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To FCC

SAR Evaluation of Symbol MC9060
FCC id: H9PMC9060B

I have assessed SAR Report WS611522.

For the RLAN Transmitter the maximum recorded 1 g body SAR at 1cm separation was 0.751 W/kg which is compliant for an uncontrolled exposure.

For the Bluetooth Transmitter the maximum recorded 1 g body SAR at 1cm separation was 0.317 W/kg which is compliant for an uncontrolled exposure.

No testing with both transmitters active took place as the equipment was declared to be incapable of co-transmission

The test report included the required Calibration data, set up information, phantom and probe descriptions, individual results, and fluid parameters.

The following concerns were resolved as a result of the evaluation. :
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1. Output Power of DSSS Radio
   a: Consistency
   Page 7 of SAR test report WS611522 reports powers for the 2.4 DSSS Radio which are in excess of those reported in page 13 of EMC report OR611522 Issue 3.
   The result in the EMC report is representative of the peak modulated power.
   The result in the SAR report were obtained in CW mode.
   Since the power levels values used for SAR testing are the higher it was considered that these represented the "Worst case". The SAR results achieved were compliant with some margin.

   Conclusion: The SAR values were accepted and the power levels cited in the SAR report should be used on the grant.

   b: Additional frequency:
   It was noted that Page 7 of SAR test report WS611522 also included data obtained at 2472 MHz which was outside the declared frequency range.

   The Test Laboratory have confirmed the frequency range reflects both the American market frequency band of the DSSS device of 2412MHz –2462MHz and the European market frequency band of the DSSS device of 2412MHz – 2472MHz.

The client have confirmed the product as supplied in the USA will be configured to operate in the declared frequency range 2412MHz –2462MHz. Furthermore a user in the USA will not be able to configure use of the frequency band between 2462MHz –2472MHz.
Finally the power levels in the SAR unit were representative of those supplied to the US market.

Conclusion: I am satisfied the product tested is representative of the market product .

2. Output Power of Bluetooth Radio
Page 7 of SAR test report WS611522 reports powers for the 2.4 Bluetooth Radio which are in excess of those reported in page 24 of EMC report OR611522 Issue 3.
The result in the EMC report is representative of the peak modulated power.
The result in the SAR report were obtained in CW mode.
Since the power levels values used for SAR testing are the higher it was considered that these represented the "Worst case". The SAR results achieved were compliant with some margin.

Conclusion: The SAR values were accepted and the power levels cited in the SAR report should be used on the grant.

3. Headset
Page 5 of SAR test report WS611522 reports that using the SAM phantom a single test with each transmitter was performed with "headset cable wrapped round the device. No mention was made of testing body SAR with the Headset attached.

The Test Lab clarified – The headset cable was wrapped around the body of the device as to represent the possible worst case situation of trying to induce the radiation into the headset cable so as to effect a SAR measurement from the headset position on the phantom head. The headset attached to the device has no impact on SAR evaluation as the devices internal antenna is positioned a distance where the radiation pattern did not extend.

The Test Lab further clarified:

> Prior to full SAR assessment, the device was placed into the appropriate test mode and an area scan was performed on each face of the device to ascertain the location of the transmitter to enable the SAR testing to be performed on the appropriate face. This was performed for each Radio Module fitted.
>
> This was carried out With and without both the Headset and Holster in position for the body Assessment, this showed that there was no difference in SAR values and therefore testing was carried out without the headset or holster being used.

Conclusion: The initial SAR measurements took satisfactory consideration of the effects of headset use

4. Holster
Page 5 of SAR test report WS611522 reports that a belt clip was supplied with the unit. I found evidence in the report that this has been taken into consideration during the testing. There was no statement related to the manufacture or separation provided by the supplied belt clip

The Test Lab clarified

– The belt clip was taken into consideration, this is shown by the position of the device whilst testing. The normal position of the device has been declared to be either the front or rear of the device placed into the holster and to be worn on the side – see page 48 of WS611522 report. However the belt buckle of the device enables, through design, the device when worn on the front of the thigh of an individual to freely move to the side when in the seated position. This in turn was the basis of the test program in considering the worst-case position. This was considered to be with the device being placed into the holster with the individual being seated and the device positioned in the groin area. This enables the device to come into contact with the individuals thigh. The original test was conducted with the device being placed in contact with the phantom 0.0mm separation, however the device was shown to fail the 1g SAR limit. It was then decided by the manufacturer to move to 10mm separation and include modified user instructions.

Tests showing the device in contact with the phantom were not include in the report as previously we have been advised to remove this from said reports.

Furthermore they clarified:

- Prior to full SAR assessment, the device was placed into the appropriate test mode and an area scan was performed on each face of the device to ascertain the location of the transmitter to enable the SAR testing to be performed on the appropriate face. This was performed for each Radio Module fitted.

This was carried out With and without both the Headset and Holster in position for the body Assessment, this showed that there was no difference in SAR values and therefore testing was carried out without the headset or holster being used.

- In the Body Assessment with the device positioned in the worst -case configuration, side on. the device was placed in the Holster with the LHS or RHS of the Device being placed against the phantom, it was evident that the device was wider than the Holster. As there was no difference in the initial SAR evaluation it was decided that the holster could be removed.

Conclusion: The initial SAR measurements took satisfactory consideration of the effects of the declared Holster.

I am qualified to assess SAR having attended the May 2003 FCC Training.

Yours sincerely

Hilton Carr
Task Manager, Certification and Technical Development
On behalf of BABT TCB