



47 CFR §2.1093 - MAXIMUM PERMISSIBLE EXPOSURE TEST REPORT

FCC ID:	2BOQ7-PERCY10	Percy Sleep, Inc 4555 Dexter St NW Washington, DC 2007 USA
Device Type:	Mobile Device	
Report Issue Date:	May 16, 2025	Certification

MPE	Power Density [mW/cm²]
FCC Limit	1.000
Result Summary	PASS

The evaluations presented in this report are based on the maximum performance of the assessed device(s) which has been shown to be capable of compliance for maximum permissible MPE for uncontrolled environment/ general population exposure federal limits in 47CFR § 1.1310 and has been assessed in accordance with the measurement procedures specified within this report.

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President

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1. DUT Specifics

1.1. Device Under Test

Table 1-1
DUT Information

Technology	Frequency (MHz)	Maximum EIRP (mW)
WLAN	2412	82.4
Radar	61000	7.9

Note: The above information was provided by the manufacturer.

This device is a human detection sensor incorporating 61 GHz radar.

The 61 GHz radar integration in this device is co-located with a 2.4 GHz WLAN Transmitter FCC ID: 2ABCB -PICOW. Bluetooth is disabled.

According to the manufacturer, during its normal use, the separation distance between the device and users will be greater than 20 cm, thus a conservative evaluation distance of 20 cm has been used.

2. MPE Calculation Results

$$S = \frac{P \times G}{4\pi R^2}$$

S = power density

P = power input to the antenna

G = antenna gain

R = distance

EIRP = P × G

Table 2-1
MPE calculation

Frequency (MHz)	Maximum EIRP (mW)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
	EIRP	R		
2412	82.4	20	0.016	1.000
61000	7.9	20	0.002	1.000

Table 2-2
Simultaneous Transmission

Power Density (mW/cm ²)	Limit (mW/cm ²)	Ratio to Limit	Σ Ratio to Limit
0.016	1.000	0.016	0.018
0.002	1.000	0.002	

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios to the limit for all simultaneous transmitting antennas incorporated in a device is ≤ 1.

3. General Introduction

Title 47 of the Code of Federal Regulations (CFR) pertains to United States Federal regulation for Telecommunications. The Federal Communications Commission (FCC) is the agency responsible for implementing and enforcing these regulations. The rules define a radiofrequency device as any device which in its operation is capable of emitting radiofrequency energy by radiation, conduction, or other means.

47CFR §2.1091(b) states, “A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the RF source's radiating structure(s) and the body of the user or nearby persons.”

Also, 47CFR §1.1310(e)(3) states, that General population/uncontrolled exposure limits defined in §1.1310 “General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.”

4. Background on Radiofrequency (RF) Exposure Limits

4.1. Controlled Environment

Controlled environments are defined as locations where the RF field intensities have been adequately characterized by means of measurement or calculation and exposure is incurred by persons who are: aware of the potential for RF field exposure, cognizant of the intensity of the RF fields in their environment, aware of the potential health risks associated with RF field exposure and able to control their risk using mitigation strategies. In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

4.2. Uncontrolled Environment

Uncontrolled environments are defined as locations where either insufficient assessment of RF fields have been conducted or where persons who are allowed access to these areas have not received proper RF field awareness/safety training and have no means to assess or, if required, to mitigate their exposure to RF fields. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed, or in which persons who may not be made fully aware of the potential for exposure, or cannot exercise control over their exposure. Members of the general public would fall under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

4.3. RF Exposure Limits for MPE

Per FCC 47 CFR §1.1310, the power density limits are applied for frequencies between 300 MHz and 100 GHz as shown below.

Table 4-1
Human Exposure to RF Radiation Limits in 47 CFR §1.1310

Frequency	Electric field strength	Magnetic field strength	Power density	Averaging time
(MHz)	(V/m)	(A/m)	(mW/cm ²)	(minutes)
(i) Limits for Occupational/Controlled Exposure				
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	<6
300-1,500			f/300	<6
1,500-100,000			5	<6
(ii) 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
300-1,500			f/1500	<30
1,500-100,000			1	<30

5. MPE Procedure

The procedure used to determine the RF power density was based upon a calculation for determining compliance with the MPE requirements.

The power generated by each transmitter used in this product was initially measured by a power meter or spectrum analyzer and the powers were recorded. Through use of the Friis transmission formula and knowledge of the maximum antenna gain to be used, the power density level is calculated at a distance of 20cm.

Friis Transmission Formula

$$P_d = \frac{P_{out} * G}{(4\pi r^2)}$$

Where,

P_d = Power Density (mW/cm²)

P_{out} = output power to antenna (mW)

r = distance between observation point and center of the radiator (cm)

G = gain of antenna in linear scale

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios to the limit for all simultaneous transmitting antennas incorporated in a device is ≤ 1 .

6. Conclusion

The device meets the mobile RF Exposure limit at 20cm separation distance as specified in §2.1091 of the FCC rules.