Universal Radio Communication Tester R&S®CMU 200

GSM spectrum measurements that meet today's requirements

As the GSM standard evolves, the hardware and software for the Universal Radio Communication Tester R&S®CMU 200 must keep pace. This popular tester now features new adjacent channel power measurements (ACP) and a faster DSP as an option, making it a state-of-the-art universal analysis tool for GPRS and EGPRS.

Faster with more features

Firmware version 3.50 for the Universal Radio Communication Tester R&S®CMU 200 is a major step forward in GSM spectrum measurements. In addition to bringing a new look to the instrument, it offers state-of-the-art features. Measurements now accommodate the full scope of current multislot requirements and reflect the significantly greater complexity of the GSM standard. The era in which a single GMSK-modulated timeslot was sent in the downlink is now gone.

In addition, the instrument's measurement speed is much faster. A new measurement DSP, available as an option, offers a very high level of performance even when faced with today's requirements.

New time domain representations

To make measurement results more transparent, you can now display time domain traces of selected frequency offsets in addition to spectrum measurement results. When you measure the modulation spectrum, the selected timeslot of this adjacent channel is also displayed. Within this timeslot, the area that contributes to the evaluation is marked. This enables you immediately to see the relationship between the time domain and frequency domain results (FIG 1).

When measuring the transient spectrum, you can select the number of timeslots to be evaluated. The measurement results are based on the maximum within this time window at the specific frequency

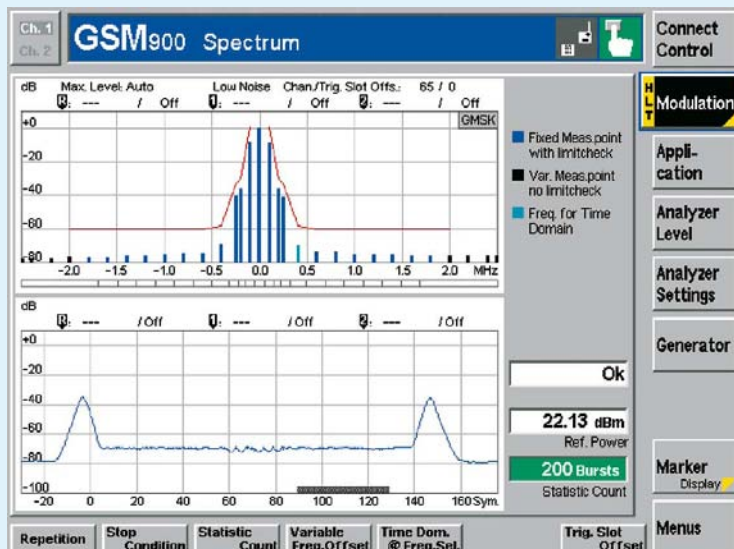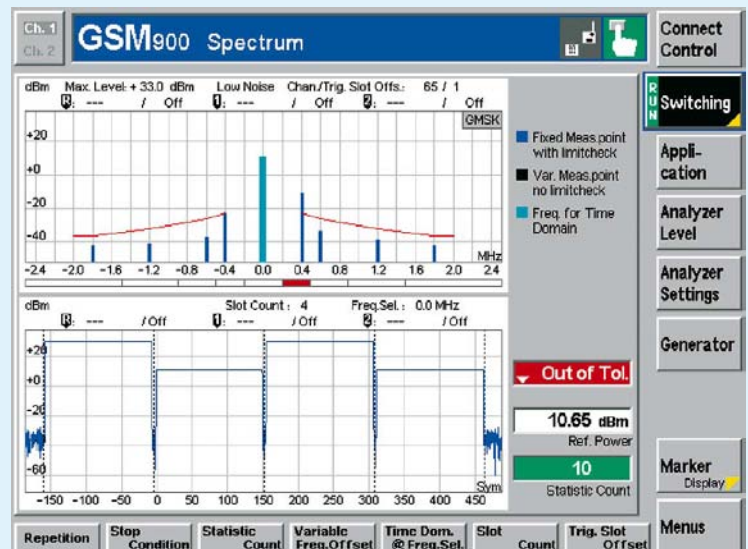FIG 1   Modulation spectrum with time domain representation.

FIG 2   Transient spectrum with time domain representation on carrier.

offset. Particularly the new generation of GSM telephones with their sometimes highly variable timeslot combinations (changing power, modulation and burst type) present new challeges for developers with regard to switching transients. The time domain representation provides you with a flexible and powerful means of error analysis (FIGs 2 and 3).

Parallel measurement of modulation spectrum and transient spectrum

The new parallel measurement feature enables you to analyze and display the results of both spectrum measurements at the same time. The diagrams are based on the same data. If you have applied the condition "Stop on Limit Failed", you will obtain a consistent measurement result in which the effect of the error is shown on both diagrams. If you use remote control, parallel measurement improves performance because you no longer have to request each measurement separately (FIG 4).

High flexibility with no loss of convenience

The same application now handles GMSK and EDGE modulation. The actual analysis remains the same, while the limit check varies. The R&S®CMU 200 still provides separate parameter sets, which you can apply either automatically or by presetting them. Experienced users can adapt the limits as necessary, while occasional users can rely on the standard-conforming application.

In addition to using the fixed frequencies, you can also select frequency offsets as needed within the measurement bandwidth of approx. 4 MHz.

Exceptional measurement speed

The new and fast ACP measurements make both developers and production happy. For example, the modulation spectrum measurement at 22 frequency offsets analyzes one timeslot per GSM frame in realtime. This tremendous speed requires the option U65v04, which is a measurement module that performs the calculations using state-of-the-art ASICs. This option speeds up both the ACP measurements and all other transmitter measurements. Thus, if speed considerations allow only partial spectrum measurements, standard-conforming measurements are still possible.

Rolf Lorenzen

FIG 3   Transient spectrum with time domain representation on adjacent channel.
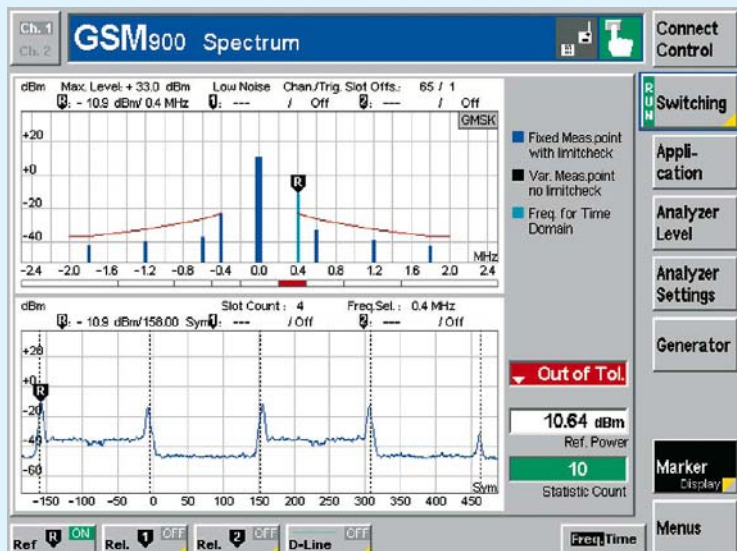

FIG 4   Parallel measurement of modulation spectrum and transient spectrum.