

RF EXPOSURE EVALUATION REPORT

FCC ID : U8G-P1930LITER6
Equipment : PEPWAVE / peplink Wireless Product
Brand Name : PEPWAVE / peplink
Model Name : MAX BR1 Mini LTEA
MAX BR1 Mini LTE
Applicant : PISMO LABS TECHNOLOGY LIMITED
A8, 5/F, HK Spinners Industrial Building, Phase 6, 481 Castle Peak Road, Cheung
Sha Wan, Hong Kong
Manufacturer : PISMO LABS TECHNOLOGY LIMITED
A8, 5/F, HK Spinners Industrial Building, Phase 6, 481 Castle Peak Road, Cheung
Sha Wan, Hong Kong
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part 2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full



Approved by: Cona Huang / Deputy Manager



SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



Table of Contents

1. DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)	4
2. MAXIMUM RF AVERAGE OUTPUT POWER AMONG PRODUCTION UNITS	6
3. RF EXPOSURE LIMIT INTRODUCTION	8
4. RADIO FREQUENCY RADIATION EXPOSURE EVALUATION	9
4.1. Standalone Power Density Calculation	9



1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	PEPWAVE / peplink Wireless Product
Brand Name	PEPWAVE / peplink
Model Name	MAX BR1 Mini LTEA MAX BR1 Mini LTE
FCC ID	U8G-P1930LITER6
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz
Mode	WLAN: 802.11b/g/n/ HT20/HT40
EUT Stage	Identical Prototype
EUT Stage	
1. The either one WWAN will intergrate into this host, the WWAN information as follow, Sim-Tx ananlys with WWAN as section 4.	

Integrated WWAN Module 1	
EUT Type	Radio Module
Brand Name	AirPrime
Model Name	MC7455
FCC ID	N7NMC7455
Wireless Technology and Frequency Range	WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 41: 2496 MHz ~ 2690 MHz
Mode	RMC 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM



Integrated WWAN Module 2	
EUT Type	Radio Module
Brand Name	Telit Wireless Solutions Inc
Model Name	LE910C4-NF
FCC ID	RI7LE910CXNF
Wireless Technology and Frequency Range	WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz
Mode	RMC 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM

Reviewed by: Jason Wang

Report Producer: Daisy Peng



2. Maximum RF average output power among production units

<MC7455>

Mode		Maximum Average power(dBm)
WCDMA	Band II	24
	Band IV	24
	Band V	24
LTE	Band 2	24
	Band 4	24
	Band 5	24
	Band 7	23
	Band 12	23
	Band 13	23
	Band 25	23
	Band 26	23
	Band 30	23
Band 41	23	

<LE910C4-NF>

Mode		Maximum Average power(dBm)
WCDMA	Band II	25
	Band IV	25
	Band V	25
LTE	Band 2	25
	Band 4	25
	Band 5	25
	Band 12	25
	Band 13	25
	Band 14	25
	Band 66	25
Band 71	25	



<WLAN 2.4GHz>

2.4GHz WLAN	Mode	Channel	Frequency (MHz)	Tune-up Limit
	802.11b 1Mbps	1	2412	19.50
		6	2437	20.50
		11	2462	18.50
	802.11g 6Mbps	1	2412	15.50
		6	2437	16.00
		11	2462	15.00
	802.11n-HT20 MCS0	1	2412	14.00
		6	2437	16.00
		11	2462	14.00
	802.11n-HT40 MCS0	3	2422	10.00
		6	2437	13.50
9		2452	11.50	



3. 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/f ²)	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 ²)	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



4. Radio Frequency Radiation Exposure Evaluation

4.1. Standalone Power Density Calculation

<MC7455>

Band	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)	Power Density / Limit
WCDMA Band 2	3.77	24.00	27.8	0.60	598.41	0.119	1.000	0.119
WCDMA Band 4	3.74	24.00	27.7	0.59	594.29	0.118	1.000	0.118
WCDMA Band 5	1.69	24.00	25.7	0.37	370.68	0.074	0.549	0.134
LTE Band 2	3.77	24.00	27.8	0.60	598.41	0.119	1.000	0.119
LTE Band 4	3.74	24.00	27.7	0.59	594.29	0.118	1.000	0.118
LTE Band 5	1.69	24.00	25.7	0.37	370.68	0.074	0.549	0.134
LTE Band 7	2.77	23.00	25.8	0.38	377.57	0.075	1.000	0.075
LTE Band 12	1.93	23.00	24.9	0.31	311.17	0.062	0.466	0.133
LTE Band 13	1.93	23.00	24.9	0.31	311.17	0.062	0.518	0.120
LTE Band 25	3.77	23.00	26.8	0.48	475.34	0.095	1.000	0.095
LTE Band 26	1.69	23.00	24.7	0.29	294.44	0.059	0.543	0.108
LTE Band 30	2.64	23.00	25.6	0.37	366.44	0.073	1.000	0.073
LTE Band 41	2.80	23.00	25.8	0.38	380.19	0.076	1.000	0.076
WLAN2.4GHz Band	5.33	20.50	25.8	0.38	382.82	0.076	1.000	0.076

<LE910C4-NF>

Band	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)	Power Density / Limit
WCDMA Band 2	2.14	25.00	27.1	0.52	517.61	0.103	1.000	0.103
WCDMA Band 4	2.56	25.00	27.6	0.57	570.16	0.113	1.000	0.113
WCDMA Band 5	2.34	25.00	27.3	0.54	542.00	0.108	0.549	0.196
LTE Band 2	2.14	25.00	27.1	0.52	517.61	0.103	1.000	0.103
LTE Band 4	2.56	25.00	27.6	0.57	570.16	0.113	1.000	0.113
LTE Band 5	2.34	25.00	27.3	0.54	542.00	0.108	0.549	0.196
LTE Band 12	1.50	25.00	26.5	0.45	446.68	0.089	0.466	0.191
LTE Band 13	1.50	25.00	26.5	0.45	446.68	0.089	0.518	0.172
LTE Band 14	1.50	25.00	26.5	0.45	446.68	0.089	0.525	0.169
LTE Band 17	1.50	25.00	26.5	0.45	446.68	0.089	0.469	0.189
LTE Band 66	2.56	25.00	27.6	0.57	570.16	0.113	1.000	0.113
LTE Band 71	1.50	25.00	26.5	0.45	446.68	0.089	0.442	0.201
WLAN2.4GHz Band	5.33	20.50	25.8	0.38	382.82	0.076	1.000	0.076



<MC7455>

WWAN (MC7455) Power Density / Limit	WLAN Power Density / Limit	Σ (Power Density / Limit) of WWAN+WLAN
0.134	0.076	0.210

Note:

1. Σ (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WWAN + WLAN.
2. Considering the WWAN collocation with the WLAN transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 2 collocated transmitters is compliant

<LE910C4-NF>

WWAN (LE910C4-NF) Power Density / Limit	WLAN Power Density / Limit	Σ (Power Density / Limit) of WWAN+WLAN
0.201	0.076	0.277

Note:

1. Σ (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WWAN + WLAN.
2. Considering the WWAN module collocation with the WLAN transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 2 collocated transmitters is compliant

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.