

# Antennas and Accessories in Telemetry Applications \*

## Antenna selection

With proper antenna selection the overall performance of a telemetry application can be significantly improved. Also system can be made more controlled, closed and more tolerant to possible interference.

## Antenna types

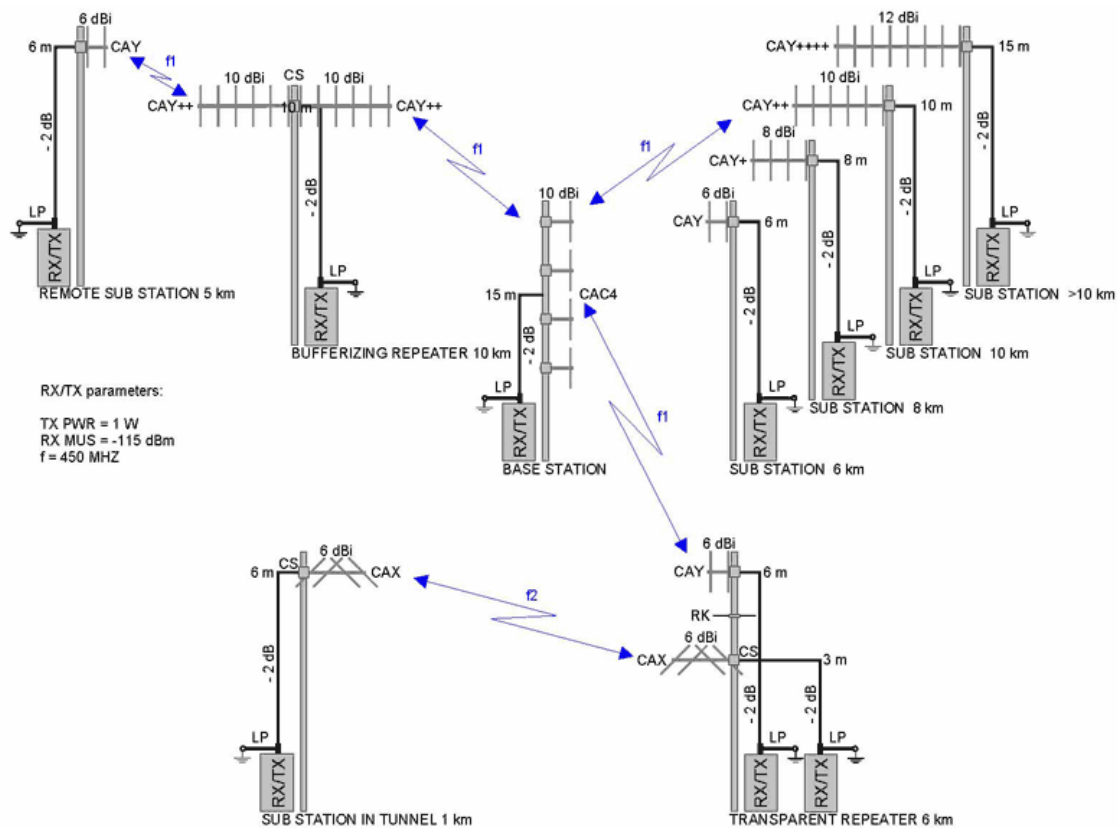
Basically the antennas are divided into three categories according to radiation characteristics:

- omni directional antennas,
- offset pattern antennas and
- directional antennas.

The usage of different antenna types is highly dependent on the shape and nature of the radio network: point to point, point to multipoint, number of base stations, fixed or mobile substations, possible repeaters, diversity reception etc.

## Directivity and gain

The antenna directivity and antenna gain have a positive correlation i.e. the higher the directivity the higher the gain. The antenna gain is always bi-directional: the same for transmission and reception.



## Point to point networks

In point to point, fixed radio networks, it is always highly recommended to use directional antennas (CAY, CAY+, CAY++, CAY+++, CAY++++) when applicable. This is because of better control over the system and closed construction: the signal is forced and noise collected only to and from the relevant directions. This also minimizes the total amount of radio interference in general.

## Point to multipoint networks

In point to multipoint radio networks, one or multiple base stations are serving multiple substations: fixed or mobile. Typically base stations have to be equipped with omni directional (CAE2, CAE4, CAGP, CAGP+) or offset pattern antennas (CAC2, CAC4) in order to serve substations within a big angle. Usually the system layout is not symmetrical nor the base station in the symmetrical center point. In these cases the offset pattern base station antenna is the best choice. If all the substations are within a small angle, the directional base station antenna is recommended for the reasons mentioned above. The fixed substations shall always be equipped with directional antennas. The mobile substations usually have to be equipped with omni directional antennas.

## Repeaters

When using repeaters, transparent or bufferizing, each repeater output has to be considered as a base station for its own subsystem and the corresponding antennas chosen accordingly for both the base station and substations.

## Diversity reception

In space diversity applications dual antennas, chosen as mentioned above, are used and located physically separated on vertical or horizontal axis. In polarization diversity, the special cross-polarized antennas (CAX, CAX+, CAX++) can be used.

## Combining antennas

Multiple antennas can also be combined to form arrays in order to find more gain and radiation pattern combinations to meet the requirements. The antennas are combined with power splitters (CS) to maintain the impedance match.

## Lightning protection

When mounting the antennas at high locations, it is also recommended to use separate lightning protectors (LP) to insure the radio modem against the stroke of lightning to the antenna, mast or especially to surroundings.

## ComAnt<sup>®</sup>

ComAnt<sup>®</sup> product line includes a wide selection of different types of antennas and accessories for all the telemetry applications.

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