



# SAW Components

Data Sheet B4140





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B4140

Low-Loss Filter for Mobile Communication

897,50 MHz

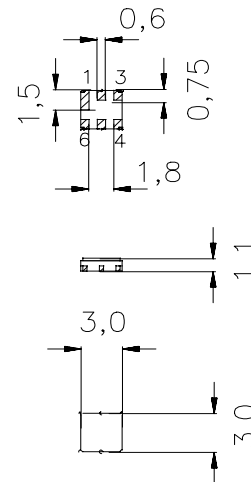
Data Sheet



Ceramic package DCC6D

**Features**

- Low-loss RF filter for mobile telephone EGSM systems, transmit path
- Low amplitude ripple
- Usable passband 35 MHz
- Balanced to unbalanced Operation
- Impedance transformation from 200 Ω to 50 Ω
- Ceramic package for Surface Mounted Technology (SMT)



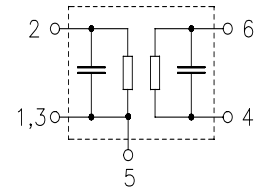
**Terminals**

- Ni, gold-plated

Dimensions in mm, approx. weight 0,037 g

**Pin configuration**

- 4, 6 Input, balanced
- 5 To be grounded
- 2 Output, unbalanced
- 1, 3 Output ground
- 1, 3, 5 Case ground



Type	Ordering code	Marking and Package according to	Packing according to
B4140	B39901-B4140-U510	C61157-A7-A68	F61074-V8089-Z000

Electrostatic Sensitive Device (ESD)

**Maximum ratings**

Operable temperature range	$T$	- 25/ + 80	°C	source impedance 50 Ω, load impedance 200 Ω, peak power of GSM signal, duty cycle 2 : 8 duty cycle 1 : 8
Storage temperature range	$T_{stg}$	- 40 / + 85	°C	
DC voltage	$V_{DC}$	0	V	
Input power max. 880 ... 915 MHz	$P_{IN}$	8,5 10,0	dBm dBm	



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**Characteristics**

Operating temperature range:  $T = 25 \pm 2 \text{ }^\circ\text{C}$   
 Terminating source impedance:  $Z_S = 50 \text{ } \Omega$   
 Terminating load impedance:  $Z_L = 200 \text{ } \Omega \parallel 56 \text{ nH}$   
 ( L simulated with Q factor 20 )

				min.	typ.	max.	
<b>Center frequency</b>		$f_C$		—	897,5	—	MHz
<b>Maximum insertion attenuation</b>	880,0 ... 915,0	$\alpha_{\max}$	MHz	—	2,8	3,4	dB
<b>Amplitude ripple (p-p)</b>	880,0 ... 915,0	$\Delta\alpha$	MHz	—	1,2	1,5	dB
<b>Input VSWR</b>	880,0 ... 915,0		MHz	—	1,7	2,0	
<b>Output VSWR</b>	880,0 ... 915,0		MHz	—	1,6	2,0	
<b>Attenuation</b>		$\alpha$					
	0,0 ... 600,0		MHz	60	77	—	dB
	600,0 ... 800,0		MHz	50	72	—	dB
	800,0 ... 860,0		MHz	40	44	—	dB
	925,0 ... 935,0		MHz	9	14	—	dB
	935,0 ... 960,0		MHz	25	27	—	dB
	960,0 ... 1000,0		MHz	25	40	—	dB
	1000,0 ... 1050,0		MHz	40	64	—	dB
	1050,0 ... 1500,0		MHz	55	68	—	dB
	1500,0 ... 2000,0		MHz	50	70	—	dB
	2000,0 ... 3000,0		MHz	30	44	—	dB
	3000,0 ... 5000,0		MHz	18	29	—	dB
	5000,0 ... 6000,0		MHz	10	28	—	dB
<b>Symmetry in band</b>	(referenced to the matched operating condition)						
	$ S_{31} / S_{21} $	880,0 ... 915,0	MHz	-1,0	0	1,0	dB
	$\arg(S_{31}/S_{21})$	880,0 ... 915,0	MHz	170	180	190	$^\circ$



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**Characteristics**

Operating temperature range:  $T = +20$  to  $+40$  °C  
 Terminating source impedance:  $Z_S = 50 \Omega$   
 Terminating load impedance:  $Z_L = 200 \Omega \parallel 56 \text{ nH}$   
 ( L simulated with Q factor 20 )

				min.	typ.	max.	
<b>Center frequency</b>		$f_C$		—	897,5	—	MHz
<b>Maximum insertion attenuation</b>	880,0 ... 915,0	MHz	$\alpha_{\max}$	—	2,9	3,6	dB
<b>Amplitude ripple (p-p)</b>	880,0 ... 915,0	MHz	$\Delta\alpha$	—	1,3	1,7	dB
<b>Input VSWR</b>	880,0 ... 915,0	MHz		—	1,7	2,0	
<b>Output VSWR</b>	880,0 ... 915,0	MHz		—	1,6	2,0	
<b>Attenuation</b>			$\alpha$				
	0,0 ... 600,0	MHz		60	77	—	dB
	600,0 ... 800,0	MHz		50	72	—	dB
	800,0 ... 860,0	MHz		40	44	—	dB
	925,0 ... 935,0	MHz		9	13	—	dB
	935,0 ... 960,0	MHz		25	27	—	dB
	960,0 ... 1000,0	MHz		25	40	—	dB
	1000,0 ... 1050,0	MHz		40	64	—	dB
	1050,0 ... 1500,0	MHz		55	68	—	dB
	1500,0 ... 2000,0	MHz		50	70	—	dB
	2000,0 ... 3000,0	MHz		30	44	—	dB
	3000,0 ... 5000,0	MHz		18	29	—	dB
	5000,0 ... 6000,0	MHz		10	28	—	dB
<b>Symmetry in band</b>							
	(referenced to the matched operating condition)						
	$ S_{31} / S_{21} $	880,0 ... 915,0	MHz	-1,0	0	1,0	dB
	$\arg(S_{31}/S_{21})$	880,0 ... 915,0	MHz	170	180	190	°



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**Characteristics**

Operating temperature range:  $T = +10$  to  $+60$  °C  
 Terminating source impedance:  $Z_S = 50 \Omega$   
 Terminating load impedance:  $Z_L = 200 \Omega \parallel 56 \text{ nH}$   
 ( L simulated with Q factor 20 )

				min.	typ.	max.	
<b>Center frequency</b>		$f_C$		—	897,5	—	MHz
<b>Maximum insertion attenuation</b>	880,0 ... 915,0	MHz	$\alpha_{\max}$	—	2,9	3,8	dB
<b>Amplitude ripple (p-p)</b>	880,0 ... 915,0	MHz	$\Delta\alpha$	—	1,3	1,9	dB
<b>Input VSWR</b>	880,0 ... 915,0	MHz		—	1,7	2,0	
<b>Output VSWR</b>	880,0 ... 915,0	MHz		—	1,6	2,0	
<b>Attenuation</b>			$\alpha$				
	0,0 ... 600,0	MHz		60	77	—	dB
	600,0 ... 800,0	MHz		50	72	—	dB
	800,0 ... 860,0	MHz		40	44	—	dB
	925,0 ... 935,0	MHz		8	12	—	dB
	935,0 ... 960,0	MHz		24	27	—	dB
	960,0 ... 1000,0	MHz		25	40	—	dB
	1000,0 ... 1050,0	MHz		40	64	—	dB
	1050,0 ... 1500,0	MHz		55	68	—	dB
	1500,0 ... 2000,0	MHz		50	70	—	dB
	2000,0 ... 3000,0	MHz		30	44	—	dB
	3000,0 ... 5000,0	MHz		18	29	—	dB
	5000,0 ... 6000,0	MHz		10	28	—	dB
<b>Symmetry in band</b> (referenced to the matched operating condition)							
	$ S_{31} / S_{21} $	880,0 ... 915,0	MHz	-1,0	0	1,0	dB
	$\arg(S_{31}/S_{21})$	880,0 ... 915,0	MHz	170	180	190	°



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**Characteristics**

Operating temperature range:  $T = -10$  to  $+80$  °C  
 Terminating source impedance:  $Z_S = 50 \Omega$   
 Terminating load impedance:  $Z_L = 200 \Omega \parallel 56$  nH  
 ( L simulated with Q factor 20 )

				min.	typ.	max.	
<b>Center frequency</b>		$f_C$		—	897,5	—	MHz
<b>Maximum insertion attenuation</b>	880,0 ... 915,0	MHz	$\alpha_{max}$	—	3,2	4,2	dB
<b>Amplitude ripple (p-p)</b>	880,0 ... 915,0	MHz	$\Delta\alpha$	—	1,6	2,3	dB
<b>Input VSWR</b>	880,0 ... 915,0	MHz		—	1,7	2,2	
<b>Output VSWR</b>	880,0 ... 915,0	MHz		—	1,6	2,2	
<b>Attenuation</b>			$\alpha$				
	0,0 ... 600,0	MHz		60	77	—	dB
	600,0 ... 800,0	MHz		50	72	—	dB
	800,0 ... 860,0	MHz		35	44	—	dB
	925,0 ... 935,0	MHz		7	11	—	dB
	935,0 ... 960,0	MHz		23	26	—	dB
	960,0 ... 1000,0	MHz		25	40	—	dB
	1000,0 ... 1050,0	MHz		40	64	—	dB
	1050,0 ... 1500,0	MHz		55	68	—	dB
	1500,0 ... 2000,0	MHz		50	70	—	dB
	2000,0 ... 3000,0	MHz		30	44	—	dB
	3000,0 ... 5000,0	MHz		18	29	—	dB
	5000,0 ... 6000,0	MHz		10	28	—	dB
<b>Symmetry in band</b>							
(referenced to the matched operating condition)							
	$ S_{31} / S_{21} $	880,0 ... 915,0	MHz	-1,0	0	1,0	dB
	$\arg(S_{31}/S_{21})$	880,0 ... 915,0	MHz	170	180	190	°



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**Characteristics**

Operating temperature range:  $T = -25$  to  $+70$  °C  
 Terminating source impedance:  $Z_S = 50 \Omega$   
 Terminating load impedance:  $Z_L = 200 \Omega \parallel 56 \text{ nH}$   
 ( L simulated with Q factor 20 )

				min.	typ.	max.	
<b>Center frequency</b>		$f_C$		—	897,5	—	MHz
<b>Maximum insertion attenuation</b>	880,0 ... 915,0	MHz	$\alpha_{max}$	—	3,4	4,5	dB
<b>Amplitude ripple (p-p)</b>	880,0 ... 915,0	MHz	$\Delta\alpha$	—	1,8	2,9	dB
<b>Input VSWR</b>	880,0 ... 915,0	MHz		—	2,1	2,4	
<b>Output VSWR</b>	880,0 ... 915,0	MHz		—	2,4	2,5	
<b>Attenuation</b>			$\alpha$				
	0,0 ... 600,0	MHz		60	77	—	dB
	600,0 ... 800,0	MHz		50	72	—	dB
	800,0 ... 860,0	MHz		35	44	—	dB
	860,0 ... 870,0	MHz		10	36	—	dB
	925,0 ... 935,0	MHz		7	11	—	dB
	935,0 ... 960,0	MHz		23	26	—	dB
	960,0 ... 1000,0	MHz		25	40	—	dB
	1000,0 ... 1050,0	MHz		40	64	—	dB
	1050,0 ... 1500,0	MHz		55	68	—	dB
	1500,0 ... 2000,0	MHz		50	70	—	dB
	2000,0 ... 3000,0	MHz		30	44	—	dB
	3000,0 ... 5000,0	MHz		18	29	—	dB
	5000,0 ... 6000,0	MHz		10	28	—	dB
<b>Symmetry in band</b>							
(referenced to the matched operating condition)							
	$ S_{31} / S_{21} $	880,0 ... 915,0	MHz	-1,0	0	1,0	dB
	$\arg(S_{31}/S_{21})$	880,0 ... 915,0	MHz	170	180	190	°



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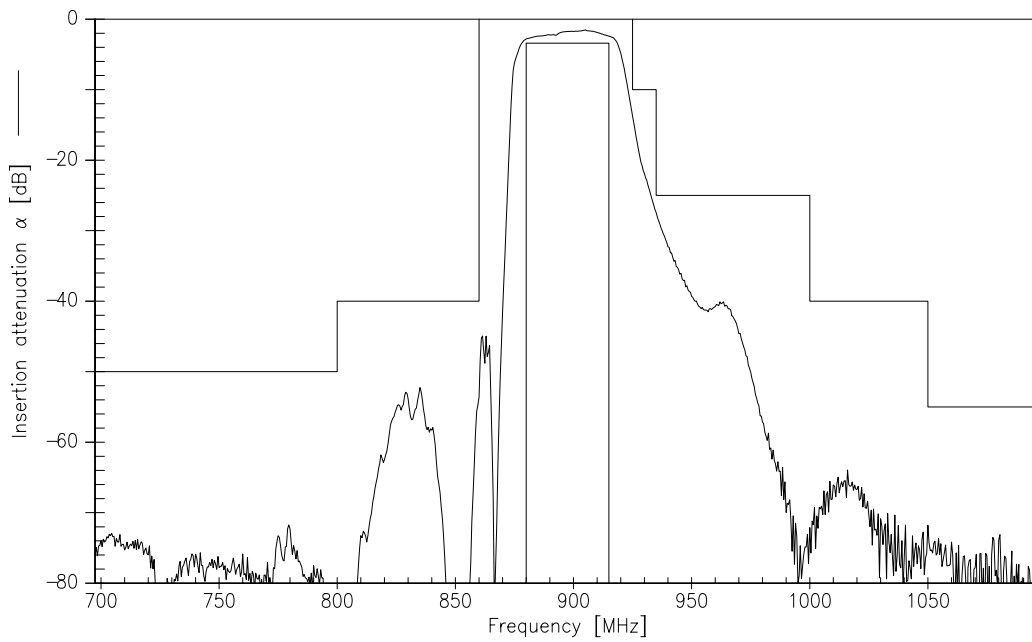
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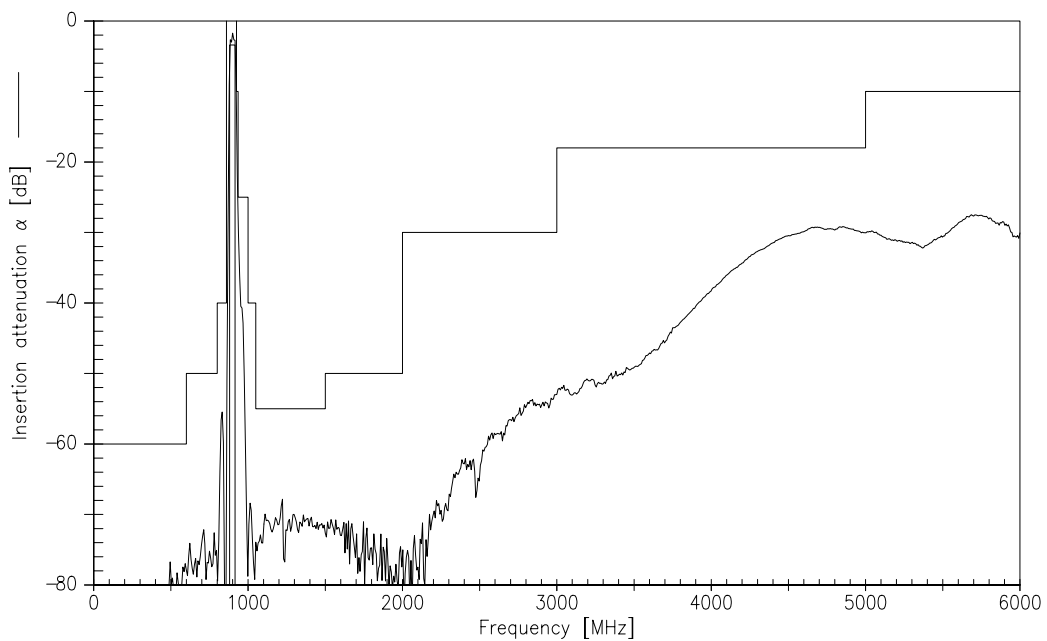
Data Sheet



Transfer function ( spec at 25 °C )

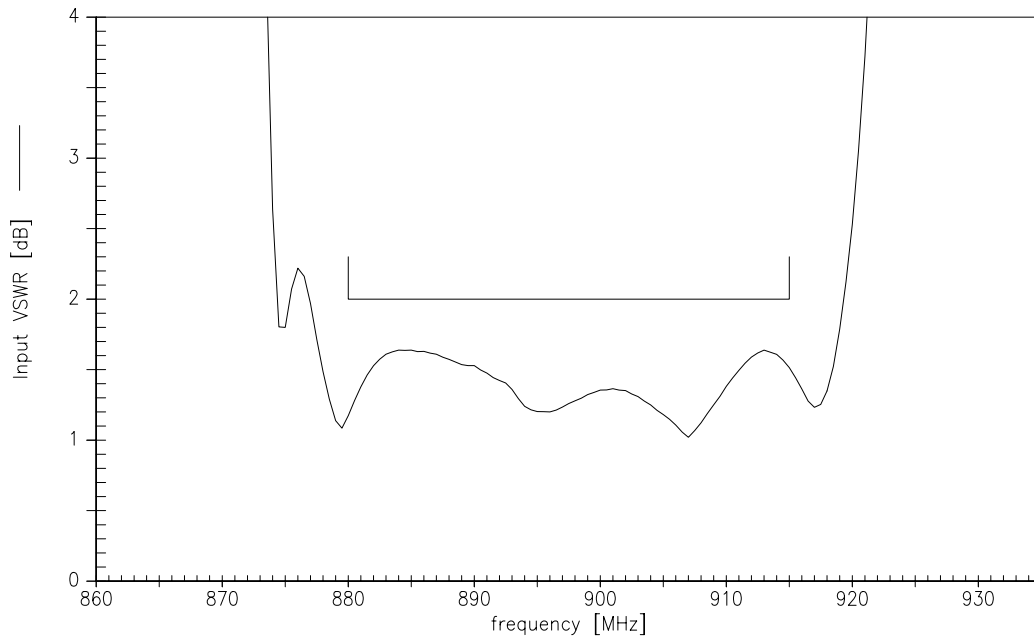


Transfer function ( wideband )

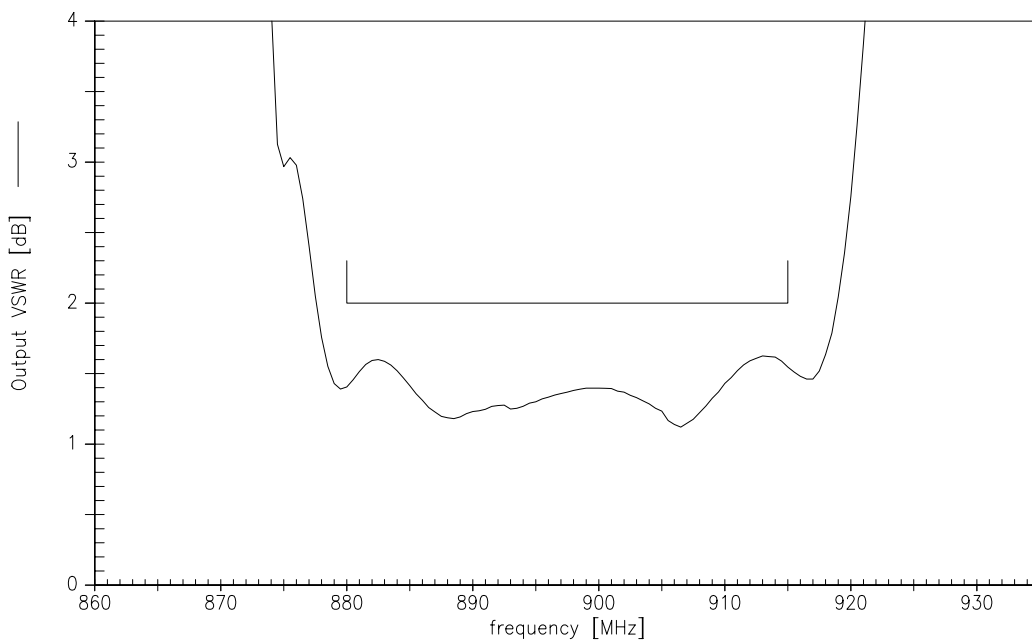




Input VSWR ( spec at 25 °C )

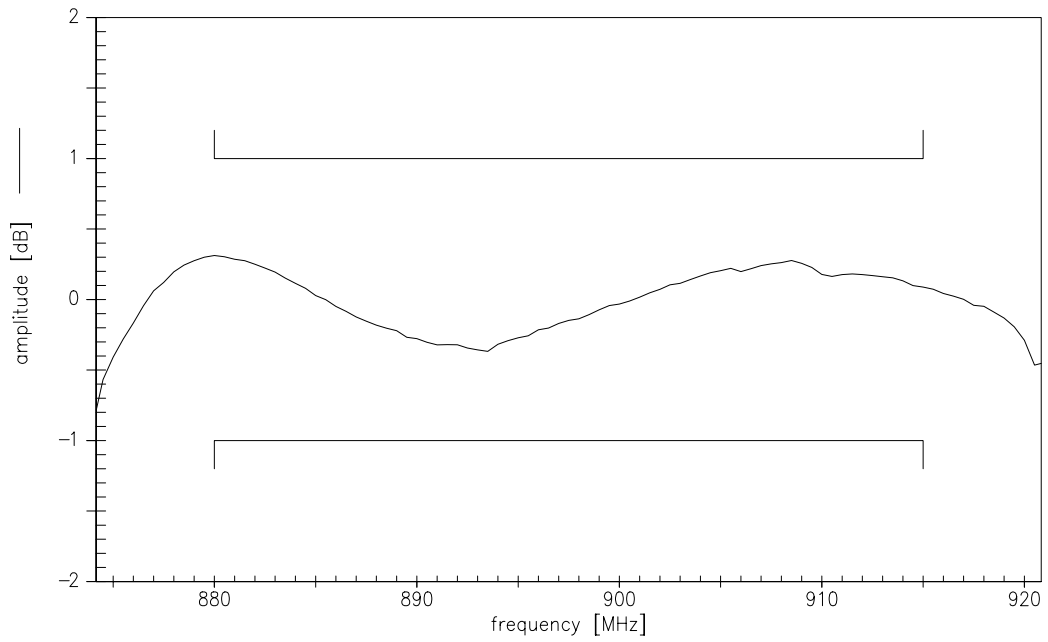


Output VSWR

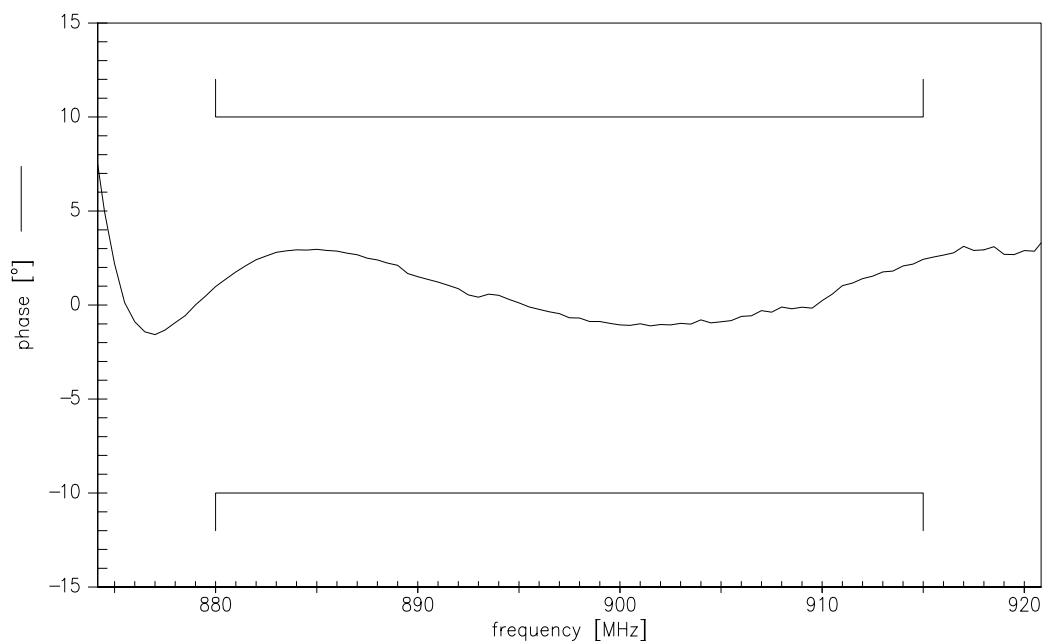




**Amplitude Symmetry  $|S_{31}|/|S_{21}|$**  (referenced to the matched operating condition)



**Phase Symmetry  $\arg(S_{31}/S_{21}) - 180^\circ$**  (referenced to the matched operating condition)





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