



Date: December 8, 2003

Ref. FCC ID:
EHA700C-SMB45
HN22011B
HN2ABTM3-2
EHARFID915PCC-6

**Intermec
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To Whom It May Concern:

Intermec Technologies Corporation hereby declares that our Model 700C Pen Computer for Data Collection with internal FCC Part 15 - 2.4 GHz DSSS transceiver, internal FCC Part 24E - 1800 MHz transceiver, and Intermec IP3 add on RFID scanner FCC Part 15 - 902 MHz FHSS transceiver is described as the equipment under test (EUT). This EUT is categorically excluded from routine environmental evaluation for RF exposure by its classification as a Part 15/24E handheld mobile radio operating with approximately 2070.4 mW ERP. Their summed ERP is less than 3 watts, therefore the EUT is categorically excluded from routine environmental evaluation per 47 CFR 2.1091(c).

Note: The radio FCC ID: HN2ABTM3-2 cannot operate simultaneously with the IP3. The operation detail is contained within this application. Since the product would be configured for sale with the above listed radios, this clarification is required for co-located transmitter identification.

The attached tables showing MPE evaluation of the product with antenna options. Each radio band has specific a maximum permissible exposure (MPE) as stated in 47 CFR 1.1310. Refer to the limits shown in the calculation tables for details.

The general calculation for exposure at a distance of 20-cm (8-inch) distance is shown in the equation below.

$$S = (PG)/4 \pi R^2$$

Where: S = power density (mW/cm²)

P = power input to the antenna (mW)

G = linear power gain relative to an isotropic radiator

R = distance to the center of the radiation of the antenna (20 cm = limit for MPE estimates)

Solving for S, the maximum power densities 20 cm from the transmitting antennas are contained within the following pages.

Sincerely,

Dave Fry
EMC Engineer

EIRP Calculation of RF Exposure

FCC ID: EHA700C-SMC45
GPRS/GSM Radio Modem

Antenna options of the 700C below show the external dual band dipole at +4 dBi antenna is worst case.
Calculation for exposure at 20cm distance

Antenna Description	Antenna Type	Antenna Part No.	Transmit Freq. (MHz)	Peak Conducted Power (mW)	Gain (dBi)	Pwr Density @ 20cm mW/cm ²	Pwr Density Limit mW/cm ²	Power Density Ratio
External	1/4 wave monopole	805-606-003	1800	933.0	3	0.3703	1.0	0.3703
External	1/4 wave monopole	805-606-204	1800	933.0	4	0.4662	1.0	0.4662

FCC ID: HN22011B
802.11b Radio

Antenna options of the 700C below show the internal antenna is worst case when co-located.
Calculation for exposure at 20cm distance

Antenna Description	Antenna Type	Antenna Part No.	Transmit Freq. (MHz)	Peak Conducted Power (mW)	Gain (dBi)	Pwr Density @ 20cm mW/cm ²	Pwr Density Limit mW/cm ²	Power Density Ratio
Internal	folded dipole	805-608	2400	89.0	-2	0.0112	1.0	0.0112

FCC ID: EHARFID915PCC-6
RFID Radio

Antenna for IP3 RFID scan handle option for 700C
Calculation for exposure at 20cm distance

Antenna Description	Antenna Type	Antenna Part No.	Transmit Freq. (MHz)	Peak Conducted Power (mW)	Gain (dBi)	Pwr Density @ 20cm mW/cm ²	Pwr Density Limit mW/cm ²	Power Density Ratio
Internal	panel	805-616-001	902	1000.0	0	0.1989	0.61	0.3261

Co-Located Transmitter Calculation of RF Exposure

Per FCC TCB Training April 3, 2002

"Devices operating in multiple frequency bands

When RF exposure evaluation is required for TCB approval

Separate antennas – estimated minimum separation distances may be considered for the frequency bands that do not require evaluation or TCB approval, however, the estimated distance should take into account the effect of co-located transmitters. (Note 24)

Note 24 According to multiple frequency exposure criteria, the ratio of field strength or power density to the applicable exposure limit at the exposure location should be determined for each transmitter and the sum of these ratios must not exceed 1.0 for the location to be compliant."

Worst Case Exposure for 700C when using internal co-located transmitters with IP3 RFID scan handle option.

Calculation for exposure at 20cm distance

Transmitter FCC ID: Antenna Description	Antenna Type	Antenna Part No.	Transmit Freq. (MHz)	Peak Conducted Power (mW)	Gain (dBi)	Pwr Density @ 20cm mW/cm ²	Pwr Density Limit mW/cm ²	Power Density Ratio
FCC ID: EHA700C-SMC45 External	1/4 wave monopole	805-606-204	1800	933.0	4	0.4662	1.0	0.4662
FCC ID: HN22011B Internal	folded monopole	805-608	2400	89.0	-2	0.0112	1.0	0.0112
FCC ID: EHARFID915PCC-6 Internal	panel	805-616-001	902	1000.0	0	0.1989	0.61	0.3261
							ratio limit	
Total							1.0	0.8036

The worst case configuration for all combinations of co-located transmitters and antennas are shown.

In all cases the ratio of exposure compared the limit when totaled does not exceed 1.0.

ERP Calculation of RF Exposure

ERP is sometimes preferred. The calculation as the Sum of the ERP of the co-located transmitters is in the table below. ERP TX1 + ERP TX2 + ERP TX3

Worst Case Exposure for 700C when using internal co-located transmitters with IP3 RFID scan handle option.

Calculation for exposure at 20cm distance

Transmitter FCC ID: Antenna Description	Antenna Type	Antenna Part No.	Transmit Freq. (MHz)	ERP Power (mW)		Pwr Density @ 20cm mW/cm ²	Pwr Density Limit mW/cm ²	Power Density Ratio
FCC ID: EHA700C-SMC45 External	1/4 wave monopole	805-606-204	1800	1427.2	0	0.2839	1.0	0.2839
FCC ID: HN22011B Internal	folded monopole	805-608	2400	34.2	0	0.0068	1.0	0.0068
FCC ID: EHARFID915PCC-6 Internal	panel	805-616-001	902	609.0	0	0.1212	0.61	0.1986
Total				2070.4		0.4119		
							ratio limit	
Total							1.0	0.4894

The worst case configuration for ERP combinations of co-located transmitters and antennas is shown.

The ratio of exposure compared the limit when totaled does not exceed 1.0.

Please note that EIRP = ERP x 1.64, so EIRP data presented is worst case.