

Environmental assessment (EA)

The device is designed to carry 2 transmitters:

- 1 x Proprietary data transmitter operating at 902 - 928 MHz,
- 1 x GSM / UMTS transmitter operating at

GSM: 824.2 – 848.8 MHz, 1850.2 – 1909.8 MHz
UMTS: 826.4 – 846.6 MHz, 1712.4 – 1752.6 MHz, 1852.4 – 1907.6 MHz

FCC ID: X46XT04, IC: 8816A-XT04

This device is to be used only for fixed and applications.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all the persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled Limits for Maximum Permissible Exposure (MPE) and Health Canada Safety Code 6, Limits for General Population/Uncontrolled Exposure:

Frequency Range (MHz)	Power density (mW/cm ²)	Averaging time (minutes)
300 – 1500	f (MHz) /1500	30
1500 – 100.000	1.0	30

Based on the above table the Limits for Maximum Permissible Exposure (MPE) are:

For 900 MHz frequency band device: **0.60 mW/cm²**
 For PCS 1900 frequencies band device: **1.00 mW/cm²**

For this consideration the max measured source based time averaged powers are:

Max. power for 900 MHz operation: 100 mW ERP
 Max. power for 1900 MHz operation: 891.25 mW EIRP

Max. power for 900 MHz operation: 100 mW ERP*
 Max. power for 1900 MHz operation : 2089.3 mW EIRP*

*containing the tune up information of the manufacturer + antenna gain

Using the equation from page 19 of OET Bulletin 65, Edition 97-01:

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

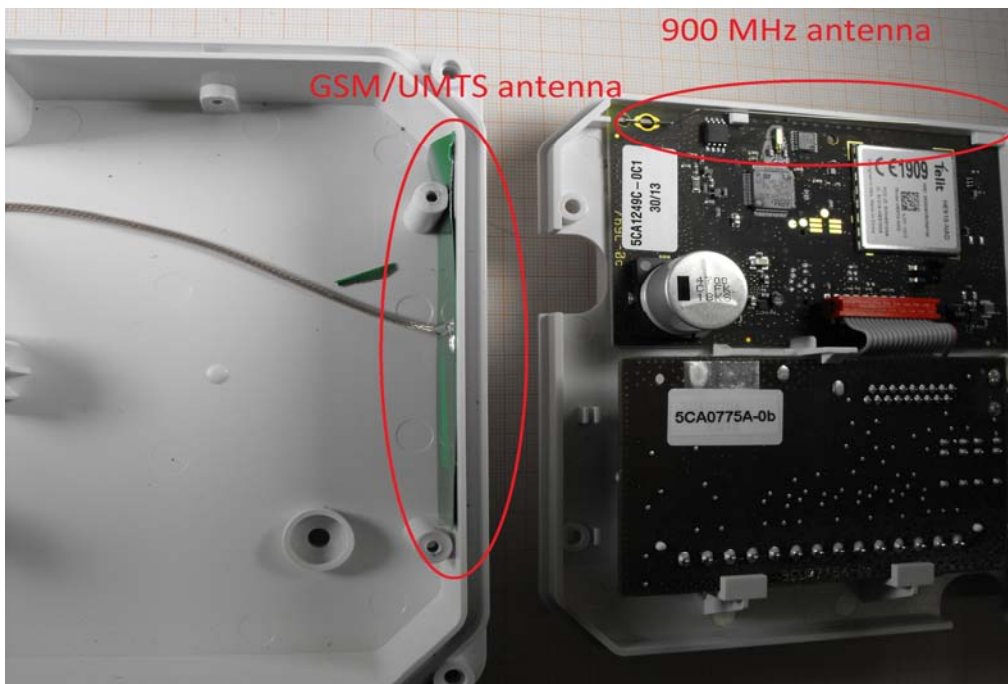
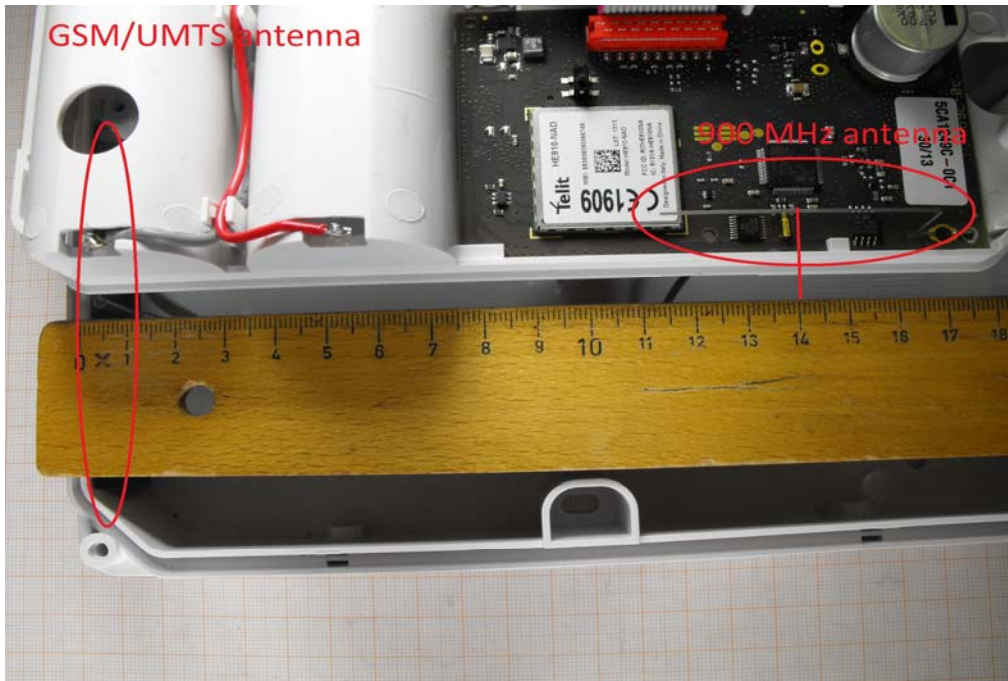
where: S = power density (in appropriate units, e.g. mW/cm²)
P = power input to the antenna (in appropriate units, e.g., mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

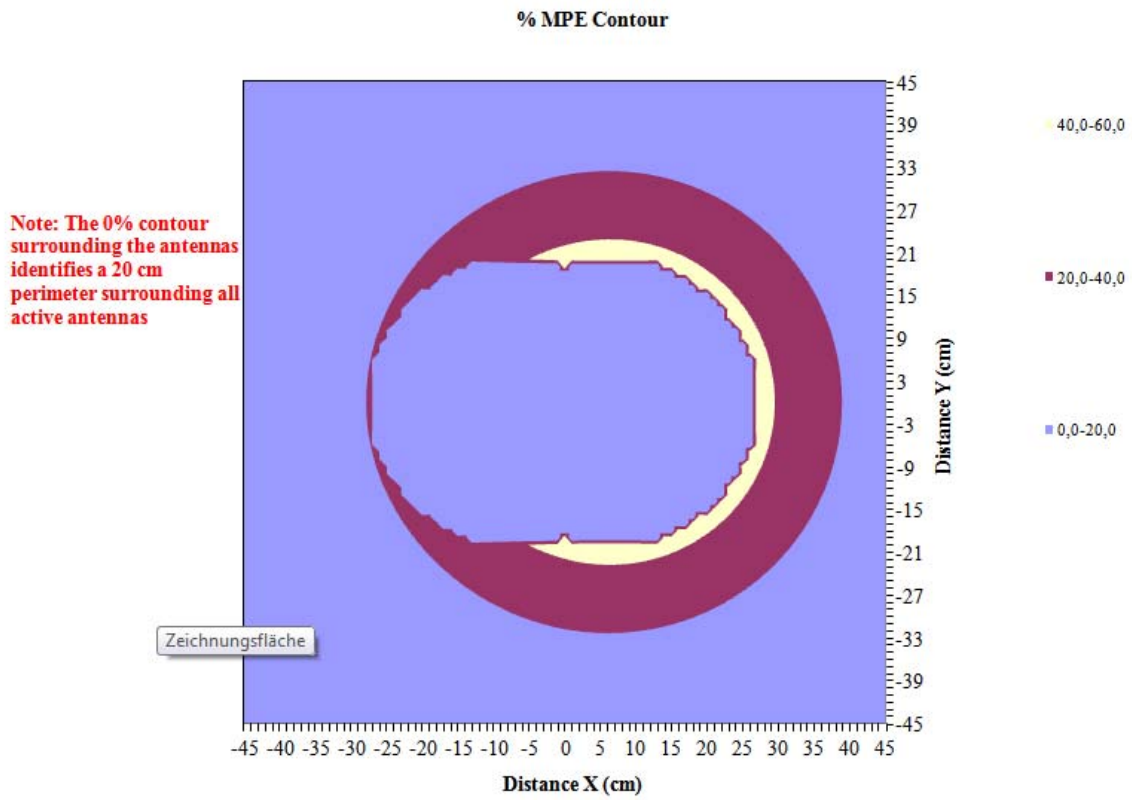
At a distance of 20 cm the calculated power density of the individual transmitter are:

900 MHz transmitter: **0.019894** mW/cm²
1900 MHz transmitter: **0.415653** mW/cm²

900 MHz transmitter: **3.32 %** of Maximum Permissible Exposure
1900 MHz transmitter: **41.56 %** of Maximum Permissible Exposure

For the simulation of the simultaneous transmission condition the following antenna separation distances were estimated. (see pictures)





Result: The sum percentage for location that are at least 20 cm from any active antenna is **44.88 %** and below the Limits for Maximum Permissible Exposure.