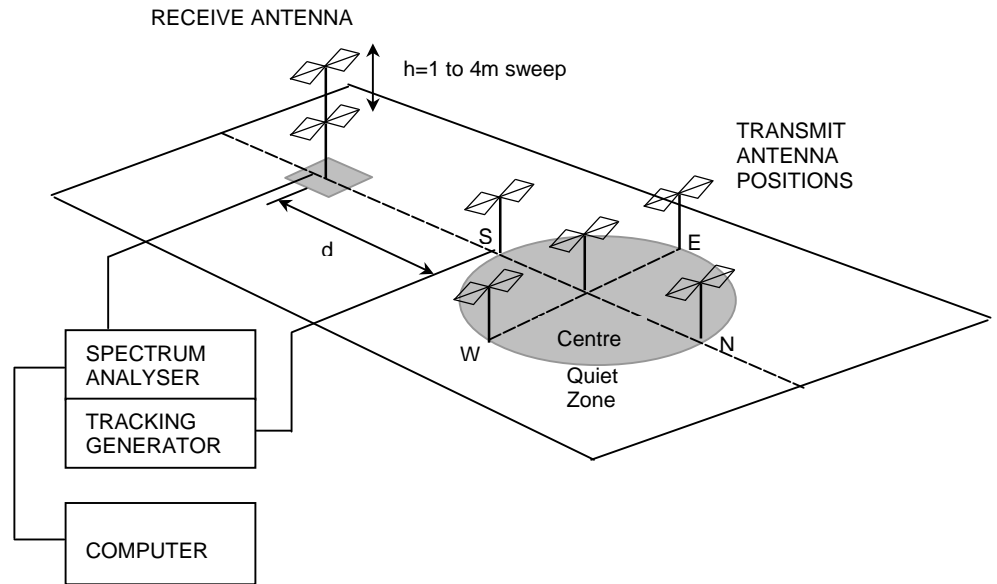




ANECHOIC CHAMBER ACCEPTANCE TESTS

Normalised Site Attenuation (ANSI C63.4/CISPR 16/EN 50147-2)

R.F.I. Industries performs normalised site attenuation chamber acceptance tests with state of the art, calibrated equipment. Tests can be performed either in the presence of the customer or another EMC expert. The Normalised Site Attenuation method allows for the use of broadband antennas with the transmit antenna placed at 1m, 1.5m and 2m in height and the receive antenna scanned from 1m to 4m in height at a distance of 3m, 10m or other desired test distance. The transmit antenna is placed in the centre and at four cardinal points of the Quiet Zone of an alternate test site which is to be measured. Site Attenuation (SA) is defined as:



$$SA = \frac{V_1}{V_2^{\max}}$$

where V_1 is the measured reading with two coaxial cables connected to each other via an adapter. V_2^{\max} is defined as the maximum received field signal with coaxial cables reconnected to their respective antennas and the receive antenna scans through a specified height range, such as from 1 to 4 meters. From the definition, the theoretical site attenuation for a conducting plane of infinite extent can be expressed as:

$$SA(\text{dB}) = -20 \log(f_m) + 48.92 + 20 \log(E_d^{\max}) + AF_T + AF_R + \Delta AF_{\text{TOT}}$$

Where:

- (f_m) = frequency in megahertz
- (E_d^{\max}) = maximum electric field at an ideal half-wave dipole receiver antenna as the height scans over a specified height range in which the fields radiated by another half-wave dipole antenna emitting one picowatt of radiated power.
- AF_T = antenna factor of the transmitting antenna/meter in dB
- AF_R = antenna factor of the receiving antenna/meter in dB
- ΔAF_{TOT} = mutual impedance correction factor.

SUMMARY OF NSA MEASUREMENTS

| FREQUENCY | POLARISATION | DISTANCE | MEASUREMENT POSITIONS | RECEIVE ANTENNA HEIGHT | TRANSMIT ANTENNA HEIGHT |
|---------------|--------------|----------|-----------------------|------------------------|-------------------------|
| 30 - 1000 MHz | Horizontal | 3/10 m | C, N, E, S, W | 1 - 4m | 1.0m |
| 30 - 1000 MHz | Vertical | 3/10 m | C, N, E, S, W | 1 - 4m | 1.0m |
| 30 - 1000 MHz | Horizontal | 3/10 m | C, N, E, S, W | 1 - 4m | 2.0m |
| 30 - 1000 MHz | Vertical | 3/10 m | C, N, E, S, W | 1 - 4m | 1.5m |

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