

Reference

[1] FCC publication 865664 SAR measurement 100 MHz to 6 GHz DR02-4116, 9/12/2012

Request for modification

In 3.3.2 add the sentence at the end of the paragraph: **If the probe has been calibrated for the specific signal under test with ISO 17025 certificate stating the linearity deviation over the dynamic range, validation of the linearity for specific modulated signals is not required.**

Rationale

The draft document [1] proposes in 3.3.2 2) that for high PAR signals the linearity of the SAR measurement shall be verified not only for CW, but also for the specifically modulated signals. For pulse like modulations, 3.3.2 1) requires to use equivalent generic pulses with the lowest duty factor. For all modulations, the validation according to 3.3.1 is required, for even more levels over the dynamic range.

Probe Modulation Response (PMR) calibration:

If a probe has been calibrated to linearize its response for the specific modulation under test over its dynamic range, each probe channel is compensated individually. The worst-case deviation for the resulting deviation from the ideal probe is stated in the calibration certificate.

If the test laboratory has to verify the response according to the stated method, they only compare the total SAR from the combined probe signal. Their effort is very high, because each measurement point over the dynamic range is the result from a spacial worst-case measurement which they have to perform for each modulation. Additional uncertainty may be contributed by the involved power sensor and its settings.

Advanced I/Q modulations are however very reproducible due to their nature. If the probe has been calibrated for such specific modulations, the additional uncertainty contributions due to the laboratory measurements would not lead to better confidence regarding the involved probe linearity.

(It is the responsibility of the laboratory to choose the correct calibrated settings matching the device modulations, in the same way as the device modes are set via the base station simulator, or the power control level of the device is set.)

Conclusion

PMR calibration with specified uncertainty characterizes the deviation of a field probe and results in the most accurate results since the individual sensors are linearized. Additional measurements will not increase the confidence. The worst-case uncertainty available from the system manufacturer / calibrator is representative for all laboratories.