Elliott Laboratories Inc. 684 West Maude Avenue 408-245-7800 Phone
www.elliottlabs.com Sunnyvale, CA 94086-3518 408-245-3499 Fax

RE: SchlumbergerSema
FCC ID: F9C-CBAMM

Original Question #2)
2) The Theory of Operations discusses this transmitter board being installed in the Landis & Gyr MS-II, MX, GE (excluding I70S) and ABB, yet only one meter is listed in the report. Please explain and provide detailed information as to what the differences in these meters?

Original Answer:
The transmitter can be used in various meters. We have previously submitted data to the FCC for the device tested in a single meter as being representative of all meters. The basic meters are very similar, with minor differences in the meter housings. The meters have a metal base and a plastic housing. The transmitter is optimized to radiate its maximum field strength when installed in the meter. If necessary, Schlumberger will apply for permissive changes to the device for different meter housings.

New Question: If Schlumberger wishes this filing to be representative of multiple meters, then this fact should be clearly represented in the application and detailed information provided as to the construction variances between the meters (and justify why they do/do not affect EMI). Depending on the construction differences, test data may be required for each model, or at least to obtained in order to determine the worse case model. Without this information, the filing can only cover the product as tested. Construction difference between meter makes will likely require a permissive change (this is also a concern since the previous response also stated that the field strength is reduced increased when installed in the meter). However, please note that since the power measurements are performed radiated, if this significantly varies or increases within different meters, a new ID may be necessary. Please let me know how you wish to handle this
issue.

RESPONSE: Schlumberger-RMS is requesting approval for the Landis & Gyr model only. They will request permissive class II changes for the other models that were mention on the manual later in the future. Uploaded a letter stating the differences between the L & G model.

Original Question #9)
Please explain how average measurements were made given the possible nature of low duty cycle. Please note that FCC guidance for average measurements expect the transmitter carrier to be in continuous transmit. Application of the RBW= 1 MHz and VBW = 10 Hz may be inappropriate depending on the answer for question .

Original Answer:
The unit was transmitting once every second during testing (as stated in question # 8). Average measurements were made using RBW=1MHz, VBW=10Hz. Although not continuously transmitting, FCC has been approach with this unique transmitter. Since the transmitter is being force to transmit every 1 second (out of its ordinary true transmit protocol) FCC has allowed us to apply an additional Duty Cycle to the Average measurement for these particular transmitters only.

New comment: The FCC will allow you to apply both a duty cycle correction & Average Measurement to a pulsed or low duty cycle TX. However, the concern with this is that the Average Measurement is performed in an acceptable manner without the technique giving undue benefit due to the analyzers settings and the duty rate of the TX (usually, as the VBW of the spectrum analyzer is reduced, the sweep time of the analyzer increases and give an unintended benefit to the measurement). In these situations, the VBW should be increased to be sure the passband of the TX is still adequately captured during a single sweep (I have seen where VBW=1kHz work well in many cases). However, your previous response states that this transmitter has been discussed with the FCC. Please comment on this issue and/or provide plots comparing VBW's to ensure that the settings previously used did not provide an unintended benefit during the measurement.

RESPONSE: Uploaded plots with comments. Label “Average and Power Measurements”

Original Question 12)
12) Please provide information showing sample calculations of Output Power (page 7 of 15 & 13 of 15). Were the units of the output power (dBm or mW)?

Original Answer:
The output power is calculated from the field strength using the formula:

$$E = \frac{\sqrt{(30\ P\ G)}}{d}$$

where E = field strength (V/m), P = output power (Watts), G = antenna gain and d is the distance from the device under test (meters).

From this equation:

$$EIRP = PG = \frac{E_2 d_2}{30}$$

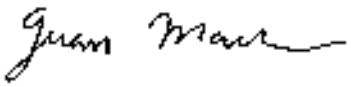
The output power stated in the report is the calculated effective isotropic radiated power expressed in dBm, based on the peak field strengths recorded.

New Comment: The purpose of following the alternative test methodology (radiated measurement) is to obtain the calculated power into the antenna terminals, since limits to 15.247 are specified as conducted power. According to information in the filing (theory of operation, RF exposure info), the antenna gain is –5 dBi gain antenna. However for this calculation, an isotropic source was assumed. This calculation should use the claimed antenna factor in order to determine the expected conducted power. However, solving the above equation for a –5 dBi, the antenna conduced power equates to +28 dBm (634 mW). This creates the following concerns: a) the expected output power according to the theory of operation at the antenna port is +23 dBm which does not match the calculated value and b) at 634 mW, this device falls under excluded devices for TCB's to approve and has to be submitted to the FCC. c) This affects the MPE calculation as well. Please explain.

RESPONSE: Plots of the "Conducted" power output has been provided label "Average and Power Measurements". +23 dBm was measured. The information for the antenna must not be correct since this will yield a 0 dBi antenna instead of the –5 dBi stated antenna gain. This was corrected in the user manual and MPE calculation was revised to reflect this.

Hopefully this answers all of your questions. Please contact me via doc@elliottlabs.com if you require more information.

Regards,



Juan Martinez
Sr. EMC Engineer