

## Radar Signal Generator – Radar Signal Receiver (RSG-RSR)

The RSG-RSR system contains Exciter and Receiver functionalities for S-Band radar. The system is configured in a 33U air cooled 19-inch rack. RSG and RSR are installed as independent Sub-racks. The rack is powered by AC 220V supply. The air-cooled 19" rack is housed in a shelter.

Radar Signal Generator (RSG) generates TxDr, all LO clocks and clocks for ADC and DAC, based on dwell messages and timing information received from STM. Spot frequencies and LO1 are generated using Direct Frequency Synthesis technique which provides better spurious performance.

IQ samples from Radar Signal Receiver (RSR) are sent to SP for signal processing. RSG-RSR system operates in two modes – Normal Resolution and High Resolution. High speed optical interfaces, using sFPDP protocol, are used for dwell commands and IQ samples. RS422 interface is used for timing information.



### TMS320

- Operation in S Band: 2.7 to 3.1 GHz. RF output programmable with 64 spot frequencies of 6.35 MHz step size with 400MHz bandwidth
- IF pulses generated for both Normal Resolution and High Resolution with LFM and NLFM schemes.
- Optical interfaces running SFPDP protocol @ 2.5Gbauds per second
- RS422 interface for timing information
- Five RF receiver channels
- 33U Air cooled 19-inch rack with Sub-Racks mounted on a swing arm for better serviceability.

## RSG – SPECIFICATIONS

Parameter	Units	Specs
RF Frequency	GHz	2.7 to 3.1
Number of spots	Count	64
Resolution modes		Normal (NR) and High Resolution (HR)
Resolution bandwidth	MHz	2.5 MHz in NR, 10 MHz in HR
TxDr power	dBm	10 ± 2
TxDr spurious	dBc	55 dBc in 400 MHz bandwidth 70 dBc in 10 MHz bandwidth
Harmonics	dB	55
Phase Noise	dBc/Hz	85 dB @ 100 Hz. 115dB @ 1KHz. 130dB @ 10KHz. 135dB @ 100KHz.

## RSR – SPECIFICATIONS

Parameter	Units	Specs
RF Frequency	GHz	2.7 to 3.1
Input power range	dBm	-85 to -30.5
Gain with 11 dB of AGC setting	dB	49 ± 1.5
Spurious	dBc	<= -60 dBc in NR Bandwidth <= -55 dBc in HR Bandwidth
Harmonics	dBc	<= -60 dBc in NR mode <= -55 dBc in HR mode
Isolation	dB	60
Survival Input power	dBm	>= +10
Two tone intermodulation distortion	dBc	<= -60 dBc in NR mode <= -55 dBc in HR mode
Filter rejection	dBc	-60 dBc at 7.5 MHz offset in NR mode -55 dBc at 12.5 MHz offset in HR mode
Noise Figure	dB	< 15 with 11 dB AGC setting

## SYSTEM

System Housing		33U Air cooled 19-inch rack with Sub-Racks mounted on a swing arm for better serviceability
Power	Watts	600
Input Supply	VAC	220
Environmental		- 40°C and +85°C (Storage) - 20°C and +55°C (Operational)
Qualification		MIL-STD810D EMI/EMC MIL-STD-461E ESS: MIL-STD-2164 (EC)

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