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SPECIFICATION

FOR

RF Processor Unit

MODEL: RFPU-2568

This specification establishes the performance for the HF RF Processor in the frequency band of 1.5 to 30.

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HF RF Processor Definition

The HF RF processor assembly consist of four (optionally five) independently controlled switch matrices in the frequency range of 1.5 to 30 MHz. There are nine antenna inputs to the RF processor assembly, which are fed to four independent RF switch matrices. Each RF switch matrix has three (3) switched RF outputs used for the WB subsystem.

The RF processor assembly supply control DC voltage to the HF antennae via their RF cables. The DC voltage is used to select the polarization of crossed-loop antenna, when in operation (or optionally, to power the active monopole antennae). At the input antenna connection there will be a bias T.
Internal BIT circuitry used to generate a 2 MHz spacing comb signal for testing. The Comb generator signal shall be either internally injected to each one of the RF switch matrices, or transmitted via a whip type BIT antenna mounted away from the RF processor.

The Reference BIT circuitry used to inject single frequency signal to each Matrix.

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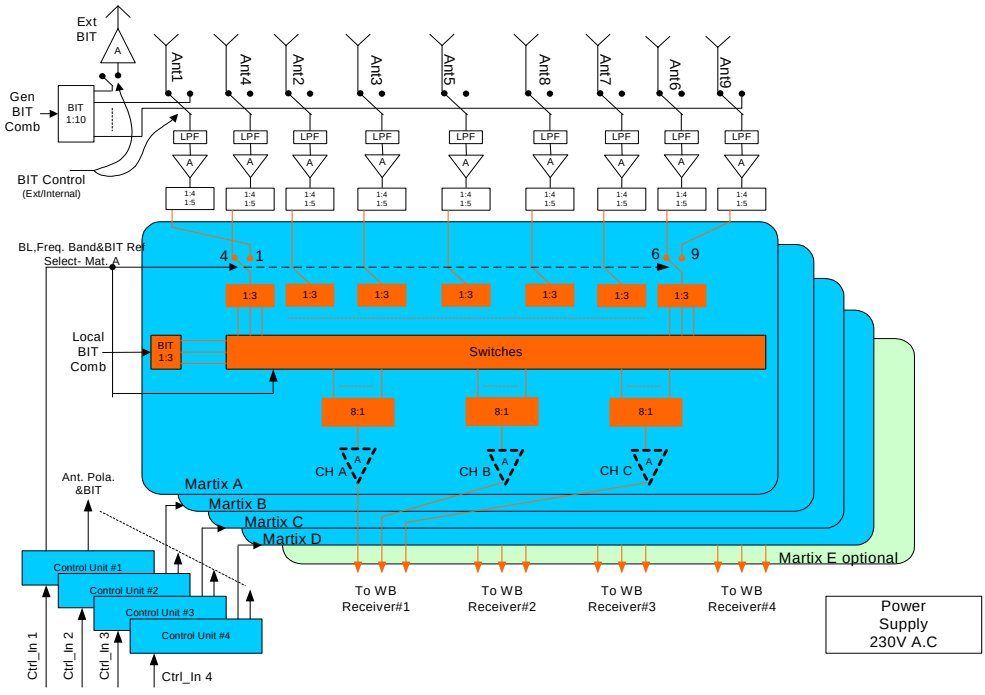
HF RF Processor Diagram

The HF RF processor block diagram is shown.

Each of the antenna inputs are fed to 'Amplifier & Power Splitter' module that include over current protection for each antenna input, antenna bias decoupled, Bit switch, LPF, amplifier and 1:4 (optionally 1:5) Power Divider. The antenna bias circuit accepts DC voltage that cab be controlled by each control circuit (only one at a time) and distributes it to the antenna inputs. This DC voltage shall be fed to the remote HF antennae via their RF cables.

The control circuitry of each internal switch matrix provides the switching controls, according to the user command. Every control circuitry can have the capability to control: Antenna polarization, Internal/External BIT and it's own Matrix Switches (Frequency Band & Ref. BIT).



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The Control circuitry of each of the four Matrices Switches decodes the user command and provides the following controls:

1. Switching controls to its Switching Matrix.
2. Local Comb Generator on/off
3. General Comb Generator control: on/off, transmission or internal injection.
4. DC voltage supply to HF for polarization selection.

<u>Notes:</u> only one out of four Control circuitries at a time can control the BIT and the Polarization operation.
Each control circuit shall receive separate user commands in a synchronous serial format.
*Once a matrix is defined as a **<u>Master,</u>** the appropriate LED will be lighted.*

The Local Comb Generators generate a comb signal upon control from its Interface circuit. This comb signal shall be internally injected at the input to the specific Switching Matrix circuits (Local BIT)

The RF processor assembly includes an internal switching power supply. The power supply AC powered 220V, 50Hz.

Interface Definition

RF Inputs: The RF inputs …… TNC female connectors.

RF Outputs ……. BNC female connectors.

Comb Generator Output

Connector…….TNC connector.

Output Signal
The Comb generator output signal is a 2 MHz spacing comb signal between 1.5 to 30MHz , where each harmonic frequency at a power level of:
Internal injection: -40 dBm minimum at each RF output.
Note: In both internal BIT (local BIT & Internal BIT) cases.
External Injection: -3 dBm minimum at BIT output.

BIT Oscillator frequency stability is +/- 1ppm
BIT Oscillator frequency aging is ≤ +/- 1ppm

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Remote Control

Note: The following control connectors are defined per Matrix Card.

Maintenance Connector…… 9 pin D-type
Maintenance Remote Control Format……RS232 protocol.

Operational Control Connector

The remote control connector ……. D-Type15 pin.

Baseline Switching Time

The maximum baseline switching time .. 50 µsec (BL command included).

Input Power

230 VAC +/-10%, 50 Hz. Maximum input power

Characteristics

These characteristics describe the electrical RF performance, mechanical and environmental of the RF processor.

Electrical Performance

Frequency Range…….. 1.5 to 30 MHz.

No. of Inputs……. 9

No. of RF outputs……. 12 (op 15)

Phase Matching…… +/-3° max

Amplitude Tracking…….. +/-0.5 dB

Noise Figure…….. 5 dB max

Gain…… 6 dB min, 9 dB max.

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Input Intercept Point

2nd Order (1.5 to 30 MHz): …… +46 dBm minimum

2nd Order (88 to 108 MHz):…… +66 dBm minimum

3rd Order (1.5 to 30 MHz):……. +23 dBm minimum.

Maximum RF Input Level…….. +20dBm

VSWR……. 2.0:1 max

Impedance…… 50Ω typical

Isolation……35 dB min

Physical and Mechanical

Dimensions

Height…….. 3U
Width…… 19”
Length…….. 500mm

Weight …….20Kg