TEST REPORT

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

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Equipment Type	HANDHELD CONTROL HEAD
Trademark	KENWOOD
Model(s)	KCH-21R-M, KCH-21R-M2, KCH-21RV-M
Serial No.	001 (for Radiated testing) 005 (for Antenna Port Conductive testing)
FCC ID	K44467100
IC CN and UPN	282F-467100
Test Result	Complied
Report Number	1611056JMA-001
Original Issue Date	December 5, 2016

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ilac-MRA VLAC Lab Accreditation
VLAC-008-3

Responsible Party of Test Item (Product)

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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	
	FCC	IC
Standard Applied	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	HANDHELD CONTROL HEAD	KCH-21R-M	001 (for Radiated testing) 005 (for Antenna Port Conductive testing)	JVC KENWOOD Corporation
Rated Power : DC-IN: DC 13.6 V ± 15%, MAX 13 A				
Supplied Power : DC 13.6 V				
Condition of Equipment	Prototype			
Type	Handheld 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
Earphone	3.5Φ	5 pin	-
Interface	-	14 pin	For Radio
Modular Data Interface	Modular	8 pin	For Maintenance

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, π/4DQPSK, 8DPSK)
Antenna Type and Gain	Integrated Printed Antenna, -2.3 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.

3.5 Similar model

	KCH-21RV-M	KCH-21R-M2
Difference between KCH-21R-M(Tested)	Sales Channel	Cable length and connector

The same PCB is installed in all models.

SECTION 4. SUPPORT EQUIPMENT

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

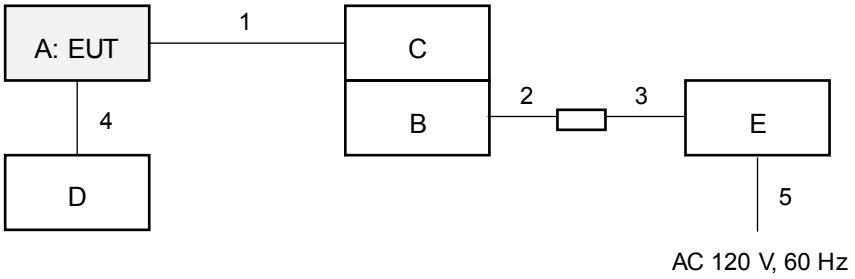
Symbol	Item	Model No.	Serial No.	Manufacturer	Remarks	FCC ID
B	UHF DIGITAL TRANSCEIVER	NX-5800-K	B5200096	JVC KENWOOD		K44471200
C	PANEL SEPARATE KIT	KRK-15B	14	JVC KENWOOD		N/A
D	Earphone	KEP-1	1	JVC KENWOOD		N/A
E	DC Power Supply	PAN60-3A	ND001658	KIKUSUI		N/A
Supplied Power:						
B	DC 13.6 V					
E	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	REMOTE CONTROL CABLE	5.18	No	No	
2	DC CABLE	0.25	No	No	
3	DC CABLE	3.4	No	No	
4	EARPHONE CABLE	0.30	No	No	
5	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_{cispr}
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

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 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

3. Allow trace to fully stabilize.
4. 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	0.938	0.856
	2441	0.940	0.863
	2480	0.938	0.864
2-DH5	2402	1.400	1.220
	2441	1.399	1.222
	2480	1.409	1.231
3-DH5	2402	1.393	1.236
	2441	1.394	1.237
	2480	1.392	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;

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

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

Margin [dB] = Limit [dBm] - 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	-20.613	21.290	0.677	125	20.97	20.293
	2441	-19.639	21.300	1.661			19.309
	2480	-19.326	21.300	1.974			18.996
DH3	2402	-20.622	21.290	0.668			20.302
	2441	-19.658	21.300	1.642			19.328
	2480	-19.350	21.300	1.950			19.020
DH5	2402	-20.625	21.290	0.665			20.305
	2441	-19.657	21.300	1.643			19.327
	2480	-19.345	21.300	1.955			19.015
2-DH1	2402	-20.217	21.290	1.073			19.897
	2441	-19.226	21.300	2.074			18.896
	2480	-18.949	21.300	2.351			18.619
2-DH3	2402	-20.232	21.290	1.058			19.912
	2441	-19.264	21.300	2.036			18.934
	2480	-18.996	21.300	2.304			18.666
2-DH5	2402	-20.235	21.290	1.055			19.915
	2441	-19.273	21.300	2.027			18.943
	2480	-18.992	21.300	2.308			18.662
3-DH1	2402	-19.564	21.290	1.726			19.244
	2441	-18.589	21.300	2.711			18.259
	2480	-18.351	21.300	2.949			18.021
3-DH3	2402	-19.556	21.290	1.734			19.236
	2441	-18.630	21.300	2.670			18.300
	2480	-18.368	21.300	2.932			18.038
3-DH5	2402	-19.576	21.290	1.714			19.256
	2441	-18.639	21.300	2.661			18.309
	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

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	:	approximately 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. 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	≥ 0.626
	2441	1.000	≥ 0.627
	2480	1.000	≥ 0.625
2-DH5	2402	1.000	≥ 0.933
	2441	1.000	≥ 0.933
	2480	1.000	≥ 0.939
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	:	≤ channel spacing
VBW	:	≥ 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	0.3983	320.00	127.46	400
DH3	1.6545	160.00	264.72	
DH5	2.9010	106.67	309.44	
2-DH1	0.4277	320.00	91.24	
2-DH3	1.6762	160.00	268.19	
2-DH5	2.9270	106.67	312.21	
3-DH1	0.4278	320.00	136.88	
3-DH3	1.6752	160.00	268.03	
3-DH5	2.9260	106.67	312.11	

AFH mode

Operating modes	Transmit Time per Hop [ms]	Number of hops per channel in specified period	Time of Occupancy [ms]	Limit [ms]
DH1	0.3983	160.00	63.73	400
DH3	1.6545	80.00	132.36	
DH5	2.9010	53.33	154.72	
2-DH1	0.4277	160.00	68.43	
2-DH3	1.6762	80.00	134.10	
2-DH5	2.9270	53.33	156.11	
3-DH1	0.4278	160.00	68.44	
3-DH3	1.6752	80.00	134.02	
3-DH5	2.9260	53.33	156.05	

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

1. The EUT and test instrument were set up as shown on section 10.2.
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) (+ Distance Conversion Factor)*

   * For other than Standard distance:
   Distance Conversion Factor = 20 log (Measurement distance / 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
1	284.225	QuasiPeak	35.62	35.83	-3.0	0.0	32.6	32.9	40.0	7.4	7.1
2	630.481	QuasiPeak	30.11	29.97	5.7	0.0	35.8	35.7	46.0	10.2	10.3
3	2390.000	Peak	39.26	39.34	3.8	0.0	43.0	43.1	74.0	31.0	30.9
4	2390.000	Average	29.85	29.54	3.8	0.0	33.6	33.3	54.0	20.4	20.7
5	4804.000	Peak	37.93	38.67	9.6	0.0	47.5	48.3	74.0	26.5	25.7
6	4804.000	Average	29.91	29.91	9.6	0.0	39.5	39.5	54.0	14.5	14.5
7	7206.000	Peak	39.03	33.74	15.0	0.0	54.0	48.7	74.0	20.0	25.3
8	7206.000	Average	28.22	28.02	15.0	0.0	43.2	43.0	54.0	10.8	11.0
9	9608.000	Peak	32.36	34.76	17.3	0.0	49.7	52.1	74.0	24.3	21.9
10	9608.000	Average	26.64	26.48	17.3	0.0	44.0	43.8	54.0	10.0	10.2
11	12010.000	Peak	33.79	34.90	21.7	0.0	55.5	56.6	74.0	18.5	17.4
12	12010.000	Average	26.65	26.43	21.7	0.0	48.4	48.2	54.0	5.6	5.8

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	82.998	80.44	3.8	0.0	86.8	84.3	-	-	-	-
2*	2400.000	Peak	27.833	30.72	3.8	0.0	31.7	34.5	66.8	64.3	35.2	29.7

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	280.470	QuasiPeak	34.92	35.63	-3.0	0.0	31.9	32.7	40.0	8.1	7.3
2	625.480	QuasiPeak	32.91	33.17	5.7	0.0	38.6	38.9	46.0	7.4	7.1
3	4882.000	Peak	39.35	37.34	9.6	0.0	48.9	46.9	74.0	25.1	27.1
4	4882.000	Average	30.40	29.74	9.6	0.0	40.0	39.3	54.0	14.0	14.7
5	7323.000	Peak	38.99	36.12	15.0	0.0	53.9	51.1	74.0	20.1	22.9
6	7323.000	Average	27.94	27.92	15.0	0.0	42.9	42.9	54.0	11.1	11.1
7	9764.000	Peak	36.22	36.07	17.3	0.0	53.5	53.4	74.0	20.5	20.6
8	9764.000	Average	27.41	27.29	17.3	0.0	44.7	44.6	54.0	9.3	9.4
9	12205.000	Peak	32.05	32.65	21.7	0.0	53.8	54.4	74.0	20.2	19.6
10	12205.000	Average	26.64	26.41	21.7	0.0	48.4	48.1	54.0	5.6	5.9

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	280.420	QuasiPeak	34.92	35.33	-3.0	0.0	31.9	32.4	40.0	8.1	7.6
2	625.510	QuasiPeak	33.31	33.37	5.7	0.0	39.0	39.1	46.0	7.0	6.9
3	2483.500	Peak	39.97	39.62	3.6	0.0	43.6	43.3	74.0	30.4	30.7
4	2483.500	Average	29.93	29.63	3.6	0.0	33.6	33.3	54.0	20.4	20.7
5	4960.000	Peak	39.18	36.78	9.9	0.0	49.1	46.7	74.0	24.9	27.3
6	4960.000	Average	33.44	29.98	9.9	0.0	43.3	39.9	54.0	10.7	14.1
7	7440.000	Peak	34.53	38.78	15.7	0.0	50.2	54.5	74.0	23.8	19.5
8	7440.000	Average	26.82	26.70	15.7	0.0	42.5	42.4	54.0	11.5	11.6
9	9920.000	Peak	36.07	33.38	18.4	0.0	54.5	51.8	74.0	19.5	22.2
10	9920.000	Average	26.82	26.64	18.4	0.0	45.2	45.1	54.0	8.8	8.9
11	12400.000	Peak	34.69	35.09	21.6	0.0	56.3	56.7	74.0	17.7	17.3
12	12400.000	Average	27.10	26.84	21.6	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	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	280.500	QuasiPeak	35.62	35.83	-3.0	0.0	32.6	32.9	40.0	7.4	7.1
2	625.447	QuasiPeak	30.11	29.97	5.7	0.0	35.8	35.7	46.0	10.2	10.3
3	2390.000	Peak	39.26	39.34	3.8	0.0	43.0	43.1	74.0	31.0	30.9
4	2390.000	Average	29.85	29.54	3.8	0.0	33.6	33.3	54.0	20.4	20.7
5	4804.000	Peak	37.93	38.67	9.6	0.0	47.5	48.3	74.0	26.5	25.7
6	4804.000	Average	29.91	29.91	9.6	0.0	39.5	39.5	54.0	14.5	14.5
7	7206.000	Peak	39.03	33.74	15.0	0.0	54.0	48.7	74.0	20.0	25.3
8	7206.000	Average	28.22	28.02	15.0	0.0	43.2	43.0	54.0	10.8	11.0
9	9608.000	Peak	32.36	34.76	17.3	0.0	49.7	52.1	74.0	24.3	21.9
10	9608.000	Average	26.64	26.48	17.3	0.0	44.0	43.8	54.0	10.0	10.2
11	12010.000	Peak	33.79	34.90	21.7	0.0	55.5	56.6	74.0	18.5	17.4
12	12010.000	Average	26.65	26.43	21.7	0.0	48.4	48.2	54.0	5.6	5.8

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	82.998	80.44	3.8	0.0	86.8	84.3	-	-	-	-
2*	2400.000	Peak	27.833	30.72	3.8	0.0	31.7	34.5	66.8	64.3	35.2	29.7

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	34.92	35.63	-3.0	0.0	31.9	32.7	40.0	8.1	7.3
2	625.480	QuasiPeak	34.91	33.17	5.7	0.0	40.6	38.9	46.0	5.4	7.1
3	4882.000	Peak	39.35	37.34	9.6	0.0	48.9	46.9	74.0	25.1	27.1
4	4882.000	Average	30.40	29.74	9.6	0.0	40.0	39.3	54.0	14.0	14.7
5	7323.000	Peak	38.99	36.12	15.0	0.0	53.9	51.1	74.0	20.1	22.9
6	7323.000	Average	27.94	27.92	15.0	0.0	42.9	42.9	54.0	11.1	11.1
7	9764.000	Peak	36.22	36.07	17.3	0.0	53.5	53.4	74.0	20.5	20.6
8	9764.000	Average	27.41	27.29	17.3	0.0	44.7	44.6	54.0	9.3	9.4
9	12205.000	Peak	32.05	32.65	21.7	0.0	53.8	54.4	74.0	20.2	19.6
10	12205.000	Average	26.64	26.41	21.7	0.0	48.4	48.1	54.0	5.6	5.9
11	280.470	QuasiPeak	34.92	35.63	-3.0	0.0	31.9	32.7	40.0	8.1	7.3
12	625.480	QuasiPeak	34.91	33.17	5.7	0.0	40.6	38.9	46.0	5.4	7.1

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	280.420	QuasiPeak	34.92	35.33	-3.0	0.0	31.9	32.4	40.0	8.1	7.6
2	625.510	QuasiPeak	33.31	33.37	5.7	0.0	39.0	39.1	46.0	7.0	6.9
3	2483.500	Peak	39.97	39.62	3.6	0.0	43.6	43.3	74.0	30.4	30.7
4	2483.500	Average	29.93	29.63	3.6	0.0	33.6	33.3	54.0	20.4	20.7
5	4960.000	Peak	39.18	36.78	9.9	0.0	49.1	46.7	74.0	24.9	27.3
6	4960.000	Average	33.44	29.98	9.9	0.0	43.3	39.9	54.0	10.7	14.1
7	7440.000	Peak	34.53	38.78	15.7	0.0	50.2	54.5	74.0	23.8	19.5
8	7440.000	Average	26.82	26.70	15.7	0.0	42.5	42.4	54.0	11.5	11.6
9	9920.000	Peak	36.07	33.38	18.4	0.0	54.5	51.8	74.0	19.5	22.2
10	9920.000	Average	26.82	26.64	18.4	0.0	45.2	45.1	54.0	8.8	8.9
11	12400.000	Peak	34.69	35.09	21.6	0.0	56.3	56.7	74.0	17.7	17.3
12	12400.000	Average	27.10	26.84	21.6	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	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	280.500	QuasiPeak	35.62	35.83	-3.0	0.0	32.6	32.9	40.0	7.4	7.1
2	625.447	QuasiPeak	30.11	29.97	5.7	0.0	35.8	35.7	46.0	10.2	10.3
3	2390.000	Peak	39.26	39.34	3.8	0.0	43.0	43.1	74.0	31.0	30.9
4	2390.000	Average	29.85	29.54	3.8	0.0	33.6	33.3	54.0	20.4	20.7
5	4804.000	Peak	37.93	38.67	9.6	0.0	47.5	48.3	74.0	26.5	25.7
6	4804.000	Average	29.91	29.91	9.6	0.0	39.5	39.5	54.0	14.5	14.5
7	7206.000	Peak	39.03	33.74	15.0	0.0	54.0	48.7	74.0	20.0	25.3
8	7206.000	Average	28.22	28.02	15.0	0.0	43.2	43.0	54.0	10.8	11.0
9	9608.000	Peak	32.36	34.76	17.3	0.0	49.7	52.1	74.0	24.3	21.9
10	9608.000	Average	26.64	26.48	17.3	0.0	44.0	43.8	54.0	10.0	10.2
11	12010.000	Peak	33.79	34.90	21.7	0.0	55.5	56.6	74.0	18.5	17.4
12	12010.000	Average	26.65	26.43	21.7	0.0	48.4	48.2	54.0	5.6	5.8

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	82.998	80.44	3.8	0.0	86.8	84.3	-	-	-	-
2*	2400.000	Peak	27.833	30.72	3.8	0.0	31.7	34.5	66.8	64.3	35.2	29.7

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	280.470	QuasiPeak	34.92	35.63	-3.0	0.0	31.9	32.7	40.0	8.1	7.3
2	625.480	QuasiPeak	34.91	33.17	5.7	0.0	40.6	38.9	46.0	5.4	7.1
3	4882.000	Peak	39.35	37.34	9.6	0.0	48.9	46.9	74.0	25.1	27.1
4	4882.000	Average	30.40	29.74	9.6	0.0	40.0	39.3	54.0	14.0	14.7
5	7323.000	Peak	38.99	36.12	15.0	0.0	53.9	51.1	74.0	20.1	22.9
6	7323.000	Average	27.94	27.92	15.0	0.0	42.9	42.9	54.0	11.1	11.1
7	9764.000	Peak	36.22	36.07	17.3	0.0	53.5	53.4	74.0	20.5	20.6
8	9764.000	Average	27.41	27.29	17.3	0.0	44.7	44.6	54.0	9.3	9.4
9	12205.000	Peak	32.05	32.65	21.7	0.0	53.8	54.4	74.0	20.2	19.6
10	12205.000	Average	26.64	26.41	21.7	0.0	48.4	48.1	54.0	5.6	5.9
11	280.470	QuasiPeak	34.92	35.63	-3.0	0.0	31.9	32.7	40.0	8.1	7.3
12	625.480	QuasiPeak	34.91	33.17	5.7	0.0	40.6	38.9	46.0	5.4	7.1

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	280.420	QuasiPeak	34.92	35.33	-3.0	0.0	31.9	32.4	40.0	8.1	7.6
2	625.510	QuasiPeak	33.31	33.37	5.7	0.0	39.0	39.1	46.0	7.0	6.9
3	2483.500	Peak	39.97	39.62	3.6	0.0	43.6	43.3	74.0	30.4	30.7
4	2483.500	Average	29.93	29.63	3.6	0.0	33.6	33.3	54.0	20.4	20.7
5	4960.000	Peak	39.18	36.78	9.9	0.0	49.1	46.7	74.0	24.9	27.3
6	4960.000	Average	33.44	29.98	9.9	0.0	43.3	39.9	54.0	10.7	14.1
7	7440.000	Peak	34.53	38.78	15.7	0.0	50.2	54.5	74.0	23.8	19.5
8	7440.000	Average	26.82	26.70	15.7	0.0	42.5	42.4	54.0	11.5	11.6
9	9920.000	Peak	36.07	33.38	18.4	0.0	54.5	51.8	74.0	19.5	22.2
10	9920.000	Average	26.82	26.64	18.4	0.0	45.2	45.1	54.0	8.8	8.9
11	12400.000	Peak	34.69	35.09	21.6	0.0	56.3	56.7	74.0	17.7	17.3
12	12400.000	Average	27.10	26.84	21.6	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.

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	-0.548	-20.548	-61.381	40.833
2483.5	0.977	-19.023	-61.295	42.272

Operating mode	**DH5, Hopping ON**			
Freq. [MHz]	**Peak level within in-band emission [dBm]**	**Limit [dBm]**	**Band edge level [dBm]**	**Margin [dB]**
2400	-0.956	-20.956	-62.220	41.264
2483.5	0.960	-19.040	-63.502	44.462

Operating mode	**2-DH5, Hopping OFF**			
Freq. [MHz]	**Peak level within in-band emission [dBm]**	**Limit [dBm]**	**Band edge level [dBm]**	**Margin [dB]**
2400	-2.350	-22.350	-55.596	33.246
2483.5	-1.031	-21.031	-58.487	37.456

Operating mode	**2-DH5, Hopping ON**			
Freq. [MHz]	**Peak level within in-band emission [dBm]**	**Limit [dBm]**	**Band edge level [dBm]**	**Margin [dB]**
2400	-3.011	-23.011	-58.395	35.384
2483.5	-1.378	-21.378	-61.021	39.643

Operating mode	3-DH5, Hopping OFF			
Freq. [MHz]	Peak level within in-band emission [dBm]	Limit [dBm]	Band edge level [dBm]	Margin [dB]
2400	-2.282	-22.282	-53.933	31.651
2483.5	-0.392	-20.392	-58.077	37.685

Operating mode	3-DH5, Hopping ON			
Freq. [MHz]	Peak level within in-band emission [dBm]	Limit [dBm]	Band edge level [dBm]	Margin [dB]
2400	-2.342	-22.342	-58.167	35.825
2483.5	-2.272	-22.272	-58.422	36.150

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

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	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	0.21	QuasiPeak	29.56	32.23	10.40	10.40	39.96	42.63	62.40	22.44	19.77
2	0.21	Average	24.73	28.00	10.40	10.40	35.13	38.40	52.40	17.27	14.00
3	0.35	QuasiPeak	19.93	24.55	10.50	10.50	30.43	35.05	58.90	28.47	23.85
4	0.32	Average	15.20	18.67	10.50	10.50	25.70	29.17	48.90	23.20	19.73
5	0.53	QuasiPeak	8.63	10.97	10.50	10.50	19.13	21.47	56.00	36.87	34.53
6	0.57	Average	7.45	7.73	10.50	10.50	17.95	18.23	46.00	28.05	27.77
7	12.89	QuasiPeak	24.02	24.18	11.30	11.30	35.32	35.48	60.00	24.68	24.52
8	12.72	Average	9.40	9.62	11.30	11.30	20.70	20.92	50.00	29.30	29.08
9	14.77	QuasiPeak	21.35	21.83	11.30	11.30	32.65	33.13	60.00	27.35	26.87
10	13.81	Average	9.70	9.79	11.30	11.30	21.00	21.09	50.00	29.00	28.91
11	14.17	QuasiPeak	25.26	24.93	11.30	11.30	36.56	36.23	60.00	23.44	23.77
12	15.35	Average	10.69	10.79	11.30	11.30	21.99	22.09	50.00	28.01	27.91

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	0.22	QuasiPeak	29.66	32.33	10.40	10.40	40.06	42.73	62.40	22.34	19.67
2	0.23	Average	24.98	28.25	10.40	10.40	35.38	38.65	52.40	17.02	13.75
3	0.38	QuasiPeak	19.99	24.61	10.50	10.50	30.49	35.11	58.90	28.41	23.79
4	0.34	Average	15.23	18.70	10.50	10.50	25.73	29.20	48.90	23.17	19.70
5	0.58	QuasiPeak	8.66	11.01	10.50	10.50	19.16	21.51	56.00	36.84	34.49
6	0.63	Average	7.50	7.79	10.50	10.50	18.00	18.29	46.00	28.00	27.71
7	13.55	QuasiPeak	24.05	24.21	11.30	11.30	35.35	35.51	60.00	24.65	24.49
8	13.92	Average	9.42	9.64	11.30	11.30	20.72	20.94	50.00	29.28	29.06
9	16.28	QuasiPeak	21.36	21.84	11.30	11.30	32.66	33.14	60.00	27.34	26.86
10	14.52	Average	9.71	9.80	11.30	11.30	21.01	21.10	50.00	28.99	28.90
11	15.50	QuasiPeak	25.27	24.95	11.30	11.30	36.57	36.25	60.00	23.43	23.75
12	16.92	Average	10.71	10.80	11.30	11.30	22.01	22.10	50.00	27.99	27.90

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	0.21	QuasiPeak	29.54	32.21	10.40	10.40	39.94	42.61	62.40	22.46	19.79
2	0.21	Average	24.67	27.94	10.40	10.40	35.07	38.34	52.40	17.33	14.06
3	0.34	QuasiPeak	19.91	24.53	10.50	10.50	30.41	35.03	58.90	28.49	23.87
4	0.32	Average	15.20	18.66	10.50	10.50	25.70	29.16	48.90	23.20	19.74
5	0.52	QuasiPeak	8.62	10.96	10.50	10.50	19.12	21.46	56.00	36.88	34.54
6	0.55	Average	7.43	7.71	10.50	10.50	17.93	18.21	46.00	28.07	27.79
7	12.75	QuasiPeak	24.01	24.17	11.30	11.30	35.31	35.47	60.00	24.69	24.53
8	12.46	Average	9.40	9.62	11.30	11.30	20.70	20.92	50.00	29.30	29.08
9	14.32	QuasiPeak	21.34	21.82	11.30	11.30	32.64	33.12	60.00	27.36	26.88
10	13.67	Average	9.70	9.79	11.30	11.30	21.00	21.09	50.00	29.00	28.91
11	13.88	QuasiPeak	25.25	24.93	11.30	11.30	36.55	36.23	60.00	23.45	23.77
12	14.88	Average	10.69	10.78	11.30	11.30	21.99	22.08	50.00	28.01	27.92

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	35.32	35.63	-3.0	0.0	32.3	32.7	40.0	7.7	7.3
2	625.500	QuasiPeak	33.11	33.07	5.7	0.0	38.8	38.8	46.0	7.2	7.2
3	4882.000	Peak	40.45	40.34	9.6	0.0	50.0	49.9	74.0	24.0	24.1
4	4882.000	Average	33.92	33.66	9.6	0.0	43.5	43.2	54.0	10.5	10.8
5	7323.000	Peak	37.91	38.25	15.0	0.0	52.9	53.2	74.0	21.1	20.8
6	7323.000	Average	31.94	31.01	15.0	0.0	46.9	46.0	54.0	7.1	8.0
7	9764.000	Peak	36.78	34.96	17.3	0.0	54.1	52.3	74.0	19.9	21.7
8	9764.000	Average	24.90	26.07	17.3	0.0	42.2	43.4	54.0	11.8	10.6
9	12205.000	Peak	34.39	33.62	21.7	0.0	56.1	55.4	74.0	17.9	18.6
10	12205.000	Average	25.67	25.61	21.7	0.0	47.4	47.3	54.0	6.6	6.7
11	280.511	QuasiPeak	35.32	35.63	-3.0	0.0	32.3	32.7	40.0	7.7	7.3
12	625.500	QuasiPeak	33.11	33.07	5.7	0.0	38.8	38.8	46.0	7.2	7.2

Note.

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

SECTION 10. LIST AND DIAGRUM OF MEASURING INSTRUMENTS

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

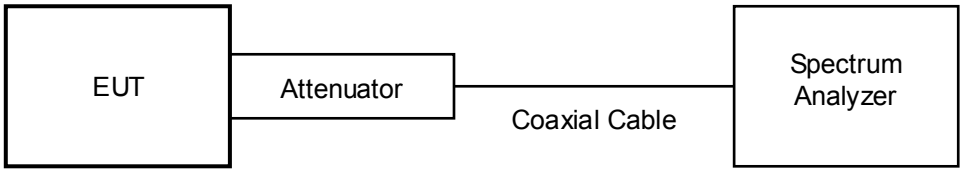
All measurements equipment used for the measurement is calibrated based on standard.
Each measurement result is traceable to national or international standards.
Antenna used in the measurement is calibrated according to ANSI C63.5.

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 Preamplifier	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)

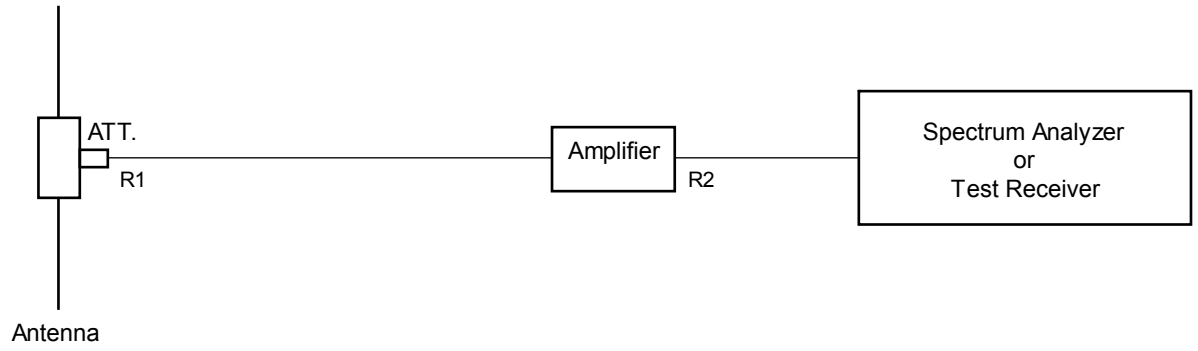


Diagram of the measurement instruments (2000 - 3000 MHz)

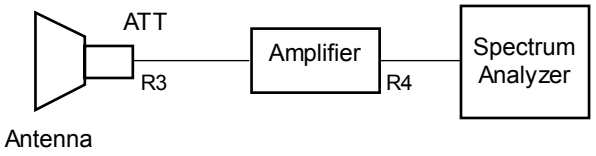


Diagram of the measurement instruments (1000- 2000 and 3000 – 18000 MHz)

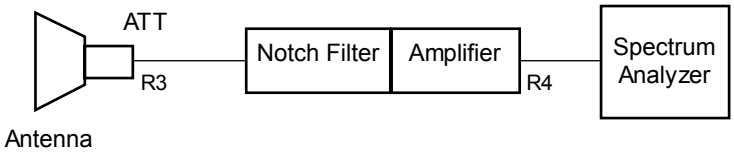
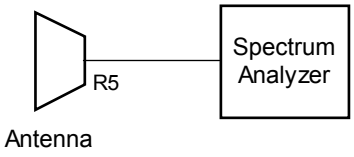
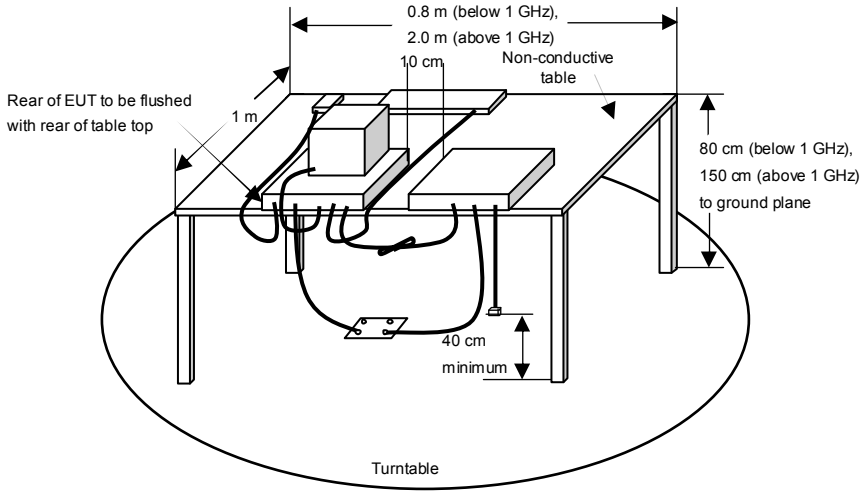


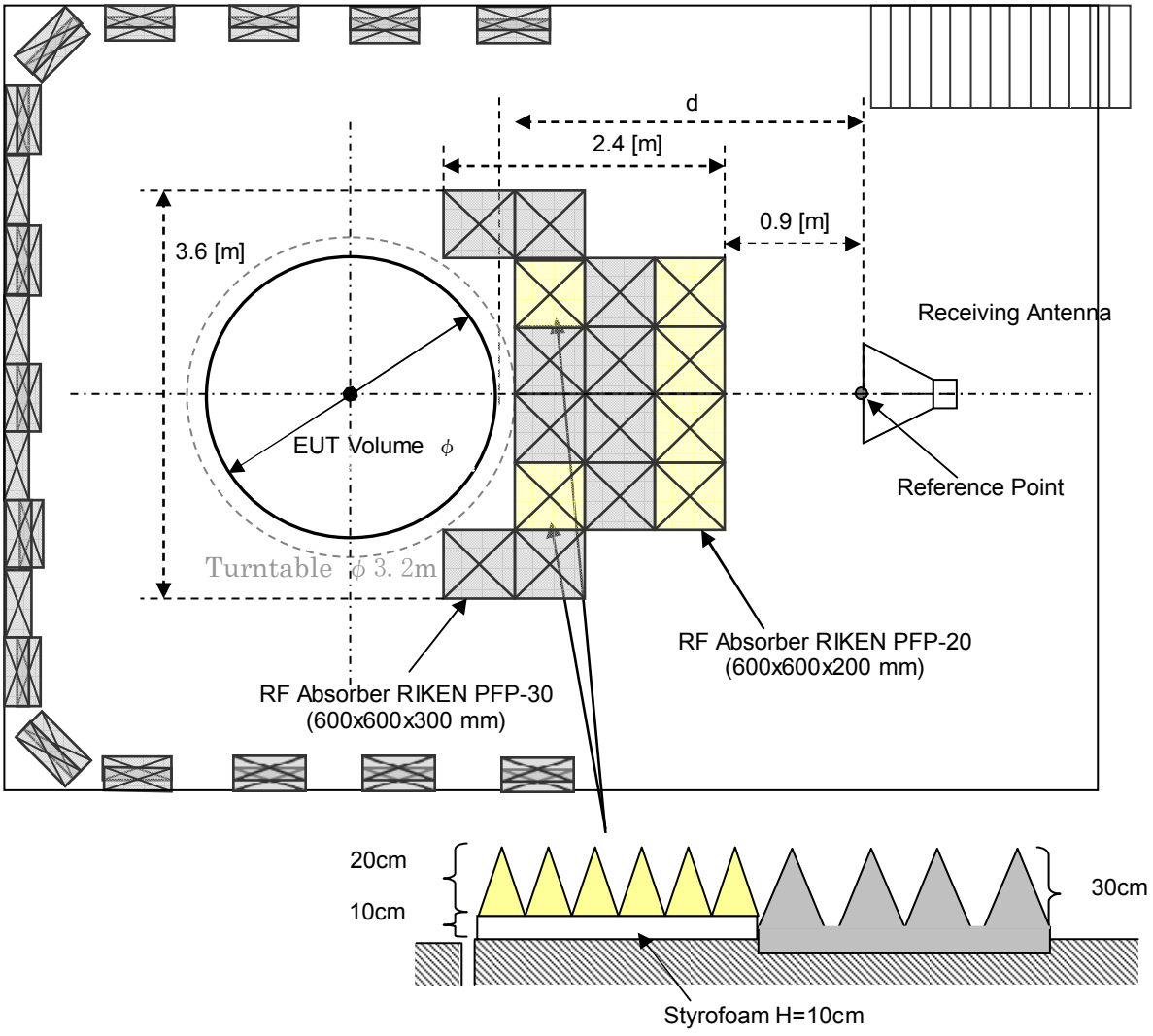
Diagram of the measurement instruments (18000 - 25000 MHz)



EUT set-up as per standard



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

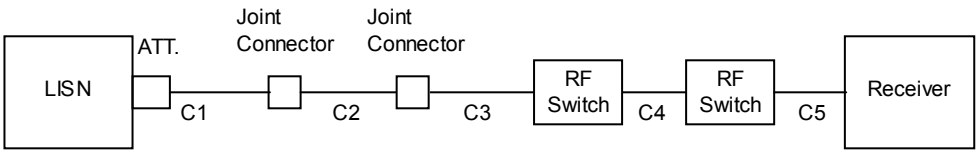


10.3 AC Line Conducted Emission

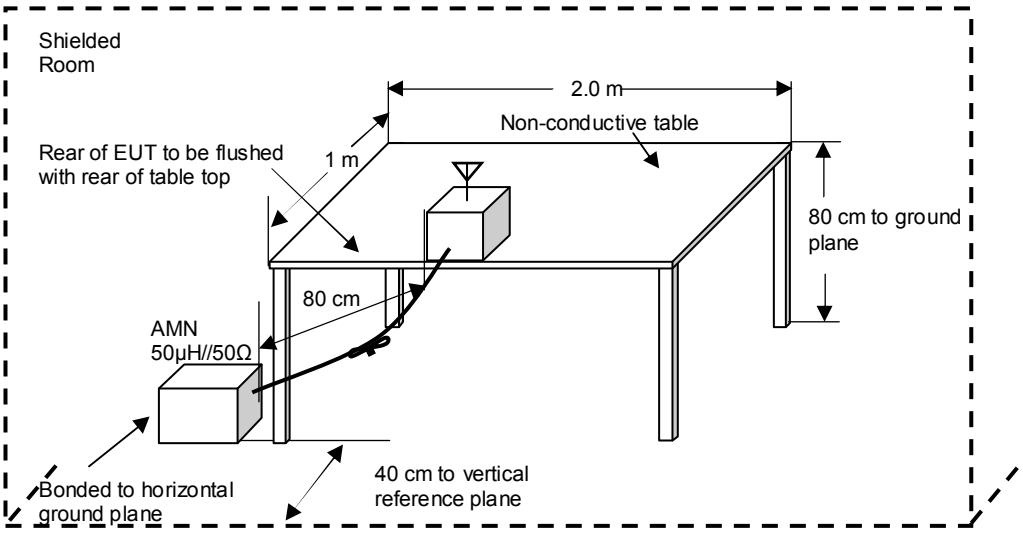
Measurement Instrument

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



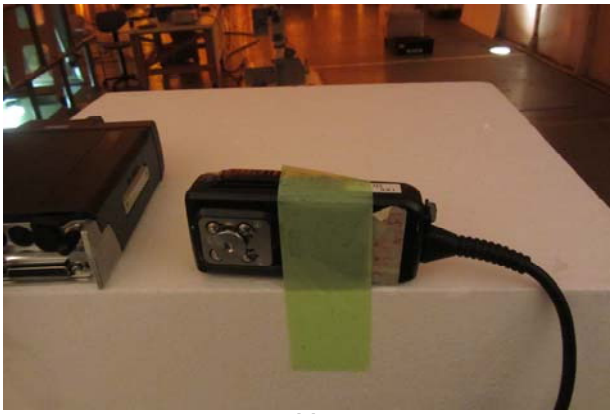
Test setup as per standard



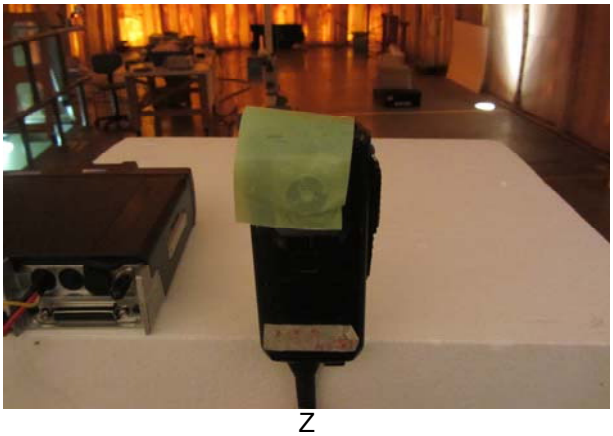
* Reference Ground plane : greater than 2 x 2m

C.1 EUT Axis

X



Y



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