Electromagnetic Emission

F C C M E A S U R E M E N T R E P O R T

VERIFICATION OF COMPLIANCE

FCC Part 15 Certification Measurement

PRODUCT	:	Remote Control Cable Converter
MODEL/TYPE NO	:	CLEARMAX 6000
FCC ID	:	PA3SY010400001
APPLICANT	:	SeYoung Communications Co., Ltd. Damo B/D 2F, 289-4, Yangjae-Dong, Seocho-Ku, Seoul, Korea Attn. : Changsoo, Ha
FCC CLASSIFICATION	:	TV Interface Device(HID)
FCC RULE PART(S)	:	FCC Part 15 Subpart B 15.115
FCC PROCEDURE	:	Certification
TRADE NAME	:	SEYOUNG
TEST REPORT No.	:	E01.0504.FCC15B.196.N
DATES OF TEST	:	May 02, 2001
DATES OF ISSUE	:	May 04, 2001
TEST LAB.		ETL Inc 371-51, Gasan-Dong, Geumcheon-Gu, Seoul, Korea Tel : (031) 885-0072 Fax : (031) 885-0074

This Cable Converter has been tested in accordance with the measurement procedures specified in ANSI C63.4-1992 and MP-3(refer to the test report) at the ETL/EMC Test Laboratory and has been shown to be complied with the electromagnetic radiated emission limits specified in FCC Rule Part15 Subpart B.

I attest to the accuracy of data. All measurement herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Kayoung Kim

Name : Kayoung Kim

Title Chief Engineer & Lab.Manager

E-RAE Testing Laboratory Inc.

371-51, Gasan-Dong, Geumcheon-Gu,
Seoul, 153-023, Korea

Table of Contents

FCC MEASUREMENT REPORT

Scope – *Measurement and determination of electromagnetic emission(EME) of radio frequency devices including intentional radiators and/or unintentional radiators for compliance with the technical rules and regulations of the U.S Federal Communications Commission(FCC)*

General Information

Applicant Name : SeYoung Communications Co., Ltd.

Address : Damo B/D 2F, 289-4, Yangjae-Dong, Seocho-Ku, Seoul, Korea

Attention : Changsoo, Ha

- **EUT Type :** Remote Control Cable Converter
- **Model Number :** Clearmax 6000
- **FCC Identifier :** PA3SY010400001
- **S/N :** Prototype
- **Freq. Range :** 60 MHz – 72 MHz
- **FCC Rule Part(s) :** Part 15 Subpart B Section 15.115
- **Test Procedure :** MP-3 ; ANSI C63.4-1992t
- **FCC Classification :** TV Interface Device(HID)
- **RF Channels :** Ch. 3 / Ch. 4
- **Dates of Tests :** May 2, 2001
- **Place of Tests :** ETL Inc
  584, Sangwhal-Ri, Kanam-Myun, Yoju-Kun,
  Kyounggi-Do, Korea
  Tel : (031) 885-0072 Fax : (031) 885-0074
- **Test Report No. :** E01.0504.FCC15B.196.N

1. INTRODUCTION

The measurement test for radiated and conducted emission test were conducted at the open area test site of E-RAE Testing Laboratiry Inc. facility located at 584, Sangwhal-ri, Ganam-myun, Youju-kun, Kyoungki-do, Korea. The site is constructed in conformance with the requirements of the ANSI C63.4-1992 and CISPR Publication 16. The ETL has site descriptions on file with the FCC for 3 and 10 meter site configurations. Detailed description of test facility was found to be in compliance with the requirements of Section 2.948 FCC Rules according to the ANSI C63.4-1992 and registered to the Federal Communications Commission(Registration Number : 95422).

The measurement procedure described in American National Standard for Method of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSI C.63.4-1992) was used in determining radiated and conducted emissions from the Seyoung Communications Co.,Ltd. Remote Control Cable Converter Model : CLEARMAX 6000.

2. PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test(EUT) is the Seyoung Communications Co., Ltd. Remote control Cable TV Converter Model:KWF-901(FCC ID : PA3SY010400001).

2.2 General Specification

- Chassis Type	Metal(Bottom)
- List of Each OSC. Or X-Tal. Freq.(>=1MHz)	4.359375MHz
- Tuner(s)/RF Modulator(s):	SAMSUNG TCMN0682PA11A
- RF Frequency Out	60MHz – 72MHz
- Input Bandwidth	54MHz – 800MHz
- Channels	125 channels
- Video Signal	EIA Standard NTSC Color
- Scanning System	Rotary, double azimuth, four-head helical scanning system
- RF Impedance	75 Ω
- RF Output Channels	Channel 3 or Channel 4 (switch selectable)
- A/V Cable(s)	Unshielded
- Power Cord	Unshielded
- Power Requirement	AC 115V / 60Hz
- Power Consumption	10 W max
- Dimension(WxHxD)	160 x 214 x 54 mm
- Weight (net)	1.3 kg

3. DESCRIPTION OF TESTS

3.1 Conducted Emission

Conducted emissions measurements were made in accordance with section 11, "Measurement of Information Technology Equipment" of ANSI C63.4-1992. The measurement were performed over the frequency range of 0.15MHz to 30MHz using a 50Ω/50uH LISN as the input transducer to a Spectrum Analyzer or a Field Intensity Meter. The measurements were made with the detector set for "Peak" amplitude within an bandwidth of 10KHz or for "quasi-peak" within a bandwidth of 9KHz.

The line-conducted emission test is conducted inside a shielded anechoic chamber room with 1m x 1.5m x 0.8m wooden table which is placed 40cm away from the vertical wall and 1.5m away from the side wall of the chamber room. Two EMCO 3825/2 LISN are bonded to the shielded room. The EUT is powered from the EMCO LISN and the support equipment is powered from the another EMCO LISN. Power to the LISNs is filtered by a noise cut power line filters. All electrical cables are shielded by braided tinned steel tubing with inner ϕ 1.2cm. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and these supply lines will be connected to the EMCO LISN. All interconnecting cables more than 1m were shortened by non-inductive bundling(serprntine fashion) to a 1m length. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the R3261A Spectrum Analyzer to determine the frequency producing the max. emission from the EUT. The frequency producing the max. level was reexamined using the detector function set to the CISPR Quasi-Peak mode by manual, after scanned by automatic Peak mode from 0.45 to 30MHz. The bandwidth of the Spectrum Analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was maximized by switching power lines, varying the mode of operation or resolution, clock or data exchange speed, if applicable, whichever determined the worst-case emission. Each emission reported was calibrated using self-calibrating mode. Photographs of the worst-case emission can be seen in photographs of conducted emission test setup.

3. DESCRIPTION OF TESTS

3.2 Radiated Emission

Preliminary measurements were made at indoors 3 meter semi EMC Anechoic Chamber using broadband antennas, broadband amplifier, and spectrum analyzer to determine the emission frequencies producing the maximum EME.
Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30 to 1000MHz using biconilog antenna and above 1000MHz, linearly polarized double ridge horn antennas were used. Above 1GHz, linearly polarized double ridge horn antennas were used. The measurements were performed with three frequencies which were selected as bottom, middle andtop frequency in the operating band. Emission level from the EUT with various configurations were examined on the spectrum analyzer connected with the RF amplifier and plotted graphically.

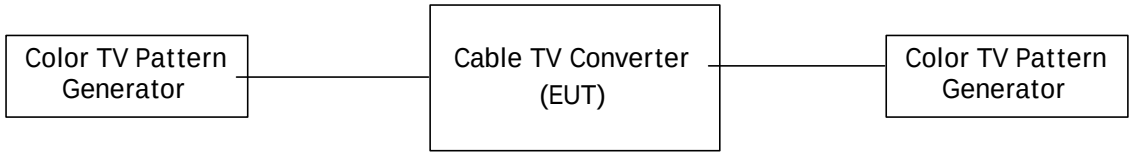
Final measurements were made outdoors open site at 3-meter test range using biconilog antenna. The output from the antenna was connected, via a preselector or a preamplifier, to the input of the EMI Measuring Receiver and Spectrum analyzer(for above 1GHz). The detector function was set to the quasi-peak or peak mode as appropriate. The measurement bandwidth on the Field strength receiver was set to at least 120kHz (1MHz for measurement above 1GHz), with all post-detector filtering no less than 10 times the measurement bandwidth. Sufficient time for the EUT, support equipment, and test equipment was allowed in
order for them to warm up to their normal operating condition.

Each frequency found during preliminary measurement was examined and investigated as the same set up and configuration which produced the maximum emission The EUT , support equipment and interconnecting cables were configured to the set-up producing the maximum emission for the frequency and were placed on top of a 0.8-meter high non-metallic 1m x 1.5 meter table. The turntable containing the system was rotated and the antenna height was varied 1 to 4 meters and stopped at the azimuth or height producing the maximum emission.

Each emission was maximized by varying the mode of operating frequencies of the EUT. The worst case emissions are recorded in the data tables. If necessary, the radiated emission measurement could be performed at a closer distance to ensure higher accuracy and the results were extrapolated to the specified distance using an inverse linear distance extrapolation factor(20Db/decade) as per section 15.31(f).

Photographs of the worst-case emission test setup can be seen in Appendix B.

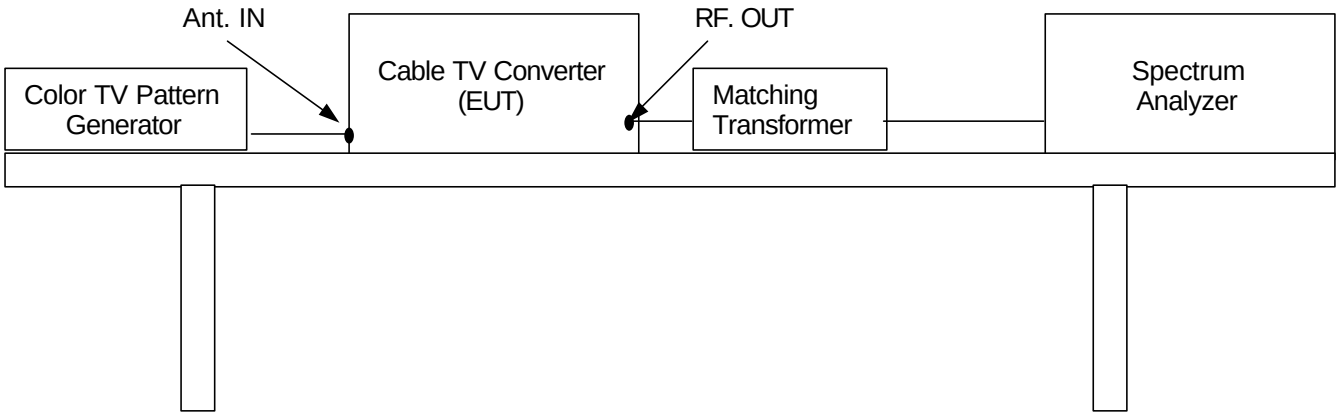
Test Configuration



3. DESCRIPTION OF TESTS

3.3 Output Signal Level Measurement

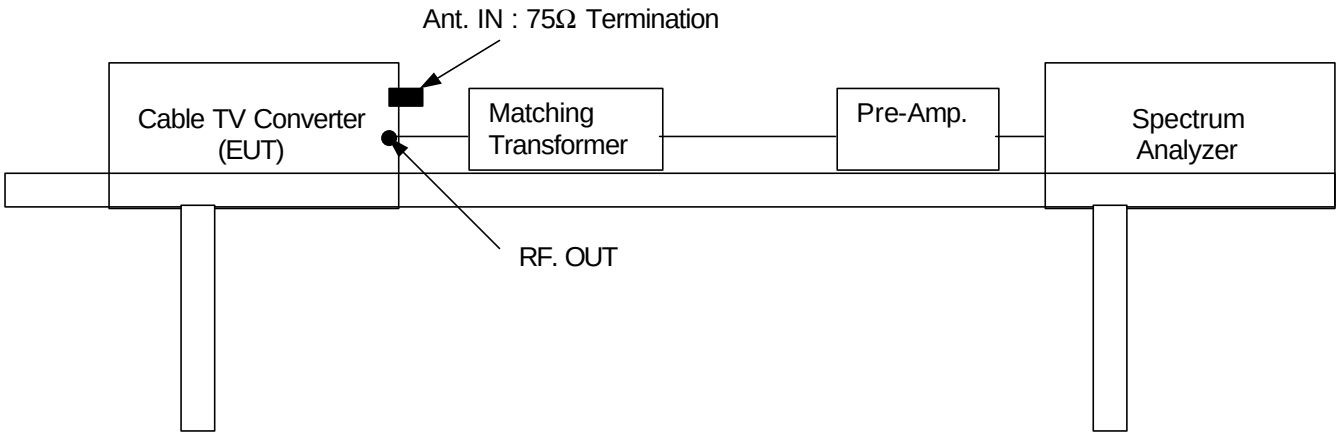
The RF output of the TV interface device was fed to the TV receiver via coaxial cable. The signal level was measured by direct connection to the spectrum analyzer with 50/75 ohm matching transformer between the
spectrum analyzer and the TV interface device. The RF output signal level measured RMS voltage was the highest RF level present at the output terminals during normal use of the device. Measurements were made of the levels of both the visual (61.25 MHz) and audio (71.75 MHz) of TV channel 4.
The voltage corresponding to the peak envelope power of the video modulated signal during maximum amplitude peaks across a resistance (R ohms) matching the rated output impedance of the device, must not exceed 692.8 $R^{1/2}$ μV for all other TV interface device. The voltage corresponding to peak envelope power of the audio modulated signal, if provided by the TV interface device, must not exceed 155$R^{1/2}$ μV for cable system terminal device of TV interface device used with a master antenna, and 77.5 $R^{1/2}$ μV for all other TV interface device. The EUT was configured in accordance with ANSI C63.4-1992 Section 12.2 as below configuration block diagram and the EUT configuration can also be seen in Appendix B. Photographs of the test setup.



3. DESCRIPTION OF TESTS

3.4 Output Terminal Conducted Spurious Emission Measurement

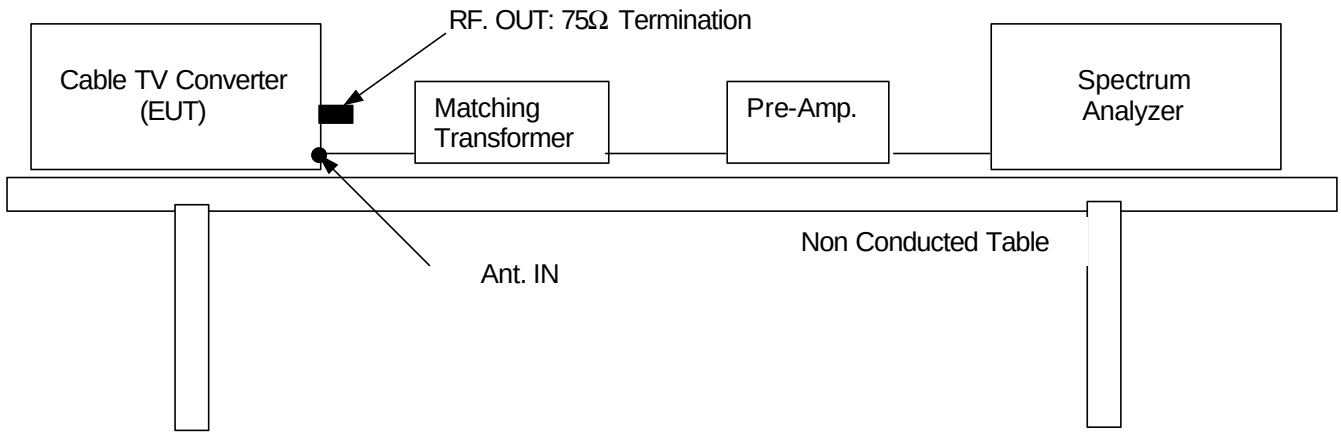
The RF output signal was fed to the TV receiver via coaxial cable. Measurements were made by direct connection to the spectrum analyzer and TV interface device with 50/75 ohm matching transformer. The frequency range 30 to 1000 MHz was investigated for significant emission.
The maximum RMS voltage of any emission appearing on frequencies removed by more than 4.6 MHz below and 7.4 MHz above the video carrier frequency on which the TV interface device is operated must not exceed 692.8 $R^{1/2}$ μV for cable system terminal device or TV interface device used with a master antenna and 1.95 $R^{1/2}$ μV for all other TV interface device when terminated with a resistance (R ohms) matching the rated output impedance of the TV interface device. The EUT was configured in accordance with ANSI C63.4-1992 Section 12.2 as below configuration block diagram and the EUT configuration can also be seen in Appendix B. Photographs of the test setup.



3. DESCRIPTION OF TESTS

3.5 Transfer Switch Measurement

Measurements were made of the maximum RMS voltage at the antenna input terminals of the switch for all positions of the transfer switch. The maximum voltage corresponds to the peak envelope power of the video signal during maximum amplitude peaks. In either position of the receiver transfer switch, the maximum voltage at the receiving antenna input terminals of the switch when terminated with a resistance (R ohms) matching the rated impedance of the antenna input of the switch, must not exceed 0.346 $R^{1/2}$ μV.
The maximum voltage corresponds to the peak envelope power of the video modulated signal during maximum amplitude.
The EUT was configured in accordance with ANSI C63.4-1992 Section 12.2 as below configuration block diagram. and the EUT configuration can also be seen in Appendix B. Photographs of the test setup.
The unused RF input/output terminals are terminated in a proper impedance. The antenna input terminal is connected to the the input of preamplifier through the matching transformer coaxial cable. And the output of preamplifier is connected to the spectrum analyzer. Then, the signal level on the antenna input terminal is measured under the EUT condition produced the maximum signal level.



4. TEST CONDITION

4.1 Test Configuration

The device was configured for testing in a typical fashion (as a customer would normally use it). During the tests, the EUT and the supported equipments were installed to meet FCC requirement and operated in a manner which tends to maximize its emission level in a typical application.

4.2 EUT operation

The EUT was set to the normal receiving mode in a TV mode during all the testing in a manner similar to a typical use. For the EUT operation, the color TV pattern generator was used with 0 dBmV NTSC TV signal input.

4.3 Support Equipment Used

Following peripheral devices and interface cables were connected during the measurement:

EUT- Remote Control Cable TV Converter

FCC ID	: PA3SY010400001
Model Name	: Clearmax 6000
Serial No.	: N/A
Manufacturer	: SeYoung Communications Co.,Ltd.
PowerSupply Type	: 120VAC Linear Type Power Supply
Power Cord	: N/A
Data Cable	: Shielded RCA Cable, more than 3m

Support Unit 1 – Television Set

FCC ID	: N/A (DoC)
Model Name	: DTQ-2199FW
Serial No.	: 401DD00353
Manufacturer	: DAEWOO Electronics Co.,Ltd.
Power Supply Type	: Switching
Power Cord	: Non-Shielded, Non-detachable, 1.2m

Support Unit 2 – Color TV pattern Generator

FCC ID	: N/A
Model Name	: PM5418TDS
Serial No.	: L0631354
Manufacturer	: Philips
Power Supply Type	: 120VAC
Power Cord	: Non-Shielded, Non-detachable, 1.2m

5. TEST RESULTS

5.1 Summary of Test Results

The measurement results were obtained with the EUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum emission of the EUT are reported.

FCC Rule Parts	Measurement Required	Result
15.107	Conducted Emission	Passed by – 3.35 dB
15.109	Radiated Emission	Passed by – 5.62 dB
15.115(b)(1)(ii)	Output Signal Level Measurement	Passed by – 6.5 dB
15.115(b)(2)(ii)	Output Terminal Conducted Spurious Emission Measurement	Passed by – 11.6 dB
15.115(c)(1)(ii)	Transfer Switch Measurement	Passed by – 3.3 dB

The data collected shows that the **SeYoung Communications Co.,Ltd. Cable converter Clearmax 6000** complies with Part 15.115 and the TV Interface Device section of the FCC Rules.

The equipment is not modified anything, mechanical or circuits to improve EMI status during a measurement. No EMI suppression device(s) was added and/or modified during testing.

5. TEST RESULTS

5.2 Conducted Emission Test

EUT	Remote Control Cable Converter Clearmax 6000(SN:Prototype)
Limit apply to	FCC Part15 Subpart B Section 15.115
Test Date	May 2, 2001
Operating Condition	TV Mode (Channel 3)
Environment Condition	Humidity Level : 37 %RH, Temperature : 22℃
Result	Passed by – 3.35dB

Conducted Emission Test Data

The following table shows the highest levels of conducted emissions on both polarization of live and neutral line.
Detector mode : CISPR Quasi-Peak mode (6dB Bandwidth : 9 kHz)

Frequency [MHz]	Reading [dBμV]		Phase (*H/**N)	Limit [dBμV]		Margin [dB]	
	Quasi-peak	Average		Quasi-peak	Average	Q.Peak	Average
0.45	44.65		H	48.0		3.35	
1.17	32.02		H	48.0		15.98	
2.05	29.02		N	48.0		18.98	
3.49	37.89		H	48.0		18.11	
4.29	32.27		H	48.0		15.73	
5.73	36.20		N	48.0		11.80	
12.78	35.07		H	48.0		12.93	
17.29	43.32		H	48.0		4.68	
22.36	35.57		N	48.0		12.43	

NOTES :

1. * H :Live Line , **N :Neutral Line
2. Margin value = Emission Level – Limit.
3. Channel 3 was the worst case operation mode

Yo han, Park

Tested by : Y. H. Park / Test Engineer

5. TEST RESULTS

5.3 Radiated Emission Test

EUT	Remote Control Cable Converter Clearmax 6000(SN:Prototype)
Limit apply to	FCC Part15 Subpart B Section 15.115
Test Date	May 2, 2001
Operating Condition	TV Mode (Channel 3)
Environment Condition	Humidity Level : 37 %RH, Temperature : 22℃
Result	Passed by – 5.62dB

Radiated Emission Test Data

The following table shows the highest levels of radiated emissions on both polarization of horizontal and vertical.
Detector mode : CISPR Quasi-Peak mode (6dB Bandwidth : 120 kHz)
Measurement Distance : 3 meters

Frequency [MHz]	Reading [dBμV]	Polarization (*H/**V)	Ant. Factor [dB]	Cable Loss [dB]	Emission Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]
32.32	13.90	V	13.12	0.98	34.39	40.0	5.62
108.98	24.75	H	10.00	1.88	30.86	43.5	12.64
113.34	24.06	H	10.37	1.96	33.42	43.5	10.08
117.70	18.20	H	10.78	2.02	34.03	43.5	9.47
122.06	21.43	H	11.40	2.05	29.72	43.5	13.78
130.80	18.50	H	11.87	2.13	28.31	43.5	15.19
135.14	23.20	H	12.12	2.18	26.75	43.5	16.75
148.22	15.64	H	12.59	2.27	25.65	43.5	17.85
174.37	26.07	H	11.99	2.48	30.70	43.5	12.80
178.73	12.34	H	11.50	2.53	31.42	43.5	12.08
183.09	26.94	H	10.88	2.58	31.42	43.5	12.08
191.80	14.23	H	9.93	2.65	32.72	43.5	10.78
200.53	21.65	H	9.51	2.68	27.34	43.5	16.16

NOTES :

1. **** H : Horizontal polarization , ** V : Vertical polarization***
2. ***Emission Level = Reading + Antenna factor + Cable loss***
3. ***Margin value = Emission Level – Limit***
4. ***All other emissions not reported were more than 25dB below the permitted limit.***
5. ***Channel 3 was the worst case operation mode.***

Yo han, Park

Tested by : Y. H, Park / Test Engineer

5. TEST RESULTS

5.4 Output Signal Level Measurement

EUT	Remote Control Cable Converter Clearmax 6000(SN:Prototype)
Limit apply to	FCC Part15 Subpart B Section 15.115
Test Date	May 2, 2001
Operating Condition	TV Mode (Channel 3)
Environment Condition	Humidity Level : 37 %RH, Temperature : 22℃
Result	Passed by – 6.5dB

Test Data Table

The following table shows the highest levels of radiated emissions on both polarization of horizontal and vertical.

Detector mode : CISPR Quasi-Peak mode (6dB Bandwidth : 120 kHz)
Measurement Distance : 3 meters

Test Channel	Emission Frequency [MHz]	Meter Reading [dBμV]	Correction Factor [dB]	Signal Level [dBμV]	Limit [dBμV]	Margin [dB]
# 3	61.25	51.0	7.5	58.5	69.5	11.0
	65.75	41.9	7.5	49.4	56.5	7.1
# 4	67.25	51.9	7.5	59.4	69.5	10.1
	71.25	42.5	7.5	50.0	56.5	6.5

NOTES :

1. ***The correction factor consist of the insertion loss of the impedance matching transformer and the coaxial cable used for the test.***
2. ***The spectrum was checked in each test mode and operation mode, and the maximum measured data were reported.***
3. ***Emission Level = Meter Reading + Correction Factor(Matching Loss + Cable loss)***
   Margin value = Limit - Emission Level

Yo han, Park
Tested by : Y. H. Park / Test Engineer

5. TEST RESULTS

5.5 Output Terminal Conducted Spurious Emission Measurement

EUT	Remote Control Cable Converter Clearmax 6000(SN:Prototype)
Limit apply to	FCC Part15 Subpart B Section 15.115
Test Date	May 2, 2001
Operating Condition	TV Mode (Channel 3)
Environment Condition	Humidity Level : 37 %RH, Temperature : 22℃
Result	Passed by – 11.60 dB

Test Data Table

Test Channel	Emission Frequency [MHz]	Meter Reading [dBμV]	Correction Factor [dB]	Signal Level [dBμV]	Limit [dBμV]	Margin [dB]
# 3	31.94	39.32	-20.5	18.82	39.5	20.68
	55.48	42.30	-20.5	21.80	39.5	17.70
	60.12	48.40	-20.5	27.90	39.5	11.60
	77.91	38.22	-20.5	17.72	39.5	21.78
	80.70	38.85	-20.5	18.35	39.5	21.15
	85.08	39.20	-20.5	18.70	39.5	20.80
	87.32	37.85	-20.5	17.00	39.5	22.50
	134.90	33.67	-20.5	13.17	39.5	26.33
# 4	31.99	39.75	-20.5	19.25	39.5	20.25
	50.51	40.12	-20.5	19.62	39.5	19.88
	54.11	48.00	-20.5	27.50	39.5	12.00
	55.70	43.00	-20.5	22.50	39.5	17.00
	71.96	41.07	-20.5	20.57	39.5	18.93
	85.13	36.80	-20.5	16.30	39.5	23.20
	87.37	36.45	-20.5	15.95	39.5	23.55
	184.00	36.25	-20.5	15.75	39.5	23.75

NOTES :

1. ***The correction factor consist of the insertion loss of the impedance matching transformer, the coaxial cable used for the test and the gain of pre-amplifier.***
2. ***The spectrum was checked in each test mode and operation mode, and the maximum measured data were reported.***
3. ***Emission Level = Meter Reading + Correction Factor(Matching Loss + Cable loss + Preamplifier Gain)***
   Margin value = Limit - Emission Level

Yo han, Park

Tested by : Y. H. Park / Test Engineer

5. TEST RESULTS

5.6 Transfer Switch Measurement

EUT	Remote Control Cable Converter Clearmax 6000(SN:Prototype)
Limit apply to	FCC Part15 Subpart B Section 15.115
Test Date	May 2, 2001
Operating Condition	TV Mode
Environment Condition	Humidity Level : 37 %RH, Temperature : 22℃
Result	Passed by – 3.3dB

Test Data Table

Test Channel	Emission Frequency [MHz]	Meter Reading [dBμV]	Correction Factor [dB]	Emission Level [dBμV]	Limit [dBμV]	Margin [dB]
# 3	61.25	22.04	-17.5	4.54	9.5	4.96
# 4	67.25	23.70	-17.5	6.20	9.5	3.3

NOTES :

1. ***The correction factor consist of the insertion loss of the impedance matching transformer, the coaxial cable used for the test and the gain of pre-amplifier.***
2. ***The spectrum was checked in each test mode and operation mode, and the maximum measured data were reported.***
3. ***Emission Level = Meter Reading + Correction Factor(Matching Loss + Cable loss- Preamplifier gain)***
   Margin value = Limit - Emission Level
4. ***Transfer switch isolation measurements were made on the Channel 3 or 4 video output frequency of 61.25 or 67.25MHz and both positions of the transfer switch were checked for compliance. No significant emissions were found***
5. ***Spectrum analyzer setting : Frequency Span 1MHz, Resolution bandwidth 100 kHz, Video bandwidth 3MHz, Detector function Peak mode.***

Yo han, Park

Tested by : Y. H. Park / Test Engineer

6. SAMPLE CALCULATION

Sample Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor.
The basic equation with a sample calculation is as follows:

FS = RA + AF + CF

where FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Attenuation Factor

$dB(\mu V/m) = 20 \log_{10} (\mu V /m)$: Equation 1
$dB\mu V = dBm + 107$: Equation 2

Example 1 : @ 0.218 MHz

Class B Limit = 441.063 uV = 52.89 dBuV
Reading = 48.45dBuV
Convert to uV = 264.55uV
Margin = 48.45 – 52.89 = -4.44
= -4.44dB below Limit

Example 2 : @664.64 MHz

Class B Limit = 70.79 uV = 37.0 dBuV/m
Reading = 7.38dBuV
Antenna Factor + Cable Loss = 25.14 dB
Total = 32.52 dBuV/m
Margin = 32.52 – 37.0 = -4.48
= -4.48dB below Limit

7. TEST EQUIPMENT LIST

List of Test Equipments Used for Measurements

	Test Equipment	Model	Mfg.	Serial No.	Cal. Due Date
☐	Spectrum Analyzer	R3261A	Advantest	21720033	01-10-08
☒	Spectrum Analyzer	ESA-L1500A	H.P	US37360920	01-10-20
☒	Receiver	ESVS 10	R & S	835165/001	02-04-06
☒	Spectrum Analyzer	R3265A	Advantest	45060321	02-02-28
☒	Preamplifier	HP8447D	HP	2944A07626	02-01-10
☐	Preamplifier	HP 8347A	HP	2834A00544	01-05-23
☒	TriLog Antenna	VULB9160	Schwarz Beck	3082	02-05-08
☐	LogBicon	VULB9165	Schwarz Beck	2023	02-05-08
☐	Dipole Antenna	VHAP	Schwarz Beck	964	02-05-03
☐	Dipole Antenna	VHAP	Schwarz Beck	965	02-05-03
☐	Dipole Antenna	UHAP	Schwarz Beck	949	02-05-03
☐	Dipole Antenna	UHAP	Schwarz Beck	950	02-05-03
☐	Double Ridged Horn	3115	EMCO	9809-2334	01-09-20
☐	Turn-Table	DETT-03	Daeil EMC	-	N/A
☐	Antenna Master	DEAM-03	Daeil EMC	-	N/A
☐	Plotter	7440A	H.P	2725A 75722	N/A
☐	Chamber	DTEC01	DAETONG	-	N/A
☒	Impedance Matching Pad	6001.01.A	SUNNER	3252	01-09-22
☐	Thermo Hygrograph	3-3122	ISUZU	3312201	01-12-20
☐	BaroMeter	-	Regulus	-	-