



SAW Components

SAW Duplexer for Smallcell

Band 13 (3G/LTE)

Series/type: B8006
Ordering code: B39781B8006P810

Date: February 25, 2015
Version: 2.1

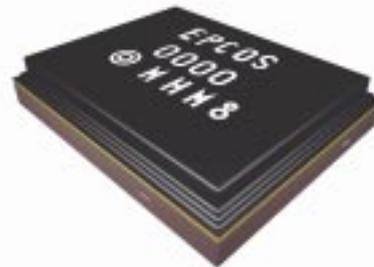
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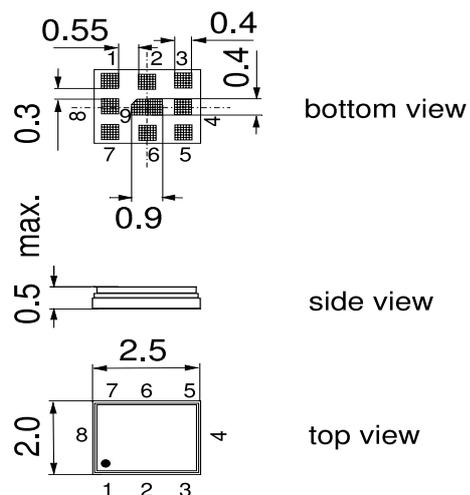
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Application

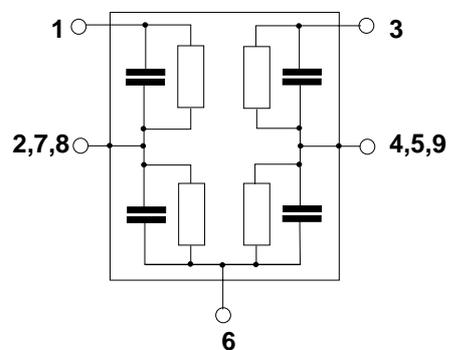
- Low-loss SAW duplexer for LTE smallcell systems (Band 13)
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 10 MHz
- High power durability
- Industrial qualification
- Rx = Uplink = 777-787 MHz
- Tx = Downlink = 746-756 MHz


Features

- Package size 2.5 * 2.0 * 0.5 mm³
- 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

- 1 RX output
- 3 TX input
- 6 Antenna
- 2, 4, 5, 7, 8, 9 To be grounded



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Characteristics

Temperature range for specification:	T = -10 °C to +85 °C
Antenna terminating impedance:	Z _{ANT} = 50 Ω 17 nH
RX terminating impedance:	Z _{RX} = 50 Ω
TX terminating impedance:	Z _{TX} = 50 Ω

Characteristics ANT - RX		min.	typ. @ 25 °C	max.	
Center frequency	f _C		782.0		MHz
Maximum insertion attenuation 777.0 ... 787.0 MHz	α _{max}	-	1.9	2.5	dB
Amplitude ripple (p-p) 777.0 ... 787.0 MHz	Δα	-	0.6	1.5	dB
Error Vector Magnitude @f _{carrier} 779.5 ... 784.5 MHz	EVM ¹⁾	-	2.2	3.0	%
Input VSWR (ANT port) 777.0 ... 787.0 MHz		-	1.5	1.8	
Output VSWR (RX port) 777.0 ... 787.0 MHz		-	1.6	1.8	
Attenuation	α				
10.0 ... 150.0 MHz		40	55	-	dB
150.0 ... 350.0 MHz		35	45	-	dB
350.0 ... 650.0 MHz		30	37	-	dB
728.0 ... 746.0 MHz		35	50	-	dB
746.0 ... 756.0 MHz		50	57	-	dB
758.0 ... 768.0 MHz		28	30	-	dB
808.0 ... 818.0 MHz		35	47	-	dB
859.0 ... 894.0 MHz		35	45	-	dB
1452.0 ... 1492.0 MHz		40	52	-	dB
1554.0 ... 1574.0 MHz		40	52	-	dB
1574.0 ... 1606.0 MHz		45	52	-	dB
1670.0 ... 1675.0 MHz		40	50	-	dB
1930.0 ... 1995.0 MHz		40	48	-	dB
2110.0 ... 2170.0 MHz		40	49	-	dB
2300.0 ... 2361.0 MHz		28	33	-	dB
2361.0 ... 2690.0 MHz		30	42	-	dB
3300.0 ... 3800.0 MHz		15	22	-	dB
5150.0 ... 5850.0 MHz		5	12	-	dB

¹⁾ 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 _{ANT} = 50 Ω 17 nH
RX terminating impedance:	Z _{RX} = 50 Ω
TX terminating impedance:	Z _{TX} = 50 Ω

Characterisitcs TX - ANT		min.	typ. @ 25 °C	max.	
Center frequency	f _C		751.0		MHz
Maximum insertion attenuation 746.0 ... 756.0 MHz	α _{max}	-	1.6	2.0	dB
Amplitude ripple (p-p) 746.0 ... 756.0 MHz	Δα	-	0.4	1.0	dB
Error Vector Magnitude @f _{carrier} 748.5 ... 753.5 MHz	EVM ¹⁾	-	1.6	2.5	%
Input VSWR (TX port) 746.0 ... 756.0 MHz		-	1.5	1.8	
Output VSWR (ANT port) 746.0 ... 756.0 MHz		-	1.4	1.8	
Attenuation	α				
10.0 ... 150.0 MHz		40	55	-	dB
150.0 ... 350.0 MHz		35	45	-	dB
350.0 ... 650.0 MHz		30	38	-	dB
698.0 ... 716.0 MHz		35	38	-	dB
716.0 ... 722.0 MHz		38	43	-	dB
777.0 ... 787.0 MHz		54	58	-	dB
788.0 ... 798.0 MHz		45	52	-	dB
798.0 ... 849.0 MHz		35	43	-	dB
1492.0 ... 1543.0 MHz		35	39	-	dB
1554.0 ... 1574.0 MHz		35	39	-	dB
1574.0 ... 1606.0 MHz		35	40	-	dB
1710.0 ... 1770.0 MHz		35	40	-	dB
1850.0 ... 1915.0 MHz		35	40	-	dB
1920.0 ... 1980.0 MHz		35	40	-	dB
2200.0 ... 2690.0 MHz		33	38	-	dB
2690.0 ... 3800.0 MHz		25	43	-	dB
5150.0 ... 5850.0 MHz		5	25	-	dB

¹⁾ 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 _{ANT} = 50 Ω 17 nH
RX terminating impedance:	Z _{RX} = 50 Ω
TX terminating impedance:	Z _{TX} = 50 Ω

Characteristics TX-RX				min.	typ. @ 25 °C	max.	
Attenuation			α				
	746.0 ... 756.0 MHz			50	60	-	dB
	777.0 ... 787.0 MHz			52	58	-	dB

Maximum Ratings

Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	0	V	
ESD voltage	V _{ESD}	50 ¹⁾	V	
Input power at pin 1				machine model, 1 pulse source and load impedance 50 Ω Pin 28 dBm average - 39 dBm peak } LTE 5 MHz downlink T = 55 °C, 100.000 h
746.0 ...756.0 MHz	P _{in}	28 ²⁾	dBm	
elsewhere	P _{in}	10	dBm	
Operating lifetime with Output power at antenna				source and load impedance 50 Ω
746.0 ...756.0 MHz	P _{out}	24 ³⁾	dBm	Continuous wave T=55°C, 100khrs

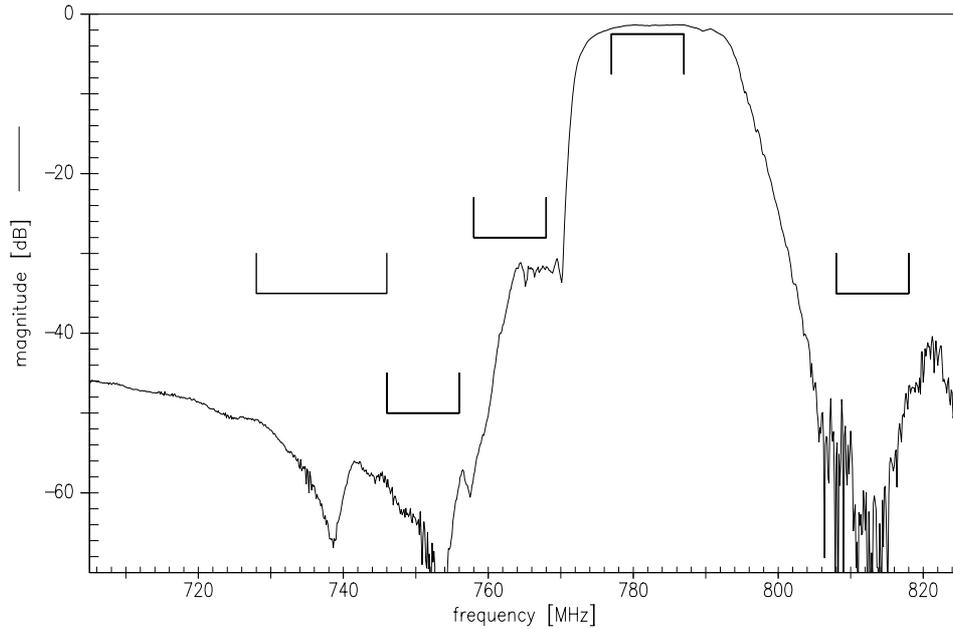
¹⁾ According to JESD22-A115A (machine model), 1 negative and 1 positive pulses.

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

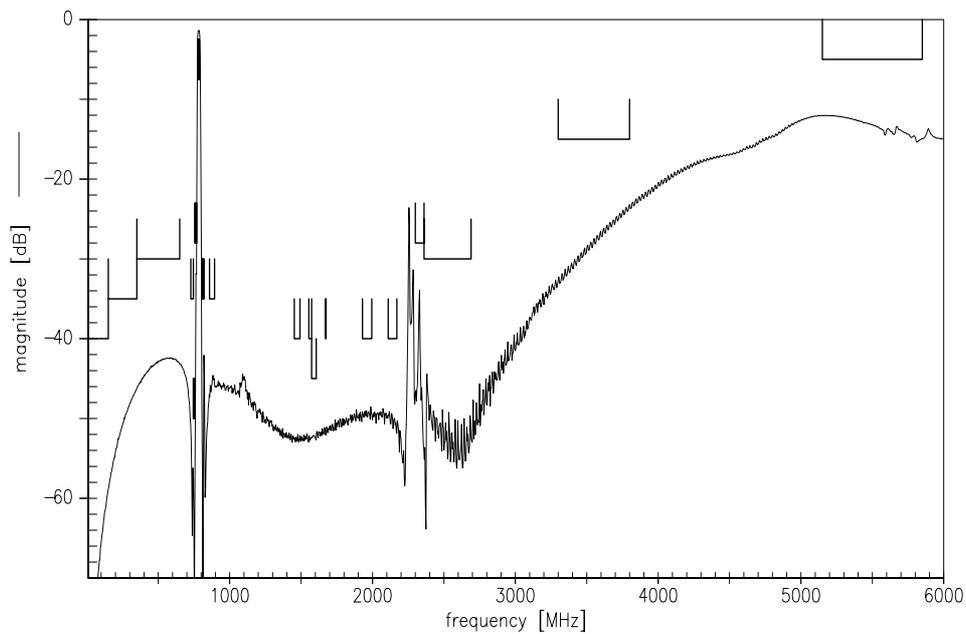
³⁾ according to accelerated High Temperature Operating Life (HTOL) test.



Frequency Response ANT-RX



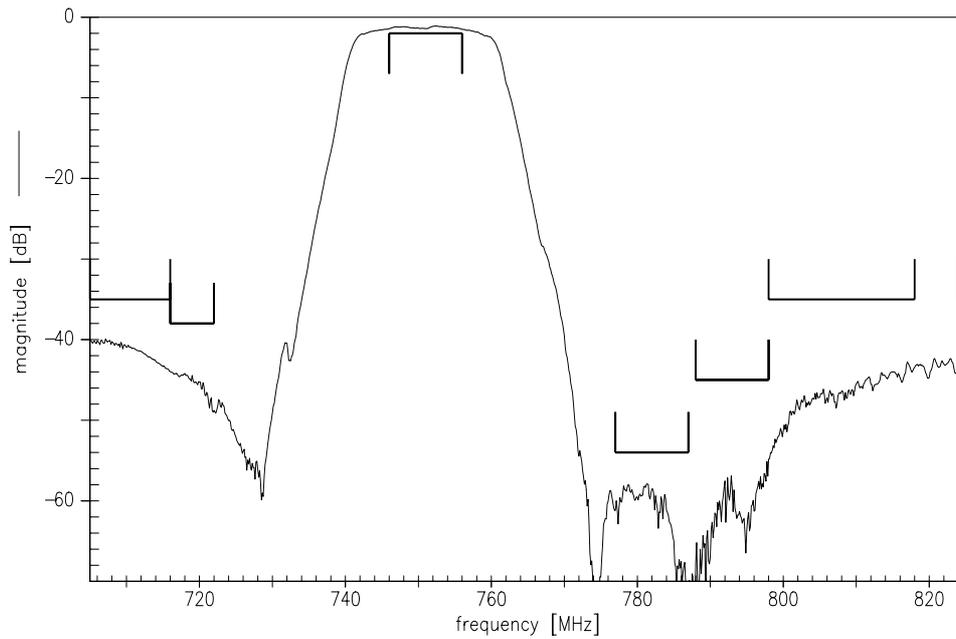
Frequency Response ANT-RX



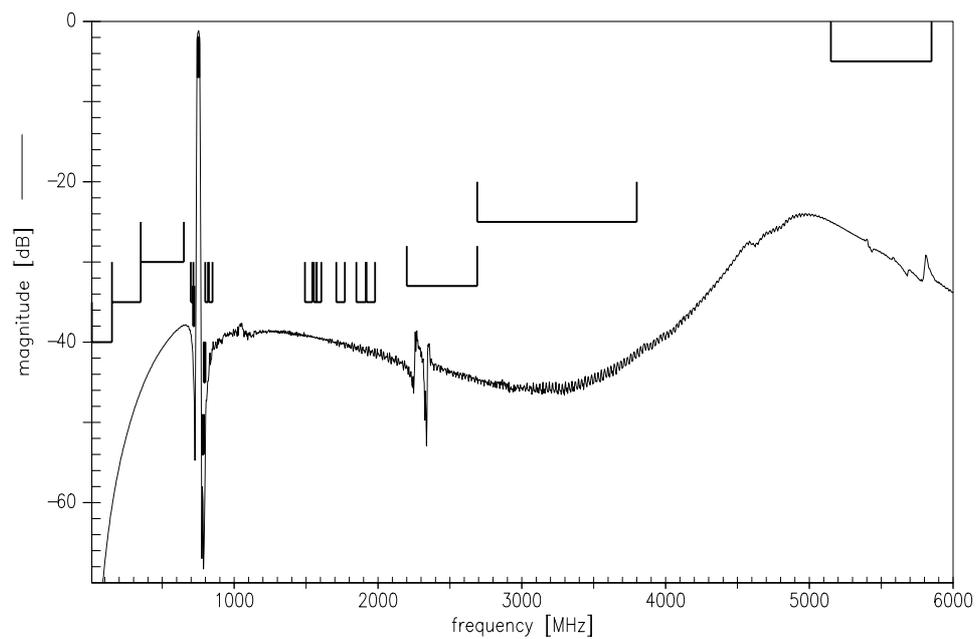
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Frequency Response TX-ANT



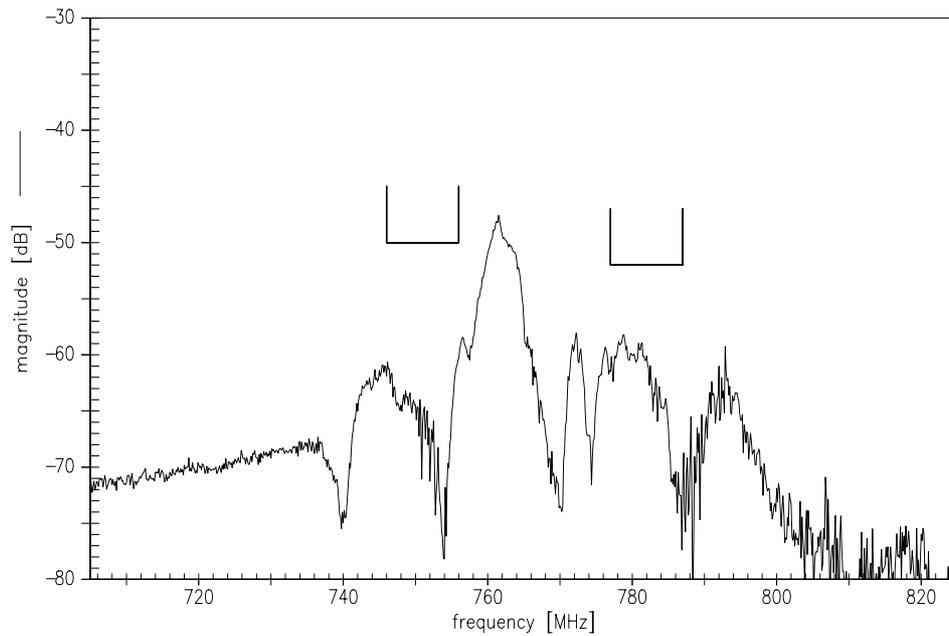
Frequency Response TX-ANT



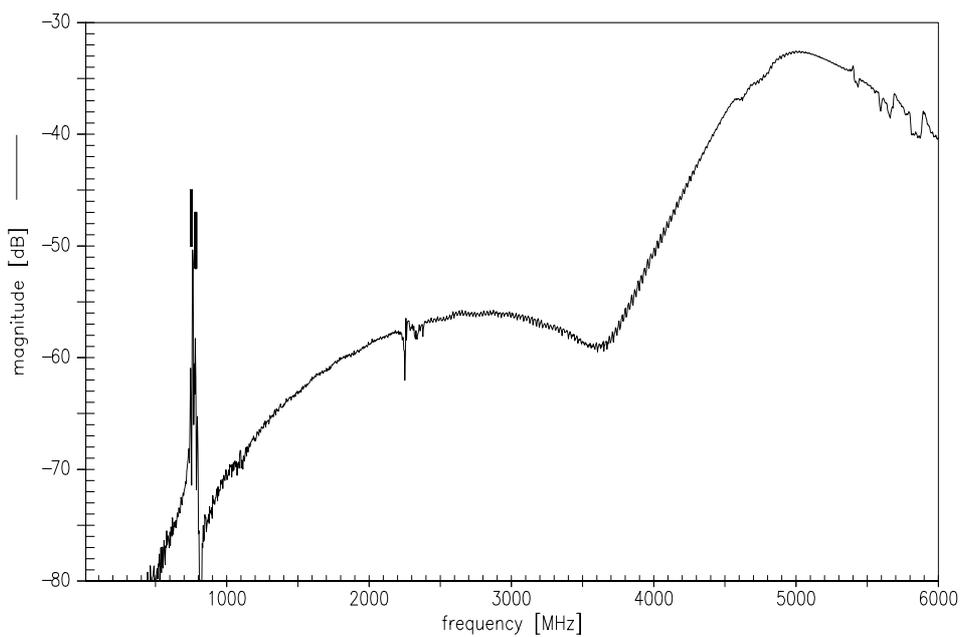
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Frequency Response TX-RX



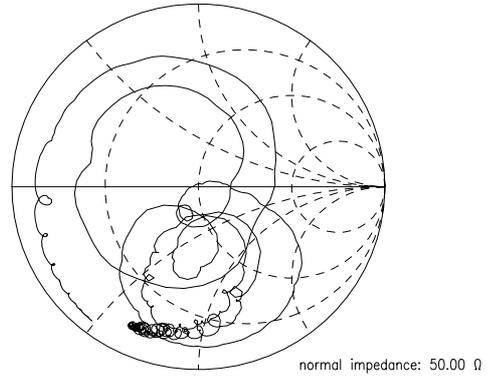
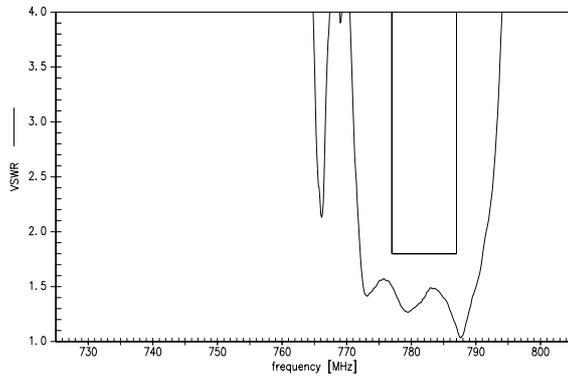
Frequency Response TX-RX



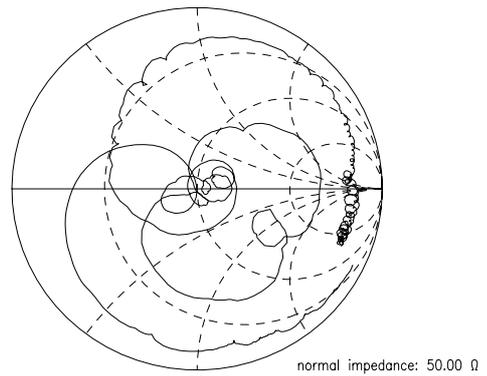
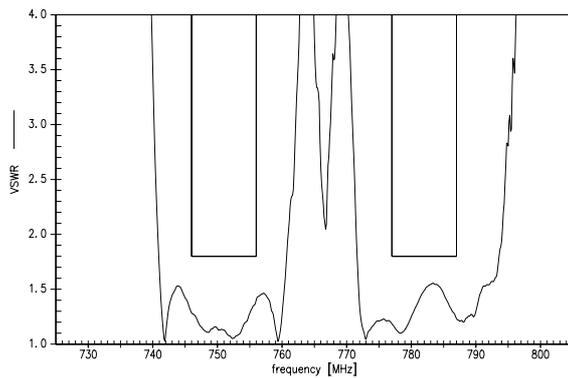
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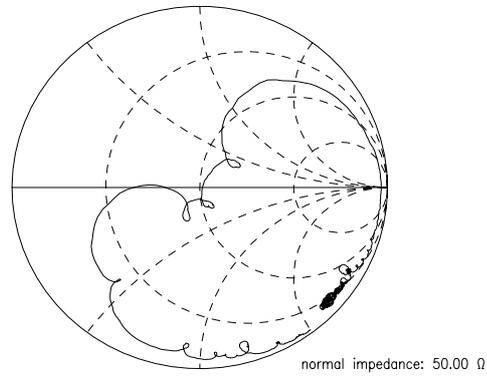
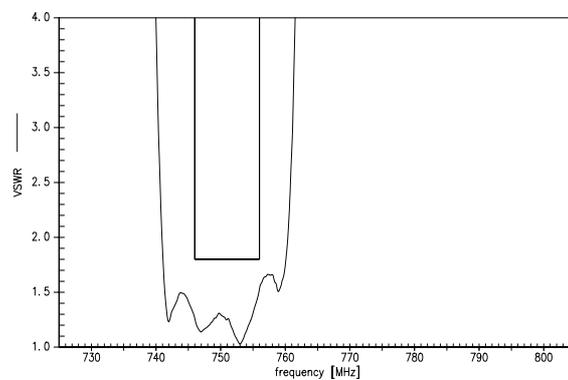
S11 VSWR (RX)



S22 VSWR (ANT)



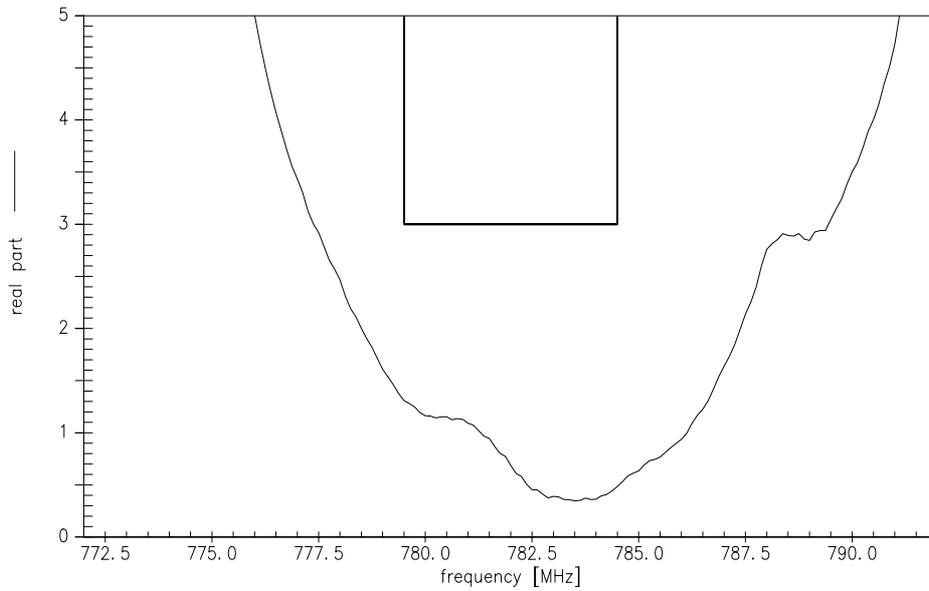
S33 VSWR (TX)



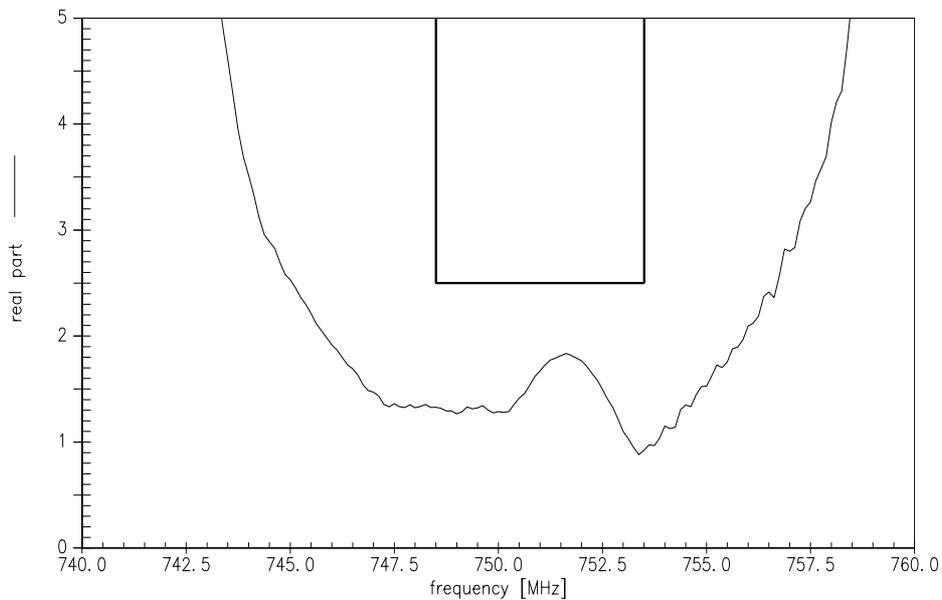
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EVM RX



EVM TX



SAW Components	B8006
SAW Duplexer	782.0 / 751.0 MHz

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References

Type	B8006
Ordering code	B39781B8006P810
Marking and package	C61157-A3-A27
Packaging	F61074-V8232-Z000
Date codes	L_1126
S-parameters	B8006_NB.s3p, B8006_WB.s3p See file header for port/pin assignment table
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 8 th , 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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