RADIO TEST REPORT

Test Report No. : 10003428H-C

Applicant	:	**FUJITSU TEN LIMITED**
Type of Equipment	:	**Car Audio**
Model No.	:	**FT0052A**
FCC ID	:	**BABFT0052A**
Test regulation	:	**FCC Part 15 Subpart C: 2012**
Test Result	:	**Complied**

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

Date of test: January 15 to 25, 2013

Representative test engineer:
Yutaka Yoshida
Engineer of WiSE Japan,
UL Verification Service

Approved by:
Takahiro Hatakeda
Leader of WiSE Japan,
UL Verification Service

NVLAP LAB CODE: 200572-0

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

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REVISION HISTORY

Original Test Report No.: 10003428H-C

Revision	Test report No.	Date	Page revised	Contents
- (Original)	10003428H-C	February 15, 2013	-	-

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SECTION 1: Customer information

Company Name	:	FUJITSU TEN LIMITED
Address	:	2-28, Gosho-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.	:	FT0052A
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 12.0V
Receipt Date of Sample	:	January 12, 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		
CPU Crystal Oscillator X401	12.000MHz	Clock
CPU Crystal Oscillator X402	11.2896MHz	Audio Clock
DSP Crystal Oscillator X7502	62.400MHz	Clock
DECK LSI Crystal Oscillator X5001	16.934MHz	Clock
Serial Flash	85MHz	Communication
DDCON Clock	300kHz, 340kHz*	PWM
PANEL PCB		
VFD	6MHz	Communication
Bluetooth Module	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 (inner)	:	DC 3.3V
Antenna type	:	Chip Antenna
Antenna Gain	:	-4.96dBi

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	Test specification: FCC Part 15 Subpart C: 2012, final revised on December 27, 2012 and effective January 28, 2013
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators Section 15.207 Conducted limits Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz

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

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

3.2 Procedures and results

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.4:2003 7. AC powerline conducted emission measurements **IC:** RSS-Gen 7.2.4	**FCC:** Section 15.207 **IC:** RSS-Gen 7.2.4	N/A	N/A *1)	-
Carrier Frequency Separation	**FCC:** FCC Public Notice DA 00-705 **IC:** -	**FCC:** Section15.247(a)(1) **IC:** RSS-210 A8.1 (b)	See data.	Complied	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	1.0dB 1602.014MHz, AV, Horizontal	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.

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
1.0dB	1.0dB

Antenna terminal conducted emission and Power density (±dB)			Antenna terminal conducted emission (±dB)		Channel power (±dB)
Below 1GHz	1GHz-3GHz	3GHz-18GHz	18GHz-26.5GHz	26.5GHz-40GHz	
1.0dB	1.1dB	2.7dB	3.2dB	3.3dB	1.5dB

Radiated emission test(3m)
The data listed in this report meets the limits unless the uncertainty is taken into consideration.

3.5 Test Location

UL Japan, Inc. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116 Facsimile : +81 596 24 8124

	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

Details of Operating Mode(s)

Test Item	Mode	Tested frequency
20dB Bandwidth Maximum Peak Output Power Spurious Emission (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

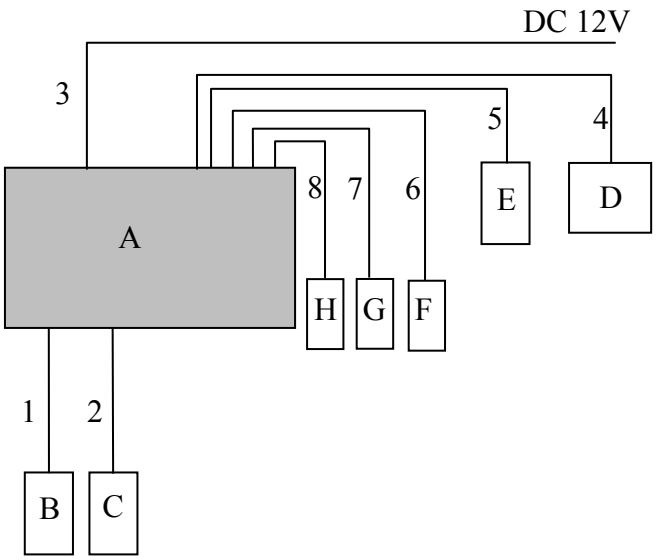
*EUT does not have Inquiry mode.

*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: 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

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.

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	FT0052A	100008105-0006	FUJITSU TEN	EUT
B	iPod	MB147J	8K812FRSYMV	Apple	-
C	DIGITAL MEDIA PLAYER	NW-A828	5027261	SONY	-
D	Termination resistor	-	-	-	-
E	FM Antenna termination	-	-	-	-
F	Termination jig board	-	-	-	-
G	Termination jig board	-	-	-	-
H	Microphone	-	-	-	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB Cable	1.1	Shielded	Shielded	-
2	Aux Cable	1.6	Shielded	Shielded	-
3	DC Cable	4.2	Unshielded	Unshielded	-
4	Signal Cable	3.4	Unshielded	Unshielded	-
5	Antenna Cable	3.2	Shielded	Shielded	-
6	Signal Cable	3.2	Unshielded	Unshielded	-
7	Signal Cable	3.2	Unshielded	Unshielded	-
8	Signal Cable	3.2	Unshielded	Unshielded	-

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 x log (3.0m/1.0m) = 9.5dB

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-25GHz
Test data : APPENDIX
Test result : Pass

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

APPENDIX 1: Data of EMI test

20dB Bandwidth and Carrier Frequency Separation

Test place	Head Office EMC Lab. No.7 Shielded Room
Report No.	10003428H
Date	01/15/2013
Temperature/ Humidity	24deg. C / 21% RH
Engineer	Yutaka Yoshida
Mode	Tx (Hopping on) DH5/3DH5

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.939	1.000	>= 0.626
DH5	2441.0	0.927	1.000	>= 0.618
DH5	2480.0	0.929	1.000	>= 0.619
3DH5	2402.0	1.269	1.000	>= 0.846
3DH5	2441.0	1.259	1.000	>= 0.839
3DH5	2480.0	1.289	1.000	>= 0.859

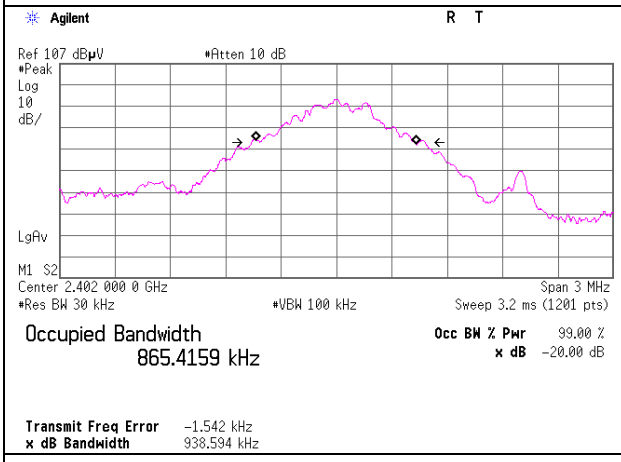
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
No limit applies to 20dB Bandwidth.

20dB Bandwidth and Carrier Frequency Separation

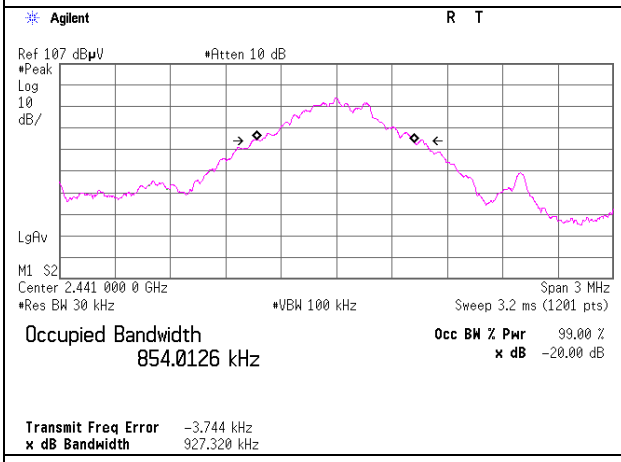
Tx DH5

20dB Bandwidth

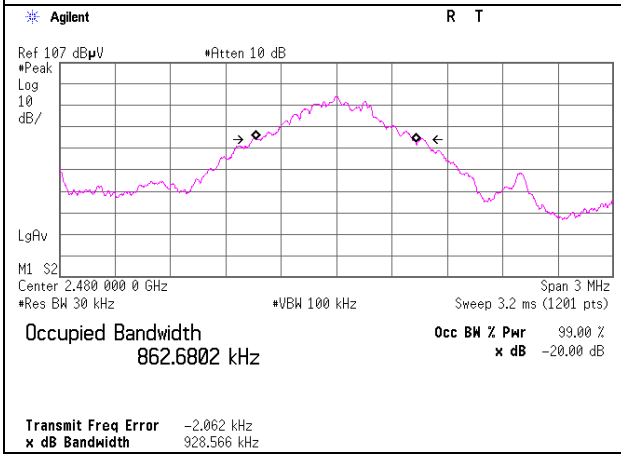
2402MHz



2441MHz

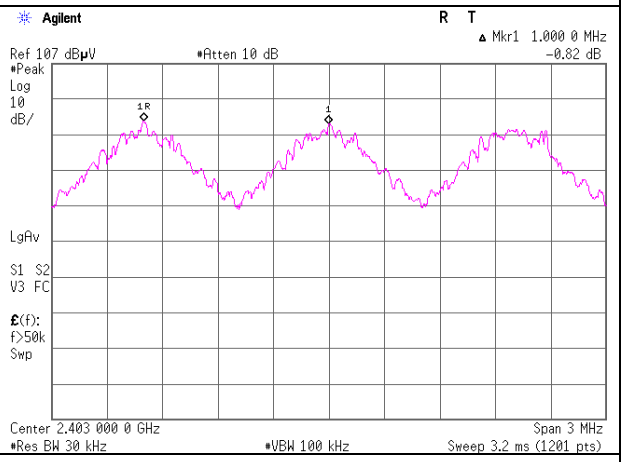


2480MHz



Carrier Frequency Separation

2402MHz



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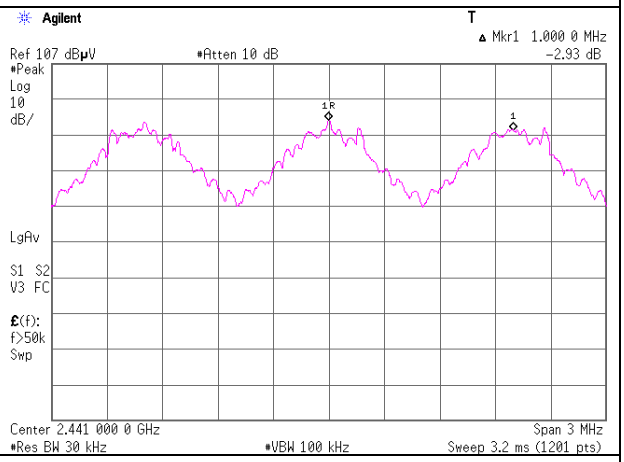

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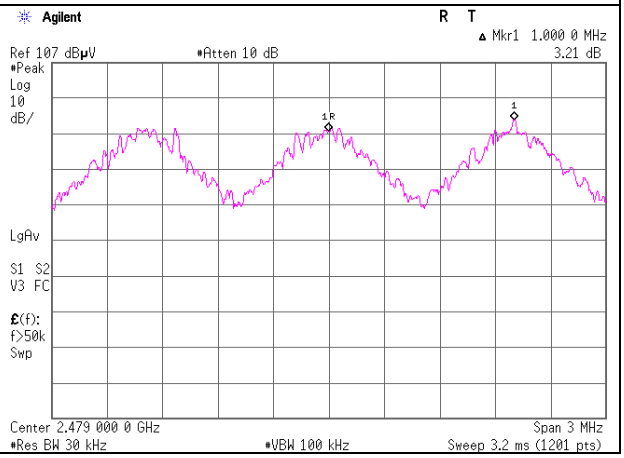
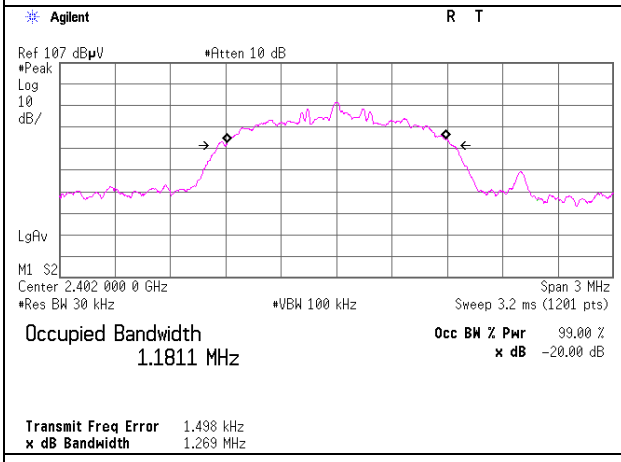


20dB Bandwidth and Carrier Frequency Separation

Tx 3DH5

20dB Bandwidth

2402MHz



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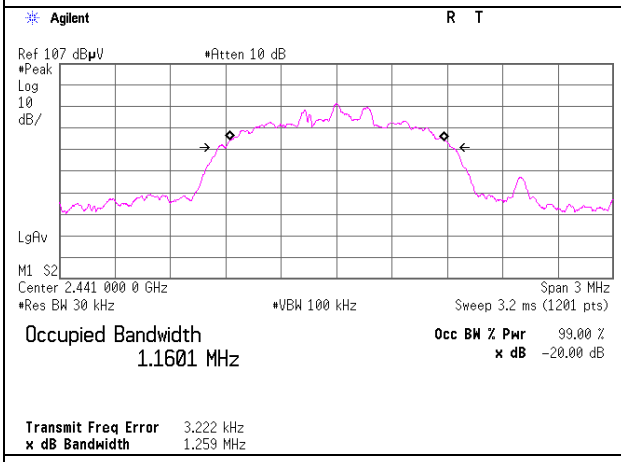
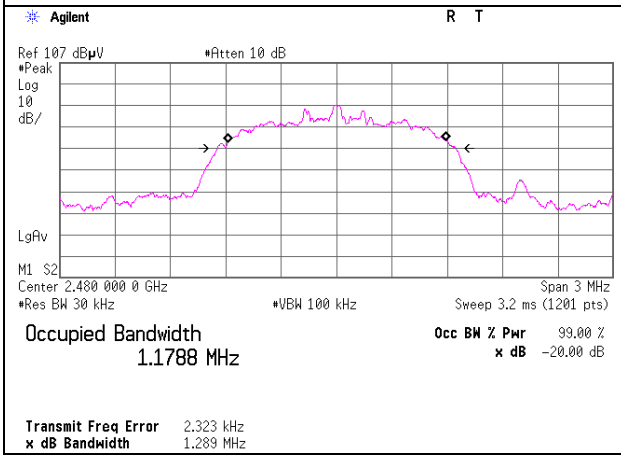
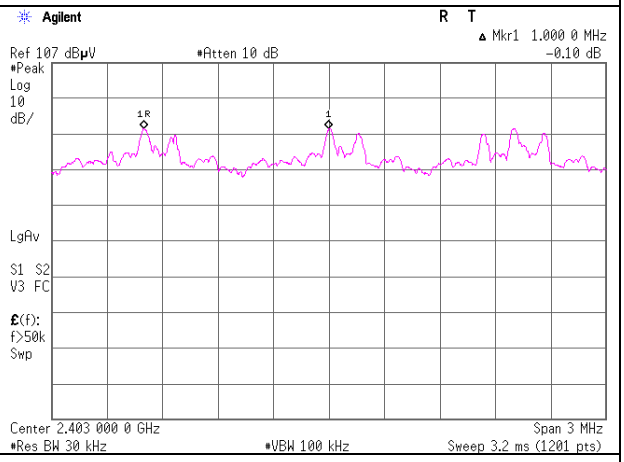


2480MHz

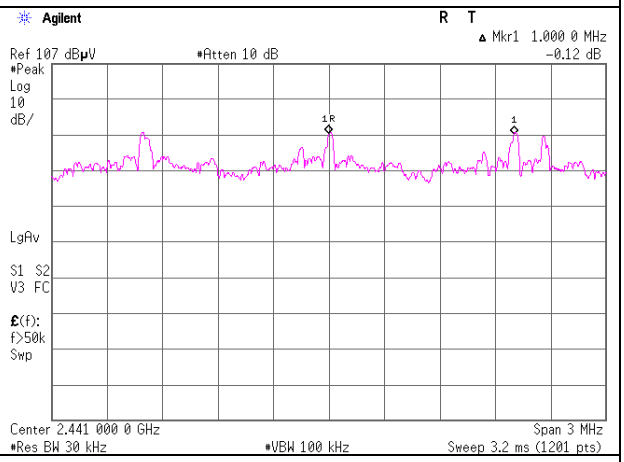


Carrier Frequency Separation

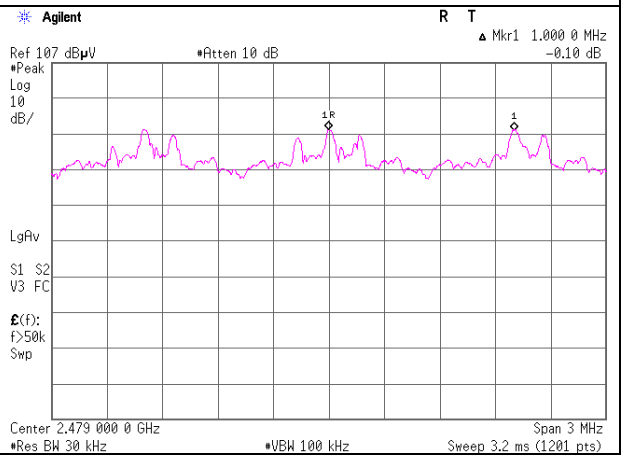
2402MHz



2441MHz



2480MHz



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Number of Hopping Frequency

Test place	Head Office EMC Lab. No.7 Shielded Room
Report No.	10003428H
Date	01/15/2013
Temperature/ Humidity	24deg. C / 21% RH
Engineer	Yutaka Yoshida
Mode	Tx (Hopping on) DH5/3DH5

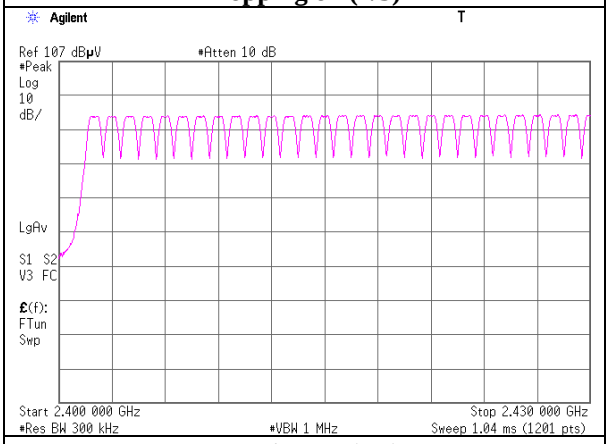
Mode	Number of channel [times]	Limit [times]
DH5	79	>= 15
3DH5	79	>= 15

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

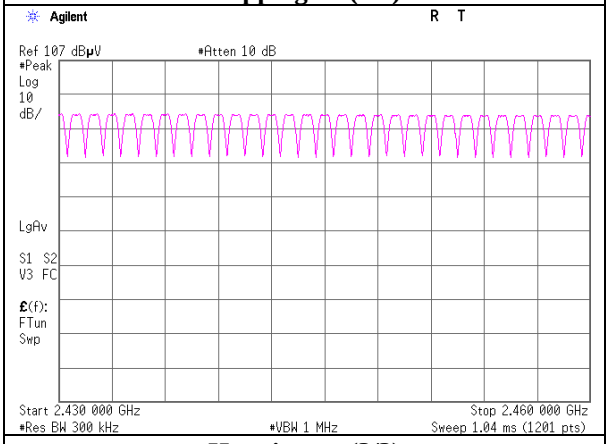
Number of Hopping Frequency

Tx DH5

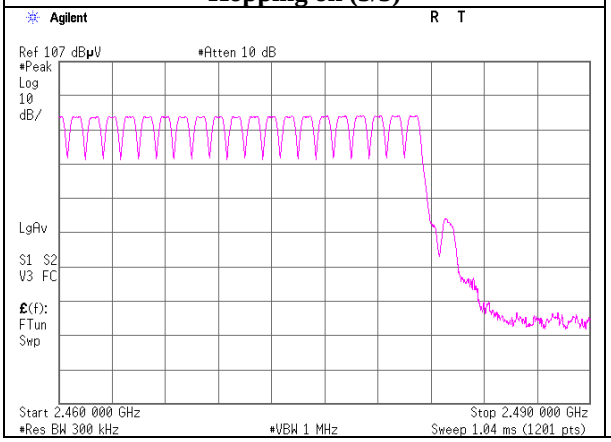
Hopping on (1/3)



Hopping on (2/3)

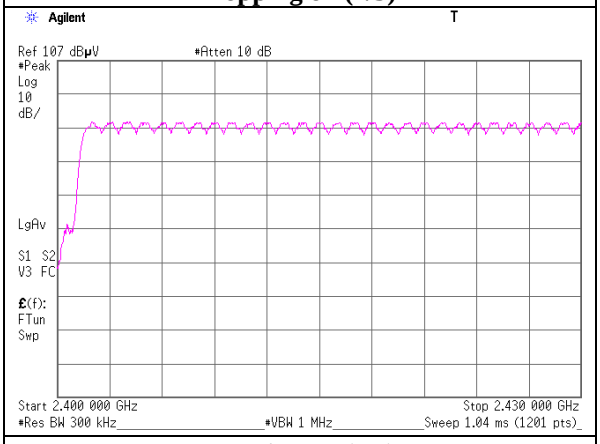


Hopping on (3/3)

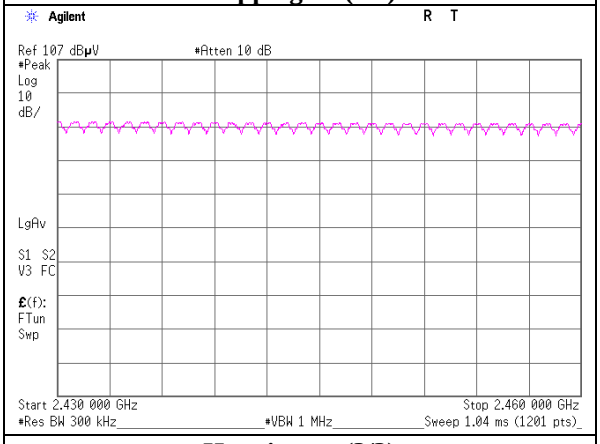


Tx 3DH5

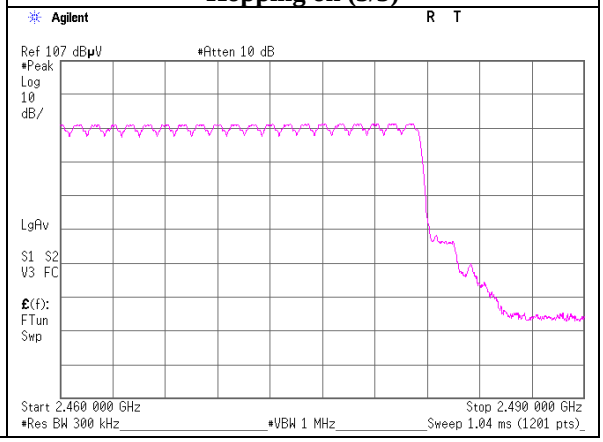
Hopping on (1/3)



Hopping on (2/3)



Hopping on (3/3)



Dwell time

Test place	Head Office EMC Lab. No.7 Shielded Room
Report No.	10003428H
Date	01/16/2013
Temperature/ Humidity	25deg.C / 19% RH
Engineer	Yutaka Yoshida
Mode	Tx (Hopping on) DH5/3DH5

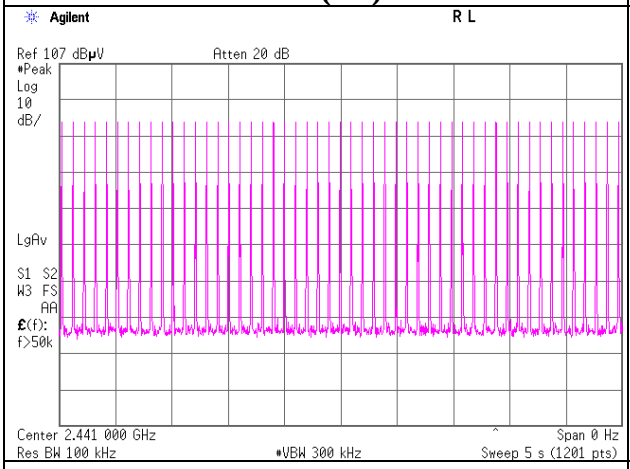
Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period					Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	51 times	/	5 sec.	x	31.6 sec. = 323 times	0.423	136	400
DH3	26 times	/	5 sec.	x	31.6 sec. = 165 times	1.685	278	400
DH5	17 times	/	5 sec.	x	31.6 sec. = 108 times	2.947	318	400
3DH1	51 times	/	5 sec.	x	31.6 sec. = 323 times	0.435	140	400
3DH3	26 times	/	5 sec.	x	31.6 sec. = 165 times	1.688	279	400
3DH5	17 times	/	5 sec.	x	31.6 sec. = 108 times	2.940	318	400

Sample Calculation
Result = Number of transmission x Length of transmition time

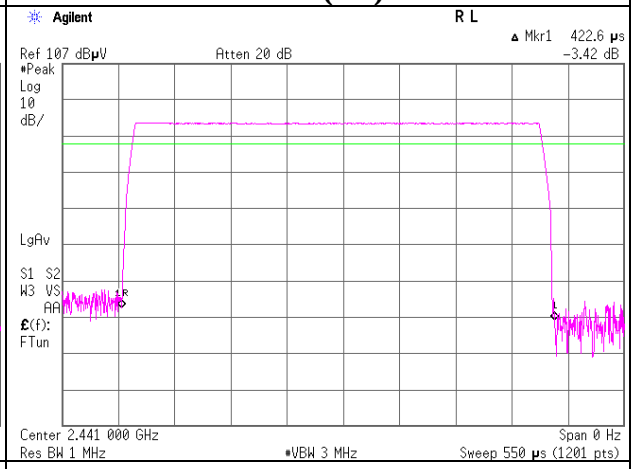
This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in N x 0.4s, where N is the number of channels being used in the hopping sequence ($20 \leq N \leq 79$), is always less than 0.4s regardless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

Dwell time

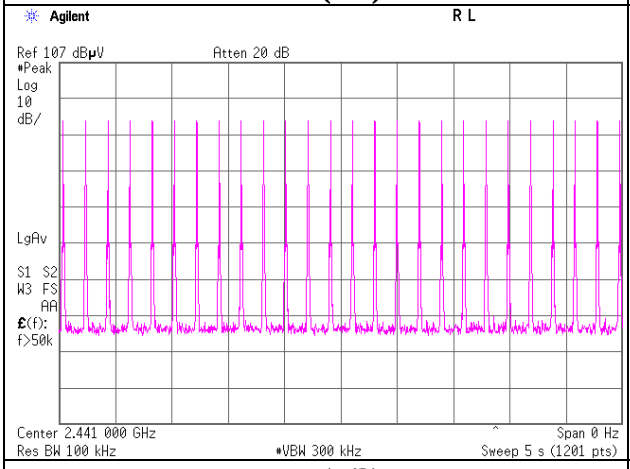
DH1 (1/2)



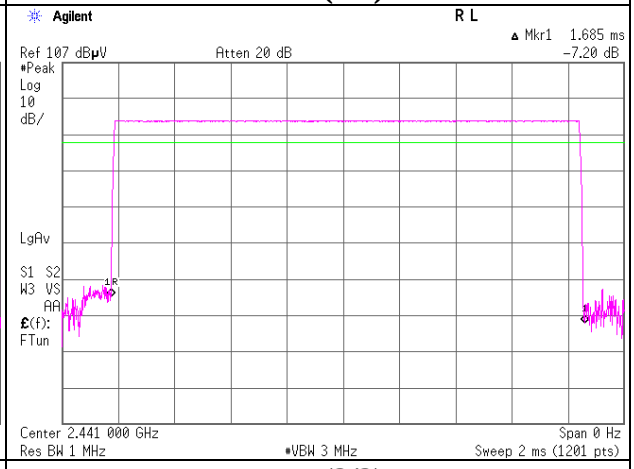
DH1 (2/2)



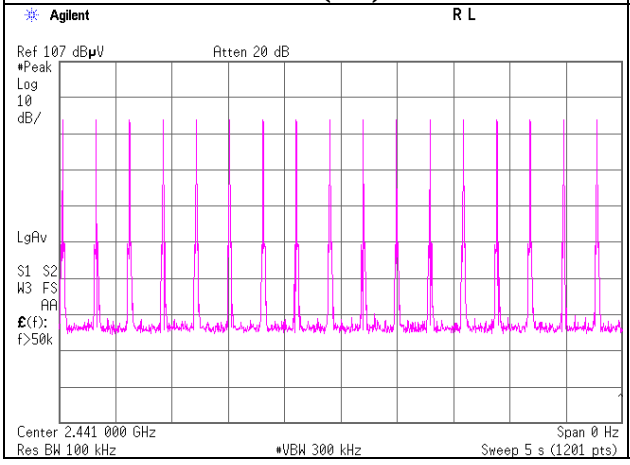
DH3 (1/2)



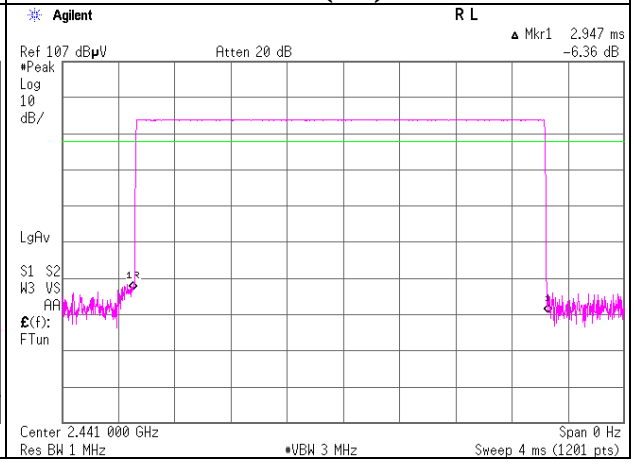
DH3 (2/2)



DH5 (1/2)

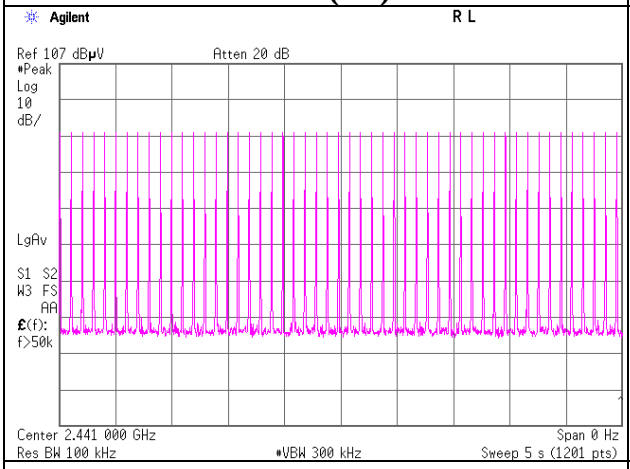


DH5 (2/2)

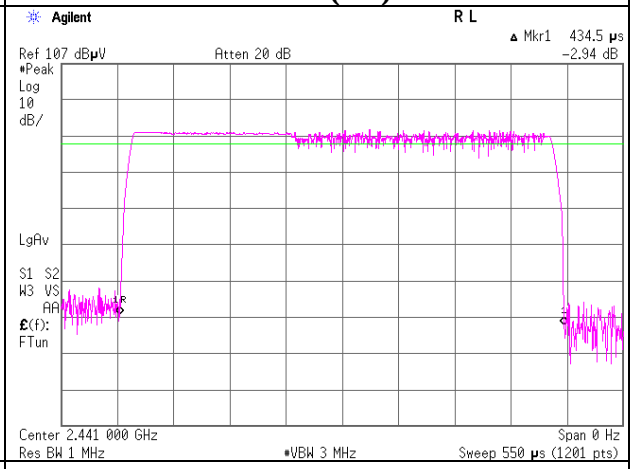


Dwell time

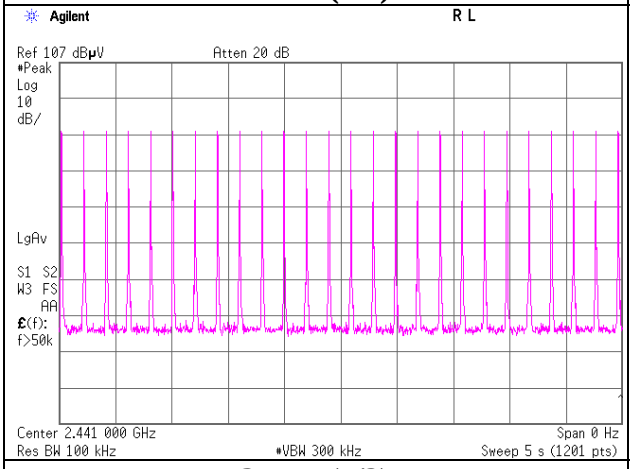
3DH1 (1/2)



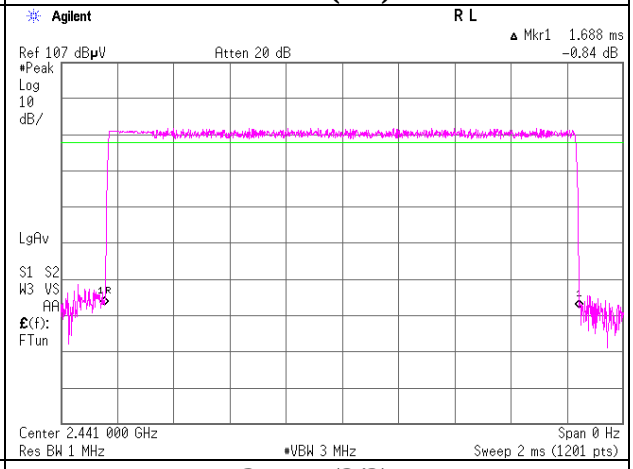
3DH1 (2/2)



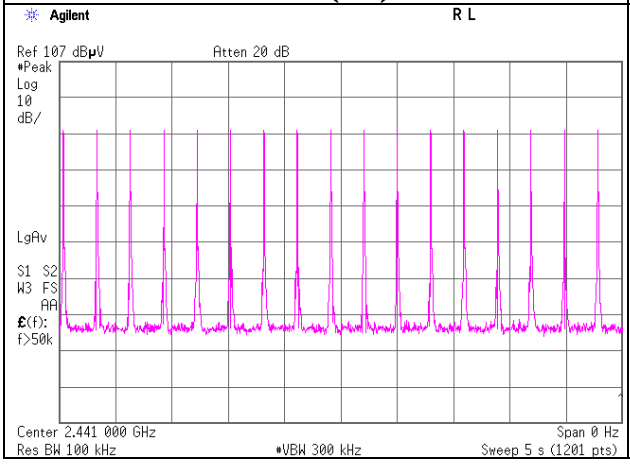
3DH3 (1/2)



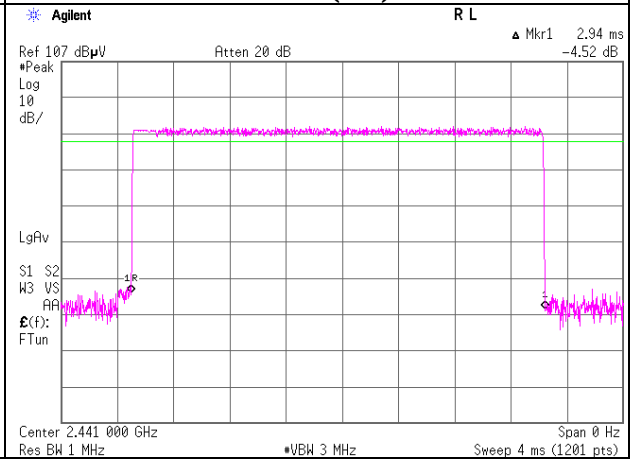
3DH3 (2/2)



3DH5 (1/2)



3DH5 (2/2)



Maximum Peak Output Power

Test place Head Office EMC Lab. No.7 Shielded Room
Report No. 10003428H
Date 01/15/2013
Temperature/ Humidity 24deg. C / 21% RH
Engineer Yutaka Yoshida
Mode Tx (Hopping off) DH5/3DH5

Mode	Freq.	Reading Peak	Cable Loss	Atten.	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
DH5	2402.0	-15.96	0.83	10.00	-5.13	0.31	20.96	125	26.09
DH5	2441.0	-15.71	0.83	10.00	-4.88	0.33	20.96	125	25.84
DH5	2480.0	-15.73	0.84	10.00	-4.89	0.32	20.96	125	25.85
3DH5	2402.0	-17.28	0.83	10.00	-6.45	0.23	20.96	125	27.41
3DH5	2441.0	-17.45	0.83	10.00	-6.62	0.22	20.96	125	27.58
3DH5	2480.0	-17.44	0.84	10.00	-6.60	0.22	20.96	125	27.56

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Average Output Power
(for reporting purpose only)

Test place Head Office EMC Lab. No.7 Shielded Room
Report No. 10003428H
Date 01/15/2013
Temperature/ Humidity 24deg. C / 21% RH
Engineer Yutaka Yoshida
Mode Tx (Hopping off) DH5/3DH5

Mode	Freq.	Reading Average	Cable Loss	Atten.	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
DH5	2402.0	-17.83	0.83	10.00	-7.00	0.20	20.96	125	27.96
DH5	2441.0	-17.66	0.83	10.00	-6.83	0.21	20.96	125	27.79
DH5	2480.0	-17.58	0.84	10.00	-6.74	0.21	20.96	125	27.70
3DH5	2402.0	-21.18	0.83	10.00	-10.35	0.09	20.96	125	31.31
3DH5	2441.0	-21.75	0.83	10.00	-10.92	0.08	20.96	125	31.88
3DH5	2480.0	-21.74	0.84	10.00	-10.90	0.08	20.96	125	31.86

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 10003428H
Date 1/25/2013
Temperature/ Humidity 22 deg. C / 31% RH
Engineer Keisuke Kawamura

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	58.101	QP	47.3	8.4	7.1	28.6	34.2	40.0	5.8	
Hori	129.911	QP	38.3	13.7	7.7	28.2	31.5	43.5	12.0	
Hori	319.449	QP	34.6	14.7	9.0	27.8	30.5	46.0	15.5	
Hori	328.548	QP	36.0	15.1	9.0	27.8	32.3	46.0	13.7	
Hori	337.514	QP	35.9	15.4	9.1	27.9	32.5	46.0	13.5	
Hori	733.531	QP	28.4	20.8	10.8	28.3	31.7	46.0	14.3	
Hori	791.996	QP	30.7	21.8	11.0	28.1	35.4	46.0	10.6	
Hori	863.994	QP	29.6	22.1	11.2	27.9	35.0	46.0	11.0	
Hori	1602.014	PK	57.2	26.5	1.9	36.0	49.6	73.9	24.3	
Hori	2390.000	PK	45.5	27.4	2.4	35.7	39.6	73.9	34.3	
Hori	4804.000	PK	59.7	31.2	4.2	34.9	60.2	73.9	13.8	
Hori	7206.000	PK	42.5	35.9	4.9	34.9	48.4	73.9	25.6	
Hori	9608.000	PK	44.4	38.8	5.7	35.4	53.5	73.9	20.4	NS
Hori	24020.000	PK	47.7	40.5	-1.2	32.5	54.5	73.9	19.4	NS
Hori	1602.014	AV	55.5	26.5	1.9	36.0	47.9	53.9	6.0	
Hori	2390.000	AV	33.3	27.4	2.4	35.7	27.4	53.9	26.5	
Hori	4804.000	AV	45.8	31.2	4.2	34.9	46.3	53.9	7.6	
Hori	7206.000	AV	32.0	35.9	4.9	34.9	37.9	53.9	36.0	
Hori	9608.000	AV	31.6	38.8	5.7	35.4	40.7	53.9	13.2	NS
Hori	24020.000	AV	35.7	40.5	-1.2	32.5	42.5	53.9	11.4	NS
Vert	45.323	QP	42.9	12.3	6.9	28.6	33.5	40.0	6.5	
Vert	129.911	QP	42.2	13.7	7.7	28.2	35.4	43.5	8.1	
Vert	138.731	QP	39.3	14.4	7.8	28.2	33.3	43.5	10.2	
Vert	255.999	QP	33.3	17.5	8.6	27.5	31.9	46.0	14.1	
Vert	337.514	QP	31.2	15.4	9.1	27.9	27.8	46.0	18.2	
Vert	863.994	QP	31.9	22.1	11.2	27.9	37.3	46.0	8.7	
Vert	1602.014	PK	58.2	26.5	1.9	36.0	50.6	73.9	23.3	
Vert	2390.000	PK	47.8	27.4	2.4	35.7	41.9	73.9	32.0	
Vert	4804.000	PK	59.4	31.2	4.2	34.9	59.9	73.9	14.0	
Vert	7206.000	PK	43.1	35.9	4.9	34.9	49.0	73.9	24.9	NS
Vert	9608.000	PK	43.2	38.8	5.7	35.4	52.3	73.9	21.7	NS
Vert	24020.000	PK	46.9	40.5	-1.2	32.5	53.7	73.9	20.2	NS
Vert	1602.014	AV	57.1	26.5	1.9	36.0	49.5	53.9	4.5	
Vert	2390.000	AV	35.1	27.4	2.4	35.7	29.2	53.9	24.7	
Vert	4804.000	AV	46.1	31.2	4.2	34.9	46.6	53.9	7.3	
Vert	7206.000	AV	31.3	35.9	4.9	34.9	37.2	53.9	16.7	NS
Vert	9608.000	AV	31.6	38.8	5.7	35.4	40.7	53.9	13.2	NS
Vert	24020.000	AV	35.6	40.5	-1.2	32.5	42.4	53.9	11.5	NS

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB
NS: No signal detect.

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10003428H
Date	1/25/2013
Temperature/ Humidity	22 deg. C / 31% RH
Engineer	Keisuke Kawamura
	20dBc
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	102.4	27.5	2.4	35.7	96.6	-	-	Carrier
Hori	2400.000	PK	59.7	27.5	2.4	35.7	53.9	76.6	22.7	
Vert	2402.000	PK	107.7	27.5	2.4	35.7	101.9	-	-	Carrier
Vert	2400.000	PK	65.0	27.5	2.4	35.7	59.2	81.9	22.7	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 10003428H
Date 1/25/2013
Temperature/ Humidity 22 deg. C / 31% RH
Engineer Keisuke Kawamura

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	58.101	QP	47.0	8.4	7.1	28.6	33.9	40.0	6.1	
Hori	129.911	QP	38.3	13.7	7.7	28.2	31.5	43.5	12.0	
Hori	319.449	QP	34.6	14.7	9.0	27.8	30.5	46.0	15.5	
Hori	328.548	QP	36.0	15.1	9.0	27.8	32.3	46.0	13.7	
Hori	337.514	QP	35.9	15.4	9.1	27.9	32.5	46.0	13.5	
Hori	733.531	QP	28.4	20.8	10.8	28.3	31.7	46.0	14.3	
Hori	791.996	QP	30.7	21.8	11.0	28.1	35.4	46.0	10.6	
Hori	863.994	QP	29.6	22.1	11.2	27.9	35.0	46.0	11.0	
Hori	1626.500	PK	59.7	26.6	2.0	36.0	52.3	73.9	21.7	
Hori	4882.000	PK	57.5	31.4	4.2	34.9	58.2	73.9	15.7	
Hori	7323.000	PK	42.9	36.0	4.9	34.9	48.9	73.9	25.0	NS
Hori	9764.000	PK	42.3	39.0	5.7	35.4	51.6	73.9	22.3	NS
Hori	24410.000	PK	47.0	40.5	-1.1	33.2	53.2	73.9	20.7	NS
Hori	1626.500	AV	58.2	26.6	2.0	36.0	50.8	53.9	3.1	
Hori	4882.000	AV	43.3	31.4	4.2	34.9	44.0	53.9	9.9	
Hori	7323.000	AV	31.5	36.0	4.9	34.9	37.5	53.9	16.4	NS
Hori	9764.000	AV	31.3	39.0	5.7	35.4	40.6	53.9	13.3	NS
Hori	24410.000	AV	35.1	40.5	-1.1	33.2	41.3	53.9	12.6	NS
Vert	45.323	QP	42.7	12.3	6.9	28.6	33.3	40.0	6.7	
Vert	129.911	QP	42.2	13.7	7.7	28.2	35.4	43.5	8.1	
Vert	138.731	QP	39.3	14.4	7.8	28.2	33.3	43.5	10.2	
Vert	255.999	QP	33.3	17.5	8.6	27.5	31.9	46.0	14.1	
Vert	337.514	QP	31.2	15.4	9.1	27.9	27.8	46.0	18.2	
Vert	863.994	QP	31.9	22.1	11.2	27.9	37.3	46.0	8.7	
Vert	1626.500	PK	60.5	26.6	2.0	36.0	53.1	73.9	20.8	
Vert	4882.000	PK	59.1	31.4	4.2	34.9	59.8	73.9	14.2	
Vert	7323.000	PK	42.6	36.0	4.9	34.9	48.6	73.9	25.4	NS
Vert	9764.000	PK	42.4	39.0	5.7	35.4	51.7	73.9	22.2	NS
Vert	24410.000	PK	46.8	40.5	-1.1	33.2	53.0	73.9	20.9	NS
Vert	1626.500	AV	58.6	26.6	2.0	36.0	51.2	53.9	2.7	
Vert	4882.000	AV	45.6	31.4	4.2	34.9	46.3	53.9	7.6	
Vert	7323.000	AV	31.4	36.0	4.9	34.9	37.4	53.9	16.5	NS
Vert	9764.000	AV	31.6	39.0	5.7	35.4	40.9	53.9	13.0	NS
Vert	24410.000	AV	35.0	40.5	-1.1	33.2	41.2	53.9	12.7	NS

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB
NS: No Signal detect.

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10003428H
Date	1/25/2013
Temperature/ Humidity	22 deg. C / 31% RH
Engineer	Keisuke Kawamura
	20dBc
Mode	Tx, DH5 2441MHz

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	2441.000	PK	101.2	27.5	2.4	35.7	95.4	-	-	Carrier
Hori	1626.668	PK	59.3	26.6	2.0	36.0	51.9	75.4	23.5	
Vert	2441.000	PK	107.8	27.5	2.4	35.7	102.0	-	-	Carrier
Vert	1626.668	PK	59.7	26.6	2.0	36.0	52.3	82.0	29.7	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 10003428H
Date 1/25/2013
Temperature/ Humidity 22 deg. C / 31% RH
Engineer Keisuke Kawamura

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	58.101	QP	47.1	8.4	7.1	28.6	34.0	40.0	6.0	
Hori	129.911	QP	38.3	13.7	7.7	28.2	31.5	43.5	12.0	
Hori	319.449	QP	34.6	14.7	9.0	27.8	30.5	46.0	15.5	
Hori	328.548	QP	36.0	15.1	9.0	27.8	32.3	46.0	13.7	
Hori	337.514	QP	35.9	15.4	9.1	27.9	32.5	46.0	13.5	
Hori	733.531	QP	28.4	20.8	10.8	28.3	31.7	46.0	14.3	
Hori	791.996	QP	30.7	21.8	11.0	28.1	35.4	46.0	10.6	
Hori	863.994	QP	29.6	22.1	11.2	27.9	35.0	46.0	11.0	
Hori	2483.500	PK	55.3	27.5	2.4	35.7	49.5	73.9	24.4	
Hori	4960.000	PK	57.5	31.6	4.2	34.9	58.4	73.9	15.5	
Hori	7440.000	PK	43.1	36.2	5.0	34.9	49.4	73.9	24.5	NS
Hori	9920.000	PK	42.3	39.1	5.8	35.4	51.8	73.9	22.1	NS
Hori	24800.000	PK	49.7	40.6	-1.1	33.9	55.3	73.9	18.6	NS
Hori	2483.500	AV	43.2	27.5	2.4	35.7	37.4	53.9	16.5	
Hori	4960.000	AV	48.5	31.6	4.2	34.9	49.4	53.9	4.5	
Hori	7440.000	AV	31.0	36.2	5.0	34.9	37.3	53.9	16.6	NS
Hori	9920.000	AV	31.3	39.1	5.8	35.4	40.8	53.9	13.1	NS
Hori	24800.000	AV	37.5	40.6	-1.1	33.9	43.1	53.9	10.8	NS
Vert	45.323	QP	42.8	12.3	6.9	28.6	33.4	40.0	6.6	
Vert	129.911	QP	42.2	13.7	7.7	28.2	35.4	43.5	8.1	
Vert	138.731	QP	39.3	14.4	7.8	28.2	33.3	43.5	10.2	
Vert	255.999	QP	33.3	17.5	8.6	27.5	31.9	46.0	14.1	
Vert	337.514	QP	31.2	15.4	9.1	27.9	27.8	46.0	18.2	
Vert	863.994	QP	31.9	22.1	11.2	27.9	37.3	46.0	8.7	
Vert	2483.500	PK	59.9	27.5	2.4	35.7	54.1	73.9	19.8	
Vert	4960.000	PK	57.8	31.6	4.2	34.9	58.7	73.9	15.3	
Vert	7440.000	PK	42.7	36.2	5.0	34.9	49.0	73.9	24.9	NS
Vert	9920.000	PK	42.4	39.1	5.8	35.4	51.9	73.9	22.0	NS
Vert	24800.000	PK	48.7	40.6	-1.1	33.9	54.3	73.9	19.6	NS
Vert	2483.500	AV	47.9	27.5	2.4	35.7	42.1	53.9	11.9	
Vert	4960.000	AV	49.0	31.6	4.2	34.9	49.9	53.9	4.0	
Vert	7440.000	AV	31.1	36.2	5.0	34.9	37.4	53.9	16.5	NS
Vert	9920.000	AV	31.6	39.1	5.8	35.4	41.1	53.9	12.8	NS
Vert	24800.000	AV	37.5	40.6	-1.1	33.9	43.1	53.9	10.8	NS

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB
NS: No signal detect.

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10003428H
Date	1/25/2013
Temperature/ Humidity	22 deg. C / 31% RH
Engineer	Keisuke Kawamura
	20dBc
Mode	Tx, DH5 2480MHz

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	2480.000	PK	99.7	27.5	2.4	35.7	93.9	-	-	Carrier
Hori	1654.000	PK	56.7	26.6	2.0	36.0	49.3	73.9	24.6	
Vert	2480.000	PK	105.1	27.5	2.4	35.7	99.3	-	-	Carrier
Vert	1654.000	PK	60.0	26.6	2.0	36.0	52.6	79.3	26.7	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 10003428H
Date 1/25/2013
Temperature/ Humidity 22 deg. C / 31% RH
Engineer Keisuke Kawamura

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	58.101	QP	47.3	8.4	7.1	28.6	34.2	40.0	5.8	
Hori	129.911	QP	38.3	13.7	7.7	28.2	31.5	43.5	12.0	
Hori	319.449	QP	34.6	14.7	9.0	27.8	30.5	46.0	15.5	
Hori	328.548	QP	36.0	15.1	9.0	27.8	32.3	46.0	13.7	
Hori	337.514	QP	35.9	15.4	9.1	27.9	32.5	46.0	13.5	
Hori	733.531	QP	28.4	20.8	10.8	28.3	31.7	46.0	14.3	
Hori	791.996	QP	30.7	21.8	11.0	28.1	35.4	46.0	10.6	
Hori	863.994	QP	29.6	22.1	11.2	27.9	35.0	46.0	11.0	
Hori	1602.014	PK	61.7	26.5	1.9	36.0	54.1	73.9	19.8	
Hori	2390.000	PK	44.6	27.4	2.4	35.7	38.7	73.9	35.2	
Hori	4804.000	PK	49.7	31.2	4.2	34.9	50.2	73.9	23.8	
Hori	7206.000	PK	43.1	35.9	4.9	34.9	49.0	73.9	24.9	NS
Hori	9608.000	PK	42.3	38.8	5.7	35.4	51.4	73.9	22.5	NS
Hori	24020.000	PK	47.7	40.5	-1.2	32.5	54.5	73.9	19.4	NS
Hori	1602.014	AV	60.5	26.5	1.9	36.0	52.9	53.9	1.0	
Hori	2390.000	AV	32.8	27.4	2.4	35.7	26.9	53.9	27.0	
Hori	4804.000	AV	33.7	31.2	4.2	34.9	34.2	53.9	19.7	
Hori	7206.000	AV	31.0	35.9	4.9	34.9	36.9	53.9	17.1	NS
Hori	9608.000	AV	31.3	38.8	5.7	35.4	40.4	53.9	13.5	NS
Hori	24020.000	AV	35.7	40.5	-1.2	32.5	42.5	53.9	11.4	NS
Vert	45.323	QP	42.9	12.3	6.9	28.6	33.5	40.0	6.5	
Vert	129.911	QP	42.2	13.7	7.7	28.2	35.4	43.5	8.1	
Vert	138.731	QP	39.3	14.4	7.8	28.2	33.3	43.5	10.2	
Vert	255.999	QP	33.3	17.5	8.6	27.5	31.9	46.0	14.1	
Vert	337.514	QP	31.2	15.4	9.1	27.9	27.8	46.0	18.2	
Vert	863.994	QP	31.9	22.1	11.2	27.9	37.3	46.0	8.7	
Vert	1602.014	PK	61.3	26.5	1.9	36.0	53.7	73.9	20.2	
Vert	2390.000	PK	47.5	27.4	2.4	35.7	41.6	73.9	32.4	
Vert	4804.000	PK	52.3	31.2	4.2	34.9	52.8	73.9	21.1	
Vert	7206.000	PK	42.7	35.9	4.9	34.9	48.6	73.9	25.3	NS
Vert	9608.000	PK	42.4	38.8	5.7	35.4	51.5	73.9	22.5	NS
Vert	24020.000	PK	46.9	40.5	-1.2	32.5	53.7	73.9	20.2	NS
Vert	1602.014	AV	60.1	26.5	1.9	36.0	52.5	53.9	1.4	
Vert	2390.000	AV	34.8	27.4	2.4	35.7	28.9	53.9	25.0	
Vert	4804.000	AV	34.7	31.2	4.2	34.9	35.2	53.9	18.7	
Vert	7206.000	AV	31.1	35.9	4.9	34.9	37.0	53.9	17.0	NS
Vert	9608.000	AV	31.6	38.8	5.7	35.4	40.7	53.9	13.2	NS
Vert	24020.000	AV	35.6	40.5	-1.2	32.5	42.4	53.9	11.5	NS

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB
NS: No signal detect.

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10003428H
Date	1/25/2013
Temperature/ Humidity	22 deg. C / 31% RH
Engineer	Keisuke Kawamura
	20dBc
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	99.9	27.5	2.4	35.7	94.1	-	-	Carrier
Hori	2400.000	PK	55.5	27.5	2.4	35.7	49.7	74.1	24.4	
Vert	2402.000	PK	106.3	27.5	2.4	35.7	100.5	-	-	Carrier
Vert	2400.000	PK	61.6	27.5	2.4	35.7	55.8	80.5	24.7	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 10003428H
Date 1/25/2013
Temperature/ Humidity 22 deg. C / 31% RH
Engineer Keisuke Kawamura

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	58.101	QP	47.0	8.4	7.1	28.6	33.9	40.0	6.1	
Hori	129.911	QP	38.3	13.7	7.7	28.2	31.5	43.5	12.0	
Hori	319.449	QP	34.6	14.7	9.0	27.8	30.5	46.0	15.5	
Hori	328.548	QP	36.0	15.1	9.0	27.8	32.3	46.0	13.7	
Hori	337.514	QP	35.9	15.4	9.1	27.9	32.5	46.0	13.5	
Hori	733.531	QP	28.4	20.8	10.8	28.3	31.7	46.0	14.3	
Hori	791.996	QP	30.7	21.8	11.0	28.1	35.4	46.0	10.6	
Hori	863.994	QP	29.6	22.1	11.2	27.9	35.0	46.0	11.0	
Hori	1626.500	PK	45.0	26.6	2.0	36.0	37.6	73.9	36.3	
Hori	4882.000	PK	51.9	31.4	4.2	34.9	52.6	73.9	21.3	
Hori	7323.000	PK	43.1	36.0	4.9	34.9	49.1	73.9	24.8	NS
Hori	9764.000	PK	42.3	39.0	5.7	35.4	51.6	73.9	22.3	NS
Hori	24410.000	PK	47.0	40.5	-1.1	33.2	53.2	73.9	20.7	NS
Hori	1626.500	AV	33.3	26.6	2.0	36.0	25.9	53.9	28.0	
Hori	4882.000	AV	33.8	31.4	4.2	34.9	34.5	53.9	19.5	
Hori	7323.000	AV	31.0	36.0	4.9	34.9	37.0	53.9	16.9	NS
Hori	9764.000	AV	31.3	39.0	5.7	35.4	40.6	53.9	13.3	NS
Hori	24410.000	AV	35.1	40.5	-1.1	33.2	41.3	53.9	12.6	NS
Vert	45.323	QP	42.7	12.3	6.9	28.6	33.3	40.0	6.7	
Vert	129.911	QP	42.2	13.7	7.7	28.2	35.4	43.5	8.1	
Vert	138.731	QP	39.3	14.4	7.8	28.2	33.3	43.5	10.2	
Vert	255.999	QP	33.3	17.5	8.6	27.5	31.9	46.0	14.1	
Vert	337.514	QP	31.2	15.4	9.1	27.9	27.8	46.0	18.2	
Vert	863.994	QP	31.9	22.1	11.2	27.9	37.3	46.0	8.7	
Vert	1626.500	PK	45.7	26.6	2.0	36.0	38.3	73.9	35.6	
Vert	4882.000	PK	53.8	31.4	4.2	34.9	54.5	73.9	19.4	
Vert	7323.000	PK	42.7	36.0	4.9	34.9	48.7	73.9	25.2	NS
Vert	9764.000	PK	42.4	39.0	5.7	35.4	51.7	73.9	22.2	NS
Vert	24410.000	PK	46.8	40.5	-1.1	33.2	53.0	73.9	20.9	NS
Vert	1626.500	AV	33.4	26.6	2.0	36.0	26.0	53.9	27.9	
Vert	4882.000	AV	35.2	31.4	4.2	34.9	35.9	53.9	18.0	
Vert	7323.000	AV	31.1	36.0	4.9	34.9	37.1	53.9	16.8	NS
Vert	9764.000	AV	31.6	39.0	5.7	35.4	40.9	53.9	13.0	NS
Vert	24410.000	AV	35.0	40.5	-1.1	33.2	41.2	53.9	12.7	NS

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB
NS: No signal detect.

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10003428H
Date	1/25/2013
Temperature/ Humidity	22 deg. C / 31% RH
Engineer	Keisuke Kawamura
	20dBc
Mode	Tx, 3DH5 2441MHz

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	2441.000	PK	98.6	27.5	2.4	35.7	92.8	-	-	Carrier
Hori	1628.000	PK	59.4	26.6	2.0	36.0	52.0	72.8	20.8	
Vert	2441.000	PK	105.6	27.5	2.4	35.7	99.8	-	-	Carrier
Vert	1628.000	PK	60.1	26.6	2.0	36.0	52.7	79.8	27.1	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 10003428H
Date 1/25/2013
Temperature/ Humidity 22 deg. C / 31% RH
Engineer Keisuke Kawamura

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	58.101	QP	47.1	8.4	7.1	28.6	34.0	40.0	6.0	
Hori	129.911	QP	38.3	13.7	7.7	28.2	31.5	43.5	12.0	
Hori	319.449	QP	34.6	14.7	9.0	27.8	30.5	46.0	15.5	
Hori	328.548	QP	36.0	15.1	9.0	27.8	32.3	46.0	13.7	
Hori	337.514	QP	35.9	15.4	9.1	27.9	32.5	46.0	13.5	
Hori	733.531	QP	28.4	20.8	10.8	28.3	31.7	46.0	14.3	
Hori	791.996	QP	30.7	21.8	11.0	28.1	35.4	46.0	10.6	
Hori	863.994	QP	29.6	22.1	11.2	27.9	35.0	46.0	11.0	
Hori	2483.500	PK	59.1	27.5	2.4	35.7	53.3	73.9	20.6	
Hori	4960.000	PK	52.1	31.6	4.2	34.9	53.0	73.9	20.9	
Hori	7440.000	PK	43.1	36.2	5.0	34.9	49.4	73.9	24.5	NS
Hori	9920.000	PK	42.3	39.1	5.8	35.4	51.8	73.9	22.1	NS
Hori	24800.000	PK	49.7	40.6	-1.1	33.9	55.3	73.9	18.6	NS
Hori	2483.500	AV	46.4	27.5	2.4	35.7	40.6	53.9	13.3	
Hori	4960.000	AV	37.2	31.6	4.2	34.9	38.1	53.9	15.8	
Hori	7440.000	AV	31.0	36.2	5.0	34.9	37.3	53.9	16.6	NS
Hori	9920.000	AV	31.3	39.1	5.8	35.4	40.8	53.9	13.1	NS
Hori	24800.000	AV	37.5	40.6	-1.1	33.9	43.1	53.9	10.8	NS
Vert	45.323	QP	42.8	12.3	6.9	28.6	33.4	40.0	6.6	
Vert	129.911	QP	42.2	13.7	7.7	28.2	35.4	43.5	8.1	
Vert	138.731	QP	39.3	14.4	7.8	28.2	33.3	43.5	10.2	
Vert	255.999	QP	33.3	17.5	8.6	27.5	31.9	46.0	14.1	
Vert	337.514	QP	31.2	15.4	9.1	27.9	27.8	46.0	18.2	
Vert	863.994	QP	31.9	22.1	11.2	27.9	37.3	46.0	8.7	
Vert	2483.500	PK	64.4	27.5	2.4	35.7	58.6	73.9	15.3	
Vert	4960.000	PK	50.2	31.6	4.2	34.9	51.1	73.9	22.8	
Vert	7440.000	PK	42.7	36.2	5.0	34.9	49.0	73.9	24.9	NS
Vert	9920.000	PK	42.4	39.1	5.8	35.4	51.9	73.9	22.0	NS
Vert	24800.000	PK	48.7	40.6	-1.1	33.9	54.3	73.9	19.6	NS
Vert	2483.500	AV	51.1	27.5	2.4	35.7	45.3	53.9	8.6	
Vert	4960.000	AV	37.2	31.6	4.2	34.9	38.1	53.9	15.8	
Vert	7440.000	AV	31.1	36.2	5.0	34.9	37.4	53.9	16.5	NS
Vert	9920.000	AV	31.6	39.1	5.8	35.4	41.1	53.9	12.8	NS
Vert	24800.000	AV	37.5	40.6	-1.1	33.9	43.1	53.9	10.8	NS

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB
NS: No signal detect.

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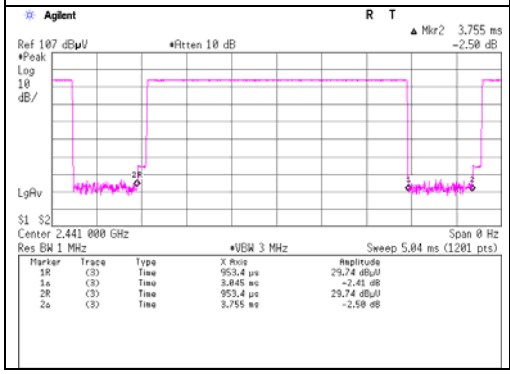
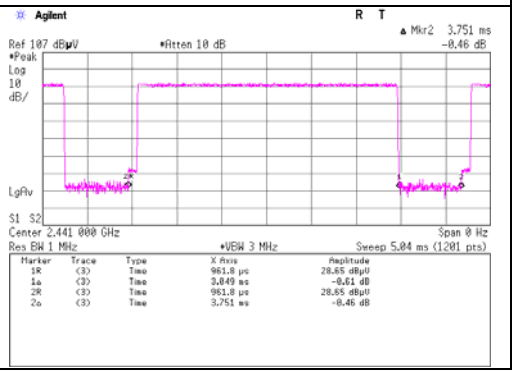
Radiated Spurious Emission

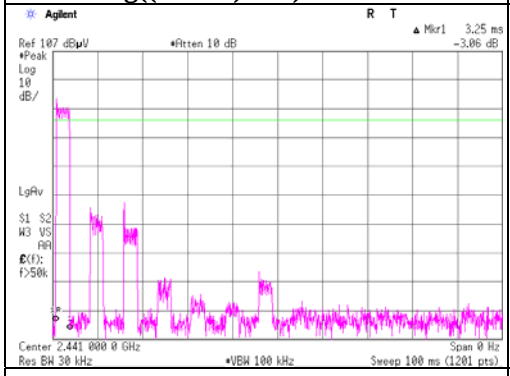
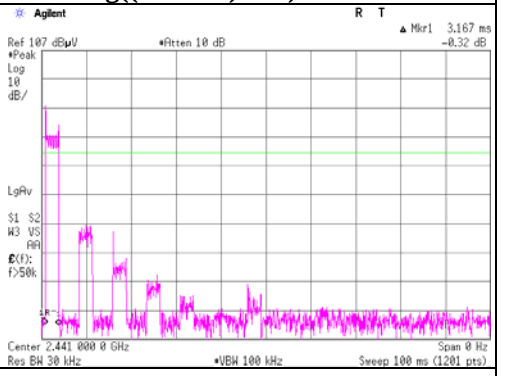
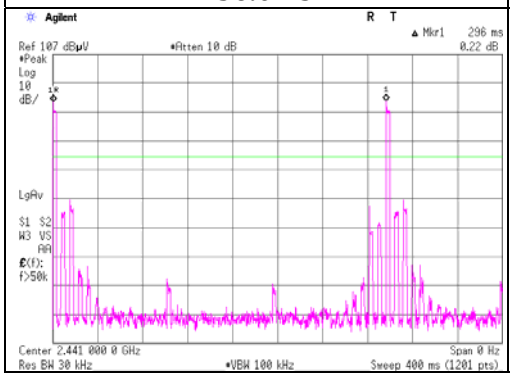
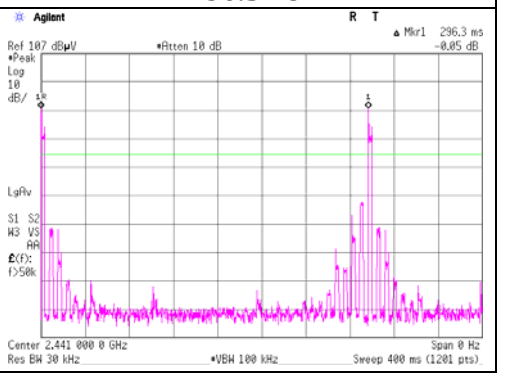
Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10003428H
Date	1/25/2013
Temperature/ Humidity	22 deg. C / 31% RH
Engineer	Keisuke Kawamura
	20dBc
Mode	Tx, 3DH5 2480MHz

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	2480.000	PK	97.2	27.5	2.4	35.7	91.4	-	-	Carrier
Hori	1654.000	PK	56.7	26.6	2.0	36.0	49.3	71.4	22.1	
Vert	2480.000	PK	102.5	27.5	2.4	35.7	96.7	-	-	Carrier
Vert	1654.000	PK	59.9	26.6	2.0	36.0	52.5	76.7	24.2	

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

Burst Rate Confirmation	
DH5	**3DH5**
Duty rate = 81.1% **Tx on = 3.045ms** **Tx on+Tx off = 3.755ms**	**Duty rate = 81.3%** **Tx on = 3.049ms** **Tx on+Tx off = 3.751ms**
	

Dwell time factor	
DH5	**3DH5**
Worst 100ms **Dwell time factor =** **20log((3.25*2)/100) = -23.74dB**	**Worst 100ms** **Dwell time factor =** **20log((3.167*2)/100) = -23.97dB**
	
1cycle time **296.0ms**	**1cycle time** **296.3ms**
	

* Dwell time factor was not used for Radiated emission.

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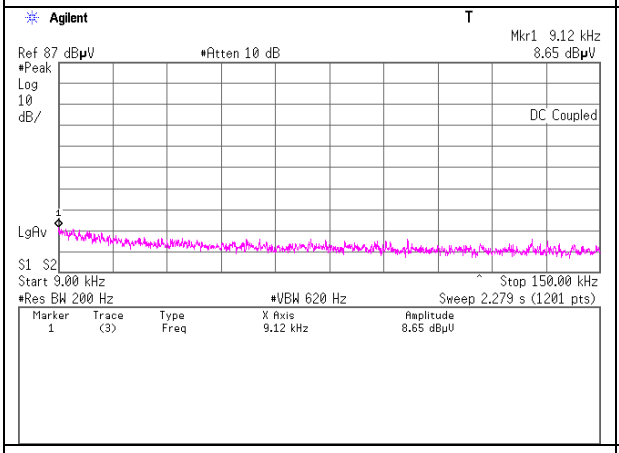
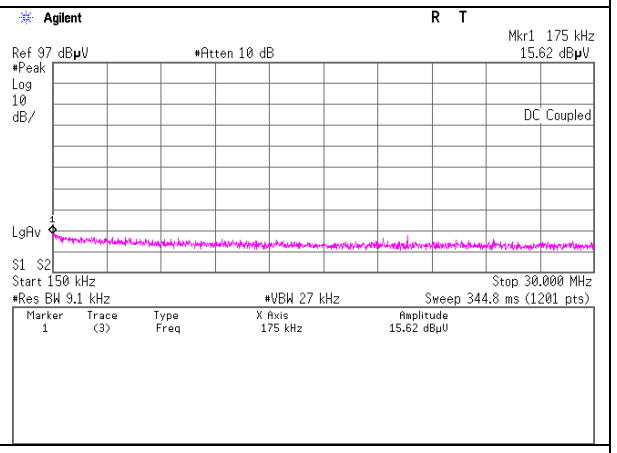
Conducted Spurious Emission

Tx DH5 2402MHz

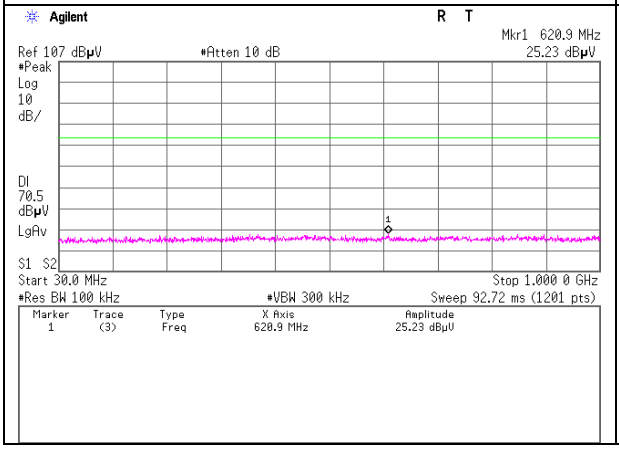
9kHz-150kHz



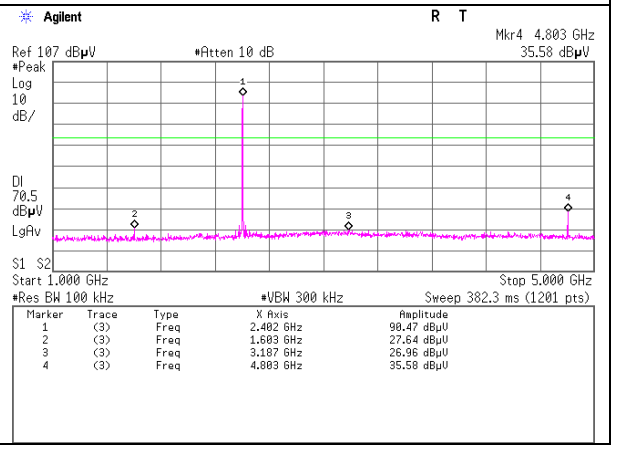
150kHz-30MHz



30MHz-1GHz



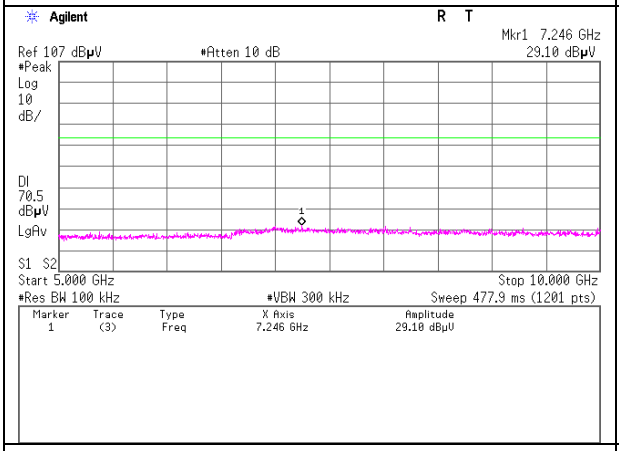
1GHz-5GHz



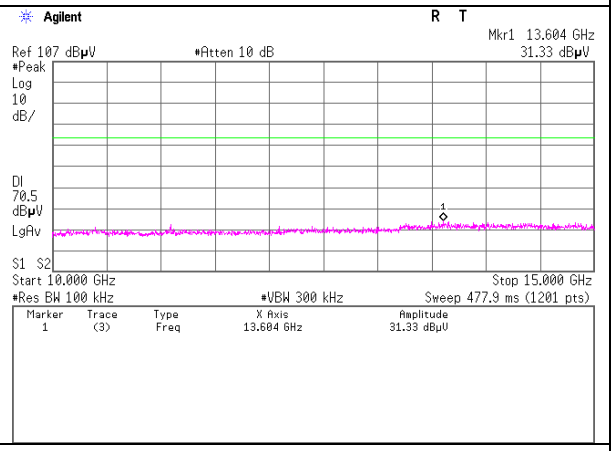
Conducted Spurious Emission

Tx DH5 2402MHz

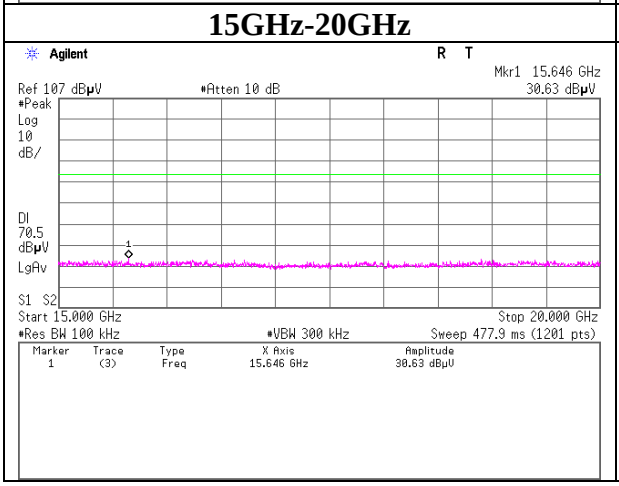
5GHz-10GHz



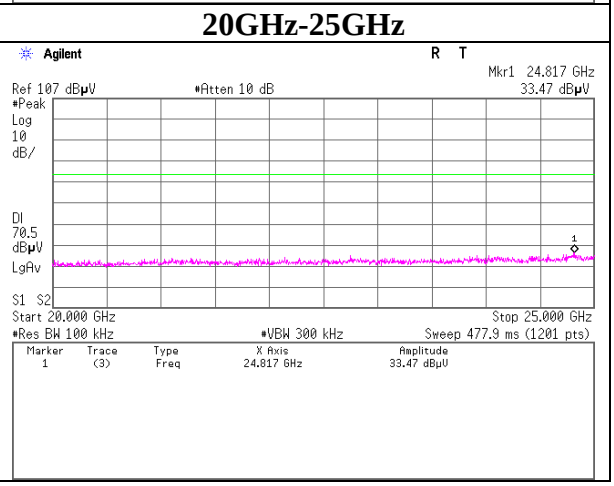
10GHz-15GHz



15GHz-20GHz



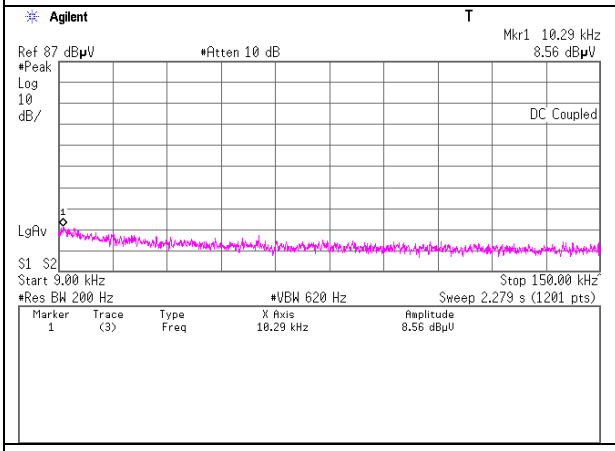
20GHz-25GHz



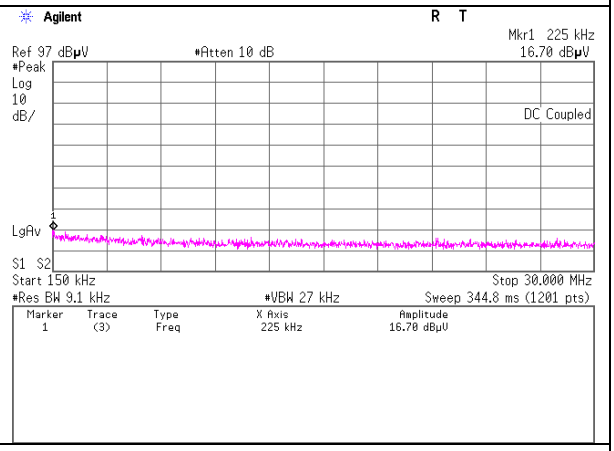
Conducted Spurious Emission

Tx DH5 2441MHz

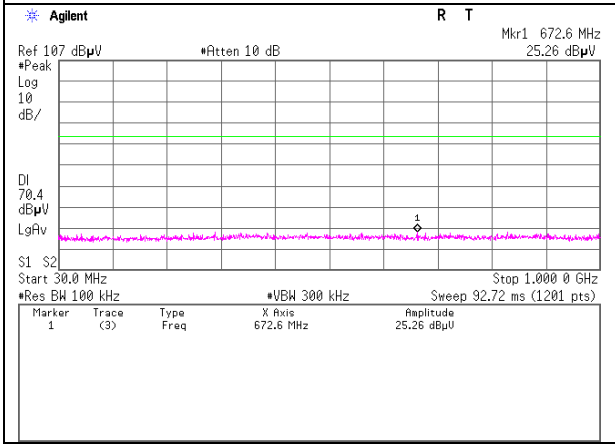
9kHz-150kHz



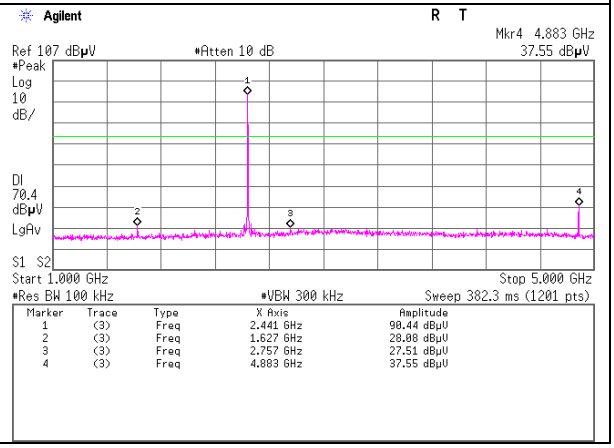
150kHz-30MHz



30MHz-1GHz



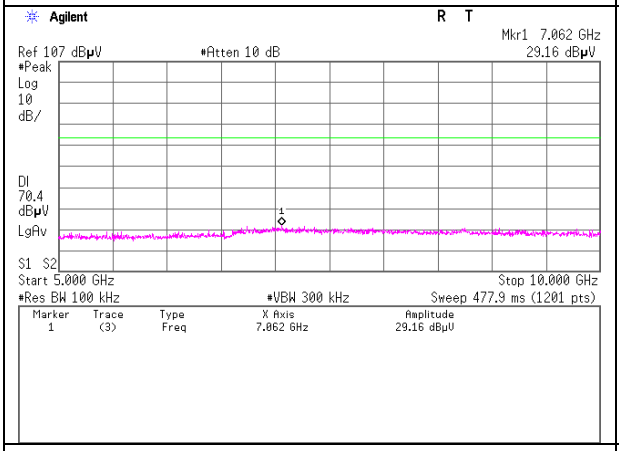
1GHz-5GHz



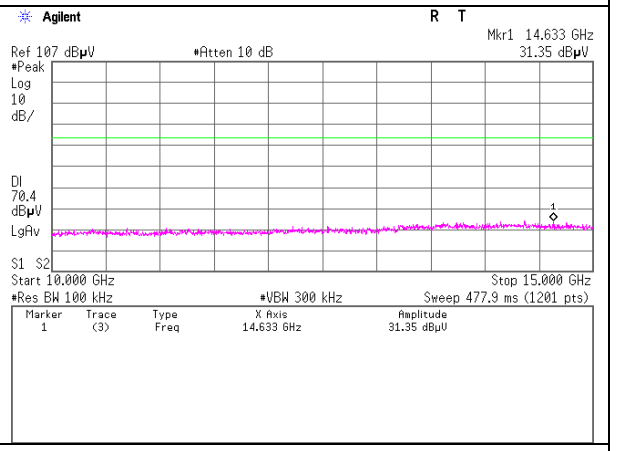
Conducted Spurious Emission

Tx DH5 2441MHz

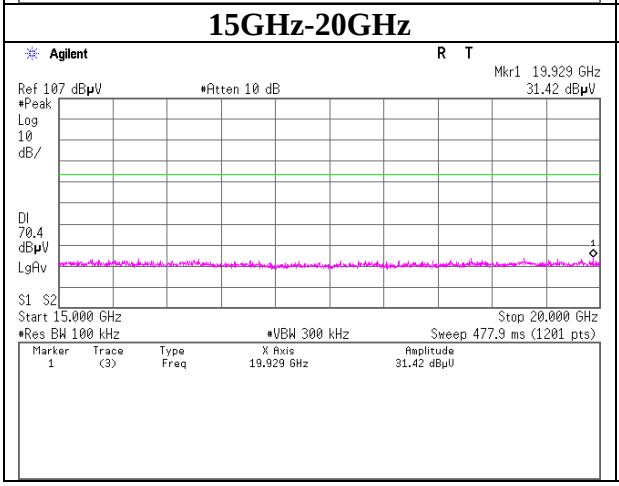
5GHz-10GHz



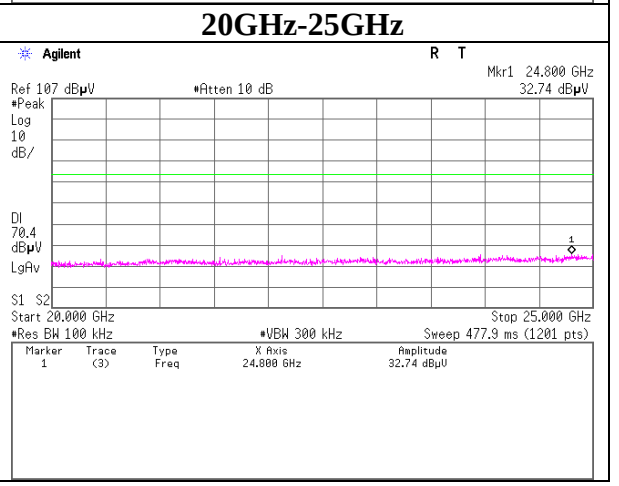
10GHz-15GHz



15GHz-20GHz



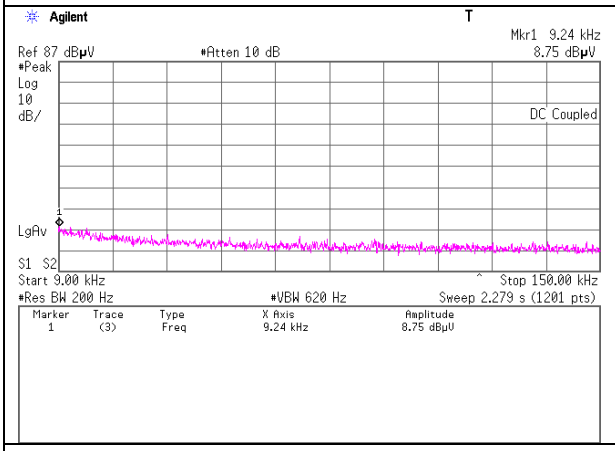
20GHz-25GHz



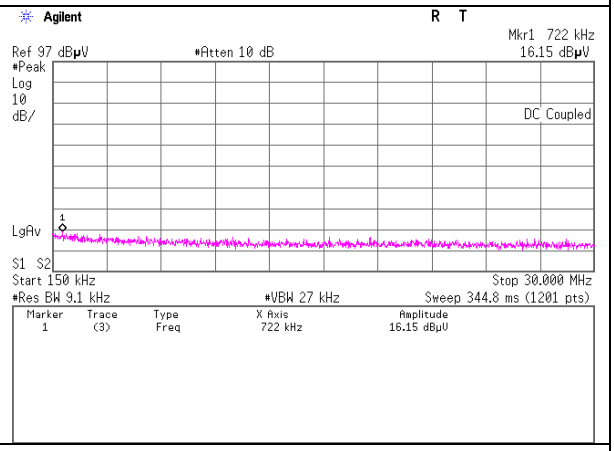
Conducted Spurious Emission

Tx DH5 2480MHz

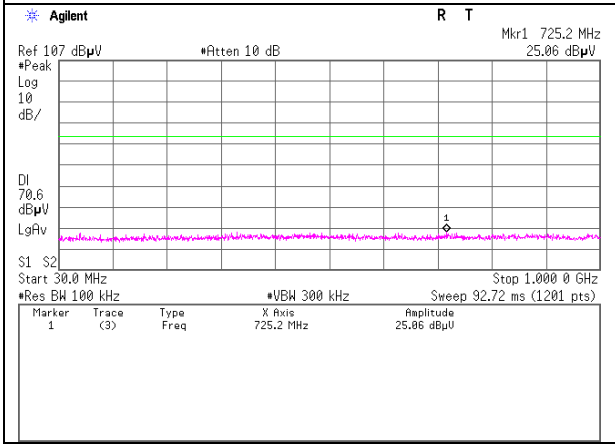
9kHz-150kHz



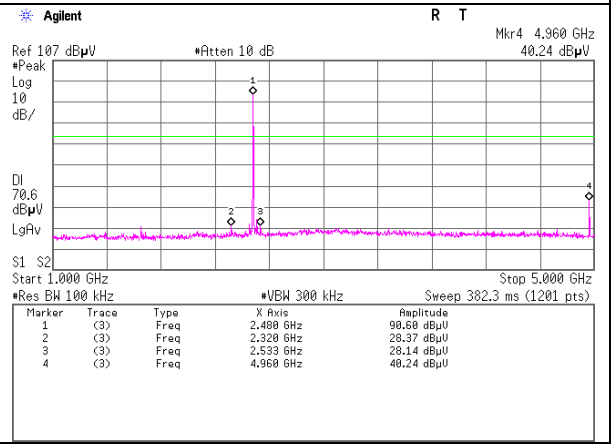
150kHz-30MHz



30MHz-1GHz



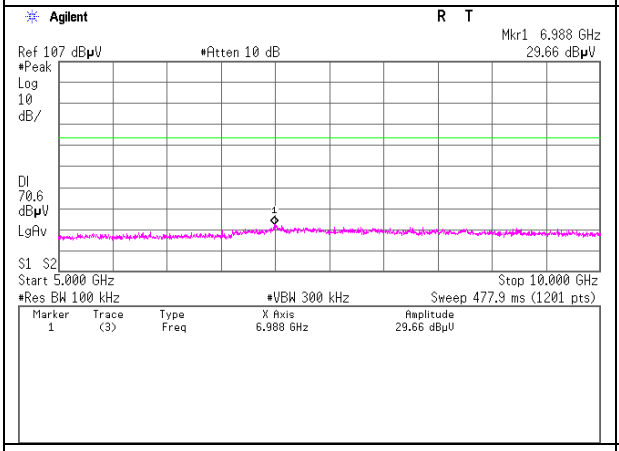
1GHz-5GHz



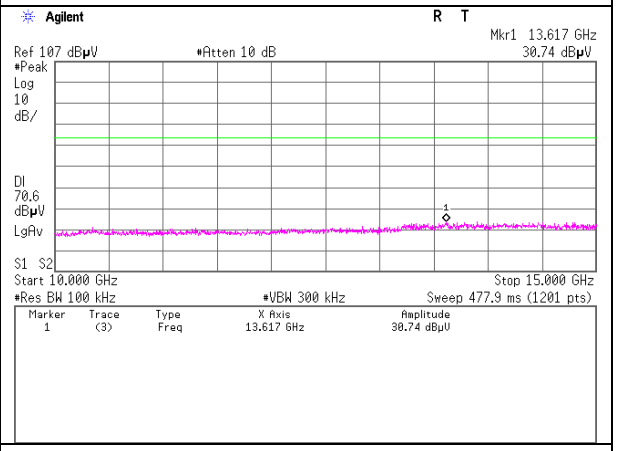
Conducted Spurious Emission

Tx DH5 2480MHz

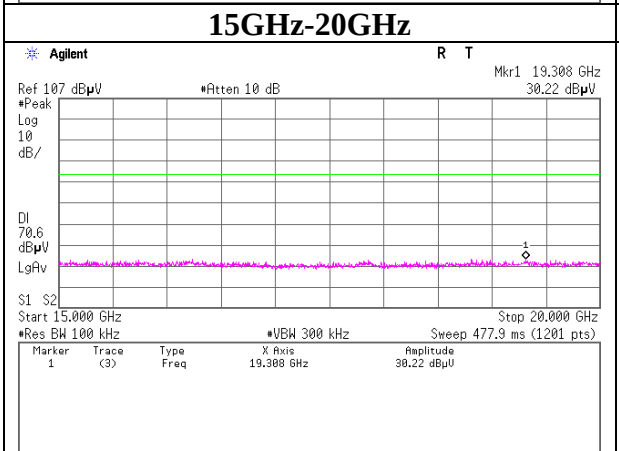
5GHz-10GHz



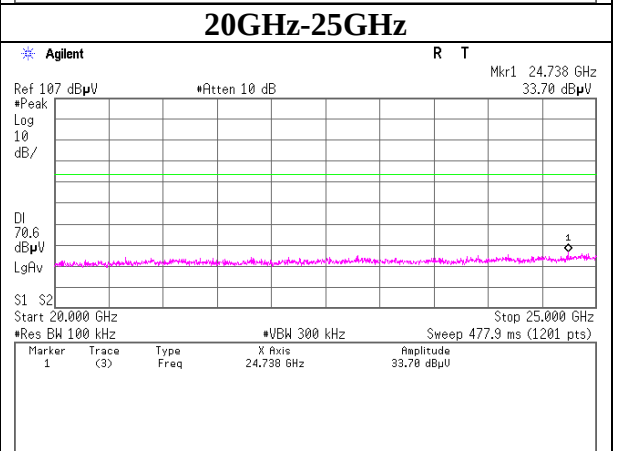
10GHz-15GHz



15GHz-20GHz



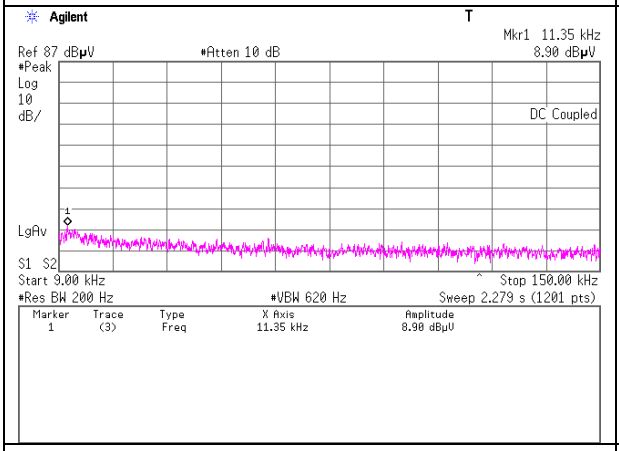
20GHz-25GHz



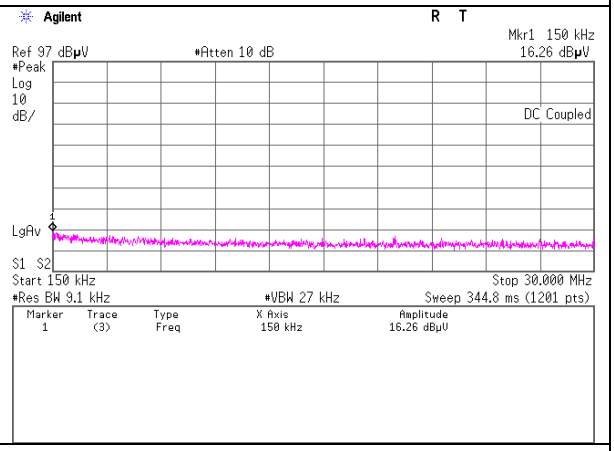
Conducted Spurious Emission

Tx 3DH5 2402MHz

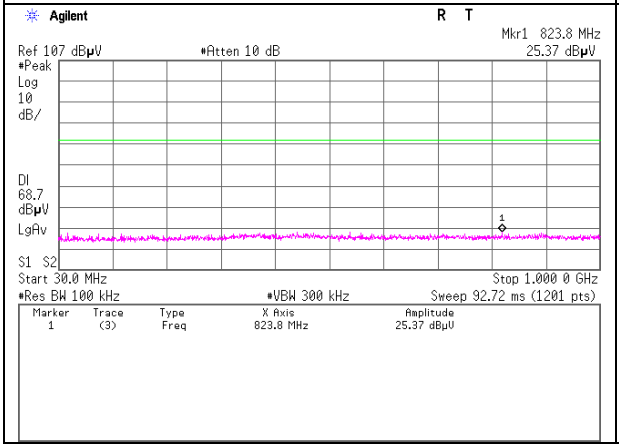
9kHz-150kHz



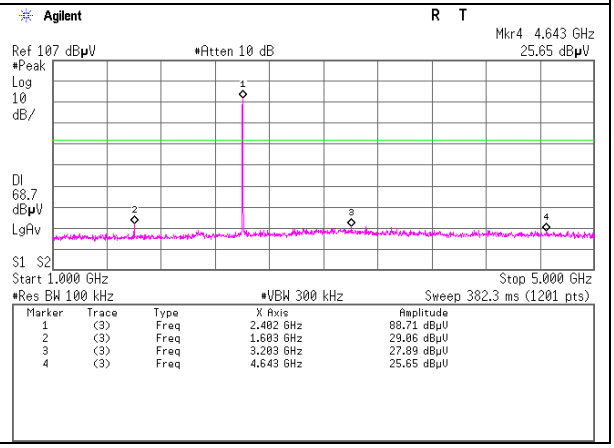
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



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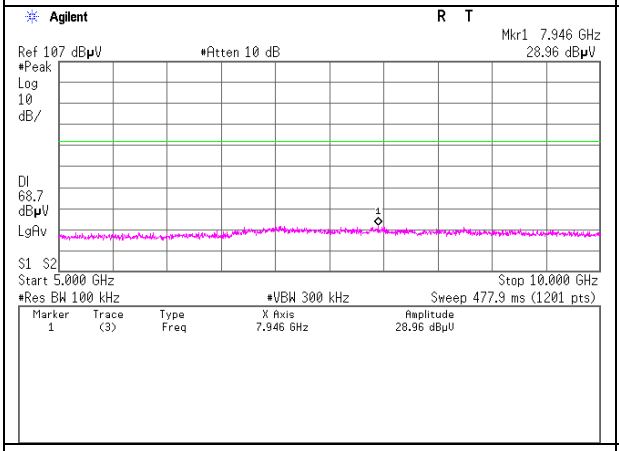
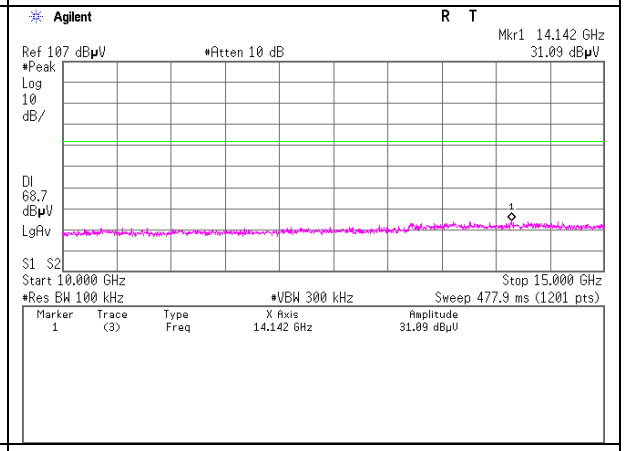
Conducted Spurious Emission

Tx 3DH5 2402MHz

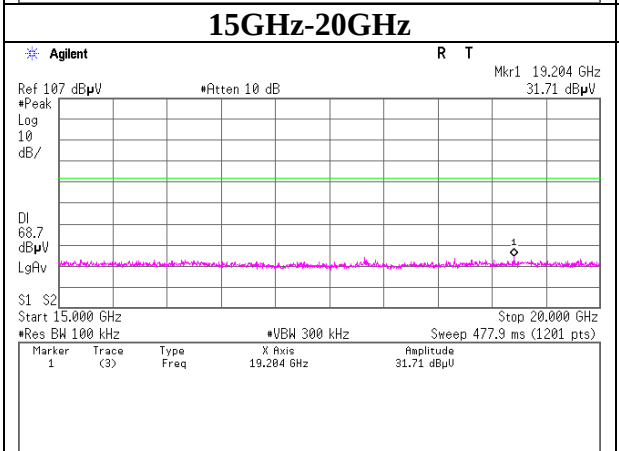
5GHz-10GHz



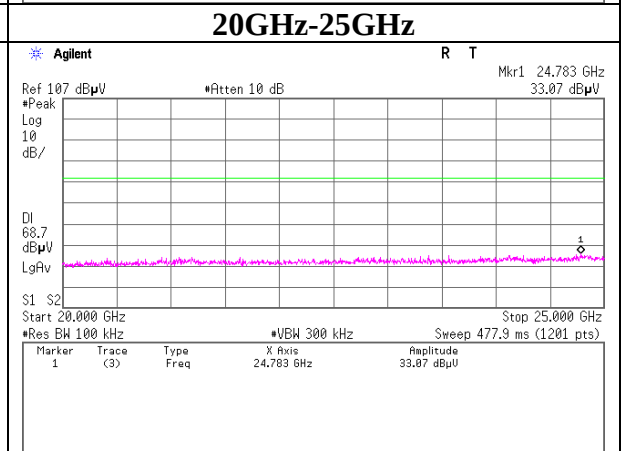
10GHz-15GHz



15GHz-20GHz



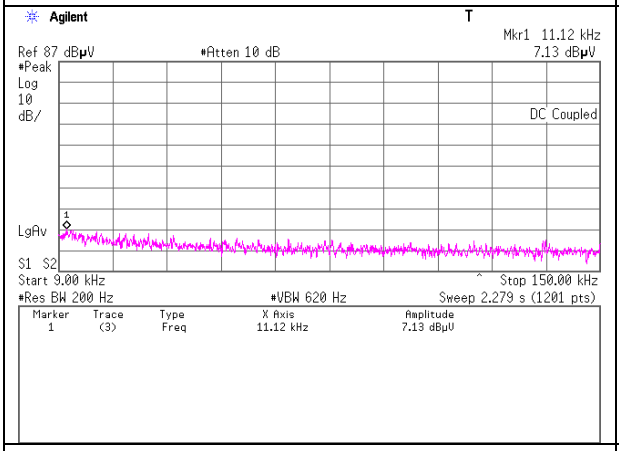
20GHz-25GHz



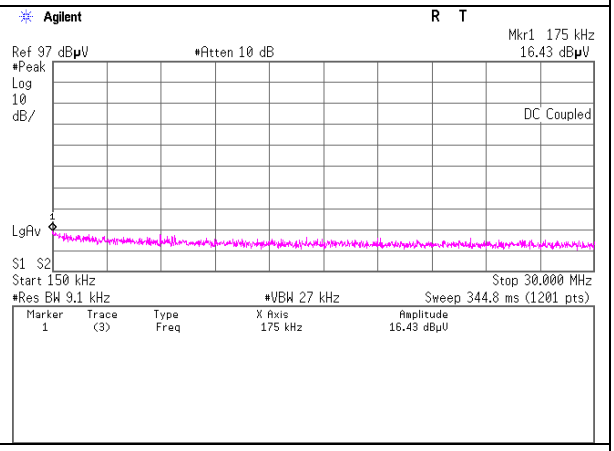
Conducted Spurious Emission

Tx 3DH5 2441MHz

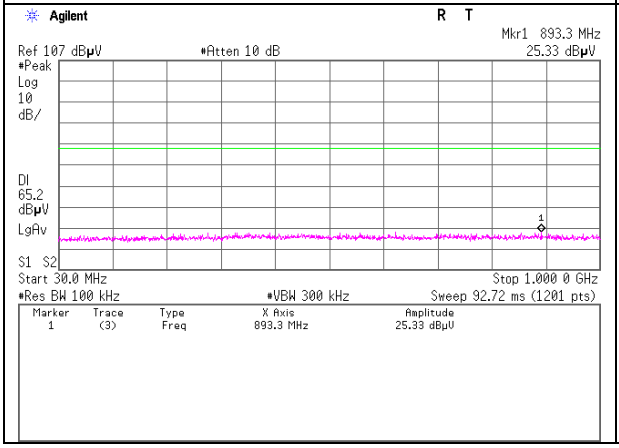
9kHz-150kHz



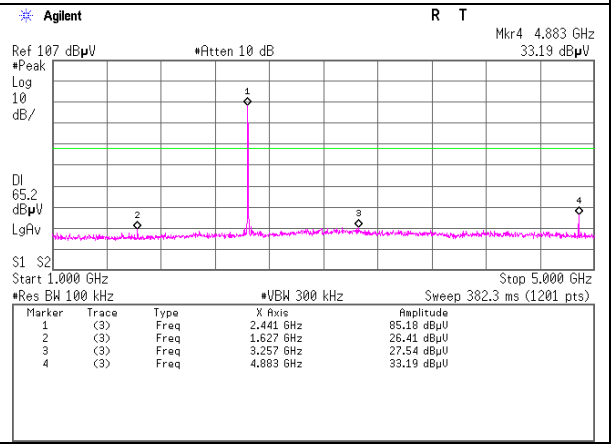
150kHz-30MHz



30MHz-1GHz



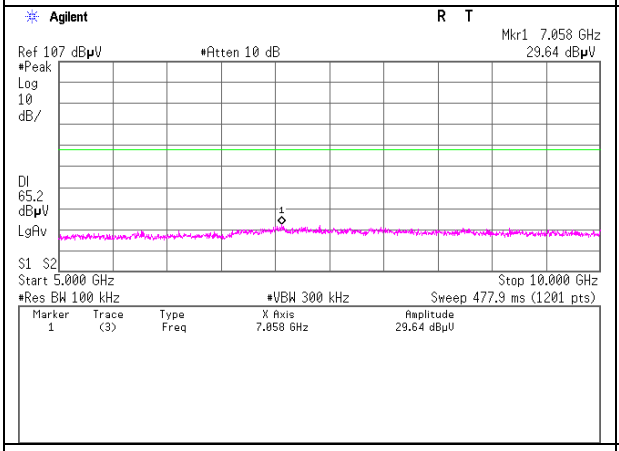
1GHz-5GHz



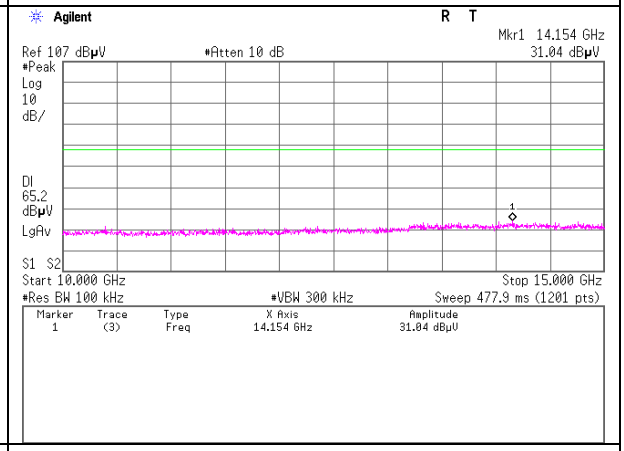
Conducted Spurious Emission

Tx 3DH5 2441MHz

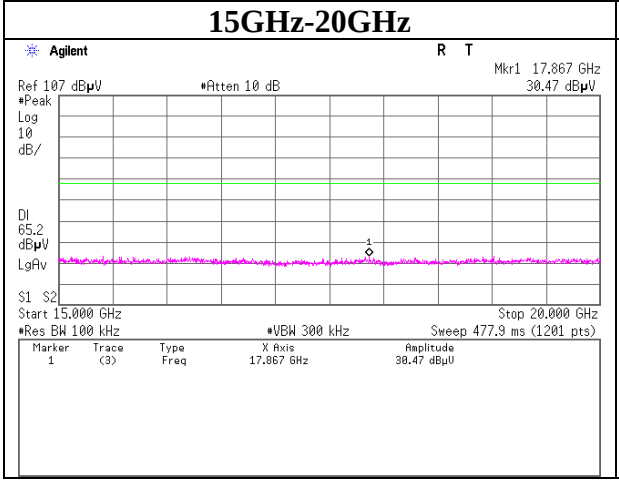
5GHz-10GHz



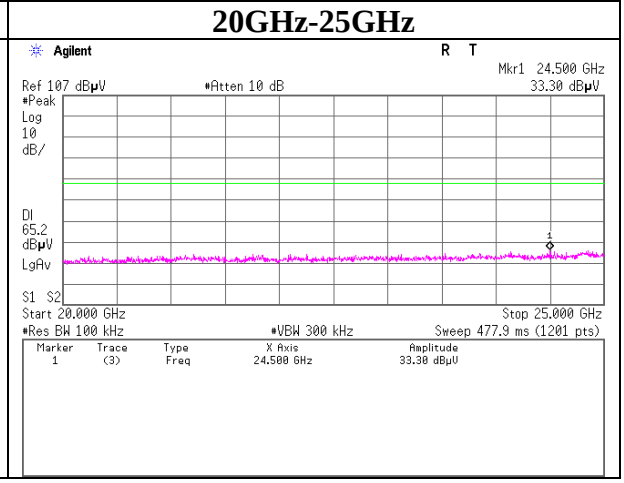
10GHz-15GHz



15GHz-20GHz



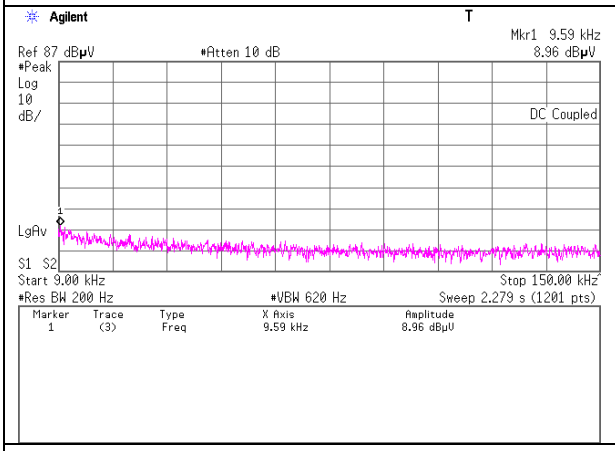
20GHz-25GHz



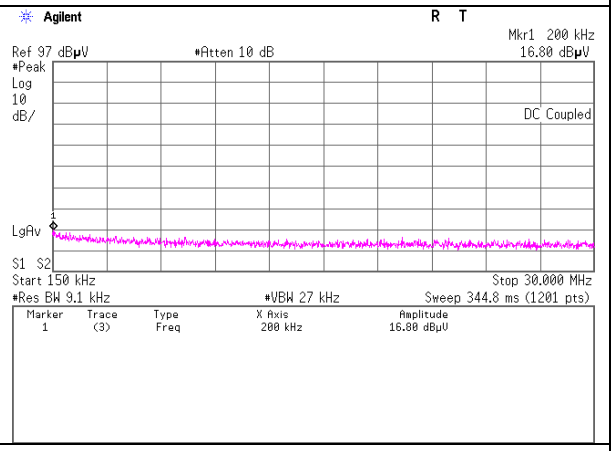
Conducted Spurious Emission

Tx 3DH5 2480MHz

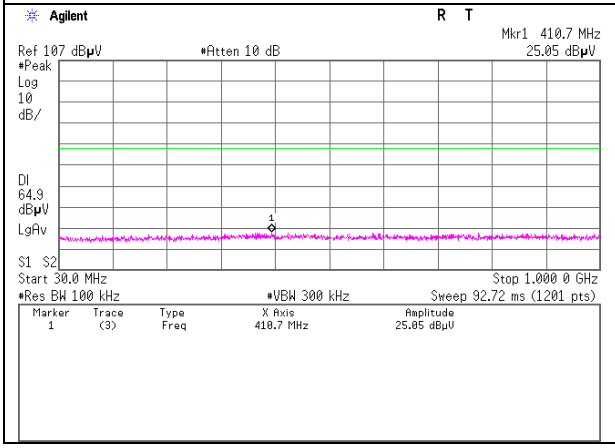
9kHz-150kHz



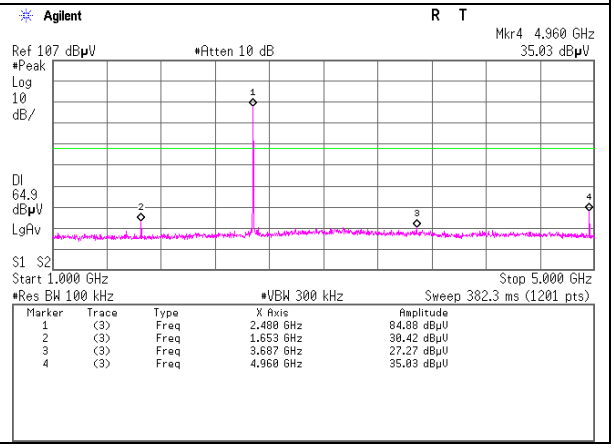
150kHz-30MHz



30MHz-1GHz



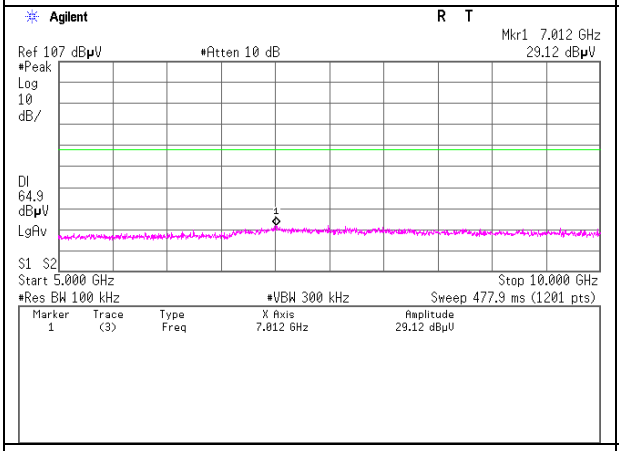
1GHz-5GHz



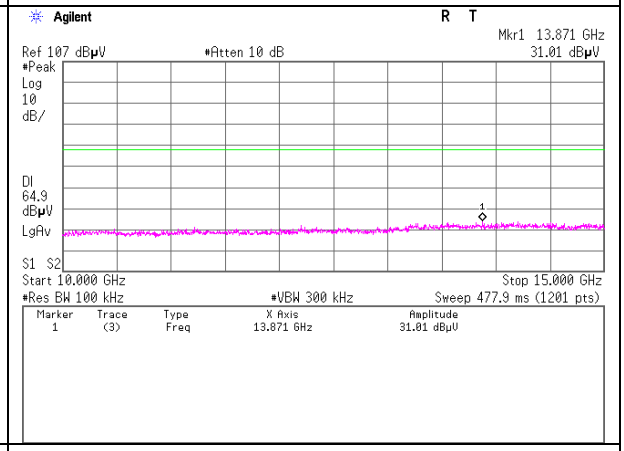
Conducted Spurious Emission

Tx 3DH5 2480MHz

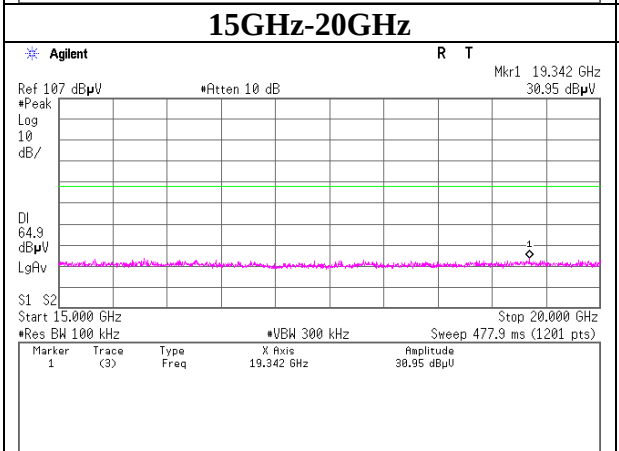
5GHz-10GHz



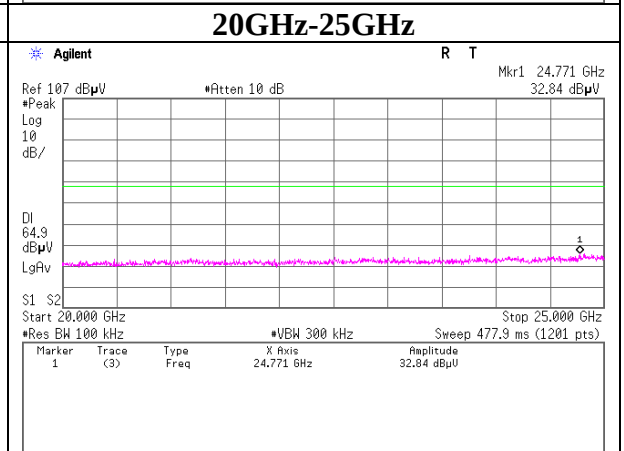
10GHz-15GHz



15GHz-20GHz



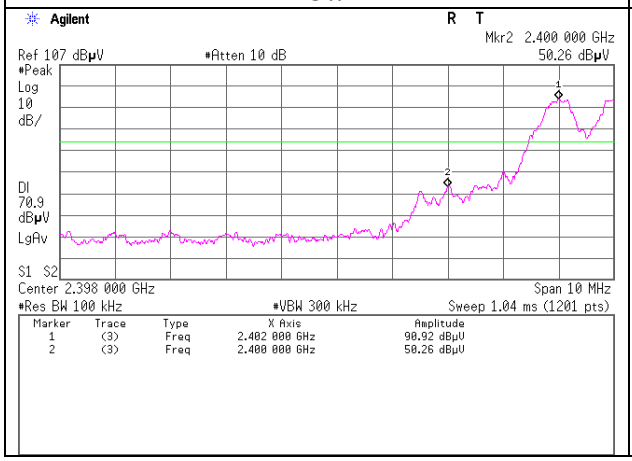
20GHz-25GHz



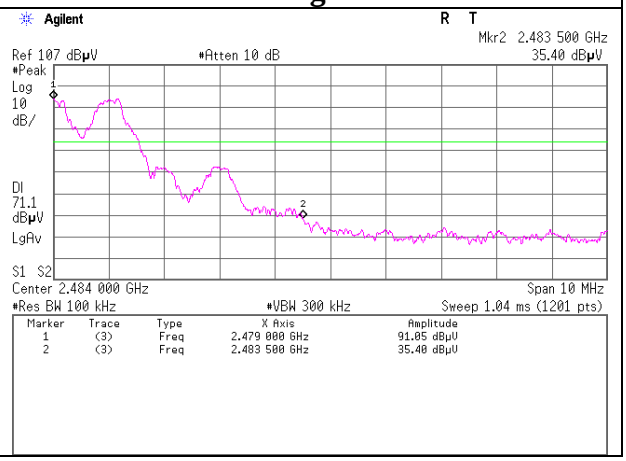
Conducted Emission Band Edge compliance

Tx DH5, Hopping on

Low

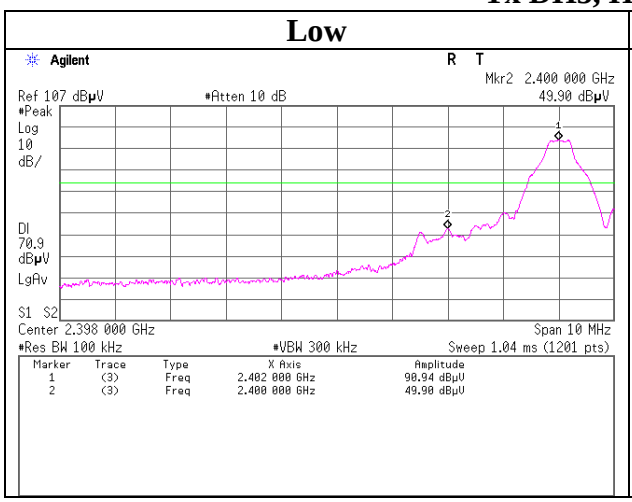


High

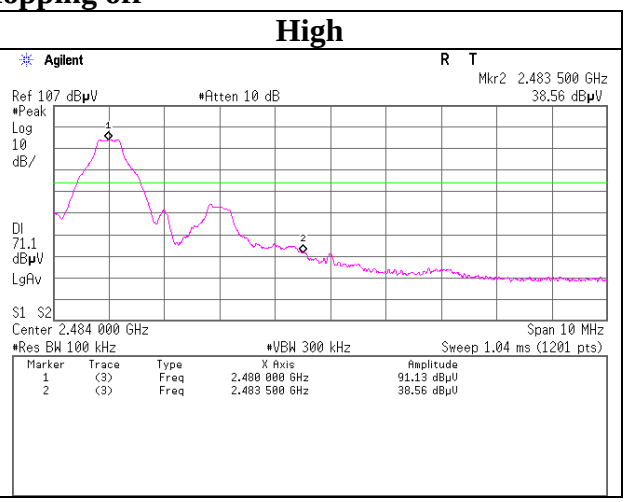


Tx DH5, Hopping off

Low



High



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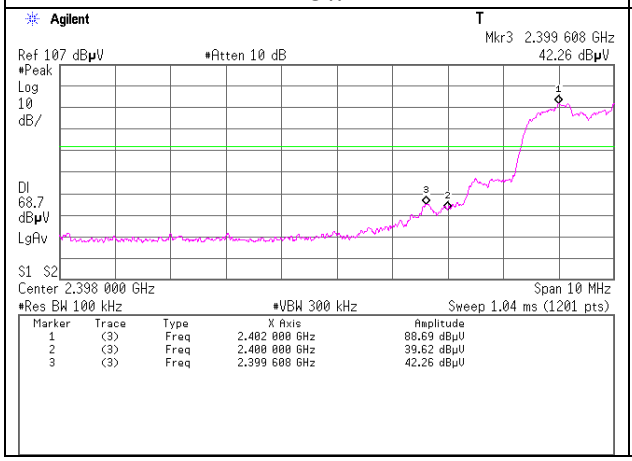
Facsimile : +81 596 24 8124

Conducted Emission Band Edge compliance

Tx 3DH5, Hopping on

Low



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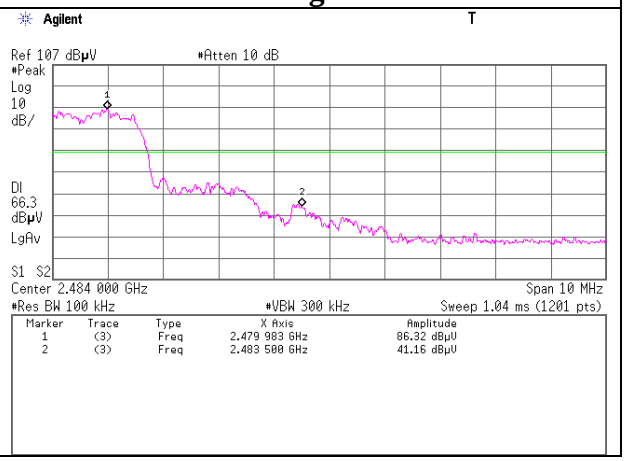
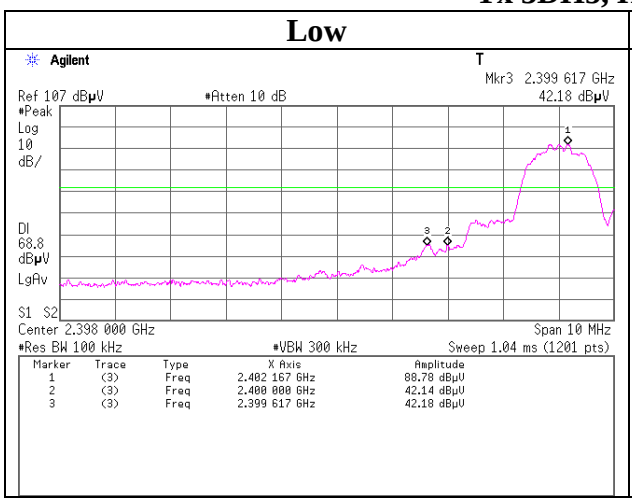
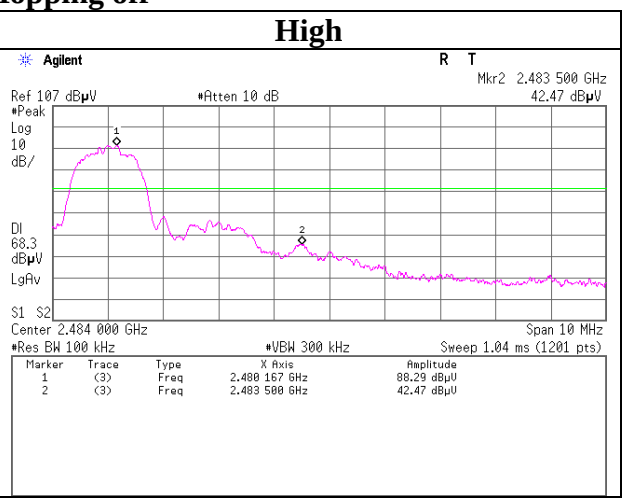


Tx 3DH5, Hopping off

Low



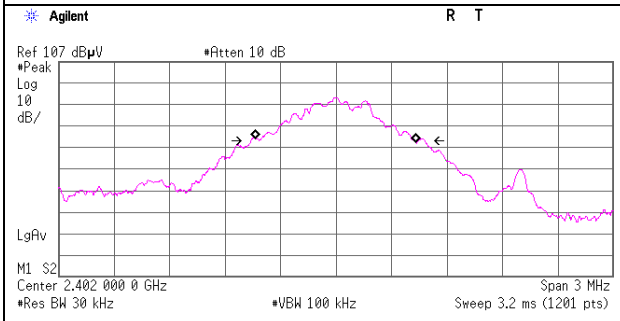
High



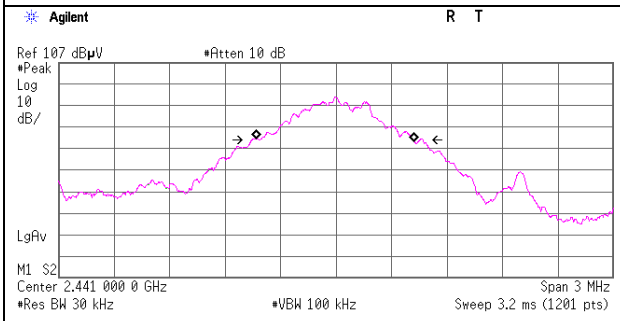
99%Occupied Bandwidth

Tx DH5, Hopping off

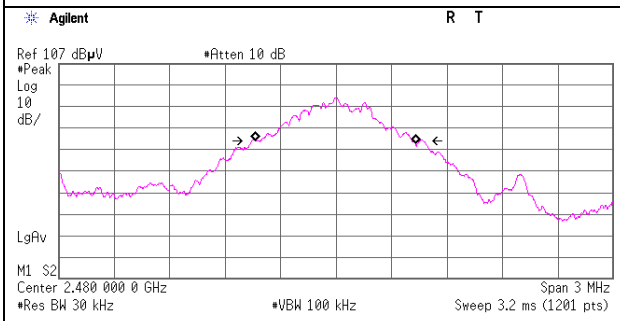
2402MHz



2441MHz

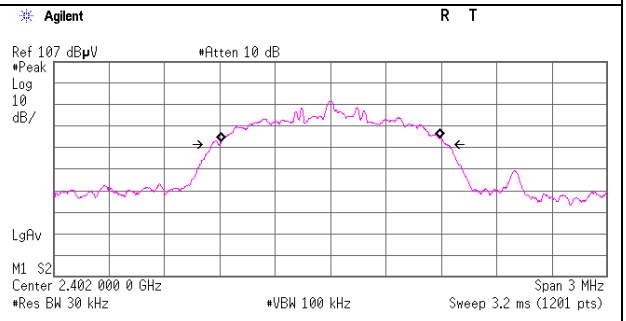


2480MHz

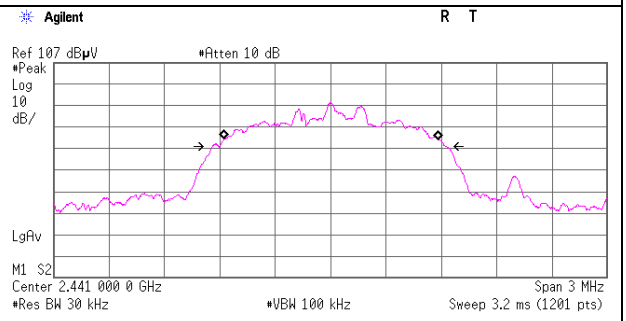


Tx 3DH5, Hopping off

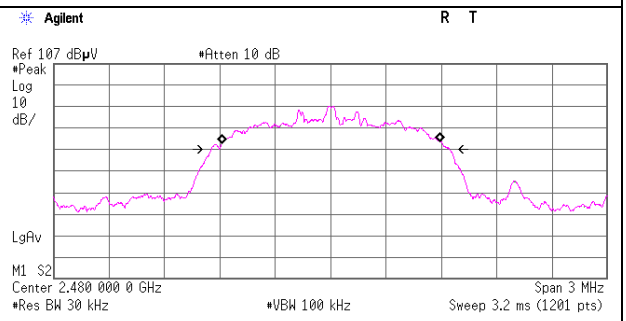
2402MHz



2441MHz

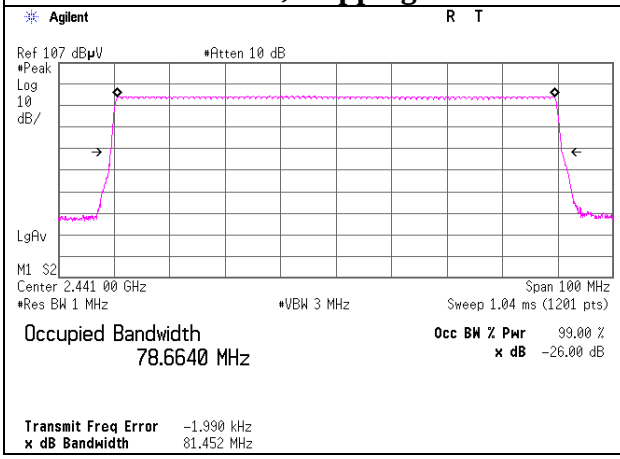


2480MHz

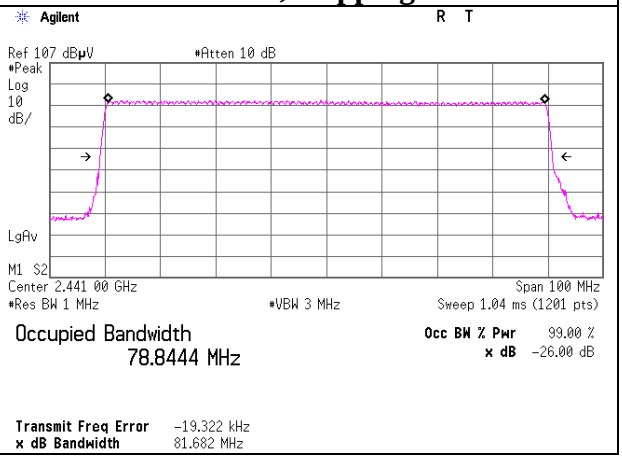


99% Occupied Bandwidth

Tx DH5, Hopping on



Tx 3DH5, Hopping on



APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MRENT-95	Spectrum Analyzer	Agilent	E4440A	MY46185823	AT	2012/06/19 * 12
MPM-08	Power Meter	Anritsu	ML2495A	6K00003338	AT	2012/10/08 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	011737	AT	2012/10/08 * 12
MCC-144	Microwave Cable	Junkosha	MWX221	1207S407	AT	2012/08/03 * 12
MAT-22	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2012/03/27 * 12
MOS-04	Digital Humidity Indicator	N.T	NT-1800	MOS04	AT	2012/02/06 * 12
MMM-16	DIGIITAL HiTESTER	Hioki	3805	070900532	AT	2013/01/08 * 12
MCH-04	Temperature and Humidity Chamber	Tabai Espec	PL-2KP	14015723	AT	2012/08/01 * 12
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE	2012/06/29 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE	2012/02/06 * 12
MJM-14	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	RE	2012/11/20 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE	2012/04/03 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	2012/10/08 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2012/10/08 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2012/02/16 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2012/11/06 * 12
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2012/09/11 * 12
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2012/02/22 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2013/01/10 * 12
MHA-02	Horn Antenna 18-26.5GHz	EMCO	3160-09	1265	RE	2012/02/22 * 12
MCC-132	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336161/4(1m) / 340639(5m)	RE	2012/09/05 * 12
MHF-06	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	RE	2012/05/30 * 12

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