Date: September 13, 2013

GSM2398

Source Based Time Average Transmitter Power

The GSM2398 (MT 3060) supports a maximum of 1 transmit timeslot (GPRS Multi-Slot class 8) in the GPRS mode of operation. This Multi-Slot class is configured in the factory during manufacturing and it is not possible for a user or installer to configure the GSM2398 to use more than 1 transmit time slot.

Therefore a source based time average calculation is used to reduce calculated average transmit power. Since the number of GSM/GPRS timeslots available in a single burst is 8 and only 1 of these are used the average power would be 1/8 of the measured ERP/EIRP.

In addition the GSM2398 is controlled by SW to only support the user to set a maximum of one location or event every 2 seconds. Each report sent over the wireless network takes under 200ms. Therefore;

- GPRS Class 8 operation duty factor = 1/8 = 0.125 = 12.5%
- Source based time averaged duty factor = 0.2/2=0.1=10%
- Maximum duty factor = 0.1*0.125 = 0.0125 or 1.25% maximum duty factor

Test Separation Distance

The GSM2398 is mounted in vehicles and plugs into the vehicle's OBD II connector, which is mounted within the dashboard region. It is not body-worn and therefore does not come into direct contact with the user.

A test separation distance of 10mm is therefore sufficiently conservative to support the operational separation distance required by the device and its antenna.

SAR Test Exclusion Calculation

From KDB 447498 D01,

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where;

- f(GHz) is the RF channel transmit frequency in GHz,
- Power and distance are rounded to the nearest mW and mm before calculation,
- The result is rounded to one decimal place for comparison

Therefore;

For 850 MHz band,

Maximum power (34 dBm or 2512mW) · Maximum duty factor (0.0125) = 31.4mW Maximum time-averaged power.

[(31mW)/(10mm)] · [√f(.85)] = 2.9

For 1900 MHz band,

Maximum power (32 dBm or 1585mW) · Maximum duty factor (0.0125) = 19.8mW Maximum time-averaged power.

[(20mW)/(10mm)] · [√f(1.91)] = 2.8

Conclusion

For both the 850 MHz and 1900 MHz bands, SAR test is not required since the results are below the ≤ 3.0 1-g SAR limit.