

RADIO PERFORMANCE TEST REPORT

Test Report No. : OT-203-RWD-022

AGR No. : A191A-340

Applicant : SoundGraph, Inc

Address : B1 Floor, 30, Teheran-ro 13-gil, Gangnam-gu, Seoul, Korea

Manufacturer : SoundGraph, Inc

Address : B1 Floor, 30, Teheran-ro 13-gil, Gangnam-gu, Seoul, Korea

Type of Equipment : Digital Information Display

FCC ID. : 2AVTC-FRAMER

Model Name : Frame R

Multiple Model Name : N/A

Serial number : N/A

Total page of Report : 7 pages (including this page)

Date of Incoming : February 22, 2019

Date of issue : March 09, 2020

SUMMARY

The equipment complies with the regulation; **FCC PART 15 SUBPART C Section 15.247**

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

Reviewed by:



Ha-Ram Lee / Manager
ONETECH Corp.

Approved by:



Jae-Ho Lee / General Manager
ONETECH Corp.

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REVISION HISTORY

Issued Report No.	Issued Date	Revisions	Effect Section
OT-203-RWD-022	March 09, 2020	Initial Issue	All

1. VERIFICATION OF COMPLIANCE

Applicant : SoundGraph, Inc

Address : B1 Floor, 30, Teheran-ro 13-gil, Gangnam-gu, Seoul, Korea

Contact Person : Dillan Shim / Specialist

Telephone No. : +82-70-7018-5373

FCC ID : 2AVTC-FRAMER

Model Name : Frame R

Brand Name : N/A

Serial Number : N/A

Date : March 09, 2020

EQUIPMENT CLASS	DTS – DIGITAL TRNSMISSION SYSTEM
E.U.T. DESCRIPTION	Digital Information Display
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2013
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SUBPART C Section 15.247
Modifications on the Equipment to Achieve Compliance	None
Final Test was Conducted On	3 m, Semi Anechoic Chamber

-. 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 Frame R (referred to as the EUT in this report) is a Digital Information Display. Product specification information described herein was obtained from product data sheet or user's manual.

Device Type	Digital Information Display	
Operating Frequency	2 412 MHz ~ 2 462 MHz (802.11b/g/n(HT20))	
RF Output Power	802.11b	14.96 dBm
	802.11g	13.37 dBm
	802.11n(HT20)	12.53 dBm
Number of Channel	11 Channels	
Modulation Type	DSSS Modulation(DBPSK/DQPSK/CCK)	
	OFDM Modulation(BPSK/QPSK/16QAM/64QAM)	
Antenna Type	Dipole Antenna	
Antenna Gain	4 dBi	
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	12 MHz, 24 MHz, 25 MHz, 26 MHz	
Rated Supply Voltage	DC 12.0 V	

2.2 Alternative type(s)/model(s); also covered by this test report.

-. None

3. EUT MODIFICATIONS

-. None

4. MAXIMUM PERMISSIBLE EXPOSURE

4.1 RF Exposure Calculation

According to the FCC rule §1.1310, the limit for General Population/Uncontrolled exposure is 1 mW/cm² for the device operating 1 500 ~ 100 000 MHz.

4.2 EUT Description

Kind of EUT	Digital Information Display	
Operating Frequency Band	☐ Wireless Microphone: 494.000 MHz ~ 501.000 MHz and 498.200 MHz ~ 505.200 MHz ☒ WLAN: 2 412 MHz ~ 2 462 MHz ☐ WLAN: 2 422 MHz ~ 2 452 MHz ☐ WLAN: 5 180 MHz ~ 5 240 MHz ☐ WLAN: 5 745 MHz ~ 5 825 MHz ☐ Bluetooth: 2 402 MHz ~ 2 480 MHz ☐ Bluetooth BLE: 2 402 MHz ~ 2 480 MHz ☐ NFC : 13.56 MHz	
MAX. RF OUTPUT POWER	802.11b	14.96 dBm
	802.11g	13.37 dBm
	802.11n(HT20)	12.53 dBm
Antenna Gain	4 dBi	
Exposure Evaluation Applied	☒ MPE ☐ SAR ☐ SAR Test Exclusion Evaluation	

4.3 Calculated MPE Safe Distance

According to above equation, the following result was obtained.

Operating Freq. Band	Operating Mode	Target Power W/tolerance	Max tune up power		Antenna Gain		Safe Distance (cm)	Power Density (mW/cm ²) @ 20 cm Separation	Limit (mW/cm ²)
		(dBm)	(dBm)	(mW)	Log	Linear			
2 412 ~ 2 462	802.11b	14.96 ± 0.5	15.46	35.16	4.00	2.512	2.65	0.017 6	1.00
2 412 ~ 2 462	802.11g	13.37 ± 0.5	13.87	24.38	4.00	2.512	2.21	0.012 2	1.00
2 412 ~ 2 462	802.11n(HT20)	12.53 ± 0.5	13.03	20.9	4.00	2.512	2.00	0.010 0	1.00

According to above table, for 2 400 ~ 2 483.5 MHz Band, safe distance,

$$D = 0.282 * \sqrt{(35.16 * 2.512)/1.00} = 2.65 \text{ cm}$$

For getting power density at 20 cm separation in above table, following formula was used.

$$S = P * G / (4\pi * R^2) = 35.16 * 2.512 / (4 * 3.14 * 20^2) = 0.017 6$$

Where:

S = Power Density,

P = Power input to the external antenna (Output power from the EUT antenna port (dBm) – cable loss (dB)),

G = Gain of Transmit Antenna (linear gain), R = Distance from Transmitting Antenna



Tested by: Sieon Lee / Assistant Manager