RF360 Europe GmbH

A Qualcomm – TDK Joint Venture

SAW Components

SAW Duplexer for Smallcell

Band 1 (3G/LTE)

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

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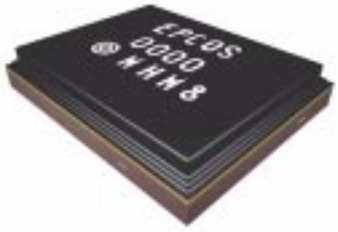
SAW Duplexer for Smallcell 1950.0 / 2140.0 MHz

DataSheet SMD

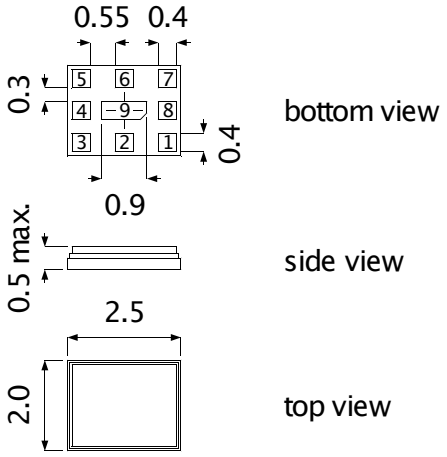
Application

- 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



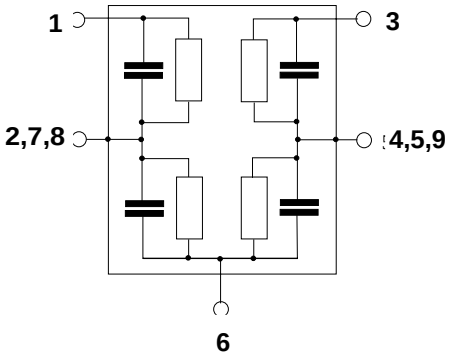
Features

- Package size 2.5 * 2.0 mm²
- max. Package height 0.5 mm
- RoHS compatible
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, Au-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**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 SMD

Characteristics

Temperature range for specification: T = –10 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω // 2.2 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		2140.0		MHz
Maximum insertion attenuation	α_{max}				
2110.0 ... 2170.0 MHz		-	2.0	2.5	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
2110.0 ... 2170.0 MHz		-	0.8	1.6	dB
Error Vector Magnitude	EVM[1)]				
2112.5 ... 2167.5 MHz		-	0.5	1.5	%
Input VSWR (TX port)					
2110.0 ... 2170.0 MHz		-	1.7	2.0	
Output VSWR (ANT port)					
2110.0 ... 2170.0 MHz		-	1.5	2.0	
Attenuation	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

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

Characteristics

Temperature range for specification: T = –10 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω // 2.2 nH
RX terminating impedance: Z_{RX} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω

Characterisitcs ANT - RX		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C		1950.0		MHz
Maximum insertion attenuation	α_{max}				
1920.0 ... 1980.0 MHz		-	2.3	3.7	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1920.0 ... 1980.0 MHz		-	0.9	2.2	dB
Error Vector Magnitude	EVM[1)]				
1922.5 ... 1977.5 MHz		-	1.5	3.0	%
Input VSWR (ANT port)					
1920.0 ... 1980.0 MHz		-	1.9	2.2	
Output VSWR (RX port)					
1920.0 ... 1980.0 MHz		-	2.0	2.3	
Attenuation	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

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

DataSheet SMD

Characteristics

Temperature range for specification: T = –10 ˚C to +85 ˚C
TX terminating impedance: Z_{Tx} = 50 Ω
ANT terminating impedance: Z_{Ant} = 50 Ω // 2.2 nH
RX teminating impedance: Z_{Rx} = 50 Ω

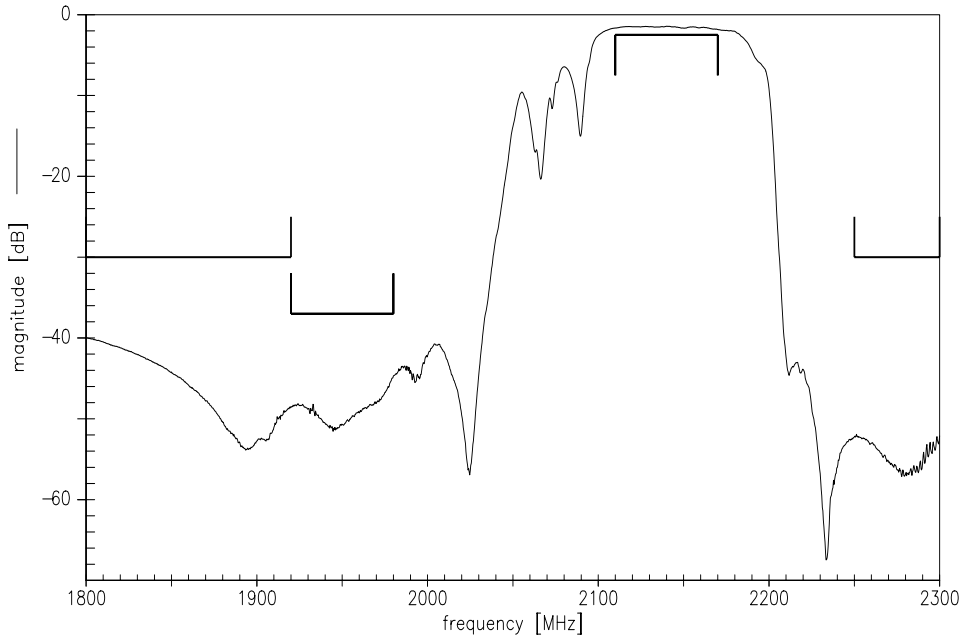
Characteristics Rx-Tx		min.	typ. @ 25 ˚C	max.	
Attenuation	α				
1920.0 ... 1980.0 MHz		42	48	-	dB
2110.0 ... 2170.0 MHz		47	52	-	dB

Maximum Ratings

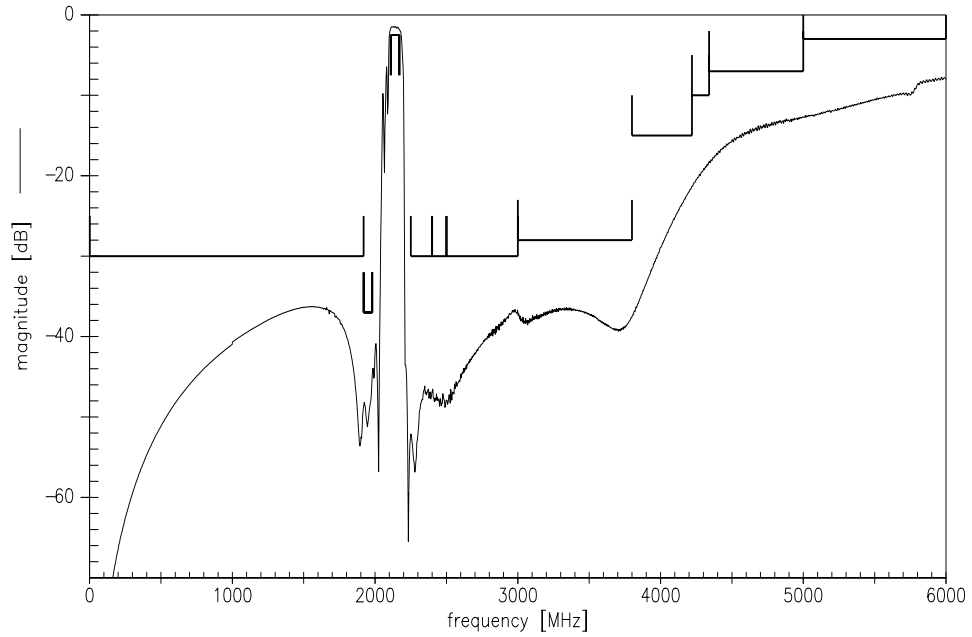
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	0	V	
ESD voltage	V_{ESD}	50[1)]	V	machine model, 1 pulse
Input power at pin 1				source and load impedance 50 Ω
2110.0 ...2170.0 MHz	P_{in}	28[2)]	dBm	Pin 28dBm average - 39 dBm peak LTE 5 MHz downlink T = 55˚C, 100.000 h
elsewhere	P_{in}	10	dBm	
Operating lifetime with Output power at antenna				source and load impedance 50 Ω
2110.0 ...2170.0 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.

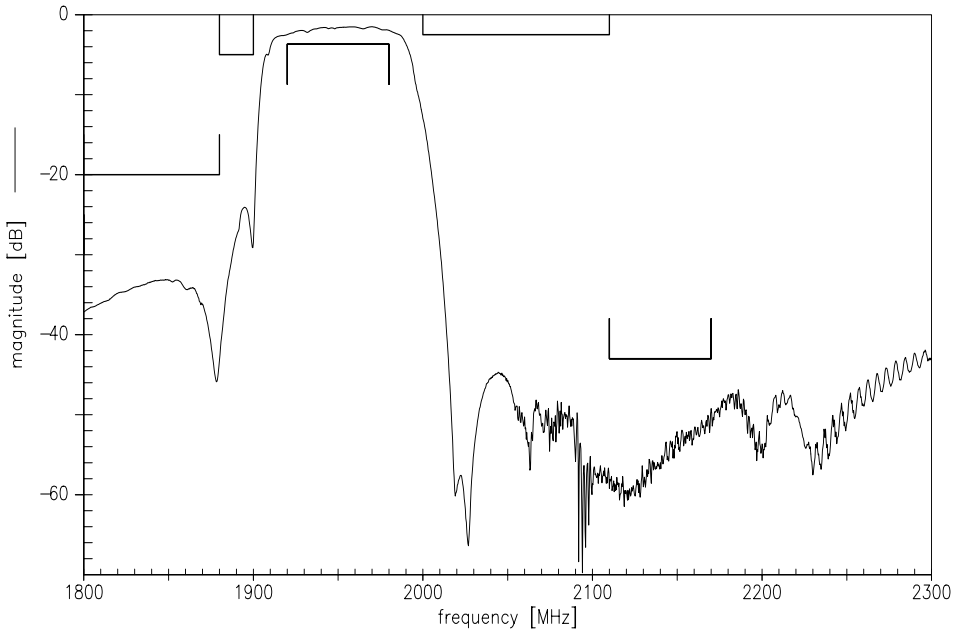
Frequency Response TX-ANT



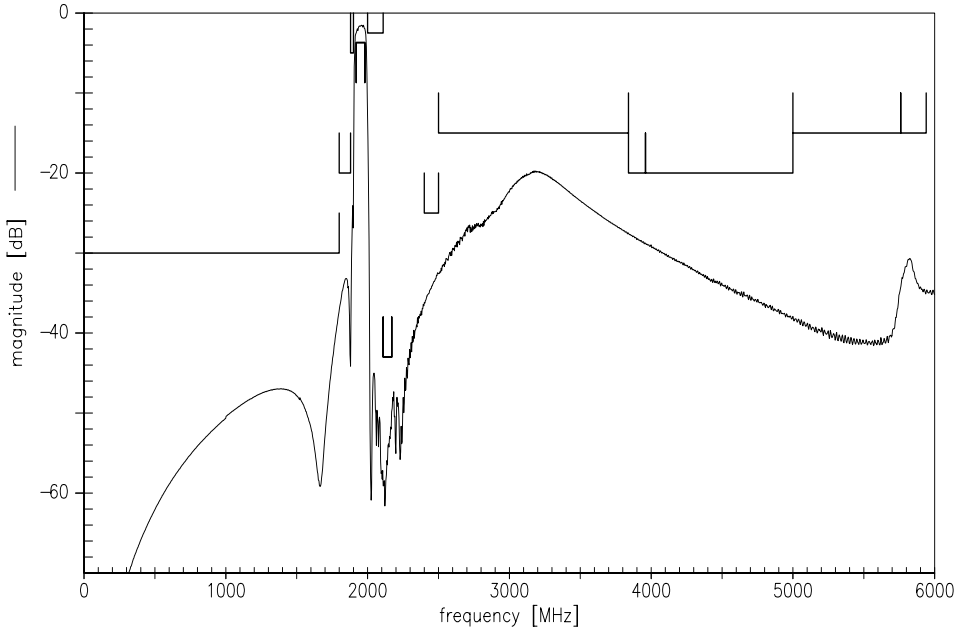
Frequency Response TX-ANT



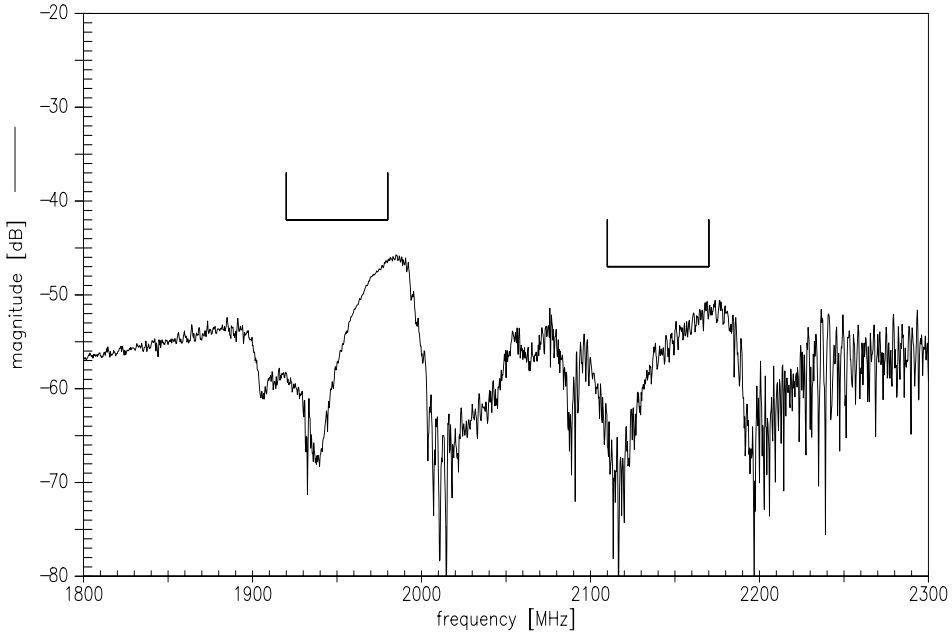
Frequency Response ANT-RX



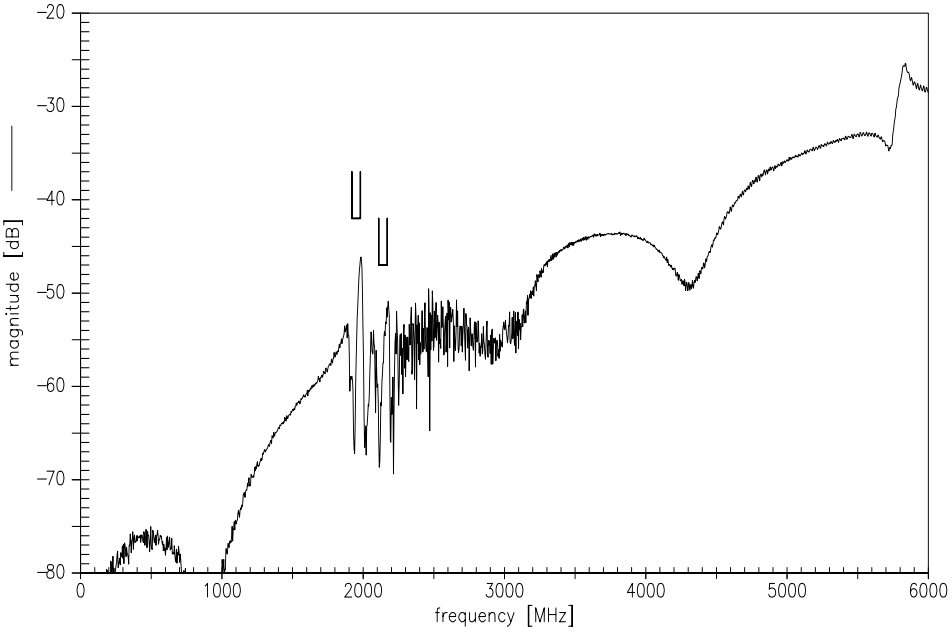
Frequency Response ANT-RX



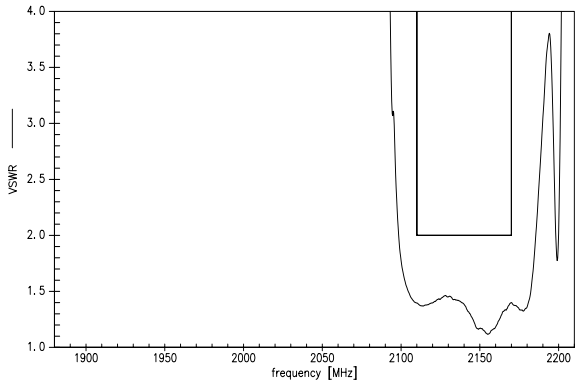
Frequency Response TX-RX

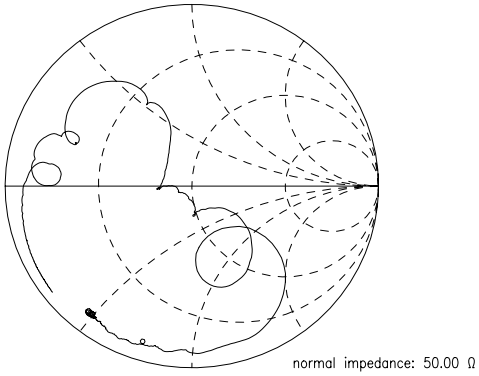


Frequency Response TX-RX

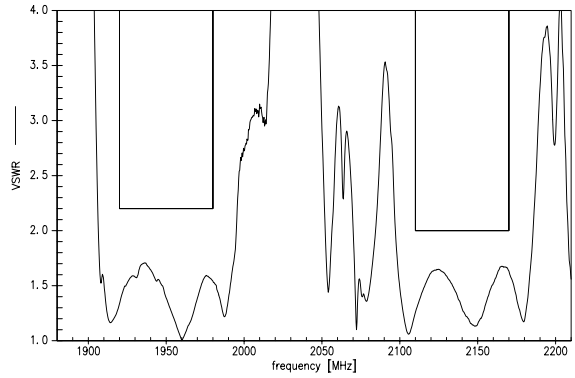


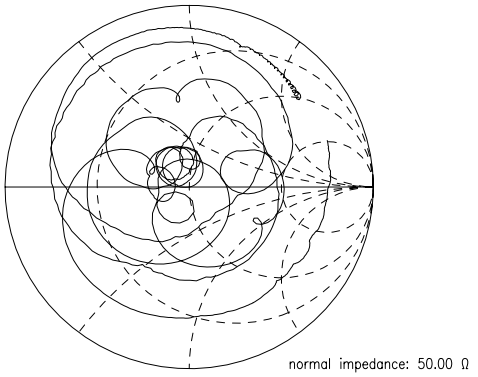
S11 VSWR (TX)



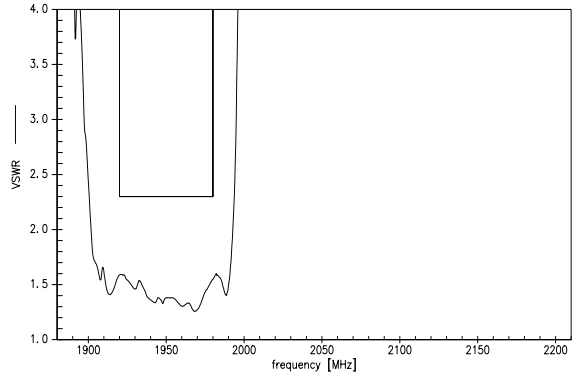


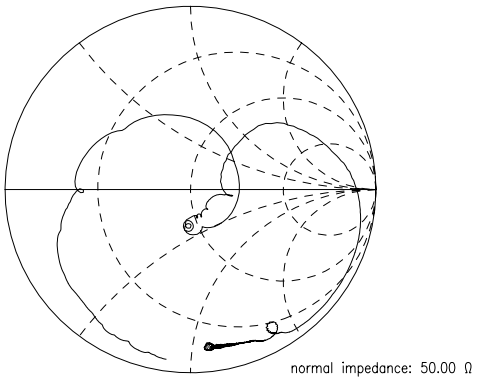
S22 VSWR (ANT)



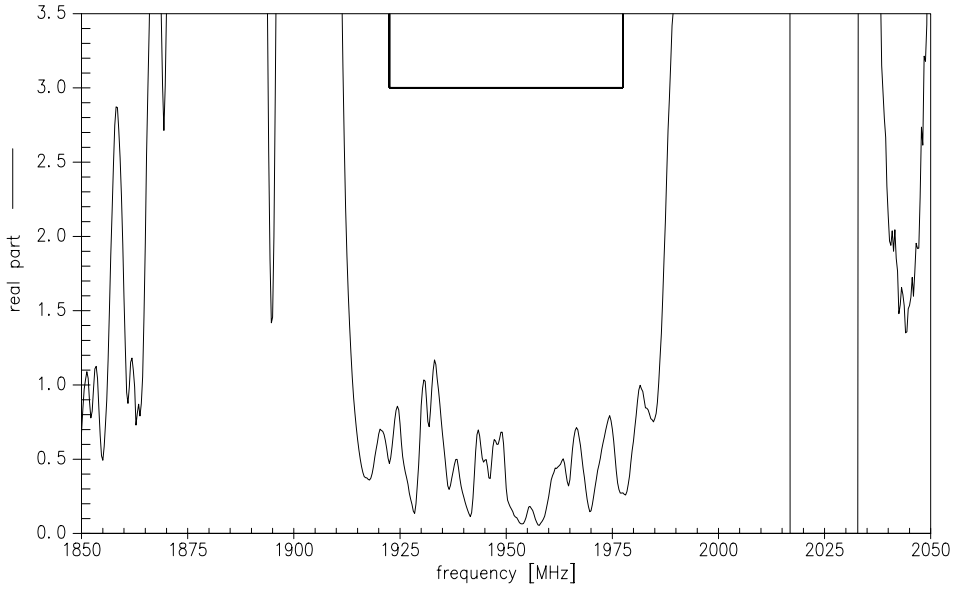


S33 VSWR (RX)

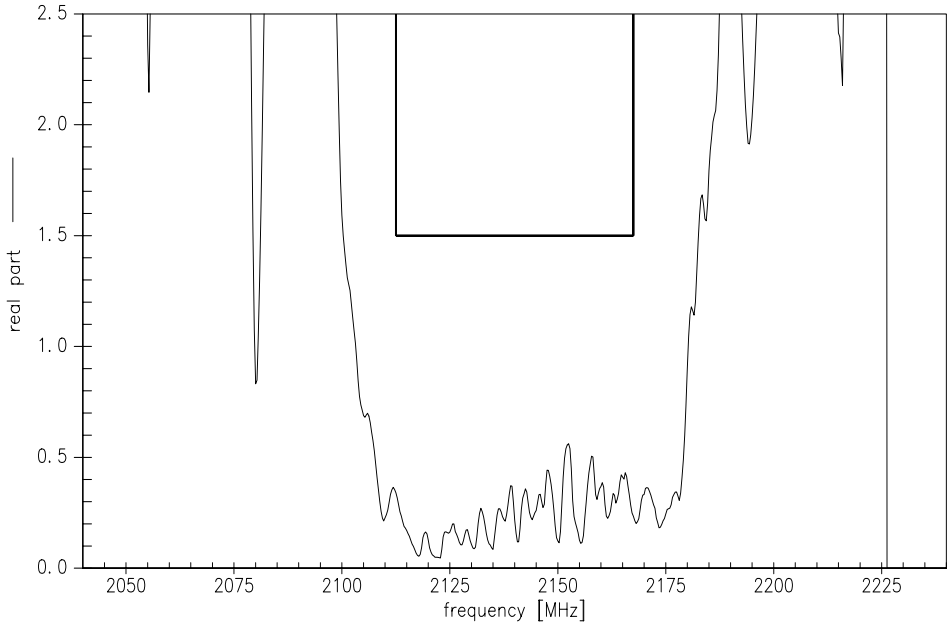




EVM Rx


3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
real part
1850
1875
1900
1925
1950
1975
2000
2025
2050
frequency [MHz]

EVM Tx


2.5
2.0
1.5
1.0
0.5
0.0
real part
2050
2075
2100
2125
2150
2175
2200
2225
frequency [MHz]

References

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