



ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test Report No. : E059R-035

Applicant : Humax Co., Ltd.
Address : Humax Building, 212-1, Yubang-Dong, Yongin-City, Gyunggi-Do, 449-080, Korea

Manufacturer : Humax Co., Ltd.
Address : Humax Building, 212-1, Yubang-Dong, Yongin-City, Gyunggi-Do, 449-080, Korea

Type of Equipment : Satellite Radio Receiver (Portable Unit)
(Peripheral Device for Class B Computing Device)

FCC ID : O6ZS50-TK1

Model Name : S50-TK1

Serial number : N/A

Total page of Report : 11 pages (including this page)

Date of Incoming : August 23, 2005

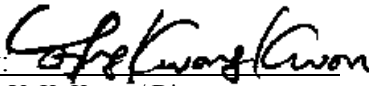
Date of Issuing : September 15, 2005

SUMMARY

The equipment complies with the requirements of **FCC CFR 47 PART 15 SUBPART B, Class B.**

This test report contains only the results 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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1. VERIFICATION OF COMPLIANCE

- APPLICANT : Humax Co., Ltd.
- ADDRESS : Humax Building, 212-1, Yubang-Dong, Yongin-City, Gyunggi-Do, 449-080, Korea
- CONTACT PERSON : Mr. Nam-Hoon, Baek / Engineer
- TELEPHONE NO : +82-31-600-6322
- FCC ID : O6ZS50-TK1
- MODEL NAME : S50-TK1
- BRAND NAME : SIRIUS SATELLITE RADIO
- SERIAL NUMBER : N/A
- DATE : September 15, 2005

EQUIPMENT CLASS	JBP - Peripheral Device for Class B Computing Device
E.U.T. DESCRIPTION	Satellite Radio Receiver (Portable Unit) - Unintentional Radiator
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)	FCC PART 15, SECTION 15.101
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
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 Humax Co., Ltd., Model S50-TK1 (referred to as the EUT in this report) is a Satellite Radio Receiver (Portable Unit) has function for MP3 player and PC peripheral device. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Metal
LIST OF EACH OSC. or CRY. FREQ.(FREQ.>=1MHz)	32.768 MHz and 24 MHz
NUMBER OF LAYERS	8 Layers
EXTERNAL CONNECTOR	USB, Audio out

2.2 Model Differences

- None

2.3 Related Submittal(s) / Grant(s)

- Original submittal only

2.4 Test System Details

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

Model	Manufacturer	FCC ID	Description	Connected to
S50-TK1	Humax Co., Ltd.	O6ZS50-TK1	Satellite Radio Receiver (Portable Unit) (EUT)	Notebook PC
S690	Samsung Elec..	DoC	Notebook PC	-
M-SAS51	Logitech	JNZ211167	Mouse	Notebook PC
C2145A	HP	B94C2145X	Printer	Notebook PC

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 426-1 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	Humax Co., Ltd.	XENA Portable Board	N/A

3.2 EUT exercise Software

- After connecting the EUT to a notebook PC, the EUT was operated with files up/downloading mode and MP3 playing mode during the test.

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
Satellite Radio Receiver (Portable Unit) (EUT)	N/A	Y	1.2(D)
Notebook PC	N	-	1.5(P)
Mouse	N/A	N	1.2(D)
Printer	N	Y	1.5(P), 1.2(D)

* The marked "(P)" means the Power Cable and "D" means the I/O Cable.

3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
Satellite Radio Receiver (Portable Unit) (EUT)	N	N/A	Y	BOTH END
Notebook PC	-	-	-	-
Mouse	N	N/A	Y	Notebook PC END
Printer	N	N/A	Y	BOTH END

3.5 Equipment Modifications

- None



3.6 Configuration of Test System

Line Conducted Test : The EUT was inserted to USB port of the PC and the power line of 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: 2001 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: 2001 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)
The files up/downloading mode	X
The MP3 playing mode	

4.2 Radiated Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
The files up/downloading mode	X
The MP3 playing mode	



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

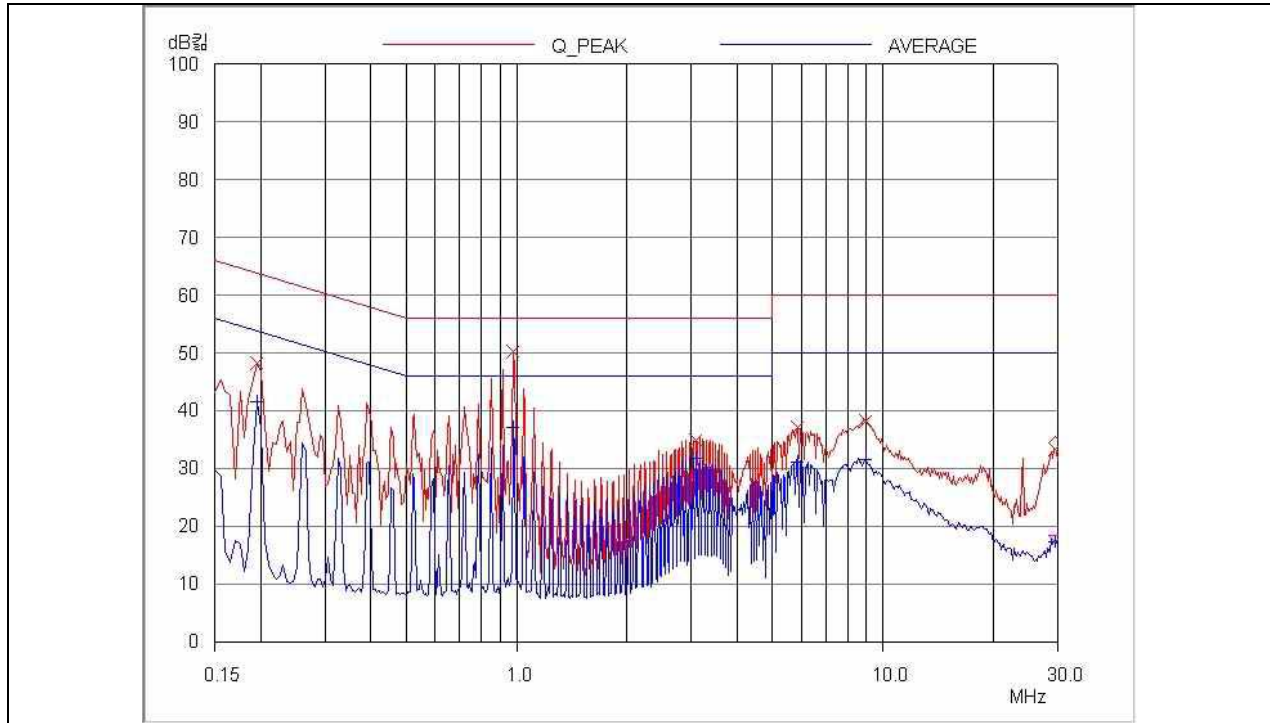
Humidity Level : 44 % Temperature : 21°C
 Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.107(a)
 Type of Test : CLASS B
 Result : PASSED BY -5.70 dB at 0.98 MHz

EUT : Satellite Radio Receiver (Portable Unit) Date: September 01, 2005
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)
 Operating Condition : The EUT was operated with files up/downloading mode

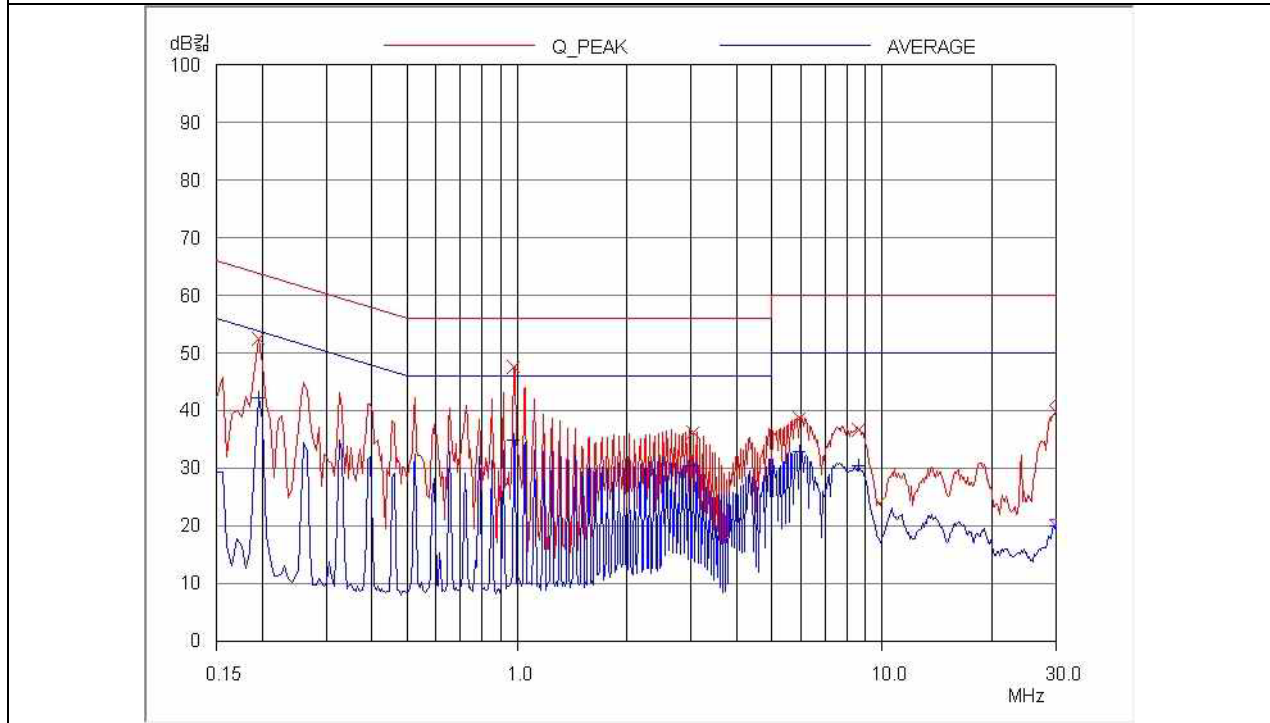
Frequency (MHz)	Line	Peak (dBuV)		Margin (dB)
		Emission level	Q.P Limits	
0.19	N	52.35	63.82	-11.47
0.98	H	50.30	56.00	-5.70
3.01	N	36.15	56.00	-19.85
3.07	H	34.88	56.00	-21.12
5.90	N	38.75	60.00	-21.25
29.94	N	39.77	60.00	-20.23
Frequency (MHz)	Line	Average (dBuV)		Margin (dB)
		Emission level	Limits	
0.19	N	42.12	53.82	-11.70
0.98	H	37.04	46.00	-8.96
3.01	N	30.45	46.00	-15.55
29.94	N	19.89	50.00	-30.11

Line Conducted Emissions Tabulated Data

Tested by: Sue-Young, Lee/ Test Engineer



HOT LINE



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 : 45 %
 Temperature: 24 °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109 (a)
 Type of Test : CLASS B
 Result : PASSED BY -4.50 dB at 400.17 MHz

EUT : Satellite Radio Receiver (Portable Unit) Date: August 29, 2005
 Frequency Range : 30MHz – 1000MHz
 Operating Condition : The EUT was operated with files up/downloading mode
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
 Distance : 3 Meter

Radiated Emission		Ant	Correction Factors		Total	FCC CLASS B	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dB/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
31.94	16.42	V	17.81	0.98	35.21	40.00	-4.79
177.29	19.15	V	15.88	2.69	37.72	43.52	-5.80
360.44	19.21	H	14.57	4.24	38.02	46.02	-8.00
400.17	21.66	H	15.46	4.40	41.52	46.02	-4.50
457.34	16.34	H	16.83	4.65	37.82	46.02	-8.20
935.06	7.28	H	22.67	7.87	37.82	46.02	-8.20

Radiated Emissions Tabulated Data

Tested by: Sue-Young, Lee/ 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)

= 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/04	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	8568B	3109A05456	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	EMCO	3110	9003-1121	FEB/05	12MONTH	
		Schwarzbeck	VHA9103	91031852	JAN/05		■
9.	Log Periodic antenna	EMCO	3146	9001-2614	FEB/05	12MONTH	
		Schwarzbeck	9108-A(494)	62281001	FEB/05		■
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	■