5	73.9	27.4	
Hori	4882.000	PK	44.0	31.4	5.3	31.4	49.3	73.9	24.6	
Hori	7323.000	PK	42.3	35.7	6.2	32.5	51.7	73.9	22.2	
Hori	9764.000	PK	42.2	38.5	7.5	33.2	55.0	73.9	18.9	
Hori	24410.000	PK	45.0	38.6	-0.1	31.6	51.9	73.9	22.0	
Hori	1627.893	AV	48.9	25.5	2.1	33.1	43.4	53.9	10.5	
Hori	4882.000	AV	34.1	31.4	5.3	31.4	39.4	53.9	14.5	
Hori	7323.000	AV	30.0	35.7	6.2	32.5	39.4	53.9	14.5	
Hori	9764.000	AV	30.5	38.5	7.5	33.2	43.3	53.9	10.6	
Hori	24410.000	AV	32.5	38.6	-0.1	31.6	39.4	53.9	14.5	
Vert	62.052	QP	32.6	8.0	7.1	28.6	19.1	40.0	20.9	
Vert	114.800	QP	27.8	11.9	7.6	28.3	19.0	43.5	24.5	
Vert	814.900	QP	21.5	22.1	11.0	28.0	26.6	46.0	19.4	
Vert	1628.018	PK	52.5	25.5	2.1	33.1	47.0	73.9	26.9	
Vert	4882.000	PK	42.0	31.4	3.7	31.4	45.7	73.9	28.2	
Vert	7323.000	PK	41.5	35.7	6.2	32.5	50.9	73.9	23.0	
Vert	9764.000	PK	42.0	38.5	7.5	33.2	54.8	73.9	19.1	
Vert	24410.000	PK	44.4	38.6	-0.1	31.6	51.3	73.9	22.6	
Vert	1628.018	AV	49.6	25.5	2.1	33.1	44.1	53.9	9.8	
Vert	4882.000	AV	31.2	31.4	5.3	31.4	36.5	53.9	17.4	
Vert	7323.000	AV	30.0	35.7	6.2	32.5	39.4	53.9	14.5	
Vert	9764.000	AV	30.5	38.5	7.5	33.2	43.3	53.9	10.6	
Vert	24410.000	AV	32.5	38.6	-0.1	31.6	39.4	53.9	14.5	

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No. 4 and 2 Semi Anechoic Chamber		
Report No.	32CE0141-HO-01		
Date	03/13/2012	03/21/2012	
Temperature/ Humidity	24 deg. C / 38% RH	22 deg. C / 35% RH	
Engineer	Satofumi Matsuyama	Tomohisa Nakagawa	
	Above 1GHz	Below 1GHz	
Mode	Tx, DH5 2480MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	59.250	QP	22.5	8.5	7.1	28.6	9.5	40.0	30.5	
Hori	106.950	QP	22.3	10.7	7.5	28.4	12.1	43.5	31.4	
Hori	832.700	QP	21.3	22.1	11.0	28.0	26.4	46.0	19.6	
Hori	1653.948	PK	51.3	25.6	2.1	33.1	45.9	73.9	28.0	
Hori	2483.500	PK	57.3	28.5	2.6	32.2	56.2	73.9	17.7	
Hori	4960.000	PK	42.8	31.6	5.3	31.4	48.3	73.9	25.6	
Hori	7440.000	PK	42.5	35.8	6.2	32.5	52.0	73.9	21.9	
Hori	9920.000	PK	41.7	38.6	7.6	33.3	54.6	73.9	19.3	
Hori	24800.000	PK	45.0	38.5	-0.9	31.5	51.1	73.9	22.8	
Hori	1653.948	AV	48.0	25.6	2.1	33.1	42.6	53.9	11.3	
Hori	2483.500	AV	46.9	28.5	2.6	32.2	45.8	53.9	8.1	
Hori	4960.000	AV	33.7	31.6	5.3	31.4	39.2	53.9	14.7	
Hori	7440.000	AV	30.2	35.8	6.2	32.5	39.7	53.9	14.2	
Hori	9920.000	AV	30.1	38.6	7.6	33.3	43.0	53.9	10.9	
Hori	24800.000	AV	33.0	38.5	-0.9	31.5	39.1	53.9	14.8	
Vert	59.250	QP	32.3	8.5	7.1	28.6	19.3	40.0	20.7	
Vert	106.950	QP	26.6	10.7	7.5	28.4	16.4	43.5	27.1	
Vert	832.700	QP	21.0	22.1	11.0	28.0	26.1	46.0	19.9	
Vert	1654.018	PK	53.3	25.6	2.1	33.1	47.9	73.9	26.0	
Vert	2483.500	PK	53.8	28.5	2.6	32.2	52.7	73.9	21.2	
Vert	4960.000	PK	41.6	31.6	5.3	31.4	47.1	73.9	26.8	
Vert	7440.000	PK	41.8	35.8	6.2	32.5	51.3	73.9	22.6	
Vert	9920.000	PK	41.4	38.6	7.6	33.3	54.3	73.9	19.6	
Vert	24800.000	PK	44.7	38.5	-0.9	31.5	50.8	73.9	23.1	
Vert	1654.018	AV	51.3	25.6	2.1	33.1	45.9	53.9	8.0	
Vert	2483.500	AV	43.7	28.5	2.6	32.2	42.6	53.9	11.3	
Vert	4960.000	AV	30.6	31.6	5.3	31.4	36.1	53.9	17.8	
Vert	7440.000	AV	30.2	35.8	6.2	32.5	39.7	53.9	14.2	
Vert	9920.000	AV	30.1	38.6	7.6	33.3	43.0	53.9	10.9	
Vert	24800.000	AV	33.0	38.5	-0.9	31.5	39.1	53.9	14.8	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No. 4 and 2 Semi Anechoic Chamber
Report No. 32CE0141-HO-01
Date 03/13/2012 03/21/2012
Temperature/ Humidity 24 deg. C / 38% RH 22 deg. C / 35% RH
Engineer Satofumi Matsuyama Tomohisa Nakagawa
Above 1GHz Below 1GHz
Mode Tx, 3DH5 2402MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	61.950	QP	22.6	8.0	7.1	28.6	9.1	40.0	30.9	
Hori	802.000	QP	21.4	22.1	10.9	28.0	26.4	46.0	19.6	
Hori	1602.090	PK	51.8	25.5	2.1	33.2	46.2	73.9	27.7	
Hori	2390.000	PK	47.8	28.1	2.5	32.2	46.2	73.9	27.7	
Hori	2400.000	PK	65.1	28.1	2.5	32.2	63.5	73.9	10.4	
Hori	4804.000	PK	40.7	31.2	5.3	31.4	45.8	73.9	28.1	
Hori	7206.000	PK	42.3	35.6	6.1	32.4	51.6	73.9	22.3	
Hori	9608.000	PK	41.6	38.3	7.2	33.2	53.9	73.9	20.0	
Hori	24020.000	PK	44.9	38.8	-0.2	31.6	51.9	73.9	22.0	
Hori	1602.090	AV	49.0	25.5	2.1	33.2	43.4	53.9	10.5	
Hori	2390.000	AV	35.4	28.1	2.5	32.2	33.8	53.9	20.1	
Hori	2400.000	AV	50.6	28.1	2.5	32.2	49.0	53.9	4.9	
Hori	4804.000	AV	28.2	31.2	5.3	31.4	33.3	53.9	20.6	
Hori	7206.000	AV	30.3	35.6	6.1	32.4	39.6	53.9	14.3	
Hori	9608.000	AV	30.7	38.3	7.2	33.2	43.0	53.9	10.9	
Hori	24020.000	AV	33.0	38.8	-0.2	31.6	40.0	53.9	13.9	
Vert	61.950	QP	30.4	8.0	7.1	28.6	16.9	40.0	23.1	
Vert	802.000	QP	21.6	22.1	10.9	28.0	26.6	46.0	19.4	
Vert	1602.045	PK	52.3	25.5	2.1	33.2	46.7	73.9	27.2	
Vert	2390.000	PK	45.1	28.1	2.5	32.2	43.5	73.9	30.4	
Vert	2400.000	PK	61.6	28.1	2.5	32.2	60.0	73.9	13.9	
Vert	4804.000	PK	39.5	31.2	5.3	31.4	44.6	73.9	29.3	
Vert	7206.000	PK	41.2	35.6	6.1	32.4	50.5	73.9	23.4	
Vert	9608.000	PK	41.9	38.3	7.2	33.2	54.2	73.9	19.7	
Vert	24020.000	PK	44.7	38.8	-0.2	31.6	51.7	73.9	22.2	
Vert	1602.045	AV	49.6	25.5	2.1	33.2	44.0	53.9	9.9	
Vert	2390.000	AV	33.2	28.1	2.5	32.2	31.6	53.9	22.3	
Vert	2400.000	AV	47.3	28.1	2.5	32.2	45.7	53.9	8.2	
Vert	4804.000	AV	28.2	31.2	5.3	31.4	33.3	53.9	20.6	
Vert	7206.000	AV	30.3	35.6	6.1	32.4	39.6	53.9	14.3	
Vert	9608.000	AV	30.7	38.3	7.2	33.2	43.0	53.9	10.9	
Vert	24020.000	AV	33.0	38.8	-0.2	31.6	40.0	53.9	13.9	

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

*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

Radiated Spurious Emission

Test place Head Office EMC Lab. No. 4 and 2 Semi Anechoic Chamber
Report No. 32CE0141-HO-01
Date 03/13/2012 03/21/2012
Temperature/ Humidity 24 deg. C / 38% RH 22 deg. C / 35% RH
Engineer Satofumi Matsuyama Tomohisa Nakagawa
Above 1GHz Below 1GHz
Mode Tx, 3DH5 2441MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	60.150	QP	22.9	8.3	7.1	28.6	9.7	40.0	30.3	
Hori	837.500	QP	21.2	22.1	11.0	28.0	26.3	46.0	19.7	
Hori	1627.887	PK	51.7	25.5	2.1	33.1	46.2	73.9	27.7	
Hori	4882.000	PK	40.1	31.4	5.3	31.4	45.4	73.9	28.5	
Hori	7323.000	PK	41.8	35.7	6.2	32.5	51.2	73.9	22.7	
Hori	9764.000	PK	42.6	38.5	7.5	33.2	55.4	73.9	18.5	
Hori	24410.000	PK	44.2	38.6	-0.1	31.6	51.1	73.9	22.8	
Hori	1627.887	AV	48.9	25.5	2.1	33.1	43.4	53.9	10.5	
Hori	4882.000	AV	28.2	31.4	5.3	31.4	33.5	53.9	20.4	
Hori	7323.000	AV	30.0	35.7	6.2	32.5	39.4	53.9	14.5	
Hori	9764.000	AV	30.5	38.5	7.5	33.2	43.3	53.9	10.6	
Hori	24410.000	AV	32.5	38.6	-0.1	31.6	39.4	53.9	14.5	
Vert	60.600	QP	33.8	8.2	7.1	28.6	20.5	40.0	19.5	
Vert	837.500	QP	21.2	22.1	11.0	28.0	26.3	46.0	19.7	
Vert	1628.017	PK	52.7	25.5	2.1	33.1	47.2	73.9	26.7	
Vert	4882.000	PK	40.3	31.4	5.3	31.4	45.6	73.9	28.3	
Vert	7323.000	PK	41.7	35.7	6.2	32.5	51.1	73.9	22.8	
Vert	9764.000	PK	42.8	38.5	7.5	33.2	55.6	73.9	18.3	
Vert	24410.000	PK	44.4	38.6	-0.1	31.6	51.3	73.9	22.6	
Vert	1628.017	AV	50.5	25.5	2.1	33.1	45.0	53.9	8.9	
Vert	4882.000	AV	28.2	31.4	5.3	31.4	33.5	53.9	20.4	
Vert	7323.000	AV	30.0	35.7	6.2	32.5	39.4	53.9	14.5	
Vert	9764.000	AV	30.5	38.5	7.5	33.2	43.3	53.9	10.6	
Vert	24410.000	AV	32.5	38.6	-0.1	31.6	39.4	53.9	14.5	

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

*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

Radiated Spurious Emission

Test place Head Office EMC Lab. No. 4 and 2 Semi Anechoic Chamber
Report No. 32CE0141-HO-01
Date 03/13/2012 03/21/2012
Temperature/ Humidity 24 deg. C / 38% RH 22 deg. C / 35% RH
Engineer Satofumi Matsuyama Tomohisa Nakagawa
Above 1GHz Below 1GHz
Mode Tx, 3DH5 2480MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	61.950	QP	22.6	8.0	7.1	28.6	9.1	40.0	30.9	
Hori	115.500	QP	22.2	12.0	7.6	28.3	13.5	43.5	30.0	
Hori	486.700	QP	22.1	18.2	9.7	28.7	21.3	46.0	24.7	
Hori	1653.911	PK	51.2	25.6	2.1	33.1	45.8	73.9	28.1	
Hori	2483.500	PK	62.5	28.5	2.6	32.2	61.4	73.9	12.5	
Hori	4960.000	PK	40.5	31.6	5.3	31.4	46.0	73.9	27.9	
Hori	7440.000	PK	42.3	35.8	6.2	32.5	51.8	73.9	22.1	
Hori	9920.000	PK	41.8	38.6	7.6	33.3	54.7	73.9	19.2	
Hori	24800.000	PK	44.7	38.5	0.0	31.5	51.7	73.9	22.2	
Hori	1653.911	AV	47.7	25.6	2.1	33.1	42.3	53.9	11.6	
Hori	2483.500	AV	50.5	28.5	2.6	32.2	49.4	53.9	4.5	
Hori	4960.000	AV	28.1	31.6	5.3	31.4	33.6	53.9	20.3	
Hori	7440.000	AV	30.2	35.8	6.2	32.5	39.7	53.9	14.2	
Hori	9920.000	AV	30.1	38.6	7.6	33.3	43.0	53.9	10.9	
Hori	24800.000	AV	33.0	38.5	0.0	31.5	40.0	53.9	13.9	
Vert	61.950	QP	32.4	8.0	7.1	28.6	18.9	40.0	21.1	
Vert	115.500	QP	26.3	12.0	7.6	28.3	17.6	43.5	25.9	
Vert	486.700	QP	22.2	18.2	9.7	28.7	21.4	46.0	24.6	
Vert	1654.020	PK	53.8	25.6	2.1	33.1	48.4	73.9	25.5	
Vert	2483.500	PK	59.2	28.5	2.6	32.2	58.1	73.9	15.8	
Vert	4960.000	PK	40.1	31.6	5.3	31.4	45.6	73.9	28.3	
Vert	7440.000	PK	41.9	35.8	6.2	32.5	51.4	73.9	22.5	
Vert	9920.000	PK	41.7	38.6	7.6	33.3	54.6	73.9	19.3	
Vert	24800.000	PK	45.2	38.5	0.0	31.5	52.2	73.9	21.7	
Vert	1654.020	AV	51.8	25.6	2.1	33.1	46.4	53.9	7.5	
Vert	2483.500	AV	47.0	28.5	2.6	32.2	45.9	53.9	8.0	
Vert	4960.000	AV	28.1	31.6	5.3	31.4	33.6	53.9	20.3	
Vert	7440.000	AV	30.2	35.8	6.2	32.5	39.7	53.9	14.2	
Vert	9920.000	AV	30.1	38.6	7.6	33.3	43.0	53.9	10.9	
Vert	24800.000	AV	33.0	38.5	0.0	31.5	40.0	53.9	13.9	

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

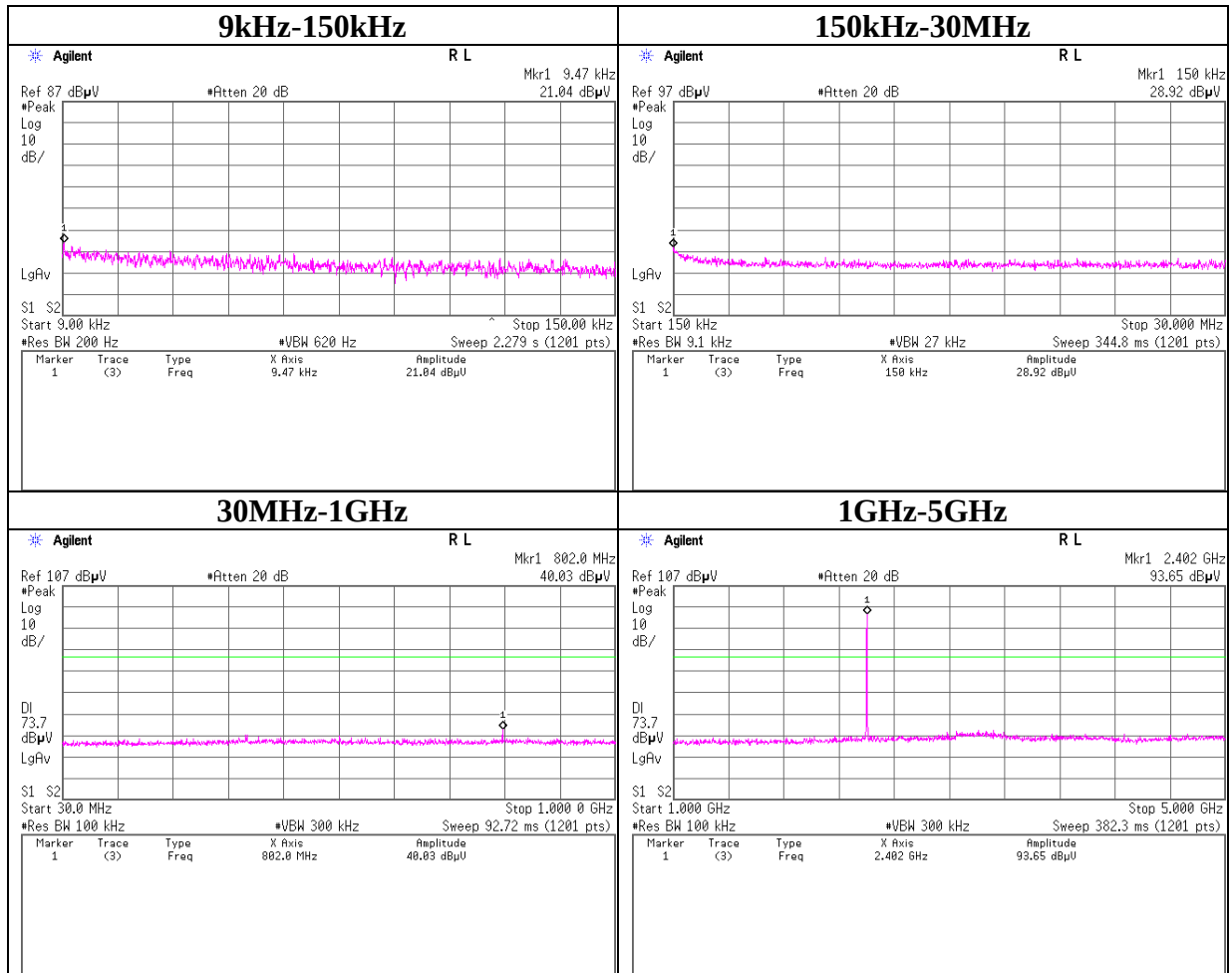
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*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

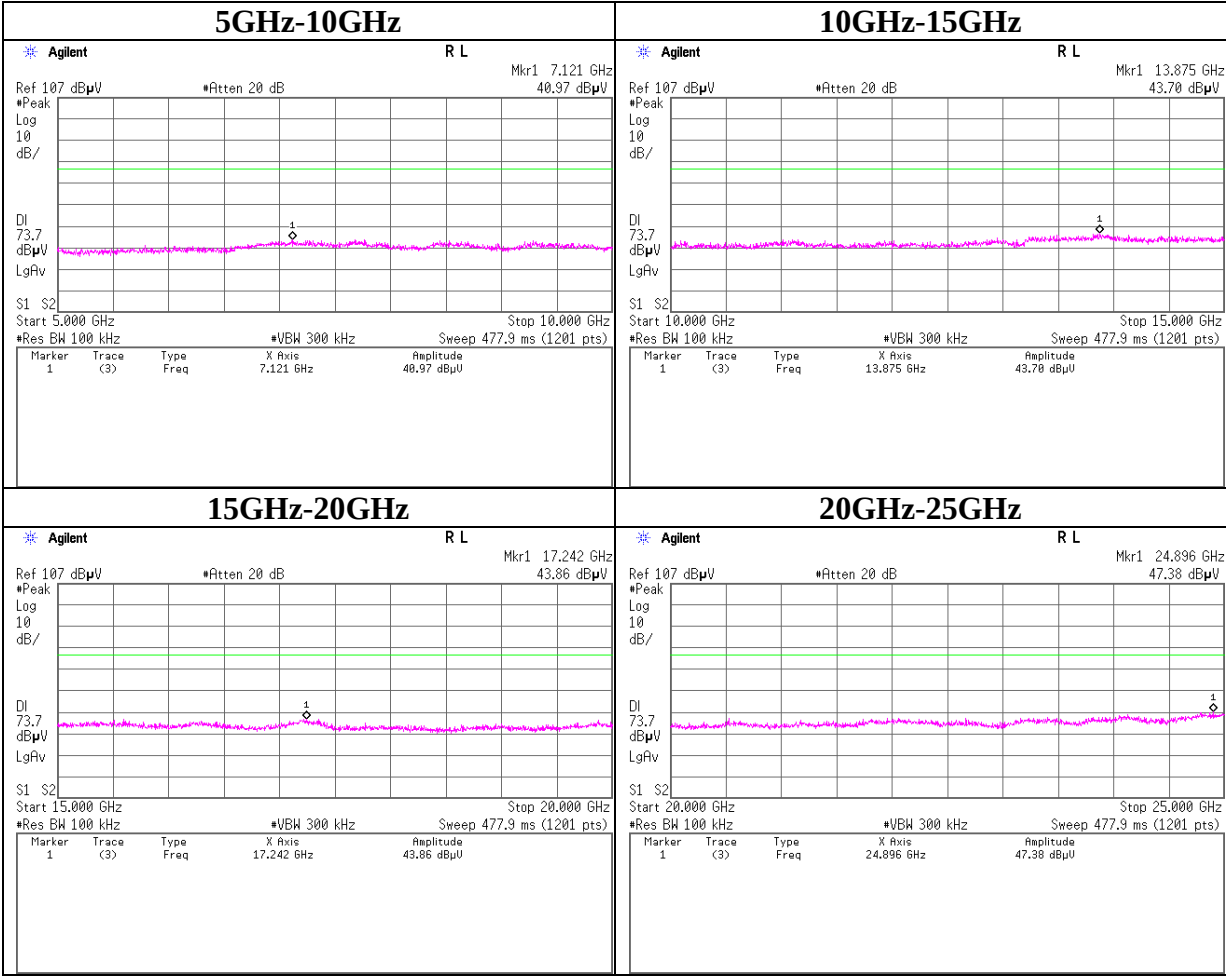
Conducted Spurious Emission

Tx DH5 2402MHz



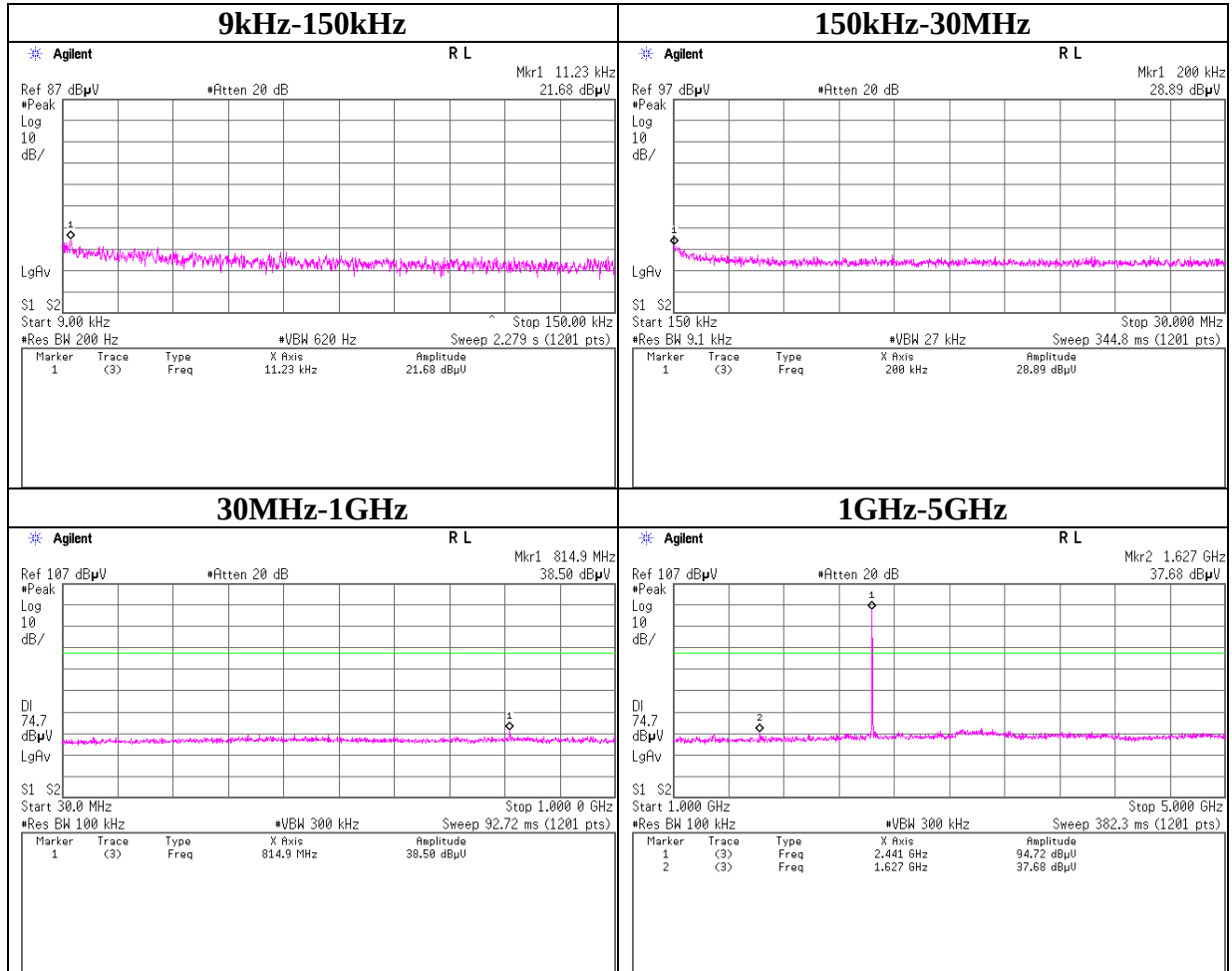
Conducted Spurious Emission

Tx DH5 2402MHz



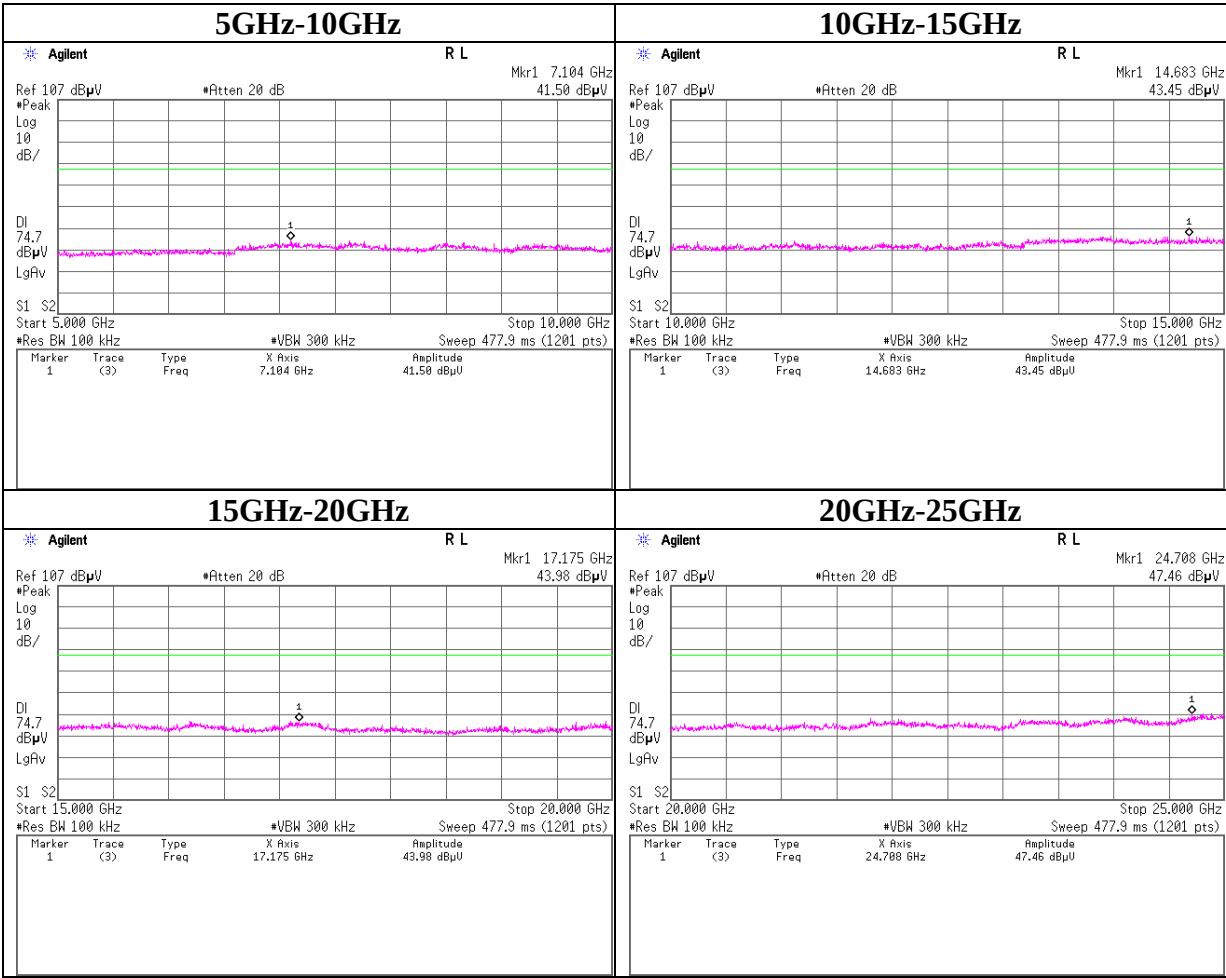
Conducted Spurious Emission

Tx DH5 2441MHz



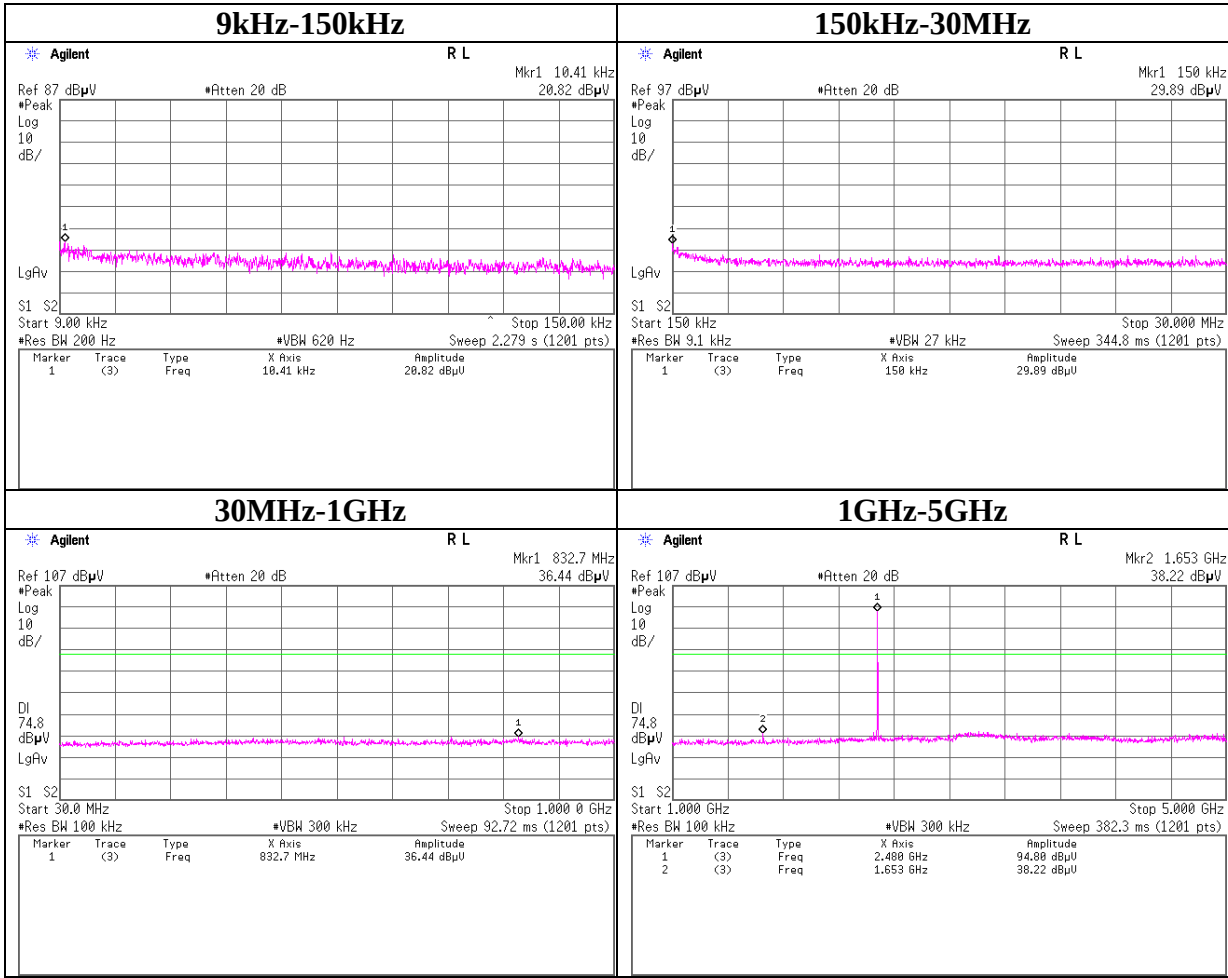
Conducted Spurious Emission

Tx DH5 2441MHz



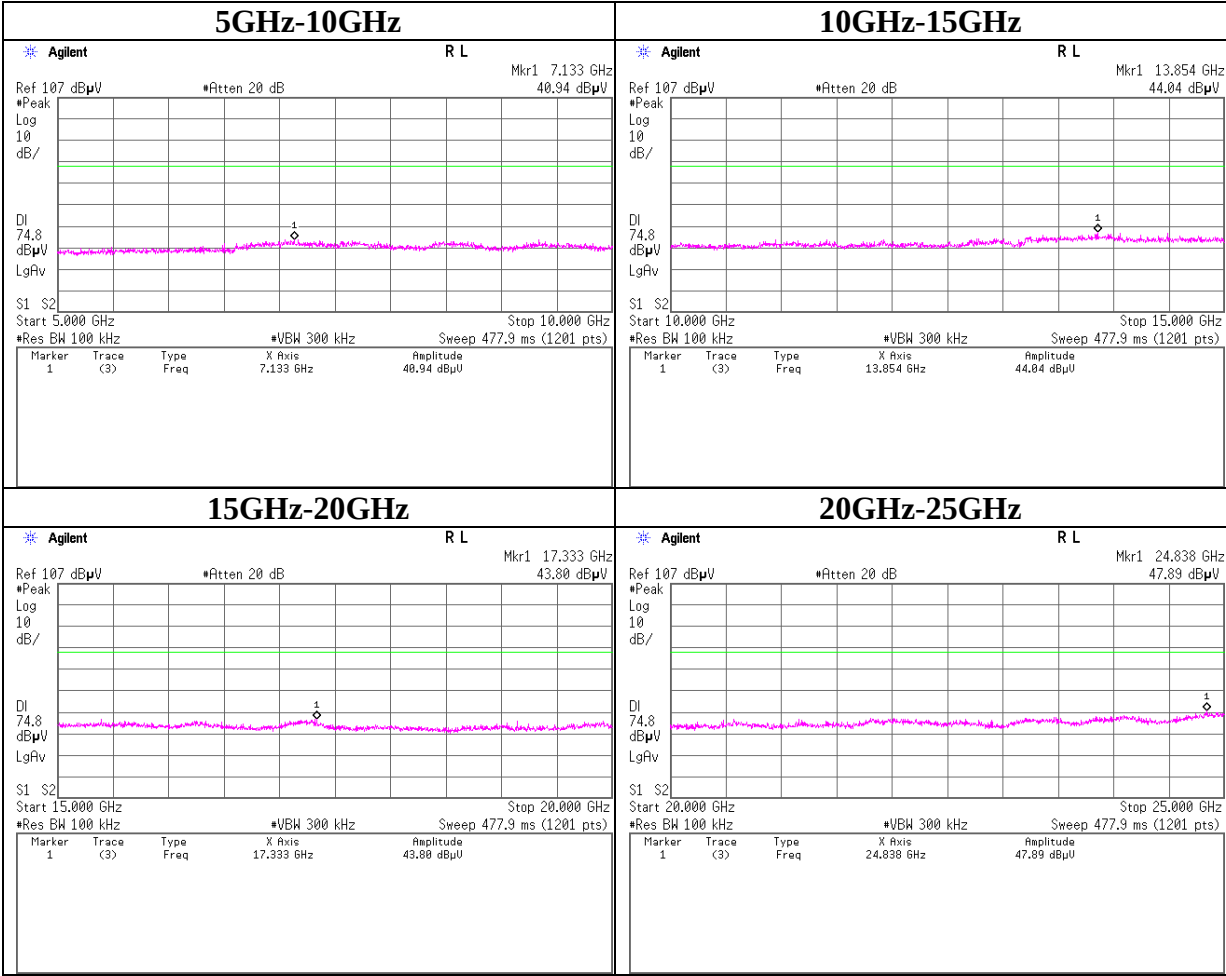
Conducted Spurious Emission

Tx DH5 2480MHz



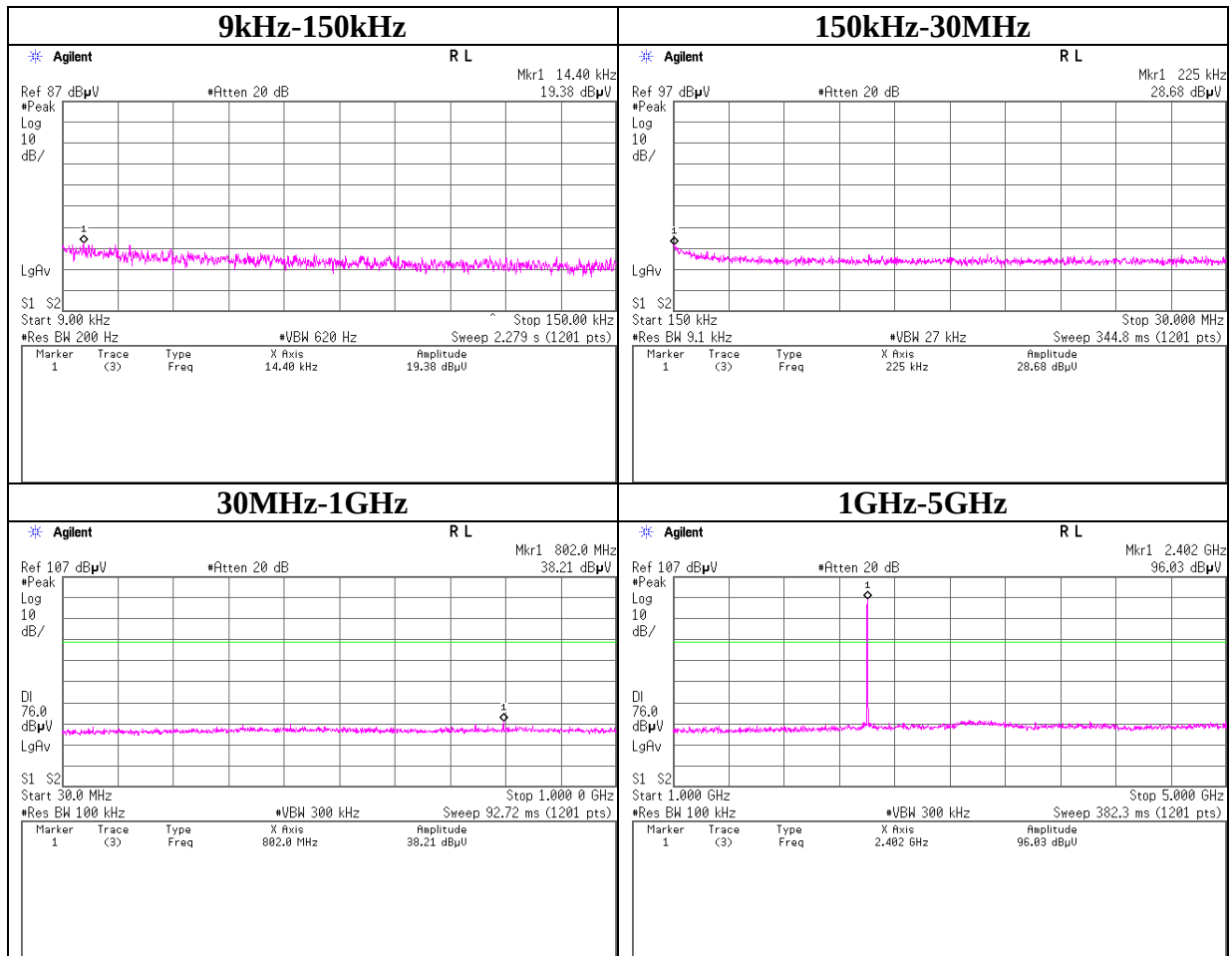
Conducted Spurious Emission

Tx DH5 2480MHz



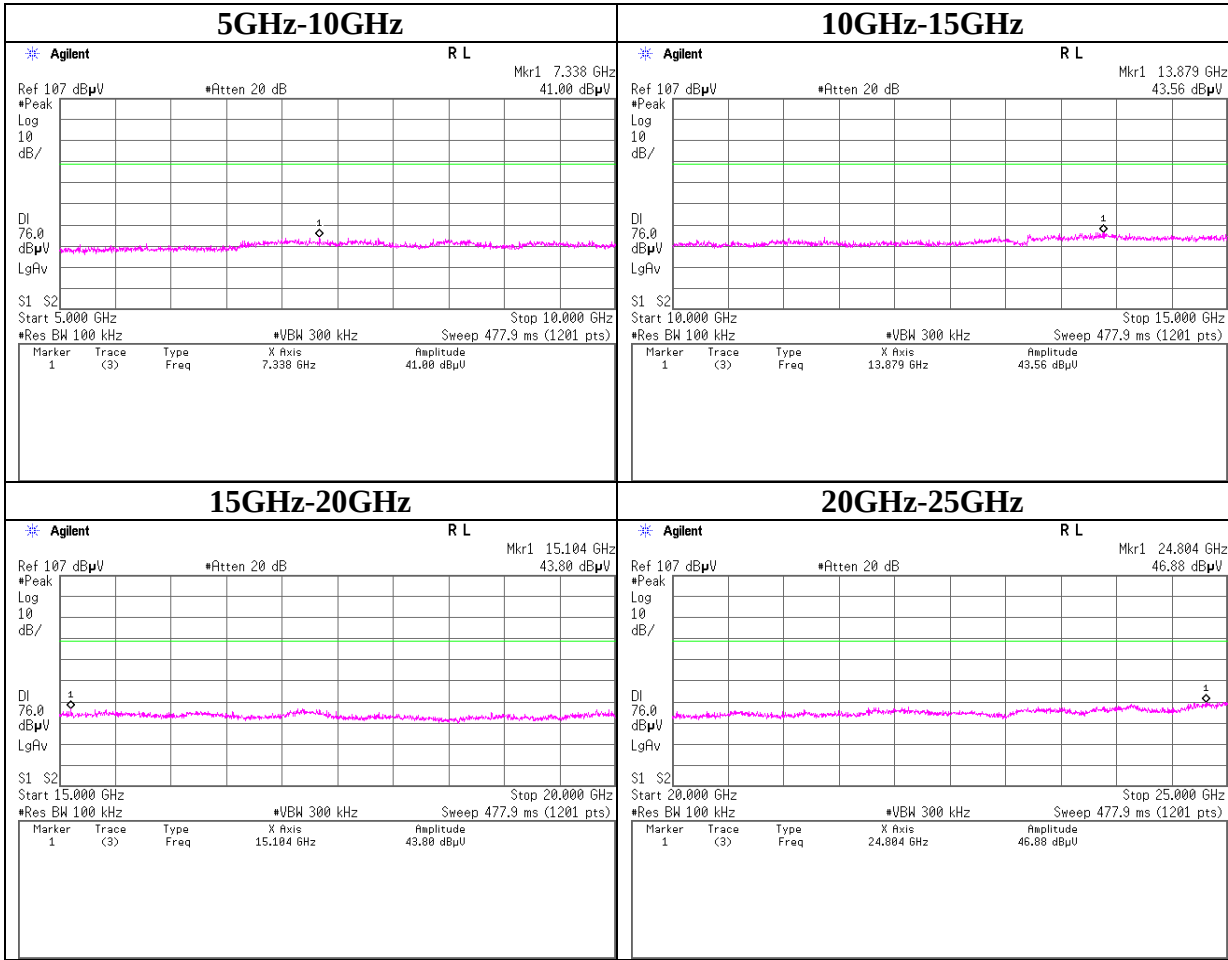
Conducted Spurious Emission

Tx 3DH5 2402MHz



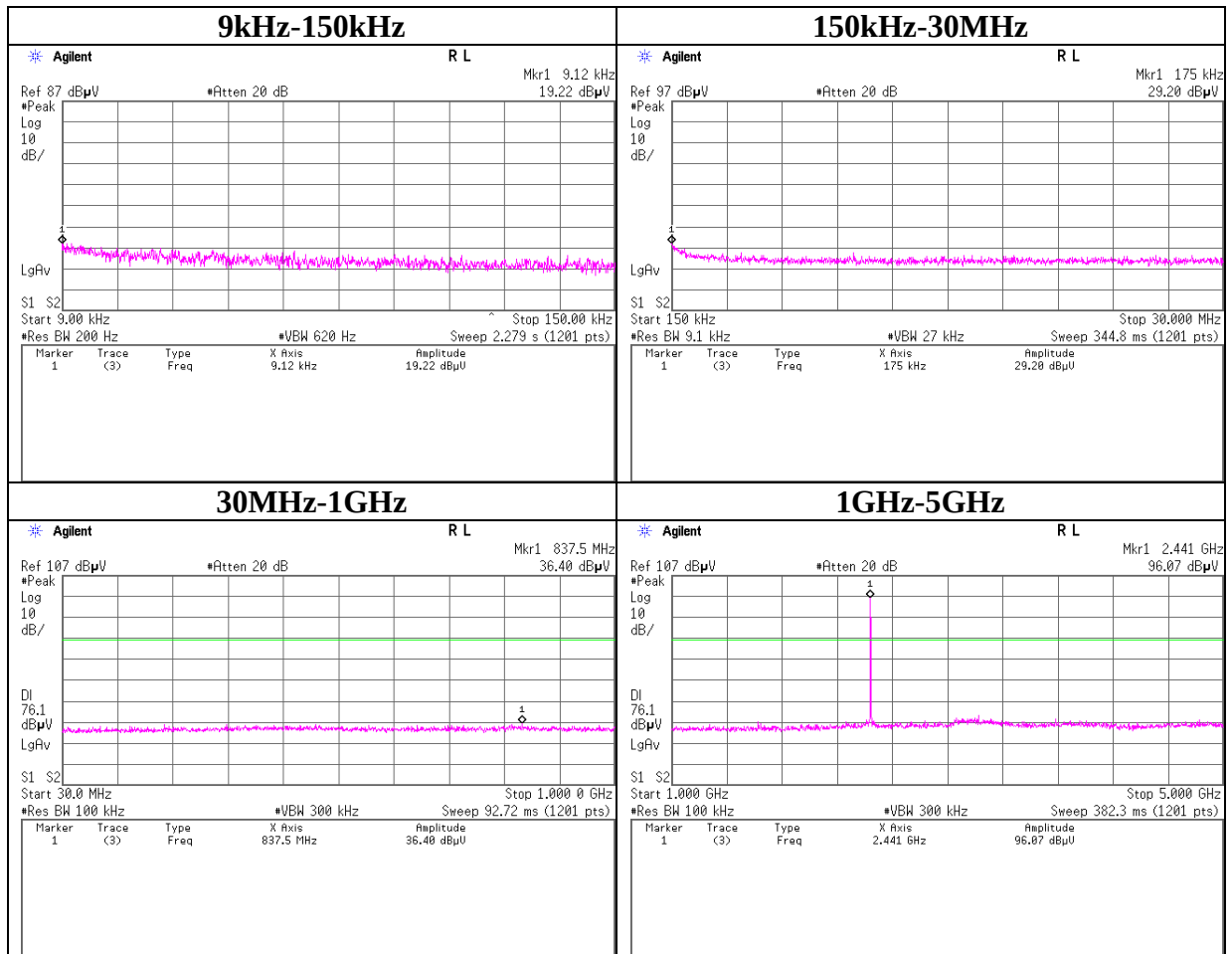
Conducted Spurious Emission

Tx 3DH5 2402MHz



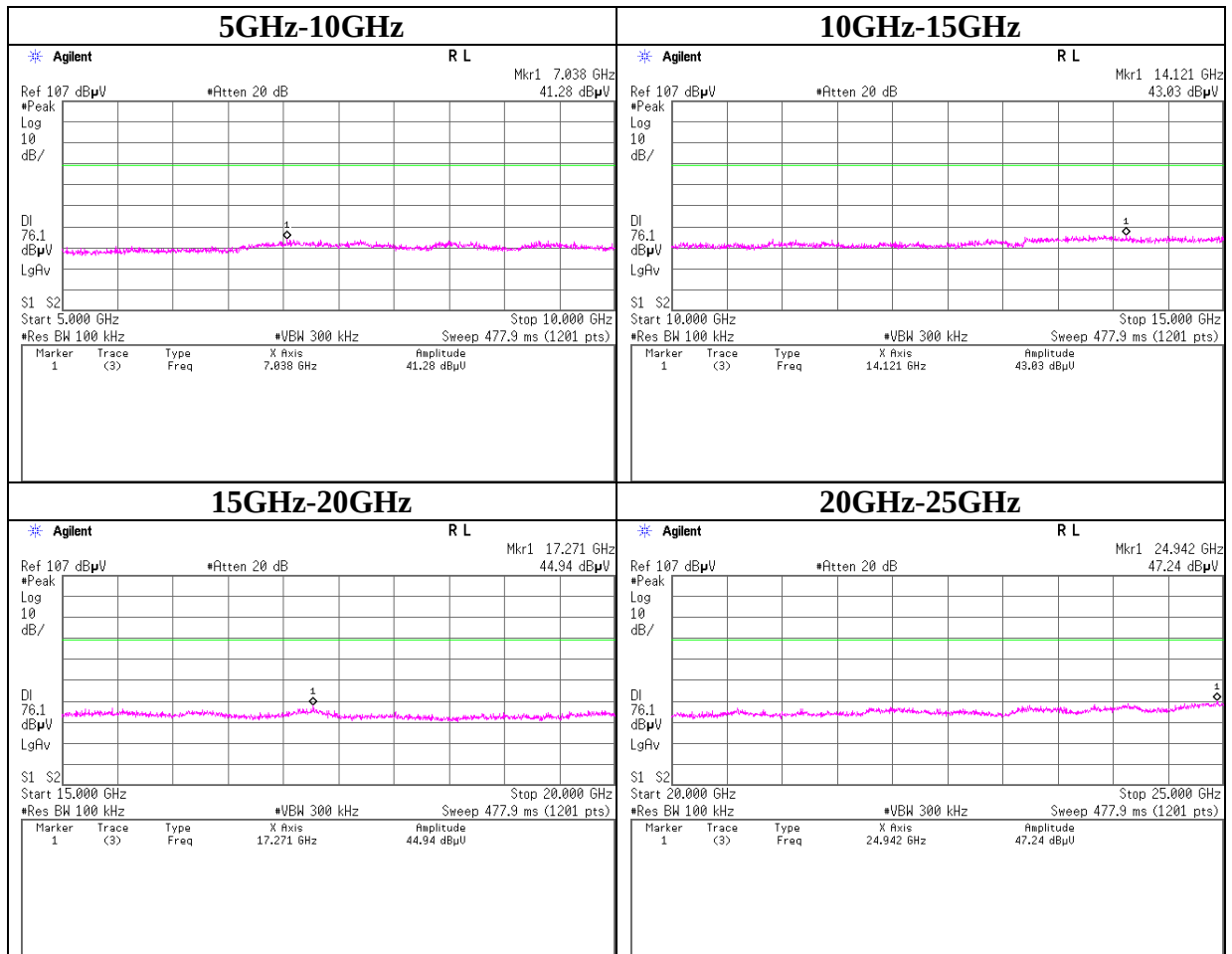
Conducted Spurious Emission

Tx 3DH5 2441MHz



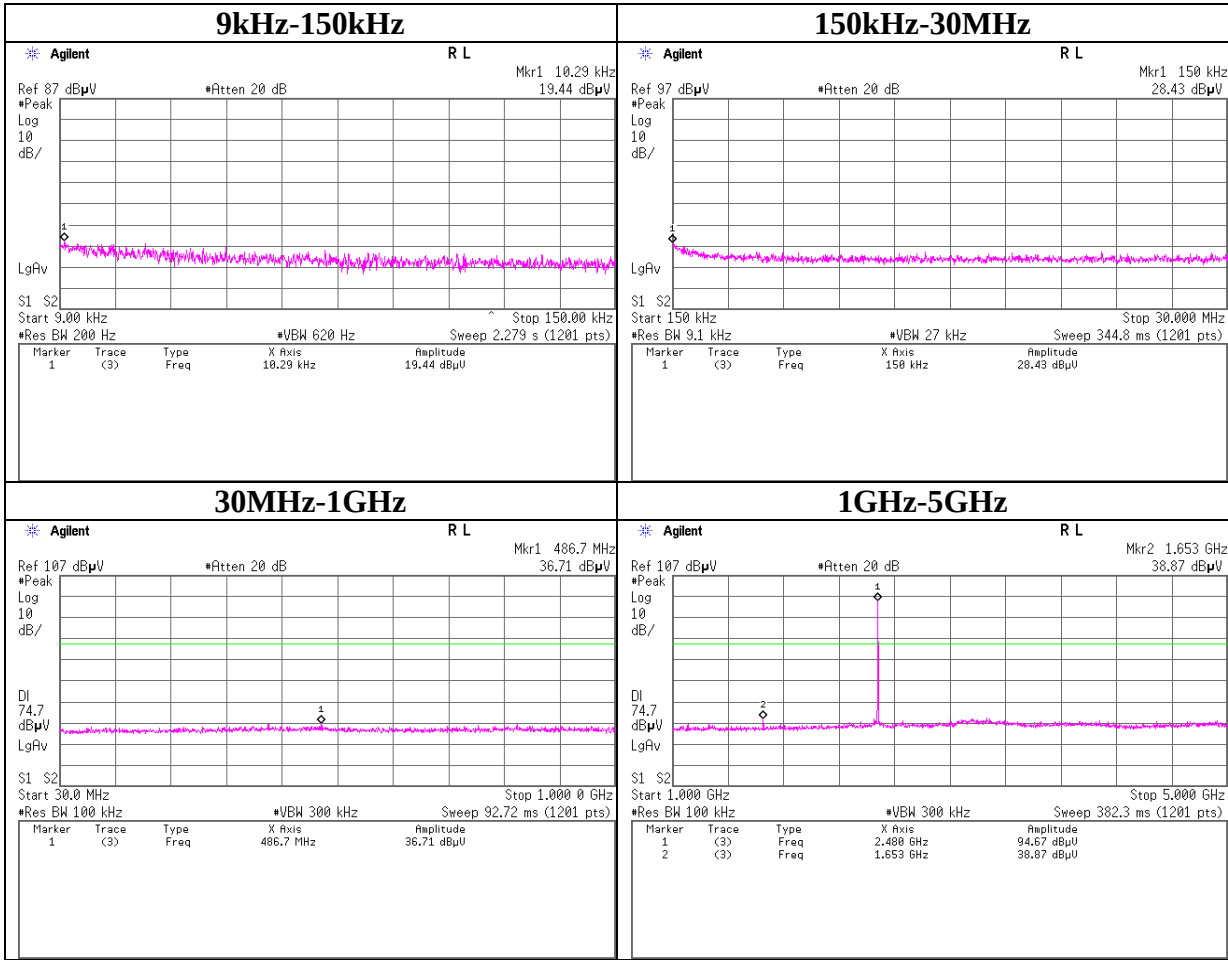
Conducted Spurious Emission

Tx 3DH5 2441MHz



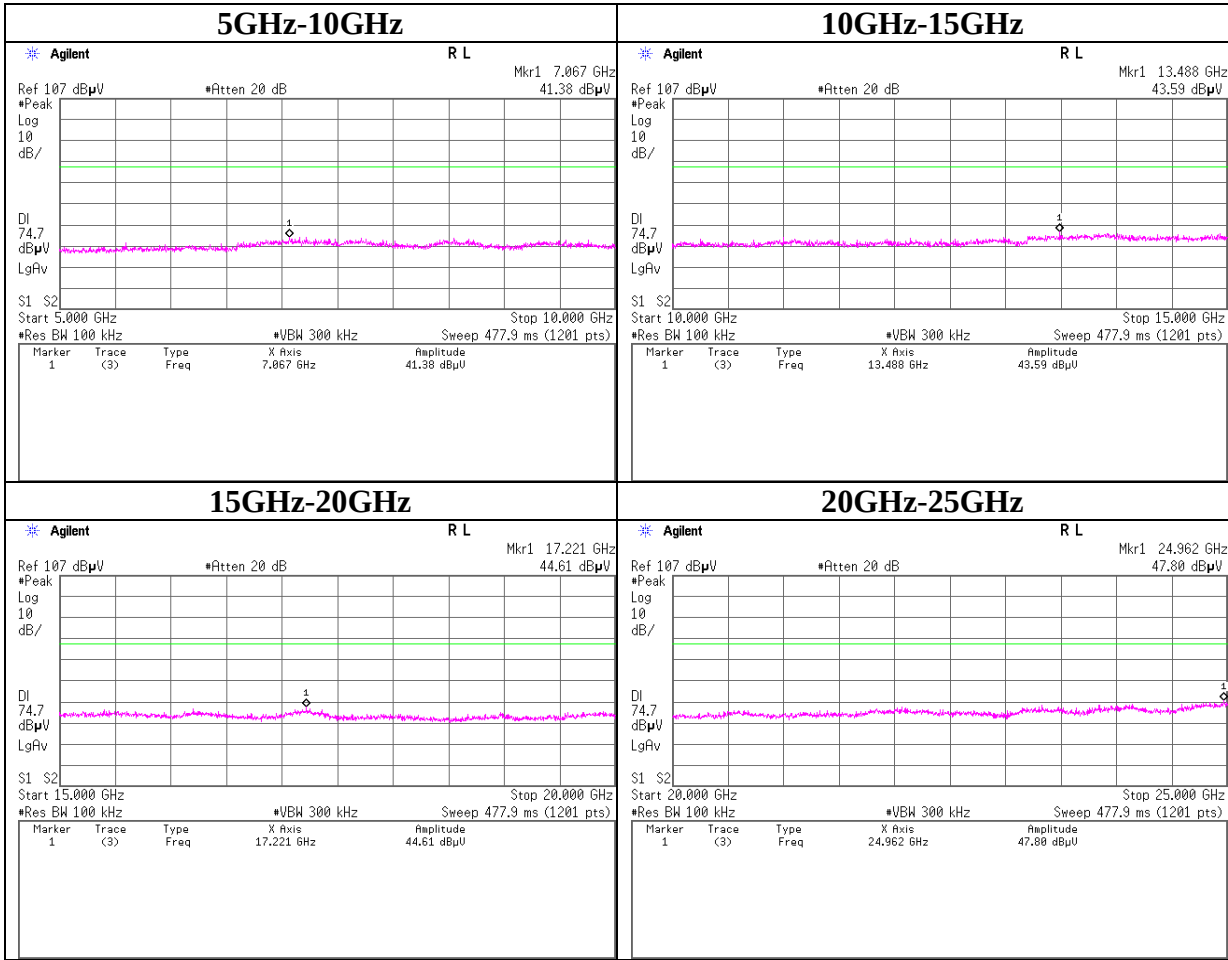
Conducted Spurious Emission

Tx 3DH5 2480MHz



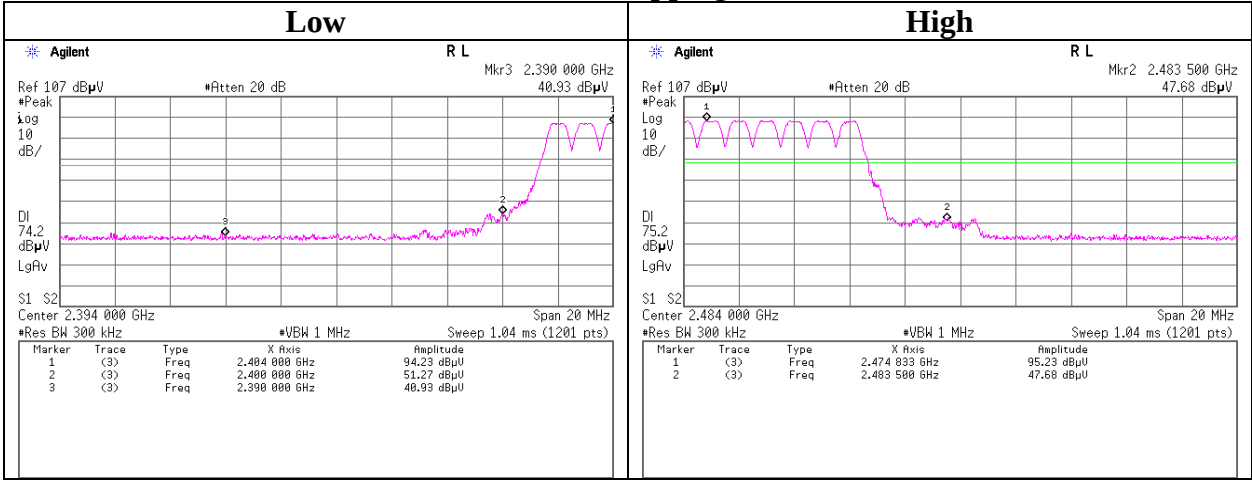
Conducted Spurious Emission

Tx 3DH5 2480MHz

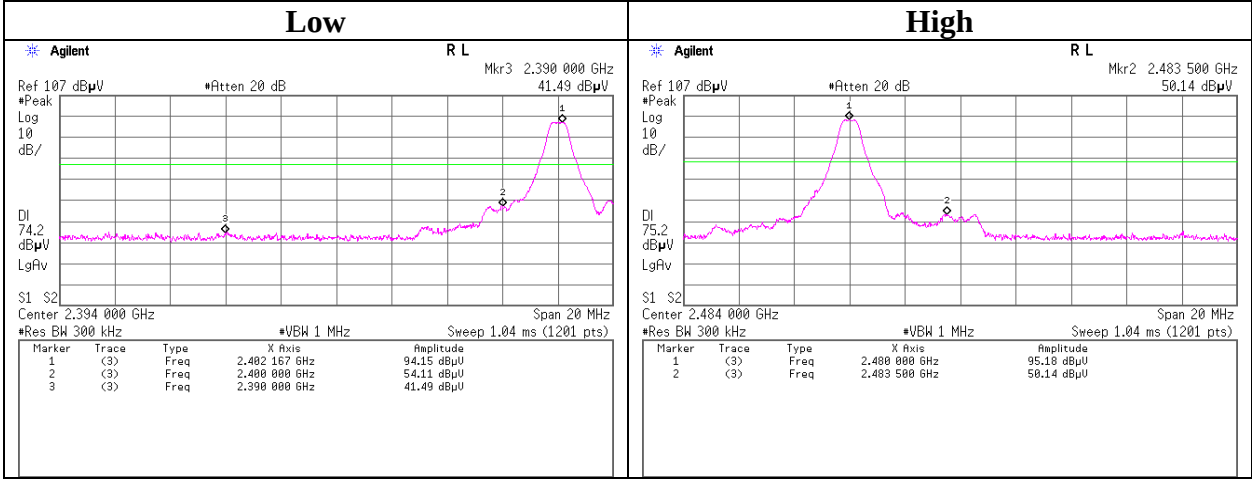


Conducted Emission Band Edge compliance

Tx DH5, Hopping on

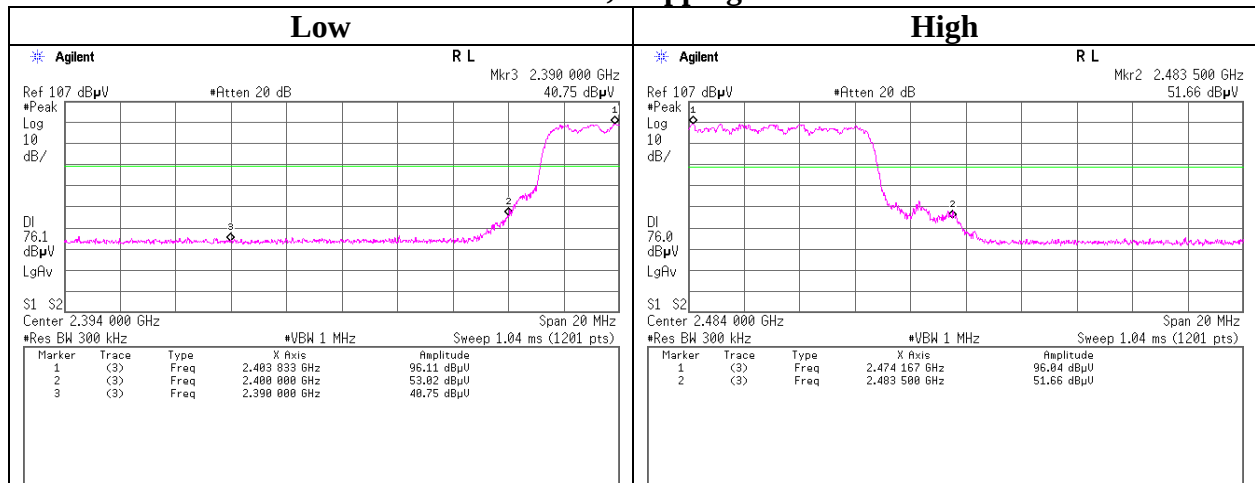


Tx DH5, Hopping off

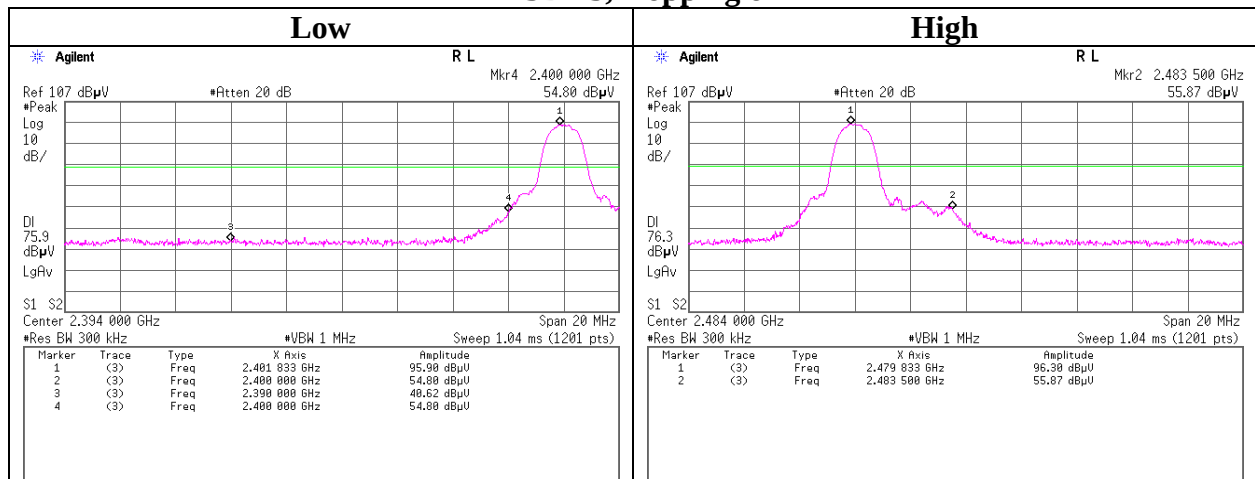


Conducted Emission Band Edge compliance

Tx 3DH5, Hopping on



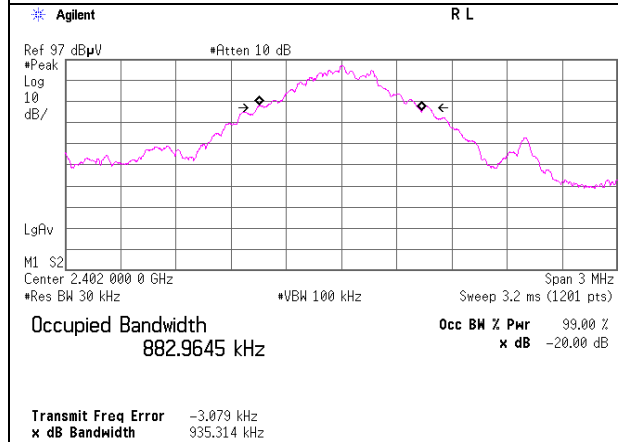
Tx 3DH5, Hopping off



99%Occupied Bandwidth

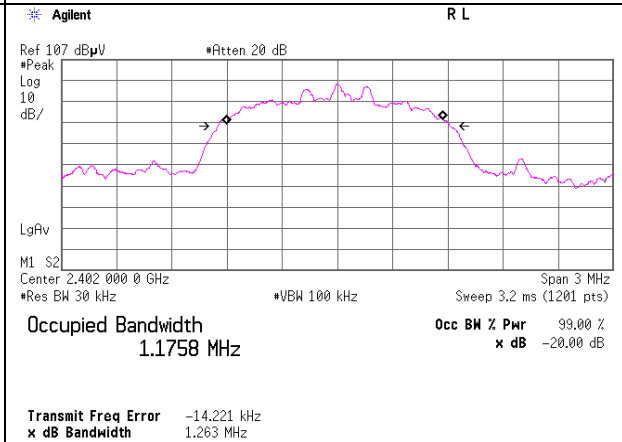
Tx DH5, Hopping off

2402MHz

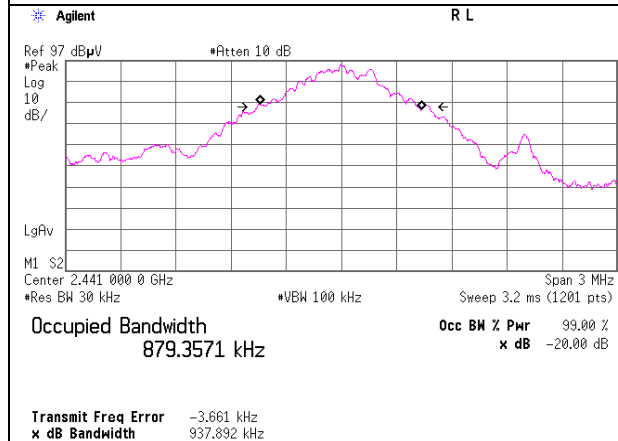


Tx 3DH5, Hopping off

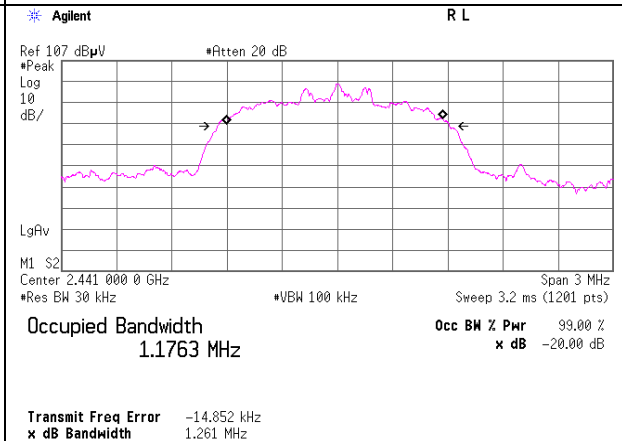
2402MHz



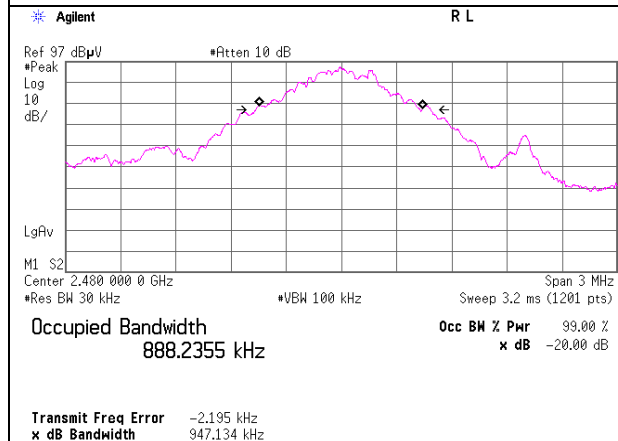
2441MHz



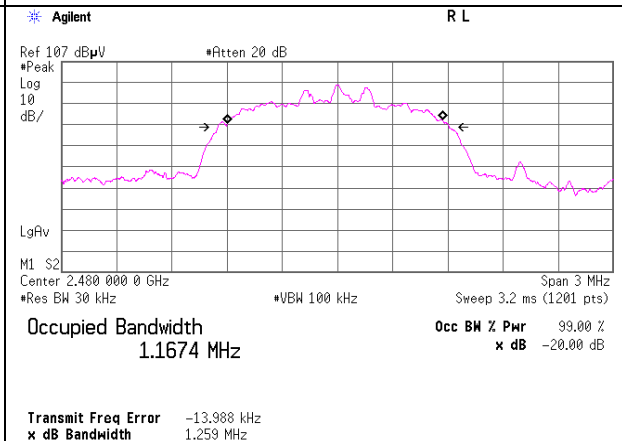
2441MHz



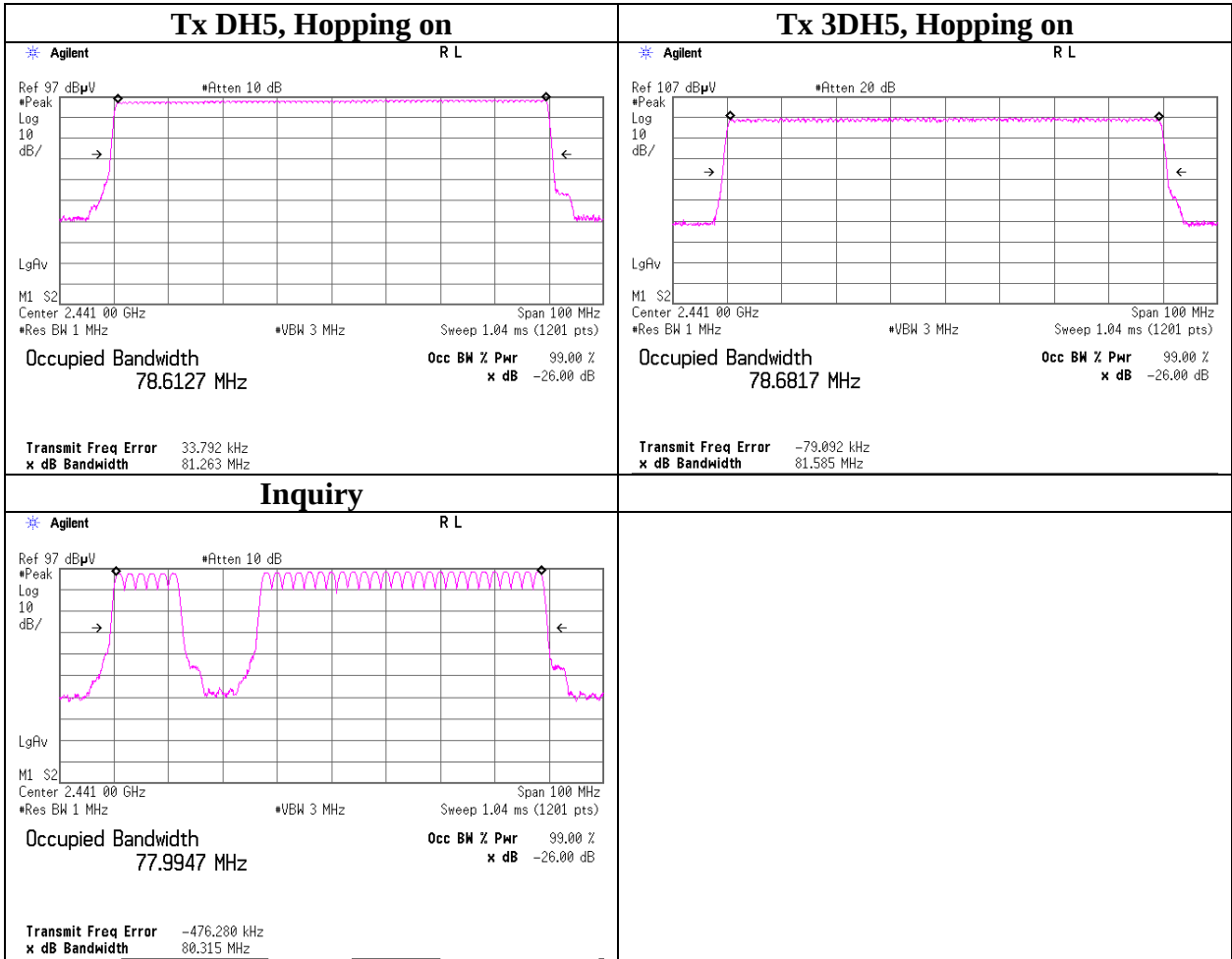
2480MHz



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)
MOS-14	Thermo-Hygrometer	Custom	CTH-201	-	AT	2012/02/06 * 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
MAT-20	Attenuator(10dB)(above 1GHz)	HIROSE ELECTRIC CO.,LTD.	AT-110	-	AT	2012/01/12 * 12
MCC-138	Microwave cable	HUBER+SUHNER	SUCOFLEX 102	37953/2	AT	2011/10/28 * 12
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2012/02/29 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	-	RE	2012/02/06 * 12
MJM-07	Measure	PROMART	SEN1955	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MRENT-95	Spectrum Analyzer	Agilent	E4440A	MY46185823	RE	2011/06/30 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2011/08/11 * 12
MCC-56	Microwave Cable	Suhner	SUCOFLEX104	270875/4(1m) / 284655(5m)	RE	2011/03/02 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2011/03/10 * 12
MHA-17	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170307	RE	2011/06/17 * 12
MHF-20	High Pass Filter 3.5-18.0GHz	TOKIMEC	TF323DCC	607	RE	2011/09/08 * 12
MCC-79	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278923/4	RE	2011/12/08 * 12
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	CE/RE	2011/06/21 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	CE/RE	2012/02/06 * 12
MJM-14	Measure	KOMELON	KMC-36	-	CE/RE	-
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	CE/RE/AT	2011/11/23 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	CE/RE	2011/04/15 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE(EUT)	2012/02/09 * 12
MCC-13	Coaxial Cable	Fujikura	3D-2W(12m)/5D-2W(5m)/5D-2W(0.8m)/5D-2W(1m)	-	CE	2012/02/16 * 12
MAT-65	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2012/01/28 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	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

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

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

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

Test Item: CE: Conducted Emission
RE: Radiated Emission
AT: Antenna Terminal Conducted test

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