

Radio Frequency Exposure

LIMIT

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

EUT Specification

EUT	GPON ONT					
Frequency band (Operating)						
Device category	☐ Portable (<20cm separation) ☐ Mobile (>20cm separation)					
Exposure classification	 ☐ Occupational/Controlled exposure (S = 5mW/cm²) ☐ General Population/Uncontrolled exposure (S=1mW/cm²) 					
Antenna diversity	 Single antenna Multiple antennas □ Tx diversity □ Rx diversity □ Tx/Rx diversity 					
Max. output power	IEEE802.11b: 16.20 dBm (0.0417 W) IEEE802.11g: 14.23 dBm (0.0265W) IEEE802.11n HT20: 14.83 dBm (0.0304 W) IEEE802.11n HT40: 12.91 dBm (0.0195 W)					
Antenna gain (Max)	3.5dBi					
Evaluation applied	✓ MPE Evaluation*✓ SAR Evaluation✓ N/A					
Remark:						
 DTS device is not subject For mobile or fixed location 	er is <u>16.32 dBm (0.0429W)</u> at <u>2412MHz</u> (with <u>numeric 3.16 antenna gain</u> .) to routine RF evaluation; MPE estimate is used to justify the compliance. In transmitters, no SAR consideration applied. The maximum power density is alculation indicates that the power density would be larger.					

 Cerpass Technology (Suzhou) Co., Ltd
 Issued date
 : Jan 31, 2015

 TEL: +86-512-6917-5888
 FAX: +86-512-6917-5666
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^{*}Note: Simultaneous transmission is not applicable for this EUT.

TEST RESULTS

No non-compliance noted.

Calculation

Given

$$E = \frac{\sqrt{30 \times P \times G}}{d} \quad \& \quad S = \frac{E^2}{3770}$$

Where E = Field strength in Volts / meter

P = *Power in Watts*

G = Numeric antenna gain

d = *Distance in meters*

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770d^2}$$

Changing to units of mW and cm, using:

$$P(mW) = P(W) / 1000$$
 and $d(cm) = d(m) / 100$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$
 Equation 1

Where d = Distance in cm

P = Power in mW

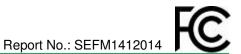
G = Numeric antenna gain

 $S = Power density in mW / cm^2$

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Maximum Permissible Exposure

Modulation Mode	Frequency band (MHz)	Max. Conducted output power(dBm)	Antenna gain (dBi)	Distance (cm)	Power density (mW/cm2)	Limit (mW/cm2)
IEEE802.11b	2412-2462	16.20	3.5	20	0.029	1
IEEE802.11g	2412-2462	14.23	3.5	20	0.018	1
IEEE802.11n HT20	2412-2462	14.83	3.5	20	0.021	1
IEEE802.11n HT40	2422-2452	12.91	3.5	20	0.014	1

NOTE:

Total (Chain0+Chain1), the formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 +etc. < 1

CPD = Calculation power density

LPD = Limit of power density

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