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Subject: SAR Testing of two Zeropa BSM-502 Samples of oval shape and dimensions 2.2×1.1 cm

Table 1. The peak 1-g SARs for two commercial wireless telephones (A & B) at 835 MHz with and without Zeropa BSM-502 EMW absorber.

Telephone	Peak 1-g SAR (W/kg)				
	Without Absorber	With Absorber on Top (See Fig. 1)			
		Sample 1		Sample 2	
	SAR W/kg	SAR W/kg	SAR Reduction	SAR W/kg	SAR Reduction
Phone A (Antenna pulled out)	1.058	0.849	19.75% (0.956 dB)	0.838	20.79% (1.01 dB)
Phone A (Antenna retracted)	0.884	0.653	26.13% (1.32 dB)	0.646	26.92% (1.36 dB)
Phone B (Antenna pulled out)	0.910	0.680	24.28% (1.21 dB)	0.667	26.70% (1.35 dB)
Phone B (Antenna retracted)	0.815	0.737	9.57% (0.44 dB)	0.748	8.22% (0.37 dB)

Table 2. The measured antenna gains for Commercial Telephone A without and with use of the Zeropa BSM-502 Samples 1 and 2 EMW absorbers mounted on top (see Fig. 1a).

Antenna	EMW Absorber	Gain in dBi		Degradation of Gain dB
		Without Absorber	With Absorber	
Pulled out	Sample 1	-0.07	-0.82	0.75
	Sample 2	-0.07	-0.86	0.79
Retracted	Sample 1	-1.37	-2.15	0.78
	Sample 2	-1.37	-2.25	0.88

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- ¹ Q. S. Yu, M. Aronsson, D. Wu, and O. P. Gandhi, "An Automated SAR Measurement System for Compliance Testing of Personal Wireless Devices," *IEEE Transactions on Electromagnetic Compatibility*, Vol. 41(3), pp. 234-245, August 1999.
- ² O. P. Gandhi, G. Lazzi, A. Tinniswood, and Q. S. Yu, "Comparison of Numerical and Experimental Methods for Determination of SAR and Radiation Patterns of Handheld Wireless Telephones," *Bioelectromagnetics*, Supplement 4, pp. 93-101, 1999.
- ³ O. P. Gandhi, "SAR Testing of Two Typical Wireless Telephones at 835 MHz With and Without EMW Absorber BSM-502," Final Technical Report submitted to Mr. Ra, Chang Ho, Ban Seok Material Development Co., Ltd., South Korea, January 28, 1999.

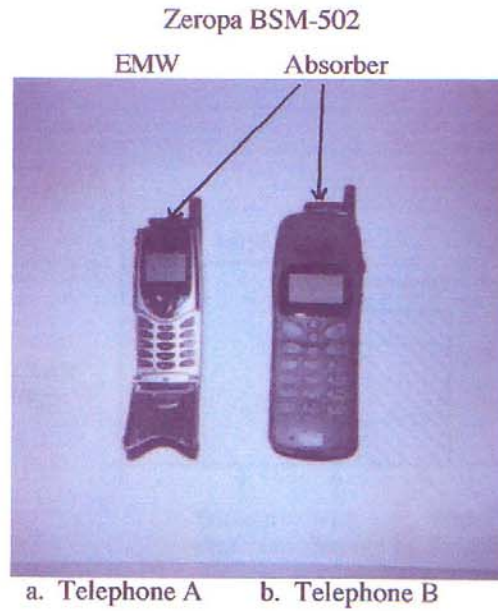
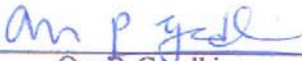
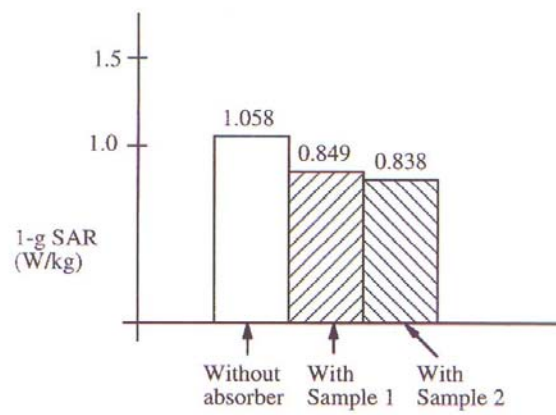


Fig. 1. Photograph of the two cellular telephones A and B with Zeropa BSM-502 EMW absorber samples mounted on top at base of the antenna.

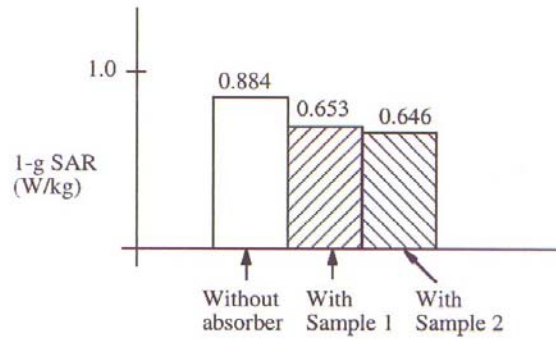


Fig. 2. The Utah SAR measurement system used for determination of peak 1-g SAR [1].


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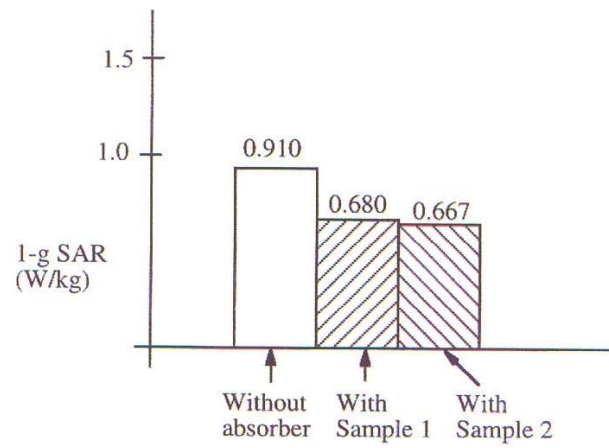
a. Antenna pulled out.



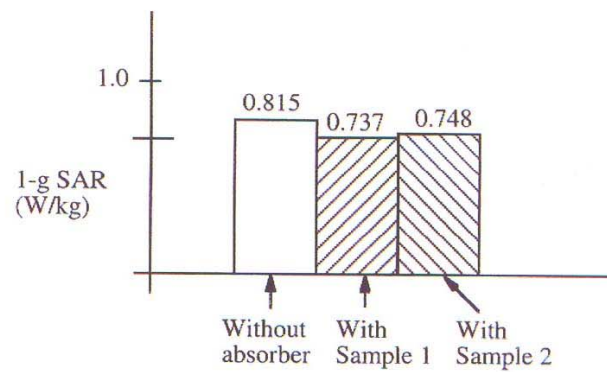
b. Antenna retracted.

Fig. 3. The peak 1-g SAR measured for Cellular Telephone A at 835 MHz with and without the Zeropa BSM-502 EMW absorber mounted on top (as shown in Fig. 1).

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a. Antenna pulled out.



b. Antenna retracted.

Fig. 4. The peak 1-g SAR measured for Cellular Telephone B at 835 MHz with and without the Zeropa BSM-502 EMW absorber mounted on top (as shown in Fig. 1).

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