Part No.1002289

LTE & NTN Cellular Wide Band FPC Embedded Antenna

700 / 750 / 850 / 900 / 1800 / 1650 / 1900 / 2000 / 2100 / 2700 MHz

Supports: NTN, Broadband LTE (OCTA-BAND), LTE CAT-M, NB-IoT, SigFox, LoRa, Cellular LPWA, RPMA

LTE & NTN Cellular FPC Embedded Antenna

Low Band : 698 - 960 MHz
High Band: 1710 - 2690 MHz
Band 255: 1525 – 1626.5 MHz
Band 256/23: 1980 – 2200 MHz

KEY BENEFITS

Reduced Costs and Time-to-Market

Standard antenna eliminates design fees and cycle time associated with a custom solution;
getting products to market faster.

Greater Flexibility with Unique Form Factors

KYOCERA AVX technology helps you deliver more advanced ergonomic designs without adverse impact on product performance.

Environmental Compliance

Products are the latest RoHS version compliant.

APPLICATIONS

- Healthcare applications (FDA Class I)
- Home automation
- Smart metering
- M2M, Industrial devices
- IoT
- Point of Sale
- Tracking
- NB-IoT
- Sigfox
- LoRa
- LPWA
- RPMA
- Firstnet

KYOCERA AVX LTE cellular embedded antenna 1002289 address the challenges facing today's product designers. Based on a flexible substrate for easier integration, high performance and isolation characteristics, this antenna offers better connectivity. In addition, 1002289 supports all the worldwide cellular bands for LTE with backward compatibility.

The 1002289 is offered in many standard cable lengths ranging up to 200mm. Ordering part number guide is located at end of document for selection ease.
This antenna also covers NTN Band 255/256/23.

Electrical Specifications

Typical Characteristics, using 75 x 140 mm ground plane with 7.6 mm cable. Antenna is mounted directly on plastic material.

Frequency (MHz)	698 - 960	1710 – 2690	Including NTN Bands n23/n255/ n256
Average Efficiency (Longer Edge)	74%	58%	Refer to Appendix1
Average Efficiency (Shorter Edge)	67%	63%	
Peak Gain (Longer Edge)	2.9 dBi	4.3 dBi	
Peak Gain (Shorter Edge)	1.8 dBi	1.2 dBi	
VSWR Match	2.5:1 max		
Feed Point Impedance	50 ohms unbalanced		
Polarization	Linear		
Power Handling	2 Watts CW		
Radiation Pattern	Omni-directional		

Mechanical Specifications & Ordering Part Number

Ordering Part #	1002289
Dimensions (mm)	53.6 x 25.1 x 0.2 (1.6 high at cable solder connection)
Weight (grams)	0.86
Connector / Cable (mm)	U.FL compatible connector Length: 7.6, Cable diameter: 1.13, Color: Black
Mounting	using 3M468 Adhesive
Additional Resources	Download 3D FIT Files

*Additional variations with different cable lengths, colors and connectors are available.

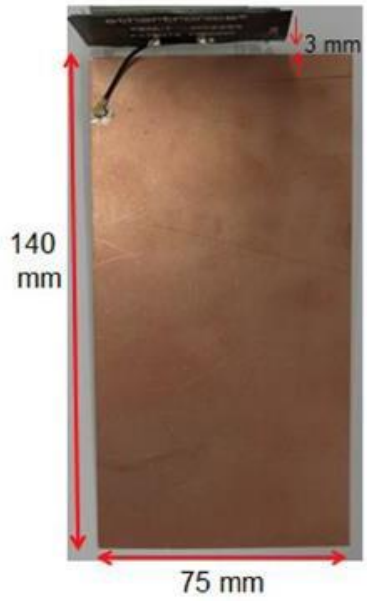
LTE & NTN Cellular Band KYOCERA AVX Embedded Antenna Specifications.
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

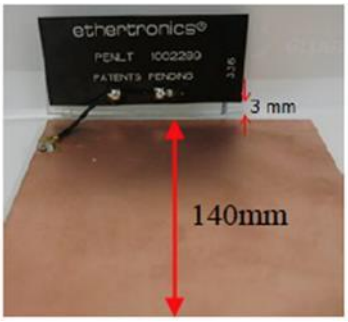
LTE Test Setup

Typical performance with 7.6 mm cable

Antenna Location 1

Antenna located at the end of the long edge of the PCB

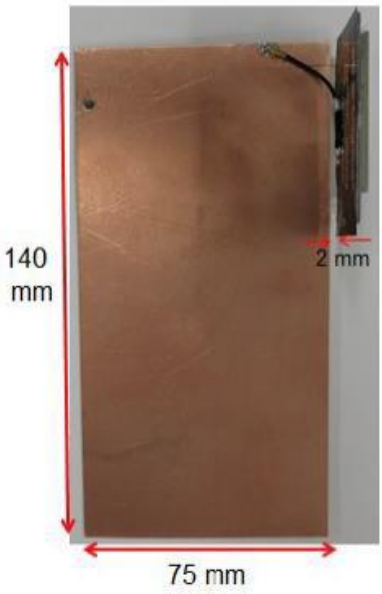


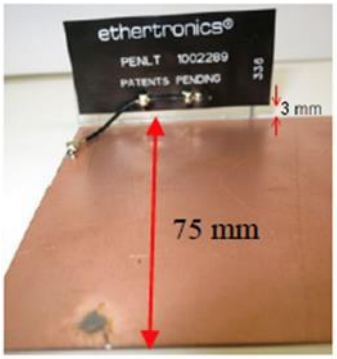


In this position, the antenna is located 3 mm away from the PCB and 3 mm above the PCB

Antenna Location 2

Antenna located at the end of the short edge of the PCB.





In this position, the antenna is located 2 mm away from the PCB and 3 mm above the PCB

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LTE / Cellular Band KYOCERA AVX Embedded Antenna Specifications.
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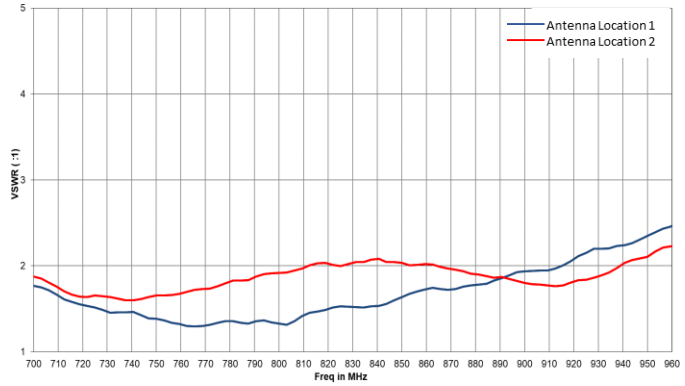
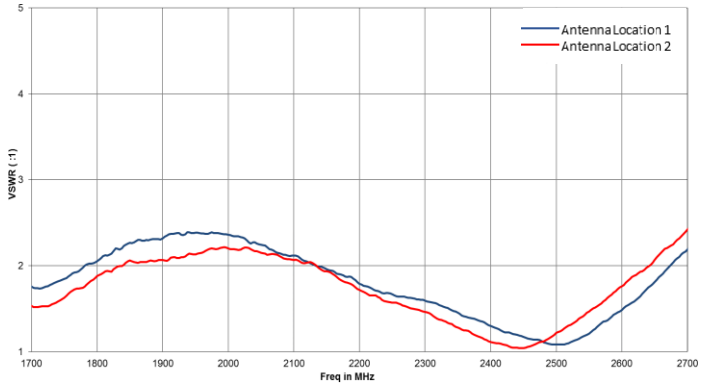
VSWR, Efficiency and Peak Gain Plots

Typical performance with 7.6 mm (Location 1 & Location 2)

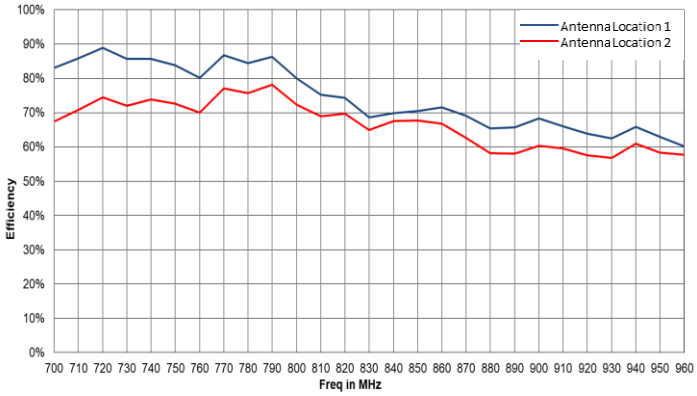
Low Band VSWR



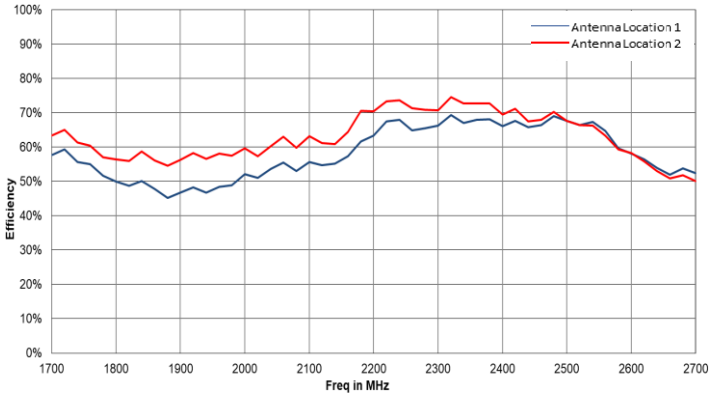
High Band VSWR



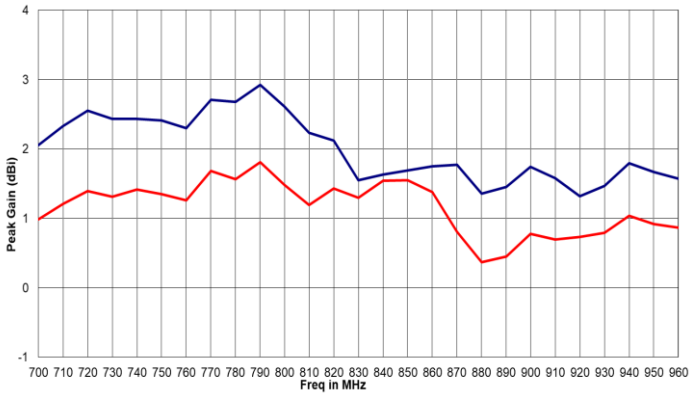
Low Band Efficiency



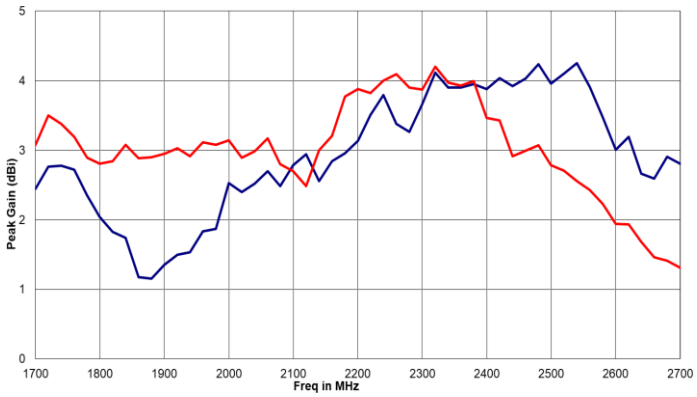
High Band Efficiency



Low Band Peak Gain



High Band Peak Gain



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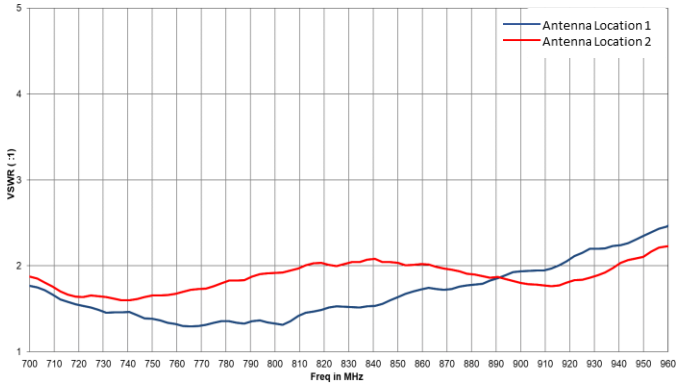
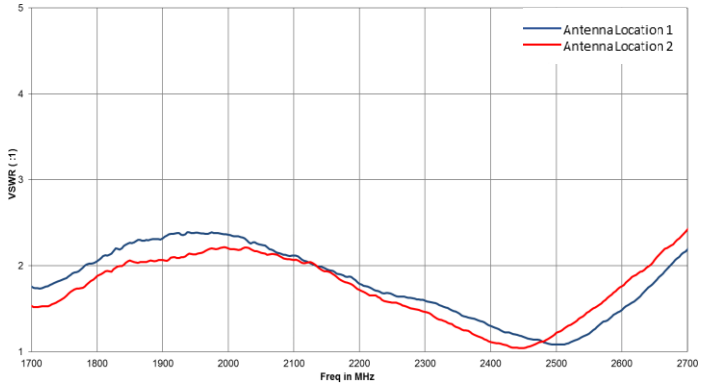
VSWR, Efficiency and Peak Gain Plots

Typical performance with 7.6 mm (Location 1 & Location 2)

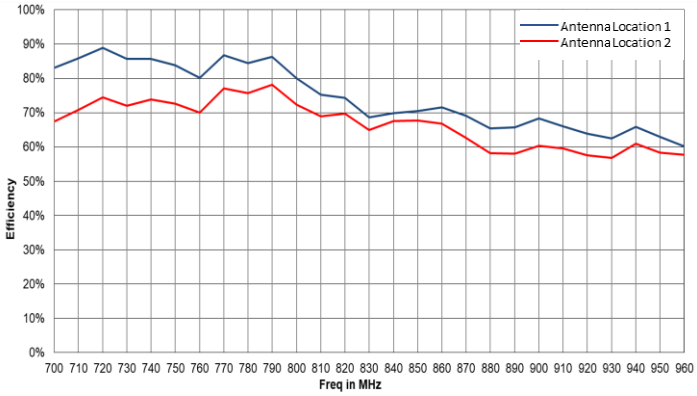
Low Band VSWR



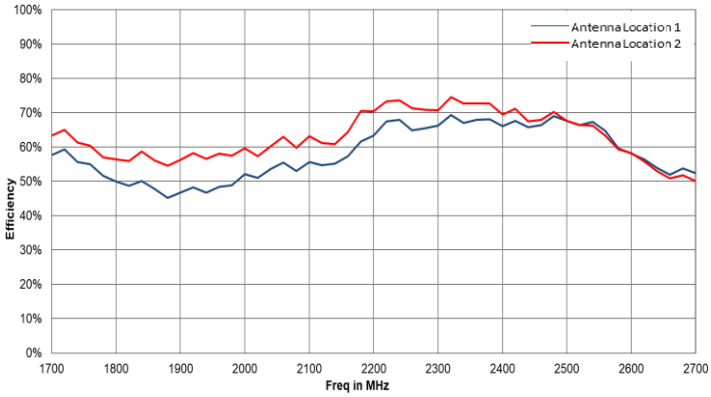
High Band VSWR



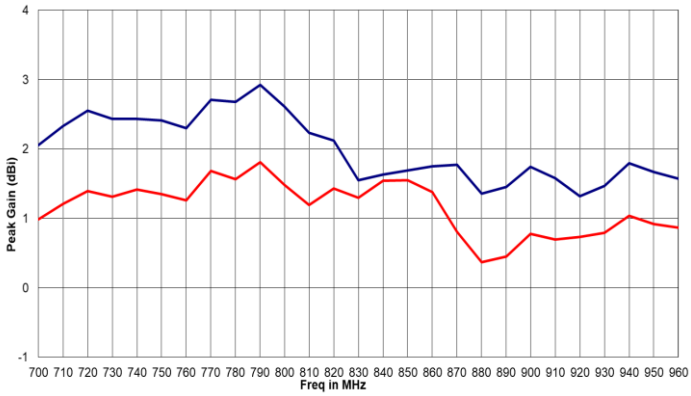
Low Band Efficiency



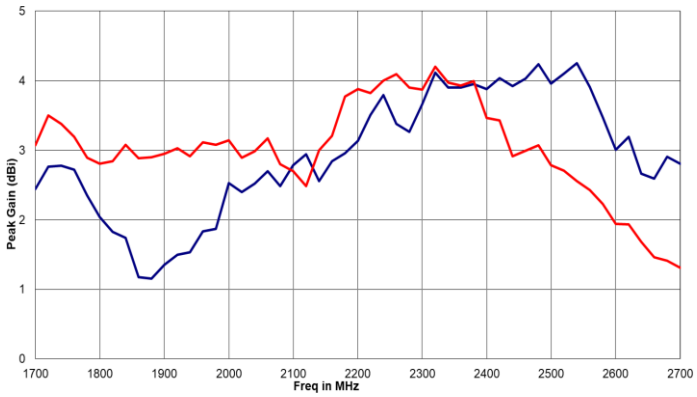
High Band Efficiency



Low Band Peak Gain



High Band Peak Gain



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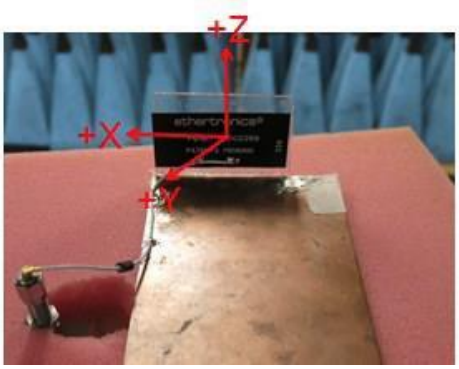
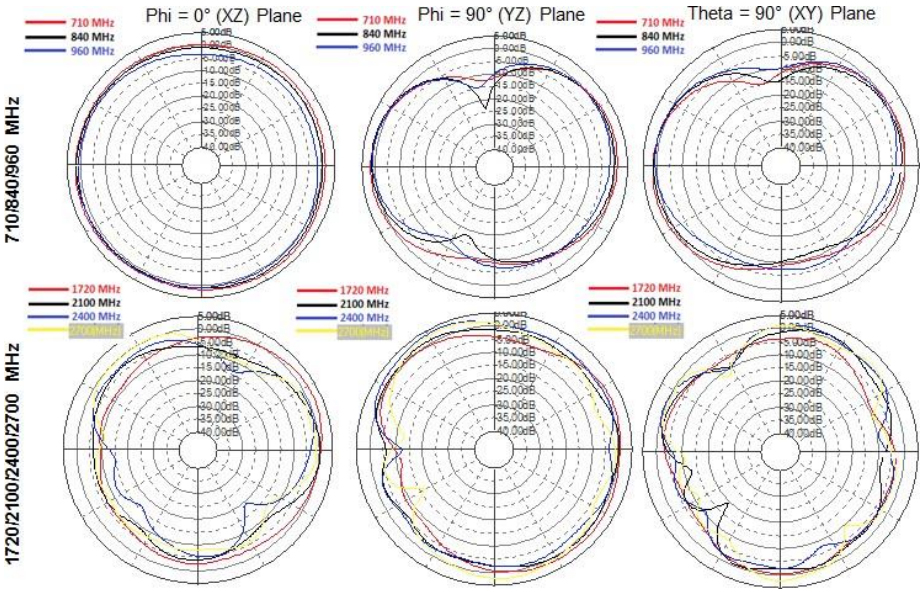
Radiation Patterns

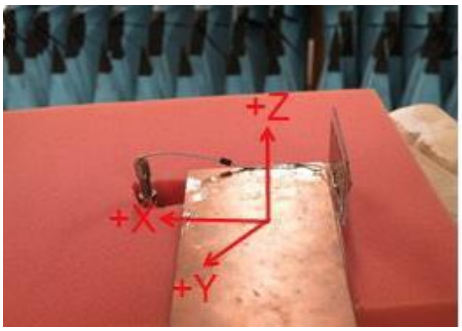
Typical performance with 7.6 mm cable

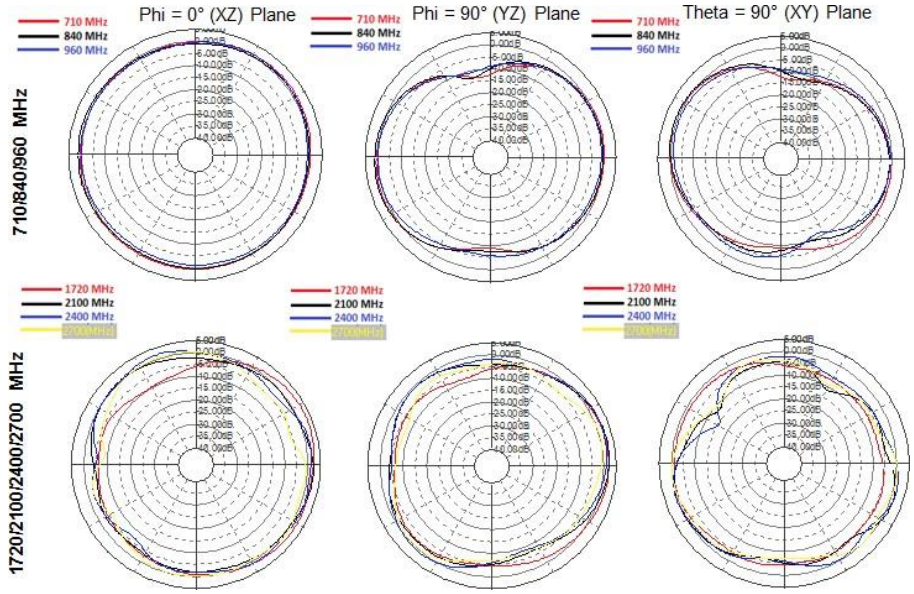
Antenna Location 1





Antenna Location 2





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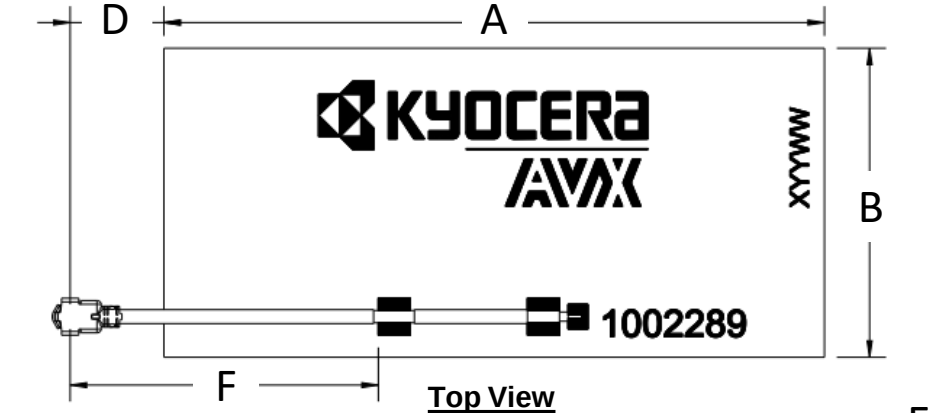
Mechanical Dimensions

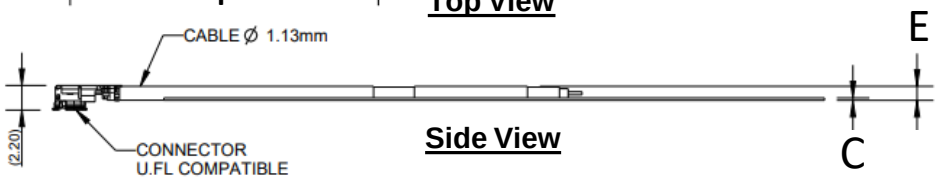
Typical antenna dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
1002289	53.6 ± 0.3	25.1 ± 0.3	0.2 ± 10%	7.6 ± 3.0	1.6 (max)	25

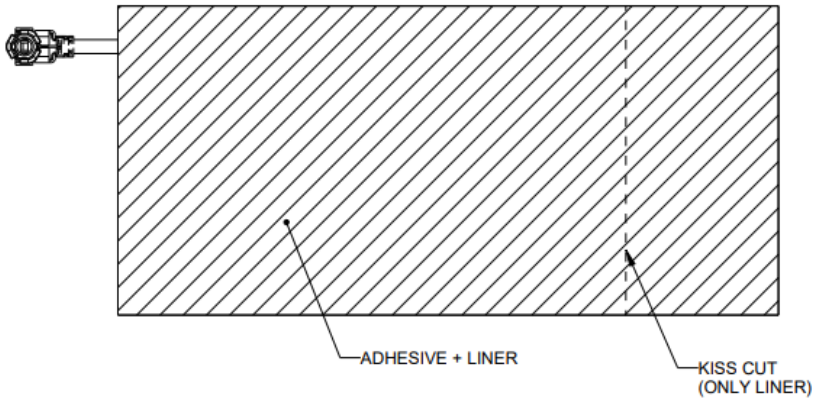
***Total Height of 1.6 mm includes the cable solder connection**
***Height "C" of 0.2 mm includes FPC + adhesive thicknesses**



Top View



Side View



Bottom View

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Ordering Part Numbers

Typical antenna dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)	D (mm) Cable Length	E (mm)	F (mm)
1002289	53.6 ± 0.3	25.1 ± 0.3	0.2 ± 10%	7.6 ± 3.0	1.6 (max)	25
1002289F0-AA10L0025	53.6 ± 0.3	25.1 ± 0.3	0.2 ± 10%	25.0 ± 3.0	1.6 (max)	42.4
1002289F0-AA10L0050	53.6 ± 0.3	25.1 ± 0.3	0.2 ± 10%	50.0 ± 3.0	1.6 (max)	67.4
1002289F0-AA10L0065	53.6 ± 0.3	25.1 ± 0.3	0.2 ± 10%	65.0 ± 3.0	1.6 (max)	82.4
1002289F0-AA10L0075	53.6 ± 0.3	25.1 ± 0.3	0.2 ± 10%	75.0 ± 3.0	1.6 (max)	92.4
1002289F0-AA10L0080	53.6 ± 0.3	25.1 ± 0.3	0.2 ± 10%	80.0 ± 3.0	1.6 (max)	97.4
1002289F0-AA10L0100	53.6 ± 0.3	25.1 ± 0.3	0.2 ± 10%	100.0 ± 3.0	1.6 (max)	117.4
1002289F0-AA10L0110	53.6 ± 0.3	25.1 ± 0.3	0.2 ± 10%	110.0 ± 3.0	1.6 (max)	127.4
1002289F0-AA10L0120	53.6 ± 0.3	25.1 ± 0.3	0.2 ± 10%	120.0 ± 4.0	1.6 (max)	137.4
1002289F0-AA10L0150	53.6 ± 0.3	25.1 ± 0.3	0.2 ± 10%	150.0 ± 4.0	1.6 (max)	167.4
1002289F0-AA10L0160	53.6 ± 0.3	25.1 ± 0.3	0.2 ± 10%	160.0 ± 4.0	1.6 (max)	177.4
1002289F0-AA10L0200	53.6 ± 0.3	25.1 ± 0.3	0.2 ± 10%	200.0 ± 4.0	1.6 (max)	217.4

***Total Height of 1.6 mm includes the cable solder connection**
***Height "C" of 0.2 mm includes FPC + adhesive thicknesses**

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Appendix 1

Appendix 1 gives instructions on how to achieve NTN bands through adjust antenna's orientation and assembly. (1525 – 1660.5 MHz, 1980 – 2200 MHz, 2000 - 2200 MHz)

Electrical Specifications

Typical Characteristics, using 75 x 140 mm ground plane with 25 mm cable.
Antenna is mounted directly on plastic material.

Frequency (MHz)	1525-1660.5	1980-2200	2000-2200
Peak Gain	1.9	6.6	6.6
Average Efficiency	73.6%	83.9%	84.3%
VSWR Match	<2.5:1	<2.5:1	<2.5:1
Power Handling	2 Watts CW		
Feed Point Impedance	50 Ω unbalanced		
Polarization	Linear		
Power Handling	2 Watts CW		
Radiation Pattern	Omni-directional		

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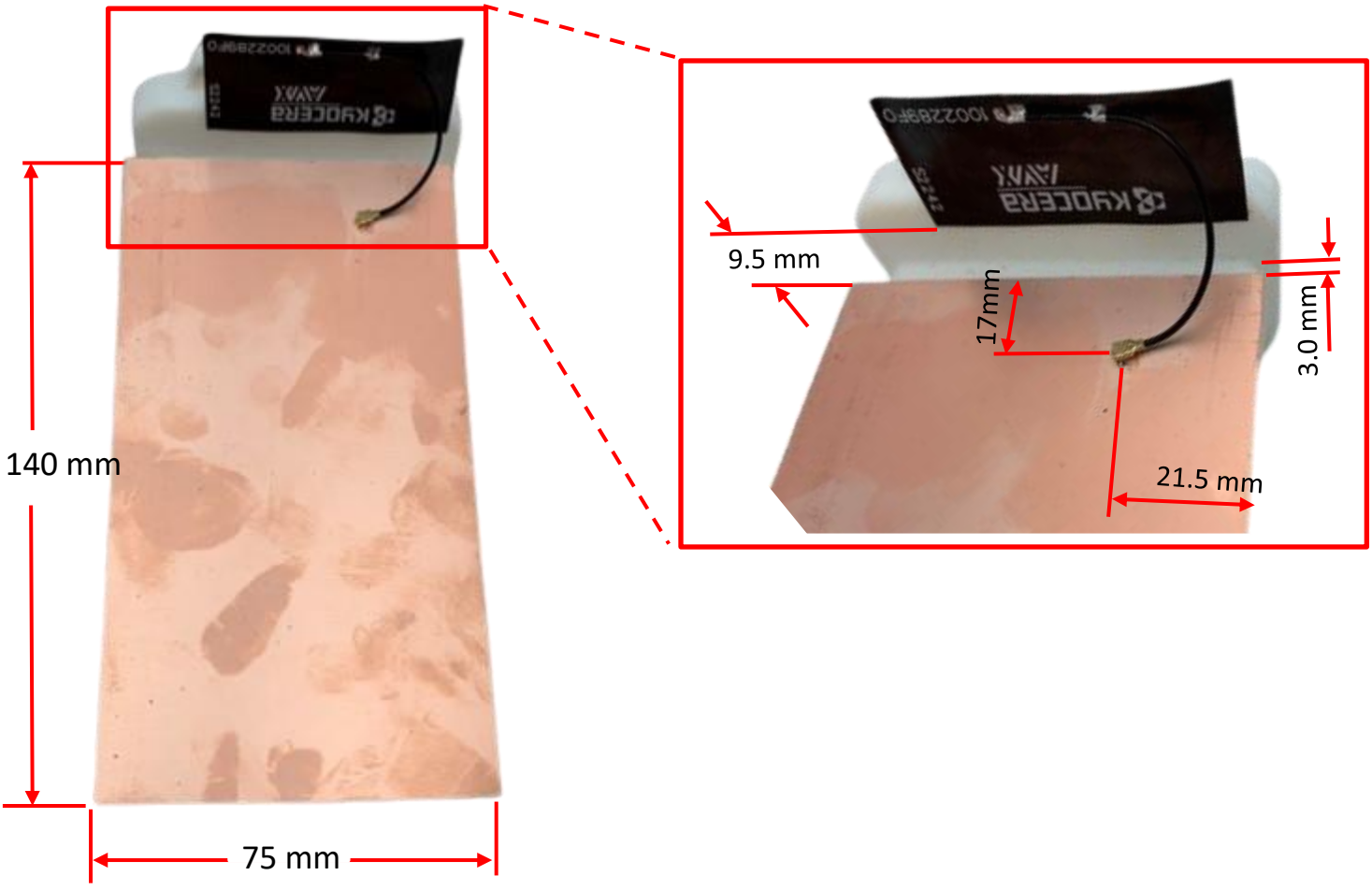
LTE & NTN Test Setup

Typical performance with 25 mm cable



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NTN Band KYOCERA AVX Embedded Antenna Specifications.
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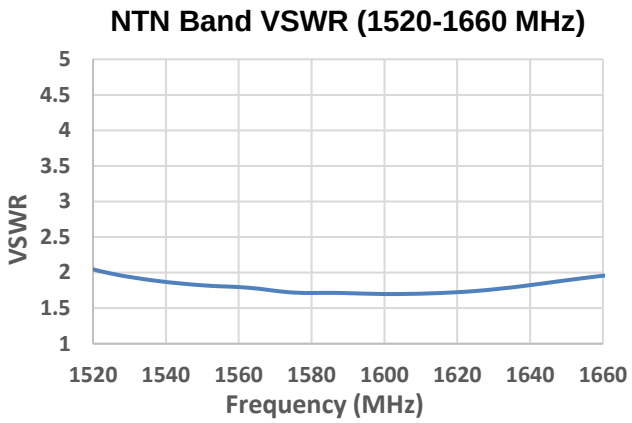
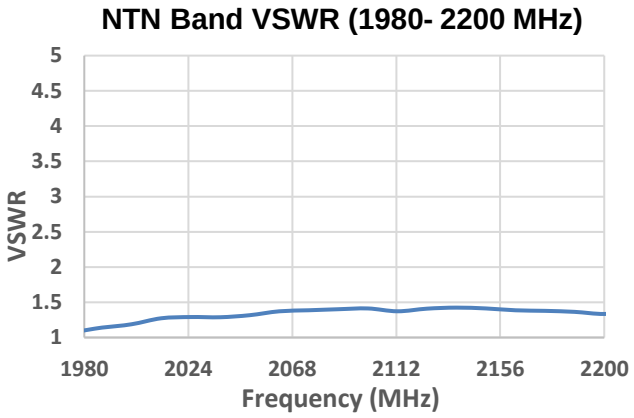
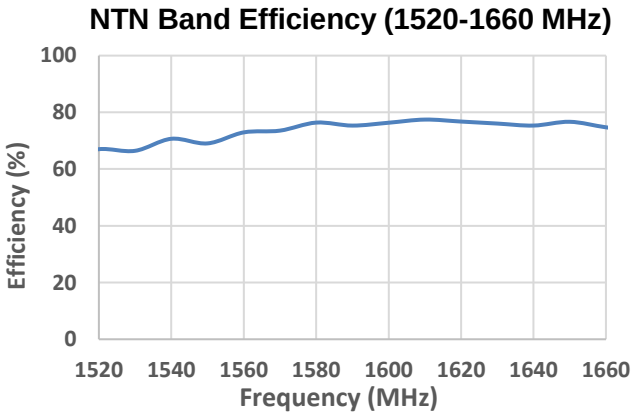
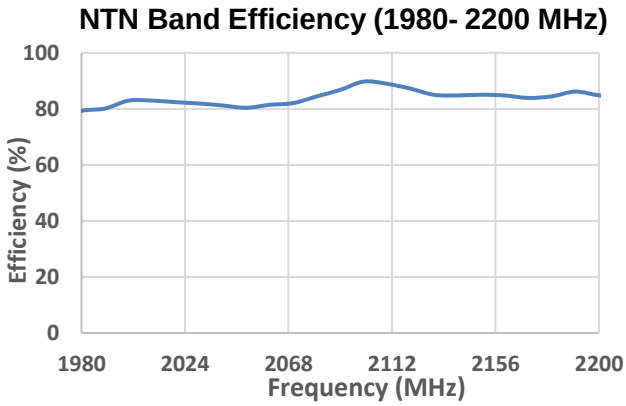
NTN Band VSWR and Efficiency

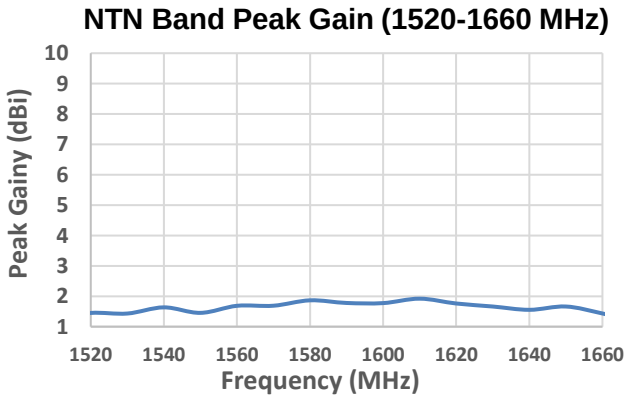
Typical performance with 25 mm

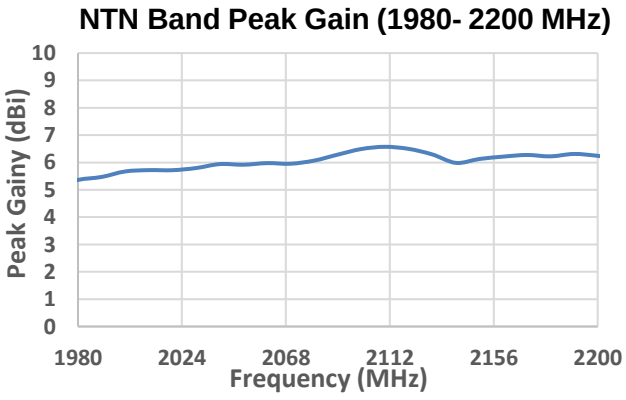












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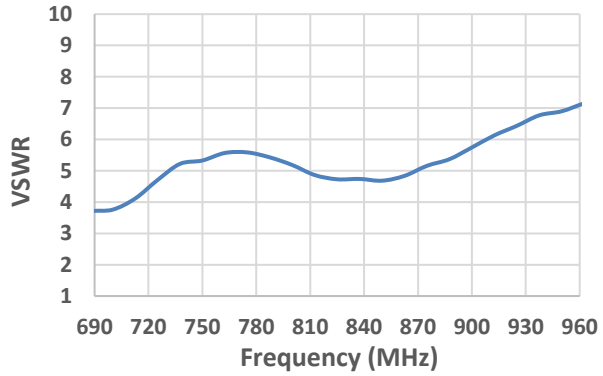
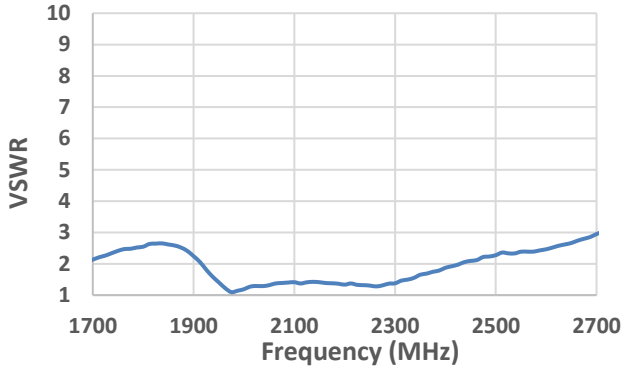
LTE VSWR, Efficiency

Typical performance with 25 mm

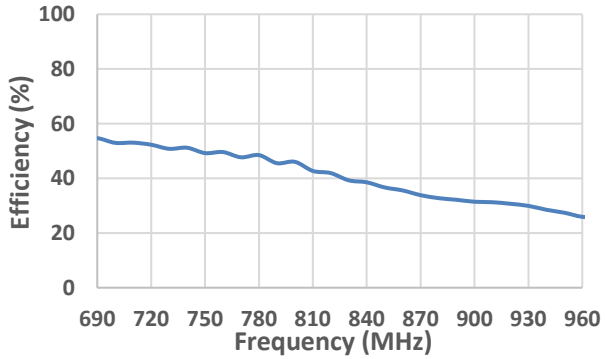
Low Band VSWR (690- 960 MHz)



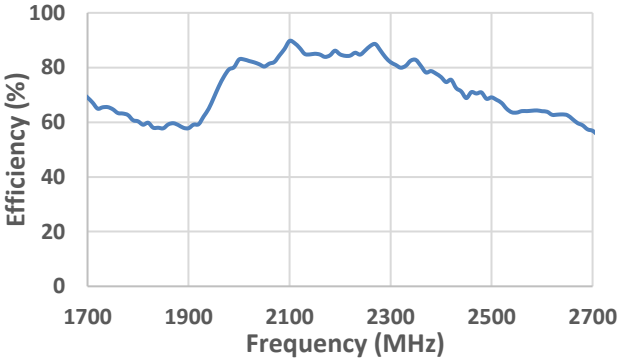
High Band VSWR (1700- 27000 MHz)



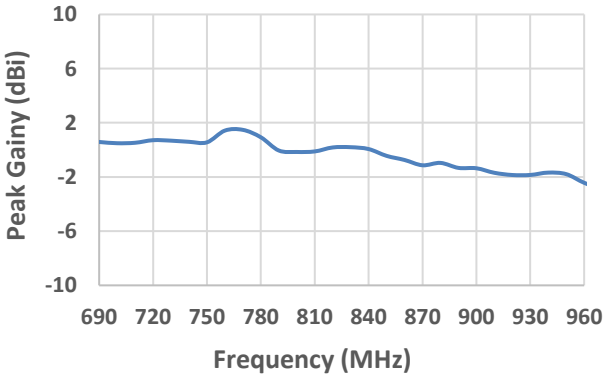
Low Band Efficiency (690-960 MHz)



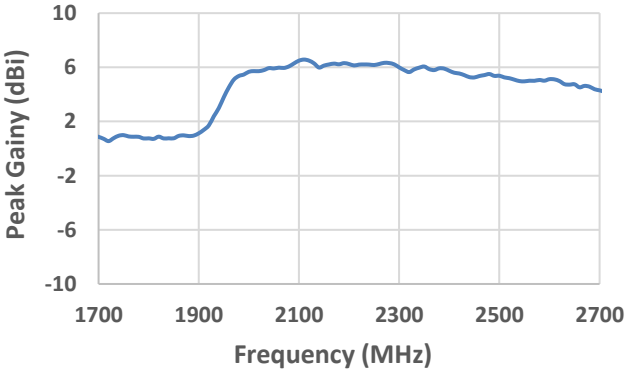
High Band Efficiency (1700-2700 MHz)



Low Band Peak Gain (690-960 MHz)



High Band Peak Gain (1700-2700 MHz)



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NTN Cellular Band KYOCERA AVX Embedded Antenna Specifications.
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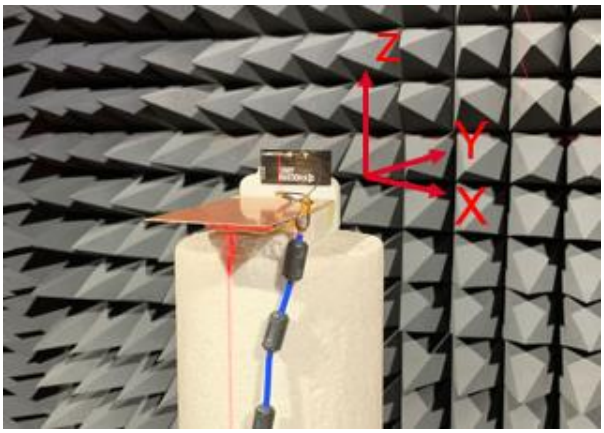
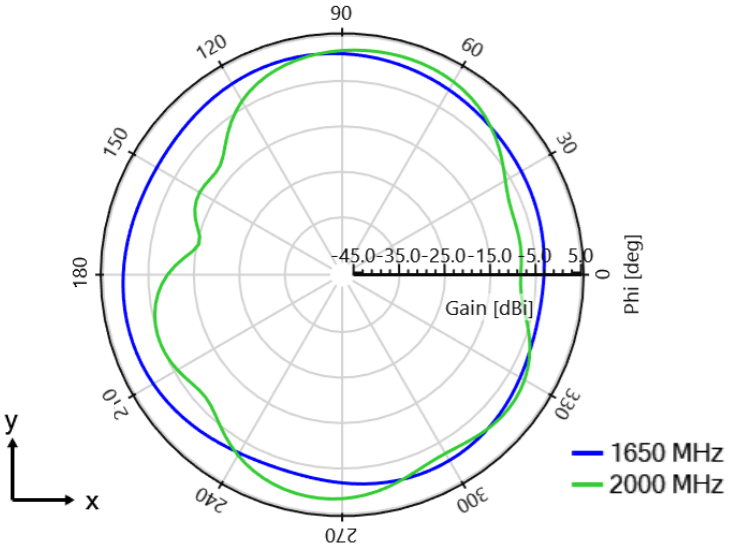
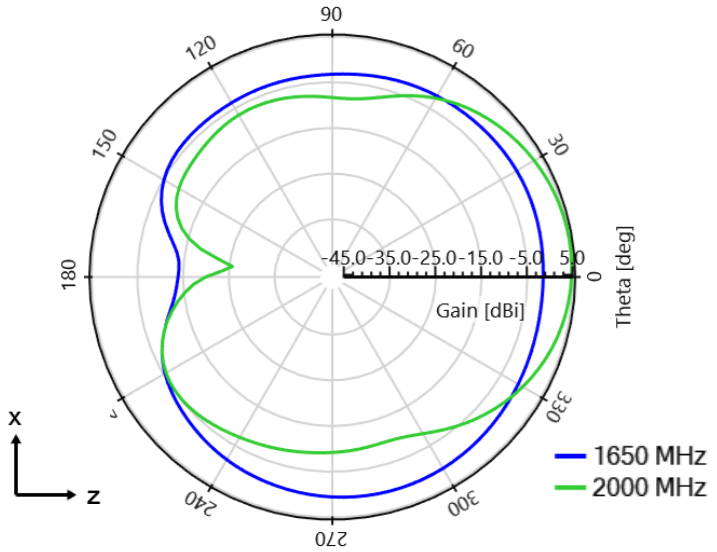
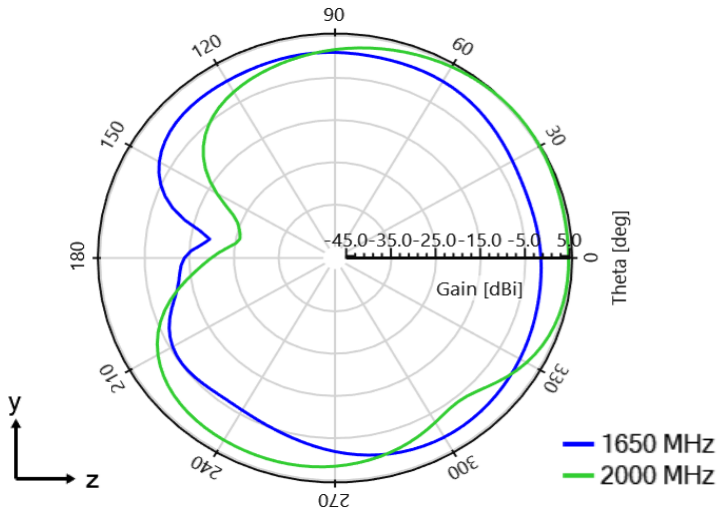
NTN Band Radiation Pattern

Typical performance with 25 mm cable









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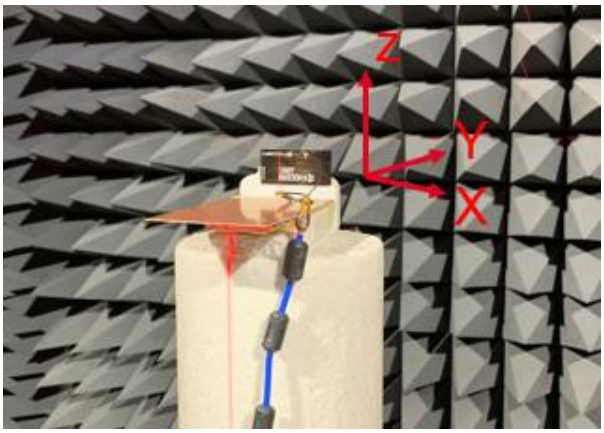
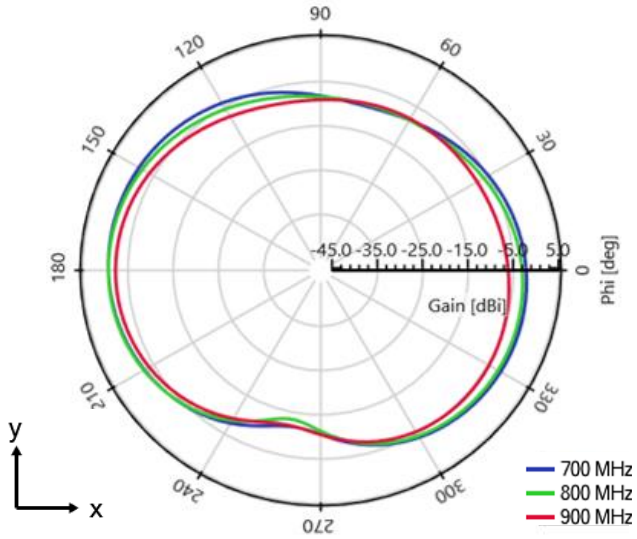
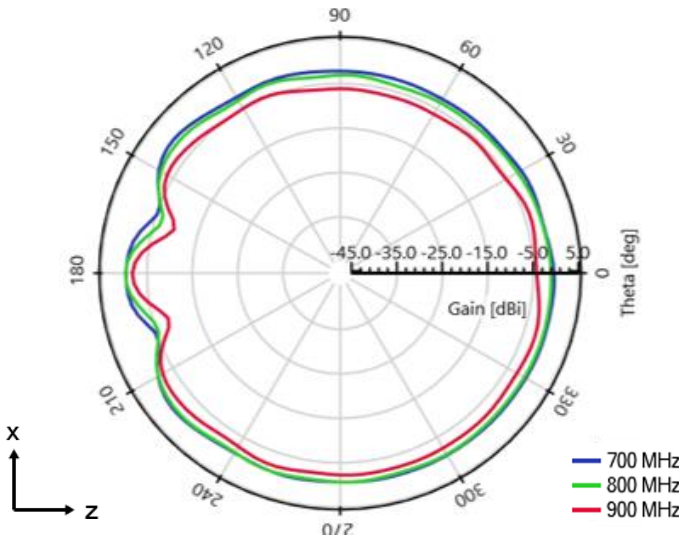
LTE Cellular Band KYOCERA AVX Embedded Antenna Specifications.
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

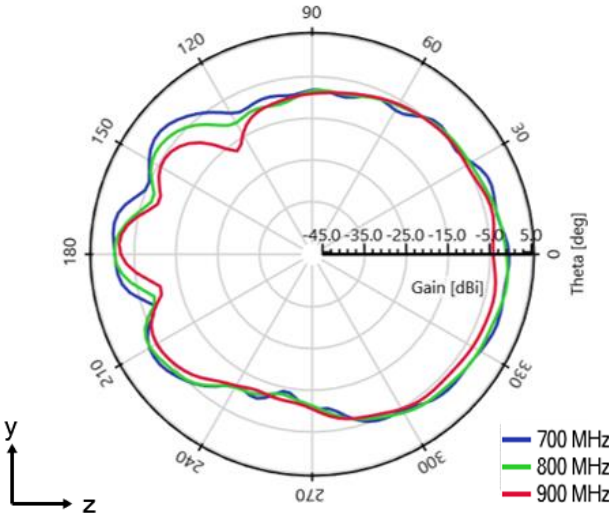
LTE Low Band Radiation Pattern

Typical performance with 25 mm cable









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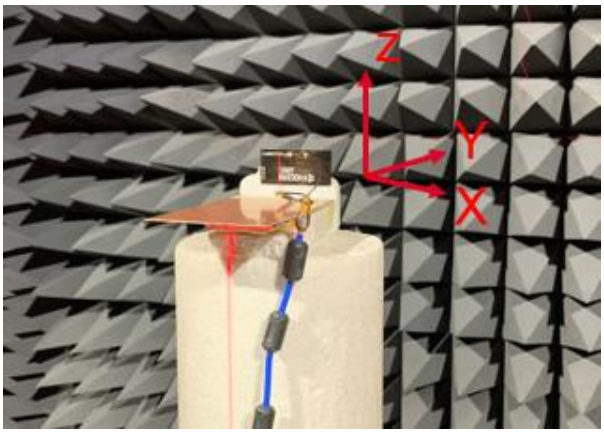
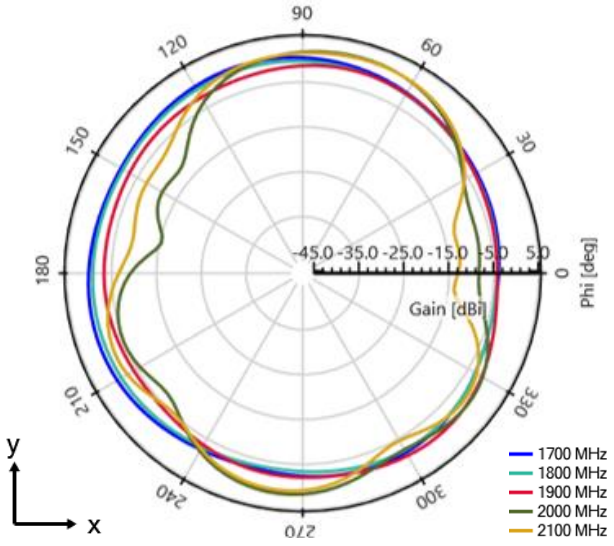
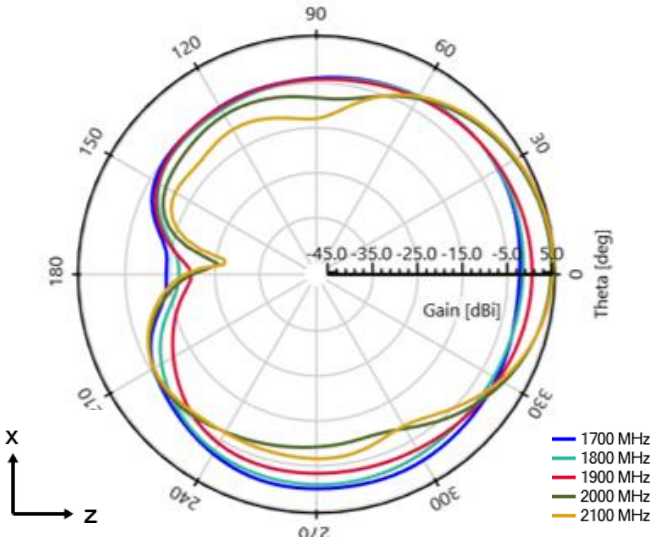
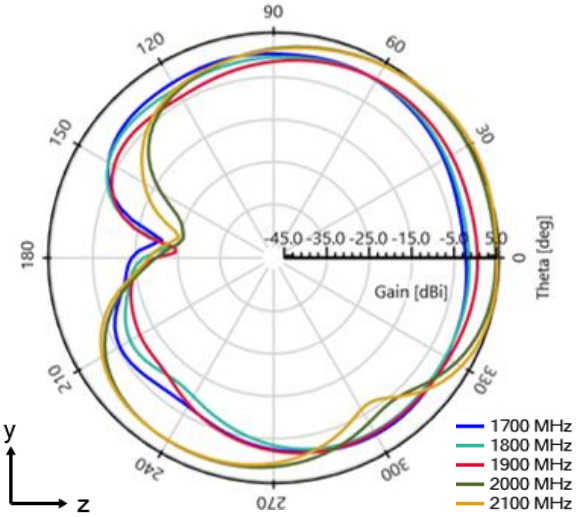
LTE Mid Band Radiation Pattern

Typical performance with 25 mm cable









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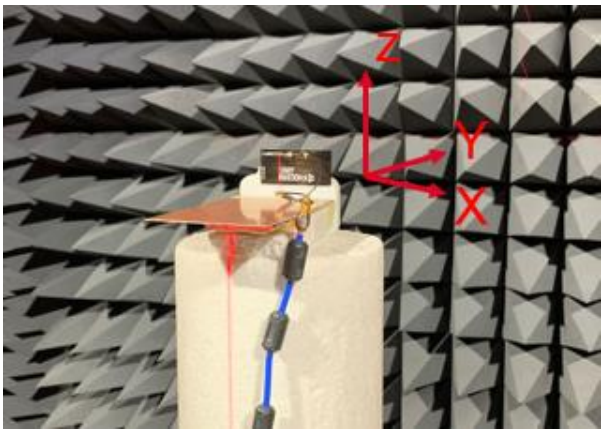
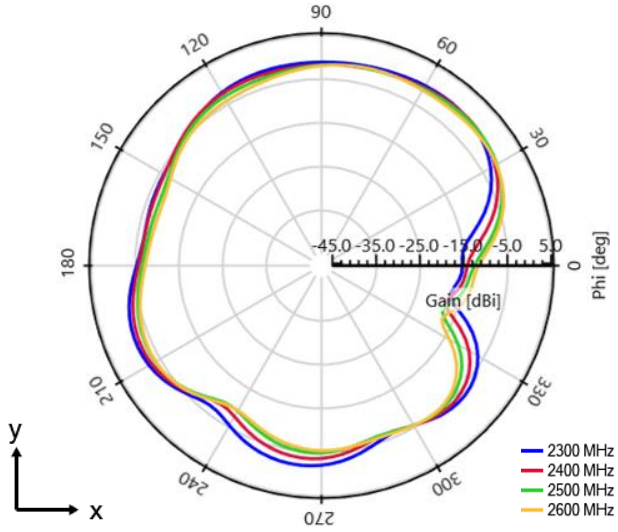
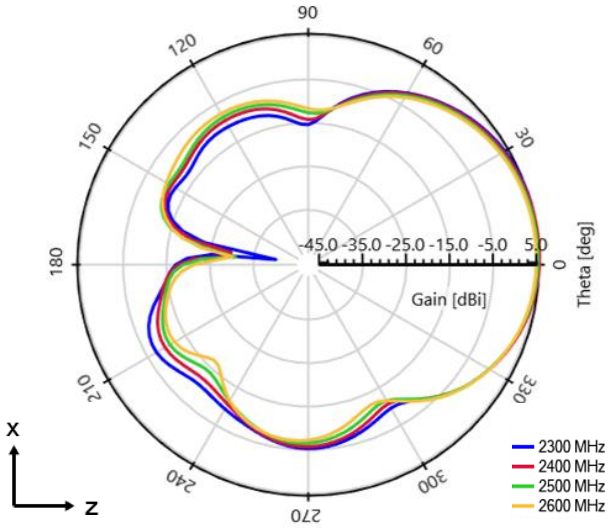
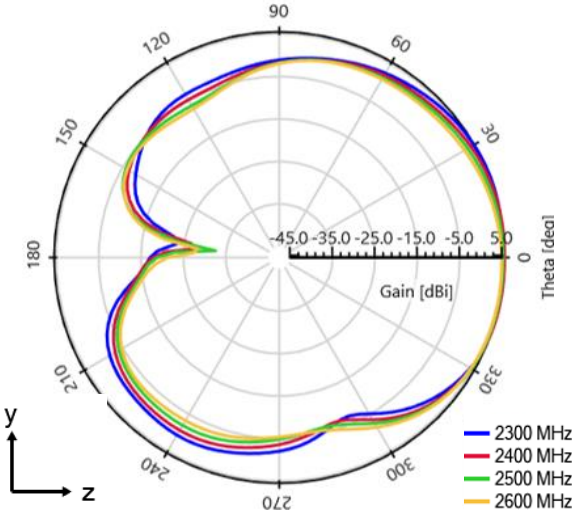
LTE High Band Radiation Pattern

Typical performance with 25 mm cable









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Additional Resources - 1002289

3D FIT File:
https://www.kyocera-avx.com/download/antennas/ME-FIT/1002289_ME_fit.zip

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