RADIO TEST REPORT

Test Report No. : 10184497H-A-R1

Applicant	:	**Mitsubishi Electric Corporation Sanda Works**
Type of Equipment	:	**Display Audio**
Model No.	:	**NR-245UH**
FCC ID	:	**UJHNR244245BT**
Test regulation	:	**FCC Part 15 Subpart C: 2014**
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 10184497H-A. 10184497H-A is replaced with this report.

Date of test: February 21 and 25, 2014

Representative test engineer:
Masatoshi Nishiguchi
Engineer
Consumer Technology Division

Approved by:
Masanori Nishiyama
Manager
Consumer Technology Division

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.: 10184497H-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	10184497H-A	June 19, 2014	-	-
1	10184497H-A-R1	June 23, 2014	P.4	Addition of explanatory note for Model No.: NR-245UH

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SECTION 1: Customer information

Company Name	:	Mitsubishi Electric Corporation Sanda Works
Address	:	2-3-33, Miwa, Sanda-city, Hyogo, 669-1513, Japan
Telephone Number	:	+81-79-559-3623
Facsimile Number	:	+81-79-559-3875
Contact Person	:	Kenji Otani

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

2.1 Identification of E.U.T.

Type of Equipment	:	Display Audio
Model No.	:	NR-245UH
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 12.0V
Receipt Date of Sample	:	January 14, 2014
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	:	26MHz

Radio Specification
[Bluetooth (Ver. 3.0 with EDR function)]

Radio Type	:	Transceiver
Frequency of Operation	:	2402-2480MHz
Modulation	:	FHSS
Power Supply (inner)	:	DC 3.3V
Antenna type	:	Inverted F Antenna
Antenna Gain	:	0.11dBi

Variant model
Model No. NR-245UH has variant model No.: NR-244UH.
Model No. NR-245UH was tested as a representative because these models embedded same module.
Model No. NR-245UH has Internal and External Amplifiers.
The test was performed on Model No. NR-245UH with Internal Amplifier according to the customer's request.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart C: 2014, final revised on May 1, 2014 and effective June 2, 2014
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 May 1, 2014 does not affect the test specification applied to the EUT.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.4:2003 7. AC powerline conducted emission measurements **IC:** RSS-Gen 7.2.4	**FCC:** Section 15.207 **IC:** RSS-Gen 7.2.4	-	N/A	*1)
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 (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	12.1dB 135.194MHz, QP, Hori. 135.202MHz, QP, Hori. 135.209MHz, QP, Hori.	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 voltage. Therefore, this EUT complies with the requirement.

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

3.3 Addition to standard

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

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

3.4 Uncertainty

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

Test room (semi-anechoic chamber)	**Radiated emission**						
	(3m*)(±dB)				**(1m*)(±dB)**		**(0.5m*)(±dB)**
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz	1GHz -10GHz	10GHz -18GHz	18GHz -26.5GHz	26.5GHz -40GHz
No.1	4.0dB	5.1dB	5.0dB	5.1dB	6.0dB	4.9dB	4.3dB
No.2	3.9dB	5.2dB	5.0dB	4.9dB	5.9dB	4.7dB	4.2dB
No.3	4.3dB	5.1dB	5.2dB	5.2dB	6.0dB	4.8dB	4.2dB
No.4	4.6dB	5.2dB	5.0dB	5.2dB	6.0dB	5.7dB	4.2dB

*3m/1m/0.5m = Measurement distance

Power meter (±dB)	
Below 1GHz	Above 1GHz
0.7dB	1.5dB

Antenna terminal conducted emission and Power density (±dB)			**Antenna terminal conducted emission (±dB)**		**Channel power (±dB)**
Below 1GHz	1GHz-3GHz	3GHz-18GHz	18GHz-26.5GHz	26.5GHz-40GHz	
1.5dB	1.7dB	2.8dB	2.8dB	2.9dB	2.6dB

Radiated emission test(3m)
The data listed in this test report has enough margin, more than the site margin.

3.5 Test Location

UL Japan, Inc. Ise EMC Lab. *NVLAP Lab. code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8999 Facsimile : +81 596 24 8124

	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	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	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	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	2973C-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	4.0 x 4.5 x 2.7m	4.0 x 4.5 m	-
No.6 measurement room	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	8.0 x 4.6 x 2.8m	2.4 x 2.4m	-
No.11 measurement room	-	6.2 x 4.7 x 3.0m	2.4 x 3.4m	-

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

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

Refer to APPENDIX.

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

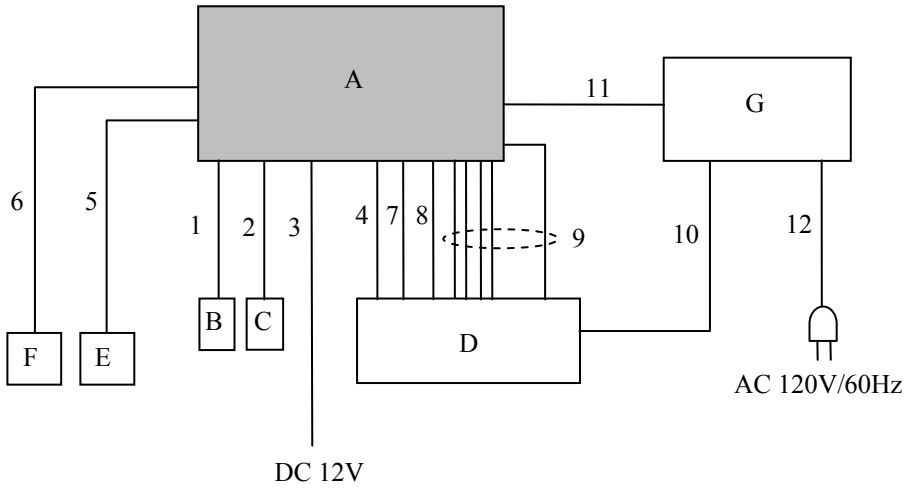
4.1 Operating Mode(s)

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

Details of Operating Mode(s)

Test Item	Mode	Tested frequency
Spurious Emission (Conducted/Radiated)	Tx (Hopping off) DH5, 3DH5	2402MHz 2441MHz 2480MHz
Carrier Frequency Separation 20dB Bandwidth	Tx (Hopping on) DH5, 3DH5 Inquiry	2402MHz 2441MHz 2480MHz
Number of Hopping Frequency	Tx (Hopping on) DH5, 3DH5 Inquiry	-
Dwell time	Tx (Hopping on), -DH1, DH3, DH5 -3DH1, 3DH3, 3DH5 Inquiry	-
Maximum Peak Output Power	Tx (Hopping off) DH5, 2DH5, 3DH5 Inquiry	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 Inquiry	2402MHz 2441MHz 2480MHz
*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload length (except Dwell time test) *We removed 2DH mode (2 Mb/s EDR: pi/4DQPSK) except power measurement by using 3DH mode (3 Mb/s EDR:8DPSK) as a representative. *EUT has the power settings by the software as follows; Power settings: 0dBm Software: 1.0 *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.		

4.2 Configuration and peripherals



* Cabling and setup were taken into consideration and test data was taken under worse case conditions.

Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Display Audio	NR-245UH	94276002 *1) 94276004 *2)	Mitsubishi Electric Corporation Sanda Works	EUT
B	GPS Antenna	-	-	MITSUMI	-
C	75 ohm Terminator	-	-	-	-
D	Jig	-	-	Mitsubishi Electric Corporation Sanda Works	-
E	Speaker	TS-STx5	FM08 47	Pioneer	-
F	Speaker	TS-STx5	FM08 47	Pioneer	-
G	DVD Player	DV-600AV-S	HEKD013328LS	Pioneer	-

*1) Used for Radiated Spurious Emission test
*2) Used for Antenna Terminal Conducted tests

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	GPS Cable	3.0	Shielded	Shielded	-
2	Signal Cable	0.2	Shielded	Shielded	-
3	DC Cable	3.5	Unshielded	Unshielded	-
4	Audio Cable	2.0	Unshielded	Unshielded	-
5	Audio Cable	2.2	Unshielded	Unshielded	-
6	Audio Cable	2.2	Unshielded	Unshielded	-
7	USB Cable	2.0	Shielded	Shielded	-
8	USB Cable	2.0	Shielded	Shielded	-
9	Signal Cable	2.0	Unshielded	Unshielded	x5
10	Video Cable	5.0	Shielded	Shielded	-
11	HDMI Cable	5.0	Shielded	Shielded	-
12	AC 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 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	Below 30MHz	30MHz to 300MHz	300MHz to 1GHz	Above 1GHz
Antenna Type	Loop	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	RBW: 1MHz VBW: 3MHz	RBW: 1MHz VBW: 10Hz *1)	RBW: 100kHz VBW: 300kHz
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-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 *1)	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak	-	Power Meter (Sensor: 50MHz BW)
Carrier Frequency Separation	3MHz	30kHz, 100kHz, 5MHz	100kHz, 300kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Number of Hopping Frequency	30MHz	300kHz	1MHz	Auto	Peak	Max Hold	Spectrum Analyzer
Dwell Time	Zero Span	100kHz, 1MHz	300kHz, 3MHz	As necessary capture the entire dwell time per hopping channel	Peak	Max Hold	Spectrum Analyzer
Conducted Spurious Emission *2)	9kHz to 150kHz	200Hz	620Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150kHz to 30MHz	9.1kHz	27kHz				
	30MHz to 25GHz (Less or equal to 5GHz)	100kHz	300kHz				
Conducted Spurious Emission Band Edge compliance	10MHz	100kHz	300kHz	Auto	Peak	Max Hold	Spectrum Analyzer

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

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

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Data of EMI test

20dB Bandwidth and Carrier Frequency Separation

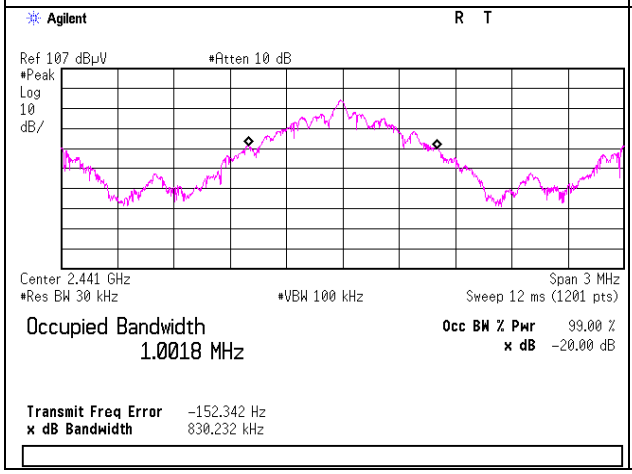
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.946	1.000	>= 0.631
DH5	2441.0	0.951	1.000	>= 0.634
DH5	2480.0	0.946	1.000	>= 0.631
3DH5	2402.0	1.288	1.000	>= 0.859
3DH5	2441.0	1.291	1.000	>= 0.861
3DH5	2480.0	1.290	1.000	>= 0.860
Inquiry	2441.0	0.830	2.000	>= 0.553

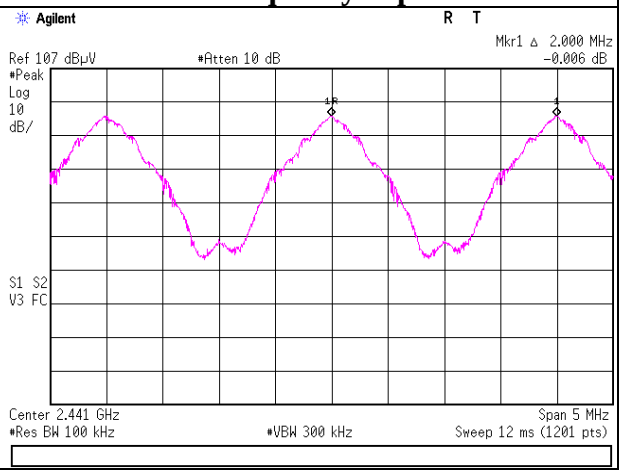
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).
No limit applies to 20dB Bandwidth.

Inquiry

20dB Bandwidth



Carrier Frequency Separation

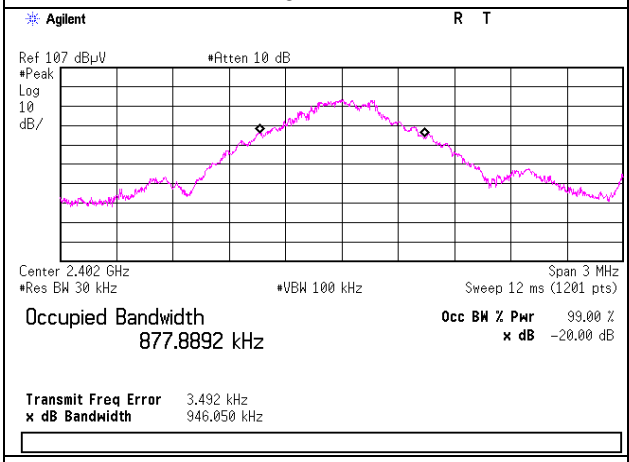


20dB Bandwidth and Carrier Frequency Separation

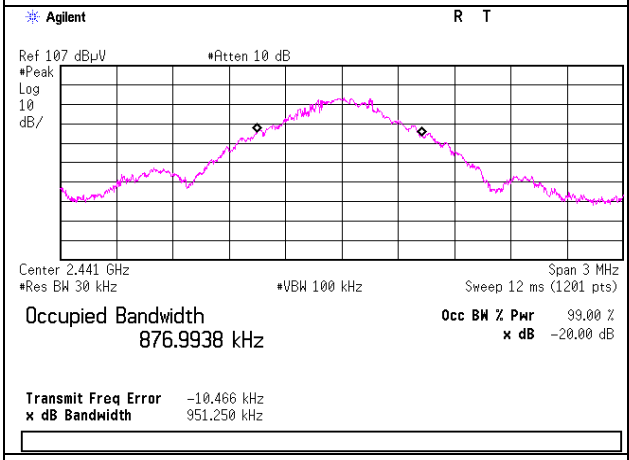
Tx DH5

20dB Bandwidth

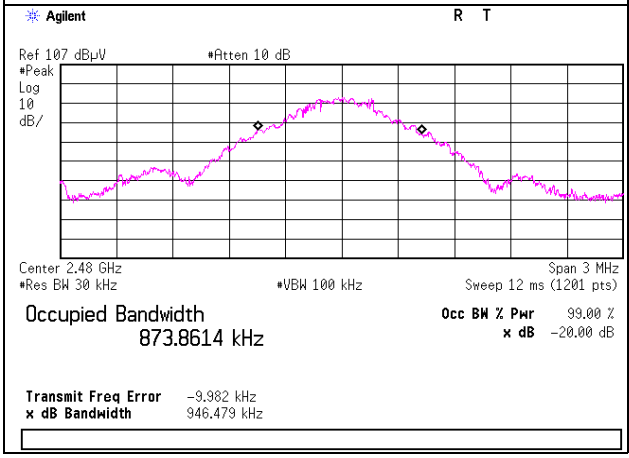
2402MHz



2441MHz

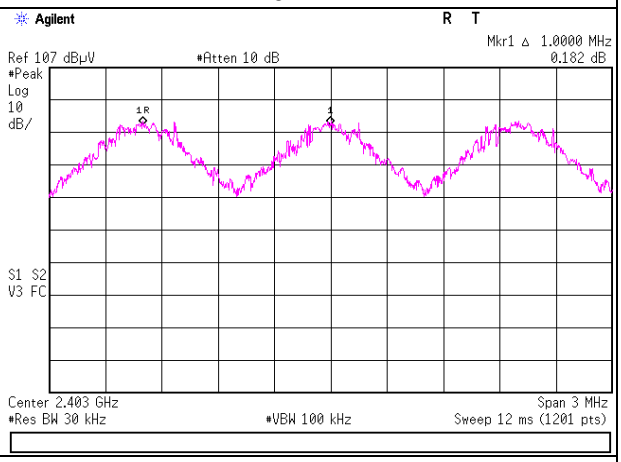


2480MHz

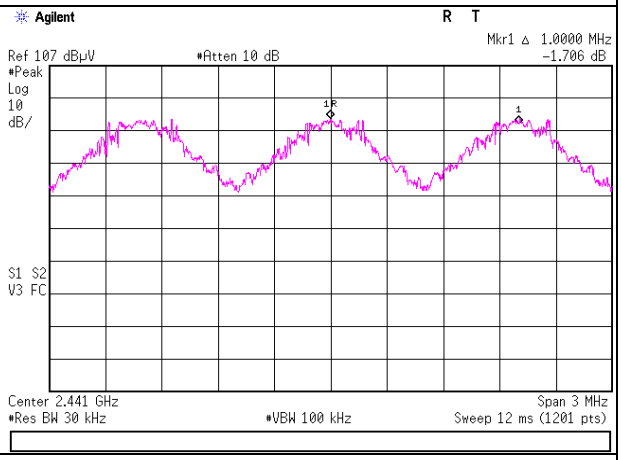


Carrier Frequency Separation

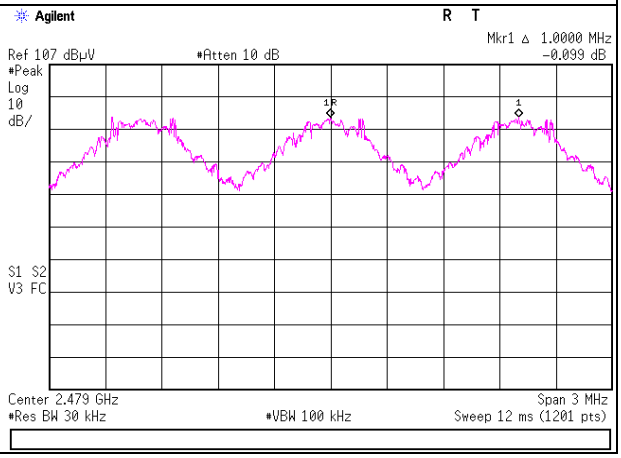
2402MHz



2441MHz



2480MHz

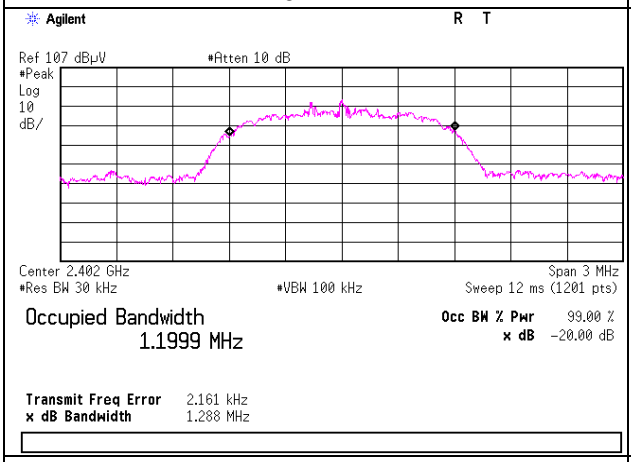


20dB Bandwidth and Carrier Frequency Separation

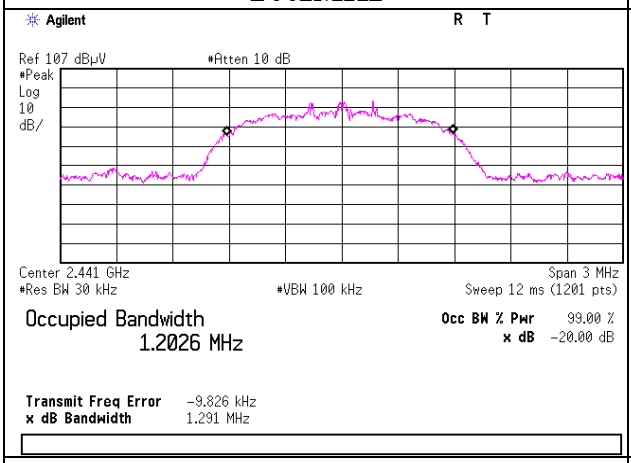
Tx 3DH5

20dB Bandwidth

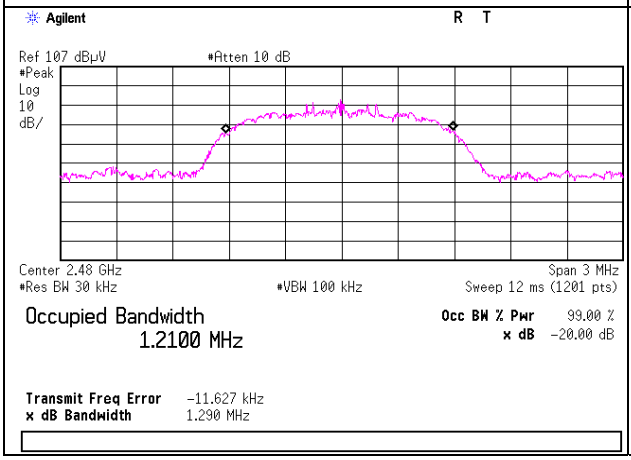
2402MHz



2441MHz

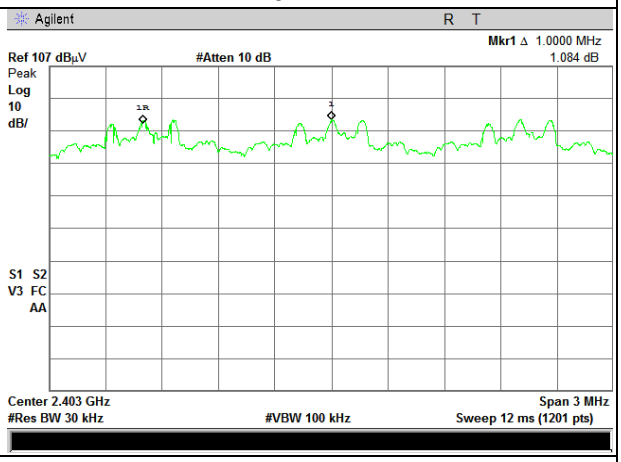


2480MHz

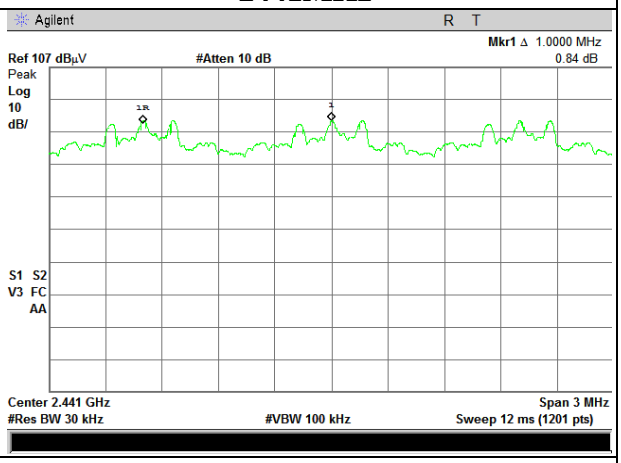


Carrier Frequency Separation

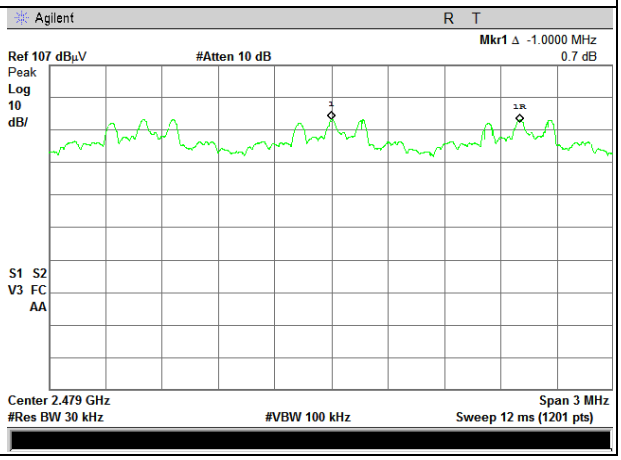
2402MHz



2441MHz



2480MHz



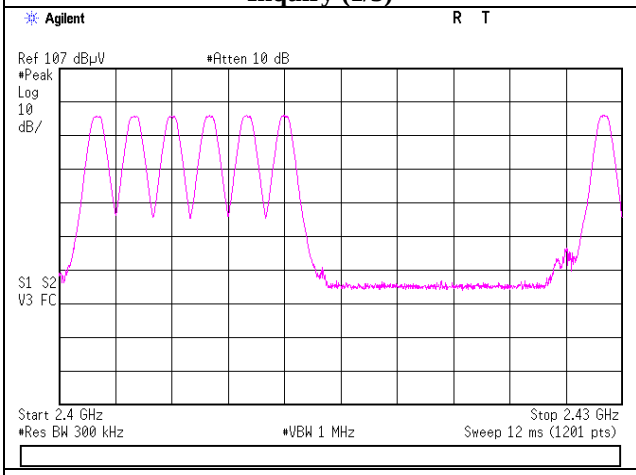
Number of Hopping Frequency

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

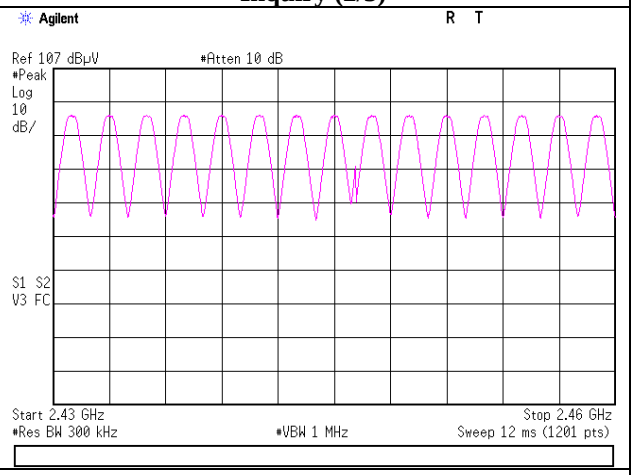
Mode	Number of channel [times]	Limit [times]
DH5	79	>= 15
3DH5	79	>= 15
Inquiry	32	>= 15

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

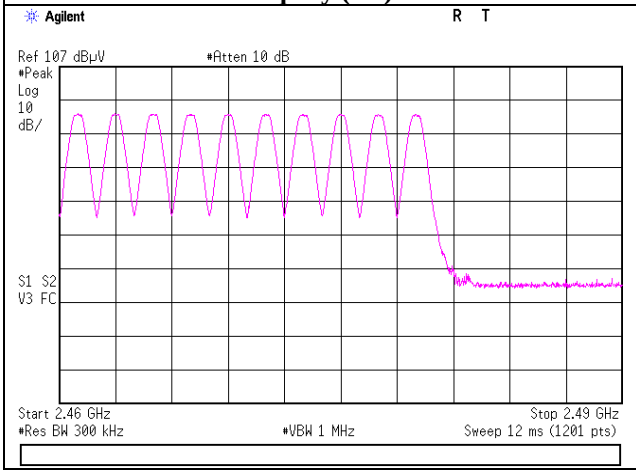
Inquiry (1/3)



Inquiry (2/3)



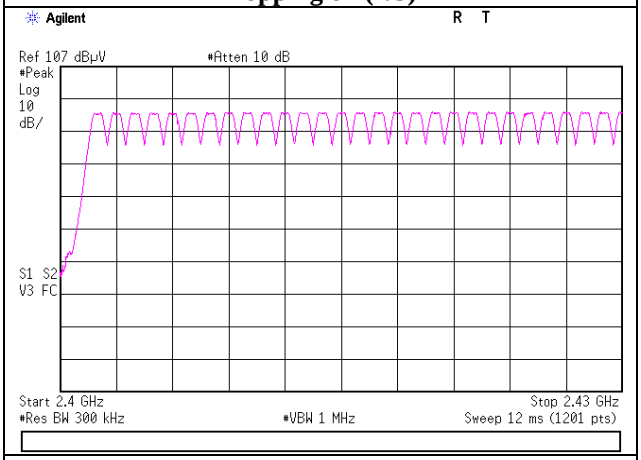
Inquiry (3/3)



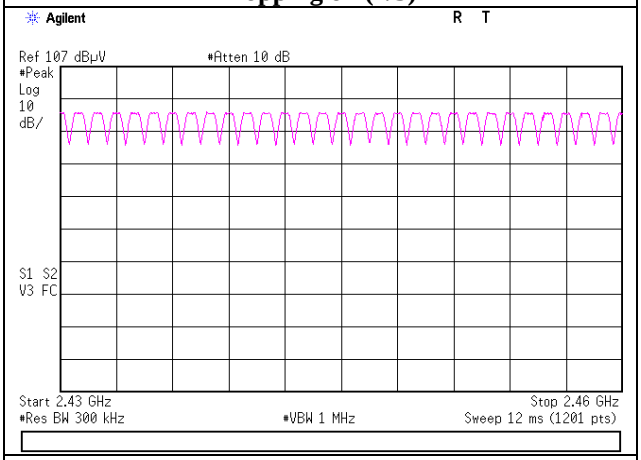
Number of Hopping Frequency

Tx DH5

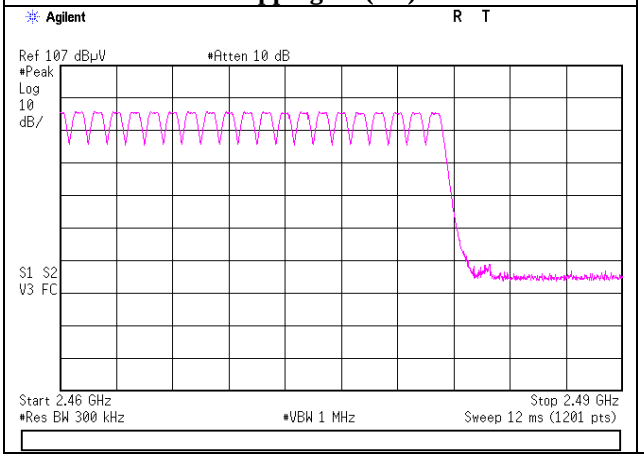
Hopping on (1/3)



Hopping on (2/3)

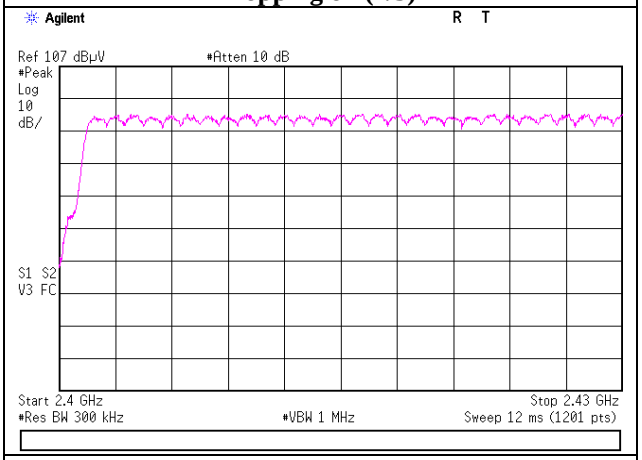


Hopping on (3/3)

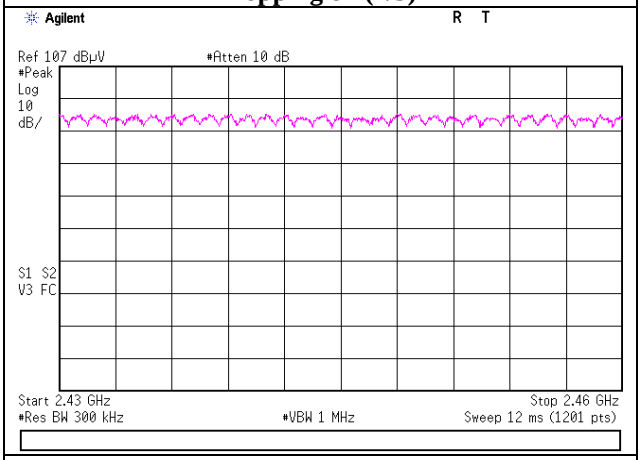


Tx 3DH5

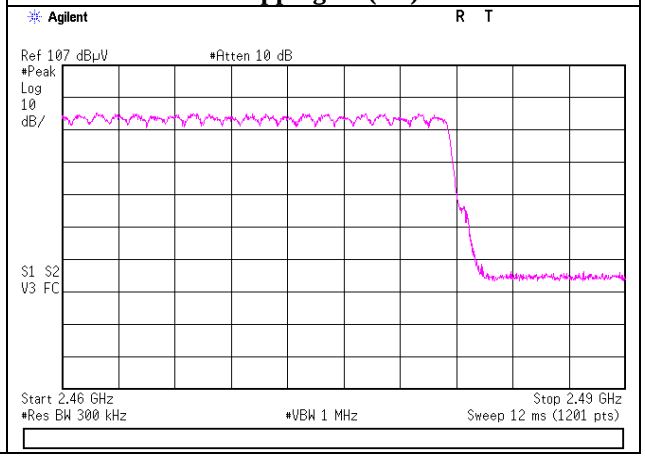
Hopping on (1/3)



Hopping on (2/3)



Hopping on (3/3)



Dwell time

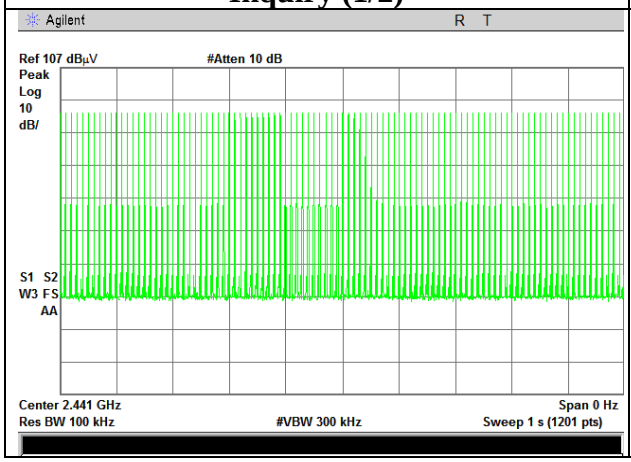
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi
Mode	Tx (Hopping on) DH5/3DH5/Inquiry

Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8(32 Hopping x 0.4)second period	Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	50.0 times / 5 sec. x 31.6 sec. = 316 times	0.423	134	400
DH3	25.0 times / 5 sec. x 31.6 sec. = 158 times	1.667	263	400
DH5	17.0 times / 5 sec. x 31.6 sec. = 108 times	2.920	315	400
3DH1	50.0 times / 5 sec. x 31.6 sec. = 316 times	0.431	136	400
3DH3	25.0 times / 5 sec. x 31.6 sec. = 158 times	1.681	266	400
3DH5	16.0 times / 5 sec. x 31.6 sec. = 102 times	2.938	300	400
Inquiry	100.0 times / 1 sec. x 12.8 sec. = 1280 times	0.123	157	400

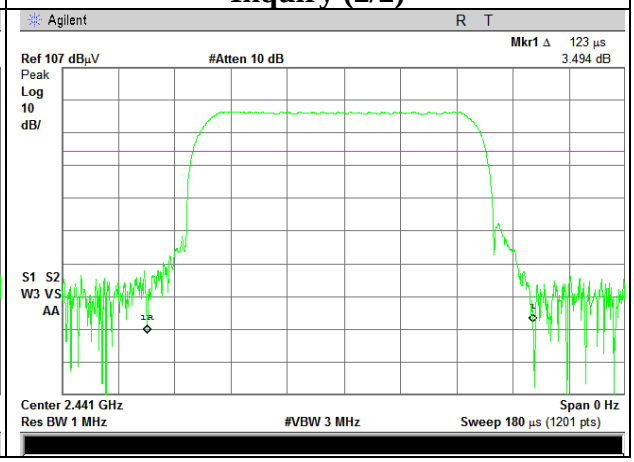
Sample Calculation
Result = Number of transmission x Length of transmition time

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 ≤ N ≤ 79), is always less than 0.4s regardless of packet size. This is confirmed in the test report for N=79.

Inquiry (1/2)

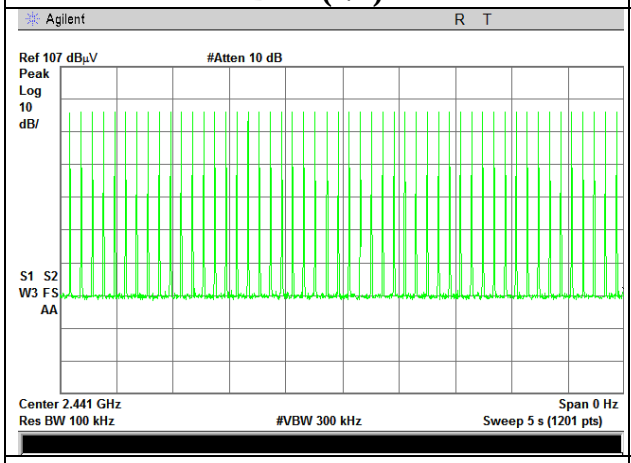


Inquiry (2/2)

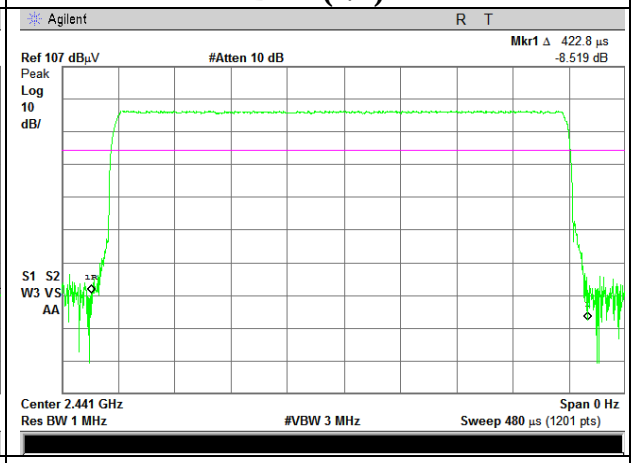


Dwell time

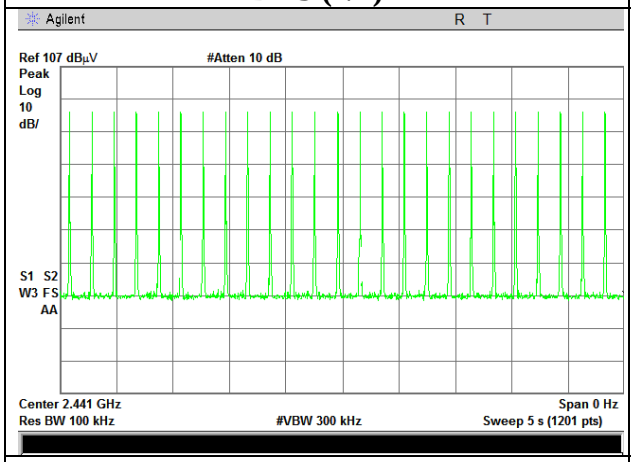
DH1 (1/2)



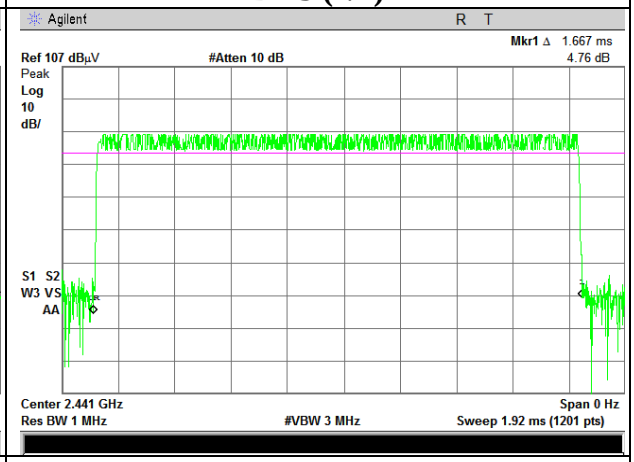
DH1 (2/2)



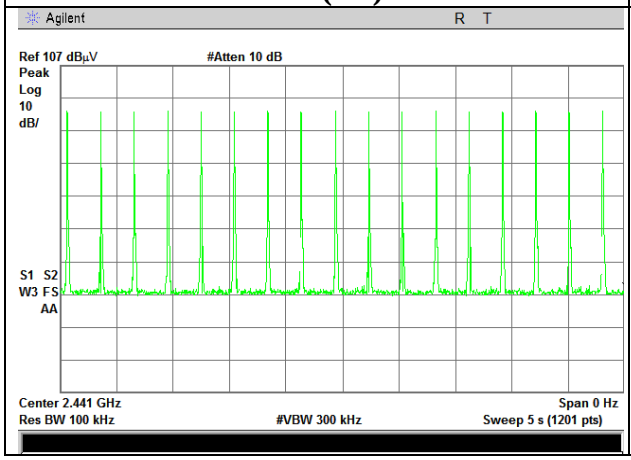
DH3 (1/2)



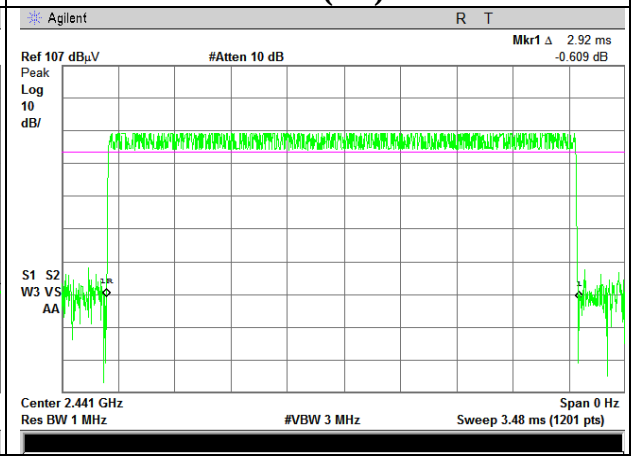
DH3 (2/2)



DH5 (1/2)

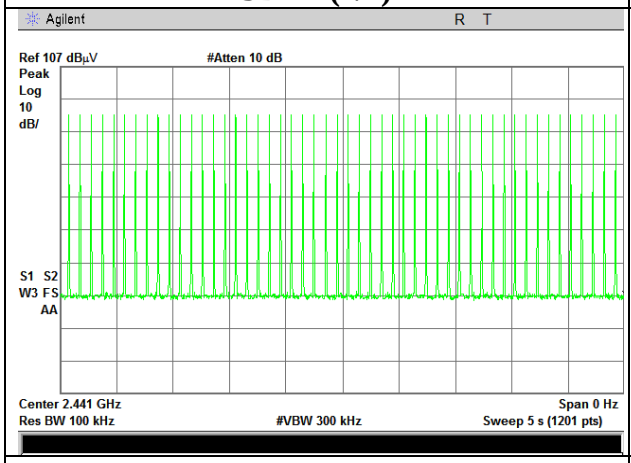


DH5 (2/2)

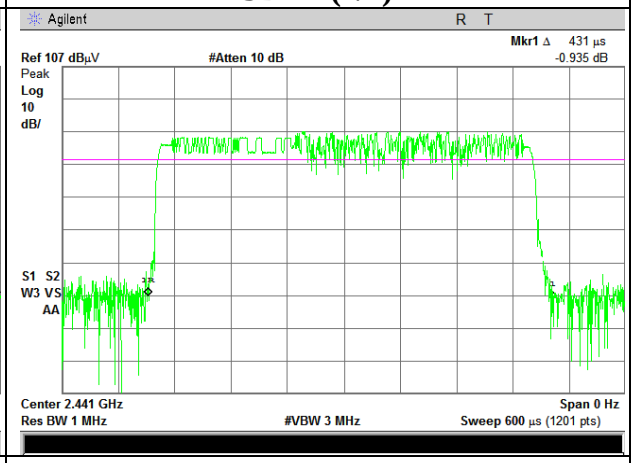


Dwell time

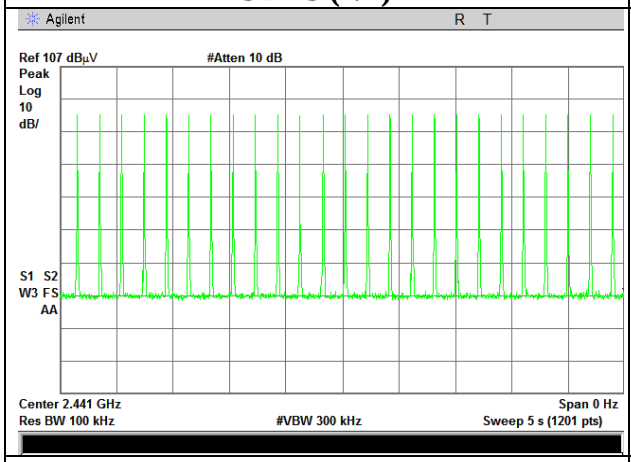
3DH1 (1/2)



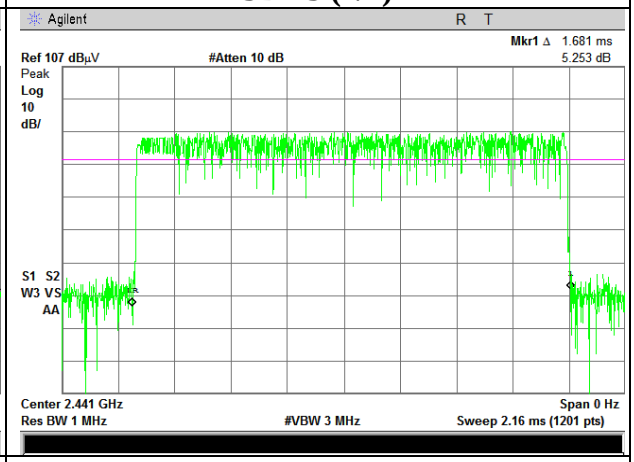
3DH1 (2/2)



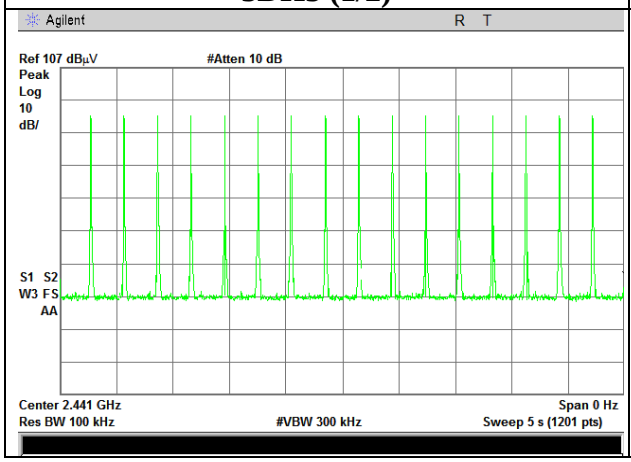
3DH3 (1/2)



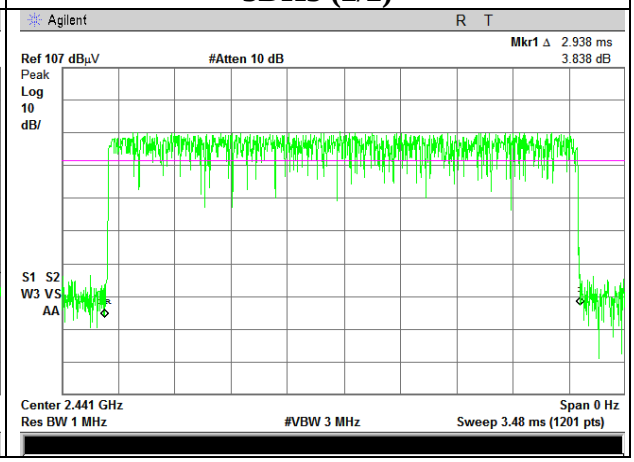
3DH3 (2/2)



3DH5 (1/2)



3DH5 (2/2)



Maximum Peak Output Power

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi
Mode	Tx (Hopping off) DH5/2DH5/3DH5/Inquiry

Mode	Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
DH5	2402.0	-13.84	2.26	10.08	-1.50	0.71	20.96	125	22.46
DH5	2441.0	-13.71	2.27	10.08	-1.36	0.73	20.96	125	22.32
DH5	2480.0	-14.04	2.28	10.08	-1.68	0.68	20.96	125	22.64
2DH5	2402.0	-13.99	2.26	10.08	-1.65	0.68	20.96	125	22.61
2DH5	2441.0	-13.87	2.27	10.08	-1.52	0.71	20.96	125	22.48
2DH5	2480.0	-14.26	2.28	10.08	-1.90	0.65	20.96	125	22.86
3DH5	2402.0	-13.69	2.26	10.08	-1.35	0.73	20.96	125	22.31
3DH5	2441.0	-13.44	2.27	10.08	-1.09	0.78	20.96	125	22.05
3DH5	2480.0	-13.95	2.28	10.08	-1.59	0.69	20.96	125	22.55
Inquiry	2441.0	-13.76	2.27	10.08	-1.41	0.72	20.96	125	22.37

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

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

Average Output Power
(Reference data for SAR testing)

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi
Mode	Tx (Hopping off) DH5/2DH5/3DH5

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
DH5	2402.0	-15.56	2.26	10.08	-3.22	0.48
DH5	2441.0	-15.40	2.27	10.08	-3.05	0.50
DH5	2480.0	-15.73	2.28	10.08	-3.37	0.46
2DH5	2402.0	-17.45	2.26	10.08	-5.11	0.31
2DH5	2441.0	-17.25	2.27	10.08	-4.90	0.32
2DH5	2480.0	-17.60	2.28	10.08	-5.24	0.30
3DH5	2402.0	-17.46	2.26	10.08	-5.12	0.31
3DH5	2441.0	-17.25	2.27	10.08	-4.90	0.32
3DH5	2480.0	-17.59	2.28	10.08	-5.23	0.30

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Radiated Spurious Emission

Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10184497H
Date 02/21/2014
Temperature/ Humidity 22 deg. C / 38% RH
Engineer Kazuya Yoshioka
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	111.000	QP	39.1	11.7	8.2	32.1	26.9	43.5	16.6	
Hori	124.180	QP	28.3	13.3	8.3	32.1	17.8	43.5	25.7	
Hori	135.210	QP	40.6	14.2	8.4	32.1	31.1	43.5	12.4	
Hori	390.795	QP	33.3	17.2	10.5	32.0	29.0	46.0	17.0	
Hori	811.193	QP	29.1	22.0	12.8	31.5	32.4	46.0	13.6	
Hori	873.594	QP	27.5	22.2	13.1	31.1	31.7	46.0	14.3	
Hori	2390.000	PK	40.2	28.2	3.1	32.4	39.1	73.9	34.8	
Hori	4804.000	PK	NS	-	-	-	-	73.9	-	
Hori	7206.000	PK	NS	-	-	-	-	73.9	-	
Hori	9608.000	PK	NS	-	-	-	-	73.9	-	
Hori	2390.000	AV	28.8	28.2	3.1	32.4	27.7	53.9	26.2	
Hori	4804.000	AV	NS	-	-	-	-	53.9	-	
Hori	7206.000	AV	NS	-	-	-	-	53.9	-	
Hori	9608.000	AV	NS	-	-	-	-	53.9	-	
Vert	111.000	QP	36.1	11.7	8.2	32.1	23.9	43.5	19.6	
Vert	124.183	QP	25.6	13.3	8.3	32.1	15.1	43.5	28.4	
Vert	135.200	QP	33.2	14.2	8.4	32.1	23.7	43.5	19.8	
Vert	390.793	QP	29.9	17.2	10.5	32.0	25.6	46.0	20.4	
Vert	811.192	QP	27.1	22.0	12.8	31.5	30.4	46.0	15.6	
Vert	873.595	QP	29.0	22.2	13.1	31.1	33.2	46.0	12.8	
Vert	2390.000	PK	41.2	28.2	3.1	32.4	40.1	73.9	33.8	
Vert	4804.000	PK	NS	-	-	-	-	73.9	-	
Vert	7206.000	PK	NS	-	-	-	-	73.9	-	
Vert	9608.000	PK	NS	-	-	-	-	73.9	-	
Vert	2390.000	AV	28.7	28.2	3.1	32.4	27.6	53.9	26.3	
Vert	4804.000	AV	NS	-	-	-	-	53.9	-	
Vert	7206.000	AV	NS	-	-	-	-	53.9	-	
Vert	9608.000	AV	NS	-	-	-	-	53.9	-	

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
NS: No signal detected

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	86.7	28.2	3.1	32.4	85.6	-	-	Carrier
Hori	2400.000	PK	37.1	28.2	3.1	32.4	36.0	65.6	29.6	
Vert	2402.000	PK	90.5	28.2	3.1	32.4	89.4	-	-	Carrier
Vert	2400.000	PK	41.0	28.2	3.1	32.4	39.9	69.4	29.5	

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

Radiated Spurious Emission

Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10184497H
Date 02/21/2014
Temperature/ Humidity 22 deg. C / 38% RH
Engineer Kazuya Yoshioka
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	110.998	QP	39.6	11.7	8.2	32.1	27.4	43.5	16.1	
Hori	124.185	QP	28.1	13.3	8.3	32.1	17.6	43.5	25.9	
Hori	135.196	QP	40.8	14.2	8.4	32.1	31.3	43.5	12.2	
Hori	390.782	QP	33.3	17.2	10.5	32.0	29.0	46.0	17.0	
Hori	811.183	QP	29.1	22.0	12.8	31.5	32.4	46.0	13.6	
Hori	873.598	QP	27.3	22.2	13.1	31.1	31.5	46.0	14.5	
Hori	4882.000	PK	NS	-	-	-	-	73.9	-	
Hori	7323.000	PK	NS	-	-	-	-	73.9	-	
Hori	9764.000	PK	NS	-	-	-	-	73.9	-	
Hori	4882.000	AV	NS	-	-	-	-	53.9	-	
Hori	7323.000	AV	NS	-	-	-	-	53.9	-	
Hori	9764.000	AV	NS	-	-	-	-	53.9	-	
Vert	110.994	QP	36.1	11.7	8.2	32.1	23.9	43.5	19.6	
Vert	124.177	QP	25.8	13.3	8.3	32.1	15.3	43.5	28.2	
Vert	135.196	QP	32.5	14.2	8.4	32.1	23.0	43.5	20.5	
Vert	390.776	QP	28.1	17.2	10.5	32.0	23.8	46.0	22.2	
Vert	811.199	QP	27.0	22.0	12.8	31.5	30.3	46.0	15.7	
Vert	873.602	QP	28.7	22.2	13.1	31.1	32.9	46.0	13.1	
Vert	4882.000	PK	NS	-	-	-	-	73.9	-	
Vert	7323.000	PK	NS	-	-	-	-	73.9	-	
Vert	9764.000	PK	NS	-	-	-	-	73.9	-	
Vert	4882.000	AV	NS	-	-	-	-	53.9	-	
Vert	7323.000	AV	NS	-	-	-	-	53.9	-	
Vert	9764.000	AV	NS	-	-	-	-	53.9	-	

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
NS: No signal detected

Radiated Spurious Emission

Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10184497H
Date 02/21/2014
Temperature/ Humidity 22 deg. C / 38% RH
Engineer Kazuya Yoshioka
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	110.996	QP	39.7	11.7	8.2	32.1	27.5	43.5	16.0	
Hori	124.175	QP	27.9	13.3	8.3	32.1	17.4	43.5	26.1	
Hori	135.194	QP	40.9	14.2	8.4	32.1	31.4	43.5	12.1	
Hori	390.778	QP	33.0	17.2	10.5	32.0	28.7	46.0	17.3	
Hori	811.181	QP	29.0	22.0	12.8	31.5	32.3	46.0	13.7	
Hori	873.596	QP	27.2	22.2	13.1	31.1	31.4	46.0	14.6	
Hori	2483.500	PK	41.7	28.4	3.1	32.3	40.9	73.9	33.0	
Hori	4960.000	PK	NS	-	-	-	-	73.9	-	
Hori	7440.000	PK	NS	-	-	-	-	73.9	-	
Hori	9920.000	PK	NS	-	-	-	-	73.9	-	
Hori	2483.500	AV	29.2	28.4	3.1	32.3	28.4	53.9	25.6	
Hori	4960.000	AV	NS	-	-	-	-	53.9	-	
Hori	7440.000	AV	NS	-	-	-	-	53.9	-	
Hori	9920.000	AV	NS	-	-	-	-	53.9	-	
Vert	110.998	QP	36.0	11.7	8.2	32.1	23.8	43.5	19.7	
Vert	124.187	QP	25.6	13.3	8.3	32.1	15.1	43.5	28.4	
Vert	135.204	QP	33.3	14.2	8.4	32.1	23.8	43.5	19.7	
Vert	390.786	QP	29.1	17.2	10.5	32.0	24.8	46.0	21.2	
Vert	811.191	QP	27.2	22.0	12.8	31.5	30.5	46.0	15.5	
Vert	873.598	QP	29.0	22.2	13.1	31.1	33.2	46.0	12.8	
Vert	2483.500	PK	40.9	28.4	3.1	32.3	40.1	73.9	33.8	
Vert	4960.000	PK	NS	-	-	-	-	73.9	-	
Vert	7440.000	PK	NS	-	-	-	-	73.9	-	
Vert	9920.000	PK	NS	-	-	-	-	73.9	-	
Vert	2483.500	AV	29.2	28.4	3.1	32.3	28.4	53.9	25.5	
Vert	4960.000	AV	NS	-	-	-	-	53.9	-	
Vert	7440.000	AV	NS	-	-	-	-	53.9	-	
Vert	9920.000	AV	NS	-	-	-	-	53.9	-	

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
NS: No signal detected

Radiated Spurious Emission

Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10184497H
Date 02/21/2014
Temperature/ Humidity 22 deg. C / 38% RH
Engineer Kazuya Yoshioka
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	110.996	QP	40.5	11.7	8.2	32.1	28.3	43.5	15.2	
Hori	124.183	QP	28.1	13.3	8.3	32.1	17.6	43.5	25.9	
Hori	135.202	QP	40.9	14.2	8.4	32.1	31.4	43.5	12.1	
Hori	390.784	QP	32.9	17.2	10.5	32.0	28.6	46.0	17.4	
Hori	811.187	QP	29.4	22.0	12.8	31.5	32.7	46.0	13.3	
Hori	873.602	QP	27.0	22.2	13.1	31.1	31.2	46.0	14.8	
Hori	2390.000	PK	40.8	28.2	3.1	32.4	39.7	73.9	34.2	
Hori	4804.000	PK	NS	-	-	-	-	73.9	-	
Hori	7206.000	PK	NS	-	-	-	-	73.9	-	
Hori	9608.000	PK	NS	-	-	-	-	73.9	-	
Hori	2390.000	AV	29.0	28.2	3.1	32.4	27.9	53.9	26.0	
Hori	4804.000	AV	NS	-	-	-	-	53.9	-	
Hori	7206.000	AV	NS	-	-	-	-	53.9	-	
Hori	9608.000	AV	NS	-	-	-	-	53.9	-	
Vert	110.990	QP	36.0	11.7	8.2	32.1	23.8	43.5	19.7	
Vert	124.179	QP	25.8	13.3	8.3	32.1	15.3	43.5	28.2	
Vert	135.206	QP	33.7	14.2	8.4	32.1	24.2	43.5	19.3	
Vert	390.768	QP	28.4	17.2	10.5	32.0	24.1	46.0	21.9	
Vert	811.195	QP	26.6	22.0	12.8	31.5	29.9	46.0	16.1	
Vert	873.598	QP	28.6	22.2	13.1	31.1	32.8	46.0	13.2	
Vert	2390.000	PK	41.1	28.2	3.1	32.4	40.0	73.9	33.9	
Vert	4804.000	PK	NS	-	-	-	-	73.9	-	
Vert	7206.000	PK	NS	-	-	-	-	73.9	-	
Vert	9608.000	PK	NS	-	-	-	-	73.9	-	
Vert	2390.000	AV	29.1	28.2	3.1	32.4	28.0	53.9	25.9	
Vert	4804.000	AV	NS	-	-	-	-	53.9	-	
Vert	7206.000	AV	NS	-	-	-	-	53.9	-	
Vert	9608.000	AV	NS	-	-	-	-	53.9	-	

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
NS: No signal detected

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	86.0	28.2	3.1	32.4	84.9	-	-	Carrier
Hori	2400.000	PK	37.5	28.2	3.1	32.4	36.4	64.9	28.5	
Vert	2402.000	PK	89.1	28.2	3.1	32.4	88.0	-	-	Carrier
Vert	2400.000	PK	40.4	28.2	3.1	32.4	39.3	68.0	28.7	

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

Radiated Spurious Emission

Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10184497H
Date 02/21/2014
Temperature/ Humidity 22 deg. C / 38% RH
Engineer Kazuya Yoshioka
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	111.000	QP	39.7	11.7	8.2	32.1	27.5	43.5	16.0	
Hori	124.193	QP	28.0	13.3	8.3	32.1	17.5	43.5	26.0	
Hori	135.202	QP	40.8	14.2	8.4	32.1	31.3	43.5	12.2	
Hori	390.774	QP	32.4	17.2	10.5	32.0	28.1	46.0	17.9	
Hori	811.211	QP	29.0	22.0	12.8	31.5	32.3	46.0	13.7	
Hori	873.602	QP	27.1	22.2	13.1	31.1	31.3	46.0	14.7	
Hori	4882.000	PK	NS	-	-	-	-	73.9	-	
Hori	7323.000	PK	NS	-	-	-	-	73.9	-	
Hori	9764.000	PK	NS	-	-	-	-	73.9	-	
Hori	4882.000	AV	NS	-	-	-	-	53.9	-	
Hori	7323.000	AV	NS	-	-	-	-	53.9	-	
Hori	9764.000	AV	NS	-	-	-	-	53.9	-	
Vert	110.990	QP	35.9	11.7	8.2	32.1	23.7	43.5	19.8	
Vert	124.195	QP	25.7	13.3	8.3	32.1	15.2	43.5	28.3	
Vert	135.196	QP	33.6	14.2	8.4	32.1	24.1	43.5	19.4	
Vert	390.768	QP	28.4	17.2	10.5	32.0	24.1	46.0	21.9	
Vert	811.193	QP	26.7	22.0	12.8	31.5	30.0	46.0	16.0	
Vert	873.586	QP	28.7	22.2	13.1	31.1	32.9	46.0	13.1	
Vert	4882.000	PK	NS	-	-	-	-	73.9	-	
Vert	7323.000	PK	NS	-	-	-	-	73.9	-	
Vert	9764.000	PK	NS	-	-	-	-	73.9	-	
Vert	4882.000	AV	NS	-	-	-	-	53.9	-	
Vert	7323.000	AV	NS	-	-	-	-	53.9	-	
Vert	9764.000	AV	NS	-	-	-	-	53.9	-	

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
NS: No signal detected

Radiated Spurious Emission

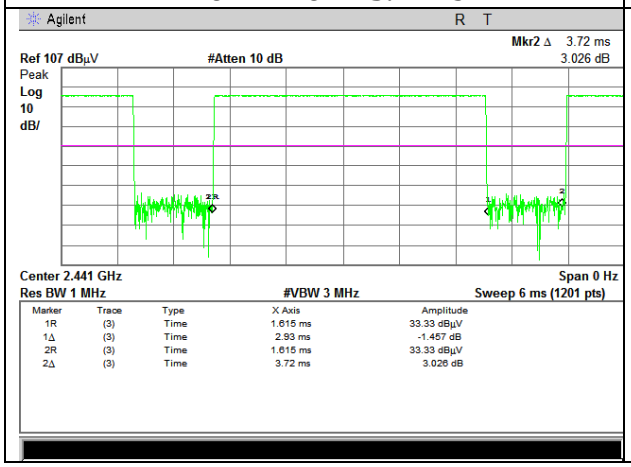
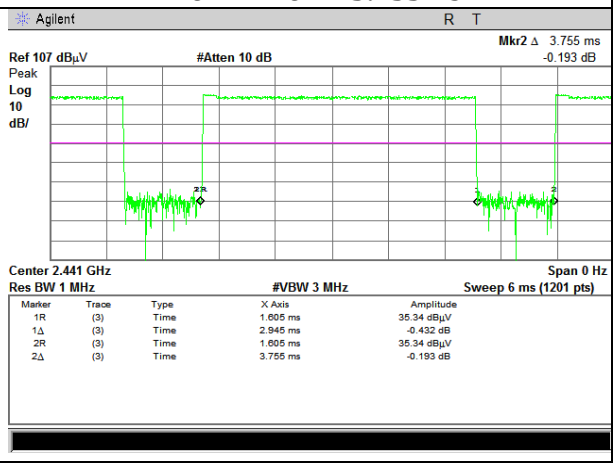
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10184497H
Date 02/21/2014
Temperature/ Humidity 22 deg. C / 38% RH
Engineer Kazuya Yoshioka
Mode Tx, 3DH5 2480MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	111.000	QP	39.3	11.7	8.2	32.1	27.1	43.5	16.4	
Hori	124.181	QP	28.1	13.3	8.3	32.1	17.6	43.5	25.9	
Hori	135.209	QP	40.9	14.2	8.4	32.1	31.4	43.5	12.1	
Hori	390.792	QP	33.2	17.2	10.5	32.0	28.9	46.0	17.1	
Hori	811.191	QP	29.0	22.0	12.8	31.5	32.3	46.0	13.7	
Hori	873.570	QP	26.6	22.2	13.1	31.1	30.8	46.0	15.2	
Hori	2483.500	PK	41.5	28.4	3.1	32.3	40.7	73.9	33.2	
Hori	4960.000	PK	NS	-	-	-	-	73.9	-	
Hori	7440.000	PK	NS	-	-	-	-	73.9	-	
Hori	9920.000	PK	NS	-	-	-	-	73.9	-	
Hori	2483.500	AV	29.2	28.4	3.1	32.3	28.4	53.9	25.5	
Hori	4960.000	AV	NS	-	-	-	-	53.9	-	
Hori	7440.000	AV	NS	-	-	-	-	53.9	-	
Hori	9920.000	AV	NS	-	-	-	-	53.9	-	
Vert	111.000	QP	36.2	11.7	8.2	32.1	24.0	43.5	19.5	
Vert	124.182	QP	25.6	13.3	8.3	32.1	15.1	43.5	28.4	
Vert	135.200	QP	31.9	14.2	8.4	32.1	22.4	43.5	21.1	
Vert	390.790	QP	28.6	17.2	10.5	32.0	24.3	46.0	21.7	
Vert	811.193	QP	26.7	22.0	12.8	31.5	30.0	46.0	16.0	
Vert	873.580	QP	28.4	22.2	13.1	31.1	32.6	46.0	13.4	
Vert	2483.500	PK	41.1	28.4	3.1	32.3	40.3	73.9	33.6	
Vert	4960.000	PK	NS	-	-	-	-	73.9	-	
Vert	7440.000	PK	NS	-	-	-	-	73.9	-	
Vert	9920.000	PK	NS	-	-	-	-	73.9	-	
Vert	2483.500	AV	29.2	28.4	3.1	32.3	28.4	53.9	25.5	
Vert	4960.000	AV	NS	-	-	-	-	53.9	-	
Vert	7440.000	AV	NS	-	-	-	-	53.9	-	
Vert	9920.000	AV	NS	-	-	-	-	53.9	-	

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
NS: No signal detected

Burst Rate Confirmation

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

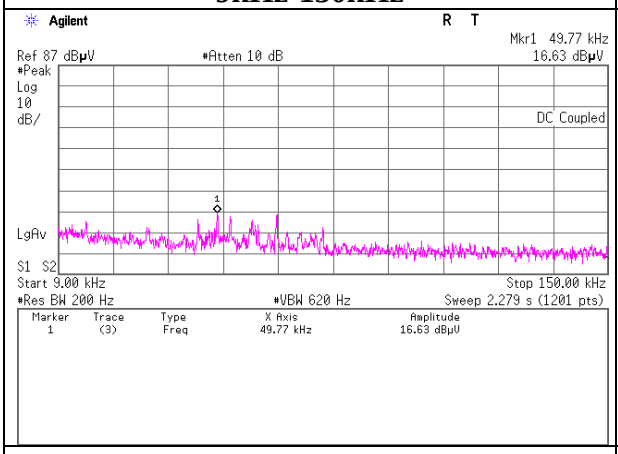
DH5	3DH5
Duty rate = 78.76% **Tx on = 2.93ms** **Tx on+Tx off =3.72ms**	**Duty rate = 78.43%** **Tx on = 2.945ms** **Tx on+Tx off =3.755ms**
	

Conducted Spurious Emission

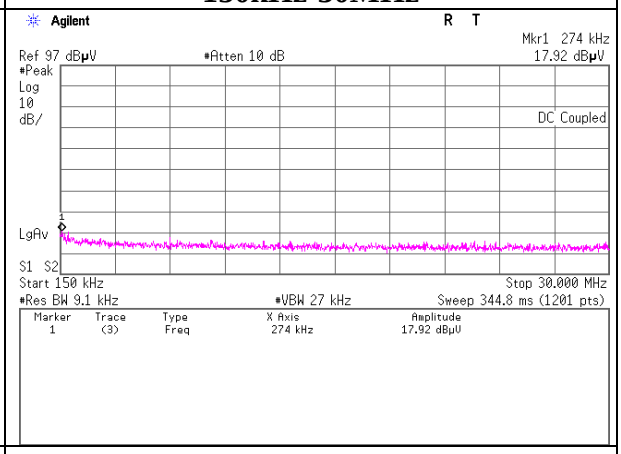
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx DH5 2402MHz

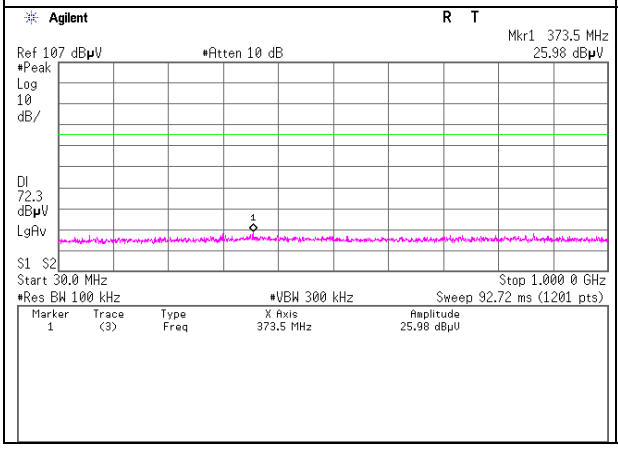
9kHz-150kHz



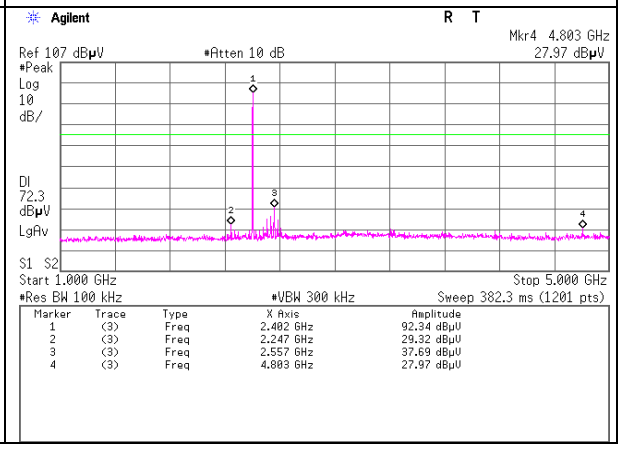
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz

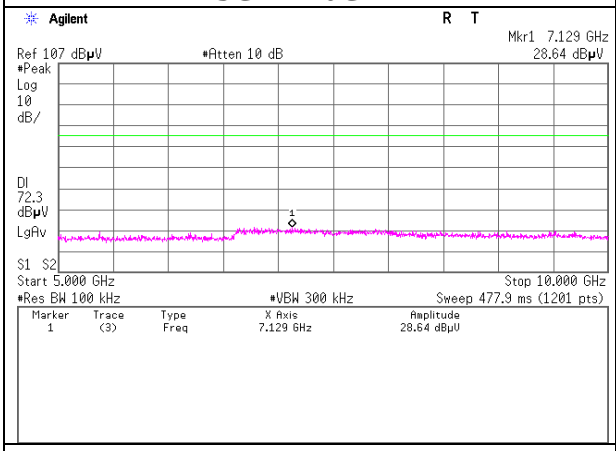


Conducted Spurious Emission

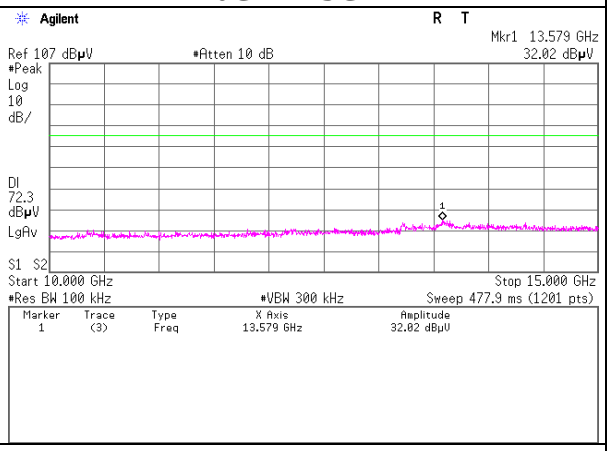
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx DH5 2402MHz

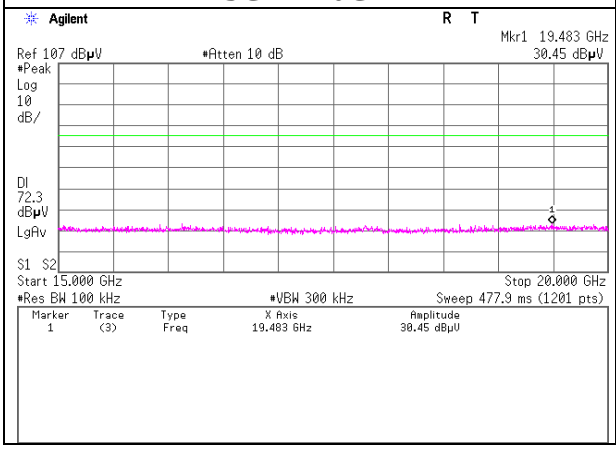
5GHz-10GHz



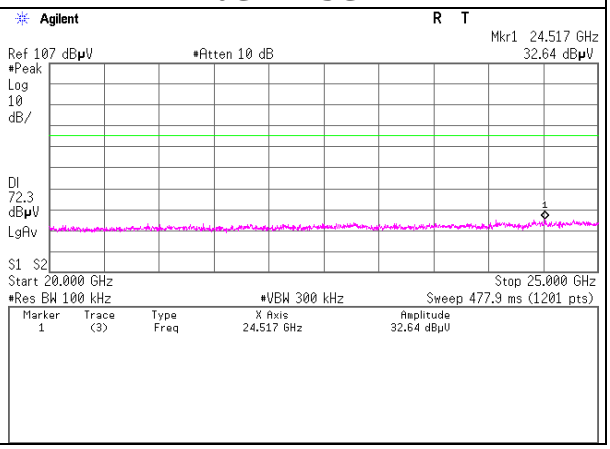
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

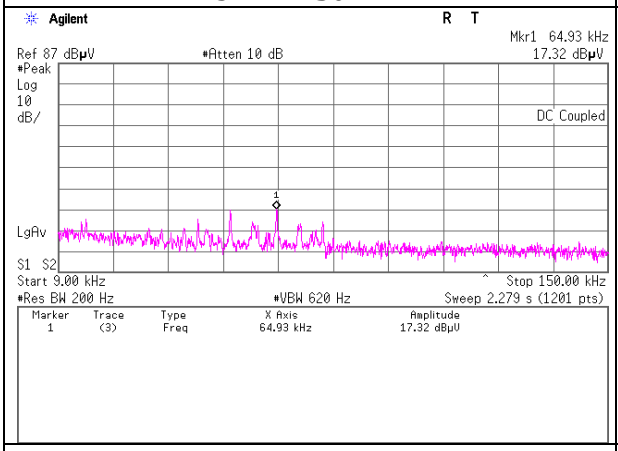


Conducted Spurious Emission

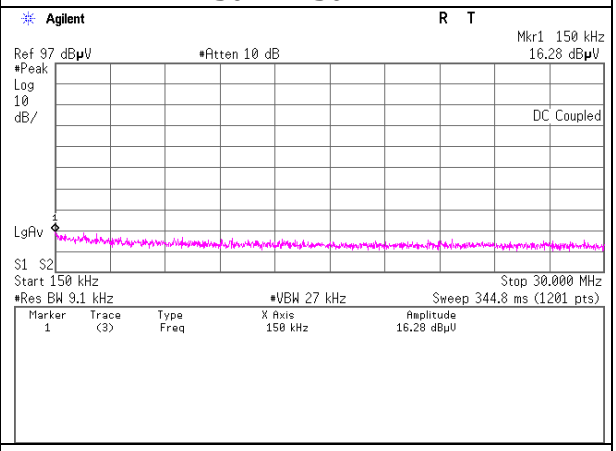
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx DH5 2441MHz

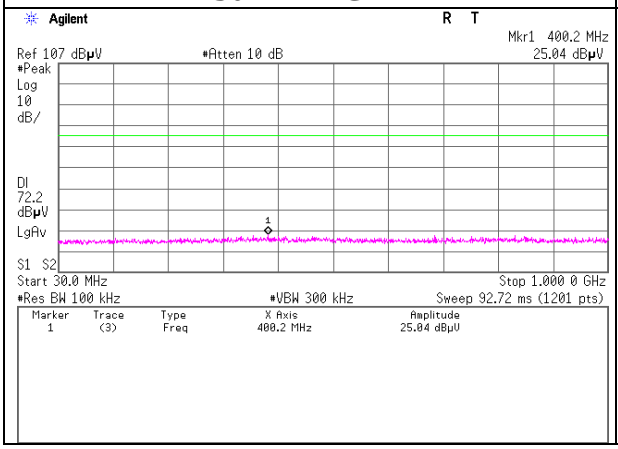
9kHz-150kHz



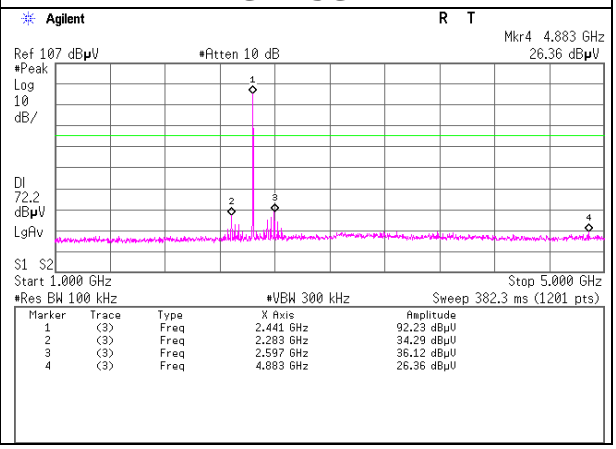
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz

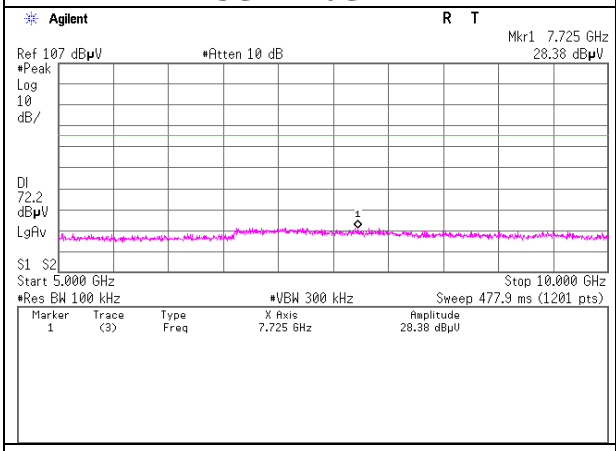


Conducted Spurious Emission

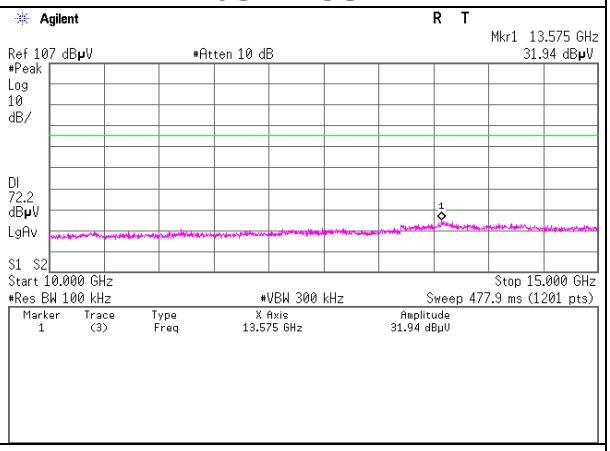
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx DH5 2441MHz

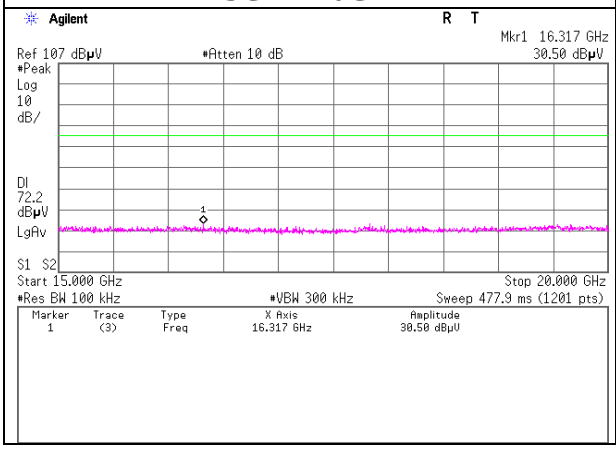
5GHz-10GHz



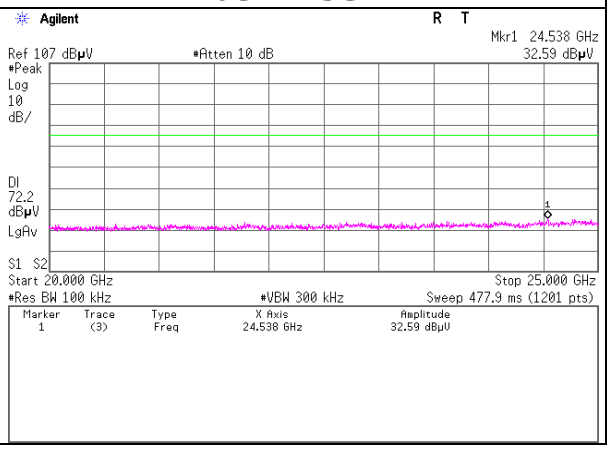
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

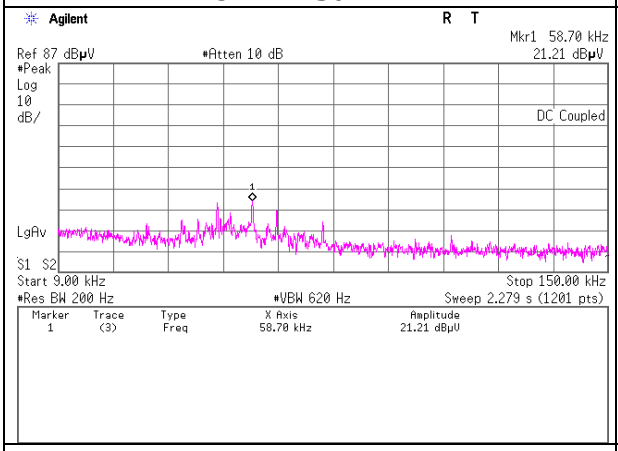


Conducted Spurious Emission

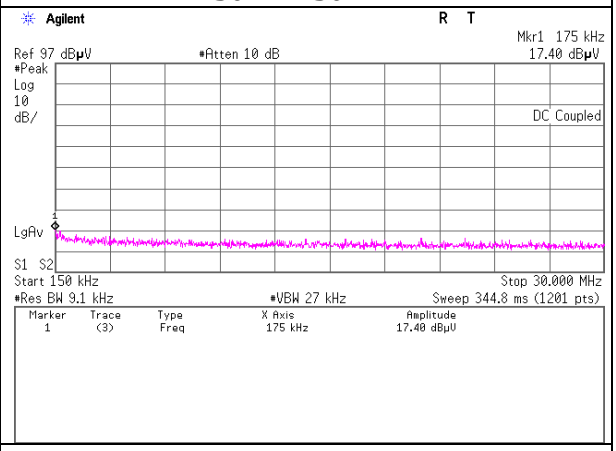
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx DH5 2480MHz

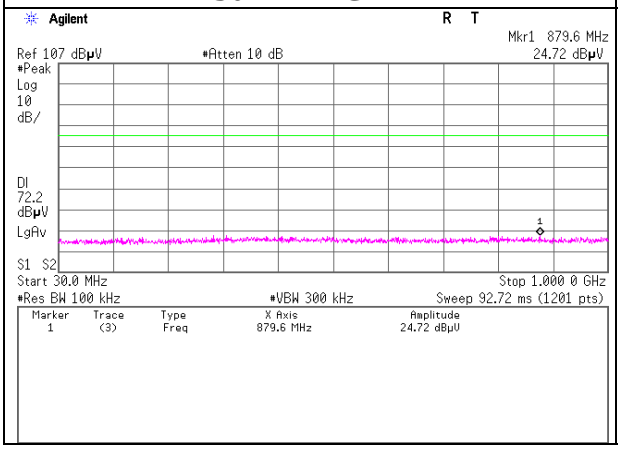
9kHz-150kHz



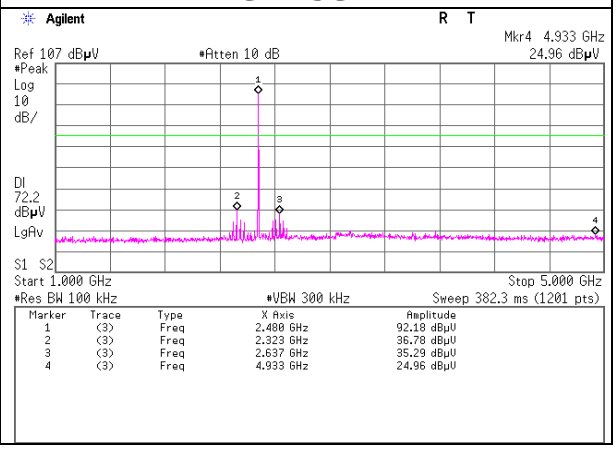
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz

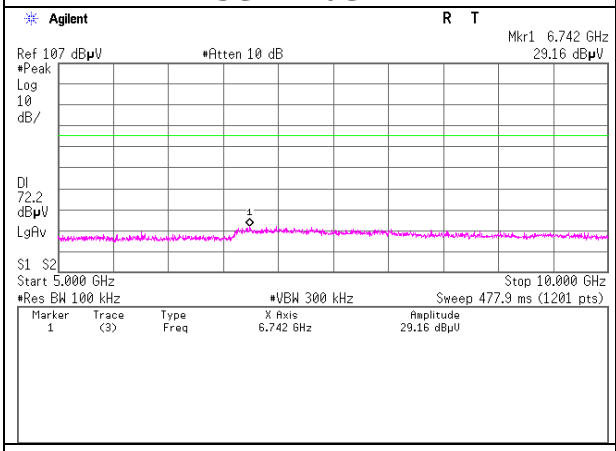


Conducted Spurious Emission

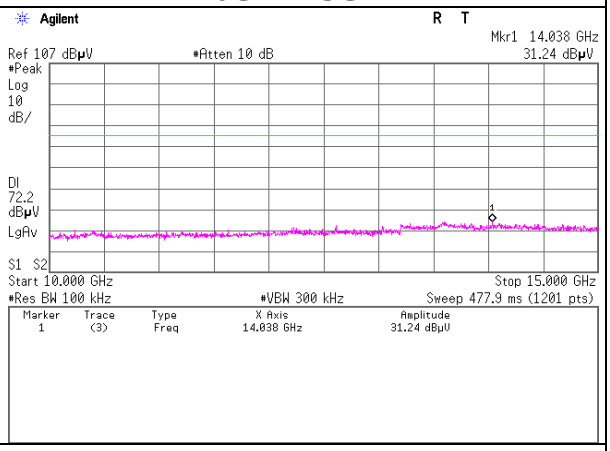
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx DH5 2480MHz

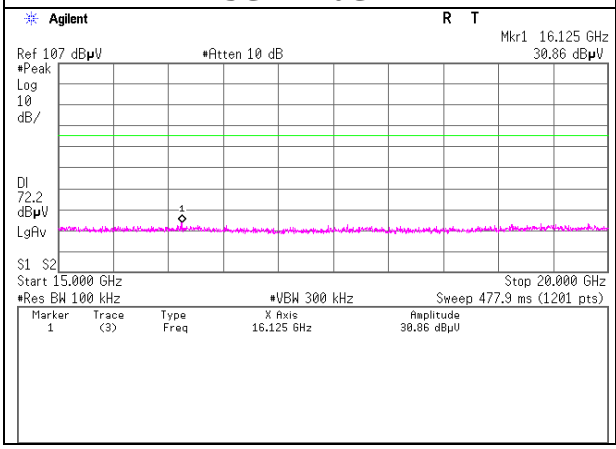
5GHz-10GHz



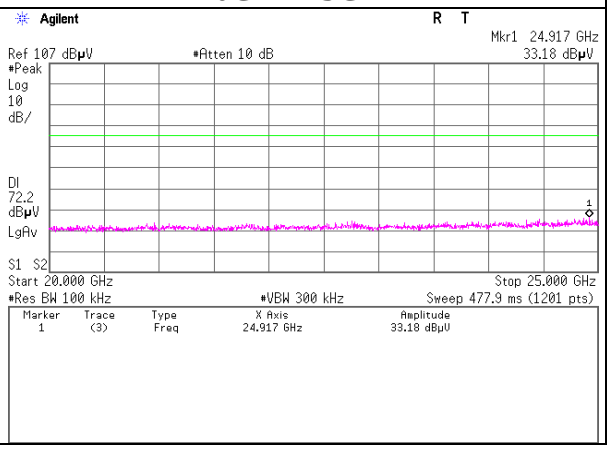
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

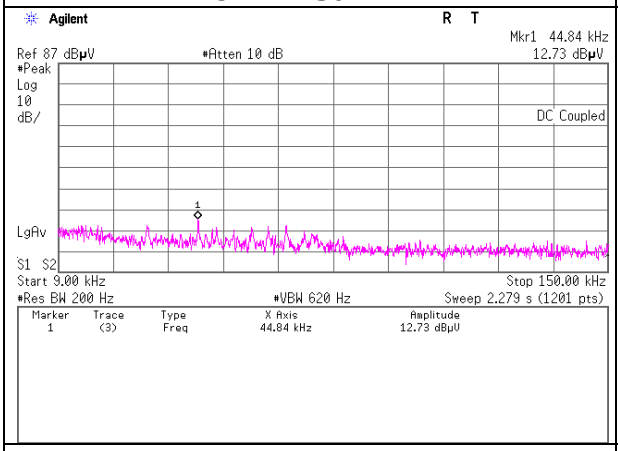


Conducted Spurious Emission

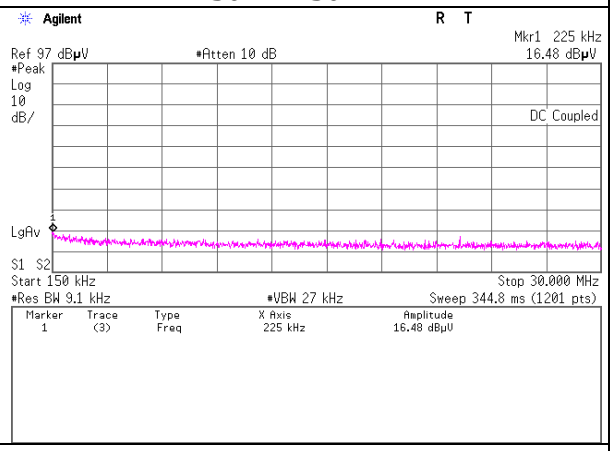
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx 3DH5 2402MHz

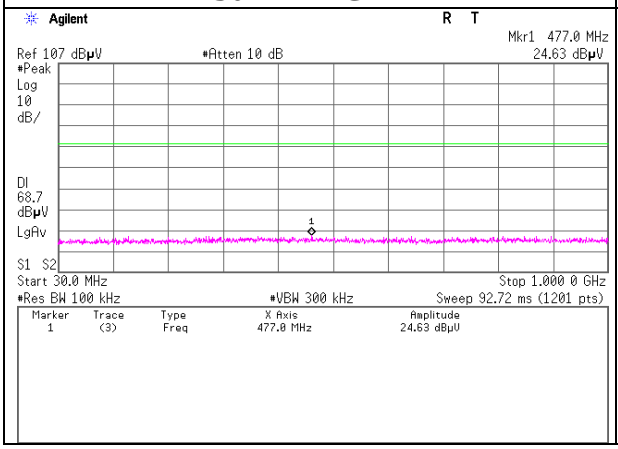
9kHz-150kHz



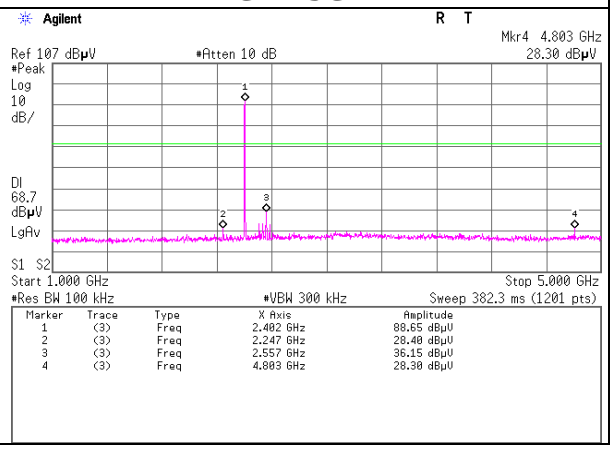
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz

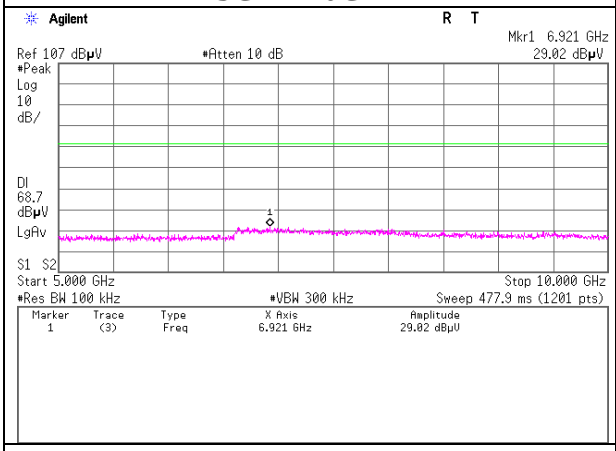


Conducted Spurious Emission

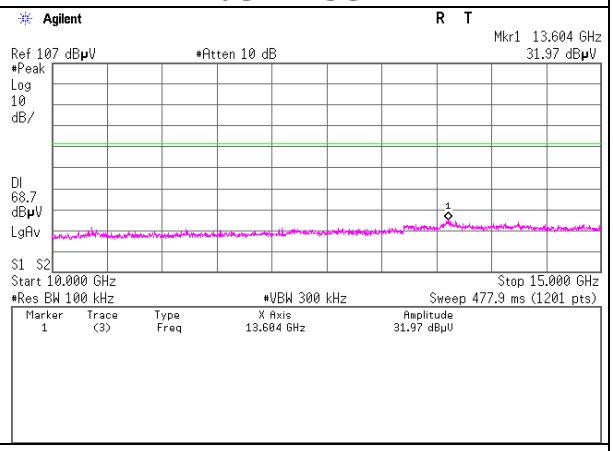
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx 3DH5 2402MHz

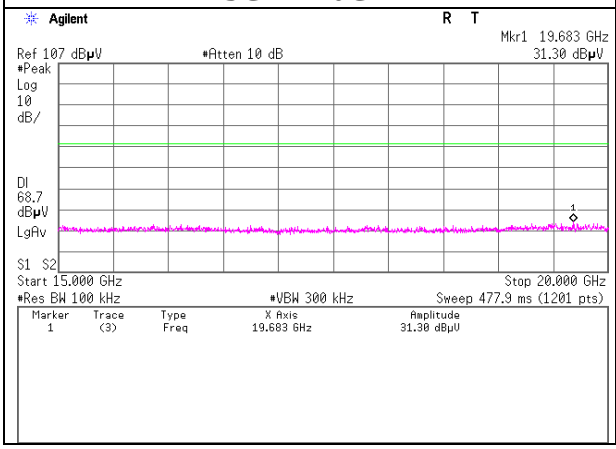
5GHz-10GHz



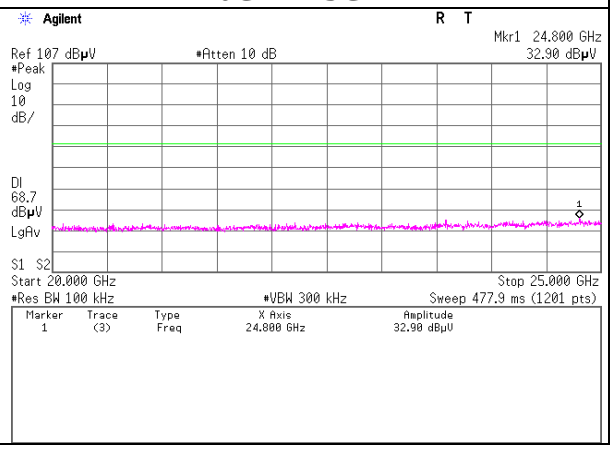
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

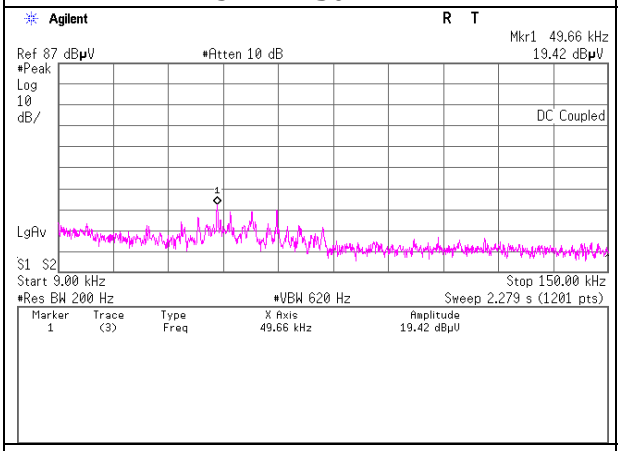


Conducted Spurious Emission

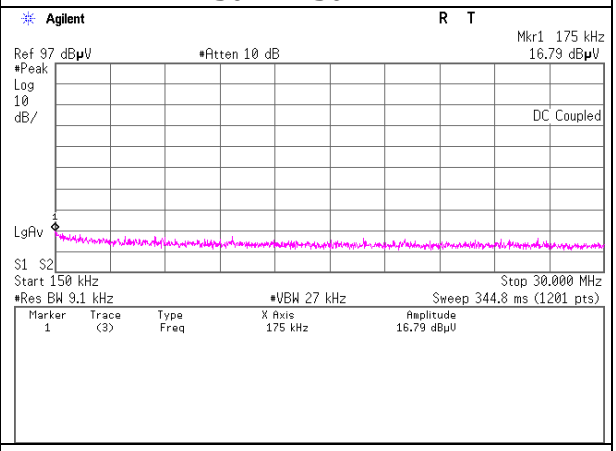
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx 3DH5 2441MHz

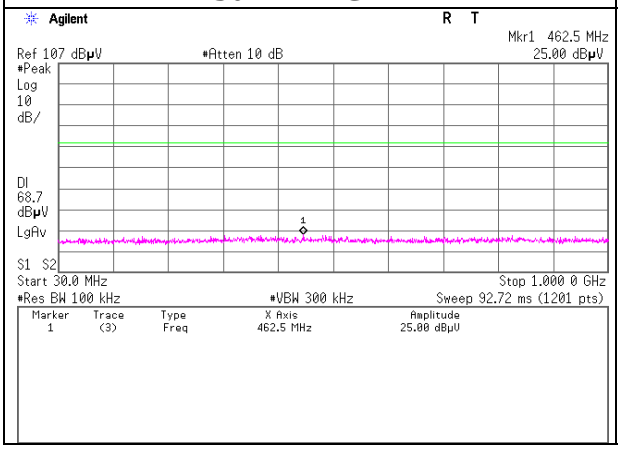
9kHz-150kHz



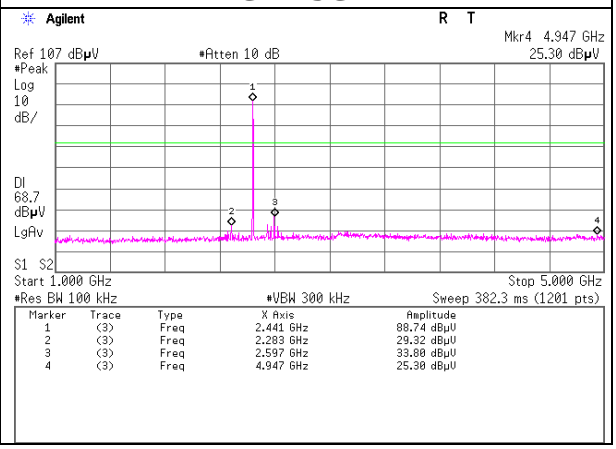
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz

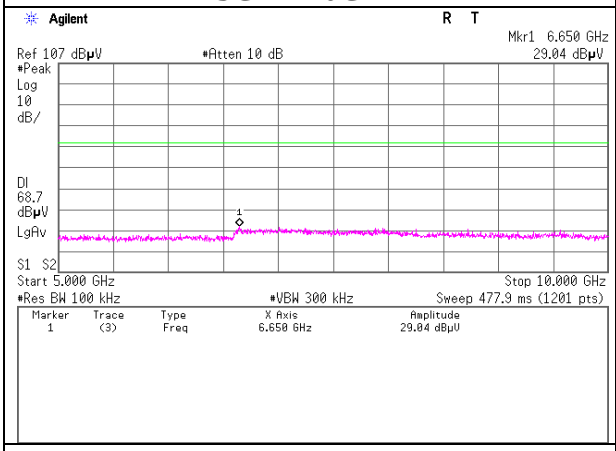


Conducted Spurious Emission

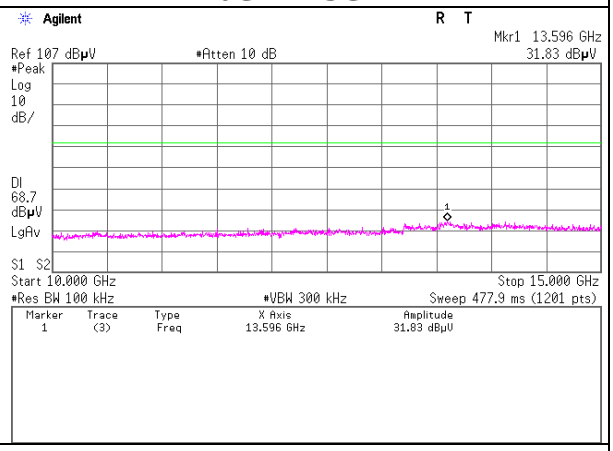
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx 3DH5 2441MHz

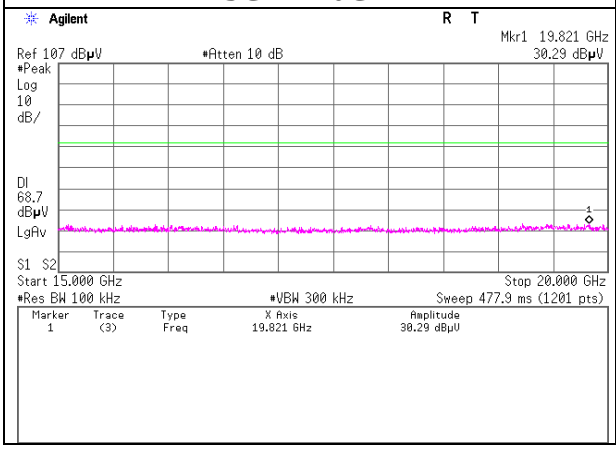
5GHz-10GHz



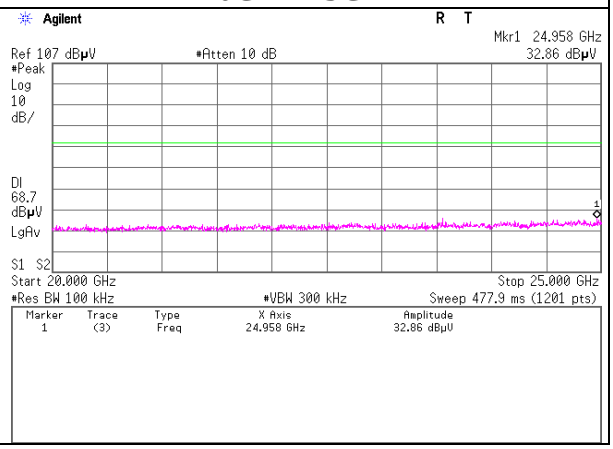
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

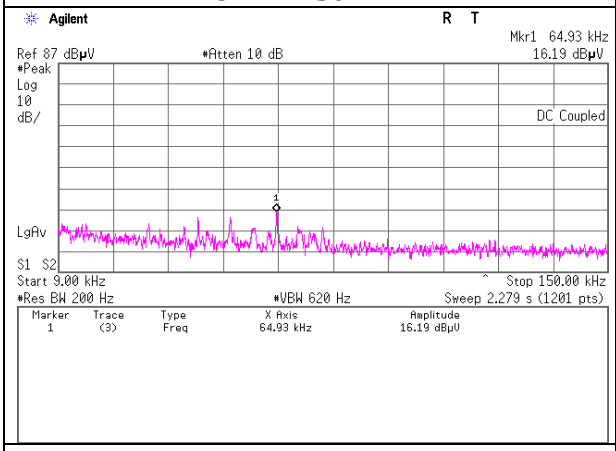


Conducted Spurious Emission

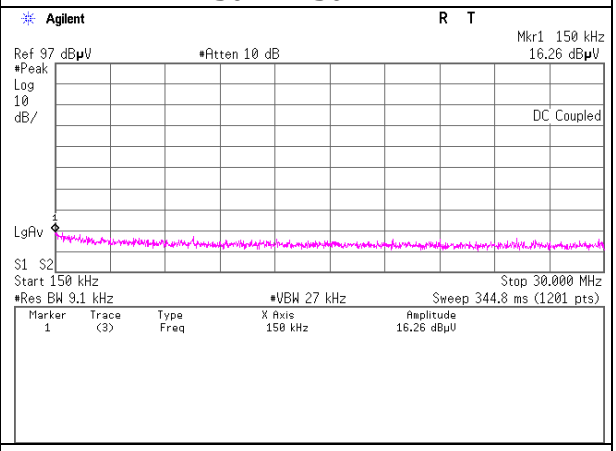
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx 3DH5 2480MHz

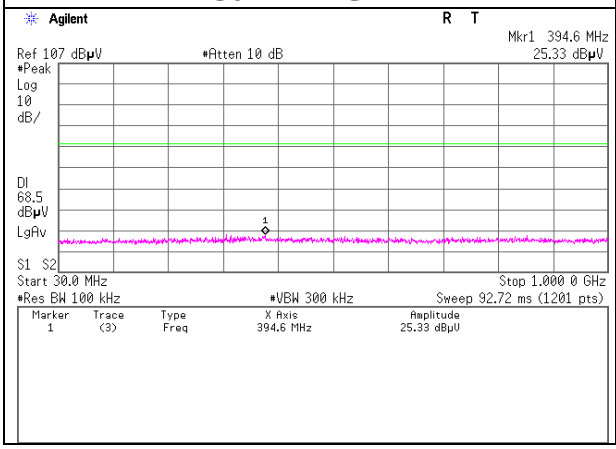
9kHz-150kHz



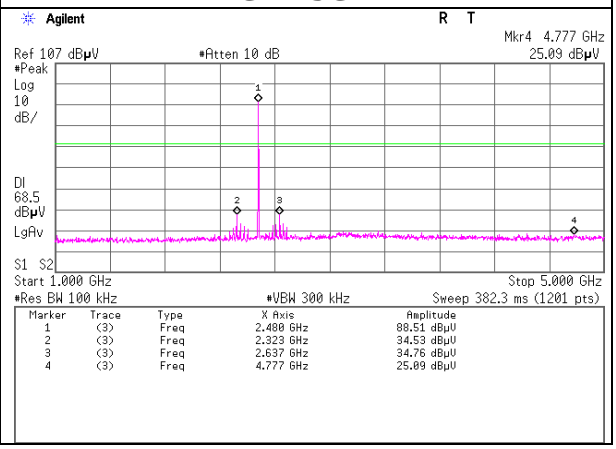
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz

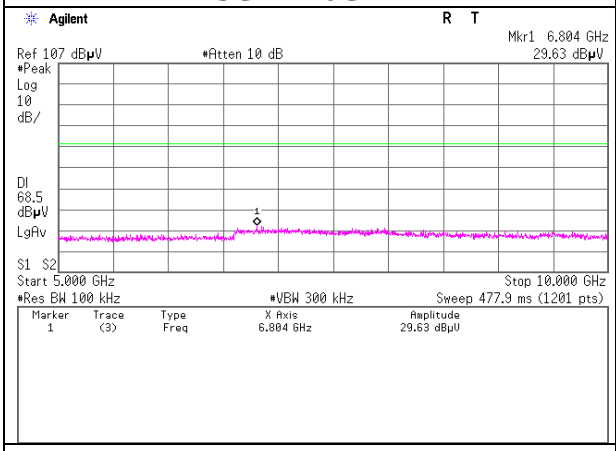


Conducted Spurious Emission

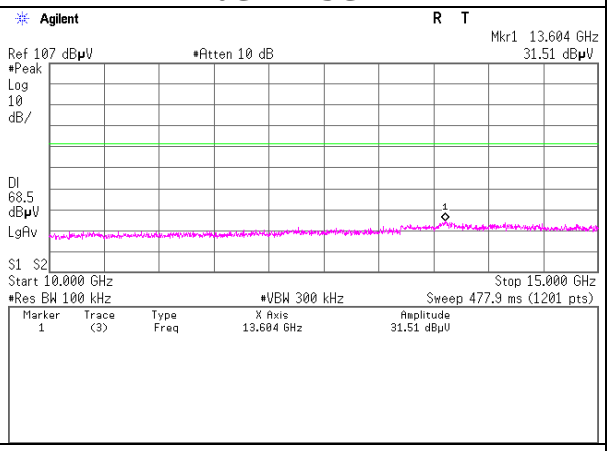
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx 3DH5 2480MHz

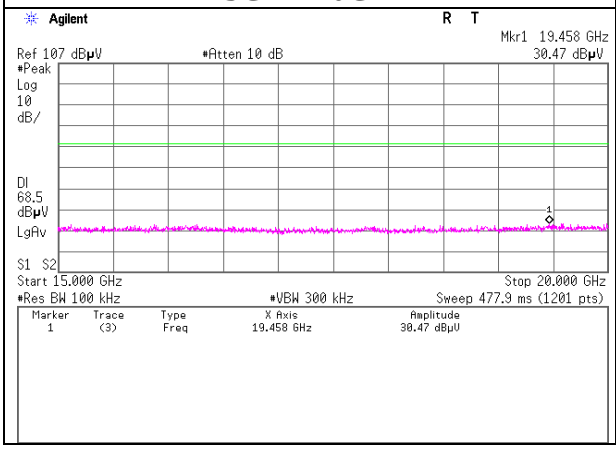
5GHz-10GHz



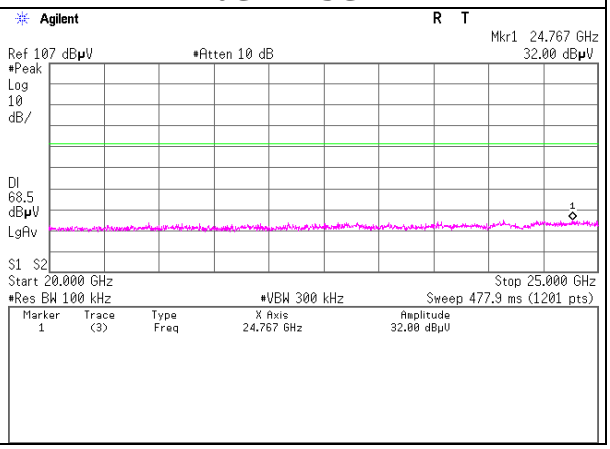
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz

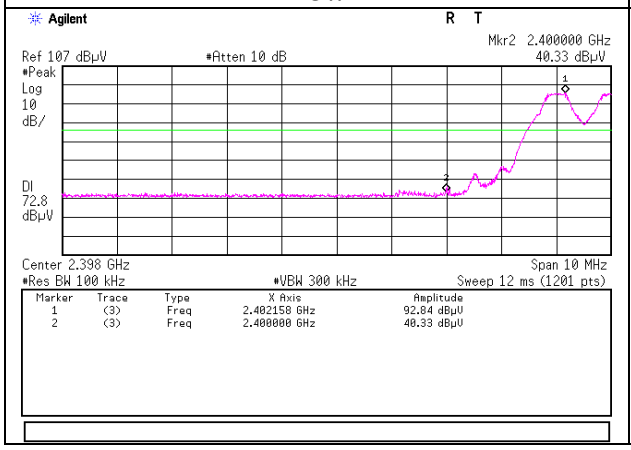


Conducted Emission Band Edge compliance

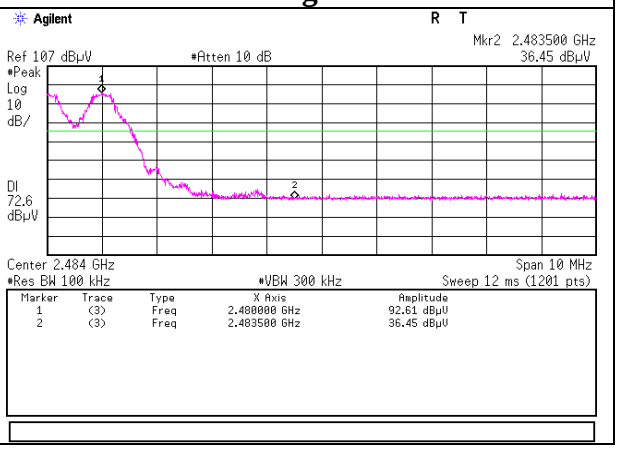
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx DH5, Hopping on

Low

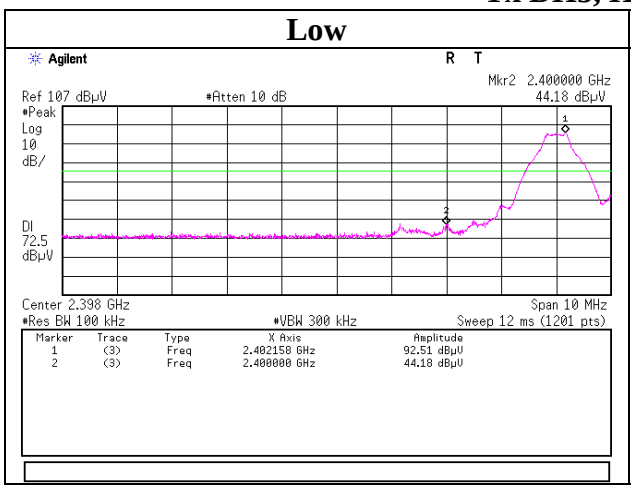


High

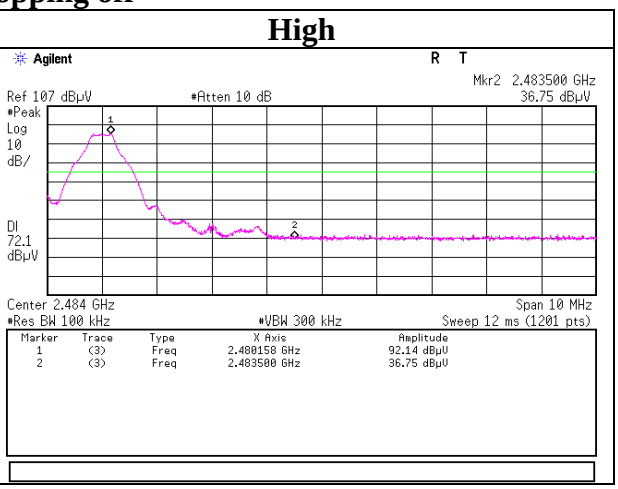


Tx DH5, Hopping off

Low



High

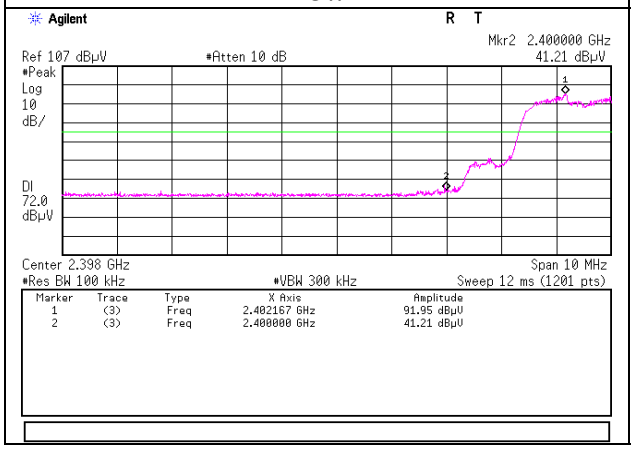


Conducted Emission Band Edge compliance

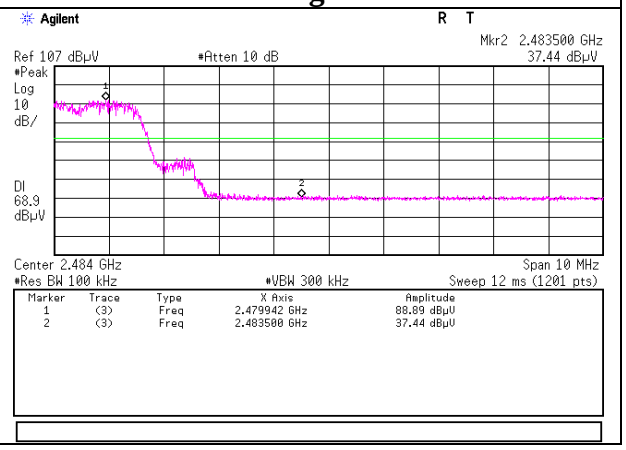
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx 3DH5, Hopping on

Low

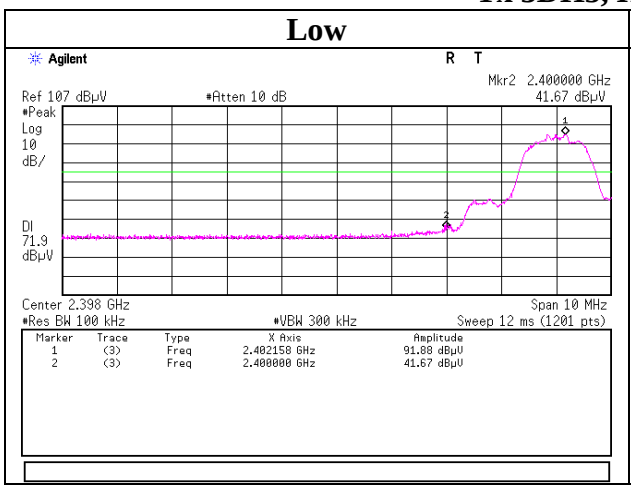


High

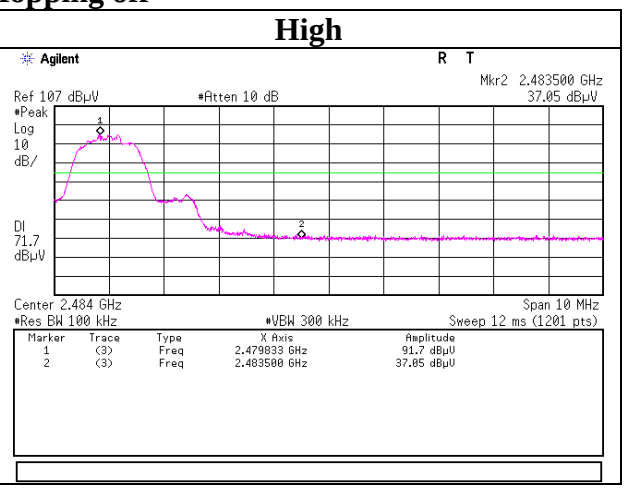


Tx 3DH5, Hopping off

Low



High

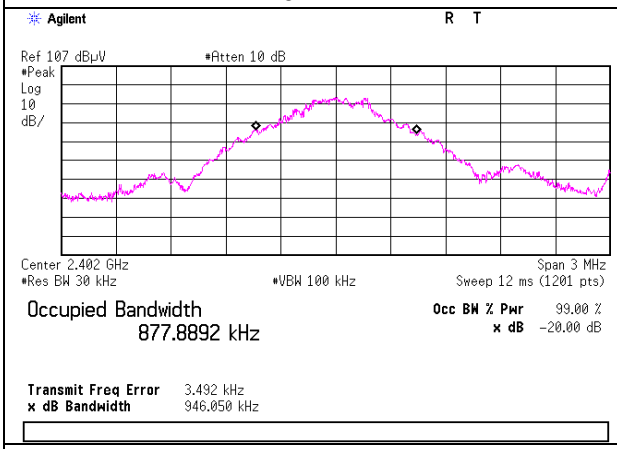


99%Occupied Bandwidth

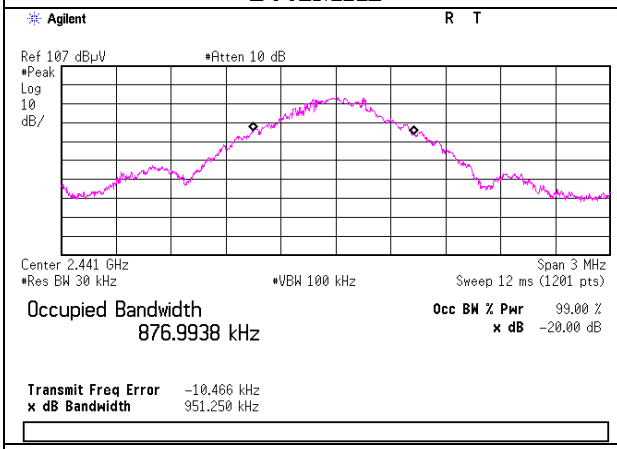
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

Tx DH5, Hopping off

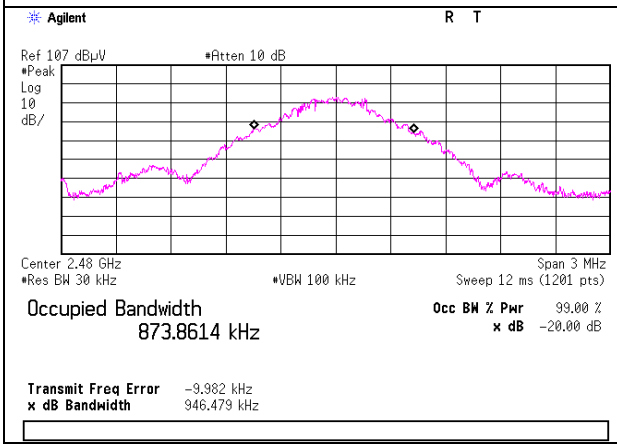
2402MHz



2441MHz

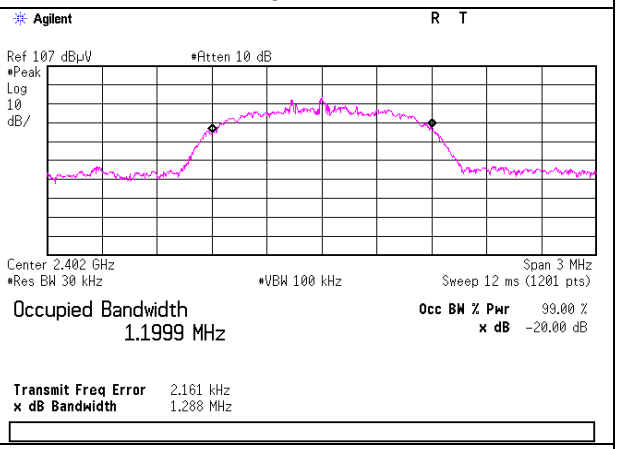


2480MHz

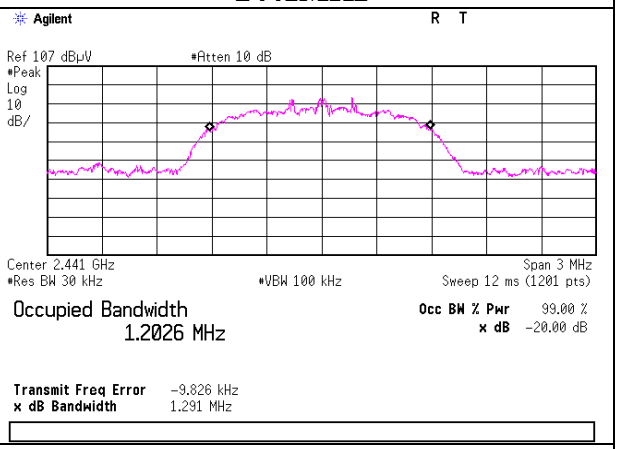


Tx 3DH5, Hopping off

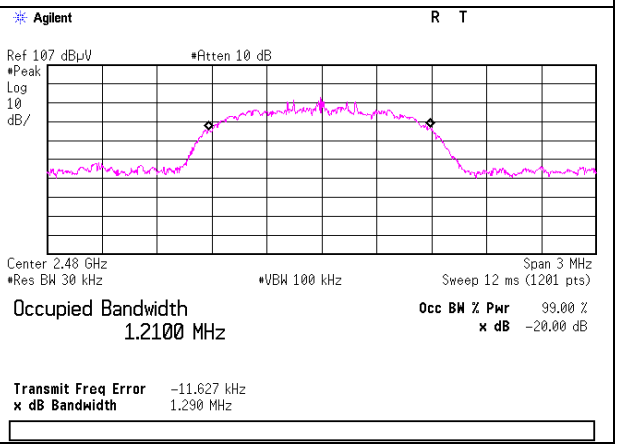
2402MHz



2441MHz



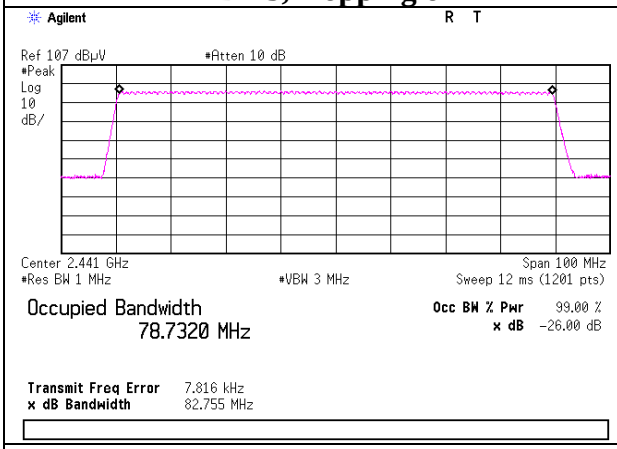
2480MHz



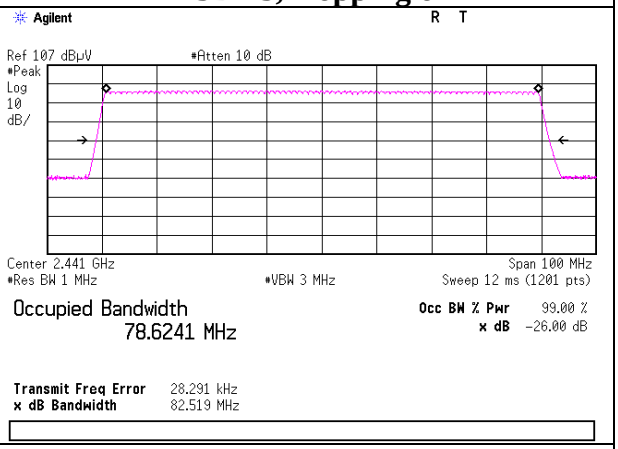
99% Occupied Bandwidth

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	10184497H
Date	02/25/2014
Temperature/ Humidity	20 deg. C / 41% RH
Engineer	Masatoshi Nishiguchi

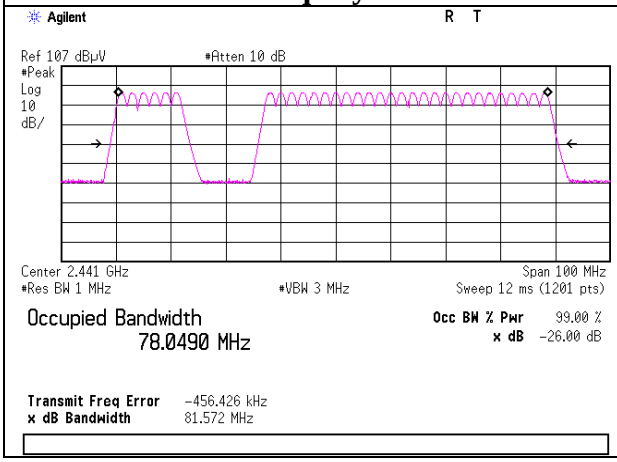
Tx DH5, Hopping on



Tx 3DH5, Hopping on



Inquiry



APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2013/02/28 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	1301	RE	2014/02/20 * 12
MJM-16	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MRENT-114	Spectrum Analyzer	Agilent	E4440A	MY46187105	RE/AT	2013/11/11 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE	2013/08/20 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2013/10/13 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2013/10/13 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2013/07/23 * 12
MAT-70	Attenuator(6dB)	Agilent	8491A-006	MY52460153	RE	2013/04/05 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2013/03/12 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2013/05/17 * 12
MCC-133	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336164/4(1m) / 340640(5m)	RE	2013/09/27 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2013/03/12 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2013/05/17 * 12
MHF-25	High Pass Filter 3.5-18.0GHz	UL Japan	HPF SELECTOR	001	RE	2013/09/01 * 12
MOS-14	Thermo-Hygrometer	Custom	CTH-201	1401	AT	2014/02/20 * 12
MPM-08	Power Meter	Anritsu	ML2495A	6K00003338	AT	2013/10/15 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	011737	AT	2013/10/15 * 12
MAT-20	Attenuator(10dB)(above 1GHz)	HIROSE ELECTRIC CO.,LTD.	AT-110	-	AT	2014/01/29 * 12
MCC-137	Microwave cable	HUBER+SUHNER	SUCOFLEX 102	37954/2	AT	2013/10/18 * 12
MSA-06	Spectrum Analyzer	Agilent	E4407B	MY45107638	AT	2013/04/05 * 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