

SPECIFICATIONS**QUAD FREQUENCY SYNTHESIZER****INTRODUCTION:**

NRL requires a phase-locked synthesizer capable of providing very low phase noise for a set of high-performance receivers. A fully coherent design is required to provide precise synthesis of four Local Oscillator (LO) frequencies needed for the second conversion mixers in two sets of receivers.

KEY REQUIREMENTS

- a. The synthesizer shall create 12 total outputs for the NRL receiver LOs.
- b. 6 outputs shall be identical at either 692.75 MHz or 769.25 MHz, depending on external TTL control.
- c. 6 outputs shall be identical at either 1376.25 MHz or 1453.125 MHz, depending on external TTL control.
- d. All output signals shall be derived from and phase locked to any of the reference signals at 10MHz, 20MHz, and 100MHz available from the NRL timing system.
- e. Must be vibration tolerant and must not be susceptible to microphonic effects.
- f. SMA female connectors, inputs on rear, outputs on front.
- g. Control connector: DB 9 male, pinout to be supplied by vendor.
- h. Packaging: 19 inch rack mount, 2U (3.5 inch) max height, 26 inch max depth, 30lb max weight.

| <u>Electrical Specifications:</u> | <u>Minimum</u> | <u>Type</u> | <u>Maximum</u> | <u>Units</u> |
|---------------------------------------|----------------|-------------|----------------|--------------|
| Input Frequencies | 9.9999 | 10.0000 | 10.0001 | MHz |
| | 19.9999 | 20.0000 | 20.0001 | MHz |
| | 99.9999 | 100.0000 | 100.0001 | MHz |
| Input Power (CW) | plus 0 | plus 3 | plus 6 | dBm |
| Outputs: 6 each UHF, 6 each L-Band | | | | |
| UHF Frequency 1 * | — | 692.75 | — | MHz |
| UHF Frequency 2 * | — | 769.25 | — | MHz |
| L-Band Frequency 1 * | — | 1376.25 | — | MHz |
| L-Band Frequency 2 * | — | 1453.125 | — | MHz |
| Output Power (Adjustable) | plus 0 | plus 3 | plus 6 | dB |
| Output Power Delta | — | 0.3 | 0.7 | dB |
| Output Spurious | — | -100 | -90 | dBc |
| Output Phase Noise Floor @ 100 KHz ** | — | -150 | -140 | dBc/Hz |
| VSWR: | | | | |
| Inputs | — | — | 1.8:1 | |
| Outputs | — | — | 1.8:1 | |
| Supply Power | | — | 120 | — |
| VAC | | | | |
| Supply Frequency | — | 60 | — | Hz |
| Power Dissipation | — | — | 1 20 | Watts |

* — Frequency Selection Control TTL

** — Dependent on Input Noise Floor from Reference Oscillator

DELIVERY: The system shall be delivered no later than 31 August 2004