RF Exposure calculations

From §FCC 1.1310 table 1A, the maximum permissible RF exposure for an uncontrolled environment is 1mW/(cm*cm), where, (cm*cm) = square cm.
The electric field generated for a 1mW/(cm*cm) exposure (S) is calculated as follows:

S = E*E/Z

where, S = Power density
E = Electric field
Z = Impedance
so, 1mW/(cm*cm) = 10 W/(m*m)

Z is 377 ohm of the impedance of free space, where E and H field are perpendicular.
Thus the Electric field to produce a 1mW/(cm*cm) exposure is:
$E = (10 \times 377)^{1/2} = 61.4$ V/m, which is equivalent to 1mW/(cm*cm)

Maximum conducted peak output power is 18.64 dBm and maximum antenna gain is 0.8 dBi. The maximum radiated output power resulted in 87.90 mW.

Using the relationship between electric field E, effective radiated power in watts P, and distance in meters D, the corresponding distance D to produce a 1mW/(cm*cm) is calculated in the following expression:

$D = (P \times 30)^{1/2} / E = (87.90 \times 10 \times 30)^{1/2} / 61.4 = 2.64$ cm
where, P: maximum effective radiated power measured, 18.64 dBm (87.90 mW)
E: electric field equivalent to 1mW/(cm*cm), 61.4 V/m

Notice in Installation Manual:
While installing and operating this transmitter, the radio frequency exposure limit of 1mW/(cm*cm) may be exceeded at distances close to the transmitter. therefore, the user must maintain a minimum distance of 20 cm from the device at all time.

The table below identifies the distance where the 1mW/(cm*cm) exposure limits may be exceeded during continuous transmission using this device.

Peak output power		calculated RF Exposure Separation Distance(cm)	Minimum RF Exposure Separation Distance(cm)
dBm	mW	2.64	20
18.64	87.90		