



## Data Sheet

### Band5 Duplexer 1814

### SPT836MADC1

2021/5/25  
V1.3

#### Description:

The Spectron SPT836MADC1 is a miniature B5 duplexer designed for applications in LTE-A, CAT1, 5G NR, customer premise equipment, and mobile communication devices.

The SPT836MADC1 provides +29 dBm power handling, low insertion loss and high out of band rejection.

The design and manufacturing of the SPT836MADC1 exploit Spectron's exclusive TSAW technology to deliver competitive performance against state of the art at a low cost.

The SPT836MADC1 is compatible with high volume, lead-free SMT soldering processes.

#### Features:

- Single-Ended Input and Output
- Terminating Impedance: 50  $\Omega$
- Compact miniature size
  - 1.8 mm  $\times$  1.4 mm footprint
  - 0.65 mm max-height
- Environmental
  - RoHS 6 Compliant

#### Specifications:

- Performance specified from -20°C to +85°C
- In-band insertion loss: 2.1 dB Max for UL band
- In-band insertion loss: 2.3 dB Max for DL band
- High out of band rejection
- High isolation between Tx and Rx

#### Applications:

- LTE-A
- 5G NR
- Communication Devices

## Electrical Specifications

Table 1 Electrical Specifications: Tx to Ant.

Tx to Ant			Specification			
Parameter	Condition [MHz]	Unit	Minimum <sup>1</sup>	Typical <sup>2</sup>	Maximum <sup>1</sup>	
Insertion Loss	824.00 ~ 849.00	dB	-	1.5	2.5	
Inband Ripple	824.00 ~ 849.00	dB	-	0.7	1.5	
VSWR of Tx Port	824.00 ~ 849.00	-	-	1.5	2.0	
VSWR of Ant Port	824.00 ~ 849.00	-	-	1.5	2.0	
Absolute Attenuation	10.00 ~ 420.00	dB	35	39	-	
	420.00 ~ 494.00	dB	35	38	-	
	494.00 ~ 701.00	dB	33	37	-	
	699.00 ~ 716.00	dB	35	42	-	
	701.00 ~ 728.00	dB	35	42	-	
	728.00 ~ 764.00	dB	35	42	-	
	764.00 ~ 804.00	dB	30	35	-	
	869.00 ~ 894.00	dB	45	48	-	
	1574.00 ~ 1577.00	dB	25	29	-	
	1638.00 ~ 1708.00	dB	25	29	-	
	1805.00 ~ 1880.00	dB	25	29	-	
	1930.00 ~ 1990.00	dB	22	27	-	
	2110.00 ~ 2170.00	dB	22	26	-	
	2400.00 ~ 2494.00	dB	21	25	-	
	2472.00 ~ 2547.00	dB	21	24	-	
	3286.00 ~ 3406.00	dB	15	18	-	
	4900.00 ~ 5950.00	dB	23	30	-	
						-
						-
					-	
					-	
					-	
					-	
					-	

Table 2 Electrical Specifications: Ant to Rx.

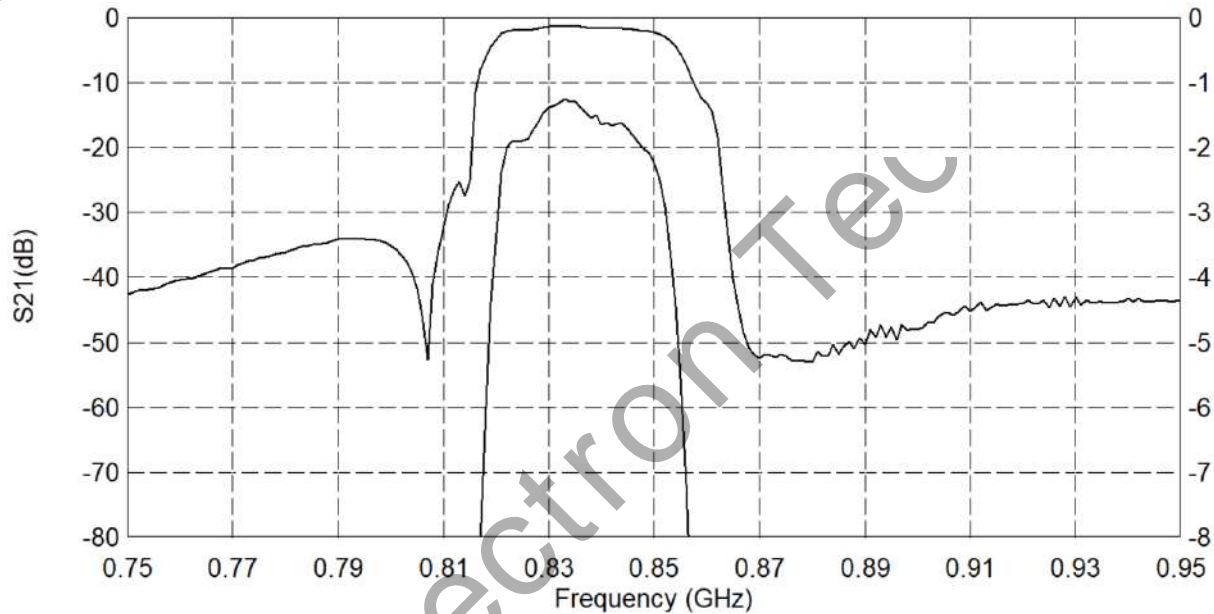
Ant to Rx			Specification			
Parameter	Condition [MHz]	Unit	Minimum <sup>1</sup>	Typical <sup>2</sup>	Maximum <sup>1</sup>	
Insertion Loss	869.00 ~ 894.00	dB	-	1.8	2.8	
Ripple Deviation	869.00 ~ 894.00	dB	-	0.7	1.5	
VSWR of Rx Port	869.00 ~ 894.00	-	-	1.5	2.2	
VSWR of Ant Port	869.00 ~ 894.00	-	-	1.5	2.2	
Absolute Attenuation	10.00 ~ 447.00	dB	35	45	-	
	447.00 ~ 824.00	dB	32	43	-	
	779.00 ~ 804.00	dB	35	45	-	
	824.00 ~ 849.00	dB	50	55	-	
	1693.00 ~ 1743.00	dB	40	55	-	
	1710.00 ~ 1785.00	dB	43	55	-	
	1850.00 ~ 1920.00	dB	45	57	-	
	1920.00 ~ 1980.00	dB	45	57	-	
	1980.00 ~ 2400.00	dB	45	50	-	
	2400.00 ~ 2500.00	dB	40	52	-	
	2517.00 ~ 2592.00	dB	35	43	-	
	2607.00 ~ 2682.00	dB	35	51	-	
	3476.00 ~ 3576.00	dB	40	50	-	
	4345.00 ~ 4470.00	dB	25	40	-	
	4900.00 ~ 5950.00	dB	25	38	-	

**Table 3** Electrical Specifications: Tx to Rx.

Tx to Rx			Specification		
Parameters	Conditions [MHz]	Unit	Minimum <sup>1</sup>	Typical <sup>2</sup>	Maximum <sup>1</sup>
Isolation	824.00 ~ 849.00	dB	53	57	-
	869.00 ~ 894.00	dB	50	55	-
	1574.00 ~ 1577.00	dB	50	55	-
	1683.00 ~ 1708.00	dB	50	55	-
	2462.00 ~ 2577.00	dB	43	55	-

1. Min/Max specifications are guaranteed at the indicated temperature (unless otherwise noted).
2. Typical data is the average value (arithmetic mean) of the parameter over the indicated band at +25°C

**Figure 1** Electrical Characteristics: Tx to Ant.



**Figure 2** Electrical Characteristics: Tx to Ant.

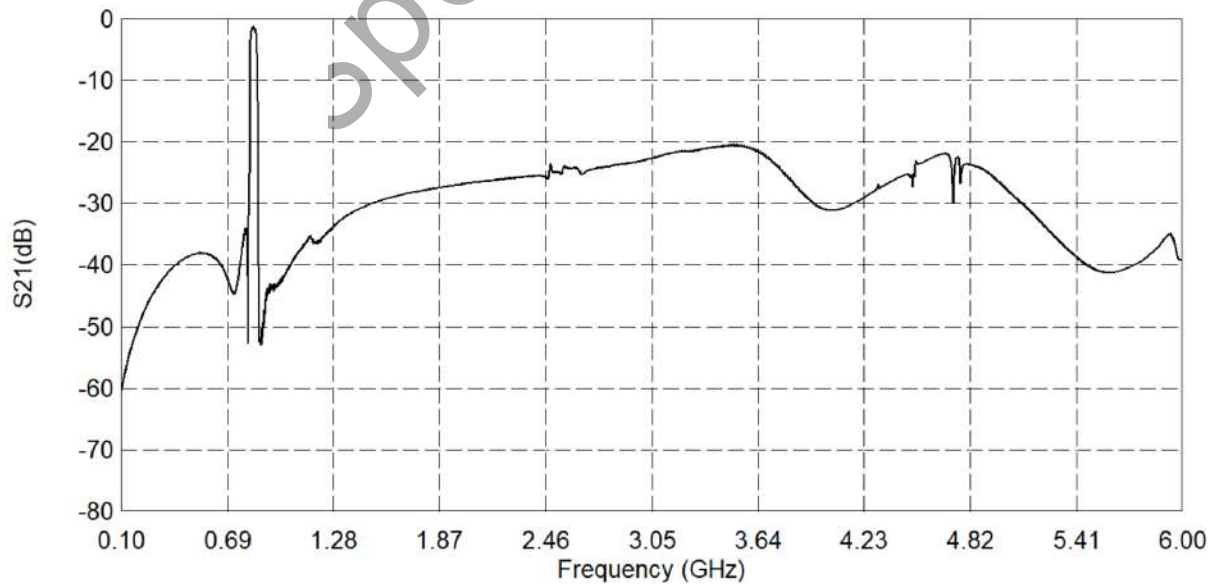


Figure 3 Electrical Characteristics: Ant to Rx.

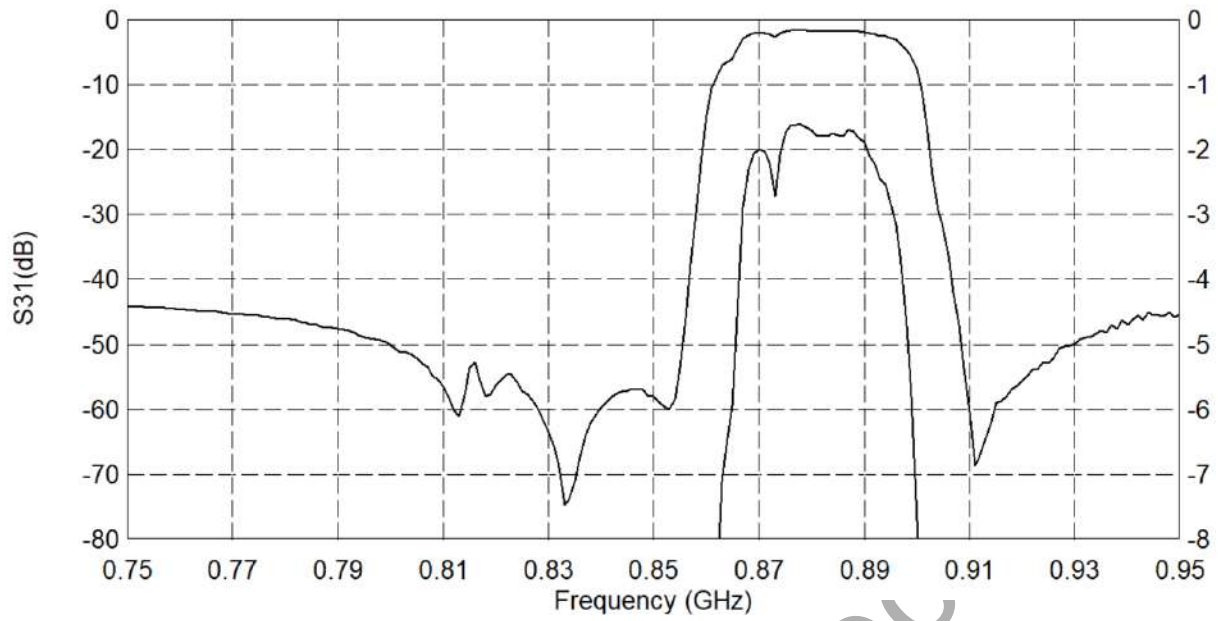


Figure 4 Electrical Characteristics: Ant to Rx.

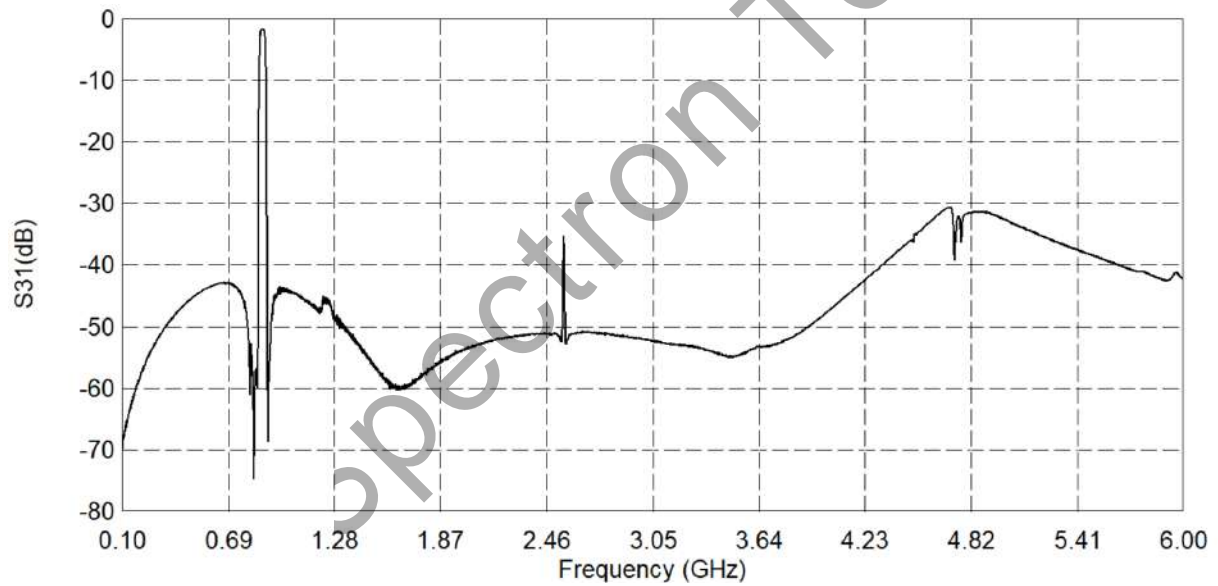


Figure 5 Electrical Characteristics: Tx to Rx.

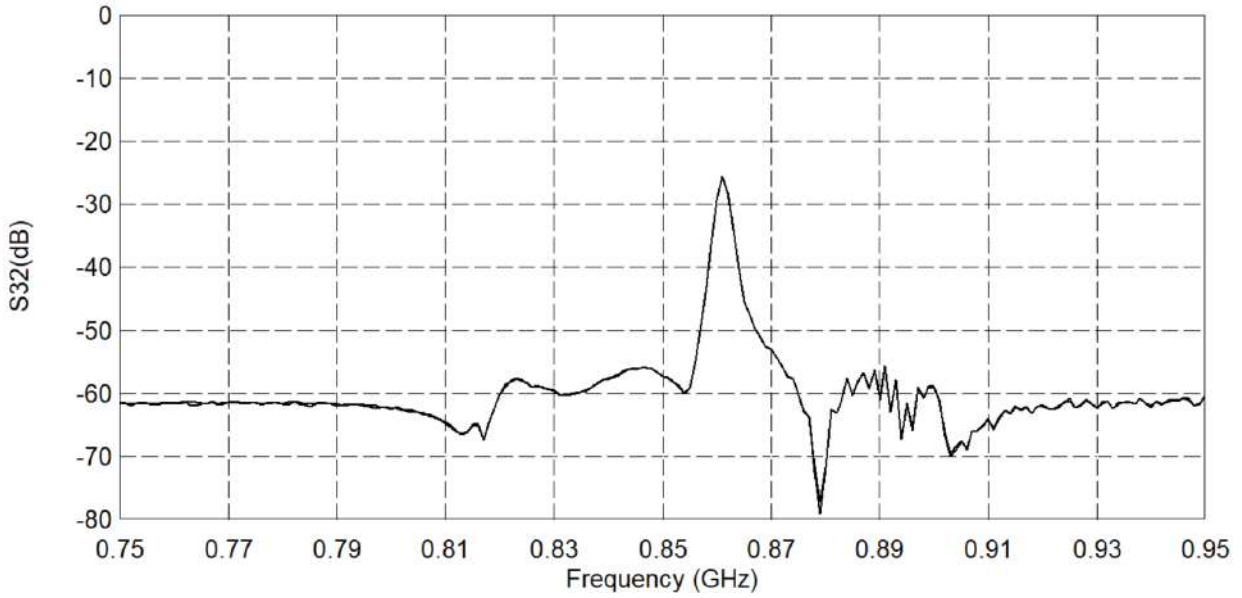


Figure 6 Electrical Characteristics: Tx to Rx.

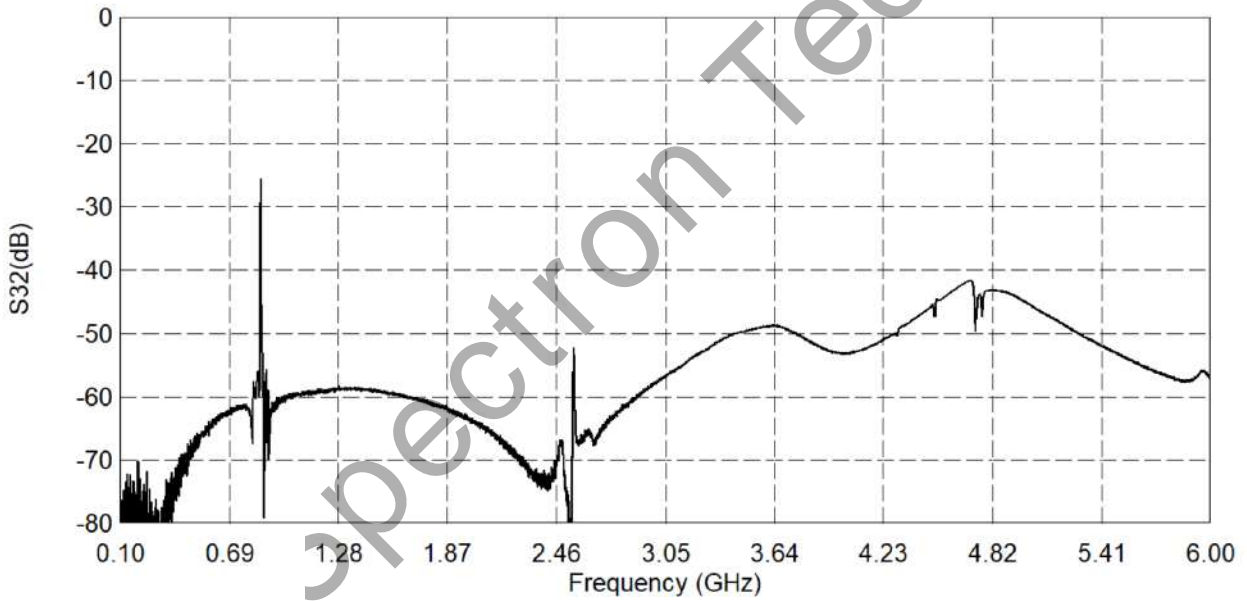
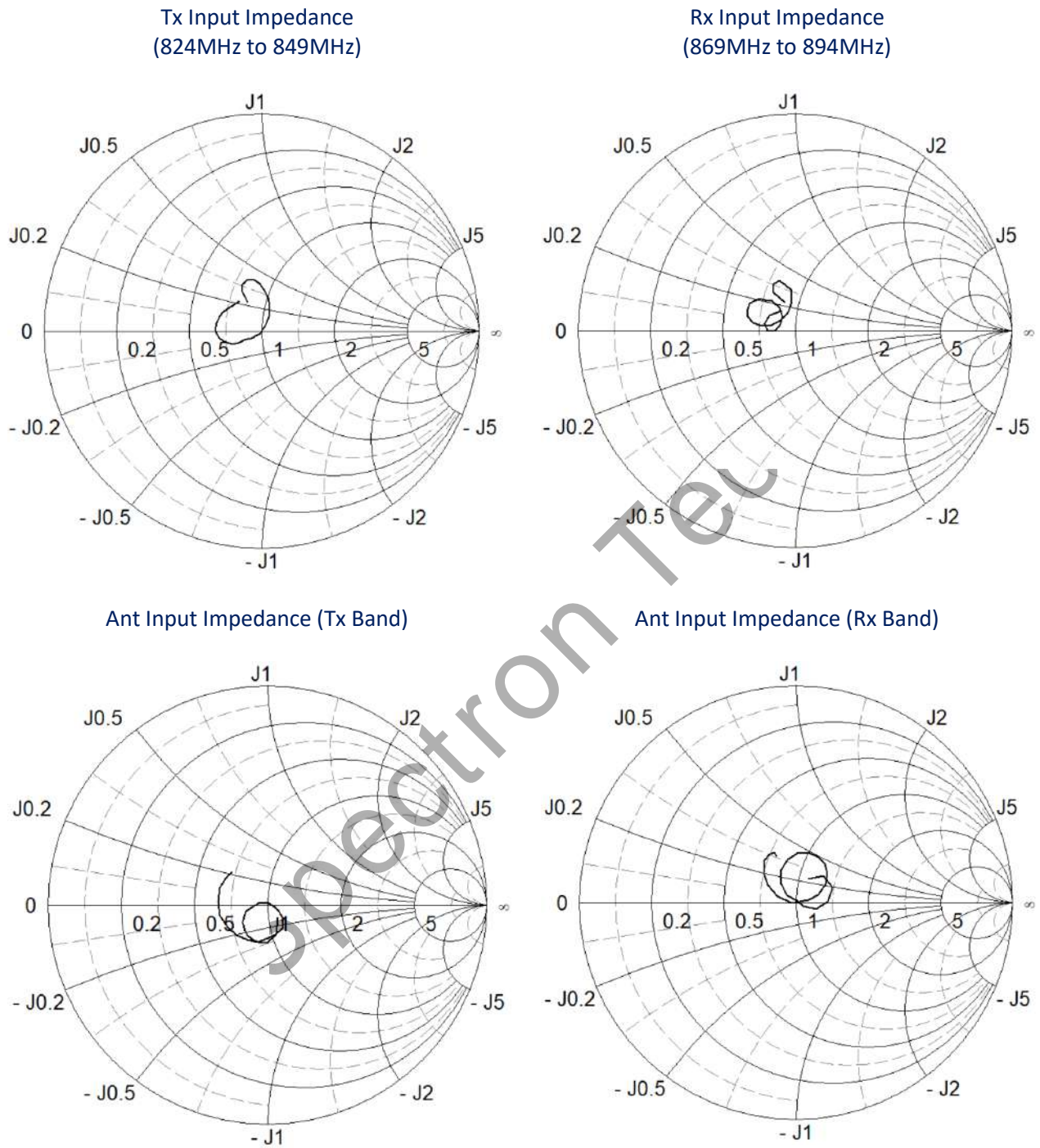
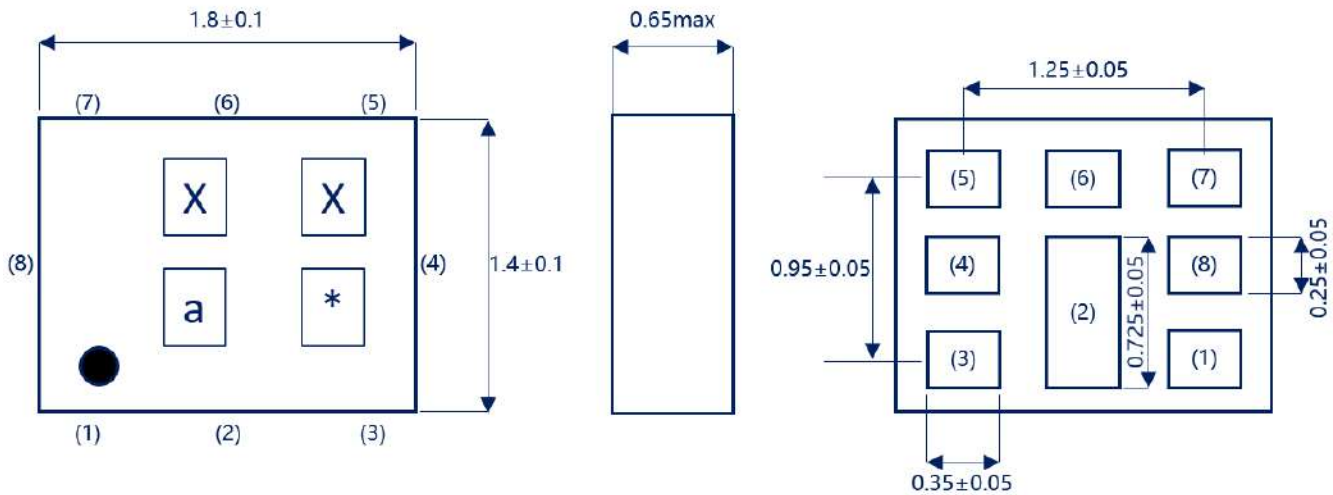


Figure 7 Input Impedances.





Package & Dimensions<sup>1</sup>

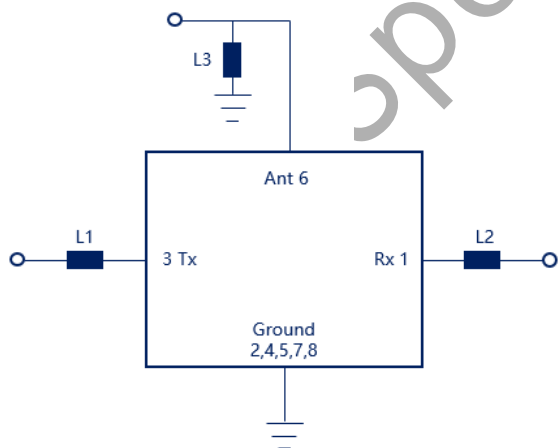


Marking Description	
XX	Band Code
#	Month Code
*	Date Code

Pin Configuration	
3	Tx
1	Rx
6	Antenna
2,4,5,7,8	Ground

1. All dimensions are in millimeters. Angles are in degrees.

Matching



Port	Matching Component <sup>1</sup>
Tx	L1 : 3.9 nH (Ideal inductor)
Rx	L2 : 3.9 nH (Ideal inductor)
Ant	L3 : 10 nH (Ideal inductor)

1. Matching component values shown are recommended based on Spectron evaluation board. Value adjustment may be required on the end-user's circuit boards for the selected component manufacturer and PCB material.

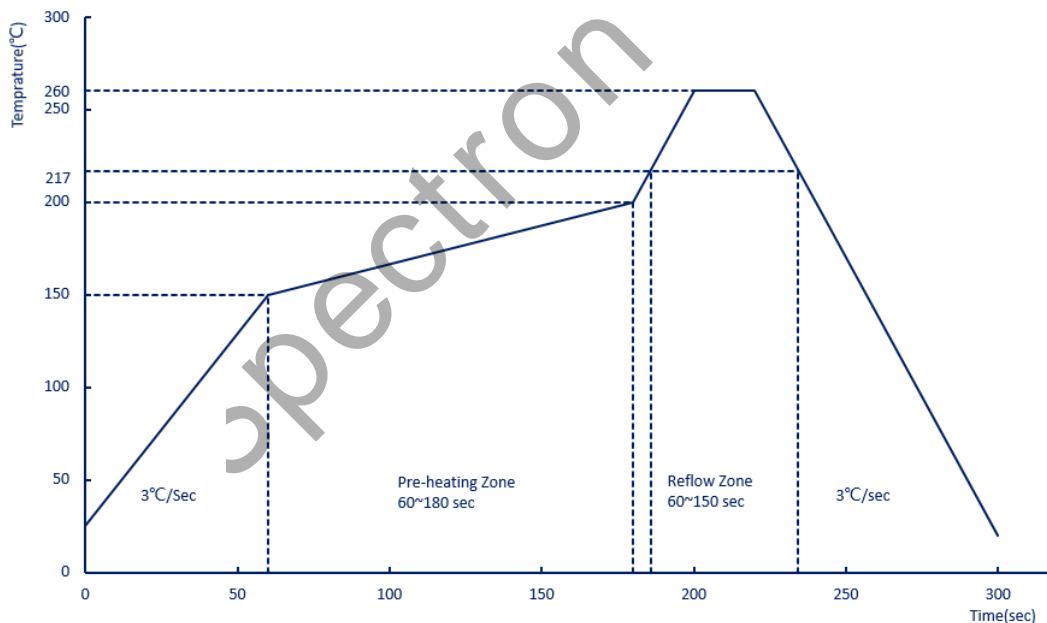


## Maximum Ratings<sup>1</sup>

Characteristic	Rating	Unit
Operating Temperature <sup>2</sup>	-20 ~ +85	°C
Storage Temperature	-40 ~ +85	°C
Maximum Input Power <sup>3,4</sup>	+29	dBm
DC Voltage Between The Terminals <sup>5</sup>	3	V
ESD Voltage (HBM)	> 100	V
ESD Voltage (CDM)	> 100	V
Moisture Sensitivity Levels	3	/

1. Operation exceeding any one of these conditions may result in permanent damage to the device.
2. The device will function over the recommended range without degradation in reliability or permanent change in performance but is not guaranteed to meet electrical specifications.
3. LTE modulation. Applies over a temperature range of TC = -20° to +85°C.
4. Maximum input power is only specified for input power to Tx port of SPT836MADC1 (Pin 3).
5. The DC resistance from Pin 1 and 3 (Tx/Rx) and Pin 6 (Ant) to ground (2-7) of this device is typically hundreds of kΩ to MΩ.

## Recommended SMT Solder Profile



## Ordering Information

Part Number	Number of Devices	Container
SPT836MADC1	4000pcs	Tape and Reel

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