



# SAW Components

## SAW Duplexer for Smallcell

Band 1 (3G/LTE)

<b>Series/type:</b>	<b>B8092</b>
<b>Ordering code:</b>	<b>B39212B8092P810</b>
<b>Date:</b>	<b>February 25, 2015</b>
<b>Version:</b>	<b>2.2</b>

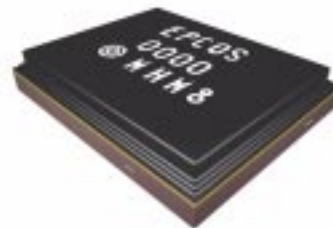
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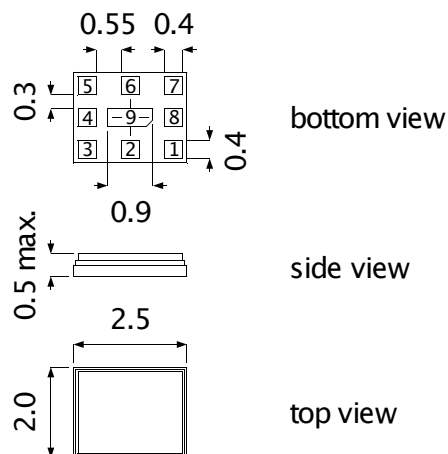
**DataSheet**

**Application**

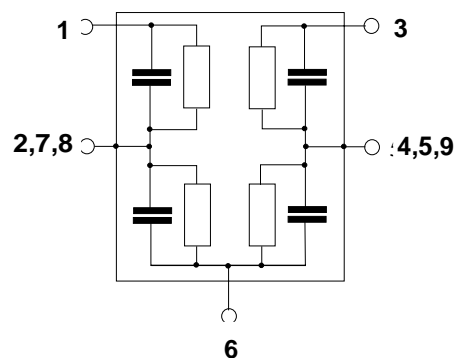
- Low-loss SAW duplexer for 3G/LTE smallcell systems (Band 1)
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 60 MHz
- High power durability
- Industrial qualification
- Rx = uplink = 1920-1980 MHz
- Tx = downlink = 2110-2170 MHz


**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



**DataSheet**

**Characteristics**

Temperature range for specification:	T = -10 °C to +85 °C
Antenna terminating impedance:	Z <sub>ANT</sub> = 50 Ω // 2.2 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>		2140.0		MHz
<b>Maximum insertion attenuation</b> 2110.0 ... 2170.0 MHz	α <sub>max</sub>	-	2.0	2.5	dB
<b>Amplitude ripple (p-p)</b> 2110.0 ... 2170.0 MHz	Δα	-	0.8	1.6	dB
<b>Error Vector Magnitude</b> 2112.5 ... 2167.5 MHz	EVM <sup>1)</sup>	-	0.5	1.5	%
<b>Input VSWR (TX port)</b> 2110.0 ... 2170.0 MHz		-	1.7	2.0	
<b>Output VSWR (ANT port)</b> 2110.0 ... 2170.0 MHz		-	1.5	2.0	
<b>Attenuation</b>	α				
10.0 ... 1574.0 MHz		30	34	-	dB
843.0 ... 894.0 MHz		30	40	-	dB
1574.0 ... 1606.0 MHz		30	34	-	dB
1606.0 ... 1880.0 MHz		30	34	-	dB
1805.0 ... 1880.0 MHz		30	40	-	dB
1920.0 ... 1980.0 MHz		37	43	-	dB
2250.0 ... 2400.0 MHz		30	48	-	dB
2400.0 ... 2500.0 MHz		30	48	-	dB
2500.0 ... 2700.0 MHz		30	37	-	dB
2700.0 ... 3000.0 MHz		30	37	-	dB
2620.0 ... 2690.0 MHz		30	42	-	dB
3000.0 ... 3800.0 MHz		28	32	-	dB
3800.0 ... 4220.0 MHz		15	20	-	dB
4220.0 ... 4340.0 MHz		10	15	-	dB
4340.0 ... 5000.0 MHz		7	18	-	dB
5000.0 ... 6000.0 MHz		3	7	-	dB

<sup>1)</sup> 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 // 2.2 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>		1950.0		MHz
<b>Maximum insertion attenuation</b> 1920.0 ... 1980.0 MHz	α <sub>max</sub>	-	2.3	3.7	dB
<b>Amplitude ripple (p-p)</b> 1920.0 ... 1980.0 MHz	Δα	-	0.9	2.2	dB
<b>Error Vector Magnitude</b> 1922.5 ... 1977.5 MHz	EVM <sup>1)</sup>	-	1.5	3.0	%
<b>Input VSWR (ANT port)</b> 1920.0 ... 1980.0 MHz		-	1.9	2.2	
<b>Output VSWR (RX port)</b> 1920.0 ... 1980.0 MHz		-	2.0	2.3	
<b>Attenuation</b>	α				
10.0 ... 1785.0 MHz		30	36	-	dB
1785.0 ... 1880.0 MHz		20	31	-	dB
1880.0 ... 1900.0 MHz		5	15	-	dB
2000.0 ... 2110.0 MHz		2.5	12	-	dB
2110.0 ... 2170.0 MHz		43	48	-	dB
2255.0 ... 2400.0 MHz		30	33	-	dB
2400.0 ... 2500.0 MHz		25	30	-	dB
2500.0 ... 3840.0 MHz		15	20	-	dB
3840.0 ... 3960.0 MHz		20	24	-	dB
3960.0 ... 5000.0 MHz		20	25	-	dB
5000.0 ... 5760.0 MHz		15	30	-	dB
5760.0 ... 5940.0 MHz		15	30	-	dB

<sup>1)</sup> 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
TX terminating impedance:	Z <sub>Tx</sub> = 50 Ω
ANT terminating impedance:	Z <sub>Ant</sub> = 50 Ω // 2.2 nH
RX terminating impedance:	Z <sub>Rx</sub> = 50 Ω

Characteristics Rx-Tx				min.	typ. @ 25 °C	max.	
<b>Attenuation</b>							
	1920.0 ... 1980.0	MHz	α	42	48	-	dB
	2110.0 ... 2170.0	MHz		47	52	-	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 28dBm average - 39 dBm peak } LTE 5 MHz downlink T = 55 °C, 100.000 h
Input power at pin 1				
2110.0 ...2170.0 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				
2110.0 ...2170.0 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.

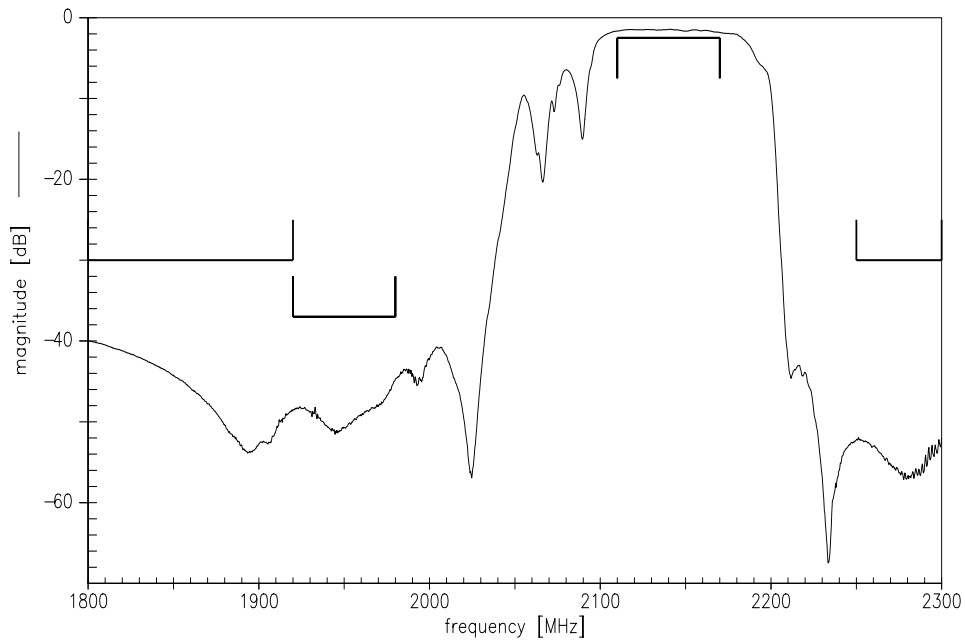
<sup>2)</sup> Time to failure (TTDF) according to accelerated power durability tests, and wear out models.

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

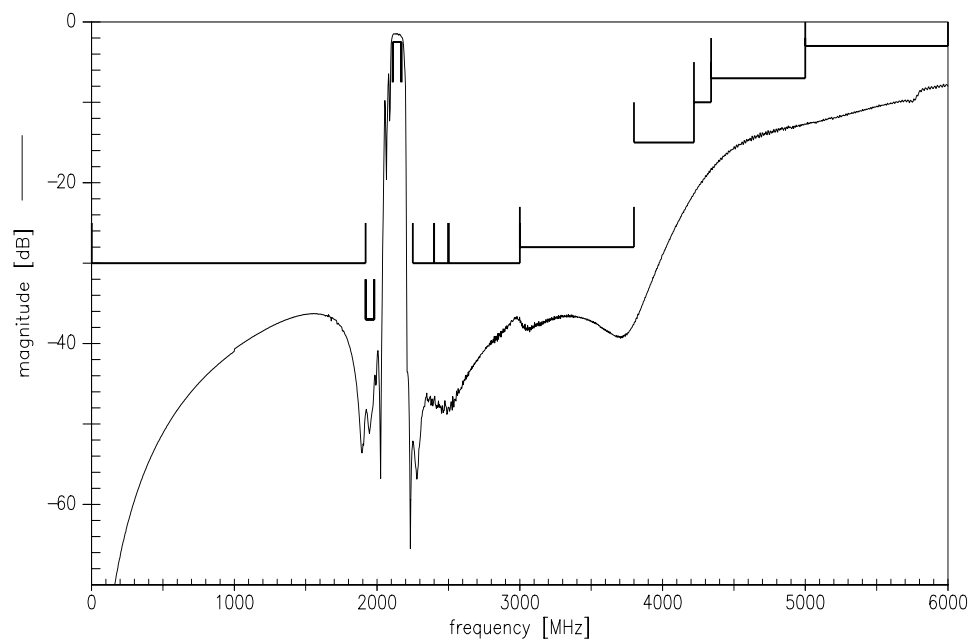
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**Frequency Response TX-ANT**



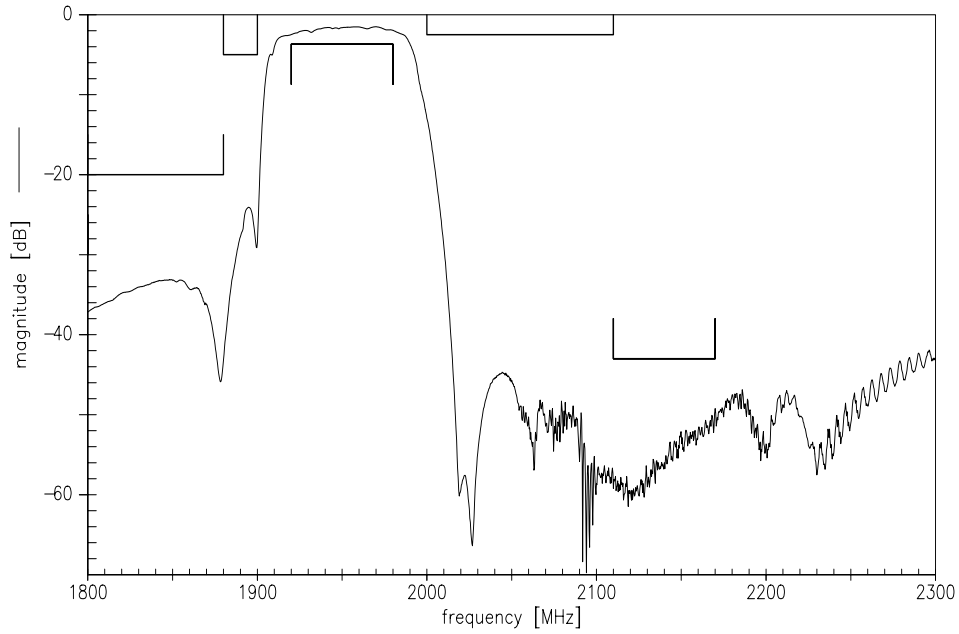
**Frequency Response TX-ANT**



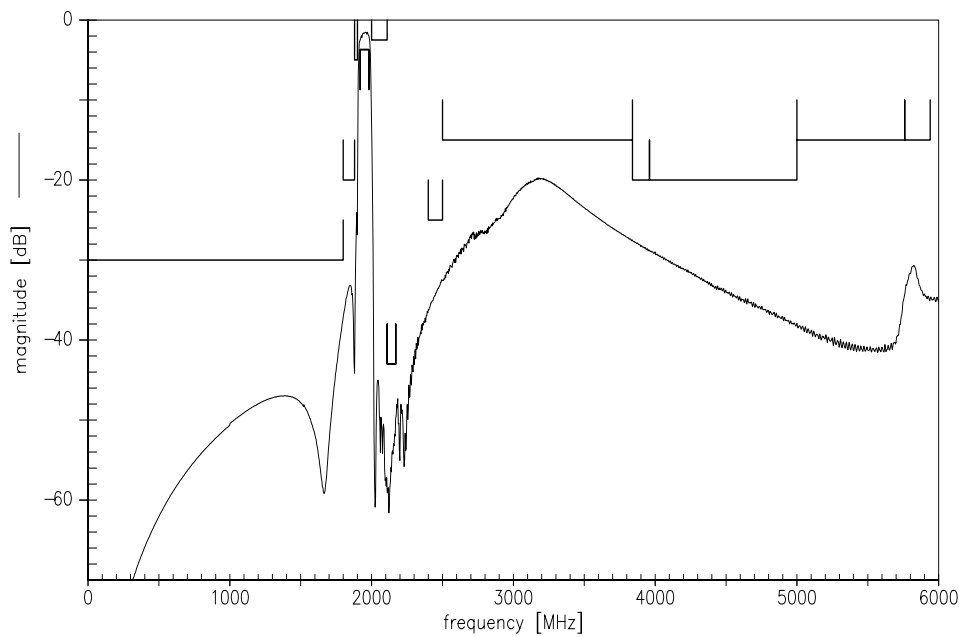
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**Frequency Response ANT-RX**



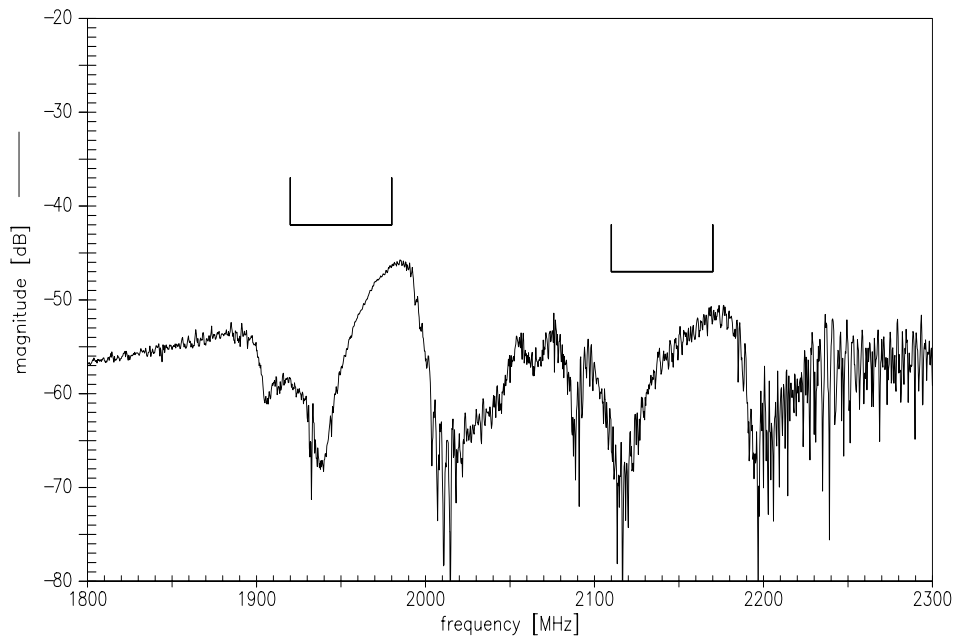
**Frequency Response ANT-RX**



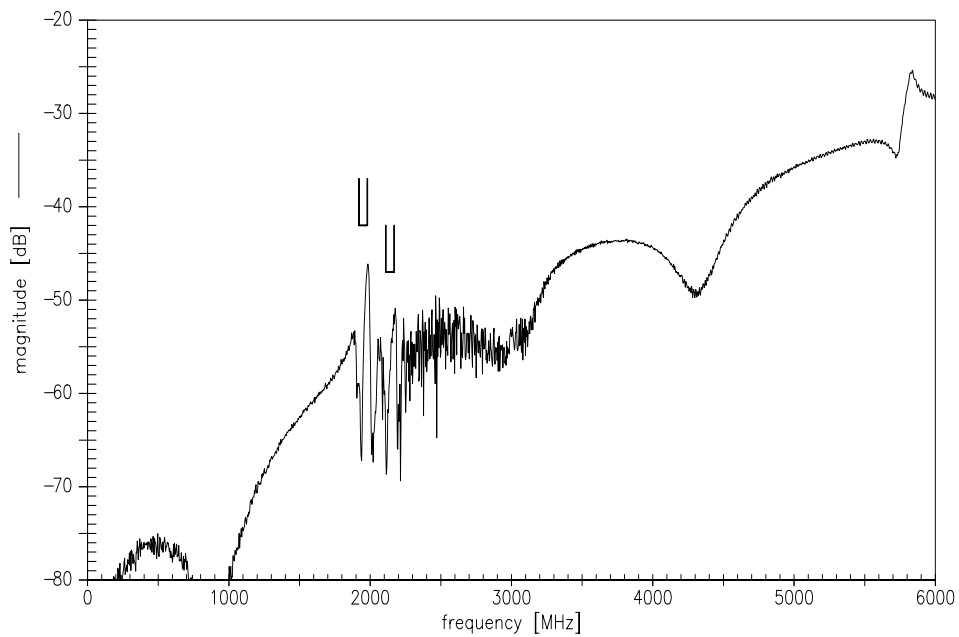
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Frequency Response TX-RX



Frequency Response TX-RX

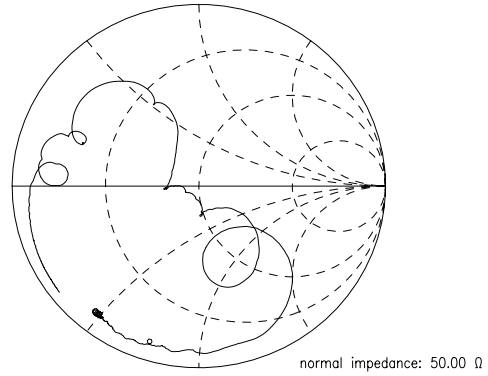
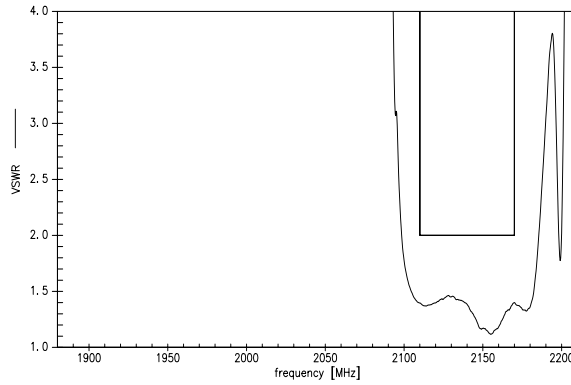




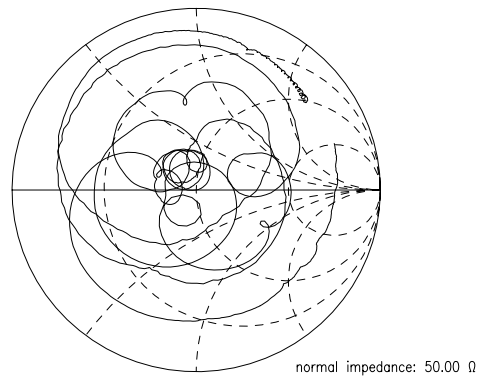
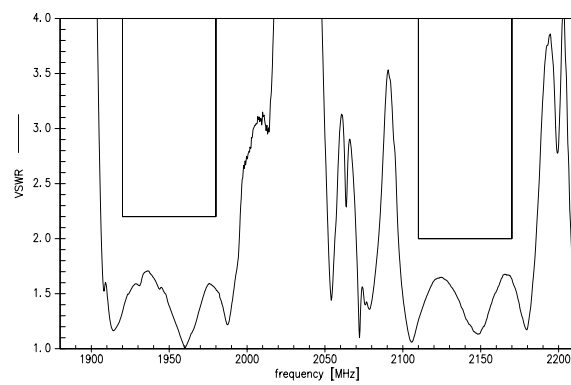
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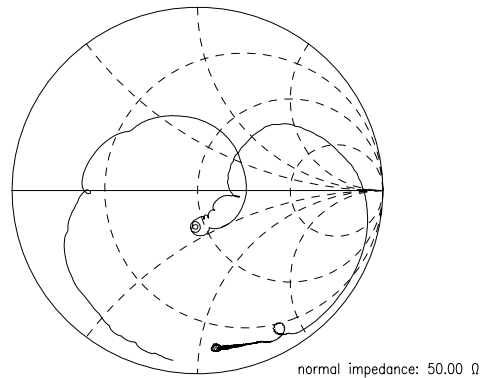
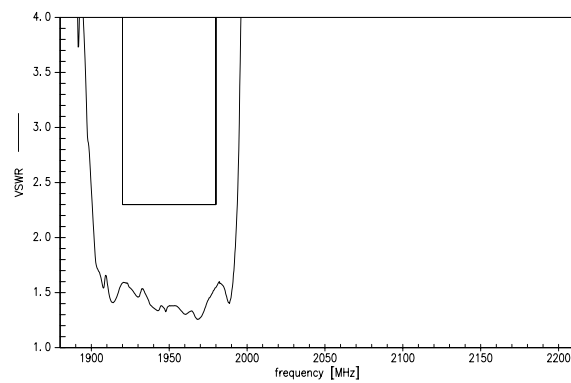
**S11 VSWR (TX)**



**S22 VSWR (ANT)**



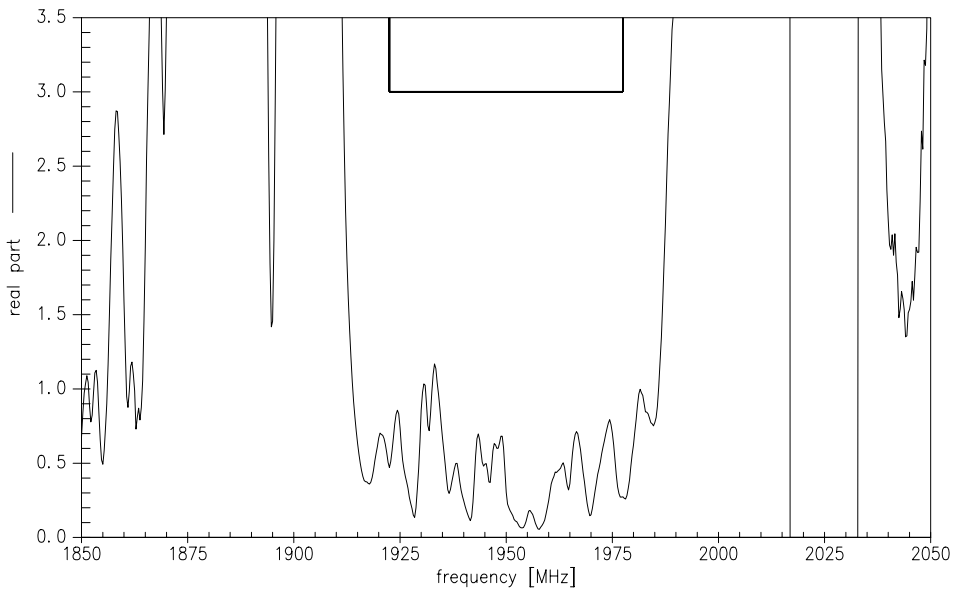
**S33 VSWR (RX)**



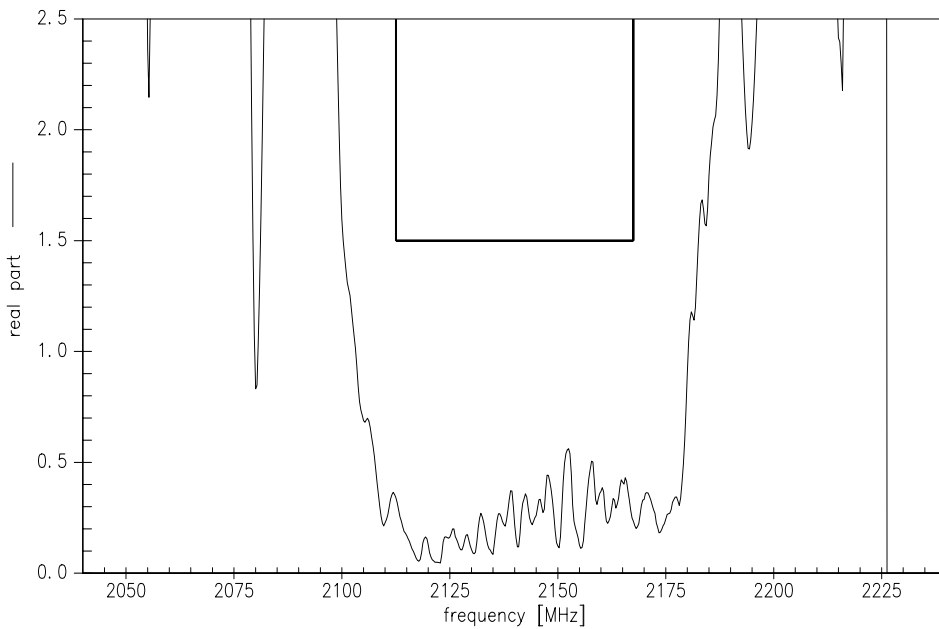
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**EVM Rx**



**EVM Tx**



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References

<b>Type</b>	B8092
<b>Ordering code</b>	B39212B8092P810
<b>Marking and package</b>	C61157-A8-A61
<b>Packaging</b>	F61074-V8232-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B8092_NB.s3p, B8092_WB.s3p see file header for port/pin assignement 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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