RF EXPOSURE REPORT

Applicant:	Shenzhen PVT Electronics Co.,Ltd
Address:	2201, West Tower, Skyworth Semiconductor Design Building, Shenzhen, China, 518057.
Manufacturer:	Shenzhen PVT Electronics Co.,Ltd
Address:	2201, West Tower, Skyworth Semiconductor Design Building, Shenzhen, China, 518057.
Product Description:	Vehicle wireless module
Brand Name:	NA
Tested Model:	P13.A01.H4
FCC ID:	2BMJZ-P13A01H4
Report No.:	JCF241024031-005
Received Date:	Oct. 24, 2024
Tested Date:	Oct. 24, 2024 ~ Mar. 07, 2025
Issued Date:	Mar. 07, 2025
Test Standards:	KDB 447498 D01 General RF Exposure Guidance v06
Test Result:	Pass

Prepared By:

Roger Li

Roger Li/Engineer   **Date:** Mar. 07, 2025

Reviewed By:

Kennys Zhang

Kennys Zhang/Engineer   **Date:** Mar. 07, 2025

Approved By:

Talent Zhang

Talent Zhang/Engineer   **Date:** Mar. 07, 2025

Note: The test results in this report apply exclusively to the tested model / sample. Without written approval of Guangzhou Jingce Testing Technology Co., Ltd. the test report shall not be reproduced except in full.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Mar. 07, 2025	Original Report	/

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1. Test Report Declare

Applicant:	Shenzhen PVT Electronics Co.,Ltd
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Product Name	Vehicle wireless module
Brand Name:	NA
Model Name:	P13.A01.H4
Difference Description:	NA

We Declare:

The equipment described above is tested by Guangzhou Jingce Testing Technology 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 Guangzhou Jingce Testing Technology Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests except as provided information by clients.

2. Equipment Under Test

2.1. Description of EUT

EUT* Name:	Vehicle wireless module
Model Number:	P13.A01.H4
EUT Function Description:	Please refer to the manual
Power Supply:	DC 4.2V
Hardware Version:	NA
Software Version:	NA
Radio Specification:	Bluetooth V5.1, IEEE802.11b/g/n/a/ac, GPRS, WCDMA, LTE
Operation Frequency:	Bluetooth: 2402MHz-2480MHz IEEE802.11b/g/n/a/ac: 2412MHz-2462MHz, 5180MHz-5825MHz GPRS850: Uplink:824-849MHz, Downlink:869-964MHz GPRS1900: Uplink:1850-1910MHz, Downlink:1930-1990MHz WCDMA Band2: Uplink:1850-1910MHz, Downlink:1930-1990MHz WCDMA Band4: Uplink:1710-1755MHz, Downlink:2110-2155MHz WCDMA Band5: Uplink:824-849MHz, Downlink:869-894MHz LTE Band 2: Uplink:1850-1910MHz, Downlink:1930-1990MHz LTE Band 4: Uplink:1710-1755MHz, Downlink:2110-2155MHz LTE Band 5: Uplink:824-849MHz, Downlink:869-894MHz LTE Band 7: Uplink:2500-2570MHz, Downlink:2620-2690MHz LTE Band 38: Uplink:2570-2620MHz, Downlink:2570-2620MHz LTE Band 41: Uplink:2496-2690MHz, Downlink:2496-2690MHz
Modulation:	Bluetooth: GFSK, π/4-DQPSK, 8DPSK IEEE 802.11b: DSSS (CCK, QPSK, BPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac (HT20/40/80): OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK) GPRS: GMSK WCDMA: QPSK/16QAM LTE: QPSK/16QAM
Antenna Type:	Bluetooth: PCB Antenna, Max gain: 4.86 dBi 2.4G WIFI: PCB Antenna, Max gain: 4.86 dBi 5G WIFI: PCB Antenna, Max gain: 5.37 dBi GPRS850: 1.66 dBi GPRS1900: 3.33 dBi WCDMA Band 2: 3.33 dBi WCDMA Band 4: 4.07 dBi WCDMA Band 5: 1.66 dBi LTE Band 2: 3.33 dBi LTE Band 4: 4.07 dBi LTE Band 5: 1.66 dBi LTE Band 7: 3.01 dBi LTE Band 38: 3.01 dBi LTE Band 41: 3.97 dBi
Product Type:	☐Portable device ☑Mobile device ☐Fixed device

Note 1: EUT is the ab. of equipment under test.

Note 2: The antenna gain is declared by the customer and the laboratory is not responsible for the accuracy of the antenna gain.

3. Test Laboratory

Guangzhou Jingce Testing Technology Co., Ltd.

Add.: No.10, Hefeng No.1 street, Huangpu District, Guangzhou, Guangdong, People's Republic of China

Association for Laboratory Accreditation(A2LA). Certificate Number: 6594.03

FCC Designation Number: CN1381. Test Firm Registration Number: 486550

IC Test Firm Registration Number: 31808

Conformity Assessment Body identifier: CN0173

4. RF Exposure Measurement

4.1. 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.

4.2. Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (Minutes)
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

* = Plane-wave equivalent power density.

4.3. MPE Calculation Formula

$Pd = (Pout*G) / (4*pi*R^2)$

where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

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

4.4. Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as Mobile Device.

4.5. Conducted Power

Band	Channel Frequency (MHz)	Average Power (dBm)
BT&BLE	2402	-1.08
2.4G WIFI	2437	21.55
5G WIFI	5180	14.62

GPRS				
Mode	Burst Average Power (dBm)		Frame-Averaged power (dBm)	
	850 MHz	1900 MHz	850 MHz	1900 MHz
GPRS (GMSK, 1-Slot)	32.23	29.06	23.04	19.87
GPRS (GMSK, 2-Slot)	31.66	28.86	25.53	22.73

GPRS (GMSK, 3-Slot)	29.98	27.13	25.56	22.71
GPRS (GMSK, 4-Slot)	28.97	26.09	25.79	22.91

Note 1: This report listed the worst case conducted power value, please refer to BL-SZ2520378-501 report for more details.

Note 2: The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below:

Frame-averaged power = Burst averaged power (1 Tx Slot) – 9.19 dB
Frame-averaged power = Burst averaged power (2 Tx Slots) – 6.13 dB
Frame-averaged power = Burst averaged power (3 Tx Slots) - 4.42dB
Frame-averaged power = Burst averaged power (4 Tx Slots) – 3.18 dB

GPRS		
Mode	850 MHz	1900 MHz
Conducted Power (dBm)	25.79	22.91
Antenna Gain (dBi)	1.66	3.33
ERP/EIRP (dBm)	25.30	26.24

Note: This report listed the worst case conducted power value, please refer to BL-SZ2520378-501 report for more details.

WCDMA			
Mode	Band 2	Band 4	Band 5
Conducted Power (dBm)	20.51	19.59	18.56
Antenna Gain (dBi)	3.33	4.07	1.66
ERP/EIRP (dBm)	23.84	23.66	18.07

Note: This report listed the worst case conducted power value, please refer to BL-SZ2520378-501 report for more details.

LTE						
Mode	Band 2	Band 4	Band 5	Band 7	Band 38	Band 41
Conducted Power (dBm)	22.37	22.81	22.69	22.09	22.31	20.58
Antenna Gain (dBi)	3.33	4.07	1.66	3.01	3.01	3.97
ERP/EIRP (dBm)	25.70	26.88	22.20	25.10	25.32	24.55

Note: This report listed the worst case conducted power value, please refer to BL-SZ2520378-501 report for more details.

4.6. Tune-up pwer

Mode	Conducted Power Range (dBm)	EIRP Range (dBm)	ERP Range (dBm)
BT&BLE	[-2.00, 0.00]	[2.68, 4.68]	/
2.4G WIFI	[20.00, 22.00]	[24.68, 26.68]	/
5G WIFI	[13.00, 15.00]	[18.37, 20.37]	/

Mode	Conducted Power Range (dBm)	EIRP Range (dBm)	ERP Range (dBm)
GPRS 850	[24.00, 26.00]	/	[23.51, 25.51]
GPRS 1900	[21.00, 23.00]	[24.33, 26.33]	[22.18, 24.18]
WCDMA Band 2	[19.00, 21.00]	[22.33, 24.33]	[20.18, 22.18]
WCDMA Band 4	[18.00, 20.00]	[22.07, 24.07]	[19.92, 21.92]
WCDMA Band 5	[17.00, 19.00]	/	[16.51, 18.51]
LTE Band 2	[20.50, 22.50]	[23.83, 25.83]	[21.68, 23.68]

LTE Band 4	[21.00, 23.00]	[25.07, 27.07]	[22.92, 24.92]
LTE Band 5	[21.00, 23.00]	/	[20.51, 22.51]
LTE Band 7	[20.50, 22.50]	[23.51, 25.51]	[21.36, 23.36]
LTE Band 38	[20.50, 22.50]	[23.51, 25.51]	[21.36, 23.36]
LTE Band 41	[19.00, 21.00]	[22.97, 24.97]	[20.82, 22.82]
Note1: ERP= EIRP -2.15dB.			

5. RF Exposure Calculation

We used the maximum power between the conducted power and ERP/EIRP to perform RF exposure exemption evaluation.

Band	Channel Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Power Density (mW/cm^2)	Limit (mW/cm^2)	PASS/FAIL
BT&BLE	2402	0.00	4.68	0.0006	1	PASS
2.4G WIFI	2437	22.00	4.68	0.0927	1	PASS
5G WIFI	5180	15.00	5.37	0.0217	1	PASS

Evolution mode	Frequency (MHz)	Maximum power (dBm)	Maximum power (mw)	Power Density (mW/cm2)	Limit (mW/cm2)	PASS/FAIL
GPRS 850	824	26.00	398.11	0.0792	0.55	Pass
GPRS 1900	1850	24.18	261.82	0.0521	1	Pass
WCDMA Band 2	1850	22.18	165.20	0.0329	1	Pass
WCDMA Band 4	1710	20.00	100.00	0.0199	1	Pass
WCDMA Band 5	824	19.00	79.43	0.0158	0.55	Pass
LTE Band 2	1850	23.68	233.35	0.0464	1	Pass
LTE Band 4	1710	24.92	310.46	0.0618	1	Pass
LTE Band 5	824	23.00	199.53	0.0397	0.55	Pass
LTE Band 7	2500	23.36	216.77	0.0431	1	Pass
LTE Band 38	2570	23.36	216.77	0.0431	1	Pass
LTE Band 41	2496	22.82	191.43	0.0381	1	Pass

Both of the WLAN and plug-in device can transmit simultaneously, the formula of calculated the MPE is:

CPD1/LPD1+CPD2/LPD2+……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

Therefore the worst-case situation is 0.0006/1.00+0.0927/1.00+0.0199/1.00+0.0792/0.55=0.2373, which is less than "1", This confirmed that the device comply with FCC 1.1310 MPE limit.

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