



TEST REPORT

Report Reference No. : **TRE1405002702** R/C.....: 64789

Applicant's name : **HARXON CORPORATION**

Address..... : 6/F, Block B, D3 Building, TCL International E City, No. 1001
Zhongshanyuan Road, Nanshan District, Shenzhen, 518055, PRC

Manufacturer..... : **HARXON CORPORATION**

Address..... : 6/F, Block B, D3 Building, TCL International E City, No. 1001
Zhongshanyuan Road, Nanshan District, Shenzhen, 518055, PRC

Test item description : **WIRELESS DATA TRANSCEIVER**

Trade Mark : Harxon

Model/Type reference..... : HX-DU8602T

List Model : HX-DU8602D.
HX-DU86XXT series: From HX-DU8680T to HX-DU8698T.
HX-DU86XXD series: From HX-DU8680D to HX-DU8698D

Standard : **FCC Per 47 CFR 2.1091(b)**
KDB447498 v05r01

Date of receipt of test sample..... : Apr 21, 2014

Date of testing..... : Apr 21, 2014- Jun 24, 2014

Date of issue..... : Jun 24, 2014

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

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1. Summary

1.1. Client Information

Applicant:	HARXON CORPORATION
Address:	6/F, Block B, D3 Building, TCL International E City, No. 1001 Zhongshanyuan Road, Nanshan District, Shenzhen, 518055, PRC
Manufacturer:	HARXON CORPORATION
Address:	6/F, Block B, D3 Building, TCL International E City, No. 1001 Zhongshanyuan Road, Nanshan District, Shenzhen, 518055, PRC

1.2. Product Description

Name of EUT	WIRELESS DATA TRANSCEIVER
Model Number	HX-DU8602T
Listed Model(s)	HX-DU8602D HX-DU86XXT series: From HX-DU8680T to HX-DU8698T HX-DU86XXD series: From HX-DU8680D to HX-DU8698D
Rated Output Power	High:35 Watts(45.44 dBm) / Low 5Watts(36.99 dBm)
Modulation Type	4FSK&GMSK
Emission Designator	7K60FXD
Channel Separation	12.5KHz
Antenna Type	External
Frequency Range	From 410 MHz to 470 MHz
Power Supply	DC 12.0V

1.3. EUT operation mode

The EUT has been tested under typical operating condition and The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

EUT operation mode no.	Description of operation mode	Additional information
Op 1	4FSK+BW12.5KHz+TX	The equipment is set with 4FSK modulation and 12.5KHz bandwidth at maximum rated power for TX Mode,powered by DC 12.0V
Op2	4FSK+BW12.5KHz+TX	The equipment is set with 4FSK modulation and 12.5KHz bandwidth at minimum rated power for TX Mode,powered by DC12.0V
Op 3	GMSK+BW12.5KHz+TX	The equipment is set with GMSK modulation and 12.5KHz bandwidth at maximum rated power for TX Mode,powered by DC 12.0V
Op 4	GMSK+BW12.5KHz+TX	The equipment is set with GMSK modulation and 12.5KHz bandwidth at minimum rated power for TX Mode,powered by DC 12.0V

1.4. 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. :	/

1.5. Modifications

No modifications were implemented to meet testing criteria.

2. TEST ENVIRONMENT

2.1. Address of the test laboratory

Shenzhen Huatongwei International Inspection Co., Ltd
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Phone: 86-755-26715686 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:	<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 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 §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 §1.1310 and §2.1091 RF exposure is calculated.

KDB447498 v05r01: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies

3.2. Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
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 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 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

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

As declared by the Applicant, the EUT transmits with the maximum source-based Duty Cycle of 100%-see the User manual, and the EUT is a wireless device used in a mobile application, at least 230 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum mobile separation distance, $r = 230\text{cm}$, as well as the gain of the used antenna is 3.50dBi, the RF power density can be obtained.

TEST RESULTS

For Op 1

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Numeric)	Power Density At 230 cm (mW/cm ²)	Power Density Limit FCC (mW/cm ²)	Test Results
410.000	230.00	46.10	40738.03	2.2387	0.1761	1.3667	PASS
440.000	230.00	46.02	39994.47	2.2387	0.1729	1.4667	PASS
470.000	230.00	45.54	35809.64	2.2387	0.1548	1.5667	PASS

For Op 3

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Numeric)	Power Density At 230 cm (mW/cm ²)	Power Density Limit FCC (mW/cm ²)	Test Results
410.000	230.00	46.01	39902.49	2.2387	0.1725	1.3667	PASS
440.000	230.00	45.99	39719.15	2.2387	0.1717	1.4667	PASS
470.000	230.00	45.57	36057.86	2.2387	0.1559	1.5667	PASS

4. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the controlled RF Exposure.

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