Combined MPE Calculation for Collocation of Intentional Transmission for a mobile device.

Prediction of MPE limit at a given distance

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

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

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

When all the antennas are at least 20cm away from the user, but individual antennas <u>can not</u> be separated by 20cm from each other.

If

[Pd(1) / LPd(1)] + [Pd(2) / LPd(2)] + ….. + [Pd(n) / LPd(n)] < 1,

then device complies with FCC's RF radiation exposure limit for general population for a mobile device.

Where;

Pd(n) = Power density of nth transmitter at 20cm
LPd(n) = Power density limit for the nth transmitter

The unit has two intentional transmitters in the 2400-2483.5MHz band which are to be collocated.

Combined Calculations

FCC ID: OA3MRF24J40MB

Maximum peak output power at the antenna terminal:	20.47	(dBm)
Maximum peak output power at the antenna terminal:	111.4037987	(mW)
Antenna gain(typical):	0	(dBi)
Maximum antenna gain:	1	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2475	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm^2)
Power density at prediction frequency:	0.022163	(mW/cm^2)

FCC ID: W7OZG2100-ZG2101

Maximum peak output power at the antenna terminal:	16.74	(dBm)
Maximum peak output power at the antenna terminal:	47.20630413	(mW)
Antenna gain(typical):	10	(dBi)
Maximum antenna gain:	10	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	2462	(MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1	(mW/cm^2)
Power density at prediction frequency:	0.093914	(mW/cm^2)

$$[(0.022163 / 1) + (0.093914 / 1)] = \mathbf{0.1161 < 1}$$

Therefore the end host unit, eMonitor Gateway (950-000012), meets FCC's RF radiation exposure limits for general population as a mobile device when the radios above are collocated in it.