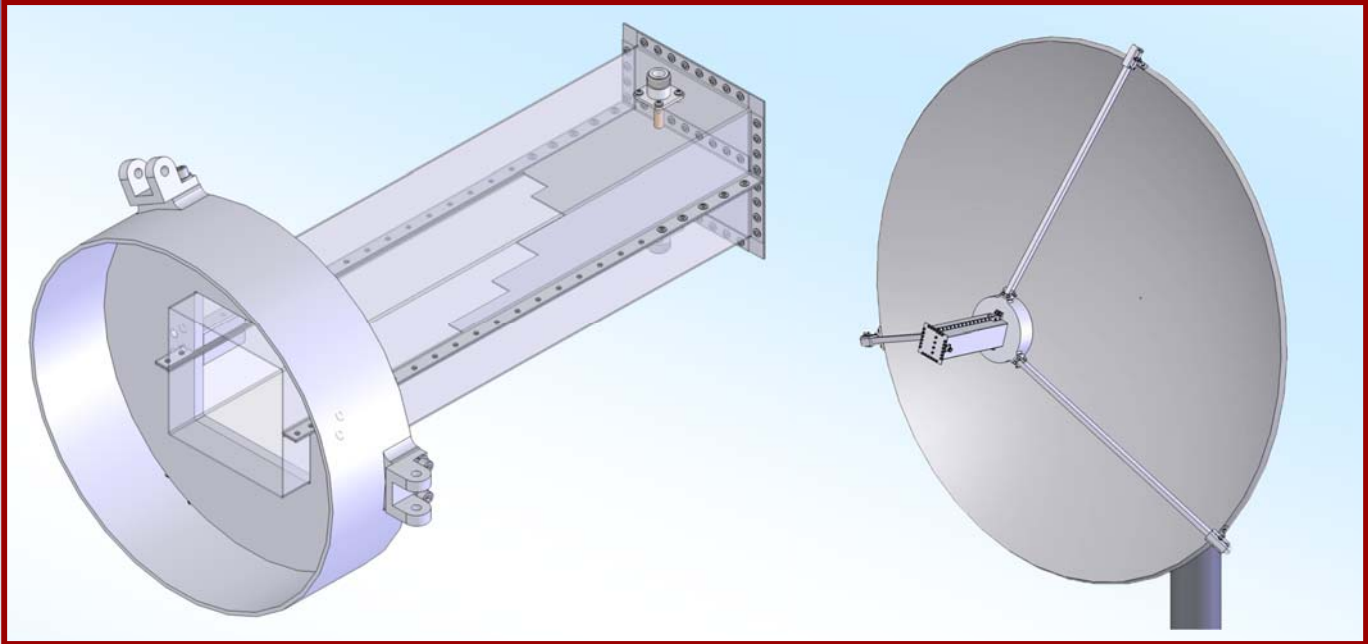




M2 Antenna Systems, Inc. Model No: 1.8 GHz SEPTUM FEED



SPECIFICATIONS:

MODEL NUMBER	1.8 GHz SEPTUM CIRCULAR DISH FEED
FREQUENCY COVERAGE	1.7 to 1.85 GHz
OPTIMUM DISH F/D RATIO	0.3 TO 0.45
SYSTEM EFFICIENCY	50 To 65%
ISOLATION BETWEEN PORTS.....	<11 DB
ELLIPTICITY	2.0 DB
POLARITY.....	RHC & LHC
CONNECTOR	"N" FEMALE
DIMENSIONS	17"X 4.2" X 4.2"
WEIGHT	4.5 lbs.

***Subtract 2.14 from dBi for dBd**

FEATURES:

The **1.8 GHz Septum Circular Dish Feed** offers many advantages over standard feed assemblies. The **1.8 GHz Septum Circular Dish Feed** has an extremely compact element design and has very good isolation between both LHC and RHC ports. Currently three frequencies are available, but the feed is scalable for your custom application. Custom spar leg mounts are also available for your specific dish size. Contact M2 Antenna Systems, Inc. with your requirements and we will help you put together a complete turnkey system.

1.8 SEPTUM DISH FEED TESTS

M2 ANTENNA SYSTEMS IN HOUSE TESTING REPORT

SYSTEM UNDER TEST: 6 FT. DISH .375 F/D (PACIFIC RADOMES) W/ 1.8 GHz SEPTUM FEED HORN W/ MODIFIED SCALAR RING.

TEST EQUIPMENT: AGILENT TECH. E5071C NETWORK ANALYZER

REFERENCE AND SOURCE ANTENNAS: REF. HORNS 1.6 TO 2.7 GHz @ 14.8 DBI GAIN @ 1.8 GHz

6 FT DISH EFFICIENCY @ 54 %: 28 DBI

LINEAR TO CP CORRECTION: 3 DB. Note: Since the dish system circularity is not perfect (ellipticity),

The NET GAIN variation noted below can be partially attributed to whether the reference horns were mounted for vertical or horizontal polarization. The gain dip found in most measurements at band center appears to be a range anomaly as dish gain across the 1.75 to 1.85 frequency range should be linear and rise slightly from low to the high frequency. VSWR of feed horn is 1.2: or better from 1.75 to 1.85 GHz

TEST RANGE DESCRIPTION:

The test range consisted of the dish mounted on a azimuth and elevation system with septum feed and scalar ring mounted at bore site with an up tilt of 19 deg. The reference antenna was placed at 4 ft from the center of the dish with an up tilt of 19 deg. The source was placed on a tower with the cross boom perpendicular to the range path. The source antenna was then positioned 10 to the right of the tower apex at a height of 39 ft with a down tilt of 19 deg. The distance from the dish rim to the tower base was 111 ft. The path from source antenna to dish and reference antenna was approximately 115 ft. The coax used between sources and references was Times LMR-400 w/ "N" male connectors. The range was normalized to 0.0 dB with the two reference horns facing each other. The sensing reference horn was then disconnected and the sensing cable attached to the septum feed on the dish. The other dish feed port was terminated in 50 Ohms. Dish pointing was optimized and relative readings taken at the 1.75 GHz, 1.80 GHz and 1.85 GHz. This same procedure was repeated for 4 different tests. The results are below. The net gain is then found by adding up the 3 values on each line by frequency.

TEST #	SEPTUM FREQ. & RELATIVE GAIN	REFERENCE ANTENNAS POLARITY AND ADJUSTED GAIN	LIN TO CP CORRECTION	NET DISH GAIN	RANGE DISTANCE
1 RHC	1.75 10.5DB	14.4 DBI V	+3 DB	27.9 DBI	115 FT.
	1.80 9.9 DB	14.8 DBI V		27.7 DBI	
	1.85 10.2 DB	15.2 DBI V		28.4 DBI	
2 LHC	1.75 10.6 DB	14.4 DBI V	+3 DB	28.0 DBI	115 FT.
	1.80 10.0 DB	14.8 DBI V		27.7 DBI	
	1.85 10.3 DB	15.2 DBI V		28.5 DBI	
3 RHC	1.75 9.4 DB	14.4 DBI H	+3 DB	26.8 DBI	115 FT.
	1.80 8.9 DB	14.8 DBI H		26.7 DBI	
	1.85 9.9 DB	15.2 DBI H		28.1 DBI	
4 LHC	1.75 9.6 DB	14.4 DBI H	+3 DB	27.0 DBI	115 FT.
	1.80 8.9 DB	14.8 DBI H		26.7 DBI	
	1.85 10.0 DB	15.2 DBI H		28.2 DBI	

1.8 SEPTUM DISH FEED TESTS

M2 ANTENNA SYSTEMS IN HOUSE TESTING REPORT OF 1.8 SEPTUM DISH FEED

TEST BEING PREFORMED: RHC PORT TO LHC PORT ISOLATION

1.75 GHz	14.7 dB
1.80 GHz	10.9 dB
1.85 GHz	11.4 dB

SYSTEM UNDER TEST: 6 FT. DISH .375 F/D (PACIFIC REDOMES) W/ 2.3 SEPTUM FEED HORN W/ MODIFIED SCALAR RING.

TEST EQUIPMENT: AGILENT TECH. E5071C NETWORK ANALYZER

TEST DESCRIPTION:

With the septum horn mounted in the dish at the proper focal point of all other measurements, two cables to the RHC and the LHC connectors were coupled together using an 'n' barrel. The network analyzer was then normalized to 0.0 across the 1.75 to 1.85 GHz frequency range. One cable was then attached to the RHC feed connector and the other to the LHC connector and the measurements taken are shown above.

1.8 SEPTUM DISH FEED TESTS

M2 ANTENNA SYSTEMS IN HOUSE TESTING REPORT

TEST BEING PERFORMED:RHC / LHC ELIPTICITY

SYSTEM UNDER TEST: 6 FT. DISH .375 F/D (PACIFIC REDOMES) W/ 1.8 SEPTUM FEED HORN W/ MODIFIED SCALAR RING.

TEST EQUIPMENT: AGI LENT TECH. E5071C NETWORK ANALYZER

SOURCE ANTENNA: STANDARD HORN @ 14.8 DBI GAIN @1.8 GHz

TEST RANGE DESCRIPTION:

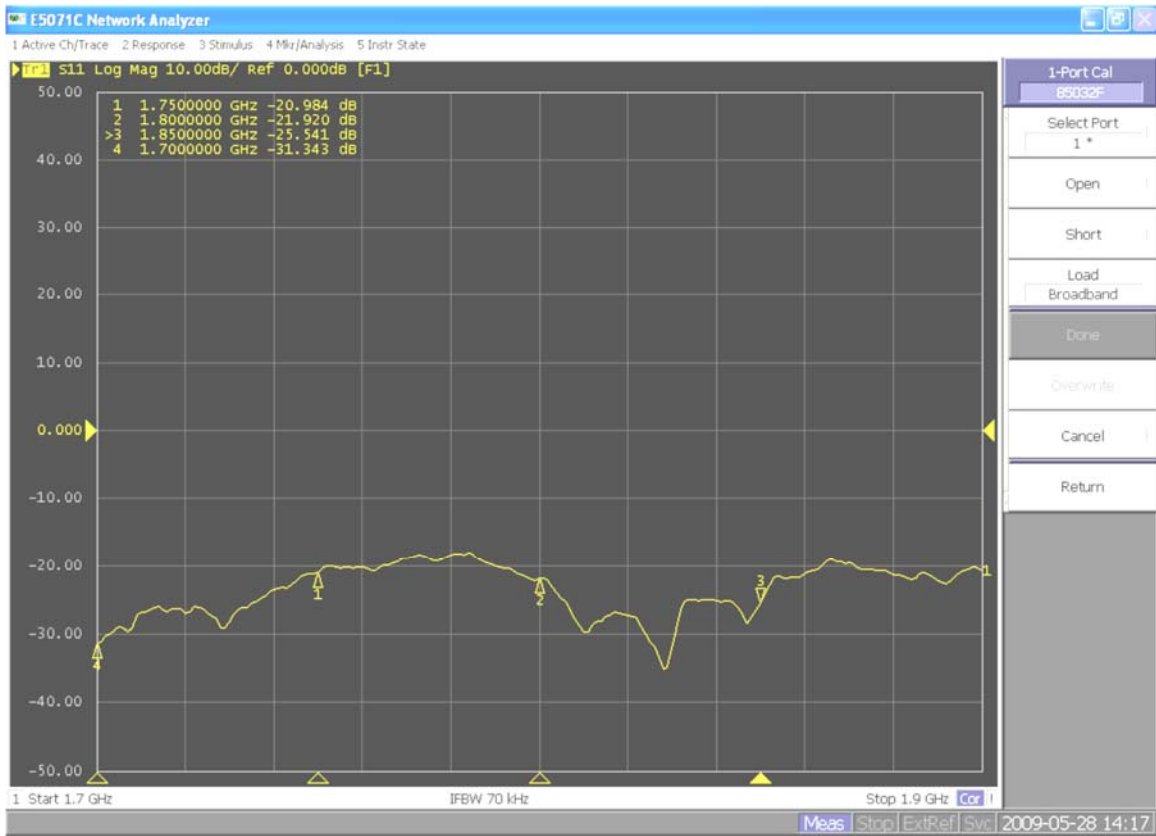
The test range consisted of the dish mounted on a azimuth and elevation system with septum feed and scalar ring mounted at bore site with an up tilt of 90 deg. A linear source was placed on a tower with 10 foot cross boom perpendicular to the range path. The source antenna was then placed 10 ft from the towers apex at a height of 32 ft looking straight down over the dish system. The coax used between sources and septum dish feed was Times LMR-400 w/ "N" male connectors.

The dish system was turned in azimuth and Measurements in DB gain were taken at every 45 deg increment of both RHC and LHC at the septum feed horn. Looking at the highs and lows of the gain readings shows an approximate elipticity of under 2 DB.

AZI-MUT H IN DEG.		LHC SEPTUM READING IN DB GAIN	RHC SEPTUM READING IN DB GAIN
0 DEG.	1750 MHZ	0	0
	1800 MHZ	0	0
	1850 MHZ	0	0
45 DEG.	1750 MHZ	-6	1.6
	1800 MHZ	-4	1.7
	1850 MHZ	-2	1.7
90 DEG.	1750 MHZ	.4	.7
	1800 MHZ	1.0	1.0
	1850 MHZ	.6	1.0
135 DEG.	1750 MHZ	.5	-1.0
	1800 MHZ	.9	-1.0
	1850 MHZ	.3	-7
180 DEG.	1750 MHZ	-2	.4
	1800 MHZ	-2	.2
	1850 MHZ	-1	.4
225 DEG.	1750 MHZ	-5	1.7
	1800 MHZ	-1	1.9
	1850 MHZ	-2	1.9
270 DEG.	1750 MHZ	.3	.9
	1800 MHZ	1.0	1.0
	1850 MHZ	.8	1.0
315 DEG.	1750 MHZ	1.1	-7
	1800 MHZ	1.7	-4
	1850 MHZ	1.3	-5

1.8 SEPTUM DISH FEED TESTS

VSWR CHART LHC PORT



VSWR CHART RHC PORT

