1. Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR §1.1310 titled “Radiofrequency radiation exposure limits”, generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as “a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter’s radiating structure(s) and the body of the user or nearby persons. ” This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product,

Client has made the following statement: “IMPORTANT: To meet the FCC’s RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna”. Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 cm from the user. Thus, this product is a “mobile device” as defined in section § 2.1091 paragraph (b).

Exposure evaluation
$$S = \frac{\mathrm{PG}}{4\pi R^2}$$ Where S: power density P: power input to the antenna 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.

2. RF Output Power

Band	CH	Frequency (MHz)	Average Conducted power (dBm)
GSM 850	128	824.2	32.24
	190	836.6	32.16
	251	848.8	32.45
PCS 1900	512	1850.2	28.67
	661	1909.8	28.73
	810	1909.8	29.81

3. Test Result

Band	Frequency (MHz)	Limit (mw/cm2)	Distance[R](cm)	Power [P] (dBm)	ANT Gain (dB)	Numeric Gain [G] (dBi)	Duty Cycle	[P] x [G] with Duty cycle [TP] (mW)	Power Density [S] (mw/cm2)
GSM 850	824.2	0.549	20	33	-1.8	0.661	12.5%	166.5	0.033
	836.6	0.558	20	33	-1.8	0.661	12.5%	166.5	0.033
	848.8	0.566	20	33	-1.8	0.661	12.5%	166.5	0.033
PCS 1900	1850.2	1.000	20	30	-1.6	0.692	12.5%	86.5	0.017
	1909.8	1.000	20	30	-1.6	0.692	12.5%	86.5	0.017
	1909.8	1.000	20	30	-1.6	0.692	12.5%	86.5	0.017

Note: 1.The Power [P] is max tune-up power (upper limit).

2.The Numeric Gain calculated by 10^(ant. Gain(dBi) /10).