

SAR Evaluation Report

Applicant:	Klipsch L.L.C.
Address of Applicant:	3502 Woodview Trace, Suite 200, Indianapolis, IN 46268, United States.
Manufacturer:	Klipsch L.L.C.
Address of Manufacturer:	3502 Woodview Trace, Suite 200, Indianapolis, IN 46268, United States.
Product name:	Powered Floorstanding Speaker
Model:	R-28PF, R-26PF
Rating(s):	100-120V~ / 220-240V~, 50/60Hz, 260W
Trademark:	Klipsch
Standards:	47 CFR Part 1.1307 (2013) 47 CFR Part 2.1093 (2013) KDB447498D01 General RF Exposure Guidance v06
FCC ID:	STI-R28PFR26PF
Date of Receipt:	2017-07-03
Date of Test:	2017-07-03~2017-07-11
Date of Issue:	2017-07-11
Test Result	Pass*

* In the configuration tested, the test item complied with the standards specified above.

Authorized for issue by:

Test by:

Jul.11, 2017 Jummy Qiu *Jummy qiu*
Project Engineer

Reviewed by:

Jul.11, 2017 Pauler Li *Pauler Li*
Project Manager

Date Name/Position Signature

Date Name/Position Signature

Possible test case verdicts:

test case does not apply to the test object ...: N/A

test object does meet the requirement: P (Pass)

test object does not meet the requirement ...: F (Fail)

Testing Laboratory information:

Testing Laboratory Name: I-Test Laboratory

Address.....: 1-2 floor, South Block, Building A2 , No 3 Keyan Lu,
Science City, Guangzhou, Guangdong Province, P.R. China

Testing location : Same as above

Tel : 0086-20-32209330

Fax : 0086-20-62824387

E-mail : itl@i-testlab.com

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report would be invalid test report without all the signatures of testing technician and approver.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

General product information:

The models R-26PF and R-28PF are identical to each other except for the model name and the size. R-26PF is the small one, R-28PF is the tall one.

All tests were performed on the model R-28PF as representative.

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2 General Information

2.1 Client Information

Applicant: Klipsch L.L.C.
Address of Applicant: 3502 Woodview Trace, Suite 200, Indianapolis, IN 46268, United States.

2.2 General Description of E.U.T.

Name: Powered Floorstanding Speaker
Model No.: R-28PF
Trade Mark: Klipsch
Operating Frequency: Bluetooth: 2402 MHz to 2480 MHz
Channels: Bluetooth: 79 channels with 1MHz step for Classic mode,
40 channels with 1MHz step for BLE mode
Bluetooth Version: 4.2
Modulation Technique: Frequency Hopping Spread Spectrum (FHSS)
Type of Modulation: Bluetooth: GFSK, ($\pi/4$) DQPSK, 8DPSK
Antenna Reference Function: Bluetooth: PCB antennas with 0 dBi peak gain
Powered Floorstanding Speaker

2.3 Details of E.U.T.

EUT Power Supply: AC Power, Class II

Rated power: 100-120V~ / 220-240V~, 50/60Hz, 260W

Test mode for Bluetooth: For Classic mode:

The program used to control the EUT for staying in continuous transmitting and receiving mode is programmed. Channel lowest (2402MHz), middle (2441MHz) and highest (2480MHz) are chosen for Bluetooth full testing. Normal mode: the Bluetooth has been tested on the Modulation of GFSK; EDR mode: the Bluetooth has been tested on the Modulation of ($\pi/4$)DQPSK and 8DPSK, compliance test and record the worst case on ($\pi/4$)DQPSK and 8DPS.

For BLE mode:

The program used to control the EUT for staying in continuous transmitting and receiving mode is programmed. Channel lowest (2402MHz), middle (2440MHz) and highest (2480MHz) are chosen for full testing.

Power cord: Direct plug

2.4 Description of Support Units

The EUT has been tested as an independent unit for fixed frequency by testing lab.

2.5 Test Location

All tests were performed at:

I-Test Laboratory

1-2 floor, South Block, Building A2 , No 3 Keyan Lu, Science City, Guangzhou, Guangdong Province, P.R. China

0086-20-32209330

itl@i-testlab.com

No tests were sub-contracted.

2.6 Deviation from Standards

Biconical and log periodic antennas were used instead of dipole antennas.

2.7 Abnormalities from Standard Conditions

None.

2.8 Other Information Requested by the Customer

None.

2.9 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS(Lab code:L4957)**
- **FCC (Registration No.:935596)**
- **IC (Registration NO.:8368A)**

3 SAR Evaluation

3.1 RF Exposure Compliance Requirement

3.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

3.1.2 Limits

1. The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{\text{min. test separation distance, mm}} \right] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$$
 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,

So,

$$\text{Numeric Threshold} = \frac{\text{max. power of channel}}{\text{Min Test separation Distance}} \times [\sqrt{f(\text{GHz})}]$$

$$\text{max. power of channel} = \text{Numeric Threshold} \times \text{Min Test separation Distance} / [\sqrt{f(\text{GHz})}]$$

Where,

f(GHz) is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation

The result is rounded to one decimal place for comparison

2. For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$$\{[\text{Power allowed at numeric threshold for 50 mm in step 1}]\} + \{[(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\} \text{ mW, for } > 1500 \text{ MHz and } \leq 6 \text{ GHz}$$

3.1.3 EUT RF Exposure

For 4.2 (classic mode):

The Max Conducted peak Output Power is 4.49dBm in highest channel (2.480 GHz);

The best case gain of the antenna is 0 dBi

EIRP=4.49dBm + 0dBi =4.49dBm

4.49dBm logarithmic terms convert to numeric result is nearly 2.8mW

EIRP= 2.8 mW

According to the formula, calculate the EIRP test result:

{[Power allowed at numeric threshold for 50 mm]} + [(test separation distance – 50 mm)·10]}

SAR Exclusion Threshold = $(3.0 \times 50) / \sqrt{2.480 + [(200-50) \times 10]} = 1595.25\text{mW}$

For 4.2 (ble mode):

The Max Conducted peak Output Power is 5.37dBm in highest channel (2.480 GHz);

The best case gain of the antenna is 0dBi

EIRP=5.37dBm + 0dBi =5.37dBm

5.37dBm logarithmic terms convert to numeric result is nearly 3.4mW

EIRP=3.4mW

According to the formula, calculate the EIRP test result:

{[Power allowed at numeric threshold for 50 mm]} + [(test separation distance – 50 mm)·10]}

SAR Exclusion Threshold = $(3.0 \times 50) / \sqrt{2.440 + [(200-50) \times 10]} = 1595.25\text{mW}$

So the SAR report is not required.