



RADIO TEST REPORT

Test Report No. : 10123345H-B-R1

Applicant : Panasonic Corporation of North America
Type of Equipment : Bone Conduction Headset
Model No. : RP-BTGS10
FCC ID : ACJ-RP-BTGS10
Test regulation : FCC Part 15 Subpart C: 2013
Test Result : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
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 10123345H-B. 10123345H-B is replaced with this report.

Date of test: November 14 to 20, 2013

Representative test engineer:

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UL Verification Service

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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 : Panasonic Corporation*
Address : 1-15 Matsuo-cho, Kadoma City, Osaka 571-8504, Japan
Telephone Number : +81-6-6906-2739
Facsimile Number : +81-6-6906-8405
Contact Person : Tsuyoshi Maruoka

*Panasonic Corporation is on behalf of the applicant: Panasonic Corporation of North America.

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

2.1 Identification of E.U.T.

Type of Equipment : Bone Conduction Headset
Model No. : RP-BTGS10
Serial No. : Refer to Clause 4.2
Rating : DC 1.2V
Receipt Date of Sample : November 11, 2013
Country of Mass-production : China
Condition of EUT : Engineering prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No Modification by the test lab

2.2 Product Description

Model: RP-BTGS10 (referred to as the EUT in this report) is a Bone Conduction Headset.

General Specification

Clock frequency(ies) in the system : 26MHz

Radio Specification

Bluetooth (Ver.3.0)

Equipment Type	Transceiver
Frequency of Operation	2402MHz - 2480MHz
Bandwidth & Channel spacing	Bandwidth : 1MHz Ch spacing : 1MHz
Type of Modulation	FHSS
Antenna Type / Antenna Gain	Directric chip antenna / 1.99dBi
Power Supply (inner)	DC 3.3V
Operating temperature range	0 to +40 deg. C.

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C: 2013, final revised on September 30, 2013 and effective October 30, 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

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 *1)	N/A	-
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		8.4dB 1602.013MHz, AV, Hori.	Complied

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.

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

FCC 15.31 (e)

This EUT provides stable voltage(DC3.3V) constantly to RF Part regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

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

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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)	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	4.0dB	5.1dB	5.0dB	5.1dB	6.0dB	4.9dB	4.3dB
No.2	3.9dB	5.2dB	5.0dB	4.9dB	5.9dB	4.7dB	4.2dB
No.3	4.3dB	5.1dB	5.2dB	5.2dB	6.0dB	4.8dB	4.2dB
No.4	4.6dB	5.2dB	5.0dB	5.2dB	6.0dB	5.7dB	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	4.0 x 4.5 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 4.6 x 2.8m	2.4 x 2.4m	-
No.11 measurement room	-	-	6.2 x 4.7 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

Details of Operating Mode(s)

Test Item	Mode	Tested frequency
Spurious Emission (Conducted/Radiated) 20dB Bandwidth	Tx (Hopping off) DH5, 3DH5	2402MHz 2441MHz 2480MHz
Maximum Peak Output Power	Tx (Hopping off) DH5, 2DH5, 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
<p>*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)</p> <p>*We removed 2DH mode (2 Mb/s EDR: pi/4DQPSK) except power measurement by using 3DH mode (3 Mb/s EDR:8DPSK) as a representative.</p> <p>*EUT has the power settings by the software as follows; Power settings: BDR :255 46 EDR :255 48 Software: CSR BlueTest3 *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.</p>		

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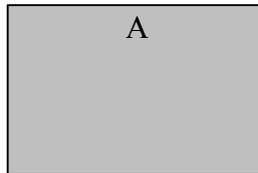
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4.2 Configuration and peripherals



* Setup was taken into consideration and test data was taken under worse case conditions.

Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Bone Conduction Headset	RP-BTGS10	2 *1) 01 *2)	Panasonic Corporation	EUT

*1) Used for Antenna Terminal conducted test

*2) Used for Radiated Emission test

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SECTION 5: 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-25GHz
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 *1)	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak Average *3)	-	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	300kHz	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)
*3) Reference data

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.11 Measurement Room
Report No. 10123345H
Date 11/20/2013
Temperature/ Humidity 25 deg. C / 45% RH
Engineer Tomohisa Nakagawa
Mode Tx (Hopping on/off) DH5/3DH5

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.934	1.000	≥ 0.623
DH5	2441.0	0.926	1.000	≥ 0.618
DH5	2480.0	0.945	1.000	≥ 0.630
3DH5	2402.0	1.268	1.000	≥ 0.845
3DH5	2441.0	1.266	1.000	≥ 0.844
3DH5	2480.0	1.258	1.000	≥ 0.839

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

No limit applies to 20dB Bandwidth.

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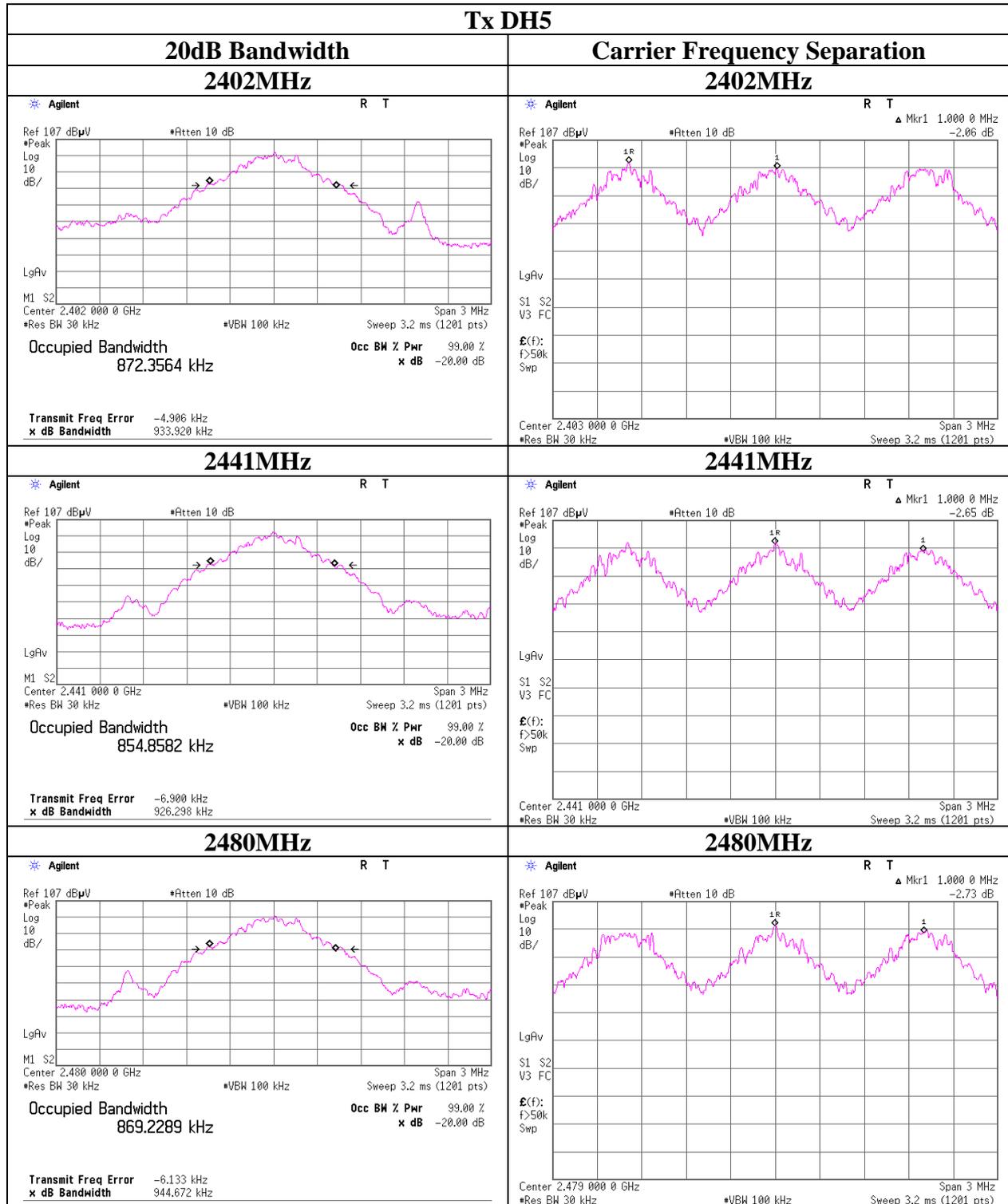
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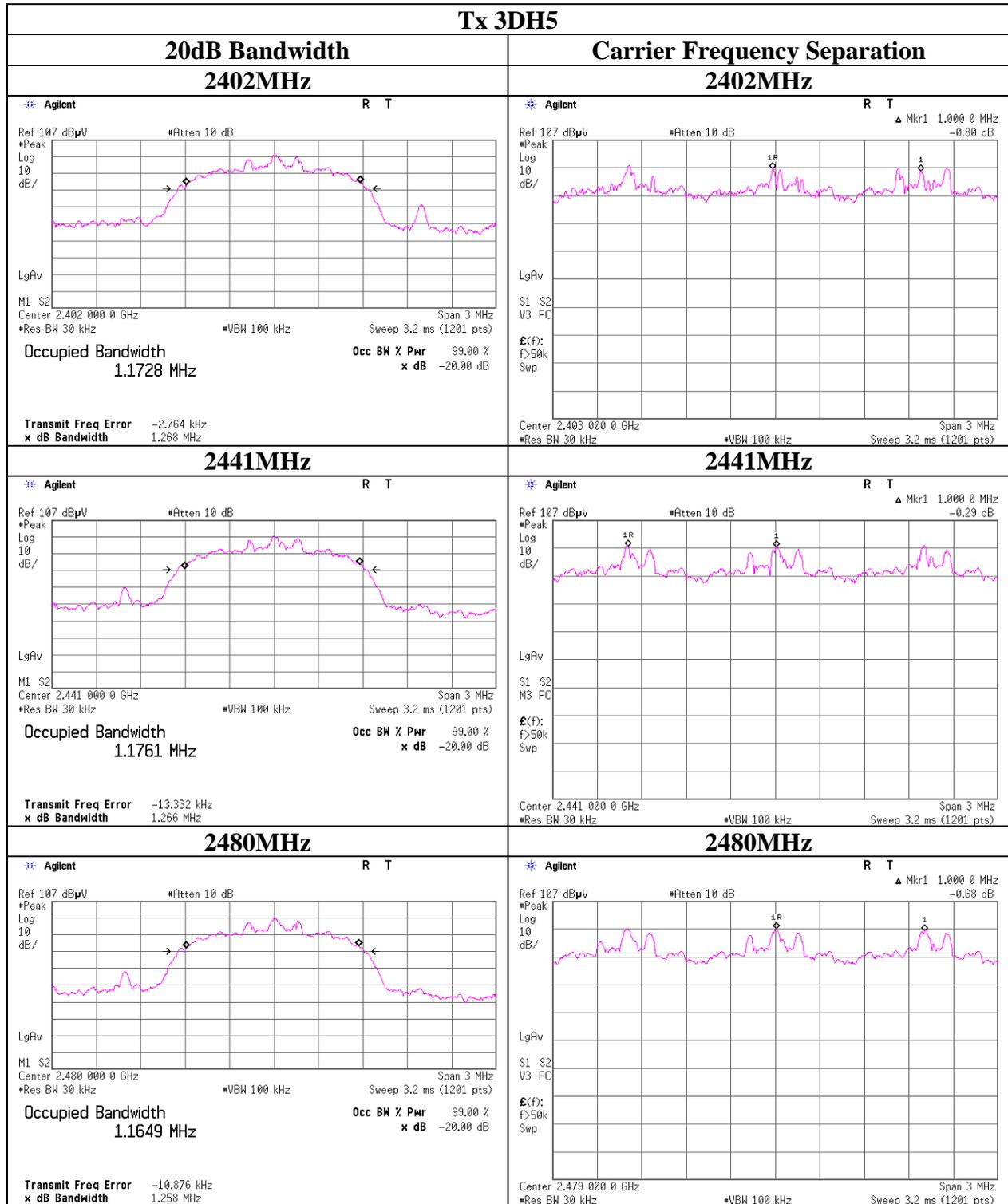
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20dB Bandwidth and Carrier Frequency Separation



20dB Bandwidth and Carrier Frequency Separation



Number of Hopping Frequency

Test place Head Office EMC Lab. No.11 Measurement Room
Report No. 10123345H
Date 11/20/2013
Temperature/ Humidity 25 deg. C / 45% RH
Engineer Tomohisa Nakagawa
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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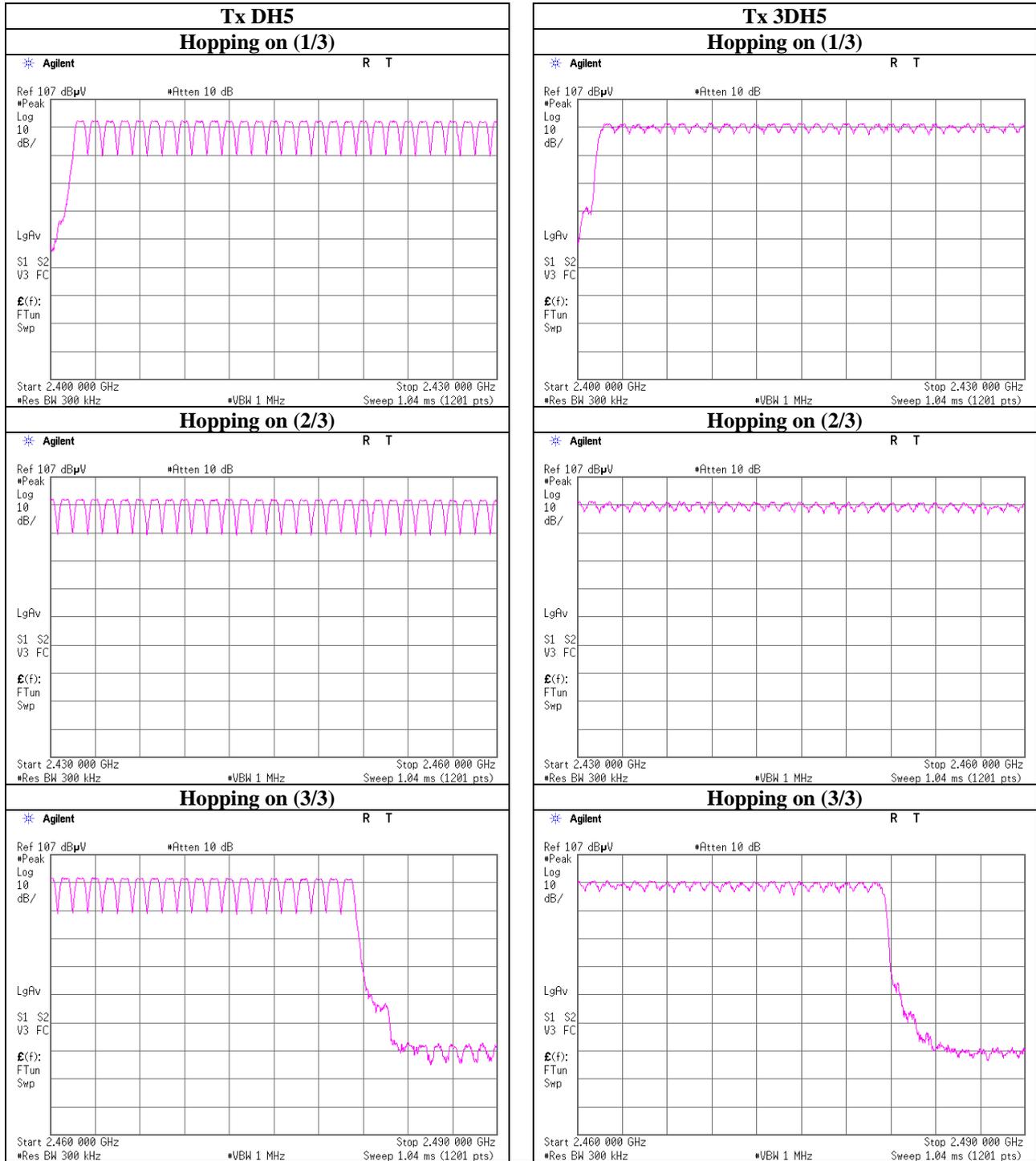
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Number of Hopping Frequency



Dwell time

Test place Head Office EMC Lab. No.11 Measurement Room
 Report No. 10123345H
 Date 11/20/2013
 Temperature/ Humidity 25 deg. C / 45% RH
 Engineer Tomohisa Nakagawa
 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	0.437	141	400
DH3	26.0 times /	5 sec. x	31.6 sec. = 165 times	1.693	279	400
DH5	17.0 times /	5 sec. x	31.6 sec. = 108 times	2.963	320	400
3DH1	50.0 times /	5 sec. x	31.6 sec. = 316 times	0.452	143	400
3DH3	25.0 times /	5 sec. x	31.6 sec. = 158 times	1.703	269	400
3DH5	17.0 times /	5 sec. x	31.6 sec. = 108 times	2.953	319	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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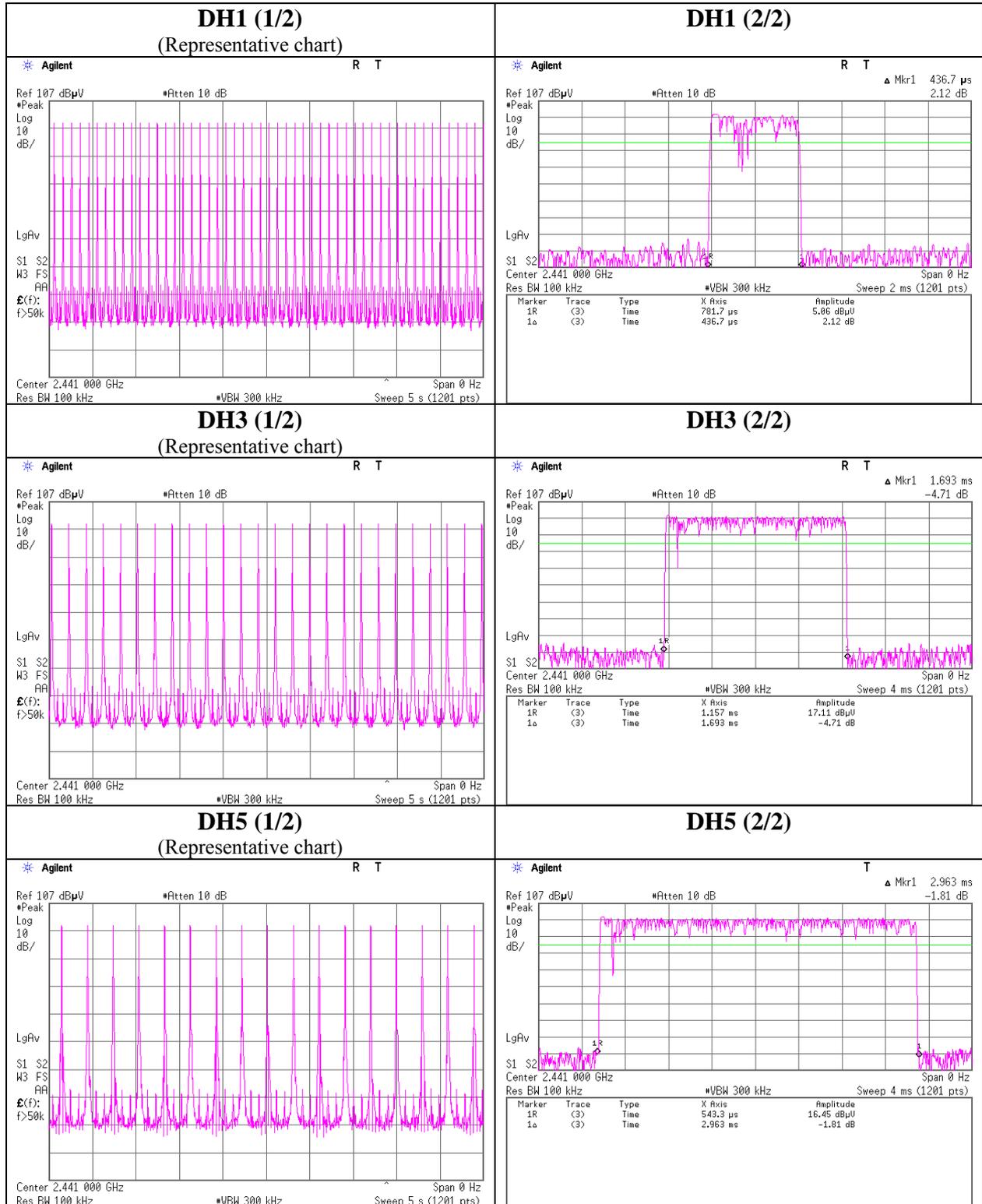
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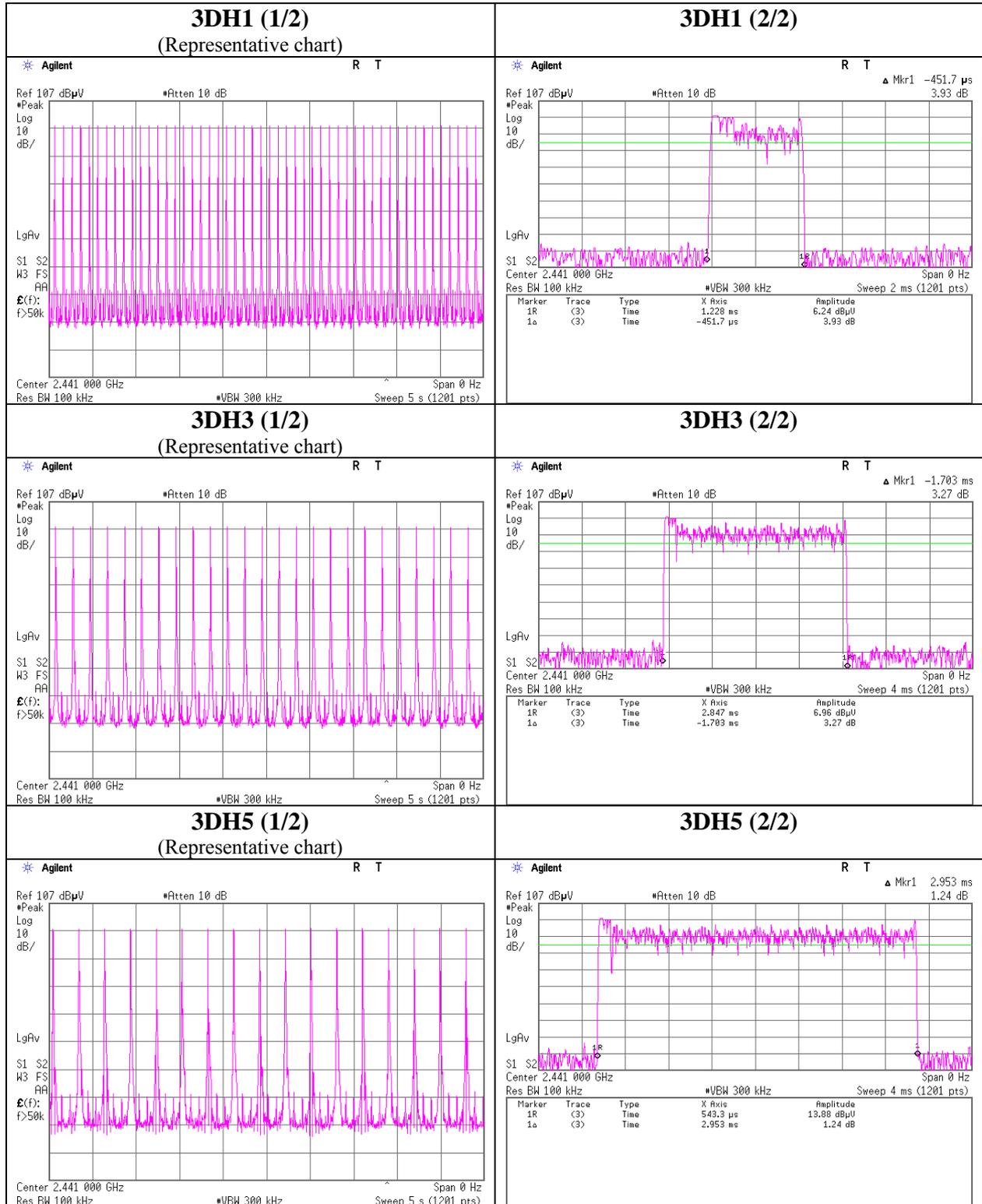
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Dwell time



Dwell time



Maximum Peak Output Power

Test place Head Office EMC Lab. No.3 Measurement Room
Report No. 10123345H
Date 11/19/13
Temperature/ Humidity 24 deg. C / 48% RH
Engineer Takumi Shimada
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	-7.67	1.28	9.97	3.58	2.28	20.96	125	17.38
DH5	2441.0	-7.89	1.28	9.97	3.36	2.17	20.96	125	17.60
DH5	2480.0	-8.49	1.28	9.97	2.76	1.89	20.96	125	18.20
2DH5	2402.0	-7.60	1.28	9.97	3.65	2.32	20.96	125	17.31
2DH5	2441.0	-7.86	1.28	9.97	3.39	2.18	20.96	125	17.57
2DH5	2480.0	-8.56	1.28	9.97	2.69	1.86	20.96	125	18.27
3DH5	2402.0	-7.58	1.28	9.97	3.67	2.33	20.96	125	17.29
3DH5	2441.0	-7.83	1.28	9.97	3.42	2.20	20.96	125	17.54
3DH5	2480.0	-8.52	1.28	9.97	2.73	1.87	20.96	125	18.23

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied)+ Attenuator

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

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

Average Output Power (Reference data for SAR testing)

Test place Head Office EMC Lab. No.3 Measurement Room
Report No. 10123345H
Date 11/19/13
Temperature/ Humidity 24 deg. C / 48% RH
Engineer Takumi Shimada
Mode Tx (Hopping off) DH5/2DH5/3DH5

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
					[dBm]	[mW]
DH5	2402.0	-9.04	1.28	9.97	2.21	1.66
DH5	2441.0	-9.21	1.28	9.97	2.04	1.60
DH5	2480.0	-9.79	1.28	9.97	1.46	1.40
2DH5	2402.0	-11.05	1.28	9.97	0.20	1.05
2DH5	2441.0	-11.33	1.28	9.97	-0.08	0.98
2DH5	2480.0	-12.16	1.28	9.97	-0.91	0.81
3DH5	2402.0	-10.98	1.28	9.97	0.27	1.06
3DH5	2441.0	-11.29	1.28	9.97	-0.04	0.99
3DH5	2480.0	-12.09	1.28	9.97	-0.84	0.82

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

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Radiated Spurious Emission

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber	
Report No.	10123345H	
Date	11/14/2013	11/16/2013
Temperature/ Humidity	23 deg. C / 34% RH	23 deg. C / 34% RH
Engineer	Satofumi Matsuyama	Masatoshi Nishiguchi
	(Above 1GHz)	(Below 1GHz)
Mode	Tx, DH5 2441MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	239.911	QP	26.1	17.1	9.4	32.1	20.5	46.0	25.5	
Hori	245.397	QP	37.1	17.2	9.5	32.1	31.7	46.0	14.3	
Hori	248.965	QP	32.3	17.3	9.5	32.1	27.0	46.0	19.0	
Hori	309.421	QP	26.2	14.5	9.9	32.0	18.6	46.0	27.4	
Hori	320.009	QP	31.9	14.9	10.0	32.0	24.8	46.0	21.2	
Hori	426.997	QP	37.5	17.7	10.7	32.0	33.9	46.0	12.1	
Hori	1626.705	PK	47.5	26.1	2.6	33.3	42.9	73.9	31.0	
Hori	4882.000	PK	53.9	30.6	5.3	31.4	58.4	73.9	15.5	
Hori	1626.705	AV	41.0	26.1	2.6	33.3	36.4	53.9	17.5	
Hori	4882.000	AV	44.9	30.6	5.3	31.4	49.4	53.9	-	See Dwell time factor sheet
Vert	239.911	QP	22.6	17.1	9.4	32.1	17.0	46.0	29.0	
Vert	245.377	QP	27.9	17.2	9.5	32.1	22.5	46.0	23.5	
Vert	249.663	QP	25.3	17.3	9.5	32.1	20.0	46.0	26.0	
Vert	309.421	QP	23.3	14.5	9.9	32.0	15.7	46.0	30.3	
Vert	319.978	QP	27.7	14.9	10.0	32.0	20.6	46.0	25.4	
Vert	425.582	QP	36.5	17.7	10.7	32.0	32.9	46.0	13.1	
Vert	1626.705	PK	47.7	26.1	2.6	33.3	43.1	73.9	30.8	
Vert	4882.000	PK	46.7	30.6	5.3	31.4	51.2	73.9	22.7	
Vert	1626.705	AV	42.4	26.1	2.6	33.3	37.8	53.9	16.1	
Vert	4882.000	AV	36.5	30.6	5.3	31.4	41.0	53.9	-	See Dwell time factor sheet

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

Dwell time factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Dwell Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	4882.000	AV	44.9	30.6	5.3	31.4	-24.2	25.2	53.9	28.7	
Vert	4882.000	AV	36.5	30.6	5.3	31.4	-24.2	16.8	53.9	37.1	

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

*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

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Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10123345H
Date 11/14/2013 11/16/2013
Temperature/ Humidity 23 deg. C / 34% RH 23 deg. C / 34% RH
Engineer Satofumi Matsuyama Masatoshi Nishiguchi
(Above 1GHz) (Below 1GHz)
Mode Tx, DH5 2480MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	239.920	QP	26.2	17.1	9.4	32.1	20.6	46.0	25.4	
Hori	245.348	QP	37.0	17.2	9.5	32.1	31.6	46.0	14.4	
Hori	248.948	QP	32.4	17.3	9.5	32.1	27.1	46.0	18.9	
Hori	309.350	QP	26.3	14.5	9.9	32.0	18.7	46.0	27.3	
Hori	320.016	QP	31.8	14.9	10.0	32.0	24.7	46.0	21.3	
Hori	427.000	QP	37.5	17.7	10.7	32.0	33.9	46.0	12.1	
Hori	1652.620	PK	49.3	26.1	2.6	33.3	44.7	73.9	29.2	
Hori	2483.500	PK	49.9	28.4	3.1	32.3	49.1	73.9	24.8	
Hori	4960.000	PK	56.6	30.7	5.4	31.4	61.3	73.9	12.6	
Hori	1652.620	AV	45.4	26.1	2.6	33.3	40.8	53.9	13.1	
Hori	2483.500	AV	36.4	28.4	3.1	32.3	35.6	53.9	18.3	
Hori	4960.000	AV	52.0	30.7	5.4	31.4	56.7	53.9	-	See Dwell time factor sheet
Vert	239.920	QP	22.7	17.1	9.4	32.1	17.1	46.0	28.9	
Vert	245.368	QP	28.0	17.2	9.5	32.1	22.6	46.0	23.4	
Vert	249.680	QP	25.3	17.3	9.5	32.1	20.0	46.0	26.0	
Vert	309.820	QP	23.2	14.5	9.9	32.0	15.6	46.0	30.4	
Vert	319.992	QP	27.9	14.9	10.0	32.0	20.8	46.0	25.2	
Vert	425.600	QP	36.4	17.7	10.7	32.0	32.8	46.0	13.2	
Vert	1652.620	PK	48.2	26.1	2.6	33.3	43.6	73.9	30.3	
Vert	2483.500	PK	46.7	28.4	3.1	32.3	45.9	73.9	28.0	
Vert	4960.000	PK	50.1	30.7	5.4	31.4	54.8	73.9	19.1	
Vert	1652.620	AV	43.4	26.1	2.6	33.3	38.8	53.9	15.1	
Vert	2483.500	AV	33.7	28.4	3.1	32.3	32.9	53.9	21.0	
Vert	4960.000	AV	44.4	30.7	5.4	31.4	49.1	53.9	-	See Dwell time factor sheet

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

Dwell time factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Dwell Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	4960.000	AV	52.0	30.7	5.4	31.4	-24.2	32.5	53.9	21.4	
Vert	4960.000	AV	44.4	30.7	5.4	31.4	-24.2	24.9	53.9	29.0	

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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

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

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Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10123345H
Date 11/14/2013 11/16/2013
Temperature/ Humidity 23 deg. C / 34% RH 23 deg. C / 34% RH
Engineer Satofumi Matsuyama Masatoshi Nishiguchi
(Above 1GHz) (Below 1GHz)
Mode Tx, 3DH5 2402MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	239.981	QP	33.3	17.1	9.4	32.1	27.7	46.0	18.3	
Hori	245.376	QP	36.7	17.2	9.5	32.1	31.3	46.0	14.7	
Hori	248.981	QP	32.4	17.3	9.5	32.1	27.1	46.0	18.9	
Hori	255.976	QP	32.9	17.6	9.5	32.1	27.9	46.0	18.1	
Hori	309.308	QP	25.9	14.5	9.9	32.0	18.3	46.0	27.7	
Hori	424.500	QP	37.5	17.7	10.7	32.0	33.9	46.0	12.1	
Hori	1602.013	PK	53.5	26.0	2.6	33.4	48.7	73.9	25.2	
Hori	2390.000	PK	47.0	28.2	3.1	32.4	45.9	73.9	28.0	
Hori	4804.000	PK	56.9	30.5	5.3	31.4	61.3	73.9	12.6	
Hori	1602.013	AV	50.3	26.0	2.6	33.4	45.5	53.9	8.4	
Hori	2390.000	AV	32.8	28.2	3.1	32.4	31.7	53.9	22.2	
Hori	4804.000	AV	48.2	30.5	5.3	31.4	52.6	53.9	-	- See Dwell time factor sheet
Vert	245.360	QP	27.8	17.2	9.5	32.1	22.4	46.0	23.6	
Vert	249.137	QP	25.2	17.3	9.5	32.1	19.9	46.0	26.1	
Vert	257.253	QP	23.0	17.7	9.5	32.0	18.2	46.0	27.8	
Vert	309.760	QP	22.5	14.5	9.9	32.0	14.9	46.0	31.1	
Vert	320.009	QP	27.6	14.9	10.0	32.0	20.5	46.0	25.5	
Vert	423.800	QP	36.1	17.7	10.7	32.0	32.5	46.0	13.5	
Vert	1602.013	PK	49.1	26.0	2.6	33.4	44.3	73.9	29.6	
Vert	2390.000	PK	42.3	28.2	3.1	32.4	41.2	73.9	32.7	
Vert	4804.000	PK	49.3	30.5	5.3	31.4	53.7	73.9	20.2	
Vert	1602.013	AV	44.3	26.0	2.6	33.4	39.5	53.9	14.4	
Vert	2390.000	AV	30.2	28.2	3.1	32.4	29.1	53.9	24.8	
Vert	4804.000	AV	39.4	30.5	5.3	31.4	43.8	53.9	-	- See Dwell time factor sheet

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

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	99.2	28.2	3.1	32.4	98.1	-	-	Carrier
Hori	2400.000	PK	51.1	28.2	3.1	32.4	50.0	78.1	28.1	
Vert	2402.000	PK	95.2	28.2	3.1	32.4	94.1	-	-	Carrier
Vert	2400.000	PK	46.9	28.2	3.1	32.4	45.8	74.1	28.3	

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

Dwell time factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Dwell Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	4804.000	AV	48.2	30.5	5.3	31.4	-24.2	28.4	53.9	25.5	
Vert	4804.000	AV	39.4	30.5	5.3	31.4	-24.2	19.6	53.9	34.3	

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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

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

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Radiated Spurious Emission

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber	
Report No.	10123345H	
Date	11/14/2013	11/16/2013
Temperature/ Humidity	23 deg. C / 34% RH	23 deg. C / 34% RH
Engineer	Satofumi Matsuyama	Masatoshi Nishiguchi
	(Above 1GHz)	(Below 1GHz)
Mode	Tx, 3DH5 2441MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	239.997	QP	33.1	17.1	9.4	32.1	27.5	46.0	18.5	
Hori	245.375	QP	36.7	17.2	9.5	32.1	31.3	46.0	14.7	
Hori	248.954	QP	32.2	17.3	9.5	32.1	26.9	46.0	19.1	
Hori	255.980	QP	33.0	17.6	9.5	32.1	28.0	46.0	18.0	
Hori	319.674	QP	26.0	14.9	10.0	32.0	18.9	46.0	27.1	
Hori	424.497	QP	37.4	17.7	10.7	32.0	33.8	46.0	12.2	
Hori	1626.700	PK	46.8	26.1	2.6	33.3	42.2	73.9	31.7	
Hori	4882.000	PK	58.0	30.6	5.3	31.4	62.5	73.9	11.4	
Hori	1626.700	AV	40.6	26.1	2.6	33.3	36.0	53.9	17.9	
Hori	4882.000	AV	53.9	30.6	5.3	31.4	58.4	53.9	-	- See Dwell time factor sheet
Vert	245.389	QP	27.6	17.2	9.5	32.1	22.2	46.0	23.8	
Vert	249.200	QP	25.1	17.3	9.5	32.1	19.8	46.0	26.2	
Vert	257.367	QP	23.0	17.7	9.5	32.0	18.2	46.0	27.8	
Vert	309.798	QP	22.4	14.5	9.9	32.0	14.8	46.0	31.2	
Vert	319.532	QP	27.5	14.9	10.0	32.0	20.4	46.0	25.6	
Vert	423.965	QP	36.0	17.7	10.7	32.0	32.4	46.0	13.6	
Vert	1626.700	PK	47.4	26.1	2.6	33.3	42.8	73.9	31.1	
Vert	4882.000	PK	50.2	30.6	5.3	31.4	54.7	73.9	19.2	
Vert	1626.700	AV	42.0	26.1	2.6	33.3	37.4	53.9	16.5	
Vert	4882.000	AV	44.8	30.6	5.3	31.4	49.3	53.9	-	- See Dwell time factor sheet

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

Dwell time factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Dwell Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	4882.000	AV	53.9	30.6	5.3	31.4	-24.2	34.2	53.9	19.7	
Vert	4882.000	AV	44.8	30.6	5.3	31.4	-24.2	25.1	53.9	28.8	

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

*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

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Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10123345H
Date 11/14/2013 11/16/2013
Temperature/ Humidity 23 deg. C / 34% RH 23 deg. C / 34% RH
Engineer Satofumi Matsuyama Masatoshi Nishiguchi
(Above 1GHz) (Below 1GHz)
Mode Tx, 3DH5 2480MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	239.965	QP	33.1	17.1	9.4	32.1	27.5	46.0	18.5	
Hori	245.388	QP	36.6	17.2	9.5	32.1	31.2	46.0	14.8	
Hori	249.001	QP	32.3	17.3	9.5	32.1	27.0	46.0	19.0	
Hori	255.923	QP	33.0	17.6	9.5	32.1	28.0	46.0	18.0	
Hori	319.756	QP	25.9	14.9	10.0	32.0	18.8	46.0	27.2	
Hori	424.512	QP	37.5	17.7	10.7	32.0	33.9	46.0	12.1	
Hori	1652.650	PK	49.8	26.1	2.6	33.3	45.2	73.9	28.7	
Hori	2483.500	PK	50.9	28.4	3.1	32.3	50.1	73.9	23.8	
Hori	4960.000	PK	51.8	30.7	5.4	31.4	56.5	73.9	17.4	
Hori	1652.650	AV	46.0	26.1	2.6	33.3	41.4	53.9	12.5	
Hori	2483.500	AV	36.6	28.4	3.1	32.3	35.8	53.9	18.1	
Hori	4960.000	AV	43.7	30.7	5.4	31.4	48.4	53.9	-	See Dwell time factor sheet
Vert	245.421	QP	27.6	17.2	9.5	32.1	22.2	46.0	23.8	
Vert	249.242	QP	25.3	17.3	9.5	32.1	20.0	46.0	26.0	
Vert	257.389	QP	22.9	17.7	9.5	32.0	18.1	46.0	27.9	
Vert	309.662	QP	22.7	14.5	9.9	32.0	15.1	46.0	30.9	
Vert	319.988	QP	27.7	14.9	10.0	32.0	20.6	46.0	25.4	
Vert	424.002	QP	36.1	17.7	10.7	32.0	32.5	46.0	13.5	
Vert	1652.650	PK	48.6	26.1	2.6	33.3	44.0	73.9	29.9	
Vert	2483.500	PK	48.0	28.4	3.1	32.3	47.2	73.9	26.7	
Vert	4960.000	PK	45.4	30.7	5.4	31.4	50.1	73.9	23.8	
Vert	1652.650	AV	43.5	26.1	2.6	33.3	38.9	53.9	15.0	
Vert	2483.500	AV	33.9	28.4	3.1	32.3	33.1	53.9	20.8	
Vert	4960.000	AV	35.2	30.7	5.4	31.4	39.9	53.9	-	See Dwell time factor sheet

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

Dwell time factor relaxation

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Dwell Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	4960.000	AV	43.7	30.7	5.4	31.4	-24.2	24.2	53.9	29.7	
Vert	4960.000	AV	35.2	30.7	5.4	31.4	-24.2	15.7	53.9	38.2	

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

- Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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

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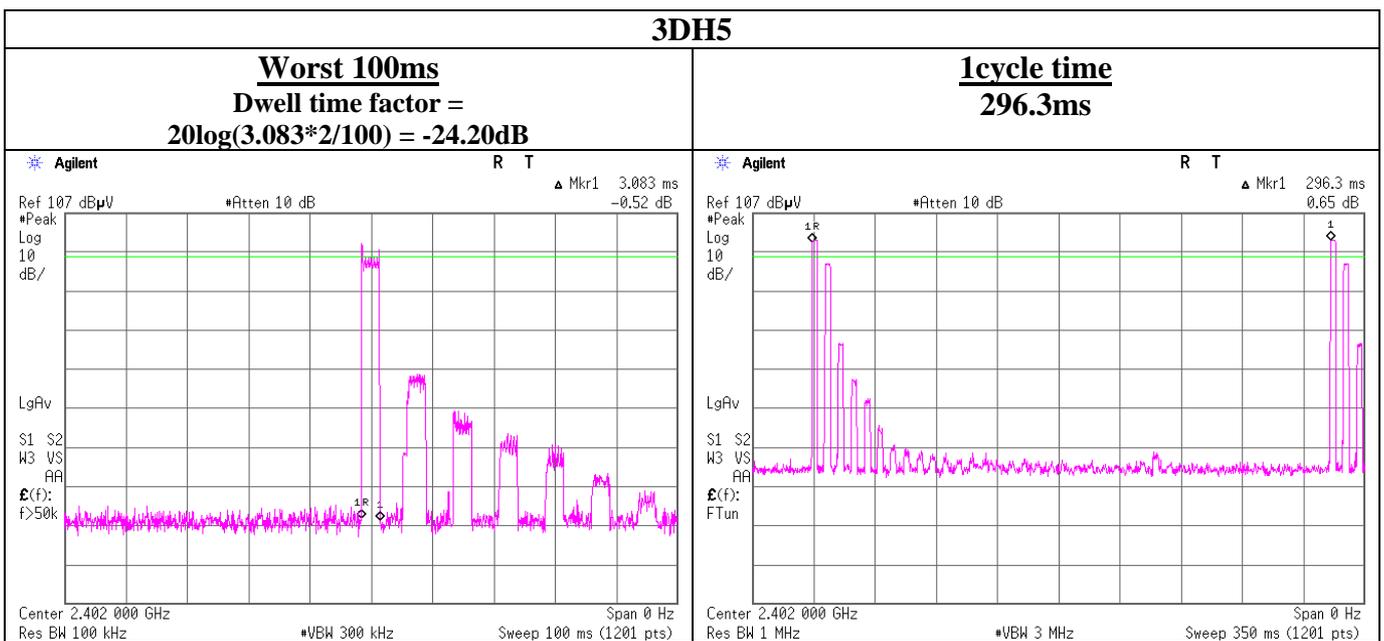
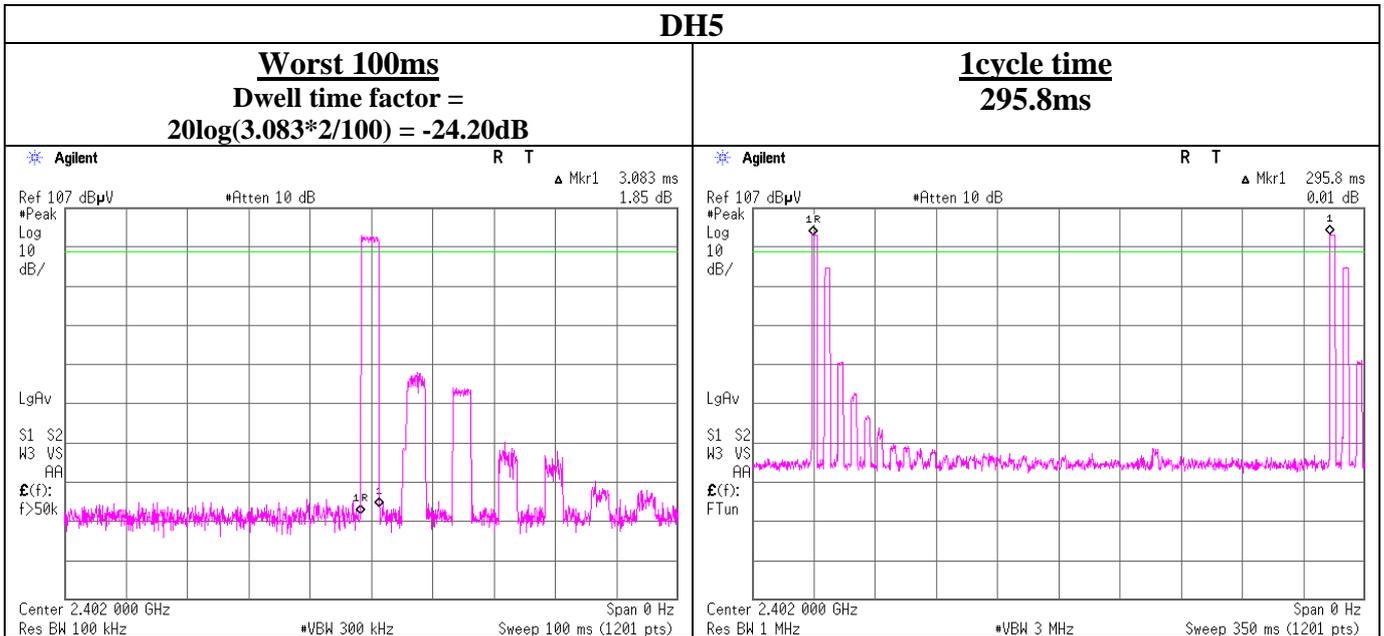
Head Office EMC Lab.

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Telephone : +81 596 24 8999

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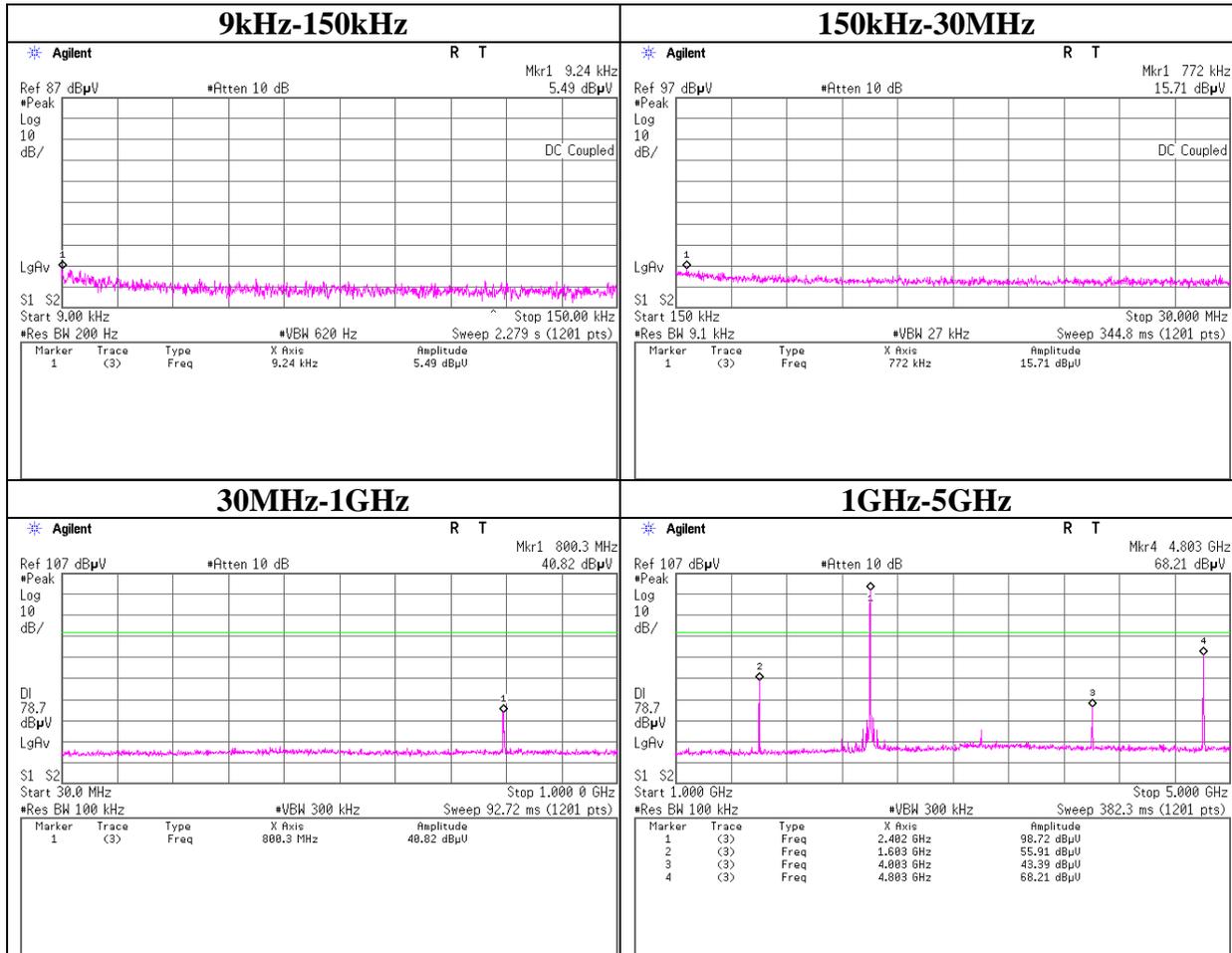
Dwell time factor



Conducted Spurious Emission

Test place	Head Office EMC Lab. No.3 Measurement Room
Report No.	10123345H
Date	11/19/13
Temperature/ Humidity	24 deg. C / 48% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5

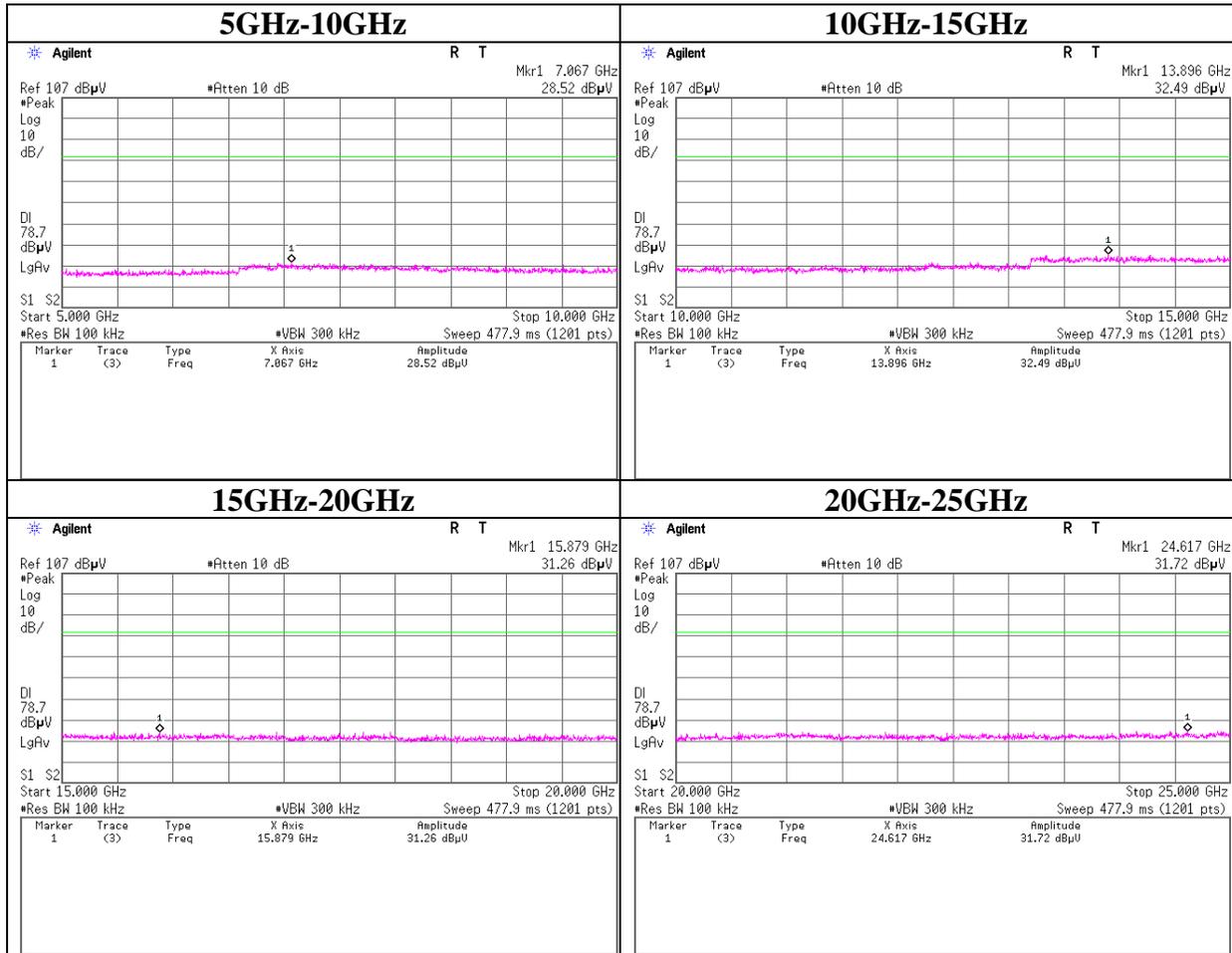
Tx DH5 2402MHz



Conducted Spurious Emission

Test place	Head Office EMC Lab. No.3 Measurement Room
Report No.	10123345H
Date	11/19/13
Temperature/ Humidity	24 deg. C / 48% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5

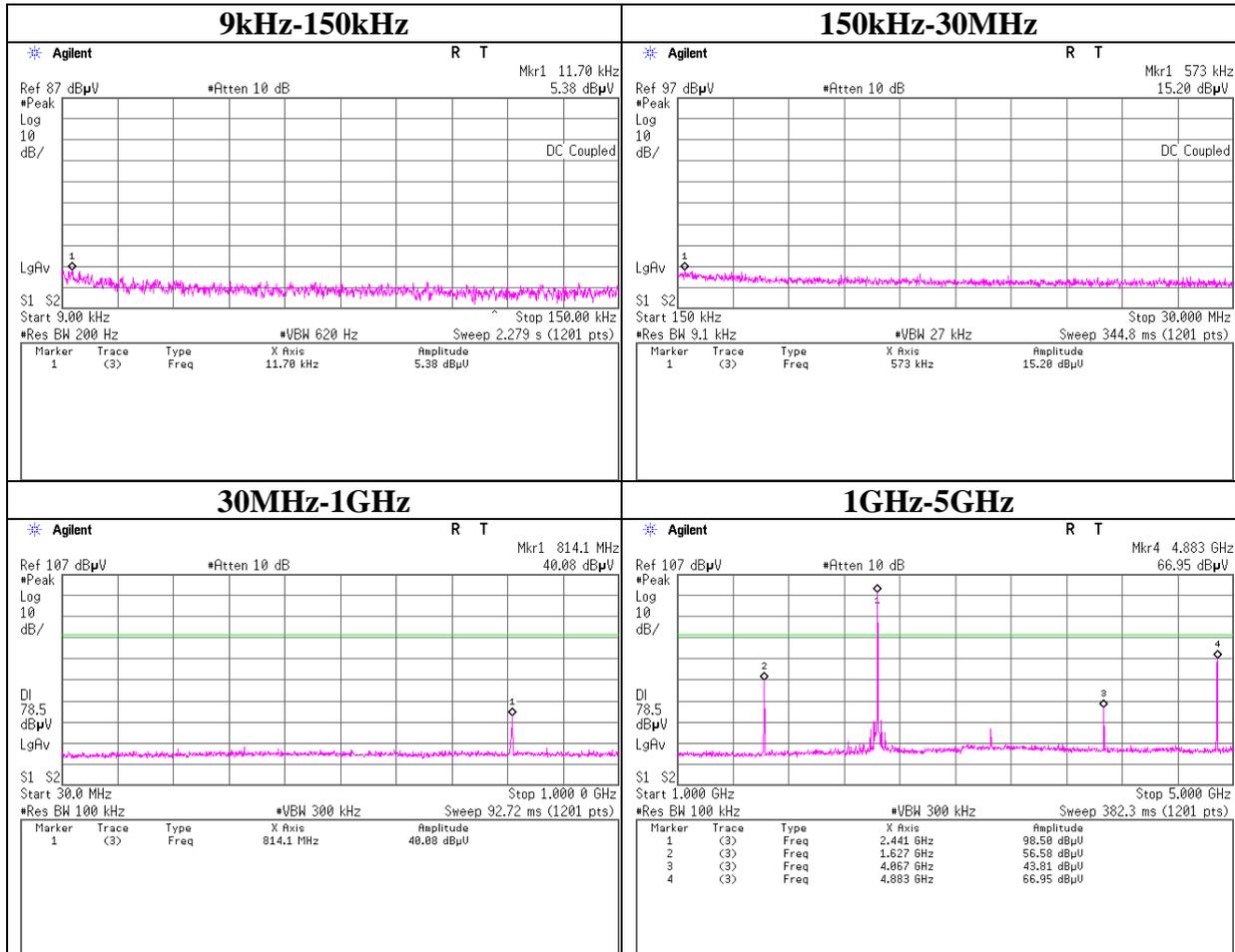
Tx DH5 2402MHz



Conducted Spurious Emission

Test place	Head Office EMC Lab. No.3 Measurement Room
Report No.	10123345H
Date	11/19/13
Temperature/ Humidity	24 deg. C / 48% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5

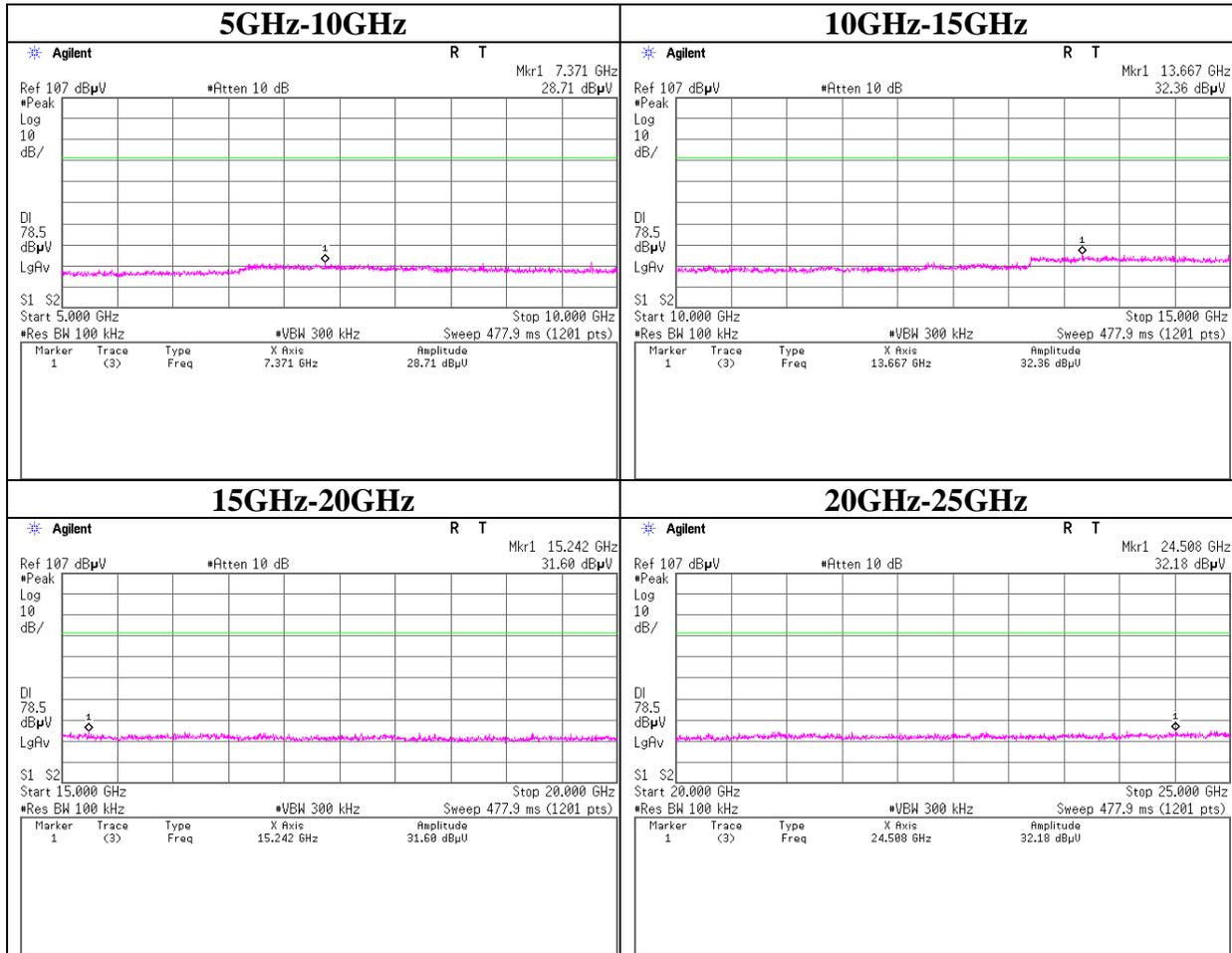
Tx DH5 2441MHz



Conducted Spurious Emission

Test place	Head Office EMC Lab. No.3 Measurement Room
Report No.	10123345H
Date	11/19/13
Temperature/ Humidity	24 deg. C / 48% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5

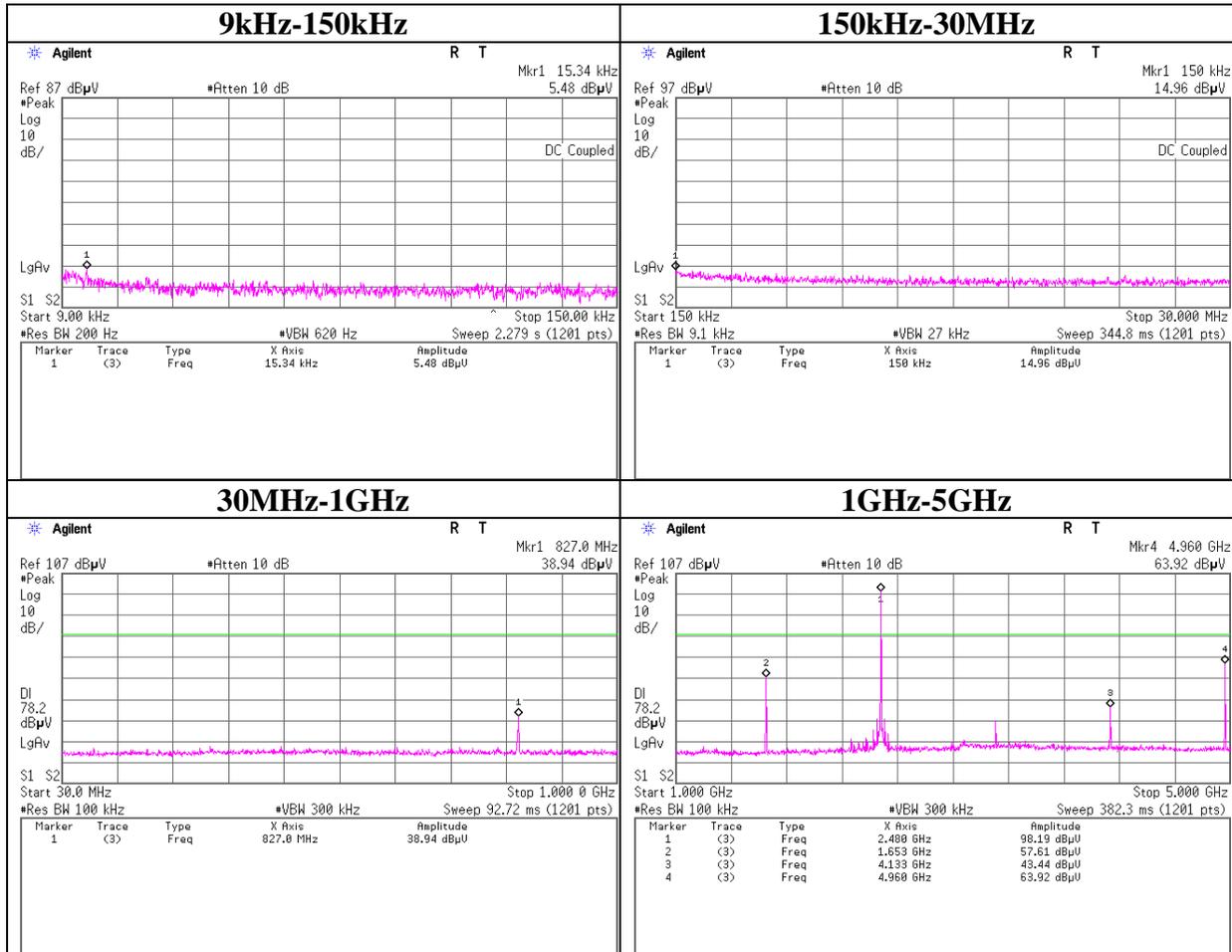
Tx DH5 2441MHz



Conducted Spurious Emission

Test place	Head Office EMC Lab. No.3 Measurement Room
Report No.	10123345H
Date	11/19/13
Temperature/ Humidity	24 deg. C / 48% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5

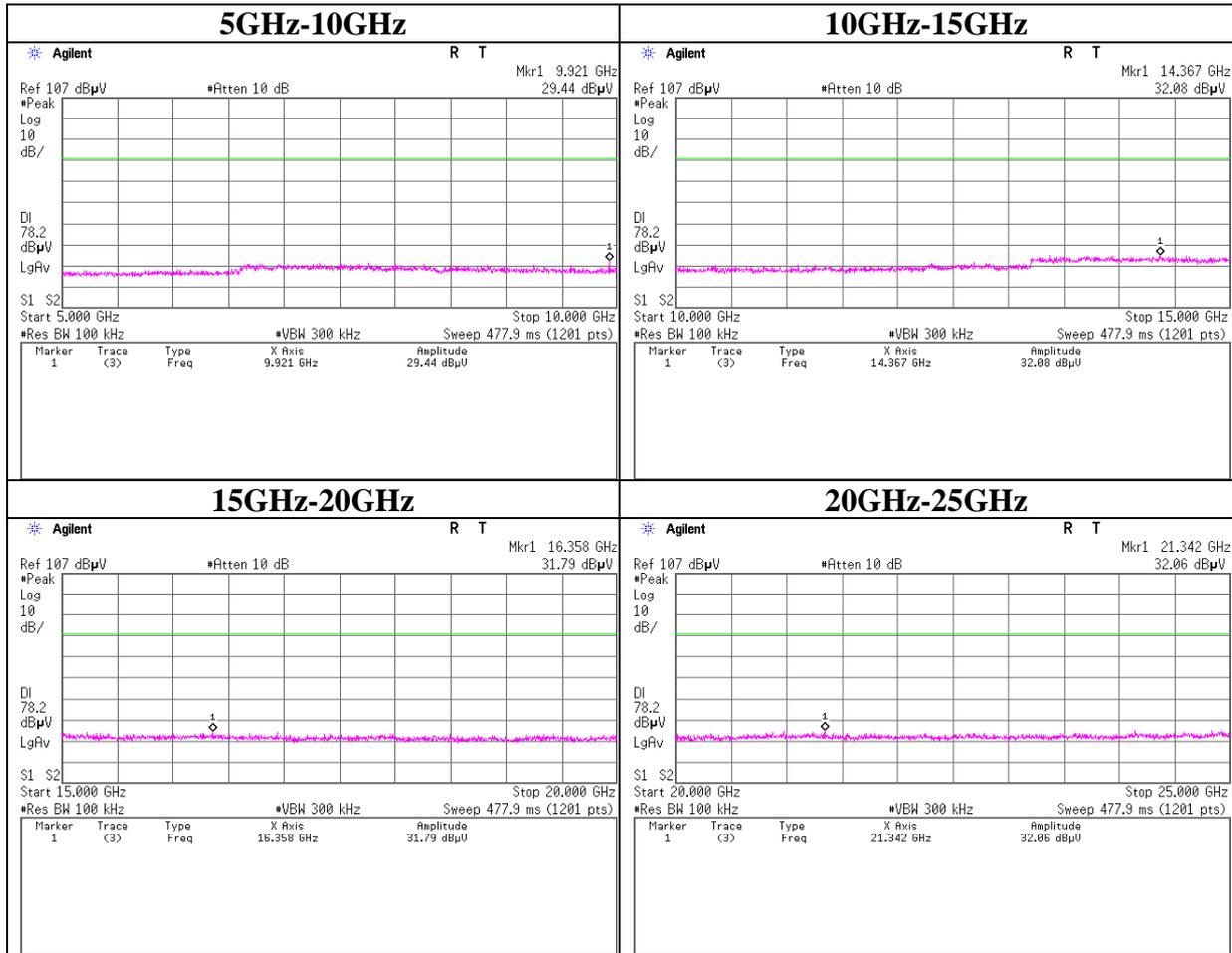
Tx DH5 2480MHz



Conducted Spurious Emission

Test place	Head Office EMC Lab. No.3 Measurement Room
Report No.	10123345H
Date	11/19/13
Temperature/ Humidity	24 deg. C / 48% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping off) DH5

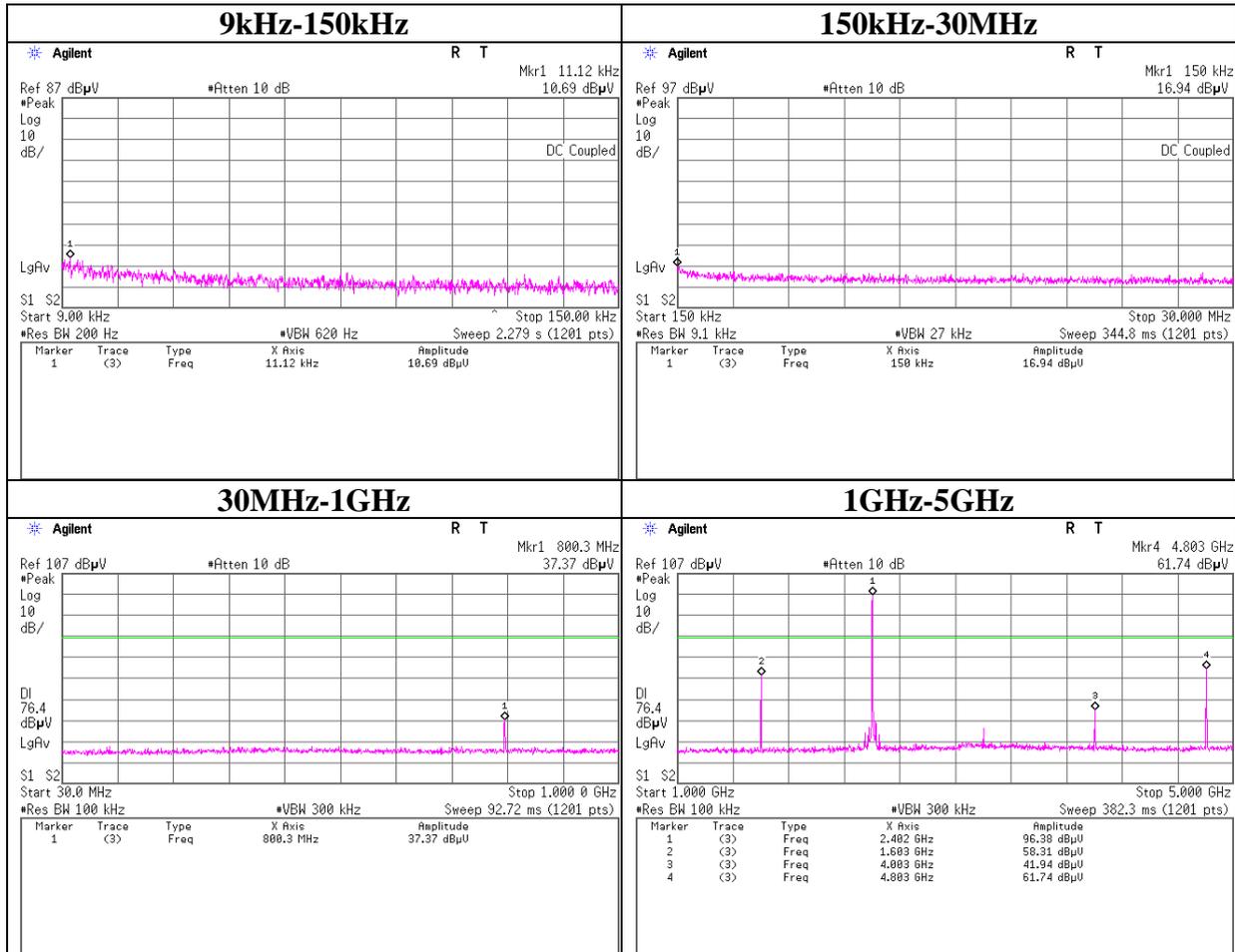
Tx DH5 2480MHz



Conducted Spurious Emission

Test place	Head Office EMC Lab. No.11 Measurement Room
Report No.	10123345H
Date	11/20/2013
Temperature/ Humidity	25 deg. C / 45% RH
Engineer	Tomohisa Nakagawa
Mode	Tx (Hopping off) 3DH5

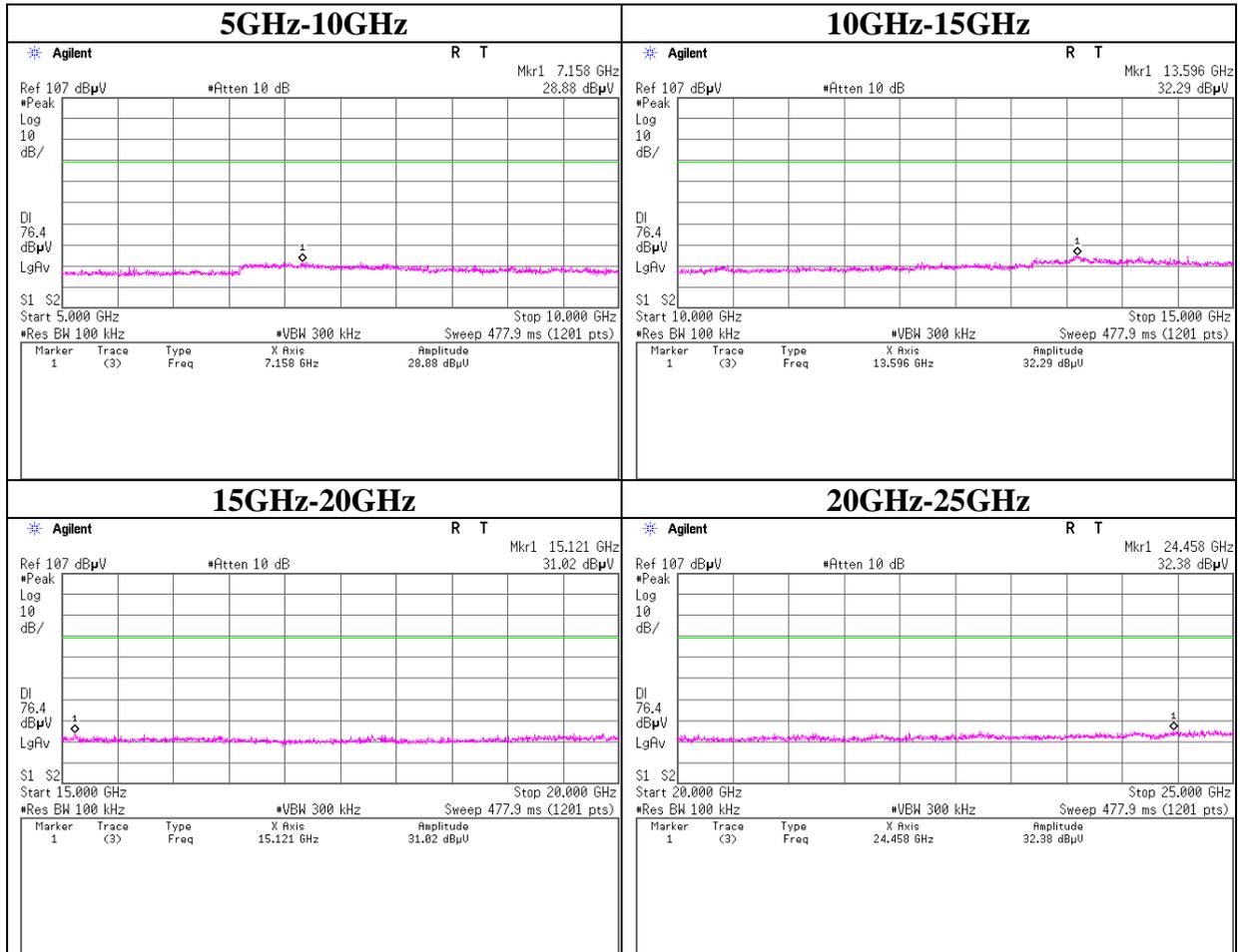
Tx 3DH5 2402MHz



Conducted Spurious Emission

Test place	Head Office EMC Lab. No.11 Measurement Room
Report No.	10123345H
Date	11/20/2013
Temperature/ Humidity	25 deg. C / 45% RH
Engineer	Tomohisa Nakagawa
Mode	Tx (Hopping off) 3DH5

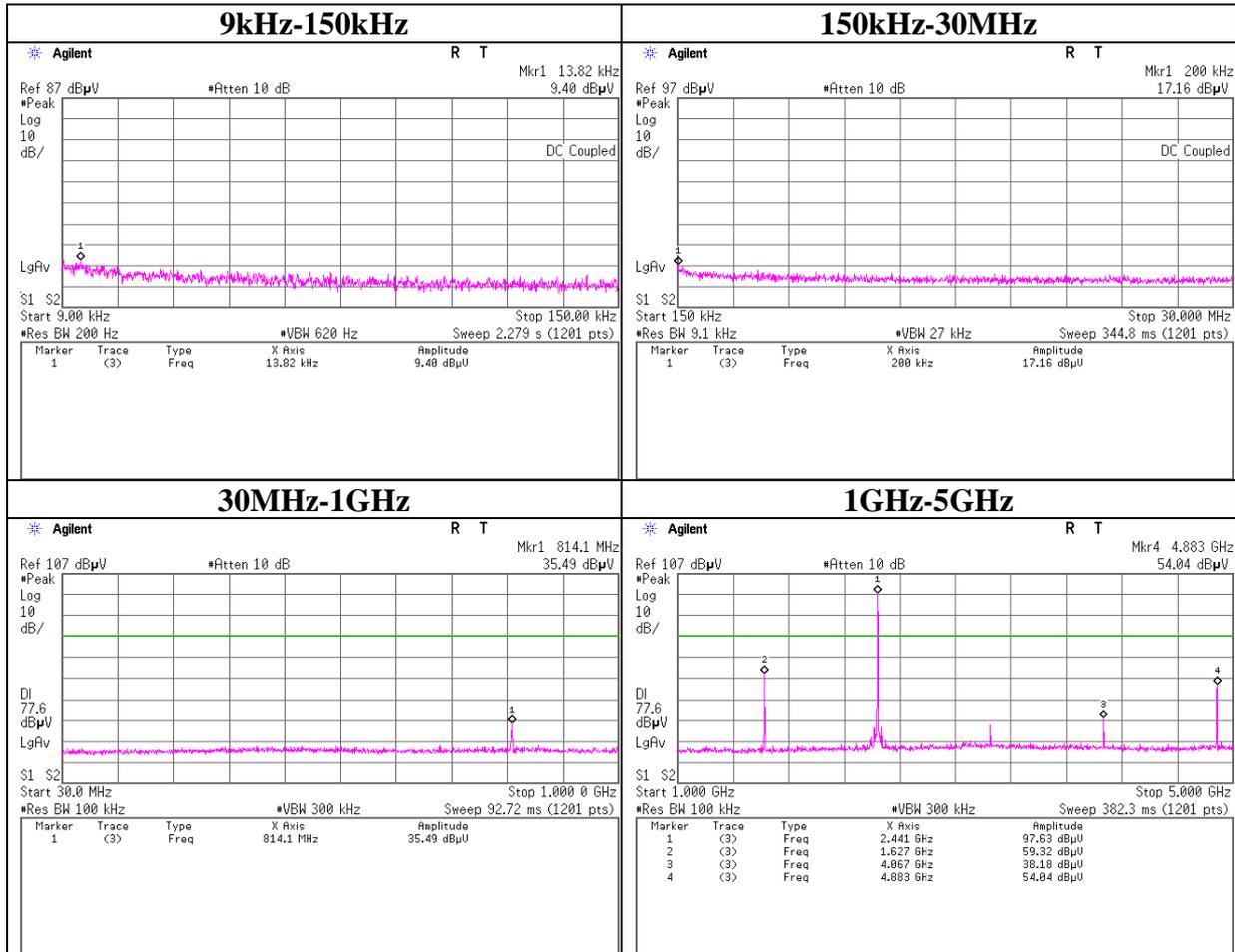
Tx 3DH5 2402MHz



Conducted Spurious Emission

Test place	Head Office EMC Lab. No.11 Measurement Room
Report No.	10123345H
Date	11/20/2013
Temperature/ Humidity	25 deg. C / 45% RH
Engineer	Tomohisa Nakagawa
Mode	Tx (Hopping off) 3DH5

Tx 3DH5 2441MHz



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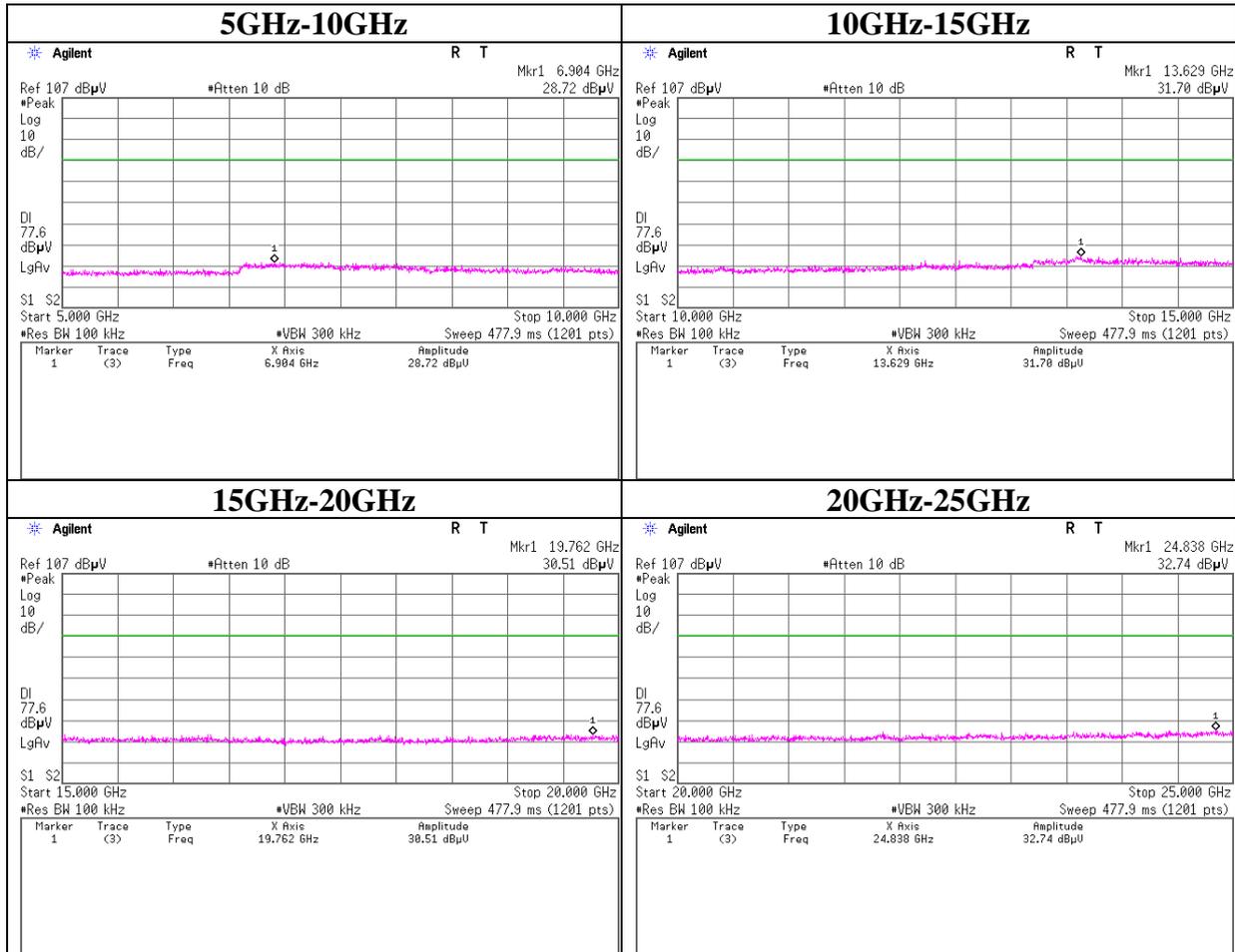
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Test place	Head Office EMC Lab. No.11 Measurement Room
Report No.	10123345H
Date	11/20/2013
Temperature/ Humidity	25 deg. C / 45% RH
Engineer	Tomohisa Nakagawa
Mode	Tx (Hopping off) 3DH5

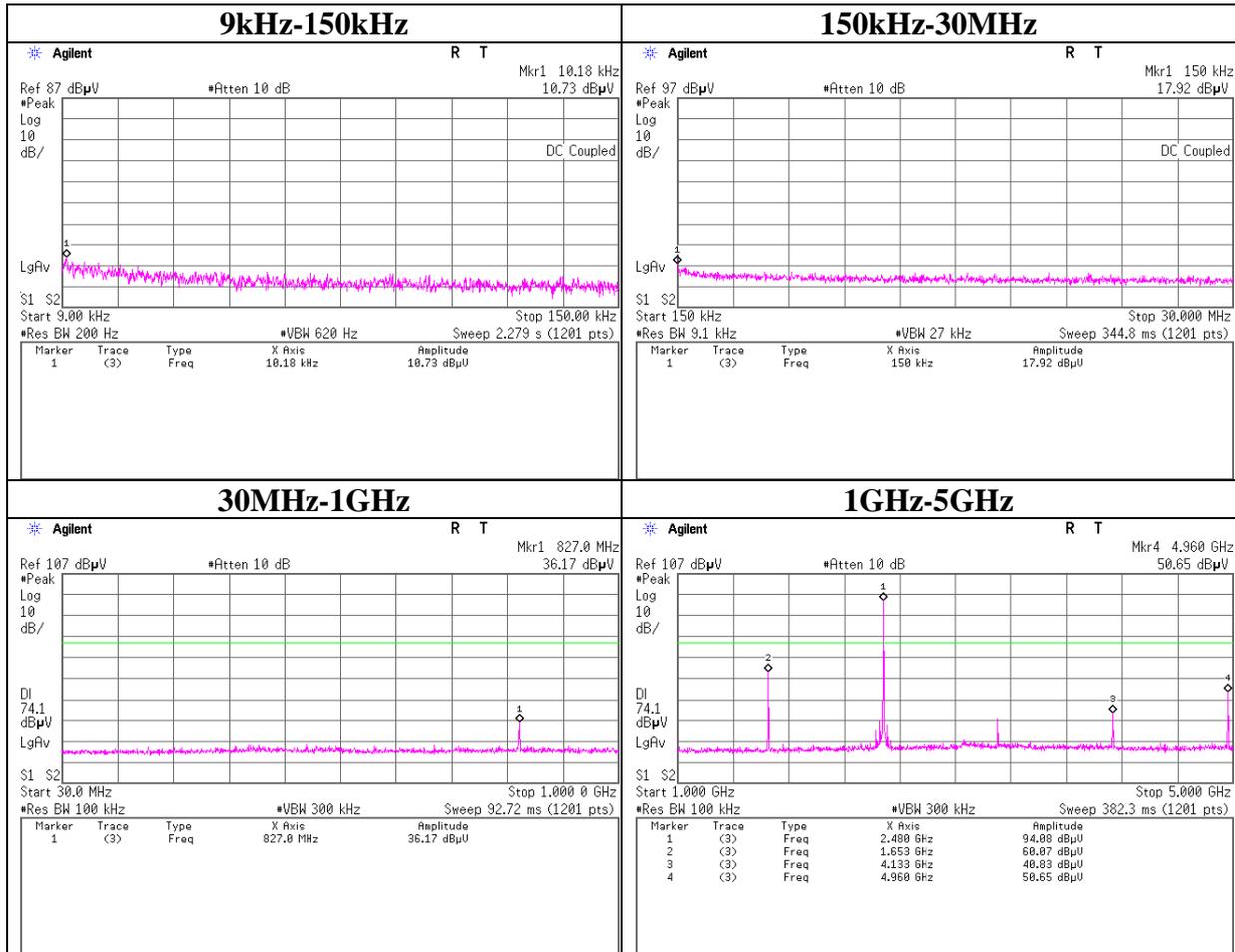
Tx 3DH5 2441MHz



Conducted Spurious Emission

Test place	Head Office EMC Lab. No.11 Measurement Room
Report No.	10123345H
Date	11/20/2013
Temperature/ Humidity	25 deg. C / 45% RH
Engineer	Tomohisa Nakagawa
Mode	Tx (Hopping off) 3DH5

Tx 3DH5 2480MHz



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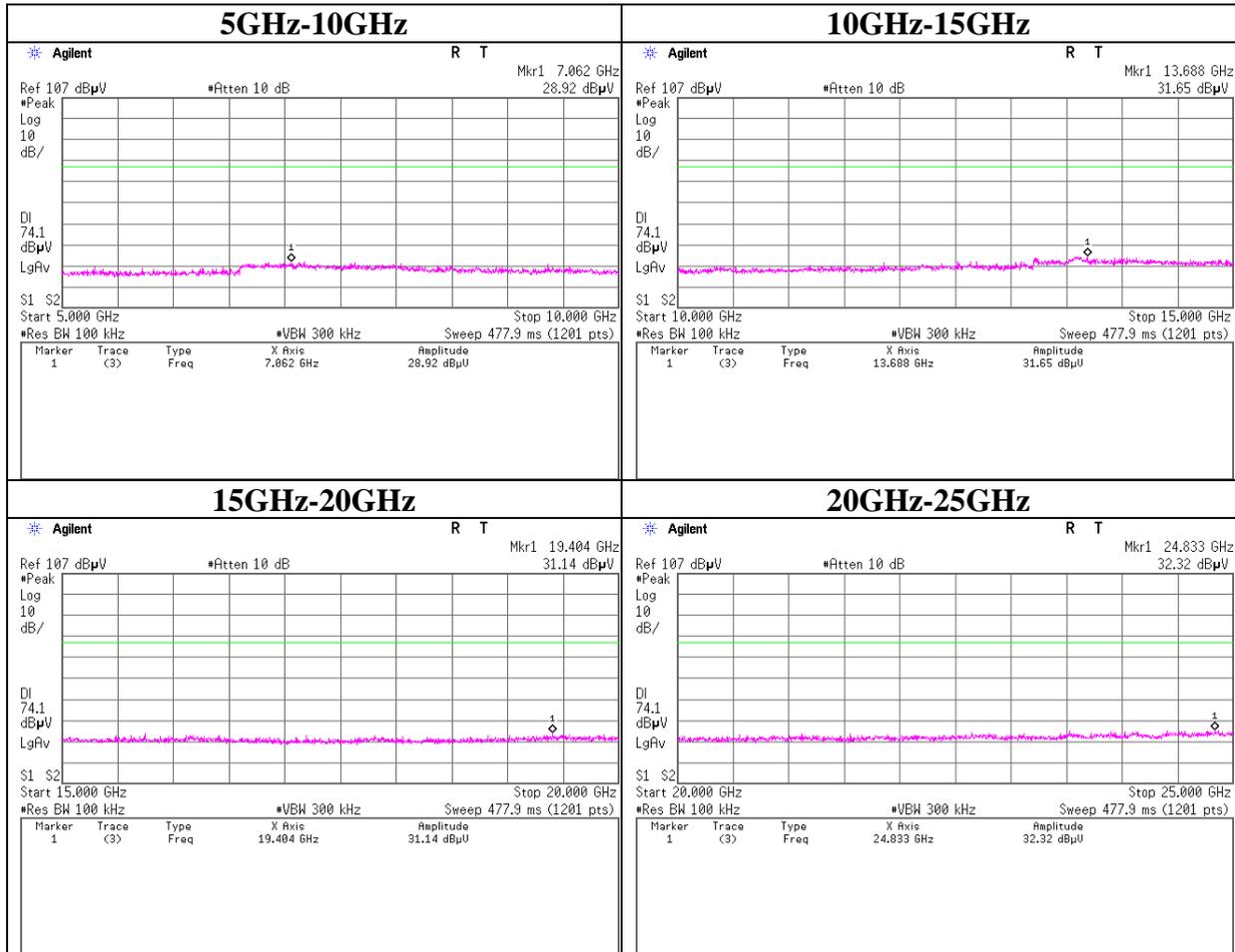
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Spurious Emission

Test place	Head Office EMC Lab. No.11 Measurement Room
Report No.	10123345H
Date	11/20/2013
Temperature/ Humidity	25 deg. C / 45% RH
Engineer	Tomohisa Nakagawa
Mode	Tx (Hopping off) 3DH5

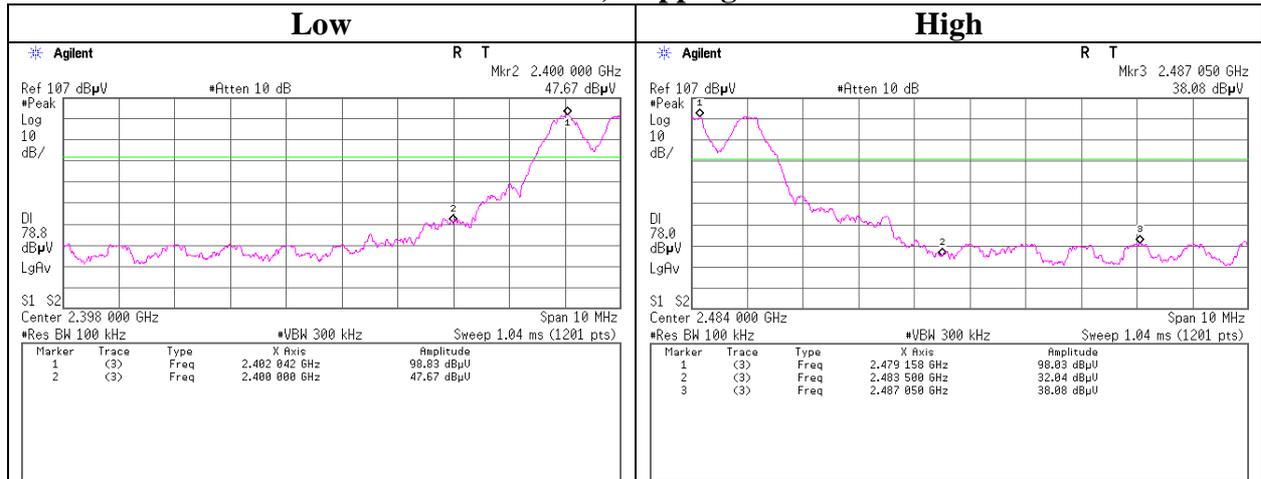
Tx 3DH5 2480MHz



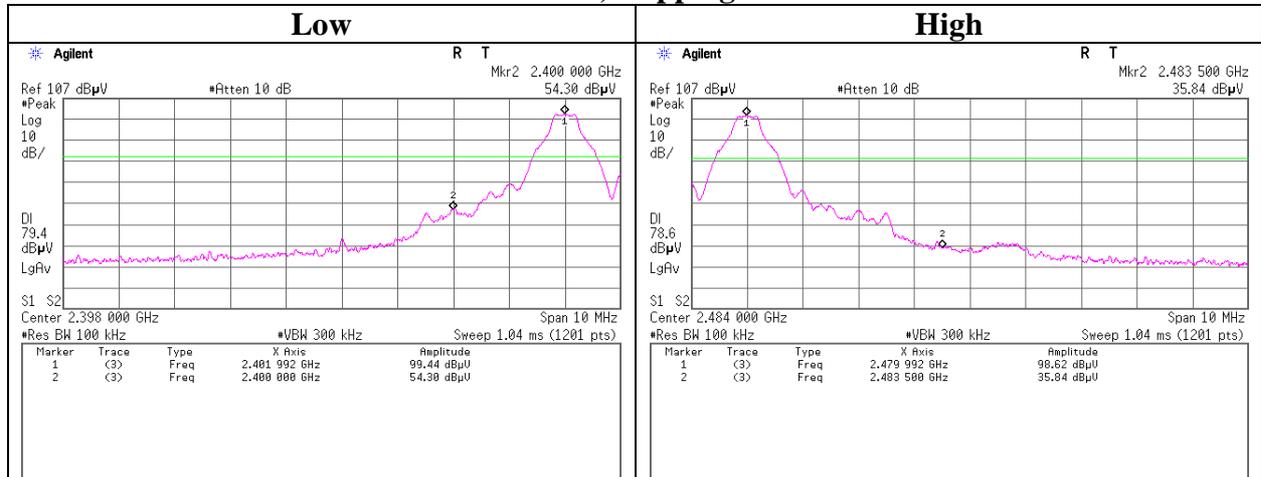
Conducted Emission Band Edge compliance

Test place	Head Office EMC Lab. No.3 Measurement Room
Report No.	10123345H
Date	11/19/13
Temperature/ Humidity	24 deg. C / 48% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping on/off) DH5

Tx DH5, Hopping on



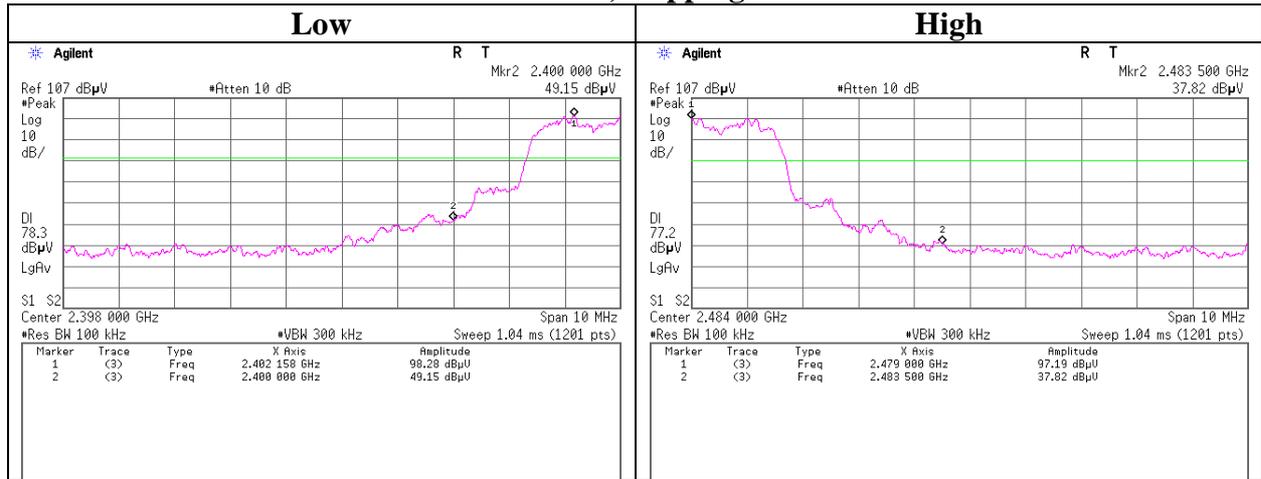
Tx DH5, Hopping off



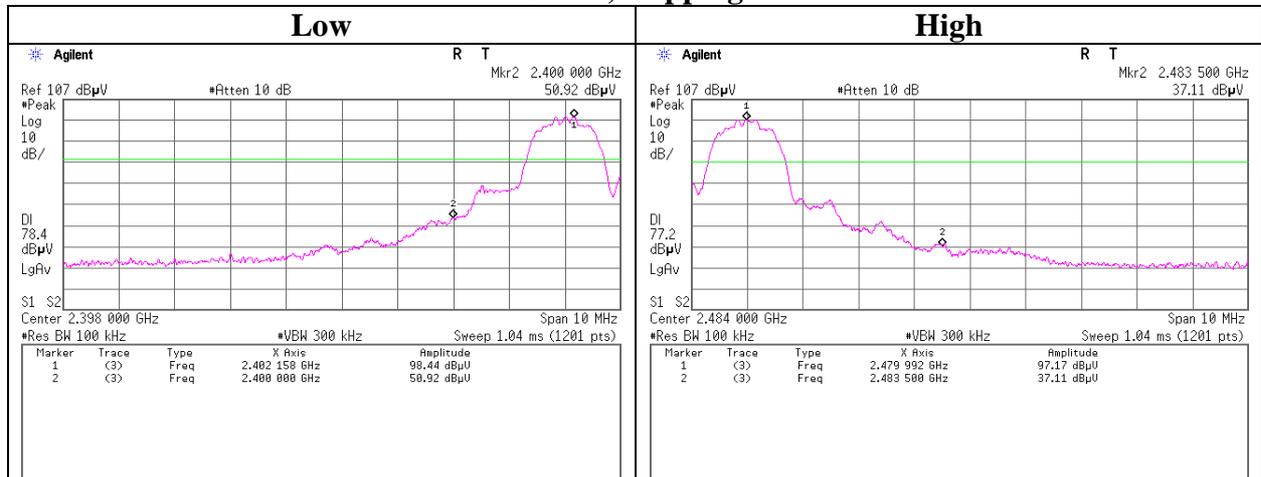
Conducted Emission Band Edge compliance

Test place	Head Office EMC Lab. No.11 Measurement Room
Report No.	10123345H
Date	11/20/2013
Temperature/ Humidity	25 deg. C / 45% RH
Engineer	Tomohisa Nakagawa
Mode	Tx (Hopping on/off) 3DH5

Tx 3DH5, Hopping on

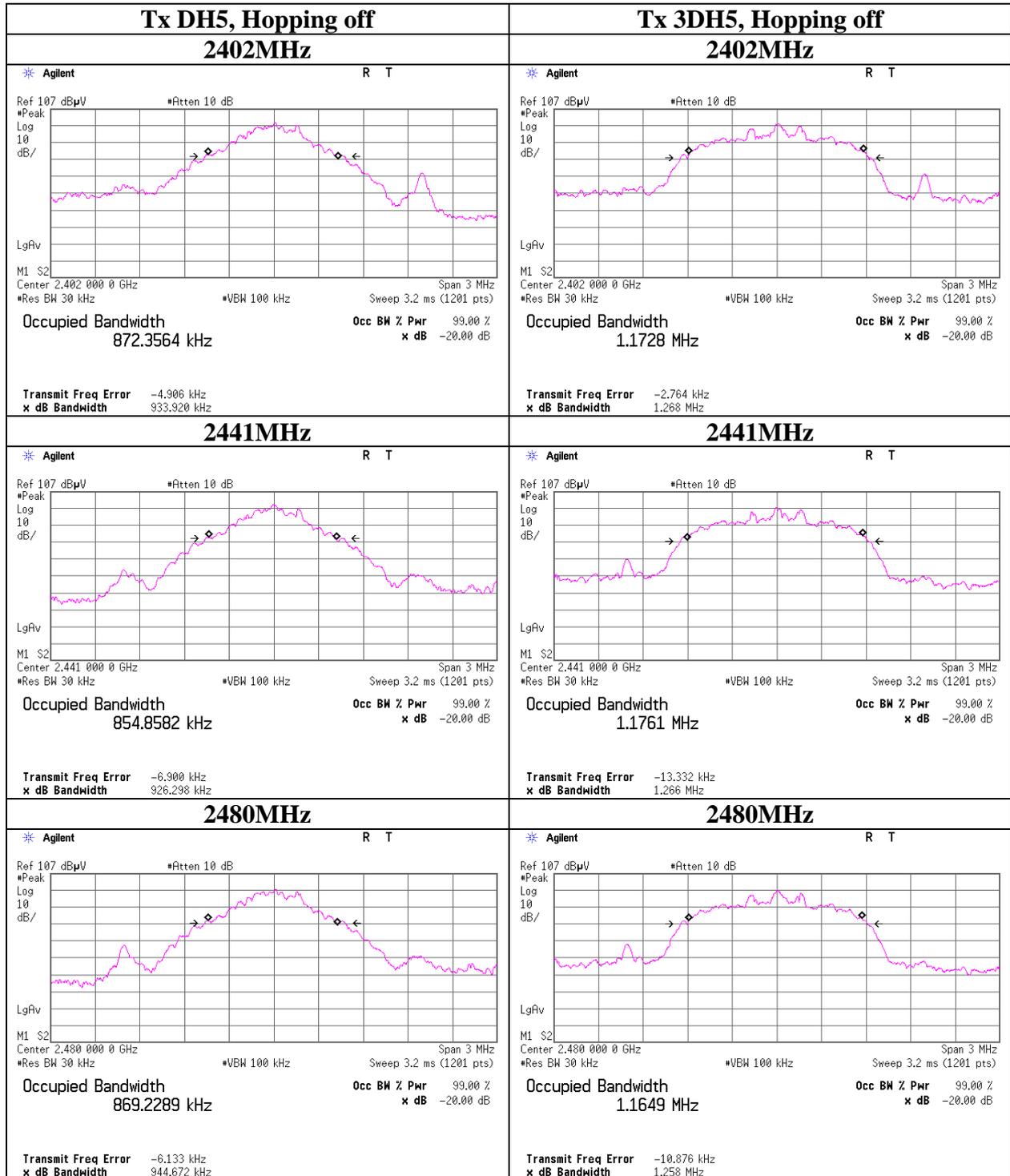


Tx 3DH5, Hopping off



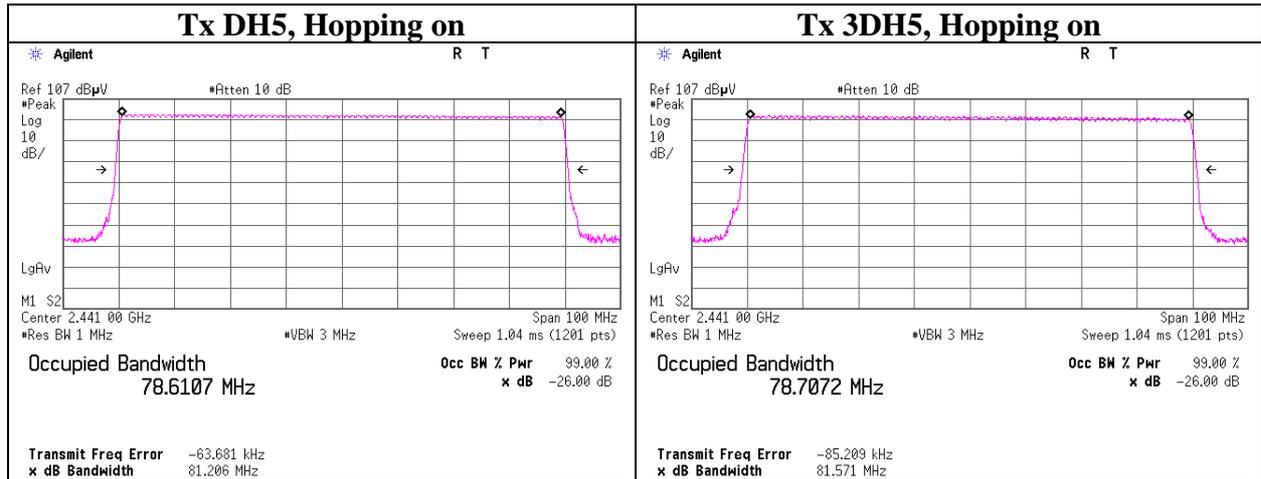
99% Occupied Bandwidth

Test place	Head Office EMC Lab. No.3 and No.11 Measurement Room	
Report No.	10123345H	
Date	11/19/13	11/20/2013
Temperature/ Humidity	24 deg. C / 48% RH	25 deg. C / 45% RH
Engineer	Takumi Shimada (DH5)	Tomohisa Nakagawa (3DH5)
Mode	Tx (Hopping on/off) DH5/3DH5	



99% Occupied Bandwidth

Test place	Head Office EMC Lab. No.3 and No.11 Measurement Room	
Report No.	10123345H	
Date	11/19/13	11/20/2013
Temperature/ Humidity	24 deg. C / 48% RH	25 deg. C / 45% RH
Engineer	Takumi Shimada (DH5)	Tomohisa Nakagawa (3DH5)
Mode	Tx (Hopping on/off) DH5/3DH5	



APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2013/02/28 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	RE	2013/02/26 * 12
MJM-16	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE	2013/02/22 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2013/05/17 * 12
MCC-133	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336164/4(1m) / 340640(5m)	RE	2013/09/27 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2013/03/12 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2013/05/17 * 12
MHF-25	High Pass Filter 3.5-18.0GHz	UL Japan	HPF SELECTOR	001	RE	2013/09/01 * 12
MSA-05	Spectrum Analyzer	Advantest	R3273	160400285	RE	2013/11/08 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE	2013/08/20 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2013/10/13 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2013/10/13 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2013/07/23 * 12
MAT-70	Attenuator(6dB)	Agilent	8491A-006	MY52460153	RE	2013/04/05 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2013/03/12 * 12
MRENT-112	Spectrum Analyzer	Agilent	E4440A	MY48250080	AT	2013/10/04 * 12
MPM-08	Power Meter	Anritsu	ML2495A	6K00003338	AT	2013/10/15 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	011737	AT	2013/10/15 * 12
MAT-24	Attenuator(10dB)(above 1GHz)	Agilent	8493C	71389	AT	2013/06/05 * 12
MOS-12	Thermo-Hygrometer	Custom	CTH-180	-	AT	2013/01/17 * 12
MRENT-114	Spectrum Analyzer	Agilent	E4440A	MY46187105	AT	2013/11/11 * 12
MAT-20	Attenuator(10dB)(above 1GHz)	HIROSE ELECTRIC CO.,LTD.	AT-110	-	AT	2013/01/09 * 12
MOS-19	Thermo-Hygrometer	Custom	CTH-201	0001	AT	2012/12/25 * 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

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Head Office EMC Lab.

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