



# MPE TEST REPORT

**Applicant** UAB Teltonika Networks  
**FCC ID** 2AET4RUT360  
**Product** LTE Router  
**Model** RUT360  
**Report No.** R2104A0353-M1V1  
**Issue Date** October 11, 2021

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.

*Fangying Wei*

*Prepared by: Fangying Wei*

*Guangchang Fan*

*Approved by: Guangchang Fan*

---

**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	Test Laboratory.....	4
1.1	Notes of the Test Report.....	4
<b>1.2.</b>	<b>Test facility</b> .....	<b>4</b>
1.3	Testing Location.....	4
1.4	Laboratory Environment.....	5
2	Description of Equipment under Test.....	6
3	Maximum conducted output power (measured) and antenna Gain.....	7
4	Test Result .....	8
	ANNEX A: The EUT Appearance.....	11



Version	Revision description	Issue Date
Rev.0	Initial issue of report.	July 19, 2021
Rev.1	Update data in Page10	October 11, 2021

Note: This revised report (Report No. R2104A0353-M1V1) supersedes and replaces the previously issued report (Report No. R2104A0353-M1). Please discard or destroy the previously issued report and dispose of it accordingly.

# 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

### **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 measurements.

## 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: Fan Guangchang  
Telephone: +86-021-50791141/2/3  
Fax: +86-021-50791141/2/3-8000  
Website: <http://www.ta-shanghai.com>  
E-mail: [fanguangchang@ta-shanghai.com](mailto:fanguangchang@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 $\Omega$
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.	

## 2 Description of Equipment under Test

### Client Information

<b>Applicant</b>	UAB Teltonika Networks
<b>Applicant address</b>	K. Barsausko st. 66, Kaunas, Lithuania
<b>Manufacturer</b>	UAB Teltonika Networks
<b>Manufacturer address</b>	K. Barsausko st. 66, Kaunas, Lithuania

### General Technologies

<b>Model</b>	RUT360
<b>IMEI</b>	868759034414005
<b>Hardware Version</b>	4
<b>Software Version</b>	RUT36X_R_00.02.06
<b>Date of Testing:</b>	May 12, 2021~ June 7, 2021

Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.

2. All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.

### 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	Maximum Conducted Output Power		Antenna Gain (dBi)	Numeric gain
	(dBm)	(mW)		
WCDMA Band II	24.000	251.189	4.000	2.512
WCDMA Band IV	24.000	251.189	4.000	2.512
WCDMA Band V	24.000	251.189	2.500	1.778
LTE Band 2	24.000	251.189	4.000	2.512
LTE Band 4	24.000	251.189	4.000	2.512
LTE Band 5	24.000	251.189	2.500	1.778
LTE Band 7	24.000	251.189	4.000	2.512
LTE Band 12	24.000	251.189	2.500	1.778
LTE Band 13	24.000	251.189	2.500	1.778
LTE Band 25	24.000	251.189	4.000	2.512
LTE Band 26	24.000	251.189	2.500	1.778
LTE Band 30	24.000	251.189	4.000	2.512
LTE Band 66	24.000	251.189	4.000	2.512
Wi-Fi 2.4GHz	20.000	100.000	5.000	3.162

## 4 Test Result

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

TABLE 1 – LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0 .....	614	1.63	*(100)	6
3-30 .....	1842/f	4.89/f	*(900/f <sup>2</sup> )	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/f <sup>2</sup> )	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

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.





The maximum permissible exposure for 300~1500 MHz is  $f/1500$ , for 1500~100,000MHz is 1.0. So

Band	The maximum permissible exposure (mW/cm <sup>2</sup> )
WCDMA Band II	1.000
WCDMA Band IV	1.000
WCDMA Band V	0.566
LTE Band 2	1.000
LTE Band 4	1.000
LTE Band 5	0.566
LTE Band 7	1.000
LTE Band 12	0.477
LTE Band 13	0.525
LTE Band 25	1.000
LTE Band 26	0.566
LTE Band 30	1.000
LTE Band 66	1.000
Wi-Fi 2.4GHz	1.000

**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:

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

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	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	PG (mW)	Test Result (mW/cm <sup>2</sup> )	Limit Value (mW/cm <sup>2</sup> )	The MPE ratio
WCDMA Band II	4.000	24.000	28.000	630.957	0.126	1.000	0.126
WCDMA Band IV	4.000	24.000	28.000	630.957	0.126	1.000	0.126
WCDMA Band V	2.500	24.000	26.500	446.684	0.089	0.566	0.157
LTE Band 2	4.000	24.000	28.000	630.957	0.126	1.000	0.126
LTE Band 4	4.000	24.000	28.000	630.957	0.126	1.000	0.126
LTE Band 5	2.500	24.000	26.500	446.684	0.089	0.566	0.157
LTE Band 7	4.000	24.000	28.000	630.957	0.126	1.000	0.126
LTE Band 12	2.500	24.000	26.500	446.684	0.089	0.477	<b>0.186</b>
LTE Band 13	2.500	24.000	26.500	446.684	0.089	0.525	0.169
LTE Band 25	4.000	24.000	28.000	630.957	0.126	1.000	0.126
LTE Band 26	2.500	24.000	26.500	446.684	0.089	0.566	0.157
LTE Band 30	4.000	24.000	28.000	630.957	0.126	1.000	0.126
LTE Band 66	4.000	24.000	28.000	630.957	0.126	1.000	0.126
Wi-Fi 2.4GHz	5.000	20.000	25.000	316.228	0.063	1.000	<b>0.063</b>
Note: R = 20cm $\pi = 3.1416$ The MPE ratio = Mac Test Result÷Limit Value							

So the simultaneous transmitting antenna pairs as below:

$$\sum \text{of MPE ratios} = \text{Main Antenna} + \text{Wi-Fi Antenna} = 0.186 + 0.063 = 0.249 < 1$$

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

\*\*\*\*\*END OF REPORT \*\*\*\*\*



## **ANNEX A: The EUT Appearance**

The EUT Appearance are submitted separately.