



RADIO TEST REPORT

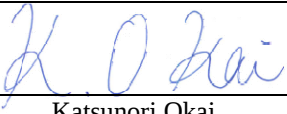
Test Report No. : 4786001719H-F

Applicant : NEC Corporation of America
Type of Equipment : Digital Portable Cellular Telephone
Model No. : KMP7R4H1-6A
FCC ID : A98-FQM6833
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: December 10 to 18, 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>

REVISION HISTORY

Original Test Report No.: 4786001719H-F

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SECTION 1: Customer information

Company Name : NEC Corporation of America
Address : Radio Communications Systems Division 6535N. State Highway 161,
Irving, TX 75039-2402 USA
Telephone Number : +1 214 262 4241
Facsimile Number : +1 214 262 4225
Contact Person : Sanjay Wadhwa

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

2.1 Identification of E.U.T.

Type of Equipment : Digital Portable Cellular Telephone
Model No. : KMP7R4H1-6A
Serial No. : Refer to Section 4, Clause 4.2
Rating : DC 3.8V (DC 3.4 - 4.2V)
Receipt Date of Sample : December 10, 2012
Country of Mass-production : Japan
Condition of EUT : Production prototype
Modification of EUT : No Modification by the test lab

2.2 Product description

Model No: KMP7R4H1-6A, (referred to as the EUT in this report), is the Digital Portable Cellular Telephone.

Radio Specification [1/2]

Bluetooth (Ver.2.1 + EDR)

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Type of Modulation	FHSS
Bandwidth & Channel spacing	1MHz & 1MHz
Antenna Connector Type	Integrated antenna
Antenna Type	Pattern Antenna
Antenna Gain	-3.0 dBi

Low Energy (Ver.4.0)

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Bandwidth & Channel spacing	1MHz & 2MHz
Antenna Connector Type	Integrated antenna
Antenna Type	Pattern antenna
Antenna Gain	-3.0 dBi

WLAN (IEEE802.11b/g/n (SISO/HT20))

Equipment Type	Transceiver
Frequency of Operation	2412-2462MHz
Type of Modulation	DSSS, OFDM
Antenna Connector Type	Integrated antenna
Antenna Type	Pattern antenna
Antenna Gain	-3.0 dBi

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
Emission Designator	GSM850: 254KGXW, PCS: 259KGXW
Channel spacing	200kHz
Antenna Connector Type	Integrated antenna
Antenna Type	Pattern antenna
Antenna Gain	+2.5dBi (PCS), 0.0dBi (GSM850)

Radio Specification [2/2]

WCDMA

Equipment Type	Transceiver
Frequency of Operation	[Up Link] Band V: 824 – 849MHz [Down Link] Band V: 869 – 894MHz
Type of Modulation	HPSK
Emission Designator	4M16F9W
Channel spacing	5MHz
Antenna Connector Type	Integrated antenna
Antenna Type	Pattern antenna
Antenna Gain	0 dBi

GPS

Equipment Type	Receiver
Receiver Type	Direct Downconversion
Frequency of Operation	1575.42MHz
Antenna Connector Type	Integrated antenna
Antenna Type	Pattern antenna
Antenna Gain	-3.0dBi

*This test report applies for Bluetooth (Ver.2.1 + EDR).

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C: 2012, final revised on August 13, 2012 and effective September 12, 2012

Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz

3.2 Procedures and results

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Conducted Emission	FCC: ANSI C63.4:2003 7. AC powerline conducted emission measurements IC: RSS-Gen 7.2.4	FCC: Section 15.207 IC: RSS-Gen 7.2.4	QP 8.9dB, 1.79485MHz, N AV 10.5dB, 1.84216MHz, 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	5.7dB, 44.800MHz, 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.

FCC 15.31 (e)

This EUT provides stable voltage (DC1.3, 1.8, 3.0V) constantly to RF Part regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

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

3.3 Addition to standard

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

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

3.4 Uncertainty

EMI

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

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

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

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

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

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

Conducted Emission test

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

Radiated emission test(3m)

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

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

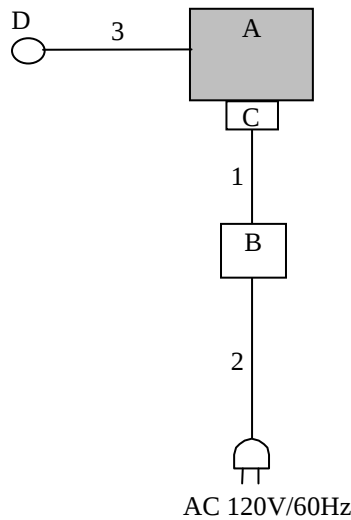
4.1 Operating Mode(s)

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
Maximum Peak Output Power	Tx (Hopping off) 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	-
Band Edge Compliance (Conducted)	Tx DH5, 3DH5 -Hopping on -Hopping off	2402MHz 2480MHz
99% Occupied Bandwidth	Tx DH5, 3DH5 -Hopping off	2402MHz 2441MHz 2480MHz
	Tx DH5, 3DH5 -Hopping on	-
	Inquiry	-
Power of the EUT was set by the software as follows: -Hardware Version: BA1 -Software Version: ESP_A0000420_N0000400 *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	Remark
A	Digital Portable Cellular Telephone	KMP7R4H1-6A	004401201130123 *1) 004401201130149 *2) 004401201130156 *3)	NEC Corporation of America	EUT
B	AC Adaptor	MAS-BH0008-A002	-	MITSUMI	-
C	Micro USB	FOMA charging microUSB adapter N01	-	NEC Corporation of America	-
D	Earphone	-	-	NEC Corporation of America	-

*1) Used for Antenna Terminal Conducted test

*2) Used for Radiated Emission tests (Above 1GHz)

*3) Used for Conducted Emission and Radiated Emission tests (Below 1GHz)

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC Cable	1.6	Shielded	Shielded	-
2	AC Cable	0.6	Unshielded	Unshielded	-
3	Earphone Cable	0.7	Unshielded	Unshielded	-

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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, 1.0m by 1.5m, raised 0.8m above the conducting ground plane.

The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

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

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

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

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

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

Test Antennas are used as below;

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

In any 100kHz bandwidth outside the restricted band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

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

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

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

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

- The 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 *1)	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak	-	Power Meter (Sensor: 50MHz BW)
Carrier Frequency Separation	3MHz/5MHz	30kHz/100kHz	30kHz/100kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Number of Hopping Frequency	30MHz	300kHz	1MHz	Auto	Peak	Max Hold	Spectrum Analyzer
Dwell Time	Zero Span	100kHz, 1MHz	300kHz, 3MHz	As necessary capture the entire dwell time per hopping channel	Peak	Max Hold	Spectrum Analyzer
Conducted Spurious Emission *2)	9kHz to 150kHz	200Hz	620Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150kHz to 30MHz	9.1kHz	27kHz				
	30MHz to 25GHz (Less or equal to 5GHz)	100kHz	300kHz				
Conducted Spurious Emission Band Edge compliance	10MHz	100kHz	300kHz	Auto	Peak	Max Hold	Spectrum Analyzer

*1) The measurement was performed with Max Hold since the duty cycle was not 100%.
*2) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.
Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart. (9kHz-150kHz:RBW=200Hz, 150kHz-30MHz:RBW=9.1kHz)

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

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Data of EMI test

Conducted Emission

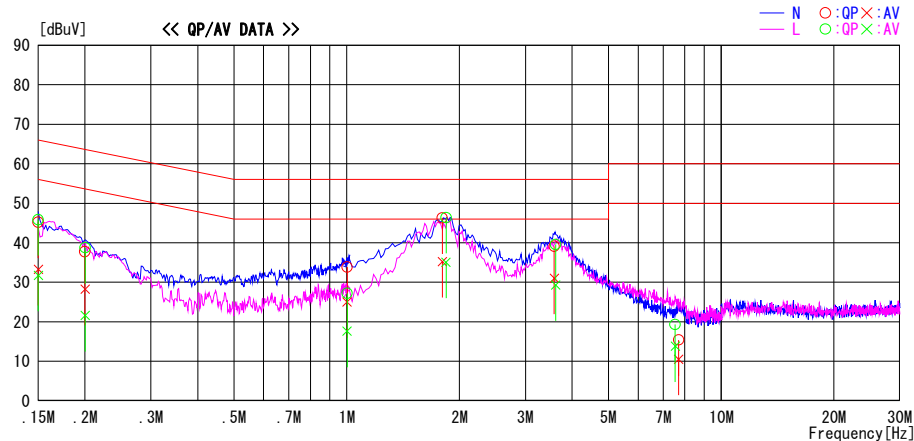
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
Date : 2012/12/18

Report No. : 4786001719H
Power : AC 120V / 60Hz
Temp./Humi. : 23deg. C / 31% RH
Engineer : Katsunori Okai

Mode / Remarks : 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	32.0	20.0	13.2	45.2	33.2	66.0	56.0	20.8	22.8	N	
0.19986	24.5	15.0	13.2	37.7	28.2	63.6	53.6	25.9	25.4	N	
1.00257	20.5	11.7	13.3	33.8	25.0	56.0	46.0	22.2	21.0	N	
1.80005	32.9	21.8	13.4	46.3	35.2	56.0	46.0	9.7	10.8	N	
3.58477	25.5	17.4	13.6	39.1	31.0	56.0	46.0	16.9	15.0	N	
7.70032	1.2	-3.7	14.2	15.4	10.5	60.0	50.0	44.6	39.5	N	
0.15000	32.6	18.5	13.2	45.8	31.7	66.0	56.0	20.2	24.3	L	
0.20018	25.5	8.4	13.2	38.7	21.6	63.6	53.6	24.9	32.0	L	
1.00257	13.9	4.3	13.3	27.2	17.6	56.0	46.0	28.8	28.4	L	
1.84289	33.0	21.7	13.4	46.4	35.1	56.0	46.0	9.6	10.9	L	
3.61701	25.9	15.6	13.7	39.6	29.3	56.0	46.0	16.4	16.7	L	
7.53832	5.2	-0.3	14.1	19.3	13.8	60.0	50.0	40.7	36.2	L	

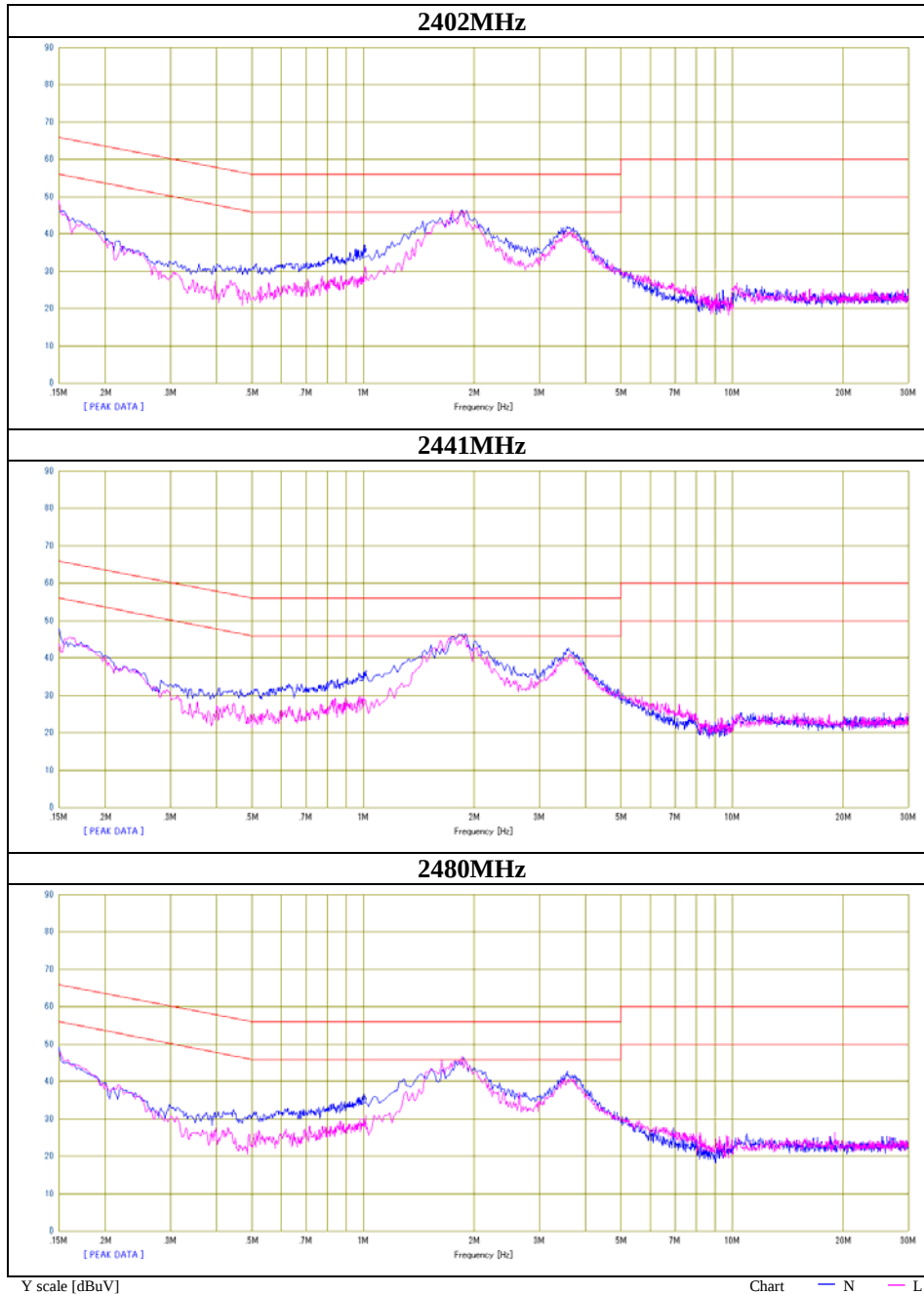
CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT=READING+C.F(LISN LOSS + ATTN LOSS + CABLE LOSS)
Except for the above table : adequate margin data below the limits.

*The limit is rounded down to one decimal place.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Conducted Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	4786001719H
Date	12/18/2012
Temperature/ Humidity	23deg. C / 31% RH
Engineer	Katsunori Okai
Mode	Tx DH5



Conducted Emission

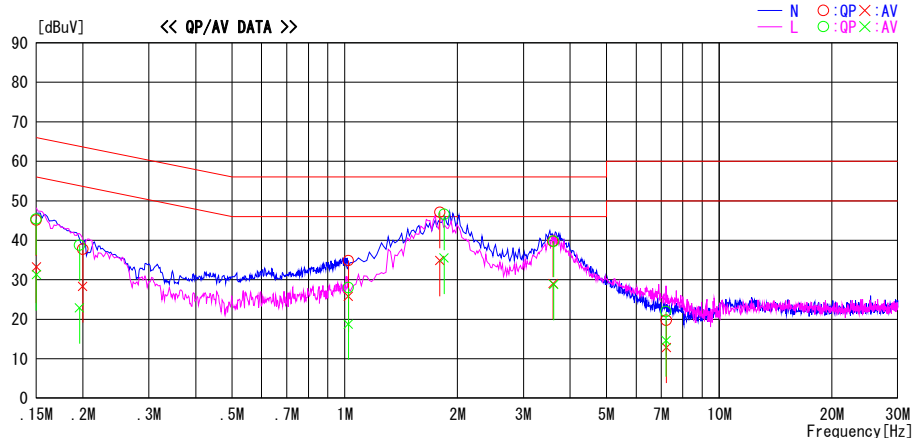
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2012/12/18

Report No. : 4786001719H
Power : AC 120V / 60Hz
Temp./Humi. : 23deg. C / 31% RH
Engineer : Katsunori Okai

Mode / Remarks : Tx 3DH5 2441MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor [dB]	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15000	31.9	20.0	13.2	45.1	33.2	66.0	56.0	20.9	22.8	N	
0.19958	24.5	15.1	13.2	37.7	28.3	63.6	53.6	25.9	25.3	N	
1.02225	21.5	12.5	13.3	34.8	25.8	56.0	46.0	21.2	20.2	N	
1.79485	33.7	21.5	13.4	47.1	34.9	56.0	46.0	8.9	11.1	N	
3.59963	26.0	15.4	13.7	39.7	29.1	56.0	46.0	16.3	16.9	N	
7.23270	5.6	-1.2	14.1	19.7	12.9	60.0	50.0	40.3	37.1	N	
0.15000	32.2	18.1	13.2	45.4	31.3	66.0	56.0	20.6	24.7	L	
0.19568	25.5	9.7	13.2	38.7	22.9	63.8	53.8	25.1	30.9	L	
1.02224	14.7	5.5	13.3	28.0	18.8	56.0	46.0	28.0	27.2	L	
1.84216	33.2	22.1	13.4	46.6	35.5	56.0	46.0	9.4	10.5	L	
3.61557	26.0	15.1	13.7	39.7	28.8	56.0	46.0	16.3	17.2	L	
7.21452	7.8	0.5	14.1	21.9	14.6	60.0	50.0	38.1	35.4	L	

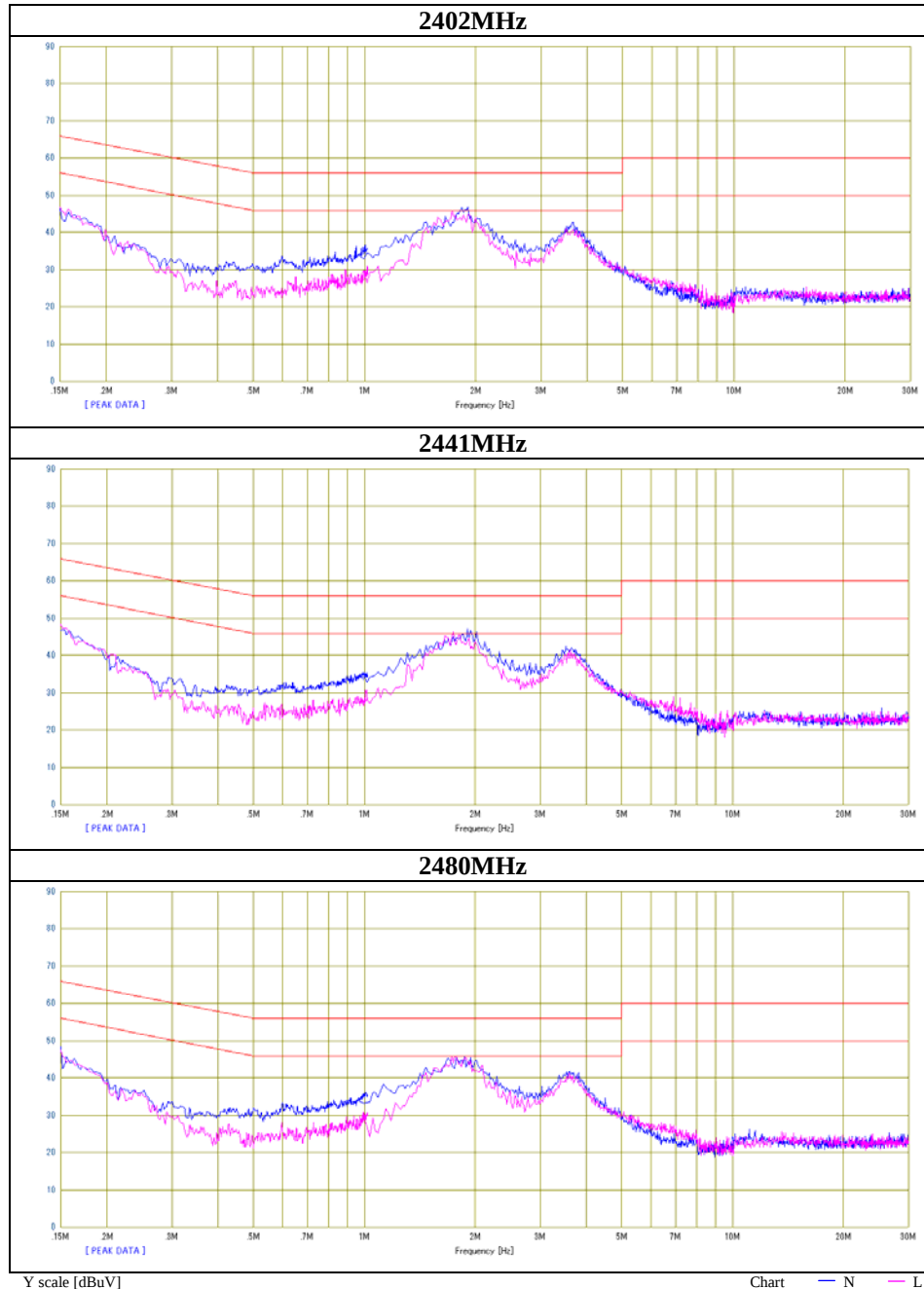
CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT=READING+C.F (LISN LOSS + ATTEN LOSS + CABLE LOSS)
Except for the above table : adequate margin data below the limits.

*The limit is rounded down to one decimal place.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Conducted Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	4786001719H
Date	12/18/2012
Temperature/ Humidity	23deg. C / 31% RH
Engineer	Katsunori Okai
Mode	Tx 3DH5



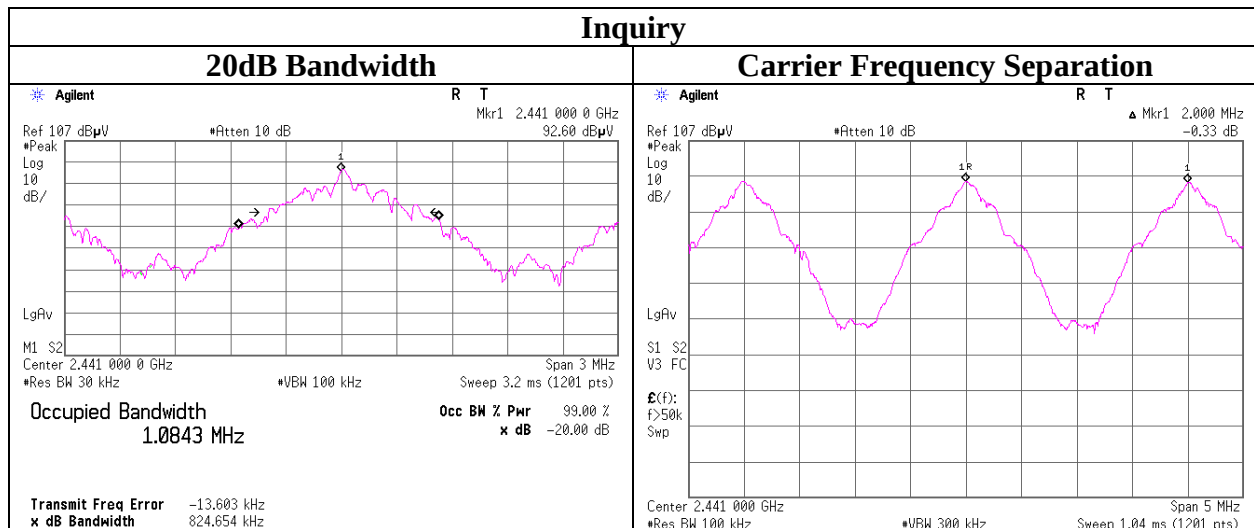
20dB Bandwidth and Carrier Frequency Separation

Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 4786001719H
Date 12/12/2012
Temperature/ Humidity 22deg. C / 31% RH
Engineer Takayuki Shimada
Mode Tx (Hopping on) DH5/3DH5/Inquiry

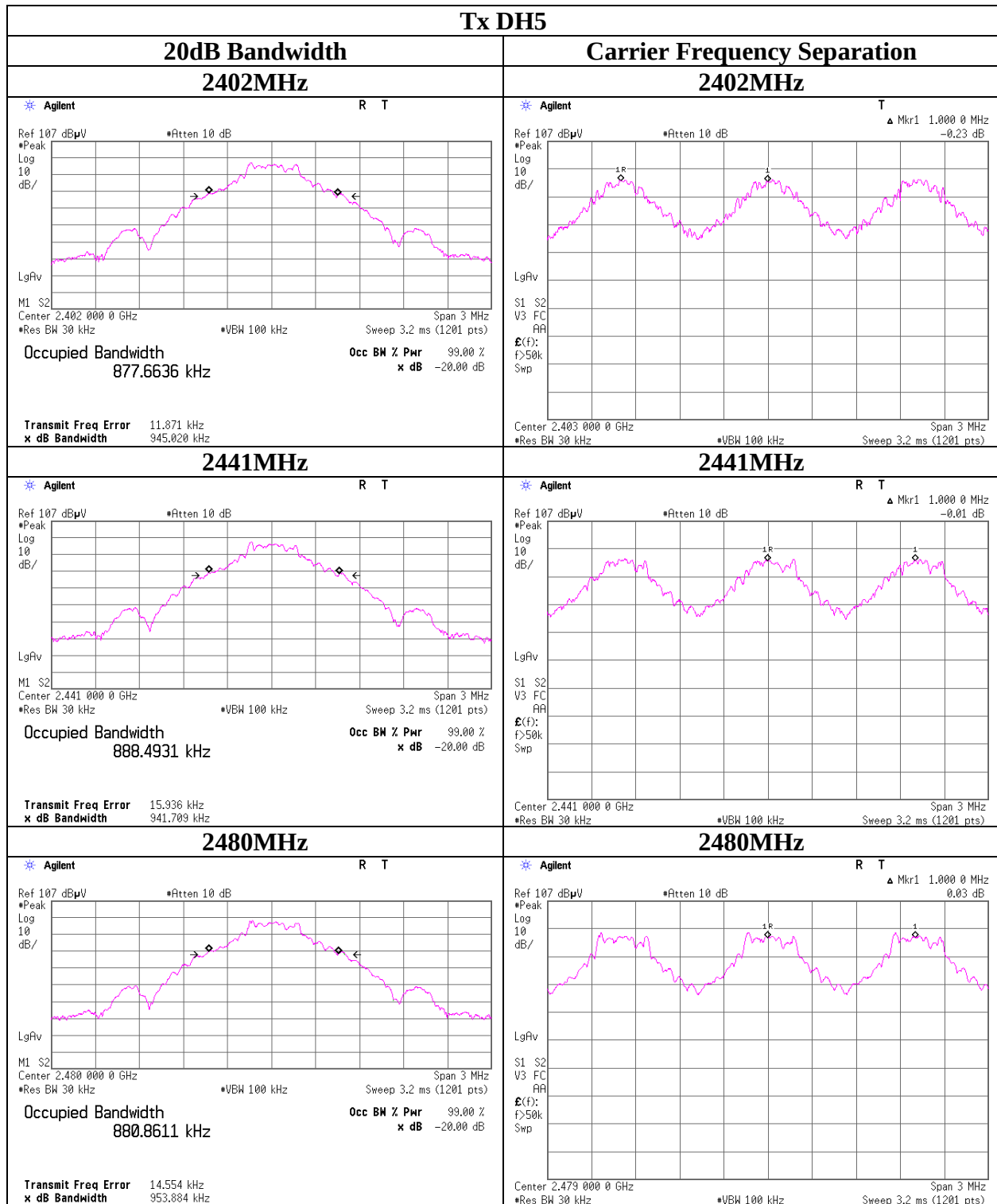
Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.945	1.000	>= 0.630
DH5	2441.0	0.942	1.000	>= 0.628
DH5	2480.0	0.954	1.000	>= 0.636
3DH5	2402.0	1.310	1.000	>= 0.873
3DH5	2441.0	1.296	1.000	>= 0.864
3DH5	2480.0	1.269	1.000	>= 0.846
Inquiry	2441.0	0.825	2.000	>= 0.550

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

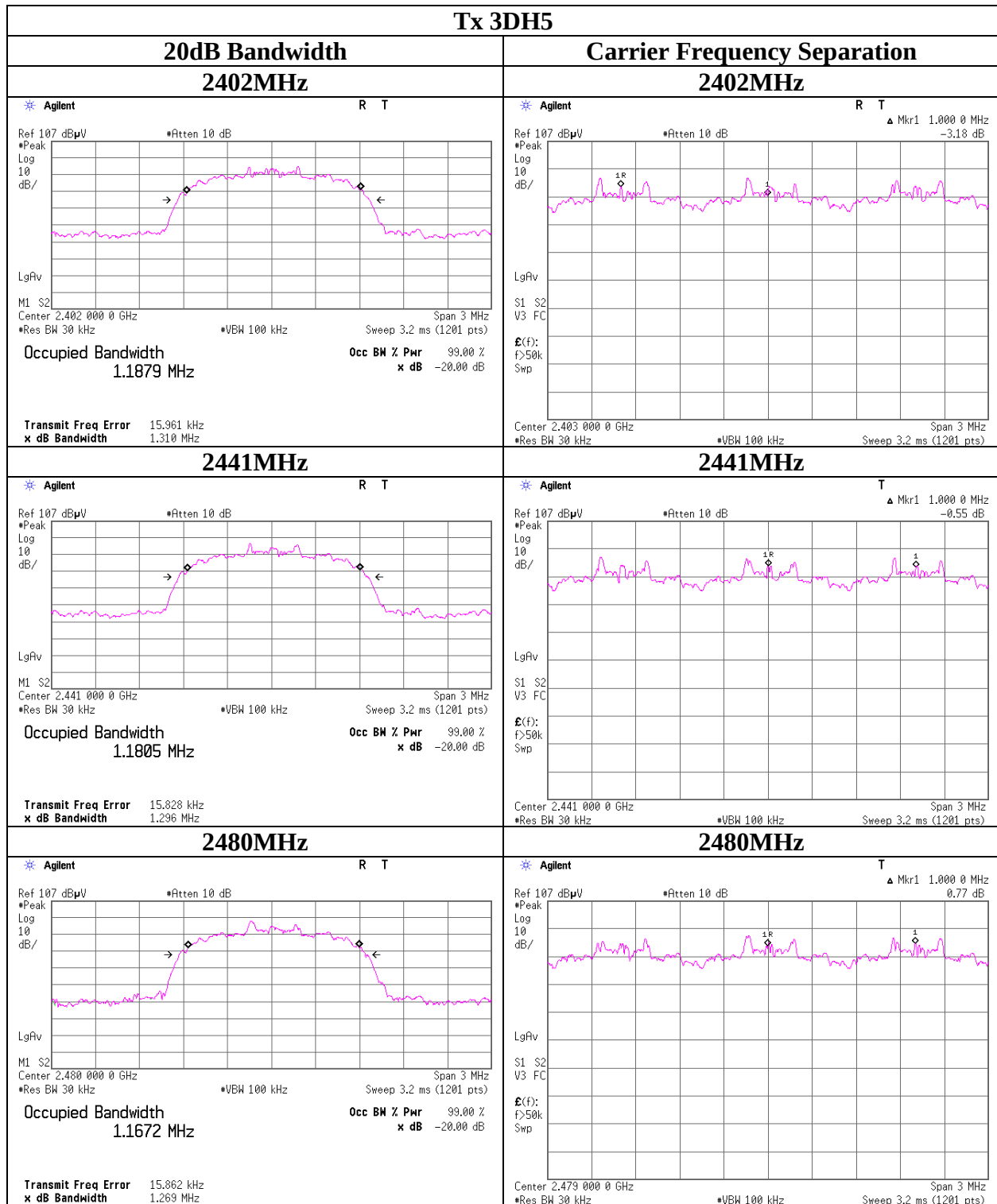
No limit applies to 20dB Bandwidth.



20dB Bandwidth



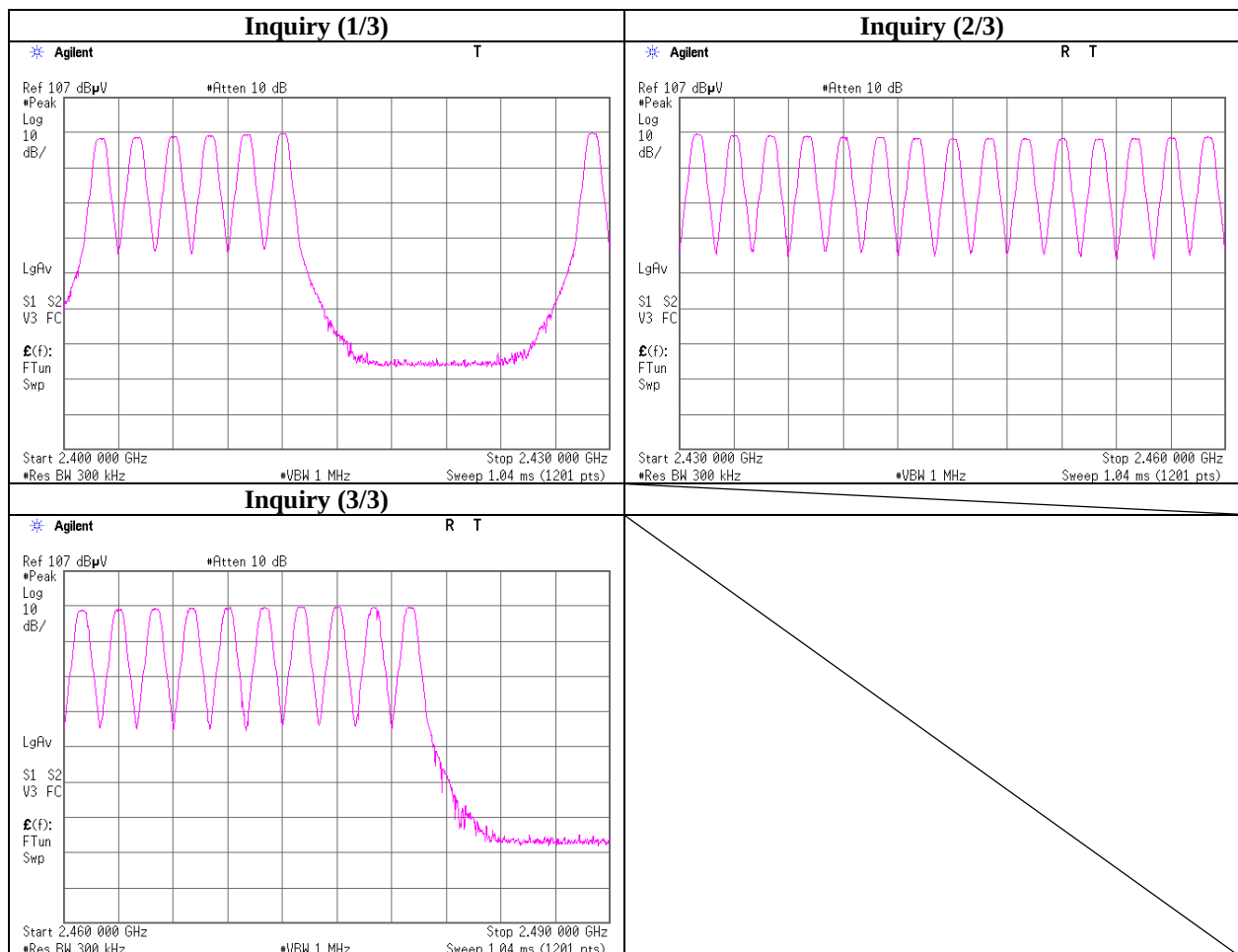
20dB Bandwidth



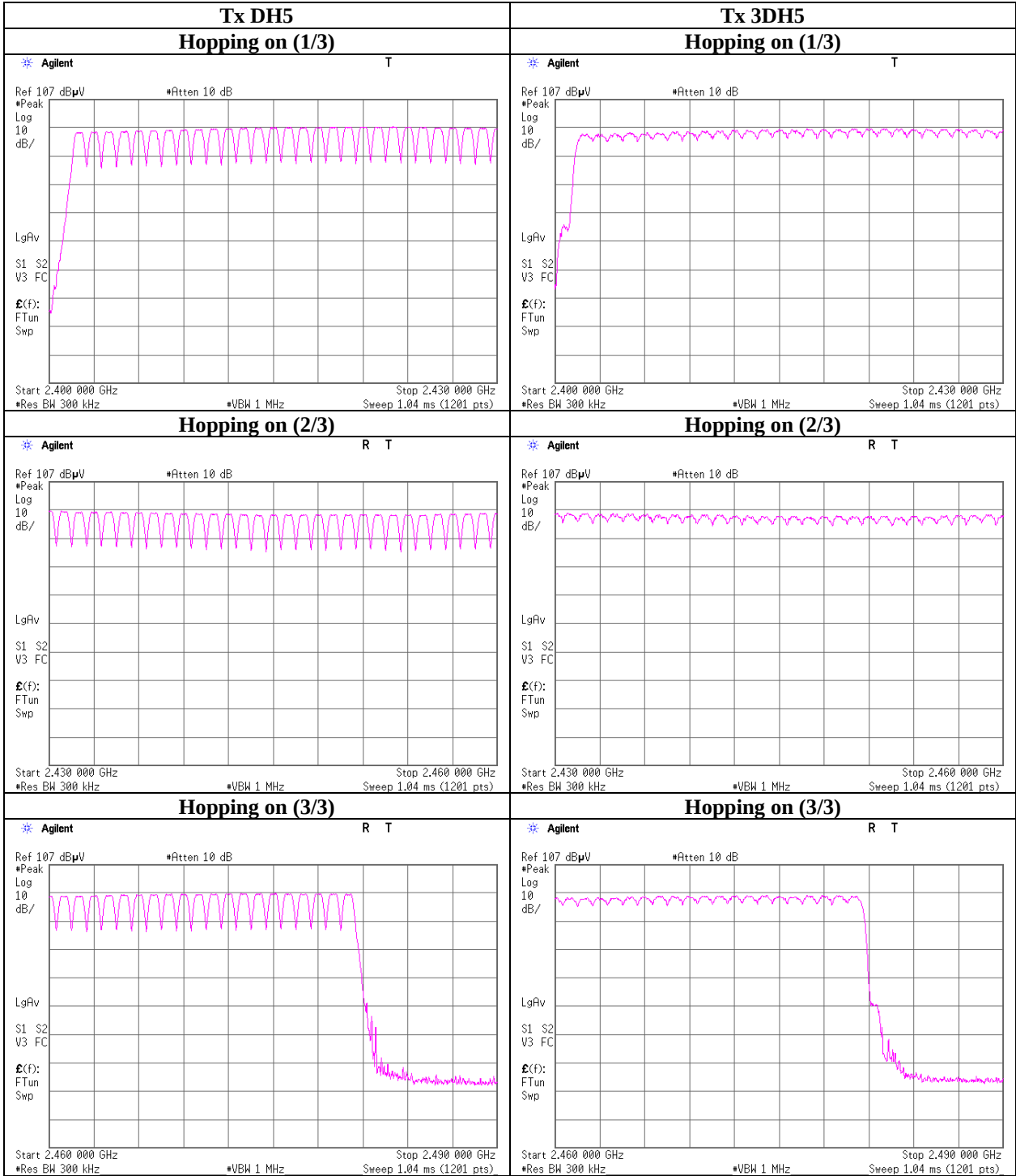
Number of Hopping Frequency

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	4786001719H
Date	12/12/2012
Temperature/ Humidity	22deg. C / 31% 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. 4786001719H
Date 12/12/2012
Temperature/ Humidity 22deg. C / 31% 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	0.402	400
DH3	23.6 times	/	5 sec.	x	31.6 sec. = 150 times	1.660	400
DH5	18.0 times	/	5 sec.	x	31.6 sec. = 114 times	2.920	400
3DH1	50.0 times	/	5 sec.	x	31.6 sec. = 316 times	0.407	400
3DH3	22.8 times	/	5 sec.	x	31.6 sec. = 145 times	1.660	400
3DH5	17.0 times	/	5 sec.	x	31.6 sec. = 108 times	2.920	400
Inquiry	100.0 times	/	1 sec.	x	12.8 sec. = 1280 times	0.102	400

Sample Calculation

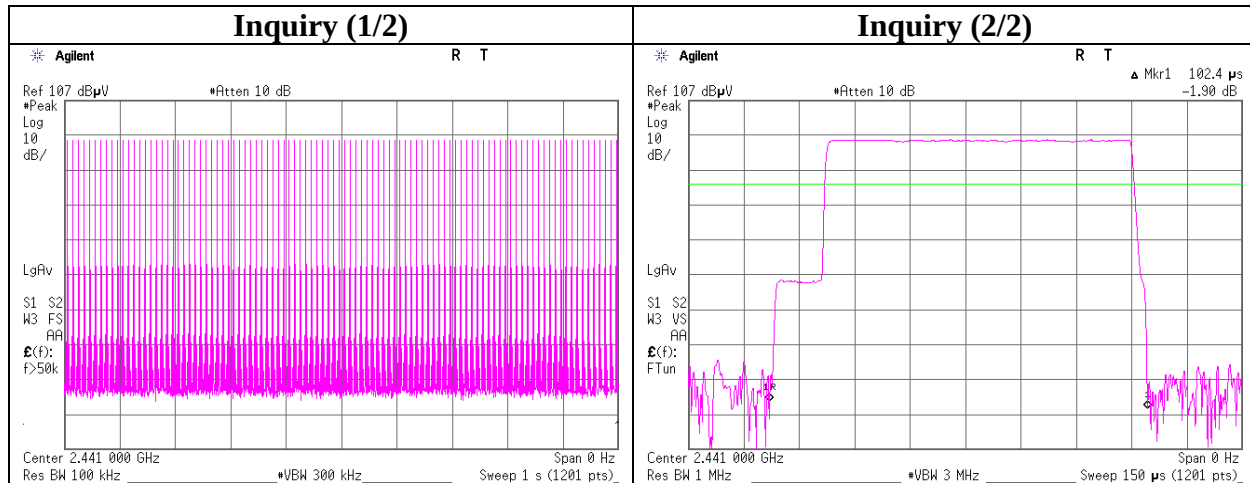
Result = Number of transmission x Length of transmission time

*Average data of 5 tests.(except Inquiry)

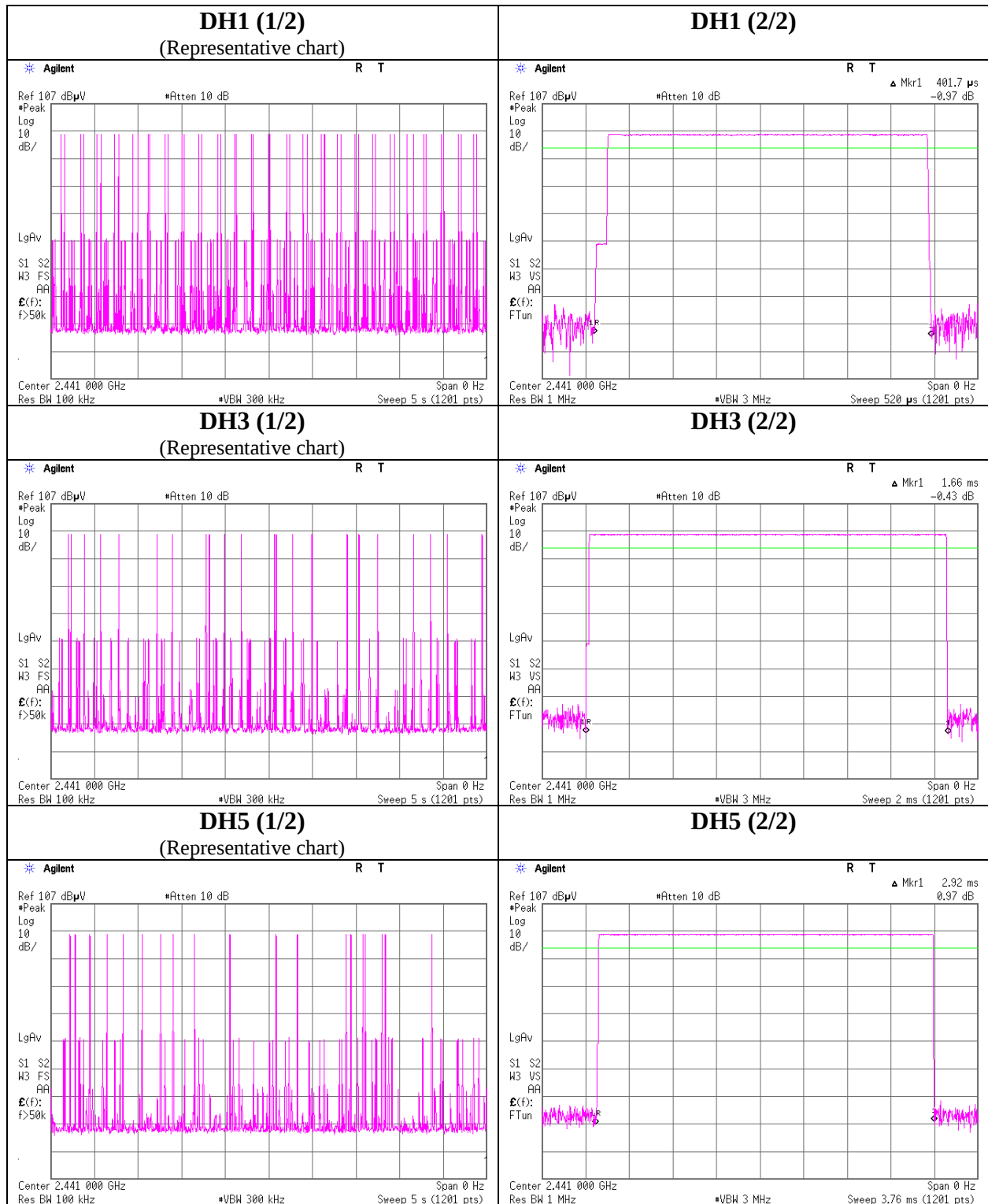
Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	50	50	50	50	50	50
DH3	22	22	25	27	22	23.6
DH5	19	17	20	17	17	18
3DH1	50	50	50	50	50	50
3DH3	24	22	23	20	25	22.8
3DH5	15	21	17	15	17	17

Sample Calculation

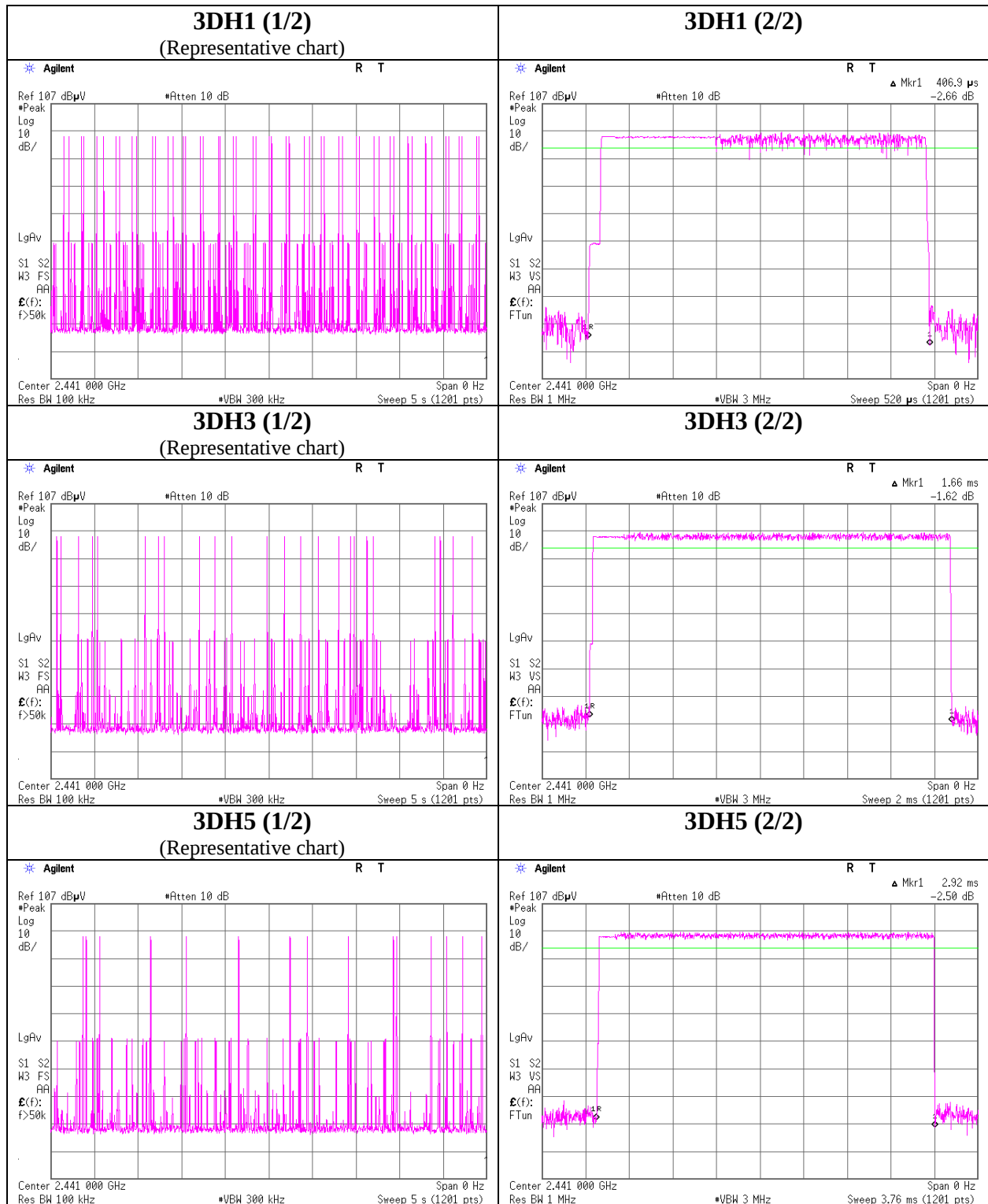
Average= Summation(Sampling 1 to 5) / 5



Dwell time



Dwell time



Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Project No.	4786001719H
Date	12/17/2012
Temperature/ Humidity	23deg. C / 47% RH
Engineer	Keisuke Kawamura
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	-9.36	0.64	10.03	1.31	1.35	20.97	125	19.66
DH5	2441.0	-9.84	0.65	10.03	0.84	1.21	20.97	125	20.13
DH5	2480.0	-9.65	0.65	10.03	1.03	1.27	20.97	125	19.94
3DH5	2402.0	-8.38	0.64	10.03	2.29	1.69	20.97	125	18.68
3DH5	2441.0	-8.89	0.65	10.03	1.79	1.51	20.97	125	19.18
3DH5	2480.0	-8.61	0.65	10.03	2.07	1.61	20.97	125	18.90
Inquiry	2441.0	-8.99	0.65	10.03	1.69	1.48	20.97	125	19.28

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. 4786001719H
Date 12/10/2012 12/18/2012
Temperature/ Humidity 20 deg.C./ 34% 23 deg. C / 31% RH
Engineer Keisuke Kawamura Katsunori Okai
(Above 1GHz) (Below 1GHz)
Mode Tx, DH5 2402MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	140.800	QP	36.5	14.6	7.8	28.2	30.7	43.5	12.8	
Hori	179.199	QP	35.8	16.1	8.0	28.0	31.9	43.5	11.6	
Hori	188.799	QP	36.2	16.3	8.1	27.9	32.7	43.5	10.8	
Hori	191.999	QP	37.3	16.4	8.1	27.9	33.9	43.5	9.6	
Hori	195.201	QP	37.0	16.5	8.1	27.9	33.7	43.5	9.8	
Hori	316.798	QP	32.4	14.6	8.9	27.7	28.2	46.0	17.8	
Hori	2390.000	PK	44.8	27.4	2.4	34.8	39.8	73.9	34.1	
Hori	4804.000	PK	44.9	31.2	4.2	34.0	46.3	73.9	27.6	
Hori	7206.000	PK	42.5	35.9	4.9	34.2	49.1	73.9	24.8	
Hori	9608.000	PK	42.0	38.8	5.7	34.7	51.8	73.9	22.1	
Hori	2390.000	AV	32.1	27.4	2.4	34.8	27.1	53.9	26.8	
Hori	4804.000	AV	33.7	31.2	4.2	34.0	35.1	53.9	18.8	
Hori	7206.000	AV	32.7	35.9	4.9	34.2	39.3	53.9	14.6	
Hori	9608.000	AV	31.0	38.8	5.7	34.7	40.8	53.9	13.1	
Vert	44.800	QP	43.5	12.5	6.9	28.6	34.3	40.0	5.7	
Vert	105.600	QP	41.7	10.9	7.5	28.3	31.8	43.5	11.7	
Vert	160.001	QP	40.4	15.3	7.9	28.1	35.5	43.5	8.0	
Vert	163.199	QP	40.2	15.4	7.9	28.1	35.4	43.5	8.1	
Vert	204.799	QP	36.0	16.7	8.2	27.8	33.1	43.5	10.4	
Vert	431.998	QP	33.0	17.6	9.5	28.5	31.6	46.0	14.4	
Vert	2390.000	PK	44.3	27.4	2.4	34.8	39.3	73.9	34.6	
Vert	4804.000	PK	43.4	31.2	4.2	34.0	44.8	73.9	29.2	
Vert	7206.000	PK	42.7	35.9	4.9	34.2	49.3	73.9	24.6	
Vert	9608.000	PK	42.2	38.8	5.7	34.7	52.0	73.9	21.9	
Vert	2390.000	AV	32.0	27.4	2.4	34.8	27.0	53.9	26.9	
Vert	4804.000	AV	32.8	31.2	4.2	34.0	34.2	53.9	19.7	
Vert	7206.000	AV	32.0	35.9	4.9	34.2	38.6	53.9	15.3	
Vert	9608.000	AV	31.2	38.8	5.7	34.7	41.0	53.9	12.9	

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

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

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

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	97.1	27.5	2.4	34.8	92.2	-	-	Carrier
Hori	2400.000	PK	41.9	27.5	2.4	34.8	37.0	72.2	35.2	
Vert	2402.000	PK	91.0	27.5	2.4	34.8	86.1	-	-	Carrier
Vert	2400.000	PK	38.8	27.5	2.4	34.8	33.9	66.1	32.2	

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.	4786001719H	
Date	12/10/2012	12/18/2012
Temperature/ Humidity	20 deg.C./ 34%	23 deg. C / 31% RH
Engineer	Keisuke Kawamura (Above 1GHz)	Katsunori Okai (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	108.800	QP	35.2	11.4	7.6	28.3	25.9	43.5	17.6	
Hori	166.399	QP	36.5	15.6	8.0	28.0	32.1	43.5	11.4	
Hori	179.201	QP	38.5	16.1	8.0	28.0	34.6	43.5	8.9	
Hori	188.799	QP	39.2	16.3	8.1	27.9	35.7	43.5	7.8	
Hori	191.999	QP	39.9	16.4	8.1	27.9	36.5	43.5	7.0	
Hori	348.801	QP	29.2	15.8	9.1	28.0	26.1	46.0	19.9	
Hori	4882.000	PK	42.8	31.4	4.2	34.0	44.4	73.9	29.5	
Hori	7323.000	PK	43.3	36.0	4.9	34.2	50.0	73.9	23.9	
Hori	9764.000	PK	42.0	39.0	5.7	34.7	52.0	73.9	21.9	
Hori	4882.000	AV	32.5	31.4	4.2	34.0	34.1	53.9	19.8	
Hori	7323.000	AV	32.5	36.0	4.9	34.2	39.2	53.9	14.7	
Hori	9764.000	AV	31.0	39.0	5.7	34.7	41.0	53.9	12.9	
Vert	44.801	QP	41.3	12.5	6.9	28.6	32.1	40.0	7.9	
Vert	105.601	QP	40.3	10.9	7.5	28.3	30.4	43.5	13.1	
Vert	163.199	QP	40.2	15.4	7.9	28.1	35.4	43.5	8.1	
Vert	166.399	QP	39.5	15.6	8.0	28.0	35.1	43.5	8.4	
Vert	204.799	QP	35.8	16.7	8.2	27.8	32.9	43.5	10.6	
Vert	431.998	QP	31.2	17.6	9.5	28.5	29.8	46.0	16.2	
Vert	4882.000	PK	43.1	31.4	4.2	34.0	44.7	73.9	29.3	
Vert	7323.000	PK	43.6	36.0	4.9	34.2	50.3	73.9	23.6	
Vert	9764.000	PK	42.2	39.0	5.7	34.7	52.2	73.9	21.7	
Vert	4882.000	AV	32.3	31.4	4.2	34.0	33.9	53.9	20.0	
Vert	7323.000	AV	32.0	36.0	4.9	34.2	38.7	53.9	15.2	
Vert	9764.000	AV	31.2	39.0	5.7	34.7	41.2	53.9	12.7	

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

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

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 4786001719H
Date 12/10/2012 12/18/2012
Temperature/ Humidity 20 deg.C./ 34% 23 deg. C / 31% RH
Engineer Keisuke Kawamura Katsunori Okai
(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	143.999	QP	37.0	14.7	7.8	28.2	31.3	43.5	12.2	
Hori	166.399	QP	36.9	15.6	8.0	28.0	32.5	43.5	11.0	
Hori	188.799	QP	35.8	16.3	8.1	27.9	32.3	43.5	11.2	
Hori	191.999	QP	37.3	16.4	8.1	27.9	33.9	43.5	9.6	
Hori	195.199	QP	36.0	16.5	8.1	27.9	32.7	43.5	10.8	
Hori	348.799	QP	33.9	15.8	9.1	28.0	30.8	46.0	15.2	
Hori	2483.500	PK	50.8	27.5	2.4	34.8	45.9	73.9	28.0	
Hori	4960.000	PK	44.2	31.6	4.2	34.0	46.0	73.9	27.9	
Hori	7440.000	PK	42.9	36.2	5.0	34.3	49.8	73.9	24.1	
Hori	9920.000	PK	42.0	39.1	5.8	34.7	52.2	73.9	21.7	
Hori	2483.500	AV	34.6	27.5	2.4	34.8	29.7	53.9	24.2	
Hori	4960.000	AV	32.9	31.6	4.2	34.0	34.7	53.9	19.2	
Hori	7440.000	AV	31.6	36.2	5.0	34.3	38.5	53.9	15.4	
Hori	9920.000	AV	31.0	39.1	5.8	34.7	41.2	53.9	12.7	
Vert	41.601	QP	35.1	13.8	6.9	28.6	27.2	40.0	12.8	
Vert	44.799	QP	42.6	12.5	6.9	28.6	33.4	40.0	6.6	
Vert	102.399	QP	39.5	10.4	7.5	28.3	29.1	43.5	14.4	
Vert	163.199	QP	38.8	15.4	7.9	28.1	34.0	43.5	9.5	
Vert	204.799	QP	39.6	16.7	8.2	27.8	36.7	43.5	6.8	
Vert	348.801	QP	30.0	15.8	9.1	28.0	26.9	46.0	19.1	
Vert	2483.500	PK	47.4	27.5	2.4	34.8	42.5	73.9	31.5	
Vert	4960.000	PK	44.6	31.6	4.2	34.0	46.4	73.9	27.5	
Vert	7440.000	PK	43.2	36.2	5.0	34.3	50.1	73.9	23.8	
Vert	9920.000	PK	42.2	39.1	5.8	34.7	52.4	73.9	21.5	
Vert	2483.500	AV	32.6	27.5	2.4	34.8	27.7	53.9	26.2	
Vert	4960.000	AV	32.4	31.6	4.2	34.0	34.2	53.9	19.7	
Vert	7440.000	AV	31.6	36.2	5.0	34.3	38.5	53.9	15.4	
Vert	9920.000	AV	31.2	39.1	5.8	34.7	41.4	53.9	12.5	

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).

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 4786001719H
Date 12/10/2012 12/18/2012
Temperature/ Humidity 20 deg.C./ 34% 23 deg. C / 31% RH
Engineer Keisuke Kawamura Katsunori Okai
(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	143.999	QP	39.6	14.7	7.8	28.2	33.9	43.5	9.6	
Hori	147.199	QP	39.9	14.8	7.8	28.2	34.3	43.5	9.2	
Hori	182.401	QP	35.2	16.2	8.1	27.9	31.6	43.5	11.9	
Hori	204.801	QP	35.6	16.7	8.2	27.8	32.7	43.5	10.8	
Hori	233.601	QP	34.4	17.0	8.4	27.6	32.2	46.0	13.8	
Hori	348.799	QP	32.0	15.8	9.1	28.0	28.9	46.0	17.1	
Hori	2390.000	PK	46.1	27.4	2.4	34.8	41.1	73.9	32.8	
Hori	4804.000	PK	43.8	31.2	4.2	34.0	45.2	73.9	28.7	
Hori	7206.000	PK	43.8	35.9	4.9	34.2	50.4	73.9	23.5	
Hori	9608.000	PK	42.0	38.8	5.7	34.7	51.8	73.9	22.1	
Hori	2390.000	AV	32.1	27.4	2.4	34.8	27.1	53.9	26.8	
Hori	4804.000	AV	33.3	31.2	4.2	34.0	34.7	53.9	19.2	
Hori	7206.000	AV	31.9	35.9	4.9	34.2	38.5	53.9	15.4	
Hori	9608.000	AV	31.0	38.8	5.7	34.7	40.8	53.9	13.1	
Vert	44.801	QP	41.5	12.5	6.9	28.6	32.3	40.0	7.7	
Vert	102.399	QP	40.0	10.4	7.5	28.3	29.6	43.5	13.9	
Vert	163.201	QP	40.3	15.4	7.9	28.1	35.5	43.5	8.0	
Vert	166.399	QP	38.5	15.6	8.0	28.0	34.1	43.5	9.4	
Vert	192.001	QP	35.4	16.4	8.1	27.9	32.0	43.5	11.5	
Vert	348.801	QP	30.8	15.8	9.1	28.0	27.7	46.0	18.3	
Vert	2390.000	PK	44.9	27.4	2.4	34.8	39.9	73.9	34.0	
Vert	4804.000	PK	44.3	31.2	4.2	34.0	45.7	73.9	28.2	
Vert	7206.000	PK	42.3	35.9	4.9	34.2	48.9	73.9	25.0	
Vert	9608.000	PK	42.2	38.8	5.7	34.7	52.0	73.9	21.9	
Vert	2390.000	AV	32.1	27.4	2.4	34.8	27.1	53.9	26.8	
Vert	4804.000	AV	32.3	31.2	4.2	34.0	33.7	53.9	20.2	
Vert	7206.000	AV	31.4	35.9	4.9	34.2	38.0	53.9	15.9	
Vert	9608.000	AV	31.2	38.8	5.7	34.7	41.0	53.9	12.9	

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

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

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

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	96.8	27.5	2.4	34.8	91.9	-	-	Carrier
Hori	2400.000	PK	42.5	27.5	2.4	34.8	37.6	71.9	34.3	
Vert	2402.000	PK	90.9	27.5	2.4	34.8	86.0	-	-	Carrier
Vert	2400.000	PK	38.6	27.5	2.4	34.8	33.7	66.0	32.3	

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.	4786001719H	
Date	12/10/2012	12/18/2012
Temperature/ Humidity	20 deg.C./ 34%	23 deg. C / 31% RH
Engineer	Keisuke Kawamura (Above 1GHz)	Katsunori Okai (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	147.200	QP	38.2	14.8	7.8	28.2	32.6	43.5	10.9	
Hori	182.401	QP	37.8	16.2	8.1	27.9	34.2	43.5	9.3	
Hori	204.800	QP	37.6	16.7	8.2	27.8	34.7	43.5	8.8	
Hori	207.999	QP	36.0	16.7	8.2	27.8	33.1	43.5	10.4	
Hori	236.801	QP	33.5	17.0	8.4	27.6	31.3	46.0	14.7	
Hori	348.801	QP	31.8	15.8	9.1	28.0	28.7	46.0	17.3	
Hori	4882.000	PK	43.8	31.4	4.2	34.0	45.4	73.9	28.5	
Hori	7323.000	PK	43.4	36.0	4.9	34.2	50.1	73.9	23.8	
Hori	9764.000	PK	42.0	39.0	5.7	34.7	52.0	73.9	21.9	
Hori	4882.000	AV	33.1	31.4	4.2	34.0	34.7	53.9	19.2	
Hori	7323.000	AV	32.0	36.0	4.9	34.2	38.7	53.9	15.2	
Hori	9764.000	AV	31.0	39.0	5.7	34.7	41.0	53.9	12.9	
Vert	44.801	QP	41.6	12.5	6.9	28.6	32.4	40.0	7.6	
Vert	102.401	QP	39.1	10.4	7.5	28.3	28.7	43.5	14.8	
Vert	163.199	QP	39.7	15.4	7.9	28.1	34.9	43.5	8.6	
Vert	201.599	QP	36.6	16.6	8.2	27.8	33.6	43.5	9.9	
Vert	204.799	QP	36.3	16.7	8.2	27.8	33.4	43.5	10.1	
Vert	348.799	QP	30.7	15.8	9.1	28.0	27.6	46.0	18.4	
Vert	4882.000	PK	42.8	31.4	4.2	34.0	44.4	73.9	29.5	
Vert	7323.000	PK	43.0	36.0	4.9	34.2	49.7	73.9	24.2	
Vert	9764.000	PK	42.2	39.0	5.7	34.7	52.2	73.9	21.7	
Vert	4882.000	AV	31.2	31.4	4.2	34.0	32.8	53.9	21.1	
Vert	7323.000	AV	31.7	36.0	4.9	34.2	38.4	53.9	15.5	
Vert	9764.000	AV	31.2	39.0	5.7	34.7	41.2	53.9	12.7	

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

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

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	4786001719H	
Date	12/10/2012	12/18/2012
Temperature/ Humidity	20 deg.C./ 34%	23 deg. C / 31% RH
Engineer	Keisuke Kawamura (Above 1GHz)	Katsunori Okai (Below 1GHz)
Mode	Tx, 3DH5 2480MHz	

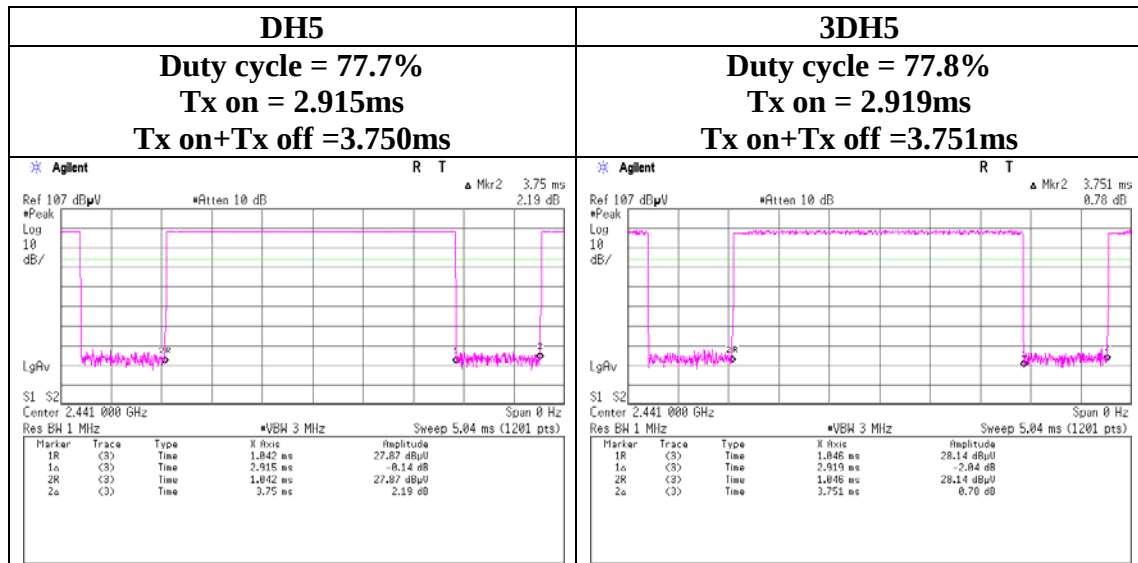
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	143.999	QP	39.5	14.7	7.8	28.2	33.8	43.5	9.7	
Hori	147.199	QP	40.5	14.8	7.8	28.2	34.9	43.5	8.6	
Hori	204.799	QP	34.1	16.7	8.2	27.8	31.2	43.5	12.3	
Hori	236.799	QP	37.1	17.0	8.4	27.6	34.9	46.0	11.1	
Hori	252.799	QP	32.6	17.3	8.5	27.5	30.9	46.0	15.1	
Hori	339.199	QP	34.5	15.4	9.1	27.9	31.1	46.0	14.9	
Hori	2483.500	PK	49.2	27.5	2.4	34.8	44.3	73.9	29.6	
Hori	4960.000	PK	44.5	31.6	4.2	34.0	46.3	73.9	27.6	
Hori	7440.000	PK	42.9	36.2	5.0	34.3	49.8	73.9	24.1	
Hori	9920.000	PK	42.0	39.1	5.8	34.7	52.2	73.9	21.7	
Hori	2483.500	AV	33.5	27.5	2.4	34.8	28.6	53.9	25.3	
Hori	4960.000	AV	33.1	31.6	4.2	34.0	34.9	53.9	19.0	
Hori	7440.000	AV	31.6	36.2	5.0	34.3	38.5	53.9	15.4	
Hori	9920.000	AV	31.0	39.1	5.8	34.7	41.2	53.9	12.7	
Vert	44.799	QP	41.9	12.5	6.9	28.6	32.7	40.0	7.3	
Vert	102.400	QP	40.0	10.4	7.5	28.3	29.6	43.5	13.9	
Vert	163.201	QP	38.8	15.4	7.9	28.1	34.0	43.5	9.5	
Vert	201.601	QP	39.4	16.6	8.2	27.8	36.4	43.5	7.1	
Vert	204.799	QP	40.2	16.7	8.2	27.8	37.3	43.5	6.2	
Vert	339.198	QP	33.5	15.4	9.1	27.9	30.1	46.0	15.9	
Vert	2483.500	PK	46.9	27.5	2.4	34.8	42.0	73.9	31.9	
Vert	4960.000	PK	43.6	31.6	4.2	34.0	45.4	73.9	28.5	
Vert	7440.000	PK	43.2	36.2	5.0	34.3	50.1	73.9	23.8	
Vert	9920.000	PK	42.2	39.1	5.8	34.7	52.4	73.9	21.5	
Vert	2483.500	AV	32.8	27.5	2.4	34.8	27.9	53.9	26.0	
Vert	4960.000	AV	32.2	31.6	4.2	34.0	34.0	53.9	19.9	
Vert	7440.000	AV	31.6	36.2	5.0	34.3	38.5	53.9	15.4	
Vert	9920.000	AV	31.2	39.1	5.8	34.7	41.4	53.9	12.5	

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).

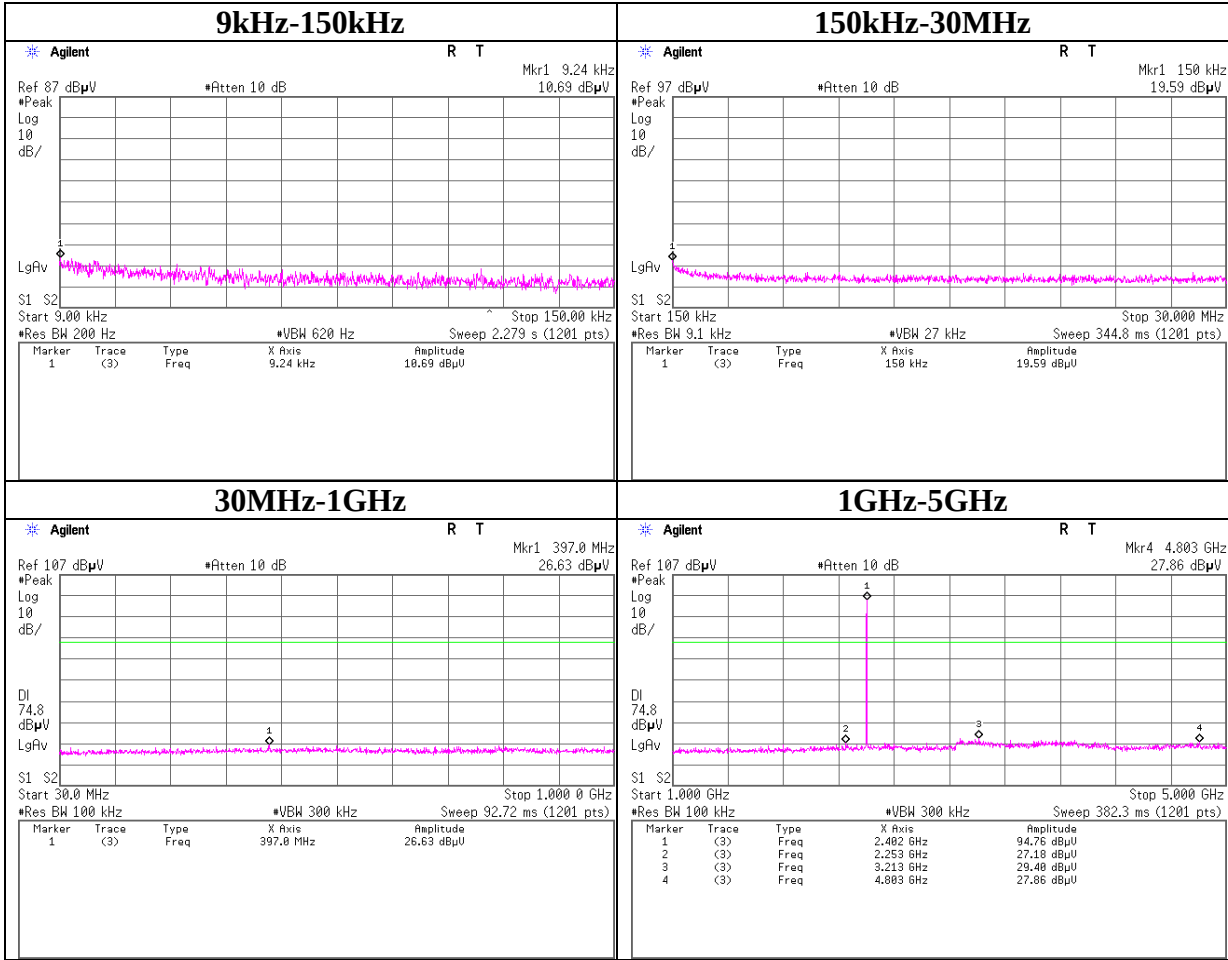
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Duty Cycle confirmation



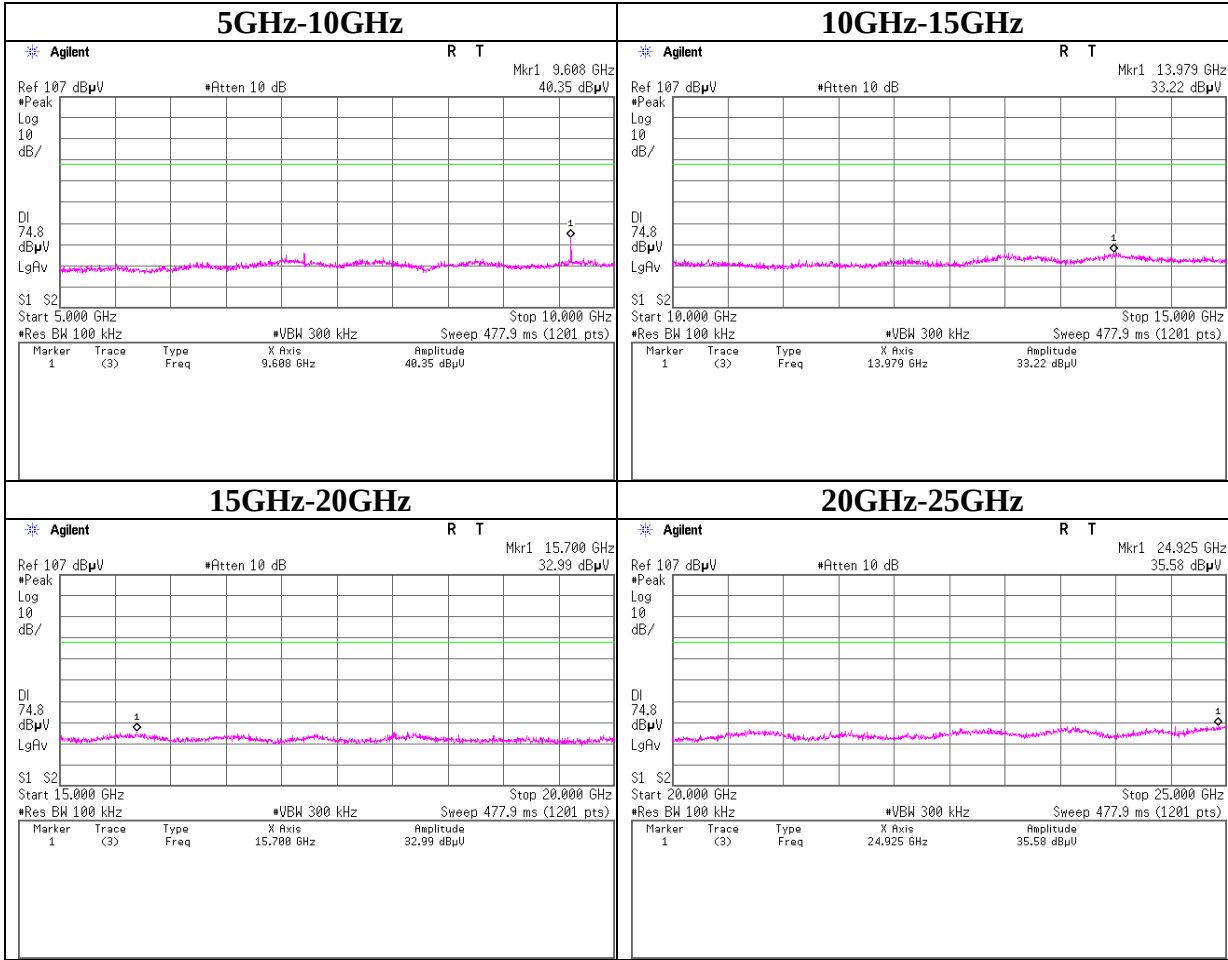
Conducted Spurious Emission

Tx DH5 2402MHz



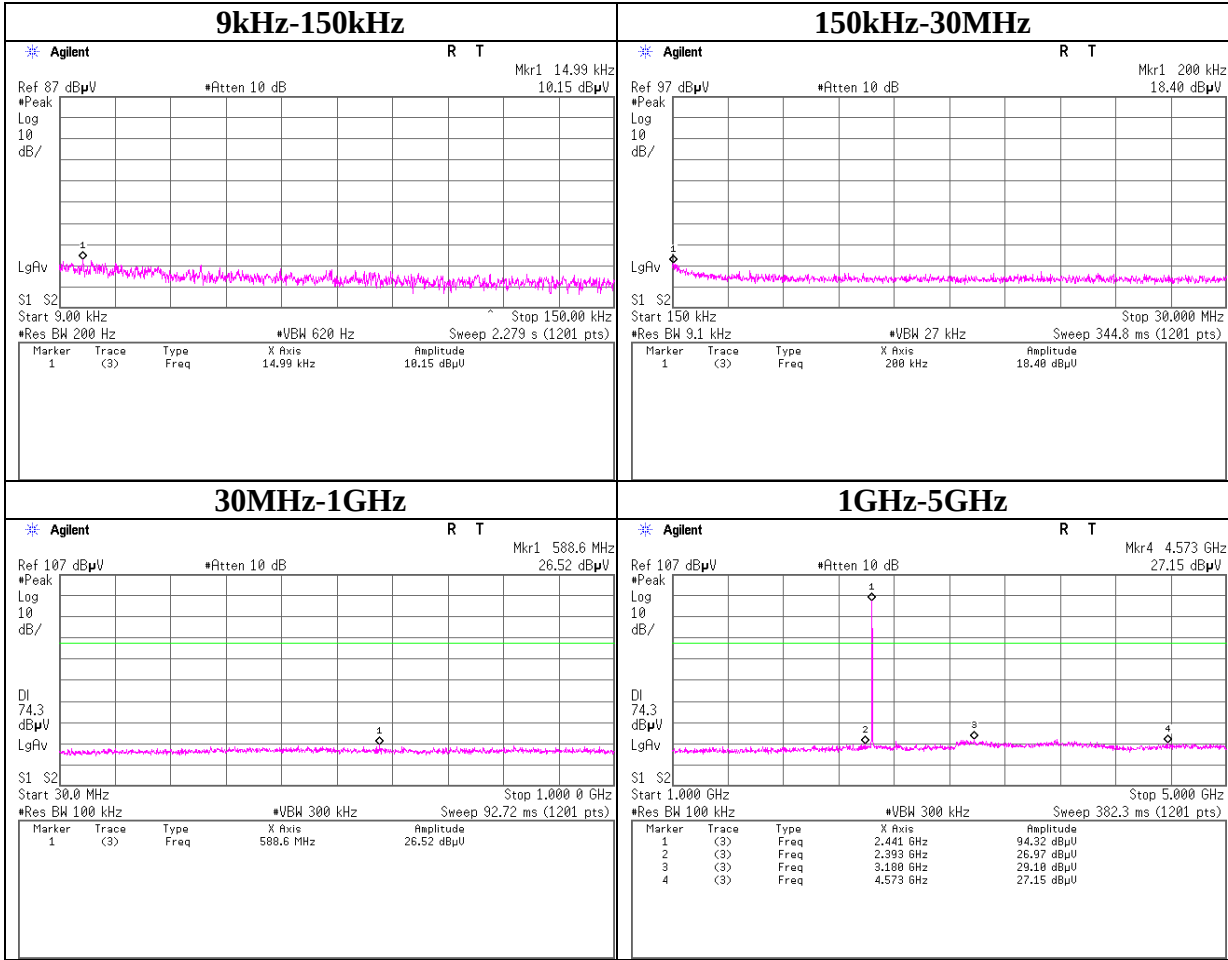
Conducted Spurious Emission

Tx DH5 2402MHz



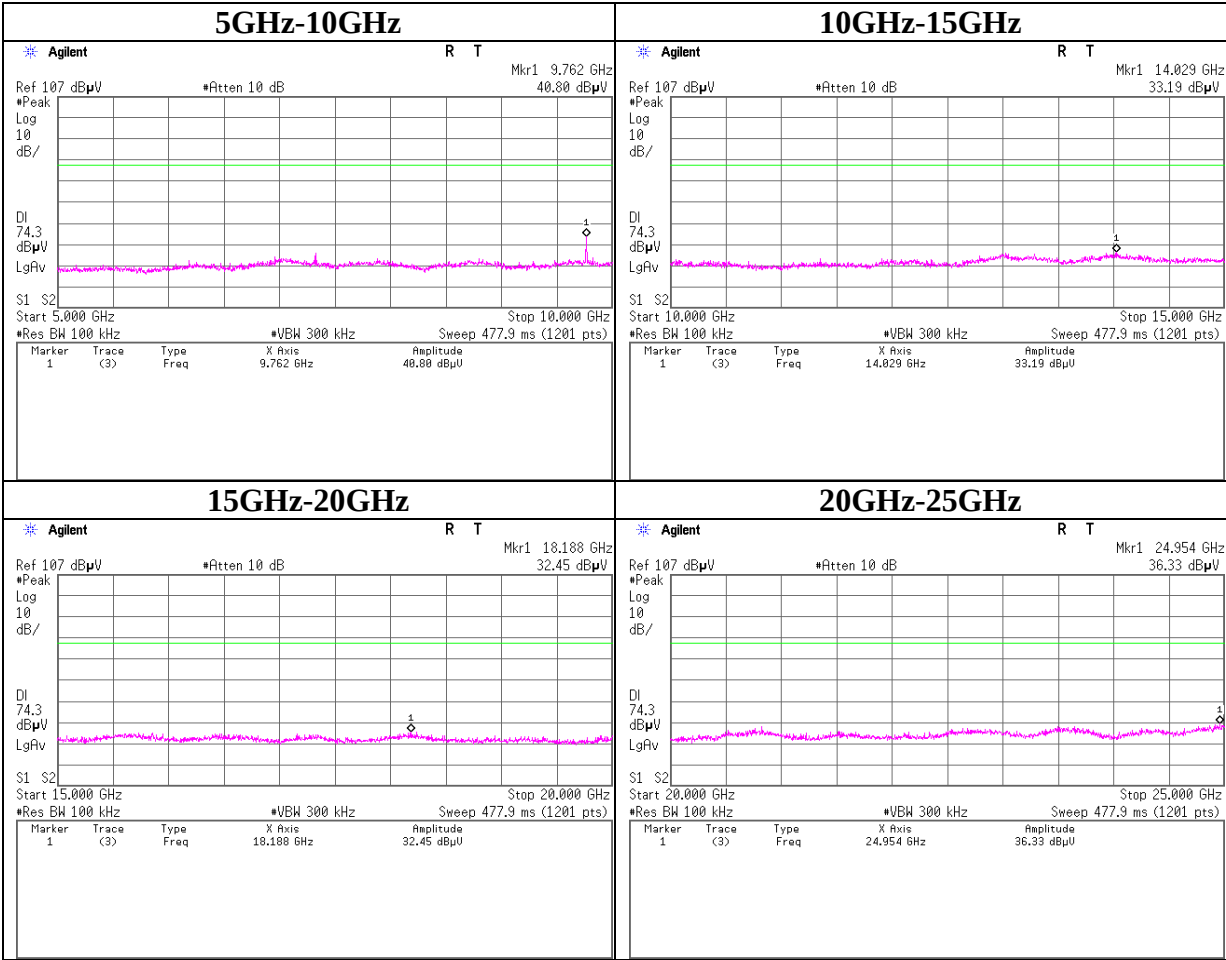
Conducted Spurious Emission

Tx DH5 2441MHz



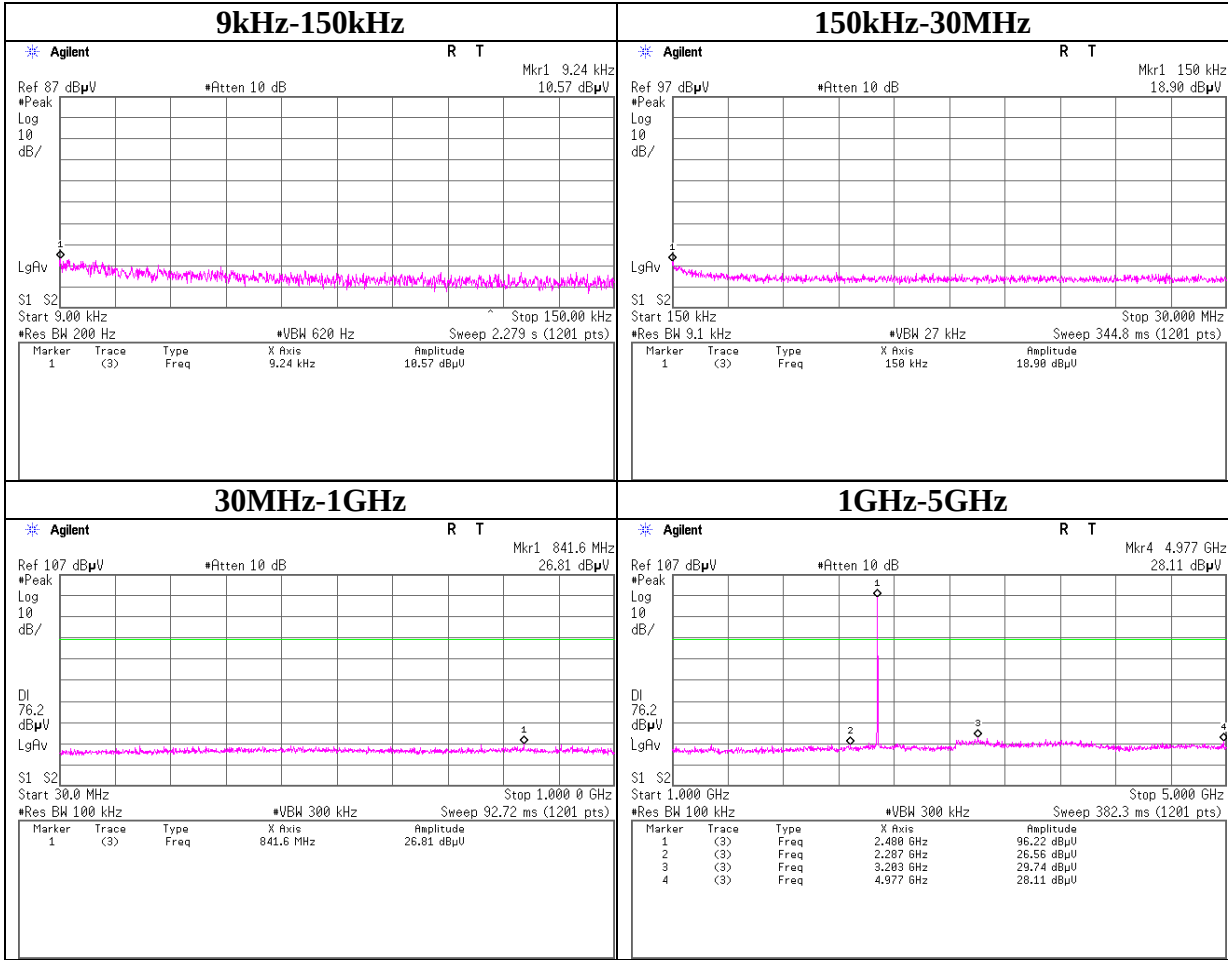
Conducted Spurious Emission

Tx DH5 2441MHz



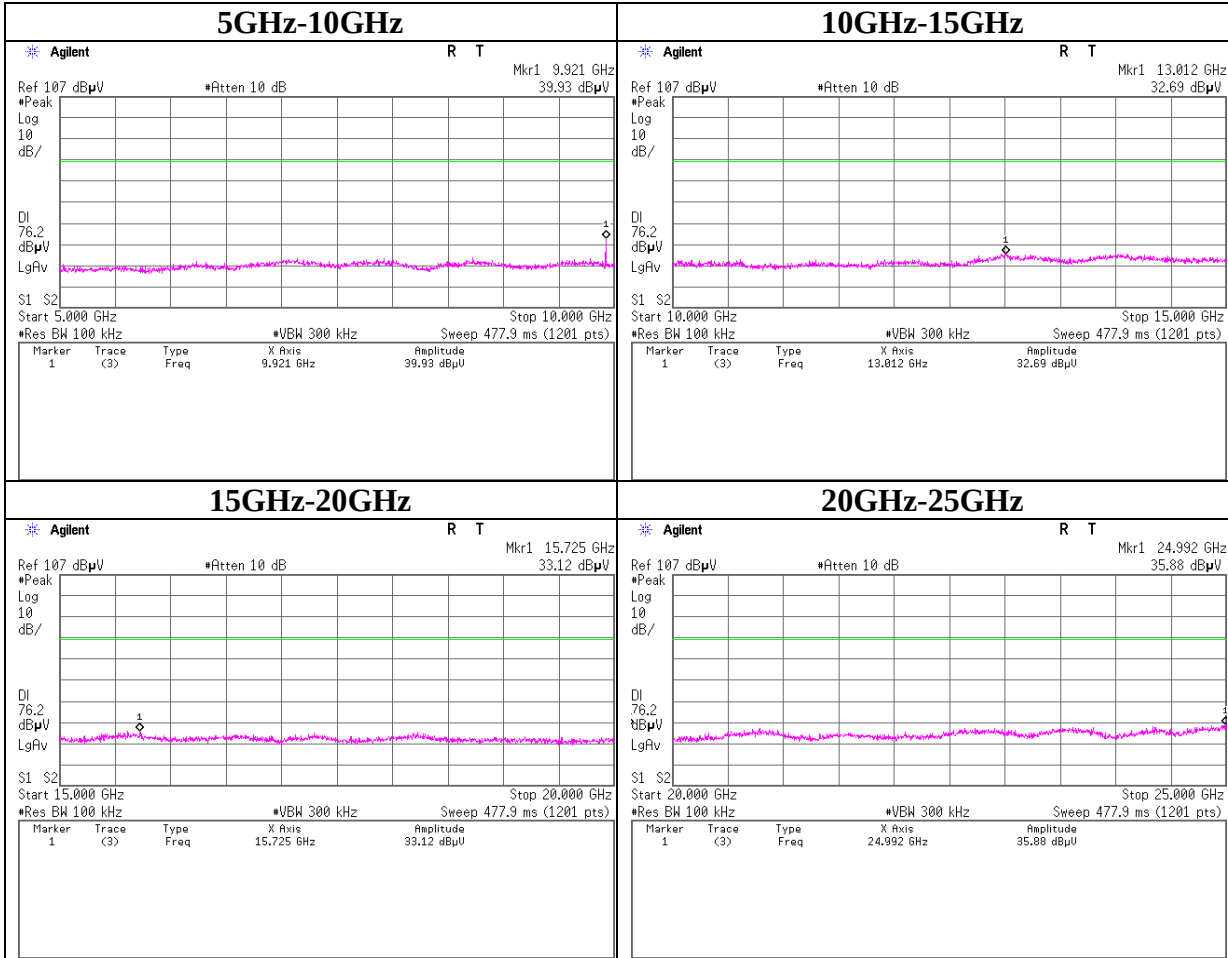
Conducted Spurious Emission

Tx DH5 2480MHz



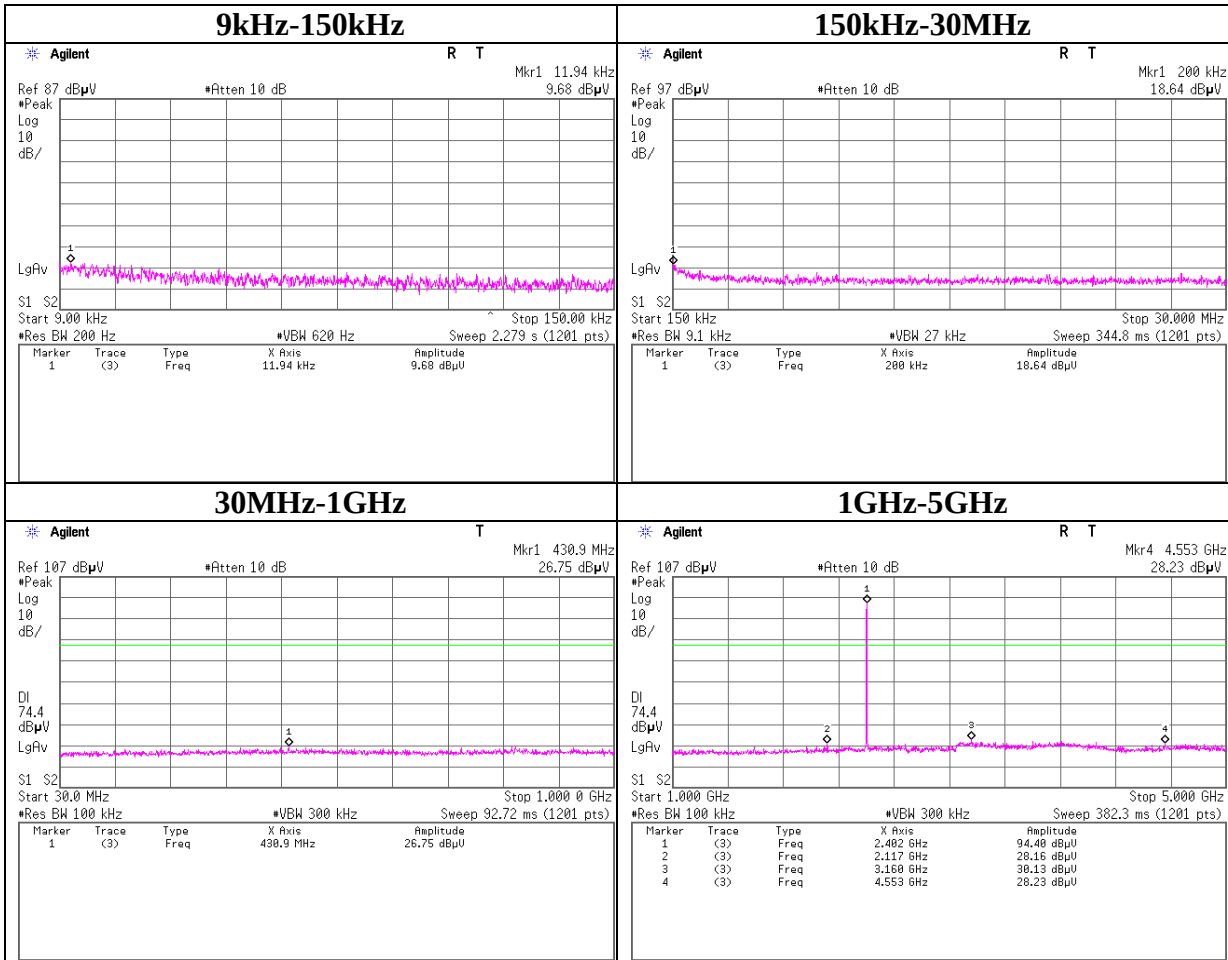
Conducted Spurious Emission

Tx DH5 2480MHz



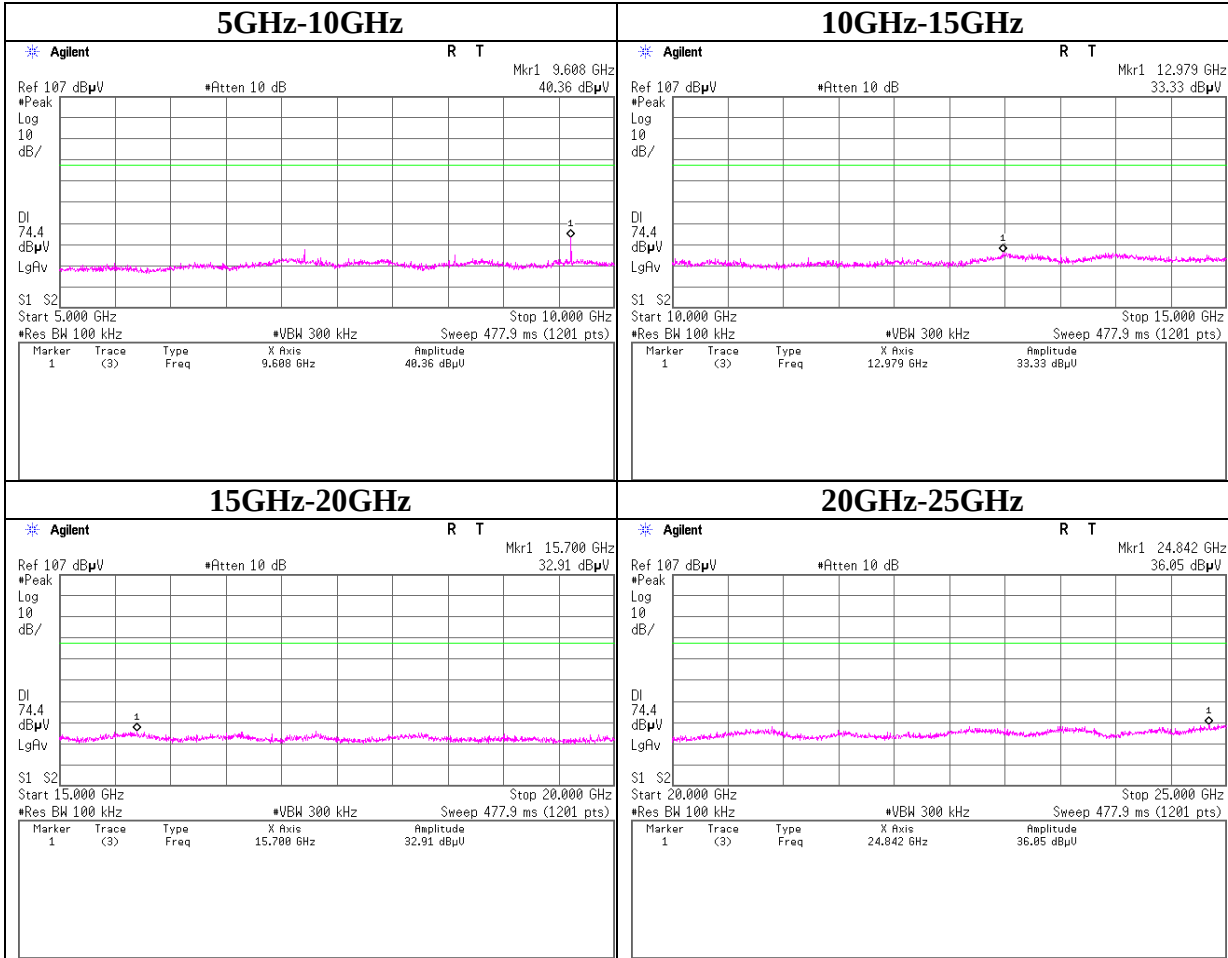
Conducted Spurious Emission

Tx 3DH5 2402MHz



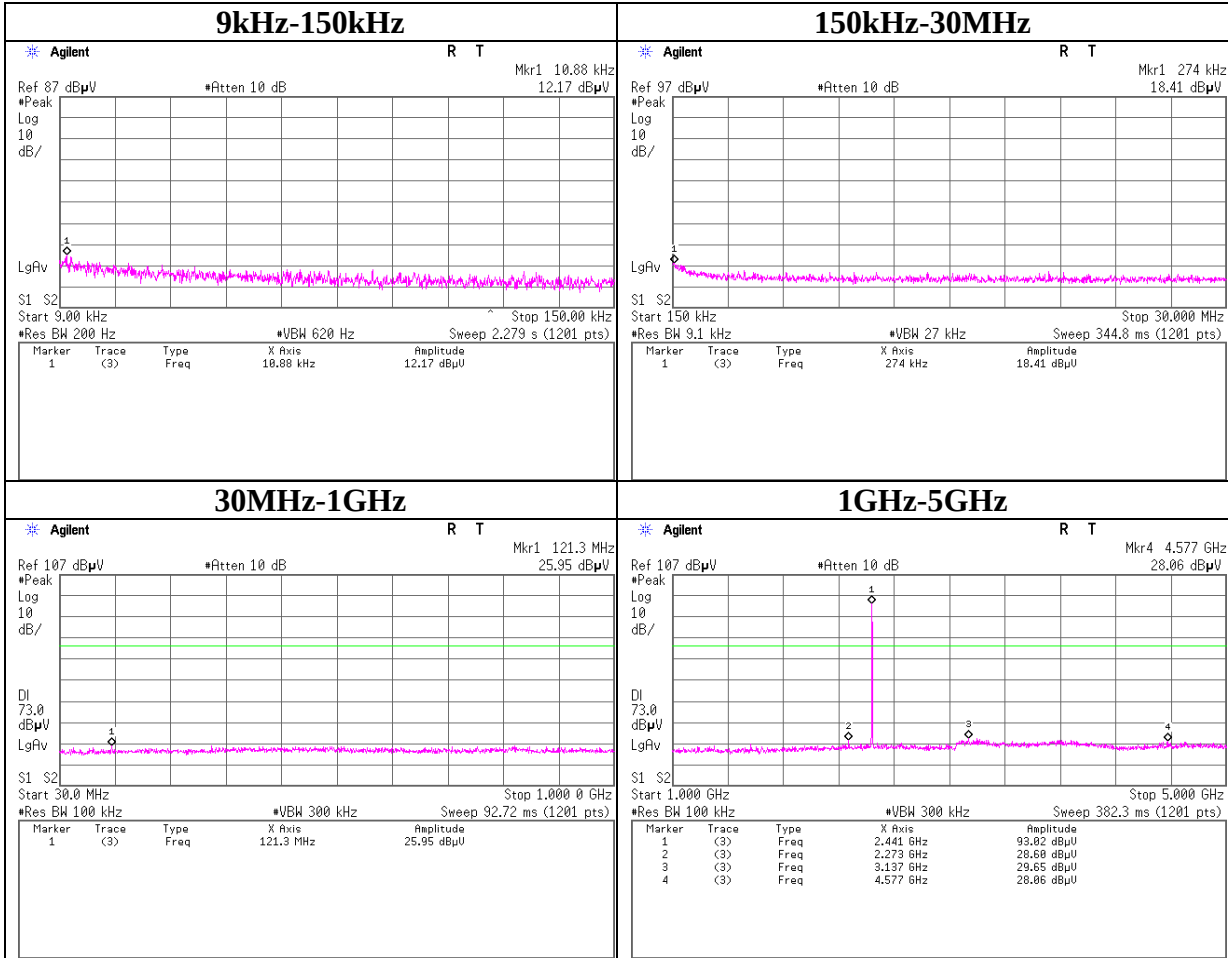
Conducted Spurious Emission

Tx 3DH5 2402MHz



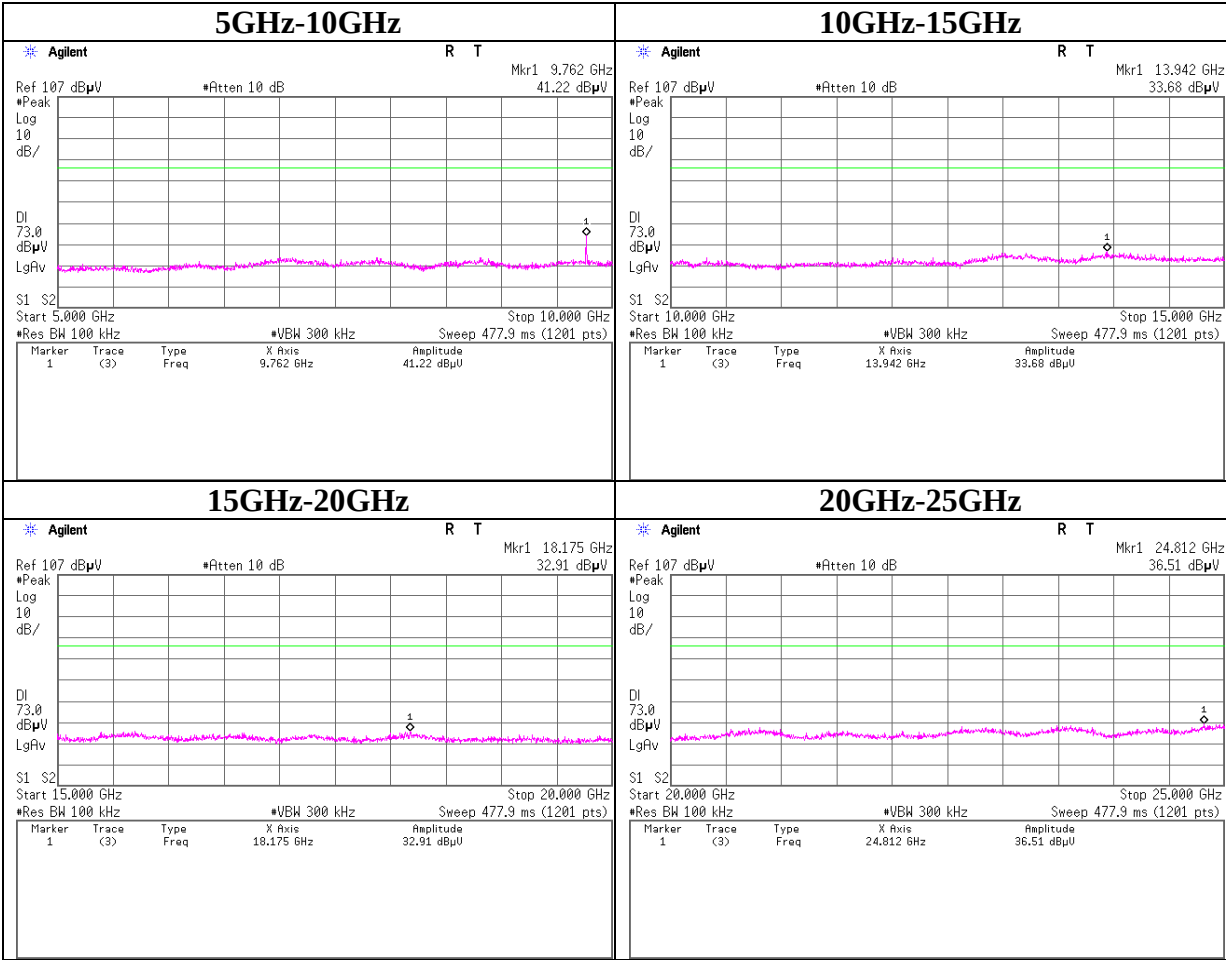
Conducted Spurious Emission

Tx 3DH5 2441MHz



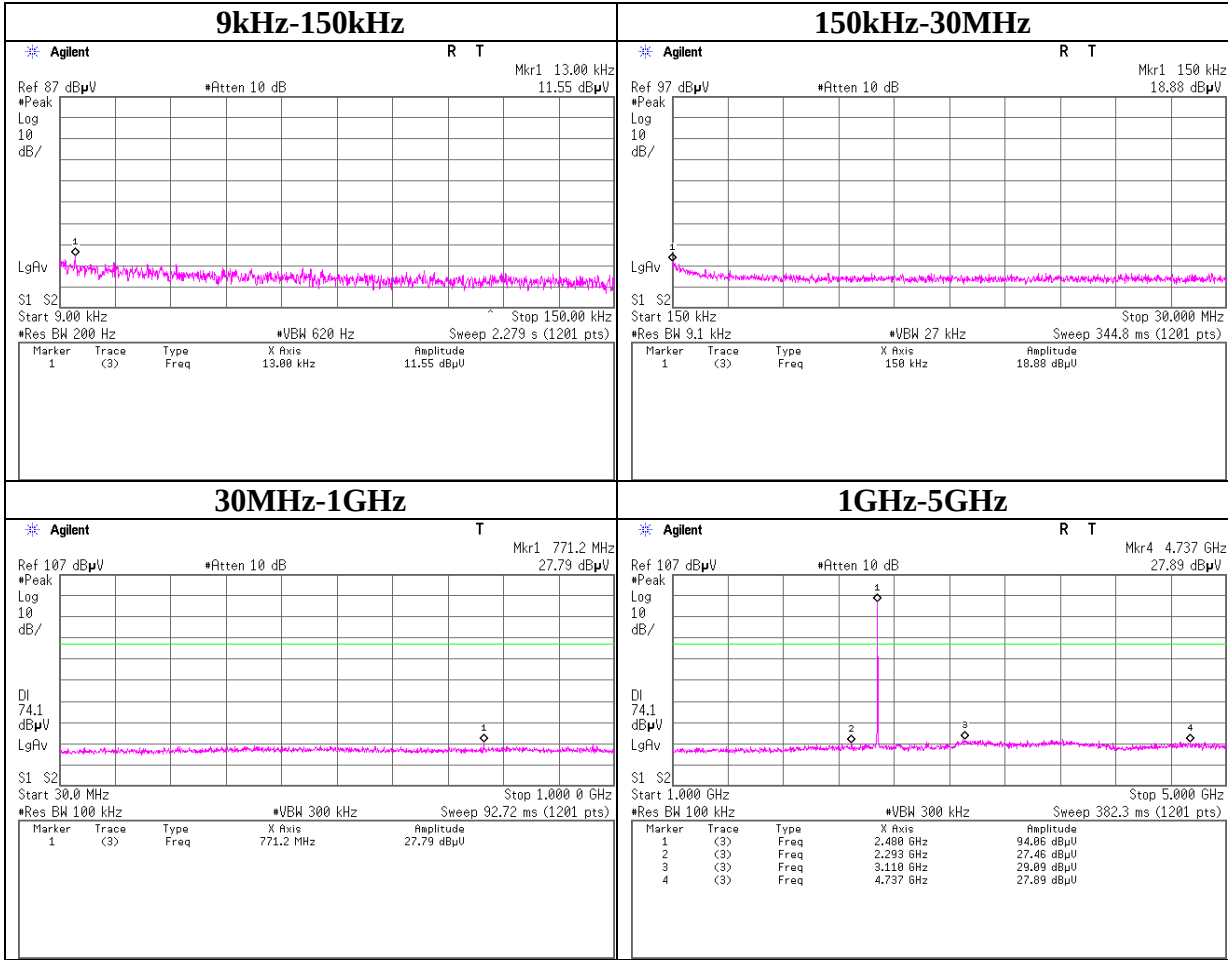
Conducted Spurious Emission

Tx 3DH5 2441MHz



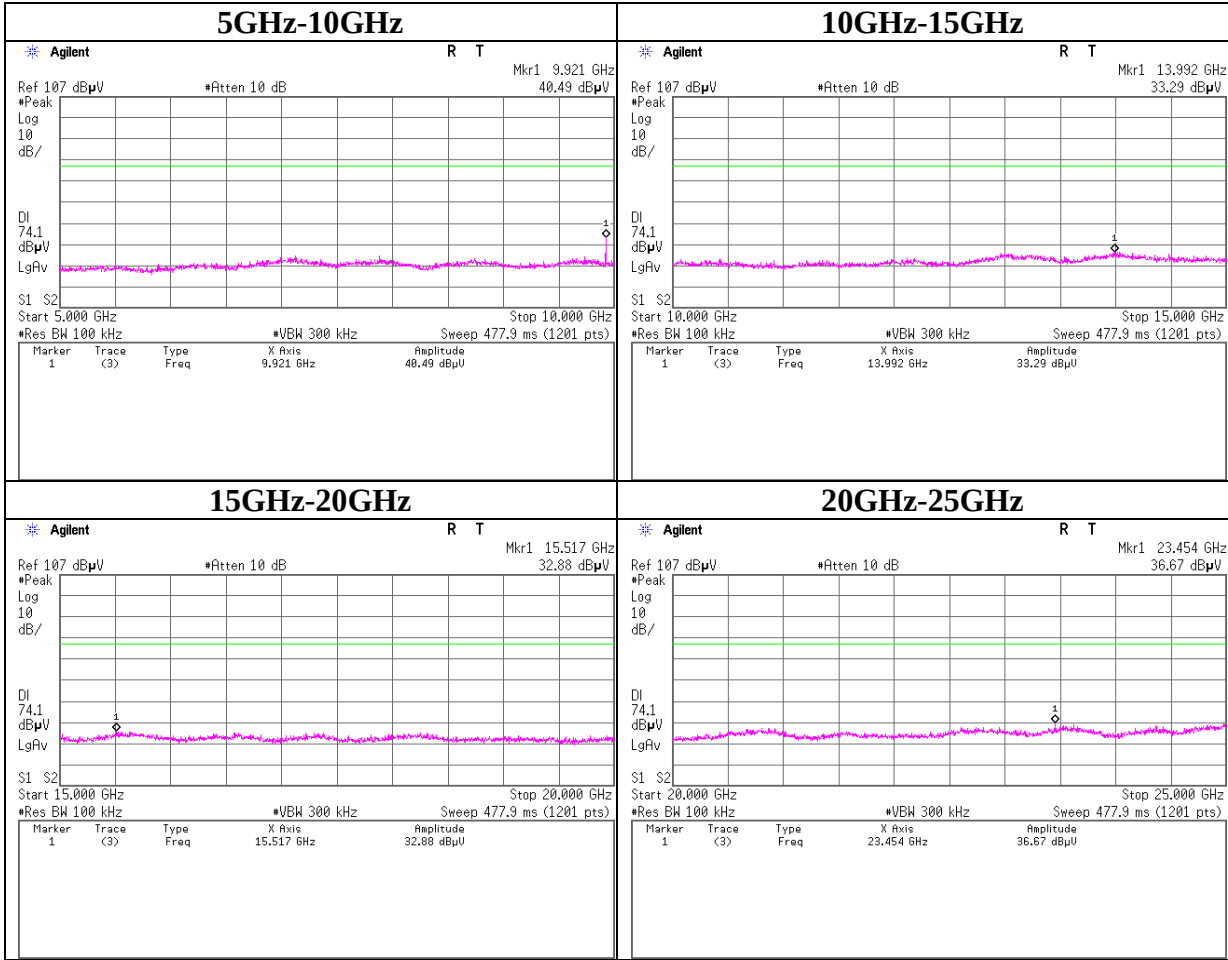
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Tx 3DH5 2480MHz



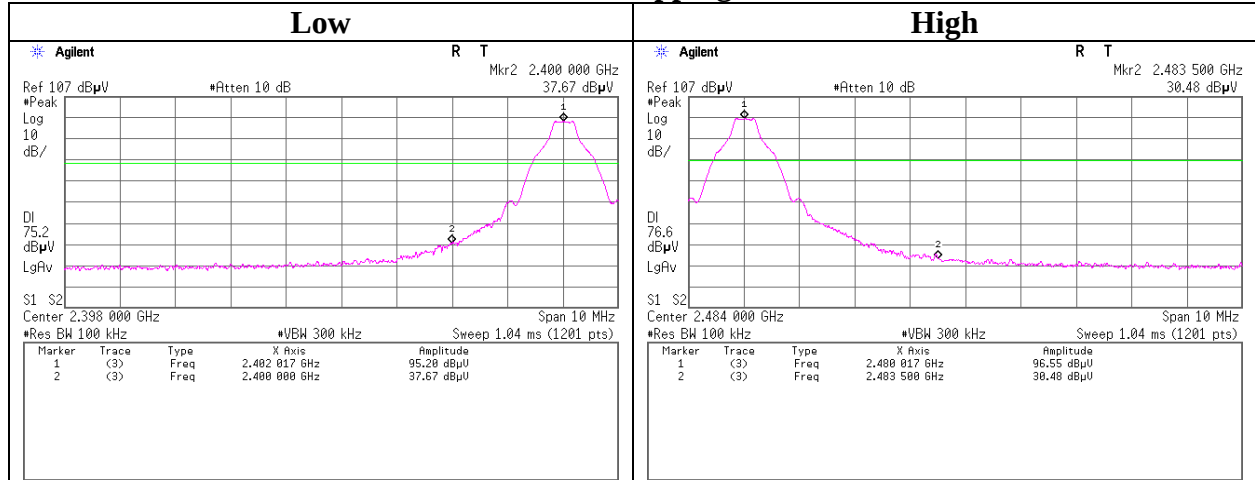
Conducted Spurious Emission

Tx 3DH5 2480MHz

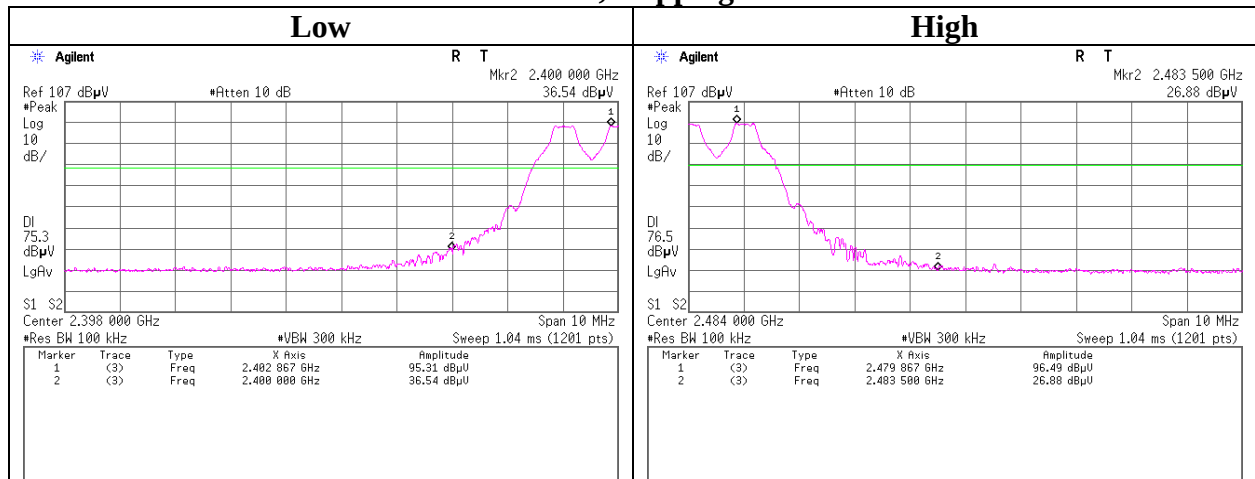


Conducted Emission Band Edge compliance

Tx DH5, Hopping off

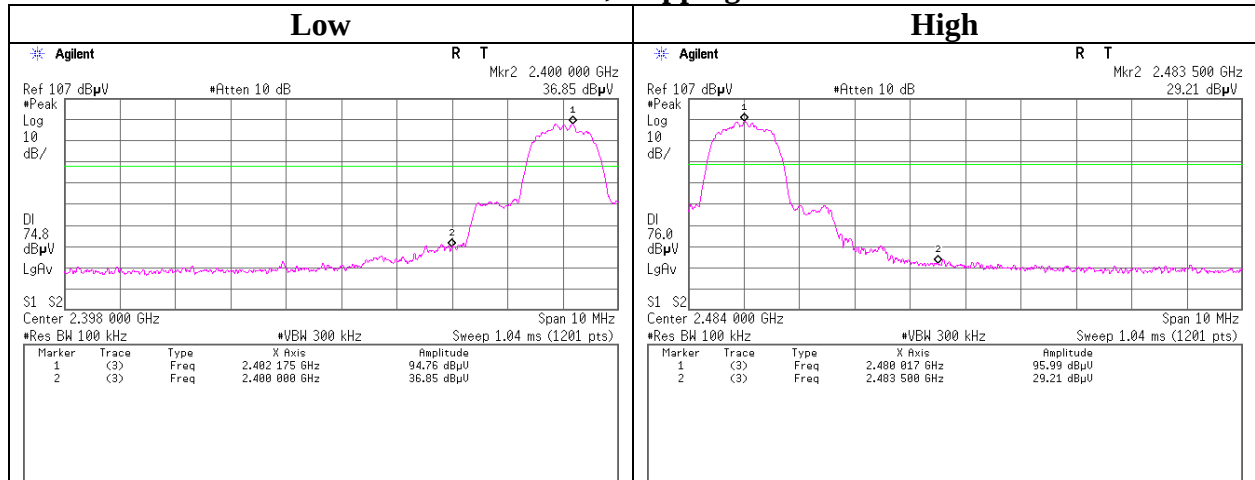


Tx DH5, Hopping on

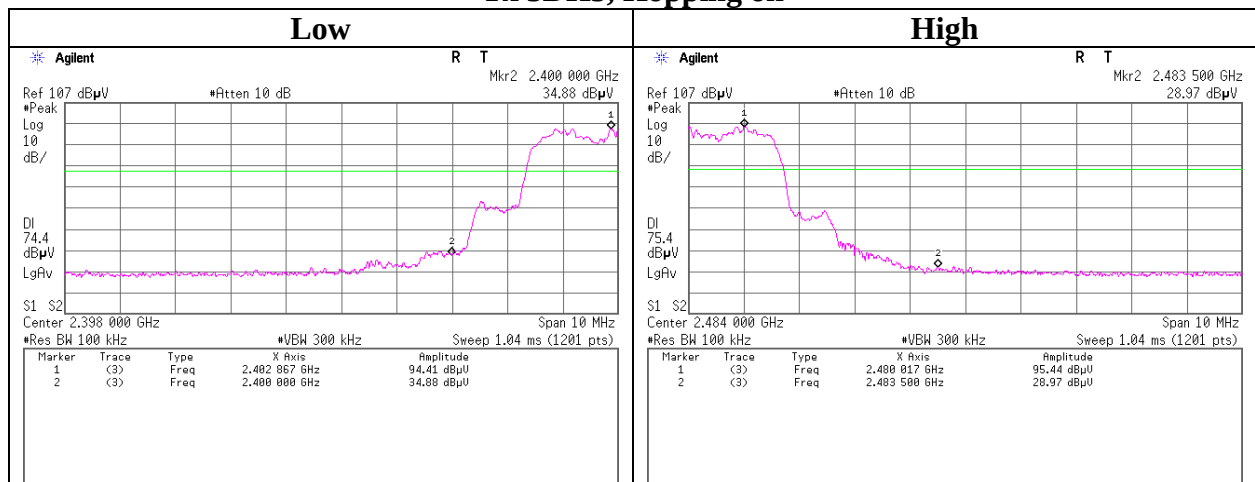


Conducted Emission Band Edge compliance

Tx 3DH5, Hopping off



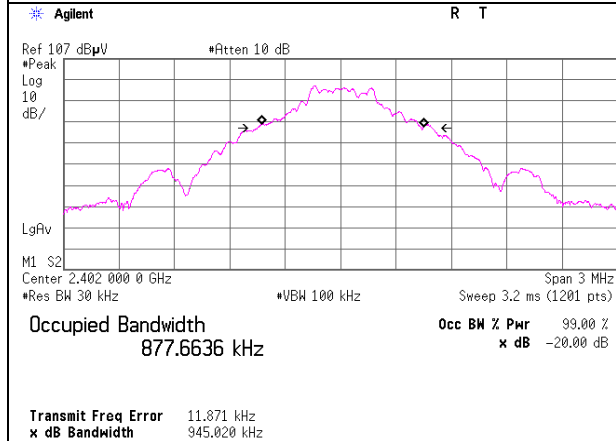
Tx 3DH5, Hopping on



99%Occupied Bandwidth

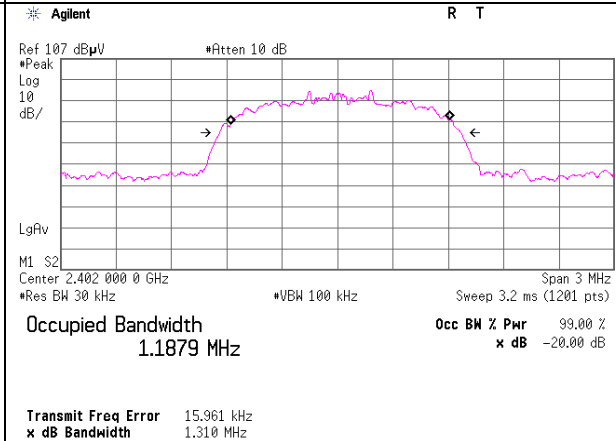
Tx DH5, Hopping off

2402MHz

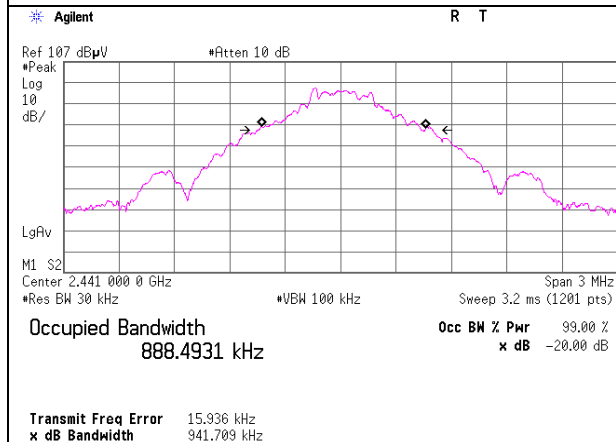


Tx 3DH5, Hopping off

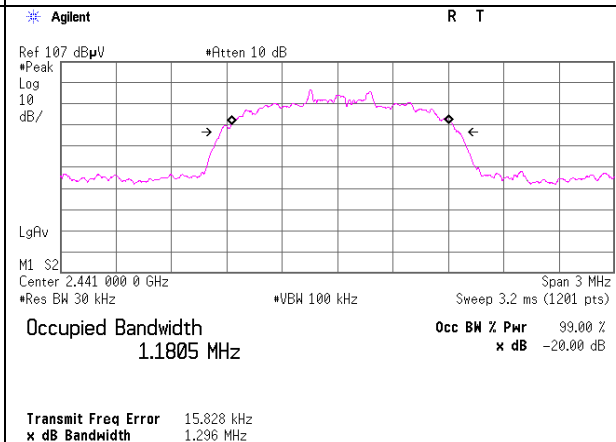
2402MHz



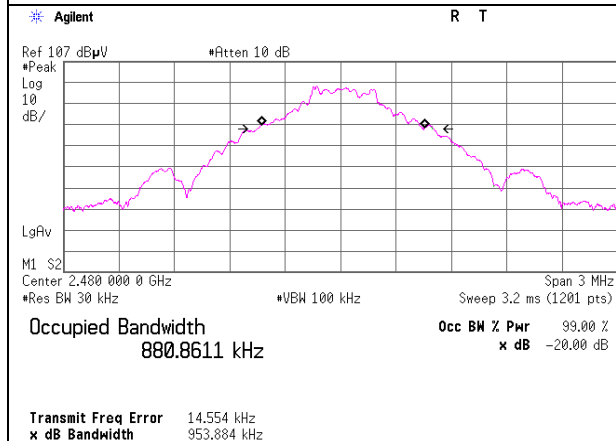
2441MHz



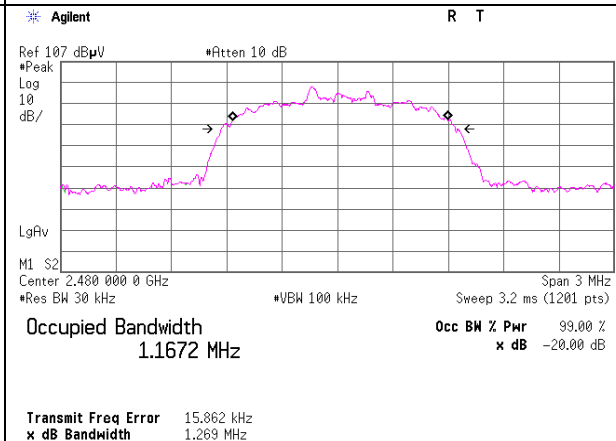
2441MHz



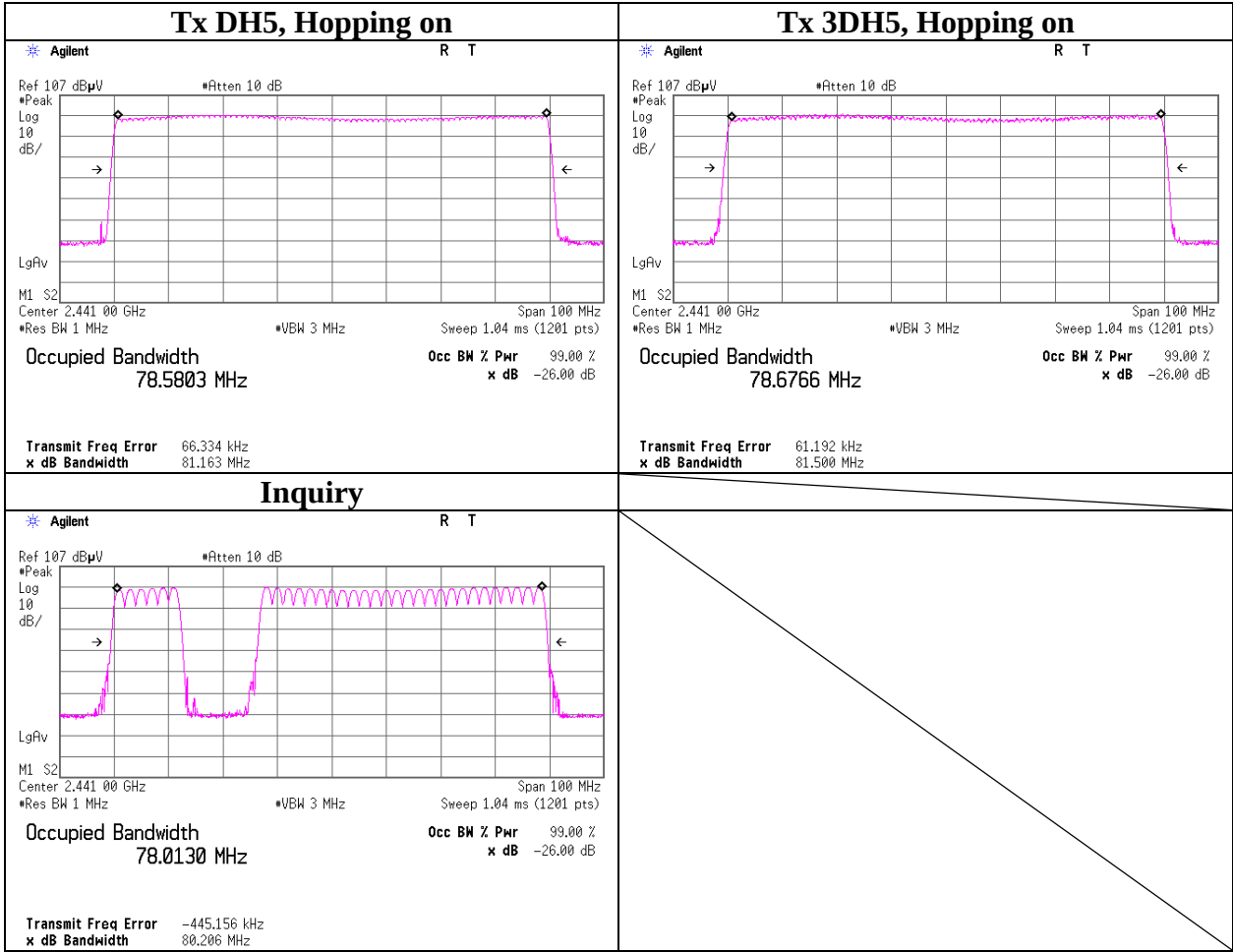
2480MHz



2480MHz



99% Occupied Bandwidth



APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date	Expiration date of the calibration
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE/CE	2012/06/29	2013/06/30
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE/CE	2012/02/06	2013/02/28
MJM-14	Measure	KOMELON	KMC-36	-	RE/CE	-	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-	-
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	RE/CE	2012/11/20	2013/11/30
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2012/02/22	2013/02/28
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2012/01/25	2013/01/31
MHA-02	Horn Antenna 18-26.5GHz	EMCO	3160-09	1265	RE	2012/02/22	2013/02/28
MCC-132	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336161/4(1m) / 340639(5m)	RE	2012/09/05	2013/09/30
MHF-06	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	RE	2012/05/30	2013/05/31
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE/CE	2012/04/03	2013/04/30
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	2012/10/08	2013/10/31
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2012/10/08	2013/10/31
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2012/02/16	2013/02/28
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2012/11/06	2013/11/30
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2012/09/11	2013/09/30
MOS-14	Thermo-Hygrometer	Custom	CTH-201	-	AT	2012/02/06	2013/02/28
MPM-12	Power Meter	Anritsu	ML2495A	0825002	AT	2012/06/01	2013/06/30
MPSE-17	Power sensor	Anritsu	MA2411B	0738285	AT	2012/06/01	2013/06/30
MCC-35	Microwave Cable	Hirose Electric	U.FL-2LP-066-A-(200)	-	AT	2012/09/05	2013/09/30
MAT-25	Attenuator(10dB) (above1GHz)	Agilent	8493C	71642	AT	2012/06/27	2013/06/30
MCC-98	Microwave Cable 1G-40GHz	Schner	SUCOFLEX102	30819/2	AT	2012/05/09	2013/05/31
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	AT	2012/04/06	2013/04/30
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE	2012/02/09	2013/02/28
MCC-13	Coaxial Cable	Fujikura	3D-2W(12m)/ 5D-2W(5m)/ 5D-2W(0.8m)/ 5D-2W(1m)	-	CE	2012/02/16	2013/02/28
MAT-65	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2012/01/28	2013/01/31

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.

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