Report No.: E2/2017/90132



MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Standard Applicable 1.1

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	1	/	F/1500	30		
1500-15000	/	/	1.0	30		

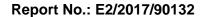
F = frequency in MHz

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^{* =} Plane-wave equipment power density





1.2 Maximum Permissible Exposure (MPE) Evaluation

802.11b Main							
СН	Freq. (MHz)	Data Rate	Peak Output Power (dBm)	Limit RESULT			RESULT
1	2412	1	21.54	1 Watt =	30.00	dBm	PASS
6	2437	1	21.49	1 Watt =	30.00	dBm	PASS
11	2462	1	20.93	1 Watt =	30.00	dBm	PASS
802.1	1b Main						
СН	Freq. (MHz)	Data Rate	Max. Avg. Output include tune up tolerance Power (dBm)	Limit			RESULT
1	2412	1	18.74	1 Watt =	30.00	dBm	PASS
6	2437	1	18.67	1 Watt =	30.00	dBm	PASS
11	2462	1	18.08	1 Watt =	30.00	dBm	PASS

MPE Prediction (802.11b 2412~2462)

Prediction of MPE limit at a given distance

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

S=PG/4πR²

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:	18.74	(dBm)
Max. output power including tune-up tolerancel:	74.81695	(mW)
Duty cycle:	98.8	(%)
Maximum Pav :	73.919147	(mW)
Peak Antenna gain (Maximum):	1.11	(dBi)
Peak Antenna gain (linear):	1.2912193	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2412	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm2)
Power density at predication frequency at 20 (cm) distance	0.019	(mW/cm2)
Measurement Result		
The predicted power density level at 20 cm is 0.010 m/M/	am 2	

The predicted power density level at 20 cm is 0.019 mW/cm2.

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

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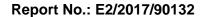
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1.3 Maximum Permissible Exposure (MPE) Evaluation

802.11g Main							
СН	Freq. (MHz)	Data Rate	Peak Output Power (dBm)	Limit RESUL			RESULT
1	2412	6	25.57	1 Watt =	30.00	dBm	PASS
6	2437	6	25.68	1 Watt =	30.00	dBm	PASS
11	2462	6	25.71	1 Watt =	30.00	dBm	PASS
802.1	1g Main						
СН	Freq. (MHz)	Data Rate	Max. Avg. Output include tune up tolerance Power (dBm)	Limit			RESULT
1	2412	6	16.58	1 Watt =	30.00	dBm	PASS
6	2437	6	16.90	1 Watt =	30.00	dBm	PASS
11	2462	6	17.01	1 Watt =	30.00	dBm	PASS

MPE Prediction (802.11g 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:	17.01	(dBm)
Max. output power including tune-up tolerancel:	50.234259	(mW)
Duty cycle:	93.19	(%)
Maximum Pav :	46.813306	(mW)
Peak Antenna gain (Maximum):	1.11	(dBi)
Peak Antenna gain (linear):	1.2912193	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2462	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm2)
Power density at predication frequency at 20 (cm) distance	0.012	(mW/cm2)
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Measurement Result

The predicted power density level at 20 cm is 0.012 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 2462MHz.

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1.4 Maximum Permissible Exposure (MPE) Evaluation

802.1	802.11n_HT20M Main						
СН	Freq. (MHz)	Data Rate	Peak Output Power (dBm)	Limit RESUL [*]			RESULT
1	2412	MCS0	25.03	1 Watt =	30.00	dBm	PASS
6	2437	MCS0	24.95	1 Watt =	30.00	dBm	PASS
11	2462	MCS0	24.87	1 Watt =	30.00	dBm	PASS
802.1	1n_HT20	M Main					
СН	Freq. (MHz)	Data Rate	Max. Avg. Output include tune up tolerance Power (dBm)		Limit		RESULT
1	2412	MCS0	15.29	1 Watt =	30.00	dBm	PASS
6	2437	MCS0	15.09	1 Watt =	30.00	dBm	PASS
11	2462	MCS0	14.80	1 Watt =	30.00	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 tolerance:	15.29	(dBm)
Max. output power including tune-up tolerancel:	33.806484	(mW)
Duty cycle:	92.63	(%)
Maximum Pav :	31.314946	(mW)
Peak Antenna gain (Maximum):	1.11	(dBi)
Peak Antenna gain (linear):	1.2912193	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2412	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm2)
Power density at predication frequency at 20 (cm) distance	0.008	(mW/cm2)
Measurement Result		

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

The predicted power density level at 20 cm is 0.008 mW/cm2.

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

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1.5 Maximum Permissible Exposure (MPE) Evaluation

802.11n_HT40M Main							
СН	Freq. (MHz)	Data Rate	Peak Output Power (dBm)	Limit RESULT			RESULT
3	2422	MCS0	24.84	1 Watt =	30.00	dBm	PASS
6	2437	MCS0	24.73	1 Watt =	30.00	dBm	PASS
9	2452	MCS0	24.81	1 Watt =	30.00	dBm	PASS
802.1	1n_HT40	M Main					
СН	Freq. (MHz)	Data Rate	Max. Avg. Output include tune up tolerance Power (dBm)	Limit		RESULT	
3	2422	MCS0	15.07	1 Watt =	30.00	dBm	PASS
6	2437	MCS0	14.88	1 Watt =	30.00	dBm	PASS
9	2452	MCS0	14.91	1 Watt =	30.00	dBm	PASS

MPE Prediction (802.11n40 2422~2452)

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:	15.07	(dBm)
Max. output power including tune-up tolerancel:	32.136605	(mW)
Duty cycle:	86.31	(%)
Maximum Pav :	27.737104	(mW)
Peak Antenna gain (Maximum):	1.11	(dBi)
Peak Antenna gain (linear):	1.2912193	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2422	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm2)
Power density at predication frequency at 20 (cm) distance	0.007	(mW/cm2)
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Measurement Result

The predicted power density level at 20 cm is 0.007 mW/cm2.

This is below the uncontrolled exposure limit of 1 mW/cm2 at 2422MHz.

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