

FCC QUESTIONS:

The FCC did not find your answer to the first portion of question 2 which requested details of your measurement procedure used in test report section 3 and 7, and how the TDMA bursts were addressed. Additionally, your response values ratios for Peak to AVG are simply listed as 3 dB variations with no explanation. Further 3 dB does not match the TDMA duty cycles applicable to these signals. Please explain further.

We found your updated table from page 11 of 84. However, we could not locate the value of 29.8 dBm under GSM1900 "Radiated output AVG" from the table provided on page 2 of 4. Please clarify.

Also, please explain the 3 dB difference between the Peak and AVG levels reported for Radiated emissions. The reported values for conducted readings do not have such a margin.

Regarding question 3, new occupied BW plots were found, however the reference level chosen still do not agree with the maximum output power of the EUT. Please explain.

FYI, the -20 or -26 dBc points are not a conclusive determination of 99% of the emitted spectral energy. However, for the purposes of this application and modulating signals, your determination will be accepted.

CFR 47 section 2.202 requires use of a Carsons rule type calculation for determining necessary BW to be used in the emission designator. However, since there is no standard formula for TDMA modulation, we will use/accept your reported values.

TUV ANSWERS:

Hello Mr. Perrine

I hope I can clear up the issues you have addressed. Let me state first you are right (of course) on the calculation of necessary BW and we do understand the issue and will be more clear on our methods in the future.

1. Let me first address the Occupied BW measurements. If you look at the test set-up photos, included in this measurement are a 10dB attenuator, cable loss and a 20dB directional coupler. This was to keep the front end of the analyzer from damage. Unfortunately the 11.9dB offset only takes into consideration the cable loss and attenuator, the 20dB direction coupler was not added back into the calculation. When this is added it is clear the measurement is being made at the maximum conducted peak output.

2. For Radiated Spurious measurements the procedure was as follows:

1. For each mode and for the High, mid and low of each mode of operation the phone was set up and the peak value of the fundamental was measured
2. This value was then compared to the expected value to validate the phone was operating at its peak power output.
3. Then all spurious emissions were measured and any found to be within 20dB of the limit, signal substitution was performed. Since all emissions measured in peak mode were below the -13dB limit any measurements meant to factor in the burst nature of the TDMA signal were not implemented. Please note however, the burst rate was factored into the conducted spurious measurements included in this report as it was needed for FCC Part 22.917(f) compliance. This was included as appendix A.

3. Now with respect to the tables showing RF output power to both Conducted and Radiated conditions. I have to admit our first attempt to reconcile the charts was a bad choice on our part as it make it appear we had made average measurements. When in fact for radiated emissions measurements only peak measurements were performed.

Chip Fleury
TUV Product Service
EMC Manager

FROM SIEMENS:

Dear Colleagues,

Explanation:

The RF signal used by devices IS-136 (TDMA) are modulated in amplitude. So there exist a difference between the maximum power and the average power during the burst. This difference is approximately 3 dB. In GSM mode there is almost no difference between maximum and average power within a burst due to the lack of amplitude modulation.

As stated in their report TUV measured maximum peak power, whereas in our technical report we considered average values during burst.

This is due to common practice: In IS-136 average power within the burst is considered. For measurements of radiated emission a peak power detector is used.

As you can see, in TDMA 800 the difference between 28.1 dBm and 25.1 dBm is 3.0 dB and for TDMA1900 32.1 dBm - 29.3 dBm = 2.8 dB.

Sincerely Yours
Mit freundlichen Grüßen
Peter Nevermann

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