

ERICSSON AB
 Larry Lindström
 Färögatan 2, Kista
 164 80 STOCKHOLM

Handledare, enhet/Handled by, department
 Fredrik Isaksson
 Electronics
 Tel +46 (0) 33 16 55 80

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Band edge measurements on WCDMA Base station 1900 MHz with FCC ID: B5KPROJ1192211-1

(3 enclosures)

Test objects

Transceiver Unit TRX PS1, ROJ 119 2211/1, R1B,
 Amplifier unit / MCPA, KRB 90102/3, R1A.

Summary

Standard	Compliant	Enclosure	Remarks
FCC CFR 47			
2.1049 Occupied bandwidth	Yes	2	Note 1

Note 1: The measurement reduced to band edge measurements.

SP Swedish National Testing and Research Institute
 Electronics - EMC


 Lasse Bergsten
 Deputy Technical Manager


 Fredrik Isaksson
 Technical Officer



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FCC ID: B5KPROJ1192211-1

Description - Equipment Under Test (EUT)

Equipment: WCDMA Base station transceiver 1900 MHz

Tx Frequency range: Single frequency 1947.5 MHz
(Block D: 1945.0-1950.0 MHz)

Tested Channel: 1947.5 MHz.

Product number: TRX PS1, ROJ 119 2211/1, R1B

RF conducted measurements were done on,
TRX PS1, ROJ 119 2211/1, R1B, s/n A534170919 and
Amplifier unit / MCPA, KRB 90102/3, R1A, s/n U100025223.
All RF conducted measurements were done at the output connector J1.

EUT configuration:

The transmitters were set-up according to Test model 1 in the standard
3GPP TS 25.141 V5.4.0 (2002-09).
16 DPCH:s at 30 kbps (SF=128) distributed randomly across the code space, at random
power levels and random timing offsets are defined so as to simulate a realistic scenario
which may have high PAR (Peak to Average ratio).

Manufacturer's
representative: Larry Lindström, Ericsson AB

Purpose of test

The purpose of the tests is to verify compliance with the performance characteristics
specified in FCC CFR47.

Reservation

The test results in this report apply only to the particular Equipment Under Test (EUT) as
declared in the report.

Test engineer

Jonas Bremholt

Test witnesses

Larry Lindström, Ericsson AB
Wayne Ly, Ericsson AB



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Occupied bandwidth measurements according to 47CFR 2.1049 (Band edge)

Date 2003-01-21	Temperature 23 °C ± 3 °C	Humidity 33 % ± 5 %
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Test set-up and Procedure

The measurement test set-up was made per 3GPP TS 25.141. Measurements were made at output connector J1. The output was connected to a spectrum analyser. In addition to normal Gaussian filter the used spectrum analyser was equipped with a sharper filter having a shape-factor < 2, by Rohde & Schwarz called "Channel" filter see encl. 3 for specification. The measurement were performed with both 1 MHz RBW/ 100 Hz VBW using the channel filter and with 50 kHz RBW/ 10 Hz VBW using Gaussian filter. The VBW was set to 100 Hz and 10 Hz instead of 1 Hz to achieve reasonable measuring times. The transmitter was set up according to Test Model 1 in 3GPP TS 25.141 during the measurements.

Results

- Diagram 1 Block D (1947.5 MHz), OBW Band edge, +43 dBm output power, RBW=1 MHz Channel filter
- Diagram 2 Block D (1947.5 MHz), OBW Band edge, +43 dBm output power, RBW=50 kHz Gaussian filter, the measurement result should be adjusted with 13 dB to be integrated over 1 MHz ($10\log 50k/ 1M$).

Limits

The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least $43 + 10 \log P$ dB.

Complies?	Yes
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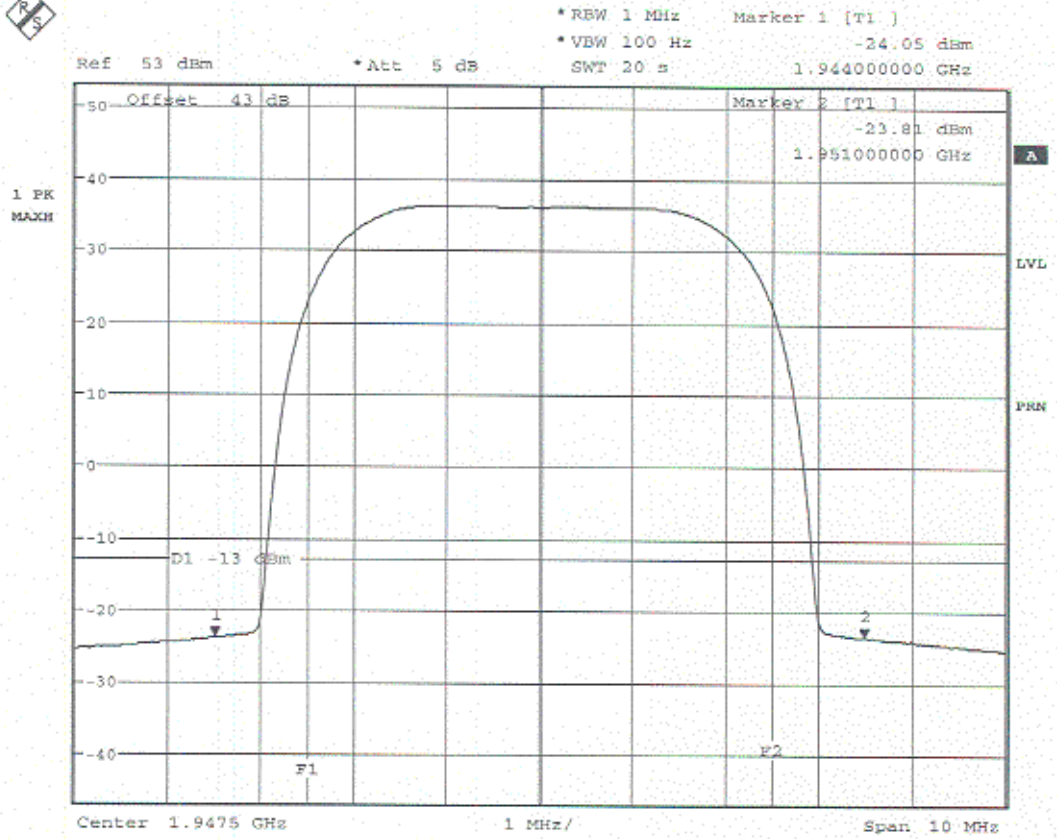
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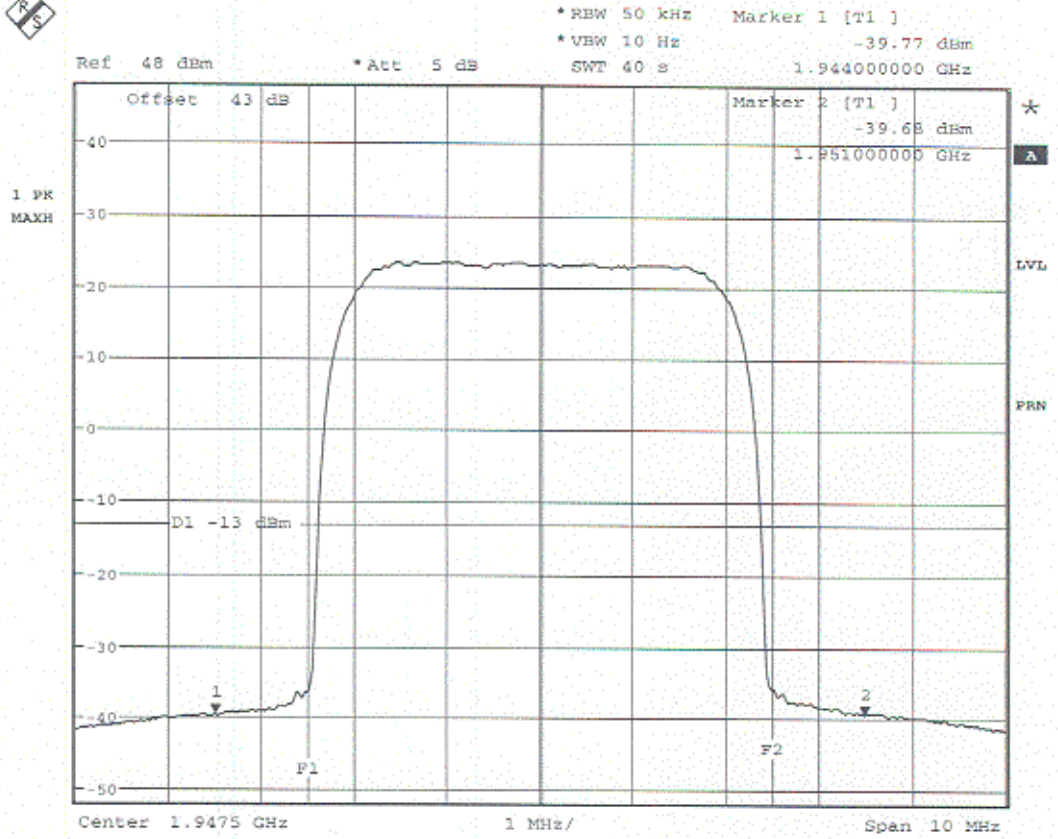
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Spectrum analyser FSU specifications

Specifications

Specifications apply under the following conditions:

30 minutes warm-up time at ambient temperature, specified environmental conditions met, calibration cycle adhered to, and total calibration performed.

Data without tolerances: typical values only.

Data designated "nominal" apply to design parameters and are not tested.

Data designated " $\sigma = xx \text{ dB}$ " are shown as standard deviation

	R&S FSU3	R&S FSU8	R&S FSU26
Frequency			
Frequency range			
DC coupled	20 Hz to 3.6 GHz	20 Hz to 8 GHz	20 Hz to 26.5 GHz
AC coupled	1 MHz to 3.6 GHz	1 MHz to 8 GHz	10 MHz to 26.5 GHz
Frequency resolution	0.01 Hz		
Internal reference frequency (nominal) with standard OCXO			
Aging per day ¹⁾	1 x 10 ⁻⁹		
Aging per year ¹⁾	1 x 10 ⁻⁷		
Temperature drift (0°C to +50°C)	8 x 10 ⁻⁸		
Total error (per year) ¹⁾	1.8 x 10 ⁻⁷		
Internal reference frequency (nominal); option R&S FS-B4			
Aging per day ¹⁾	2 x 10 ⁻¹⁰		
Aging per year ¹⁾	3 x 10 ⁻⁸		
Temperature drift (0°C to +50°C)	1 x 10 ⁻⁹		
Total error (per year) ¹⁾	5 x 10 ⁻⁸		
External reference frequency	1 MHz to 20 MHz, 1 Hz steps		
Frequency display	with marker or frequency counter		
Marker resolution	0.1 Hz to 10 kHz (dependent on span)		
Max. deviation (sweep time >3 x auto sweep time)	$\pm(\text{marker frequency} \times \text{reference error} + 0.5\% \times \text{span} + 10\% \times \text{resolution bandwidth} + \frac{1}{2} \text{ (last digit)})$		
Frequency counter resolution	0.1 Hz to 10 kHz (selectable)		
Count accuracy (S/N >25 dB)	$\pm(\text{frequency} \times \text{reference error} + \frac{1}{2} \text{ (last digit)})$		
Frequency span	0 Hz, 10 Hz to 3.6 GHz	0 Hz, 10 Hz to 8 GHz	0 Hz, 10 Hz to 26.5 GHz
Span resolution/ max. span deviation	0.1 Hz/1 %		
Spectral purity (dBc(1Hz)), SSB phase noise, f = 640 MHz			
Residual FM	<1 Hz nominal		
Carrier offset			
10 Hz	typ. -73 dBc(1Hz), with option R&S FS-B4 typ. -86 dBc		
100 Hz	<-90 dBc(1Hz), typ. -100 dBc(1Hz)		
1 kHz	<-112 dBc(1Hz), typ. -116 dBc(1Hz)		
10 kHz	<-120 dBc(1Hz), typ. -123 dBc(1Hz)		
100 kHz	<-120 dBc(1Hz), typ. -123 dBc(1Hz)		
1 MHz	<-138 dBc(1Hz), typ. -144 dBc(1Hz)		
10 MHz	<-155 dBc(1Hz) nominal, typ. -160 dBc(1Hz)		
Sweep			
Span 0 Hz	1 μ s to 16000 s in steps of 5%		
Span \geq 10 Hz	2.5 ms to 16000 s in steps \leq 10%		
Max. deviation of sweep time	3%		
Sampling rate	31.25 ns (32 MHz A/D converter)		
Measurement in time domain	with marker and display lines (resolution 31.25 ns)		

	R&S FSU3	R&S FSU8	R&S FSU26
Resolution bandwidths			
Analog filters			
3 dB bandwidths	10 Hz to 20 MHz in 1/2/3/5 sequence, 50 MHz		
Bandwidth error			
10 Hz to 100 kHz	<3%		
200 kHz to 5 MHz	<10%		
10 MHz, 20 MHz	-30% to +10%		
50 MHz	-30% to +10%	-30% to +10% for f<3.6 GHz -30% to +100% for f>3.6 GHz	
Shape factor -60 dB: -3 dB			
\leq 100 kHz	<6		
200 kHz to 2 MHz	<12		
3 MHz to 10 MHz	<7		
20 MHz, 50 MHz	<6 nominal		
Video bandwidths	1 Hz to 10 MHz in 1/2/3/5 sequence		
FFT filters			
3 dB bandwidths	1 Hz to 30 kHz in 1/2/3/5 sequence		
Bandwidth error	<5% nominal		
Shape factor	<3 nominal		
-60 dB : -3 dB			
EMI filters			
6 dB bandwidths	200 Hz, 9 kHz, 120 kHz		
Bandwidth error	<3% nominal		
Shape factor	<6 nominal		
-60 dB : -3 dB			
Channel filters			
Bandwidths	100, 200, 300, 500 Hz, 1, 1.5, 2, 2.4, 2.7, 3, 3.4, 4, 4.5, 5, 6, 8.5, 9, 10, 12.5, 14, 15, 16, 18 (RRC), 20, 21, 24.3 (RRC), 25, 30, 50, 100, 150, 192, 200, 300, 500 kHz, 1, 1.228, 1.5, 2, 3, 5 MHz		
Shape factor	<2 nominal		
-60 dB : -3 dB			
Bandwidth error	2% nominal		
Level			
Display range	displayed average noise level to 30 dBm		
Maximum input level			
DC voltage (AC coupling)	50 V		
DC voltage (DC coupling)	0 V		
RF attenuation 0 dB			
CW RF power	20 dBm (= 0.1 W)		
Pulse spectral density	97 dB μ V/1 MHz		
RF attenuation \geq10 dB			
CW RF power	30 dBm (= 1 W)		
Max. pulse voltage	150 V		
Max. pulse energy (10 μ s)	1 mWs		
1 dB compression of input mixer (0 dB RF attenuation)	+13 dBm nominal	+13 dBm nominal up to 3.6 GHz	+7 dBm nominal from 3.6 GHz to 26 GHz
	-	+10 dBm nominal from 3.6 GHz to 8 GHz	+7 dBm nominal from 3.6 GHz to 26 GHz
Intermodulation			
Third-order intermodulation			
Third-order intercept (TOI), level 2 x -10 dBm, $\Delta f > 5 \times \text{RBW}$ or 10 kHz, whichever is the greater value	>17 dBm, typ. 20 dBm for f = 10 MHz to 300 MHz >+20 dBm, typ. +25 dBm for f >300 MHz	>17 dBm, typ. 20 dBm for f = 10 MHz to 300 MHz >+20 dBm, typ. +25 dBm for f = 300 MHz to 3.6 GHz >+18 dBm, typ. +23 dBm for f = 3.6 GHz to 8 GHz	>17 dBm, typ. 20 dBm for f = 10 MHz to 300 MHz >+22 dBm, typ. +27 dBm for f = 300 MHz to 3.6 GHz >+12 dBm, typ. +15 dBm for f = 3.6 GHz to 26.5 GHz

1) After 30 days of continuous operation.

	R&S FSU3	R&S FSU8	R&S FSU26
Second harmonic intercept point (SHI)			
$f_{in} \leq 100$ MHz	>35 dBm		
100 MHz < $f_{in} \leq 400$ MHz	>45 dBm, typ. 55 dBm		
400 MHz < $f_{in} \leq 500$ Hz	>52 dBm, typ. 60 dBm		
500 MHz < $f_{in} \leq 1$ GHz	>45 dBm, typ. 55 dBm		
1 GHz < $f_{in} \leq 1.8$ GHz	>35 dBm		
$f_{in} > 1.8$ GHz	–	>80 dBm nominal	
Displayed average noise level			
(0 dB RF attenuation, RBW 10 Hz, VBW 30 Hz, 20 averages, trace average, span 0 Hz, termination 50 Ω)			
Frequency			
20 Hz	<–80 dBm		
100 Hz	<–100 dBm		
1 kHz	<–110 dBm		
10 kHz	<–120 dBm		
100 kHz	<–120 dBm		
1 MHz	<–130 dBm		
10 MHz to 2 GHz	<–145 dBm, typ. –148 dBm	<–142 dBm, typ. –146 dBm	
2 GHz to 3.6 GHz	<–143 dBm, typ. –147 dBm	<–143 dBm, typ. –145 dBm	<–140 dBm, typ. –143 dBm
3.6 GHz to 7 GHz	<–142 dBm, typ. –146 dBm	<–142 dBm, typ. –144 dBm	–
7 GHz to 8 GHz	–	<–140 dBm	–
3.6 GHz to 8 GHz	–	–	<–142 dBm, typ. –146 dBm
8 GHz to 13 GHz	–	–	<–140 dBm, typ. –143 dBm
13 GHz to 18 GHz	–	–	<–138 dBm, typ. –141 dBm
18 GHz to 22 GHz	–	–	<–137 dBm, typ. –140 dBm
22 GHz to 26.5 GHz	–	–	<–135 dBm, typ. –138 dBm
Maximum dynamic range			
1 dB compression to DANL (1 Hz)	170 dB		
Immunity to interference			
Image frequency			
$f \leq 3.6$ GHz	>90 dB, typ. >110 dB		
$f > 3.6$ GHz	–	>70 dB, typ. 100 dB	
Intermediate frequency			
$f \leq 3.6$ GHz	>90 dB, typ. >110 dB		
3.6 GHz $\leq f \leq 4.2$ GHz	–	typ. 70 dB	
$f > 4.2$ GHz	>70 dB, typ. >90 dB		
Spurious responses ($f > 1$ MHz, without input signal, 0 dB attenuation)	<–103 dBm		
Other spurious ($\Delta f > 100$ kHz)			
$f_{in} < 2.3$ GHz	<–80 dBc (mixer level ≤ -10 dBm)		
2.3 GHz $\leq f_{in} < 4$ GHz	<–70 dBc (mixer level ≤ -35 dBm)		
4 GHz $\leq f_{in} < 26.5$ GHz	<–80 dBc (mixer level ≤ -10 dBm)		
Level display (spectrum mode)			
Screen	625 x 500 pixels (one diagram), max. 2 diagrams with independent settings		
Logarithmic level axis	1 dB, 10 dB to 200 dB in steps of 10 dB		
Linear level axis	10% of reference level per level division, 10 divisions or logarithmic scaling		
Traces	max. 6, with two diagrams on screen max. 3 per diagram		
Trace detector	Max Peak, Min Peak, Auto Peak (normal), Sample, RMS, Average, Quasi Peak		
Trace functions	Clear/Write, Max Hold, Min Hold, Average		
Number of measurement points	625, settable between 155 and 100001 in steps of about the factor 2		

	R&S FSU3	R&S FSU8	R&S FSU26
Setting range of reference level			
Logarithmic level display	–130 dBm to (+5 dBm + RF attenuation), max. 30 dBm, in steps of 0.1 dB		
Linear level display	7.0 nV to 7.07 V in steps of 1%		
Units of level axis	dBm, dB μ V, dBmV, dB μ A, dBpW (log level display) / μ V, mV, μ A, mA, pW, nW (linear level display)		
Level measurement error			
Reference error at 128 MHz, RBW ≤ 100 kHz, reference level –30 dBm, RF attenuation 10 dB	<0.2 ($\sigma = 0.07$) dB		
Frequency response (DC coupling, RF attenuation ≥ 10 dB)			
10 MHz to 3.6 GHz	<0.3 dB ($\sigma = 0.1$ dB) ¹⁾		
3.6 GHz to 8 GHz	–	<1.5 dB ($\sigma = 0.5$ dB) ²⁾	
8 GHz to 22 GHz	–	–	<2 dB ($\sigma = 0.7$ dB) ²⁾
22 GHz to 26.5 GHz	–	–	<2.5 dB ($\sigma = 0.8$ dB) ²⁾
Attenuator (≥ 5 dB)	<0.2 dB ($\sigma = 0.07$ dB)		
Reference level switching	<0.15 dB ($\sigma = 0.05$ dB)		
Display nonlinearity (20 °C to 30 °C, mixer level ≤ -10 dBm)			
Logarithmic level display			
RBW ≤ 100 kHz, S/N > 20 dB			
0 dB to –70 dB	<0.1 dB ($\sigma = 0.03$ dB)		
–70 dB to –90 dB	<0.3 dB ($\sigma = 0.1$ dB)		
10 MHz \geq RBW ≥ 200 kHz, S/N > 16 dB			
0 dB to –50 dB	<0.2 dB ($\sigma = 0.07$ dB)		
–50 dB to –70 dB	<0.5 dB ($\sigma = 0.17$ dB)		
RBW ≥ 10 MHz			
0 dB to –50 dB	<0.5 dB ($\sigma = 0.17$ dB)		
Linear level display			
5 % of reference level			
Bandwidth switching error (ref. to RBW = 10 kHz)			
10 Hz to 100 kHz	–		
200 kHz to 10 MHz	<0.2 dB ($\sigma = 0.07$ dB)		
5 MHz to 50 MHz	<0.5 dB ($\sigma = 0.15$ dB)		
FFT 1 Hz to 3 kHz	<0.2 dB ($\sigma = 0.07$ dB)		
Total measurement error			
(0 dB to –70 dB, S/N > 20 dB, span/RBW < 100 , 95 % confidence level) (20 °C to 30 °C, mixer level ≤ -10 dBm)			
<3.6 GHz	0.3 dB for RBW ≤ 100 kHz 0.5 dB for RBW > 100 kHz		
3.6 GHz to 8 GHz	–	<2.0 dB	
8 GHz to 18 GHz	–	–	<2.5 dB
18 GHz to 26.5 GHz	–	–	<3.0 dB
Audio demodulation			
Modulation modes			
AM and FM			
Audio output	loudspeaker and headphones output		
Marker hold time in spectrum mode	100 ms to 60 s		
Trigger functions			
Trigger			
Span ≥ 10 Hz			
Trigger source	free run, video, external, IF level (mixer level > -20 dBm)		
Trigger offset	125 ns to 100 s, resolution 125 ns min. (or 1 % of offset)		
Span = 0 Hz			
Trigger source	free run, video, external, IF level (mixer level > -20 dBm)		
Trigger offset	± 125 ns to 100 s, resolution 125 ns min., dependent on sweep time		
Max. deviation of trigger offset	$\pm (125$ ns + (0.1 % x delay time))		
Gated sweep			
Trigger source	external, IF level, video		
Gate delay	1 μ s to 100 s		
Gate length	125 ns to 100 s, resolution min. 125 ns or 1 % of gate length		
Max. deviation of gate length	$\pm (125$ ns + (0.05 % x gate length))		

	R&S FSU3	R&S FSU8	R&S FSU26
Inputs and outputs (front panel)			
RF input	N female, 50 Ω		
VSWR; RF attenuation ≥10 dB, DC coupling			
f <3.6 GHz	<1.5		
f <8 GHz	–	<2.0	<1.8
f <18 GHz	–	–	<1.8
f <26.5 GHz	–	–	<2.0
RF attenuation <10 dB or AC coupling	typ. 1.5		
Setting range of attenuator	0 dB to 75 dB in 5 dB steps		
Probe power supply	+15 V DC, –12.6 V DC and ground, max. 150 mA nominal		
Power supply for antennas	5-pin connector		
Supply voltages	±10 V and ground, max. 100 mA nominal		
Keyboard			
Keyboard connector	PS/2 female for MF2 keyboard		
AF output			
AF output	3.5 mm mini jack		
Output impedance	10 Ω		
Open-circuit voltage	up to 1.5 V, adjustable		
Inputs and outputs (rear panel)			
IF 20.4 MHz	Z _{out} = 50 Ω, BNC female		
Bandwidth			
RBW ≤ 100 kHz	1.5 x resolution bandwidth, min. 2.6 kHz		
10 MHz ≥ RBW ≥ 200 kHz	same as resolution bandwidth		
Level			
RBW ≤ 100 kHz, FFT	–20 dBm at reference level, mixer level >–70 dBm		
10 MHz ≥ RBW ≥ 200 kHz	0 dBm at reference level, mixer level >–50 dBm		
IF 404.4 MHz	Z _{out} = 50 Ω, BNC female 404.4 MHz IF output active only if RBW >10 MHz		
Bandwidth			
RBW > 10 MHz	same as resolution bandwidth		
Level			
Mixer level ≤ 0 dBm	mixer level –10 dB typ., only active if RBW 20.50 MHz		
Video output	Z _{out} = 50 Ω, BNC female		
Voltage (RBW ≥200 kHz)	0 V to 1 V, full scale (open-circuit voltage), logarithmic scaling		
Reference frequency			
Output	BNC female		
Output frequency	10 MHz		
Level	>0 dBm nominal		
Input	BNC female		
Input frequency range	1 MHz to 20 MHz in 1 Hz steps		
Required level	>0 dBm from 50 Ω		
Sweep output	BNC female, 0 V to 5 V, proportional to displayed frequency		
Power supply connector for noise source	BNC female, 0 V and 28 V, switchable, max. 100 mA		
External trigger/gate input	BNC female, >10 kΩ		
Trigger voltage	1.4 V		
IEC/IEEE-bus remote control	interface to IEC 625-2 (IEEE 488.2)		
Command set	SCPI 1997.0		
Connector	24-pin Amphenol female		
Interface functions	SH1, AH1, T6, L4, SR1, RL1, PP1, DC1, DT1, C0		
Serial interface	RS-232-C (COM), 9-pin SUB-D female		
Printer interface	parallel (Centronics-compatible)		
Mouse connector	PS/2 female		
Connector for external monitor (VGA)	15-pin SUB-D female		

- Valid for temperatures between +20°C and +30°C; <0.6 dB for temperatures between +5°C and +45°C.
- Valid for temperatures between +20°C and +30°C and span <1 GHz; add <0.5 dB for temperatures between +5°C and +45°C or span >1 GHz.

General data	
Display	21 cm TFT LCD colour display (8.4")
Resolution	800 x 600 pixels (SVGA resolution)
Pixel failure rate	<1 x 10 ⁻⁵
Mass memory	1.44 Mbyte 3½" disk drive, hard disk
Data storage	>500 instrument settings and traces
Operating temperature range	
Rated temperature range	+5 °C to +40 °C
Limit temperature range	+0 °C to +50 °C
Storage temperature range	–40 °C to +70 °C
Damp heat	+40 °C at 95 % relative humidity (IEC 68–2–3)
Mechanical resistance	
Vibration, sinusoidal	5 Hz to 150 Hz, max. 2 g at 55 Hz; 0.5 g from 55 Hz to 150 Hz; meets IEC 68-2-6, IEC 68-2-3, IEC 1010-1, MIL-T-28800D, class 5
Vibration, random	10 Hz to 100 Hz, acceleration 1 g (rms)
Shock test	40 g shock spectrum, meets MIL-STD-810C and MIL-T-28800D, classes 3 and 5
Recommended calibration interval	2 years for operation with external reference, 1 year with internal reference
RFI suppression	meets EMC directive of EU (89/336/EEC) and German EMC law
Power supply	
AC supply	100 V AC to 240 V AC, 3.1 A to 1.3 A, 50 Hz to 400 Hz, class of protection I to VDE 411
Power consumption	typ. 130 VA typ. 150 VA
Safety	meets EN 61010-1, UL 3111-1, CSA C22.2 No. 1010-1, IEC 1010-1
Test mark	VDE, GS, CSA, CSA-NRTL
Dimensions (W x H x D)	435 mm x 192 mm x 460 mm 435 mm x 192 mm x 460 mm
Weight	14.6 kg 15.4 kg

Optional Extended Environmental Specification R&S FSU-B20

Temperature range (without condensation)	
Rated temperature range	0°C to +50°C
Limit temperature range	0°C to +55°C
Mechanical resistance	
Vibration, random	10 Hz to 300 Hz, acceleration 1.9 g (rms)

Optional Electronic Attenuator R&S FSU-B25

Frequency	
Frequency range	
R&S FSU 3	10 MHz to 3.6 GHz
R&S FSU 8	10 MHz to 8 GHz
R&S FSU 26	10 MHz to 3.6 GHz
Setting range	
Electronic attenuator	0 dB to 30 dB, 5 dB steps
Preamplifier	20 dB, switchable
Maximum level measurement error	
Frequency response, with preamplifier or electronic attenuator	
10 MHz to 50 MHz	<1 dB
50 MHz to 3.6 GHz	<0.6 dB
3.6 GHz to 8 GHz	<2.0 dB
Reference error at 128 MHz, RBW ≤100 kHz, reference level –30 dBm, RF attenuation 10 dB	
Electronic attenuator	<0.3 dB
Preamplifier	<0.3 dB

Displayed average noise level

RBW=1 kHz, VBW=3 kHz, zero span, sweep time 50 ms, 20 averages, mean marker, normalized to 10 Hz RBW

Preamplifier on

10 MHz to 2.0 GHz	<-152 dBm
2.0 GHz to 3.6 GHz	<-150 dBm
3.6 GHz to 8.0 GHz	<-147 dBm

With the R&S FSU-B25 built in, the average noise level values displayed by the basic units degrade by (R&S FSU-B25 off):

20 Hz to 3.6 GHz	1 dB
3.6 GHz to 8 GHz	2 dB

Preamplifier off, electronic attenuator 0 dB

20 Hz to 3.6 GHz	typ. 2.5 dB
3.6 GHz to 8 GHz	typ. 3.5 dB

Intermodulation

Third-order intermodulation, third-order intercept (TOI), electronic attenuator on, $\Delta f > 5 \times$ RBW or 10 kHz

10 MHz to 300 MHz	>17 dBm
300 MHz to 3.6 GHz	>20 dBm
3.6 GHz to 8 GHz	>18 dBm

Ordering information

Order designation	Type	Order No.
Spectrum Analyzer 20 Hz to 3.6 GHz	R&S FSU3	1129.9003.03
Spectrum Analyzer 20 Hz to 8 GHz	R&S FSU8	1129.9003.08
Spectrum Analyzer 20 Hz to 26.5 GHz	R&S FSU26	1129.9003.26

Accessories supplied

Power cable, operating manual, service manual; R&S FSU26: test port adapter with 3.5 mm female (1021.0512.00) and N female (1021.0535.00) connector

Options

Order designation	Type	Order No.
Options		
Delete Manual	R&S FSU-B0	1144.9998.02
Highly Accurate Reference Frequency	R&S FSU-B4	1144.9000.02
External Generator Control	R&S FSP-B10	1129.7246.02
LAN Interface100BT	R&S FSU-B16	1144.9498.02
Removable Hard Disk	R&S FSU-B18 ^{1) 2)}	1145.0242.02
Second Hard Disk for FSU-B18	R&S FSU-B19 ²⁾	1145.0394.02
Extended Environmental Specification	R&S FSU-B20 ³⁾	1155.1606.04
Electronic Attenuator, 0 dB to 30 dB, with integrated 20 dB preamplifier	R&S FSU-B25	1144.9298.02
Software		
Noise Measurement Software	R&S FS-K3	1057.3028.02
Phase Noise Measurement Software	R&S FS-K4	1108.0088.02
GSM/EDGE Application Firmware	R&S FS-K5	1141.1496.02
FM Measurement Demodulator	R&S FS-K7	1141.1796.02
3GPP BTS/Node B FDD Application Firmware	R&S FS-K72	1154.7000.02
Service Kit	R&S FSU-Z1	1145.0042.02

1) Factory installation only.

2) Not with R&S FSU-B20.

3) Not with R&S FSU-B18/-B19.

Recommended extras

Order designation	Type	Order No.
Microwave Measurement Cable with Adapter Set (for R&S FSU26 only)	R&S FSE-Z15	1046.2002.02
Headphones	-	0708.9010.00
US Keyboard with trackball	R&S PSP-Z2	1091.4100.02
PS/2 Mouse	R&S FSE-Z2	1084.7043.02
Colour Monitor, 17", 230 V	R&S PMC3	1082.6004.04
IEC/IEEE-Bus Cable, 1 m	R&S PCK	0292.2013.10
IEC/IEEE-Bus Cable, 2 m	R&S PCK	0292.2013.20
19" Rack Adapter	R&S ZZA-411	1096.3283.00
Adapter for mounting on telescopic rails (only with 19" Adapter ZZA-411)	R&S ZZA-T45	1109.3774.00

Matching Pads, 75 Ω

L Section	R&S RAM	0358.5414.02
Series Resistor, 25 Ω	R&S RAZ	0358.5714.02
SWR Bridge, 5 MHz to 3000 MHz	R&S ZRB2	0373.9017.52
SWR Bridge, 40 kHz to 4 GHz	R&S ZRC	1039.9492.52

High-Power Attenuators, 100 W,

3/6/10/20/30 dB	R&S RBU 100	1073.8820.XX (XX=03/06/10/20/ 30)
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High-Power Attenuators, 50 W

3/6/10/20/30 dB	R&S RBU 50	1073.8895.XX (XX=03/06/10/20/ 30)
20 dB, 6 GHz	R&S RDL 50	1035.1700.52



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