

RF EXPOSURE REPORT



Applicant: LITE-ON TECHNOLOGY CORP.
Bldg. C, 90, Chien 1 Rd., Chung-Ho, 23585 New Taipei City,
Taiwan

Manufacturer: Barco NV
President Kennedypark 35, 8500 Kortrijk, Belgium

Product Name: Wi-Fi 6E BT 5.2 M.2 2230 Module

Brand Name: LITEON

Model No.: WCBN814A

Model Difference: N/A

Report Number: TESA2208000326ES

FCC ID PPQ-WCBN814A

Issue Date: November 17, 2022

Date of EUT Received: August 29, 2022

John Yeh
Approved By _____

John Yeh

We hereby certify that:

The above equipment was evaluated by SGS Taiwan Ltd. The evaluation in this report is in compliance with FCC Rule Part §1.1307.

The results of this report relate to the specific sample identified in this report.

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TESA2208000326ES	00	Original	November 10, 2022	Violetta Tang	
TESA2208000326ES	01	Update applicant information	November 17, 2022	Violetta Tang	*

Note:

- 1、The remark "*" indicates modification of the report upon requests from certification body.

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1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

1.1 Product Description

Product Name:	Wi-Fi 6E BT 5.2 M.2 2230 Module
Brand Name:	LITEON
Model No.:	WCBN814A
Model Difference:	N/A
Hardware Version:	N/A
Firmware Version:	N/A
EUT Series No.:	2022070056
Class II Permissive change:	WCBN814A modules INSTALLED IN C5011S
Host Information:	Product Name: ClickShare Brand Name: Barco Model Name: C5011S
Power Supply:	19V
Test Software (Name / Version)	Qualcomm® Radio Control Toolkit v4.0.00163.0

1.2 Evaluation site

Laboratory	Site Address		FCC Designation number
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	<input type="checkbox"/>	No. 134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, 24803, Taiwan.	TW0027
	<input checked="" type="checkbox"/>	No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 333 Taiwan.	TW0028
	<input type="checkbox"/>	1F, No. 8, Alley 15, Lane 120, Sec. 1, Nei Hu Road, Neihu District, Taipei City, 222 Taiwan.	TW0029

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2 DETERMINATION OF MPE EXEMPTION

2.1 Single RF Source

As per §1.1307(b)(3)(i),

- (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 P_{th} (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). P_{th} is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the separation distance (cm);

Note: when 10-g extremity SAR applies, SAR test exemption may be considered by applying a factor of 2.5 to the SAR-based exemption thresholds.

- (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 $\lambda/2\pi$, 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 $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

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Table 1 to § 1.1307(b)(3)(i)(C) –

Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)		Minimum Distance			Threshold ERP (W)	
fL	fH	$\lambda L / 2\pi$		$\lambda H / 2\pi$		
0.3	-	1.34	159m	-	35.6m	1920 R^2
1.34	-	30	35.6m	-	1.6m	3450 R^2/f^2
30	-	300	1.6m	-	159mm	3.83 R^2
300	-	1500	159mm	-	31.8mm	0.0128 R^2f
1500	-	100000	31.8mm	-	0.5mm	19.2 R^2

R= minimum separation distance in meter

f = frequency in MHz

2.2 Multiple RF Sources

In the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

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2.3 Single RF Source Evaluation Results

Chain 0	Frequency (MHz)	Max. tune-up power (dBm)	Peak gain (dBi)	ERP (dBm)	ERP (W)	Permissible Minimum separation distance ($\lambda/2\pi$) (m)	R = actual Minimum separation distance(m)	ERP _{th} (W)	ERP/ERP _{th}	Simultaneous transmission modes								
										1	2	3	4	5	6	7	8	9
WiFi 2.4GHz	2437	20	2.74	20.59	0.115	0.0196	0.200	0.768	0.150	V	V	V						
WiFi 5GHz	5200	19	4.42	21.27	0.134	0.0092	0.200	0.768	0.174			V	V	V				
WiFi 6GHz	6175	19	4.62	21.47	0.140	0.0077	0.200	0.768	0.182					V	V	V		

Chain 1	Frequency (MHz)	Max. tune-up power (dBm)	Peak gain (dBi)	ERP (dBm)	ERP (W)	Permissible Minimum separation distance ($\lambda/2\pi$) (m)	R = actual Minimum separation distance(m)	ERP _{th} (W)	ERP/ERP _{th}	Simultaneous transmission modes								
										1	2	3	4	5	6	7	8	9
WiFi 2.4GHz	2437	20	2.74	20.59	0.115	0.0196	0.200	0.768	0.150	V		V		V				
Bluetooth	2402	15	2.74	15.59	0.036	0.0199	0.200	0.768	0.047	V	V	V	V	V	V	V	V	V
WiFi 5GHz	5200	19	4.42	21.27	0.134	0.0092	0.200	0.768	0.174	V		V		V		V		
WiFi 6GHz	6175	19	4.62	21.47	0.140	0.0077	0.200	0.768	0.182	V		V		V		V		

Note: For conservativeness, the lowest uplink frequency of each band is used to determine the minimum separation distance of that band. All the single RF source results (P or ERP) are less than their corresponding threshold (P_{th} or ERP_{th}), so they are exempt from RF exposure testing.

2.4 Multiple RF Sources Evaluation Results

Simultaneous transmission modes	\sum ERP/ERP _{th}	Criteria
1	0.347	1
2	0.371	1
3	0.379	1
4	0.371	1
5	0.395	1
6	0.403	1
7	0.379	1
8	0.403	1
9	0.411	1

Note:

1. $\Sigma(\text{ERP}/\text{ERP}_{\text{th}})$: This is a summation of [(ERP of RF source / exemption threshold ERP for RF source)]. Considering the collocated transmitters, the aggregated (ERP/ERP_{th}) is smaller than 1, and MPE of collocated transmitters is compliant

~ End of Report ~

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