

*To: FCC***Subject:** Consideration on new antenna gain (Class II permissive change for Dragon M131 and Powerscan M830X)

Dear Sir/Madam,

The purpose of this document is to give you a rough estimation of the new antenna gain.

According to the measured field strength 88dbuV/m @3 m distance from the antenna the radiated power (EIRP) is nearly equal to -7.3 dbm.

$$E = 88 \text{ dbuV/m} \rightarrow \left(10\right)^{\left(\frac{88}{20}\right)} \cong 25 \text{ mV/m}$$

$$\text{EIRP} = \frac{4 * \pi * d^2 * E^2}{\eta} \text{ considering a roughly circular polarization ; where } d=3\text{m} , E = 0.025 \text{ V/m} ,$$
$$\eta = 377 \Omega ; \text{ so EIRP} \cong -7.28 \text{ dbm}$$

Since the power applied to the input port of the antenna is nearly equal to -4dbm (the output power of the radio is tuned to this value) then the gain of the antenna may be roughly estimated equal to -3dbm. In this way the antenna receives a conducted power of -4dbm and converts it to the radiated value of -7.28 dbm.

The gain is therefore attenuation and this is accepted because the purpose of the new antenna is to have a better reliability of it instead of a higher gain compared with the previous one. The pcb realization is indeed more reliable in production than the realization with wire.

Date: January 9th 2008

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Name of applicant: Ruggero Cacioppo

Signature:

