Signal Generator SMT

SMT02: 5 kHz to 1.5 GHz

SMT03: 5 kHz to 3 GHz

SMT06: 5 kHz to 6 GHz

For receiver and EMS measure-

ments



Photo 42353

Brief description

Signal Generator SMT covers the complete range of conventional analog receiver measurements. It provides an exceptionally high signal quality for a generator in this price category, as well as outstanding level accuracy, a wide variety of modulation and signal generation modes, customized configuration, and great ease of operation. Features such as programmable RF, LF and level sweeps as well as the correction of external frequency response make the SMT an ideal source for EMS measurements.

Main features

- · Ideal EMS signal source with specified frequency range from 5 kHz
- AM, FM, φM, pulse modulation
- FM DC with high carrier frequency accuracy
- Broadband FM from DC to 8 MHz, broadband oM from DC to 2 MHz

- Convenient RF/LF/level sweep
- Programmable level correction (compensation of external frequency response)
- VOR/ILS generator (option SM-B6)
 - phase resolution 0.01°
 - DDM resolution 0.0001
- · Stereo generator (option SM-B6) for measurements on FM sound broadcast transmitters and receivers

- Large, backlit LCD for clear display of all relevant settings
- Minimum RF leakage due to special shielding measures
- · Calibration interval of three years

Overview of options

Designation, functions	Option
Reference Oscillator OCXO: aging <1 x 10 ⁻⁹ /day	SM-B1
LF Generator: supplies sinewave, noise 0.1 Hz to 500 kHz, triangular, squarewave 0.1 Hz to 50 kHz signals	SM-B2
Pulse Modulator: on/off ratio >80 dB,SMT02:rise/fall time <10 ns	SM-B3 SM-B8 SM-B9
Pulse Generator: only in conjunction with SM-B3/SM-B8/SM-B9; provides single, delayed and double pulses	SM-B4
Multifunction Generator : produces stereo multiplex and VOR/ILS signals as well as sinewave, noise 0.1 Hz to 1 MHz, triangular, sawtooth, squarewave 0.1 Hz to 50 kHz signals	SM-B6
Rear Connectors for RF and LF: to replace front-panel connectors	SMT-B19

Specifications in brief

Signal Generator SMT

Spectral purity Spurious signals Harmonics Nonharmonics f <1.5 GHz f >1.5 GHz f >3 GHz SSB phase noise at 20 kHz from carrier, 1 Hz bandwidth <67.5 MHz 125 MHz 250 MHz 500 MHz 1000 MHz 2000 MHz 3000 MHz 6000 MHz Residual FM, rms (f=1 GHz) 0.3 to 3 kHz (CCITT) 0.03 to 20 kHz	<-30 dBc, with SM-B8/-B9: <-26 dBc <-80 dBc <-74 dBc <-68 dBc <-120 dBc <-134 dBc <-128 dBc <-122 dBc <-116 dBc <-110 dBc <-109 dBc <-103 dBc
Level Resolution Accuracy for levels >-127dBm f <1.5 GHz f >1.5 GHz f >3 GHz Level frequency response at 0 dBm	-144 to +13 dBm 0.1 dB ±1 dB ±1.5 dB ±2 dB 1 dB, typ. 0.3 dB
Overload protection	protects the unit from externally applied RF power (50 Ω source) and DC voltages, SMT02 and 03: \leq 50 W/ 35 V, SMT06: \leq 1 W/0 V
Simultaneous modulation	any combination of AM, FM (ϕ M) and pulse modulation
Amplitude modulation Modulation depth/resolution Setting error at 1 kHz (m <80 %) AM distortion at 1 kHz m = 30 % m = 80 % Modulation frequency range	internal, external AC/DC 0 to 100%/0.1% <4% of reading ±1% <1% <2% DC to 100 kHz
Frequency modulation	internal, external AC/DC, two-tone with two separate channels FM1 and
Maximum deviation Setting error at AF=1 kHz (FM AC)	FM2 depending on carrier frequency: 5 MHz (at f _c <130 MHz) to 40 MHz (at f _c 6 GHz) <(3% of reading + 20 Hz)
FM distortion at AF=1 kHz and 50% of max. deviation Modulation frequency response	<0.2%, typ. 0.1%
FM1/2: 20 Hz (DC) to 100 kHz FM2: 20 Hz (DC) to 8 MHz Stereo modulation	0.5 dB 3 dB
Crosstalk attenuation Unweighted S/N ratio Carrier frequency offset (FM DC)	>50 dB >76 dB <0.1% of deviation
Phase modulation	internal, external AC/DC, two-tone with two separate channels broad-
Maximum deviation pM range 1: DC to 100 kHz pM range 2: DC to 2 MHz Pulse modulation	band φM or narrowband φM (broad- band φM only possible with φM2) depending on carrier frequency 12.5 to 400 rad 0.625 to 20 rad with option SM-B3. SM-B8. SM-B9

 $0.4/1/3/15~kHz~\pm3\%$ 1 V ±1% (R_{out} = 10 Ω , R_L >200 Ω)

>80 dB

<10 ns

with option SM-B3, SM-B8, SM-B9 external; internal with optional Pulse Generator SM-B4

Operating modes On/off ratio

Rise/fall time (10/90%)

Internal modulation generator Level (EMF) at LF socket

LF generator Sinewave, noise Triangular, squarewave Distortion (20 Hz to 100 kHz) Level (EMF) at LF socket	option SM-B2 0.1 Hz to 500 kHz 0.1 Hz to 50 kHz <0.1% (level >0.5 V 1 mV to 4 V (R _{out} =	V)
Multifunction generator Modulation signals	option SM-B6 sinewave, triangular, sawtooth, squarewave, noise, stereo MPX, VOR/ILS 0.1 Hz to 1 MHz 0.1 Hz to 50 kHz $<0.1\%$ (level >0.5 V) 1 mV to 4 V (R_{out} =10 Ω , R_{L} >200 Ω)	
Sinewave, noise Triangular, sawtooth, squarewave Distortion (20 Hz to 100 kHz) Level (EMF) at LF socket		
Stereo multiplex signal Stereo operating modes	with option SM-B6 R, L, R=L, R=-L, ARI (pilot tone or MPX signal can be connected to LF socket) 0.1 Hz to 15 kHz 50 μ s, 75 μ s 19 kHz ±1 Hz 0 to 360°/0.1°	
Frequency range of L, R signal Preemphasis Pilot-tone frequency Pilot phase/resolution		
VOR modulation signal Settings	with option SM-B6 30 Hz (VAR, REF)/ 9.96 kHz FM carrier, FM deviation, COM/ID tone 0 to 360°/0.01° <0.05°	
Phase/phase resolution Bearing error (RF output, 108 to 118 MHz)		
ILS modulation signal	with option SM-B6	
Settings DDM setting range/resolution	90 Hz, 150 Hz tone, COM/ID tone, marker beacon 0 to ±0.8/0.0001 <0.0004 + 1% of DDM reading <0.0008 + 1% of DDM reading	
DDM error (RF output) Localizer (108 to 112 MHz) Glideslope (329 to 335 MHz)		
Pulse generator Operating modes Pulse repetition period Pulse width Pulse delay Double pulse	option SM-B4 single, delayed and double pulse 100 ns to 85 s 20 ns to 1 s 40 ns to 1 s 60 ns to 1 s	
Sweep	digital sweep in discrete steps for RF, level and LF LF sweep with option SM-B2 or SM-B6	
Remote control Command set	IEC 625 (IEEE 488) SCPI 1993.0	
General data Power supply	90 to 132/180 to 265 V, 47 to 440 Hz (300 VA) 435 mm x 192 mm x 350 mm 20 kg for fully equipped unit	
Dimensions (W x H x D) Weight		
Ordering information		
Signal Generator	SMT02 SMT03 SMT06	1039.2000.02 1039.2000.03 1039.2000.06
Options	0.4.0.4	400/ 7500 00
Reference Oscillator OCXO LF Generator	SM-B1 SM-B2	1036.7599.02 1036.7947.02
Pulse Modulator	SM D2	1024 4240 02
for SMT02 for SMT03	SM-B3 SM-B8	1036.6340.02 1036.6805.02
for SMT06	SM-B9	1039.5100.02
Pulse Generator (only in combination with SM-B3, SM-B8 or SM-B9)	SM-B4	1036.9310.02
Multifunction Generator	SM-B6	1036.7760.02
Rear Connectors for RF and LF	SMT-B19	1039.4003.02