

TEST REPORT

STANDARD : FCC Part15B Class B -Scanning Receiver
: Industry Canada RSS-215 Issue 2

Applicant	Testing Laboratory
Kenwood Corporation 1-16-2, Hakusan, Midori-ku, Yokohama-shi, Kanagawa, 226-8525 Japan Tel. +81 45 939 6254	Intertek Japan K.K. Tochigi Laboratory URL: http://www.japan.intertek-etlsemko.com 870, Nakaawano, Kanuma-shi, Tochigi-ken 322-0306 Japan Tel. +81 289 86 7121

Equipment Type	144 MHz FM TRANSCEIVER
Category	Scanning Receiver
Trademark	KENWOOD
Model(s)	TM-281A
Serial No.	00000088
Equipment Authorization	Certification
FCC ID	K44441700
IC ID	281F-441700
Report Number	JT11050012
Report Issue Date	June 20, 2011

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

Approved by

Kazuo Gokita
[Manager]

Tested by



Atsuyuki Morishima



TABLE OF CONTENTS

	Page
SECTION 1. GENERAL INFORMATION	3
SECTION 2. SUMMARY OF TEST RESULTS	4
SECTION 3. EQUIPMENT UNDER TEST	5
SECTION 4. SUPPORT EQUIPMENT.....	6
SECTION 5. USED CABLE(S).....	7
SECTION 6. TEST CONFIGURATION	8
SECTION 7. OPERATING CONDITION	10
SECTION 8. UNCERTAINTY	11
SECTION 9. EVALUATION OF TEST RESULTS	12
SECTION 10. LIST OF MEASURING INSTRUMENTS	33
ANNEX	35

SECTION 1. GENERAL INFORMATION

Test Performed

EUT Received	May 25, 2011
Date of Test	From May 31, 2011 to June 4, 2011
Standard Applied	FCC Part15B – Scanning Receiver Industry Canada RSS-215 Issue 2 * * It is not covered by accredited scope of VLAC.
Test methods	ANSI C63.4-2003 / RSS-GEN Issue3 -2010
Deviation from Standard(s)	None

Note : As for the ICES-003 “Digital Apparatus”, the EUT has been measured.

Refer to report No.“JT11050014”.

As for the FCC Part15B Class B “Peripherals”, the EUT has been measured.

Refer to report No.“JT11050013”.

Qualifications of Testing Laboratory

Accreditation	Scope	Lab. Code	Remarks
VLAC	EMC Testing	VLAC-008-5	JAPAN
BSMI	EMC Testing	SL2-IN-E-6017, SL2-AI-E-6017	TAIWAN
Filing			
VCCI	EMC Testing	R-257, C-260, C-284, T-1736, T-1737, G-124 R-258, C-261, C-285, T-1738, T-1739 R-259, C-262, T-1740, G-125	JAPAN
FCC	EMC Testing	Designation Number : JP0011	USA
IC	EMC Testing	2042P-1, 2042P-2	CANADA
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
VFO	Variable Frequency Oscillator		

SECTION 2. SUMMARY OF TEST RESULTS

See Section9 for the detailed result.

Standard Applied	FCC Part15B – Scanning Receiver Industry Canada RSS-215 Issue 2	
Test Item	Minimum margin	Remarks
Conducted disturbance at mains terminals	6.8dB (0.2047 MHz) [Q-P]	RX mode (136.05MHz)
Radiated disturbance	8.5 dB (214.66 Mz)	VFO SCAN mode
Conducted Power on Antenna Port (15.111/ RSS-215 5.1)	7.1dB (1215.0750 MHz)	VFO SCAN mode
38dB Rejection Test (15.121(b))	No frequency of response was detected	-Passed-

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	144 MHz FM TRANSCEIVER	TM-281A	00000088	KENWOOD
Rated Power : DC13.8 V(DC11.7-15.9 V), 2.0 A max.				
Supplied Power : DC13.8 V				
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	136-174 MHz
Receiver Type	Double Conversion
Model of Operation	F3E

3.3 Intermediate Frequencies

1st	49.95MHz (Upper)
2nd	450kHz (Upper)

3.4 Port(s)/Connector(s)

Port Name	Connector Type	Connector Pin	Remarks
External Speaker	3.5 φ	2pin	
Antenna	M	2pin	
Microphone	RJ-45	8pin	

3.5 Highest Frequency Generated / Used

Base Clock	Operating Frequency	Board Name	Remarks
447.895 MHz	447.895 MHz	TX RX UNIT	

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	00148	KENWOOD	N/A
C	External Speaker	SP-50B	None	KENWOOD	N/A
D	Microphone	KMC-32	None	KENWOOD	N/A
E	Dummy Antenna	CT-01	None	TME	N/A
Supplied Power:					
B	AC120 V, 60 Hz				
E	50ohms				

SECTION 5. USED CABLE(S)

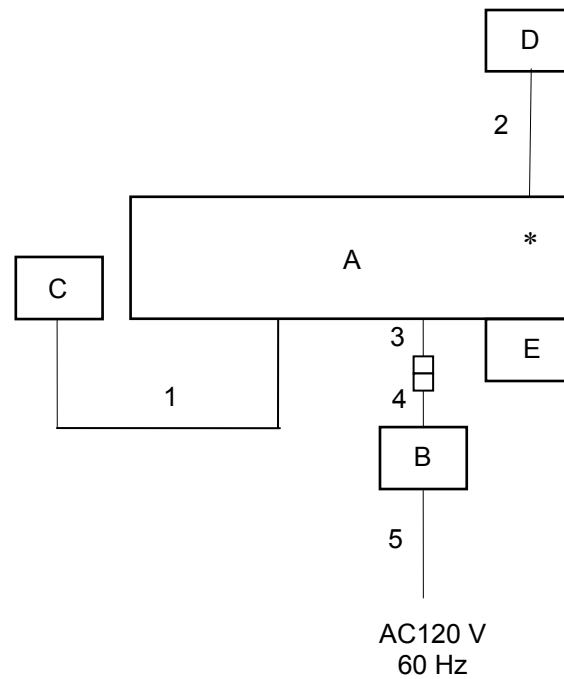
The following cable(s) was used for the test.

No.	Name	Length (m)	Shield	Metal Connector	Ferrite Core
1	Speaker cable	2.55	No	No	
2	Microphone cable	0.55	No	No	
3	Power cable for EUT (DC)	0.25	No	No	
4	Power cable for EUT (DC)	2.00	No	No	
5	Power cable for DC supply	2.00	No	No	

SECTION 6. TEST CONFIGURATION

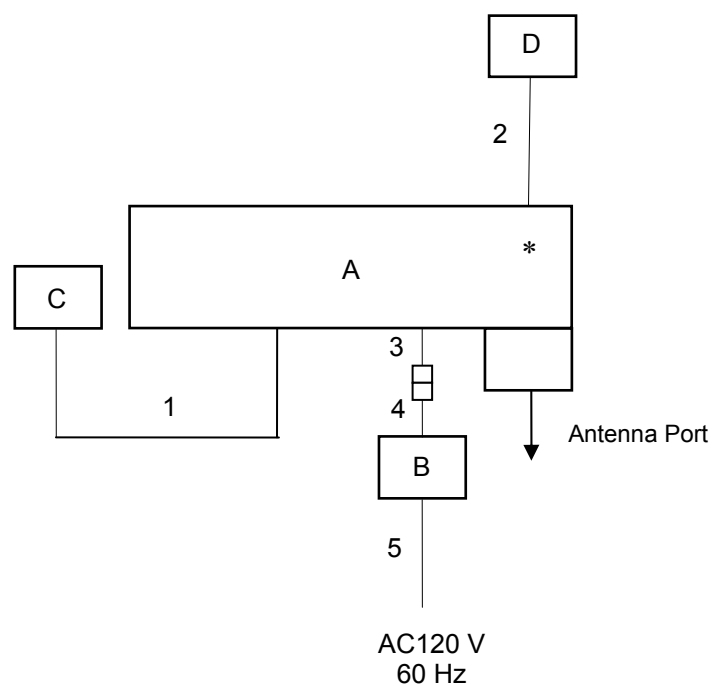
6.1 Conducted disturbance at mains terminals Radiated disturbance

* : EUT
■ : Ferrite core

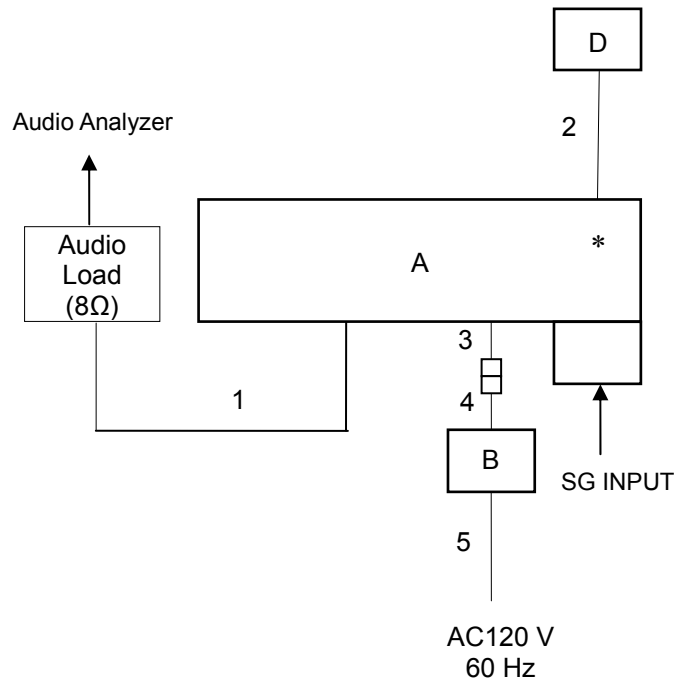


The symbols and numbers assigned to the equipments and cables on this diagram correspond to the ones in Sections 3 to 5.

6.2 Conducted Power on Antenna Port (15.111)



6.3 38dB Rejection Test (15.121(b))



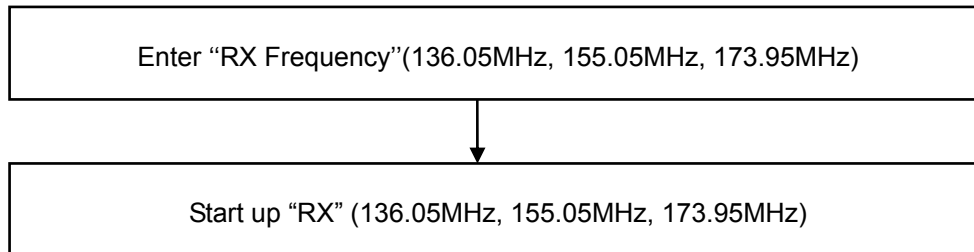
The symbols and numbers assigned to the equipments and cables on this diagram correspond to the ones in Sections 3 to 5.

SECTION 7. OPERATING CONDITION

The test was carried out under the following mode.

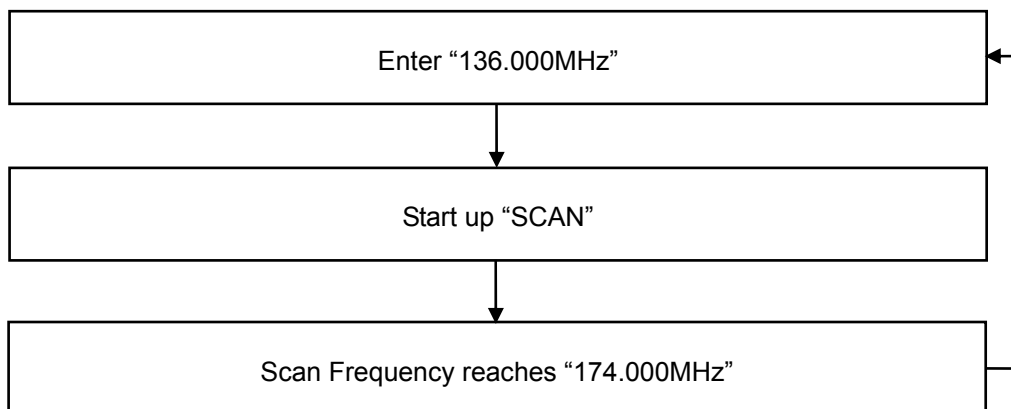
7.1 Rx mode

Cycle time for operation: Continuity



7.2 VFO SCAN 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.

Radiated disturbance at 3m	U _{lab} [k = 2]	U _{cispr}
30 MHz – 1000 MHz	+/- 3.52 dB	5.2 dB
CISPR22	N/A	
Above 1 GHz ANCI 63.4	+/- 4.26 dB	
Radiated disturbance at 10m		
30 MHz – 1000 MHz	+/- 3.98 dB	5.1 dB
Above 1 GHz	+/- 4.26 dB	
Radiated disturbance at 30m		
	N/A	5.2 dB
Conducted disturbance at mains terminals		
9 kHz – 150 kHz	+/- 2.76 dB	4.0 dB
150 kHz – 30 MHz		3.6 dB
Conducted disturbance at telecommunication ports (ISN)		
150 kHz – 30 MHz	+/- 2.76 dB	Nil
Conducted disturbance at telecommunication ports (Capacitive Voltage Probe)		
150 kHz – 30 MHz	+/- 3.10 dB	Nil
Conducted disturbance at telecommunication ports (Current Probe)		
150 kHz – 30 MHz	+/- 2.86 dB	Nil
Conducted disturbance at terminals		
150 kHz – 30 MHz	+/- 2.79 dB	Nil
Disturbance power		
30 MHz – 300 MHz	+/- 3.00 dB	4.5 dB
Conducted Power on Antenna Port		
30 MHz – 1000 MHz	+/- 2.90 dB	Nil
Above 1 GHz	+/- 1.60 dB	
38dB Rejection (15.121(b))		
136MHz – 174MHz	+/- 0.56 dB	Nil

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

SECTION 9. EVALUATION OF TEST RESULTS

Location	Tochigi No.1 Test Site
Test Engineer	Atsuyuki Morishima

Frequency Range of Measurements

	Required Measurement Frequency Range	Measured Frequency Range
Conducted	0.15 – 30 MHz	0.15 – 30 MHz
Radiated	30 – 2000 MHz	30 – 2000 MHz
Conducted Power on Antenna Port (15.111 /RSS-215 5.1)	30 – 2000 MHz	30 – 2000 MHz
38dB Rejection Test (15.121(b))	136 M – 174 MHz	136 M – 174 MHz

Test Procedure

Item	Document number
Conducted disturbance at mains terminals	RJP-EM001
Radiated disturbance	RJP-EM003
Conducted Power on Antenna Port (15.111)	RJP-TE101
38dB Rejection Test (15.121(b))	RJP-TE102

Setting for the Measuring instruments

Frequency [MHz]	Instrument	Detector	Resolution Bandwidth	Video Bandwidth
0.15 – 30	Receiver	Quasi Peak	10 kHz	N/A
		Average	10 kHz	N/A
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 >

* Conducted disturbance at mains terminals

Emission Level [dBμV] = Meter Reading [dBμV] + Factor [dB]

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

* Factor = LISN Factor + Cable Loss + ATT

* Radiated disturbance

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

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

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

* Conducted Power on Antenna Port

Emission Level [dBμV] = Meter Reading [dBμV] + Factor [dB]

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

* Factor = Pad + Cable Loss - Amplifier Gain

9.1 Conducted disturbance at mains terminals

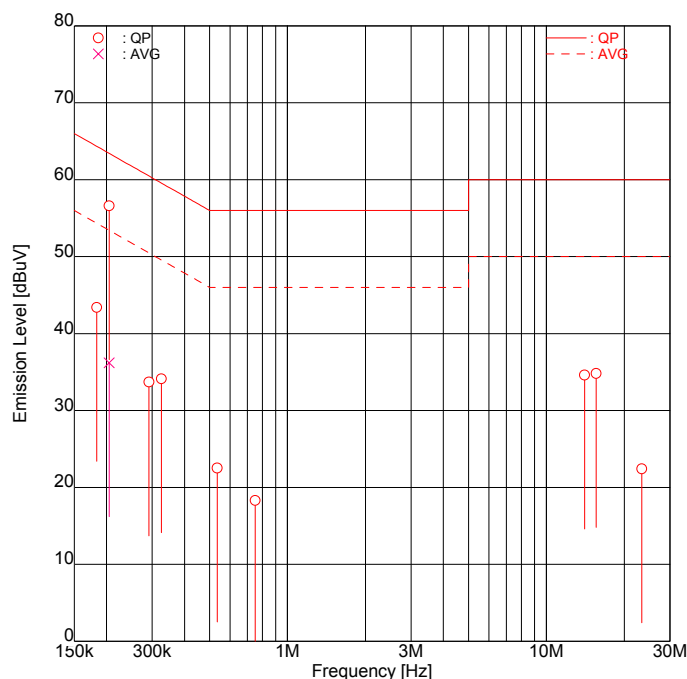
9.1.1 RX mode (136.05MHz)

Intertek Japan K.K.

Tochigi No.1 Test Site

Conducted Voltages on Mains Port

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(136.05MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : Jun 01 2011
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2003
TEMPERATURE : 18.0 [degC]
HUMIDITY : 51.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

FREQUENCY [No]	MODE	READING [dBuV]	Line1		FACTOR [dB]	Line1		EMISSION [dBuV]	Line1		LIMIT [dBuV]	MARGIN [dB]	
			Line2	Line2		Line2	Line2		Line2	Line2		Line2	Line2
1	0.1833	QP	32.3	<u>33.1</u>	10.3	10.3		42.6	<u>43.4</u>		64.3	21.7	<u>20.9</u>
2	0.2047	QP	<u>46.3</u>	46.3	10.3	10.3		<u>56.6</u>	56.6		63.4	<u>6.8</u>	6.8
3	0.2047	AVG	<u>25.9</u>	25.9	10.3	10.3		<u>36.2</u>	36.2		53.4	<u>17.2</u>	17.2
4	0.2916	QP	18.9	23.4	10.3	10.3		29.2	33.7		60.5	31.3	26.8
5	0.3258	QP	6.5	<u>23.8</u>	10.3	10.3		16.8	<u>34.1</u>		59.6	42.8	<u>25.5</u>
6	0.5350	QP	7.2	12.2	10.3	10.3		17.5	22.5		56.0	38.5	33.5
7	0.7499	QP	3.1	8.0	10.3	10.3		13.4	18.3		56.0	42.6	37.7
8	14.0330	QP	<u>23.5</u>	22.0	11.1	11.2		<u>34.6</u>	33.2		60.0	<u>25.4</u>	26.8
9	15.5629	QP	<u>23.0</u>	<u>23.5</u>	11.2	11.3		<u>34.2</u>	<u>34.8</u>		60.0	<u>25.8</u>	<u>25.2</u>
10	23.3489	QP	10.9	10.9	11.3	11.5		22.2	22.4		60.0	37.8	37.6

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

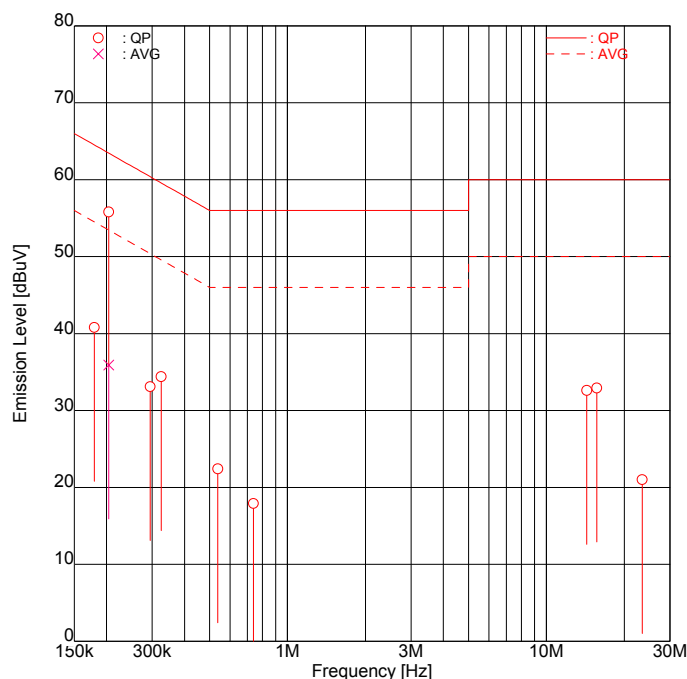
9.1.2 RX mode (155.05MHz)

Intertek Japan K.K.

Tochigi No.1 Test Site

Conducted Voltages on Mains Port

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(155.05MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : Jun 01 2011
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2003
TEMPERATURE : 18.0 [degC]
HUMIDITY : 51.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.1795	QP	29.9	<u>30.5</u>	10.3	10.3	40.2	<u>40.8</u>	64.5	24.3	<u>23.7</u>
2	0.2040	QP	<u>45.5</u>	45.3	10.3	10.3	<u>55.8</u>	55.6	63.4	<u>7.6</u>	7.8
3	0.2040	AVG	25.0	<u>25.6</u>	10.3	10.3	35.3	<u>35.9</u>	53.4	18.1	<u>17.5</u>
4	0.2948	QP	16.0	<u>22.8</u>	10.3	10.3	26.3	<u>33.1</u>	60.4	34.1	<u>27.3</u>
5	0.3252	QP	9.6	<u>24.1</u>	10.3	10.3	19.9	<u>34.4</u>	59.6	39.7	<u>25.2</u>
6	0.5383	QP	7.3	12.1	10.3	10.3	17.6	22.4	56.0	38.4	33.6
7	0.7385	QP	3.1	7.6	10.3	10.3	13.4	17.9	56.0	42.6	38.1
8	14.3260	QP	21.5	21.3	11.1	11.2	32.6	32.5	60.0	27.4	27.5
9	15.6670	QP	21.4	<u>21.6</u>	11.2	11.3	32.6	<u>32.9</u>	60.0	27.4	<u>27.1</u>
10	23.4594	QP	9.5	9.5	11.3	11.5	20.8	21.0	60.0	39.2	39.0

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

Copyright(c)2007 Intertek Japan K.K.

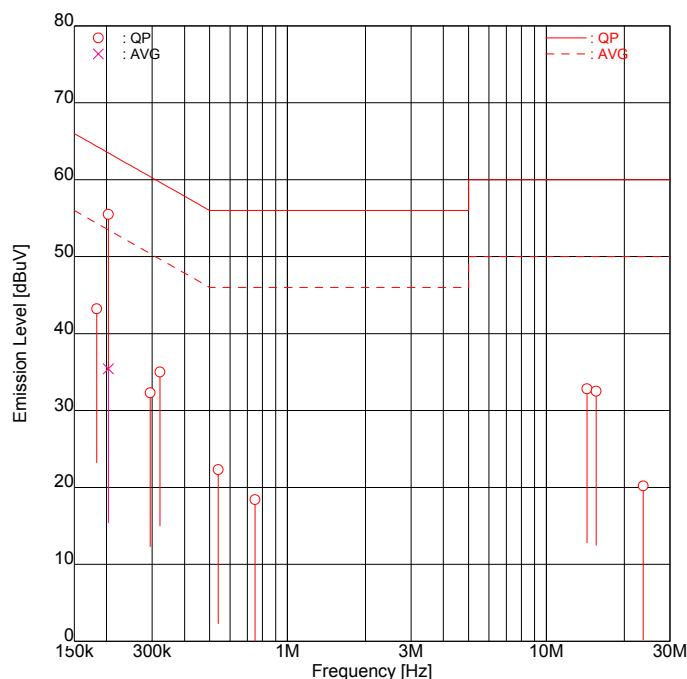
9.1.3 RX mode (173.95MHz)

Intertek Japan K.K.

Tochigi No.1 Test Site

Conducted Voltages on Mains Port

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(173.95MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : Jun 01 2011
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2003
TEMPERATURE : 18.0 [degC]
HUMIDITY : 51.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.1833	QP	31.8	<u>32.9</u>	10.3	10.3	42.1	<u>43.2</u>	64.3	22.2	<u>21.1</u>
2	0.2033	QP	<u>45.2</u>	45.2	10.3	10.3	<u>55.5</u>	55.5	63.5	<u>8.0</u>	8.0
3	0.2033	AVG	24.0	<u>25.1</u>	10.3	10.3	34.3	<u>35.4</u>	53.5	19.2	<u>18.1</u>
4	0.2948	QP	15.3	22.0	10.3	10.3	25.6	32.3	60.4	34.8	28.1
5	0.3218	QP	8.5	<u>24.7</u>	10.3	10.3	18.8	<u>35.0</u>	59.7	40.9	<u>24.7</u>
6	0.5398	QP	7.3	12.0	10.3	10.3	17.6	22.3	56.0	38.4	33.7
7	0.7483	QP	3.4	8.1	10.3	10.3	13.7	18.4	56.0	42.3	37.6
8	14.3410	QP	21.5	<u>21.6</u>	11.1	11.2	32.6	<u>32.8</u>	60.0	27.4	<u>27.2</u>
9	15.5581	QP	<u>21.3</u>	21.2	11.2	11.3	<u>32.5</u>	32.5	60.0	<u>27.5</u>	27.5
10	23.6455	QP	8.9	8.7	11.3	11.5	20.2	20.2	60.0	39.8	39.8

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

Copyright(c)2007 Intertek Japan K.K.

9.2 Radiated disturbance

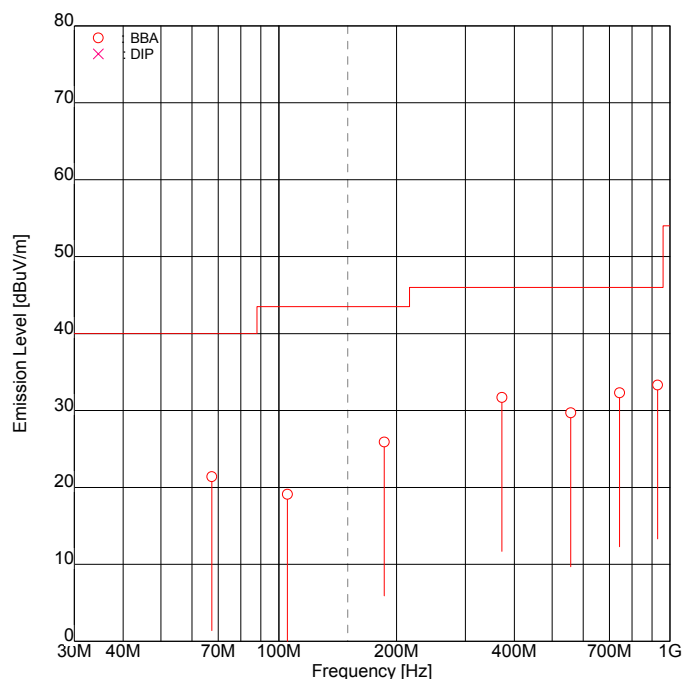
9.2.1 RX mode(136.05MHz) [30 – 1000MHz]

Intertek Japan K.K.

Tochigi No.1 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(136.05MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : Jun 03 2011
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2003
DISTANCE : 3.00 [m]
TEMPERATURE : 21.0 [degC]
HUMIDITY : 71.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

FREQUENCY [No]	ANT. [MHz]		READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	67.42	BBA	-	<u>28.3</u>	-6.9	-6.9	-	<u>21.4</u>	40.0	-	<u>18.6</u>
2	105.20	BBA	-	28.1	-9.0	-9.0	-	19.1	43.5	-	24.4
3	186.00	BBA	30.1	<u>31.9</u>	-6.0	-6.0	24.1	<u>25.9</u>	43.5	19.4	<u>17.6</u>
4	372.00	BBA	32.2	<u>32.4</u>	-0.7	-0.7	31.5	<u>31.7</u>	46.0	14.5	<u>14.3</u>
5	558.00	BBA	<u>25.8</u>	24.7	3.9	3.9	<u>29.7</u>	28.6	46.0	<u>16.3</u>	17.4
6	744.00	BBA	<u>24.7</u>	24.2	7.6	7.6	<u>32.3</u>	31.8	46.0	<u>13.7</u>	14.2
7	930.00	BBA	21.0	<u>21.6</u>	11.7	11.7	32.7	<u>33.3</u>	46.0	13.3	<u>12.7</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

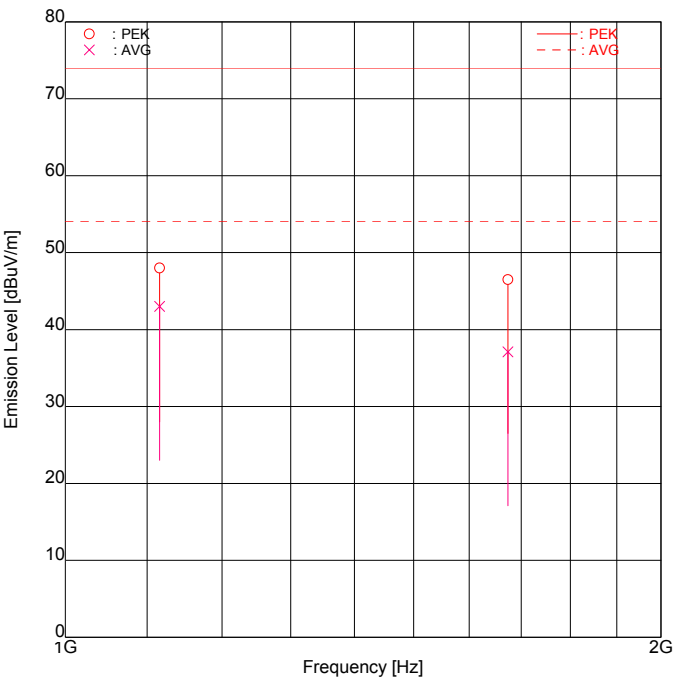
Copyright(c)2007 Intertek Japan K.K.

9.2.2 RX mode(136.05MHz) [1000 - 2000MHz]

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

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(136.05MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : Jun 03 2011
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2003
DISTANCE : 3.00 [m]
TEMPERATURE : 20.0 [degC]
HUMIDITY : 60.0 [%]
NOTE :

ENGINEER : Atsuyuki Morishima



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	1115.95	PEK	48.4	<u>50.3</u>	-2.3	-2.3	46.1	<u>48.0</u>	74.0	27.9	<u>26.0</u>
2	1115.95	AVG	40.4	<u>45.3</u>	-2.3	-2.3	38.1	<u>43.0</u>	54.0	15.9	<u>11.0</u>
3	1673.96	PEK	<u>45.8</u>	<u>45.7</u>	0.7	0.7	<u>46.5</u>	<u>46.4</u>	74.0	<u>27.5</u>	<u>27.6</u>
4	1673.96	AVG	34.1	<u>36.4</u>	0.7	0.7	34.8	<u>37.1</u>	54.0	19.2	<u>16.9</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)

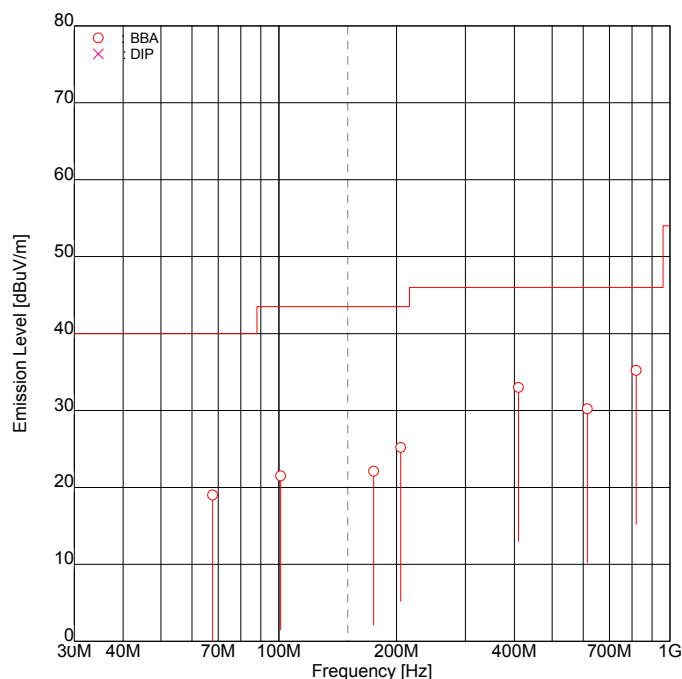
9.2.3 RX mode(155.05MHz) [30 - 1000MHz]

Intertek Japan K.K.

Tochigi No.1 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(155.05MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : Jun 03 2011
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2003
DISTANCE : 3.00 [m]
TEMPERATURE : 21.0 [degC]
HUMIDITY : 71.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

FREQUENCY [No]	ANT. [MHz]		READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	67.74	BBA	-	<u>25.9</u>	-6.9	-6.9	-	<u>19.0</u>	40.0	-	<u>21.0</u>
2	101.13	BBA	-	31.2	-9.7	-9.7	-	21.5	43.5	-	22.0
3	174.82	BBA	-	<u>27.5</u>	-5.4	-5.4	-	<u>22.1</u>	43.5	-	<u>21.4</u>
4	205.00	BBA	<u>31.9</u>	31.0	-6.7	-6.7	<u>25.2</u>	<u>24.3</u>	43.5	<u>18.3</u>	<u>19.2</u>
5	410.00	BBA	31.3	<u>33.0</u>	0.0	0.0	31.3	<u>33.0</u>	46.0	<u>14.7</u>	<u>13.0</u>
6	615.00	BBA	<u>25.0</u>	24.0	5.2	5.2	<u>30.2</u>	29.2	46.0	<u>15.8</u>	<u>16.8</u>
7	820.00	BBA	25.5	<u>25.9</u>	9.3	9.3	34.8	<u>35.2</u>	46.0	11.2	<u>10.8</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

Copyright(c)2007 Intertek Japan K.K.

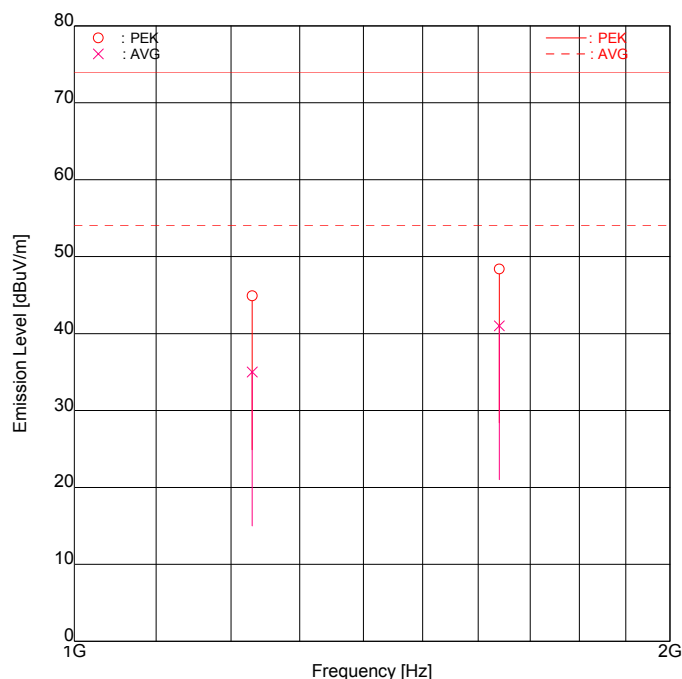
9.2.4 RX mode(155.05MHz) [1000 - 2000MHz]

Intertek Japan K.K.

Tochigi No.1 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(155.05MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : Jun 03 2011
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2003
DISTANCE : 3.00 [m]
TEMPERATURE : 22.0 [degC]
HUMIDITY : 65.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

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	1230.07	PEK	44.8	<u>46.6</u>	-1.7	-1.7	43.1	<u>44.9</u>	74.0	30.9	<u>29.1</u>
2	1230.07	AVG	33.7	<u>36.7</u>	-1.7	-1.7	32.0	<u>35.0</u>	54.0	22.0	<u>19.0</u>
3	1639.88	PEK	47.0	<u>47.9</u>	0.5	0.5	47.5	<u>48.4</u>	74.0	26.5	<u>25.6</u>
4	1639.88	AVG	38.1	<u>40.5</u>	0.5	0.5	38.6	<u>41.0</u>	54.0	15.4	<u>13.0</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)

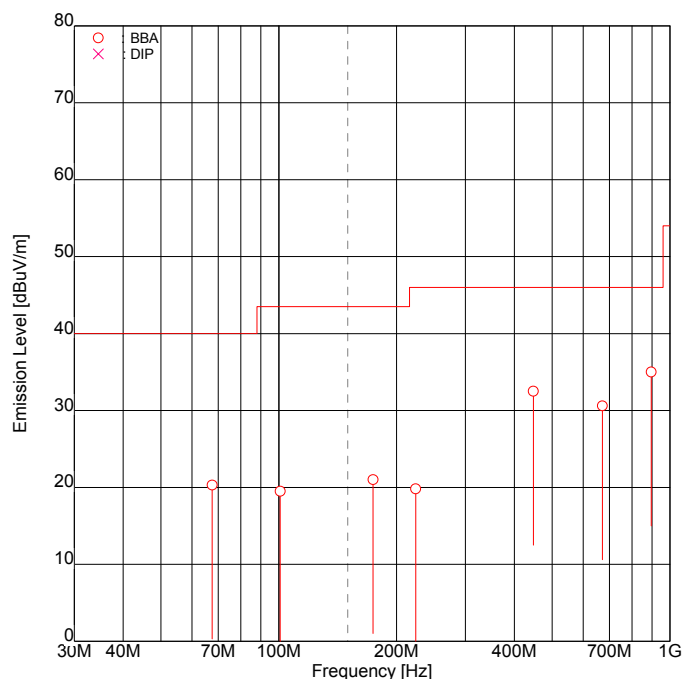
9.2.5 RX mode(173.95MHz) [30 - 1000MHz]

Intertek Japan K.K.

Tochigi No.1 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(173.95MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : Jun 03 2011
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2003
DISTANCE : 3.00 [m]
TEMPERATURE : 21.0 [degC]
HUMIDITY : 70.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

FREQUENCY [No]	ANT. [MHz]	ANT.	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	67.60	BBA	-	<u>27.2</u>	-6.9	-6.9	-	<u>20.3</u>	40.0	-	<u>19.7</u>
2	100.90	BBA	-	<u>29.2</u>	-9.7	-9.7	-	<u>19.5</u>	43.5	-	<u>24.0</u>
3	174.18	BBA	-	<u>26.3</u>	-5.3	-5.3	-	<u>21.0</u>	43.5	-	<u>22.5</u>
4	223.90	BBA	25.6	25.6	-5.8	-5.8	19.8	19.8	46.0	26.2	26.2
5	447.80	BBA	30.8	<u>31.6</u>	0.9	0.9	31.7	<u>32.5</u>	46.0	14.3	<u>13.5</u>
6	671.70	BBA	<u>24.4</u>	23.8	6.2	6.2	<u>30.6</u>	30.0	46.0	<u>15.4</u>	16.0
7	895.60	BBA	24.0	<u>24.1</u>	10.9	10.9	34.9	<u>35.0</u>	46.0	11.1	<u>11.0</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

Copyright(c)2007 Intertek Japan K.K.

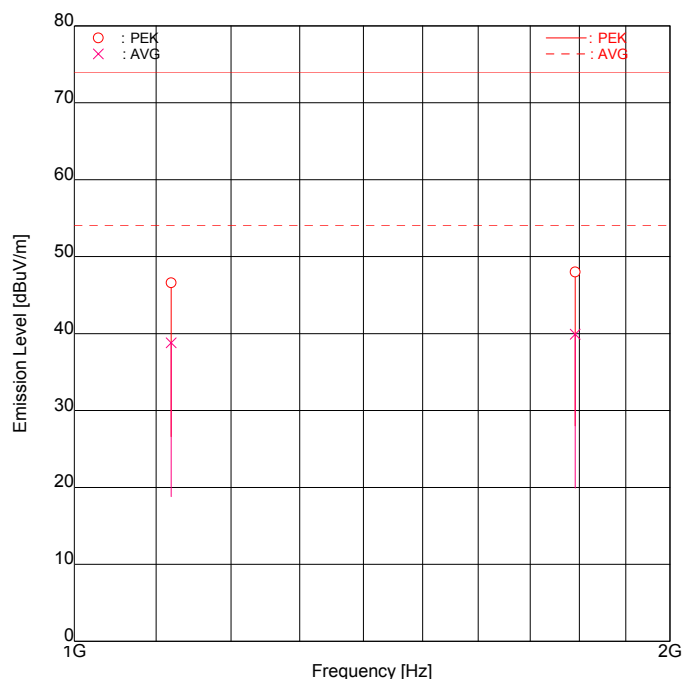
9.2.6 RX mode(173.95MHz) [1000 - 2000MHz]

Intertek Japan K.K.

Tochigi No.1 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(173.95MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : Jun 03 2011
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2003
DISTANCE : 3.00 [m]
TEMPERATURE : 22.0 [degC]
HUMIDITY : 65.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

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	1119.50	PEK	46.8	<u>48.9</u>	-2.3	-2.3	44.5	<u>46.6</u>	74.0	29.5	<u>27.4</u>
2	1119.50	AVG	36.4	<u>41.1</u>	-2.3	-2.3	34.1	<u>38.8</u>	54.0	19.9	<u>15.2</u>
3	1791.35	PEK	44.8	<u>46.7</u>	1.3	1.3	46.1	<u>48.0</u>	74.0	27.9	<u>26.0</u>
4	1791.35	AVG	34.7	<u>38.6</u>	1.3	1.3	36.0	<u>39.9</u>	54.0	18.0	<u>14.1</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

Copyright(c)2007 Intertek Japan K.K.

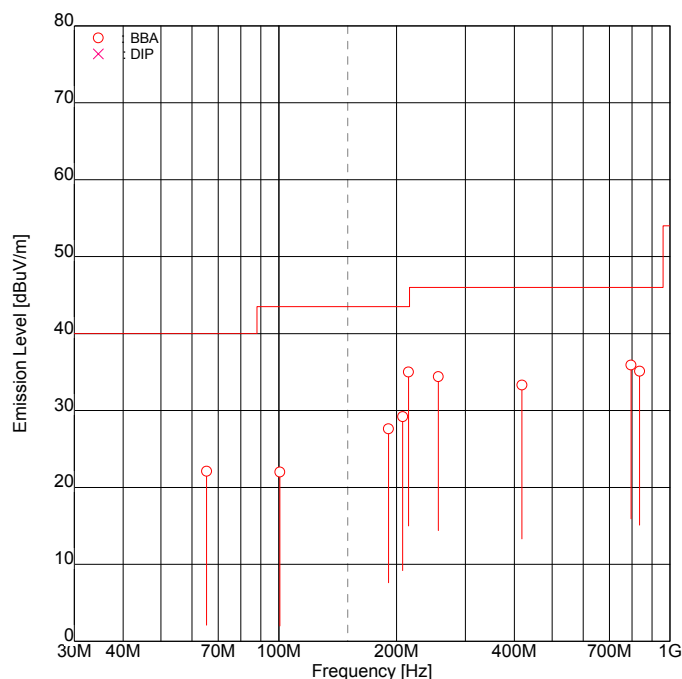
9.2.7 VFO SCAN mode [30 - 1000MHz]

Intertek Japan K.K.

Tochigi No.1 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : VFO SCAN mode
POWER SOURCE : DC 13.8V
DATE TESTED : Jun 04 2011
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2003
DISTANCE : 3.00 [m]
TEMPERATURE : 23.0 [degC]
HUMIDITY : 59.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

FREQUENCY [No]	FREQUENCY [MHz]	ANT.	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
			Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	65.37	BBA	-	28.7	-6.6	-6.6	-	22.1	40.0	-	17.9
2	100.64	BBA	-	31.8	-9.8	-9.8	-	22.0	43.5	-	21.5
3	190.67	BBA	-	33.9	-6.3	-6.3	-	27.6	43.5	-	15.9
4	207.40	BBA	<u>35.8</u>	33.2	-6.6	-6.6	<u>29.2</u>	26.6	43.5	<u>14.3</u>	16.9
5	214.66	BBA	<u>41.3</u>	31.0	-6.3	-6.3	<u>35.0</u>	24.7	43.5	<u>8.5</u>	18.8
6	255.93	BBA	<u>38.5</u>	-	-4.1	-4.1	<u>34.4</u>	-	46.0	<u>11.6</u>	-
7	418.50	BBA	31.1	<u>33.1</u>	0.2	0.2	31.3	<u>33.3</u>	46.0	14.7	<u>12.7</u>
8	794.99	BBA	25.9	<u>27.4</u>	8.5	8.5	34.4	<u>35.9</u>	46.0	11.6	<u>10.1</u>
9	837.00	BBA	-	<u>25.5</u>	9.6	9.6	-	<u>35.1</u>	46.0	-	<u>10.9</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

Copyright(c)2007 Intertek Japan K.K.

9.2.8 VFO SCAN mode [1000 - 2000MHz]

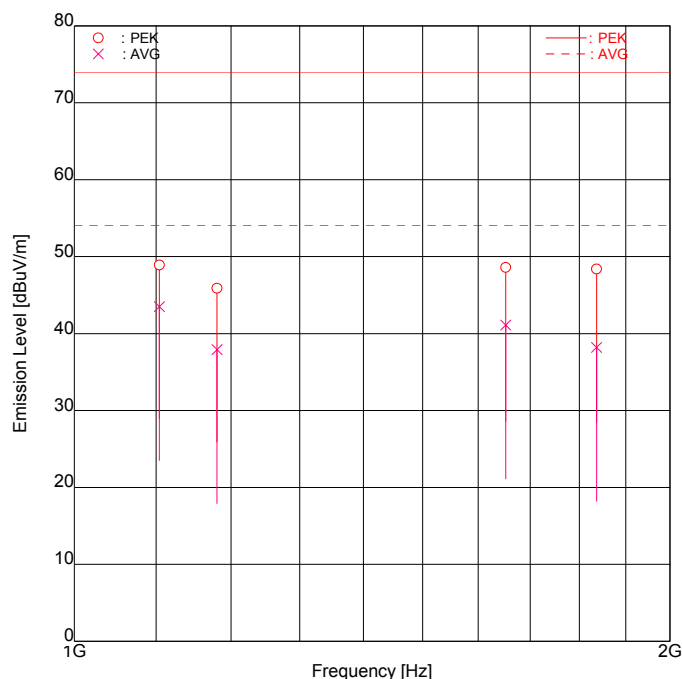
Intertek Japan K.K.

Tochigi No.1 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : VFO SCAN mode
POWER SOURCE : DC 13.8V
DATE TESTED : Jun 03 2011
FILE NO. : -
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-2003
DISTANCE : 3.00 [m]
TEMPERATURE : 21.0 [degC]
HUMIDITY : 63.0 [%]
NOTE :

ENGINEER : Atsuyuki Morishima



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	1104.12	PEK	47.8	<u>51.2</u>	-2.3	-2.3	45.5	<u>48.9</u>	74.0	28.5	<u>25.1</u>
2	1104.12	AVG	38.4	<u>45.8</u>	-2.3	-2.3	36.1	<u>43.5</u>	54.0	17.9	<u>10.5</u>
3	1180.83	PEK	46.6	<u>47.8</u>	-1.9	-1.9	44.7	<u>45.9</u>	74.0	29.3	<u>28.1</u>
4	1180.83	AVG	34.9	<u>39.8</u>	-1.9	-1.9	33.0	<u>37.9</u>	54.0	21.0	<u>16.1</u>
5	1652.08	PEK	43.9	<u>48.1</u>	0.5	0.5	44.4	<u>48.6</u>	74.0	29.6	<u>25.4</u>
6	1652.08	AVG	34.4	<u>40.6</u>	0.5	0.5	34.9	<u>41.1</u>	54.0	19.1	<u>12.9</u>
7	1836.33	PEK	46.1	<u>46.8</u>	1.6	1.6	47.7	<u>48.4</u>	74.0	26.3	<u>25.6</u>
8	1836.33	AVG	34.6	<u>36.6</u>	1.6	1.6	36.2	<u>38.2</u>	54.0	17.8	<u>15.8</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

Copyright(c)2007 Intertek Japan K.K.

9.3 Conducted Power on Antenna Port (15.111)

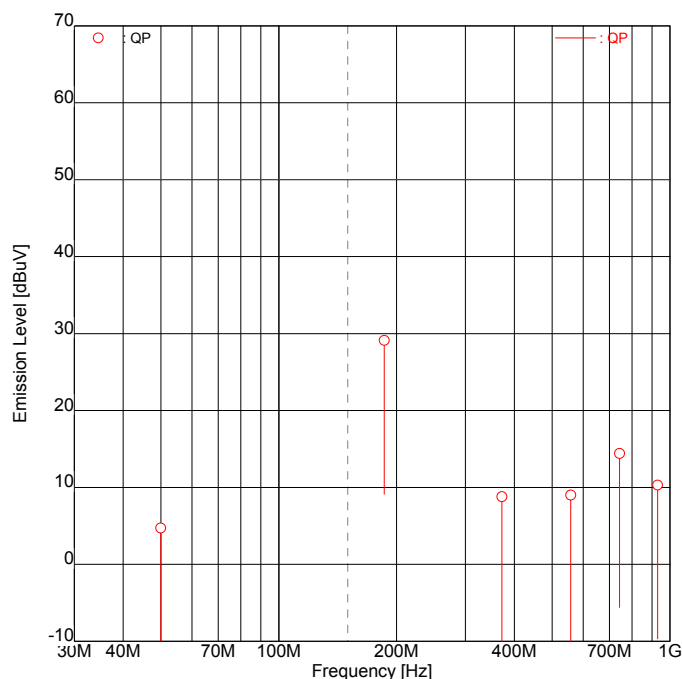
9.3.1 RX mode(136.05MHz) [30 – 1000MHz]

Intertek Japan K.K.

Tochigi No.1 Test Site

Conducted Power on Antenna Port

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(136.05MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : May 31 2011
FILE NO. : -
REGULATION : FCC Part15B (15.111)
TEST METHOD : ANSI C63.4-2003
TEMPERATURE : 23.0 [degC]
HUMIDITY : 49.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	49.9500	<u>20.8</u>	-16.1	<u>4.7</u>	50.0	<u>45.3</u>
2	186.0000	<u>43.2</u>	-14.1	<u>29.1</u>	50.0	<u>20.9</u>
3	371.9980	<u>21.5</u>	-12.7	<u>8.8</u>	50.0	<u>41.2</u>
4	558.0000	<u>21.4</u>	-12.4	<u>9.0</u>	50.0	<u>41.0</u>
5	744.0000	<u>26.0</u>	-11.6	<u>14.4</u>	50.0	<u>35.6</u>
6	930.0000	<u>20.6</u>	-10.3	<u>10.3</u>	50.0	<u>39.7</u>

Higher six points are underlined.
Other frequencies : Below the FCC Part15B (15.111) limit
Emission Level = Read + Factor(Pad,Cable,Preamp)
Limit: 2nW = 50dBuV(50ohm impedance)

emiT 3, 0, 0, 0

Copyright(c)2007 Intertek Japan K.K.

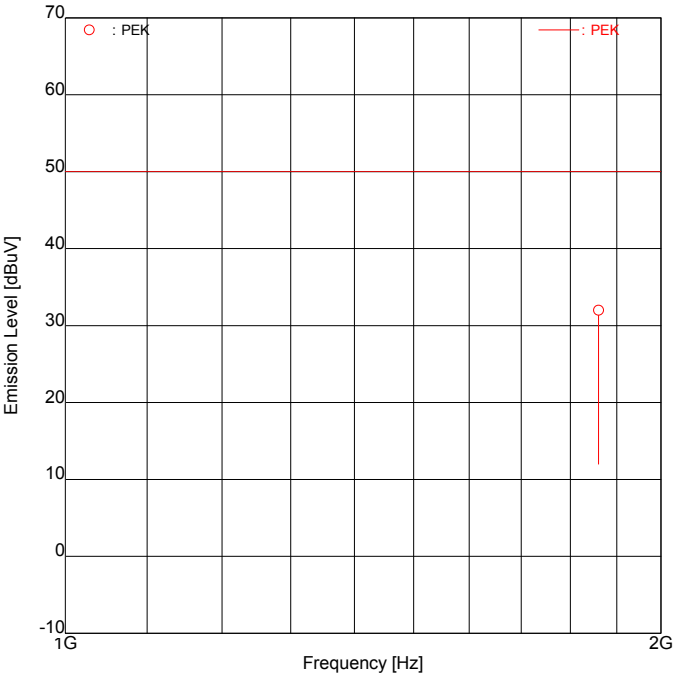
9.3.2 RX mode(136.05MHz) [1000– 2000MHz]

Intertek Japan K.K.

Tochigi No.1 Test Site

Conducted Power on Antenna Port

APPLICANT : Kenwood Corpporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(136.05MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : May 31 2011
FILE NO. : -
REGULATION : FCC Part15B (15.111)
TEST METHOD : ANSI C63.4-2003
TEMPERATURE : 22.0 [degC]
HUMIDITY : 52.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	1860.0500	<u>50.8</u>	-18.8	<u>32.0</u>	50.0	<u>18.0</u>

Higher six points are underlined.
Other frequencies : Below the FCC Part15B (15.111) limit
Emission Level = Read + Factor(Pad,Cable,Preamp)
Limit: 2nW = 50dBuV(50ohm impedance)

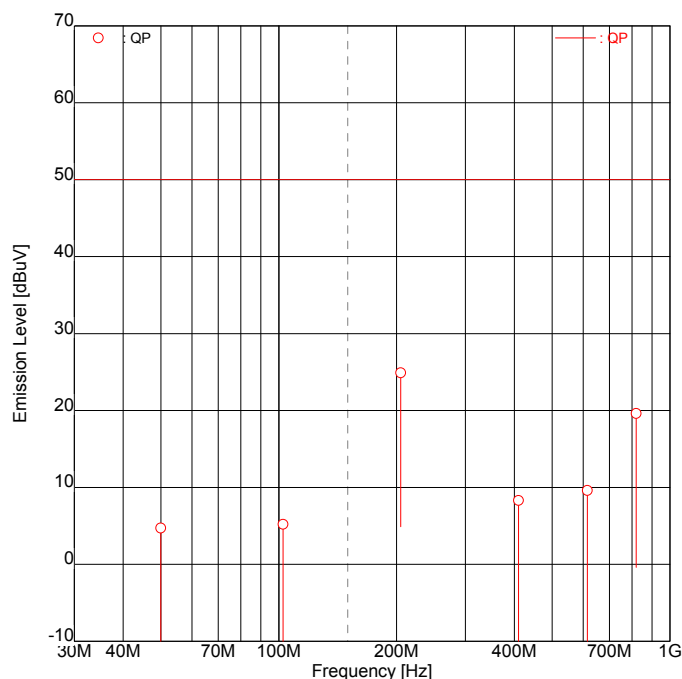
9.3.3 RX mode(155.05MHz) [30 – 1000MHz]

Intertek Japan K.K.

Tochigi No.1 Test Site

Conducted Power on Antenna Port

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(155.05MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : May 31 2011
FILE NO. : -
REGULATION : FCC Part15B (15.111)
TEST METHOD : ANSI C63.4-2003
TEMPERATURE : 23.0 [degC]
HUMIDITY : 49.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	49.9500	<u>20.8</u>	-16.1	<u>4.7</u>	50.0	<u>45.3</u>
2	102.5000	<u>20.5</u>	-15.3	<u>5.2</u>	50.0	<u>44.8</u>
3	205.0000	<u>38.8</u>	-13.9	<u>24.9</u>	50.0	<u>25.1</u>
4	410.0000	<u>20.8</u>	-12.5	<u>8.3</u>	50.0	<u>41.7</u>
5	615.0000	<u>21.9</u>	-12.3	<u>9.6</u>	50.0	<u>40.4</u>
6	820.0000	<u>30.8</u>	-11.2	<u>19.6</u>	50.0	<u>30.4</u>

Higher six points are underlined.

Other frequencies : Below the FCC Part15B (15.111) limit

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

Limit: 2nW = 50dBuV(50ohm impedance)

emiT 3, 0, 0, 0

Copyright(c)2007 Intertek Japan K.K.

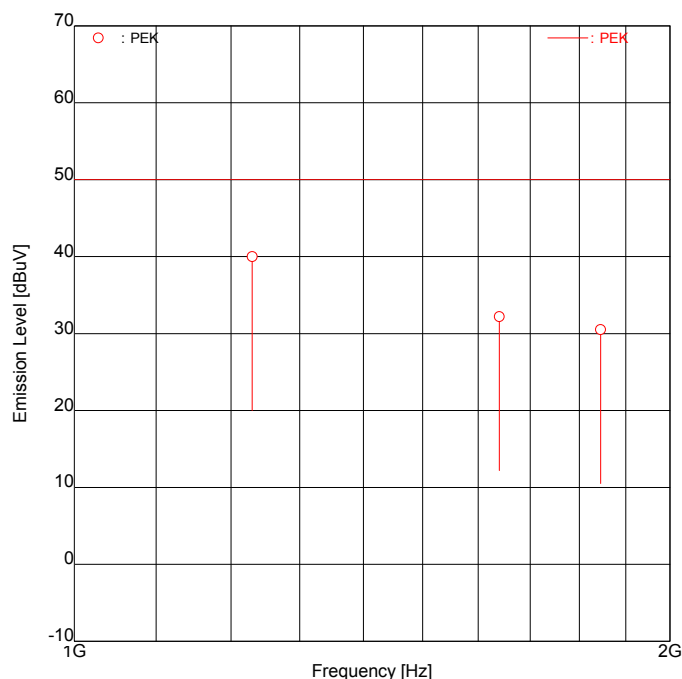
9.3.4 RX mode(155.05MHz) [1000 – 2000MHz]

Intertek Japan K.K.

Tochigi No.1 Test Site

Conducted Power on Antenna Port

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(155.05MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : May 31 2011
FILE NO. : -
REGULATION : FCC Part15B (15.111)
TEST METHOD : ANSI C63.4-2003
TEMPERATURE : 22.0 [degC]
HUMIDITY : 52.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	1230.0670	<u>59.9</u>	-19.9	<u>40.0</u>	50.0	<u>10.0</u>
2	1640.0200	<u>51.2</u>	-19.0	<u>32.2</u>	50.0	<u>17.8</u>
3	1845.0300	<u>49.3</u>	-18.8	<u>30.5</u>	50.0	<u>19.5</u>

Higher six points are underlined.
Other frequencies : Below the FCC Part15B (15.111) limit
Emission Level = Read + Factor(Pad,Cable,Preamp)
Limit: 2nW = 50dBuV(50ohm impedance)

emiT 3, 0, 0, 0

Copyright(c)2007 Intertek Japan K.K.

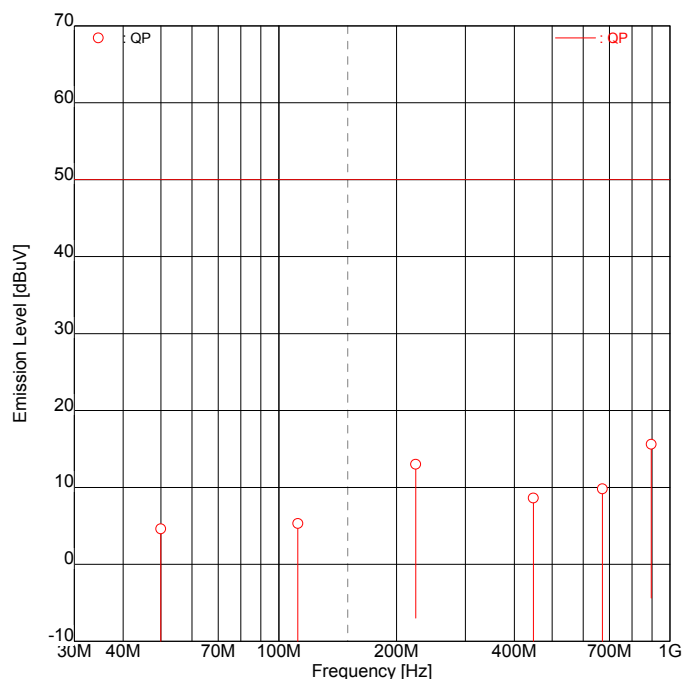
9.3.5 RX mode(173.95MHz) [30 – 1000MHz]

Intertek Japan K.K.

Tochigi No.1 Test Site

Conducted Power on Antenna Port

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(173.95MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : May 31 2011
FILE NO. : -
REGULATION : FCC Part15B (15.111)
TEST METHOD : ANSI C63.4-2003
TEMPERATURE : 23.0 [degC]
HUMIDITY : 49.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	49.9500	<u>20.7</u>	-16.1	<u>4.6</u>	50.0	<u>45.4</u>
2	111.9500	<u>20.4</u>	-15.1	<u>5.3</u>	50.0	<u>44.7</u>
3	223.9000	<u>26.6</u>	-13.6	<u>13.0</u>	50.0	<u>37.0</u>
4	447.8000	<u>21.0</u>	-12.4	<u>8.6</u>	50.0	<u>41.4</u>
5	671.7000	<u>21.9</u>	-12.1	<u>9.8</u>	50.0	<u>40.2</u>
6	895.6000	<u>26.3</u>	-10.7	<u>15.6</u>	50.0	<u>34.4</u>

Higher six points are underlined.
Other frequencies : Below the FCC Part15B (15.111) limit
Emission Level = Read + Factor(Pad,Cable,Preamp)
Limit: 2nW = 50dBuV(50ohm impedance)

emiT 3, 0, 0, 0

Copyright(c)2007 Intertek Japan K.K.

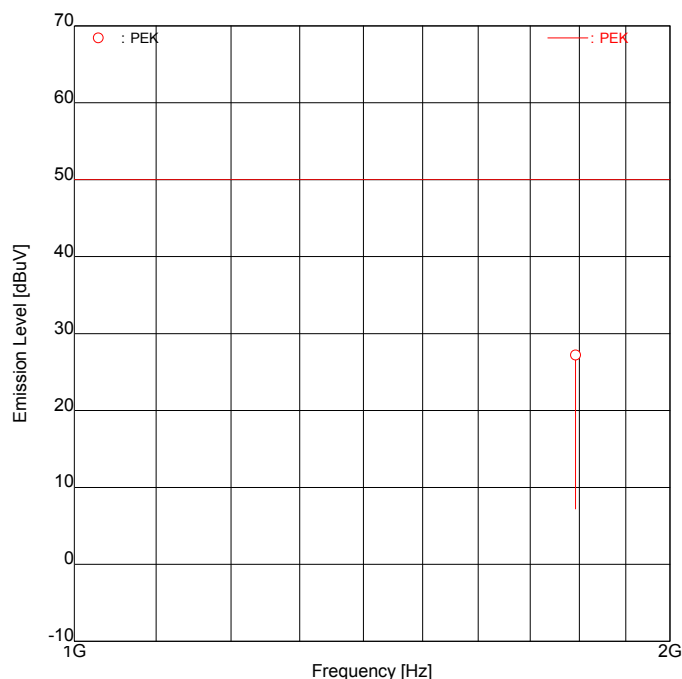
9.3.6 RX mode(173.95MHz) [1000 – 2000MHz]

Intertek Japan K.K.

Tochigi No.1 Test Site

Conducted Power on Antenna Port

APPLICANT : Kenwood Corporation
EUT NAME : 144MHz FM TRANSCEIVER
MODEL NO. : TM-281A
SERIAL NO. : 00000088
TEST MODE : Rx mode(173.95MHz)
POWER SOURCE : DC 13.8V
DATE TESTED : May 31 2011
FILE NO. : -
REGULATION : FCC Part15B (15.111)
TEST METHOD : ANSI C63.4-2003
TEMPERATURE : 22.0 [degC]
HUMIDITY : 52.0 [%]
NOTE :



ENGINEER : Atsuyuki Morishima

FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	1792.0000	<u>46.0</u>	-18.8	<u>27.2</u>	50.0	<u>22.8</u>

Higher six points are underlined.
Other frequencies : Below the FCC Part15B (15.111) limit
Emission Level = Read + Factor(Pad,Cable,Preamp)
Limit: 2nW = 50dBuV(50ohm impedance)

9.3.7 VFO SCAN mode [30 – 1000MHz]

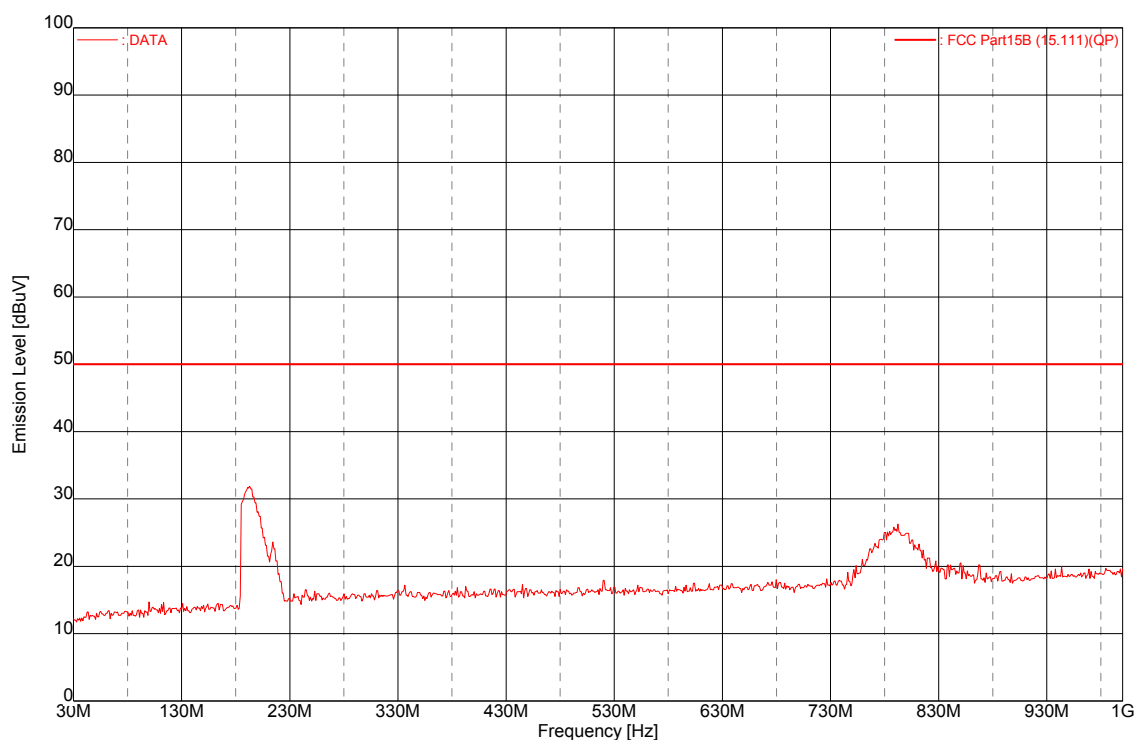
SPECTRUM ANALYSIS

Tochigi No.1 Test Site

23.0degC /49.0%

Date tested : May 31 2011
Company : Kenwood Corporation
EUT Name : 144MHz FM TRANSCEIVER
Model number : TM-281A
Serial number : 00000088

Test mode : VFO SCAN mode
Power source : DC 13.8V
File number : -
Engineer : Atsuyuki Morishima
Note :



Frequency [MHz]	Reading [dBuV]	Factor [dB]	Emission [dBuV]	Limit [dBuV]	Margin [dB]
185.95	<u>43.1</u>	-14.1	<u>29.0</u>	50.0	<u>21.0</u>
194.10	<u>46.5</u>	-14.0	<u>32.5</u>	50.0	<u>17.5</u>
216.72	35.5	-13.7	21.8	50.0	28.2
771.80	34.3	-11.5	22.8	50.0	27.2
791.86	<u>37.2</u>	-11.3	<u>25.9</u>	50.0	<u>24.1</u>
817.22	31.4	-11.2	20.2	50.0	29.8

Higher six points are underlined.

Other frequencies : Below the FCC Part15B (15.111) limit

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

Limit : 2nW = 50dBuV (50ohm impedance)

9.3.8 VFO SCAN mode [1000 – 2000MHz]

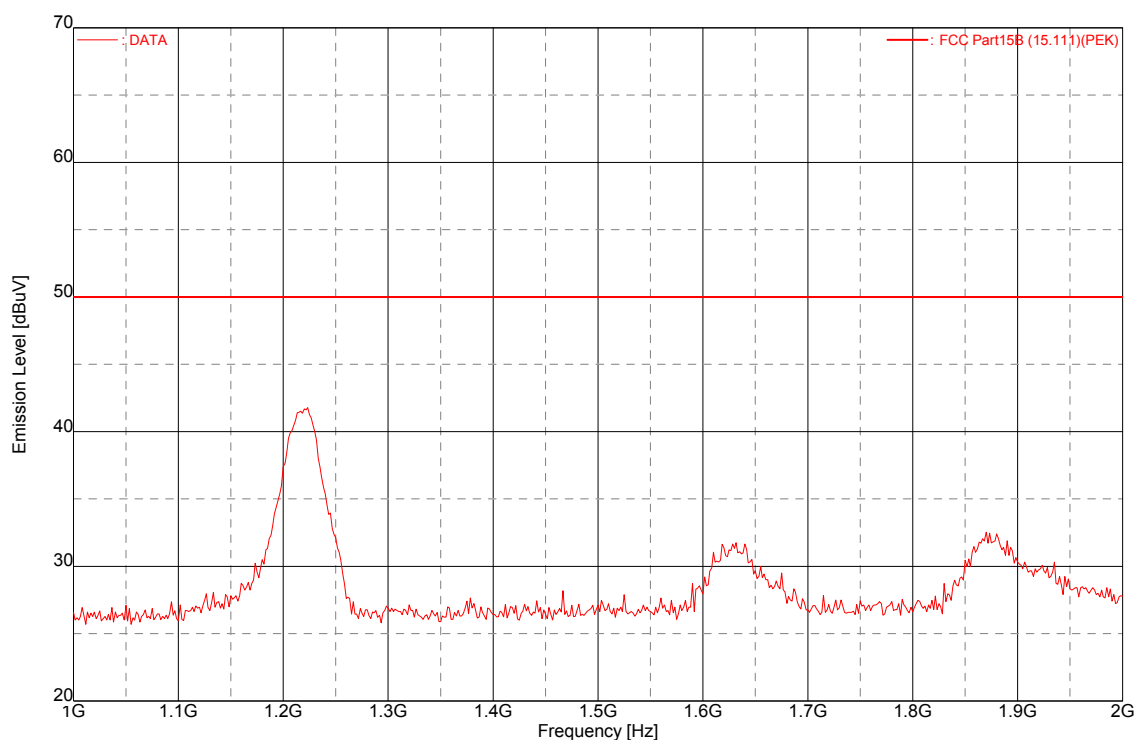
SPECTRUM ANALYSIS

Tochigi No.1 Test Site

22.0degC /52.0%

Date tested : May 31 2011
Company : Kenwood Corporation
EUT Name : 144MHz FM TRANSCEIVER
Model number : TM-281A
Serial number : 00000088

Test mode : VFO SCAN mode
Power source : DC 13.8V
File number : -
Engineer : Atsuyuki Morishima
Note :



Frequency [MHz]	Reading [dBuV]	Factor [dB]	Emission [dBuV]	Limit [dBuV]	Margin [dB]
1215.075	<u>62.8</u>	-19.9	<u>42.9</u>	50.0	<u>7.1</u>
1628.505	<u>51.2</u>	-19.0	<u>32.2</u>	50.0	<u>17.8</u>
1874.693	<u>52.3</u>	-18.8	<u>33.5</u>	50.0	<u>16.5</u>

Higher six points are underlined.

Other frequencies : Below the FCC Part15B (15.111) limit

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

Limit : 2nW = 50dBuV (50ohm impedance)

9.4 38dB Rejection Test (15.121(b))

9.4.1 VFO SCAN mode(136 – 174MHz)

Location	:	Tochigi No.1 Test Site
Date Tested	:	June 6, 2011
Temperature	:	23 [degC]
Humidity	:	67 [%]
Engineer	:	Atsuyuki Morishima

Injected Frequency [MHz]	Detected Frequency [MHz]	12dB SINAD Reading Injected Frequency [dBm]	12dB SINAD Reading Detected Frequency	Rejection Level [dB]	Margin [dB]
824.040	No Point Detected	N / A	N / A	N / A	N / A
836.505	No Point Detected	N / A	N / A	N / A	N / A
848.970	No Point Detected	N / A	N / A	N / A	N / A
869.040	No Point Detected	N / A	N / A	N / A	N / A
881.505	No Point Detected	N / A	N / A	N / A	N / A
893.970	No Point Detected	N / A	N / A	N / A	N / A

SG Input Level = 66dBuV

SG Reference Level = -11.1dBuV (the worst case sensitivity)

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	845268/023	Rohde & Schwarz	1 Y	Jun., 2011
10dB Attenuator	CFA-01(BPJ-10)	None	TAMAGAWA	1 Y	Apr., 2012
LISN (Peripheral)	KNW-407	8-1395-5	Kyoritsu	1 Y	Jul., 2011
50Ω Termination	CT-01	None	TAMAGAWA	1 Y	Jul., 2011
Coaxial cable(C1)	5D-2W(6.0 m)	1CL01a	Intertek	1 Y	Apr., 2012
Coaxial cable(C2)	RG-5A/U(7.0 m)	1CL02	Intertek	1 Y	Apr., 2012
Coaxial cable(C3)	5D-2W(0.1 m)	1CL03	Intertek	1 Y	Apr., 2012
Coaxial cable(C4)	5D-2W(1.7 m)	1CL04	Intertek	1 Y	Apr., 2012
Test receiver	ESS (Firmware Version 1.08)	845420/009	Rohde & Schwarz	1 Y	Jul., 2011
RF Switch	ACX-150	None	Intertek	1 Y	Apr., 2012
Testing Software	emiT (Version 3,0,0,0)				
Radiated disturbance					
Broad Band antenna	VULB9168	217	Schwarzbeck	1 Y	Apr., 2012
6dB Attenuator	CFA-01(NPJ-6)	None	TAMAGAWA	1 Y	Apr., 2012
Step Attenuator	8494B	2805A14560	Hewlett Packard	1 Y	Apr., 2012
Amplifier	8447D	2727A05322	Hewlett Packard	1 Y	Apr., 2012
Double ridged antenna	3115	9903-5699	EMCO	1 Y	May, 2012
6dB Attenuator	8493C	75550	Agilent	1 Y	Apr., 2012
Amplifier	8449B	3008A01182	Hewlett Packard	1 Y	Apr., 2012
Spectrum analyzer	8563E (Firmware Revision 971024)	3821A09565	Hewlett Packard	1 Y	May, 2012
Coaxial cable(R1)	5D-2W(10.0 m)	1R1001a	Intertek	1 Y	Apr., 2012
Coaxial cable(R2)	RG-177/U(20.0 m)	1R1002	Intertek	1 Y	Apr., 2012
Coaxial cable(R3)	RG-5A/U(1.3 m)	1R1003	Intertek	1 Y	Apr., 2012
Coaxial cable(R4)	RG-5A/U(0.2 m)	1R1004	Intertek	1 Y	Apr., 2012
Coaxial cable(R5)	5D-2W(0.7 m)	1R1005	Intertek	1 Y	Apr., 2012
Coaxial cable(R6)	5D-2W(0.1 m)	1R1006	Intertek	1 Y	Apr., 2012
Coaxial cable(R7)	5D-2W(1.7 m)	1R1007	Intertek	1 Y	Apr., 2012
Coaxial cable(R8)	5D-2W(6.0 m)	1R1008a	Intertek	1 Y	Apr., 2012
Coaxial cable(RG1)	SUCOFLEX(1.5 m)	290799/4	SUHNER	1 Y	Apr., 2012
Coaxial cable(RG2)	SUCOFLEX(6.0 m)	290800/4	SUHNER	1 Y	Apr., 2012
Site Attenuation				1 Y	Aug., 2011
Test receiver	ESS (Firmware Version 1.08)	845420/009	Rohde & Schwarz	1 Y	Jul., 2011
RF Switch	ACX-150	None	Intertek	1 Y	Apr., 2012
Testing Software	emiT (Version 3,0,0,0)				

Instrument	Model No.	Serial No.	Manufacturer	Cal. Interval	Effective period
Conducted Power on Antenna Port					
Step Attenuator	8494B	2805A14560	Hewlett Packard	1 Y	Apr., 2012
Amplifier	8447D	2727A05322	Hewlett Packard	1 Y	Apr., 2012
10dB Attenuator	CFA-05NPJ-10	262856	TAMAGAWA	1Y	Oct., 2011
Coaxial cable(R4)	RG-5A/U(0.2 m)	1R1004	Intertek	1 Y	Apr., 2012
Coaxial cable(R5)	5D-2W(0.7 m)	1R1005	Intertek	1 Y	Apr., 2012
Coaxial cable(R6)	5D-2W(0.1 m)	1R1006	Intertek	1 Y	Apr., 2012
Coaxial cable(R7)	5D-2W(1.7 m)	1R1007	Intertek	1 Y	Apr., 2012
Coaxial cable(C001a)	5D-2W(18.0m)	C001a	Intertek	1Y	Aug., 2011
RF Switch	ACX-150	None	Intertek	1 Y	Apr., 2012
Test receiver	ESS (Firmware Version 1.08)	845420/009	Rohde & Schwarz	1 Y	Jul., 2011
Amplifier	8449B	3008A01182	Hewlett Packard	1 Y	Apr., 2012
Coaxial cable(RG1)	SUCOFLEX(1.5 m)	290799/4	SUHNER	1 Y	Apr., 2012
Coaxial cable(RG2)	SUCOFLEX(6.0 m)	290800/4	SUHNER	1 Y	Apr., 2012
10dB Attenuator	6810.17B	5061	HUBER+SUHNER	1Y	Feb., 2012
3dB Attenuator	8493C	07818	Hewlett Packard	1Y	Apr., 2012
Spectrum analyzer	8563E (Firmware Revision 971024)	3821A09565	Hewlett Packard	1 Y	May, 2012
Testing Software	emiT (Version 3,0,0,0)				
38dB Rejection					
Audio analyzer	8903B	2948A07326	Hewlett Packard	1 Y	Mar., 2012
Signal Generator	SMT06	100684	ROHDE & SCHWARZ	1 Y	Jan., 2012
Coaxial cable(2m)	SUCOFLEX104	318401/4	SUHNER	1 Y	Sep., 2011

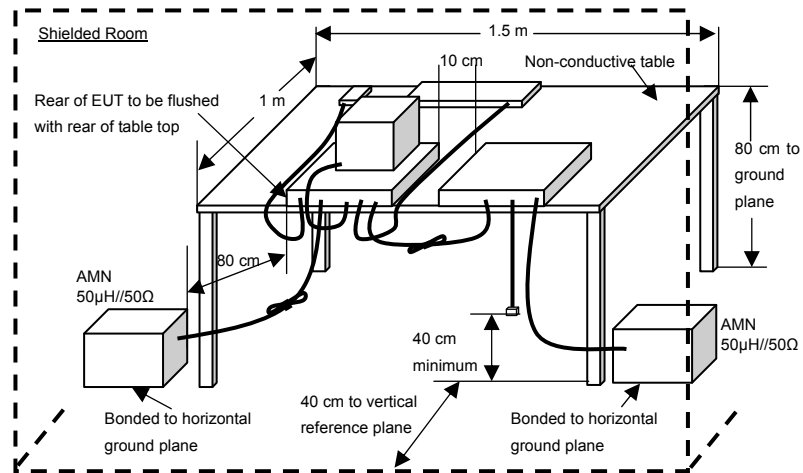
ANNEX

A. TEST PROCEDURE(S)

Test was carried out under the following conditions.

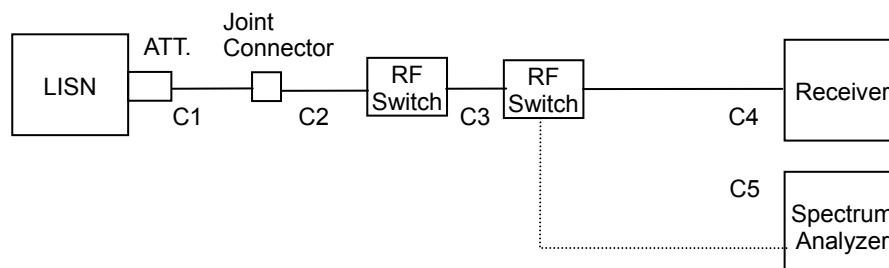
Conducted disturbance at mains terminals

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.

Test was carried out under the following conditions.

Radiated disturbance

Test setup as per standard

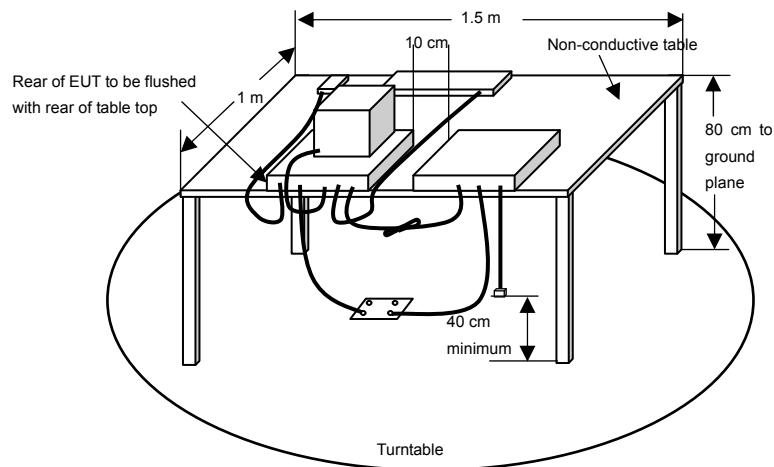
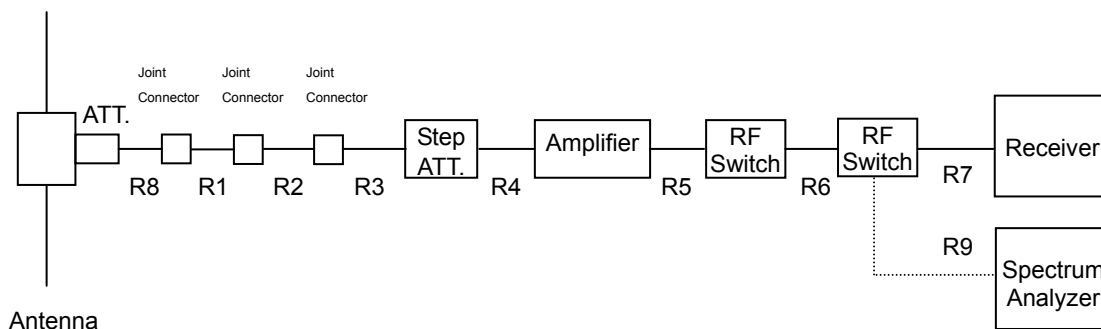
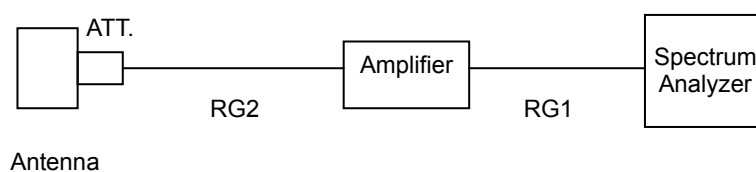


Diagram of the measuring instruments (30 – 1000 MHz)



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]

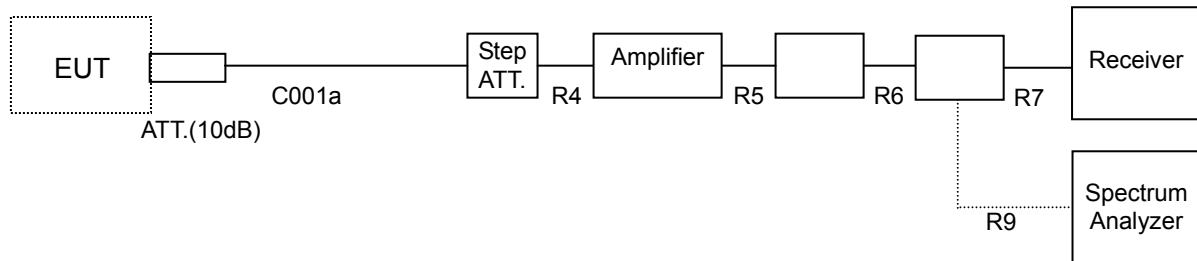
The EUT operated in the worst emission condition found by the preliminary test.

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.

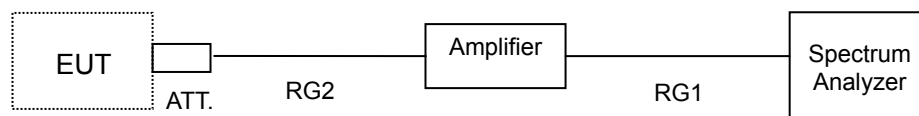
The equipment and cables are arranged or manipulated within the range of the test standard in the above condition. At least six highest spectrums are measured by the test receiver (quasi-peak) and spectrum analyzer (peak and average). When the uncertain result was obtained (30 – 1000 MHz), the measurement is retried by using the half wave dipole antenna instead of the broadband antenna.

Conducted Power on Antenna port (15.111)

Schema for the conducted power on antenna port measurement



Above 1GHz



[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 are plotted out to find the worst emission conditions in operating mode and/or configuration decision for the final test.

[Final Measurement]

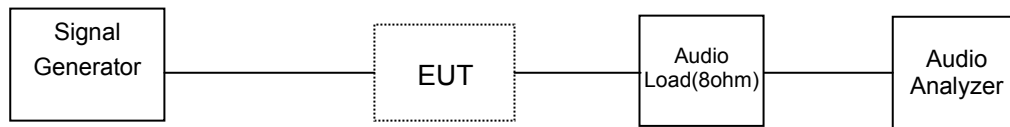
The EUT is operated in the worst emission condition found by the preliminary test.

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 by the test receiver (quasi-peak) and spectrum analyzer (peak).

38dB Rejection

Schema for the 38dB rejection measurement



[Preliminary Measurement]

The Signal Generator conditions :

Output level = 66 dBuV.

Modulation = Frequency modulated to 1 kHz tone at 3 kHz peak deviation.

Frequency Points = 824.040 MHz, 836.505 MHz, 848.970 MHz

869.040 MHz, 881.505 MHz, 893.970 MHz

(The Cellular Radiotelephone Service mobile and base frequency bands)

The EUT condition :

Scanning Frequency = 136MHz – 174MHz (5 kHz Step)

Scan stopped point, was the detected frequency.

[Final Measurement]

Injected 12dB SINAD Reading (SG RF Output)

The EUT condition :

Frequency = Scan stopped point

The Signal Generator condition :

Frequency = Cellular point

Detected 12dB SINAD Reading (SG RF Output)

The EUT condition :

Frequency = Scan stopped point

The Signal Generator condition :

Frequency = Scan stopped point

Under the requirements of Section 15.121(b) of the Rule.

Injected 12dB SINAD Reading – Detected 12dB SINAD Reading = 38 dB or more.