

RF Exposure Evaluation Report

Equipment : 802.11ac Tri Band PoE Access Point
Brand Name : LITE-ON, MOJO
Model No. : WP9333, WP9331, O-105, WP9331-FM
FCC ID : PPQ-WP9333
Standard : 47 CFR Part 2.1091
Applicant : LITE-ON Technology Corp.
Bldg. C, 90, Chien 1 Rd., Chung-Ho, New Taipei City,
23585 Taiwan
Manufacturer : Lite-On Network Communication (Dongguan)
Limited
30#Keji Rd.,Yin Hu Industrial Area,Qingxi
Town,DongGuan City,Guangdong,China

The product sample received on Sep. 07, 2017 and completely tested on Sep. 12, 2017. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with 47 CFR Part 2.1091, and pass the limit.

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Kevin Liang / Assistant Manager





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REVISION HISTORY

[illegible]

1 General Description

1.1 EUT General Information

RF General Information			
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
5GHz WLAN	5150-5250 5725-5850	5180-5240 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Bluetooth	2400-2483.5	2402-2480	BR / EDR: FHSS (GFSK / $\pi/4$ -DQPSK / 8DPSK) LE: DSSS (GFSK)

1.2 Table for Multiple Listing

The brand/model names in the following table are all refer to the identical product.

Brand Name	Model Name	CPU	CPU Brand	DDR	DDR Brand	Flash	Flash Brand/Model
LITE-ON	WP9333	IPQ4029	Qualcomm Atheros	256	Micron	64	1x64 MX25L51245GMI-08G MXIC
						32X2	2x32 25Q256JVFQ WINBOND
		IPQ4019	Qualcomm Atheros	256	Micron	64	1x64 MX25L51245GMI-08G MXIC
						32X2	2x32 25Q256JVFQ WINBOND
	WP9331	IPQ4029	Qualcomm Atheros	256	Micron	64	1x64 MX25L51245GMI-08G MXIC
						32X2	2x32 25Q256JVFQ WINBOND
		IPQ4019	Qualcomm Atheros	256	Micron	64	1x64 MX25L51245GMI-08G MXIC
						32X2	2x32 25Q256JVFQ WINBOND
MOJO	O-105	IPQ4029	Qualcomm Atheros	256	Micron	64	1x64 MX25L51245GMI-08G MXIC
						32X2	2x32 25Q256JVFQ WINBOND
		IPQ4019	Qualcomm Atheros	256	Micron	64	1x64 MX25L51245GMI-08G MXIC
						32X2	2x32 25Q256JVFQ WINBOND

Brand Name	Model Name	Radio 1	Radio 2	Radio 3	Radio 4	EUT Power Type
LITE-ON	WP9333	V	V	V	V	AC main / PoE
	WP9331	V	V	X	V	PoE
	WP9331-FM	V	V	X	V	PoE
MOJO	O-105	V	V	X	V	PoE

Note:

Radio 1: 802.11ac 2.4G only

Radio 2: 802.11ac 5GHz on board

Radio 3: 802.11agnac PCIe card, 2.4G+5GB1/B4

Radio 4: Bluetooth (BT LE and BR/EDR) on board

1.3 Testing Location

Testing Location			
☒	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)	
		TEL : 886-3-327-3456	FAX : 886-3-327-0973
Test site Designation No. TW1190 with FCC.			
☐	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)	
		TEL : 886-3-656-9065	FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.			

2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
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

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time 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 ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	F/1500	30
1500-100,000	-	-	1.0	30

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

2.2 MPE Calculation Method

The MPE was calculated at 32 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$



2.3 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

Radio 1 (2.4G) + Radio 2 (5G) + Radio 3 (2.4G) + Radio 4 (BT)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	T-EIRP (dBm)	T-EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;D1D	5.90	29.94	35.84	35.84	3.83707	32	0.29819	1.00000	0.29819
5.8G;D1D	6.40	27.79	34.19	34.19	2.62422	32	0.20393	1.00000	0.20393
2.4G;G1D	6.50	24.89	31.39	31.39	1.377221	32	0.10703	1.00000	0.10703
2.4G;BT-BR	8.60	8.28	16.88	16.88	0.04875	32	0.00379	1.00000	0.00379
-	-	-	-	-	-	-	-	Sum Ratio	0.61294
-	-	-	-	-	-	-	-	Ratio Limit	1

T-EIRP(dBm) = Tune-up power(dB) + EIRP Power(dBm)

Radio 1 (2.4G) + Radio 2 (5G) + Radio 3 (5G) + Radio 4 (BT)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	T-EIRP (dBm)	T-EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;D1D	5.90	29.94	35.84	35.84	3.83707	32	0.29819	1.00000	0.29819
5.8G;D1D	6.40	27.79	34.19	34.19	2.62422	32	0.20393	1.00000	0.20393
5.3G;D1D	5.40	22.87	28.27	28.27	0.67143	32	0.05218	1.00000	0.05218
2.4G;BT-BR	8.60	8.28	16.88	16.88	0.04875	32	0.00379	1.00000	0.00379
-	-	-	-	-	-	-	-	Sum Ratio	0.55809
-	-	-	-	-	-	-	-	Ratio Limit	1

T-EIRP(dBm) = Tune-up power(dB) + EIRP Power(dBm)