

RF EXPOSURE EVALUATION REPORT

Product Name: Car Charger

Trade Mark:

dealworthy™

heyday™



Model No.: CAC-33KL-2A

Add. Model No.: N/A

Report Number: 24042311017RFC-3

Test Standards: FCC 47 CFR Part 1 Subpart I

FCC ID: 2AO23-BTFMC01

Test Result: PASS

Date of Issue: May 31, 2024

Prepared for:

Chug, Inc.

7157 Shady Oak Rd, Eden Prairie MN 55344, United States

Prepared by:

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UTTR-RF-FCCPART1-V1.1

Version

Version No.	Date	Description
V1.0	May 31, 2024	Original



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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Chug, Inc.
Address of Applicant:	7157 Shady Oak Rd, Eden Prairie MN 55344, United States
Manufacturer 1:	PYS VIETNAM TECHNOLOGY COMPANY LIMITED
Manufacturer 2:	PYS High-Tech Co., Ltd.
Address of Manufacturer 1:	CN-06, ThuanThanh II industrial zone, Mao Dien commune, ThuanThanh district, BacNinh, Vietnam
Address of Manufacturer 2:	1F~12F, Block 9, Lianhua Industrial Zone, Longhua, Shenzhen, Guangdong 518109 CHINA

1.2 EUT INFORMATION

Product Name:	Car Charger	
Model No.:	CAC-33KL-2A	
Add. Model No.:	N/A	
Trade Mark:	  	
DUT Stage:	Production Unit	
EUT Supports Function: (Provided by the customer)	2.4 GHz ISM Band:	Bluetooth V5.3
	FM:	FM
Software Version:	1.0.1 (Provided by the customer)	
Hardware Version:	N/A (Provided by the customer)	
Remark: The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.		

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

For BT_EDR	
Frequency Band:	2400 MHz to 2483.5 MHz
Frequency Range:	2402 MHz to 2480 MHz
Bluetooth Version:	Bluetooth BR + EDR 5.3
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Type of Modulation:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channels:	79
Channel Separation:	1 MHz
Antenna Type:	PCB Antenna
Antenna Gain: (Provided by the customer)	2.54 dBi
Maximum Conducted Peak Power:	10.49 dBm

For FM	
Frequency Band:	88 MHz to 108 MHz
Frequency Range:	88.1 MHz to 107.9 MHz
Modulation Technique:	FM
Type of Modulation:	ASK

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Number of Channels:	199
Channel Separation:	100 KHz
Antenna Type:	PCB Antenna
Antenna Gain: (Provided by the customer)	0 dBi
Maximum Conducted Peak Power:	66.77 dB μ V/m

1.4 OTHER INFORMATION

Test channels for BT_EDR				
Mode	Tx/Rx Frequency	Test RF Channel Lists		
		Lowest(L)	Middle(M)	Highest(H)
GFSK (DH1, DH3, DH5)	2402 MHz to 2480 MHz	Channel 0	Channel 39	Channel 78
		2402 MHz	2441 MHz	2480 MHz
π /4DQPSK (DH1, DH3, DH5)	2402 MHz to 2480 MHz	Channel 0	Channel 39	Channel 78
		2402 MHz	2441 MHz	2480 MHz
8DPSK (DH1, DH3, DH5)	2402 MHz to 2480 MHz	Channel 0	Channel 39	Channel 78
		2402 MHz	2441 MHz	2480 MHz

Test channels for FM				
Mode	Tx/Rx Frequency	Test RF Channel Lists		
		Lowest(L)	Middle(M)	Highest(H)
FM(ASK)	88.1 MHz to 107.9 MHz	Channel 0	Channel 99	Channel 198
		88.1 MHz	98.1 MHz	107.9 MHz

1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC 47 CFR Part 1 Subpart I

All test items have been performed and recorded as per the above standards

1.6 DEVIATION FROM STANDARDS

None.

1.7 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

2. EQUIPMENT LIST

Please refer to the RF test report.

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3. MPE EVALUATION

3.1 REFERENCE DOCUMENTS FOR EVALUATION

No.	Identity	Document Title
1	FCC 47 CFR Part 1 Subpart I	PROCEDURES IMPLEMENTING THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969
2	KDB 447498 D01 General RF Exposure Guidance v06	RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES

3.2 MPE COMPLIANCE REQUIREMENT

3.2.1 Limits

3.2.1.1 FCC 47 CFR Part 1 Subpart I

According to §1.1307(b)(1), system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density.

3.2.2 Test Procedure

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

3.3 MPE CALCULATION METHOD

FCC 47 CFR Part 1 Subpart I

$$S = PG/4\pi R^2 = EIRP/4\pi R^2$$

S = power density (in appropriate units, e.g., mw/cm²)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = 20cm distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

3.4 MPE CALCULATION RESULTS

Note: For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

3.4.1 For BT

For BT_EDR function, operating at 2402MHz to 2480 MHz for GFSK, π/4 DQPSK, 8DPSK

3.4.1.1 Antenna Type:

PCB Antenna

3.4.1.2 Antenna Gain:

2402MHz to 2480 MHz: 2.54 dBi

3.4.1.3 Results for FCC 47 CFR Part 1 Subpart I

Operating Mode	Freq.	Declared maximum conducted output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	MPE Limit	MPE Value
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(mW)	(mW /cm ²)	
EDR	2402-2480	10.5	2.5	2.54	15.54	35.8096	1	0.0071

3.4.2 For FM

For FM function, operating at 88.1MHz to 107.9 MHz for ASK

3.4.3.1 Antenna Type:

External Antenna

3.4.3.1 Antenna Gain:

88.1MHz to 107.9 MHz: 0 dBi

3.4.3.1 Results for FCC 47 CFR Part 1 Subpart I

Operating Mode	Freq.	Maximum Field strength	MPE Limit	MPE Value
	(MHz)	(dBμV/m)	(mW /cm ²)	
FM	88.1-107.9	66.77	1	0.0000

3.4.3 Simultaneous Multi-band Transmission MPE Analysis

3.4.3.1 List of Mode for Simultaneous Multi-band Transmission

No.	Configurations	Support/Not Support
1	FM + BT	Support

3.4.3.1 Results for transmit simultaneously

FCC 47 CFR Part 1 Subpart I

No.	Configurations	Maximum MPE Value			Limits
		WLAN (mw/cm ²)	BT (mw/cm ²)	Transmit simultaneously	
1	FM + BT	0.0071	0.0000	0.0071	1

Note:

According to KDB 447498 D01 General RF Exposure Guidance v06, At the transmit simultaneously calculation method is as follows:

$$\text{Transmit simultaneously MPE} = \Sigma \text{ of MPE ratios}$$

$$\text{MPE ratios} = \text{Field strengths or power density} / \text{MPE limit at the test frequency}$$

APPENDIX 1 PHOTOS OF TEST SETUP

N/A

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal Photos.

*** End of Report ***

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