



# TAI-SAW TECHNOLOGY CO., LTD.

No. 3, Industrial 2nd Rd., Ping-Chen Industrial District,  
Taoyuan, 324, Taiwan, R.O.C.

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## Product Specifications Approval Sheet

Product Name: 2535/2655MHz Band 7 Balanced Duplexer SMD 2.0X1.6 mm

TST Part No.: TF0061A

Customer Part No.: \_\_\_\_\_

Customer signature required
Company: _____
Division: _____
Approved by : _____
Date: _____

Checked by: \_\_\_\_\_ Andy Yu *Andy Yu*

Approved by: \_\_\_\_\_ Bob Chau *Bob Chau*

Date: \_\_\_\_\_ 01, 10, 2014

1. Customer signed back is required before TST can proceed with sample build and receive orders.
2. Orders received without customer signed back will be regarded as agreement on the specifications.
3. Any specifications changes must be approved upon by both parties and a new revision of specifications shall be released to reflect the changes



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## 2535/2655MHz Band 7 Balanced Duplexer SMD 2.0X1.6 mm

MODEL NO.:TF0061AP

REV. NO.3.0

### A. MAXIMUM RATING:

1. DC Voltage : 0V
2. Operating Temperature: -30°C to +85°C
3. Storage Temperature: -40°C to +85°C

RoHS Compliant

Lead-free soldering

Electrostatic Sensitive Device (ESD)

### B. ELECTRICAL CHARACTERISTICS:

Parameters Description	Unit	Minimum	Typical	Maximum
Operation Temperature Range	°C	-30	-	+85
Storage Temperature Range	°C	-40	-	+85
Maximum DC Voltage	v	0		
Input Power Level	w	2.0		
Antenna Impedance(single ended)	Ω	50		
Tx Impedance(single ended)	Ω	50		
Rx Impedance (balanced) <sup>(1)</sup>	Ω	100		
Length x Width	mm <sup>2</sup>	2.0 x 1.6		
Height	mm	0.9		

Parameters Description	Unit	Minimum	Typical	Maximum
Operation Temperature Range	°C	-30	-	+85
Storage Temperature Range	°C	-40	-	+85
Maximum DC Voltage	v	0		
Input Power Level	w	2.0		
Antenna Impedance(single ended)	Ω	50		
Tx Impedance(single ended)	Ω	50		
Rx Impedance (balanced) <sup>(1)</sup>	Ω	100		
Package type		C43		
Length x Width	mm <sup>2</sup>	2.0 x 1.6		
Height	mm	0.9		

Tx to Ant		Specifications (+25°C)			
Parameters Description	Condition [MHz]	Unit	Minimum	Typical	Maximum
Insertion Loss	2500.0 ~ 2570.0	dB	-	3.2	3.8
Return Loss of Tx Port	2500.0 ~ 2570.0	dB	5	8	-
Return Loss of Ant Port	2500.0 ~ 2570.0	dB	6	9	-
Attenuation in Rx Band	2620.0 ~ 2690.0	dB	45	51	-
Attenuation in ISM band	2400.0 ~ 2480.0	dB	33	38	-
Attenuation in ISM band	2480.0 ~ 2483.0	dB	30	35	-

Ant to Rx		Specifications (+25°C)			
Parameters Description	Condition [MHz]	Unit	Minimum	Typical	Maximum
Insertion Loss	2620.0 ~ 2690.0	dB	-	3.0	3.5
Return Loss of Rx Port	2620.0 ~ 2690.0	dB	5	8	-
Return Loss of Ant Port	2620.0 ~ 2690.0	dB	5	8	-
Attenuation in Tx Band	2500.0 ~ 2570.0	dB	50	56	-
Amplitude balance ( $ S_{31}/S_{41} $ )	2620.0 ~ 2690.0	dB	-0.5	-0.3 / +0.2	+0.5
Phase balance $\Phi(S_{31}) - \Phi(S_{41}) + 180^\circ$	2620.0 ~ 2690.0	deg	-6.5	+1.0 / +3.5	+6.5

Tx to Rx		Specifications (+25°C)			
Parameters Description	Condition [MHz]	Unit	Minimum	Typical	Maximum
Isolation in Rx Band	2620.0 ~ 2690.0	dB	48	52	-
Isolation in Tx Band	2500.0 ~ 2570.0	dB	53	58	-

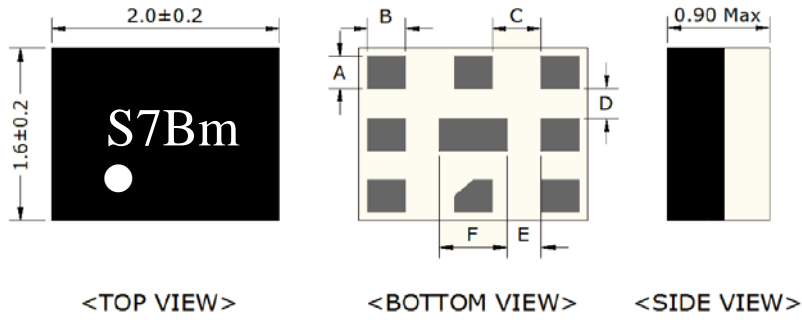
## Electrical Specification

Tx to Ant		Specifications (-30~+85°C)			
Parameters Description	Condition [MHz]	Unit	Minimum	Typical	Maximum
Insertion Loss	2500.0 ~ 2570.0	dB	-	3.1	4.0
Return Loss of Rx Port	2500.0 ~ 2570.0	dB	5	8	-
Return Loss of Ant Port	2500.0 ~ 2570.0	dB	6	9	-
Attenuation in Rx Band	2620.0 ~ 2690.0	dB	45	51	-
Attenuation in ISM band	2400.0 ~ 2480.0	dB	33	38	-
Attenuation in ISM band	2480.0 ~ 2483.0	dB	30	35	-

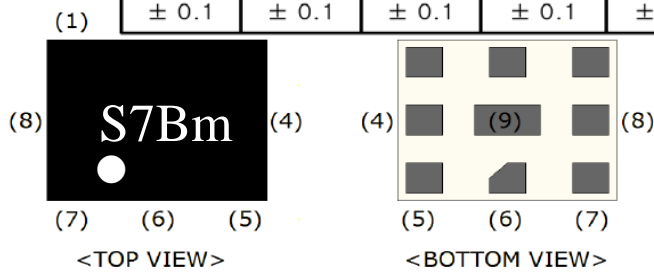
Ant to Rx		Specifications (-30~+85°C)			
Parameters Description	Condition [MHz]	Unit	Minimum	Typical	Maximum
Insertion Loss	2620.0 ~ 2690.0	dB	-	3.0	4.0
Return Loss of Tx Port	2620.0 ~ 2690.0	dB	5	8	-
Return Loss of Ant Port	2620.0 ~ 2690.0	dB	5	8	-
Attenuation in Tx Band	2500.0 ~ 2570.0	dB	50	56	-
Amplitude balance( $ S_{31}/S_{41} $ )	2620.0 ~ 2690.0	dB	-0.5	-0.3 / +0.2	+0.5
Phase balance $\Phi(S_{31})-\Phi(S_{41})+180^\circ$	2620.0 ~ 2690.0	deg	-10	+1.0/ +3.5	+10

Tx to Rx		Specifications (-30~+85°C)			
Parameters Description	Condition [MHz]	Unit	Minimum	Typical	Maximum
Isolation in Rx Band	2620.0 ~ 2690.0	dB	48	52	-
Isolation in Tx Band	2500.0 ~ 2570.0	dB	53	58	-

**C. OUTLINE DRAWING:**



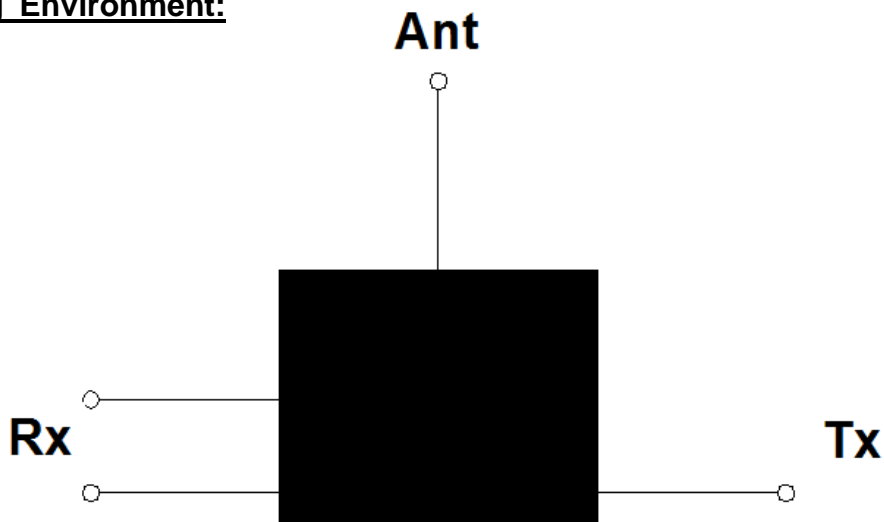
A	B	C	D	E	F	Thickness
0.30 $\pm 0.1$	0.33 $\pm 0.1$	0.43 $\pm 0.1$	0.275 $\pm 0.1$	0.295 $\pm 0.1$	0.60 $\pm 0.1$	0.90 MAX



Pin Description	
(1),(3),(4),(6),(9)	Ground
(2)	Antenna
(5)	Tx
(7)	Rx - Balanced
(8)	Rx + Balanced

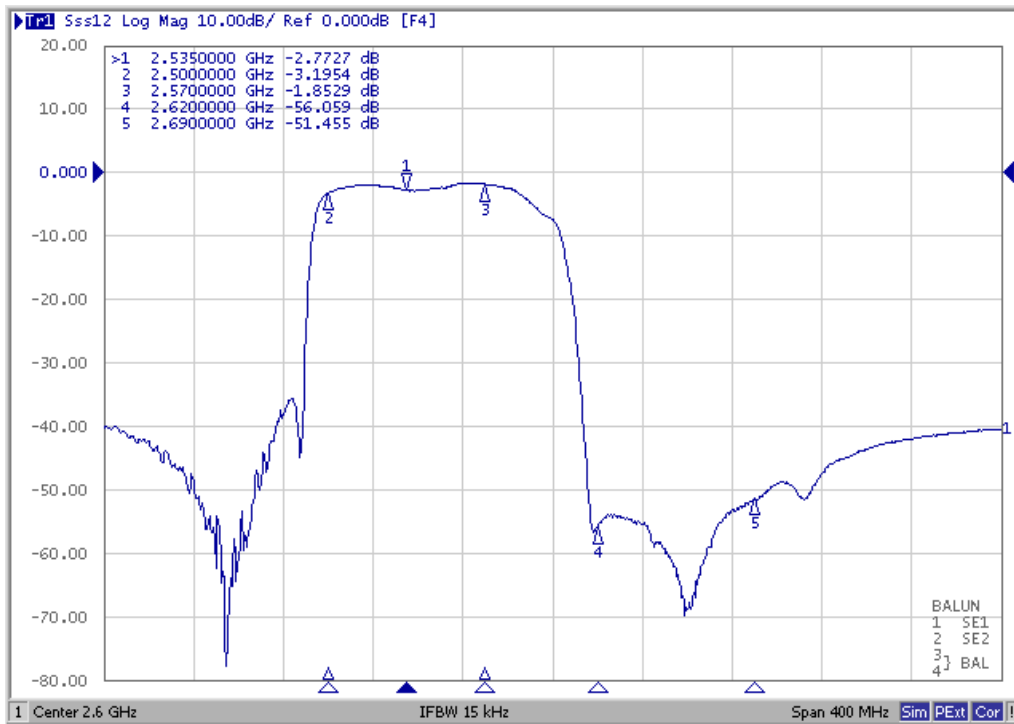
Marking Method																																																					
	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <b>S2Sm</b>  </div>																																																				
S	S : SAWNICS Duplexer																																																				
2	Band Class Band2 : 2, Band7 : 7																																																				
S	Single DPX : S, Balanced DPX : B																																																				
m	Date Code [year + month] <table border="1" style="margin-top: 5px;"> <thead> <tr> <th>年</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> <th>9</th> <th>10</th> <th>11</th> <th>12</th> </tr> </thead> <tbody> <tr> <td>2013</td> <td>a</td> <td>b</td> <td>c</td> <td>d</td> <td>e</td> <td>f</td> <td>g</td> <td>h</td> <td>j</td> <td>k</td> <td>l</td> <td style="background-color: yellow;">m</td> </tr> <tr> <td>2014</td> <td>n</td> <td>p</td> <td>q</td> <td>r</td> <td>s</td> <td>t</td> <td>u</td> <td>v</td> <td>w</td> <td>x</td> <td>y</td> <td>z</td> </tr> <tr> <td>2015</td> <td>A</td> <td>B</td> <td>C</td> <td>D</td> <td>E</td> <td>F</td> <td>G</td> <td>H</td> <td>J</td> <td>K</td> <td>L</td> <td>M</td> </tr> </tbody> </table>	年	1	2	3	4	5	6	7	8	9	10	11	12	2013	a	b	c	d	e	f	g	h	j	k	l	m	2014	n	p	q	r	s	t	u	v	w	x	y	z	2015	A	B	C	D	E	F	G	H	J	K	L	M
年	1	2	3	4	5	6	7	8	9	10	11	12																																									
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2014	n	p	q	r	s	t	u	v	w	x	y	z																																									
2015	A	B	C	D	E	F	G	H	J	K	L	M																																									
●	Index Dot																																																				

**D. Testing Environment:**

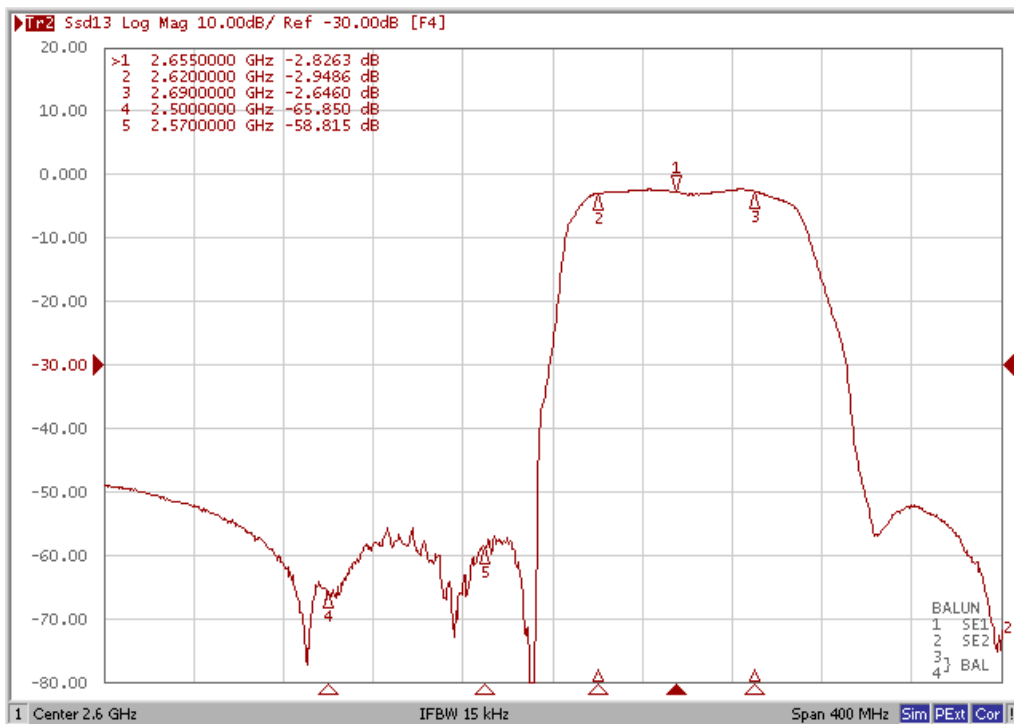


## E. Frequency Characteristics :

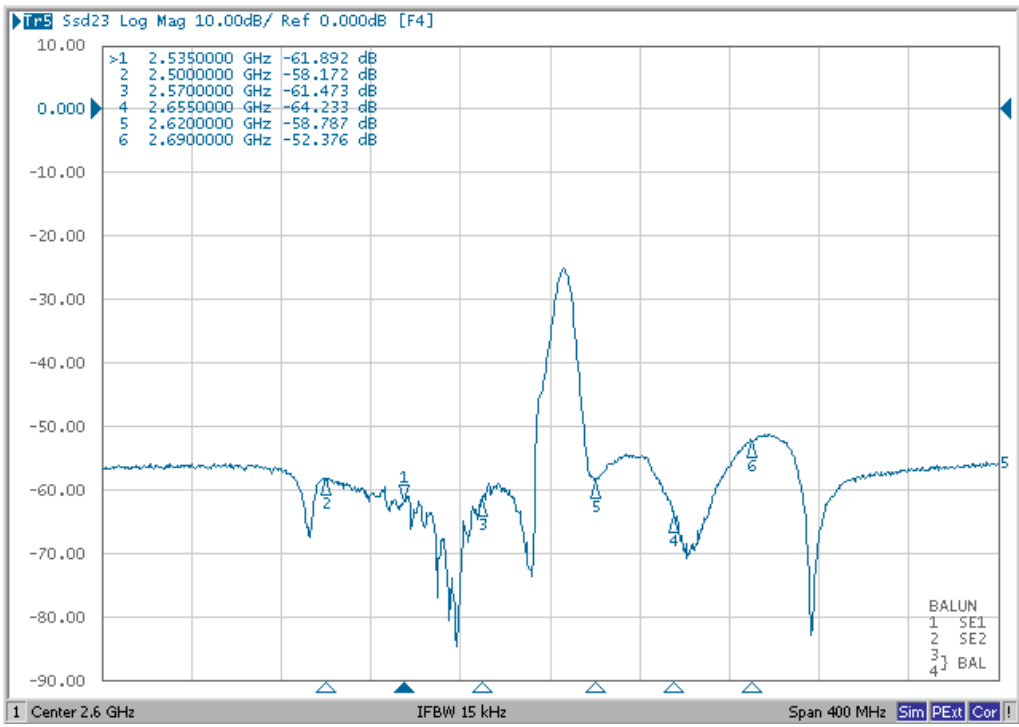
### Tx to Ant



### Ant to Rx



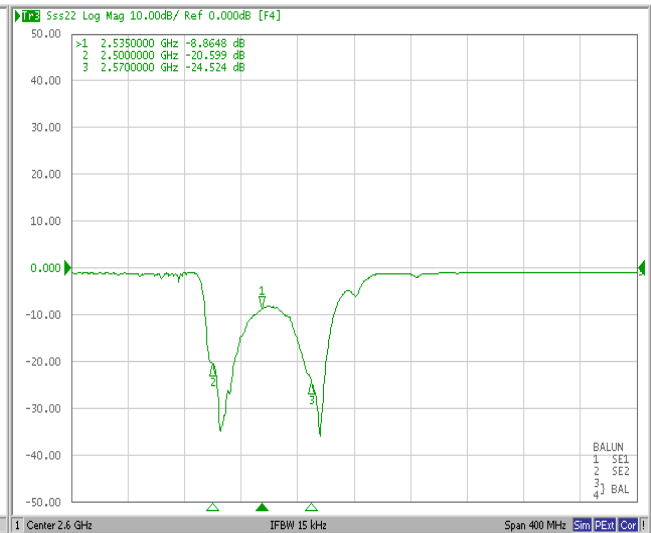
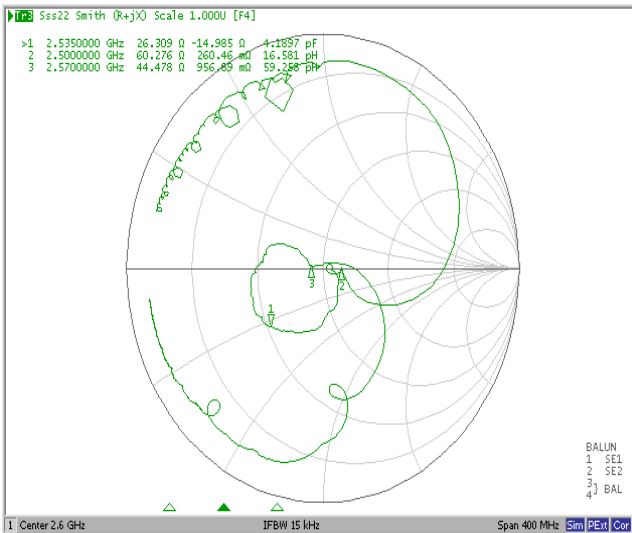
## Isolation



## Tx Port

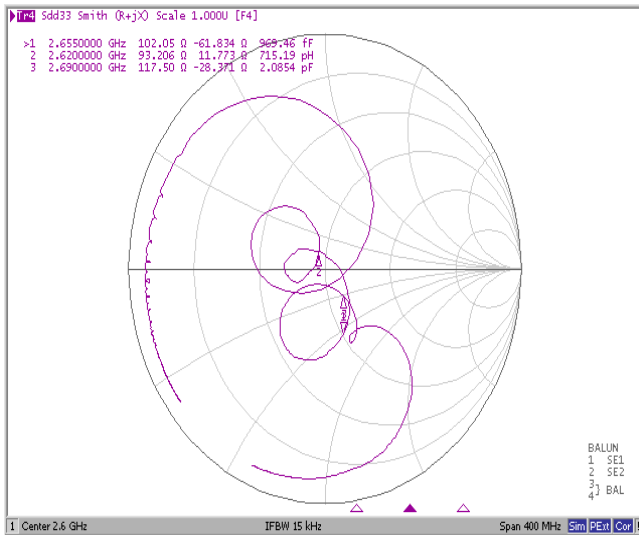
### Smith Chart

### Return Loss

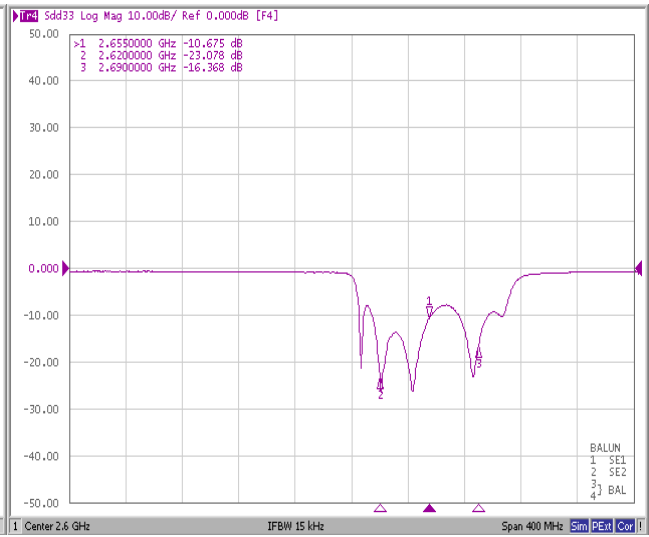


## Rx Port

### Smith Chart

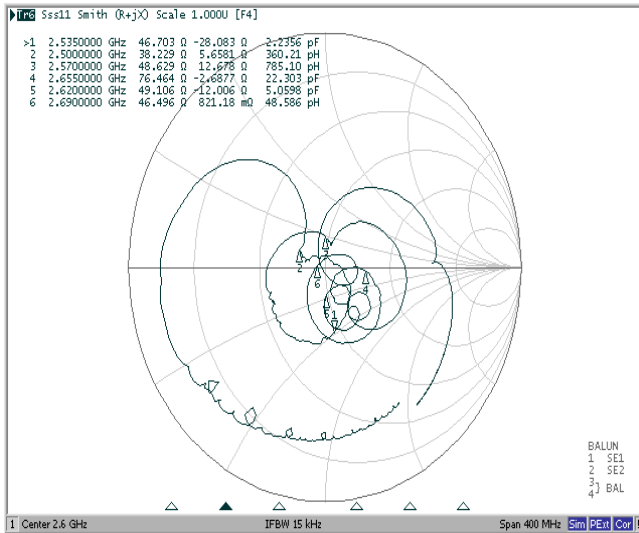


### Return Loss

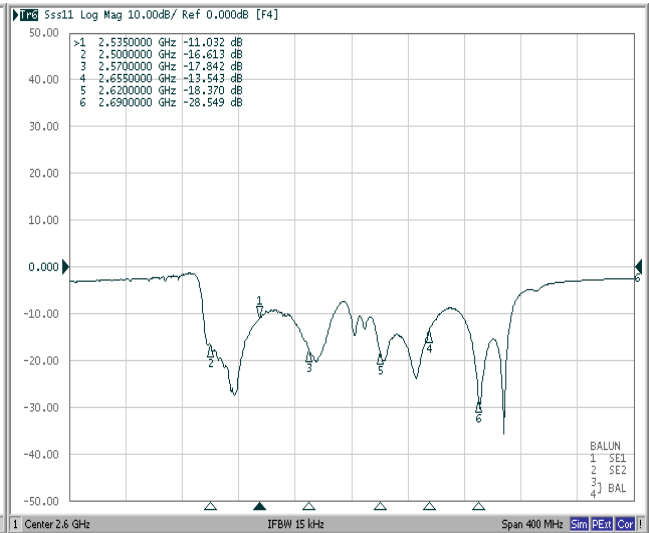


## Ant Port

### Smith Chart

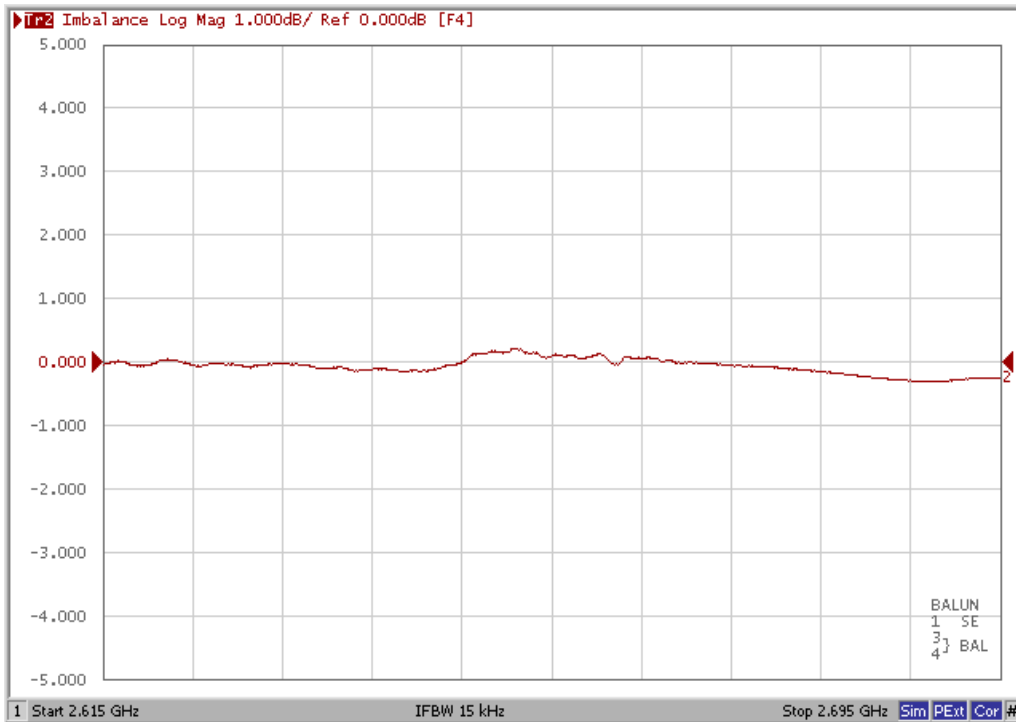


### Return Loss

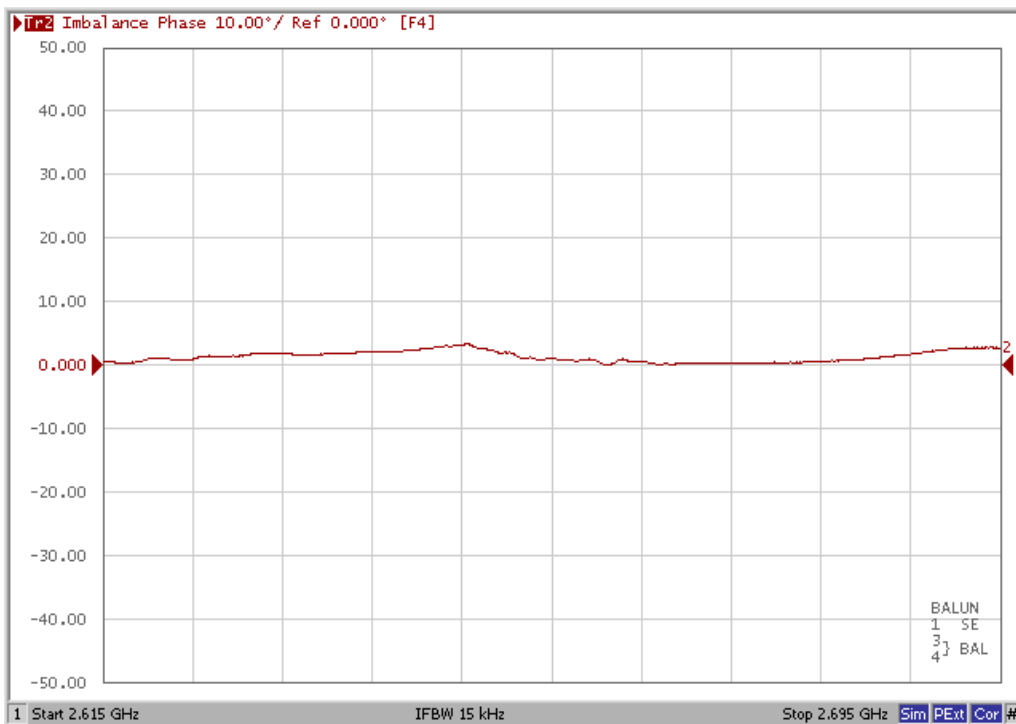




## Amplitude Imbalance



## Phase Imbalance



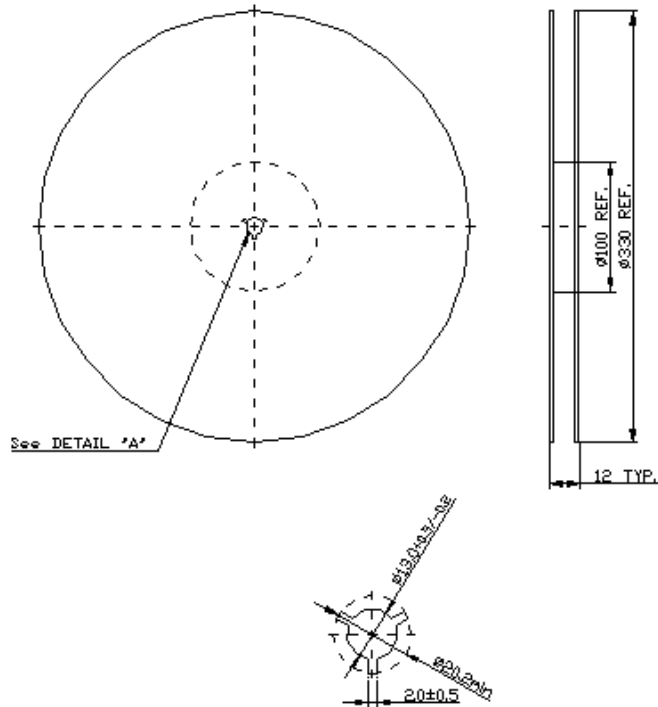
### Notes ;

1. Antenna and Tx ports are Single-ended port of  $50\Omega$  impedance
2. Each of the two balanced-ended port is  $50\Omega$  impedance. Total impedance is  $100\Omega$
3. Dimensions of all signal line width & space should be adjusted for  $50\Omega$  lined

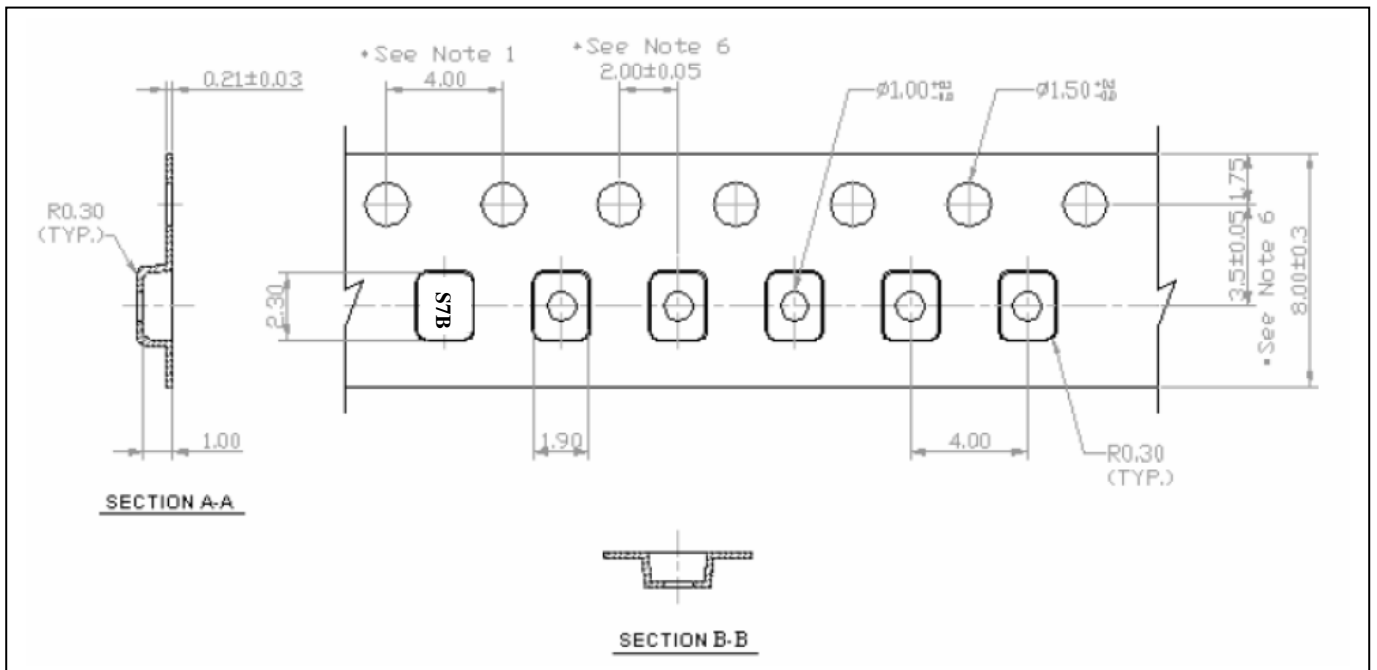
**F. PACKING:**

**1. REEL DIMENSION**

(Please refer to FR-75D10 for packing quantity)



**2.TAPE DIMENSION**



→  
**Direction of Feed**

**G. RECOMMENDED REFLOW PROFILE :**

