Calculation and sample for Confirmation

Dear Reviewer,

As specified in Table 1B of 47 CFR 1.1310 – Limits for Maximum Permissible Exposure(MPE), Limits for General Population/Uncontrolled Exposure:

Frequency range (MHz)	*Power density (mW/cm^2)*
300 – 1,500	**f/1500**
1,500 – 100,000	1.0

The RF Exposure level is calculated using the general equation:

$$S = PG/ 4\pi R^2$$

the EUT antenna gain is 0.5 dBi

R = 2 cm

π = 3.1416

The power density limit is:

For 1,500 – 100,000MHz: 1.0 mW/cm^2

Solving for S, the power density at 20 cm is

For BT4.0 BLE

Frequency(MHz)	dBm	mW	G(dBi)	Numeric	R(cm)	S(mW/cm2)	Limit(mW/cm2)
2402	-0.75	0.84	1.74	1.5	20	**0.00025**	1
2440	-0.63	0.86	1.74	1.5	20	**0.00026**	1
2480	-1.23	0.75	1.74	1.5	20	**0.00022**	1

For BT 4.0 BR/EDR

GFSK

Frequency(MHz)	dBm	mW	G(dBi)	Numeric	R(cm)	S(mW/cm2)	Limit(mW/cm2)
2402	6.65	4.62	1.74	1.5	20	**0.00137**	1
2441	6.95	4.95	1.74	1.5	20	**0.00147**	1
2480	6.57	4.54	1.74	1.5	20	**0.00135**	1

π /4-DQPSK

Frequency(MHz)	dBm	mW	G(dBi)	Numeric	R(cm)	S(mW/cm2)	Limit(mW/cm2)
2402	6.16	4.13	1.74	1.5	20	**0.00123**	1
2441	6.47	4.44	1.74	1.5	20	**0.00132**	1
2480	6.08	4.06	1.74	1.5	20	**0.00120**	1

8-DPSK

Frequency(MHz)	dBm	mW	G(dBi)	Numeric	R(cm)	S(mW/cm2)	Limit(mW/cm2)
2402	6.28	4.25	1.74	1.5	20	**0.00126**	1
2441	6.66	4.63	1.74	1.5	20	**0.00138**	1
2480	6.20	4.17	1.74	1.5	20	**0.00124**	1

For WIFI:

802.11b:

Frequency(MHz)	dBm	mW	G(dBi)	Numeric	R(cm)	S(mW/cm2)	Limit(mW/cm2)
2412	18.23	66.53	1.74	1.5	20	**0.01976**	1
2437	17.99	62.95	1.74	1.5	20	**0.01869**	1
2462	17.46	55.72	1.74	1.5	20	**0.01655**	1

802.11g:

Frequency(MHz)	dBm	mW	G(dBi)	Numeric	R(cm)	S(mW/cm2)	Limit(mW/cm2)
2412	21.64	145.88	1.74	1.5	20	**0.04332**	1
2437	21.74	149.28	1.74	1.5	20	**0.04433**	1
2462	21.17	130.92	1.74	1.5	20	**0.03888**	1

802.11n-20:

Frequency(MHz)	dBm	mW	G(dBi)	Numeric	R(cm)	S(mW/cm2)	Limit(mW/cm2)
2412	21.32	135.52	1.74	1.5	20	**0.04025**	1
2437	20.83	121.06	1.74	1.5	20	**0.03595**	1
2462	20.37	108.89	1.74	1.5	20	**0.03234**	1

So, the power density is kept.

Please contact us if you have any additional questions.

Best Regards

Skylabs

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