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ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

Test report file number : E012R-010

Applicant : XROSSTECH, INC.
 Address : B-6F, Samho bldg. 275-6, Yangjae-Dong, Seocho-Ku, Seoul, 137-130, Korea
 Manufacturer : TAE KWANG INDUSTRIAL CO., LTD.
 Address : 191-1, Anyang-7Dong, Manan-Ku, Anyang-Si, Kyunggi-Do, 430-017, Korea
 Type of Equipment : Cable Modem (Class B Computing Device Peripheral)
 FCC ID : PGYXCM-2000
 Model / Type No. : XCM-2000
 Serial number : N/A
 Total page of Report : 16 pages (including this page)
 Date of Incoming : December 13, 2000
 Date of issuing : February 09, 2001

SUMMARY

The equipment complies with the regulation; FCC PART 15 SUBPART B, SECTION 15.101

This test report contains only the result of a single test of the sample supplied for the examination. It is not a general valid assessment of the features of the respective products of the mass-production

Prepared by:

G. W. Lee / Ass. Chief Engineer
 EMC Dept.
 ONETECH Corp.

Reviewed by:

S. S. Hong / Managing Director
 EMC Dept.
 ONETECH Corp.

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1. VERIFICATION OF COMPLIANCE

APPLICANT : XROSSTECH, INC.
 ADDRESS : B-6F, Samho bldg. 275-6, Yangjae-Dong, Seocho-Ku, Seoul, 137-130, Korea
 CONTACT PERSON : Mr. Won-Seok, Chon / Assistant Manager
 TELEPHONE NO : +82-2-3460-4540
 FCC ID : PGYXCM-2000
 MODEL NO/NAME : XCM-2000
 SERIAL NUMBER : N/A
 DATE : February 09, 2001

DEVICE TYPE	Class B Computing Device Peripheral - Unintentional Radiator
E.U.T. DESCRIPTION	Cable Modem
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4/1992
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15, SECTION 15.101 (Class B)
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	3 METER OPEN AREA TEST SITE

The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. GENERAL INFORMATION

2.1 Product Description

The XROSSTECH, INC., Model XCM-2000 (referred to as the EUT in this report) is a Cable Modem, which provides high-speed data services connecting a PC or local LAN to a high-speed Internet or multimedia service network through the CATV network. The EUT uses two AC/DC adaptors, which were manufactured by Kisan Electronics Co., Ltd or Sungwon Electronics Corp.

Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	24MHz, 25MHz on the main board, 4MHz on the tuner module board
POWER REQUIREMENT	DC3.3V/2A, 5.6V/1A, 30V/6mA From AC/DC Adaptor (110/220v, 60Hz, 30VA) : KP-023 / KISAN ELECTRONICS CO., LTD. DC3.3V/2A, 5.6V/1A, 30V/0.02A From AC/DC Adaptor (110/220v, 60Hz, 33VA) : SW-15CM / SUNGWON ELECTRONICS CORP.
CENTER FREQUENCY	Downstream : 91~857MHz Upstream : 5~42MHz
CHANNEL BANDWIDTH	Downstream : 6MHz Upstream : 200K, 400K, 800K, 1.6M, 3.2MHz
MODULATION TYPE	Downstream : 64/256QAM Upstream : QPSK/16QAM
DATA RATE	Downstream : Max 30Mbps/64QAM Upstream : Max 5.12Mbps/QPSK Max 40Mbps/256QAM Max 10.24Mbps/16QAM
NUMBER OF LAYERS	6Layers: Main Board, 2Layers: Tuner Board
EXTERNAL CONNECTOR	ETHERNET, USB, POWER INPUT, RF INPUT

Model Differences:

-. The difference(s) compared to the EUT is as follows: none

2.2 Related Submittal(s) / Grant(s)

Original submittal only



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2.3 Test System Details

The model numbers for all the equipments which were used in the tested system is:

Model	Manufacturer	FCC ID	Description	Connected to
XCM-2000	XROSSTECH, INC.	PGYXCM-2000	Cable Modem (EUT)	N/A
TC-PA1000	TAEIL	LIZ-TCPA1000	PC	EUT
AV-5T	KDS	EVOKD-1510T	MONITOR	PC
5123W	BEHAVIOR TECH	E5XKBP10M10	KEYBOARD	PC
M-S34	TRIGEM	DOC	MOUSE	PC
2225C	HP	DSI6XU2225	PRINTER	PC
020-0470	CARDINAL	GDE0196	MODEM	PC
TOPSYNC500S	ORION	DOC	MONITOR	CMTS (CO)
5530KP	N/A	DOC	KEYBOARD	CMTS (CO)
CN610	DAEWOO	DOC	NOTEBOOK	CMTS (CO)
UC4040D	WAVECOM	DOC	UP CONVERTOR	EUT
CPX2000	MOTOLORA	DOC	CMTS (CO)	N/A
KP-023	KISAN ELECTRONICS CO., LTD.	DOC	ADAPTOR	EUT
SW-15CM	SUNGWON ELECTRONICS CORP.	DOC	ADAPTOR	EUT

2.4 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4/1992. Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.5 Test Facility

The open area test site and conducted measurement facilities are located on at 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Kun, Kyunggi-Do 464-080 Korea. Description details of test facilities were submitted to the Commission on January 12, 1999. (Registration Number: 92819)



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3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
MAIN BOARD	TAE KWANG INDUSTRIAL CO.,LTD.	XCM-2000	N/A
MODULE BOARD	TAE KWANG INDUSTRIAL CO.,LTD.	N/A	N/A
ADAPTOR BOARD	KISAN ELECTRONICS CO., LTD	KP-023	N/A
ADAPTOR BOARD	SUNGWON ELECTRONICS CORP.	SW-15CM	N/A

3.2 EUT exercise Software

The line port of the EUT was connected to the central office device (CO), which was installed in the test room more than 30 meters far from the EUT, and the Ethernet port of the EUT was connected to the Personal Computer. The data from CO and/or PC were transmitted and received through the EUT using “ping-t” program during the testing.

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
CABLE MODEM (EUT)	N	Y	1.5(P), 15(D)
PC	N	Y	1.5(P), 1.5(D)
KEYBOARD	N/A	Y	1.2(D)
MOUSE	N/A	Y	1.2(D)
MONITOR	N	Y	1.5(P), 1.5(D)
PRINTER	N	Y	1.5(P), 1.2(D)
MODEM	N	Y	1.5(P), 1.2(D)

* The marked “(P)” means the Power Cable and “(D)” means signal cable.



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3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
CABLE MODEM (EUT)	N	N/A	Y	BOTH END
PC	-	-	-	-
KEYBOARD	N	N/A	Y	PC END
MOUSE	N	N/A	Y	PC END
MONITOR	Y	BOTH END	Y	BOTH END
PRINTER	N	N/A	Y	BOTH END
MODEM	N	N/A	Y	BOTH END

3.5 Equipment Modifications

To achieve compliance to CLASS B levels, the following change(s) was made by ONETECH Corp. during compliance testing:

“Not Applicable”

3.6 Configuration of Test System

Line Conducted Test: The EUT was connected to LISN. All supporting equipments were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.4/1992 7.2.3 to determine the worse operating conditions.

Radiated Emission Test: Preliminary radiated emission test was conducted using the procedure in ANSI C63.4/1992 8.3.1.1 to determine the worse operating conditions. Final radiated emission test was conducted at 3 meters open area test site.

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4. PRELIMINARY TEST

4.1 AC Power line Conducted Emission Test

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
Standby Mode	
Continuously transferring data between PC and EUT	X

4.2 Radiated Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Standby Mode	
Continuously transferring data between PC and EUT	X



document property name.

Remark : Test result using AC/DC Adaptor, Model Name SW-15CM which was manufactured by Sungwon Electronics.

Power Line Conducted Emission			FCC CLASS B	
Frequency (MHz)	Amplitude (dBuV)	Conductor	Limit (dBuV)	Margin (dB)
0.74	33.22	HOT	48.00	-14.78
1.05	35.99	NEUTRAL	48.00	-12.01
1.95	32.52	HOT	48.00	-15.48
4.78	36.24	NEUTRAL	48.00	-11.76
12.45	40.44	HOT	48.00	-7.56
27.80	37.41	NEUTRAL	48.00	-10.59

Line Conducted Emission Tabulated Data

Measuring by: Seung Hyun, Nam / Test Engineer

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(TEL: 82-31-746-8500 FAX: 82-31-746-8700)

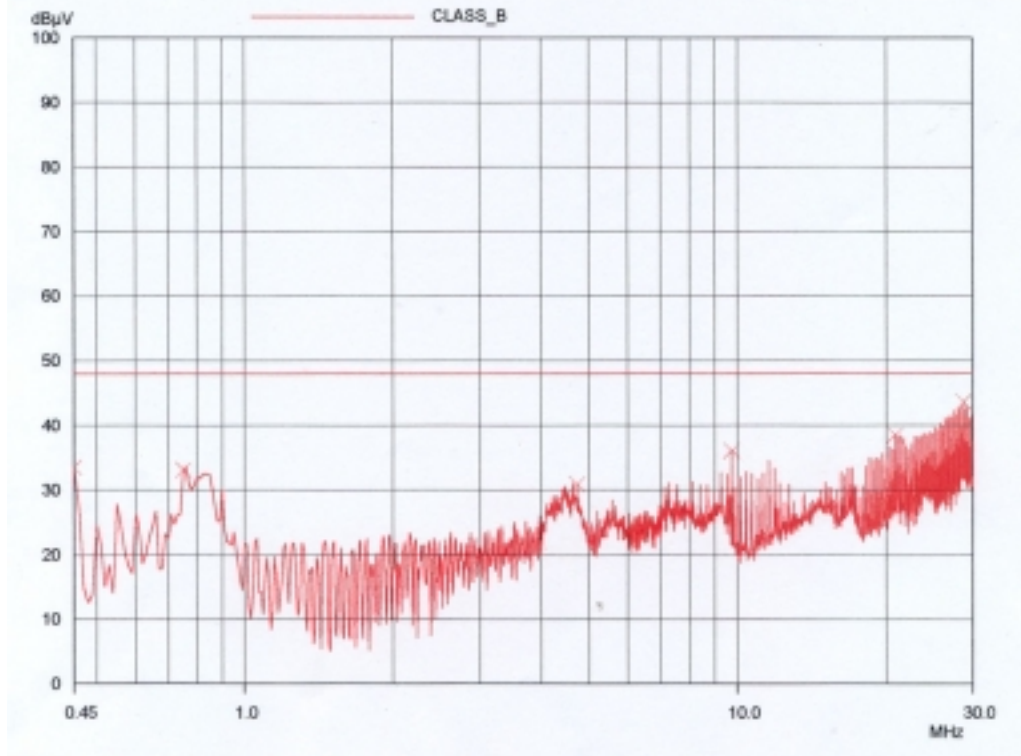
EMC Testing Dept : 426-1 Daeangyeong-Ri Chong-Myun Kwangju-Kun Kyunggi-Do 464-860 Korea (TEL: 82-31-765-8289 FAX: 82-31-766-2904)

document property name.

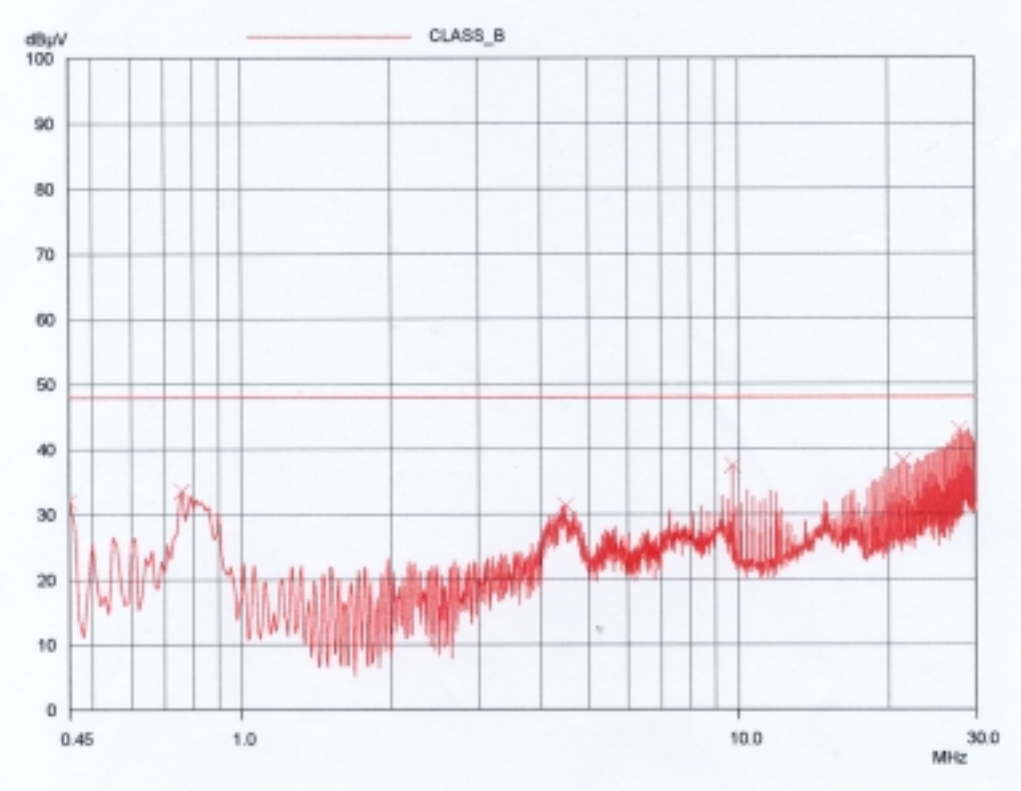


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Remark : Test result using AC/DC Adaptor, Model Name KP-023 which was manufactured by Kisan Electronics.



HOT LINE



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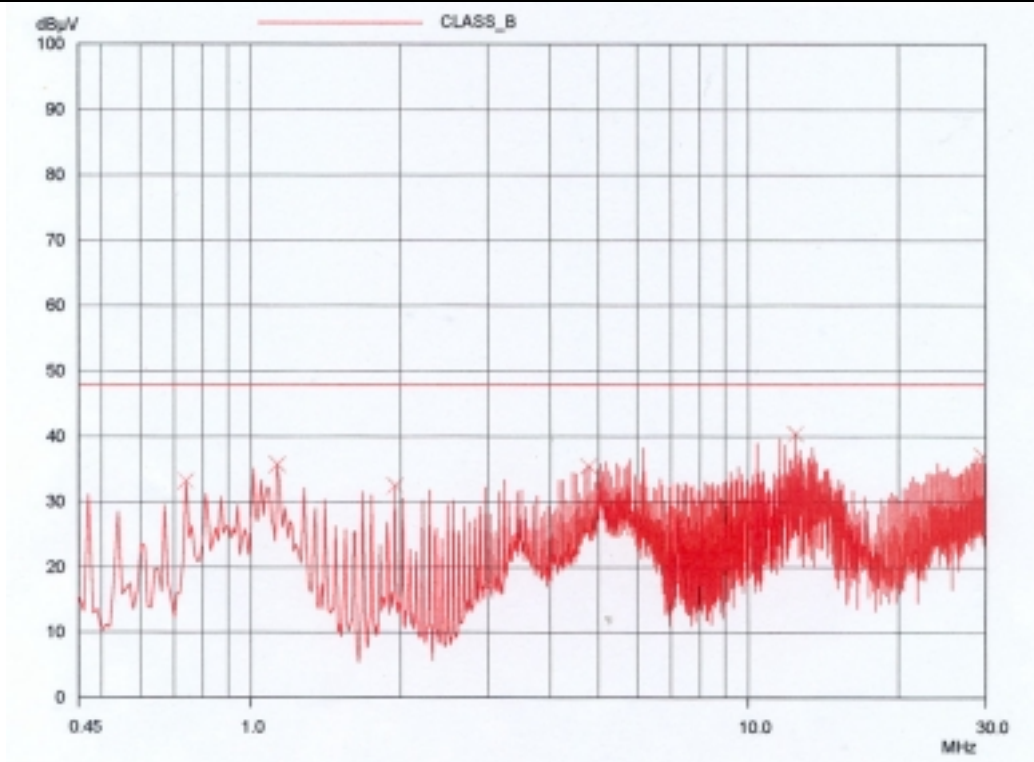
document property name.

NEUTRAL LINE

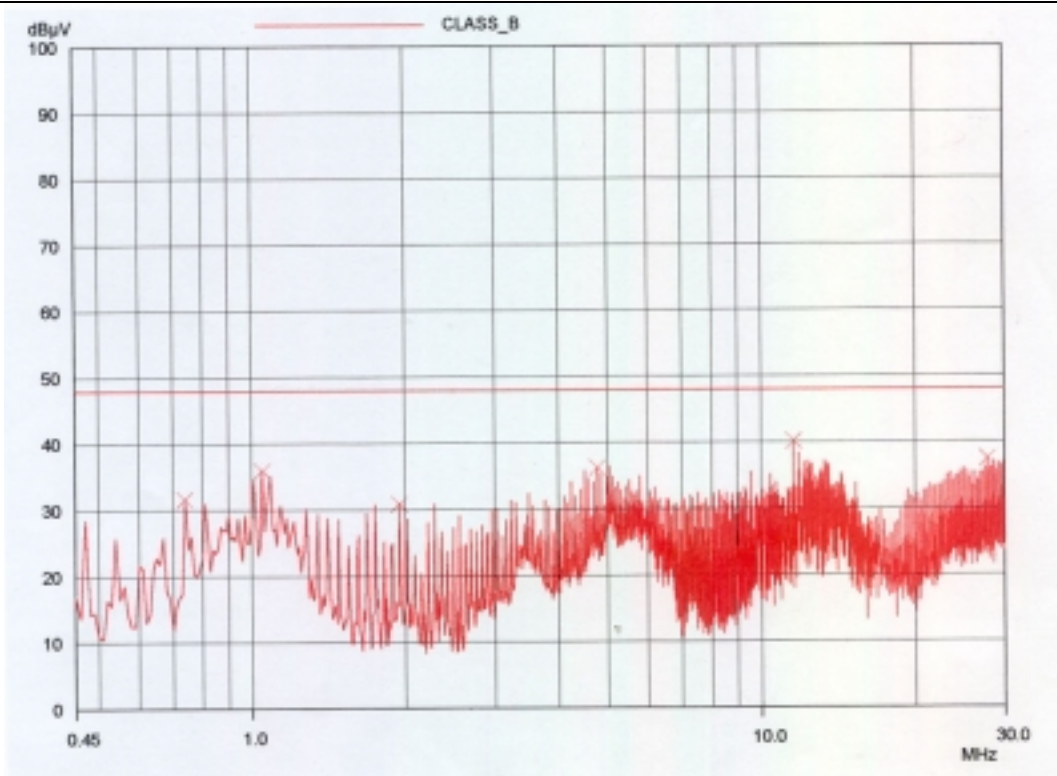


document property name.

Remark : Test result using AC/DC Adaptor, Model Name SW-15CM which was manufactured by Sungwon Electronics.



HOT LINE





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NEUTRAL LINE

5.2 Radiated Emission Test

The following table shows the highest levels of radiated emission on both polarizations of horizontal and vertical.

Humidity Level : 40 % Temperature: 17 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109
Type of Test : CLASS B
Result : PASSED BY -3.24 dB at 864.40 MHz
Result : PASSED BY -3.2 dB at 864.4 MHz for Kisan's AC/DC Adatpr
: PASSED BY -5.7 dB at 576.4 MHz for Sungwon's AC/DC Adatpr

EUT : Cable Modem Date: December 28, 2000
Operating Condition : Continuously transferring data between PC and EUT
Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
Distance : 3 Meter
Remark : Test result using AC/DC Adaptor, Model Name KP-023 which was manufactured by Kisan Electronics.

Radiated Emissions		Ant	Correction Factors		Total	FCC CLASS B	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
76.80	23.00	V	6.31	1.00	30.31	40.00	-9.69
108.59	20.60	V	12.49	1.19	34.28	43.50	-9.22
121.16	19.50	V	13.30	1.23	34.03	43.50	-9.47
134.57	18.00	V	12.84	1.29	32.13	43.50	-11.37
168.23	15.50	V	14.95	1.42	31.87	43.50	-11.63
251.80	20.50	H	12.50	1.83	34.83	46.00	-11.17
288.00	21.10	H	14.70	1.95	37.75	46.00	-8.25
336.20	21.80	H	15.20	2.21	39.21	46.00	-6.79
480.00	20.40	H	17.75	2.62	40.77	46.00	-5.23
504.20	18.50	V	18.31	2.69	39.50	46.00	-6.50
576.40	19.20	H	18.68	2.87	40.75	46.00	-5.25
671.60	13.30	H	20.53	3.17	37.00	46.00	-9.00
864.40	16.20	H	22.69	3.87	42.76	46.00	-3.24
960.80	13.00	H	23.50	4.12	40.62	54.00	-13.38

document property name.

Radiated Emissions Tabulated Data

Remark : Test result using AC/DC Adaptor, Model Name SW-15CM which was manufactured by Sungwon Electronics.

Radiated Emissions		Ant	Correction Factors		Total	FCC CLASS B	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
76.70	18.50	V	6.31	1.00	25.81	40.00	-14.19
109.34	14.00	V	12.55	1.20	27.75	43.50	-15.75
168.00	12.00	V	14.92	1.42	28.34	43.50	-15.16
251.80	20.60	H	12.50	1.83	34.93	46.00	-11.07
288.00	15.50	H	14.70	1.95	32.15	46.00	-13.85
336.20	15.60	H	15.20	2.21	33.01	46.00	-12.99
480.00	15.50	V	17.75	2.62	35.87	46.00	-10.13
504.00	15.60	V	18.31	2.69	36.60	46.00	-9.40
576.40	18.80	H	18.68	2.87	40.35	46.00	-5.65
671.20	13.40	V	20.53	3.16	37.09	46.00	-8.91
864.40	12.20	H	22.69	3.87	38.76	46.00	-7.24
960.80	12.30	H	23.50	4.12	39.92	54.00	-14.08

Radiated Emissions Tabulated Data

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Measuring by: Seung Hyun, Nam / Test Engineer

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6. FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses

+ Meter reading (dBuV)

+ Cable Loss (dB)

+ Antenna Factor (Loss) (dB/meter)

= Corrected Reading (dBuV/meter)

- Specification Limit (dBuV/meter)

= dB Relative to Spec (+/- dB)

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7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVS 10	827864/005	SEP/00	12MONTH	■
2.	Test receiver	R/S	ESHS10	834467/007	APRIL/00	12MONTH	■
3.	Spectrum analyzer	HP	8568B	3026A0226	SEP/00	12MONTH	■
4.	RF preselector	HP	85685A	3107A01264	SEP/00	12MONTH	■
5.	Quasi-Peak Adapter	HP	85650A	3107A01542	SEP/00	12MONTH	■
6.	Dipole Antenna	EMCO	3121C	9107-745	JUN/00	12MONTH	
7.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	MAR/00	12MONTH	■
8.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	MAR/00	12MONTH	■
9.	LISN	EMCO	3825/2	9109-1867 9109-1869	FEB/00	12MONTH	■
10.	RF Amplifier	HP	8447F	3113A04554	JUN/00	N/A	
11.	Spectrum Analyzer	HP	8591A	3131A02312	APR/00	12MONTH	
12.	Computer System	HP	98581C	98543A	N/A	N/A	■
	Hard disk drive		9153C	CMC762Z9153	N/A	N/A	■
13.	Plotter	HP	7475A	30052 22986	N/A	N/A	■
14.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	■
15.	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	■
16.	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	■