



Eyal Microwave Ltd.

Phone: 972-9-7499100 Fax: 972-9-7493669

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Web: www.eyal-emi.com Email: emi@eyal-emi.com



Specification for

6 to 18 GHz

Modulator

MODEL: MOD-2350-66

Item Definition and General Description

The Modulator Module is a broadband, nominally 6 GHz to 18 GHz unit.

Its major function is to shift down the frequency of a broadband RF signal by a fixed 70 MHz signal.

The RF input signal is modulated by a fixed 70 MHz Local Oscillator (Single-Side-Band modulation), the signal is then split into two independent amplification paths.

A BIT input may be injected through the input coupler.



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Block Diagram

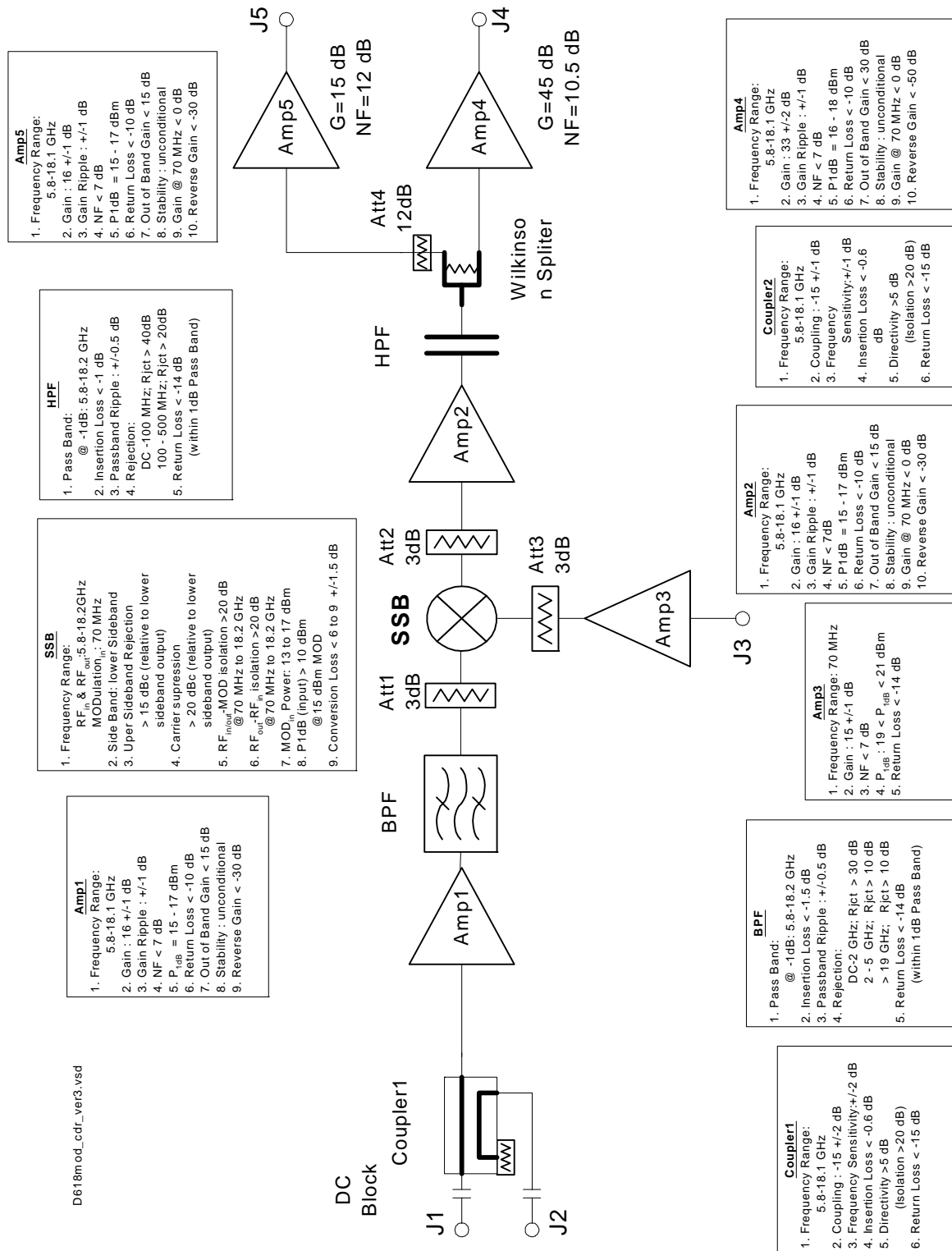


Figure 1: Modulator Module



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Electrical Specification

Frequency Range6.0÷18.0 GHz

(Gain Best-Fit Line – G.B.F.L.)

Gain Limits

For RF path J1 to J4:

G.L.B.F.L @ 6 GHz..... 44.5 ± 1.5 dB
Min Gain = 41.5dB @ 6÷8GHz
Min Gain = 40.0dB @ 17÷18GHz

For RF path J1 to J5:

G.L.B.F.L @ 6 GHz..... 16.5 ± 1.0 dB
Min Gain = 13.5dB @ 6÷8GHz
Min Gain = 12.0dB @ 17÷18GHz

Gain flatness:_____

For RF path J1 to J4:..... ± 3.0 dB
For RF path J1 to J5:..... ± 3.0 dB

Noise figure J1 to J4:10.5 dB max.

Noise figure J1 to J5: 12.0 dB max.

Power output @1 dB Compression Point (input @ either J1 or J2):

Output J4:..... + 15.5 dBm min.
@ 6 GHz & 18 GHz..... + 14.5 dBm
Output J5:..... + 15.0 dBm min.
@ 6 GHz & 18 GHz..... + 14.0 dBm

Input coupler characteristics (J2)

(The Gain Measured within the integrated unit):

G52 = G51 – 15 ±2 dB.

G42 = G41 – 15 ±2 dB.

Directivity: better than 5 dB (isolation better than 20 dB).



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Upper Sideband Rejection

The power level of the upper sideband at J4 or J5 shall be less than the power of the lower sideband by more than 15 dB (for any input frequency and power).

Carrier rejection

The power level of the carrier at J4 or J5 shall be less than the power of the lower sideband by more than 19 dB (for any input frequency and power).

LO Leakage

The power measured at J4 or J5 around 70 MHz, when a +5 dBm 70 MHz signal is applied to J3..... -50 dBm.

Reverse Modulation

The signal measured at J4 at frequency $f \pm 70$ MHz, when a -5 dBm signal at frequency f (5.8-18.1 GHz) is applied to J5, (5 dBm 70 MHz signal applied to J3)..... -45 dBm.

The signal measured at J5 at frequency $f \pm 70$ MHz, when a -5 dBm signal at frequency f (5.8-18.1 GHz) is applied to J4, (5 dBm 70 MHz signal applied to J3)..... -55 dBm.

Returned Modulation

The signal returned to J1 at frequency $f \pm 70$ MHz, when a -30 dBm signal at frequency f (5.8-18.1 GHz) is applied to J1, (+5 dBm 70 MHz signal applied to J3, Switch command J1: ON, J2: OFF)..... -80 dBm.
(Measurement may be carried out using a circulator).

IF Isolation

The isolation between J4 & J5 @ 70 MHz 25 dB.

RF Isolation

At J5 when a +5 dBm signal ($f = 5.8 - 18.1$ GHz) is applied to J4..... -55 dBm.

At J4 when a +5 dBm signal ($f = 5.8 - 18.1$ GHz) is applied to J5..... -15 dBm.

RETURN - LOSS.

Impedance (all ports): 50 Ω

Input Return-Loss (J1, J2, J3)..... < -10 dB for small signal input.

Output Return-Loss (J4, J5)..... < -10 dB.

@6÷7GHz Output Return Loss (J4, J5)..... < -9dB



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Max Operating RF Input Power +5 dBm C.W.

DC Voltages & Currents.....+11 VDC \pm 10%: 1200 ma max.

Physical Characteristics and Connectors

The module packaged in hermetically sealed Aluminum case.

J4 and J5 RF connectors are Shroud GPO type (field replaceable to SMA).

J1, J2&J3 RF connector is SMA female.

The DC is Solder pins.

