



RADIO TEST REPORT

Test Report No. : 10005565H-C

Applicant : FUJITSU TEN LIMITED
Type of Equipment : Car Audio
Model No. : FT0057A
FCC ID : BABFT0057A
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: March 23 to April 3, 2013

Representative test engineer: *S. Matsuyama*
Satofumi Matsuyama
Engineer of WiSE Japan,
UL Verification Service

Approved by: *T. Hatakedo*
Takahiro Hatakedo
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. : FT0057A
Serial No. : Refer to Section 4, Clause 4.2
Receipt Date of Sample : March 16, 2013
Country of Mass-production : Thailand
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

2.2 Product Description

General Specification

Clock frequency(ies) in the system :

Component, Location	Generated frequency	Type, Rating etc.
Main PCB		
Crystal Oscillator X401	12.000MHz	Main CPU Clock
Crystal Oscillator X402	11.2896MHz	Audio Clock
Crystal Oscillator X7502	62.400MHz	DSP Clock
Crystal Oscillator X5001	16.934MHz	Deck Clock
Serial Flash	72MHz	Communication
DDCON Clock	300kHz, 340kHz*	PWM
PANEL PCB		
VFD	6.000MHz	Communication
Bluetooth Module	26MHz	Bluetooth Module Clock
	115.2kHz	Communication

* DDCON Clock Frequency output depends on AM Tuning

Radio Specification

[Bluetooth (Ver. 2.1 with EDR function)]

Radio Type : Transceiver
Frequency of Operation : 2402-2480MHz
Modulation : FHSS
Power Supply (radio part input) : DC 3.3V
Antenna type : Chip Antenna
Antenna Gain : -9.75dBi

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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)		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		2.9dB 1626.697MHz, AV, Vertical	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 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.

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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 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.

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

4.1 Operating Mode(s)

Bluetooth (BT): Transmitting (Tx), Payload: PRBS9
*The 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
<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>*EUT has the power settings by the software as follows; Power settings: BDR: Power Ext Amp=255, Power Int Amp=50 EDR: Power Ext Amp=255, Power Int Amp=50 Software: CSR BlueTest 3 Version: Release Build 2.4.8.0</p> <p>*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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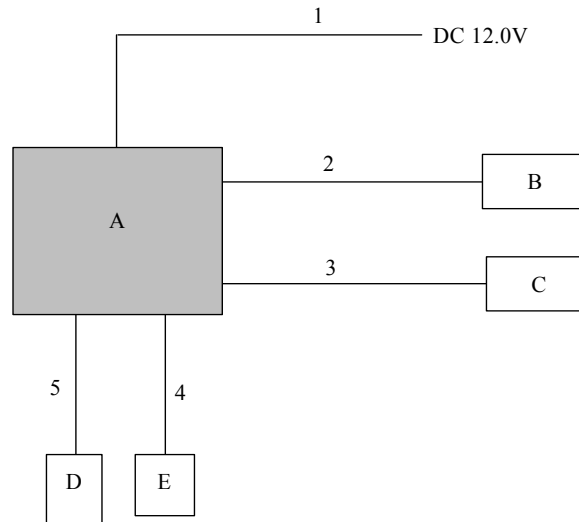
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4.2 Configuration and peripherals



*Cabling and setup 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	FT0057A	BK200047 *1) BK200032 *2)	FUJITSU TEN	EUT
B	Register	-	-	-	-
C	Register	-	-	-	-
D	Digital Media Player	NW-A828	5027261	Sony	-
E	USB Memory	RUF-C128M1U2	SK812FRSYMV	Apple	-

*1) Used for Radiated emissions test

*2) Used for Antenna terminal conducted test

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	2.5	Unshielded	Unshielded	-
2	FM Cable	2.5	Shielded	Shielded	-
3	Signal Cable	2.5	Unshielded	Unshielded	-
4	USB Cable	0.5	Shielded	Shielded	-
5	Audio Cable	1.6	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 1.5m, raised 0.8m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

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

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

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

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

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

Test Antennas are used as below;

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

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

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

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

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

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

The 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	-	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 *1)	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) 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.4 Measurement Room
Report No. 10005565H
Date 04/03/2013
Temperature/ Humidity 24 deg. C / 46% RH
Engineer Satofumi Matsuyama
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	0.928	1.000	≥ 0.619
DH5	2441.0	0.938	1.000	≥ 0.625
DH5	2480.0	0.935	1.000	≥ 0.623
3DH5	2402.0	1.262	1.005	≥ 0.841
3DH5	2441.0	1.271	1.000	≥ 0.847
3DH5	2480.0	1.266	1.000	≥ 0.844

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

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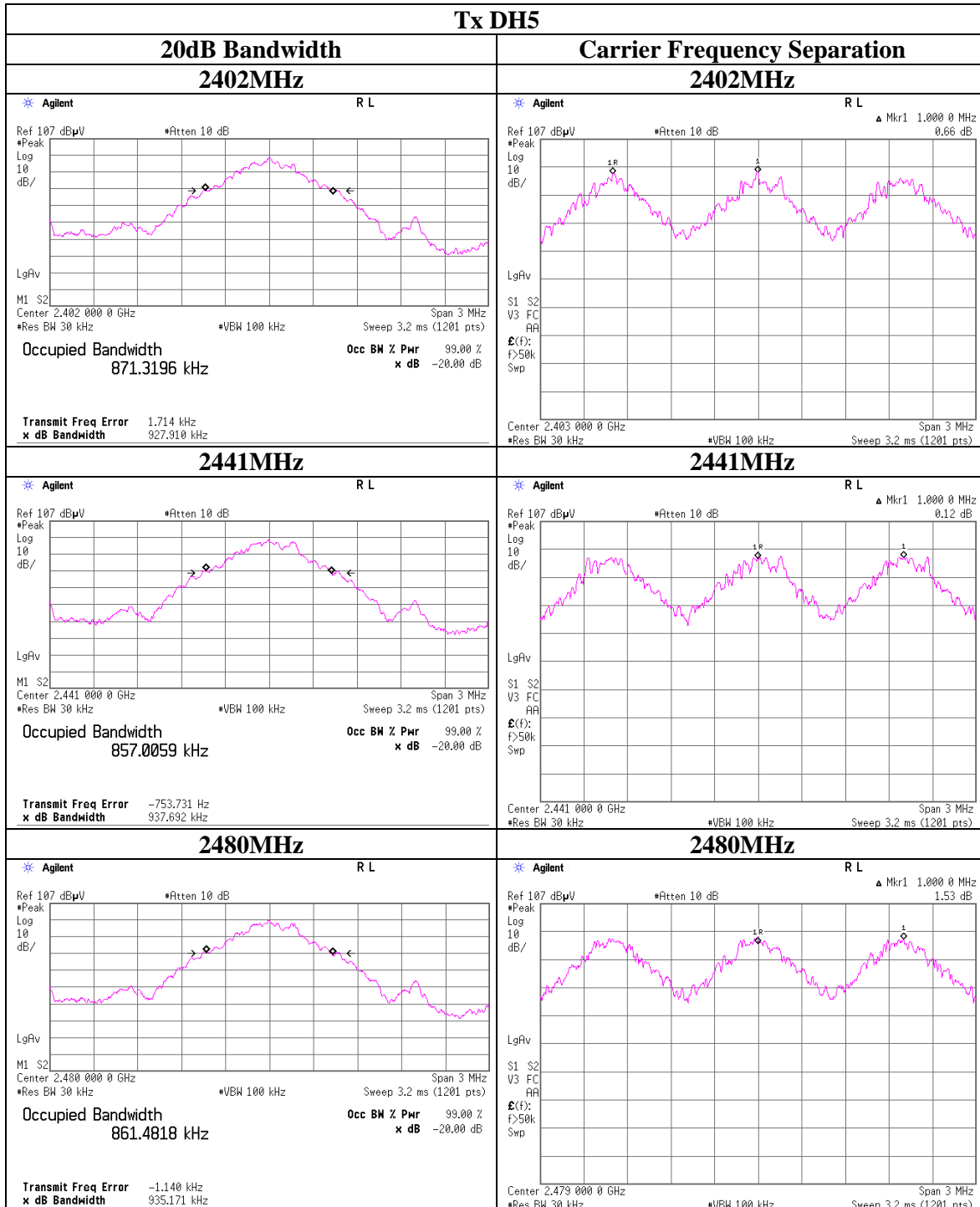
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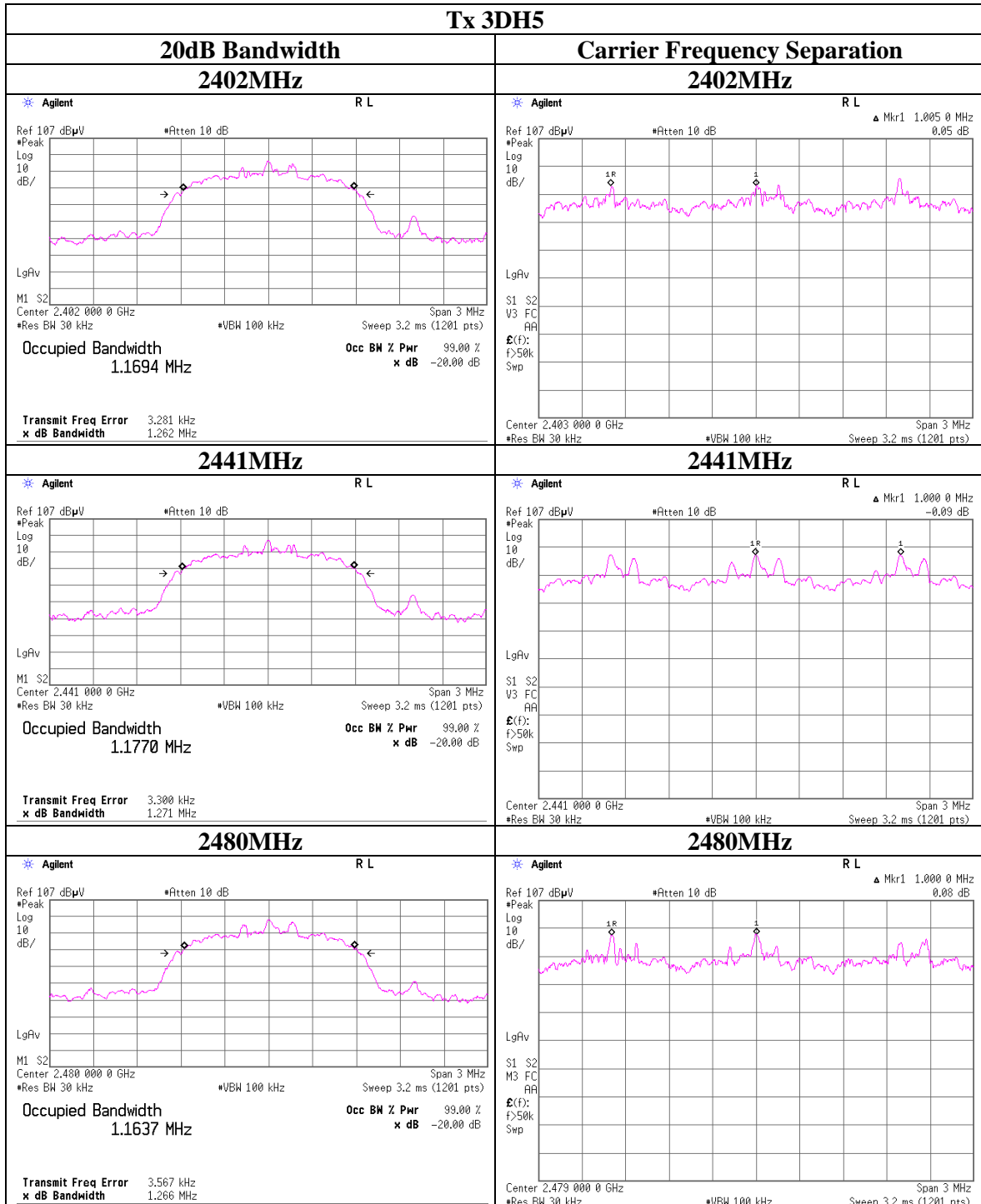
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20dB Bandwidth and Carrier Frequency Separation



20dB Bandwidth and Carrier Frequency Separation



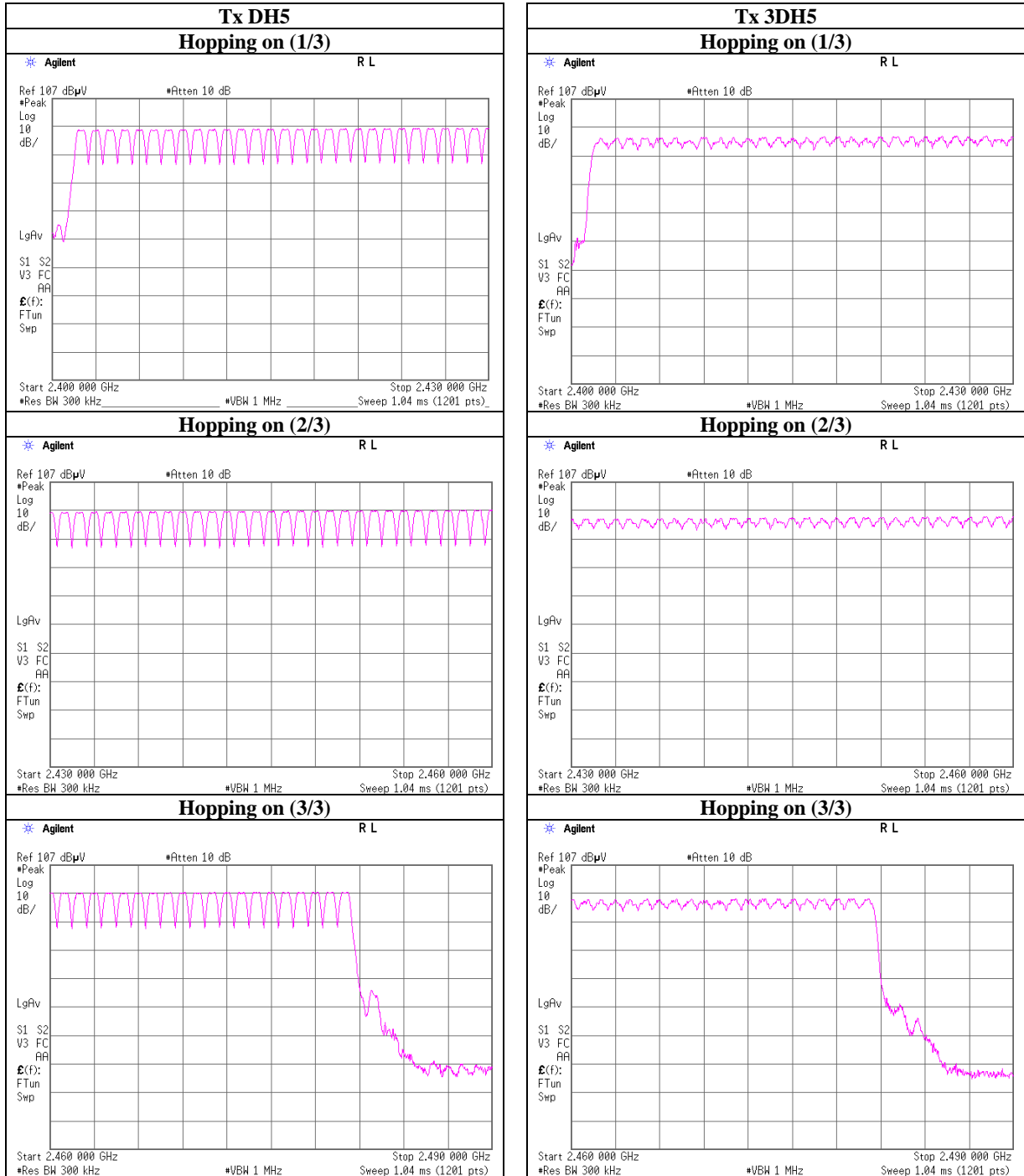
Number of Hopping Frequency

Test place Head Office EMC Lab. No.4 Measurement Room
Report No. 10005565H
Date 04/03/2013
Temperature/ Humidity 24 deg. C / 46% RH
Engineer Satofumi Matsuyama
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.

Number of Hopping Frequency



Dwell time

Test place	Head Office EMC Lab. No.4 Measurement Room
Report No.	10005565H
Date	04/03/2013
Temperature/ Humidity	24 deg. C / 46% RH
Engineer	Satofumi Matsuyama
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	0.519	168	400
DH3	26.0 times / 5 sec. x 31.6 sec. = 165 times	1.776	293	400
DH5	17.0 times / 5 sec. x 31.6 sec. = 108 times	3.028	327	400
3DH1	51.0 times / 5 sec. x 31.6 sec. = 323 times	0.532	172	400
3DH3	26.0 times / 5 sec. x 31.6 sec. = 165 times	1.781	294	400
3DH5	17.0 times / 5 sec. x 31.6 sec. = 108 times	3.045	329	400

Sample Calculation

Result = Number of transmission x Length of transmittion 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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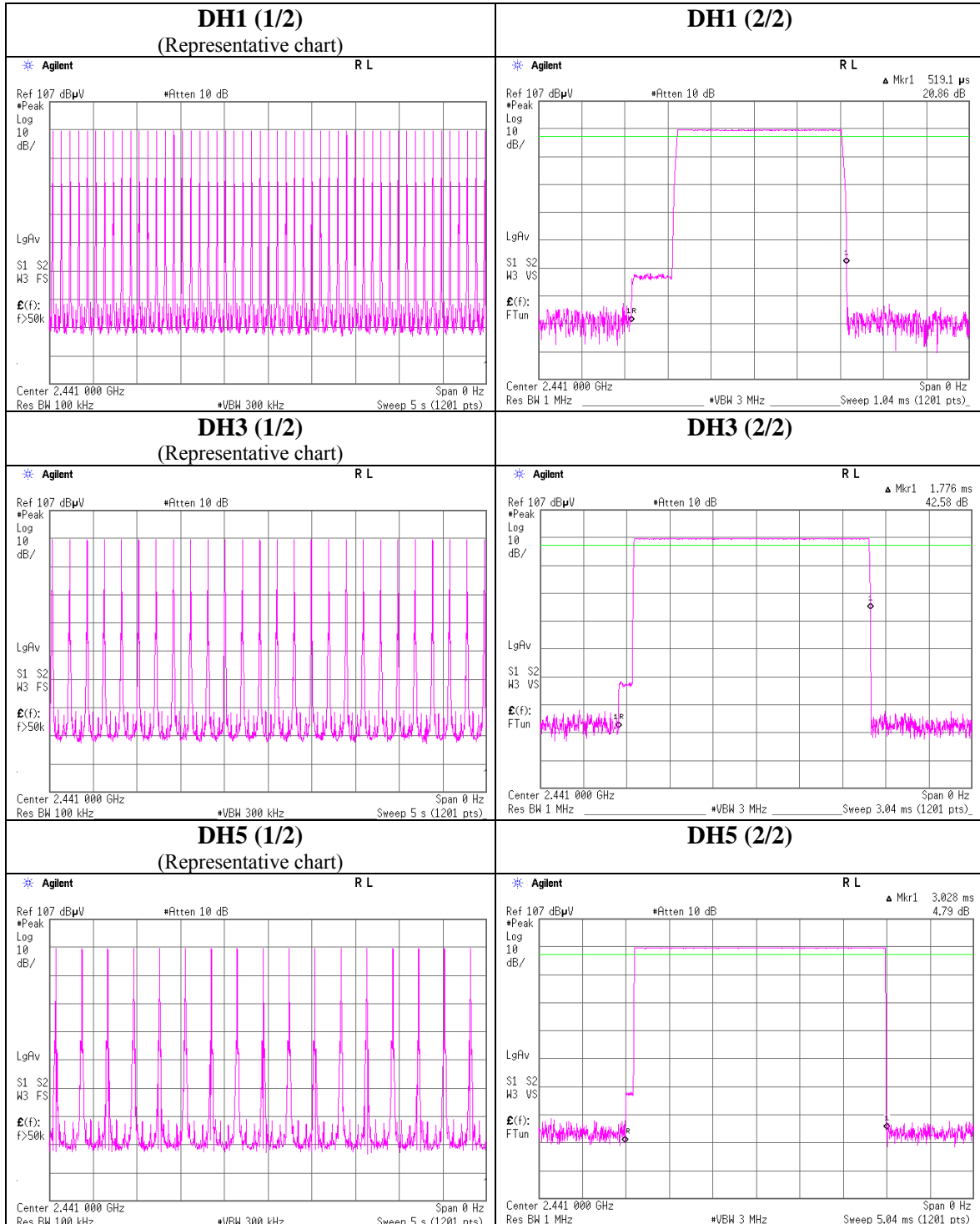
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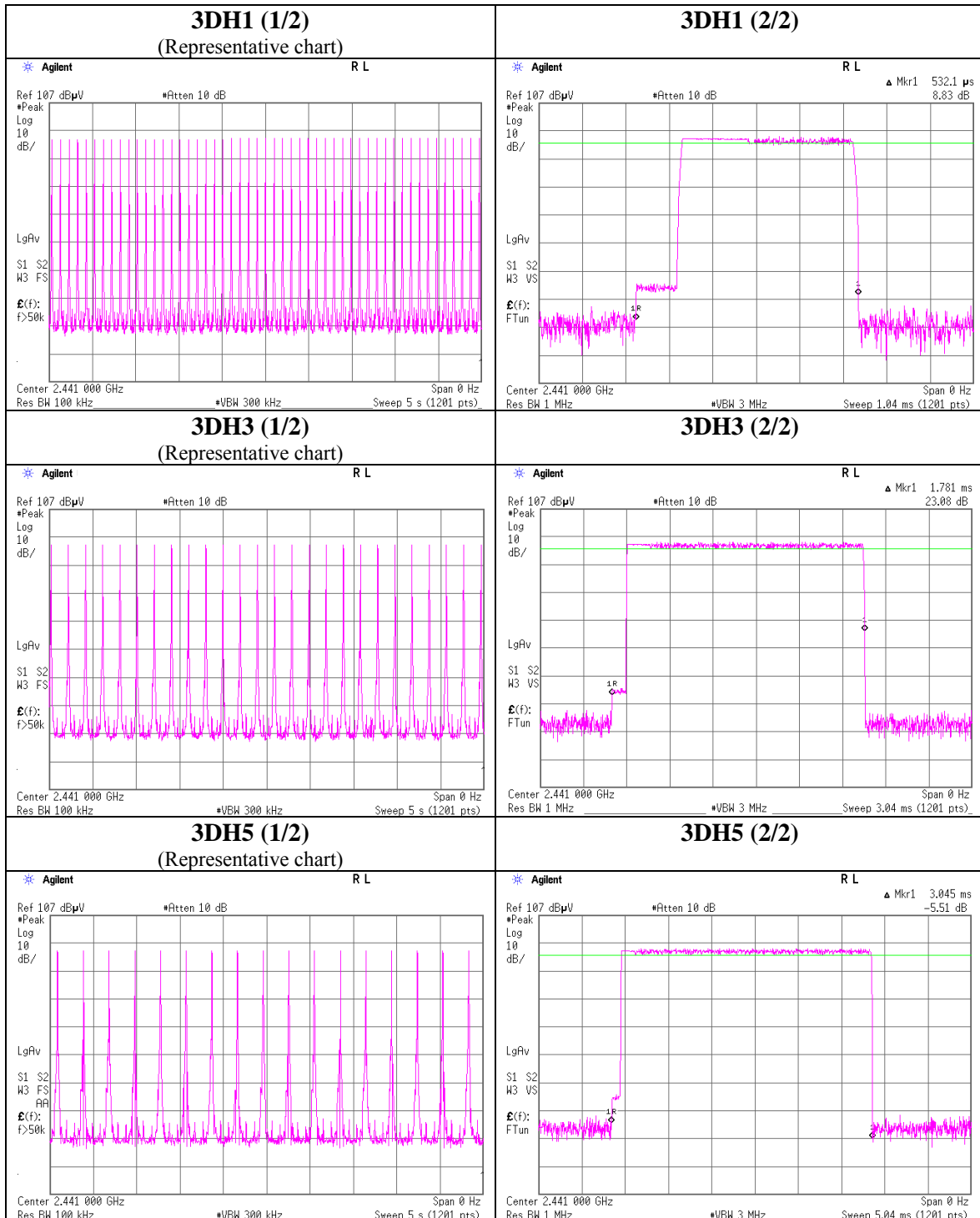
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Dwell time



Dwell time



Maximum Peak Output Power

Test place	Head Office EMC Lab. No.4 Measurement Room
Report No.	10005565H
Date	04/03/2013
Temperature/ Humidity	24 deg. C / 46% RH
Engineer	Satofumi Matsuyama
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	-10.85	2.20	10.01	1.36	1.37	20.96	125	19.60
DH5	2441.0	-10.13	2.21	10.01	2.09	1.62	20.96	125	18.87
DH5	2480.0	-9.36	2.22	10.01	2.87	1.94	20.96	125	18.09
3DH5	2402.0	-12.46	2.20	10.01	-0.25	0.94	20.96	125	21.21
3DH5	2441.0	-11.44	2.21	10.01	0.78	1.20	20.96	125	20.18
3DH5	2480.0	-10.70	2.22	10.01	1.53	1.42	20.96	125	19.43

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.

[3DH5]

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.

[DH5]

However, the limit level 125mW of AFH mode was used for the test.

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Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10005565H
Date 03/23/2013 03/25/2013
Temperature/ Humidity 23 deg. C / 37% RH 20 deg. C / 39% RH
Engineer Kazuya Yoshioka Kazuya Yoshioka
 (1-26.5GHz) (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	57.402	QP	45.3	8.6	7.6	32.2	29.3	40.0	10.7	
Hori	89.991	QP	43.3	8.2	8.0	32.2	27.3	43.5	16.2	
Hori	159.989	QP	42.8	15.4	8.8	32.1	34.9	43.5	8.6	
Hori	172.170	QP	44.4	15.8	8.9	32.1	37.0	43.5	6.5	
Hori	360.006	QP	45.2	16.3	10.4	32.0	39.9	46.0	6.1	
Hori	960.000	QP	34.9	22.8	13.8	30.7	40.8	46.0	5.2	
Hori	1439.927	PK	53.6	25.1	1.8	33.7	46.8	73.9	27.1	
Hori	1602.026	PK	56.8	25.4	1.9	33.4	50.7	73.9	23.2	
Hori	2390.000	PK	41.4	27.4	2.3	32.4	38.7	73.9	35.2	
Hori	4804.000	PK	61.7	31.6	4.1	31.6	65.8	73.9	8.1	
Hori	7206.000	PK	41.7	36.3	4.7	32.7	50.0	73.9	23.9	NS
Hori	9608.000	PK	42.3	38.1	5.4	33.3	52.5	73.9	21.4	NS
Hori	1439.927	AV	50.8	25.1	1.8	33.7	44.0	53.9	9.9	
Hori	1602.026	AV	55.8	25.4	1.9	33.4	49.7	53.9	4.2	
Hori	2390.000	AV	29.5	27.4	2.3	32.4	26.8	53.9	27.1	
Hori	7206.000	AV	30.2	36.3	4.7	32.7	38.5	53.9	15.4	NS
Hori	9608.000	AV	29.8	38.1	5.4	33.3	40.0	53.9	13.9	NS
Vert	54.001	QP	45.3	9.6	7.5	32.1	30.3	40.0	9.7	
Vert	89.991	QP	46.2	8.2	8.0	32.2	30.2	43.5	13.3	
Vert	160.009	QP	37.8	15.4	8.8	32.1	29.9	43.5	13.6	
Vert	172.150	QP	34.8	15.8	8.9	32.1	27.4	43.5	16.1	
Vert	360.007	QP	35.9	16.3	10.4	32.0	30.6	46.0	15.4	
Vert	960.000	QP	36.5	22.8	13.8	30.7	42.4	46.0	3.6	
Vert	1440.037	PK	50.6	25.1	1.8	33.7	43.8	73.9	30.1	
Vert	1601.983	PK	58.0	25.4	1.9	33.4	51.9	73.9	22.0	
Vert	2390.000	PK	41.5	27.4	2.3	32.4	38.8	73.9	35.1	
Vert	4804.000	PK	59.6	31.6	4.1	31.6	63.7	73.9	10.2	
Vert	7206.000	PK	41.9	36.3	4.7	32.7	50.2	73.9	23.7	NS
Vert	9608.000	PK	42.1	38.1	5.4	33.3	52.3	73.9	21.6	NS
Vert	1440.037	AV	46.4	25.1	1.8	33.7	39.6	53.9	14.3	
Vert	1601.983	AV	56.6	25.4	1.9	33.4	50.5	53.9	3.4	
Vert	2390.000	AV	29.5	27.4	2.3	32.4	26.8	53.9	27.1	
Vert	7206.000	AV	30.2	36.3	4.7	32.7	38.5	53.9	15.4	NS
Vert	9608.000	AV	29.8	38.1	5.4	33.3	40.0	53.9	13.9	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.

NS: No signal detect.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
 26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10005565H
Date 03/23/2013
Temperature/ Humidity 23 deg. C / 37% RH
Engineer Kazuya Yoshioka
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	90.0	27.4	2.3	32.4	87.3	-	-	Carrier
Hori	2400.000	PK	53.5	27.4	2.3	32.4	50.8	67.3	16.5	
Vert	2402.000	PK	88.2	27.4	2.3	32.4	85.5	-	-	Carrier
Vert	2400.000	PK	52.1	27.4	2.3	32.4	49.4	65.5	16.1	

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	55.4	31.6	4.1	31.6	-29.9	29.6	53.9	24.3	
Vert	4804.000	AV	53.4	31.6	4.1	31.6	-29.9	27.6	53.9	26.3	

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

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

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Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 10005565H
Date : 03/23/2013 03/25/2013
Temperature/ Humidity : 23 deg. C / 37% RH 20 deg. C / 39% RH
Engineer : Kazuya Yoshioka Kazuya Yoshioka
(1-26.5GHz) (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	63.670	QP	46.2	7.4	7.6	32.2	29.0	40.0	11.0	
Hori	87.290	QP	46.3	7.7	8.0	32.2	29.8	40.0	10.2	
Hori	171.959	QP	43.6	15.8	8.9	32.1	36.2	43.5	7.3	
Hori	223.980	QP	41.7	17.0	9.4	32.1	36.0	46.0	10.0	
Hori	360.002	QP	45.1	16.3	10.4	32.0	39.8	46.0	6.2	
Hori	960.000	QP	34.8	22.8	13.8	30.7	40.7	46.0	5.3	
Hori	1440.025	PK	52.4	25.1	1.8	33.7	45.6	73.9	28.3	
Hori	1626.678	PK	55.0	25.4	1.9	33.3	49.0	73.9	24.9	
Hori	4882.000	PK	59.9	31.9	4.0	31.6	64.2	73.9	9.7	
Hori	7323.000	PK	42.0	36.5	4.7	32.7	50.5	73.9	23.4	NS
Hori	9764.000	PK	42.5	38.3	5.4	33.4	52.8	73.9	21.1	NS
Hori	1440.025	AV	50.0	25.1	1.8	33.7	43.2	53.9	10.7	
Hori	1626.678	AV	53.6	25.4	1.9	33.3	47.6	53.9	6.3	
Hori	7323.000	AV	29.9	36.5	4.7	32.7	38.4	53.9	15.5	NS
Hori	9764.000	AV	30.0	38.3	5.4	33.4	40.3	53.9	13.6	NS
Vert	55.350	QP	47.2	9.2	7.5	32.1	31.8	40.0	8.2	
Vert	87.291	QP	45.2	7.7	8.0	32.2	28.7	40.0	11.3	
Vert	172.079	QP	27.5	15.8	8.9	32.1	20.1	43.5	23.4	
Vert	223.980	QP	39.9	17.0	9.4	32.1	34.2	46.0	11.8	
Vert	360.002	QP	34.7	16.3	10.4	32.0	29.4	46.0	16.6	
Vert	960.000	QP	36.1	22.8	13.8	30.7	42.0	46.0	4.0	
Vert	1440.033	PK	49.3	25.1	1.8	33.7	42.5	73.9	31.4	
Vert	1626.702	PK	55.8	25.4	1.9	33.3	49.8	73.9	24.1	
Vert	4882.000	PK	58.3	31.9	4.0	31.6	62.6	73.9	11.3	
Vert	7323.000	PK	42.2	36.5	4.7	32.7	50.7	73.9	23.2	NS
Vert	9764.000	PK	42.3	38.3	5.4	33.4	52.6	73.9	21.3	NS
Vert	1440.033	AV	45.2	25.1	1.8	33.7	38.4	53.9	15.5	
Vert	1626.702	AV	54.3	25.4	1.9	33.3	48.3	53.9	5.6	
Vert	7323.000	AV	29.9	36.5	4.7	32.7	38.4	53.9	15.5	NS
Vert	9764.000	AV	30.0	38.3	5.4	33.4	40.3	53.9	13.6	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.

NS: No signal detect.

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

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

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Head Office EMC Lab.

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Facsimile : +81 596 24 8124

Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
 Report No. : 10005565H
 Date : 03/23/2013
 Temperature/ Humidity : 23 deg. C / 37% RH
 Engineer : Kazuya Yoshioka
 Mode : Tx, DH5 2441MHz

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	55.2	31.9	4.0	31.6	-29.9	29.6	53.9	24.3	
Vert	4882.000	AV	53.2	31.9	4.0	31.6	-29.9	27.6	53.9	26.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz))
 - Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 10005565H
Date : 03/23/2013 03/25/2013
Temperature/ Humidity : 23 deg. C / 37% RH 20 deg. C / 39% RH
Engineer : Kazuya Yoshioka Kazuya Yoshioka
(1-26.5GHz) (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	55.920	QP	43.4	9.1	7.5	32.1	27.9	40.0	12.1	
Hori	87.210	QP	46.5	7.7	8.0	32.2	30.0	40.0	10.0	
Hori	159.993	QP	42.7	15.4	8.8	32.1	34.8	43.5	8.7	
Hori	224.025	QP	42.3	17.0	9.4	32.1	36.6	46.0	9.4	
Hori	360.004	QP	45.1	16.3	10.4	32.0	39.8	46.0	6.2	
Hori	960.000	QP	35.2	22.8	13.8	30.7	41.1	46.0	4.9	
Hori	1440.053	PK	52.9	25.1	1.8	33.7	46.1	73.9	27.8	
Hori	1652.690	PK	54.7	25.5	1.9	33.3	48.8	73.9	25.1	
Hori	2483.500	PK	44.9	27.7	2.3	32.4	42.5	73.9	31.4	
Hori	4960.000	PK	59.6	32.2	4.0	31.6	64.2	73.9	9.7	
Hori	7440.000	PK	43.0	36.7	4.7	32.8	51.6	73.9	22.3	NS
Hori	9920.000	PK	44.5	38.6	5.4	33.5	55.0	73.9	18.9	NS
Hori	1440.053	AV	50.6	25.1	1.8	33.7	43.8	53.9	10.1	
Hori	1652.690	AV	52.7	25.5	1.9	33.3	46.8	53.9	7.1	
Hori	2483.500	AV	33.6	27.7	2.3	32.4	31.2	53.9	22.7	
Hori	7440.000	AV	30.9	36.7	4.7	32.8	39.5	53.9	14.4	NS
Hori	9920.000	AV	31.5	38.6	5.4	33.5	42.0	53.9	11.9	NS
Vert	55.720	QP	48.8	9.1	7.5	32.1	33.3	40.0	6.7	
Vert	87.291	QP	45.5	7.7	8.0	32.2	29.0	40.0	11.0	
Vert	159.969	QP	34.7	15.4	8.8	32.1	26.8	43.5	16.7	
Vert	223.977	QP	40.2	17.0	9.4	32.1	34.5	46.0	11.5	
Vert	360.002	QP	35.8	16.3	10.4	32.0	30.5	46.0	15.5	
Vert	960.000	QP	35.6	22.8	13.8	30.7	41.5	46.0	4.5	
Vert	1440.063	PK	48.4	25.1	1.8	33.7	41.6	73.9	32.3	
Vert	1652.690	PK	57.0	25.5	1.9	33.3	51.1	73.9	22.8	
Vert	2483.500	PK	41.7	27.7	2.3	32.4	39.3	73.9	34.6	
Vert	4960.000	PK	58.4	32.2	4.0	31.6	63.0	73.9	10.9	
Vert	7440.000	PK	43.2	36.7	4.7	32.8	51.8	73.9	22.1	NS
Vert	9920.000	PK	44.0	38.6	5.4	33.5	54.5	73.9	19.4	NS
Vert	1440.063	AV	44.3	25.1	1.8	33.7	37.5	53.9	16.4	
Vert	1652.690	AV	55.3	25.5	1.9	33.3	49.4	53.9	4.5	
Vert	2483.500	AV	30.6	27.7	2.3	32.4	28.2	53.9	25.7	
Vert	7440.000	AV	30.9	36.7	4.7	32.8	39.5	53.9	14.4	NS
Vert	9920.000	AV	31.5	38.6	5.4	33.5	42.0	53.9	11.9	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.

NS: No signal detect.

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

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Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
 Report No. : 10005565H
 Date : 03/23/2013
 Temperature/ Humidity : 23 deg. C / 37% RH
 Engineer : Kazuya Yoshioka
 Mode : Tx, DH5 2480MHz

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	55.0	32.2	4.0	31.6	-29.9	29.7	53.9	24.2	
Vert	4960.000	AV	53.7	32.2	4.0	31.6	-29.9	28.4	53.9	25.5	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz))
 - Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 10005565H
Date : 03/23/2013 03/25/2013
Temperature/ Humidity : 23 deg. C / 37% RH 20 deg. C / 39% RH
Engineer : Kazuya Yoshioka Kazuya Yoshioka
(1-26.5GHz) (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	55.831	QP	45.4	9.1	7.5	32.1	29.9	40.0	10.1	
Hori	87.250	QP	46.6	7.7	8.0	32.2	30.1	40.0	9.9	
Hori	171.440	QP	41.2	15.8	8.9	32.1	33.8	43.5	9.7	
Hori	223.970	QP	46.7	17.0	9.4	32.1	41.0	46.0	5.0	
Hori	360.012	QP	45.7	16.3	10.4	32.0	40.4	46.0	5.6	
Hori	960.000	QP	34.9	22.8	13.8	30.7	40.8	46.0	5.2	
Hori	1440.036	PK	53.1	25.1	1.8	33.7	46.3	73.9	27.6	
Hori	1602.018	PK	53.6	25.4	1.9	33.4	47.5	73.9	26.4	
Hori	2390.000	PK	42.5	27.4	2.3	32.4	39.8	73.9	34.1	
Hori	4804.000	PK	53.3	31.6	4.1	31.6	57.4	73.9	16.5	
Hori	7206.000	PK	41.9	36.3	4.7	32.7	50.2	73.9	23.7	NS
Hori	9608.000	PK	42.4	38.1	5.4	33.3	52.6	73.9	21.3	NS
Hori	1440.036	AV	50.5	25.1	1.8	33.7	43.7	53.9	10.2	
Hori	1602.018	AV	51.8	25.4	1.9	33.4	45.7	53.9	8.2	
Hori	2390.000	AV	29.5	27.4	2.3	32.4	26.8	53.9	27.1	
Hori	7206.000	AV	30.2	36.3	4.7	32.7	38.5	53.9	15.4	NS
Hori	9608.000	AV	29.8	38.1	5.4	33.3	40.0	53.9	13.9	NS
Vert	55.832	QP	49.7	9.1	7.5	32.1	34.2	40.0	5.8	
Vert	88.210	QP	42.4	7.9	8.0	32.2	26.1	43.5	17.4	
Vert	171.420	QP	35.0	15.8	8.9	32.1	27.6	43.5	15.9	
Vert	224.010	QP	47.3	17.0	9.4	32.1	41.6	46.0	4.4	
Vert	359.990	QP	37.3	16.3	10.4	32.0	32.0	46.0	14.0	
Vert	960.000	QP	36.2	22.8	13.8	30.7	42.1	46.0	3.9	
Vert	1440.041	PK	49.1	25.1	1.8	33.7	42.3	73.9	31.6	
Vert	1601.991	PK	55.4	25.4	1.9	33.4	49.3	73.9	24.6	
Vert	2390.000	PK	41.3	27.4	2.3	32.4	38.6	73.9	35.3	
Vert	4804.000	PK	53.9	31.6	4.1	31.6	58.0	73.9	15.9	
Vert	7206.000	PK	42.0	36.3	4.7	32.7	50.3	73.9	23.6	NS
Vert	9608.000	PK	42.3	38.1	5.4	33.3	52.5	73.9	21.4	NS
Vert	1440.041	AV	45.0	25.1	1.8	33.7	38.2	53.9	15.7	
Vert	1601.991	AV	53.9	25.4	1.9	33.4	47.8	53.9	6.1	
Vert	2390.000	AV	29.5	27.4	2.3	32.4	26.8	53.9	27.1	
Vert	7206.000	AV	30.2	36.3	4.7	32.7	38.5	53.9	15.4	NS
Vert	9608.000	AV	29.8	38.1	5.4	33.3	40.0	53.9	13.9	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.

NS: No signal detect.

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

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

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Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
 Report No. : 10005565H
 Date : 03/23/2013
 Temperature/ Humidity : 23 deg. C / 37% RH
 Engineer : Kazuya Yoshioka
 (1-26.5GHz)
 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	86.5	27.4	2.3	32.4	83.8	-	-	Carrier
Hori	2400.000	PK	41.9	27.4	2.3	32.4	39.2	63.8	24.6	
Vert	2402.000	PK	85.2	27.4	2.3	32.4	82.5	-	-	Carrier
Vert	2400.000	PK	43.7	27.4	2.3	32.4	41.0	62.5	21.5	

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	40.9	31.6	4.1	31.6	-29.9	15.1	53.9	38.8	
Vert	4804.000	AV	39.2	31.6	4.1	31.6	-29.9	13.4	53.9	40.5	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz))
 - Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 10005565H
Date : 03/23/2013 03/25/2013
Temperature/ Humidity : 23 deg. C / 37% RH 20 deg. C / 39% RH
Engineer : Kazuya Yoshioka Kazuya Yoshioka
(1-26.5GHz) (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	55.761	QP	44.9	9.1	7.5	32.1	29.4	40.0	10.6	
Hori	87.120	QP	46.3	7.7	8.0	32.2	29.8	40.0	10.2	
Hori	159.957	QP	45.4	15.4	8.8	32.1	37.5	43.5	6.0	
Hori	224.004	QP	45.9	17.0	9.4	32.1	40.2	46.0	5.8	
Hori	360.006	QP	45.8	16.3	10.4	32.0	40.5	46.0	5.5	
Hori	960.000	QP	35.3	22.8	13.8	30.7	41.2	46.0	4.8	
Hori	1440.041	PK	53.7	25.1	1.8	33.7	46.9	73.9	27.0	
Hori	1626.703	PK	54.5	25.4	1.9	33.3	48.5	73.9	25.4	
Hori	4882.000	PK	53.8	31.9	4.0	31.6	58.1	73.9	15.8	
Hori	7323.000	PK	42.1	36.5	4.7	32.7	50.6	73.9	23.3	NS
Hori	9764.000	PK	42.4	38.3	5.4	33.4	52.7	73.9	21.2	NS
Hori	1440.041	AV	51.3	25.1	1.8	33.7	44.5	53.9	9.4	
Hori	1626.703	AV	52.8	25.4	1.9	33.3	46.8	53.9	7.1	
Hori	7323.000	AV	29.9	36.5	4.7	32.7	38.4	53.9	15.5	NS
Hori	9764.000	AV	30.0	38.3	5.4	33.4	40.3	53.9	13.6	NS
Vert	55.161	QP	45.5	9.3	7.5	32.1	30.2	40.0	9.8	
Vert	87.210	QP	45.7	7.7	8.0	32.2	29.2	40.0	10.8	
Vert	159.993	QP	37.9	15.4	8.8	32.1	30.0	43.5	13.5	
Vert	223.972	QP	44.7	17.0	9.4	32.1	39.0	46.0	7.0	
Vert	359.993	QP	37.1	16.3	10.4	32.0	31.8	46.0	14.2	
Vert	960.000	QP	36.1	22.8	13.8	30.7	42.0	46.0	4.0	
Vert	1440.045	PK	49.4	25.1	1.8	33.7	42.6	73.9	31.3	
Vert	1626.697	PK	58.2	25.4	1.9	33.3	52.2	73.9	21.7	
Vert	4882.000	PK	51.4	31.9	4.0	31.6	55.7	73.9	18.2	
Vert	7323.000	PK	42.3	36.5	4.7	32.7	50.8	73.9	23.1	NS
Vert	9764.000	PK	42.6	38.3	5.4	33.4	52.9	73.9	21.0	NS
Vert	1440.045	AV	44.8	25.1	1.8	33.7	38.0	53.9	15.9	
Vert	1626.697	AV	57.0	25.4	1.9	33.3	51.0	53.9	2.9	
Vert	7323.000	AV	29.9	36.5	4.7	32.7	38.4	53.9	15.5	NS
Vert	9764.000	AV	30.0	38.3	5.4	33.4	40.3	53.9	13.6	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.

NS: No signal detect.

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

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

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Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
 Report No. : 10005565H
 Date : 03/23/2013
 Temperature/ Humidity : 23 deg. C / 37% RH
 Engineer : Kazuya Yoshioka
 Mode : Tx, 3DH5 2441MHz

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	42.0	31.9	4.0	31.6	-29.9	16.4	53.9	37.5	
Vert	4882.000	AV	40.4	31.9	4.0	31.6	-29.9	14.8	53.9	39.1	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz))
 - Gain(Amplifier) + Dwell time factor (Refer to dwell time data sheet)

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Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 10005565H
Date : 03/23/2013 03/25/2013
Temperature/ Humidity : 23 deg. C / 37% RH 20 deg. C / 39% RH
Engineer : Kazuya Yoshioka Kazuya Yoshioka
(1-26.5GHz) (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	55.800	QP	45.4	9.1	7.5	32.1	29.9	40.0	10.1	
Hori	87.830	QP	43.1	7.8	8.0	32.2	26.7	40.0	13.3	
Hori	171.210	QP	44.5	15.8	8.9	32.1	37.1	43.5	6.4	
Hori	223.910	QP	41.6	17.0	9.4	32.1	35.9	46.0	10.1	
Hori	359.993	QP	45.8	16.3	10.4	32.0	40.5	46.0	5.5	
Hori	960.000	QP	34.7	22.8	13.8	30.7	40.6	46.0	5.4	
Hori	1440.053	PK	53.6	25.1	1.8	33.7	46.8	73.9	27.1	
Hori	1652.690	PK	54.9	25.5	1.9	33.3	49.0	73.9	24.9	
Hori	2483.500	PK	44.2	27.7	2.3	32.4	41.8	73.9	32.1	
Hori	4960.000	PK	52.0	32.2	4.0	31.6	56.6	73.9	17.3	
Hori	7440.000	PK	43.1	36.7	4.1	32.8	51.1	73.9	22.8	NS
Hori	9920.000	PK	44.2	38.6	4.7	33.5	54.0	73.9	19.9	NS
Hori	1440.053	AV	51.3	25.1	1.8	33.7	44.5	53.9	9.4	
Hori	1652.690	AV	53.0	25.5	1.9	33.3	47.1	53.9	6.8	
Hori	2483.500	AV	32.4	27.7	2.3	32.4	30.0	53.9	23.9	
Hori	7440.000	AV	30.9	36.7	4.7	32.8	39.5	53.9	14.4	NS
Hori	9920.000	AV	31.5	38.6	5.4	33.5	42.0	53.9	11.9	NS
Vert	55.791	QP	49.8	9.1	7.5	32.1	34.3	40.0	5.7	
Vert	87.770	QP	44.2	7.8	8.0	32.2	27.8	40.0	12.2	
Vert	171.150	QP	32.7	15.8	8.9	32.1	25.3	43.5	18.2	
Vert	223.910	QP	38.9	17.0	9.4	32.1	33.2	46.0	12.8	
Vert	359.994	QP	37.2	16.3	10.4	32.0	31.9	46.0	14.1	
Vert	960.000	QP	36.1	22.8	13.8	30.7	42.0	46.0	4.0	
Vert	1440.063	PK	49.1	25.1	1.8	33.7	42.3	73.9	31.6	
Vert	1652.697	PK	57.0	25.5	1.9	33.3	51.1	73.9	22.8	
Vert	2483.500	PK	42.3	27.7	2.3	32.4	39.9	73.9	34.0	
Vert	4960.000	PK	53.0	32.2	4.0	31.6	57.6	73.9	16.3	
Vert	7440.000	PK	43.4	36.7	4.1	32.8	51.4	73.9	22.5	NS
Vert	9920.000	PK	44.1	38.6	4.7	33.5	53.9	73.9	20.0	NS
Vert	1440.063	AV	44.3	25.1	1.8	33.7	37.5	53.9	16.4	
Vert	1652.697	AV	55.8	25.5	1.9	33.3	49.9	53.9	4.0	
Vert	2483.500	AV	30.2	27.7	2.3	32.4	27.8	53.9	26.1	
Vert	7440.000	AV	30.9	36.7	4.7	32.8	39.5	53.9	14.4	NS
Vert	9920.000	AV	31.5	38.6	5.4	33.5	42.0	53.9	11.9	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.

NS: No signal detect.

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

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Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
 Report No. : 10005565H
 Date : 03/23/2013
 Temperature/ Humidity : 23 deg. C / 37% RH
 Engineer : Kazuya Yoshioka
 Mode : Tx, 3DH5 2480MHz

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	42.5	32.2	4.0	31.6	-29.9	17.2	53.9	36.7	
Vert	4960.000	AV	41.6	32.2	4.0	31.6	-29.9	16.3	53.9	37.6	

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

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

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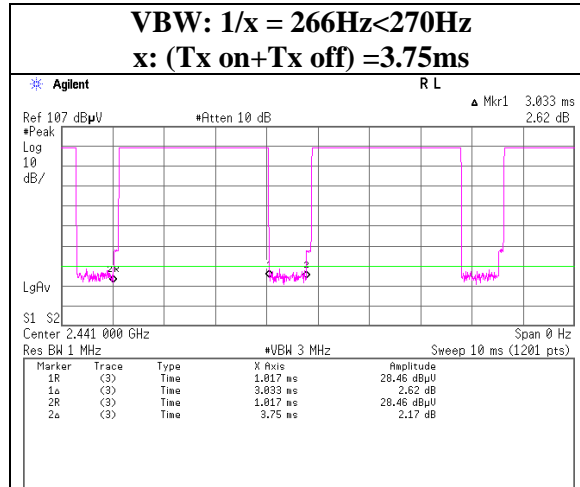
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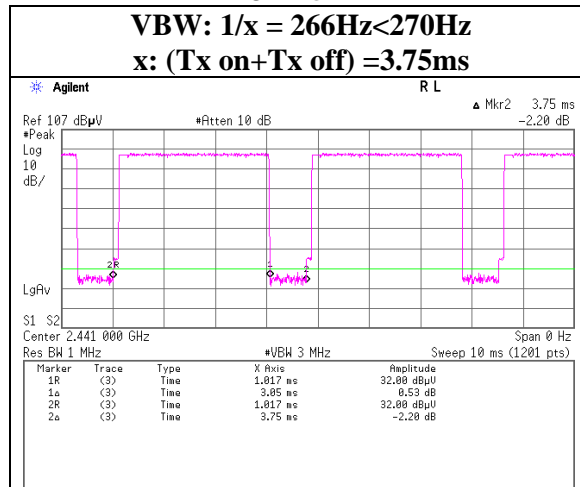
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VBW (AV) Calculation

DH5



3DH5



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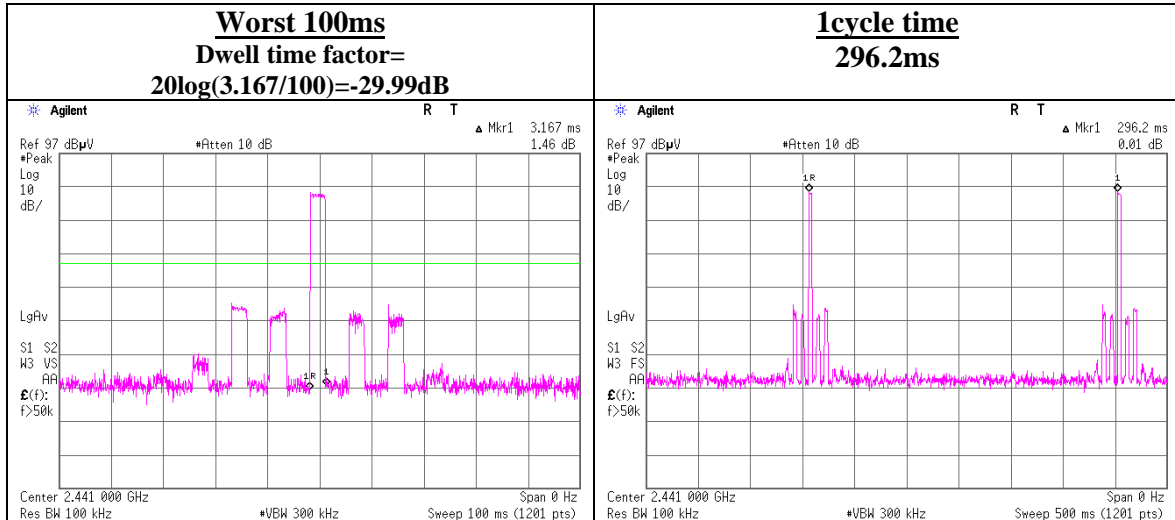
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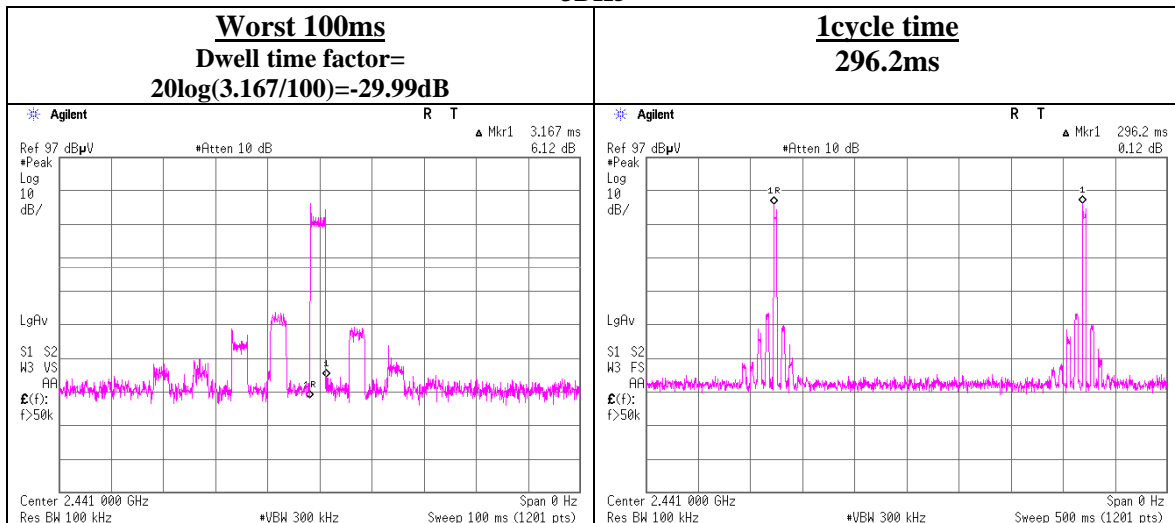
Facsimile : +81 596 24 8124

Dwell time factor

DH5

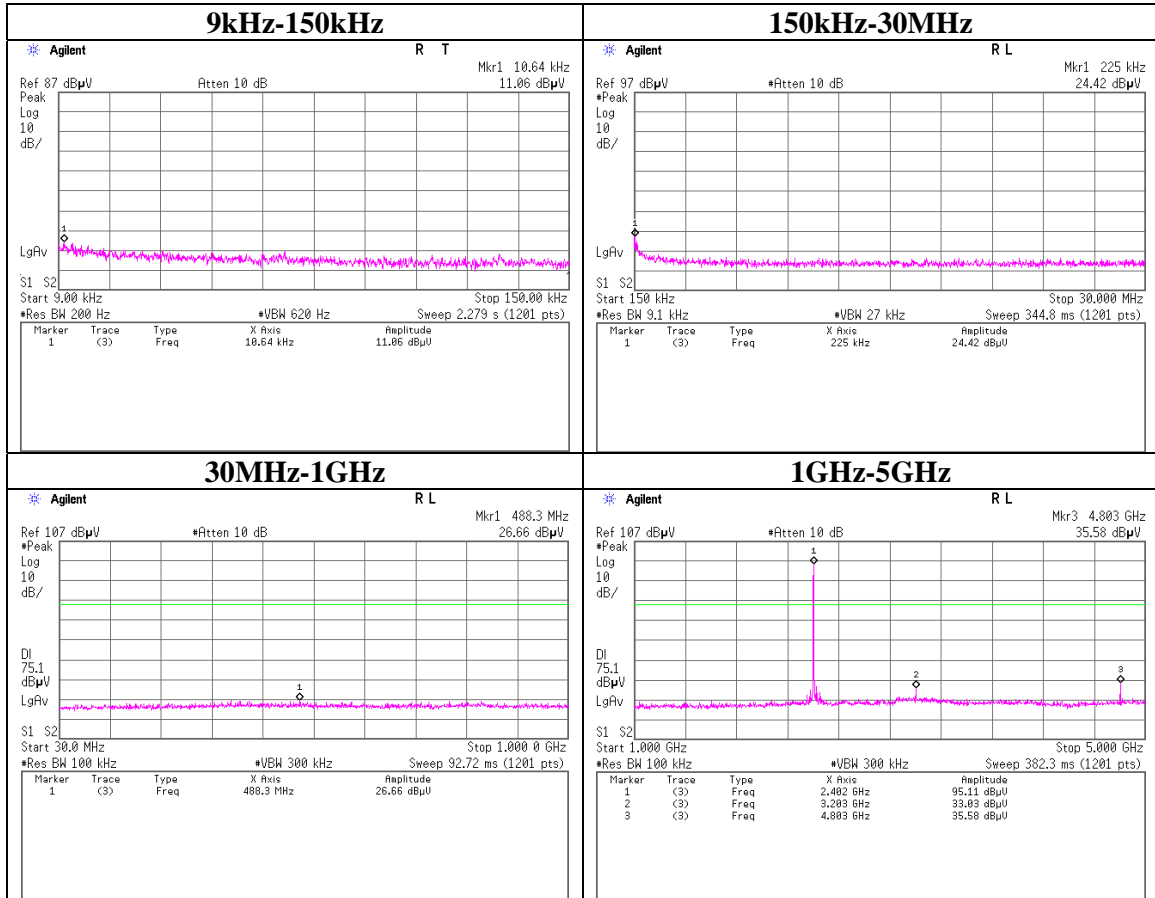


3DH5



Conducted Spurious Emission

Tx DH5 2402MHz



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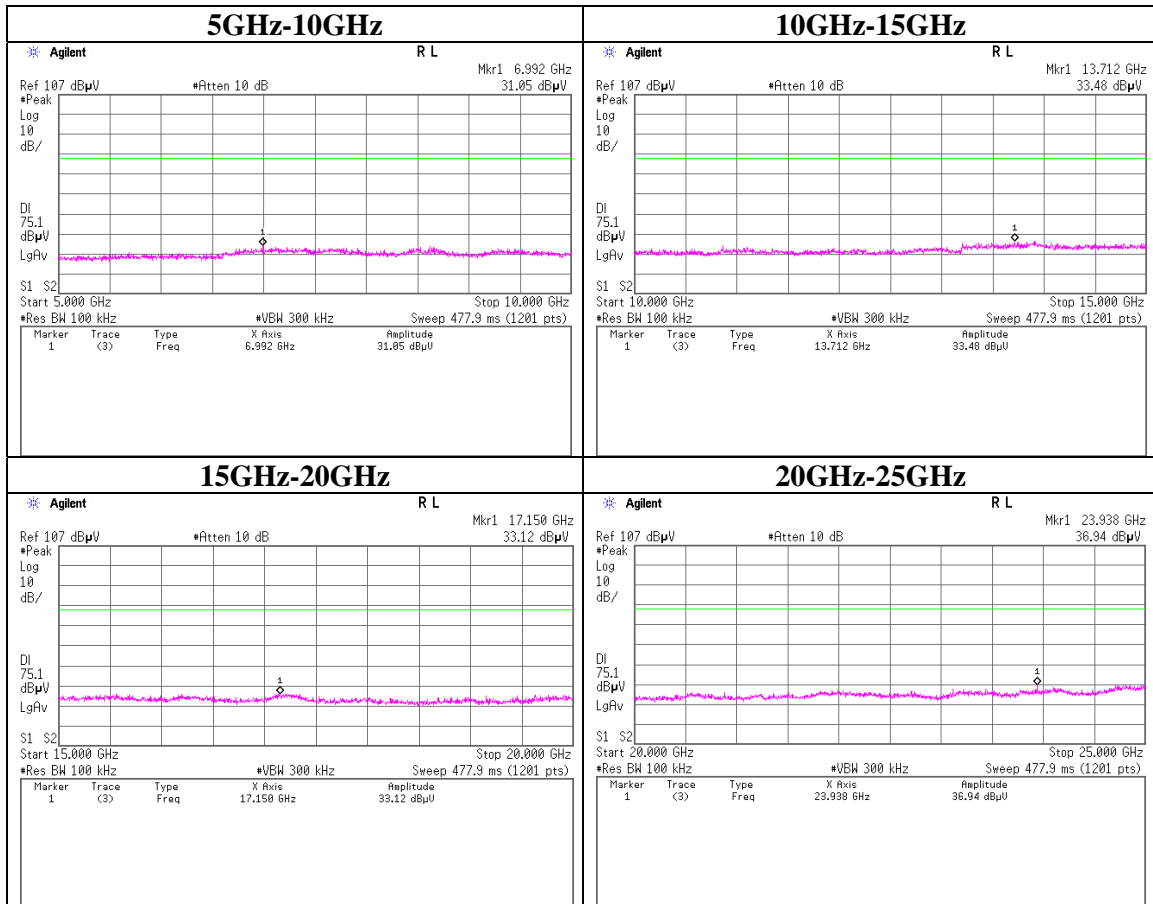
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Conducted Spurious Emission

Tx DH5 2402MHz



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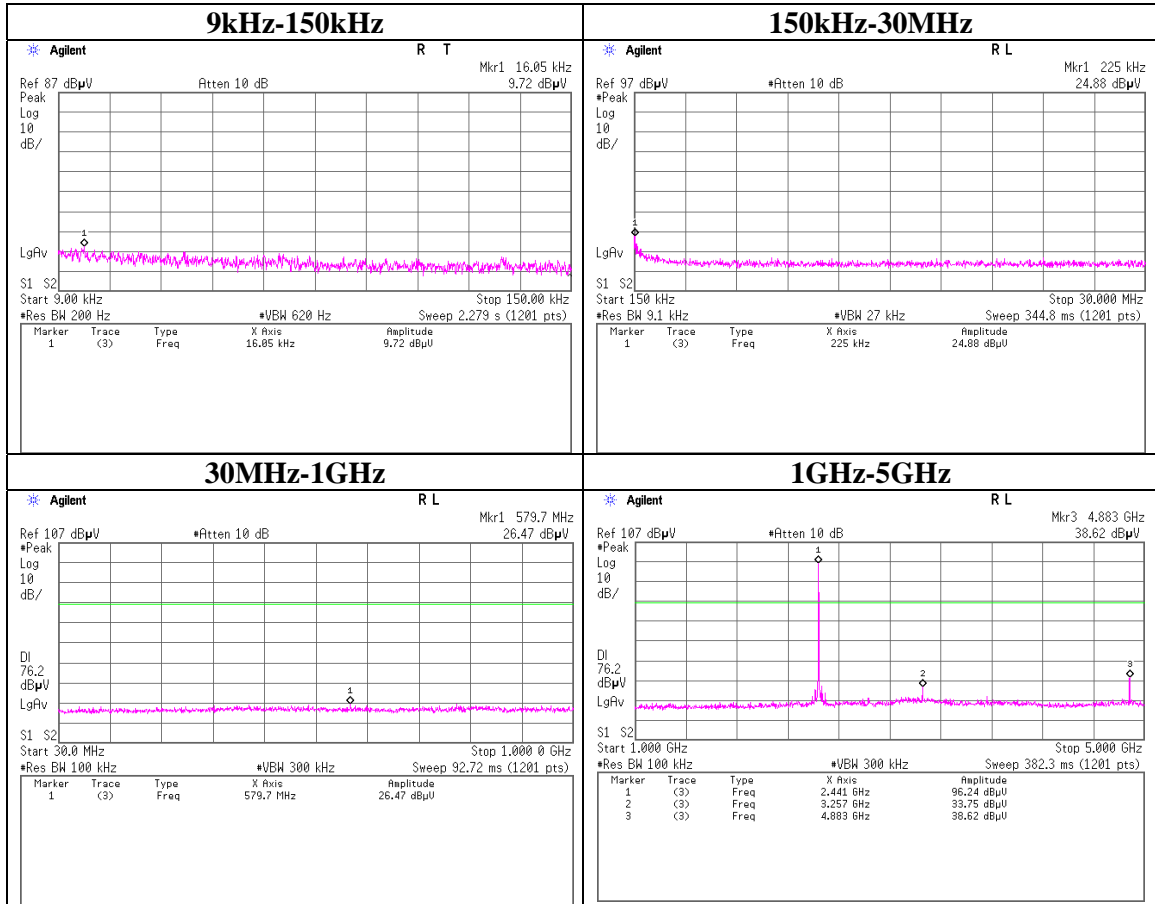
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Conducted Spurious Emission

Tx DH5 2441MHz



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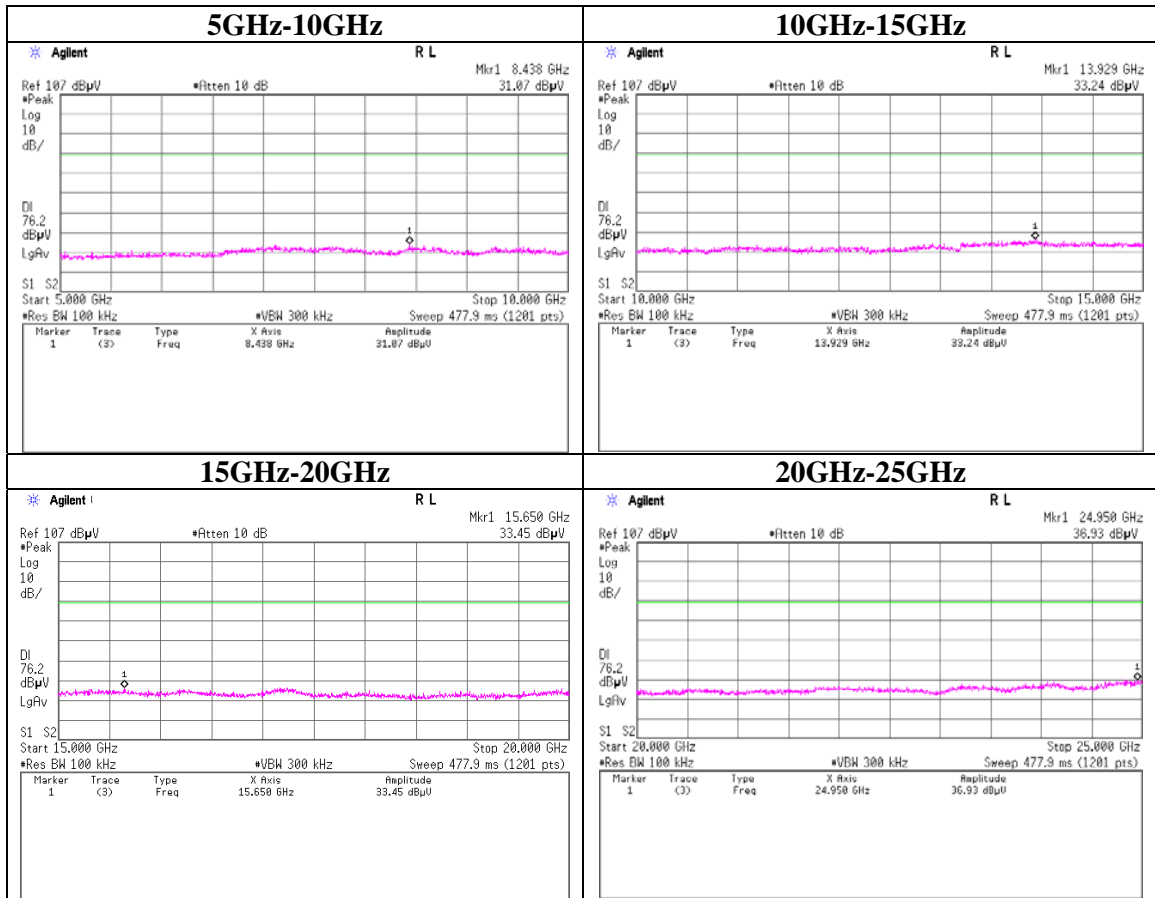
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Conducted Spurious Emission

Tx DH5 2441MHz



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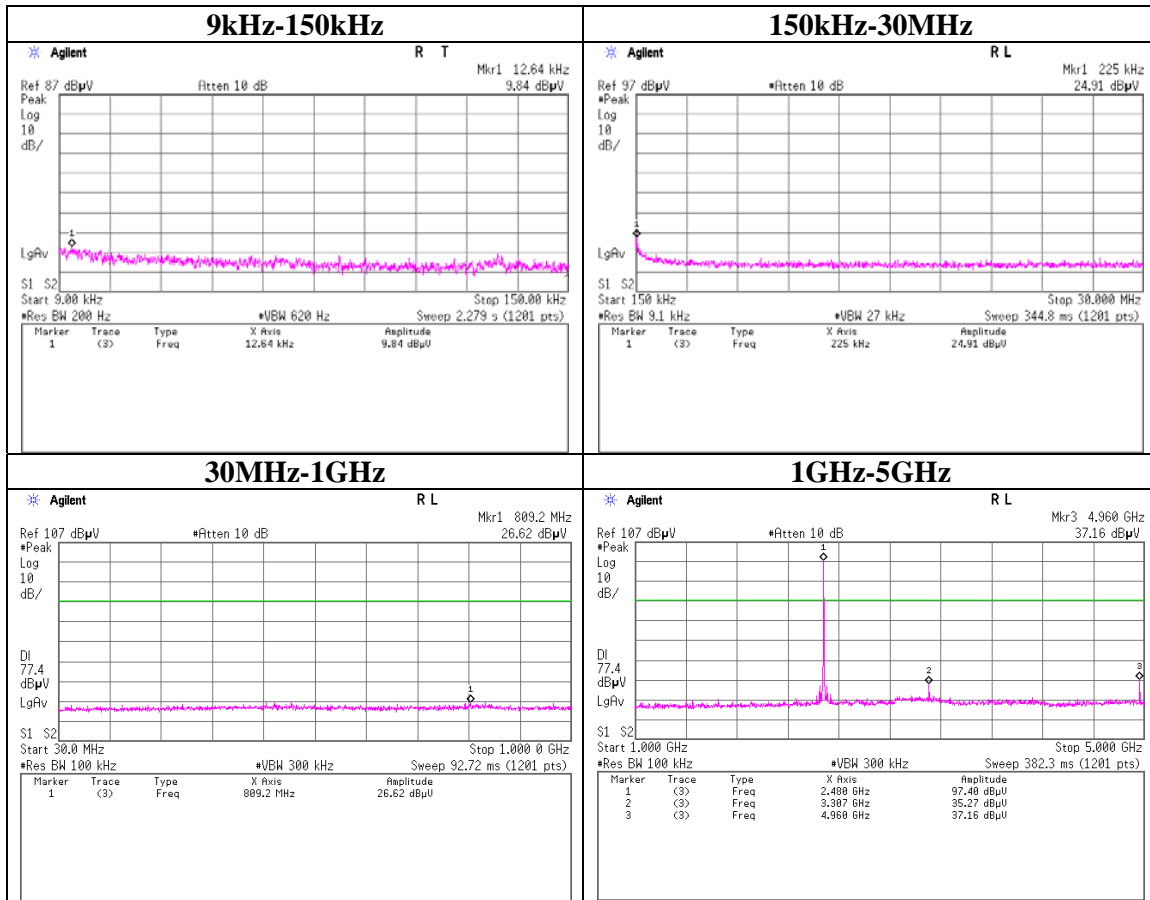
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Conducted Spurious Emission

Tx DH5 2480MHz



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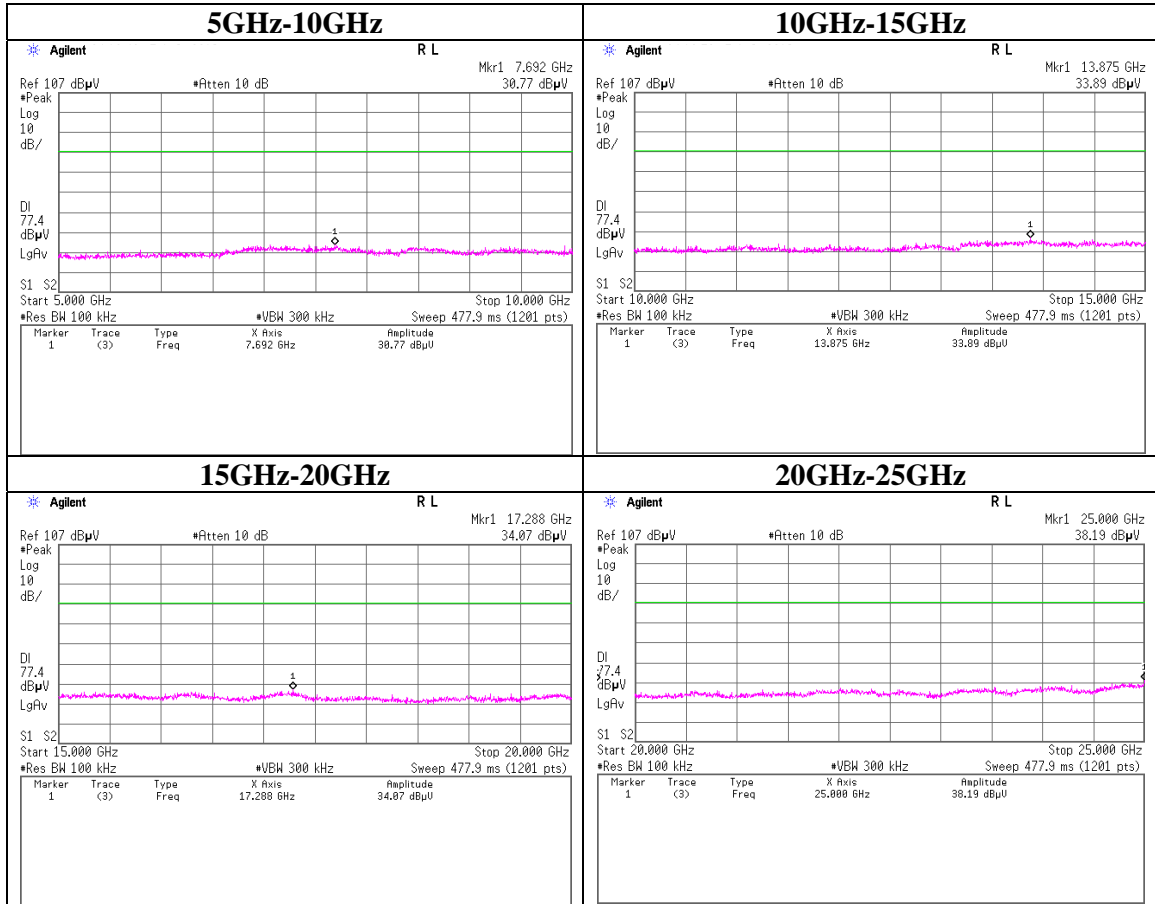
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Conducted Spurious Emission

Tx DH5 2480MHz



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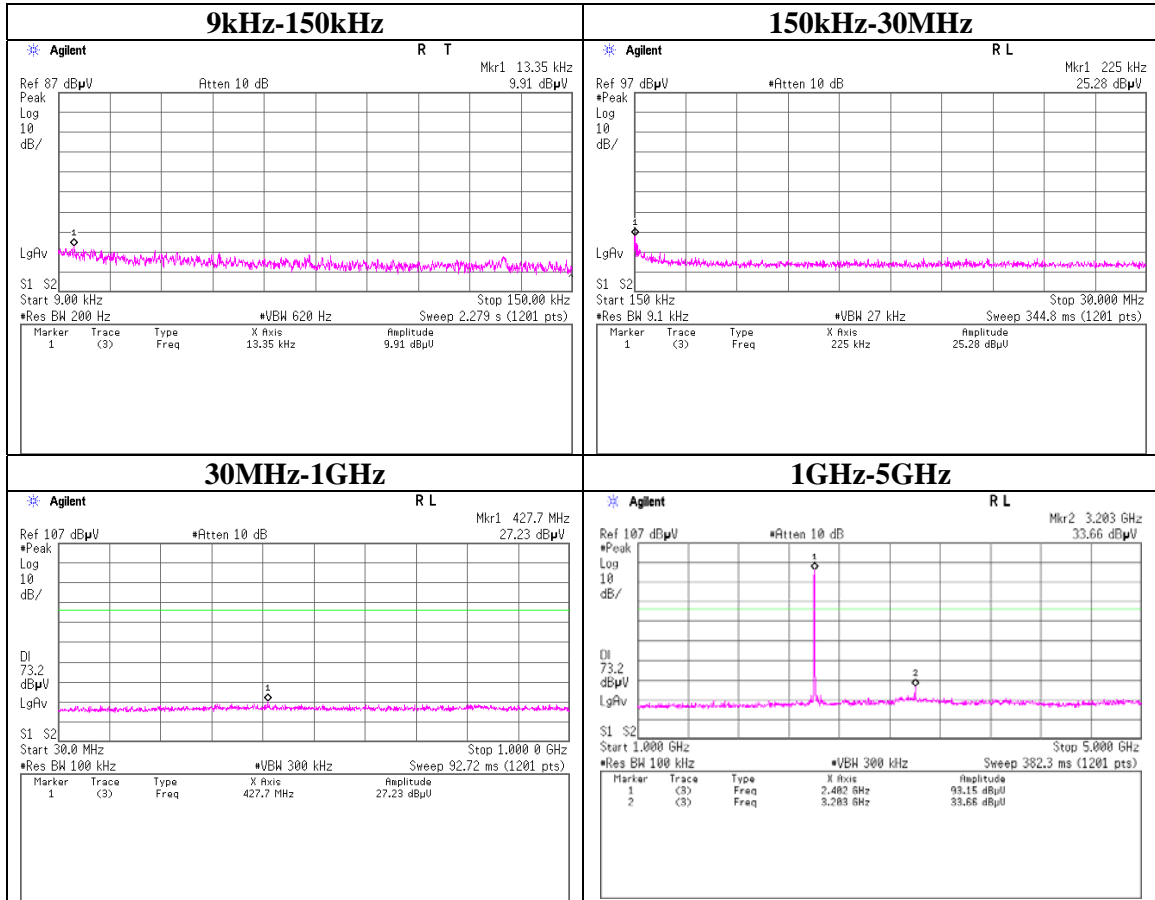
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Conducted Spurious Emission

Tx 3DH5 2402MHz



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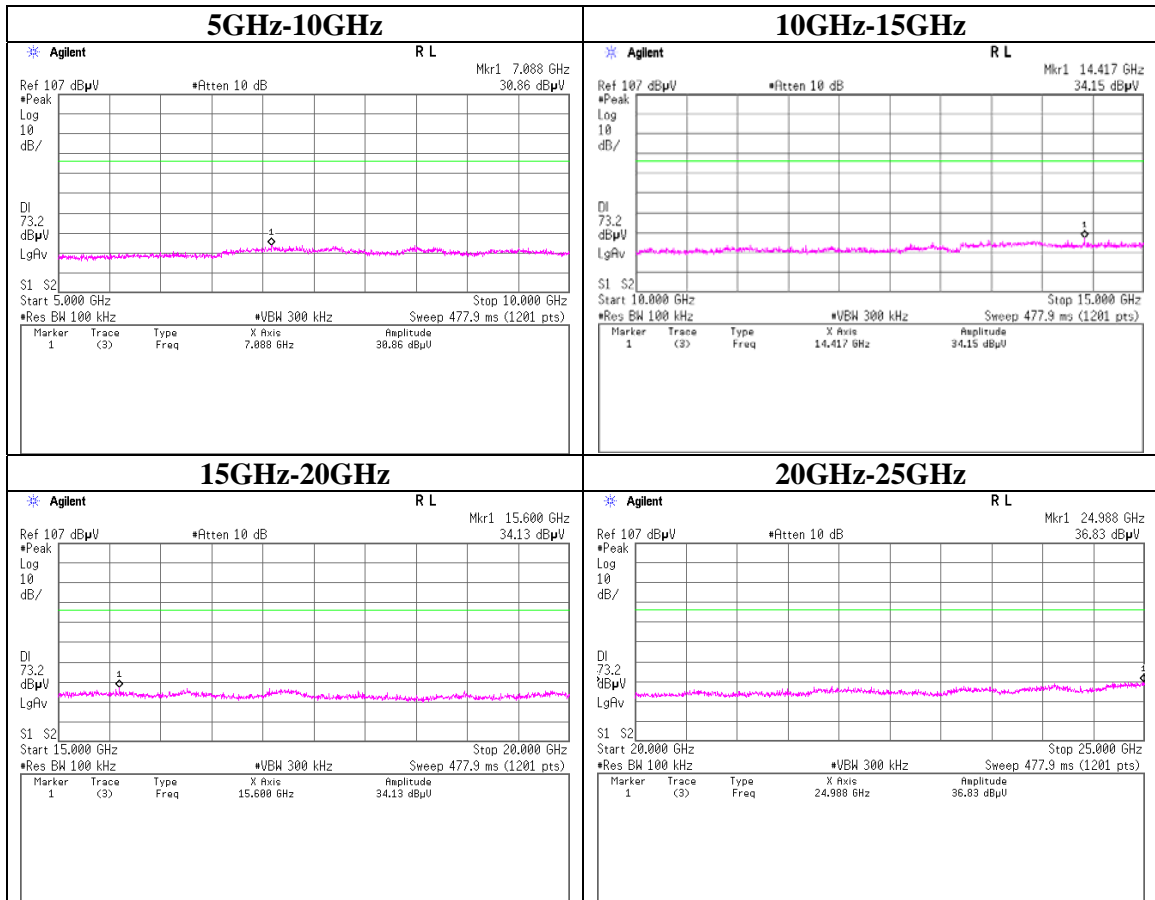
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Conducted Spurious Emission

Tx 3DH5 2402MHz



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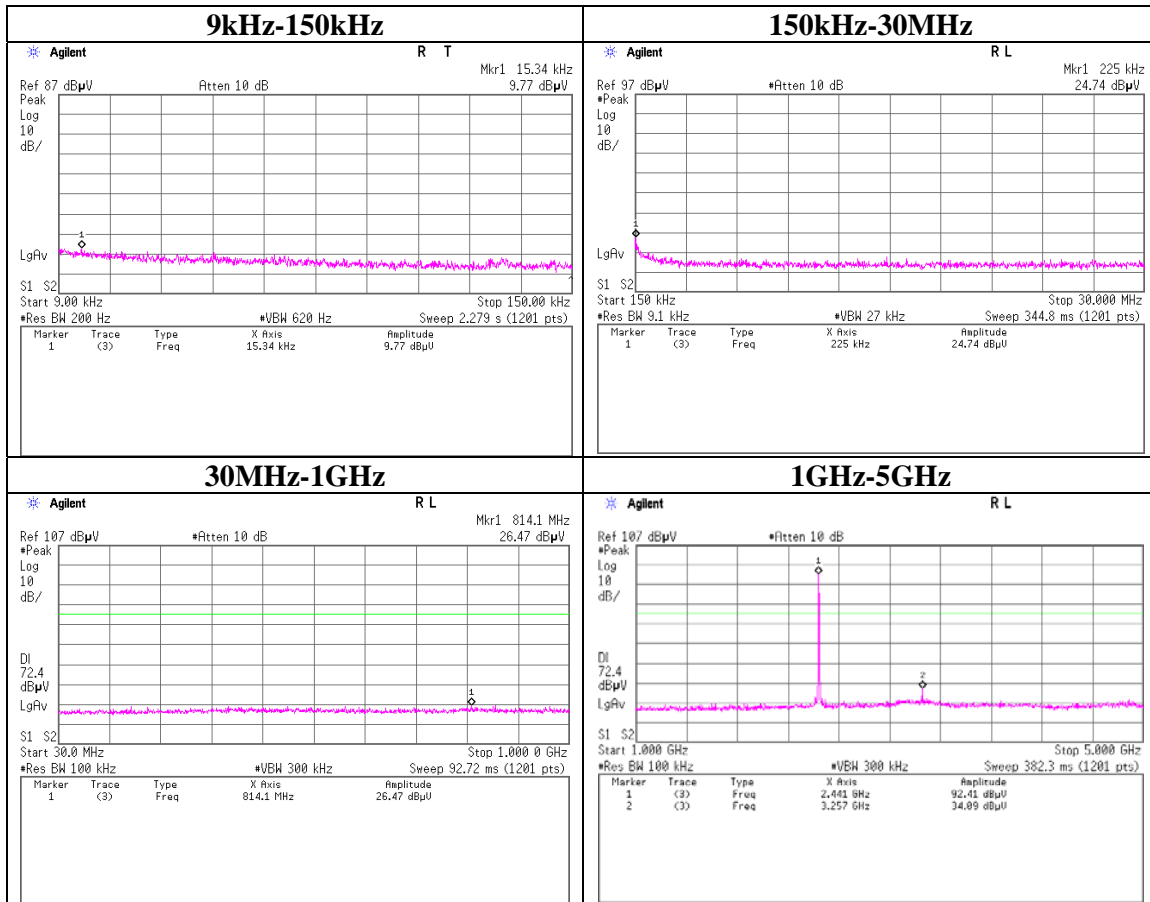
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Conducted Spurious Emission

Tx 3DH5 2441MHz



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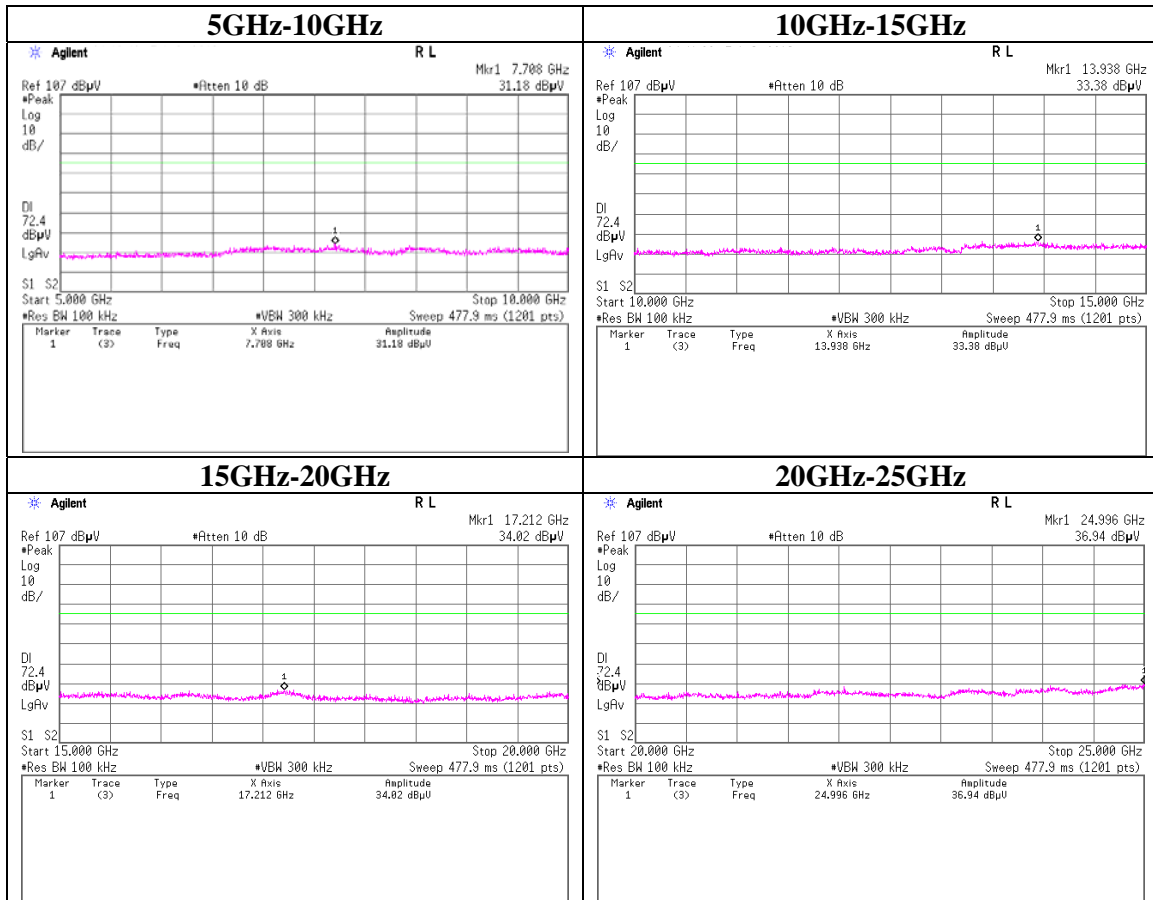
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Conducted Spurious Emission

Tx 3DH5 2441MHz



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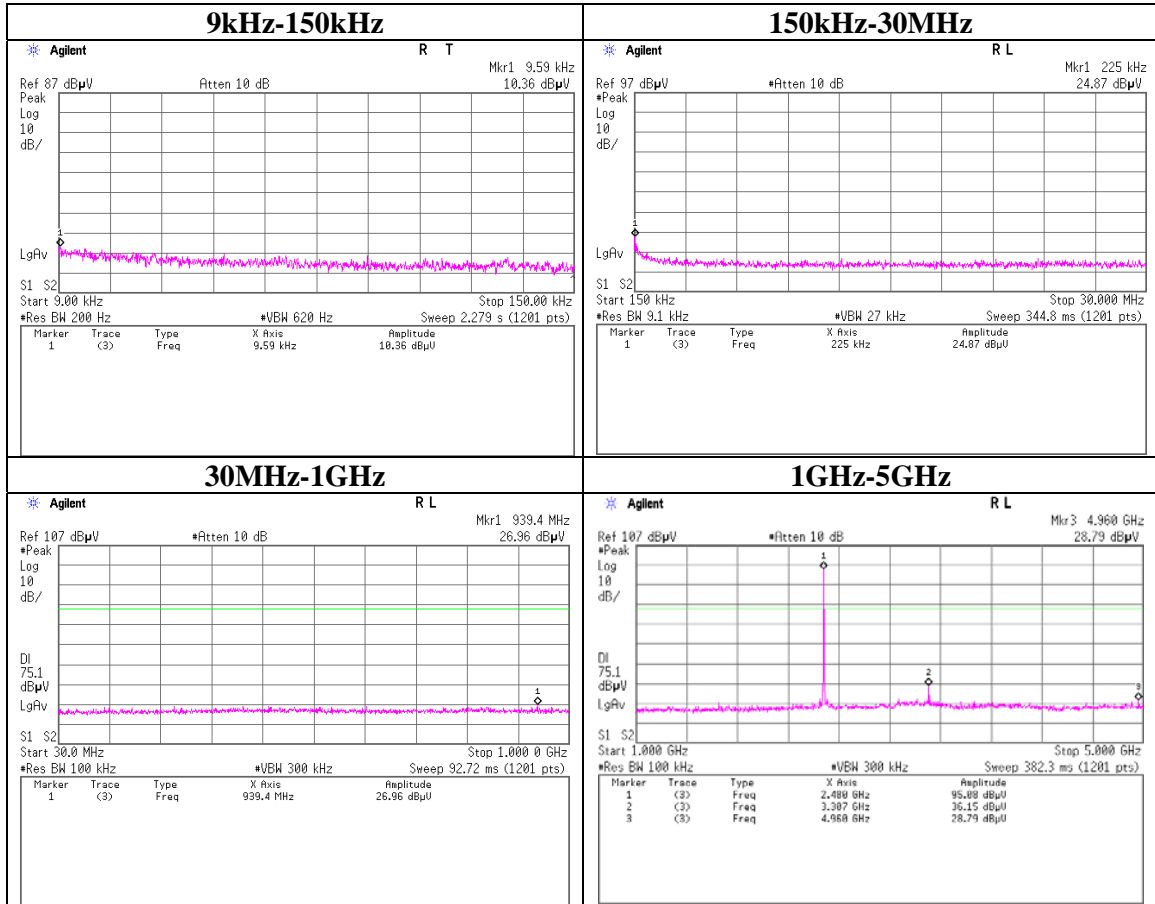
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Conducted Spurious Emission

Tx 3DH5 2480MHz



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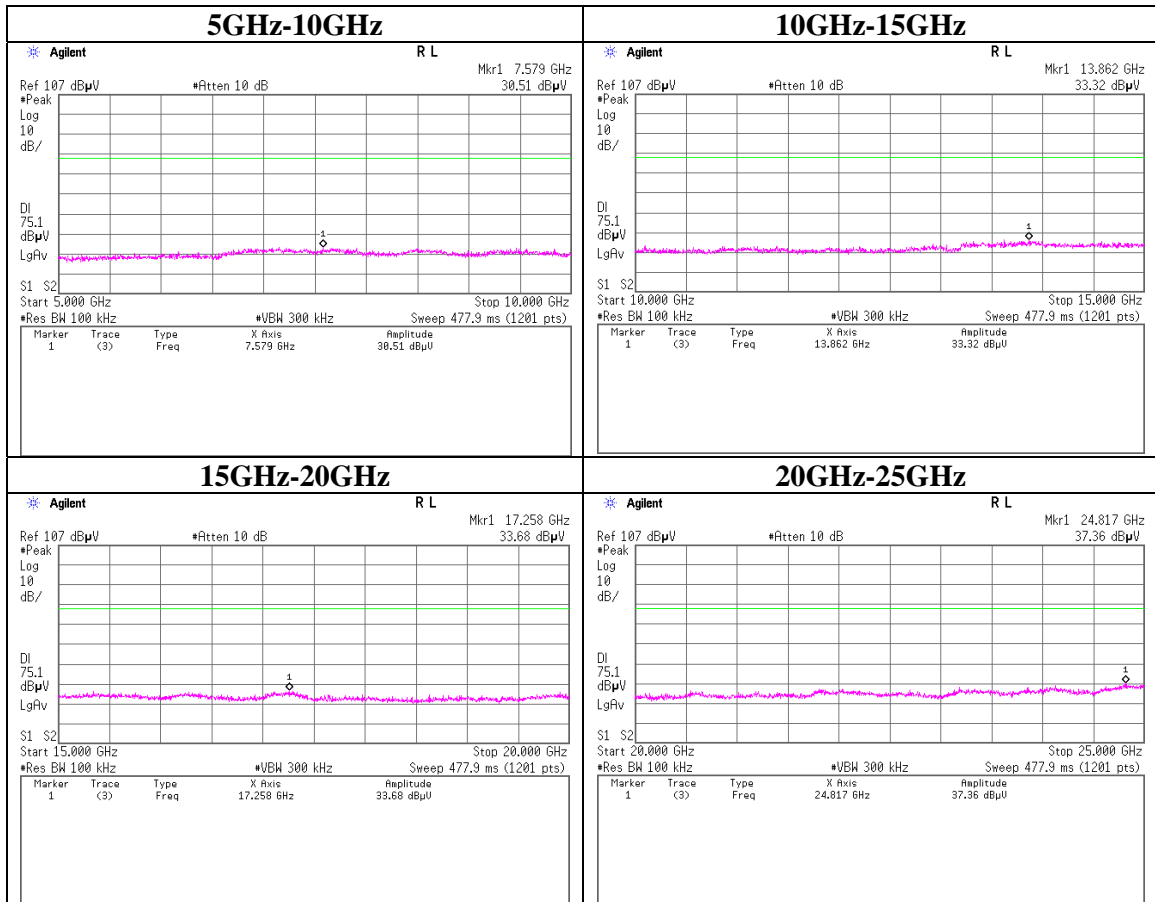
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Conducted Spurious Emission

Tx 3DH5 2480MHz



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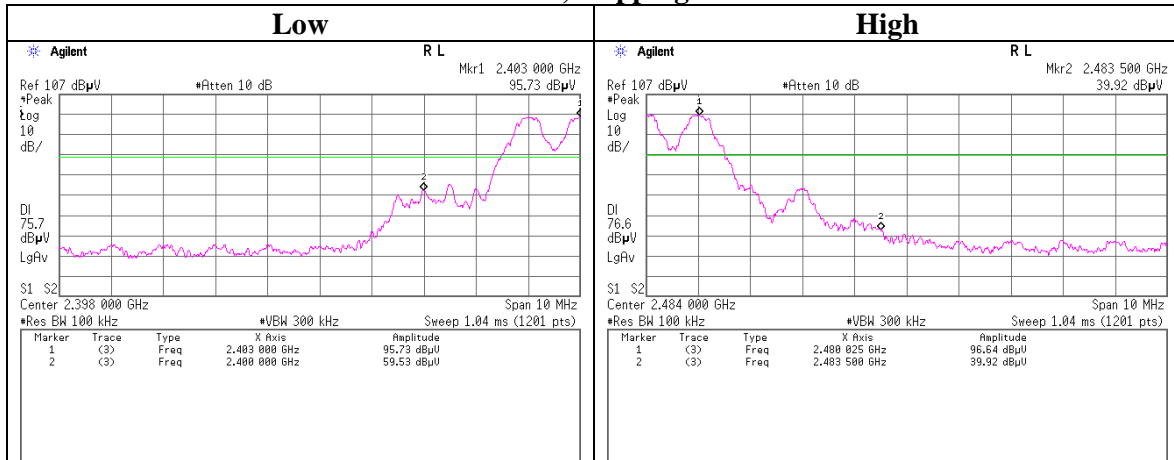
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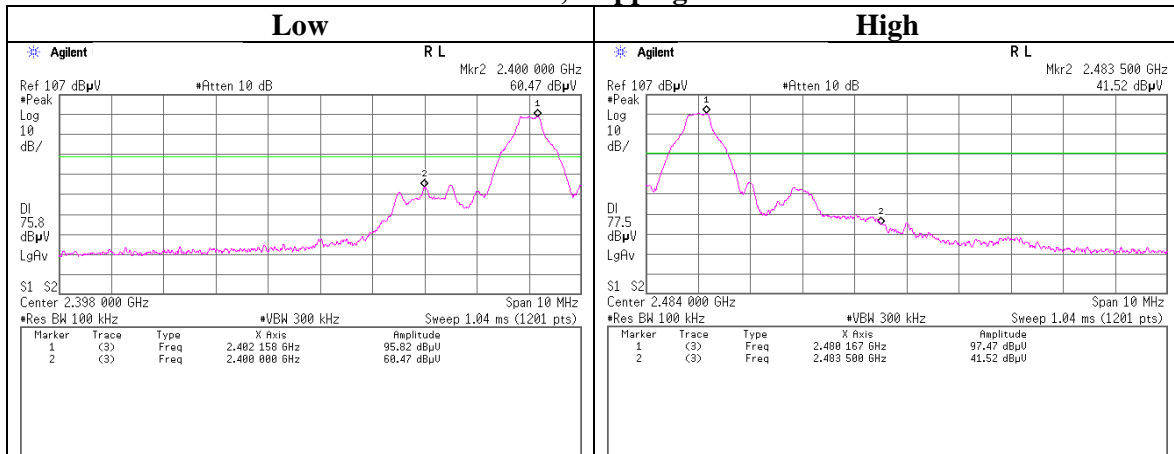
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Conducted Emission Band Edge compliance

Tx DH5, Hopping on



Tx DH5, Hopping off



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Head Office EMC Lab.

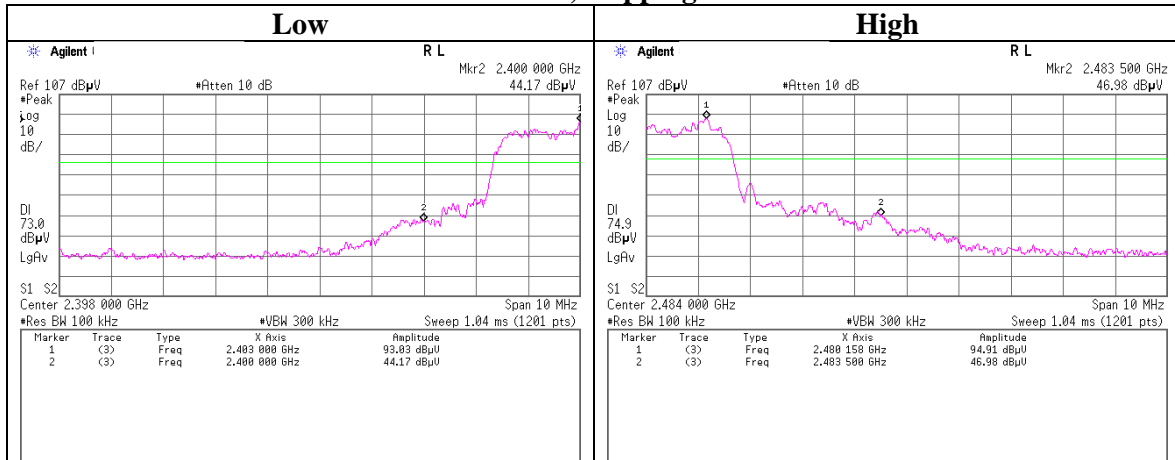
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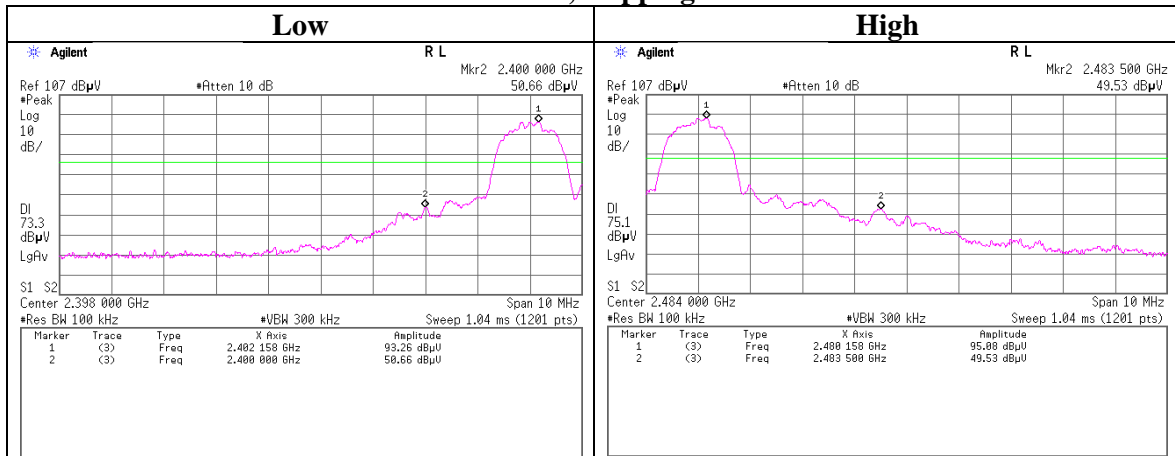
Facsimile : +81 596 24 8124

Conducted Emission Band Edge compliance

Tx 3DH5, Hopping on



Tx 3DH5, Hopping off



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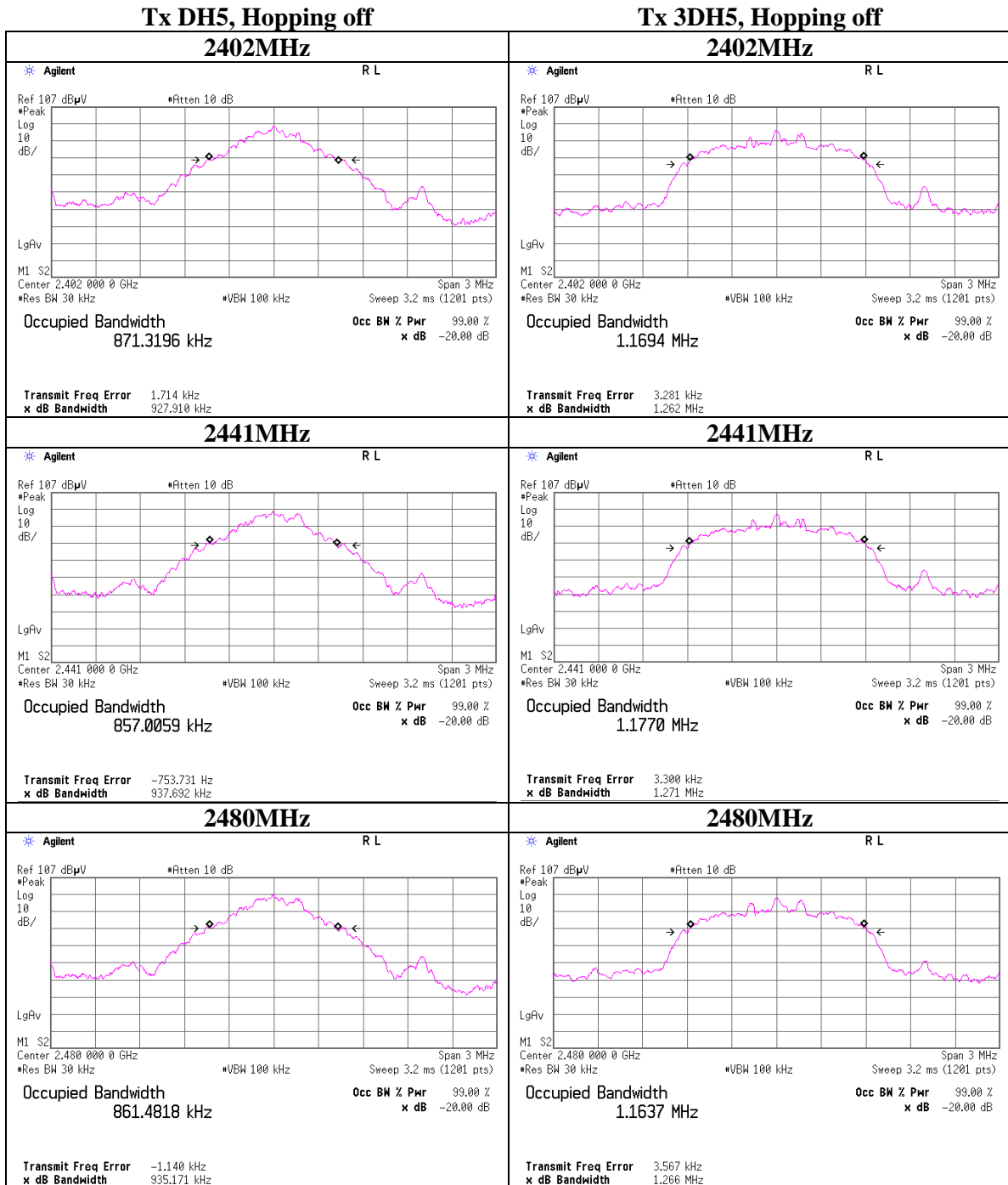
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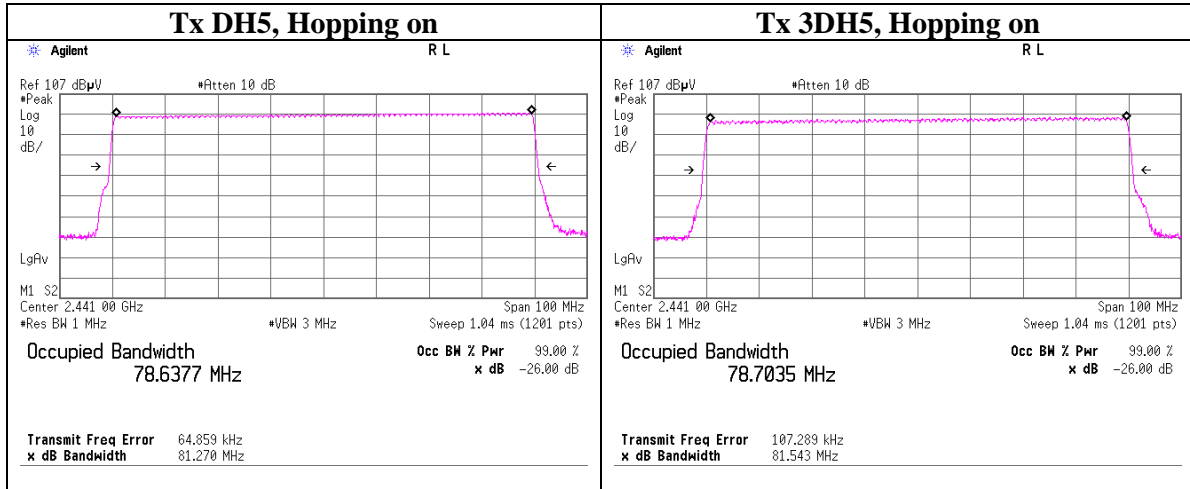
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99% Occupied Bandwidth



99% Occupied Bandwidth



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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	2012/05/25 * 12
MCC-133	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336164/4(1m) / 340640(5m)	RE	2012/09/05 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2013/03/19 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2012/05/21 * 12
MHF-06	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	RE	2012/05/30 * 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
MPM-09	Power Meter	Anritsu	ML2495A	6K00003348	AT	2012/10/08 * 12
MPSE-12	Power sensor	Anritsu	MA2411B	011598	AT	2012/10/08 * 12
MCC-137	Microwave cable	HUBER+SUHNER	SUCOFLEX 102	37954/2	AT	2012/10/19 * 12
MAT-22	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2013/03/21 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	AT	2012/11/20 * 12
MOS-23	Thermo-Hygrometer	Custom	CTH-201	0004	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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