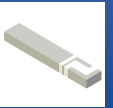


Embedded LTE Chip Antenna



AANI-CH-0056

Request Samples



Check Inventory



33 x 6 x 3 mm

RoHS/RoHS II Compliant

MSL Level = N/A

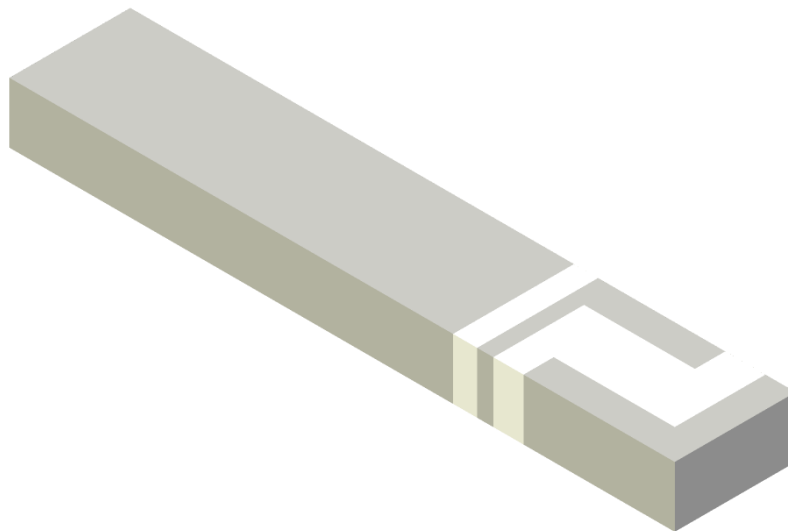
Features

- Ultra-wide band 790MHz ~ 2700MHz
- Compact & Low-Profile
- VSWR: ≤ 2.0
- Peak Gain: 4.5 dBi
- Efficiency: up to 70 %
- Surface Mount (SMD)
- High efficiency across cellular bands

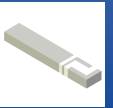
Applications

- Internet of Things (IoT) devices
- LTE-M, Cat M, Cat M1, NB-IoT
- LTE CAT 1 up to CAT 20 supported
- CBRS and 5G bands supported
- Smart Home networking
- Networking & Telecommunication

Product Image



Embedded LTE Chip Antenna



AANI-CH-0056

Request Samples



Check Inventory



33 x 6 x 3 mm

RoHS/RoHS II Compliant

MSL Level = N/A

Electrical Specification

Parameter	Specification		Unit
Operating Frequency	790-960	1700-2700	MHz
VSWR (Typ.)	< 2.0		
Peak Gain	1.5	4.5	dBi
Efficiency (Maximum)	45	70	%
Impedance	50		Ω
Polarization	Linear		
Radiation Pattern (Azimuth)	Omni-directional		

Note : All test measurements were conducted on 120 x 45 mm. Performance of the chip antenna will vary relative to the ground plane size in use.

Mechanical Specification

Parameter	Specification
Dimensions	33 x 6 x 3 mm
Evaluation Board size	130 x 60 mm
Recommended Ground Clearance for Antenna	60 x 9.8 mm
Mounting Type	Surface Mount
Material(s)	Ceramic

Environmental Specification

Parameter	Specification
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Relative Humidity	90% to 95%
RoHS Complaint	Yes



5101 Hidden Creek Ln Spicewood TX 78669
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REVISED: 08-08-24

ABRACON IS
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Embedded LTE Chip Antenna



AANI-CH-0056

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33 x 6 x 3 mm

RoHS/RoHS II Compliant

MSL Level = N/A

Ordering Information

Part Number	Description
AANI-CH-0056	Embedded LTE Chip Antenna
AANI-CH-0056-EVB	Embedded LTE Chip Antenna Evaluation Board

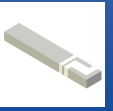


5101 Hidden Creek Ln Spicewood TX 78669
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For terms and conditions of sales, please visit:
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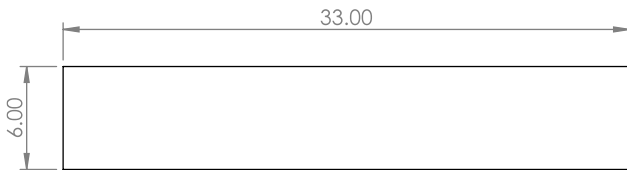


33 x 6 x 3 mm

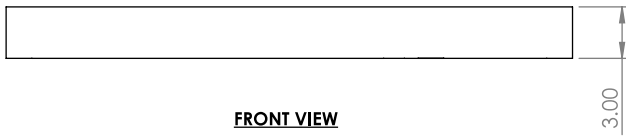
RoHS/RoHS II Compliant

MSL Level = N/A

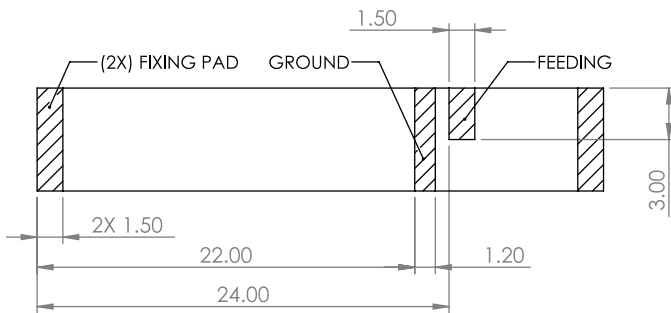
Product & Footprint & Land Pattern Dimensions



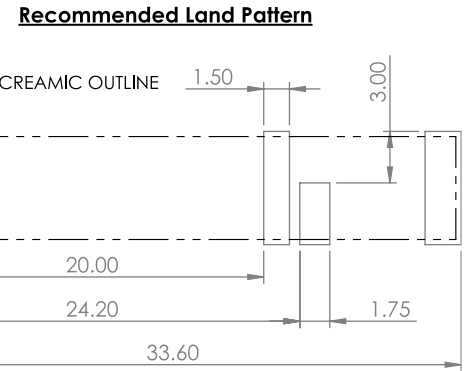
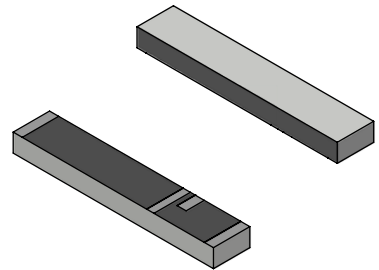
TOP VIEW



FRONT VIEW



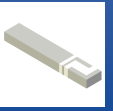
BOTTOM VIEW



Recommended Land Pattern

Unit: mm

Embedded LTE Chip Antenna



AANI-CH-0056

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Check Inventory

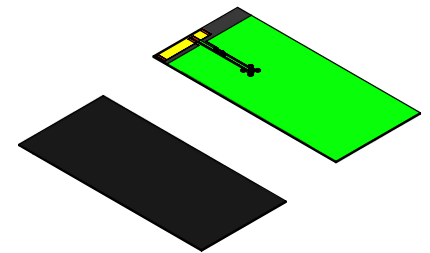
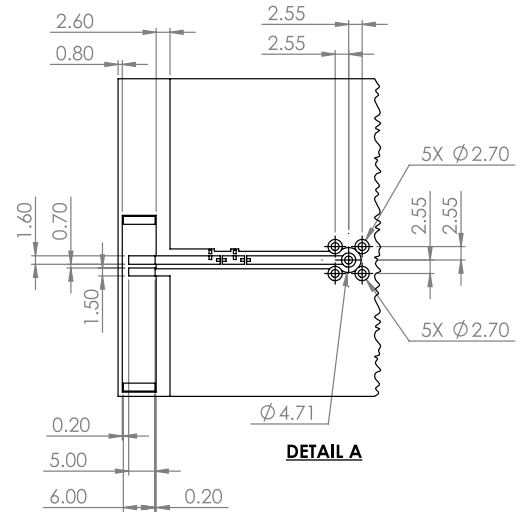
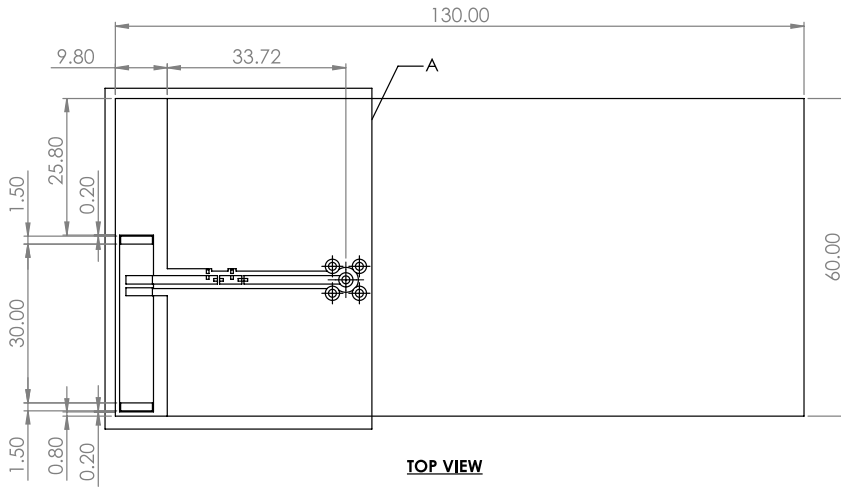


33 x 6 x 3 mm

RoHS/RoHS II Compliant

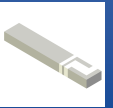
MSL Level = N/A

Evaluation Board Dimensions



Unit: mm

Embedded LTE Chip Antenna



AANI-CH-0056

Request Samples



Check Inventory

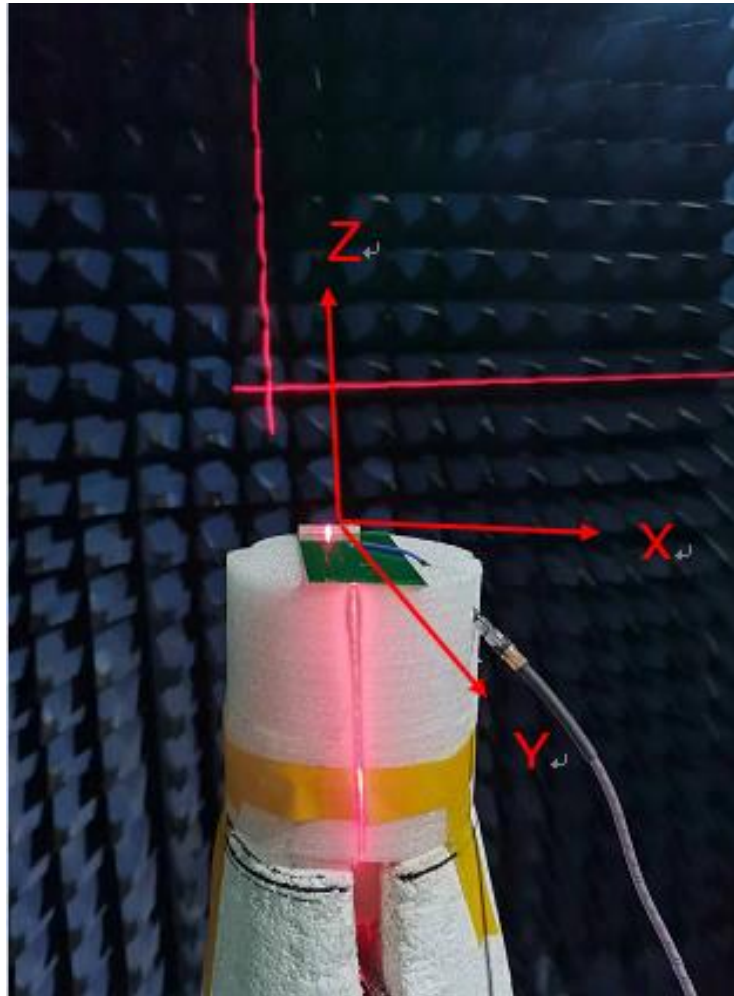


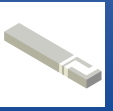
33 x 6 x 3 mm

RoHS/RoHS II Compliant

MSL Level = N/A

Measurement Setup photo





AANI-CH-0056

Request Samples



Check Inventory

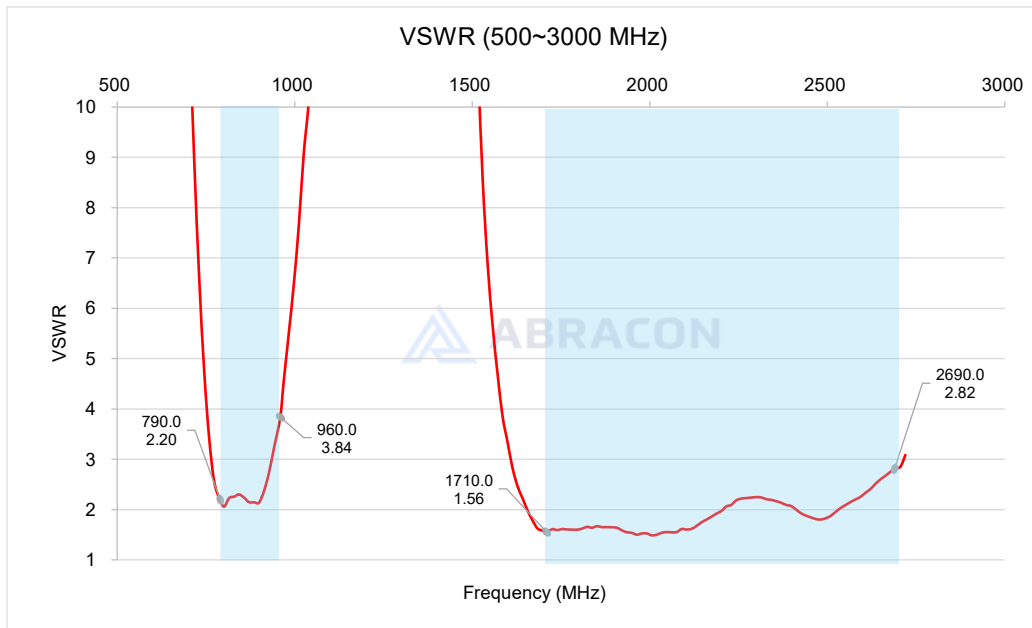
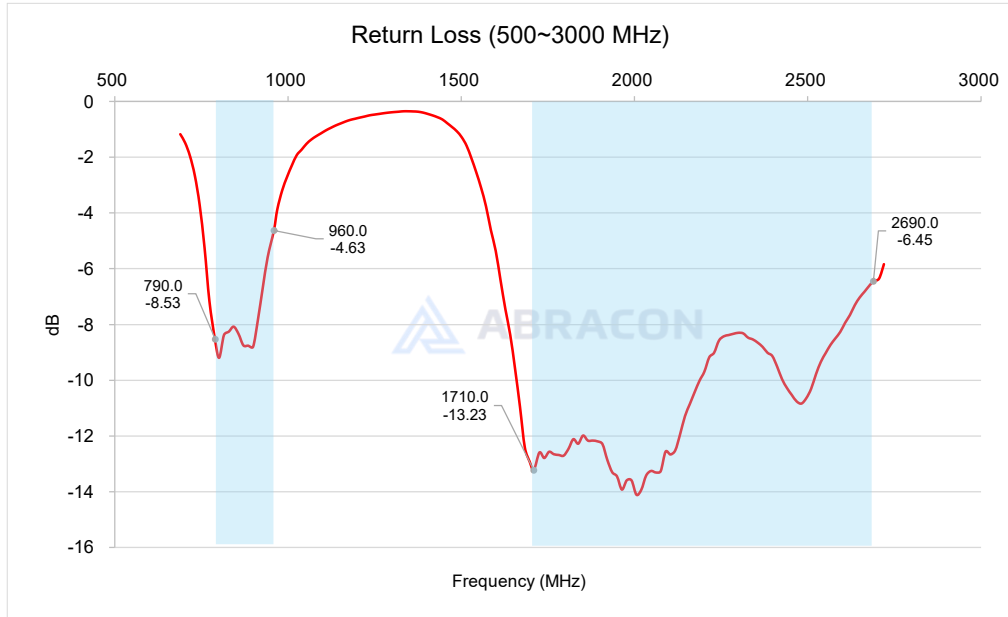


33 x 6 x 3 mm

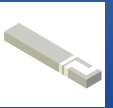
RoHS/RoHS II Compliant

MSL Level = N/A

Reflection Characteristics –Return Loss & VSWR



Embedded LTE Chip Antenna



AANI-CH-0056

Request Samples



Check Inventory

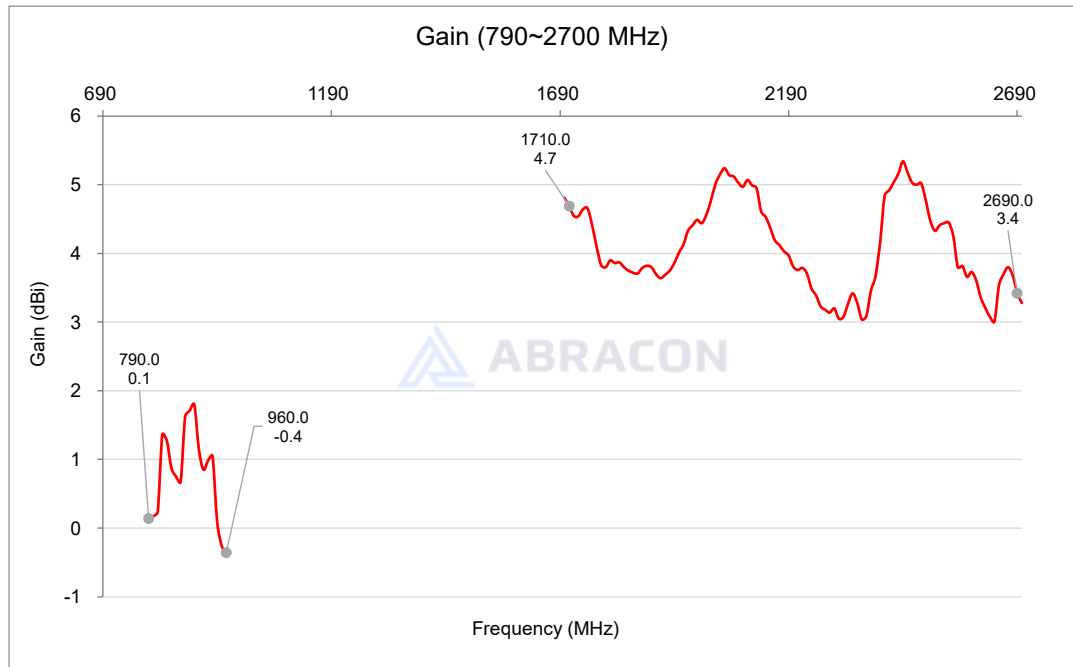


33 x 6 x 3 mm

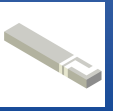
RoHS/RoHS II Compliant

MSL Level = N/A

Radiation Characteristics – Peak Gain



Embedded LTE Chip Antenna



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Request Samples



Check Inventory

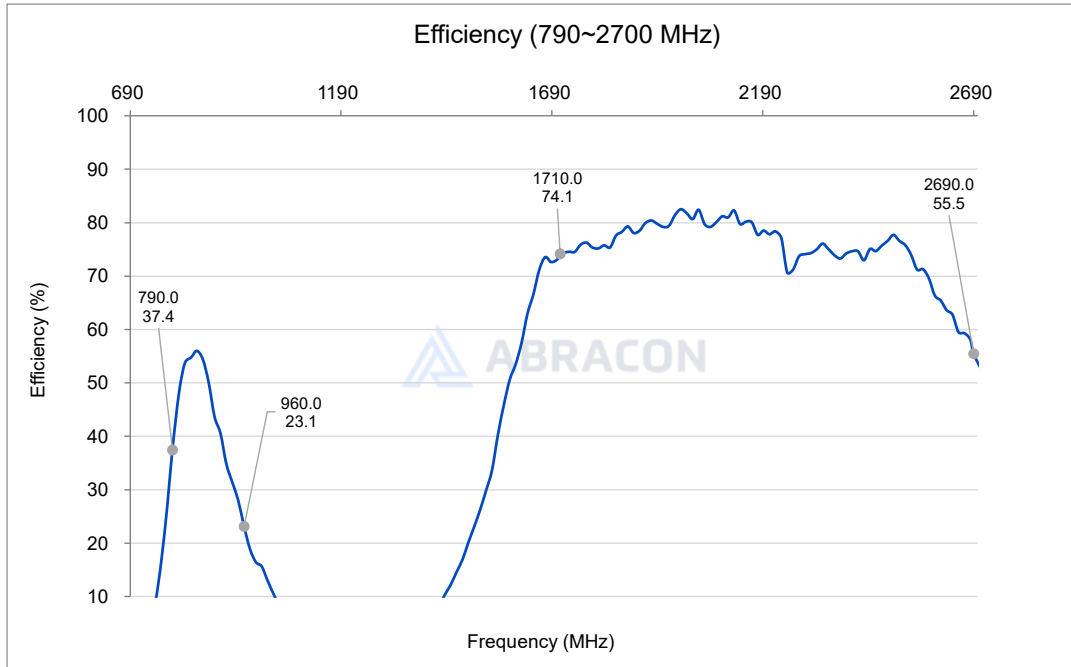


33 x 6 x 3 mm

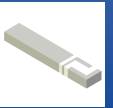
RoHS/RoHS II Compliant

MSL Level = N/A

Radiation Characteristics – Total Efficiency (%)



Embedded LTE Chip Antenna



AANI-CH-0056

Request Samples



Check Inventory



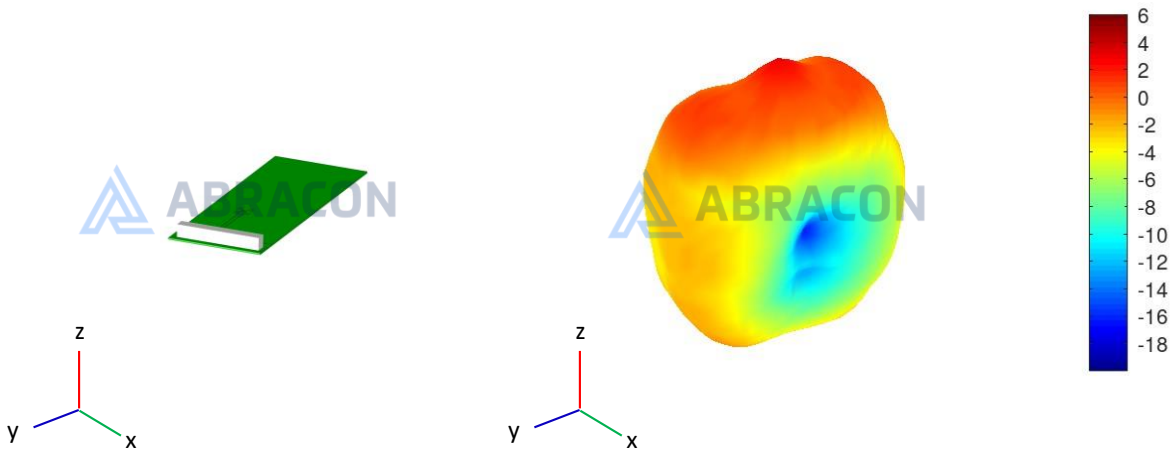
33 x 6 x 3 mm

RoHS/RoHS II Compliant

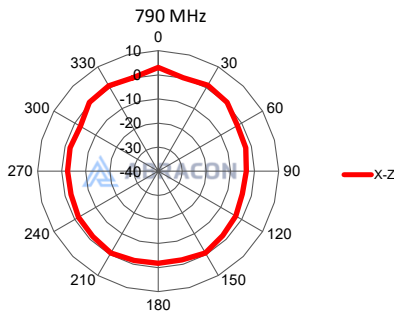
MSL Level = N/A

Radiation Characteristics – 3D & 2D Pattern

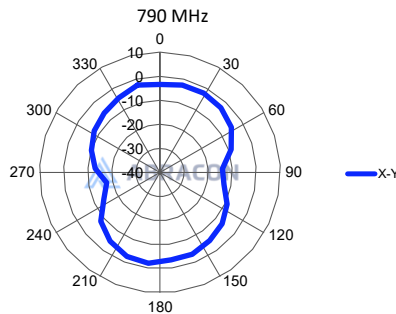
790MHz



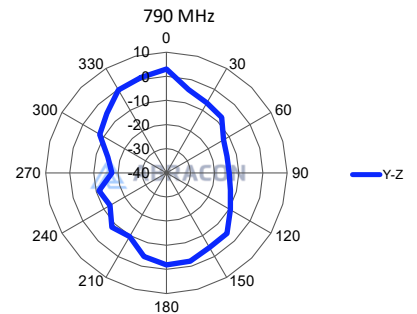
XZ plane



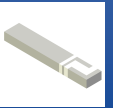
XY plane



YZ plane



Embedded LTE Chip Antenna



AANI-CH-0056

Request Samples



Check Inventory

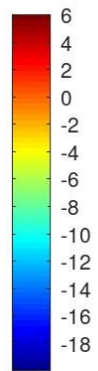
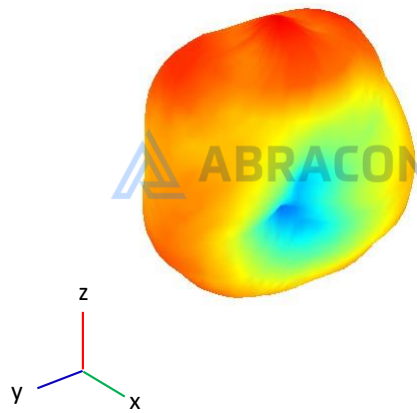
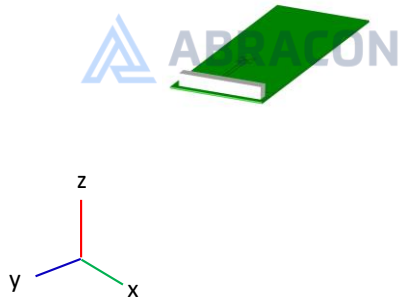


33 x 6 x 3 mm

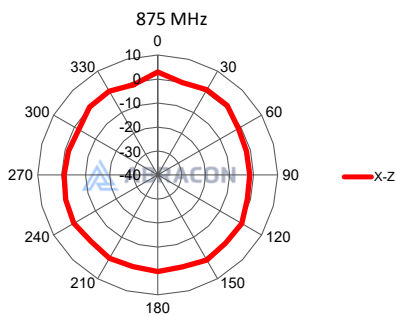
RoHS/RoHS II Compliant

MSL Level = N/A

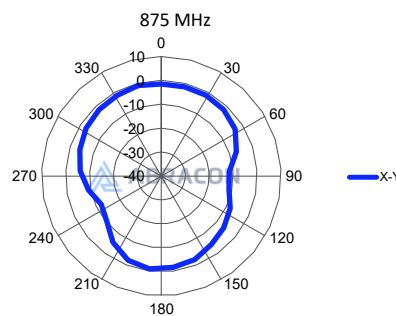
875MHz



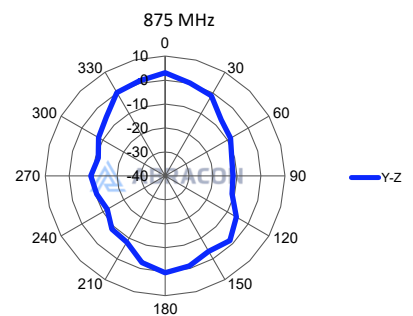
XZ plane



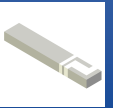
XY plane



YZ plane



Embedded LTE Chip Antenna



AANI-CH-0056

Request Samples



Check Inventory

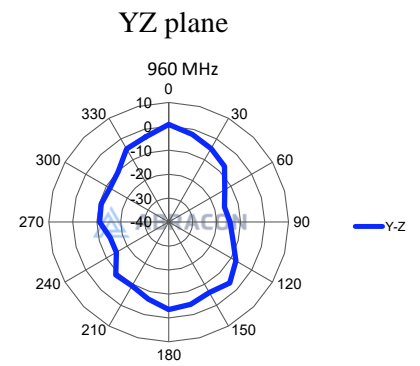
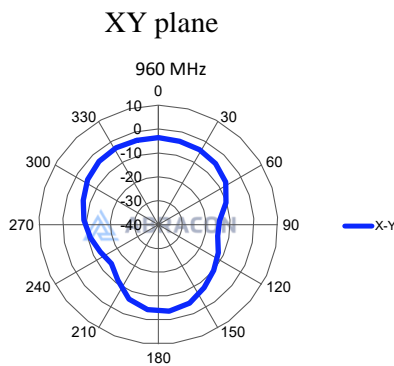
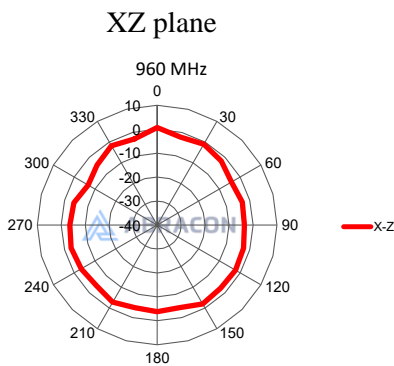
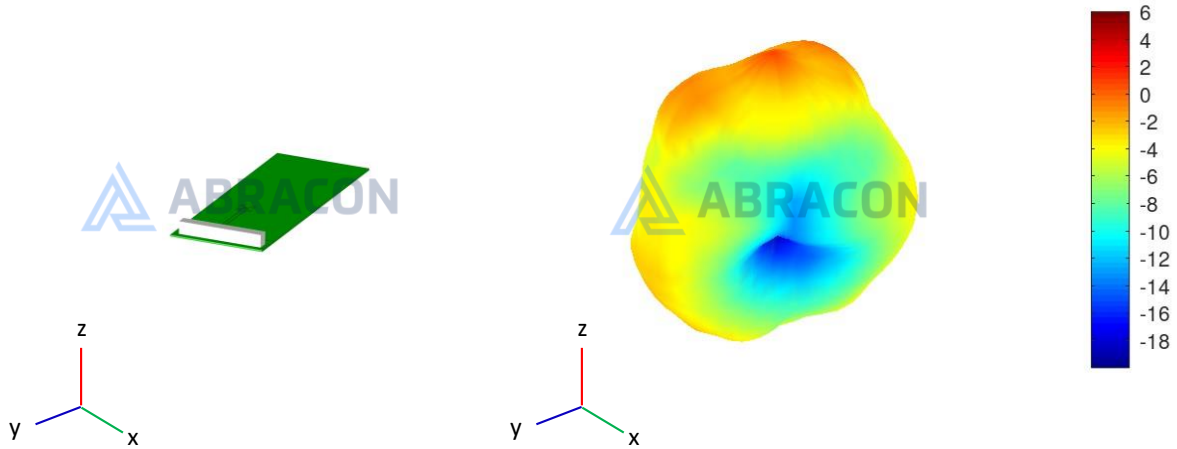


33 x 6 x 3 mm

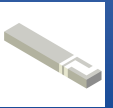
RoHS/RoHS II Compliant

MSL Level = N/A

960MHz



Embedded LTE Chip Antenna



AANI-CH-0056

Request Samples



Check Inventory

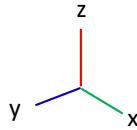
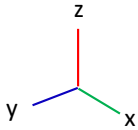
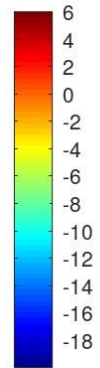
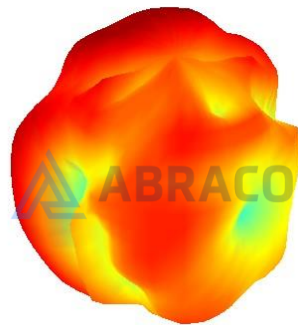


33 x 6 x 3 mm

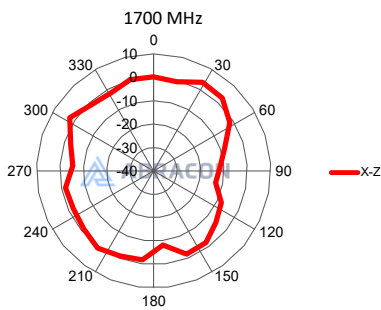
RoHS/RoHS II Compliant

MSL Level = N/A

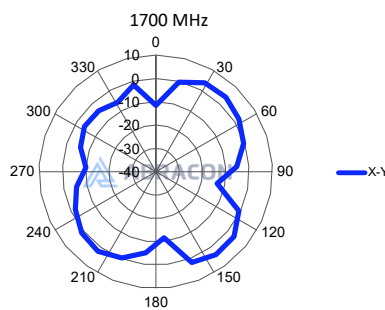
1700MHz



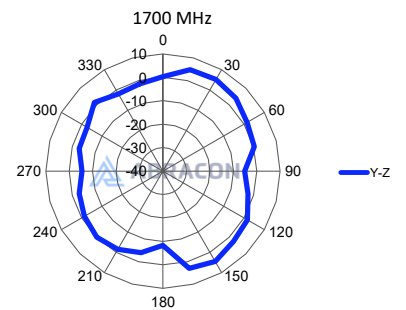
XZ plane



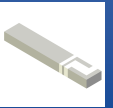
XY plane



YZ plane



Embedded LTE Chip Antenna



AANI-CH-0056

Request Samples



Check Inventory

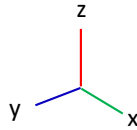
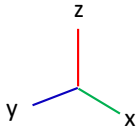
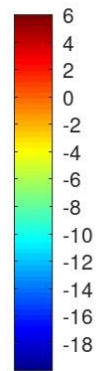
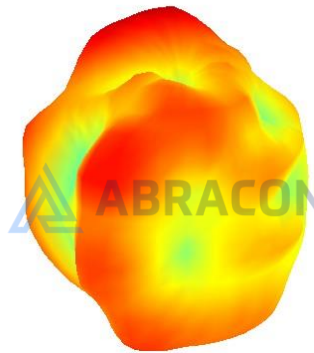


33 x 6 x 3 mm

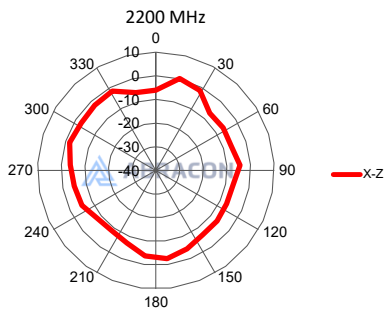
RoHS/RoHS II Compliant

MSL Level = N/A

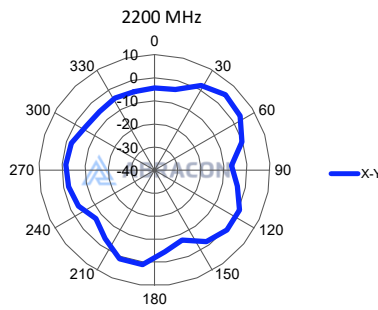
2200MHz



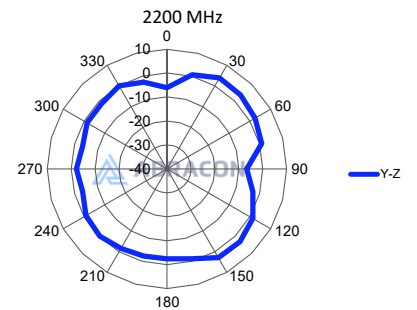
XZ plane



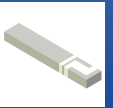
XY plane



YZ plane



Embedded LTE Chip Antenna



AANI-CH-0056

Request Samples



Check Inventory

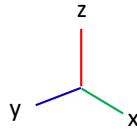
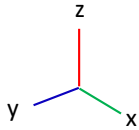
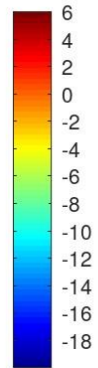
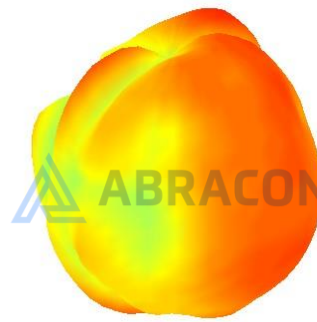


33 x 6 x 3 mm

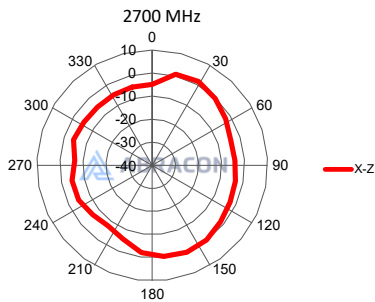
RoHS/RoHS II Compliant

MSL Level = N/A

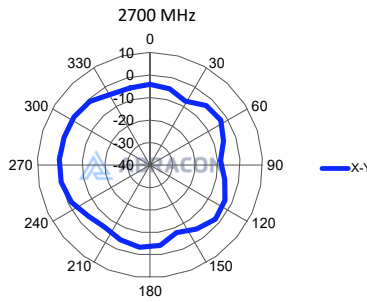
2700MHz



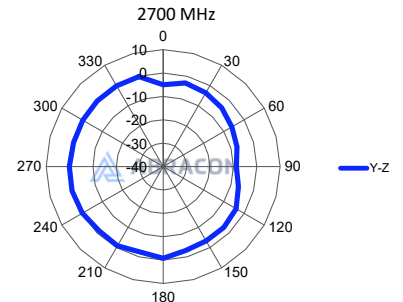
XZ plane



XY plane



YZ plane



Embedded LTE Chip Antenna



AANI-CH-0056

Request Samples



Check Inventory



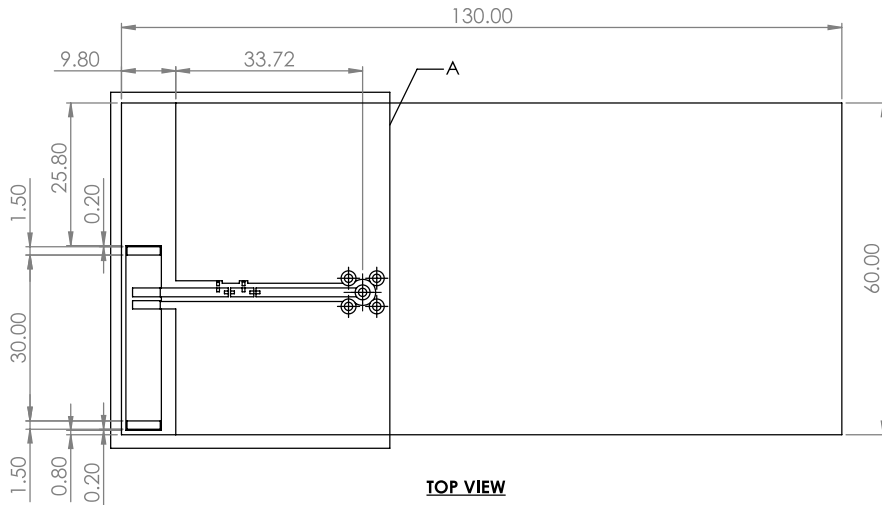
33 x 6 x 3 mm

RoHS/RoHS II Compliant

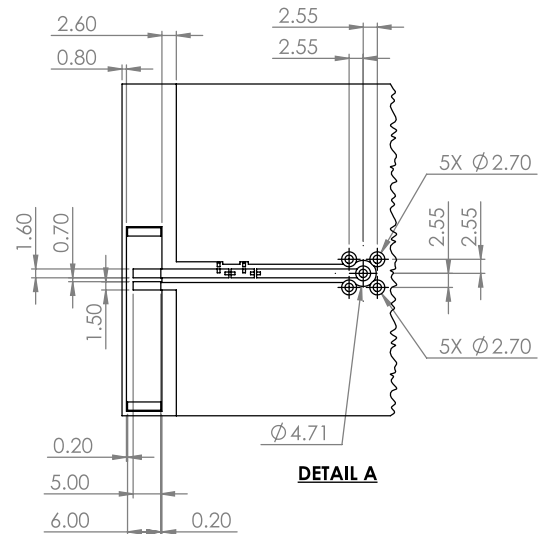
MSL Level = N/A

Evaluation Board Outline & Matching Circuit

The evaluation board (<AANI-CH-0056-EVB >) is developed to simplify antenna testing and evaluation. It has an arbitrary size of 130 x 60 mm. The purpose is to give a reference design for an optimal antenna implementation. The evaluation board can also be used to test other implementations by cutting and soldering the PCB into any device.



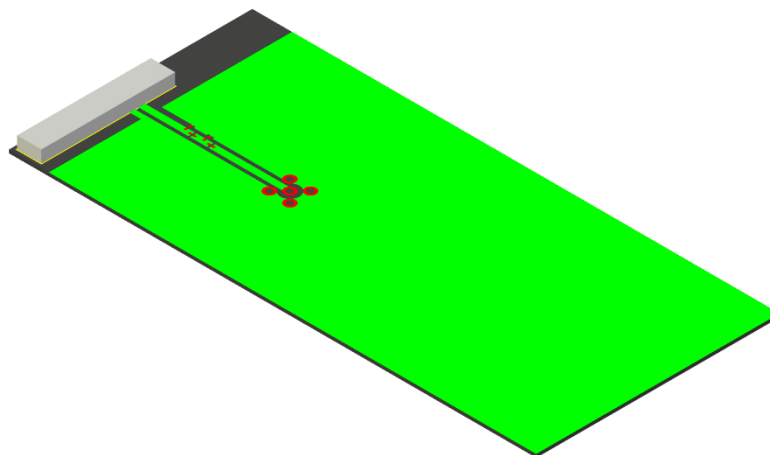
TOP VIEW



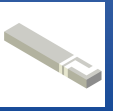
DETAIL A

Unit: mm

Evaluation board outline



Embedded LTE Chip Antenna



AANI-CH-0056

Request Samples



Check Inventory



33 x 6 x 3 mm

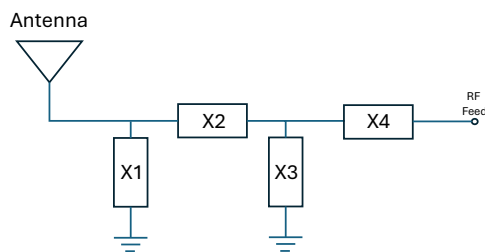
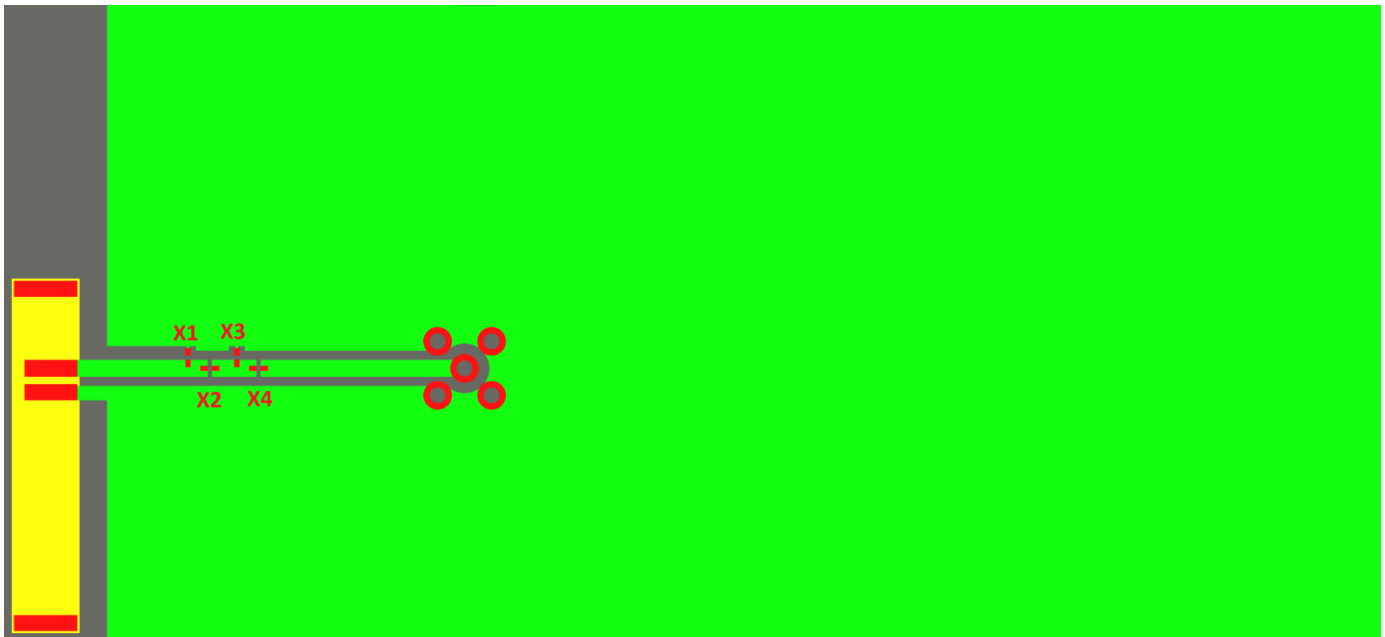
RoHS/RoHS II Compliant

MSL Level = N/A

The evaluation board has a matching circuit implemented next to the antenna. This is aimed to enable optimization possibilities for the user.

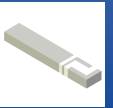
The antenna needs a matching circuit to adjust the resonant frequency balance. When delivered, the evaluation board is tuned for optimum balance at the LTE frequency bands using the following (can be replaced by equivalent):

However, it is common that the resonant frequency will shift during implementation in an arbitrary device. Therefore, this matching may be changed with other values/components/brands for compensation of such effects. This is further described in the General Implementation Guidelines section below.



Location	Description
X1	6.2 nH
X2	3.0 pF
X3	N/C
X4	0 ohm

Embedded LTE Chip Antenna



AANI-CH-0056

Request Samples



Check Inventory



33 x 6 x 3 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Reflow Profile [JEDEC J-STD-020]

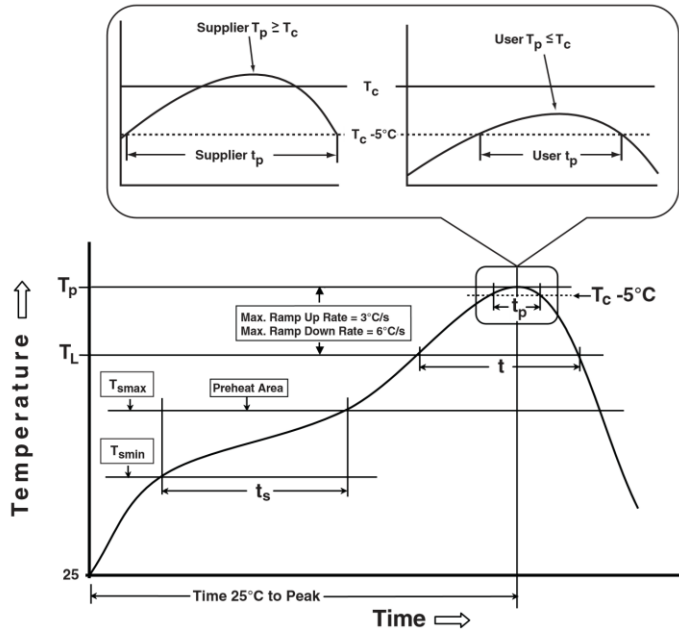


Table 1

SnPb Eutectic Process Classification Temperatures (T_c)		
Package Thickness	Volume mm^3 <350	Volume mm^3 \geq 350
<2.5mm	235°C	220°C
\geq 2.5mm	220°C	220°C

Table 2

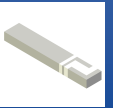
Pb-Free Process Classification Temperatures (T_c)			
Package Thickness	Volume mm^3 <350	Volume mm^3 350-2000	Volume mm^3 >2000
<1.6mm	260°C	260°C	260°C
1.6mm - 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum (T_{smin})	100°C	130°C
Temperature maximum (T_{smax})	150°C	175°C
Time (T_{smin} to T_{smax}) (t_s)	60 – 120 sec.	60 – 120 sec.
Average ramp-up rate (T_{smax} to T_p)	3°C/sec. max	3°C/sec. max
Liquidous temperature (T_L)	183°C	217°C
Time at Liquidous (T_L)	60 – 150 sec.	60 – 150 sec.
Peak package body temperature (T_p)*	See Table 1	See Table 2
Time (T_p)** within 5°C of the specified classification temperature (T_c)	20 sec.	30 sec.
Ramp-down rate (T_p to T_{smax})	6°C/sec. max	6°C/sec. max
Time 25°C to peak temperature	6 min. max	8 min. max
Reflow cycles	2 max	2 max

*Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

**Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

Embedded LTE Chip Antenna



AANI-CH-0056

Request Samples



Check Inventory



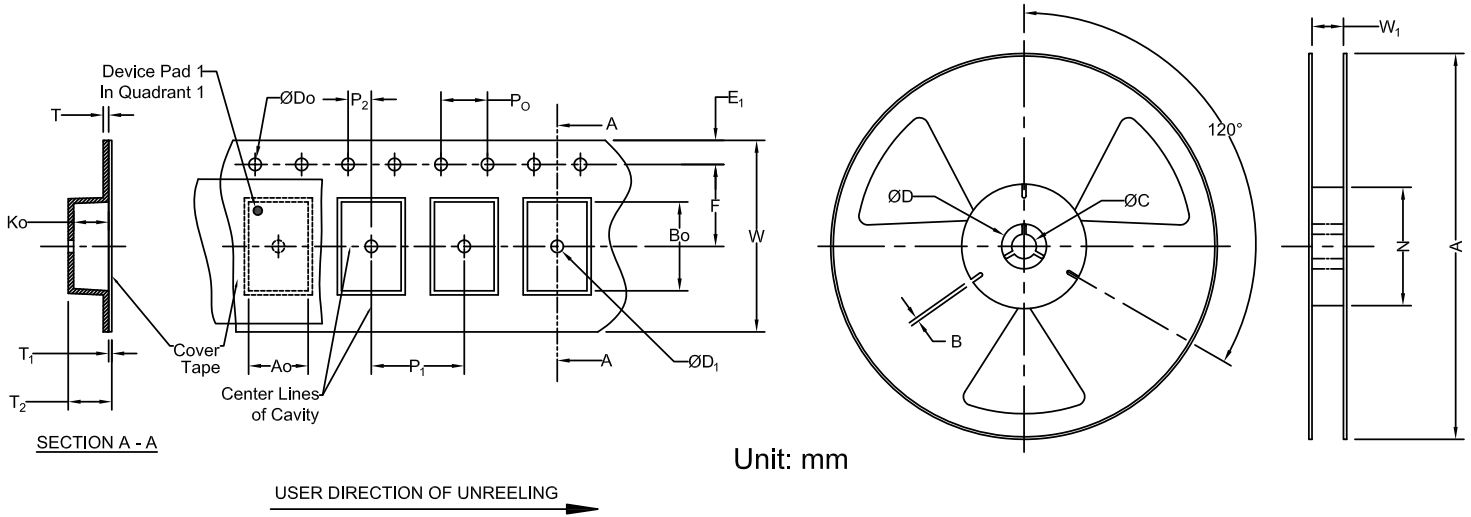
33 x 6 x 3 mm

RoHS/RoHS II Compliant

MSL Level = N/A

Packaging

Tape & Reel Dimension



Carrier Tape Specifications (mm)

Do	Ko	Bo	E ₁	P ₀	P ₂	F	P ₁	W	Reel Qty
1.50 ± 0.1	3.4 ± 0.1	38.4 ± 0.1	1.75 ± 0.1	4.0 ± 0.1	2.0 ± 0.1	26.2 ± 0.1	12.0 ± 0.1	56 ± 0.30	600

Reel Specifications (mm)

A	W ₁
330 ± 1.5	57 ± 0.5

ATTENTION: Abracon LLC's products are Commercial-Off-The-Shelf ('COTS'), which are designed, intended, and validated for use in commercial, industrial, and automotive applications. The customer is responsible for testing and verifying the performance of an Abracon solution to meet their system-level requirements.



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