Re: FCC ID QLAMID
Applicant: Mala GeoScience AB (publ)
Correspondence Reference Number: 24228
731 Confirmation Number: EA364767

Answers in bold.

1) You have requested confidentiality for the Test Report and internal photo's. This is not permitted. Please submit a new letter requesting confidentiality with the Test Report and internal photo's removed.

Our lawyer is preparing a letter to Ed Thomas and Bruce Romano explaining why we believe the interior photographs are entitled to confidentiality protection. Please continue processing the application while we attempt to resolve this issue! If the issue has not been decided when you are prepared to grant the certification, then we will either drop the request for confidentiality or ask you to postpone the grant for a short time.

If you cannot continue processing while we work on the confidentiality issue, please let me know.

2) The kill switch uses a standard BNC connector which can be easily defeated with a shorted connector. Explain what provisions are being taken to ensure that the provisions of Part 15.509(c) are compliant at all times. Also, how is the kill switch implemented when the device is dragged on the ground while being pulled by a car.

Since we did not find any specifications on this device in the report and order nor in the latest part 15, we asked you what the requirements really are. Up to this date we've got no answer to this question.

Part 15.509(c) is compliant at all time since removing or releasing the switch will cause the UWB-device to cease transmitting immediately.

If the operator wants to tow the unit behind a car he needs to order a kill switch with sufficient cable length.

3) It appears from the photo of the test setup (Picture 2) that the testing was not done in accordance with the measurement procedure of FCC 02-48 Appendix F. The ground plane covers the bed of sand. This is not permitted. Retest as necessary. The guideline requires that the device is tested under conditions of actual operating conditions. e.g. GPR's tested on floor in a bed of sand.

Statement from our test lab:

"It is stated in the test report under test site description point 4.2.1 that there is NO ground plane under the EUT. This is a direct copy from the test report text "A ground plane, made by sheet metal, was formed around the EUT and protruding under the measurement antenna. The EUT was placed directly on the dry sand with no ground plane under it."
The picture 2 photo shows the ground plane metal sheets formed around the EUT."

4) Upload an exhibit demonstrating how this device meets the definition of an UWB device as specified in Part 15.503(d) of the Rules. What are the -10 dB points as required by Part 15.503(a) of the Rules? Upload a plot and data for determining the -10 dB points. Include a test procedure. In determining the -10 dB points adjust for non-linearities in the measurement system (antenna factor and preamp gain). The emission should be maximized across the band of operation. The EUT should be rotated, the antenna height should be varied as well as the antenna polarization. We have been requiring that these bandwidth plots be of the electronic signature of the device based on the maximum radiated field strength in 1 MHz RBW from the device at each frequency when using the same detector function(preferably peak) and measured from any direction when operating the device under conditions of actual operating conditions.

An answer to this request is being prepared by our test lab and will be uploaded to your web soon.

5) What is the center frequency of this device? Show calculation.

An answer to this request is being prepared by our test lab and will be uploaded to your web soon.

6) The Test Report indicates that radiated emissions were tested up to 960 MHz. There is no data for frequencies > 960 MHz. Upload data showing compliance with the limits of 15.509(d) of the Rules for frequencies up to 5 GHz. If there are no observable emissions, the noise floor of the measurement must be reported. This will require a pre-amplifier. Include the pre-amplifier calibration information (gain, calibration date, etc.) in the exhibit. Use the procedure of Part 15.521. For RMS average field strength measurements refer to the procedure in Appendix F. All RMS measurements should include a procedure and data as necessary. Provide the test procedure used including description on maximizing emissions and EUT configuration. Also provide test setup photos.

An answer to this request is being prepared by our test lab and will be uploaded to your web soon.

7) Submit an exhibit showing compliance with the 50 MHz BW requirements of Part 15.509(f) of the Rules. Ensure that this is performed at the frequency containing the highest field strength.

An answer to this request is being prepared by our test lab and will be uploaded to your web soon.

8) Upload a photo and location diagram showing compliance with the labeling requirements of Part 15.509(g) of the Rules. In addition, the labeling per 15.19 is not in a conspicuous location. It appears that it is in a location that is sandwiched between the antenna and to plate. Please correct.

Sorry, I used the wrong wording. A new document defining the label as well as its location on the UWB-unit has been uploaded with the description field filled in as “New label and location”.

9) What is the pulse width of this device. Is the pulse random (dithered) or periodic? Upload an exhibit with the pulse characteristics of this device. Include a plot.

The MID MHz UWB-unit has a pulse width of about 1.6 ns, in air. A plot of the pulse is shown in figure 1 below. The pulse is periodic with a repetition frequency of 100 kHz.

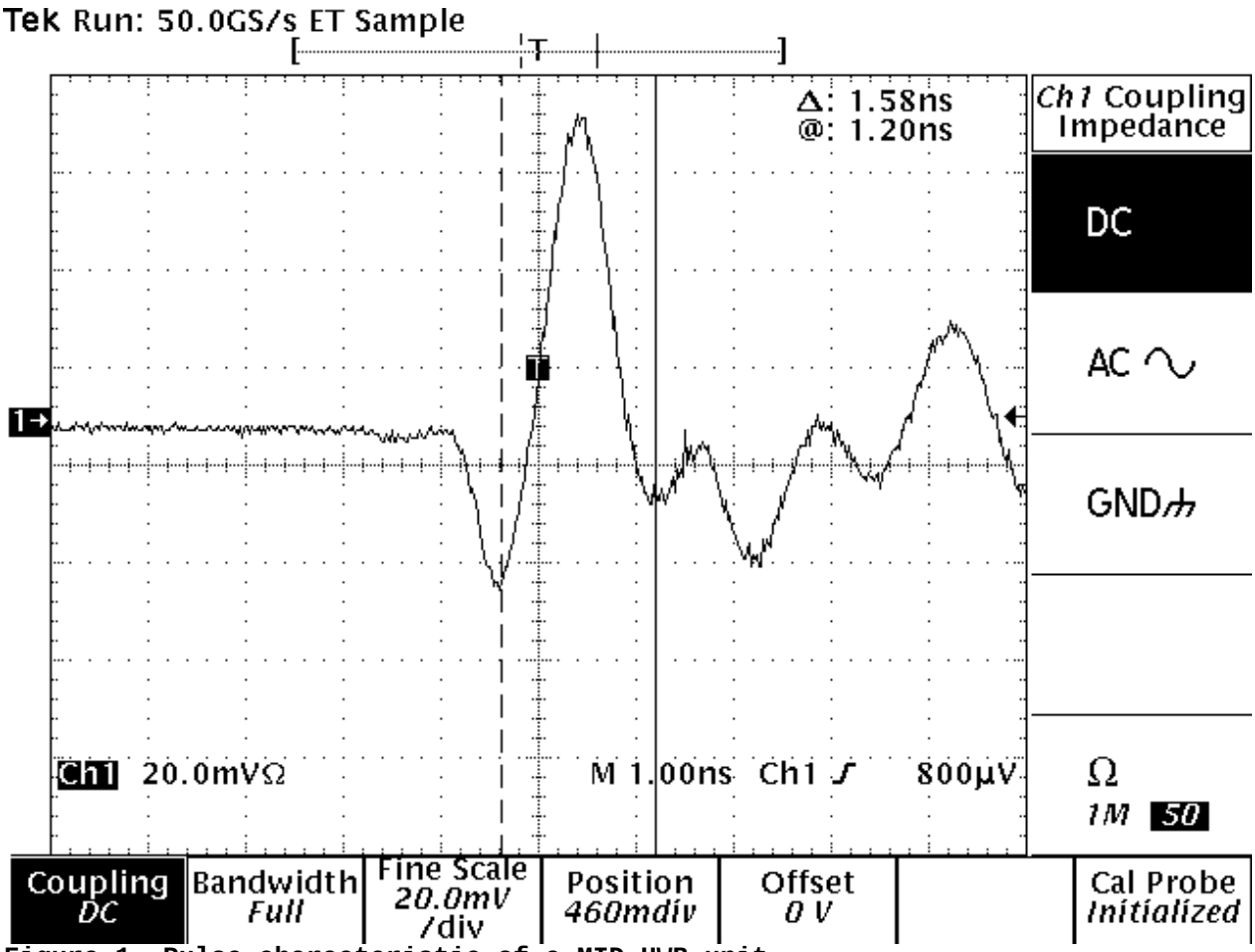

Figure 1. Pulse characteristic of a MID UWB-unit.

10) What measures have been taken to ensure that the emissions from the top of the device are less than the ground penetrating emissions. It is recommended that a field strength measurement be done directly above the device to show compliance with the limits.

As described in the overview system description, the antenna elements are completely shielded on all sides except one. This one unshielded side is facing ground during normal operation. Also, inside the shields, we have Rf-absorbers.

Statement from our test lab:

”The emissions test had the receiving antenna vary from 1 meter to 4 meters above the EUT as required by your test methods. This would be adequate to show

that the emissions from the top of the device are less than the ground penetrating emissions and are in compliance with the limits.”

11) Provide clearer photo's of both sides of all circuit boards and remove all shielding on the boards.

I cannot understand this question! Focused photos, taken with a Nikon 3.1 Mpixel camera, have been submitted. Both sides of all circuit boards are present as well as photos of how the boards are mounted. Please specify more precise what more I need to submit.

12) The test report was only for the 350 MHz antenna. The External Photo's exhibit listed several other antennas. Please verify which antenna(s) this filing is for. All exhibits in the filing should be consistent with this declaration. Additional test data, photo's may be required.

This filing is for the EasyLocator MID antenna/UWB-unit. The title of the test report is “EMC Test, X3M/EasyLocator MID with 350 MHz Shielded antenna”, which is confusing. The EasyLocator is the digital unit controlling the device. The UWB-unit/antenna is sold under the name MID. The lab engineers heard us at the R&D discuss the working name, which for a long time were 350MHz antenna. That’s why we’ve got this confusion.

The external photo’s exhibit shows all antennas, which we are filing for; do I need to remove all photos except one showing this unit?