



# SAW Components

## SAW Duplexer for smallcells

Band 4

**Series/type:** B8026  
**Ordering code:** B39212B8026P810

**Date:** July 08, 2015  
**Version:** 2.4

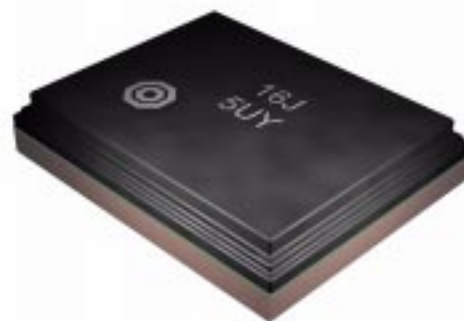
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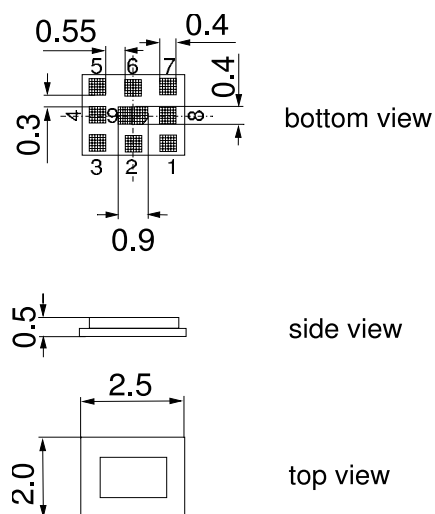
Data sheet


**Application**

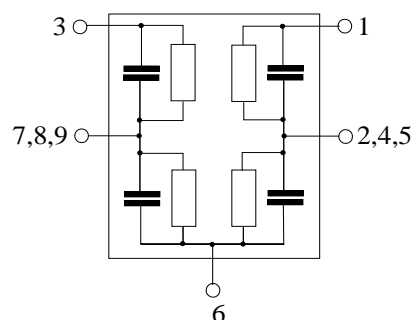
- Low-loss RF SAW Duplexer for smallcells and small-cell systems (Band 4)
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 45 MHz
- Tx = DOWNLINK = 2110-2155 MHz
- Rx = UPLINK = 1710-1755 MHz


**Features**

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


**Pin configuration**

- 1 Tx Input
- 3 Rx output
- 6 Antenna
- 2,4,5,7,8,9 To be grounded



Data sheet


**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    3.3 nH
RX terminating impedance:	Z <sub>Rx</sub> = 50 Ω

Characteristics ANT-Rx				min.	typ. @ 25 °C	max.	
<b>Center frequency</b>		f <sub>C</sub>		—	1732.5	—	MHz
<b>Maximum insertion attenuation</b>	1710.0 ... 1755.0	MHz	α <sub>max</sub>	—	2.0	3.1	dB
<b>Amplitude ripple (p-p)</b>	1710.0 ... 1755.0	MHz	Δα	—	0.6	1.7	dB
<b>Error Vector Magnitude</b>	@f <sub>carrier</sub> 1712.4 ... 1752.6	MHz	EVM <sup>1)</sup>	—	1.2	3.0	%
<b>VSWR (Rx port)</b>	1710.0 ... 1755.0	MHz		—	1.6	2.1	
<b>VSWR (Ant port)</b>	1710.0 ... 1755.0	MHz		—	1.6	2.2	
<b>Absolute Attenuation</b>			α				
	50.0 ... 1500.0	MHz		45	57	—	dB
	1670.0 ... 1675.0	MHz		21	26	—	dB
	1805.0 ... 1830.0	MHz		20	37	—	dB
	1830.0 ... 1875.0	MHz		35	47	—	dB
	1875.0 ... 1910.0	MHz		20	46	—	dB
	1920.0 ... 1980.0	MHz		40	49	—	dB
	2110.0 ... 2155.0	MHz		50	54	—	dB
	2400.0 ... 2500.0	MHz		38	49	—	dB
	3420.0 ... 3510.0	MHz		40	45	—	dB
	4220.0 ... 4310.0	MHz		35	46	—	dB
	5130.0 ... 5265.0	MHz		29	42	—	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
TX terminating impedance:	Z <sub>Tx</sub> = 50 Ω
ANT terminating impedance:	Z <sub>Ant</sub> = 50 Ω    3.3 nH
RX terminating impedance:	Z <sub>Rx</sub> = 50 Ω

Characteristics Tx-ANT		min.	typ. @ 25 °C	max.	
<b>Center frequency</b>	f <sub>c</sub>	—	2132.5	—	MHz
<b>Maximum insertion attenuation</b>	α				
2110.0 ... 2155.0 MHz		—	2.0	2.4	dB
<b>Amplitude ripple (p-p)</b>	Δα				
2110.0 ... 2155.0 MHz		—	0.6	1.1	dB
<b>Error Vector Magnitude</b>					
@f <sub>carrier</sub> 2112.4 ... 2152.6 MHz	EVM <sup>1)</sup>	—	1.3	3.0	%
<b>VSWR (Tx port)</b>					
2110.0 ... 2155.0 MHz		—	1.7	2.1	
<b>VSWR (Ant Port)</b>					
2110.0 ... 2155.0 MHz		—	1.7	2.2	
<b>Attenuation</b>	α				
50.0 ... 1574.0 MHz		30	36	—	dB
1574.0 ... 1606.0 MHz		35	40	—	dB
1606.0 ... 1710.0 MHz		35	42	—	dB
1710.0 ... 1755.0 MHz		38	50	—	dB
1830.0 ... 1875.0 MHz		28	36	—	dB
1875.0 ... 1910.0 MHz		20	33	—	dB
1920.0 ... 2025.0 MHz		15	30	—	dB
2200.0 ... 2300.0 MHz		5	12	—	dB
2300.0 ... 2400.0 MHz		30	36	—	dB
2400.0 ... 2500.0 MHz		30	34	—	dB
2500.0 ... 3000.0 MHz		20	29	—	dB
4220.0 ... 4310.0 MHz		6	31	—	dB

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

Data sheet


**Characteristics**

Temperature range for specification:	$T = -10\text{ °C to }+85\text{ °C}$
TX terminating impedance:	$Z_{Tx} = 50\ \Omega$
ANT terminating impedance:	$Z_{Ant} = 50\ \Omega \parallel 3.3\text{ nH}$
RX terminating impedance:	$Z_{Rx} = 50\ \Omega$

Characteristics Tx-Rx		min.	typ. @ 25 °C	max.	
<b>Attenuation</b>	$\alpha$				
	1710.0 ... 1755.0 MHz	40	53	—	dB
	2110.0 ... 2155.0 MHz	45	53	—	dB

**Maximum Ratings**

Storage temperature range	$T_{stg}$	-40/+85	°C	
DC voltage	$V_{DC}$	0	V	
ESD voltage	$V_{ESD}$	50 <sup>1)</sup>	V	machine model, 1 pulses human body model, 1 pulse
		200 <sup>2)</sup>	V	
Input power at pin 1				source and load impedance 50 $\Omega$ } Pin 27.5dBm average - 38.5dBm peak LTE 5 MHz downlink T = 55°C, 100,000 h
2110.0 ... 2155.0 MHz	$P_{in}$	27.5 <sup>3)</sup>	dBm	
elsewhere	$P_{in}$	10	dBm	
Operating lifetime with Output power at antenna				source and load impedance 50 $\Omega$
2110.0 ... 2155.0 MHz		24 <sup>4)</sup>	dBm	Continuous wave T = 55°C, 100khrs

1) acc. to JESD22-A115B (machine model), +/-1 pulse.

2) acc. to JESD22-A114F (human body model), +/-1 pulse.

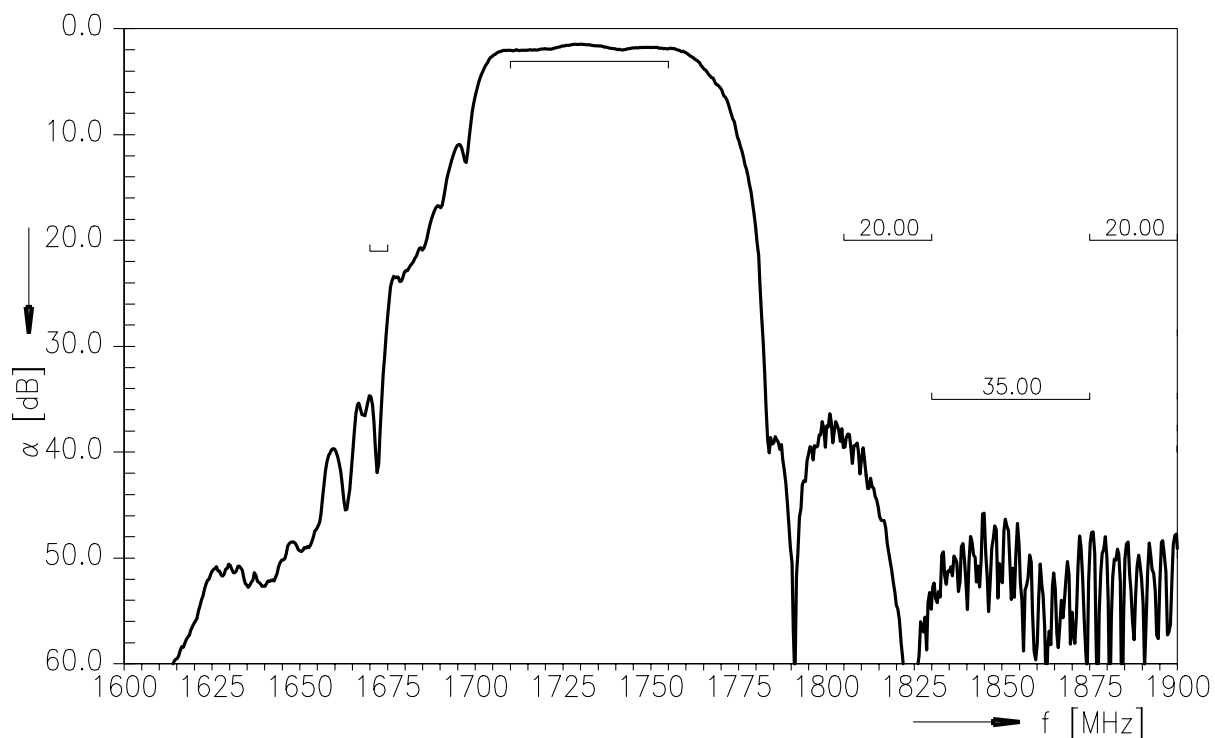
3) Time to failure (TTF) according to accelerated power durability test, and wear out models.

4) according to accelerated High Temperature Operating Life (HTOL) test.

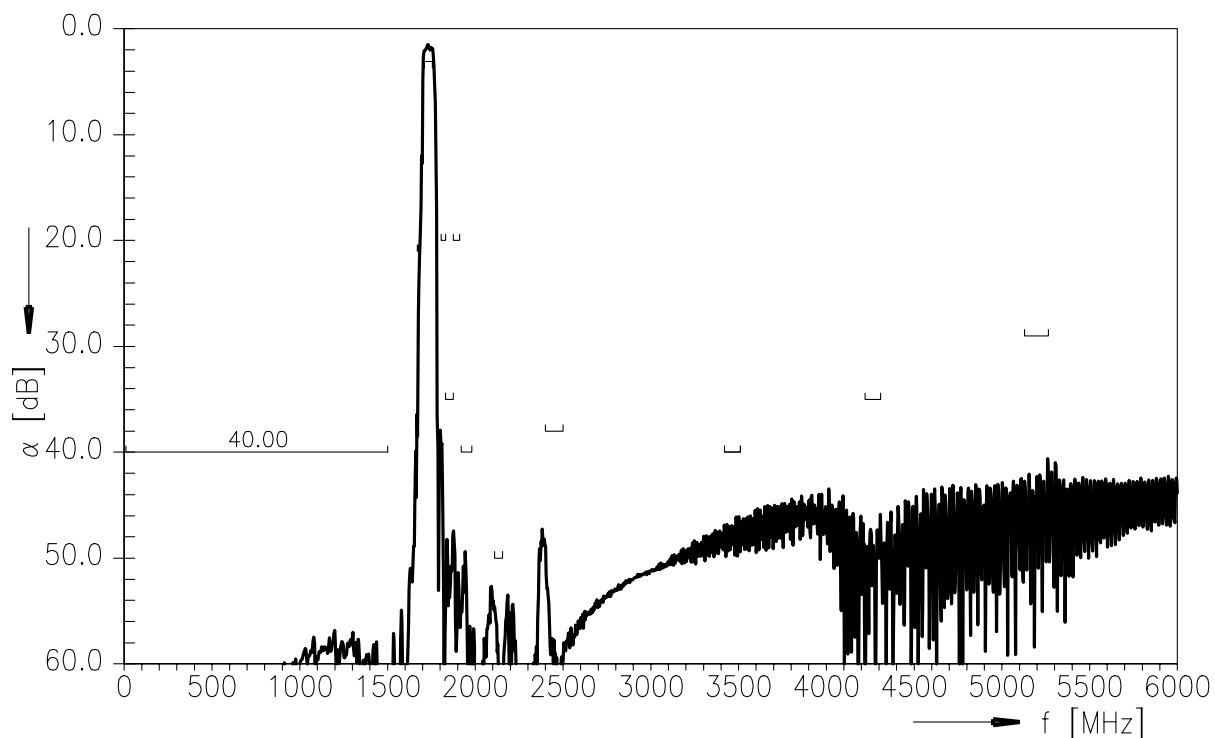
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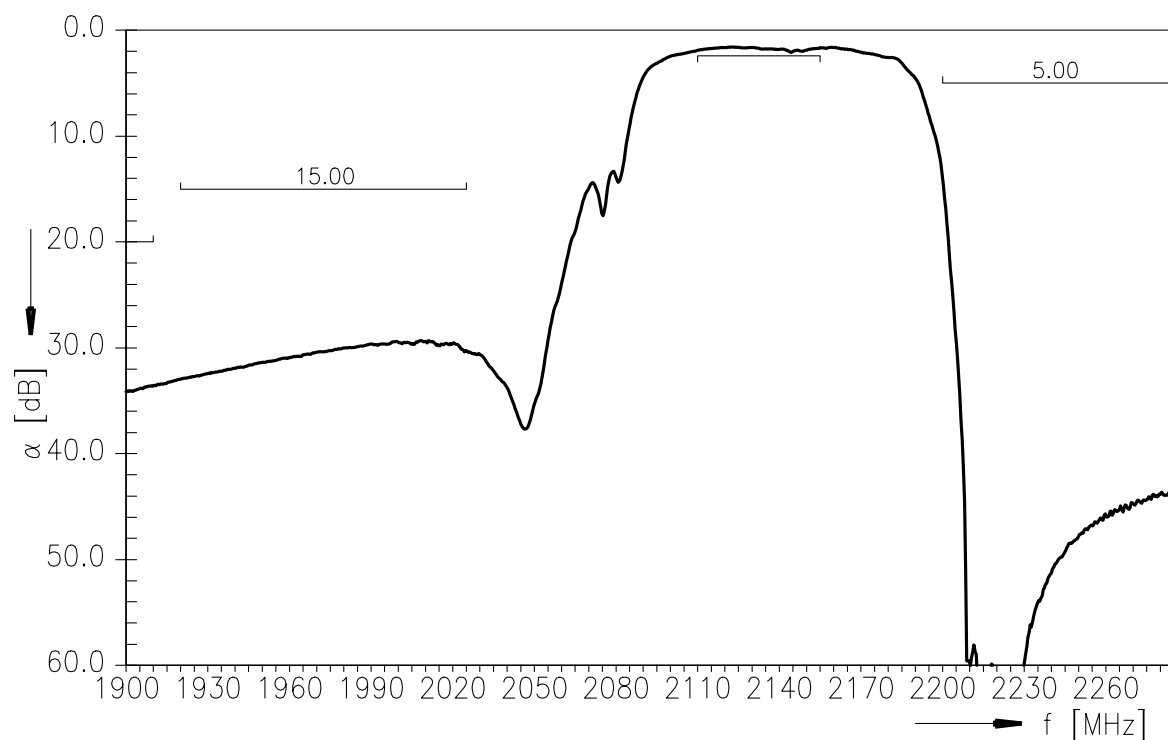
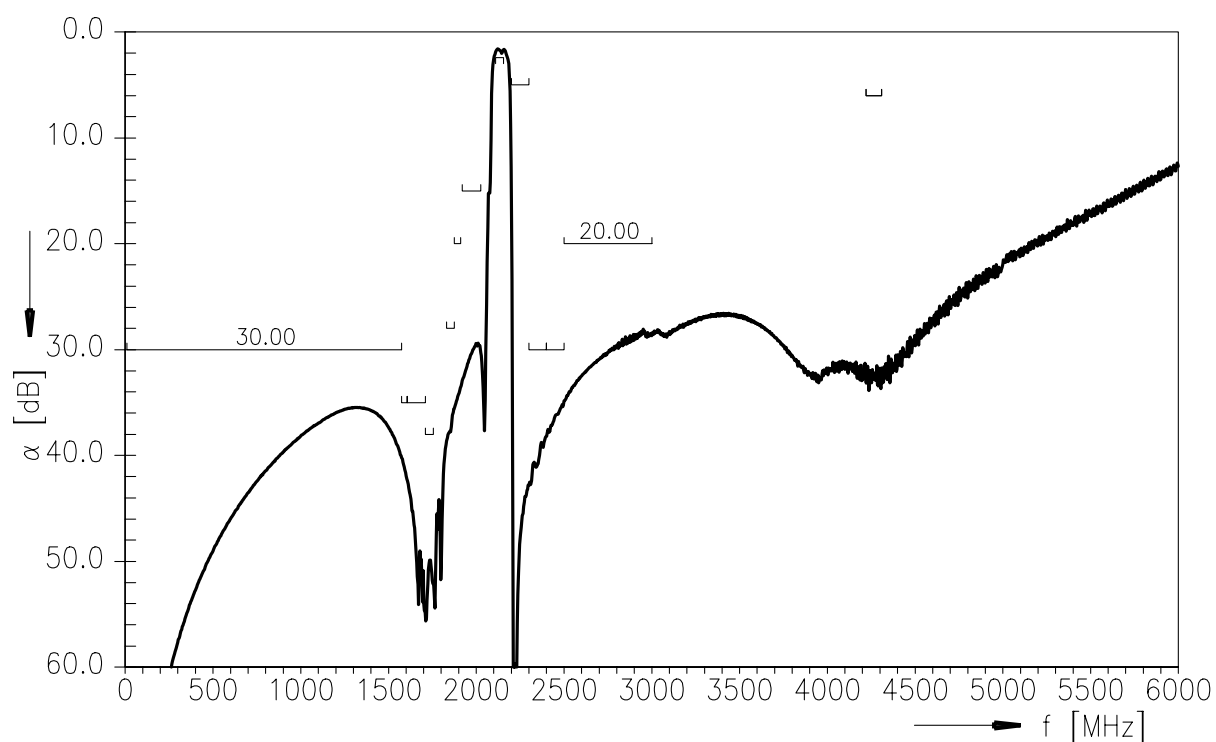
**Frequency response ANT-RX**



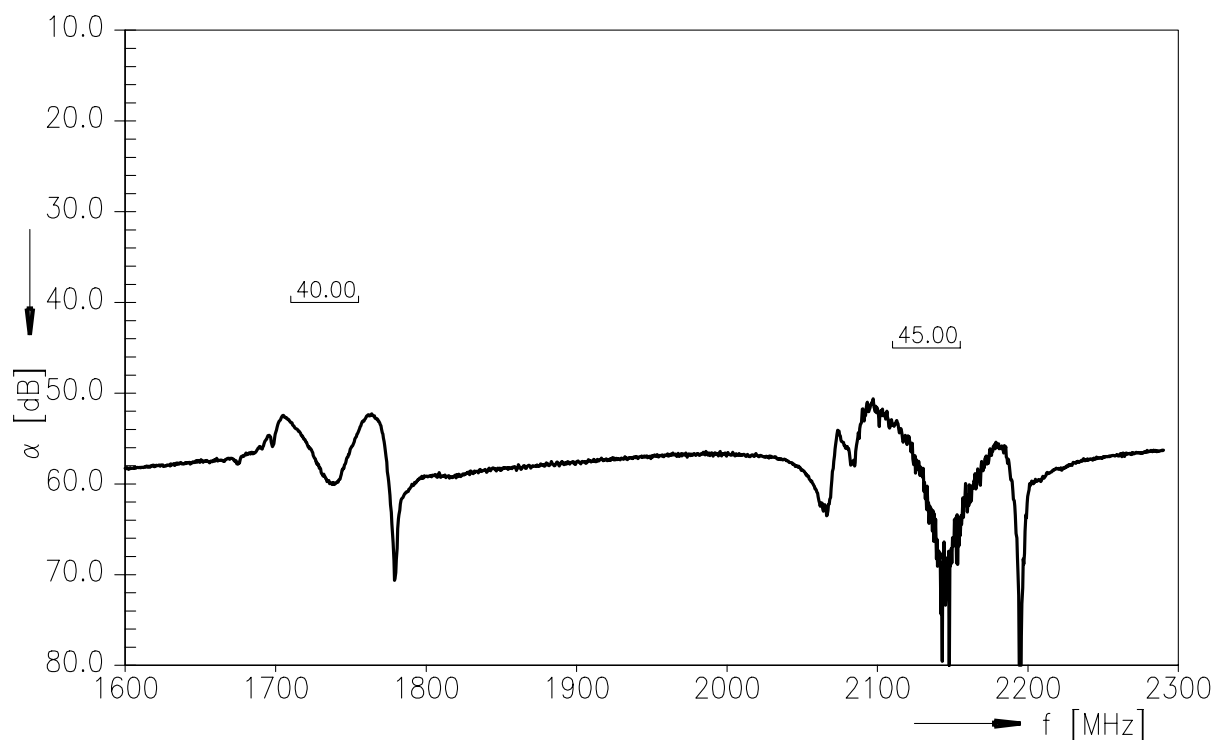
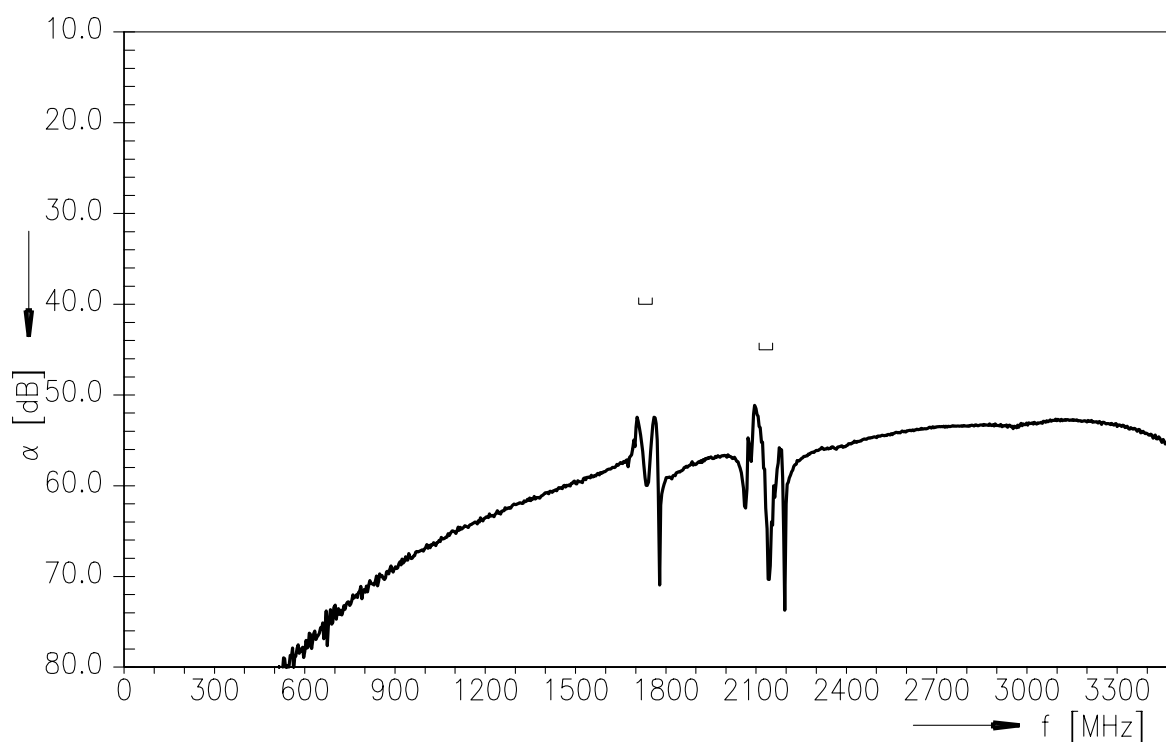
**Frequency response ANT-RX (wideband)**



Data sheet


**Frequency response TX-ANT**

**Frequency response TX-ANT (wideband)**


Data sheet


**Frequency response TX-RX**

**Frequency response TX-RX (wideband)**




Data sheet

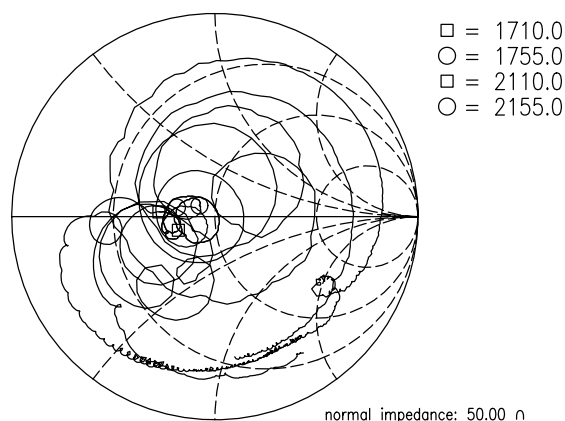
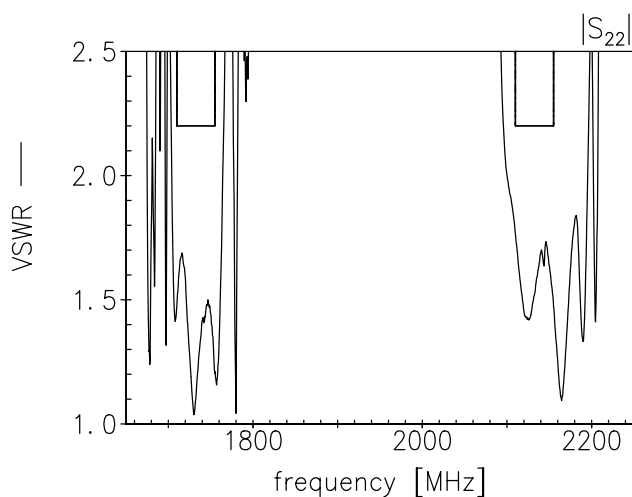
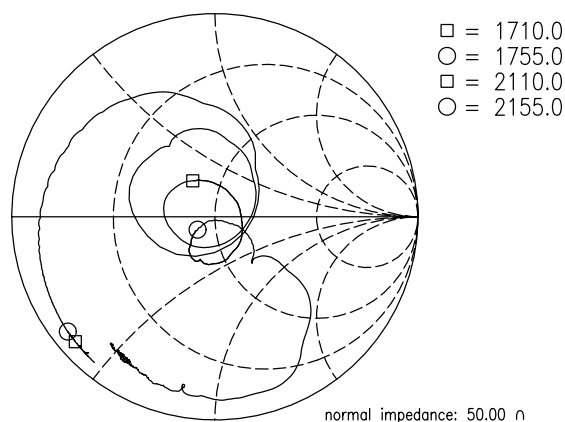
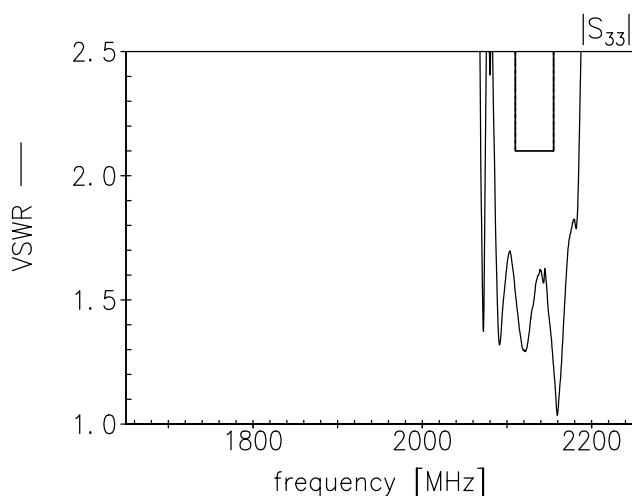
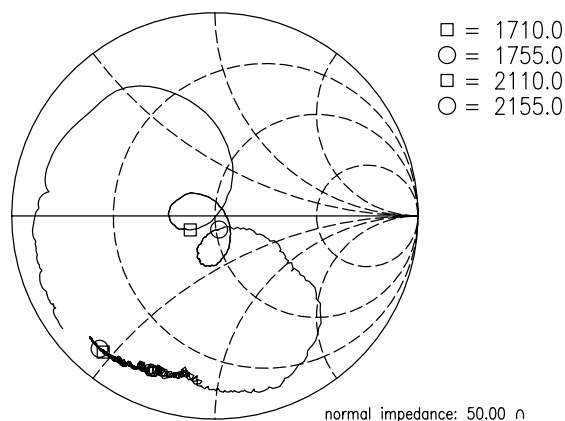
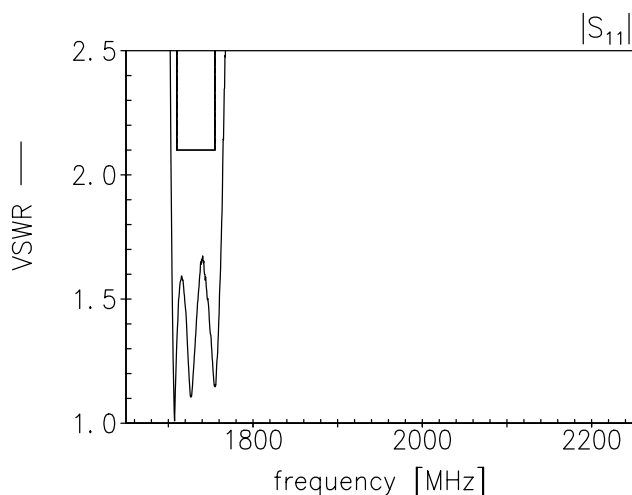


Return Loss

$S_{11}$  RX- port

$S_{22}$  ANT-port

$S_{33}$  TX-port



Data sheet


**References**

<b>Type</b>	B8026
<b>Ordering code</b>	B39212B8026P810
<b>Marking and package</b>	C61157-A3-A27
<b>Packaging</b>	F61074-V8232-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B8026_NB_UN.s3p , B8026_WB_UN.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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**Published by EPCOS AG**  
**Systems, Acoustics, Waves Business Group**  
**P.O. Box 80 17 09, 81617 Munich, GERMANY**

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