



# ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

**Test report file number** : E032R-019

**Applicant** : SOUNDGRAPH, INC.  
**Address** : 501 HIT Bldg., HanYangUniv., 17 Haengdang-Dong, Sungdong-Ku, Seoul, 133-791, Korea

**Manufacturer** : SOUNDGRAPH, INC.  
**Address** : 501 HIT Bldg., HanYangUniv., 17 Haengdang-Dong, Sungdong-Ku, Seoul, 133-791, Korea

**Type of Equipment** : Universal IR Remote Control Device (Peripheral Device for Class B Computing Device)

**FCC ID** : PMTSG03IMON

**Model Name** : iMON

**Serial number** : N/A

**Total page of Report** : 13 pages (including this page)

**Date of Incoming** : December 2, 2002

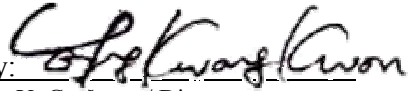
**Date of Issuing** : February 11, 2003

## SUMMARY

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

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.

Reviewed by:   
G. W. Lee / Chief Engineer  
EMC Dept.  
ONETECH Corp.

Approved by:   
Y. G. Gwon / Director  
EMC Dept.  
ONETECH Corp.



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## 1. VERIFICATION OF COMPLIANCE

APPLICANT : SOUNDGRAPH, INC.  
 ADDRESS : 501 HIT Bldg., HanYangUniv., 17 Haengdang-Dong, Sungdong-Ku, Seoul, 133-791, Korea  
 CONTACT PERSON : Mr. Randy Ahn / Sales Manager  
 TELEPHONE NO : +82-2-2298-2375  
 FCC ID : PMTSG03IMON  
 MODEL NO/NAME : iMON  
 SERIAL NUMBER : N/A  
 DATE : February 11, 2003

DEVICE TYPE	Peripheral Device for Class B Computing Device - Unintentional Radiator
E.U.T. DESCRIPTION	Universal IR Remote Control Device
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, Section 15.101
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.



## 2. GENERAL INFORMATION

### 2.1 Product Description

The SOUNDGRAPH, INC., Model iMON (referred to as the EUT in this report) is a Universal IR Remote Control Device which transforms the PC into the true AV system such as TV, VTR, DVDP, or Audio System. With a signal remote controller, the EUT allows the full control over all applications. 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)	6 MHz on the main board
NUMBER OF LAYERS	2 Layers
ELECTRICAL RATING	DC 5V from USB Port.
EXTERNAL TERMINALS	USB Port

#### Model Differences:

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

### 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
iMON	SOUNDGRAPH, INC.	PMTSG03IMON	Remote Controller for PC (EUT)	NOTEBOOK PC
S690	SAMSUNG ELECTRONICS	DOC	NOTEBOOK PC	-
AD-6019(V)	SAMSUNG ELECTRONICS	N/A	ADAPTER	NOTEBOOK PC
X06-08477	MICROSOFT CORP.	DOC	MOUSE	NOTEBOOK PC
2225C	HP	DSI6XU2225	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)



### 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	SOUNDGRAPH, INC.	N/A	N/A

#### 3.2 EUT exercise Software

- The EUT connected to a notebook PC via USB port. And then the EUT was standby mode for receiving IR signal during the test.

#### 3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (M)
Remote Controller for PC (EUT)	N/A	Y	1.2(D)
NOTEBOOK PC	N	-	1.5 (P), -
ADAPTER	N	N (DC OUT)	1.3 (P), 1.0 (D)
MOUSE	N/A	N	1.3 (D)
PRINTER	N	Y	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
Remote Controller for PC (EUT)	N	N/A	Y	PC END
NOTEBOOK PC	N	N/A	-	-
ADAPTER	Y	PC END	Y	PC END
MOUSE	N	N/A	Y	PC 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:

“There was no Modified items during EMI test”

### 3.6 Configuration of Test System

**Line Conducted Test:** The EUT was connected to notebook PC via USB port, and the power line 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 C63.4/1992 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.



**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 for receiving IR signal	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 for receiving IR signal	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 : 49 % Temperature : 20 °C  
 Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.107 (a)  
 Type of Test : CLASS B  
 Result : PASSED BY -14.12 dB at 0.19 MHz

EUT : Remote Controller for PC Date: January 27, 2003  
 Operating Condition : Standby mode for receiving IR signal  
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

Frequency (MHz)	Line	Peak (dBuV)		Margin (dB)
		Emission level	Q.P Limits	
0.19	H	49.70	63.82	-14.12
0.39	N	43.52	57.96	-14.44
0.52	N	41.51	56.00	-14.49
0.65	N	39.10	56.00	-16.90
4.79	H	37.55	56.00	-18.45
4.86	N	38.14	56.00	-17.86
Frequency (MHz)	Line	Average (dBuV)		Margin (dB)
		Emission level	Limits	
-				
-				

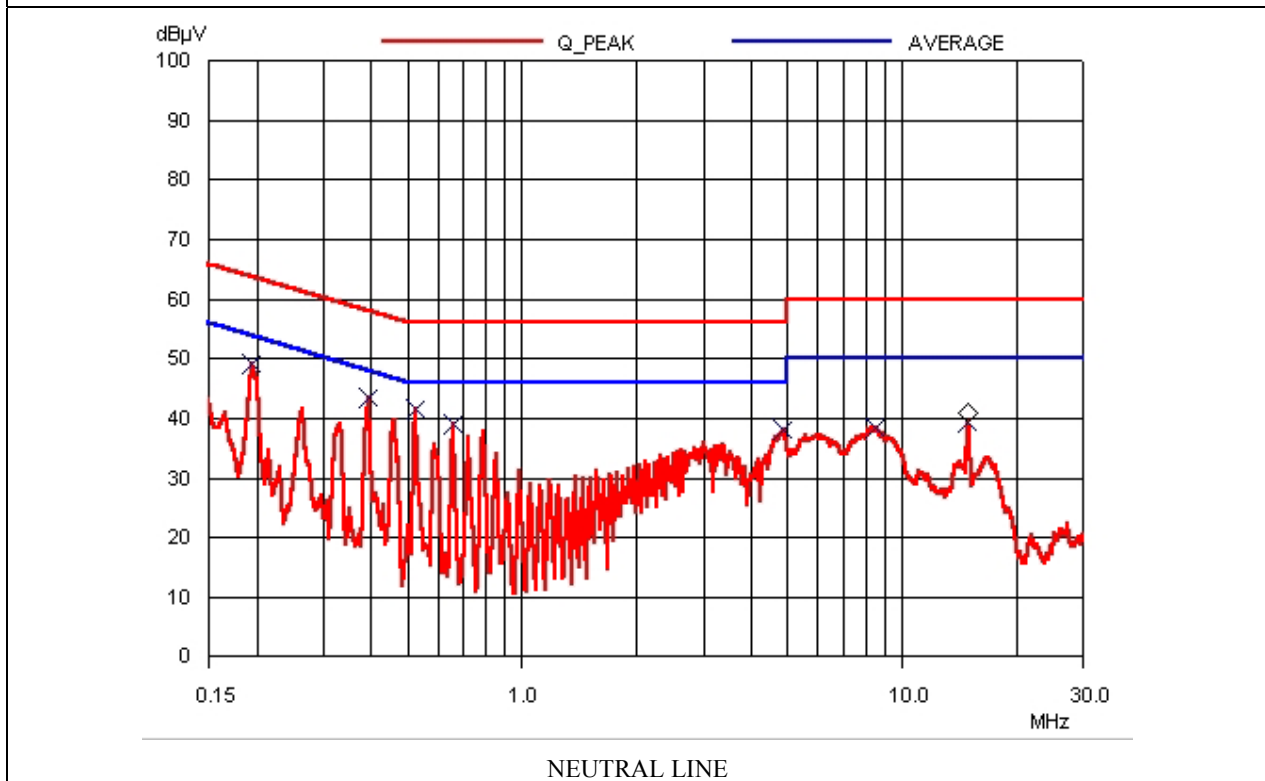
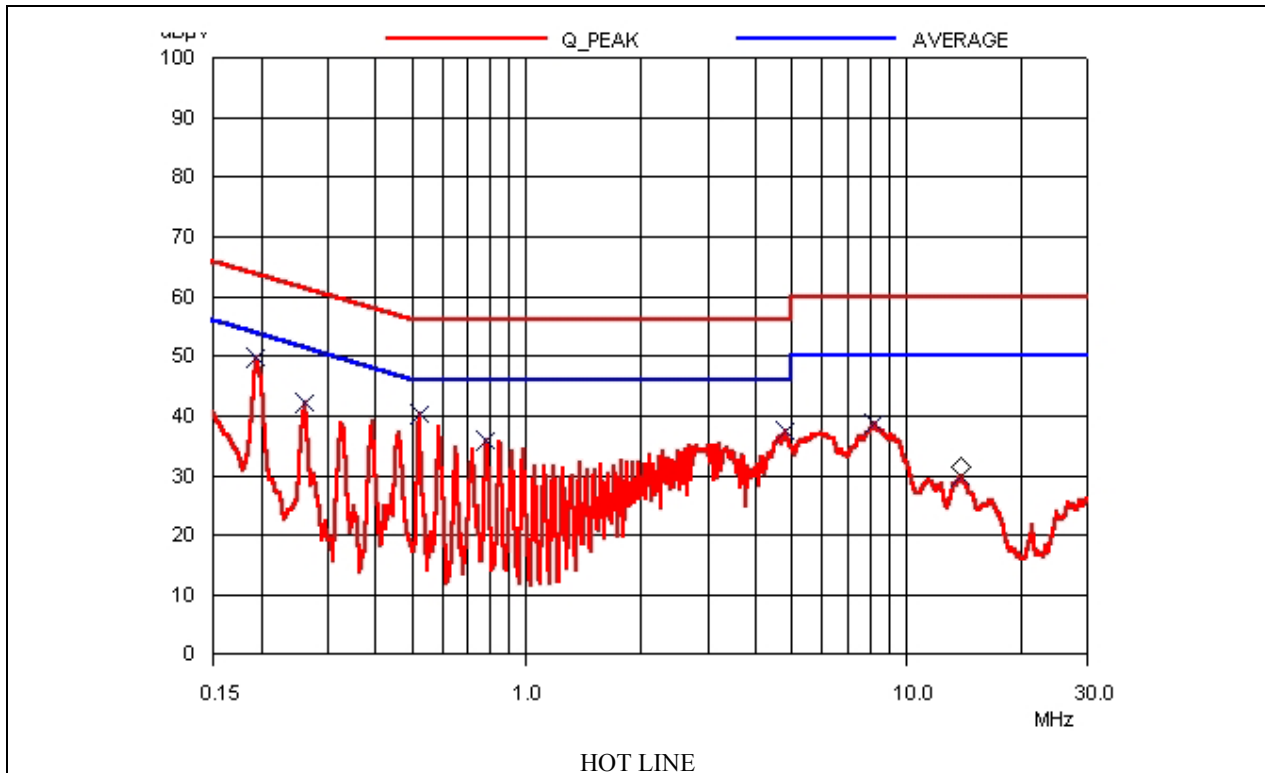
Line Conducted Emission Tabulated Data

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

Average data was not measured, because Peak values were under the Average limit.

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

**Tested by: Young Min, Choi / Project 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 : 49 % Temperature : 21 °C  
 Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109 (a)  
 Type of Test : CLASS B  
 Result : PASSED BY -3.68 dB at 61.56 MHz

EUT : Remote Controller for PC Date: December 05, 2002  
 Operating Condition : Standby mode for receiving IR signal  
 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. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
61.56	26.20	V	9.13	0.99	36.32	40.00	-3.68
133.04	20.60	V	12.85	1.28	34.73	43.50	-8.77
161.09	17.40	V	15.66	1.39	34.45	43.50	-9.05
199.90	12.90	V	16.89	1.57	31.36	43.50	-12.14
258.19	16.30	V	12.35	1.85	30.50	46.00	-15.50
451.75	19.50	V	16.35	2.55	38.40	46.00	-7.60
644.76	9.20	V	19.83	3.06	32.09	46.00	-13.91
711.89	14.00	V	20.81	3.38	38.19	46.00	-7.81

Radiated Emission Tabulated Data

Tested by: Young Min, Choi / Project 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	ESVS 10	827864/005	OCT/02	12MONTH	■
2.	Test receiver	R/S	ESHS 10	834467/007	APR/02	12MONTH	■
3.	Spectrum analyzer	HP	8568B	3109A05456	APR/02	12MONTH	■
4.	RF preselector	HP	85685A	3107A01264	APR/02	12MONTH	■
5.	Quasi-Peak Adapter	HP	85650A	3107A01542	APR/02	12MONTH	■
6.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	APR/02	12MONTH	■
7.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	APR/02	12MONTH	■
8.	LISN	EMCO	3825/2	9109-1867 9109-1869	AUG/02	12MONTH	■
9.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	■
10.	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	■
11.	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	■