Report No.: E2/2018/60056



14 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

14.1 **Standard Applicable**

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

Frequency Range	Electric Field	Magnetic Field	Power Density	Averaging Time		
(MHz)	Strength (V/m)	Strength (A/m)	(mW/cm ²)	(minute)		
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		
300-1500	/	/	F/1500	30		
1500-15000	/	/	1.0	30		

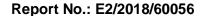
F = frequency in MHz

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^{* =} Plane-wave equipment power density





14.2 Maximum Permissible Exposure (MPE) Evaluation

802.1	802.11n_HT20M MIMO											
СН	Freq. (MHz)	Data Rate	Peak Output Power (dBm)			er	Total Peak Output Power	Total Peak Output Power	Limit			RESULT
			CH 0	CH 1	CH 2	CH3	(dBm)	(mW)				
1	2412	MCS8	22.84	20.43	0.00	0.00	24.81	302.72	1 Watt =	25.37	dBm	PASS
6	2437	MCS8	22.61	21.41	0.00	0.00	25.06	320.75	1 Watt =	25.37	dBm	PASS
11	2462	MCS8	18.87	20.31	0.00	0.00	22.66	184.50	1 Watt =	25.37	dBm	PASS
10	2457	MCS8	13.14	17.46	0.00	0.00	18.83	76.38	1 Watt =	25.37	dBm	PASS
802.1	802.11n_HT20M MIMO											
СН	Freq. (MHz)		Avg. Output Power (dBm)			r	Max. Avg. Output include tune up tolerance Power	Max. Avg. Output include tune up tolerance Power	include tune up			RESULT
			CH 0	CH 1	CH 2	CH3	(dBm)	(mW)				
1	2412	MCS8	16.84	14.77	0.00	0.00	19.99	99.84	1 Watt =	25.37	dBm	PASS
6	2437	MCS8	16.67	15.01	0.00	0.00	19.98	99.65	1 Watt =	25.37	dBm	PASS
11	2462	MCS8	7.21	10.74	0.00	0.00	13.39	21.83	1 Watt =	25.37	dBm	PASS

MPE Prediction (802.11n20 2412~2462)

Prediction of MPE limit at a given distance

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

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

Where: S = Power density

P = Power input to 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

Max. output power including tune-up tolerancel:	19.99	(dBm)
Max. output power including tune-up tolerancel:	99.770006	(mW)
Duty cycle:	78.42	(%)
Maximum Pav :	78.239639	(mW)
Peak Antenna gain (Maximum):	7.72	(dBi)
Peak Antenna gain (linear):	5.9156163	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2412	(MHz)
MPE limit for uncontrolled exposure at prediction	1	
frequency:		(mW/cm2)
Power density at predication frequency at 20 (cm)	0.092	
distance		(mW/cm2)

Measurement Result

The predicted power density level at 20 cm is 0.092 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 2412MHz.

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