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1. Equipment Under Test (EUT)

K206 Controller

Manufacturer declaration

The EUT is designed for fixed / mobile applications application environments.

1.1. Fixed / Mobile Application

MPE for bystanders which are considered to be ≥20cm away from the front of the transmit antenna

2. Maximum Permissible Exposure FCC

2.1 Frequency hopping radio only

2.1.1 Limit

§ 1.1310(e)(1)

2.1.2 Result

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

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

Prediction frequency:	924	MHz
Conducted Output Power	22.12	dBm
Antenna Gain	2.4	dBi
Tune up tolerance	1.00	dB
Time Averaging Factor	0	dB
EIRP Peak	25.52	dBm
EIRP Peak	356	mW
Prediction distance:	20	cm
Prediction frequency:	924	MHz
MPE limit for Uncontrolled/General Population exposure at mid band frequency (915MHz):	0.610	mW/cm ²
Power density at prediction frequency:	0.071	mW/cm ²
Power density at prediction frequency:	0.709	W/m ²
Test Result	Pass	
Exempt from routine evaluation for RF Exposure 0.071 ≤ 0.61		

Notes

The table above shows that for a prediction distance of 20 cm, RF exposure evaluation is not required.

2.2 Wifi radio only

2.2.1 Limit

§ 1.1310(e)(1)

2.2.2 Result

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

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

Prediction frequency:	2412	MHz
Radiated Field Strength at 3m	113.3	dBuV/m
Power Conversion factor for antenna distance 3m	-95.2	dB
Tune up tolerance	1.00	dB
Time Averaging Factor	0	dB
EIRP Peak	19	dBm
EIRP Peak	81	mW
Prediction distance:	20	cm
Prediction frequency:	2412	MHz
MPE limit for Uncontrolled/General Population exposure at prediction frequency:	1.000	mW/cm ²
Power density at prediction frequency:	0.016	mW/cm ²
Power density at prediction frequency:	0.162	W/m ²
Test Result	Pass	
Exempt from routine evaluation for RF Exposure 0.016 <= 1		

Notes

The table above shows that for a prediction distance of 20 cm, RF exposure evaluation is not required.

2.3 Co-locating frequency hopping and Wifi radios

2.3.1 Limit

§ 1.1307(b)(3)(ii)(B)

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using [paragraph \(b\)\(3\)\(i\)\(B\)](#) of this section for P_{th} , including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using [paragraph \(b\)\(3\)\(i\)\(C\)](#) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

P_i = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

$P_{th,i}$ = the exemption threshold power (P_{th}) according to [paragraph \(b\)\(3\)\(i\)\(B\)](#) of this section for fixed, mobile, or portable RF source i .

ERP_j = the ERP of fixed, mobile, or portable RF source j .

$ERP_{th,j}$ = exemption threshold ERP for fixed, mobile, or portable RF source j , at a distance of at least $\lambda/2\pi$ according to the applicable formula of [paragraph \(b\)\(3\)\(i\)\(C\)](#) of this section.

$Evaluated_k$ = the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

$Exposure Limit_k$ = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k , as applicable from [§ 1.1310 of this chapter](#).

2.3.2 Result

$$0.071/0.61 + 0.016/1 = 0.13$$

$$\text{Limit} \leq 1$$

This result shows that for a prediction distance of 20cm RF exposure evaluation is not required when co-locating the Wifi and the frequency hopping transmitters.

End of report