ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test report file Number	**: E03DR-019**
Applicant	**: SASEM CO., LTD.**
Address	**: 2Fl., 1000-3 Hwa Jeong-Dong, Deok Yang-Gu, Go Yang-City, Gyong Gi-Do, 412-270, Korea**
Manufacturer	**: SASEM CO., LTD.**
Address	**: 2Fl., 1000-3 Hwa Jeong-Dong, Deok Yang-Gu, Go Yang-City, Gyong Gi-Do, 412-270, Korea**
Type of Equipment	**: USB HDTV Receiver**
FCC ID	**: PM2ONAIRUSBHDTV**
Model Name	**: OnAir USB HDTV**
Serial Number	**: N/A**
Total page of Report	**: 13 pages (including this page)**
Date of Incoming	**: November 21, 2003**
Date of Issuing	**: December 8, 2003**

SUMMARY

The equipment complies with the regulation; ***FCC CFR 47 PART 15 SUBPART B, Class B Computing Peripheral Device.***

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 / Chief Engineer
EMC Dept.
ONETECH Corp.

Reviewed by: Y. K. Kwon / Director
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ONETECH Corp.

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EMC Testing Dept : 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Si, Kyunggi-Do 464-860 Korea. (TEL: +82-31-765-8289, FAX: 82-31-766-2904)

CONTENTS

Page

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1. VERIFICATION OF COMPLIANCE

APPLICANT	: SASEM CO., LTD.
ADDRESS	: 2Fl., 1000-3 Hwa Jeong-Dong, Deok Yang-Gu, Go Yang-City, Gyong Gi-Do, 412-270, Korea
CONTACT PERSON	: Mr. Sang-Jin, Kim / Assistant Manager
TELEPHONE NO	: +82-31-9788-660(ext. 109)
FCC ID	: PM2ONAIRUSBHDTV
MODEL NO/NAME	: OnAir USB HDTV
SERIAL NUMBER	: N/A
DATE	: December 8, 2003

DEVICE TYPE	Peripheral Device for Class B Computing Device - Unintentional Radiator
E.U.T. DESCRIPTION	USB HDTV Receiver
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 CFR 47 PART 15 §15.101
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	Yes
FINAL TEST WAS CONDUCTED ON	3 METER OPEN AREA TEST SITE

-. This device has shown compliance with the conducted emissions limits in 15.107 adopted under FCC 02-107 (ET Docket 98-80). The device may be marketed after July 11, 2005 and is not affected by the 15.37(j) transition provisions.

-. 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 SASEM CO., LTD., Model OnAir USB HDTV (referred to as the EUT in this report) is a Digital & Analog TV USB HDTV Receiver. The Verification report for the TV Tuner in the EUT shall be issued with other test report numbers. 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)		20 MHZ, 24 MHz, 27 MHz, 32.11 MHz, 50 MHz	
HDTV TUNER	Type No. / MFR	FCV1236D / PHILIPS	
	Channel Frequency	VHF	2 ~ 13 CH
		UHF	14 ~ 69 CH
NUMBER OF LAYERS		Main Board: 4 Layers	
RATE OF POWER SUPPLY		AC 110 ~220 V, 50/60Hz, 0.5 A, DC 5 V, 2.0, 10 W	
NUMBER OF LAYERS		4 Layers	
INTERFACE		ANT Port(Digital TV + Analog TV), USB, S-Video, Video, Audio	

Model Differences

None

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2.2 Related Submittal(s) / Grant(s)

Original submittal only

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
OnAir USB HDTV	SASEM CO., LTD.	PM2ONAIRUSBHDTV	USB HDTV Receiver (EUT)	-
SP1006A	Seungbo elecom	N/A	AC/DC Adapter	EUT
HDTV996	Sencore	N/A	HDTV Transmitter	EUT
PT831K-143P6	Toshiba	DoC	Notebook PC	EUT
SCPH-103	Sony	DoC	Game Device	EUT
020-0470	Cardinal	GDE0196	Modem	Notebook PC
2225C	HP	DS16XU2225	Printer	Notebook PC

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 18, 2002. (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	SASEM CO., LTD.	OnAir USB HDTV	PM2ONAIRUSBHDTV

3.2 EUT exercise Software

-. The EUT was received video data from a Game device or a HDTV Signal Generator.
After connecting USB 2.0 Port on the EUT to the Notebook PC, and then received video data from the tuner or RCA Jack on the EUT was transferred to the Notebook PC. The PC continuously displays the image during the testing and other unused shielded antenna cable was terminated.

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
USB HDTV Receiver (EUT)	N	N	1.5(P), 1.2(D)
AC/DC Adapter(EUT)	N	N/A	1.5(P)
HDTV Transmitter	N	Y	1.5(P), 3.0(D)
Notebook PC	N	N	1.5(P), 1.0(D)
Game Device	N	N	1.5(P), 1.2(D)
Modem	N	Y	1.5(P), 1.2(D)
Printer	N	Y	1.5(P), 1.5(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
USB HDTV Receiver (EUT)	Y	The EUT	Y	BOTH END
AC/DC Adapter	Y	The EUT	N	-
HDTV Transmitter	N	N/A	Y	BOTH END
Notebook PC	N	Notebook PC END	Y	Notebook PC END
Game Device	N	N/A	Y	Notebook PC END
Modem	N	N/A	Y	BOTH END
Printer	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:

1. Added the ground copper in main board.
2. The R58 / 33 ohm was changed to B26 / HB-1H1608-221.

3.6 Configuration of Test System

Line Conducted Test: The power plug of the EUT was connected to LISN. All supporting equipments were connected to another LISN. Preliminary Power lines 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	
Receiving and transmitting Video data from Game device	
Receiving and transmitting Video data from HDTV signal generator	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	
Receiving and transmitting Video data from Game device	
Receiving and transmitting Video data from HDTV signal generator	X

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5. FINAL RESULT OF MEASURMENT

Per preliminary test, the following charging mode of operations were selected which shown the maximum emissions level.

5.1 Conducted Emissions Tests

Humidity Level : 42 % Temperature: 22 °C

Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.107(a)

Type of Test : Class B Computing Peripheral Device

Result : PASSED BY –6.93 dB at 4.32 MHz at Average Mode

The EUT : USB HDTV Receiver Date: December 5, 2003

Operating Condition : Receiving and transmitting Video data from HDTV signal generator

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

Frequency (MHz)	Line	Quasi-Peak (dBuV)			Margin (dB)	Average (dBuV)		Margin (dB)
		Emission level	Detect Mode	Limits		Emission level	Limits	
0.15	N	54.06	P	65.73	-11.67	18.23	55.73	-37.50
0.20	N	50.10	P	63.61	-13.51	35.79	53.61	-17.82
2.32	N	40.78	P	56.00	-15.22	30.64	46.00	-15.36
4.25	H	46.59	P	56.00	-9.41	39.18	46.00	-14.90
4.32	N	46.07	P	56.00	-9.93	39.07	46.00	-6.93
14.22	H	44.56	P	60.00	-15.44	34.62	50.00	-15.38
24.11	N	49.49	P	60.00	-10.51	32.63	50.00	-17.37

Line Conducted Emissions Tabulated Data

Remark : "H": Hot Line, "N": Neutral line, "P": Peak detect.

See Appendix I for an overview sweep performed with peak and average detector.

Tested by: Sung-Chel, You / Test Engineer

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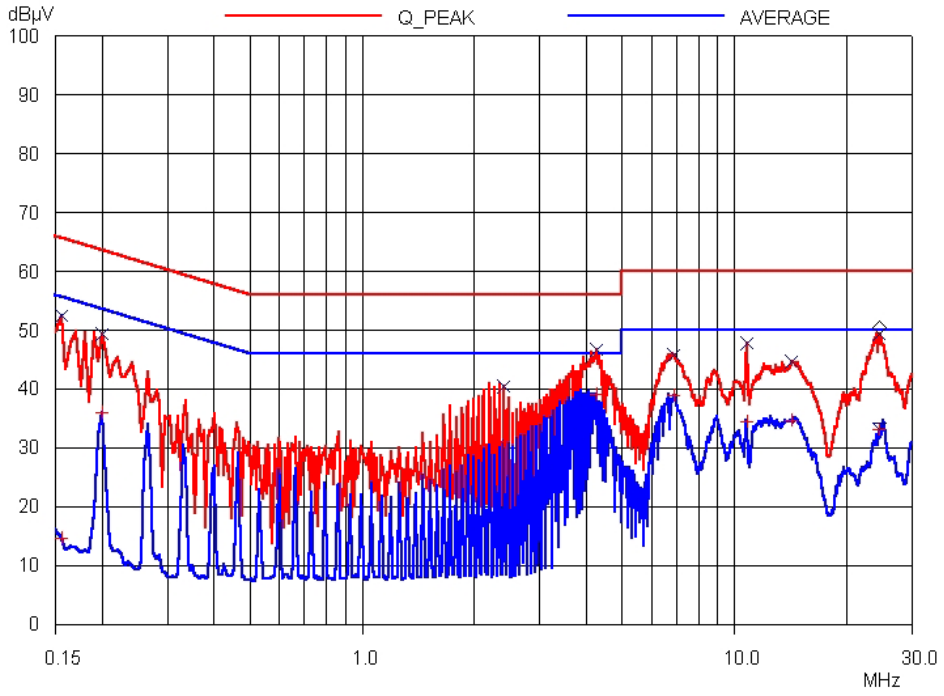
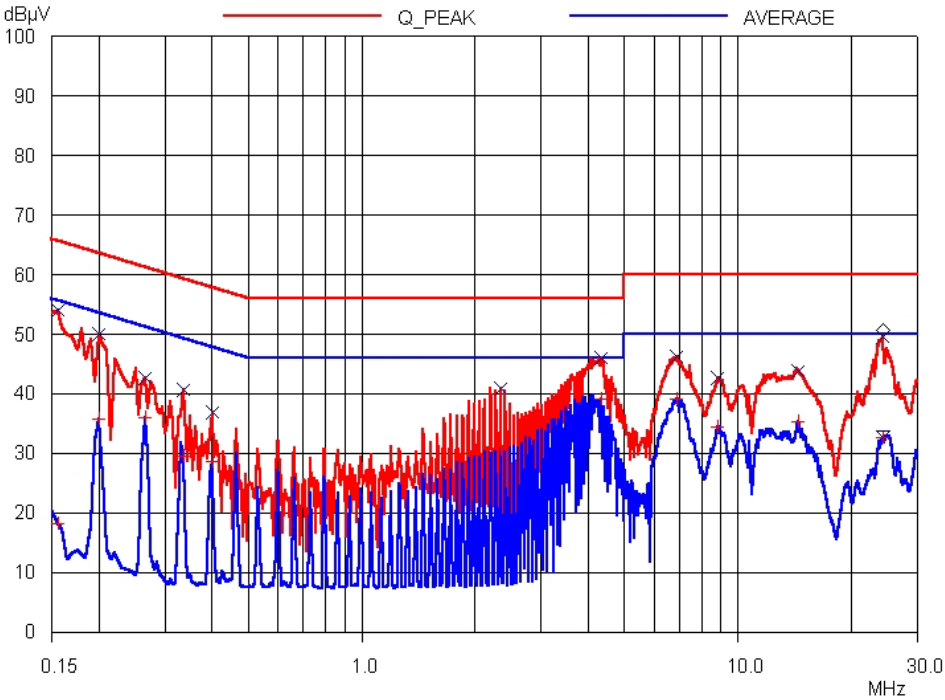


HOT LINE



NEUTRAL LINE

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5.2 Radiated Emission Tests

5.2.1 Measurement Data for Fundamental Frequencies

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

Humidity Level : 42% Temperature: 13°C

Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109(a)

Type of Test : Class B Computing Peripheral Device

Result : PASSED BY –4.03 dB at 84.00 MHz

The EUT : USB HDTV Receiver Date: December 4, 2003

Operating Condition : Receiving and transmitting Video data from HDTV signal generator

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz) up to 1000 MHz

Distance : 3 Meter

Radiated Emission		Ant	Correction Factors		Total	FCC	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
63.35	21.00	V	8.81	0.99	30.80	40.00	-9.20
84.00	27.58	V	7.31	1.08	35.97	40.00	-4.03
135.00	21.50	V	12.76	1.29	35.55	43.50	-7.95
140.78	17.50	V	12.62	1.31	31.43	43.50	-12.07
216.00	17.30	H	10.93	1.65	29.88	43.50	-13.62
270.00	26.30	H	12.74	1.88	40.92	46.00	-5.08
320.00	19.50	H	14.35	2.12	35.97	46.00	-10.03
404.90	24.20	H	15.32	2.44	41.96	46.00	-4.04
540.00	18.80	H	17.85	2.75	39.40	46.00	-6.60

Radiated Emissions Tabulated Data

Tested by: Sung-Chel, You / 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	OCT/03	12MONTH	■
2.	Test receiver	R/S	ESHS 10	834467/007	APR/03	12MONTH	■
3.	Spectrum analyzer	HP	HP8567A	3021A00773	JUN/03	12MONTH	■
4.	RF preselector	HP	HP85685A	3107A01268	JUN/03	12MONTH	■
5.	Quasi-Peak Adapter	HP	HP85650A	3107A01550	JUN/03	12MONTH	■
6.	Matching Pad	TME	ZT-130	9F 954	N/A	N/A	□
7.	Color Pattern Generator	Leader	408NPS	3307198	JUN/03	12MONTH	□
8.	Signal Generator	HP	8657A	3134A-03919	JUN/03	12MONTH	□
9.	Biconical antenna	Schwarzbeck	VHA9103	91031852	AUG/03	12MONTH	■
10.	Log Periodic antenna	Schwarzbeck	9108-A(494)	62281001	AUG/03	12MONTH	■
11.	LISN	EMCO	3825/2	9109-1867 9109-1869	JUL/03	12MONTH	■
12.	Position Controller	HD	HD100	100/788	N/A	N/A	■
13.	Turn Table	HD	DS412S	N/A	N/A	N/A	■
14.	Antenna Master	HD	HD240	N/A	N/A	N/A	■

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