



RADIO TEST REPORT

Test Report No. : 10007540H-A

Applicant : Sony Computer Entertainment Inc.
Type of Equipment : WIRELESS CONTROLLER
Model No. : CECHZC2U A
FCC ID : AK8CECHZC2UA2
Test regulation : FCC Part 15 Subpart C: 2012
Test Result : Complied

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

Date of test: April 4 to 7, 2013

Representative test engineer:

T. Shimada

Takumi Shimada
Engineer of WiSE Japan,
UL Verification Service

Approved by:

M. Nishiyama

Masanori Nishiyama
Manager of WiSE Japan,
UL Verification Service



NVLAP LAB CODE: 200572-0

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

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13-EM-F0429

CONTENTS	PAGE
SECTION 1: Customer information.....	4
SECTION 2: Equipment under test (E.U.T.).....	4
SECTION 3: Test specification, procedures & results.....	5
SECTION 4: Operation of E.U.T. during testing.....	8
SECTION 5: Radiated Spurious Emission	10
SECTION 6: Antenna Terminal Conducted Tests.....	11
APPENDIX 1: Data of EMI test.....	12
20dB Bandwidth and Carrier Frequency Separation.....	12
Number of Hopping Frequency	15
Dwell time.....	17
Maximum Peak Output Power.....	20
Radiated Spurious Emission	21
Conducted Spurious Emission	34
Conducted Emission Band Edge compliance	46
99%Occupied Bandwidth	48
APPENDIX 2: Test instruments	50
APPENDIX 3: Photographs of test setup.....	51
Radiated Spurious Emission	51
Worst Case Position (Horizontal: X-axis/ Vertical: Z-axis)	52
Test Configuration and peripherals.....	53

SECTION 1: Customer information

Company Name	Sony Computer Entertainment Inc.
Brand Name	SONY
Address	1-7-1 Konan, Minato-ku, Tokyo, 108-0075 Japan
Telephone Number	+81-3-6748-6333
Facsimile Number	+81-3-6748-6383
Contact Person	Kiyoto Sasaki

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

2.1 Identification of E.U.T.

Type of Equipment	WIRELESS CONTROLLER
Model No	CECHZC2U A
Serial No	See Clause 4.2
Country of Manufacture	China
Receipt Date of Sample	April 1, 2013
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 No: CECHZC2U A is the WIRELESS CONTROLLER for game machine.

Product Specification

Maximum clock frequency in the system	240MHz
Operating Temperature	5-35 deg. C
Power Supply	DC5V (USB Bus Power)
Battery Supply	DC3.7V
Size	93.7 x 156.5 x 62.2 mm
Weight	180 g

Radio Specification: Bluetooth

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Type of Modulation	FHSS (GFSK, $\pi/4$ DQPSK, 8DPSK)
Bandwidth & Channel spacing	1MHz & 1MHz
Method of frequency generation	Crystal
Power Supply (inner)	DC1.35V
Antenna Type	PWB Pattern Antenna
Antenna Gain	2.0dBi max

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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 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	Conducted
20dB Bandwidth	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1) IC: RSS-210 A8.1 (a)		-	Conducted
Number of Hopping Frequency	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1)(iii) IC: RSS-210 A8.1 (d)		Complied	Conducted
Dwell time	FCC: FCC Public Notice DA 00-705 IC: -	FCC: Section15.247(a)(1)(iii) IC: RSS-210 A8.1 (d)		Complied	Conducted
Maximum Peak Output Power	FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 4.8	FCC: Section15.247(a)(b)(1) IC: RSS-210 A8.4 (2)		Complied	Conducted
Spurious Emission & Band Edge Compliance	FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 4.9	FCC: Section15.247(d) IC: RSS-210 A8.5 RSS-Gen 6 and 7.2.3	3.0dB 84.110MHz, Horizontal, QP	Complied	Conducted/ Radiated

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

*1) The test is not applicable, because the EUT is not connected with AC power during wireless communication. It is connected with AC power on Standby and Movement of Dual Shock Motors and Charging modes. Please see UL Japan Test Report No. 10007536Y for the test result on these two modes.

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

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FCC 15.31 (e)

This EUT provides stable voltage (DC1.35V) constantly to RF Part regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

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

3.3 Addition to standard

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

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

3.4 Uncertainty

EMI

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

Test room (semi-anechoic chamber)	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 report meets the limits unless the uncertainty is taken into consideration.

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3.5 Test Location

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

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

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

Refer to APPENDIX.

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

4.1 Operating Mode(s)

Bluetooth (BT): Transmitting (Tx), Payload: PRBS9
Inquiry

Details of Operating Mode(s)

Test Item	Mode	Tested frequency
20dB Bandwidth Carrier Frequency Separation	Tx (Hopping on) DH5, 3DH5 Inquiry	2402MHz 2441MHz 2480MHz
Number of Hopping Frequency	Tx (Hopping on) DH5, 3DH5 Inquiry	-
Dwell time	Tx (Hopping on), -DH1, DH3, DH5 -3DH1, 3DH3, 3DH5 Inquiry	-
Maximum Peak Output Power	Tx (Hopping off) DH5, 3DH5 Inquiry	2402MHz 2441MHz 2480MHz
Spurious Emission (Conducted/Radiated)	Tx (Hopping off) DH5, 3DH5	2402MHz 2441MHz 2480MHz
Band Edge Compliance (Conducted)	Tx DH5, 3DH5 -Hopping on -Hopping off	2402MHz 2480MHz
99% Occupied Bandwidth	Tx DH5, 3DH5 -Hopping on -Hopping off	2402MHz 2441MHz 2480MHz
*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload length (except Dwell time test) *EUT has the power settings by the software as follows; Power settings: BDR: Ext.=24, Int.=48 (Radiated Emission)/44 (Antenna terminal conducted) EDR: Ext.=41, Int.=53 (Radiated Emission)/54 (Antenna terminal conducted) Software: CSR BlueSuite BlueTest3 Version 2.5.2.138 CSR BlueSuite BtCliCtrl Version 2.5.2.138 (Inquiry mode only) *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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4.2 Configuration and peripherals

This page has been submitted for a separate exhibit.

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

*1) The Spectrum Analyzer was used in 3dB resolution bandwidth.

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

*3) 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	-	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	Max Hold	Spectrum Analyzer
Conducted Spurious Emission *2)	9kHz to 150kHz	200Hz	620Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150kHz to 30MHz	9.1kHz	27kHz				
	30MHz to 25GHz (Less or equal to 5GHz)	100kHz	300kHz				
Conducted Spurious Emission Band Edge compliance	10MHz	100kHz	300kHz	Auto	Peak	Max Hold	Spectrum Analyzer

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

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

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Data of EMI test

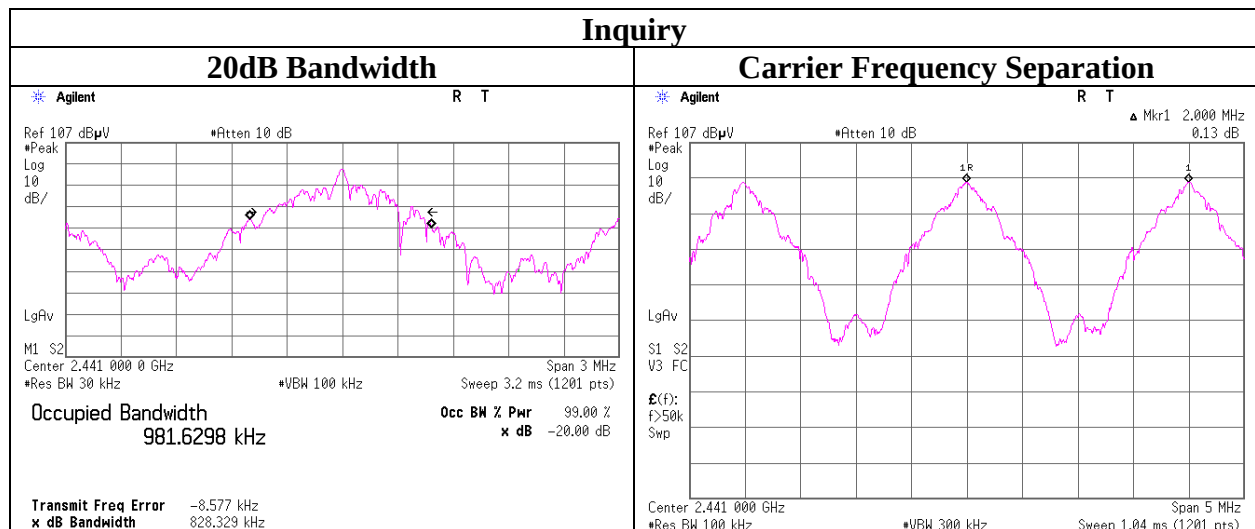
20dB Bandwidth and Carrier Frequency Separation

Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 10007540H
Date 04/07/2013
Temperature/ Humidity 20 deg. C / 55% RH
Engineer Takumi Shimada
Mode Tx (Hopping on) DH5/3DH5/Inquiry

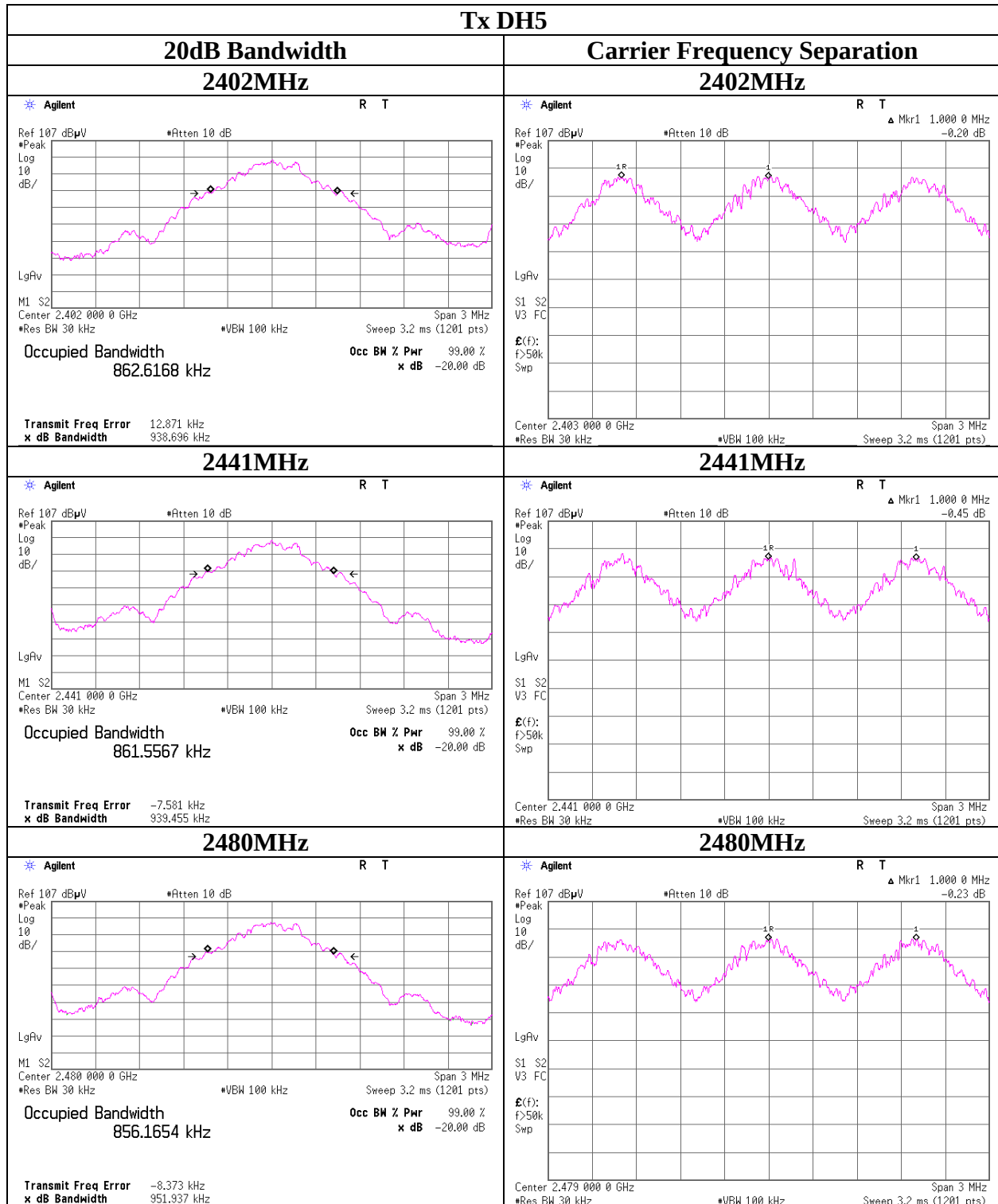
Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.939	1.000	≥ 0.626
DH5	2441.0	0.939	1.000	≥ 0.626
DH5	2480.0	0.952	1.000	≥ 0.635
3DH5	2402.0	1.274	1.000	≥ 0.849
3DH5	2441.0	1.260	1.000	≥ 0.840
3DH5	2480.0	1.255	1.000	≥ 0.837
Inquiry	2441.0	0.828	2.000	≥ 0.552

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

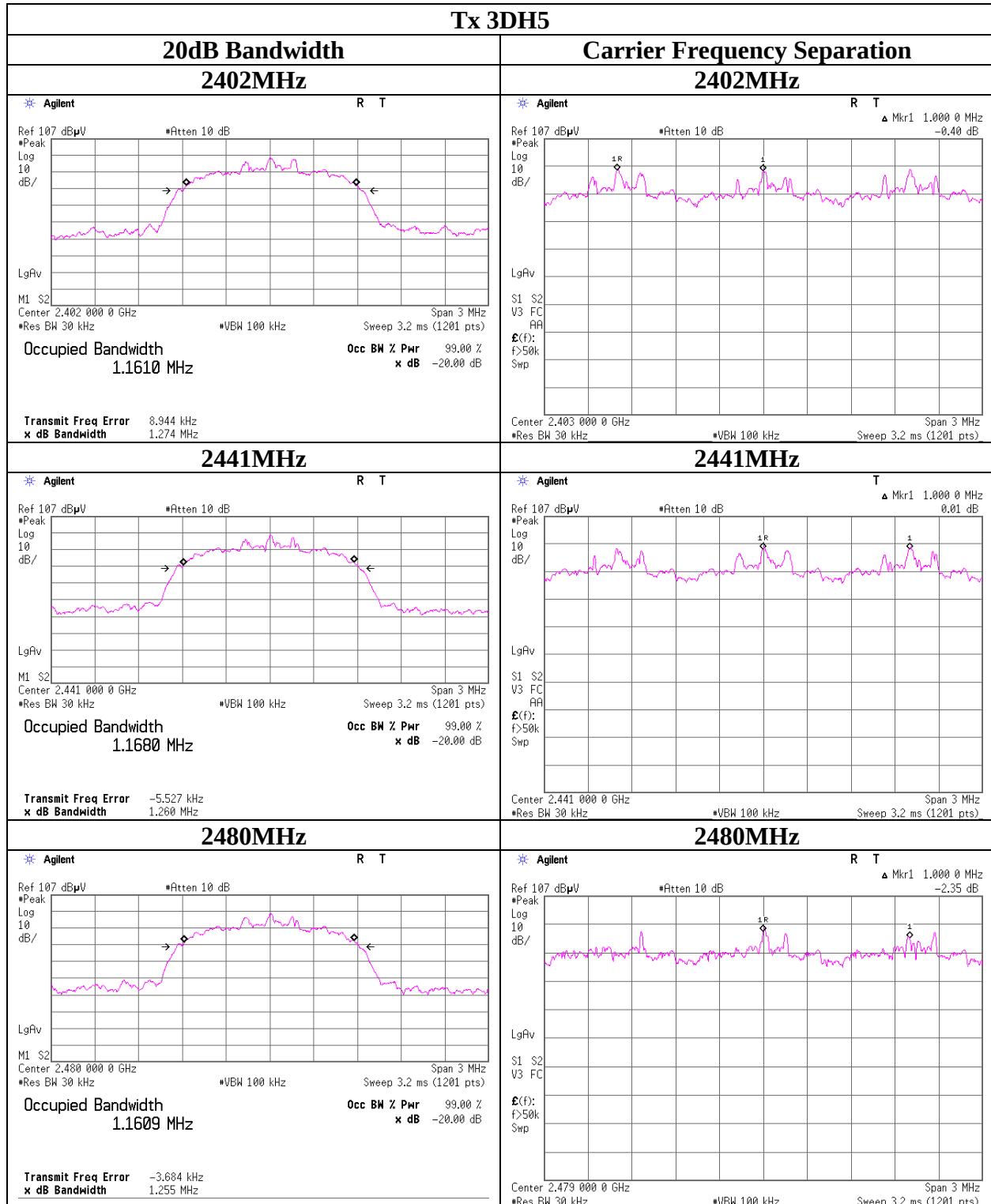
No limit applies to 20dB Bandwidth.



20dB Bandwidth and Carrier Frequency Separation



20dB Bandwidth and Carrier Frequency Separation

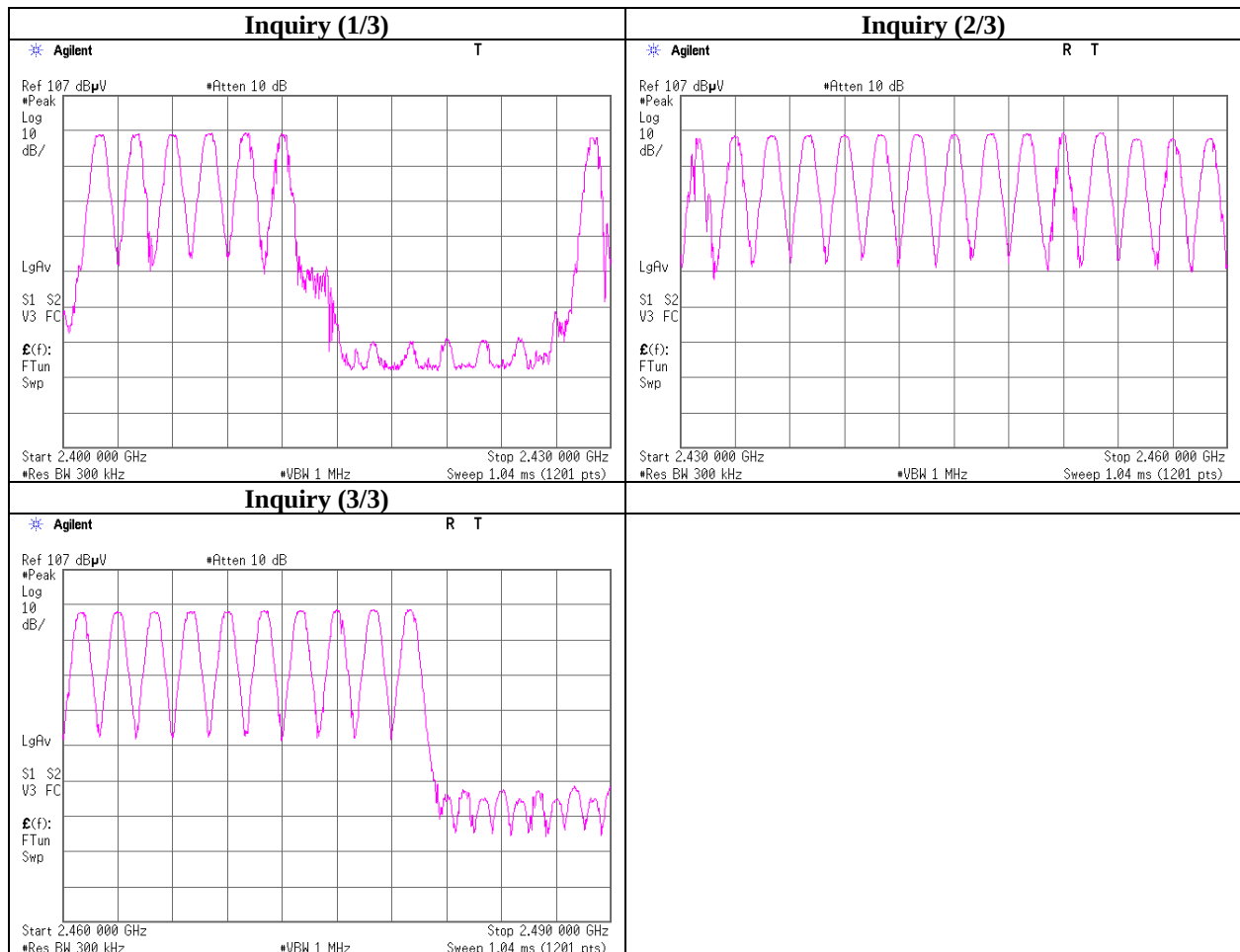


Number of Hopping Frequency

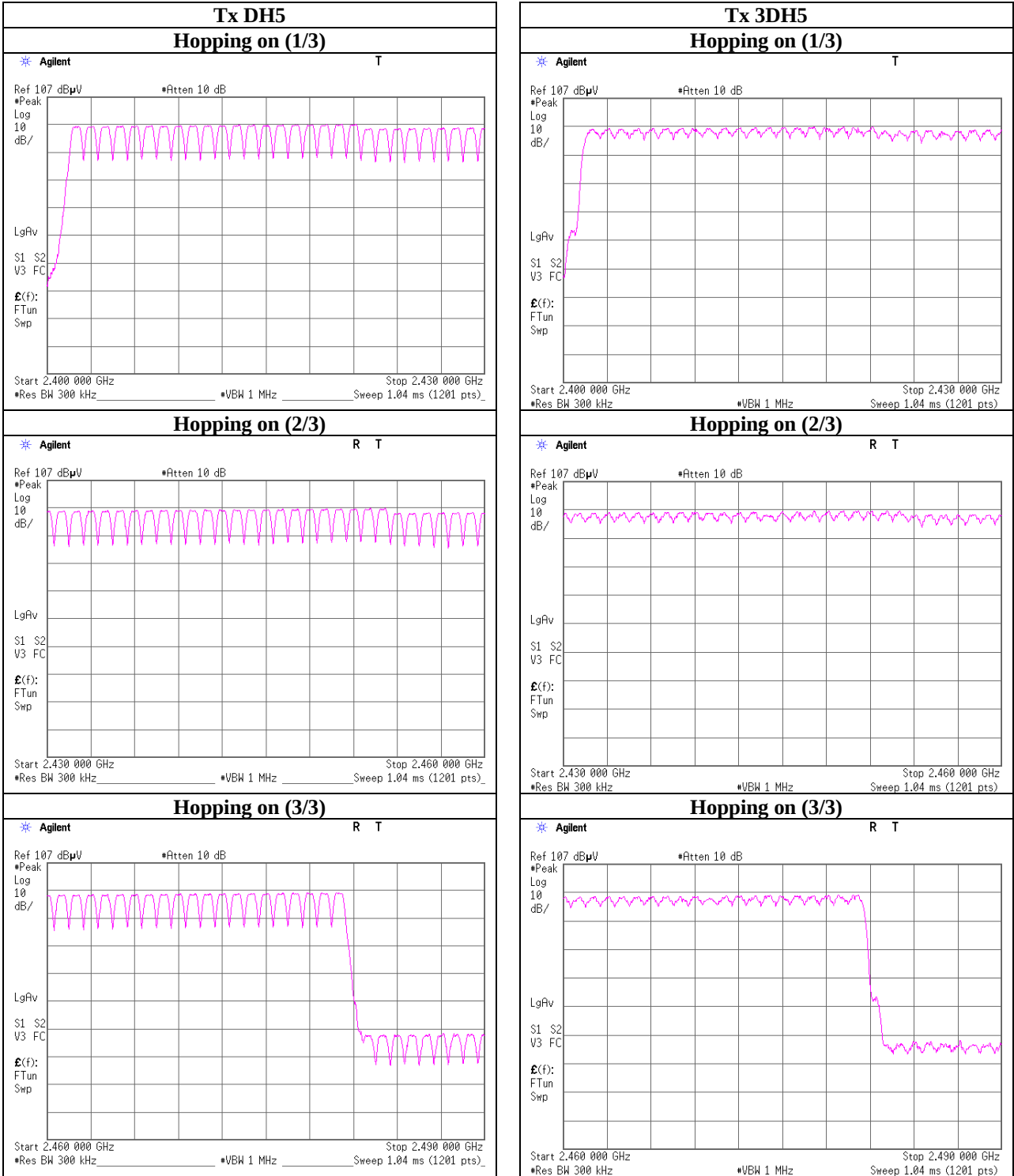
Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	10007540H
Date	04/07/2013
Temperature/ Humidity	20 deg. C / 55% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

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



Number of Hopping Frequency



Dwell time

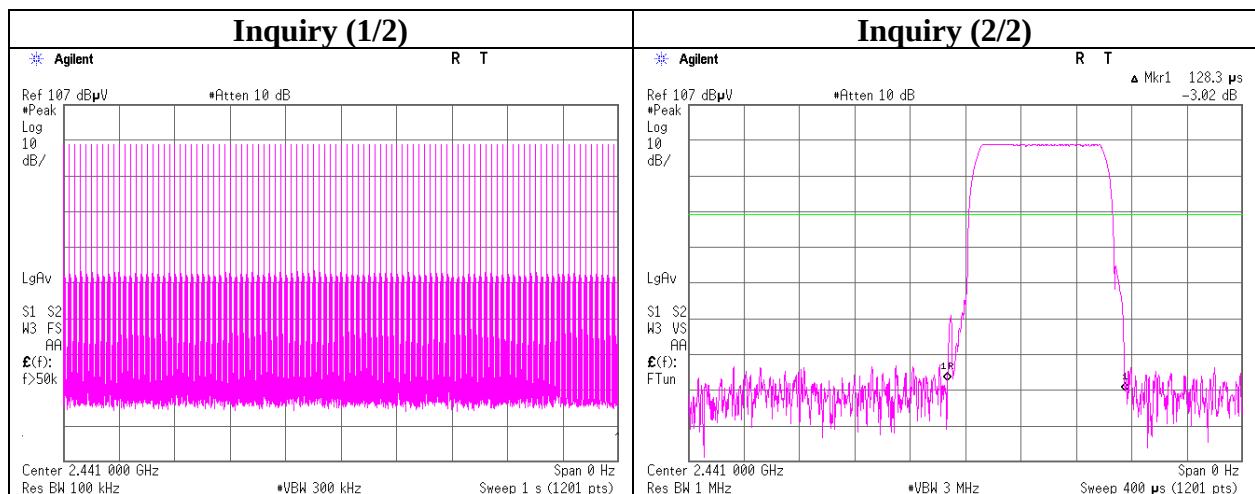
Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	10007540H
Date	04/07/2013
Temperature/ Humidity	20 deg. C / 55% RH
Engineer	Takumi Shimada
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period			Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	51.0 times /	5 sec. x	31.6 sec. =	323 times	0.433	140
DH3	26.0 times /	5 sec. x	31.6 sec. =	165 times	1.690	279
DH5	17.0 times /	5 sec. x	31.6 sec. =	108 times	2.948	318
3DH1	51.0 times /	5 sec. x	31.6 sec. =	323 times	0.449	145
3DH3	25.0 times /	5 sec. x	31.6 sec. =	158 times	1.707	270
3DH5	17.0 times /	5 sec. x	31.6 sec. =	108 times	2.965	320
Inquiry	100.0 times /	1 sec. x	12.8 sec. =	1280 times	0.128	164

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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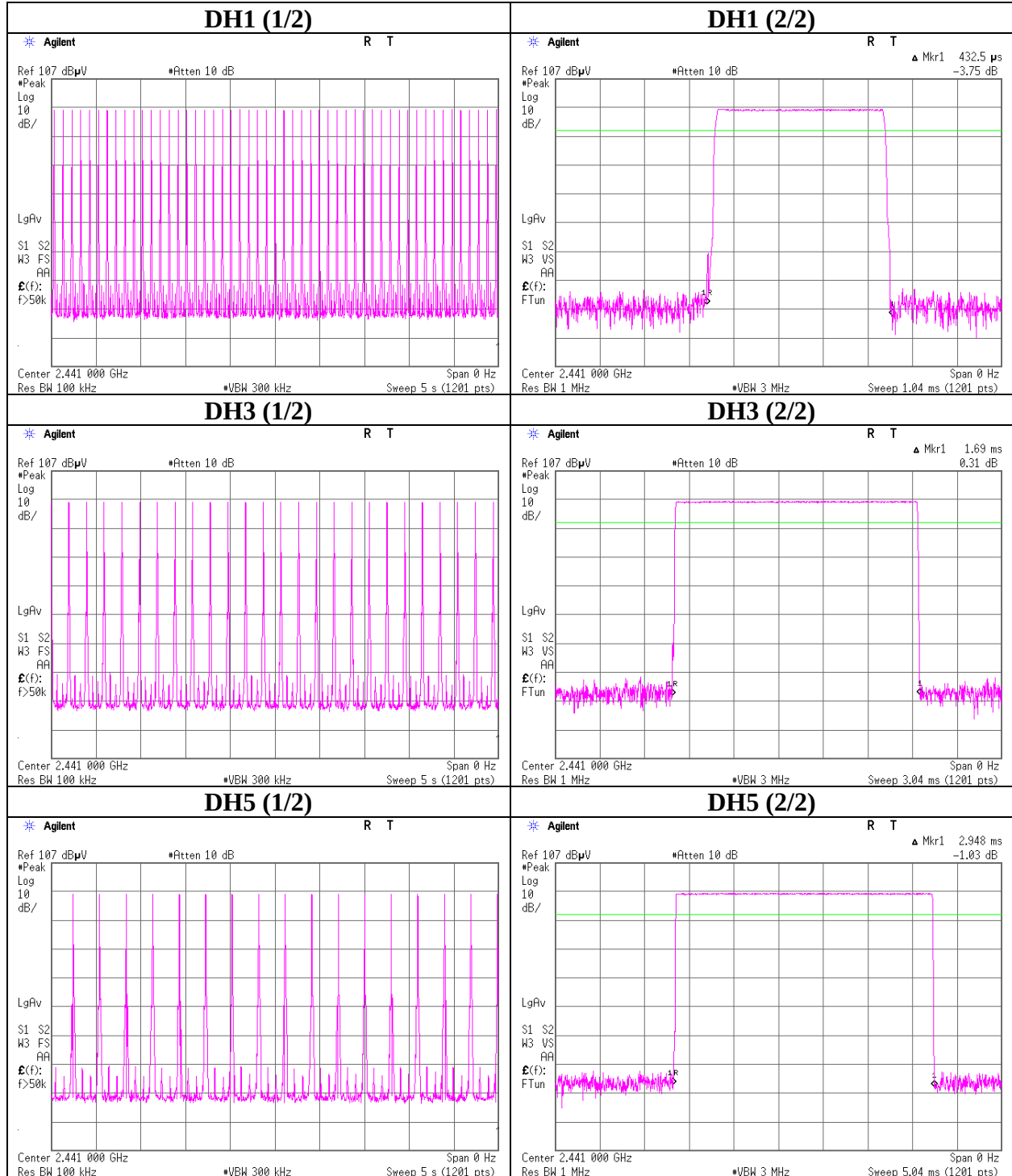
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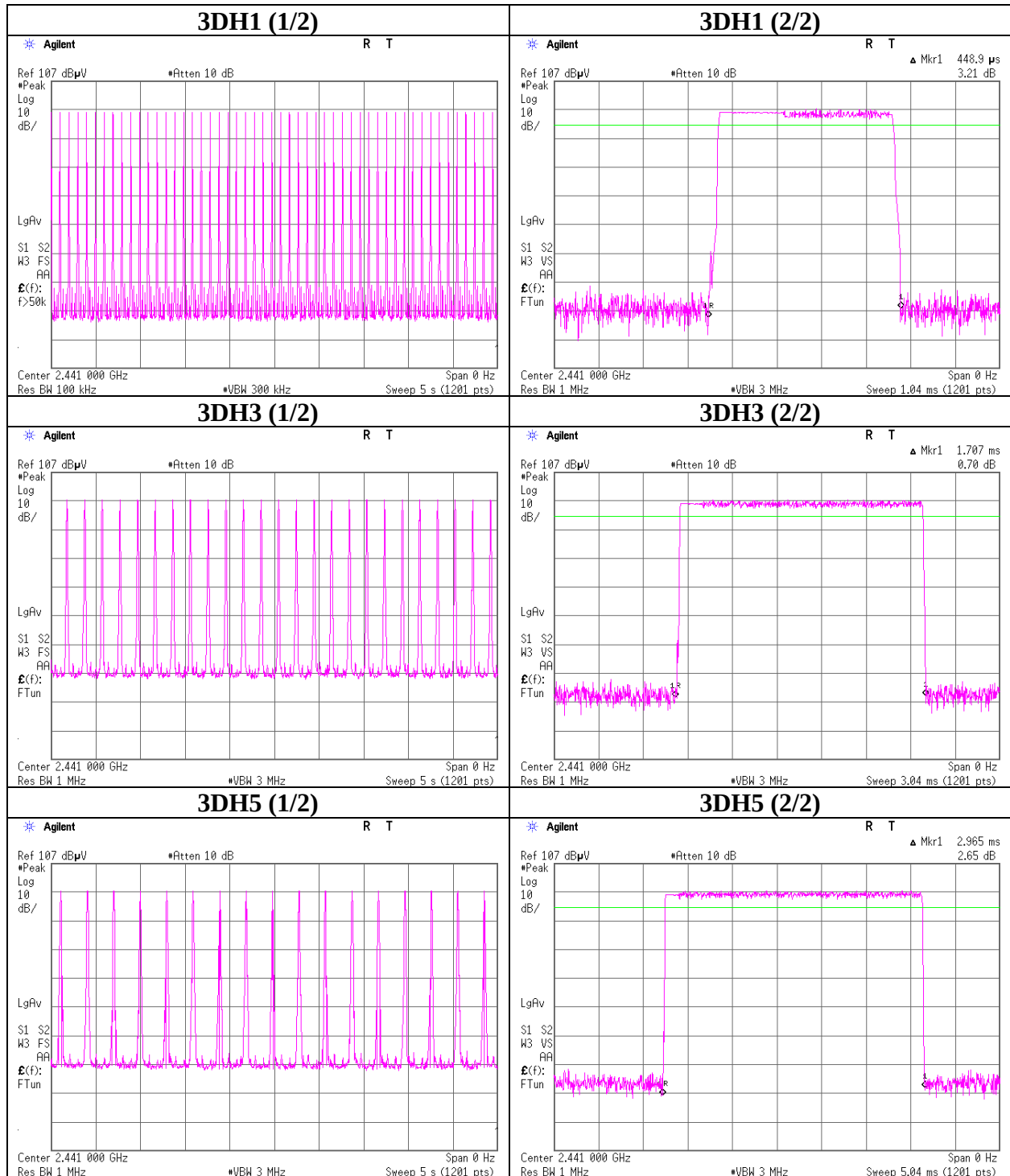
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Dwell time



Dwell time



Maximum Peak Output Power

Test place Head Office EMC Lab. No.11 Measurement Room
Report No. 10007540H
Date 04/07/2013
Temperature/ Humidity 20 deg. C / 55% RH
Engineer Takumi Shimada
Mode Tx (Hopping off) DH5/3DH5/Inquiry

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-10.57	0.50	9.95	-0.12	0.97	20.97	125	21.09
DH5	2441.0	-10.63	0.50	9.95	-0.18	0.96	20.97	125	21.15
DH5	2480.0	-10.81	0.50	9.95	-0.36	0.92	20.97	125	21.33
3DH5	2402.0	-9.39	0.50	9.95	1.06	1.28	20.97	125	19.91
3DH5	2441.0	-9.34	0.50	9.95	1.11	1.29	20.97	125	19.86
3DH5	2480.0	-9.41	0.50	9.95	1.04	1.27	20.97	125	19.93
Inquiry	2441.0	-10.67	0.50	9.95	-0.22	0.95	20.97	125	21.19

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.

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Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10007540H
Date 04/04/2013 04/04/2013
Temperature/ Humidity 22 deg. C / 38% RH 22 deg. C / 38% RH
Engineer Hironobu Ohnishi Keisuke Kawamura
(1-10GHz) (Below 1GHz,
Above 10GHz)
Mode Tx, DH5 2402MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	67.350	QP	43.7	6.9	7.7	32.2	26.1	40.0	13.9	
Hori	76.880	QP	49.2	6.5	7.8	32.2	31.3	40.0	8.7	
Hori	84.088	QP	53.2	7.2	7.9	32.2	36.1	40.0	3.9	
Hori	307.990	QP	44.1	14.8	10.0	32.0	36.9	46.0	9.1	
Hori	311.990	QP	45.3	14.9	10.1	32.0	38.3	46.0	7.7	
Hori	324.032	QP	45.0	15.3	10.1	32.0	38.4	46.0	7.6	
Hori	2298.000	PK	53.7	27.1	2.2	32.4	50.6	73.9	23.3	
Hori	2390.000	PK	43.6	27.4	2.3	32.4	40.9	73.9	33.0	
Hori	4804.000	PK	50.7	31.6	4.4	31.4	55.3	73.9	18.6	
Hori	7206.000	PK	43.3	36.3	5.1	32.3	52.4	73.9	21.5	
Hori	9608.000	PK	43.8	38.1	5.9	33.0	54.8	73.9	19.1	
Hori	2298.000	AV	49.2	27.1	2.2	32.4	46.1	53.9	7.8	
Hori	2390.000	AV	30.5	27.4	2.3	32.4	27.8	53.9	26.1	
Hori	4804.000	AV	44.8	31.6	4.4	31.4	49.4	53.9	4.5	
Hori	7206.000	AV	30.0	36.3	5.1	32.3	39.1	53.9	14.8	
Hori	9608.000	AV	30.6	38.1	5.9	33.0	41.6	53.9	12.3	
Vert	66.210	QP	43.4	7.1	7.7	32.2	26.0	40.0	14.0	
Vert	76.887	QP	47.0	6.5	7.8	32.2	29.1	40.0	10.9	
Vert	84.098	QP	48.3	7.2	7.9	32.2	31.2	40.0	8.8	
Vert	303.977	QP	38.9	14.7	10.0	32.0	31.6	46.0	14.4	
Vert	312.001	QP	41.1	14.9	10.1	32.0	34.1	46.0	11.9	
Vert	379.527	QP	42.3	16.8	10.5	32.0	37.6	46.0	8.4	
Vert	2298.000	PK	52.7	27.1	2.2	32.4	49.6	73.9	24.3	
Vert	2390.000	PK	43.4	27.4	2.3	32.4	40.7	73.9	33.2	
Vert	4804.000	PK	50.6	31.6	4.4	31.4	55.2	73.9	18.7	
Vert	7206.000	PK	42.9	36.3	5.1	32.3	52.0	73.9	21.9	
Vert	9608.000	PK	43.5	38.1	5.9	33.0	54.5	73.9	19.4	
Vert	2298.000	AV	47.9	27.1	2.2	32.4	44.8	53.9	9.1	
Vert	2390.000	AV	30.4	27.4	2.3	32.4	27.7	53.9	26.2	
Vert	4804.000	AV	45.0	31.6	4.4	31.4	49.6	53.9	4.3	
Vert	7206.000	AV	29.9	36.3	5.1	32.3	39.0	53.9	14.9	
Vert	9608.000	AV	30.5	38.1	5.9	33.0	41.5	53.9	12.4	

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

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

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10007540H
Date 04/04/2013
Temperature/ Humidity 22 deg. C / 38% RH
Engineer Hironobu Ohnishi
(1-10GHz)
Mode Tx, DH5 2402MHz

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2402.000	PK	101.9	27.4	2.3	32.4	99.2	-	-	Carrier
Hori	2400.000	PK	48.3	27.4	2.3	32.4	45.6	79.2	33.6	
Hori	2506.000	PK	59.9	27.8	2.3	32.3	57.7	79.2	21.5	
Vert	2402.000	PK	100.8	27.4	2.3	32.4	98.1	-	-	Carrier
Vert	2400.000	PK	49.5	27.4	2.3	32.4	46.8	78.1	31.3	
Vert	2506.000	PK	58.7	27.8	2.3	32.3	56.5	78.1	21.6	

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 Semi Anechoic Chamber
Report No. 10007540H
Date 04/04/2013 04/04/2013
Temperature/ Humidity 22 deg. C / 38% RH 22 deg. C / 38% RH
Engineer Hironobu Ohnishi Keisuke Kawamura
(1-10GHz) (Below 1GHz,
Above 10GHz)
Mode Tx, DH5 2441MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	72.014	QP	46.1	6.5	7.8	32.2	28.2	40.0	11.8	
Hori	76.908	QP	48.5	6.5	7.8	32.2	30.6	40.0	9.4	
Hori	84.076	QP	52.1	7.2	7.9	32.2	35.0	40.0	5.0	
Hori	308.020	QP	44.9	14.8	10.0	32.0	37.7	46.0	8.3	
Hori	312.012	QP	46.0	14.9	10.1	32.0	39.0	46.0	7.0	
Hori	323.992	QP	43.8	15.3	10.1	32.0	37.2	46.0	8.8	
Hori	2337.000	PK	55.3	27.2	2.2	32.4	52.3	73.9	21.6	
Hori	4882.000	PK	49.7	31.9	4.3	31.4	54.5	73.9	19.4	
Hori	7323.000	PK	41.7	36.5	5.1	32.4	50.9	73.9	23.0	
Hori	9764.000	PK	41.8	38.3	5.9	33.0	53.0	73.9	20.9	
Hori	2337.000	AV	50.9	27.2	2.2	32.4	47.9	53.9	6.0	
Hori	4882.000	AV	44.7	31.9	4.3	31.4	49.5	53.9	4.4	
Hori	7323.000	AV	29.5	36.5	5.1	32.4	38.7	53.9	15.2	
Hori	9764.000	AV	30.2	38.3	5.9	33.0	41.4	53.9	12.5	
Vert	67.958	QP	43.4	6.8	7.7	32.2	25.7	40.0	14.3	
Vert	76.903	QP	46.2	6.5	7.8	32.2	28.3	40.0	11.7	
Vert	84.097	QP	47.6	7.2	7.9	32.2	30.5	40.0	9.5	
Vert	308.003	QP	40.1	14.8	10.0	32.0	32.9	46.0	13.1	
Vert	311.992	QP	40.4	14.9	10.1	32.0	33.4	46.0	12.6	
Vert	357.924	QP	36.3	16.3	10.4	32.0	31.0	46.0	15.0	
Vert	2337.000	PK	53.5	27.2	2.2	32.4	50.5	73.9	23.4	
Vert	4882.000	PK	50.8	31.9	4.3	31.4	55.6	73.9	18.3	
Vert	7323.000	PK	41.3	36.5	5.1	32.4	50.5	73.9	23.4	
Vert	9764.000	PK	42.2	38.3	5.9	33.0	53.4	73.9	20.5	
Vert	2337.000	AV	49.3	27.2	2.2	32.4	46.3	53.9	7.6	
Vert	4882.000	AV	44.9	31.9	4.3	31.4	49.7	53.9	4.2	
Vert	7323.000	AV	29.6	36.5	5.1	32.4	38.8	53.9	15.1	
Vert	9764.000	AV	30.2	38.3	5.9	33.0	41.4	53.9	12.5	

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

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

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10007540H
Date 04/04/2013
Temperature/ Humidity 22 deg. C / 38% RH
Engineer Hironobu Ohnishi
 (1-10GHz)
Mode Tx, DH5 2441MHz

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2441.000	PK	102.8	27.6	2.3	32.3	100.4	-	-	Carrier
Hori	2545.000	PK	58.8	27.9	2.3	32.3	56.7	80.4	23.7	
Vert	2441.000	PK	102.1	27.6	2.3	32.3	99.7	-	-	Carrier
Vert	2545.000	PK	58.7	27.9	2.3	32.3	56.6	79.7	23.1	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10007540H
Date 04/04/2013 04/04/2013
Temperature/ Humidity 22 deg. C / 38% RH 22 deg. C / 38% RH
Engineer Hironobu Ohnishi Keisuke Kawamura
(1-10GHz) (Below 1GHz,
Above 10GHz)
Mode Tx, DH5 2480MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	76.902	QP	49.4	6.5	7.8	32.2	31.5	40.0	8.5	
Hori	79.890	QP	49.9	6.4	7.9	32.2	32.0	40.0	8.0	
Hori	84.110	QP	54.1	7.2	7.9	32.2	37.0	40.0	3.0	
Hori	307.975	QP	46.0	14.8	10.0	32.0	38.8	46.0	7.2	
Hori	311.991	QP	44.7	14.9	10.1	32.0	37.7	46.0	8.3	
Hori	328.043	QP	42.8	15.4	10.2	32.0	36.4	46.0	9.6	
Hori	2376.000	PK	54.5	27.4	2.3	32.4	51.8	73.9	22.1	
Hori	2483.500	PK	46.8	27.7	2.3	32.3	44.5	73.9	29.4	
Hori	4960.000	PK	47.4	32.2	4.3	31.4	52.5	73.9	21.4	
Hori	7440.000	PK	42.1	36.7	5.1	32.4	51.5	73.9	22.4	
Hori	9920.000	PK	43.3	38.6	5.9	33.1	54.7	73.9	19.2	
Hori	2376.000	AV	50.2	27.4	2.3	32.4	47.5	53.9	6.4	
Hori	2483.500	AV	33.0	27.7	2.3	32.3	30.7	53.9	23.2	
Hori	4960.000	AV	41.4	32.2	4.3	31.4	46.5	53.9	7.4	
Hori	7440.000	AV	29.8	36.7	5.1	32.4	39.2	53.9	14.7	
Hori	9920.000	AV	30.8	38.6	5.9	33.1	42.2	53.9	11.7	
Vert	76.876	QP	46.9	6.5	7.8	32.2	29.0	40.0	11.0	
Vert	79.876	QP	45.8	6.4	7.9	32.2	27.9	40.0	12.1	
Vert	84.098	QP	47.9	7.2	7.9	32.2	30.8	40.0	9.2	
Vert	300.000	QP	37.2	14.5	10.0	32.0	29.7	46.0	16.3	
Vert	308.016	QP	41.0	14.8	10.0	32.0	33.8	46.0	12.2	
Vert	379.560	QP	42.2	16.8	10.5	32.0	37.5	46.0	8.5	
Vert	2376.000	PK	53.2	27.4	2.3	32.4	50.5	73.9	23.4	
Vert	2483.500	PK	45.9	27.7	2.3	32.3	43.6	73.9	30.3	
Vert	4960.000	PK	50.1	32.2	4.3	31.4	55.2	73.9	18.7	
Vert	7440.000	PK	43.1	36.7	5.1	32.4	52.5	73.9	21.4	
Vert	9920.000	PK	43.8	38.6	5.9	33.1	55.2	73.9	18.7	
Vert	2376.000	AV	48.6	27.4	2.3	32.4	45.9	53.9	8.0	
Vert	2483.500	AV	32.5	27.7	2.3	32.3	30.2	53.9	23.7	
Vert	4960.000	AV	45.2	32.2	4.3	31.4	50.3	53.9	3.6	
Vert	7440.000	AV	30.0	36.7	5.1	32.4	39.4	53.9	14.5	
Vert	9920.000	AV	30.5	38.6	5.9	33.1	41.9	53.9	12.0	

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

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

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

Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 10007540H
Date : 04/04/2013
Temperature/ Humidity : 22 deg. C / 38% RH
Engineer : Hironobu Ohnishi
(1-10GHz)
Mode : Tx, DH5 2480MHz

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2480.000	PK	102.7	27.7	2.3	32.3	100.4	-	-	Carrier
Hori	2584.000	PK	60.1	28.0	2.4	32.3	58.2	80.4	22.2	
Vert	2480.000	PK	101.5	27.7	2.3	32.3	99.2	-	-	Carrier
Vert	2584.000	PK	59.8	28.0	2.4	32.3	57.9	79.2	21.3	

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 Semi Anechoic Chamber
Report No. 10007540H
Date 04/04/2013 04/04/2013 04/05/2013
Temperature/ Humidity 22 deg. C / 38% RH 22 deg. C / 38% RH 23 deg. C / 39% RH
Engineer Hironobu Ohnishi Keisuke Kawamura Hironobu Ohnishi
(1-10GHz) (Above 10GHz) (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	70.154	QP	46.4	6.6	7.7	32.2	28.5	40.0	11.5	
Hori	84.094	QP	51.9	7.2	7.9	32.2	34.8	40.0	5.2	
Hori	200.449	QP	35.9	16.7	9.2	32.1	29.7	43.5	13.8	
Hori	283.992	QP	35.7	19.2	9.9	32.0	32.8	46.0	13.2	
Hori	307.999	QP	46.6	14.8	10.0	32.0	39.4	46.0	6.6	
Hori	315.995	QP	45.4	15.0	10.1	32.0	38.5	46.0	7.5	
Hori	2298.000	PK	52.2	27.1	2.2	32.4	49.1	73.9	24.8	
Hori	2390.000	PK	43.2	27.4	2.3	32.4	40.5	73.9	33.4	
Hori	4804.000	PK	47.3	31.6	4.4	31.4	51.9	73.9	22.0	
Hori	7206.000	PK	42.8	36.3	5.1	32.3	51.9	73.9	22.0	
Hori	9608.000	PK	43.9	38.1	5.9	33.0	54.9	73.9	19.0	
Hori	2298.000	AV	45.1	27.1	2.2	32.4	42.0	53.9	11.9	
Hori	2390.000	AV	30.4	27.4	2.3	32.4	27.7	53.9	26.2	
Hori	4804.000	AV	37.5	31.6	4.4	31.4	42.1	53.9	11.8	
Hori	7206.000	AV	29.9	36.3	5.1	32.3	39.0	53.9	14.9	
Hori	9608.000	AV	30.6	38.1	5.9	33.0	41.6	53.9	12.3	
Vert	70.154	QP	44.2	6.6	7.7	32.2	26.3	40.0	13.7	
Vert	84.094	QP	48.7	7.2	7.9	32.2	31.6	40.0	8.4	
Vert	200.449	QP	30.5	16.7	9.2	32.1	24.3	43.5	19.2	
Vert	283.992	QP	36.2	19.2	9.9	32.0	33.3	46.0	12.7	
Vert	307.999	QP	40.2	14.8	10.0	32.0	33.0	46.0	13.0	
Vert	315.995	QP	40.4	15.0	10.1	32.0	33.5	46.0	12.5	
Vert	2298.000	PK	51.5	27.1	2.2	32.4	48.4	73.9	25.5	
Vert	2390.000	PK	43.3	27.4	2.3	32.4	40.6	73.9	33.3	
Vert	4804.000	PK	47.5	31.6	4.4	31.4	52.1	73.9	21.8	
Vert	7206.000	PK	43.3	36.3	5.1	32.3	52.4	73.9	21.5	
Vert	9608.000	PK	43.8	38.1	5.9	33.0	54.8	73.9	19.1	
Vert	2298.000	AV	44.4	27.1	2.2	32.4	41.3	53.9	12.6	
Vert	2390.000	AV	30.3	27.4	2.3	32.4	27.6	53.9	26.3	
Vert	4804.000	AV	37.4	31.6	4.4	31.4	42.0	53.9	11.9	
Vert	7206.000	AV	30.0	36.3	5.1	32.3	39.1	53.9	14.8	
Vert	9608.000	AV	30.6	38.1	5.9	33.0	41.6	53.9	12.3	

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

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

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10007540H
Date 04/04/2013
Temperature/ Humidity 22 deg. C / 38% RH
Engineer Hironobu Ohnishi
(1-10GHz)
Mode Tx, 3DH5 2402MHz

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2402.000	PK	100.6	27.4	2.3	32.4	97.9	-	-	Carrier
Hori	2400.000	PK	51.3	27.4	2.3	32.4	48.6	77.9	29.3	
Hori	2506.000	PK	58.2	27.8	2.3	32.3	56.0	77.9	21.9	
Vert	2402.000	PK	99.3	27.4	2.3	32.4	96.6	-	-	Carrier
Vert	2400.000	PK	50.9	27.4	2.3	32.4	48.2	76.6	28.4	
Vert	2506.000	PK	57.0	27.8	2.3	32.3	54.8	76.6	21.8	

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 Semi Anechoic Chamber		
Report No.	10007540H		
Date	04/04/2013	04/04/2013	04/05/2013
Temperature/ Humidity	22 deg. C / 38% RH	22 deg. C / 38% RH	23 deg. C / 39% RH
Engineer	Hironobu Ohnishi (1-10GHz)	Keisuke Kawamura (Above 10GHz)	Hironobu Ohnishi (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	72.029	QP	48.3	6.5	7.8	32.2	30.4	40.0	9.6	
Hori	84.093	QP	52.0	7.2	7.9	32.2	34.9	40.0	5.1	
Hori	200.457	QP	36.8	16.7	9.2	32.1	30.6	43.5	12.9	
Hori	283.996	QP	33.4	19.2	9.9	32.0	30.5	46.0	15.5	
Hori	307.999	QP	47.9	14.8	10.0	32.0	40.7	46.0	5.3	
Hori	315.995	QP	44.0	15.0	10.1	32.0	37.1	46.0	8.9	
Hori	2337.000	PK	53.6	27.2	2.2	32.4	50.6	73.9	23.3	
Hori	4882.000	PK	46.9	31.9	4.3	31.4	51.7	73.9	22.2	
Hori	7323.000	PK	42.7	36.5	5.1	32.4	51.9	73.9	22.0	
Hori	9764.000	PK	43.6	38.3	5.9	33.0	54.8	73.9	19.1	
Hori	2337.000	AV	46.9	27.2	2.2	32.4	43.9	53.9	10.0	
Hori	4882.000	AV	37.0	31.9	4.3	31.4	41.8	53.9	12.1	
Hori	7323.000	AV	29.6	36.5	5.1	32.4	38.8	53.9	15.1	
Hori	9764.000	AV	30.1	38.3	5.9	33.0	41.3	53.9	12.6	
Vert	72.029	QP	44.9	6.5	7.8	32.2	27.0	40.0	13.0	
Vert	84.093	QP	48.9	7.2	7.9	32.2	31.8	40.0	8.2	
Vert	200.457	QP	31.2	16.7	9.2	32.1	25.0	43.5	18.5	
Vert	283.996	QP	33.4	19.2	9.9	32.0	30.5	46.0	15.5	
Vert	307.999	QP	42.7	14.8	10.0	32.0	35.5	46.0	10.5	
Vert	315.995	QP	39.8	15.0	10.1	32.0	32.9	46.0	13.1	
Vert	2337.000	PK	52.5	27.2	2.2	32.4	49.5	73.9	24.4	
Vert	4882.000	PK	47.1	31.9	4.3	31.4	51.9	73.9	22.0	
Vert	7323.000	PK	42.6	36.5	5.1	32.4	51.8	73.9	22.1	
Vert	9764.000	PK	43.7	38.3	5.9	33.0	54.9	73.9	19.0	
Vert	2337.000	AV	45.4	27.2	2.2	32.4	42.4	53.9	11.5	
Vert	4882.000	AV	37.1	31.9	4.3	31.4	41.9	53.9	12.0	
Vert	7323.000	AV	29.7	36.5	5.1	32.4	38.9	53.9	15.0	
Vert	9764.000	AV	30.2	38.3	5.9	33.0	41.4	53.9	12.5	

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

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

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

Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 10007540H
Date : 04/04/2013
Temperature/ Humidity : 22 deg. C / 38% RH
Engineer : Hironobu Ohnishi
(1-10GHz)
Mode : Tx, 3DH5 2441MHz

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2441.000	PK	101.4	27.6	2.3	32.3	99.0	-	-	Carrier
Hori	2545.000	PK	57.7	27.9	2.3	32.3	55.6	79.0	23.4	
Vert	2441.000	PK	99.8	27.6	2.3	32.3	97.4	-	-	Carrier
Vert	2545.000	PK	57.2	27.9	2.3	32.3	55.1	77.4	22.3	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10007540H
Date 04/04/2013 04/04/2013 04/05/2013
Temperature/ Humidity 22 deg. C / 38% RH 22 deg. C / 38% RH 23 deg. C / 39% RH
Engineer Hironobu Ohnishi Keisuke Kawamura Hironobu Ohnishi
(1-10GHz) (Above 10GHz) (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	72.080	QP	48.2	6.5	7.8	32.2	30.3	40.0	9.7	
Hori	84.087	QP	51.2	7.2	7.9	32.2	34.1	40.0	5.9	
Hori	200.457	QP	36.4	16.7	9.2	32.1	30.2	43.5	13.3	
Hori	283.998	QP	35.4	19.2	9.9	32.0	32.5	46.0	13.5	
Hori	308.002	QP	48.1	14.8	10.0	32.0	40.9	46.0	5.1	
Hori	315.991	QP	45.1	15.0	10.1	32.0	38.2	46.0	7.8	
Hori	2376.000	PK	52.9	27.4	2.3	32.4	50.2	73.9	23.7	
Hori	2483.500	PK	47.0	27.7	2.3	32.3	44.7	73.9	29.2	
Hori	4960.000	PK	44.6	32.2	4.3	31.4	49.7	73.9	24.2	
Hori	7440.000	PK	42.2	36.7	5.1	32.4	51.6	73.9	22.3	
Hori	9920.000	PK	44.2	38.6	5.9	33.1	55.6	73.9	18.3	
Hori	2376.000	AV	45.9	27.4	2.3	32.4	43.2	53.9	10.7	
Hori	2483.500	AV	33.2	27.7	2.3	32.3	30.9	53.9	23.0	
Hori	4960.000	AV	34.7	32.2	4.3	31.4	39.8	53.9	14.1	
Hori	7440.000	AV	30.0	36.7	5.1	32.4	39.4	53.9	14.5	
Hori	9920.000	AV	30.7	38.6	5.9	33.1	42.1	53.9	11.8	
Vert	72.027	QP	44.2	6.5	7.8	32.2	26.3	40.0	13.7	
Vert	84.085	QP	48.3	7.2	7.9	32.2	31.2	40.0	8.8	
Vert	200.449	QP	30.6	16.7	9.2	32.1	24.4	43.5	19.1	
Vert	283.992	QP	35.1	19.2	9.9	32.0	32.2	46.0	13.8	
Vert	308.005	QP	42.6	14.8	10.0	32.0	35.4	46.0	10.6	
Vert	316.005	QP	40.5	15.0	10.1	32.0	33.6	46.0	12.4	
Vert	2376.000	PK	51.7	27.4	2.3	32.4	49.0	73.9	24.9	
Vert	2483.500	PK	46.5	27.7	2.3	32.3	44.2	73.9	29.7	
Vert	4960.000	PK	46.6	32.2	4.3	31.4	51.7	73.9	22.2	
Vert	7440.000	PK	41.3	36.7	5.1	32.4	50.7	73.9	23.2	
Vert	9920.000	PK	43.0	38.6	5.9	33.1	54.4	73.9	19.5	
Vert	2376.000	AV	44.7	27.4	2.3	32.4	42.0	53.9	11.9	
Vert	2483.500	AV	32.6	27.7	2.3	32.3	30.3	53.9	23.6	
Vert	4960.000	AV	37.8	32.2	4.3	31.4	42.9	53.9	11.0	
Vert	7440.000	AV	29.9	36.7	5.1	32.4	39.3	53.9	14.6	
Vert	9920.000	AV	30.8	38.6	5.9	33.1	42.2	53.9	11.7	

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

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

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

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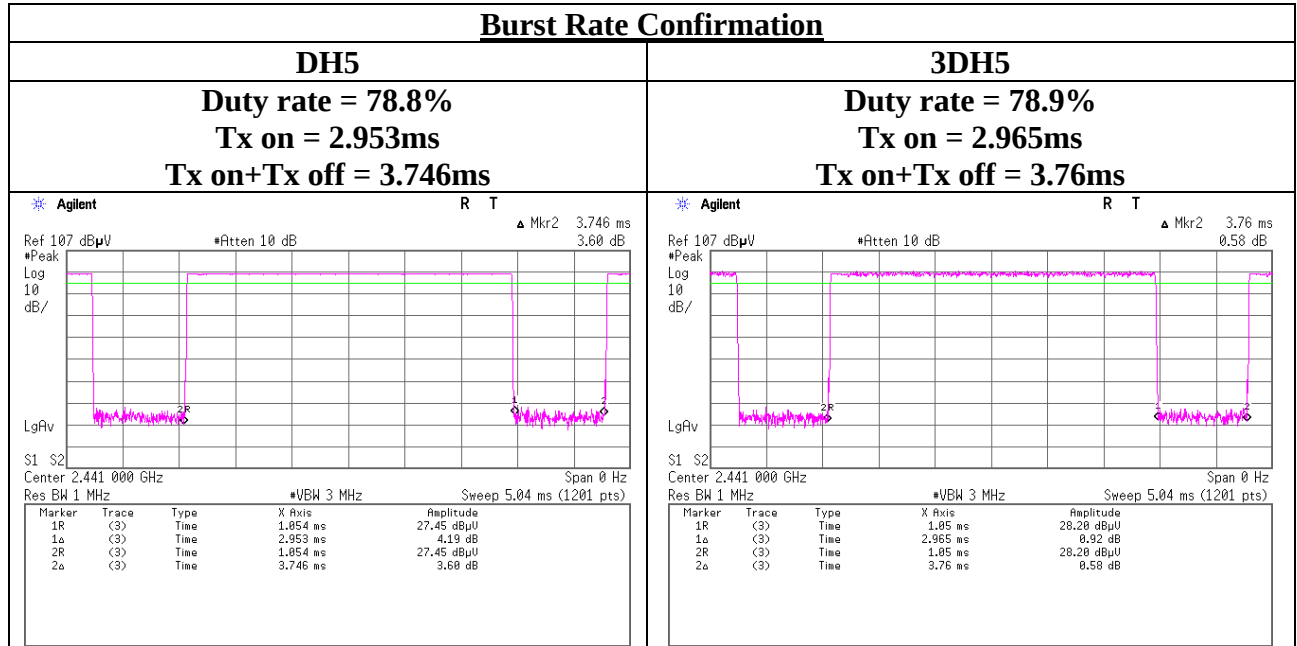
Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10007540H
Date 04/04/2013
Temperature/ Humidity 22 deg. C / 38% RH
Engineer Hironobu Ohnishi
(1-10GHz)
Mode Tx, 3DH5 2480MHz

20dBc Data Sheet

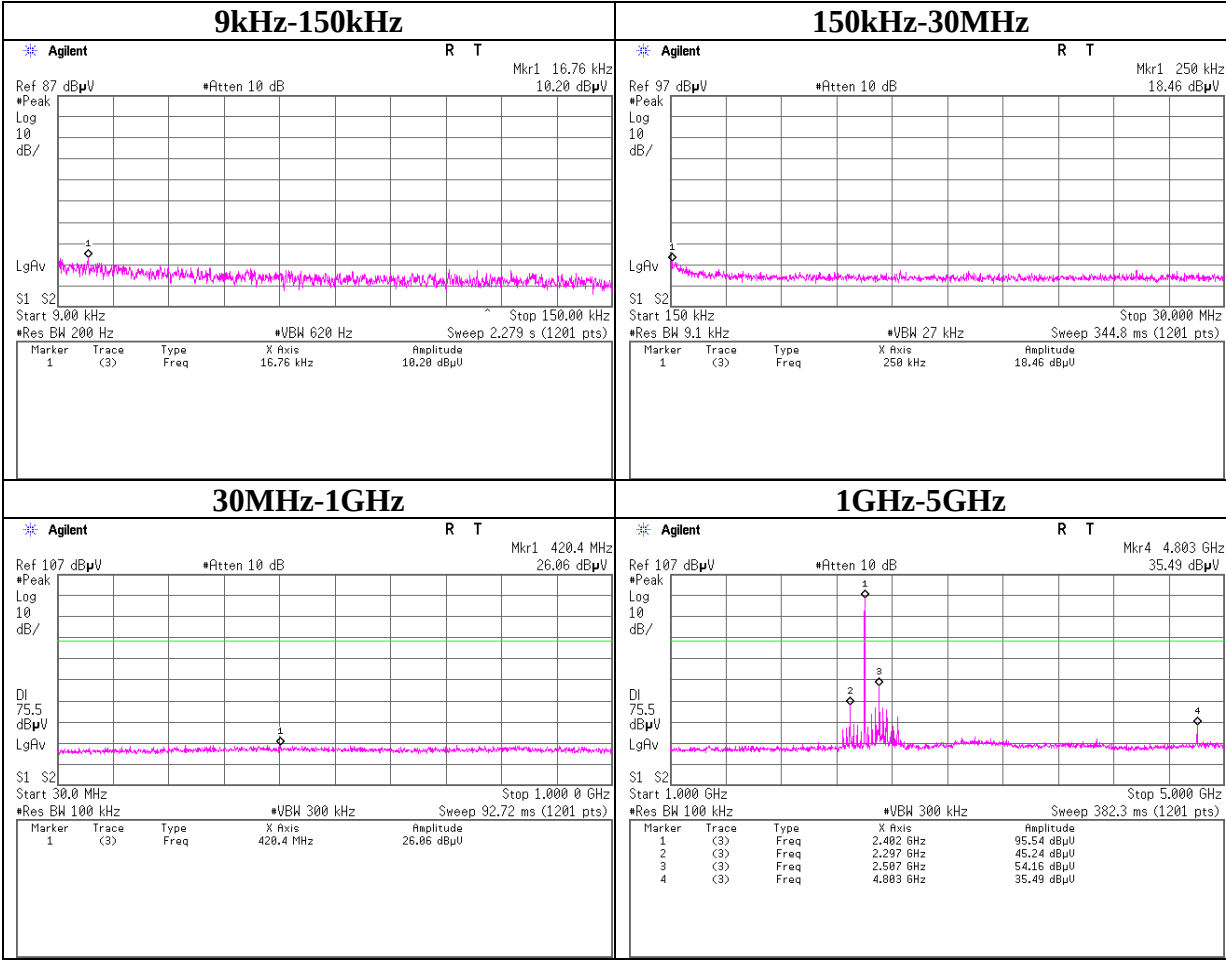
Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2480.000	PK	101.1	27.7	2.3	32.3	98.8	-	-	Carrier
Hori	2584.000	PK	58.4	28.0	2.4	32.3	56.5	78.8	22.3	
Vert	2480.000	PK	99.8	27.7	2.3	32.3	97.5	-	-	Carrier
Vert	2584.000	PK	58.0	28.0	2.4	32.3	56.1	77.5	21.4	

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



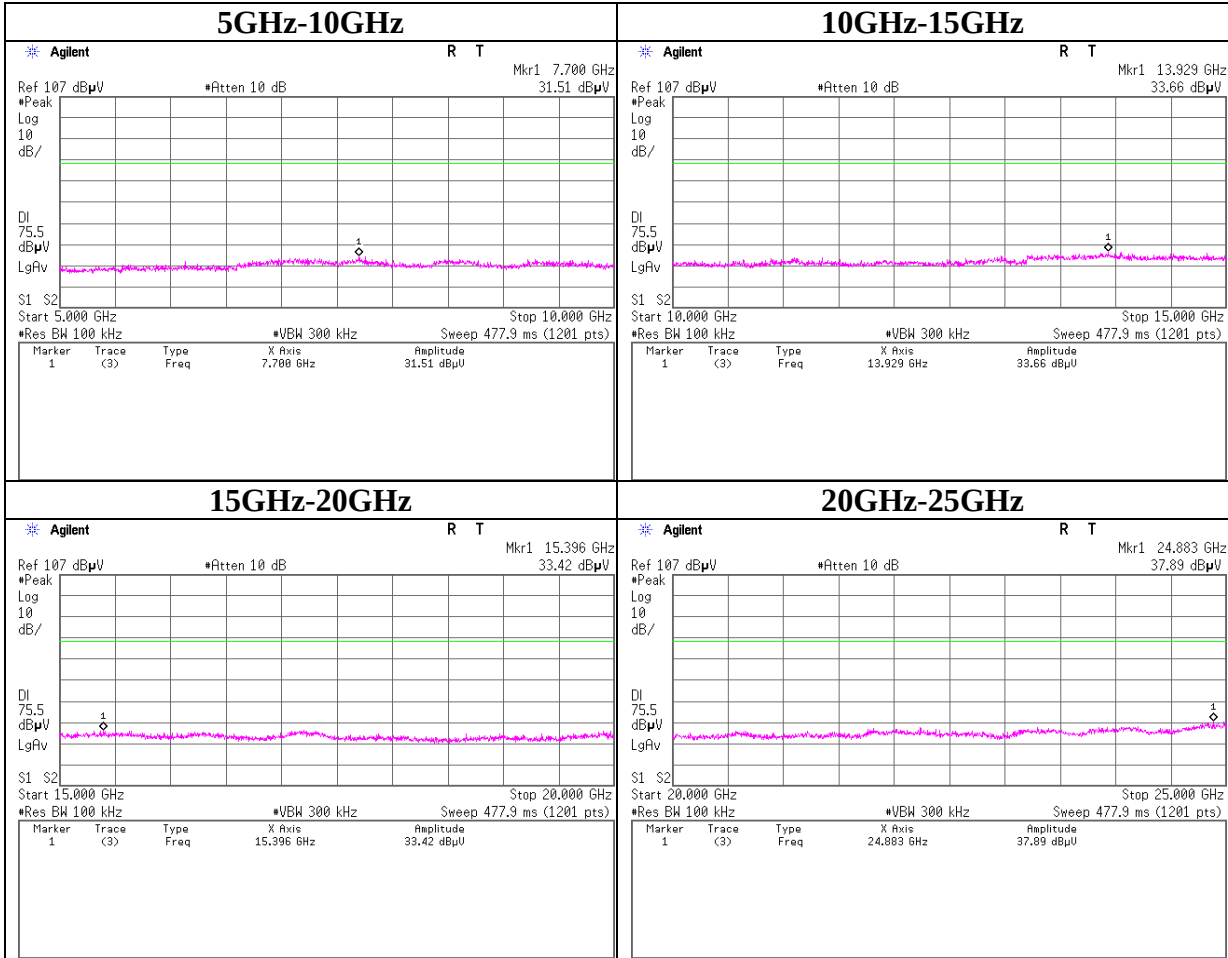
Conducted Spurious Emission

Tx DH5 2402MHz



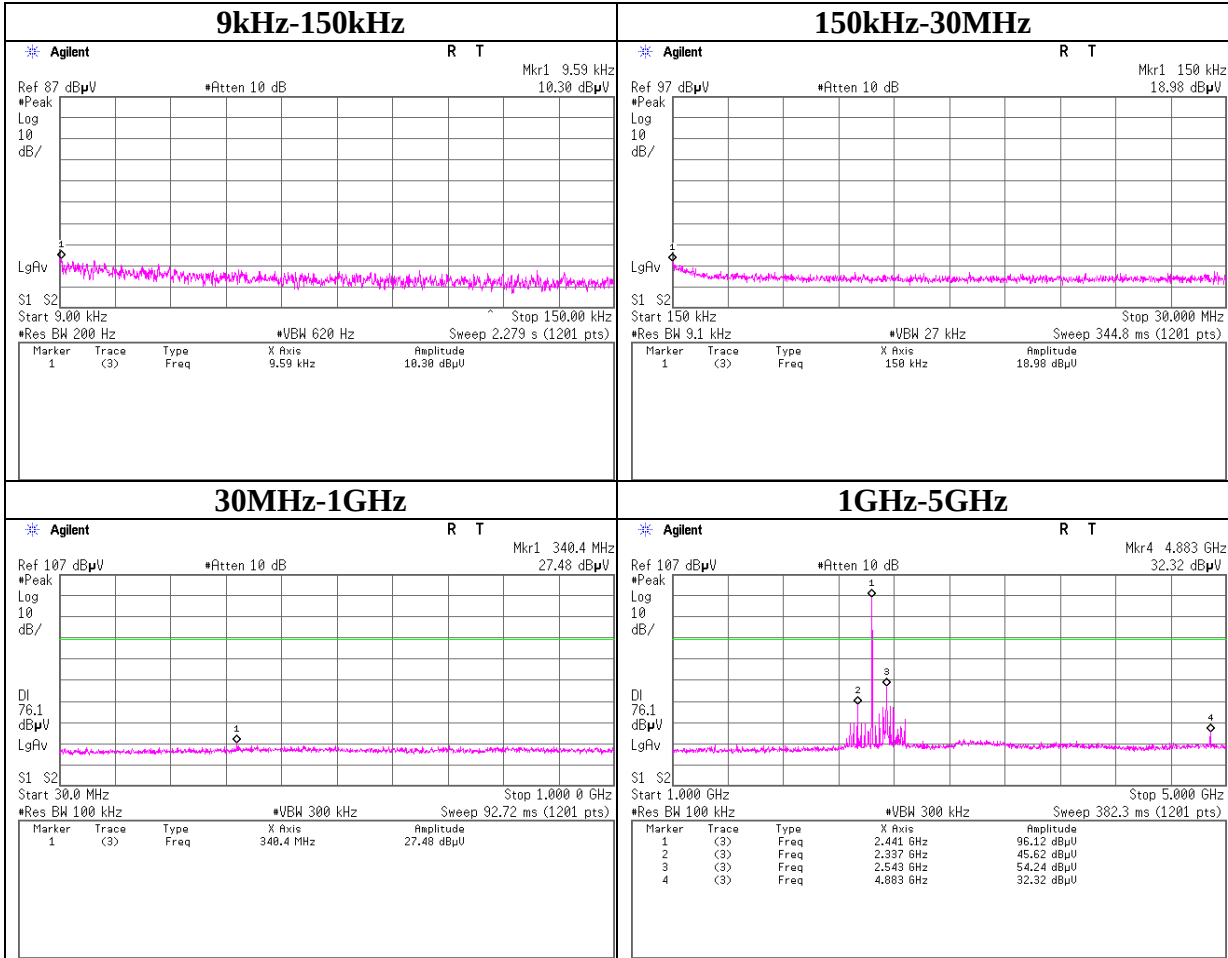
Conducted Spurious Emission

Tx DH5 2402MHz



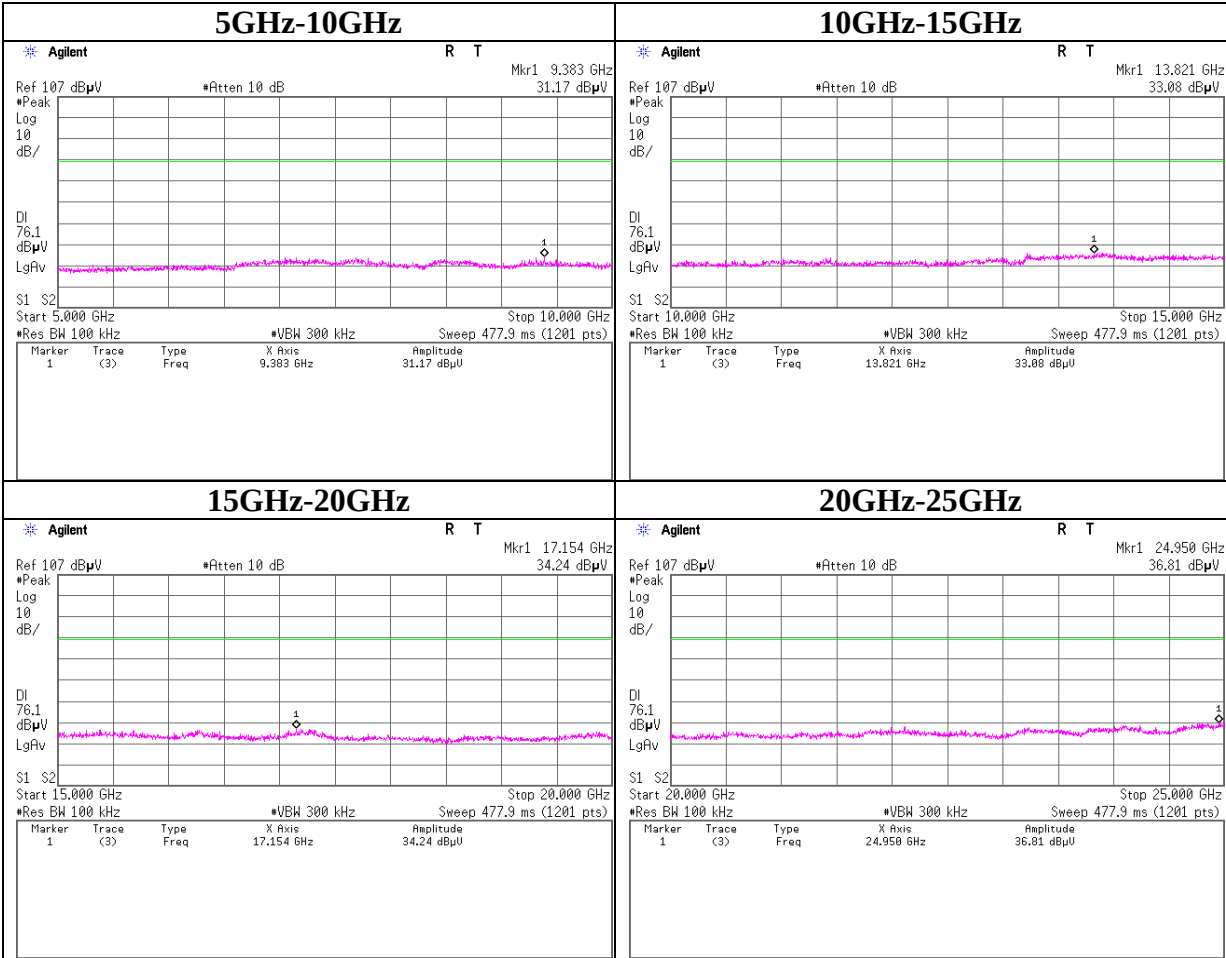
Conducted Spurious Emission

Tx DH5 2441MHz



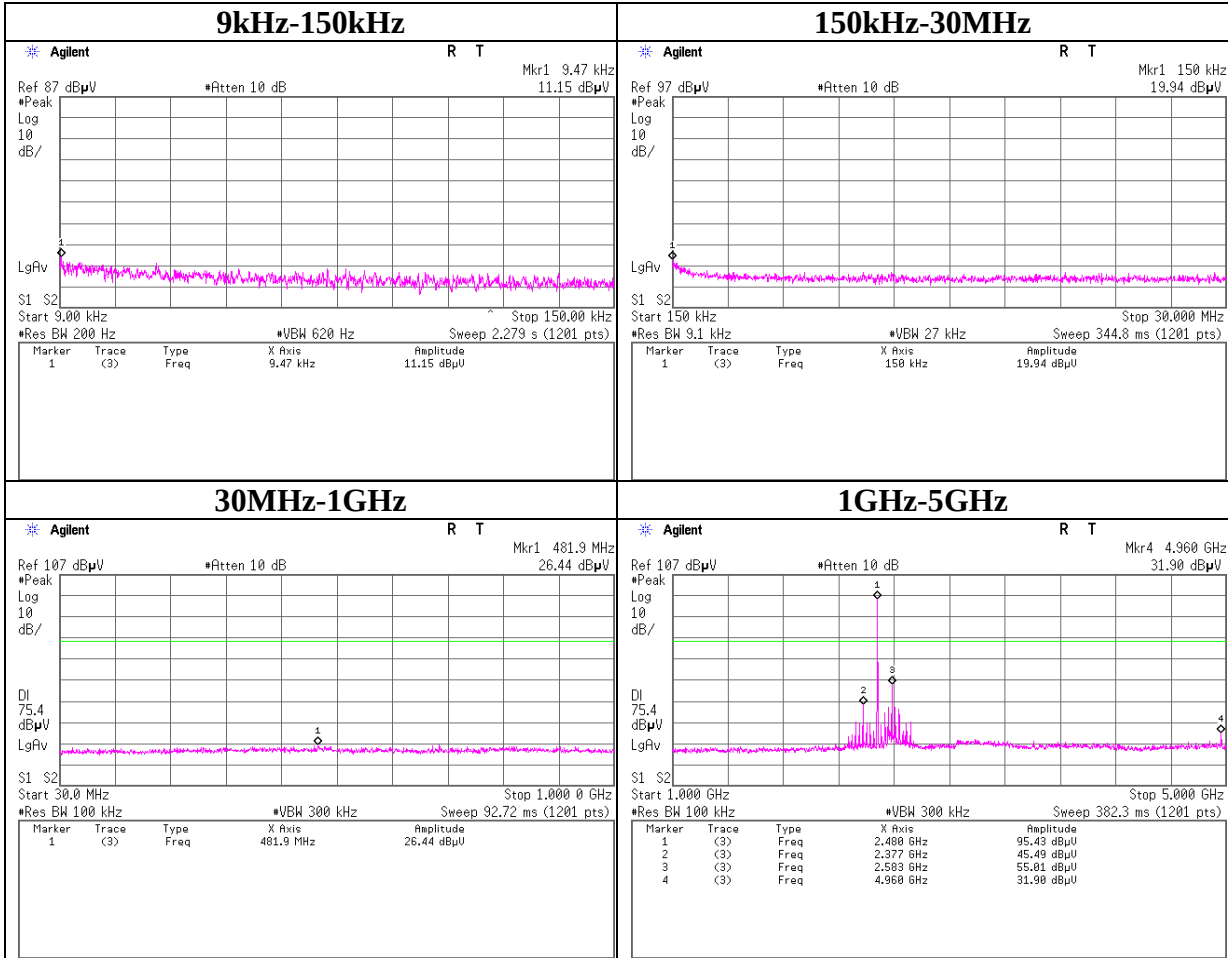
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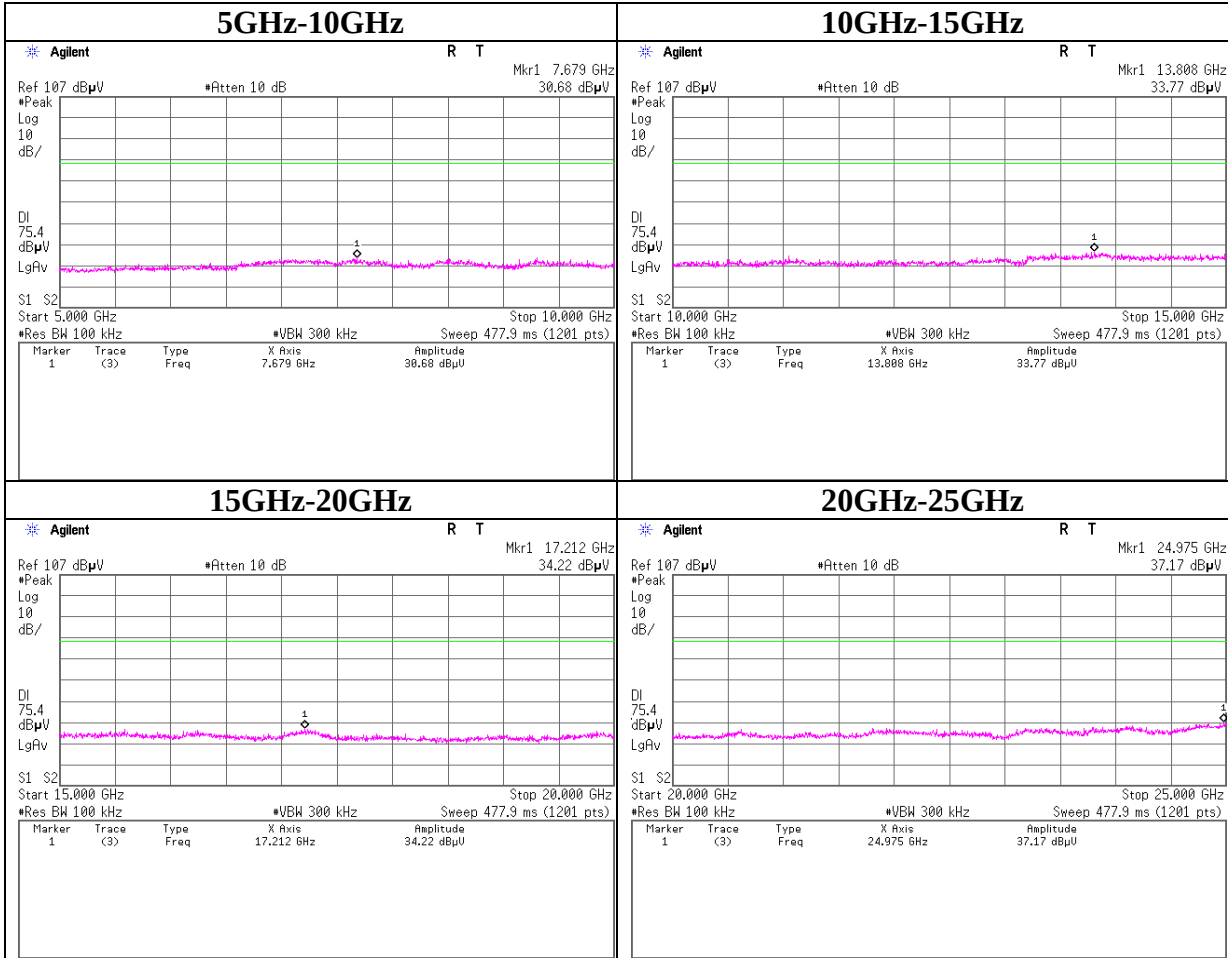
Conducted Spurious Emission

Tx DH5 2480MHz



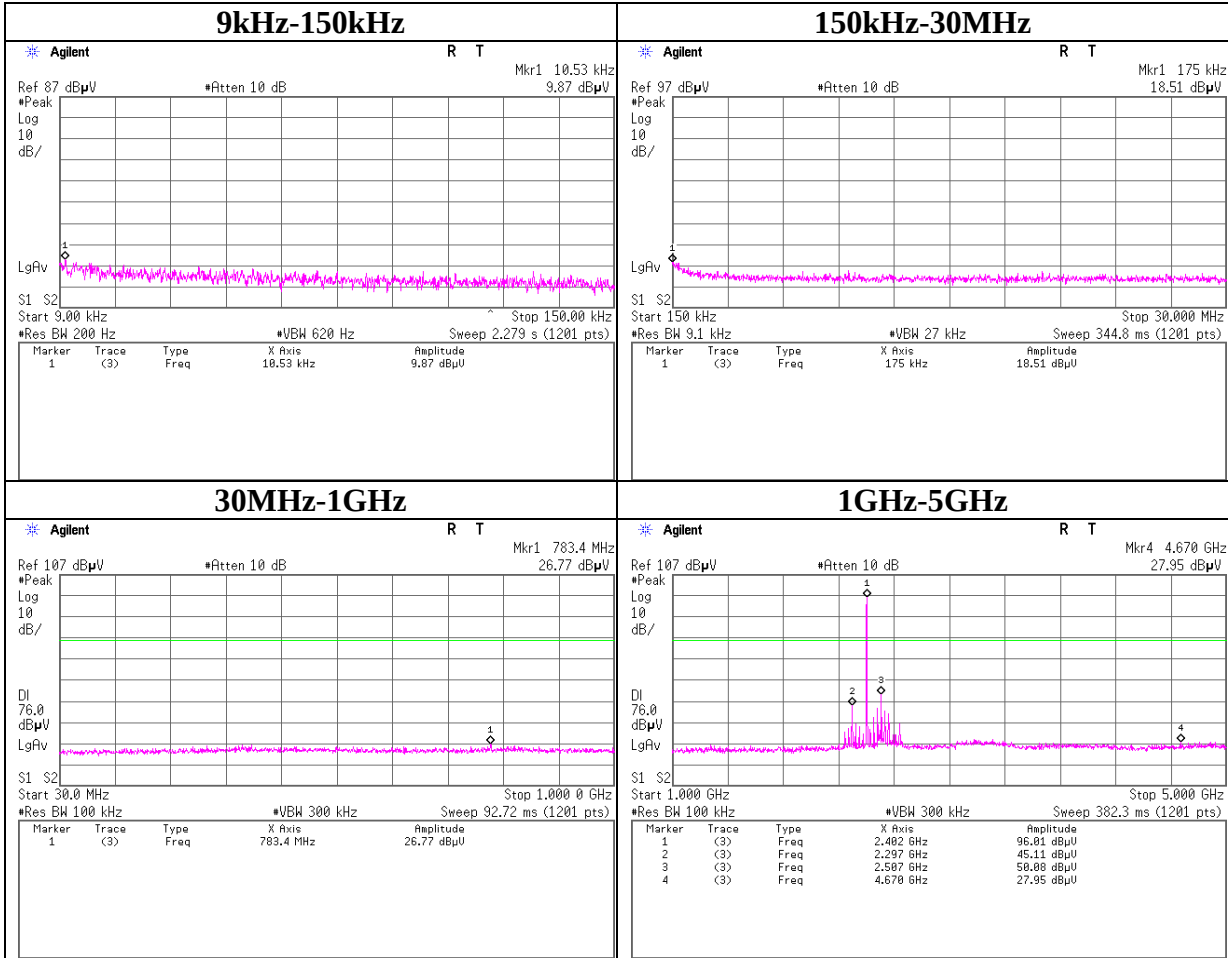
Conducted Spurious Emission

Tx DH5 2480MHz



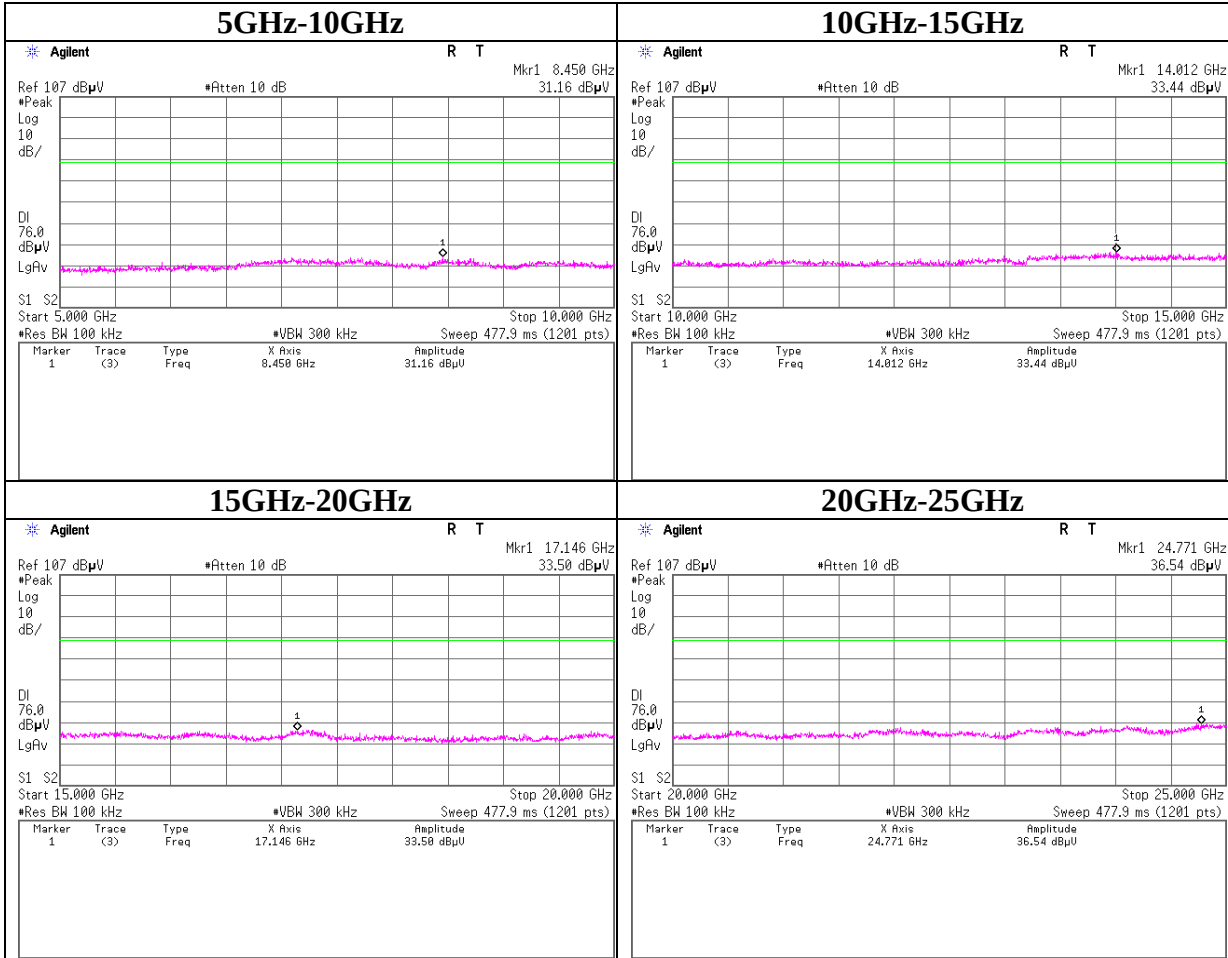
Conducted Spurious Emission

Tx 3DH5 2402MHz



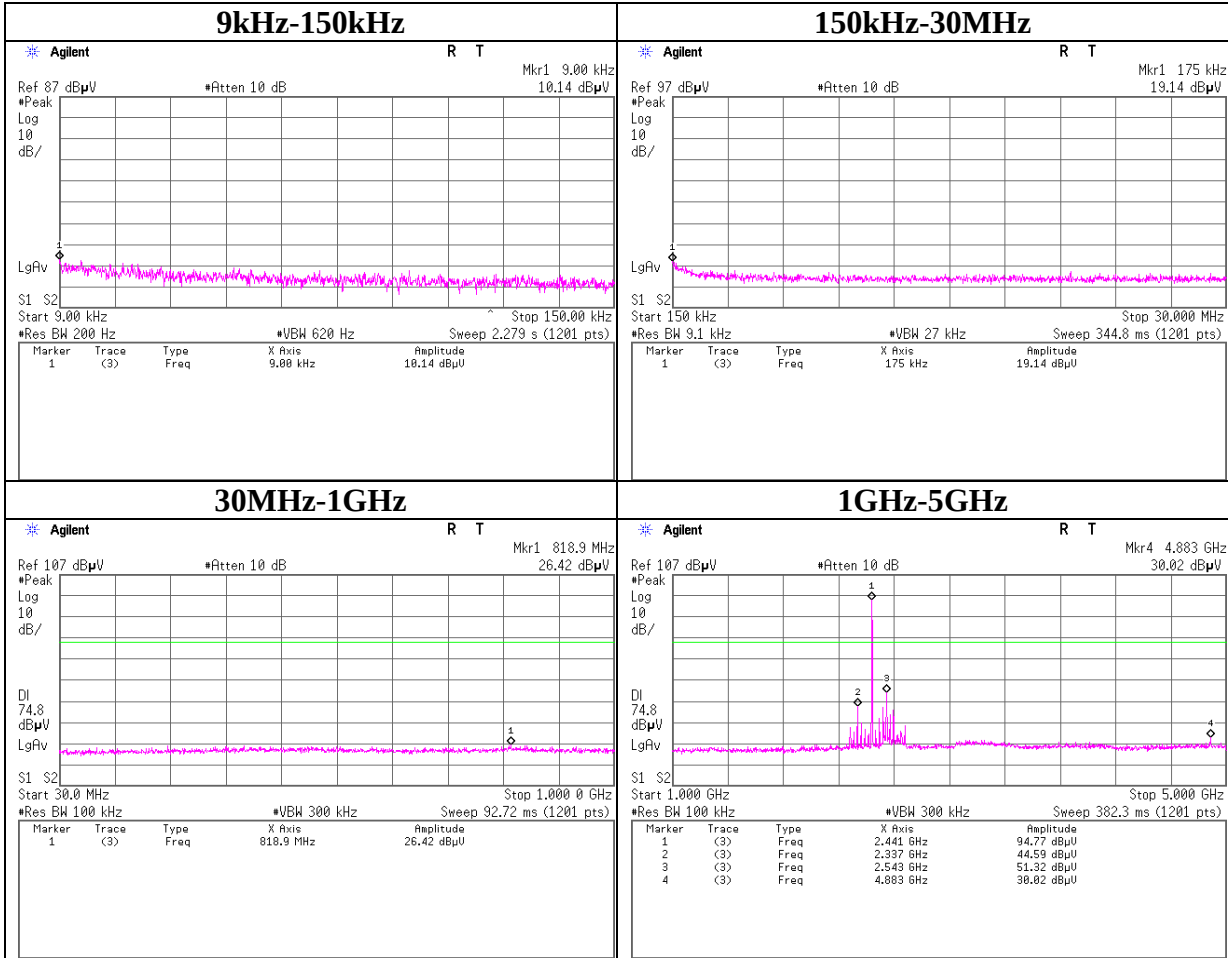
Conducted Spurious Emission

Tx 3DH5 2402MHz



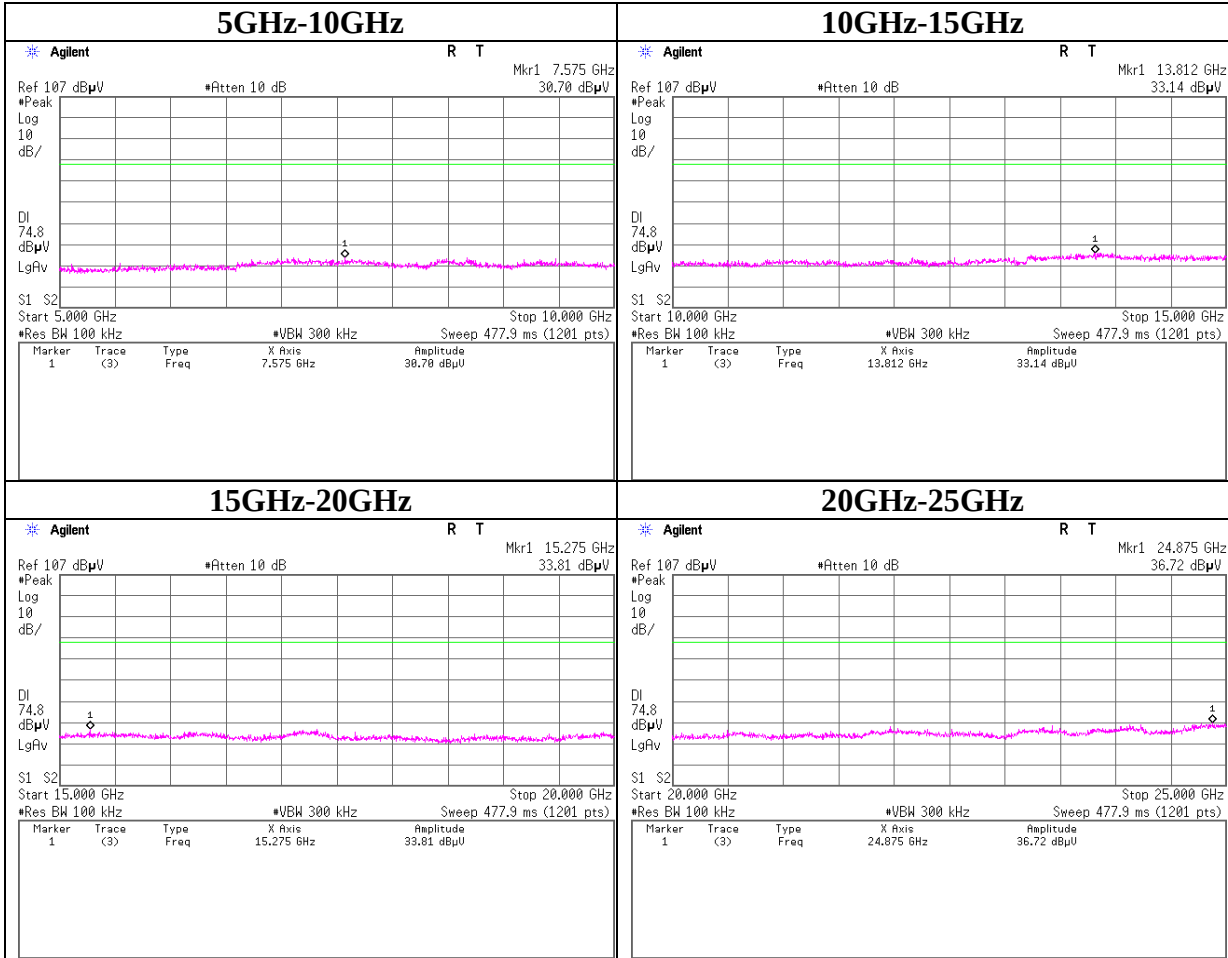
Conducted Spurious Emission

Tx 3DH5 2441MHz



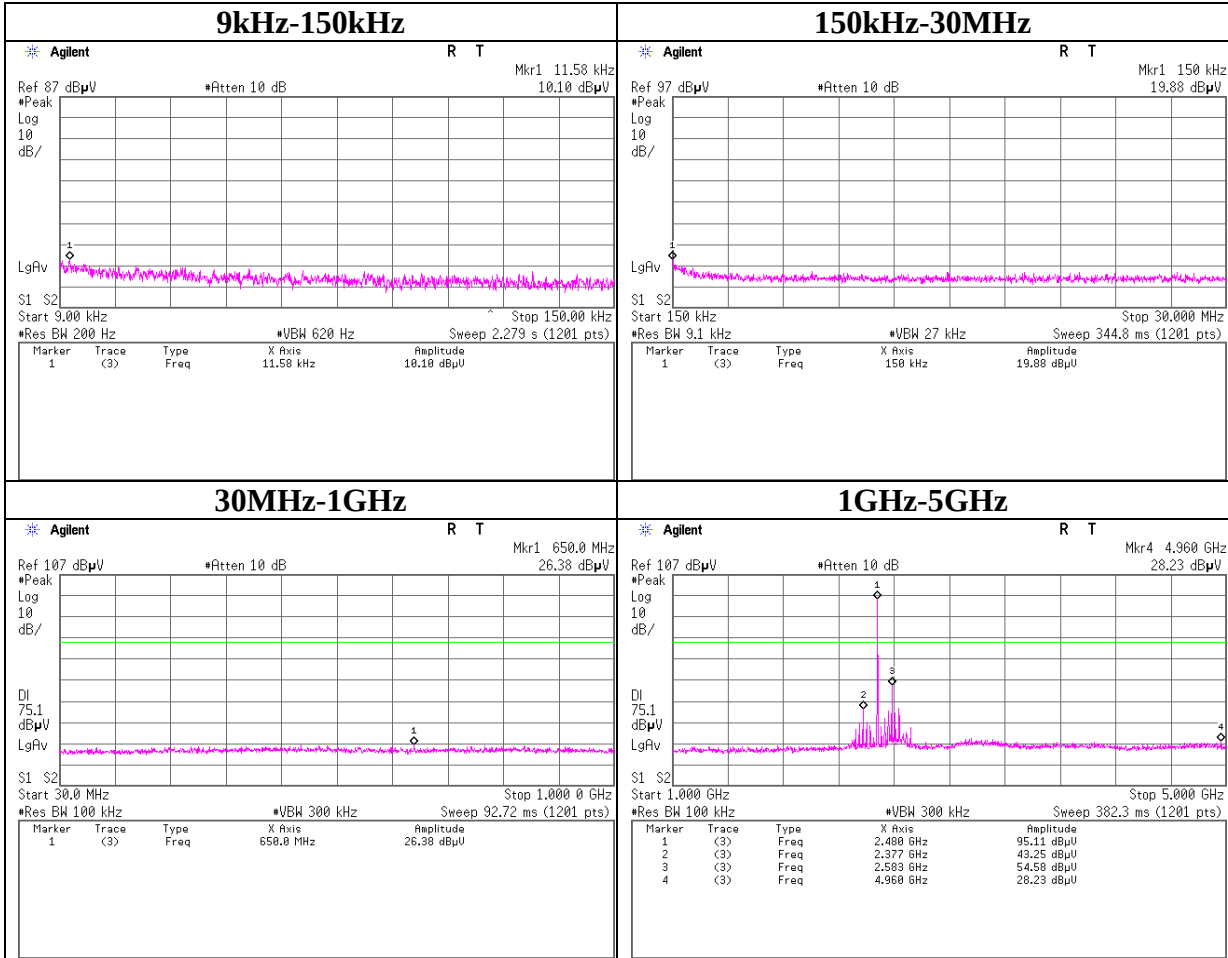
Conducted Spurious Emission

Tx 3DH5 2441MHz



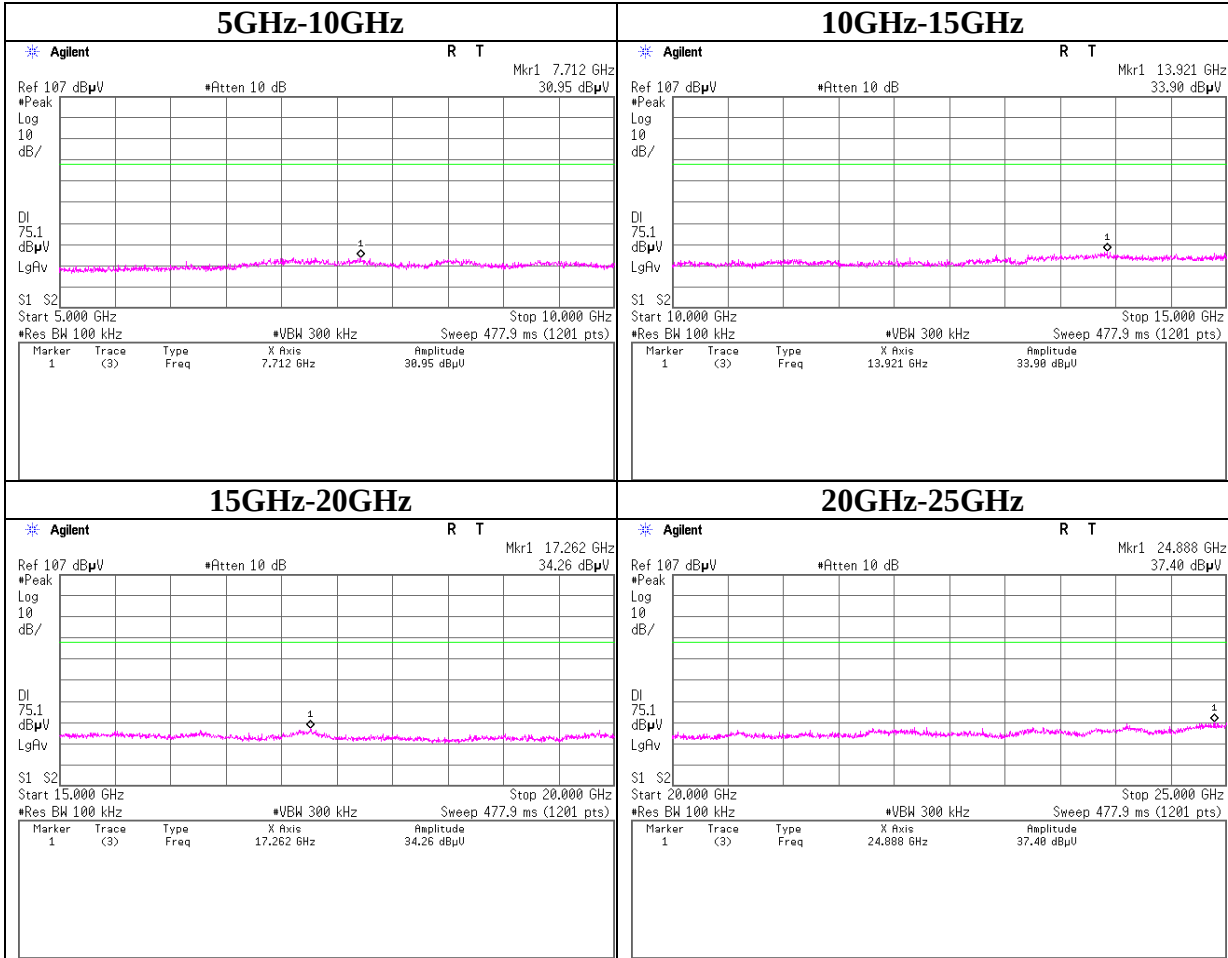
Conducted Spurious Emission

Tx 3DH5 2480MHz



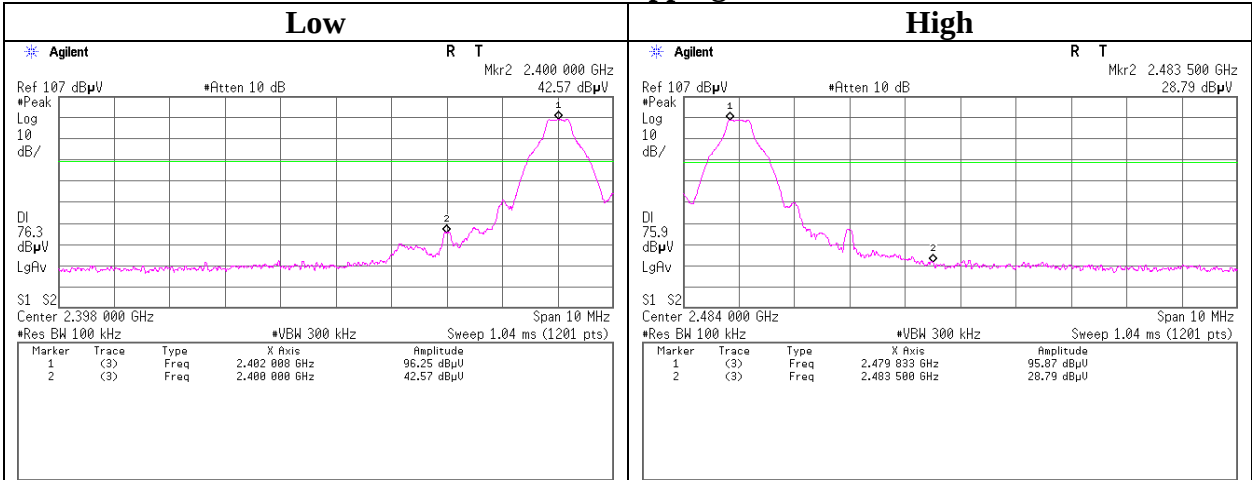
Conducted Spurious Emission

Tx 3DH5 2480MHz

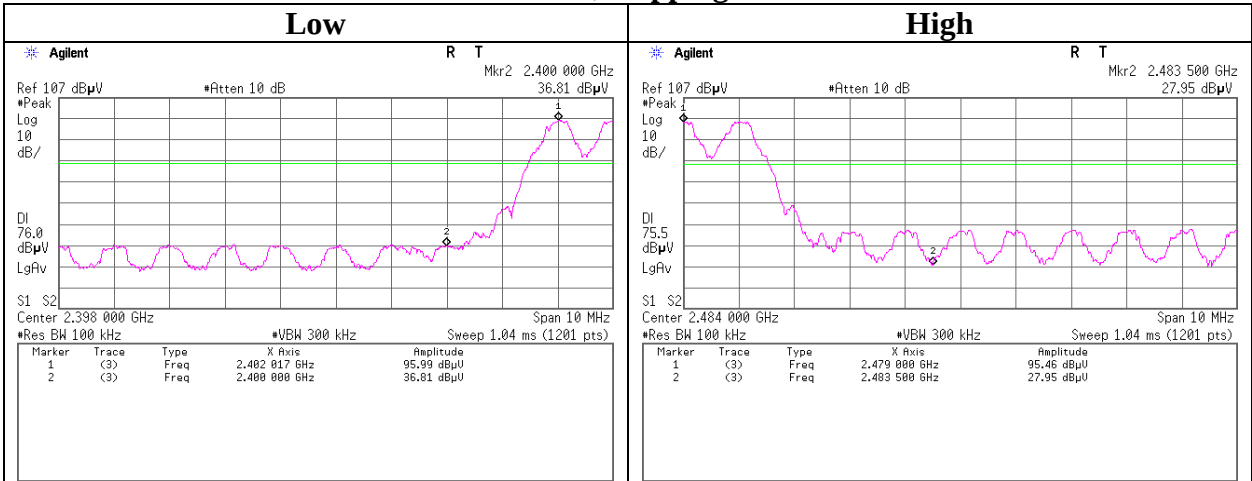


Conducted Emission Band Edge compliance

Tx DH5, Hopping off

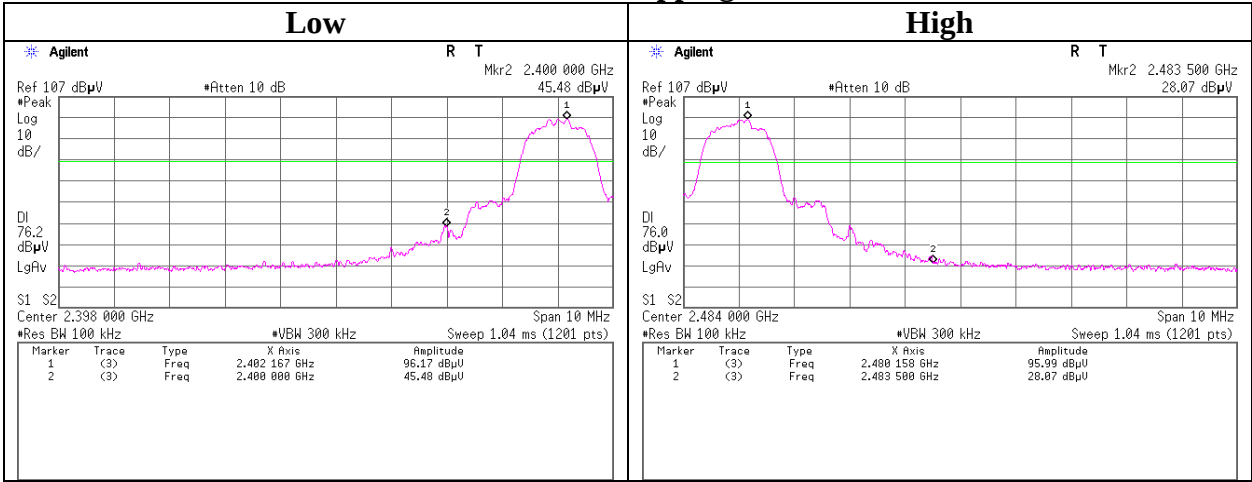


Tx DH5, Hopping on

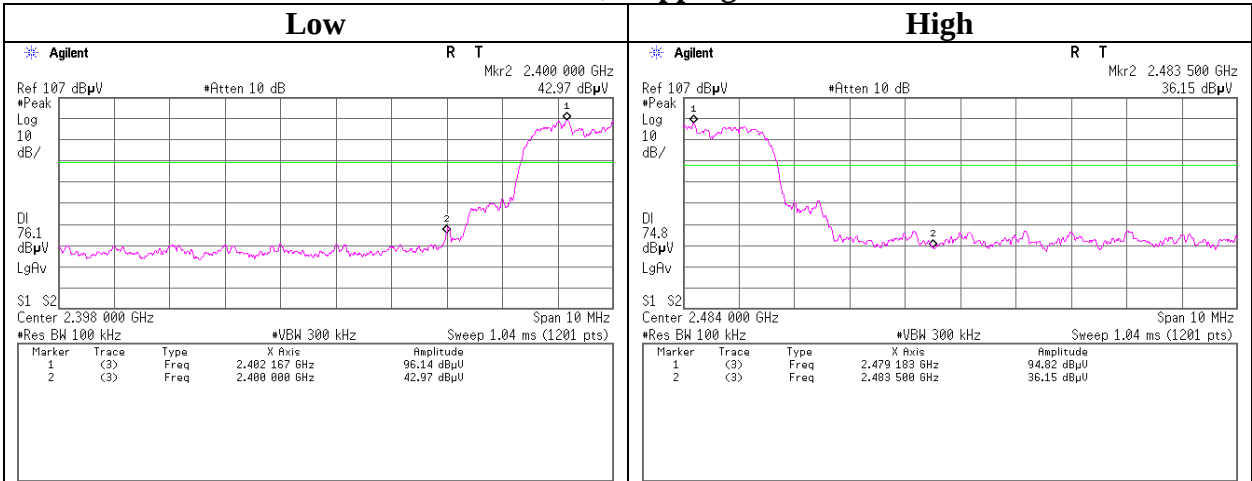


Conducted Emission Band Edge compliance

Tx 3DH5, Hopping off



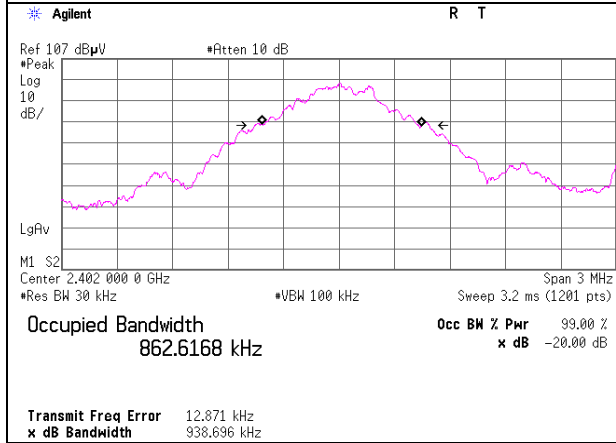
Tx 3DH5, Hopping on



99%Occupied Bandwidth

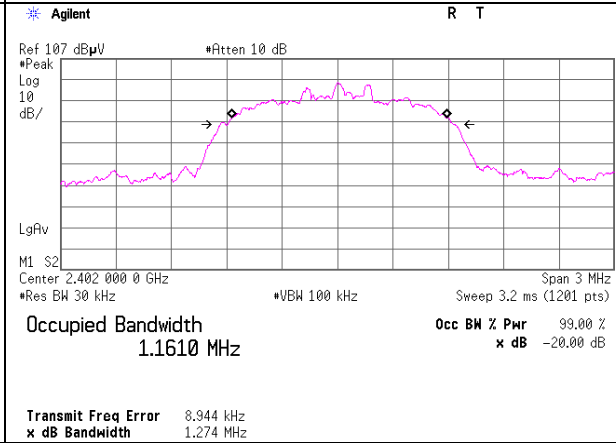
Tx DH5, Hopping off

2402MHz

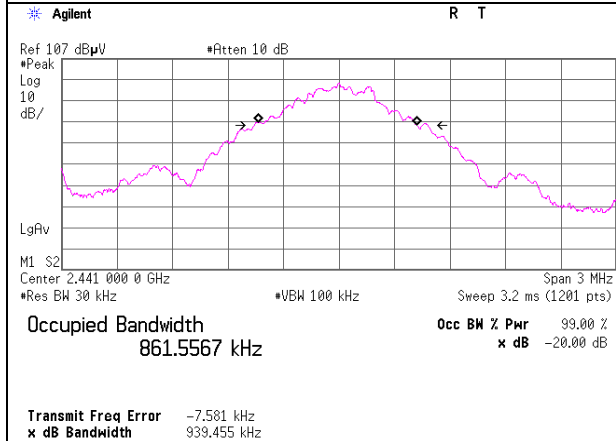


Tx 3DH5, Hopping off

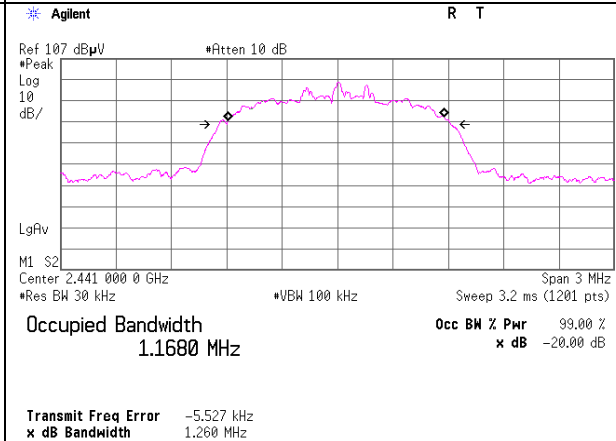
2402MHz



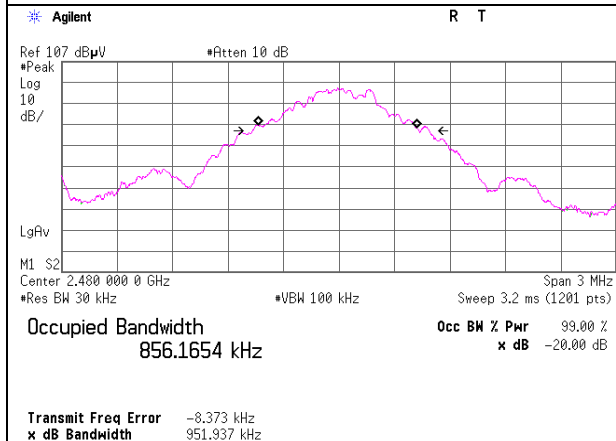
2441MHz



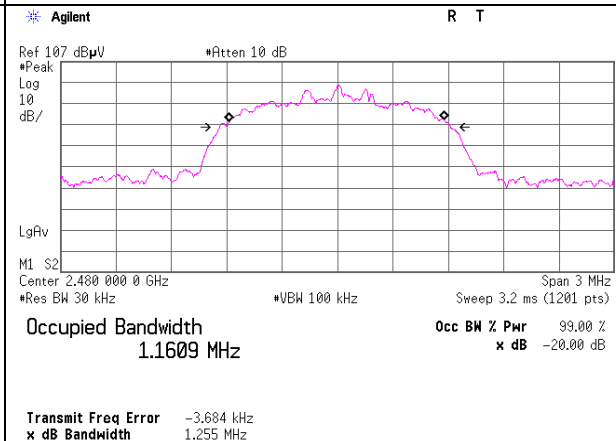
2441MHz



2480MHz



2480MHz



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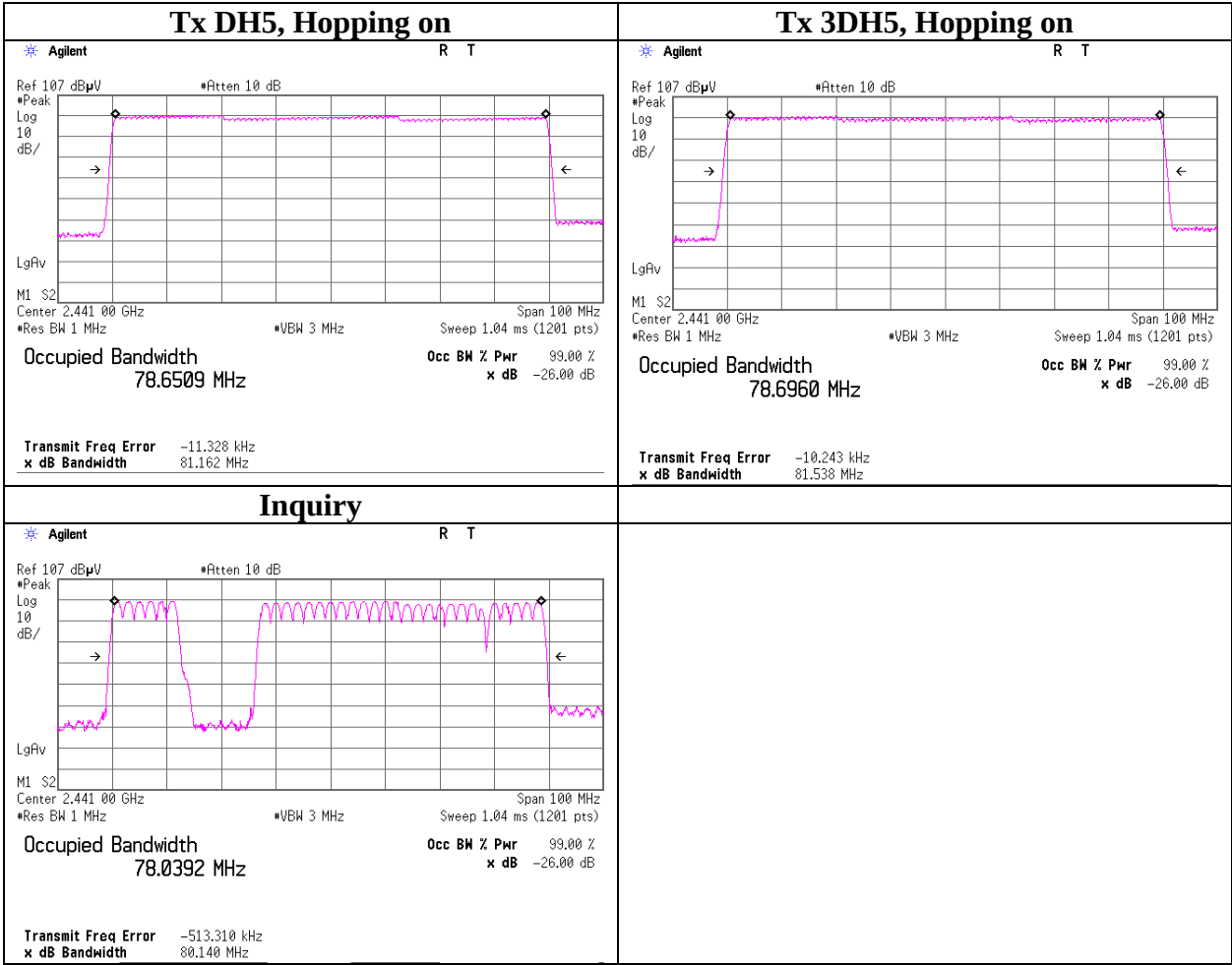
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99% Occupied Bandwidth



APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-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-04	Spectrum Analyzer	Agilent	E4448A	US44300523	RE	2013/04/03 * 12
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	2013/03/12 * 12
MHF-19	High Pass Filter 3.5-18.0GHz	TOKIMEC	TF323DCA	602	RE	2012/09/12 * 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	2013/03/12 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA917030 6	RE	2012/05/21 * 12
MPM-13	Power Meter	Anritsu	ML2495A	0824014	AT	2012/11/26 * 12
MPSE-18	Power sensor	Anritsu	MA2411B	0738174	AT	2012/11/26 * 12
MOS-14	Thermo-Hygrometer	Custom	CTH-201	-	AT	2013/02/26 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	AT	2012/11/20 * 12
MAT-24	Attenuator(10dB)(above 1GHz)	Agilent	8493C	71389	AT	2012/06/27 * 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.

Head Office EMC Lab.

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