

SAW Duplexer

for B1 / Unbalanced / LR / 1612

Pinnacle PN: SA0116122G14AT

Key Feature:

✓ Band 1 LTE

✓ Low Insertion Loss

1 Description

SA0116122G14AT is a high-performance Surface Acoustic Wave (SAW) duplexer optimized for FDD LTE Band 1 applications operating in the range of 1.920-1.980 GHz / 2.110-2.170 GHz. It is designed to provide low insertion loss in Band 1, good isolation between TX and RX ports, and high rejection in the adjacent cellular bands for mobile devices.

SA0116122G14AT uses advanced Chip Scale Package (CSP) technology and is housed in an industry-standard, 8-pin 1.6 mm x 1.2 mm package with a low profile of 0.6 mm max.

2 Package & Dimensions:

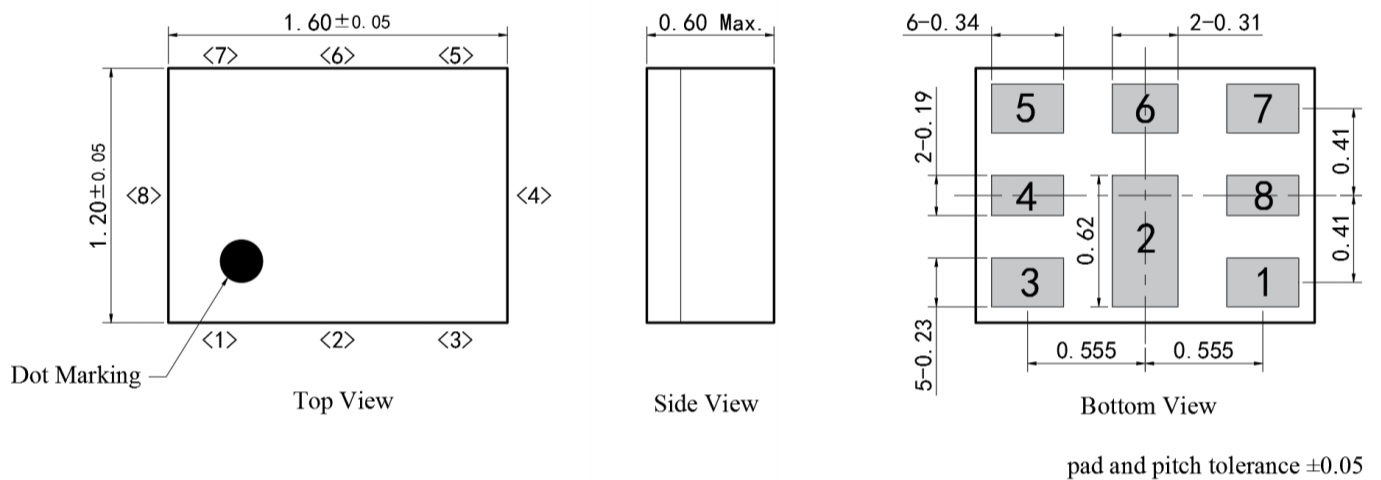


Figure 1: Drawing of Package with each tolerance range

3 Test Circuit

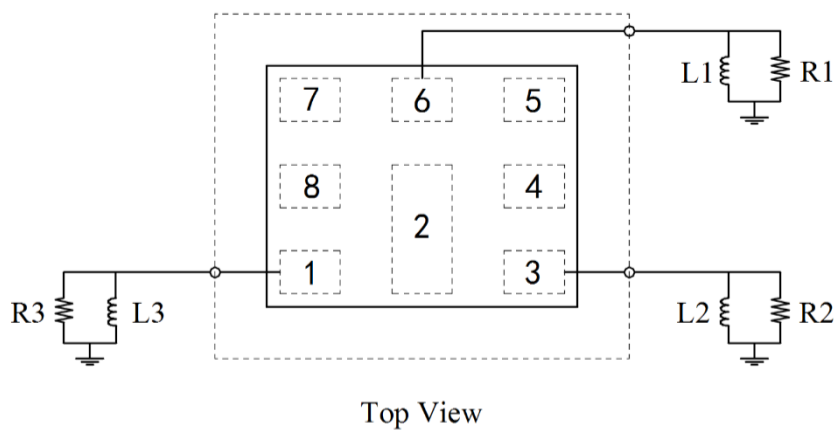


Figure 2: Schematic of matching circuit. External matching components required as below.

R1: 50 Ohm	L1: 2.7nH
R2: 50 Ohm	L2: 5.6nH
R3: 50 Ohm	L3: 4.7nH

4 Pin configuration

- 1 RX
- 3 TX
- 6 Ant
- 2, 4,5,7,8 To be grounded

5 Absolute Maximum Ratings

Parameter	Rating	Unit
Operating Temperature	-30 to +85	°C
Storage Temperature	-40 to +85	°C
Input Power@ input port	Pin=30dBm Continuous wave for 5000h@+50 °C	dBm
Approximate weight	2.8	mg
Moisture Sensitivity Levels	3	MSL
Maximum DC Voltage	3	V

6 Electrical Specifications

(At $T_a=25^{\circ}\text{C}$, unless otherwise specified, as measured on the evaluation board of SA0116122G14AT with feedline loss de-embedded.)

TX→ANT					
Parameter	Conditions	Min	Typ.	Max	Unit
Insertion Loss	1920 - 1980 MHz	-	2.2	2.6	dB
Passband Ripple	1920 - 1980 MHz	-	1.1	1.5	dB
Attenuation	10 - 1574 MHz	38	42	-	dB
	814 - 849 MHz	48	51	-	dB
	859 - 894 MHz	47	50	-	dB
	880 - 915 MHz	45	49	-	dB
	925 - 960 MHz	45	48	-	dB
	1559 - 1606 MHz	38	41	-	dB
	1710 - 1785 MHz	30	36	-	dB
	1805 - 1880 MHz	22	28	-	dB
	2110 - 2170 MHz	40	45	-	dB
	2400 - 2500 MHz	31	33	-	dB
	2496 - 2690 MHz	26	29	-	dB
	3300 - 4200 MHz	14	17	-	dB
	4900 - 5950 MHz	10	13	-	dB
VSWR(TX)	1920 - 1980 MHz	-	1.7	1.9	-
VSWR(ANT)	1920 - 1980 MHz	-	1.6	1.8	-

ANT→RX					
Parameter	Conditions	Min	Typ.	Max	Unit
Insertion Loss	2110 - 2170 MHz	-	2.5	2.9	dB
Passband Ripple	2110 - 2170 MHz	-	1.0	1.3	dB
Attenuation	10 - 1920 MHz	35	39	-	dB
	703 - 748 MHz	50	60	-	dB
	814 - 849 MHz	50	57	-	dB
	880 - 915 MHz	50	55	-	dB
	1559 - 1606 MHz	35	40	-	dB
	1710 - 1785 MHz	35	39	-	dB
	1920 - 1980 MHz	44	48	-	dB
	2300 - 2400 MHz	35	38	-	dB
	2400 - 2500 MHz	36	40	-	dB
	2500 - 2570 MHz	36	42	-	dB
	3300 - 4200 MHz	32	38	-	dB
	4900 - 5950 MHz	12	16	-	dB
VSWR(ANT)	2110 - 2170 MHz	-	1.6	1.9	-
VSWR(RX)	2110 - 2170 MHz	-	1.7	2.0	-

TX→RX					
Parameter	Conditions	Min	Typ.	Max	Unit
Isolation	1920 - 1980 MHz	50	53	-	dB
	2110 - 2170 MHz	50	54	-	dB

7 Recommended Soldering Profile

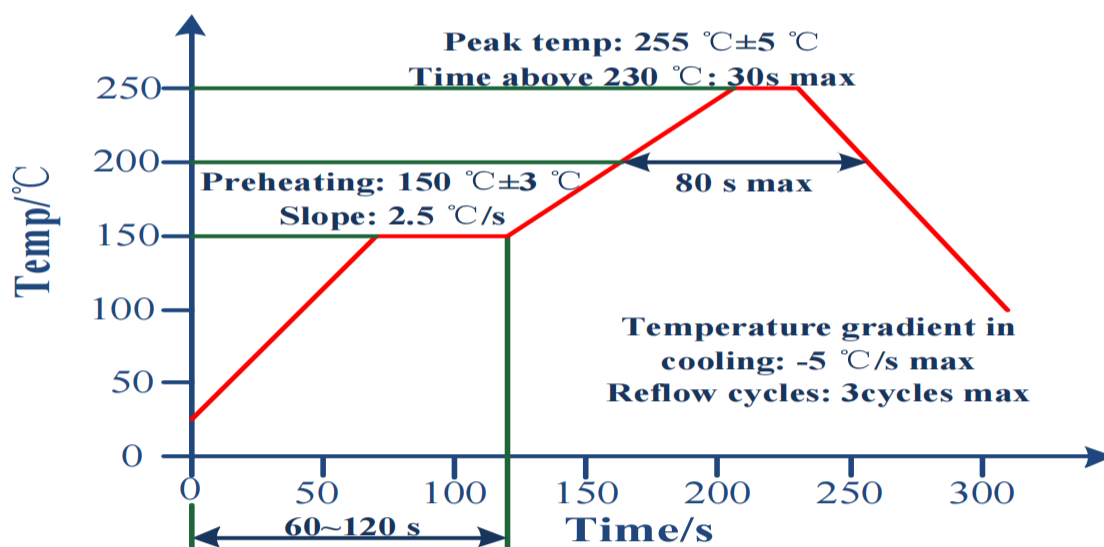


Figure 3 : Recommended Reflow profile for convection and infrared soldering-lead-free solder.

8 Frequency Characteristics

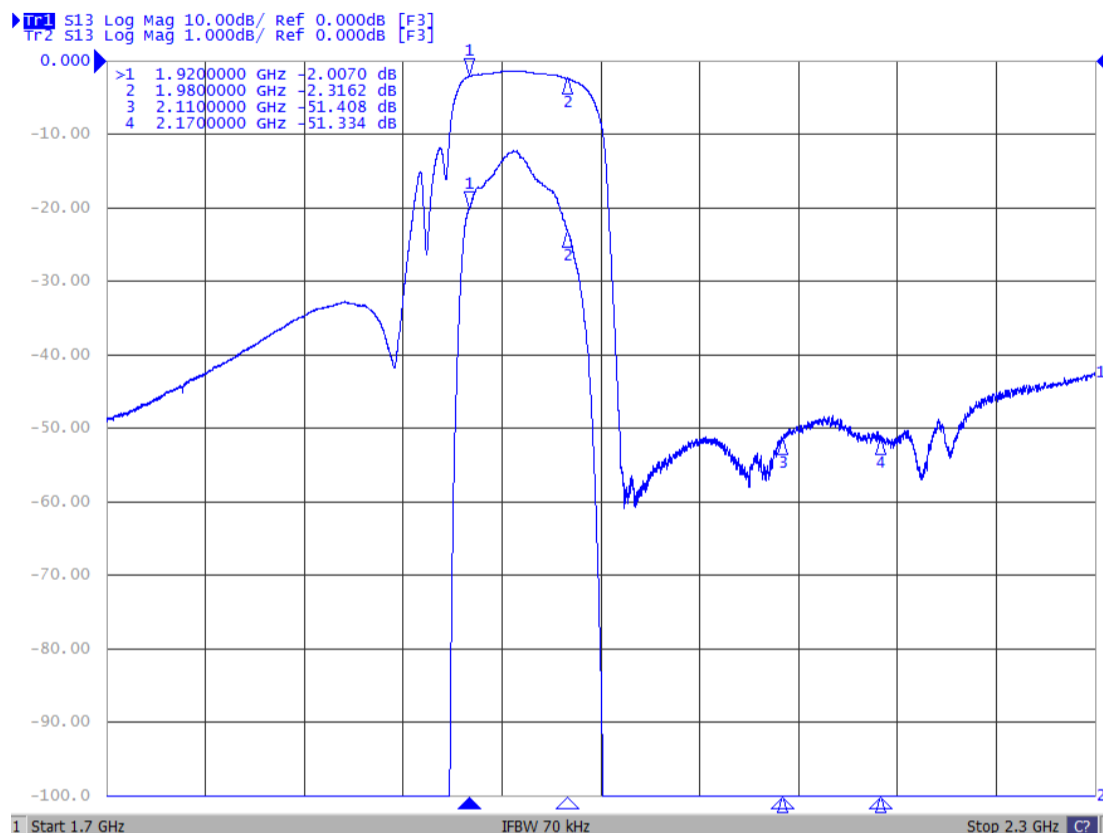


Figure 4: TX→ANT

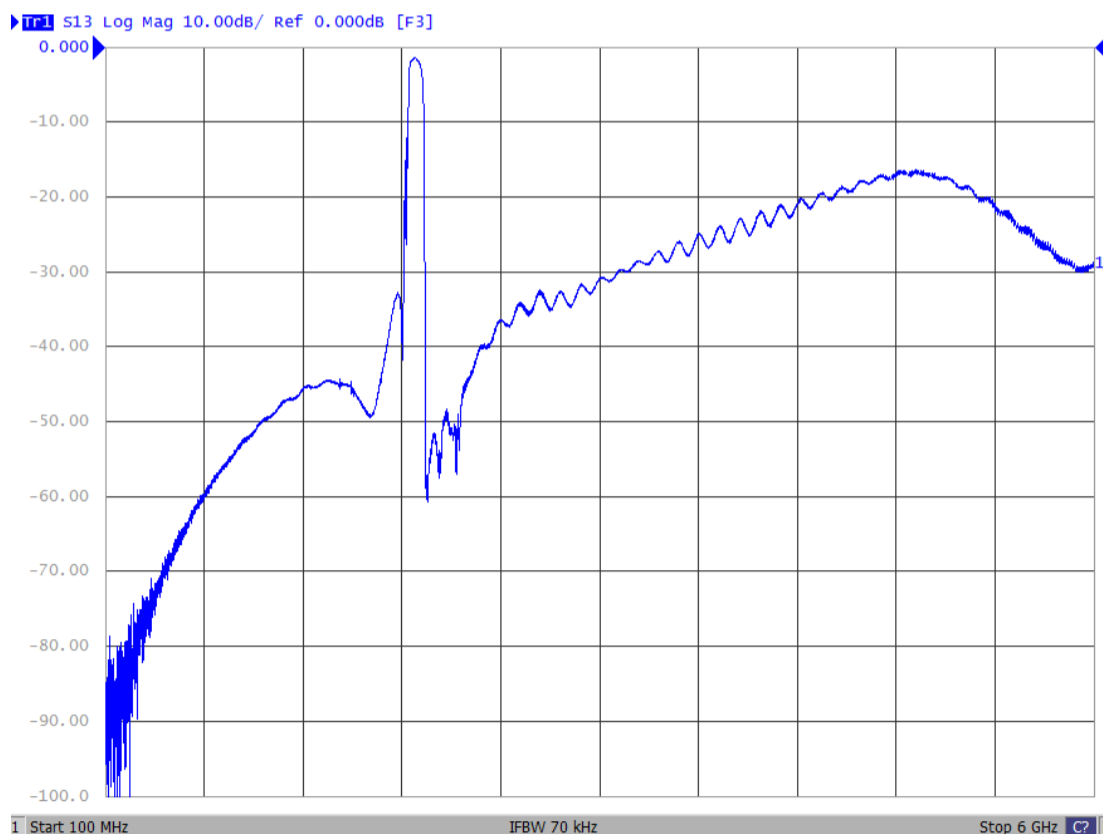


Figure 5: TX→ANT (Wide Band)

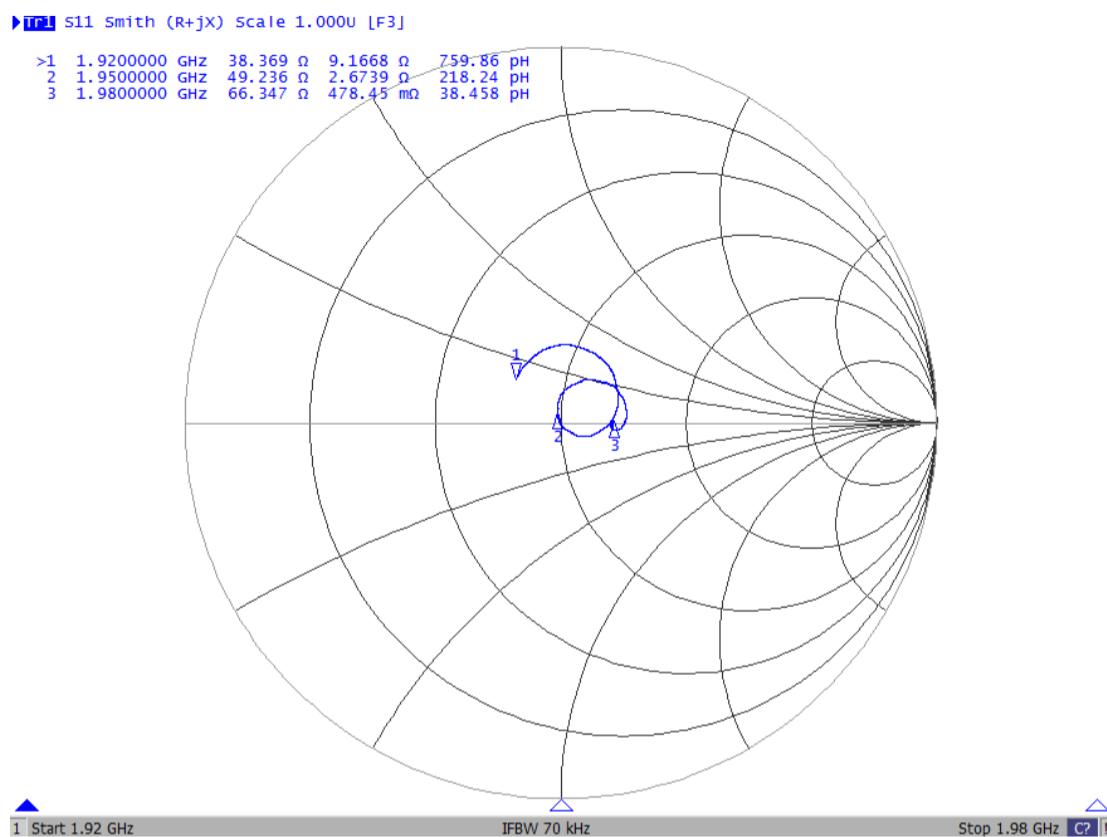


Figure 6: Smith for ANT

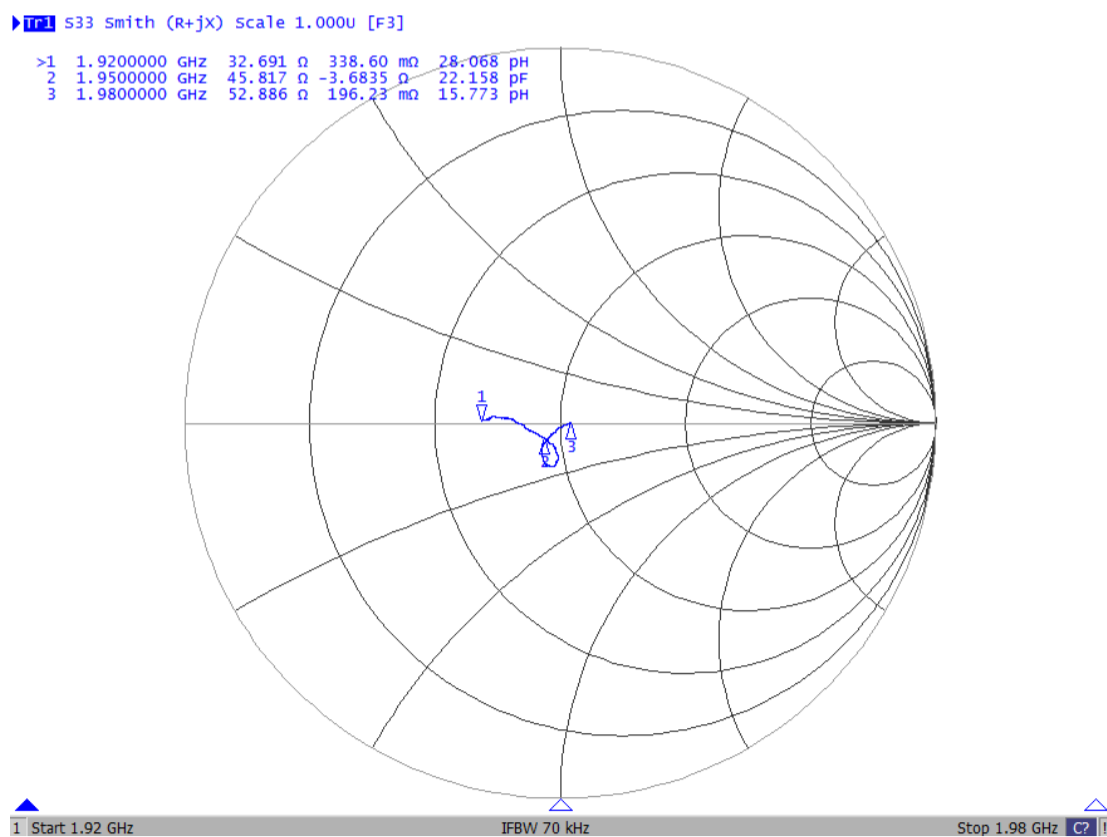


Figure 7: Smith for TX

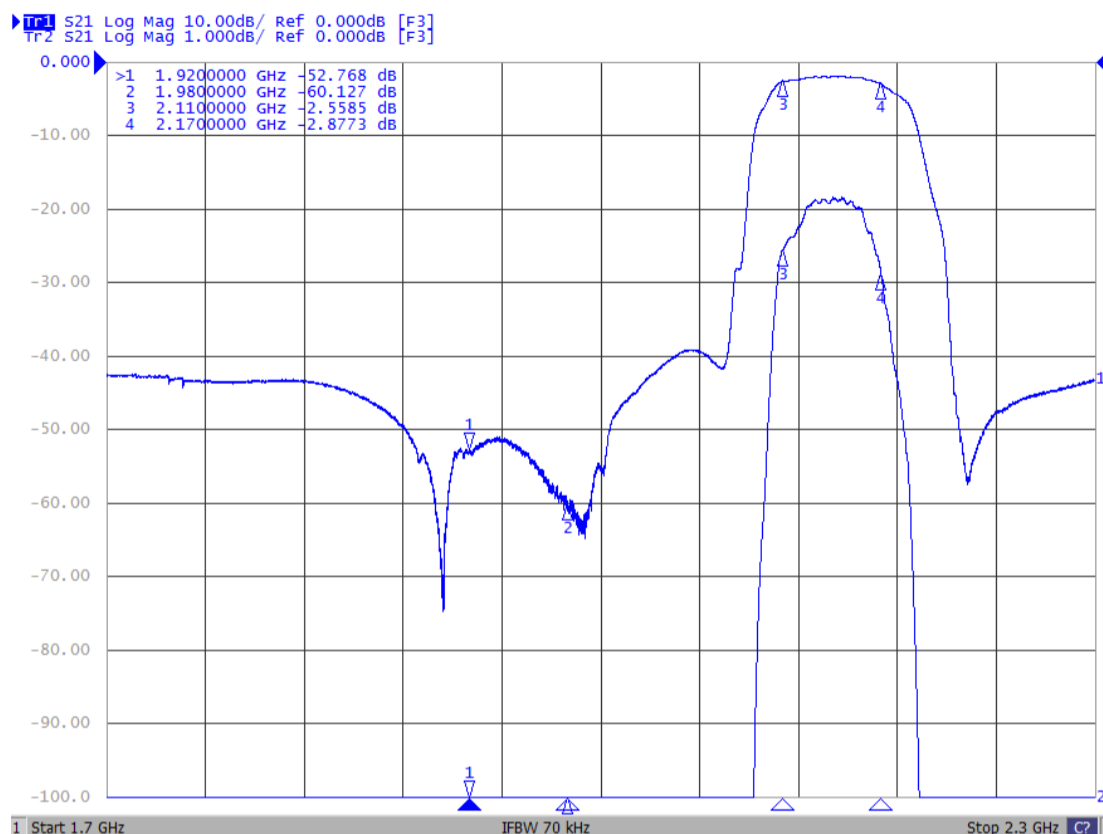


Figure 8: ANT → RX

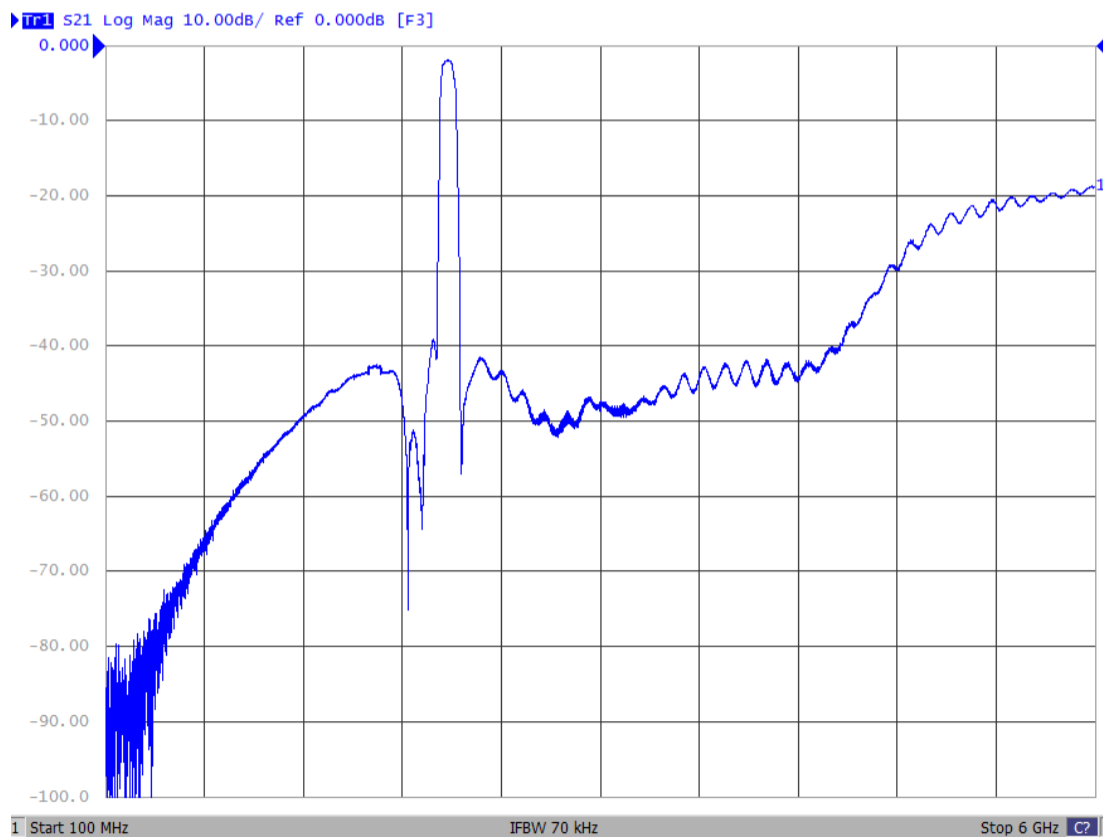


Figure 9: ANT → RX (Wide Band)

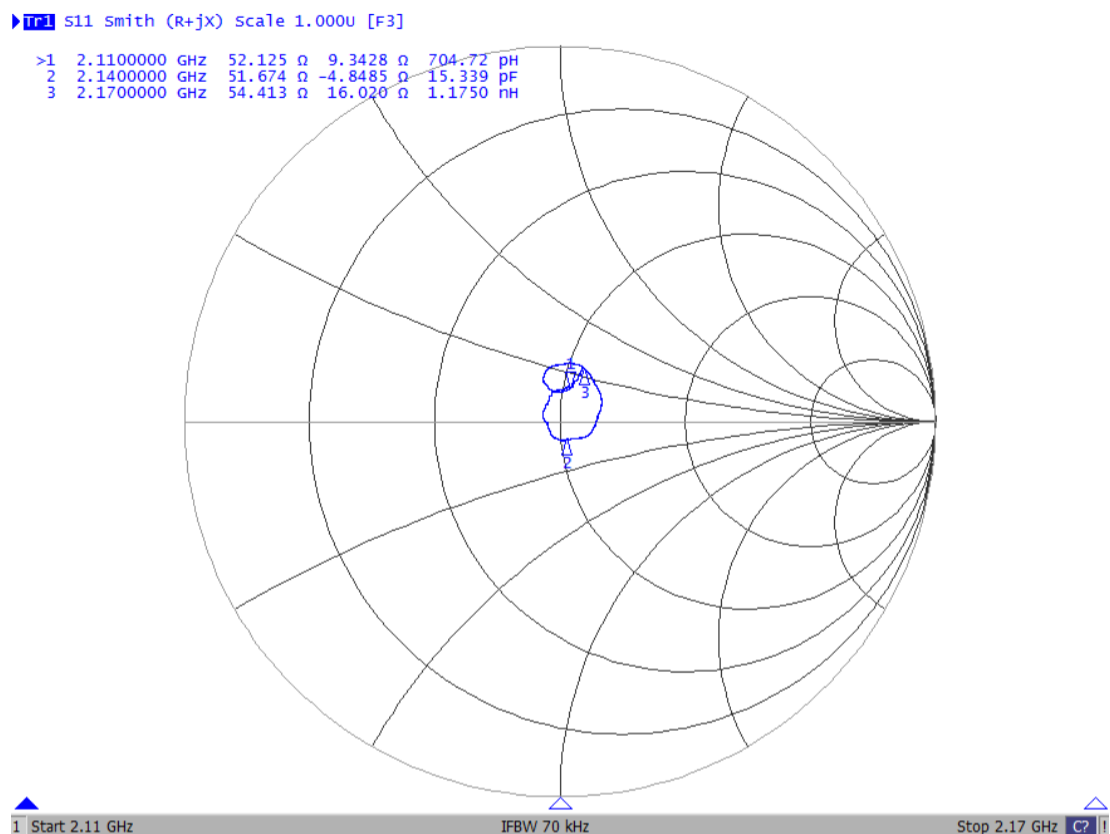


Figure 10: Smith for ANT

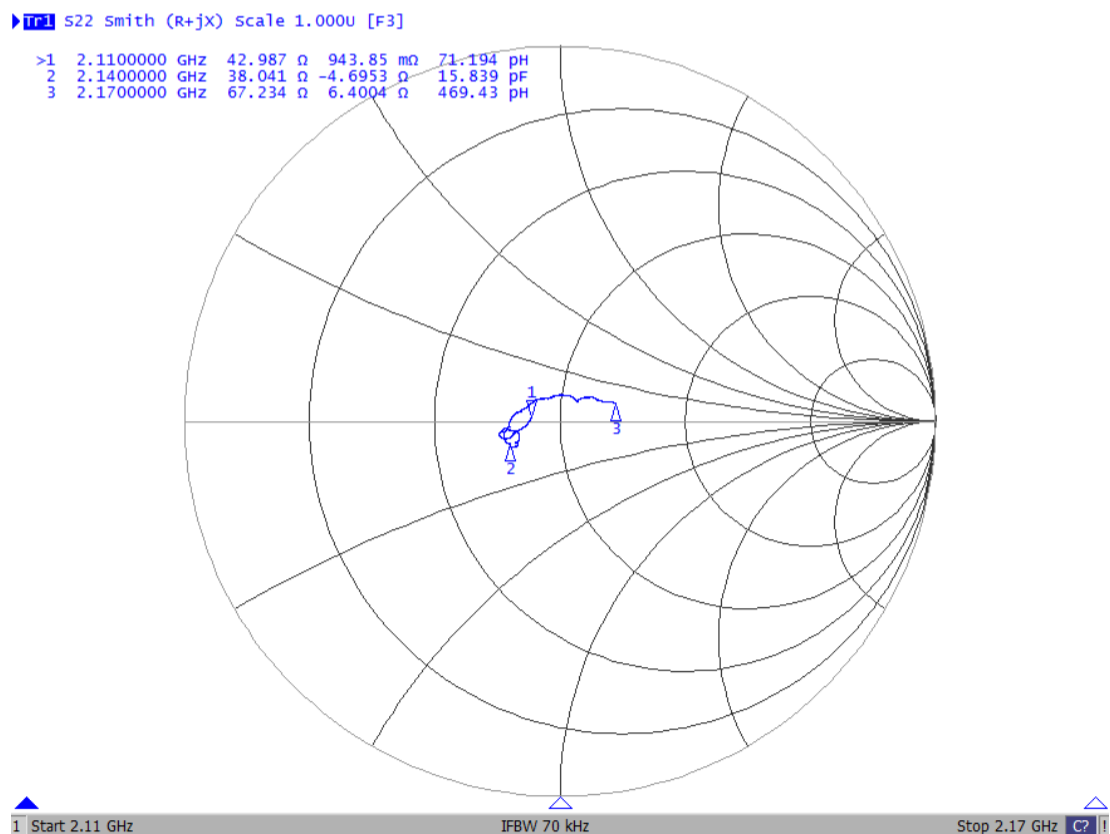


Figure 11: Smith for RX

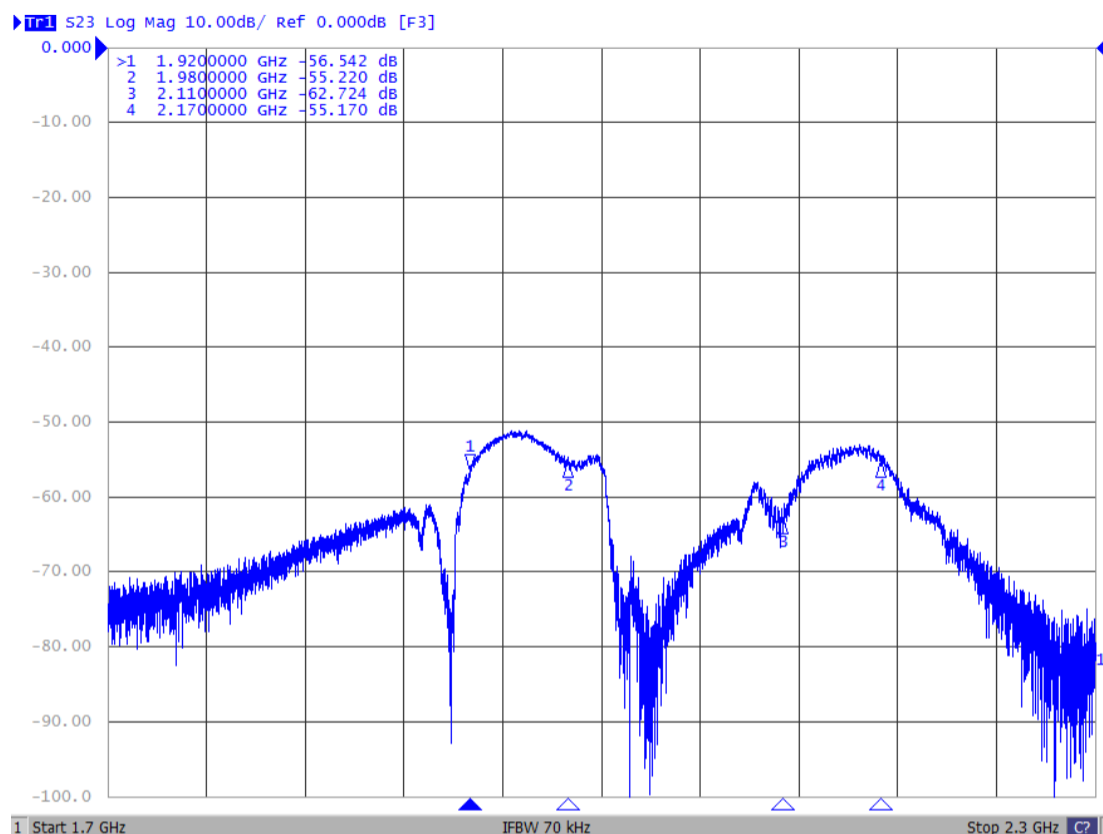


Figure 12:TX→RX

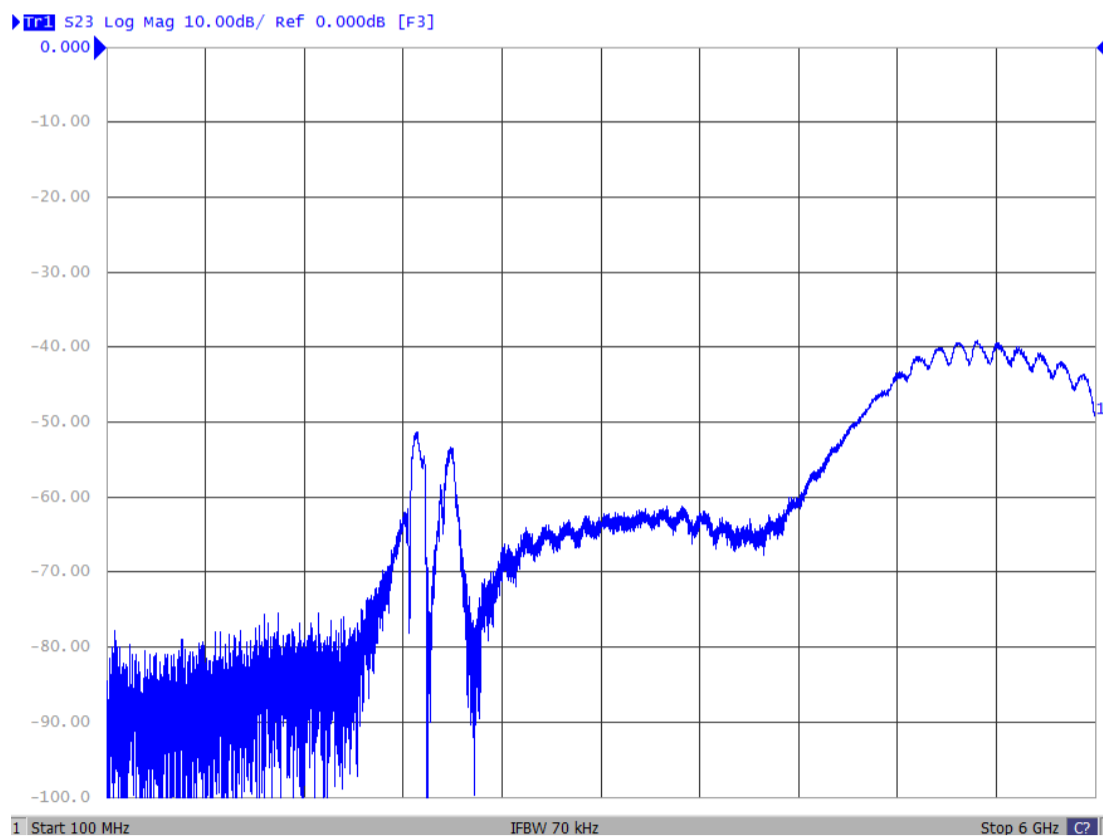


Figure 13:TX→RX (Wide Band)

9 Packaging

9.1 Tape

Tensile Strength of Carrier Tape: Carrier tape 10N or more; Cover tape 5N or more. Packaging quantities: 5000 PCS / Reel.

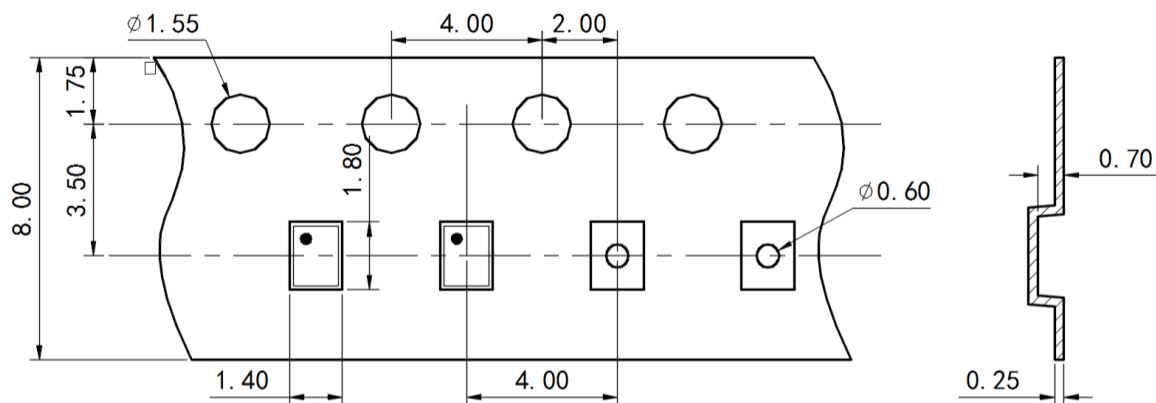


Figure 14: Drawing of tape with tape dimensions according above (mm.).

9.2 Reel with diameter of 178mm

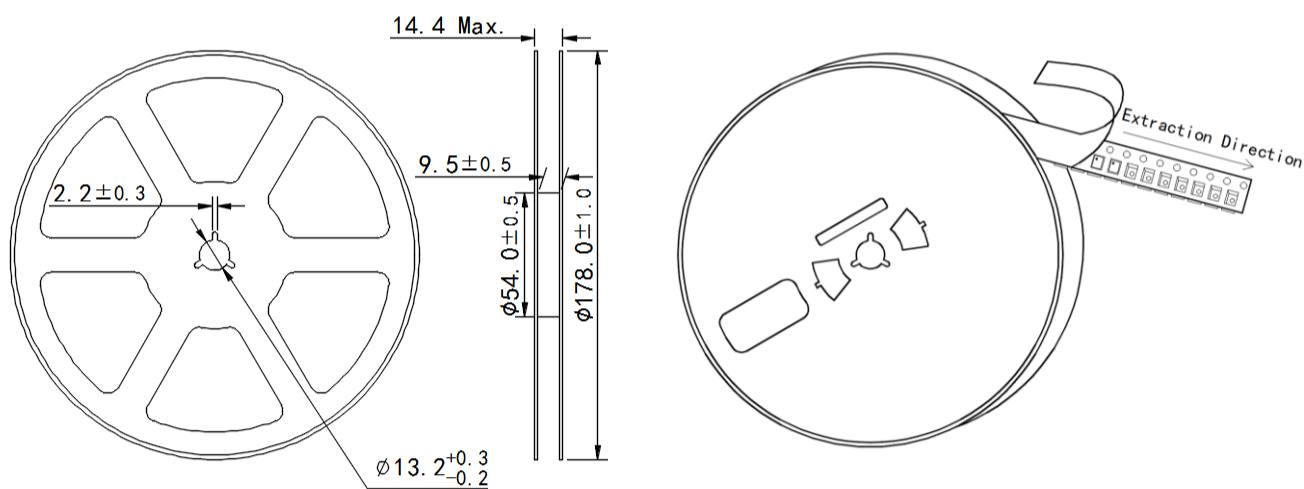


Figure 15: Drawing of reel with diameter of 178mm.