TEST REPORT

REPORT NUMBER:I21W00004

ON

Type of Equipment:	AT Pro NG
Type of Designation:	Tracker
Manufacturer:	Micron Electronics LLC
FCC ID:	ZKQ-ATPNG

ACCORDING TO

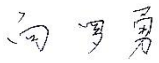
FCC CFR 47 Part 2.1091《Radiofrequency radiation exposure evaluation: mobile devices》
FCC CFR 47 Part1.1310《Radiofrequency radiation exposure limits》

Chongqing Academy of Information and Communication Technology

Month date, year

Apr,10,2021

Signature



Xiang Luoyong

Director

Note:
The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communications Technology.

Revision Version

Report Number	Revision	Date	Memo
I21W00004-MPE	00	2021-04-10	Initial creation of test report

CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name:	Chongqing Academy of Information andCommunications Technology
Address:	No. 8, Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China
Postal Code:	401336
Telephone:	0086-23-88069965
Fax:	0086-23-88608777

1.2. Testing Environment

Normal Temperature:	21.3℃
Relative Humidity:	75%

1.3. Project Data

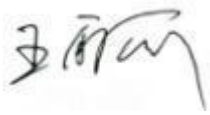
Testing Start Date:	2021-04-09
Testing End Date:	2021-04-09

1.4. Signature

2021-04-10

Fu Bohao
(Prepared this test report)

Date



2021-04-10

Wang Lili
(Reviewed this test report)

Date

2021-04-10

Xiang Luoyong
Director of the laboratory
(Approved this test report)

Date

2. Client Information

2.1. Applicant Information

Company Name:	Micron Electronics LLC
Address /Post:	1001 Yamato Road, Suite 400, Boca Raton, FL 33431, USA
Telephone:	18885383489
Fax:	--
Email:	pcheng@micron-electronics.com
Contact Person:	Ping Cheng

2.2. Manufacturer Information

Company Name:	Micron Electronics LLC
Address /Post:	1001 Yamato Road, Suite 400, Boca Raton, FL 33431, USA
Telephone:	18885383489
Fax:	--
Email:	pcheng@micron-electronics.com
Contact Person:	Ping Cheng

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description:	AT Pro NG
Model name:	Tracker
GSM Frequency Band	GPRS850/1900,EGPRS850/1900
CATM Frequency Band	Band2/4/5/12/13
Support Technology	2.4G WLAN
GPRS Multislot Class	12
EGPRS Multislot Class	12
Antenna type:	FPC
Note：Photographs of EUT are shown in ANNEX A of this test report.	

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
S4	866884045634251	F602_V1_PCB	L101_PTCRB	2021-03-22

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

EUT ID*	SN	Description
NA	NA	NA

*AE ID: is used to identify the test sample in the lab internally.

4. Reference Documents

4.1. Applicable Standards

The MPE report was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 2.1091.

FCC CFR 47 Part 2.1091: Radiofrequency radiation exposure evaluation: mobile devices

4.2. Test Limits

Systems operating under the provisions of this section shall be operated in a mannerthat ensures that the public is not exposed to radio frequency energy level in excesslimit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2Subpart J, section 2.1091 this device has been defined as a mobile device whereby adistance of 0.2m normally can be maintained between the user and the device.

MPE for the upper tier (people in controlled environments)

Frequency Range [MHz]	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) 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
1500-100000	--	--	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	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100000	--	--	1.0	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

For the DUT, the limits for the general public when an RF safety program is unavailable.

5. Test Results

5.1. RF Power Output

Frequency Band	Highest Averaged Power Output(dBm)	Highest Frame-Averaged Output Power (dBm)	Antenna Gain(dBi)
GPRS 850 3TS	31.00	26.74	0.5
GPRS 1900 4TS	31.00	27.99	0.5
CATM1 Band2	24.74	24.74	0.5
CATM1 Band4	24.74	24.74	0.5
CATM1 Band5	24.55	24.55	0.5
CATM1 Band12	24.58	24.58	0.5
CATM1 Band13	25.42	25.42	0.5
2.4G WLAN	18.46	18.46	0.5

Notes:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

2) According to the conducted power as above, the measurements are performed with 1Txslots for 850MHz and 1900MHz.

5.2. Calculation Information

For conservative evaluation consideration, only maximum power of each frequency band based on the tighter limits respectively are used to calculate the boundary power density.

Based on the FCC KDB 447498 D01 and 47 CFR §2.1091, the DUT is evaluated as a mobile device.

$$S = \frac{PG}{4\pi d^2}$$

Where

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

5.3. Results

Frequency range	Limit(mW/cm^2)	Results(mW/cm^2)	Verdict
GPRS 850 3TS	0.549	0.105	Pass
GPRS 1900 4TS	1.000	0.141	Pass
CATM1 Band2	1.000	0.066	Pass
CATM1 Band4	1.000	0.066	Pass
CATM1 Band5	0.549	0.064	Pass
CATM1 Band12	0.466	0.064	Pass
CATM1 Band13	0.518	0.078	Pass
2.4G WLAN	1.000	0.016	Pass

5.4. Result of GPRS 850

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 824.2～848.8 MHz; The maximum conducted is 26.74 dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 824.2/1500=0.549 mW/cm^2.

$$S = \frac{PG}{4\pi r^2}$$

P= input power of the antenna（472.063 mW）
G = antenna gain（1.122 numeric）
r = distance to the center of radiation of antenna (in meter)= 20 cm

S=(472.063*1.122)/(4 π*20^2)=0.105mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 0.549 mW/cm^{2}limit for uncontrolled exposure.

5.5. Result of GPRS 1900

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1850.2～1909.8 MHz; The maximum conducted is 27.99 dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 1.0 mW/cm^2.

$$S = \frac{PG}{4\pi r^2}$$

P= input power of the antenna（629.506 mW）
G = antenna gain（1.122 numeric）
r = distance to the center of radiation of antenna (in meter)= 20 cm

S=(629.506*1.122)/(4 π*20^2)=0.141 mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 1.0 mW/cm^2 limit for uncontrolled exposure.

5.6. Result of CATM Band 2

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1850.0～1909.9 MHz; The maximum conducted is 24.74 dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 1.0 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（297.852 mW）
G = antenna gain（1.122numeric）
r = distance to the center of radiation of antenna (in meter)=20 cm

S=(297.852*1.122)/(4 π*20^2)=0.066mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 1.0 mW/cm^2 limit for uncontrolled exposure.

5.7. Result of CATM Band 4

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1710.0～1754.9 MHz; The maximum conducted is 24.74 dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 1 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（297.852 mW）
G = antenna gain（1.122numeric）
r = distance to the center of radiation of antenna (in meter)=20 cm

S=(297.852*1.122)/(4 π*20^2)=0.066mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 1 mW/cm^2 limit for uncontrolled exposure.

5.8. Result of CATM Band 5

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 824.0～848.9 MHz; The maximum conducted is 24.55dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 824.0/1500=0.549 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（285.102 mW）
G = antenna gain（1.122numeric）
r = distance to the center of radiation of antenna (in meter)=20 cm

S=(285.102*1.122)/(4 π*20^2)=0.064mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 0.549mW/cm^2 limit for uncontrolled exposure.

5.9. Result of CATM Band 12

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 699.0 ~ 715.9 MHz; The maximum conducted is 24.58dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 699.0/1500=0.466 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（287.078 mW）
G = antenna gain（1.122numeric）
r = distance to the center of radiation of antenna (in meter)=20 cm

S=(287.078*1.122)/(4 π*20^2)=0.064mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 0.466mW/cm^2 limit for uncontrolled exposure.

5.10. Result of CATM Band 13

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 777.0 ~ 786.9 MHz; The maximum conducted is 25.42 dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 777.0/1500=0.518 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（348.337 mW）
G = antenna gain（1.122numeric）
r = distance to the center of radiation of antenna (in meter)=20 cm

S=(348.337*1.122)/(4 π*20^2)=0.078mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 0.518mW/cm^2 limit for uncontrolled exposure.

5.11. Result of 2.4G WLAN 802.11g

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 2400.0～2483.5 MHz; The maximum conducted is 18.46 dBm. The maximum gain is 0.5 dBi. Therefore, maximum limit for general public RF exposure: 1.0 mW/cm^2.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna（70.146 mW）

G = antenna gain（1.122numeric）

r = distance to the center of radiation of antenna (in meter)=20 cm

S=(70.146*1.122)/(4 π*20^2)=0.016mW/cm^2

Therefore, at 20 cm the spectral power density is less than the 1.0 mW/cm^2 limit for uncontrolled exposure.

ANNEX A: EUT photograph

See the document" Tracker -External Photos".

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