

How To Find Signal Strength & Coverage Distance for 50dB Amplifiers:

1.1 How to determine the signal strength at the inside antenna.

- a. Measure the **Received Signal Strength Level (RSSL)** at the intended outside antenna location using the AMPS phone in test mode (see leaflet titled PHONE TEST MODES). **This value is always a negative number.** Even if your phone shows a positive number you will need to change it to a negative for the following formulas. Maximum signal strength is usually about -50. When the signal weakens to about -100 or worse, the call will probably be lost.
- b. Find your total **Cable Factor (CF)** by adding up the losses for all extension cables used (Table 1).

CABLE FACTOR

| CABLE | FACTOR |
|-----------|--------|
| 20' RG58 | 2.4 |
| 20' 9913 | .8 |
| 30' 9913 | 1.2 |
| 50' 9913 | 2 |
| 100' 9913 | 4 |

Table 1.

- c. Add up **Splitter Factors (SF)** for each splitter used (Table 2).

SPLITTER FACTOR

| SPLITTER | FACTOR |
|----------|--------|
| 2-way | 3.5 |
| 3-way | 5.5 |
| 4-way | 7 |

Table 2.

- d. Find the **Antenna Factor (AF)** for each antenna used (Table 3).

ANTENNA FACTOR

| ANTENNA | FACTOR |
|--------------|--------|
| Yagi | 10 |
| Trucker | 3 |
| Magnet Mount | 3 |
| Mini Magnet | 0 |

Table 3.

Note: If splitters are used the cable factor must be determined for each inside antenna separately. The Coverage Area also needs to be determined separately for each inside antenna.

Signal strength (S) is calculated using the following formula:

Signal Strength = 50 (AMP GAIN) plus **Received Signal Strength Level** (this is always a negative number) minus **Cable Factor** minus **Splitter Factor** plus **Antenna Factor** (include both Inside & Outside Antennas)

$$S = 50 + \text{RSSL} - \text{CF} - \text{SF} + \text{AF}$$

EXAMPLE:

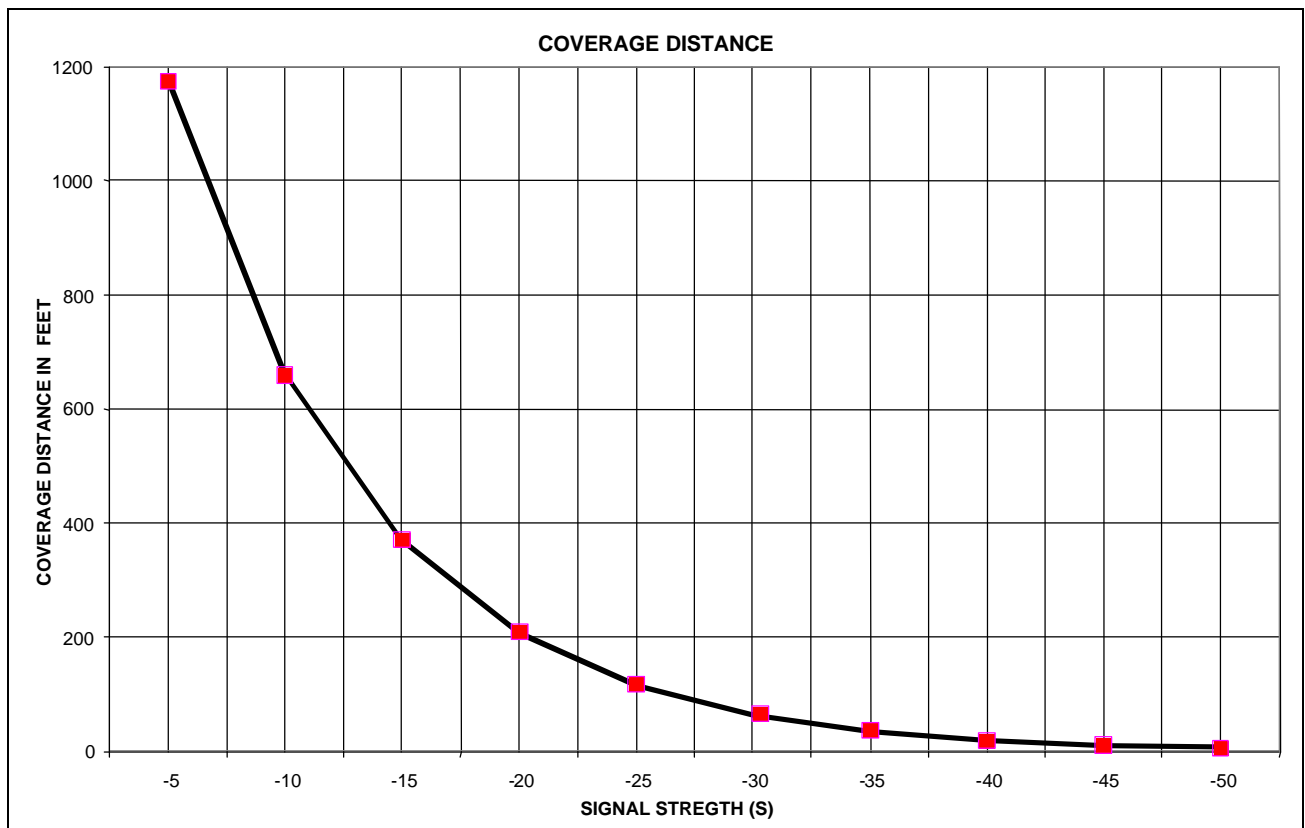
Using the following assumptions:

- RSSL** -70 (always a negative number) (found on phone in test mode)
- CF** 100 ft of 9913 Coax (2 dB loss per 50 ft.)
- SF** None used
- AF** Trucker Antenna used on the outside and Mini Magnet used on the inside (3 dB gain for Trucker and none for the Mini Magnet).

Formula: $S = 50 + (-70) - 4 - 0 + 3$

Solution: $S = -21$

1.2 Use the **GRAPH** below to find coverage distance once signal strength (S) is calculated:



With $S = -21$ your usable coverage distance would be approximately **200 feet** from the inside antenna.