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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





RF360 Europe GmbH

A Qualcomm – TDK Joint Venture

## SAW Components

### SAW Duplexer for Smallcell

Band 17 (3G/LTE)

Series/type:	B8017
Ordering code:	B39741B8017P810
Date:	February 25, 2015
Version:	2.3

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# SAW Components

## SAW Duplexer for Smallcell

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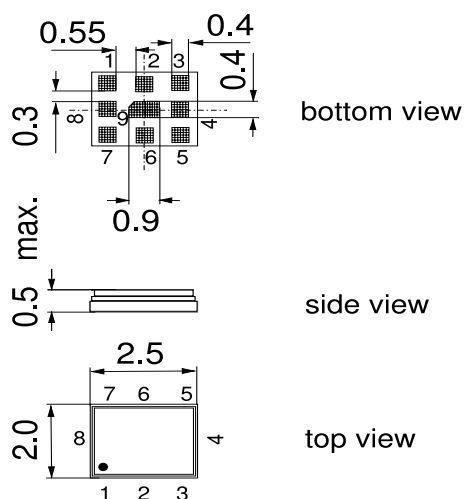
Data sheet


**Application**

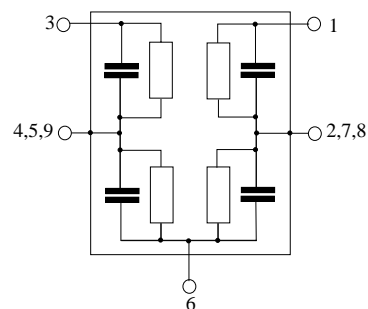
- Low-loss SAW duplexer for 3G/LTE smallcell systems (Band 17)
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 12 MHz
- High power durability
- Industrial qualification
- Rx = Uplink = 704-716 MHz
- Tx = Downlink = 734-746 MHz


**Features**

- Package size 2.5 \* 2.0 mm<sup>2</sup>
- max. Package height 0.5 mm
- RoHS compatible
- Package for **Surface Mount Technology (SMT)**
- Ni, Au-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- Moisture Sensitivity Level 3


**Pin configuration**

- 3 RX output
- 1 TX input
- 6 Antenna
- 2, 4, 5, 7, 8, 9 To be grounded



Data sheet


**Characteristics**

Temperature range for specification:  $T = -10\text{ }^{\circ}\text{C to }+85\text{ }^{\circ}\text{C}$   
 Antenna terminating impedance:  $Z_{\text{ANT}} = 50\ \Omega \parallel 30\ \text{nH}$   
 RX terminating impedance:  $Z_{\text{RX}} = 50\ \Omega$   
 TX terminating impedance:  $Z_{\text{TX}} = 50\ \Omega$

Characteristics ANT - RX		min.	typ. @ 25 °C	max.	
<b>Center frequency</b>	$f_C$	—	710.0	—	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\text{max}}$	—	2.0	3.2	dB
704.0 ... 716.0 MHz					
<b>Amplitude ripple (p-p)</b>	$\Delta\alpha$	—	0.6	2.0	dB
704.0 ... 716.0 MHz					
<b>Error Vector Magnitude</b>	EVM <sup>1)</sup>	—	2.3	3.8	%
@ $f_{\text{carrier}}$ 706.5 ... 713.5 MHz					
<b>Input VSWR (ANT port)</b>		—	1.5	1.7	
704.0 ... 716.0 MHz					
<b>Output VSWR (RX port)</b>		—	1.6	1.8	
704.0 ... 716.0 MHz					
<b>Attenuation</b>	$\alpha$				
10.0 ... 600.0 MHz		40	55	—	dB
693.25 ... 697.75 MHz		10	20	—	
699.0 ... 700.0 MHz		1.5	12	—	dB
700.0 ... 704.0 MHz		1	2	—	
716.0 ... 722.2 MHz		1	2	—	dB
722.2 ... 724.0 MHz		7	16	—	
724.0 ... 728.0 MHz		15	17	—	dB
729.0 ... 734.0 MHz		35	55	—	
734.0 ... 746.0 MHz		50	55	—	dB
746.0 ... 756.0 MHz		48	56	—	
758.0 ... 768.0 MHz		45	49	—	dB
869.0 ... 894.0 MHz		40	50	—	
1408.0 ... 1432.0 MHz		50	60	—	dB
1930.0 ... 1990.0 MHz		45	56	—	
2110.0 ... 2170.0 MHz		45	56	—	dB
2400.0 ... 2500.0 MHz		45	56	—	
2816.0 ... 2864.0 MHz		45	57	—	dB
3000.0 ... 6000.0 MHz		15	26	—	

<sup>1)</sup> Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141

Data sheet


**Characteristics**

Temperature range for specification:	T = -10 °C to +85 °C
Antenna terminating impedance:	Z <sub>ANT</sub> = 50 Ω    30 nH
RX terminating impedance:	Z <sub>RX</sub> = 50 Ω
TX terminating impedance:	Z <sub>TX</sub> = 50 Ω

Characteristics TX - ANT		min.	typ. @ 25 °C	max.	
<b>Center frequency</b>	f <sub>C</sub>	—	740.0	—	MHz
<b>Maximum insertion attenuation</b> 734.0 ... 746.0 MHz	α <sub>max</sub>	—	1.6	2.2	dB
<b>Amplitude ripple (p-p)</b> 734.0 ... 746.0 MHz	Δα	—	0.5	1.1	dB
<b>Error Vector Magnitude</b> @f <sub>carrier</sub> 736.5 ... 743.5 MHz	EVM <sup>1)</sup>	—	1.7	3.8	%
<b>Input VSWR (TX port)</b> 734.0 ... 746.0 MHz		—	1.5	1.8	
<b>Output VSWR (ANT port)</b> 734.0 ... 746.0 MHz		—	1.3	1.7	
<b>Attenuation</b>	α				
10.0 ... 600.0 MHz		30	43	—	dB
699.0 ... 704.0 MHz		50	54	—	dB
704.0 ... 716.0 MHz		50	54	—	dB
777.0 ... 787.0 MHz		40	55	—	dB
788.0 ... 798.0 MHz		40	50	—	dB
824.0 ... 849.0 MHz		40	46	—	dB
1468.0 ... 1492.0 MHz		40	52	—	dB
1574.0 ... 1606.0 MHz		45	53	—	dB
1710.0 ... 1755.0 MHz		40	52	—	dB
1850.0 ... 1915.0 MHz		40	48	—	dB
2202.0 ... 2238.0 MHz		30	43	—	dB
2400.0 ... 2500.0 MHz		35	42	—	dB
2936.0 ... 2984.0 MHz		20	40	—	dB
3000.0 ... 5000.0 MHz		10	21	—	dB
5000.0 ... 6000.0 MHz		10	15	—	dB

1) Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141

Data sheet


**Characteristics**

Temperature range for specification:	T = -10 °C to +85 °C
Antenna terminating impedance:	Z <sub>ANT</sub> = 50 Ω    30 nH
RX terminating impedance:	Z <sub>RX</sub> = 50 Ω
TX terminating impedance:	Z <sub>TX</sub> = 50 Ω

Characteristics TX-RX				min.	typ. @ 25 °C	max.	
<b>Attenuation</b>							
	704.0 ... 716.0 MHz	α		53	58	—	dB
	734.0 ... 746.0 MHz			53	58	—	dB

**Maximum Ratings**

Storage temperature range	T <sub>stg</sub>	-40/+85	°C	
DC voltage	V <sub>DC</sub>	0	V	
ESD voltage	V <sub>ESD</sub>	50 <sup>1)</sup>	V	machine model, 1 pulse source and load impedance 50 Ω Pin 28 dBm average - 39 dBm peak } LTE 5 MHz downlink T = 55°C, 100.000 h
Input power at pin 1				
734.0 ...746.0 MHz	P <sub>in</sub>	28 <sup>2)</sup>	dBm	
elsewhere	P <sub>in</sub>	10	dBm	source and load impedance 50 Ω  Continuous wave T=55°C, 100khrs
Operating lifetime with Output power at antenna				
734.0 ...746.0 MHz	P <sub>out</sub>	24 <sup>3)</sup>	dBm	

<sup>1)</sup> According to JESD22-A115A (machine model), 1 negative and 1 positive pulses.

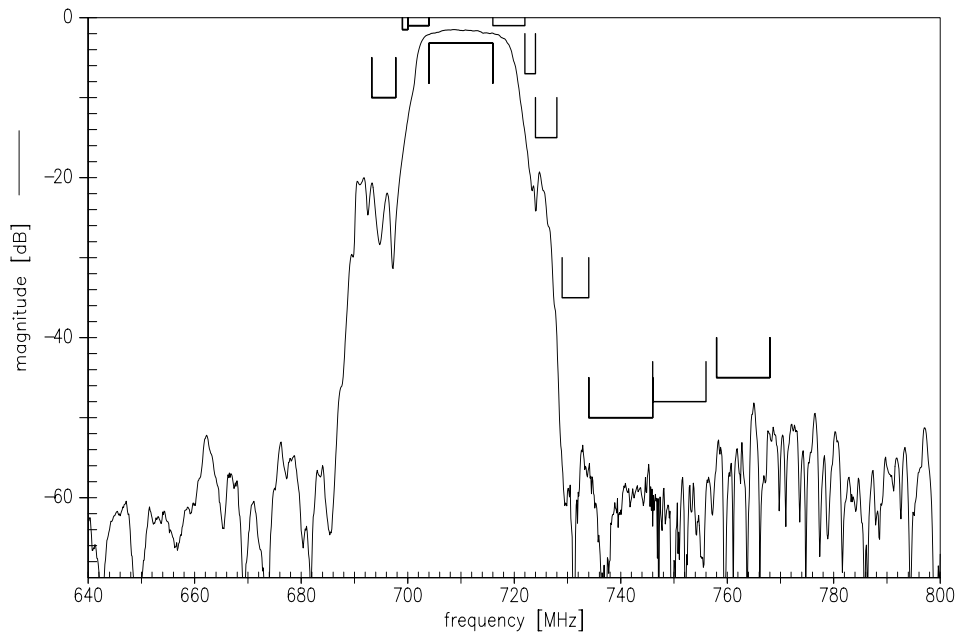
<sup>2)</sup> Time to failure (TTDF) according to accelerated power durability tests, and wear out models.

<sup>3)</sup> according to accelerated High Temperature Operating Life (HTOL) test.

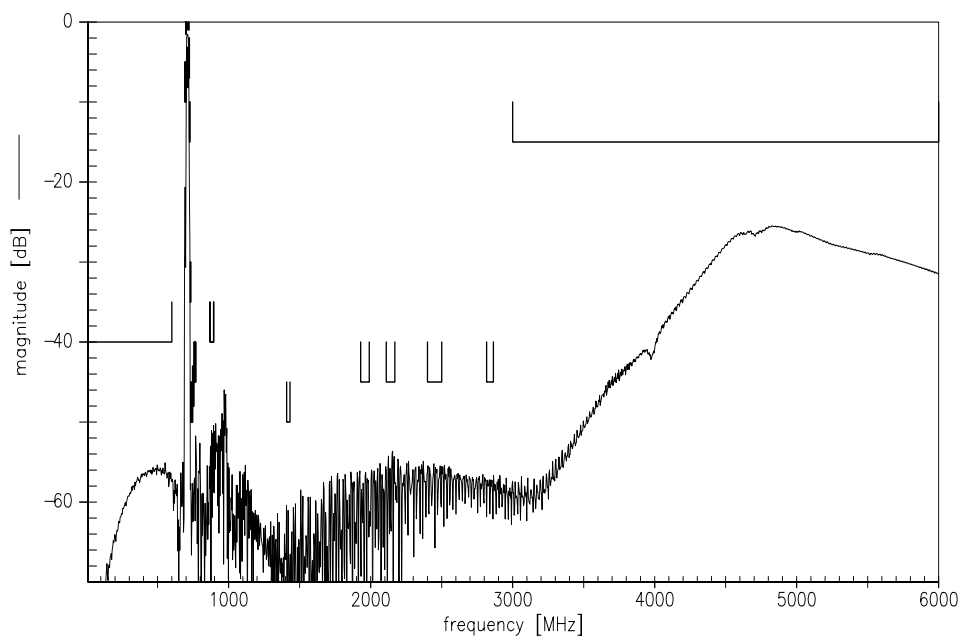




Frequency Response ANT-RX



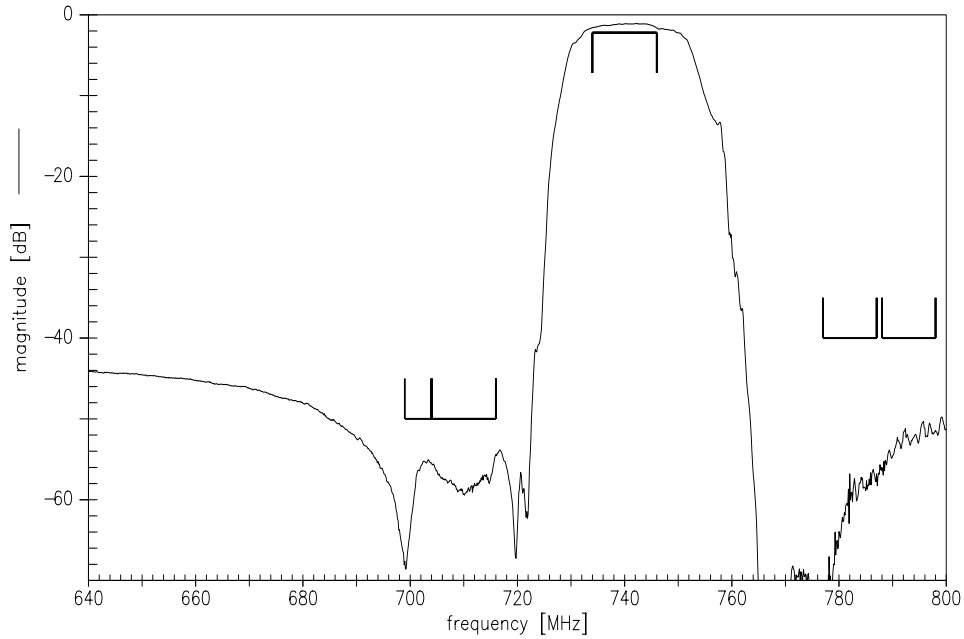
Frequency Response ANT-RX



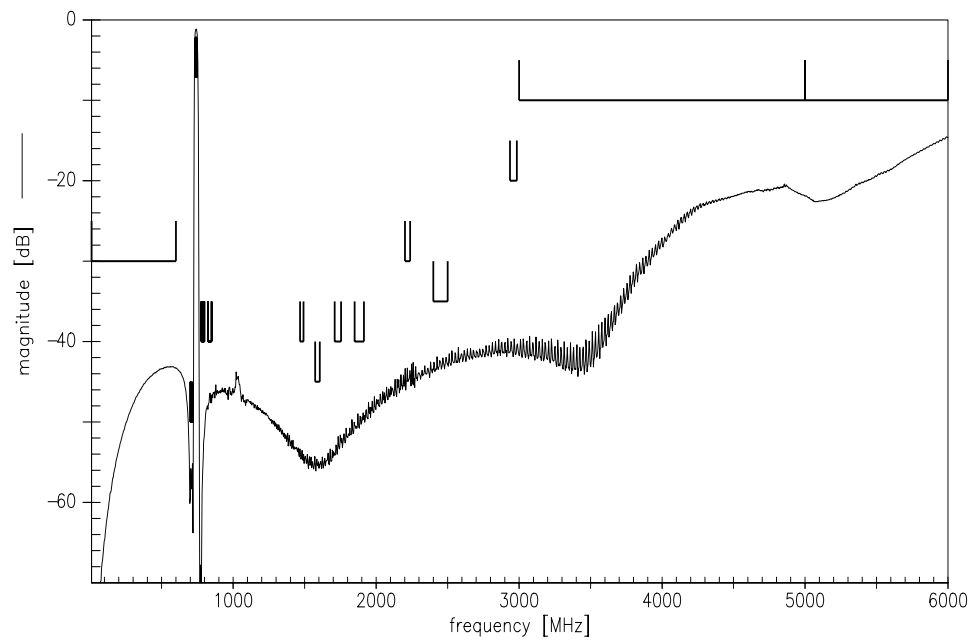
Data sheet



**Frequency Response TX-ANT**



**Frequency Response TX-ANT**

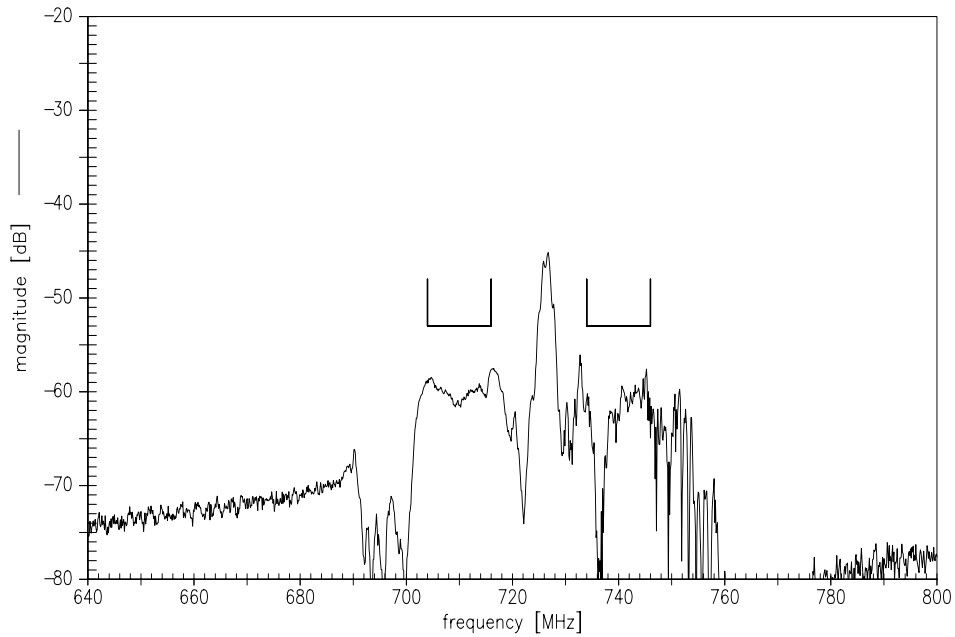


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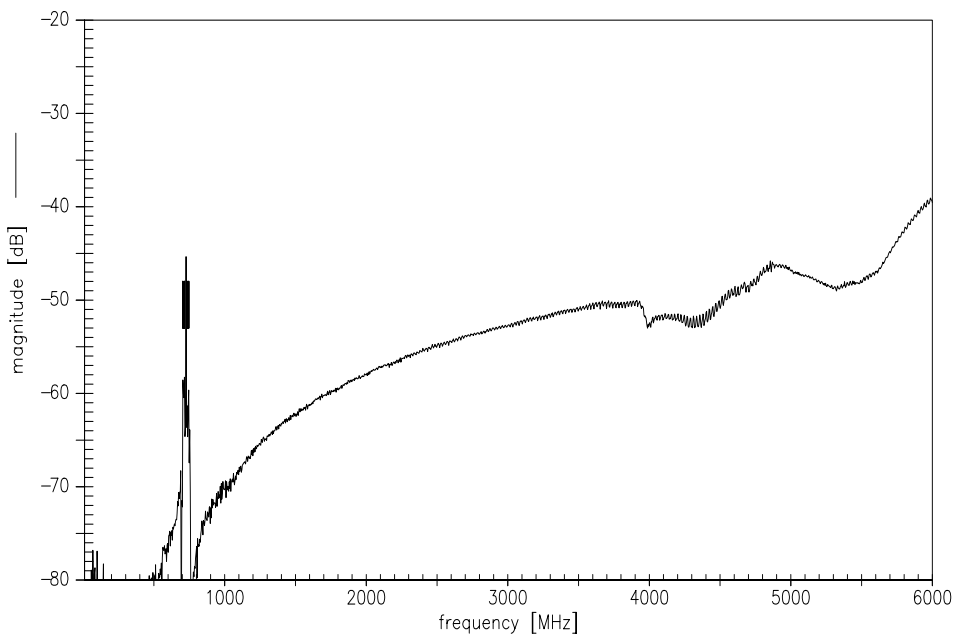
Data sheet



**Frequency Response TX-RX**



**Frequency Response TX-RX**

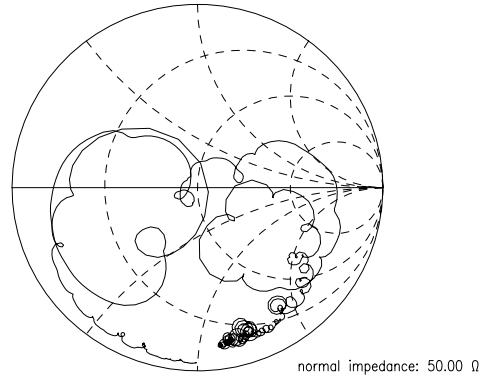
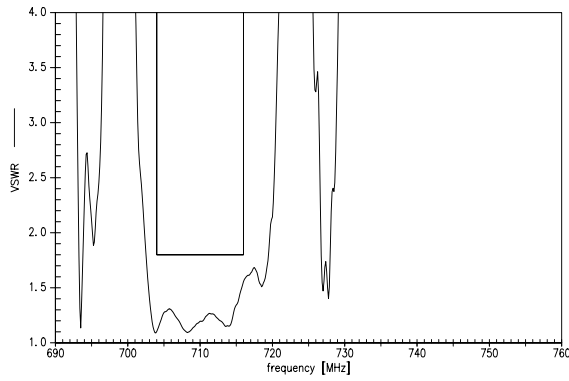


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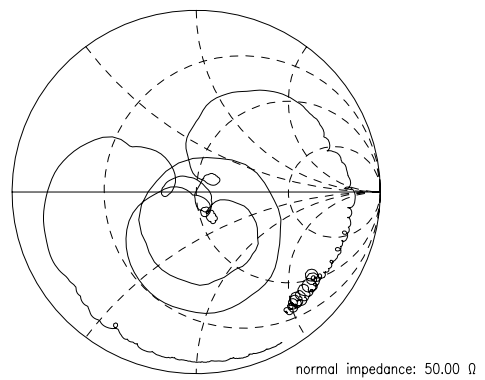
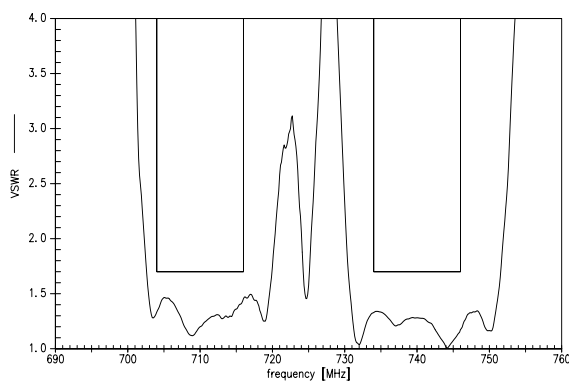
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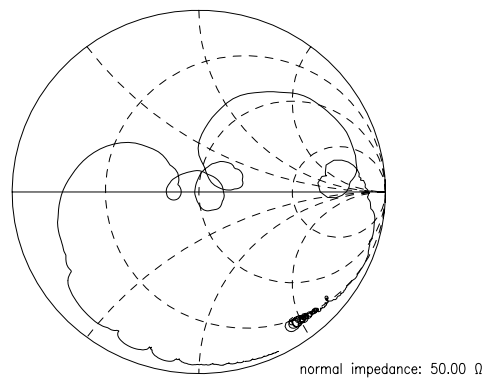
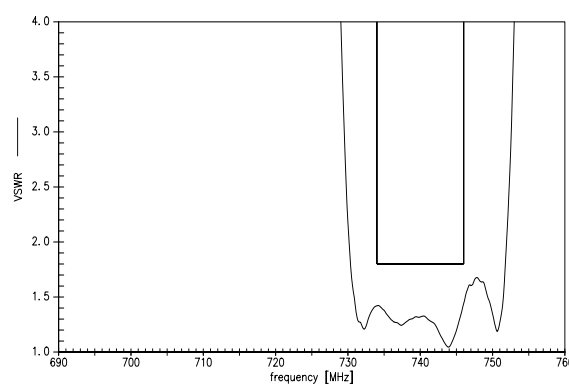
**S11 VSWR (RX)**



**S22 VSWR (ANT)**



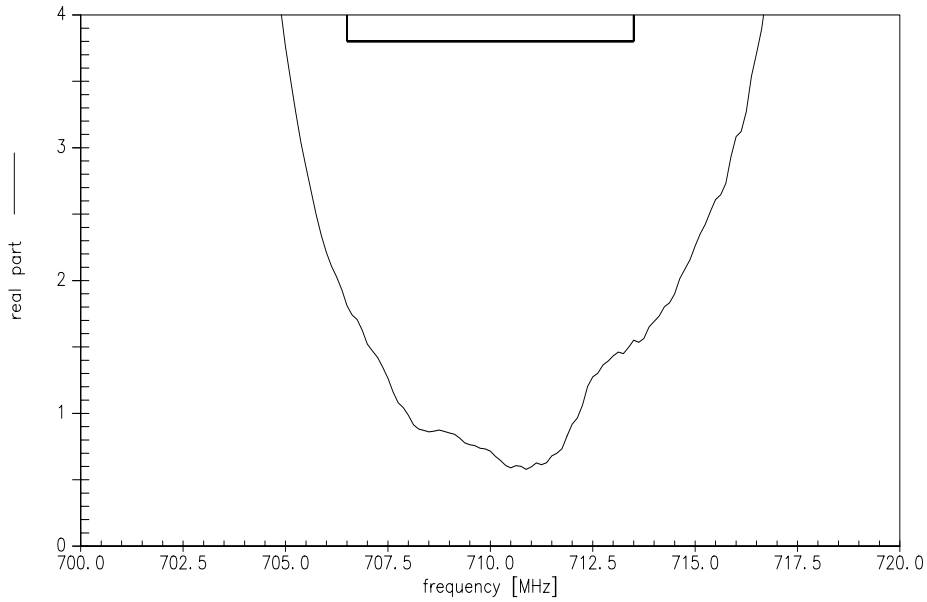
**S33 VSWR (TX)**



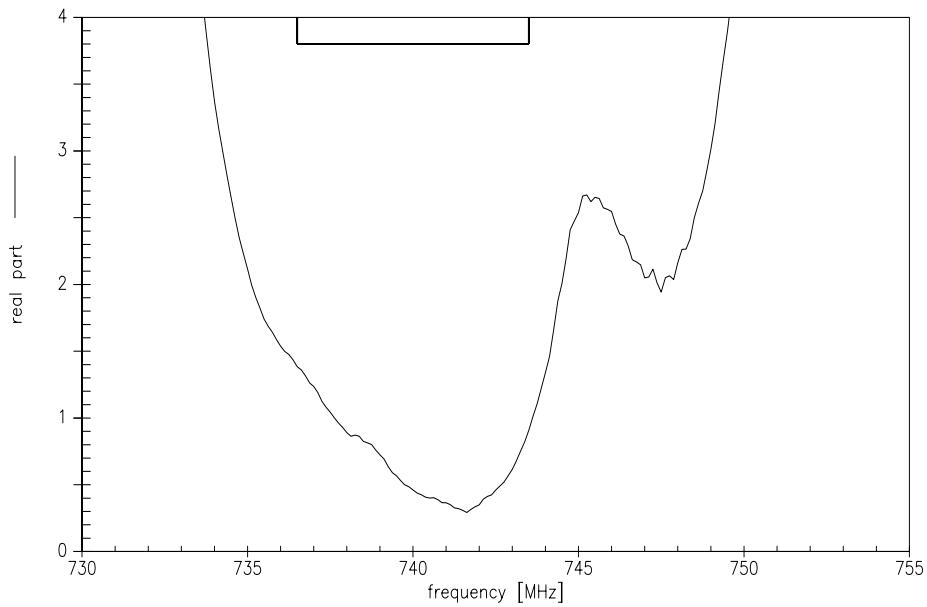
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**EVM RX**



**EVM TX**



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**SAW Components**

**B8017**

**SAW Duplexer**

**710.0 / 740.0 MHz**

Data sheet



References

<b>Type</b>	B8017
<b>Ordering code</b>	B39741B8017P810
<b>Marking and package</b>	C61157-A3-A27
<b>Packaging</b>	F61074-V8232-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B8017_NB.s3p, B8017_WB.s3p See file header for port/pin assignment table
<b>Soldering profile</b>	S_6001
<b>RoHS compatible</b>	RoHS-compatible means that products are compatible with the requirements according to Art. 4 (substance restrictions) of Directive 2011/65/EU of the European Parliament and of the Council of June 8 <sup>th</sup> , 2011, on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("Directive") with due regard to the application of exemptions as per Annex III of the Directive in certain cases.
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