

RF Frequency Multiply-By-Five

DCC:  E1600375

Description

This RF frequency multiplier is a 1U rack mount unit which takes a 10 dBm input and provides an outputs at 13 dBm at five times the frequency. A power monitor is available after the divider. This signal together with a temperature reading can be accesses through 15-pin D-sub on the read panel. There is also a BNC output which has a higher bandwidth. The unit requires +/-24V and +/-16.5V.

Power Monitors

The nominal slope of the power monitor is -100 mV/dBm with a reading of 4 V at 12 dBm. The formula is

$$\text{Power Level} = 12 \text{ dBm} - 10 \text{ dBm/V} * (\text{Voltage Reading} - 4 \text{ V})$$

Conversion table:

| RF power | Voltage reading |
|----------|-----------------|
| 30 dBm | 2.3V |
| 20 dBm | 3.2V |
| 10 dBm | 4.2V |
| 0 dBm | 5.2V |
| -10 dBm | 6.2V |
| -20 dBm | 7.2V |
| -30 dBm | 8.0V |

The temperature readout uses the following conversion

$$\text{Temperature} = 20 \text{ }^{\circ}\text{C} + 50 \text{ }^{\circ}\text{C/V} * (\text{Voltage Reading} - 6 \text{ V})$$

Specifications

DCC:  E1600380-v1

Frequency range:

- 40.000000 ± 1 MHz (input); 200.000000 ± 5 MHz, sine (output)

Input:

- +10 dBm nominal
- N female

Output:

- +13 dBm nominal
- 8x N female

RF power monitors (1 used):

- monitor power after doubler
- range at least 40 dB
- output: 0V - 10V single ended

Phase noise (all outputs):

- Noise floor -165 dBc/Hz (10 kHz offset)

Harmonics:

- < -30 dBc