

## 8. RADIO FREQUENCY EXPOSURE

### 8.1. Limit

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

**Table: Limits for General Population/Uncontrolled Exposure**

Frequency Range (MHz)	Power Density (S) (mW/cm <sup>2</sup> )
0.3–1.34	*(100)
1.34–30	*(180/f <sup>2</sup> )
30–300	0.2
300–1500	f/1500
1500–100,000	1.0

F = frequency in MHz

\* = Plane-wave equivalent power density

### Maximum Permissible Exposure

The MPE was calculated at 20cm to show compliance with the power density limit.

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

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.

Note:

1. Manufacturer declared that the maximum antenna gain is 4.5dBi for TX.
2. Manufacturer declared that the nearest distance between human and the EUT is 20cm.
3. Only record worst case data.

## 802.11b(Chain0+Chain1)

Conducted Peak output Power in dBm	15.40	dBm
Tune up power tolerance	$14.90 \pm 0.5$	dBm
Max. Conducted Peak output Power in mW	34.6737	mW
Prediction distance	20	cm
Prediction frequency	2437	MHz
Antenna Gain(typical)	7.5	dBi
Antenna Gain(numeric)	5.62	
Power density at prediction frequency( S)	0.03878	mW/cm <sup>2</sup>
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm <sup>2</sup>

## 802.11g(Chain0+Chain1)

Conducted Peak output Power in dBm	12.60	dBm
Tune up power tolerance	$12.10 \pm 0.5$	dBm
Max. Conducted Peak output Power in mW	18.1970	mW
Prediction distance	20	cm
Prediction frequency	2462	MHz
Antenna Gain(typical)	7.5	dBi
Antenna Gain(numeric)	5.62	
Power density at prediction frequency( S)	0.02033	mW/cm <sup>2</sup>
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm <sup>2</sup>

## 802.11n-HT20(Chain0+Chain1)

Conducted Peak output Power in dBm	12.70	dBm
Tune up power tolerance	$12.20 \pm 0.5$	dBm
Max. Conducted Peak output Power in mW	18.6209	mW
Prediction distance	20	cm
Prediction frequency	2437	MHz
Antenna Gain(typical)	7.5	dBi
Antenna Gain(numeric)	5.62	
Power density at prediction frequency( S)	0.02082	mW/cm <sup>2</sup>
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm <sup>2</sup>

## 802.11n-HT40(Chain0+Chain1)

Conducted Peak output Power in dBm	12.60	dBm
Tune up power tolerance	$12.1 \pm 0.5$	dBm
Max. Conducted Peak output Power in mW	18.1970	mW
Prediction distance	20	cm
Prediction frequency	2437	MHz
Antenna Gain(typical)	7.5	dBi
Antenna Gain(numeric)	5.62	
Power density at prediction frequency( S)	0.02035	mW/cm <sup>2</sup>
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm <sup>2</sup>

## 802.11b(Chain0)

Conducted Peak output Power in dBm	12.30	dBm
Tune up power tolerance	$11.80 \pm 0.5$	dBm
Max. Conducted Peak output Power in mW	16.9824	mW
Prediction distance	20	cm
Prediction frequency	2437	MHz
Antenna Gain(typical)	4.5	dBi
Antenna Gain(numeric)	2.82	
Power density at prediction frequency( S)	0.00953	mW/cm <sup>2</sup>
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm <sup>2</sup>

## 802.11g(Chain0)

Conducted Peak output Power in dBm	9.78	dBm
Tune up power tolerance	$9.28 \pm 0.5$	dBm
Max. Conducted Peak output Power in mW	9.5060	mW
Prediction distance	20	cm
Prediction frequency	2462	MHz
Antenna Gain(typical)	4.5	dBi
Antenna Gain(numeric)	2.82	
Power density at prediction frequency( S)	0.00533	mW/cm <sup>2</sup>
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm <sup>2</sup>

## 802.11n-HT20(Chain0)

Conducted Peak output Power in dBm	9.87	dBm
Tune up power tolerance	$9.37 \pm 0.5$	dBm
Max. Conducted Peak output Power in mW	9.7051	mW
Prediction distance	20	cm
Prediction frequency	2437	MHz
Antenna Gain(typical)	4.5	dBi
Antenna Gain(numeric)	2.82	
Power density at prediction frequency( S)	0.00544	mW/cm <sup>2</sup>
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm <sup>2</sup>

## 802.11n-HT40(Chain0)

Conducted Peak output Power in dBm	9.65	dBm
Tune up power tolerance	$9.15 \pm 0.5$	dBm
Max. Conducted Peak output Power in mW	9.2257	mW
Prediction distance	20	cm
Prediction frequency	2422	MHz
Antenna Gain(typical)	4.5	dBi
Antenna Gain(numeric)	2.82	
Power density at prediction frequency( S)	0.00517	mW/cm <sup>2</sup>
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm <sup>2</sup>

## 802.11b(Chain1)

Conducted Peak output Power in dBm	12.45	dBm
Tune up power tolerance	$11.95 \pm 0.5$	dBm
Max. Conducted Peak output Power in mW	17.5792	mW
Prediction distance	20	cm
Prediction frequency	2437	MHz
Antenna Gain(typical)	4.5	dBi
Antenna Gain(numeric)	2.82	
Power density at prediction frequency( S)	0.00986	mW/cm <sup>2</sup>
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm <sup>2</sup>

## 802.11g(Chain1)

Conducted Peak output Power in dBm	9.30	dBm
Tune up power tolerance	$8.80 \pm 0.5$	dBm
Max. Conducted Peak output Power in mW	8.5114	mW
Prediction distance	20	cm
Prediction frequency	2462	MHz
Antenna Gain(typical)	4.5	dBi
Antenna Gain(numeric)	2.82	
Power density at prediction frequency( S)	0.00477	mW/cm <sup>2</sup>
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm <sup>2</sup>

## 802.11n-HT20(Chain1)

Conducted Peak output Power in dBm	9.50	dBm
Tune up power tolerance	$9.00 \pm 0.5$	dBm
Max. Conducted Peak output Power in mW	8.9125	mW
Prediction distance	20	cm
Prediction frequency	2462	MHz
Antenna Gain(typical)	4.5	dBi
Antenna Gain(numeric)	2.82	
Power density at prediction frequency( S)	0. 00500	mW/cm <sup>2</sup>
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm <sup>2</sup>

## 802.11n-HT40(Chain1)

Conducted Peak output Power in dBm	9.50	dBm
Tune up power tolerance	$9.00 \pm 0.5$	dBm
Max. Conducted Peak output Power in mW	8.9125	mW
Prediction distance	20	cm
Prediction frequency	2437	MHz
Antenna Gain(typical)	4.5	dBi
Antenna Gain(numeric)	2.82	
Power density at prediction frequency( S)	0. 00500	mW/cm <sup>2</sup>
MPE limit for uncontrolled exposure at prediction frequency	1	mW/cm <sup>2</sup>

## 8.2 Test Results

The power density level worst case at 20 cm is below the uncontrolled exposure limit.