ANNEX A
TEST DATA Section Rule Part Number: 2.1033 (c)(14)

All applicable test data according to:
-Part 2: 2.1046, 2.1047, 2.1049, 2.1051, 2.1053 and 2.1057
-Part 15:15.207, 15.209
-Part 90, Subpart R: 90.521 to 90.555
-Part 27, Subpart C: 25.50 to 27.54
are provided in this section of the Engineering Report, as shown detailed below:

part-pages	Data Contents	FCC parts	Laboratory
A0-1	General. Data efficiency RF Safety	2.1033 (c)(14) 90.535(a)(c) 2.1091(c),27.52	
A1-1	Transmitter Rated Power Output	2.1046, 90.541, 27.50(a)(2)	R&D Dataradio Inc
A2-1	Modulation characteristics	2.1047, 90.535	R&D Dataradio Inc
A3-2	Occupied bandwidth	2.1049, 90.543(d),27.53(d)(4)	R&D Dataradio Inc
A4-2	Spurious Emissons at Antenna Terminals	2.1051,90.543(c),27.53(d)(3)	R&D Dataradio COR
A5-3	Field Strength of Spurious Radiation	2.1053,90.543(c),(e),27.53(e)	R&D Dataradio COR
A6-4	Field Strength of Spurious Radiation (Receiver Radiation Limits)	2.1053,90.543(c),15.207&209	R&D Dataradio COR
A7-2	Frequency Stability vs Variation in Ambient Temperature	2.1055(a), 90.539,27.54	R&D Dataradio Inc
A8-1	Frequency Stability vs Variation in Supply Voltage	2.1055(d),90.539,27.54	R&D Dataradio Inc
A9- 11	Adjacent Channel Coupled Power	90.543(a),(b),27.53(d)	R&D Dataradio Inc
28	**Total number of report pages**		

The following reports have been generated for FCC Certification of the Dataradio 792-803 MHz Transceiver/Modem/GPS, part number GPD7-6075-112 00. Unless otherwise noted, all of the measurements were conducted following the procedures set forth in the TIA/EIA-603 standards.

Set-up and equipment identification

Dataradio Inc	Dataradio COR
Units under test Prototype MDP 700MHz+G3, Serial: 00005	Units under test Prototype, Serial: 00003

Open Area Test Site (OATS): FCC certified Open Area Test Site at the Transcrypt International / E.F. Johnson Radio Products located at 299 Johnson Avenue in Waseca, Minnesota

Modulation and Spectrum Usage Efficiency

The unit employs only digital modulation as per 90.535 (a). The unit is designed for a channel size of 50 kHz as per 90.531(c) with a spectrum efficiency of 128kbps/50kHz . This equates to 128*3kbps/50*3kHz=384kbps/150kHz as required by 90.535(c)

The part 90.531(d)(2) states that two or three contiguous wideband (50 kHz) channels may be used in combination as 100 kHz or 150 kHz channels. Rates of 256kbps/100kHz and 384kbps/150 kHz respectively can be achieved running 3 units appropriately programmed

RF Safety

rule: FCC part 2.1091, part 1.1310

Maximum Standard: FCC part 1.1310 table 1 [B]

Frequency range: 300-1500 MHz values: 792-806MHz (max Tx freq)
Power Density f/1500 mW/cm2 0.528-0.537 mW/cm2
The exposure should not exceed 0.537 mW/cm2

Estimation Result: Meets maximum standard (0.478mW/cm^2) @50%duty cycle

Theoretical Estimation of Exposure Fields: as per OET Bulletin 65 section 2 formula (3) page 19 for power density and section 1 formula (2) for time averaging .

Calculations Performed By _____. date Jan 17, 2003
Constantin Pintilei

Note: The calculation will consider the worst case (minimum limit) for RF exposure as follow:
f=792 MHz
$\lambda=3*10^8$(m/s)/$792*10^6$(Hz)=0.378m
r=0.5 m - mag-mount antenna and person standing next to the car. r>$\lambda/(2\pi)$ =>far field region
P_T=30W -maximum transmitted power
G=0dB - unity gain mag-mount antenna,
no cable loses - for worst case.
no spatial averaging
50% average Tx duty cycle , half duplex unit

Formulas:

Time - averaged power density: $S_{\lim} = \frac{1}{t_{avg}} \sum_{i=1}^{n} S_i t_i = S \frac{\sum_{i=1}^{n} t_i}{t_{avg}} = \eta * S$; Far-field region power density: $S = \frac{P_T G}{4\pi * r^2}$

For an 50% Tx duty cycle

$$W = 0.5 * \frac{30*1}{4\pi * 0.5^2} = 4.775 \text{ W/m}^2 = 0.4775 \text{mW/cm}^2$$