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X-Band 200kW SiDPol

Waveguide Assembly

Interface Control Document

APPENDIX A INTERFACE CONTROL DOCUMENTS (ICD)

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US 6,859,163.
US 6,803,875.
US 7,049,997

Various additional domestic and international patents have been applied for.

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1.0 Introduction

This document details the electrical interface requirements for the EEC-131303-100 X-Band 200 kW Waveguide Assembly.

2.0 Hardware Description

The waveguide assembly consists of the following major components

1. Circulation
2. Low-power load
3. Bi-directional Coupler
4. Double Stub Tuner

2.1 Assembly Specification

NOTE

THE DATA VALUES CONTAINED HEREIN ARE TYPICAL AND NOT TO BE CONSIDERED ABSOLUTE.

FUNCTION	VALUE	LIMIT	COMMENT
Frequency Range	8300 - 9600 MHz.		
Waveguide Type	WR112		
RF Peak Power	83 dBm	Maximum	
RF Average Power	63 dBm	Maximum	5 kW
T/R Recovery	5.0 µsec	Nominal	
VSWR	1.25:1	Maximum	
Input to Output Isolation	20 dB	Nominal	
Input Connector	UG-52 A/U	Or equivalent	Drilled out 8 places 7/32” diame -ter.
Output Connector	UG-52 A/U	Or equivalent	
Forward Sample Connector	Type “N”	RF –32 dB nominal	
Reverse Sample Connector	Type “N”	RF -32 dB nominal	
Pressurization	4 psig	Minimum	
	15 psig	Maximum	

2.2 Component Specification

2.2.1 Circulator

The Circulator is a 4-port phase shift isolator used in conjunction with a low-power load.

2.2.2 Bi-directional Coupler

The Bi-directional Coupler is a coupled wall cavity device which samples the forward and reflected (reverse) RF power and provides outputs via type "N" connectors. The typical sample values are; Forward Power = -32 dB, Reverse Power = -32 dB.

2.2.3 Double Stub Tuner

The Double Stub Tuner provides a method to compensate for waveguide variations. It is used to match impedance so as to achieve the lowest possible Voltage Standing Wave Ration (VSWR).