To: smtp@DAN7@Servers[fifousa@compuserve.com
<fifousa@compuserve.com>]
From: Mary Washington@EMC@PSSDG
Cc: Chip Fleury@EMC@PSSDG,Debbie Vega@EMC@PSSDG,Judy F. Evans@EMC@PSSDG,Rhonda Saxon@EMC@PSSDG
Subject: re: Responses for FCC
Attachment: BEYOND.RTF
Date: 1/5/00 2:25 PM

Hello All,
I just spoke with Monni. We should receive the test equipment by Friday. I will need to make the measurements and Judy needs to upload to the FCC website on Friday; otherwise, this application will be dismissed.

Mary

> From: Mary Washington@EMC@PSSDG, on 1/5/00 1:11 PM:
>
> Hi Philippe,
> Please send the revised user's manual mentioned in the following responses. I still do not know the status of the whereabouts of the CMD 55 coming from France. I contacted Monni at SDV. But, I still have received a return call. I spoke with her assistant Tedra who informed that according to the file on Monni desk that the CMD 55 had not been released from customs.
>
> Mary
> ---
> From: Philippe Faurie <fifousa@compuserve.com>, on 1/5/00 9:56 AM:
>
> ITEM 01
>
> 1. The test data shows a frequency range of 1850-1910 MHz. EAS has an
> additional range of 1930-1900 (not a typo), please check.
>
> RESPONSE
>
> The Wavecom WM02-G1900 modem is a GSM (PCS-1900) terminal which operates in
> the US licensed PCS frequency spectrum. The device transmits over the
> 1850 - 1910 MHz band and receives over the 1930-1990 MHz band. References
> to a transmit range of 1930 - 1990 MHz are erronous and should be ignored.
>
> ITEM 02

2. This device operates like a standalone module, it has data, speaker &
microphone, power supply and antenna ports built-in. A small modular
foot-print that allows it to be mounted or placed just about anywhere or
into
other products. The RF exposure info included in the filing indicates the
applicant certifies MPE compliance has been determined for this device but
dependent on the installation, operating and configuration of the product.
It
can operate as a fixed or mobile transmitter using antenna gains of up to 7
dBi
and 3 dBi respectively. The device has maximum measured output of 1.05 W
at
the antenna terminal. The tested frequency (1850-1910 MHz) is typically
used
for uplink PCS operations, but fixed transmitters are generally for
basestations operating on downlink frequencies. Part 24 allows mobiles to a
maximum of 2.0 W EIRP but allows much higher output for basestations (no
definition for fixed in Part 24, it is an RF exposure definition). The
maximum
output of 1.05 W plus 3 dBi antenna gain
do not comply with mobile 2.0 W EIRP limit. The allowable operating
frequencies, conditions and RF exposure conditions need to be determined
and/or
clarified.

RESPONSE

The WM02-G1900 is a GSM (PCS-1900) terminal, similar to a handset, except
that it is intended only for fixed and mobile applications; portable uses
are strictly prohibited. The following operating conditions and
restrictions are specified for this device, as stated in the manual:

* The WMO2-G1900 is designed and intended for fixed and mobile
applications only.

* A minimum of 20 cm (8 inches) separation between the antenna and body of the user and nearby persons is required.
* Portable uses are prohibited.
* Antenna gain is limted to 3 dBi for mobile applications.
* Antenna gain is limited to 7 dBi for fixed applications.

The 7 dBi limitation on antenna gain for fixed applications has been added to the corrected user's manual which will be uploaded to the EAS for review. Additionally, these restrictions will be placed at the front of the manual and within the installation section to clarify and emphasize these operating conditions and constraints.

Finally, the tune-up procedure for the WMO2-G1900 has been revised to ensure that the maximum RF output power of the device does not exceed 30.0 dBm (1.0 W), within the variations that can be expected due to quantity production and testing on a statistical basis. Updated RF output power measurements, replacing those found in the original filing, are as follows:

PCS-1900 CHANNEL	FREQUENCY (MHz)	MAXIMUM (PEAK) OUTPUT POWER (dBm)	MAXIMUM (PEAK) OUTPUT POWER (W)
512	1850.18	28.5	708 mW
661	1880.0	28.2	660 mW
810	1910.3	28.0	631 mW

A updated exhibit reflecting these measurements will be uploaded to the EAS.

ITEM 03

3. The RF exposure info included in the filing appears to be adapted from a different filing, it has certain item and info (such as DTSA) that is not defined or may not apply to this filing.

RESPONSE

The RF exposure information inadvertently contains information adopted from a different filing. These errors have been corrected and affected sections of the filing will be uploaded to the EAS.

ITEM 04

4. It is not clear how mobile operating conditions can be ensured without appropriate antenna installation specifications and/or instructions. It is also not clear how portable operating conditions can be excluded from the operations for this modem. Further clarification is needed to support RF exposure compliance and/or categorical exclusion requirements.

RESPONSE

Wavecom recognizes these concerns with regard to RF exposure and MPE compliance. To address these concerns, additional warnings and cautions have been added to the User's Manual to clarify and emphasize, to both an OEM integrator and the user of the device (or of a product containing the device), requirements for RF exposure and MPE compliance. Specifically, a new section entitled "Instructions to OEMs" (Note: the attachment “Operating Description” has this information will be updated in the User Manual.) has been added to ensure that OEM's are aware of their responsibilities, with regard to RF exposure compliance, for products into which the modem is integrated. With this guidance, the OEM will be able to incorporate into their documentation the necessary operating conditions, and warnings. Additionally, the Installation/Start-Up section has been revised to clearly indicate these restrictions and requirements.

As noted in the filing, this device is categorically excluded from performance of a routine environmental evaluation and preparation of an EA in both fixed and mobile applications, in accordance with 1.1307(b) and 2.1091(c), respectively. Of course, this exclusion is one from performance of a routine environmental evaluation and prepartion of an EA, and not from compliance. As will be shown in Item 07, worst case power

density at 20 cm
from a 7 dBi antenna (the maximum gain allowed), is determined to be
approximately 9 dB below the lowest MPE level for the general population /
uncontrolled exposures.

ITEM 05

5. The operators manual has descriptions of headsets and two antennas (a
cellular phone antenna and a short antenna). What type of operating and RF
exposure conditions do these configurations produce and how would such
configurations comply with RF exposure requirements.

RESPONSE

By limiting antenna gain to 3 dBi for mobile applications (to comply with
Section 24.232(b)) and 7 dBi for fixed applications, by mandating a minimum
separation distance of 20 cm (8 inches) between the antenna and the body of
the user and any nearby persons, and by specifically prohibiting use of the
device in portable applications, operation of this device will comply with
current RF exposure limits (see also the response in Item 07). These
operating conditions and restrictions are clearly stated and emphasized in
the updated User's Manual.

References to a "cellular phone" and "short" antenna have been removed from
the original manual and replaced with the forementioned restrictions on
antenna gain for both mobile and fixed applications. Finally, use of a
headset with the device will not result in exposure to RF energy in excess
of current MPE limits, as long as the specified operating conditions and
restrictions are followed.

ITEM 06

6. The manual indicates a car kit option but with no antenna

options
indicated,
how would vehicle mount configurations comply with MPE limits?

RESPONSE

As discussed in Item 04, both an OEM integrator and end-user of the device
are provided with detailed operating instructions, conditions and
restrictions which address proper use of the device to ensure compliance
with current MPE limits, for both fixed and mobile applications. A vehicle
mount configuration is considered to be a mobile application, for which
maximum antenna gain is limited to 3 dBi, as clearly stated at multiple
locations throughout the revised manual. Although Wavecom cannot guarantee
that the device will not be used in a manner inconsistent with the
instructions provided in the revised User's Manual, we believe that we have
taken the necessary measures to ensure that both the OEM and final user of
the device, or of the product into which the device has been integrated, is
provided with the necessary operating conditions and restrictions to ensure
compliance with MPE limits, regardless of application.

ITEM 07

7. The filing also indicates the modem has both voice and data
capabilities.
Compliance with worst case RF exposure conditions for the normal operation
conditions and configurations of the device is needed. How would portable
operating conditions be excluded for certain voice type operations?

RESPONSE

As stated in Item 06, it is not possible to guarantee that the device will
not be used in a manner inconsistent with the instructions provided in the
documentation. Compliance with both eirp (24.232(b)--2 W

maximum eirp for
mobile devices) and MPE limits is realized by limiting antenna gain to 3 dBi
for mobile and 7 dBi for fixed applications, in conjunction with the
required 20 cm separation distance (which precludes portable applications).
Power density for the worst case condition of a 7 dBi gain antenna at a 20
cm separation distance is approximately 1.0 mW/cm2 (see OET Bulletin 65,
"Evaluating Compliance with FCC Guidelines for Human Exposure to
Radiofrequency Electromagnetic Fields" for derivation). Due to the nature
of the GSM frame structure, the transmitter duty cycle is approximately 1/8,
resulting in an average power density of 0.125 mW/cm2. OET Bulletin 65
permits this "source-based" averaging ("'source-based' time-averaging based
on an inherent property or duty cycle of a device is allowed"). This
average power density is 9 dB lower than the lowest allowed MPE of 1.0
mW/cm2 for the general population/uncontrolled exposure, a conservative
margin.

ITEM 08

8. Will this device be marketed for OEM integration into other products
where
RF exposure requirements of the final product must be addressed, please
clarify.

RESPONSE

The WMO2-G1900 will be marketed to OEMs for integration into other products.
The RF exposure requirements applicable to the final product will be
addressed by providing the necessary guidance and information such that the
OEM can provide the end-user with the appropriate operating instructions,
conditions and restrictions to ensure compliance with MPE limits in both
mobile and fixed applications. For example, the WMO2-G1900 manual will be

revised to include a new section entitled "Instructions to OEMs" as
discussed in the response to Item 04.

SUMMARY

Wavecom believes that the questions, comments and concerns regarding FCC ID:
ON8WMO2-G1900 have been fully addressed by this response, and we are looking
forward to the authorization of this device.

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