



# SAW Components

## SAW Duplexer for Femtocell and Small-cell

Band 12 (3G/LTE)

**Series/type:** B8012  
**Ordering code:** B39741B8012P810

**Date:** July 09, 2014  
**Version:** 2.0

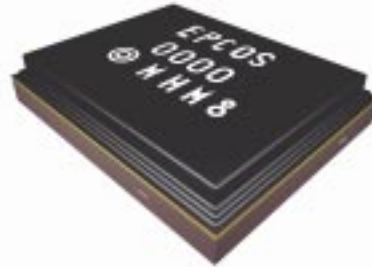
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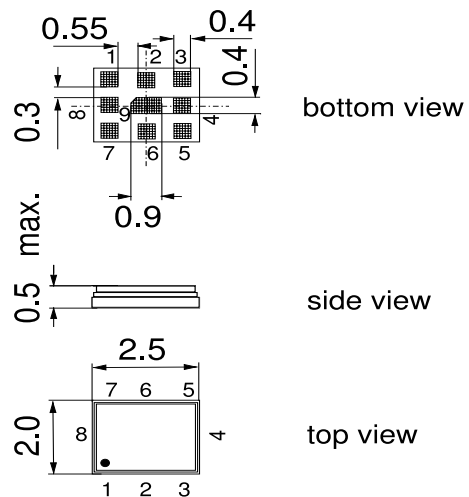
**DataSheet**

**Application**

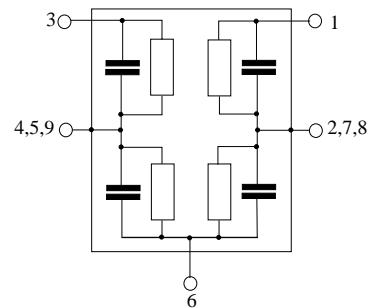
- Low-loss SAW duplexer for 3G/LTE femtocell and smallcell systems (Band 12)
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 17 MHz
- High power durability
- Rx = Uplink = 699-716 MHz
- Tx = Downlink = 729-746 MHz


**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



Please read *cautions and warnings and important notes* at the end of this document.

**DataSheet**

**Characteristics**

Temperature range for specification:	T = -10 °C to +85 °C
Antenna terminating impedance:	Z <sub>ANT</sub> = 50 Ω    17 nH
RX terminating impedance:	Z <sub>RX</sub> = 50 Ω
TX terminating impedance:	Z <sub>TX</sub> = 50 Ω

Characteristics ANT - RX		min.	typ. @ 25 °C	max.	
<b>Center frequency</b>	f <sub>C</sub>	—	707.5	—	MHz
<b>Maximum insertion attenuation</b>	α <sub>max</sub>				
699.0 ... 714.75 MHz		—	2.3	3.0	dB
714.75 ... 716.0 MHz		—	2.4	4.5	dB
<b>Amplitude ripple (p-p)</b>	Δα				
699.0 ... 714.75 MHz		—	0.9	2.0	dB
699.0 ... 716.0 MHz		—	1.0	3.0	dB
<b>Error Vector Magnitude</b>	EVM <sup>1)</sup>				
@f <sub>carrier</sub> 701.5 ... 713.5 MHz		-	2.2	5.0	%
<b>Input VSWR (ANT port)</b>					
699.0 ... 716.0 MHz		—	1.8	2.2	
<b>Output VSWR (RX port)</b>					
699.0 ... 716.0 MHz		—	2.0	2.3	
<b>Attenuation</b>	α				
100.0 ... 600.0 MHz		45	58	—	dB
693.25 ... 694.0 MHz		12	15	—	dB
694.0 ... 694.5 MHz		5	23	—	dB
694.5 ... 697.75 MHz		1.5	2.5	—	dB
716.0 ... 721.0 MHz		1	2.3	—	dB
721.0 ... 722.5 MHz		5	13	—	dB
722.5 ... 728.0 MHz		10	19	—	dB
729.0 ... 746.0 MHz		45	50	—	dB
746.0 ... 756.0 MHz		42	48	—	dB
758.0 ... 768.0 MHz		45	49	—	dB
777.0 ... 787.0 MHz		45	50	—	dB
788.0 ... 798.0 MHz		45	52	—	dB
869.0 ... 894.0 MHz		45	54	—	dB
1398.0 ... 1432.0 MHz		45	56	—	dB
1574.0 ... 1606.0 MHz		45	54	—	dB

Characterisitcs ANT - RX	min.	typ. @ 25 °C	max.	
1710.0 ... 1755.0 MHz	45	53	—	dB
1850.0 ... 1915.0 MHz	40	51	—	dB
1930.0 ... 1995.0 MHz	40	50	—	dB
2110.0 ... 2170.0 MHz	30	44	—	dB
2400.0 ... 2500.0 MHz	40	50	—	dB

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

**DataSheet**

**Characteristics**

Temperature range for specification:	T = -10 °C to +85 °C
Antenna terminating impedance:	Z <sub>ANT</sub> = 50 Ω    17 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>	—	737.5	—	MHz
<b>Maximum insertion attenuation</b> 729.0 ... 746.0 MHz	α <sub>max</sub>	—	1.8	2.5	dB
<b>Amplitude ripple (p-p)</b> 729.0 ... 746.0 MHz	Δα	—	0.6	1.3	dB
<b>Error Vector Magnitude</b> @f <sub>carrier</sub> 731.5 ... 743.5 MHz	EVM <sup>1)</sup>	-	2.5	4.0	%
<b>Input VSWR (TX port)</b> 729.0 ... 746.0 MHz		—	1.8	2.0	
<b>Output VSWR (ANT port)</b> 729.0 ... 746.0 MHz		—	1.6	2.0	
<b>Attenuation</b>	α				
10.0 ... 699.0 MHz		30	42	—	dB
699.0 ... 716.0 MHz		45	51	—	dB
777.0 ... 787.0 MHz		35	48	—	dB
788.0 ... 798.0 MHz		35	45	—	dB
824.0 ... 849.0 MHz		35	41	—	dB
869.0 ... 894.0 MHz		35	40	—	dB
1398.0 ... 1432.0 MHz		35	45	—	dB
1458.0 ... 1492.0 MHz		35	46	—	dB
1574.0 ... 1606.0 MHz		35	47	—	dB
1710.0 ... 1755.0 MHz		35	49	—	dB
1850.0 ... 1915.0 MHz		40	49	—	dB
1930.0 ... 1995.0 MHz		40	49	—	dB
2097.0 ... 2148.0 MHz		30	46	—	dB
2110.0 ... 2170.0 MHz		30	46	—	dB
2187.0 ... 2238.0 MHz		30	44	—	dB
2400.0 ... 2500.0 MHz		35	42	—	dB

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

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**Characteristics**

Temperature range for specification:	T = -10 °C to +85 °C
Antenna terminating impedance:	Z <sub>ANT</sub> = 50 Ω    17 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>							
	699.0 ... 716.0 MHz		α	48	52	—	dB
	729.0 ... 746.0 MHz			48	52	—	dB

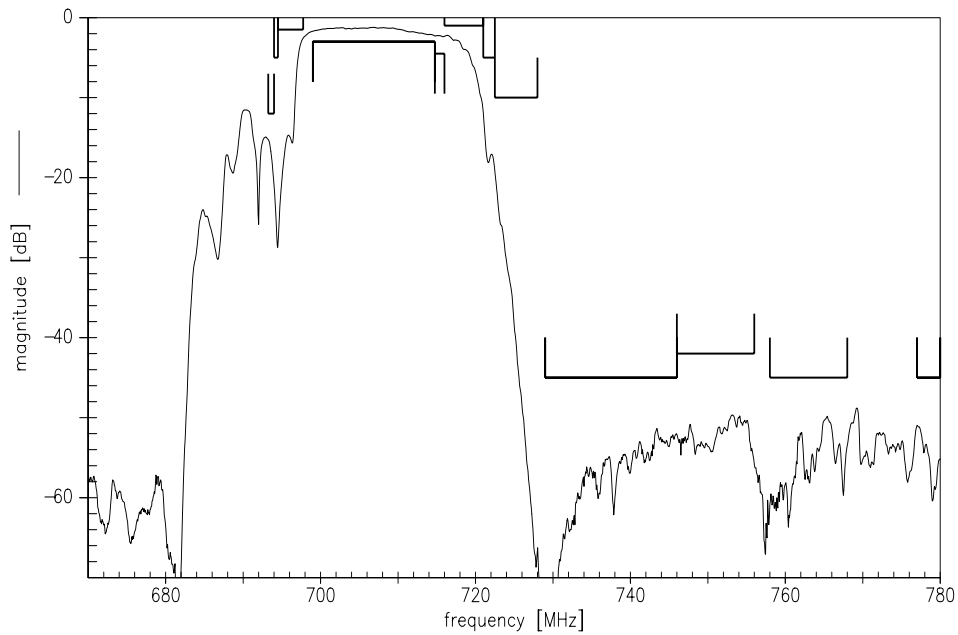
**Maximum Ratings**

Storage temperature range	T <sub>stg</sub>	-40/+85	°C	machine model, 1 pulse source and load impedance 50 Ω LTE 5 MHz downlink } average power T = 55°C, 50.000 h
DC voltage	V <sub>DC</sub>	0	V	
ESD voltage	V <sub>ESD</sub>	50 <sup>1)</sup>	V	
Input power at pin 1				
729.0 ... 746.0 MHz	P <sub>in</sub>	31	dBm	
elsewhere	P <sub>in</sub>	10	dBm	

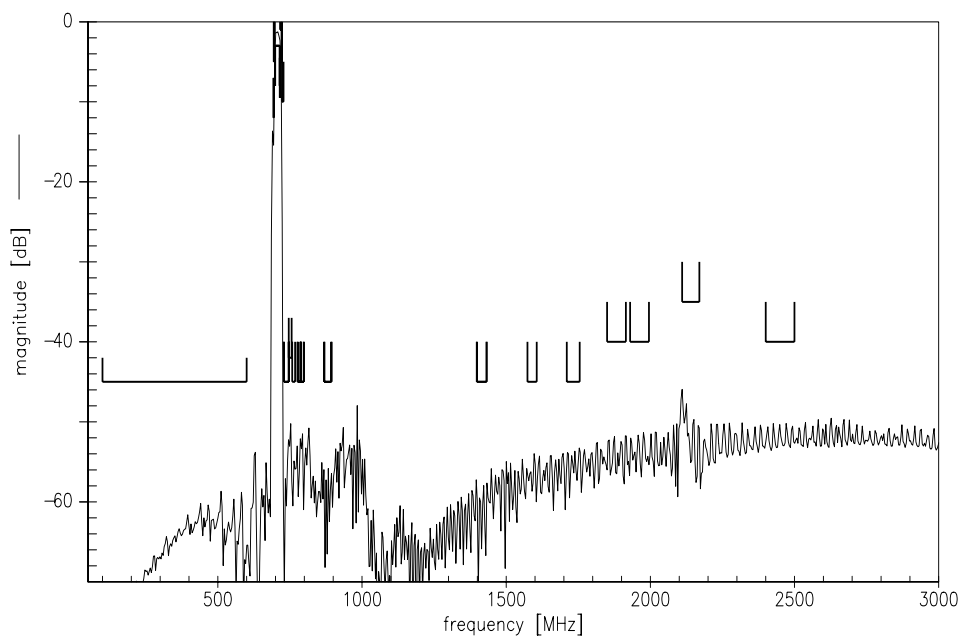
<sup>1)</sup> According to JESD22-A115A (machine model), 1 negative and 1 positive pulses.



Frequency Response ANT-RX



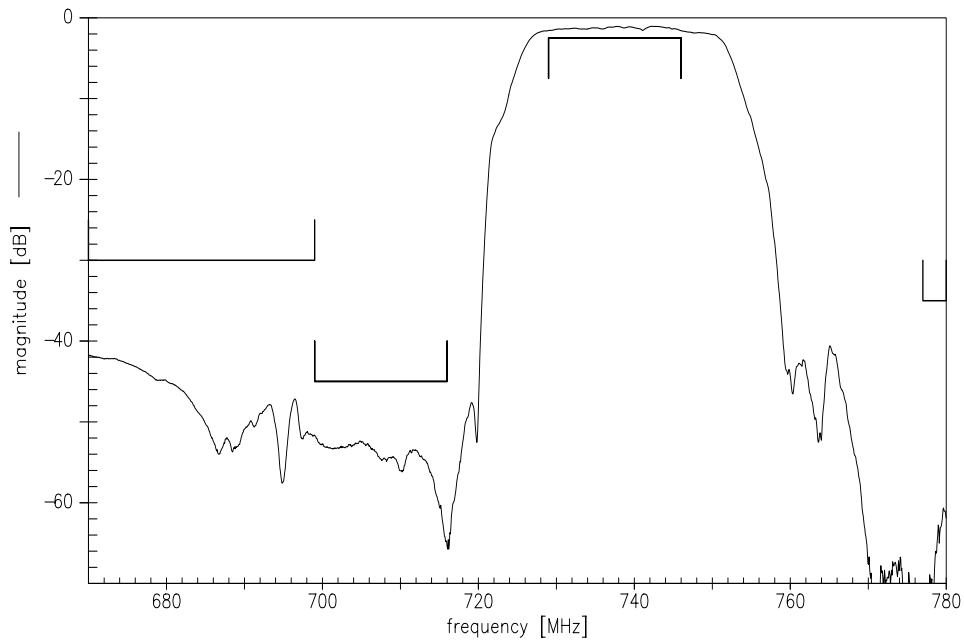
Frequency Response ANT-RX



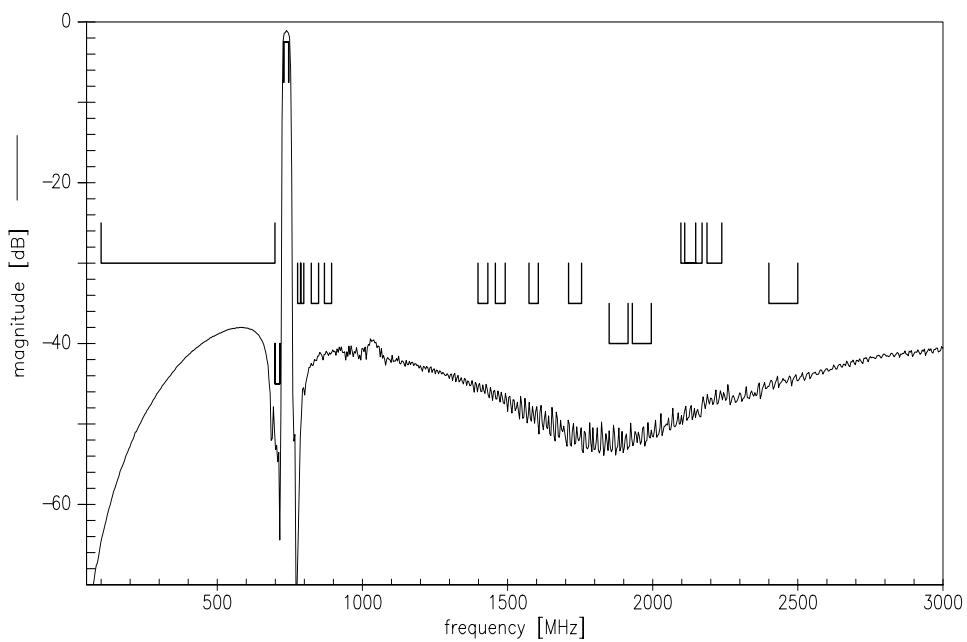
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Frequency Response TX-ANT



Frequency Response TX-ANT

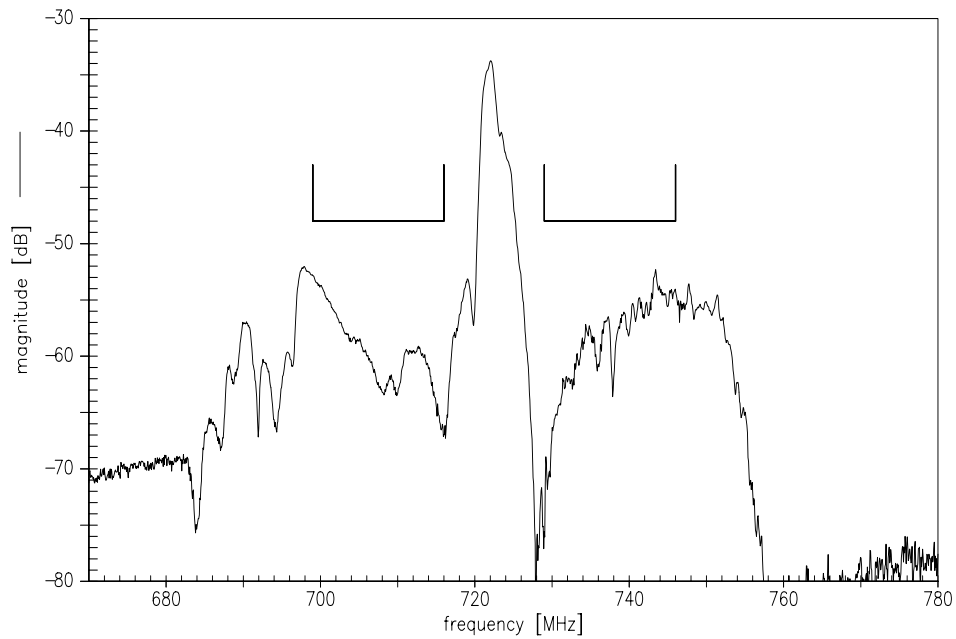


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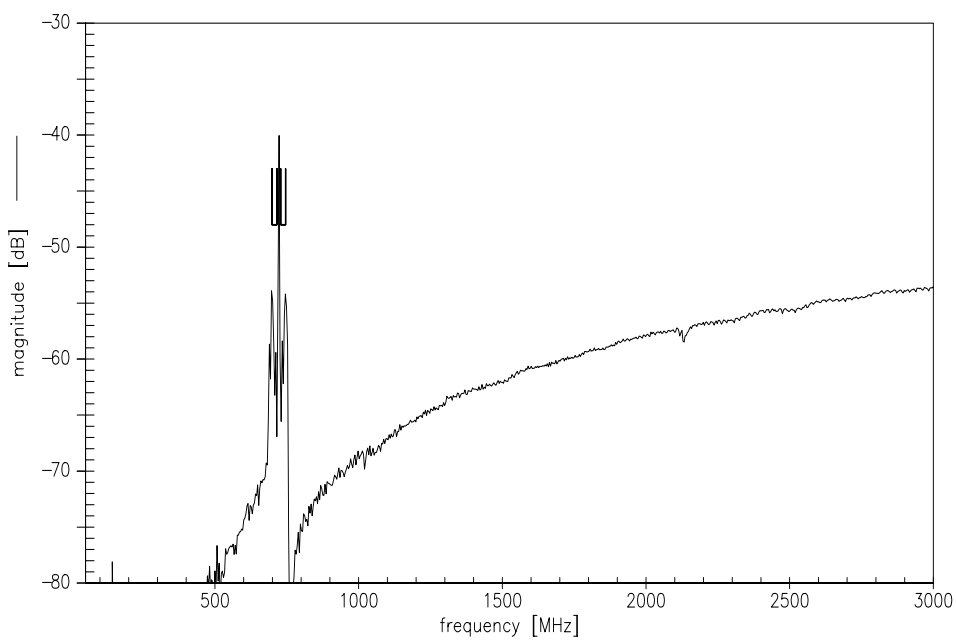




Frequency Response TX-RX



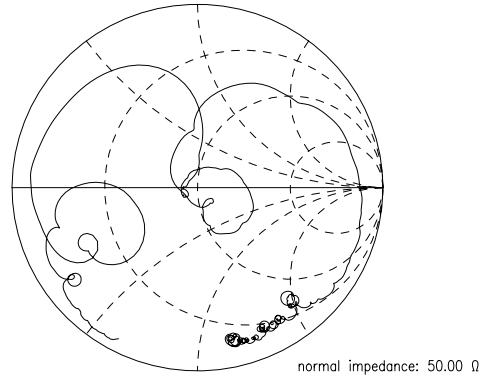
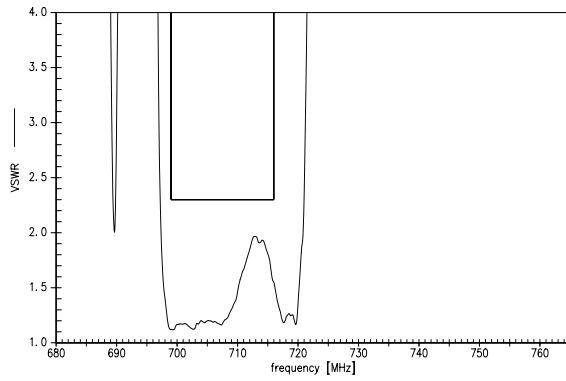
Frequency Response TX-RX



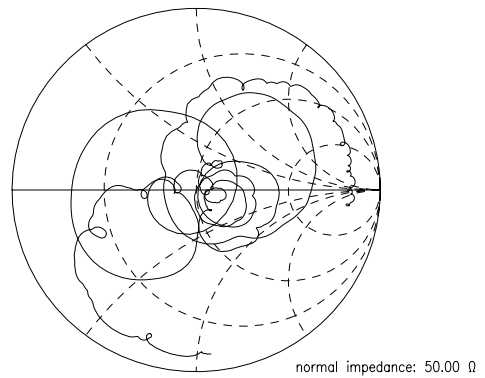
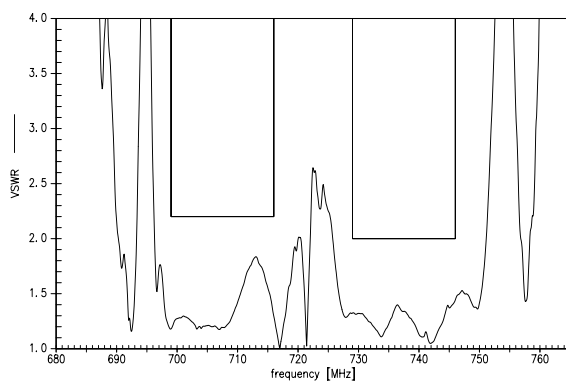
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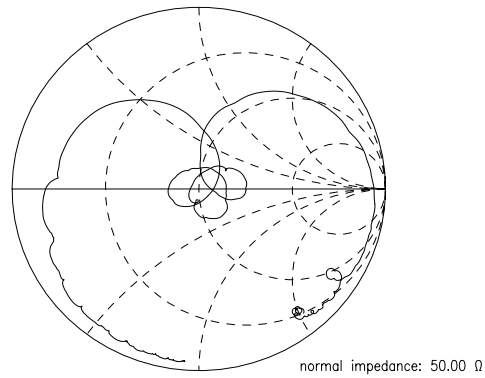
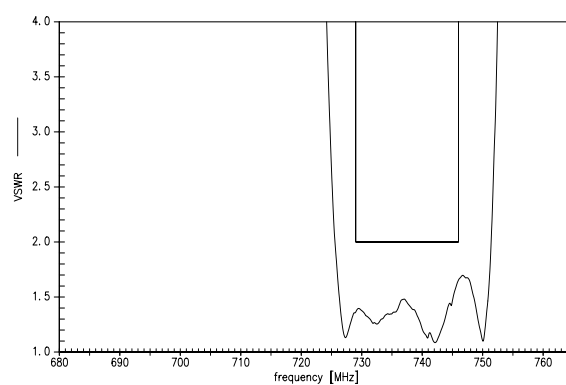
**S11 VSWR (RX)**



**S22 VSWR (ANT)**



**S33 VSWR (TX)**

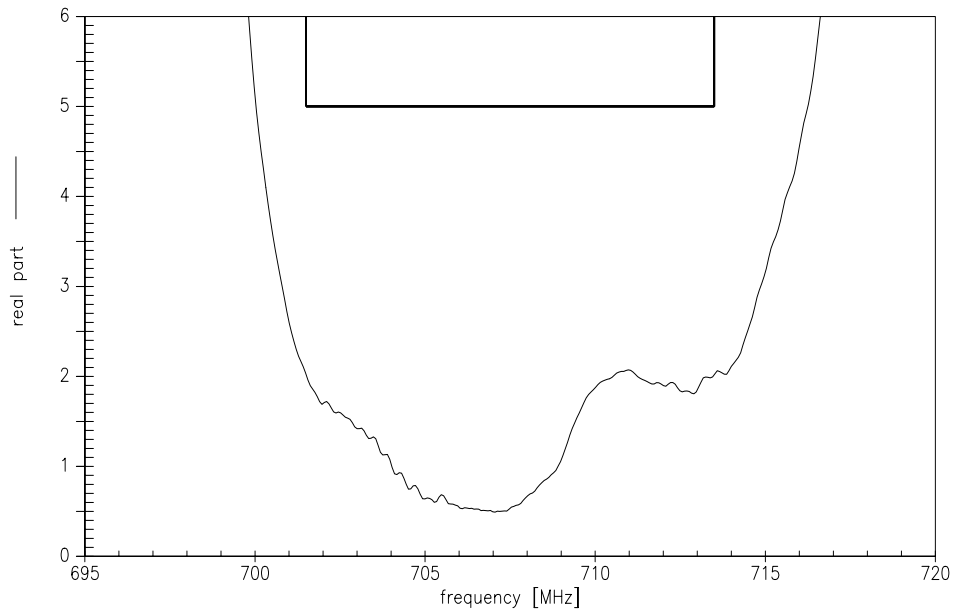


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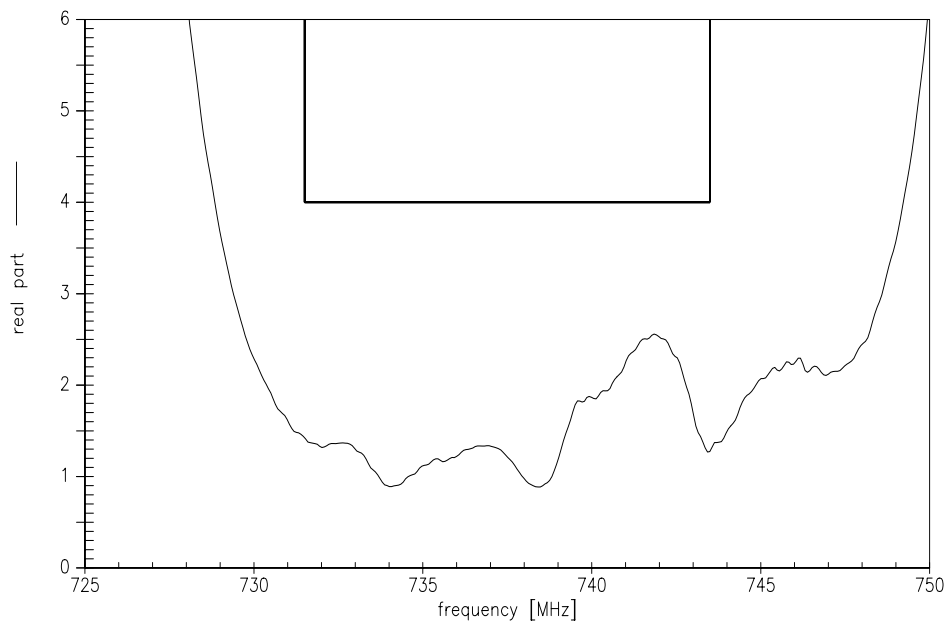
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**EVM RX**



**EVM TX**



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**SAW Components**
**B8012**
**SAW Duplexer**
**707.5 / 737.5 MHz**

DataSheet



References

<b>Type</b>	B8012
<b>Ordering code</b>	B39741B8012P810
<b>Marking and package</b>	C61157-A3-A27
<b>Packaging</b>	F61074-V8232-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B8012_NB.s3p, B8012_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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12 July 09, 2014

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