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Federal Communications Commission  
Authorization and Evaluation Division  
7435 Oakland Mills Road  
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May 26, 2000

**RE: Response to FCC Requests**  
**Correspondence Reference Numbers: 12894, 14145**  
**FCC IDs: HZB-S24-12**  
**Form 731 Confirmation Numbers: EA96522**

**Attn: Errol Chang**

Dear Mr. Chang:

This is in response to your request 12894 and 14145 regarding the application of HZB-S24-12 product.

1. Please find in the attached the updated manual page of the product.
2. In our product manual, we recommend antennas to be used with our equipment by their size and gain. At 2.4GHz band, we recommend 2' panel antennas and 2'-8' parabolic antennas. The gains of these antennas range from 20dBi to 33.5dBi. As examples, we recommend to our users some typical antenna vendors now in the market, such Gabriel, Radio Wave, Andrew, CSA Wireless, etc. Though of different make, antennas of the same dimensions have very similar gains and other specifications, as indicated in the following table.

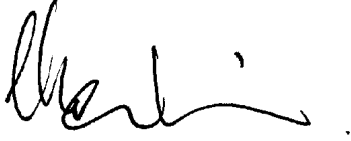
Antenna Type and Size	Gain (dBi)
2' parabolic	20.7
4' parabolic	27
6' parabolic	31
8' parabolic	33.5

Please find in the following table detailed information of some antennas as examples. Since there are numerous antenna manufacturers and product models in the market, this is only a partial list. However, I hope the examples shown on the following table can demonstrate the consistency of antenna specifications regardless of the make and model of the antennas.

Antenna Type	Manufacturer	Model Number	Mid-band Gain (dBi)
2 foot Parabolic	Gabriel Electronics	SSP2-23	20.7
3 foot Parabolic	Gabriel Electronics	SSG3-23A	23.9
4 foot Parabolic	Andrew	FP4-23D	26.5
4 foot Parabolic	Gabriel Electronics	SSG4-23A	26.7
6 foot Parabolic	Andrew	FP6-23D	30.4
6 foot Parabolic	Gabriel Electronics	SSG6-23A	30.1
8 foot Parabolic	Andrew	FP8-23D	32.7
8 foot Parabolic	Gabriel Electronics	SSG8-23	32.6

I hope I have addressed your concerns. Please contact the undersigned should there be any further questions.

Yours truly

A handwritten signature in black ink, appearing to read 'Caroline Yu', with a long horizontal flourish extending to the right.

Caroline Yu  
International Product Manager  
Western Multiplex Corporation

### 3.10 Antenna Installation & Alignment



**INSTALLER CAUTION:** Antennas used for this device must be fix-mounted on permanent outdoor structures to provide 5 meters or more separation from all persons during device operation to comply with FCC RF Exposure requirements. Installers should contact the manufacturer for applicable antenna gain and type restrictions to ensure compliance.

The antenna installation consists of mounting the antenna on the tower, building roof, or other location that provides line-of-sight path clearance to the far-end location. In general, antennas smaller than 2 feet diameter are not recommended for urban areas due to their wider beamwidths, which results in higher interference susceptibility. For 2.4 GHz *Tsunami* radios, a minimum of 4 foot (1.2m) diameter antennas, or larger, are recommended.

Antennas should be ordered with a suitable mounting kit specific to the site requirements. For example, specifying round or angle tower leg adapters, or a roof tripod as necessary.

The antenna must be very rigidly mounted, with adequate room for azimuth and elevation adjustment.

The antenna polarization must be the same at both ends of the link, either vertical or horizontal.

In general, antenna mountings require a support pipe to which upper and lower support brackets are attached with “U” bolts. The antenna and optional elevation and azimuth adjustment rods are then mounted onto the support brackets. The whole structure must be adequately grounded for lightning protection. The antenna system must always be installed according to the manufacturer’s instructions.

Unless special test equipment is available, two operating *Tsunami* terminals are required to align the antennas. Alternatively, a CW generator may be used to transmit a signal toward the end under alignment. The antenna is coarse aligned using visual sighting and then fine aligned using the receive signal level (RSL) voltage of the *Tsunami*.



*The RSL voltage reading can still be used to peak antennas even if the radios have not synchronized, however far-end RSL cannot be measured from the near-end terminal until radios are synchronized.*

To coarse align the antenna, first set it for flat elevation (no up or down tilt) using a spirit level. Then point it at a heading marker obtained using a compass back-bearing from an adjacent location, (ideally, 100 feet or more away from the antenna).