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RF Exposure Evaluation Report

Report No. : CQASZ20210600850E-02
Applicant: Shenzhen Times Innovation Technology Co., Ltd
Address of Applicant: 5th Floor, Building B, Baseus Intelligence Park, No. 2008, Xuegang Rd, Gangtou Community, Bantian Stree, Longgang District, Shenzhen.
Equipment Under Test (EUT):
EUT Name: Baseus Car Wireless MP3 Charger
Model No.: CCLH-01
Brand Name: Baseus
FCC ID: 2AY37-CCLH-01
Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498D01 General RF Exposure Guidance v06
Date of Receipt: 2021-06-09
Date of Test: 2021-06-09 to 2021-06-10
Date of Issue: 2021-06-10
Test Result : **PASS***

*In the configuration tested, the EUT complied with the standards specified above

Tested By: Lewis Zhou
(Lewis Zhou)
Reviewed By: Jun Li
(Jun Li)
Approved By: Sheek Luo
(Sheek Luo)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20210600850E-02	Rev.01	Initial report	2021-06-10

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3 General Information

3.1 Client Information

Applicant:	Shenzhen Times Innovation Technology Co., Ltd
Address of Applicant:	5th Floor, Building B, Baseus Intelligence Park, No. 2008, Xuegang Rd, Gangtou Community, Bantian Stree, Longgang District, Shenzhen.
Manufacturer:	Shenzhen Times Innovation Technology Co., Ltd
Address of Manufacturer:	5th Floor, Building B, Baseus Intelligence Park, No. 2008, Xuegang Rd, Gangtou Community, Bantian Stree, Longgang District, Shenzhen.
Factory:	Shenzhen Lohee Technology Co., Ltd
Address of Factory:	6F, Building B1, Aine Industrial Zone, No. 170, Hangcheng Avenue, Xixiang Stress, Baoan District, Shenzhen

3.2 General Description of EUT

Product Name:	Baseus Car Wireless MP3 Charger
Model No.:	CCLH-01
Trade Mark:	Baseus
Hardware Version:	CD-015-MAIN_V2.5.PCB
Software Version:	V2.9.prd
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V5.0
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Transfer Rate:	1Mbps/2Mbps/3Mbps
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Product Type:	☐ Mobile ☐ Portable ☒ Fix Location
Test Software of EUT:	BT_Tool V1.0.6 (manufacturer declare))
Antenna Type:	PCB antenna
Antenna Gain:	0dBi
Power Supply:	Powered by the DC 12V-24V

4 RF Exposure Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

4.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.1.3 EUT RF Exposure

1) For BT Classic

Antenna Gain: 0dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-0.080	-1±1	0	1
Middle(2441MHz)	-0.950	-2±1	-1	0.794
Highest(2480MHz)	-1.590	-2.5±1	-1.5	0.708
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	2.360	1.5±1	2.5	1.778
Middle(2441MHz)	1.440	0.5±1	1.5	1.413
Highest(2480MHz)	0.790	0±1	1	1.295
8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	2.920	2±1	3	1.995
Middle(2441MHz)	1.940	1±1	2	1.585
Highest(2480MHz)	1.280	0.5±1	1.5	1.413

The worst case:

Maximum tune-up Power (mW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
1.995	0	0.0004	1.0	PASS

Note: 1) Refer to report No. CQASZ20210600850E-02 for EUT test Max Conducted Peak Output Power value.

2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (1.995 \cdot 1) / (4 \cdot 3.1416 \cdot 20^2) = 0.0004$