



Report of Measurements Radiated Data

The following table reports the results of the radiated measurements for the Proximity Access Control System, PROMI.

Table 5 - Radiated Emission Level

15.209 Limit dBμV/m	Fundamental Frequency kHz	Level dBμV/m	Detector	Test Distance	Limit dBμV/m	Margin dB	Antenna
25.46 @ 300 meters	128.0	66.81	AV	10	108.96	42.15	Loop

15.209 Limit dBμV/m	Unwanted Frequency kHz	Level dBμV	Detector	Test Distance	Limit dBμV	Margin dB	Antenna
19.44 @ 300 meters	256.0	42.42	AV	10	102.94	60.52	Loop
15.92 @ 300 meters	384.0	40.61	AV	10	99.42	58.81	Loop
33.42 @ 30 meters	512.0	42.23	QP	10	60.39	18.16	Loop
31.48 @ 30 meters	640.0	54.70	QP	3	88.01	33.31	Loop
29.90 @ 30 meters	768.0	60.97	QP	3	56.87	25.46	Loop
28.56 @ 30 meters	896.0	36.40	QP	10	55.53	19.13	Loop
27.40 @ 30 meters	1024.0	37.08	QP	10	54.37	17.29	Loop
26.38 @ 30 meters	1152.0	36.09	QP	10	53.35	17.26	Loop
25.46 @ 30 meters	1280.0	41.18	QP	10	52.43	11.25	Loop

Test Method: ANSI C63.4-1992
 Spec Limit: FCC 15.209
 No other emissions were observed.

Note: AV = Average
 QP = Quasi Peak

COMMENTS: System continuously running. Ambient temperature 62°F and relative humidity of 55%. Test distance of 3 meters was due to the presents of ambient radio noise. Limits are extrapolated at 56.53 dB/decade derived by taking measurements at two distances at one radial (see 15.31 (f)(2)).

Calculation of limit at 128kHz:

Limit in microvolts/meter

$2400/128 = 18.75 \mu\text{V/m}$ at 300 meters

Convert to dBμV

$20 \log 18.75 \mu\text{V/m} = 25.46 \text{ dB}\mu\text{V/m}$ at 300 meters

Take the Log of the ratio of the distance between 300 and 10

$\log 300/10 = 1.477$

Multiply this distance ratio with the extrapolation factor

$1.477 * 56.53 \text{ dB/decade} = 83.50$ factor for 10 meter distance

Add this factor to the limit of $25.46 \text{ dB}\mu\text{V/m}$

$25.46 + 83.50 = 108.96 \text{ dB}\mu\text{V/m}$ at 10 meters



Calculation of extrapolation factor at 128kHz, 3 meter to 10 meter distance:

The reading level in dB at 10 meter subtracted from the level in dB at 3 meter

$$96.37 - 66.81 = 29.56$$

Subtract the log of the two distances

$$\text{Log}(10) - \text{Log}(3) =$$

$$1 - 0.477121 = 0.522879$$

Divide the ratio of the readings by the ratio of the distance

$$29.56 / 0.522879 = \underline{56.53}$$

Actual Extrapolation Factor derived from measurements at 3 meters and 10 meters on fundamental frequency
56.53 dB/decade

Levels at 3 and 10 meters were measured, levels at 30 and 300 meters are calculated.

Table 6 - 128kHz Extrapolation Factor Data

Distance in meters	3	10	30	300
Level dBuV/m	96.37	66.81	39.84	-16.70
Limit dBuV/m (40dB/decade)	105.46	84.54	65.46	25.46
Limit dBuV/m (56.53dB/decade)	138.52	108.96	81.89	25.46

Figure 2 - Extrapolation Factor Plot

