23 October 2003

Federal Communications Commission
Authorization and Evaluation Division
7435 Oakland Mills Road
Columbia, MD 21046

SUBJECT: Emission Levels for FCC ID: O2E-ILR-IPORT3
References: A) Test Report # EMCC-010133AF

To Whom It May Concern:

Further to the Commission's request for information, please find herein the emission levels within 20dB of the FCC limit pursuant to the requirements of section 15.245.

I trust that this information provides sufficient basis for the approval of the subject application under section 15.245.

If you have any questions or concerns, please do not hesitate to contact me at (250) 860-6567.

Yours truly,
IDENTEC SOLUTIONS, INC.

Marty Brooks
Product Engineer

Email: mbrooks@identecsolutions.com

Fundamental Peak Output Power

Channel Frequency (MHz)	905	910	914.8
Reading (dBm)	13.1	13.1	13.2
Attenuation (dB)	10.1	10.1	10.1
Peak Output Power (dBm)	23.2	23.2	23.3
Antenna Gain (dBi)	5	5	5
Test Distance (m)	0	0	0
EIRP (dBm)	28.2	28.2	28.3
Field Strength FS (µV/m)	1484037.9	1484037.9	1501222.3
Duty Cycle (%)	6	6	6
Result (mV/m)	89.0	89.0	90.0
Spec Limit (mV/m)	500	500	500
Margin (mV/m)	411	411	410

Calculations:
To convert the EIRP from dBm to mV/m, the following equation is used:
$P_t = 20 \log (D*FS) - 104.7713$ where,
P_t = EIRP in dBm
D = Measurement distance in m
FS = Field strength in µV/m

Solving for FS, and using the required measurement distance of 3m, the above equation becomes:
$\log FS = (P_t + 95.2289) / 20$

For the channel emission at 905MHz, the field strength becomes:
$FS = {}_{10}((28.2 + 95.2289) / 20) = 1484037.9$ µV/m

The Result will convert the field strength from microvolts/meter into millivolts/meter in addition to taking into account the duty cycle of the device. In accordance with section 15.245(b)(4), the emission limit of 500mV/m @3m is based on a time average value.
Result = FS *.001 mV/ µV * DC where
FS = field strength in µV/m
DC = duty cycle in %

For the channel emission at 905MHz, the result becomes:
Result = 1484037.9 µV/m * .001 mV/ µV * .06 = 89.0 mV/m

Measurements were performed on all antenna ports. The results shown above refer to the **worst case** port, ANT4.

Product Radiated Spurious Emissions Data 15.205 Bands

No	Emission Frequency (MHz)	Receiver Mode and Bandwidth (kHz)	Test Distance (m)	Receiver Reading RA (dBμV)	Correction Factor AF+CF (dB(1/m))	Distance Extrapolation Factor DF (dB)	Result = Corrected Reading FS (dBμV/m)	Result (μV/m)	Spec Limit (μV/m)	Margin (dB)
1	116.1	120, QP	3	28.6	8.4	0	37	70.8	150	6.5
2	119.39	120, QP	3	28	8.5	0	36.5	66.8	150	7
3	331.72	120, QP	3	17.5	17.6	0	35.1	56.9	200	10.9
4	2715	1000, AV 1000, Pk	3	AV 7.7 Pk 33.9	27.9	0	AV 35.6 Pk 61.8	AV 60.3 Pk 1230	500 5000	AV18.4 Pk12.2
5	2730	1000, AV 1000, Pk	3	AV 8.1 Pk 34	27.9	0	AV 36.0 Pk 61.9	AV 63.1 Pk 1244	500 5000	AV18 Pk12.1
6	2744.4	1000, AV 1000, Pk	3	AV 8.3 Pk 35.1	27.9	0	AV 36.2 Pk 63	AV 64.6 Pk 1412	500 5000	AV17.8 Pk11
7	4525	1000, AV 1000, Pk	2	AV 8.1 Pk 32.6	30.6	-3.5	AV 35.2 Pk 59.7	AV 57.5 Pk 966	500 5000	AV18.8 Pk14.3
8	4550	1000, AV 1000, Pk	2	AV 8.3 Pk 32.6	30.6	-3.5	AV 35.4 Pk 59.6	AV 58.9 Pk 955	500 5000	AV18.6 Pk14.4
9	4574	1000, AV 1000, Pk	2	AV 8.2 Pk 34	30.6	-3.5	AV 35.3 Pk 61	AV 58.2 Pk 1122	500 5000	AV18.7 Pk13

Calculations:

The corrected field strength reading, FS, is obtained via the following formula:

FS = RA + AF + CF + DF where,

FS = Field strength in dBμV/m

RA = Receiver amplitude in dBμV/m

AF = Antenna factor in dB/m

CF = Cable attenuation factor in dB

DF = Distance extrapolation factor in dB

The antenna factor is a frequency dependant gain of the wideband antenna used to measure the field strength. This value will vary depending on the emission frequency being measured. The cable attenuation factor is also frequency dependant on the emission frequency being measured.

The distance extrapolation factor is calculated when the test distance is other than the 3m required under the requirements of section 15.31. This factor is calculated as follows:

DF = 20 log (D_{test} / D_{spec}) where,

D_{test} = Test distance

D_{spec} = Specified distance

Sample calculation for emission number seven:

DF = 20 log (2/3)

= -3.52 dB

Therefore,

FS = 8.1 + (30.6) + -3.5

= 35.2 dBμV/m

To convert the field strength from dBμV/m to μV/m, the following formula is employed:

Result = $10^{(FS/20)}$

= $10^{(35.2/20)}$

= 57.5 μV/m

Product Emissions Data 15.109

No	Emission Frequency (MHz)	Receiver Mode and Bandwidth (kHz)	Test Distance (m)	Receiver Reading RA (dBµV)	Correction Factor AF+CF (dB(1/m))	Distance Extrapolation Factor DF (dB)	Result = Corrected Reading FS (dBµV/m)	Result (µV/m)	Spec Limit (µV/m)	Margin (dB)
1	116.1	120, QP	3	28.7	8.4	0	37.1	71.6	150	6.4
2	119.4	120, QP	3	28.5	8.5	0	37	70.8	150	6.5
3	122.75	120, QP	3	27.8	8.8	0	36.6	67.6	200	6.9
4	398.06	120, QP	3	19.6	18.6	0	38.2	81.3	200	7.8
5	563.9	120, QP	3	14.7	22.9	0	37.6	75.9	200	8.4
6	713.2	120, QP	3	14.7	24.9	0	39.6	95.5	200	6.4
7	743.08	120, QP	3	17.6	25.4	0	43	141.3	200	3
8	746.37	120, QP	3	16.9	25.5	0	42.4	131.8	200	3.6
9	1000-9000	1000, Pk	1	<20*	24.7-37	-9.5	<47.5	< 237.1	Pk 500	>16.5

Calculations:

The corrected field strength reading, FS, is obtained via the following formula:

FS = RA + AF + CF + DF where,

FS = Field strength in dBµV/m

RA = Receiver amplitude in dBµV/m

AF = Antenna factor in dB/m

CF = Cable attenuation factor in dB

DF = Distance extrapolation factor in dB

The antenna factor is a frequency dependant gain of the wideband antenna used to measure the field strength. This value will vary depending on the emission frequency being measured. The cable attenuation factor is also frequency dependant on the emission frequency being measured.

The distance extrapolation factor is calculated when the test distance is other than the 3m required under the requirements of section 15.31. This factor is calculated as follows:

DF = 20 log (D_{test} / D_{spec}) where,

D_{test} = Test distance

D_{spec} = Specified distance

Sample calculation for emission number one:

FS   = 28.7 + (8.4) + 0

        = 37.1 dBµV/m

To convert the field strength from dBµV/m to µV/m, the following formula is employed:

Result   = $10^{(FS/20)}$

        = $10^{(37.1/20)}$

        = 71.6 µV/m