

January 28, 2004

RE: Savi Technology

FCC ID: KL7-650R-V1

1) Please explain the purpose of 2 identical transmitters in the unit. The theory of operation does not bring up this issue. Are they ever expected to transmit at the same time? If so, how does this affect the measurements made?

Each transmitter connects to a different antennas. The antennas are identical but arranged at 90 degrees to each other. All transmissions are made from one antenna or from the other to achieve an omni-directional pattern.

All duty-cycles take into consideration combinations of transmissions from both antennas, that is the combination of any transmissions from transmitter number one followed by transmissions from antenna number 2 meet the requirements for timing as detailed in 15.231.

Both transmitters cannot operate simultaneously. These should not affect the measurements made.

2) Under the Data mode, it is not certain what is meant by the 30% duty cycle given in the operational description.

The duty-cycle for data signals is limited to a maximum of 30% in any 100ms period and a total transmission time of less than 1 second. The duty cycle plots show a pulse train of data signals with a duty cycle of ~23% for reference.

3) The users manual (installation page 7 of 40) mentions an adjustable range. Please explain what is meant by this and its affect on the testing performed.

It is possible for the end user to reduce the output. This is used in in applications where the user would like to collect tags located inside a smaller area. The system was tested operating at the maximum output level, which is hard coded in firmware. It is only possible for the end user to decrease power.

4) The device was tested face down. Has any testing been performed with the device face up vs. face down to ensure there is little difference in the results due to positioning of the unit relative to ground plane orientation, etc?

The antennas in the device are horizontal. Flipping the unit over would not change the relative positions of the antennas with respect to the ground plane. Additionally, the device is intended to be installed in this orientation.

As previous versions of this product were tested in this orientation without comment, the device was tested in the same fashion.

Please note that during ETSI testing, the EUT was in the same orientation but at an elevation of 1.5m above the ground plane. Measurements made with the device in this orientation were 0.1 – 0.2dB lower than with the EUT at a height of 0.8m above the ground plane.

5) Average readings on page 6 of 12 should have been made by correcting the peak reading by 10.5 dB as specified. However, the delta between peak and average varies from approximately 4 to 15 dB. Note that when pulsed emissions are employed, the accepted methodology is to obtain the average measurement by correction of the peak measurement with an appropriate duty cycle factor. Average measurements are not typically acceptable for pulsed emissions. Please explain.

The limit was also incorrectly stated as being 52.9 for average measurements. 15.231(e) allows the limit of 15.209 to be used if it allows for higher emissions, so the average limit should be 54dBuV/m.

Data and limit have been corrected and have been uploaded in a revised report.

6) Please provide information regarding the RBW and VBW settings used for various tests.

Peak readings for radiated emissions were made using RBW=VBW = 120kHz below 1GHz, RBW=VBW=1MHz above 1GHz. When actual average measurements were made (i.e. as opposed to calculated measurements) they were made below 1GHz using the test receiver's average detector and a 120kHz bandwidth. Above 1GHz the VBW was reduced to 10Hz (refer to page 12 of 20 in the test report) since the device was transmitting continuously and was not operating in a pulsed mode.

The test data has been annotated appropriately.

7) FYI...Proposed Grant Notes: Collection Mode of operation meets with the requirements of 15.231(a)(1) & (a)(2). Data Transmission Mode of operation meets with the requirements of 15.231(e) and is permitted with a duration of no more than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission, but in no case less than 10 seconds.

This is noted.

I hope this answers all of your questions. The revised report "*R54044-ATCB revised.pdf*" have been uploaded to the ATCB website:

Regards

A handwritten signature in green ink that reads "Mark Briggs". The signature is written in a cursive style with a large, looped "B".

Mark Briggs
Vice President of Engineering