TEST REPORT

REGULATIONS : FCC Part15 C §15.247

Applicant	Testing Laboratory
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Equipment Type	REMOTE CONTROL HEAD
Trademark	KENWOOD
Model(s)	KCH-20R-M
Serial No.	No.04 (for Radiated testing) No.02 (for Antenna Port Conductive testing)
FCC ID	K44473100
Test Result	Complied
Report Number	14120062JMA-002
Original Issue Date	January 21, 2015

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SECTION 1. GENERAL INFORMATION

Test Performed

EUT Received	December 12, 2014
Date of Test	From December 15 2014 to December 25, 2014
Standard Applied	FCC Part15 C §15.247
Test methods	ANSI C63.10-2009 ANSI C63.4-2009
Deviation from Standard(s)	None

Qualifications of Testing Laboratory

Accreditation	**Scope**	**Lab. Code**	**Remarks**
VLAC	EMC Testing	VLAC-008-3	JAPAN
BSMI	EMC Testing	SL2-IN-E-6009	TAIWAN
Filing			
VCCI	EMC Testing	A-0127	JAPAN
FCC	EMC Testing	Designation Number : JP0009	USA
IC	EMC Testing	2042S-1, 2042S-2, 2042S-3, 2042S-4	Canada
CB-Scheme	EMC Testing	TL223	IECEE
SAUDI ARABIA	EMC Testing	N/A	

Abbreviations

EUT	Equipment Under Test	DoC	Declaration of Conformity
AMN	Artificial Mains Network	ISN	Impedance Stabilization Network
LISN	Line Impedance Stabilization Network	Q-P	Quasi-peak
AMP	Amplifier	AVG	Average
ATT	Attenuator	PK	Peak
ANT	Antenna	Cal	Calibration
BBA	Broadband Antenna	N/A	Not applicable or Not available
DIP	Dipole Antenna	LCD	Liquid-Crystal Display
AE	Associated Equipment	HDMI	High-Definition Multimedia Interface

SECTION 2. SUMMARY OF TEST RESULTS

Test Item	Specification	Results	Detail
20 dB Bandwidth	FCC Part15C §15.247 (a) (1)	N/A	Section 9.1
Maximum Peak Output Power	FCC Part15C §15.247 (b) (1)	PASS	Section 9.2
Carrier Frequency Separation	FCC Part15C §15.247 (a) (1)	PASS	Section 9.3
Number of Hopping Frequency	FCC Part15C §15.247 (a) (1) (iii)	PASS	Section 9.4
Time of occupancy	FCC Part15C §15.247 (a) (1) (iii)	PASS	Section 9.5
Radiated Spurious Emissions and Restrict Band edge	FCC Part15C §15.209, §15.205	PASS	Section 9.6
Band Edge of Authorized Frequency Band	FCC Part15C §15.247 (d)	PASS	Section 9.7
Spurious RF Conducted Emissions	FCC Part15C §15.247 (d)	PASS	Section 9.8
AC Conducted Emissions	FCC Part15C §15.207	PASS	Section 9.9

Limitation on Results

The test result of this report is effective equipment under test itself and under the test configuration described on the report.
This test report does not assure that whether the test result taken in other testing laboratory is compatible or reproducible to the test result on this report or not.

SECTION 3. EQUIPMENT UNDER TEST

The equipment under test (EUT) consisted of the following apparatus.

3.1 System Configuration

Symbol	Item	Model No.	Serial No.	Manufacturer
A	REMOTE CONTROL HEAD	KCH-20R-M	No.04 (for Radiated testing) No.02 (for ANT Port Conductive testing)	JVC KENWOOD Corporation
Rated Power : DC 13.6 V +/- 15 %, 0.6 A				
Supplied Power : DC 13.6 V				
Condition of Equipment	Prototype			
Type	Mobile type			
Suppression Devices	No Modifications by the laboratory were made to the device			

3.2 Port(s)/Connector(s)

Port Name	Connector Type	Connector Pin	Remarks
Separate I/F	W to B Connector	16 pin	
Accessary I/F	W to B Connector	13 pin	
Microphone	RJ-45	8 pin	
SD Card Slot	Micro SD Card Slot	8 pin	

3.3 Highest Frequency Generated / Used

Operating Frequency	Board Name	Remarks
4960 MHz	Bluetooth UNIT	

3.4 Over View of EUT

Access method	Bluetooth Version 3.0
Rated Output Power	2.5 mW
Frequency Range of Operating	2402 – 2480 MHz
Number of Channels	79 ch, 1 MHz step
Modulation Method	FHSS (GFSK, π/4DQPSK, 8DPSK)
Antenna Type and Gain	Chip Antenna, 4.24 dBi See Note 1
Antenna Connector	None

Note:

1. The EUT comply with the requirement of FCC Part15C §15.203, because
   (1) The antenna was built in the EUT and permanently attached.
   (2) There were no other antenna connectors.

SECTION 4. SUPPORT EQUIPMENT

The EUT was supported by the following equipment during the test.

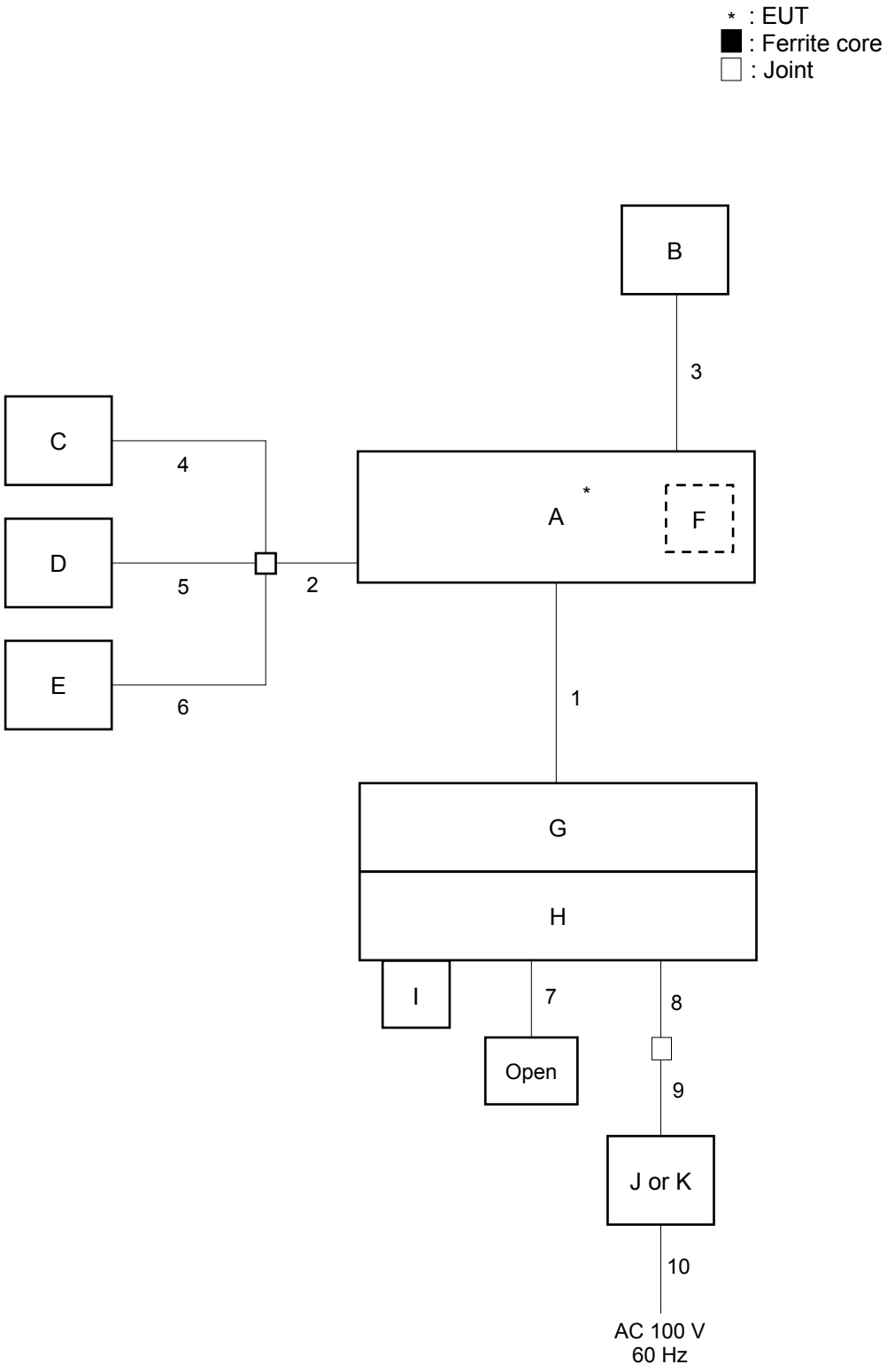
Symbol	Item	Model No.	Serial No.	Manufacturer	FCC ID
B	Microphone with 12-Keypad	KMC-36	CGI-51327	JVC KENWOOD Corporation	N/A
C	EXTERNAL MIC KIT	KCT-73MIC	11	JVC KENWOOD Corporation	N/A
D	EXTERNAL PTT KIT	KCT-74PTT	11	JVC KENWOOD Corporation	N/A
E	External Speaker	KES-5	None	JVC KENWOOD Corporation	N/A
F	Micro SD Card	MMG01GCCA	None	SAMSUNG	N/A
G	PANEL SEPARATE KIT	KRK-15B	001	JVC KENWOOD Corporation	N/A
H	VHF DIGITAL TRANSCEIVER	NX-5800-K	001	JVC KENWOOD Corporation	FCC ID: K44471200
I	Dummy Load	SK-50	None	SK	N/A
J	DC Power Supply (1)	PAB 25-1TR	28020014	KIKUSUI	N/A
K	DC Power Supply (2)	PMC35-3A	LE000716	KIKUSUI	N/A
Supplied Power:					
J, K	AC 100 V, 60 Hz				

SECTION 5. USED CABLE(S)

The following cable(s) was used for the test.

No.	Name	Length (m)	Shield	Metal Connector	Ferrite Core
1	KCT-71 (REMOTE CONTROL CABLE)	7.60	Yes	No	-
2	KCT-72 (CONNECTION CABLE)	0.30	Yes	No	-
3	MIC (B) Cable	0.55	No	No	-
4	MIC (C) Cable	3.00	No	No	-
5	PTT Cable	2.80	No	No	-
6	Speaker Cable	2.80	No	No	-
7	Ignition sense cable	0.12	No	No	-
8	DC cable	0.30	No	No	-
9	DC cable	3.40	No	No	-
10	Power cable for DC Power Supply	2.00	No	No	-

SECTION 6. TEST CONFIGURATION



The symbols and numbers assigned to the equipment and cables on this diagram correspond to the ones in Sections 3 to 5.

SECTION 7. OPERATING CONDITION

The test was carried out under the following mode.

Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

7.1 Test Channel

In accordance with Section 15.31 (m), all test items was conducted in the following three channels:

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

7.2 Test modes

Test Item	Operating modes
Maximum Peak Output Power	Hopping OFF DH1, DH3, DH5 2-DH1, 2-DH3, 2-DH5 3-DH1, 3-DH3, 3-DH5
Carrier Frequency Separation	Hopping ON DH5, 2-DH5, 3-DH5
Number of Hopping Frequency	Hopping ON DH5, 2-DH5, 3-DH5
Time of occupancy	Hopping OFF DH1, DH3, DH5 2-DH1, 2-DH3, 2-DH5 3-DH1, 3-DH3, 3-DH5
Radiated Spurious Emissions and Restrict Band edge	Hopping OFF DH5, 2-DH5, 3-DH5
Band Edge of Authorized Frequency Band	Hopping OFF/ON DH5, 2-DH5, 3-DH5
Spurious RF Conducted Emissions	Hopping ON DH5, 2-DH5, 3-DH5
AC Conducted Emissions	Hopping ON DH5, 2-DH5, 3-DH5
Receiver Spurious Emissions	Transmit OFF, Receive mode

Note: The Test modes were configured in typical fashion as a customer would normally use it.

SECTION 8. UNCERTAINTY

The following uncertainty represents the expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of *k* = 2.
Traceability to national standard in SI units is ensured with these values.
Compliance with the limits in this standard are determined without in consideration of the measurement uncertainty of the measurement instrumentation.

8.1 Emission tests

Test items	**U_{lab} [*k* = 2]**	**U_{cispr}**
Radiated Spurious Emissions at 3m		
30 MHz – 1000 MHz	+/- 3.96 dB	6.3 dB
Above 1 GHz	+/- 4.46 dB	5.2 dB
AC Conducted Emissions		
150 kHz – 30 MHz	+/- 1.54 dB	3.4 dB

The above expanded instrumentation uncertainty, $U_{lab.}$, is estimated in accordance with CISPR 16-4-2:2011.

8.2 RF Conducted tests

Test Items	**U_{lab} [*k* = 2]**
Bandwidth	+/- 1.42 %
Maximum Output Power	+/- 1.96 dB
Conducted Emissions	+/- 1.82 dB

SECTION 9. TEST DATA

9.1 20 dB Bandwidth and 99 % Occupied Bandwidth

Regulations	FCC Part15C §15.247 (a) (1)
Test Method/Guide	ANSI C63.10-2009

Test Procedure

1. The EUT and test instrument were set up as shown on section 10.1.
2. Adjust the test instrument for the following setting:

RBW	:	≥ 1 % of the 20 dB bandwidth
VBW	:	≥ RBW
Span	:	approximately 3 times the 20 dB bandwidth
Detector	:	Peak
Sweep Time	:	Auto
Trace mode	:	Max Hold

3. Allow trace to fully stabilize.
4. Use “Occupied Bandwidth Measurement” function to measure the 20 dB bandwidth.

Test Result

Location	Matsuda No.4 Test Site
Test date	Dec. 18, 2014
Temperature	20.0 [degree C]
Humidity variation	30.0 [%]
Test Engineer	Shiro Kobayashi

Operating modes	Frequency [MHz]	20 dB Bandwidth [MHz]
DH5	2402	0.956
	2441	0.957
	2480	0.955
2-DH5	2402	1.334
	2441	1.337
	2480	1.334
3-DH5	2402	1.322
	2441	1.316
	2480	1.324

Spectrum Plots

See ANNEX A.1.

9.2 Maximum Peak Output Power

Regulations	FCC Part15C §15.247 (b) (1)
Test Method/Guide	ANSI C63.10-2009

Test Procedure

1. The EUT and test instrument were set up as shown on section 10.1.
2. Adjust the test instrument for the following setting:

RBW	:	≥ the 20 dB bandwidth
VBW	:	≥ RBW
Span	:	approximately 5 times the 20 dB bandwidth
Detector	:	Peak
Sweep Time	:	Auto
Trace mode	:	Max Hold

Note: The value of the “20 dB bandwidth”, from the result of section 9.1.

3. Allow trace to fully stabilize.
4. Use the peak search function to measure the peak of the emission.
5. Measurement data correction;

Measured Value [dBm] = Reading [dBm] + Factor [dB]

*Factor = Cable Loss [dB] + Attenuator [dB]

Margin [dB] = Limit [dBm] - Measured Value [dBm]

Test Result

Location	Matsuda No.4 Test Site
Test date	Dec. 18, 2014
Temperature	20.0 [degree C]
Humidity variation	30.0 [%]
Test Engineer	Shiro Kobayashi

Operating modes	Freq. [MHz]	Reading [dBm]	Factor [dB]	Measured Value [dBm]	Limit		Margin [dB]
					[mW]	[dBm]	
DH1	2402	-22.89	20.57	-2.32	125	20.97	23.29
	2441	-22.78	20.57	-2.21			23.18
	2480	-22.94	20.58	-2.37			23.34
DH3	2402	-22.92	20.57	-2.35			23.32
	2441	-22.79	20.57	-2.22			23.19
	2480	-22.97	20.58	-2.39			23.36
DH5	2402	-22.95	20.57	-2.38			23.35
	2441	-22.81	20.57	-2.24			23.21
	2480	-22.94	20.58	-2.37			23.33
2-DH1	2402	-22.55	20.57	-1.98			22.95
	2441	-22.42	20.57	-1.85			22.82
	2480	-22.57	20.58	-1.99			22.96
2-DH3	2402	-22.54	20.57	-1.97			22.94
	2441	-22.42	20.57	-1.85			22.82
	2480	-22.56	20.58	-1.98			22.95
2-DH5	2402	-22.54	20.57	-1.97			22.94
	2441	-22.41	20.57	-1.83			22.80
	2480	-22.54	20.58	-1.96			22.93
3-DH1	2402	-22.24	20.57	-1.67			22.64
	2441	-22.17	20.57	-1.59			22.56
	2480	-22.31	20.58	-1.73			22.70
3-DH3	2402	-21.90	20.57	-1.33			22.30
	2441	-21.76	20.57	-1.19			22.16
	2480	-21.87	20.58	-1.29			22.26
3-DH5	2402	-21.88	20.57	-1.31			22.28
	2441	-21.76	20.57	-1.19			22.16
	2480	-21.95	20.58	-1.37			22.34

Spectrum Plots

See ANNEX A.2

9.3 Carrier Frequency Separation

Regulations	FCC Part15C §15.247 (a) (1)
Test Method/Guide	ANSI C63.10-2009

Test Procedure

1. The EUT and test instrument were set up as shown on section 10.1.
2. Adjust the test instrument for the following setting:

   RBW : ≥ 1 % of the span
   VBW : ≥ 3 x RBW
   Span : Including emission band
   Detector : Peak
   Sweep Time : Auto
   Trace mode : Max Hold
3. Allow trace to fully stabilize.
4. Use delta marker function to measure the separation between the two channels.

Test Result

Location	Matsuda No.4 Test Site
Test date	Dec. 18, 2014
Temperature	20.0 [degree C]
Humidity variation	30.0 [%]
Test Engineer	Shiro Kobayashi

Operating modes	Frequency [MHz]	Measured Value [MHz]	Limit [MHz]
DH5	2402	1.000	≥ 0.637
	2441	1.000	≥ 0.638
	2480	1.000	≥ 0.636
2-DH5	2402	1.000	≥ 0.889
	2441	1.000	≥ 0.891
	2480	1.000	≥ 0.889
3-DH5	2402	1.000	≥ 0.881
	2441	1.000	≥ 0.877
	2480	1.000	≥ 0.883

Note: Limits were applied to two-thirds of 20 dB bandwidth.
The value of the “20 dB bandwidth”, from the result of section 9.1.

Spectrum Plots

See ANNEX A.3

9.4 Number of Hopping Frequency

Regulations	FCC Part15C §15.247 (a) (1) (iii)
Test Method/Guide	ANSI C63.10-2009

Test Procedure

1. The EUT and test instrument were set up as shown on section 10.1.
2. Adjust the test instrument for the following setting:

RBW	:	≥ 1% of the span
VBW	:	≥ 3 x RBW
Span	:	Including emission band
Detector	:	Peak
Sweep Time	:	Auto
Trace mode	:	Max Hold

3. Allow trace to fully stabilize.
4. Count the peaks.

Test Result

Location	Matsuda No.4 Test Site
Test date	Dec. 19, 2014
Temperature	23.1 [degree C]
Humidity variation	16.1 [%]
Test Engineer	Shiro Kobayashi

Operating modes	Measured Value	Limit
DH5	79	≥ 15
2-DH5	79	
3-DH5	79	

Spectrum Plots

See ANNEX A.4

9.5 Time of Occupancy

Regulations	FCC Part15C §15.247 (a) (1) (iii)
Test Method/Guide	ANSI C63.10-2009

Test Procedure

1. The EUT and test instrument were set up as shown on section 10.1.
2. Adjust the test instrument for the following setting:

RBW	:	1 MHz
VBW	:	3 MHz
Span	:	0 Hz
Detector	:	Peak
Sweep Time	:	As necessary to capture the entire dwell time per hopping channel
Trace mode	:	Single, Use Video Trigger

3. Use delta marker function to measure the transmit time as per hop.
4. By the following method, calculated time of occupancy;

(1) Number of hops per sec
= 1600 / 1 time slots / 1 [sec]. * 1 time slots : 2 for DH1 packet
4 for DH3 packet
6 for DH5 packet

(2) Number of hops per sec in each channel
= Number of hops per sec / number of hopping channel.

(3) Specified periods [sec]
= 0.4 [sec] x number of hopping channels.

(4) Number of hops per specified periods in each channel
= Number of hops per sec in each channel x Specified periods [sec].

(5) Time of occupancy [ms]
= Number of hops per specified periods in each channel x the transmit time as per hop [ms].

Test Result

Test date	Dec. 19, 2014
Location	Matsuda No.4 Test Site
Temperature	23.1 [degree C]
Humidity variation	16.1 [%]
Test Engineer	Shiro Kobayashi

Operating modes	Number of hops per channel in specified period	Transmit Time per Hop [ms]	Time of Occupancy [ms]	Limit [ms]
DH1	320.00	0.3986	127.55	400.00
DH3	160.00	1.6550	264.80	
DH5	106.67	2.9030	309.65	
2-DH1	320.00	0.3134	100.29	
2-DH3	160.00	0.9369	149.90	
2-DH5	106.67	1.5610	166.51	
3-DH1	320.00	0.2727	87.26	
3-DH3	160.00	0.6878	110.05	
3-DH5	106.67	1.1040	117.76	

Spectrum Chart

See ANNEX A.5

9.6 Radiated Spurious Emissions and Band Edge of Restrict Band

Regulations	FCC Part15C §15.209, §15.205
Test Method/Guide	ANSI C63.4-2009

Test Procedure

1. The EUT and test instrument were set up as shown on section 10.3.
2. The measurement antenna was placed at a distance of 3 m from the EUT.
4. The turntable azimuth (EUT direction) and antenna height are adjusted the position so that maximum field strength is obtained for each frequency spectrum to be measured.
   The equipment and cables are arranged or manipulated within the range of the test standard in the above condition. At least six highest spectrums are measured by the test receiver (below 1 GHz) and spectrum analyzer (above 1 GHz).
5. Adjust the test instrument for the following setting:

Frequency	Instruments	Detector	RBW	VBW	Remarks
30 – 1000 MHz	CISPR Receiver	QP	120 kHz	N/A	-
Above 1000 MHz	Spectrum Analyzer	Peak	1 MHz	1 MHz	for Peak
				10 Hz	for Average

6. Measurement data correction;

   Emission Level [dBuV/m] = Reading [dBuV] + Factor [dB/m]

   Margin [dB] = Limit [dBuV/m] – Emission Level [dBuV/m]

   * Factor = Antenna Factor + Amplifier gain + Cable loss + Attenuator (+ Filter)

Note: Did not carried out the fainal measurement about frequency range of 9 kHz to 30 MHz, because result of pre-check in shield room, spurious emissions was not detected.

Test Result

Operating mode	DH5, 2402 MHz				
Location	Matsuda No.4 Test Site				
Test date	30 – 1000 MHz,	2 – 3 GHz,	1-2, 3-18 GHz,	18 – 25 GHz	
	Dec. 17, 2014,	Dec. 16, 2014,	Dec. 15, 2014,	Dec. 16, 2014	
Temperature	17.0,	18.0,	19.0,	18.0	[degree C]
Humidity variation	18.0,	56.0,	35.8,	56.0	[%]
Test Engineer	Shiro Kobayashi				

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB/m]	Emission Level [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hori	Vert		Hori	Vert		Hori	Vert
1	48.00	QP	-	31.1	-8.3	-	22.8	40.0	-	17.2
2	71.04	QP	-	35.4	-13.6	-	21.8	40.0	-	18.2
3	82.56	QP	29.8	40.7	-13.1	16.7	27.6	40.0	23.3	12.4
4	97.92	QP	-	35.8	-10.2	-	25.6	43.5	-	17.9
5	124.80	QP	28.8	32.5	-6.2	22.6	26.3	43.5	20.9	17.2
6	182.40	QP	27.2	30.3	-3.2	24.0	27.1	43.5	19.5	16.4
7	205.44	QP	28.3	30.2	-2.2	26.1	28.0	43.5	17.4	15.5
8	432.00	QP	35.7	29.7	-1.5	34.2	28.2	46.0	11.8	17.8
9	672.00	QP	26.8	26.8	3.9	30.7	30.7	46.0	15.3	15.3
10	1152.00	PEK	36.5	36.7	-5.2	31.3	31.5	74.0	42.7	42.5
11	1152.00	AVG	27.5	27.5	-5.2	22.3	22.3	54.0	31.7	31.7
12	2377.10	PEK	43.4	45.3	2.4	45.8	47.7	74.0	28.2	26.3
13	2377.10	AVG	27.0	27.0	2.4	29.4	29.4	54.0	24.6	24.6
14*	2390.00	PEK	34.9	36.8	2.4	37.3	39.2	74.0	36.7	34.8
15*	2390.00	AVG	27.0	27.1	2.4	29.4	29.5	54.0	24.6	24.5
16	4804.00	PEK	34.2	33.9	7.1	41.3	41.0	74.0	32.7	33.0
17	4804.00	AVG	25.9	25.7	7.1	33.0	32.8	54.0	21.0	21.2
18	6090.75	PEK	36.3	38.2	9.6	45.9	47.8	74.0	28.1	26.2
19	6090.75	AVG	28.9	32.2	9.6	38.5	41.8	54.0	15.5	12.2
20	7206.00	PEK	33.7	33.7	11.6	45.3	45.3	74.0	28.7	28.7
21	7206.00	AVG	25.7	25.6	11.6	37.3	37.2	54.0	16.7	16.8

Note.
* : Band Edge of Restrict Band
- : Measurement limit

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	DH5, 2441 MHz				
Location	Matsuda No.4 Test Site				
Test date	30 – 1000 MHz,	2 – 3 GHz,	1-2, 3-18 GHz,	18 – 25 GHz	
	Dec. 17, 2014,	Dec. 16, 2014,	Dec. 15, 2014,	Dec. 16, 2014	
Temperature	17.0,	18.0,	19.0,	18.0	[degree C]
Humidity variation	18.0,	56.0,	35.8,	56.0	[%]
Test Engineer	Shiro Kobayashi				

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB/m]	Emission Level [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hori	Vert		Hori	Vert		Hori	Vert
1	48.00	QP	-	30.8	-8.3	-	22.5	40.0	-	17.5
2	71.04	QP	-	35.4	-13.6	-	21.8	40.0	-	18.2
3	82.56	QP	30.3	41.1	-13.1	17.2	28.0	40.0	22.8	12.0
4	97.92	QP	-	37.5	-10.2	-	27.3	43.5	-	16.2
5	124.80	QP	28.3	32.4	-6.2	22.1	26.2	43.5	21.4	17.3
6	186.24	QP	27.2	30.5	-2.9	24.3	27.6	43.5	19.2	15.9
7	205.44	QP	28.5	29.8	-2.2	26.3	27.6	43.5	17.2	15.9
8	432.00	QP	35.7	30.1	-1.5	34.2	28.6	46.0	11.8	17.4
9	672.00	QP	26.8	27.0	3.9	30.7	30.9	46.0	15.3	15.1
10	1152.00	PEK	36.7	36.5	-5.2	31.5	31.3	74.0	42.5	42.7
11	1152.00	AVG	27.6	27.5	-5.2	22.4	22.3	54.0	31.6	31.7
12*	2390.00	PEK	38.6	38.7	2.4	41.0	41.1	74.0	33.0	32.9
13*	2390.00	AVG	27.0	27.0	2.4	29.4	29.4	54.0	24.6	24.6
14	4882.00	PEK	33.8	34.4	7.5	41.3	41.9	74.0	32.7	32.1
15	4882.00	AVG	26.0	26.1	7.5	33.5	33.6	54.0	20.5	20.4
16	6090.75	PEK	36.4	38.4	9.6	46.0	48.0	74.0	28.0	26.0
17	6090.75	AVG	28.9	32.2	9.6	38.5	41.8	54.0	15.5	12.2
18	7323.00	PEK	33.2	33.2	11.9	45.1	45.1	74.0	28.9	28.9
19	7323.00	AVG	25.0	24.9	11.9	36.9	36.8	54.0	17.1	17.2

Note.
* : Band Edge of Restrict Band
- : Measurement limit

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	DH5, 2480 MHz				
Location	Matsuda No.4 Test Site				
Test date	30 – 1000 MHz,	2 – 3 GHz,	1-2, 3-18 GHz,	18 – 25 GHz	
	Dec. 17, 2014,	Dec. 16, 2014,	Dec. 15, 2014,	Dec. 16, 2014	
Temperature	17.0,	18.0,	19.0,	18.0	[degree C]
Humidity variation	18.0,	56.0,	35.8,	56.0	[%]
Test Engineer	Shiro Kobayashi				

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB/m]	Emission Level [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hori	Vert		Hori	Vert		Hori	Vert
1	48.00	QP	-	31.3	-8.3	-	23.0	40.0	-	17.0
2	71.04	QP	-	37.5	-13.6	-	23.9	40.0	-	16.1
3	82.56	QP	30.0	40.8	-13.1	16.9	27.7	40.0	23.1	12.3
4	97.92	QP	-	38.1	-10.2	-	27.9	43.5	-	15.6
5	124.80	QP	29.2	32.4	-6.2	23.0	26.2	43.5	20.5	17.3
6	186.24	QP	27.4	30.5	-2.9	24.5	27.6	43.5	19.0	15.9
7	205.44	QP	28.9	29.8	-2.2	26.7	27.6	43.5	16.8	15.9
8	432.00	QP	35.7	30.5	-1.5	34.2	29.0	46.0	11.8	17.0
9	672.00	QP	26.8	27.0	3.9	30.7	30.9	46.0	15.3	15.1
10	1152.00	PEK	36.7	36.9	-5.2	31.5	31.7	74.0	42.5	42.3
11	1152.00	AVG	27.9	27.5	-5.2	22.7	22.3	54.0	31.3	31.7
12*	2483.50	PEK	39.0	38.6	2.3	41.3	40.9	74.0	32.7	33.1
13*	2483.50	AVG	28.7	28.3	2.3	31.0	30.6	54.0	23.0	23.4
14	4960.00	PEK	35.0	34.7	7.6	42.6	42.3	74.0	31.4	31.7
15	4960.00	AVG	26.5	26.6	7.6	34.1	34.2	54.0	19.9	19.8
16	6090.75	PEK	36.3	38.1	9.6	45.9	47.7	74.0	28.1	26.3
17	6090.75	AVG	29.0	32.3	9.6	38.6	41.9	54.0	15.4	12.1
18	7440.00	PEK	32.9	33.0	12.2	45.1	45.2	74.0	28.9	28.8
19	7440.00	AVG	24.4	24.4	12.2	36.6	36.6	54.0	17.4	17.4

Note.
* : Band Edge of Restrict Band
- : Measurement limit

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	2-DH5, 2402 MHz				
Location	Matsuda No.4 Test Site				
Test date	30 – 1000 MHz,	2 – 3 GHz,	1-2, 3-18 GHz,	18 – 25 GHz	
	Dec. 17, 2014,	Dec. 16, 2014,	Dec. 15, 2014,	Dec. 16, 2014	
Temperature	17.0,	18.0,	19.0,	18.0	[degree C]
Humidity variation	18.0,	56.0,	35.8,	56.0	[%]
Test Engineer	Shiro Kobayashi				

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB/m]	Emission Level [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hori	Vert		Hori	Vert		Hori	Vert
1	48.00	QP	-	31.7	-8.3	-	23.4	40.0	-	16.6
2	71.04	QP	-	36.7	-13.6	-	23.1	40.0	-	16.9
3	82.56	QP	29.3	40.3	-13.1	16.2	27.2	40.0	23.8	12.8
4	97.92	QP	-	38.0	-10.2	-	27.8	43.5	-	15.7
5	124.80	QP	28.7	33.2	-6.2	22.5	27.0	43.5	21.0	16.5
6	186.24	QP	27.3	30.7	-2.9	24.4	27.8	43.5	19.1	15.7
7	205.44	QP	29.1	30.1	-2.2	26.9	27.9	43.5	16.6	15.6
8	432.00	QP	35.8	30.2	-1.5	34.3	28.7	46.0	11.7	17.3
9	672.00	QP	26.7	27.0	3.9	30.6	30.9	46.0	15.4	15.1
10	1152.00	PEK	36.8	36.8	-5.2	31.6	31.6	74.0	42.4	42.4
11	1152.00	AVG	27.4	27.7	-5.2	22.2	22.5	54.0	31.8	31.5
12	2289.78	PEK	46.2	47.0	2.3	48.5	49.3	74.0	25.5	24.7
13	2289.78	AVG	26.9	26.8	2.3	29.2	29.1	54.0	24.8	24.9
14*	2390.00	PEK	52.7	55.8	2.4	55.1	58.2	74.0	18.9	15.8
15*	2390.00	AVG	27.6	28.1	2.4	30.0	30.5	54.0	24.0	23.5
16	4804.00	PEK	34.3	34.4	7.1	41.4	41.5	74.0	32.6	32.5
17	4804.00	AVG	26.1	25.9	7.1	33.2	33.0	54.0	20.8	21.0
18	6090.75	PEK	36.3	38.4	9.6	45.9	48.0	74.0	28.1	26.0
19	6090.75	AVG	29.1	32.4	9.6	38.7	42.0	54.0	15.3	12.0
20	7203.00	PEK	34.0	33.7	11.6	45.6	45.3	74.0	28.4	28.7
21	7203.00	AVG	25.8	25.6	11.6	37.4	37.2	54.0	16.6	16.8
22	19216.00	PEK	33.7	33.6	11.0	44.7	44.6	74.0	29.3	29.4
23	19216.00	AVG	25.1	25.1	11.0	36.1	36.1	54.0	17.9	17.9

Note.
* : Band Edge of Restrict Band
- : Measurement limit

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	2-DH5, 2441 MHz				
Location	Matsuda No.4 Test Site				
Test date	30 – 1000 MHz,	2 – 3 GHz,	1-2, 3-18 GHz,	18 – 25 GHz	
	Dec. 17, 2014,	Dec. 16, 2014,	Dec. 15, 2014,	Dec. 16, 2014	
Temperature	17.0,	18.0,	19.0,	18.0	[degree C]
Humidity variation	18.0,	56.0,	35.8,	56.0	[%]
Test Engineer	Shiro Kobayashi				

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB/m]	Emission Level [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hori	Vert		Hori	Vert		Hori	Vert
1	48.00	QP	-	31.5	-8.3	-	23.2	40.0	-	16.8
2	71.04	QP	-	36.8	-13.6	-	23.2	40.0	-	16.8
3	82.56	QP	30.2	40.4	-13.1	17.1	27.3	40.0	22.9	12.7
4	97.92	QP	-	37.9	-10.2	-	27.7	43.5	-	15.8
5	124.80	QP	28.5	32.9	-6.2	22.3	26.7	43.5	21.2	16.8
6	182.40	QP	28.1	30.8	-3.2	24.9	27.6	43.5	18.6	15.9
7	205.44	QP	28.9	30.0	-2.2	26.7	27.8	43.5	16.8	15.7
8	432.00	QP	35.3	30.2	-1.5	33.8	28.7	46.0	12.2	17.3
9	672.00	QP	27.1	26.9	3.9	31.0	30.8	46.0	15.0	15.2
10	1152.00	PEK	36.6	36.6	-5.2	31.4	31.4	74.0	42.6	42.6
11	1152.00	AVG	27.6	27.4	-5.2	22.4	22.2	54.0	31.6	31.8
12	2289.46	PEK	45.5	47.1	2.3	47.8	49.4	74.0	26.2	24.6
13	2289.46	AVG	26.8	26.9	2.3	29.1	29.2	54.0	24.9	24.8
14*	2384.27	PEK	54.1	56.5	2.4	56.5	58.9	74.0	17.5	15.1
15*	2384.27	AVG	27.2	27.4	2.4	29.6	29.8	54.0	24.4	24.2
16	4882.00	PEK	34.9	34.6	7.5	42.4	42.1	74.0	31.6	31.9
17	4882.00	AVG	26.3	26.2	7.5	33.8	33.7	54.0	20.2	20.3
18	6090.75	PEK	36.0	38.1	9.6	45.6	47.7	74.0	28.4	26.3
19	6090.75	AVG	29.1	32.3	9.6	38.7	41.9	54.0	15.3	12.1
20	7323.00	PEK	33.5	34.2	11.9	45.4	46.1	74.0	28.6	27.9
21	7323.00	AVG	25.1	25.1	11.9	37.0	37.0	54.0	17.0	17.0
22	19528.00	PEK	34.0	34.2	11.3	45.3	45.5	74.0	28.7	28.5
23	19528.00	AVG	25.2	25.1	11.3	36.5	36.4	54.0	17.5	17.6

Note.
* : Band Edge of Restrict Band
- : Measurement limit

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	2-DH5, 2480 MHz				
Location	Matsuda No.4 Test Site				
Test date	30 – 1000 MHz,	2 – 3 GHz,	1-2, 3-18 GHz,	18 – 25 GHz	
	Dec. 17, 2014,	Dec. 16, 2014,	Dec. 15, 2014,	Dec. 16, 2014	
Temperature	17.0,	18.0,	19.0,	18.0	[degree C]
Humidity variation	18.0,	56.0,	35.8,	56.0	[%]
Test Engineer	Shiro Kobayashi				

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB/m]	Emission Level [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hori	Vert		Hori	Vert		Hori	Vert
1	48.00	QP	-	32.3	-8.3	-	24.0	40.0	-	16.0
2	71.04	QP	-	36.9	-13.6	-	23.3	40.0	-	16.7
3	82.56	QP	29.8	40.5	-13.1	16.7	27.4	40.0	23.3	12.6
4	97.92	QP	-	37.8	-10.2	-	27.6	43.5	-	15.9
5	124.80	QP	28.0	32.4	-6.2	21.8	26.2	43.5	21.7	17.3
6	182.40	QP	28.0	30.6	-3.2	24.8	27.4	43.5	18.7	16.1
7	205.44	QP	28.9	29.9	-2.2	26.7	27.7	43.5	16.8	15.8
8	432.00	QP	35.3	30.2	-1.5	33.8	28.7	46.0	12.2	17.3
9	672.00	QP	27.3	27.1	3.9	31.2	31.0	46.0	14.8	15.0
10	1152.00	PEK	36.3	36.7	-5.2	31.1	31.5	74.0	42.9	42.5
11	1152.00	AVG	27.5	27.5	-5.2	22.3	22.3	54.0	31.7	31.7
12*	2387.96	PEK	53.8	56.9	2.4	56.2	59.3	74.0	17.8	14.7
13*	2387.96	AVG	27.2	27.4	2.4	29.6	29.8	54.0	24.4	24.2
14*	2483.50	PEK	45.5	46.0	2.3	47.8	48.3	74.0	26.2	25.7
15*	2483.50	AVG	29.0	28.9	2.3	31.3	31.2	54.0	22.7	22.8
16	2486.77	PEK	51.1	52.5	2.4	53.5	54.9	74.0	20.5	19.1
17	2486.77	AVG	28.2	28.5	2.4	30.6	30.9	54.0	23.4	23.1
18	4960.00	PEK	34.9	35.0	7.6	42.5	42.6	74.0	31.5	31.4
19	4960.00	AVG	26.7	26.7	7.6	34.3	34.3	54.0	19.7	19.7
20	6090.75	PEK	35.6	38.2	9.6	45.2	47.8	74.0	28.8	26.2
21	6090.75	AVG	28.9	32.2	9.6	38.5	41.8	54.0	15.5	12.2
22	7440.00	PEK	32.5	33.0	12.2	44.7	45.2	74.0	29.3	28.8
23	7440.00	AVG	24.5	24.5	12.2	36.7	36.7	54.0	17.3	17.3
24	19840.00	PEK	33.9	34.3	11.6	45.5	45.9	74.0	28.5	28.1
25	19840.00	AVG	25.0	25.1	11.6	36.6	36.7	54.0	17.4	17.3

Note.
* : Band Edge of Restrict Band
- : Measurement limit

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	3-DH5, 2402 MHz				
Location	Matsuda No.4 Test Site				
Test date	30 – 1000 MHz,	2 – 3 GHz,	1-2, 3-18 GHz,	18 – 25 GHz	
	Dec. 17, 2014,	Dec. 16, 2014,	Dec. 15, 2014,	Dec. 16, 2014	
Temperature	17.0,	18.0,	19.0,	18.0	[degree C]
Humidity variation	18.0,	56.0,	35.8,	56.0	[%]
Test Engineer	Shiro Kobayashi				

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB/m]	Emission Level [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hori	Vert		Hori	Vert		Hori	Vert
1	48.00	QP	-	31.7	-8.3	-	23.4	40.0	-	16.6
2	71.04	QP	-	36.9	-13.6	-	23.3	40.0	-	16.7
3	82.56	QP	30.0	40.1	-13.1	16.9	27.0	40.0	23.1	13.0
4	97.92	QP	-	38.0	-10.2	-	27.8	43.5	-	15.7
5	124.80	QP	28.6	32.0	-6.2	22.4	25.8	43.5	21.1	17.7
6	182.40	QP	27.3	30.7	-3.2	24.1	27.5	43.5	19.4	16.0
7	205.44	QP	27.9	29.2	-2.2	25.7	27.0	43.5	17.8	16.5
8	432.00	QP	35.2	30.2	-1.5	33.7	28.7	46.0	12.3	17.3
9	672.00	QP	27.0	26.5	3.9	30.9	30.4	46.0	15.1	15.6
10	1152.00	PEK	37.8	37.0	-5.2	32.6	31.8	74.0	41.4	42.2
11	1152.00	AVG	28.0	27.6	-5.2	22.8	22.4	54.0	31.2	31.6
12	2287.48	PEK	43.9	47.9	2.3	46.2	50.2	74.0	27.8	23.8
13	2287.48	AVG	26.9	26.9	2.3	29.2	29.2	54.0	24.8	24.8
14*	2388.67	PEK	53.6	57.1	2.4	56.0	59.5	74.0	18.0	14.5
15*	2388.67	AVG	27.5	27.9	2.4	29.9	30.3	54.0	24.1	23.7
16	4804.00	PEK	35.2	34.5	7.1	42.3	41.6	74.0	31.7	32.4
17	4804.00	AVG	26.3	25.9	7.1	33.4	33.0	54.0	20.6	21.0
18	6090.75	PEK	36.7	38.9	9.6	46.3	48.5	74.0	27.7	25.5
19	6090.75	AVG	29.4	32.7	9.6	39.0	42.3	54.0	15.0	11.7
20	7206.00	PEK	34.0	33.8	11.6	45.6	45.4	74.0	28.4	28.6
21	7206.00	AVG	25.8	25.7	11.6	37.4	37.3	54.0	16.6	16.7
22	19216.00	PEK	34.0	33.3	11.0	45.0	44.3	74.0	29.0	29.7
23	19216.00	AVG	25.1	25.0	11.0	36.1	36.0	54.0	17.9	18.0

Note.
* : Band Edge of Restrict Band
- : Measurement limit

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	3-DH5, 2441 MHz				
Location	Matsuda No.4 Test Site				
Test date	30 – 1000 MHz,	2 – 3 GHz,	1-2, 3-18 GHz,	18 – 25 GHz	
	Dec. 17, 2014,	Dec. 16, 2014,	Dec. 15, 2014,	Dec. 16, 2014	
Temperature	17.0,	18.0,	19.0,	18.0	[degree C]
Humidity variation	18.0,	56.0,	35.8,	56.0	[%]
Test Engineer	Shiro Kobayashi				

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB/m]	Emission Level [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hori	Vert		Hori	Vert		Hori	Vert
1	48.00	QP	-	32.3	-8.3	-	24.0	40.0	-	16.0
2	71.04	QP	-	37.4	-13.6	-	23.8	40.0	-	16.2
3	82.56	QP	30.6	40.8	-13.1	17.5	27.7	40.0	22.5	12.3
4	97.92	QP	-	38.1	-10.2	-	27.9	43.5	-	15.6
5	124.80	QP	28.7	31.6	-6.2	22.5	25.4	43.5	21.0	18.1
6	186.24	QP	27.4	31.1	-2.9	24.5	28.2	43.5	19.0	15.3
7	205.44	QP	28.0	29.9	-2.2	25.8	27.7	43.5	17.7	15.8
8	432.00	QP	34.9	30.0	-1.5	33.4	28.5	46.0	12.6	17.5
9	672.00	QP	27.0	26.6	3.9	30.9	30.5	46.0	15.1	15.5
10	1152.00	PEK	36.3	36.7	-5.2	31.1	31.5	74.0	42.9	42.5
11	1152.00	AVG	27.8	27.5	-5.2	22.6	22.3	54.0	31.4	31.7
12	2288.60	PEK	45.1	46.7	2.3	47.4	49.0	74.0	26.6	25.0
13	2288.60	AVG	26.8	26.9	2.3	29.1	29.2	54.0	24.9	24.8
14*	2389.40	PEK	51.4	54.9	2.4	53.8	57.3	74.0	20.2	16.7
15*	2389.40	AVG	27.2	27.4	2.4	29.6	29.8	54.0	24.4	24.2
16	4882.00	PEK	34.8	34.7	7.5	42.3	42.2	74.0	31.7	31.8
17	4882.00	AVG	26.5	26.1	7.5	34.0	33.6	54.0	20.0	20.4
18	6090.75	PEK	36.4	37.8	9.6	46.0	47.4	74.0	28.0	26.6
19	6090.75	AVG	29.2	32.2	9.6	38.8	41.8	54.0	15.2	12.2
20	7323.00	PEK	33.5	33.1	11.9	45.4	45.0	74.0	28.6	29.0
21	7323.00	AVG	25.2	25.0	11.9	37.1	36.9	54.0	16.9	17.1
22	19528.00	PEK	34.3	34.4	11.3	45.6	45.7	74.0	28.4	28.3
23	19528.00	AVG	25.1	25.1	11.3	36.4	36.4	54.0	17.6	17.6

Note.
* : Band Edge of Restrict Band
- : Measurement limit

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

Operating mode	3-DH5, 2480 MHz				
Location	Matsuda No.4 Test Site				
Test date	30 – 1000 MHz,	2 – 3 GHz,	1-2, 3-18 GHz,	18 – 25 GHz	
	Dec. 17, 2014,	Dec. 16, 2014,	Dec. 15, 2014,	Dec. 16, 2014	
Temperature	17.0,	18.0,	19.0,	18.0	[degree C]
Humidity variation	18.0,	56.0,	35.8,	56.0	[%]
Test Engineer	Shiro Kobayashi				

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB/m]	Emission Level [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hori	Vert		Hori	Vert		Hori	Vert
1	48.00	QP	-	32.2	-8.3	-	23.9	40.0	-	16.1
2	71.04	QP	-	37.3	-13.6	-	23.7	40.0	-	16.3
3	82.56	QP	30.4	40.9	-13.1	17.3	27.8	40.0	22.7	12.2
4	97.92	QP	-	37.8	-10.2	-	27.6	43.5	-	15.9
5	124.80	QP	28.9	31.6	-6.2	22.7	25.4	43.5	20.8	18.1
6	186.24	QP	27.4	31.1	-2.9	24.5	28.2	43.5	19.0	15.3
7	205.44	QP	28.9	30.2	-2.2	26.7	28.0	43.5	16.8	15.5
8	432.00	QP	34.9	29.8	-1.5	33.4	28.3	46.0	12.6	17.7
9	672.00	QP	27.0	26.5	3.9	30.9	30.4	46.0	15.1	15.6
10	1152.00	PEK	37.6	36.7	-5.2	32.4	31.5	74.0	41.6	42.5
11	1152.00	AVG	27.7	27.5	-5.2	22.5	22.3	54.0	31.5	31.7
12	2289.90	PEK	45.5	47.8	2.3	47.8	50.1	74.0	26.2	23.9
13	2289.90	AVG	26.9	26.9	2.3	29.2	29.2	54.0	24.8	24.8
14	2390.72	PEK	54.4	56.5	2.4	56.8	58.9	74.0	17.2	15.1
15	2390.72	AVG	27.2	27.3	2.4	29.6	29.7	54.0	24.4	24.3
16*	2483.50	PEK	48.6	51.0	2.3	50.9	53.3	74.0	23.1	20.7
17*	2483.50	AVG	28.3	29.2	2.3	30.6	31.5	54.0	23.4	22.5
18	2490.00	PEK	51.0	52.3	2.4	53.4	54.7	74.0	20.6	19.3
19	2490.00	AVG	27.6	27.7	2.4	30.0	30.1	54.0	24.0	23.9
20	4960.00	PEK	35.5	36.0	7.6	43.1	43.6	74.0	30.9	30.4
21	4960.00	AVG	26.9	26.8	7.6	34.5	34.4	54.0	19.5	19.6
22	6090.75	PEK	36.5	37.8	9.6	46.1	47.4	74.0	27.9	26.6
23	6090.75	AVG	29.3	32.1	9.6	38.9	41.7	54.0	15.1	12.3
24	7440.00	PEK	33.0	33.5	12.2	45.2	45.7	74.0	28.8	28.3
25	7440.00	AVG	24.8	24.7	12.2	37.0	36.9	54.0	17.0	17.1
26	19840.00	PEK	33.7	34.7	11.6	45.3	46.3	74.0	28.7	27.7
27	19840.00	AVG	25.0	25.2	11.6	36.6	36.8	54.0	17.4	17.2

Note.
* : Band Edge of Restrict Band
- : Measurement limit

Any Spurious emissions higher than the frequency reported in the table above were not detected during the measurement.

9.7 Band Edge of Authorized Frequency Band

Regulations	FCC Part15C §15.247 (d)
Test Method/Guide	ANSI C63.10-2009

Test Procedure

1. The EUT and test instrument were set up as shown on section 10.1.
2. Adjust the measurement instrument for the following setting:

RBW	:	100 kHz
VBW	:	300 kHz
Span	:	20 MHz
Detector	:	Peak
Sweep Time	:	Auto
Correction Factor	:	Input Cable loss and Attenuator
Trace mode	:	Max Hold

3. Allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within in-band emission.
5. Use the marker function to ensure that the band edge level of the authorized frequency band was attenuated by at least the minimum requirements specified.
6. Band Edge Measurement data correction;

   Limit [dBm] = Peak level within in-band emission [dBm] - 20 [dB]

   Margin [dB] = Limit [dBm] – Band edge Level [dBm]

Test Result

Location	Matsuda No.4 Test Site
Test date	Dec. 19, 2014
Temperature	23.1 [degree C]
Humidity variation	16.1 [%]
Test Engineer	Shiro Kobayashi

Operating mode	**DH5, Hopping OFF**			
Freq. [MHz]	**Peak level within in-band emission [dBm]**	**Limit [dBm]**	**Band edge level [dBm]**	**Margin [dB]**
2400	-2.865	-22.865	-52.825	29.960
2483.5	-3.024	-23.024	-54.288	31.264

Operating mode	**DH5, Hopping ON**			
Freq. [MHz]	**Peak level within in-band emission [dBm]**	**Limit [dBm]**	**Band edge level [dBm]**	**Margin [dB]**
2400	-2.822	-22.822	-52.203	29.381
2483.5	-3.020	-23.020	-52.477	29.457

Operating mode	**2-DH5, Hopping OFF**			
Freq. [MHz]	**Peak level within in-band emission [dBm]**	**Limit [dBm]**	**Band edge level [dBm]**	**Margin [dB]**
2400	-4.693	-24.693	-49.933	25.240
2483.5	-4.427	-24.427	-51.087	26.660

Operating mode	**2-DH5, Hopping ON**			
Freq. [MHz]	**Peak level within in-band emission [dBm]**	**Limit [dBm]**	**Band edge level [dBm]**	**Margin [dB]**
2400	-4.772	-24.772	-51.903	27.131
2483.5	-4.755	-24.755	-51.527	26.772

Operating mode	3-DH5, Hopping OFF			
Freq. [MHz]	Peak level within in-band emission [dBm]	Limit [dBm]	Band edge level [dBm]	Margin [dB]
2400	-4.734	-24.734	-49.942	25.208
2483.5	-4.589	-24.589	-51.366	26.777

Operating mode	3-DH5, Hopping ON			
Freq. [MHz]	Peak level within in-band emission [dBm]	Limit [dBm]	Band edge level [dBm]	Margin [dB]
2400	-4.711	-24.711	-52.378	27.667
2483.5	-4.721	-24.721	-52.237	27.516

Spectrum Plots

See ANNEX A.6

9.8 Spurious RF Conducted Emissions

Regulations	FCC Part15C §15.247 (d)
Test Method/Guide	ANSI C63.10-2009

Test Procedure

1. The EUT and test instrument were set up as shown on section 10.1.
2. Adjust the measurement instrument for the following setting:

RBW	:	100 kHz
VBW	:	300 kHz
Span	:	Set span to encompass the spectrum to be examined
Detector	:	Peak
Sweep Time	:	Auto
Correction Factor	:	Input Cable loss and Attenuator
Trace mode	:	Max Hold, Allow trace to fully stabilize.

3. Use the marker function to ensure that the amplitude of all unwanted emissions outside of the authorized frequency band is attenuated by at least the minimum requirements specified.

Spectrum Plots

See ANNEX A.7

Location	Matsuda No.4 Test Site
Test date	Dec. 19, 2014
Temperature	23.1 [degree C]
Humidity variation	16.1 [%]
Test Engineer	Shiro Kobayashi

9.9 AC Conducted Emissions

Regulations	FCC Part15C §15.207
Test Method/Guide	ANSI C63.4-2009

Test Procedure

1. The EUT and test instrument were set up as shown on section 10.3.
2. The spectrum analyzer is controlled by the computer program to sweep the frequency range to be measured, then spectrum chart is plotted out to find the worst emission.
   At least six highest spectrum are measured in quasi-peak and average (if necessary) using the CISPR Receiver.
3. Adjust the test instrument for the following setting:

Frequency	Instruments	Detector	RBW	VBW
0.15 – 30 MHz	CISPR Receiver	QP	9 kHz	N/A
		AVG		

6. Measurement data correction;
   Emission Level [dBuV] = Reading [dBuV] + Factor [dB]
   Margin [dB] = Limit [dBuV] – Emission Level [dBuV]
   * Factor = LISN Factor + Cable loss + Attenuator

Test Result

Test date	Dec. 24, 2014
Location	Matsuda No.4 Test Site
Temperature	20.0 [degree C]
Humidity variation	36.0 [%]
Test Engineer	Shiro Kobayashi

Operating mode			**DH5, Hopping ON**								
No.	**Freq [MHz]**	**Detector**	**Reading [dBuV]**		**Factor [dB]**		**Emission Level [dBuV]**		**Limit [dBuV]**	**Margin [dB]**	
			L1	**L2**	**L1**	**L2**	**L1**	**L2**		**L1**	**L2**
1	0.150	QP	42.0	42.0	10.0	10.0	52.0	52.0	66.0	14.0	14.0
2	0.150	AVG	10.9	11.0	10.0	10.0	20.9	21.0	56.0	35.1	35.0
3	0.200	QP	39.2	39.3	10.1	10.1	49.3	49.4	63.6	14.3	14.2
4	0.200	AVG	8.3	8.3	10.1	10.1	18.4	18.4	53.6	35.2	35.2
5	0.300	QP	34.7	34.8	10.1	10.1	44.8	44.9	60.2	15.4	15.3
6	0.500	QP	26.3	26.3	10.1	10.1	36.4	36.4	56.0	19.6	19.6
7	1.000	QP	15.6	15.4	10.2	10.2	25.8	25.6	56.0	30.2	30.4
8	1.500	QP	2.6	2.7	10.3	10.3	12.9	13.0	56.0	43.1	43.0
9	3.000	QP	-8.4	-8.4	10.4	10.4	2.0	2.0	56.0	54.0	54.0
10	5.000	QP	-8.4	-8.4	10.6	10.5	2.2	2.1	56.0	53.8	53.9

Operating mode			2-DH5, Hopping ON								
No.	Freq [MHz]	Detector	Reading [dBuV]		Factor [dB]		Emission Level [dBuV]		Limit [dBuV]	Margin [dB]	
			L1	L2	L1	L2	L1	L2		L1	L2
1	0.150	QP	42.1	42.2	10.0	10.0	52.1	52.2	66.0	13.9	13.8
2	0.150	AVG	11.1	11.2	10.0	10.0	21.1	21.2	56.0	34.9	34.8
3	0.200	QP	39.3	39.4	10.1	10.1	49.4	49.5	63.6	14.2	14.1
4	0.200	AVG	8.3	8.3	10.1	10.1	18.4	18.4	53.6	35.2	35.2
5	0.300	QP	34.8	35.0	10.1	10.1	44.9	45.1	60.2	15.3	15.1
6	0.500	QP	26.3	26.3	10.1	10.1	36.4	36.4	56.0	19.6	19.6
7	1.000	QP	15.4	15.1	10.2	10.2	25.6	25.3	56.0	30.4	30.7
8	1.500	QP	1.2	2.5	10.3	10.3	11.5	12.8	56.0	44.5	43.2
9	3.000	QP	-8.3	-8.3	10.4	10.4	2.1	2.1	56.0	53.9	53.9
10	5.000	QP	-8.4	-8.5	10.6	10.5	2.2	2.0	56.0	53.8	54.0

Operating mode			3-DH5, Hopping ON								
No.	Freq [MHz]	Detector	Reading [dBuV]		Factor [dB]		Emission Level [dBuV]		Limit [dBuV]	Margin [dB]	
			L1	L2	L1	L2	L1	L2		L1	L2
1	0.150	QP	42.0	42.1	10.0	10.0	52.0	52.1	66.0	14.0	13.9
2	0.150	AVG	10.8	10.9	10.0	10.0	20.8	20.9	56.0	35.2	35.1
3	0.200	QP	39.2	39.3	10.1	10.1	49.3	49.4	63.6	14.3	14.2
4	0.200	AVG	6.5	6.6	10.1	10.1	16.6	16.7	53.6	37.0	36.9
5	0.300	QP	34.8	34.9	10.1	10.1	44.9	45.0	60.2	15.3	15.2
6	0.500	QP	26.3	26.3	10.1	10.1	36.4	36.4	56.0	19.6	19.6
7	1.000	QP	15.6	15.3	10.2	10.2	25.8	25.5	56.0	30.2	30.5
8	1.500	QP	1.2	2.5	10.3	10.3	11.5	12.8	56.0	44.5	43.2
9	3.000	QP	-8.4	-8.3	10.4	10.4	2.0	2.1	56.0	54.0	53.9
10	5.000	QP	-8.4	-8.3	10.6	10.5	2.2	2.2	56.0	53.8	53.8

SECTION 10. LIST AND DIAGRUM OF MEASURING INSTRUMENTS

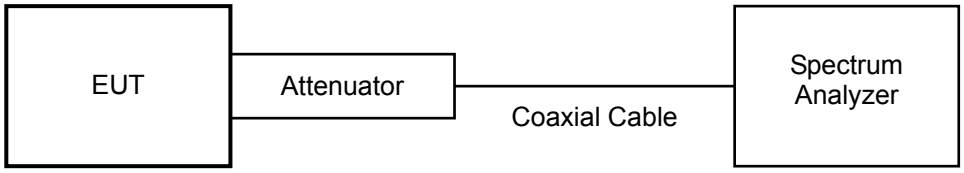
Test instruments are calibrated according to Quality Manual and Calibration Rules of Intertek Japan K.K.

10.1 RF Conducted

Measurement Instruments

Instrument	Model No.	Serial No.	Manufacturer	Cal. Interval	Effective period
Spectrum Analyzer	N9030A	MY52350520	Agilent	1 Y	Mar.31, 2015
20 dB Attenuator	8493C	78585	Agilent	1 Y	Dec.31, 2014
Coaxial Cable	SUCOFLEX 104PE	94703/4PE	SUHNER	1 Y	Dec.31, 2014

Measurement Equipment Configuration



10.2 Radiated Emission

Measurement Instruments

Instrument	Model No.	Serial No.	Manufacturer	Cal. Interval	Effective period
30 – 1000 MHz					
Biconical Antenna	BBA9106	CEC008	Schwarzbeck	1 Y	Aug.31, 2015
Log-Periodic Antenna	UHALP9108A	0146	Schwarzbeck	1 Y	Aug.31, 2015
Amplifier	8447D	1937A02669	Hewlett Packard	1 Y	Aug.31, 2015
6dB Attenuator	6806.17.AC	E04AT3RB	HUBER+SUHNER	1 Y	Aug.31, 2015
Step Attenuator	8494A	1510A08521	Hewlett Packard	1 Y	Aug.31, 2015
Coaxial Cable (R1)	RG214HF(9.0m)	MTS04R3-1	SUHNER	1 Y	Aug.31, 2015
Coaxial Cable (R2)	8D-2W(15.0m)	MTS04R3-2	Intertek	1 Y	Aug.31, 2015
Coaxial Cable (R3)	RG214HF(2.0m)	MTS04R3-3	SUHNER	1 Y	Aug.31, 2015
Coaxial Cable (R4)	RG214HF(0.4m)	MTS04R3-4	SUHNER	1 Y	Aug.31, 2015
Coaxial Cable (R5)	RG214HF(0.4m)	MTS04R3-5	SUHNER	1 Y	Aug.31, 2015
Coaxial Cable (R6)	RG214HF(1.5m)	MTS04R3-6	SUHNER	1 Y	Aug.31, 2015
Coaxial Cable (R7)	RG214HF(1.5m)	MTS04R3-7	SUHNER	1 Y	Aug.31, 2015
Coaxial Cable (R8)	RG214HF(1.5m)	MTS04R3-8	SUHNER	1 Y	Aug.31, 2015
Coaxial Cable (R9)	RG214HF(6.0m)	MTS04R3-9	SUHNER	1 Y	Aug.31, 2015
Test Receiver	ESS (Firmware Version 1.21)	842123/007	Rohde & Schwarz	1 Y	Mar.31, 2015
RF Switch(1)	MP59B	M21448	ANRITSU	1 Y	Aug.31, 2015
RF Switch(2)	ACX-150-1	E04301501	Intertek	1 Y	Aug.31, 2015
Site Attenuation	-	-	-	1 Y	May.31, 2015
Above 1000 MHz					
Double Ridged Antenna	3115	2567	EMCO	1 Y	Oct.31, 2015
Notch Filter	BRM50702	165	Micro-Tronics	1 Y	Dec.31, 2014
3dB Attenuator	6803.17.B	E00AT3GB	SUNNER	1 Y	Jul.31, 2015
6dB Attenuator	6806.17.B	DML227	SUNNER	1 Y	Oct.31, 2015
Amplifier	AMF-4D-001180-21-10P	1040241	TOYO Corporation	1 Y	Oct.31, 2015
Coaxial Cable (R11)	SUCOFLEX 104(6.0m)	94702/4PE	SUNNER	1 Y	Oct.31, 2015
Coaxial Cable (R12)	SUCOFLEX 104(1.0m)	94703/4PE	SUNNER	1 Y	Oct.31, 2015
Coaxial Cable (R13)	5B-048-98-98-6000	120315	Candox	1 Y	Sep.30, 2015
Horn Antenna with Preamplifier	MLA-18265-B03-30	1694440	TSJ	1 Y	Sep.30, 2015
Spectrum Analyzer	N9030A	MY52350520	Agilent	1 Y	Mar.31, 2015
Common					
Testing Software	emiT (Version 3,0,0,0)	-	-	--	-

Measurement Instruments Configurations

Diagram of the measurement instruments (30-1000 MHz)

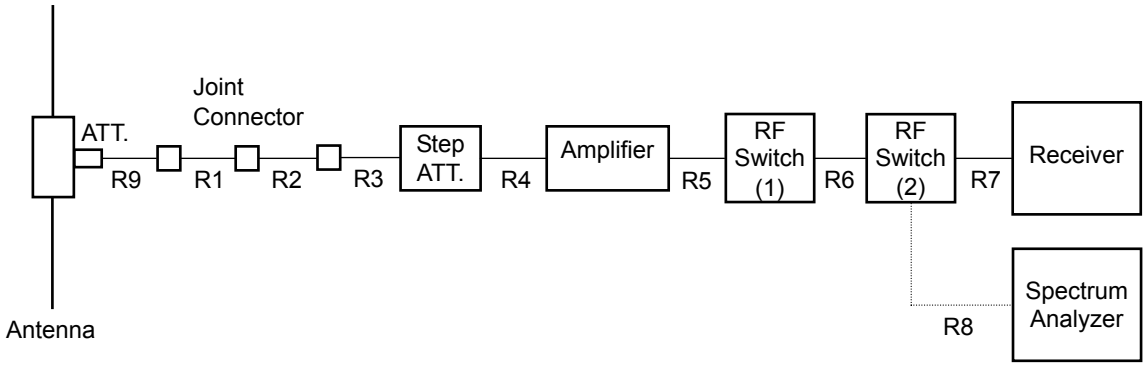


Diagram of the measurement instruments (2000 - 3000 MHz)

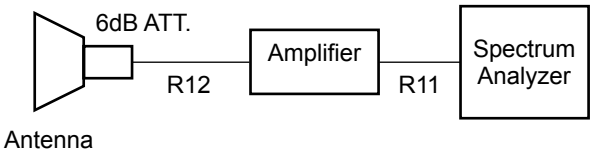


Diagram of the measurement instruments (1000- 2000 and 3000 – 18000 MHz)

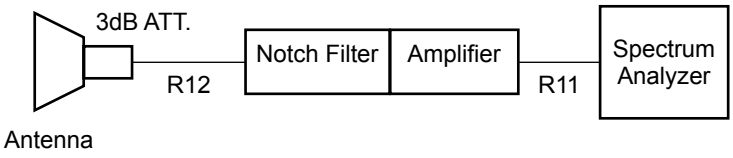
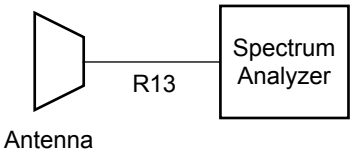
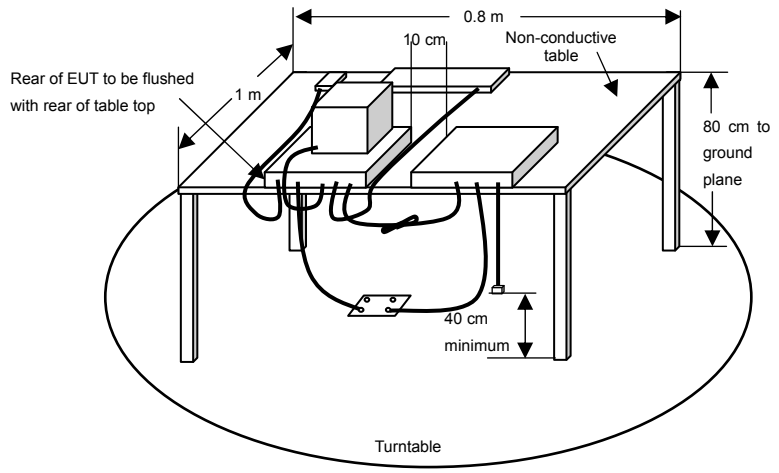


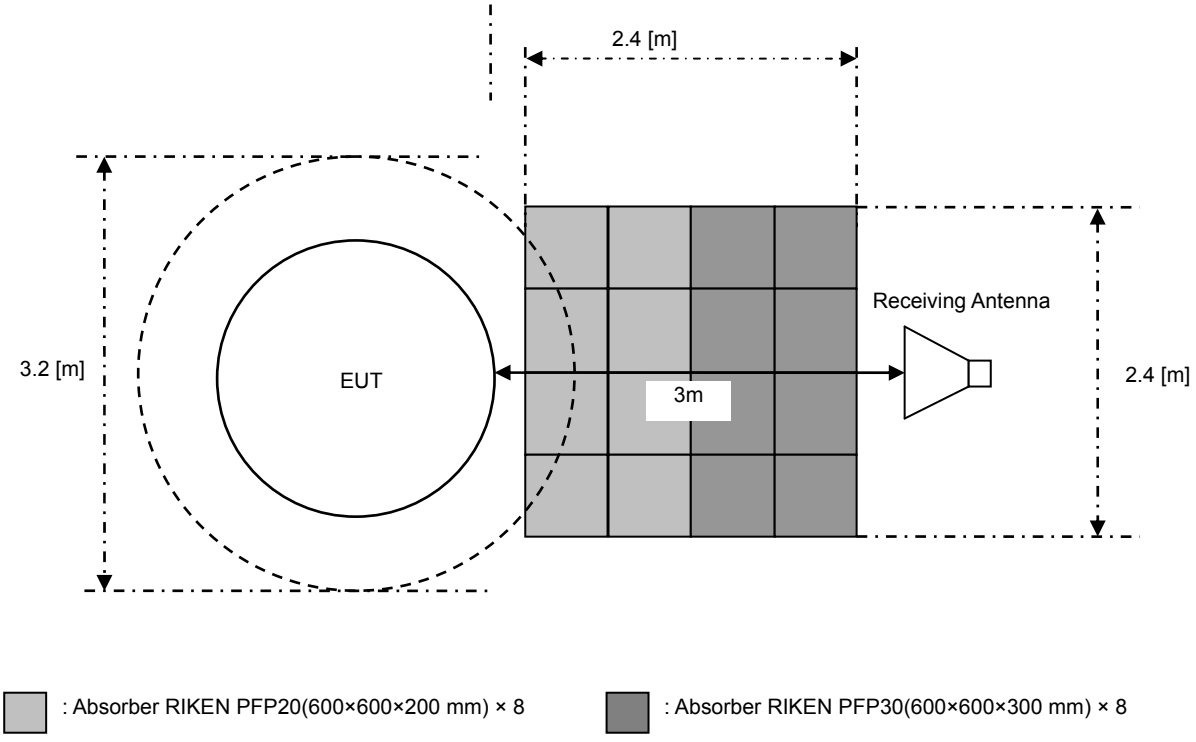
Diagram of the measurement instruments (18000 - 25000 MHz)



EUT set-up as per standard



Absorber placement and Receive Antenna location in Radiated disturbance above 1 GHz

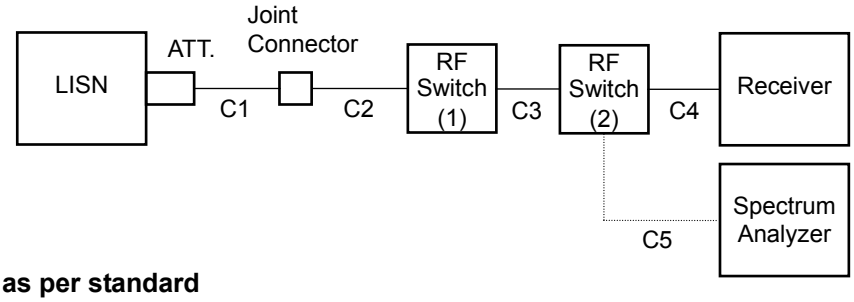


10.3 AC Line Conducted Emission

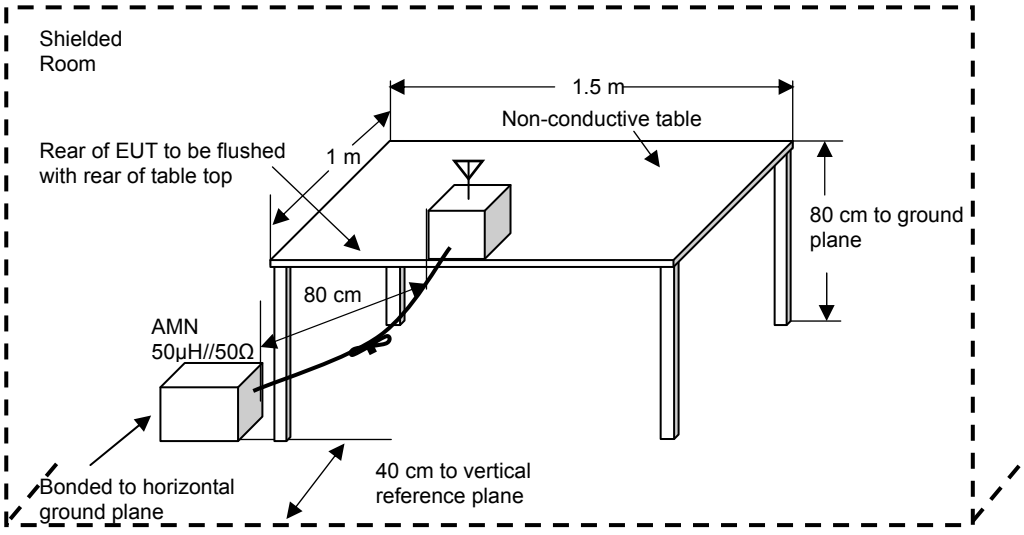
Measurement Instrument

Instrument	Model No.	Serial No.	Manufacturer	Cal. Interval	Effective period
LISN(EUT)	ESH2-Z5	882395/019	Rohde & Schwarz	1 Y	Jun. 30, 2015
10dB LISN Pad	CFA-01	E04AT10B	TAMAGAWA	1 Y	Jun. 30, 2015
50Ω Termination	65BNC-50-0-2/133NE	E03TRM50C	SUHNER	1 Y	Aug. 31, 2015
Coaxial Cable (C1)	3D-2W(5.0m)	MTS04CSR-1	Intertek	1 Y	Aug. 31, 2015
Coaxial Cable (C2)	RG-5A/U(4.0m)	MTS04CSR-2	Intertek	1 Y	Aug. 31, 2015
Coaxial Cable (C3)	RG214HF(1.5m)	MTS04CSR-3	SUHNER	1 Y	Aug. 31, 2015
Coaxial Cable (C4)	RG214HF(1.5m)	MTS04CSR-4	SUHNER	1 Y	Aug. 31, 2015
Coaxial Cable (C5)	RG214HF(1.5m)	MTS04CSR-5	SUHNER	1 Y	Aug. 31, 2015
Test Receiver	ESS (Firmware Version 1.21)	842123/007	Rohde & Schwarz	1 Y	Mar. 30, 2015
RF Switch(1)	MP59B	M21448	ANRITSU	1 Y	Aug. 31, 2015
RF Switch(2)	ACX-150-1	E04301501	Intertek	1 Y	Aug. 31, 2015
Testing Software	emiT (Version 3,0,0,0)	-	-	-	-

Measurement Instruments Configurations



Test setup as per standard



* Reference Ground plane : greater than 2 x 2m

ANNEX

A. HARD COPY OF SPECTRUM PLOTS

A.1 20 dB Bandwidth and 99 % Occupied Bandwidth

DH5	2-DH5
2402 MHz	**2402 MHz**
	
2441 MHz	**2441 MHz**
	
2480 MHz	**2480 MHz**
	

3-DH5
2402 MHz

2441 MHz

2480 MHz


A.2 Maximum Peak Output Power

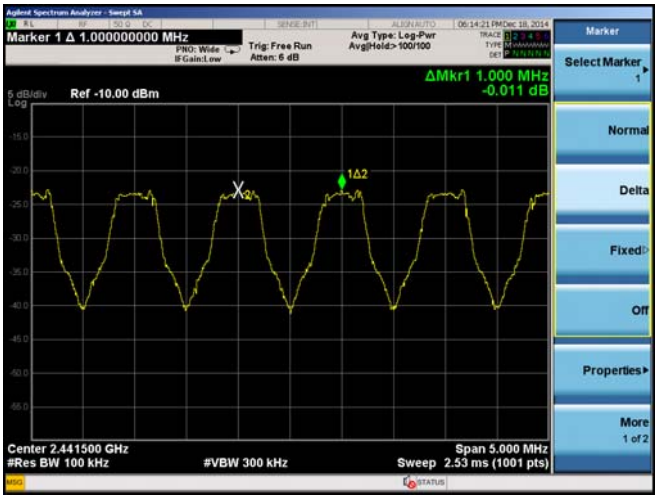
DH5	2-DH5
2402 MHz	**2402 MHz**
	
2441 MHz	**2441 MHz**
	
2480 MHz	**2480 MHz**
	

3-DH5
2402 MHz

2441 MHz

2480 MHz


A.3 Carrier Frequency Separation

DH5	2-DH5
2402 MHz	**2402 MHz**
	
2441 MHz	**2441 MHz**
	
2480 MHz	**2480 MHz**
	

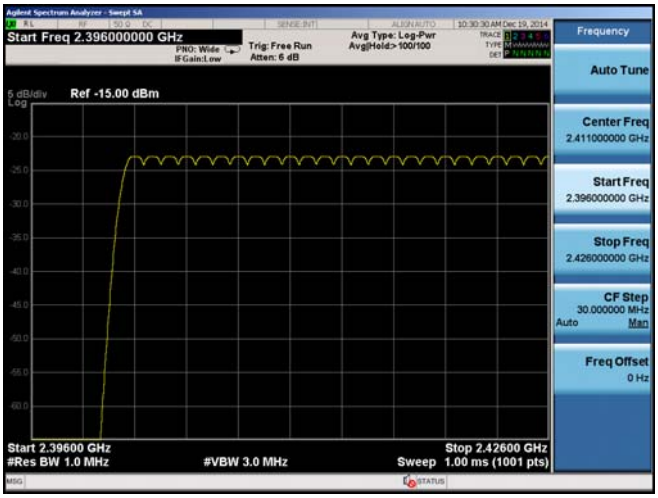
3-DH5
2402 MHz

2441 MHz

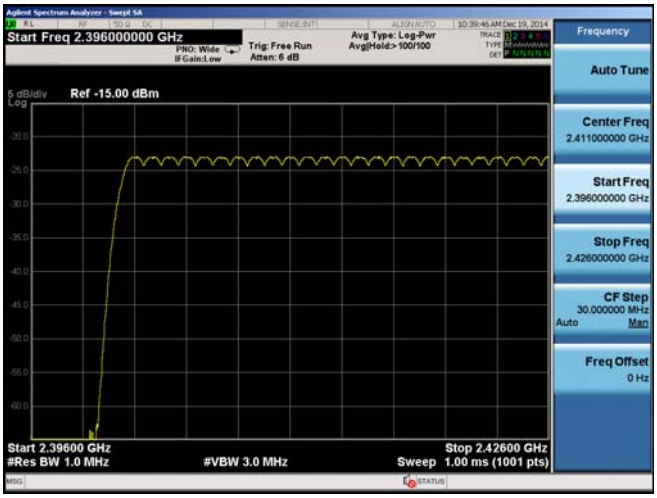
2480 MHz


A.4 Number of Hopping Frequency

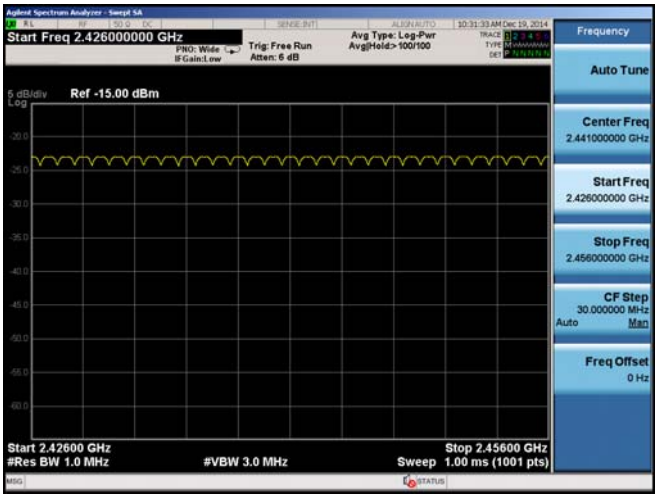
DH5_1



2-DH5_1



DH5_2



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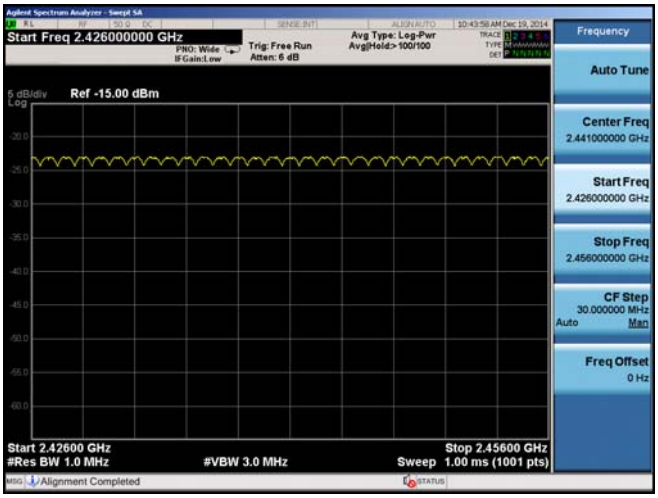
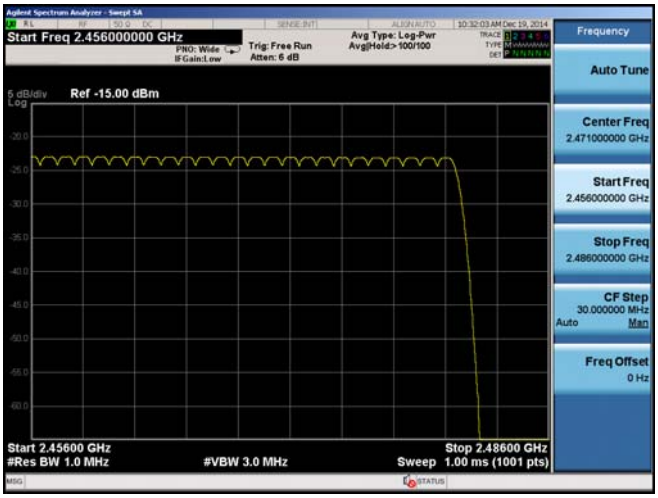
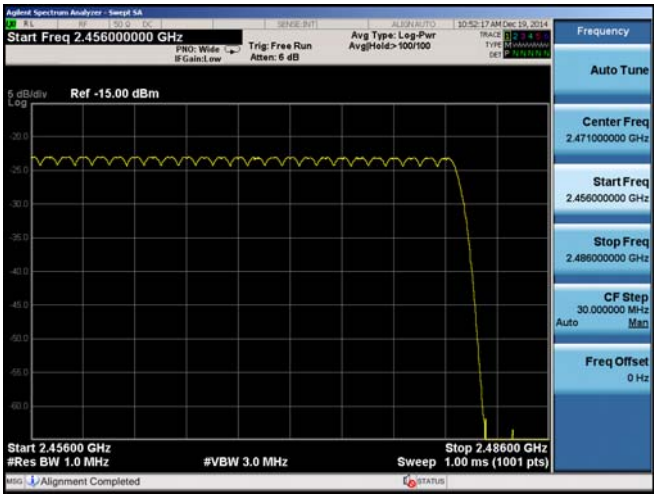


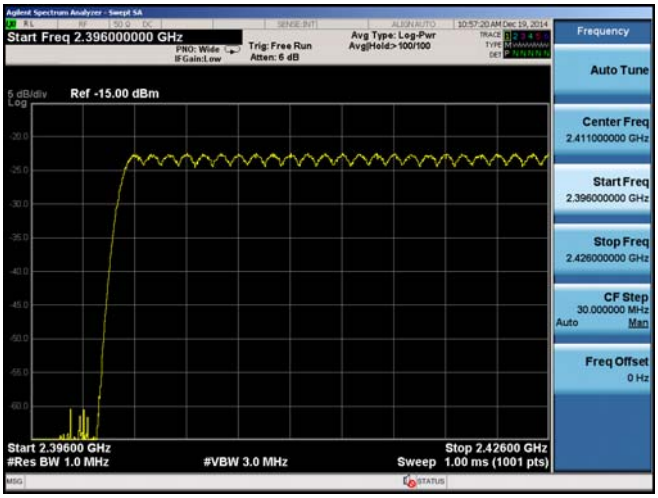
DH5_3



2-DH5_3



3-DH5_1



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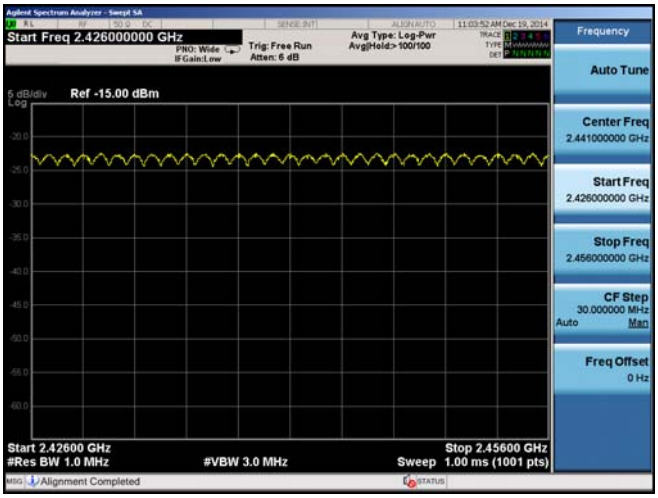
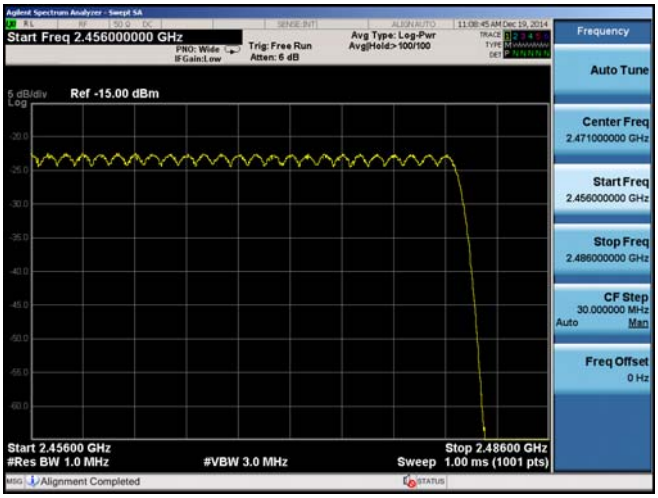
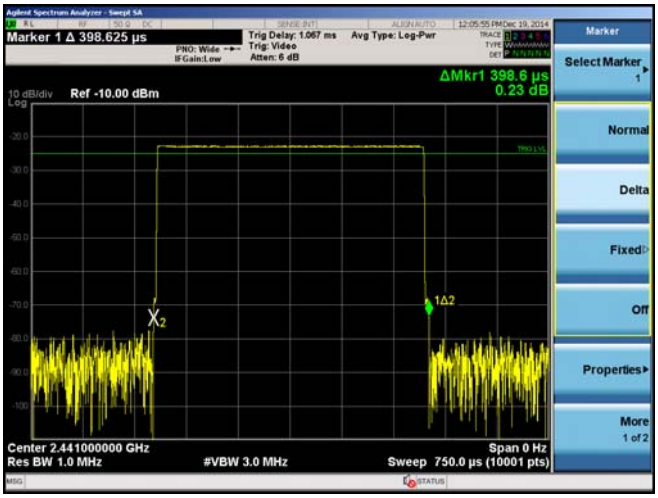


3-DH5_3

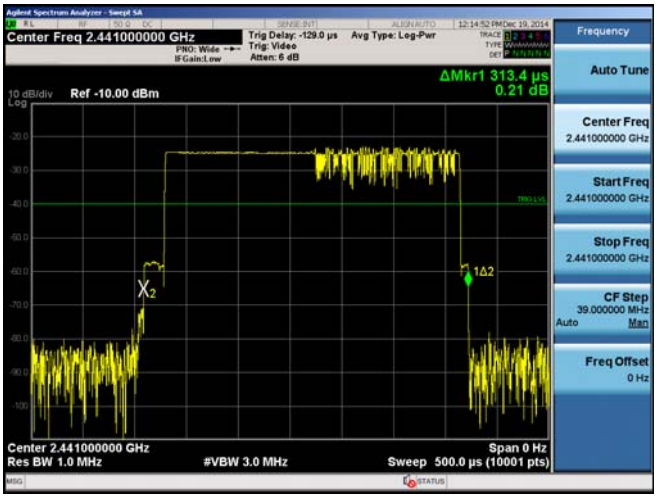


A.5 Time of Occupancy

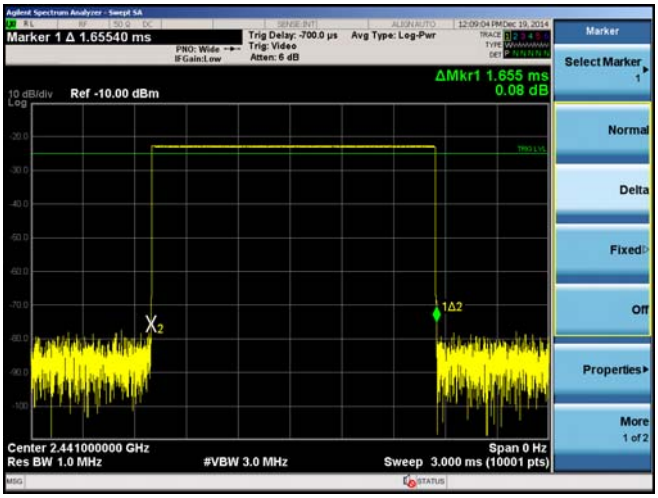
DH1



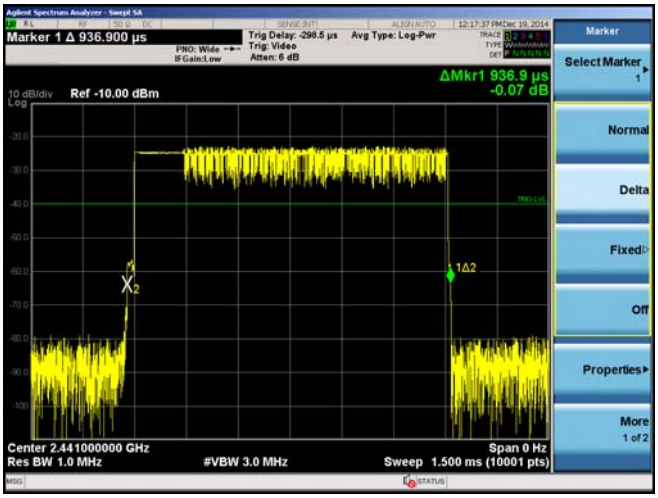
2-DH1



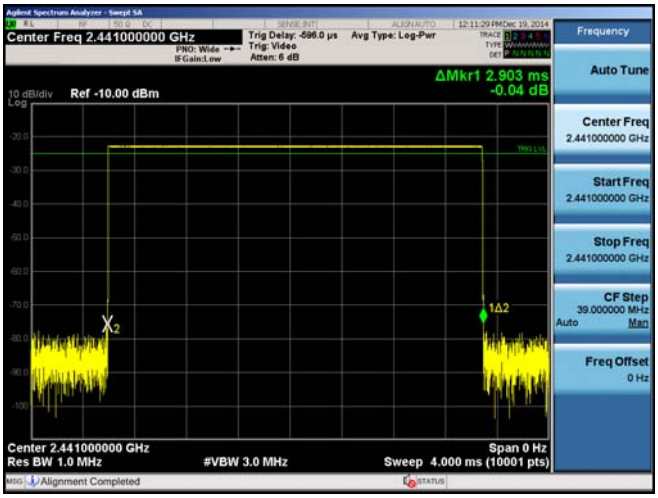
DH3



2-DH3



DH5



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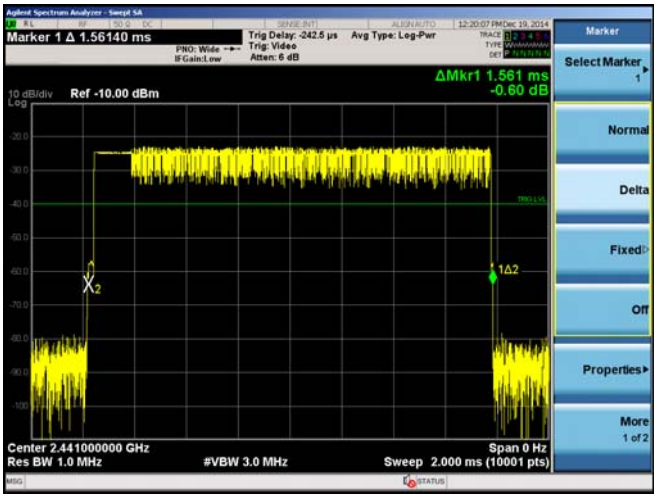
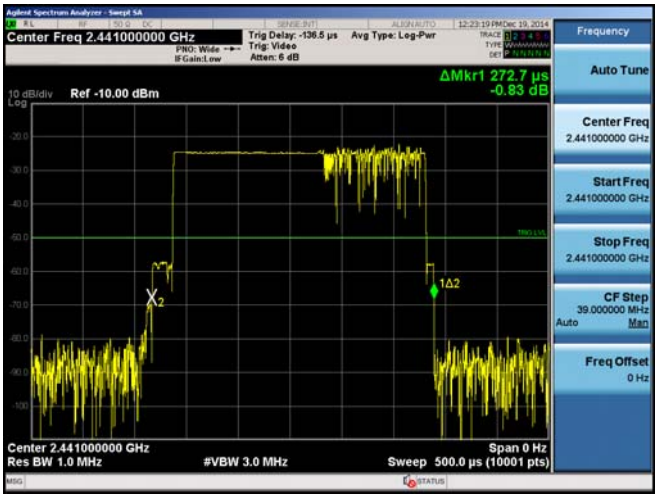
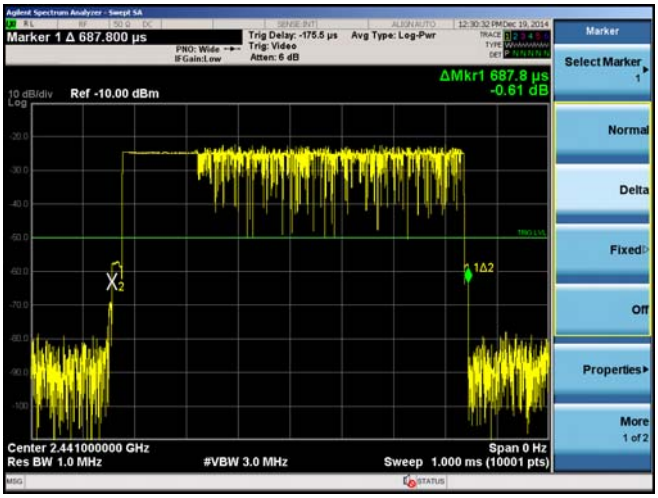


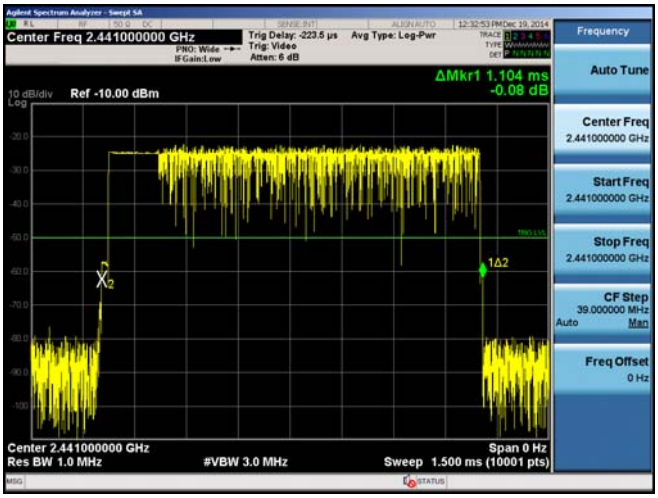
3-DH1



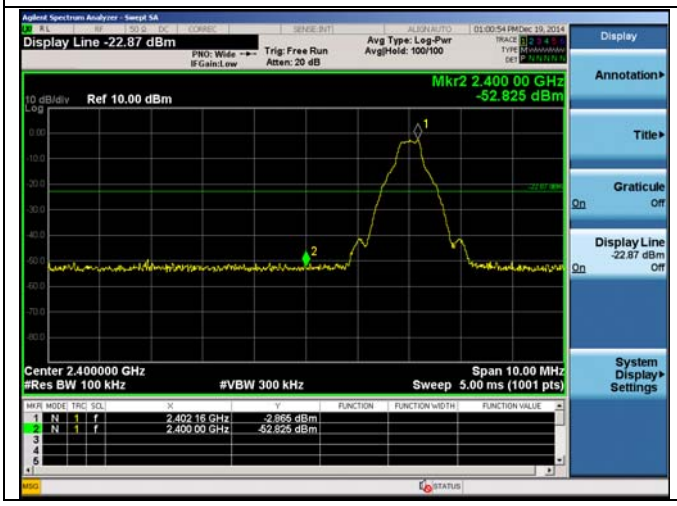
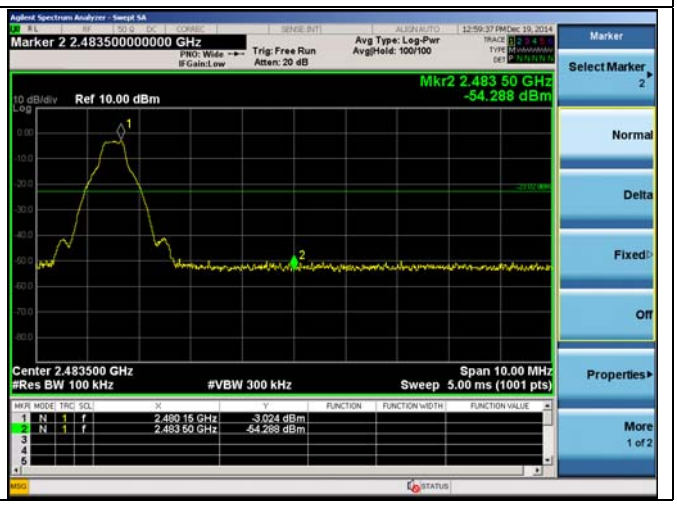
3-DH3

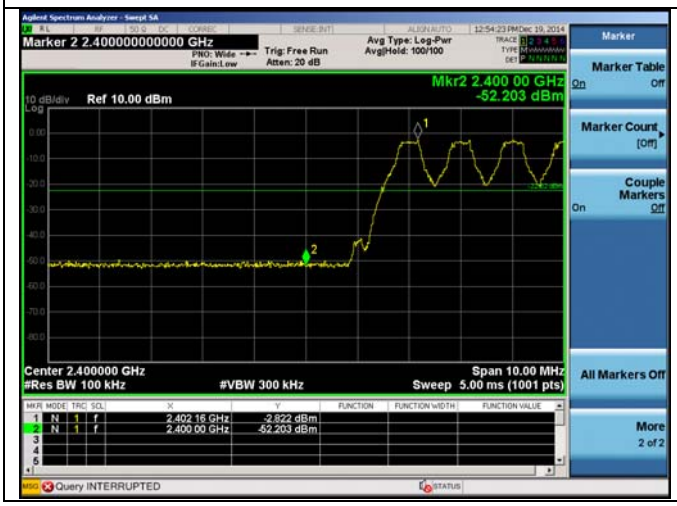
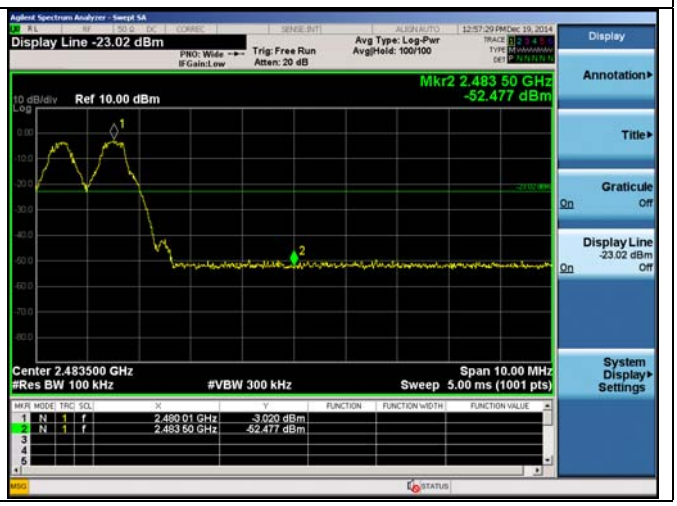


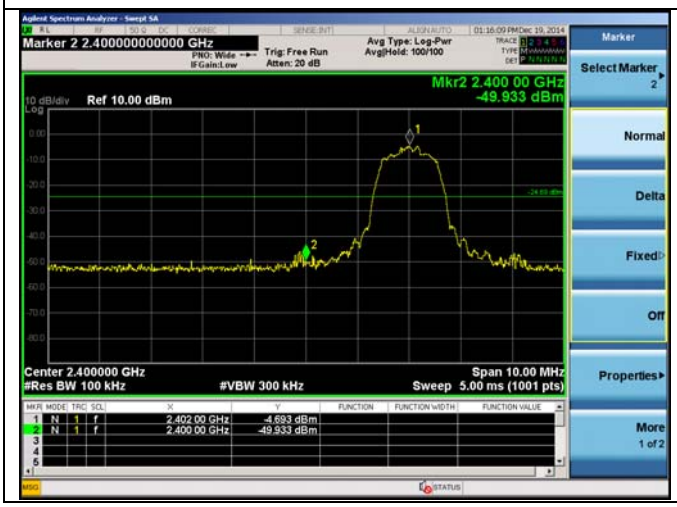
3-DH5



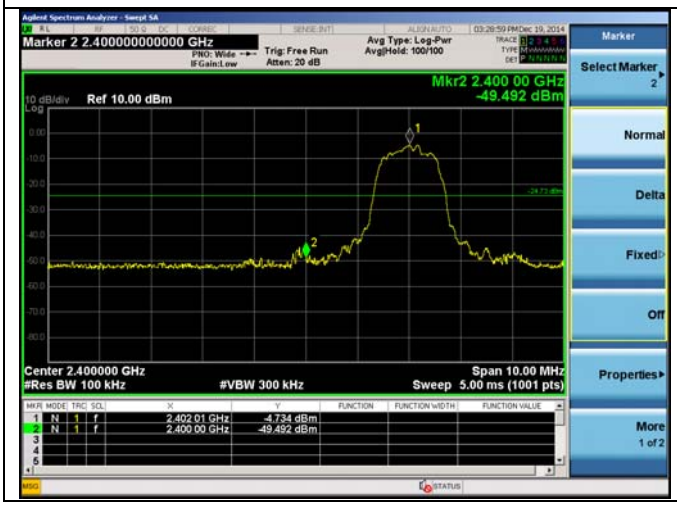
A.6 Band Edge of Authorized Frequency Band

DH5, Hopping OFF	
2400 MHz	**2483.5 MHz**
	

DH5, Hopping ON	
2400 MHz	**2483.5 MHz**
	

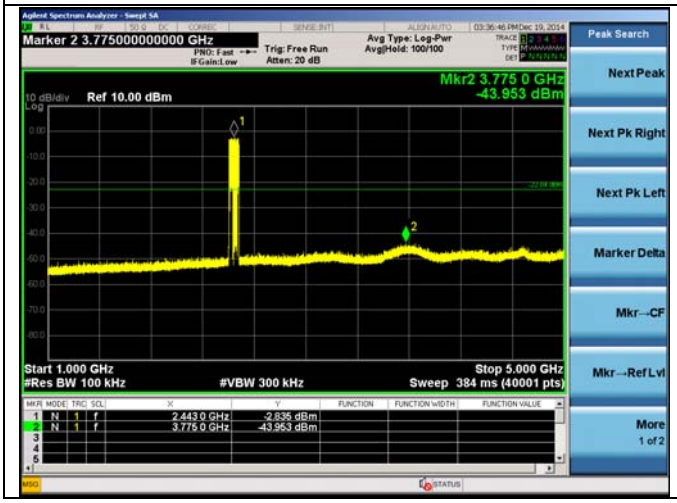
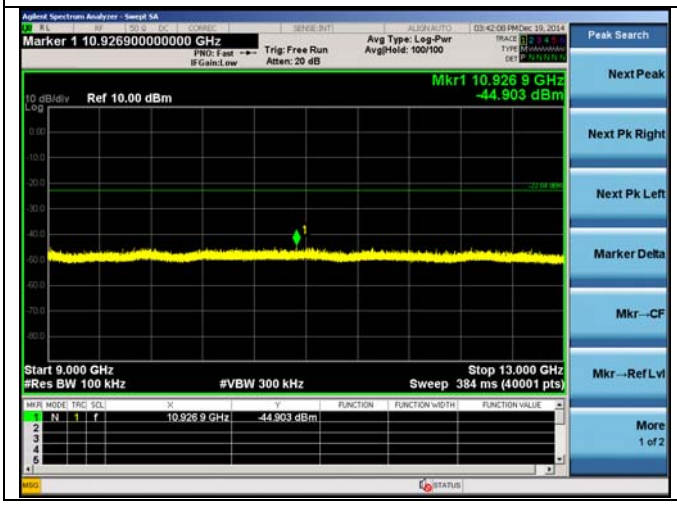
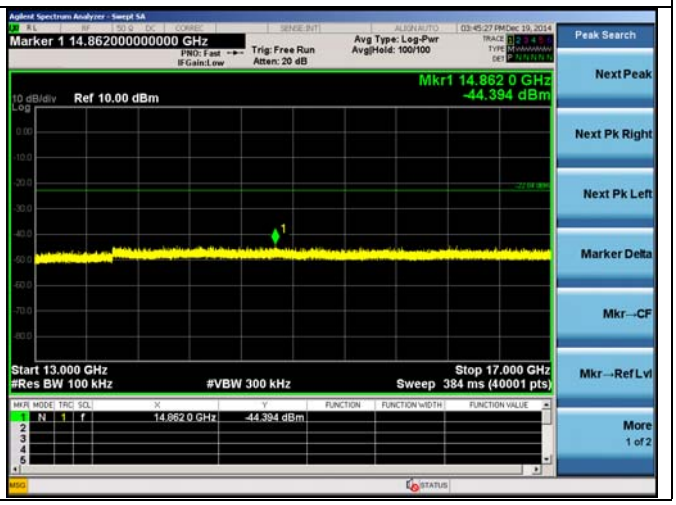
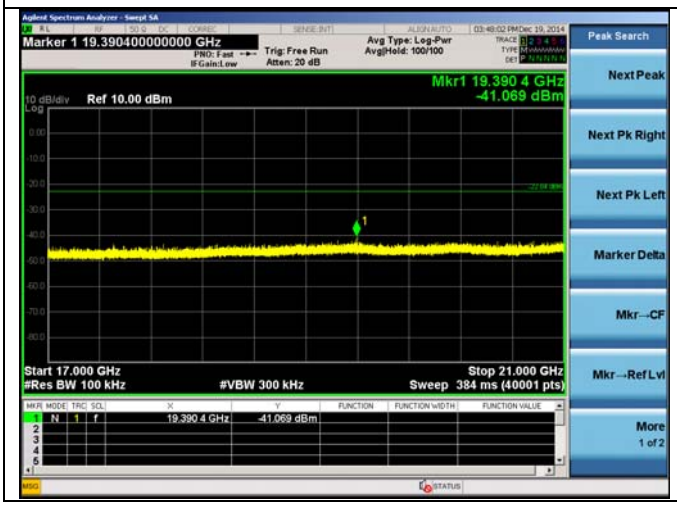
2-DH5, Hopping OFF	
2400 MHz	**2483.5 MHz**
	

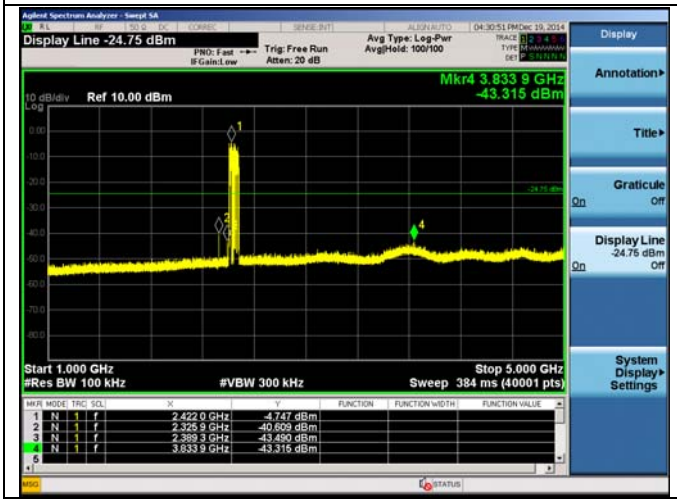
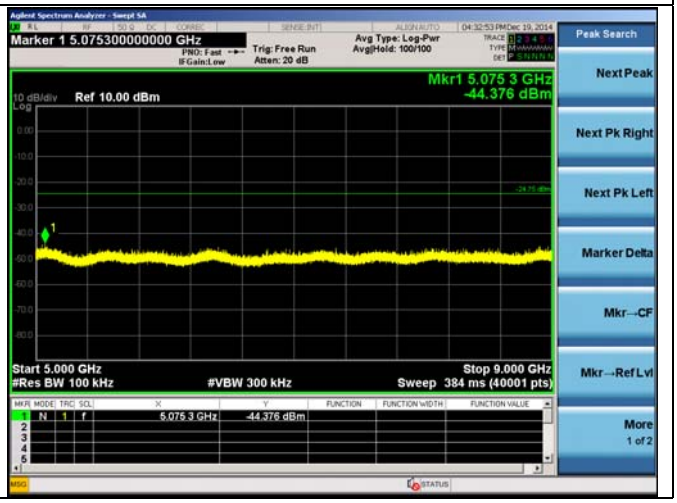
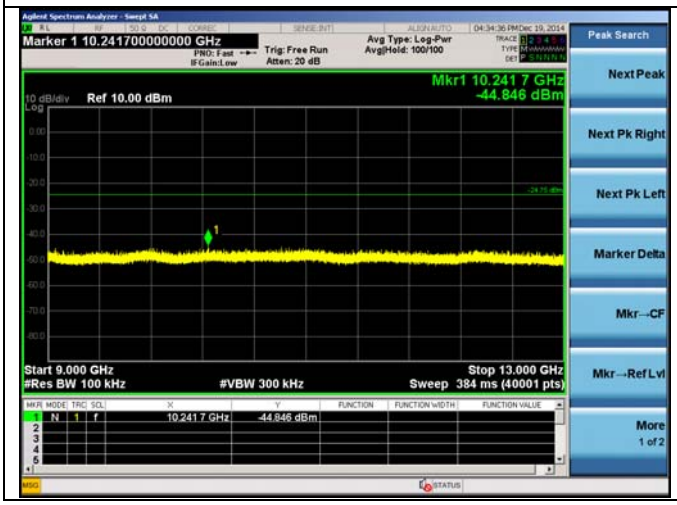
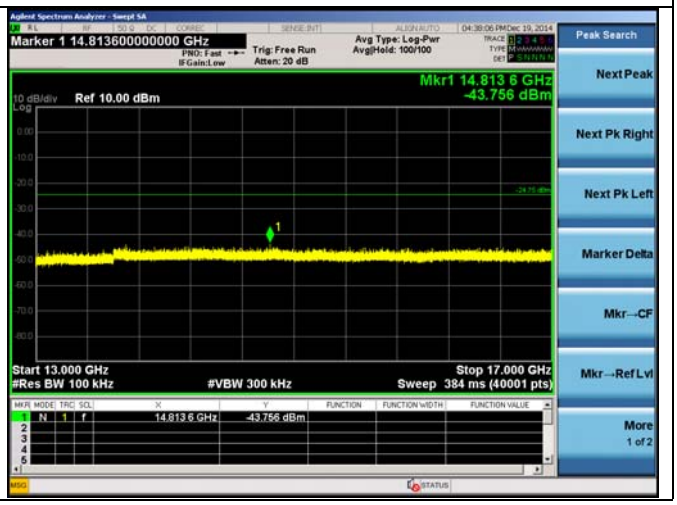
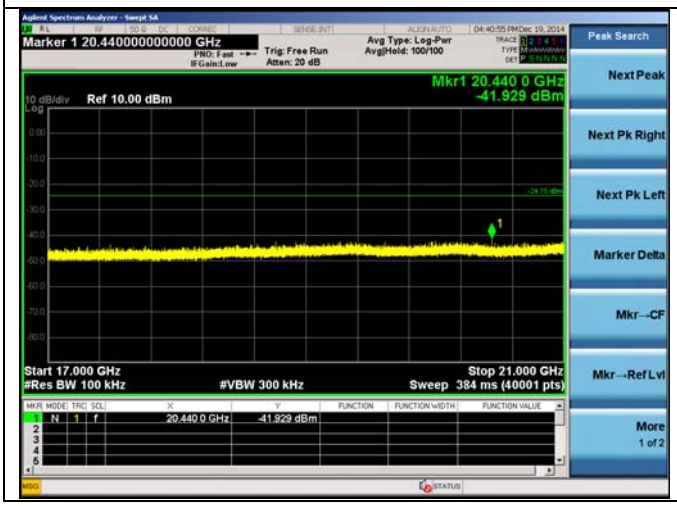
2-DH5, Hopping ON	
2400 MHz	**2483.5 MHz**
	

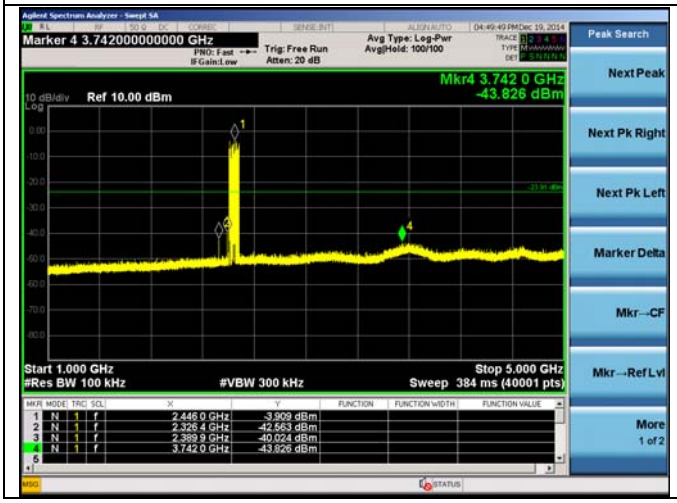
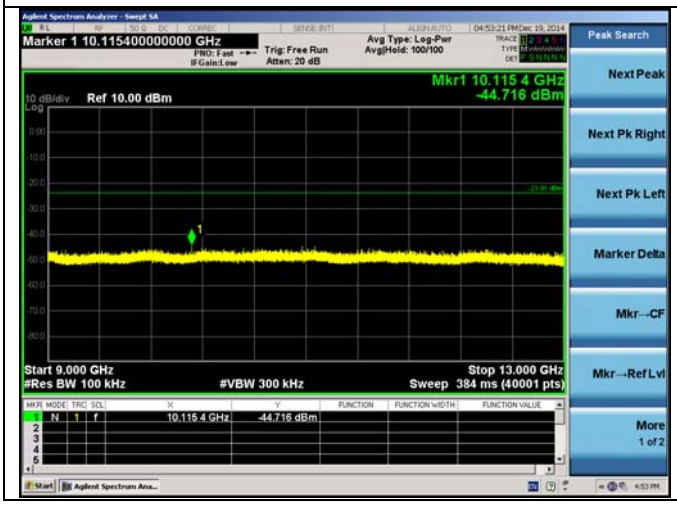
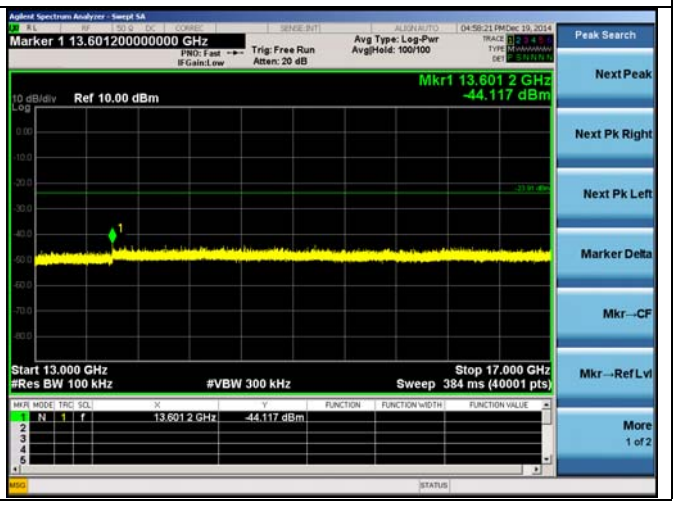
3-DH5, Hopping OFF	
2400 MHz	**2483.5 MHz**
	

3-DH5, Hopping ON	
2400 MHz	**2483.5 MHz**
	

A.7 Spurious RF Conducted Emissions

DH5, Hopping ON	
1 – 5 GHz	**5 – 9 GHz**
	
9 – 13 GHz	**13 – 17 GHz**
	
17 – 21 GHz	**21 – 25 GHz**
	

2-DH5, Hopping ON	
1 – 5 GHz	5 – 9 GHz
	
9 – 13 GHz	13 – 17 GHz
	
17 – 21 GHz	21 – 25 GHz
	

3-DH5, Hopping ON	
1 – 5 GHz	**5 – 9 GHz**
	
9 – 13 GHz	**13 – 17 GHz**
	
17 – 21 GHz	**21 – 25 GHz**