

04/08/2013

Federal Communications Commission
Office of Engineering and Technology
Laboratory Division Public Draft Review

Draft Laboratory Division Publications Report

Title: 3SAR Evaluation Procedures for UMPC Mini-Tablet Devices

Short Title: UMPC Mini Tablet Devices

Reason: Revision of Attachment [941225 D07 UMPC Mini Tablet Devices](#)

Publication: 941225

Keyword/Subject: SAR Test Procedures, 3G Devices, 2.5G, GPS/GPRS/Edge, Dual Xfer Mode, 2.1093

First Category: Administrative Requirements

Second Category: Measurement Procedures

Third Category:

Question: What are the current SAR test procedures for 3G devices?

Answer:

Attached document - 941225 D01 SAR test for 3G devices v02- provides the SAR test procedures for 3G devices that operate under rule Parts 22H, 24E, 27L are described in the attached document.

Attached document- 941225 D02 Guidance for 3GPP R6 and R7 HSPA v02v02 - provides guidance 3GPP R6-HSPA and R7 HSPA plus SAR testing.

Attached document- 941225 D03 SAR Test Reduction GSM GPRS EDGE v01 - provides SAR Test Reduction Procedures for 3G devices with GSM/GPRS/EDGE modes (also applicable to 2.5G with the same GSM/GPRS/EDGE modes).

Attached document- 941225 D04 SAR for GSM E GPRS Dual Xfer Mode v01 - provides SAR test procedures for GSM/(E)GPRS Dual Transfer Mode operation.

Attached document- 941225 D05 SAR for LTE Devices v02r02- provides SAR test procedures for devices incorporating Long Term Evolution (LTE) capabilities. See transition period note below.

Attached document- 941225 D06 Hot Spot SAR v01r01 - provides SAR test procedures for devices incorporating SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities (Hot Spot SAR)..

Attached document- 941225 D07 UMPC Mini Tablet Devices v01r01 - provides SAR Evaluation Procedures for UMPC Mini-Tablet Devices

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These procedures must be used for applications submitted to TCBs for approval. Questions about using alternative procedures should be submitted to <http://www.fcc.gov/labhelp> and then use the link "Submit An Inquiry" to access the form to submit your question.

Attachment List:

941225 D01 SAR test for 3G devices v02¹
941225 D02 Guidance for 3GPP R6 and R7 HSPA v02r02²
941225 D03 SAR Test Reduction GSM GPRS EDGE v01¹
941225 D04 SAR for GSM E GPRS Dual Xfer Mode v01¹
941225 D05 SAR for LTE Devices v02r02³
941225 D06 Hot Spot SAR v01r01⁴
941225 D07 UMPC Mini Tablet Devices v01r01⁵



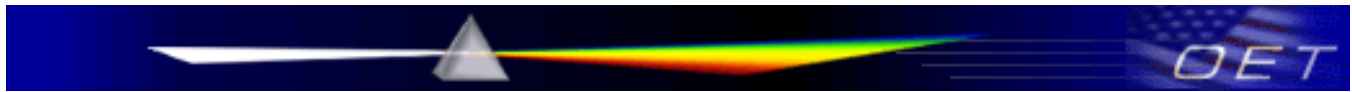
¹ Attachments are currently in KDB 941225 and are not under draft review.

² 941225 D02 Guidance for 3GPP R6 and R7 HSPA v02r02 is also available for review (until May 15th 2013), posted as a separate draft publications: 941225 D02 Guidance for 3GPP R6 and R7 HSPA v02r02 DR06-413722. Comments to D02 must be filed under that separate draft posting and not under this draft posting.

³ 941225 D05 SAR for LTE Devices v02r02 is also available for review (until May 15th 2013), posted as a separate draft publications: 941225 D05 SAR for LTE Devices v02r02 DR07-413722. Comments to D05 must be filed under that separate draft posting and not under this draft posting..

⁴ 941225 D06 Hot Spot SAR v01r01 is also available for review (until May 15th 2013), posted as a separate draft publications: 941225 D06 Hot Spot SAR v01r01 DR08-41372. Comments to D06 must be filed under that separate draft posting and not under this draft posting.

⁵ This draft is for attachment 941225 D07 UMPC Mini Tablet Devices v01r01 which will be published by May 20, 2013. Prior to publication, applicants can use this draft guidance during the interim period for compliance testing.



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Attachment: D07 UMPC Mini Tablet Devices v01r01

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SAR Evaluation Procedures for UMPC Mini-Tablet Devices

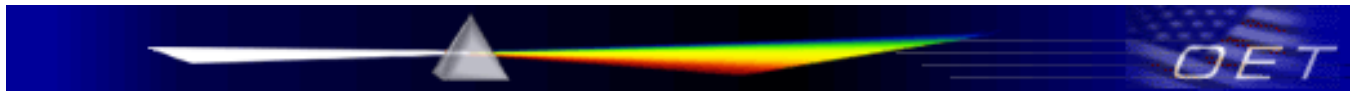
This document describes the SAR test requirements for certain small hand-held tablets and devices of similar form factors that are designed primarily for interactive hand-held use next to or near the body of users. This type of mini-tablets is normally optimized for mobile web access and multimedia use. The test procedures are applicable to devices with a display and overall diagonal dimension ≤ 20 cm (~ 7.9 ""). These devices are typically operated like a mini-tablet and are usually designed with certain UMPC features and operating characteristics; therefore, the term "UMPC Mini-Tablet" ~~is has been~~ used to identify the SAR test requirements for this category of devices. A ~~standard~~-composite test separation distance of 5 mm ~~is applied to test has been established for testing~~ UMPC mini-tablet transmitters and to maintain RF exposure conservativeness for the interactive operations associated with this type of devices. The same approach and concepts used for wireless routers (also known as hotspot mode) ~~are have been~~ applied to UMPC mini-tablet devices.¹ Other than a smaller test separation distance of 5 mm, the same device test setup is used for UMPC mini-tablet devices and wireless routers. Combinations of voice, data, video, gaming and hotspot mode transmissions can be supported in various wireless modes, technologies and frequency bands for hand-held and near-body use conditions by this type of devices. Voice communication for UMPC mini-tablet devices should be limited to speaker mode only. When next to the ear voice operations are supported, the handset and phablet procedures in KDB 648474 must be applied.

UMPC mini-tablet devices must be tested on all sides and edges with a transmitting antenna within 25 mm from that surface or edge, at 5 mm separation from a flat phantom, for the data modes, wireless technologies and frequency bands supported by the device to determine SAR compliance. When voice mode applies (speaker mode only) and the exposure conditions are not adequately covered by the data mode SAR results, additional SAR tests for voice mode may be required. Since ~~UMPC mini-tablet~~the procedures are more conservative than those required for hotspot mode, additional SAR tests for hotspot mode is typically not necessary when UMPC mini-tablet procedures are used. For simultaneous transmission conditions, the procedures described in KDB ~~447498 648474~~ are used to determine SAR test exclusion and ~~SAR test volume scan~~ requirements. The simultaneous transmission configurations must be clearly described in the SAR report to support the analyses and test results.

Depending on the device form factor, antenna locations, operating configurations and exposure conditions, a test separation distance up to 10 mm may be considered for some devices; for example, certain gaming controllers and dual display smart phones. Under such circumstances, 10-g SAR must also be measured at zero test separation for all measured 1-g SAR configurations to address hand exposure. A KDB inquiry is required must be submitted to determine ~~the an~~-acceptable test separation distance for ~~the 1-g SAR~~²-measurements.

¹ See "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities" in one of the attachment to KDB 941225.

² Test separation distance is explained in item 5) of section 4.1 in KDB 447498.



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Some UMPC mini-tablet devices ~~may have~~ incorporated proximity sensing and power reduction mechanisms to address RF exposure and simultaneous transmission concerns. The proximity sensor triggering distance and coverage tests described in KDB 616217 for full size tablets should be applied to determine the non-reduced full power SAR test separation distance required for UMPC mini-tablets. ~~The following may need to be considered when performing the SAR measurements.~~

~~When SAR to peak location ratio is used to determine simultaneous transmission SAR test exclusion, the X, Y, Z coordinates of the peak locations reported by the zoom scans must be used to compute the peak location separation, $d = \text{Sqrt}[(X_1 - X_2)^2 + (Y_1 - Y_2)^2 + (Z_1 - Z_2)^2]$. Since SAR systems may be implemented differently in making the coordinates available to users, the manufacturer may need to be consulted to ensure proper procedures are used. Area scan contour plots should be used to illustrate the relative separation of the peak locations in the SAR report.~~

~~When power reduction is applied to selected wireless modes, frequency bands or operating conditions, the standalone SAR measured at full power without power reduction may be used to determine simultaneous transmission SAR test exclusion. However, when volume scan is required for any test configuration that requires power reduction, the maximum output power in the power reduction modes must be used for SAR testing. When different power reduction levels are applied to the wireless modes and/or frequency bands involving multiple simultaneous transmitting transmitters/antennas, additional tests may be necessary to ensure compliance for combinations of full and reduced power conditions allowed by the transmitters. A KDB inquiry is recommended to confirm the test requirements.~~

~~When proximity sensors or similar sensing mechanisms are used to activate power reduction, the reliability and consistency of the triggering distance, in all applicable directions and orientations from the user, must be thoroughly investigated to determine SAR test requirements. The surface, edge or orientation containing the sensor is tested at the normally required 5 mm test separation with power reduction enabled. Additional SAR measurements at the most conservative distance when full power is restored are also necessary. For example, if power reduction can be triggered when the surface or edge is within $x \pm y$ mm from the user, SAR measurements are required at full power with a separation of $x - y$ mm to show compliance. The automatic power reduction triggering mechanism of an individual test sample may not necessarily trigger at $x - y$ mm to restore device output to full power; therefore, the output power must be set manually with power reduction disabled to perform SAR measurements. The test setup and operating requirements must be clearly explained in the SAR report to support the results.~~

For larger tablets with a display or overall diagonal dimension > 20 cm, the SAR procedures in KDB 616217 are required. 447498 should be used. Tablets with larger form factors or overall dimensions often have additional features to control or restrict transmissions to support interactive use in certain display (portrait or landscape modes) or use orientations; therefore, the test considerations for UMPC mini-tablet devices may not fully apply to the full size larger tablets. ~~When hotspot mode or other simultaneous transmission configurations exist, certain display or use orientation restrictions may require additional considerations to determine SAR test exclusion.~~ As different tablet designs and use conditions continue to emerge, the SAR test requirements may need adjustments. A KDB inquiry is recommended to ensure the test configurations used are acceptable.

~~The procedures in this document are required for UMPC mini-tablet and similar devices to be approved by a TCB. When different test procedures are used, a PBA is required. Devices that incorporate power reduction, proximity sensing or need volume scan measurements also require PBA.~~

Change Notice:

04/08/2013 As indicated by track changes in the document.