




TEST REPORT


REGULATIONS : FCC Part15 C §15.247
RSS-247 Issue 1

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Equipment Type	Bluetooth Module
Trademark	KENWOOD
Model(s)	J7C-0037
Serial No.	100 (for Radiated testing) 106 (for Antenna Port Conductive testing)
FCC ID	K44479250
IC CN and UPN	282F-479250
Test Result	Complied
Report Number	1611055JMA-001
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SECTION 1. GENERAL INFORMATION

Test Performed

EUT Received	November 11, 2016	
Date of Test	From November 16, 2016 to November 22, 2016	
Standard Applied	FCC	IC
	FCC Part15 C §15.247	RSS-247 Issue 1
Test methods	ANSI C63.10-2013	RSS-Gen Issue 4 ANSI C63.10-2013
Deviation from Standard(s)	None	

Qualifications of Testing Laboratory (Matsuda Lab.)

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	Canada
CB-Scheme	EMC Testing	TL223	IECEE
SAUDI ARABIA	EMC Testing	N/A	

Qualifications of Testing Laboratory (Nagano Lab.)

Accreditation	Scope	Lab. Code	Remarks
VLAC	EMC Testing	VLAC-008-4	JAPAN
BSMI	EMC Testing	SL2-IN-E-6007	TAIWAN
Filing			
VCCI	EMC Testing	A-0128	JAPAN
FCC	EMC Testing	Designation Number : JP0010	USA
IC	EMC Testing	2042O-1	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
AFH	: Adaptive Hopping Frequency		

Revision Summary

Revised Date	Section	Description of Changes
December 5, 2016	-	First issue.
-	-	-

SECTION 2. SUMMARY OF TEST RESULTS

Test Item	Specification	Results	Detail
20 dB Bandwidth and 99 % Occupied Bandwidth	FCC Part15C §15.247 (a) (1) RSS-247 5.1 (1) RSS-Gen 6.6	N/A	Section 9.1
Maximum Peak Output Power	FCC Part15C §15.247 (b) (1) RSS-247 5.4 (2)	PASS	Section 9.2
Carrier Frequency Separation	FCC Part15C §15.247 (a) (1) RSS-247 5.1 (2)	PASS	Section 9.3
Number of Hopping Frequency	FCC Part15C §15.247 (a) (1) (iii) RSS-247 5.1 (4)	PASS	Section 9.4
Time of occupancy	FCC Part15C §15.247 (a) (1) (iii) RSS-247 5.1 (4)	PASS	Section 9.5
Radiated Spurious Emissions and Restrict Band edge	FCC Part15C §15.209, §15.205 RSS-247 5.5 RSS-Gen 8.9	PASS	Section 9.6
Band Edge of Authorized Frequency Band	FCC Part15C §15.247 (d) RSS-247 5.5	PASS	Section 9.7
Spurious RF Conducted Emissions	FCC Part15C §15.247 (d) RSS-247 5.5	PASS	Section 9.8
AC Conducted Emissions	FCC Part15C §15.207 RSS-Gen 7.2.2	PASS	Section 9.9
Receiver Spurious Emissions	RSS-Gen 7.1	PASS	Section 9.10

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	Bluetooth Module	J7C-0037	100 (for Radiated testing) 106 (for Antenna Port Conductive testing)	JVC KENWOOD Corporation
Rated Power : DC 5.4V ± 10%(Supply from Support Equipment)				
Supplied Power : DC 13.6 V (for Support Equipment)				
Condition of Equipment		Prototype		
Type		Built-in 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
-	-	-	-

3.3 Highest Frequency Generated / Used

Operating Frequency	Board Name	Remarks
4960 MHz	Generated / Bluetooth	-

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	Max: 79 ch, 1 MHz step (Normal mode) Min: 20 ch (AFH mode)
Modulation Method	FHSS (GFSK, $\pi/4$ DQPSK, 8DPSK)
Antenna Type and Gain	Integrated Printed Antenna, 1.43 dBi See Note 1
Antenna Connector	None

Note:

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

SECTION 4. SUPPORT EQUIPMENT

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

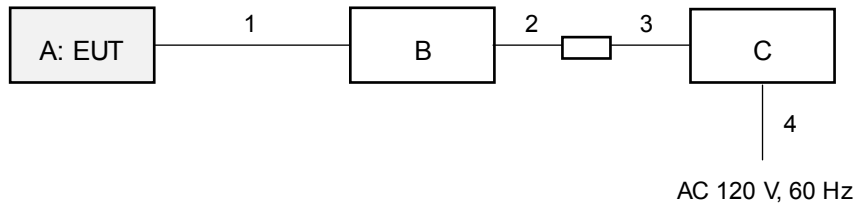
Symbol	Item	Model No.	Serial No.	Manufacturer	Remarks	FCC ID
B	700/800MHz DIGITAL TRANSCIVER	NX-5900-K	B5900020	JVC KENWOOD		K44478500
C	DC Power Supply	PAN60-3A	ND001658	KIKUSUI		N/A
Supplied Power:						
B	DC 13.6 V					
C	AC 120 V, 60 Hz					

SECTION 5. USED CABLE(S)

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

No.	Name	Length (m)	Shield	Metal Connector	Ferrite Core
1	FLEXIBLE PRINTED CIRCUITS CABLE	0.20	No	No	
2	DC CABLE	0.25	No	No	
3	DC CABLE	3.4	No	No	
4	AC CABLE	1.80	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 OFF 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_{cisp}
Radiated Spurious Emissions at 3m		
30 MHz – 1000 MHz	+/- 3.96 dB	6.3 dB
Above 1 GHz	+/- 4.91 dB	5.2 dB
AC Conducted Emissions		
150 kHz – 30 MHz	+/- 2.80 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) RSS-247 5.1 (1) RSS-Gen 6.6
Test Method/Guide	ANSI C63.10-2013 clause 6.9.2

Test Procedure

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

RBW	:	1 to 5 % of the 20 dB bandwidth
VBW	:	approximately 3 times RBW
Span	:	approximately 3 times the 20 dB bandwidth
Detector	:	Peak
Sweep Time	:	Auto
Trace mode	:	Max Hold
- Allow trace to fully stabilize.
- Use "Occupied Bandwidth Measurement" function to measure the 20 dB bandwidth.

Test Result

Location	Nagano Laboratory No.2 Test Site
Test date	November 16, 2016
Temperature	19.0 [degree C]
Humidity variation	45.0 [%RH]
Test Engineer	Tomochika Yonemura

Operating modes	Frequency [MHz]	20 dB Bandwidth [MHz]	99 % Bandwidth [MHz]
DH5	2402	0.953	0.853
	2441	0.952	0.848
	2480	0.954	0.851
2-DH5	2402	1.399	1.224
	2441	1.401	1.223
	2480	1.399	1.223
3-DH5	2402	1.394	1.235
	2441	1.393	1.236
	2480	1.393	1.235

Spectrum Plots

See ANNEX A.1.

9.2 Maximum Peak Output Power

Regulations	FCC Part15C §15.247 (b) (1) RSS-247 5.4 (2)
Test Method/Guide	ANSI C63.10-2013 clause 7.8.5

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;

$$\text{Measured Value [dBm]} = \text{Reading [dBm]} + \text{Factor [dB]}$$

$$*\text{Factor} = \text{Cable Loss [dB]} + \text{Attenuator [dB]}$$

$$\text{Margin [dB]} = \text{Limit [dBm]} - \text{Measured Value [dBm]}$$

Test Result

Location	Nagano Laboratory No.2 Test Site
Test date	November 16, 2016
Temperature	19.0 [degree C]
Humidity variation	45.0 [%]
Test Engineer	Tomochika Yonemura

Operating modes	Freq. [MHz]	Reading [dBm]	Factor [dB]	Measured Value [dBm]	Limit		Margin [dB]
					[mW]	[dBm]	
DH1	2402	-20.587	21.290	0.703	125	20.97	20.267
	2441	-21.083	21.300	0.217			20.753
	2480	-20.969	21.300	0.331			20.639
DH3	2402	-20.586	21.290	0.704			20.266
	2441	-21.084	21.300	0.216			20.754
	2480	-20.951	21.300	0.349			20.621
DH5	2402	-20.575	21.290	0.715			20.255
	2441	-21.076	21.300	0.224			20.746
	2480	-20.974	21.300	0.326			20.644
2-DH1	2402	-19.980	21.290	1.310			19.660
	2441	-20.452	21.300	0.848			20.122
	2480	-20.332	21.300	0.968			20.002
2-DH3	2402	-20.003	21.290	1.287			19.683
	2441	-20.487	21.300	0.813			20.157
	2480	-20.361	21.300	0.939			20.031
2-DH5	2402	-20.027	21.290	1.263			19.707
	2441	-20.519	21.300	0.781			20.189
	2480	-20.408	21.300	0.892			20.078
3-DH1	2402	-19.449	21.290	1.841			19.129
	2441	-19.935	21.300	1.365			19.605
	2480	-19.790	21.300	1.510			19.460
3-DH3	2402	-19.487	21.290	1.803	19.167		
	2441	-19.914	21.300	1.386	19.584		
	2480	-19.826	21.300	1.474	19.496		
3-DH5	2402	-19.514	21.290	1.776	19.194		
	2441	-19.976	21.300	1.324	19.646		
	2480	-19.843	21.300	1.457	19.513		

Spectrum Plots
 See ANNEX A.2

9.3 Carrier Frequency Separation

Regulations	FCC Part15C §15.247 (a) (1) RSS-247 5.1 (2)
Test Method/Guide	ANSI C63.10-2013 clause 7.8.2

Test Procedure

- The EUT and test instrument were set up as shown on section 10.1.
- Adjust the test instrument for the following setting:
 - RBW : approximately 30% of the channel spacing
 - VBW : \geq RBW
 - Span : Including emission band
 - Detector : Peak
 - Sweep Time : Auto
 - Trace mode : Max Hold
- Allow trace to fully stabilize.
- Use delta marker function to measure the separation between the two channels.

Test Result

Location	Nagano Laboratory No.2 Test Site
Test date	November 16, 2016
Temperature	19.0 [degree C]
Humidity variation	45.0 [%]
Test Engineer	Tomochika Yonemura

Operating modes	Frequency [MHz]	Measured Value [MHz]	Limit [MHz]
DH5	2402	1.000	≥ 0.635
	2441	1.000	≥ 0.635
	2480	1.000	≥ 0.636
2-DH5	2402	1.000	≥ 0.933
	2441	1.000	≥ 0.934
	2480	1.000	≥ 0.933
3-DH5	2402	1.000	≥ 0.933
	2441	1.000	≥ 0.929
	2480	1.000	≥ 0.928

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) RSS-247 5.1 (4)
Test Method/Guide	ANSI C63.10-2013 clause 7.8.3

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	:	< 30% of the channel spacing
VBW	:	≥ 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	Nagano Laboratory No.2 Test Site
Test date	November 16, 2016
Temperature	19.0 [degree C]
Humidity variation	45.0 [%]
Test Engineer	Tomochika Yonemura

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) RSS-247 5.1 (4)
Test Method/Guide	ANSI C63.10-2013 clause 7.8.4

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 : \leq channel spacing
 - VBW : \geq RBW
 - 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
 = Hopping rate / 1 time slots / 1 [sec].

- * 1 time slots : 2 for DH1 packet
4 for DH3 packet
6 for DH5 packet
- * Hopping rate : 1600 for Normal mode
800 for AFH mode

(2) Number of hops per sec in each channel
 = Number of hops per sec / number of hopping channel.
 * number of hopping channel: 79 for Normal mode
20 for AFH mode

(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

Location	Nagano Laboratory No.2 Test Site
Test date	November 16, 2016
Temperature	19.0 [degree C]
Humidity variation	45.0 [%]
Test Engineer	Tomochika Yonemura

Normal mode

Operating modes	Transmit Time per Hop [ms]	Number of hops per channel in specified period	Time of Occupancy [ms]	Limit [ms]
DH1	0.3975	320.00	127.20	400
DH3	1.6534	160.00	264.54	
DH5	2.9005	106.67	309.39	
2-DH1	0.4267	320.00	91.03	
2-DH3	1.6788	160.00	268.61	
2-DH5	2.9230	106.67	311.79	
3-DH1	0.4268	320.00	136.56	
3-DH3	1.6754	160.00	268.06	
3-DH5	2.9265	106.67	312.16	

AFH mode

Operating modes	Transmit Time per Hop [ms]	Number of hops per channel in specified period	Time of Occupancy [ms]	Limit [ms]
DH1	0.3975	160.00	63.60	400
DH3	1.6534	80.00	132.27	
DH5	2.9005	53.33	154.69	
2-DH1	0.4267	160.00	68.27	
2-DH3	1.6788	80.00	134.30	
2-DH5	2.9230	53.33	155.89	
3-DH1	0.4268	160.00	68.28	
3-DH3	1.6754	80.00	134.03	
3-DH5	2.9265	53.33	156.08	

Spectrum Chart

See ANNEX A.5

9.6 Radiated Spurious Emissions and Band Edge of Restrict Band

Regulations	FCC Part15C §15.209, §15.205 RSS-247 5.5 RSS-Gen 8.9
Test Method/Guide	ANSI C63.10-2013 clause 6.5 and 6.6

Test Procedure

- The EUT and test instrument were set up as shown on section 10.2.
- The measurement antenna was placed at a distance of 3 m from the EUT.
- 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).
- 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

- Measurement data correction;

$$\text{Emission Level [dBuV/m]} = \text{Reading [dBuV]} + \text{Factor [dB/m]}$$

$$\text{Margin [dB]} = \text{Limit [dBuV/m]} - \text{Emission Level [dBuV/m]}$$
 - * Factor = Antenna Factor + Amplifier gain + Cable loss + Attenuator (+ Filter)
(+ Distance Conversion Factor)*

* For other than Standard distance:

$$\text{Distance Conversion Factor} = 20 \log (\text{Measurement distance} / \text{Standard distance})$$

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, EUT axis: X		
Location	Nagano Laboratory No.2 Test Site	Nagano Laboratory No.1 Test Site	
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz
Test date	November 18, 2016,	November 19, 2016	November 19, 2016
Temperature	18.0	19.0	19.0 [degree C]
Humidity variation	40.0	40.0	40.0 [%]
Test Engineer	Tomochika Yonemura		

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]		Result [dBuV/m]		Limit [dBuV/m]		Margin [dB]	
			Hor	Ver	Loss, Gain	Dist. Factor	Hor	Ver	Hor	Ver	Hor	Ver
1	280.250	QuasiPeak	34.15	34.23	-3.0	0.0	31.2	31.3	40.0	8.8	8.7	
2	625.390	QuasiPeak	27.49	27.51	5.7	0.0	33.2	33.2	46.0	12.8	12.8	
3	2390.000	Peak	39.17	39.04	3.8	0.0	42.9	42.8	74.0	31.1	31.2	
4	2390.000	Average	29.13	29.19	3.8	0.0	32.9	32.9	54.0	21.1	21.1	
5	4804.000	Peak	37.67	38.53	9.6	0.0	47.2	48.1	74.0	26.8	25.9	
6	4804.000	Average	29.66	29.67	9.6	0.0	39.2	39.2	54.0	14.8	14.8	
7	7206.000	Peak	38.48	33.40	15.0	0.0	53.4	48.4	74.0	20.6	25.6	
8	7206.000	Average	28.2114	28.01	15.0	0.0	43.2	43.0	54.0	10.8	11.0	
9	9608.000	Peak	32.38	34.83	17.3	0.0	49.7	52.1	74.0	24.3	21.9	
10	9608.000	Average	26.56	26.39	17.3	0.0	43.9	43.7	54.0	10.1	10.3	
11	12010.000	Peak	34.30	34.95	21.7	0.0	56.0	56.7	74.0	18.0	17.3	
12	12010.000	Average	26.63	26.55	21.7	0.0	48.4	48.3	54.0	5.6	5.7	

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]		Result [dBuV/m]		Limit [dBuV/m]		Margin [dB]	
			Hor	Ver	Loss, Gain	Dist. Factor	Hor	Ver	Hor	Ver	Hor	Ver
1*	2402.000	Peak	82.587	80.0467	3.8	0.0	86.4	83.9	-	-	-	-
2*	2400.000	Peak	27.484	30.071	3.8	0.0	31.3	33.9	66.4	63.9	35.1	30.0

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	DH5, 2441 MHz, EUT axis: X		
Location	Nagano Laboratory No.2 Test Site	Nagano Laboratory No.1 Test Site	
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz
Test date	November 18, 2016,	November 19, 2016	November 19, 2016
Temperature	18.0	19.0	19.0 [degree C]
Humidity variation	40.0	40.0	40.0 [%]
Test Engineer	Tomochika Yonemura		

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]		Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver	Loss, Gain	Dist. Factor	Hor	Ver		Hor	Ver
1	280.380	QuasiPeak	34.41	34.57	-3.0	0.0	31.4	31.6	40.0	8.6	8.4
2	625.500	QuasiPeak	27.60	27.86	5.7	0.0	33.3	33.5	46.0	12.7	12.5
3	4882.000	Peak	37.78	38.83	9.6	0.0	47.4	48.4	74.0	26.6	25.6
4	4882.000	Average	29.81	29.93	9.6	0.0	39.4	39.5	54.0	14.6	14.5
5	7323.000	Peak	38.70	33.67	15.0	0.0	53.7	48.6	74.0	20.3	25.4
6	7323.000	Average	28.50	28.39	15.0	0.0	43.5	43.3	54.0	10.5	10.7
7	9764.000	Peak	32.48	35.16	17.3	0.0	49.8	52.5	74.0	24.2	21.5
8	9764.000	Average	26.91	26.62	17.3	0.0	44.2	43.9	54.0	9.8	10.1
9	12205.000	Peak	34.55	35.13	21.7	0.0	56.3	56.9	74.0	17.7	17.1
10	12205.000	Average	26.93	26.65	21.7	0.0	48.7	48.4	54.0	5.3	5.6

Note.

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

Operating mode	DH5, 2480 MHz, EUT axis: X		
Location	Nagano Laboratory No.2 Test Site	Nagano Laboratory No.1 Test Site	
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz
Test date	November 18, 2016,	November 19, 2016	November 19, 2016
Temperature	18.0	19.0	19.0 [degree C]
Humidity variation	40.0	40.0	40.0 [%]
Test Engineer	Tomochika Yonemura		

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]		Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver	Loss, Gain	Dist. Factor	Hor	Ver		Hor	Ver
1	280.330	QuasiPeak	34.40	34.56	-3.0	0.0	31.4	31.6	40.0	8.6	8.4
2	625.420	QuasiPeak	27.59	27.83	5.7	0.0	33.3	33.5	46.0	12.7	12.5
3	2483.500	Peak	39.29	39.36	3.6	0.0	42.9	43.0	74.0	31.1	31.0
4	2483.500	Average	29.29	29.47	3.6	0.0	32.9	33.1	54.0	21.1	20.9
5	4960.000	Peak	37.91	38.82	9.9	0.0	47.8	48.7	74.0	26.2	25.3
6	4960.000	Average	29.93	30.02	9.9	0.0	39.8	39.9	54.0	14.2	14.1
7	7440.000	Peak	38.59	33.77	15.7	0.0	54.3	49.5	74.0	19.7	24.5
8	7440.000	Average	28.52	28.22	15.7	0.0	44.2	43.9	54.0	9.8	10.1
9	9920.000	Peak	32.67	35.04	18.4	0.0	51.1	53.5	74.0	22.9	20.5
10	9920.000	Average	26.85	26.48	18.4	0.0	45.3	44.9	54.0	8.7	9.1
11	12400.000	Peak	34.99	35.17	21.6	0.0	56.6	56.8	74.0	17.4	17.2
12	12400.000	Average	26.95	26.79	21.6	0.0	48.5	48.4	54.0	5.5	5.6

Note.

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

Operating mode	2DH5, 2402 MHz, EUT axis: X		
Location	Nagano Laboratory No.2 Test Site	Nagano Laboratory No.1 Test Site	
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz
Test date	November 18, 2016,	November 19, 2016	November 19, 2016
Temperature	18.0	19.0	19.0 [degree C]
Humidity variation	40.0	40.0	40.0 [%]
Test Engineer	Tomochika Yonemura		

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]		Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver	Loss, Gain	Dist. Factor	Hor	Ver		Hor	Ver
1	280.280	QuasiPeak	34.16	34.24	-3.0	0.0	31.2	31.3	40.0	8.8	8.7
2	625.450	QuasiPeak	27.50	27.52	5.7	0.0	33.2	33.2	46.0	12.8	12.8
3	2390.000	Peak	39.17	39.03	3.8	0.0	42.9	42.8	74.0	31.1	31.2
4	2390.000	Average	29.12	29.17	3.8	0.0	32.9	32.9	54.0	21.1	21.1
5	4804.000	Peak	37.64	38.50	9.6	0.0	47.2	48.1	74.0	26.8	25.9
6	4804.000	Average	29.66	29.67	9.6	0.0	39.2	39.2	54.0	14.8	14.8
7	7206.000	Peak	38.47	33.38	15.0	0.0	53.4	48.3	74.0	20.6	25.7
8	7206.000	Average	28.2672	28.05	15.0	0.0	43.2	43.0	54.0	10.8	11.0
9	9608.000	Peak	32.39	34.84	17.3	0.0	49.7	52.2	74.0	24.3	21.8
10	9608.000	Average	26.57	26.39	17.3	0.0	43.9	43.7	54.0	10.1	10.3
11	12010.000	Peak	34.25	34.94	21.7	0.0	56.0	56.7	74.0	18.0	17.3
12	12010.000	Average	26.61	26.53	21.7	0.0	48.3	48.3	54.0	5.7	5.7

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]		Result [dBuV/m]		Limit [dBuV/m]		Margin [dB]	
			Hor	Ver	Loss, Gain	Dist. Factor	Hor	Ver	Hor	Ver	Hor	Ver
1*	2402.000	Peak	82.587	80.0467	3.8	0.0	86.4	83.9	-	-	-	-
2*	2400.000	Peak	27.484	30.071	3.8	0.0	31.3	33.9	66.4	63.9	35.1	30.0

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	2DH5, 2441 MHz, EUT axis: X		
Location	Nagano Laboratory No.2 Test Site	Nagano Laboratory No.1 Test Site	
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz
Test date	November 18, 2016,	November 19, 2016	November 19, 2016
Temperature	18.0	19.0	19.0 [degree C]
Humidity variation	40.0	40.0	40.0 [%]
Test Engineer	Tomochika Yonemura		

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]		Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver	Loss, Gain	Dist. Factor	Hor	Ver		Hor	Ver
1	280.470	QuasiPeak	34.42	34.58	-3.0	0.0	31.4	31.6	40.0	8.6	8.4
2	625.390	QuasiPeak	27.60	27.84	5.7	0.0	33.3	33.5	46.0	12.7	12.5
3	4882.000	Peak	37.85	38.76	9.6	0.0	47.4	48.3	74.0	26.6	25.7
4	4882.000	Average	29.92	30.01	9.6	0.0	39.5	39.6	54.0	14.5	14.4
5	7323.000	Peak	38.57	33.72	15.0	0.0	53.5	48.7	74.0	20.5	25.3
6	7323.000	Average	28.61	28.29	15.0	0.0	43.6	43.2	54.0	10.4	10.8
7	9764.000	Peak	32.65	35.03	17.3	0.0	50.0	52.3	74.0	24.0	21.7
8	9764.000	Average	26.91	26.50	17.3	0.0	44.2	43.8	54.0	9.8	10.2
9	12205.000	Peak	34.92	35.16	21.7	0.0	56.7	56.9	74.0	17.3	17.1
10	12205.000	Average	26.91	26.76	21.7	0.0	48.6	48.5	54.0	5.4	5.5

Note.

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

Operating mode	2DH5, 2480 MHz, EUT axis: X		
Location	Nagano Laboratory No.2 Test Site	Nagano Laboratory No.1 Test Site	
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz
Test date	November 18, 2016,	November 19, 2016	November 19, 2016
Temperature	18.0	19.0	19.0 [degree C]
Humidity variation	40.0	40.0	40.0 [%]
Test Engineer	Tomochika Yonemura		

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]		Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver	Loss, Gain	Dist. Factor	Hor	Ver		Hor	Ver
1	280.400	QuasiPeak	34.42	34.58	-3.0	0.0	31.4	31.6	40.0	8.6	8.4
2	625.470	QuasiPeak	27.60	27.85	5.7	0.0	33.3	33.5	46.0	12.7	12.5
3	2483.500	Peak	39.29	39.33	3.6	0.0	42.9	43.0	74.0	31.1	31.0
4	2483.500	Average	29.28	29.45	3.6	0.0	32.9	33.1	54.0	21.1	20.9
5	4960.000	Peak	37.86	38.77	9.9	0.0	47.7	48.6	74.0	26.3	25.4
6	4960.000	Average	29.92	30.01	9.9	0.0	39.8	39.9	54.0	14.2	14.1
7	7440.000	Peak	38.57	33.70	15.7	0.0	54.3	49.4	74.0	19.7	24.6
8	7440.000	Average	28.59	28.27	15.7	0.0	44.3	44.0	54.0	9.7	10.0
9	9920.000	Peak	32.68	35.05	18.4	0.0	51.1	53.5	74.0	22.9	20.5
10	9920.000	Average	26.88	26.49	18.4	0.0	45.3	44.9	54.0	8.7	9.1
11	12400.000	Peak	35.03	35.19	21.6	0.0	56.6	56.8	74.0	17.4	17.2
12	12400.000	Average	26.90	26.76	21.6	0.0	48.5	48.4	54.0	5.5	5.6

Note.

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

Operating mode	3DH5, 2402 MHz, EUT axis: X		
Location	Nagano Laboratory No.2 Test Site	Nagano Laboratory No.1 Test Site	
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz
Test date	November 18, 2016,	November 19, 2016	November 19, 2016
Temperature	18.0	19.0	19.0 [degree C]
Humidity variation	40.0	40.0	40.0 [%]
Test Engineer	Tomochika Yonemura		

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]		Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver	Loss, Gain	Dist. Factor	Hor	Ver		Hor	Ver
1	280.410	QuasiPeak	34.18	34.27	-3.0	0.0	31.2	31.3	40.0	8.8	8.7
2	625.460	QuasiPeak	27.51	27.55	5.7	0.0	33.2	33.2	46.0	12.8	12.8
3	2390.000	Peak	39.18	39.06	3.8	0.0	42.9	42.8	74.0	31.1	31.2
4	2390.000	Average	29.11	29.17	3.8	0.0	32.9	32.9	54.0	21.1	21.1
5	4804.000	Peak	37.64	38.49	9.6	0.0	47.2	48.1	74.0	26.8	25.9
6	4804.000	Average	29.64	29.64	9.6	0.0	39.2	39.2	54.0	14.8	14.8
7	7206.000	Peak	38.46	33.35	15.0	0.0	53.4	48.3	74.0	20.6	25.7
8	7206.000	Average	28.261	28.04	15.0	0.0	43.2	43.0	54.0	10.8	11.0
9	9608.000	Peak	32.38	34.83	17.3	0.0	49.7	52.1	74.0	24.3	21.9
10	9608.000	Average	26.53	26.38	17.3	0.0	43.8	43.7	54.0	10.2	10.3
11	12010.000	Peak	34.30	34.95	21.7	0.0	56.0	56.7	74.0	18.0	17.3
12	12010.000	Average	26.65	26.56	21.7	0.0	48.4	48.3	54.0	5.6	5.7

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]		Result [dBuV/m]		Limit [dBuV/m]		Margin [dB]	
			Hor	Ver	Loss, Gain	Dist. Factor	Hor	Ver	Hor	Ver	Hor	Ver
1*	2402.000	Peak	82.585	80.0401	3.8	0.0	86.4	83.9	-	-	-	-
2*	2400.000	Peak	27.4437	30.0437	3.8	0.0	31.3	33.9	66.4	63.9	35.1	30.0

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	3DH5, 2441 MHz, EUT axis: X		
Location	Nagano Laboratory No.2 Test Site	Nagano Laboratory No.1 Test Site	
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz
Test date	November 18, 2016,	November 19, 2016	November 19, 2016
Temperature	18.0	19.0	19.0 [degree C]
Humidity variation	40.0	40.0	40.0 [%]
Test Engineer	Tomochika Yonemura		

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]		Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver	Loss, Gain	Dist. Factor	Hor	Ver		Hor	Ver
1	280.430	QuasiPeak	34.43	34.60	-3.0	0.0	31.5	31.6	40.0	8.5	8.4
2	625.500	QuasiPeak	27.61	27.88	5.7	0.0	33.3	33.6	46.0	12.7	12.4
3	4882.000	Peak	37.86	38.76	9.6	0.0	47.4	48.3	74.0	26.6	25.7
4	4882.000	Average	29.89	29.97	9.6	0.0	39.5	39.6	54.0	14.5	14.4
5	7323.000	Peak	38.55	33.66	15.0	0.0	53.5	48.6	74.0	20.5	25.4
6	7323.000	Average	28.59	28.26	15.0	0.0	43.5	43.2	54.0	10.5	10.8
7	9764.000	Peak	32.65	35.03	17.3	0.0	50.0	52.3	74.0	24.0	21.7
8	9764.000	Average	26.86	26.49	17.3	0.0	44.2	43.8	54.0	9.8	10.2
9	12205.000	Peak	35.08	35.20	21.7	0.0	56.8	56.9	74.0	17.2	17.1
10	12205.000	Average	26.97	26.81	21.7	0.0	48.7	48.5	54.0	5.3	5.5

Note.

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

Operating mode	3DH5, 2480 MHz, EUT axis: X		
Location	Nagano Laboratory No.2 Test Site	Nagano Laboratory No.1 Test Site	
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz
Test date	November 18, 2016,	November 19, 2016	November 19, 2016
Temperature	18.0	19.0	19.0 [degree C]
Humidity variation	40.0	40.0	40.0 [%]
Test Engineer	Tomochika Yonemura		

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]		Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver	Loss, Gain	Dist. Factor	Hor	Ver		Hor	Ver
1	280.360	QuasiPeak	34.45	34.63	-3.0	0.0	31.5	31.7	40.0	8.5	8.3
2	625.520	QuasiPeak	27.62	27.90	5.7	0.0	33.3	33.6	46.0	12.7	12.4
3	2483.500	Peak	40.42	42.25	3.6	0.0	44.0	45.9	74.0	30.0	28.1
4	2483.500	Average	29.28	29.48	3.6	0.0	32.9	33.1	54.0	21.1	20.9
5	4960.000	Peak	37.87	38.78	9.9	0.0	47.7	48.6	74.0	26.3	25.4
6	4960.000	Average	29.93	30.01	9.9	0.0	39.8	39.9	54.0	14.2	14.1
7	7440.000	Peak	38.59	33.78	15.7	0.0	54.3	49.5	74.0	19.7	24.5
8	7440.000	Average	28.64	28.29	15.7	0.0	44.3	44.0	54.0	9.7	10.0
9	9920.000	Peak	32.61	35.00	18.4	0.0	51.0	53.4	74.0	23.0	20.6
10	9920.000	Average	26.80	26.47	18.4	0.0	45.2	44.9	54.0	8.8	9.1
11	12400.000	Peak	34.95	35.16	21.6	0.0	56.5	56.8	74.0	17.5	17.2
12	12400.000	Average	26.93	26.78	21.6	0.0	48.5	48.4	54.0	5.5	5.6

Note.

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) RSS-247 5.5
Test Method/Guide	ANSI C63.10-2013 clause 6.10.4

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
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] + Factor [dB] - 20 [dB]
Margin [dB] = Limit [dBm] – (Band edge Level [dBm] + Factor [dB])

Test Result

Location	Nagano Laboratory No.2 Test Site
Test date	November 16, 2016
Temperature	19.0 [degree C]
Humidity variation	45.0 [%RH]
Test Engineer	Tomochika Yonemura

Operating mode				
DH5, Hopping OFF				
Freq. [MHz]	Peak level within in-band emission [dBm]	Limit [dBm]	Band edge level [dBm]	Margin [dB]
2400	-0.536	-20.536	-61.465	40.929
2483.5	-0.563	-20.563	-62.456	41.893

Operating mode				
DH5, Hopping ON				
Freq. [MHz]	Peak level within in-band emission [dBm]	Limit [dBm]	Band edge level [dBm]	Margin [dB]
2400	-0.675	-20.675	-61.726	41.051
2483.5	-0.854	-20.854	-63.462	42.608

Operating mode				
2-DH5, Hopping OFF				
Freq. [MHz]	Peak level within in-band emission [dBm]	Limit [dBm]	Band edge level [dBm]	Margin [dB]
2400	-1.744	-21.744	-55.801	34.057
2483.5	-2.953	-22.953	-61.362	38.409

Operating mode				
2-DH5, Hopping ON				
Freq. [MHz]	Peak level within in-band emission [dBm]	Limit [dBm]	Band edge level [dBm]	Margin [dB]
2400	-1.792	-21.792	-57.622	35.830
2483.5	-2.192	-22.192	-62.819	40.627

Operating mode		3-DH5, Hopping OFF		
Freq. [MHz]	Peak level within in-band emission [dBm]	Limit [dBm]	Band edge level [dBm]	Margin [dB]
2400	-1.969	-21.969	-55.280	33.311
2483.5	-2.567	-22.567	-61.426	38.859

Operating mode		3-DH5, Hopping ON		
Freq. [MHz]	Peak level within in-band emission [dBm]	Limit [dBm]	Band edge level [dBm]	Margin [dB]
2400	-3.073	-23.073	-61.965	38.892
2483.5	-4.729	-24.729	-63.967	39.238

Spectrum Plots
 See ANNEX A.6

9.8 Spurious RF Conducted Emissions

Regulations	FCC Part15C §15.247 (d) RSS-247 5.5
Test Method/Guide	ANSI C63.10-2013 clause 7.8.8

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	Nagano Laboratory No.2 Test Site
Test date	November 16, 2016
Temperature	19.0 [degree C]
Humidity variation	45.0 [%]
Test Engineer	Tomochika Yonemura

9.9 AC Conducted Emissions

Regulations	FCC Part15C §15.207 RSS-Gen 7.2.2
Test Method/Guide	ANSI C63.10-2013 clause 6.2

Test Procedure

- The EUT and test instrument were set up as shown on section 10.3.
- 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.

- 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		

- Measurement data correction;

$$\text{Emission Level [dBuV]} = \text{Reading [dBuV]} + \text{Factor [dB]}$$

$$\text{Margin [dB]} = \text{Limit [dBuV]} - \text{Emission Level [dBuV]}$$

$$* \text{Factor} = \text{LISN Factor} + \text{Cable loss} + \text{Attenuator}$$

Test Result

Test date	November 22, 2016
Location	Matsuda Laboratory No.1 Test Site
Temperature	22.0 [degree C]
Humidity variation	55.0 [%]
Test Engineer	Tomochika Yonemura

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	0.24	QuasiPeak	27.79	30.40	10.40	10.40	38.19	40.80	62.40	24.21	21.60
2	0.26	Average	22.32	25.48	10.40	10.40	32.72	35.88	52.40	19.68	16.52
3	0.41	QuasiPeak	19.38	23.99	10.50	10.50	29.88	34.49	58.90	29.02	24.41
4	0.37	Average	14.62	18.07	10.50	10.50	25.12	28.57	48.90	23.78	20.33
5	0.64	QuasiPeak	8.25	10.58	10.50	10.50	18.75	21.08	56.00	37.25	34.92
6	0.67	Average	6.94	7.21	10.50	10.50	17.44	17.71	46.00	28.56	28.29
7	14.55	QuasiPeak	23.37	23.51	11.30	11.30	34.67	34.81	60.00	25.33	25.19
8	15.42	Average	9.22	9.43	11.30	11.30	20.52	20.73	50.00	29.48	29.27
9	17.48	QuasiPeak	21.25	21.73	11.30	11.30	32.55	33.03	60.00	27.45	26.97
10	15.60	Average	9.51	9.60	11.30	11.30	20.81	20.90	50.00	29.19	29.10
11	17.18	QuasiPeak	25.10	24.77	11.30	11.30	36.40	36.07	60.00	23.60	23.93
12	18.17	Average	10.58	10.67	11.30	11.30	21.88	21.97	50.00	28.12	28.03

Operating mode			2DH5, 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	0.24	QuasiPeak	27.77	30.38	10.40	10.40	38.17	40.78	62.40	24.23	21.62
2	0.25	Average	22.21	25.37	10.40	10.40	32.61	35.77	52.40	19.79	16.63
3	0.37	QuasiPeak	19.31	23.92	10.50	10.50	29.81	34.42	58.90	29.09	24.48
4	0.36	Average	14.62	18.07	10.50	10.50	25.12	28.57	48.90	23.78	20.33
5	0.61	QuasiPeak	8.23	10.56	10.50	10.50	18.73	21.06	56.00	37.27	34.94
6	0.61	Average	6.87	7.14	10.50	10.50	17.37	17.64	46.00	28.63	28.36
7	14.41	QuasiPeak	23.37	23.51	11.30	11.30	34.67	34.81	60.00	25.33	25.19
8	14.83	Average	9.21	9.42	11.30	11.30	20.51	20.72	50.00	29.49	29.28
9	15.70	QuasiPeak	21.24	21.72	11.30	11.30	32.54	33.02	60.00	27.46	26.98
10	15.44	Average	9.51	9.60	11.30	11.30	20.81	20.90	50.00	29.19	29.10
11	16.52	QuasiPeak	25.09	24.76	11.30	11.30	36.39	36.06	60.00	23.61	23.94
12	16.32	Average	10.57	10.66	11.30	11.30	21.87	21.96	50.00	28.13	28.04

Operating mode			3DH5, 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	0.23	QuasiPeak	27.73	30.34	10.40	10.40	38.13	40.74	62.40	24.27	21.66
2	0.24	Average	22.12	25.28	10.40	10.40	32.52	35.68	52.40	19.88	16.72
3	0.39	QuasiPeak	19.34	23.95	10.50	10.50	29.84	34.45	58.90	29.06	24.45
4	0.36	Average	14.60	18.05	10.50	10.50	25.10	28.55	48.90	23.80	20.35
5	0.60	QuasiPeak	8.22	10.55	10.50	10.50	18.72	21.05	56.00	37.28	34.95
6	0.64	Average	6.90	7.17	10.50	10.50	17.40	17.67	46.00	28.60	28.33
7	14.12	QuasiPeak	23.35	23.49	11.30	11.30	34.65	34.79	60.00	25.35	25.21
8	14.39	Average	9.21	9.42	11.30	11.30	20.51	20.72	50.00	29.49	29.28
9	16.51	QuasiPeak	21.24	21.72	11.30	11.30	32.54	33.02	60.00	27.46	26.98
10	15.14	Average	9.51	9.60	11.30	11.30	20.81	20.90	50.00	29.19	29.10
11	16.03	QuasiPeak	25.09	24.76	11.30	11.30	36.39	36.06	60.00	23.61	23.94
12	17.16	Average	10.57	10.66	11.30	11.30	21.87	21.96	50.00	28.13	28.04

9.10 Receiver Spurious Emissions

Regulations	RSS-Gen 7.1
Test Method/Guide	ANSI C63.10-2013 clause 6.5 and 6.6

Test Procedure

See section 9.6

Test Result

Operating mode	Receiving mode, EUT Axis: X		
Location	Nagano Laboratory No.2 Test Site	Nagano Laboratory No.2 Test Site	
Frequency	30 - 1000 MHz,	1 - 18 GHz,	18 - 25 GHz
Test date	November 18, 2016,	November 17, 2016	November 17, 2016
Temperature	18.0	19.0	19.0 [degree C]
Humidity variation	40.0	40.0	40.0 [%]
Test Engineer	Tomochika Yonemura		

No.	Freq. [MHz]	Detector	Reading [dBuV]		Factor [dB]		Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]	
			Hor	Ver	Loss, Gain	Dist. Factor	Hor	Ver		Hor	Ver
1	280.511	QuasiPeak	33.87	34.06	-3.0	0.0	30.9	31.1	40.0	9.1	8.9
2	625.500	QuasiPeak	35.51	35.65	5.7	0.0	41.2	41.3	46.0	4.8	4.7
3	4882.000	Peak	41.48	42.91	9.6	0.0	51.1	52.5	74.0	22.9	21.5
4	4882.000	Average	33.21	33.34	9.6	0.0	42.8	42.9	54.0	11.2	11.1
5	7323.000	Peak	37.64	38.11	15.0	0.0	52.6	53.1	74.0	21.4	20.9
6	7323.000	Average	31.72	30.80	15.0	0.0	46.7	45.8	54.0	7.3	8.2
7	9764.000	Peak	36.25	34.69	17.3	0.0	53.6	52.0	74.0	20.4	22.0
8	9764.000	Average	24.98	26.11	17.3	0.0	42.3	43.4	54.0	11.7	10.6
9	12205.000	Peak	34.39	33.68	21.7	0.0	56.1	55.4	74.0	17.9	18.6
10	12205.000	Average	25.53	25.50	21.7	0.0	47.3	47.2	54.0	6.7	6.8
11	280.511	QuasiPeak	33.87	34.06	-3.0	0.0	30.9	31.1	40.0	9.1	8.9
12	625.500	QuasiPeak	35.51	35.65	5.7	0.0	41.2	41.3	46.0	4.8	4.7

Note.

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

SECTION 10. LIST AND DIAGRAM OF MEASURING INSTRUMENTS

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

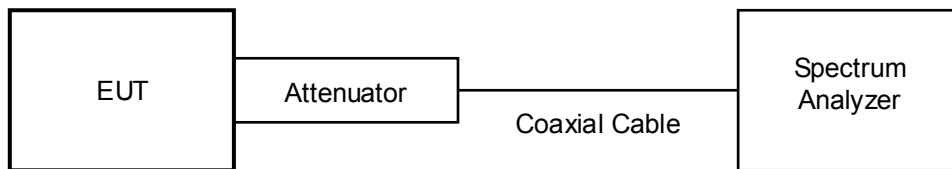
All measurements equipment used for the measurement is calibrated based on standard.
 Each measurement result is traceable to national or international standards.
 Antenna used in the measurement is calibrated according to ANSI C63.5.

10.1 RF Conducted

Measurement Instruments

Instrument	Model No.	Serial No.	Manufacturer	Cal. Interval	Effective period
Spectrum Analyzer	N9030A	MY52350520	Agilent	1 Y	Feb.28, 2017
20 dB Attenuator	8493C	78585	Agilent	1 Y	Jul.31, 2017
Coaxial Cable	SUCOFLEX 104PE	94703/4PE	SUHNER	1 Y	Jul.31, 2017

Measurement Equipment Configuration



10.2 Radiated Emission

Measurement Instruments

Instrument	Model No.	Serial No.	Manufacturer	Cal. Interval	Effective period
30 – 1000 MHz					
Tri-log Antenna	VULB9168WP	331	Schwarzbeck	1 Y	Jan. 2017
Amplifier	8447F	2805A02505	Hewlett Packard	1 Y	Feb. 2017
Attenuator	6806.17.AC	-	HUBER+SUHNER	1 Y	Apr. 2017
Coaxial Cable(R1)	EM0NSA3	MTD02325	Fujikura	1 Y	Jan. 2017
Coaxial Cable(R2)	SUCOFLEX 106	12718/6	HUBER+SUHNER	1 Y	Aug. 2017
Spectrum Analyzer	N9030A	MY52350520	Agilent	1 Y	Feb.28, 2017
Test Receiver	ESS	842886/010	Rohde&Schwarz	1 Y	Jan. 2017
Site Attenuation (Nagano No.2 Test Site)	-	-	-	1 Y	May. 2017
Above 1000 MHz					
Double Ridged Antenna	3115	2568	EMCO	1 Y	Dec. 2016
Horn Antenna with Preampfier	MLA-18265-B03-30	1694440	TSJ	1 Y	Sep. 2017
Amplifier	TPA0118-30	950186	TOYO	1 Y	Apr. 2017
Attenuator	6806.17.B	-	HUBER+SUHNER	1 Y	Apr. 2017
Notch Filter	BRM50702	111	Micro-Tronics	1 Y	Jul. 2017
Coaxial Cable(R3)	SUCOFLEX 104PE(6m)	64611/4PE	HUBER+SUHNER	1 Y	Apr. 2017
Coaxial Cable(R4)	SUCOFLEX 104PE(1m)	64587/4PE	HUBER+SUHNER	1 Y	Apr. 2017
Spectrum Analyzer	N9030A	MY52350520	Agilent	1 Y	Feb.28, 2017
Coaxial Cable (R5)	5B-048-98-98-6000	120315	Candox	1 Y	Sep. 2017
SVSWR (Nagano No.2 Test Site)	-	-	-	1 Y	Sep. 2017
Common					
Testing Software	emiT (Version 3,0,0,0)	-	-	--	-

Measurement Instruments Configurations

Diagram of the measurement instruments (30-1000 MHz)

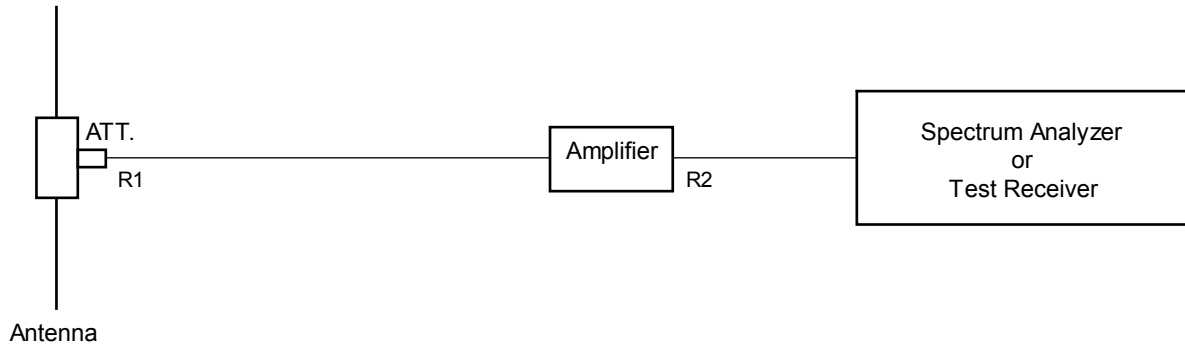


Diagram of the measurement instruments (2000 - 3000 MHz)

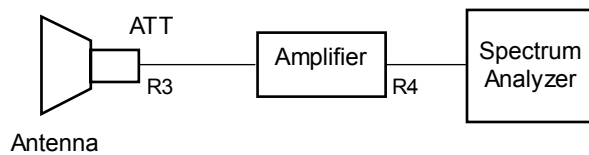


Diagram of the measurement instruments (1000- 2000 and 3000 – 18000 MHz)

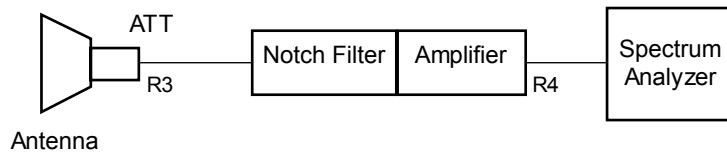
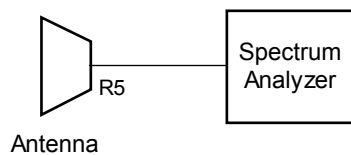
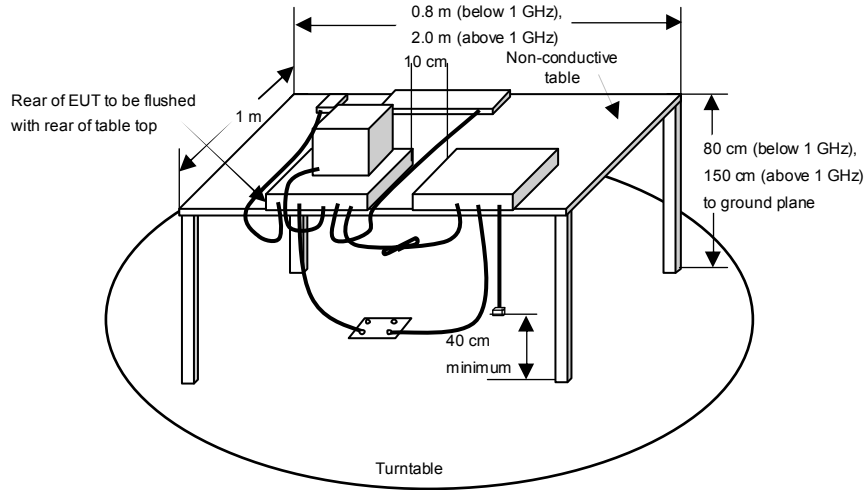


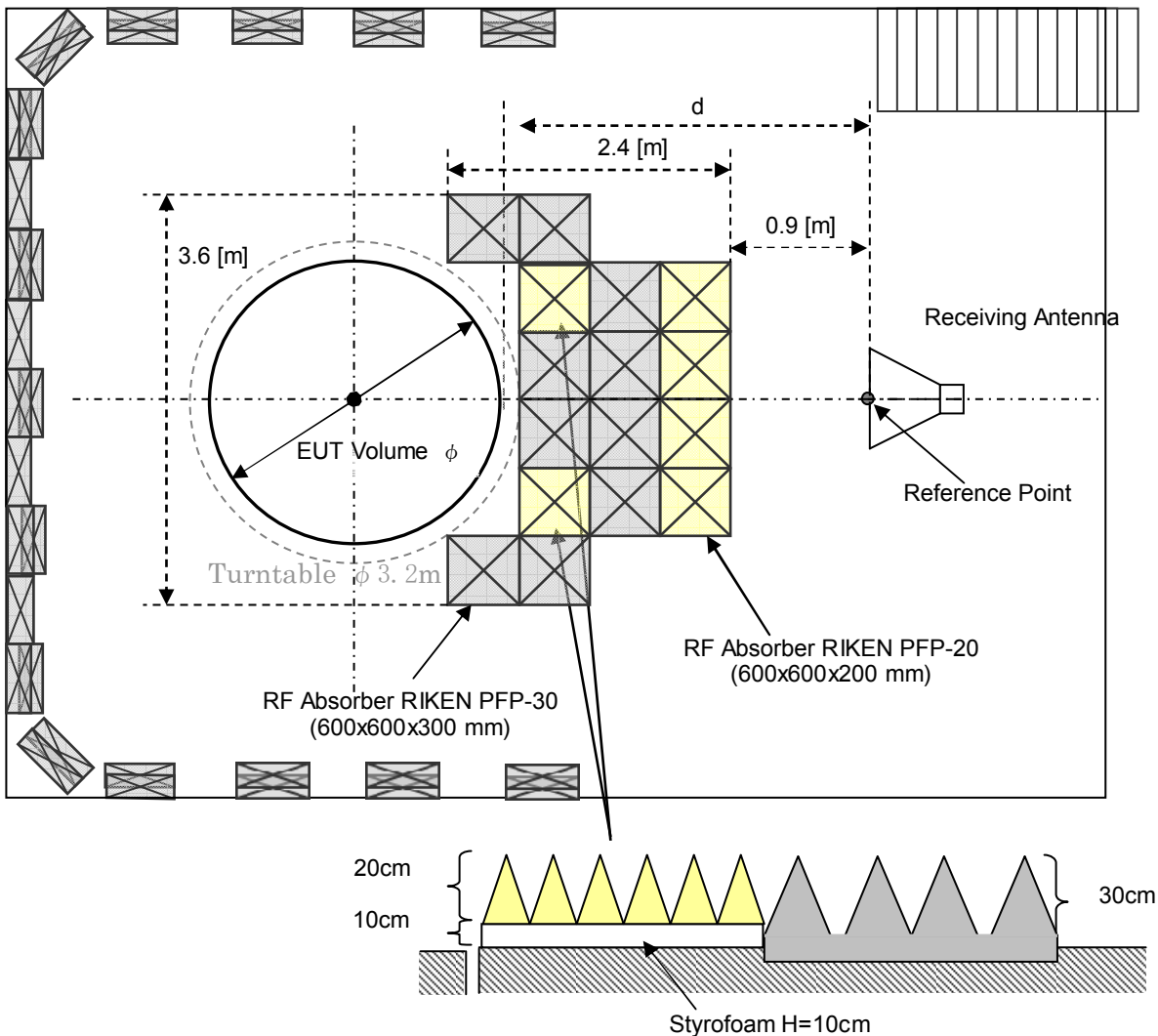
Diagram of the measurement instruments (18000 - 25000 MHz)



EUT set-up as per standard



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

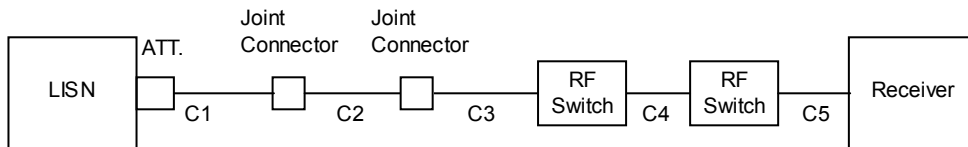


10.3 AC Line Conducted Emission

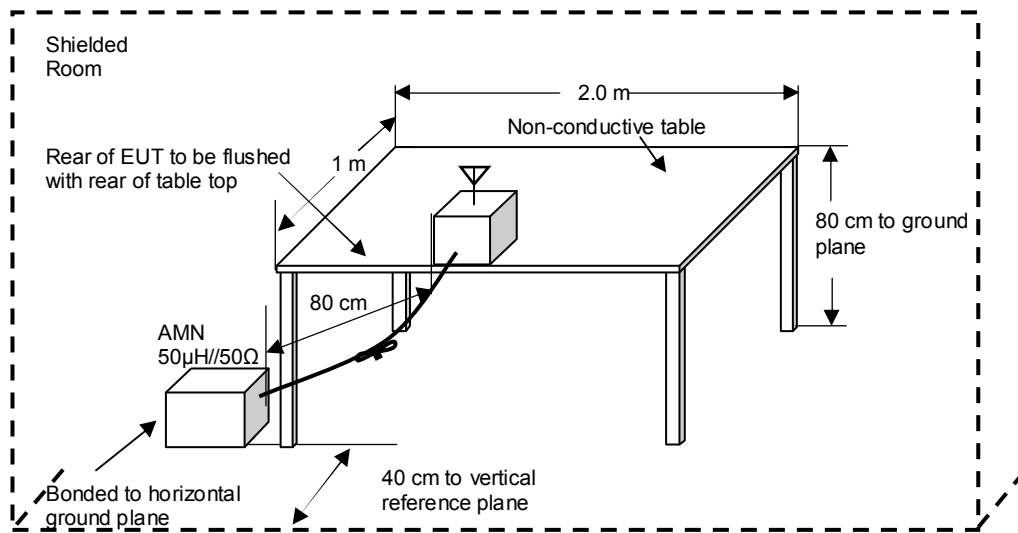
Measurement Instrument

Instrument	Model No.	Serial No.	Manufacturer	Cal. Interval	Effective period
LISN (EUT)	ESH2-Z5	879675/014	ROHDE & SCHWARZ	1 Y	Apr. 2017
10 dB Attenuator	CFA-01	KSR00251	TAMAGAWA	1 Y	Apr. 2017
Coaxial Cable(C1)	3D-2W	-	FUJIKURA	1 Y	Apr. 2017
Coaxial Cable(C2)	RG-5A/U	-	FUJIKURA	1 Y	Apr. 2017
Coaxial Cable(C3)	RG214HF	-	FUJIKURA	1 Y	Apr. 2017
Coaxial Cable(C4)	RG214HF	-	FUJIKURA	1 Y	Apr. 2017
Coaxial Cable(C5)	RG214HF	-	FUJIKURA	1 Y	Apr. 2017
RF Switch	MP59B	M28542	Anritsu	1 Y	Feb. 2017
RF Switch	ACX-150-1	-	Intertek	1 Y	Feb. 2017
Test Receiver	ESS (Firmware Version 1.21)	842123/010	Rohde & Schwarz	1 Y	Feb. 2017
Testing Software	emiT (Version 3,0,0,0)	-	-	-	-

Measurement Instruments Configurations



Test setup as per standard



* Reference Ground plane : greater than 2 x 2m