



TEST REPORT

REPORT NUMBER : ANKK-103234
APPLICANT : KENWOOD CORPORATION
MODEL NUMBER : TS-480SAT
FCC ID : K4433101110
REGULATION : FCC Part15B – Scanning Receiver
: FCC Part15B Class B
Canada ICES-003 Class B

Conducted Emission Test
Radiated Emission Test
Antenna Power Conducted Test
38dB Rection Test



NVLAP accreditation is valid for FCC Part15 (Digital Devices), CISPR22 and AS/NZS 3548.

NVLAP accreditation does not cover ICES-003.

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ABBREVIATIONS

LISN = Line Impedance Stabilization Network

AMN = Artificial Mains Network

ISN = Impedance Stabilization Network

CDN = Coupling Decoupling Network

ANT = Antenna

BBA = Broadband Antenna

DIP = Dipole Antenna

AMP = Amplifier

ATT = Attenuator

EUT = Equipment Under Test

AE = Associated Equipment

Q-P = Quasi-peak

AVG = Average

RX = Receive

SECTION 1. TEST CERTIFICATION**APPLICANT INFORMATION**

Company	: KENWOOD CORPORATION
Address	: 1-16-2, Hakusan, Midori-ku, Yokohama-shi, Kanagawa, 226-8525 Japan
Telephone number	: +81 45 939 6254
Fax number	: +81 45 939 7093

DESCRIPTION OF TEST ITEM

Kind of equipment	: HF / 50MHz All Mode Transceiver
Condition of equipment	: Prototype
Category	: Scanning Receiver & Peripherals
Trademark	: KENWOOD
FCC ID	: K4433101110
Model number	: TS-480SAT
Serial number	: None

TEST PERFORMED

Location	: Kashima No. 1 Test Site (FCC Reg. :90433) Kashima No. 3 Test Site (FCC Reg. :90433)
EUT received	: August 11, 2003
Test started	: August 19, 2003
Test completed	: September 9, 2003
Purpose of test	: FCC Docket 87-389 and Canadian Interference-Causing Equipment Regulations
Regulation	: FCC Part15B - Scanning Receiver FCC Part15B Class B - Peripherals and Canada ICES-003 Class B
Test setup	: ANSI C63.4-1992

Report issue date : September 26, 2003

Test engineer : Kazuo Masuda



Report approved by : Takeshi Yamanaka
[Site Manager]

**Note**

- The test result of this report is effective for equipment under test itself and under the test configuration described on the report.
- This test report does not assure that whether the test result taken in other testing laboratory is compatible or reproducible to the test result on this report or not.
- This test report shall not be reproduced except in full, without issuer's permission.

SECTION 2. CONCLUSION

This test report clearly shows that the EUT is in compliance with the FCC Part15B (– Scanning Receiver) and FCC Part15B Class B (– Peripheral with Canada ICES-003 Class B) specification.

Traceability to national standards of test result is achieved by means of calibration traceability to national standards.

The minimum margins to the limits are as follows:

Conducted Voltages on Mains Port			
Tuned Point 54.000MHz	0.7 dB	at	0.4500 MHz

Radiated Electric Field			
Tuned Point 24.500MHz	11.5 dB	at	878.35 MHz

Conducted Power on Antenna Port			
Tuned Point 40.0MHz(ANT1)	23.7 dB	at	113.09 MHz

38dB Rejection Test (15.121(b))			
VFO Scan	No frequency of response was detected.		
	– Passed –		

Note : See Section 9 for details.

SECTION 3. EQUIPMENT UNDER TEST

The equipment under test (EUT) consisted of the following equipment.
Indication in the following left side column corresponds to Section 6.

Symbol	Item	Model No.	Serial No.	FCC ID / DoC	Manufacturer	Remarks
A)	All Mode Transceiver	TS-480SAT	None	K4433101110	KENWOOD	EUT
B)	Remote Control Panel	None	None	N.A.	KENWOOD	EUT
C)	Microphone	None	None	N.A.	KENWOOD	EUT
D)	Headphone	HS-5	None	N.A.	KENWOOD	Option
E)	Speaker	SP-50B	None	N.A.	KENWOOD	Option
F)	DC Power Supply Unit	PS-53	50400013	N.A.	KENWOOD	Option

Power ratings of EUT : DC 13.8V, 20.5A (Max)

3.1 Overview of EUT :

Frequency Ranges : 0.030 – 60.000 MHz
Receiver Type : Double Conversion Super-heterodyne
Triple Conversion Super-heterodyne (FM mode only)
Mode of Operation : J3E, A1A, A3E, F1D, F3E

3.2 Port(s)/Connector(s) :

Port name	Connector type	Connector pin	Remarks
PANEL	RJ11	6 pin	
MIC	RJ45	8pin	
EXP.SP	Mini jack (3.5φ)	1pin	
COM	D-sub	9pin	
ANT1 / ANT2	M type	1pin	
REMOTE	DIN	8pin	
DATA	DIN	6pin	
AT	wire to wire connector	5pin	

3.3 Oscillator(s)/Crystal(s) :

Oscillator	Operating frequency	Board name	Remarks
12.288 MHz	98.304 MHz	TX/RXunit (DSP)	
22.1184 MHz	22.1184 MHz	TX/RXunit (CPU)	
15.6 MHz	31.2 MHz	TX/RXunit	
	62.4 MHz	TX/RXunit	
11.0592 MHz	11.0592 MHz	Panel (CPU)	
11.0592 MHz	11.0592 MHz	Option VGS1 (CPU)	

3.4 Operation Ranges :

RX Frequency	0.030000	to	1.705000 MHz
	1.705000	to	24.500000 MHz
	24.500000	to	30.000000 MHz
	50.000000	to	60.000000 MHz
1st LO	73.125000	to	74.800000 MHz
	74.800000	to	97.595000 MHz
	97.595000	to	103.095000 MHz
	103.095000	to	133.095000 MHz

3.5 Intermediate Frequencies :

1st	:	73.095 MHz (Upper)
2nd	:	10.695 MHz (Lower)
3rd	:	455 kHz (Upper)

SECTION 4. SUPPORT EQUIPMENT USED

The EUT was supported by the following equipment during the test.
Indication in the following left side column corresponds to Section 6.

Symbol	Item	Model No.	Serial No.	FCC ID / DoC	Manufacturer	Remark
G)	Computer	Dimension2100 MCM	3V5W41S	DoC	Dell Computer	
H)	CRT Display	E551	0870WY	DoC	Dell Computer	
I)	Keyboard	RT7D00	054EXM	AQ6- 7D0080C0B	Dell Computer	
J)	Mouse	M-S34	LNA13038374	DZL211029	Dell Computer	
K)	Printer	C3941A	JPCD204480	B94C3941A	Hewlett Packard	

DoC : Device was tested and authorized under a Declaration of Conformity to the applicable FCC rules.

SECTION 5. CABLE (S) USED

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

Indication number in the following left side column corresponds to Section 6.

Number	Name	Length	Shield	Connector	Core
1)	Panel cable	2.00 m	None	Plastic	
2)	Extension Panel cable	4.00 m	None	Plastic	Fixed × 1
3)	Mic cable	1.40 m	None	Plastic	
4)	Extension Mic cable	4.00 m	None	Plastic	Fixed × 1
5)	Headphone cable	2.00 m	None	Metal	
6)	Speaker cable	2.60 m	None	Metal	
7)	RS-232C	1.00 m	Tes	Metal	
8)	Antenna cable	0.20 m	Yes	Metal	
9)	Antenna cable	0.20 m	Yes	Metal	
10)	CRT Display cable	1.50 m	Yes	Metal	Fixed × 1
11)	Keyboard cable	2.00 m	Yes	Metal	
12)	Mouse cable	1.80 m	Yes	Metal	
13)	Printer cable	2.50 m	Yes	Metal	
14)	Power cord for EUT (DC)	7.00 m	None		
15)	Power cord for DC Supply Unit (AC)	1.80 m	None		
16)	Power cable for Computer	2.30 m	None		
17)	Power cable for CRT Display	2.10 m	None		
18)	Power cable for Printer	1.80 m	None		

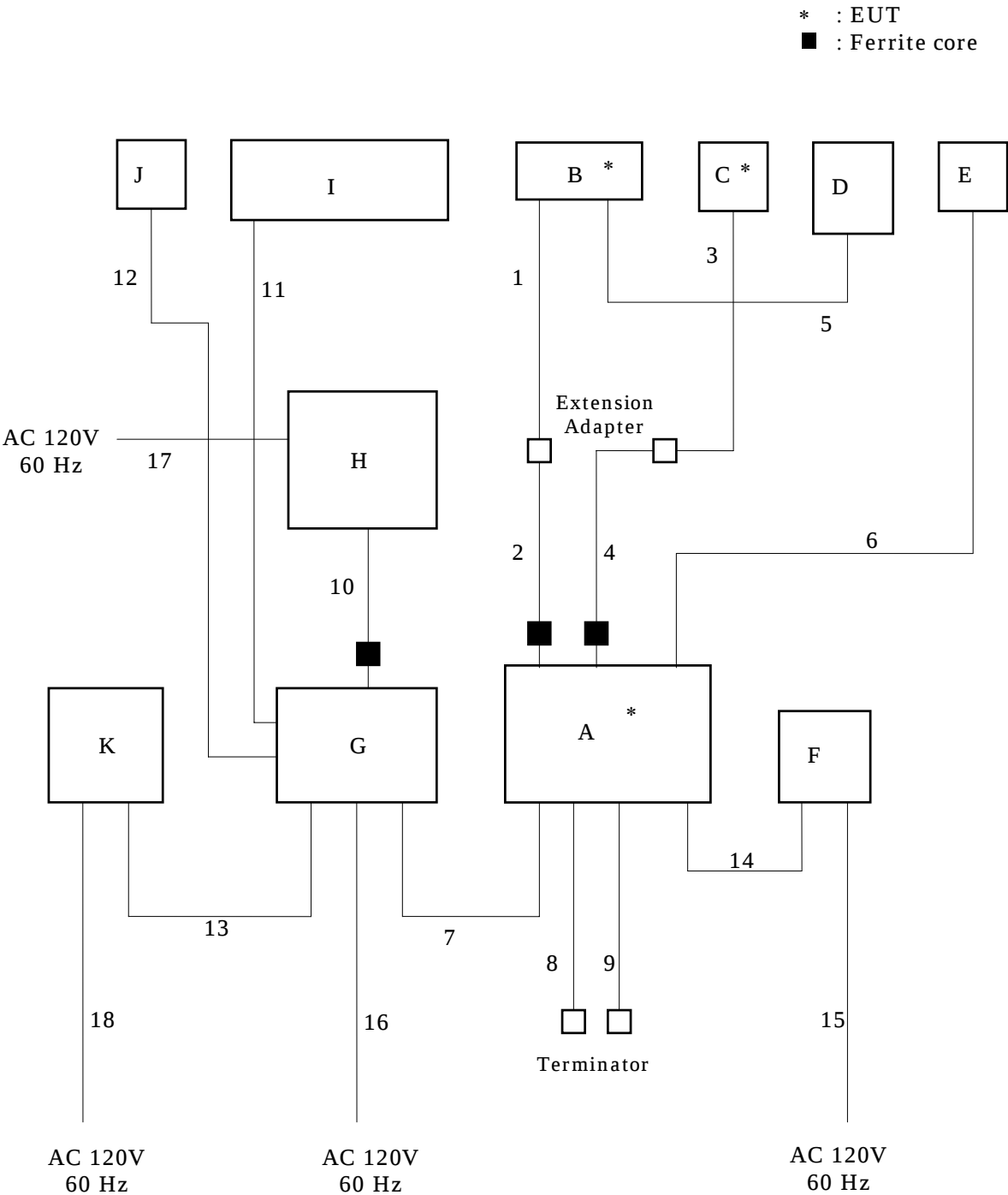
Note : a. No.2 and No.4 cables are supplied together with EUT by the applicant.

SECTION 6. CONSTRUCTION OF EQUIPMENT

The construction of EUT during the test was as follows.

- 6.1
- Conducted Voltages on Mains Port
- Radiated Electric Field
- Conducted Power on Antenna Port

System configuration

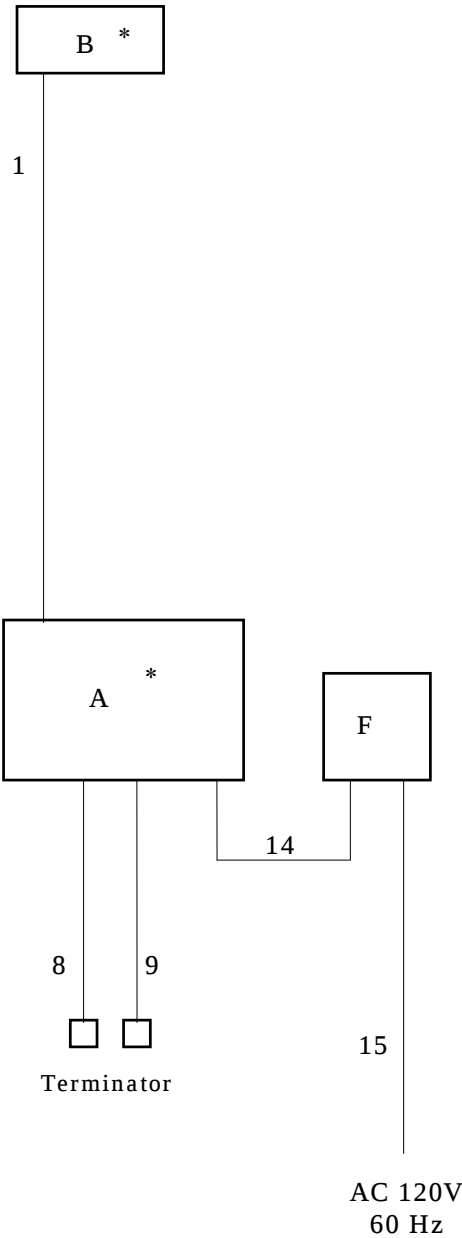


Symbols or numbers assigned to equipment or cables on this diagram are corresponded to the symbols or numbers assigned to equipment or cables on tables in Sections 3 to 5.

6.2 38dB Rejection

System configuration

* : EUT



Symbols or numbers assigned to equipment or cables on this diagram are corresponded to the symbols or numbers assigned to equipment or cables on tables in Sections 3 to 5.

SECTION 7. OPERATING CONDITIONS

The EUT was operated under the following conditions during the test.

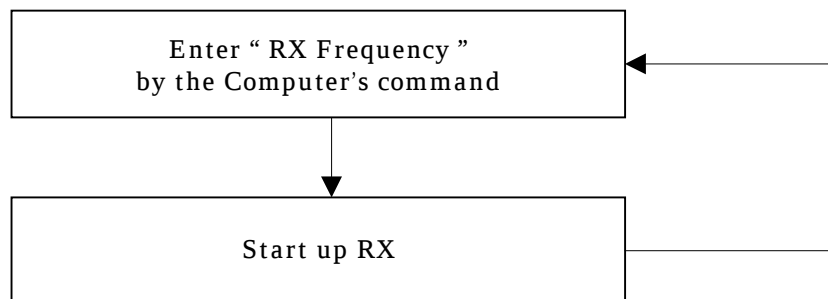
7.1 Operating condition

The test was carried out under Tuned Point mode and VFO Scan mode.
EUT was examined in the operating conditions that had maximum disturbances.

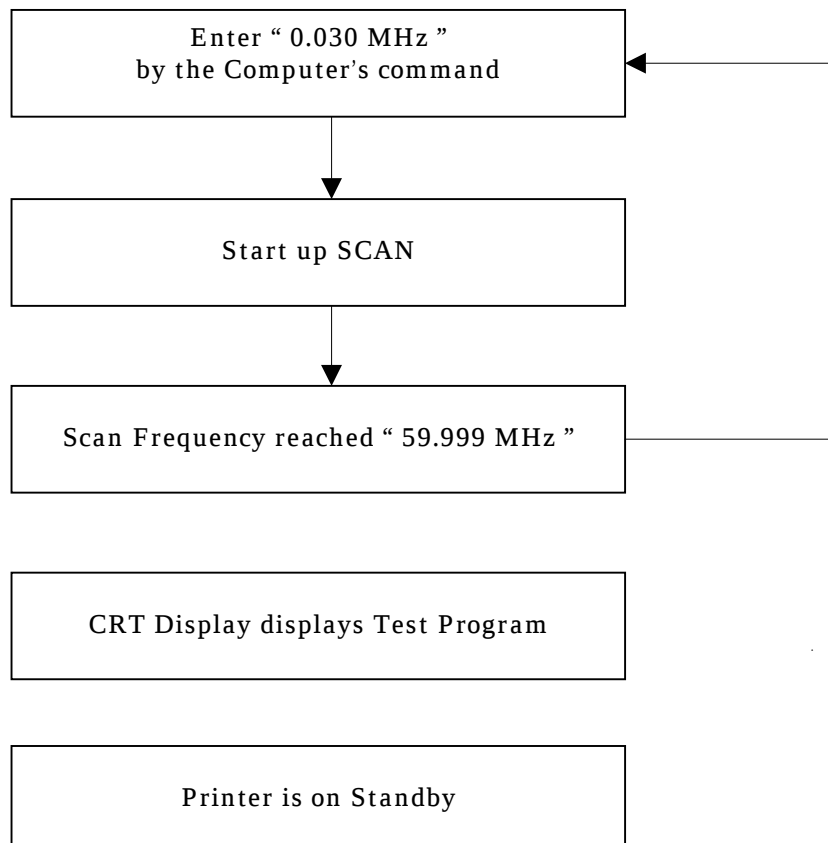
7.2 Operating flow

Following operations were performed continuously.

7.2.1 Tuned Point mode



7.2.2 VFO Scan mode

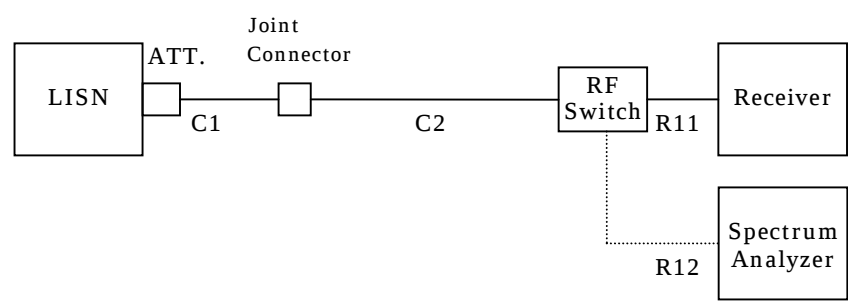


SECTION 8. TEST PROCEDURE(S)

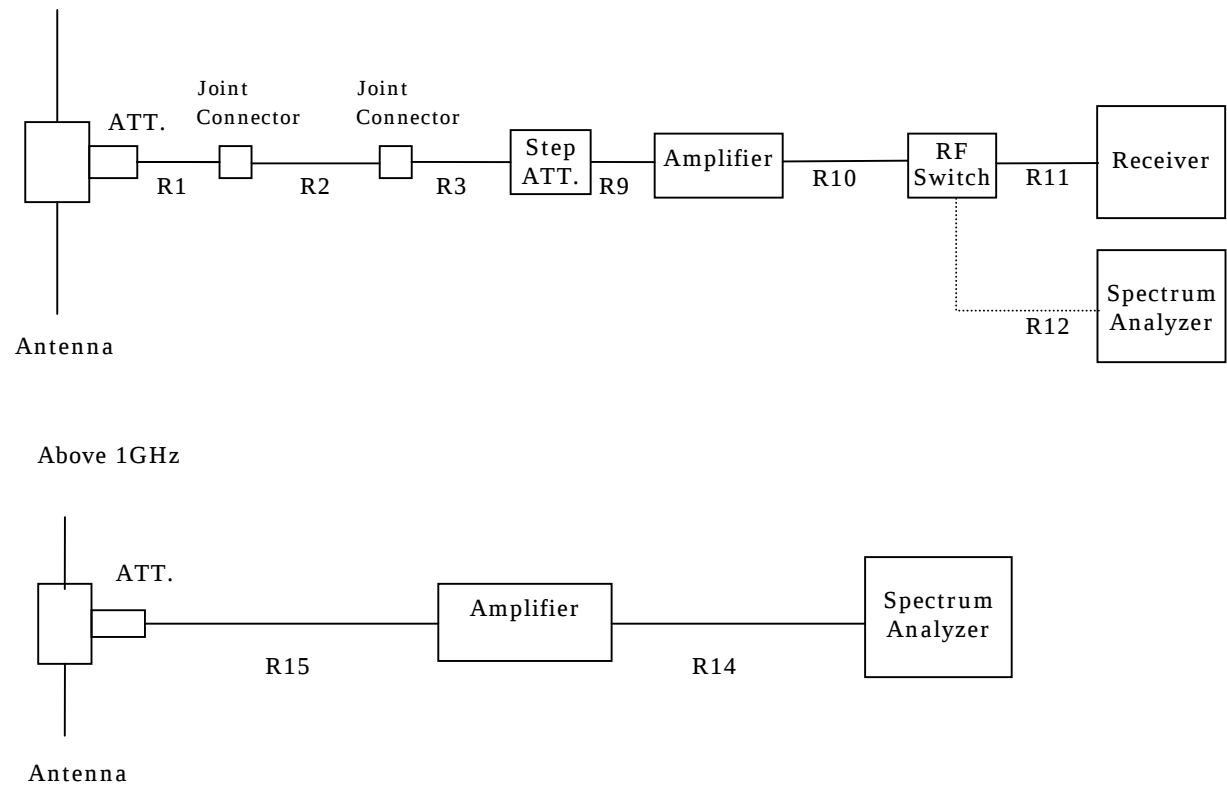
Test was carried out under the following conditions.
Test was carried out with no deviations from standards and test methods.

Subject	Scanned frequency
Conducted Voltages on Mains Port	0.15 – 30 MHz
Radiated Electric Field	30 – 2000 MHz

Schema for the conducted voltages on mains port measurement



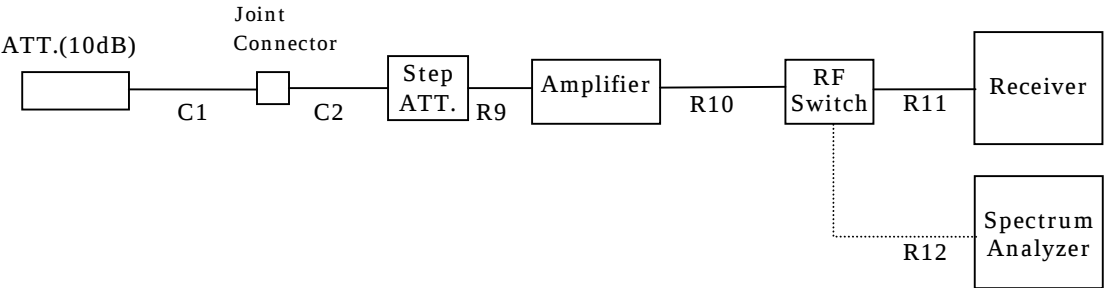
Schema for the radiated electric field measurement



Test was carried out under the following conditions.
Test was carried out with no deviations from standards and test methods.

Subject	Scanned frequency
Conducted Power on Antenna Port	30 – 1000 MHz
38dB Rejection	0.030 – 60 MHz

Schema for the conducted power on antenna port measurement



Schema for the 38dB rejection measurement



Summary ;

8.1 Conducted Voltages on Mains Port

8.1.1 Equipment Setup

System configuration and Equipment setup are shown on Section 6 and Annex A.

8.1.1.1 Tabletop Equipment

EUT is placed on the wooden table, the top of which is 0.8 meter above the metal ground plane.

8.1.1.2 Interconnecting Cables

Excess part of the interconnecting cables longer than 1 meter are bundled in the center. Cables that hang closer than 40 cm to the ground plane is folded back and forth forming bundle 30 to 40 cm long, hanging approx, in the middle between ground plane and table.

8.1.1.3 AC Power Cable

AC power cable for EUT is connected to one LISN which is placed on the ground plane. The LISN is placed in 80 cm from the nearest part of EUT chassis. The excess power cable is bundled in the center, or shortened to appropriate length. AC cables except from the EUT are connected second LISN.

8.1.2 Measuring Instruments

Measuring instruments list and their calibration schedule are shown on Section 10. The brief description are as follows;

8.1.2.1 Spectrum Analyzer

The Spectrum analyzer is used for preliminary measurement.

8.1.2.2 EMI Test Receiver

The Quasi-peak detector (IF bandwidth : 10 kHz) and average detector (IF bandwidth : 10 kHz) built in test receiver is used for final measurement. The test receiver is complied with the specification of the CISPR publication 16.

8.1.2.3 LISN

Two 50 μ H//50 Ω LISN are used. The chassis of the LISN is bonded to the ground plane by the copper blade. One LISN is connected to the EUT. Other LISN (2nd LISN) is connected to the support equipment. The signal output of the 2nd LISN is terminated with a 50 Ω termination.

8.1.3 Test Procedure

8.1.3.1 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.

All leads other than safety ground are tested.

8.1.3.2 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.

8.2 Radiated Electric Field

8.2.1 Equipment Setup

System configuration and Equipment setup are shown on Section 6 and Annex A.

8.2.1.1 Tabletop Equipment

EUT is placed on the wooden table, the top of which is 0.8meter above the metal ground plane (turntable).

8.2.1.2 Interconnecting Cables

Excess part of the interconnecting cables longer than 1 meter are bundled in the center. Cables that hang closer than 40 cm to the ground plane is folded back and forth forming bundle 30 to 40 cm long, hanging approx, in the middle between ground plane and table.

8.2.2 Measuring Instruments

Measuring instruments list and their calibration schedule are shown on Section 10. The brief description are as follows;

8.2.2.1 Antennas

The broadband Tri-log antenna is used for measurement on the frequency range 30 – 1000 MHz.

If uncertain result was obtained, the broadband antenna is replaced by the half wave length dipole, then measurement is carried out over again.

8.2.2.2 Pre-amplifier

The broadband pre-amplifier is used for Radiated Electric Field measurement. The signal to noise ratio is improved by using pre-amplifier.

8.2.2.3 Spectrum Analyzer

The spectrum analyzer is used for preliminary measurement of frequency range 30 – 1000 MHz.

8.2.2.4 EMI Test Receiver

The Quasi-peak detector (IF bandwidth : 120 kHz) built in test receiver is used for final measurement of the frequency 30 – 1000 MHz.

The test receiver is complied with the specification of the CISPR publication 16.

8.2.2.5 Turntable

The turntable is capable for EUT weight and rotatable 0 to 360 degree horizontally by remote control in the test room.

8.2.2.6 Antenna Mast

The antenna mast is attachable to all antennas described on clause 8.2.2.1 and antenna height is adjustable 1 to 4 meters continuously by remote control at the test room, and antenna polarization is also changed by the remote control.

8.2.3 Test Procedure

8.2.3.1 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. Then spectrum chart are plotted out to find the worst emission conditions in configuration, operating mode, or ambient noise notation.

8.2.3.2 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.

When the uncertain result was obtained, the measurement is retried by using the half wave dipole antenna instead of the broadband antenna.

8.3 Conducted Power on Antenna Port

8.3.1 Equipment Setup

System configuration and Equipment setup are shown on Section 6 and Annex A.

8.3.1.1 Tabletop Equipment

EUT is placed on the wooden table, the top of which is 0.8 meter above the metal ground plane.

8.3.1.2 Interconnecting Cables

Excess part of the interconnecting cables longer than 1 meter are bundled in the center. Cables that hang closer than 40 cm to the ground plane is folded back and forth forming bundle 30 to 40 cm long, hanging approx, in the middle between ground plane and table.

8.3.2 Measuring Instruments

Measuring instruments list and their calibration schedule are shown on Section 10. The brief description are as follows;

8.3.2.1 Spectrum Analyzer

The Spectrum analyzer is used for preliminary measurement.

8.3.2.2 EMI Test Receiver

The Quasi-peak detector (IF bandwidth : 120 kHz) built in test receiver is used for final measurement of the frequency 30 – 1000 MHz.

The test receiver is complied with the specification of the CISPR publication 16.

8.3.3 Test Procedure

8.3.3.1 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.

8.3.3.2 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 using the test receiver.

8.4 38dB Rejection

8.4.1 Equipment Setup

System configuration and Equipment setup are shown on Section 6 and Annex A.

8.4.1.1 Tabletop Equipment

EUT is placed on the wooden table, the top of which is 0.8 meter above the metal ground plane.

8.4.2 Measuring Instruments

Measuring instruments list and their calibration schedule are shown on Section 10. The brief description are as follows;

8.4.3 Test Procedure

8.4.3.1 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 = 0.030 MHz – 59.999 MHz (5 kHz Step).

Scan stopped point, was the detected frequency.

8.4.3.2 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.

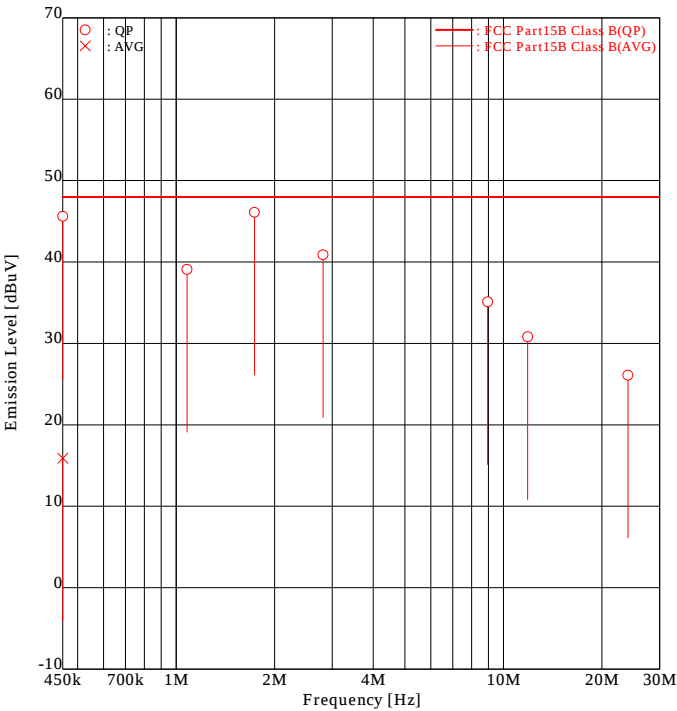
SECTION 9. EVALUATION OF TEST RESULTS

9.1 Conducted Voltages on Mains Port

9.1.1 Tuned Point 1.705 MHz mode

Akzo Nobel K. K.
Kashima No.3 Test Site
Conducted Voltages on Mains Port

APPLICANT : Kenwood Corporation
EUT NAME : HF / 50MHz All Mode Transceiver
MODEL NO. : TS-480SAT
SERIAL NO. : None
TEST MODE : Tuned Point 1.705MHz
POWER SOURCE : DC13.8V (AC120V/60Hz)
DATE TESTED : Aug 25 2003
FILE NO. : ANKK-103234
REGULATION : FCC Part15B Class B
TEST METHOD : ANSI C63.4-1992
TEMPERATURE : 21.0 [degC]
HUMIDITY : 64.0 [%]
NOTE :



ENGINEER : Kazuo Masuda

FREQUENCY MODE			READING		FACTOR		EMISSION		LIMIT	MARGIN	
[No]	[MHz]		[dBuV]		[dB]		[dBuV]		[dBuV]	[dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.4500	QP	<u>52.7</u>	51.4	5.9	5.9	<u>45.6</u>	<u>44.3</u>	48.0	<u>2.4</u>	3.7
2	0.4500	AVG	10.0	9.9	5.9	5.9	15.9	15.8	48.0	-	-
3	1.0785	QP	33.0	<u>33.1</u>	5.9	6.0	38.9	<u>39.1</u>	48.0	9.1	<u>8.9</u>
4	1.7350	QP	40.0	<u>40.1</u>	5.9	6.0	45.9	<u>46.1</u>	48.0	2.1	<u>1.9</u>
5	2.8120	QP	<u>34.8</u>	34.6	6.1	6.1	<u>40.9</u>	40.7	48.0	<u>7.1</u>	7.3
6	8.9531	QP	<u>28.8</u>	28.5	6.3	6.3	<u>35.1</u>	34.8	48.0	<u>12.9</u>	13.2
7	11.8603	QP	<u>24.5</u>	24.1	6.3	6.3	<u>30.8</u>	30.4	48.0	<u>17.2</u>	17.6
8	24.0033	QP	18.9	19.2	6.5	6.9	25.4	26.1	48.0	22.6	21.9

Higher six points are underlined.
Other frequencies : Below the FCC Part15B Class B limit
Relaxations are Italic fonts. (13dB mitigation)
Emission Level = Read + Factor(LISN,Pad,Cable)

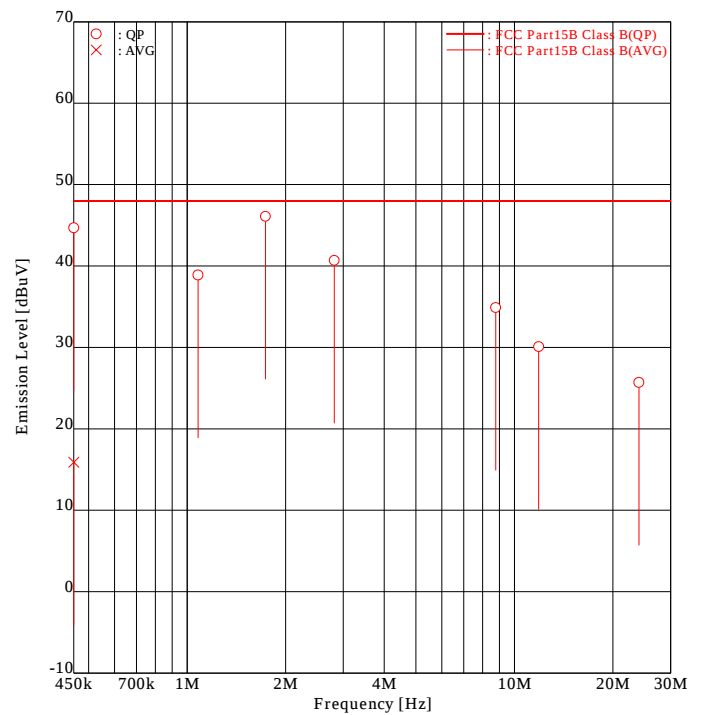
9.1.2 Tuned Point 24.500 MHz mode

Akzo Nobel K. K.

Kashima No.3 Test Site

Conducted Voltages on Mains Port

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 24.500MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 25 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 21.0 [degC]
 HUMIDITY : 64.0 [%]
 NOTE :



ENGINEER : Kazuo Masuda

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.4500	QP	51.2	<u>51.8</u>	5.9	5.9	<i>44.1</i>	<i>44.7</i>	48.0	3.9	<u>3.3</u>
2	0.4500	AVG	10.0	9.8	5.9	5.9	15.9	15.7	48.0	-	-
3	1.0790	QP	32.8	<u>32.9</u>	5.9	6.0	38.7	<u>38.9</u>	48.0	9.3	<u>9.1</u>
4	1.7345	QP	<u>40.2</u>	39.2	5.9	6.0	<u>46.1</u>	45.2	48.0	<u>1.9</u>	2.8
5	2.8141	QP	34.5	<u>34.6</u>	6.1	6.1	40.6	<u>40.7</u>	48.0	7.4	<u>7.3</u>
6	8.7680	QP	<u>28.6</u>	28.3	6.3	6.3	<u>34.9</u>	34.6	48.0	<u>13.1</u>	13.4
7	11.8619	QP	<u>23.8</u>	23.5	6.3	6.3	<u>30.1</u>	29.8	48.0	<u>17.9</u>	18.2
8	24.0039	QP	18.6	18.8	6.5	6.9	25.1	25.7	48.0	22.9	22.3

Higher six points are underlined.

Other frequencies : Below the FCC Part15B Class B limit

Relaxations are Italic fonts. (13dB mitigation)

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

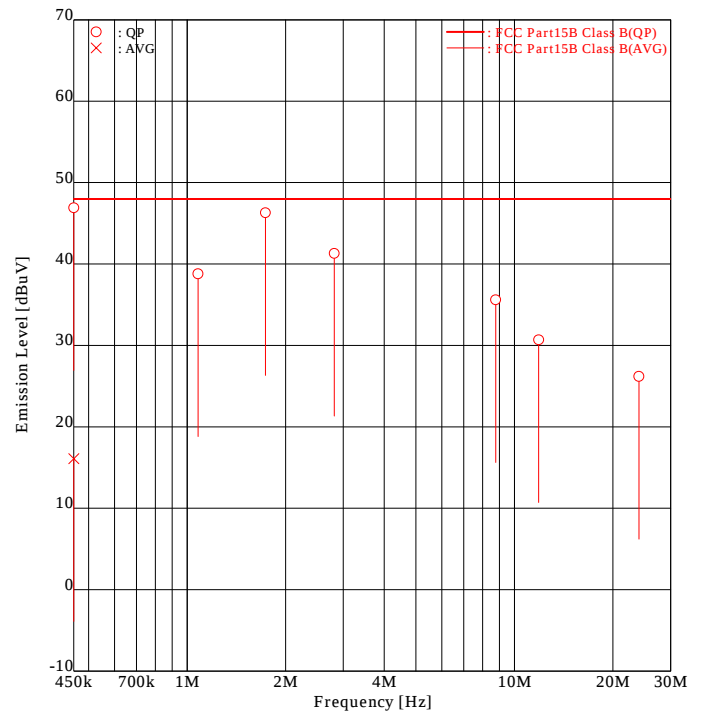
9.1.3 Tuned Point 30.000 MHz mode

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Kashima No.3 Test Site

Conducted Voltages on Mains Port

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 30.000MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 25 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 21.0 [degC]
 HUMIDITY : 64.0 [%]
 NOTE :



ENGINEER : Kazuo Masuda

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.4500	QP	<u>54.0</u>	52.3	5.9	5.9	<u>46.9</u>	<i>45.2</i>	48.0	<u>1.1</u>	2.8
2	0.4500	AVG	10.2	10.1	5.9	5.9	16.1	16.0		-	-
3	1.0792	QP	32.8	<u>32.8</u>	5.9	6.0	38.7	<u>38.8</u>	48.0	9.3	<u>9.2</u>
4	1.7350	QP	40.2	<u>40.3</u>	5.9	6.0	46.1	<u>46.3</u>	48.0	1.9	<u>1.7</u>
5	2.8136	QP	<u>35.2</u>	35.0	6.1	6.1	<u>41.3</u>	41.1	48.0	<u>6.7</u>	6.9
6	8.7670	QP	<u>29.3</u>	29.0	6.3	6.3	<u>35.6</u>	35.3	48.0	<u>12.4</u>	12.7
7	11.8604	QP	<u>24.4</u>	24.0	6.3	6.3	<u>30.7</u>	30.3	48.0	<u>17.3</u>	17.7
8	24.0031	QP	19.1	19.3	6.5	6.9	25.6	26.2	48.0	22.4	21.8

Higher six points are underlined.

Other frequencies : Below the FCC Part15B Class B limit

Relaxations are Italic fonts. (13dB mitigation)

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

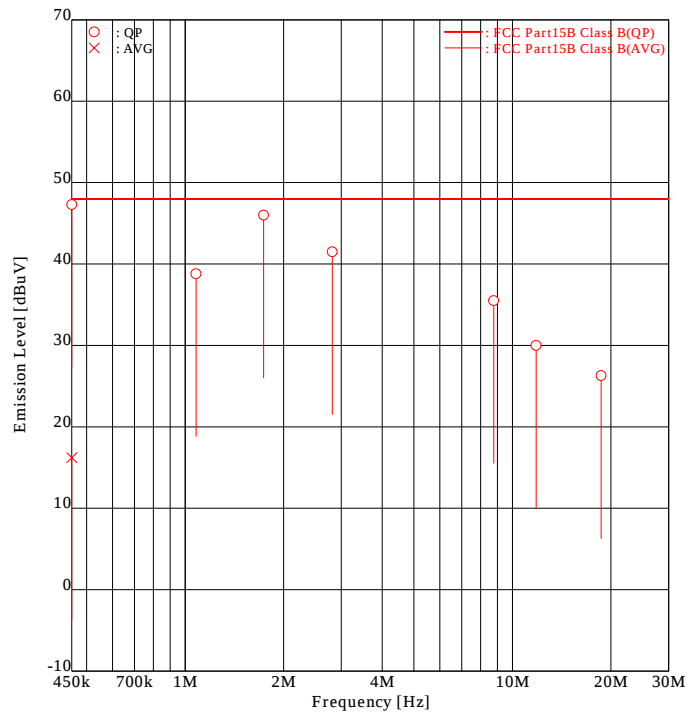
9.1.4 Tuned Point 54.000 MHz mode

Akzo Nobel K. K.

Kashima No.3 Test Site

Conducted Voltages on Mains Port

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 54.000MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 25 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 21.0 [degC]
 HUMIDITY : 64.0 [%]
 NOTE :



ENGINEER : Kazuo Masuda

FREQUENCY [No]	MODE [MHz]		READING [dBuV]		FACTOR [dB]		EMISSION [dBuV]		LIMIT [dBuV]	MARGIN [dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.4500	QP	<u>54.4</u>	53.8	5.9	5.9	<u>47.3</u>	<u>46.7</u>	48.0	<u>0.7</u>	1.3
2	0.4500	AVG	10.3	10.2	5.9	5.9	16.2	16.1		-	-
3	1.0792	QP	32.8	<u>32.8</u>	5.9	6.0	38.7	<u>38.8</u>	48.0	9.3	<u>9.2</u>
4	1.7355	QP	39.5	<u>40.0</u>	5.9	6.0	45.4	<u>46.0</u>	48.0	2.6	<u>2.0</u>
5	2.8130	QP	35.2	<u>35.4</u>	6.1	6.1	41.3	<u>41.5</u>	48.0	6.7	<u>6.5</u>
6	8.7661	QP	<u>29.2</u>	29.0	6.3	6.3	<u>35.5</u>	35.3	48.0	<u>12.5</u>	12.7
7	11.8146	QP	<u>23.7</u>	23.3	6.3	6.3	<u>30.0</u>	29.6	48.0	<u>18.0</u>	18.4
8	18.6580	QP	19.8	19.7	6.5	6.6	26.3	26.3	48.0	21.7	21.7

Higher six points are underlined.

Other frequencies : Below the FCC Part15B Class B limit

Relaxations are Italic fonts. (13dB mitigation)

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

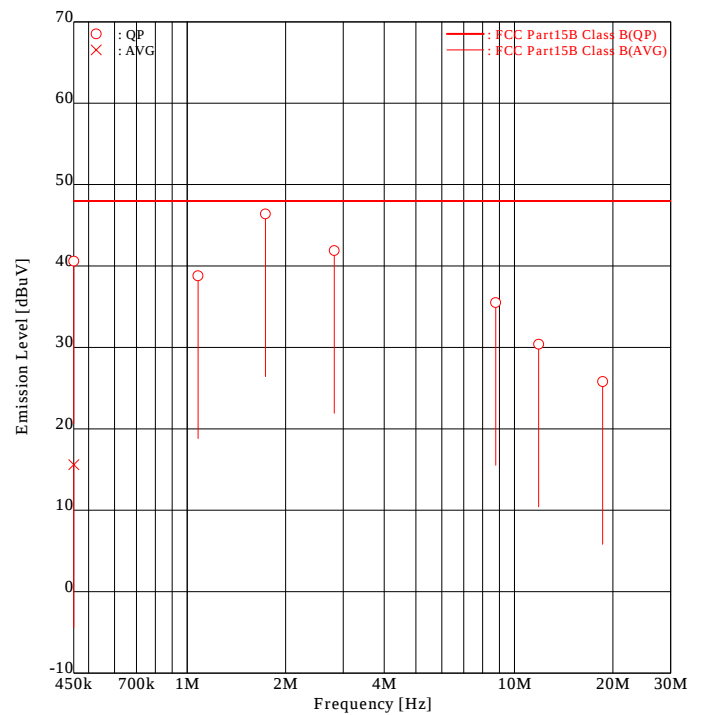
9.1.5 VFO Scan mode

Akzo Nobel K. K.

Kashima No.3 Test Site

Conducted Voltages on Mains Port

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : SCAN
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 25 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 21.0 [degC]
 HUMIDITY : 64.0 [%]
 NOTE : Band : 0.030 - 59.999MHz



ENGINEER : Kazuo Masuda

FREQUENCY MODE			READING		FACTOR		EMISSION		LIMIT	MARGIN	
[No]	[MHz]		[dBuV]		[dB]		[dBuV]		[dBuV]	[dB]	
			Line1	Line2	Line1	Line2	Line1	Line2		Line1	Line2
1	0.4500	QP	46.2	<u>47.7</u>	5.9	5.9	<i>39.1</i>	<u>40.6</u>	48.0	8.9	<u>7.4</u>
2	0.4500	AVG	9.6	9.7	5.9	5.9	15.5	15.6		-	-
3	1.0790	QP	32.8	<u>32.8</u>	5.9	6.0	38.7	<u>38.8</u>	48.0	9.3	<u>9.2</u>
4	1.7346	QP	38.8	<u>40.4</u>	5.9	6.0	44.7	<u>46.4</u>	48.0	3.3	<u>1.6</u>
5	2.8130	QP	34.8	<u>35.8</u>	6.1	6.1	40.9	<u>41.9</u>	48.0	7.1	<u>6.1</u>
6	8.7670	QP	<u>29.2</u>	29.0	6.3	6.3	<u>35.5</u>	35.3	48.0	<u>12.5</u>	12.7
7	11.8620	QP	<u>24.1</u>	23.7	6.3	6.3	<u>30.4</u>	30.0	48.0	<u>17.6</u>	18.0
8	18.6116	QP	19.3	18.8	6.5	6.6	25.8	25.4	48.0	22.2	22.6

Higher six points are underlined.

Other frequencies : Below the FCC Part15B Class B limit

Relaxations are Italic fonts. (13dB mitigation)

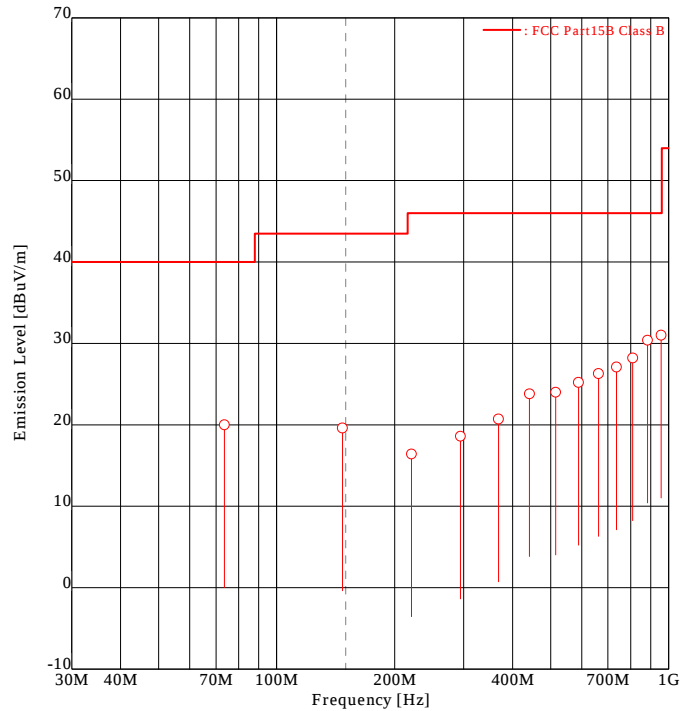
Emission Level = Read + Factor(LISN,Pad,Cable)

9.2 Radiated Electric Field

9.2.1 Tuned Point 0.500 MHz mode (30 – 1000 MHz)

Akzo Nobel K. K. Kashima No.3 Test Site Radiated Electric Field

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 0.500MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 22 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-1992
 DISTANCE : 3.0 [m]
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 0.030 - 1.705MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	73.59	28.6	<u>30.4</u>	-10.4	-10.4	18.2	<u>20.0</u>	40.0	21.8	<u>20.0</u>
2	147.19	26.2	24.9	-6.6	-6.6	19.6	18.3	43.5	23.9	25.2
3	220.78	25.4	25.5	-9.1	-9.1	16.3	16.4	46.0	29.7	29.6
4	294.38	24.3	24.2	-5.7	-5.7	18.6	18.5	46.0	27.4	27.5
5	367.97	24.2	24.0	-3.5	-3.5	20.7	20.5	46.0	25.3	25.5
6	441.57	25.0	24.7	-1.2	-1.2	23.8	23.5	46.0	22.2	22.5
7	515.16	22.3	23.5	0.5	0.5	22.8	24.0	46.0	23.2	22.0
8	588.76	21.8	22.1	3.1	3.1	24.9	25.2	46.0	21.1	20.8
9	662.35	21.7	<u>21.9</u>	4.4	4.4	26.1	<u>26.3</u>	46.0	19.9	<u>19.7</u>
10	735.95	21.4	<u>21.5</u>	5.6	5.6	27.0	<u>27.1</u>	46.0	19.0	<u>18.9</u>
11	809.54	<u>21.0</u>	20.9	7.2	7.2	<u>28.2</u>	28.1	46.0	<u>17.8</u>	17.9
12	883.14	21.1	<u>22.0</u>	8.4	8.4	29.5	<u>30.4</u>	46.0	16.5	<u>15.6</u>
13	956.73	<u>21.7</u>	21.4	9.3	9.3	<u>31.0</u>	30.7	46.0	<u>15.0</u>	15.3

Higher six points are underlined.

Other frequencies : Below the FCC Part15B Class B limit

Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamplifier)

ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

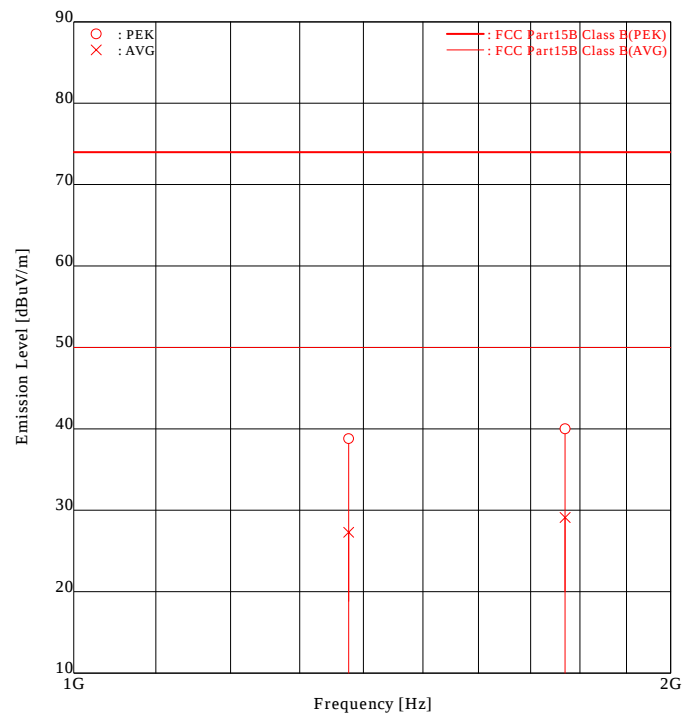
9.2.2 Tuned Point 0.500 MHz mode (1000 – 2000 MHz)

Akzo Nobel K. K.

Kashima No.3 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 0.500MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 23 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4:1992
 DISTANCE : 3.0 [m]
 TEMPERATURE : 21.0 [degC]
 HUMIDITY : 64.0 [%]
 NOTE : Band : 0.030 - 1.705MHz



ENGINEER : Kazuo Masuda

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	1376.25	PEK	-	<u>39.9</u>	-1.1	-1.1	-	<u>38.8</u>	74.0	-	<u>35.2</u>
2	1376.25	AVG	-	<u>28.4</u>	-1.1	-1.1	-	<u>27.3</u>	54.0	-	<u>26.7</u>
3	1769.47	PEK	-	<u>38.9</u>	1.1	1.1	-	<u>40.0</u>	74.0	-	<u>34.0</u>
4	1769.47	AVG	-	<u>28.0</u>	1.1	1.1	-	<u>29.1</u>	54.0	-	<u>24.9</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)

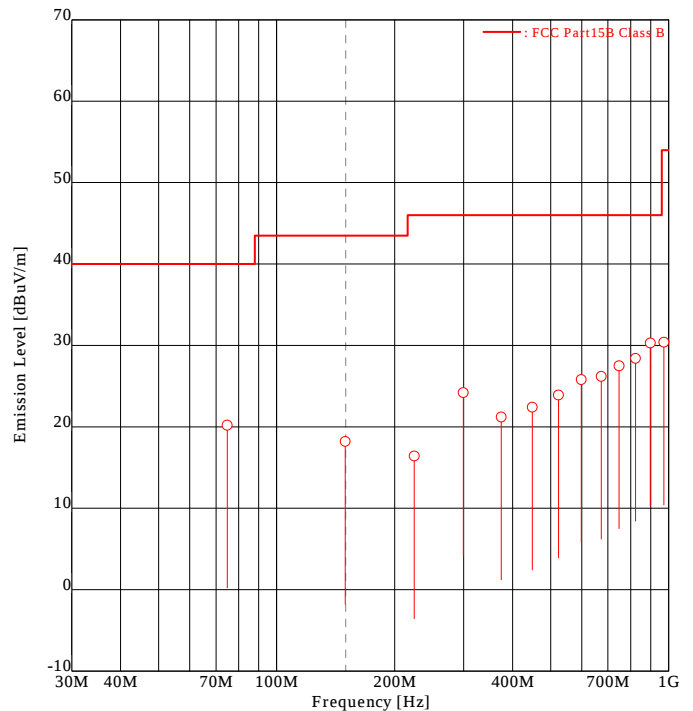
9.2.3 Tuned Point 1.705 MHz mode (30 – 1000 MHz)

Akzo Nobel K. K.

Kashima No.3 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 1.705MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 22 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-1992
 DISTANCE : 3.0 [m]
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 0.030 - 1.705MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	74.80	29.2	<u>30.8</u>	-10.6	-10.6	18.6	<u>20.2</u>	40.0	21.4	<u>19.8</u>
2	149.60	24.2	24.4	-6.2	-6.2	18.0	18.2	43.5	25.5	25.3
3	224.40	25.4	24.2	-9.0	-9.0	16.4	15.2	46.0	29.6	30.8
4	299.20	29.6	25.9	-5.4	-5.4	24.2	20.5	46.0	21.8	25.5
5	374.00	24.5	24.6	-3.4	-3.4	21.1	21.2	46.0	24.9	24.8
6	448.80	23.4	23.2	-1.0	-1.0	22.4	22.2	46.0	23.6	23.8
7	523.60	23.2	23.1	0.7	0.7	23.9	23.8	46.0	22.1	22.2
8	598.40	22.1	<u>22.4</u>	3.4	3.4	25.5	<u>25.8</u>	46.0	20.5	<u>20.2</u>
9	673.20	21.5	<u>21.6</u>	4.6	4.6	26.1	<u>26.2</u>	46.0	19.9	<u>19.8</u>
10	748.00	<u>21.5</u>	21.3	6.0	6.0	<u>27.5</u>	27.3	46.0	<u>18.5</u>	18.7
11	822.80	<u>21.1</u>	21.0	7.3	7.3	<u>28.4</u>	28.3	46.0	<u>17.6</u>	17.7
12	897.60	<u>21.5</u>	<u>21.6</u>	8.7	8.7	<u>30.2</u>	<u>30.3</u>	46.0	15.8	<u>15.7</u>
13	972.40	21.0	21.1	9.3	9.3	30.3	30.4	54.0	23.7	23.6

Higher six points are underlined.

Other frequencies : Below the FCC Part15B Class B limit

Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamplifier)

ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

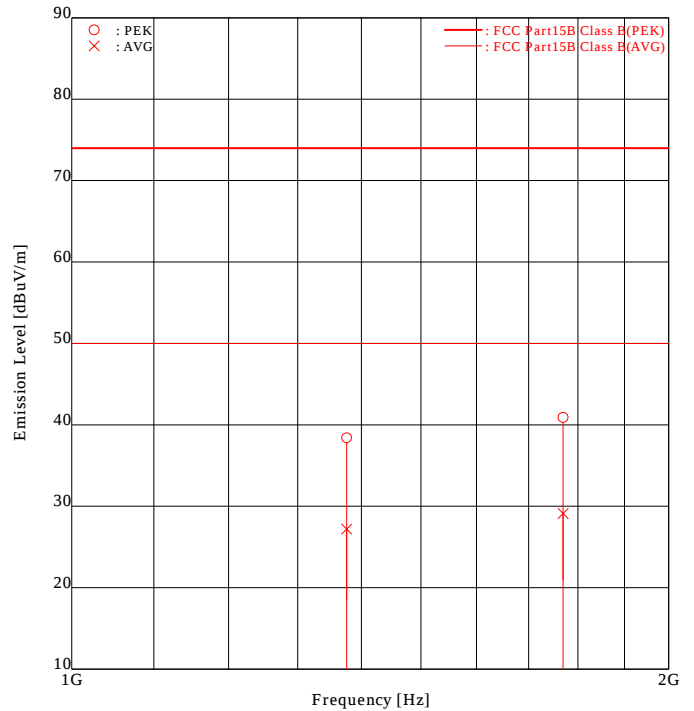
9.2.4 Tuned Point 1.705 MHz mode (1000 – 2000 MHz)

Akzo Nobel K. K.

Kashima No.3 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 1.705MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 23 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4:1992
 DISTANCE : 3.0 [m]
 TEMPERATURE : 21.0 [degC]
 HUMIDITY : 64.0 [%]
 NOTE : Band : 0.030 - 1.705MHz



ENGINEER : Kazuo Masuda

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	1376.25	PEK	-	<u>39.5</u>	-1.1	-1.1	-	<u>38.4</u>	74.0	-	<u>35.6</u>
2	1376.25	AVG	-	<u>28.3</u>	-1.1	-1.1	-	<u>27.2</u>	54.0	-	<u>26.8</u>
3	1769.47	PEK	-	<u>39.8</u>	1.1	1.1	-	<u>40.9</u>	74.0	-	<u>33.1</u>
4	1769.47	AVG	-	<u>28.0</u>	1.1	1.1	-	<u>29.1</u>	54.0	-	<u>24.9</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)

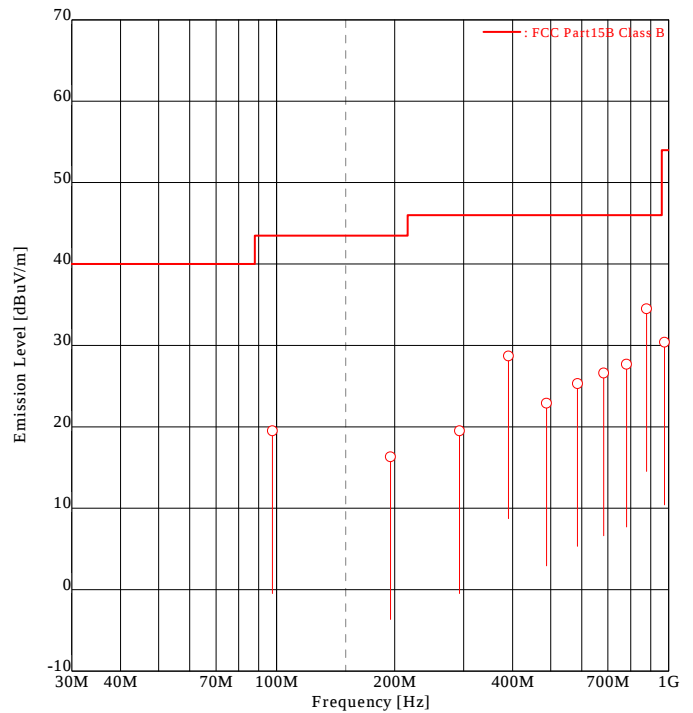
9.2.5 Tuned Point 24.500 MHz mode (30 – 1000 MHz)

Akzo Nobel K. K.

Kashima No.3 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 24.500MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 22 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-1992
 DISTANCE : 3.0 [m]
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 1.705 - 24.500MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	97.59	31.5	31.6	-12.1	-12.1	19.4	19.5	43.5	24.1	24.0
2	195.19	24.7	25.8	-9.5	-9.5	15.2	16.3	43.5	28.3	27.2
3	292.78	24.8	25.2	-5.7	-5.7	19.1	19.5	46.0	26.9	26.5
4	390.38	<u>31.4</u>	29.6	-2.7	-2.7	<u>28.7</u>	26.9	46.0	<u>17.3</u>	19.1
5	487.97	22.6	<u>23.1</u>	-0.2	-0.2	22.4	<u>22.9</u>	46.0	23.6	<u>23.1</u>
6	585.57	22.1	<u>22.3</u>	3.0	3.0	25.1	<u>25.3</u>	46.0	20.9	<u>20.7</u>
7	683.16	<u>21.9</u>	21.6	4.7	4.7	<u>26.6</u>	26.3	46.0	<u>19.4</u>	19.7
8	780.76	21.1	<u>21.2</u>	6.5	6.5	27.6	<u>27.7</u>	46.0	18.4	<u>18.3</u>
9	878.35	22.2	<u>26.3</u>	8.2	8.2	30.4	<u>34.5</u>	46.0	15.6	<u>11.5</u>
10	975.95	21.0	20.9	9.4	9.4	30.4	30.3	54.0	23.6	23.7

Higher six points are underlined.

Other frequencies : Below the FCC Part15B Class B limit

Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamplifier)

ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

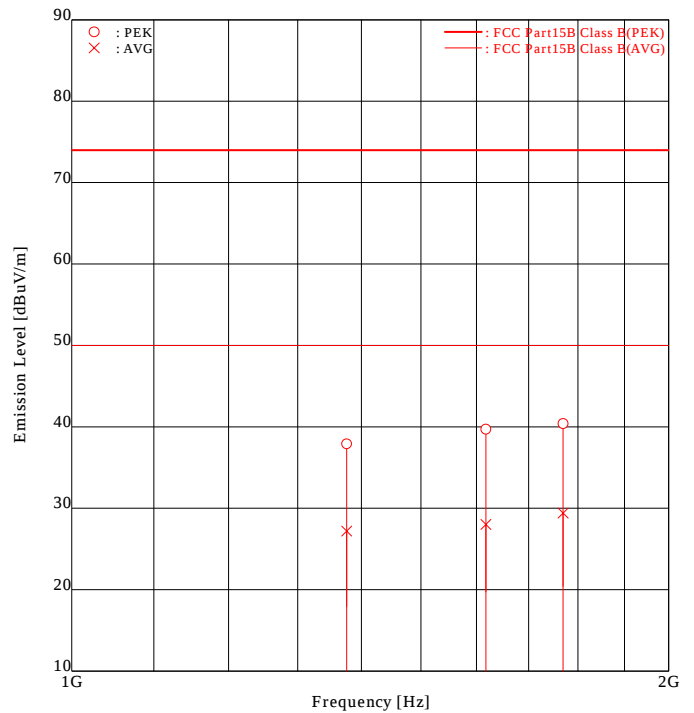
9.2.6 Tuned Point 24.500 MHz mode (1000 – 2000 MHz)

Akzo Nobel K. K.

Kashima No.3 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 24.500MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 23 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4:1992
 DISTANCE : 3.0 [m]
 TEMPERATURE : 21.0 [degC]
 HUMIDITY : 64.0 [%]
 NOTE : Band : 1.705 - 24.500MHz



ENGINEER : Kazuo Masuda

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	1376.25	PEK	-	<u>39.0</u>	-1.1	-1.1	-	<u>37.9</u>	74.0	-	<u>36.1</u>
2	1376.25	AVG	-	<u>28.3</u>	-1.1	-1.1	-	<u>27.2</u>	54.0	-	<u>26.8</u>
3	1617.52	PEK	-	<u>39.8</u>	-0.1	-0.1	-	<u>39.7</u>	74.0	-	<u>34.3</u>
4	1617.52	AVG	-	<u>28.1</u>	-0.1	-0.1	-	<u>28.0</u>	54.0	-	<u>26.0</u>
5	1769.47	PEK	-	<u>39.3</u>	1.1	1.1	-	<u>40.4</u>	74.0	-	<u>33.6</u>
6	1769.47	AVG	-	<u>28.3</u>	1.1	1.1	-	<u>29.4</u>	54.0	-	<u>24.6</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)

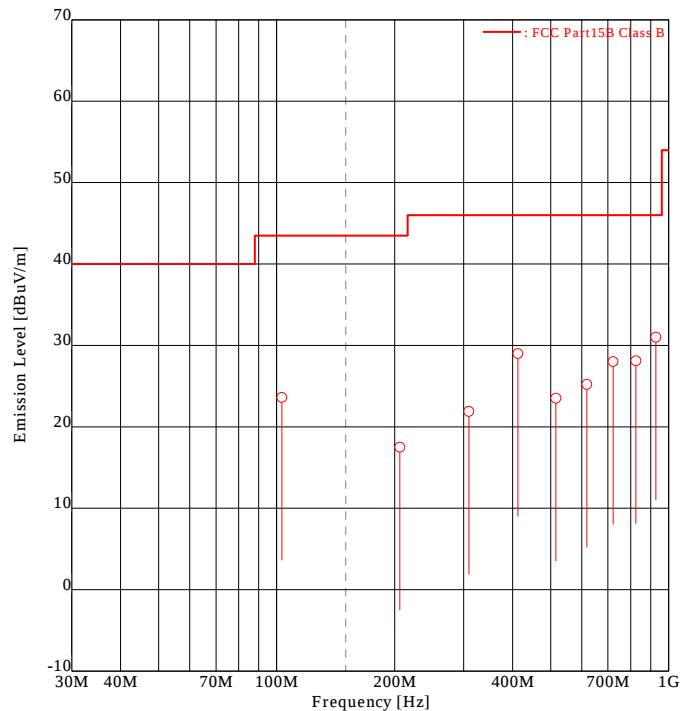
9.2.7 Tuned Point 30.000 MHz mode (30 – 1000 MHz)

Akzo Nobel K. K.

Kashima No.3 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 30.000MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 22 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-1992
 DISTANCE : 3.0 [m]
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 24.500 - 30.000MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	103.09	<u>34.9</u>	33.7	-11.3	-11.3	<u>23.6</u>	22.4	43.5	<u>19.9</u>	21.1
2	206.19	27.1	26.2	-9.6	-9.6	17.5	16.6	43.5	26.0	26.9
3	309.28	27.1	25.4	-5.2	-5.2	21.9	20.2	46.0	24.1	25.8
4	412.38	<u>31.0</u>	30.2	-2.0	-2.0	<u>29.0</u>	28.2	46.0	<u>17.0</u>	17.8
5	515.47	22.0	22.9	0.6	0.6	22.6	23.5	46.0	23.4	22.5
6	618.57	21.3	<u>21.4</u>	3.8	3.8	25.1	<u>25.2</u>	46.0	20.9	<u>20.8</u>
7	721.66	21.6	<u>22.7</u>	5.3	5.3	26.9	<u>28.0</u>	46.0	19.1	<u>18.0</u>
8	824.76	20.0	<u>20.9</u>	7.2	7.2	27.2	<u>28.1</u>	46.0	18.8	<u>17.9</u>
9	927.85	21.9	<u>22.0</u>	9.0	9.0	30.9	<u>31.0</u>	46.0	15.1	<u>15.0</u>

Higher six points are underlined.

Other frequencies : Below the FCC Part15B Class B limit

Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamplifier)

ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

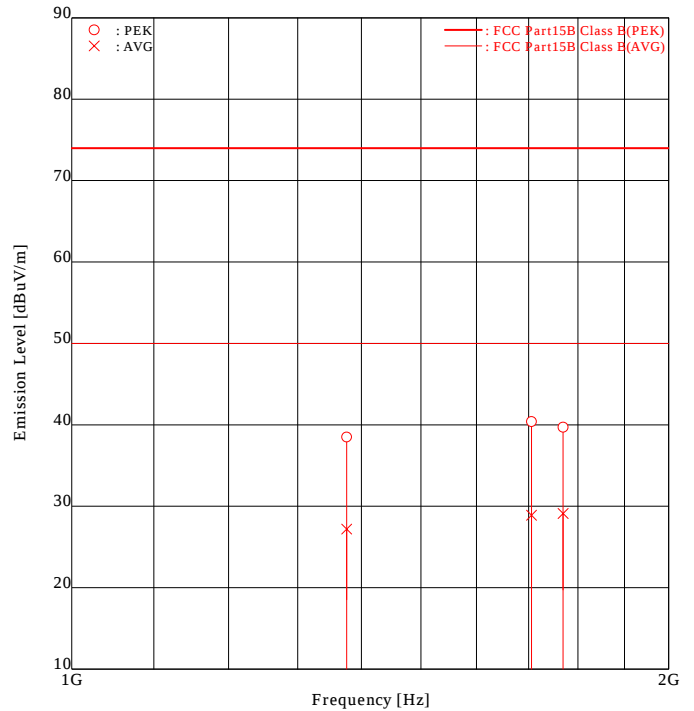
9.2.8 Tuned Point 30.000 MHz mode (1000 – 2000 MHz)

Akzo Nobel K. K.

Kashima No.3 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 30.000MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 23 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4:1992
 DISTANCE : 3.0 [m]
 TEMPERATURE : 21.0 [degC]
 HUMIDITY : 64.0 [%]
 NOTE : Band : 24.500 - 30.000MHz



ENGINEER : Kazuo Masuda

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	1376.25	PEK	-	<u>39.6</u>	-1.1	-1.1	-	<u>38.5</u>	74.0	-	<u>35.5</u>
2	1376.25	AVG	-	<u>28.3</u>	-1.1	-1.1	-	<u>27.2</u>	54.0	-	<u>26.8</u>
3	1705.52	PEK	-	<u>39.8</u>	0.6	0.6	-	<u>40.4</u>	74.0	-	<u>33.6</u>
4	1705.52	AVG	-	<u>28.3</u>	0.6	0.6	-	<u>28.9</u>	54.0	-	<u>25.1</u>
5	1769.47	PEK	-	<u>38.6</u>	1.1	1.1	-	<u>39.7</u>	74.0	-	<u>34.3</u>
6	1769.47	AVG	-	<u>28.0</u>	1.1	1.1	-	<u>29.1</u>	54.0	-	<u>24.9</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)

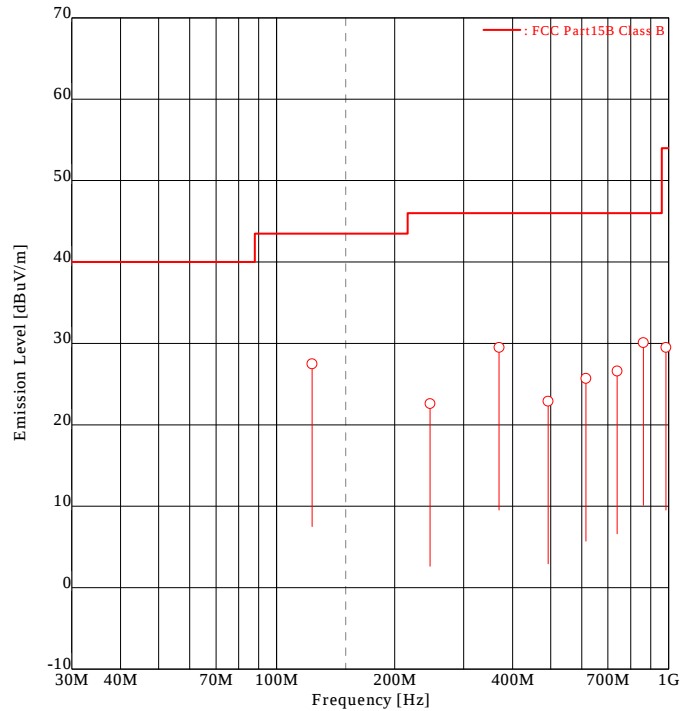
9.2.9 Tuned Point 50.000 MHz mode (30 – 1000 MHz)

Akzo Nobel K. K.

Kashima No.3 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 50.000MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 22 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-1992
 DISTANCE : 3.0 [m]
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 30.000 - 50.000MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	123.09	<u>35.9</u>	32.8	-8.4	-8.4	<u>27.5</u>	24.4	43.5	<u>16.0</u>	19.1
2	246.19	30.3	25.1	-7.7	-7.7	22.6	17.4	46.0	23.4	28.6
3	369.28	<u>33.1</u>	26.3	-3.6	-3.6	<u>29.5</u>	22.7	46.0	<u>16.5</u>	23.3
4	492.38	22.6	<u>22.9</u>	0.0	0.0	22.6	<u>22.9</u>	46.0	23.4	<u>23.1</u>
5	615.47	<u>21.9</u>	21.7	3.8	3.8	<u>25.7</u>	25.5	46.0	<u>20.3</u>	20.5
6	738.57	<u>21.0</u>	20.9	5.6	5.6	<u>26.6</u>	26.5	46.0	<u>19.4</u>	19.5
7	861.66	21.6	<u>22.1</u>	8.0	8.0	29.6	<u>30.1</u>	46.0	16.4	<u>15.9</u>
8	984.76	19.8	20.0	9.5	9.5	29.3	29.5	54.0	24.7	24.5

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)

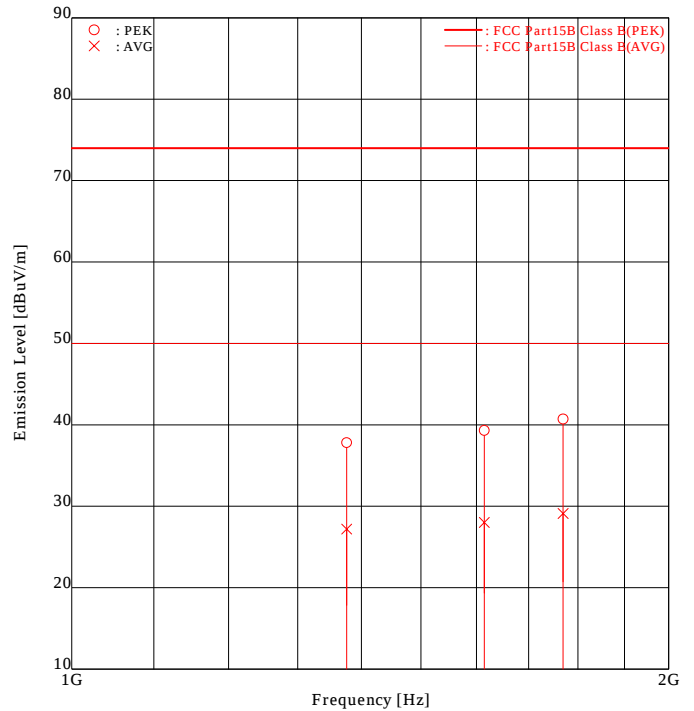
9.2.10 Tuned Point 50.000 MHz mode (1000 – 2000 MHz)

Akzo Nobel K. K.

Kashima No.3 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 50.000MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 23 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4:1992
 DISTANCE : 3.0 [m]
 TEMPERATURE : 21.0 [degC]
 HUMIDITY : 64.0 [%]
 NOTE : Band : 30.000 - 50.000MHz



ENGINEER : Kazuo Masuda

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	1376.25	PEK	-	<u>38.9</u>	-1.1	-1.1	-	<u>37.8</u>	74.0	-	<u>36.2</u>
2	1376.25	AVG	-	<u>28.3</u>	-1.1	-1.1	-	<u>27.2</u>	54.0	-	<u>26.8</u>
3	1614.53	PEK	-	<u>39.4</u>	-0.1	-0.1	-	<u>39.3</u>	74.0	-	<u>34.7</u>
4	1614.53	AVG	-	<u>28.1</u>	-0.1	-0.1	-	<u>28.0</u>	54.0	-	<u>26.0</u>
5	1769.47	PEK	-	<u>39.6</u>	1.1	1.1	-	<u>40.7</u>	74.0	-	<u>33.3</u>
6	1769.47	AVG	-	<u>28.0</u>	1.1	1.1	-	<u>29.1</u>	54.0	-	<u>24.9</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)

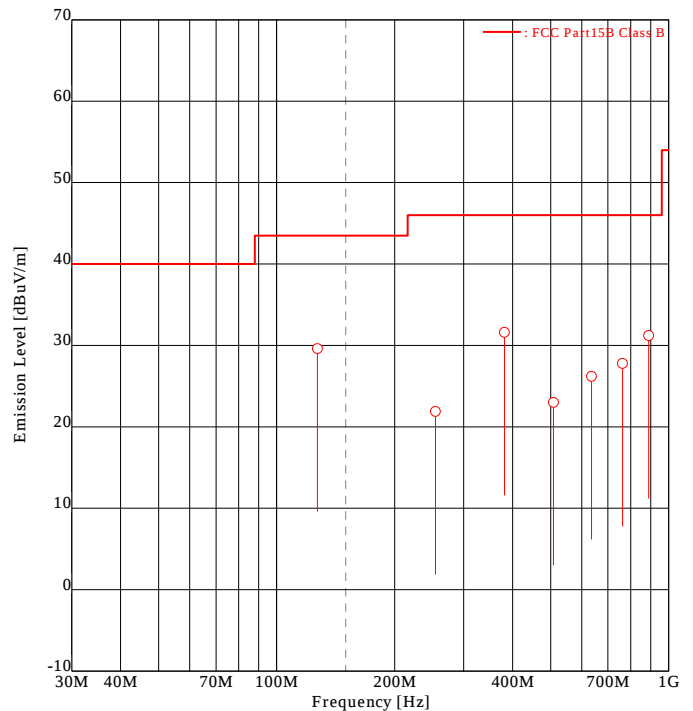
9.2.11 Tuned Point 54.000 MHz mode (30 – 1000 MHz)

Akzo Nobel K. K.

Kashima No.3 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 54.000MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 22 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-1992
 DISTANCE : 3.0 [m]
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 50.000 - 59.999MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]		FACTOR [dB/m]		EMISSION [dBuV/m]		LIMIT [dBuV/m]	MARGIN [dB]	
		Hori	Vert	Hori	Vert	Hori	Vert		Hori	Vert
1	127.09	<u>37.8</u>	33.4	-8.2	-8.2	<u>29.6</u>	25.2	43.5	<u>13.9</u>	18.3
2	254.19	29.3	25.9	-7.4	-7.4	21.9	18.5	46.0	24.1	27.5
3	381.28	<u>34.7</u>	31.9	-3.1	-3.1	<u>31.6</u>	28.8	46.0	<u>14.4</u>	17.2
4	508.38	<u>22.6</u>	22.6	0.4	0.4	<u>23.0</u>	23.0	46.0	<u>23.0</u>	23.0
5	635.47	21.5	<u>22.2</u>	4.0	4.0	25.5	<u>26.2</u>	46.0	20.5	<u>19.8</u>
6	762.57	<u>21.7</u>	21.4	6.1	6.1	<u>27.8</u>	27.5	46.0	<u>18.2</u>	18.5
7	889.66	22.4	<u>22.7</u>	8.5	8.5	30.9	<u>31.2</u>	46.0	15.1	<u>14.8</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)

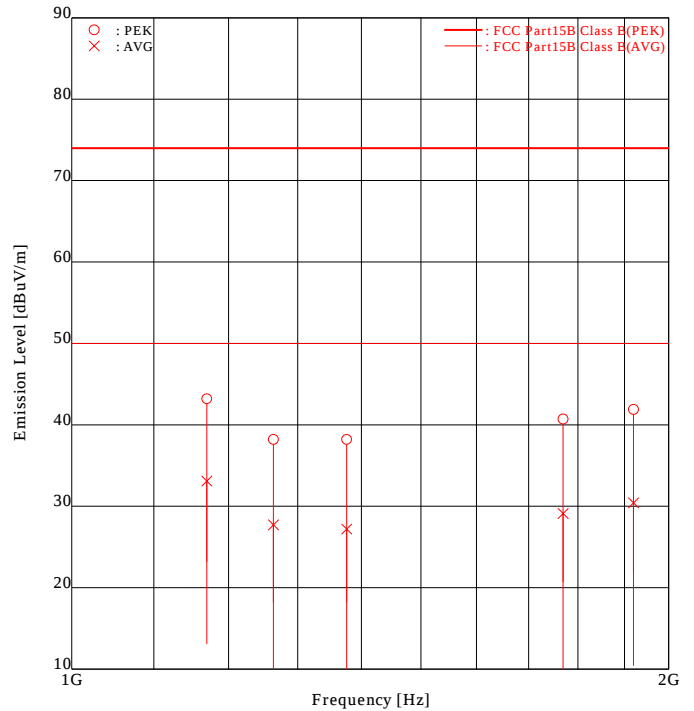
9.2.12 Tuned Point 54.000 MHz mode (1000 – 2000 MHz)

Akzo Nobel K. K.

Kashima No.3 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 54.000MHz
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 23 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4:1992
 DISTANCE : 3.0 [m]
 TEMPERATURE : 21.0 [degC]
 HUMIDITY : 64.0 [%]
 NOTE : Band : 50.000 - 59.999MHz



ENGINEER : Kazuo Masuda

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	1170.02	PEK	-	<u>40.6</u>	2.6	2.6	-	<u>43.2</u>	74.0	-	<u>30.8</u>
2	1170.02	AVG	-	<u>30.5</u>	2.6	2.6	-	<u>33.1</u>	54.0	-	<u>20.9</u>
3	1263.92	PEK	-	39.3	-1.1	-1.1	-	38.2	74.0	-	35.8
4	1263.92	AVG	-	<u>28.8</u>	-1.1	-1.1	-	<u>27.7</u>	54.0	-	<u>26.3</u>
5	1376.25	PEK	-	39.3	-1.1	-1.1	-	38.2	74.0	-	35.8
6	1376.25	AVG	-	<u>28.3</u>	-1.1	-1.1	-	<u>27.2</u>	54.0	-	<u>26.8</u>
7	1769.47	PEK	-	39.6	1.1	1.1	-	40.7	74.0	-	33.3
8	1769.47	AVG	-	<u>28.0</u>	1.1	1.1	-	<u>29.1</u>	54.0	-	<u>24.9</u>
9	1919.97	PEK	-	39.5	2.4	2.4	-	41.9	74.0	-	32.1
10	1919.97	AVG	-	<u>28.0</u>	2.4	2.4	-	<u>30.4</u>	54.0	-	<u>23.6</u>

Higher six points are underlined.

Other frequencies : Below the FCC Part15B Class B limit

Emission Level = Read + Factor(Antenna,Antenna Pad,Cable,Preamplifier)

ANT. : Used antenna(BBA = Broadband antenna, DIP = Dipole antenna)

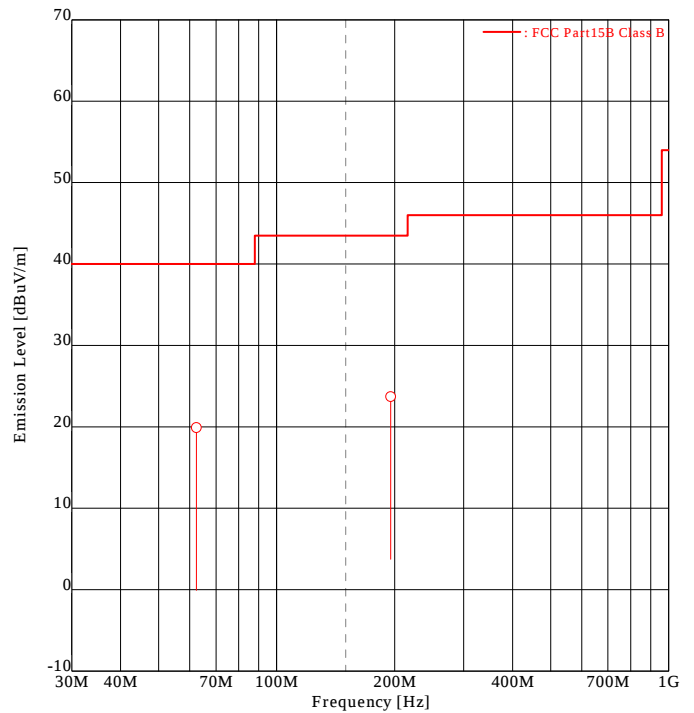
9.2.13 VFO Scan mode (30 – 1000 MHz)

Akzo Nobel K. K.

Kashima No.3 Test Site

Radiated Electric Field

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Other Point
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 22 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B Class B
 TEST METHOD : ANSI C63.4-1992
 DISTANCE : 3.0 [m]
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE :



ENGINEER : Kazuo Masuda

FREQUENCY		READING		FACTOR		EMISSION		LIMIT		MARGIN	
[No]	[MHz]	[dBuV]		[dB/m]		[dBuV/m]		[dBuV/m]		[dB]	
		Hori	Vert	Hori	Vert	Hori	Vert			Hori	Vert
1	62.40	27.7	<u>28.3</u>	-8.4	-8.4	19.3	<u>19.9</u>	40.0	20.7	<u>20.1</u>	
2	195.44	-	<u>33.2</u>	-9.5	-9.5	-	<u>23.7</u>	43.5	-	<u>19.8</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)

9.3 Conducted Power on Antenna Port

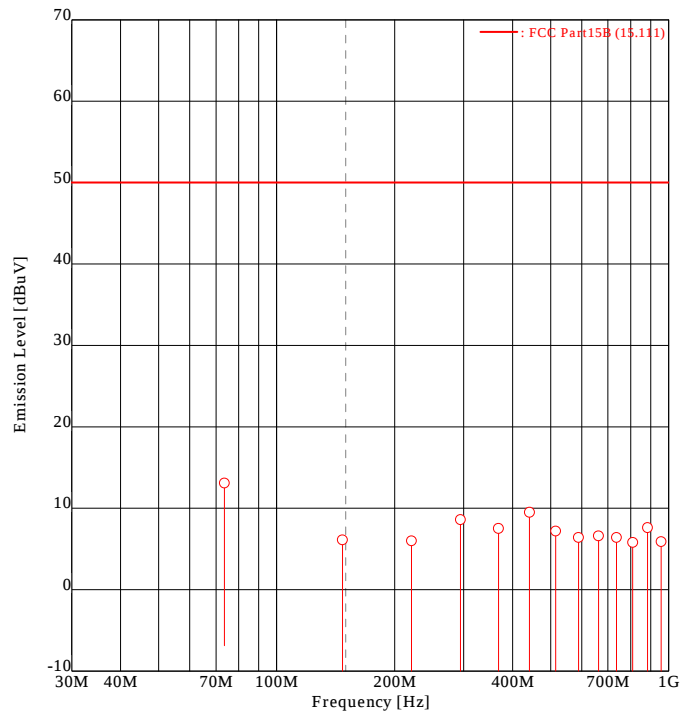
9.3.1 Tuned Point 0.500 MHz mode (ANT1)

Akzo Nobel K. K.

Kashima No.1 Test Site

Conducted Power on Antenna Port

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 0.500MHz (ANT1)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 0.030 - 1.705MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	73.5950	<u>29.4</u>	-16.3	<u>13.1</u>	50.0	<u>36.9</u>
2	147.1900	22.0	-15.9	6.1	50.0	43.9
3	220.7800	21.7	-15.7	6.0	50.0	44.0
4	294.3800	<u>24.2</u>	-15.6	<u>8.6</u>	50.0	<u>41.4</u>
5	367.9700	<u>22.8</u>	-15.3	<u>7.5</u>	50.0	<u>42.5</u>
6	441.5700	<u>24.9</u>	-15.4	<u>9.5</u>	50.0	<u>40.5</u>
7	515.1600	<u>21.9</u>	-14.7	<u>7.2</u>	50.0	<u>42.8</u>
8	588.7600	21.6	-15.2	6.4	50.0	43.6
9	662.3500	20.9	-14.3	6.6	50.0	43.4
10	735.9500	20.3	-13.9	6.4	50.0	43.6
11	809.5400	20.4	-14.6	5.8	50.0	44.2
12	883.1400	<u>20.7</u>	-13.1	<u>7.6</u>	50.0	<u>42.4</u>
13	956.7300	20.0	-14.1	5.9	50.0	44.1

Higher six points are underlined.

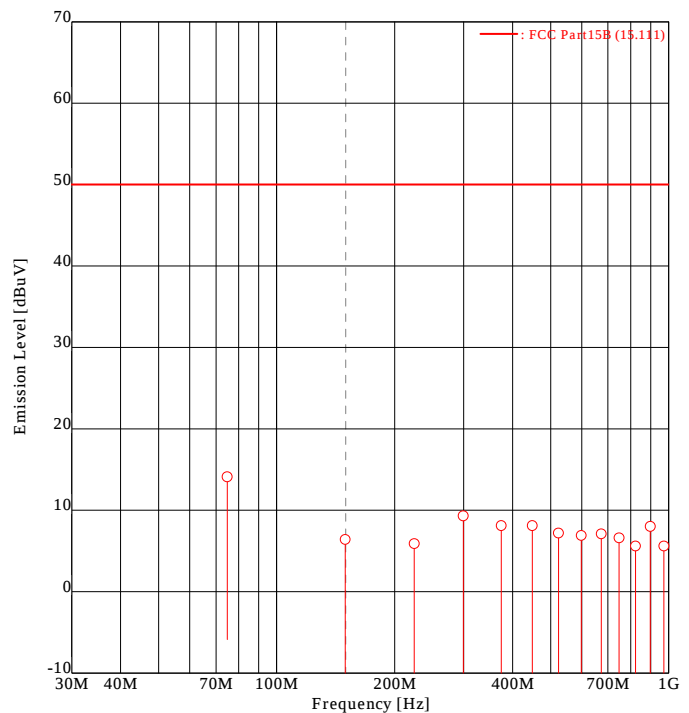
Other frequencies : Below the FCC Part15B (15.111) limit

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

9.3.2 Tuned Point 1.705 MHz mode (ANT1)

Akzo Nobel K. K.**Kashima No.1 Test Site****Conducted Power on Antenna Port**

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 1.705MHz (ANT1)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 0.030 - 1.705MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	74.8000	<u>30.4</u>	-16.3	<u>14.1</u>	50.0	<u>35.9</u>
2	149.6000	22.2	-15.8	6.4	50.0	43.6
3	224.4000	21.6	-15.7	5.9	50.0	44.1
4	299.2000	<u>24.9</u>	-15.6	<u>9.3</u>	50.0	<u>40.7</u>
5	374.0000	<u>23.4</u>	-15.3	<u>8.1</u>	50.0	<u>41.9</u>
6	448.8000	<u>23.5</u>	-15.4	<u>8.1</u>	50.0	<u>41.9</u>
7	523.6000	<u>21.8</u>	-14.6	<u>7.2</u>	50.0	<u>42.8</u>
8	598.4000	22.1	-15.2	6.9	50.0	43.1
9	673.2000	21.3	-14.2	7.1	50.0	42.9
10	748.0000	20.5	-13.9	6.6	50.0	43.4
11	822.8000	19.9	-14.3	5.6	50.0	44.4
12	897.6000	<u>21.1</u>	-13.1	<u>8.0</u>	50.0	<u>42.0</u>
13	972.4000	19.8	-14.2	5.6	50.0	44.4

Higher six points are underlined.

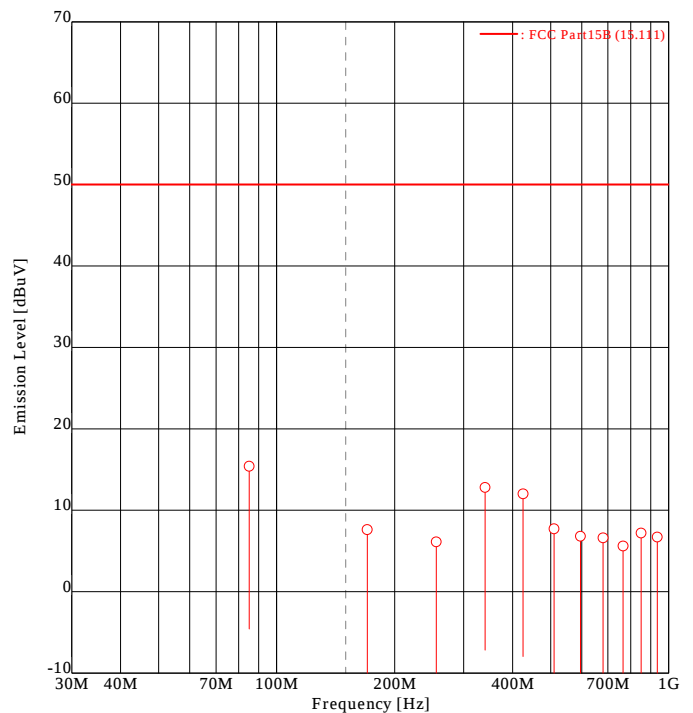
Other frequencies : Below the FCC Part15B (15.111) limit

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

9.3.3 Tuned Point 12.000 MHz mode (ANT1)

Akzo Nobel K. K.**Kashima No.1 Test Site****Conducted Power on Antenna Port**

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 12.000MHz (ANT1)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 1.705 - 24.500MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	85.0900	<u>31.6</u>	-16.2	<u>15.4</u>	50.0	<u>34.6</u>
2	170.1900	<u>23.7</u>	-16.1	<u>7.6</u>	50.0	<u>42.4</u>
3	255.2800	21.7	-15.6	6.1	50.0	43.9
4	340.3800	<u>28.3</u>	-15.5	<u>12.8</u>	50.0	<u>37.2</u>
5	425.4700	<u>27.4</u>	-15.4	<u>12.0</u>	50.0	<u>38.0</u>
6	510.5700	<u>22.4</u>	-14.7	<u>7.7</u>	50.0	<u>42.3</u>
7	595.6600	22.0	-15.2	6.8	50.0	43.2
8	680.7600	20.8	-14.2	6.6	50.0	43.4
9	765.8500	20.0	-14.4	5.6	50.0	44.4
10	850.9500	<u>20.9</u>	-13.7	<u>7.2</u>	50.0	<u>42.8</u>
11	936.0400	20.7	-14.0	6.7	50.0	43.3

Higher six points are underlined.

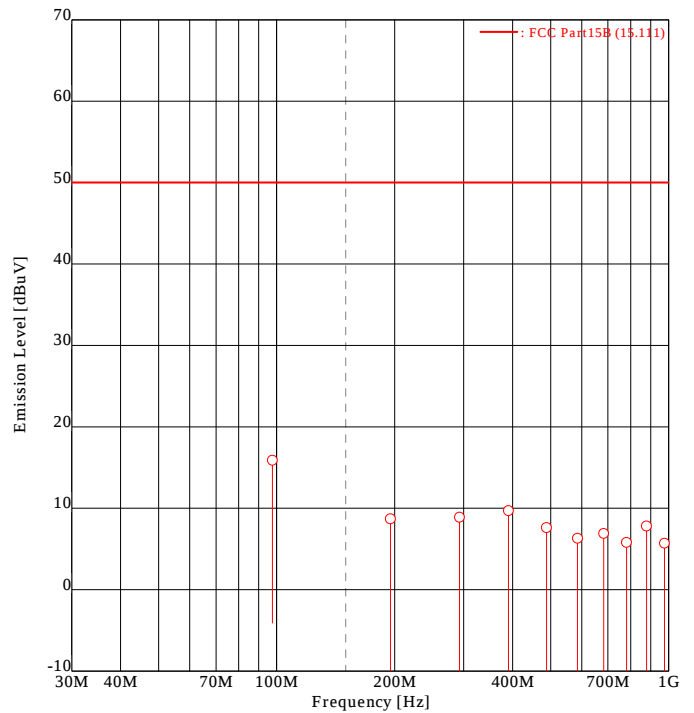
Other frequencies : Below the FCC Part15B (15.111) limit

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

9.3.4 Tuned Point 24.500 MHz mode (ANT1)

Akzo Nobel K. K.**Kashima No.1 Test Site****Conducted Power on Antenna Port**

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 24.500MHz (ANT1)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 1.705 - 24.500MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	97.5900	<u>32.0</u>	-16.1	<u>15.9</u>	50.0	<u>34.1</u>
2	195.1900	<u>24.6</u>	-15.9	<u>8.7</u>	50.0	<u>41.3</u>
3	292.7800	<u>24.5</u>	-15.6	<u>8.9</u>	50.0	<u>41.1</u>
4	390.3800	<u>25.0</u>	-15.3	<u>9.7</u>	50.0	<u>40.3</u>
5	487.9700	<u>22.5</u>	-14.9	<u>7.6</u>	50.0	<u>42.4</u>
6	585.5700	21.5	-15.2	6.3	50.0	43.7
7	683.1600	21.0	-14.1	6.9	50.0	43.1
8	780.7600	20.5	-14.7	5.8	50.0	44.2
9	878.3500	<u>20.9</u>	-13.1	<u>7.8</u>	50.0	<u>42.2</u>
10	975.9500	20.0	-14.3	5.7	50.0	44.3

Higher six points are underlined.

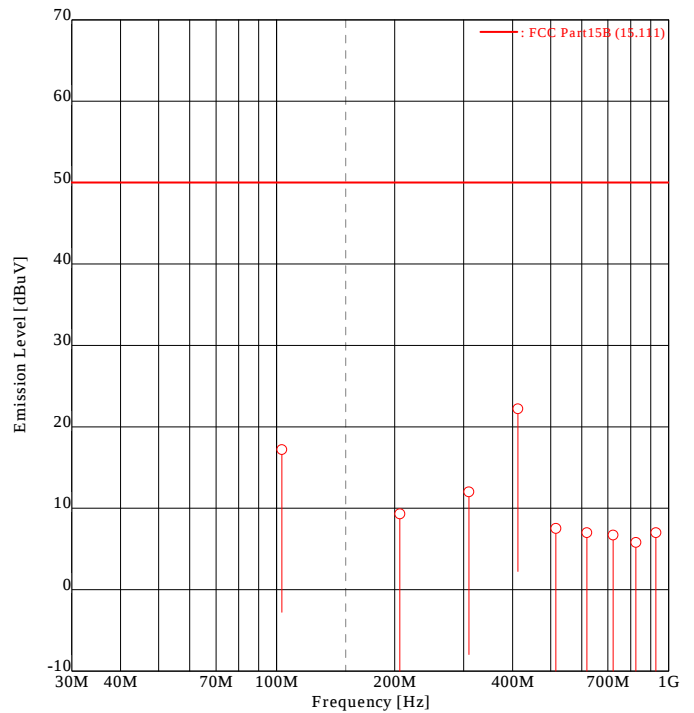
Other frequencies : Below the FCC Part15B (15.111) limit

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

9.3.5 Tuned Point 30.000 MHz mode (ANT1)

Akzo Nobel K. K.**Kashima No.1 Test Site****Conducted Power on Antenna Port**

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 30.000MHz (ANT1)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 24.500 - 30.000MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	103.0900	<u>33.3</u>	-16.1	<u>17.2</u>	50.0	<u>32.8</u>
2	206.1900	<u>25.1</u>	-15.8	<u>9.3</u>	50.0	<u>40.7</u>
3	309.2800	<u>27.6</u>	-15.6	<u>12.0</u>	50.0	<u>38.0</u>
4	412.3800	<u>37.6</u>	-15.4	<u>22.2</u>	50.0	<u>27.8</u>
5	515.4700	<u>22.2</u>	-14.7	<u>7.5</u>	50.0	<u>42.5</u>
6	618.5700	<u>21.8</u>	-14.8	<u>7.0</u>	50.0	<u>43.0</u>
7	721.6600	20.7	-14.0	6.7	50.0	43.3
8	824.7600	20.1	-14.3	5.8	50.0	44.2
9	927.8500	<u>20.9</u>	-13.9	<u>7.0</u>	50.0	<u>43.0</u>

Higher six points are underlined.

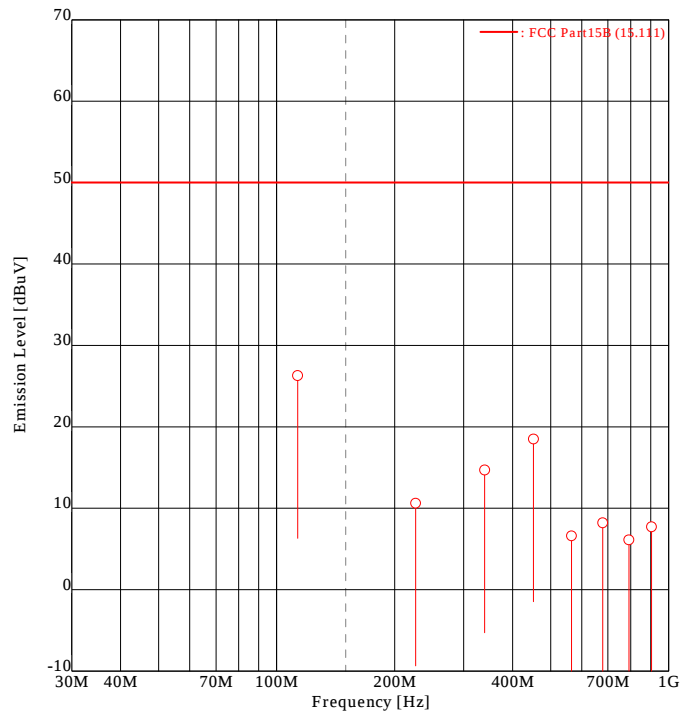
Other frequencies : Below the FCC Part15B (15.111) limit

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

9.3.6 Tuned Point 40.000 MHz mode (ANT1)

Akzo Nobel K. K.**Kashima No.1 Test Site****Conducted Power on Antenna Port**

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 40.000MHz (ANT1)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 30.000 - 50.000 MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	113.0900	<u>42.4</u>	-16.1	<u>26.3</u>	50.0	<u>23.7</u>
2	226.1900	<u>26.3</u>	-15.7	<u>10.6</u>	50.0	<u>39.4</u>
3	339.2800	<u>30.2</u>	-15.5	<u>14.7</u>	50.0	<u>35.3</u>
4	452.3800	<u>33.9</u>	-15.4	<u>18.5</u>	50.0	<u>31.5</u>
5	565.4700	21.8	-15.2	6.6	50.0	43.4
6	678.5700	<u>22.4</u>	-14.2	<u>8.2</u>	50.0	<u>41.8</u>
7	791.6600	20.9	-14.8	6.1	50.0	43.9
8	904.7600	<u>21.0</u>	-13.3	<u>7.7</u>	50.0	<u>42.3</u>

Higher six points are underlined.

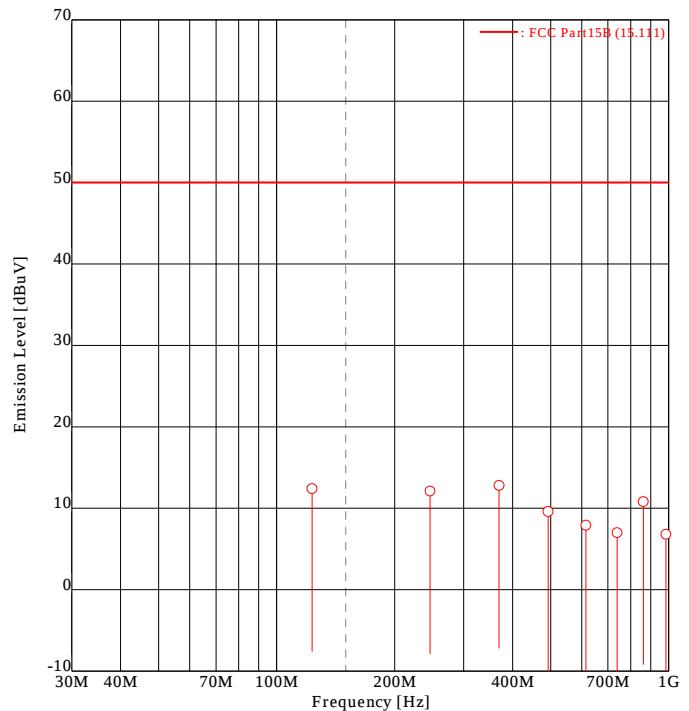
Other frequencies : Below the FCC Part15B (15.111) limit

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

9.3.7 Tuned Point 50.000 MHz mode (ANT1)

Akzo Nobel K. K.**Kashima No.1 Test Site****Conducted Power on Antenna Port**

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 50.000MHz (ANT1)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 30.000 - 50.000MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	123.0900	<u>28.3</u>	-15.9	<u>12.4</u>	50.0	<u>37.6</u>
2	246.1900	<u>27.8</u>	-15.7	<u>12.1</u>	50.0	<u>37.9</u>
3	369.2800	<u>28.1</u>	-15.3	<u>12.8</u>	50.0	<u>37.2</u>
4	492.3800	<u>24.5</u>	-14.9	<u>9.6</u>	50.0	<u>40.4</u>
5	615.4700	<u>22.8</u>	-14.9	<u>7.9</u>	50.0	<u>42.1</u>
6	738.5700	20.9	-13.9	7.0	50.0	43.0
7	861.6600	<u>24.2</u>	-13.4	<u>10.8</u>	50.0	<u>39.2</u>
8	984.7600	21.1	-14.3	6.8	50.0	43.2

Higher six points are underlined.
 Other frequencies : Below the FCC Part15B (15.111) limit
 Emission Level = Read + Factor(Pad,Cable,Preamplifier)

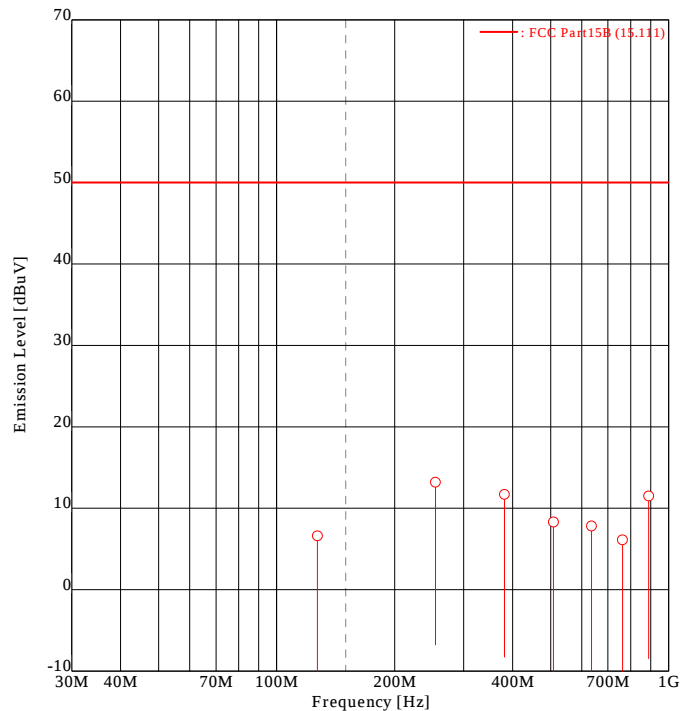
9.3.8 Tuned Point 54.000 MHz mode (ANT1)

Akzo Nobel K. K.

Kashima No.1 Test Site

Conducted Power on Antenna Port

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 54.000MHz (ANT1)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 50.000 - 59.999MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	127.0900	<u>22.4</u>	-15.8	<u>6.6</u>	50.0	<u>43.4</u>
2	254.1900	<u>28.8</u>	-15.6	<u>13.2</u>	50.0	<u>36.8</u>
3	381.2800	<u>27.0</u>	-15.3	<u>11.7</u>	50.0	<u>38.3</u>
4	508.3800	<u>23.1</u>	-14.8	<u>8.3</u>	50.0	<u>41.7</u>
5	635.4700	<u>22.4</u>	-14.6	<u>7.8</u>	50.0	<u>42.2</u>
6	762.5700	20.4	-14.3	6.1	50.0	43.9
7	889.6600	<u>24.6</u>	-13.1	<u>11.5</u>	50.0	<u>38.5</u>

Higher six points are underlined.

Other frequencies : Below the FCC Part15B (15.111) limit

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

9.3.9 VFO Scan mode (ANT1)

< Graph number #3 >

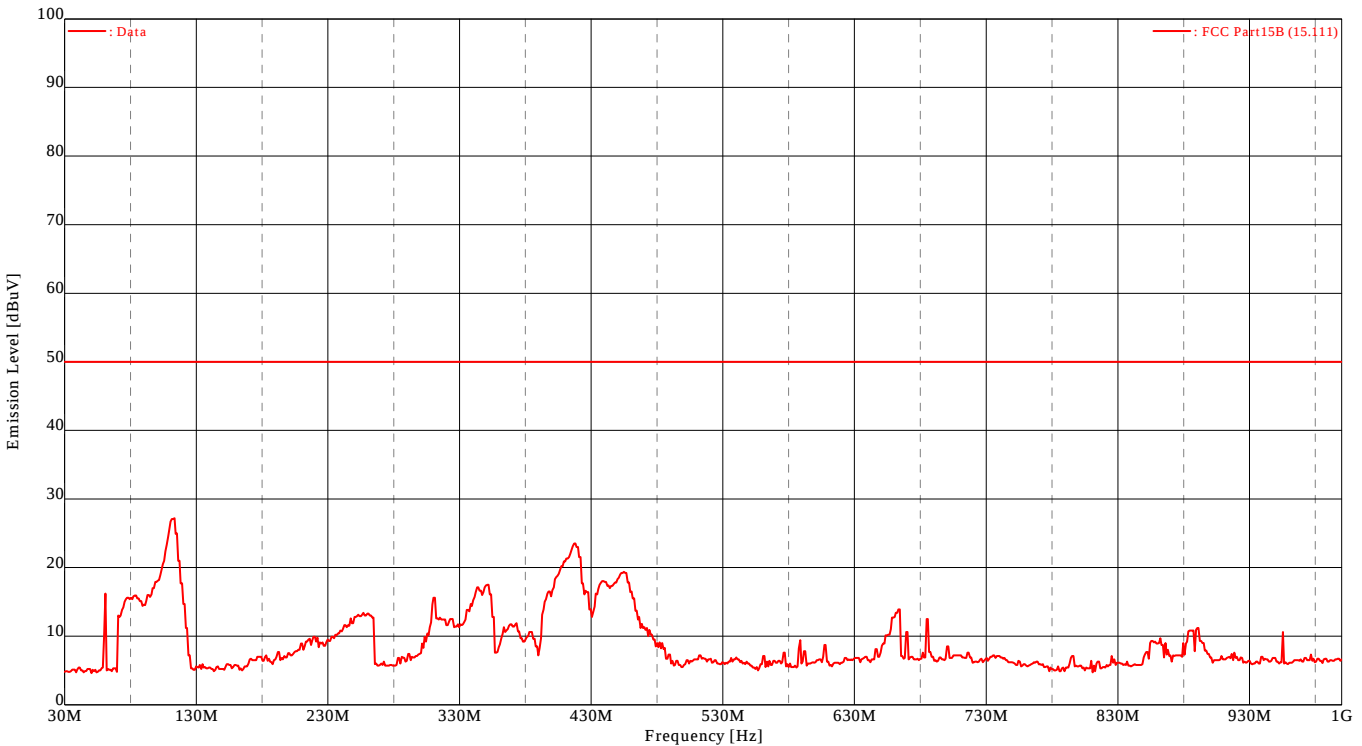
SPECTRUM ANALYSIS

Kashima No.1 Test Site

22.0°C/62.0%

Date tested : Aug 27 2003
Company : Kenwood Corporation
EUT Name : HF / 50MHz All Mode Transceiver
Model number : TS-480SAT
Serial number : None

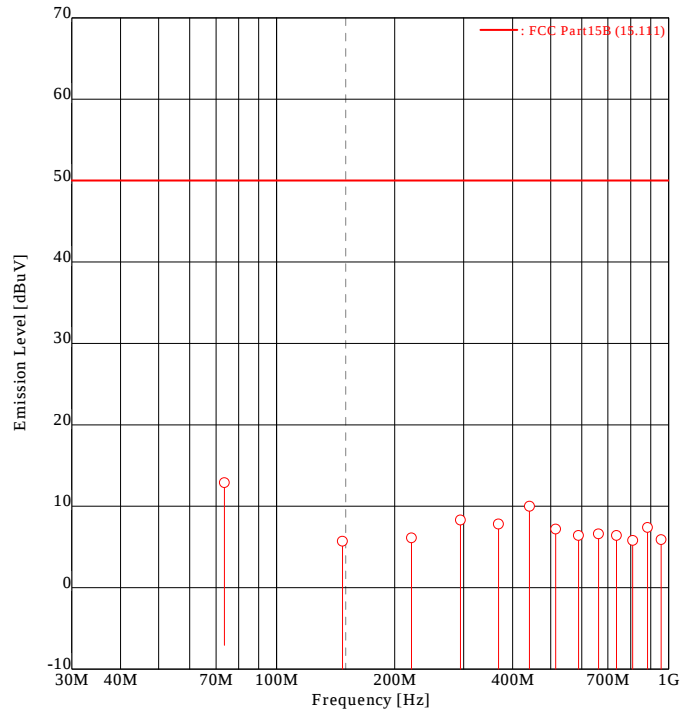
Test mode : VFO SCAN (ANT1)
Power source : DC13.8V (AC120V/60Hz)
File number : ANKK-103234
Engineer : Kazuo Masuda
Note : Band : 0.030 - 59.999MHz



9.3.10 Tuned Point 0.500 MHz mode (ANT2)

Akzo Nobel K. K.**Kashima No.1 Test Site****Conducted Power on Antenna Port**

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 0.500MHz (ANT2)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 0.030 - 1.705MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	73.5950	<u>29.2</u>	-16.3	<u>12.9</u>	50.0	<u>37.1</u>
2	147.1900	21.6	-15.9	5.7	50.0	44.3
3	220.7800	21.8	-15.7	6.1	50.0	43.9
4	294.3800	<u>23.9</u>	-15.6	<u>8.3</u>	50.0	<u>41.7</u>
5	367.9700	<u>23.1</u>	-15.3	<u>7.8</u>	50.0	<u>42.2</u>
6	441.5700	<u>25.4</u>	-15.4	<u>10.0</u>	50.0	<u>40.0</u>
7	515.1600	<u>21.9</u>	-14.7	<u>7.2</u>	50.0	<u>42.8</u>
8	588.7600	21.6	-15.2	6.4	50.0	43.6
9	662.3500	20.9	-14.3	6.6	50.0	43.4
10	735.9500	20.3	-13.9	6.4	50.0	43.6
11	809.5400	20.4	-14.6	5.8	50.0	44.2
12	883.1400	<u>20.5</u>	-13.1	<u>7.4</u>	50.0	<u>42.6</u>
13	956.7300	20.0	-14.1	5.9	50.0	44.1

Higher six points are underlined.

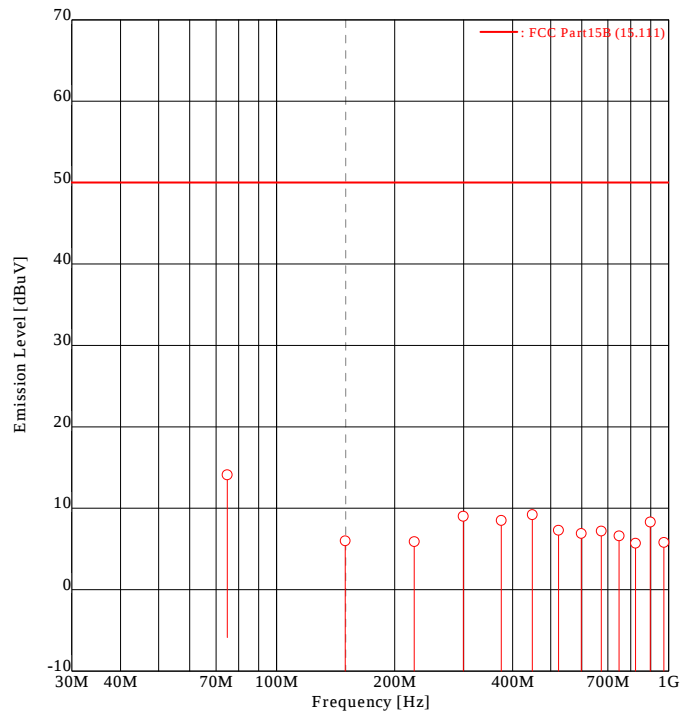
Other frequencies : Below the FCC Part15B (15.111) limit

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

9.3.11 Tuned Point 1.705 MHz mode (ANT2)

Akzo Nobel K. K.**Kashima No.1 Test Site****Conducted Power on Antenna Port**

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 1.705MHz (ANT2)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 0.030 - 1.705MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	74.8000	<u>30.4</u>	-16.3	<u>14.1</u>	50.0	<u>35.9</u>
2	149.6000	21.8	-15.8	6.0	50.0	44.0
3	224.4000	21.6	-15.7	5.9	50.0	44.1
4	299.2000	<u>24.6</u>	-15.6	<u>9.0</u>	50.0	<u>41.0</u>
5	374.0000	<u>23.8</u>	-15.3	<u>8.5</u>	50.0	<u>41.5</u>
6	448.8000	<u>24.6</u>	-15.4	<u>9.2</u>	50.0	<u>40.8</u>
7	523.6000	<u>21.9</u>	-14.6	<u>7.3</u>	50.0	<u>42.7</u>
8	598.4000	22.1	-15.2	6.9	50.0	43.1
9	673.2000	21.4	-14.2	7.2	50.0	42.8
10	748.0000	20.5	-13.9	6.6	50.0	43.4
11	822.8000	20.0	-14.3	5.7	50.0	44.3
12	897.6000	<u>21.4</u>	-13.1	<u>8.3</u>	50.0	<u>41.7</u>
13	972.4000	20.0	-14.2	5.8	50.0	44.2

Higher six points are underlined.

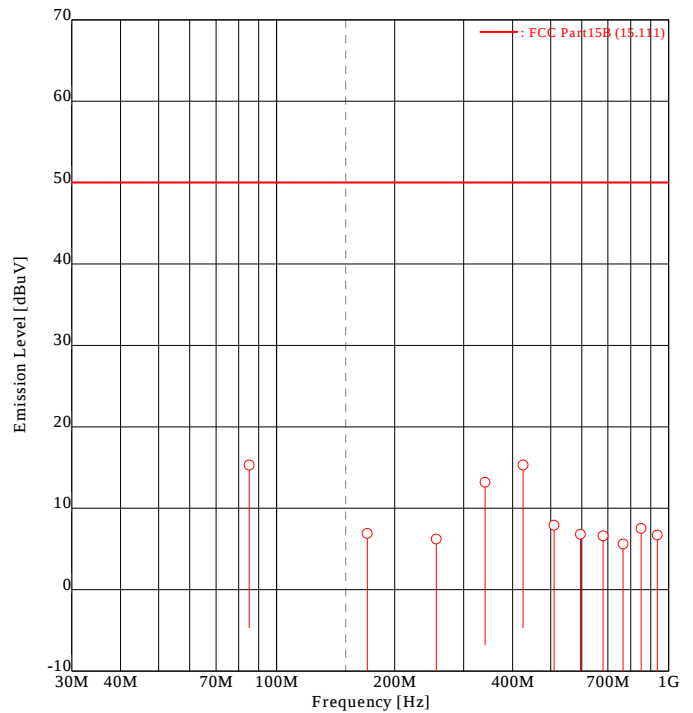
Other frequencies : Below the FCC Part15B (15.111) limit

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

9.3.12 Tuned Point 12.000 MHz mode (ANT2)

Akzo Nobel K. K.**Kashima No.1 Test Site****Conducted Power on Antenna Port**

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 12.000MHz (ANT2)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 1.705 - 24.500MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	85.0900	<u>31.5</u>	-16.2	<u>15.3</u>	50.0	<u>34.7</u>
2	170.1900	<u>23.0</u>	-16.1	<u>6.9</u>	50.0	<u>43.1</u>
3	255.2800	<u>21.8</u>	-15.6	<u>6.2</u>	50.0	<u>43.8</u>
4	340.3800	<u>28.7</u>	-15.5	<u>13.2</u>	50.0	<u>36.8</u>
5	425.4700	<u>30.7</u>	-15.4	<u>15.3</u>	50.0	<u>34.7</u>
6	510.5700	<u>22.6</u>	-14.7	<u>7.9</u>	50.0	<u>42.1</u>
7	595.6600	22.0	-15.2	6.8	50.0	43.2
8	680.7600	20.8	-14.2	6.6	50.0	43.4
9	765.8500	20.0	-14.4	5.6	50.0	44.4
10	850.9500	<u>21.2</u>	-13.7	<u>7.5</u>	50.0	<u>42.5</u>
11	936.0400	20.7	-14.0	6.7	50.0	43.3

Higher six points are underlined.

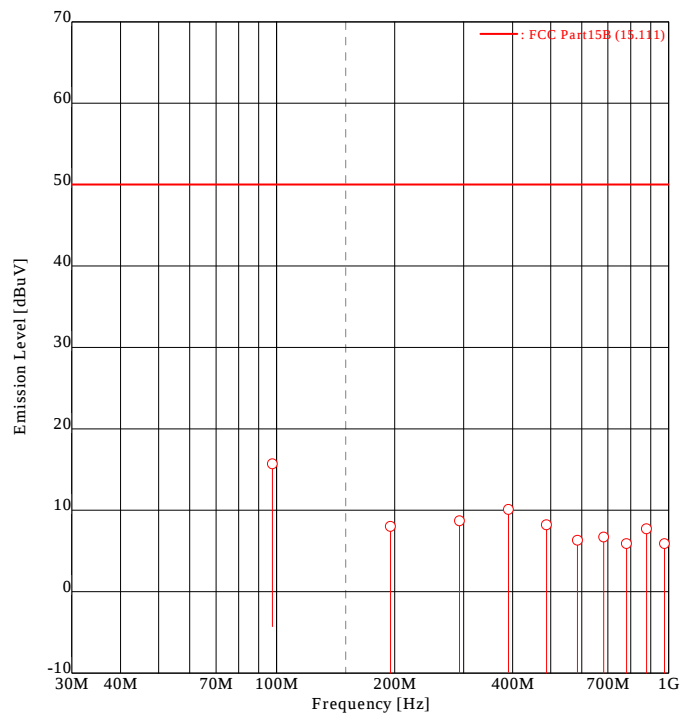
Other frequencies : Below the FCC Part15B (15.111) limit

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

9.3.13 Tuned Point 24.500 MHz mode (ANT2)

Akzo Nobel K. K.**Kashima No.1 Test Site****Conducted Power on Antenna Port**

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 24.500MHz (ANT2)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 1.705 - 24.500MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	FREQUENCY [MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	97.5900	<u>31.8</u>	-16.1	<u>15.7</u>	50.0	<u>34.3</u>
2	195.1900	<u>23.9</u>	-15.9	<u>8.0</u>	50.0	<u>42.0</u>
3	292.7800	<u>24.3</u>	-15.6	<u>8.7</u>	50.0	<u>41.3</u>
4	390.3800	<u>25.4</u>	-15.3	<u>10.1</u>	50.0	<u>39.9</u>
5	487.9700	<u>23.1</u>	-14.9	<u>8.2</u>	50.0	<u>41.8</u>
6	585.5700	21.5	-15.2	6.3	50.0	43.7
7	683.1600	20.8	-14.1	6.7	50.0	43.3
8	780.7600	20.6	-14.7	5.9	50.0	44.1
9	878.3500	<u>20.8</u>	-13.1	<u>7.7</u>	50.0	<u>42.3</u>
10	975.9500	20.2	-14.3	5.9	50.0	44.1

Higher six points are underlined.

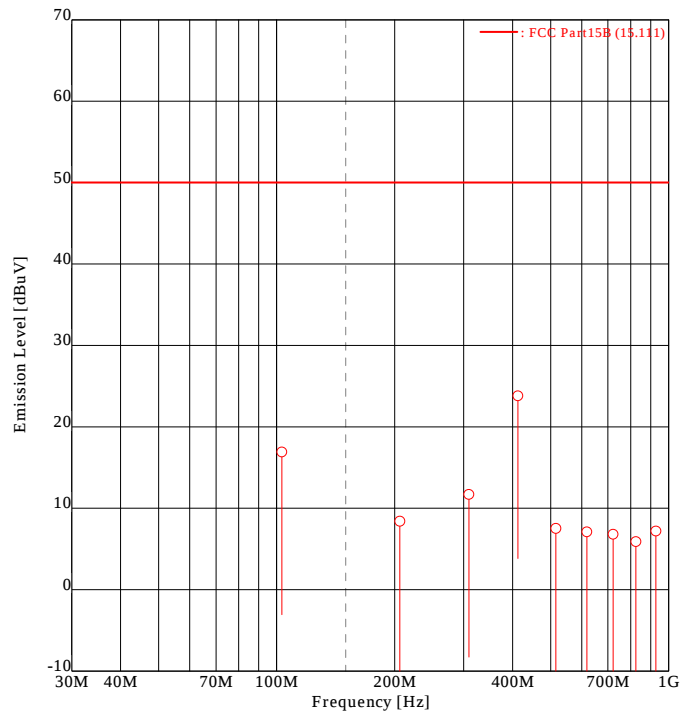
Other frequencies : Below the FCC Part15B (15.111) limit

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

9.3.14 Tuned Point 30.000 MHz mode (ANT2)

Akzo Nobel K. K.**Kashima No.1 Test Site****Conducted Power on Antenna Port**

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 30.000MHz (ANT2)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 24.500 - 30.000MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	103.0900	<u>33.0</u>	-16.1	<u>16.9</u>	50.0	<u>33.1</u>
2	206.1900	<u>24.2</u>	-15.8	<u>8.4</u>	50.0	<u>41.6</u>
3	309.2800	<u>27.3</u>	-15.6	<u>11.7</u>	50.0	<u>38.3</u>
4	412.3800	<u>39.2</u>	-15.4	<u>23.8</u>	50.0	<u>26.2</u>
5	515.4700	<u>22.2</u>	-14.7	<u>7.5</u>	50.0	<u>42.5</u>
6	618.5700	21.9	-14.8	7.1	50.0	42.9
7	721.6600	20.8	-14.0	6.8	50.0	43.2
8	824.7600	20.2	-14.3	5.9	50.0	44.1
9	927.8500	<u>21.1</u>	-13.9	<u>7.2</u>	50.0	<u>42.8</u>

Higher six points are underlined.

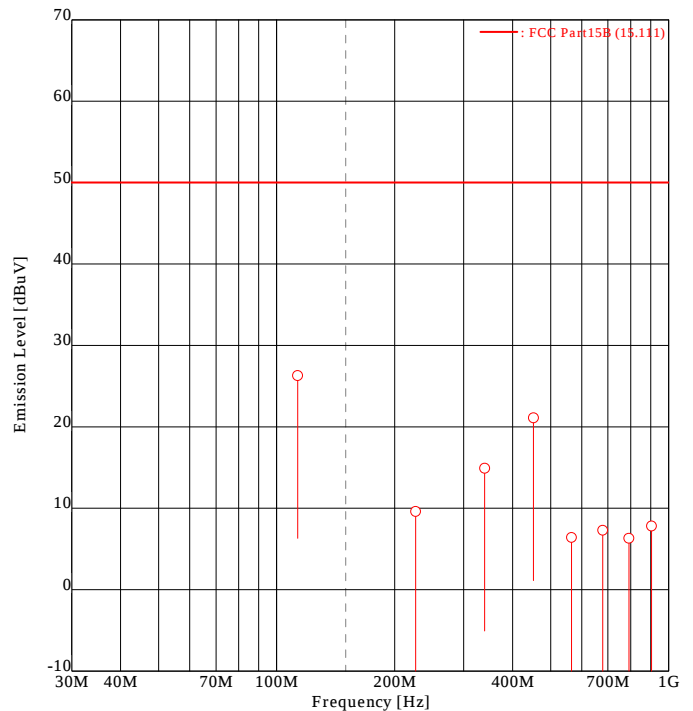
Other frequencies : Below the FCC Part15B (15.111) limit

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

9.3.15 Tuned Point 40.000 MHz mode (ANT2)

Akzo Nobel K. K.**Kashima No.1 Test Site****Conducted Power on Antenna Port**

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 40.000MHz (ANT2)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 30.000 - 50.000 MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	113.0900	<u>42.4</u>	-16.1	<u>26.3</u>	50.0	<u>23.7</u>
2	226.1900	<u>25.3</u>	-15.7	<u>9.6</u>	50.0	<u>40.4</u>
3	339.2800	<u>30.4</u>	-15.5	<u>14.9</u>	50.0	<u>35.1</u>
4	452.3800	<u>36.5</u>	-15.4	<u>21.1</u>	50.0	<u>28.9</u>
5	565.4700	21.6	-15.2	6.4	50.0	43.6
6	678.5700	<u>21.5</u>	-14.2	<u>7.3</u>	50.0	<u>42.7</u>
7	791.6600	21.1	-14.8	6.3	50.0	43.7
8	904.7600	<u>21.1</u>	-13.3	<u>7.8</u>	50.0	<u>42.2</u>

Higher six points are underlined.

Other frequencies : Below the FCC Part15B (15.111) limit

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

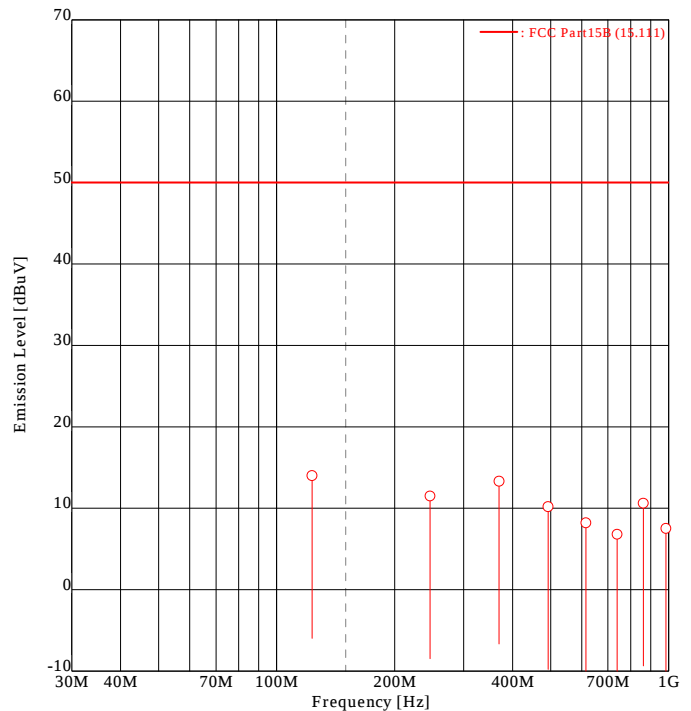
9.3.16 Tuned Point 50.000 MHz mode (ANT2)

Akzo Nobel K. K.

Kashima No.1 Test Site

Conducted Power on Antenna Port

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 50.000MHz (ANT2)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 30.000 - 50.000MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	123.0900	<u>29.9</u>	-15.9	<u>14.0</u>	50.0	<u>36.0</u>
2	246.1900	<u>27.2</u>	-15.7	<u>11.5</u>	50.0	<u>38.5</u>
3	369.2800	<u>28.6</u>	-15.3	<u>13.3</u>	50.0	<u>36.7</u>
4	492.3800	<u>25.1</u>	-14.9	<u>10.2</u>	50.0	<u>39.8</u>
5	615.4700	<u>23.1</u>	-14.9	<u>8.2</u>	50.0	<u>41.8</u>
6	738.5700	20.7	-13.9	6.8	50.0	43.2
7	861.6600	<u>24.0</u>	-13.4	<u>10.6</u>	50.0	<u>39.4</u>
8	984.7600	21.8	-14.3	7.5	50.0	42.5

Higher six points are underlined.

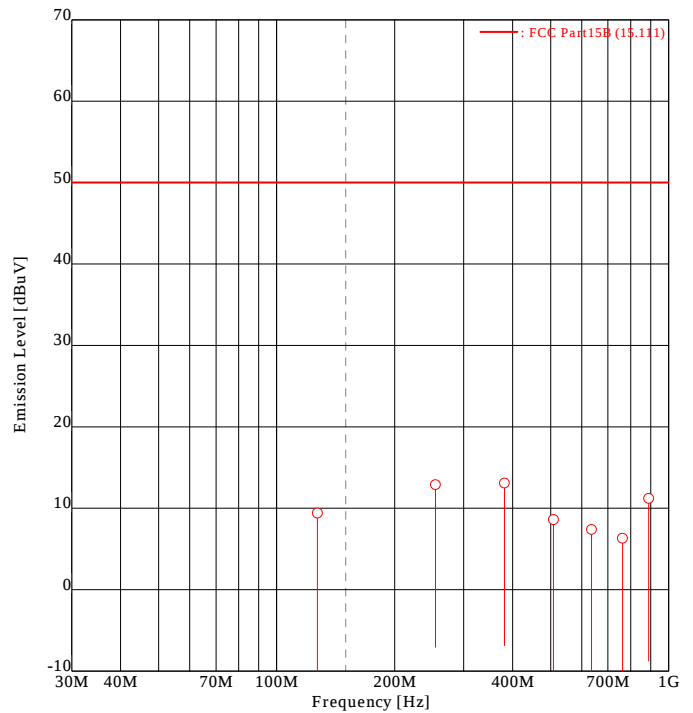
Other frequencies : Below the FCC Part15B (15.111) limit

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

9.3.17 Tuned Point 54.000 MHz mode (ANT2)

Akzo Nobel K. K.**Kashima No.1 Test Site****Conducted Power on Antenna Port**

APPLICANT : Kenwood Corporation
 EUT NAME : HF / 50MHz All Mode Transceiver
 MODEL NO. : TS-480SAT
 SERIAL NO. : None
 TEST MODE : Tuned Point 54.000MHz (ANT2)
 POWER SOURCE : DC13.8V (AC120V/60Hz)
 DATE TESTED : Aug 27 2003
 FILE NO. : ANKK-103234
 REGULATION : FCC Part15B (15.111)
 TEST METHOD : ANSI C63.4-1992
 TEMPERATURE : 22.0 [degC]
 HUMIDITY : 62.0 [%]
 NOTE : Band : 50.000 - 59.999MHz



ENGINEER : Kazuo Masuda

FREQUENCY [No]	[MHz]	READING [dBuV]	FACTOR [dB]	EMISSION [dBuV]	LIMIT [dBuV]	MARGIN [dB]
1	127.0900	<u>25.2</u>	-15.8	<u>9.4</u>	50.0	<u>40.6</u>
2	254.1900	<u>28.5</u>	-15.6	<u>12.9</u>	50.0	<u>37.1</u>
3	381.2800	<u>28.4</u>	-15.3	<u>13.1</u>	50.0	<u>36.9</u>
4	508.3800	<u>23.4</u>	-14.8	<u>8.6</u>	50.0	<u>41.4</u>
5	635.4700	<u>22.0</u>	-14.6	<u>7.4</u>	50.0	<u>42.6</u>
6	762.5700	20.6	-14.3	6.3	50.0	43.7
7	889.6600	<u>24.3</u>	-13.1	<u>11.2</u>	50.0	<u>38.8</u>

Higher six points are underlined.

Other frequencies : Below the FCC Part15B (15.111) limit

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

9.3.18 VFO Scan mode (ANT2)

< Graph number #4 >

SPECTRUM ANALYSIS

Kashima No.1 Test Site

22.0°C/62.0%

Date tested : Aug 27 2003

Company : Kenwood Corporation

EUT Name : HF / 50MHz All Mode Transceiver

Model number : TS-480SAT

Serial number : None

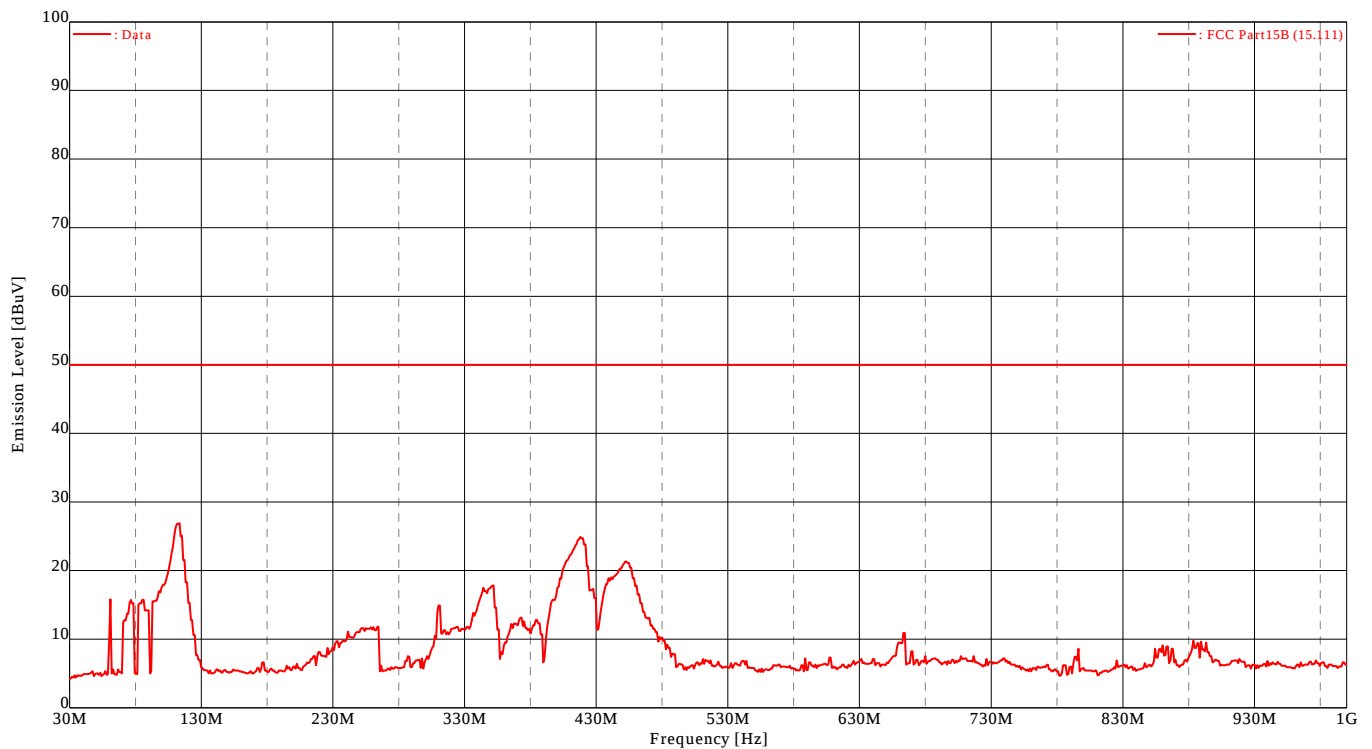
Test mode : VFO SCAN (ANT2)

Power source : DC13.8V (AC120V/60Hz)

File number : ANKK-103234

Engineer : Kazuo Masuda

Note : Band : 0.030 - 59.999MHz



9.4 38dB Rejection Test

9.4.1 VFO Scan mode (ANT1)

Location : Kashima No.1 Test Site
 Date Tested : Sep. 09 2003
 Temperature : 22 [degC]
 Humidity : 57 [%]
 Engineer : Kazuo Masuda

Injected Frequency [MHz]	Detected Frequency [MHz]	12dB SINAD Reading Injected Frequency [dBm]	12dB SINAD Reading Detected Frequency [dBm]	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

The Audio Analyzer condition :

12dB SINAD measurment level = 45mW.

9.4.2 VFO Scan mode (ANT2)

Location : Kashima No.1 Test Site
 Date Tested : Sep. 09 2003
 Temperature : 22 [degC]
 Humidity : 57 [%]
 Engineer : Kazuo Masuda

Injected Frequency [MHz]	Detected Frequency [MHz]	12dB SINAD Reading Injected Frequency [dBm]	12dB SINAD Reading Detected Frequency [dBm]	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

The Audio Analyzer condition :

12dB SINAD measurment level = 45mW.

9.5 Sample Calculations

9.5.1 Conducted Voltages on Mains Port

Example @ 0.4500 MHz

Emission Level	=	Meter Reading	54.4	dBuV
		IF QP-AV>6dB *	-	13.0 dB
	+	Factor	+	5.9 dB
			=	47.3 dBuV
Margin	=	Limit	48.0	dBuV
	-	Emission Level	-	47.3 dBuV
			=	0.7 dB

Factor = LISN Factor + Cable Loss + Pad Loss

* If the quasi-peak level is 6dB, or, more higher than average level, that emission is considered broadband and the quasi-peak level may be reduced by 13 dB.
(ANSI C63.4-1992 Section11.5.2)

9.5.2 Radiated Electric Field

Example @ 878.35 MHz

Emission Level	=	Meter Reading	26.3	dBuV
	+	Factor	+	8.2 dB/m
			=	34.5 dBuV/m
Margin	=	Limit	46.0	dBuV/m
	-	Emission Level	-	34.5 dBuV/m
			=	11.5 dB

Factor = Antenna Factor + Cable Loss – Amplifier Gain + Pad Loss

9.5.3 Conducted Power on Antenna Port

Example @ 113.09 MHz

Output Power Level	=	Meter Reading		42.4	dBuV
	+	Factor		16.1	dB
				=	26.3 dBuV
Margin	=	Limit (:2.0nW)		50.0	dBuV
	-	Output Power Level		26.3	dBuV
				=	23.7 dB

Factor = Cable Loss – Amplifier Gain + Pad Loss

9.5.4 38dB Rejection

Example @ N/A MHz

Rejection Level	=	12dB SINAD Reading at Injected Frequency		N/A	dBm
	-	12dB SINAD Reading at Detected Frequency		N/A	dBm
				=	N/A dB
Margin	=	Rejection Level		N/A	dB
	-	Limit		38.0	dB
				=	N/A dB

SECTION 10. INSTRUMENTS USED FOR FINAL TEST

Location : Kashima No.1 Test Site

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
10dB Attenuator	CFA-05NPJ-10	262856	TME	Aug.26, 03	1 Year
Coaxial cable	5D-2W(7.0 m)	C1	AKZO	Aug. 26, 03	1 Year
	5D-2W(2.0 m)	C2	AKZO	Aug. 26, 03	1 Year
	5D-2W(0.2 m)	R4	AKZO	Aug. 26, 03	1 Year
	5D-2W(1.0 m)	R5	AKZO	Aug. 26, 03	1 Year
	5D-2W(1.0 m)	R6	AKZO	Aug. 26, 03	1 Year
Step Attenuator	8494B	2726A14513	HEWLETT PACKARD	Aug. 26, 03	1 Year
Amplifier	8447D	1937A03130	HEWLETT PACKARD	Aug. 26, 03	1 Year
Test receiver	ESS (Firmware Version 1.08)	847151/012	ROHDE & SCHWARZ	Jun. 04, 03	1 Year
RF Switch	ACX-150	None	AKZO	Aug. 26, 03	1 Year
Signal Generator	SMT02	842477/016	ROHDE & SCHWARZ	Mar. 10, 03	1 Year
Audio (-BNC) cable	None(1.0 m)	None	KENWOOD	Aug. 26, 03	1 Year
Audio Analyzer	VA-2230	3080031	KENWOOD	Aug. 19, 03	1 Year
ANT Termination	CT-01	A002CON50	TME	Jul. 03, 03	1 Year
	CT-01	A004CON50	TME	Jul. 03, 03	1 Year
Site Attenuation				Jun. 02, 03	1 Year

Note : Test instruments are calibrated according to Quality Manual and Calibration Rules of EMC division.

Location : Kashima No.3 Test Site

Instrument	Model No.	Serial No.	Manufacturer	Last cal. date	Period
LISN (EUT)	ESH2-Z5	879675/014	ROHDE & SCHWARZ	Jun. 19, 03	1 Year
6dB Attenuator	CFA-01	None	TME	Jan. 15, 03	1 Year
LISN (Peripheral)	KNW-407	8-532-11	KYORITSU	Mar. 19, 03	1 Year
50Ω Termination	CT-01	A030CON50	TME	Jul. 03, 03	1 Year
Coaxial cable	RG-5A/U(7.2 m)	C1	AKZO	Jan. 15, 03	1 Year
	RG-5A/U(4.0 m)	C2	AKZO	Jan. 15, 03	1 Year
	RG-5A/U(1.1 m)	R11	AKZO	Jan. 15, 03	1 Year
	RG-5A/U(1.0 m)	R12	AKZO	Jan. 15, 03	1 Year
Broad Band antenna	VULB9168	107	Schwarzbeck	Jul. 15, 03	1 Year
Double Ridged antenna	3115	5044	EMCO	Jun. 27, 03	1 Year
6dB Attenuator	MP721B	M56993	ANRITSU	Jan. 15, 03	1 Year
3dB Attenuator	4768-3	79	NARDA	Aug. 12, 03	1 Year
Step Attenuator	8494B	2406A09036	HEWLETT PACKARD	Jan. 15, 03	1 Year
Amplifier	8447D	2443A03849	HEWLETT PACKARD	Jan. 15, 03	1 Year
	83051A	3332A00329	HEWLETT PACKARD	Aug. 12, 03	1 Year
Coaxial cable	RG-5A/U(12.3 m)	R1	AKZO	Jan. 15, 03	1 Year
	23D-4AF(10.0 m)	R2	AKZO	Jan. 15, 03	1 Year
	RG-5A/U(1.8 m)	R3	AKZO	Jan. 15, 03	1 Year
	RG-5A/U(0.2 m)	R9	AKZO	Jan. 15, 03	1 Year
	RG-5A/U(0.4 m)	R10	AKZO	Jan. 15, 03	1 Year
	RG-5A/U(1.1 m)	R11	AKZO	Jan. 15, 03	1 Year
	SUCOFLEX102 (1.0 m)	R14	SUHNER	Aug. 12, 03	1 Year
	KPS-1501-1969-KPS (5.0 m)	R15	INSULATED WIRE	Aug. 12, 03	1 Year
Test receiver	ESS (Firmware Version 1.08)	842886/011	ROHDE & SCHWARZ	Mar. 19, 03	1 Year
Spectrum Analyzer	8564E	3643A00665	HEWLETT PACKARD	Aug. 04, 03	1 Year
RF Switch	ACX-150	None	AKZO	Jan. 15, 03	1 Year
ANT Termination	CT-01	A002CON50	TME	Jul. 03, 03	1 Year
	CT-01	A004CON50	TME	Jul. 03, 03	1 Year
Site Attenuation				Jun. 03, 03	1 Year

Note : Test instruments are calibrated according to Quality Manual and Calibration Rules of EMC division.

SECTION 11.MEASUREMENT UNCERTAINTY

The uncertainty of the measurements performed for this report lies:

Radiated Electric Field at 3m

30 MHz – 1000 MHz	+/- 4.07 dB
Above 1 GHz	+/- 3.90 dB

Conducted Voltages on Mains Port

9 kHz – 30 MHz	+/- 2.45 dB
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Conducted Power on Antenna Port

30 MHz – 1000 MHz	+/- 2.50 dB
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38dB Rejection

30 kHz – 60 MHz	+/- 0.71 dB
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Note on Radiated Electric Field measurement uncertainty

The following items are not included in the calculations in spite of their own uncertainty components because it is impracticable to find the value.

It is our problem awaiting solution in future.

(1)Repeatability of measurement

It is not possible to calculate repeatability since the measurement was carried out only one time.

(2)Antenna factor variation

The definition of measured (radiated electric field strength) is not completed on the referred standard(s).

(3)Loss of EUT radiation propagation

It is certainly one of the uncertainty components, however is not able to calculate.

Please note that these uncertainties are not reflected to the compliance judgement of the test results in this report.

SECTION 12. DESCRIPTION OF TEST LABORATORY

13.1 Outline of Akzo Nobel K. K. (formerly Akzo Kashima Limited), EMC Division

Akzo Nobel K. K., the country organization in Japan for Akzo Nobel NV, was established in 1968. The shares are owned by Akzo Nobel NV (100%). Akzo Nobel NV, headquartered in the Netherlands, is one of the world's leading companies in selected areas of chemicals, coatings, healthcare products and fibers with work force of approximately 70,000 people in over 50 countries.

In 1984, in order to respond to the growing testing demand, in particular, for FCC filing, Akzo Nobel K. K. started EMI testing business, installing the first open air test site in Kashima, Ibaraki prefecture. Further the business has been expanded by installing additional testing facilities not only in Ibaraki but also in other areas such as Shizuoka, Nagano, Kanagawa and Tochigi. As results, Akzo Nobel K. K. has now 16 open air test sites and 4 anechoic chambers for EMI/EMC testing. As the largest EMC testing laboratory in number of testing facilities and staffs, EMC Division has been organized separately in the company and independently operated in conformity with the requirements of ISO/IEC17025 for its competency as a testing laboratory.

Akzo Nobel K. K. EMC Division is the first foreign private laboratory accredited by NVLAP, National Voluntary Laboratory Accreditation Program-NIST, USA. The division has been certified, authorized and/or filed as a competent testing laboratory by various testing organizations/authorities as described below.

13.2 Filing, certification, authorization and accreditation list

<u>EMI/EMC testing</u>		<u>Telecommunications terminal testing</u>	
FCC	(USA)	FCC	(USA)
NVLAP	(USA)	NVLAP	(USA)
NEMKO	(Norway)	NATA	(Australia)
VCCI	(Japan)	IC	(Canada)
VLAC	(Japan)		
ETL SEMKO	(Sweden)		
TÜV PRODUCT SERVICE	(Germany)		
BSMI	(Taiwan)		

Note 1 : NVLAP accreditation does not constitute any product endorsement by NVLAP or any agent of the U.S. Government.