

TEST REPORT

STANDARD : FCC Part15B Class B -Peripherals-

Applicant	Testing Laboratory
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Equipment Type	HF/50MHz TRANSCEIVER
Trademark	KENWOOD
Model(s)	TS-890S
Serial No.	B8790012
Equipment Authorization	Certification
FCC ID :	K44512001
Test Result	Complied
Report Number	21050183JMA-002
Original Issue Date	June 9 2021

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Approved by

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Hideaki Kosemura

[Reviewer]



Tested by

N. Murakami

Naohei Murakami

[Engineer]

Tested by

Y. Yoneyama

Yoshiaki Yoneyama

[Engineer]

Responsible Party of Test Item (Product)

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

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APPENDIX PHOTOGRAPHS OF MAXIMUM EMISSION SET-UP

SECTION 1. GENERAL INFORMATION

Test Performed

EUT Received	May 14, 2021
Date of Test	From May 26, 2021 to June 2, 2021
Tested Location	Matsuda No.1 test site and Matsuda No.2 test site
Standard Applied	FCC Part15B -Peripherals-
Test methods	ANSI C63.4-2014
Deviation from Standard(s)	None

Qualifications of Testing Laboratory

Accreditation/Recognition	Scope	Lab. Code	Remarks
VLAC	Wireless / EMC Testing	VLAC-008-3	JAPAN
NVLAP	Wireless / EMC Testing	600234-0	USA
FCC	Wireless / EMC Testing	JP0009	USA
ISED	Wireless Testing	JP0004 (CABID)	CANADA
BSMI	EMC Testing	SL2-IN-E-6009	TAIWAN
SABS	EMC Testing	N/A	South Africa
Filing			
VCCI	EMC Testing	A-0127	JAPAN

Abbreviations

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

SECTION 2. SUMMARY OF TEST RESULTS

See Section9 for the detailed result.

Emission Tests

Standard (Regulation) Applied		FCC Part15B Class B -Peripherals-	
Test Item	Minimum margin	Results	Remarks
Conducted disturbance at mains terminals	3.7 dB (0.2014 MHz) [Q-P] RX mode(59.9999MHz)	Pass	-
Radiated disturbance	1.8 dB (310.51 MHz) RX mode(59.9999MHz)	Pass	-

SECTION 3. EQUIPMENT UNDER TEST

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

The information of this section is provided by the Applicant or customer. Intertek doesn't take any responsibility for the information.

3.1 System Configuration

Symbol	Item	Model No.	Serial No.	Manufacturer	Remarks
A	HF/50MHz TRANSCIVER	TS-890S	B8790012	JVCKENWOOD Corporation	
Rated Power : DC 13.8 V $\pm$ 15%, 3.0Amax					
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	0.1 – 60 MHz
Conversion Type	Double conversion

3.3 Intermediate frequency

1st	8.248 MHz
2nd	24 kHz (except FM)
3rd	36 kHz (FM)

3.4 Highest Frequency Generated / Used

Operating Frequency	Operating mode	Remarks
3.633 GHz	RX mode	

3.5 Port(s)/Connector(s)

Port Name	Connector Type	Connector Pin	Remarks
MIC	Metal type	8 pin	
PHONES	Φ6.3 Phone Jack	3 pin	
PADDLE	Φ6.3 Phone Jack	3 pin	
USB	USB-A	4 pin	
Ext. AT	Square shape type	6 pin	
ANT1	M	2 pin	
ANT2	M	2 pin	
ANT OUT	RCA	2 pin	
RX IN	RCA	2 pin	(ANTRX)
RX OUT	RCA	2 pin	
DRV	RCA	2 pin	
KEY	Φ6.3 Phone Jack	3 pin	
ACC2	DIN	13 pin	
REMOTE	DIN	7 pin	
COM	D-SUB	9 pin	
LAN	RJ-45 Modular	8 pin	
DISPLAY	DVI-I	29 pin	
USB	USB-A	4 pin	
USB	USB-B	4 pin	
SP	Φ3.5 Phone Jack	3 pin	
KEYPAD	Φ3.5 Phone Jack	3 pin	
METER	Φ3.5 Phone Jack	3 pin	
REF IN	BNC	2 pin	
GND	Wing Nut type	1 pin	

SECTION 4. SUPPORT EQUIPMENT

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

Symbol	Item	Model No.	Serial No.	Manufacturer	FCC ID
B	DC Power Supply	PS-60	11/01 00148	JVC KENWOOD	N/A
C	Speaker	SP-23	None	JVC KENWOOD	N/A
D	Keyboard	KB216	CN-0CJCVG-LO300-89K-18KJ-A03	DELL	SDoC
E	HUB	SF100D-05	J16070C87	CISCO	SDoC
F	LCD(DVI)	HSTND-2801-W (ZR22W)	CN40160HSZ	HP	SDoC
G	Microphone	MC-47	0019048155894	JVC KENWOOD	N/A
H	Headphone	HS-6	TS-K023	JVC KENWOOD	N/A
I	Computer	HP 280 C3 SFF	8CG9237KKC	HP	SDoC
J	Keyboard	SK-2120	BEXKE0CCPC04AE	HP	SDoC
K	Mouse	MOFYUO	FCMHH0AFAC78L4	HP	SDoC
L	AC Adapter	MU06-6120050-A1	0432-011X000	CISCO	N/A
M	Terminator	CT-01	EM117	TME	N/A
N	Terminator	CT-01	EM120	TME	N/A
O	Terminator	None	None	JVC KENWOOD	N/A
P	Terminator	None	None	JVC KENWOOD	N/A
Q	Terminator	None	None	JVC KENWOOD	N/A
R	USB Memory	U273	95121270079086	pq1	SDoC
S	LCD(VGA)	V203p	6CM92110KR	HP	SDoC
T	Printer	K10231	FBUJ89883	Canon	SDoC
U	Headset	HS-HP10SV	None	ELECOM	N/A
Supplied Power:					
B, F, I, L, S, T, U		AC120 V, 60 Hz			

Note: The information except Symbol F, I, J, K, S and T are provided by the Applicant or customer. Intertek doesn't take any responsibility for the information.

SECTION 5. USED CABLE(S)

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

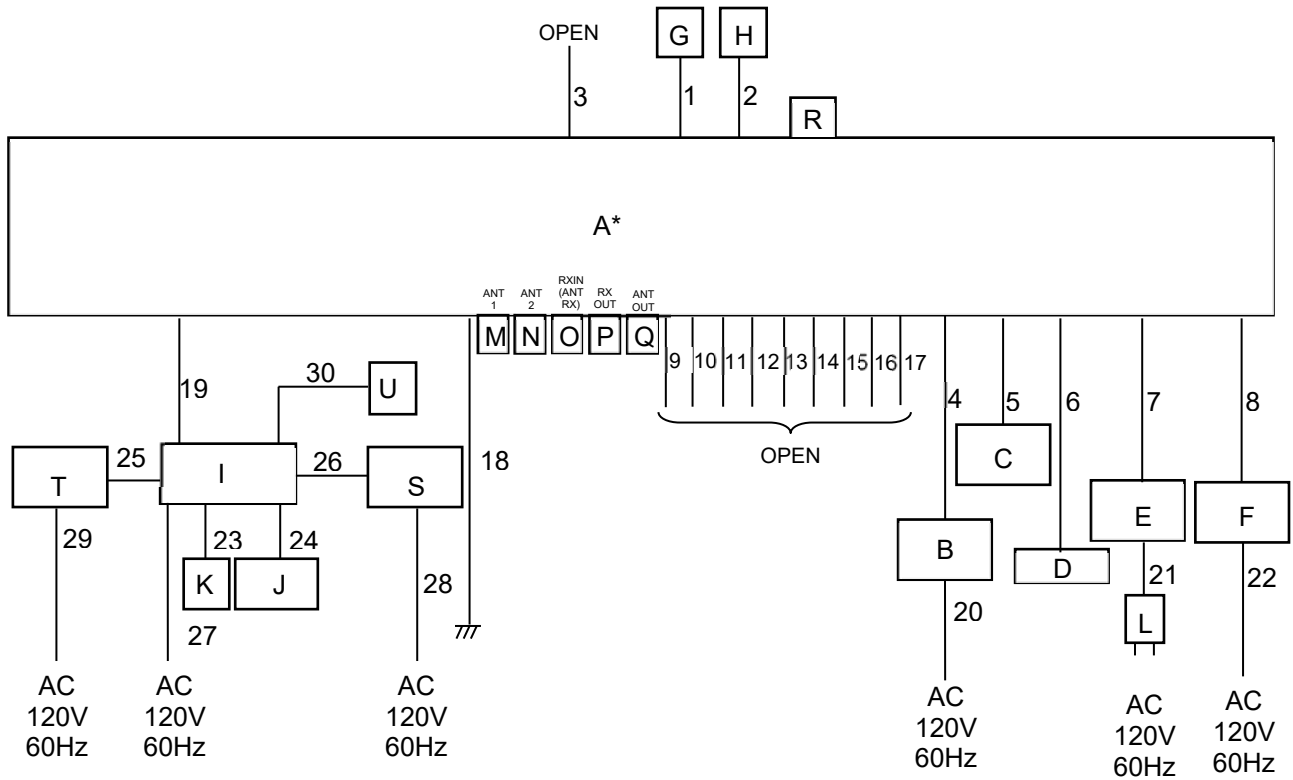
No.	Name	Length (m)	Shield	Metal Connector	Ferrite Core
1	MIC cable	0.45	No	Yes	
2	HEAD PHONE cable	1.50	No	No	
3	PADDLE cable	1.00	No	No	
4	Power cable for EUT (DC)	1.80	No	No	
5	Speaker cable	1.00	No	No	
6	USB Keyboard cable	2.20	Yes	Yes	
7	LAN cable	1.00	No	No	
8	DVI-D cable	1.10	Yes	Yes	
9	REF cable	1.00	Yes	Yes	
10	KEYPAD cable	1.00	No	No	
11	DRV cable	1.00	No	No	
12	ACC cable	1.00	No	No	
13	REMOTE cable	1.00	No	No	
14	METER cable	1.00	No	No	
15	KEY cable	1.00	No	No	
16	COM cable	1.50	Yes	Yes	
17	AT cable	1.00	No	No	
18	GND cable	2.20	No	No	
19	USB cable	2.00	Yes	Yes	
20	Power cable for DC Power Supply (AC)	2.00	No	No	
21	Power cable for Hub (DC)	1.50	No	No	
22	Power cable for LCD(DVI)	1.70	No	No	
23	Mouse cable	1.80	Yes	Yes	
24	Keyboard cable	1.70	Yes	Yes	
25	Centronics cable	2.00	Yes	Yes	
26	VGA cable	1.50	Yes	Yes	
27	Power cable for Computer	1.90	No	No	
28	Power cable for LCD(VGA)	2.00	No	No	
29	Power cable for Printer(AC)	1.70	No	No	
30	Headset cable	1.80	No	No	

Note: The information except No.19, No.22, No.23, No.24, No.25, No.26, No.27, No.28, No.29 and No.30 cables are provided by the Applicant or customer. Intertek doesn't take any responsibility for the information.

SECTION 6. TEST CONFIGURATION

6.1 Conducted disturbance at mains terminals Tests, Radiated disturbance tests and Conducted power on antenna port

* : EUT



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

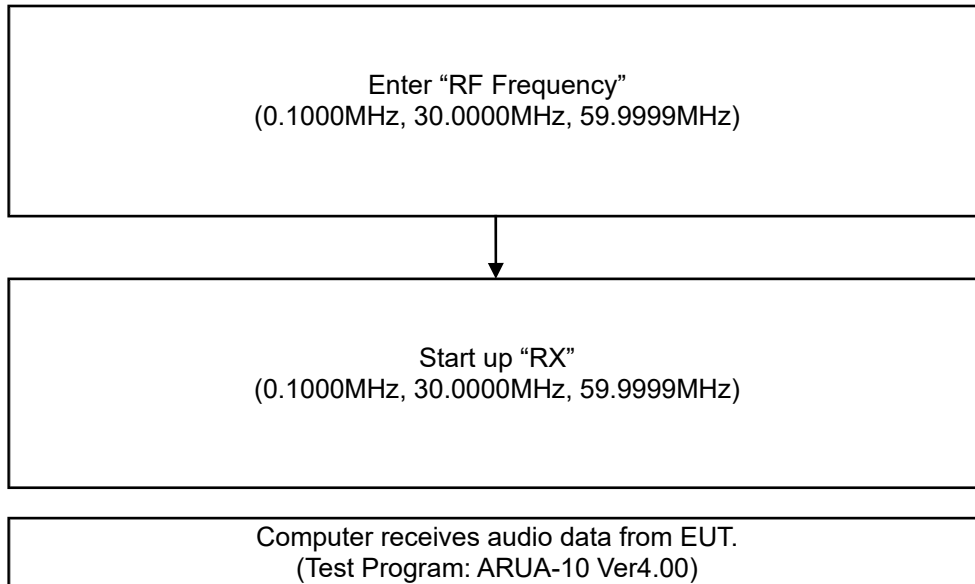
SECTION 7. OPERATING CONDITION

The test was carried out under the following mode.

The information of this section is provided by the Applicant or customer. Intertek doesn't take any responsibility for the information.

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	+/- 5.21 dB	6.3 dB
Above 1 GHz	+/- 4.82 dB	5.2 dB
Radiated disturbance at 10m		
30 MHz – 1000 MHz	+/- 5.29 dB	6.3 dB
Above 1 GHz	-	-
Radiated disturbance at 30m		
	N/A	Nil
Conducted disturbance at mains terminals		
9 kHz – 150 kHz	+/- 1.49 dB	3.8 dB
150 kHz – 30 MHz	+/- 1.56 dB	3.4 dB
Conducted disturbance at telecommunication ports (ISN)		
150 kHz – 30 MHz	+/- 3.22 dB	5.0 dB
Conducted disturbance at telecommunication ports (Capacitive Voltage Probe)		
150 kHz – 30 MHz	+/- 2.92 dB	3.9 dB
Conducted disturbance at telecommunication ports (Current Probe)		
150 kHz – 30 MHz	+/- 1.65 dB	2.9 dB
Conducted disturbance at terminals		
150 kHz – 30 MHz	+/- 1.52 dB	2.9 dB

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	Matsuda No.2 Test Site.
Test Engineer	Naohei Murakami

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	LEN-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 [dBuV] = Meter Reading [dBuV] + Factor [dB]

Margin [dB] = Limit [dBuV] - Emission Level [dBuV]

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

< Sample Calculations >

Sample @0.1820 MHz (RX mode(0.1000MHz))

Emission Level = 39.4 [dBuV] + 10.0 [dB] = 49.4 [dBuV]

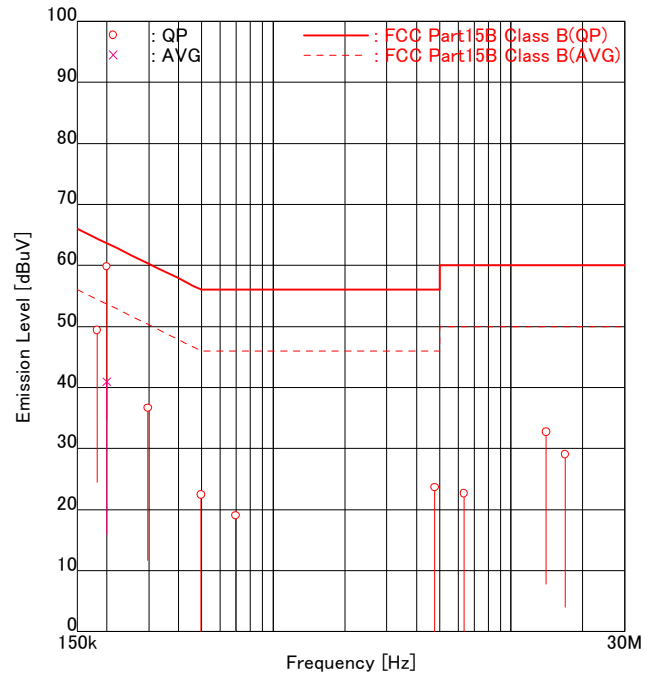
Result of Conducted disturbance at mains terminals
9.1.1.1 RX mode (0.1000MHz)

Intertek Japan K.K.

Matsuda No.2 Test Site

Conducted Voltages on Mains Port

APPLICANT : JVCKENWOOD Corporation
EUT NAME : HF/50MHz TRANSCEIVER
MODEL NO. : TS-890S
SERIAL NO. : B8790012
TEST MODE : RX mode(0.1000MHz)
POWER SOURCE : DC 13.8V (AC 120V 60Hz)
DATE TESTED : May 27 2021
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2014
TEMPERATURE : 20.0 [degC]
HUMIDITY : 63.0 [%]
NOTE : -



ENGINEER : Naohei Murakami

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.1820	QP	<u>39.4</u>	39.4	10.0	9.9	<u>49.4</u>	49.3	64.4	<u>15.0</u>	15.1
2	0.1999	QP	<u>49.8</u>	49.7	10.0	9.9	<u>59.8</u>	59.6	63.6	<u>3.8</u>	4.0
3	0.1999	AVG	30.6	<u>31.0</u>	10.0	9.9	40.6	<u>40.9</u>	53.6	13.0	<u>12.7</u>
4	0.2975	QP	23.6	<u>26.7</u>	10.0	9.9	33.6	<u>36.6</u>	60.3	26.7	<u>23.7</u>
5	0.4978	QP	8.5	12.4	10.1	10.0	18.6	22.4	56.0	37.4	33.6
6	0.6954	QP	3.8	9.0	10.1	10.0	13.9	19.0	56.0	42.1	37.0
7	4.7801	QP	6.5	13.2	10.5	10.4	17.0	23.6	56.0	39.0	32.4
8	6.3361	QP	11.9	7.5	10.7	10.6	22.6	18.1	60.0	37.4	41.9
9	14.0501	QP	<u>21.4</u>	21.1	11.3	11.2	<u>32.7</u>	32.3	60.0	<u>27.3</u>	27.7
10	16.9077	QP	<u>17.6</u>	17.4	11.4	11.4	<u>29.0</u>	28.8	60.0	<u>31.0</u>	31.2

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

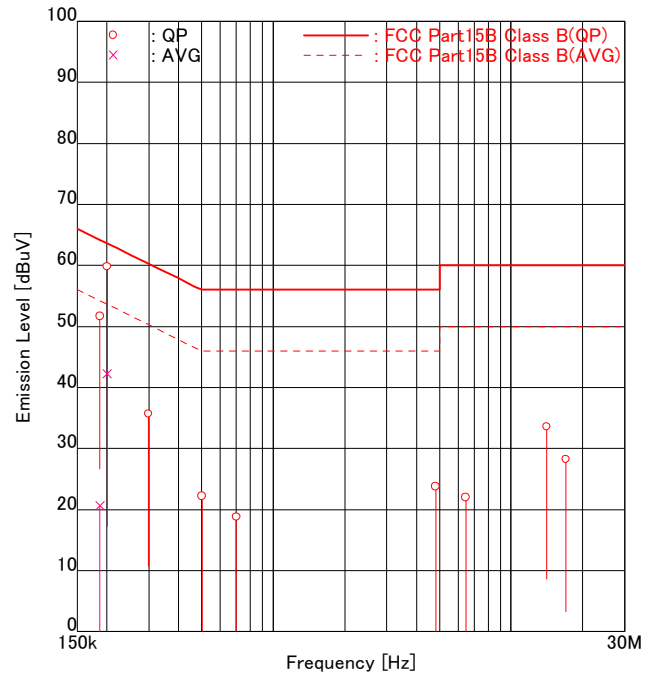
9.1.1.2 RX mode (30.0000MHz)

Intertek Japan K.K.

Matsuda No.2 Test Site

Conducted Voltages on Mains Port

APPLICANT : JVCKENWOOD Corporation
EUT NAME : HF/50MHz TRANSCEIVER
MODEL NO. : TS-890S
SERIAL NO. : B8790012
TEST MODE : RX mode(30.0000MHz)
POWER SOURCE : DC 13.8V (AC 120V 60Hz)
DATE TESTED : May 27 2021
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2014
TEMPERATURE : 20.0 [degC]
HUMIDITY : 63.0 [%]
NOTE : -



ENGINEER : Naohei Murakami

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.1870	QP	<u>41.7</u>	41.7	10.0	9.9	<u>51.7</u>	51.6	64.2	<u>12.5</u>	12.6
2	0.1870	AVG	9.5	10.7	10.0	9.9	19.5	20.6	54.2	34.7	33.6
3	0.2005	QP	<u>49.8</u>	49.6	10.0	9.9	<u>59.8</u>	59.5	63.6	<u>3.8</u>	4.1
4	0.2005	AVG	31.8	<u>32.3</u>	10.0	9.9	41.8	<u>42.2</u>	53.6	11.8	<u>11.4</u>
5	0.2984	QP	21.7	<u>25.8</u>	10.0	9.9	31.7	<u>35.7</u>	60.3	28.6	<u>24.6</u>
6	0.5019	QP	8.5	12.2	10.1	10.0	18.6	22.2	56.0	37.4	33.8
7	0.6999	QP	3.9	8.8	10.1	10.0	14.0	18.8	56.0	42.0	37.2
8	4.8169	QP	5.5	13.4	10.5	10.4	16.0	23.8	56.0	40.0	32.2
9	6.4403	QP	11.3	7.8	10.7	10.6	22.0	18.4	60.0	38.0	41.6
10	14.0774	QP	<u>22.3</u>	21.8	11.3	11.2	<u>33.6</u>	33.0	60.0	<u>26.4</u>	27.0
11	16.9961	QP	<u>16.8</u>	16.5	11.4	11.4	<u>28.2</u>	27.9	60.0	<u>31.8</u>	32.1

Higher six points are underlined.

Other frequencies : Below the FCC Part15B Class B limit

Emission Level = Read + Factor(LISN,Pad,Cable)

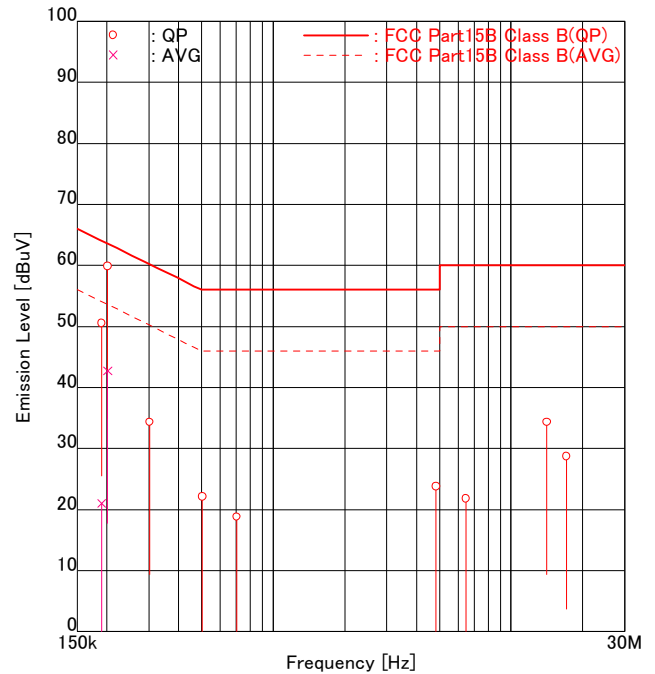
9.1.1.3 RX mode (59.9999MHz)

Intertek Japan K.K.

Matsuda No.2 Test Site

Conducted Voltages on Mains Port

APPLICANT : JVCKENWOOD Corporation
EUT NAME : HF/50MHz TRANSCEIVER
MODEL NO. : TS-890S
SERIAL NO. : B8790012
TEST MODE : RX mode(59.9999MHz)
POWER SOURCE : DC 13.8V (AC 120V 60Hz)
DATE TESTED : May 27 2021
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2014
TEMPERATURE : 20.0 [degC]
HUMIDITY : 63.0 [%]
NOTE : -



ENGINEER : Naohei Murakami

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.1897	QP	<u>40.5</u>	40.4	10.0	9.9	<u>50.5</u>	50.3	64.0	<u>13.5</u>	13.7
2	0.1897	AVG	11.0	10.5	10.0	9.9	21.0	20.4	54.0	33.0	33.6
3	0.2014	QP	<u>49.9</u>	49.7	10.0	9.9	<u>59.9</u>	59.6	63.6	<u>3.7</u>	4.0
4	0.2014	AVG	32.4	<u>32.8</u>	10.0	9.9	42.4	<u>42.7</u>	53.6	11.2	<u>10.9</u>
5	0.3028	QP	18.3	<u>24.4</u>	10.1	9.9	28.4	<u>34.3</u>	60.2	31.8	<u>25.9</u>
6	0.5041	QP	8.4	12.1	10.1	10.0	18.5	22.1	56.0	37.5	33.9
7	0.7031	QP	3.7	8.8	10.1	10.0	13.8	18.8	56.0	42.2	37.2
8	4.8343	QP	5.5	13.4	10.5	10.4	16.0	23.8	56.0	40.0	32.2
9	6.4586	QP	11.1	8.0	10.7	10.6	21.8	18.6	60.0	38.2	41.4
10	14.1352	QP	<u>23.0</u>	22.5	11.3	11.2	<u>34.3</u>	33.7	60.0	<u>25.7</u>	26.3
11	17.0812	QP	<u>17.3</u>	17.2	11.4	11.4	<u>28.7</u>	28.6	60.0	<u>31.3</u>	31.4

Higher six points are underlined.

Other frequencies : Below the FCC Part15B Class B limit

Emission Level = Read + Factor(LISN,Pad,Cable)

9.1.2 Radiated disturbance

Location	Matsuda No.1 Test Site and No.2 Test Site
Test Engineer	Yoshiaki Yoneyama

Frequency Range of Measurements

Operating mode	Required Frequency Range	Measured Frequency Range
RX mode(0.1000MHz) RX mode(30.0000MHz) RX mode(59.9999MHz)	30 – 19000 MHz	30 – 19000 MHz

Test Procedure

Item	Document number
Radiated disturbance	LEN-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	Receiver	Peak	1 MHz	N/A
		Average	1 MHz	N/A

< Measurement data correction >

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

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

Factor [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB] - Amplifier Gain [dB] + Attenuator [dB]
(+ Distance Conversion Factor [dB])*

* For other than Standard distance:

Distance Conversion Factor = 20 log (Measurement distance / Standard distance)

< Sample Calculations >

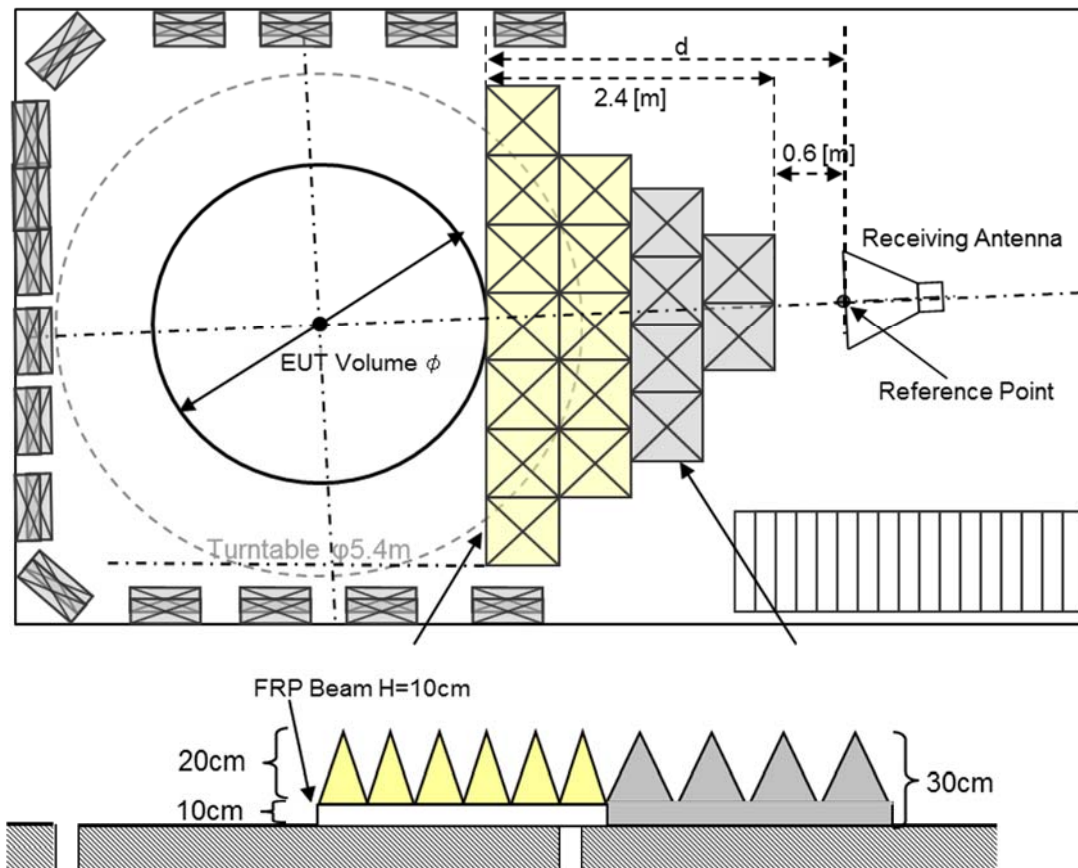
Sample @34.85 MHz (RX mode(0.1000MHz))

Emission Level = 40.5 [dBuV] – 8.1 [dB/m] = 32.4 [dBuV/m]

Specification of Radiated disturbance

Operating Condition	Frequency Range	Measurement distance	Antenna height
RX mode(0.1000MHz) RX mode(30.0000MHz) RX mode(59.9999MHz)	30-1000 MHz	3 m	Scanned 1 to 4 m
	Above 1 GHz	3.43 m	Scanned 1 to 4 m

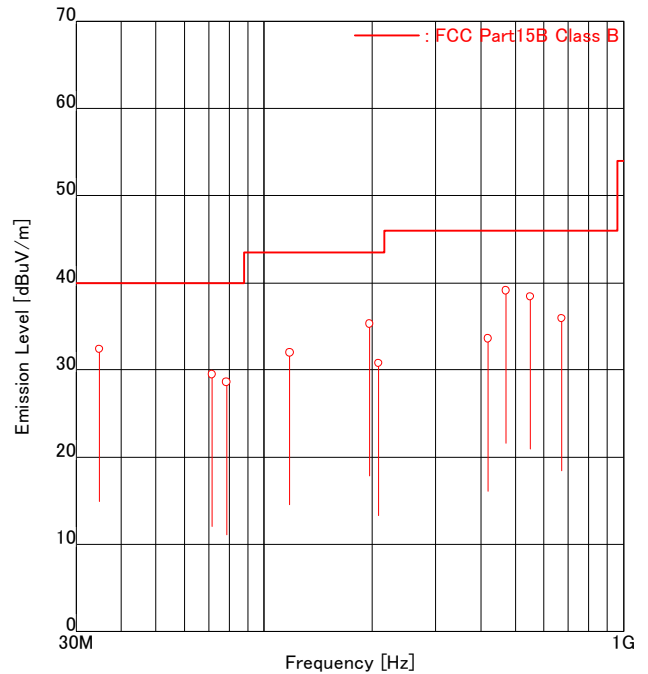
Absorber placement and Receive Antenna location in Radiated disturbance above 1 GHz



Result of Radiated disturbances
9.1.2.1 RX mode(0.1000MHz)
30 – 1000 MHz

Intertek Japan K.K.
Matsuda No.2 Test Site
Radiated Electric Field

APPLICANT : JVCKENWOOD Corporation
EUT NAME : HF/50MHz TRANSCEIVER
MODEL NO. : TS-890S
SERIAL NO. : B8790012
TEST MODE : RX mode(0.1000MHz)
POWER SOURCE : DC 13.8V (AC 120V 60Hz)
DATE TESTED : Jun 01 2021
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2014
DISTANCE : 3.00 [m]
TEMPERATURE : 24.5 [degC]
HUMIDITY : 43.0 [%]
NOTE : -



ENGINEER : Yoshiaki Yoneyama

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
1	34.85	-	<u>40.5</u>	-8.1	-8.1	-	<u>32.4</u>	40.0	-	<u>7.6</u>
2	71.55	<u>37.1</u>	-	-7.6	-7.6	<u>29.5</u>	-	40.0	<u>10.5</u>	-
3	78.55	38.0	37.5	-9.4	-9.4	28.6	28.1	40.0	11.4	11.9
4	117.82	39.7	36.8	-7.7	-7.7	32.0	29.1	43.5	11.5	14.4
5	196.36	<u>42.3</u>	33.2	-7.0	-7.0	<u>35.3</u>	26.2	43.5	<u>8.2</u>	17.3
6	208.10	37.5	-	-6.7	-6.7	30.8	-	43.5	12.7	-
7	419.80	32.4	-	1.2	1.2	33.6	-	46.0	12.4	-
8	471.27	<u>36.8</u>	32.0	2.3	2.3	<u>39.1</u>	34.3	46.0	<u>6.9</u>	11.7
9	549.82	<u>34.2</u>	32.9	4.2	4.2	<u>38.4</u>	37.1	46.0	<u>7.6</u>	8.9
10	672.00	27.3	<u>29.2</u>	6.7	6.7	34.0	<u>35.9</u>	46.0	12.0	<u>10.1</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)

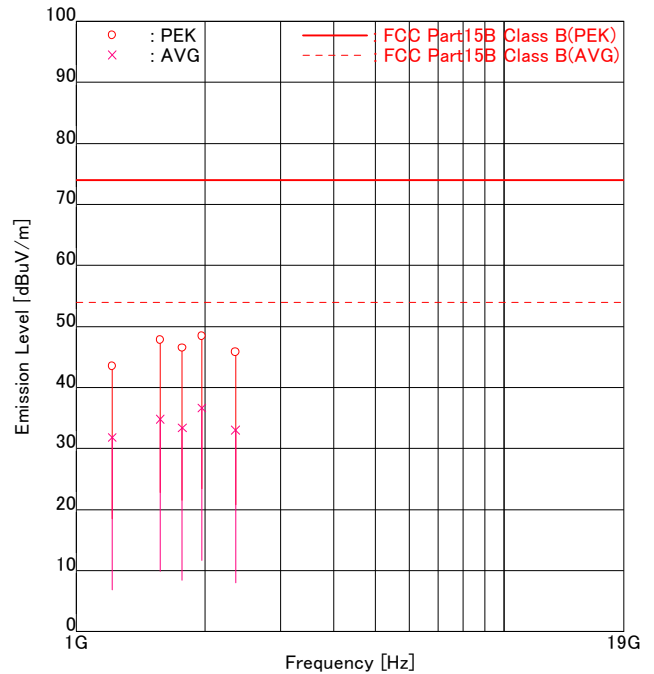
emiT 3, 0, 0, 0

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Above 1000 MHz

Intertek Japan K.K.
Matsuda No.1 Test Site
Radiated Electric Field

APPLICANT : JVCKENWOOD Corporation
EUT NAME : HF/50MHz TRANSCEIVER
MODEL NO. : TS-890S
SERIAL NO. : B8790012
TEST MODE : RX mode(0.1000MHz)
POWER SOURCE : DC 13.8V (AC 120V 60Hz)
DATE TESTED : Jun 02 2021
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2014
DISTANCE : 3.43 [m]
TEMPERATURE : 23.0 [degC]
HUMIDITY : 56.0 [%]
NOTE : -



ENGINEER : Yoshiaki Yoneyama

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]		MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert	Hori	Vert
1	1213.48	PEK	42.0	43.5	-0.0	-0.0	42.0	43.5	74.0	32.0	30.5	
2	1213.48	AVG	29.0	<u>31.8</u>	-0.0	-0.0	29.0	<u>31.8</u>	54.0	25.0	<u>22.2</u>	
3	1570.95	PEK	43.3	46.1	1.7	1.7	45.0	47.8	74.0	29.0	26.2	
4	1570.95	AVG	31.5	<u>33.1</u>	1.7	1.7	33.2	<u>34.8</u>	54.0	20.8	<u>19.2</u>	
5	1767.21	PEK	43.7	43.2	2.8	2.8	46.5	46.0	74.0	27.5	28.0	
6	1767.21	AVG	<u>30.6</u>	30.4	2.8	2.8	<u>33.4</u>	33.2	54.0	<u>20.6</u>	20.8	
7	1963.61	PEK	<u>44.5</u>	43.7	3.9	3.9	<u>48.4</u>	47.6	74.0	<u>25.6</u>	26.4	
8	1963.61	AVG	<u>32.7</u>	31.1	3.9	3.9	<u>36.6</u>	35.0	54.0	<u>17.4</u>	19.0	
9	2356.33	PEK	41.0	40.7	4.8	4.8	45.8	45.5	74.0	28.2	28.5	
10	2356.33	AVG	<u>28.2</u>	28.0	4.8	4.8	<u>33.0</u>	32.8	54.0	<u>21.0</u>	21.2	

Higher six points are underlined.
Other frequencies : Below the FCC Part15B Class B limit
Emission Level=Read+Fact.
Fact.=Ant. Fact.+Cable Loss-Amp. Gain+ATT+Dist.Conversion

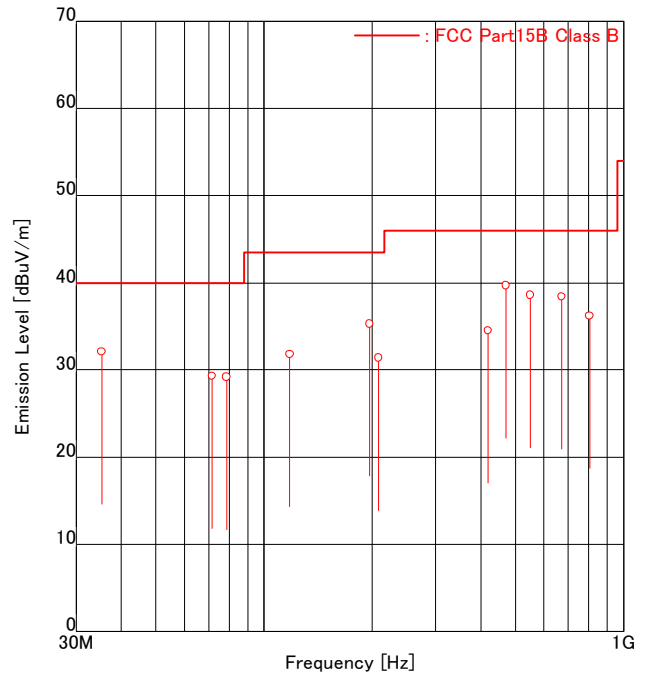
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9.1.2.2 RX mode(30.0000MHz)
30 – 1000 MHz

Intertek Japan K.K.
Matsuda No.2 Test Site
Radiated Electric Field

APPLICANT : JVCKENWOOD Corporation
EUT NAME : HF/50MHz TRANSCEIVER
MODEL NO. : TS-890S
SERIAL NO. : B8790012
TEST MODE : RX mode(30.0000MHz)
POWER SOURCE : DC 13.8V (AC 120V 60Hz)
DATE TESTED : Jun 01 2021
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2014
DISTANCE : 3.00 [m]
TEMPERATURE : 24.5 [degC]
HUMIDITY : 43.0 [%]
NOTE : -



ENGINEER : Yoshiaki Yoneyama

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
1	35.34	-	<u>40.0</u>	-7.9	-7.9	-	<u>32.1</u>	40.0	-	<u>7.9</u>
2	71.55	36.9	34.5	-7.6	-7.6	29.3	26.9	40.0	10.7	13.1
3	78.55	38.6	38.0	-9.4	-9.4	29.2	28.6	40.0	10.8	11.4
4	117.82	39.5	-	-7.7	-7.7	31.8	-	43.5	11.7	-
5	196.36	<u>42.3</u>	-	-7.0	-7.0	<u>35.3</u>	-	43.5	<u>8.2</u>	-
6	207.85	38.1	-	-6.7	-6.7	31.4	-	43.5	12.1	-
7	419.80	33.3	-	1.2	1.2	34.5	-	46.0	11.5	-
8	471.27	<u>37.4</u>	33.3	2.3	2.3	<u>39.7</u>	35.6	46.0	<u>6.3</u>	10.4
9	549.82	<u>34.4</u>	33.2	4.2	4.2	<u>38.6</u>	37.4	46.0	<u>7.4</u>	8.6
10	672.00	29.2	<u>31.7</u>	6.7	6.7	35.9	<u>38.4</u>	46.0	10.1	<u>7.6</u>
11	803.21	25.3	<u>26.7</u>	9.5	9.5	34.8	<u>36.2</u>	46.0	11.2	<u>9.8</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)

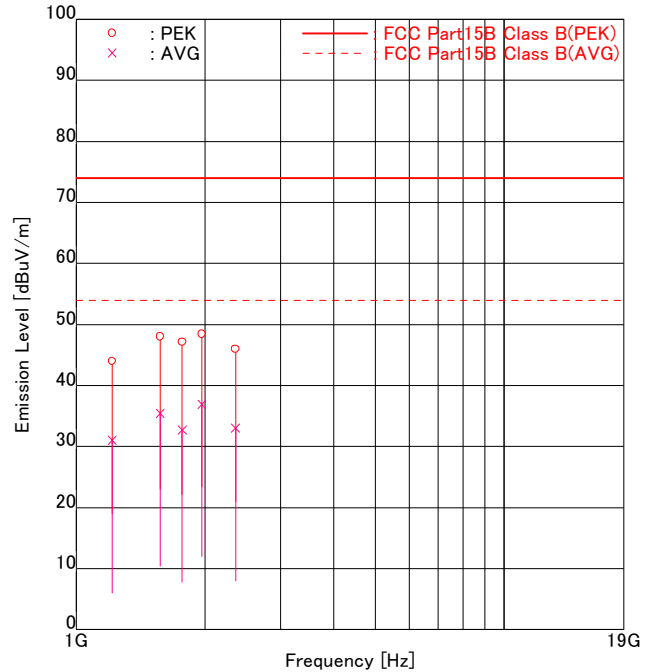
emiT 3, 0, 0, 0

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Above 1000 MHz

Intertek Japan K.K.
Matsuda No.1 Test Site
Radiated Electric Field

APPLICANT : JVCKENWOOD Corporation
EUT NAME : HF/50MHz TRANSCEIVER
MODEL NO. : TS-890S
SERIAL NO. : B8790012
TEST MODE : RX mode(30.0000MHz)
POWER SOURCE : DC 13.8V (AC 120V 60Hz)
DATE TESTED : Jun 02 2021
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2014
DISTANCE : 3.43 [m]
TEMPERATURE : 23.0 [degC]
HUMIDITY : 56.0 [%]
NOTE : -



ENGINEER : Yoshiaki Yoneyama

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	1213.48	PEK	43.0	44.0	-0.0	-0.0	43.0	44.0	74.0	31.0	30.0
2	1213.48	AVG	29.0	<u>31.0</u>	-0.0	-0.0	29.0	<u>31.0</u>	54.0	25.0	<u>23.0</u>
3	1570.95	PEK	43.9	46.3	1.7	1.7	45.6	48.0	74.0	28.4	26.0
4	1570.95	AVG	31.8	<u>33.7</u>	1.7	1.7	33.5	<u>35.4</u>	54.0	20.5	<u>18.6</u>
5	1767.21	PEK	44.3	43.0	2.8	2.8	47.1	45.8	74.0	26.9	28.2
6	1767.21	AVG	28.3	<u>29.9</u>	2.8	2.8	31.1	<u>32.7</u>	54.0	22.9	<u>21.3</u>
7	1963.61	PEK	<u>44.5</u>	44.2	3.9	3.9	<u>48.4</u>	48.1	74.0	<u>25.6</u>	25.9
8	1963.61	AVG	<u>33.0</u>	31.0	3.9	3.9	<u>36.9</u>	34.9	54.0	<u>17.1</u>	19.1
9	2356.33	PEK	41.2	41.0	4.8	4.8	46.0	45.8	74.0	28.0	28.2
10	2356.33	AVG	<u>28.2</u>	27.9	4.8	4.8	<u>33.0</u>	32.7	54.0	<u>21.0</u>	21.3

Higher six points are underlined.
Other frequencies : Below the FCC Part15B Class B limit
Emission Level=Read+Fact.
Fact.=Ant. Fact.+Cable Loss-Amp. Gain+ATT+Dist.Conversion

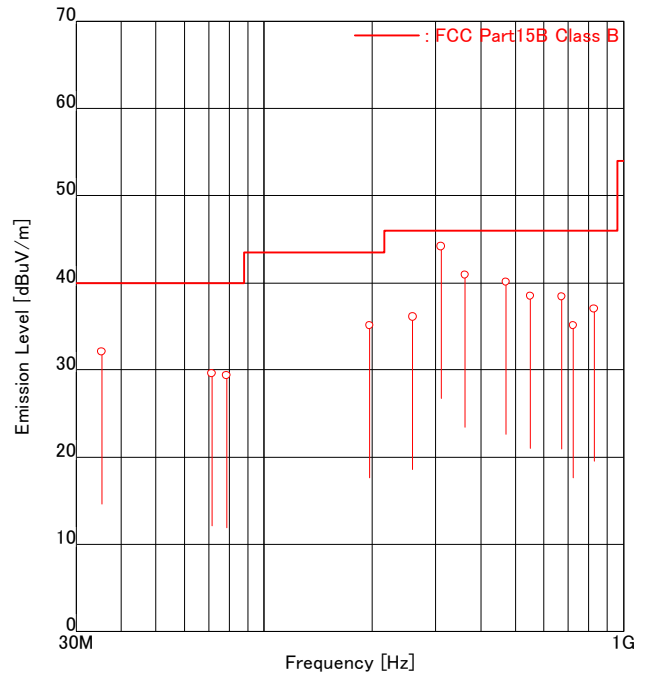
emiT 3, 0, 0, 0

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9.1.2.3 RX mode(59.9999MHz)
30 – 1000 MHz

Intertek Japan K.K.
Matsuda No.2 Test Site
Radiated Electric Field

APPLICANT : JVCKENWOOD Corporation
EUT NAME : HF/50MHz TRANSCEIVER
MODEL NO. : TS-890S
SERIAL NO. : B8790012
TEST MODE : RX mode(59.9999MHz)
POWER SOURCE : DC 13.8V (AC 120V 60Hz)
DATE TESTED : Jun 01 2021
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2014
DISTANCE : 3.00 [m]
TEMPERATURE : 24.5 [degC]
HUMIDITY : 43.0 [%]
NOTE : -



ENGINEER : Yoshiaki Yoneyama

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	35.34	-	<u>40.0</u>	-7.9	-7.9	-	<u>32.1</u>	40.0	-	-	<u>7.9</u>
2	71.50	37.2	34.5	-7.6	-7.6	29.6	26.9	40.0	10.4	13.1	
3	78.55	38.8	38.0	-9.4	-9.4	29.4	28.6	40.0	10.6	11.4	
4	196.36	42.1	-	-7.0	-7.0	35.1	-	43.5	8.4	-	
5	258.76	40.0	-	-3.9	-3.9	36.1	-	46.0	9.9	-	
6	310.51	<u>45.8</u>	37.5	-1.6	-1.6	<u>44.2</u>	35.9	46.0	<u>1.8</u>	10.1	
7	362.26	<u>41.2</u>	34.3	-0.3	-0.3	<u>40.9</u>	34.0	46.0	<u>5.1</u>	12.0	
8	471.27	<u>37.8</u>	33.3	2.3	2.3	<u>40.1</u>	35.6	46.0	<u>5.9</u>	10.4	
9	549.82	<u>34.3</u>	33.2	4.2	4.2	<u>38.5</u>	37.4	46.0	<u>7.5</u>	8.6	
10	672.00	27.8	<u>31.7</u>	6.7	6.7	34.5	<u>38.4</u>	46.0	11.5	<u>7.6</u>	
11	724.53	26.8	27.2	7.9	7.9	34.7	35.1	46.0	11.3	10.9	
12	828.03	27.2	26.0	9.8	9.8	37.0	35.8	46.0	9.0	10.2	

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)

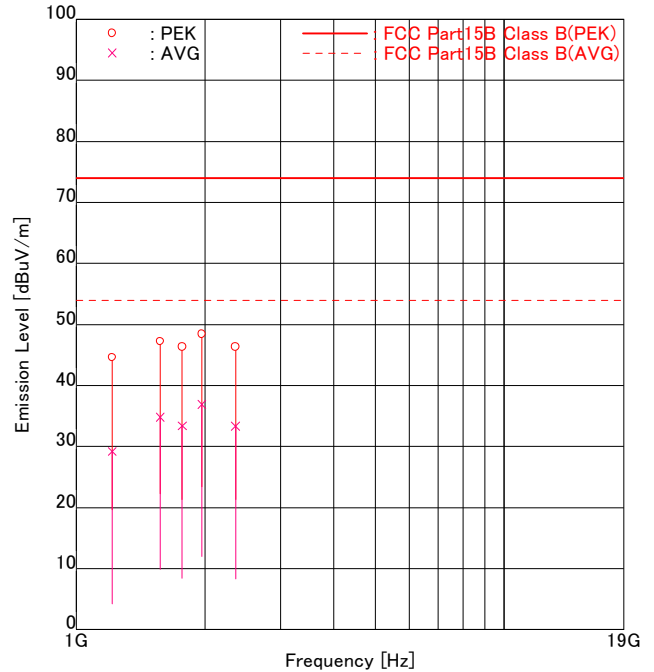
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Above 1000 MHz

Intertek Japan K.K.
Matsuda No.1 Test Site
Radiated Electric Field

APPLICANT : JVCKENWOOD Corporation
EUT NAME : HF/50MHz TRANSCEIVER
MODEL NO. : TS-890S
SERIAL NO. : B8790012
TEST MODE : RX mode(59.9999MHz)
POWER SOURCE : DC 13.8V (AC 120V 60Hz)
DATE TESTED : Jun 02 2021
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2014
DISTANCE : 3.43 [m]
TEMPERATURE : 23.0 [degC]
HUMIDITY : 56.0 [%]
NOTE : -



ENGINEER : Yoshiaki Yoneyama

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	1213.48	PEK	44.6	42.8	-0.0	-0.0	44.6	42.8	74.0	29.4	31.2
2	1213.48	AVG	<u>29.2</u>	28.9	-0.0	-0.0	<u>29.2</u>	28.9	54.0	<u>24.8</u>	25.1
3	1570.95	PEK	44.5	45.5	1.7	1.7	46.2	47.2	74.0	27.8	26.8
4	1570.95	AVG	32.3	<u>33.1</u>	1.7	1.7	34.0	<u>34.8</u>	54.0	20.0	<u>19.2</u>
5	1767.21	PEK	43.3	43.5	2.8	2.8	46.1	46.3	74.0	27.9	27.7
6	1767.21	AVG	<u>30.6</u>	29.8	2.8	2.8	<u>33.4</u>	32.6	54.0	<u>20.6</u>	21.4
7	1963.61	PEK	<u>44.5</u>	42.9	3.9	3.9	<u>48.4</u>	46.8	74.0	<u>25.6</u>	27.2
8	1963.61	AVG	<u>33.0</u>	29.7	3.9	3.9	<u>36.9</u>	33.6	54.0	<u>17.1</u>	20.4
9	2356.33	PEK	41.5	41.2	4.8	4.8	46.3	46.0	74.0	27.7	28.0
10	2356.33	AVG	<u>28.5</u>	28.1	4.8	4.8	<u>33.3</u>	32.9	54.0	<u>20.7</u>	21.1

Higher six points are underlined.
Other frequencies : Below the FCC Part15B Class B limit
Emission Level=Read+Fact.
Fact.=Ant. Fact.+Cable Loss-Amp. Gain+ATT+Dist.Conversion

emiT 3, 0, 0, 0

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SECTION 10. LIST 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 for the measurement is calibrated based on the ANSI C63.5.

10.1 Emission tests

Instrument	Model No.	Serial No.	Manufacturer	Cal. Interval	Effective period
Conducted disturbance at mains terminals					
LISN(EUT)	ESH2-Z5	882395/019	Rohde & Schwarz	1 Y	Jun. 2021
LISN(Peripheral)	KNW-407	8-1395-2	Kyoritsu	1 Y	Jun. 2021
10dB LISN Pad	CFA-01	E04AT10B	TAMAGAWA	1 Y	Jun. 2021
10dB LISN Pad	6801.01.A	788072	HUBER+SUHNER	1 Y	Jun. 2021
50Ω Termination	65BNC-50-0-2/133NE	E02TRM50A	SUHNER	1 Y	Jun. 2021
Coaxial Cable (C1)	3D-2W(7.8m)	MTS02CSR-1	Intertek	1 Y	Jan. 2022
Coaxial Cable (C2)	RG-5A/U(12.0m)	MTS02CSR-2	Intertek	1 Y	Jan. 2022
Coaxial Cable (C3)	RG214HF(1.5m)	MTS02CSR-3	SUHNER	1 Y	Jan. 2022
Coaxial Cable (C4)	RG214HF(1.5m)	MTS02CSR-4	SUHNER	1 Y	Jan. 2022
Coaxial Cable (C5)	RG214HF(1.5m)	MTS02CSR-5	SUHNER	1 Y	Jan. 2022
RF Switch(1)	MP59B	M7736	ANRITSU	1 Y	Jan. 2022
RF Switch(2)	ACX-150-1	E02301501	Intertek	1 Y	Jan. 2022
Test Receiver	ESS (Firmware Version 1.21)	839643/008	Rohde & Schwarz	1 Y	Aug. 2021
Testing Software	emiT (Version 3,0,0,0)			N/A	N/A

Note: The effective period is to the last day of month listed.

Radiated disturbance (30-1000 MHz)					
Broad Band Antenna	VULB9168	124	Schwarzbeck	1 Y	Jul. 2021
Amplifier	8447D	2727A05809	Hewlett Packard	1 Y	Jan. 2022
Step Attenuator	8494B	2805A14576	Hewlett Packard	1 Y	Jan. 2022
6dB Attenuator	MP721B	M87938	ANRITSU	1 Y	Jan. 2022
Coaxial Cable (R1)	RG214HF(8.0m)	MTS02R3-1	SUHNER	1 Y	Jan. 2022
Coaxial Cable (R2)	12D-SFA(28.0m)	MTS02R3-2	Intertek	1 Y	Jan. 2022
Coaxial Cable (R3)	RG214HF(2.0m)	MTS02R3-3	SUHNER	1 Y	Jan. 2022
Coaxial Cable (R4)	RG214HF(0.4m)	MTS02R3-4	SUHNER	1 Y	Jan. 2022
Coaxial Cable (R5)	RG214HF(0.4m)	MTS02R3-5	SUHNER	1 Y	Jan. 2022
Coaxial Cable (R6)	RG214HF(1.5m)	MTS02R3-6	SUHNER	1 Y	Jan. 2022
Coaxial Cable (R7)	RG214HF(1.5m)	MTS02R3-7	SUHNER	1 Y	Jan. 2022
Coaxial Cable (R8)	RG214HF(1.5m)	MTS02R3-8	SUHNER	1 Y	Jan. 2022
Coaxial Cable (R9)	5D-2W(8.0m)	MTS02R3-9	SUHNER	1 Y	Jan. 2022
RF Switch(1)	MP59B	M7736	ANRITSU	1 Y	Jan. 2022
RF Switch(2)	ACX-150-1	E02301501	Intertek	1 Y	Jan. 2022
Test Receiver	ESS (Firmware Version 1.21)	839643/008	Rohde & Schwarz	1 Y	Aug. 2021
Site Attenuation	-	-	-	1 Y	May 2022
Radiated disturbance (Above 1GHz)					
Double Ridged Antenna	3115	2568	EMCO	1 Y	Mar. 2022
Horn Antenna with Preamplifier	MLA-18265-B03-30	1694440	TSJ	1 Y	May 2022
Amplifier	TPA0118-30	950186	TOYO Corporation	1 Y	Mar. 2022
6dB Attenuator	6806.17.B	None(E00AT6GA)	HUBER+SUHNER	1 Y	Mar. 2022
Coaxial Cable (R11)	S04272B/11N/11SMA	38242_1	HUBER+SUHNER	1 Y	Nov. 2021
Coaxial Cable (R12)	SUCOFLEX 104	808144/4	HUBER+SUHNER	1 Y	Nov. 2021
Coaxial Cable (G3)	5B-048-98-98-6000	120315	Candox	1 Y	May 2022
Test Receiver	ESR26 (Firmware Ver. 3.46 SP1)	101629	Rohde & Schwarz	1 Y	Mar. 2022
SVSWR	1site			1 Y	Sep. 2021
Common					
Testing Software	emiT (Version 3,0,0,0)			N/A	N/A

Note: The effective period is to the last day of month listed.

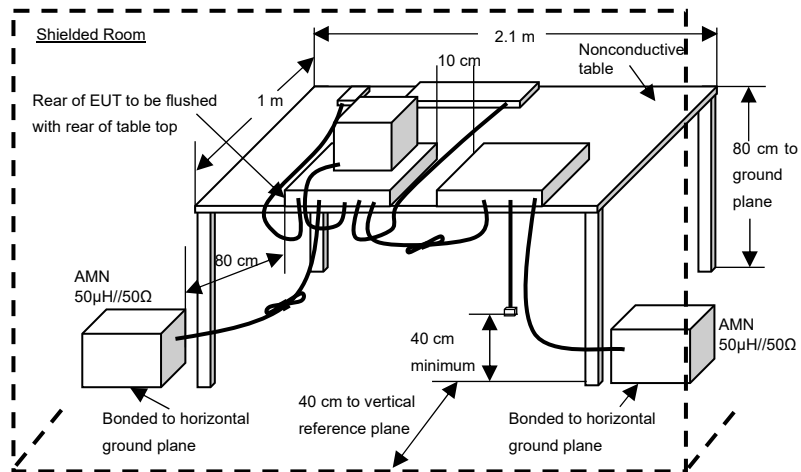
ANNEX

A. TEST PROCEDURE(S)

Test was carried out under the following conditions.

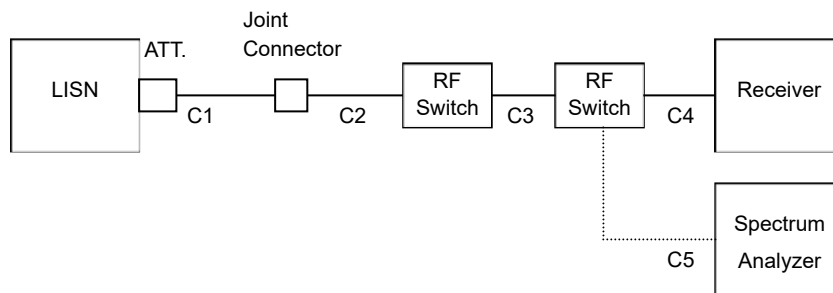
Conducted disturbance at mains terminals

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

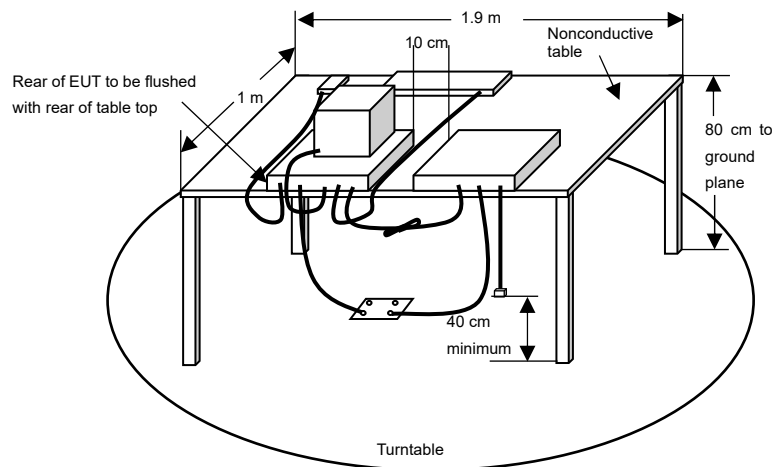
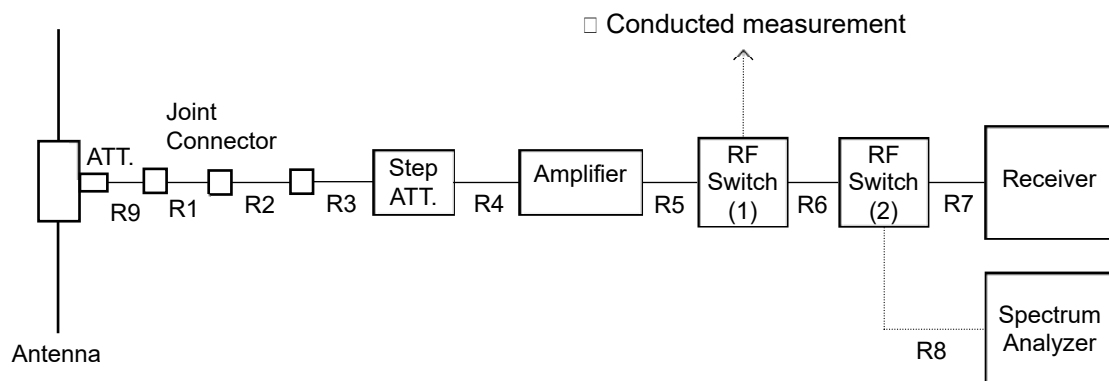
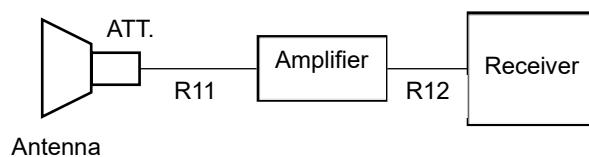


Diagram of the measuring instruments

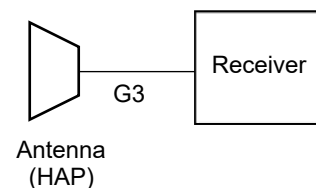
30 – 1000 MHz



1 – 18 GHz



Above 18GHz



[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 or spectrum analyzer. 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.