Alpha Cognetics Antenna - INSTALLATION CONSIDERATIONS

The Alpha Cognetics High Frequency antenna's unique patented design differs significantly from traditional dipole, vertical, wire, loop or other Hertz antennas. It provides omni-directional coverage. It does not require the extensive elaborate grounding requirements needed for vertical antennas. This allows both short range NVIS (Near Vertical Incident Signal) and long range (Low Angle) radiated communications in an extremely small form factor. The Alpha Cognetics antenna operates between 2.5 MHz to 25 MHz in the HF (High Frequency) spectrum. It uses a similar 'Single Coaxial Cable' configuration as other antennas for its operation; allowing plug and play replacement of aging antennas for simple retrofitting into existing systems. No external power is required at the location of the antenna. The Alpha Cognetics antenna is only four (4) feet in length, four (4) feet in height and one (1) foot wide, weighing only 52 pounds. The weight is distributed equally over the base footprint of the antenna. It is shipped in a sturdy, reusable, dual-wall corrugated container via all shipping carriers. The requirements for optimal antenna installation of the Alpha Cognetics antenna are noted below.

HEIGHT: The Alpha Cognetics antenna does not need a tower or other large supporting structure, mounting poles or such to provide excellent performance. It can be mounted on an existing roof, vehicle, vessel, or temporary location. Setting the antenna on a metal roof will not impede the performance. It may also be situated on the ground. We suggest elevating it about four (4) feet.

SPACING: Spacing between the antenna and existing structures such as buildings, walls, or other large objects should be a minimum of 20 feet. If the antenna system is mounted in the bed of a pickup truck, a raised platform should be used to mount the system at a height level with the side bed and aligned front to rear with the vehicle.

OTHER ANTENNAS: Power, telephone, networking and other wiring in the surrounding area will have a minimal effect on the antenna's operation. Very little interference will be noticed (electromagnetic coupling) to other antennas within its immediate vicinity used for radio, TV, GPS Radar and Satellite. If the wires are resonant at the operating frequency such as existing dipole, vertical or other antennas in close proximity, it is suggested not to mount the Alpha Cognetics antenna underneath or in close proximity to existing HF antennas. Maintain a spacing of at least 50 feet when installing near existing HF antennas.

OTHER MATERIALS: The materials used in the construction of the antenna are stainless steel hardware, anodized aluminum, and copper to minimize corrosion and insure optimal performance. The antenna is enclosed in a plastic radome. Do not cover or otherwise place any materials that are colored within four (4) feet of the antenna. Be aware that colored materials contain carbon which gets warm in an electromagnetic field and therefore could absorb RF energy thus reduces the antenna performance.

COAX LENGTH: The coax should be LMR-400, RG-213, RG-8, or other HF suitable coaxial cable. Tests had also utilized smaller diameter LMR-200 and LMR-240 cable. Smaller diameter LMR-200 and LMR-240 cable for cable lengths of less than 100 feet can be used. We recommend lengths of no more than ~150 feet, due to normal minimal loss in coax at HF frequencies. Use of larger diameter coax at lengths over 150 feet is recommended.

GROUND: Our aerial is a complete antenna system and needs only a static ground to obtain optimal performance. A static ground must be connected between the ground terminal of the antenna and a suitable ground. Because this is a static ground rather than a power ground, there is virtually no current flow on the ground wire. Use a wire having a minimum size of 10 gauge or larger; we suggest an 8 gauge ground wire and connecting to a nearby conduit or the case of an air conditioner or other metallic connection. This will

provide satisfactory performance. *Do not* connect the antenna static ground to the building lightning ground. This may cause damage to the antenna or companion radio in the event of a lightning strike if the radio is not grounded properly.

RF POWER: The Alpha Cognetics antenna has been successfully tested with RF power up to 500 watts, average. For clients desiring RF power levels above 500 watts, please consult the factory technical support staff for recommendations. The antenna has a standard Type N female connector for weather resistant ruggedized connection to it. The connecting cable should have a Type N male connector. Use of a suitable adapter to interface with an existing cable is acceptable and will not degrade performance of the antenna. VSWR (Voltage Standing Wave Ratio) is specified at less than 1.3 to 1 over its operating range if installed as recommended.

WEATHER: The housing for the antenna virtually eliminates weather considerations. For installations where very high winds may be expected, the system should be properly mounted to a structure that can sustain the maximum winds expected in the area. Integrally attached substantial mounting tabs provide easy attachment. For temporary or rapid deployment, concrete cinder blocks or other objects can be used. Although rain is of no concern, the antenna radome should be inspected after a natural event that may cause excessively large hail damage. The antenna has been successfully tested with snow on its radome. During one evaluation approximately two (2) inches of snow was present on the Alpha Cognetics aerial while testing at the Navy Research Labs. Performance is within 1 dB in one direction and 3 dB the other, measured by NRL personnel, compared to a full length ninety-five (95) foot long folded dipole.

NOISE: The Alpha Cognetics antenna has the ability to receive the same signal level as a large dipole. Due to it receiving the electromagnetic wave as compared to independent electric and magnetic fields, manmade noise will be significantly reduced compared to a dipole, vertical or other conventional antenna in the same location. To minimize motor noise, locate the antenna as far from unshielded (non-metallic covered) air conditioners and appliances as feasible. A Noise Suppression Kit is available in the unlikely event noise suppressors must be applied to the offending appliance.

SAFETY CONCERNS: The Alpha Cognetics antenna system radiates Radio Frequency (RF) as with any antenna system. Personnel should be further than 20 feet while the antenna is transmitting. Follow all normal RF and standard safety procedures and concerns in the installation and operation of the Alpha Cognetics antenna. All specifications / requirements subject to change without prior notice