

# ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test Report No. : E063R-008  
AGR No. : A05DA-019  
Applicant : ONAIRSOLUTION CO., LTD.  
Address : Paekche Bldg. 1F 494-97, Yonggang-Dong, Mapo-Gu, Seoul, 121-876, Korea  
Manufacturer : ONAIRSOLUTION CO., LTD.  
Address : Paekche Bldg. 1F 494-97, Yonggang-Dong, Mapo-Gu, Seoul, 121-876, Korea  
Type of Equipment : USB HDTV RECEIVER (Class B Computing Device Peripheral)  
FCC ID : TBPONAIRUSBHDTVGT  
Model Name : ONAIR USB HDTV GT  
Serial number : N/A  
Total page of Report : 12 pages (including this page)  
Date of Incoming : February 24, 2006  
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## SUMMARY

The equipment complies with the regulation; **PART 15 SUBPART B, Class B Computing Device Peripherals**.  
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

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EMC-002 (Rev.0)

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**1. VERIFICATION OF COMPLIANCE**

APPLICANT : ONAIRSOLUTION CO., LTD.  
ADDRESS : Paekche Bldg. 1F 494-97, Yonggang-Dong, Mapo-Gu, Seoul, 121-876, Korea  
CONTACT PERSON : Mr. Sang-jin, Kim / Assistant Manager  
TELEPHONE NO : +82-2-703-8881  
FCC ID : TBPONAIRUSBHDTVGT  
MODEL NO/NAME : ONAIR USB HDTV GT  
SERIAL NUMBER : N/A  
DATE : March 07, 2006

DEVICE TYPE	Peripheral Device for Class B Computing Device
E.U.T. DESCRIPTION	USB HDTV RECEIVER
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4: 2003
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	PART 15 SUBPART B, SECTION 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 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.

## 2. GENERAL INFORMATION

### 2.1 Product Description

The ONAIRSOLUTION CO., LTD., Model ONAIR USB HDTV GT (referred to as the EUT in this report) is a USB HDTV RECEIVER. The verification report for the TV tuner in the EUT shall be issued with another test report number. 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)	28.6363 MHz and 24 MHz
NUMBER OF LAYERS	4 Layers
ELECTRICAL RATING	DC 5V from to the Notebook (USB)
EXTERNAL TERMINALS	Video In, Audio In, USB In, Tuner In

### 2.2 Model Differences

The difference(s) compared to the EUT is as follows: None

### 2.3 Related Submittal(s) / Grant(s)

Original submittal only

### 2.4 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 GT	ONAIRSOLUTION CO., LTD.	N/A	USB HDTV RECEIVER (EUT)	Notebook PC
PPS10K-00K00E	Toshiba	DoC	Notebook PC	-
PA3378E-1ACA	Toshiba	N/A	AC/DC Adaptor	Notebook PC
SCPH-103	Sony	DoC	Game Device	EUT
LOVER	Notecase	N/A	Mouse	Notebook PC
LT 416	LEADER	N/A	Pattern Generator	EUT

## **2.5 Test Methodology**

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4: 2003. Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

## **2.6 Test Facility**

The open area test site and conducted measurement facilities are located on at 307-51 Daessangryung-Ri, Chowol-Eup, Kwangju-City, Kyunggi-Do, 464-080, Korea. Description details of test facilities were submitted to the Commission on April 04, 2003. (Registration Number: 340658)

### 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	ONAIRSOLUTION	GT-CX	N/A
Remote Control Board	N/A	N/A	N/A

#### 3.2 EUT exercise Software

- The EUT received video data from a game device or a pattern generator. After connecting the USB 2.0 Port on the EUT to the Notebook PC, the received video data was transferred to the Notebook PC.

#### 3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
USB HDTV RECEIVER	N/A	Y	1.5(D)
Notebook PC	N	-	1.5(P)
AC/DC Adapter	N	N	1.5(P), 1.0(D)
Game Device	N	N	1.5(P), 1.5(D)
Mouse	N/A	N	1.5(D)
Pattern Generator	N	N	1.5(P), 1.5(D)

\* The marked "(P)" means the Power Cable and "(D)" means Signal Cable.

#### 3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
USB HDTV RECEIVER	N	N/A	Y	BOTH END
Notebook PC	N	N/A	-	-
AC/DC Adapter	N	N/A	Y	Notebook PC END
Game Device	Y	Game Device END	Y	BOTH END
Mouse	N	N/A	Y	Notebook PC END
Pattern Generator	N	N/A	Y	BOTH END

### 3.5 Equipment Modifications

- The USB connector was connected to the GND.
- The ferrite bead (M/N: CL-2M2012-900J, Manufacture: Ceratech) was added on the usb(D+/D-) data line
- The ferrite bead(M/N: HB-1H2012-320/ Manufacture: Ceratech) was added on the FB17
- The rating of R27 was changed from 0 ohm to 18 ohm.
- The rating of R29 was changed from 75 ohm to 56 ohm.
- The rating of AC2 was changed from 22uF/10V to 470uF/10V.

### 3.6 Configuration of Test System

Line Conducted Test: The power of the EUT was supplied by Notebook PC and the adapter of Notebook PC 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: 2003 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: 2003 8.3.1.1 to determine the worse operating conditions. Final radiated emission test was conducted at 3 meters open area test site.

## 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)
Receiving and transmitting video data from game device	-
Receiving and transmitting video data from pattern 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)
Receiving and transmitting video data from game device	-
Receiving and transmitting video data from pattern generator	X

## 5. FINAL RESULT OF MEASUREMENT

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level

### 5.1 Conducted Emission Test

Humidity Level	: <u>39 %</u>	Temperature: <u>22 °C</u>
Limits apply to	: <u>FCC CFR 47, PART 15, SUBPART B, SECTION 15.107(a)</u>	
Type of Test	: <u>Class B</u>	
Result	: <u>PASSED BY -16.18dB at 15.85 MHz under peak mode</u>	

EUT	: USB HDTV RECEIVER	Date: March 02, 2006
Operating Condition	: The received video signal was transferred to notebook pc by EUT.	
Detector	: CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)	

Frequency (MHz)	Line	Peak (dBuV)		Margin (dB)
		Emission level	Q.P Limits	
0.15	H	48.67	66.00	-17.33
15.82	H	43.60	60.00	-16.40
15.85	N	43.82	60.00	-16.18
18.63	H	40.77	60.00	-19.23
18.89	N	40.20	60.00	-19.80
25.79	N	38.00	60.00	-22.00
Frequency (MHz)	Line	Average (dBuV)		Margin (dB)
		Emission level	Limits	
-				
-				

Line Conducted Emission Tabulated Data

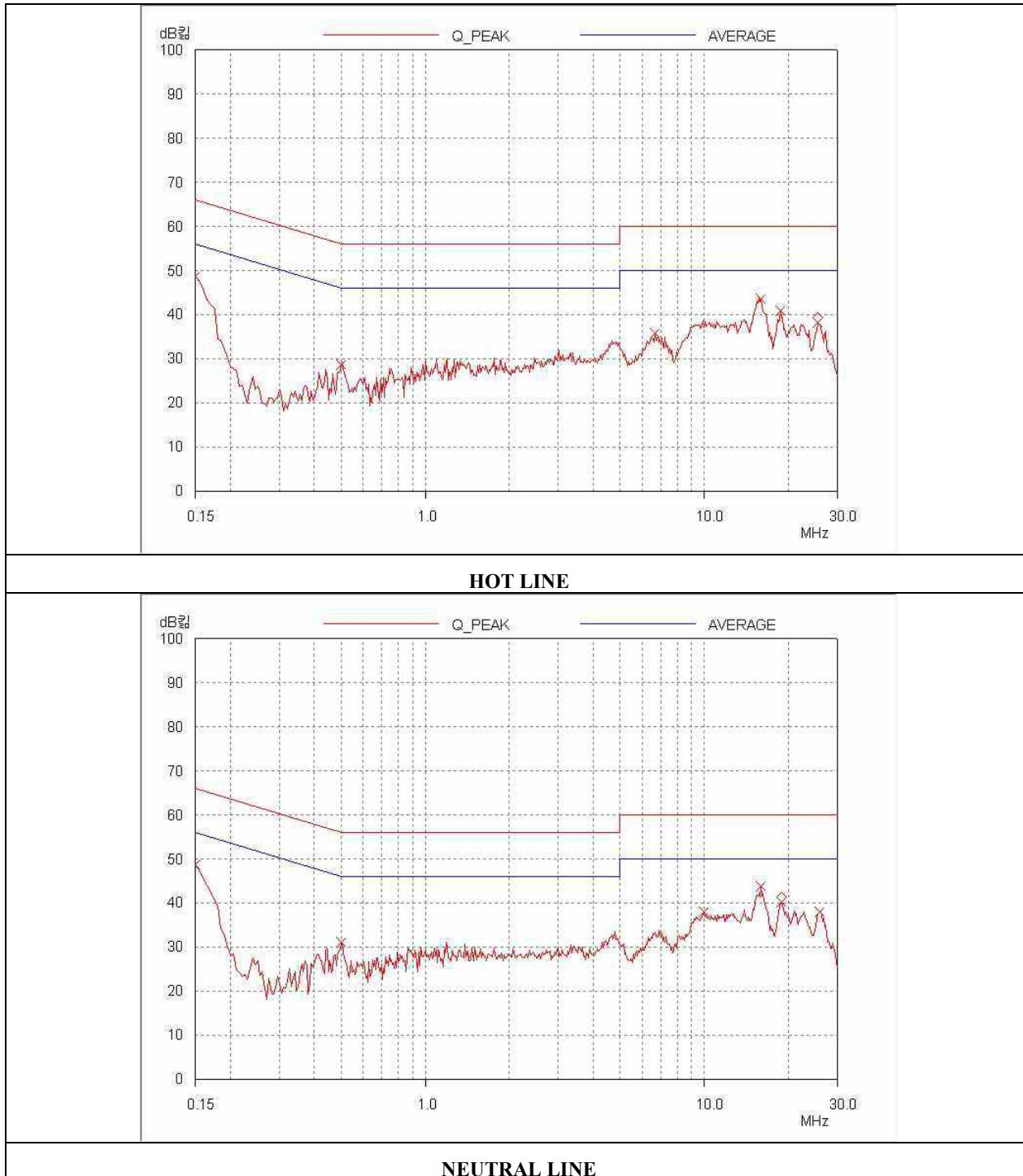
Remark : "H": Hot Line, "N": Neutral line.

Average mode was not measured, because peak measurement values were under the Average limit.

See next page for an overview sweep performed with peak detector.



Tested by: Sung-Chel, You / Test Engineer



## 5.2 Radiated Emission Test

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

Humidity Level	: <u>39 %</u>	Temperature: <u>22 °C</u>
Limits apply to	: <u>FCC CFR 47, PART 15, SUBPART B, SECTION 15.109(a)</u>	
Type of Test	: <u>CLASS B</u>	
Result	: <u>PASSED BY -6.79dB at 377.80MHz</u>	

EUT	: USB HDTV RECEIVER	Date: February
24, 2006		
Operating Condition	: The received video signal was transferred to notebook pc by EUT.	
Frequency range	: 30MHz – 1000MHz	
Detector	: CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)	
Distance	: 3 Meter	

Radiated Emission		Ant	Correction Factors		Total	FCC	
Freq. (MHz)	Amp. (dBuV)		Ant. (dBuV/m)	Cable (dB)		Amp. (dBuV/m)	Limit (dBuV/m)
69.73	22.00	V	5.62	1.50	29.12	40.00	-10.88
161.78	12.30	V	15.05	2.40	29.75	40.00	-10.25
215.80	13.00	H	16.62	2.93	32.55	40.00	-7.45
268.38	13.00	H	17.47	3.47	33.94	47.00	-13.06
323.60	15.00	V	15.35	3.99	34.34	47.00	-12.66
377.80	19.50	V	16.40	4.31	40.21	47.00	-6.79
429.20	13.50	H	17.59	4.46	35.55	47.00	-11.45



Tested by: Sung-Chel You / Test Engineer

## 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)

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= Corrected Reading (dBuV/meter)

- Specification Limit (dBuV/meter)

= dB Relative to Spec (+/- dB)

## 7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUe CAL	USE
1.	Test receiver	R/S	ESVS10	827864/005	DEC/05	12MONTH	■
2.	Test receiver	R/S	ESHS 10	834467/007	MAY/05	12MONTH	■
3.	Spectrum analyzer	HP	8566B	3407A08547	JUL/05	12MONTH	
4.	Spectrum analyzer	HP	85680B	3001A04955	APR/05	12MONTH	■
5.	RF preselector	HP	85685A	3107A01264	APR/05	12MONTH	■
6.	Quasi-Peak Adapter	HP	8574B	2811A01432	APR/05	12MONTH	■
7.	TRILOG Broadband Antenna	Schwarzbeck	VULB9163	VULB9163 166	APR/05	12MONTH	
8.	Biconical antenna	Schwarzbeck	VHA9103	91031852	FEB/06	12MONTH	■
9.	Log Periodic antenna	Schwarzbeck	9108-A(494)	62281001	FEB/06	12MONTH	■
10.	LISN	EMCO	3825/2	9109-1867	JUL/05	12MONTH	■
				9109-1869	JUL/05		
		Schwarzbeck	NSLK 8126	8126-404	AUG/05		■
11.	Position Controller	HD GmbH	HD100	N/A	N/A	N/A	■
12.	Turn Table	HD GmbH	DS420S	N/A	N/A	N/A	■
13.	Antenna Master	HD GmbH	MA240	N/A	N/A	N/A	■

Remark: Mark ■ mean used equipment.