JAPAN QUALITY ASSURANCE ORGANIZATION
KITA-KANSAI TESTING CENTER
7-7, Ishimaru 1-Chome, Minoh-shi, Osaka 562-0027 Japan. Phone. +81-72-729-2243/Facsimile. +81-72-728-6848

EMC EMISSION - TEST REPORT

JQA File No.	:	KL80060379R
Products	:	2.4GHz Frequency Hopping Spread Spectrum
	:	Cordless Telephone(Base Unit)
Model No.	:	KX-TG3031
FCC ID	:	ACJ96NKX-TG3031
Applicant	:	Panasonic Communications Co., Ltd.
Address	:	1-62, 4-chome, Minoshima, Hakata-ku, Fukuoka 812-8531, Japan
Manufacturer	:	Panasonic Communications Co., Ltd.
Address	:	1-62, 4-chome, Minoshima, Hakata-ku, Fukuoka 812-8531, Japan
Receive date of EUT	:	October 10, 2006
Test Results	:	**Passed**

TEST RESULTS IN THIS REPORT are obtained in use of equipment that is traceable to National Institute of Advanced Industrial Science and Technology (AIST) of Japan and National Institute of Information and Communications Technology(NIST) of Japan.

THE TEST RESULTS only responds to the test sample. This test report shall not be reproduced except in full.

This report must not used by the client to claim product endorsement by NVLAP or NIST or any agency of the U.S. Government.

NVLAP LAB CODE: 200191-0

Y. Fukumoto

Yuichi Fukumoto, Manager
JQA KITA-KANSAI Testing Center

DIRECTORY

TEST REGULATION

FCC Rules and Regulations Part 15 Subpart A and C

○ - Class A Digital Device
○ - Class B Digital Device
● - Intentional Radiator (Sec.15.247)
○ - Receiver

Test items:

○ - Sec.15.203 : Antenna requirement
● - Sec.15.205 : Restricted bands of operation
● - Sec.15.207 : Conducted limits
● - Sec.15.209 : Radiated emission limits general requirements
○ - Sec.15.214 : Cordless Telephones
● - Sec.15.247 : Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz

Test procedure:

The tests were performed according to the procedures in ANSI C63.4-2003.

GENERAL INFORMATION

JQA KITA-KANSAI Testing Center Testing Department EMC Division is accredited under ISO/IEC 17025 by following accreditation bodies and the test facility of Testing Division is registered by the following bodies.

VLAC Code : VLAC-001-2 (Effective through : April 3, 2008)
NVLAP Lab Code : 200191-0 (Effective through : June 30, 2007)
BSMI Recognition No. : SL2-IS-E-6006, SL2-IN-E-6006, SL2-AI-E-6006 (Effective through : September 14, 2007)

VCCI Registration No. : R-006, R-008, R-1117, C-006, C-007, C-1674, C-2143 (Effective through : April 3, 2008)
FCC Registration No. : 683630 (Effective through : June 30, 2007)
IC Registration No. : IC 4125-1, IC 6217-1, IC 6217-2 (Effective through : November 16, 2008)

Accredited as conformity assessment body for Japan electrical appliances and material law by METI. (Effective through : February 24, 2007)

Average Measurement Method
FCC filing No. : 950523A 1300F2

Definitions for symbols used in this test report:

● - Black box indicates that the listed condition, standard or equipment is applicable for this Report.
○ - Blank box indicates that the listed condition, standard or equipment is not applicable for this Report.

Description of the Equipment Under Test (EUT):

1) Products	:	2.4GHz Frequency Hopping Spread Spectrum Cordless Telephone (Base Unit)
2) Model No.	:	KX-TG3031
3) Product Type	:	Prototype
4) Category	:	Intentional Radiator
5) EUT Authorization	:	○ - Verification ● - Certification ○ - D.o.C.
6) Transmitting Frequency	:	2400.914355 MHz (01ch) - 2480.292773 MHz (90ch)
7) Receiving Frequency	:	2400.914355 MHz (01ch) - 2480.292773 MHz (90ch)
8) Method/System	:	Frequency Hopping Spread Spectrum (FHSS)
9) Type of Antenna	:	J-Type Antenna
10) Antenna Gain	:	2 dBi(Rated)
11) Measured MAX Output Power	:	107.2 mW (Conducted)
12) Power Rating	:	AC 120V 60Hz 90mA 1ϕ 2-pin plug AC Adaptor(Model No. : PQLV203 Output DC9V 500mA)

Detailed Transmitter portion (Channel plan):

Transmitting frequency : 2400.914355 MHz (01ch) - 2480.292773 MHz (90ch)
Number of channel : 90

CH	0	1	2	3	4	5	6	7	8	9
0	--	2400.914355	2401.808203	2402.698096	2403.591943	2404.481836	2405.375684	2406.265576	2407.159424	2408.049316
10	2408.943164	2409.833057	2410.726904	2411.616797	2412.510645	2413.400537	2414.294385	2415.184277	2416.078125	2416.968018
20	2417.861865	2418.753736	2419.645935	2420.537806	2421.429677	2422.321548	2423.213419	2424.105290	2424.997161	2425.889032
30	2426.780566	2427.670459	2428.564307	2429.454199	2430.348047	2431.237939	2432.131787	2433.021680	2433.915527	2434.805420
40	2435.699268	2436.589160	2437.483008	2438.372900	2439.266748	2440.156641	2441.050488	2441.940381	2442.834229	2443.724121
50	2444.617969	2445.507861	2446.401709	2447.291602	2448.185449	2449.075342	2449.969189	2450.859082	2451.752930	2452.642822
60	2453.536670	2454.426563	2455.320410	2456.210303	2457.104150	2457.994043	2458.887891	2459.777783	2460.671631	2461.561523
70	2462.455371	2463.345264	2464.239111	2465.129004	2466.022852	2466.912744	2467.806592	2468.696484	2469.590332	2470.480225
80	2471.374072	2472.263965	2473.157813	2474.047705	2474.941553	2475.831445	2476.725293	2477.615186	2478.509033	2479.398926
90	2480.292773	--	--	--	--	--	--	--	--	--

Channel Separation : 891.871 kHz

Modulation System Information:

Spread Spectrum Method : Frequency Hopping
Modulation : GFSK (Gaussian-shaped Binary Frequency Shift Keying)
Hop Rate : 100 hops/sec.
Bit Rate : 576 kBit/sec.
Digital Security Code : 40 Bit

Time Division Multiple Access(TDMA) Frame structure.
The basic, repeating, frame structure is 10msec long. It is sub-divided into 8 slots, each 1250usec long. The active transmission time is 986.1usec. The first 4 slots from the “up-link”, when the Handsets transmit to the Base Unit. The last 4 slots form the “down-link”, when the Baseset transmits to the Handsets.
This system uses TDD (Time Division Duplex) to carry a two-way voice communication. This is always by using slot-pairs: 0 and 4, 1 and 5, 2 and 6, 3 and 7.
Each slot contains 568 bits of 1.736 usec duration, with 263.9 usec gap times between each slot.

Detailed Receiver portion:

Receiving frequency : 2400.914355 MHz (01ch) - 2480.292773 MHz (90ch)

Local frequency : 2398.914355 MHz (01ch) - 2478.292773 MHz (90ch)

Intermediate frequency : 2.000 MHz

Other used (generated) frequencies in the EUT:

Reference Clock : 13.824 MHz
PLL1(2nd, Reference Clock) : 129.6 MHz

TEST CONDITIONS

Transmitter Power (TP) Measurement (Sec.15.247(b)(1))

Test Procedure :

The measurement test-setup is shown in Fig.2. The modulation is set to page 19.

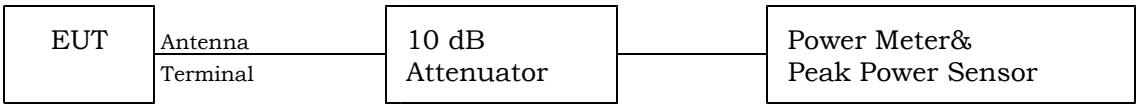


Fig.2 Transmitter Power Measurement

Test location :

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
● - Shielded room
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - Shielded room

Used test instruments and sites :

Type	Model No.	Device ID	Manufacturer	Last Cal. Date	Cal. Interval
○ -Power Meter	E4417A	B - 51	Agilent		
○ -Power Sensor	E9321A	B - 52	Agilent		
○ -Power Sensor	E9323A	B - 59	Agilent		
● -Power Meter	N1911A	B - 63	Agilent	June, 2006	1 Year
● -Power Sensor	N1921A	B - 64	Agilent	June, 2006	1 Year
○ -10dB Att.	54-10	D - 82	Lucas Weinschel		
● -10dB Att.	54-10	D - 83	Lucas Weinschel	May, 2006	1 Year
○ -10dB Att.	2-10	D - 79	Lucas Weinschel		
○ -10dB Att.	4T-10	D - 73	Lucas Weinschel		
○ -10dB Att.	4T-10	D - 74	Lucas Weinschel		
● -Cable	--	C - 54	HUBER+SUHNER	February, 2006	1 Year

Environmental conditions :

Temperature: 24 °C Humidity: 67 %

Transmitter Power (EIRP) Measurement

Test Procedure :

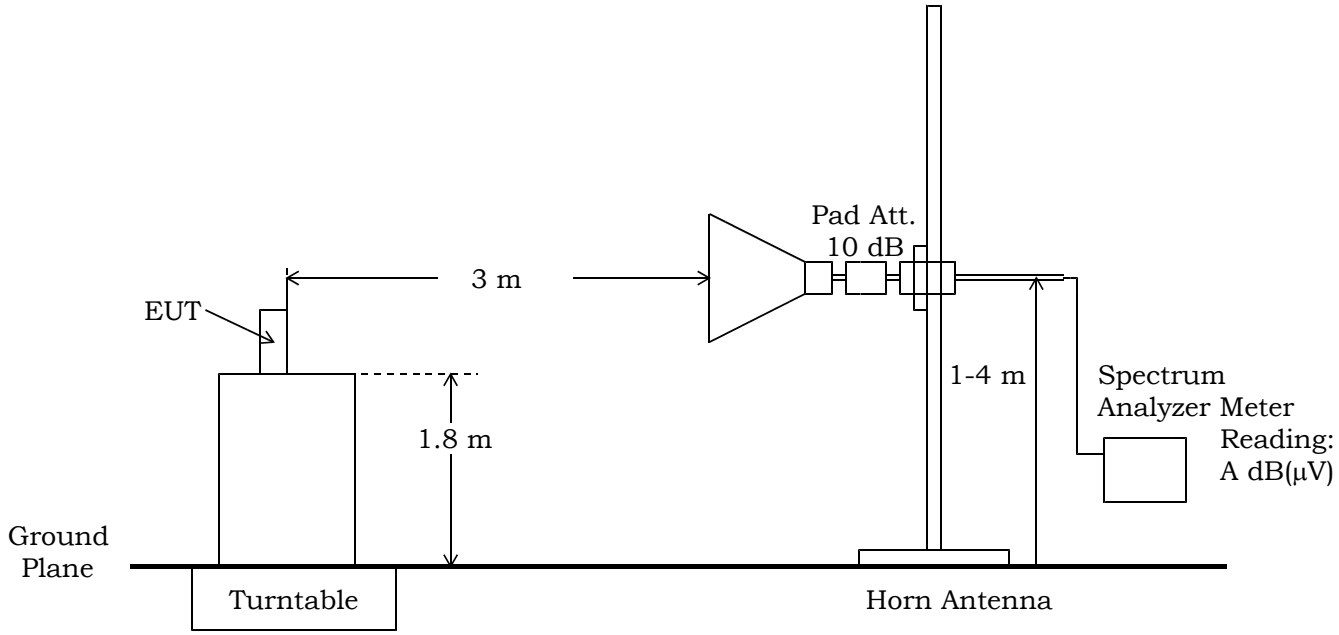
Step 1) The test was set-up shown as Fig.1 (a). In order to obtain the maximum emission, the EUT is placed at the height 1.8m on the non-conducted support, at the distance 3m from the receiving antenna (Horn Antenna) and rotated around 360 degrees. The receiving antenna height was varied from 1 m to 4 m. The EUT on the table was placed to be maximum emission against the receiving antenna polarized (Vertical and Horizontal). Then the meter reading of the spectrum analyzer at the maximum emission was A dB(μV).

Step 2) The test was set-up shown as Fig.1 (b). The EUT was replaced to Horn antenna at the same polarized under the same condition as step 1. The RF power was fed to the transmitting Antenna (Horn Antenna) through the RF amplifier from the signal generator. In order to obtain the maximum emission level, the height of the receiving antenna is varied from 1 m to 4 m. The level of the signal generator was adjusted so that the meter reading of the spectrum analyzer at the maximum emission was A dB(μV), same as the recorded level in step 1. Then the RF power into the substitution horn antenna was P(dBm).

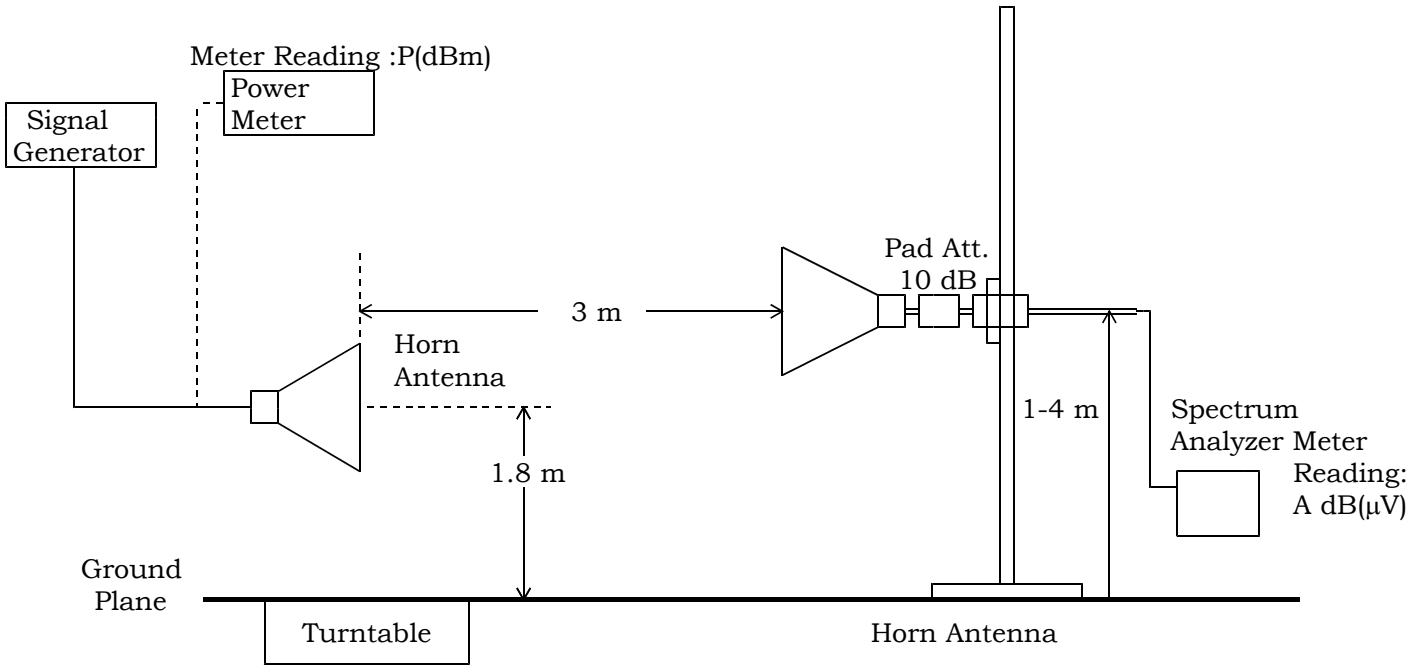
The EIRP is calculated in the following equation.

$$EIRP\ (dBm) = P\ (dBm) + Gh\ (dBi)$$

Where, Gh (dBi) : Gain of the substitution horn antenna



(a) EUT



(b) Substitution Horn Antenna

Fig.1 Maximum Transmitter Power (EIRP) Measurement

Test location:

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
● - 1st open test site (3 meters)
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - 1st open test site ○ - 3 m ○ - 10 m ○ - 30 m
○ - 2nd open test site ○ - 3 m ○ - 10 m

Used test instruments:

Type	Model No.	Device ID	Manufacturer	Last Cal. Date	Cal. Interval
○ -Spectrum Analyzer	8566B	A - 13	Agilent		
● -Spectrum Analyzer	4446A	A - 39	Agilent	November, 2005	1 Year
○ -10dB Att.	4T-10	D - 73	Lucas Weinschel		
○ -10dB Att.	4T-10	D - 74	Lucas Weinschel		
○ -10dB Att.	54-10	D - 82	Lucas Weinschel		
○ -10dB Att.	54-10	D - 82	Lucas Weinschel		
● -10dB Att.	2-10	D - 79	Lucas Weinschel	September, 2006	1 Year
○ -Horn Ant.	91888-2	C - 40 - 1	EATON		
● -Horn Ant.	91889-2	C - 40 - 2	EATON	June, 2006	1 Year
○ -Horn Ant.	94613-1	C - 40 - 3	EATON		
○ -Horn Ant.	91888-2	C - 41 - 1	EATON		
● -Horn Ant.	91889-2	C - 41 - 2	EATON	June, 2006	1 Year
○ -Horn Ant.	94613-1	C - 41 - 3	EATON		
● -Cable	--	C - 64	HUBER+SUHNER	May, 2006	1 Year
● -Cable	--	C - 67	HUBER+SUHNER	May, 2006	1 Year
● -Signal Generator	MG3681A	B - 3	Anritsu	February, 2006	1 Year
○ -Signal Generator	E8257D	B - 39	Agilent		
○ -Signal Generator	6062A	B - 44	Giga Tronics		
○ -Power Meter	E4417A	B - 51	Agilent		
○ -Power Sensor	E9321A	B - 52	Agilent		
○ -Power Sensor	E9323A	B - 59	Agilent		
● -Power Meter	N1911A	B - 63	Agilent	June, 2006	1 Year
● -Power Sensor	N1921A	B - 64	Agilent	June, 2006	1 Year

Temperature: 24 °C Humidity: 60 %

20dB Bandwidth Measurement (Sec.15.247(a)(1))

Test Procedure :

The measurement test-setup is shown in Fig.3. The modulation is set to page 19.

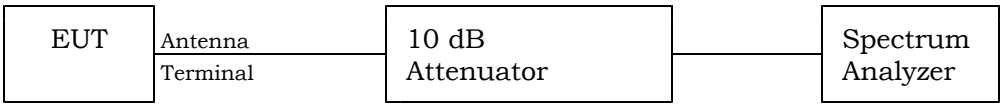


Fig.3 20dB Bandwidth Measurement

The setting of the spectrum analyzer are shown as follows :

Res. Bandwidth	27 kHz
Video Bandwidth	270 kHz
Span	3 MHz
Sweep Time	AUTO
Trace	Maxhold

Test location :

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
● - Shielded room
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - Shielded room

Used test instruments and sites :

Type	Model No.	Device ID	Manufacturer	Last Cal. Date	Cal. Interval
○ -Spectrum Analyzer	8566B	A - 13	Agilent		
● -Spectrum Analyzer	4446A	A - 39	Agilent	November, 2005	1 Year
○ -10dB Att.	54-10	D - 82	Lucas Weinschel		
● -10dB Att.	54-10	D - 83	Lucas Weinschel	May, 2006	1 Year
○ -10dB Att.	2-10	D - 79	Lucas Weinschel		
○ -10dB Att.	4T-10	D - 73	Lucas Weinschel		
○ -10dB Att.	4T-10	D - 74	Lucas Weinschel		
● -Cable	--	C - 54	HUBER+SUHNER	February, 2006	1 Year

Environmental conditions :

Temperature: 24 °C Humidity: 67 %

Band-edge Emission Measurement (Sec.15.247(d))

Test Procedure :

The measurement test-setup is shown in Fig.4. The modulation is set to page 19.

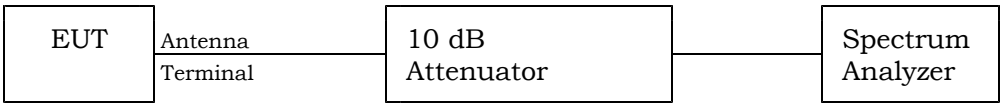


Fig.4 Band-Edge Emission Measurement

The setting of the spectrum analyzer are shown as follows :

TX Frequency	2400.914 MHz / 2480.293 MHz
Band-edge Frequency	2400.0 MHz / 2483.5 MHz
Res. Bandwidth	100 kHz
Video Bandwidth	300 kHz
Span	10 MHz
Sweep Time	AUTO
Trace	Maxhold

Test location :

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
● - Shielded room
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - Shielded room

Used test instruments and sites :

Type	Model No.	Device ID	Manufacturer	Last Cal. Date	Cal. Interval
○ -Spectrum Analyzer	8566B	A - 13	Agilent		
● -Spectrum Analyzer	4446A	A - 39	Agilent	November, 2005	1 Year
○ -10dB Att.	54-10	D - 82	Lucas Weinschel		
● -10dB Att.	54-10	D - 83	Lucas Weinschel	May, 2006	1 Year
○ -10dB Att.	2-10	D - 79	Lucas Weinschel		
○ -10dB Att.	4T-10	D - 73	Lucas Weinschel		
○ -10dB Att.	4T-10	D - 74	Lucas Weinschel		
● -Cable	--	C - 54	HUBER+SUHNER	February, 2006	1 Year

Environmental conditions :

Temperature: 24 °C Humidity: 67 %

Carrier Frequency Seperation Measurement (Sec.15.247(a)(1))

Test Procedure :

The measurement test-setup is shown in the Fig.5. The modulation is set to page 19.
The transmitting frequency is set to 2440.156641 MHz (45ch) and 2441.050488 MHz (46ch).

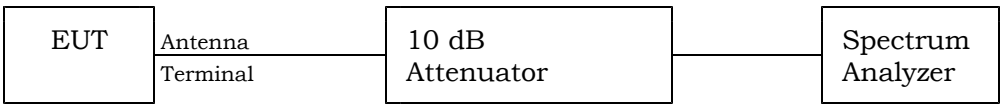


Fig.5 Carrier Frequency Seperation Measurement

The setting of the spectrum analyzer are shown as follows :

Center Frequency	2440.6 MHz
Res. Bandwidth	100 kHz
Video Bandwidth	300 kHz
Span	10 MHz
Sweep Time	AUTO
Trace	Maxhold

Test location :

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
● - Shielded room
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - Shielded room

Used test instruments and sites :

Type	Model No.	Device ID	Manufacturer	Last Cal. Date	Cal. Interval
○ -Spectrum Analyzer	8566B	A - 13	Agilent		
● -Spectrum Analyzer	4446A	A - 39	Agilent	November, 2005	1 Year
○ -10dB Att.	54-10	D - 82	Lucas Weinschel		
● -10dB Att.	54-10	D - 83	Lucas Weinschel	May, 2006	1 Year
○ -10dB Att.	2-10	D - 79	Lucas Weinschel		
○ -10dB Att.	4T-10	D - 73	Lucas Weinschel		
○ -10dB Att.	4T-10	D - 74	Lucas Weinschel		
● -Cable	--	C - 54	HUBER+SUHNER	February, 2006	1 Year

Environmental conditions :

Temperature: 24 °C Humidity: 67 %

Sprious RF Conducted Emission Measurement (Sec.15.247(d))

Test Procedure :

The measurement test-setup is shown in Fig.6. The modulation is set to page 19.

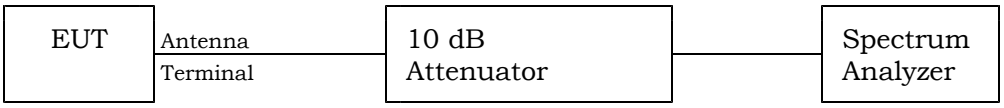


Fig.6 Sprious RF Conducted Emission Measurement

The setting of the spectrum analyzer are shown as follows :

Start Frequency	1 GHz
Stop Frequency	25 GHz
Res. Bandwidth	100 kHz
Video Bandwidth	300 kHz
Sweep Time	AUTO
Trace	Maxhold

Test location :

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
● - Shielded room
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - Shielded room

Used test instruments and sites :

Type	Model No.	Device ID	Manufacturer	Last Cal. Date	Cal. Interval
○ -Spectrum Analyzer	8566B	A - 13	Agilent		
● -Spectrum Analyzer	4446A	A - 39	Agilent	November, 2005	1 Year
○ -10dB Att.	54-10	D - 82	Lucas Weinschel		
● -10dB Att.	54-10	D - 83	Lucas Weinschel	May, 2006	1 Year
○ -10dB Att.	2-10	D - 79	Lucas Weinschel		
○ -10dB Att.	4T-10	D - 73	Lucas Weinschel		
○ -10dB Att.	4T-10	D - 74	Lucas Weinschel		
● -Cable	--	C - 54	HUBER+SUHNER	February, 2006	1 Year

Environmental conditions :

Temperature: 24 °C Humidity: 67 %

AC Powerline Conducted Emission Measurement (Sec.15.207(a))
was performed in the following test site.

Test location:

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
● - Shielded room
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - Shielded room
○ - On metal plane of 1st open site

Used test instruments and sites:

Type	Model No.	Device ID	Manufacturer	Last Cal. Date	Cal. Interval
● -Receiver	ESCS30	A - 1	Rohde&Schwarz	August, 2006	1 Year
○ -Receiver	ESH2	A - 2	Rohde&Schwarz		
○ -Receiver	ESH2	A - 3	Rohde&Schwarz		
● -LISN	KNW-407	D - 6	Kyoritsu	October, 2005	1 Year
○ -LISN	KNW-408	D - 11	Kyoritsu		
○ -LISN	KNW-242	D - 7	Kyoritsu		
○ -LISN	ESH3-Z5	D - 12	Kyoritsu		
○ -LISN	KNW-341C	D - 13	Kyoritsu		
○ -LISN	KNW-408	D - 14	Kyoritsu		
○ -LISN	KNW-244C	D - 77	Kyoritsu		
○ -LISN	KNW-408	D - 78	Kyoritsu		
○ -LISN	ESH2-Z5	D - 10	Kyoritsu		
○ -High Imp. Probe	ESH2-Z3	D - 17	Kyoritsu		
○ -50Ω Terminator	65 BNC-50-0-1	H - 26	HUBER+SUHNER		
○ -50Ω Terminator	65 BNC-50-0-1	H - 27	HUBER+SUHNER		
○ -Cable	--	H - 7	--		
● -Cable	--	H - 8	--	October, 2005	1 Year

Environmental conditions:

Temperature: 26 °C Humidity: 58 %

Magnetic Field Radiated Emission Measurement (Sec.15.247(d),15.205(a),15.209(a))
was performed in the frequency range of 9 kHz - 30 MHz, in the following test site.

Test location:

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
● - 1st open test site (3 meters)
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - 1st open test site ○ - 3 m ○ - 10 m ○ - 30 m
○ - 2nd open test site ○ - 3 m ○ - 10 m

Used test instruments:

Type	Model No.	Device ID	Manufacturer	Last Cal. Date	Cal. Interval
● -Receiver	ESCS 30	A - 1	Rohde&Schwarz	August, 2006	1 Year
○ -Receiver	ESH 2	A - 2	Rohde&Schwarz		
○ -Receiver	ESH 2	A - 3	Rohde&Schwarz		
● -Loop Ant.	HFH2-Z2	C - 2	Rohde&Schwarz	August, 2006	1 Year
○ -Loop Ant.	HFH2-Z2	C - 3	Rohde&Schwarz		
● -Cable	RG213/U	H - 28	Rohde&Schwarz	August, 2006	1 Year
○ -Cable	RG213/U	H - 29	Rohde&Schwarz		

Environmental conditions:

Temperature: 19 °C Humidity: 72 %

Electromagnetic Field Radiated Emission Measurement (Sec.15.247(d),15.205(a),15.209(a)) was performed in horizontal and vertical polarization, in the frequency range of 30 MHz - 1000 MHz, in the following test site.

Test location:

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
● - 1st open test site (3 meters)
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - 1st open test site ○ - 3 m ○ - 10 m ○ - 30 m
○ - 2nd open test site ○ - 3 m ○ - 10 m

Validation of Site Attenuation:

1) Last Confirmed Date : October 3, 2005
2) Interval : 1 Year

Used test instruments:

Type	Model No.	Device ID	Manufacturer	Last Cal. Date	Cal. Interval
● -Receiver	ESV	A - 6	Rohde&Schwarz	July, 2006	1 Year
● -Pre. Amp.	ESV-Z3	A - 20	Rohde&Schwarz	Auguste, 2006	1 Year
○ -Receiver	ESVS 10	A - 5	Rohde&Schwarz		
○ -Dipole Ant.	KBA-511A	C - 11	Kyoritsu		
○ -Dipole Ant.	KBA-611	C - 21	Kyoritsu		
● -Biconical Ant.	VHA9103/BBA9106	C - 43	Schwarzbeck	August, 2006	1 Year
● -Logperiodic Ant.	UHALP9107	C - 42	Schwarzbeck	August, 2006	1 Year
○ -Biconical Ant.	VHA9103/FBAB9177	C - 25	Schwarzbeck		
○ -Logperiodic Ant.	UHALP9108-A1	C - 28	Schwarzbeck		
● -Cable	---	H - 5	---	August, 2006	1 Year

Environmental conditions:

Temperature: 19 °C Humidity: 72 %

Electromagnetic Field Radiated Emission Measurement (Sec.15.247(d),15.205(a),15.209(a)) was performed in horizontal and vertical polarization, in the frequency range of 1 GHz - 25 GHz, in the following test site.

Test location:

KITA-KANSAI Testing Center
7-7, Ishimaru, 1-Chome, Minoh-Shi, Osaka, 562-0027, Japan
● - 1st open test site (3 meters)
KAMEOKA EMC Branch
9-1, Ozaki, Inukanno, Nishibetsuin-Cho, Kameoka-Shi, Kyoto, 621-0126, Japan
○ - 1st open test site ○ - 3 m ○ - 10 m ○ - 30 m
○ - 2nd open test site ○ - 3 m ○ - 10 m

Used test instruments:

Type	Model No.	Device ID	Manufacturer	Last Cal. Date	Cal. Interval
○ -Receiver	ESCS30	A - 1	Rohde&Schwarz		
○ -Spectrum Analyzer	8566B	A - 13	Agilent		
○ -Spectrum Analyzer	8593A	A - 15	Agilent		
● -Spectrum Analyzer	4446A	A - 39	Agilent	November, 2005	1 Year
● -Receiver	ESV	A - 7	Rohde&Schwarz	November, 2005	1 Year
○ -10dB Att.	4T-10	D - 73	Lucas Weinschel		
○ -10dB Att.	4T-10	D - 74	Lucas Weinschel		
● -10dB Att.	54-10	D - 82	Lucas Weinschel	May, 2006	1 Year
● -10dB Att.	54-10	D - 83	Lucas Weinschel	May, 2006	1 Year
● -Pre Amp.	WJ-6611-513	A - 23	Watkins Johnson	May, 2006	1 Year
● -Pre Amp.	WJ-6882-824	A - 21	Watkins Johnson	May, 2006	1 Year
● -Pre Amp.	DBL-0618N515	A - 33	DBS Microwave	May, 2006	1 Year
● -Pre Amp.	ALN-22093545-01	A - 37	Wise Wave Technologies	February, 2006	1 Year
○ -Pre Amp.	ALN-33144045-01	A - 38	Wise Wave Technologies		
● -Horn Ant.	91888-2	C - 41 - 1	EATON	June, 2006	1 Year
● -Horn Ant.	91889-2	C - 41 - 2	EATON	June, 2006	1 Year
● -Horn Ant.	94613-1	C - 41 - 3	EATON	June, 2006	1 Year
● -Horn Ant.	91891-2	C - 41 - 4	EATON	June, 2006	1 Year
● -Horn Ant.	94614-1	C - 41 - 5	EATON	June, 2006	1 Year
● -Horn Ant.	3160-09	C - 48	EMCO	June, 2006	2 Years
● -Step Att.	355C	D - 22	Agilent	March, 2006	1 Year
● -Step Att.	355D	D - 23	Agilent	March, 2006	1 Year
● -Cable	--	C - 66	HUBER+SUHNER	May, 2006	1 Year
● -Cable	--	C - 67	HUBER+SUHNER	May, 2006	1 Year
● -Cable	--	C - 54	HUBER+SUHNER	February, 2006	1 Year
● -Cable	--	C - 69	HUBER+SUHNER	February, 2006	1 Year

Environmental conditions:

Temperature: 24 °C Humidity: 60 %

CONFIGURATION OF EUT

The Equipment Under Test (EUT) consists of:

Description	Applicant (Manufacturer)	Model No. (Serial No.)	FCC ID
2.4GHz Frequency Hopping Spread Spectrum Cordless Telephone (Base Unit)	Panasonic Communications Co., Ltd. (Panasonic Communications Co., Ltd.)	KX-TG3031 (--)	ACJ96NKX-TG3031
AC Adaptor	Panasonic Communications Co., Ltd. (Panasonic Communications Co., Ltd.)	PQLV203 (--)	N/A

The measurement was carried out with the following equipment connected:

Description	Grantee/Distributor	Model No. (Serial No.)	FCC ID
None			

Type of Interface Cable(s) and the AC Power Cord used with the EUT:

	Description	Port	Shielded Cable	Shell Material	Ferrite Core	Cable Length
1	EUT No termination	LINE --	NO	-- --	NO	1.8 m
2	DC Power Cord (AC Adaptor) 1ϕ 2-pin plug	--	NO	--	NO	1.8 m

Operation - mode of the EUT:

The EUT was operated during the test under the following specification:

Transmitting
Modulation signal : TDMA/TDD Burst Type (FSK 190kHz dev.)

For operating condition of the EUT, the typical modulating signal is not used and input because the occupied bandwidth of the EUT is subject to restriction due to the bit rate of preamble data other than audio data in the transmitting data .

And at the AC Powerline Conducted Emission test is performed under Communicating(Hopping) and Charging. The worst data is Communicating(Hopping).

Test system:

The EUT has a DC IN port and a LINE port.

Special accessories:

None

EUT Modification

● - No modifications were conducted by JQA to achieve compliance to applied levels.

○ - To achieve compliance to applied levels, the following change(s) were made by JQA during the compliance test.

The modification(s) will be implemented in all production models of this equipment.

Applicant : N/A Date : N/A

Typed Name : N/A Position : N/A

Responsible Party

Responsible Party of Test Item(Product)

Responsible party :

Contact Person :

Signatory

Deviation from Standard

● - No deviations from the standard described in page 3.

○ - The following deviations were employed from the standard described in page 3.

TEST RESULTS

Transmitter Power (TP) (Sec.15.247(b)(1))

The requirements are ● - Passed ○ - Not Passed

The transmitter power is	107.2	mW	at	2400.914355	MHz
Min. limit margin	9.7	dB	at	2400.914355	MHz
Max. limit exceeding		dB	at		MHz
Uncertainty of measurement results				± 0.6	dB(2σ)

Remarks:

Maximum Peak Power (EIRP)

Maximum Peak Power (EIRP)	195.0	mW	at	2440.156641	MHz

Antenna Gain of the EUT (Sec.15.247(b)(4))

The antenna gain is	2.6	dBi	at	2440.156641	MHz

Remarks:

20dB Bandwidth (Sec.15.247(a)(1))

The 20 dB Bandwidth is	740	kHz	at	2480.292773	MHz
The Occupied(99%) Bandwidth is	755	kHz	at	2480.292773	MHz

The results Refer to pages* 2 - 4

Uncertainty of measurement results at Frequency	±5	kHz(2σ)
Uncertainty of measurement results at Amplitude	± 0.6	dB(2σ)

Remarks: *: The Page is one in the Attachment A.

Band-edge Emission (Sec.15.247(d))

The requirements are ● - **Passed** ○ - **Not Passed**

The Band-Edge level is -45.4 dBc at 2400.00 MHz

The results Refer to pages* 6 - 7

Uncertainty of measurement results at Frequency ±10 kHz(2σ)
Uncertainty of measurement results at Amplitude ± 0.6 dB(2σ)

Remarks: *: The Page is one in the Attachment A.

Carrier Frequency Separation (Sec.15.247(a)(1))

The requirements are ● - **Passed** ○ - **Not Passed**

Channel Separation 890 kHz

The results Refer to page * 8

Uncertainty of measurement results at Frequency ±5 kHz(2σ)
Uncertainty of measurement results at Amplitude ± 0.6 dB(2σ)

Remarks: *: The Page is one in the Attachment A.

Spurious RF Conductd Emission (Sec.15.247(d))

The requirements are ● - **Passed** ○ - **Not Passed**

The results Refer to pages* 9 - 11

Uncertainty of measurement results at Frequency ±10 kHz(2σ)
Uncertainty of measurement results at Amplitude ± 0.6 dB(2σ)

Remarks: *: The Page is one in the Attachment A.

AC Powerline Conducted Emission 150 kHz - 30 MHz (Sec.15.207(a))

The requirements are	● - Passed		○ - Not Passed		
Min. limit margin	26.5	dB	at	8.53	MHz
Max. limit exceeding		dB	at		MHz
Uncertainty of measurement results	+ 2.1	dB(2σ)		- 2.1	dB(2σ)

Remarks:

Electromagnetic Field Radiated Emission 9 kHz - 25 GHz

Spurious (Sec.15.247(d),15.205(a),15.209(a))

The requirements are	● - Passed			○ - Not Passed		
Min. limit margin	More than	5.9	dB	at	7440.9	MHz
Max. limit exceeding			dB	at		MHz

Uncertainty of measurement results (≤ 30 MHz)	+ 2.5	dB(2σ)	- 2.5	dB(2σ)
Uncertainty of measurement results (30 MHz - 1000 MHz)	+ 4.1	dB(2σ)	- 4.2	dB(2σ)
Uncertainty of measurement results (≥ 1000 MHz)	+ 3.1	dB(2σ)	- 3.2	dB(2σ)

Remarks:

SUMMARY

GENERAL REMARKS :

The EUT was tested according to the requirements of FCC Rules and Regulations Part 15 Subpart A and C under the test configuration, as shown in page 25.

The conclusion for the test items of which are required by the applied regulation is indicated under the final results.

Test Results :

The "as received" sample;

● - fulfill the test requirements of the regulation mentioned on page 3.

○ - doesn't fulfill the test regulation mentioned on page 3.

Begin of testing : October 11, 2006

End of testing : October 20, 2006

- JAPAN QUALITY ASSURANCE ORGANIZATION -

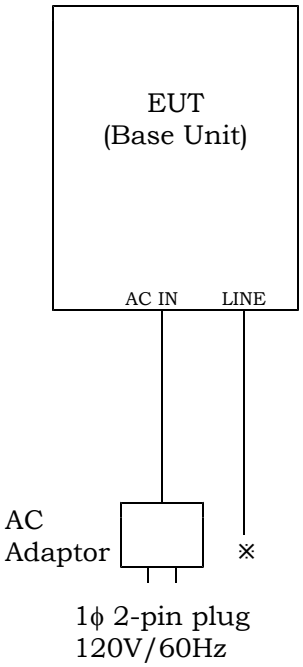
Reviewed by :

Akio Hosoda
Manager
EMC Div.
JQA KITA-KANSAI Testing Center

Tested by :

Shigeru Kinoshita
Deputy Manager
EMC Div.
JQA KITA-KANSAI Testing Center

Test System-Arrangement (Drawings)

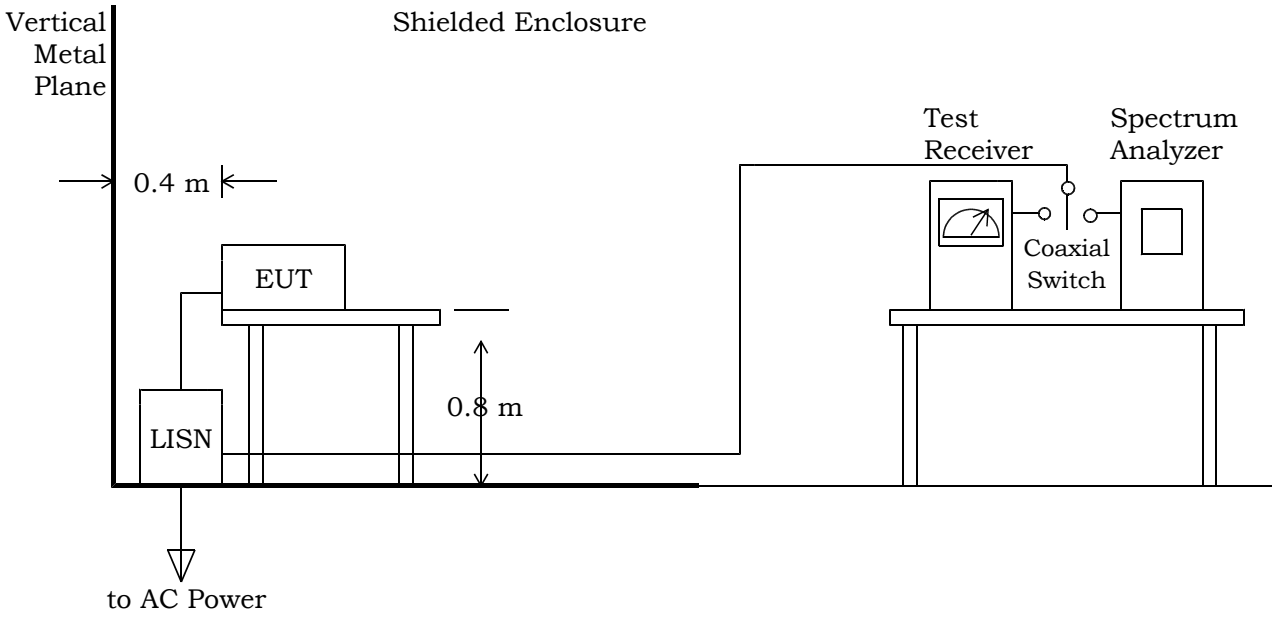


Note) ※ : No termination

Preliminary Test and Test-setup(Drawings)

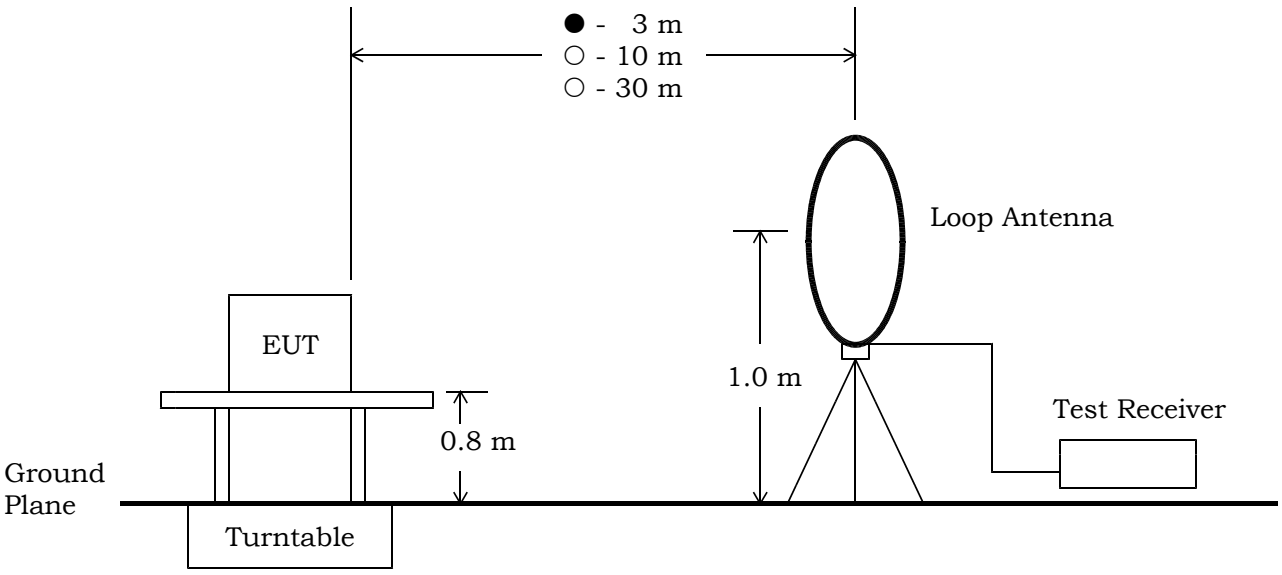
AC Powerline Conducted Emission 150 kHz - 30 MHz:

The preliminary test was performed according to the description of ANSI C63.4-2003 Sec.7.2.3 (Exploratory AC Powerline Conducted Emission Measurements) and Sec.6.2.1 (Tabletop Equipment Tests).
The preliminary test was carried out to investigate the frequency of the emission that has the highest amplitude relative to the limits within normal operating modes, cable positions, and a typical system configuration. In order to find out to the maximum emission, the preliminary test and a final test were performed in accordance with the following steps.
Step 1: One operation mode of the test system was setting.
Step 2: Using both of a spectrum analyzer and a test receiver, the emission's circumstance from the system was monitored in one of ten divided frequency bands of the specified frequency range (150 kHz - 30 MHz). The maximum emission in the band was found by changing the typical cable positions or cable manipulation under a typical system configuration and by selecting of current-carrying conductor. The level and the frequency at the one point which are regarded as relative high emission in the band was measured and recorded. This step was repeated until the ending frequency band.
Step 3: Return to step 1, if the other operation mode was possible to be setting.
Step 4: Based on the collected results, the operation mode produced the maximum emission was selected. The final test on the selected operation mode was performed. But if it was difficult to select the operation mode, the final tests on all operation modes were performed.
Step 5: Based on the same data, as result if the final measurement, at the worst point that has the highest amplitude relative to the limit the repeatability of the worst was reconfirmed.
The photographs of the test system setup on the worst point were taken and recorded.



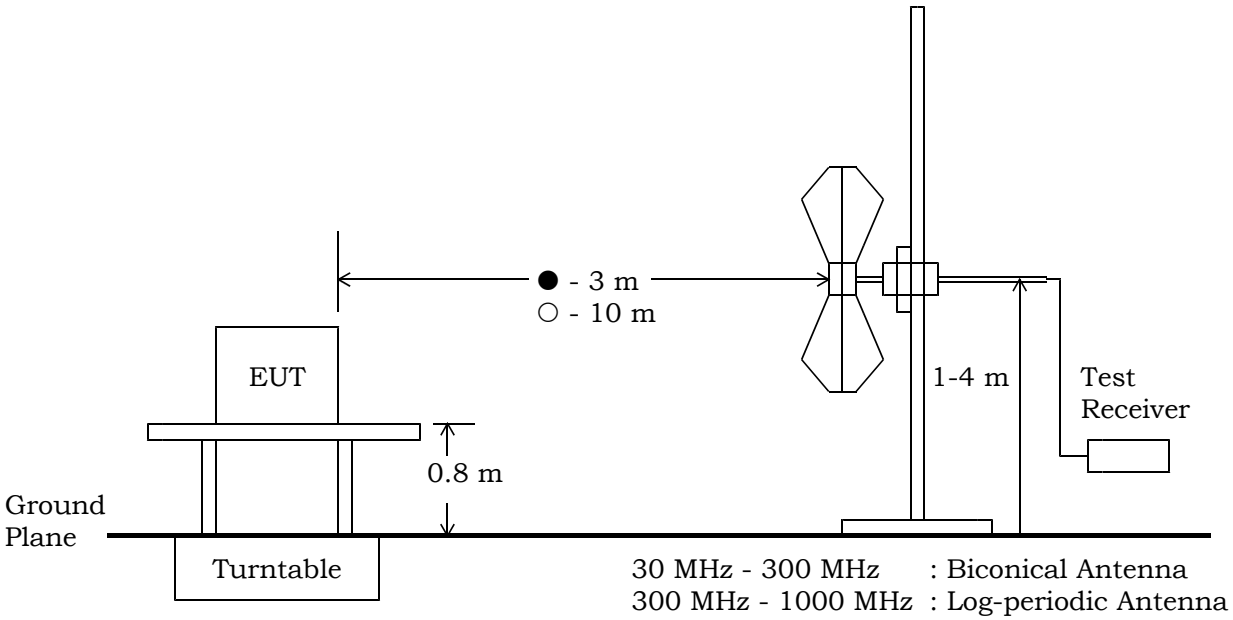
Radiated Emission (Magnetic Field) 9 kHz - 30 MHz:

The preliminary test was performed according to the description of ANSI C63.4-2003 Sec.8.3.1.1 (Exploratory Radiated Emission Measurements) and Sec.6.2.1 (Tabletop Equipment Tests).
The preliminary test was carried out to investigate the frequency of the emission that has the highest amplitude relative to the limits within normal operating modes, cable positions, and a typical system configuration. In order to find out to the maximum emission, the preliminary test and a final test were performed in accordance with the following steps.
Step 1: One operation mode of the test system was setting.
Step 2: In order to investigate the frequencies of maximum emissions, the loop antenna position was approached to the EUT and the significant frequency of the emission's circumstance from the test system were investigated. These data were recorded in the specified frequency band (9 kHz - 30 MHz).
Step 3: Using a test receiver and a loop antenna, the emission's circumstance from the test system was measured in according with ANSI C63.4-2003 Sec.8.3.1.2 (Final Radiated Emission Measurements) at each frequency which was found the higher emission referred to level vs. frequency on the list and which was measured by the loop antenna.
Step 4: Return to step 1, if the other operation mode was possible to be setting.
Step 5: The worst result was reported arranging data of which was obtained and performed by one or plural operation modes as the final test.
At the worst point that has the highest amplitude relative to the limit the repeatability of the level was reconfirmed. The photographs of the tests system setup on the worst point were taken and recorded.



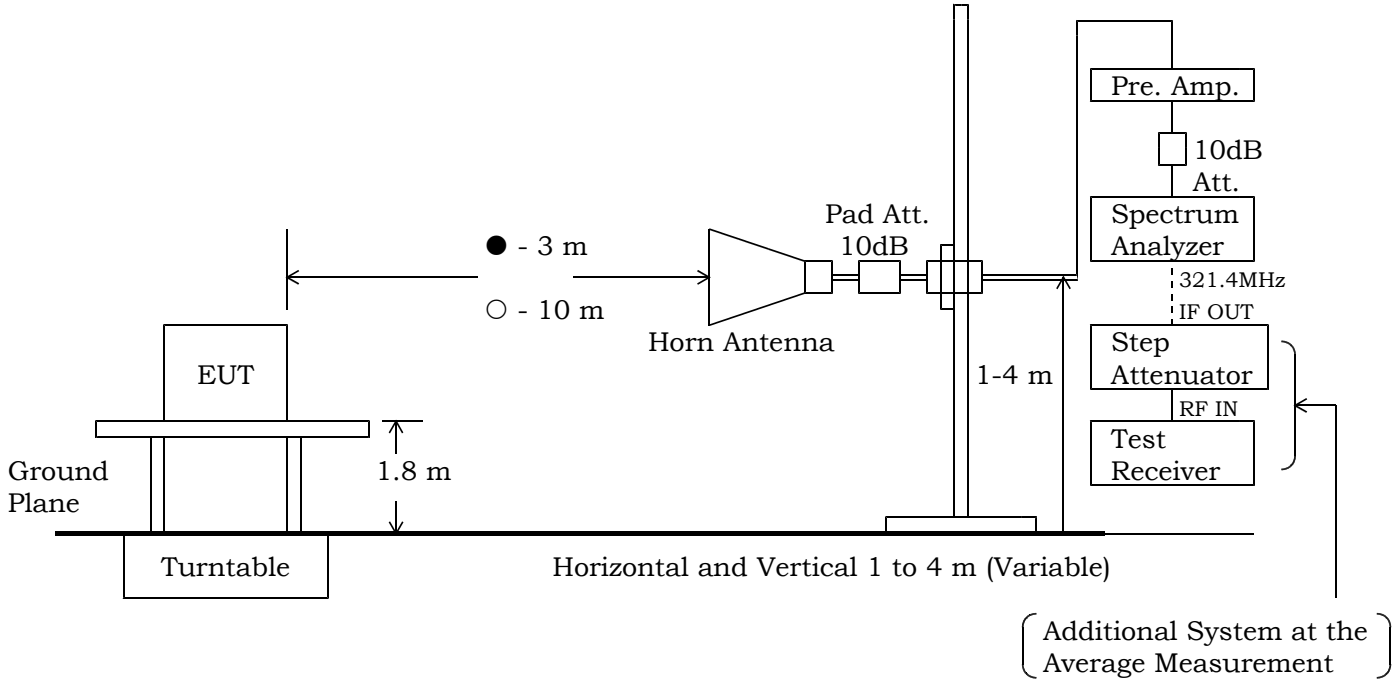
Electromagnetic Field Radiated Emission 30 MHz - 1000 MHz:

The preliminary test was performed according to the description of ANSI C63.4-2003 Sec.8.3.1.1 (Exploratory Radiated Emission Measurements) and Sec.6.2.1 (Tabletop Equipment Tests).
The preliminary test was carried out to investigate the frequency of the emission that has the highest amplitude relative to the limits within normal operating modes, cable positions, and a typical system configuration. In order to find out to the maximum emission, the preliminary test and a final test were performed in accordance with the following steps.
Step 1: One operation mode of the test system was setting.
Step 2: Using a test receiver and the broadband antennas, the significant frequency of the emission's circumstance from the test system were investigated. These data were recorded every one of 22 divided bands in the specified frequency band (30 MHz - 1000 MHz).
Step 3: Using a test receiver and a linearly polarized broadband antenna, the emission's circumstance from the test system was measured in according with ANSI C63.4-2003 Sec.8.3.1.2 (Final Radiated Emission Measurements) at each frequency which was found the higher emission referred to level vs. frequency on the list and which was measured by the linearly polarized broadband antenna. The maximum emission was found by changing the antenna angle under a typical system configuration.
Step 4: Return to step 1, if the other operation mode was possible to be setting.
Step 5: The worst result was reported arranging data of which was obtained and performed by one or plural operation modes as the final test.
At the worst point that has the highest amplitude relative to the limit the repeatability of the level was reconfirmed. The photographs of the tests system setup on the worst point were taken and recorded.



Electromagnetic Field Radiated Emission 1 GHz - 25 GHz:

The preliminary test was performed according to the description of ANSI C63.4-2003 Sec.8.3.1.1 (Exploratory Radiated Emission Measurements) and Sec.6.2.1 (Tabletop Equipment Tests).
The preliminary test was carried out to investigate the frequency of the emission that has the highest amplitude relative to the limits within normal operating modes, cable positions, and a typical system configuration. In order to find out to the maximum emission, the preliminary test and a final test were performed in accordance with the following steps.
Step 1: One operation mode of the test system was setting.
Step 2: In order to investigate the frequencies of maximum emissions, the horn antenna position was approached to the EUT and the significant frequency of the emission's circumstance from the test system were investigated. These data were recorded in the specified frequency band (1 GHz - 25 GHz).
Step 3: The emission's circumstance from the test system was measured in accordance with ANSI C63.4-2003, Sec.8.3.1.2 (Final Radiated Emissions Tests) at each frequency which was found higher emission referred to level vs. frequency on the list and which was measured in the specified distance using the horn antenna.
Step 4: Return to step 1, if the other operation mode was possible to be setting.
Step 5: The worst result was reported arranging data of which was obtained and performed by one or plural operation modes as the final test.
At the worst point that has the highest amplitude relative to the limit the repeatability of the level was reconfirmed. The photographs of the tests system setup on the worst point were taken and recorded.



Spectrum Analyzer Setting:

Detector	*)Peak/Average
RES BW	1 MHz
VIDEO BW	1 MHz
SPAN	0 Hz

Test Receiver Setting:

SCALE	LINEAR	LINEAR
I.F.B.W.	1 MHz	1 MHz
Detector	Average	Peak

*) For the average measurement, it is made using a test receiver and a step attenuator.

This page is CONFIDENTIAL.
Refer to PDF(TestSetup_Photo)

Transmitter Power (TP) Measurement

Test Date: October 10, 2006
Temp.: 24 °C, Humi: 67 %

A)AC Supply Voltage : 102V

Transmitting Frequency		Correction Factor	Meter Reading	Conducted Peak Output Power		Limits	Margin
CH	[MHz]	[dB]	[dBm]	[dBm]	[mW]	[dBm]	[dB]
01	2400.914	10.0	10.3	20.3	107.2	30.0	+ 9.7
45	2440.157	10.0	10.3	20.3	107.2	30.0	+ 9.7
90	2480.293	10.0	10.1	20.1	102.3	30.0	+ 9.9

B)AC Supply Voltage : 120V

Transmitting Frequency		Correction Factor	Meter Reading	Conducted Peak Output Power		Limits	Margin
CH	[MHz]	[dB]	[dBm]	[dBm]	[mW]	[dBm]	[dB]
01	2400.914	10.0	10.3	20.3	107.2	30.0	+ 9.7
45	2440.157	10.0	10.3	20.3	107.2	30.0	+ 9.7
90	2480.293	10.0	10.1	20.1	102.3	30.0	+ 9.9

C)AC Supply Voltage : 138V

Transmitting Frequency		Correction Factor	Meter Reading	Conducted Peak Output Power		Limits	Margin
CH	[MHz]	[dB]	[dBm]	[dBm]	[mW]	[dBm]	[dB]
01	2400.914	10.0	10.3	20.3	107.2	30.0	+ 9.7
45	2440.157	10.0	10.3	20.3	107.2	30.0	+ 9.7
90	2480.293	10.0	10.1	20.1	102.3	30.0	+ 9.9

Calculated result at 2400.914 MHz, as the worst point shown on underline:

	Correction Factor	=	10.0 dB
+)	Meter Reading	=	10.3 dBm
	Result	=	20.3 dBm = 107.2 mW

Minimum Margin: 30.0 - 20.3 = 9.7 (dB)

NOTES
1. The correction factor shows the attenuation pad loss including the short, low loss cable or adapter.
2. Setting of measuring instrument(s) :

Detector Function	Video B.W.
Peak	5 MHz

Transmitter Power (EIRP) Measurement

Test Date: October 10, 2006
Temp.: 24 °C, Humi: 60 %

1. Measurement Results

CH	Transmitting Frequency [MHz]	Emission Measurement [dB(μV)] Hori. (Mh)	Emission Measurement [dB(μV)] Vert. (Mv)	Substitution Measurement [dB(μV)] Hori. (Msh)	Substitution Measurement [dB(μV)] Vert. (Msv)	Supplied Power to Substitution Antenna [dBm]	Gain of Substitution Antenna [dB]
01	2400.914	78.3	85.5	78.0	78.0	- 1.6	16.3
45	2440.157	78.9	86.1	78.3	78.2	- 1.6	16.6
90	2480.293	81.3	84.6	78.6	78.7	- 1.7	16.7

2. Calculation Results

CH	Transmitting Frequency [MHz]	Peak EIRP [dBm] (EIRPh)	Peak EIRP [dBm] Vert. (EIRPv)	Maximum Peak EIRP [mW]	Maximum Peak Conducted Power [mW]	Antenna Gain G_{EUT} [dBi]
01	2400.914	15.0	22.2	166.0	107.2	1.9
45	2440.157	15.6	22.9	195.0	107.2	2.6
90	2480.293	17.7	20.9	123.0	102.3	0.8

Calculated result at 2440.157 MHz, as the maximum level point shown on underline:

	Emission Measurment (Mv)	=	86.1 dB(μV)
	Substitution Measurement (Msv)	=	-78.2 dB(μV)
	Supplied Power to Substitution Antenna	=	-1.6 dBm
+)	Gain of Substitution Antenna	=	16.6 dB
	Maximum Peak EIRP (EIRPv)	=	22.9 dBm = 195.0 mW

Antenna gain of the integrated antenna of the EUT : G_{EUT} [dBi]
Maximum Peak EIRP (measured) : EIRP [dBm] = eirp [mW]
Maximum Peak Conducted Output Power (measured) : TP [dBm] = tp [mW]

If the antenna gain (G_{EUT}) is met the equations as follows.

G_{EUT} [dBi] = EIRP [dBm] - TP [dBm] = 10log(eirp [mW] / tp [mW])

	Maximum Peak EIRP	=	22.9 dBm = 195.0 mW
-)	Maximum Peak Conduced Output Power	=	20.3 dBm = 107.2 mW
	Result	=	2.6 dBi

NOTE : Setting of measuring instrument(s) :

Detector Function	Resolution B.W.	V.B.W.	Sweep Time
Peak	1 MHz	1 MHz	20 msec.

20dB Bandwidth Measurement

Test Date: October 10, 2006
Temp.: 24 °C ; Humi.: 67 %

CH No.	Transmitting Frequency(MHz)	20dB Bandwidth	99% Bandwidth	Data Page*
1	2400.914355	686 kHz	645 kHz	Page 2
45	2440.156641	709 kHz	681 kHz	Page 3
90	2480.292773	740 kHz	755 kHz	Page 4

Note) 1. *: The Data Page is one in Attachment A.
2. The point shown on "_____" is the Maximum Margin Point.

Band-Edge Emission Measurement

Test Date: October 10, 2006
Temp.: 24 °C ; Humi.: 67 %

1) Low Band-Edge Measurement

CH	Transmitting Frequency(MHz)	Band-Edge Frequency(MHz)	Band-Edge Level[dBc]	Data Page*
1	2400.914355	2400.0	-45.4	Page 6

2) High Band-Edge Measurement

CH	Transmitting Frequency(MHz)	Band-Edge Frequency(MHz)	Band-Edge Level[dBc]	Data Page*
90	2480.292773	2483.5	-67.3	Page 7

Note) 1. *: The Data Page is one in Attachment A.
2. The point shown on "_____" is the Maximum Point.

Carrier Frequency Separation Measurement

Test Date: October 10, 2006
Temp.: 24 °C ; Humi.: 67 %

Measurement Results:

Transmitting Frequency No.1	:	2439.970 MHz (45 ch)
Transmitting Frequency No.2	:	2440.870 MHz (46 ch)
Channel Separation	:	890 kHz
Data Page in Attachment A	:	Page 8

Spurious RF Conducted Emission Measurement

Test Date: October 10, 2006
Temp.: 24 °C ; Humi.: 67 %

Data Page in Attachment A : Pages 9 - 11

AC Powerline Conducted Emisson Measurement

Test Date: October 19, 2006
Temp.: 26 °C, Humi: 58 %

Test condition : Communicating(Hopping)

Frequency	Corr. Factor	Meter Readings [dB(μV)] VA		VB		Limits [dB(μV)]		Results [dB(μV)]		Margin [dB]	Remarks
[MHz]	[dB]	QP	AVE	QP	AVE	QP	AVE	QP	AVE		
2.56	0.2	< 20.0	--	< 20.0	--	56.0	46.0	< 20.2	--	> +35.8	A
7.10	0.4	22.0	--	23.0	--	60.0	50.0	23.4	--	+36.6	A
8.24	0.5	26.0	--	27.0	--	60.0	50.0	27.5	--	+32.5	A
8.53	0.5	32.0	--	33.0	--	60.0	50.0	33.5	--	+26.5	A
8.81	0.5	27.0	--	27.0	--	60.0	50.0	27.5	--	+32.5	A
9.10	0.5	24.0	--	25.0	--	60.0	50.0	25.5	--	+34.5	A
22.74	0.8	21.0	--	21.0	--	60.0	50.0	21.8	--	+38.2	A

Calculated result at 8.53 MHz, as the worst point shown on underline:

	Corr. Factor	=	0.5 dB
+)	Meter Reading	=	33.0 dB(μV)
	Result	=	33.5 dB(μV)

Minimum Margin: 60.0 - 33.5 = 26.5 (dB)

NOTES
1. The spectrum was checked from 0.15 MHz to 30 MHz.
2. The correction factor includes the AMN insertion loss and the cable loss.
3. The symbol of "<" means "or less".
4. The symbol of ">" means "more than".
5. The symbol of "--" means "not applicable".
6. QP : Quasi-Peak Detector AVE : Average Detector
7. Setting of measuring instrument(s) :

	Detector Function	IF Bandwidth
A	CISPR QP	9 kHz
B	Average	10 kHz

Electromagnetic Field Radiated Emission Measurement

Test Date: October 20, 2006
Temp.: 19 °C, Humi: 72 %

Test condition : Communicating(Hopping)

Frequency [MHz]	Antenna Factor [dB(1/m)]	Cable Loss [dB]	Meter Readings [dB(μV)] Hori.	Meter Readings [dB(μV)] Vert.	Limits [dB(μV/m)]	Results [dB(μV/m)] Hori.	Results [dB(μV/m)] Vert.	Margin [dB]	Remarks
131.1	14.0	1.8	20.0	14.0	43.5	35.8	29.8	+ 7.7	A
137.2	14.4	1.8	11.0	6.0	43.5	27.2	22.2	+16.3	A
127.0	13.6	1.8	13.0	12.0	43.5	28.4	27.4	+15.1	A
189.0	16.5	2.1	9.0	8.0	43.5	27.6	26.6	+15.9	A
291.0	18.8	2.7	8.0	< 7.0	46.0	29.5	< 28.5	+16.5	A
301.0	16.0	2.7	8.0	8.0	46.0	26.7	26.7	+19.3	A
687.8	22.1	4.3	6.0	< 2.0	46.0	32.4	< 28.4	+13.6	A

Calculated result at 131.1 MHz, as the worst point shown on underline:

	Antenna Factor	=	14.0 dB(1/m)
	Cable Loss	=	1.8 dB
+)	Meter Reading	=	20.0 dB(μV)
	Result	=	35.8 dB(μV/m)

Minimum Margin: 43.5 - 35.8 = 7.7 (dB)

NOTES
1. Test Distance : 3 m
2. The spectrum was checked from 30 MHz to 1000 MHz.
3. The symbol of "<" means "or less".
4. The symbol of ">" means "more than".
5. Setting of measuring instrument(s) :

	Detector Function	IF Bandwidth	Antenna
A	CISPR QP	120 kHz	Broadband
B	Average	120 kHz	
C	Average	12 kHz	
D	Average	7.5 kHz	
E	CISPR QP	120 kHz	Tuned Dipole

Electromagnetic Field Radiated Emission Measurement

Test Date: October 10, 2006
Temp.: 24 °C, Humi: 60 %

Test condition : Tx Low Ch

Frequency [MHz]	Antenna Factor [dB(1/m)]	Corr. Factor [dB]	Meter Readings [dB(μV)] Horizontal PK	Horizontal AVE	Vertical PK	Vertical AVE	Limits [dB(μV/m)] PK	Limits AVE	Results [dB(μV/m)] PK	Results AVE	Margin [dB]	Remarks
4801.8	36.2	-20.7	45.0	31.0	43.7	30.5	74.0	54.0	60.5	46.5	+ 7.5	A/B
12004.6	43.7	-25.7	< 40.0	< 28.0	< 40.0	< 28.0	74.0	54.0	< 58.0	< 46.0	> + 8.0	A/B
19207.3	40.3	-26.5	< 40.0	< 28.0	< 40.0	< 28.0	74.0	54.0	< 53.8	< 41.8	> +12.2	A/B

Calculated result at 4801.8 MHz, as the worst point shown on underline:

	Antenna Factor	=	36.2 dB(1/m)
	Corr. Factor	=	-20.7 dB
+)	Meter Reading	=	31.0 dB(μV)
	Result	=	7.5 dB(μV/m)

Minimum Margin: 54.0 - 46.5 = 7.5 (dB)

NOTES
1. Test Distance : 3 m
2. The spectrum was checked from 1 GHz to 25 GHz (10th harmonic of the highest fundamental frequency).
3. The correction factor is shown as follows:
   Corr. Factor [dB] = Cable Loss + 20dB Pad Att. - Pre-Amp. Gain [dB] (1.0 - 7.6GHz)
   Corr. Factor [dB] = Cable Loss + 10dB Pad Att. - Pre-Amp. Gain [dB] (7.6 - 18.0GHz)
   Corr. Factor [dB] = Cable Loss + 20dB Pad Att. - Pre-Amp. Gain [dB] (over 18 GHz)
4. The symbol of "<" means "or less".
5. The symbol of ">" means "more than".
6. PK : Peak Detector / AVE : Average Detector
7. Setting of measuring instrument(s) :

	Detector Function	Resolution B.W.	Video B.W.	Sweep Time
A	Peak	1 MHz	1 MHz	20 msec.
B	Average*	1 MHz	1 MHz	20 msec.

*For the average measurement method, it is made measurement using a test receiver, a step attenuator and a spectrum analyzer. (FCC REPLY No. 950523A)

Electromagnetic Field Radiated Emission Measurement

Test Date: October 10, 2006
Temp.: 24 °C, Humi: 60 %

Test condition : Tx Middle Ch

Frequency [MHz]	Antenna Factor [dB(1/m)]	Corr. Factor [dB]	Meter Readings [dB(μV)] Horizontal PK	Horizontal AVE	Vertical PK	Vertical AVE	Limits [dB(μV/m)] PK	Limits AVE	Results [dB(μV/m)] PK	Results AVE	Margin [dB]	Remarks
4880.3	36.3	-20.8	43.5	< 30.0	42.0	< 30.0	74.0	54.0	59.0	< 45.5	> + 8.5	A/B
7320.5	36.7	-19.0	45.0	< 30.0	43.7	< 30.0	74.0	54.0	62.7	< 47.7	> + 6.3	A/B
12200.8	44.1	-25.6	< 40.0	< 28.0	< 40.0	< 28.0	74.0	54.0	< 58.5	< 46.5	> + 7.5	A/B
19521.3	40.4	-26.4	< 40.0	< 28.0	< 40.0	< 28.0	74.0	54.0	< 54.0	< 42.0	> +12.0	A/B

Calculated result at 7320.5 MHz, as the worst point shown on underline:

	Antenna Factor	=	36.7 dB(1/m)
	Corr. Factor	=	-19.0 dB
+)	Meter Reading	=	<30.0 dB(μV)
	Result	=	>6.3 dB(μV/m)

Minimum Margin: 54.0 - <47.7 = >6.3 (dB)

NOTES

1. Test Distance : 3 m
2. The spectrum was checked from 1 GHz to 25 GHz (10th harmonic of the highest fundamental frequency).
3. The correction factor is shown as follows:
   Corr. Factor [dB] = Cable Loss + 20dB Pad Att. - Pre-Amp. Gain [dB] (1.0 - 7.6GHz)
   Corr. Factor [dB] = Cable Loss + 10dB Pad Att. - Pre-Amp. Gain [dB] (7.6 - 18.0GHz)
   Corr. Factor [dB] = Cable Loss + 20dB Pad Att. - Pre-Amp. Gain [dB] (over 18 GHz)
4. The symbol of "<" means "or less".
5. The symbol of ">" means "more than".
6. PK : Peak Detector / AVE : Average Detector
7. Setting of measuring instrument(s) :

	Detector Function	Resolution B.W.	Video B.W.	Sweep Time
A	Peak	1 MHz	1 MHz	20 msec.
B	Average*	1 MHz	1 MHz	20 msec.

*For the average measurement method, it is made measurement using a test receiver, a step attenuator and a spectrum analyzer. (FCC REPLY No. 950523A)

Electromagnetic Field Radiated Emission Measurement

Test Date: October 10, 2006
Temp.: 24 °C, Humi: 60 %

Test condition : Tx High Ch

Frequency [MHz]	Antenna Factor [dB(1/m)]	Corr. Factor [dB]	Meter Readings [dB(μV)] Horizontal PK	Horizontal AVE	Vertical PK	Vertical AVE	Limits [dB(μV/m)] PK	Limits AVE	Results [dB(μV/m)] PK	Results AVE	Margin [dB]	Remarks
4960.6	37.0	-20.9	43.8	30.0	42.8	< 30.0	74.0	54.0	59.9	46.1	+ 7.9	A/B
7440.9	36.9	-18.8	44.0	< 30.0	44.0	30.0	74.0	54.0	62.1	48.1	+ 5.9	A/B
12401.5	43.9	-25.5	< 40.0	< 28.0	< 40.0	< 28.0	74.0	54.0	< 58.4	< 46.4	> + 7.6	A/B
19842.3	40.3	-26.4	< 40.0	< 28.0	< 40.0	< 28.0	74.0	54.0	< 53.9	< 41.9	> +12.1	A/B
22322.6	40.5	-26.2	< 40.0	< 28.0	< 40.0	< 28.0	74.0	54.0	< 54.3	< 42.3	> +11.7	A/B

Calculated result at 7440.9 MHz, as the worst point shown on underline:

	Antenna Factor	=	36.9 dB(1/m)
	Corr. Factor	=	-18.8 dB
+)	Meter Reading	=	30.0 dB(μV)
	Result	=	5.9 dB(μV/m)

Minimum Margin: 54.0 - 48.1 = 5.9 (dB)

NOTES
1. Test Distance : 3 m
2. The spectrum was checked from 1 GHz to 25 GHz (10th harmonic of the highest fundamental frequency).
3. The correction factor is shown as follows:
   Corr. Factor [dB] = Cable Loss + 20dB Pad Att. - Pre-Amp. Gain [dB] (1.0 - 7.6GHz)
   Corr. Factor [dB] = Cable Loss + 10dB Pad Att. - Pre-Amp. Gain [dB] (7.6 - 18.0GHz)
   Corr. Factor [dB] = Cable Loss + 20dB Pad Att. - Pre-Amp. Gain [dB] (over 18 GHz)
4. The symbol of "<" means "or less".
5. The symbol of ">" means "more than".
6. PK : Peak Detector / AVE : Average Detector
7. Setting of measuring instrument(s) :

	Detector Function	Resolution B.W.	Video B.W.	Sweep Time
A	Peak	1 MHz	1 MHz	20 msec.
B	Average*	1 MHz	1 MHz	20 msec.

*For the average measurement method, it is made measurement using a test receiver, a step attenuator and a spectrum analyzer. (FCC REPLY No. 950523A)

Electromagnetic Field Radiated Emission Measurement

Test Date: October 10, 2006
Temp.: 24 °C, Humi: 60 %

Test condition : Hopping

Frequency [MHz]	Antenna Factor [dB(1/m)]	Corr. Factor [dB]	Meter Readings [dB(μV)] Horizontal PK	Horizontal AVE	Vertical PK	Vertical AVE	Limits [dB(μV/m)] PK	Limits AVE	Results [dB(μV/m)] PK	Results AVE	Margin [dB]	Remarks
2390.0	21.5	-21.3	41.0	< 28.0	55.0	< 28.0	74.0	54.0	55.2	< 28.2	+18.8	A/B
2483.5	21.4	-21.4	59.5	29.0	62.0	29.0	74.0	54.0	62.0	29.0	+12.0	A/B

Calculated result at 2483.5 MHz, as the worst point shown on underline:

	Antenna Factor	=	21.4 dB(1/m)
	Corr. Factor	=	-21.4 dB
+)	Meter Reading	=	62.0 dB(μV)
	Result	=	12.0 dB(μV/m)

Minimum Margin: 74.0 - 62.0 = 12.0 (dB)

NOTES
1. Test Distance : 3 m
2. The spectrum was checked from 1 GHz to 25 GHz (10th harmonic of the highest fundamental frequency).
3. The correction factor is shown as follows:
   Corr. Factor [dB] = Cable Loss + 20dB Pad Att. - Pre-Amp. Gain [dB] (1.0 - 7.6GHz)
   Corr. Factor [dB] = Cable Loss + 10dB Pad Att. - Pre-Amp. Gain [dB] (7.6 - 18.0GHz)
   Corr. Factor [dB] = Cable Loss + 20dB Pad Att. - Pre-Amp. Gain (over 18 GHz)
4. The symbol of "<" means "or less".
5. The symbol of ">" means "more than".
6. PK : Peak Detector / AVE : Average Detector
7. Setting of measuring instrument(s) :

	Detector Function	Resolution B.W.	Video B.W.	Sweep Time
A	Peak	1 MHz	1 MHz	20 msec.
B	Average*	1 MHz	1 MHz	20 msec.

*For the average measurement method, it is made measurement using a test receiver, a step attenuator and a spectrum analyzer. (FCC REPLY No. 950523A)