



MPE TEST REPORT

FCC Per 47 CFR 2.1091(b)&RSS-102

Report Reference No.....: TRE1203004602

FCC ID.....: X24-MOBILE-U

IC.....: 10337A-MOBILEU

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Date of issue.....: May 03, 2012

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

Address.....: Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

Applicant's name.....: Quanzhou TYT Electronics Co., Ltd.

Address.....: Bldg.22, Daxiamei Industrial Area, Nan'an, Quanzhou, Fujian
362300, China

Test specification:

Standard.....: FCC Per 47 CFR 2.1091(b)
OET Bulletin 65 Supplement C[June 2001]
RSS-102


TRF Originator.....: Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF.....: Dated 2006-06

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Test item description.....: Mobile Radio

Trade Mark.....: 

Model/Type reference.....: TH-9000UHF

Listed Models.....: TH-8900UHF/TH-9800UHF/TH-9900UHF

Ratings.....: DC 13.60 V

Rated Output Power.....: 45 Watt(46.53 dBm)/25 Watt(43.98 dBm)/10 Watt(40.00 dBm)

Modulation.....: FM

Channel Separation.....: 12.5KHz only for FCC&both 12.5KHz and 25KHz only for IC

Frequency Range.....: From 406.1MHz to 430MHz and 450MHz to 470MHz for IC

From 400MHz to 490MHz for FCC

Result.....: **Positive**

M P E T E S T R E P O R T

Test Report No. : TRE1203004602	May 03, 2012 Date of issue
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Equipment under Test : Mobile Radio

Model /Type : TH-9000UHF

Listed Models : TH-8900UHF/TH-9800UHF/TH-9900UHF

Applicant : **Quanzhou TYT Electronics Co., Ltd.**

Address : Bldg.22, Daxiamei Industrial
Area,Nan'an,Quanzhou,Fujian 362300,China

Manufacturer : **Quanzhou TYT Electronics Co., Ltd.**

Address : Bldg.22, Daxiamei Industrial
Area,Nan'an,Quanzhou,Fujian 362300,China

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) :	3
		Shield :	Unshield
		Detachable :	Detachable
○	Multimeter	Manufacturer :	/
		Model No. :	/

1.2. Product Description

The **Quanzhou TYT Electronics Co., Ltd.**'s Model:TH-9000UHF/TH-8900UHF/TH-9800UHF/TH-9900UHF or the "EUT" as referred to in this report; more general information as follows:

Name of EUT	Mobile Radio	
Model Number	TH-9000UHF/TH-8900UHF/TH-9800UHF/TH-9900UHF	
Rated Output Power	45 Watt(46.53 dBm)/25 Watt(43.98 dBm)/10 Watt(40.00 dBm)	
Modulation Type	FM for Analog Voice	
Emission Designator	Analog	16K0F3E for 25KHz Channel Separation 11K50F3E for 12.5KHz Channel Separation
Channel Separation	Analog Voice	12.5KHz&25KHz only for IC 12.5KHz only for FCC
Antenna Type	External	
Frequency Range	From 406.1MHz to 430MHz and 450 MHz to 470 MHz for IC From 400 MHz to 490 MHz for FCC	
Maximum Transmitter Power	Analog/FCC	<u>46.67 W</u> for 12.5 KHz Channel Separation
	Analog/IC	<u>45.71 W</u> for 25 KHz Channel Separation <u>45.60 W</u> for 12.5 KHz Channel Separation

1.3. Equipment under Test

Power supply system utilised

Power supply voltage	:	○ 120V / 60 Hz	○ 115V / 60Hz
		○ 12 V DC	○ 24 V DC
		● Other (specified in blank below)	

DC 13.60 V

Test frequency list

Modulation Type	Channel Separation	Test Channel	Test Frequency	Remark
Analog/FM	12.5 KHz	Low	406.5000 MHz	Only for FCC Review
		Middle	450.5000 MHz	
		High	489.5000 MHz	
	25 KHz	Low	406.5000 MHz	Only for IC Review (Not for FCC Review)
		Middle	429.5000 MHz	
		Middle	450.5000 MHz	
		High	469.0000 MHz	
	12.5 KHz	Low	406.5000 MHz	
		Middle	429.5000 MHz	
		Middle	450.5000 MHz	
		High	469.0000 MHz	

1.4. Note

- The EUT is a 400-490 MHz frequency band Mobile Radio (TH-9000UHF/TH-8900UHF/TH-9800UHF/TH-9900UHF),The functions of the EUT listed as below:

	Test Standards	Reference Report	Remark
Radio	FCC Part 90&RSS-119	TRE1203004601	For both FCC and IC Review
Health	Oet 65&RSS-102	TRE1203004602	
Health	Oet 65	TRE1203004603	Only for FCC Review

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:	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 CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ 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	0.30 dB	(1)
Transmitter power Radiated	2.20 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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 and §2.1091 RF exposure is calculated.

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

RSS-102 Issue 4 March 2010 Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

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)*	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)*	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

From the peak EUT RF output power, the minimum mobile separation distance, R=1.00 m, as well as the maximum gain of the used antenna is 5.2 dBi, the RF power density can be obtained.

TEST RESULTS

Only for FCC Review

For FM Modulation @ 12.5 KHz Channel Separation @ Rated High Power

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 100 cm (mW/cm ²)	Test Results
406.5000	100.00	46.34	43052.66	3.311	1.3550	1.1345	Compliance
450.5000	100.00	46.32	42854.85	3.311	1.5017	1.1293	Compliance
489.5000	100.00	46.69	46665.94	3.311	1.6317	1.2297	Compliance

For FM Modulation @ 12.5 KHz Channel Separation @ Rated Middle Power

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 100 cm (mW/cm ²)	Test Results
406.5000	100.00	43.95	24831.33	3.3113	1.3550	0.6543	Compliance
450.5000	100.00	43.55	22646.44	3.3113	1.5017	0.5967	Compliance
489.5000	100.00	43.90	24547.09	3.3113	1.6317	0.6468	Compliance

For FM Modulation @ 12.5 KHz Channel Separation @ Rated Low Power

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 100 cm (mW/cm ²)	Test Results
406.5000	100.00	39.88	9727.47	3.3113	1.3550	0.2563	Compliance
450.5000	100.00	40.51	11246.05	3.3113	1.5017	0.2963	Compliance
489.5000	100.00	40.03	10069.32	3.3113	1.6317	0.2653	Compliance

Only for IC Review (Not For FCC Review)**For FM Modulation @ 12.5 KHz Channel Separation @ Rated High Power**

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 100 cm (mW/cm ²)	Test Results
406.5000	100.00	46.34	43052.66	3.3113	1.3550	1.1345	Compliance
429.5000	100.00	46.59	45603.69	3.3113	1.5017	1.2017	Compliance
450.5000	100.00	46.32	42854.85	3.3113	1.6317	1.1293	Compliance
469.0000	100.00	46.57	45394.16	3.3113	1.5633	1.1962	Compliance

For FM Modulation @ 12.5 KHz Channel Separation @ Rated Middle Power

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 100 cm (mW/cm ²)	Test Results
406.5000	100.00	43.95	24931.33	3.3113	1.3550	0.6543	Compliance
429.5000	100.00	43.92	24660.39	3.3113	1.4317	0.6498	Compliance
450.5000	100.00	43.55	22646.44	3.3113	1.5017	0.5967	Compliance
469.0000	100.00	43.87	24387.11	3.3113	1.5633	0.6424	Compliance

For FM Modulation @ 12.5 KHz Channel Separation @ Rated Low Power

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 100 cm (mW/cm ²)	Test Results
406.5000	100.00	39.88	9727.47	3.3113	1.3550	0.2563	Compliance
429.5000	100.00	40.62	11534.53	3.3113	1.4317	0.3039	Compliance
450.5000	100.00	40.51	11246.05	3.3113	1.5017	0.2963	Compliance
469.0000	100.00	40.05	10115.79	3.3113	1.5633	0.2666	Compliance

For FM Modulation @ 25 KHz Channel Separation @ Rated High Power

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 100 cm (mW/cm ²)	Test Results
406.5000	100.00	46.35	43151.90	3.3113	1.3550	1.1371	Compliance
429.5000	100.00	46.60	45708.82	3.3113	1.4317	1.2045	Compliance
450.5000	100.00	46.35	43151.90	3.3113	1.5017	1.1371	Compliance
469.0000	100.00	46.58	45498.80	3.3113	1.5633	1.1989	Compliance

For FM Modulation @ 25 KHz Channel Separation @ Rated Middle Power

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 100 cm (mW/cm ²)	Test Results
406.5000	100.00	43.95	24831.33	3.3113	1.3550	0.6543	Compliance
429.5000	100.00	43.92	24660.39	3.3113	1.4317	0.6498	Compliance
450.5000	100.00	43.55	44646.44	3.3113	1.5017	0.5967	Compliance
469.0000	100.00	43.87	24378.11	3.3113	1.5633	0.6424	Compliance

For FM Modulation @ 25 KHz Channel Separation @ Rated Middle Power

Test Frequency (MHz)	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Nemeric)	Power Density Limit (mW/cm ²)	Power Density At 100 cm (mW/cm ²)	Test Results
406.5000	100.00	39.88	9727.47	3.3113	1.3550	0.2563	Compliance
429.5000	100.00	40.62	11534.53	3.3113	1.4317	0.3039	Compliance
450.5000	100.00	40.51	11246.05	3.3113	1.5017	0.2963	Compliance
469.0000	100.00	40.05	10115.79	3.3113	1.5633	0.2666	Compliance

4. Conclusion

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

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