Zacta

TEST REPORT

Report number : Z101C-14020
Issue date : May 2, 2014

The device, as described herewith, was tested pursuant to applicable test procedure and complies with the requirements of;

FCC Part15 Subpart C

The test results are traceable to the international or national standards.

Applicant	:	KYOCERA Corporation
Equipment under test (EUT)	:	Mobile Phone
Model number	:	KYY23
FCC ID	:	JOYKYY23

Date of test : March 19, 20, 27, April 1, 3, 21, May 2, 2014
Test place : TÜV SÜD Zacta Ltd. Yonezawa Testing Center
4149-7 Hachimanpara 5-chome
Yonezawa-shi Yamagata 992-1128 Japan
Phone: +81-238-28-2880 Fax: +81-238-28-2888
Test results : Complied

The results in this report are applicable only to the equipment tested.
This report shall not be re-produced except in full without the written approval of TÜV SÜD Zacta Ltd.
This test report must not be used by client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Tested by : N. Toda
Nobuyuki Toda

Tested by : Taiki Watanabe
Taiki Watanabe

Authorized by : Eiji Akiba
Eiji Akiba
Deputy General Manager of EMC Technical Department

NVLAP®
NVLAP LAB CODE 200306-0

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1. Summary of Test

1.1 Purpose of test

It is the original test in order to verify conformance to FCC Part 15 Subpart C.

1.2 Standards

CFR47 FCC Part 15 Subpart C

1.2.1 Test Methods

ANSI C63.4-2003

1.2.2 Deviation from standards

None

1.3 List of applied test to the EUT

Test items Section	Test items	Condition	Result
15.247(a)(1)	20dB Bandwidth	Conducted	PASS
15.247(a)(1)	Carrier Frequency Separation	Conducted	PASS
15.247(a)(1)(iii)	Number of Hopping Frequencies	Conducted	PASS
15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Conducted	PASS
15.247(b)(3)	Maximum Peak Output Power	Conducted	PASS
15.247(d)	Band Edge Compliance of RF Conducted Emissions	Conducted	PASS
15.247(d) 15.205 15.209	Spurious Emissions	Conducted Radiated	PASS
15.247(d) 15.205 15.209	Restricted Bands of Operation	Radiated	PASS
15.207	AC Power Line Conducted Emissions	Conducted	PASS

1.3.1 Test set up

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1.4 Modification to the EUT by laboratory

None

2. Equipment Under Test

2.1 General Description of equipment

EUT is the Mobile Phone.

2.2 EUT information

Applicant	:	KYOCERA Corporation Yokohama Office 2-1-1 Kagahara, Tsuzuki-ku, Yokohama-shi, Kanagawa, Japan Phone: +81-45-943-6253 Fax: +81-45-943-6314
Equipment under test	:	Mobile Phone
Trade name	:	Kyocera
Model number	:	KYY23
Serial number	:	N/A
EUT condition	:	Pre-Production
Power ratings	:	Battery: DC 3.8V
Size	:	Qi mounted type :(W) 70.3 × (D) 10.3 × (H) 140.3 mm Qi non-mounted type : (W) 70.3 × (D) 9.9 × (H) 140.3 mm
Environment	:	Indoor and Outdoor use
Terminal limitation	:	-20˚C to 60˚C
RF Specification		
Protocol	:	Bluetooth 4.0 + EDR
Frequency range	:	2402MHz-2480MHz
Number of RF Channels	:	79 Channels
Modulation type/ Data rate	:	FHSS: GFSK (1Mbps), π/4-DQPSK (2Mbps), 8-DPSK (3Mbps)
Channel separation	:	1MHz
Output power	:	8.128mW (DH5) 9.977mW (3-DH5)
Antenna type	:	Internal antenna
Antenna gain	:	0dBi

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2.3 Variation of the family model(s)

KYY23 has Qi mounted type and Qi non-mounted type.

2.4 Operating channels and frequencies

Channel	Frequency [MHz]	Channel	Frequency [MHz]	Channel	Frequency [MHz]
0	2402	27	2429	54	2456
1	2403	28	2430	55	2457
2	2404	29	2431	56	2458
3	2405	30	2432	57	2459
4	2406	31	2433	58	2460
5	2407	32	2434	59	2461
6	2408	33	2435	60	2462
7	2409	34	2436	61	2463
8	2410	35	2437	62	2464
9	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

2.5 Operating mode

The EUT had been tested under operating condition.
There are three channels have been tested as following:

Tested Channel	Frequency [MHz]
Low	2402
Middle	2441
High	2480

The pre-test has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates.

Tested Channel	Modulation Technology	Modulation Type	Packet Type
Low, Middle, High	FHSS	GFSK	DH5
Low, Middle, High	FHSS	8-DPSK	3-DH5

The field strength of spurious emissions was measured at each position of all three axis X, Y and Z to compare the level, and the maximum noise.
The worst emission was found in Z axis and the worst case recorded.
Qi non-mounted type is tested only the worst mode at radiated test.

2.6 Operating mode

[Tx mode]
i) Bluetooth test program setup to the DM tool
ii) Select a test mode
Operating frequency:
No hopping (Channel Low: 2402MHz, Channel Middle: 2441MHz, Channel High: 2480MHz)
Hopping
Packet type: DH5, 3-DH5
iii) Start test mode

[Rx mode]
i) Bluetooth test program setup to the DM tool
ii) Select a test mode
Operating frequency: Channel Low: 2402MHz, Channel Middle: 2441MHz, Channel High: 2480MHz
iii) Start test mode

3. Configuration of equipment

3.1 Equipment(s) used

No.	Equipment	Company	Model No.	Serial No.	FCC ID / DoC	Comment
1	Mobile Phone	KYOCERA	KYY23	N/A	JOYKYY23	EUT
2	AC Adapter	au	N/A	N/A	-	*

*: AC power line Conducted Emission Test.

3.2 Cable(s) used

No.	Cable	Length[m]	Shield	Connector	Comment
a	Micro USB cable(for AC Adapter)	1.1	Yes	Metal	*

*: AC power line Conducted Emission Test.

3.3 System configuration

: Un-detachable cable

Note1: Numbers assigned to equipment or cables on this diagram correspond to the list in “3.1 Equipment(s) used” and “3.2 Cable(s) used”.

4. 20dB Bandwidth

4.1 Measurement procedure [FCC 15.247(a)(1)]

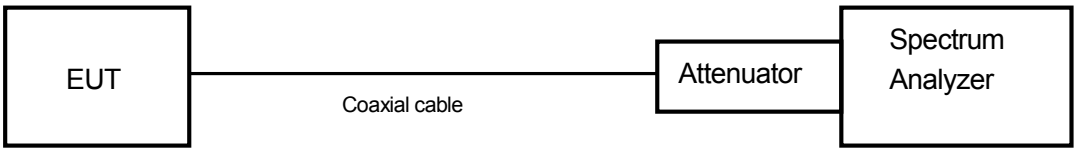
The bandwidth at 20dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=30kHz, VBW=100kHz, Span=3MHz, Sweep=auto, Detector=Peak, Trace mode=Max hold

The EUT was set to operate with following conditions.
- No hopping [Channel Low: 2402MHz, Channel Middle: 2441MHz, Channel High: 2480MHz]

The test mode of EUT is as follows.
- Tx mode

- Test configuration



4.2 Limit

None

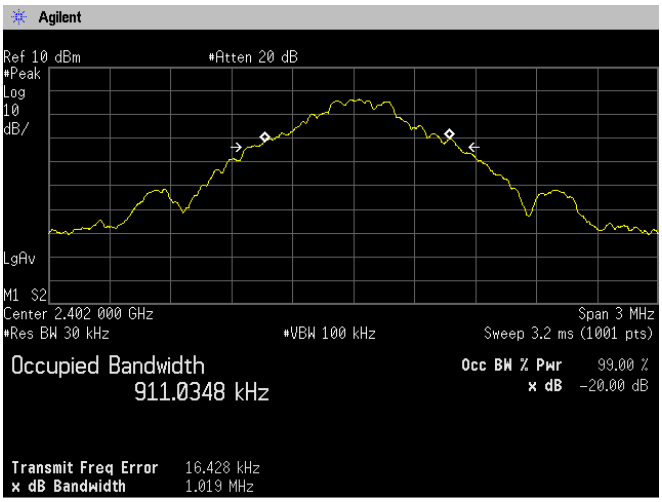
4.3 Measurement result

Date : Mar. 27, 2014
Temperature : 24.0 [˚C]
Humidity : 51.0 [%]
Test place : Shielded room No.4
Tested by : Nobuyuki Toda

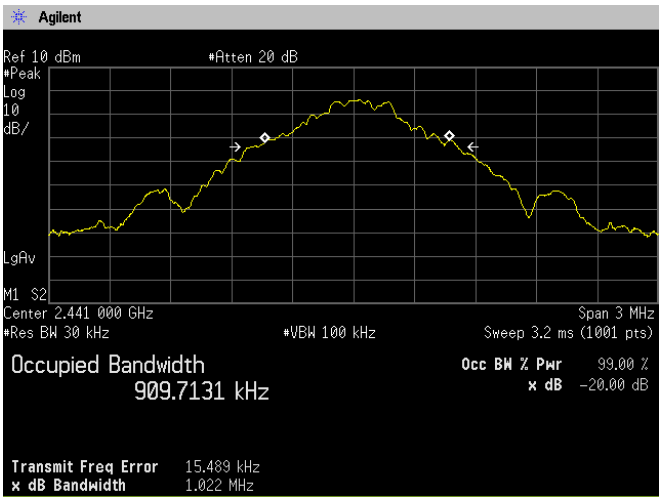
Channel	Frequency [MHz]	20dB bandwidth [MHz]	
		DH5	3-DH5
Low	2402	1.019	1.307
Middle	2441	1.022	1.306
High	2480	1.030	1.306

4.4 Trace data
[DH5]

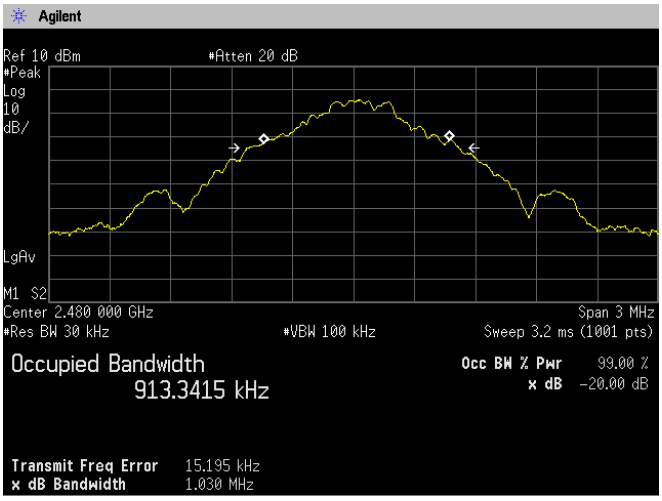
Channel Low



Channel Middle

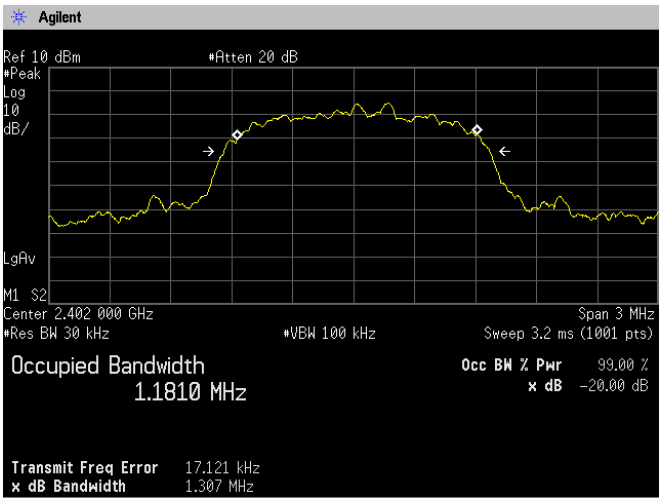


Channel High

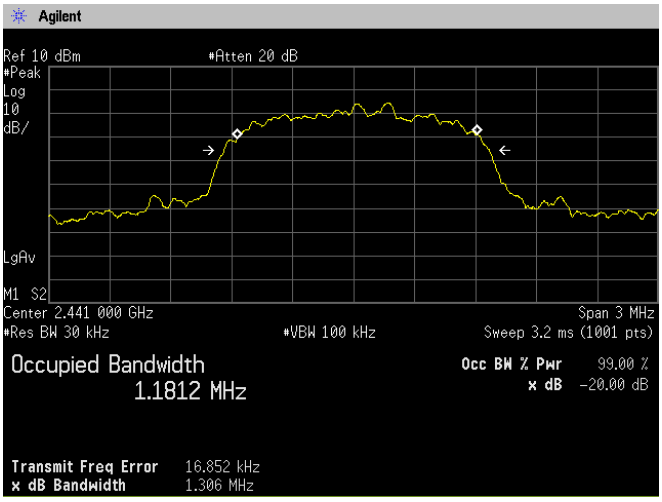


[3-DH5]

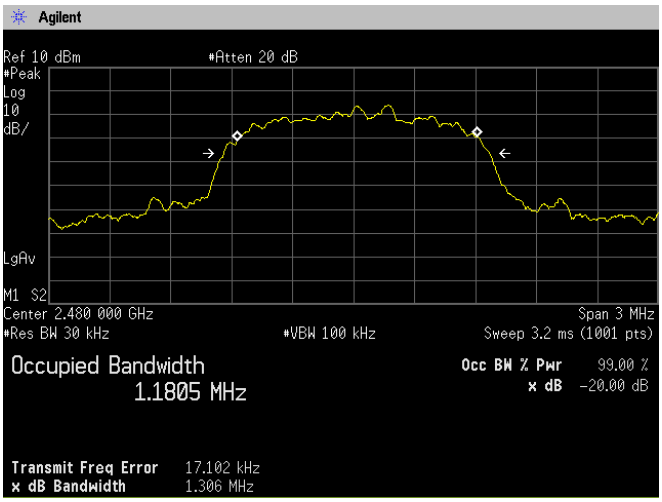
Channel Low



Channel Middle



Channel High



5. Carrier Frequency Separation

5.1 Measurement procedure [FCC 15.247(a)(1)]

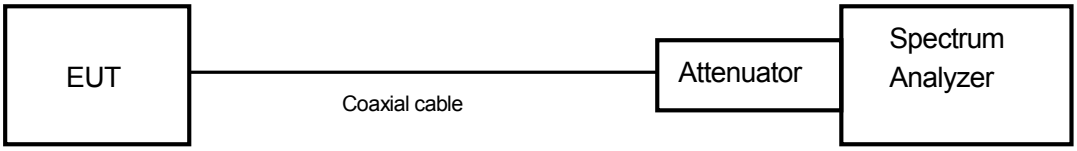
The adjacent channel interval is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=30kHz, VBW=30kHz, Span=3MHz, Sweep=auto, Detector=Peak, Trace mode=Max hold

The EUT was set to operate with following conditions.
- Hopping [Channel Middle: 2441MHz]

The test mode of EUT is as follows.
- Tx mode

- Test configuration



5.2 Limit

System shall have hopping channel carrier frequencies separated by a minimum of;
25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

5.3 Measurement result

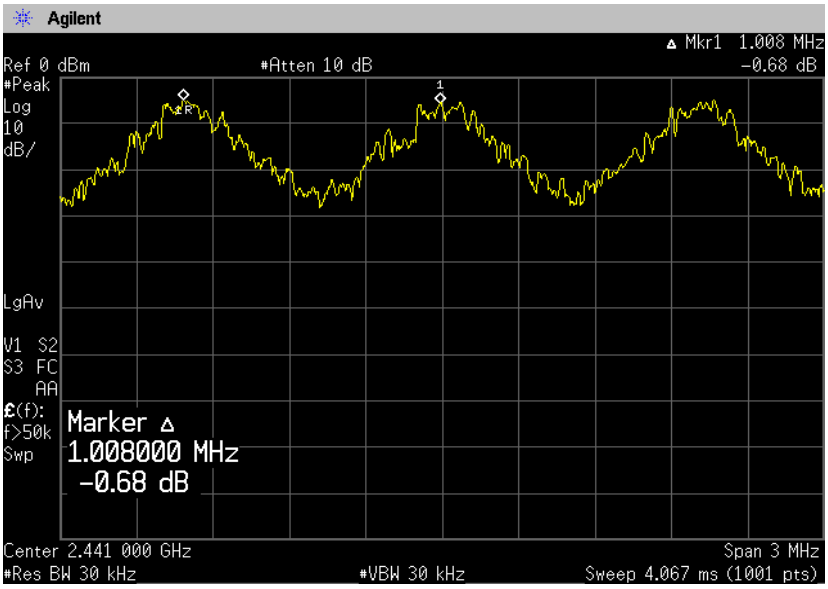
Date : Mar. 27, 2014
Temperature : 24.0 [˚C]
Humidity : 51.0 [%] Tested by : Nobuyuki Toda
Test place : Shielded room No.4

Date : May 2, 2014
Temperature : 24.5 [˚C]
Humidity : 47.0 [%] Tested by : Taiki Watanabe
Test place : Shielded room No.4

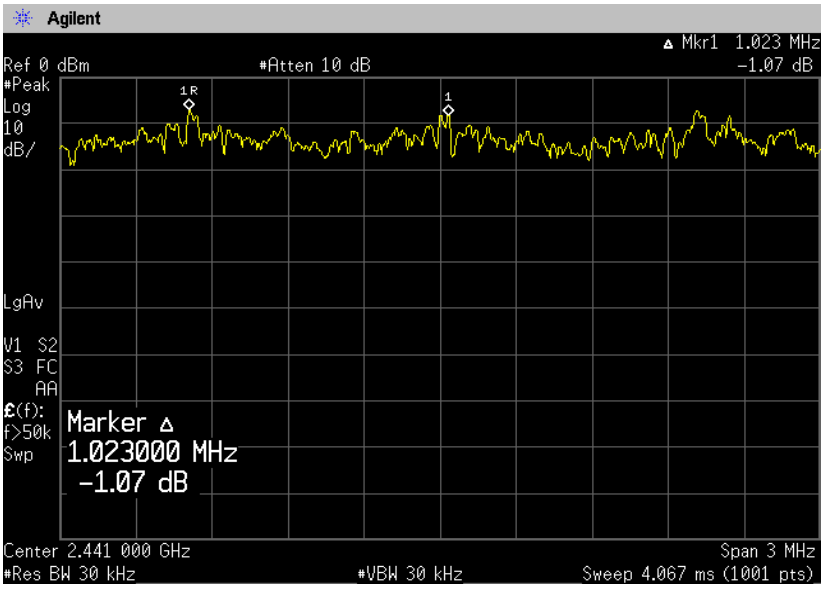
Packet type	Channel separation [MHz]	Limit [MHz]	Result
DH5	1.008	>two-thirds of the 20dB Bandwidth =687kHz	PASS
3-DH5	1.023	>two-thirds of the 20dB Bandwidth =871kHz	PASS
DH5(AFH)	1.011	>two-thirds of the 20dB Bandwidth =687kHz	PASS
3-DH5(AFH)	1.002	>two-thirds of the 20dB Bandwidth =871kHz	PASS

5.4 Trace data

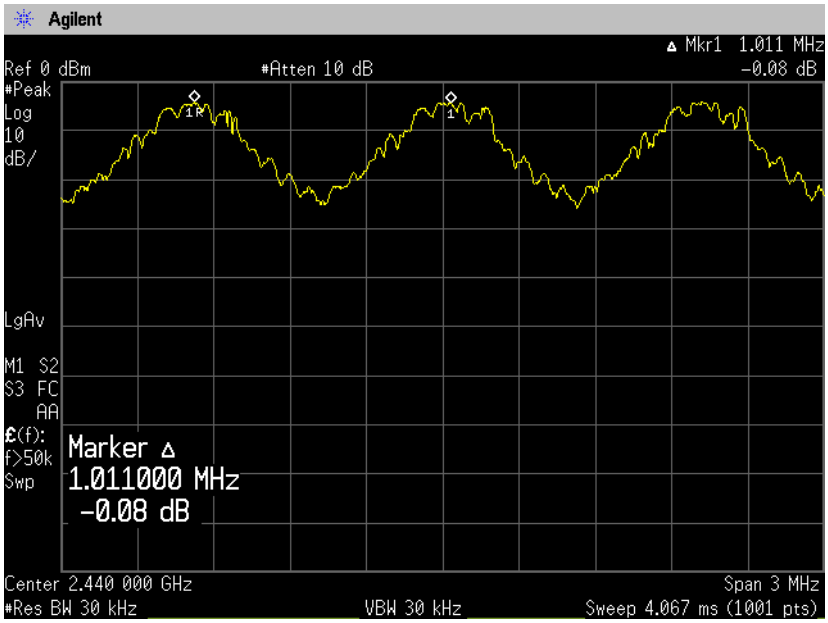
[DH5]



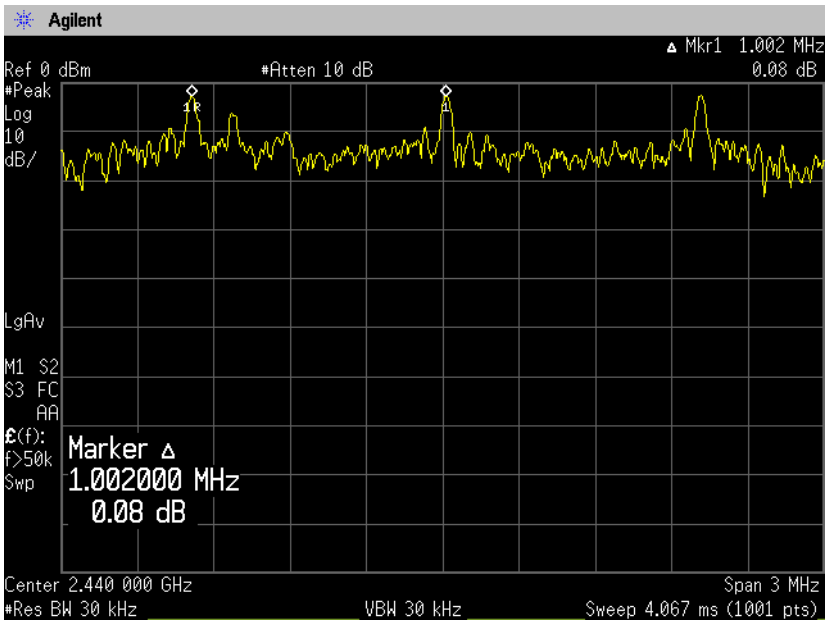
[3-DH5]



[DH5(AFH)]



[3-DH5(AFH)]



6. Number of Hopping Frequencies

6.1 Measurement procedure [FCC 15.247(a)(1)(iii)]

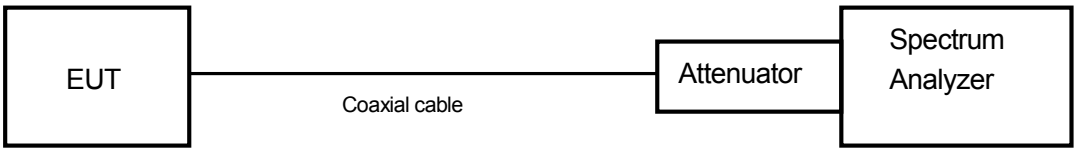
The number of hopping channels is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=510kHz, VBW=510kHz, Span=Arbitrary setting, Sweep=auto, Detector=Peak, Trace mode=Max hold

The EUT was set to operate with following conditions.
- Hopping

The test mode of EUT is as follows.
- Tx mode

- Test configuration



6.2 Limit

Shall have more than 15 channels.

6.3 Measurement result

Date : Mar. 27, 2014
Temperature : 24.0 [˚C]
Humidity : 51.0 [%] Tested by : Nobuyuki Toda
Test place : Shielded room No.4

Date : May 2, 2014
Temperature : 24.5 [˚C]
Humidity : 47.0 [%] Tested by : Taiki Watanabe
Test place : Shielded room No.4

FHSS mode

Number of channels	Limit	Result
79	≥15 channel	PASS

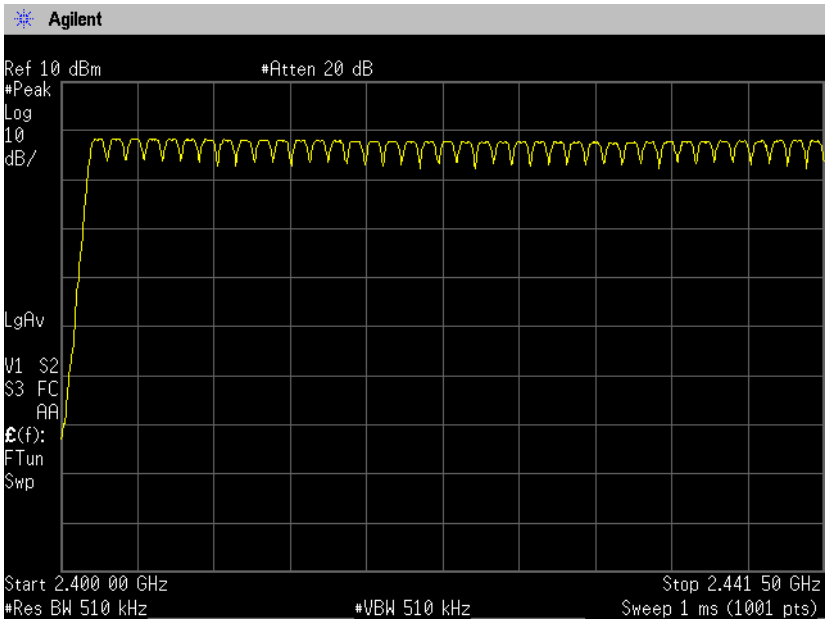
AFH mode

channel	Number of channels	Limit	Result
Low	20	≥15 channel	PASS
Middle	20	≥15 channel	PASS
High	20	≥15 channel	PASS

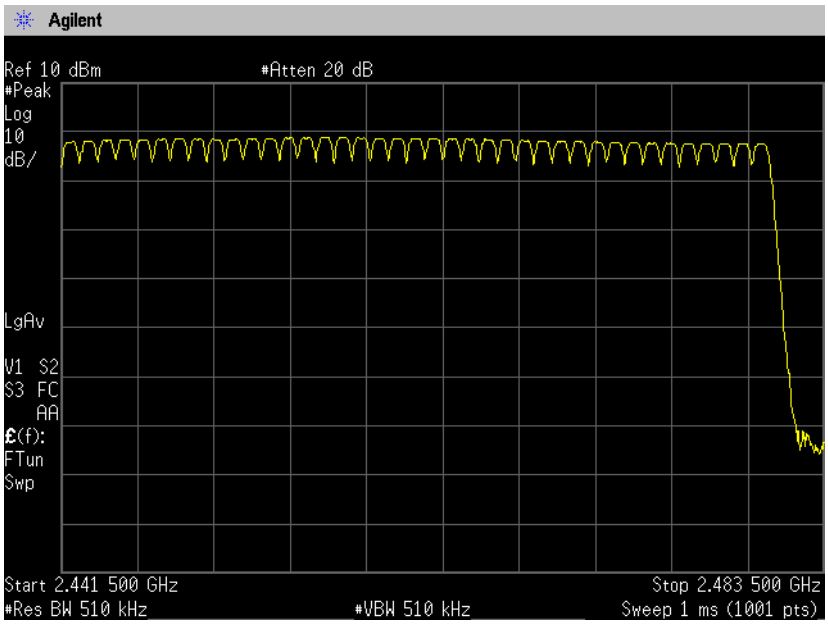
6.4 Trace data

[DH5]

Low

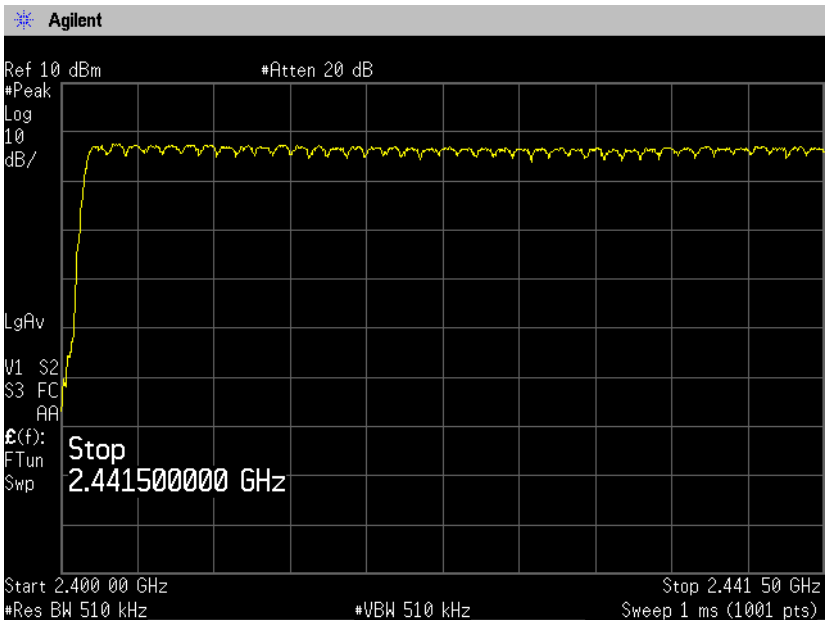


High

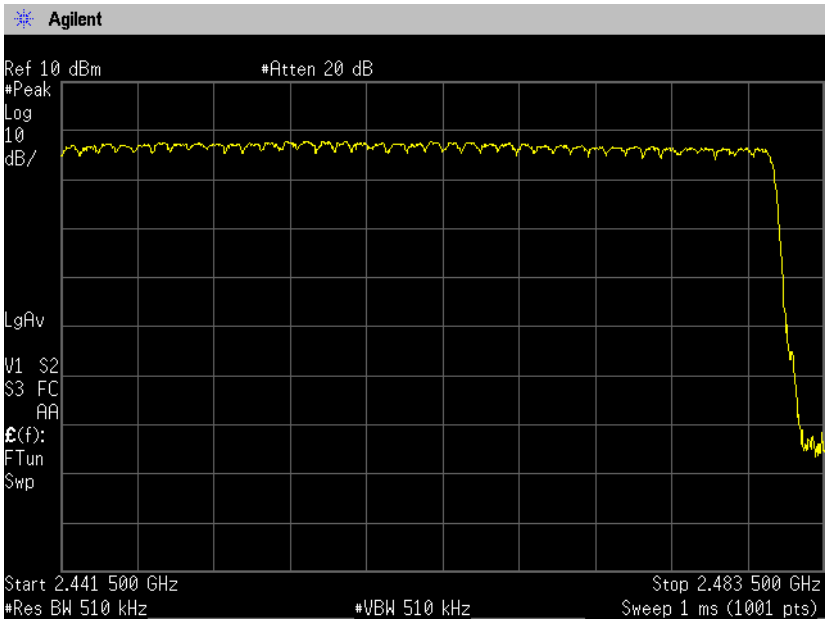


[3-DH5]

Low

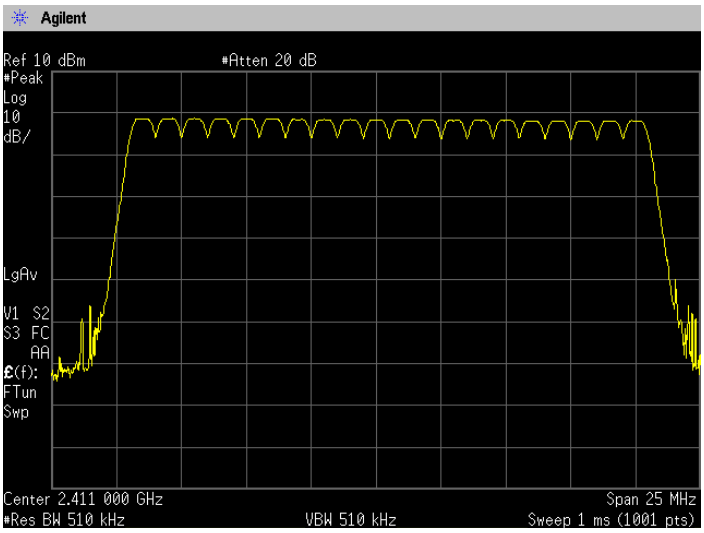


High

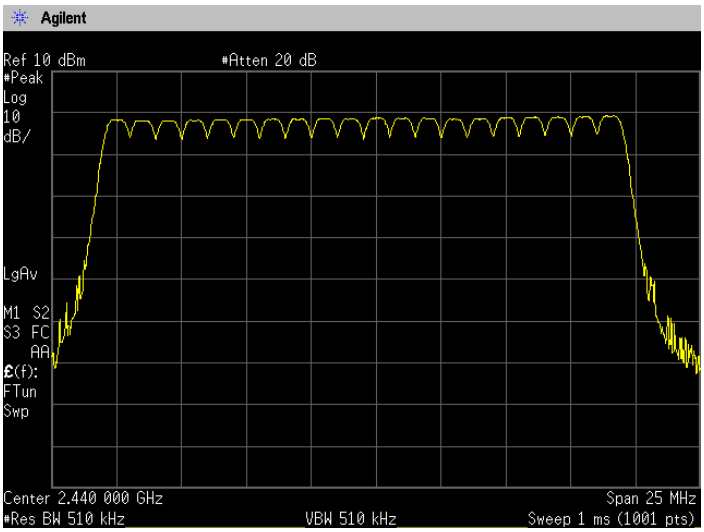


[DH5(AFH)]

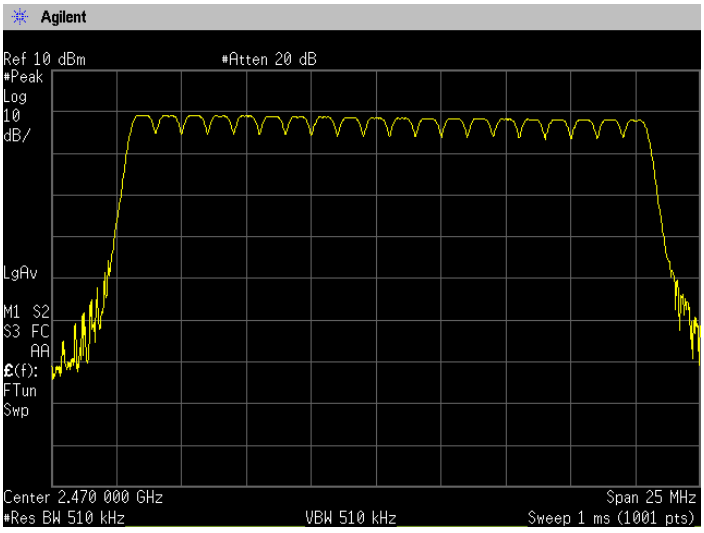
Low



Middle

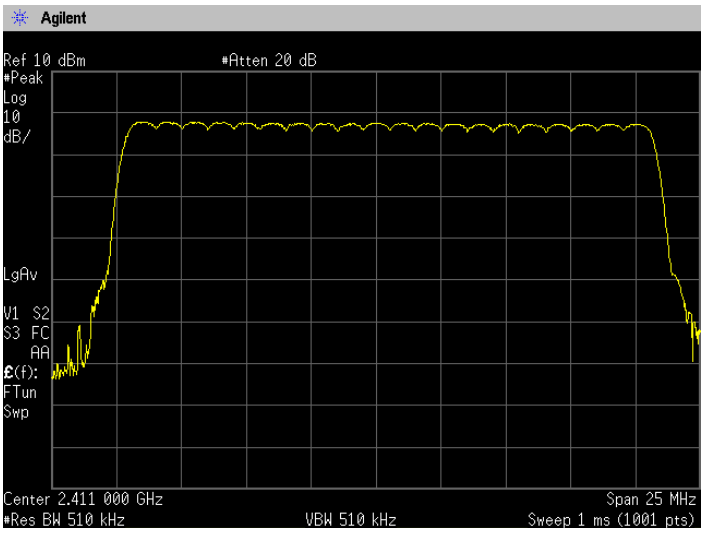


High

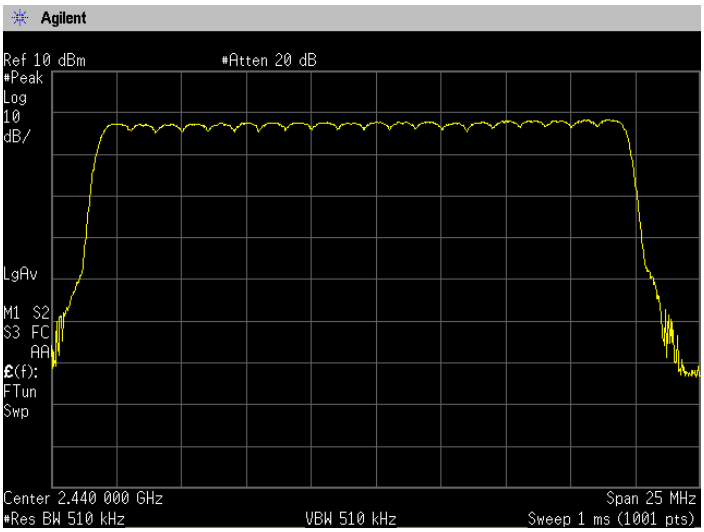


[3DH5(AFH)]

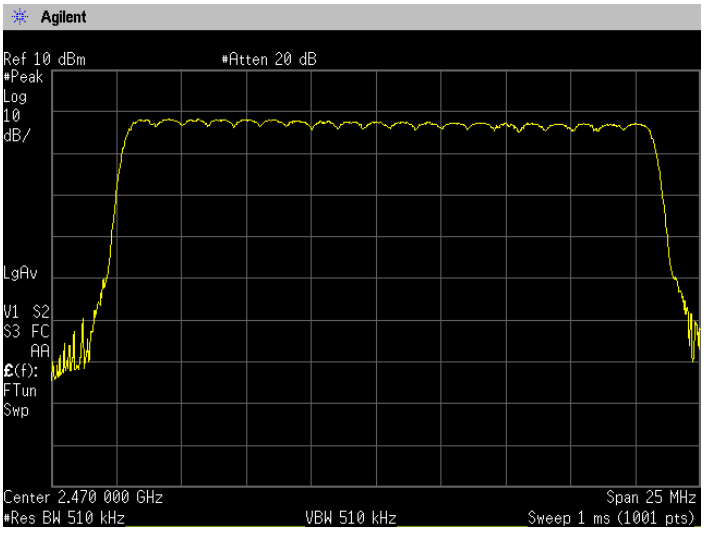
Low



Middle



High



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7. Time of Occupancy (Dwell Time)

7.1 Measurement procedure [FCC 15.247(a)(1)(iii)]

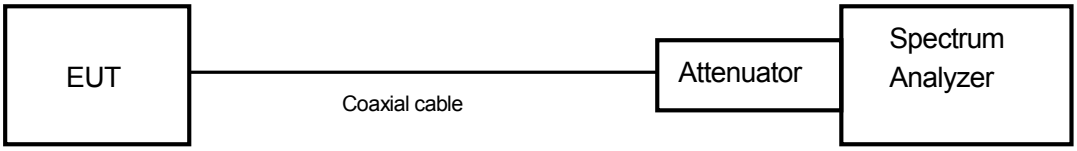
The time occupancy of hopping channel is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=1MHz, VBW=1MHz, Span=0Hz, Sweep=5ms, Detector=Peak, Trace mode=Single

The EUT was set to operate with following conditions.
- Hopping

The test mode of EUT is as follows.
- Tx mode

- Test configuration



7.2 Limit

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

7.3 Measurement result

Date	:	Mar. 27, 2014			
Temperature	:	24.0 [˚C]			
Humidity	:	51.0 [%]	Tested by	:	
Test place	:	Shielded room No.4			Nobuyuki Toda

Date	:	May 2, 2014			
Temperature	:	24.5 [˚C]			
Humidity	:	47.0 [%]	Tested by	:	
Test place	:	Shielded room No.4			Taiki Watanabe

FHSS mode

Channel	Frequency (MHz)	Packet type	Dwell time (ms)	Occupancy time of 31.6 seconds (s)	Limit	Result
Low	2402	DH5	2.885	0.308	<0.4s	PASS
		3-DH5	2.885	0.308	<0.4s	PASS
Middle	2441	DH5	2.885	0.308	<0.4s	PASS
		3-DH5	2.890	0.308	<0.4s	PASS
High	2480	DH5	2.880	0.307	<0.4s	PASS
		3-DH5	2.885	0.308	<0.4s	PASS

AFH mode

Channel	Frequency (MHz)	Packet type	Dwell time (ms)	Occupancy time of 31.6 seconds (s)	Limit	Result
Low	2411	DH5	2.880	0.154	<0.4s	PASS
		3-DH5	2.885	0.154	<0.4s	PASS
Middle	2440	DH5	2.885	0.154	<0.4s	PASS
		3-DH5	2.885	0.154	<0.4s	PASS
High	2470	DH5	2.885	0.154	<0.4s	PASS
		3-DH5	2.885	0.154	<0.4s	PASS

FHSS mode
DH5/3-DH5 = Dwell time (ms) x 1600 / 6 / 79 x 31.6

AFH mode
DH5/3-DH5 = Dwell time (ms) x 800 / 6 / 20 x 8

The hopping rates of Bluetooth devices change with different types of payload. The longer the payload is, the slower the hopping rate. The hopping rate scenario is defined in Bluetooth core specification.

Calculation:

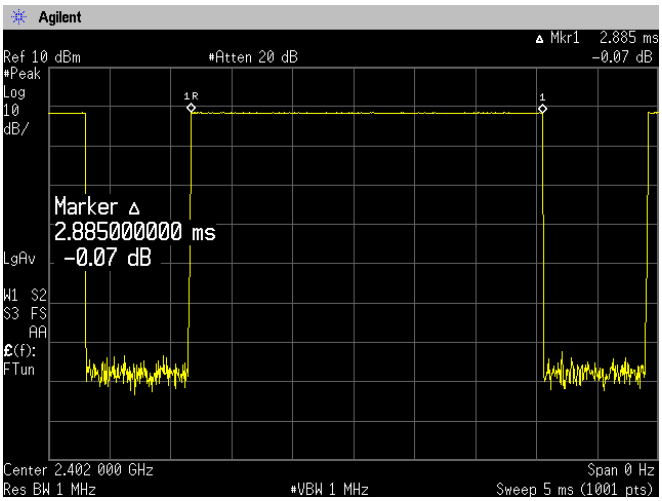
Occupancy time of 31.6 seconds* = time domain slot length x hop rate / number of hopper channel / 79 /x 31.6

Ex.) for FHSS mode Channel Middle, DH5 = 2.885ms x 1600 / 6/ 79 x 31.6 = 308ms

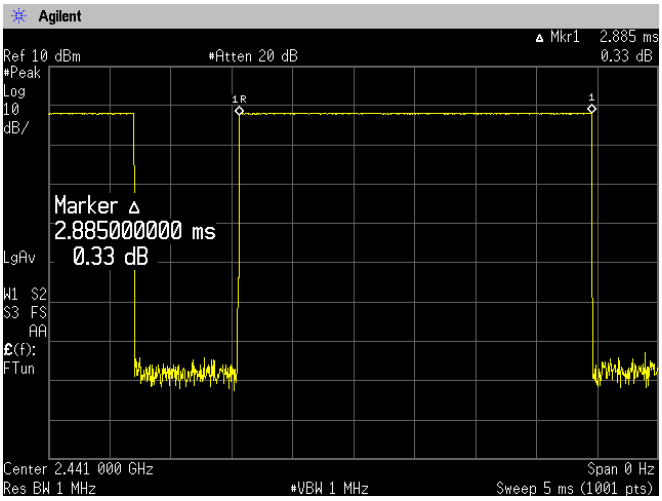
7.4 Trace data

FHSS mode
[DH5]

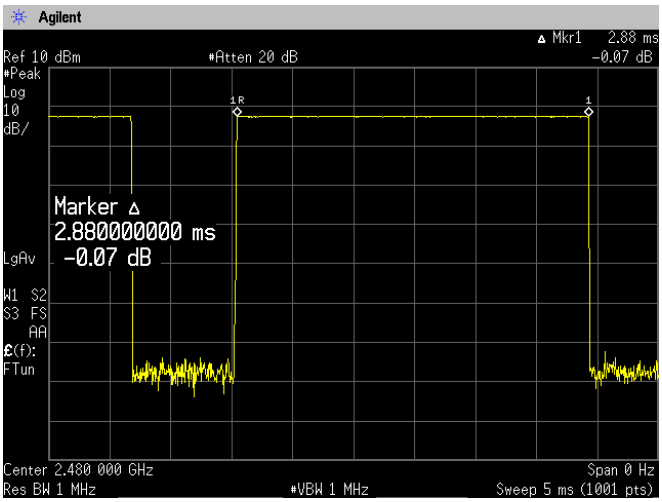
Channel Low



Channel Middle

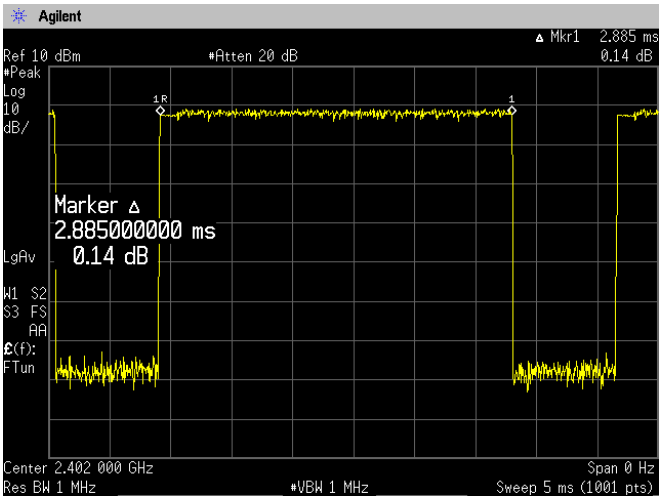


Channel High

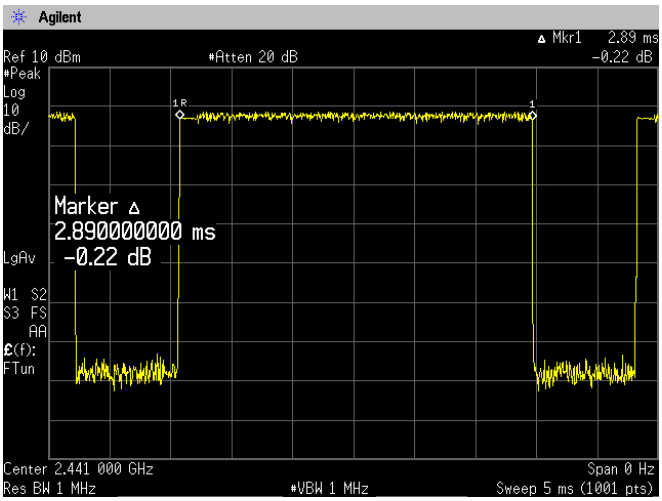


FHSS mode
[3-DH5]

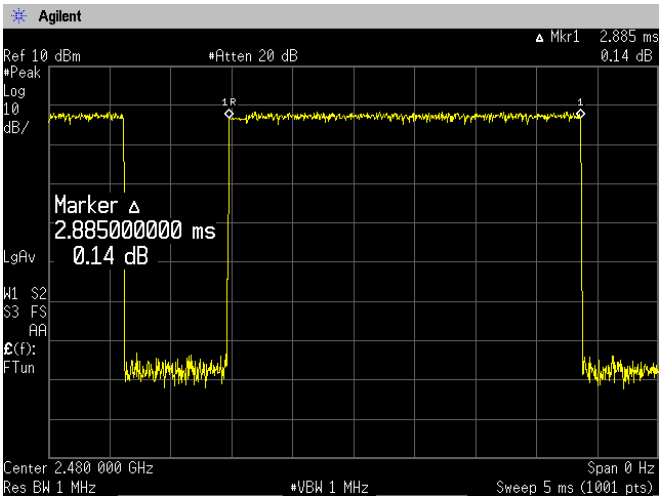
Channel Low



Channel Middle

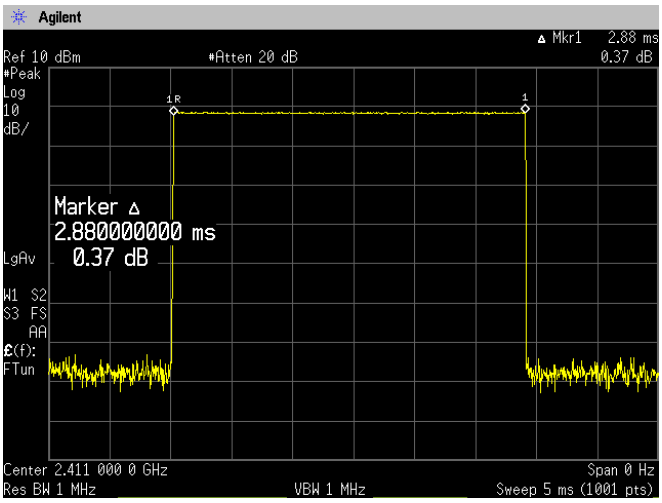


Channel High

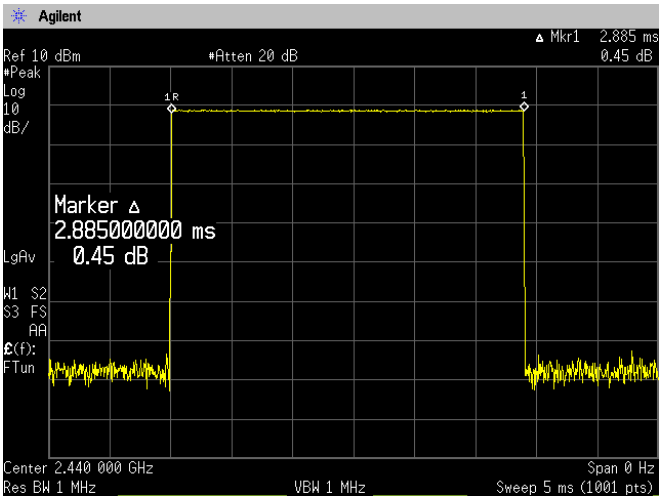


AFH mode
[DH5]

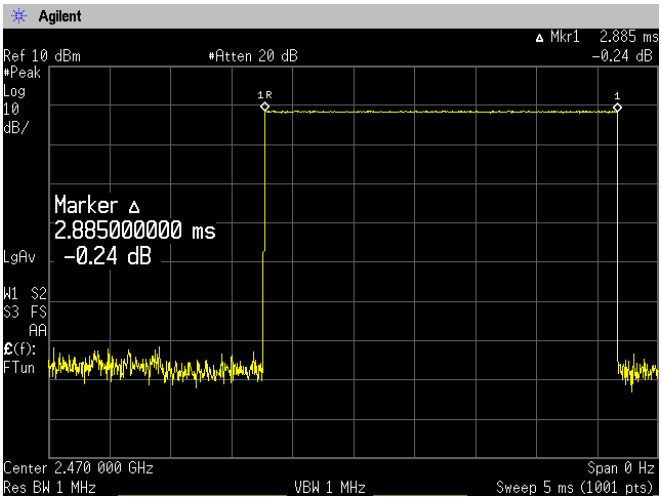
Channel Low



Channel Middle



Channel High



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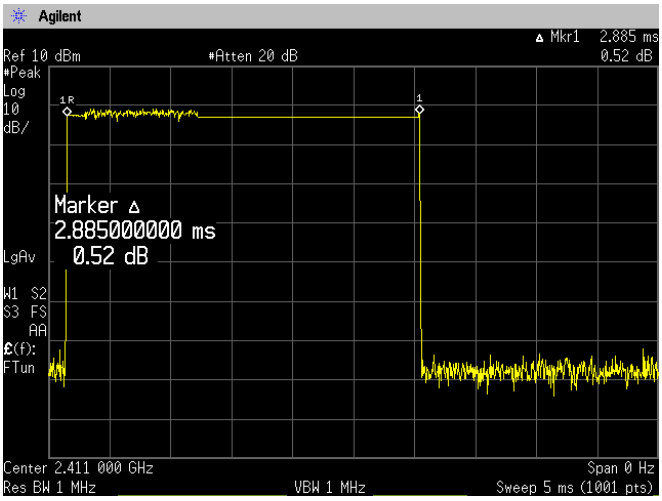
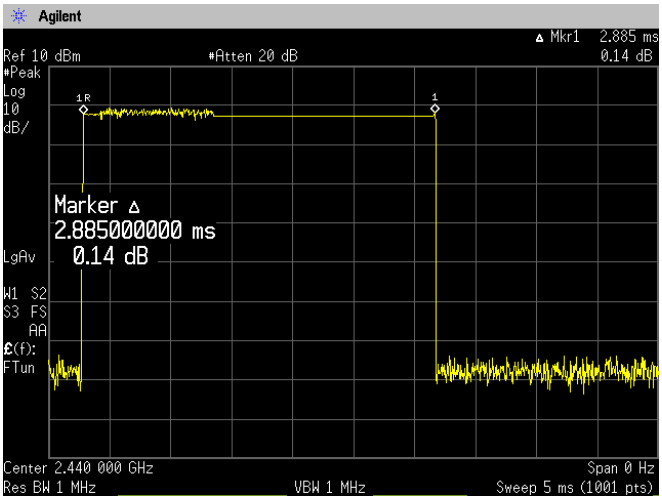
AFH mode
[3-DH5]

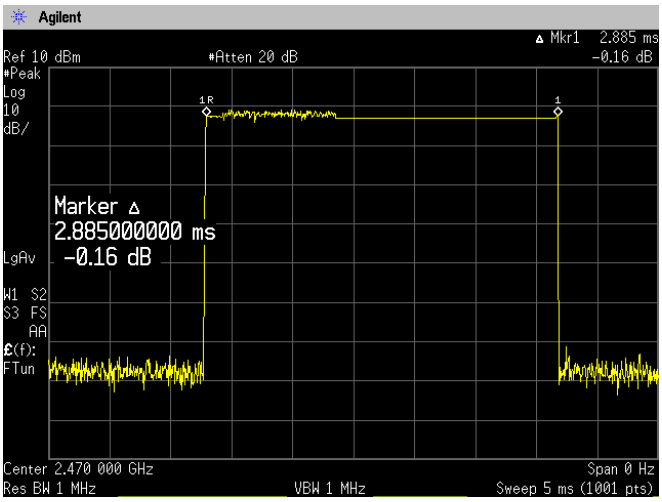
Channel Low



Channel Middle



Channel High



Zacta

8. Maximum Peak Output Power

8.1 Measurement procedure [FCC 15.247(b)(3), 15.31(e)]

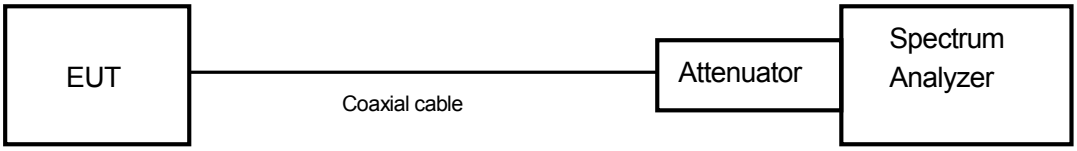
The peak power is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=1MHz, VBW=3MHz, Span=5MHz, Sweep=auto, Detector=Peak, Trace mode=Max hold

The EUT was set to operate with following conditions.
- No hopping [Channel Low: 2402MHz, Channel Middle: 2441MHz, Channel High: 2480MHz]

The test mode of EUT is as follows.
- Tx mode

- Test configuration



8.2 Limit

0.125 W or less

8.3 Measurement result

Date : Mar. 27, 2014
Temperature : 24.0 [˚C]
Humidity : 51.0 [%]
Test place : Shielded room No.4

Tested by : Nobuyuki Toda

Battery Full

Channel	Center Frequency (MHz)	Packet type	Reading (dBm)	Factor (dB)	Level (dBm)	Peak Output Power (mW)	Limit (mW)	Result
Low	2402.00	DH5	-1.52	10.62	9.10	8.128	≤125	PASS
		3-DH5	-0.63	10.62	9.99	9.977	≤125	PASS
Middle	2441.00	DH5	-1.83	10.62	8.79	7.568	≤125	PASS
		3-DH5	-0.94	10.62	9.68	9.290	≤125	PASS
High	2480.00	DH5	-2.33	10.62	8.29	6.745	≤125	PASS
		3-DH5	-1.46	10.62	9.16	8.241	≤125	PASS

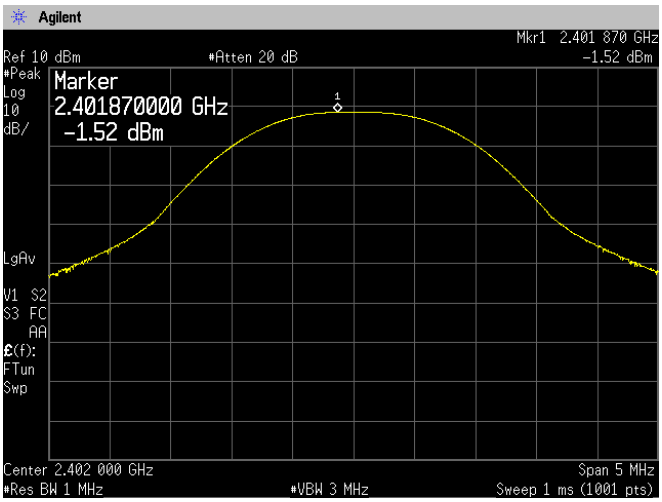
Calculation;
Reading (dBm) + Factor (dB) = Level (dBm)
10logP = Level (dBm)
$P = 10^{(\text{Maximum Peak Output Power} / 10)}$ (mW)

8.4 Trace data

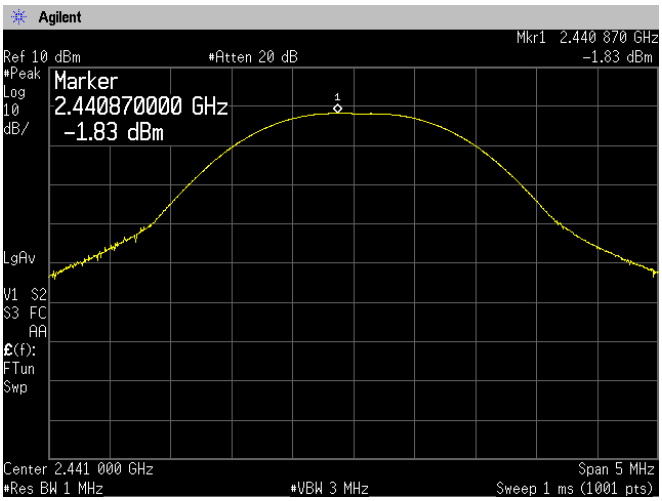
[DH5]

[Battery Full]

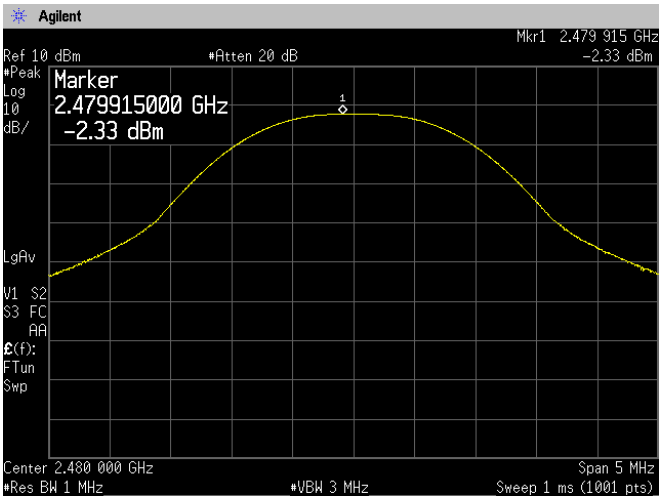
Channel Low



Channel Middle



Channel High

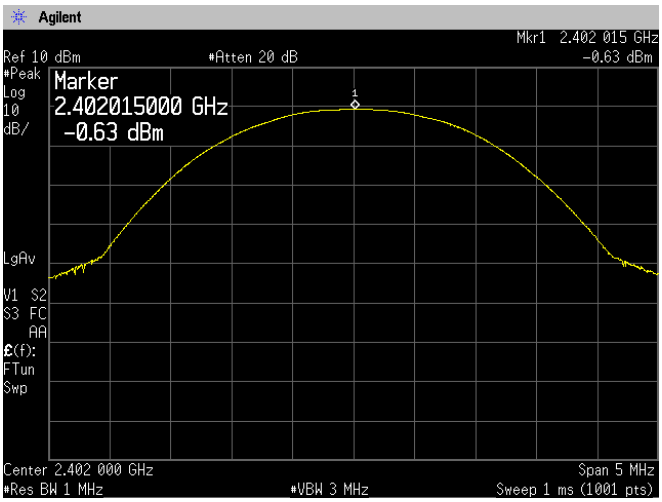


Zacta

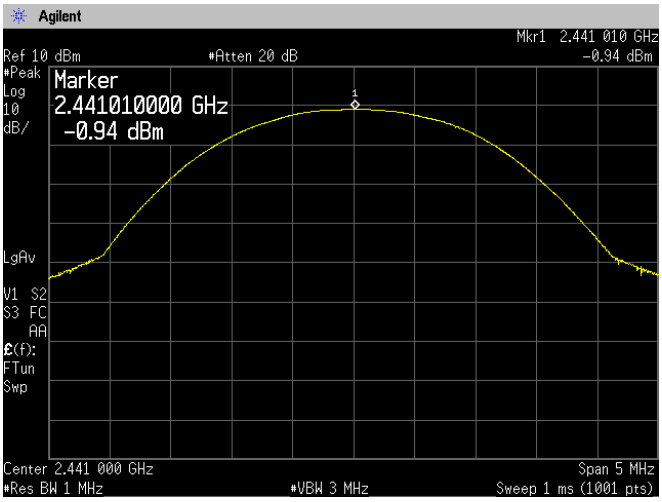
[3-DH5]

[Battery Full]

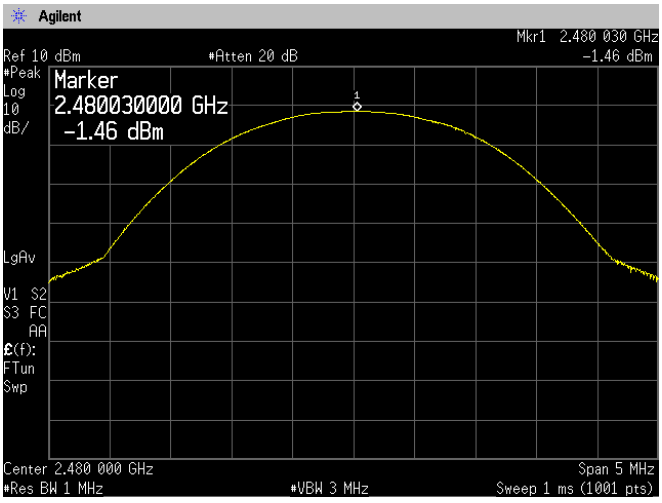
Channel Low



Channel Middle



Channel High



9. Band Edge Compliance of RF Conducted Emissions

9.1 Measurement procedure [FCC 15.247(d)]

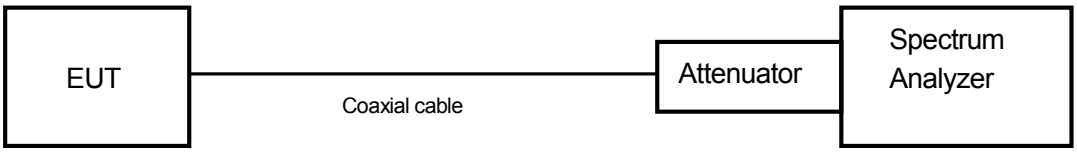
The Band Edge is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=100kHz, VBW=100kHz, Span=Arbitrary setting, Sweep=auto, Detector=Peak, Trace mode=Max hold

The EUT was set to operate with following conditions.
- No hopping [Channel Low: 2402MHz, Channel High: 2480MHz]
- Hopping

The test mode of EUT is as follows.
- Tx mode

- Test configuration



9.2 Limit

In any 100kHz bandwidth outside the frequency band the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

9.3 Measurement result

Date	:	Mar. 27, 2014		
Temperature	:	24.0 [˚C]		
Humidity	:	51.0 [%]	Tested by	:
Test place	:	Shielded room No.4		Nobuyuki Toda

[Hopping]

Channel	Frequency (MHz)	Packet type	RF Power Level (dBm)	Band-edge Frequency (MHz)	Band-edge Level (dBm)	Difference Level (dBm)	Limit (dBm)	Result
Low	2402.00	DH5	-1.50	2390.88	-71.69	70.19	At least 20dB below from peak of RF	PASS
		3-DH5	-3.76	2390.69	-72.01	68.25		PASS
High	2480.00	DH5	-2.89	2483.32	-71.96	69.07		PASS
		3-DH5	-4.70	2483.31	-70.19	65.49		PASS

[No hopping]

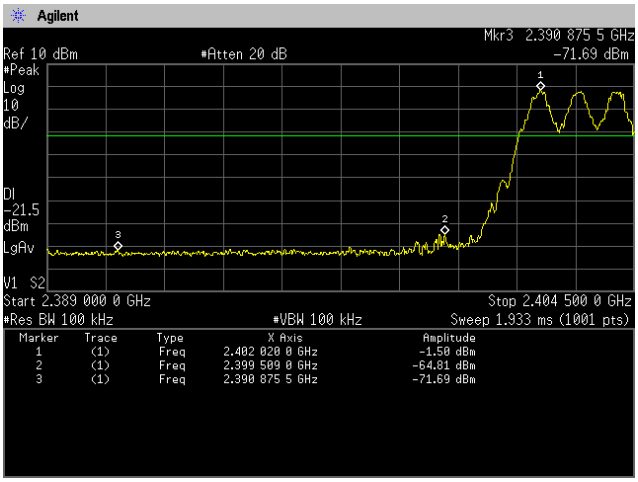
Channel	Frequency (MHz)	Packet type	RF Power Level (dBm)	Band-edge Frequency (MHz)	Band-edge Level (dBm)	Difference Level (dBm)	Limit (dBm)	Result
Low	2402.00	DH5	-1.57	2390.88	-72.00	70.43	At least 20dB below from peak of RF	PASS
		3-DH5	-2.51	2391.73	-71.04	68.53		PASS
High	2480.00	DH5	-2.52	2483.44	-66.85	64.33		PASS
		3-DH5	-3.27	2483.34	-68.68	65.41		PASS

9.4 Trace data

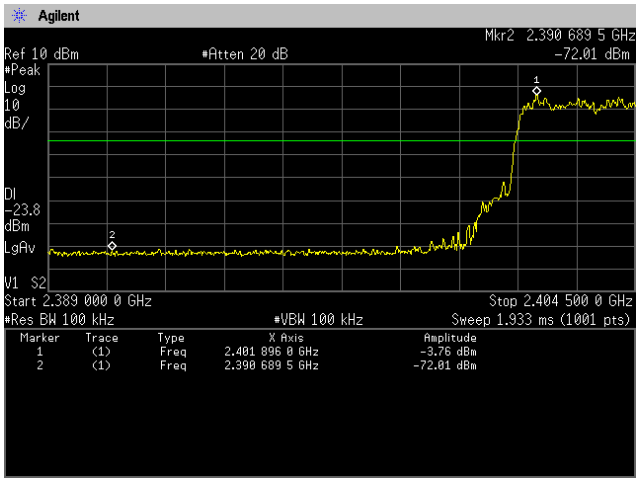
[Hopping]

Channel Low

DH5

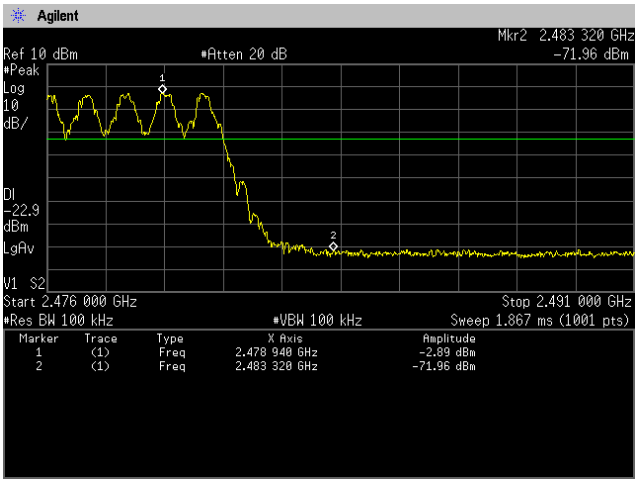


3-DH5

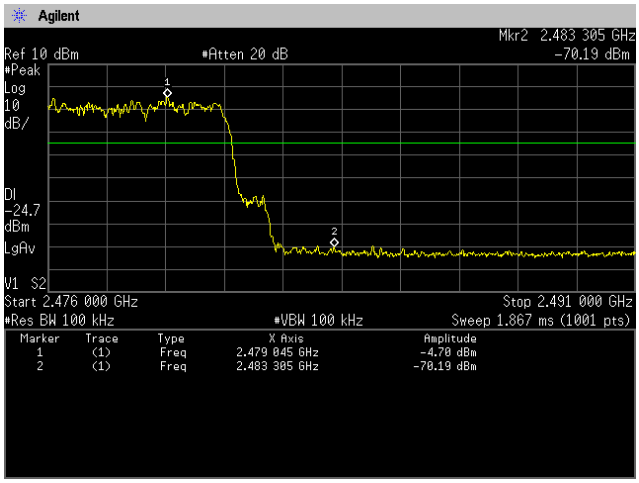


Channel High

DH5



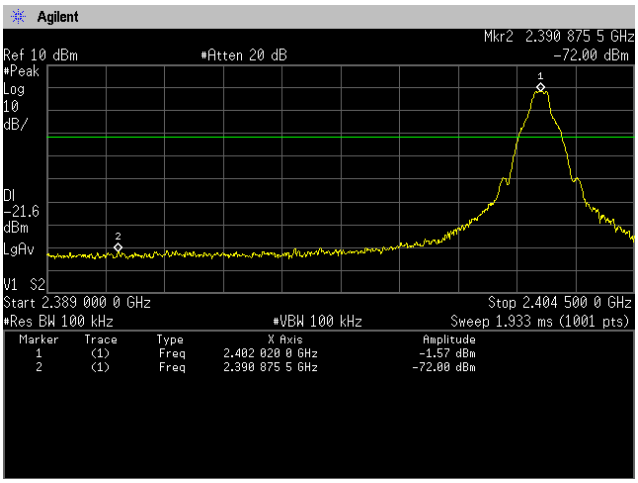
3-DH5



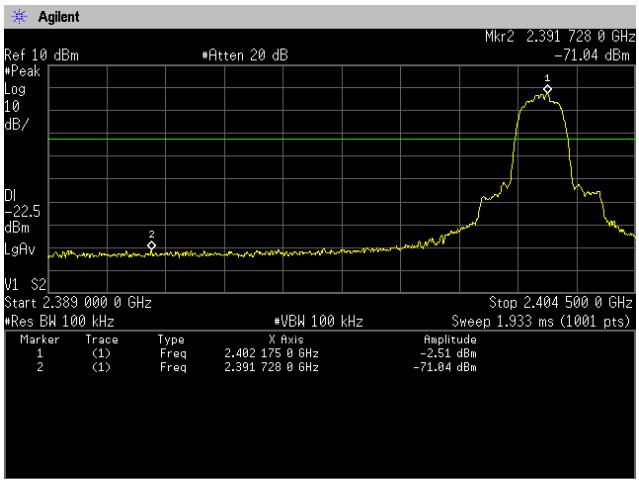
[No hopping]

Channel Low

DH5

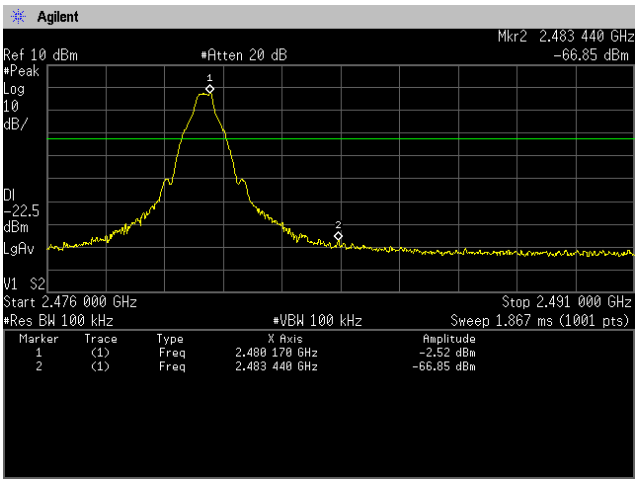


3-DH5

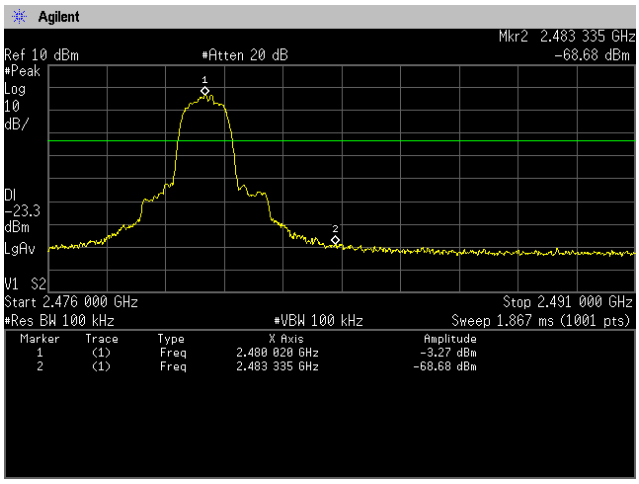


Channel High

DH5



3-DH5



Zacta

10. Spurious emissions - Conducted -

10.1 Measurement procedure [FCC 15.247(d)]

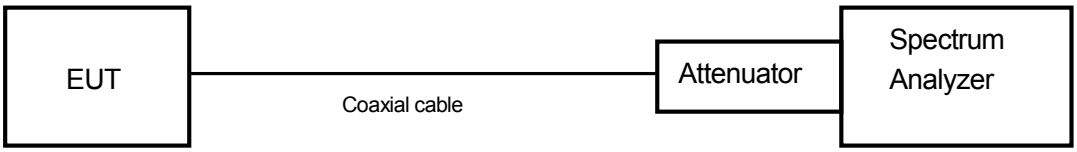
The spurious emissions (Conducted) are measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency.

The spectrum analyzer is set to;
- RBW=100kHz, VBW=300kHz, Span=Arbitrary setting, Sweep=auto, Detector=Peak, Trace mode=Max hold

The EUT was set to operate with following conditions.
- No hopping [Channel Low: 2402MHz, Channel Middle: 2441MHz, Channel High: 2480MHz]

The test mode of EUT is as follows.
- Tx mode

- Test configuration



10.2 Limit

In any 100kHz bandwidth outside the frequency band the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

10.3 Measurement result

Date : Mar. 27, 2014
Temperature : 24.0 [˚C]
Humidity : 51.0 [%] Tested by : Nobuyuki Toda
Test place : Shielded room No.4

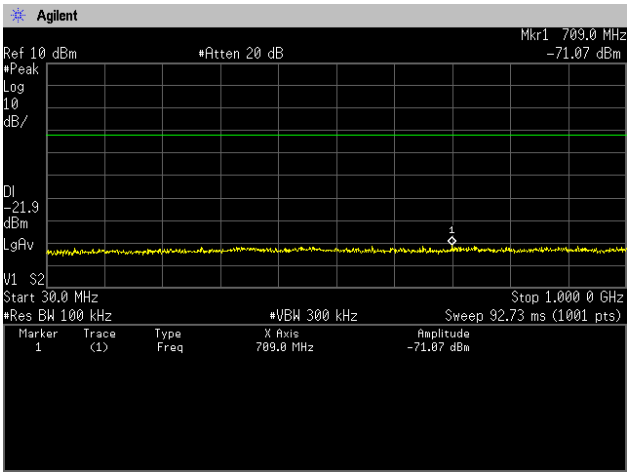
Channel	Frequency [MHz]	Limit [dB]	Results Chart	Result
Low	2402	At least 20dB below from peak of RF	See the trace Data	PASS
Middle	2441	At least 20dB below from peak of RF	See the trace Data	PASS
High	2480	At least 20dB below from peak of RF	See the trace Data	PASS

10.4 Trace data

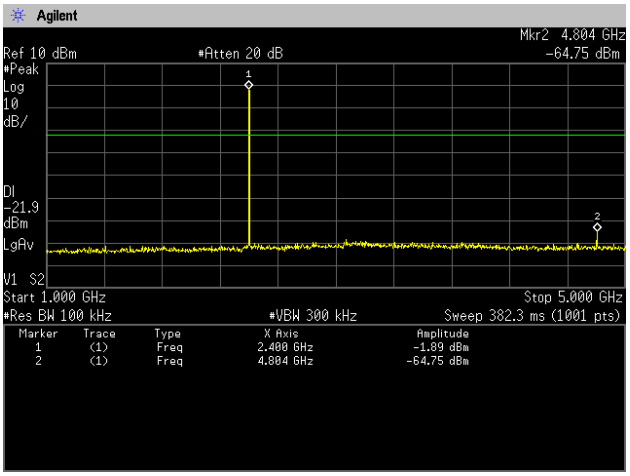
[DH5]

Channel Low

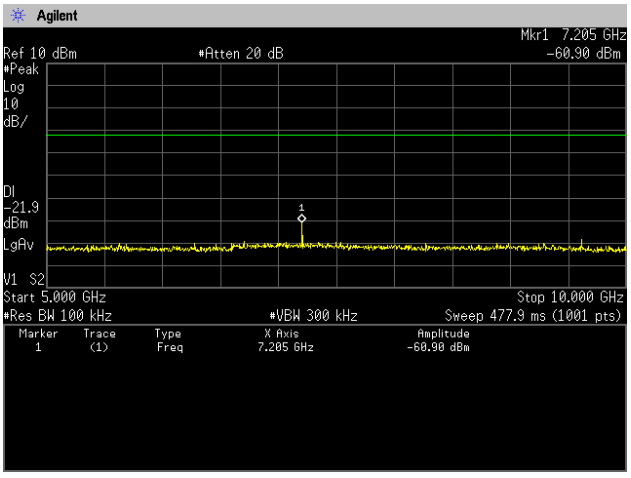
30MHz-1GHz



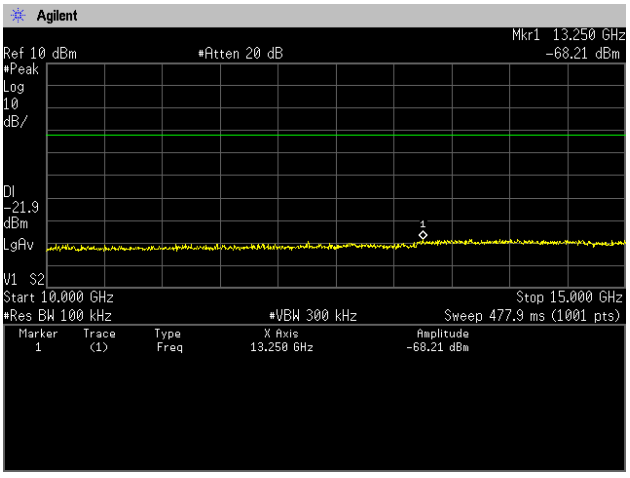
1GHz-5GHz



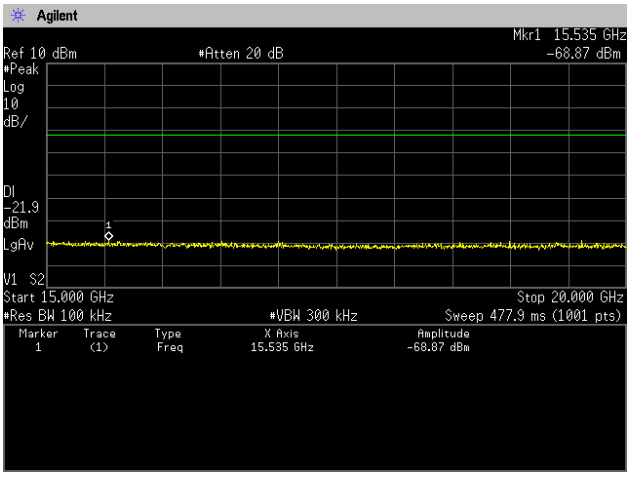
5GHz-10GHz



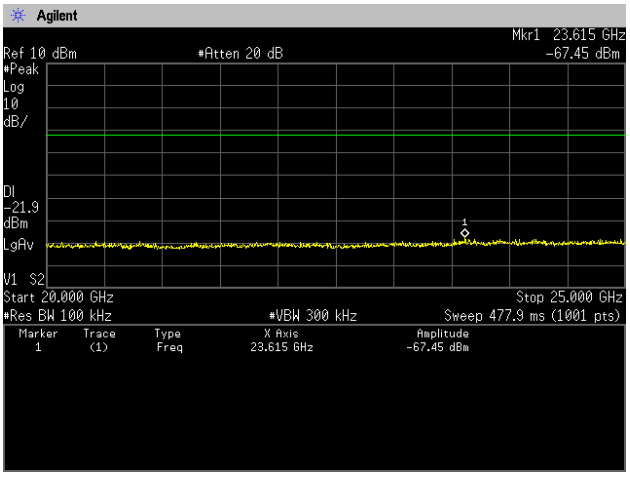
10GHz-15GHz



15GHz-20GHz

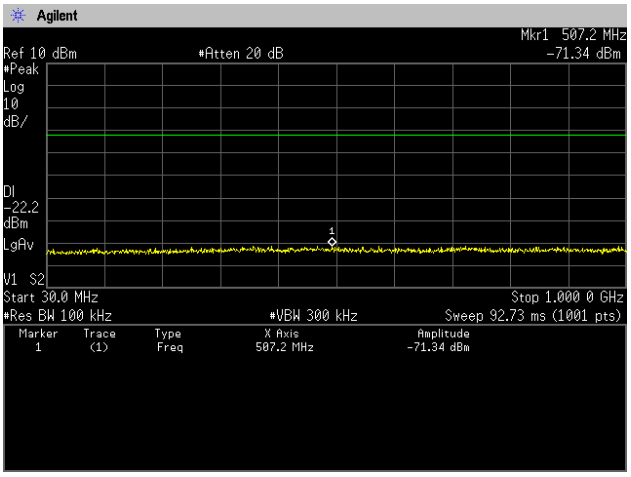


20GHz-25GHz

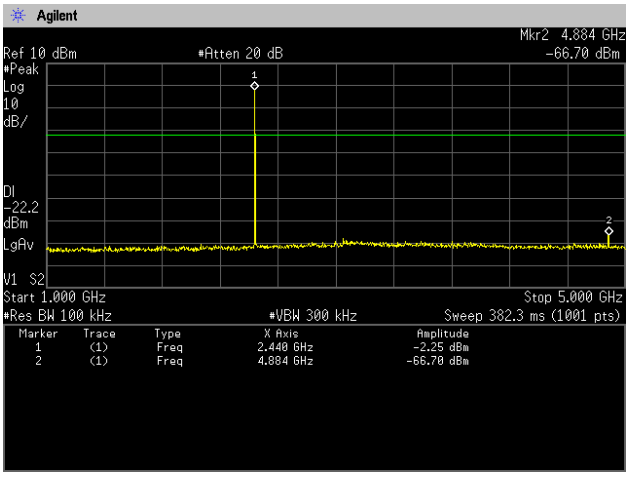


Channel Middle

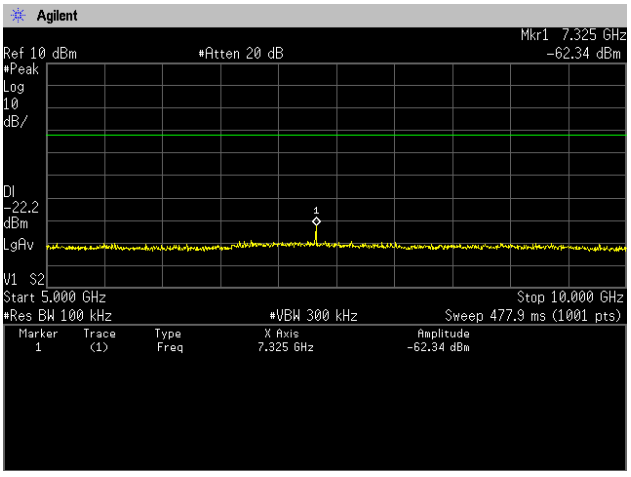
30MHz-1GHz



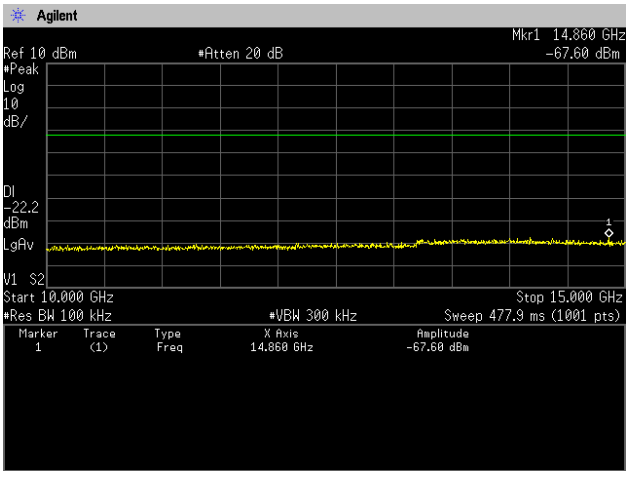
1GHz-5GHz



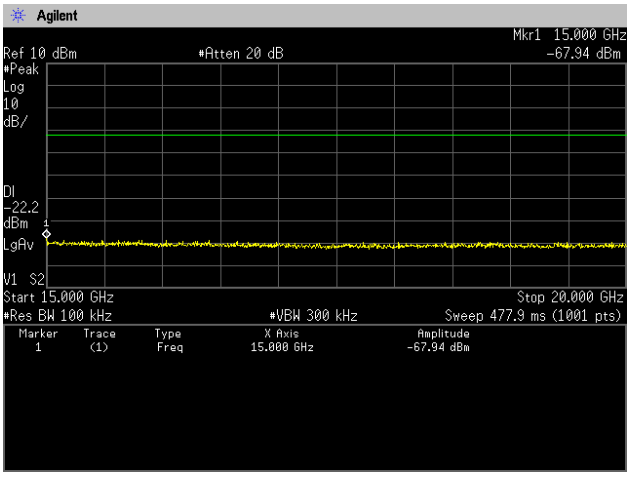
5GHz-10GHz



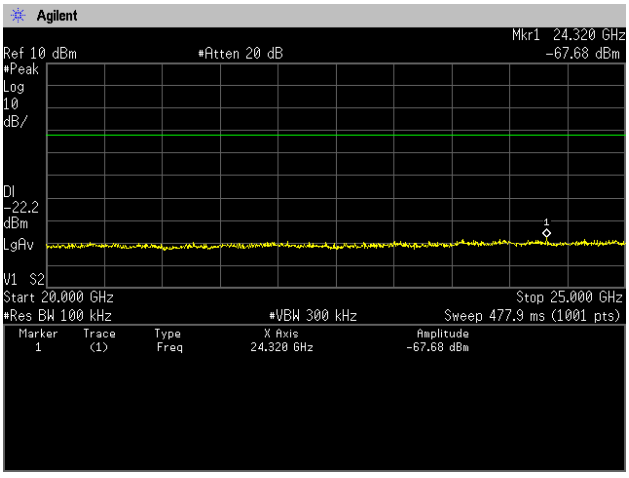
10GHz-15GHz



15GHz-20GHz

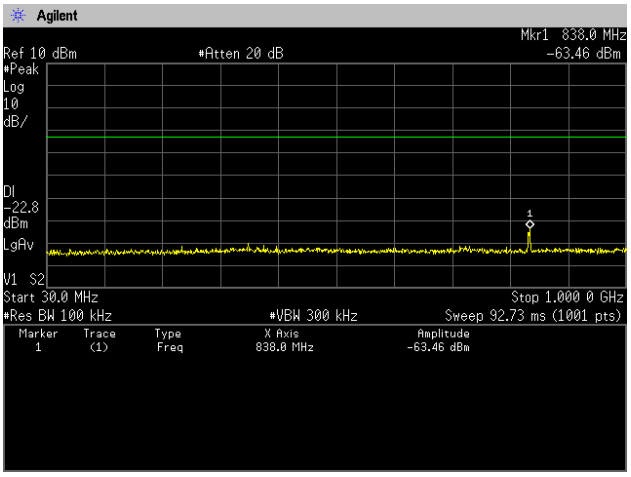


20GHz-25GHz

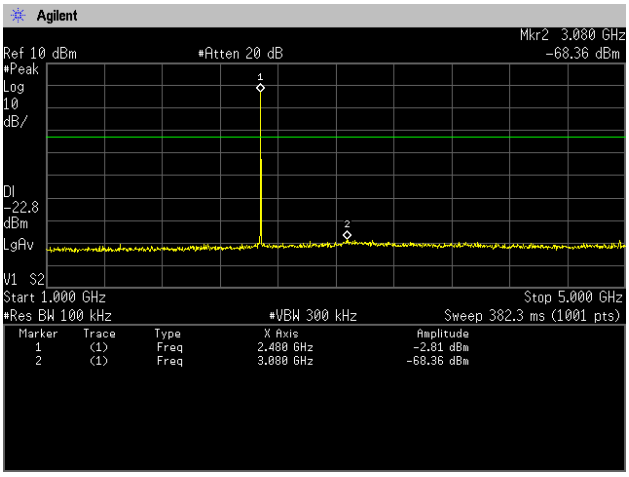


Channel High

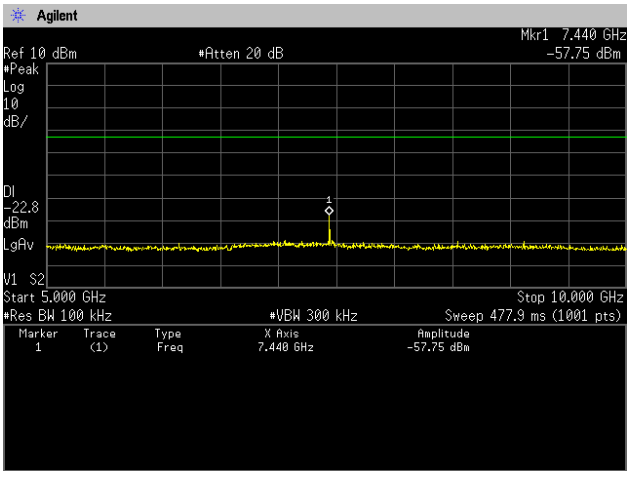
30MHz-1GHz



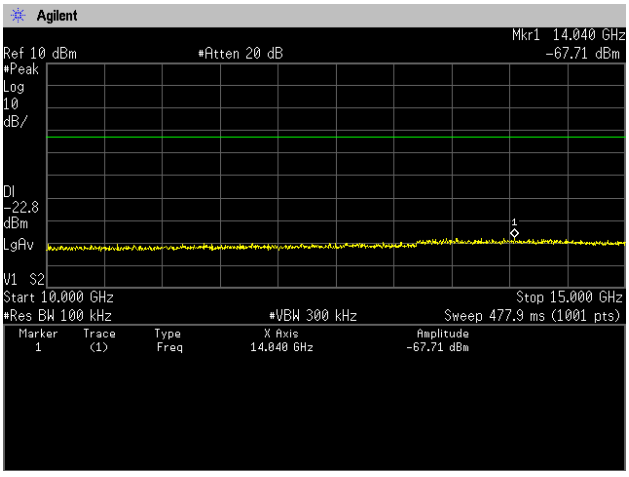
1GHz-5GHz



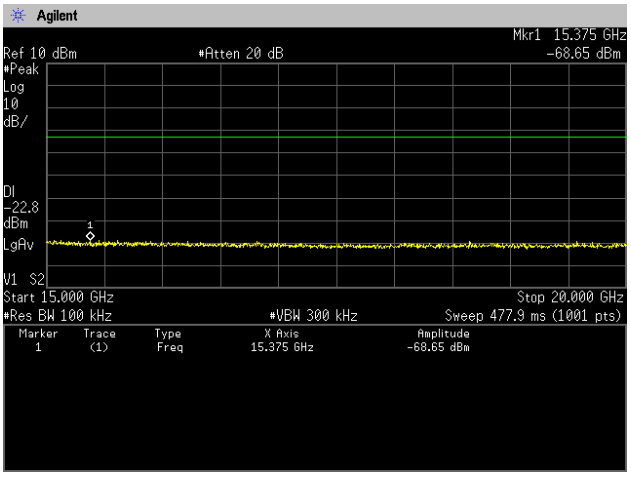
5GHz-10GHz



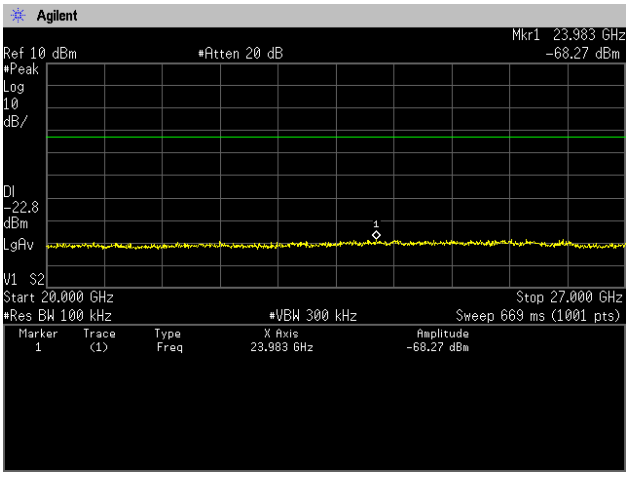
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



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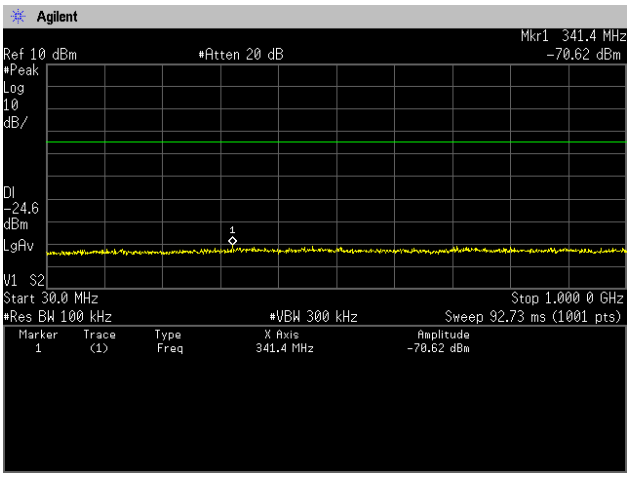
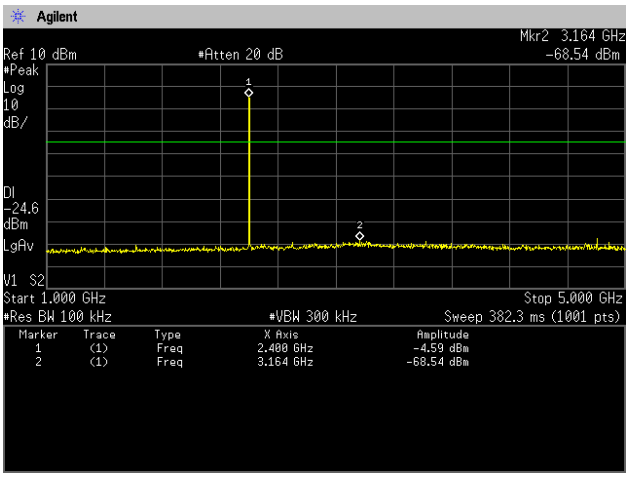
[3-DH5]
Channel Low

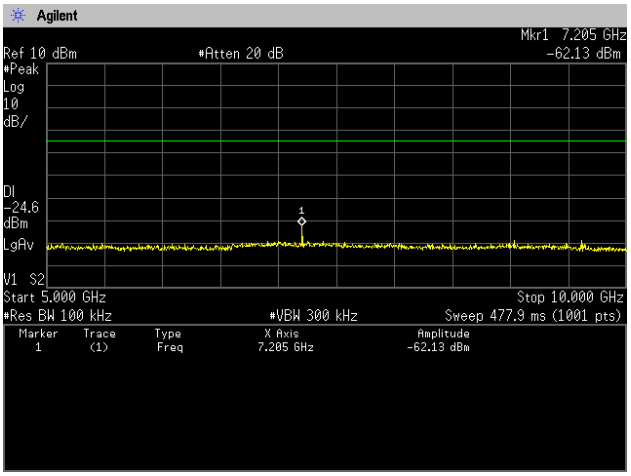
30MHz-1GHz



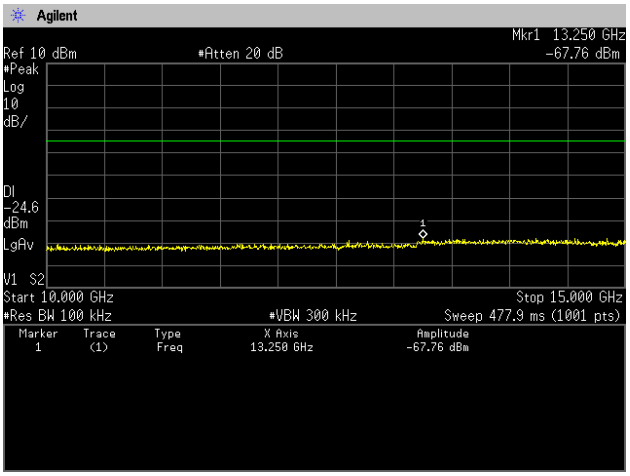
1GHz-5GHz



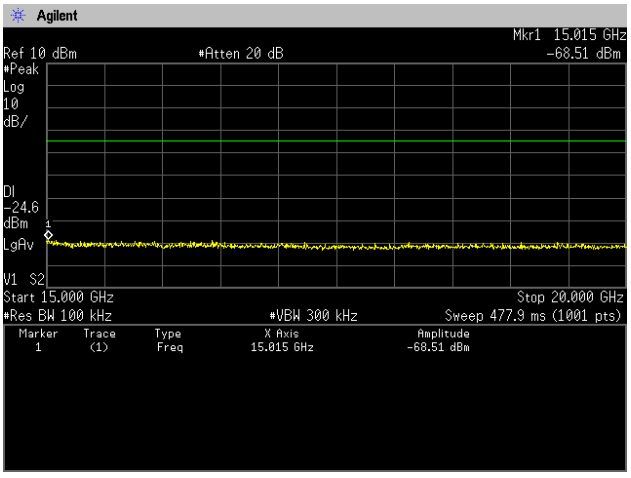
5GHz-10GHz



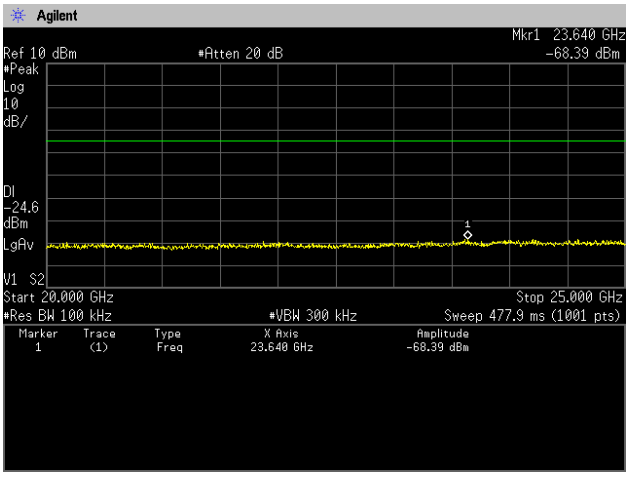
10GHz-15GHz



15GHz-20GHz

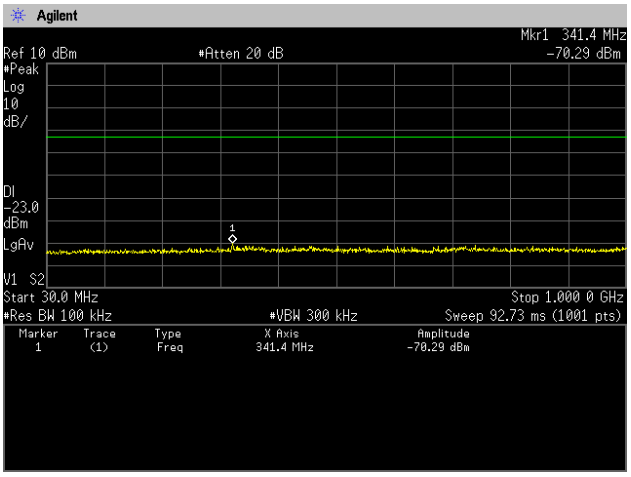


20GHz-25GHz

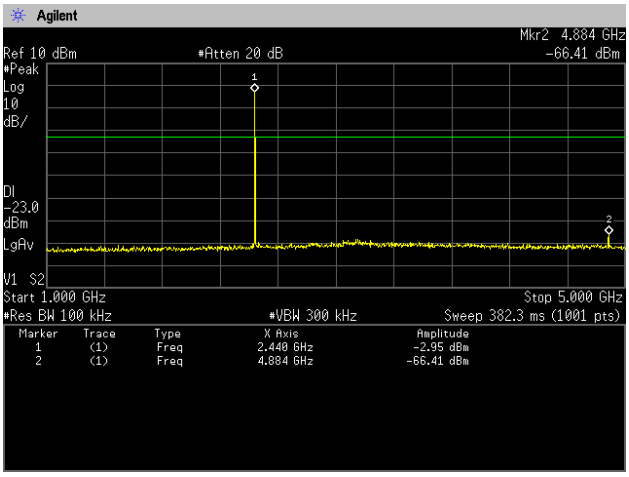


Channel Middle

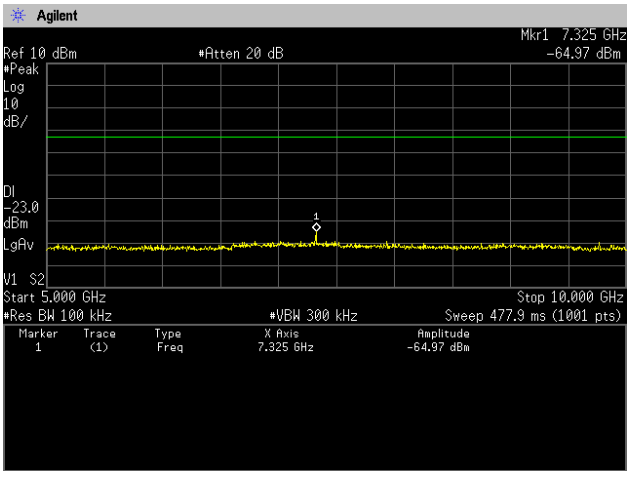
30MHz-1GHz



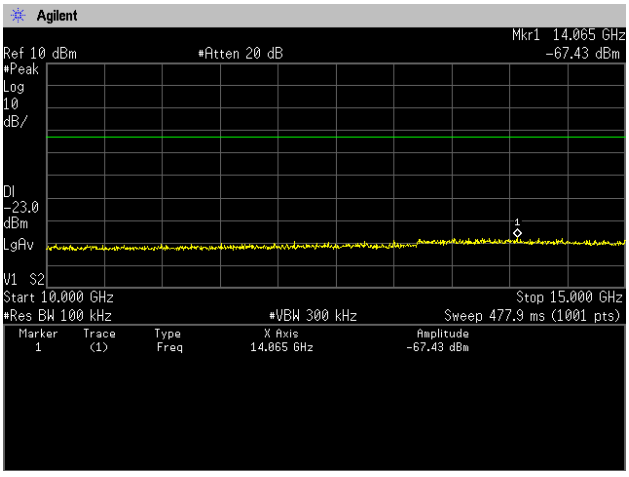
1GHz-5GHz



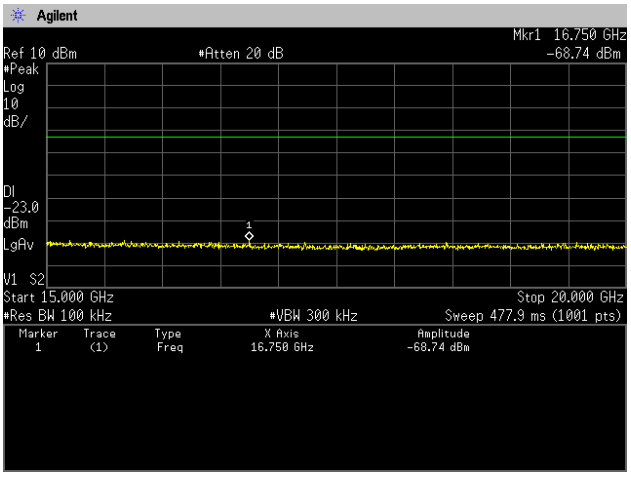
5GHz-10GHz



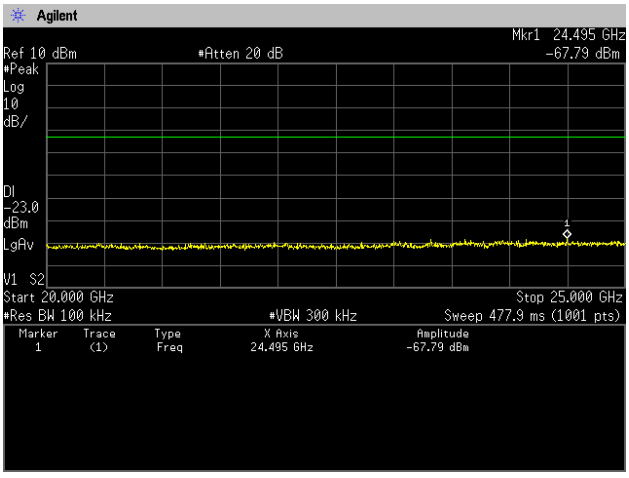
10GHz-15GHz



15GHz-20GHz

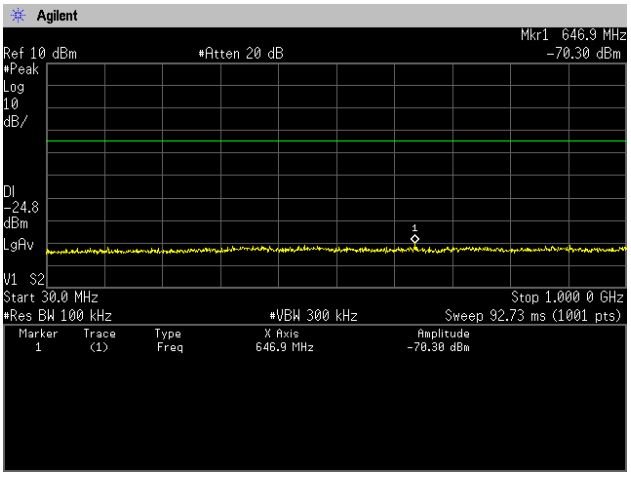


20GHz-25GHz

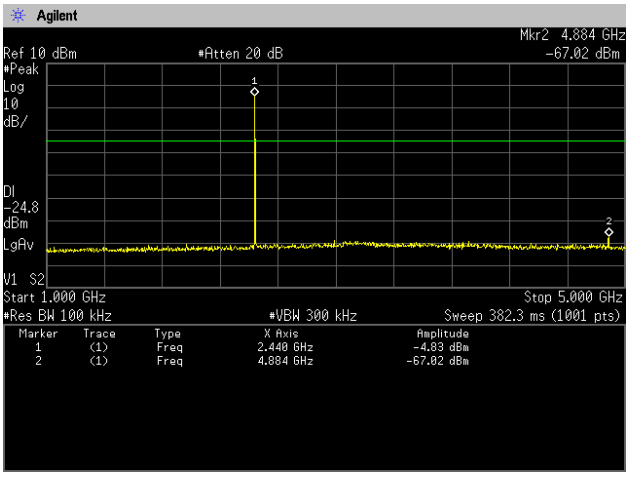


Channel High

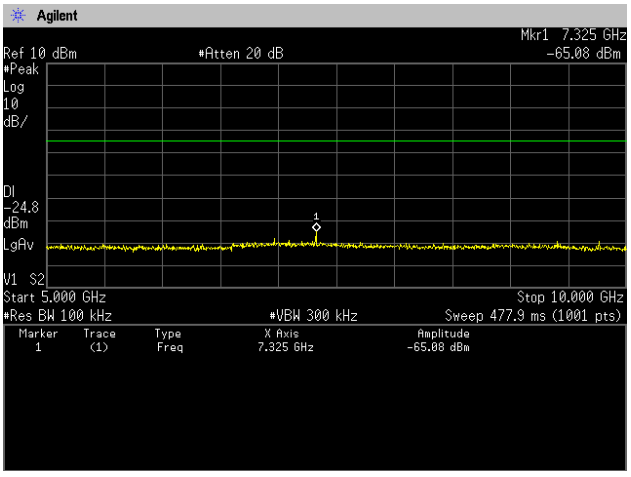
30MHz-1GHz



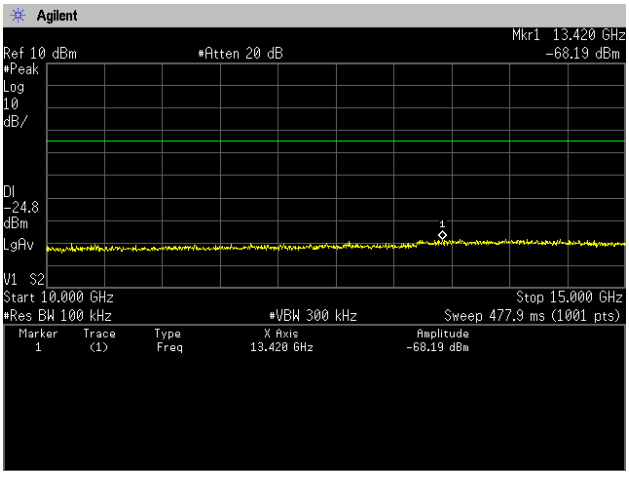
1GHz-5GHz



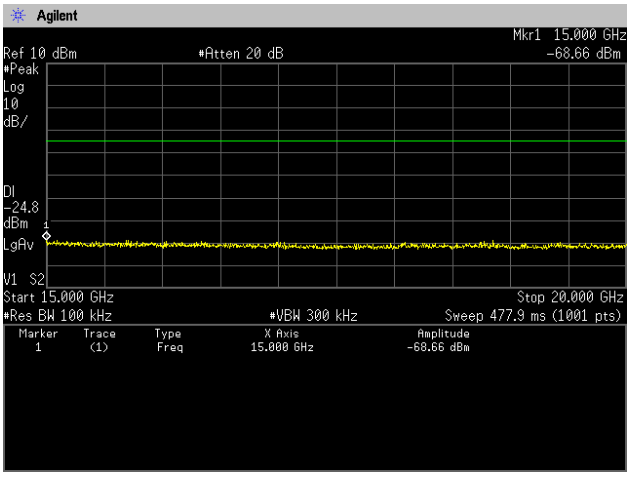
5GHz-10GHz



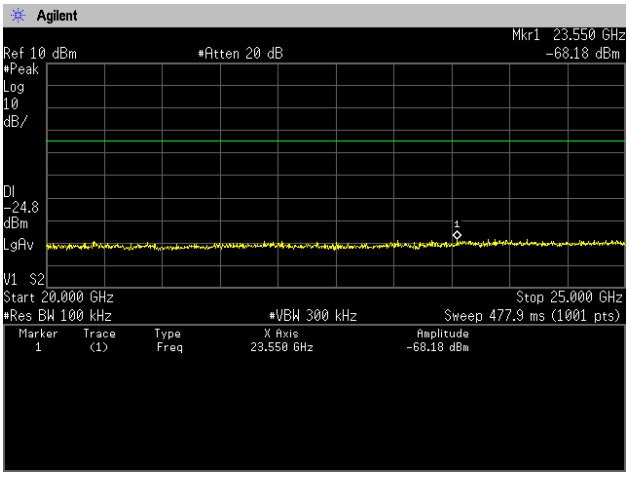
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



11. Spurious Emissions - Radiated -

11.1 Measurement procedure
[FCC 15.247(d), 15,205, 15.209]

Test was applied by following conditions.

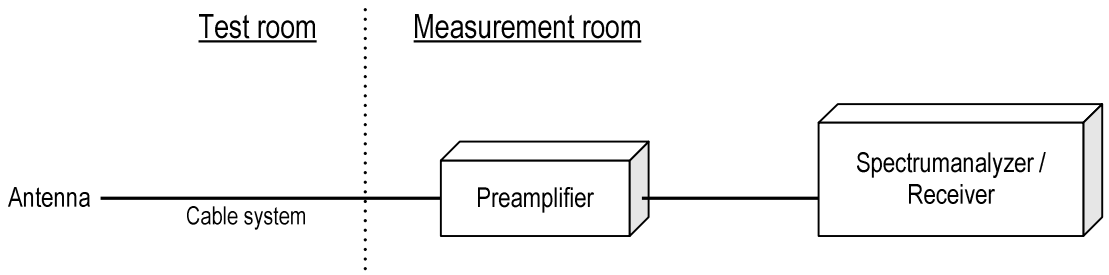
Test method	:	ANSI C63.4
Frequency range	:	9kHz to 25GHz
Test place	:	3m Semi-anechoic chamber
EUT was placed on	:	FRP table / (W)2.0m × (D)1.0m × (H)0.8m
Antenna distance	:	3m
Test receiver setting		Below 1GHz
- Detector	:	Average (9kHz-90kHz, 110kHz-490kHz), Quasi-peak
- Bandwidth	:	200Hz, 120kHz
Spectrum analyzer setting		Above 1GHz
- Peak	:	RBW=1MHz, VBW=3MHz, Span=0Hz, Sweep=auto
- Average	:	RBW=1MHz, VBW=10Hz, Span=0Hz, Sweep=auto
		Display mode=Linear

Radiated emission measurements are performed at 3m distance with the broadband antenna (Loop antenna, TRILOG antenna and Double ridged guide antenna). The antenna is positioned both the horizontal and vertical planes of polarization and height is varied 1m to 4m and stopped at height producing the maximum emission. As for the Loop antenna, it is positioned with its plane vertical, and the center of the Loop antenna is 1m above the ground plane.
The EUT is Placed on a turntable, which is 0.8m above ground plane. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. The test results represent the worst case emission for each emission with manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation. Sufficient time for the EUT, support equipment, and test equipment are allowed in order for them to warm up to their normal operating condition.

The EUT was set to operate with following conditions.
- No hopping [Channel Low: 2402MHz, Channel Middle: 2441MHz, Channel High: 2480MHz]

The test mode of EUT is as follows.
- Tx mode, Rx mode

- Test configuration



Zacta

11.2 Calculation method

[9kHz to 150kHz]
Emission level = Reading + (Ant. factor + Cable system loss)
Margin = Limit – Emission level

[150kHz to 25GHz]
Emission level = Reading + (Ant. factor + Cable system loss – Amp. Gain)
Margin = Limit – Emission level

11.3 Limit

Frequency [MHz]	Field strength		Distance [m]
	[uV/m]	[dBuV/m]	
0.009-0.490	2400 / F [kHz]	20logE [uV/m]	300
0.490-1.705	24000 / F [kHz]	20logE [uV/m]	30
1.705-30	30	29.5	30
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Note:
1. The lower limit shall apply at the transition frequencies.
2. Emission level [dBuV/m] = 20log Emission [uV/m]
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition modulation.

11.4 Test data

Date	:	Mar. 19, 2014			
Temperature	:	24.2 [˚C]			
Humidity	:	32.0 [%]	Tested by	:	
Test place	:	3m Semi-anechoic chamber			Nobuyuki Toda

Date	:	Mar. 20, 2014			
Temperature	:	24.0 [˚C]			
Humidity	:	31.0 [%]	Tested by	:	
Test place	:	3m Semi-anechoic chamber			Nobuyuki Toda

Zacta

【Qi mounted type】

[DH5]

Channel Low

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]
1	4804.000	H	42.9	30.9	8.6	51.5	39.5	74.0	54.0	22.5	14.5	100.0	219.0
2	4804.356	V	42.4	29.5	8.6	51.0	38.1	74.0	54.0	23.0	15.9	213.0	279.0
3	7206.522	H	43.9	31.9	13.4	57.3	45.3	74.0	54.0	16.7	8.7	100.0	43.0
4	7206.532	V	43.7	31.2	13.4	57.1	44.6	74.0	54.0	16.9	9.4	215.0	133.0

Channel Middle

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]
1	4882.000	H	43.1	30.5	9.0	52.1	39.5	74.0	54.0	21.9	14.5	100.0	220.0
2	4882.056	V	42.5	29.8	9.0	51.5	38.8	74.0	54.0	22.5	15.2	100.0	272.0
3	7323.506	H	47.4	37.4	14.1	61.5	51.5	74.0	54.0	12.5	2.5	100.0	32.0
4	7323.518	V	44.4	32.9	14.1	58.5	47.0	74.0	54.0	15.5	7.0	100.0	136.0

Channel High

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]
1	4959.745	V	41.7	28.3	9.3	51.0	37.6	74.0	54.0	23.0	16.4	100.0	232.0
2	4959.939	H	42.1	28.9	9.3	51.4	38.2	74.0	54.0	22.6	15.8	100.0	213.0
3	7440.000	V	43.2	32.3	14.3	57.5	46.6	74.0	54.0	16.5	7.4	100.0	162.0
4	7439.815	H	45.1	34.1	14.3	59.4	48.4	74.0	54.0	14.6	5.6	100.0	199.0

[3-DH5]

Channel Low

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]
1	4804.115	H	42.2	29.5	8.6	50.8	38.1	74.0	54.0	23.2	15.9	126.0	242.0
2	4804.283	V	41.5	27.5	8.6	50.1	36.1	74.0	54.0	23.9	17.9	124.0	183.0
3	7206.000	H	42.5	29.7	13.4	55.9	43.1	74.0	54.0	18.1	10.9	100.0	21.0
4	7206.330	V	42.9	29.8	13.4	56.3	43.2	74.0	54.0	17.7	10.8	209.0	134.0

Channel Middle

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]
1	4882.054	H	42.3	29.2	9.0	51.3	38.2	74.0	54.0	22.7	15.8	123.0	231.0
2	4882.060	V	40.7	27.9	9.0	49.7	36.9	74.0	54.0	24.3	17.1	115.0	187.0
3	7323.000	H	46.0	33.2	14.1	60.1	47.3	74.0	54.0	13.9	6.7	100.0	30.0
4	7323.520	V	45.4	32.3	14.1	59.5	46.4	74.0	54.0	14.5	7.6	208.0	141.0

Channel High

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]
1	4960.046	H	41.0	28.3	9.3	50.3	37.6	74.0	54.0	23.7	16.4	143.0	205.0
2	4960.840	V	40.3	27.6	9.3	49.6	36.9	74.0	54.0	24.4	17.1	100.0	310.0
3	7440.015	H	45.6	32.1	14.3	59.9	46.4	74.0	54.0	14.1	7.6	100.0	239.0
4	7440.020	V	43.9	30.2	14.3	58.2	44.5	74.0	54.0	15.8	9.5	100.0	130.0

Note:

1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.
3. No emission was detected in the receive mode.

Zacta

【Qi non-mounted type (Worst Only)】

[DH5]

Channel Middle

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]
1	4882.000	H	42.5	30.0	9.0	51.5	39.0	74.0	54.0	22.5	15.0	100.0	220.0
2	4882.000	V	42.1	29.4	9.0	51.1	38.4	74.0	54.0	22.9	15.6	100.0	272.0
3	7323.506	H	46.0	36.0	14.1	60.1	50.1	74.0	54.0	13.9	3.9	100.0	32.0
4	7323.518	V	44.0	32.5	14.1	58.1	46.6	74.0	54.0	15.9	7.4	100.0	136.0

[3-DH5]

Channel Middle

No.	Frequency	(P)	Reading PK	Reading CAV	c.f	Result PK	Result CAV	Limit PK	Limit AV	Margin PK	Margin CAV	Height	Angle
	[MHz]		[dB(μV)]	[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[dB]	[cm]	[°]
1	4882.054	H	42.0	29.0	9.0	51.0	38.0	74.0	54.0	23.0	16.0	123.0	231.0
2	4882.000	V	40.0	27.2	9.0	49.0	36.2	74.0	54.0	25.0	17.8	115.0	187.0
3	7323.000	H	46.0	33.0	14.1	60.1	47.1	74.0	54.0	13.9	6.9	100.0	30.0
4	7323.520	V	45.2	32.1	14.1	59.3	46.2	74.0	54.0	14.7	7.8	208.0	141.0

Note:

1. Emission Level (Margin) = Limit - [Reading + Factor (Antenna + Cable – Amp)]
2. No emission were detected in frequency range 9kHz to 1000MHz at the 3 meters distance.
3. No emission was detected in the receive mode.

12. Restricted Band of Operation

12.1 Measurement procedure [FCC 15.247(d), 15,205, 15.209]

Test was applied by following conditions.

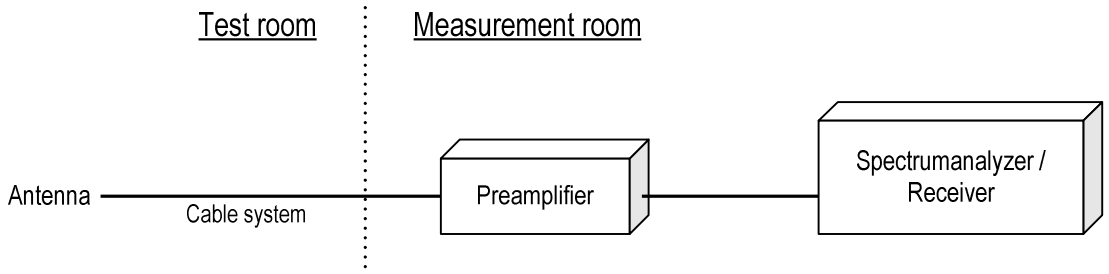
Test method	:	ANSI C63.4
Test place	:	3m Semi-anechoic chamber
EUT was placed on	:	FRP table / (W)2.0m × (D)1.0m × (H)0.8m
Antenna distance	:	3m
Spectrum analyzer setting		
- Peak	:	RBW=1MHz, VBW=3MHz, Span=Arbitrary setting, Sweep=auto
- Average	:	RBW=1MHz, VBW=10Hz, Span=Arbitrary setting, Sweep=auto Display mode=Linear

Radiated emission measurements are performed at 3m distance with the broadband antenna (Double ridged guide antenna). The antenna is positioned both the horizontal and vertical planes of polarization and height is varied 1m to 4m and stopped at height producing the maximum emission.
The EUT is Placed on a turntable, which is 0.8m above ground plane. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. The test results represent the worst case emission for each emission with manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation. Sufficient time for the EUT, support equipment, and test equipment are allowed in order for them to warm up to their normal operating condition.

The EUT was set to operate with following conditions.
- No hopping [Channel Low: 2402MHz, Channel High: 2480MHz]

The test mode of EUT is as follows.
- Tx mode

- Test configuration



12.2 Limit

Emission at the boundary of the restricted band provided by 15.205 shall be lower than 15.209 limit.

12.3 Measurement Result

Channel	Frequency [MHz]	Results Chart	Result
Low	2402	See the Trace Data	Pass
High	2480	See the Trace Data	Pass

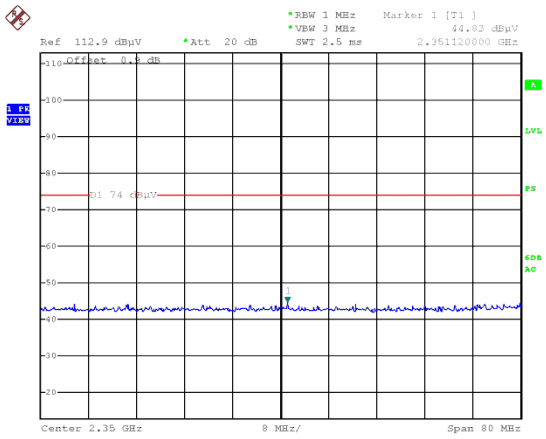
12.4 Test data

Date	:	Apr. 1, 2014			
Temperature	:	21.0 [°C]			
Humidity	:	32.5 [%]	Tested by	:	
Test place	:	3m Semi-anechoic chamber			Taiki Watanabe

Date	:	Apr. 21, 2014			
Temperature	:	22.0 [°C]			
Humidity	:	33.5 [%]	Tested by	:	
Test place	:	3m Semi-anechoic chamber			Taiki Watanabe

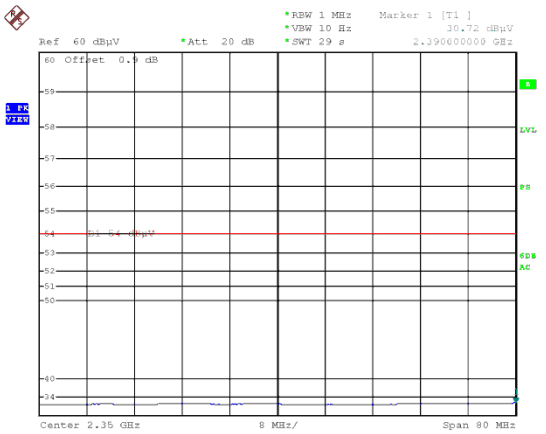
【Qi mounted type】

[DH5]
Channel Low
Horizontal
Peak



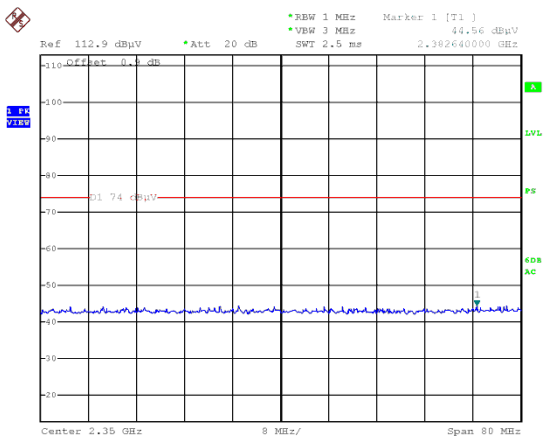
Date: 1.APR.2014 00:01:58

Average



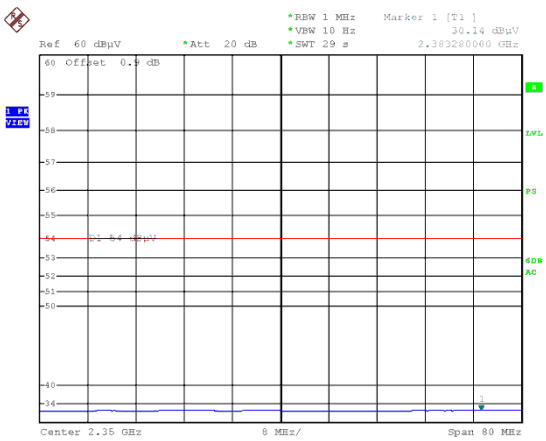
Date: 1.APR.2014 00:43:15

Vertical
Peak



Date: 1.APR.2014 00:06:34

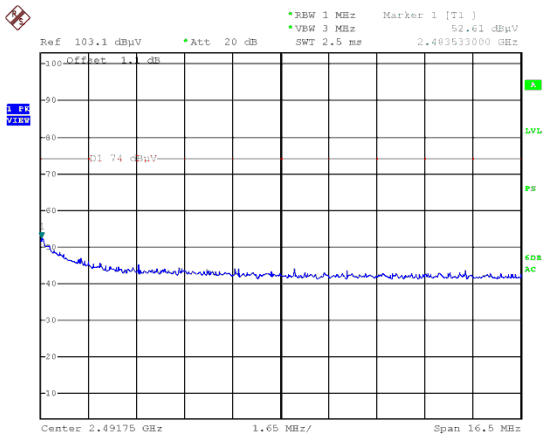
Average



Date: 1.APR.2014 00:10:02

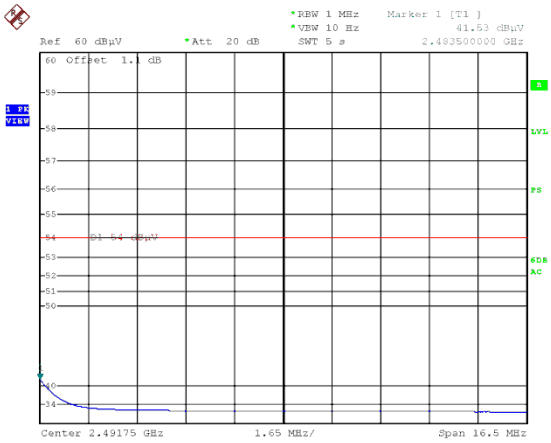
【Qi mounted type】

[DH5]
Channel High
Horizontal
Peak



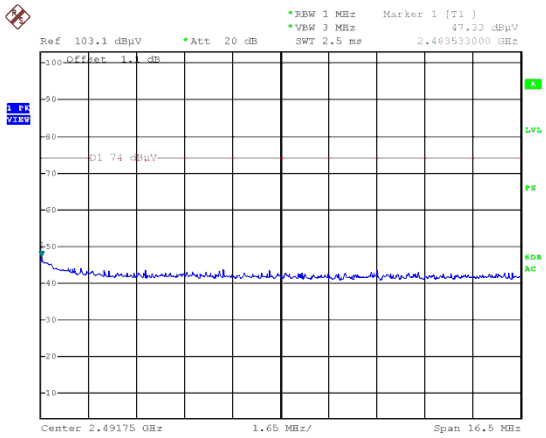
Date: 31.MAR.2014 23:36:41

Average



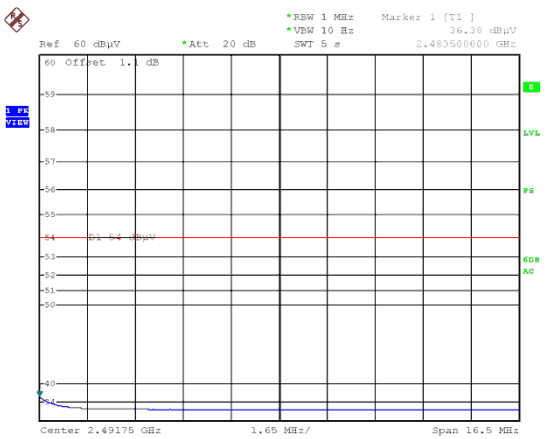
Date: 31.MAR.2014 23:37:18

Vertical
Peak



Date: 31.MAR.2014 23:40:41

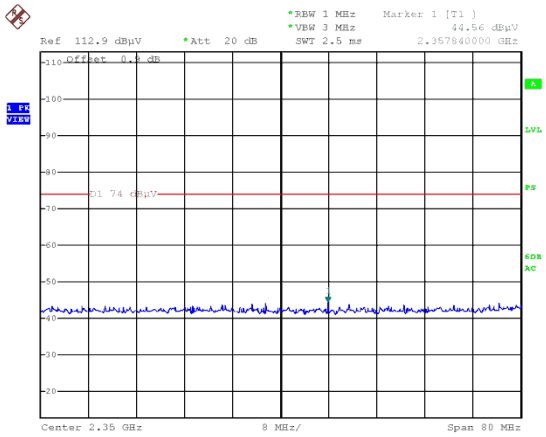
Average



Date: 31.MAR.2014 23:42:04

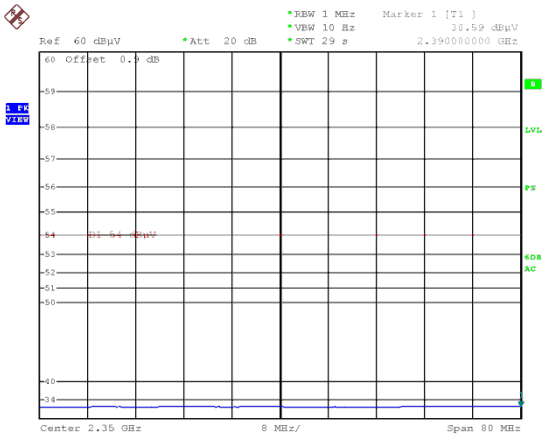
【Qi mounted type】

[3-DH5]
Channel Low
Horizontal
Peak



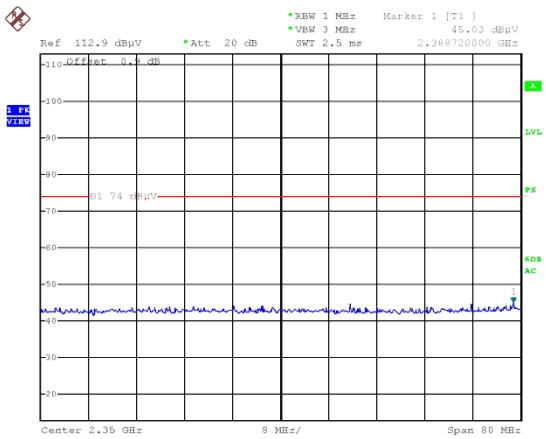
Date: 1.APR.2014 00:27:54

Average



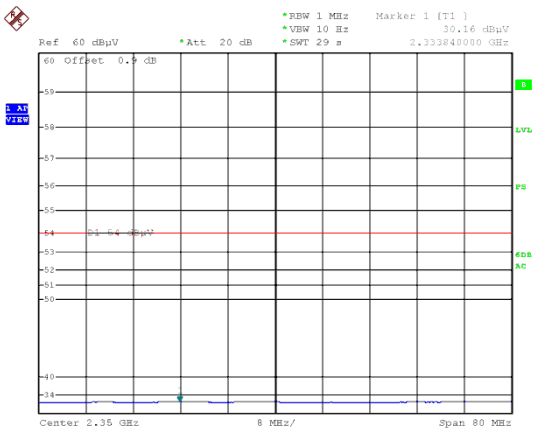
Date: 1.APR.2014 00:30:54

Vertical
Peak



Date: 1.APR.2014 00:15:49

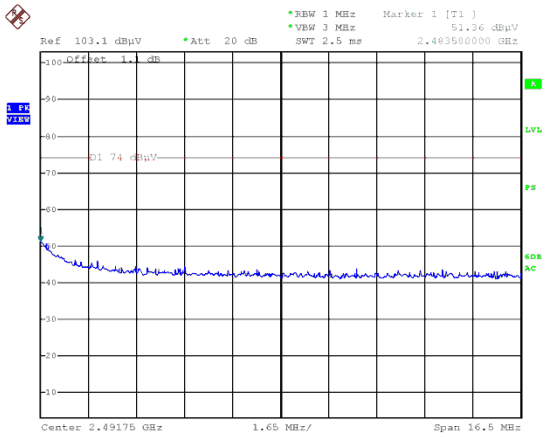
Average



Date: 1.APR.2014 00:19:30

【Qi mounted type】

[3-DH5]
Channel High
Horizontal
Peak



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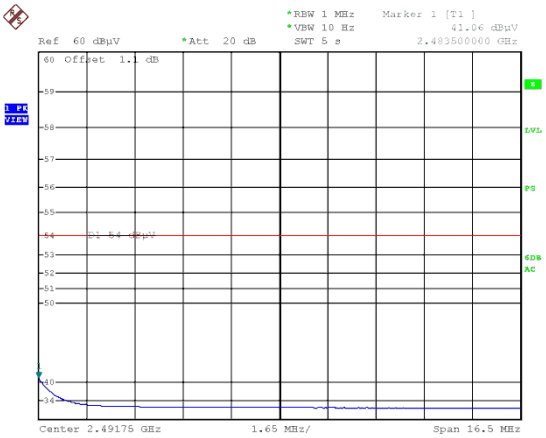

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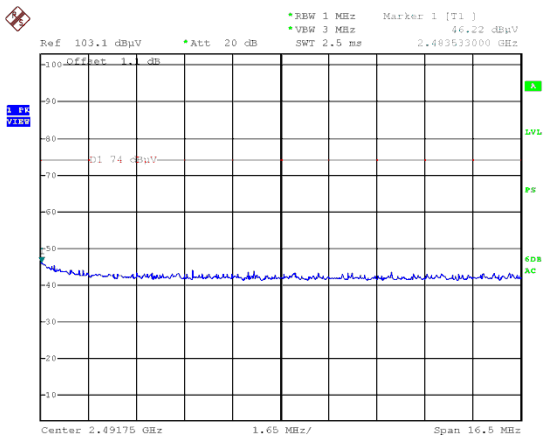
Vertical
Peak



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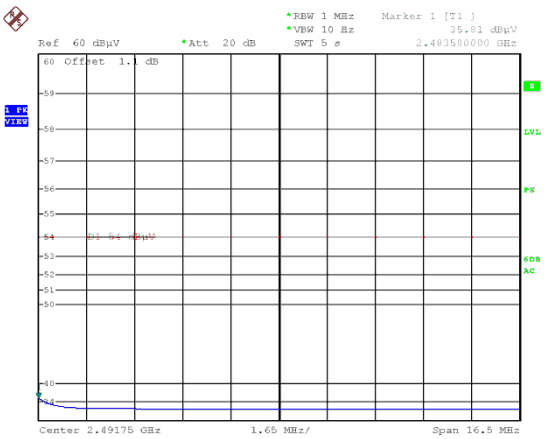

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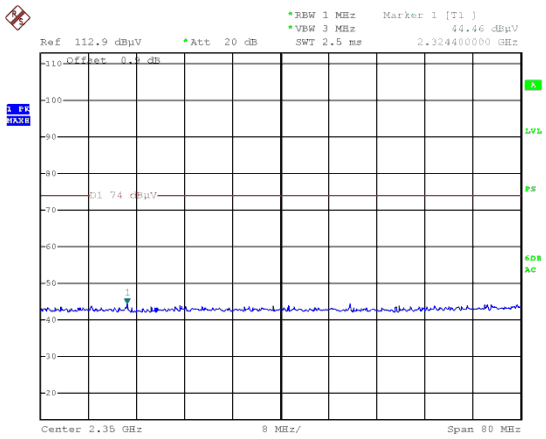
【Qi non-mounted type】

[DH5]
Channel Low
Horizontal
Peak



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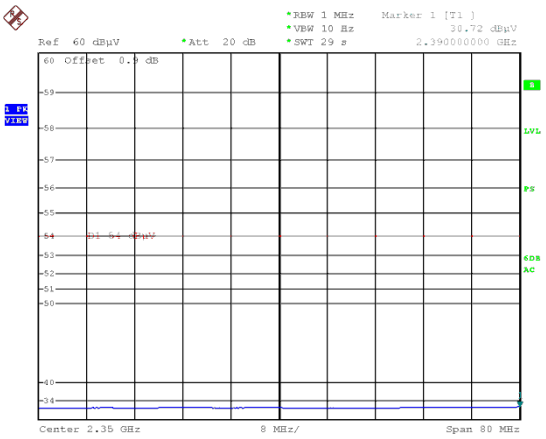
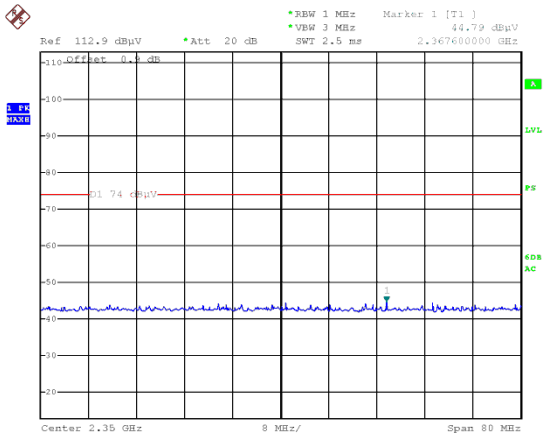


Date: 21.APR.2014 20:18:24

Vertical
Peak



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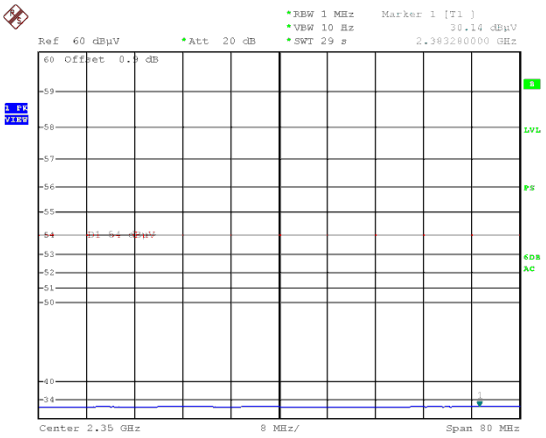
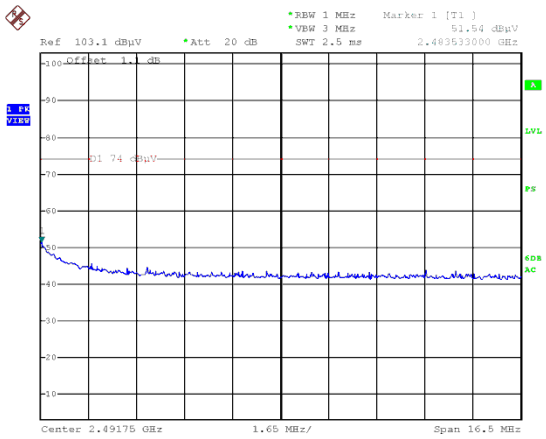


Date: 21.APR.2014 20:23:18

【Qi non-mounted type】

[DH5]
Channel High
Horizontal
Peak



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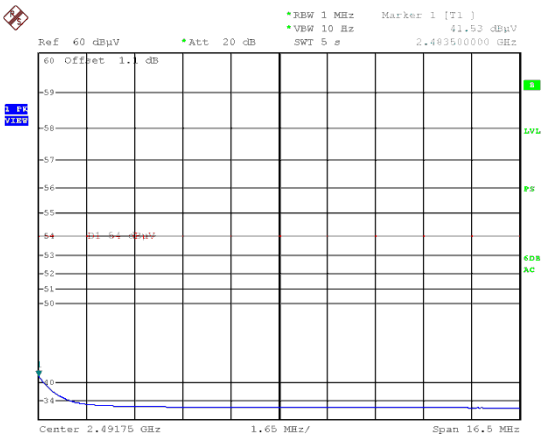
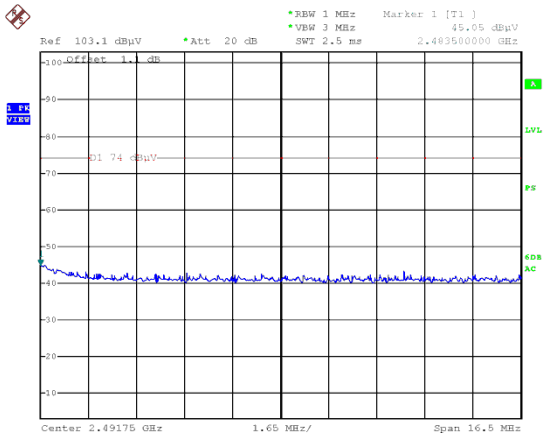


Date: 21.APR.2014 20:32:30

Vertical
Peak



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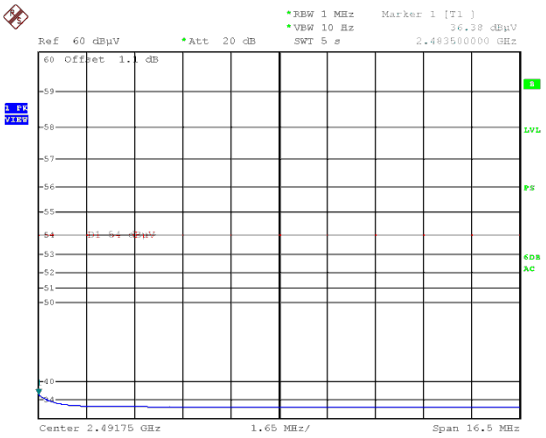
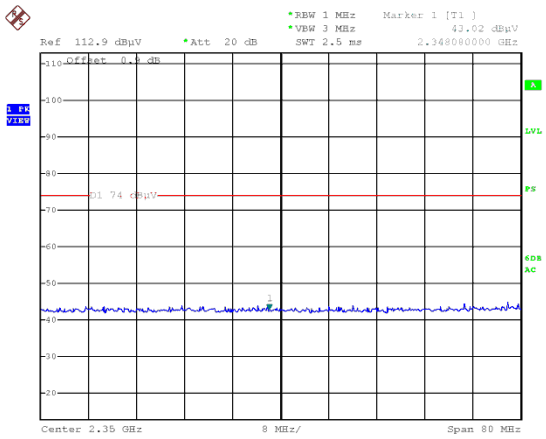


Date: 21.APR.2014 20:36:59

【Qi non-mounted type】

[3-DH5]
Channel Low
Horizontal
Peak



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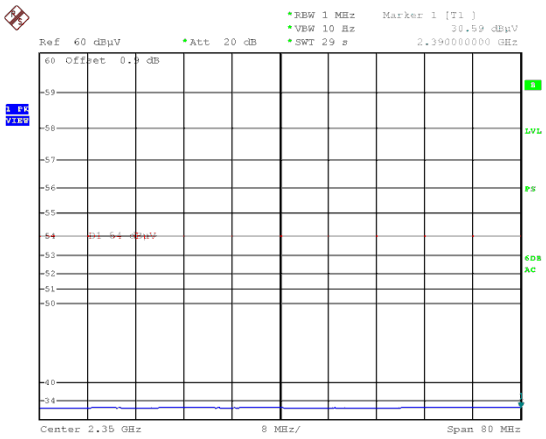
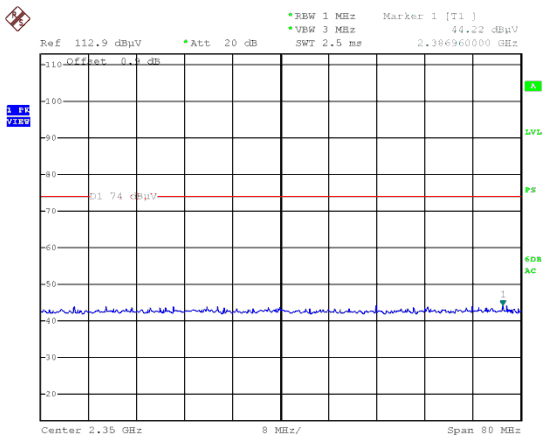
Average



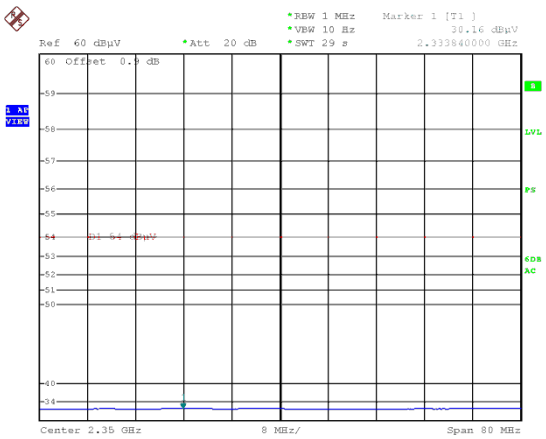
Date: 21.APR.2014 20:43:50

Vertical
Peak



Date: 21.APR.2014 20:48:42

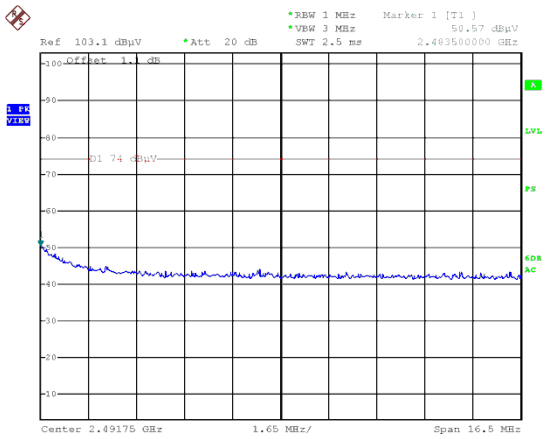
Average



Date: 21.APR.2014 20:50:23

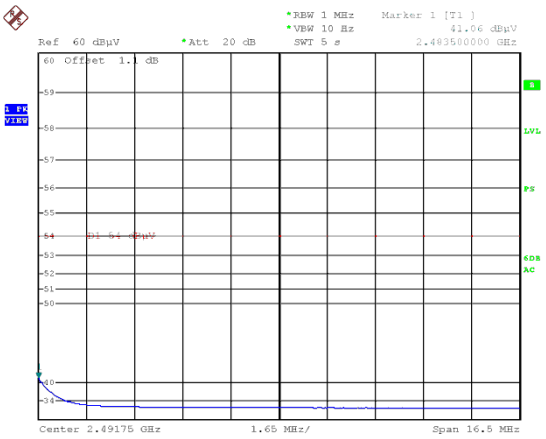
【Qi non-mounted type】

[3-DH5]
Channel High
Horizontal
Peak



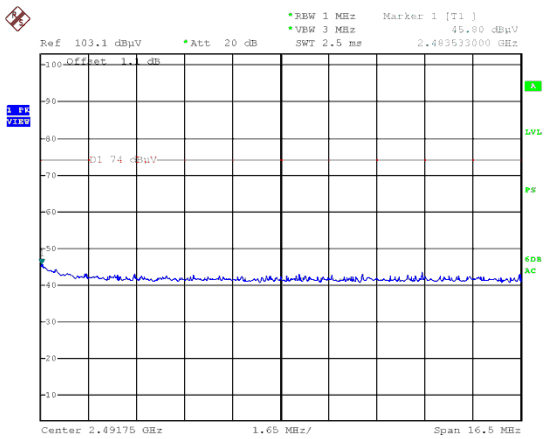
Date: 21.APR.2014 20:56:12

Average



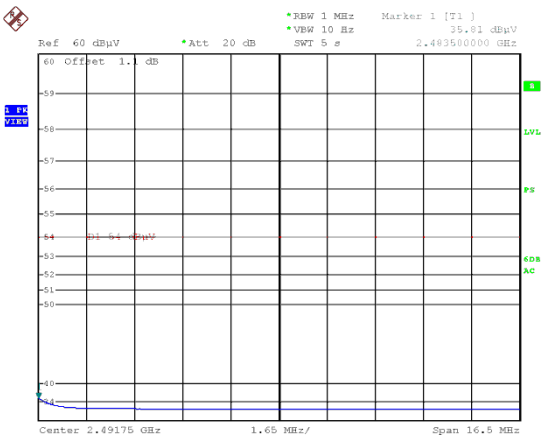
Date: 21.APR.2014 21:02:45

Vertical
Peak



Date: 21.APR.2014 20:58:25

Average



Date: 21.APR.2014 21:00:16

Zacta

13. AC Power Line Conducted Emissions

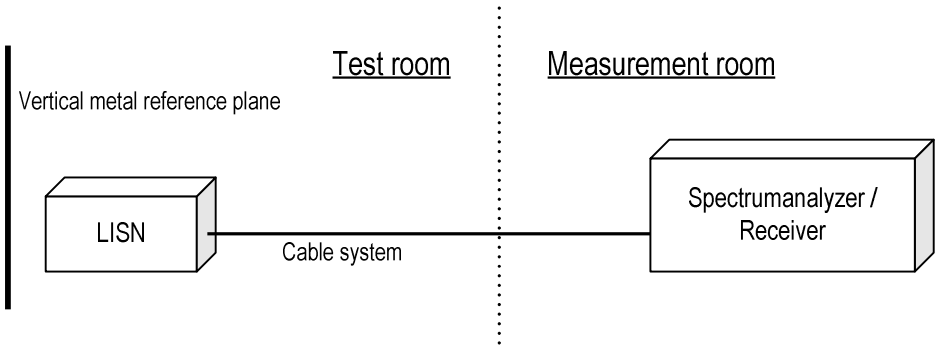
13.1 Measurement procedure [FCC 15.207]

Test was applied by following conditions.

Test method	:	ANSI C63.4
Frequency range	:	0.15MHz to 30MHz
Test place	:	10m Semi-anechoic chamber
EUT was placed on	:	FRP table / (W)2.0m × (D)1.0m × (H)0.8m
Vertical Metal Reference Plane	:	(W)2.0m × (H)2.0m 0.4m away from EUT
Test receiver setting		
- Detector	:	Quasi-peak, Average
- Bandwidth	:	9kHz

EUT and peripherals are connected to 50Ω/50μH Line Impedance Stabilization Network (LISN) which are connected to reference ground plane, and are placed 80cm away from EUT. Excess of AC power cable is bundled in center.
LISN for peripheral is terminated in 50Ω.
EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Maximum emission configuration is determined by manipulating the EUT, peripherals, interconnecting cables. Then, emission measurements are performed with test receiver in above setting to each current-carrying conductor of the mains port. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits.

- Test configuration



13.2 Calculation method

Emission level = Reading + (LISN. factor + Cable system loss)
Margin = Limit – Emission level

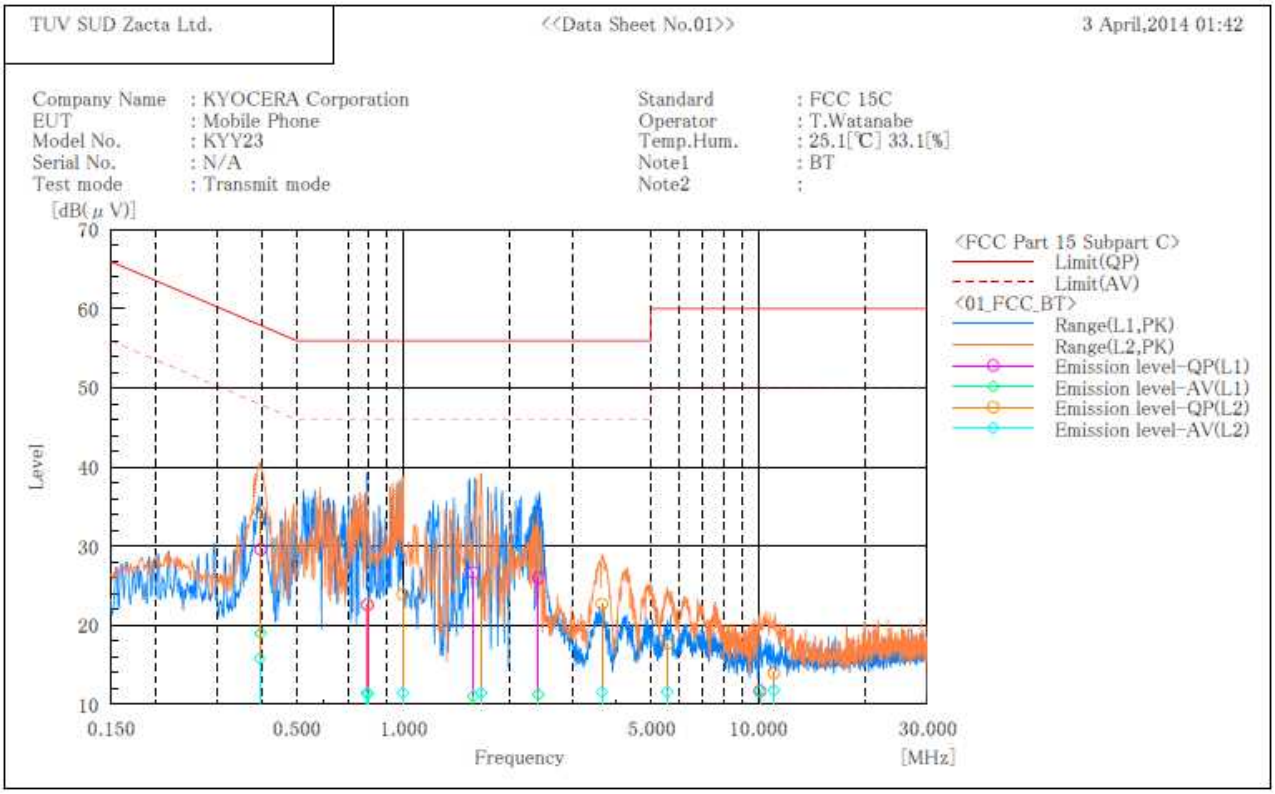
13.3 Limit

Frequency [MHz]	Limit	
	QP [dBuV]	AV [dBuV]
0.15-0.5	66-56*	56-46*
0.5-5	56	46
5-30	60	50

*: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

13.4 Test data

***** CONDUCTED EMISSION at MAINS PORT *****
≪ 3m Semi-anechoic chamber ≫



Final Result

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.397	19.3	8.7	10.3	29.6	19.0	57.9	47.9	28.3	28.9
2	0.795	12.3	1.0	10.3	22.6	11.3	56.0	46.0	33.4	34.7
3	1.579	16.3	0.6	10.4	26.7	11.0	56.0	46.0	29.3	35.0
4	2.408	15.6	0.9	10.4	26.0	11.3	56.0	46.0	30.0	34.7
5	10.119	1.0	1.0	10.7	11.7	11.7	60.0	50.0	48.3	38.3

--- L2 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.395	24.0	5.4	10.4	34.4	15.8	58.0	48.0	23.6	32.2
2	0.791	12.2	1.1	10.4	22.6	11.5	56.0	46.0	33.4	34.5
3	1.000	13.5	1.1	10.4	23.9	11.5	56.0	46.0	32.1	34.5
4	1.659	15.0	1.1	10.4	25.4	11.5	56.0	46.0	30.6	34.5
5	3.631	12.2	1.1	10.5	22.7	11.6	56.0	46.0	33.3	34.4
6	5.550	7.1	1.0	10.6	17.7	11.6	60.0	50.0	42.3	38.4
7	11.090	3.2	1.0	10.8	14.0	11.8	60.0	50.0	46.0	38.2

14. Antenna requirement

According to FCC section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
The antenna is a special antenna mounted inside of the EUT. Therefore, the EUT complies with the antenna requirement of FCC section 15.203.

15. Uncertainty of measurement

Expanded uncertainties stated are calculated with a coverage Factor k=2.
Please note that these results are not taken into account when determining compliance or non-compliance with test result.

Test item	Measurement uncertainty
Conducted emission at mains port	±3.0dB
Radiated emission (9kHz – 30MHz)	±4.4dB
Radiated emission (30MHz – 1000MHz)	±4.5dB
Radiated emission (1000MHz – 26GHz)	±3.9dB

16. Laboratory description

1. Location:

TÜV SÜD Zacta Ltd. Yonezawa Testing Center
4149-7 Hachimanpara 5-chome Yonezawa-shi Yamagata 992-1128 Japan
Phone: +81-238-28-2880 Fax: +81-238-28-2888

2. Facility filing information:

1) NVLAP accreditation: NVLAP Lab. code: 200306-0

2) VLAC accreditation: Lab. code: VLAC-013

Site name	Radiated emission	Conducted emission for mains port	Conducted emission for telecom port	Radiated emission (CMAD)	Expiry Date
10m Semi-anechoic chamber	VLAC-013			VLAC-013	Jul. 3, 2013
3m Semi-anechoic chamber				-	
Shielded room No.1	-	VLAC-013		-	

3) FCC filing:

Site name	Registration Number	Expiry Date
Site 2	91065	Oct.31, 2014
Site 3		
10m Semi-anechoic chamber	540072	Jan. 9, 2016
3m Semi-anechoic chamber		
Shielded room No.1		

4) Industry Canada Oats site filing:

Site name	Sites on file: Oats 3m/10m	Expiry Date
Site 2	4224A-2	Jan. 23, 2015
Site 3	4224A-3	
3m Semi-anechoic chamber	4224A-4	
10m Semi-anechoic chamber	4224A-5	

5) VCCI site filing:

Site name	Radiated emission	Conducted emission for mains port	Expiry Date	Conducted emission for telecom port	Expiry Date
Site 2	R-137	C-133	Nov. 16, 2014	T-1221	Nov. 28, 2014
Site 3	R-138	C-134		T-1222	
10m Semi-anechoic chamber	R-2480	C-2722	Jul. 3, 2013	T-1474	Jul. 3, 2013
	G-81	-		-	-
3m Semi-anechoic chamber	R-2481	C-2723		T-1475	Jul. 3, 2013
	G-82	-		-	-
Shielded room No.1	-	C-2724		T-1476	Jul. 3, 2013

6) TÜV SÜD PS authorization:
Authorized as an EMC test laboratory

7) TÜV Rheinland authorization:
Authorized as an EMC test laboratory

Appendix A. Test equipment

Antenna port conducted test

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
Spectrum analyzer	Agilent Technologies	E4440A	US4432655	May 2014	May 14, 2013
Microwave cable	RS	YH_13S5	N/A (S403)	May 2014	May 10, 2013
Attenuator	Weinschel	56-10	J4180	Nov. 2014	Nov. 12, 2013

Radiated emission

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI Receiver	ROHDE&SCHWARZ	ECSI	100451	Nov. 2014	Nov. 16, 2013
Preamplifier	ANRITSU	MH648A	M96057	Jun. 2014	Jun. 12, 2013
Loop antenna	ROHDE&SCHWARZ	HFH2-Z2	892246/010	Oct. 2014	Oct. 5, 2013
Biconical Antenna	Schwarzbeck	VHA9103/BBA9106	2155	May 2014	May 1, 2013
Log periodic Antenna	Schwarzbeck	UHALP9108A	0560	May 2014	May 1, 2013
Attenuator	TME	CFA-01NPJ-6	N/A (S275)	Jun. 2014	Jun. 6, 2013
Attenuator	TME	CFA-01NPJ-3	N/A (S272)	Jun. 2014	Jun. 6, 2013
Spectrum analyzer	Agilent Technologies	E4440A	US4432655	May 2014	May 14, 2013
Preamplifier	Agilent Technologies	8449B	3008A1008	Dec. 2014	Dec. 9, 2013
Double ridged guide antenna	EMCO	3115	5205	Dec. 2014	Dec. 10, 2013
Attenuator	AEROFLEX	40A-03	081217-20	Feb. 2015	Feb. 23, 2014
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170189	May 2015	May 2, 2013
Preamplifier	TSJ	MLA-1840-B03-35	1240332	May 2015	May 2, 2013
Microwave cable	SUHNER	SUCOFLEX104/9m	346316/4	Oct. 2014	Oct. 6, 2013
		SUCOFLEX104/1m	322084/4	Oct. 2014	Oct. 6, 2013
		SUCOFLEX104/1.5m	317226/4	Oct. 2014	Oct. 6, 2013
		SUCOFLEX104/7m	41625/6	Oct. 2014	Oct. 6, 2013
PC	DELL	DIMENSION E521	75465BX	N/A	N/A
Software	TOYO Corporation	EP5/RE-AJ	0611193/V5.3.61	N/A	N/A
3m Semi-anechoic chamber	TOKIN	N/A	N/A (9002-NSA)	May 2014	May 19, 2013
3m Semi-anechoic chamber	TOKIN	N/A	N/A (9002-SVSWR)	May 2014	May 19, 2013

Conducted emission at mains port

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
EMI Receiver	ROHDE&SCHWARZ	ECSI	100451	Nov. 2014	Nov. 16, 2013
Attenuator	HUBER+SUHNER	6810.01.A	N/A (S411)	Feb. 2015	Feb. 28, 2014
Line impedance stabilization network for EUT	Kyoritsu Electrical Works, Ltd.	KNW-407F	8-2003-1	Jul. 2014	Jul. 1, 2013
Coaxial cable	FUJIKURA	5D-2W/4m	N/A (S350)	Feb. 2015	Feb. 5, 2014
Coaxial cable	FUJIKURA	5D-2W/1m	N/A (S193)	Feb. 2015	Feb. 5, 2014
Coaxial cable	SUHNER	RG214/U/10m	N/A (S194)	Feb. 2015	Feb. 5, 2014
PC	DELL	DIMENSION	75465BX	N/A	N/A