The efficient AM suppression conformance test

Its dual-path concept plus its ability to duplicate baseband signals make the R&S®SMW200A vector signal generator ideal for efficient GSM/EDGE AM-suppression conformance testing.

Your task

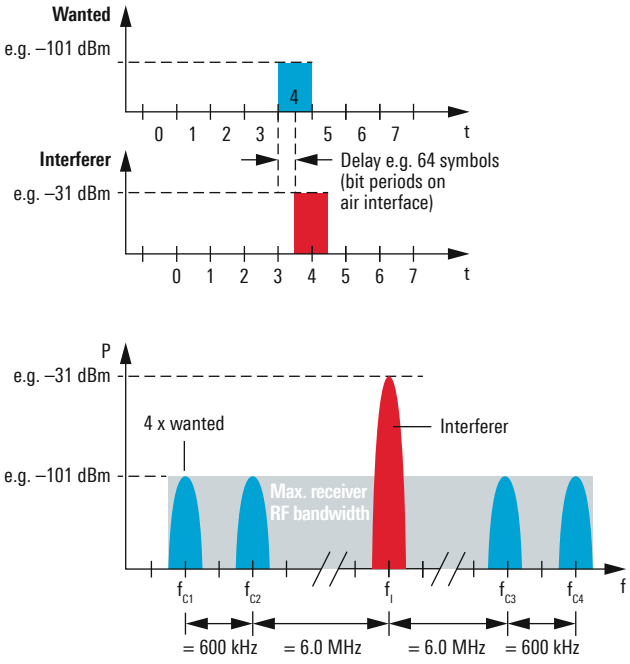
Every GSM/EDGE base station system (BSS) has to prove compliance with a variety of transmitter and receiver test cases specified by 3GPP TS 51.021/ETSI TS 151 021 before it can be launched on the market.

One of these essential tests, the AM suppression test case, measures the ability of a BSS to receive a wanted GSM modulated signal without exceeding a given degradation level due to the presence of an unwanted GSM-modulated signal.

For wide area or medium range base transceiver stations (BTS) equipped with multi-carrier receivers, this test case is performed with the maximum supported number of wanted input signals or four, whichever is less.

The interfering signal is GMSK-modulated by a pseudo-random bit sequence and has one active timeslot. The timeslot (burst) is synchronized, but delayed between 61 and 86 symbol periods relative to the timeslot of the wanted signals.

Example of the AM-suppression test signals (MC receiver) according to 3GPP TS 51.021



Several properly synchronized vector signal generators (VSGs) provide the required wanted signals to the receiver under test at a certain power level and frequency. An additional VSG delivers the specified modulated interfering signal (at a significantly higher power level) to the receiver.

The interfering signal's impact on receiver performance is evaluated by simultaneously measuring BER/BLER on the wanted signals without reallocating any receiver resources during the test (done by the BTS).

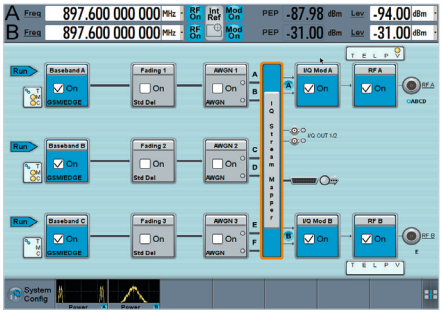
The traditional approach of using up to five VSGs to provide the wanted and interferer signals over the specified frequency range makes the test setup complex to assemble and remote control and also costly.

T&M solution

The R&S®SMW200A vector signal generator is a compact solution for highly efficient wireless transceiver conformance testing in line with applicable standards (e.g. 5G, LTE, UMTS and GSM/EDGE) and customer-specific requirements.

Its extensive baseband capabilities (such as generation of multiple realtime baseband signals in combination with flexible assignment of frequency offsets) and the unique stream extender (R&S®SMW-K550) that allows duplication of generated baseband signals (streams) make the R&S®SMW200A an ideal solution for the GSM/EDGE AM suppression conformance test setup. And it only takes a few key presses to set up the entire test configuration.

First, three independent baseband generators A to C are allocated for GSM test signal generation by selecting a 3 × 1 × 1 system configuration.



R&S®SMW200A AM suppression system configuration.

Generators A and B, which are configured identically, are used to provide the wanted realtime GSM signals. Activating stream duplication immediately provides not only two but all four wanted signals (streams A to D). Baseband generator C calculates in parallel the framed GSM interferer signal (stream E) with the required burst delay.

The correct timing between all streams is achieved thanks to the exact internal triggering of the R&S®SMW200A baseband generators.

All baseband streams

- are properly positioned within the receiver's RF bandwidth by applying appropriate frequency offsets
- are routed/mapped to the desired RF port

These tasks are easy with the stream mapper.

	Frequency Offs /Hz	Phase Offs /°	RF A	RF B
Stream A	-6 600 000.00	0.00	●	
Stream B	-6 000 000.00	0.00	●	
Stream C	6 000 000.00	0.00	●	
Stream D	6 600 000.00	0.00	●	
Stream E	0.00	0.00		●
Stream F	0.00	0.00		
Combination			Add	Single

R&S®SMW200A AM suppression stream mapper.

Finally, the RF level and frequency of the wanted and interferer signal have to be set in line with the standard.
This outstanding configuration flexibility in combination with features especially tailored for wireless communications testing make the R&S®SMW200A an efficient one-box solution for performing AM suppression conformance tests on your GSM/EDGE transceivers.

Key features

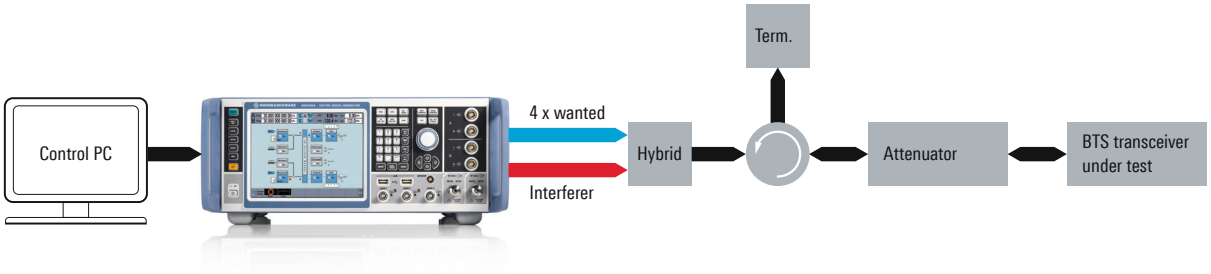
R&S®SMW200A vector signal generator:

- All wanted and interfering signals out of one box
- Realtime test signal generation
- All test signals properly time and frequency aligned and synchronized

See also

www.rohde-schwarz.com/product/SMW200A

Compact AM suppression test setup



Providing all wanted and interferer signals out of one box makes the two-path R&S®SMW200A with its extensive baseband capabilities an efficient solution for GSM/EDGE AM suppression conformance tests.

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PD 5214.8925.92 | Version 01.00 | February 2017 (fi)
R&S®SMW; The efficient AM suppression conformance test
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5214.8925.92 01.00 PDP 1 en