

6.9 Thermal Resistance Characteristics for FCBGA Package [ALP0180A]

THERMAL METRICS ^{(1) (4)}		°C/W ^{(2) (3)}
RO _{JC}	Junction-to-case	3.3
RO _{JB}	Junction-to-board	10.9
RO _{JA}	Junction-to-free air	21.1
RO _{JMA}	Junction-to-moving air	N/A ⁽⁴⁾
Psi _{JT}	Junction-to-package top	1.9
Psi _{JB}	Junction-to-board	10.8

(1) For more information about traditional and new thermal metrics, see [Semiconductor and IC Package Thermal Metrics](#).

(2) °C/W = degrees Celsius per watt.

(3) These values are based on a JEDEC-defined 2S2P system (with the exception of the Theta JC [RO_{JC}] value, which is based on a JEDEC-defined 1S0P system) and will change based on environment as well as application. For more information, see these EIA/JEDEC standards:

- JESD51-2, *Integrated Circuits Thermal Test Method Environmental Conditions - Natural Convection (Still Air)*
- JESD51-3, *Low Effective Thermal Conductivity Test Board for Leaded Surface Mount Packages*
- JESD51-7, *High Effective Thermal Conductivity Test Board for Leaded Surface Mount Packages*
- JESD51-9, *Test Boards for Area Array Surface Mount Package Thermal Measurements*

A junction temperature of 125°C is assumed.

(4) N/A = not applicable

6.10 Timing and Switching Characteristics

6.10.1 Antenna Radiation Patterns

This section discusses transmitter and receiver antenna radiation patterns in both Azimuth and Elevation planes for a specified frequency.

6.10.1.1 Antenna Radiation Patterns for Receiver

Figure 6-1 shows the RX effective Isotropic noise figure across the entire frequency band.

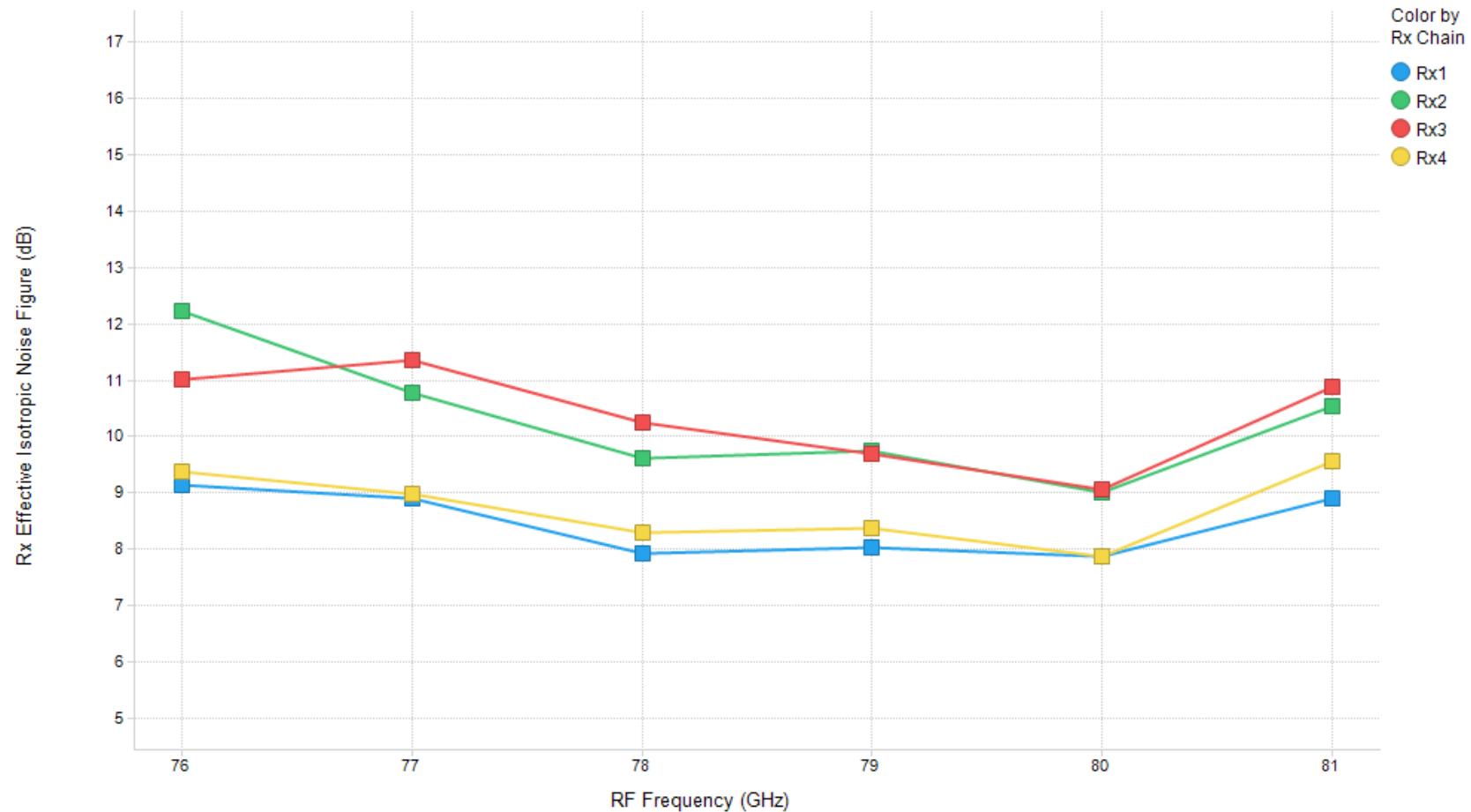


Figure 6-1. RX Effective Isotropic Noise Figure

[Figure 6-2](#) and [Figure 6-3](#) shows typical antenna radiation patterns for the four receivers in both Azimuth and Elevation planes.

Rx Gain Across Azimuth

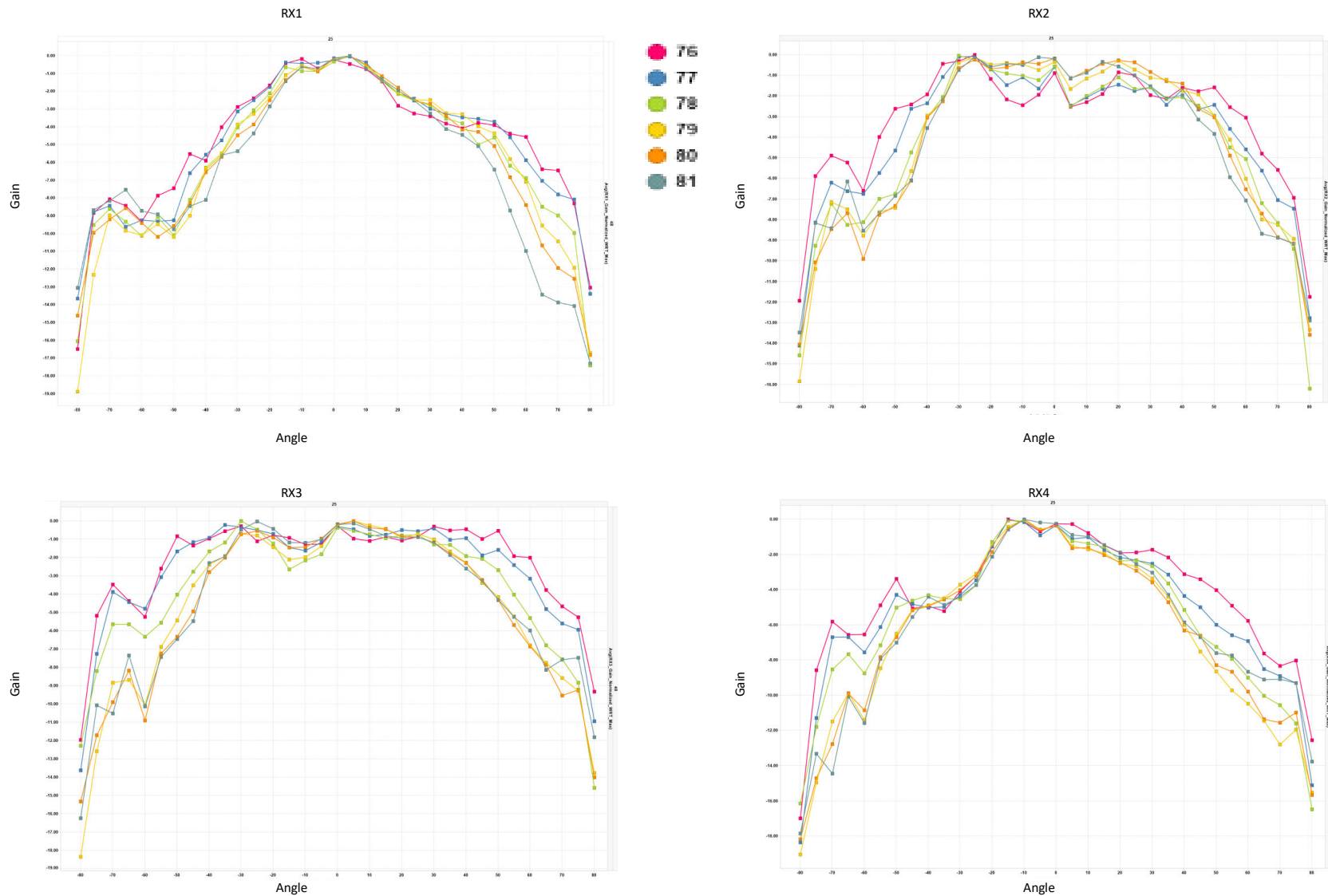


Figure 6-2. Receiver Antenna Radiation Pattern - Azimuth

Rx Gain Across Elevation

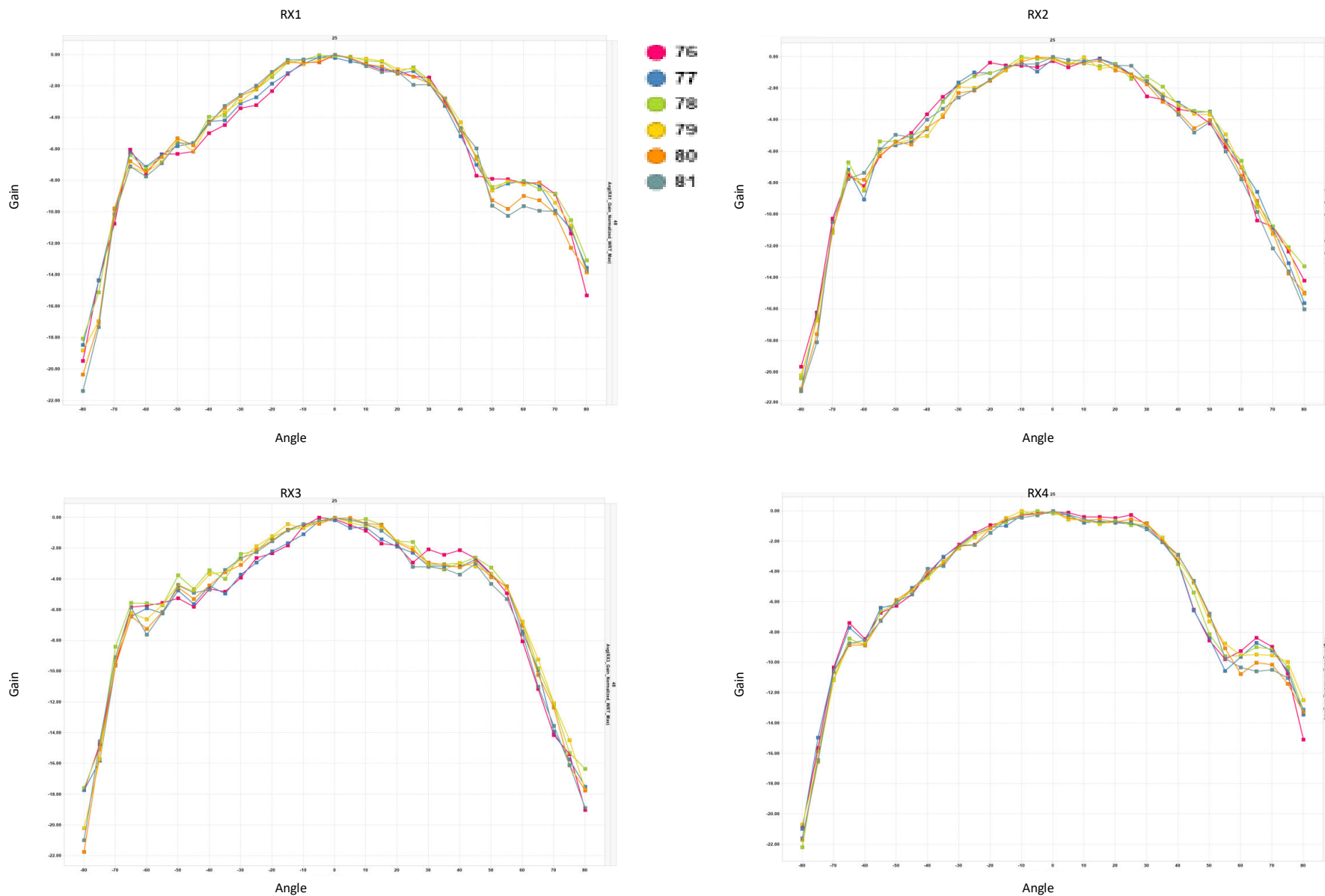


Figure 6-3. Receiver Antenna Radiation Pattern – Elevation

6.10.1.2 Antenna Radiation Patterns for Transmitter

Figure 6-4 shows typical antenna radiation patterns for the three transmitters in both Azimuth and Elevation planes.

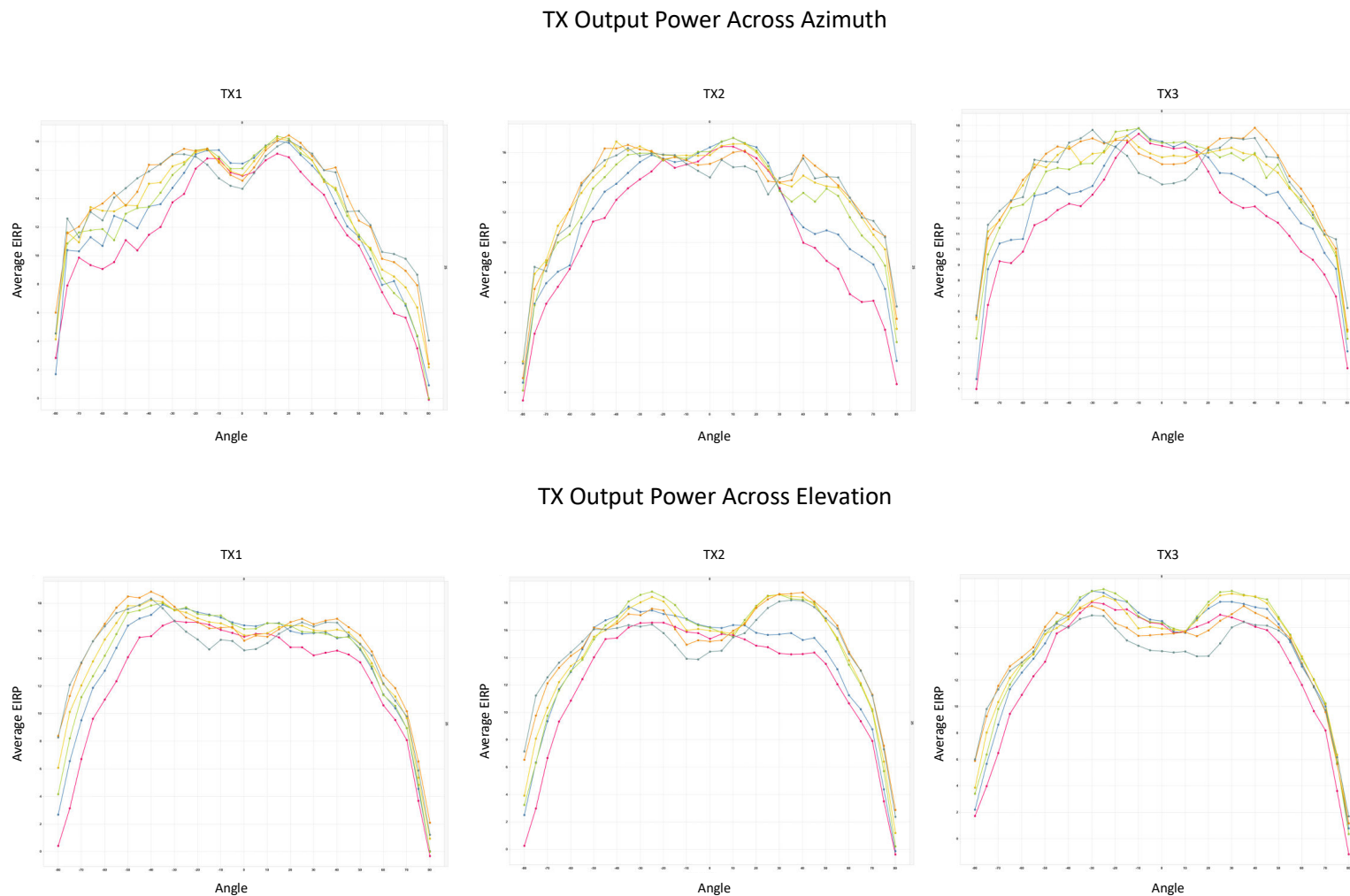


Figure 6-4. Transmitter Antenna Radiation Pattern

6.10.2 Antenna Positions

Figure 6-5 shows the placement and relative spacing of the antennas. Lambda corresponds to a frequency of 78.5 GHz.

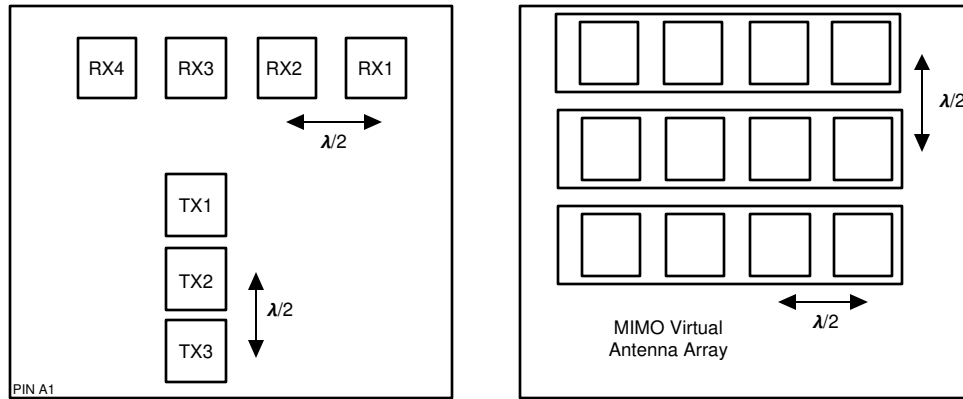


Figure 6-5. Antenna Positions (Placement and Relative Spacing)

6.10.3 Power Supply Sequencing and Reset Timing

The AWR1843AOP device expects all external voltage rails and SOP lines to be stable before reset is deasserted. Figure 6-6 describes the device wake-up sequence.