



# SAW Components

## SAW Duplexer

LTE Band 13

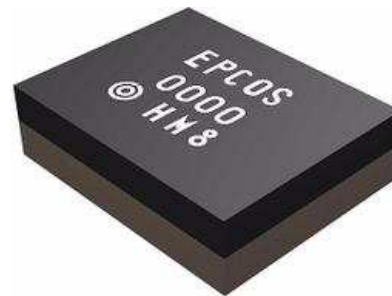
<b>Series/type:</b>	<b>B8511</b>
<b>Ordering code:</b>	<b>B39781B8511P810</b>
<b>Date:</b>	<b>April 03, 2013</b>
<b>Version:</b>	<b>2.0</b>

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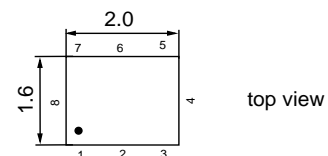
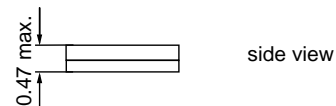
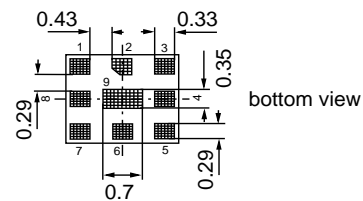
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**Application**

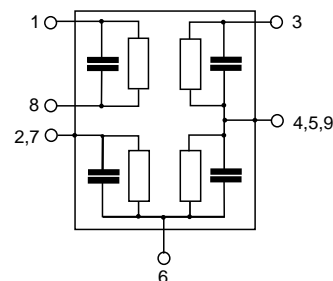
- Low-loss SAW duplexer for mobile telephone LTE Band 13 systems
- Low insertion attenuation
- High isolation
- Usable passband 10 MHz
- Single-ended to balanced transformation in Antenna-Rx path
- Impedance transformation 50 Ω to 100 Ω in Antenna-Rx path
- Very small size and low height


**Features**

- Package size 2.0 \* 1.6 \* 0.47 mm<sup>3</sup>
- RoHS compatible
- Package for **Surface Mount Technology (SMT)**
- Ni, Au-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- Moisture Sensitivity Level 3


**Pin configuration**

- 3 Tx input
- 1, 8 Rx output (balanced)
- 6 Antenna
- 2, 4, 5, 7, 9 To be grounded



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

**Characteristics**

Temperature range for specification:	T = -30 °C to +85 °C
TX terminating impedance:	Z <sub>Tx</sub> = 50 Ω
ANT terminating impedance:	Z <sub>Ant</sub> = 50 Ω    15 nH
RX terminating impedance:	Z <sub>Rx</sub> = 100 Ω (balanced)

Characteristics Tx-Antenna		min.	typ. @ 25 °C	max.	
<b>Center frequency</b>	f <sub>c</sub>	—	782.0	—	MHz
<b>Maximum insertion attenuation</b>	α	—	1.8	2.5	dB
	777.0 ... 787.0 MHz				
<b>Amplitude ripple (p-p)</b>	Δα	—	0.6	1.5	dB
	777.0 ... 787.0 MHz				
<b>Error Vector Magnitude @ 25°C</b>					
	@ f <sub>Carrier</sub> 779.4 ... 784.6 MHz EVM <sup>1)</sup>	—	2.0	2.7	%
<b>Error Vector Magnitude</b>					
	@ f <sub>Carrier</sub> 779.4 ... 784.6 MHz EVM <sup>2)</sup>	—	2.0	4.0	%
<b>Input VSWR (Tx port)</b>					
	777.0 ... 787.0 MHz	—	1.4	2.0	
<b>Output VSWR (Ant Port)</b>					
	777.0 ... 787.0 MHz	—	1.5	2.0	

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

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

**Characteristics**

Temperature range for specification:	T = -30 °C to +85 °C
TX terminating impedance:	Z <sub>Tx</sub> = 50 Ω
ANT terminating impedance:	Z <sub>Ant</sub> = 50 Ω    15 nH
RX terminating impedance:	Z <sub>Rx</sub> = 100 Ω (balanced)

Characteristics Tx-Antenna				min.	typ. @ 25 °C	max.	
<b>Absolute attenuation</b> α							
10.0	...	716.0	MHz	35	43	—	dB
716.0	...	728.0	MHz	40	46	—	dB
728.0	...	746.0	MHz	40	47	—	dB
746.0	...	756.0	MHz	50	65	—	dB
758.0	...	767.0	MHz	35	46	—	dB
767.0	...	768.0	MHz	26	46	—	dB
768.0	...	769.0	MHz	12	46	—	dB
769.0	...	770.0	MHz	6	35	—	dB
770.0	...	771.0	MHz	3	22	—	dB
771.0	...	772.0	MHz	2.5	11	—	dB
808.0	...	869.0	MHz	20	30	—	dB
869.0	...	894.0	MHz	35	41	—	dB
1554.0	...	1565.0	MHz	45	51	—	dB
1565.0	...	1607.0	MHz	45	51	—	dB
1805.0	...	2170.0	MHz	35	54	—	dB
2331.0	...	2361.0	MHz	35	46	—	dB
2400.0	...	2484.0	MHz	40	50	—	dB
3108.0	...	3148.0	MHz	30	42	—	dB
3885.0	...	3935.0	MHz	20	28	—	dB
4662.0	...	4722.0	MHz	10	17	—	dB
5160.0	...	5845.0	MHz	10	16	—	dB

**Data Sheet**

**Characteristics**

Temperature range for specification:	T = -30 °C to +85 °C
TX terminating impedance:	Z <sub>Tx</sub> = 50 Ω
ANT terminating impedance:	Z <sub>Ant</sub> = 50 Ω    15 nH
RX terminating impedance:	Z <sub>Rx</sub> = 100 Ω (balanced)

Characteristics Antenna-Rx		min.	typ. @ 25 °C	max.	
<b>Center frequency</b>	f <sub>c</sub>	—	751.0	—	MHz
<b>Maximum insertion attenuation</b>	α				
746.0 ... 756.0 MHz		—	1.6	2.2	dB
<b>Amplitude ripple (p-p)</b>	Δα				
746.0... 756.0 MHz		—	0.4	1.2	dB
<b>Input VSWR (Ant port)</b>					
746.0 ... 756.0 MHz		—	1.4	2.0	
<b>Output VSWR (Rx Port)</b>					
747.0 ... 756.0 MHz		—	1.5	2.0	
<b>Common mode rejection ratio</b>					
746.0 ... 756.0 MHz		25	31	—	dB
<b>Absolute attenuation</b>	α				
10.0 ... 650.0 MHz		50	66	—	dB
650.0 ... 730.0 MHz		35	44	—	dB
730.0 ... 736.0 MHz		30	43	—	dB
777.0 ... 787.0 MHz		55	61	—	dB
793.0 ... 805.0 MHz		40	53	—	dB
805.0 ... 2400.0 MHz		40	50	—	dB
2400.0 ... 2484.0 MHz		40	57	—	dB
2484.0 ... 4500.0 MHz		40	54	—	dB
4500.0 ... 6000.0 MHz		35	42	—	dB

**SAW Components**
**B8511**
**SAW Duplexer**
**782.0 / 751.0 MHz**
**Data Sheet**

**Characteristics**

Temperature range for specification:	T = -30 °C to +85 °C
TX terminating impedance:	Z <sub>Tx</sub> = 50 Ω
ANT terminating impedance:	Z <sub>Ant</sub> = 50 Ω    15 nH
RX terminating impedance:	Z <sub>Rx</sub> = 100 Ω (balanced)

Characteristics Tx-Rx				min.	typ. @ 25 °C	max.	
<b>Attenuation</b>							
			α				
	746.5 ... 752.0		MHz	54	59	—	dB
	752.0 ... 755.5		MHz	54	59	—	dB
	777.0 ... 787.0		MHz	58	63	—	dB
	1552.0 ... 1574.0		MHz	30	74	—	dB
	2328.0 ... 2361.0		MHz	30	67	—	dB
	3104.0 ... 3148.0		MHz	30	64	—	dB
<b>Common mode attenuation</b>							
			α				
	777.0 ... 787.0		MHz	60	65	—	dB

**Maximum Ratings**

Storage temperature range	T <sub>stg</sub>	-40/+85	°C	
DC voltage	V <sub>DC</sub>	5 <sup>1)</sup>	V	
ESD voltage	V <sub>ESD</sub>	100 <sup>2)</sup>	V	Machine Model
ESD voltage	V <sub>ESD</sub>	200 <sup>3)</sup>	V	Human Body Model
ESD voltage	V <sub>ESD</sub>	600 <sup>4)</sup>	V	Charged Device Model
Input power at Tx Port				
777.0 ... 787.0 MHz	P <sub>in</sub>	29	dBm	} CW 50 °C, 5,000h
elsewhere	P <sub>in</sub>	10	dBm	

1) 168h Damp Heat Steady State acc. to IEC 60068-2-67 Cy.

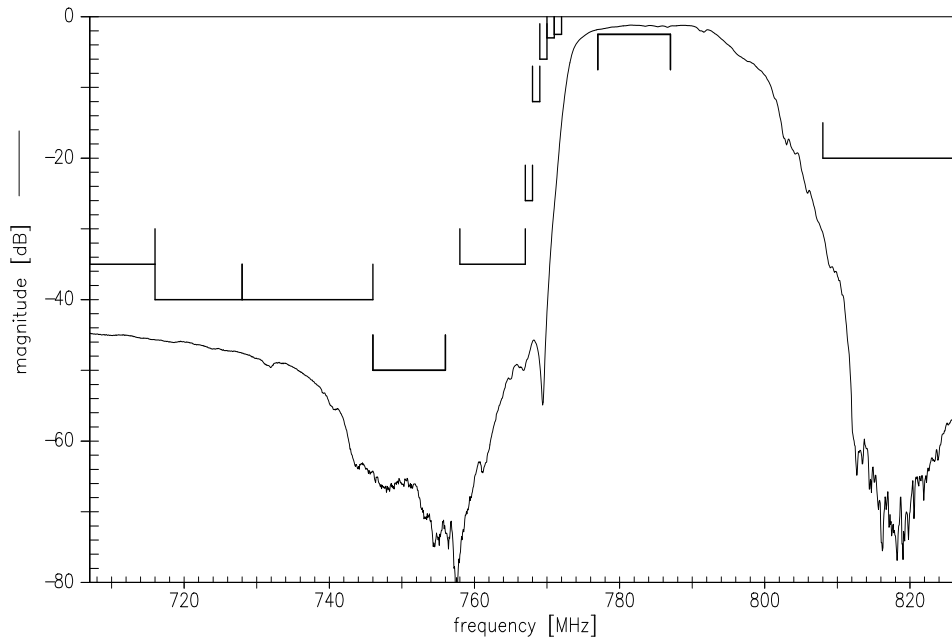
2) Acc. to FESD22-A115B (MM - Machine Model), 10 negative & 10 positive pulses.

3) Acc. to JESD22-A114F (HBM - Human Body Level), 1 negative & 1 positive pulses.

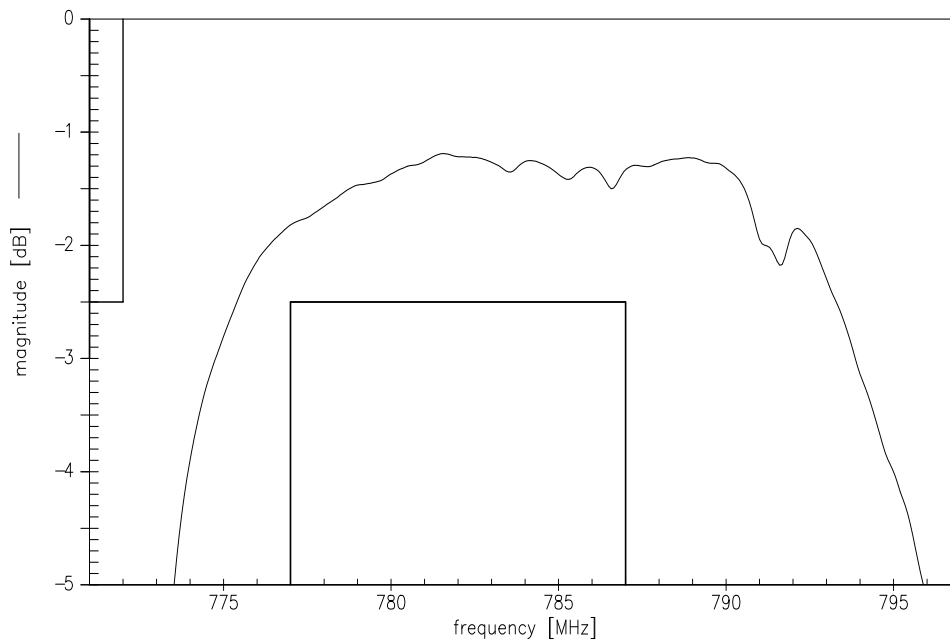
4) Acc. to JESD22-C101C (CDM - Fiel Inducted Charged Device Model), 3 negative & 3 positive pulses.

**Frequency Response TX-ANT**

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

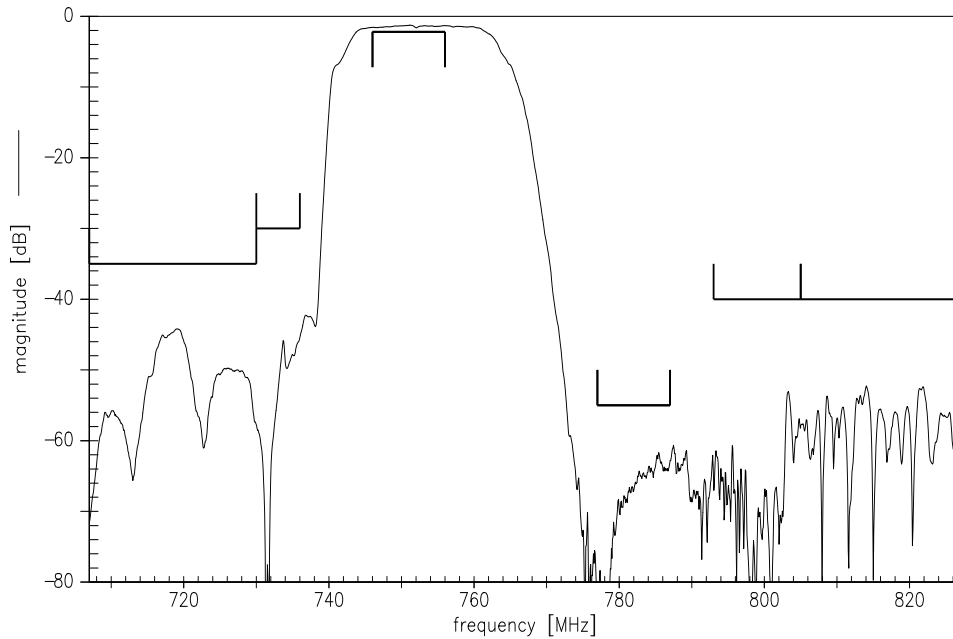


**Frequency Response TX-ANT**

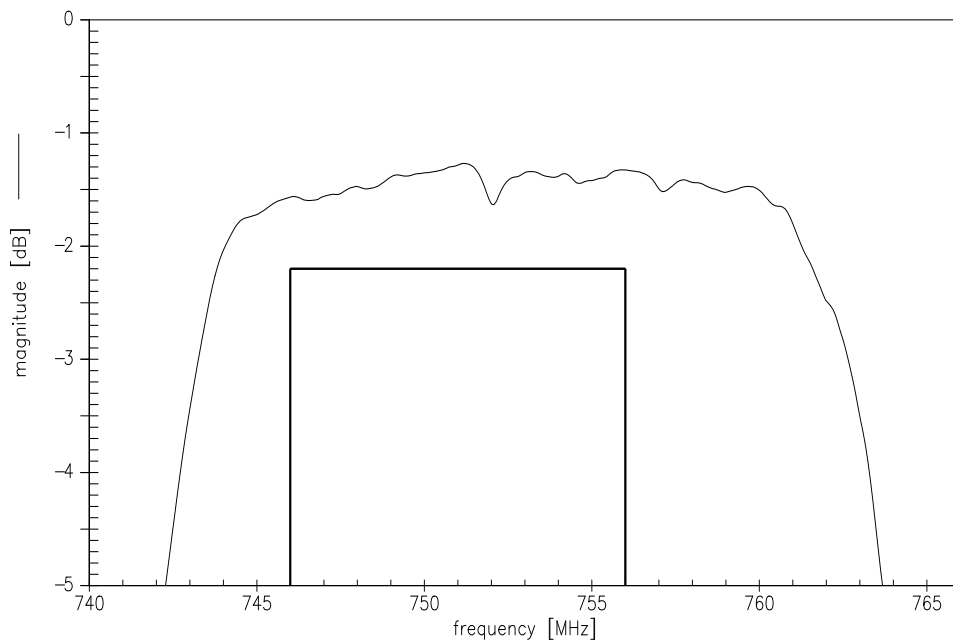


**Frequency Response RX-ANT**

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



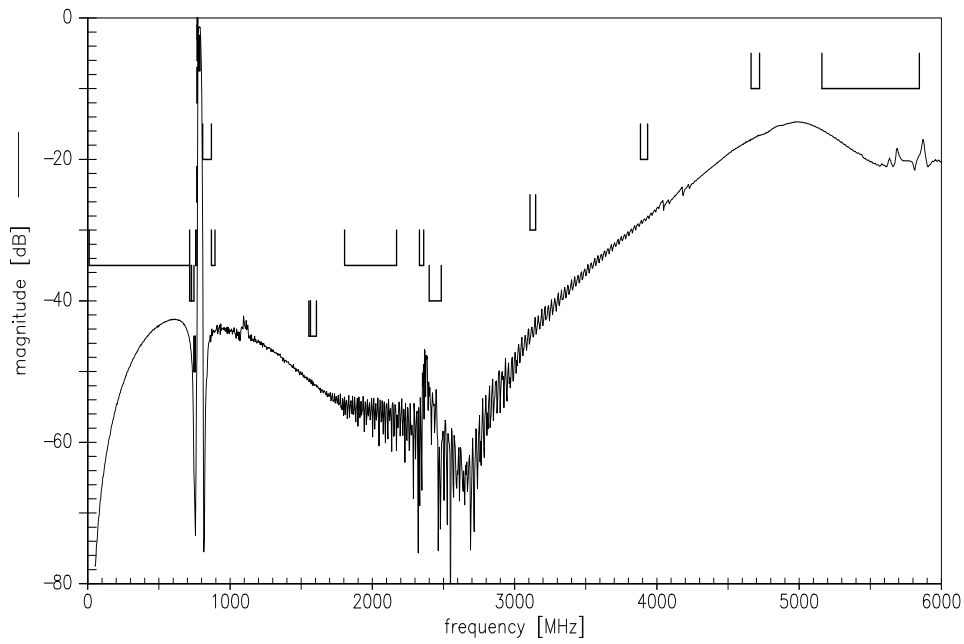
**Frequency Response RX-ANT**



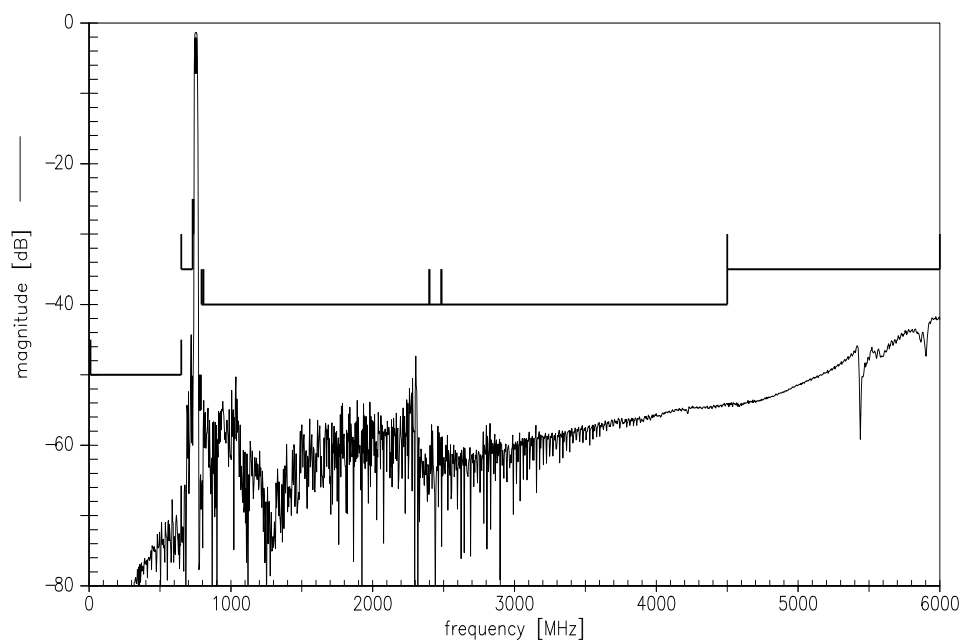
Please read *cautions and warnings* and *important notes* at the end of this document.



Frequency Response ANT-TX

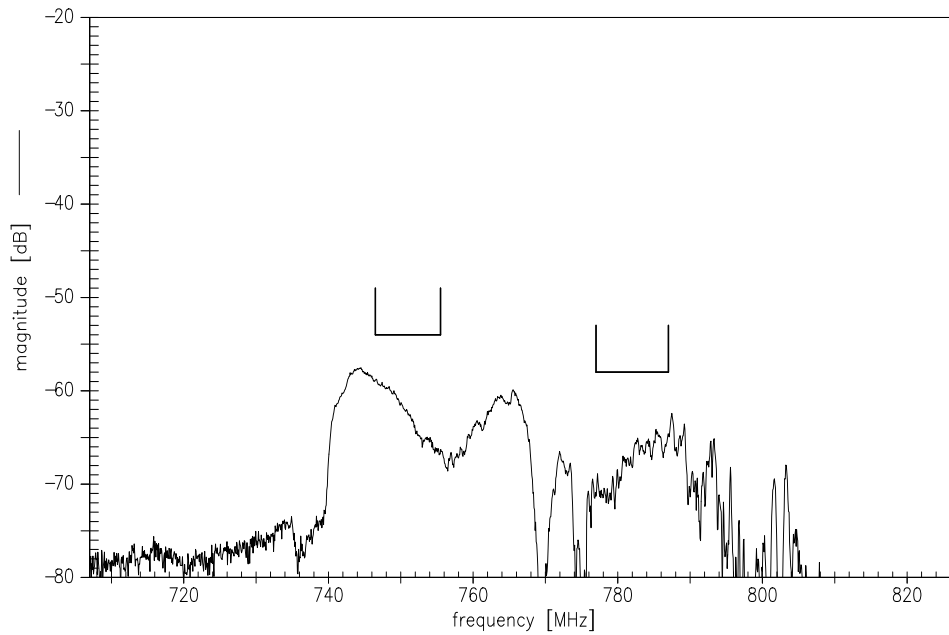


Frequency Response ANT-RX

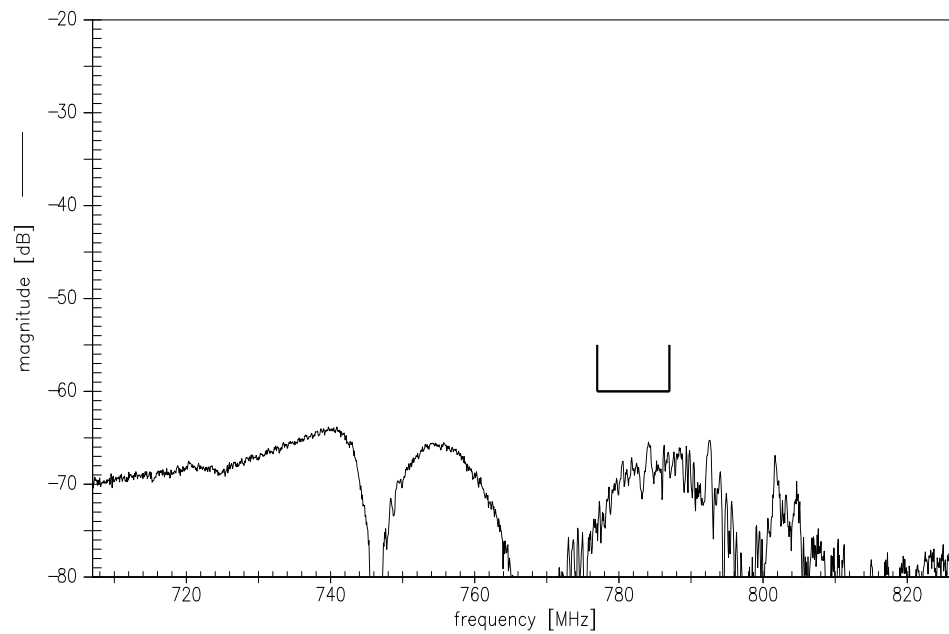


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Frequency Response TX-RX (Isolation)

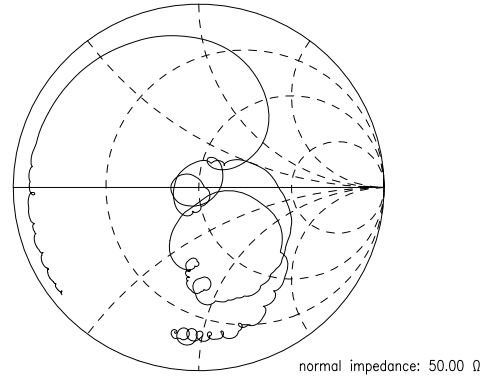
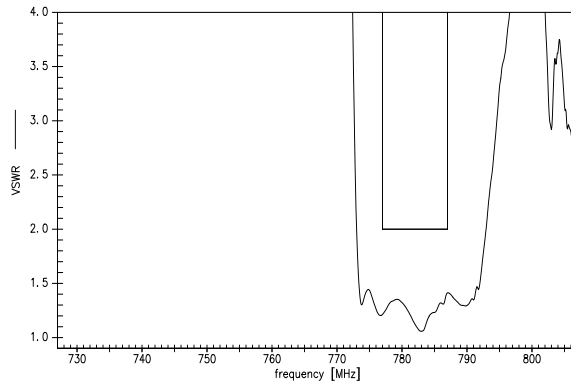


Frequency Response Common Mode Isolation

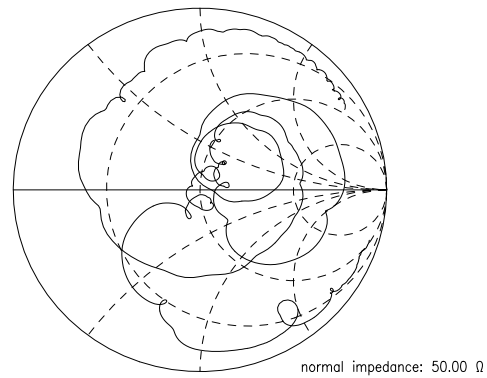
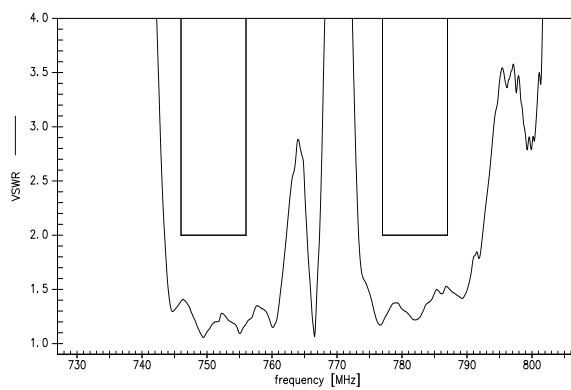


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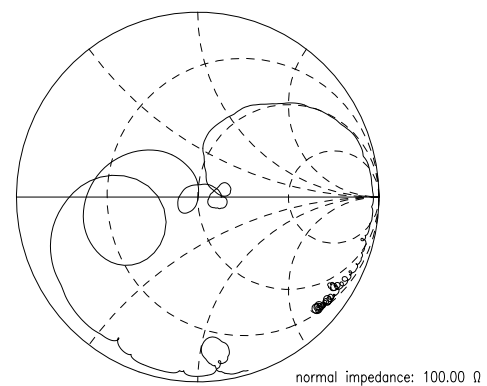
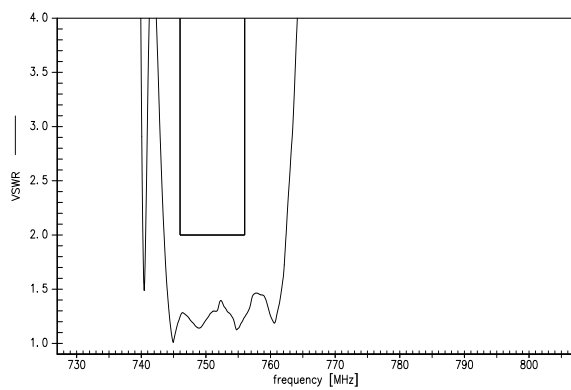
**S11 VSWR (TX)**



**S22 VSWR (ANT)**



**S33 VSWR (RX)**



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<b>SAW Components</b>	<b>B8511</b>
<b>SAW Duplexer</b>	<b>782.0 / 751.0 MHz</b>

Data Sheet



References

<b>Type</b>	B8511
<b>Ordering code</b>	B39781B8511P810
<b>Marking and package</b>	C61157-A8-A77
<b>Packaging</b>	F61074-V8247-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B8511_NB_UN.s4p, B8511_WB_UN.s4p 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 April 03, 2013

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