MPE CALCULATIONS

The following Power density for the MaxStream transmitter was calculated from the power level indicated in the grant for the MaxStream Inc.'s GSM/GPRS Q2426B PCS transmitter. For the WaveCom module, since the antenna has changed, the power densities were calculated from the conducted peak output power measurements recorded in the original test report (G0M20304-7780-T-47) and the antenna gains obtained from PowerOneData Inc,. The maximum gain for the antenna at the 800 MHz band is 2.5 dBi. This is according to Antenna Factor, the manufacturer of the antenna. This is a quarter wave whip antenna that has been tuned to 800 MHz. No data is available for the gain at 1900MHz. PowerOneData has asked that we perform the calculations using the worst case, that is 2.5 dBi. The actual gain at this frequency should be less than this.

WaveCom Power density calculation:

From part 22; Gain of antenna = 2.5 dBi
Conducted output power from test report = 32.59 dBm
Therefore, EIRP = 2.5 + 32.59 = 35.09 dBm = 3.24 Watts
$S1 = (EIRP)/(4\pi R^2) = 0.413$ mW/cm²; R = 25cm

Part 24; Gain of antenna = 2.5 dBi (worst case)
Conducted output power from test report = 29.82 dBm
EIRP = 2.5 + 29.82 = 32.32 dBm = 1.71 Watts
$S2 = (EIRP)/(4\pi R^2) = 0.218$ mW/cm²

MaxStream Power density calculation:

Antenna gain = 1.9 dBi (verified with customer that this is what they are using)
Power output from grant (conducted) = 0.148 Watts = 21.69 dBm
ERP = 21.69 dBm + 1.9 dBi = 23.54 dBm = 0.229 Watts

$S3 = (0.41*ERP)/(\pi R^2) = 0.0478$ mW/cm²

Limits for general population exposure:

Limit for S1;

Center frequency = 836.5 MHz
Limit at 836.5 MHz = f/1500 = 0.5576 mW/cm²

Limit for S2;

Center frequency = 1880 MHz
Limit at 1880 MHz = 1 mW/cm²

Limit for S3;

Center frequency = 914.9 MHz
Limit at 914.9 MHz = f/1500 = 0.61 mW/cm²

The Wavecom transmitter will not operate both frequency bands at the same time. The worst case is when the device is transmitting at the 800 MHz band.

S	Power density (mW/cm²)	General Population Limit (mW/cm²)	S as a fraction of the limit (%)
S1	0.413	0.5576	74.1
S3	0.0478	0.61	7.84

The total percentage does not exceed 100 % per OET 65 requirements when the spectral power density is calculated at least 25cm away from the unit.