



RF EXPOSURE REPORT

Applicant	:	BYD Auto Industry Company Limited
Address of Applicant	:	No.3001, 3007, HengPing Road, Pingshan, Shenzhen, Guangdong, P.R. China
Manufacturer	:	BYD Auto Industry Company Limited
Address of Manufacturer	:	No.3001, 3007, HengPing Road, Pingshan, Shenzhen, Guangdong, P.R. China
Equipment under Test	:	In-vehicle Multimedia Host
Model No.	:	MTCD03
FCC ID	:	SD4-MTCD03
Test Standard(s)	:	KDB447498 D01 General RF Exposure Guidance v06
Report No.	:	DDT-RE24101411-1E11
Issue Date	:	2025/01/12
Issue By	:	Guangdong Dongdian Testing Service Co., Ltd. Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808

REPORT

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Test Report Declare

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Address of Manufacturer	:	No.3001, 3007, HengPing Road, Pingshan, Shenzhen, Guangdong, P.R. China

Test Standard Used:

KDB447498 D01 General RF Exposure Guidance v06

We Declare:

The equipment described above is tested by Guangdong Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Guangdong Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

Report No.:	DDT-RE24101411-1E11		
Date of Receipt:	2024/10/23	Date of Test:	2024/10/23~2025/01/08

Prepared By:*Jacky Huang***Jacky Huang/Engineer****Approved By:***Damon Hu***Damon Hu/EMC Manager**

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Guangdong Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	2025/01/13	

1. General Test Information

1.1. Description of EUT

EUT Name	: In-vehicle Multimedia Host
Model Number	: MTCD03
EUT Function Description	: Please reference user manual of this device
Power Supply	: DC 12V
Radio Specification	: Bluetooth (BR/EDR/LE), 2.4G WLAN: IEEE 802.11b/g/n20/n40, 5G WLAN: IEEE 802.11a/n/ac WWAN: GSM, UMTS, LTE
Operation Frequency	: Bluetooth: 2402 MHz-2480 MHz 2.4G WLAN: 2412 MHz-2462 MHz 5G WLAN: 5180MHz-5240MHz, 5260MHz-5320MHz, 5500MHz-5720MHz, 5745MHz-5825MHz GSM850/1900 UMTS Band II/IV/V LTE Band2/4/5/7/12/13/17/38/41
Modulation	: Bluetooth: GFSK, p/4-DQPSK, 8DPSK IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK) GSM: GMSK, 8-PSK UMTS: BPSK, QPSK, 16QAM E-UTRA: QPSK, 16QAM
Antenna Type	: External PCB Antenna
Max Antenna Gain (dBi)	: WWAN: GSM 850: 5.6dBi GSM 1900: 3.63dBi WCDMA B2: 3.63dBi WCDMA B4: 1.94dBi WCDMA B5: 5.6dBi LTE B2: 3.63dBi LTE B4: 1.94dBi LTE B5: 5.6dBi LTE B7: 1.64dBi LTE B12: 3.06dBi LTE B13: 4.21dBi LTE B17: 3.06dBi LTE B38: 1.77dBi LTE B41: 1.77dBi WLAN: 5150MHz-5250MHz: 3.02 5250MHz-5350MHz: 2.56 5470MHz-5725MHz: 2.88 5725MHz-5850MHz: 3.99 2412MHz-2462MHz: 0.94 Bluetooth: 2402MHz-2480MHz: 1.16

1.2. Accessories of EUT

Accessories	Manufacturer	Model number	Description
Power connecting cable	N/A	N/A	length: 2.5m, unshielded
MIC cable	N/A	N/A	length: 2.2m, unshielded
Power amplifier cable	N/A	N/A	length: 2.0m, unshielded
Camera/recorder cable	N/A	N/A	length: 2.0m, shielded
SIM cable	N/A	N/A	length: 0.8m, shielded
Bluetooth/WIFI antenna	N/A	N/A	length: 2.0m, shielded
FM/AM/DAB antenna	N/A	N/A	length: 4.2m, shielded
GNSS antenna	N/A	N/A	length: 2.2m, shielded

1.3. Test laboratory

Guangdong Dongdian Testing Service Co., Ltd.

Add.: Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808.

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

2. RF Exposure evaluation for FCC

2.1. Assessment procedure

Requirement:

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

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 Time $ 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			1.0	30

Note: f= frequency in MHz; *Plane-wave equivalent power density

Calculation method

$$E(\text{V/m}) = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } S(\text{mW/cm}^2) = \frac{E^2}{377}$$

E = Electric field (V/m)

P = Peak RF output power (mW)

G = EUT Antenna numeric gain (numeric)=

d = Separation distance between radiator and human body (m)

The formula can be changed to

We can change the formula to:

$$S = \frac{30 \times P \times G}{377 \times d^2} \quad \text{or, } d = \sqrt{\frac{30 \times P \times G}{377 \times S}}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2 m, as well as the gain of the used antenna, the RF power density can be obtained.

2.2. Assess result

WWAN:

Mode	Band	Output power Tune up (dBm)	Output power Tune up (mW)	Antenna Gain (dBi)	Antenna Gain (mW)	MPE Value (mW/cm2)	MPE ratio	MPE Limit (mW/cm2)
GSM	GSM 850	32	1584.89	5.60	3.63	0.508789	2.620337	0.55
	GSM 1900	30	1000.00	3.63	2.31	0.203956	0.203956	1.00

Mode	Band	Output power Tune up (dBm)	Output power Tune up (mW)	Antenna Gain (dBi)	Antenna Gain (mW)	MPE Value (mW/cm2)	MPE ratio	MPE Limit (mW/cm2)
WCDMA	Band 2	25	316.23	3.63	2.31	0.064497	0.064497	1.00
	Band 4	25	316.23	1.94	1.56	0.043706	0.043706	1.00
	Band 5	25	316.23	5.6	3.63	0.101517	0.184800	0.55

Mode	Band	Output power Tune up (dBm)	Output power Tune up (mW)	Antenna Gain (dBi)	Antenna Gain (mW)	MPE Value (mW/cm2)	MPE ratio	MPE Limit (mW/cm2)
E-UTRA	LTE Band 2	25	316.23	3.63	2.31	0.064497	0.064497	1.00
	LTE Band 4	25	316.23	1.94	1.56	0.043706	0.043706	1.00
	LTE Band 5	25	316.23	5.6	3.63	0.101517	0.184800	0.55
	LTE Band 7	25	316.23	1.64	1.46	0.040788	0.040788	1.00
	LTE Band 12	25	316.23	3.06	2.02	0.056564	0.121381	0.47
	LTE Band 13	25	316.23	4.21	2.64	0.073712	0.142301	0.52
	LTE Band 17	25	316.23	3.06	2.02	0.056564	0.056564	0.47
	LTE Band 38	25	316.23	1.77	1.50	0.042028	0.021014	1.00
	LTE Band 41	25	316.23	1.77	1.50	0.042028	0.042028	1.00

WIFI&Bluetooth:

Mode	Output power (dBm)	tune up power (dBm)	tune up power (mW)	Antenna Gain (dBi)	Antenna Gain (linear)	MPE Values (mW/cm ²)	MPE Limit (mW/cm ²)
BR/EDR	11.53	12.00	15.85	1.16	1.306	0.0018	1
BLE	8.19	9.00	7.94	1.16	1.306	0.0009	1
2.4G WIFI	12.70	14.00	25.12	0.94	1.242	0.0028	1
5G WIFI Band 1	11.54	12.00	15.85	3.02	2.004	0.0028	1
5G WIFI Band 2	11.38	12.00	15.85	2.56	1.803	0.0025	1
5G WIFI Band 3	13.38	14.00	25.12	2.88	1.941	0.0043	1
5G WIFI Band 4	13.24	14.00	25.12	3.99	2.506	0.0056	1

Simultaneous transmit evaluation result (worst case):

WWAN+WIFI: $0.508789/0.55+0.00443/1=0.93<1$.

Note 1: The estimation distance is 30 cm

Note 2: EUT does not support The EUT cannot support Bluetooth & WIFI nor 2.4G WIFI & 5G WIFI simultaneous transmit.

Conclusion: MPE evaluation required since transmitter power is below FCC threshold

3. Photos of the EUT

Please refer to DDT-Q24062510-2E appendix I

-----End Report-----