

7.2 TO 8.4 GHz SATELLITE I/Q TEST MODULATOR

MODEL: SDM0708LI3CDQ (TRI-BAND, X)

FEATURES

- Tri-band, X
Downlink 7.2 to 7.7 GHz
Uplink 7.9 to 8.4 GHz
- Direct linear I/Q modulation DC to 300 MHz
- Carrier/sideband rejection 25 dB
- Harmonic rejection 30 dB
- Packaging Hermetically sealed

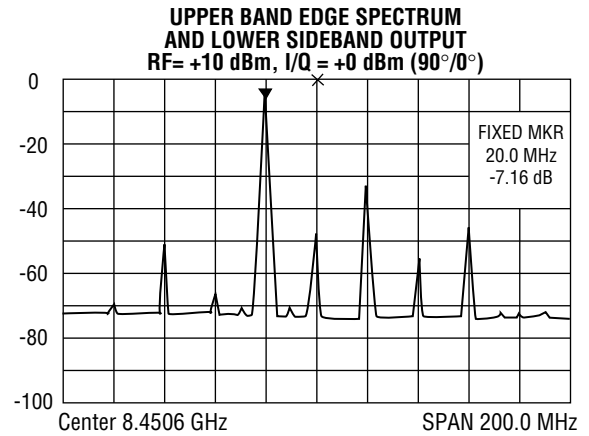
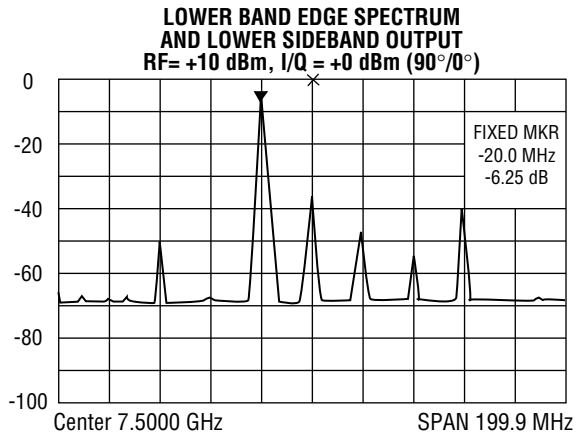
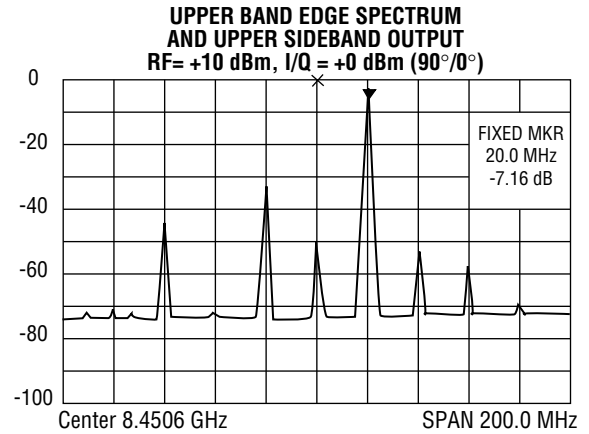
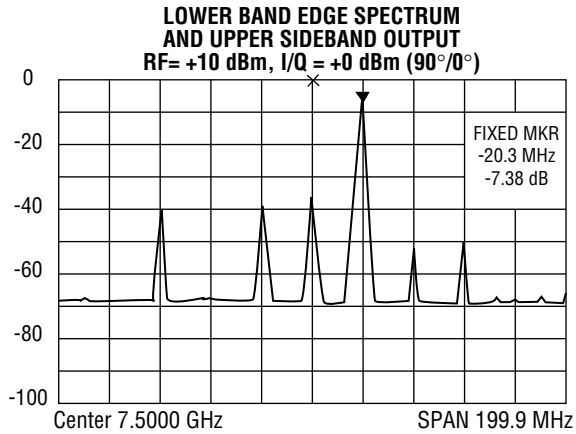


Microwave QAM signals are traditionally generated by linearly mixing or modulating a VHF or UHF carrier oscillator with band limited I and Q information. The resulting phase and/or amplitude states of the carrier are then multiplied or upconverted by another mixer, local oscillator and sideband filter to the actual transmitted frequency. I/Q modulation has traditionally been done in this manner because lower frequency high-isolation mixers tend to yield the best carrier and sideband rejection. The latter qualities are most important for accurate I/Q phase states or transmitted signal constellations. More recently at MITEQ, the electrical and physical symmetry of microwave baluns have been improved to yield mixers with LO-to-RF isolations of 45 dB up to 18 GHz. This unit uses these new mixers to achieve direct I/Q modulation of a microwave carrier without the costly lower frequency upconversion.

ELECTRICAL SPECIFICATIONS

INPUT PARAMETERS	CONDITION	UNITS	MIN.	TYP.	MAX.
Carrier frequency range		GHz	7.2		8.4
Carrier VSWR (RF = +16 dBm)		Ratio		1.5:1	
Carrier power		dBm	+8	+10	+12
Modulation frequency range	I/Q	MHz	DC		300
Modulation power	I/Q (50 ohms)	dBm	Noise	0	+6
TRANSFER CHARACTERISTICS	CONDITION	UNITS	MIN.	TYP.	MAX.
Conversion loss (IF = 100 MHz) (desired output relative to I/Q input)	RF = +10 dBm I/Q = 0 dBm	dB		7.5	8.5
Carrier rejection (relative to desired output)	IF = +6 dBm	dB		30	
Upper or lower sideband	$f_0 \pm IF$	dB	23	25	
Second-harmonic sideband	$f_0 \pm 2 IF$	dB		20	
Third-harmonic sideband	$f_0 \pm 3 IF$	dB		20	
Insertion loss (I/Q switch mode)	I/Q = +10 mA	dB		8	
OUTPUT PARAMETERS	CONDITION	UNITS	MIN.	TYP.	MAX.
RF frequency range		GHz	7.2		8.4
RF VSWR (RF = +16 dBm)		Ratio		2.5:1	

SDM0708LI3CDQ TRI-BAND TYPICAL SPECTRUM DATA



MAXIMUM RATINGS

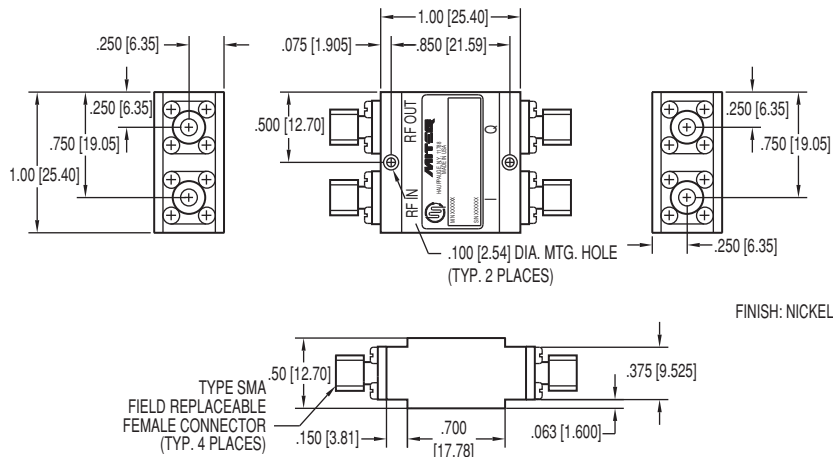
Specification temperature +25°C
 Operating temperature -54 to +85°C
 Storage temperature -65 to +125°C

GENERAL NOTES

1. Input/output RF amplifiers optional.
2. Filtered digital inputs available.

NOTE: Test data supplied at 25°C; per spectrum data.

OUTLINE DRAWING



NOTE: All dimensions shown in brackets [] are in millimeters.