



MPE TEST REPORT

Report Reference No..... : **TRE1712015902** R/C.....: 75040

FCC ID..... : **P6NDR-9200V**

Applicant's name..... : **Shenzhen HQT Science&Technology Co., Ltd.**

Address..... : 5/F, East of Building M-8, Central Zone, Hi-Tech Industrial Park, Nanshan District,Shenzhen,China

Manufacturer..... : Shenzhen HQT Science&Technology Co., Ltd.

Address..... : 5/F, East of Building M-8, Central Zone, Hi-Tech Industrial Park, Nanshan District,Shenzhen,China

Test item description : **Digital Repeater Radio**

Trade Mark : HQT

Model/Type reference..... : DR-9200

Listed Model(s) : -


Standard : **FCC Per 47 CFR 2.1091(b); KDB447498 v05r02**


Date of receipt of test sample..... : Dec. 18, 2017


Date of testing..... : Dec. 19, 2017 – Jan. 09, 2018

Date of issue..... : Jan. 09, 2018

Result..... : **PASS**

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Testing Laboratory Name : **Shenzhen Huatongwei International Inspection Co., Ltd**

Address..... : 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

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Contents

1.	SUMMARY	3
1.1.	Client Information	3
1.2.	Report version	3
1.3.	Product Description	4
1.4.	Test frequency list	5
1.5.	EUT operation mode	6
1.6.	EUT configuration	6
1.7.	Modifications	6
2.	TEST ENVIRONMENT	7
2.1.	Address of the test laboratory	7
2.2.	Environmental conditions	7
2.3.	Statement of the measurement uncertainty	7
3.	METHOD OF MEASUREMENT	8
3.1.	Applicable Standard	8
3.2.	Limit	8
3.3.	MPE Calculation Method	8
4.	CONCLUSION	9

1. SUMMARY

1.1. Client Information

Applicant:	Shenzhen HQT Science&Technology Co., Ltd.
Address:	5/F, East of Building M-8, Central Zone, Hi-Tech Industrial Park, Nanshan District,Shenzhen,China
Manufacturer:	Shenzhen HQT Science&Technology Co., Ltd.
Address:	5/F, East of Building M-8, Central Zone, Hi-Tech Industrial Park, Nanshan District,Shenzhen,China

1.2. Report version

Version No.	Date of issue	Description
00	Jan. 09, 2018	Original

1.3. Product Description

Name of EUT:	Digital Repeater Radio	
Trade mark:	HQT	
Model/Type reference:	DR-9200	
Listed mode(s):	-	
Power supply:	DC13.6V/ AC110V	
Battery information:	-	
Charger information:	-	
Adapter information:	-	
Operation Frequency Range:	From 136MHz to 174 MHz	
Rated Output Power:	High Power: 50W (46.99dBm)/Low Power: 25W (43.98dBm)	
Modulation Type:	Analog Voice:	FM
	Digital Voice /Digital Data:	4FSK
Digital Type:	DMR	
Channel Separation:	Analog Voice:	<input checked="" type="checkbox"/> 12.5kHz
	Digital Voice /Digital Data:	<input checked="" type="checkbox"/> 12.5kHz <input type="checkbox"/> 6.25kHz
Emission Designator:	Analog Voice:	<input checked="" type="checkbox"/> 12.5kHz Channel Separation: 5K28F3E <input type="checkbox"/> 25kHz Channel Separation: ---
	Digital Voice& Data:	<input checked="" type="checkbox"/> 12.5kHz Channel Separation: 7K63FXW <input type="checkbox"/> 6.25kHz Channel Separation: ---
	Digital Data:	<input checked="" type="checkbox"/> 12.5kHz Channel Separation: 7K63FXD <input type="checkbox"/> 6.25kHz Channel Separation: ---
Support data rate:	9.6kbps	
Antenna Type:	External	
Maximum Transmitter Power:	Digital	48.98W for 12.5kHz Channel Separation
	Analog	45.60W for 12.5kHz Channel Separation

Note:

- 1)The product has the same digital working characters when operating in both two digitized voice/data mode. So only one set of test results for digital modulation modes are provided in this test report.
- 2)This equipment is capable of supporting a minimum data rate of 4800 bits per second per 6.25 kHz of channel bandwidth. DMR interphone's bandwidth is 12.5 kHz, and it has a double time slot, one is the speech time slot, one is the data time slot, just language sequence is satisfied with 4800 bps/6.25 kHz BW.

1.4. Test frequency list

Mode	Modulation	Operation Frequency Range (MHz)	Test Frequency (MHz)
Analog	FM	136-174	CH _L 136.0125
			CH _M 155.0125
			CH _H 173.9875
Digital	4FSK	136-174	CH _L 136.0125
			CH _M 155.0125
			CH _H 173.9875

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the above listed frequency for testing.

1.5. EUT operation mode

Test mode	Transmitting	Power level		Digital	Analog
		High	Low	12.5kHz	12.5kHz
TX1	√	√		√	
TX2	√		√	√	
TX3	√	√			√
TX4	√		√		√

√: is operation mode.

1.6. 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) :	3.00
		Shield :	Unshielded
		Detachable :	Undetachable
○	Multimeter	Manufacturer :	/
		Model No. :	/

1.7. Modifications

No modifications were implemented to meet testing criteria.

2. TEST ENVIRONMENT

2.1. Address of the test laboratory

1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China
Phone: 86-755-26748019 Fax: 86-755-26748089

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2009) and CISPR Publication 22.

2.2. Environmental conditions

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

Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 950-1050mbar

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 TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen Huatongwei International Inspection 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 Shenzhen Huatongwei 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 FCC Part 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 FCC Part 1.1310 and FCC Part 2.1091 RF exposure is calculated.

IEEE Std C95.1: 2005: "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz".

FCC OET Bulletin 65, Edition 97-01: "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields".

FCC Supplement C to OET Bulletin 65, Edition 01-01: "Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emission".

IEEE Std C95.3: 2002: "IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields with Respect to Human Exposure to Such Fields, 100 kHz – 300 GHz",

3.2. Limit

FCC Part 1.1310(e):

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 Exposure				
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
300-1,500			f/300	6
1,500-100,000			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
300-1,500			f/1500	30
1,500-100,000			1.0	30

f=frequency in MHz

*=Plane-wave equivalent power density

3.3. MPE Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

TX1									
Test Frequency (MHz)	Minimum Separation Distance (cm)	Rated Output Power (dBm)	Tolerance (dB)	Max Output Power (dBm)	Max Output Power (mW)	Antenna Gain (Numeric)	Power Density (mW/cm ²)	Power Density Limit FCC (mW/cm ²)	Test Results
136.0125	340	46.5	1.00	47.5	56234	4.4668	0.1730	0.2000	PASS
155.0125	340	46.9	1.00	47.9	61660	4.4668	0.1897	0.2000	
173.9875	340	46.9	1.00	47.9	61660	4.4668	0.1897	0.2000	

TX3									
Test Frequency (MHz)	Minimum Separation Distance (cm)	Rated Output Power (dBm)	Tolerance (dB)	Max Output Power (dBm)	Max Output Power (mW)	Antenna Gain (Numeric)	Power Density (mW/cm ²)	Power Density Limit FCC (mW/cm ²)	Test Results
136.0125	340	46.3	1.00	47.3	53456	4.4668	0.1645	0.2000	PASS
155.0125	340	46.6	1.00	47.6	57544	4.4668	0.1770	0.2000	
173.9875	340	46.4	1.00	47.4	55081	4.4668	0.1695	0.2000	

Note:

Max Output Power(dBm)= Rated Output Power(dBm)+Tolerance(dB)

Antenna Gain (Numeric)=10^{Antenna Gain (dBi)/10}

EUT Antenna Gain=6.5dBi

4. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 1.1310(e) for general population/ Uncontrolled exposure.

-----End of Report-----