

Solving Network Congestion & Efficiency with Small Cells

Qorvo® Addresses Congested RF Airwaves



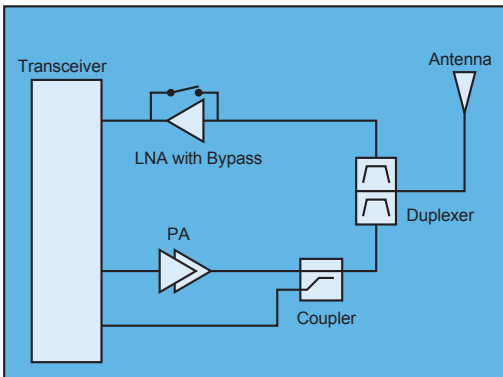
Small Cells & Densification

Carriers can add capacity and make better use of their networks by either deploying more spectrum or densification of existing networks. Regardless of the choice, the need for more small-cell deployments is happening with 5G rollout providing the tailwinds. Densification of small cells, both indoor and outdoor, greatly increases capacity for different use cases and also improves cell edge performance, therefore increasing value of their existing spectrum. In the small cell arena, no one size fits all. Small cells differ in their power level, geographical coverage, regional band allocation and the number of users serviced. Therefore, OEMs must produce small cells to accommodate several SKUs (stock keeping unit).

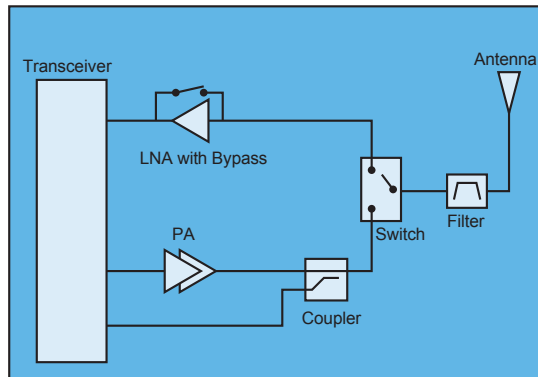
Qorvo's Small Cell Solution and Product Response

Qorvo's continuous innovation of its core RF solutions such as filters, amplifiers and switches enable our customers to meet new design requirements for small cell applications.

Small Cells FDD



Small Cells TDD



Qorvo System Solutions for FDD and TDD Small Cell Front-End Designs

Band	12, 13, 14, 17, 20	5, 18, 19, 26, 8	3	2, 25	1, 4, 10, 66	30, 40, 75	7, 41	42, N78	N79	46	Package	
Freq	729-821 MHz	851-960 MHz	1.805-1.88 GHz	1.93-2 GHz	2.11-2.2 GHz	2.3-2.4 GHz	2.5-2.7 GHz	3.3-4.0 GHz	4.8-5.0 GHz	5.1-5.9 GHz	(mm)	
Duplexer/Filter	QPQ1214		QPQ1297				QPQ1270 QPQ1298	QPQ3500 QPQ3501 QPQ3509	QPQ4900		2x2	
LNAs	QPL9547		QPL9547, TQL9092, TQL9093, QPL9057, QPL9058					QPL9503, QPL9504			2x2	
Bypass LNAs			TQL9063								2x2	
	QPL9095		QPL9096				QPL9097	QPL9098				
Power Amplifiers	PA Pavg											
	Linear PA			TQP9218	QPA9219	TQP9221	TQP9224	QPA9226	QPA9501			7x7
	Non-linear* (Required DPD)	24dBm		QPA9418	QPA9419	QPA9421	QPA9424	QPA9426				7x7
	28dBm	QPA9909	QPA9908	QPA9903		QPA9901	QPA9940	QPA9907	QPA9942			5x5



Switches for Small Cells

Type	Type	Frequency (GHz)	IL (dB)	Isolation (dB)	P0.1 dB Max Pin (dBm)	Vcc (V)	Package (mm)	Part Number
SPDT	R	0.005-6	0.25	56	37	1.8 to 2.7	1.1x1.5	QPC1022
SPST	A	0.005-6	0.84	53	36	1.8	2x2	QPC6014
SP3T	A	0.005-6	0.93	62	36	5	4x4	QPC6034
SP4T	A	0.005-6	0.98	50	36	5	4x4	QPC6044
SP5T	A	0.005-6	1.18	57	36	5	4x4	QPC6054
SP6T	A	0.005-6	1.1	57	36	5	4x4	QPC6064
SPDT	A	0.005-6	0.90	62		5	4x4	QPC6324
SPDT	R	0.005-3.8	0.3	37	37	3	2x2	RFSW1012
SP4T	R	0.005-6	0.45	34	35	3 to 5	2.5x2.5	RFSW6042
SP6T	R	0.005-6	0.5	28	32	3 to 5	2x2	RFSW6062
SPDT	A	0.005-6	0.7	70	35	3 to 5	4x4	RFSW6024
2xSPDT	R	0.005-6	0.3	35	30	3	2x2	RFSW6222

dBm-to-Watts Conversion Table

dBm	Watts	dBm	Watts	dBm	Watts
0	1.0mW	16	40mW	32	1.6W
1	1.3mW	17	50mW	33	2W
2	1.6mW	18	63mW	34	2.5W
3	2.0mW	19	79mW	35	3W
4	2.5mW	20	100mW	36	4W
5	3.2mW	21	126mW	37	5W
6	4mW	22	158mW	38	6W
7	5mW	23	200mW	39	8W
8	6mW	24	250mW	40	10W
9	8mW	25	318mW	41	13W
10	10mW	26	398mW	42	16W
11	13mW	27	500mW	43	20W
12	16mW	28	630mW	44	25W
13	20mW	29	800mW	45	32W
14	25mW	30	1W	46	40W

Qorvo Design Tools

Qorvo continuously strives to provide assistance to the engineering community. Below is a collection of RF design tools to assist engineers during their critical design stages. Learn more at www.qorvo.com/design-tools.



Bandpass Filter Response Calculator



dBm-Volts-Watts Conversion



Pad Attenuator (Pi & Tee) Calculator



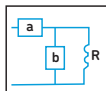
Trace Width Calculator



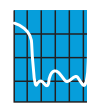
Cascade Calculator



Noise Figure & Noise Temperature Calculator



RF Impedance Matching Calculator



VSWR/Return Loss Conversion