Technical Information
Option SMIQB60
Arbitrary Waveform Generator

Technical Data

Waveform Memory, Interpolation

Output memory	
Waveform length	1 to 524216 in steps of one sample value

Note: This waveform length cannot be compared directly to the corresponding values of conventional ARB generators. The SMIQB69 performs the oversampling required to suppress the aliasing effects by means of the analog filter automatically at realtime conditions by means of hardware interpolation, i.e., the wave to be stored does not lengthen by the oversampling factor. E.g., an oversampling of 1.62 is sufficient for a WCDMA signal. Compared to a conventional ARB providing an oversampling of 4, the output memory of the SMIQB60 corresponds to a 1.25 Msample memory.

Resolution	12 bits
Load time 512k I/Q-samples	4 s
Non-volatile memory	
Number of blocks	22 (one waveform occupies at least one block)
Block size	65527
Interpolation	
Interpolation bandwidth (-0.1dB)	0,375 * clock rate
Attenuation of the analog aliasing filter	> 70 dB

Clock generation

Clock rate	1 kHz to 40 MHz
Resolution	0.1 Hz
Mode	Internal or external

Signal output

Channels	2 (I and Q)
Output resistance	50 Ω
Output level (EMF, Peak)	
Normal mode	$\sqrt{I^2 + Q^2}$ = 1 V
Manual mode	-6 to 0 dB referred to 1 V, setting range up to 3 dB
Level difference of channels	< 0.2% with 1 kHz [1]
Offset	< -54 dB in normal mode[1]
Frequency response	
absolute	
up to 12 MHz	< 1 dB
up to 10 MHz	typ. 0.1 dB
group delay	
up to 10 MHz	typ. 1 ns
I/Q synchronism	
absolute	
up to 10 MHz	typ. 0.05 dB
group delay	
up to 10 MHz	typ. 0.5 ns
SFDR (sinewave 1 MHz, clock 4 MHz, up to 12 MHz)	> 60 dB

Triggering

Trigger modes	Auto, Retrig, Armed Auto, Armed Retrig
Trigger source	Internal or external
External trigger input	Threshold –2.5 to 2.5 V, impedance 1 kΩ / 50 Ω
External trigger frequency	< 10 MHz
External trigger delay	0 to 2^{16} sampling values
External trigger inhibit	0 to 2^{26} sampling values
Pulse width	> 50 ns

Trigger outputs

Number	2
Delay	0 to 524216 sampling values
On Time	1 to 524215 sampling values
Off Time	1 to 524215 sampling values
Level	TTL

Graphic Displays

CCDF	Determination and graphic display of the CCDF in the output memory of the loaded wave. Determination of crest factor. The CCDF functions of up to 3 of the latest loaded waves can be displayed simultaneously.

Use of WinIQSIM

WinIQSIM is a Windows software which allows for the calculation of various I and Q baseband signals on a personal computer (see Data Sheet AMIQ/WinIQSIM PD 757.3970.22). Moreover, it supports loading of the waves into the SMIQ and operation of the SMIQB60 option via the PC.

[1)] following a 1-hour warm-up time and calibration for 4 hours operating time and temperature variations < 5° C