



To: Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Subject: Revision to antennas used during experiment

Reference: STA File Number: 0130-EX-ST-2004, Conf Number EL14199
Call Sign: WB9XWJ

Date: 20 June 2004

Gentlemen,

Metrofi would like to add an additional antenna to the STA referenced above. This antenna will temporarily replace some of the 5 GHz directional antennas being used during the evaluation.

There is some additional development required for the 5 GHz directional antennas and omni antennas are being used temporarily until the development of the 5 GHz directional antenna is complete. At that time the omni antennas will be replaced.

FCC 15.247 COMPLIANCE:

FCC Part 15.247 (under which the radios will be certified) allows up to 36 dBm EIRP within the 5.8 GHz ISM band for point-to-multipoint systems. The omni antenna being used is a MAXRAD MFB58009 (See attached data sheet, pattern and picture). The gain of this antenna at 5.8 GHz is rated at 9dBi (6.85 dBd)

As outlined previously in the Metrofi public exhibit dated 21 March 2004, the maximum transmit power on the 5.8 GHz band is .5 W (27 dBm). Neglecting cable loss between the RF output and the antenna yields a 5.8 GHz EIRP of:

$$27 \text{ dBm} + 9 \text{ dBi} = 36 \text{ dBmEIRP (4 W EIRP)} \qquad 33.85 \text{ dBm ERP (2.426 W ERP)}$$

Though the EIRP is right at the FCC limit, this is a “worst case” estimate due to the fact that there is some cable loss between the RF output and the antenna so in reality, the EIRP will be slightly lower.

If additional information / clarification is required, I must ask you to contact Bill Levan (blevan@metrofi.com) and/or Dr. Adam Schwartz (aschwartz@metrofi.com) as I will be out of the country on vacation until 19 July. Please CC me on any/all emails (david@waitt.us).

Regards,

David Waitt
Consultant Representing MetroFi
david@waitt.us

PCS, 2.4 GHz ISM, MMDS and 5.8 GHz ISM/UNII Omnidirectional Base Station Antenna Series

The MAXRAD XtremeWave™ wireless broadband omnidirectional antennas are designed to provide maximum performance and reliability under the toughest weather conditions. These antennas feature a UV stable, vented radome that provides ultimate protection against weather elements. These antennas can be mast, wall or ceiling mounted.

General Specifications:

Radome Material:

UV resistant pultruded fiberglass

Polarization:

Vertical

Lightning Protection:

Not standard, but all models can be ordered with DC grounding. Add a "DC" suffix to the part number to choose the DC grounded version of the antenna.

Nominal Impedance:

50 Ohms

Mounting Base Diameter:

1.25 inches (all models except MFB24012)

1.5 inches (model MFB24012)

Mounting Method (sold separately):

MMK1924 - L-bracket mount for wall or pipe mount (all models, except MFB24010 and MFB24012)

MMK8 - Aluminum extruded bracket for mast mounting (all models, except model MFB24012)

MMK11 - Ceiling mount bracket (for MFB24004, MFB24006 and MFB24008 only)

MMK12 - Heavy duty bracket for mast mounting the MFB24012

MMK14 - Light duty mounting clamp for MFB24012

Termination:

N female standard with all models, except MFB24012 and MFB58009PTNM

N female, reverse polarity and reverse threaded connectors optional

16" RG-213 pigtail with N female connector for model MFB24012 only

5' LMR400 pigtail with N male connector for model MFB58009PTNM only

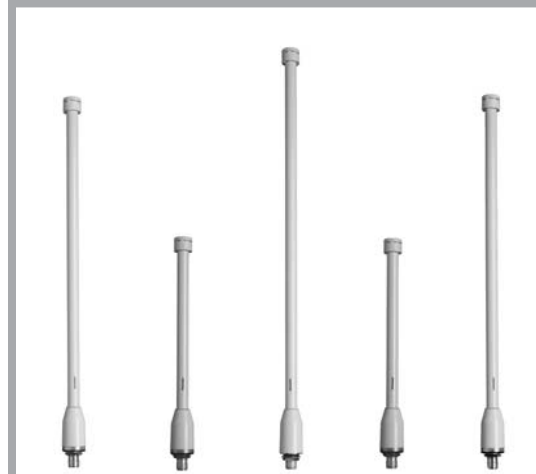
N male connector option available with models MFB58009, MFB24010, MFB24008, MFB24006 and MFB19008. To order, add "NM" to part number.

Features and Benefits:

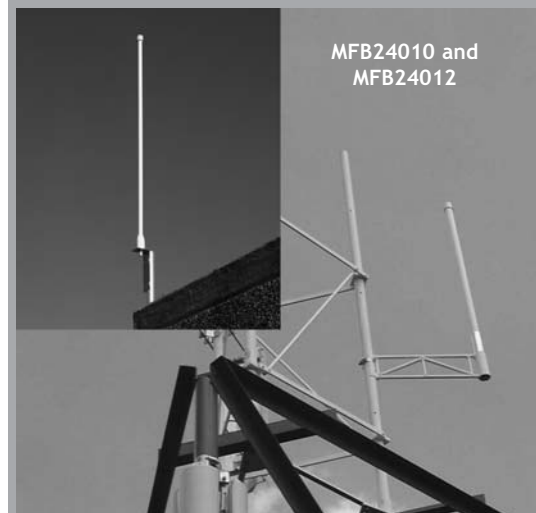
- UV stable, pultruded fiberglass radome. Allows outdoor installation even in harsh climates. Vented system design. Provides reliable performance by protecting the electrical design against extreme moisture and/or temperatures.
- Thread relief on connector (all models, except MFB24012 and MFB58009PTNM which have pigtails). Improved accessibility for taping reduces installation time and improves overall effectiveness.
- Internal o-ring seal in the base of the antenna with integrated connector at the base. Assures a watertight seal to prevent water from migrating into the antenna connector (all models, except MFB24012 which has a pigtail).
- Electrical downtilt options on select models. Provide system planners flexibility in challenging operating environments.



XtremeWave™ MFB24012



XtremeWave™ Models 25007 (MMDS), MFB58009 (5.8 GHz ISM) and MFB19008A (PCS), MFB24006 and MFB24008 (2.4 GHz ISM) Antennas



MFB24010 and
MFB24012

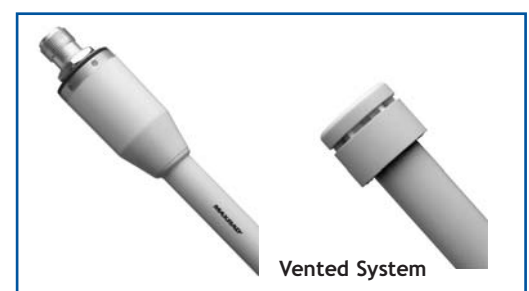
Specifications

Electrical Specifications

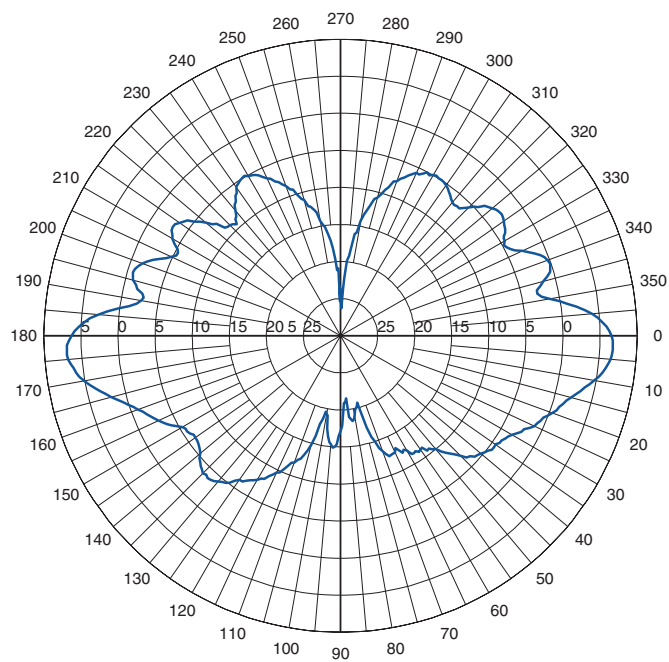
Model #	Frequency Range	Gain	Bandwidth @ 1.5:1 VSWR	Vertical Beamwidth @ 1/2 Power	VSWR	Maximum Power	Downtilt
MFB19008A	1850-1990 MHz	8 dBi	140 MHz	12°	< 1.5:1	25 Watts	N/A
MFB24004	2400-2483.5 MHz	4 dBi	100 MHz	30°	< 1.5:1	25 Watts	N/A
MFB24006	2400-2483.5 MHz	6 dBi	100 MHz	20°	< 1.5:1	25 Watts	N/A
MFB24008	2400-2483.5 MHz	8 dBi	100 MHz	13°	< 1.5:1	25 Watts	N/A
MFB24008DT3	2400-2483.5 MHz	8 dBi	100 MHz	13°	< 1.5:1	25 Watts	3°
MFB24008DT5	2400-2483.5 MHz	8 dBi	100 MHz	13°	< 1.5:1	25 Watts	5°
MFB24008DT7	2400-2483.5 MHz	8 dBi	100 MHz	13°	< 1.5:1	25 Watts	7°
MFB24008DT12	2400-2483.5 MHz	8 dBi	100 MHz	13°	< 1.5:1	25 Watts	12°
MFB24010	2400-2483.5 MHz	10 dBi	100 MHz	9°	< 1.5:1	25 Watts	N/A
MFB24012	2400-2500 MHz	12 dBi	100 MHz	7°	< 1.5:1	25 Watts	N/A
MFB25007	2500-2700 MHz	7 dBi	200 MHz	13°	< 1.5:1	25 Watts	N/A
MFB25007DT3	2500-2700 MHz	7 dBi	200 MHz	13°	< 1.5:1	25 Watts	3°
MFB51510	5150-5350 MHz	10 dBi	200 MHz	7°	< 1.8:1	25 Watts	N/A
MFB58009	5725-5875 MHz	9 dBi	150 MHz	8°	< 1.5:1	25 Watts	N/A
MFB58009PTNM	5725-5825 MHz	9 dBi	100 MHz	6°	< 1.5:1	25 Watts	N/A
MFB58010	5725-5825 MHz	10 dBi	100 MHz	6°	< 1.5:1	25 Watts	N/A

Mechanical Specifications

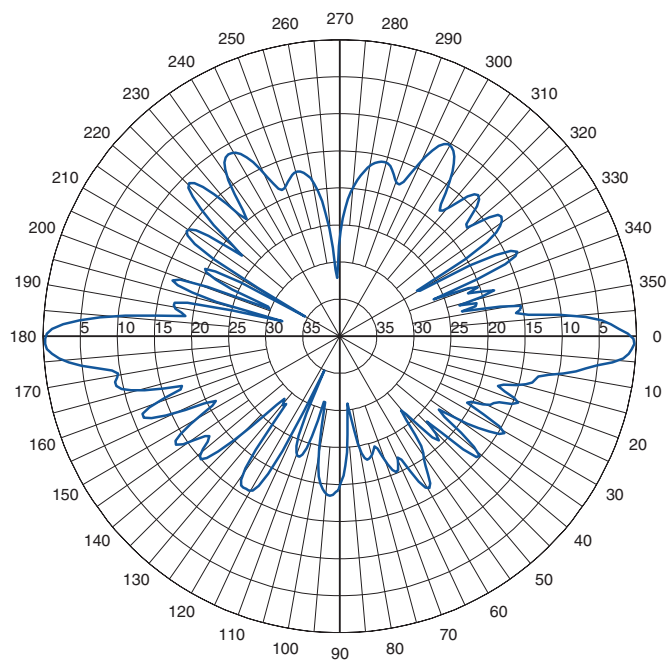
Model #	Wind Survival	Equivalent Flat Plate Area	Lateral Thrust @ Rated Wind	Bending Moment @ Rated Wind	Height	Weight
MFB19008A	125 mph	.07 ft ²	5.9 lbs	5.7 ft-lbs	24.0" (609.6 mm)	0.70 lbs (0.318 kg)
MFB24004	125 mph	.02 ft ²	2.1 lbs	0.7 ft-lbs	8.1" (205.7 mm)	0.34 lbs (0.154 kg)
MFB24006	125 mph	.04 ft ²	3.0 lbs	1.4 ft-lbs	11.6" (294.6 mm)	0.38 lbs (0.172 kg)
MFB24008	125 mph	.06 ft ²	5.2 lbs	4.4 ft-lbs	20.2" (513.1 mm)	0.50 lbs (0.226 kg)
MFB24008DT3	125 mph	.06 ft ²	5.2 lbs	4.4 ft-lbs	20.2" (513.1 mm)	0.50 lbs (0.226 kg)
MFB24008DT5	125 mph	.06 ft ²	5.2 lbs	4.4 ft-lbs	20.2" (513.1 mm)	0.50 lbs (0.226 kg)
MFB24008DT7	125 mph	.06 ft ²	5.2 lbs	4.4 ft-lbs	20.2" (513.1 mm)	0.50 lbs (0.226 kg)
MFB24008DT12	125 mph	.06 ft ²	5.2 lbs	4.4 ft-lbs	20.2" (513.1 mm)	0.50 lbs (0.226 kg)
MFB24010	125 mph	.11 ft ²	10.1 lbs	14.7 ft-lbs	36.0" (914.4 mm)	0.65 lbs (0.295 kg)
MFB24012	125 mph	.25 ft ²	22.4 lbs	41 ft-lbs	44.0" (1,118 mm)	3.00 lbs (1.400 kg)
MFB25007	125 mph	.06 ft ²	5.2 lbs	4.4 ft-lbs	20.2" (513.1 mm)	0.50 lbs (0.226 kg)
MFB25007DT3	125 mph	.06 ft ²	5.2 lbs	4.4 ft-lbs	20.2" (513.1 mm)	0.50 lbs (0.226 kg)
MFB51510	125 mph	.06 ft ²	5.2 lbs	4.4 ft-lbs	20.2" (513.1 mm)	0.50 lbs (0.226 kg)
MFB58009	125 mph	.046 ft ²	4.1 lbs	2.7 ft-lbs	15.7" (398.8 mm)	0.43 lbs (0.195 kg)
MFB58009PTNM	125 mph	.06 ft ²	5.2 lbs	4.4 ft-lbs	20.2" (513.1 mm)	0.50 lbs (0.226 kg)
MFB58010	125 mph	.06 ft ²	5.2 lbs	4.4 ft-lbs	20.2" (513.1 mm)	0.50 lbs (0.226 kg)



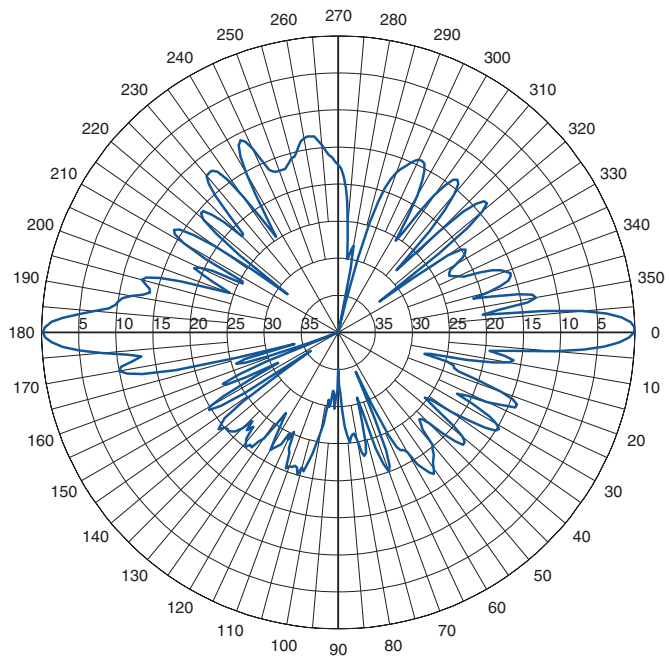
Patterns



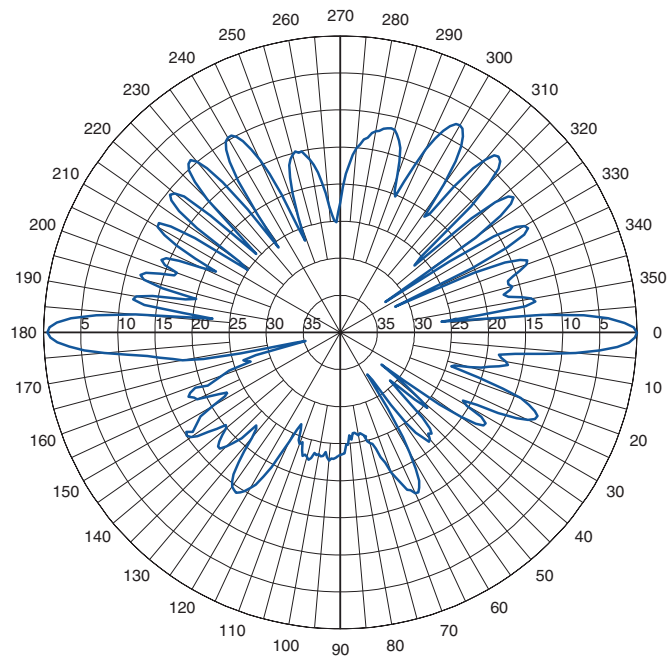
MFB25007DT3 Elevation Cut



MFB58009 Elevation Cut



MFB58009PTNM and MFB58010 Elevation Cut



MFB51510 Elevation Cut

1.9 GHz, 2.4 GHz, 2.5 GHz and 5.8 GHz omnidirectional Base Station Antennas for PCS, MMDS, ISM, 802.11a, 802.11b and 802.11g Applications

