

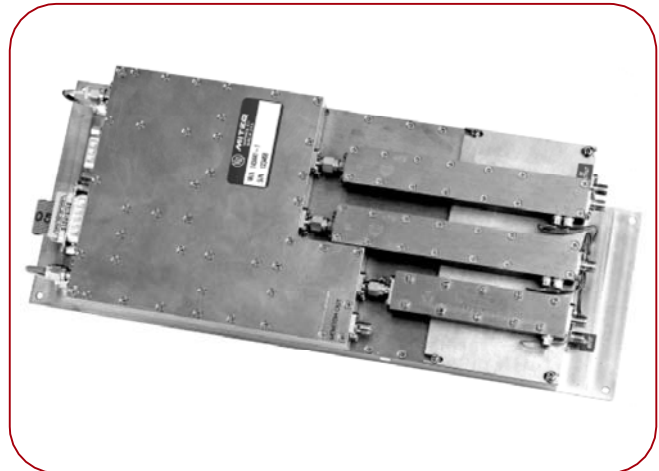
# MULTI BAND SYNTHESIZER

## MULTI-BAND:

C, X & Ku

## FEATURES

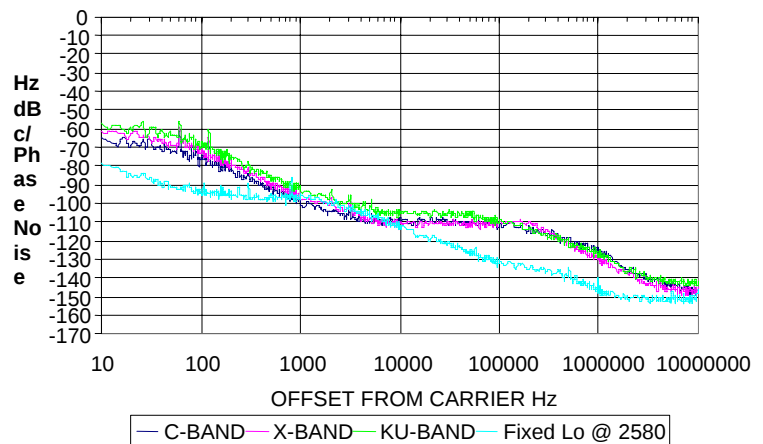
- Multi band broad band operation
- Fixed frequency L-band LO
- Standard 1 kHz step size
- 20 dB better than INTELSAT phase noise
- Meets MIL-STD-188-164A by 10 dB on all bands
- Low power dissipation.
- MIL-STD-188-164A microphonic compliant



## OPTIONS

- Custom frequency bands
- Optional fixed LO frequencies
- High output power
- Custom step sizes
- Custom packaging

TYPICAL PHASE NOISE MULTIBAND SYNTHESIZER



MITEQ's Multiband series of synthesizers are designed specifically for application in multiband translators and converters, covering all the up and down SATCOM bands in one unit for use in all C, X and Ku band converters. The unit complies with MIL-STD-188-164A for microphonics, making it ideal for X-band application without any extra testing. Phase Noise requirement as per MIL-STD is met with sufficient margin. With only 14 Watts of power dissipation it is industry state of the art for Phase noise and spur performance, leading to higher reliability in the system.

## MECHANICAL SPECIFICATIONS

|                         |                  |
|-------------------------|------------------|
| Outline drawing .....   | 143230           |
| Size .....              | 12.35"x5"x1.5"   |
| Weight.....             | 5 pounds typical |
| RF connectors.....      | SMA female       |
| Control connector ..... | 20-pin header    |
| DC power .....          | DEM 9P           |

## ENVIRONMENTAL SPECIFICATIONS

|                             |                                                                                                            |
|-----------------------------|------------------------------------------------------------------------------------------------------------|
| Temperature                 |                                                                                                            |
| Operating.....              | -10 to +65°C (Note 7)                                                                                      |
| Storage.....                | -55 to +95°C                                                                                               |
| Humidity.....               | Up to 95% at 40°C<br>Noncondensing                                                                         |
| Shock (nonoperational)..... | 30 Gs, 10 ms pulse                                                                                         |
| Vibration (survival).....   | 20 to 2000 Hz<br>random to .04 G <sup>2</sup> /Hz                                                          |
| Altitude.....               | Up to 13,500 feet                                                                                          |
| 100% testing.....           | Frequency range<br>Output power<br>Discrete power<br>Spectral purity<br>Phase bursts<br>Alarm and monitors |
| 100% screening.....         | Temperature cycle/monitor                                                                                  |

# MULTI BAND SYNTHESIZER

## ELECTRICAL SPECIFICATIONS

| Output frequency range (Note 1)  | C                                                           | X                  | Ku                 | Fixed LO (Note 2) |
|----------------------------------|-------------------------------------------------------------|--------------------|--------------------|-------------------|
| -I                               | 5.910 – 6.710 GHz                                           | 9.760 – 10.260 GHz | 13.210 – 15.26 GHz | 1150 MHz          |
| -II                              | 4.625 – 5.505 GHz                                           | 6.680 – 7.180 GHz  | 12.530 – 13.28 GHz | 1080 MHz          |
| -III                             | 5.700 – 6.500 GHz                                           | 9.550 – 10.050 GHz | 13.250 – 15.05 GHz | 1330 MHz          |
| -IV                              | 5.840 – 6.710 GHz                                           | 9.690 – 10.260 GHz | 13.140 – 15.26 GHz | 1440 MHz          |
| Step size                        | 1 kHz (Note 3, 4)                                           |                    |                    |                   |
| Output power                     | +13 dBm minimum, +18 minimum on C-band                      |                    |                    | +13 dBm           |
| Output power variation           | ±2 dB maximum                                               |                    |                    | ±2 dBm            |
| Input reference frequency        | 10 MHz (Note 5)                                             |                    |                    |                   |
| Input power level                | 0 ±3 dBm                                                    |                    |                    |                   |
| Spurious outputs                 |                                                             |                    |                    |                   |
| In-band                          | -65 dBc minimum                                             |                    |                    | -80 dBc minimum   |
| Out-of-band                      | -65 dBc minimum                                             |                    |                    | -70 dBc minimum   |
| Phase noise                      | See graph (Note 6)                                          |                    |                    | See graph         |
| Offset from carrier              |                                                             |                    |                    | @2580 MHz         |
| 10 Hz                            | -55 dBc                                                     |                    |                    | -68 dBc           |
| 100 Hz                           | -68 dBc                                                     |                    |                    | -95 dBc           |
| 1 kHz                            | -90 dBc                                                     |                    |                    | -100 dBc          |
| 10 kHz                           | -100 dBc                                                    |                    |                    | -100 dBc          |
| 100 kHz                          | -105 dBc                                                    |                    |                    | -115 dBc          |
| 1 MHz                            | -120 dBc                                                    |                    |                    | -135 dBc          |
| 10 MHz                           | -145 dBc                                                    |                    |                    | -140 dBc          |
| Harmonic output                  | -15 dBc                                                     |                    |                    | -20 dBc           |
| Output impedance                 | 50 ohm nominal                                              |                    |                    |                   |
| Load VSWR                        | 1.5:1 maximum, all phases                                   |                    |                    |                   |
| Regulation                       | ±5%                                                         |                    |                    |                   |
| Noise and ripple                 | 10 mV p-p maximum                                           |                    |                    |                   |
| Frequency control                | serial RS485 (4 wire)                                       |                    |                    |                   |
| Acquisition time (to phase lock) | 50 ms typical<br>100 ms maximum                             |                    |                    |                   |
| Summary alarm                    | In lock TTL 1                                               |                    |                    |                   |
| VCO lock voltage                 | 2 – 12 volts                                                |                    |                    |                   |
| DC power requirements            | +15 volts, 0.5 amps maximum<br>+5.2 volts, 1.3 amps maximum |                    |                    |                   |
| Outline drawing                  | 143230                                                      |                    |                    |                   |

### Notes:

1. Custom Frequency bands available.
2. Optional fixed LO frequency available from 600 to 3000 MHz in 10 MHz integers.
3. Custom step size available.
4. Frequency accuracy ± 0.005 ppm.
5. Other reference frequency option available, consult factory.
6. Close in Phase Noise is dependent on reference frequency.
7. Wider operating temperature range available.

## ORDERING INFORMATION:

**MB-\_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_**

Model

Step Size

M or K  
MHz/KHz

Fixed Lo

Example: MB-I-1k-1080 part number for frequency synthesizer covering -I models with a step size of 1 kHz and fixed LO of 1080 MHz.



# MULTI BAND SYNTHESIZER

## MUTI BAND SERIES OUTLINE:

