



RADIO TEST REPORT

Test Report No. : 4786002697H-A-R1

Applicant : FUJITSU TEN LIMITED
Type of Equipment : Car Audio
Model No. : FT0043A
FCC ID : BABFT0043A
Test regulation : FCC Part 15 Subpart C: 2012
*Bluetooth part
Test Result : Complied

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
6. This report is a revised version of 4786002697H-A. 4786002697H-A is replaced with this report.

Date of test: September 6, 2012 to February 8, 2013

Representative test engineer:

Kazuya Yoshioka
Engineer of WiSE Japan,
UL Verification Service

Approved by:

Takahiro Hatakeda
Leader of WiSE Japan,
UL Verification Service



NVLAP LAB CODE: 200572-0

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13-EM-F0429

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SECTION 1: Customer information

Company Name : FUJITSU TEN LIMITED
Address : 2-28, Goshō-dori 1-Chome, Hyogo-ku, Kobe, 652-8510 JAPAN
Telephone Number : +81-78-682-2159
Facsimile Number : +81-78-671-7160
Contact Person : YO SHOTATSU

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

2.1 Identification of E.U.T.

Type of Equipment : Car Audio
Model No. : FT0043A
Serial No. : Refer to Section 4, Clause 4.2
Rating : DC 13.2V
Rated range : DC 10.5 to 16.0V
Receipt Date of Sample : September 3, 2012
Country of Mass-production : Japan
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No Modification by the test lab

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2.2 Product Description

General Specification

Clock frequency(ies) in the system : 792MHz

Radio Specification

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

Radio Type : Transceiver
Frequency of Operation : 2412-2462MHz
Modulation : 11b: DSSS, 11g/n: OFDM
Power Supply (radio part input) : DC 3.3V
Antenna type : Inverted F type Antenna
Antenna Gain : 1.43dBi

[Bluetooth (Ver. 3.0 with EDR function)]

Radio Type : Transceiver
Frequency of Operation : 2402-2480MHz
Modulation : FHSS
Power Supply (radio part input) : DC 3.3V
Antenna type : Inverted F type Antenna
Antenna Gain : 3.0dBi

[GPS]

Radio Type : Receiver
Frequency of Operation : 1575.42MHz
Modulation : CDMA
Power Supply (radio part input) : DC 5.0V
Antenna type : Dome Antenna
Antenna Gain : -6.0dBi

[Receiver]

Equipment type : Receiver
Frequency of Operation : 87.75-107.9 MHz
IF Frequency : 284.375-289.5kHz
Local frequency : 88.039500-107.615625MHz
(Voltage controlled oscillator : 5634.528-6026.475MHz)

*WLAN and Bluetooth do not transmit simultaneously.

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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.

*The EUT complies with FCC Part 15 Subpart B: 2012, final revised on December 27, 2012 and effective January 28, 2013.

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	N/A	N/A *1)	-	
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 *2)	Conducted	
20dB Bandwidth	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1) ----- IC: RSS-210 A8.1 (a)		- *2)	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 *2)	Conducted	
Dwell time	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1)(iii) ----- IC: RSS-210 A8.1 (d)		Complied *2)	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 *2)	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		5.4dB 246.947MHz, QP, Horizontal	Complied	Conducted *2)/ Radiated

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

*1) The test is not applicable since the EUT is not the device that is designed to be connected to the public utility (AC) power line.

*2) Test data in UL Japan Report No. 32KE0192-HO-A-R1 was used in this report, as the embedded Bluetooth module is same as the one in the EUT of the report.

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

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FCC 15.31 (e)

The EUT is a battery-operated device and test was performed with the full-charged battery. 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)	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
0.7dB	1.5dB

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	
1.5dB	1.7dB	2.8dB	2.8dB	2.9dB	2.6dB

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.

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

4.1 Operating Mode(s)

Bluetooth (BT): Transmitting (Tx), Payload: PRBS9
*EUT does not have Inquiry mode.

Details of Operating Mode(s)

Test Item	Mode	Tested frequency
20dB Bandwidth Maximum Peak Output Power Spurious Emission (Conducted/Radiated)	Tx (Hopping off) DH5, 3DH5	2402MHz 2441MHz 2480MHz
Carrier Frequency Separation	Tx (Hopping on) DH5, 3DH5	2402MHz 2441MHz 2480MHz
Number of Hopping Frequency	Tx (Hopping on) DH5, 3DH5	-
Dwell time	Tx (Hopping on), -DH1, DH3, DH5 -3DH1, 3DH3, 3DH5	-
Band Edge Compliance (Conducted)	Tx DH5, 3DH5 -Hopping on -Hopping off	2402MHz 2480MHz
99% Occupied Bandwidth	Tx DH5, 3DH5 -Hopping on -Hopping off	2402MHz 2441MHz 2480MHz
*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload length (except Dwell time test) *EUT has the power settings by the software as follows; Power settings: Same as production model Software: Diag. mode(BT Certification mode) *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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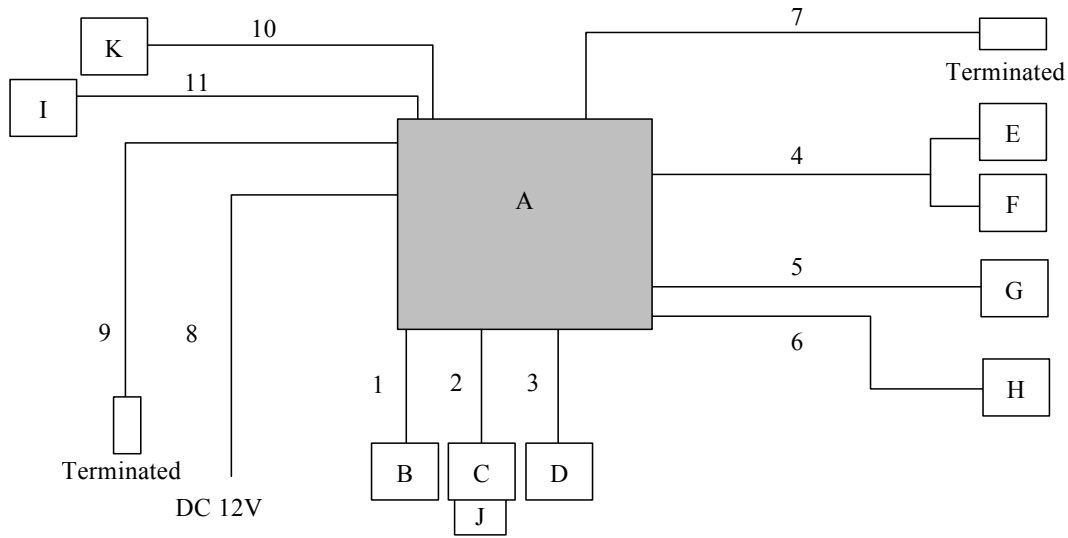
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4.2 Configuration and peripherals



* 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	Car Audio	FT0043A	001	FUJITSU TEN	EUT
B	Display	134000-7780A101	3H800017	FUJITSU TEN	-
C	USB connector Box	86190-48030	95016	Tokai-Rika	-
D	Remote control device	84870-48080	-	Tokai-Rika	-
E	Steering SW Right	84250-28150	-	Tokai-Rika	-
F	Steering SW Left	84250-28150	-	Tokai-Rika	-
G	Microphone	86730-20030	-	KOJIMA PRESS	-
H	Back Camera	86790-20070	-	Panasonic	-
I	External amplifier	86100-0W250	2133105	Harman	-
J	USB memory	ULTIMA II I Series 2GB	10091290E6A91E 00B18602A8	SILICON POWER	-
K	FM Antenna	146000-09810101	PJ401571	FUJITSU TEN	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Display Cable	3.0	Unshielded	Unshielded	-
2	USB Cable	3.0	Shielded	Shielded	-
3	Signal Cable	2.5	Unshielded	Unshielded	-
4	Signal Cable	2.5	Unshielded	Unshielded	-
5	Microphone Cable	5.0	Shielded	Shielded	-
6	Camera Cable	15.0	Shielded	Shielded	-
7	tuner Cable	3.7	Unshielded	Unshielded	-
8	DC Cable	5.0	Unshielded	Unshielded	-
9	GPS Antenna Cable	0.5	Shielded	Shielded	-
10	FM Antenna Cable	3.5	Shielded	Shielded	-
11	Signal Cable	2.5	Unshielded	Unshielded	-

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SECTION 5: Radiated Spurious Emission

Test Procedure

EUT was placed on a urethane platform of nominal size, 1.0m by 2.5m, 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 test was made on EUT at the normal use position.

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 6: Antenna Terminal Conducted Tests

Test Procedure

The tests were made with below setting connected to the antenna port.

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used
20dB Bandwidth	3MHz	30kHz	100kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99% Occupied Bandwidth	Enough width to display 20dB Bandwidth	1 to 3% of Span	Three times of RBW	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak/Average *1)	-	Power Meter (Sensor: 50MHz BW)
Carrier Frequency Separation	3MHz	30kHz	100kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Number of Hopping Frequency	30MHz	300kHz	1MHz	Auto	Peak	Max Hold	Spectrum Analyzer
Dwell Time	Zero Span	100kHz, 1MHz	300kHz, 3MHz	As necessary capture the entire dwell time per hopping channel	Peak	Clear Write	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) Reference data							
*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 low enough as shown in the chart (9kHz-150kHz:RBW=200Hz, 150kHz-30MHz:RBW=9.1kHz). The EUT complies with the limit of FCC15.209.							

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

Test data : APPENDIX
Test result : Pass

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APPENDIX 1: Data of EMI test

20dB Bandwidth and Carrier Frequency Separation

Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 4786002697H
Date 09/06/2012
Temperature/ Humidity 24deg. C / 68% RH
Engineer Yutaka Yoshida
Mode Tx (Hopping on) DH5/3DH5

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.962	1.000	≥ 0.641
DH5	2441.0	0.956	1.000	≥ 0.637
DH5	2480.0	0.961	1.000	≥ 0.640
3DH5	2402.0	1.286	1.000	≥ 0.857
3DH5	2441.0	1.283	1.000	≥ 0.855
3DH5	2480.0	1.283	1.000	≥ 0.855

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

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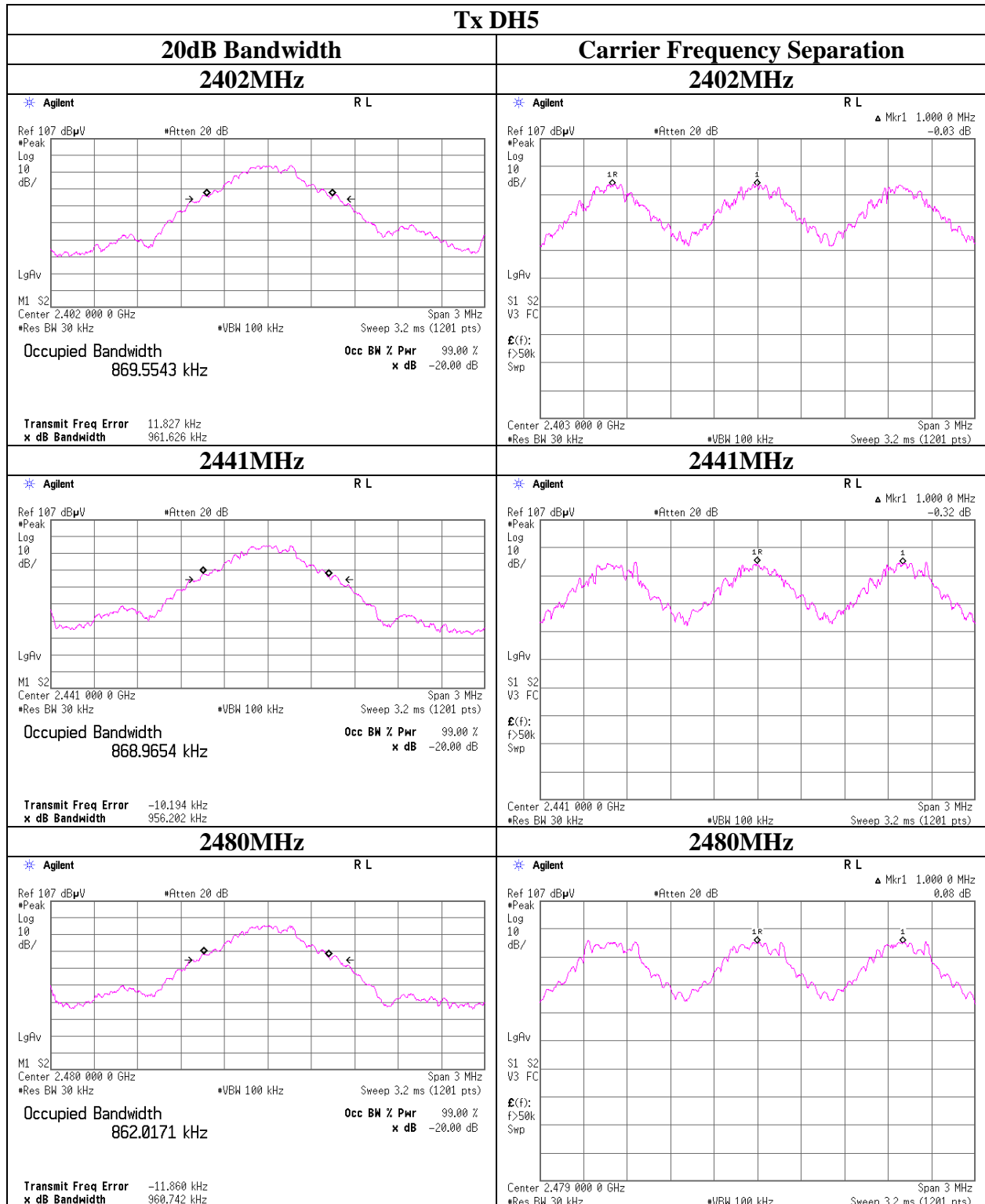
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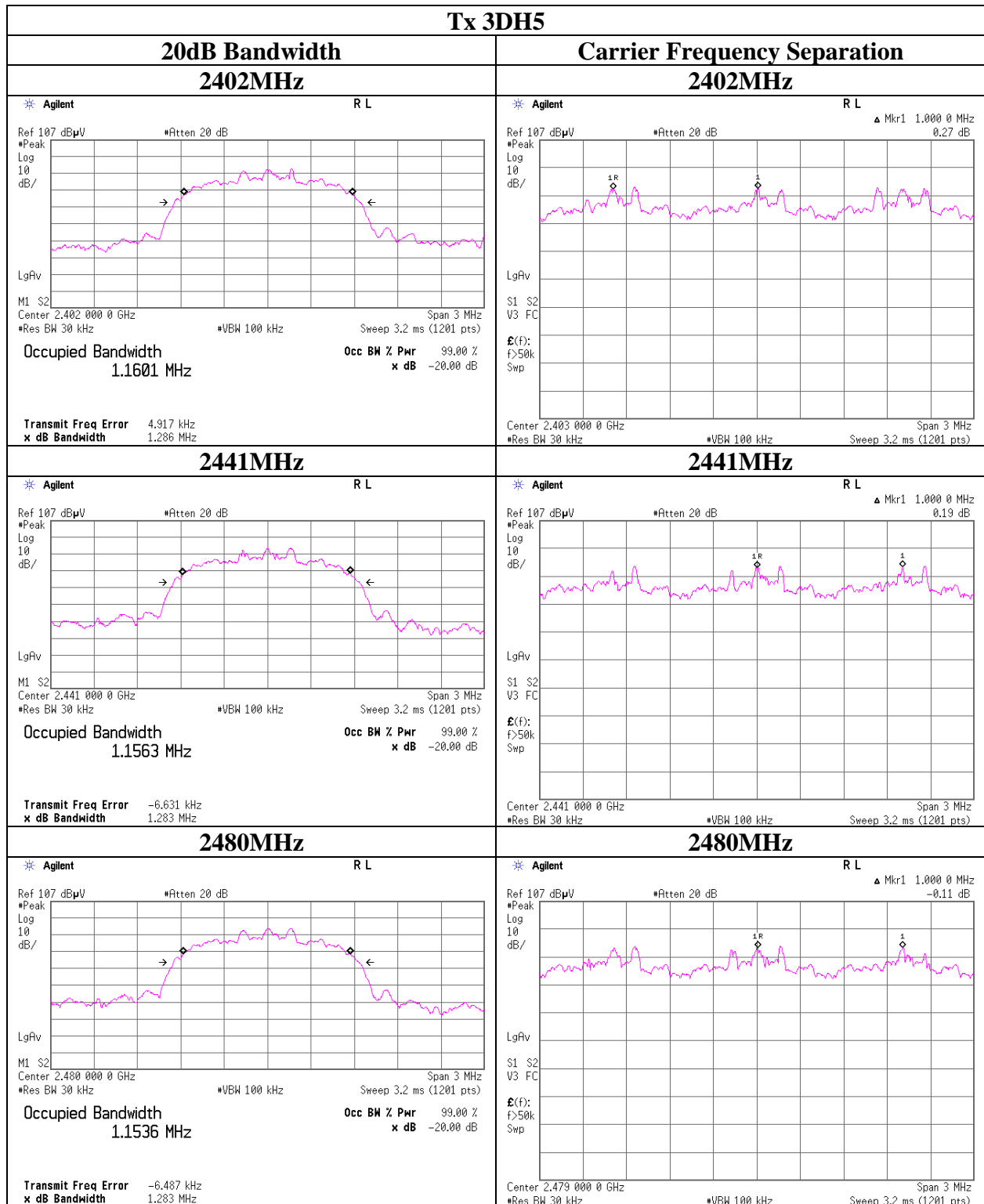
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20dB Bandwidth and Carrier Frequency Separation



20dB Bandwidth and Carrier Frequency Separation



Number of Hopping Frequency

Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 4786002697H
Date 09/06/2012
Temperature/ Humidity 24deg. C / 68% RH
Engineer Yutaka Yoshida
Mode Tx (Hopping on) DH5/3DH5

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

Test was not performed at AFH mode whose number of hopping channel is 20 channels because this Bluetooth radio is in compliance of Bluetooth Specification.

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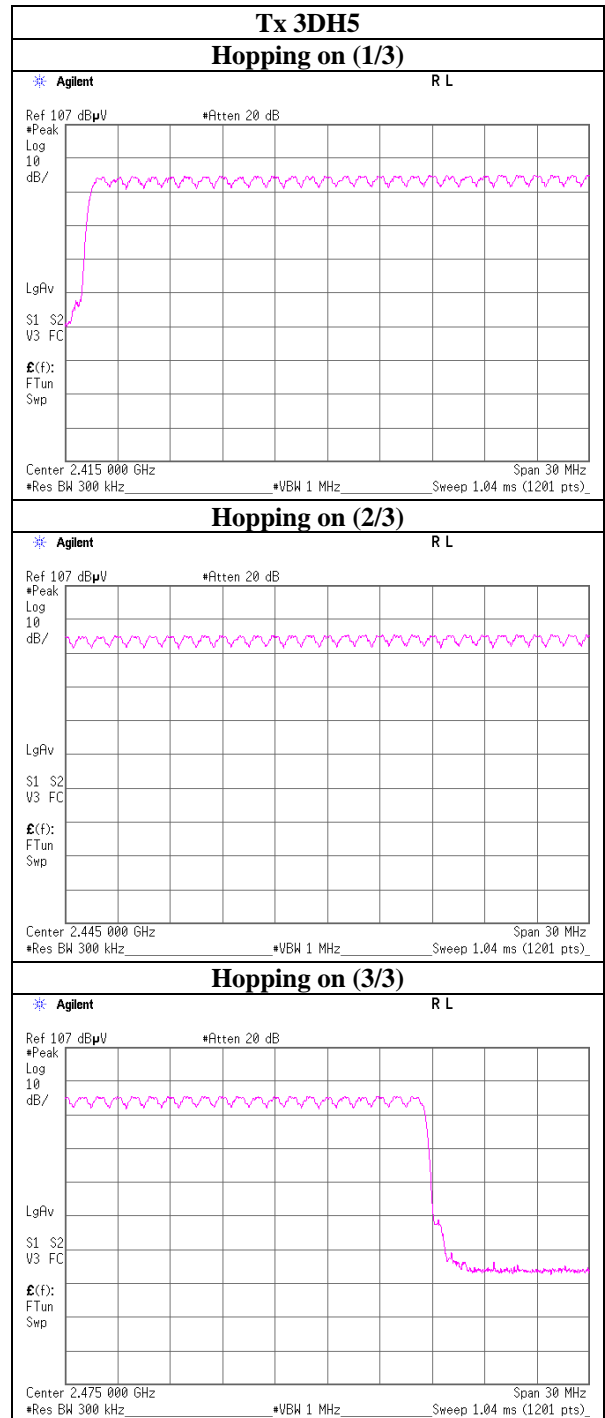
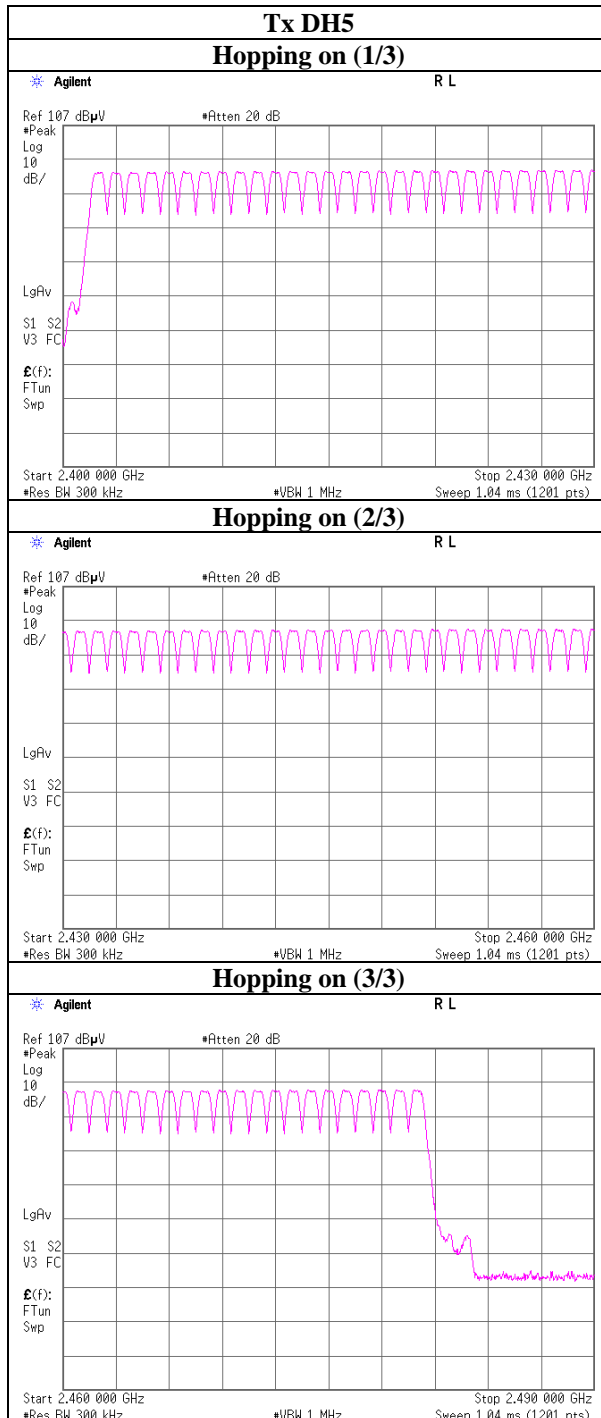
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Number of Hopping Frequency



Dwell time

Test place : Head Office EMC Lab. No.6 Measurement Room
 Report No. : 4786002697H
 Date : 09/06/2012
 Temperature/ Humidity : 24deg.C / 68% RH
 Engineer : Yutaka Yoshida
 Mode : Tx (Hopping on) DH5/3DH5

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	51.0 times /	5 sec. x	31.6 sec. =	323 times	0.410	400
DH3	26.0 times /	5 sec. x	31.6 sec. =	165 times	1.507	400
DH5	17.0 times /	5 sec. x	31.6 sec. =	108 times	2.920	400
3DH1	51.0 times /	5 sec. x	31.6 sec. =	323 times	0.424	400
3DH3	26.0 times /	5 sec. x	31.6 sec. =	165 times	1.682	400
3DH5	17.0 times /	5 sec. x	31.6 sec. =	108 times	2.937	400

Sample Calculation

Result = Number of transmission x Length of transmission time

This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in $N \times 0.4s$, where N is the number of channels being used in the hopping sequence ($20 \leq N \leq 79$), is always less than $0.4s$ regardless of packet size. This is confirmed in the test report for $N=79$.

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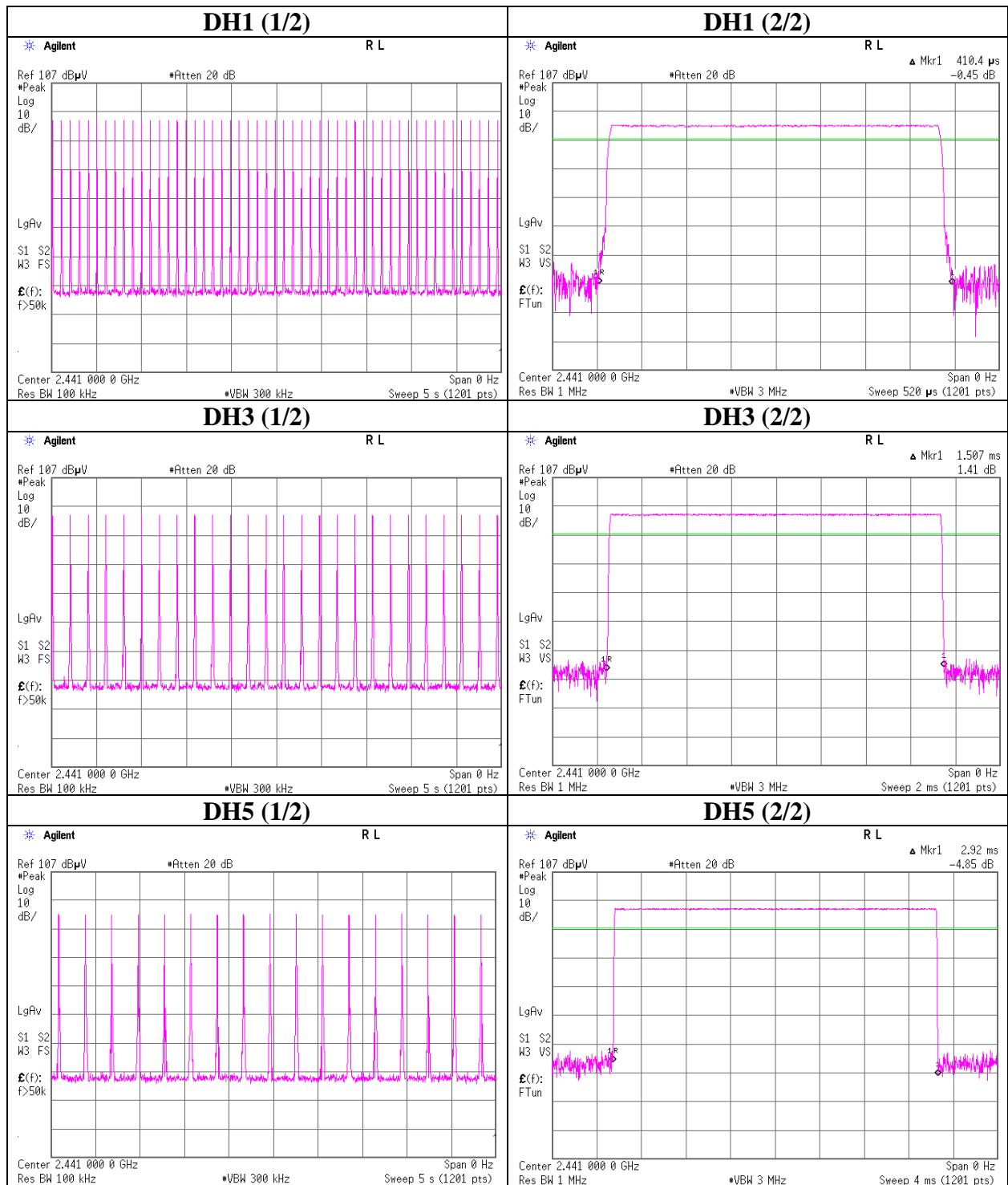
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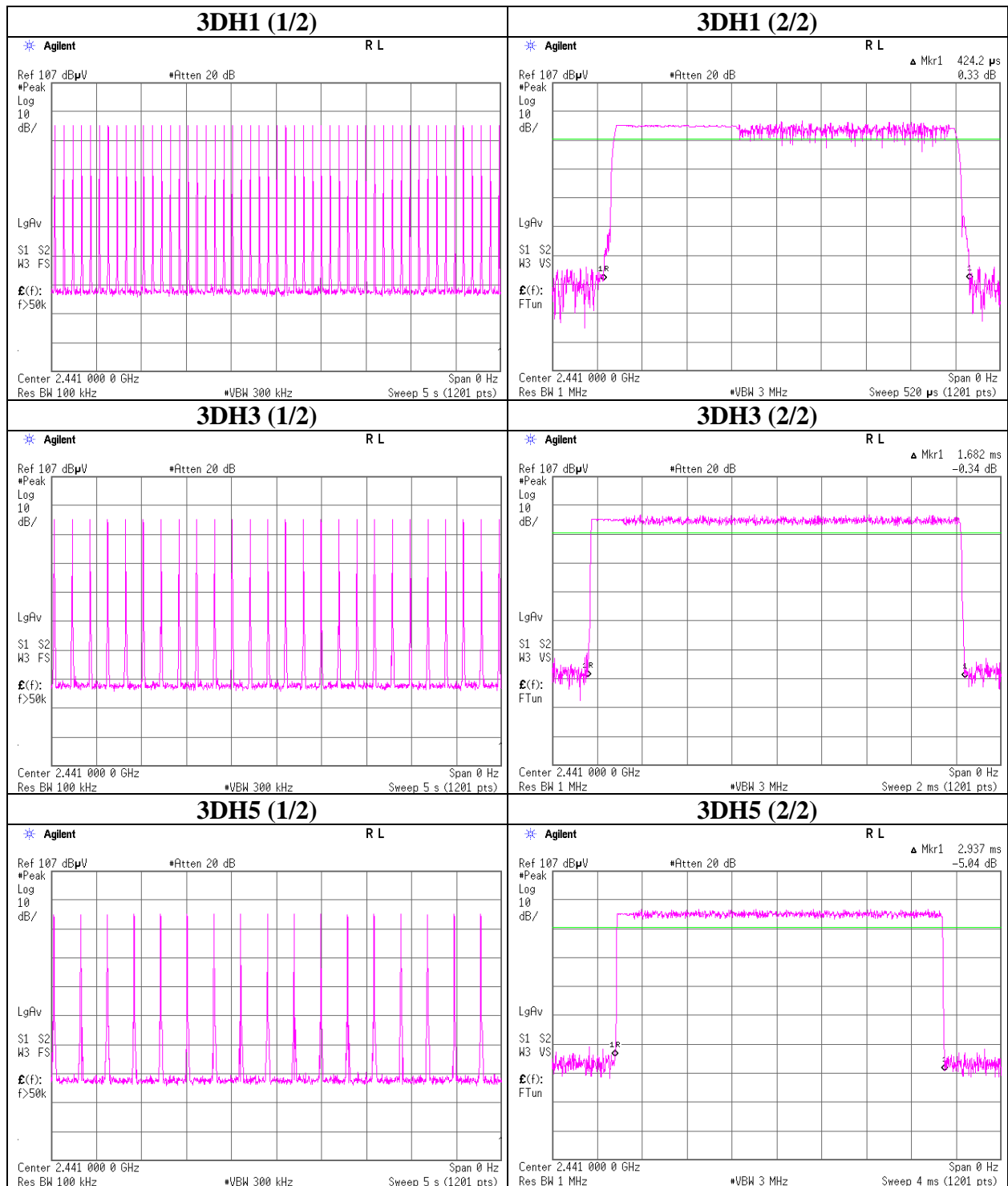
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Dwell time



Dwell time



Maximum Peak Output Power

Test place : Head Office EMC Lab. No.6 Measurement Room
 Report No. : 4786002697H
 Date : 09/06/2012
 Temperature/ Humidity : 24deg. C / 68% RH
 Engineer : Yutaka Yoshida
 Mode : Tx (Hopping off) DH5/3DH5

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-13.45	1.99	10.00	-1.46	0.71	20.96	125	22.42
DH5	2441.0	-12.58	2.01	10.00	-0.57	0.88	20.96	125	21.53
DH5	2480.0	-11.98	2.02	10.00	0.04	1.01	20.96	125	20.92
3DH5	2402.0	-13.53	1.99	10.00	-1.54	0.70	20.96	125	22.50
3DH5	2441.0	-12.85	2.01	10.00	-0.84	0.82	20.96	125	21.80
3DH5	2480.0	-12.44	2.02	10.00	-0.42	0.91	20.96	125	21.38

Sample Calculation:
 Result = Reading + Cable Loss + Attenuator

Average Output Power (for reporting purpose only)

Test place : Head Office EMC Lab. No.6 Measurement Room
 Report No. : 4786002697H
 Date : 09/06/2012
 Temperature/ Humidity : 24deg. C / 68% RH
 Engineer : Yutaka Yoshida
 Mode : Tx (Hopping off) DH5/3DH5

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-15.17	1.99	10.00	-3.18	0.48	20.96	125	24.14
DH5	2441.0	-14.33	2.01	10.00	-2.32	0.59	20.96	125	23.28
DH5	2480.0	-13.76	2.02	10.00	-1.74	0.67	20.96	125	22.70
3DH5	2402.0	-18.09	1.99	10.00	-6.10	0.25	20.96	125	27.06
3DH5	2441.0	-17.43	2.01	10.00	-5.42	0.29	20.96	125	26.38
3DH5	2480.0	-17.13	2.02	10.00	-5.11	0.31	20.96	125	26.07

Sample Calculation:
 Result = Reading + Cable Loss + Attenuator

Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power and bandwidth of the EUT.
 As this device had AFH mode and frequency separation could not meet the requirement of over 20dB BW without 2/3 relaxation, 125mW power limit was applied to it.

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 and No.4 Semi Anechoic Chamber
Report No. 4786002697H
Date 02/07/2013 02/08/2013
Temperature/ Humidity 24 deg. C / 28% RH 22 deg. C / 31% RH
Engineer Kazuya Yoshioka Kazuya Yoshioka
(1-10GHz) (10-26.5GHz, 30-1000MHz)
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	55.301	QP	36.0	9.2	7.5	32.2	20.5	40.0	19.5	
Hori	123.600	QP	37.2	13.3	8.4	32.3	26.6	43.5	16.9	
Hori	246.899	QP	45.6	17.2	9.6	32.1	40.3	46.0	5.7	
Hori	370.086	QP	35.7	16.6	10.5	32.1	30.7	46.0	15.3	
Hori	666.152	QP	34.6	20.0	12.4	32.0	35.0	46.0	11.0	
Hori	940.506	QP	29.7	22.6	13.7	30.8	35.2	46.0	10.8	
Hori	2390.000	PK	44.3	27.5	2.4	35.7	38.5	73.9	35.4	
Hori	4804.000	PK	41.2	31.3	4.3	34.9	41.9	73.9	32.0	NS
Hori	7206.000	PK	42.4	35.8	5.0	34.9	48.3	73.9	25.6	NS
Hori	9608.000	PK	41.4	38.3	5.8	35.4	50.1	73.9	23.8	NS
Hori	2390.000	AV	33.6	27.5	2.4	35.7	27.8	53.9	26.1	NS
Hori	4804.000	AV	32.4	31.3	4.3	34.9	33.1	53.9	20.8	NS
Hori	7206.000	AV	32.5	35.8	5.0	34.9	38.4	53.9	15.5	NS
Hori	9608.000	AV	32.6	38.3	5.8	35.4	41.3	53.9	12.6	NS
Vert	55.302	QP	30.6	9.2	7.5	32.2	15.1	40.0	24.9	
Vert	123.600	QP	39.5	13.3	8.4	32.3	28.9	43.5	14.6	
Vert	246.946	QP	37.4	17.2	9.6	32.1	32.1	46.0	13.9	
Vert	370.091	QP	39.4	16.6	10.5	32.1	34.4	46.0	11.6	
Vert	666.156	QP	34.7	20.0	12.4	32.0	35.1	46.0	10.9	
Vert	940.065	QP	29.1	22.6	13.7	30.8	34.6	46.0	11.4	
Vert	2390.000	PK	42.6	27.5	2.4	35.7	36.8	73.9	37.1	
Vert	4804.000	PK	41.5	31.3	4.3	34.9	42.2	73.9	31.7	NS
Vert	7206.000	PK	41.4	35.8	5.0	34.9	47.3	73.9	26.6	NS
Vert	9608.000	PK	42.8	38.3	5.8	35.4	51.5	73.9	22.4	NS
Vert	2390.000	AV	33.5	27.5	2.4	35.7	27.7	53.9	26.2	NS
Vert	4804.000	AV	32.7	31.3	4.3	34.9	33.4	53.9	20.5	NS
Vert	7206.000	AV	32.5	35.8	5.0	34.9	38.4	53.9	15.5	NS
Vert	9608.000	AV	32.8	38.3	5.8	35.4	41.5	53.9	12.4	NS

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

NS: No signal detect.

UL Japan, Inc.

Head Office EMC Lab.

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Radiated Spurious Emission

Test place : Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. : 4786002697H
Date : 02/07/2013
Temperature/ Humidity : 24 deg. C / 28% RH
Engineer : Kazuya Yoshioka
(1-10GHz)
Mode : Tx, DH5 2402MHz

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	99.7	27.5	2.4	35.7	93.9	-	-	Carrier
Hori	2400.000	PK	54.3	27.5	2.4	35.7	48.5	73.9	25.4	
Vert	2402.000	PK	98.2	27.5	2.4	35.7	92.4	-	-	Carrier
Vert	2400.000	PK	52.4	27.5	2.4	35.7	46.6	73.9	27.3	

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

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Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 and No.4 Semi Anechoic Chamber
Report No. 4786002697H
Date 02/07/2013 02/08/2013
Temperature/ Humidity 24 deg. C / 28% RH 22 deg. C / 31% RH
Engineer Kazuya Yoshioka Kazuya Yoshioka
(1-10GHz) (10-26.5GHz, 30-1000MHz)
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	55.296	QP	34.5	9.2	7.5	32.2	19.0	40.0	21.0	
Hori	123.476	QP	33.9	13.3	8.4	32.3	23.3	43.5	20.2	
Hori	246.947	QP	45.9	17.2	9.6	32.1	40.6	46.0	5.4	
Hori	370.083	QP	34.8	16.6	10.5	32.1	29.8	46.0	16.2	
Hori	666.156	QP	30.4	20.0	12.4	32.0	30.8	46.0	15.2	
Hori	940.506	QP	28.1	22.6	13.7	30.8	33.6	46.0	12.4	
Hori	4882.000	PK	41.9	31.5	4.3	34.9	42.8	73.9	31.1	NS
Hori	7323.000	PK	42.7	35.8	5.0	34.9	48.6	73.9	25.3	NS
Hori	9764.000	PK	42.7	38.4	5.9	35.4	51.6	73.9	22.3	NS
Hori	4882.000	AV	32.2	31.5	4.3	34.9	33.1	53.9	20.8	NS
Hori	7323.000	AV	32.6	35.8	5.0	34.9	38.5	53.9	15.4	NS
Hori	9764.000	AV	32.7	38.4	5.9	35.4	41.6	53.9	12.3	NS
Vert	55.300	QP	30.5	9.2	7.5	32.2	15.0	40.0	25.0	
Vert	123.473	QP	39.7	13.3	8.4	32.3	29.1	43.5	14.4	
Vert	246.941	QP	39.5	17.2	9.6	32.1	34.2	46.0	11.8	
Vert	370.089	QP	36.7	16.6	10.5	32.1	31.7	46.0	14.3	
Vert	666.152	QP	32.6	20.0	12.4	32.0	33.0	46.0	13.0	
Vert	940.060	QP	27.6	22.6	13.7	30.8	33.1	46.0	12.9	
Vert	4882.000	PK	41.2	31.5	4.3	34.9	42.1	73.9	31.8	NS
Vert	7323.000	PK	42.5	35.8	5.0	34.9	48.4	73.9	25.5	NS
Vert	9764.000	PK	42.8	38.4	5.9	35.4	51.7	73.9	22.2	NS
Vert	4882.000	AV	33.1	31.5	4.3	34.9	34.0	53.9	19.9	NS
Vert	7323.000	AV	32.6	35.8	5.0	34.9	38.5	53.9	15.4	NS
Vert	9764.000	AV	32.7	38.4	5.9	35.4	41.6	53.9	12.3	NS

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

NS: No signal detect.

UL Japan, Inc.

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Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 and No.4 Semi Anechoic Chamber
Report No. 4786002697H
Date 02/07/2013 02/08/2013
Temperature/ Humidity 24 deg. C / 28% RH 22 deg. C / 31% RH
Engineer Kazuya Yoshioka Kazuya Yoshioka
(1-10GHz) (10-26.5GHz, 30-1000MHz)
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	55.301	QP	34.6	9.2	7.5	32.2	19.1	40.0	20.9	
Hori	123.470	QP	33.5	13.3	8.4	32.3	22.9	43.5	20.6	
Hori	246.945	QP	45.8	17.2	9.6	32.1	40.5	46.0	5.5	
Hori	370.085	QP	34.9	16.6	10.5	32.1	29.9	46.0	16.1	
Hori	666.149	QP	30.5	20.0	12.4	32.0	30.9	46.0	15.1	
Hori	940.067	QP	27.8	22.6	13.7	30.8	33.3	46.0	12.7	
Hori	2483.500	PK	54.5	27.5	2.4	35.7	48.7	73.9	25.2	
Hori	4960.000	PK	42.4	31.8	3.6	34.9	42.9	73.9	31.0	NS
Hori	7440.000	PK	43.2	35.9	4.5	34.9	48.7	73.9	25.2	NS
Hori	9920.000	PK	43.0	38.6	5.2	35.4	51.4	73.9	22.5	NS
Hori	2483.500	AV	44.6	27.5	2.4	35.7	38.8	53.9	15.1	NS
Hori	4960.000	AV	31.9	31.8	3.6	34.9	32.4	53.9	21.5	NS
Hori	7440.000	AV	33.1	35.9	4.5	34.9	38.6	53.9	15.3	NS
Hori	9920.000	AV	33.2	38.6	5.2	35.4	41.6	53.9	12.3	NS
Vert	55.300	QP	30.5	9.2	7.5	32.2	15.0	40.0	25.0	
Vert	123.473	QP	39.5	13.3	8.4	32.3	28.9	43.5	14.6	
Vert	246.940	QP	40.7	17.2	9.6	32.1	35.4	46.0	10.6	
Vert	370.087	QP	36.8	16.6	10.5	32.1	31.8	46.0	14.2	
Vert	666.150	QP	32.7	20.0	12.4	32.0	33.1	46.0	12.9	
Vert	940.066	QP	28.1	22.6	13.7	30.8	33.6	46.0	12.4	
Vert	2483.500	PK	52.0	27.5	2.4	35.7	46.2	73.9	27.7	
Vert	4960.000	PK	42.3	31.8	3.6	34.9	42.8	73.9	31.1	NS
Vert	7440.000	PK	43.9	35.9	4.5	34.9	49.4	73.9	24.5	NS
Vert	9920.000	PK	43.6	38.6	5.2	35.4	52.0	73.9	21.9	NS
Vert	2483.500	AV	40.9	27.5	2.4	35.7	35.1	53.9	18.8	NS
Vert	4960.000	AV	32.9	31.8	3.6	34.9	33.4	53.9	20.5	NS
Vert	7440.000	AV	33.1	35.9	4.5	34.9	38.6	53.9	15.3	NS
Vert	9920.000	AV	33.1	38.6	5.2	35.4	41.5	53.9	12.4	NS

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

NS: No signal detect.

UL Japan, Inc.

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Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 and No.4 Semi Anechoic Chamber
Report No. 4786002697H
Date 02/07/2013 02/07/2013
Temperature/ Humidity 24 deg. C / 28% RH 22 deg. C / 31% RH
Engineer Kazuya Yoshioka Kazuya Yoshioka
(1-10GHz) (10-26.5GHz, 30-1000MHz)
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	55.298	QP	34.4	9.2	7.5	32.2	18.9	40.0	21.1	
Hori	123.470	QP	34.0	13.3	8.4	32.3	23.4	43.5	20.1	
Hori	246.945	QP	45.7	17.2	9.6	32.1	40.4	46.0	5.6	
Hori	370.078	QP	34.7	16.6	10.5	32.1	29.7	46.0	16.3	
Hori	666.150	QP	30.6	20.0	12.4	32.0	31.0	46.0	15.0	
Hori	940.067	QP	25.9	22.6	13.7	30.8	31.4	46.0	14.6	
Hori	2390.000	PK	43.8	27.5	2.4	35.7	38.0	73.9	35.9	
Hori	4804.000	PK	43.0	31.3	4.3	34.9	43.7	73.9	30.2	NS
Hori	7206.000	PK	41.4	35.8	5.0	34.9	47.3	73.9	26.6	NS
Hori	9608.000	PK	41.9	38.3	5.8	35.4	50.6	73.9	23.3	NS
Hori	2390.000	AV	33.7	27.5	2.4	35.7	27.9	53.9	26.0	NS
Hori	4804.000	AV	32.3	31.3	4.3	34.9	33.0	53.9	20.9	NS
Hori	7206.000	AV	32.5	35.8	5.0	34.9	38.4	53.9	15.5	NS
Hori	9608.000	AV	32.6	38.3	5.8	35.4	41.3	53.9	12.6	NS
Vert	55.302	QP	30.2	9.2	7.5	32.2	14.7	40.0	25.3	
Vert	123.473	QP	39.3	13.3	8.4	32.3	28.7	43.5	14.8	
Vert	246.945	QP	39.5	17.2	9.6	32.1	34.2	46.0	11.8	
Vert	370.078	QP	36.5	16.6	10.5	32.1	31.5	46.0	14.5	
Vert	666.151	QP	33.0	20.0	12.4	32.0	33.4	46.0	12.6	
Vert	940.067	QP	27.9	22.6	13.7	30.8	33.4	46.0	12.6	
Vert	2390.000	PK	45.1	27.5	2.4	35.7	39.3	73.9	34.6	
Vert	4804.000	PK	43.9	31.3	4.3	34.9	44.6	73.9	29.3	NS
Vert	7206.000	PK	41.7	35.8	5.0	34.9	47.6	73.9	26.3	NS
Vert	9608.000	PK	40.7	38.3	5.8	35.4	49.4	73.9	24.5	NS
Vert	2390.000	AV	33.9	27.5	2.4	35.7	28.1	53.9	25.8	NS
Vert	4804.000	AV	32.6	31.3	4.3	34.9	33.3	53.9	20.6	NS
Vert	7206.000	AV	32.4	35.8	5.0	34.9	38.3	53.9	15.6	NS
Vert	9608.000	AV	32.6	38.3	5.8	35.4	41.3	53.9	12.6	NS

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

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

NS: No signal detect.

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Radiated Spurious Emission

Test place : Head Office EMC Lab. No.4 Semi Anechoic Chamber
 Report No. : 4786002697H
 Date : 02/07/2013
 Temperature/ Humidity : 24 deg. C / 28% RH
 Engineer : Kazuya Yoshioka
 (1-10GHz)
 Mode : Tx, 3DH5 2402MHz

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	101.1	27.5	2.4	35.7	95.3	-	-	Carrier
Hori	2400.000	PK	51.5	27.5	2.4	35.7	45.7	73.9	28.2	
Vert	2402.000	PK	98.9	27.5	2.4	35.7	93.1	-	-	Carrier
Vert	2400.000	PK	48.9	27.5	2.4	35.7	43.1	73.9	30.8	

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

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Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 and No.4 Semi Anechoic Chamber
Report No. 4786002697H
Date 02/07/2013 02/07/2013
Temperature/ Humidity 24 deg. C / 28% RH 22 deg. C / 31% RH
Engineer Kazuya Yoshioka Kazuya Yoshioka
(1-10GHz) (10-26.5GHz, 30-1000MHz)
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	55.304	QP	34.2	9.2	7.5	32.2	18.7	40.0	21.3	
Hori	123.474	QP	34.1	13.3	8.4	32.3	23.5	43.5	20.0	
Hori	246.944	QP	45.8	17.2	9.6	32.1	40.5	46.0	5.5	
Hori	370.089	QP	34.8	16.6	10.5	32.1	29.8	46.0	16.2	
Hori	666.150	QP	30.6	20.0	12.4	32.0	31.0	46.0	15.0	
Hori	940.067	QP	25.9	22.6	13.7	30.8	31.4	46.0	14.6	
Hori	4882.000	PK	42.5	31.5	4.3	34.9	43.4	73.9	30.5	NS
Hori	7323.000	PK	41.3	35.8	5.0	34.9	47.2	73.9	26.7	NS
Hori	9764.000	PK	41.8	38.4	5.9	35.4	50.7	73.9	23.2	NS
Hori	4882.000	AV	32.0	31.5	4.3	34.9	32.9	53.9	21.0	NS
Hori	7323.000	AV	32.5	35.8	5.0	34.9	38.4	53.9	15.5	NS
Hori	9764.000	AV	32.7	38.4	5.9	35.4	41.6	53.9	12.3	NS
Vert	55.080	QP	30.1	9.3	7.5	32.2	14.7	40.0	25.3	
Vert	123.476	QP	39.2	13.3	8.4	32.3	28.6	43.5	14.9	
Vert	246.950	QP	39.5	17.2	9.6	32.1	34.2	46.0	11.8	
Vert	370.080	QP	36.7	16.6	10.5	32.1	31.7	46.0	14.3	
Vert	666.152	QP	33.0	20.0	12.4	32.0	33.4	46.0	12.6	
Vert	940.072	QP	27.7	22.6	13.7	30.8	33.2	46.0	12.8	
Vert	4882.000	PK	42.3	31.5	4.3	34.9	43.2	73.9	30.7	NS
Vert	7323.000	PK	40.7	35.8	5.0	34.9	46.6	73.9	27.3	NS
Vert	9764.000	PK	41.7	38.4	5.9	35.4	50.6	73.9	23.3	NS
Vert	4882.000	AV	32.7	31.5	4.3	34.9	33.6	53.9	20.3	NS
Vert	7323.000	AV	32.4	35.8	5.0	34.9	38.3	53.9	15.6	NS
Vert	9764.000	AV	32.7	38.4	5.9	35.4	41.6	53.9	12.3	NS

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

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

*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

NS: No signal detect.

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 and No.4 Semi Anechoic Chamber
Report No. 4786002697H
Date 02/07/2013 02/07/2013
Temperature/ Humidity 24 deg. C / 28% RH 22 deg. C / 31% RH
Engineer Kazuya Yoshioka Kazuya Yoshioka
(1-10GHz) (10-26.5GHz, 30-1000MHz)
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	55.298	QP	34.4	9.2	7.5	32.2	18.9	40.0	21.1	
Hori	123.473	QP	34.3	13.3	8.4	32.3	23.7	43.5	19.8	
Hori	246.951	QP	45.3	17.2	9.6	32.1	40.0	46.0	6.0	
Hori	370.087	QP	35.0	16.6	10.5	32.1	30.0	46.0	16.0	
Hori	666.149	QP	30.7	20.0	12.4	32.0	31.1	46.0	14.9	
Hori	940.065	QP	23.8	22.6	13.7	30.8	29.3	46.0	16.7	
Hori	2483.500	PK	54.1	27.5	2.4	35.7	48.3	73.9	25.6	
Hori	4960.000	PK	42.2	31.8	4.3	34.9	43.4	73.9	30.5	NS
Hori	7440.000	PK	43.8	35.9	5.1	34.9	49.9	73.9	24.0	NS
Hori	9920.000	PK	41.9	38.6	5.9	35.4	51.0	73.9	22.9	NS
Hori	2483.500	AV	42.0	27.5	2.4	35.7	36.2	53.9	17.7	NS
Hori	4960.000	AV	31.9	31.8	4.3	34.9	33.1	53.9	20.8	NS
Hori	7440.000	AV	33.0	35.9	5.1	34.9	39.1	53.9	14.8	NS
Hori	9920.000	AV	33.2	38.6	5.9	35.4	42.3	53.9	11.6	NS
Vert	55.294	QP	30.2	9.2	7.5	32.2	14.7	40.0	25.3	NS
Vert	123.476	QP	39.7	13.3	8.4	32.3	29.1	43.5	14.4	NS
Vert	246.950	QP	39.1	17.2	9.6	32.1	33.8	46.0	12.2	NS
Vert	370.088	QP	36.8	16.6	10.5	32.1	31.8	46.0	14.2	
Vert	666.154	QP	33.2	20.0	12.4	32.0	33.6	46.0	12.4	
Vert	940.068	QP	27.7	22.6	13.7	30.8	33.2	46.0	12.8	
Vert	2483.500	PK	50.1	27.5	2.4	35.7	44.3	73.9	29.6	
Vert	4960.000	PK	41.6	31.8	4.3	34.9	42.8	73.9	31.1	NS
Vert	7440.000	PK	43.3	35.9	5.1	34.9	49.4	73.9	24.5	NS
Vert	9920.000	PK	41.1	38.6	5.9	35.4	50.2	73.9	23.7	NS
Vert	2483.500	AV	39.3	27.5	2.4	35.7	33.5	53.9	20.4	NS
Vert	4960.000	AV	32.0	31.8	4.3	34.9	33.2	53.9	20.7	NS
Vert	7440.000	AV	33.0	35.9	5.1	34.9	39.1	53.9	14.8	NS
Vert	9920.000	AV	33.2	38.6	5.9	35.4	42.3	53.9	11.6	NS

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

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

*The 10th harmonic was not seen so the result was its base noise level.

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

NS: No signal detect.

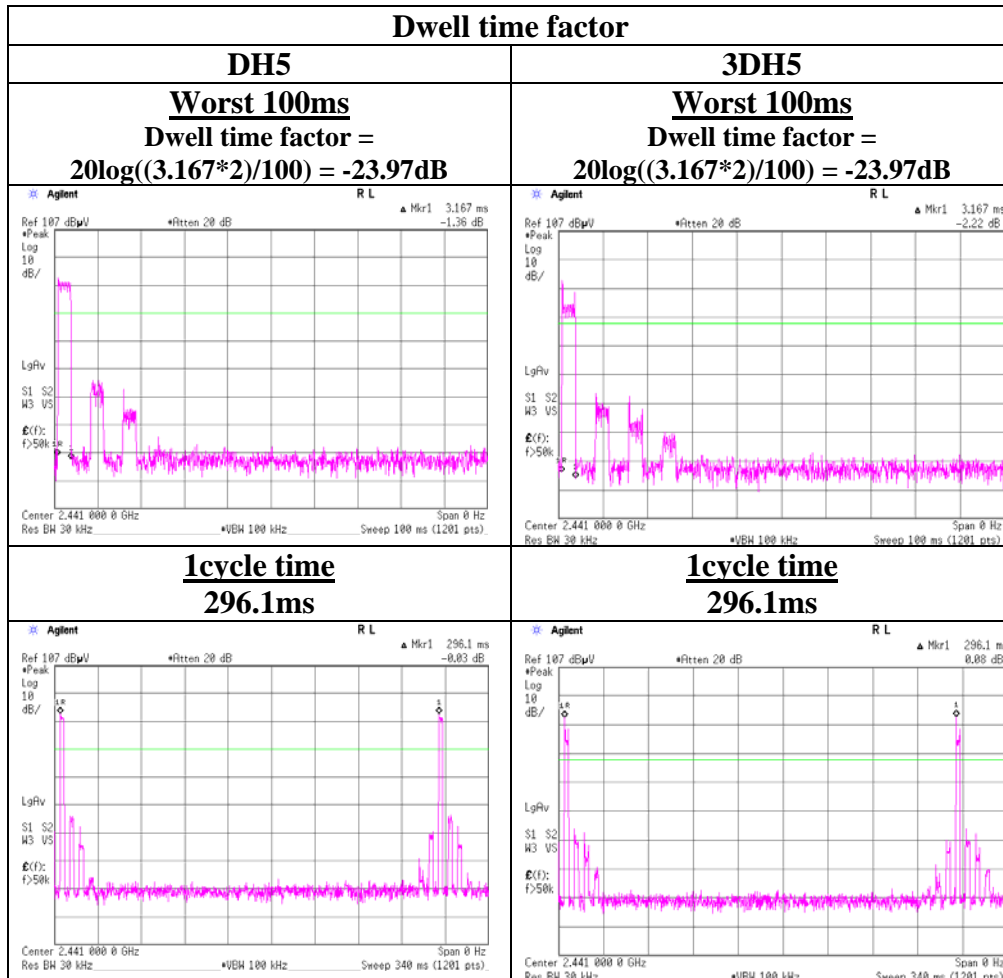
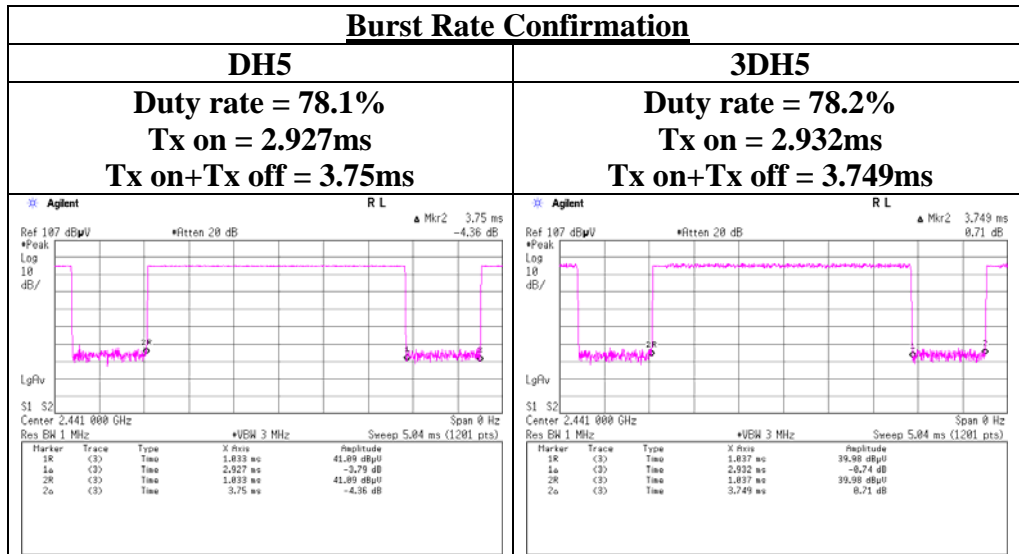
UL Japan, Inc.

Head Office EMC Lab.

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

Telephone : +81 596 24 8116

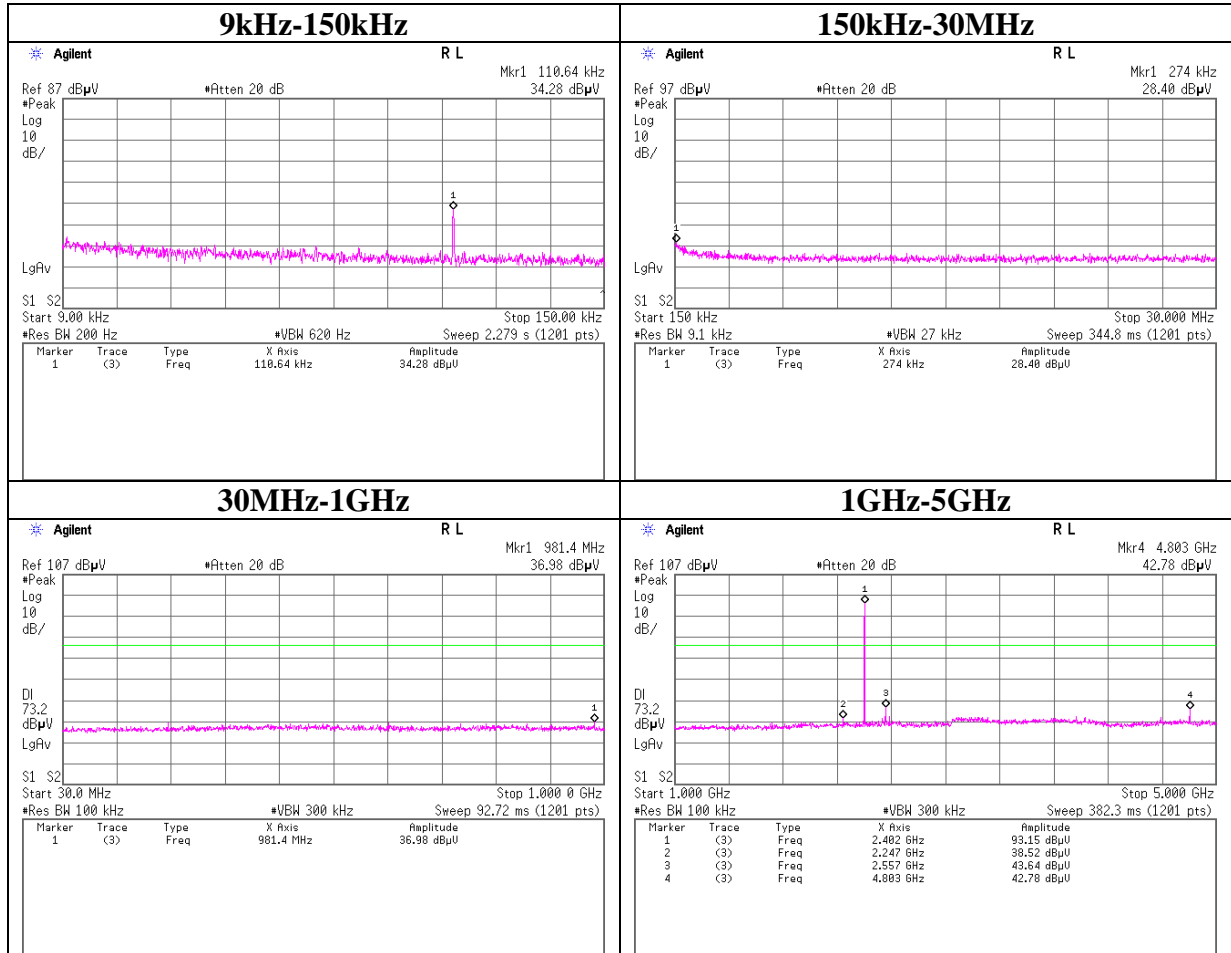
Facsimile : +81 596 24 8124



* Dwell time factor was not used for Radiated emission.

Conducted Spurious Emission

Tx DH5 2402MHz



Frequency	Reading	Reading	Cable Loss	Attenuator	Antenna Gain	EIRP	Distance	Ground bounce	E (field strength)	Limit	Margin
[kHz]	[dBuV]	[dBm]	[dB]	[dB]	[dBi]	[dBm]	[m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]
110.640	34.3	-72.7	0.0	10.0	3.0	-59.7	300.0	6.0	1.6	26.7	25.2

$$EIRP = \text{Reading (dBm)} + \text{Cable Loss} + \text{Attenuator} + \text{Antenna Gain}$$

$$E = EIRP - 20 \log(\text{Distance}) + \text{Ground bounce} + 104.8$$

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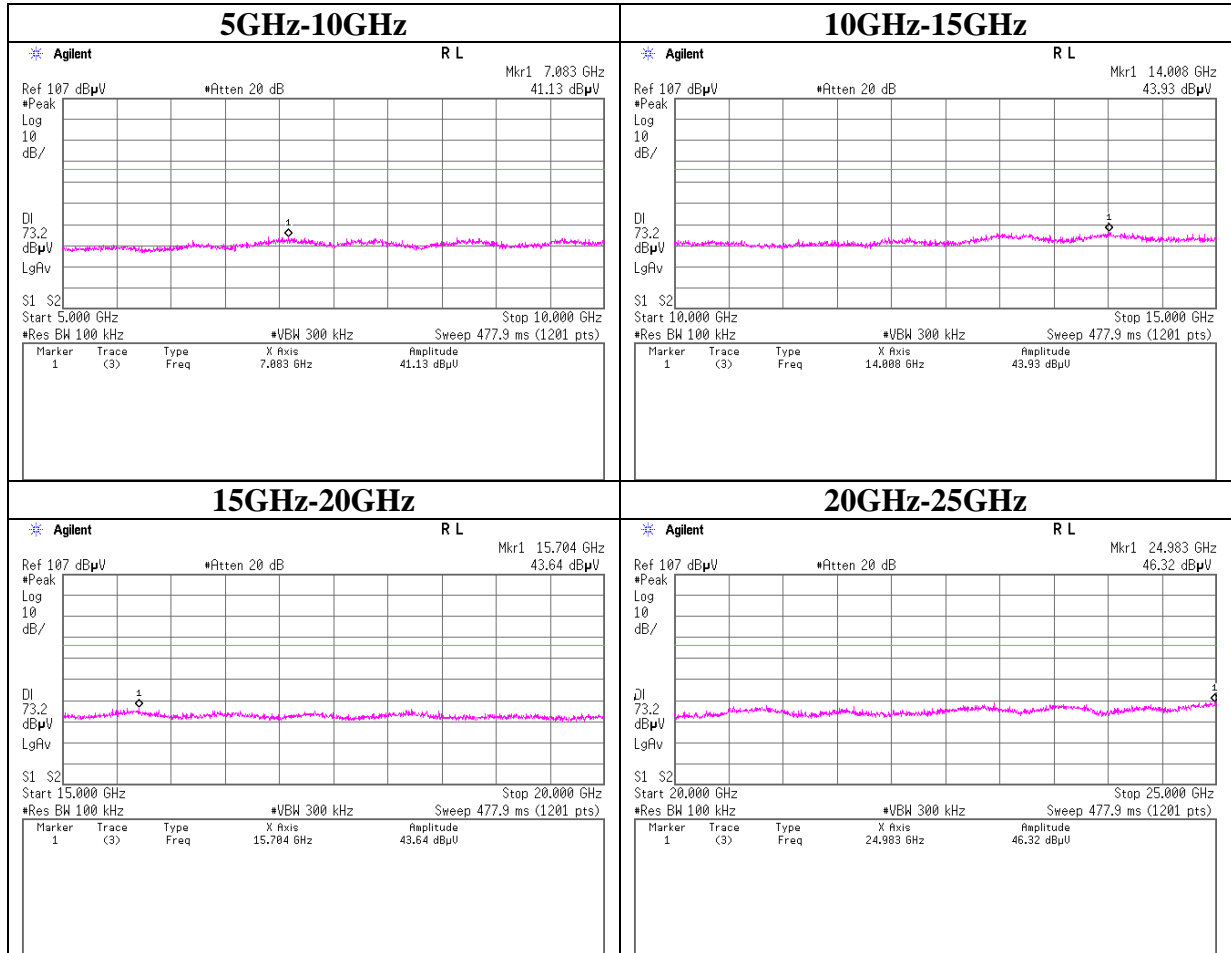
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Conducted Spurious Emission

Tx DH5 2402MHz



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Head Office EMC Lab.

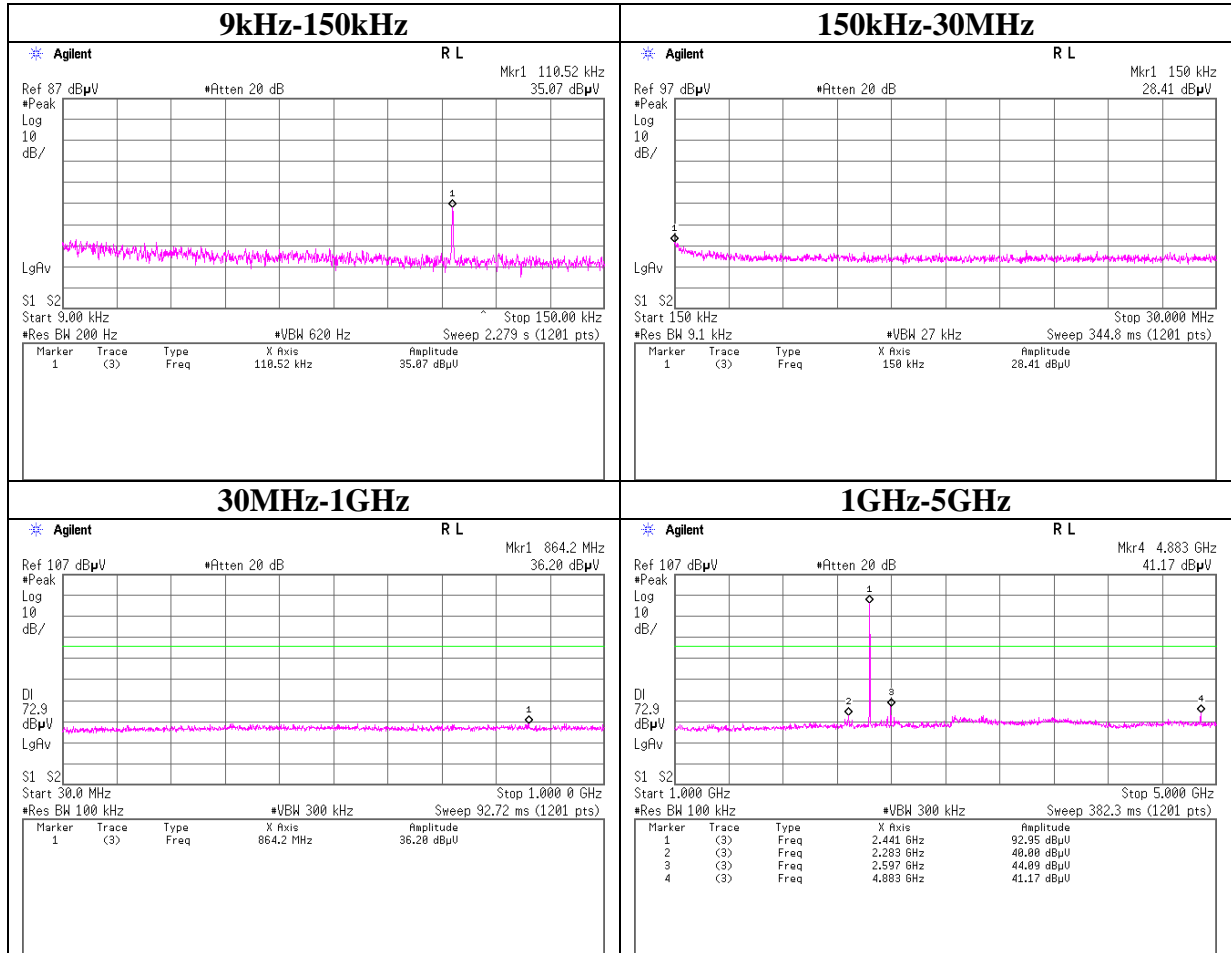
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Facsimile : +81 596 24 8124

Conducted Spurious Emission

Tx DH5 2441MHz



Frequency	Reading	Reading	Cable Loss	Attenuator	Antenna Gain	EIRP	Distance	Ground bounce	E (field strength)	Limit	Margin
[kHz]	[dBuV]	[dBm]	[dB]	[dB]	[dBi]	[dBm]	[m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]
110.520	35.1	-71.9	0.0	10.0	3.0	-58.9	300.0	6.0	2.3	26.7	24.4

$EIRP = \text{Reading (dBm)} + \text{Cable Loss} + \text{Attenuator} + \text{Antenna Gain}$

$E = EIRP - 20 \log(\text{Distance}) + \text{Ground bounce} + 104.8$

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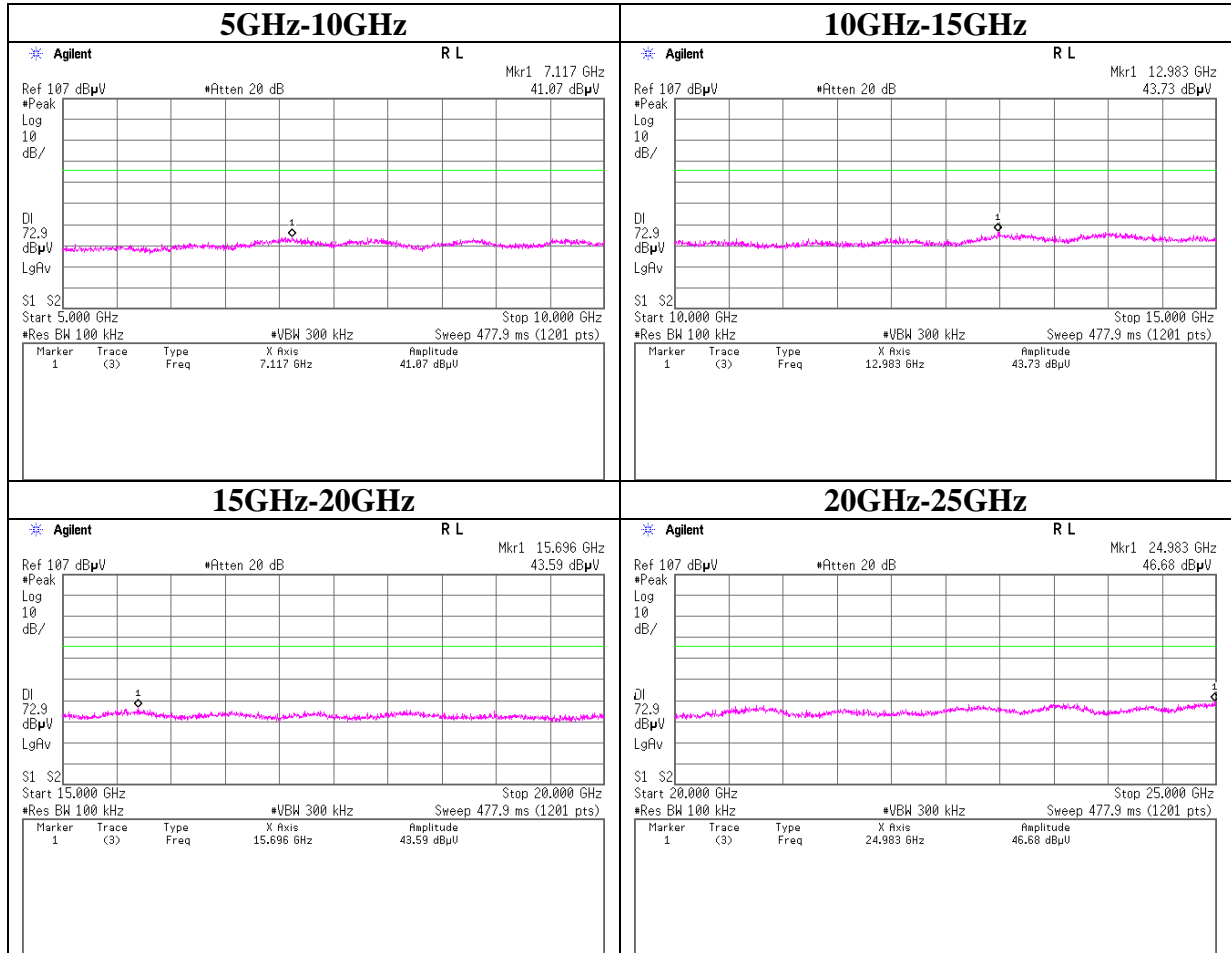
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Conducted Spurious Emission

Tx DH5 2441MHz



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Head Office EMC Lab.

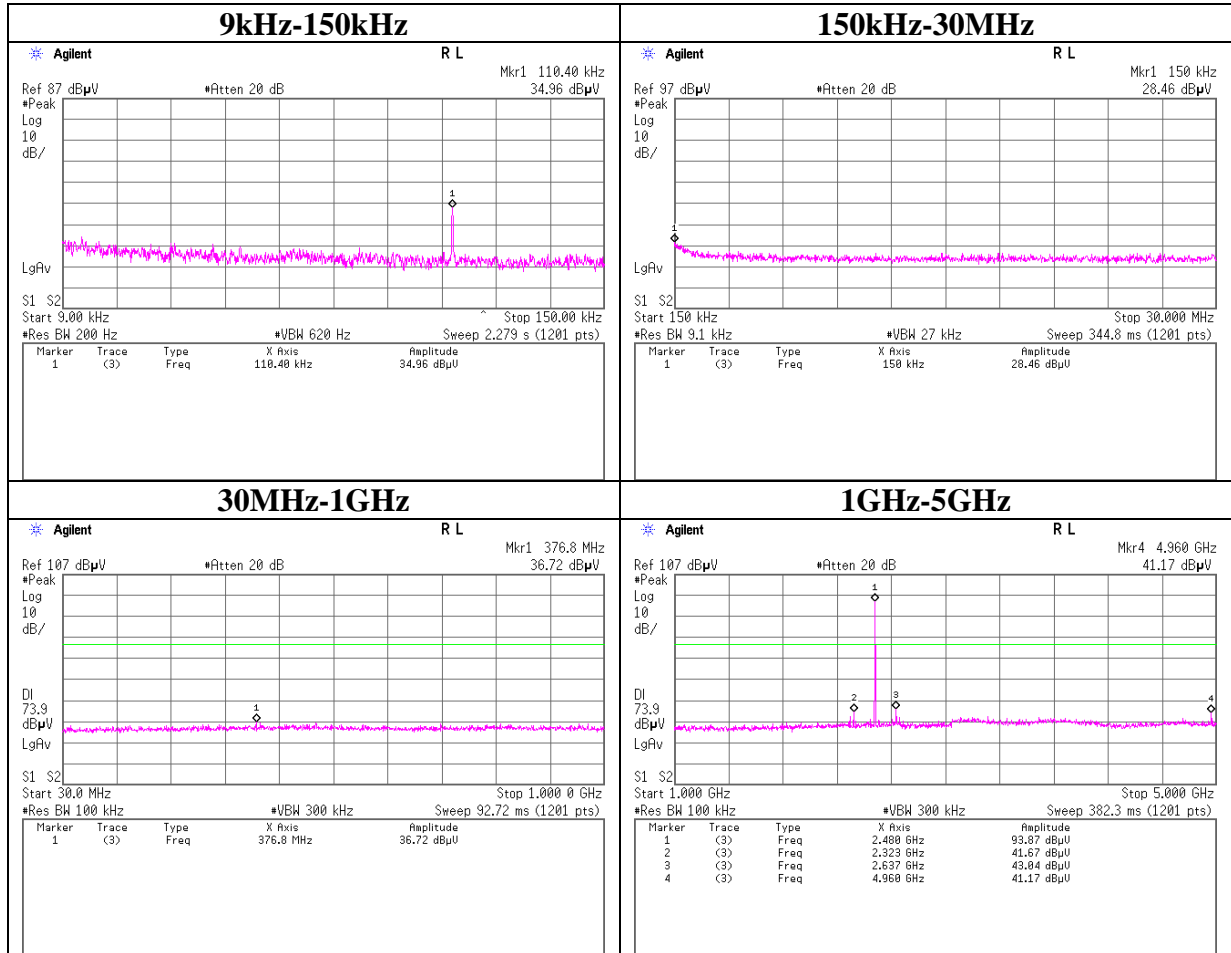
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Conducted Spurious Emission

Tx DH5 2480MHz



Frequency	Reading	Reading	Cable Loss	Attenuator	Antenna Gain	EIRP	Distance	Ground bounce	E (field strength)	Limit	Margin
[kHz]	[dBuV]	[dBm]	[dB]	[dB]	[dBi]	[dBm]	[m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]
110.400	35.0	-72.0	0.0	10.0	3.0	-59.0	300.0	6.0	2.2	26.7	24.5

$$EIRP = \text{Reading(dBm)} + \text{Cable Loss} + \text{Attenuator} + \text{Antenna Gain}$$

$$E = EIRP - 20\text{Log}(\text{Distance}) + \text{Ground bounce} + 104.8$$

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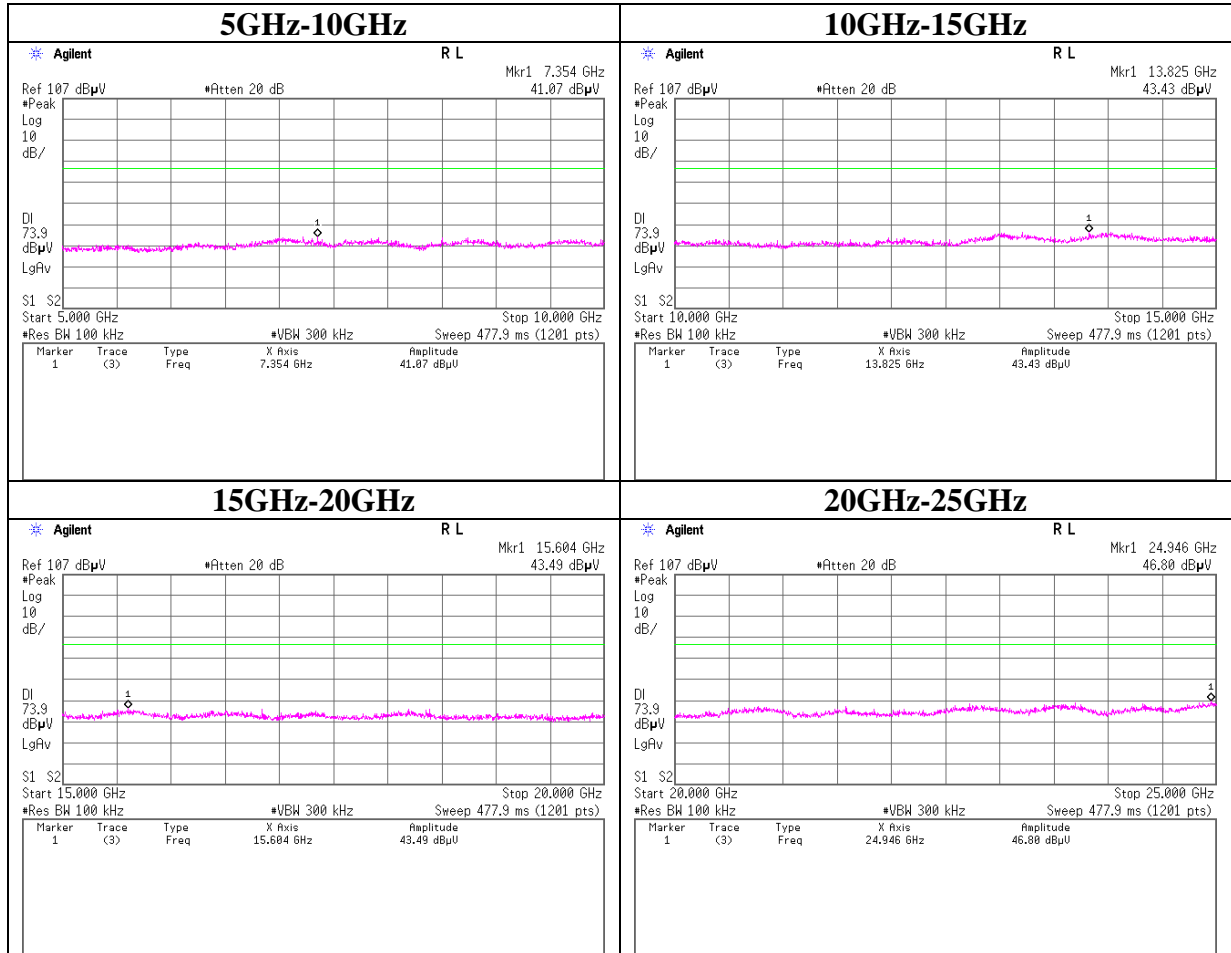
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Conducted Spurious Emission

Tx DH5 2480MHz



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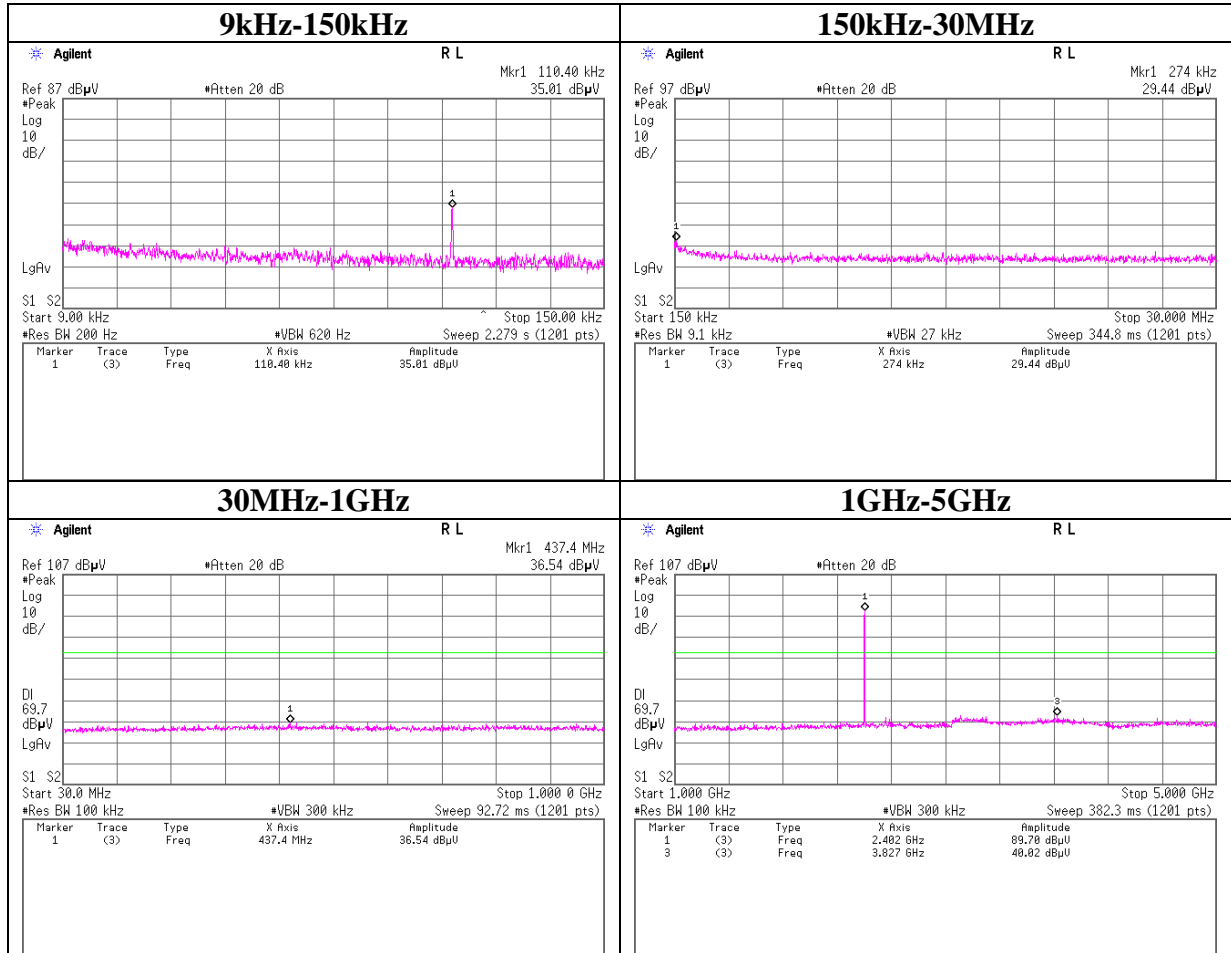
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Conducted Spurious Emission

Tx 3DH5 2402MHz



Frequency	Reading	Reading	Cable Loss	Attenuator	Antenna Gain	EIRP	Distance	Ground bounce	E (field strength)	Limit	Margin
[kHz]	[dBuV]	[dBm]	[dB]	[dB]	[dBi]	[dBm]	[m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]
110.400	35.0	-72.0	0.0	10.0	3.0	-59.0	300.0	6.0	2.3	26.7	24.5

$$EIRP = \text{Reading (dBm)} + \text{Cable Loss} + \text{Attenuator} + \text{Antenna Gain}$$

$$E = EIRP - 20 \log(\text{Distance}) + \text{Ground bounce} + 104.8$$

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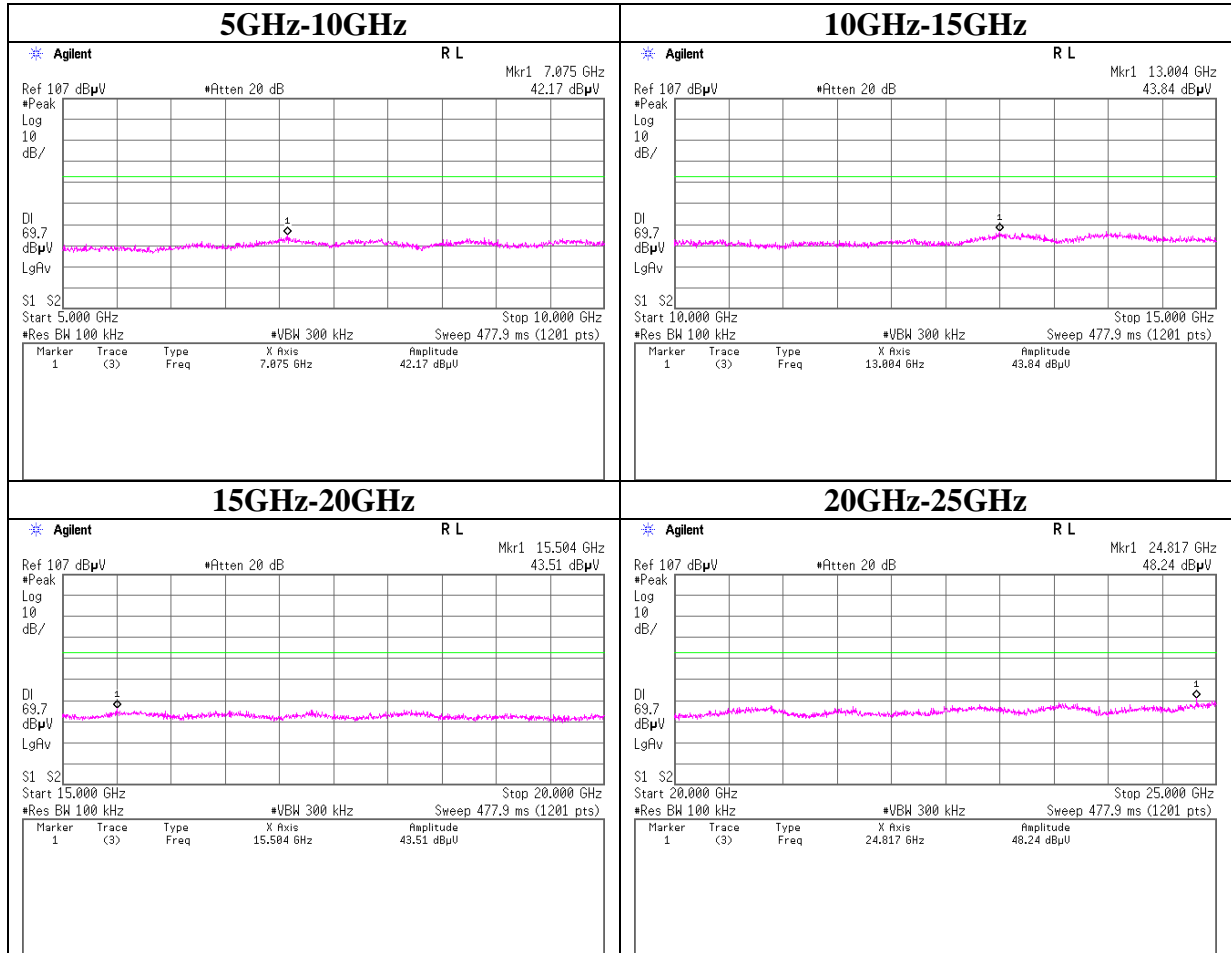
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Conducted Spurious Emission

Tx 3DH5 2402MHz



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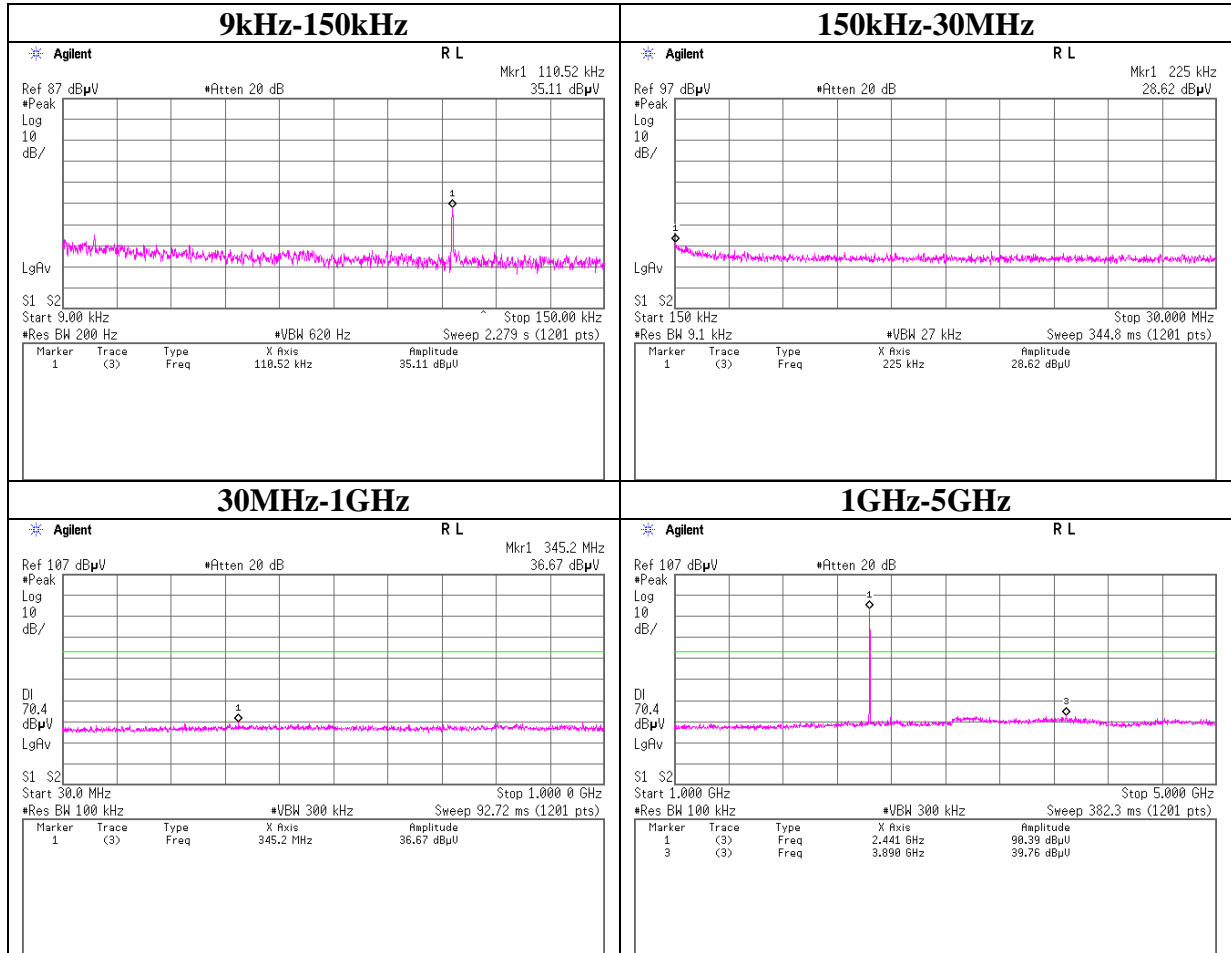
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Conducted Spurious Emission

Tx 3DH5 2441MHz



Frequency	Reading	Reading	Cable Loss	Attenuator	Antenna Gain	EIRP	Distance	Ground bounce	E (field strength)	Limit	Margin
[kHz]	[dBuV]	[dBm]	[dB]	[dB]	[dBi]	[dBm]	[m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]
110.520	35.1	-71.9	0.0	10.0	3.0	-58.9	300.0	6.0	2.4	26.7	24.4

$EIRP = \text{Reading (dBm)} + \text{Cable Loss} + \text{Attenuator} + \text{Antenna Gain}$

$E = EIRP - 20 \log(\text{Distance}) + \text{Ground bounce} + 104.8$

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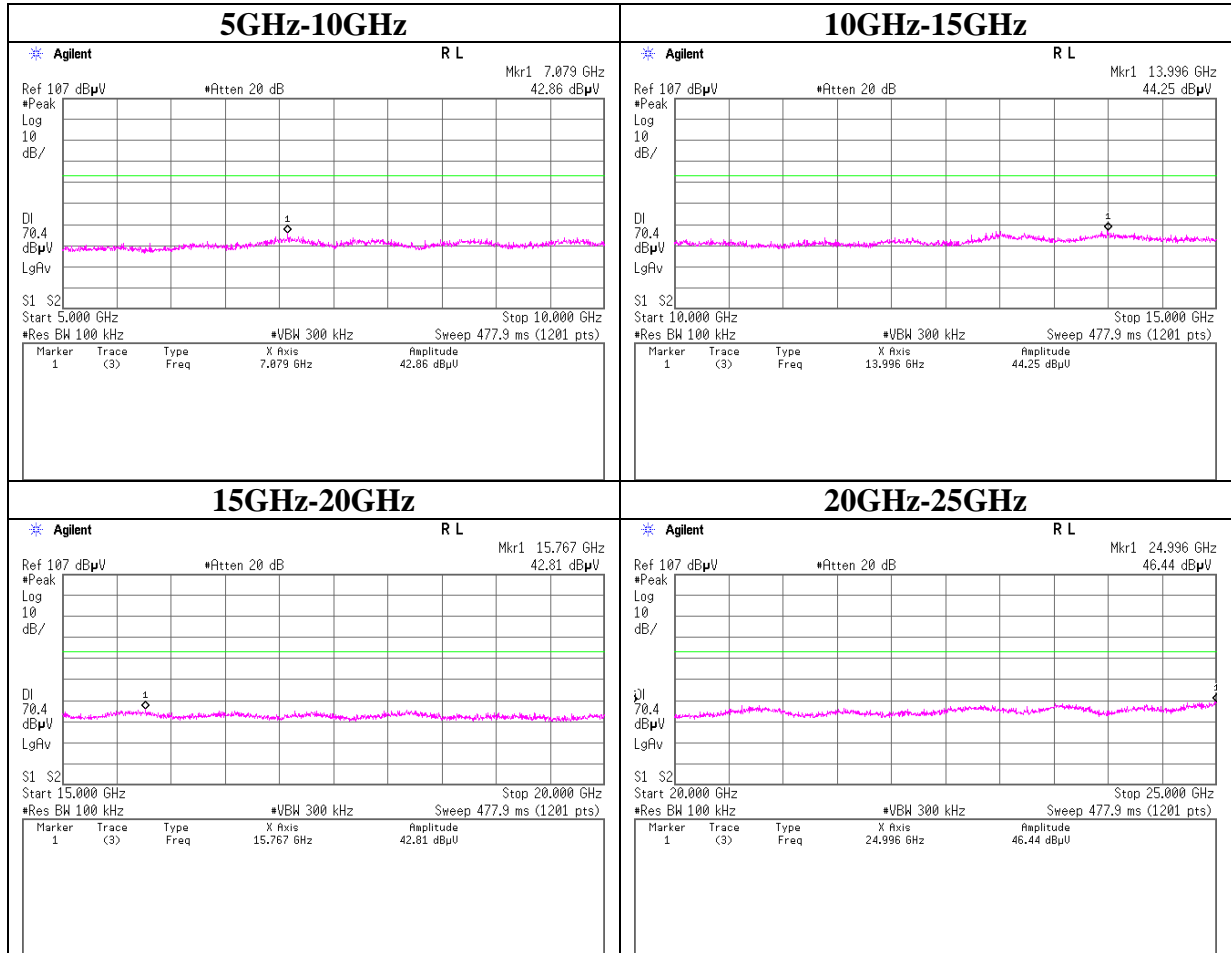
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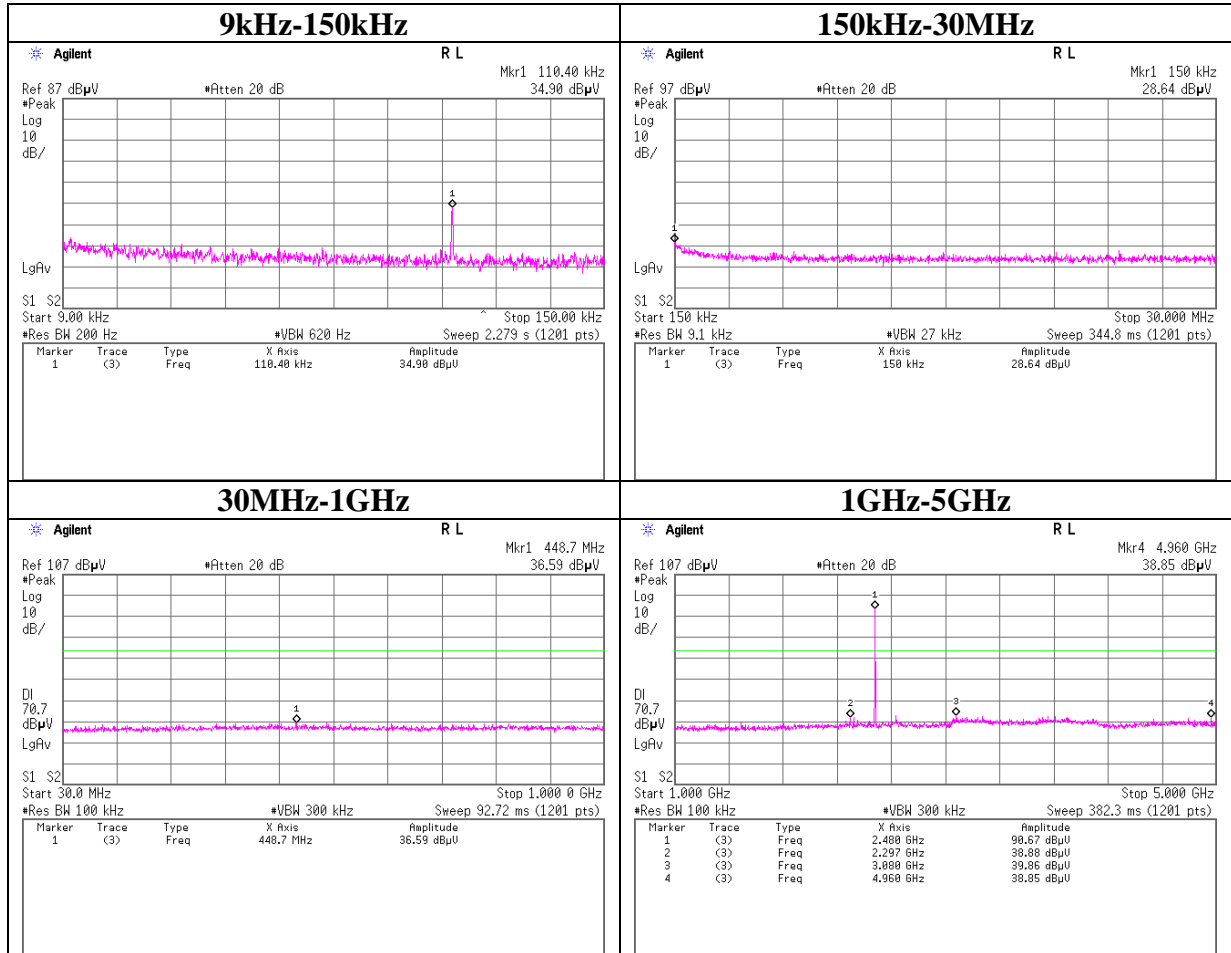
Conducted Spurious Emission

Tx 3DH5 2441MHz



Conducted Spurious Emission

Tx 3DH5 2480MHz



Frequency	Reading	Reading	Cable Loss	Attenuator	Antenna Gain	EIRP	Distance	Ground bounce	E (field strength)	Limit	Margin
[kHz]	[dBuV]	[dBm]	[dB]	[dB]	[dBi]	[dBm]	[m]	[dB]	[dBuV/m]	[dBuV/m]	[dB]
110.400	34.9	-72.1	0.0	10.0	3.0	-59.1	300.0	6.0	2.2	26.7	24.6

$$EIRP = \text{Reading(dBm)} + \text{Cable Loss} + \text{Attenuator} + \text{Antenna Gain}$$

$$E = EIRP - 20\text{Log}(\text{Distance}) + \text{Ground bounce} + 104.8$$

UL Japan, Inc.

Head Office EMC Lab.

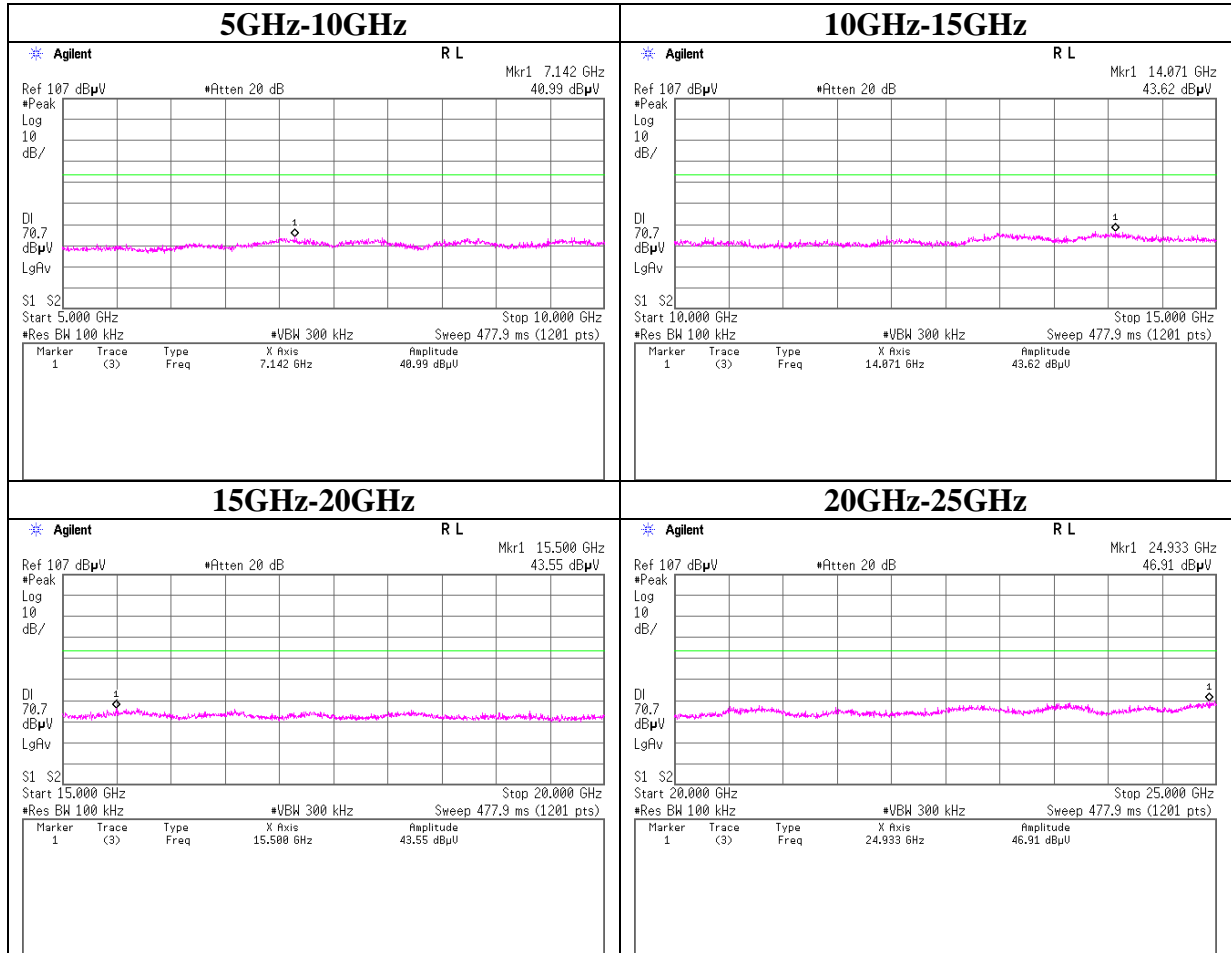
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Conducted Spurious Emission

Tx 3DH5 2480MHz



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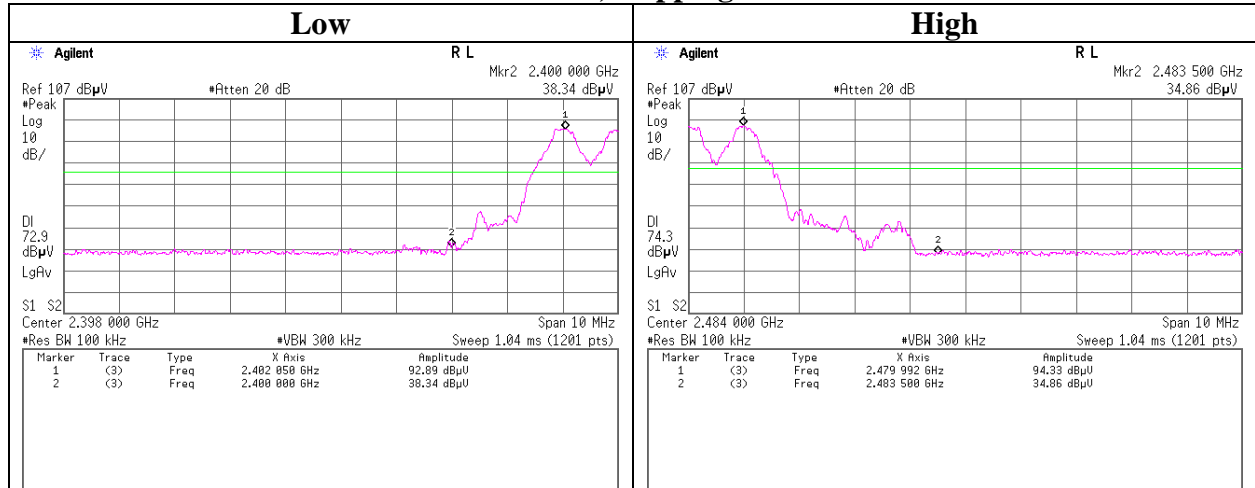
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

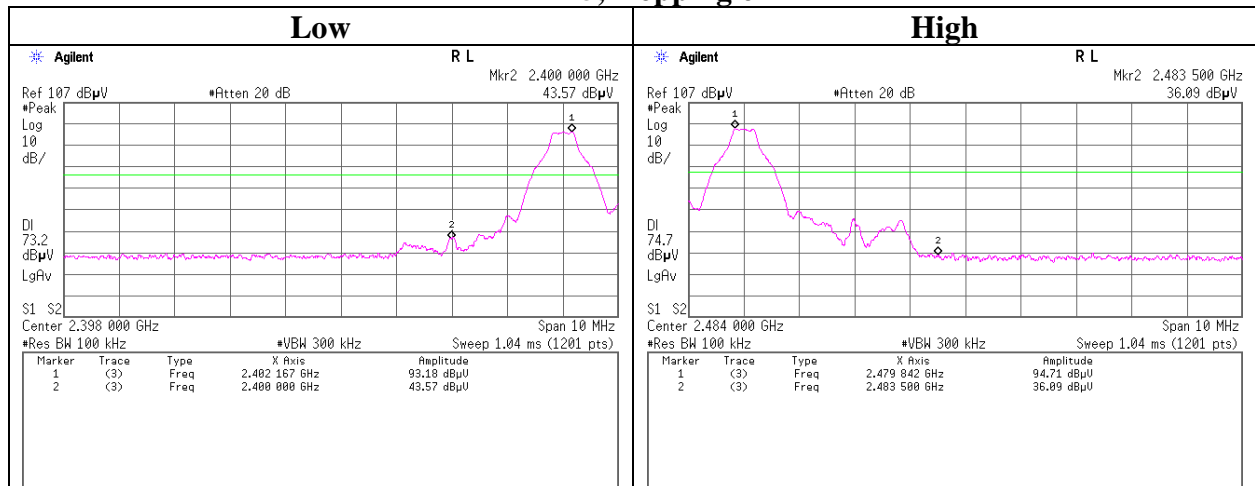
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Conducted Emission Band Edge compliance

Tx DH5, Hopping on



Tx DH5, Hopping off



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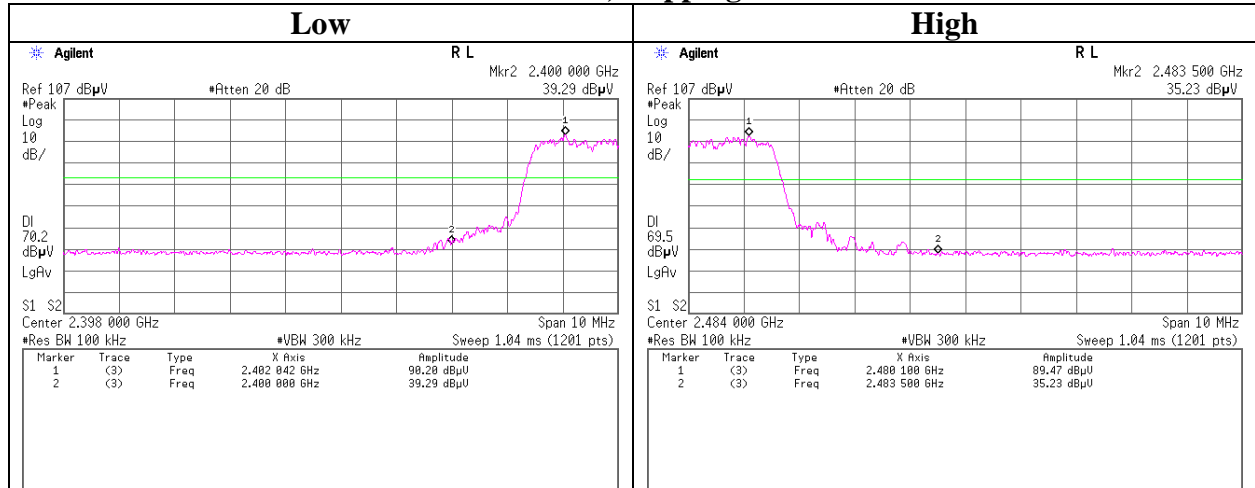
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Telephone : +81 596 24 8116

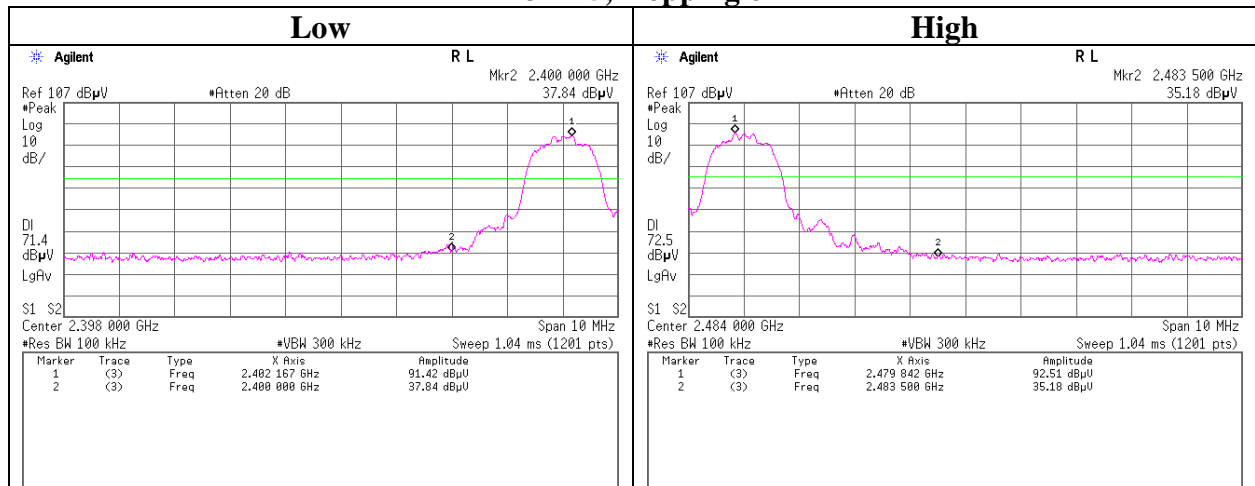
Facsimile : +81 596 24 8124

Conducted Emission Band Edge compliance

Tx 3DH5, Hopping on



Tx 3DH5, Hopping off



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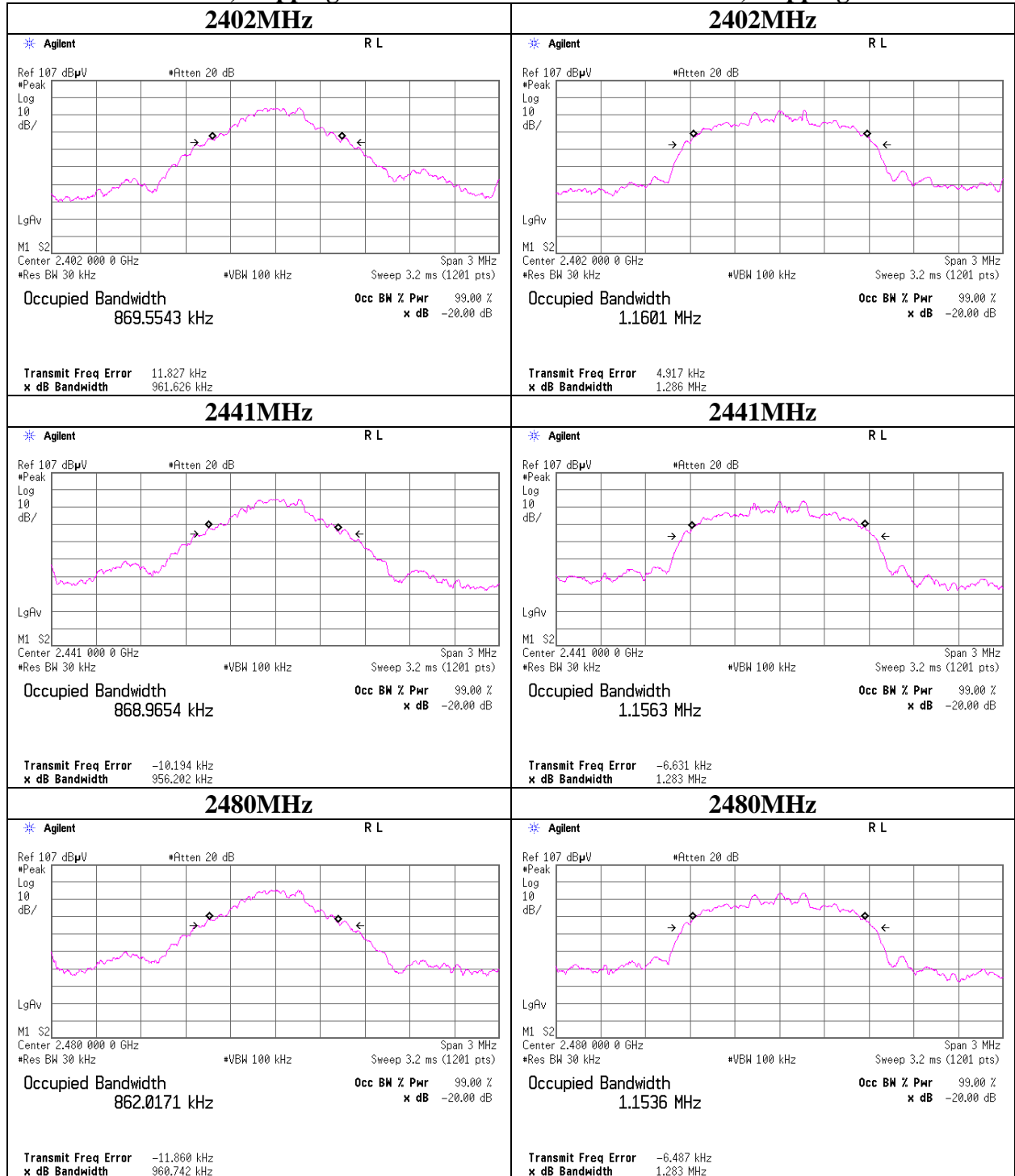
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99% Occupied Bandwidth

Tx DH5, Hopping off

Tx 3DH5, Hopping off



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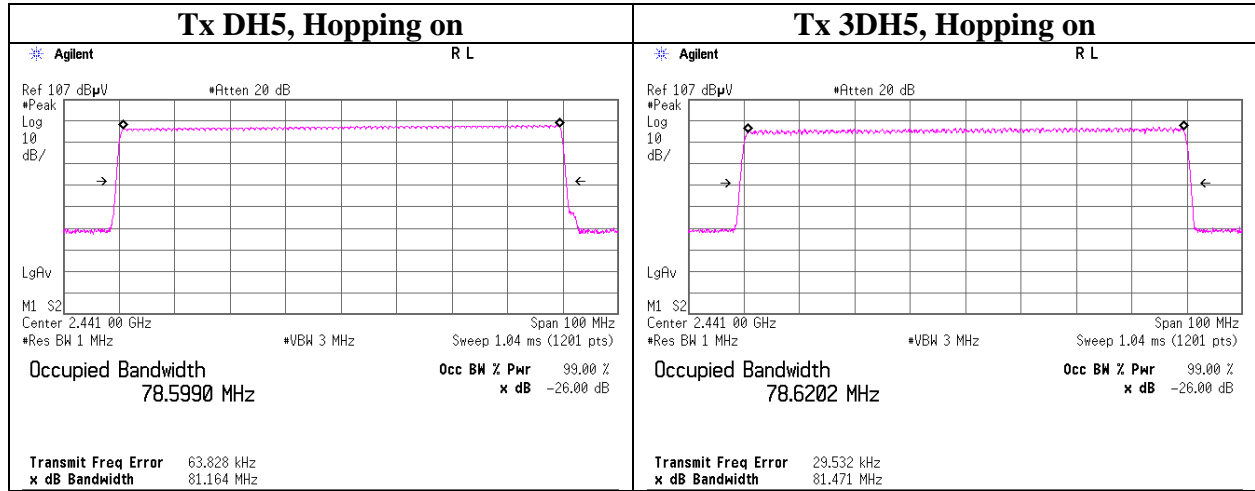
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99% Occupied Bandwidth



APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2012/02/29 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	RE	2012/02/06 * 12
MJM-07	Measure	PROMART	SEN1955	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE	2012/02/03 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2012/08/17 * 12
MCC-141	Microwave Cable	Junkosha	MWX221	1203S212(1m) / 1204S062(5m)	RE	2012/04/23 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2013/01/10 * 12
MHF-06	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	RE	2012/05/30 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	RE	2012/11/20 * 12
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2012/02/24 * 12
MJM-16	Measure	KOMELON	KMC-36	-	RE	-
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2012/05/25 * 12
MCC-133	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336164/4(1m) / 340640(5m)	RE	2012/09/05 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2012/03/29 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2012/05/21 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE	2012/08/23 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2012/10/08 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2012/10/08 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2012/07/12 * 12
MAT-09	Attenuator(6dB)	Weinschel Corp	2	BK7973	RE	2012/11/06 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2012/03/16 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	-	RE	2012/02/06 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	AT	2012/04/06 * 12
MCC-66	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX102	28636/2	AT	2012/04/25 * 12
MCC-102	Microwave Cable	Hirose Electric	U.FL-2LP-066J1-A(200)	-	AT	2012/06/27 * 12
MAT-22	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2012/03/27 * 12
MPA-08	Pre Amplifier	WiseWave	ALN-61226028-51	11576-01-071	AT	2012/08/10 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	011737	AT	-
MDPS-13	DC Power Supply	Kikusui	PAK35-10A	LF002313	AT	Pre Check
MMM-11	Digital HiTESTER	Hioki	3805	060100600	AT	2012/05/18 * 12

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

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

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

Test Item: RE: Radiated Emission

AT: Antenna Terminal Conducted test

UL Japan, Inc.

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