RADIO TEST REPORT

Test Report No. : 32KE0192-HO-A-R1

Applicant	:	**FUJITSU TEN LIMITED**
Type of Equipment	:	**Car Audio**
Model No.	:	**FT0042A**
FCC ID	:	**BABFT0042A**
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.
6. This report is a revised version of 32KE0192-HO-A. 32KE0192-HO-A is replaced with this report.

Date of test: September 3 and 6, 2012

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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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.	:	FT0042A
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 12.0V
Receipt Date of Sample	:	August 24, 2012
Country of Mass-production	:	Japan
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No Modification by the test lab

2.2 Product Description

General Specification

Clock frequency(ies) in the system	:	792MHz

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	:	Inverted F type Antenna
Antenna Gain	:	3.0dBi

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	Test specification: FCC Part 15 Subpart C: 2012, final revised on August 13, 2012 and effective September 12, 2012
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 August 13, 2012 does not affect the test specification applied to the EUT.

* The EUT complies with FCC Part 15 Subpart B: 2012, final revised on July 23, 2012 and effective August 22, 2012.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.4:2003 7. AC powerline conducted emission measurements **IC:** RSS-Gen 7.2.4	**FCC:** Section 15.207 **IC:** RSS-Gen 7.2.4	N/A	N/A *1)	-
Carrier Frequency Separation	**FCC:** FCC Public Notice DA 00-705 **IC:** -	**FCC:** Section15.247(a)(1) **IC:** RSS-210 A8.1 (b)	See data.	Complied	Conducted
20dB Bandwidth	**FCC:** FCC Public Notice DA 00-705 **IC:** -	**FCC:** Section15.247(a)(1) **IC:** RSS-210 A8.1 (a)		-	Conducted
Number of Hopping Frequency	**FCC:** FCC Public Notice DA 00-705 **IC:** -	**FCC:** Section15.247(a)(1)(iii) **IC:** RSS-210 A8.1 (d)		Complied	Conducted
Dwell time	**FCC:** FCC Public Notice DA 00-705 **IC:** -	**FCC:** Section15.247(a)(1)(iii) **IC:** RSS-210 A8.1 (d)		Complied	Conducted
Maximum Peak Output Power	**FCC:** FCC Public Notice DA 00-705 **IC:** RSS-Gen 4.8	**FCC:** Section15.247(a)(b)(1) **IC:** RSS-210 A8.4 (2)		Complied	Conducted
Spurious Emission & Band Edge Compliance	**FCC:** FCC Public Notice DA 00-705 **IC:** RSS-Gen 4.9	**FCC:** Section15.247(d) **IC:** RSS-210 A8.5 RSS-Gen 6 and 7.2.3	7.8dB 940.421MHz, QP, 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.

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 (10m*)(±dB)**		
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz
No.1	4.2dB	5.0dB	4.8dB
No.2	-	-	-
No.3	-	-	-
No.4	-	-	-

*10m = Measurement distance

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 test report has enough margin, more than the site margin.

3.5 Test Location

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

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

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

Refer to APPENDIX.

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

4.1 Operating Mode(s)

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

Details of Operating Mode(s)

Test Item	Mode	Tested frequency
Spurious Emission (Radiated)	Tx (Hopping off) DH5, 3DH5	2402MHz 2441MHz 2480MHz
Carrier Frequency Separation	Tx (Hopping on) DH5, 3DH5	2402MHz 2441MHz 2480MHz
20dB Bandwidth	Tx (Hopping off) 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	-
Maximum Peak Output Power	Tx (Hopping off) DH5, 3DH5	2402MHz 2441MHz 2480MHz
Band Edge Compliance (Conducted)	Tx DH5, 3DH5 -Hopping on -Hopping off	2402MHz 2480MHz
99% Occupied Bandwidth	Tx DH5, 3DH5 -Hopping on -Hopping off	2402MHz 2441MHz 2480MHz

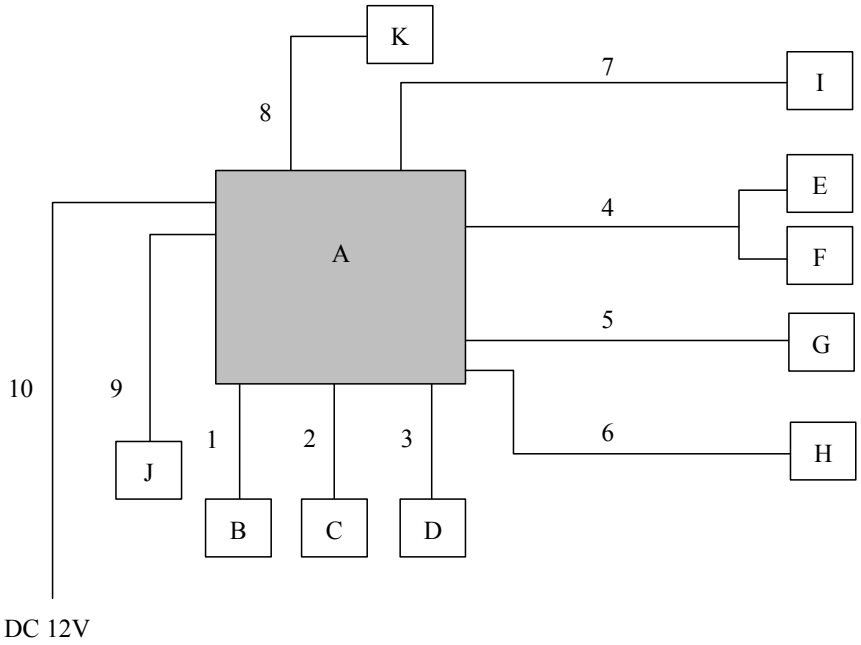
* EUT does not have Inquiry mode

*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: Same as production model
Software: Diag. mode(BT Certification mode)

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	FT0042A	-	FUJITSU TEN	EUT
B	Display	134000-7780A101	3H800017	FUJITSU TEN	-
C	USB connecter Box	84780-48080	-	Tokai-rika	-
D	Simple remote Device	86300-72020	86300-72020	Tokai-rika	-
E	Steering SW Right	84250-28150	-	Tokai-rika	-
F	Steering SW Left	84250-28150	-	Tokai-rika	-
G	Microphone	86730-20030	-	KOJIMA PRESS	-
H	Back Camera	86790-20070	-	FUJITSU TEN	-
I	Antenna amplifier	146000-09810101	PJ401571	FUJITSU TEN	-
J	GPS antenna	195000-04800700	-	DENSO	-
K	External amplifier	86100-W250	2333105	Harman	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Display Cable	3.0	Unshielded	Unshielded	-
2	USB Cable	3.0	Shielded	Shielded	-
3	Signal Cable	4.0	Unshielded	Unshielded	-
4	Signal Cable	4.0	Unshielded	Unshielded	-
5	Microphone Cable	6.0	Shielded	Shielded	-
6	Camera Cable	15.0	Shielded	Shielded	-
7	AMP Cable	4.0	Unshielded	Unshielded	-
8	AMP Cable	4.0	Unshielded	Unshielded	-
9	GPS Antenna Cable	4.5	Shielded	Shielded	-
10	DC Cable	1.5	Unshielded	Unshielded	-

SECTION 5: Radiated Spurious Emission

Test Procedure

EUT was placed on a urethane platform of nominal size, 1.0m by 2.5m, raised 0.8m above the conducting ground plane.
The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.
The height of the measuring antenna varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.
The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.
The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Test Antennas are used as below;

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

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

*1) The Spectrum Analyzer was used in 3dB resolution bandwidth.
*2) Although 00-705 accepts VBW=10Hz for AV measurements, confirmed that superfluous smoothing was not performed.
*3) 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 : 30MHz-26.5GHz
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.6 Measurement Room
Report No.	32KE0192-HO
Date	09/06/2012
Temperature/ Humidity	24deg. C / 68% RH
Engineer	Yutaka Yoshida
Mode	Tx (Hopping on) DH5/3DH5

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

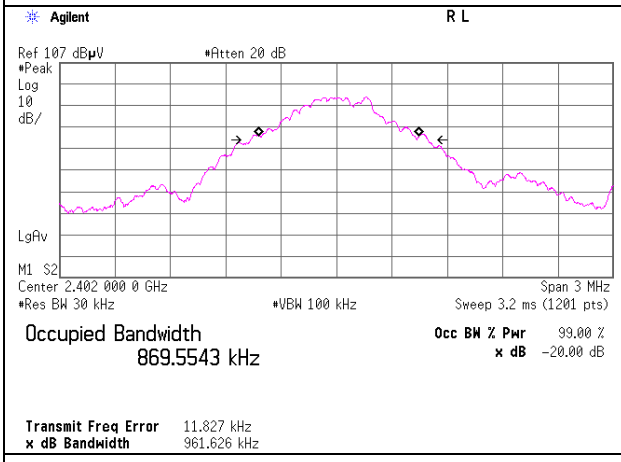
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
No limit applies to 20dB Bandwidth.

20dB Bandwidth and Carrier Frequency Separation

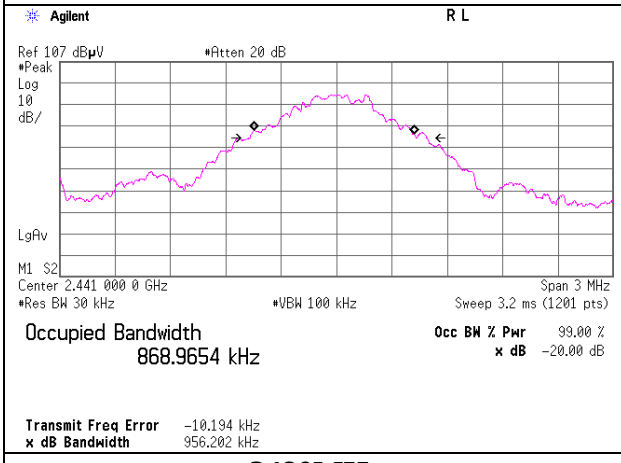
Tx DH5

20dB Bandwidth

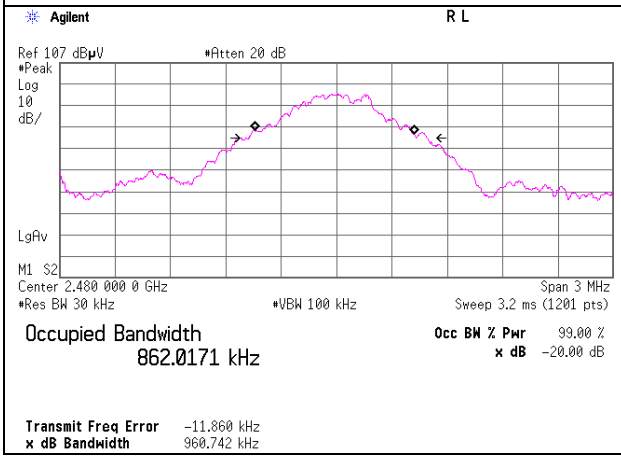
2402MHz



2441MHz

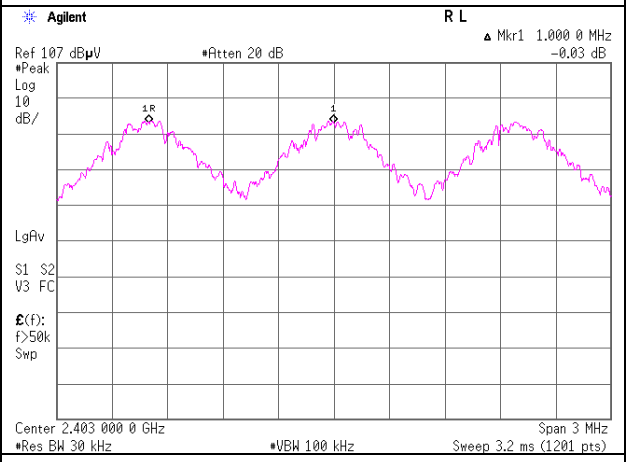


2480MHz



Carrier Frequency Separation

2402MHz



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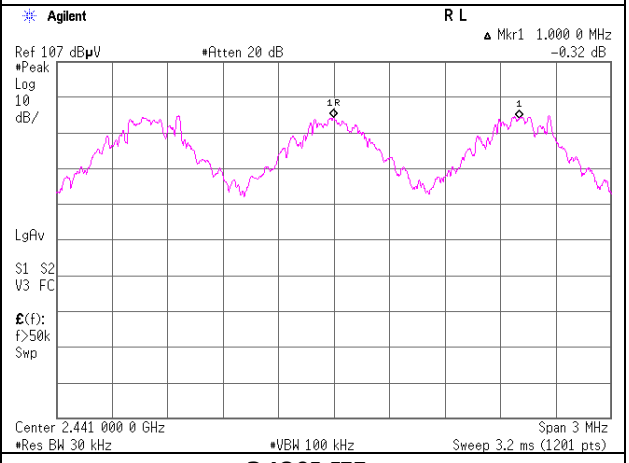
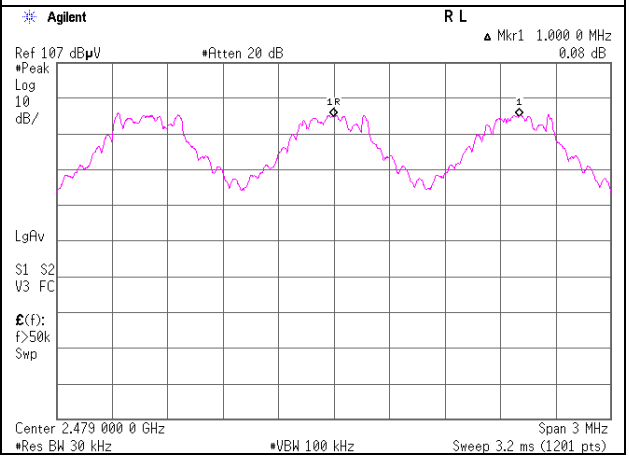


2480MHz



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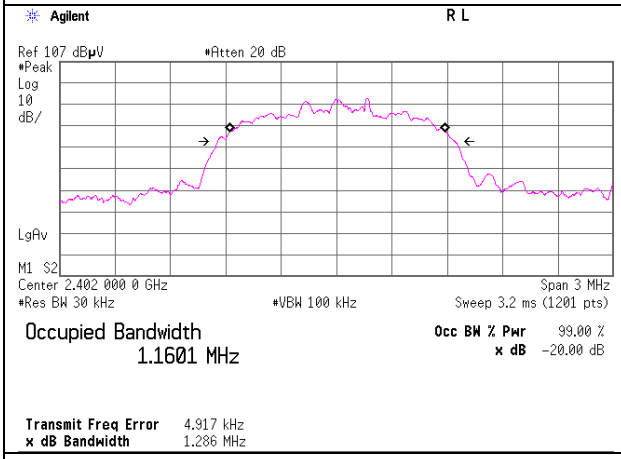
20dB Bandwidth and Carrier Frequency Separation

Tx 3DH5

20dB Bandwidth

2402MHz



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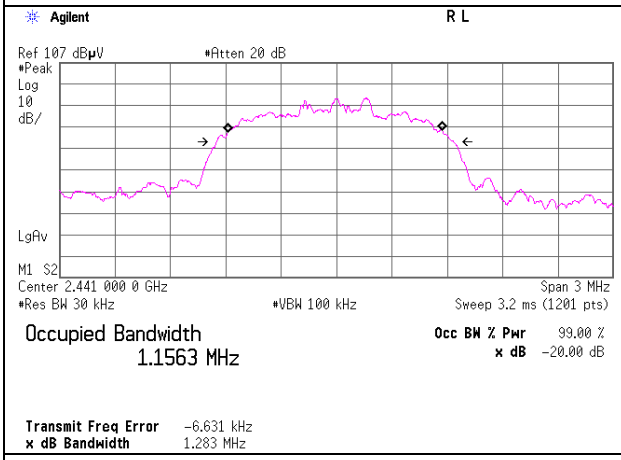
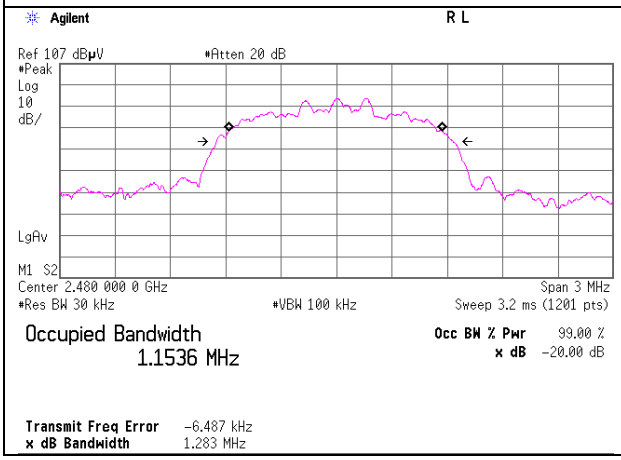
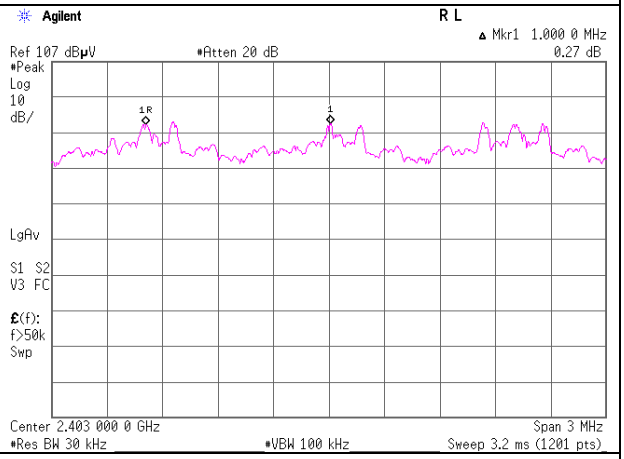


2480MHz

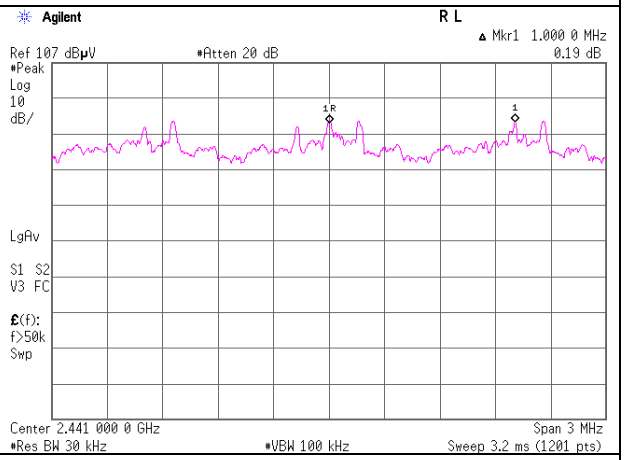


Carrier Frequency Separation

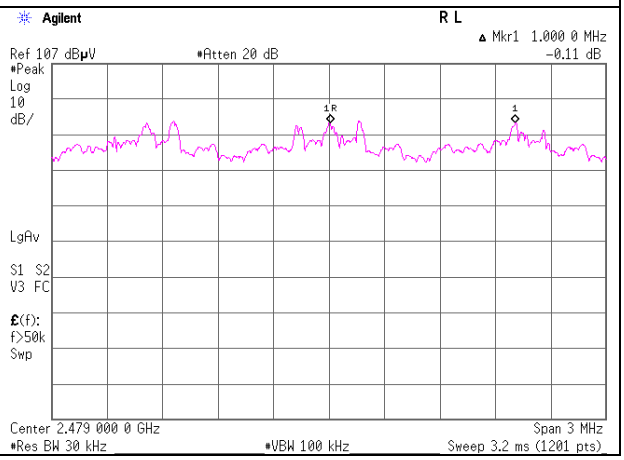
2402MHz



2441MHz



2480MHz



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Number of Hopping Frequency

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0192-HO
Date	09/06/2012
Temperature/ Humidity	24deg. C / 68% RH
Engineer	Yutaka Yoshida
Mode	Tx (Hopping on) DH5/3DH5

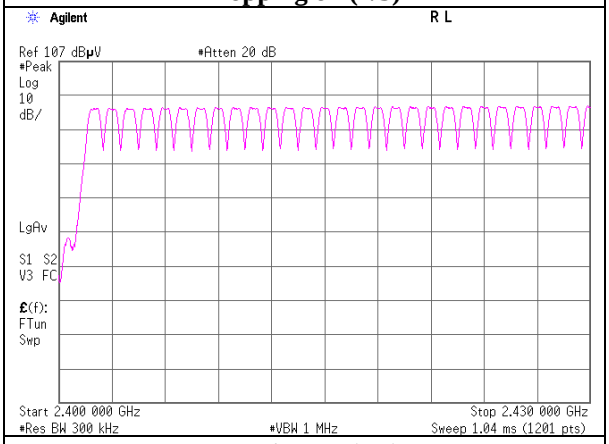
Mode	Number of channel [times]	Limit [times]
DH5	79	>= 15
3DH5	79	>= 15

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

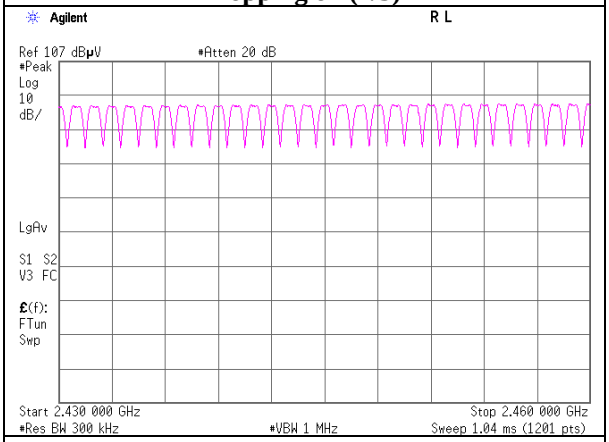
Number of Hopping Frequency

Tx DH5

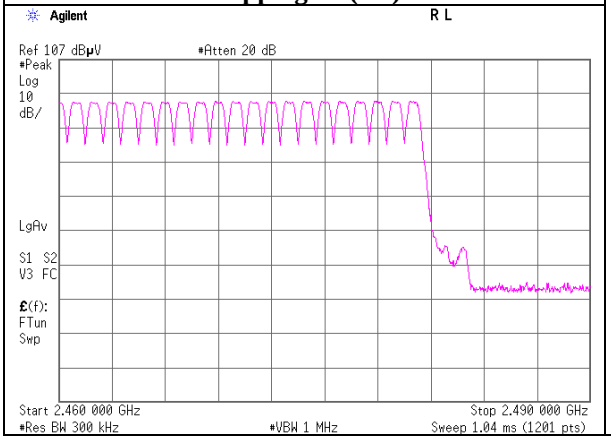
Hopping on (1/3)



Hopping on (2/3)

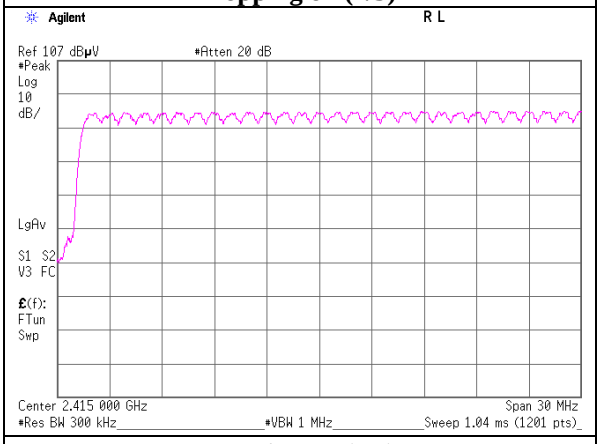


Hopping on (3/3)

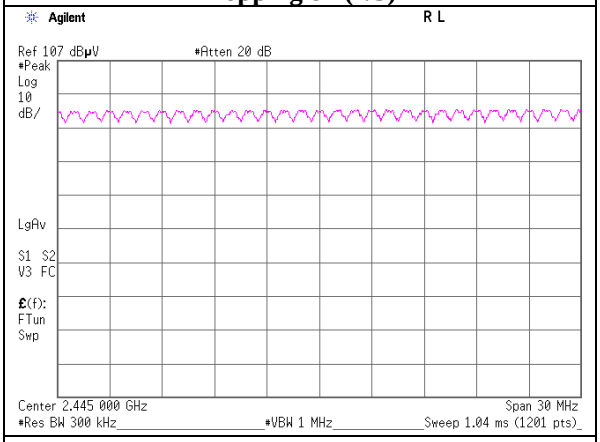


Tx 3DH5

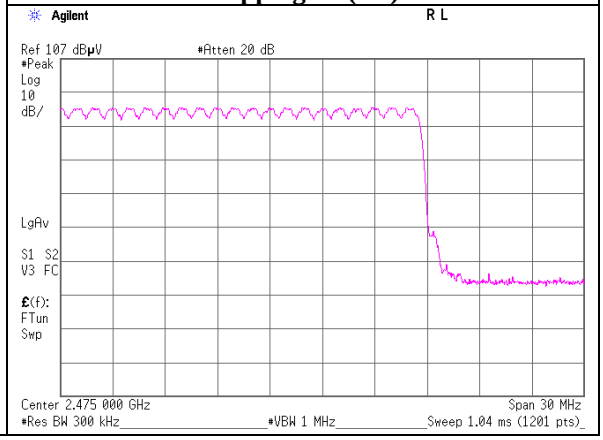
Hopping on (1/3)



Hopping on (2/3)



Hopping on (3/3)



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Dwell time

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0192-HO
Date	09/06/2012
Temperature/ Humidity	24deg.C / 68% RH
Engineer	Yutaka Yoshida
Mode	Tx (Hopping on) DH5/3DH5

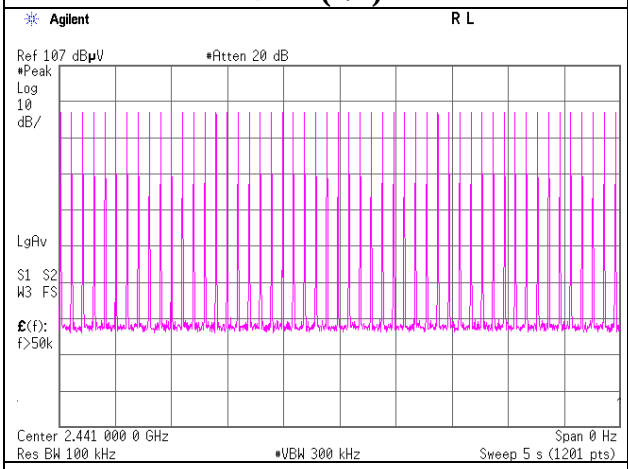
Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period					Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	51.0 times	/	5 sec.	x	31.6 sec. = 323 times	0.410	133	400
DH3	26.0 times	/	5 sec.	x	31.6 sec. = 165 times	1.507	249	400
DH5	17.0 times	/	5 sec.	x	31.6 sec. = 108 times	2.920	315	400
3DH1	51.0 times	/	5 sec.	x	31.6 sec. = 323 times	0.424	137	400
3DH3	26.0 times	/	5 sec.	x	31.6 sec. = 165 times	1.682	278	400
3DH5	17.0 times	/	5 sec.	x	31.6 sec. = 108 times	2.937	317	400

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

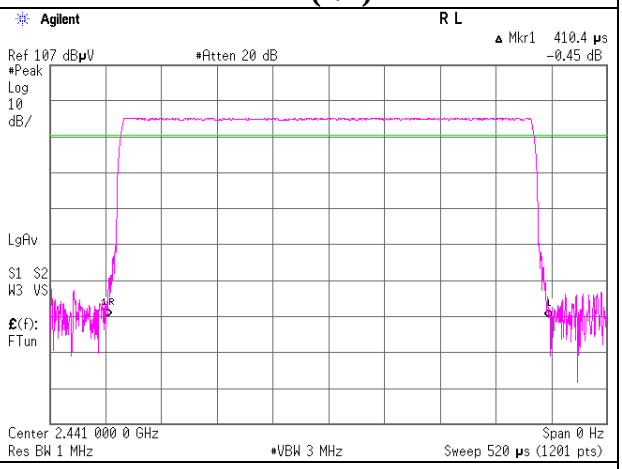
This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in N x 0.4s, where N is the number of channels being used in the hopping sequence ($20 \leq N \leq 79$), is always less than 0.4s regardless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

Dwell time

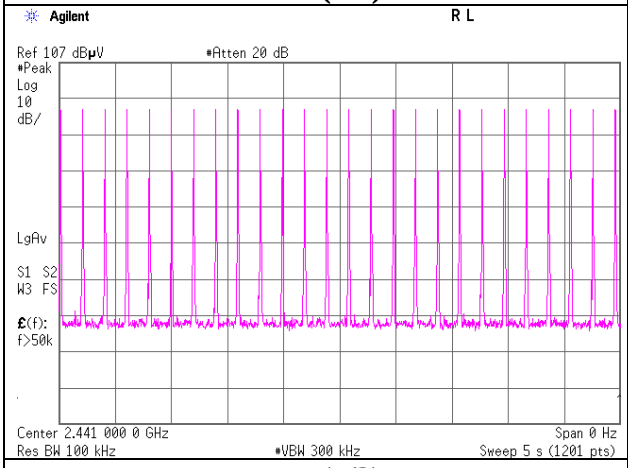
DH1 (1/2)



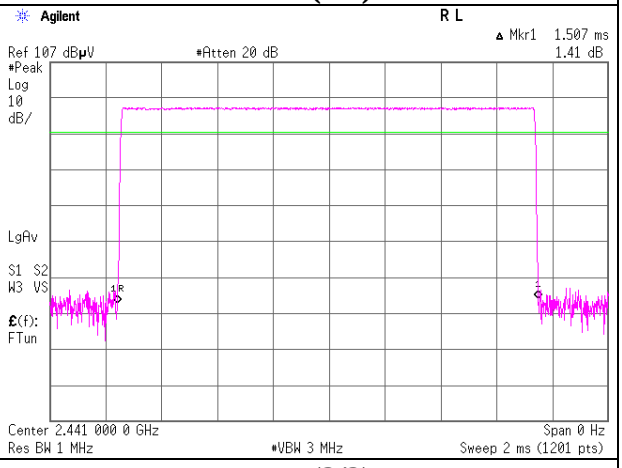
DH1 (2/2)



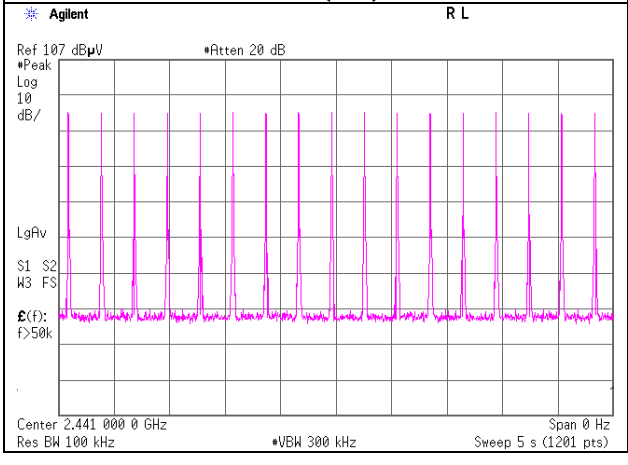
DH3 (1/2)



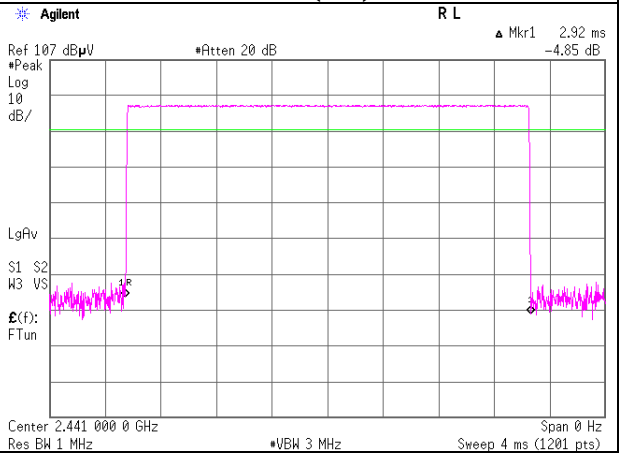
DH3 (2/2)



DH5 (1/2)



DH5 (2/2)



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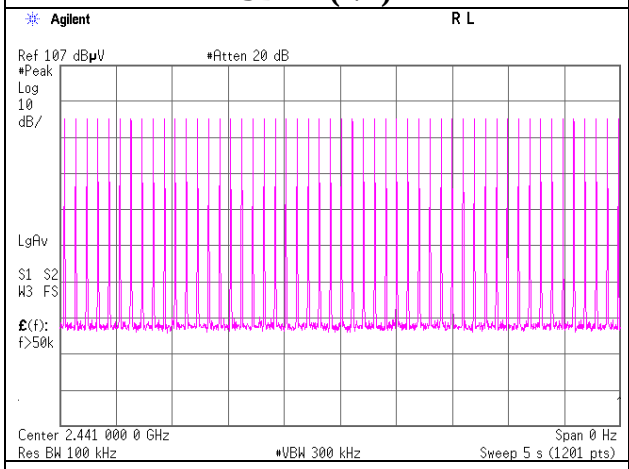
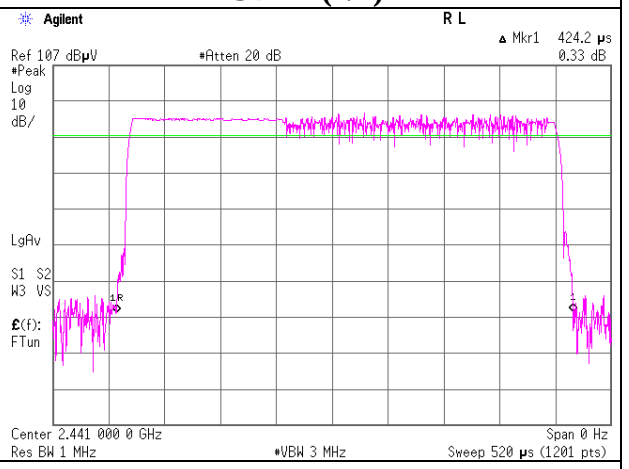
Dwell time

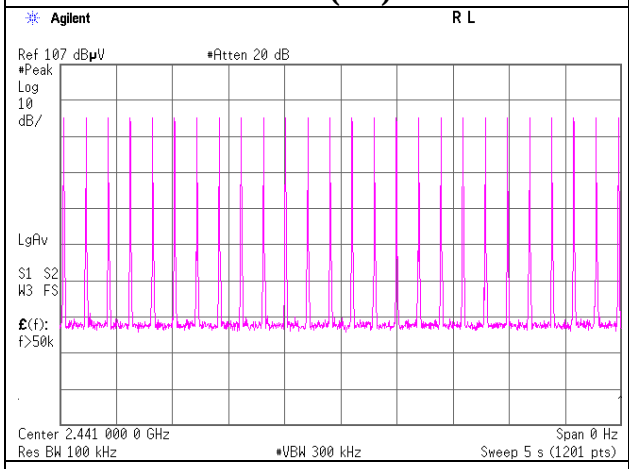
3DH1 (1/2)



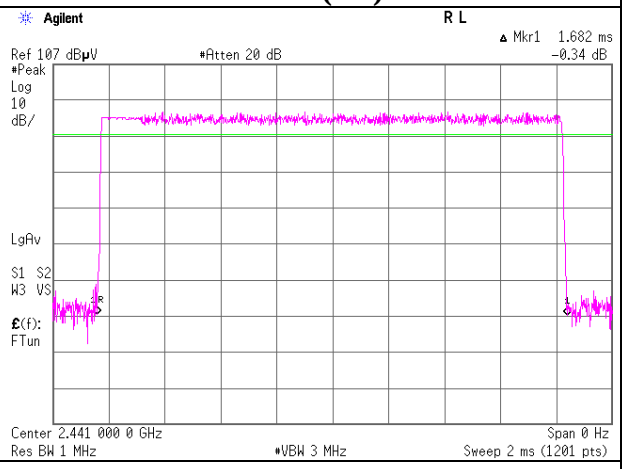
3DH1 (2/2)



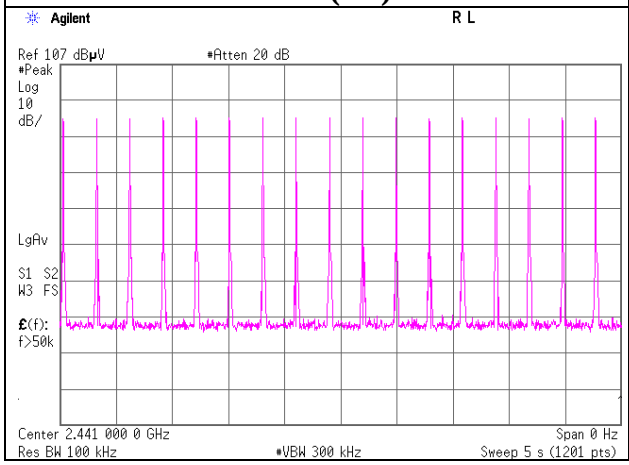
3DH3 (1/2)



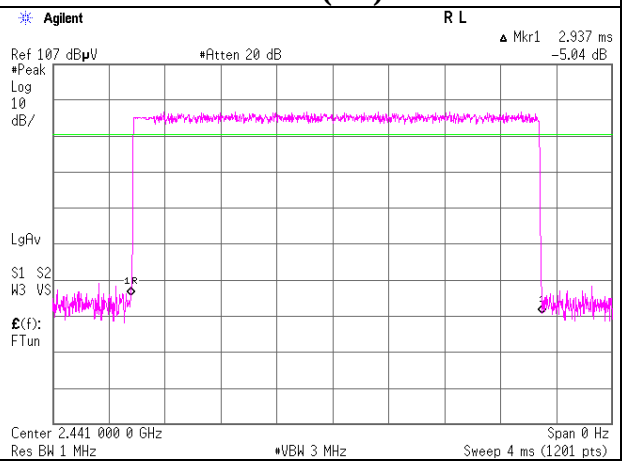
3DH3 (2/2)



3DH5 (1/2)



3DH5 (2/2)



Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0192-HO
Date	09/06/2012
Temperature/ Humidity	24deg. C / 68% RH
Engineer	Yutaka Yoshida
Mode	Tx (Hopping off) DH5/3DH5

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

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Average Output Power
(for reporting purpose only)

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0192-HO
Date	09/06/2012
Temperature/ Humidity	24deg. C / 68% RH
Engineer	Yutaka Yoshida
Mode	Tx (Hopping off) DH5/3DH5

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

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber		
Report No.	32KE0192-HO		
Date	09/03/2012	09/03/2012	09/03/2012
Temperature/ Humidity	23 deg. C / 62% RH	23 deg. C / 62% RH	23 deg. C / 62% RH
Engineer	Keisuke Kawamura (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
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	147.900	QP	35.8	15.0	8.5	32.0	27.3	43.5	16.2	
Hori	197.849	QP	32.4	16.5	8.9	31.9	25.9	43.5	17.6	
Hori	221.249	QP	33.9	16.8	9.0	32.0	27.7	46.0	18.3	
Hori	369.999	QP	36.9	17.2	10.1	32.0	32.2	46.0	13.8	
Hori	444.665	QP	38.4	18.3	10.6	31.9	35.4	46.0	10.6	
Hori	940.506	QP	22.3	25.1	13.0	31.1	29.3	46.0	16.7	
Hori	2390.000	PK	44.4	27.5	2.4	32.3	42.0	73.9	32.0	
Hori	2558.000	PK	49.6	27.6	2.5	32.2	47.5	73.9	26.4	
Hori	4804.000	PK	40.0	31.3	5.1	31.5	44.9	73.9	29.0	
Hori	7206.000	PK	41.6	35.8	5.9	32.5	50.8	73.9	23.1	
Hori	9608.000	PK	42.3	38.3	7.1	32.9	54.8	73.9	19.1	
Hori	2390.000	AV	31.5	27.5	2.4	32.3	29.1	53.9	24.8	
Hori	2558.000	AV	44.1	27.6	2.5	32.2	42.0	53.9	11.9	
Hori	4804.000	AV	28.9	31.3	5.1	31.5	33.8	53.9	20.1	
Hori	7206.000	AV	30.5	35.8	5.9	32.5	39.7	53.9	14.2	
Hori	9608.000	AV	30.8	38.3	7.1	32.9	43.3	53.9	10.6	
Vert	147.900	QP	37.6	15.0	8.5	32.0	29.1	43.5	14.4	
Vert	197.849	QP	32.4	16.5	8.9	31.9	25.9	43.5	17.6	
Vert	221.249	QP	31.8	16.8	9.0	32.0	25.6	46.0	20.4	
Vert	369.999	QP	37.9	17.2	10.1	32.0	33.2	46.0	12.8	
Vert	444.665	QP	36.1	18.3	10.6	31.9	33.1	46.0	12.9	
Vert	940.506	QP	30.4	25.1	13.0	31.1	37.4	46.0	8.6	
Vert	2390.000	PK	42.4	27.5	2.4	32.3	40.0	73.9	33.9	
Vert	2558.000	PK	46.5	27.6	2.5	32.2	44.4	73.9	29.5	
Vert	4804.000	PK	41.1	31.3	5.1	31.5	46.0	73.9	27.9	
Vert	7206.000	PK	42.1	35.8	5.9	32.5	51.3	73.9	22.6	
Vert	9608.000	PK	41.4	38.3	7.1	32.9	53.9	73.9	20.1	
Vert	2390.000	AV	29.8	27.5	2.4	32.3	27.4	53.9	26.5	
Vert	2558.000	AV	39.5	27.6	2.5	32.2	37.4	53.9	16.5	
Vert	4804.000	AV	29.3	31.3	5.1	31.5	34.2	53.9	19.7	
Vert	7206.000	AV	30.5	35.8	5.9	32.5	39.7	53.9	14.3	
Vert	9608.000	AV	30.9	38.3	7.1	32.9	43.4	53.9	10.6	

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No.	32KE0192-HO
Date	09/03/2012
Temperature/ Humidity	23 deg. C / 62% RH
Engineer	Keisuke Kawamura
	(1-10GHz)
Mode	Tx, DH5 2402MHz

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	93.7	27.5	2.4	32.3	91.3	-	-	Carrier
Hori	2400.000	PK	46.3	27.5	2.4	32.3	43.9	71.3	27.4	
Vert	2402.000	PK	91.1	27.5	2.4	32.3	88.7	-	-	Carrier
Vert	2400.000	PK	44.3	27.5	2.4	32.3	41.9	68.7	26.8	

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber		
Report No.	32KE0192-HO		
Date	09/03/2012	09/03/2012	09/03/2012
Temperature/ Humidity	23 deg. C / 62% RH	23 deg. C / 62% RH	23 deg. C / 62% RH
Engineer	Keisuke Kawamura (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	Tx, DH5 2441MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	147.321	QP	35.6	15.0	8.5	32.0	27.1	43.5	16.4	
Hori	197.243	QP	32.7	16.5	8.9	31.9	26.2	43.5	17.4	
Hori	221.252	QP	34.2	16.8	9.0	32.0	28.0	46.0	18.0	
Hori	369.432	QP	36.8	17.2	10.1	32.0	32.1	46.0	13.9	
Hori	444.512	QP	38.1	18.2	10.6	31.9	35.0	46.0	11.0	
Hori	940.210	QP	22.9	25.1	13.0	31.1	29.9	46.0	16.1	
Hori	2597.000	PK	52.6	27.7	2.5	32.2	50.6	73.9	23.3	
Hori	4882.000	PK	40.0	31.5	5.2	31.5	45.2	73.9	28.7	
Hori	7323.000	PK	41.6	35.8	5.9	32.5	50.8	73.9	23.1	
Hori	9764.000	PK	42.3	38.4	7.4	32.9	55.2	73.9	18.7	
Hori	2597.000	AV	47.9	27.7	2.5	32.2	45.9	53.9	8.0	
Hori	4882.000	AV	28.9	31.5	5.2	31.5	34.1	53.9	19.8	
Hori	7323.000	AV	30.5	35.8	5.9	32.5	39.7	53.9	14.2	
Hori	9764.000	AV	30.8	38.4	7.4	32.9	43.7	53.9	10.2	
Vert	147.421	QP	37.4	15.0	8.5	32.0	28.9	43.5	14.6	
Vert	197.321	QP	32.9	16.5	8.9	31.9	26.4	43.5	17.1	
Vert	221.242	QP	32.1	16.8	9.0	32.0	25.9	46.0	20.1	
Vert	369.321	QP	38.1	17.2	10.1	32.0	33.4	46.0	12.6	
Vert	444.512	QP	36.5	18.2	10.6	31.9	33.4	46.0	12.6	
Vert	940.521	QP	31.0	25.1	13.0	31.1	38.0	46.0	8.0	
Vert	2597.000	PK	49.6	27.7	2.5	32.2	47.6	73.9	26.3	
Vert	4882.000	PK	41.1	31.5	5.2	31.5	46.3	73.9	27.6	
Vert	7323.000	PK	42.1	35.8	5.9	32.5	51.3	73.9	22.6	
Vert	9764.000	PK	41.4	38.4	7.4	32.9	54.3	73.9	19.6	
Vert	2597.000	AV	43.9	27.7	2.5	32.2	41.9	53.9	12.0	
Vert	4882.000	AV	29.3	31.5	5.2	31.5	34.5	53.9	19.4	
Vert	7323.000	AV	30.5	35.8	5.9	32.5	39.7	53.9	14.2	
Vert	9764.000	AV	30.9	38.4	7.4	32.9	43.8	53.9	10.1	

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber		
Report No.	32KE0192-HO		
Date	09/03/2012	09/03/2012	09/03/2012
Temperature/ Humidity	23 deg. C / 62% RH	23 deg. C / 62% RH	23 deg. C / 62% RH
Engineer	Keisuke Kawamura (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	Tx, DH5 2480MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	148.321	QP	36.2	15.0	8.5	32.0	27.7	43.5	15.8	
Hori	197.312	QP	32.9	16.5	8.9	31.9	26.4	43.5	17.1	
Hori	221.321	QP	34.1	16.8	9.0	32.0	27.9	46.0	18.1	
Hori	369.432	QP	37.1	17.2	10.1	32.0	32.4	46.0	13.6	
Hori	444.521	QP	38.5	18.2	10.6	31.9	35.4	46.0	10.6	
Hori	940.421	QP	23.1	25.1	13.0	31.1	30.1	46.0	15.9	
Hori	2483.500	PK	46.7	27.5	2.4	32.2	44.4	73.9	29.6	
Hori	2636.022	PK	52.0	27.8	2.5	32.2	50.1	73.9	23.8	
Hori	4960.000	PK	40.0	31.8	5.2	31.5	45.5	73.9	28.4	
Hori	7440.000	PK	41.6	35.9	6.0	32.6	50.9	73.9	23.0	
Hori	9920.000	PK	42.3	38.6	7.5	33.0	55.4	73.9	18.5	
Hori	2483.500	AV	34.2	27.5	2.4	32.2	31.9	53.9	22.0	
Hori	2636.022	AV	47.1	27.8	2.5	32.2	45.2	53.9	8.7	
Hori	4960.000	AV	28.9	31.8	5.2	31.5	34.4	53.9	19.5	
Hori	7440.000	AV	30.5	35.9	6.0	32.6	39.8	53.9	14.1	
Hori	9920.000	AV	30.8	38.6	7.5	33.0	43.9	53.9	10.0	
Vert	147.842	QP	38.1	15.0	8.5	32.0	29.6	43.5	13.9	
Vert	197.452	QP	32.6	16.5	8.9	31.9	26.1	43.5	17.4	
Vert	221.423	QP	32.1	16.8	9.0	32.0	25.9	46.0	20.1	
Vert	369.432	QP	38.2	17.2	10.1	32.0	33.5	46.0	12.5	
Vert	444.510	QP	36.5	18.2	10.6	31.9	33.4	46.0	12.6	
Vert	940.421	QP	31.2	25.1	13.0	31.1	38.2	46.0	7.8	
Vert	2483.500	PK	45.4	27.5	2.4	32.2	43.1	73.9	30.8	
Vert	2636.022	PK	48.7	27.8	2.5	32.2	46.8	73.9	27.1	
Vert	4960.000	PK	41.1	31.8	5.2	31.5	46.6	73.9	27.3	
Vert	7440.000	PK	42.1	35.9	6.0	32.6	51.4	73.9	22.5	
Vert	9920.000	PK	41.4	38.6	7.5	33.0	54.5	73.9	19.4	
Vert	2483.500	AV	32.4	27.5	2.4	32.2	30.1	53.9	23.8	
Vert	2636.022	AV	42.1	27.8	2.5	32.2	40.2	53.9	13.7	
Vert	4960.000	AV	29.3	31.8	5.2	31.5	34.8	53.9	19.1	
Vert	7440.000	AV	30.5	35.9	6.0	32.6	39.8	53.9	14.1	
Vert	9920.000	AV	30.9	38.6	7.5	33.0	44.0	53.9	9.9	

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber		
Report No.	32KE0192-HO		
Date	09/03/2012	09/03/2012	09/03/2012
Temperature/ Humidity	23 deg.C/ 62% RH	23 deg.C/ 62% RH	23 deg.C/ 62% RH
Engineer	Keisuke Kawamura (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	Tx, 3DH5 2402MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	148.321	QP	36.1	15.0	8.5	32.0	27.6	43.5	15.9	
Hori	197.932	QP	32.9	16.5	8.9	31.9	26.4	43.5	17.1	
Hori	221.245	QP	34.1	16.8	9.0	32.0	27.9	46.0	18.1	
Hori	369.849	QP	37.2	17.2	10.1	32.0	32.5	46.0	13.5	
Hori	444.653	QP	38.1	18.3	10.6	31.9	35.1	46.0	10.9	
Hori	940.322	QP	23.1	25.1	13.0	31.1	30.1	46.0	15.9	
Hori	2390.000	PK	42.2	27.5	2.4	32.3	39.8	73.9	34.1	
Hori	2558.000	PK	49.6	27.6	2.5	32.2	47.5	73.9	26.4	
Hori	4804.000	PK	39.4	31.3	5.1	31.5	44.3	73.9	29.6	
Hori	7206.000	PK	41.9	35.8	5.9	32.5	51.1	73.9	22.8	
Hori	9608.000	PK	41.8	38.3	7.1	32.9	54.3	73.9	19.6	
Hori	2390.000	AV	29.9	27.5	2.4	32.3	27.5	53.9	26.4	
Hori	2558.000	AV	40.9	27.6	2.5	32.2	38.8	53.9	15.1	
Hori	4804.000	AV	28.5	31.3	5.1	31.5	33.4	53.9	20.5	
Hori	7206.000	AV	31.0	35.8	5.9	32.5	40.2	53.9	13.7	
Hori	9608.000	AV	30.8	38.3	7.1	32.9	43.3	53.9	10.6	
Vert	147.982	QP	37.2	15.0	8.5	32.0	28.7	43.5	14.8	
Vert	197.231	QP	32.6	16.5	8.9	31.9	26.1	43.5	17.4	
Vert	221.231	QP	32.1	16.8	9.0	32.0	25.9	46.0	20.1	
Vert	369.823	QP	37.4	17.2	10.1	32.0	32.7	46.0	13.3	
Vert	444.510	QP	36.5	18.2	10.6	31.9	33.4	46.0	12.6	
Vert	940.421	QP	31.2	25.1	13.0	31.1	38.2	46.0	7.8	
Vert	2390.000	PK	44.2	27.5	2.4	32.3	41.8	73.9	32.1	
Vert	2558.000	PK	46.8	27.6	2.5	32.2	44.7	73.9	29.2	
Vert	4804.000	PK	40.1	31.3	5.1	31.5	45.0	73.9	28.9	
Vert	7206.000	PK	42.1	35.8	5.9	32.5	51.3	73.9	22.6	
Vert	9608.000	PK	40.8	38.3	7.1	32.9	53.3	73.9	20.6	
Vert	2390.000	AV	31.5	27.5	2.4	32.3	29.1	53.9	24.9	
Vert	2558.000	AV	37.1	27.6	2.5	32.2	35.0	53.9	19.0	
Vert	4804.000	AV	28.5	31.3	5.1	31.5	33.4	53.9	20.5	
Vert	7206.000	AV	31.0	35.8	5.9	32.5	40.2	53.9	13.7	
Vert	9608.000	AV	30.8	38.3	7.1	32.9	43.3	53.9	10.6	

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

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Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No.	32KE0192-HO
Date	09/03/2012
Temperature/ Humidity	23 deg. C / 62% RH
Engineer	Keisuke Kawamura
	(1-10GHz)
Mode	Tx, 3DH5 2402MHz

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	93.2	27.5	2.4	32.3	90.8	-	-	Carrier
Hori	2400.000	PK	45.3	27.5	2.4	32.3	42.9	70.8	27.9	
Vert	2402.000	PK	89.5	27.5	2.4	32.3	87.1	-	-	Carrier
Vert	2400.000	PK	42.3	27.5	2.4	32.3	39.9	67.1	27.2	

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber		
Report No.	32KE0192-HO		
Date	09/03/2012	09/03/2012	09/03/2012
Temperature/ Humidity	23 deg.C/ 62% RH	23 deg.C/ 62% RH	23 deg.C/ 62% RH
Engineer	Keisuke Kawamura (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	Tx, 3DH5 2441MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	148.321	QP	36.2	15.0	8.5	32.0	27.7	43.5	15.8	
Hori	197.421	QP	32.5	16.5	8.9	31.9	26.0	43.5	17.5	
Hori	221.310	QP	33.1	16.8	9.0	32.0	26.9	46.0	19.1	
Hori	369.412	QP	37.2	17.2	10.1	32.0	32.5	46.0	13.5	
Hori	444.512	QP	38.4	18.2	10.6	31.9	35.3	46.0	10.7	
Hori	940.231	QP	22.9	25.1	13.0	31.1	29.9	46.0	16.1	
Hori	2597.000	PK	51.3	27.7	2.5	32.2	49.3	73.9	24.6	
Hori	4882.000	PK	39.4	31.5	5.2	31.5	44.6	73.9	29.3	
Hori	7323.000	PK	41.9	35.8	5.9	32.5	51.1	73.9	22.8	
Hori	9764.000	PK	41.8	38.4	7.4	32.9	54.7	73.9	19.2	
Hori	2597.000	AV	43.6	27.7	2.5	32.2	41.6	53.9	12.3	
Hori	4882.000	AV	28.5	31.5	5.2	31.5	33.7	53.9	20.2	
Hori	7323.000	AV	31.0	35.8	5.9	32.5	40.2	53.9	13.7	
Hori	9764.000	AV	30.8	38.4	7.4	32.9	43.7	53.9	10.2	
Vert	147.830	QP	37.8	15.0	8.5	32.0	29.3	43.5	14.2	
Vert	197.243	QP	32.8	16.5	8.9	31.9	26.3	43.5	17.2	
Vert	221.312	QP	32.1	16.8	9.0	32.0	25.9	46.0	20.1	
Vert	369.321	QP	38.1	17.2	10.1	32.0	33.4	46.0	12.6	
Vert	444.123	QP	36.7	18.2	10.6	31.9	33.6	46.0	12.4	
Vert	940.421	QP	31.0	25.1	13.0	31.1	38.0	46.0	8.0	
Vert	2597.000	PK	47.2	27.7	2.5	32.2	45.2	73.9	28.7	
Vert	4882.000	PK	40.1	31.5	5.2	31.5	45.3	73.9	28.6	
Vert	7323.000	PK	42.1	35.8	5.9	32.5	51.3	73.9	22.6	
Vert	9764.000	PK	40.8	38.4	7.4	32.9	53.7	73.9	20.2	
Vert	2597.000	AV	39.4	27.7	2.5	32.2	37.4	53.9	16.5	
Vert	4882.000	AV	28.5	31.5	5.2	31.5	33.7	53.9	20.2	
Vert	7323.000	AV	31.0	35.8	5.9	32.5	40.2	53.9	13.7	
Vert	9764.000	AV	30.8	38.4	7.4	32.9	43.7	53.9	10.2	

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber		
Report No.	32KE0192-HO		
Date	09/03/2012	09/03/2012	09/03/2012
Temperature/ Humidity	23 deg.C/ 62% RH	23 deg.C/ 62% RH	23 deg.C/ 62% RH
Engineer	Keisuke Kawamura (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	Tx, 3DH5 2480MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	148.213	QP	36.1	15.0	8.5	32.0	27.6	43.5	15.9	
Hori	197.883	QP	31.9	16.5	8.9	31.9	25.4	43.5	18.1	
Hori	221.341	QP	33.8	16.8	9.0	32.0	27.6	46.0	18.4	
Hori	369.321	QP	37.1	17.2	10.1	32.0	32.4	46.0	13.6	
Hori	444.510	QP	38.1	18.2	10.6	31.9	35.0	46.0	11.0	
Hori	940.431	QP	23.1	25.1	13.0	31.1	30.1	46.0	15.9	
Hori	2483.500	PK	43.2	27.5	2.4	32.2	40.9	73.9	33.0	
Hori	2636.022	PK	49.8	27.8	2.5	32.2	47.9	73.9	26.0	
Hori	4960.000	PK	39.4	31.8	5.2	31.5	44.9	73.9	29.0	
Hori	7440.000	PK	41.9	35.9	6.0	32.6	51.2	73.9	22.7	
Hori	9920.000	PK	41.8	38.6	7.5	33.0	54.9	73.9	19.0	
Hori	2483.500	AV	30.8	27.5	2.4	32.2	28.5	53.9	25.4	
Hori	2636.022	AV	42.3	27.8	2.5	32.2	40.4	53.9	13.5	
Hori	4960.000	AV	28.5	31.8	5.2	31.5	34.0	53.9	19.9	
Hori	7440.000	AV	31.0	35.9	6.0	32.6	40.3	53.9	13.7	
Hori	9920.000	AV	30.8	38.6	7.5	33.0	43.9	53.9	10.0	
Vert	147.843	QP	37.2	15.0	8.5	32.0	28.7	43.5	14.8	
Vert	197.421	QP	32.8	16.5	8.9	31.9	26.3	43.5	17.2	
Vert	221.442	QP	32.1	16.8	9.0	32.0	25.9	46.0	20.1	
Vert	369.422	QP	38.0	17.2	10.1	32.0	33.3	46.0	12.7	
Vert	444.151	QP	36.5	18.2	10.6	31.9	33.4	46.0	12.6	
Vert	940.521	QP	30.9	25.1	13.0	31.1	37.9	46.0	8.1	
Vert	2483.500	PK	42.7	27.5	2.4	32.2	40.4	73.9	33.5	
Vert	2636.022	PK	46.5	27.8	2.5	32.2	44.6	73.9	29.3	
Vert	4960.000	PK	40.1	31.8	5.2	31.5	45.6	73.9	28.3	
Vert	7440.000	PK	42.1	35.9	6.0	32.6	51.4	73.9	22.5	
Vert	9920.000	PK	40.8	38.6	7.5	33.0	53.9	73.9	20.0	
Vert	2483.500	AV	30.1	27.5	2.4	32.2	27.8	53.9	26.1	
Vert	2636.022	AV	37.9	27.8	2.5	32.2	36.0	53.9	17.9	
Vert	4960.000	AV	28.5	31.8	5.2	31.5	34.0	53.9	19.9	
Vert	7440.000	AV	31.0	35.9	6.0	32.6	40.3	53.9	13.6	
Vert	9920.000	AV	30.8	38.6	7.5	33.0	43.9	53.9	10.0	

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

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

*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

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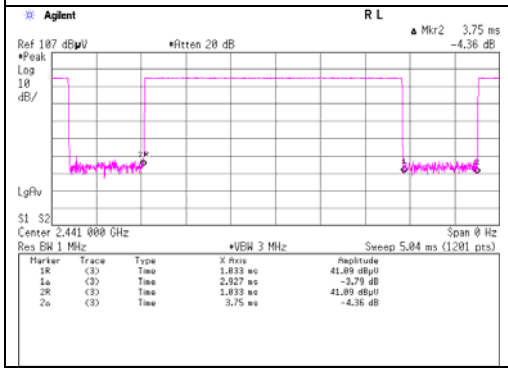
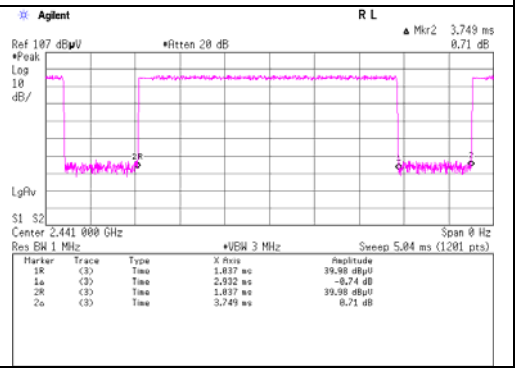
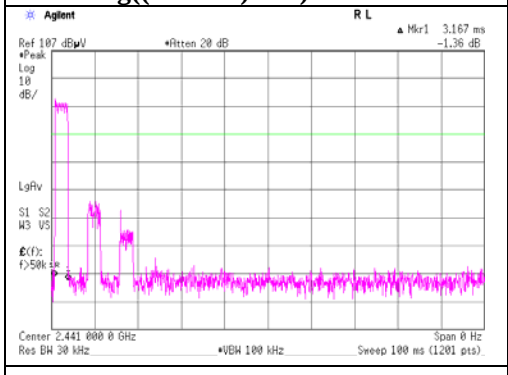
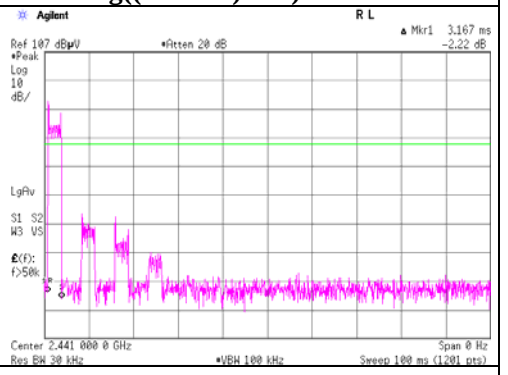
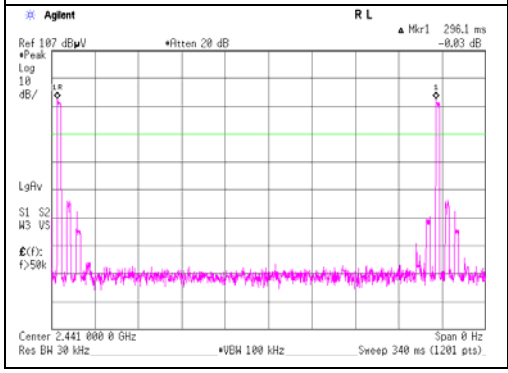
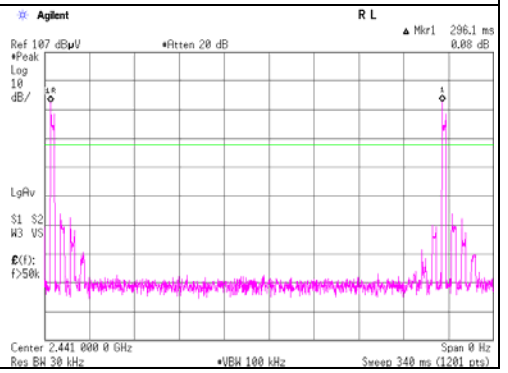
Burst Rate Confirmation

DH5	3DH5
Duty rate = 78.1% Tx on = 2.927ms Tx on+Tx off = 3.75ms	Duty rate = 78.2% Tx on = 2.932ms Tx on+Tx off = 3.749ms
	

Dwell time factor

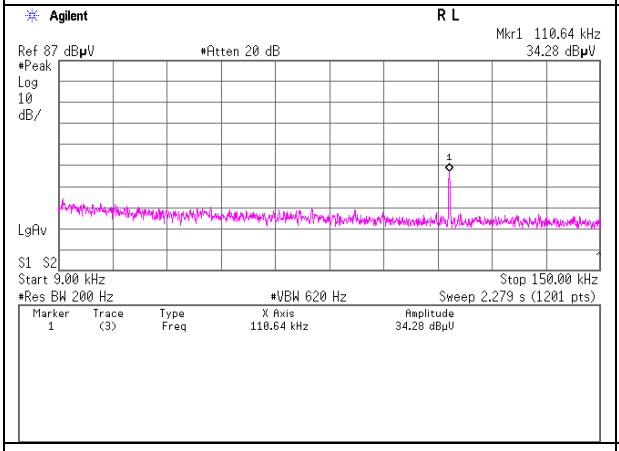
DH5	3DH5
Worst 100ms Dwell time factor = 20log((3.167*2)/100) = -23.97dB	**Worst 100ms** Dwell time factor = 20log((3.167*2)/100) = -23.97dB
	
1cycle time 296.1ms	**1cycle time** 296.1ms
	

* Dwell time factor was not used for Radiated emission.

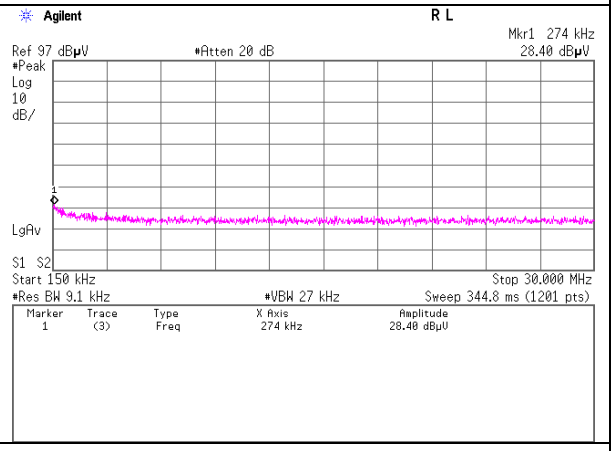
Conducted Spurious Emission

Tx DH5 2402MHz

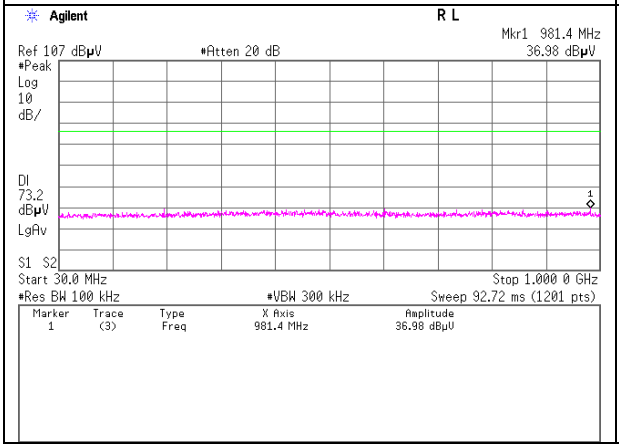
9kHz-150kHz



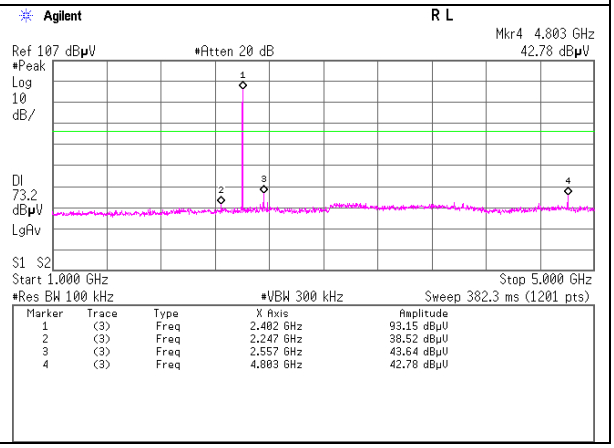
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



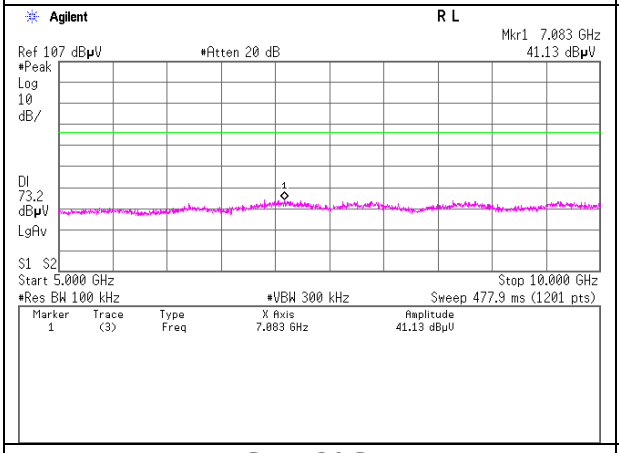
Frequency [kHz]	Reading [dBuV]	Reading [dBm]	Cable Loss [dB]	Attenator [dB]	Antenna Gain [dBi]	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]
110.640	34.3	-72.7	0.0	10.0	3.0	-59.7	300.0	6.0	1.6	26.7	25.2

EIRP=Reading(dBm) + Cable Loss + Attenuator + Antenna Gain
E=EIRP-20Log(Distance) + Ground bounce + 104.8

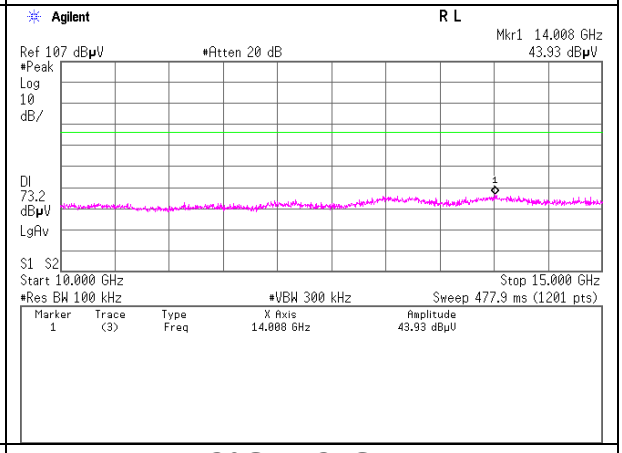
Conducted Spurious Emission

Tx DH5 2402MHz

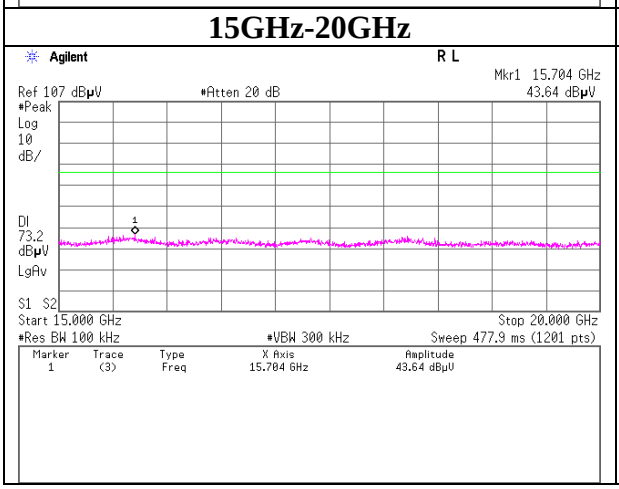
5GHz-10GHz



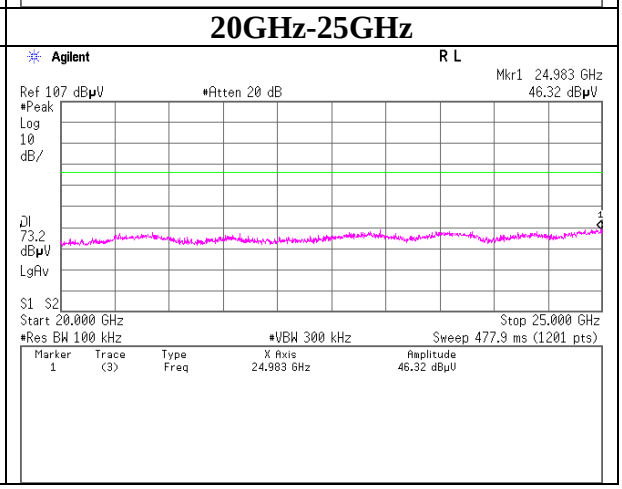
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



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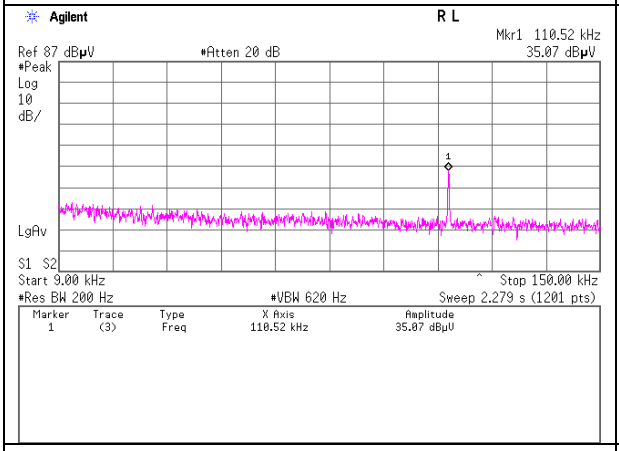
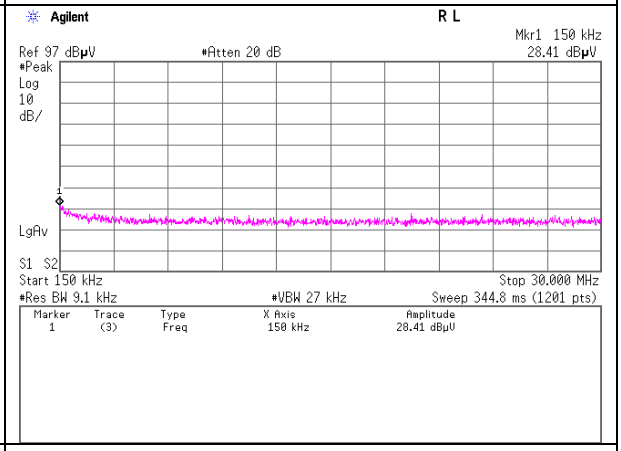
Conducted Spurious Emission

Tx DH5 2441MHz

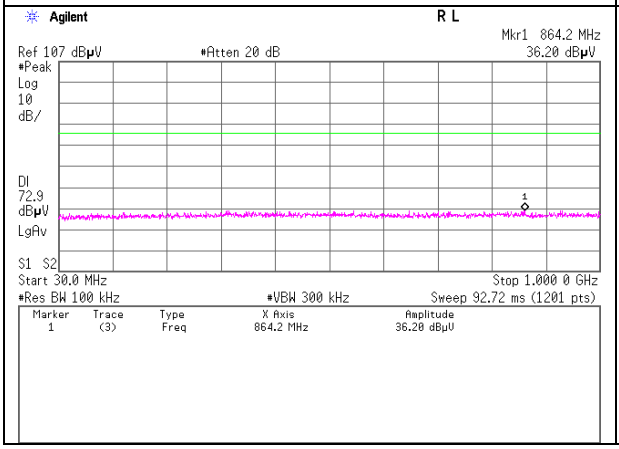
9kHz-150kHz



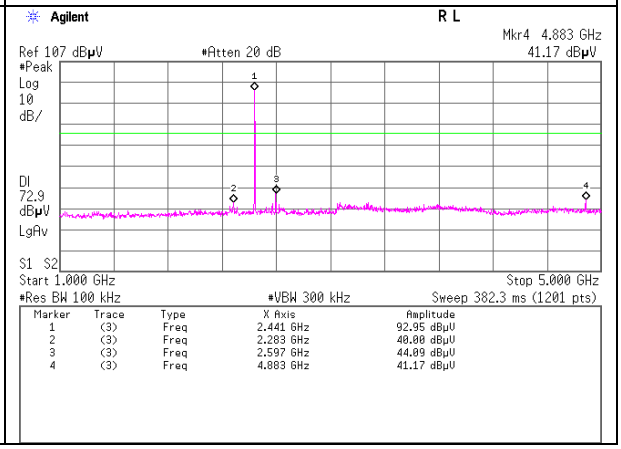
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



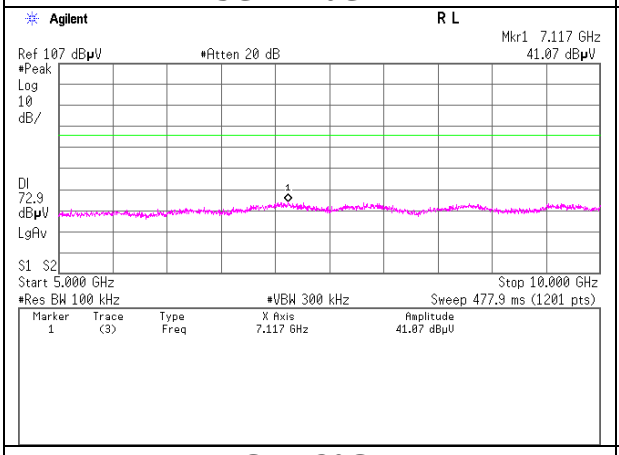
Frequency [kHz]	Reading [dBuV]	Reading [dBm]	Cable Loss [dB]	Attenator [dB]	Antenna Gain [dBi]	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]
110.520	35.1	-71.9	0.0	10.0	3.0	-58.9	300.0	6.0	2.3	26.7	24.4

EIRP=Reading(dBm) + Cable Loss + Attenuator + Antenna Gain
E=EIRP-20Log(Distance) + Ground bounce + 104.8

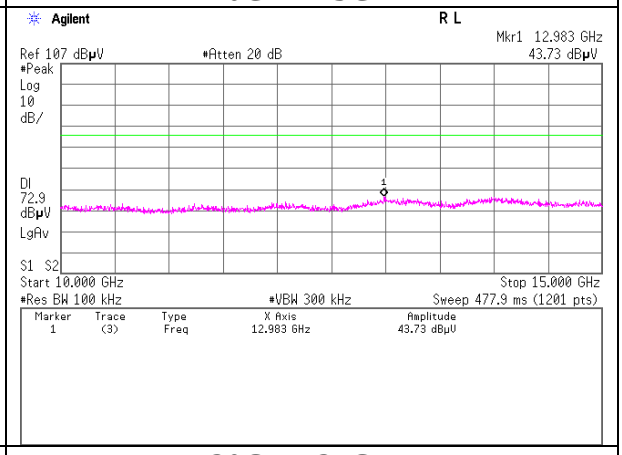
Conducted Spurious Emission

Tx DH5 2441MHz

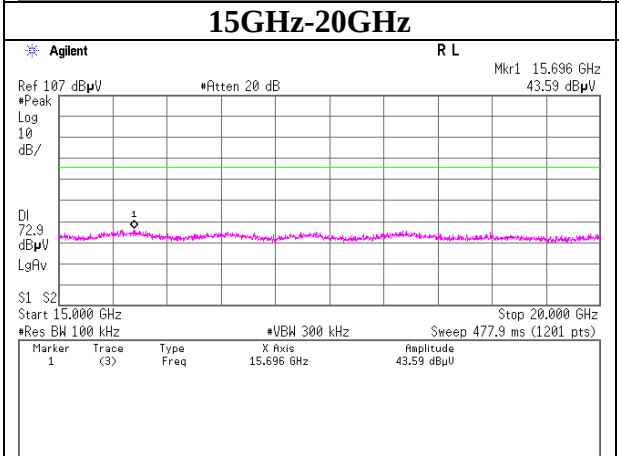
5GHz-10GHz



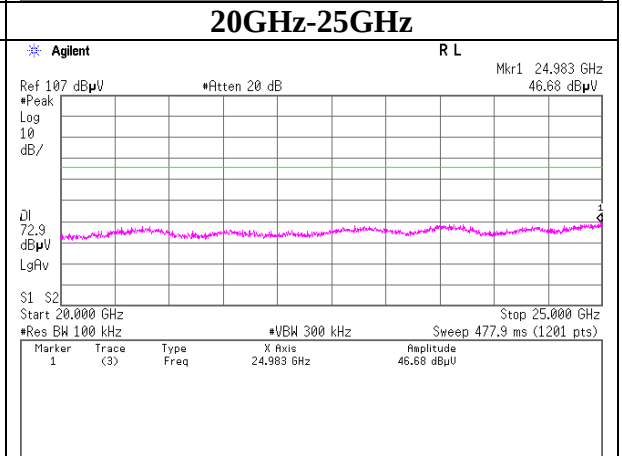
10GHz-15GHz



15GHz-20GHz



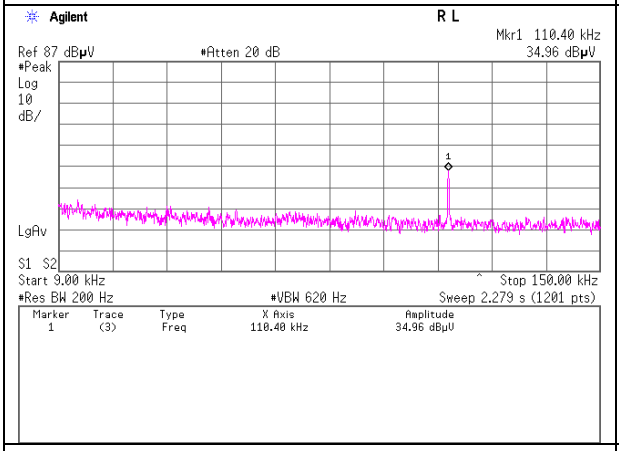
20GHz-25GHz



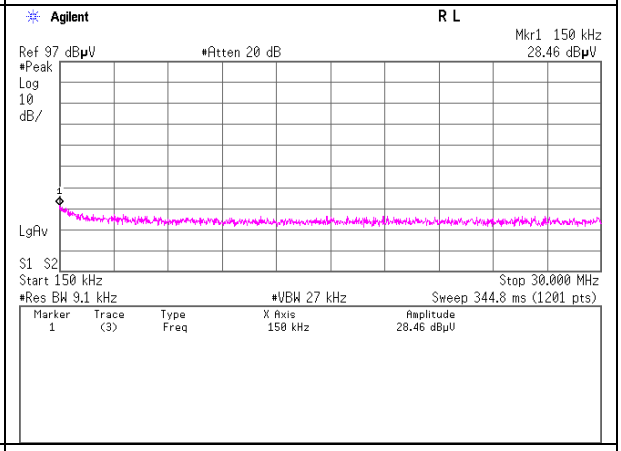
Conducted Spurious Emission

Tx DH5 2480MHz

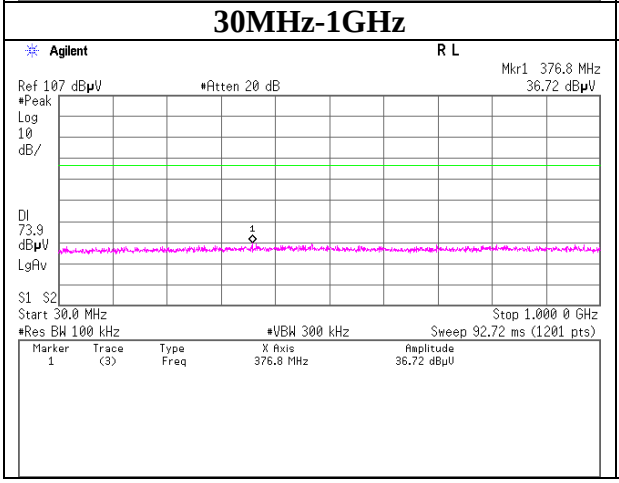
9kHz-150kHz



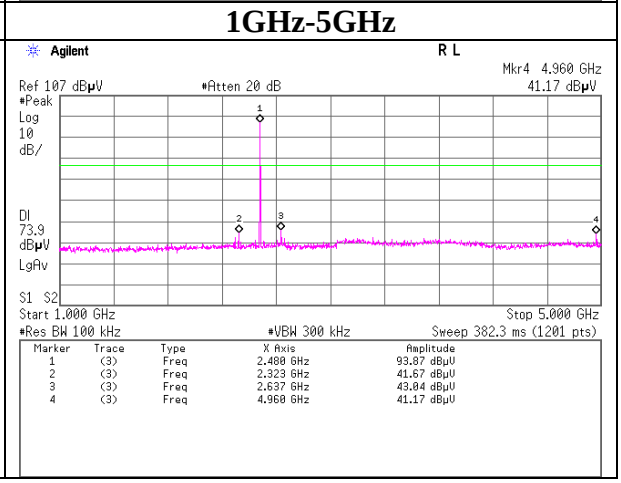
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



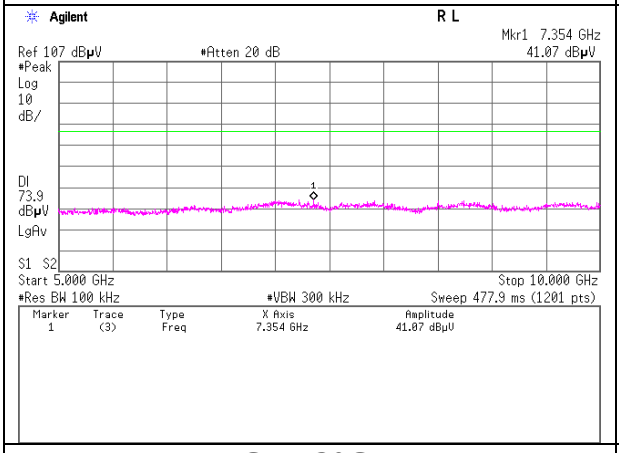
Frequency [kHz]	Reading [dBuV]	Reading [dBm]	Cable Loss [dB]	Attenator [dB]	Antenna Gain [dBi]	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]
110.400	35.0	-72.0	0.0	10.0	3.0	-59.0	300.0	6.0	2.2	26.7	24.5

EIRP=Reading(dBm) + Cable Loss + Attenuator + Antenna Gain
E=EIRP-20Log(Distance) + Ground bounce + 104.8

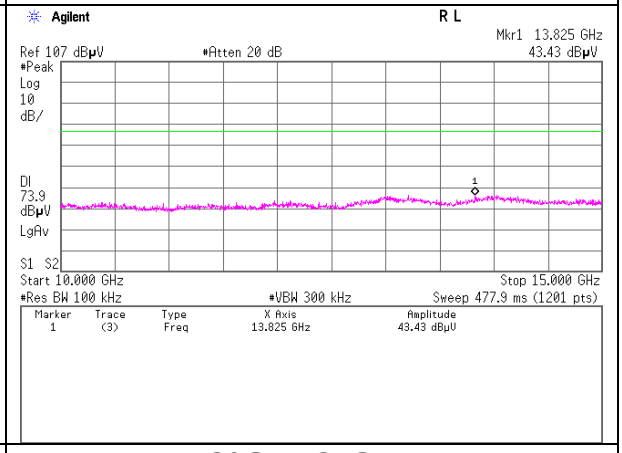
Conducted Spurious Emission

Tx DH5 2480MHz

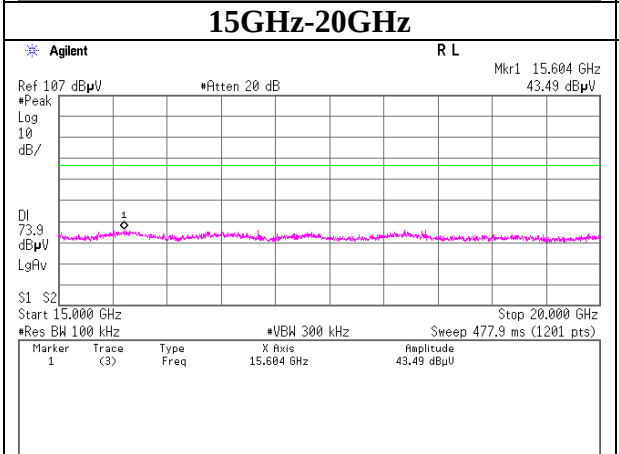
5GHz-10GHz



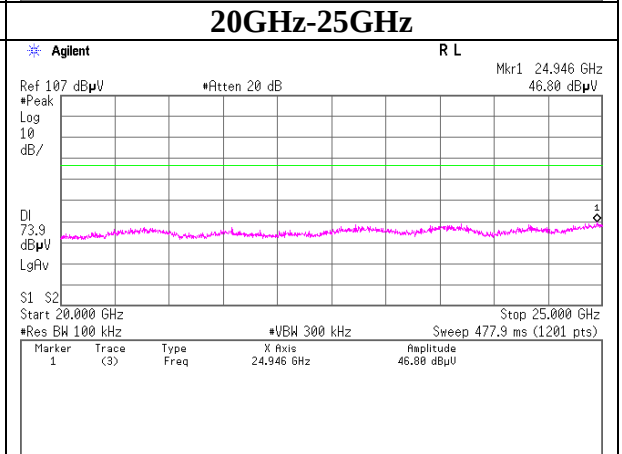
10GHz-15GHz



15GHz-20GHz



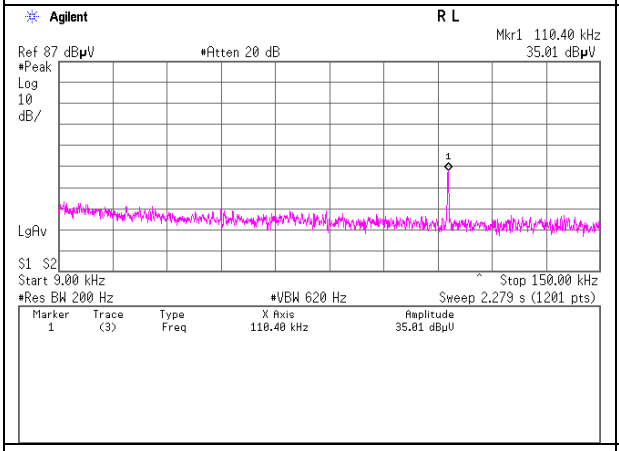
20GHz-25GHz



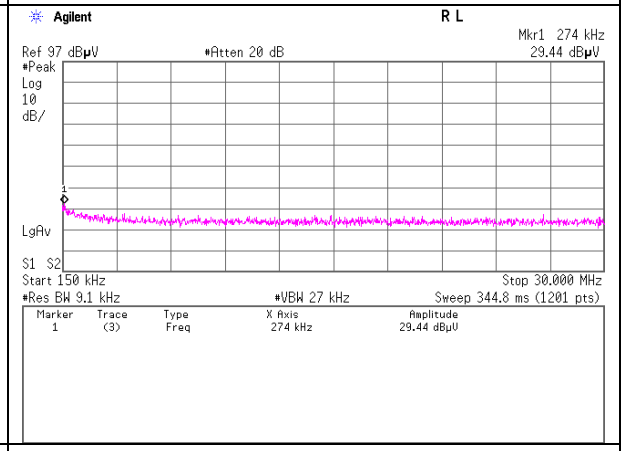
Conducted Spurious Emission

Tx 3DH5 2402MHz

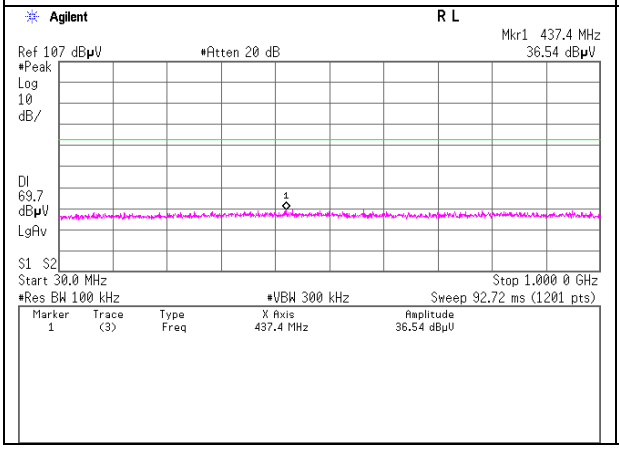
9kHz-150kHz



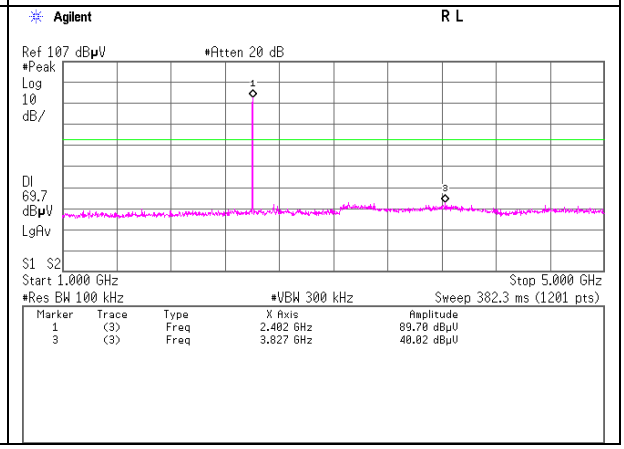
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



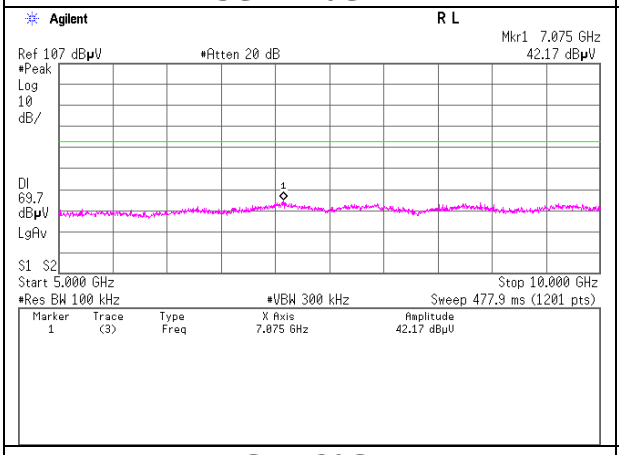
Frequency [kHz]	Reading [dBuV]	Reading [dBm]	Cable Loss [dB]	Attenator [dB]	Antenna Gain [dBi]	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]
110.400	35.0	-72.0	0.0	10.0	3.0	-59.0	300.0	6.0	2.3	26.7	24.5

EIRP=Reading(dBm) + Cable Loss + Attenuator + Antenna Gain
E=EIRP-20Log(Distance) + Ground bounce + 104.8

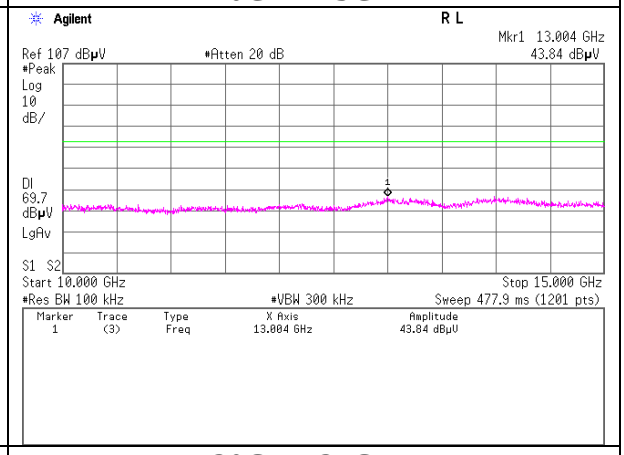
Conducted Spurious Emission

Tx 3DH5 2402MHz

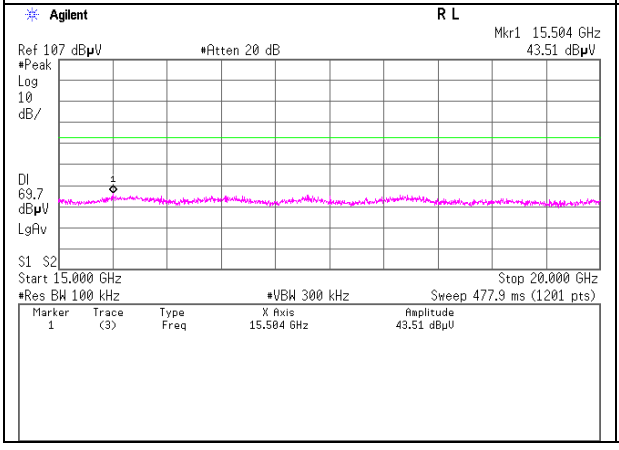
5GHz-10GHz



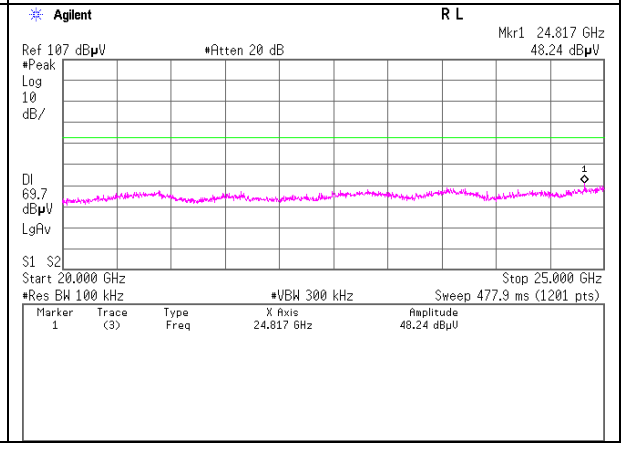
10GHz-15GHz



15GHz-20GHz



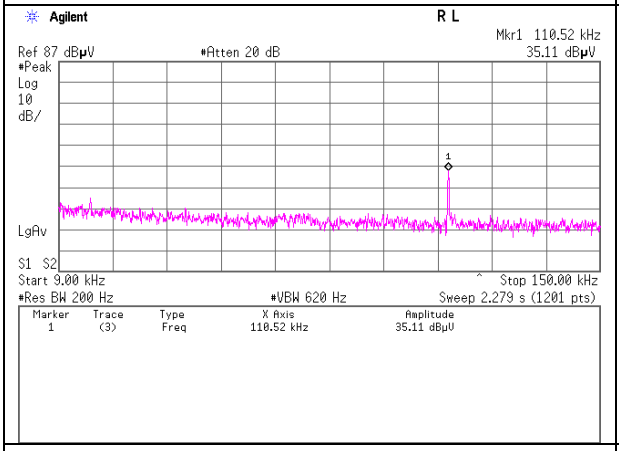
20GHz-25GHz



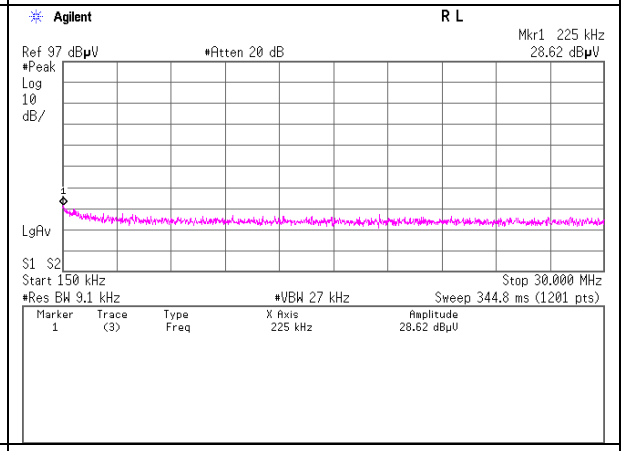
Conducted Spurious Emission

Tx 3DH5 2441MHz

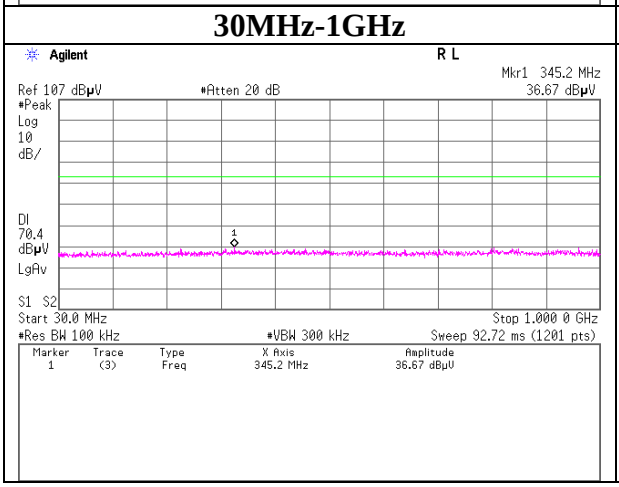
9kHz-150kHz



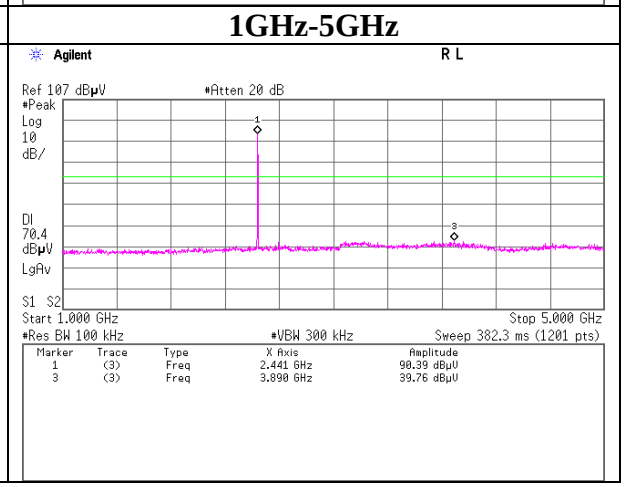
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



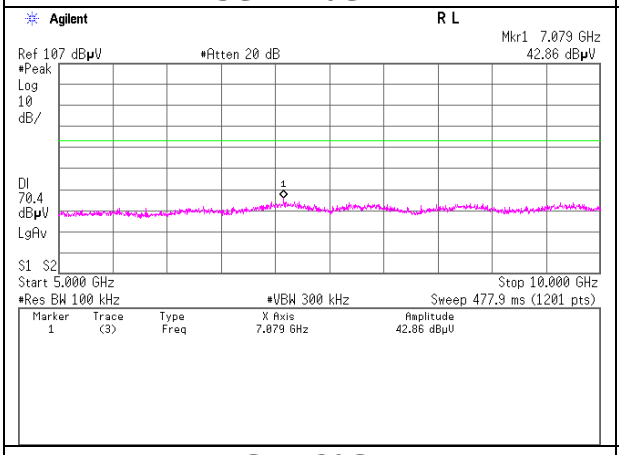
Frequency [kHz]	Reading [dBuV]	Reading [dBm]	Cable Loss [dB]	Attenator [dB]	Antenna Gain [dBi]	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]
110.520	35.1	-71.9	0.0	10.0	3.0	-58.9	300.0	6.0	2.4	26.7	24.4

EIRP=Reading(dBm) + Cable Loss + Attenuator + Antenna Gain
E=EIRP-20Log(Distance) + Ground bounce + 104.8

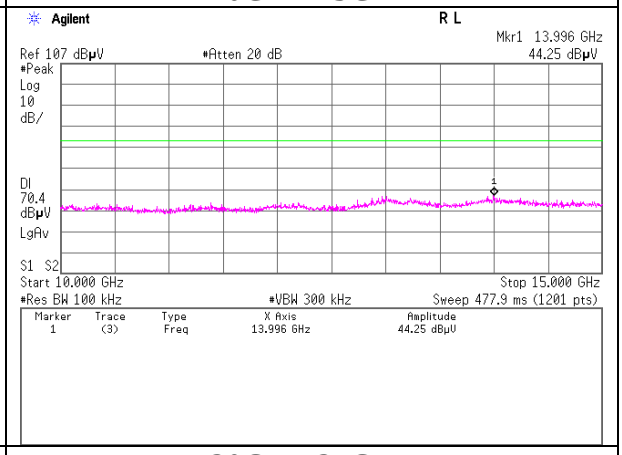
Conducted Spurious Emission

Tx 3DH5 2441MHz

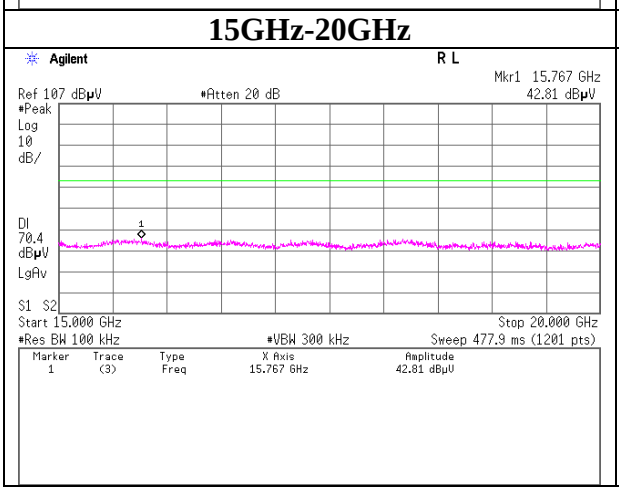
5GHz-10GHz



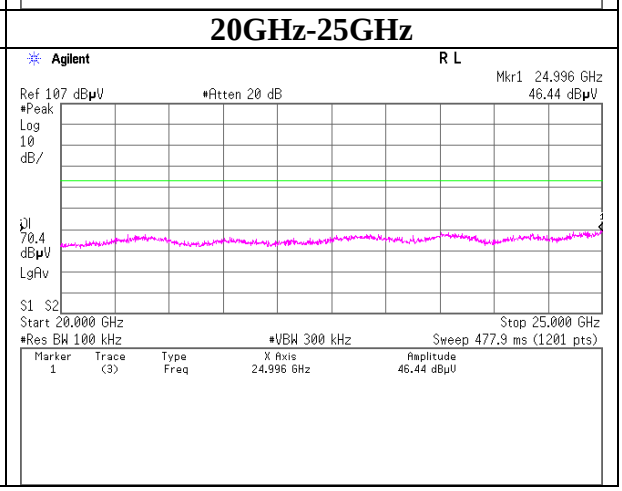
10GHz-15GHz



15GHz-20GHz



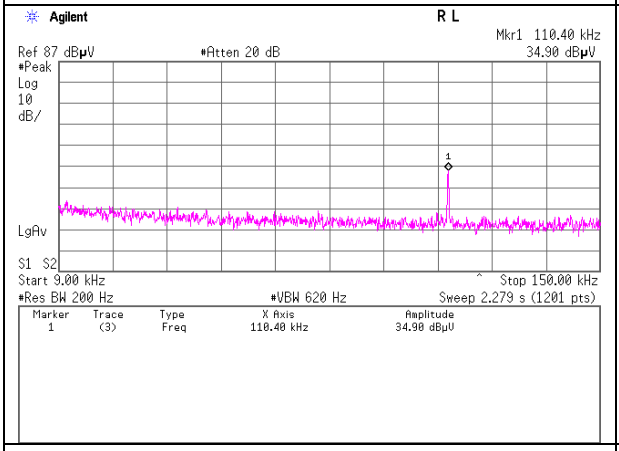
20GHz-25GHz



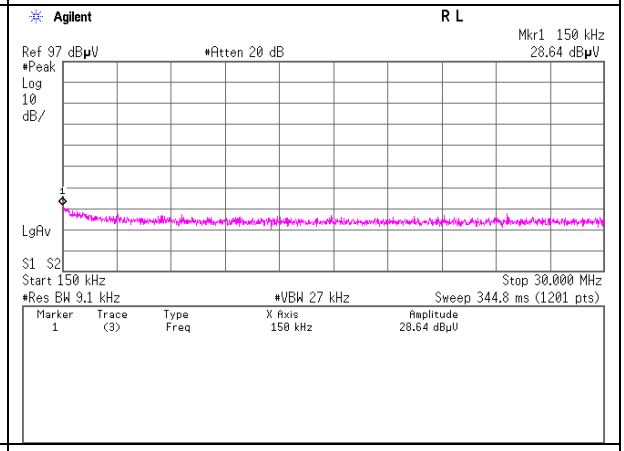
Conducted Spurious Emission

Tx 3DH5 2480MHz

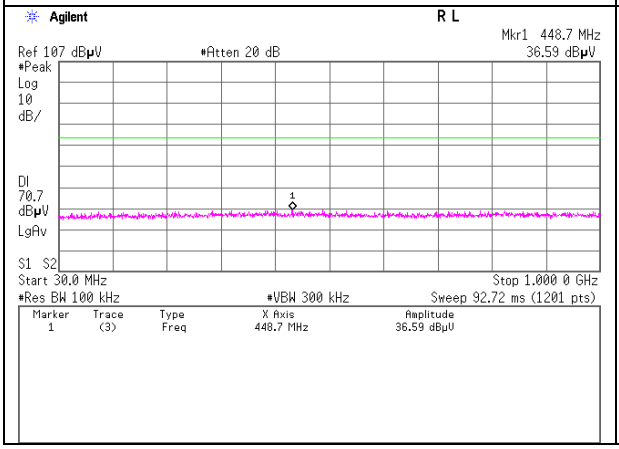
9kHz-150kHz



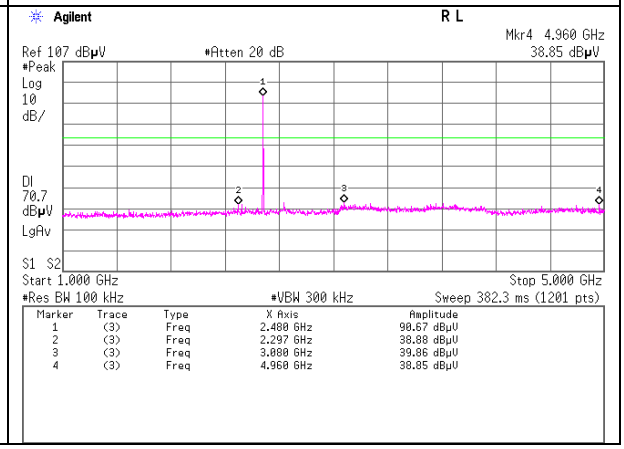
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



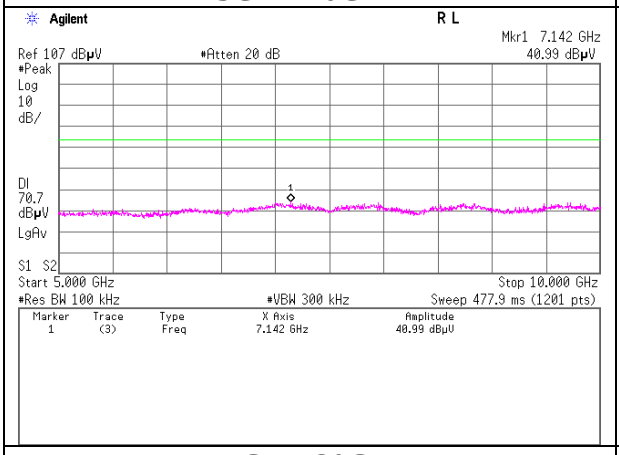
Frequency [kHz]	Reading [dBuV]	Reading [dBm]	Cable Loss [dB]	Attenator [dB]	Antenna Gain [dBi]	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]
110.400	34.9	-72.1	0.0	10.0	3.0	-59.1	300.0	6.0	2.2	26.7	24.6

EIRP=Reading(dBm) + Cable Loss + Attenuator + Antenna Gain
E=EIRP-20Log(Distance) + Ground bounce + 104.8

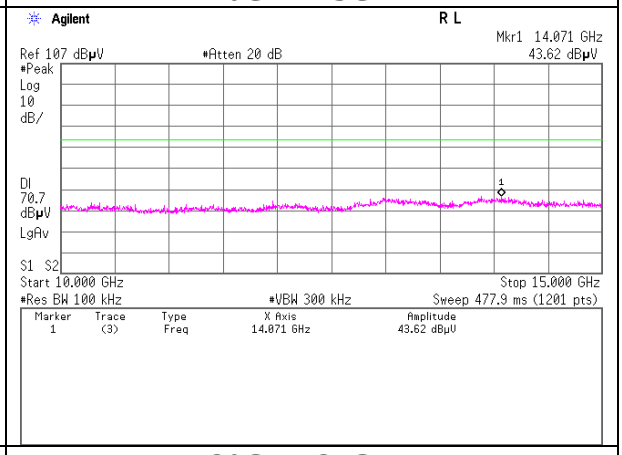
Conducted Spurious Emission

Tx 3DH5 2480MHz

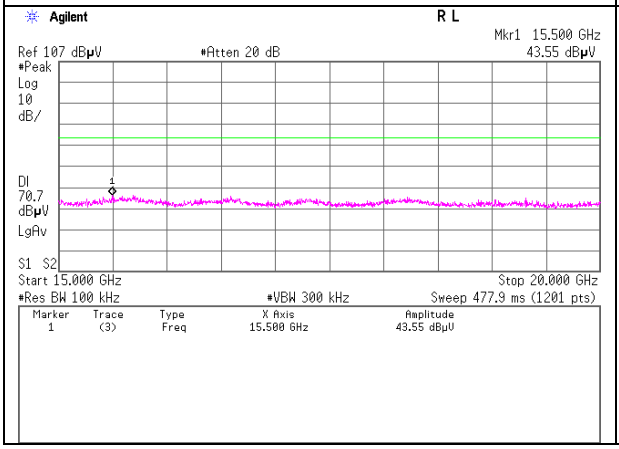
5GHz-10GHz



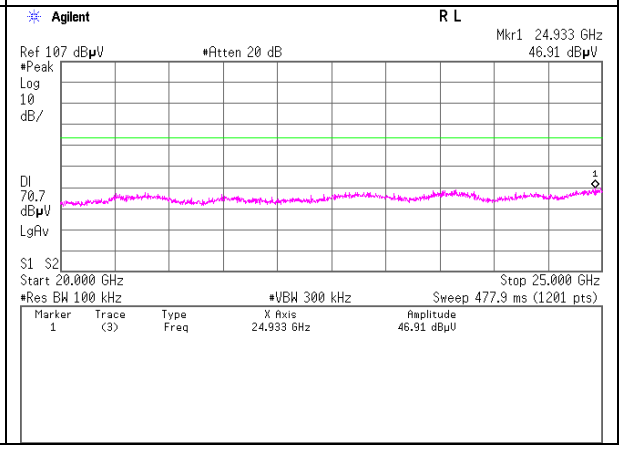
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



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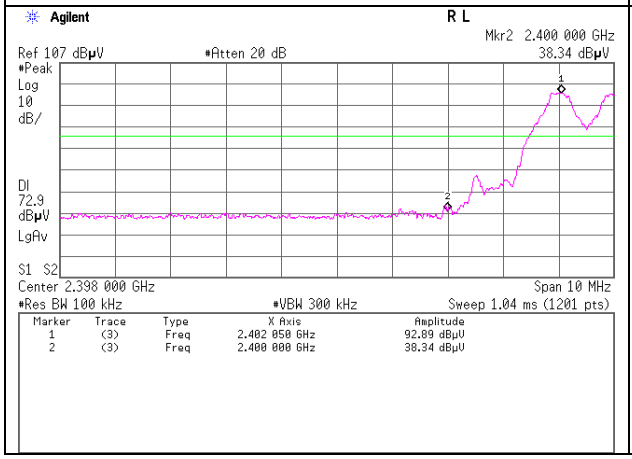
Telephone : +81 596 24 8116
Facsimile : +81 596 24 8124

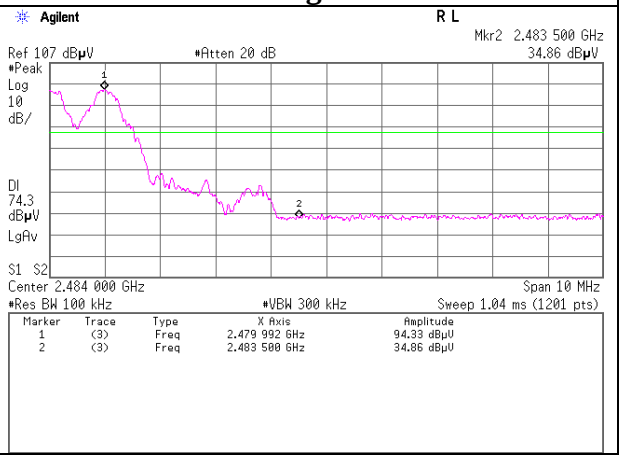
Conducted Emission Band Edge compliance

Tx DH5, Hopping on

Low

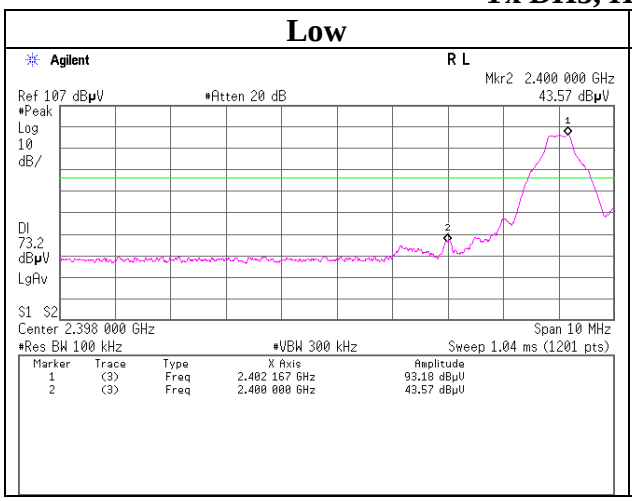


High

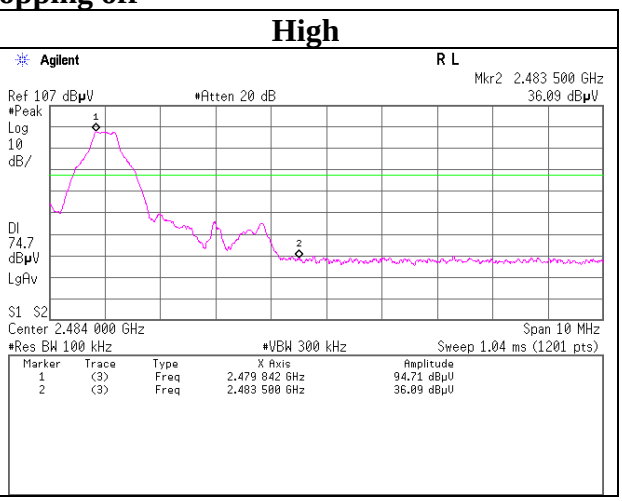


Tx DH5, Hopping off

Low



High



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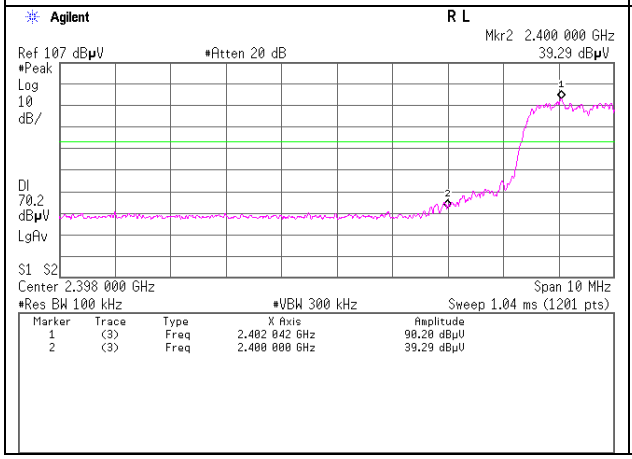
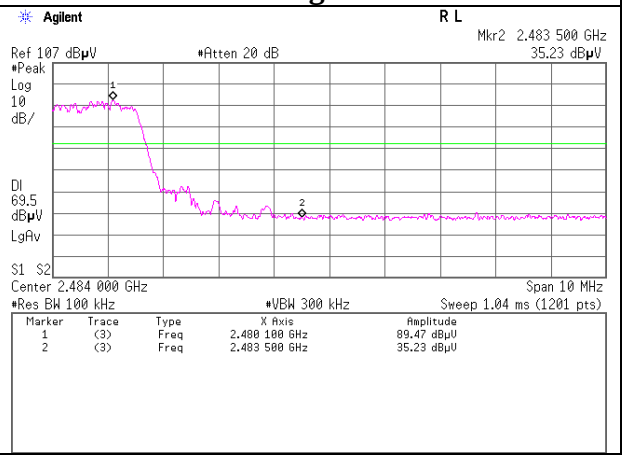
Conducted Emission Band Edge compliance

Tx 3DH5, Hopping on

Low

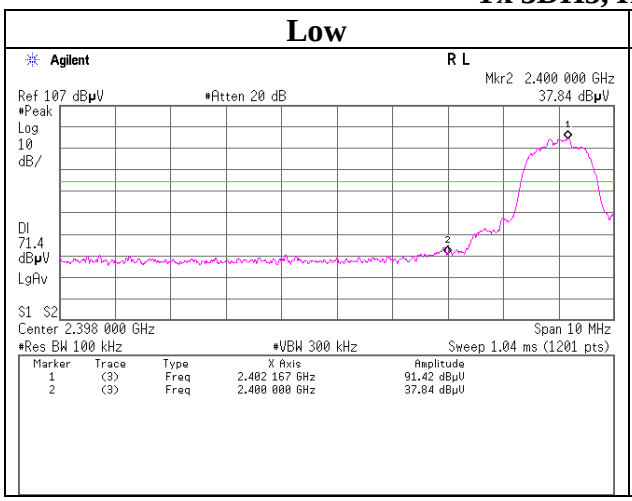


High

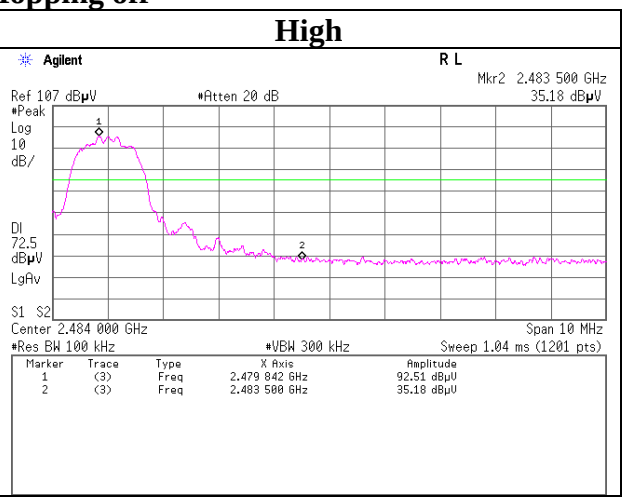


Tx 3DH5, Hopping off

Low



High



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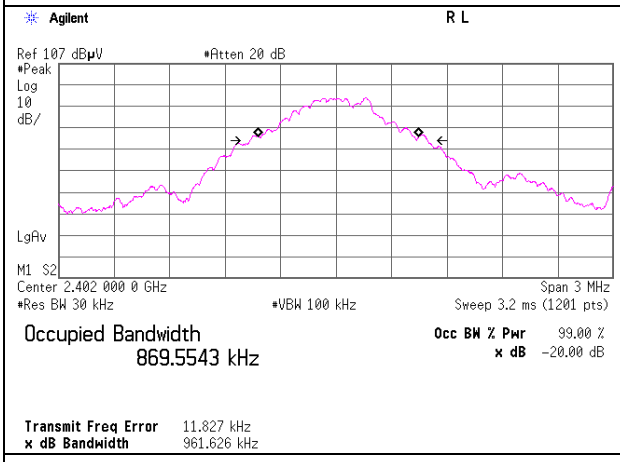
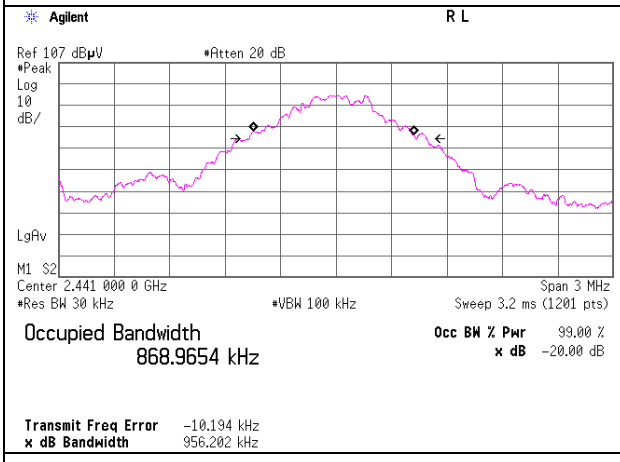
99%Occupied Bandwidth

Tx DH5, Hopping off

2402MHz



2441MHz



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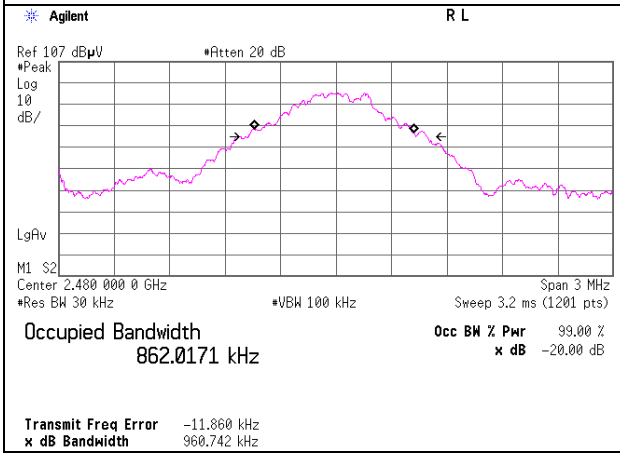
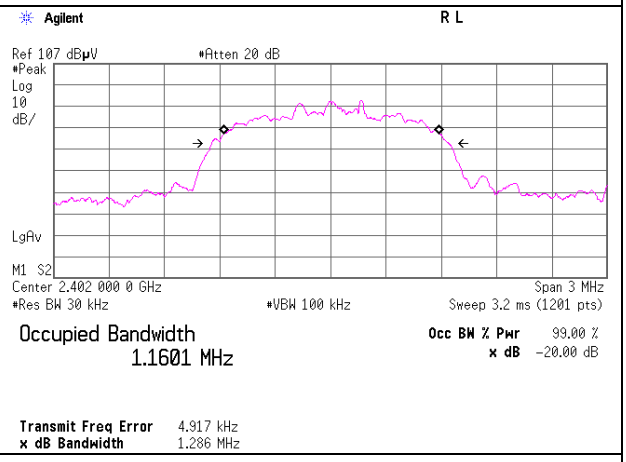


Tx 3DH5, Hopping off

2402MHz



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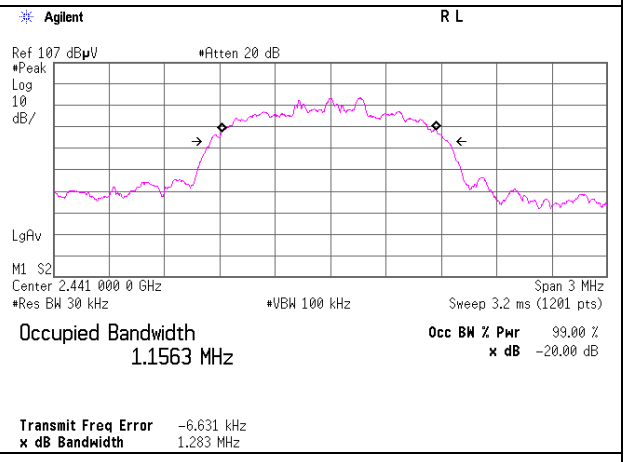

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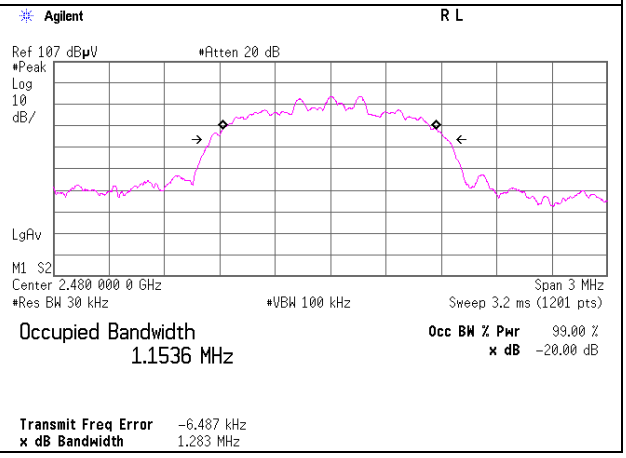

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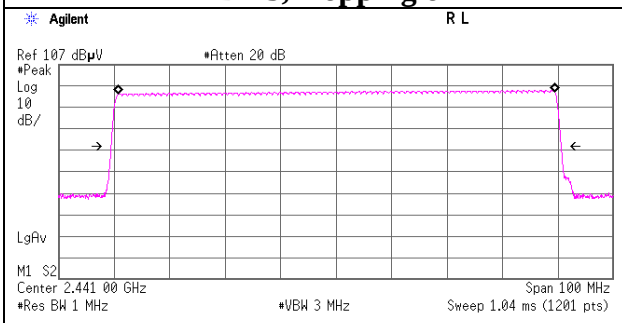
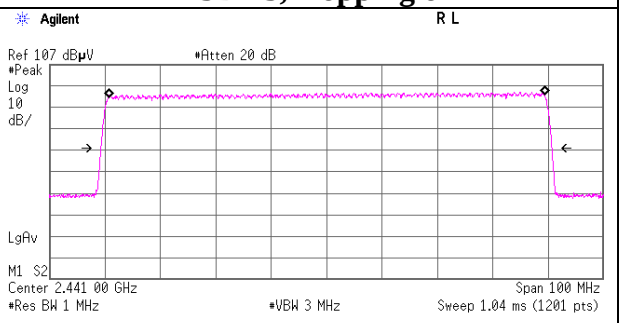
99% Occupied Bandwidth

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)
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2012/02/29 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	RE	2012/02/06 * 12
MJM-09	Measure	KDS	E19-55	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MRENT-95	Spectrum Analyzer	Agilent	E4440A	MY46185823	RE	2012/06/19 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2012/08/17 * 12
MCC-141	Microwave Cable	Junkosha	MWX221	1203S212(1m) / 1204S062(5m)	RE	2012/04/23 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2012/03/28 * 12
MHF-20	High Pass Filter 3.5-18.0GHz	TOKIMEC	TF323DCC	607	RE	2011/09/08 * 12
MCC-79	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278923/4	RE	2011/12/08 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	-	RE	2012/02/06 * 12
MJM-07	Measure	PROMART	SEN1955	-	RE	-
MSA-05	Spectrum Analyzer	Advantest	R3273	160400285	RE	2011/11/23 * 12
MTR-07	Test Receiver	Rohde & Schwarz	ESCI	100635	RE	2012/04/05 * 12
MBA-05	Biconical Antenna	Schwarzbeck	BBA9106	1302	RE	2011/11/16 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	N/A	RE	2011/11/16 * 12
MCC-50	Coaxial Cable	UL Japan	-	-	RE	2012/06/01 * 12
AT-38	Attenuator	Anritsu	MP721B	6200961025	RE	2011/12/08 * 12
MPA-14	Pre Amplifier	SONOMA INSTRUMENT	310	260833	RE	2012/03/05 * 12
MHA-17	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170307	RE	2012/06/27 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	AT	2012/04/06 * 12
MCC-66	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX102	28636/2	AT	2012/04/25 * 12
MCC-102	Microwave Cable	Hirose Electric	U.FL-2LP-066J1-A(200)	-	AT	2012/06/27 * 12
MAT-22	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2012/03/27 * 12
MPM-08	Power Meter	Anritsu	MA2495A	6K00003338	AT	2011/09/13 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	011737	AT	
MDPS-13	DC Power Supply	Kikusui	PAK35-10A	LF002313	AT	Pre Check
MMM-11	Digital HiTESTER	Hioki	3805	060100600	AT	2012/05/18 * 12

The expiration date of the calibration is the end of the expired month.
All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

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

Test Item:

RE: Radiated Emission
AT: Antenna Terminal Conducted test