




TEST REPORT


STANDARD : FCC Part15B Class B -Peripherals-

Applicant	Testing Laboratory
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Equipment Type	HF/50MHz ALL MODE TRANSCEIVER
Trademark	KENWOOD
Model(s)	TS-590SG
Serial No.	0001
Equipment Authorization	Certification (FCC ID : K44407110)
Test Result	Complied
Report Number	14070023JKA-002
Original Issue Date	August 27, 2014

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Approved by 
Kazuo Gokita
[Manager]

Tested by 
Koichi Wagatsuma
[Engineer]



Responsible Party of Test Item (Product)

Responsible Party	:
Add.	:
Tel.	:
Fax.	:
Contact Person	:

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SECTION 1. GENERAL INFORMATION

Test Performed

EUT Received	July 12, 2014
Date of Test	From July 29, 2014 to July 31, 2014
Standard Applied	FCC Part15B -Peripherals-
Test methods	ANSI C63.4-2003
Deviation from Standard(s)	None

Qualifications of Testing Laboratory

Accreditation	Scope	Lab. Code	Remarks
VLAC	EMC Testing	VLAC-008-1	JAPAN
BSMI	EMC Testing	SL2-IN-E-6008	TAIWAN
Filing			
VCCI	EMC Testing	A-0126	JAPAN
FCC	EMC Testing	Designation Number : JP0008	USA
IC	EMC Testing	2042K-3, 2042Q-12	CANADA
CB-Scheme	EMC Testing	TL222	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

See Section9 for the detailed result.

Emission Tests

Standard Applied	FCC Part15B Class B -Peripherals-	
Test Item	Minimum margin	Remarks
Conducted disturbance at mains terminals	4.4 dB (0.2036 MHz) [Q-P] RX mode(0.03MHz : ANT 1)	
Radiated disturbance	3.9 dB (393.60 MHz) RX mode(59.999MHz : ANT 1)	

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	Remarks
A1	HF/50MHz ALL MODE TRANSCEIVER	TS-590SG	0001	JVC KENWOOD	
Rated Power : DC13.8 V \pm 15% / 1.5A max.					
Supplied Power :DC 13.8V					
Condition of Equipment		Prototype			
Type		Tabletop			
Suppression Devices		No Modifications by the laboratory were made to the device			

3.2 Overview of EUT

Frequency Ranges	0.030 – 60.000 MHz
Receiver Type	Double or Triple conversion
Type of Emission	J3E / A1A / F1B / A3E / F3E

3.3 Intermediate frequency

1st	11.374 MHz (upper) or 73.095 MHz (upper)
2nd	24 kHz (upper or lower) or 10.695 MHz (lower)
3rd	24 kHz (upper) or 455 kHz (lower)

3.4 Port(s)/Connector(s)

Port Name	Connector Type	Connector Pin	Remarks
ANT 1	M	2 pin	
ANT 2	M	2 pin	
EXT. AT	JST 6pin	6 pin	
DC 13.8V	JST 4pin	4 pin	
COM	D-Sub	9 pin	
USB	Type B	4 pin	
EXT SP	3.5Φ	2 pin	
ACC2	MINI-DIN	13 pin	
REMOTE	MINI-DIN	7 pin	
KEY	3.5Φ	2 pin	
PADDLE	3.5Φ	3 pin	
DRV/ANT OUT	RCA	2 pin	
RX ANT	RCA	2 pin	
MIC	Receptacle	8 pin	
PHONES	6.2Φ	3 pin	

3.5 Highest Frequency Generated / Used

Operating Frequency	Operating mode	Remarks
480 MHz	RX mode	

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	DC Power Supply	PS-60	11/01 00148	JVC KENWOOD		N/A
C	Microphone	MC-47	none	JVC KENWOOD		N/A
D	Headphone	HS-6	none	JVC KENWOOD		N/A
E	Speaker	SP-50B	none	JVC KENWOOD		N/A
F	TCXO	SO-3	none	JVC KENWOOD		N/A
G	Voice Guide & Storage Unit	VGS-1	none	JVC KENWOOD		N/A
H	Terminator	none	none	none		N/A
I	Terminator	none	none	none		N/A
J	Terminator	none	none	JVC KENWOOD		N/A
K	Terminator	none	none	JVC KENWOOD		N/A
L	Computer	MTC2	GZNP1X	DELL		DoC
M	Mobile Braket	MB-430	none	JVC KENWOOD		N/A
N	LCD	E151FPb	CN-04W569-466 33-363-1DLT	DELL		DoC
O	Printer	C8154A	TH571320G8	HEWLETT PACKARD		DoC
P	AC Adapter	0957-2142	E10588014801L	HEWLETT PACKARD		N/A
Q	Keyboard	SK-8110	CN-07N247-7161 6-44Q-090P	DELL		DoC
R	Mouse	M-SAW34	LZC31257181	DELL		DZL211029
Supplied Power:						
B, L, N, P	AC120 V, 60 Hz					

SECTION 5. USED CABLE(S)

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

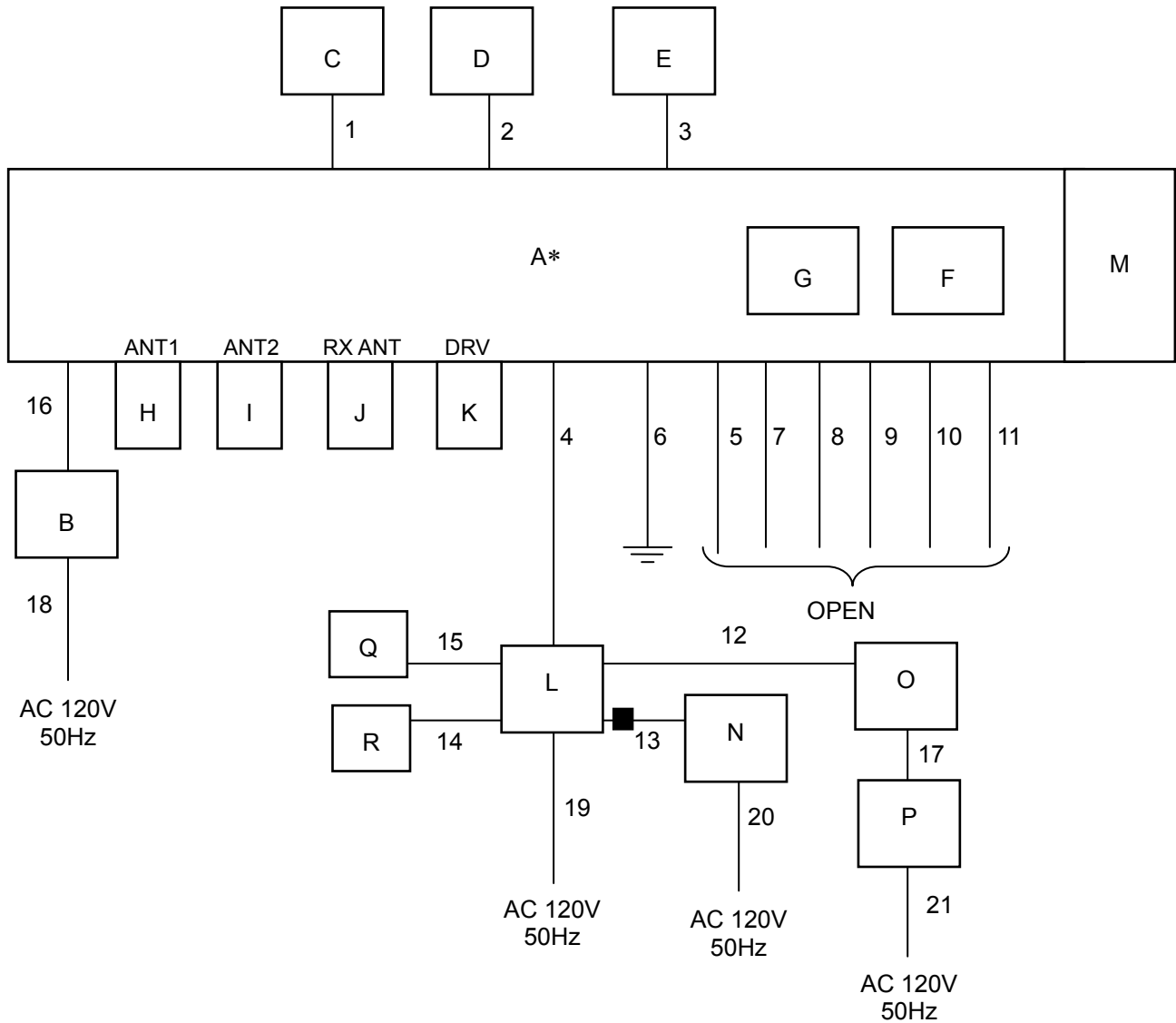
No.	Name	Length (m)	Shield	Metal Connector	Ferrite Core
1	Microphone Cable	0.6	No	Yes	
2	Headphone Cable	1.5	No	No	
3	Speaker Cable	2.5	No	No	
4	USB Cable	1.0	Yes	Yes	
5	EXT AT Cable	1.0	No	No	
6	GND Cable	1.6	No	Yes	
7	COM Cable	1.5	No	No	
8	ACC 2 Cable	1.0	No	No	
9	Remote Cable	1.0	No	No	
10	KEY Cable	1.0	No	No	
11	Paddle Cable	1.0	No	No	
12	Printer Cable	2.5	Yes	Yes	
13	Monitor Cable	1.6	Yes	Yes	Fixed x 1
14	Mouse Cable	1.8	Yes	Yes	
15	Keyboard Cable	2.0	Yes	Yes	
16	Power Cable for TS-590SG (DC)	2.0	No	No	
17	Power Cable for Printer (DC)	1.7	No	No	
18	Power Cable for DC Supply (AC)	1.8	No	No	
19	Power Cable for Computer (AC)	1.9	No	No	
20	Power Cable for LCD (AC)	1.7	No	No	
21	Power Cable for AC Adapter (AC)	2.0	No	No	

Note : No.13 cable is supplied together with LCD(N)

SECTION 6. TEST CONFIGURATION

6.1 Conducted disturbance at mains terminals Tests and Radiated disturbance tests

* : EUT
 ■ : Ferrite core



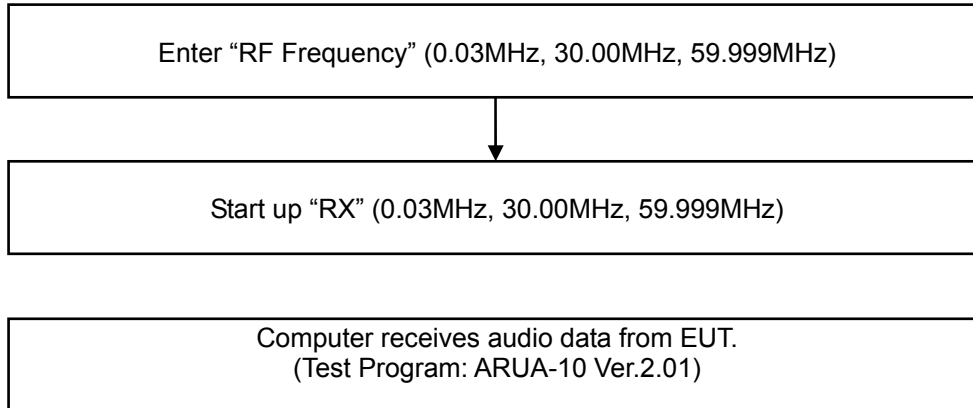
The symbols and numbers assigned to the equipments and cables on this diagram correspond to the ones in Sections 3 to 5.

SECTION 7. OPERATING CONDITION

The test was carried out under the following mode.

7.1 RX mode

Cycle time for operation: Continuity



SECTION 8. UNCERTAINTY

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

Radiated disturbance at 3m	U_{lab} [k = 2]	U_{cispr}
30 MHz – 1000 MHz	+/- 4.83 dB	5.19 dB
Above 1 GHz CISPR22	+/- 4.33 dB	
ANCI 63.4	+/- 4.90 dB	
Radiated disturbance at 10m		
30 MHz – 1000 MHz	+/- 5.00 dB	5.06 dB
Above 1 GHz	+/- 4.95 dB	
Radiated disturbance at 30m		
	N/A	5.02 dB
Conducted disturbance at mains terminals		
9 kHz – 150 kHz	+/- 2.82 dB	3.97 dB
150 kHz – 30 MHz	+/- 2.80 dB	3.60 dB
Conducted disturbance at telecommunication ports (ISN)		
9 kHz – 30 MHz	+/- 3.85 dB	Nil
Conducted disturbance at telecommunication ports (Capacitive Voltage Probe)		
9 kHz – 30 MHz	+/- 3.77 dB	Nil
Conducted disturbance at telecommunication ports (Current Probe)		
9 kHz – 30 MHz	+/- 2.91 dB	Nil
Conducted disturbance at terminals		
150 kHz – 30 MHz	+/- 2.80 dB	Nil
Disturbance power		
30 MHz – 300 MHz	+/- 3.34 dB	4.45 dB
Conducted power on antenna port		
30 MHz – 1000 MHz	+/- 2.90 dB	Nil
Above 1 GHz	+/- 1.60 dB	
38dB Rejection		
30 kHz – 60 MHz	+/- 0.56 dB	Nil

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

SECTION 9. EVALUATION OF TEST RESULTS

9.1 Emission tests

9.1.1 Conducted disturbance at mains terminals

Location	Kashima No.12 Test Site
Test Engineer	Koichi Wagatsuma

Frequency Range of Measurements

Required Measurement Frequency Range	Measured Frequency Range
0.15 – 30 MHz	0.15 – 30 MHz

Test Procedure

Item	Document number
Conducted disturbance at mains terminals	RJP-EM001

Setting for the Measuring instruments

Instrument	Detector	Resolution Bandwidth	Video Bandwidth
Receiver	Quasi Peak	10 kHz	N/A
	Average	10 kHz	N/A

< Measurement data correction >

Emission Level = Meter Reading + Factor

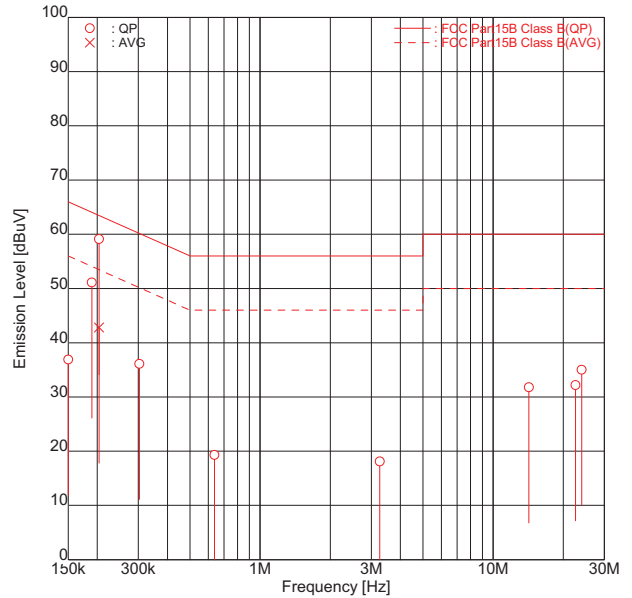
Margin = Limit- Emission Level

Factor = LISN Factor + Cable Loss + Attenuator

Result of Conducted disturbance at mains terminals
9.1.1.1 RX mode (0.030MHz : Ant 1)

Intertek Japan K.K.
Kashima No.12 Test Site
 Conducted Voltages on Mains Port

APPLICANT : JVC KENWOOD Corporation
 EUT NAME : HF/50MHz ALL MODE TRANSCEIVER
 MODEL NO. : TS-590SG
 SERIAL NO. : 0001
 TEST MODE : RX mode(0.03MHz : ANT1)
 POWER SOURCE : DC 13.8V (AC 120V, 60Hz)
 DATE TESTED : Jul 31 2014
 FILE NO. : -
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-2003
 TEMPERATURE : 22.7 [degC]
 HUMIDITY : 49.0 [%]
 NOTE :



ENGINEER : Koichi Wagatsuma

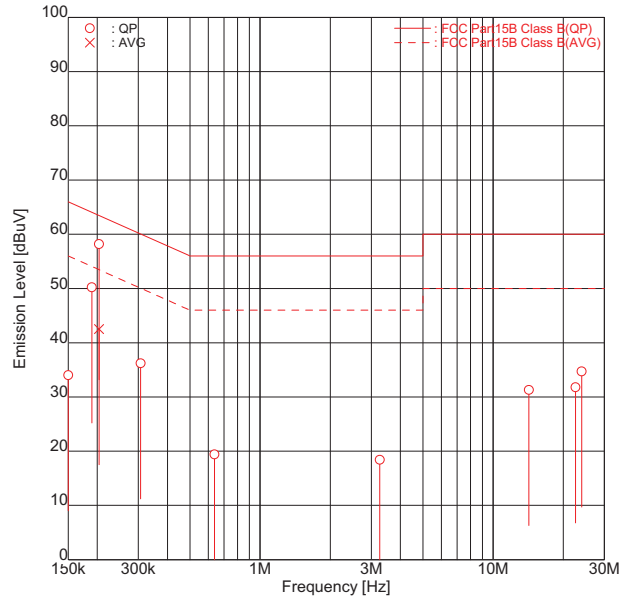
FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.1500	QP	26.9	25.3	10.0	10.1	36.9	35.4	66.0	29.1	30.6
2	0.1895	QP	41.0	<u>41.0</u>	10.0	10.1	51.0	<u>51.1</u>	64.1	13.1	<u>13.0</u>
3	0.2036	QP	<u>49.0</u>	48.0	10.1	10.1	<u>59.1</u>	58.1	63.5	<u>4.4</u>	5.4
4	0.2036	AVG	32.6	<u>32.7</u>	10.1	10.1	42.7	<u>42.8</u>	53.5	10.8	<u>10.7</u>
5	0.3031	QP	18.4	<u>26.0</u>	10.1	10.1	28.5	<u>36.1</u>	60.2	31.7	<u>24.1</u>
6	0.6373	QP	9.1	3.3	10.2	10.2	19.3	13.5	56.0	36.7	42.5
7	3.2604	QP	7.7	3.4	10.4	10.5	18.1	13.9	56.0	37.9	42.1
8	14.2400	QP	20.8	20.7	11.0	11.0	31.8	31.7	60.0	28.2	28.3
9	22.5838	QP	<u>21.0</u>	20.0	11.2	11.4	<u>32.2</u>	31.4	60.0	<u>27.8</u>	28.6
10	23.9988	QP	<u>23.8</u>	23.1	11.2	11.4	<u>35.0</u>	34.5	60.0	<u>25.0</u>	25.5

Higher six points are underlined.
 Other frequencies : Below the FCC Part15B Class B limit
 Emission Level = Read + Factor(LISN,Pad,Cable)

9.1.1.2 RX mode (30MHz : Ant 1)

Intertek Japan K.K.
Kashima No.12 Test Site
 Conducted Voltages on Mains Port

APPLICANT : JVC KENWOOD Corporation
 EUT NAME : HF/50MHz ALL MODE TRANSCEIVER
 MODEL NO. : TS-590SG
 SERIAL NO. : 0001
 TEST MODE : RX mode(30MHz : ANT1)
 POWER SOURCE : DC 13.8V (AC 120V, 60Hz)
 DATE TESTED : Jul 31 2014
 FILE NO. : -
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-2003
 TEMPERATURE : 22.7 [degC]
 HUMIDITY : 49.0 [%]
 NOTE :



ENGINEER : Koichi Wagatsuma

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.1500	QP	24.0	23.1	10.0	10.1	34.0	33.2	66.0	32.0	32.8
2	0.1895	QP	<u>40.2</u>	38.6	10.0	10.1	<u>50.2</u>	48.7	64.1	<u>13.9</u>	15.4
3	0.2036	QP	<u>48.1</u>	47.6	10.1	10.1	<u>58.2</u>	57.7	63.5	<u>5.3</u>	5.8
4	0.2036	AVG	32.2	<u>32.4</u>	10.1	10.1	42.3	<u>42.5</u>	53.5	11.2	<u>11.0</u>
5	0.3069	QP	16.3	<u>26.1</u>	10.1	10.1	26.4	<u>36.2</u>	60.1	33.7	<u>23.9</u>
6	0.6373	QP	9.2	4.3	10.2	10.2	19.4	14.5	56.0	36.6	41.5
7	3.2604	QP	8.0	3.2	10.4	10.5	18.4	13.7	56.0	37.6	42.3
8	14.2400	QP	20.3	20.3	11.0	11.0	31.3	31.3	60.0	28.7	28.7
9	22.5838	QP	20.3	<u>20.4</u>	11.2	11.4	31.5	<u>31.8</u>	60.0	28.5	<u>28.2</u>
10	23.9988	QP	23.3	<u>23.3</u>	11.2	11.4	34.5	<u>34.7</u>	60.0	25.5	<u>25.3</u>

Higher six points are underlined.
 Other frequencies : Below the FCC Part15B Class B limit
 Emission Level = Read + Factor(LISN,Pad,Cable)

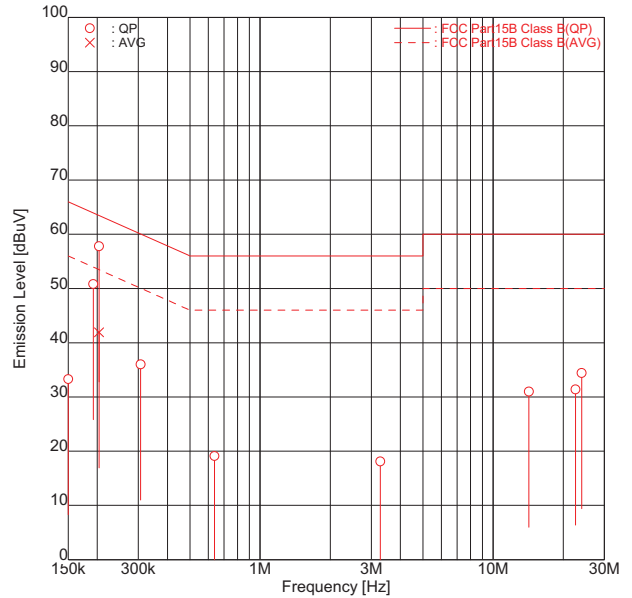
9.1.1.3 RX mode (59.999MHz : Ant 1)

Intertek Japan K.K.

Kashima No.12 Test Site

Conducted Voltages on Mains Port

APPLICANT : JVC KENWOOD Corporation
 EUT NAME : HF/50MHz ALL MODE TRANSCEIVER
 MODEL NO. : TS-590SG
 SERIAL NO. : 0001
 TEST MODE : RX mode(59.999MHz : ANT1)
 POWER SOURCE : DC 13.8V (AC 120V, 60Hz)
 DATE TESTED : Jul 31 2014
 FILE NO. : -
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-2003
 TEMPERATURE : 22.7 [degC]
 HUMIDITY : 49.0 [%]
 NOTE :



ENGINEER : Koichi Wagatsuma

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.1500	QP	23.3	22.3	10.0	10.1	33.3	32.4	66.0	32.7	33.6
2	0.1922	QP	<u>40.8</u>	40.2	10.0	10.1	<u>50.8</u>	50.3	63.9	<u>13.1</u>	13.6
3	0.2036	QP	<u>47.7</u>	46.7	10.1	10.1	<u>57.8</u>	56.8	63.5	<u>5.7</u>	6.7
4	0.2036	AVG	<u>31.8</u>	31.8	10.1	10.1	<u>41.9</u>	41.9	53.5	<u>11.6</u>	11.6
5	0.3069	QP	15.0	<u>25.9</u>	10.1	10.1	25.1	<u>36.0</u>	60.1	35.0	<u>24.1</u>
6	0.6373	QP	8.9	4.1	10.2	10.2	19.1	14.3	56.0	36.9	41.7
7	3.2795	QP	7.7	3.3	10.4	10.5	18.1	13.8	56.0	37.9	42.2
8	14.2400	QP	19.8	20.0	11.0	11.0	30.8	31.0	60.0	29.2	29.0
9	22.5838	QP	20.0	<u>20.0</u>	11.2	11.4	31.2	<u>31.4</u>	60.0	28.8	<u>28.6</u>
10	23.9988	QP	23.0	<u>23.0</u>	11.2	11.4	34.2	<u>34.4</u>	60.0	25.8	<u>25.6</u>

Higher six points are underlined.
 Other frequencies : Below the FCC Part15B Class B limit
 Emission Level = Read + Factor(LISN,Pad,Cable)

emiT 3, 0, 0, 0

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9.1.2 Radiated disturbance

Location	Kashima No.12 Test Site
Test Engineer	Koichi Wagatsuma

Frequency Range of Measurements

Operating mode	Required Frequency Range	Measured Frequency Range
RX mode(0.030MHz : ANT1) RX mode(30MHz : ANT1) RX mode(59.999MHz : ANT1)	30 – 2000 MHz	30 – 2000 MHz

Test Procedure

Item	Document number
Radiated disturbance	RJP-EM003

Setting for the Measuring instruments

Frequency [MHz]	Instrument	Detector	Resolution Bandwidth	Video Bandwidth
30 – 1000	Receiver	Quasi Peak	120 kHz	N/A
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
		Average	1 MHz	10 Hz

< Measurement data correction >

Emission Level = Meter Reading + Factor

Margin = Limit - Emission Level

Factor = Antenna Factor + Cable Loss - Amplifier Gain + Attenuator (+ Distance Conversion Factor)*

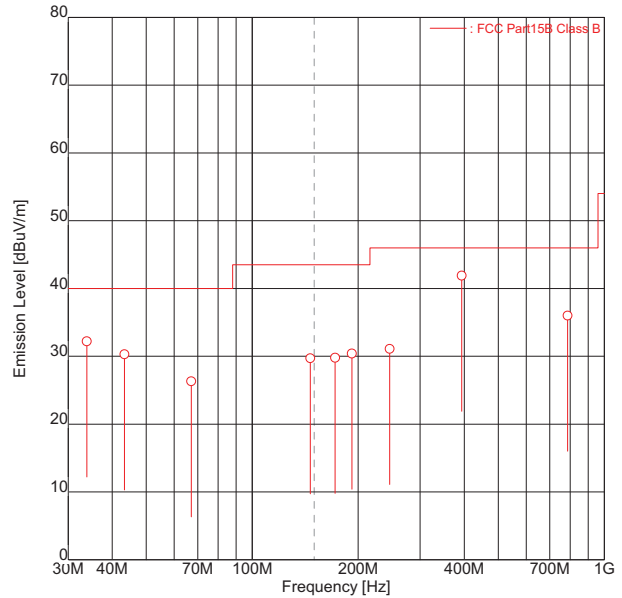
* For other than Standard distance:

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

Result of Radiated disturbances
9.1.2.1 RX mode(0.030MHz : ANT1)
30 – 1000 MHz

Intertek Japan K.K.
Kashima No.12 Test Site
 Radiated Electric Field

APPLICANT : JVC KENWOOD Corporation
 EUT NAME : HF/50MHz ALL MODE TRANSCEIVER
 MODEL NO. : TS-590SG
 SERIAL NO. : 0001
 TEST MODE : RX mode(0.03MHz : ANT1)
 POWER SOURCE : DC 13.8V
 DATE TESTED : Jul 29 2014
 FILE NO. : -
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-2003
 DISTANCE : 3.00 [m]
 TEMPERATURE : 23.1 [degC]
 HUMIDITY : 44.0 [%]
 NOTE :



ENGINEER : Koichi Wagatsuma

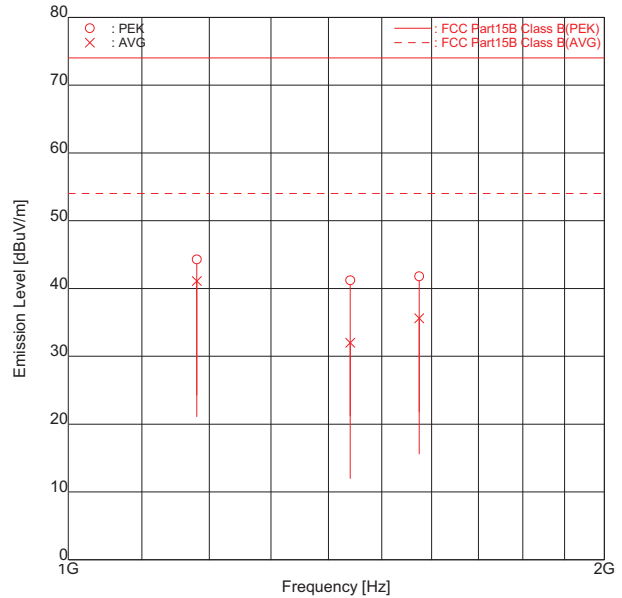
FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert
1	33.88	-	<u>34.9</u>	-2.7	-2.7	-	<u>32.2</u>	40.0	-	-	<u>7.8</u>
2	43.34	31.5	<u>32.0</u>	-1.7	-1.7	29.8	<u>30.3</u>	40.0	10.2	-	<u>9.7</u>
3	67.12	<u>28.7</u>	28.0	-2.4	-2.4	<u>26.3</u>	25.6	40.0	<u>13.7</u>	-	14.4
4	146.24	-	30.7	-1.0	-1.0	-	29.7	43.5	-	-	13.8
5	172.03	-	<u>31.0</u>	-1.2	-1.2	-	<u>29.8</u>	43.5	-	-	<u>13.7</u>
6	191.99	-	<u>33.0</u>	-2.6	-2.6	-	<u>30.4</u>	43.5	-	-	<u>13.1</u>
7	245.76	32.2	-	-1.1	-1.1	31.1	-	46.0	14.9	-	-
8	393.60	<u>37.7</u>	32.1	4.2	4.2	<u>41.9</u>	36.3	46.0	<u>4.1</u>	-	9.7
9	787.19	<u>22.1</u>	21.5	13.9	13.9	<u>36.0</u>	35.4	46.0	<u>10.0</u>	-	10.6

Higher six points are underlined.
 Other frequencies : Below the FCC Part15B Class B limit
 Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
 ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

1000 – 2000 MHz

Intertek Japan K.K.
Kashima No.12 Test Site
 Radiated Electric Field

APPLICANT : JVC KENWOOD Corporation
 EUT NAME : HF/50MHz ALL MODE TRANSCEIVER
 MODEL NO. : TS-590SG
 SERIAL NO. : 0001
 TEST MODE : RX mode(0.03MHz : ANT1)
 POWER SOURCE : DC 13.8V
 DATE TESTED : Jul 30 2014
 FILE NO. : -
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-2003
 DISTANCE : 3.00 [m]
 TEMPERATURE : 25.7 [degC]
 HUMIDITY : 50.0 [%]
 NOTE :



ENGINEER : Koichi Wagatsuma

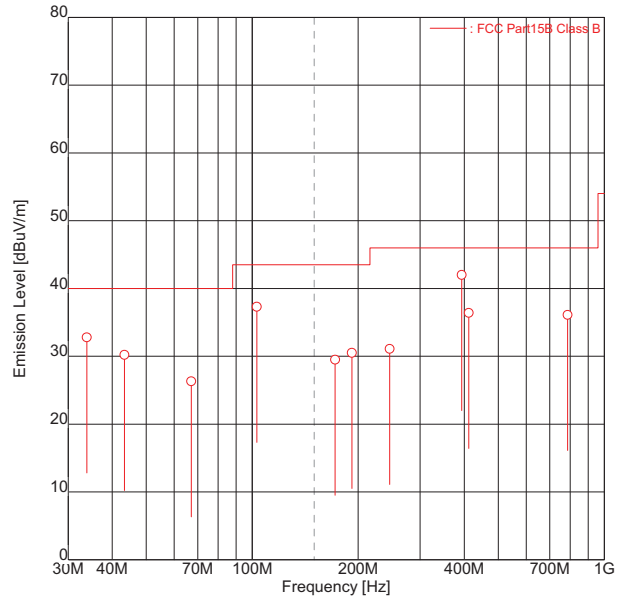
FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	1180.90	PEK	47.0	<u>48.5</u>	-4.2	-4.2	42.8	<u>44.3</u>	74.0	31.2	<u>29.7</u>
2	1180.90	AVG	43.3	<u>45.3</u>	-4.2	-4.2	39.1	<u>41.1</u>	54.0	14.9	<u>12.9</u>
3	1440.11	PEK	43.2	<u>44.5</u>	-3.3	-3.3	39.9	<u>41.2</u>	74.0	34.1	<u>32.8</u>
4	1440.11	AVG	32.3	<u>35.3</u>	-3.3	-3.3	29.0	<u>32.0</u>	54.0	25.0	<u>22.0</u>
5	1574.37	PEK	<u>44.5</u>	43.8	-2.7	-2.7	<u>41.8</u>	41.1	74.0	<u>32.2</u>	32.9
6	1574.37	AVG	<u>38.3</u>	37.3	-2.7	-2.7	<u>35.6</u>	34.6	54.0	<u>18.4</u>	19.4

Higher six points are underlined.
 Other frequencies : Below the FCC Part15B Class B limit
 Emission Level = Read + Factor(Antenna, Antenna Pad, Cable, Preamp)
 ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

**9.1.2.2 RX mode(30MHz : ANT1)
 30 – 1000 MHz**

Intertek Japan K.K.
Kashima No.12 Test Site
 Radiated Electric Field

APPLICANT : JVC KENWOOD Corporation
 EUT NAME : HF/50MHz ALL MODE TRANSCEIVER
 MODEL NO. : TS-590SG
 SERIAL NO. : 0001
 TEST MODE : RX mode(30MHz : ANT1)
 POWER SOURCE : DC 13.8V
 DATE TESTED : Jul 29 2014
 FILE NO. : -
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-2003
 DISTANCE : 3.00 [m]
 TEMPERATURE : 23.1 [degC]
 HUMIDITY : 44.0 [%]
 NOTE :



ENGINEER : Koichi Wagatsuma

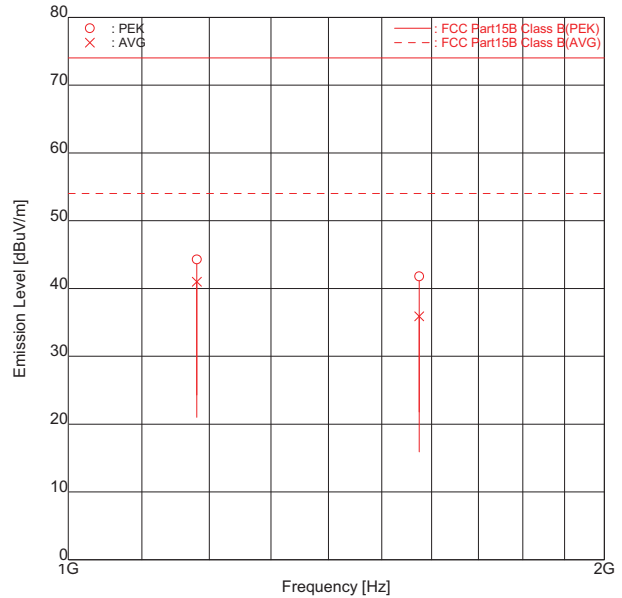
FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert
1	33.88	-	<u>35.5</u>	-2.7	-2.7	-	<u>32.8</u>	40.0	-	-	<u>7.2</u>
2	43.34	31.4	<u>31.9</u>	-1.7	-1.7	29.7	<u>30.2</u>	40.0	10.3	13.7	<u>9.8</u>
3	67.12	28.7	<u>28.0</u>	-2.4	-2.4	26.3	<u>25.6</u>	40.0	13.7	14.4	<u>14.4</u>
4	103.08	37.8	<u>42.5</u>	-5.2	-5.2	32.6	<u>37.3</u>	43.5	10.9	10.9	<u>6.2</u>
5	172.03	-	<u>30.7</u>	-1.2	-1.2	-	<u>29.5</u>	43.5	-	-	<u>14.0</u>
6	191.99	-	33.1	-2.6	-2.6	-	30.5	43.5	-	-	13.0
7	245.76	32.2	-	-1.1	-1.1	31.1	-	46.0	14.9	-	-
8	393.60	<u>37.8</u>	31.8	4.2	4.2	<u>42.0</u>	36.0	46.0	<u>4.0</u>	10.0	10.0
9	412.38	<u>31.7</u>	30.3	4.7	4.7	<u>36.4</u>	35.0	46.0	<u>9.6</u>	11.0	11.0
10	787.19	<u>22.2</u>	21.4	13.9	13.9	<u>36.1</u>	35.3	46.0	<u>9.9</u>	10.7	10.7

Higher six points are underlined.
 Other frequencies : Below the FCC Part15B Class B limit
 Emission Level = Read + Factor(Antenna, Antenna Pad, Cable, Preamp)
 ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

1000 – 2000 MHz

Intertek Japan K.K.
Kashima No.12 Test Site
 Radiated Electric Field

APPLICANT : JVC KENWOOD Corporation
 EUT NAME : HF/50MHz ALL MODE TRANSCEIVER
 MODEL NO. : TS-590SG
 SERIAL NO. : 0001
 TEST MODE : RX mode(30MHz : ANT1)
 POWER SOURCE : DC 13.8V
 DATE TESTED : Jul 30 2014
 FILE NO. : -
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-2003
 DISTANCE : 3.00 [m]
 TEMPERATURE : 25.7 [degC]
 HUMIDITY : 50.0 [%]
 NOTE :



ENGINEER : Koichi Wagatsuma

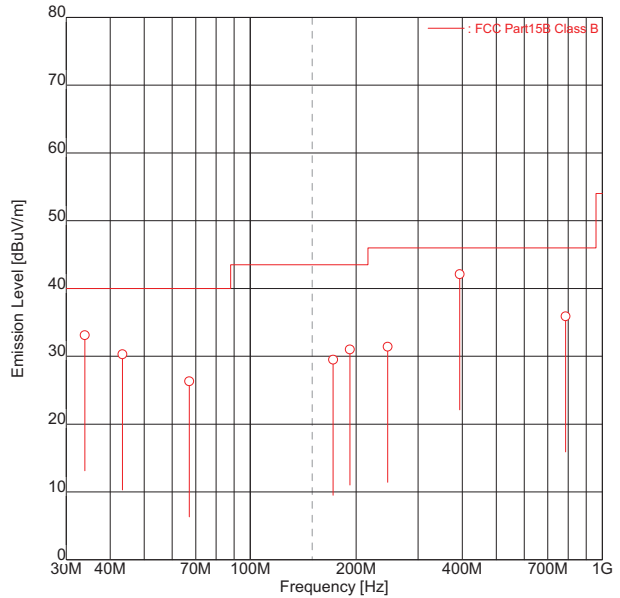
FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	1180.90	PEK	47.4	<u>48.5</u>	-4.2	-4.2	43.2	<u>44.3</u>	74.0	30.8	<u>29.7</u>
2	1180.90	AVG	42.7	<u>45.2</u>	-4.2	-4.2	38.5	<u>41.0</u>	54.0	15.5	<u>13.0</u>
3	1574.37	PEK	<u>44.5</u>	44.1	-2.7	-2.7	<u>41.8</u>	41.4	74.0	<u>32.2</u>	32.6
4	1574.37	AVG	38.3	<u>38.6</u>	-2.7	-2.7	35.6	<u>35.9</u>	54.0	18.4	<u>18.1</u>

Higher six points are underlined.
 Other frequencies : Below the FCC Part15B Class B limit
 Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamp)
 ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

**9.1.2.3 RX mode(59.999MHz : ANT1)
 30 – 1000 MHz**

Intertek Japan K.K.
Kashima No.12 Test Site
 Radiated Electric Field

APPLICANT : JVC KENWOOD Corporation
 EUT NAME : HF/50MHz ALL MODE TRANSCEIVER
 MODEL NO. : TS-590SG
 SERIAL NO. : 0001
 TEST MODE : RX mode(59.999MHz : ANT1)
 POWER SOURCE : DC 13.8V
 DATE TESTED : Jul 29 2014
 FILE NO. : -
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-2003
 DISTANCE : 3.00 [m]
 TEMPERATURE : 23.1 [degC]
 HUMIDITY : 44.0 [%]
 NOTE :



ENGINEER : Koichi Wagatsuma

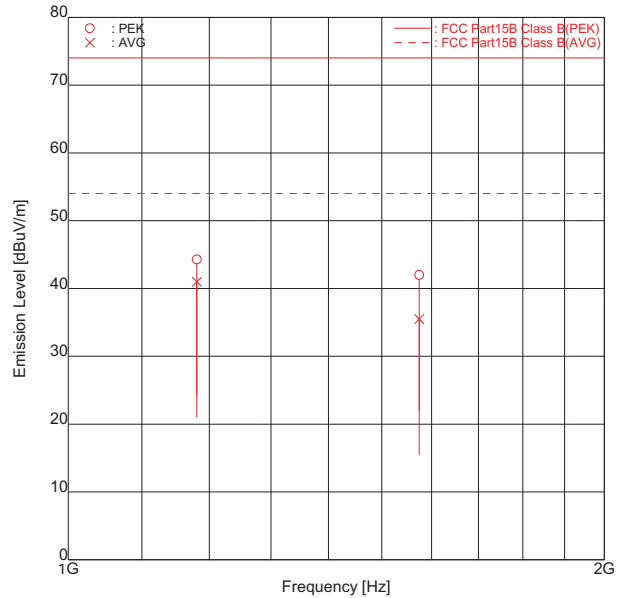
FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert
1	33.88	-	<u>35.8</u>	-2.7	-2.7	-	<u>33.1</u>	40.0	-	-	<u>6.9</u>
2	43.34	31.3	<u>32.0</u>	-1.7	-1.7	29.6	<u>30.3</u>	40.0	10.4	-	<u>9.7</u>
3	67.12	<u>28.7</u>	28.2	-2.4	-2.4	<u>26.3</u>	25.8	40.0	<u>13.7</u>	-	14.2
4	172.03	-	30.7	-1.2	-1.2	-	29.5	43.5	-	-	14.0
5	191.99	-	<u>33.6</u>	-2.6	-2.6	-	<u>31.0</u>	43.5	-	-	<u>12.5</u>
6	245.76	32.5	-	-1.1	-1.1	31.4	-	46.0	14.6	-	-
7	393.60	<u>37.9</u>	31.1	4.2	4.2	<u>42.1</u>	35.3	46.0	<u>3.9</u>	-	10.7
8	787.19	<u>22.0</u>	21.3	13.9	13.9	<u>35.9</u>	35.2	46.0	<u>10.1</u>	-	10.8

Higher six points are underlined.
 Other frequencies : Below the FCC Part15B Class B limit
 Emission Level = Read + Factor(Antenna, Antenna Pad, Cable, Preamp)
 ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

1000 – 2000 MHz

Intertek Japan K.K.
Kashima No.12 Test Site
 Radiated Electric Field

APPLICANT : JVC KENWOOD Corporation
 EUT NAME : HF/50MHz ALL MODE TRANSCEIVER
 MODEL NO. : TS-590SG
 SERIAL NO. : 0001
 TEST MODE : RX mode(59.999MHz : ANT1)
 POWER SOURCE : DC 13.8V
 DATE TESTED : Jul 30 2014
 FILE NO. : -
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-2003
 DISTANCE : 3.00 [m]
 TEMPERATURE : 25.7 [degC]
 HUMIDITY : 50.0 [%]
 NOTE :



ENGINEER : Koichi Wagatsuma

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert		
1	1180.90	PEK	47.2	<u>48.5</u>	-4.2	-4.2	43.0	<u>44.3</u>	74.0	31.0	<u>29.7</u>	
2	1180.90	AVG	42.8	<u>45.2</u>	-4.2	-4.2	38.6	<u>41.0</u>	54.0	15.4	<u>13.0</u>	
3	1574.37	PEK	<u>44.7</u>	44.7	-2.7	-2.7	<u>42.0</u>	42.0	74.0	<u>32.0</u>	32.0	
4	1574.37	AVG	<u>38.2</u>	37.9	-2.7	-2.7	<u>35.5</u>	35.2	54.0	<u>18.5</u>	18.8	

Higher six points are underlined.
 Other frequencies : Below the FCC Part15B Class B limit
 Emission Level = Read + Factor(Antenna, Antenna Pad, Cable, Preamp)
 ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

SECTION 10. LIST OF MEASURING INSTRUMENTS

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

Instrument	Model No.	Serial No.	Manufacturer	Cal. Interval	Effective period
Conducted disturbance at mains terminals					
LISN(EUT)	ESH2-Z5	890484/001	Rohde & Schwarz	1 Y	Nov.30, 2014
LISN(Peripheral)	KNW-242	8-851-21	Kyoritsu	1 Y	May.31, 2015
10dB LISN Pad	CFA-01	KSR00240	TAMAGAWA	1 Y	Nov.30, 2014
10dB LISN Pad	CFA-01	KSR00255	TAMAGAWA	1 Y	May.31, 2015
50ohm Termination	CT-01	KSR00138	TAMAGAWA	1 Y	May.31, 2015
Coaxial Cable	RG-5A/U (14.0m)	R2	FUJIKURA	1 Y	Jan.31 2015
Coaxial Cable	10D-2W(7.0m)	R4	FUJIKURA	1 Y	Jan.31 2015
Coaxial Cable	RG-5A/U(4.0m)	R6	FUJIKURA	1 Y	Jan.31 2015
Coaxial Cable	5D-2W(0.6m)	R7	MIYAZAKI	1 Y	Jan.31 2015
Coaxial Cable	5D-2W(1.2m)	R10	FUJIKURA	1 Y	Jan.31 2015
Radiated disturbance					
Antenna	Tri-Log VULB9168	126	Schwarzbeck	1 Y	Nov.31 2014
Amplifier	ZX60-3018G	005	Intertek Japan	1 Y	Jan.31 2015
6dB Attenuator	CFA-01	A00040805	TAMAGAWA	1 Y	Jan.31 2015
Coaxial Cable	5D-2W(14.0m)	R11	FUJIKURA	1 Y	Jan.31 2015
Coaxial Cable	10D-2W(7.0m)	R3	FUJIKURA	1 Y	Jan.31 2015
Coaxial Cable	RG-5A/U(4.0m)	R5	FUJIKURA	1 Y	Jan.31 2015
Coaxial Cable	5D-2W(0.6m)	R7	MIYAZAKI	1 Y	Jan.31 2015
Coaxial Cable	5D-2W(1.2m)	R10	FUJIKURA	1 Y	Jan.31 2015
Spectrum Analyzer	N9000A	MY51206520	Agilent	1 Y	Mar.31, 2015
Double Ridged Antenna	3115	5045	EMCO	1 Y	Mar.31, 2015
3dB Attenuator	6803.17.B	5111	HUBER + SUHNER	1 Y	Feb.28, 2015
Amplifier	TPA0118-30	0402	TOYO	1 Y	Feb.28, 2015
Coaxial Cable (R13)	SUCOFLEX 104	229603	SUHNER	1 Y	Feb.28, 2015
Coaxial Cable (R12)	5B-048-98-98-5000	111130	Candox	1 Y	Feb.28, 2015
Site Attenuation				1 Y	Feb.28, 2015
Common					
Test receiver	ESS (Firmware Version 1.07)	847151/012	Rohde & Schwarz	1 Y	Mar.31, 2015
RF Switch	ACX-150-1	A12301501	Intertek Japan	1 Y	Jan.31 2015
Testing Software	emiT (Version 3,0,0,0)				

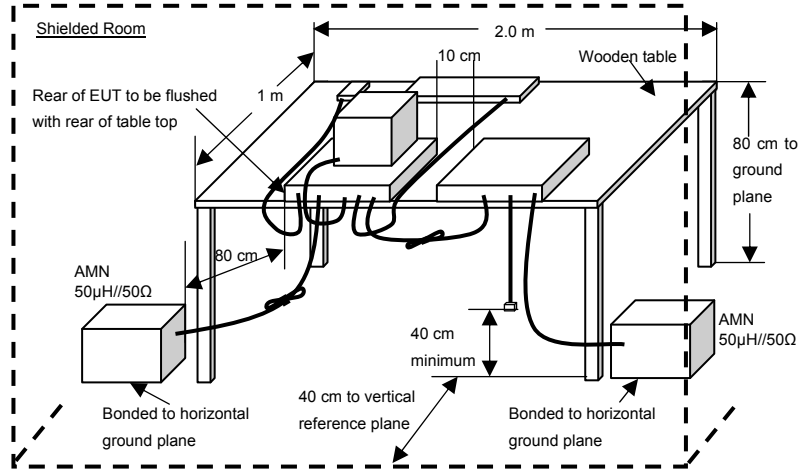
ANNEX

A. TEST PROCEDURE(S)

Test was carried out under the following conditions.

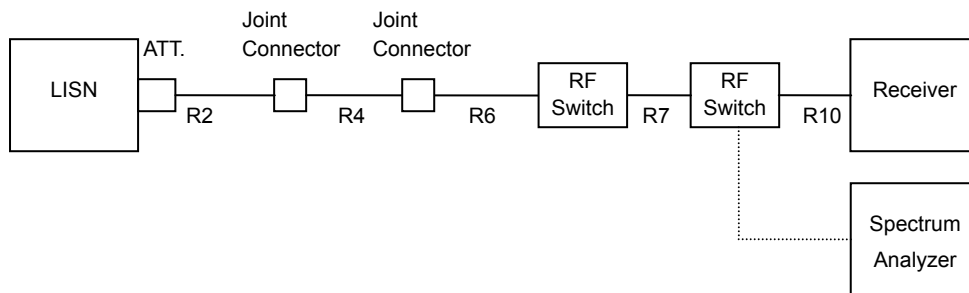
Conducted disturbance at mains terminals

Test setup as per standard



* Reference Ground plane : greater than 2 x 2m

Diagram of the measuring instruments



[Preliminary Measurement]

EUT is tested on all operating conditions.

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 conditions in operating mode and/or configuration decision for the final test.

All leads other than safety ground are tested.

[Final Measurement]

The EUT is operated in the worst emission condition found by the preliminary test.

The equipment and cables are arranged or manipulated within the range of the test standard in the above condition.

At least six highest spectrum are measured in quasi-peak and average (if necessary) using the test receiver.

Radiated disturbance
Test setup as per standard

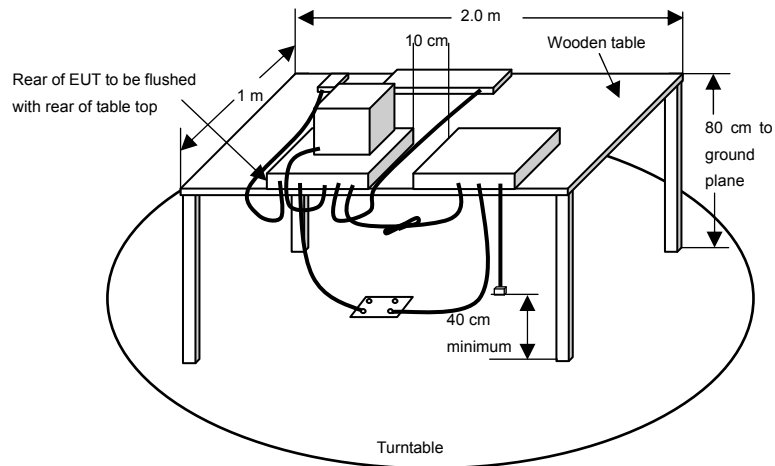
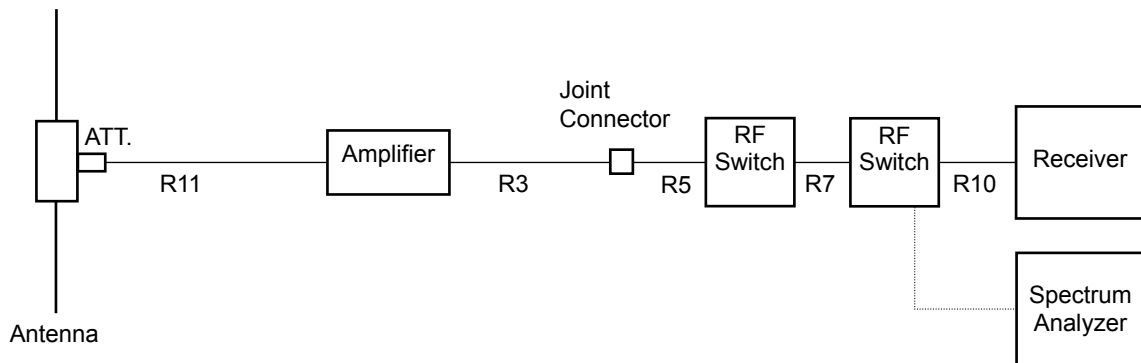
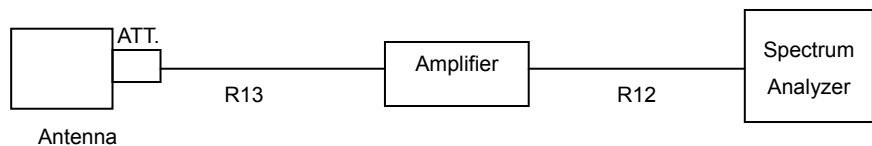


Diagram of the measuring instruments (30-1000MHz)



Above 1GHz



[Preliminary Measurement]

EUT is tested on all operating conditions.
 The spectrum analyzer is set max-hold mode and swept during turntable was rotated 0 to 360 degree,
 And find the worst emission conditions in configuration, operating mode, or ambient noise notation.

[Final Measurement]

The EUT operated in the worst emission condition found by the preliminary test.
 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 (quasi-peak) and spectrum analyzer (peak and average). When the uncertain result was obtained (30 – 1000 MHz), the measurement is retried by using the half wave dipole antenna instead of the broadband antenna.