RF Exposure Evaluation Report

APPLICANT	:	Huawei Technologies Co.,Ltd
EQUIPMENT	:	LTE Module
BRAND NAME	:	HUAWEI
MODEL NAME	:	ME936
FCC ID	:	QISME936
STANDARD	:	47 CFR Part 2.1091 KDB 616217 D04 v01r01

The product was installed into Touch All-in-One Computer (Brand Name: Elo or Model Name: ESY15i1, FCC ID: RBWESY15I1) during evaluation.

We, SPORTON INTERNATIONAL INC., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091 and pass the limit. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

SPORTON INTERNATIONAL INC.
No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan R.O.C.

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA4D0318	Rev. 01	Initial issue of report	Feb. 25, 2015
FA4D0318	Rev. 02	Added host information on page1 and added note2 on page3.	Mar. 16, 2015

1. Administration Data

1.1. Testing Laboratory

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	Huawei Technologies Co., Ltd
Address	Administration Building, Headquarters of Huawei, Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, China

Manufacturer	
Company Name	Huawei Technologies Co., Ltd
Address	Administration Building, Headquarters of Huawei, Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, China

2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	LTE Module
Brand Name	HUAWEI
Model Name	ME936
FCC ID	QISME936
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz
Mode	• GSM/GPRS/EGPRS • RMC 12.2Kbps • HSDPA • HSUPA • LTE: QPSK, 16QAM
Antenna Type	WWAN: PIFA Antenna
EUT Stage	Production Unit

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. This device cannot transmit simultaneously with BT / WiFi operation in FCC ID: RBWESY15I1.

3. Maximum RF average output power among production units

Mode	GSM 850	GSM 1900
	Burst Average power(dBm)	
GPRS/EDGE (GMSK, 1 Tx slot)	33.50	30.50
GPRS/EDGE (GMSK, 2 Tx slots)	31.50	28.50
GPRS/EDGE (GMSK, 3 Tx slots)	30.50	27.50
GPRS/EDGE (GMSK, 4 Tx slots)	28.50	25.50
EDGE (8PSK, 1 Tx slot)	33.50	30.50
EDGE (8PSK, 2 Tx slots)	31.50	28.50
EDGE (8PSK, 3 Tx slots)	30.50	27.50
EDGE (8PSK, 4 Tx slots)	28.50	25.50

Band / Mode		Average power(dBm)
WCDMA	Band V	24.50
	Band II	24.50
	Band IV	24.50
LTE	Band 17	24.00
	Band 13	24.00
	Band 5	24.00
	Band 4	24.00
	Band 2	24.00
	Band 7	24.00

4. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

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 Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	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

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

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

Where:
S = Power Density
P = Output Power at Antenna Terminals
G = Gain of Transmit Antenna (linear gain)
R = Distance from Transmitting Antenna

5. Radio Frequency Radiation Exposure Evaluation

5.1. Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm^2)	Limit (mW/cm^2)
GPRS 850 (1 Tx slot)	824.2	-2.39	33.50	31.110	1.291	162.555	0.032	0.549
GPRS 850 (2 Tx slots)	824.2	-2.39	31.50	29.110	0.815	204.644	0.041	0.549
GPRS 850 (3 Tx slots)	824.2	-2.39	30.50	28.110	0.647	242.661	0.048	0.549
GPRS 850 (4 Tx slots)	824.2	-2.39	28.50	26.110	0.408	204.644	0.041	0.549
EGPRS 850 (1 Tx slot)	824.2	-2.39	33.50	31.110	1.291	162.555	0.032	0.549
EGPRS 850 (2 Tx slots)	824.2	-2.39	31.50	29.110	0.815	204.644	0.041	0.549
EGPRS 850 (3 Tx slots)	824.2	-2.39	30.50	28.110	0.647	242.661	0.048	0.549
EGPRS 850 (4 Tx slots)	824.2	-2.39	28.50	26.110	0.408	204.644	0.041	0.549
GPRS 1900 (1 Tx slot)	1850.2	-1.73	30.50	28.770	0.753	94.842	0.019	1.000
GPRS 1900 (2 Tx slots)	1850.2	-1.73	28.50	26.770	0.475	119.399	0.024	1.000
GPRS 1900 (3 Tx slots)	1850.2	-1.73	27.50	25.770	0.378	141.579	0.028	1.000
GPRS 1900 (4 Tx slots)	1850.2	-1.73	25.50	23.770	0.238	119.399	0.024	1.000
EGPRS 1900 (1 Tx slot)	1850.2	-1.73	30.50	28.770	0.753	94.842	0.019	1.000
EGPRS 1900 (2 Tx slots)	1850.2	-1.73	28.50	26.770	0.475	119.399	0.024	1.000
EGPRS 1900 (3 Tx slots)	1850.2	-1.73	27.50	25.770	0.378	141.579	0.028	1.000
EGPRS 1900 (4 Tx slots)	1850.2	-1.73	25.50	23.770	0.238	119.399	0.024	1.000
WCDMA Band 5	826.4	-2.39	24.50	22.110	0.163	162.555	0.032	0.551
WCDMA Band 4	1712.4	-2.33	24.50	22.170	0.165	164.816	0.033	1.000
WCDMA Band 2	1852.4	-1.73	24.50	22.770	0.189	189.234	0.038	1.000
LTE Band 17	706.5	-3.15	24.00	20.850	0.122	121.619	0.024	0.471
LTE Band 13	779.5	-2.79	24.00	21.210	0.132	132.130	0.026	0.520
LTE Band 5	824.7	-2.39	24.00	21.610	0.145	144.877	0.029	0.550
LTE Band 4	1710.7	-2.33	24.00	21.670	0.147	146.893	0.029	1.000
LTE Band 2	1850.7	-1.73	24.00	22.270	0.169	168.655	0.034	1.000
LTE Band 7	2502.5	-3.82	24.00	20.180	0.104	104.232	0.021	1.000

Conclusion:

Despite the fact that touch screen capability allows the user's hands come within 20 cm of the antenna during normal operation, continuously operating with the hand next to the antenna in normal operation is not expected. According to KDB 616217 D04 v01r01, exposures to hands for typical consumer transmitters used in tablets are not expected to exceed the extremity SAR limit; therefore, SAR evaluation for the front surface of tablet display screens are generally not necessary.