American Telecommunications Certification Body Inc.
6731 Whittier Ave, McLean, VA 22101

December 2, 2005

RE: VEGA Grieshaber KG

FCC ID: O6QPULS616263

After a review of the submitted information, I have a few comments on the above referenced Application.

1) The test report mentions an off the shelf type power supply was used for AC powerline emissions, however radiated photographs appear to support a lab bench power supply. Please review/explain.

Response: The unit is 24 VDC powered; conducted emission is really not applicable in this case because the device does not use an off-the-shelf type power supply. The statement in the report about an "off- the-shelf AC power supply" was an error. The device would typically be installed in industrial sites where a central 24 VDC supply already exists. The conducted data was taken with an unfiltered power line lab bench supply to simulate unfiltered industrial VDC supplies.

2) Please explain the XXXX in section 3 of the report.

Response: This was an oversight in the report. This reference was an attestation that conducted output power was verified under normal measurement mode at the manufacturer's facility.

3) Please explain the duty factor of section 5.3 given the operational description cites a pulse of 1 nS. This makes nearly a 5 dB difference to average readings. Note that the pulse plot appears to support close to 1 ns as well.

Response: The duty cycle factor used in the report is correct. The plot used in the report supplied by the manufacturer is that of their 6.3 GHz model radar system. We used the attached attestation provided by the manufacturer to calculate the duty cycle factor. It is evident from the plot values that the pulse period is indeed 1.58 nS; you are right the plot does reveal a 280 nS pulse width and a 1.2 nS pulse period. As you can see from the plot received from the manufacturer we believe that this is an inadvertent mistake and that the values from the attestation are correct. Nonetheless, the attestation is correct with 600 pS pulse width and 280 pS pulse period used for the duty cycle calculation.

4) Given the test distances necessary in the report (3 cm and 30 cm), please explain why the test antennas appear to be at 3 meters in test photos, especially for the parabolic antenna.

Response: The test photographs represent mostly the 3 meter test distance when the EUT was investigated between 30 MHz and 1 GHz as a digital device. In the future, photographs of all test distances used will be provided for clarity.

5) FYI…It appears that a straight 20 dB/decade correction factor was applied for correction of distance. However following general mm-wave procedures, you may also use a 40 dB to correct from test distance to far field edge, and then 20 dB is applied for edge of far field to desired distance. Additionally, the far field edge is determined following equations that are dependent on the radiating and receiving elements. Please see attached guidelines for mm-wave measurements.

Response: FYI information noted. The FCC /TCB Council Millimeter Wave Test Procedure was used as the guiding document when the device was tested.

6) Due to the frequencies and antennas involved, extreme caution should be used when measuring the field strength of emission. The beamwidths are extremely narrow and therefore very small adjustments to the position of the test antennas are required in order to ensure that the measuring instrumentation is within the maximum beam of the transmitted signal. As a result, it is recommended that handheld field strength measurements be made (i.e., the test antenna (horn) is held in the hand). Please provide further detail about how the signals were measured to ensure the main beam was adequately captured.

Response: The EUT was tested as described in the FCC/TCB Council Millimeter Wave Test Procedure as stated in #5 in which the mixer/horn was used in a handheld configuration because of the very low nature of the signal level and narrow beamwidth.

7) For table 5-5, please explain the 5.2.0 data shown.

Response: Please refer to the revised test report for the proper data in Table 5-5. The spectrum analyzer level column plus the cable loss column plus the antenna gain column equals the spectrum analyzer level corrected. The antenna gain is that of the receiving test antenna.

8) Please explain why the parabolic antenna is only 10 to 14 dB higher than other antennas, but the results appear almost 37 dB higher. This suggests an error in testing, calculations, or possibly a bad sample may have been received. Please review.

Response: The difference you noted is a result of the errors in Table 5-5. Please refer to the revised test report uploaded with this response. With Table 5-5 corrected, the difference of 10-14 dB gain between the parabolic antenna and the other antennas is now reduced from 12-19 dB. This difference is well within the uncertainty of the test equipment and the EUT antenna gain used during the measurement.

9) Please explain why the antenna gain in tables 5-1 to 5-4 is 16.8 dB, while table 5-5 is 40 dB.

Response: Please see the revised test report uploaded with this response. The gain should be 16.8 dBi from the receiving test antenna.

10) The wording in the manual section 2.7 appears odd. In effort to ensure proper wording for FCC and IC, please add the following to the manual:

This device complies with Part 15 and RSS-210 rules. Operation is subject to the following conditions:
1. This device may not cause harmful interference
2. This device must accept any interference received, including interference that may cause undesired operation.

Response: Please see the revised manual uploaded with this response.

11) For IC, please add the information required by RSS-GEN 7.1.4 for detachable antennas to the manual.

Response: Please see the revised manual uploaded with this response.

12) For IC, please provide an appropriate attestation per Annex A/B per the newly released RSS-102 (see attached).

Response: Please refer to Annex A/B uploaded with this response, along with the RF Exposure evaluation.

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13) For IC, a list of all models to be included in the family and sufficient information as necessary to show that all the devices can be approved under one Certification Number should be provided.

Response: Please refer to the attestation letter uploaded with this response.

14) For IC, please explain/show how an occupied bandwidth of 800 MHz was obtained for IC. Generally the main lobe is 2/(t_{eff}f) which appears to be about 2 GHz. Please explain.

Response: The emission designator in the report is a typo. The bandwidth taken at the $2/t_{eff}$ points 20 dB from the carrier for Industry Canada and 26 dB for FCC could not be measured as there is not sufficient amplitude to make a 20 dB bandwidth measurement.

15) Reference to RSS-210 Annex 8 in the test report appears incorrect. Please correct.

Response: Please see the revised report reflecting RSS-210 Section 2.6 General Field Strength Level.

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The items indicated above must be submitted before processing can continue on the above referenced application. Failure to provide the requested information may result in application termination. Correspondence should be considered part of the permanent submission and may be viewed from the Internet after a Grant of Equipment Authorization is issued.

Please do not respond to this correspondence using the email reply button. In order for your response to be processed expeditiously, you must submit your documents through the AmericanTCB.com website. Also, please note that partial responses increase processing time and should not be submitted. Any questions about the content of this correspondence should be directed to the sender.