# **EXHIBIT 14.** MPE CALCULATIONS

The following MPE calculations are based on a dipole antenna or printed circuit board antenna, and a Bluetooth and WLAN radio paired to each.

## **BT With Dipole Antenna**

	Prediction of MP	E limit at	a given	<u>distance</u>				
Equation	from page 18 of (	DET Bullet	tin 65, Ed	dition 97-0	1			
	$S = \frac{PG}{4\pi R^2}$							
where:	S = power density	/						
	P = power input to	the anter	nna					
	G = power gain of	f the anten	na in the	direction of	of interest relative	e to an isot	ropic radia	tor
	R = distance to th	e center o	f radiatio	n of the an	tenna			
	m peak output pov		•			(dBm)		
Maximu	m peak output pov	output power at antenna input terminal:			6.310			
				in(typical):		(dBi)		
		Maximum antenna gain:				(numeric)		
		_		distance:		(cm)		
				frequency:		(MHz)		
IPE limit fo	uncontrolled expo	sure at pr	ediction f	frequency:	1	(mW/cm^	2)	
	Power de	Power density at prediction frequency:			0.003379	(mW/cm^	2)	
	Maxir	Maximum allowable antenna gain:			29.0	(dBi)		
	Margin of Comp	liance at	20	cm =	24.7	dB		

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#### **BT With PIFA Antenna**

### Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal: 8.00 (dBm)

Maximum peak output power at antenna input terminal: 6.310 (mW)

Antenna gain(typical): -0.6 (dBi)

Maximum antenna gain: 0.871 (numeric)

Prediction distance: 20 (cm)
Prediction frequency: 2402 (MHz)

MPE limit for uncontrolled exposure at prediction frequency: \_\_\_\_\_\_1 (mW/cm^2)

Power density at prediction frequency: 0.001093 (mW/cm^2)

Maximum allowable antenna gain: 29.0 (dBi)

29.6 dB Margin of Compliance at 20 cm =

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## **WLAN With Dipole Antenna**

		Prediction of MPE limit at	a given	<u>distance</u>				
	Equation	from page 18 of OET Bulleti	n 65, Ed	lition 97-0	1			
	•		•					
		$S = \frac{PG}{4\pi R^2}$						
	where:	S = power density						
		P = power input to the anten	na					
		G = power gain of the anteni	na in the	direction of	of interest relative	to an iso	tropic ra	diator
		R = distance to the center of	radiatio	n of the an	tenna			
	Maximu	ım peak output power at ante	nna inpu	t terminal:	8.00	(dBm)		
	Maximu	ım peak output power at ante	nna inpu	t terminal:	6.310	(mW)		
		Ant	enna gai	in(typical):	4.3	(dBi)		
		Maxin	num ante	enna gain:	2.692	(numeric	)	
		Pı	rediction	distance:	20	(cm)		
				requency:		(MHz)		
MP	E limit fo	uncontrolled exposure at pre	ediction f	requency:	1	(mW/cm/	<b>'2</b> )	
		Power density at pre	ediction f	requency:	0.003379	(mW/cm/	<b>'2</b> )	
		Maximum allowable antenna gain:			29.0	(dBi)		
		Margin of Compliance at	20	cm =	24.7	dB		

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#### WLAN With PIFA Antenna

### Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal: 20.10 (dBm)

Maximum peak output power at antenna input terminal: 102.329 (mW)

Antenna gain(typical): -0.6 (dBi)

Maximum antenna gain: 0.871 (numeric)

Prediction distance: 20 (cm)
Prediction frequency: 2402 (MHz)

MPE limit for uncontrolled exposure at prediction frequency: \_\_\_\_\_\_1 (mW/cm^2)

Power density at prediction frequency: 0.017731 (mW/cm^2)

Maximum allowable antenna gain: 16.9 (dBi)

Margin of Compliance at 20 cm = 17.5 dB

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