1196 Borregas Ave., Sunnyvale, CA 94089-1302, USA
Tel: +1 (408) 542-5200, Fax: +1 (408) 542-5300

STATEMENT THAT HZB-U5358-155 (UNII) RADIOS MUST BE PROFESSIONALLY INSTALLED AND SO IS EXEMPT FROM THE ANTENNA RESTRICTIONS OF FCC PART 15.203, INCLUDING INFORMATION ON ANTENNAS USED FOR TESTING

This letter is submitted with regards to professional installation of the HZB-U5358-155 (UNII) radio and the antennas used for testing. The HZB-U5358-155 (UNII) radios must be professionally installed and so is exempt from the antenna restrictions of FCC Part 15.203. The HZB-U5358-155 (UNII) radio is a product manufactured by Western Multiplex in Sunnyvale, California.

The HZB-U5358-155 (UNII) radio is to be certified for operation under Part 15.407 of the FCC Rules in the 5.25-5.35 GHz and 5.725-5.825 GHz band. This equipment is designed for point-to-point communications and will only carry data signals using an OC3 interface. Due to the unique requirements of installation and integration of these systems, typical consumers or businesses will not have the proper training required for successful implementation of these systems.

The HZB-U5358-155 (UNII) is not designed for use by the general public, and will be sold as follows:

- Through the Western Multiplex sales force to professional communications users in the following categories: electric power utilities, cellular telephone operating companies, personal communication service operating companies, regional Bell operating companies, oil and gas exploration and transmission companies, railroad companies, federal, state and local government agencies, or
- Through designated and professionally trained Western Multiplex Value Added Resellers to business users under individual reseller agreements.

These companies will either use their professional telecommunications engineering staff to carry out the installation or will subcontract to professional installation firms. On occasion, a professional installation firm will purchase the HZB-U5358-155 (UNII) radios directly.

The HZB-U5358-155 (UNII) radio will be used for fixed, permanent or temporary, outdoor links requiring the use of directional antennas at 5.2-5.8 GHz, which tend to be mounted on towers. These antennas will have narrow beam-widths and require professional installers to align them.

In addition, the HZB-U5358-155 (UNII) radio must be set up for the specific line interface required during installation. This procedure must be carried out by a qualified professional installer for the equipment to operate properly.

The output power of the HZB-U5358-155 (UNII) radio will be adjusted to meet any applicable EIRP limits by the professional installer during installation. The method of adjusting the output power is described in the manual written for use by professional trained installers.

The HZB-U5358-155 (UNII) radio is a full-duplex device with a common transmit/receive port. The addition of an external amplifier to boost the transmit power would disable the receive signal,

thus rendering the HZB-U5358-155 (UNII) radio inoperable. In addition, high power amplifiers (not generally available at 5.2-5.8 GHz) cannot be used without ensuring that signal saturation does not occur (because this would produce unrecoverable deterioration of the receive signal). Thus, a non-professional installer could not accomplish the addition of an amplifier.

The HZB-U5358-155 (UNII) radio is typically sold without an antenna, and the customer and/or installation engineer chooses from commercially available antennas. From time to time, Western Multiplex may sell a commercially available antenna along with the HZB-U5358-155 (UNII) radio upon customer request.

Western Multiplex has also included detailed instructions on how to determine the maximum output power based on EIRP limits for all professional installers to follow.

Caroline Yu

International Product Manager
Western Multiplex Corporation

Antenna Type	Manufacturer	Model Number	Mid-band Gain (dBi)	Notes
1 Foot Flat Panel	Gabriel	DFPD1-52	23.5	
	Andrew	FPA5250D12-N	23.6	
2 Foot Flat Panel	Gabriel	DFPD2-52	28	
	Andrew	FPA5250D24-N	28.2	
2 Foot Parabolic	Gabriel	SSP2-52B	28.5	
	Gabriel	SSD2-52A	28.4	
	Gabriel	HSSP2-52	28.1	
	Radio Waves	SP2-5.2	28.3	
	Radio Waves	SPD2-5.2	28.1	
	Andrew	P2F-52	29.4	
	Andrew	PX2F-52	29.4	
3 Foot Parabolic	Radio Waves	SP3-5.2	31.4	
	Radio Waves	SPD3-5.2	31.1	
	Andrew	P3F-52	33.4	
	Andrew	PX3F-52	33.4	
4 Foot Parabolic	Gabriel	SSP4-52A	34.2	
	Gabriel	SSD4-52	34.1	
	Gabriel	HSSP4-52	33.9	
	Radio Waves	SP4-5.2	34.6	
	Radio Waves	SPD4-5.2	34.4	
6 Foot Parabolic	Gabriel	SSP6-52A	37.5	
	Gabriel	SSD6-52	37.4	
	Gabriel	HSSP6-52	37.2	
	Radio Waves	SP6-5.2	37.7	
	Radio Waves	SPD6-5.2	37.5	
8 Foot Parabolic	Gabriel	SSP8-52	39.8	
	Gabriel	SSD8-52	39.7	
	Gabriel	HSSP8-52	39.6	

Formula for determining maximum output power setting at the antenna input for 5.25-5.35 GHz Transmitters (@ EIRP=30dBm)

Max Tx (dBm) is the lesser of 3.6dBm and 30 - G

Formula for determining maximum output power setting at antenna input for 5.725-5.825 GHz Transmitters (@ EIRP=46.8dBm):
Max Tx (dBm) is the lesser of the 17.1Bm and 53 - G

where: G = Antenna Gain
Tx is the output power measured at the antenna input

Note:
All Western Multiplex radios require professional installation.
Antennas with gain less than 23.5 dBi are not allowed
Antennas of other make may be used with the HZB-U5358-155 device, but must be of the same type, dimensions and gain as those listed

Standard & High Performance Plane - Dual Polarized Unlicensed "NII" and Spread Spectrum / "ISM" Bands

(National Information Infrastructure) (Industrial, Scientific & Medical)

Facts & Features

- Gabriel Quality and Dependability.
- Innovative Feed Design.
- Feed input is Type N Female, 50 ohm.
- Isolation is 35 dB on Dual Polarized models.
- Optional radomes available.
- 2 ft. (0.6) model feeds are installed from the front of the antenna. 4 ft. (1.2), 6 ft. (1.8) and 8 ft. (2.4) model feeds are installed from the rear of the antenna, and allow for inspection or replacement from the rear.

  These models allow for smooth polarization adjustment from the back of the antenna.
- Gabriel's Quick Align Mount comes standard on the SSP2, SSD2 and HSSP2 models. This mount allows for quick installation and easy alignment of the antenna with two hand tools. The Quick Align Mount will mount to a 1.9 - 4.5 in OD mast pipe.
- New environmentally pleasing neutral colors.
- Dual band models are available.

Gabriel "UNII" and "ISM" Band
2-ft. (0.6 m) - Plane Polarized - Standard Parabolic Antenna

Associated Equipment Information **Pages**
Point-to-Point Antenna Specifications ..... 14 - 111
Special Application Antennas ..... 135 - 145
Antenna Mounts & Reference Dimensions ..... 112 - 134
Radomes ..... 122 - 124
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Dry Air Pressurizers ..... 244 - 253

Electrical Specifications

Frequency GHz	Model Number	Size ft	Size (m)	Standard	Gain at Low	Gain at Mid dBi	Gain at High	Nominal Mid-Band Beamwidth degrees	XPD dB	F/B ratio dB	VSWR max.	(R.L. dB)
Standard - Plane Polarized												
5.250 - 5.850	SSP2-52B	2	(0.6)	-	28.1	28.5	29.0	6.1	25	38	1.50	(14.0)†
	SSP4-52A	4	(1.2)	-	33.6	34.2	34.6	3.1	30	46	1.50	(14.0)†
	SSP6-52A	6	(1.8)	-	37.0	37.5	38.0	2.1	30	49	1.50	(14.0)†
	SSP8-52	8	(2.4)	-	39.4	39.8	40.3	1.6	30	52	1.50	(14.0)†
Standard - Dual Polarized												
5.250 - 5.850	SSD2-52A	2	(0.6)	-	28.0	28.4	28.9	6.1	30	38	1.50	(14.0)†
	SSD4-52	4	(1.2)	-	33.5	34.1	34.5	3.1	30	46	1.50	(14.0)†
	SSD6-52	6	(1.8)	-	36.9	37.4	37.9	2.1	30	49	1.50	(14.0)†
	SSD8-52	8	(2.4)	-	39.3	39.7	40.2	1.6	30	52	1.50	(14.0)†
High Performance - Plane Polarized												
5.250 - 5.850	HSSP2-52	2	(0.6)	-	27.7	28.1	28.6	6.1	30	43	1.50	(14.0)†
	HSSP4-52	4	(1.2)	-	33.3	33.9	34.3	3.1	30	50	1.50	(14.0)†
	HSSP6-52	6	(1.8)	-	36.7	37.2	37.7	2.1	30	58	1.50	(14.0)†
	HSSP8-52	8	(2.4)	-	39.2	39.6	40.1	1.6	30	62	1.50	(14.0)†

See the Special Application section of this catalog for Gabriel's Directional Flat Panel antennas for Spread Spectrum operation.

NOTE:
† Improved VSWR available.
Product information subject to change without notice.

5 GHz - Spread Spectrum / NII Band Directional Flat Panel Antenna

(for Point-to-Point applications)

Facts & Features

- Gabriel Quality and Dependability.
- Lightweight and durable construction.
- Quick and easy installation.
- Feed input, Type N Female connector. (Other types available on request.)
- Input connector positioned on back of antenna assembly.
- Antenna supplied with paintable rigid radome.
- All Gabriel antennas meet or exceed Standards EIA-195-C and EIA-222-F.
- Antenna accommodates +/-20° elevation adjustment. (Specific installation limitations may apply.)
- Mini-Mounts accommodate a 1.9 in. to 4.5 in. (48 to 114 mm) O.D. mast pipe. Quick-Align Mounts mount to a 2.375 in. (60 mm) O.D. mast pipe. An optional 1.9 in. (48 mm) to 4.5 in. (114 mm) Mast Clamp Kit is available on request for the Quick-Align Mount.
- *To adapt the Quick Align Mount for use on a 1.9 in. to 4.5 in. O.D. mast pipe order Mast Clamp Kit MCKQ-19-45*
- Special colors and / or logos available on request.
- Dual band models are available on request.

5 GHz Directional Flat Panel Antenna

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Electrical Specifications

Frequency GHz	Model Number	Diameter ft	(m)	Mount Type	Gain at Low	Mid dBi	High	Nominal Mid-Band Beamwidth degrees	XPD dB	F/B ratio dB	VSWR max.	(R.L. dB)
Diagonal - Directional Flat Panel - Plane Polarized												
	DFPS.5-52**	0.5	(0.15)	MM	17.5	18.0	18.4	19.0	30	35	1.50	(14.0)
5.250 - 5.850	DFPD1-52	1	(0.3)	MM	23.0	23.5	23.9	9.4	30	43	1.50	(14.0)
	DFPD1-52 (M1)	1	(0.3)	QAM	23.0	23.5	23.9	9.4	30	43	1.50	(14.0)
	DFPD2-52	2	(0.6)	QAM	27.5	28.0	28.4	4.6	30	46	1.50	(14.0)

MM	=	Mini - Mount
QAM	=	Quick Align Mount

** Note:

The DFPS.5-52 antenna model is square in configuration.

NOTE:
Product information subject to change without notice.
Other polarization configurations available.