Transmitter Certification

Test Report

FCC ID: SDBTXCVRBB01

FCC Rule Part: CFR 47 Part 24 Subpart D, Part 90 Subpart I, Part 101 Subpart C

ACS Report Number: 07- 0226-LD

Applicant: Sensus Metering Systems
Equipment Type: Generic Transceiver
Model(s): TXCVRBB01

RF Exposure

General Information:

Applicant: SENSUS METERING SYSTEMS
ACS Project: 07- 0226
FCC ID: SDBTXCVRBB01
Device Category: Fixed/Mobile
Environment: Uncontrolled/General Population

Technical Information - Fixed:

Antenna Type: Omni Directional
Antenna Gain: 11dBi
Max Transmitter Output Power: 30.38 dBm
Max System EIRP: 41.38 dBm
Operating Configuration: Fixed Mounted on Permanent Structures

Technical Information - Mobile:

Antenna Type: Printed Monopole
Antenna Gain: 0dBi
Max Transmitter Output Power: 30.38 dBm
Max System EIRP: 30.38 dBm
Operating Configuration: Mobile

MPE Calculation - Fixed

The Power Density (mW/cm^2) is calculated as follows:

$$S = \frac{PG}{4\pi R^2}$$

Where:
S = power density (in appropriate units, e.g. mW/cm2)
P = power input to the antenna (in appropriate units, e.g., mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Calculations were performed at low, middle, and high channels within the total band of operation. The low channel corresponding to 901.9875 MHz is consistent with the highest output power.

MPE Calculator for Mobile Equipment Limits for General Population/Uncontrolled Exposure							
Transmit Frequency (MHz)	Radio Power (dBm)	Power Density Limit (mW/Cm2)	Radio Power (mW)	Antenna Gain (dBi)	Antenna Gain (mW eq.)	Distance (cm)	Power Density (mW/cm^2)
901.9875	30.38	0.60	1091.44	11	12.589	43	0.591
928.925	30.14	0.62	1032.76	11	12.589	41	0.615
959.925	29.34	0.64	859.01	11	12.589	37	0.629

MPE Calculation - Mobile

The Power Density (mW/cm^2) is calculated as follows:

$$S = \frac{PG}{4\pi R^2}$$

Where:
S = power density (in appropriate units, e.g. mW/cm2)
P = power input to the antenna (in appropriate units, e.g., mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Calculations were performed at low, middle, and high channels within the total band of operation. The low channel corresponding to 901.9875 MHz is consistent with the highest output power.

MPE Calculator for Mobile Equipment Limits for General Population/Uncontrolled Exposure							
Transmit Frequency (MHz)	Radio Power (dBm)	Power Density Limit (mW/Cm2)	Radio Power (mW)	Antenna Gain (dBi)	Antenna Gain (mW eq.)	Distance (cm)	Power Density (mW/cm^2)
901.9875	30.38	0.60	1091.44	0	1.000	20	0.217
928.925	30.14	0.62	1032.76	0	1.000	20	0.205
959.925	29.34	0.64	859.01	0	1.000	20	0.171

Installation Guidelines
The installation manual should contain text similar to the following advising how to install the equipment to maintain compliance with the FCC RF exposure requirements:

"RF Exposure (Intentional Radiators Only)
For mobile operation and in accordance with FCC requirements of human exposure to radiofrequency fields, the radiating element shall be installed such that a minimum separation distance of 20cm is maintained. The maximum antenna gain used shall be no greater than 0dBi

For fixed operation and in accordance with FCC requirements of human exposure to radiofrequency fields, the radiating element shall be installed such that a minimum separation distance of 43cm is maintained. The maximum antenna gain used shall be no greater than 11dBi. The antennas used must be fixed-mounted on indoor/outdoor permanent structures.