



TEST REPORT

No. I19D00117-SAR01

For

Client: Micronet

Production: A9 PCBA module

Model Name: A9

Brand Name TREQ

FCC ID: U80-A9

IC ID: 12186A-A9

Hardware Version: C801_V1.00_PCB

Software Version: SC_10.2.0.0

Issued date: 2019-09-19

NOTE

1. The test results in this test report relate only to the devices specified in this report.
2. This report shall not be reproduced except in full without the written approval of East China Institute of Telecommunications.
3. For the test results, the uncertainty of measurement is not taken into account when judging the compliance with specification, and the results of measurement or the average value of measurement results are taken as the criterion of the compliance with specification directly.
4. It has been confirmed with the customer that the Highest Frame-Averaged Output Power and Antenna gain information provided by the customer may affect the validity of the measurement results in this report, and the impact and consequences will be borne by the customer.

Test Laboratory:

East China Institute of Telecommunications

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Revision Version

Report Number	Revision	Date	Memo
I19D00117-SAR01	00	2019-09-19	Initial creation of test report

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1. Test Laboratory

1.1. Testing Location

Company Name	East China Institute of Telecommunications
Address	7-8/F., Area G, No.668, Beijing East Road, Shanghai, China
Postal Code	200001
Telephone	+86 21 63843300
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1.2. Testing Environment

Normal Temperature	18°C-25°C
Relative Humidity	25%-75%

1.3. Project Data

Project Leader	Zhou Yan
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1.4. Signature



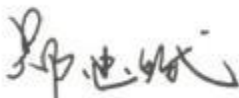
Yan Hang

(Prepared this test report)



Fu Erliang

(Reviewed this test report)



Zheng Zhongbin

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name	Micronet
Address	1865 West 2100 South, Suite 2 Salt Lake City, Utah 84119 United States
Telephone	+1-801-990-8700
Postcode	84119

2.2. Manufacturer Information

Company Name	Micronet
Address	1865 West 2100 South, Suite 2 Salt Lake City, Utah 84119 United States
Telephone	+1-801-990-8700
Postcode	84119

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

3.1. About EUT

EUT Description	A9 PCBA module
Model name	A9
GSM Frequency Band	GSM900/1800/850/1900
UMTS Frequency Band	WCDMA Band 1/2/4/5/8
LTE Frequency Band	LTE Band 1/2/3/4/5/7/8/12/13/17/20/28
Additional Communication Function	BT4.2, BLE; WiFi 802.11a/b/g/n/ac

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N01	N/A	C801_V1.00_P CB	SC_10.2.0.0	2019-07-06

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

3.3. Internal Identification of AE used during the test

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

4. Reference Documents for FCC

4.1. Documents supplied by applicant

All technical documents are supplied by the client or manufacturer, which is the basis of evaluation.

4.2. Reference Documents

The following documents listed in this section are referred for evaluation.

Reference	Title	Version
FCC CFR 47	Part 2 FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS. Oct 1,2011 Section 2.1091 Radiofrequency radiation exposure evaluation: mobile devices, June 23, 2015	2015

4.3. Criteria

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 limit for maximum permissible exposure. In accordance with the reference this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

Limits for Occupational / Controlled Exposure				
Frequency (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3 – 3.0	614	1.63	(100)*	6
3.0 – 30	1824/f	4.89/f	(900/f)*	6
30 – 300	61.4	0.163	1	6
300 – 1500	--	--	F/300	6
1500 - 100000	--	--	5	6
Limits for General Population / Uncontrolled Exposure				
Frequency (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3 – 1.34	614	1.63	(100)*	30
1.34 – 30	824/f	2.19/f	(180/f)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	--	--	F/1500	30
1500 - 100000	--	--	1	30
Note: f = frequency in MHz; * Plane-wave equivalent power density. For the DUT, the limits for General Population / Uncontrolled Exposure are applicable.				

4.4. Calculation

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.

$$S = \frac{P \times G}{4\pi d^2}$$

Where

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

5. Reference Documents for IC

5.1. Documents supplied by applicant

All technical documents are supplied by the client or manufacturer, which is the basis of evaluation.

5.2. Reference Documents

The following documents listed in this section are referred for testing.

Reference	Title	Version
RSS 102 Issue 5	Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)	2015

5.3. Criteria

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

Frequency (MHz)	Base	Maximum e.i.r.p (w)
< 20	Source	1
20 – 48	Source	22.48/f ^{0.5}
48 – 300	Source	0.6
300 – 6000	Source	1.31*10 ⁻² *f ^{0.6834}
> 6000	Source	5

Note:

f = frequency in MHz;

The result should be adjusted for tune-up tolerance.

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

5.4. Calculation

At or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;

6. Evaluation Summary and Statement of Compliance

6.1. RF Power Output

Band	Frequency	Highest Output Power (dBm)	Highest Output Power (mW)	Antenna Gain(dBi)
GSM850	824.2	32	1584.89	3
GSM1900	1850.2	32	1584.89	5
WCDMA Band 2	1852.4	23	199.53	5
WCDMA Band 4	1712.4	24	251.19	5
WCDMA Band 5	826.4	24	251.19	3
LTE Band 2	1850.7	24	251.19	5
LTE Band 4	1710.7	23	199.53	5
LTE Band 5	824.7	25	316.23	3
LTE Band 7	2502.5	23	199.53	6
LTE Band 12	699.7	23	199.53	3
LTE Band 13	779.5	24	251.19	3
LTE Band 17	706.5	24	251.19	3
BT 4.2	2402	8	6.31	6
BLE	2402	3	2.00	6
WIFI 2.4G 802.11b	2412	18	63.10	6
WIFI 2.4G 802.11g	2412	18	63.10	6
WIFI 2.4G 802.11n	2412	19	79.43	6
WIFI 5G 802.11a	5180	13	19.95	6
WIFI 5G 802.11n	5180	14	25.12	6
WIFI 5G 802.11ac	5180	14	25.12	6

6.2. Evaluation Summary for FCC

Band	Frequency	Highest Output Power (dBm)	Highest Output Power (mW)	Antenna Gain(dBi)	Numeric antenna gain	Duty Cycle	Power density at 20cm	MPE limit (mW/cm ²)
GSM850	824.2	32	1584.89	3	1.995	0.120	0.076	0.549
GSM1900	1850.2	32	1584.89	5	3.162	0.120	0.120	1.000
WCDMA Band 2	1852.4	23	199.53	5	3.162	1.000	0.126	1.000
WCDMA Band 4	1712.4	24	251.19	5	3.162	1.000	0.158	1.000
WCDMA Band 5	826.4	24	251.19	3	1.995	1.000	0.100	0.551
LTE Band 2	1850.7	24	251.19	5	3.162	1.000	0.158	1.000
LTE Band 4	1710.7	23	199.53	5	3.162	1.000	0.126	1.000
LTE Band 5	824.7	25	316.23	3	1.995	1.000	0.126	0.550
LTE Band 7	2502.5	23	199.53	6	3.981	1.000	0.158	1.000
LTE Band 12	699.7	23	199.53	3	1.995	1.000	0.079	0.466
LTE Band 13	779.5	24	251.19	3	1.995	1.000	0.100	0.520
LTE Band 17	706.5	24	251.19	3	1.995	1.000	0.100	0.471
BT 4.2	2402	8	6.31	6	3.981	1.000	0.005	1.000
BLE	2402	3	2.00	6	3.981	1.000	0.002	1.000
WIFI 2.4G 802.11b	2412	18	63.10	6	3.981	1.000	0.050	1.000
WIFI 2.4G 802.11g	2412	18	63.10	6	3.981	1.000	0.050	1.000
WIFI 2.4G 802.11n	2412	19	79.43	6	3.981	1.000	0.063	1.000
WIFI 5G 802.11a	5180	13	19.95	6	3.981	1.000	0.016	1.000
WIFI 5G 802.11n	5180	14	25.12	6	3.981	1.000	0.020	1.000
WIFI 5G 802.11ac	5180	14	25.12	6	3.981	1.000	0.020	1.000

6.3. Evaluation Summary for IC

Band	Frequency	Highest Output Power (dBm)	Highest Output Power (mW)	Antenna Gain(dBi)	Numeric antenna gain	Duty Cycle	Power density at 20cm	MPE limit (mW/cm ²)
GSM850	824.2	32	1584.89	3	1.995	0.120	0.076	0.549
GSM1900	1850.2	32	1584.89	5	3.162	0.120	0.120	1.000
WCDMA Band 2	1852.4	23	199.53	5	3.162	1.000	0.126	1.000
WCDMA Band 4	1712.4	24	251.19	5	3.162	1.000	0.158	1.000
WCDMA Band 5	826.4	24	251.19	3	1.995	1.000	0.100	0.551
LTE Band 2	1850.7	24	251.19	5	3.162	1.000	0.158	1.000
LTE Band 4	1710.7	23	199.53	5	3.162	1.000	0.126	1.000
LTE Band 5	824.7	25	316.23	3	1.995	1.000	0.126	0.550
LTE Band 7	2502.5	23	199.53	6	3.981	1.000	0.158	1.000
LTE Band 12	699.7	23	199.53	3	1.995	1.000	0.079	0.466
LTE Band 13	779.5	24	251.19	3	1.995	1.000	0.100	0.520
LTE Band 17	706.5	24	251.19	3	1.995	1.000	0.100	0.471
BT 4.2	2402	8	6.31	6	3.981	1.000	0.005	1.000
BLE	2402	3	2.00	6	3.981	1.000	0.002	1.000
WIFI 2.4G 802.11b	2412	18	63.10	6	3.981	1.000	0.050	1.000
WIFI 2.4G 802.11g	2412	18	63.10	6	3.981	1.000	0.050	1.000
WIFI 2.4G 802.11n	2412	19	79.43	6	3.981	1.000	0.063	1.000
WIFI 5G 802.11a	5180	13	19.95	6	3.981	1.000	0.016	1.000
WIFI 5G 802.11n	5180	14	25.12	6	3.981	1.000	0.020	1.000
WIFI 5G 802.11ac	5180	14	25.12	6	3.981	1.000	0.020	1.000

The product is under the MPE limits. All is pass.

6.4. Statement of Compliance

The **A9** manufactured by **Micronet** is a parent model for evaluation.

ECIT has verified that the compliance of the tested device specified in section 3 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 4 and section 5 of this test report.

*****End of the Report*****