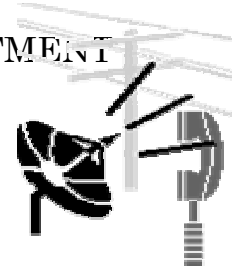


HEXAGRAM, INC.

RF & MICROWAVE TECHNOLOGY DEPARTMENT

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RE: [LLB8877; TIMCO Job 1280UC3](#)

September 21, 2003

Mr. Bruno Clavier,
Chief Engineer,
Timco Engineering

RE: your letter of 9-15-2003

Dear Mr. Bruno Clavier,
Thanks for your input regarding Hexagram LLB8877 submission.

Following your numbering; bellow is the information on your request.

1. Revised request for confidentiality is included in this e-mail package.
2. See next paragraph.
3. Module/Modular approval is not feasible for LLB8877 due to the fact that each manufacturer has different mechanical structure of their electrical meter. Therefore, in each specific case, Hexagram will redesign the MTU and will submit documentation for FCC approval for use of our transmitter within a new electrical meter environment.

Therefore, Please, authorize the use of LLB8877 with Invensys Watt-hour meter. The LLB8877 is tested within the Invensys Watt-hour meter.

Also, the previously submitted file LLB8877-Location FCC label.pdf consists of external photo of the final device.

4. See previous paragraph.
5. The file LLB8877 Int Photo-no shield.pf is a photograph of the component level of the board without shield.

6. LLB8877 uses a ribbon cable with a ferrite suppression core on the cable. This ferrite core does not affect the RF performance of the LLB8877, and, it is used to preserve the data reading integrity of the electrical meter.
7. The LLB8877 has undergone intensive laboratory RF testing during design and prototype validation. The frequency 460MHz is the worst case point due to the fact that transmitter's filters and matching circuits have the smallest losses in the middle of the band. At the ends of the band, the radiated components are lower than at the 460MHz.
8. The Occupied Bandwidth (OBW) plots are blurry due to the fact the Lab that performed the test had to print them to add the mask boundaries (manually), and, after that they scan them back into electronic format.

We attached file LLB8877 OBW-plots.pdf for your review. These are original plots from real-time spectrum analyzer (TEK3086) and they have no mask boundaries. You may see the span is set to 100 kHz.

According to TEK 3086 user manual, page 3-34, the resolution (and video) bandwidth of the instrument is internally set to:

$$RBW = \frac{SetSpan}{641} = \frac{100[kHz]}{641} = 156[Hz]$$

The FCC requires to set the spectrum analyzer for RBW and VBW of not less than 100 [Hz]. We fully comply with this request.

Dear Mr. Clavier; I hope, I have answered to all of your questions. If there any more questions or requests, please, submit them to my attention, because I am responsible for all RF product in the company.

Sincerely
Lazar Feldman