Certificate #7136.01

FCC RF EXPOSURE REPORT

FCC ID: 2BHQS-PSM803

Project No.	:	2405H020
Equipment	:	Smart Module
Brand Name	:	N/A
Test Model	:	PSM803
Series Model	:	N/A
Applicant	:	Phoenix Season LLC
Address	:	113 Cruiser lrvine, California 92618 United States
Manufacturer	:	Phoenix Season LLC
Address	:	113 Cruiser lrvine, California 92618 United States
Date of Receipt	:	May 16, 2024
Date of Test	:	May 20, 2024~Jul. 31, 2024
Issued Date	:	Oct. 12, 2024
Report Version	:	R01
Test Sample	:	Engineering Sample No.: SH202406256 for radiated, SH2024051641 for conducted, SH20240517566 for adapter.
Standard(s)	:	KDB 447498 D04 Interim General RF Exposure Guidance v01

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc. (Shanghai)

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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-7-2405H020	R00	Original Report	Sep. 13, 2024	Invalid
BTL-FCCP-7-2405H020	R01	Revised report to address TCB's comments.	Oct. 12, 2024	Valid

1. TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No. 29, Jintang Road, Tangzhen Industry Park, Pudong New Area, Shanghai 201210,China
BTL's Registration Number for FCC: 964234
BTL's Designation Number for FCC: CN1374

2. GENERAL CONCULUSION

According to FCC §§1.1307 and KDB 447498 D04, 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).

1) Option A. 1-mW Test Exemption

Per § 1.1307(b)(3)(i)(A), a single RF source is exempt RF device (from the requirement to show data demonstrating compliance to RF exposure limits, as previously mentioned) if the available maximum time-averaged power is no more than 1 mW, regardless of separation distance.

This exemption applies to all operating configurations and exposure conditions, for the frequency range 100 kHz to 100 GHz, regardless of fixed, mobile, or portable device exposure conditions. This is a standalone exemption, and it cannot be applied in conjunction with any other test exemption.

2) Option B. SAR-Based Exemption

A more comprehensive exemption, considering a variable power threshold that depends on both the separation distance and power, is provided in § 1.1307(b)(3)(i)(B). This exemption is applicable to the frequency range between 300 MHz and 6 GHz, with test separation distances between 0.5 cm and 40 cm, and for all RF sources in fixed, mobile, and portable device exposure conditions.

Accordingly, a RF source is considered an RF exempt device if its available maximum time-averaged (matched conducted) power or its effective radiated power (ERP), whichever is greater, are below a specified threshold. 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:

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

Where

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

and

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

d = the separation distance (cm);

Table B2-Example Power Thresholds (mW)

Frequency (MHz)	Distance(mm)										
	mW	5	10	15	20	25	30	35	40	45	50
	300	39	65	88	110	129	148	166	184	201	217
	450	22	44	67	89	112	135	158	180	203	226
	835	9	25	44	66	90	116	145	175	207	240
	1900	3	12	26	44	66	92	122	157	195	236
	2450	3	10	22	38	59	83	111	143	179	219
	3600	2	8	18	32	49	71	96	125	158	195
	5800	1	6	14	25	40	58	80	106	136	169

3) Option C MPE-Based Exemption

An alternative to the SAR-based exemption is provided in § 1.1307(b)(3)(i)(C), for a much wider frequency range, from 300 kHz to 100 GHz, applicable for separation distances greater or equal to λ/2π, where λ is the free-space operating wavelength in meters. The MPE-based test exemption condition is in terms of ERP, defined as the product of the maximum antenna gain and the delivered maximum time-averaged power. For this case, a RF source is an RF exempt device if its ERP (watts) is no more than a frequency-dependent value, as detailed tabular form in Appendix B. These limits have been derived based on the basic specifications on Maximum Permissible Exposure (MPE) considered for the FCC rules in § 1.1310(e)(1).

TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

RF Source Frequency			**Minimum Distance**			**Threshold ERP**
f_L MHz		f_H MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W
0.3	–	1.34	159 m	–	35.6 m	1,920 R^2
1.34	–	30	35.6 m	–	1.6 m	3,450 R^2/f^2
30	–	300	1.6 m	–	159 mm	3.83 R^2
300	–	1,500	159 mm	–	31.8 mm	0.0128 R^2f
1,500	–	100,000	31.8 mm	–	0.5 mm	19.2R^2
Subscripts L and H are low and high; λ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.						

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.

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

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for Pth, including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

P_i = 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 (inclusive).

$P_{th,i}$ = the exemption threshold power (P_{th}) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source i.

ERP_j = the ERP of fixed, mobile, or portable RF source j.

$ERP_{th,j}$ = exemption threshold ERP for fixed, mobile, or portable RF source j, at a distance of at least $\lambda/2\pi$ according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

$Evaluated_k$ = the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

$Exposure\ Limit_k$ = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k, as applicable from §1.1310 of this chapter.

1. MAXIMUM RF OUTPUT POWER:

Mode	Maximum Output Power (dBm)
BT	8.08
BLE	11.34
WLAN 2.4G	20.04
RLAN 5G	14.02
RLAN 6G	9.52

2. CALCULATED RESULTS

Operation Mode	Minimum Frequency (MHz)	Maximum Output Power (dBm)	Gain (dBi)	ERP (dBm)	ERP (mW)	Distance (cm)	Threshold ERP Limit (mW)	Ratio	Result
BT	2480.00	8.08	5.82	11.75	14.96	20.00	768.00	0.0195	Pass
BLE	2480.00	11.34	5.82	15.01	31.70	20.00	768.00	0.0413	Pass
WLAN 2.4 GHz	2437.00	20.04	8.83	26.72	469.89	20.00	768.00	0.6118	Pass
RLAN 5 GHz	5260.00	14.02	6.77	18.64	73.11	20.00	768.00	0.0952	Pass
RLAN 6 GHz	6165.00	9.52	6.08	13.45	22.13	20.00	768.00	0.0288	Pass

Note:

(1) The lowest operating frequency is applied to get the severe limit.

(2) The calculation result is below exemption criteria and/or MPE Threshold ERP limits, therefore the device is compliant FCC RF exposure requirements.

3. COLLOCATED SIMULTANEOUS TRANSMISSION CALCULATIONS

BT MPE Ratio	BLE MPE Ratio	WLAN 2.4G MPE Ratio	RLAN 5G MPE Ratio	RLAN 6G MPE Ratio
0.0195	0.0413	0.6118	0.0952	0.0288
Σ(All MPE Ratios)				
0.7966				
Limit				
≤ 1.0				

The sum of the simultaneous transmission results has not over Limit, which is in compliance.

End of Test Report