





# **MPE TEST REPORT**

**Applicant** UAB TELTONIKA

FCC ID 2AET4RUT955A

**Product** LTE Router

**Brand** Teltonika

Model RUT955

**Report No.** R1808A0384-M1

Issue Date October 25, 2018

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC 47 CFR Part 1 1.1310**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Performed by: Jiangpeng Lan

Jiang peng Lan

Approved by: Kai Xu

# TA Technology (Shanghai) Co., Ltd.

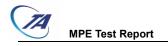
No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000



### **Table of Contents**

1	Tes	t Laboratory	. 3
		Notes of the Test Report	
		Test facility	
		Testing Location	
		Laboratory Environment	
		scription of Equipment under Test	
		ximum conducted output power (measured) and antenna Gain	



1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology** (shanghai) co., Ltd. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein . Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support

regulatory compliance of the applicable standards stated above.

1.2 Test facility

CNAS (accreditation number:L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.



#### 1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.

Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

City: Shanghai

Post code: 201201

Country: P. R. China

Contact: Xu Kai

Telephone: +86-021-50791141/2/3

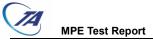
Fax: +86-021-50791141/2/3-8000
Website: http://www.ta-shanghai.com

E-mail: xukai@ta-shanghai.com

#### 1.4 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C		
Relative humidity	Min. = 30%, Max. = 70%		
Ground system resistance	< 0.5 Ω		
Anabiant naise is absolved and found year, la	and in assemble as with requirement of standards		

Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.



Report No: R1808A0384-M1

### **Description of Equipment under Test**

#### **Client Information**

Applicant	UAB TELTONIKA	
Applicant address	Saltoniskiu g. 9B LT-08105, Vilnius, Lithuania	
Manufacturer	UAB TELTONIKA	
Manufacturer address	Saltoniskiu g. 9B LT-08105, Vilnius, Lithuania	

#### **General Technologies**

Model	RUT955
IMEI	861107033626590
Hardware Version	11
Software Version	RUT9xx_R_AA.BB.CCC
Date of Testing:	August 21, 2018 ~ September 7, 2018



### 3 Maximum conducted output power (measured) and antenna Gain

The numeric gain (G) of the antenna with a gain specified in dB is determined by Numeric gain (G)=10^(antenna gain/10)

Band		nducted Output r (dBm)	Antenna Gain	Numeric gain	
	(dBm)	(mW)	(dBi)		
WCDMA Band II	23.50	223.87	3.00	2.00	
WCDMA Band IV	23.50	223.87	3.00	2.00	
WCDMA Band V	23.50	223.87	3.00	2.00	
LTE Band 2	24.00	251.19	3.00	2.00	
LTE Band 4	24.00	251.19	3.00	2.00	
LTE Band 12	24.00	251.19	3.00	2.00	
Wi-Fi 2.4G	14.52	28.31	5.00	3.16	



MPE Test Report No: R1808A0384-M1

According to section 1.1310 of FCC 47 CFR Part 1, limits for maximum permissible exposure (MPE) are as following

TABLE 1 - LIMITS FOR MAXIMUN PERMISSIBLE EXPOSURE (MPE)

Frequency Range	Electric Field	Magnetic Field	Power Density	Averaging Time			
(MHz)	Strength	Strength					
94500° 4950	(V/m)	(A/m)	(mW/cm2)	(minutes)			
(A) Limits for Occupational/Controlled Exposures							
0.3-3.0	614	1.63	*(100)	6			
3-30	1842/f	4.89/f	*(900/f2)	6			
30-300	61.4	0.163	1.0	6			
300-1500			f/300	6			
1500-100,000			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/f2)	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

- Note1. Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational / controlled limits apply provided he or she is made aware of the potential for exposure.
- Note2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

<sup>\* =</sup> Plane-wave equivalent power density



Report No: R1808A0384-M1 The maximum permissible exposure for 300~1500 MHz is f/1500, for 1500~100,000MHz is 1.0.So

Band	The maximum permissible exposure
WCDMA II	1.0mW/cm <sup>2</sup>
WCDMA IV	1.0mW/cm <sup>2</sup>
WCDMA V	0.55mW/cm <sup>2</sup>
LTE Band 2	1.0mW/cm <sup>2</sup>
LTE Band 4	1.0mW/cm <sup>2</sup>
LTE Band 12	0.47mW/cm <sup>2</sup>
Wi-Fi 2.4G	1.0mW/cm <sup>2</sup>

MPE Test Report No: R1808A0384-M1

#### **RF Exposure Calculations:**

The following information provides the minimum separation distance for the highest gain antenna provided. This calculation is based on the conducted power, considering maximum power and antenna gain. The formula shown in KDB 447498 D01 is used in the calculation.

Equation from KDB 447498 D01 General RF Exposure Guidance v06 (10/23/2015) is:

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

Where: S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

P = Time-average maximum tune up procedure (in appropriate units, e.g., mW)

G = the numeric gain of the antenna

R = distance to the center of radiation of the antenna (20 cm = limit for MPE)

Band	PG (mW)	Test Result (mW/cm <sup>2</sup> )	Limit Value (mW/cm <sup>2</sup> )	The MPE ratio	Conclusion
WCDMA II	446.68	0.09	1.0	0.09	Pass
WCDMA IV	446.68	0.09	1.0	0.09	Pass
WCDMA V	446.68	0.09	0.55	0.16	Pass
LTE Band 2	501.19	0.10	1.0	0.10	Pass
LTE Band 4	501.19	0.10	1.0	0.10	Pass
LTE Band 12	501.19	0.10	0.47	0.21	Pass
Wi-Fi 2.4G	89.54	0.02	1.0	0.02	Pass

Note: **R** = 20cm

∏= 3.1416

The MPE ratio = Mac Test Result ÷ Limit Value

So the simultaneous transmitting antenna pairs as below:

∑of MPE ratios=WiFi 2.4G + 3G/4G Antenna =0.02+0.21 =0.23 <1

Note: For transmitters, minimum separation distance is 20cm, even if calculations indicate MPE distance is less.