

# ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR LOW-POWER, NON-LICENSED TRANSMITTER

**Test Report No.** : OT-215-RWD-003

**Reception No.** : 2104001519

**Applicant** : Remote Solution Co., Ltd.

**Address** : 92, Chogokri, Nammyun, Kimchon City, Kyungbuk, 740-871, South Korea

**Manufacturer** : Remote Solution Co., Ltd.

**Address** : 71, Gunpocheomdansaneop 2-roGunpo-si, Gyeonggi-do, 15880, Korea

**Type of Equipment** : Remote Controller

**FCC ID.** : TX4-RD49

**Model Name** : RD49B00

**Multiple Model Name** : RD49A00

**Serial number** : N/A

**Total page of Report** : 8 pages (including this page)

**Date of Incoming** : April 26, 2021

**Date of issue** : May 07, 2021

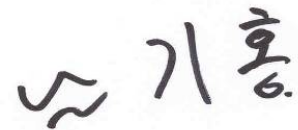
## SUMMARY

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.





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**Revision History**

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-215-RWD-003	May 07, 2021	Initial Release	All

## 1. VERIFICATION OF COMPLIANCE

Applicant : Remote Solution Co., Ltd.  
 Address : 92, Chogokri, Nammyun, Kimchon City, Kyungbuk, 740-871, South Korea  
 Contact Person : Byung-Cheol, Kim / Manager  
 Telephone No. : +82-54-420-4517  
 FCC ID : TX4-RD49  
 Model Name : RD49B00  
 Brand Name : Tivo Brook  
 Serial Number : N/A  
 Date : May 07, 2021

EQUIPMENT CLASS	DTS – DIGITAL TRNSMISSION SYSTEM
E.U.T. DESCRIPTION	Remote Controller
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2020
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 KDB 558074 D01 15.247 Meas Guidance v05r02
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 Remote Solution Co., Ltd., Model RD49B00 (referred to as the EUT in this report) is a Remote Controller. The product specification described herein was obtained from product data sheet or user’s manual.

DEVICE TYPE	Remote Controller
TEMPERATURE RANGE	0 °C ~ 40 °C
OPERATING FREQUENCY	2 402 MHz ~ 2 480 MHz
MODULATION TYPE	GFSK (Bluetooth LE)
NUMBER OF CHANNEL	40 Channel
RF OUTPUT POWER	0.36 dBm
ANTENNA TYPE	PCB Antenna
ANTENNA GAIN	0.39 dBi
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	24 MHz

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

-. The following lists consist of the added model and their differences.

Model Name	Differences	Tested
RD49B00	Basic Model. - RF: 4.2 / Profile : HOGP - Carbon Keypad - Dual IR LEDs, Indicate LEDs - Voice Transmission - Backlight Leds with Accelerometer, Ambient Light Sensor - Buzzer - IR Learning Circuit	<input checked="" type="checkbox"/>
RD49A00	This model and the basic model have different components. - RF: 4.2 / Profile : HOGP - Carbon Keypad - Dual IR LEDs, Indicate LEDs - Voice Transmission	<input type="checkbox"/>

Note: 1. Applicant consigns only basic model to test. Therefore this test report just guarantees the units, which have been tested.

2. The Applicant/manufacturer is responsible for the compliance of all variants.

### 3. EUT MODIFICATIONS

-. None

## 4. MAXIMUM PERMISSIBLE EXPOSURE

### 4.1 RF Exposure Calculation

According to the FCC rule 1.1310 table 1B, the limit for the maximum permissible RF exposure for an uncontrolled environment are  $f/1500$  mW/cm<sup>2</sup> for the frequency range between 300 MHz and 1 500 MHz and 1.0 mW/cm<sup>2</sup> for the frequency range between 1 500 MHz and 100 000 MHz.

The electric field generated for a 1 mW/cm<sup>2</sup> exposure is calculated as follows:

$$E = \sqrt{(30 * P * G) / d}, \text{ and } S = E^2 / Z = E^2 / 377, \text{ because } 1 \text{ mW/cm}^2 = 10 \text{ W/m}^2$$

Where

S = Power density in mW/cm<sup>2</sup>, Z = Impedance of free space, 377 Ω

E = Electric field strength in V/m, G = Numeric antenna gain, and d = distance in meter

Combining equations and rearranging the terms to express the distance as a function of the remaining variable

$$d = \sqrt{(30 * P * G) / (377 * 10 S)}$$

Changing to units of mW and cm, using  $P \text{ (mW)} = P \text{ (W)} / 1 000$ ,  $d \text{ (cm)} = 0.01 * d \text{ (m)}$

$$d = 0.282 * \sqrt{(P * G) / S}$$

Where

d = distance in cm, P = Power in mW, G = Numeric antenna gain, and S = Power density in mW/cm<sup>2</sup>

### 4.2 EUT Description

Kind of EUT	Remote Controller
Device Category	<input checked="" type="checkbox"/> Portable (< 20 cm separation) <input type="checkbox"/> Mobile (> 20 cm separation) <input type="checkbox"/> Others
Exposure Evaluation Applied	<input checked="" type="checkbox"/> MPE <input type="checkbox"/> SAR <input type="checkbox"/> N/A

### 4.3 Calculated MPE Safe Distance

According to the procedure, KDB 447498 D01, the standalone SAR test exclusion threshold is

$$[(\text{Max. Power of channel, including tune-up tolerance, mW}) / (\text{Min. test separation distance, mm})] \times [\sqrt{f(\text{GHz})}] < 3$$

$$= (1.12/5) \times \sqrt{2.402} = 0.35$$

Mode	Frequency (MHz)	Target Power W/tolerance (dBm)	Max tune up power (dBm)	Max tune up power (mW)	Separation distance (mm)	RF exposure
Bluetooth LE	2 402.00	-0.5 ± 1.0	0.50	1.12	5.00	0.35

Conclusion:

SAR evaluation for general population exposure conditions by measurement or numerical simulation is not required.