

Addendum to the Report No. 01-087a

Submitted by: _____
Vichate Ungvichian, Ph.D., P.E.

Date: 1 October 2002

In response to the FCC correspondence Reference No. 23718, a SenTech EAS Corporation provided a similar AQUILA system Model No. AQA-100/202 used on 2 November 2001 to validate the conformance of the conducted emission data as per Section 15.207 (Intentional conducted limit).

The test setup was identical to the one previously described in the FAU Report No. 01-087a, Section 4.2.1. Upon re-evaluating the system, it was found that the line filter (Epcos Model No. 565-2; PN: B82722-A2302-NI) is needed. In addition, a safety ground wire must be connected between the system ground mounting plate and the metallic-loop-antenna frame. The final conducted emissions measured across line and phase terminals were shown in Figure 1. It can be seen that the detectable conducted emissions occurred in the 7.47-9.00 MHz band of operation. With the spectrum analyzer tuned to 9.00 MHz and set the analyzer to peak detector response, the highest emission voltage between both phase and neutral lines was 32 dB μ V (39.8 μ V). Therefore, there is a margin of 15.95 dB below the 47.95 dB μ V (250 μ V) limit.

As for the question of restricted bands of operation per Section 15.205, the Aquila system **continues to sweep** across the designed band of 7.47-9.00 MHz with the 82 Hz repetition rate. There are four restricted bands relevant for the discussion, which are 8.291-8.294 MHz, 8.362-8.366 MHz, 8.37625-8.38675 MHz and 8.41425-8.41475 MHz. The Aquila system is exempted as per Section 15.205d-1 that the fundamental emission is outside the bands more than 99% of the time or less than 1% in-band. The method of determination is as follows:

1) 8.291-8.294 MHz restricted band:

The restricted band occupies 0.003 MHz in comparison to the 1.53 MHz Aquila system operating band (7.47-9.00 MHz). Hence with a constant sweep speed, the percent of in-band is $0.003/1.53 \times 100$ or 0.196% or the Aquila system operates 99.804% outside the restricted band.

2) 8.362-8.366 MHz restricted band:

Similar to the above explanation, the signal is 0.261% in-band or the system operates 99.739% outside the restricted band.

3) 8.37625-8.38675 MHz restricted band:

Similar to the first restricted band, the signal is 0.686% in band or the system operates 99.314% outside the restricted band.

4) 8.41425-8.41475 MHz restricted band:

Similar to the first restricted band, the signal is 0.03268% in band or the system operates 99.98732% outside the restricted band.

Figure 2 is a plot demonstrating the Aquila system signal sweeping an entire band of operation. It can be seen that the operating frequency band is 7.47-8.95 MHz. Since the purpose of this study was only for the frequency band of operation but not for the amplitude level, the loop antenna Model ALR25M was then placed inside the 3-m semi-anechoic chamber such that the antenna loop plane was parallel to the Aquila antenna loop plane. It should be noted that the frequency of operation (below 30 MHz) was outside the performance of the chamber. Hence only the frequency determination was accurately measured.

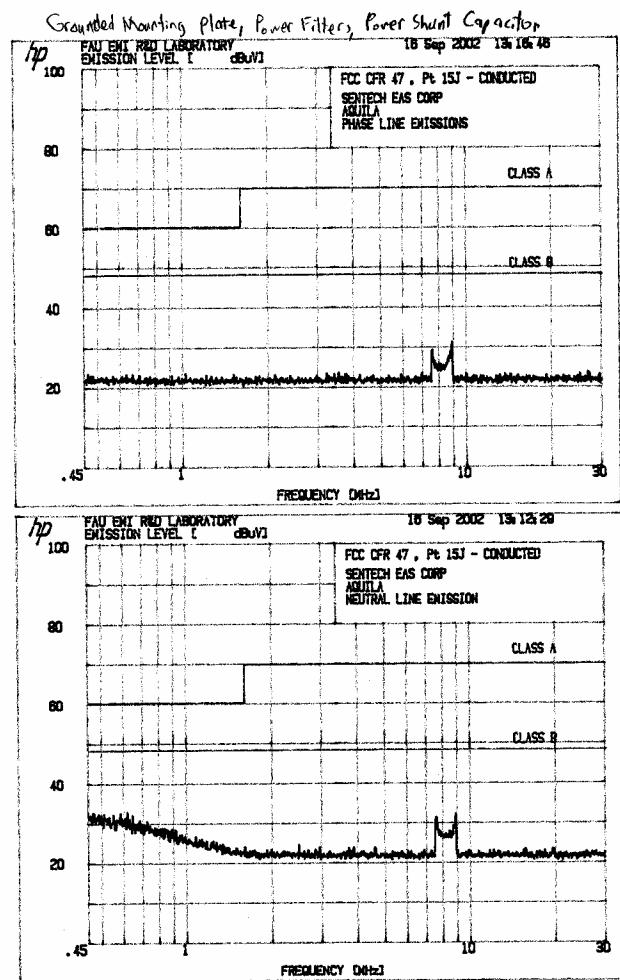


Figure 1

Aquila

1 Loop antenna
Setup

①

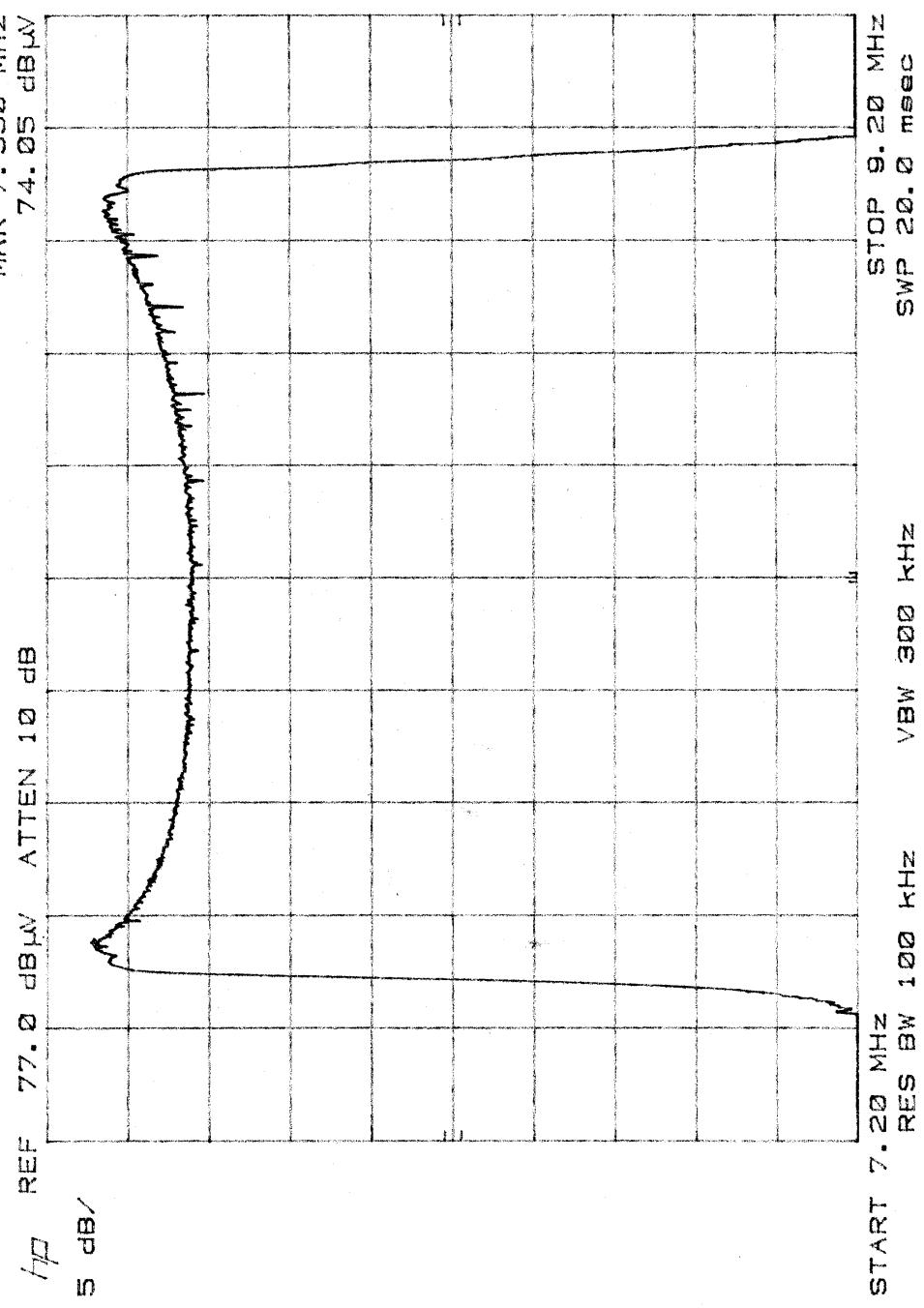


Figure 2