

## Dward ATCB

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**From:** David Case (davecase) [davecase@cisco.com]  
**Sent:** 11/14/2006 4:38 AM  
**To:** dward@atcb.com; Kwok Chan; Rashmi Doshi; Joe Dichoso  
**Subject:** RE: Question

Rashmi

The question I raised yesterday is basically can we relax the TCB restriction that they cannot evaluate a SAR report if the power measured between the SAR power test and EMC power test is greater the 0.5dB. Based on the reasons I stated earlier I believe a 1dB margin is more realistic.

My read of Kwok's interpretation based on my discussion with him that the 0.5dB as referenced in 8.4.4 of IEEE 1528 is not applicable for comparison between the EMC lab and SAR lab measurements.

I believe the 0.5dB restriction in place was based on the referenced section of the IEEE standard.

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**From:** dward ATCB [mailto:dward@atcb.com]  
**Sent:** Monday, November 13, 2006 11:02 PM  
**To:** 'Kwok Chan'; David Case (davecase); 'Rashmi Doshi'; 'Joe Dichoso'  
**Subject:** RE: Question

Hi Kwok

The issue then only becomes, will the FCC allow a TCB to certify a device where the power measurements between the EMC and SAR report exceed 0.5dB especially if the SAR is lesser in power measured? If this is so, isn't this a different stand than in the past where the 0.5dB or less was expected to exist. The question then also becomes – how relevant then is the FCC requirement of conducted power measurements on PC2s being within 0.5dB of the original as it would seem the same logic should apply.

Please give clear guidance on this issue as it has come up a number of times and the FCC has consistently want the 0.5dB or less. Can a TCB certify a device where more than 0.5dB exists between the SAR and EMC and where the SAR is the lesser power.

Thanks

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**From:** Kwok Chan [mailto:Kwok.Chan@fcc.gov]  
**Sent:** Monday, November 13, 2006 9:27 AM  
**To:** David Case (davecase); Rashmi Doshi; Joe Dichoso  
**Cc:** Dennis Ward  
**Subject:** RE: Question

The document is for SAR only; it contains no EMC procedures. Therefore, it would be incorrect to assume any sort of comparison between EMC and SAR power measurements. In certain situations, depending on the test mode signal used and other test parameters, the power measurement required for EMC purposes may not necessarily be the same as that required for SAR. It happens to be the same, then it would be the same measurement and there is nothing to compare. For SAR purposes, continuous time-averaged power is the parameter of interest, which can be easily and accurately measured with an appropriate power meter or a suitable spectrum analyzer. The 0.5 dB mainly accounts for how good a specific laboratory can measure the time-averaged output power at the antenna port of a device using appropriate equipment so that we don't have to chase after numbers within the measurement tolerance range; that is, measurement repeatability. How numbers compare across labs using similar or different equipment is reproducibility (or inter-laboratory comparison) which is not addressed by this document. During the development of IEEE 1528 about 5 years ago, it was acknowledged that output power at the antenna port can be accurately measured to about 0.3 dB. To give some consideration for cables and connectors etc., 0.5 dB was selected.

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**From:** David Case (davecase) [mailto:davecase@cisco.com]  
**Sent:** Monday, November 13, 2006 11:56 AM  
**To:** Kwok Chan; Rashmi Doshi; Joe Dichoso  
**Cc:** Dennis Ward  
**Subject:** Question

All

Looking at the 802.11 SAR procedures for TCB's the allowed power measurement difference between EMC test and SAR test is  $\pm 0.5$ dB. This test measurement difference is more likely to occur if two different labs were to do the measurements.

For 802.11 radios the actual specifications of operation over temperature, the power variation can be as high as  $\pm 2$ dB though  $\pm 1$ dB is more nominal..

We have a case where the measured power difference between our internal test lab and the external lab is 0.87dB difference. This raises a problem for the TCB since it is greater than 0.5dB but it is within the tolerance difference of the radio operation specification as well as within the measurement uncertainty of most test equipment.

Therefore Cisco believes a more realistic power measurement tolerance of  $\pm 1$ dB should be allowed for 802.11 radios between the measured SAR and EMC portion.

Regards

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11/15/06