

US Tech Test Report:
FCC ID:
IC:
Test Report Number:
Issue Date:
Customer:
Model:

FCC Part 15.247 C2PC Report
2AKZ5-CDSVN210ISA
4171B-VN210
18-0412
March 6, 2019
Control Data Systems
VN210

Maximum Public Exposure to RF (MPE) CFR 15.247 (i), CFR 1.1310 (e)

The maximum exposure level to the public from the RF power of the EUT shall not exceed a power density, **S** as per the respective limits in Table 1 below, at a distance, d, of 20 cm (Mobile condition) from the EUT.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

Therefore, for:

MPE for 2400 MHz – 2483.5 MHz for the Control Data Systems VN210 radio module:

Limit: 1.0 mW/cm²

Peak Power (dBm) = 10.71 dBm

Peak Power (Watts) = 0.012 W

Gain of Transmit Antenna = 2.2 dB_i = 1.66 numeric (Approved co-location antenna)

d = Distance = 20 cm = 0.2 m

$$\begin{aligned} S &= (PG/4\pi d^2) = \text{EIRP}/4A = 0.012(1.66)/4*\pi*0.2*0.2 \\ &= 0.0199/0.5030 = 0.0396 \text{ W/m}^2 \\ &= (0.0396 \text{ W/m}^2) (1\text{m}^2/\text{W}) (0.1 \text{ mW/cm}^2) \\ &= 0.00396 \text{ mW/cm}^2 \end{aligned}$$

which is << less than S = 1.0 mW/cm²

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Simultaneous transmission MPE calculation for two VN210 radio modules installed on a single host board operating in the band 2400-2483.5 MHz:

From above for operation at 20cm or greater:

Individual Power Spectral Density ratios:

For one VN210 radio module= 0.00396 mW/cm^2

For two VN210 radios = 0.00792 mW/cm^2

which is << less than 1 mW/cm^2

Therefore two co-located VN210 radio modules will continue to meet the requirements for MPE.