



RADIO TEST REPORT

Test Report No. : 33FE0016-HO-B

Applicant : SAMSUNG ELECTRONICS CO., LTD.
Type of Equipment : GSM/GPRS 850/1900 and WCDMA850 Phone with BT v3.0(EDR), 802.11b/g/n, EDGE Rx only and Hotspot
Model No. : GT-S5303B
FCC ID : A3LGTS5303B
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: January 19 to 22, 2013

Representative test engineer:

K. Kawamura

Keisuke Kawamura
Engineer of WiSE Japan,
UL Verification Service

Approved by:

T. Hatakeda

Takahiro Hatakeda
Leader of WiSE Japan,
UL Verification Service



NVLAP LAB CODE: 200572-0

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

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13-EM-F0429

REVISION HISTORY

Original Test Report No.: 33FE0016-HO-B

[illegible]

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CONTENTS	PAGE
SECTION 1: Customer information	4
SECTION 2: Equipment under test (E.U.T.)	4
SECTION 3: Test specification, procedures & results	6
SECTION 4: Operation of E.U.T. during testing	9
SECTION 5: Conducted Emission	11
SECTION 6: Radiated Spurious Emission	12
SECTION 7: Antenna Terminal Conducted Tests	13
APPENDIX 1: Data of EMI test	14
Conducted Emission	14
20dB Bandwidth and Carrier Frequency Separation	18
Number of Hopping Frequency	21
Dwell time	23
Maximum Peak Output Power	26
Radiated Spurious Emission	27
Conducted Spurious Emission	36
Conducted Emission Band Edge compliance	48
99% Occupied Bandwidth	50
APPENDIX 2: Test instruments	52
APPENDIX 3: Photographs of test setup	53
Conducted Emission	53
Radiated Spurious Emission	54
Worst Case Position Horizontal: X-axis / Vertical: Y-axis	55

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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 : GSM/GPRS 850/1900 and WCDMA850 Phone with BT v3.0(EDR),
802.11b/g/n, EDGE Rx only and Hotspot
Model No. : GT-S5303B
Serial No. : Refer to Section 4, Clause 4.2
Rating : AC100-240V/50-60Hz (AC Adapter)
DC3.7V/1200mAh (Battery)
Receipt Date of Sample : January 18, 2013
Modification of EUT : No Modification by the test lab

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2.2 Product Description

Radio Specification

Bluetooth (BDR/EDR)

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Type of Modulation	FHSS
Bandwidth & Channel spacing	1MHz & 1MHz
Antenna Type	Cap
Antenna Gain	-5.88dBi

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	Cap
Antenna Gain	-5.88dBi

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: 247KGXW PCS: 251KGXW
Antenna Type	PIFA
Antenna Gain	GSM850: -6.7dBi PCS: -8.3dBi

W-CDMA

Equipment Type	Transceiver
Frequency of Operation	[Up Link] Band V: 824 – 849MHz [Down Link] Band V: 869 – 894MHz
Type of Modulation	QPSK
Emission Designator	Band V: 4M17F9W
Antenna Type	PIFA
Antenna Gain	Band V: -6.7dBi

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : Test specification: FCC Part 15 Subpart C: 2012, final revised on December 27, 2012 and effective January 28, 2013

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

* The revision on December 27, 2012 does not affect the test specification applied to the EUT.

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 15.2dB, 0.32661MHz, L AV 9.3dB, 0.32661MHz, N	Complied	-
Carrier Frequency Separation	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1) IC: RSS-210 A8.1 (b)	See data.	Complied	Conducted
20dB Bandwidth	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1) IC: RSS-210 A8.1 (a)		Complied	Conducted
Number of Hopping Frequency	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1)(iii) IC: RSS-210 A8.1 (d)		Complied	Conducted
Dwell time	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1)(iii) IC: RSS-210 A8.1 (d)		Complied	Conducted
Maximum Peak Output Power	FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 4.8	FCC: Section15.247(a)(b)(1) IC: RSS-210 A8.4 (2)		Complied	Conducted
Spurious Emission & Band Edge Compliance	FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 4.9	FCC: Section15.247(d) IC: RSS-210 A8.5 RSS-Gen 6 and 7.2.3	11.1dB 4804.000MHz, 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.

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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 test report has enough margin, more than the site margin.

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3.5 Test Location

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

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

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

Refer to APPENDIX.

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

4.1 Operating Mode(s)

Bluetooth (BT): Transmitting (Tx), Payload: PRBS9
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, 2DH5, 3DH5	2402MHz 2441MHz 2480MHz
Band Edge Compliance (Conducted)	Tx DH5, 3DH5 -Hopping on -Hopping off	2402MHz 2480MHz
99% Occupied Bandwidth	Tx DH5, 3DH5 -Hopping on -Hopping off 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: REV0.1

S/W version: S5303B.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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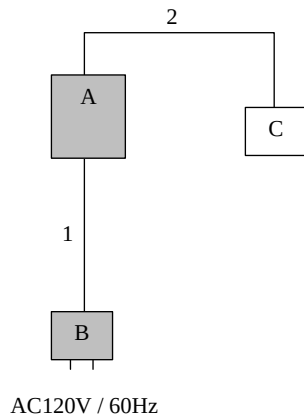
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4.2 Configuration and peripherals



* 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	GSM/GPRS 850/1900 and WCDMA850 Phone with BT v3.0(EDR), 802.11b/g/n, EDGE Rx only and Hotspot	GT-S5303B	355779050000181 *1) 355779050000165 *2)	SAMSUNG	EUT
B	AC Adapter	ETA0U10RBS	-	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	DC Cable	1.5	Unshielded	Unshielded	-
2	Ear phone 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, 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.

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

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-26.5GHz
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.

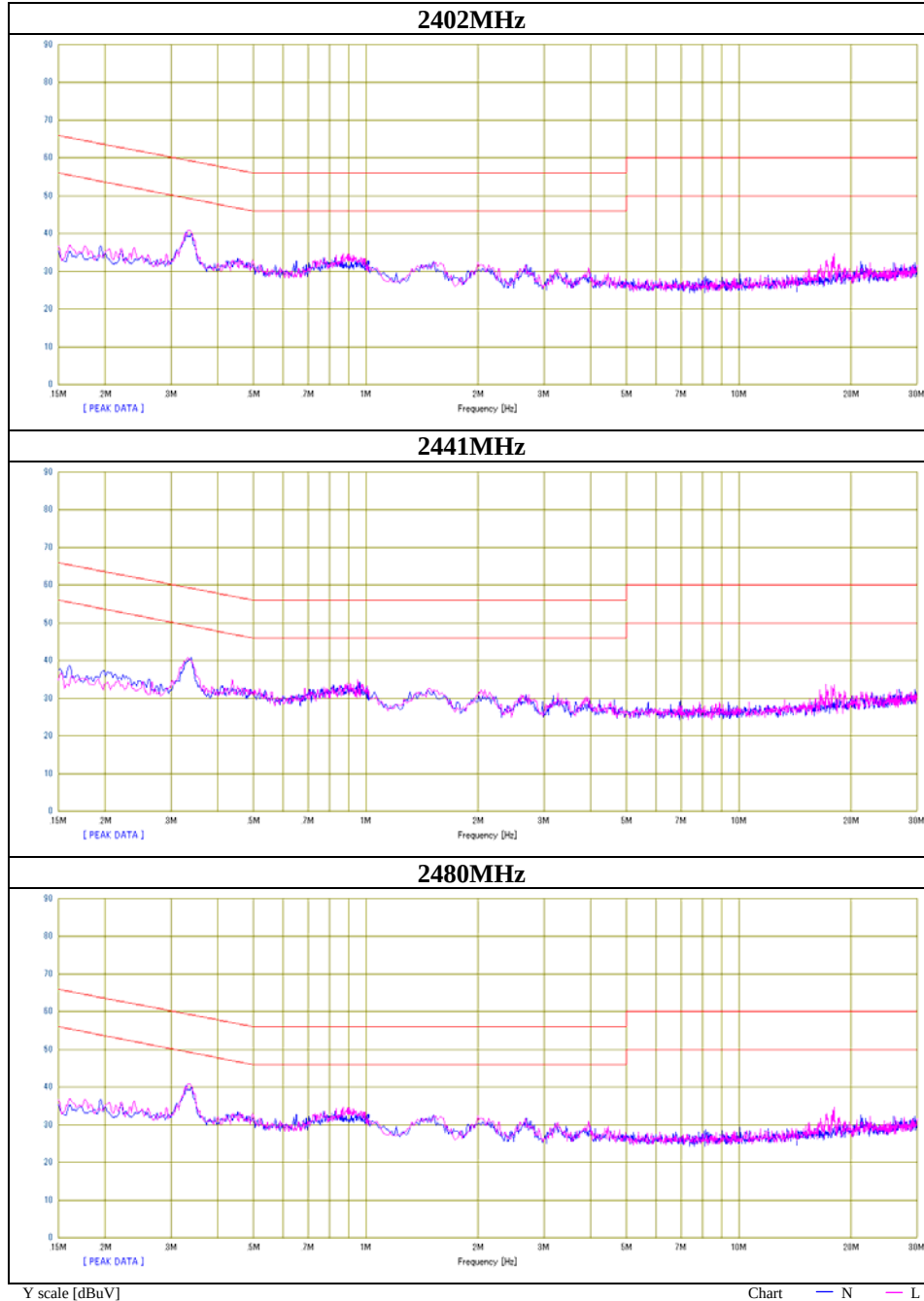
Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used
20dB Bandwidth	3MHz 2.5MHz (Inquiry mode)	30kHz	100kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99% Occupied Bandwidth	Enough width to display 20dB Bandwidth	1 to 3% of Span	Three times of RBW	Auto	Peak	Max Hold *1)	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak	-	Power Meter (Sensor: 50MHz BW)
Carrier Frequency Separation	3MHz 5MHz (Inquiry mode)	30kHz 100kHz	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 *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

Conducted Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	33FE0016-HO
Date	1/22/2013
Temperature/ Humidity	23deg. C / 31% RH
Engineer	Keisuke Kawamura
Mode	Tx DH5



Conducted Emission

DATA OF CONDUCTED EMISSION TEST

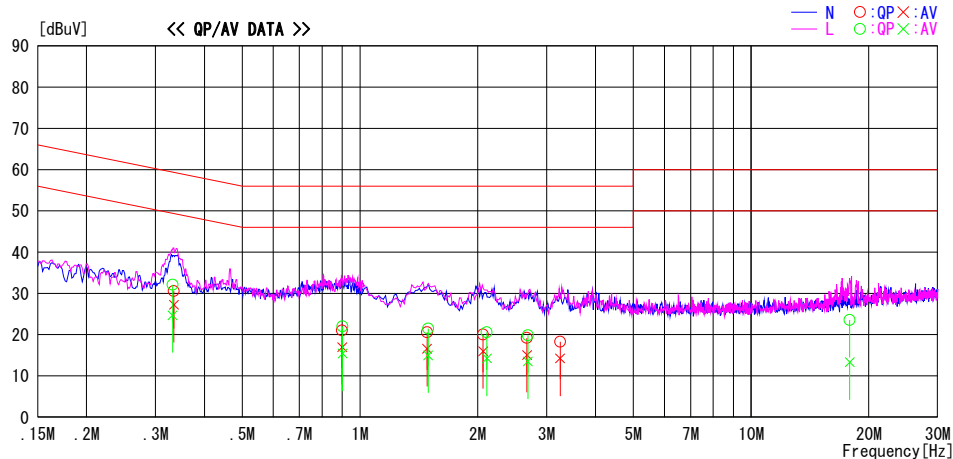
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2013/01/22

Report No. : 33FE0016-H0

Temp./Humi. : 23deg. C / 31% RH
Engineer : Keisuke Kawamura

Mode / Remarks : 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]		
0.33415	17.2	13.8	13.4	30.6	27.2	59.3	49.3	28.7	22.1	N	
0.90025	7.5	3.5	13.5	21.0	17.0	56.0	46.0	35.0	29.0	N	
1.48397	7.0	3.0	13.6	20.6	16.6	56.0	46.0	35.4	29.4	N	
2.06417	6.3	2.3	13.7	20.0	16.0	56.0	46.0	36.0	30.0	N	
2.67307	5.4	1.3	13.8	19.2	15.1	56.0	46.0	36.8	30.9	N	
3.24751	4.4	0.3	13.9	18.3	14.2	56.0	46.0	37.7	31.8	N	
0.33181	18.7	11.3	13.4	32.1	24.7	59.4	49.4	27.3	24.7	L	
0.90225	8.5	1.9	13.5	22.0	15.4	56.0	46.0	34.0	30.6	L	
1.49397	7.9	1.4	13.6	21.5	15.0	56.0	46.0	34.5	31.0	L	
2.10929	6.9	0.5	13.7	20.6	14.2	56.0	46.0	35.4	31.8	L	
2.68819	6.0	-0.3	13.8	19.8	13.5	56.0	46.0	36.2	32.5	L	
17.86885	7.1	-3.2	16.5	23.6	13.3	60.0	50.0	36.4	36.7	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.

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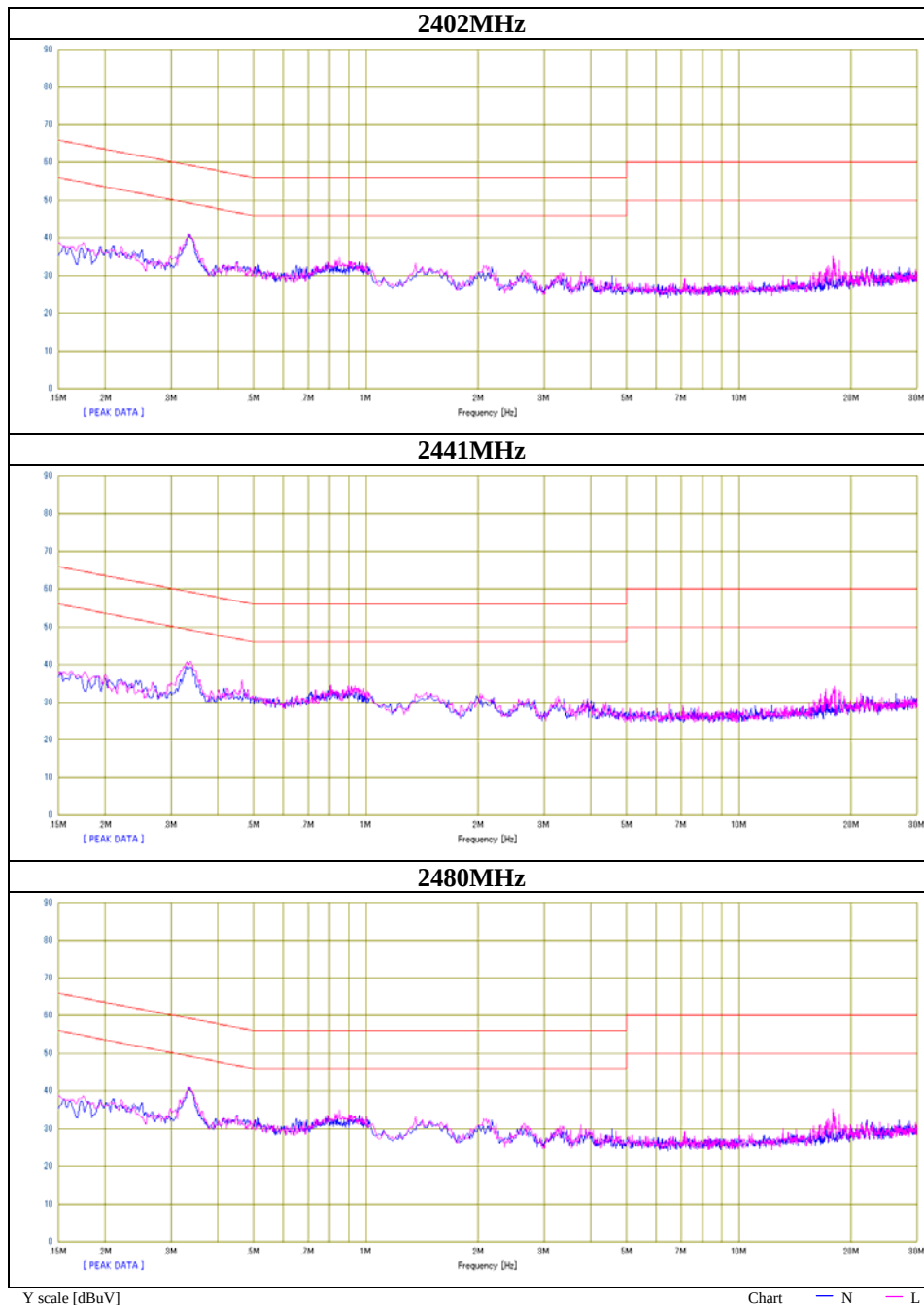
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Conducted Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	33FE0016-HO
Date	1/22/2013
Temperature/ Humidity	23deg. C / 31% RH
Engineer	Keisuke Kawamura
Mode	Tx 3DH5

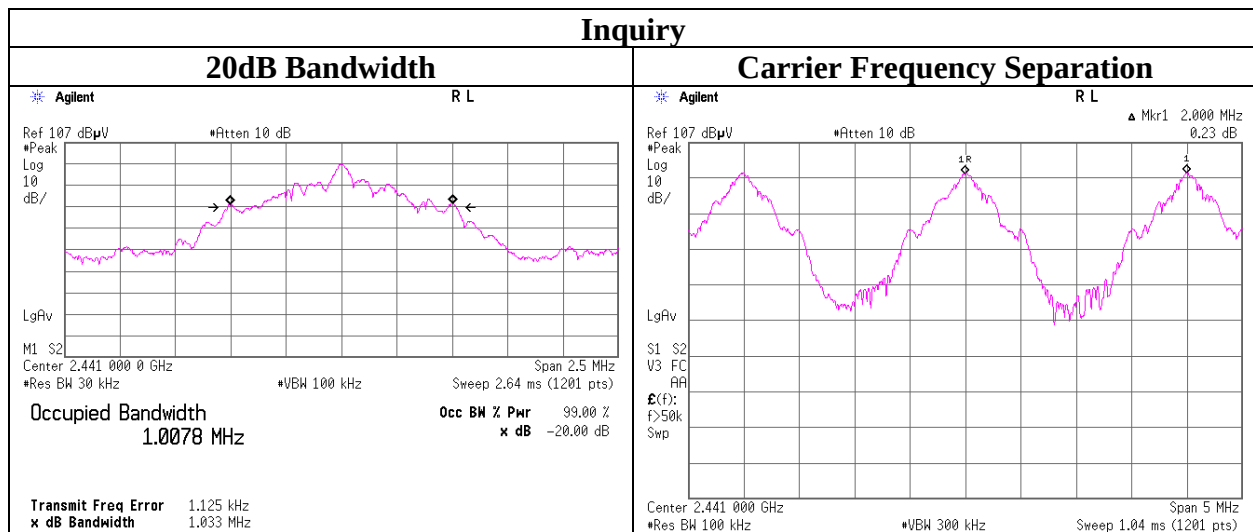


20dB Bandwidth and Carrier Frequency Separation

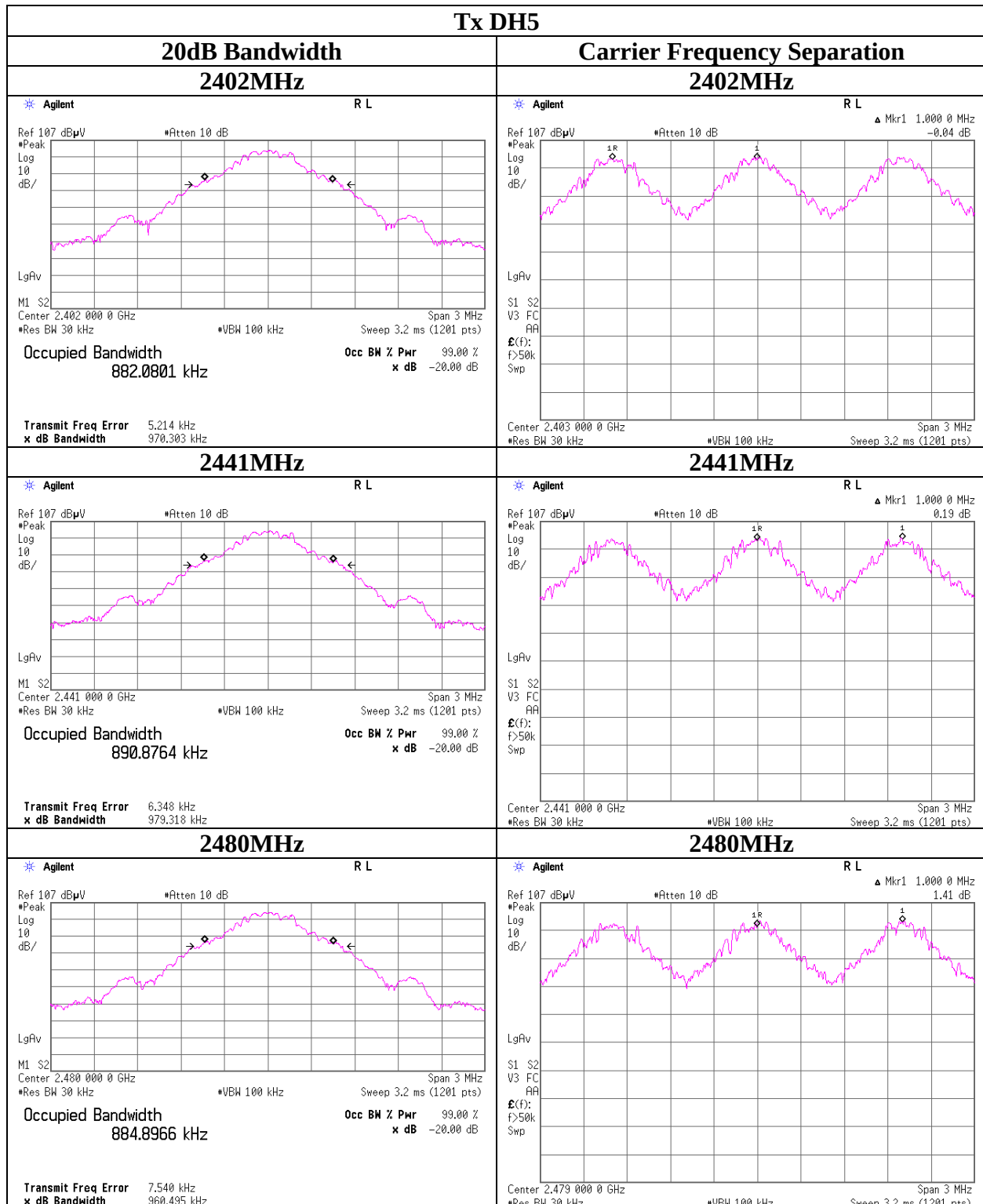
Test place Head Office EMC Lab. No.7 shielded room
Report No. 33FE0016-HO
Date 01/22/2013
Temperature/ Humidity 23deg. C / 34% RH
Engineer Shinya Watanabe
Mode Tx (Hopping on) DH5/3DH5/Inquiry

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.970	1.000	>= 0.647
DH5	2441.0	0.979	1.000	>= 0.653
DH5	2480.0	0.960	1.000	>= 0.640
3DH5	2402.0	1.344	1.000	>= 0.896
3DH5	2441.0	1.335	1.000	>= 0.890
3DH5	2480.0	1.335	1.000	>= 0.890
Inquiry	2441.0	1.033	2.000	>= 0.689

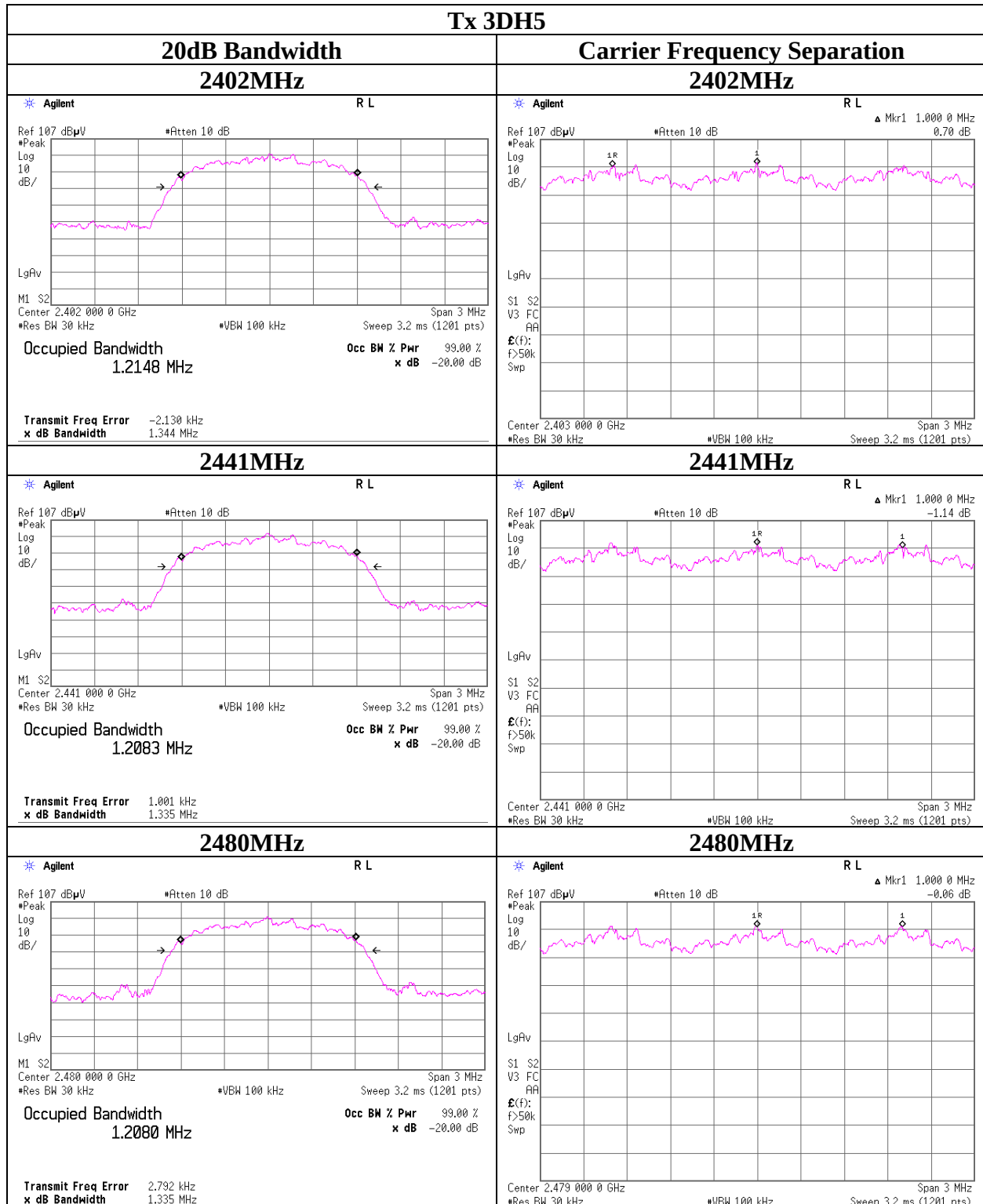
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
No limit applies to 20dB Bandwidth.



20dB Bandwidth and Carrier Frequency Separation



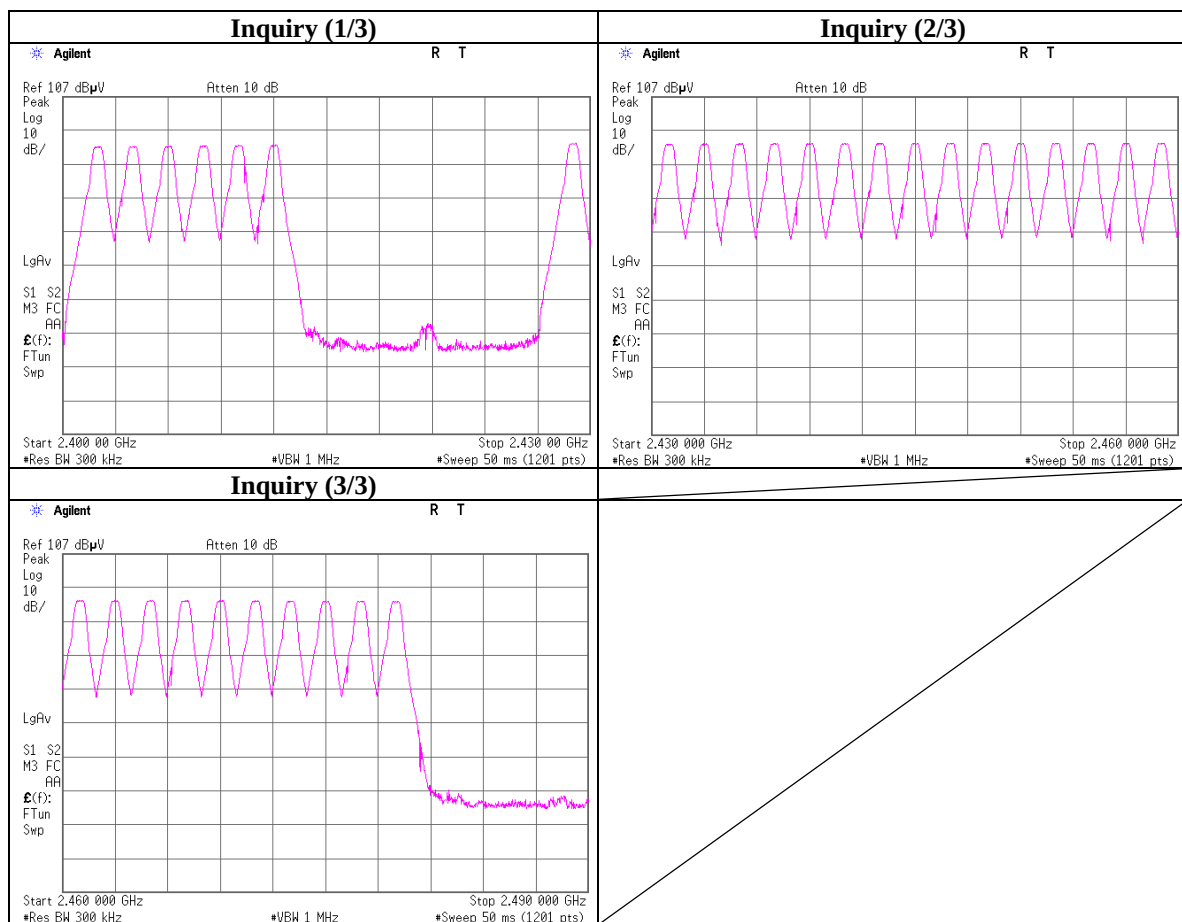
20dB Bandwidth and Carrier Frequency Separation



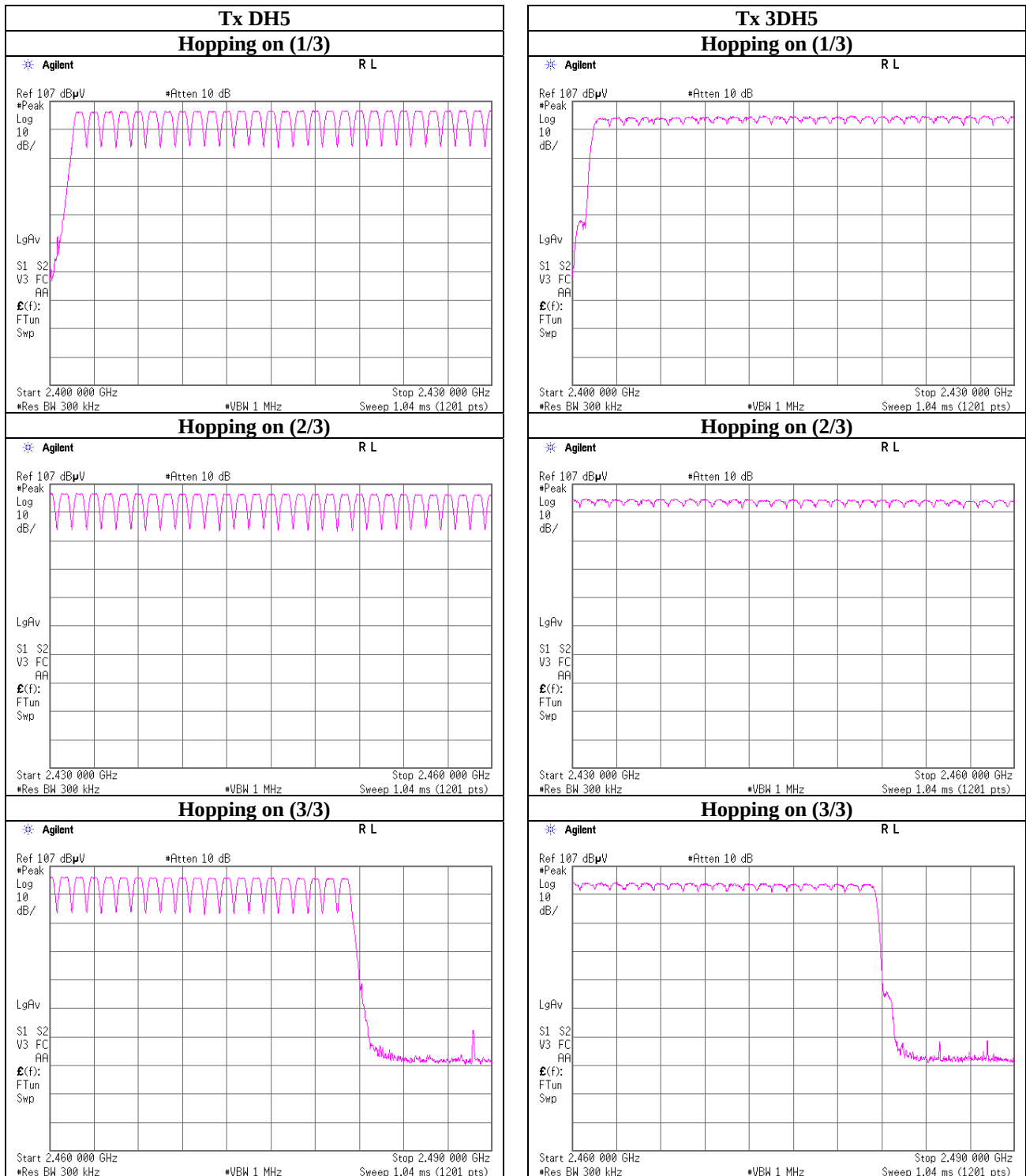
Number of Hopping Frequency

Test place	Head Office EMC Lab. No.7 shielded room
Report No.	33FE0016-HO
Date	01/22/2013
Temperature/ Humidity	23deg. C / 34% RH
Engineer	Shinya Watanabe
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

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



Number of Hopping Frequency



Dwell time

Test place	Head Office EMC Lab. No.7 shielded room
Report No.	33FE0016-HO
Date	01/22/2013
Temperature/ Humidity	23deg. C / 34% RH
Engineer	Keisuke Kawamura
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	51.4 times	/	5 sec.	x	31.6 sec. = 325 times	0.420	137	400
DH3	21.4 times	/	5 sec.	x	31.6 sec. = 136 times	1.681	229	400
DH5	13.4 times	/	5 sec.	x	31.6 sec. = 85 times	2.963	252	400
3DH1	50.8 times	/	5 sec.	x	31.6 sec. = 322 times	0.427	137	400
3DH3	22.2 times	/	5 sec.	x	31.6 sec. = 141 times	1.681	237	400
3DH5	14.6 times	/	5 sec.	x	31.6 sec. = 93 times	2.938	273	400
Inquiry	101.0 times	/	1 sec.	x	12.8 sec. = 1293 times	0.119	154	400

Sample Calculation

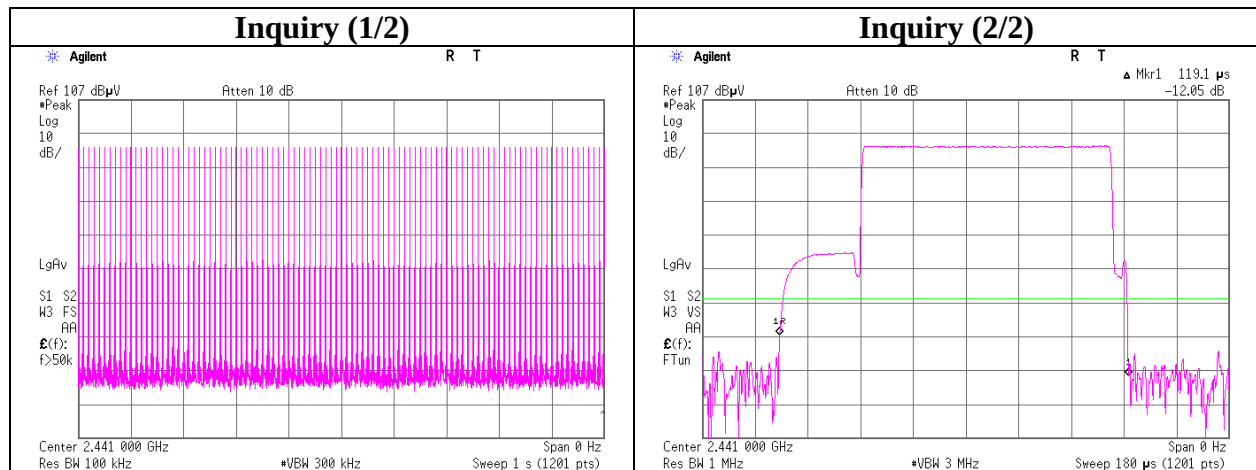
Result = Number of transmission x Length of transmission time

*Average data of 5 tests.(except Inquiry)

Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	52	52	51	51	51	51.4
DH3	26	21	21	19	20	21.4
DH5	18	12	13	12	12	13.4
3DH1	50	51	51	51	51	50.8
3DH3	25	20	22	21	23	22.2
3DH5	17	13	13	16	14	14.6

Sample Calculation

Average= Summation(Sampling 1 to 5) / 5



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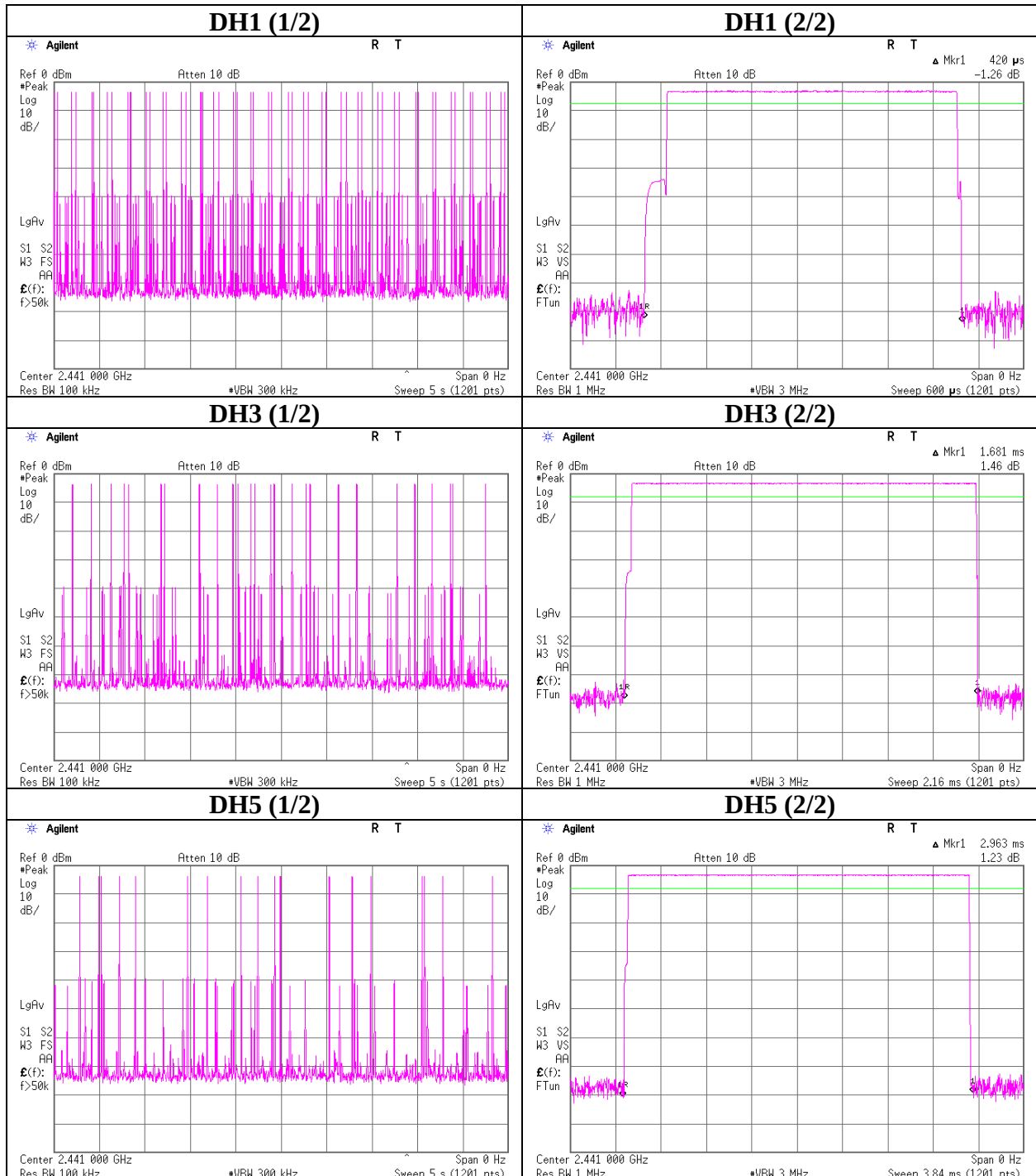
Head Office EMC Lab.

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

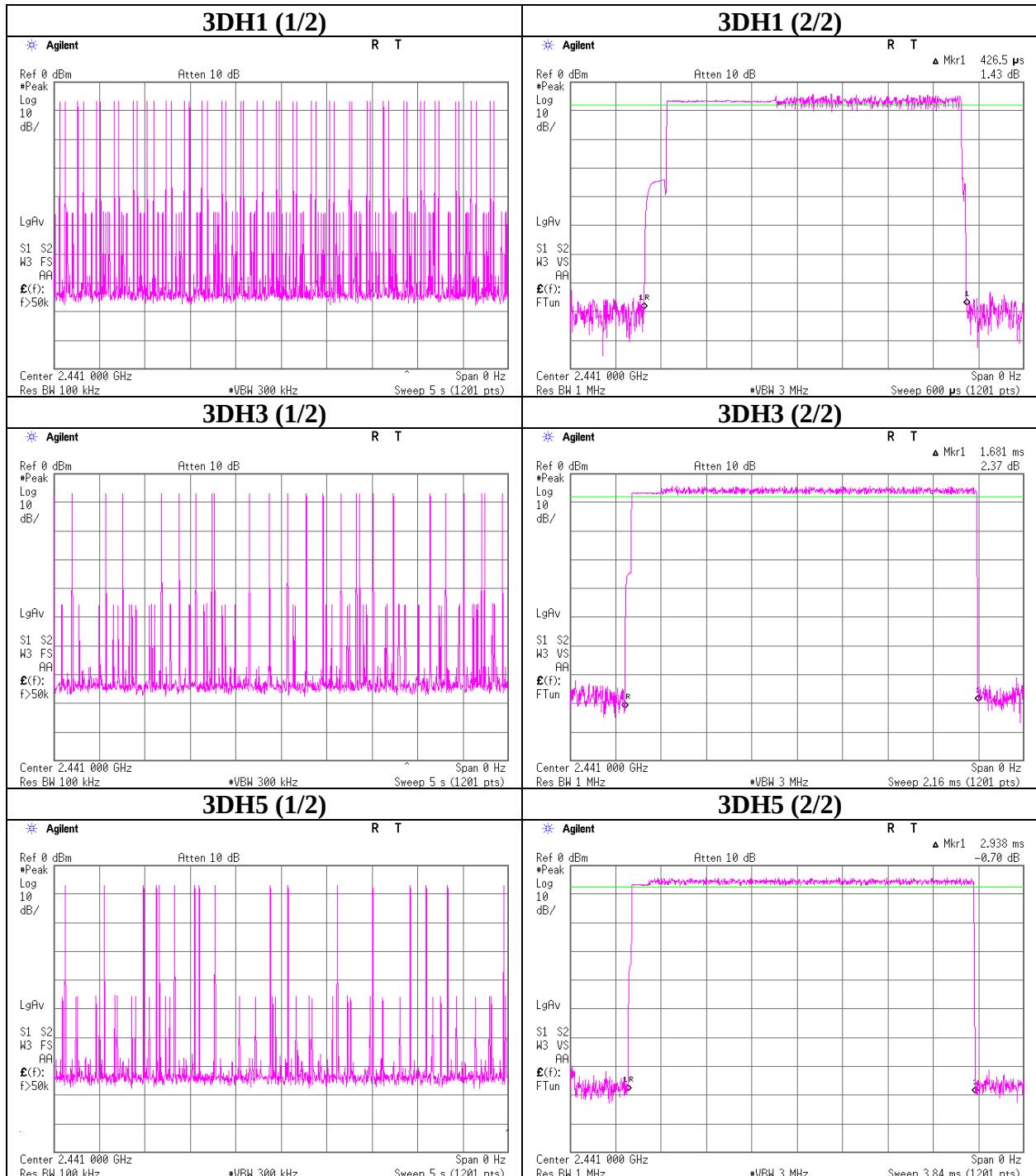
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Facsimile : +81 596 24 8124

Dwell time



Dwell time



Maximum Peak Output Power

Test place Head Office EMC Lab. No.7 shielded room
Report No. 33FE0016-HO
Date 01/22/2013
Temperature/ Humidity 23deg. C / 34% RH
Engineer Keisuke Kawamura
Mode Tx (Hopping off) DH5/2DH5/3DH5

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-3.72	0.83	9.95	7.06	5.08	20.97	125	13.91
DH5	2441.0	-3.45	0.83	9.95	7.33	5.41	20.97	125	13.64
DH5	2480.0	-4.28	0.84	9.95	6.51	4.48	20.97	125	14.46
2DH5	2402.0	-4.85	0.83	9.95	5.93	3.92	20.97	125	15.04
2DH5	2441.0	-4.45	0.83	9.95	6.33	4.30	20.97	125	14.64
2DH5	2480.0	-5.15	0.84	9.95	5.64	3.66	20.97	125	15.33
3DH5	2402.0	-4.34	0.83	9.95	6.44	4.41	20.97	125	14.53
3DH5	2441.0	-4.09	0.83	9.95	6.69	4.67	20.97	125	14.28
3DH5	2480.0	-4.75	0.84	9.95	6.04	4.02	20.97	125	14.93

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.

Frequency separation could not meet the requirement of over 20dB BW without 2/3 relaxation, 125mW power limit was applied to it.

Average Output Power (Reference data for SAR testing)

Test place Head Office EMC Lab. No.7 shielded room
Report No. 33FE0016-HO
Date 01/22/2013
Temperature/ Humidity 23deg. C / 34% RH
Engineer Keisuke Kawamura
Mode Tx (Hopping off) DH5/2DH5/3DH5

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm]	[mW]
DH5	2402.0	-5.02	0.83	9.95	5.76	3.77
DH5	2441.0	-4.80	0.83	9.95	5.98	3.96
DH5	2480.0	-5.64	0.84	9.95	5.15	3.27
2DH5	2402.0	-8.40	0.83	9.95	2.38	1.73
2DH5	2441.0	-8.04	0.83	9.95	2.74	1.88
2DH5	2480.0	-8.79	0.84	9.95	2.00	1.58
3DH5	2402.0	-8.40	0.83	9.95	2.38	1.73
3DH5	2441.0	-8.05	0.83	9.95	2.73	1.87
3DH5	2480.0	-8.78	0.84	9.95	2.01	1.59

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

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Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 33FE0016-HO
Date 01/19/2013 01/20/2013
Temperature/ Humidity 22deg. C / 43% RH 22deg. C / 38% RH
Engineer Satofumi Matsuyama Motoya Imura
1-10GHz Below 1GHz, Above 10GHz
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	80.877	QP	25.7	6.6	7.3	28.5	11.1	40.0	28.9	
Hori	90.152	QP	25.6	8.2	7.4	28.4	12.8	43.5	30.7	
Hori	240.002	QP	25.9	17.1	8.5	27.6	23.9	46.0	22.1	
Hori	403.860	QP	22.3	17.4	9.4	28.4	20.7	46.0	25.3	
Hori	480.008	QP	23.1	17.9	9.7	28.7	22.0	46.0	24.0	
Hori	601.097	QP	23.0	19.2	10.3	28.8	23.7	46.0	22.3	
Hori	2390.000	PK	53.1	27.4	2.4	35.7	47.2	73.9	26.7	
Hori	4804.000	PK	51.3	31.2	4.2	34.9	51.8	73.9	22.1	
Hori	7206.000	PK	41.7	35.9	4.9	34.9	47.6	73.9	26.3	
Hori	9608.000	PK	42.3	38.8	5.7	35.4	51.4	73.9	22.5	
Hori	2390.000	AV	38.9	27.4	2.4	35.7	33.0	53.9	20.9	
Hori	4804.000	AV	42.3	31.2	4.2	34.9	42.8	53.9	11.1	
Hori	7206.000	AV	31.1	35.9	4.9	34.9	37.0	53.9	16.9	
Hori	9608.000	AV	31.6	38.8	5.7	35.4	40.7	53.9	13.2	
Vert	80.716	QP	30.9	6.5	7.3	28.5	16.2	40.0	23.8	
Vert	90.188	QP	28.5	8.2	7.4	28.4	15.7	43.5	27.8	
Vert	240.002	QP	30.7	17.1	8.5	27.6	28.7	46.0	17.3	
Vert	403.815	QP	22.3	17.4	9.4	28.4	20.7	46.0	25.3	
Vert	480.018	QP	23.8	17.9	9.7	28.7	22.7	46.0	23.3	
Vert	601.078	QP	23.1	19.2	10.3	28.8	23.8	46.0	22.2	
Vert	2390.000	PK	50.3	27.4	2.4	35.7	44.4	73.9	29.5	
Vert	4804.000	PK	46.9	31.2	4.2	34.9	47.4	73.9	26.5	
Vert	7206.000	PK	42.3	35.9	4.9	34.9	48.2	73.9	25.7	
Vert	9608.000	PK	43.1	38.8	5.7	35.4	52.2	73.9	21.7	
Vert	2390.000	AV	35.9	27.4	2.4	35.7	30.0	53.9	23.9	
Vert	4804.000	AV	36.7	31.2	4.2	34.9	37.2	53.9	16.7	
Vert	7206.000	AV	31.1	35.9	4.9	34.9	37.0	53.9	16.9	
Vert	9608.000	AV	31.6	38.8	5.7	35.4	40.7	53.9	13.2	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 33FE0016-HO
Date 01/19/2013
Temperature/ Humidity 22 deg. C / 43% RH
Engineer Satofumi Matsuyama

Mode Tx, DH5 2402MHz

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	dBuV/m	dBuV/m	[dB]	
Hori	2402.000	PK	113.3	27.5	2.4	35.7	107.5	-	-	Carrier
Hori	2400.000	PK	54.2	27.5	2.4	35.7	48.4	87.5	39.1	
Vert	2402.000	PK	110.2	27.5	2.4	35.7	104.4	-	-	Carrier
Vert	2400.000	PK	50.9	27.5	2.4	35.7	45.1	84.4	39.3	

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. 33FE0016-HO
Date 01/19/2013 01/20/2013
Temperature/ Humidity 22deg. C / 43% RH 22deg. C / 38% RH
Engineer Satofumi Matsuyama Motoya Imura
1-10GHz Below 1GHz, Above 10GHz
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	80.732	QP	25.6	6.5	7.3	28.5	10.9	40.0	29.1	
Hori	90.153	QP	25.3	8.2	7.4	28.4	12.5	43.5	31.0	
Hori	240.001	QP	25.4	17.1	8.5	27.6	23.4	46.0	22.6	
Hori	403.857	QP	22.3	17.4	9.4	28.4	20.7	46.0	25.3	
Hori	480.015	QP	23.1	17.9	9.7	28.7	22.0	46.0	24.0	
Hori	601.088	QP	23.1	19.2	10.3	28.8	23.8	46.0	22.2	
Hori	4882.000	PK	48.2	31.4	4.2	34.9	48.9	73.9	25.0	
Hori	7323.000	PK	42.9	36.0	4.9	34.9	48.9	73.9	25.0	
Hori	9764.000	PK	42.5	39.0	5.7	35.4	51.8	73.9	22.1	
Hori	4882.000	AV	36.7	31.4	4.2	34.9	37.4	53.9	16.5	
Hori	7323.000	AV	31.4	36.0	4.9	34.9	37.4	53.9	16.5	
Hori	9764.000	AV	31.6	39.0	5.7	35.4	40.9	53.9	13.0	
Vert	80.716	QP	29.8	6.5	7.3	28.5	15.1	40.0	24.9	
Vert	90.188	QP	28.4	8.2	7.4	28.4	15.6	43.5	27.9	
Vert	240.001	QP	28.9	17.1	8.5	27.6	26.9	46.0	19.1	
Vert	403.820	QP	22.3	17.4	9.4	28.4	20.7	46.0	25.3	
Vert	480.018	QP	23.8	17.9	9.7	28.7	22.7	46.0	23.3	
Vert	601.078	QP	23.1	19.2	10.3	28.8	23.8	46.0	22.2	
Vert	4882.000	PK	45.3	31.4	4.2	34.9	46.0	73.9	27.9	
Vert	7323.000	PK	41.8	36.0	4.9	34.9	47.8	73.9	26.1	
Vert	9764.000	PK	42.7	39.0	5.7	35.4	52.0	73.9	21.9	
Vert	4882.000	AV	33.6	31.4	4.2	34.9	34.3	53.9	19.6	
Vert	7323.000	AV	31.4	36.0	4.9	34.9	37.4	53.9	16.5	
Vert	9764.000	AV	31.6	39.0	5.7	35.4	40.9	53.9	13.0	

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).

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 33FE0016-HO
Date 01/19/2013 01/20/2013
Temperature/ Humidity 22deg. C / 43% RH 22deg. C / 38% RH
Engineer Satofumi Matsuyama Motoya Imura
1-10GHz Below 1GHz, Above 10GHz
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	81.150	QP	25.7	6.6	7.3	28.5	11.1	40.0	28.9	
Hori	90.145	QP	25.7	8.2	7.4	28.4	12.9	43.5	30.6	
Hori	240.002	QP	25.9	17.1	8.5	27.6	23.9	46.0	22.1	
Hori	403.824	QP	22.3	17.4	9.4	28.4	20.7	46.0	25.3	
Hori	480.016	QP	23.6	17.9	9.7	28.7	22.5	46.0	23.5	
Hori	601.081	QP	23.2	19.2	10.3	28.8	23.9	46.0	22.1	
Hori	2483.500	PK	58.4	27.5	2.4	35.7	52.6	73.9	21.3	
Hori	4960.000	PK	48.4	31.6	4.2	34.9	49.3	73.9	24.6	
Hori	7440.000	PK	43.2	36.2	5.0	34.9	49.5	73.9	24.4	
Hori	9920.000	PK	43.9	39.1	5.8	35.4	53.4	73.9	20.5	
Hori	2483.500	AV	42.0	27.5	2.4	35.7	36.2	53.9	17.7	
Hori	4960.000	AV	38.2	31.6	4.2	34.9	39.1	53.9	14.8	
Hori	7440.000	AV	31.6	36.2	5.0	34.9	37.9	53.9	16.0	
Hori	9920.000	AV	32.3	39.1	5.8	35.4	41.8	53.9	12.1	
Vert	81.182	QP	29.8	6.6	7.3	28.5	15.2	40.0	24.8	
Vert	90.188	QP	28.5	8.2	7.4	28.4	15.7	43.5	27.8	
Vert	240.002	QP	27.8	17.1	8.5	27.6	25.8	46.0	20.2	
Vert	403.815	QP	22.3	17.4	9.4	28.4	20.7	46.0	25.3	
Vert	480.018	QP	23.8	17.9	9.7	28.7	22.7	46.0	23.3	
Vert	601.078	QP	23.1	19.2	10.3	28.8	23.8	46.0	22.2	
Vert	2483.500	PK	54.5	27.5	2.4	35.7	48.7	73.9	25.2	
Vert	4960.000	PK	46.4	31.6	4.2	34.9	47.3	73.9	26.6	
Vert	7440.000	PK	42.7	36.2	5.0	34.9	49.0	73.9	24.9	
Vert	9920.000	PK	44.0	39.1	5.8	35.4	53.5	73.9	20.4	
Vert	2483.500	AV	38.5	27.5	2.4	35.7	32.7	53.9	21.2	
Vert	4960.000	AV	35.1	31.6	4.2	34.9	36.0	53.9	17.9	
Vert	7440.000	AV	31.6	36.2	5.0	34.9	37.9	53.9	16.0	
Vert	9920.000	AV	32.3	39.1	5.8	35.4	41.8	53.9	12.1	

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. 33FE0016-HO
Date 01/19/2013 01/20/2013
Temperature/ Humidity 22deg. C / 43% RH 22deg. C / 38% RH
Engineer Satofumi Matsuyama Motoya Imura
1-10GHz Below 1GHz, Above 10GHz
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	73.002	QP	25.2	6.5	7.2	28.5	10.4	40.0	29.6	
Hori	90.154	QP	25.7	8.2	7.4	28.4	12.9	43.5	30.6	
Hori	240.002	QP	25.4	17.1	8.5	27.6	23.4	46.0	22.6	
Hori	403.834	QP	22.3	17.4	9.4	28.4	20.7	46.0	25.3	
Hori	480.012	QP	23.2	17.9	9.7	28.7	22.1	46.0	23.9	
Hori	601.088	QP	23.1	19.2	10.3	28.8	23.8	46.0	22.2	
Hori	2390.000	PK	52.4	27.4	2.4	35.7	46.5	73.9	27.4	
Hori	4804.000	PK	47.8	31.2	4.2	34.9	48.3	73.9	25.6	
Hori	7206.000	PK	42.2	35.9	4.9	34.9	48.1	73.9	25.8	
Hori	9608.000	PK	42.8	38.8	5.7	35.4	51.9	73.9	22.0	
Hori	2390.000	AV	37.6	27.4	2.4	35.7	31.7	53.9	22.2	
Hori	4804.000	AV	37.0	31.2	4.2	34.9	37.5	53.9	16.4	
Hori	7206.000	AV	31.2	35.9	4.9	34.9	37.1	53.9	16.8	
Hori	9608.000	AV	31.6	38.8	5.7	35.4	40.7	53.9	13.2	
Vert	73.002	QP	29.2	6.5	7.2	28.5	14.4	40.0	25.6	
Vert	90.155	QP	28.5	8.2	7.4	28.4	15.7	43.5	27.8	
Vert	240.002	QP	28.8	17.1	8.5	27.6	26.8	46.0	19.2	
Vert	403.822	QP	22.3	17.4	9.4	28.4	20.7	46.0	25.3	
Vert	480.018	QP	23.8	17.9	9.7	28.7	22.7	46.0	23.3	
Vert	601.078	QP	23.1	19.2	10.3	28.8	23.8	46.0	22.2	
Vert	2390.000	PK	49.3	27.4	2.4	35.7	43.4	73.9	30.5	
Vert	4804.000	PK	44.6	31.2	4.2	34.9	45.1	73.9	28.8	
Vert	7206.000	PK	42.3	35.9	4.9	34.9	48.2	73.9	25.7	
Vert	9608.000	PK	42.1	38.8	5.7	35.4	51.2	73.9	22.7	
Vert	2390.000	AV	35.0	27.4	2.4	35.7	29.1	53.9	24.8	
Vert	4804.000	AV	33.2	31.2	4.2	34.9	33.7	53.9	20.2	
Vert	7206.000	AV	31.2	35.9	4.9	34.9	37.1	53.9	16.8	
Vert	9608.000	AV	31.6	38.8	5.7	35.4	40.7	53.9	13.2	

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. 33FE0016-HO
Date 01/19/2013
Temperature/ Humidity 22deg. C / 43% RH
Engineer Satofumi Matsuyama
1-10GHz
Mode Tx, 3DH5 2402MHz

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2402.000	PK	110.8	27.5	2.4	35.7	105.0	-	-	Carrier
Hori	2400.000	PK	53.1	27.5	2.4	35.7	47.3	85.0	37.7	
Vert	2402.000	PK	106.7	27.5	2.4	35.7	100.9	-	-	Carrier
Vert	2400.000	PK	49.0	27.5	2.4	35.7	43.2	80.9	37.7	

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.	33FE0016-HO	
Date	01/19/2013	01/20/2013
Temperature/ Humidity	22deg. C / 43% RH	22deg. C / 38% RH
Engineer	Satofumi Matsuyama	Motoya Imura
	1-10GHz	Below 1GHz, Above 10GHz
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	72.669	QP	25.2	6.5	7.2	28.5	10.4	40.0	29.6	
Hori	90.163	QP	25.4	8.2	7.4	28.4	12.6	43.5	30.9	
Hori	240.002	QP	25.9	17.1	8.5	27.6	23.9	46.0	22.1	
Hori	403.829	QP	22.3	17.4	9.4	28.4	20.7	46.0	25.3	
Hori	480.011	QP	23.2	17.9	9.7	28.7	22.1	46.0	23.9	
Hori	601.081	QP	23.0	19.2	10.3	28.8	23.7	46.0	22.3	
Hori	4882.000	PK	47.6	31.4	4.2	34.9	48.3	73.9	25.6	
Hori	7323.000	PK	42.3	36.0	4.9	34.9	48.3	73.9	25.6	
Hori	9764.000	PK	42.1	39.0	5.7	35.4	51.4	73.9	22.5	
Hori	4882.000	AV	36.0	31.4	4.2	34.9	36.7	53.9	17.2	
Hori	7323.000	AV	31.3	36.0	4.9	34.9	37.3	53.9	16.6	
Hori	9764.000	AV	31.6	39.0	5.7	35.4	40.9	53.9	13.0	
Vert	72.662	QP	27.9	6.5	7.2	28.5	13.1	40.0	26.9	
Vert	90.188	QP	28.5	8.2	7.4	28.4	15.7	43.5	27.8	
Vert	240.002	QP	27.8	17.1	8.5	27.6	25.8	46.0	20.2	
Vert	403.822	QP	22.3	17.4	9.4	28.4	20.7	46.0	25.3	
Vert	480.018	QP	23.8	17.9	9.7	28.7	22.7	46.0	23.3	
Vert	601.078	QP	23.1	19.2	10.3	28.8	23.8	46.0	22.2	
Vert	4882.000	PK	43.9	31.4	4.2	34.9	44.6	73.9	29.3	
Vert	7323.000	PK	42.7	36.0	4.9	34.9	48.7	73.9	25.2	
Vert	9764.000	PK	43.0	39.0	5.7	35.4	52.3	73.9	21.6	
Vert	4882.000	AV	32.0	31.4	4.2	34.9	32.7	53.9	21.2	
Vert	7323.000	AV	31.3	36.0	4.9	34.9	37.3	53.9	16.6	
Vert	9764.000	AV	31.6	39.0	5.7	35.4	40.9	53.9	13.0	

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).

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. 33FE0016-HO
Date 01/19/2013 01/20/2013
Temperature/ Humidity 22deg. C / 43% RH 22deg. C / 38% RH
Engineer Satofumi Matsuyama Motoya Imura
1-10GHz Below 1GHz, Above 10GHz
Mode Tx, 3DH5 2480MHz

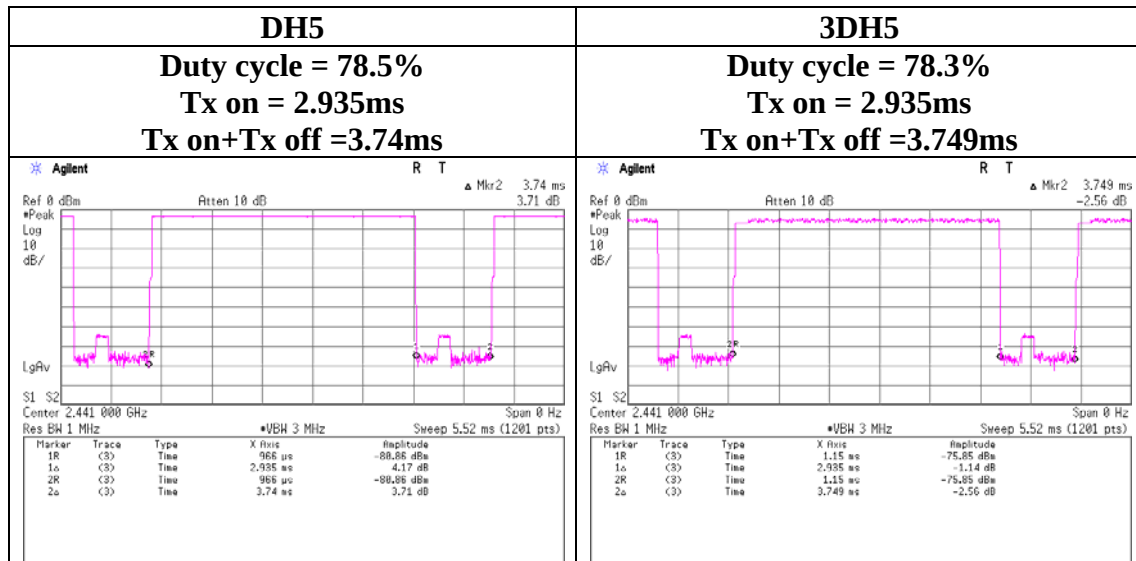
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	80.862	QP	25.5	6.6	7.3	28.5	10.9	40.0	29.1	
Hori	90.156	QP	25.4	8.2	7.4	28.4	12.6	43.5	30.9	
Hori	240.006	QP	25.4	17.1	8.5	27.6	23.4	46.0	22.6	
Hori	403.807	QP	22.3	17.4	9.4	28.4	20.7	46.0	25.3	
Hori	480.012	QP	23.0	17.9	9.7	28.7	21.9	46.0	24.1	
Hori	601.100	QP	23.0	19.2	10.3	28.8	23.7	46.0	22.3	
Hori	2483.500	PK	63.9	27.5	2.4	35.7	58.1	73.9	15.8	
Hori	4960.000	PK	46.5	31.6	4.2	34.9	47.4	73.9	26.5	
Hori	7440.000	PK	42.3	36.2	5.0	34.9	48.6	73.9	25.3	
Hori	9920.000	PK	43.8	39.1	5.8	35.4	53.3	73.9	20.6	
Hori	2483.500	AV	39.2	27.5	2.4	35.7	33.4	53.9	20.5	
Hori	4960.000	AV	34.5	31.6	4.2	34.9	35.4	53.9	18.5	
Hori	7440.000	AV	31.6	36.2	5.0	34.9	37.9	53.9	16.0	
Hori	9920.000	AV	32.3	39.1	5.8	35.4	41.8	53.9	12.1	
Vert	80.720	QP	31.4	6.5	7.3	28.5	16.7	40.0	23.3	
Vert	90.200	QP	28.4	8.2	7.4	28.4	15.6	43.5	27.9	
Vert	240.006	QP	30.9	17.1	8.5	27.6	28.9	46.0	17.1	
Vert	403.807	QP	22.6	17.4	9.4	28.4	21.0	46.0	25.0	
Vert	480.012	QP	23.8	17.9	9.7	28.7	22.7	46.0	23.3	
Vert	601.099	QP	23.0	19.2	10.3	28.8	23.7	46.0	22.3	
Vert	2483.500	PK	53.8	27.5	2.4	35.7	48.0	73.9	25.9	
Vert	4960.000	PK	44.5	31.6	4.2	34.9	45.4	73.9	28.5	
Vert	7440.000	PK	42.7	36.2	5.0	34.9	49.0	73.9	24.9	
Vert	9920.000	PK	43.9	39.1	5.8	35.4	53.4	73.9	20.5	
Vert	2483.500	AV	36.7	27.5	2.4	35.7	30.9	53.9	23.0	
Vert	4960.000	AV	32.2	31.6	4.2	34.9	33.1	53.9	20.8	
Vert	7440.000	AV	31.6	36.2	5.0	34.9	37.9	53.9	16.0	
Vert	9920.000	AV	32.3	39.1	5.8	35.4	41.8	53.9	12.1	

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

Burst rate confirmation



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Head Office EMC Lab.

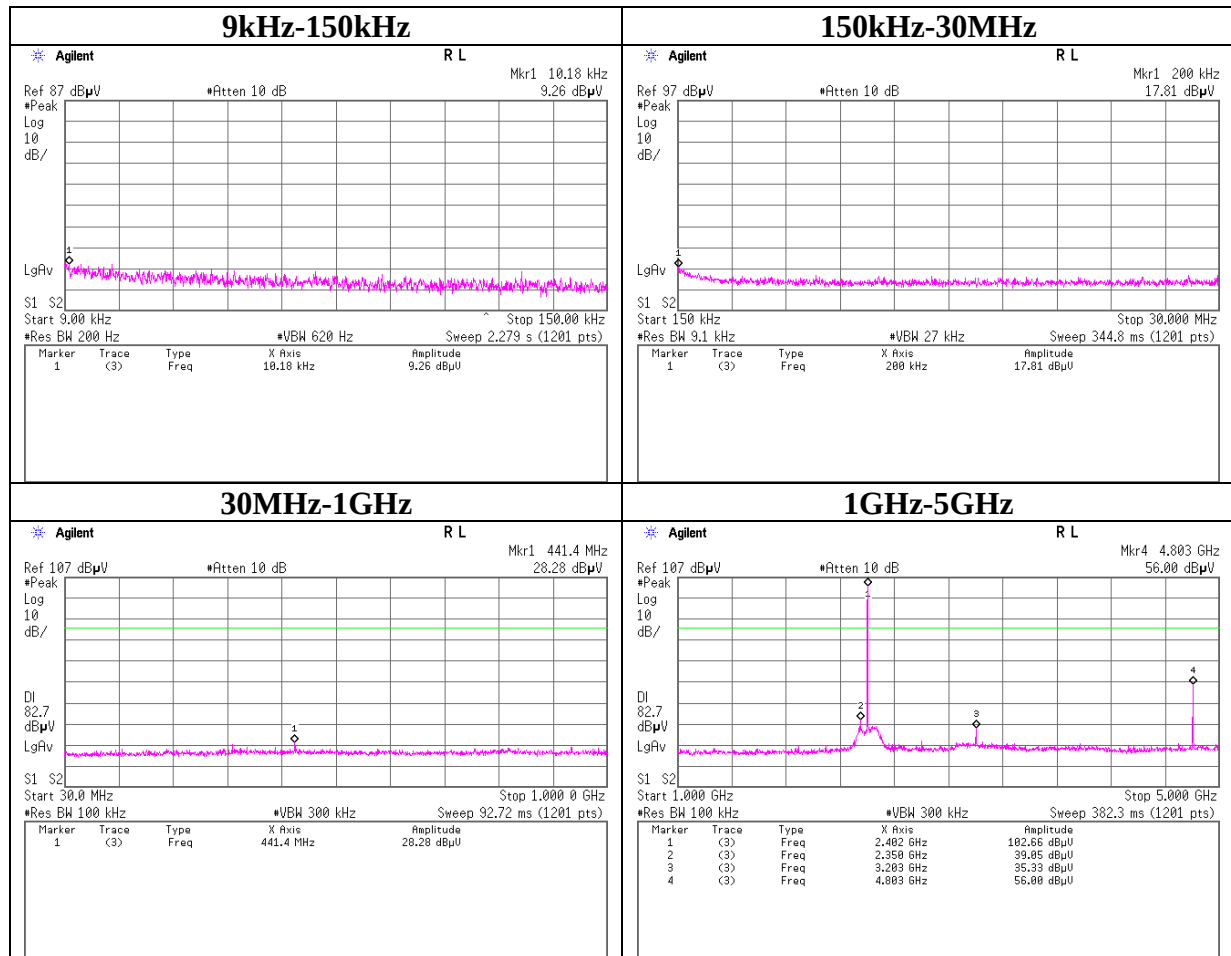
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Tx DH5 2402MHz



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Head Office EMC Lab.

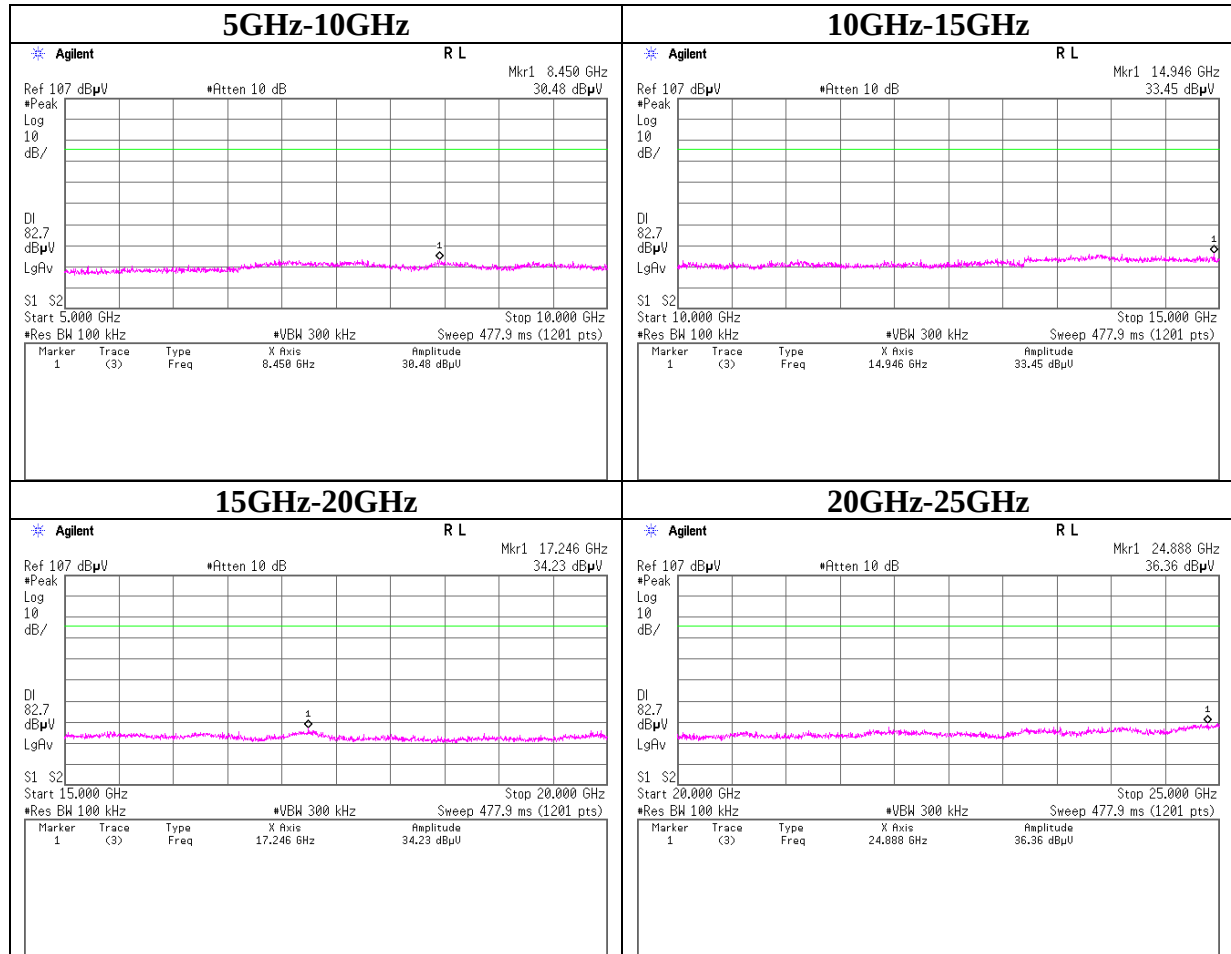
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

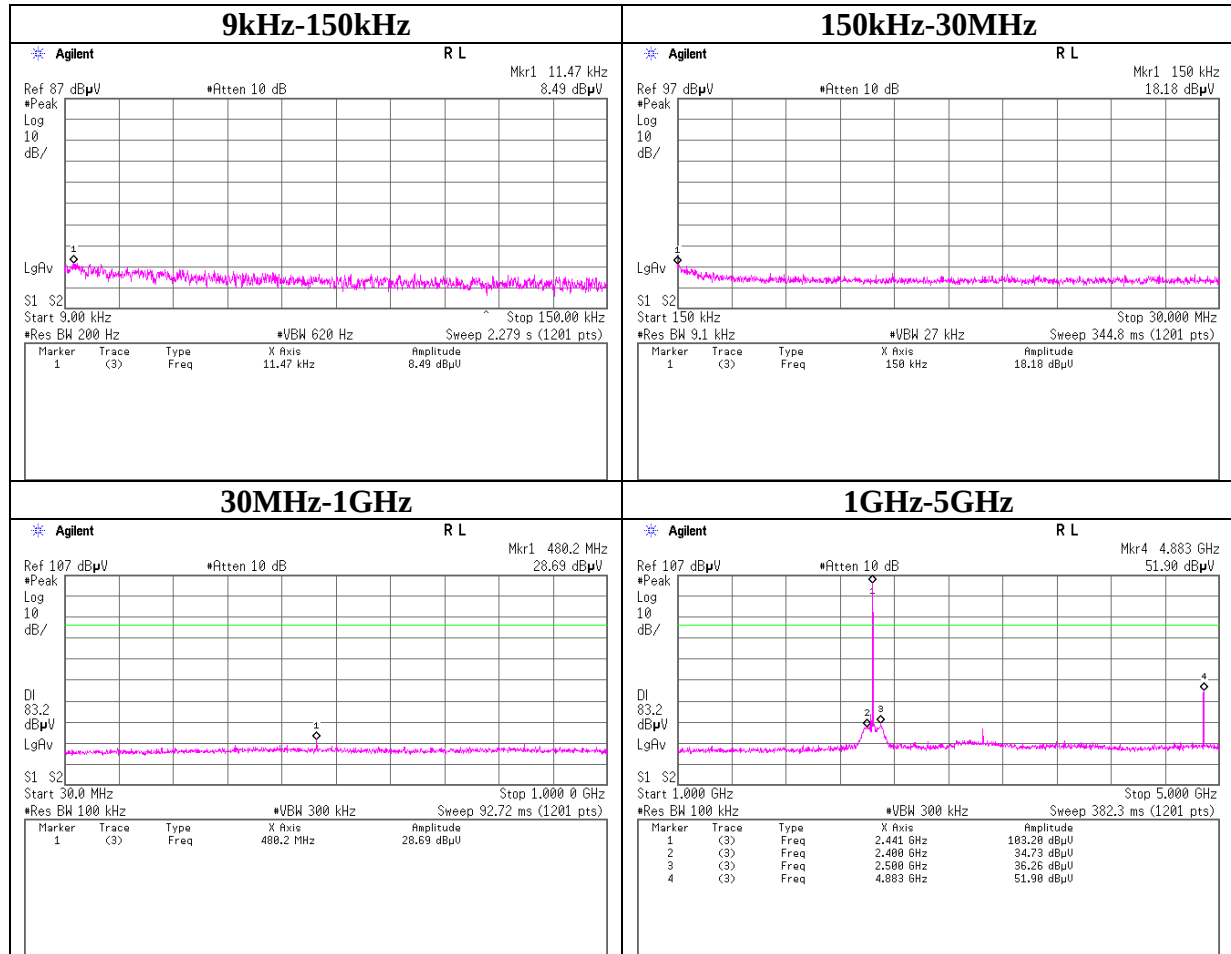
Conducted Spurious Emission

Tx DH5 2402MHz



Conducted Spurious Emission

Tx DH5 2441MHz



UL Japan, Inc.

Head Office EMC Lab.

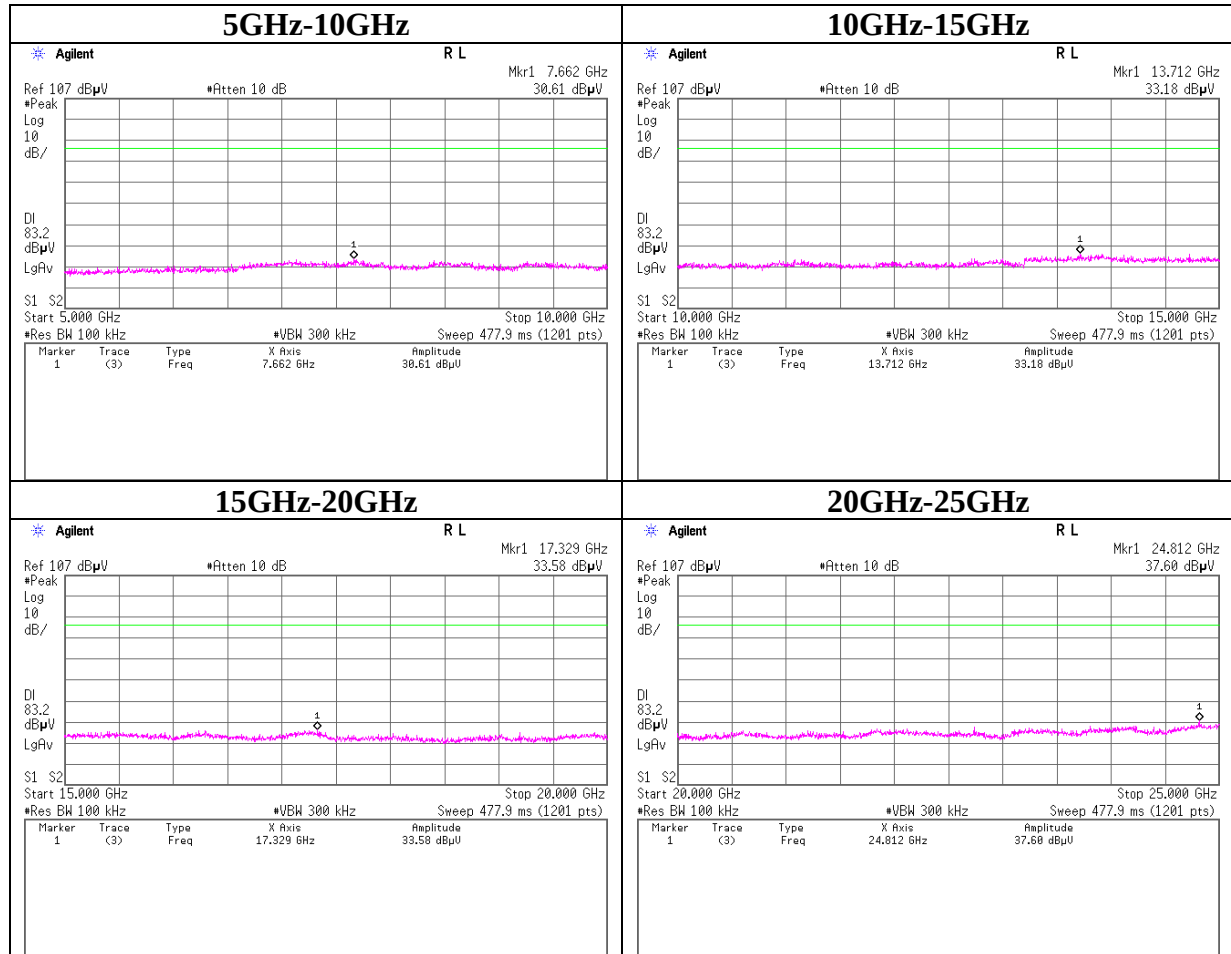
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

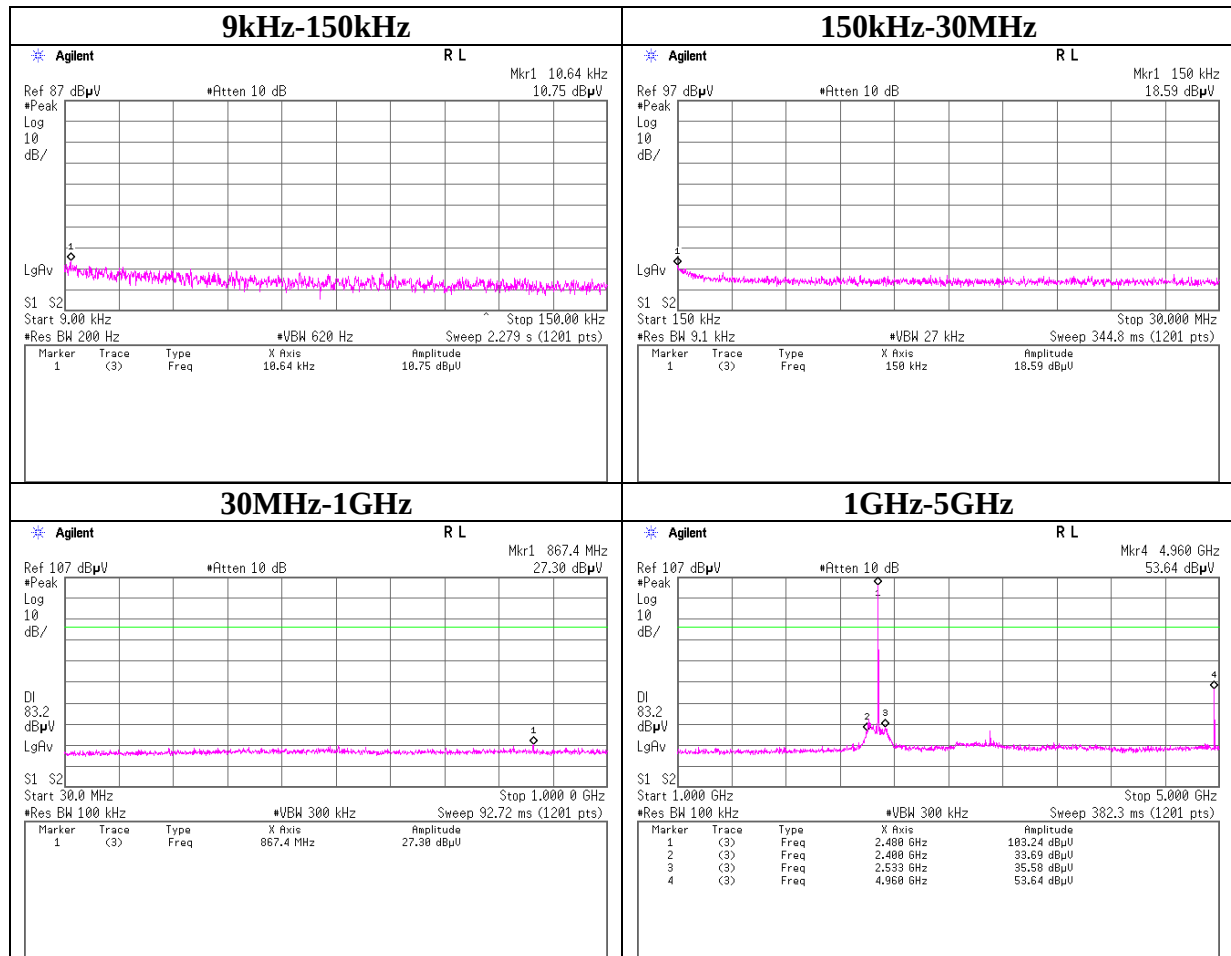
Conducted Spurious Emission

Tx DH5 2441MHz



Conducted Spurious Emission

Tx DH5 2480MHz



UL Japan, Inc.

Head Office EMC Lab.

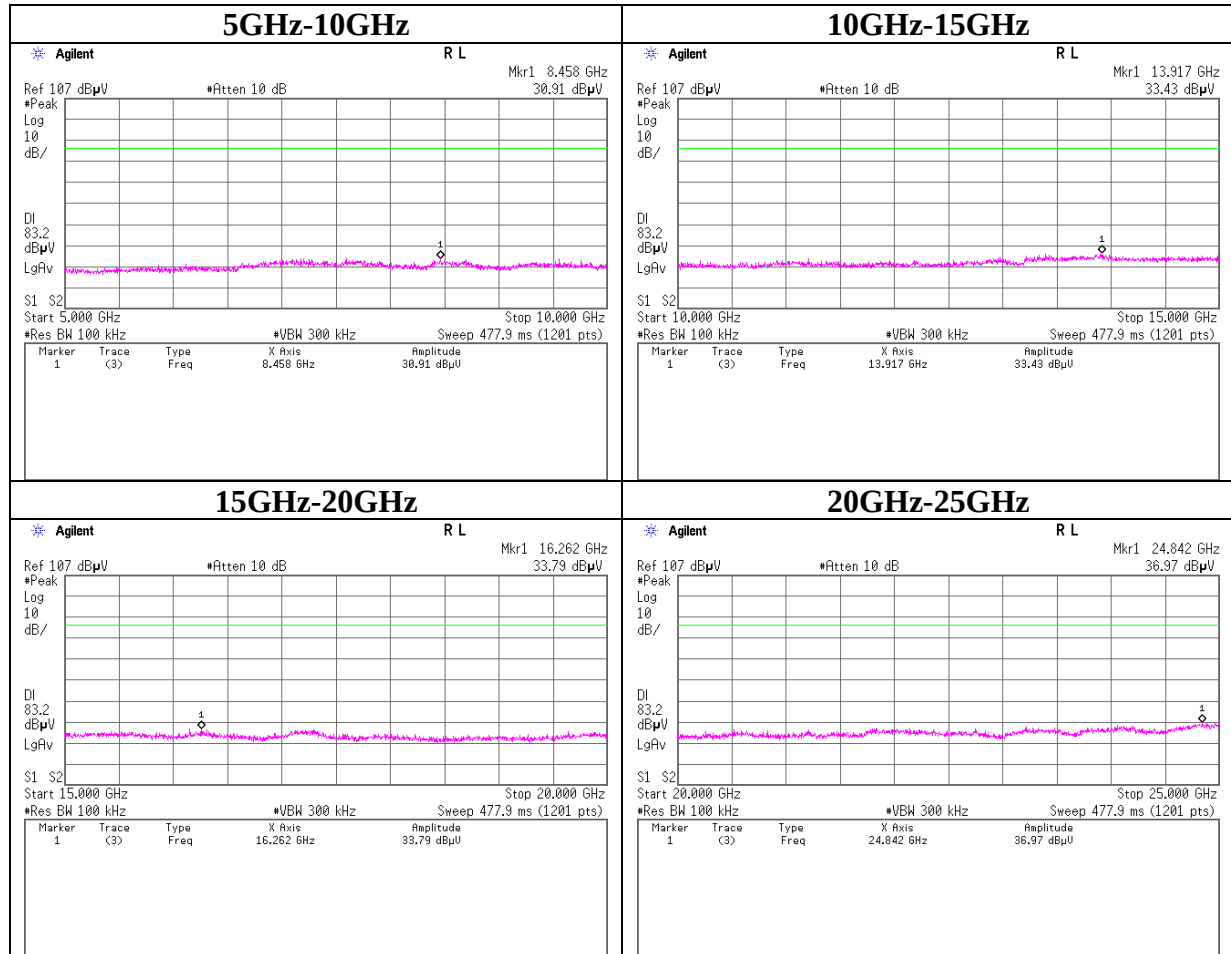
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

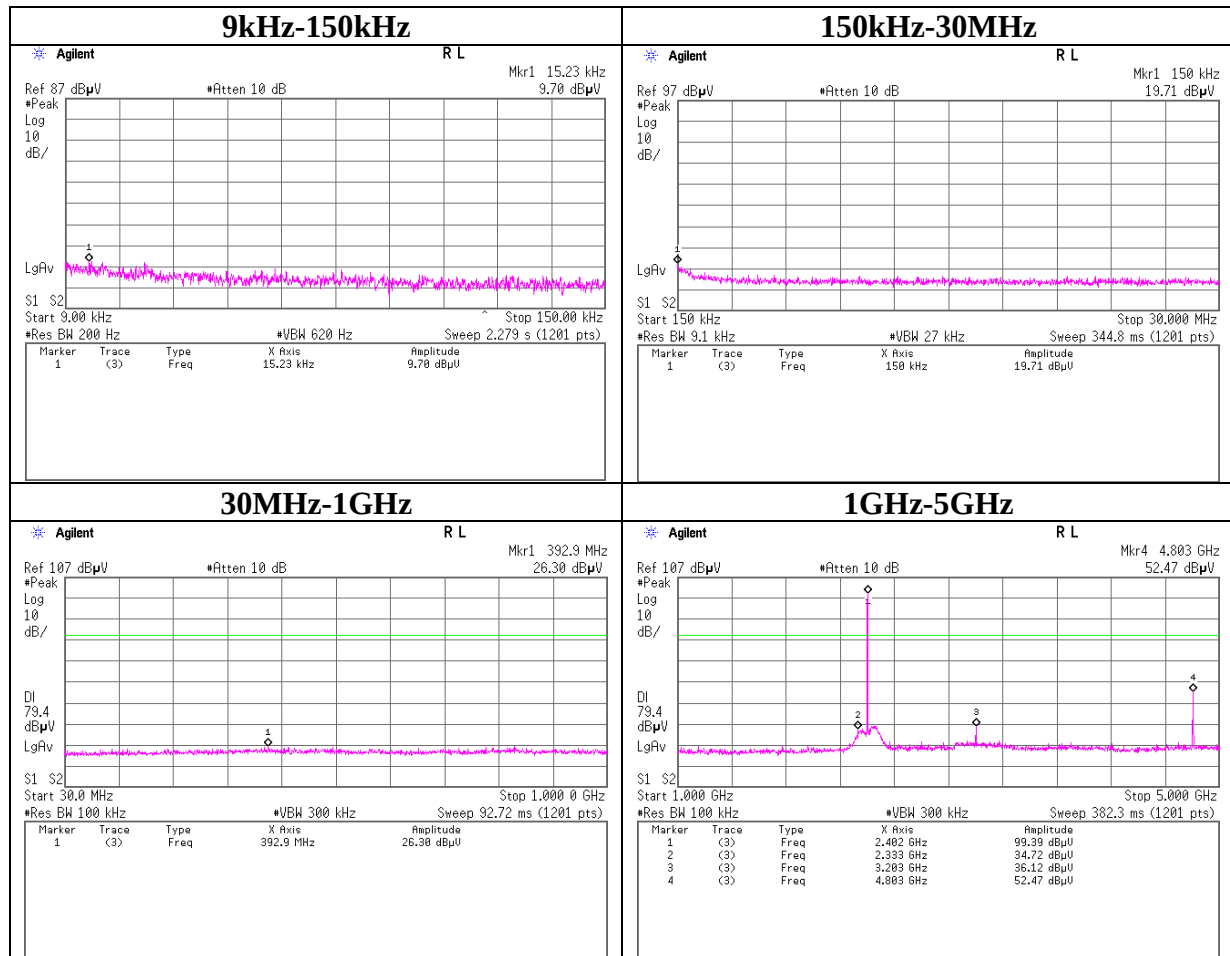
Conducted Spurious Emission

Tx DH5 2480MHz



Conducted Spurious Emission

Tx 3DH5 2402MHz



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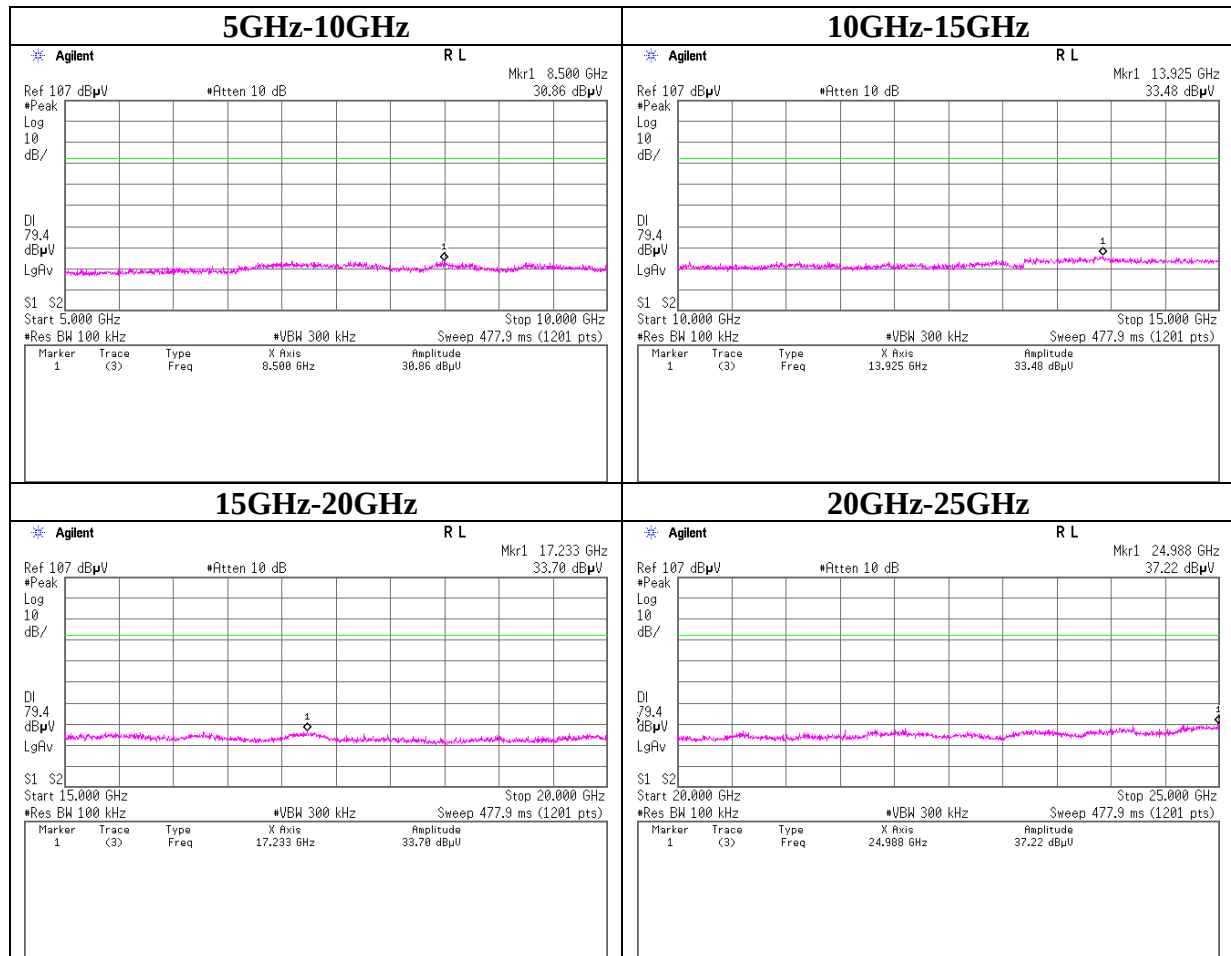
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Conducted Spurious Emission

Tx 3DH5 2402MHz



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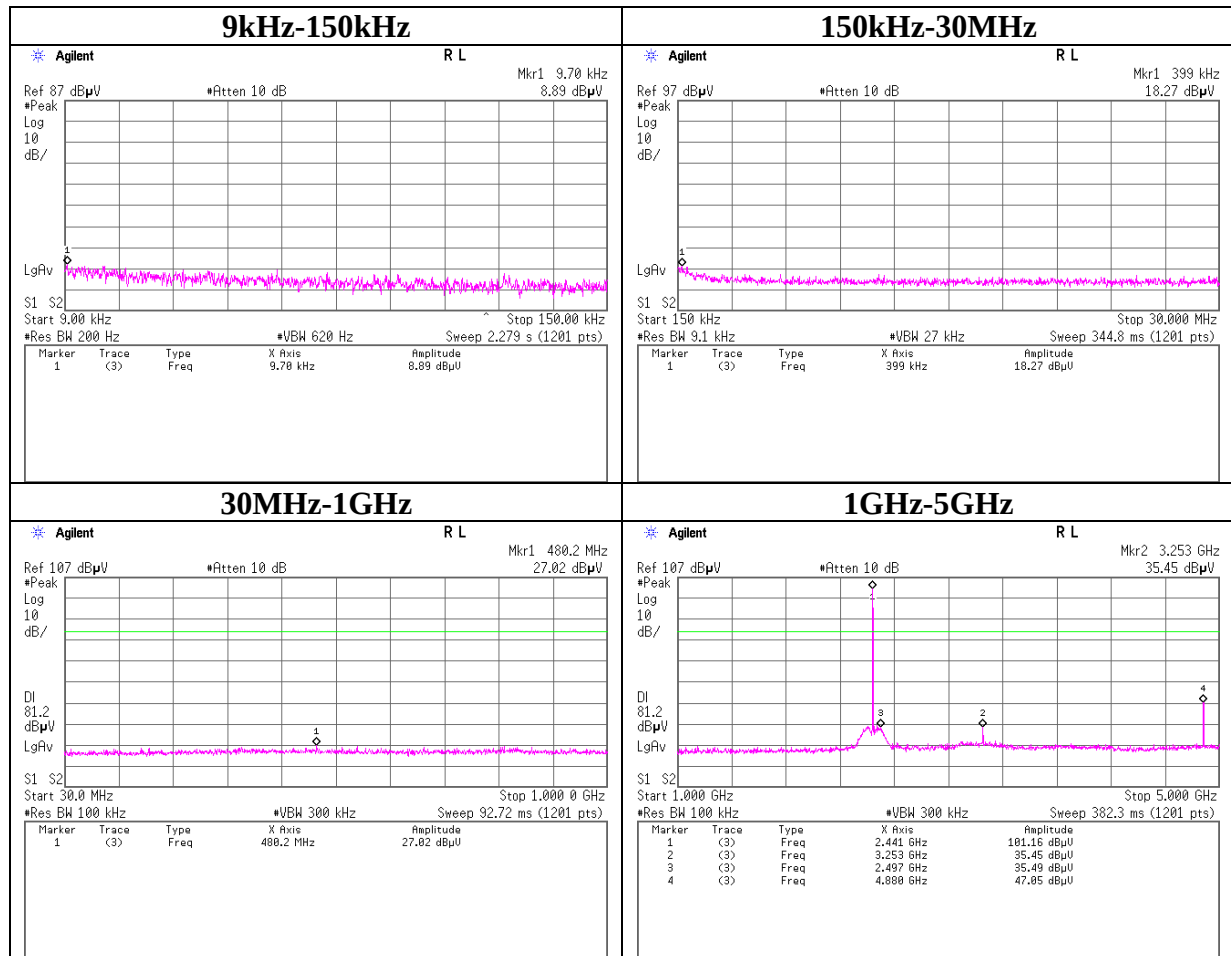
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Conducted Spurious Emission

Tx 3DH5 2441MHz



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Head Office EMC Lab.

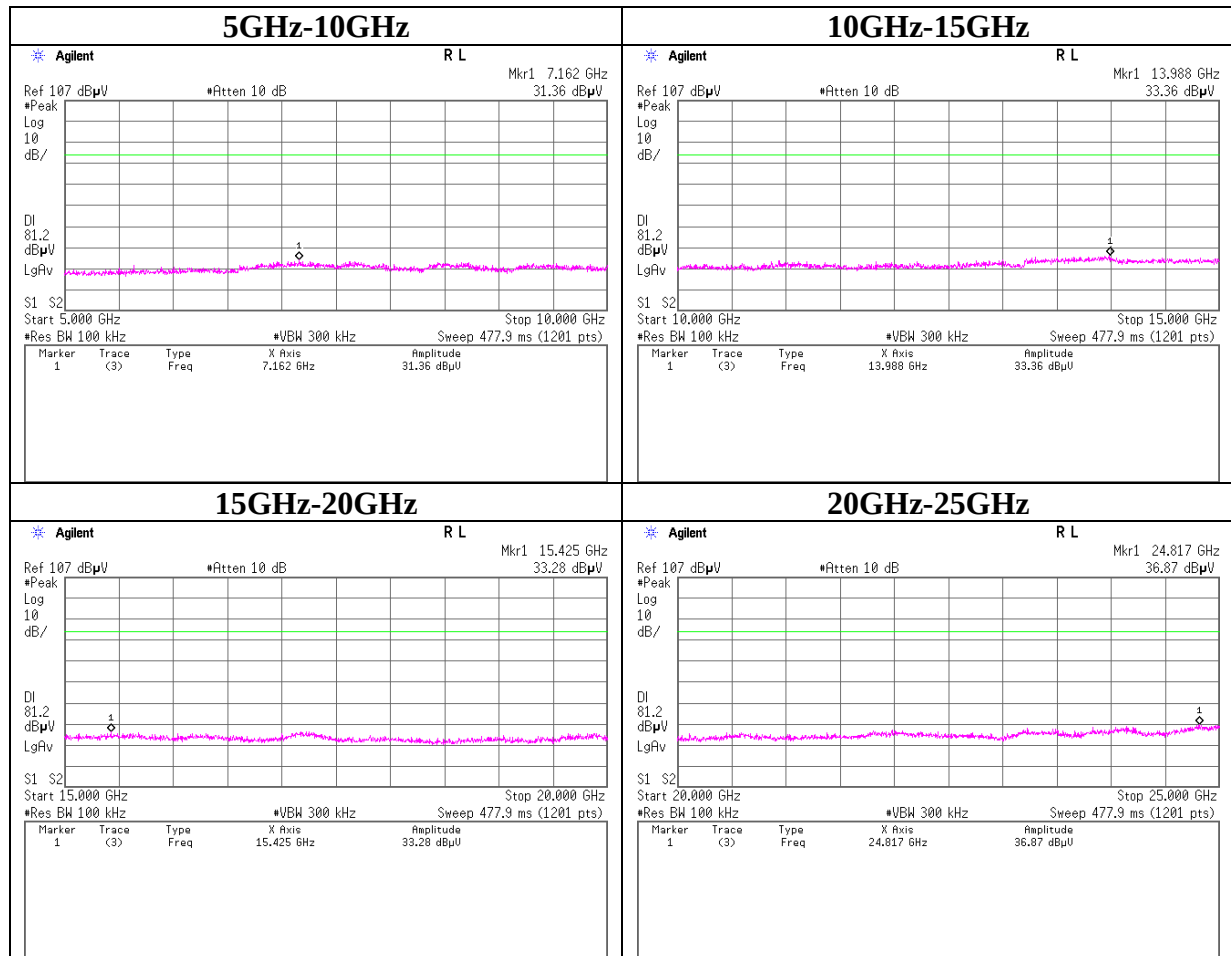
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Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Tx 3DH5 2441MHz



UL Japan, Inc.

Head Office EMC Lab.

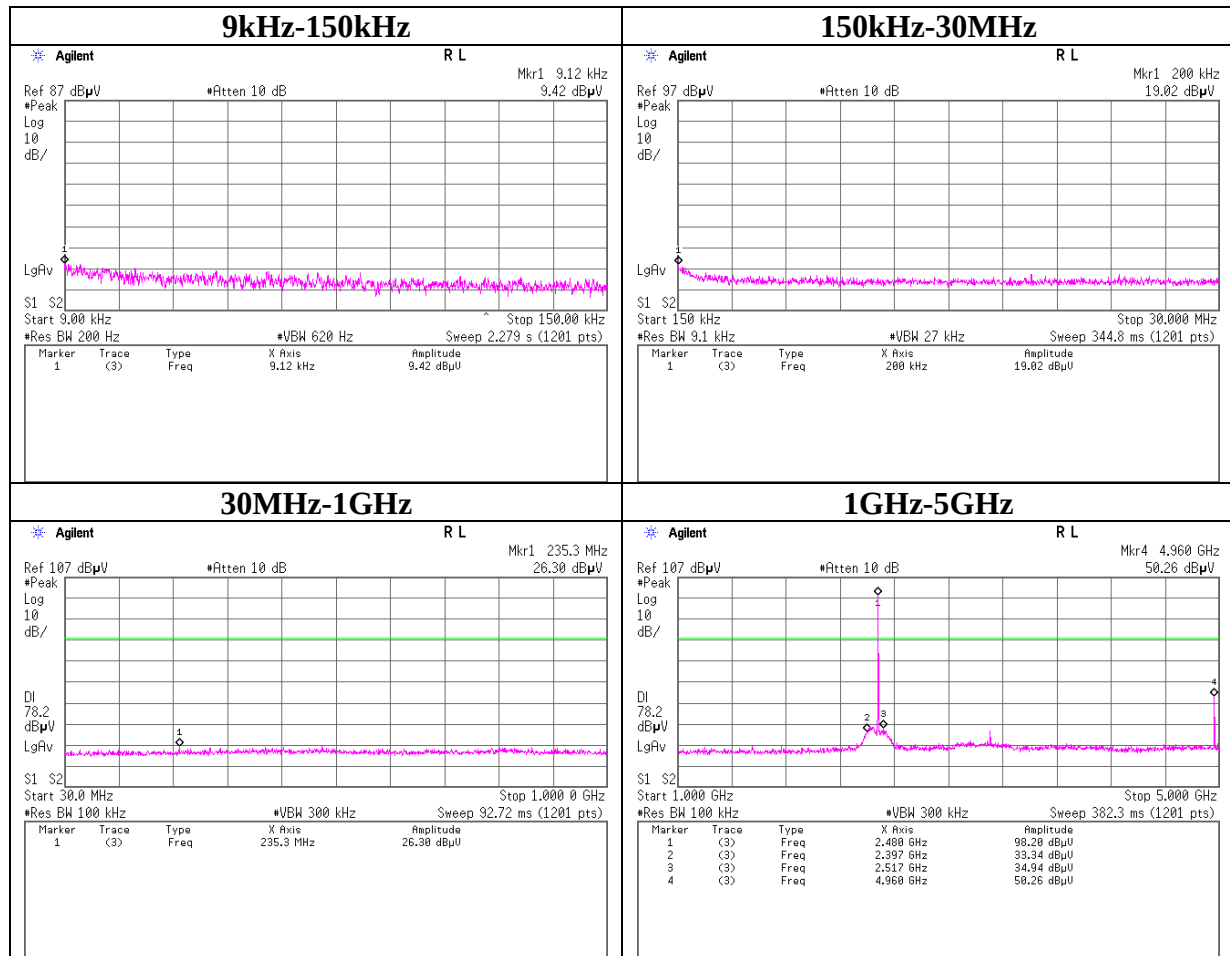
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Tx 3DH5 2480MHz



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Head Office EMC Lab.

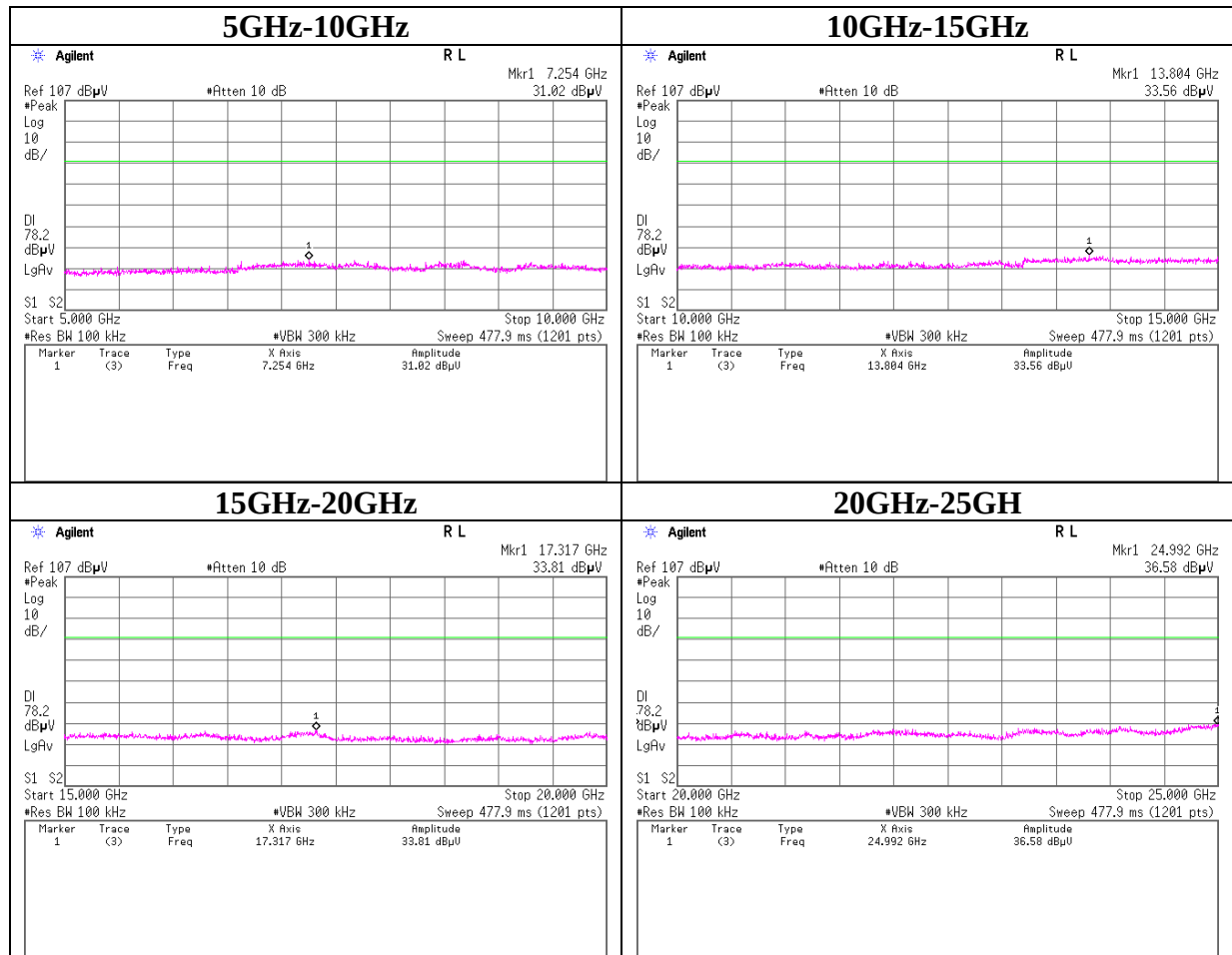
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

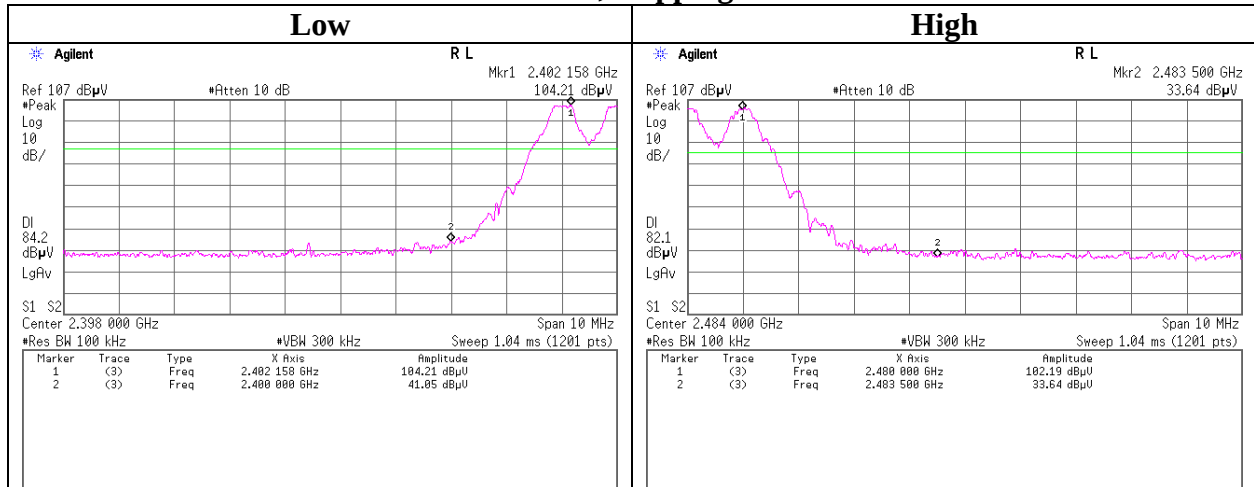
Conducted Spurious Emission

Tx 3DH5 2480MHz

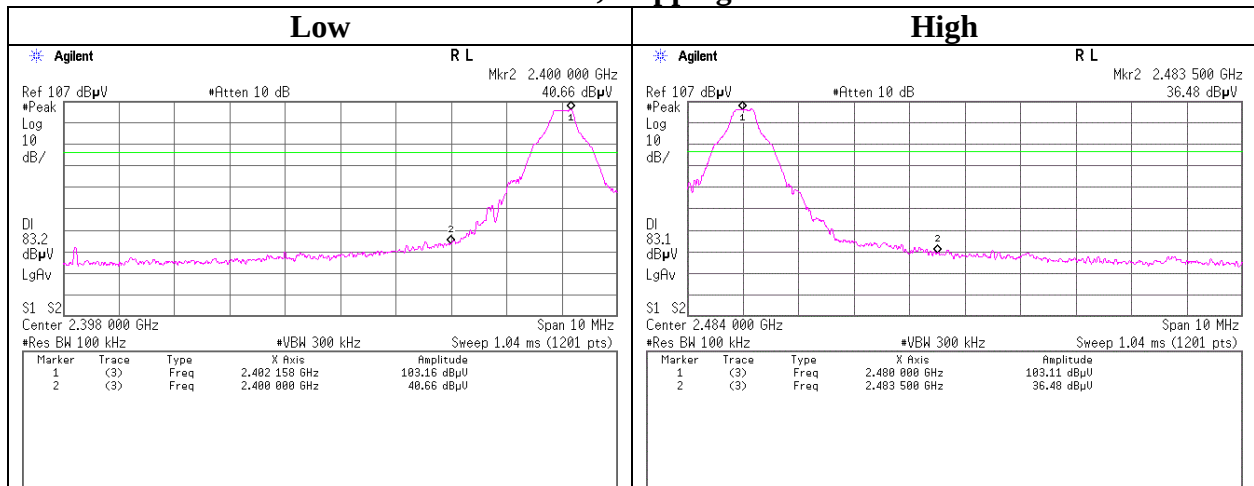


Conducted Emission Band Edge compliance

Tx DH5, Hopping on



Tx DH5, Hopping off



UL Japan, Inc.

Head Office EMC Lab.

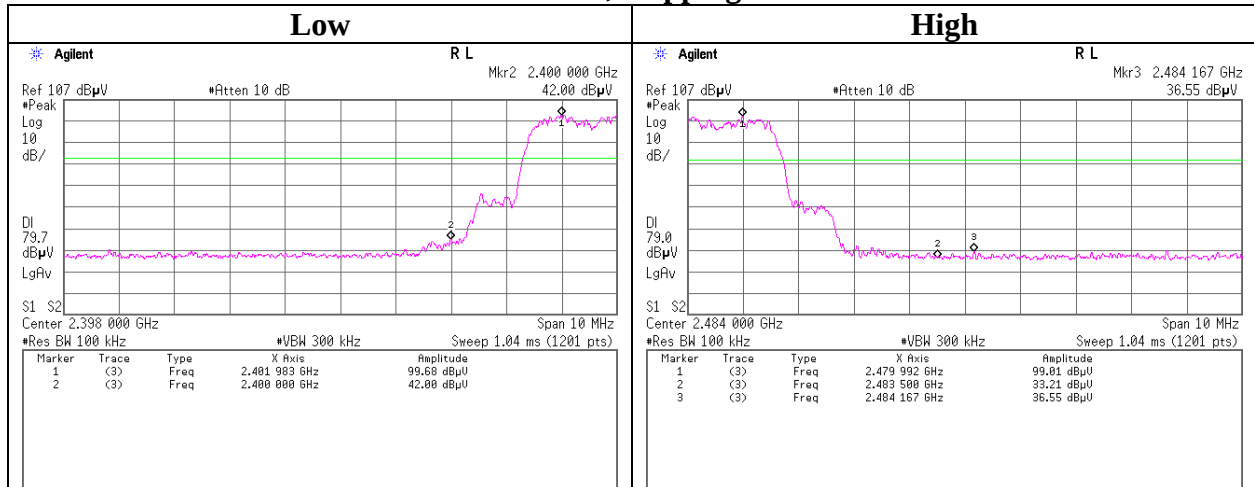
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

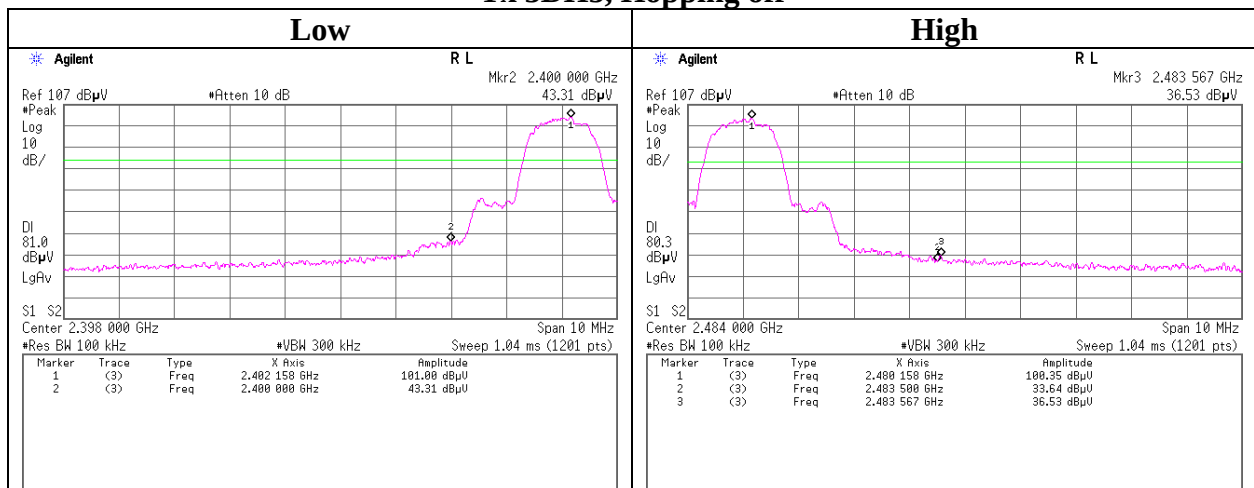
Facsimile : +81 596 24 8124

Conducted Emission Band Edge compliance

Tx 3DH5, Hopping on



Tx 3DH5, Hopping off



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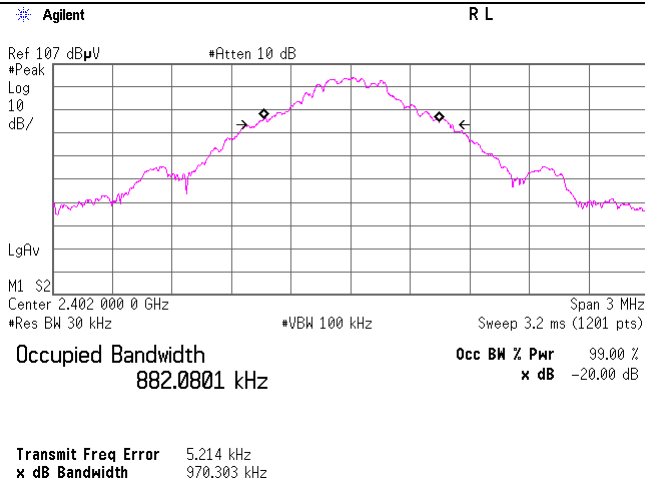
Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

99% Occupied Bandwidth

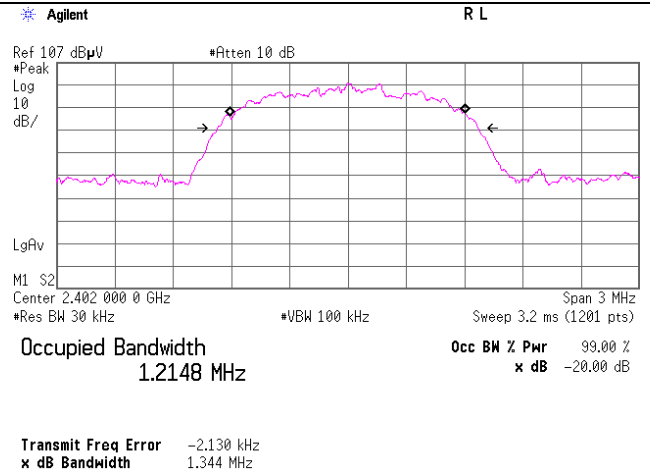
Tx DH5, Hopping off

2402MHz

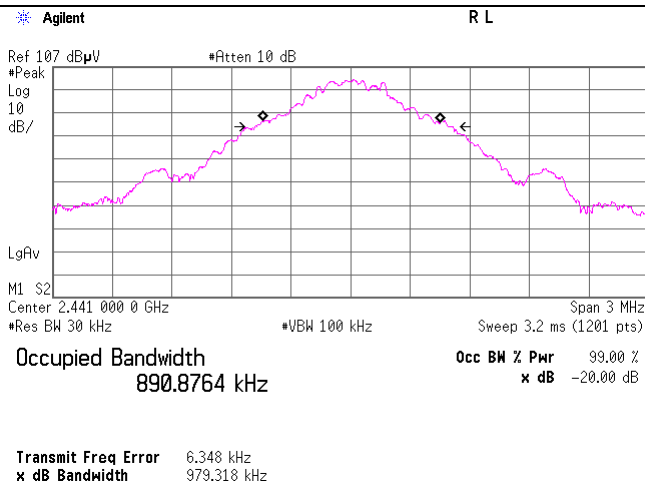


Tx 3DH5, Hopping off

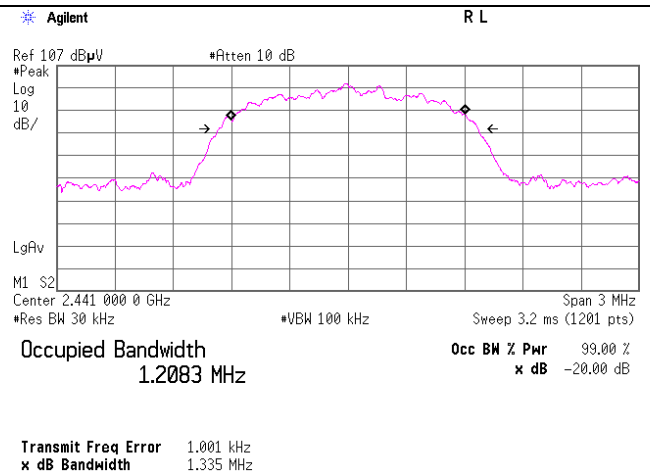
2402MHz



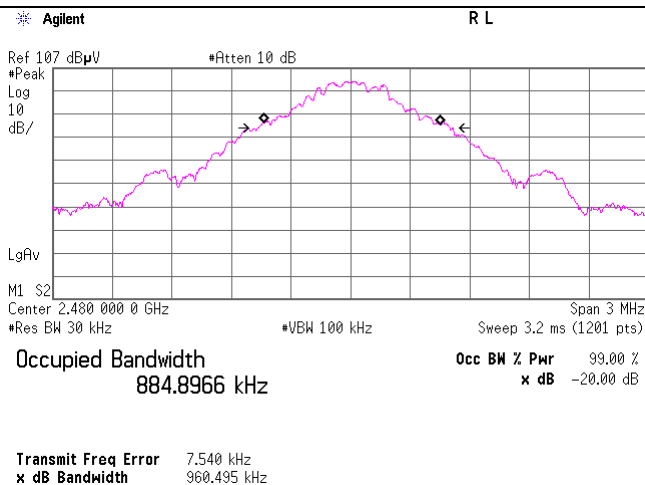
2441MHz



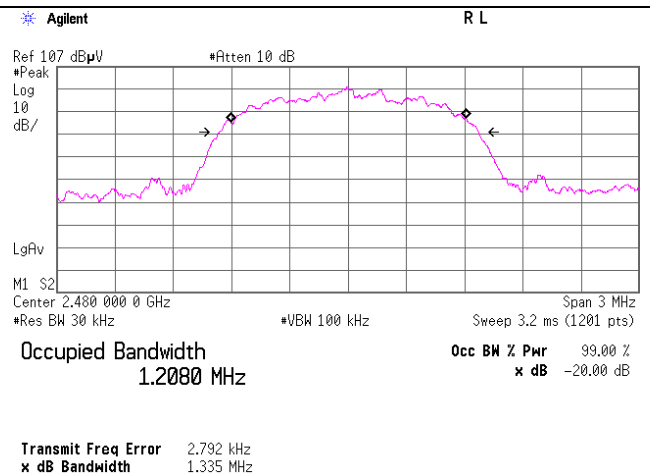
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2480MHz



2480MHz



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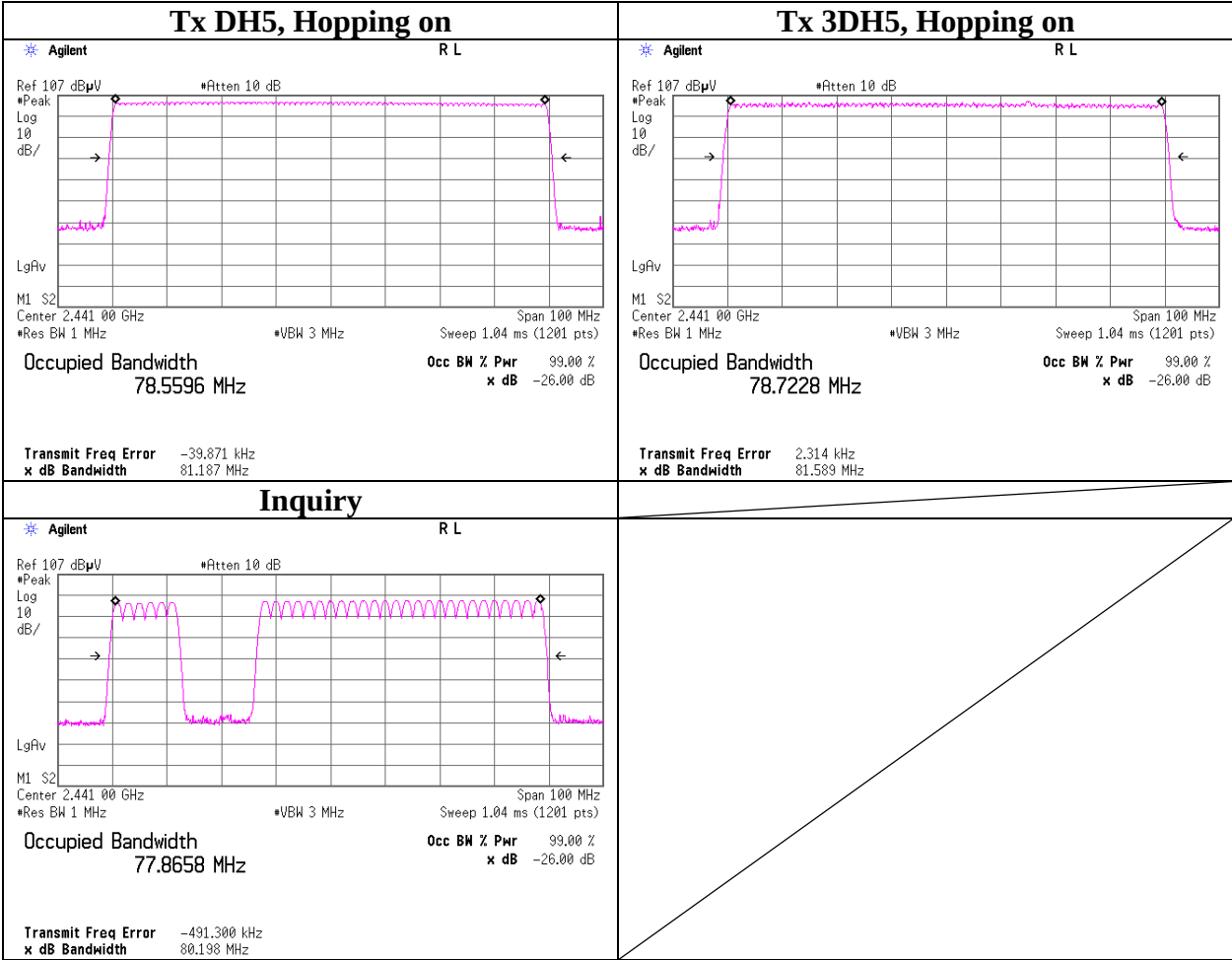
Head Office EMC Lab.

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99% Occupied Bandwidth



APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE/CE	2012/06/29 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE/CE	2012/02/06 * 12
MJM-14	Measure	KOMELON	KMC-36	-	RE/CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	RE/CE/AT	2012/11/20 * 12
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2012/02/22 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2013/01/10 * 12
MCC-132	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336161/4(1m) / 340639(5m)	RE	2012/09/05 * 12
MHF-06	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	RE	2012/05/30 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE/CE	2012/04/03 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	2012/10/08 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2012/10/08 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2012/02/16 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2012/11/06 * 12
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2012/09/11 * 12
MHA-02	Horn Antenna 18-26.5GHz	EMCO	3160-09	1265	RE	2012/02/22 * 12
MOS-04	Digital Humidity Indicator	N.T	NT-1800	MOS04	AT	2012/02/06 * 12
MAT-24	Attenuator(10dB) (above1GHz)	Agilent	8493C	71389	AT	2012/06/27 * 12
MCC-144	Microwave Cable	Junkosha	MWX221	1207S407	AT	2012/08/03 * 12
MPSC-01	Power splitters/ Combiners	Mini-Circuit	ZFSC-2-2500	0124	AT	2012/09/12 * 12
MBTR15	CBT Bluetooth Tester	Rohde & Schwarz	CBT	100401	AT	2011/05/25 * 24
MPM-09	Power Meter	Anritsu	ML2495A	6K00003348	AT	2012/10/08 * 12
MPSE-12	Power sensor	Anritsu	MA2411B	011598	AT	2012/10/08 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(EUT)	2013/01/07 * 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	2013/01/09 * 12

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

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

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

Test Item: CE: Conducted Emission

RE: Radiated Emission

AT: Antenna Terminal Conducted test

UL Japan, Inc.

Head Office EMC Lab.

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