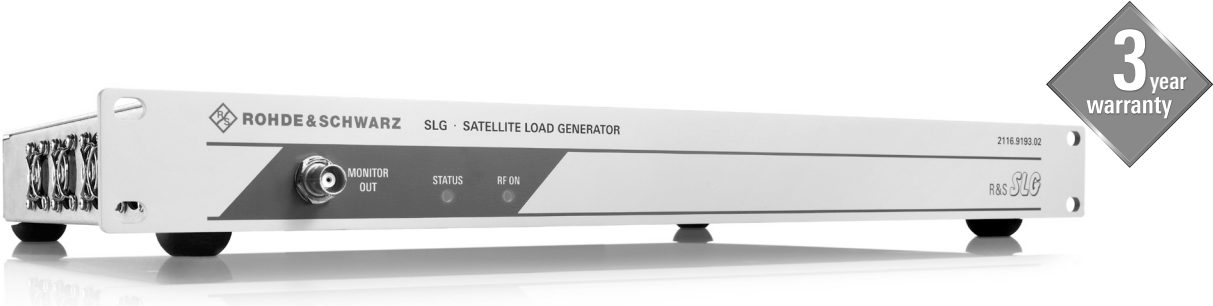


R&S® SLG

Satellite Load Generator

Specifications



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Definitions

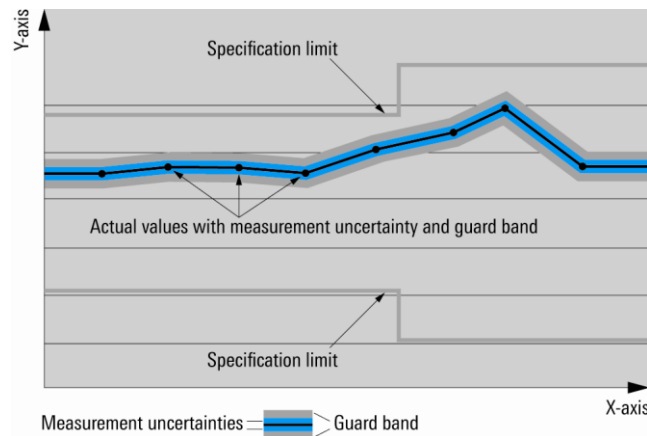
General

Product data applies under the following conditions:

- Three hours storage at ambient temperature followed by 30 minutes warm-up operation
- Specified environmental conditions met
- Recommended calibration interval adhered to
- All internal automatic adjustments performed, if applicable

Specifications with limits

Represent warranted product performance by means of a range of values for the specified parameter. These specifications are marked with limiting symbols such as $<$, \leq , $>$, \geq , \pm , or descriptions such as maximum, limit of, minimum. Compliance is ensured by testing or is derived from the design. Test limits are narrowed by guard bands to take into account measurement uncertainties, drift and aging, if applicable.



Specifications without limits

Represent warranted product performance for the specified parameter. These specifications are not specially marked and represent values with no or negligible deviations from the given value (e.g. dimensions or resolution of a setting parameter). Compliance is ensured by design.

Typical data (typ.)

Characterizes product performance by means of representative information for the given parameter. When marked with $<$, $>$ or as a range, it represents the performance met by approximately 80 % of the instruments at production time. Otherwise, it represents the mean value.

Nominal values (nom.)

Characterize product performance by means of a representative value for the given parameter (e.g. nominal impedance). In contrast to typical data, a statistical evaluation does not take place and the parameter is not tested during production.

Measured values (meas.)

Characterize expected product performance by means of measurement results gained from individual samples.

Uncertainties

Represent limits of measurement uncertainty for a given measurand. Uncertainty is defined with a coverage factor of 2 and has been calculated in line with the rules of the Guide to the Expression of Uncertainty in Measurement (GUM), taking into account environmental conditions, aging, wear and tear.

Device settings and GUI parameters are indicated as follows: "parameter: value".

Typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

RF characteristics

Frequency

Frequency range		250 MHz to 3000 MHz
	with R&S®SLG-K3018 ¹	250 MHz to 3225 MHz
Modulation bandwidth		500 MHz
Number of simultaneously generated channels	in 500 MHz	max. 32
Frequency bands ²	band 1	250 MHz to 750 MHz
	band 2	550 MHz to 1050 MHz
	band 3	950 MHz to 1450 MHz
	band 4	1250 MHz to 1750 MHz
	band 5 ³	1550 MHz to 2150 MHz
	band 6 ⁴	2050 MHz to 2650 MHz
	band 7	2500 MHz to 3000 MHz
	band 8 ¹	2725 MHz to 3225 MHz
Frequency accuracy	at +25 °C	≤ ±5 ppm
Frequency stability	above operating temperature range	≤ ±3 ppm
	through aging in first year	≤ ±1.5 ppm

Level

Maximum total level	sum of all active channels	≥ -3 dBm
Step size		0.1 dB
Setting range	band 1	-45 dBm to +5 dBm
	band 2	-45 dBm to +5 dBm
	band 3	-45 dBm to +5 dBm
	band 4	-45 dBm to +5 dBm
	band 5	-45 dBm to 0 dBm
	band 6	-45 dBm to 0 dBm
	band 7	-45 dBm to 0 dBm
	band 8 ¹	-45 dBm to -10 dBm
Level uncertainty	primary RF output (SMA, 50 Ω), one active channel	≤ ±1 dB (max.), ≤ ±0.25 dB (typ.)
	primary RF output (SMA, 50 Ω), max. number of active channels	≤ ±1.5 dB
	secondary RF output (F, 75 Ω), one active channel	≤ ±3 dB
	secondary RF output (F, 75 Ω), max. number of active channels	≤ ±4 dB
Frequency response	in 500 MHz	≤ ±1.25 dB

¹ Available from serial numbers higher or equal 101771 (Master)/101010 (Slave) with FW version higher or equal V1.08 via option key. R&S®SLG base units with serial numbers below numbers above need to be recalibrated in factory.

² Only one band can be active at a time. All simultaneously generated signals must be in the active band. To generate signals in more than one band, the R&S®SLG base unit can be expanded by adding up to six R&S®SLG slave units.

³ In bands 5 and 6 with 600 MHz width, all simultaneously generated signals must be within a subrange of 500 MHz.

⁴ In bands 5 and 6 with 600 MHz width, all simultaneously generated signals must be within a subrange of 500 MHz.

Maximum sum level of all active channels

Sum level, mode: DVB 8 carrier, 8 active channels	band 1	≥ 2.5 dBm
	band 2	≥ 2.5 dBm
	band 3	≥ 2.5 dBm
	band 4	≥ 2.5 dBm
	band 5	≥ -2.5 dBm
	band 6	≥ -2.5 dBm
	band 7	≥ -2.5 dBm
	band 8 ¹	≥ -10 dBm
Sum level, 32 active channels, mode: DVB 32 carrier, ISDB-S 32 carrier, ISDB-S3 32 carrier and turbo 32 carrier	band 1	≥ 2 dBm
	band 2	≥ 2 dBm
	band 3	≥ 2 dBm
	band 4	≥ 2 dBm
	band 5	≥ -3 dBm
	band 6	≥ -3 dBm
	band 7	≥ -3 dBm
	band 8 ¹	≥ -10 dBm

Maximum level per channel

Level per channel, mode: DVB 1 carrier, 1 active channel	band 1	≥ 5 dBm
	band 2	≥ 5 dBm
	band 3	≥ 5 dBm
	band 4	≥ 5 dBm
	band 5	≥ 0 dBm
	band 6	≥ 0 dBm
	band 7	≥ 0 dBm
	band 8 ¹	≥ -10 dBm
Level per channel, mode: DVB 8 carrier, 8 active channels	band 1	≥ -6.5 dBm
	band 2	≥ -6.5 dBm
	band 3	≥ -6.5 dBm
	band 4	≥ -6.5 dBm
	band 5	≥ -11.5 dBm
	band 6	≥ -11.5 dBm
	band 7	≥ -11.5 dBm
	band 8 ¹	≥ -19.0 dBm
Level per channel, 32 active channels, mode: DVB 32 carrier, ISDB-S 32 carrier, ISDB-S3 32 carrier and turbo 32 carrier	band 1	≥ -13 dBm
	band 2	≥ -13 dBm
	band 3	≥ -13 dBm
	band 4	≥ -13 dBm
	band 5	≥ -18 dBm
	band 6	≥ -18 dBm
	band 7	≥ -18 dBm
	band 8 ¹	≥ -25 dBm

Spectral purity

Nonharmonics	all channels: CW with maximum level	
	band 1	≤ -40 dBc
	band 2	≤ -50 dBc
	band 3	≤ -55 dBc
	band 4	≤ -55 dBc
	band 5	≤ -45 dBc
	band 6	≤ -45 dBc
	band 7	≤ -45 dBc
SSB phase noise in band 1	band 8 ¹	≤ -45 dBc
	100 Hz	≤ -85 dBc/Hz
	1 kHz	≤ -91 dBc/Hz
	10 kHz	≤ -97 dBc/Hz
	100 kHz	≤ -114 dBc/Hz
SSB phase noise in band 2	1 MHz	≤ -121 dBc/Hz
	100 Hz	≤ -82 dBc/Hz
	1 kHz	≤ -88 dBc/Hz
	10 kHz	≤ -94 dBc/Hz
	100 kHz	≤ -111 dBc/Hz
SSB phase noise in band 3	1 MHz	≤ -118 dBc/Hz
	100 Hz	≤ -79 dBc/Hz
	1 kHz	≤ -85 dBc/Hz
	10 kHz	≤ -91 dBc/Hz
	100 kHz	≤ -108 dBc/Hz
SSB phase noise in band 4	1 MHz	≤ -115 dBc/Hz
	100 Hz	≤ -78 dBc/Hz
	1 kHz	≤ -84 dBc/Hz
	10 kHz	≤ -90 dBc/Hz
	100 kHz	≤ -107 dBc/Hz
SSB phase noise in band 5	1 MHz	≤ -114 dBc/Hz
	100 Hz	≤ -76 dBc/Hz
	1 kHz	≤ -82 dBc/Hz
	10 kHz	≤ -88 dBc/Hz
	100 kHz	≤ -105 dBc/Hz
SSB phase noise in band 6	1 MHz	≤ -112 dBc/Hz
	100 Hz	≤ -74 dBc/Hz
	1 kHz	≤ -80 dBc/Hz
	10 kHz	≤ -86 dBc/Hz
	100 kHz	≤ -103 dBc/Hz
SSB phase noise in band 7	1 MHz	≤ -110 dBc/Hz
	100 Hz	≤ -73 dBc/Hz
	1 kHz	≤ -79 dBc/Hz
	10 kHz	≤ -85 dBc/Hz
	100 kHz	≤ -102 dBc/Hz
SSB phase noise in band 8 ¹	1 MHz	≤ -109 dBc/Hz
	100 Hz	≤ -73 dBc/Hz
	1 kHz	≤ -79 dBc/Hz
	10 kHz	≤ -85 dBc/Hz
	100 kHz	≤ -102 dBc/Hz
SSB phase noise in band 8 ¹	1 MHz	≤ -109 dBc/Hz

Modulation schemes

DVB-S2

Format		CCM
FEC frame		normal, short
Pilot		on/off
Constellation		QPSK, 8PSK, 16APSK, 32APSK
Roll-off factor		0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35
Step size		0.05
Spectral inversion	for each channel	on/off
FEC code rate	QPSK	1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 (9/10 only with FEC frame = normal)
	8PSK	3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (9/10 only with FEC frame = normal)
	16APSK	2/3, 3/4, 4/5, 5/6, 8/9, 9/10 (9/10 only with FEC frame = normal)
	32APSK	3/4, 4/5, 5/6, 8/9, 9/10 (9/10 only with FEC frame = normal)
Symbol rate		depending on mode, see page 11
Transport stream formats		single stream, multistream, wideband
Content	internally generated	PRBS, MPEG-2 transport stream
	external feed	MPEG-2 transport stream via ASI or IP
Stuffing		automatic null packet insertion to attain output data rate
PCR restamping		automatic to attain PCR jitter $\leq \pm 100$ ns

DVB-S2X (options R&S[®]SLG-K210 S2X MODCOD (master) for base unit, R&S[®]SLG-K220 S2X MODCOD (slave) for slave unit)

Additional FEC code rates		
Normal frames	QPSK	13/45, 9/20, 11/20
	8PSK/8APSK	5/9-L, 26/45-L, 23/36, 25/36, 13/18
	16APSK	5/9-L, 8/15-L, 1/2-L, 26/45, 3/5-L, 3/5, 28/45, 23/36, 2/3-L, 25/36, 13/18, 7/9, 77/90
	32APSK	2/3-L, 32/45, 11/15, 7/9
	64APSK	11/15, 7/9, 4/5, 5/6, 32/45-L
	128APSK	3/4, 7/9
	256APSK	32/45, 3/4, 29/45-L, 2/3-L, 31/45-L, 11/15-L
Short frames	QPSK	11/45, 4/15, 14/45, 7/15, 8/15, 32/45
	8PSK/8APSK	7/15, 8/15, 26/45, 32/45
	16APSK	7/15, 8/15, 26/45, 3/5, 32/45
	32APSK	2/3, 32/45

DVB-S/DSNG

Constellation		QPSK, 8PSK, 16QAM
Roll-off factor		0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35
Step size		0.05
Spectral inversion	for each channel	on/off
FEC code rate	QPSK	1/2, 2/3, 3/4, 5/6, 7/8
	8PSK	2/3, 5/6, 8/9
	16QAM	3/4, 7/8
Symbol rate		depending on mode, see page 11
Content	internally generated	PRBS, MPEG-2 transport stream
	external feed	MPEG-2 transport stream via ASI or IP
Stuffing		automatic null packet insertion to attain output data rate
PCR restamping		automatic to attain PCR jitter $\leq \pm 100$ ns

ISDB-S3

Constellation		$\pi/2$ -BPSK, QPSK, 8PSK, 16APSK, 32APSK
Roll-off factor		0.03, 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35
Spectral inversion	for each channel	on/off
FEC code rate	$\pi/2$ -BPSK	1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 7/9, 4/5, 5/6, 7/8, 9/10
	QPSK	1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 7/9, 4/5, 5/6, 7/8, 9/10
	8PSK	1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 7/9, 4/5, 5/6, 7/8, 9/10
	16APSK	1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 7/9, 4/5, 5/6, 7/8, 9/10
	32APSK	1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 7/9, 4/5, 5/6, 7/8, 9/10
Symbol rate		see section modes, page 11
Content	internally generated	PRBS, MPEG-2 transport stream
	external feed	MPEG-2 transport stream via ASI or IP
Stuffing		automatic null packet insertion to attain output data rate
PCR restamping		automatic to attain PCR jitter $\leq \pm 100$ ns

ISDB-S

Constellation		BPSK, QPSK, TC8PSK
Roll-off factor		0.03, 0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35
Spectral inversion	for each channel	on/off
FEC code rate	BPSK	1/2
	QPSK	1/2, 2/3, 3/4, 5/6, 7/8
	TC8PSK	2/3
Symbol rate		see section Modes, page 11
Content	internally generated	PRBS, MPEG-2 transport stream
	external feed	MPEG-2 transport stream via ASI or IP
Stuffing		automatic null packet insertion to attain output data rate
PCR restamping		automatic to attain PCR jitter $\leq \pm 100$ ns

Turbo (R&S®SLG-K200 option)

The turbo code is a proprietary technology of the EchoStar Corporation. The R&S®SLG-K200 option may only be sold to licensees of EchoStar and only with express permission from EchoStar.

Constellation		QPSK, 8PSK
Roll-off factor		0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35
Step size		0.05
Spectral inversion	for each channel	on/off
FEC code rate	BPSK	1/2
	QPSK	1/2, 2/3, 3/4, 5/6, 7/8
	8PSK	2/3, 3/4, 4/5, 5/6, 8/9
Symbol rate		see section modes, page 12
Content	internally generated	PRBS, MPEG-2 transport stream
	external feed	MPEG-2 transport stream via ASI or IP
Stuffing		automatic null packet insertion to attain output data rate
PCR restamping		automatic to attain PCR jitter $\leq \pm 100$ ns

Transport stream generator

The R&S®SLG has an integrated transport stream generator for playing MPEG-2 transport stream files. The generated transport stream can be used as content for one or more data carriers.

Transport stream format		MPEG-2, SPTS with 1 PAT and 1 PMT
Packet size		188 byte
Transport stream file size		max. 188 Mbyte
File format		.trp, .ts, .mpg
Seamless loop playback		can be switched on/off for continuity counter, PCR, DTS/PTS, TDT/TOT
Bit rate		1504 kbit/s to 216 Mbit/s

Arbitrary waveform generator

Waveform file memory		400 Mbyte
Number of simultaneously played waveform files	modes: DVB 32 carrier, ISDB-S 32 carrier, ISDB-S3 32 carrier, turbo 32 carrier	max. 4
	mode: DVB 8 carrier	max. 2
	mode: DVB 1 carrier	1
ARB file size	modes: DVB 32 carrier, ISDB-S 32 carrier, ISDB-S3 32 carrier, turbo 32 carrier	≤ 64 Mbyte
	mode: DVB 8 carrier	≤ 128 Mbyte
	mode: DVB 1 carrier	≤ 256 Mbyte
Total sample rate of all simultaneously played waveform files	modes: DVB 32 carrier, ISDB-S 32 carrier, ISDB-S3 32 carrier, turbo 32 carrier	≤ 288 Msample/s
	mode: DVB 8 carrier	≤ 288 Msample/s
Sample rate per waveform file	modes: DVB 32 carrier, ISDB-S 32 carrier, ISDB-S3 32 carrier, turbo 32 carrier	≤ 72 Msample/s
	mode: DVB 8 carrier	≤ 144 Msample/s
	mode: DVB 1 carrier	≤ 575 Msample/s
Occupied bandwidth per waveform file	modes: DVB 32 carrier, ISDB-S 32 carrier, ISDB-S3 32 carrier, turbo 32 carrier	≤ 36 MHz
	mode: DVB 8 carrier	≤ 93.6 MHz
	mode: DVB 1 carrier	≤ 375 MHz
Number of RF channels per waveform file ⁵		max. 32

⁵ One waveform file can be played simultaneously on multiple RF channels.

Modulation quality

EVM without equalizer

EVM, max. and typ., for different symbol rates, measured without equalizer ⁶ .		
Maximum value in selected frequency band, one active channel, 5 dB below maximum level, QPSK, 20 % roll-off.		
Typ. values with identical settings, but > 50 MHz from band edge ⁷ .		
EVM at 30 Msymbol/s symbol rate	band 1	≤ 3.0 % (max.), 1.5 % (typ.)
	band 2	≤ 2.5 % (max.), 1.0 % (typ.)
	band 3	≤ 2.5 % (max.), 1.0 % (typ.)
	band 4	≤ 2.5 % (max.), 1.0 % (typ.)
	band 5	≤ 3.0 % (max.), 1.0 % (typ.)
	band 6	≤ 3.0 % (max.), 1.0 % (typ.)
	band 7	≤ 3.0 % (max.), 1.5 % (typ.)
	band 8 ¹	≤ 3.5 % (max.), 3.0 % (typ.)
EVM at 72 Msymbol/s symbol rate	band 1	≤ 4.0 % (max.), 2.0 % (typ.)
	band 2	≤ 3.0 % (max.), 1.5 % (typ.)
	band 3	≤ 3.0 % (max.), 1.5 % (typ.)
	band 4	≤ 3.0 % (max.), 1.5 % (typ.)
	band 5	≤ 3.0 % (max.), 1.5 % (typ.)
	band 6	≤ 4.0 % (max.), 1.5 % (typ.)
	band 7	≤ 4.0 % (max.), 2.0 % (typ.)
	band 8 ¹	≤ 4.5 % (max.), 3.0 % (typ.)
EVM at 416 Msymbol/s symbol rate	band 1	≤ 6.0 % (max.), 4.0 % (typ.)
	band 2	≤ 6.0 % (max.), 5.0 % (typ.)
	band 3	≤ 4.0 % (max.), 3.0 % (typ.)
	band 4	≤ 4.0 % (max.), 3.0 % (typ.)
	band 5	≤ 5.0 % (max.), 3.0 % (typ.)
	band 6	≤ 5.0 % (max.), 4.0 % (typ.)
	band 7	≤ 5.0 % (max.), 4.0 % (typ.)
	band 8 ¹	≤ 6.5 % (max.), 5.5 % (typ.)

EVM with equalizer

EVM, typ., for different symbol rates, equalizer with 10-symbol filter length, one active channel, 5 dB below maximum level, QPSK, 20 % roll-off.		
EVM at 30 Msymbol/s symbol rate	band 1	0.4 % (typ.)
	band 2	0.4 % (typ.)
	band 3	0.5 % (typ.)
	band 4	0.5 % (typ.)
	band 5	0.5 % (typ.)
	band 6	0.6 % (typ.)
	band 7	0.6 % (typ.)
	band 8 ¹	0.6 % (typ.)
EVM at 72 Msymbol/s symbol rate	band 1	0.4 % (typ.)
	band 2	0.4 % (typ.)
	band 3	0.4 % (typ.)
	band 4	0.4 % (typ.)
	band 5	0.5 % (typ.)
	band 6	0.6 % (typ.)
	band 7	0.6 % (typ.)
	band 8 ¹	0.6 % (typ.)
EVM at 416 Msymbol/s symbol rate	band 1	1.5 % (typ.)
	band 2	1.0 % (typ.)
	band 3	1.0 % (typ.)
	band 4	1.0 % (typ.)
	band 5	1.0 % (typ.)
	band 6	1.3 % (typ.)
	band 7	1.5 % (typ.)
	band 8 ¹	1.5 % (typ.)

⁶ For QPSK and 8PSK, EVM can be converted into MER: $MER = -20 \times \log EVM$, with MER in dB and EVM in %. This means that 1 % EVM corresponds to 40 dB MER, for example.

⁷ The maximum value deviates from the typical value because modulation quality degrades toward the band limits.

Modes

In the DVB 32 carrier, ISDB-S 32 carrier, ISDB-S3 32 carrier and turbo 32 carrier modes, a distinction is made between data carriers and load carriers. Data carriers can transmit transport streams or PRBS as the payload and use error protection, constellation and roll-off factor in line with the selected modulation scheme. Load carriers use constellation and roll-off factor of the selected modulation scheme, but do not have error protection. As a result, they can only transmit PRBS as the content.

DVB 32 carrier mode

Modulation schemes		DVB-S/DSNG, DVB-S2, DVB-S2X, ARB, CW
Number of data carriers	total	max. 16
	DVB-S	max. 16
	DVB-S2	max. 16
Number of load carriers		max. 32
Carrier spacing		no limits
Symbol rate	per carrier	0.1 Msymbol/s to 30 Msymbol/s
Step size		1 symbol/s

ISDB-S 32 carrier mode

Modulation schemes		ISDB-S, ARB, CW
Number of data carriers		max. 14 (carrier 1 can carry up to 8 streams)
Number of load carriers		max. 32
Carrier spacing		no limits
Symbol rate	per carrier	0.1 Msymbol/s to 30 Msymbol/s
Step size		1 symbol/s

ISDB-S3 32 carrier mode

Modulation schemes		ISDB-S3, ARB, CW
Number of data carriers		max. 14 (carrier 1 can carry up to 8 streams)
Number of load carriers		max. 32
Carrier spacing		no limits
Symbol rate	per carrier	0.1 Msymbol/s to 34 Msymbol/s
Step size		1 symbol/s

Turbo 32 carrier mode (R&S®SLG-K200 option)

Modulation schemes		turbo, DVB-S/DSNG, DVB-S2, ARB, CW
Number of data carriers	total	max. 16
	turbo	max. 16
	DVB-S/DSNG	max. 16
	DVB-S2	max. 4
Number of load carriers		max. 32
Carrier spacing		no limits
Symbol rate	per carrier	1 Msymbol/s to 30 Msymbol/s
Step size		1 symbol/s

DVB 8 carrier mode

Modulation schemes		DVB-S2, DVB-S/DSNG, DVB-S2X, ARB, CW
Number of data carriers	total	max. 8
	DVB-S	max. 16
	DVB-S2	max. 16
Carrier spacing		≥ 30 MHz
Symbol rate	per carrier	5 Msymbol/s to 72 Msymbol/s
Step size		1 symbol/s

DVB 1 carrier mode

Modulation schemes		DVB-S2, DVB-S2X, ARB, CW
Number of data carriers		1
Symbol rate		45 Msymbol/s to 416 Msymbol/s
Step size		1 symbol/s
DVB-S2/DB-S2X		
	Number of time slices	2 to 4
	Number of time slice with data content	2 to 4
	Max. FEC data rate/slice	624 Mbits/s

Channel bonding

Option R&S®SLG-K211 DVB-S2X channel bonding (M) for master unit, R&S®SLG-K221 DVB-S2X channel bonding (S) for slave unit.

Channel bonding ⁸	acc. to DVB-S2X	up to 4 × 3 bonded transponders
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Simulation of signal impairments

AWGN

Frequency range		active band
1 dB bandwidth		510 MHz
Noise power	in 500 MHz	-45 dBm to +5 dBm
Step size		0.1 dB
C/N per channel	displayed on GUI	calculated from symbol rate, signal power and noise power ⁹
Uncertainty	at constant temperature	< 0,5 dB
Distribution function		Gaussian, statistically independent for I and Q
Crest factor	measurement bandwidth < 100 MHz	> 11.5 dB
Period		$(2^{31} - 1)/(312 \text{ MHz})$

Phase noise

Range		all active channels
Carrier offset		up to 15 MHz
Characteristics	user-defined	interpolation points at 10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, 1 MHz, 10 MHz, 15 MHz
Setting range	for each interpolation point	-150 dBc/Hz to -20 dBc/Hz
Step size		0.1 dBc/Hz

Tilt

Settable tilt ¹⁰	band 1	$\leq \pm 50 \text{ dB}/500 \text{ MHz}$
	band 2	$\leq \pm 50 \text{ dB}/500 \text{ MHz}$
	band 3	$\leq \pm 50 \text{ dB}/500 \text{ MHz}$
	band 4	$\leq \pm 50 \text{ dB}/500 \text{ MHz}$
	band 5	$\leq \pm 45 \text{ dB}/500 \text{ MHz}$
	band 6	$\leq \pm 45 \text{ dB}/500 \text{ MHz}$
	band 7	$\leq \pm 45 \text{ dB}/500 \text{ MHz}$
	band 8 ¹	$\leq \pm 45 \text{ dB}/500 \text{ MHz}$
Step size		0.1 dB

⁸ Available with FW version higher or equal V1.09.

⁹ $C/N = 10 \times \log(\text{signal power}/(\text{noise power}/(500 \times 10^6) \times \text{symbol rate}))$, with signal power and noise power in W, symbol rate in Hz; or $C/N = \text{signal power} - \text{noise power} - 10 \times \log \text{symbol rate} + 87 \text{ dB}$, with signal power und noise power in dBm, symbol rate in Hz.

For ARB waveform files, the symbol rate is supposed to equal $0.65 \times \text{sample rate}$. The accuracy of this formula depends on the bandwidth of the ARB waveform.

¹⁰ The R&S®SLG generates the tilt by stepping down the level setting of the active channels. The frequency response within the channel remains flat.

Interfaces

RF outputs

Only one RF output can be active at a time.

Primary output		SMA, female, 50 Ω
Secondary output		F, female, 75 Ω
Return loss	primary output, $f < 950$ MHz	≥ 9 dB
	primary output, $f \geq 950$ MHz	≥ 13 dB
	primary output, $f \geq 3000$ MHz	≥ 11 dB
	secondary output ≤ 3000 MHz	≥ 9 dB
	secondary output > 3000 MHz	≥ 9 dB

DiSEqC ¹¹

The DiSEqC function is only available at the secondary RF output (F, 75 Ω).

DiSEqC function		slave receiver and slave transmitter
Version		DiSEqC version 2.1, level 2.2
DiSEqC interpreter		slave mode

Monitoring outputs

RF monitoring output		BNC, female, 50 Ω
RF monitoring output level	referenced to active RF output	-35 dBc to -25 dBc
DVB ASI monitoring output		BNC, female, 75 Ω

Data inputs

DVB ASI transport stream inputs		2 x BNC, female, 75 Ω
Ethernet data inputs		2 x 100BASE-T, RJ-45
10 GigE data input		SFP+
Input data format		MPEG
IP protocol	unicast	UDP/IP with MPEG packets RTP/CoP3 via unicast UDP/IP
	multicast	IGMPv2, IGMPv3 RTP/CoP3 via multicast UDP/IP

Control interfaces

Ethernet control interface		10/100BASE-T, RJ-45
Web GUI		via Ethernet control interface
SCPI		via Ethernet control interface
SNMP		SNMPv2 via Ethernet control interface
10 MHz reference input		BNC, female, 50 Ω , 0 dBm to +15 dBm, sinusoidal

¹¹ DiSEqC is a registered trademark of Eutelsat Communications S.A.

General data

Environmental conditions		
Temperature	operating temperature range	0 °C to +45 °C
	storage temperature range	-10 °C to +50 °C
Humidity	operation	0 % to 50 %, noncondensing, max. 80 % for temperatures up to +31 °C with linear decrease to 50 % at +45 °C
	off	10 % to 95 %, noncondensing
Max. operating altitude		2000 m
Mechanical resistance		
Vibration		NEBS, GR-63-CORE
Power rating		
Rated voltage		120 V to 240 V AC
Rated frequency		50 Hz to 60 Hz
Rated power		≤ 100 VA
Product conformity		
Electromagnetic compatibility	in line with EU EMC directive 2004/108/EC	EN55011, EN61326-1, EN61326-2-2
		ICES-003
		part 15 of FCC rules
		class A
Electrical safety	in line with EU low voltage directive 2006/95/EC	EN 61010-1
		USA
		Canada
Calibration interval		after 12 months, then every 36 months
Dimensions	W x H x D	482.6 mm x 44.5 mm x 279.4 mm (19", 1 HU)
Weight		3.2 kg (7.05 lb)

Ordering information

Designation	Type	Order No.
Satellite Load Generator, base unit	R&S®SLG	2116.9193.02
incl. power cable, quick start guide and CD-ROM with user manual		
Satellite Load Generator, slave unit ¹²	R&S®SLG	2116.9193.03
incl. power cable, quick start guide and CD-ROM with user manual		
Master Upgrade for R&S®SLG Slave Unit	R&S®SLG-K100	2116.9341.02
Turbo Code Modulation ¹³	R&S®SLG-K200	2118.7298.02
DVB-S2X MODCOD (Master)	R&S®SLG-K210	2118.7717.02
DVB-S2X Channel Bonding (Master)	R&S®SLG-K211	2118.7769.02
DVB-S2X MODCOD (Slave)	R&S®SLG-K220	2118.7775.02
DVB-S2X Channel Bonding (Slave)	R&S®SLG-K221	2118.7781.02
Extended Frequency Range	R&S®SLG-K3018	2118.7946.02

Warranty		
Warranty, base unit		3 year
Warranty, accessories		1 year
Extended Warranty, one year	R&S®WE1	Please contact your local Rohde & Schwarz sales office.
Extended Warranty, two years	R&S®WE2	

Extended warranty with a term of one to four years (WE1 to WE2)

Repairs carried out during the contract term are free of charge ¹⁴. Necessary calibration and adjustments carried out during repairs are also covered. Simply contact the forwarding agent we name; your product will be picked up free of charge and returned to you in top condition a couple of days later.

For product brochure, see PD 3606.8289.12

¹² The specifications provided in this document apply to the R&S®SLG base unit and the R&S®SLG slave unit.

A slave unit expands the frequency range of the base unit. It works only in combination with a base unit.

¹³ The turbo code is a proprietary technology of the EchoStar Corporation. The R&S®SLG-K200 option may only be sold to licensees of EchoStar and only with express permission from EchoStar.

¹⁴ Excluding defects caused by incorrect operation or handling and force majeure. Wear-and-tear parts are not included.

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About Rohde & Schwarz

The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, radiomonitoring and radiolocation. Founded more than 80 years ago, the independent company which is headquartered in Munich, Germany, has an extensive sales and service network with locations in more than 70 countries.

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- | Energy efficiency and low emissions
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Certified Quality Management

ISO 9001

Certified Environmental Management

ISO 14001

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R&S® is a registered trademark of Rohde & Schwarz GmbH & Co. KG

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R&S®SLG Satellite Load Generator

Data without tolerance limits is not binding | Subject to change

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