

Part No. M830520

WLAN / BT / Zigbee Embedded Ceramic Antenna

2.4 / 4.9 / 5.2 / 5.8 GHz (802.11 a/b/g/n/c + Japan)

Supports: Wi-Fi applications, Bluetooth, Zigbee, WLAN



Wi-Fi / BT / Zigbee Ceramic Antenna

2.4 GHz; 5 GHz

KEY BENEFITS

Stay-in-Tune

KYOCERA AVX 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 version compliant

APPLICATIONS

- Embedded design
- Cellular, Headsets, Tablets
- Gateway, Access Point
- Handheld
- Telematics
- Tracking
- Healthcare (FDA Class I)
- IoT, Industrial devices
- Smart Grid

KYOCERA AVX series of Ceramic Isolated Magnetic Dipole™ (IMD) antennas deliver on the key needs of device designers for higher functionality and

performance in smaller/thinner designs. These innovative antennas provide compelling advantages for a full WIFI dual band enabled handheld devices, media players and other mobile devices.

Real-World Performance and Implementation

Ceramic antennas may look alike on the outside, but the important difference is inside. Other antennas may contain simple PIFA or monopole designs that interact with their surroundings, complicating layout or changing performance with use position. KYOCERA AVX antennas utilize patented IMD technology to deliver a unique size and performance combination.

Greater Flexibility

KYOCERA AVX first-in-class IMD technology enables you to develop designs that are more advanced and that deliver superior performance in reception critical applications.

Electrical Specifications

Typical Characteristics on 40 x 80 mm PCB

Frequency	2400 – 2485 MHz	5150 – 5825 MHz
Peak Gain	1.0 dBi	2.6 dBi
Average Efficiency	62%	56%
VSWR Match	2.1:1 max	2.8:1 max
Feed Point Impedance	50 ohms unbalanced	
Polarization	Linear	
Power Handling	0.5 Watt CW	
Additional Resources	Download Application Note and Simulation Files	

Mechanical Specifications & Ordering Part Number

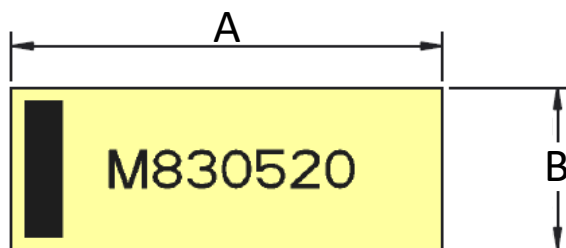
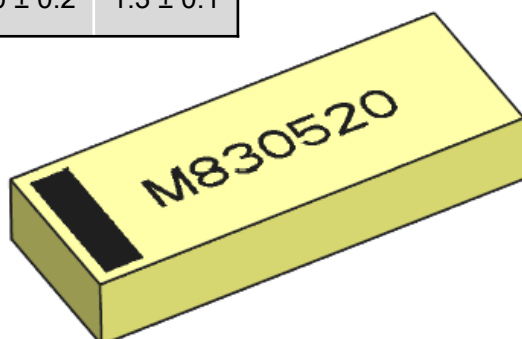
Ordering Part Number	M830520
Size (mm)	8.0 x 3.0 x 1.3
Mounting	SMT
Weight (grams)	0.2
Packaging	Tape & Reel, M830520 – 1,000 pieces per reel
Demo Board	M830520-01 (Wi-Fi Dual Band) M830520-02 (Wi-Fi Tri Band)
Additional Resources	Download DXF, Gerber and 3D FIT Files

2.4 / 5 GHz KYOCERA AVX Embedded Antenna Specifications
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

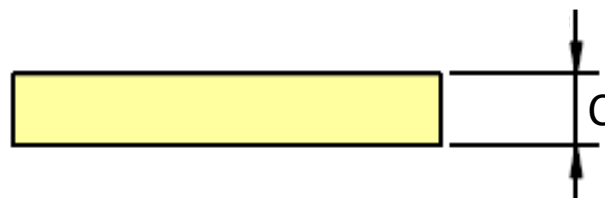
Antenna Dimensions

Typical antenna dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)
M830520	8.0 ± 0.2	3.0 ± 0.2	1.3 ± 0.1

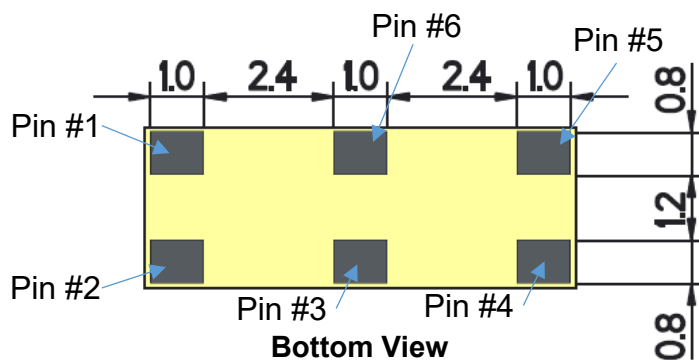


Top View



Height

Pin	Description
1	Feed
2	Ground
3	Dummy Pad
4	Dummy Pad
5	Dummy Pad
6	Dummy Pad

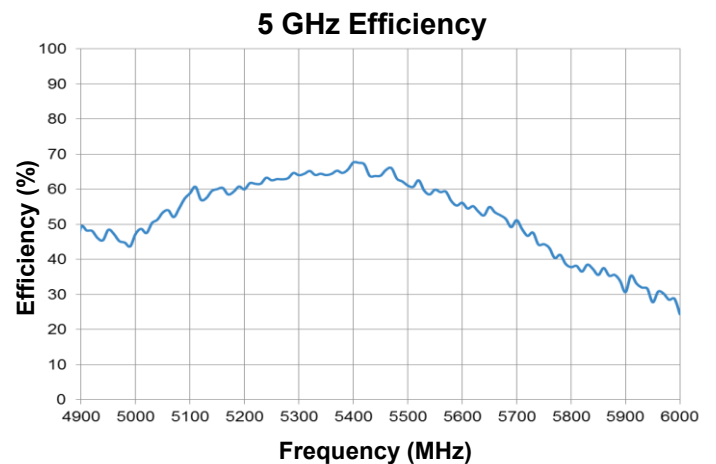
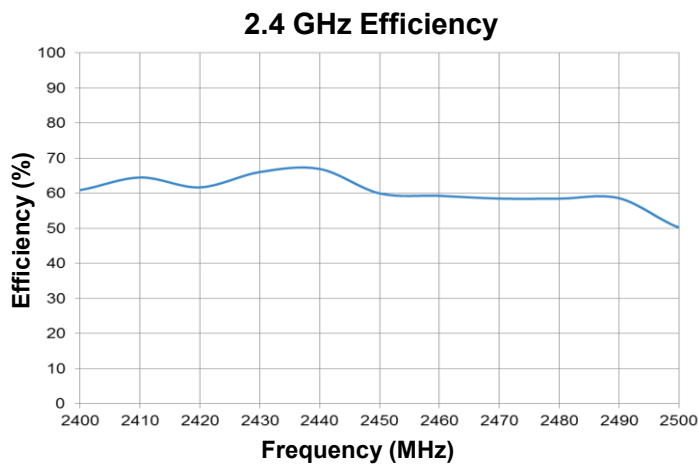
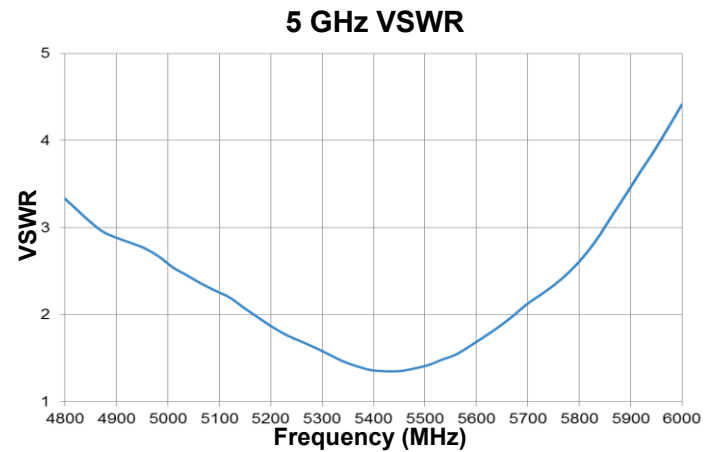
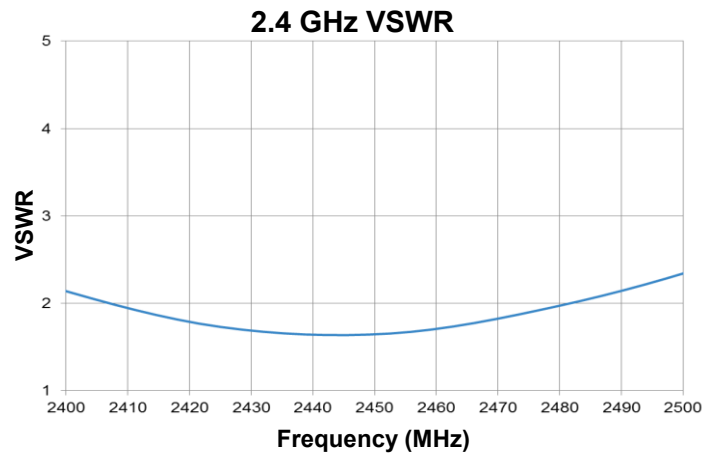


Bottom View

2.4 / 5 GHz KYOCERA AVX Embedded Antenna Specifications
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VSWR and Efficiency Plots (Off-Ground)

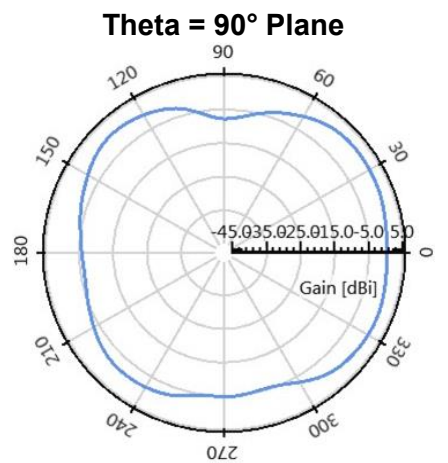
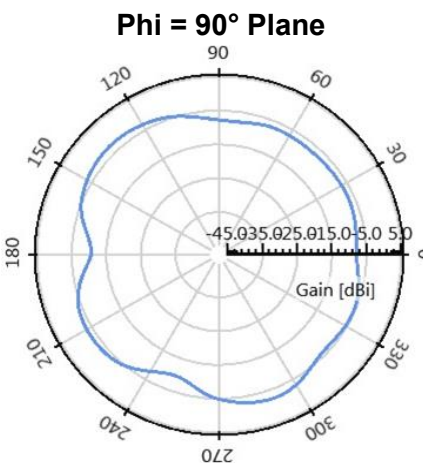
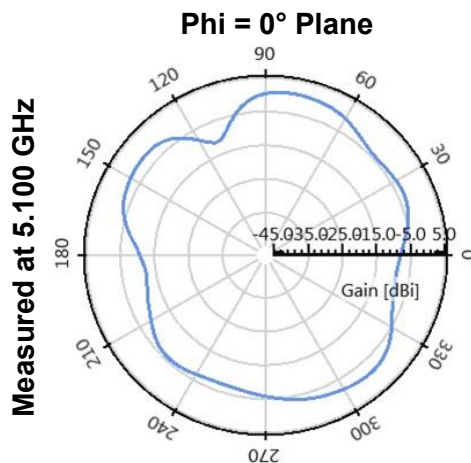
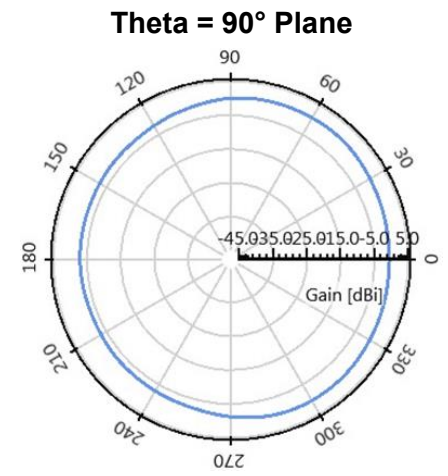
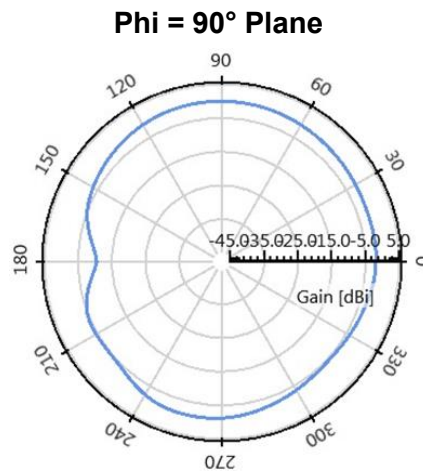
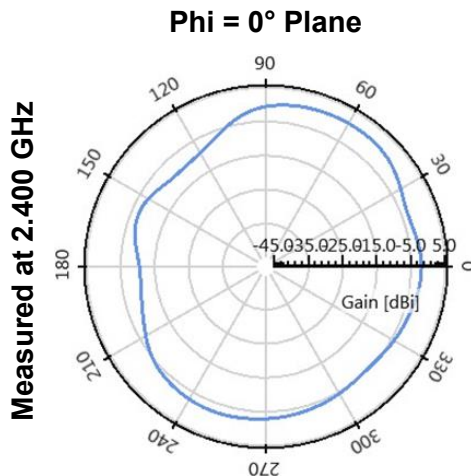
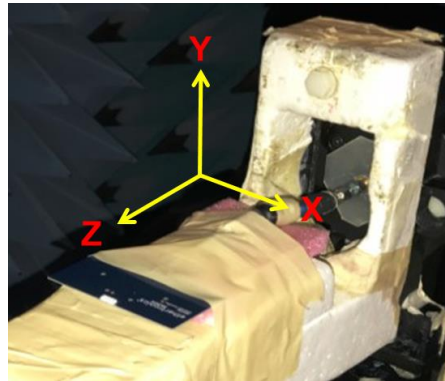
Typical performance on 40 x 80 mm PCB



2.4 / 5 GHz KYOCERA AVX Embedded Antenna Specifications
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Antenna Radiation Patterns

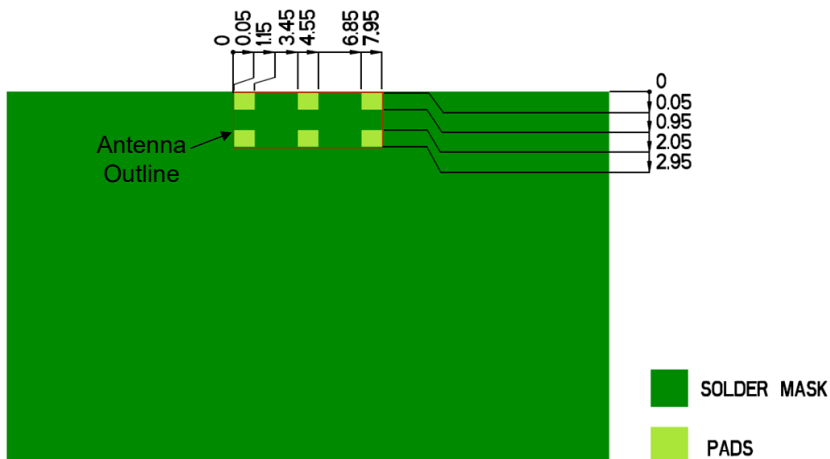
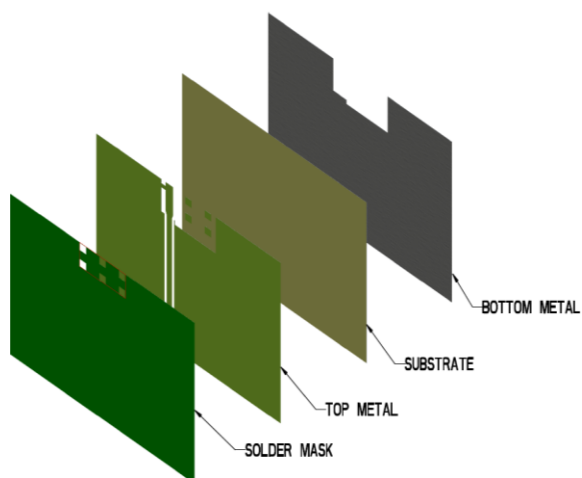
Typical performance on 40 x 80 mm PCB



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Antenna Layout (Off-Ground)

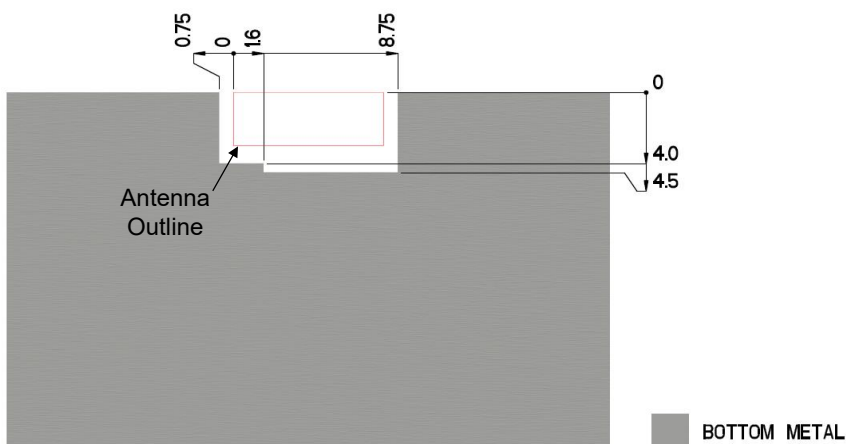
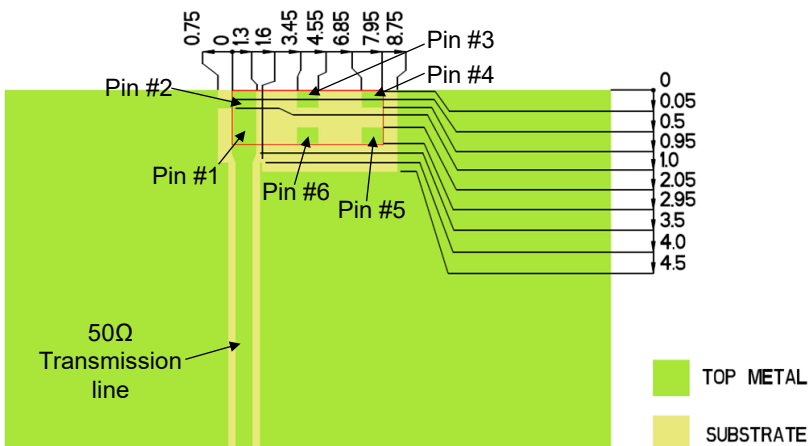
Typical layout dimensions (mm)



- Additional VIAS: Diam. 0.2mm to be placed around antenna, (no vias on transmission lines).
- Via holes must be covered by solder mask

Pin Descriptions

Pin#	Description
1	Feed
2	Ground
3	Dummy Pad
4	Dummy Pad
5	Dummy Pad
6	Dummy Pad

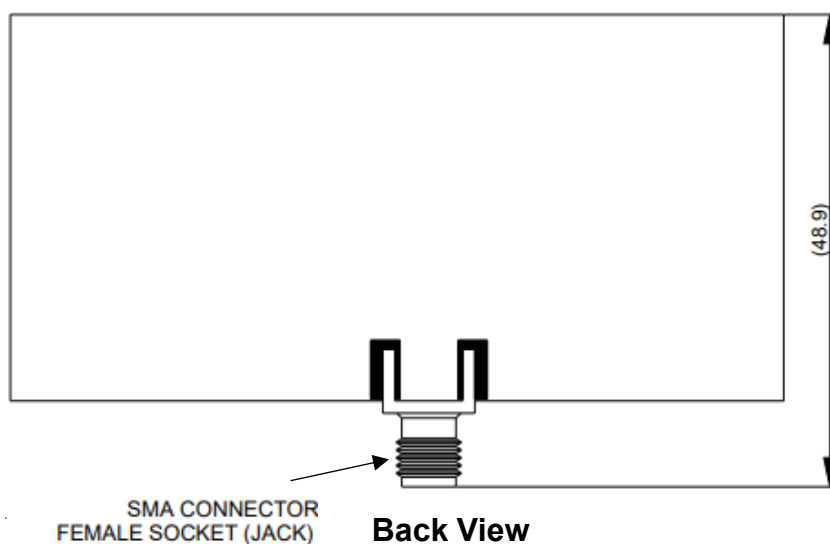
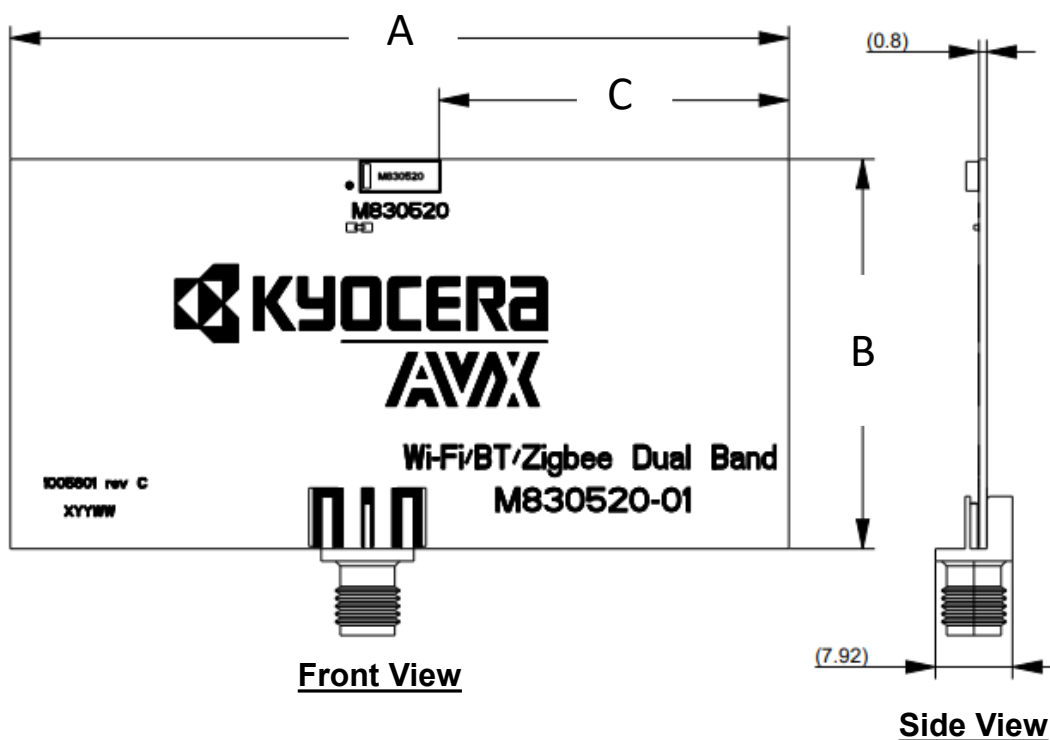


2.4 / 5 GHz KYOCERA AVX Embedded Antenna Specifications
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

Antenna Demo Board

Typical layout dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)
M830520-01	80.0	40.0	36.0



2.4 / 5 / 6 GHz KYOCERA AVX Embedded Antenna Specifications.
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Appendix 2

Appendix 2 gives instructions on how to achieve
Tri-Band Wi-Fi 6E/7 to cover till 7.125 GHz
through layout modifications.

(2.4-2.48 GHz)
(5.150-5.825GHz)
(5.925-7.125 GHz)

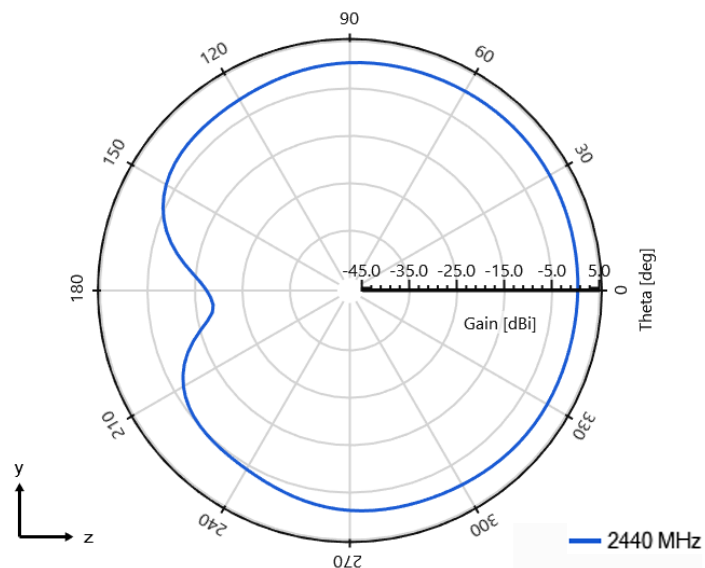
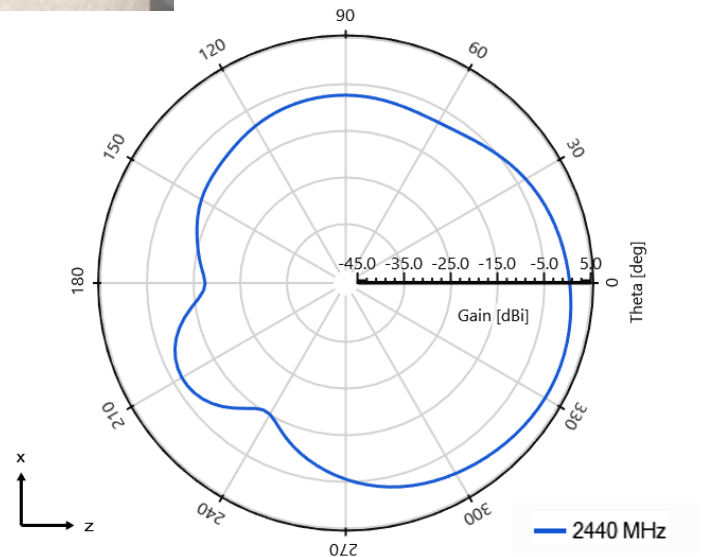
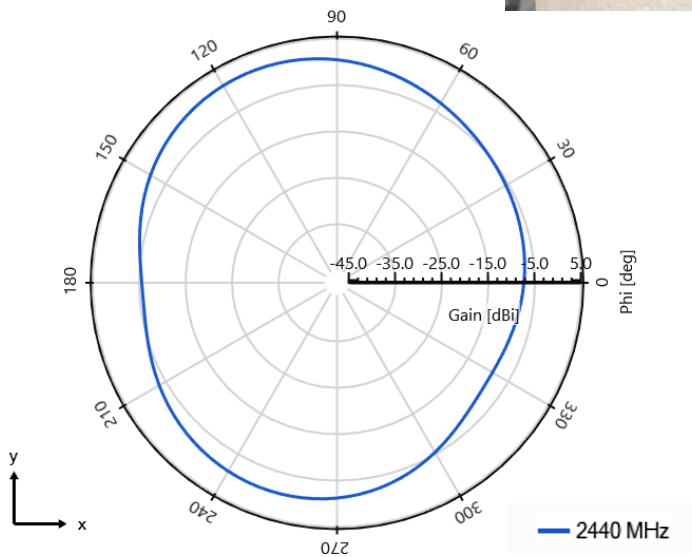
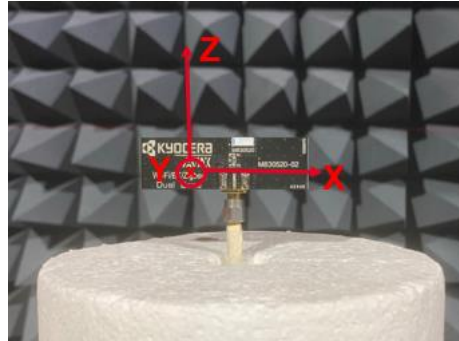
Frequency (MHz)	2400 - 2485	5150 - 5825	5925-7125
Peak Gain	2.6 dBi	2.5 dBi	4.0 dBi
Average Efficiency	58%	61%	63%
VSWR Match	< 3:1	< 3:1	< 3:1
Polarization	Linear		
Power Handling	0.5 Watt CW		
Feed Point Impedance	50 Ω unbalanced		

*Data shown above over 20 x 65 mm PCB.

2.4 / 5 / 6 GHz KYOCERA AVX Embedded Antenna Specifications
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Antenna Radiation Patterns

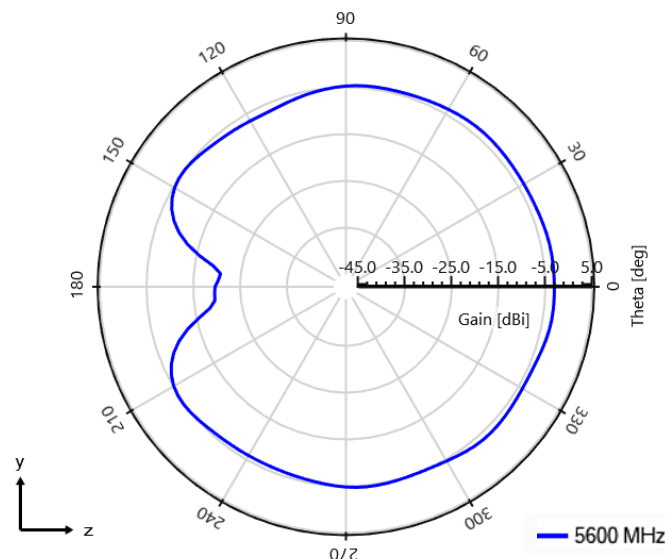
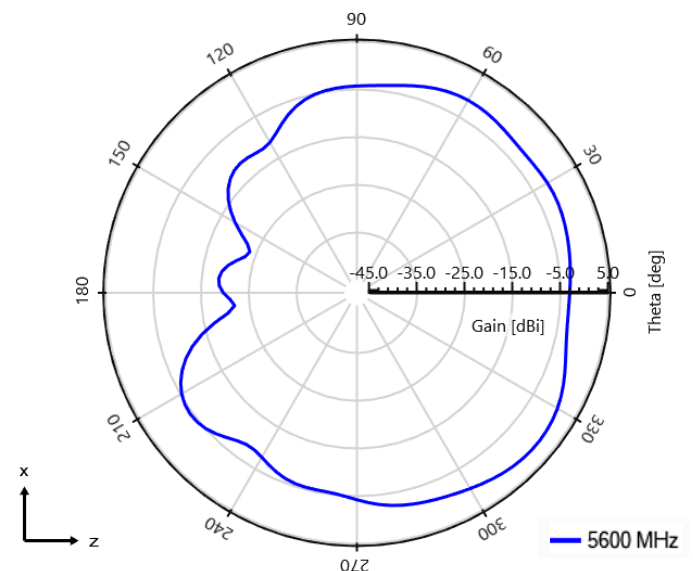
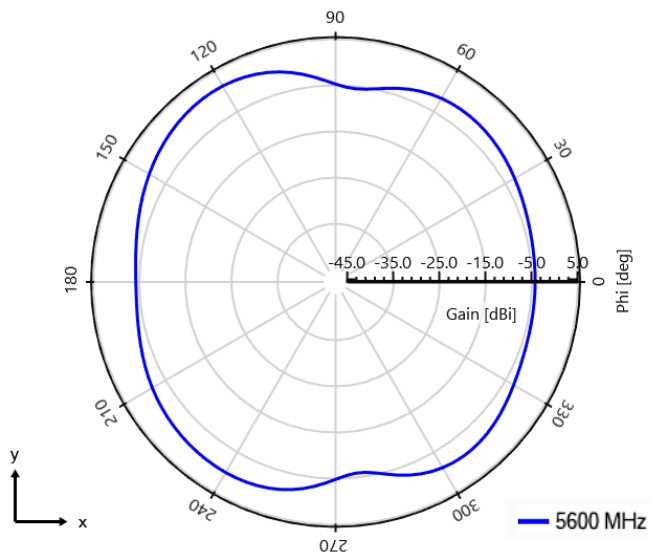
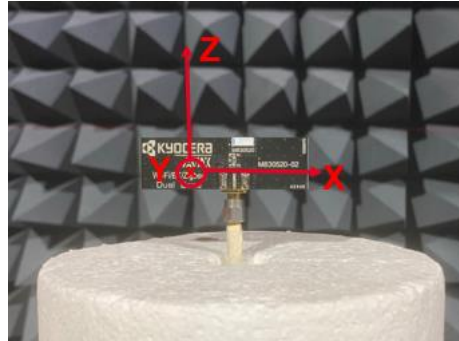
Typical performance on 20 x 65 mm PCB
Measured at 2440 MHz



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Antenna Radiation Patterns

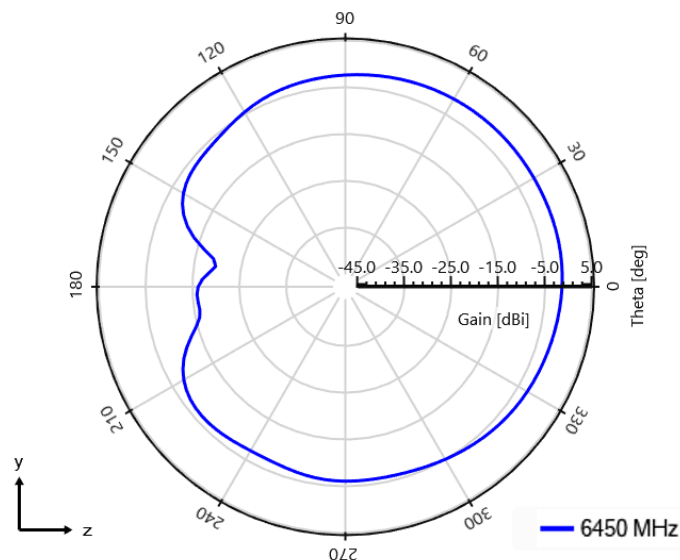
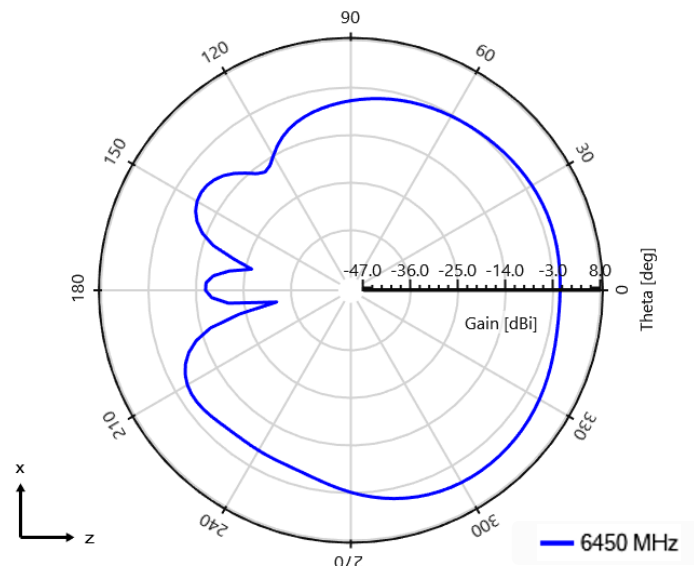
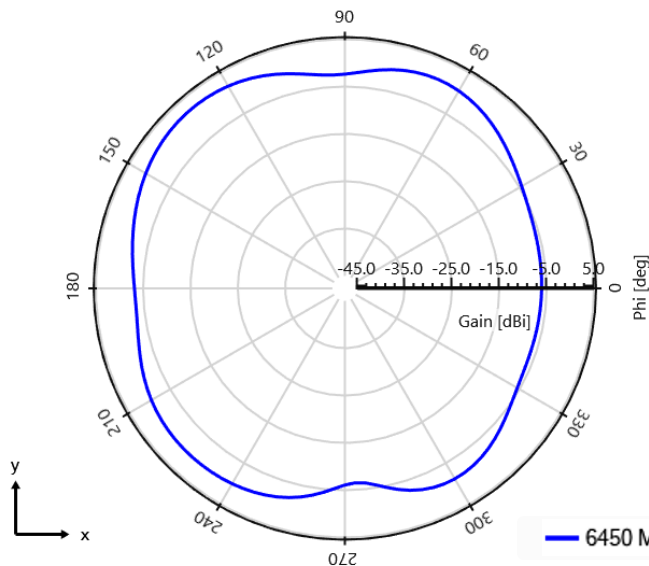
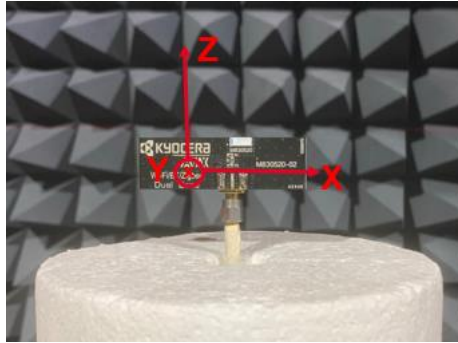
Typical performance on 20 x 65 mm PCB
Measured at 5600 MHz



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Antenna Radiation Patterns

Typical performance on 20 x 65 mm PCB
Measured at 6450 MHz

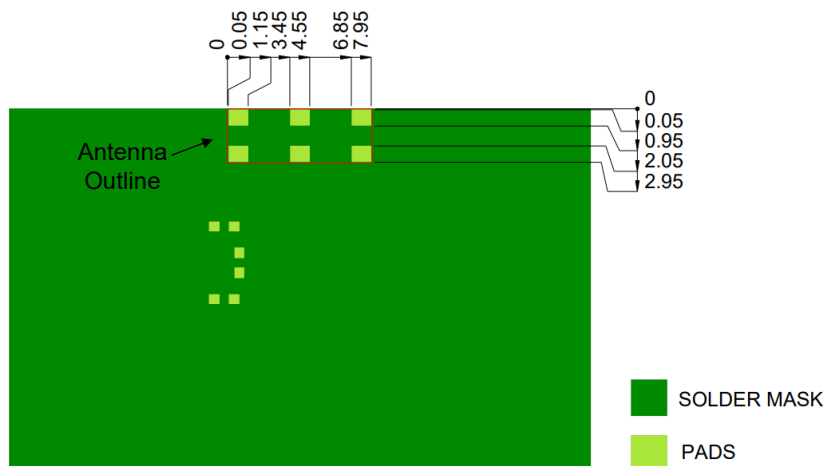
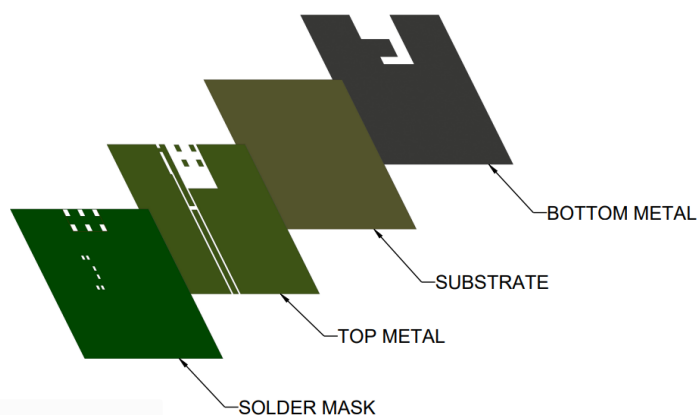


2.4 / 5 / 6 GHz KYOCERA AVX Embedded Antenna Specifications

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Antenna Layout (M830520-02)

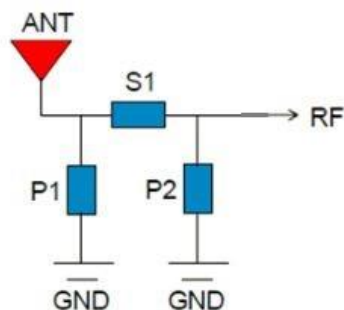
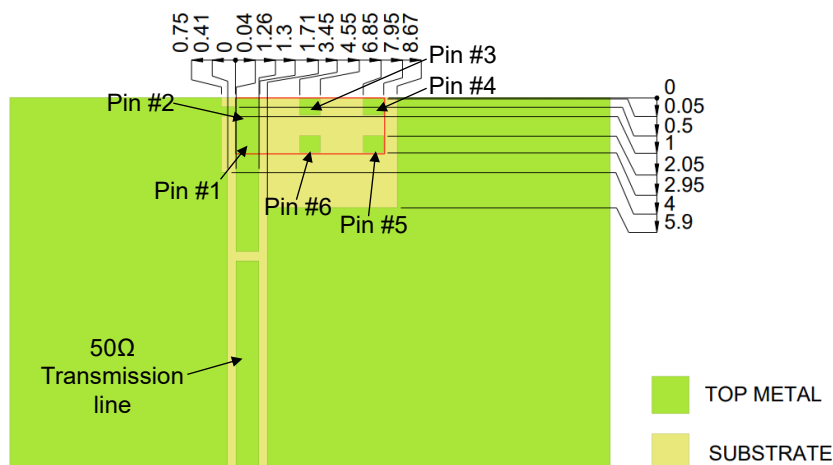
Typical layout dimensions (mm)



- Additional VIAS: Diam. 0.2mm to be placed around antenna, (no vias on transmission lines).
- Via holes must be covered by solder mask

Pin Descriptions

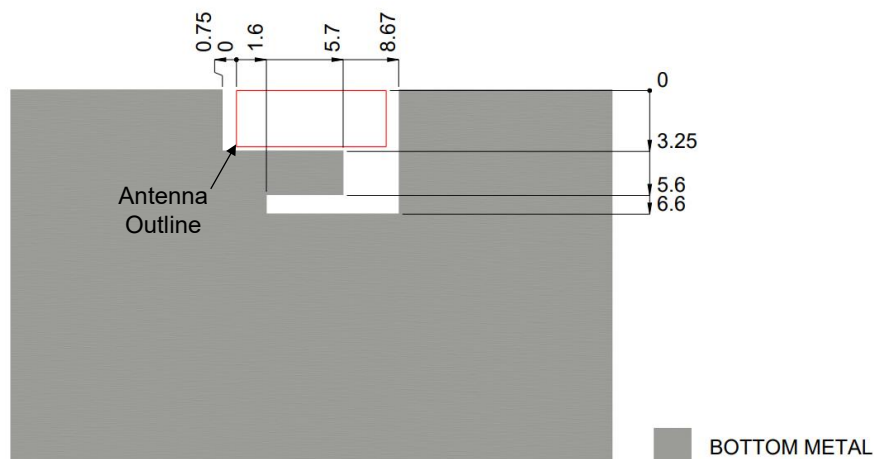
Pin#	Description
1	Feed
2	Ground
3	Dummy Pad
4	Dummy Pad
5	Dummy Pad
6	Dummy Pad



Matching Pi Network (Demo Board)

Component	Value
P1	N/A
S1	0 ohm
P2	N/A

*Actual matching values depend on customer design

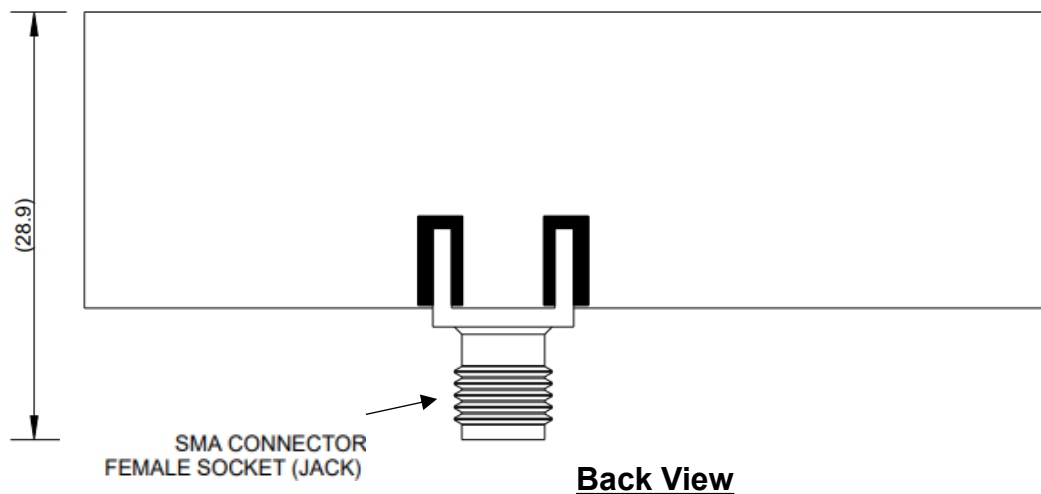
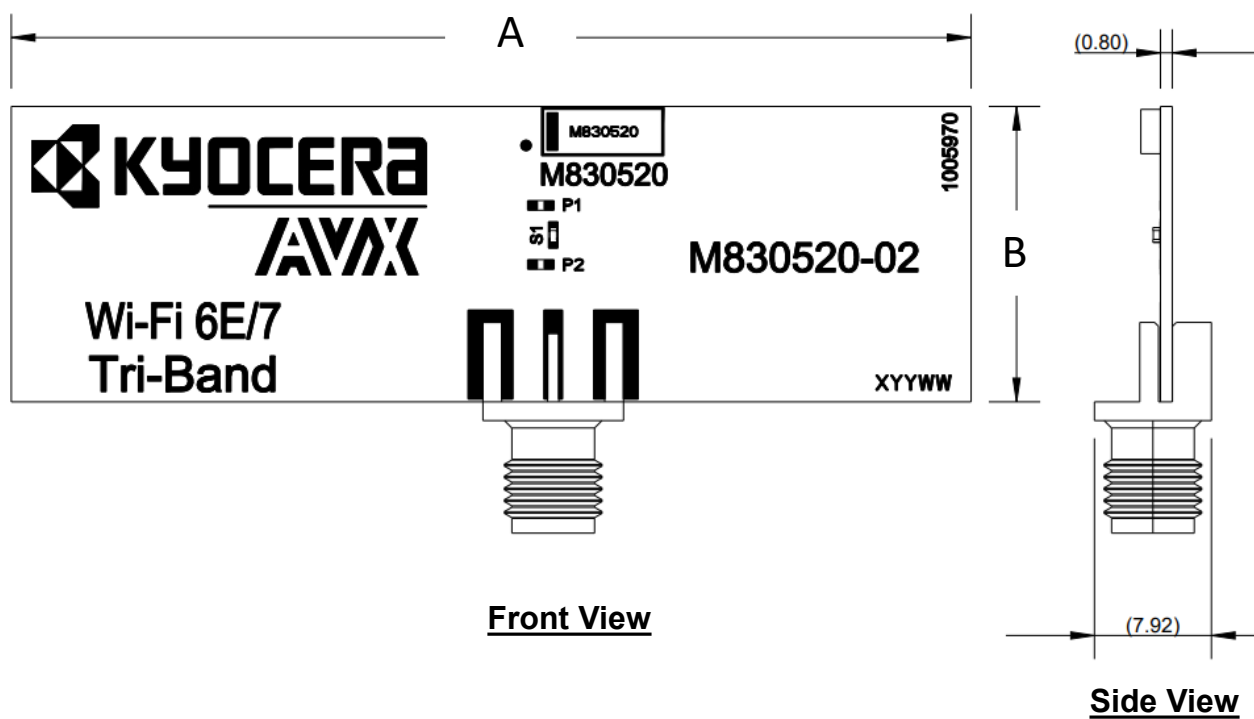


2.4 / 5 / 6 GHz KYOCERA AVX Embedded Antenna Specifications
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Antenna Demo Board

Typical layout dimensions (mm)

Part Number	A (mm)	B (mm)	C (mm)
M830520-02	65.0	20.0	36.0



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Additional Resources – M830520

Simulation Files:

HFSS (23 R1): https://www.kyocera-avx.com/download/antennas/ansys-hfss/23r1/M830520_08232022_23r1.zip

HFSS (19R3-22R2): https://www.kyocera-avx.com/download/antennas/ansys-hfss/19r3/M830520_08232022_19r3.zip

CST : https://www.kyocera-avx.com/download/antennas/CST/M830520_CST_071024_23r1.zip

Application Note:

https://www.kyocera-avx.com/docs/techinfo/ApplicationNotes/Antenna-AppNotes/AVX-E_AppNote-M-Series.pdf

3D FIT File:

https://www.kyocera-avx.com/download/antennas/ME-FIT/M830520_ME_fit.zip

DXF File:

https://www.kyocera-avx.com/download/antennas/3D-DXF/M830520_3D-DXF.zip

Gerber File:

https://www.kyocera-avx.com/download/antennas/GERBER/M830520_GERBERS.zip