

Scope

The purpose of this document is to describe the differences between the Single Band RF Shelf and the Dual Band RF Shelf used in the MC Series System with an FCC ID # of PURMC SERIES10.

Background

As part of FCC rule change WT Docket 02-55, it is necessary to accommodate the 900 MHz frequency band as part of the MC Series system. Nextel must shift some of its operations from the 800 MHz band to 900 MHz band frequencies in order to provide the “green space” necessary to effect reconfiguration of the 800 MHz band.

Comparison of requirements

The Dual Band Shelf must be a backwards compatible replacement for the Single band Shelf. The following is a list of differences between the single and the Dual band RF Shelves:

Specification Differences	Single band	Dual Band
Voltage	-48 VDC	-48 VDC
Current	2 Amps	2.6 Amps
Power Consumption	96 Watts	125 Watts
Frequency	851 - 869 MHz	851 - 869 MHz and 935 - 940 MHz
Input RF power	-9 dBm/carrier	-9 dBm/carrier
Output RF Power	+10/carrier	+10/carrier
Major Component differences	Single Band	Dual Band
DC - DC Converters	(1) 15V LDO, (3) 12V LDO, (2) 28V	(1) 15V LDO, (2) 28V, (2) 12V LDO
Rf Attenuators	Externally Controlled	Internally and software controlled
Maintenance Port	Serial	Serial/Ethernet
LNA Frequency Band	806 - 825 MHz	806-825/896-901MHZ
Power Amplifier Frequency Band	850-870 MHz	850 to 870MHz, 935 to 940 MHz
Power Amplifier Average Output Power	33 dBm	33dBm

Summary of Requirements

The differences between the two units are transparent with exception to the attenuation adjustment method and the Voltage/Current ratings. The main changes are a new RF Dual Band amplifier, change from a Rotary Step Attenuator to a software controlled attenuator and some various changes to the maintenance ports for the controlling software. Even though the system will be capable of passing frequencies in the 935 - 940 MHz band, this functionality is reserved for future use. The RF properties are identical between both shelves with the exception of the Frequency bands. Relative to EMI, the test data taken by NWEMC has depicted that there are no significant differences between the two units. As far as safety is concerned, the unit has only increased the total power

consumption of the MC Series system by 29 watts and the thermal tests show no significant increase in temperature. This system should be accepted as a class 2 Permissive change per FCC 2.1043(a), since there are no changes to the basic frequency determining and stabilizing circuitry (including clock or data rates), frequency multiplication stages, basic modulator circuit or maximum power or field strength ratings.