

Table 1 Specifications of mobile vehicle earth station for WINDS

Tx frequency	27.5 to 28.6 GHz
Rx frequency	17.7 to 18.8 GHz
Polarization	Linear (H/V)
Antenna	65 cm Ringfocus Antenna
HPA	20 W SSPA
Drive range	El: 20 to 160 degs. Az: Unlimited
Tracking accuracy	< +/- 0.2 deg.
Data rate	WINDS regenerative transponder
	Tx: 1.5, 6, 24 Mbps
	Rx: 155 Mbps
Use interface	Ethernet (1000 base-T)
Others	- Equipped with an engine generator (2.8 kVA or more)
	- Antenna can be mounted on seacraft

Table 2 Specifications of fully automatic earth station

Tx frequency	27.5 to 28.6 GHz
Rx frequency	17.7 to 18.8 GHz
Polarization	Linear (H/V)
Antenna	1.0 m parabola
HPA	75 W TWTA
Drive range	El: 15-75 degs.
	Az: +/- 95 degs.
Data rate	WINDS regenerative transponder
	Tx: 1.5, 6, 24, 51 Mbps
	Rx: 155 Mbps
Use interface	Ethernet (1000 base-T)



Fig. 1 Mobile vehicle earth station for WINDS



Fig. 2 Fully automatic earth station

Earthquake, we have developed the mobile vehicle station and fully automatic earth station for WINDS which can be installed by simple operation in a time of disaster.

2.1 Mobile vehicle earth station for WINDS

The mobile vehicle earth station for WINDS is composed of an axis symmetric reflector antenna of 65 cm opening size with a radome, a solid-state power amplifier of 20 W class, a triaxial gimbal mechanism, and a modem. The mobile vehicle earth station is mounted on general vehicles as shown in Table 1 and Fig. 1. Assuming movement immediately after the disaster with the disaster countermeasure organizations such as a fire department emergency relief team, this Ka band mobile vehicle earth station can transmit 24 Mbps data while moving at 100 km/h. In addition, as this satellite communication vehicle earth station is unprecedented in the world, it is technology for which the fire departments and defense

bodies concerned have great expectations.

2.2 Fully automatic earth station

As shown in Table 2 and Fig. 2, the fully automatic earth station is composed of an offset-type reflector antenna of 100 cm, an antenna feeding part, an antenna pedestal which doubles as a storage box, and a modem. The 75 W of TWTA and the LNA are integrally implemented in the antenna feeding part, and the fully automatic portable earth station has a structure which enables it to be easily assembled without tools. In addition, the GPS receiver and GPS compass mounted on the antenna enables automatic satellite-capture, and as the local station position is automatically input, the initial setting for the earth station is automated.