Part No. 9002418L0-L16S
NTN S-Band LDS “Cap” Antenna

1980 – 2020 MHz / 2170 – 2200 MHz

Supports: NTN, S-Band

NTN S-Band
LDS Cap Antenna

1980 – 2020 MHz
2170 – 2200 MHz

KEY BENEFITS

Stay-in-Tune
KYOCERA AVX's antenna technology provides superior RF field containment, resulting in less interaction with surrounding components.

Quicker Time-to-Market
By optimizing antenna size, performance and emissions, customer and regulatory specifications are more easily met.

Environmental Compliance
Products are the latest RoHS and REACH version compliant

APPLICATIONS

- Telematics
- Asset Tracking
- IoT, Industrial devices
- Smart Agriculture
- Smart Metering
- Rural and Remote Area Access
- Maritime and Aeronautical
- Emergency Communications

KYOCERA AVX's 9002418L0-L16S is an innovative - one of its kind - on-board antenna with capabilities to achieve both Right hand circular polarization (RHCP) and Left hand circular polarization (LHCP) for satellite applications.
RHCP: 9002418L0-L16S-16D
LHCP: 9002418L0-L16S-17D
It has a constant gain towards the azimuth and elevation.

This antenna is manufactured using Laser Direct Structuring (LDS) technology covering NTN S-Band which makes it lightweight. It is also characterized by its reliable performance over metal.
The LDS technology is a revolutionary approach offering a streamlined and efficient process for creating complex 3D antenna designs on a myriad of substrates.

Among the benefits of this solution are the low weight, wide bandwidth and high gain. LDS technology is ideal when more curves are needed or less 3D volume is available.

Electrical Specifications

Typical Performance using Mini-Circuits WP4P1+ Power Divider/Combiner was used for the radiating test (Power handling of 1.5W as a Divider).

Typical performance on 70 x 70 x 1.6 mm

Frequency (MHz)	Band n256 / n23	
	1980 – 2020	2170 – 2200
Peak Gain	3.3dBi	2.7dBi
Average Efficiency	65%	61%
RL Match	< -13.8dB	< -13.3dB
Gain @ Zenith	2.9dBi @ 2000MHz	2.6dBi @ 2190MHz
Axial Ratio	< 0.5dB @ 2000MHz	< 1.2dB @ 2190MHz
Power Handling	2 Watt CW	
Feed Points Impedance (x4)	50 ohms	
Polarization	R.H.C.P	
Radiation Pattern	Directional	

DATASHEET | **Part No. 9002418L0-L16S**

KYOCERA AVX NTN S-Band LDS Cap Antenna Specifications.
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

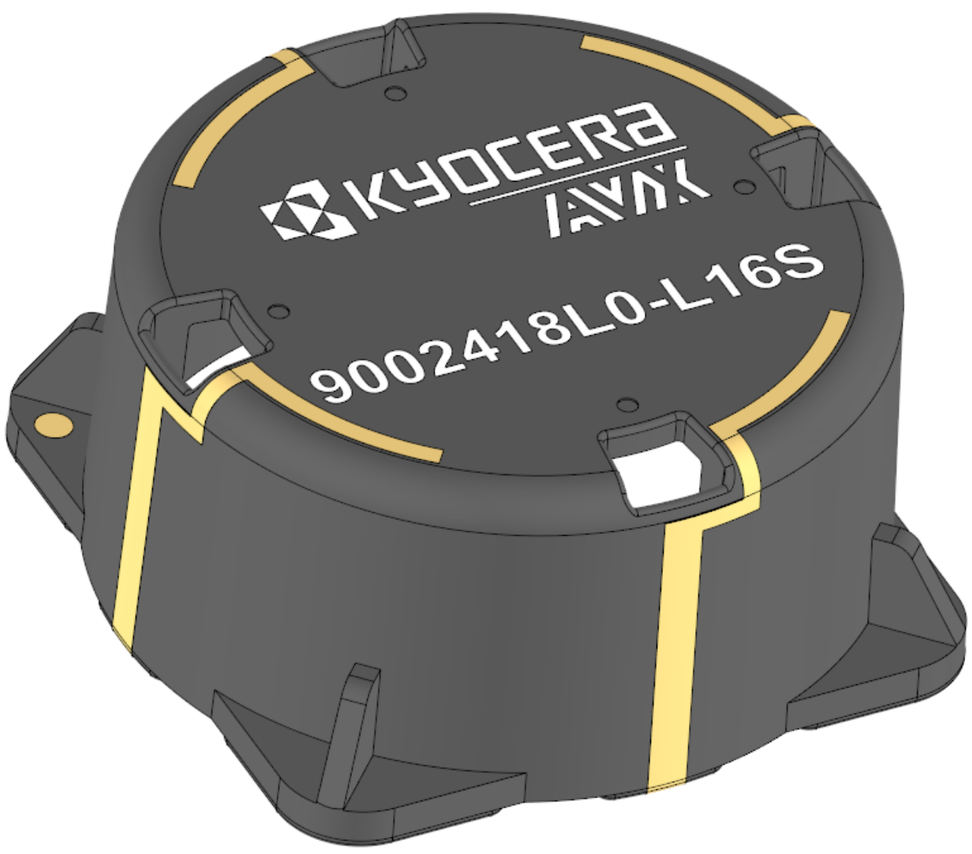
Mechanical Specifications & Ordering Part Number

Ordering Part #	9002418L0-L16S
Dimensions (mm)	37.5 x 37.5 x 17.98 (h)
Recommended Distance between the antenna and the casing	5 mm
Weight (grams)	6.85
Mounting	SMT (Pick-and-Place)
Demo Board Part Number	9002418L0-L16S-16D
Storage Temperature (°C) / Humidity	-40 to +85 °C / 45~75% (Sealed Shipping Pack)
Operation Temperature (°C)	-40 to + 85°C
Packaging	Tape & Reel Package
Additional resources	Download DXF and 3D FIT Files

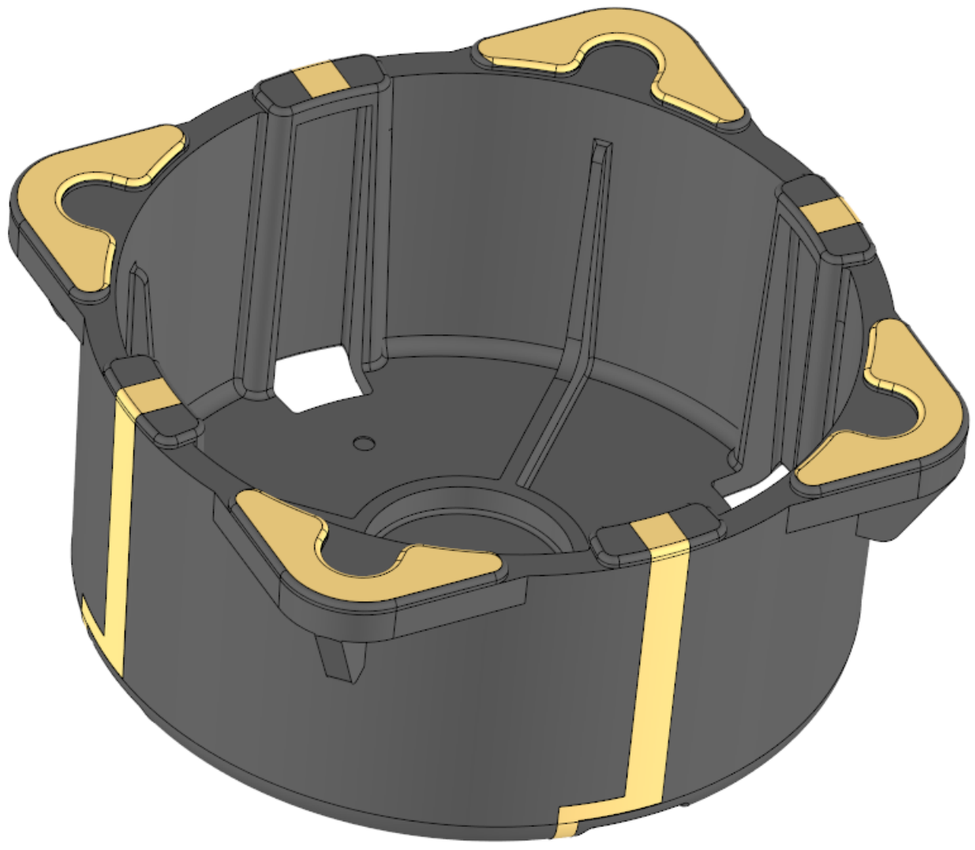
Reliability Testing Summary

High Temperature and High Humidity (HTHH) Test	Conditions: Temperature: +85°C, Humidity: 85% RH, Test Duration: 96 Hours Acceptance Criteria: No visible Corrosion.
Salt Spray Test	Conditions: Expose to a +35 ±3 °C spray of a 5% (by volume) resolution of NaCl in water for 48 hours. Acceptance Criteria: No visible Corrosion / Discoloration acceptable.

Antenna 3D View: 9002418L0-L16S



Top View



Bottom View

tel +(1) 858.550.3820
email: antenna.info@kyocera-avx.com
1 Avx Blvd, Fountain Inn, SC 29644

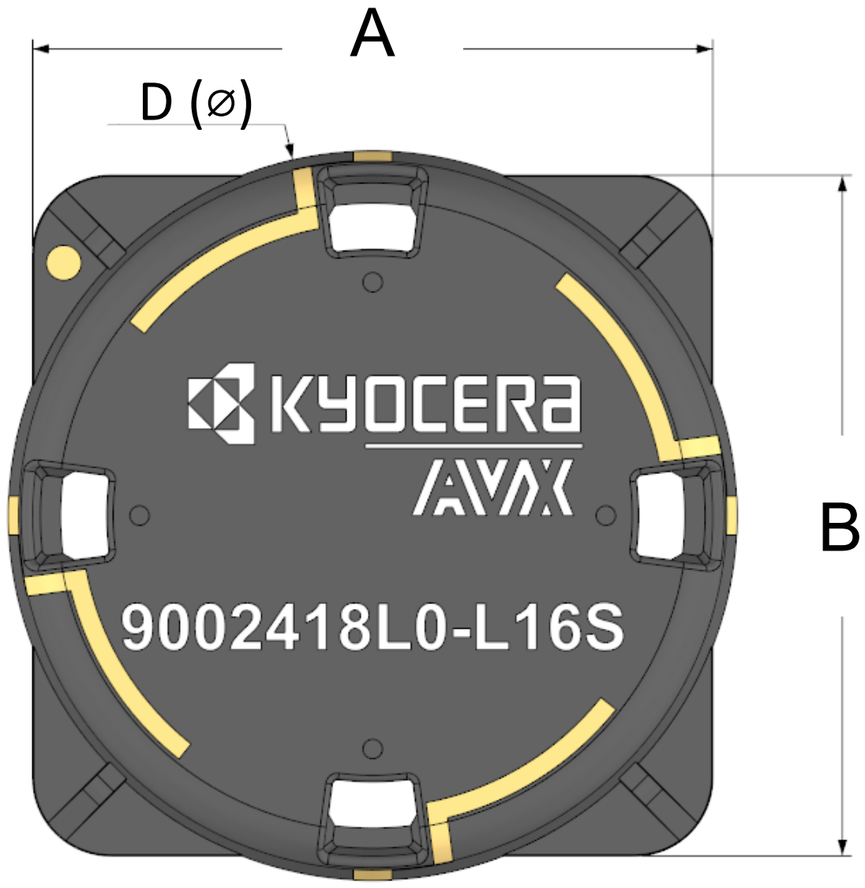
DATASHEET | **Part No. 9002418L0-L16S**

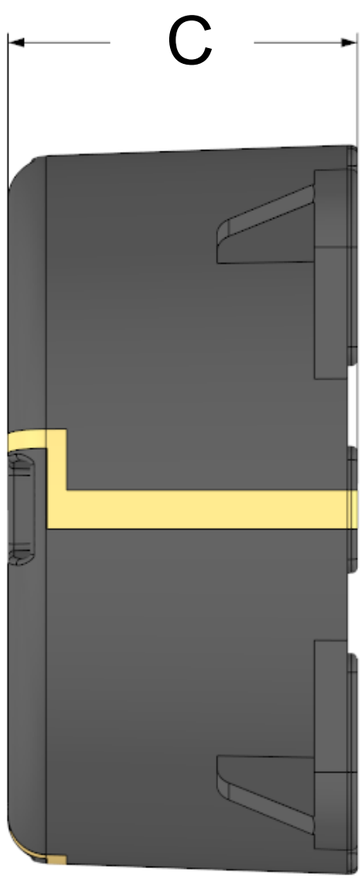
KYOCERA AVX NTN S-Band LDS Cap Antenna Specifications.
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

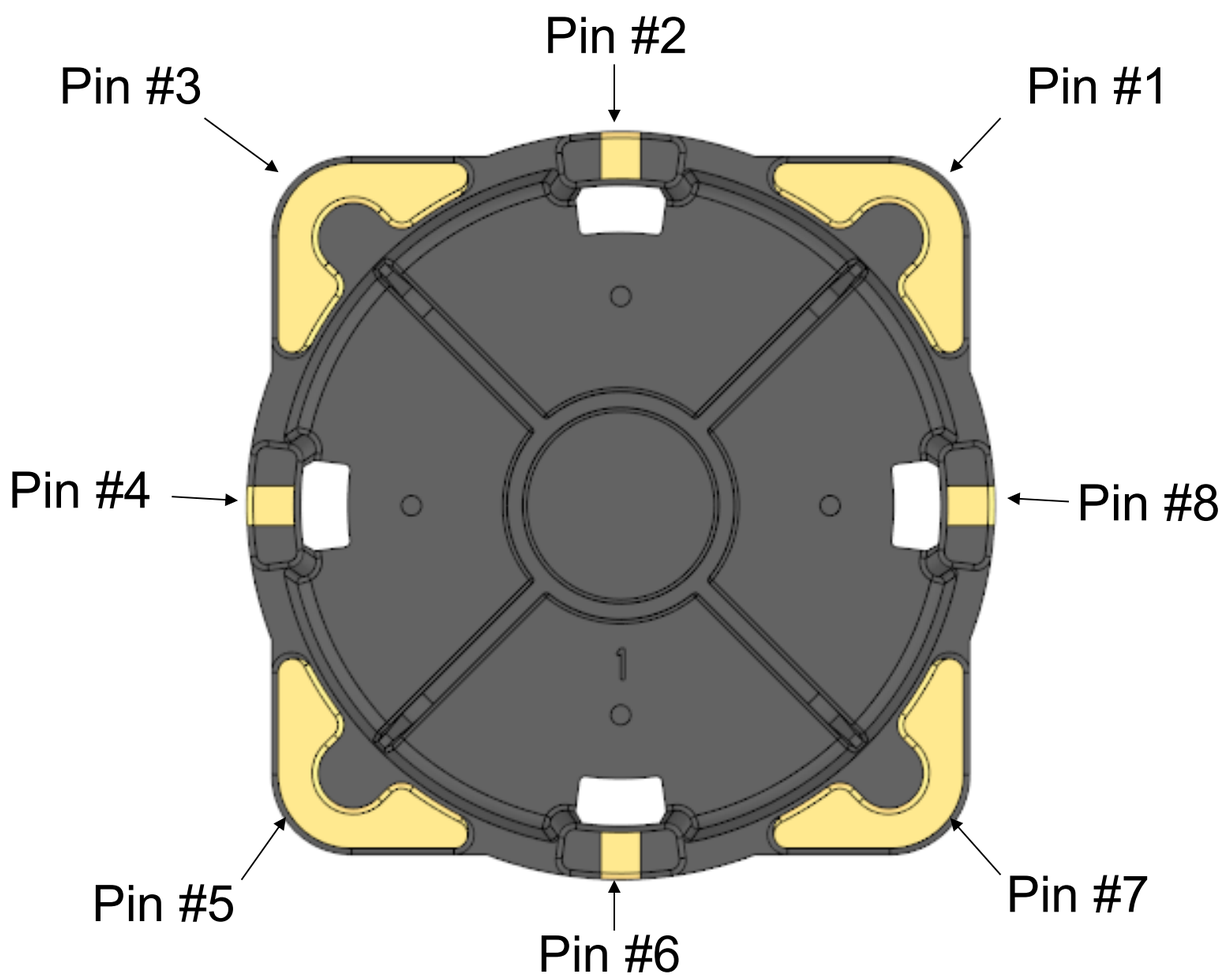
Antenna Dimensions

Typical antenna dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)	D (⌀)
9002418L0-L16S	35 ± 0.3	35 ± 0.3	17.98 ± 0.2	37.5 ± 0.2







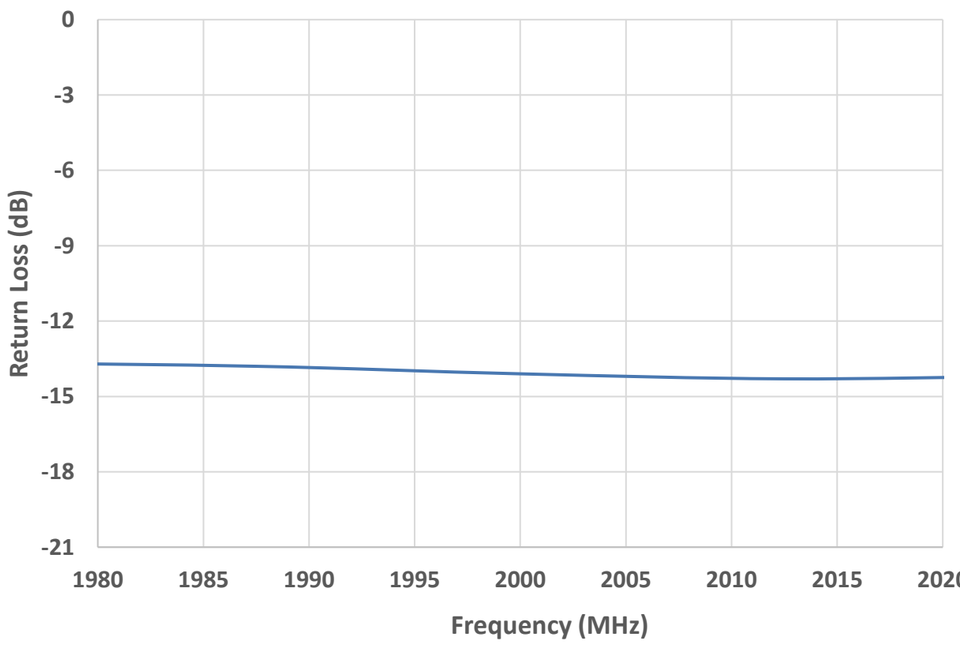
Pin#	Description
1, 3, 5, 7	GND
2, 4, 6, 8	Feed

tel +(1) 858.550.3820
email: antenna.info@kyocera-avx.com
1 Avx Blvd, Fountain Inn, SC 29644

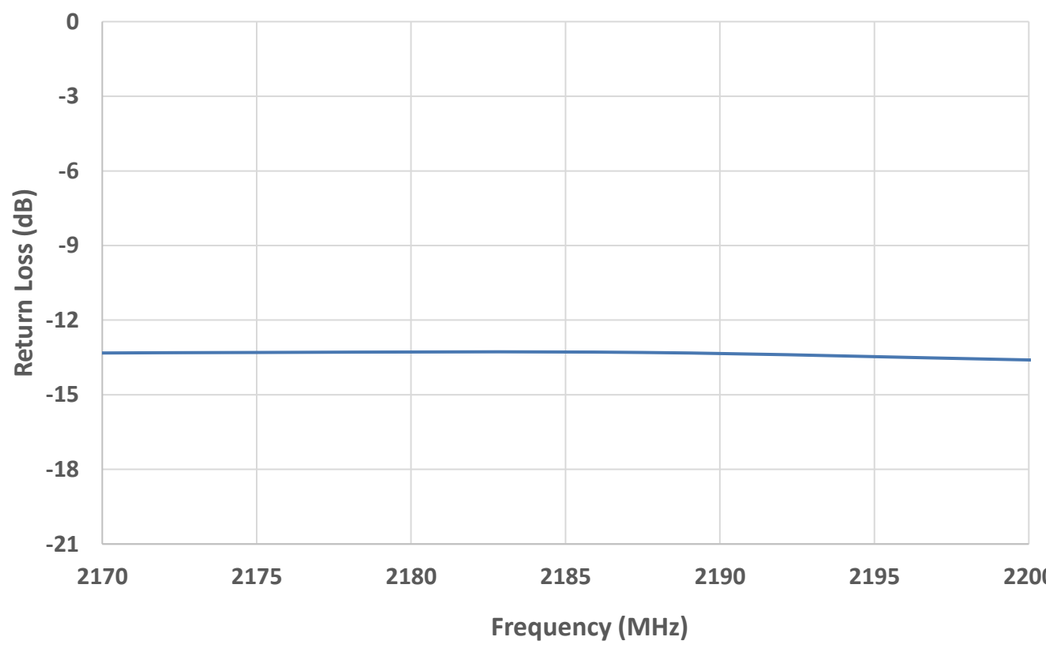
KYOCERA AVX NTN S-Band LDS Cap Antenna Specifications.
KYOCERA AVXs produces a wide variety of standard and custom antennas to meet user needs.

Return Loss, Efficiency and Peak Gain plots

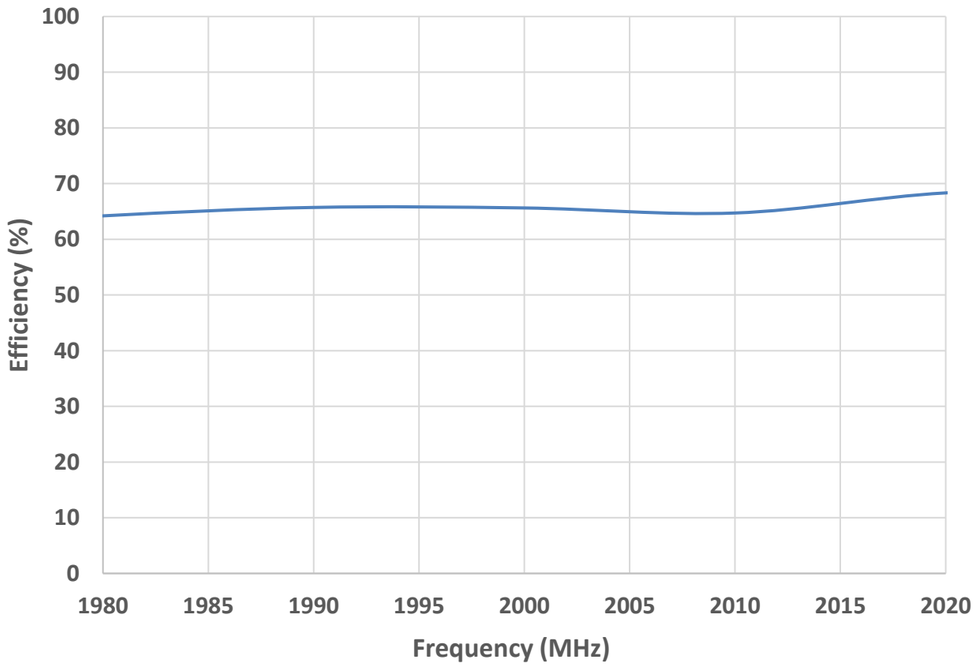
Return Loss Data (1980 – 2020 MHz)



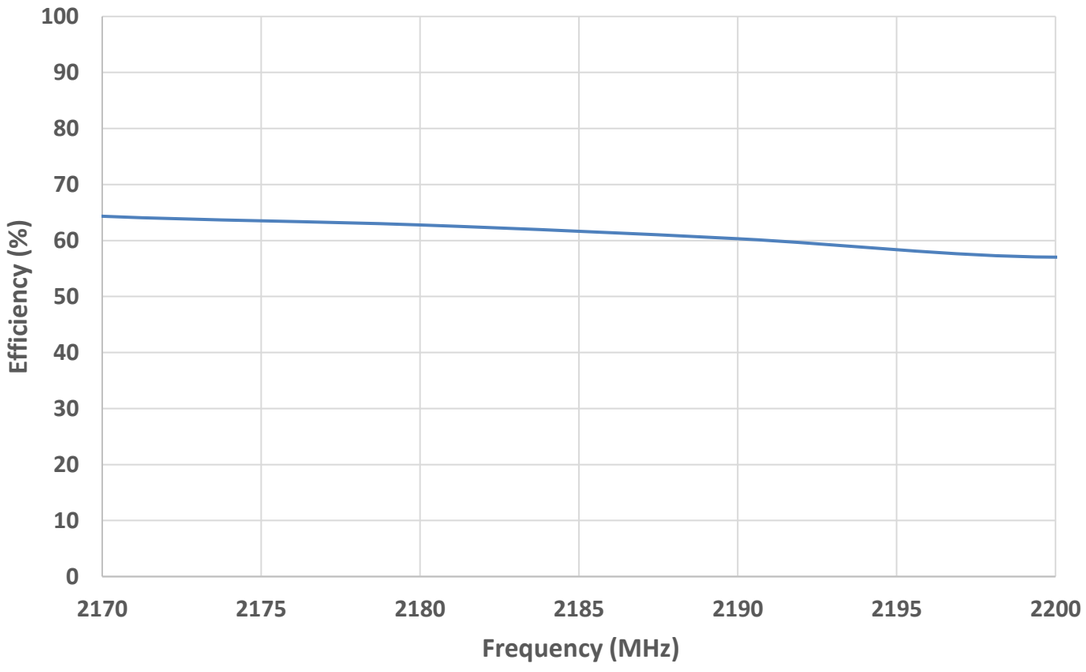
Return Loss Data (2170 – 2200 MHz)



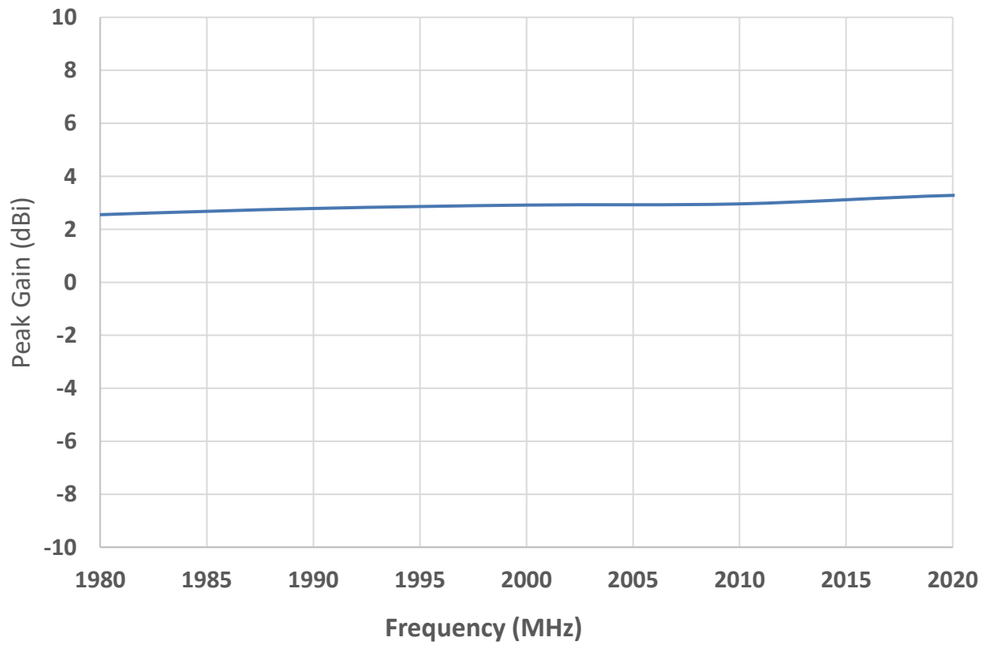
Efficiency (1980 – 2020 MHz)



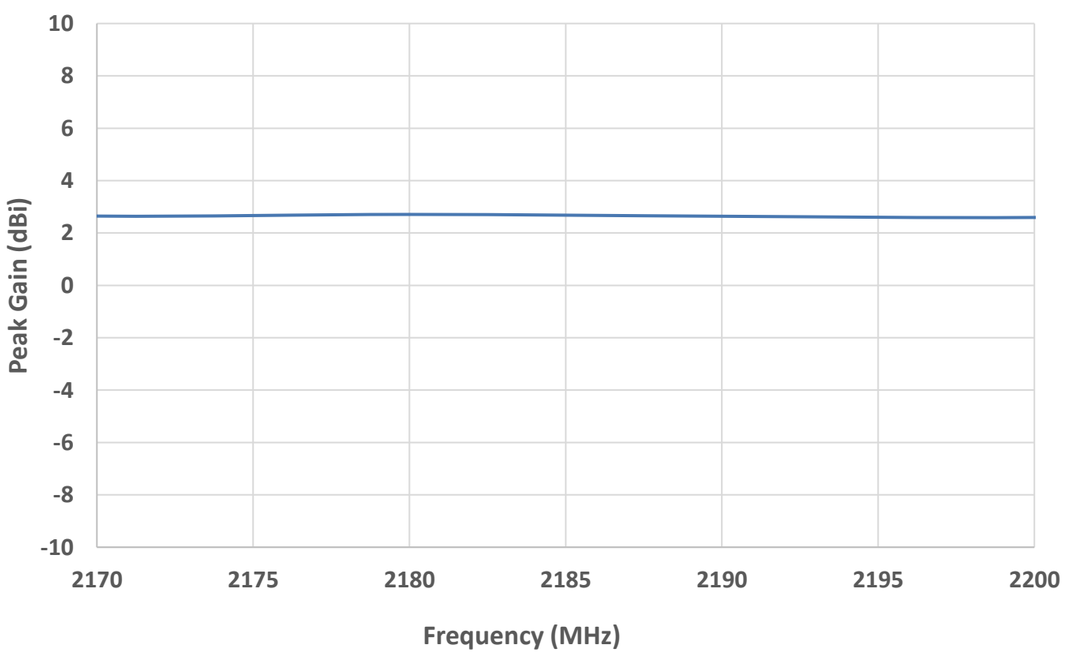
Efficiency (2170 – 2200 MHz)



Peak Gain (1980 – 2020 MHz)



Peak Gain (2170 – 2200 MHz)



Mini-Circuits WP4P1+ Power Divider/Combiner was used for the radiating test.

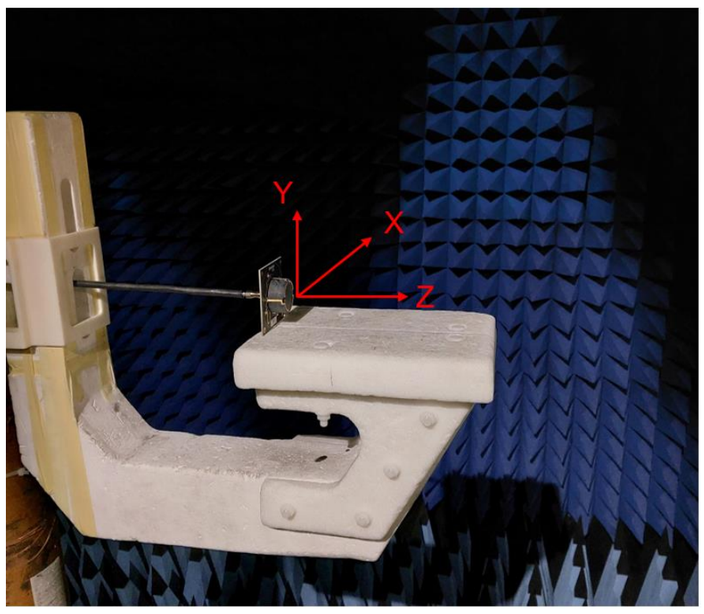
tel +(1) 858.550.3820
email: antenna.info@kyocera-avx.com
1 Avx Blvd, Fountain Inn, SC 29644

DATASHEET | **Part No. 9002418L0-L16S**

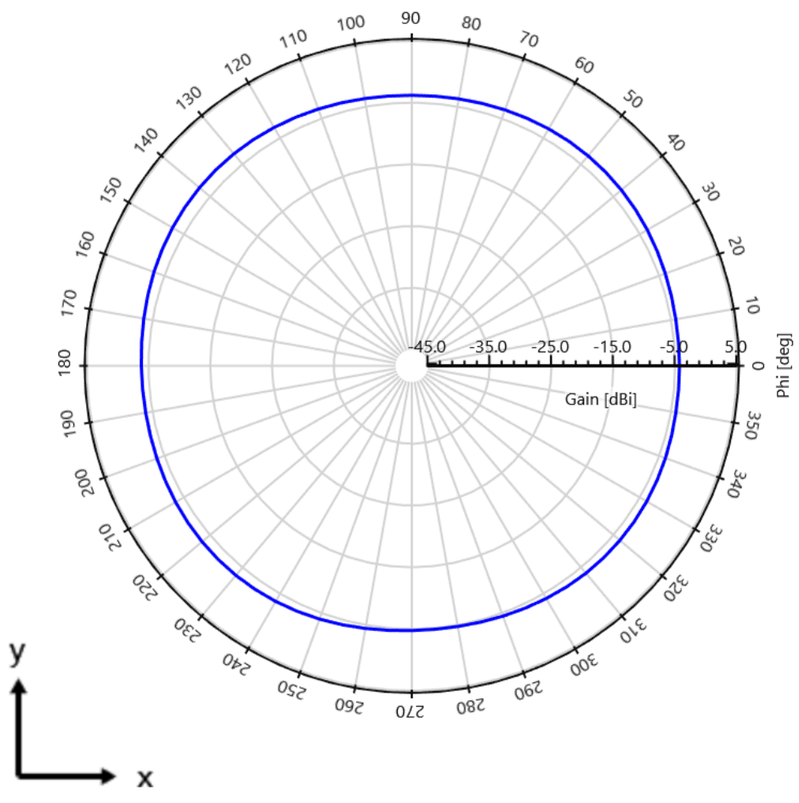
KYOCERA AVX NTN S-Band LDS Cap Antenna Specifications.
KYOCERA AVXs produces a wide variety of standard and custom antennas to meet user needs.

Radiation Patterns Plots

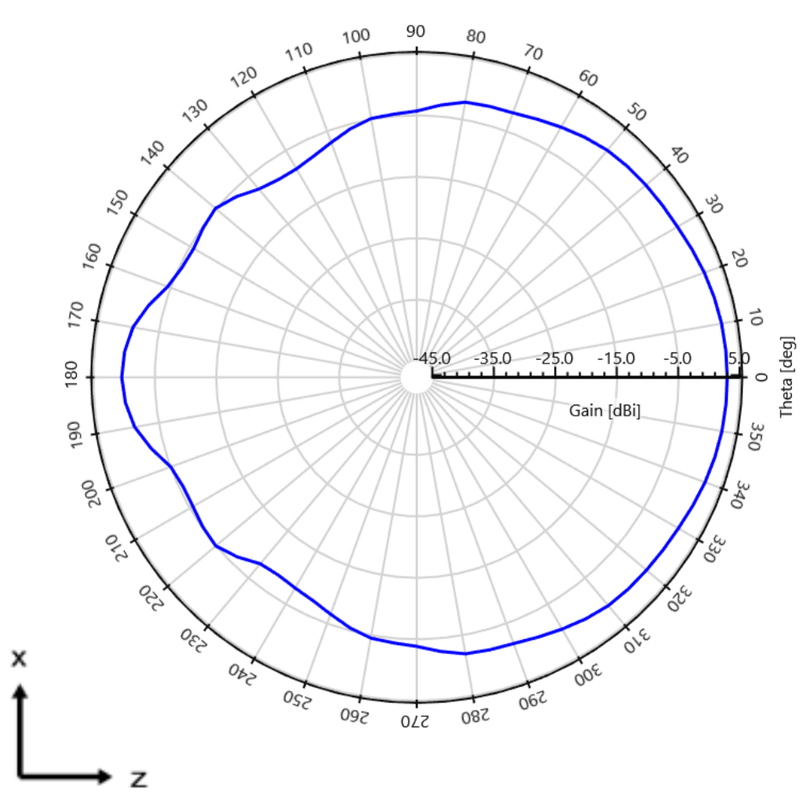
Measured at 2000 MHz



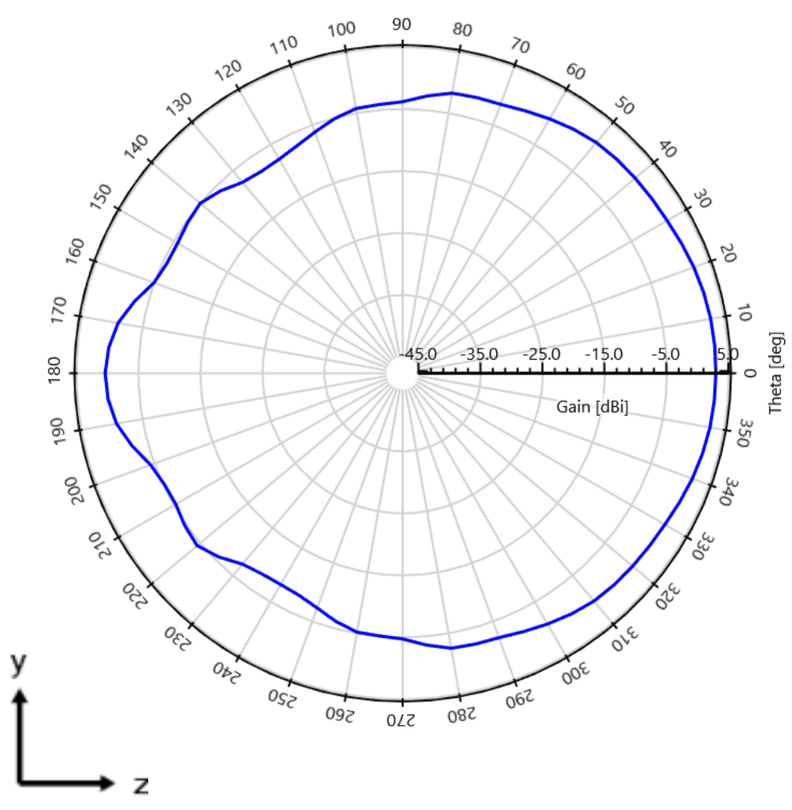
Gain (Total) - θ = 90 deg - 2000 MHz [Plane XY]



Gain (Total) - φ = 0 deg - 2000 MHz [Plane XZ]



Gain (Total) - φ = 90 deg - 2000 MHz [Plane YZ]



Mini-Circuits WP4P1+ Power Divider/Combiner was used for the radiating test.

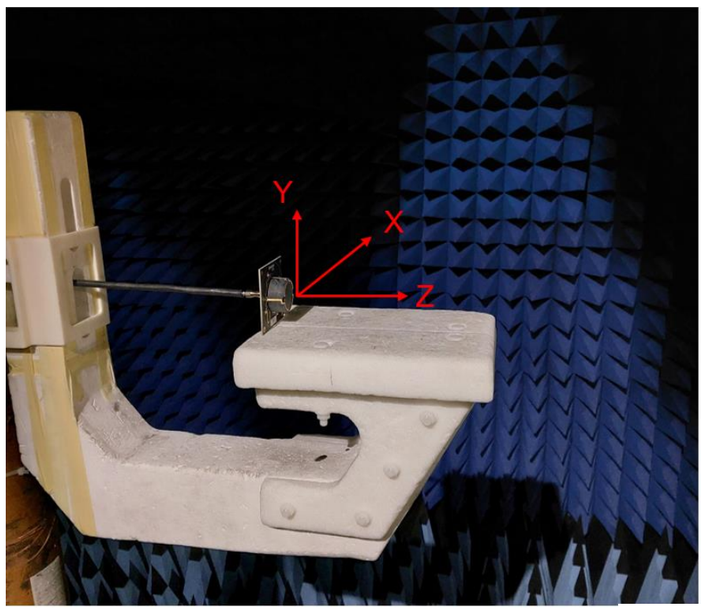
tel +(1) 858.550.3820
email: antenna.info@kyocera-avx.com
1 Avx Blvd, Fountain Inn, SC 29644

DATASHEET | **Part No. 9002418L0-L16S**

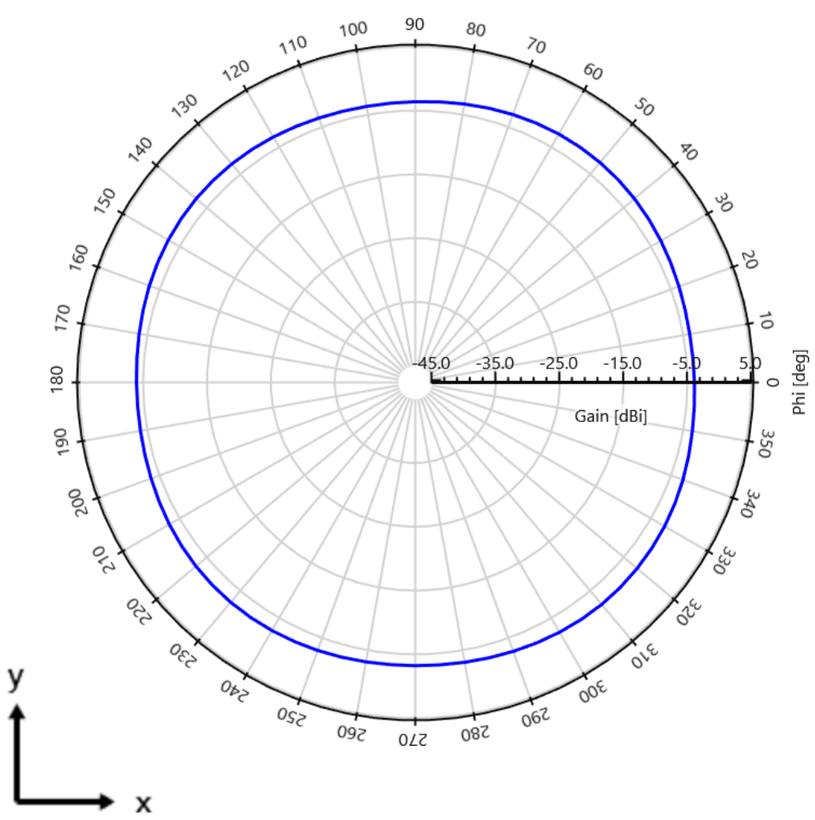
KYOCERA AVX NTN S-Band LDS Cap Antenna Specifications.
KYOCERA AVXs produces a wide variety of standard and custom antennas to meet user needs.

Radiation Patterns Plots

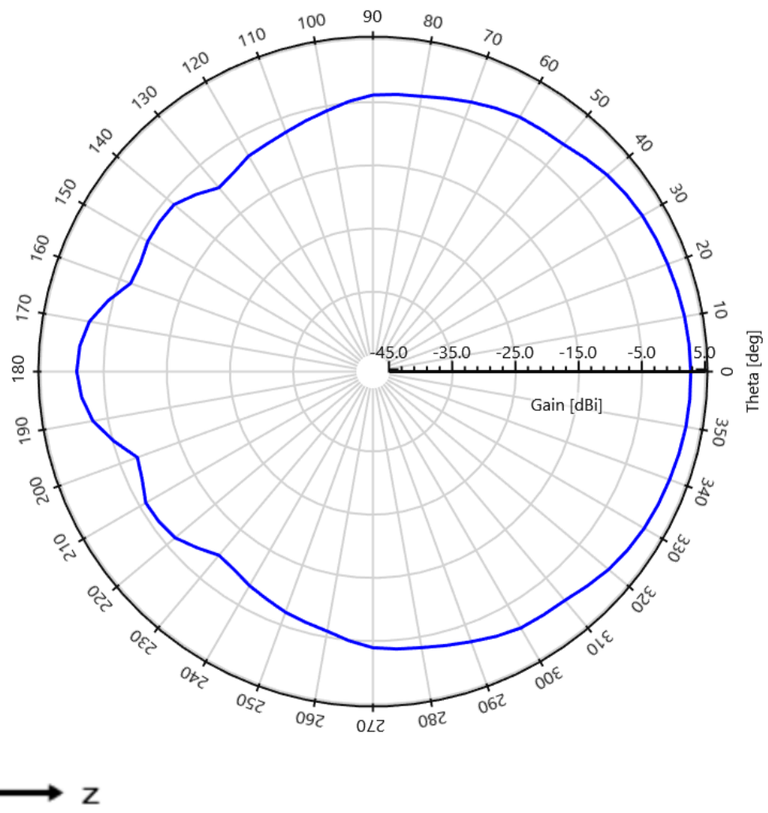
Measured at 2190 MHz



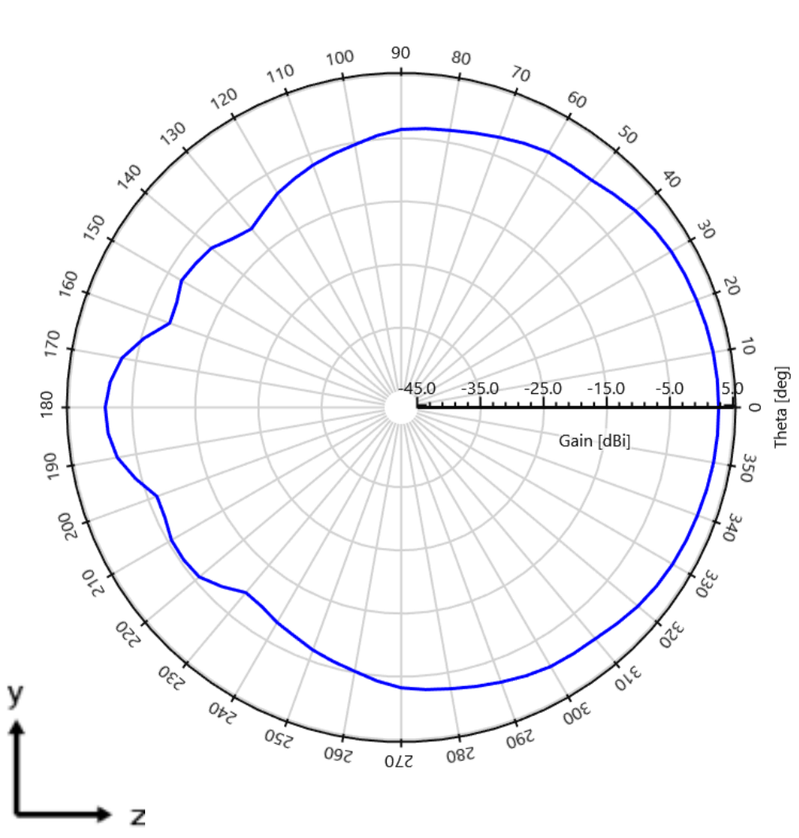
Gain (Total) - θ = 90 deg - 2190 MHz [Plane XY]



Gain (Total) - φ = 0 deg - 2190 MHz [Plane XZ]



Gain (Total) - φ = 90 deg - 2190 MHz [Plane YZ]



Mini-Circuits WP4P1+ Power Divider/Combiner was used for the radiating test.

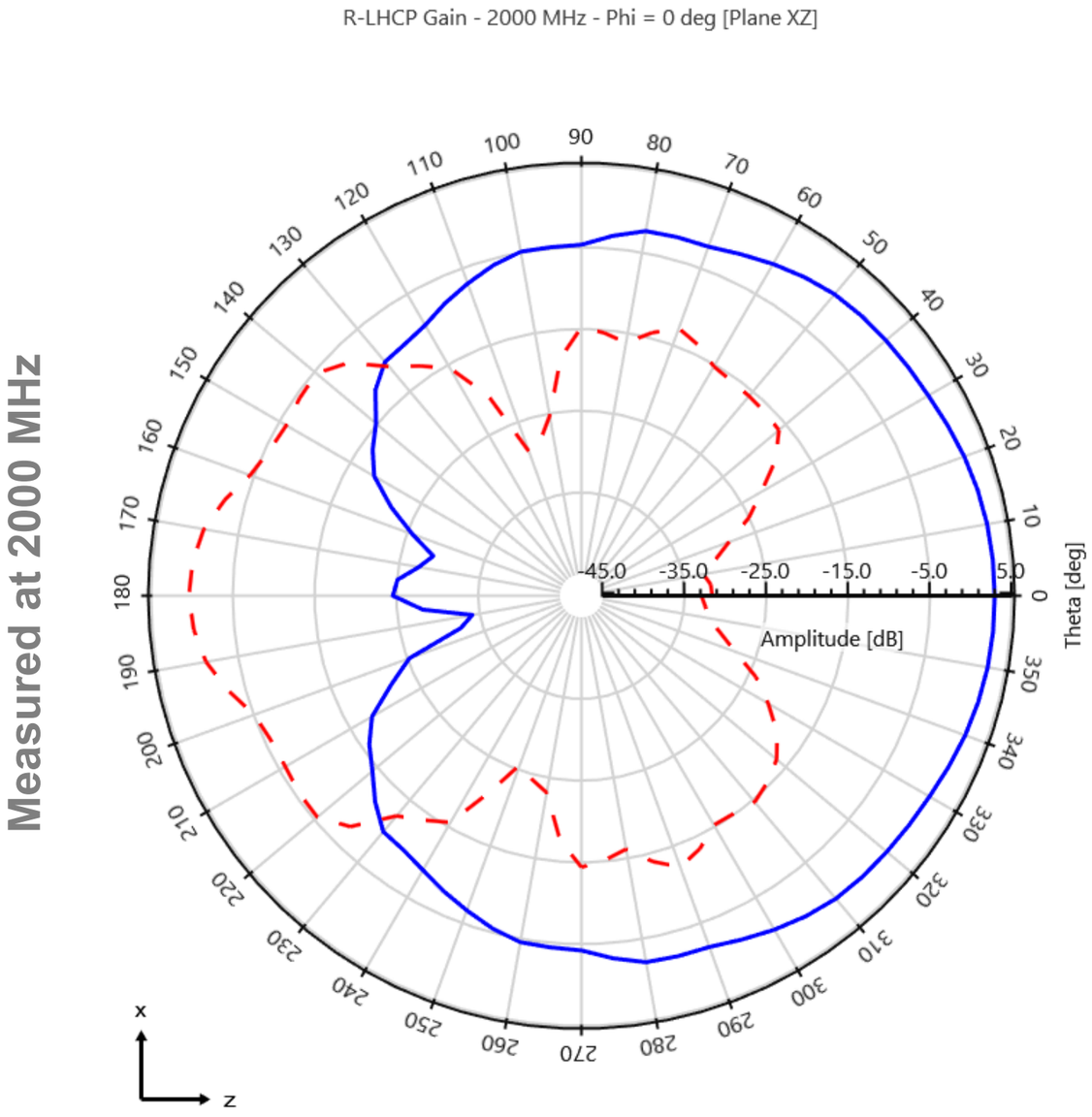
tel +(1) 858.550.3820
email: antenna.info@kyocera-avx.com
1 Avx Blvd, Fountain Inn, SC 29644

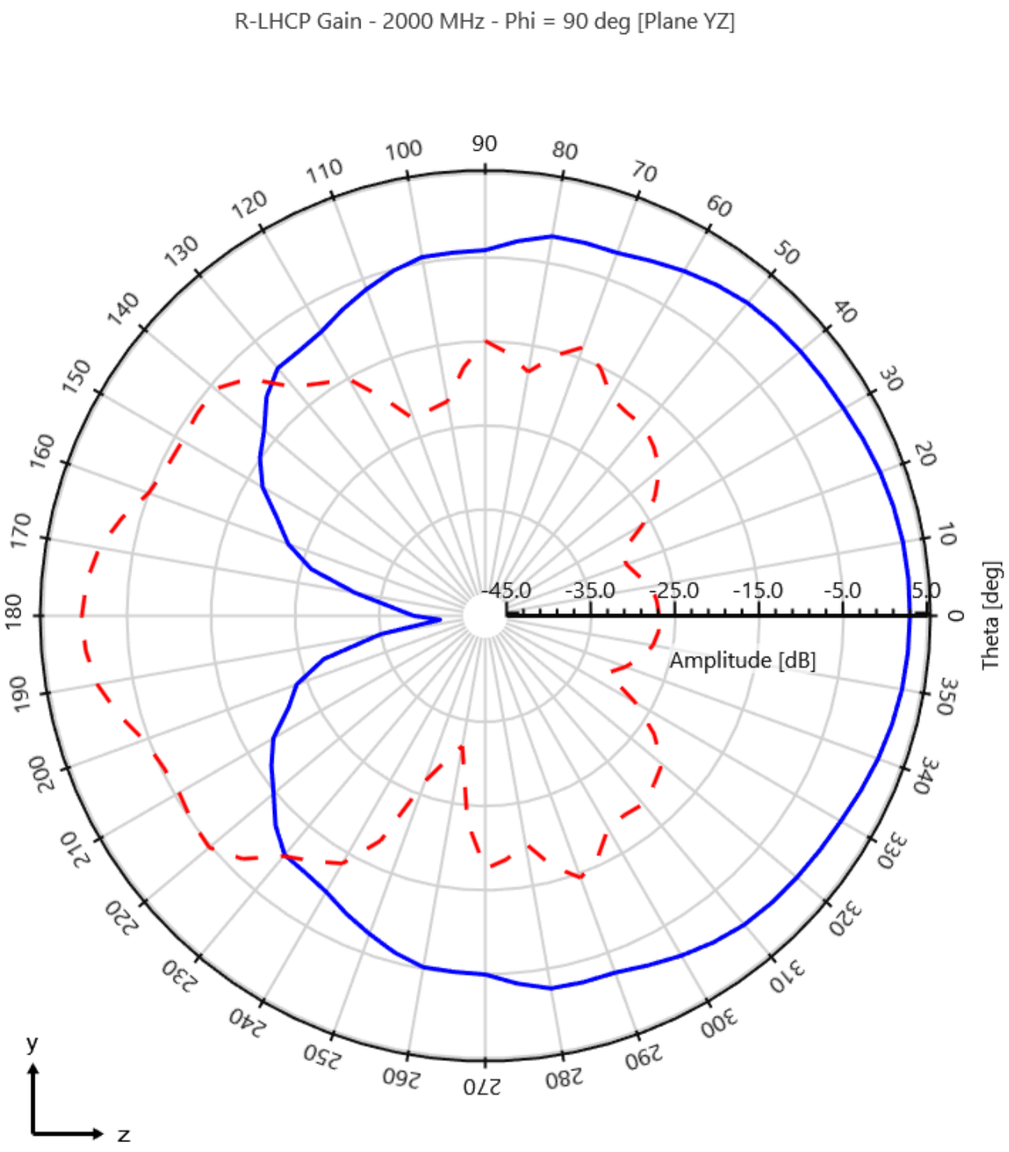
KYOCERA AVX NTN S-Band LDS Cap Antenna Specifications.
KYOCERA AVXs produces a wide variety of standard and custom antennas to meet user needs.

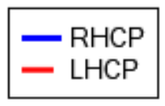
RHCP Gain 2D

Measured at 2000 and 2190 MHz

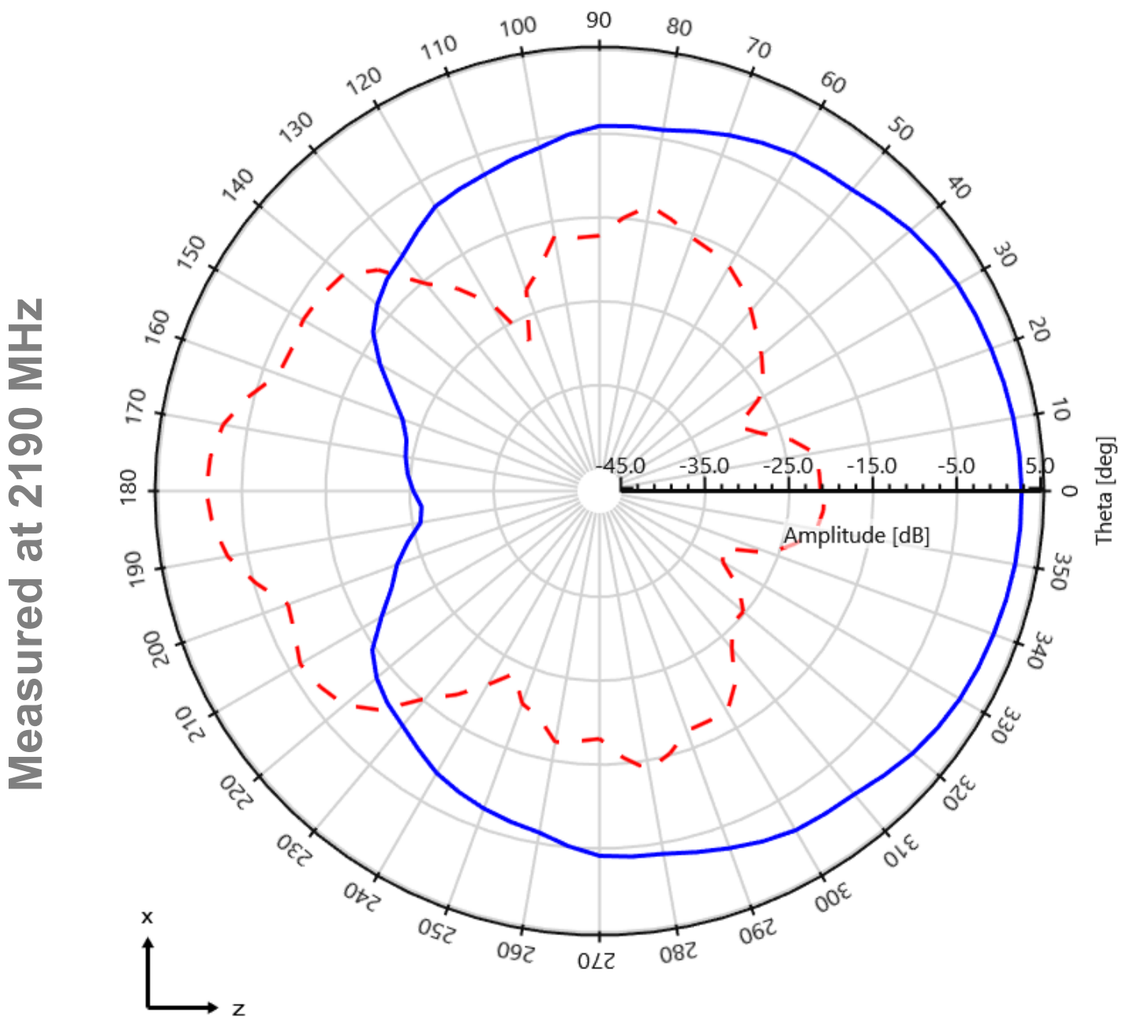
Measured at 2000 MHz

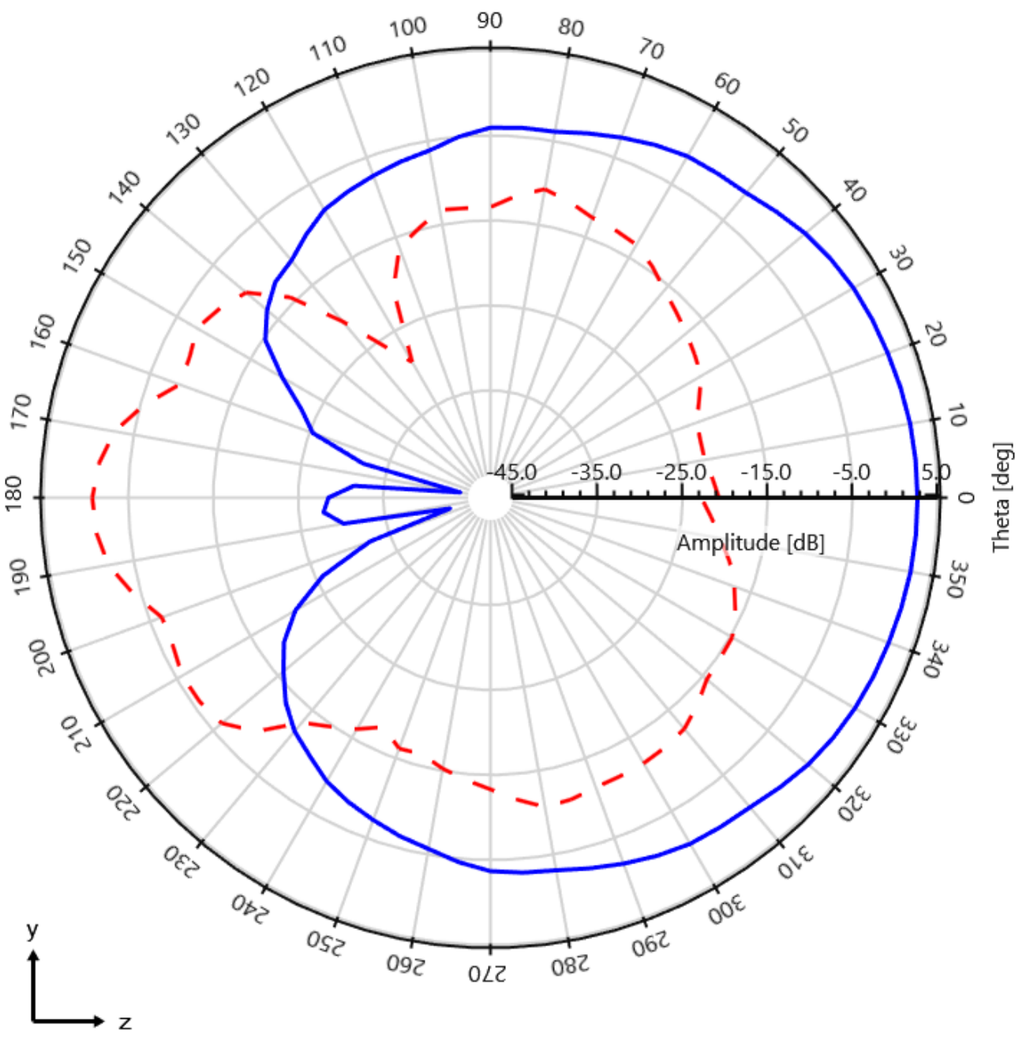






Measured at 2190 MHz





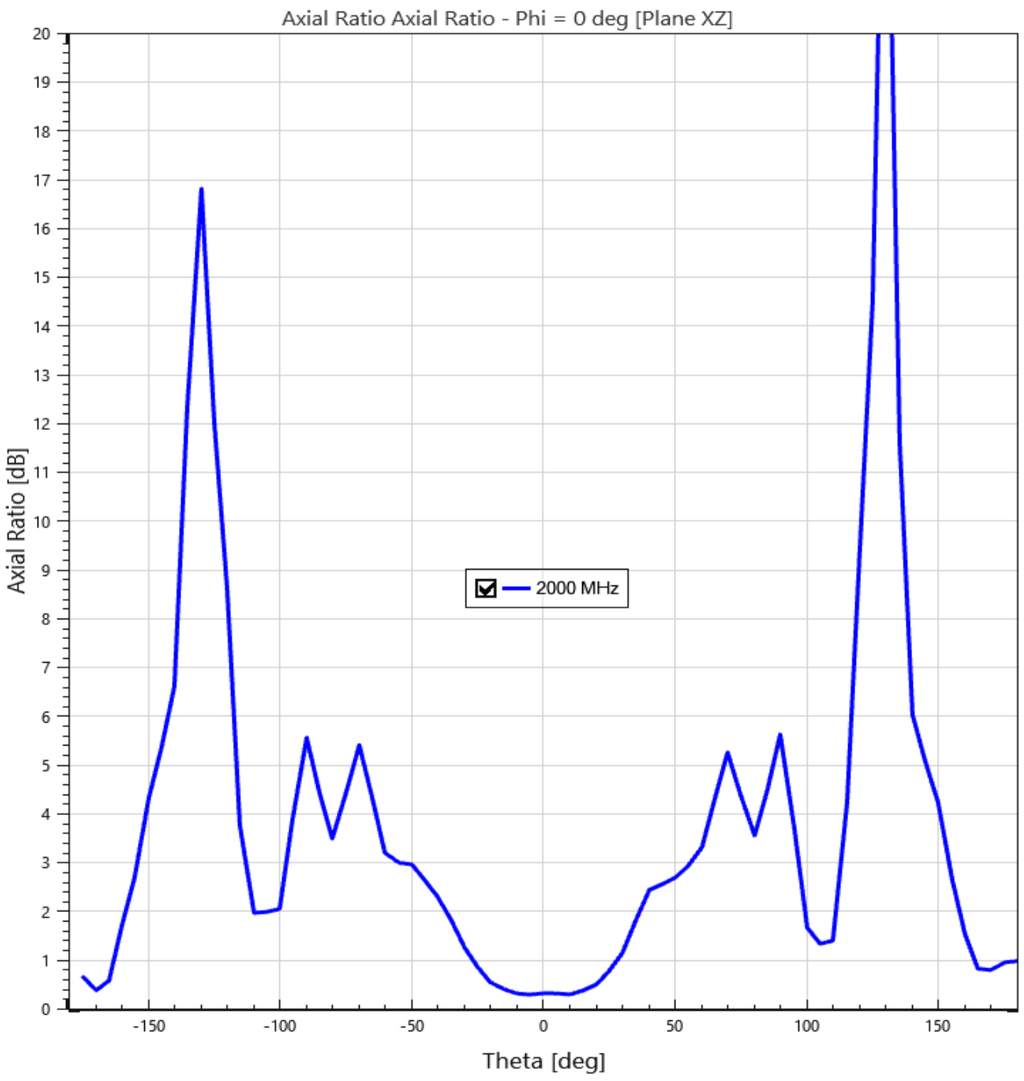
Mini-Circuits WP4P1+ Power Divider/Combiner was used for the radiating test.

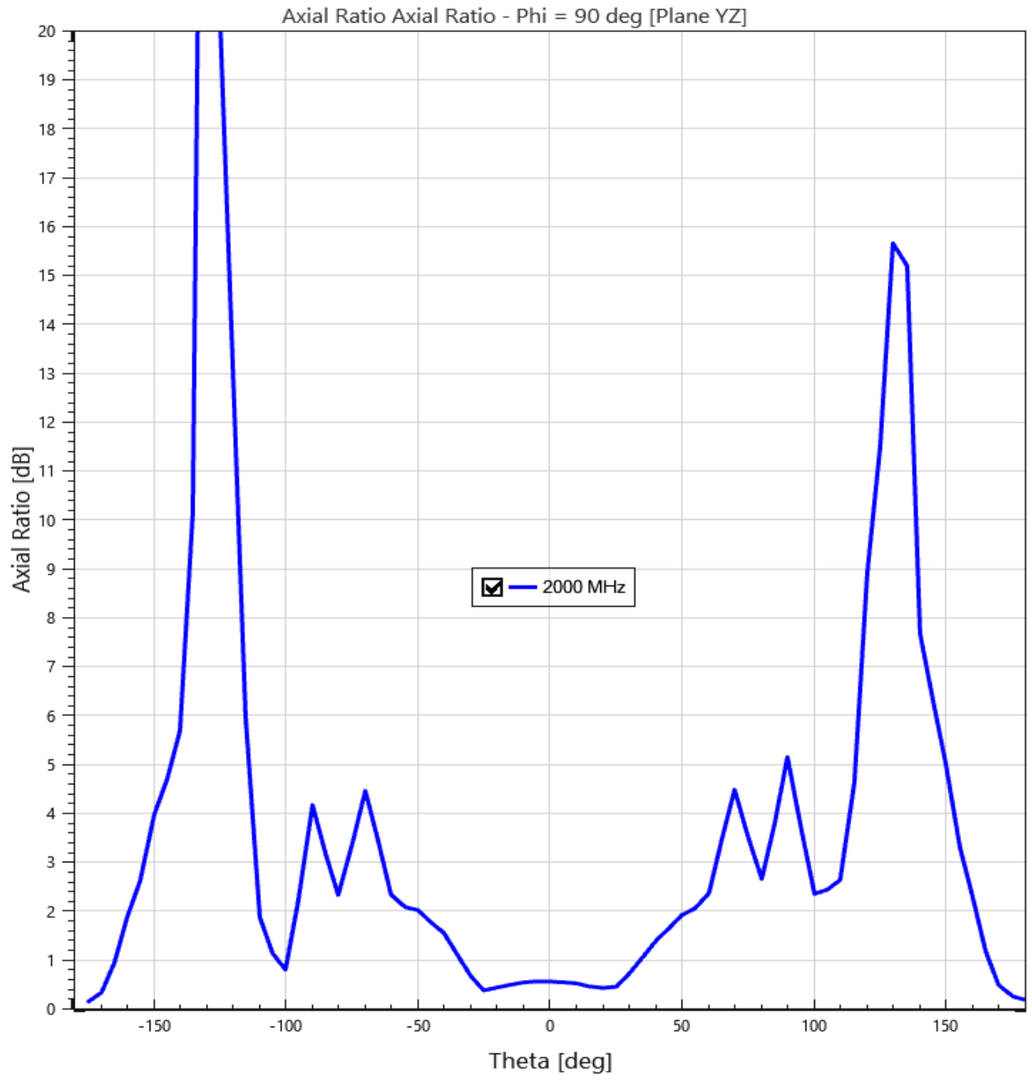
tel +(1) 858.550.3820
email: antenna.info@kyocera-avx.com
1 Avx Blvd, Fountain Inn, SC 29644

KYOCERA AVX NTN S-Band LDS Cap Antenna Specifications.
KYOCERA AVXs produces a wide variety of standard and custom antennas to meet user needs.

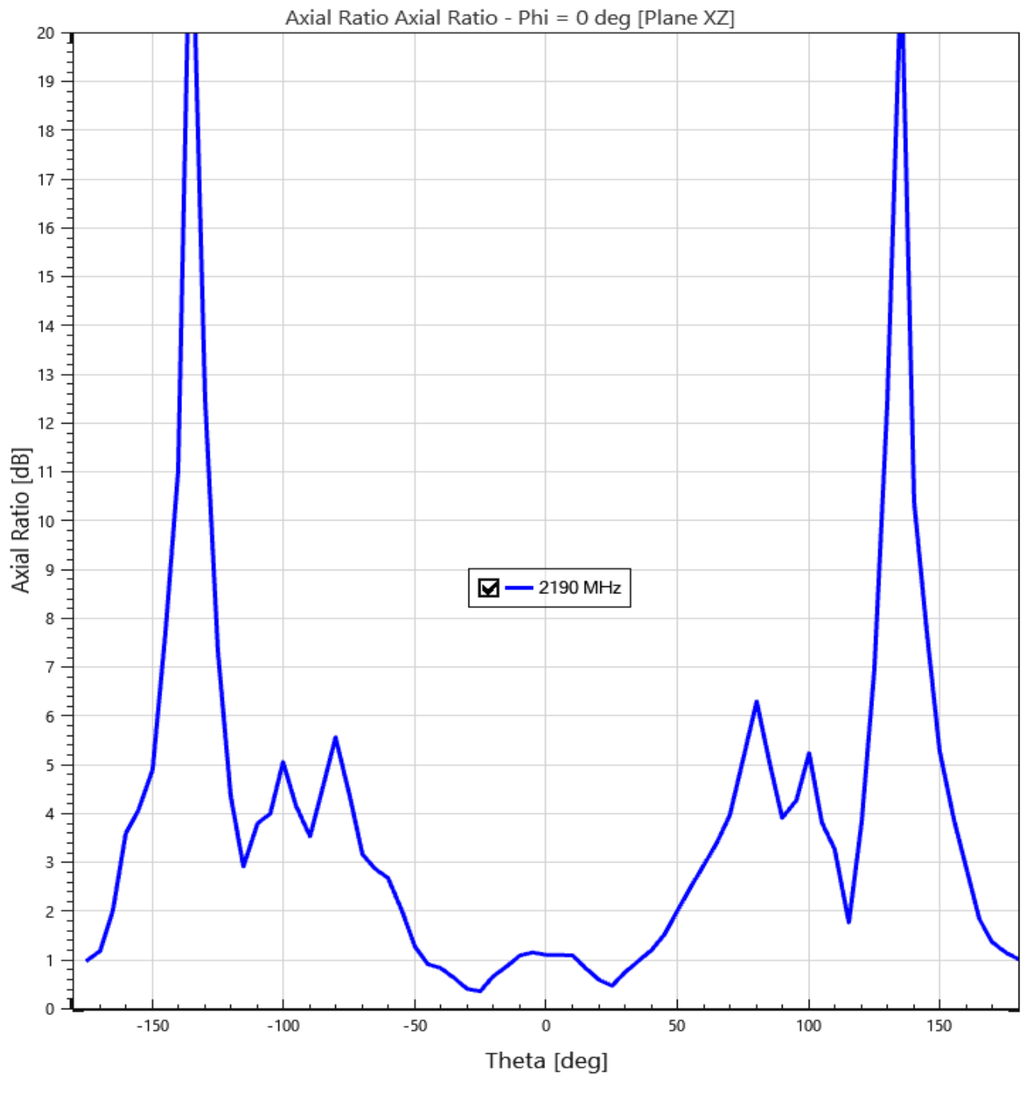
Axial Ratio 2D

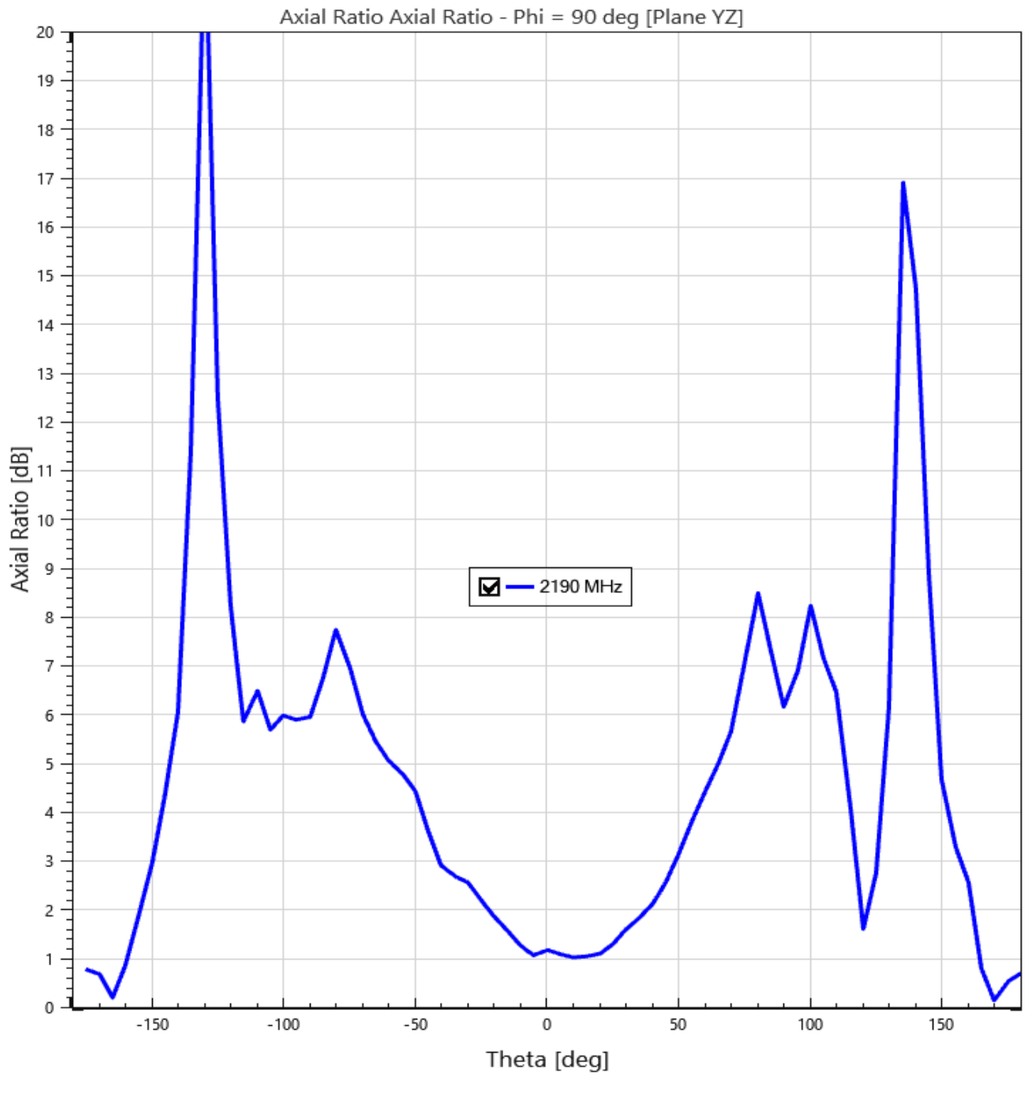
Measured at 2000 MHz





Measured at 2190 MHz





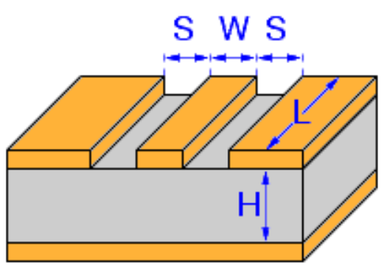
Mini-Circuits WP4P1+ Power Divider/Combiner was used for the radiating test.

tel +(1) 858.550.3820
email: antenna.info@kyocera-avx.com
1 Avx Blvd, Fountain Inn, SC 29644

KYOCERA AVX NTN S-Band LDS Cap Specifications.
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

Delay Lines Recommended Length (9002418L0-L16S-16D)

Three tables showing our recommended length for the Delay Lines (the one in Blue) for conventional PCB. They are also showing the variation of the length for Delay Lines with a few PCB parameters (permittivity, thickness and RF line dimensions).



H (mm) = Dielectric thickness
W (mm) = RF line width
S (mm)= Spacing between lines

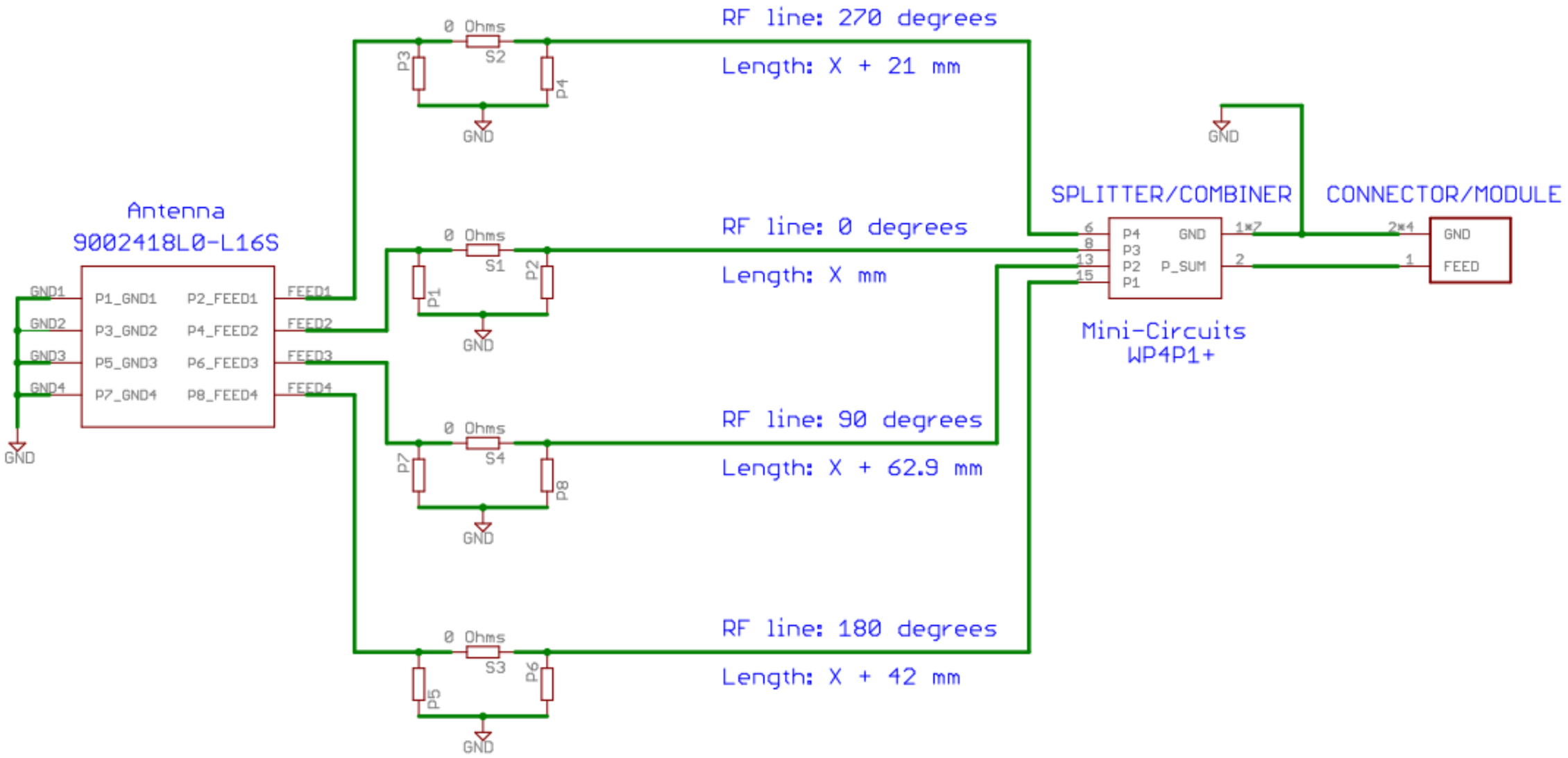
S-Band	H (mm)	W (mm)	S (mm)	Frequency (MHz)	λ/4 (270°)	λ/2 (180°)	3λ/4 (90°)	
FR4 (εr = 4.4)	0.24	0.44	0.3	2090	20.7	41.4	62.1	Same εr and same S.
FR4 (εr = 4.4)	0.3	0.53	0.3	2090	20.8	41.7	62.5	
FR4 (εr = 4.4)	0.36	0.6	0.3	2090	21.0	42.0	62.9	
FR4 (εr = 4.4)	0.6	0.88	0.3	2090	21.3	42.6	63.9	
FR4 (εr = 4.4)	0.8	1.1	0.3	2090	21.5	42.9	64.4	
FR4 (εr = 4.4)	0.36	0.68	0.6	2090	20.1	40.3	60.4	Same εr and same H.
FR4 (εr = 4.4)	0.36	0.64	0.4	2090	20.6	41.2	61.8	
FR4 (εr = 4.4)	0.36	0.6	0.3	2090	21.0	42.0	62.9	
FR4 (εr = 4.4)	0.36	0.53	0.2	2090	21.6	43.1	64.7	
FR4 (εr = 4.7)	0.36	0.58	0.3	2090	20.4	40.9	61.3	Same H and same S.
FR4 (εr = 4.4)	0.36	0.6	0.3	2090	21.0	42.0	62.9	
FR4 (εr = 4.1)	0.36	0.64	0.3	2090	21.5	43.1	64.6	
FR4 (εr = 3.9)	0.36	0.67	0.3	2090	21.9	43.9	65.8	

If you use a parameter outside of the presented range, it's recommended to adjust the lengths.

tel +(1) 858.550.3820
email: antenna.info@kyocera-avx.com
1 Avx Blvd, Fountain Inn, SC 29644

KYOCERA AVX NTN S-Band LDS Cap Specifications.
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

Antenna Schematic for RHCP (9002418L0-L16S-16D)



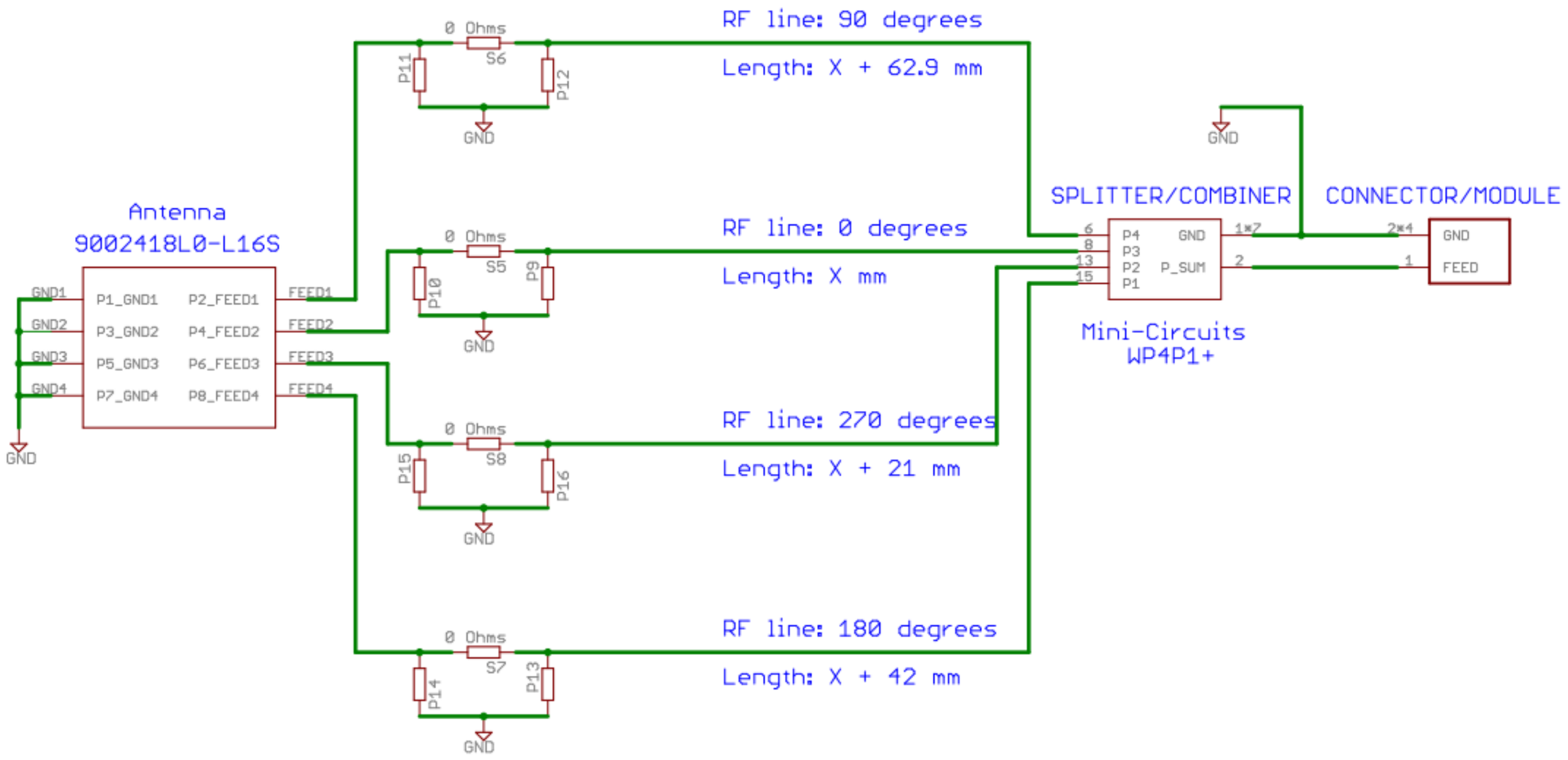
	P1/P2/P3/P4/P5/P6/P7/P8	S1/S2/S3/S4
Default Matching	DNI	0 ohm

Mini-Circuits WP4P1+ Power Divider/Combiner was used for the radiating test.

tel +(1) 858.550.3820
email: antenna.info@kyocera-avx.com
1 Avx Blvd, Fountain Inn, SC 29644

KYOCERA AVX NTN S-Band LDS Cap Specifications.
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

Antenna Schematic for LHCP (9002418L0-L16S-17D)



	P1/P2/P3/P4/P5/P6/P7/P8	S1/S2/S3/S4
Default Matching	DNI	0 ohm

Mini-Circuits WP4P1+ Power Divider/Combiner was used for the radiating test.

tel +(1) 858.550.3820
email: antenna.info@kyocera-avx.com
1 Avx Blvd, Fountain Inn, SC 29644

DATASHEET | **Part No. 9002418L0-L16S**

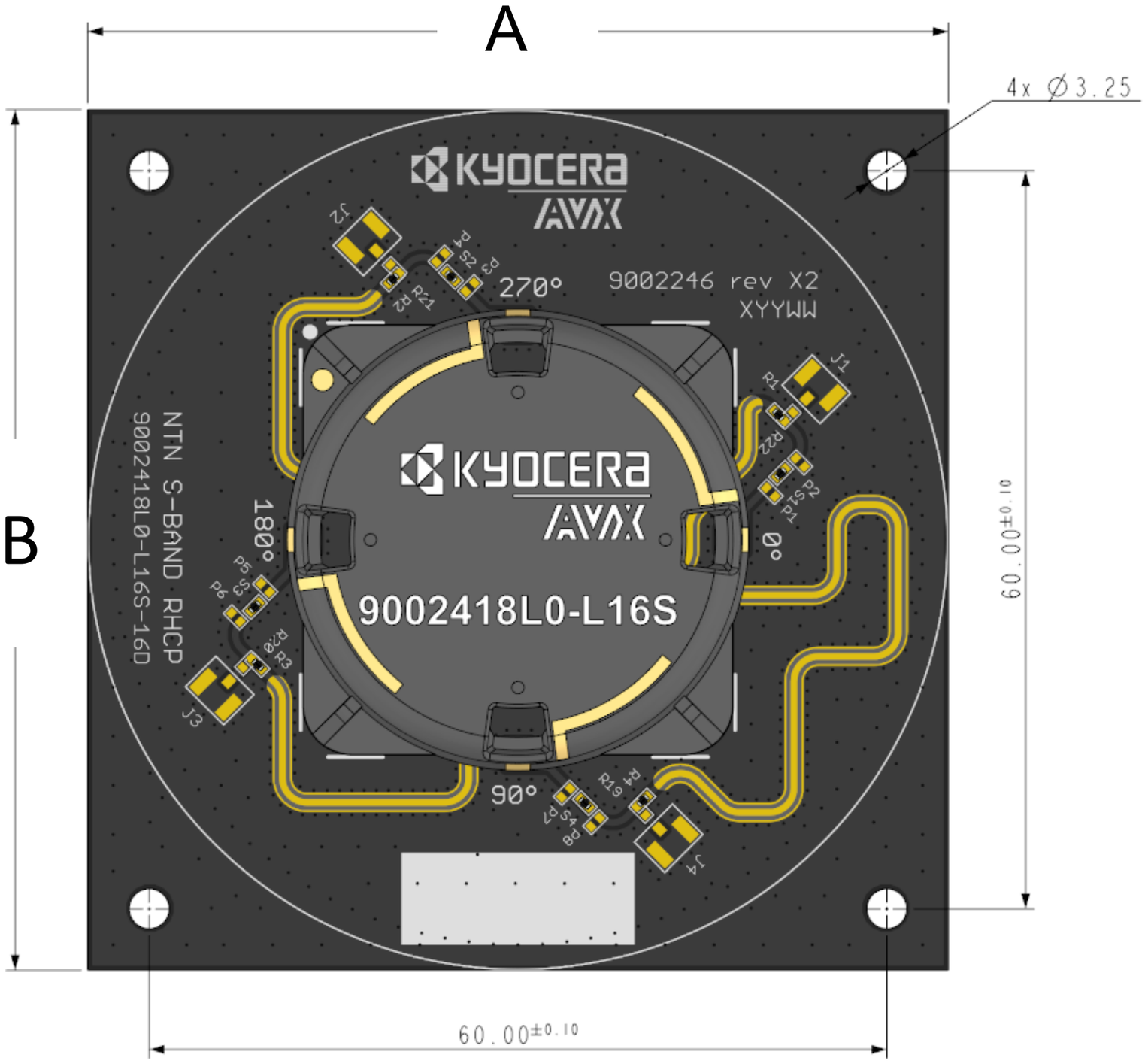
KYOCERA AVX NTN S-Band LDS Cap Antenna Specifications.
KYOCERA AVXs produces a wide variety of standard and custom antennas to meet user needs.

Antenna Demo Board (9002418L0-L16S-16D)

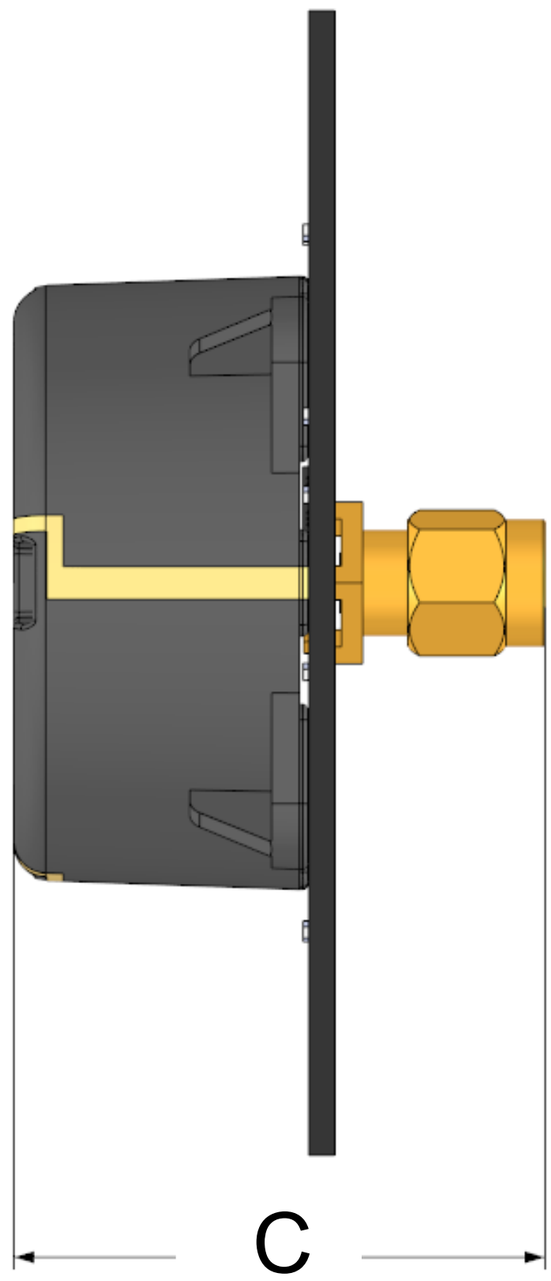
Demo Board Top and Side View

Part Number	A	B	C
9002418L0-L16S-16D	70.0 mm	70.0 mm	32.5 mm

For more details, please check our Gerber file on the website.
MHF connector Footprint for debugging purposes



Top View



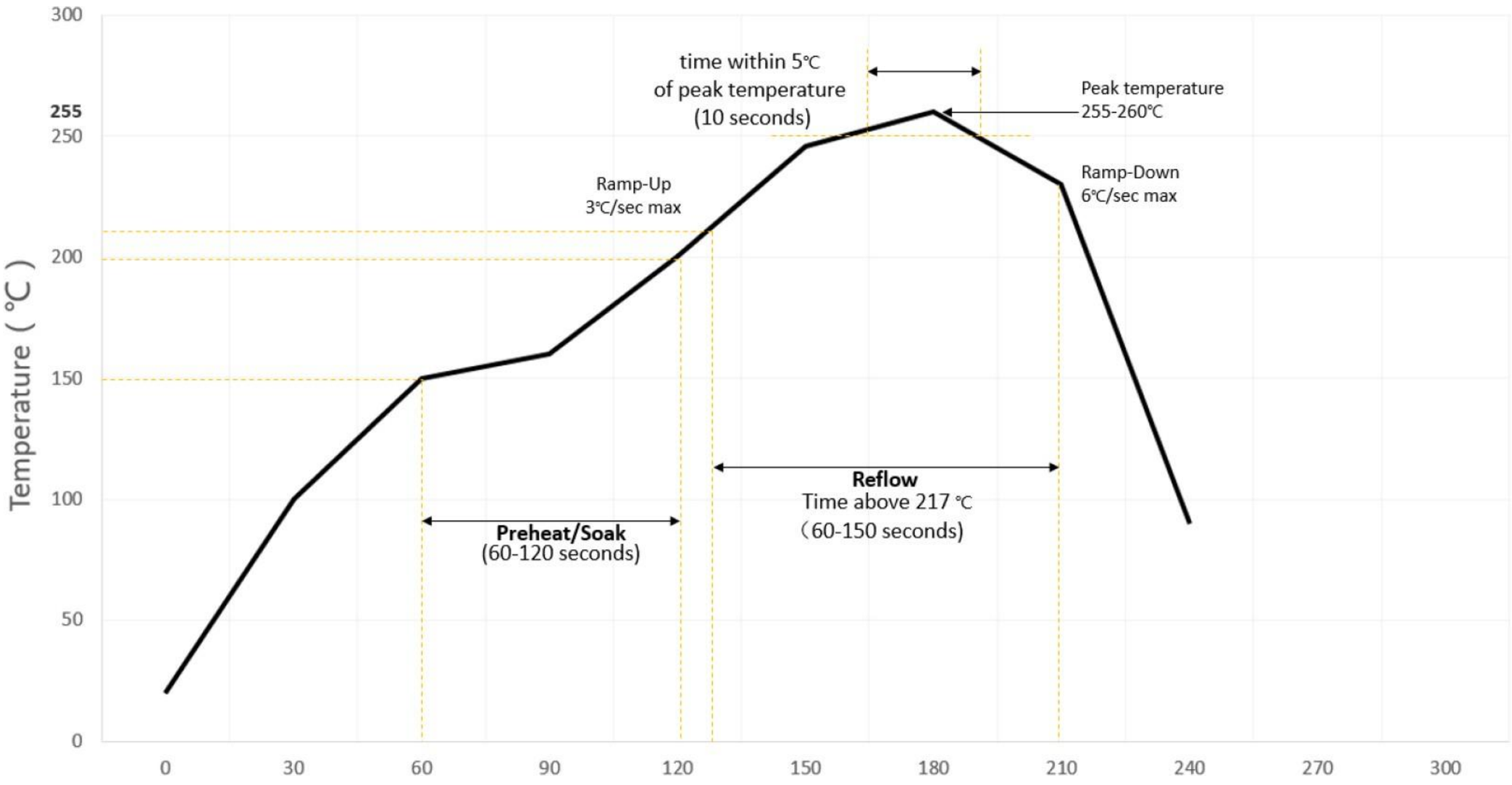
Side View

tel +(1) 858.550.3820
email: antenna.info@kyocera-avx.com
1 Avx Blvd, Fountain Inn, SC 29644

KYOCERA AVX NTN S-Band LDS Cap Antenna Specifications.
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

Recommended Reflow Soldering Profile

The recommended method for soldering the antenna to the board is forced convection reflow soldering. The following suggestions provide information on how to optimize the reflow process for the LDS antenna:

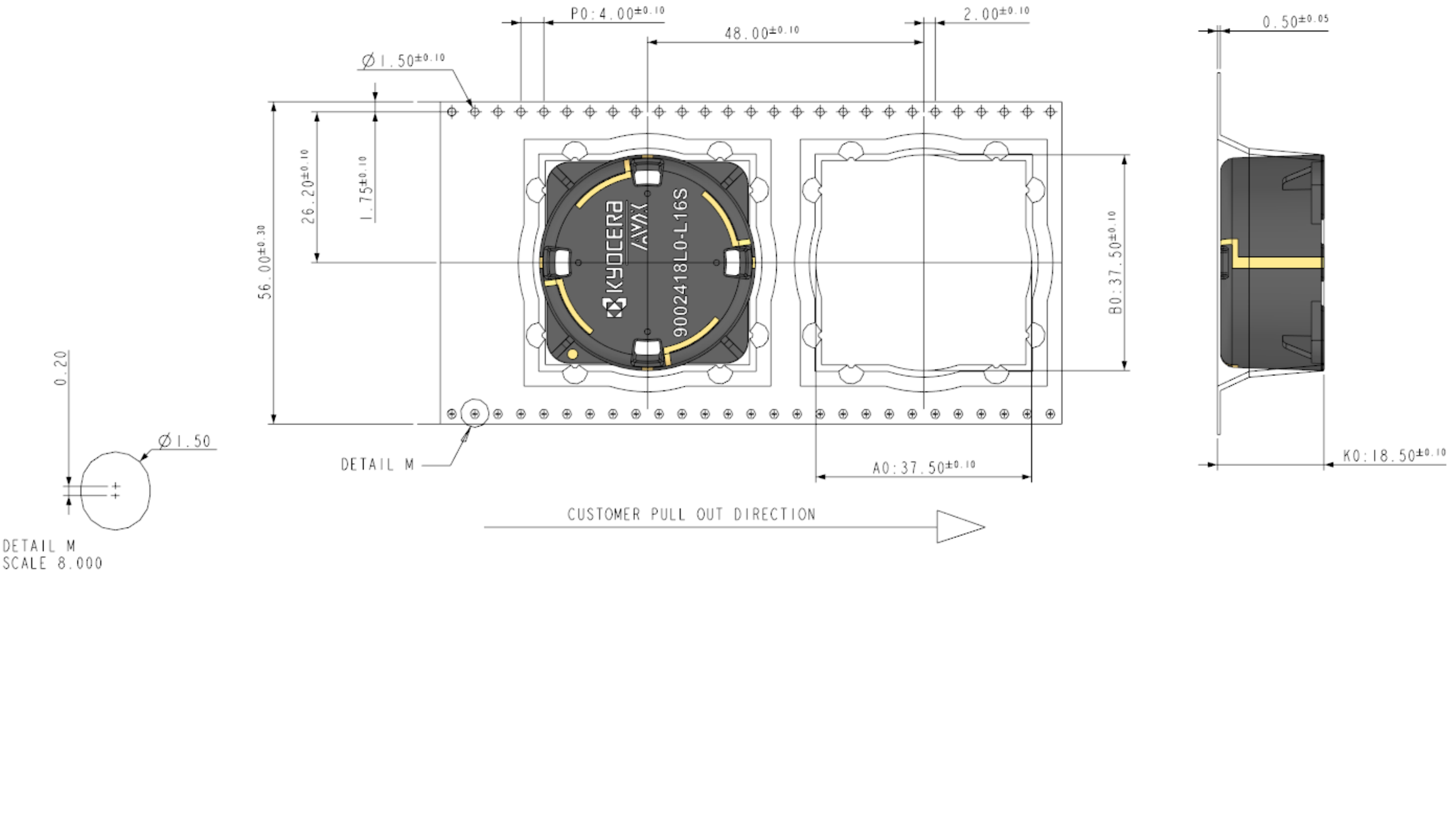


tel +(1) 858.550.3820
email: antenna.info@kyocera-avx.com
1 Avx Blvd, Fountain Inn, SC 29644

KYOCERA AVX NTN S-Band LDS Cap Antenna Specifications.
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

Packaging

9. PACKAGING REQUIREMENT:
TAPE AND REEL (EMBOSSED CARRIER TAPE), SEE BELOW SPECIFICATIONS:
- REEL SIZE 15"(Ø380mm)
- CARRIER TAPE - ALL DIMENSIONS ARE DEFINED IN ACCORDANCE WITH THE EIA-481 STANDARD
  MATERIAL: PS - THICKNESS: 0.50±0.05mm - COLOR: BLACK
- QTY/REEL: 104 PARTS



tel +(1) 858.550.3820
email: antenna.info@kyocera-avx.com
1 Avx Blvd, Fountain Inn, SC 29644

KYOCERA AVX NTN S-Band LDS Cap Specifications.
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

Additional Resources – 9002418L0-L16S

3D FIT File:
https://www.kyocera-avx.com/download/antennas/ME-FIT/9002418L0-L16S_3D-FIT.zip

tel +(1) 858.550.3820
email: antenna.info@kyocera-avx.com
1 Avx Blvd, Fountain Inn, SC 29644