

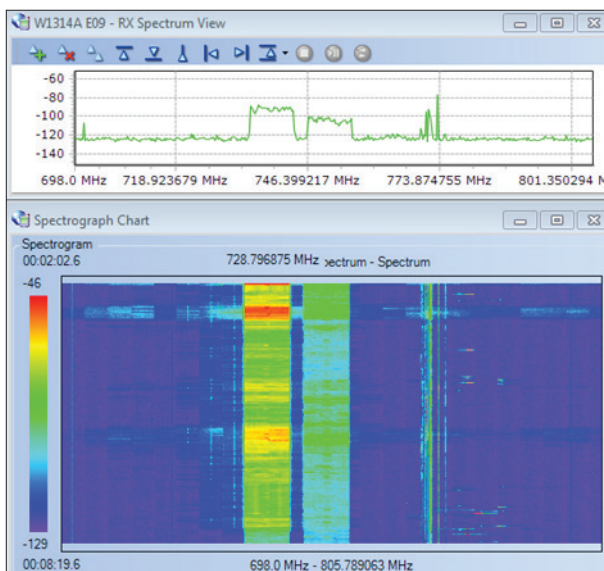


# Wireless Network Measurement Receivers

W1314B/L



The W1314B measurement receiver and the new, lighter W1314L deliver unparalleled multitechnology measurement capabilities. The RF front-end of the receivers use discrete preselectors for more accurate measurement results.



Integrated spectrum analyzer

## Key Benefits

- Reduce capture time — measure multiple technologies in one drive or indoor survey
- Accurate results — best-in-class measurement performance
- Maximize ROI — add new technologies through optional software updates
- Ideal for outdoor and indoor use
- Lightweight, rugged, solid RF-shielded housing
- Extended test time — low 18 W power consumption

## Key Features

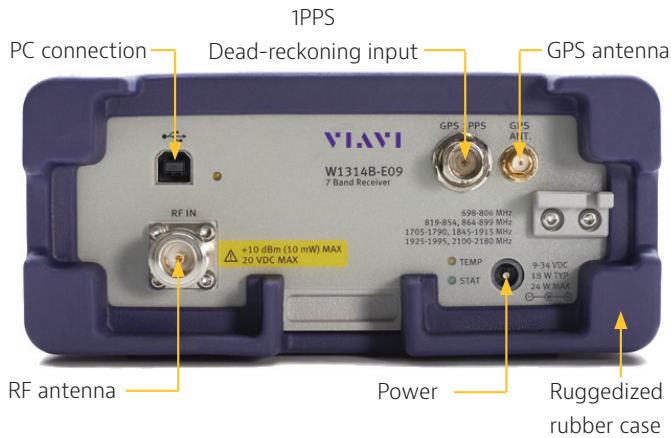
- Supports LTE FDD/TDD, UMTS, GSM, 1xEV-DO, cdma2000, spectrum analysis, and CW
- High-performance on-board DSP measurements minimize laptop loading
- Ruggedized housing with complete RF shielding
- Integrated 50-channel GPS
- 450 MHz to 3.8 GHz (pre-selector based)
- Up to 8 bands

## Multiband, Multiformat, Software-Defined Receiver

The receivers measure 2G, 3G, and 4G wireless technologies, making it ideal for carriers and NEMs who need to optimize and monitor different wireless networks. Using software-defined receiver (SDR) techniques, the receivers can perform up to 24 concurrent measurements.

Frequency range 450 MHz to 3.8 GHz	Snapshot IQ™ mode for deep analysis
Supports all wireless bands	Measures both spectrum and channel power
Preselect up to 8 bands	USB interface for control and data transfer
Supports multitechnology FDD-LTE, TD-LTE, UMTS, GSM, cdma2000, and EV-DO measurements	API support for OEM applications
	Lowest power consumption
Integrated 50-channel GPS	1-year warranty standard, 3 years optional

The receivers are integral parts of the E6474A RANAdvisor Drive Test system with easy configuration and robust connections for quick and accurate measurements enabling users to analyze and optimize networks regardless of their location or change to the technology they are based.



## Rugged Storage Case

The rugged pelican case provides portability and protects and securely stores your valuable drive test equipment. The case can easily fit a receiver and up to six devices, including all device, power, and GPS cabling. The case can also be powered from a 12 V DC outlet and securely locks and stores all cables and equipment within the case when testing is complete.



## RF Optimization Backpack Solution

The backpack accommodates the same receiver (ordered separately) and mobile devices available for our traditional drive-test solution. However, a fully equipped backpack weighs less than 20 pounds (excluding phones) and can accommodate a single receiver, up to six mobile devices, all cabling, fans, and batteries. Using four hot-swappable batteries lets users test continuously for up to 8 hours. The backpack lets users test where traditional vehicle-based solutions cannot—in buildings, malls, airports, stadiums, and a host of other places. Also, point-and-click way points efficiently guide engineers through the test area.



### Key Benefits

- Quickly confirm that revenue can be generated from any indoor environment
- Get a faster ROI with a single, multitechnology solution: GSM, UMTS, CDMA, LTE (FDD/TDD)
- Leverage LTE added-value measurements such as CINR across the band and LTE-TDD power profile
- Test both RF conditions and services using the devices that subscribers use
- Ensure engineer health and safety with an ergonomic design
- Test where vehicles cannot go, such as stadiums, malls, buildings, and airports
- Easily connect to a laptop/tablet PC and software

## Band Reference Table

E-UTRA Bands	Common Name	Bandwidth (MHz)	Uplink (MHz)		Downlink (MHz)		Uplink EARFCN		Downlink EARFCN		Equivalent UMTS band	Uplink UARFCN		Downlink UARFCN	
			Low EARFCN	High EARFCN	Low EARFCN	High EARFCN	Low	High	Low	High		Low	High		
1	IMT 2.1 GHz	60	1920	1980	2110	2170	18000	18599	0	599	1	9612	9888	10562	10383
2	PCS 1900	60	1850	1910	1930	1990	18600	19199	600	1199	2	9621	9538	9662	9938
3	DCS 1800	75	1710	1785	1805	1880	19200	19949	1200	1949	3	937	1288	1162	1513
4	AWS	45	1710	1755	2110	2155	19950	20399	1950	2399	4	1312	1513	1537	1738
5	850 MHz	Ba	824	849	869	894	20400	20649	2400	2649	5	4132	4233	4357	4458
6	UMTS 800	10	830	840	875	885	20650	20749	2650	2749	6	4162	4188	4387	4413
7	IMT-E 2.6 GHz	70	2500	2570	2620	2690	20750	21449	2750	3449	7	2012	2338	2237	2563
8	E-GSM 900	35	880	915	925	960	21450	21799	3450	3799	8	2712	2863	2937	3088
9	1700 MHz	35	1749.9	1784.9	1844.9	1879.9	21800	22149	3800	4149	9	8762	8912	9237	9388
10	Extended AWS	60	1710	1770	2110	2170	22150	22749	4150	4749	10	2887	3163	3112	3388
11	Japan 1.5 GHz lower	20	1427.9	1447.9	1475.9	1495.9	22750	22949	4750	4949	11	3487	3562	3712	3812
12	700 MHz lower, A+B+C	17	699	716	729	746	23010	23179	5010	5179	12	3617	3678	3842	3903
13	700 MHz upper	10	777	787	746	756	23180	23279	5180	5279	13	3792	3818	4017	4043
14	Public safety	10	788	798	758	768	23280	23379	5280	5379	14	4117	4143	3892	3918
17	700 MHz lower, B+C	12	704	716	734	746	23730	23849	5730	5849					
18	Japan 800 MHz lower	15	815	830	860	875	23850	23999	5850	5999					
19	Japan 800 MHz upper	15	830	845	875	890	24000	24149	6000	6149	19	2400	2419	6000	6149
20	800 MHz EDD	30	832	862	791	821	24150	24449	6150	6449	20	24150	24449	6150	6449
21	1.5 GHz upper	15	1447.9	1462.9	1495.9	1510.9	24450	24599	6450	6599	21	24450	24599	6450	6599
22	3.5 GHz	80	3410	3490	3510	3590	24600	25399	6600	7399	22	24600	25399	6600	7399
23	2 GHz S band	20	2000	2020	2180	2200	25500	25699	7500	7699					
24	L band	34	1626.5	1660.5	1525	1559	25700	26039	7700	8039					
25	PCS 1900 + G block	65	1850	1915	1930	1995	26040	26689	8040	8689	25	26040	26689	8040	8689
26	800 MHz iDEN	35	814	849	859	894	26690	27039	8690	9039	26	26690	27039	8690	9039
27	850 MHz lower	17	807	824	852	869	27040	27209	9040	9209					

## Band Reference Table continued

E-UTRA Bands	Common Name	Bandwidth (MHz)	Uplink (MHz)		Downlink (MHz)		Uplink EARFCN		Downlink EARFCN		Equivalent UMTS band	Uplink UARFCN		Downlink UARFCN	
			Low EARFCN	High EARFCN	Low EARFCN	High EARFCN	Low	High	Low	High		Low	High	Low	High
28	700 MHz APAC	45	703	748	758	803	27210	27659	9210	9659					
29	US 700de lower	11			717	728			9660	9769					
30	US WCS	10	2305	2315	2350	2360	27660	27759	9770	9869					
33	TDD 2000	20			1900	1920			36000	36199	A(lo)				
34	TDD 2000	15			2010	2025			36200	36349	A(hi)				
35	TDD 1900	60			1850	1910			36350	36949	B(lo)				
36	TDD 1900	60			1930	1990			36950	37549	B(hi)				
37	TDD PCS	20			1910	1930			37550	37749	C				
38	TDD 2.6 GHz	50			2570	2620			37750	38249	D				
39	TDD 1.9 GHz	40			1880	1920			38250	38649	F				
40	TDD 2.3 GHz	100			2300	2400			38650	39649	E				
41	TDD 2.5 GHz	194			2496	2690			39650	41589					
42	TDD 3.4 GHz	200			3400	3600			41590	43589					
43	TDD 3.6 GHz	200			3600	3800			43590	45589					
44	700 MHz APAC	100			703	803			45590	46589					

## Options and Bands

3GPP Band		Frequency (MHz)	W1314B/L																
Uplink	Downlink		E08	E09	E10	E12	E13	E14	E15	E16	E17	E18	E19	E20	E21	E22	E23	E25	
		450 – 496							■										
12, 13, 14, 17, 28	12, 13, 14, 17, 28, 29, 44	698 – 806		■		■						■	■	■	■			■	
13, 14, 18, 19, 20, 26, 27	5, 13, 18, 19, 20, 26, 27	780 – 899				■	■		■	■	■	■	■	■			■	■	
5, 18, 19		819 – 854	■	■								■				■			
5, 6, 19, 20	18, 27	824 – 875			■							■							
	5, 6, 19	864 – 899	■	■	■							■				■		■	
8		876 – 917	■																
	8	900 – 962				■	■	■	■	■	■	■		■	■				
	8	921 – 962	■																
	11, 21	1460 – 1525			■	■								■					
	24	1525 – 1559										■							
24		1625 – 1661										■							
9, 10		1705 – 1790	■	■									■			■			
3, 9, 10	4	1710 – 1785																■	
	3, 9	1800 – 1885	■		■	■	■	■	■	■	■			■	■			■	
2, 25	33, 35	1845 – 1915		■			■	■				■	■			■		■	
	25, 30, 37, 39	1880 – 1980																■	
1	25, 30, 37	1895 – 1990	■				■	■	■						■				
	2, 25, 36	1925 – 1995		■		■					■	■	■			■		■	
23	34	2000 – 2100					■	■	■										
	34	2005 – 2030			■														
	1, 4, 10	2100 – 2180	■	■	■	■				■	■		■	■	■	■	■	■	
30	30, 40	2300 – 2400					■	■	■	■						■	■	■	
7	41	2496 – 2595			■			■	■			■	■		■		■	■	
	38, 41	2535 – 2690										■	■	■			■		
	7, 38	2570 – 2690			■	■	■	■	■	■	■	■	■	■	■		■	■	
22, 42	42	3400 – 3500									■								
42	22, 42	3500 – 3600									■								

## Specifications (Release 20.0)

RF	
Frequency range	450 MHz to 3.8 GHz
Band coverage	All DL and UL bands
Preselection	Up to 8 bands
IF bandwidths	200 kHz to 20 MHz
Amplitude accuracy	±1 dB (20 to 30°C) ±1.5 dB (0 to 55°C)
Frequency accuracy	±5 ppb (OCXO)
Noise figure	8 dB typical (< 2.3 GHz) 9.5 typical (>2.3 GHz)
1 dB compression	-15 dBm typical
TOI	0 dBm typical
Maximum safe input level	+10 dBm/20 V DC
Residuals	-120 dBm
Adjacent channel rejection	55 dB
Connectors	
RF input	Type N, 50 ohm, VSWR < 2.0, typical
GPS RF input	SMA, 50 Ω, 3.3 V bias
Control/data	USB
1PPS	BNC
Power	2.5 mm, male, position center

Physical/Environmental	
Size (H x W x D)	W1314B: 7.7 x 15.2 x 22.9 cm (3 x 6 x 9 in) W1314L: 5.6 x 15.5 x 21.5 cm (2.2 x 6.1 x 8.5 in)
Weight	W1314B: 2.9 kg (6.5 lb) W1314L: 2.0 kg (4.3 lb)
Power	9 to 34 V DC, 18 W nominal
Operating temp	0 to 55°C
Storage temp	-40 to +70°C
Humidity	95% at 40°C, noncondensing
Emissions	Class A CISPR 11, IEC/EN61326
Immunity	IEC/EN 61000-4-3
Environmental	MIL-PRF-28800F Class 2 (vibration and shock)
MTBF	10,000 hr
Safety	
IEC 60950-1 when used with company-supplied power adapter	
Regulatory	
RoHS product Category 9 for monitoring and control instruments	

## Specifications (Release 20.0)

Measurement	Characteristics	Notes
<b>LTE</b>		
Frequency bands	Any installed band option	
Maximum number of carriers	16	If LTE only
Channel bandwidths	1.4, 3, 5, 10, 15, 20 MHz	
Format modes	FDD and TDD	
Cyclic prefix	Normal or extended	
Measurement modes	TopN	
Measurement data	CID, RSRP, RSRQ, RSCINR, delay, MIB/SIB1	
RSRP detection level, initial	-134 dBm	
RSRP detection level, minimum	-140 dBm	
RCINR maximum	+50 dB	
RCINR minimum	12 dB/-15 dB (TDD/FDD)	
Update rate regardless of band	14/s	10 MHz BW, single carrier
<b>UMTS/WCDMA</b>		
Frequency bands	Any installed band option	
Maximum number of carriers	24	If UMTS only
Channel bandwidths	3.84 MHz	
Measurement modes	TopN SC, SC list	
Measurement data	I0/RSSI, Ec, Ec/I0, Agg Ec, Agg Ec/I0, PSCH, SSCH, SC/CPICH, SC delay spread, SC multipath	
Minimum detection level	-122.0 dBm	
Ec/I0 measurement range	-25.0 to 0.0	
Update rate regardless of band	8/s	Single carrier
<b>GSM</b>		
Frequency bands	Any installed band option	
Maximum number of carriers	16	If GSM only
Channel bandwidths	200 kHz	
Measurement modes	TopN BCH, all BCH, BCH list, BCH list with BSIC	
Measurement data	RSSI, BSIC	
Minimum detection level	-105.0 dBm	
Update rate regardless of band	10/s	For BSIC decode
<b>CDMA</b>		
Frequency bands	Any installed band option	
Maximum number of carriers	24	If CDMA only
Channel bandwidths	1.25 MHz	
Measurement modes	TopN PN, PN list	
Measurement data	Pilot PN#, I0, Ec, Ec/I0, Agg Ec/I0, delay, delay spread, multipath	
Min detection level	-128.0 dBm	
Ec/I0 measurement range	-25.5 to 0.0 dB	
Update rate regardless of band	23/s	Single carrier

Measurement	Characteristics	Notes
<b>EV-DO</b>		
Frequency bands	Any installed band option	
Maximum number of carriers	24	If EV-DO only
Channel bandwidths	1.25 MHz	
Measurement modes	TopN	
Measurement data	Pilot PN#, I0, Ec, Ec/I0, Agg Ec/I0, delay, delay spread, multipath	
Min detection level	-121.0 dBm	
Ec/I0 measurement Range	-18.0 to 0.0 dB	
Update rate	5.5/s	Single carrier
<b>Spectrum</b>		
Frequency bands	Any installed band option	
Measurement data	Power vs frequency trace	
If bandwidths	200 kHz or 5 MHz	
Resolution bandwidths (RBW)	1 kHz to 1 MHz	
Minimum DANL	-128.0 dBm	For 1 kHz RBW
Update rate < 80% of IFBW	550 points/s	Maximum for span
<b>CW/Channel Power</b>		
Frequency bands	Any installed band option	
Measurement mode	List	
Measurement data	CW or channel (CH) power	
If bandwidths	200 kHz or 5 MHz	
Resolution bandwidths (RBW)	1 kHz to 4 MHz	
Update rate	1500/s CW; 400/s CH	With 5 MHz IFBW
<b>IQ Capture</b>		
Frequency bands	Any installed band option	
Measurement data	Digitized IF data	IQ pairs (32-bit wods)
If bandwidths	1.25, 5, 10, 20 MHz	
Maximum time record	1000 ms for 20 MHz BW	95 MB file size (approx.)
<b>Concurrency</b>		
LTE/UMTS	4/16	
LTE/CDMA	7/18	

## Ordering Information

Descriptions									Part Number
Filters	Filter 1 (MHz)	Filter 2 (MHz)	Filter 3 (MHz)	Filter 4 (MHz)	Filter 5 (MHz)	Filter 6 (MHz)	Filter 7 (MHz)	Filter 8 (MHz)	
	819 – 854	864 – 899	876 – 917	921 – 962	1705 – 1790	1800 – 1885	1895 – 1990	2100 – 2180	W1314B-E08
	819 – 854	698 – 806	819 – 854	864 – 899	1705 – 1790	1845 – 1915	1925 – 1995	2100 – 2180	W1314B-E09
	824 – 875	864 – 899	1460 – 1525	1800 – 1885	2005 – 2030	2100 – 2180	2496 – 2595	2570 – 2690	W1314B-E10
	698 – 806	780 – 899	900 – 962	1460 – 1525	1800 – 1885	1925 – 1995	2100 – 2180	2570 – 2690	W1314B-E12
	780 – 899	900 – 962	1800 – 1885	1845 – 1920	1895 – 1990	2000 – 21000	2300 – 2400	2570 – 2690	W1314B-E13
	900 – 962	1800 – 1885	1845 – 1920	1895 – 1990	2000 – 2100	2300 – 2400	2496 – 2595	2570 – 2690	W1314B-E14
	780 – 899	900 – 962	1800 – 1885	1895 – 1990	2100 – 2180	2300 – 2400	2496 – 2595	2570 – 2690	W1314B-E15
	780 – 899	450 – 496	780 – 899	900 – 962	1800 – 1885	2100 – 2180	2300 – 2400	2570 – 2690	W1314B-E16
	780 – 899	900 – 962	1800 – 1885	1925 – 1995	2100 – 2180	2570 – 2690	3400 – 3500	3500 – 3600	W1314B-E17
	780 – 899	900 – 962	1525 – 1559	1625 – 1661	1845 – 1920	1925 – 1995	2496 – 2595	2570 – 2690	W1314B-E18
	698 – 806	780 – 899	1705 – 1790	1845 – 1920	1925 – 1995	2100 – 2180	2496 – 2595	2570 – 2690	W1314B-E19, W1314L-E19
	698 – 806	698 – 806	780 – 899	900 – 962	1460 – 1525	1800 – 1885	2100 – 2180	2535 – 2690	W1314B-E20
	698 – 806	780 – 899	900 – 962	1800 – 1885	1895 – 1990	2100 – 2180	2495 – 2595	2570 – 2690	W1414B-E21, W1314L-E21
	698 – 806	819 – 899	864 – 899	1705 – 1790	1845 – 1915	1925 – 1995	2100 – 2180	2300 – 2400	W1314B-E22, W1314L-E22
	780 – 899	1710 – 1785	1800 – 1885	1880 – 1980	2100 – 2180	2300 – 2400	2495 – 2595	2570 – 2690	W1314B-E23
	698 – 806	780 – 899	1845 – 1920	1925 – 1995	2100 – 2180	2300 – 2400	2496 – 2595	2570 – 2690	W1314B-E25

### Cables and Accessories

W1314B/L receivers include all cabling, antennas, and a power supply (AC and DC).

### Rugged Storage Case Options

Hard carrying case for six phones and one W1314B/L receiver, including cable and integral 7-port USB hub	E6473B-915
GlobalSat® BU353 GPS receiver	E6473B-035

### Backpack Options

Drive test backpack with built-in hub and battery charging power harness	E6473B-930
Optional stand-alone battery charger	E6473B-926
Basic backpack	E6473B-921
Battery pack	E6473B-925
Upgrade E6474A-920 backpack to the cable harness E6474A-930	E6474A-927



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