Answers questions FCC ID IMR1102CB EA922213 corr nr 26794

1) The device is set to operate at a defined level. During test, continuous transmit is forced by means of applicant supplied software. Alls test are done using this software, so including power measurements, power drift measurements and the measurements of spot SAR drift during SAR evaluation. Should the device not transmit at max power, one or more of the drift or power measurements would have revealed that.

   EMC report lists max transmit peak power as per 47 CFR § 15.247 and § 15 subpart E. A description of the measurement prodedure for 15.247 is annexed. Please note that no Spectrum Analyzer is involved. For 15.407, the measurement is in accordance with FCC Public Notice DA 02-2138 (August 30, 2002), Appendix A, peak conducted transmit output power, test method #3. Plots of the measurements are included in the test report as per the above refenced Public Notice. Video BW and RBW are given in the plots in the test report.

   SAR report lists average conducted power measured at the antenna terminal, or the sum of this power and antenna gain whichever is higher. Measurement is done with a broadband power sensor, in this case a HP 8184A. Explanation applies for both 2.4 and 5 GHz.

2) Average conducted power is 15.4 dBm at the antenna terminal, measured conducted using a broadband power sensor HP8184A. Including antenna gain EIRP is 18.4 dBm @ 2.4 GHz (reported in SAR report), which is below 100 mW. We are of the opinion that a 1 host test is sufficient.

3) In general, Probe linearity is proven in the calibration report of the probe, wich is annexed to the SAR report., The probe is checked as part of the probe calibration for values of up to 100 W/kg. In addition we did a full 3d scan using the system validation power feed setup as per the P1528 system validation. The source was modulated OFDM 6 Mbit/s. Using body liquid psaSAR measured is 4.52 W/kg (1g). When changing to unmodulated source, and leaving everything in place, the psaSAR measured was 4.705 W/kg (1g), a difference of 4% or 0.17 dB. The measurements were performed with body liquid, at the waveguide frequency: 5740 MHz. Earlier the system validation showed 36.6W/kg (1g), where the reference (as per Ghandi, see SAR report) is 39.46 W/kg (1g) , which is off 7.8%. We believe we have sufficiently shown that the probes reponse to modulated signals is valid. Note: All measurements are performed May 12, 2004.

4) Liquids were within accordance of P1528 and other guidelines within 10% of targets. Assuming your question is targeted at using target values rather than measured values in consecutive processing: Other liquid values to be used in calculations can be reasonably accurate corrected with a first order approximation. However, in our opinion target values should be used in order to prevent unnecessary propagation of uncertainties: Although field strengths are

measured in a liquid whith deviation from target (albeit within 10%), the target value should be used in consecutive calculations to predict psaSAR as accurately as possible.

5) Liquids recipes are proprietry. In SAR report p 14. Specs are according P1528 (see tables in SAR report). Bristol university claims to be within 3.5% for all proeperties.

"All Tissue Equivalent Liquids are obtained from Bristol University.
Contact details:
Medical Physics Department
University of Bristol, Bristol Haemotology & Oncology Centre
Horfield road, Bristol BS2 8 ED, United Kingdom
Tel. 44 117 928 2469.
"

6) SAR plots entire device:

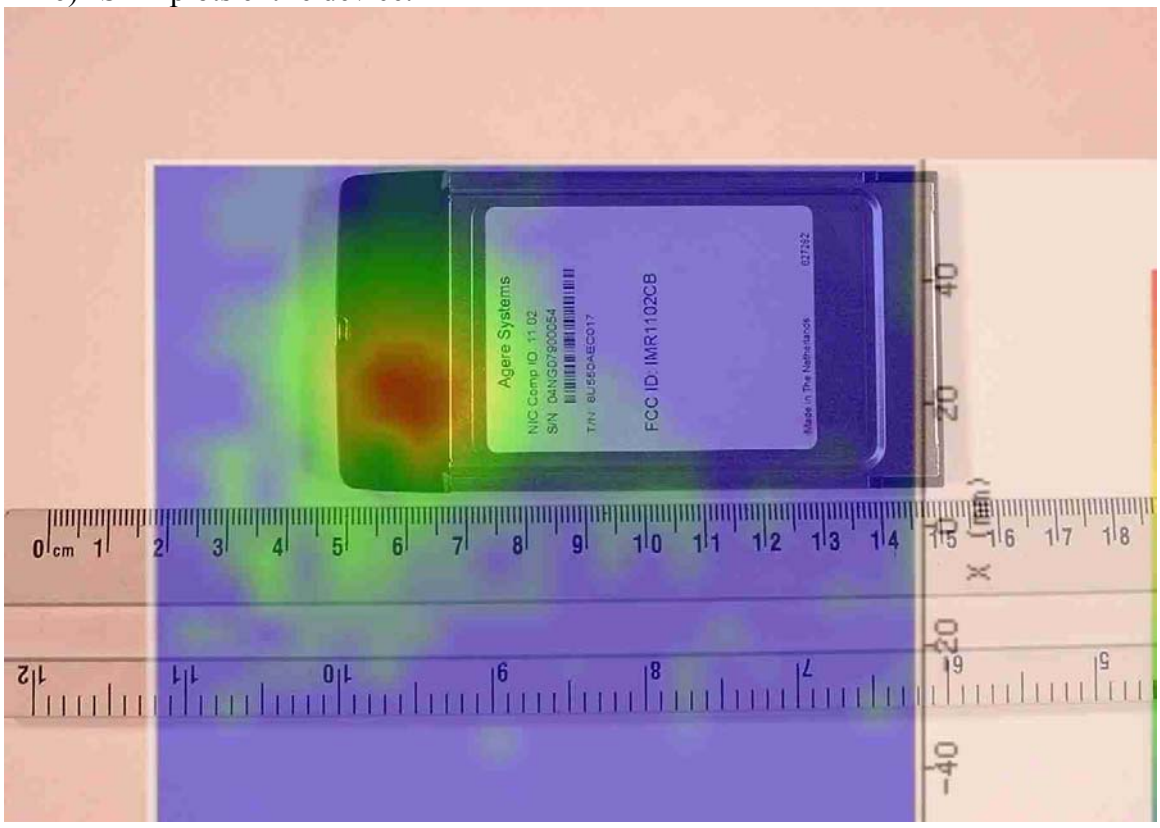

Figure 1: 5 GHz contour plot entire device

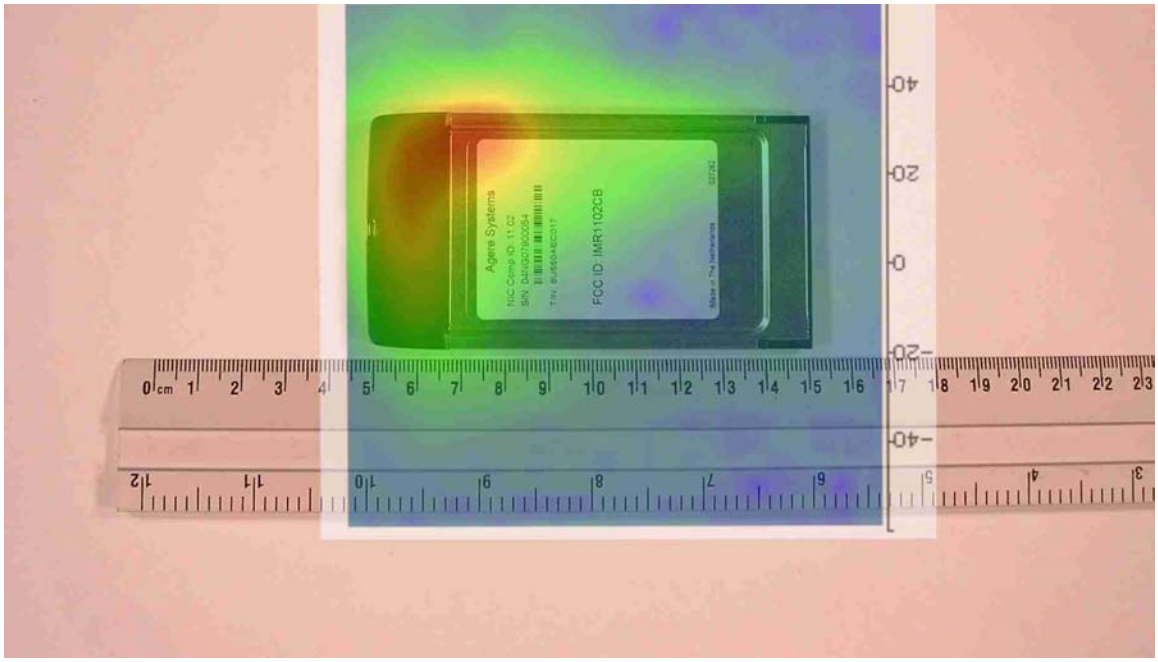

Figure 2. 2437 MHz contour plot entire device

7) Contour plots:
   Please find below the missing plots

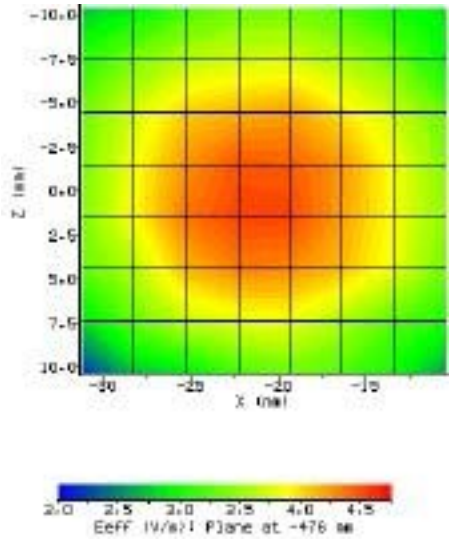

Figure 3 channel 149 lapheld

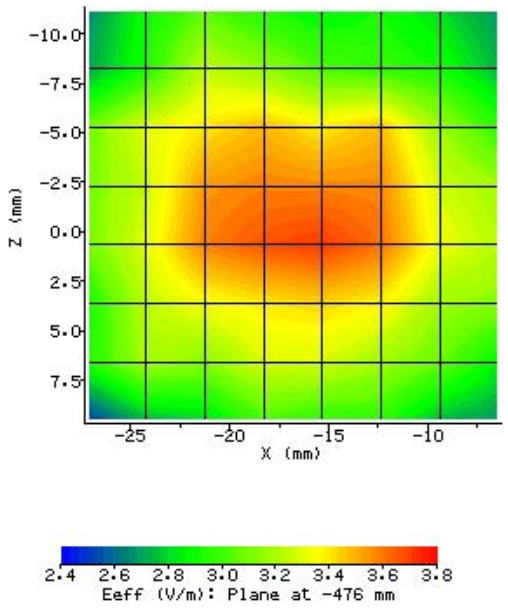

Figure 5: lapheld ch 164

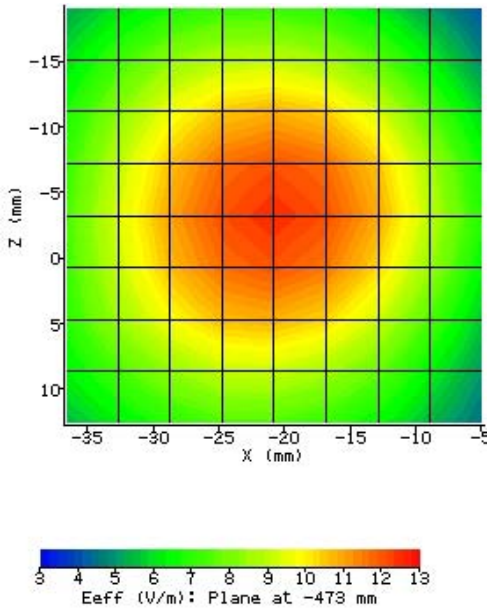

Figure 4: perpendiculat ch 6

ANNEX: lab guideline to measure peak output power.

Components of test setup

1.) Diode detector, brand Radiall, model R451576000, 18 GHz

2.) Oscilloscope, brand LeCroy, model 9310AM, dual 400 MHz

3.) RF synthesizer, brand HP, model 83620A, 10 MHz – 20 GHz

4.) 6 dB attenuator, brand Radiall, model R413806000, 18 GHz

5.) 6 dB attenuator, brand Radiall, model R413806000, 18 GHz

6.) RG58, length 50 cm.

7.) Rigid coaxial cable, length 1 m.

8.) Adapter MiniPCI connector – SMA

9.) Adapter N – SMA (connected to 1.))

10.) Various SMA-SMA (male-female, female-female) adapters where needed

Test setup for measuring the peak output power of the CardBus card.

-Connect the 6 dB attenuator 4.) to the input of diode detector 1.)

-Connect the rigid coaxial cable 7.) to the CardBus card antenna connector by using adapter 8.)

-Connect the other end of the rigid coaxial cable 7.) to the 6 dB attenuator 4.)

-Connect the RG58 cable 6.) to the output of diode detector 1.) and the input of oscilloscope 2.)

-Set the input of oscilloscope 2.) to 50 Ohms input impedance and DC coupling

-Set the timebase of the oscilloscope to approx. 1 – 50 us, depending on the bit-rate of the transmission

-Measure the output peak voltage of diode detector 1.) on the oscilloscope

-Disconnect the rigid coaxial cable 7.) from 6 dB attenuator 4.)

-Connect the second 6 dB attenuator 5.) to the 6 dB attenuator 4.) which was already connected to diode detector 1.)

-Disconnect the rigid coaxial cable 7.) from adapter 8.)

-Connect this end of the rigid coaxial cable 7.) to to RF synthesizer 3.) and set the RF synthesizer to the same frequency as the CardBus card

-Connect the other end of rigid coaxial cable 7.) to the 6 dB attenuator 5.)

-Increase the RF output voltage of RF synthesizer 3.) untill on the oscilloscope the same value is measured as with the CardBus card connected

-Increase the readout of the value of the RF output voltage of RF synthesizer 3.) with 6 dB in order to compensate for the additional 6 dB attenuation

-This is value of the peak output power of the CardBus card.