

Mr W. Leung
VTech Telecommunications Ltd

Date: 14th December 2004
REF: EW780-5595-00
CRN: 28167

Dear Mr. Leung,

Please find attached details and responses to the relevant questions received from the FCC.

If you have any questions please let me know.

Thanks,
Stuart Nicol.

Please provide details of the scanning procedure such as step size and distance from phantom surface.

Area scan dimensions along with the distance from the phantom surface are included within the test report(s) data under the phantom data section. The distance from the probe to the phantom surface is recorded in section 4.1 isotropic E-Field probe as (sensor offset+2.44mm) =5mm. The area scan is recorded as 280mm by 200mm maximum scan area, but is reduced to 130 by 80mm after the peak SAR location has been identified. APREL Laboratories use a 4mm step resolution for "zoom" scan processes in all directions due to the axial isotropic response error for the E-020 probe being around 0.05dB. It has been found that this process allows FDTD derived target validation numbers to be achieved.

Please provide details justifying the developed target values.

Presented below are numerical references derived from homogeneous compositions based on the FCC values for epsilon and sigma, along with the values for epsilon and sigma used for experimental tissues used by APREL Laboratories, and complex heterogeneous (anatomical models). All numerical problems were executed using Remcom XFDTD.

Tissue Type	Epsilon	Sigma	Frequency	1g SAR	10g SAR	Peak SAR
APREL	43	5.75	5200 MHz	58.8	17.7	240.2
FCC	49	5.3	5200 MHz	55.7	15.5	210.3
Anatomical	-	-	5200 MHz	34.1	11.38	-
APREL	48.2	6	5800 MHz	57.9	16.6	295.3
FCC	48.2	6	5800 MHz	55.8	15.2	230.1
Anatomical	-	-	5800 MHz	33.0	11.1	-

The data presented above shows that a complex anatomical model based on MRI/VH data at a resolution of 0.3mm yields significantly lower SAR values. It should be noted that these values are closer to the physical biological phenomenon. Deviations of SAR when comparing the FCC data for epsilon and sigma against the APREL tissue values for epsilon and sigma show that the deviation is within tolerance which is significantly lower than allowable deviations of 30%. It can also be shown that the tissues used by APREL Laboratories yield conservative SAR, and prove that a conservative mandate has been met.

Papers along with presentations have been submitted to IEC 62209 for consideration and use in the development of the part 2 standard. APREL Laboratories shall also present relevant papers to IEEE at symposiums next year.

Please justify body worn test position as shown on page 23 of 41. The device hanging off the phantom is unusual.

Initial scans were executed over the complete area of the device to identify the location for the hotspot and to determine the distribution of the SAR in X and Y. This exercise allows APREL Laboratories to create a smaller scanning area and thus reduce test time for the exercise. Included below is a series of images showing the device setup used for the larger area scan used to determine the reduction scan ratio.



Maximum Area Scan Back of Device



Maximum Area Scan Front of Device

Please provide a body worn position scan of the entire device.

A complete series of area scans were run on both the front and back configurations and it was found that the SAR was lower than that reported in the SAR test report following the reduced area scan parameters. The maximum SAR values recorded are listed below.

Back of Device

SAR 1g=0.14 SAR Peak=0.32

Front of Device

SAR 1g=0.06 SAR Peak=0.17

As the SAR results were close to the noise floor level the plots were not included in the original report.