

R&S®FSL-K92 WiMAX Application Firmware

Transmitter measurements on WiMAX OFDM signals

The R&S®FSL-K92 option expands the R&S®FSL spectrum analyzer by adding the capability to perform spectrum and modulation measurements on signals in line with the IEEE 802.16-2004 OFDM standard. Offering an unmatched price/performance ratio also for this appli-

cation as well as remote control of all functions via GPIB or LAN, the R&S®FSL is the ideal solution in production test applications. Results are output in scalar form and also in a variety of graphical representations, which makes the R&S®FSL suitable also for R&D and service applications.

The functional and control concept as well as the remote control commands are largely identical with the R&S®FSQ signal analyzer with the R&S®FSQ-K92 option.



Measurement

• IEEE 802.16-2004 OFDM/IEEE 802.16e-2005 OFDM

Output power

Spectrum mask with limit lines and pass/fail indication

Spectrum flatness with limit lines and pass/fail indication, group delay

Adjacent-channel power with noise correction

(up to five adjacent channels can be defined)

EVM

EVM display

Versus carrier or time

Constellation versus carriers

Constellation diagram

- For individual or all carriers
- For individual or all modulation modes

Selectable tracking: phase, level, timing

RF carrier leakage

Carrier frequency error, symbol clock error

CCDF and crest factor

Bit stream (color-coded to indicate modulation)

Overview of all bursts

FCH information

Automatic selection of modulation

Ordering information

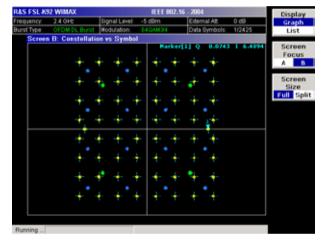
Designation	Туре	Order number
IEEE 802.16-2004 OFDM WiMAX Application	R&S®FSL-K92	1302.0236.02
Firmware		

RAS FSLK92 WIMAX		IEEE 802.1	6 - 2004		Settings	
Frequency: 2.4 GHz		Level -3.1 dBm	Eiternal Att: 0	_	General	
Burst Type: OFDM D	L Burst Modu	lation: 64QAM3/4	Data Symbols: 1/	2425	Demod	
Bursts: 5	Min	Result Summary Mean Limit	Max L	imit Unit	Display	
EVM All Carr.	- 38.65	-38.43 31.00		$\overline{}$	Graph	
EVM Data Carr.	- 38.62	-38.40	- 38.15	dB	List	
EVM Pilot Carr.	- 39.88	- 39.43	- 39.02	dB	DATE: 0	
IQ Offset	- 60.20	-58.49 - 15.00	-57.51 - 15	_	PVT (
Gain Imbalance	- 0.01	- 0.01	- 0.01	dB		
Quadrature Err	- 0.033	- 0.027	- 0.023	-	EVM Constell ⁸	
Freq. Err	174.36	175.36 ± 19200	176.86 ± 192	200 Hz		
Clock Err	0.03	0.06 ± 8	0.07	±8ppm		
Burst Power	- 0.29	- 0.27	- 0.26	dBm	Spectrum ()	
Crest Factor	6.51	9.74	10.68	₫B		
RSSI	2.55	2.55	2.69	dBm	Statistics 8	
RSSI Stnd. Dev.		- 5.27		₫B		
CINR	38.81	38.83	40.48	d₿		
CINR Stnd. Dev.		25.51		₫B		
Running						

The result summary provides a quick overview of the main measurement results

WO LOT WAY	WIMAX		IEEE 807.16	2004		Display
requency:	2.4 GHz	Bignal Level	-3 d@m	Edemal Att	0 dB	Graph
unst Type:	OFDM DL Burit	Modulation	E4GAM3/4	Data Symbols:	1/2425	List
Screen	B: Burst Summ	nary				
Downlin	r Burst Smaar;	List				Screen
Burst	Aren	Modulation	Length[sym]	Power[dlm]	EVM (dB)	Focus
YEN	Fremble	DESK		2.58	-39,77	A B
	Jets	DESK		-0.27	-36.91	_
Bearing S.	Jets	0.00	80	-0.29	-39.01	Screen
Fuggt 3	Premable	BESK		2,36	-38.97	Size
	Jata	11110	100	+0.25	-39.00	Full Spl
Fuggt 4		6.40AM	. 80	-0.29	-39,25	
france 5		BYSK	50	+0.27	-38,99	
ECH	Premble		2	2.59	-37,00	
	Pote	DESK	- 1	-0.17	-39,71	
Overal1			317	0.07	-30,60	

The burst summary list shows EVM and power results separately for the individual users



In the constellation diagram, results of several users can be displayed simultaneously, even when employing different modulation modes (640AM, 160AM, 0PSK, BPSK)





For specifications, see PD 5213.7254.22 and www.rohde-schwarz.com (search term: FSL-K92)

