Assessment Notes by BABT as TCB for the Symbol Technologies Inc MC9002B Mobile Computer.

For Symbol Technologies Inc. under FCC ID number H9PMC9002B

BABT file number US/000068

I have reviewed the TÜV-PS SAR test report WS611528-001 issue 3.01 in respect of the above product and I have the following comments:

The expanded measurement uncertainty is shown on page 16 of the reports at 21.10%, which is acceptable for this kind of measurement. The head and body simulant fluids were correctly calibrated within 5% of the target values and the measurements were taken within 100MHz of the calibrated frequency of the fluids.

Important note to FCC reviewer:

The device is a portable computer intended to be normally hand-held and used for data entry applications. The device can also be used with a headset. The device incorporates a GSM Radio, and a Bluetooth™ radio module and is a sub-equipped version of the H9P9062B to which the above report refers. The testing programme adequately reflects this complexity and was performed using both head and body (box) phantoms and includes a representative set of headset and body-worn test configurations. The Bluetooth™ module is of a low output power and is the subject of a separate, existing FCC grant under FCC ID H9P2164381.

This device may contain a maximum number of two transmitters, one Bluetooth™ radio (FCC ID H9P2164381) and a GSM/GPRS 850/1900 module FCC ID QIPMC45). The manufacturer has declared that the composite device is **not** capable of co-transmission and has applied software controls to prevent this. The separate, worst-case SAR values for normal General Population uncontrolled exposure use are summarised below.

Summary of highest measured SAR Values in Abnormal Positions

Band	Position	Channel	Frequency (MHz)	Max Spot SAR (W/kg)	1g SAR (W/kg)	SAR drift dB	Area Scan (Figure #)
GSM/GPRS 900MHz	Rear to Phantom in Holster *	124	914.8	0.190	0.176	-0.070	Figure 21
GSM/GPRS 1800MHz	Rear to Phantom in Holster *	885	1784.8	0.59	0.462	0.243	Figure 25
GSM 1900MHz	Rear to Phantom in Holster *	661	1880.0	1.06	0.592	-0.030	Figure 29
Bluetooth™	MC9062 placed 1.0cm from phantom 2.0mm side	0	2402	0.65	0.485	-0.105	Figure 30
Limit for General Population (uncontrolled exposure) 1.6 W/kg (1g)							
* Note these are worse case results in a position not designated for normal use.							

Summary of highest measured SAR Values in Normal Positions

Band	Position	Channel	Frequency (MHz)	Max Spot SAR (W/kg)	1g SAR (W/kg)	SAR drift dB	Area Scan (Figure #)
GSM/GPRS 900MHz	LCD to Phantom in Holster	37	897.4	0.05	0.046	-0.270	Figure 18
GSM/GPRS 1800MHz	LCD to Phantom in Holster	885	1784.8	0.02	0.020	0.00	Figure 24
GSM 1900MHz	LCD to Phantom in Holster	661	1880.0	0.01	0.012	0.00	Figure 27
Bluetooth™	MC9062 placed 1.0cm from phantom 2.0mm side	0	2402	0.65	0.485	-0.105	Figure 30
Limit for General Population (uncontrolled exposure) 1.6 W/kg (1g)							
These figures are worst case in normally designated position.							

Justification:

The maximum measured SAR value for the Bluetooth™ module is obtained at 2402 MHz and is 0.485W/kg for 1g averaging. Also it should be noted that these results are obtained under CW mode working which will not occur in practice.

The device will normally be hand-held but could used with a headset. Measurements results for headset use are not shown but were found to be all below the noise floor. No special training is required to use the device to limit RF exposure therefore this equipment has been tested for general population usage. When carrying the device the user will either hand carry the equipment or use a belt-clip, which contains metal parts and maintains a distance of 4.0cm from the user's body. It is viewed that this device DOES MEET the SAR requirements for a body-worn device for use by the general population even allowing for worst-case measurement uncertainties. Appropriate Grant conditions have been applied to this submission.

I confirm that I have undergone SAR awareness training by the FCC at the TCB Council workshops in August 2001, February 2002, April 2002, October 2002 and May 2004.

Alan Binks
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6th August 2004