

HEALTH TEST REPORT
For
Shenzhen Etross telecom Co., Ltd.
GSM FIXED WIRELESS TERMINAL
Test Model: SA125
Additional Model No.: 8848

Prepared for : Shenzhen Etross telecom Co., Ltd.
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Date of receipt of test sample : September 28, 2017
Number of tested samples : 1
Serial number : Prototype
Date of Test : September 28, 2017~October 21, 2017
Date of Report : October 21, 2017



HEALTH TEST REPORT**EN 62311: 2008**

Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)

Report Reference No. : **LCS170928004AE3****Date of Issue** : October 21, 2017**Testing Laboratory Name** : **Shenzhen LCS Compliance Testing Laboratory Ltd.****Address** : 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue,
Bao'an District, Shenzhen, Guangdong, China
Full application of Harmonised standards ☒**Testing Location/ Procedure** : Partial application of Harmonised standards ☐
Other standard testing method ☐**Applicant's Name** : **Shenzhen Etross telecom Co., ltd.****Address** : 301, Block B, Yuetong Comprehensive Bldg, Meilong Road,
Longhua Town, Bao' an District Shenzhen, Guangdong Province,
China, 518109**Test Specification****Standard** : EN 62311: 2008**Test Report Form No.** : LCSEMC-1.0**TRF Originator** : Shenzhen LCS Compliance Testing Laboratory Ltd.**Master TRF** : Dated 2011-03**Shenzhen LCS Compliance Testing Laboratory Ltd. All rights reserved.**

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Test Item Description : **GSM FIXED WIRELESS TERMINAL****Trade Mark** : smartwares /ETROSS**Test Model** : SA125**Ratings** : DC 7.4V by Battery(800mAh)

Adapter: Input:100-240VAC, 50/60Hz, 0.2A

Output: 12VDC, 500mA

Result : **Positive****Compiled by:***Linda He*

Linda He/ File administrators

Supervised by:*Dick Su*

Dick Su/ Technique principal

Approved by:*Gavin Liang*
Gavin Liang/ Manager

HEALTH --TEST REPORT**Test Report No. : LCS170928004AE3**October 21, 2017
Date of issue

Test Model..... : SA125

EUT..... : GSM FIXED WIRELESS TERMINAL

Applicant..... : Shenzhen Etross telecom Co., ltd.Address..... : 301, Block B, Yuetong Comprehensive Bldg, Meilong Road,
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China, 518109

Telephone..... : /

Fax..... : /

Test Result**Positive**

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.

Revision History

Revision	Issue Date	Revisions	Revised By
000	October 21, 2017	Initial Issue	Gavin Liang

1. GENERAL INFORMATION

1.1. Product Description for Equipment Under Test (EUT)

EUT	GSM FIXED WIRELESS TERMINAL
Test Model	SA125
Additional Model	8848
Model Declaration	PCB board, structure and internal of these model(s) are the same, So no additional models were tested.
Power Supply	DC 7.4V by Battery(800mAh) Adapter: Input:100-240VAC, 50/60Hz, 0.2A Output: 12VDC, 500mA
Hardware Version	R2.0
Software Version	V3.1

2G

Support Band	<input checked="" type="checkbox"/> GSM 900 (EU-Band) <input checked="" type="checkbox"/> DCS 1800 (EU-Band) <input checked="" type="checkbox"/> GSM 850 (U.S.-Band) <input checked="" type="checkbox"/> PCS 1900 (U.S.-Band)
Release Version	R99
GPRS Class	Class 12
EGPRS Class	Class 12
Uplink	GSM 900: 880MHz ~ 915MHz DCS 1800: 1710MHz ~ 1785MHz
Downlink	GSM 900: 925MHz ~ 960MHz DCS 1800: 1805MHz ~ 1880MHz
Type Of Modulation	GMSK for GSM/GPRS, GMSK/8PSK for EGPRS
Antenna Description	External Antenna, 2.5dBi(Max.)
Power Class	GSM 900: Class 4, DCS 1800: Class 1

1.2. Objective

According to its specifications, the EUT must comply with the requirements of the following standards:
EN 62311: 2008 –Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)

1.3. Test Methodology

All measurements contained in this report were conducted with EN 62311: 2008.

1.4. Facilities

All measurement facilities used to collect the measurement data are located at 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China.

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

1.5. Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate
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1.6. External I/O Cable

I/O Port Description	Quantity	Cable
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1.7. Equipment

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

1.8. Laboratory Accreditations And Listings

Site Description

EMC Lab. : FCC Registration Number. is 254912.
Industry Canada Registration Number. is 9642A-1.
ESMD Registration Number. is ARCB0108.
UL Registration Number. is 100571-492.
TUV SUD Registration Number. is SCN1081.
TUV RH Registration Number. is UA 50296516-001.
NVLAP Registration Code is 600167-0.

1.9. Measurement Uncertainty

Test Item		Uncertainty
Radio Frequency	:	0.9×10^{-4}
Total RF Power, Conducted	:	1.0 dB
RF Power Density, Conducted	:	1.8 dB
Spurious Emissions, Conducted	:	1.8 dB
All Emissions, Radiated	:	3.1 dB
Temperature	:	0.5 °C
Humidity	:	1 %
DC And Low Frequency Voltages	:	1 %

2. HUMAN EXPOSURE TO THE ELECTROMAGNETIC FIELDS

2.1 Basic Restrictions Reference levels

Council Recommendation 1999/519/EC Annex II

Basic restrictions for electric, magnetic and electromagnetic fields (0Hz to 300GHz)

Frequency range	Magnetic flux density (mT)	Current density (Ma/m ²) (rms)	Whole body average SAR (W/kg)	Localised SAR (head and trunk) (W/kg)	Localised SAR (limbs) (W/kg)	Power density (W/m ²)
0Hz	40	-	-	-	-	-
>0-1Hz	-	8	-	-	-	-
1-4Hz	-	8/f	-	-	-	-
4-1000Hz	-	2	-	-	-	-
1000Hz-100kHz	-	f/500	-	-	-	-
100kHz-10MHz	-	f/500	0.08	2	4	-
10MHz-10GHz	-	-	0.08	2	4	-
10-300GHz	-	-	-	-	-	10

Note:

1. f is the frequency in Hz.
2. The basic restriction on the current density is intended to protect against acute exposure effects on central nervous system tissues in the head and trunk of the body and includes a safety factor. The basic restrictions for ELF fields are based on established adverse effects on the central nervous system. Such acute effects are essentially instantaneous and there is no scientific justification to modify the basic restrictions for exposure of short duration. However, since the basic restriction refers to adverse effects on the central nervous system, this basic restriction may permit higher current densities in body tissues other than the central nervous system under the same exposure conditions.
3. Because of electrical inhomogeneity of the body, current densities should be averaged over a cross section of 1cm² perpendicular to the current direction.
4. For frequencies up to 100 kHz, peak current density values can be obtained by multiplying the rms value by $\sqrt{2}$ (=1.414). For pulses of duration t_p the equivalent frequency to apply in the basic restrictions should be calculated as $f=1/(2t_p)$
5. For frequencies up to 100kHz and for pulsed magnetic fields, the maximum current density associated with the pulses can be calculated from the rise/fall times and the maximum rate of change of magnetic flux density. The induced current density can then be compared with the appropriate basic restriction.
6. All SAR values are to be averaged over any six-minute period.
7. Localised SAR averaging mass is any 10g of contiguous tissue; the maximum SAR so obtained should be the value used for the estimation of exposure. These 10g of tissue are intended to be a mass of contiguous tissue with nearly homogeneous electrical properties. In specifying a contiguous mass of tissue, it is recognised that this concept can be used in computational dosimetry but may present difficulties for direct physical measurements. A simple geometry such as cubic tissue mass can be used provided that the calculated dosimetric quantities have conservation values relative to the exposure guidelines.

8. For pulses of duration t_p the equivalent frequency to apply in the basic restrictions should be calculated as $1/(2t_p)$. Additionally, for pulsed exposures, in the frequency range 0,3 to 10GHz and for localised exposure of the head, in order to limit and avoid auditory effects caused by thermoelastic expansion, an additional basic restriction is recommended. This is that SA should not exceed 2mJ kg⁻¹ averaged over 10g of tissue.

2.2 Reference Levels

Council Recommendation 1999/519/EC Annex III

Reference levels for electric, magnetic and electromagnetic fields (0Hz to 300GHz)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density Seq (W/m ²)
0-1Hz	-	$3,2 \times 10^4$	4×10^4	-
1-8Hz	1000	$3,2 \times 10^4 / f^2$	$4 \times 10^4 / f^2$	-
8-25Hz	1000	4000/f	5000/f	-
0.025Hz-0,8kHz	250/f	4/f	5/f6,25	-
0,8-3kHz	250/f	5	6,25	-
3-150kHz	87	5	6,25	-
0,15-1MHz	87	0.73/f	0,92/f	-
1-10MHz	$87/f^{1/2}$	0.73/f	0,92/f	-
10-400MHz	28	0.073	0,092	2
400-2000MHz	$1,375 f^{1/2}$	$0,0037 f^{1/2}$	$0,0046 f^{1/2}$	f/200
2-300GHz	61	0,16	0,20	10

Note:

1. As indicated in the frequency range column.
2. For frequencies between 100kHz and 10GHz, Seq, E2, H2 and B2 are to be averaged over any six-minute period.
3. For frequencies exceeding 10GHz, Seq, E2, H2 and B2 are to be averaged over any 68/.1.05-minute period (.in GHz).
4. No E-field value is provided for frequencies <1Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 20kV/m. Spark discharges causing stress or annoyance should be avoided.

2.3. Test Results

According to the radio test report (LCS170928004AE2), GSM900 owns the maximum output power.

EUT parameter (data from the separate report)	
Max average output power in Watt (TP)=EIRP-Antenna gain	1. Low Channel: 30.41dBm (1.09901W) 2. Middle Channel: 30.29dBm (1.06905W) 3. High Channel: 30.41dBm (1.09901W)
Antenna gain (G)	2.5dBi (Numeric gain:1.78)
Minimum distance in meter (D) (from transmitting structure to the human body)	0.2m
Exposure evaluation	
Given $E = \frac{\sqrt{30 \times G \times TP}}{D}$ yield E1=38.304V/m yield E2= 37.778 V/m yield E3= 38.304 V/m	Where <i>G: numerical gain of transmitting antenna;</i> <i>TP: Transmitted power in watt;</i> <i>D: distance from the transmitting antenna in meter.</i>
Conclusion: → <u>E1=38.304V/m, E2=37.778 V/m, E3=38.304V/m, is significant lower than the 1,375 f^{1/2} V/m as required in Annex III table 2 of EC Council Recommendation (1999/519/EC). This proves that the unit complies with the EN 62311 for RF exposure requirement.</u>	

Note:

1. Only record worst case data for Low, Mid. High Channel
2. All other emissions are too low to read.

-----THE END OF REPORT-----