TAOGLAS

Datasheet

169 MHz VHF Polymer Substrate Chip Monopole

Part No:
CA.69

Description:

25.2*5.1*0.8mm CA.69 169MHz 7dBi Polymer Substrate Chip Antenna

Features:

169 MHz VHF Polymer Substrate Chip Monopole Antenna
Peak Gain – approx. -7 dBi (on evaluation board)
Efficiency 10~15% (on evaluation board)
Low Profile
Dimensions: 25.2*5.1*0.8mm
RoHS & REACH Compliant

Ireland ISO 9001: 2015 Certified

Taiwan ISO 9001: 2015 Certified

1. Introduction

The CA.69 Polymer Substrate Chip Antenna from Taoglas, 169 MHz is specifically designed for VHF 169MHz band applications. It is a high efficiency miniature SMD edge mounted antenna with small footprint requirement. This chip antenna uses the main PCB as its ground plane, thereby increasing antenna efficiency. It is tuned for different PCB sizes by simply changing the value of the matching circuit. CA.69 antenna electrical properties are symmetrical therefore the antenna can be soldered to the board from either side.

This antenna is delivered on tape and reel. Small low frequency antennas such as CA.69 need to be carefully tuned and integrated into devices to perform optimally given the narrow band tuning required, so contact your regional Taoglas sales office for support on gerber review of your layout, advice on ground-plane layout and transmission line design. Taoglas also recommends we test your final device prototype with CA.69 on board and provide final matching values.

Taoglas has tested the CA.69 mounted in realistic conditions in metal or semi metal meter housings with the latest high power modules from Telit and achieved read ranges of more than one hundred metres.

Applications:

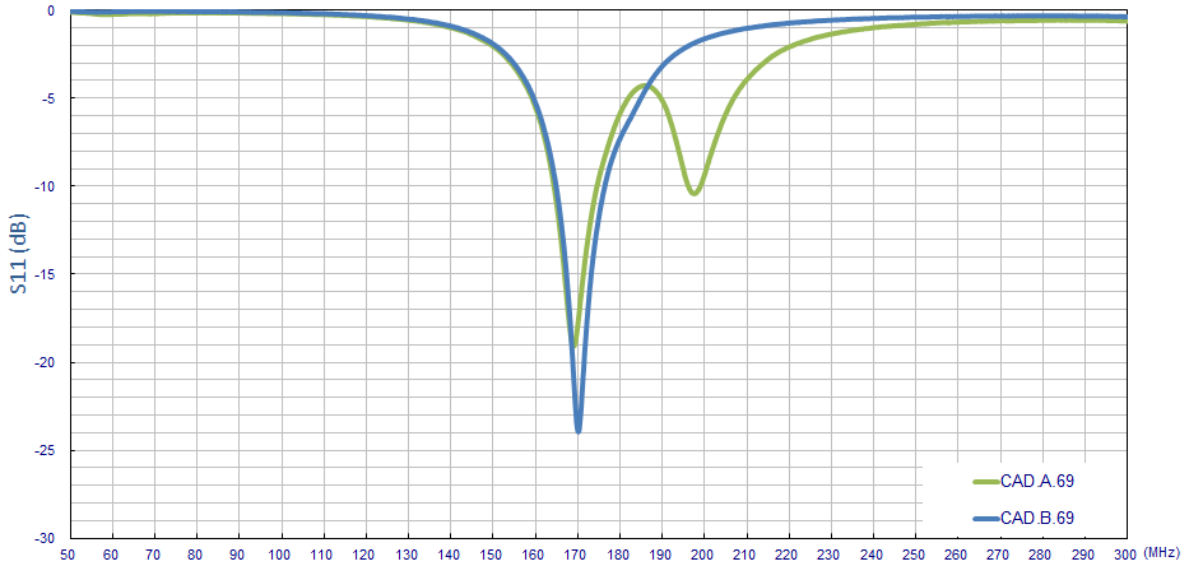
VHF Band Applications

2. Specifications

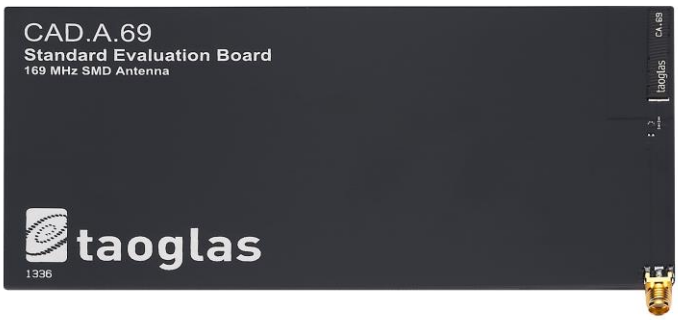
Antenna	
Frequency (MHz)	169 MHz
Bandwidth (MHz)	8 (under -10dB Return Loss)
VSWR	2 max.
Impedance (Ω)	50Ω
Polarization	Linear
Radiation Pattern	Omni
Mechanical	
Dimensions (mm)	25.2 x 5.1 x 0.8
Ground plane (mm)	110 x 55 (Recommended)
Material	Polymer Substrate
Mechanical	
Temperature Range	-40°C to 85°C
Humidity	20% to 70% RH
Moisture Sensitivity Level (MSL)	3 (168 Hours)

3. Antenna Characteristics

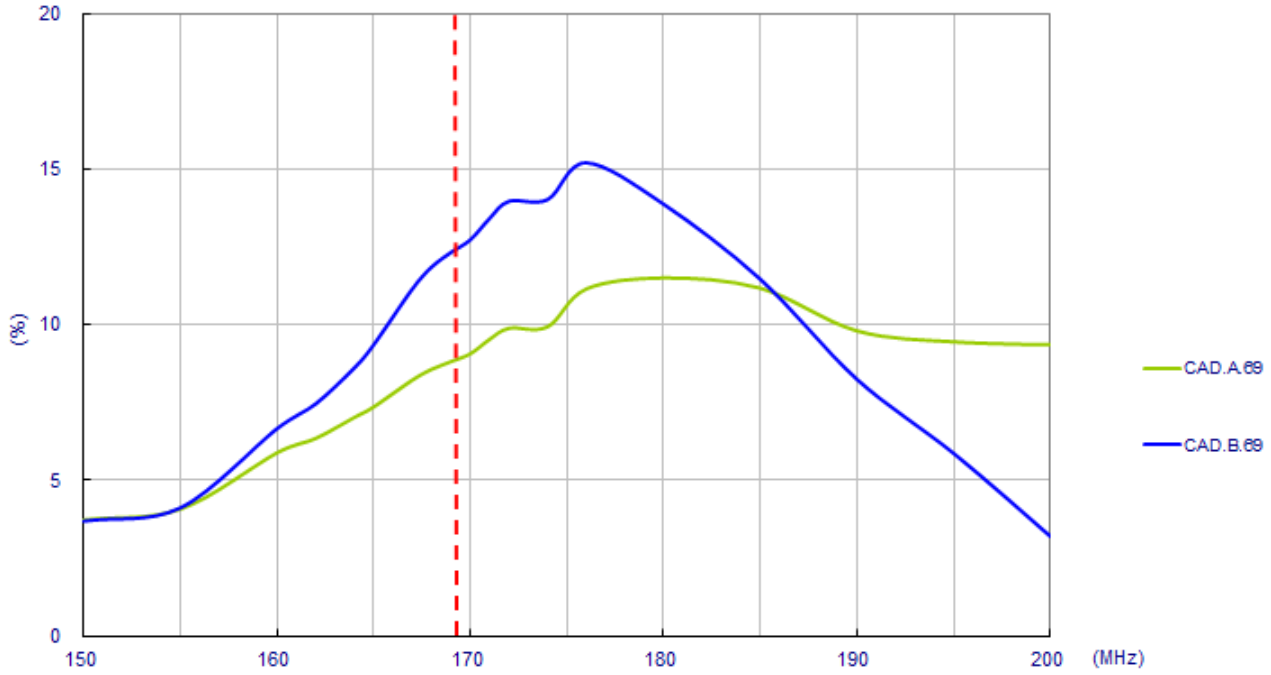
3.1 Return Loss



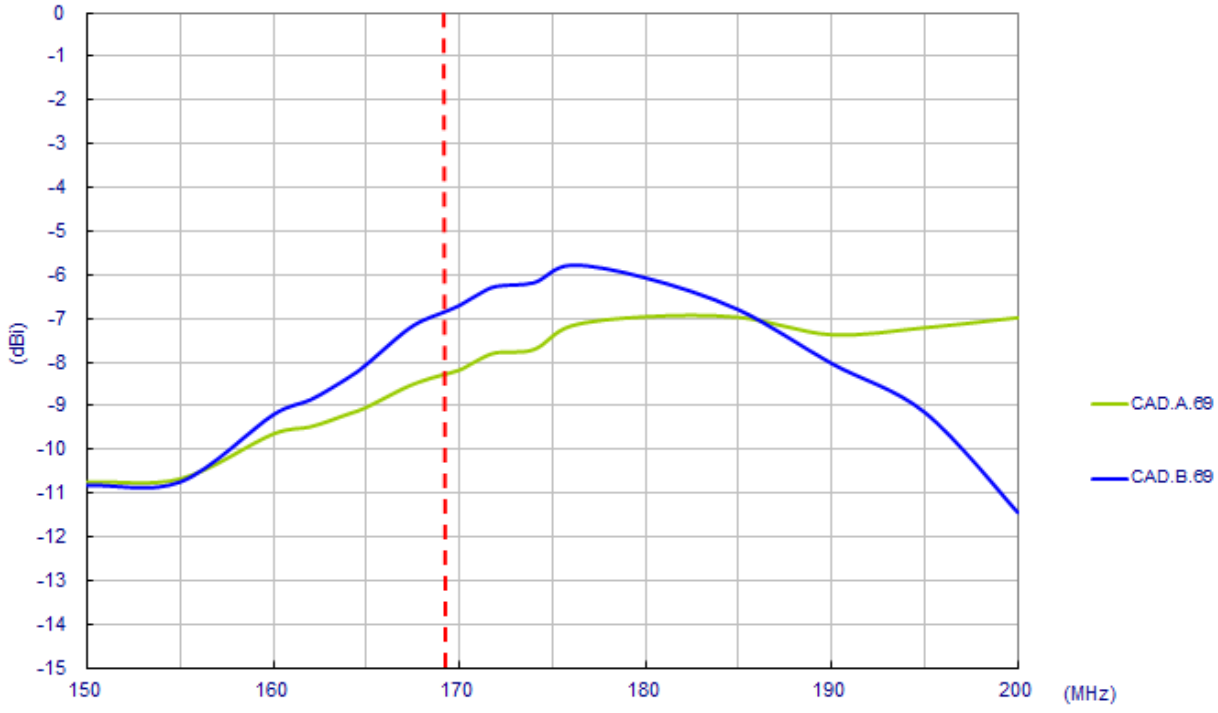
*The antenna tuning depends on different antenna ground plane application. Taoglas provides CAD.A.69 and CAD.B.69 evaluation boards to show performance when antenna is parallel mounted to the ground plane or when it is orthogonally mounted to the ground-plane.



3.2 Efficiency



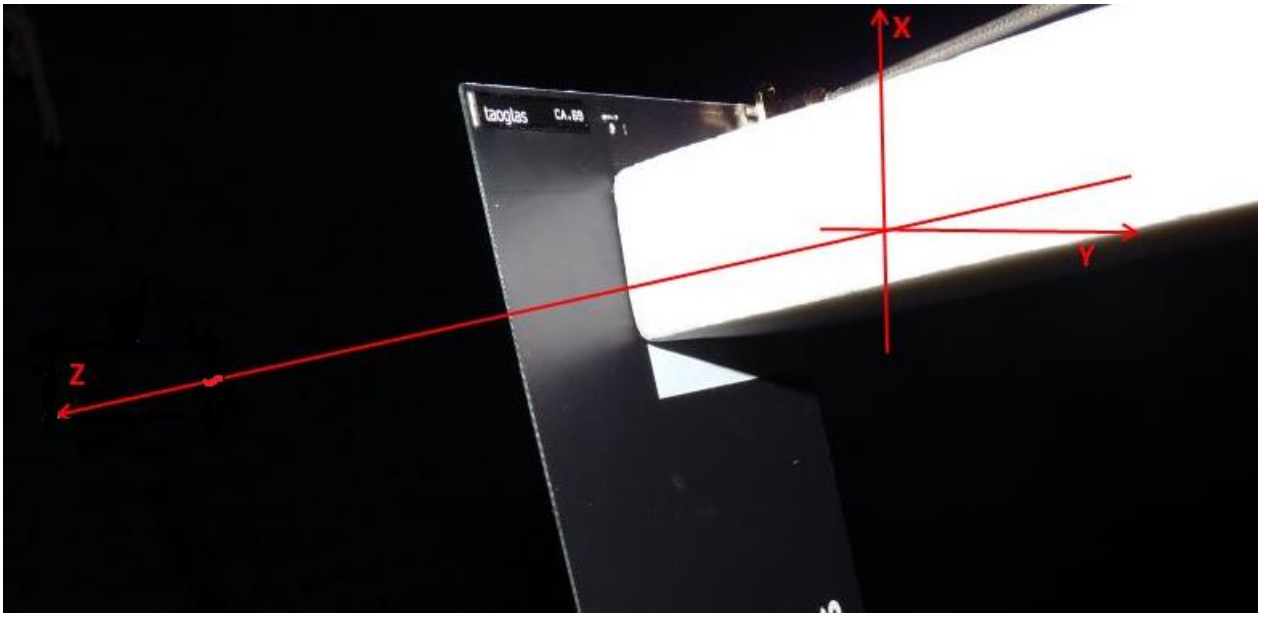
3.3 Peak Gain



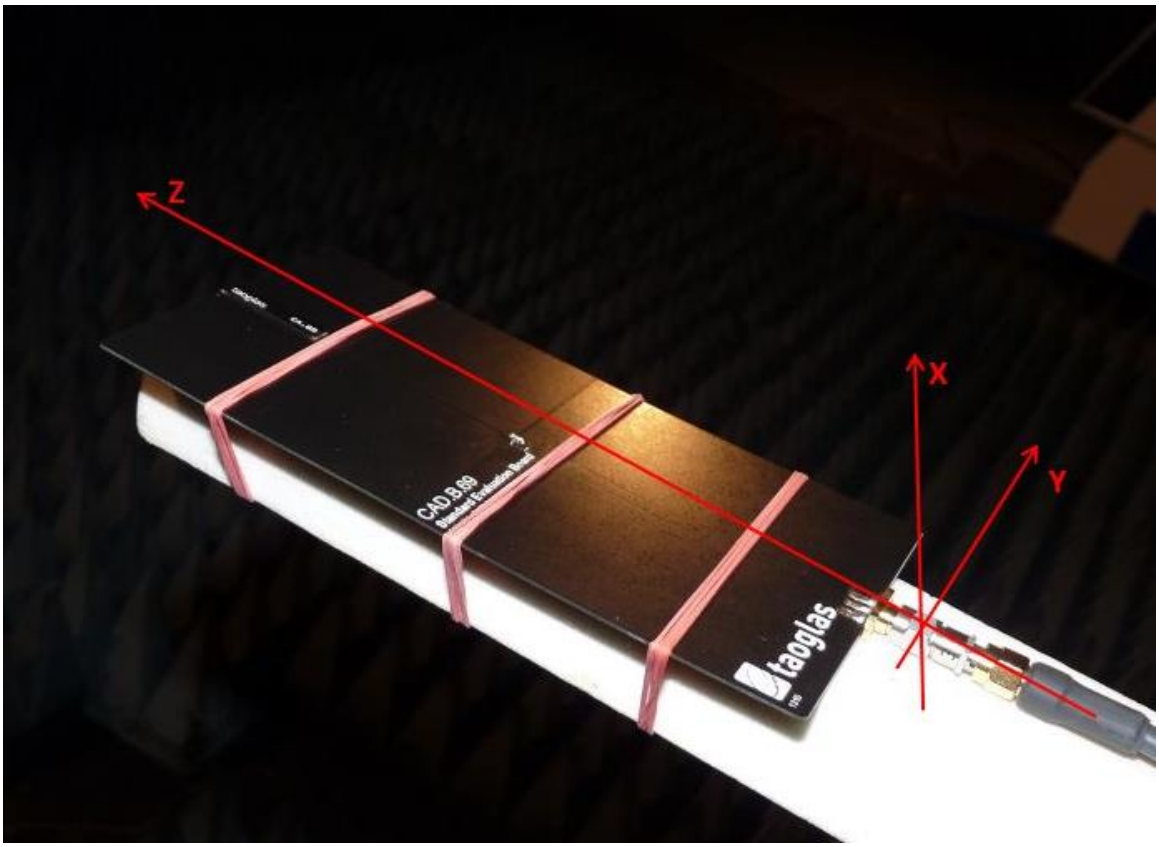
4. Radiation Patterns

4.1 Test Setup – Antenna on Evaluation Board

CAD.A.69

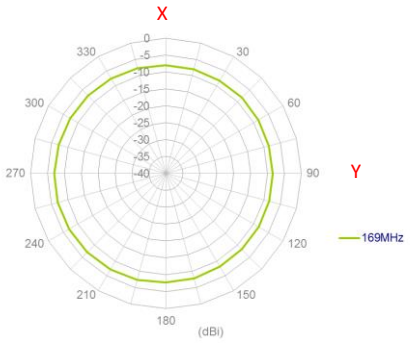


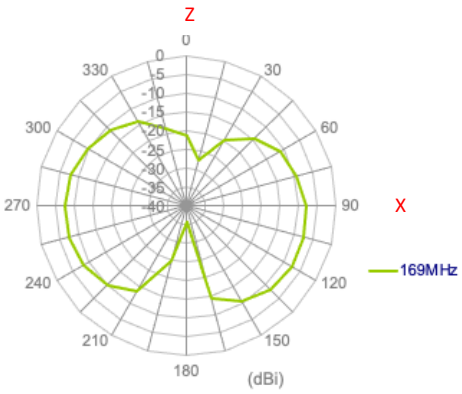
CAD.B.69

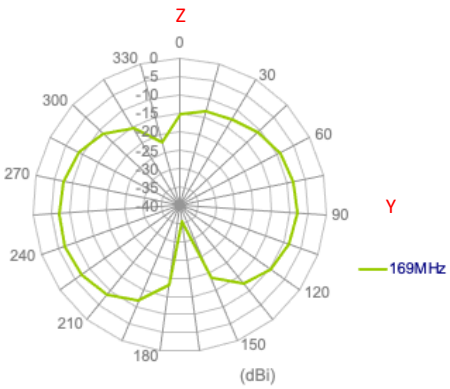


4.2 169 MHz Radiation Patterns

XY Plane	XY Plane Flipped	XZ Plane

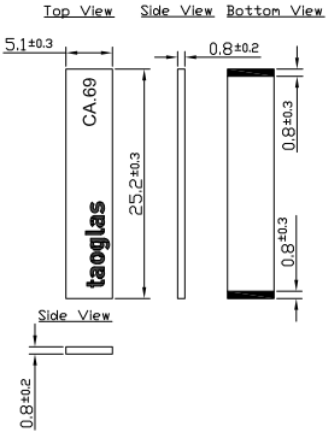




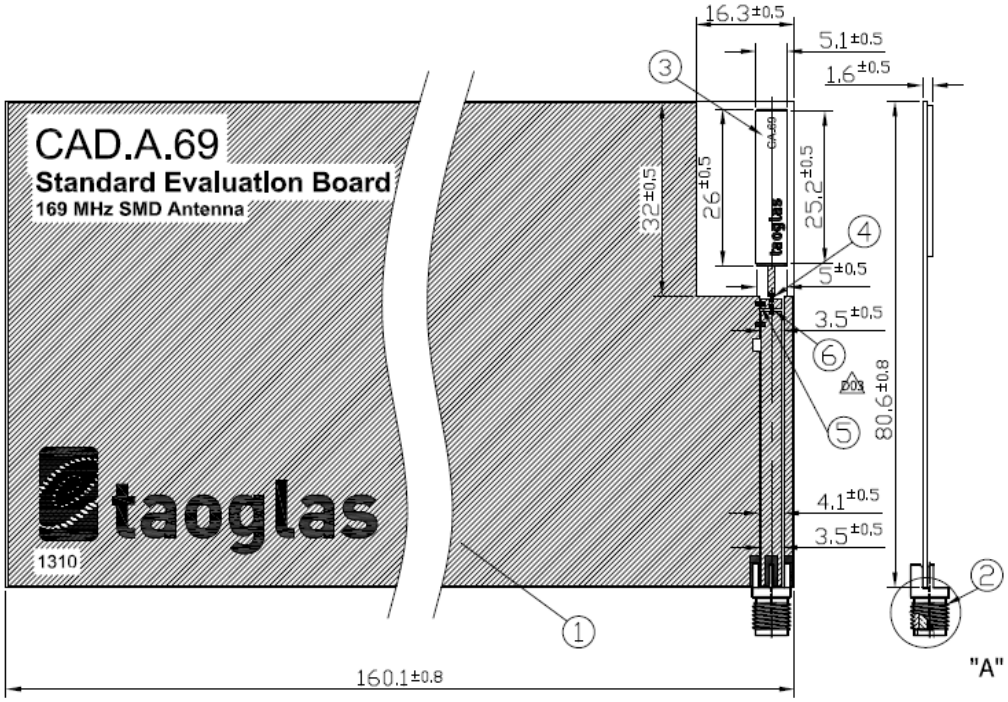


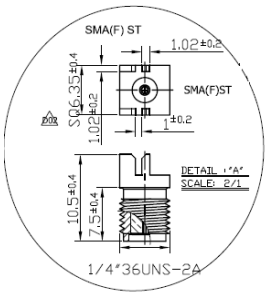
5. Mechanical Drawing

5.1 Antenna Main Body



5.2 CAD.A.69 Application





	Name	P/N	Material	Finish	QTY
1	CAD.A.69 EVB PCB	100213E010012A	FR4 0,8t	Black	1
2	SMA(F) ST	200413H000002A	Brass	Gold	1
3	CA.69 Antenna	001513E020012A	FR4 0,8t	Black	1
4	Inductor (L=300nH) 0402	001513G020055A	Ceramic	N/A	1
5	Capacitor (C=1pF) 0402	001513G010055A	Ceramic	N/A	1
6	Inductor (L=270nH) 0402	001513J000055A	Ceramic	N/A	1

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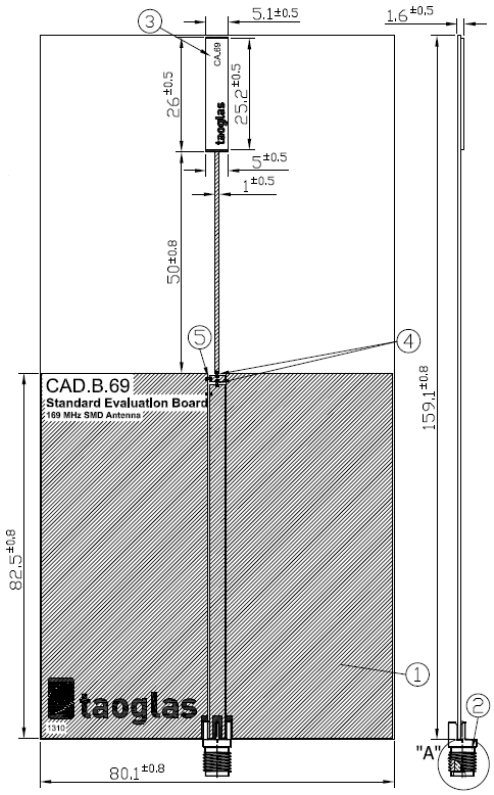
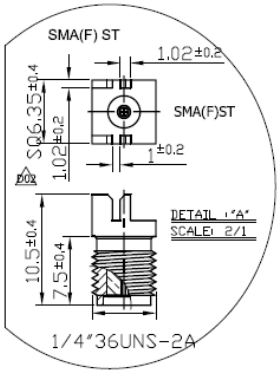
5.2 CAD.B.69 Application

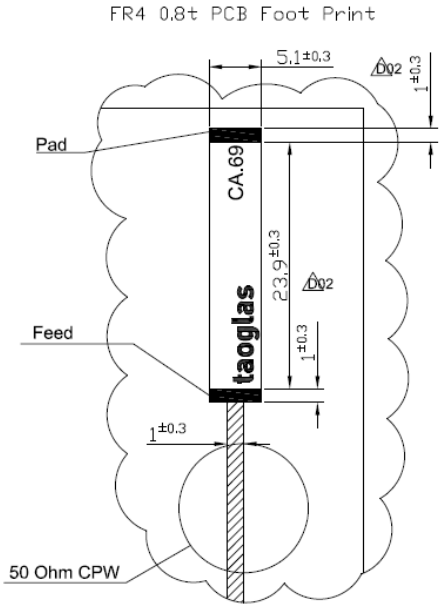




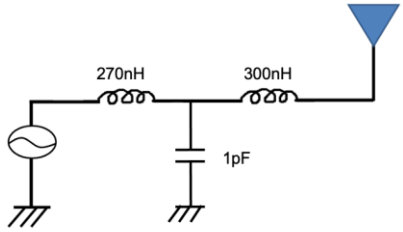
	Name	P/N	Materlal	Finish	QTY
1	CAD.B.69 EVB PCB	100213E000012A	FR4 0,8t	Black	1
2	SMA(F) ST	200413H000002A	Brass	Gold	1
3	CA.69 Antenna	001513E020012A	FR4 0,8t	Black	1
4	Inductor (L=220nH) 0402	001513G030055A	Ceramlc	N/A	2
5	Capacltor (C=1pF) 0402	001513G010055A	Ceramlc	N/A	1

6. Layout Guide

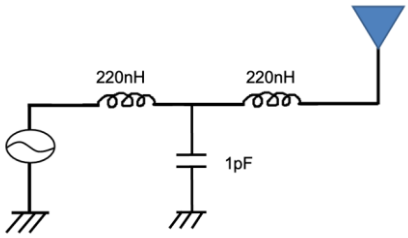
6.1 Solder Land Pattern



6.2 Matching circuit CAD.A.69

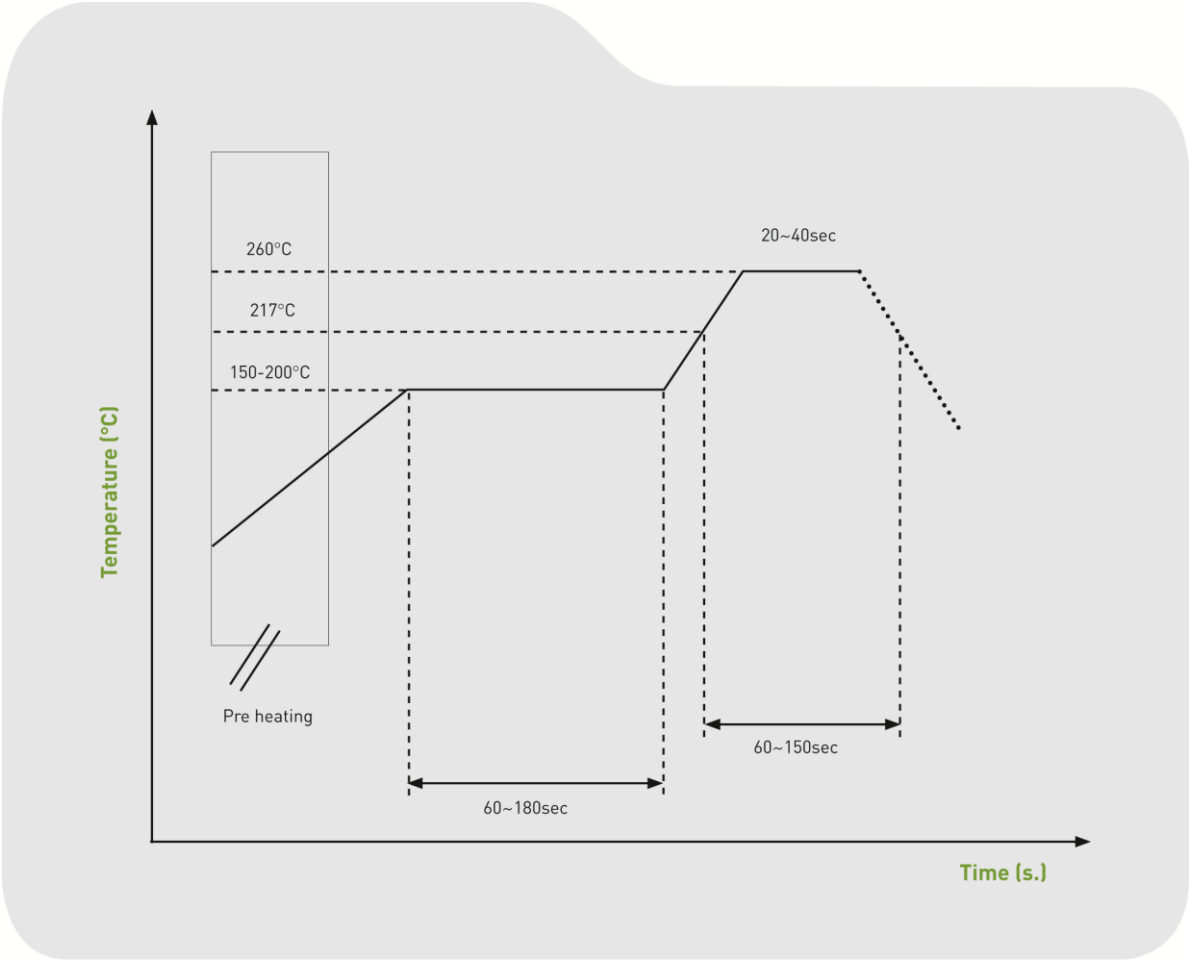


6.3 Matching circuit CAD.B.69



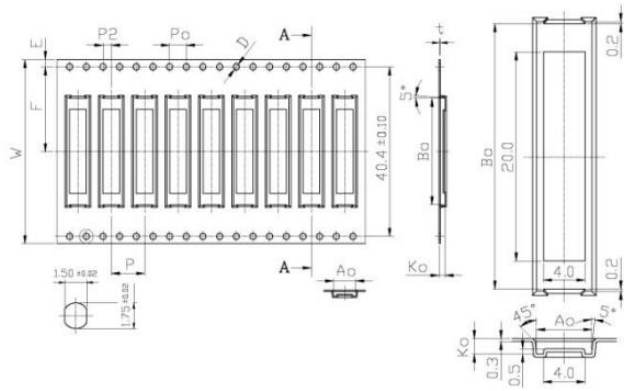
7. Soldering Conditions

Typical Soldering profile for lead-free process:



9. Packaging

Quantity: 4000pcs/ Reel



Tape Dimensions (unit: mm)

Feature	Specification	Tolerance
W	44.00	±0.30
P	8.00	±0.10
E	1.75	±0.10
F	20.20	±0.10
P2	2.00	±0.10
D	1.50	+0.10 / -0.00
D1	2.00	±0.10
Po	4.00	±0.10
10Po	40.00	±0.20

Pocket Dimensions (unit: mm)

Feature	Specification	Tolerance
Ao	5.3	+0.10 -0.10
Bo	25.45	
Ko	1.50	±0.05
t	0.30	±0.05

1. Cumulative tolerance of 10 pocket hole pitch: ±0.20mm
2. Carrier camber not to exceed 1mm in 250mm
3. Ao and Bo measured on a plane above the inside bottom of the pocket
4. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier
5. All dimensions meet EIA-481-B requirements
6. Material – Clear non Anti-Static Polystyrene, Black Conductive Polystyrene

Changelog for the datasheet

SPE-13-8-077– CA.69

Revision: B (Current Version)	
Date:	2021-10-05
Changes:	Format Change, MSL
Changes Made by:	Erik Landi

Previous Revisions

Revision: A (Original First Release)	
Date:	2017-10-11
Notes:	Initial Release
Author:	STAFF

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