RF EXPOSURE EVALUATION REPORT

FCC ID	:	**PPQ202008EG91NAXD**
Equipment	:	**LTE Module**
Brand Name	:	**LITEON**
Model Name	:	**EG91-NAXD**
Applicant	:	**Lite-On Technology Corporation Bldg. C, 90, Chien 1 Rd., Chung-Ho, New Taipei City 23585, Taiwan (R.O.C)**
Manufacturer	:	**Lite-On Technology Corporation Bldg. C, 90, Chien 1 Rd., Chung-Ho, New Taipei City 23585, Taiwan (R.O.C)**
Standard	:	**47 CFR Part 2.1091**

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part2.1091 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. Laboratory, the test report shall not be reproduced except in full

Cona Huang

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

History of this test report

Report No.	Version	Description	Issued Date
FA351509-01	Rev. 01	Initial issue of report	Aug. 10, 2023
FA351509-01	Rev. 02	Update section 1	Dec. 04, 2023

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	LTE Module
Brand Name	LITEON
Model Name	EG91-NAXD
FCC ID	PPQ202008EG91NAXD
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 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz
Mode	RMC 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM

Host Information	
Equipment Name	AC Charging Station
Brand Name	LITEON
Model Name	W1-UC168-0ML1EP
Integrated WLAN Module	Brand Name: AzureWave Model Name: AW-CM467-USB-I FCC ID: TLZ-CM467
Integrated RFID Module	Brand Name: ID Tech Model Name: ID-80149014-004 FCC ID: WQJ-ID80149014
Wireless Technology and Frequency Range	WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz RFID: 13.56 MHz
Mode	WLAN: 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE RFID: ASK
EUT Stage	Production Unit
Remark: 1. The RFID maximum field strength is 74.6 according module part15 report, Convert EIRP to -20.56dBm and used MPE calculation.	

Reviewed by: Jason Wang

Report Producer: Carlie Tsai

2. Maximum RF average output power among production units

Mode		Maximum Average power(dBm)
WCDMA	Band II	24.00
	Band IV	24.00
	Band V	24.00
LTE	Band 2	24.50
	Band 4	24.50
	Band 5	24.50
	Band 12	24.50
	Band 13	24.50
	Band 25	25.00
	Band 26	25.00

Mode		Maximum Average power(dBm)
WLAN	2.4GHz	17.50
	5GHz	19.50
Bluetooth		9.00

Mode	Maximum EIRP(dBm)
RFID	-20.56

3. Determination of exemption

Per 1.1307(b)(3), (i) For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by:

$$\text{Pth (mW)} = \text{ERP}_{20cm}\,(d / 20)^{x} \quad \text{for distance } d \le 20cm$$

$$\text{Pth (mW)} = \text{ERP}_{20cm} \quad \text{for distance } 20cm < d \le 40cm$$

$$x = -log10\left(\frac{60}{ERP_{20cm}\sqrt{f}}\right)$$

$$\text{ERP}_{20cm}\text{(mW)} \quad \begin{matrix} 0.3\ GHz \le f < 1.5\ GHz: & 2040\ f \\ 1.5\ GHz \le f \le 6\ GHz: & 3060 \end{matrix}$$

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least λ/2π, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of λ/4 or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

4. RF Exposure Evaluation

General Note:

1. Pi is mean the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm
2. Pth is mean the exemption threshold power (Pth) according to the § 1.1307(b)(3)(i)(B) formula for fixed, mobile, or portable RF source i.
3. In this report was used Part1.1307(b)(3)(i)(B) perfrom RF Exposure evaluation
4. The distance of 20cm is for this device
5. Either MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (Evaluatedk term) shall be used to determine exemption for simultaneous transmission according to Formula (C.1).
6. The sum of the ratios of the applicable terms for MPE-based and MPE shall be less than 1, to determine WWAN + WLAN + BT +RFID simultaneous transmission exposure compliance.

$$\sum_{i=1}^{a}\frac{P_i}{P_{\mathrm{th},i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{\mathrm{th},j}}+\sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k}\le 1 \qquad (C.1)$$

Band	Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum ERP (dBm)	Maximum EIRP (mW)	Maximum ERP (mW)	Pi (dBm)	Pi (mW)	Part1.1307 option(b) Threshold (mW)	Part1.1307 option(b) Pi/Pth
WCDMA Band 2	2.70	24.00	26.70	24.55	467.74	285.10	24.55	285.10	3060.000	0.093
WCDMA Band 4	2.00	24.00	26.00	23.85	398.11	242.66	24.00	251.19	3060.000	0.082
WCDMA Band 5	1.90	24.00	25.90	23.75	389.05	237.14	24.00	251.19	1680.960	0.149
LTE Band 2	2.70	24.50	27.20	25.05	524.81	319.89	25.05	319.89	3060.000	0.105
LTE Band 4	2.00	24.50	26.50	24.35	446.68	272.27	24.50	281.84	3060.000	0.092
LTE Band 5	1.90	24.50	26.40	24.25	436.52	266.07	24.50	281.84	1680.960	0.168
LTE Band 12	1.90	24.50	26.40	24.25	436.52	266.07	24.50	281.84	1425.960	0.198
LTE Band 13	1.70	24.50	26.20	24.05	416.87	254.10	24.50	281.84	1585.080	0.178
LTE Band 25	2.70	25.00	27.70	25.55	588.84	358.92	25.55	358.92	3060.000	0.117
LTE Band 26	1.90	25.00	26.90	24.75	489.78	298.54	25.00	316.23	1660.560	0.190
WLAN2.4GHz Band	4.20	17.50	21.70	19.55	147.91	90.16	19.55	90.16	3060.000	0.029
WLAN5GHz Band	5.16	19.50	24.66	22.51	292.42	178.24	22.51	178.24	3060.000	0.058
Bluetooth	4.20	9.00	13.20	11.05	20.89	12.74	11.05	12.74	3060.000	0.004
RFID			-20.56	-22.71	0.01	0.01	-20.56	0.01	27.662	0.0003

Maximum WWAN Pi/Pth Ratio	WLAN Pi/Pth Ratio	Bluetooth Pi/Pth Ratio	RFID Pi/Pth Ratio	Σ (P/Pth Ratio) of WWAN + WLAN + Bluetooth + RFID
0.198	0.058	0.004	0.0003	0.2603

Conclusion:

According to 47 CFR §1.1307, the RF exposure analysis concludes that the RF Exposure is FCC compliant.