SAW Components

SAW Duplexer

LTE Band 7

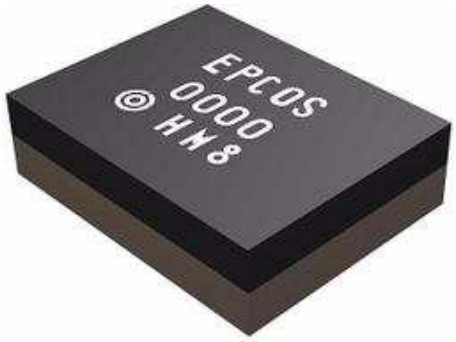
Series/type:	**B8659**
Ordering code:	**B39272B8659P810**
Date:	February 27, 2015
Version:	2.0

EPCOS AG is a TDK Group Company.

Data sheet SMD

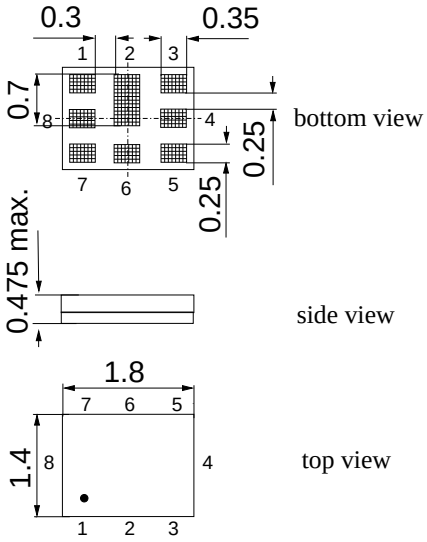
Application

- Low-loss SAW duplexer for mobile telephone LTE Band 7 systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 70 MHz
- 50 Ω single-ended in both in Antenna-Rx and Tx-Antenna paths



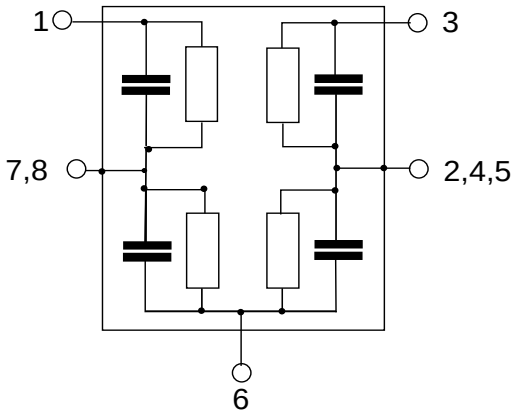
Features

- Package size 1.8 x 1.4 mm²
- Max. package height 0.475mm
- RoHS compatible
- Approx. weight 0.0042 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, Au-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- **M**oisture **S**ensitive **L**evel 3



Pin configuration

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



Data sheet SMD

Characteristics

Temperature range for specification: T = –20 ˚C to +90 ˚C
Ant terminating impedance: Z_{Ant} = 50 Ω || 2.7 nH
Rx terminating impedance: Z_{Rx} = 50 Ω
Tx terminating impedance: Z_{Tx} = 50 Ω

Characteristics Tx - Antenna		min.	typ. @ 25˚C	max.	
Center frequency	f_C	—	2535.0	—	MHz
Maximum insertion attenuation	α_{max}				
2500.0 ... 2570.0 MHz		—	1.8	2.8	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
2500.0 ... 2570.0 MHz		—	0.8	1.8	dB
Error Vector Magnitude	EVM[1)]				
@$f_{Carrier}$2502.4 ... 2567.6 MHz		—	0.7	2.5	%
@$f_{Carrier}$2502.4 ... 2567.6 MHz		—	0.7	2.0[2)]	%
Input VSWR (Tx port)					
2500.0 ... 2570.0 MHz		—	1.6	2.1	
Output VSWR (Ant port)					
2500.0 ... 2570.0 MHz		—	1.8	2.2	

1) Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141.
2) Valid for room temperature at 25˚C.

Data sheet SMD

Characteristics

Temperature range for specification: T = –20 ˚C to +90 ˚C
Ant terminating impedance: Z_{Ant} = 50 Ω || 2.7 nH
Rx terminating impedance: Z_{Rx} = 50 Ω
Tx terminating impedance: Z_{Tx} = 50 Ω

Characteristics Tx - Antenna				min.	typ. @ 25˚C	max.	
Attenuation			α				
10.0	...	1559.0	MHz	33	39	—	dB
1559.0	...	1563.0	MHz	33	38	—	dB
1565.42	...	1573.374	MHz	33	38	—	dB
1573.374	...	1577.466	MHz	32	38	—	dB
1577.466	...	1585.42	MHz	32	38	—	dB
1597.552	...	1605.886	MHz	32	38	—	dB
1605.886	...	1680.0	MHz	32	37	—	dB
1805.0	...	1880.0	MHz	30	36	—	dB
1900.0	...	1920.0	MHz	30	36	—	dB
2010.0	...	2025.0	MHz	30	35	—	dB
2110.0	...	2170.0	MHz	30	35	—	dB
2402.0	...	2440.0	MHz	33	36	—	dB
2440.0	...	2460.0	MHz	33	36	—	dB
2470.0	...	2474.0	MHz	14	39	—	dB
2474.0	...	2500.0	MHz	0.5	1.8	—	dB
2590.0	...	2620.0	MHz	1.5	8	—	dB
2620.0	...	2690.0	MHz	45	48	—	dB
4900.0	...	5000.0	MHz	30	37	—	dB
5000.0	...	5140.0	MHz	30	36	—	dB
5140.0	...	5280.0	MHz	30	36	—	dB
7500.0	...	7710.0	MHz	15	23	—	dB

Data sheet SMD

Characteristics

Temperature range for specification: T = –20 ˚C to +90 ˚C
Ant terminating impedance: Z_{Ant} = 50 Ω || 2.7 nH
Rx terminating impedance: Z_{Rx} = 50 Ω
Tx terminating impedance: Z_{Tx} = 50 Ω

Characteristics Antenna - Rx		min.	typ. @ 25˚C	max.	
Center frequency	f_C	—	2655.0	—	MHz
Maximum insertion attenuation	α_{max}				
2620.0 ... 2690.0 MHz		—	2.2	3.3	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
2620.0 ... 2690.0 MHz		—	0.7	1.9	dB
Input VSWR (Ant port)					
2620.0 ... 2690.0 MHz		—	1.9	2.2	
Output VSWR (Rx port)					
2620.0 ... 2690.0 MHz		—	1.8	2.1	
Attenuation	α				
10.0 ... 718.0 MHz		50	55	—	dB
45.0 MHz		50	90	—	dB
718.0 ... 748.0 MHz		50	55	—	dB
814.0 ... 849.0 MHz		45	53	—	dB
832.0 ... 862.0 MHz		45	53	—	dB
880.0 ... 915.0 MHz		45	52	—	dB
1710.0 ... 1785.0 MHz		37	41	—	dB
1920.0 ... 1980.0 MHz		37	40	—	dB
2400.0 ... 2500.0 MHz		40	43	—	dB
2500.0 ... 2570.0 MHz		45	57	—	dB
2570.0 ... 2600.0 MHz		3	8	—	dB
2775.0 ... 2790.0 MHz		40	46	—	dB
2790.0 ... 2810.0 MHz		40	46	—	dB
2810.0 ... 3660.0 MHz		37	41	—	dB
3600.0 ... 4900.0 MHz		35	42	—	dB
4900.0 ... 5300.0 MHz		33	41	—	dB
5300.0 ... 5950.0 MHz		30	36	—	dB
7620.0 ... 7830.0 MHz		10	15	—	dB

Characteristics

Temperature range for specification: T = –20 ˚C to +90 ˚C
Ant terminating impedance: Z_{Ant} = 50 Ω || 2.7 nH
Rx terminating impedance: Z_{Rx} = 50 Ω
Tx terminating impedance: Z_{Tx} = 50 Ω

Characteristics Antenna - Rx			min.	typ. @ 25˚C	max.	
IMD Product Level Limits[1)] at f_{Tx}=2535.0 MHz, f_{Rx}=2655.0 MHz						
Blocker 1	120.0	MHz	—	-130	-110	dBm
Blocker 2	2415.0	MHz	—	-109	-100	dBm
Blocker 3	5190.0	MHz	—	-111	-100	dBm

1) IMD product level limits for power levels P_{Tx}=21.5dBm (antenna port output power) and $P_{Blocker}$=-15dBm (antenna port input power)

Data sheet SMD

Characteristics

Temperature range for specification: T = –20 ˚C to +90 ˚C
Ant terminating impedance: Z_{Ant} = 50 Ω || 2.7 nH
Rx terminating impedance: Z_{Rx} = 50 Ω
Tx terminating impedance: Z_{Tx} = 50 Ω

Characteristics Tx - Rx				min.	typ. @ 25˚C	max.	
Isolation			α				
1574.0	...	1577.0	MHz	30	73	—	dB
2500.0	...	2560.0	MHz	54	57	—	dB
2560.0	...	2570.0	MHz	54[1)]	59	—	dB
2560.0	...	2570.0	MHz	47	59	—	dB
2620.0	...	2690.0	MHz	50	53	—	dB
5000.0	...	5140.0	MHz	30	59	—	dB
7500.0	...	7710.0	MHz	25	44	—	dB

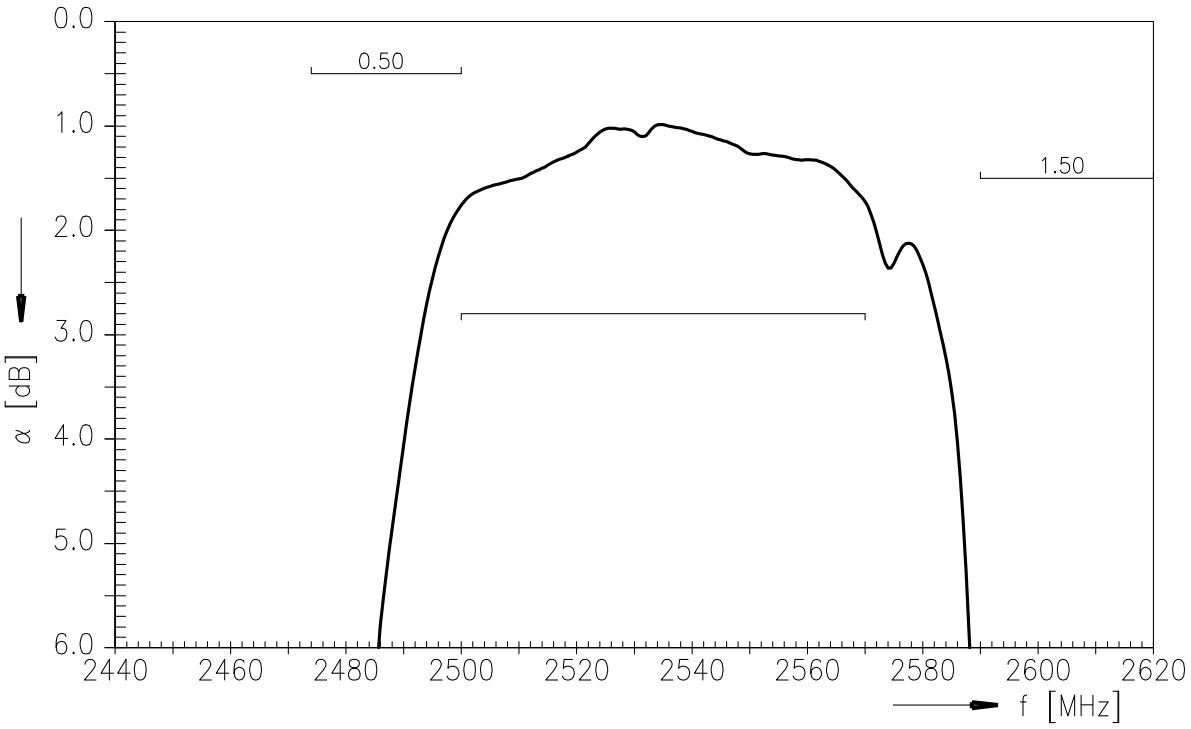
1) Valid for room temperature at 25˚C.

Maximum ratings

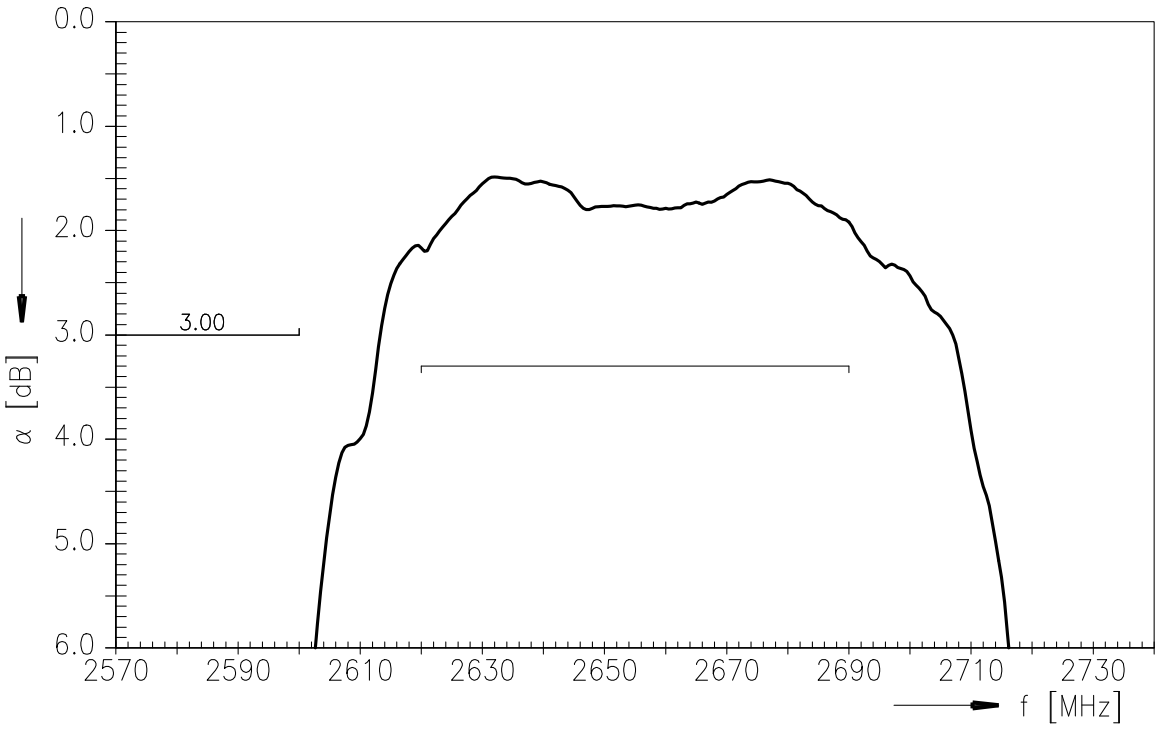
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	5[1)]	V	
ESD voltage	V_{ESD}	50[2)]	V	Machine Model
		300[3)]	V	Human Body Model
		600[4)]	V	Charged Device Model
Input power at	P_{IN}			
2500.0 ... 2570.0 MHz		28	dBm	} continuous wave 50˚C, 5000 h
elsewhere		10	dBm	

1) 168h Damp Heat Steady State acc. to IEC 60068-2-67 Cy.
2) acc. to JESD22-A115B (MM - Machine Model), 10 negative and 10 positive pulses.
3) acc. to JESD22-A114F (HBM - Human Body Model) , 1 negative & 1 positive pulses.
4) acc. to JESD22-C101C (CDM - Field Induced Charged Device Model) , 3 negative & 3 positive pulses.

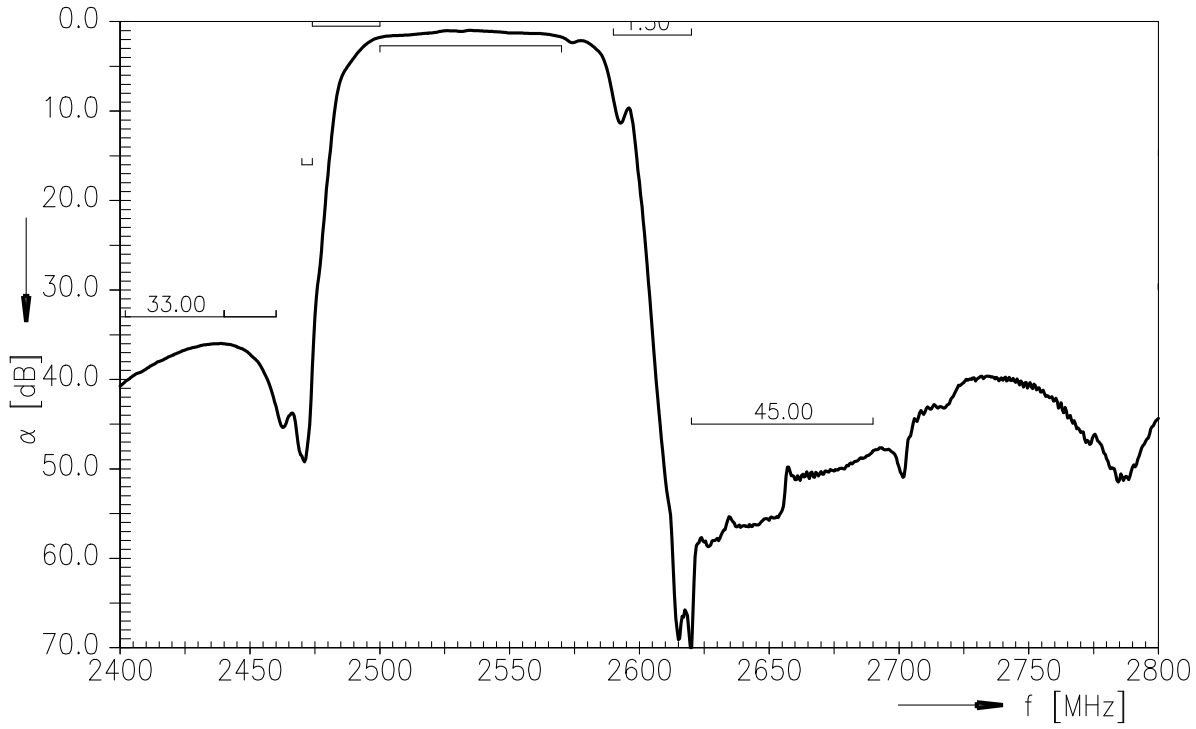
Frequency response Tx-Antenna (passband)



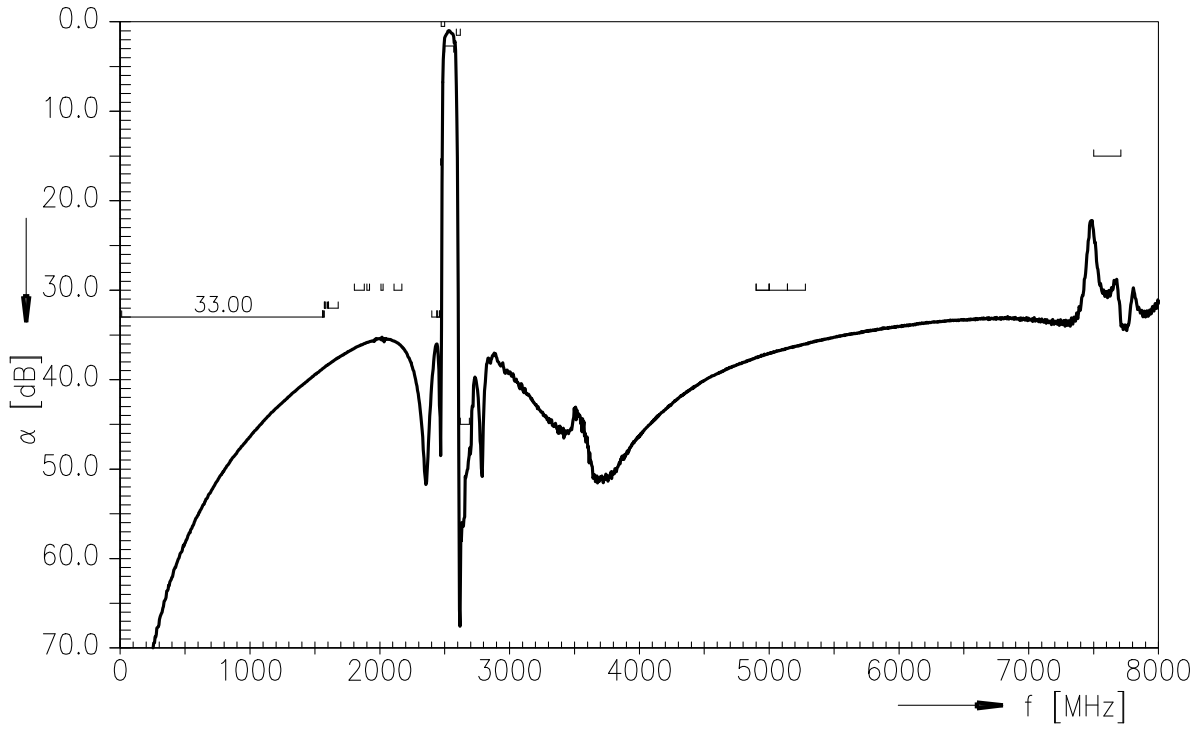
Frequency response Antenna-Rx (passband)



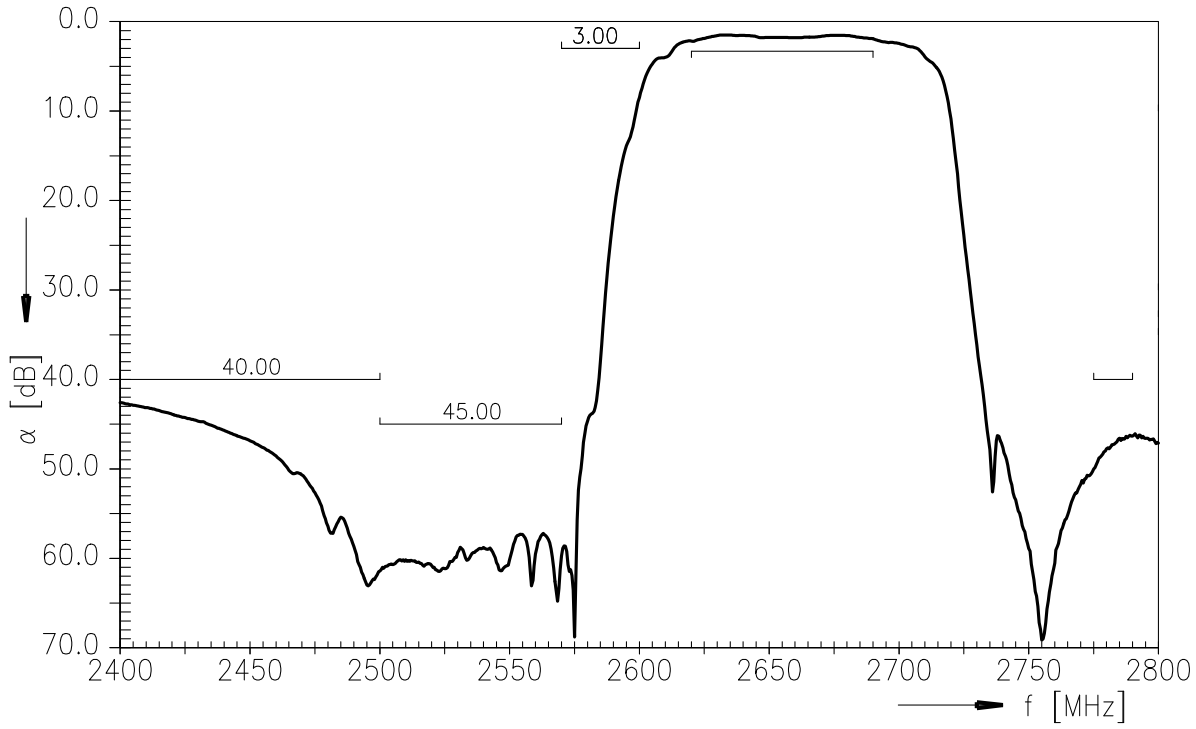
Frequency response Tx-Antenna (narrowband)



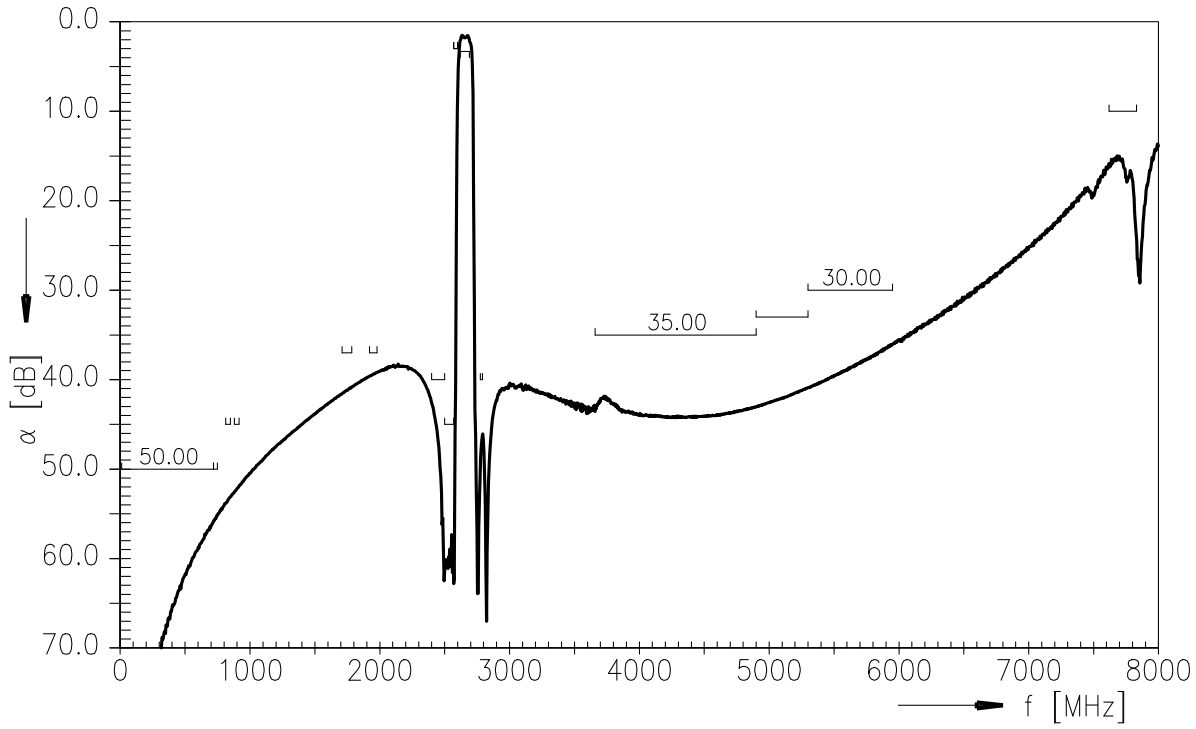
Frequency response Tx-Antenna (wideband)



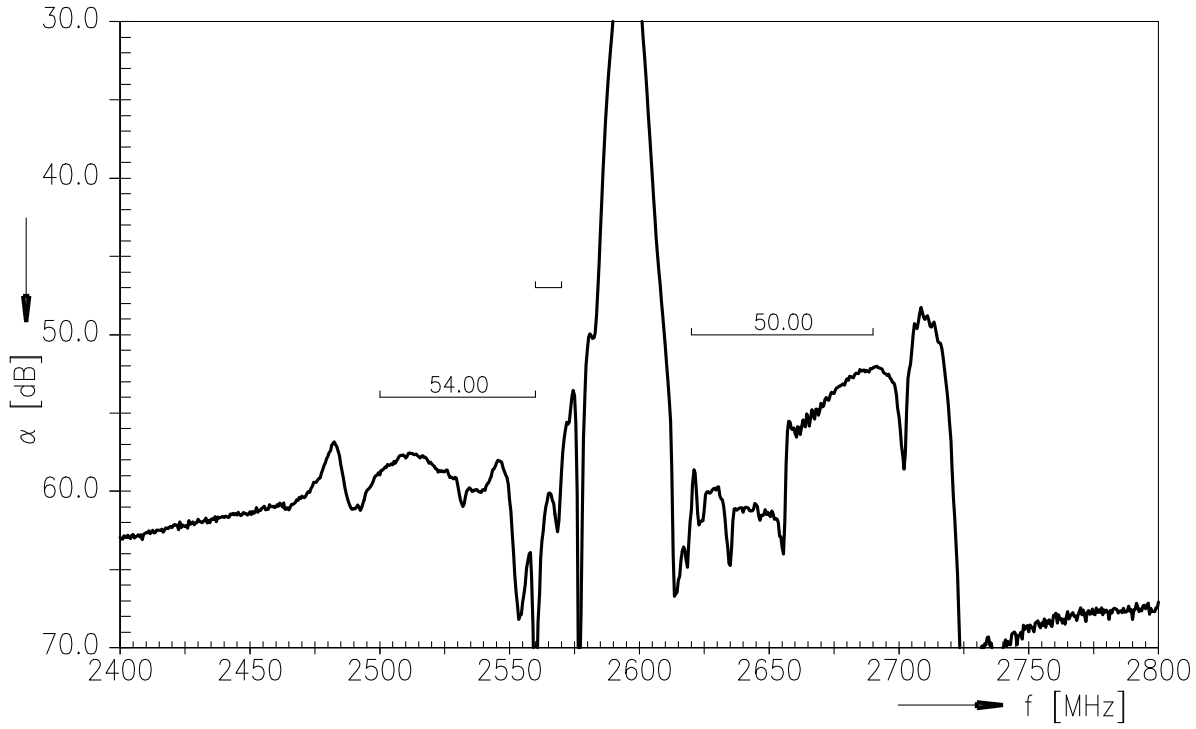
Frequency response Antenna-Rx (narrowband)



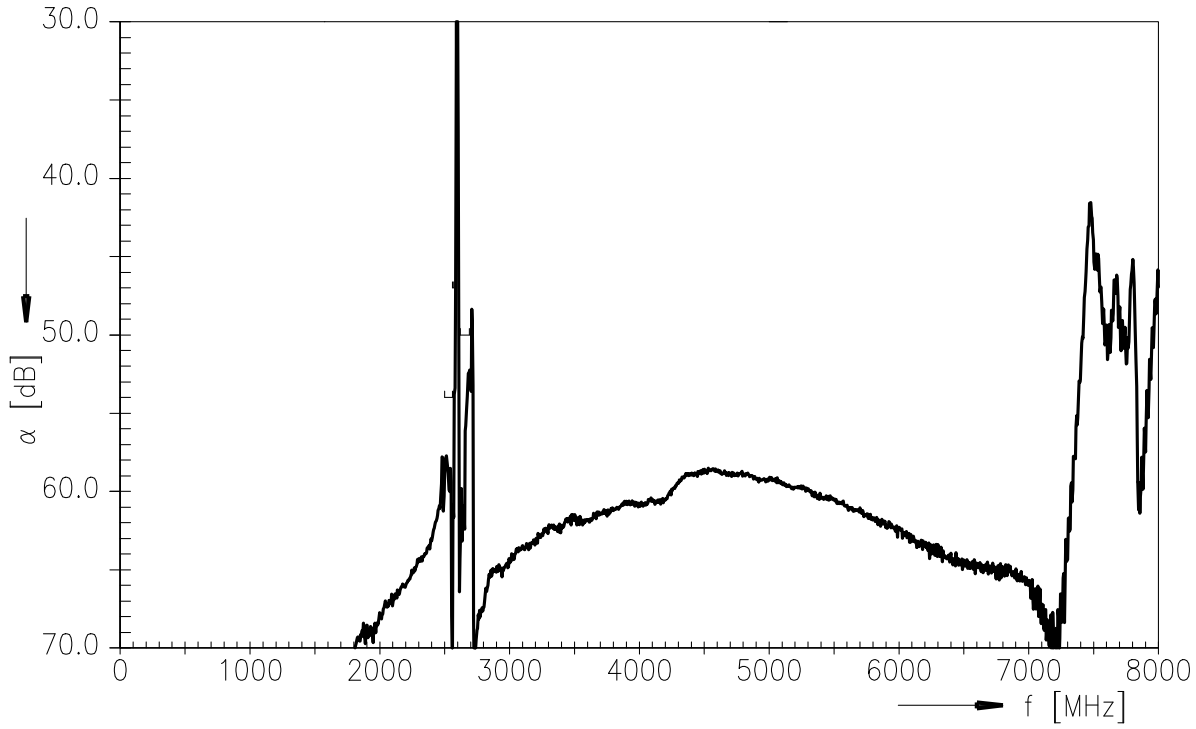
Frequency response Antenna-Rx (wideband)



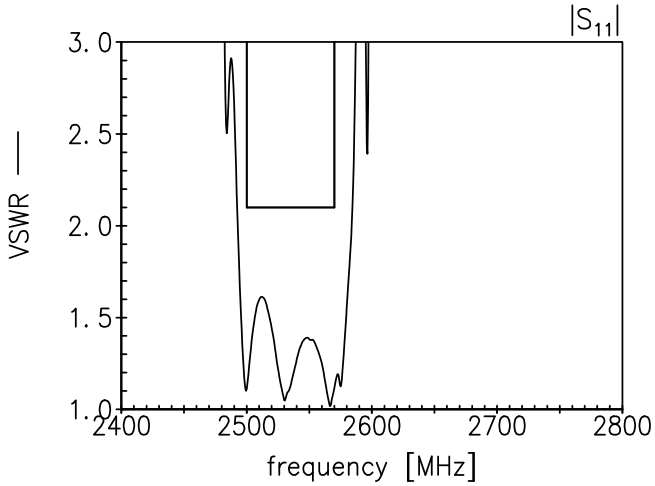
Frequency response Tx-Rx (narrowband)

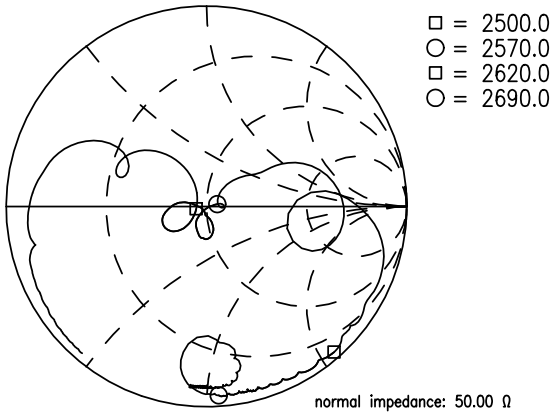


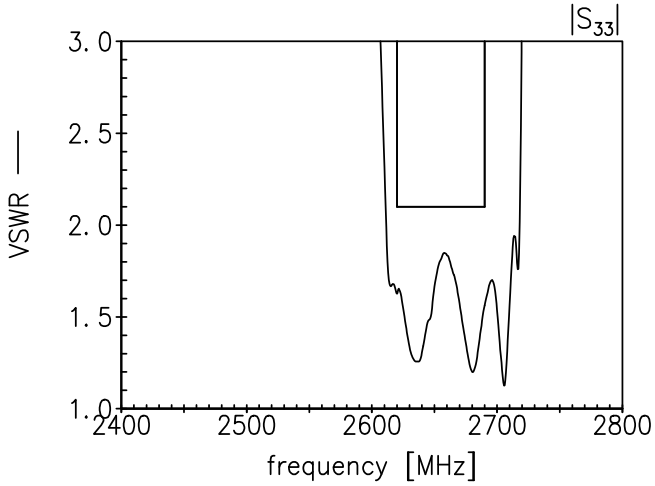
Frequency response Tx-Rx (wideband)

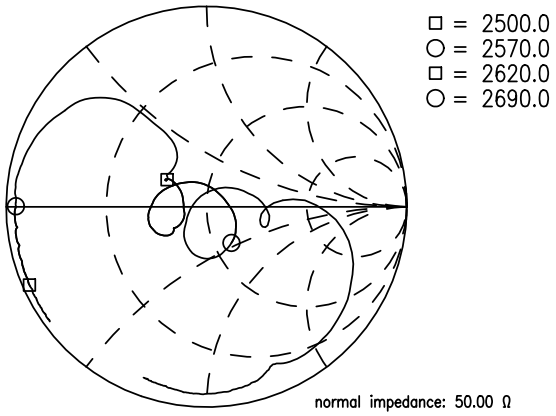


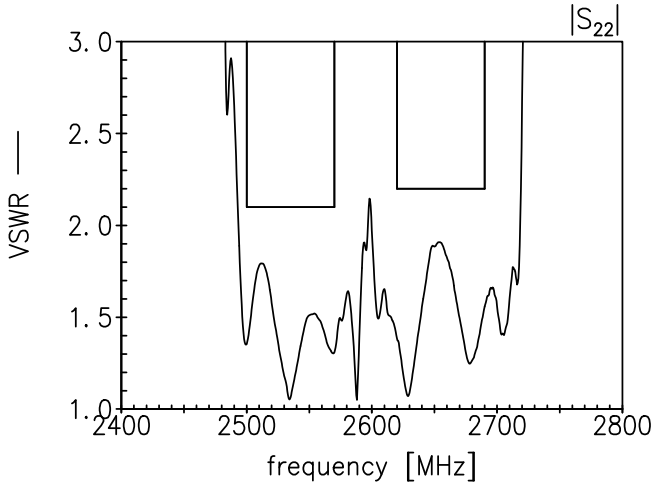
VSWR **S_{11} Tx-port** **S_{22} Antenna-port** **S_{33} Rx-port**

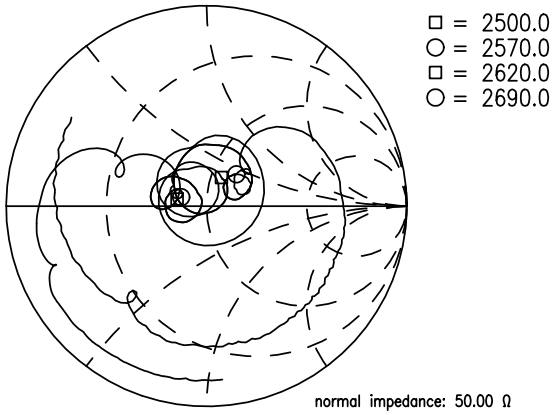












References

Type	B8659
Ordering code	B39272B8659P810
Marking and package	C61157-A8-A98
Packaging	F61074-V8259-Z000
Date codes	L_1126
S-parameters	B8659_NB_UN.s3p, B8659_WB_UN.s3p See file header for pin/port assignment.
Soldering profile	S_6001
RoHS compatible	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 8th, 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.
Moldability	Before using in overmolding environment, please contact your EPCOS sales office.
Matching coils	See Inductor pdf-catalog http://www.tdk.co.jp/tefe02/coil.htm#aname1 and Data Library for circuit simulation http://www.tdk.co.jp/etvcl/index.htm

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