

Subject: Re: Vocera Communicatinos; FCC ID: QGC-B1000
Date: Tue, 10 Sep 2002 15:48:20 -0700
From: Dennis Ward <dennis@yosemite.net>
Reply-To: dward@americantcb.com
Organization: dt Associates
To: Juan Martinez <jmartinez@elliottlabs.com>

Hi Juan

the power on the grant for 15.247 devices is typically conducted measured at the antenna terminal unless there is no way to do antenna terminal measurements. Then it is an EIRP calculated number using $(E_d)^2 / 30G$ formula. Some times this is done using antenna substitution. In any case the actual power on the grant would be that highest measured value in the report.

As to the differences in the powers between the SAR and the EMC report, here is my problem, if conducted measurements could be made on the SAR, then they could be made on the EMC report. Comparing actual conducted antenna terminal measurements with calculated EIRP is comparing apples and oranges. The FCC likes an apple to be compared to an apple.

Also, please be aware that the SAR report initially provided was seriously lacking in what the FCC has said an SAR report is to be. The report must follow the OET and 1528 processes and procedures. I have attached a copy of the checklist that the FCC says is to be followed so you can check the SAR report over when you get it back.

thanks
Dennis

Juan Martinez wrote:

> Dennis,
>
> The SAR lab is still in the process of gathering the information for the
> questions you requested to be answered, sorry in my delay to let you know
> about this.
>
> One question that you ask is No# 4:
>
> 4) The FCC has stated that the maximum variation between conducted power in
> the SAR report and the EMC report can be no more than 0.3dB and if there is
> a difference the highest must be in the SAR report. Please note that the
> SAR report says the maximum power conducted is 15dBm while the EMC report
> says the maximum conducted power is 16.1dBm. This is an unacceptable
> variation between the reports. Please retest SAR to show equal or higher
> conducted power but still within +/- 0.3dB.
>
> The 16.1 dBm was not a conducted measurements it was actually a radiated
> field strength measurement, which was then converted to a dBm value by
> subtracting 95.2 dB. While this is the case for the EMC report, can be
> request an approval of maximum power of 15 dBm as this is now Vocera's
> specification as the maximum output power? Even though the original 731
> form requested a 16.1 dBm approval can we change the 731 to get approval at
> 15 dBm instead?
>
> Thanks,
>
> Juan Martinez

Subject: Re: Vocera Communications, FCC ID: QGC-B1000
Date: Thu, 19 Sep 2002 17:51:17 -0700
From: Dennis Ward <dennis@yosemite.net>
Reply-To: dward@americantcb.com
Organization: dt Associates
To: Juan Martinez <jmartinez@elliottlabs.com>
CC: Randy Evans <revans@elliottlabs.com>, doc@elliottlabs.com,
Bill Graff <whgraff@qwest.net>

HI Juan

I am at somewhat of a quandry here. Betwixt and between as they say. While the device may be extremely low in SAR and while the data may be accurate, and while those performing the testing may be very competent, it is not presented in a manner acceptable to the FCC for evaluation by a TCB. While I may agree with some of the assumptions and ascertions of Dr. Gandhi about the compliance of this device, his report is not acceptable as it is presented. It is lacking in calibration information and in some instances (system validation etc) it is inaccurate and inappropriate at best.

The FCC specifies certain things that we are to look at and they require that we make sure that these things are contained in the SAR report. Unfortunately the SAR report from the University of Utah does not contain adequate reporting information, and is missing significant information required by the FCC. While I can guess and make assumptions that certain things may or may not matter, a TCB does not have the leeway to make interpretations on what is and what is not required in the report. As far as a TCB is concerned, a SAR report must meet the OET checklist.

I have attached the OET checklist that the FCC wants TCBs to use when evaluating SAR reports. Please compare the required information listed in this checklist with the original SAR report and the answers to the questions you have provided. Please note that the original SAR report, answers and the additional information provided are to say the least sadly lacking in what the FCC wants.

For example, while reference b (Appendix A) may be nice information, it is not sufficient for a validation of the system as required by the FCC. The validation information in appendix A then is only applicable to that specific system in the paper, not to the system used in the SAR test report. Also, please note that the report states "As described in [4], this SAR measurement system has been validated using a number of wireless telephones at 835 and 1900 MHz, respectively." While it may be interesting information, validation of the system cannot be done accurately by random cell phones. This then is unacceptable and against the specific requirements that the system be validated using calibrated RF signal source (e.g. random cell phones are not calibrated signal sources). Nothing in the report nor appendix A nor other additional information shows the required validation of the specific system in question.

The FCC wants recent validation data done using a reference calibrated RF signal source on the system prior to the actual test on the EUT. This should be done within 24 hours of the actual test not 2 weeks. See 1528 draft 6.5 section 7.2 for specifics on validating your SAR system. Consequently, the "Validation" of this system as presented in the report is unacceptable and this then means that the SAR measurements are suspect and are also unacceptable.

Also, please note that the FCC requires that Ambient temperature should be measured immediately prior to starting a SAR measurement. The FCC also requires that the difference between the temperature of the liquid during assessment and the temperature during the test be recorded and verified not to exceed +/- 2 degrees C. This was not done. Only an ambiguous reference to the room temperature was provided. The FCC will not accept this information only and will require that the liquid temperature immediately before testing be provided. This does not appear to have been done either.

You MUST present a SAR report that is acceptable to the FCC from a TCB.

Thanks
Dennis

Juan Martinez wrote:

> Dennis,
>
> I have uploaded the new information you requested. Regarding the SAR all
> info uploaded and regarding the Class A and B, the devices is Class B. The
> user guide has been change to reflect Class B. Hopefully I have answered
> all your answers. Any other concern or issues please let me know. Thank you.
>
> Regards,
>
> Juan Martinez
> EMC Engineer
> Elliott Laboratories

OET SAR checklist .doc Name: OET SAR checklist .doc
 Type: Microsoft Word Document
 (application/msword)
 Encoding: base64

Subject: Re: SAR quesitons for Vocera Communications, FCC ID: QGC-B1000
Date: Mon, 23 Sep 2002 11:49:08 -0700
From: Dennis Ward <dennis@yosemite.net>
Reply-To: dward@americantcb.com
Organization: dt Associates
To: Juan Martinez <jmartinez@elliottlabs.com>,
Bill Graff <whgraff@qwest.net>
CC: dward@americantcb.com, gandhi@ece.utah.edu,
editor@tcst.elen.utah.edu

HI Juan

my phone number is 209 966 2145.

Basically, the report must meet the checklist I provided to you. This includes system validation using the recommended procedure and calibrated equipment within 24 hours of the actual test (if other methods are used, they must meet be at least as detailed and accurate as that specified); Temperature measurements at the time of test recorded in the report as required; Power drift measured at the time of SAR testing. While it is nice to know that the device is a 'quality product' and has a good power stability factor, this is not what is being asked by the FCC. The FCC wants to know what the specific device is doing. Power drift measurements are not to show how the product family stays within any certain operating parameter, but is to show the specific device being tested and how its specific power drifts during the testing). This drift must be within 5% of the measured power level. Typically the FCC also wants to see plots of the results showing the temperature gradients as well as tabular data.

My recommendation is that both you and Dr Ghandi review the SAR report in comparison with the FCC checklist I provided. You will see very clearly where the report is insufficient. If you feel the report meets this checklist, you will need to provide me with chapter and verse of each item because I cannot find much of what the FCC wants in the report.

Analysis of the test results is the only thing a TCB can do. Interpretation and extrapolation of what might be meant is not within the purview of a TCB.

Thanks
Dennis

Juan Martinez wrote:

> Dennis,
>
> Dr. Gandhi will like to speak to you in regards to the SAR data
> provided. If you can please provide a phone number that he can reach you
> at, this will help him understand what is it you want him to
> provide. Thank you.
>
> Regards,
>
> Juan Martinez
> EMC Engineer
> Elliott Labratories

> EMC Engineer
> Elliott Laboratories

Name: OET 65 Supplement C SAR
Review.doc
OET 65 Supplement C SAR Review.doc Type: Microsoft Word Document
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