

RF EXPOSURE REPORT

FCC Per 47 CFR 2.1093(d)

Report Reference No.....: A1407096032-MPE

FCC ID.....: 2ACP7-MJ28X0

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Date of issue.....: July 26, 2014

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Applicant's name.....: HuiZhou Minjie Technology Co.,LTD

Address.....: Qingchun Industrial District Chengjing Huizhou City

Test specification:

Standard: FCC Per 47 CFR 2.1093(d)

TRF Originator.....: Shenzhen CTL Electron Technology Co., Ltd.

Master TRF.....: Dated 2012-06

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Test item description: Wireless barcode scanner

Trade Mark: Minjie

Manufacturer: HuiZhou Minjie Technology Co.,LTD

Model/Type reference.....: MJ2810

Listed Models: MJ2820,MJ2830,MJ2850,MJ2860,MJ2870,MJ2880,MJ2890

Modulation Type: GFSK

Operation Frequency.....: From 2402MHz to 2480MHz

Rating: DC 3.7V

Result.....: PASS

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		Date of issue

Equipment under Test : Wireless barcode scanner

Model /Type : MJ2810

Listed Models : MJ2820,MJ2830,MJ2850,MJ2860,MJ2870,MJ2880,MJ2890

Applicant : **HuiZhou Minjie Technology Co.,LTD**

Address : Qingchun Industrial District Chengjing Huizhou City

Manufacturer : **HuiZhou Minjie Technology Co.,LTD**

Address : Qingchun Industrial District Chengjing Huizhou City

Test Result:	PASS
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. SUMMARY

1.1. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

○	Power Cable	Length (m) :	/
		Shield :	/
		Detachable :	/
○	Multimeter	Manufacturer :	/
		Model No. :	/

1.2. NOTE

1. The EUT is a Wireless barcode scanner with Bluetooth function, The functions of the EUT listed as below:

	Test Standards	Reference Report
Bluetooth	FCC Part 15 Subpart C	A1407096032-RW
RF Exposure	FCC Per 47 CFR 2.1093(d)	A1407096032-MPE

2. The frequency bands used in this EUT are listed as follows:

Frequency Band(MHz)	2400-2483.5	5150-5350	5470-5725	5725-5850
EUT	√	—	—	—

2. TEST ENVIRONMENT

2.1. Address of the test laboratory

Dongguan Dongdian Testing Service Co., Ltd
 No.17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China
 The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

2.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

2.3. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Dongguan Dongdian Testing Service Co.,Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Dongguan Dongdian Testing Service Co.,Ltd laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

3. Method of measurement

3.1. Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this 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.

According to §RSS-102, Devices that have a radiating element normally operating at separation distances greater than 20 cm between the user and the device shall undergo an RF exposure evaluation. SAR evaluation may be performed in lieu of an RF exposure evaluation for devices operating below 6 GHz with a separation distance of greater than 20 cm between the user and the device.

According to §1.1310, KDB447498 and §2.1093 RF exposure is required.

OET Bulletin 65 Supplement C [June 2001]: Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields

3.2. Limit

According to KDB447498 D01 General RF Exposure Guidance v05r01 Section 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 Test Exclusion Threshold condition, listed below, is satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.²² The minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander (see 5) of section 4.1). To qualify for SAR test exclusion, the test separation distances applied must be fully explained and justified by the operating configurations and exposure conditions of the transmitter and applicable host platform requirements, typically in the SAR measurement or SAR analysis report, according to the required published RF exposure KDB procedures. When no other RF exposure testing or reporting is required, a statement of justification and compliance must be included in the equipment approval, in lieu of the SAR report, to qualify for the SAR test exclusion. When required, the device specific conditions described in the other published RF exposure KDB procedures must be satisfied before applying these SAR test exclusion provisions; for example, handheld PTT two-way radios, handsets, laptops & tablets etc.²³ “

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:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{(\text{min. test separation distance, mm})} \right] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR,}^{24} \text{ where}$$

- $f_{(\text{GHz})}$ 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
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

According to KDB447498 D01 General RF Exposure Guidance v05r01 Appendix A: SAR Test Exclusion Thresholds for 100 MHz-6 GHz and ≤ 50 mm, Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

3.3. RF Exposure

TEST RESULTS

From the peak EUT RF output power and power drift from Tune-up Procedure provide by manufacturer as following states:

Manufacturing tolerance

GFSK			
Test Channel	Channel 00	Channel 39	Channel 78
Target (dBm)	4.00	4.00	4.00
Tolerance $\pm$ (dB)	1.00	1.00	1.00

For GFSK

Test Frequency (MHz)	Output Power (dBm)	Output Power including Power Drift (dBm)	Output Power including Power Drift (mW)	Evaluated SAR test exclusion	SAR Test Exclusion Threshold	Verdict
2402	4.65	5.00	3.1623	1.0	3.0	PASS
2441	4.96	5.00	3.1623	1.0	3.0	PASS
2480	4.63	5.00	3.1623	1.0	3.0	PASS

4. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1093 for the uncontrolled RF Exposure and SAR Exclusion Threshold per KDB 447498 v05r01.

.....**End of Report**.....