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Vector Signal Generator R&S®SMU200A

Configuration Guide

Configuration Guide

This document guides you step-by-step through the configuration procedure for the Vector Signal Generator R&S SMU200A.
Each step indicates whether an option is mandatory or optional and also provides the following information:

Option	Name of the option
Description	Description of the option
Requires	Options required in order to install the selected option
Not compatible with	Options incompatible with the selected option
HW or SW	Identifies the option as a hardware or software option
Remarks	Special remarks such as “factory-installed”

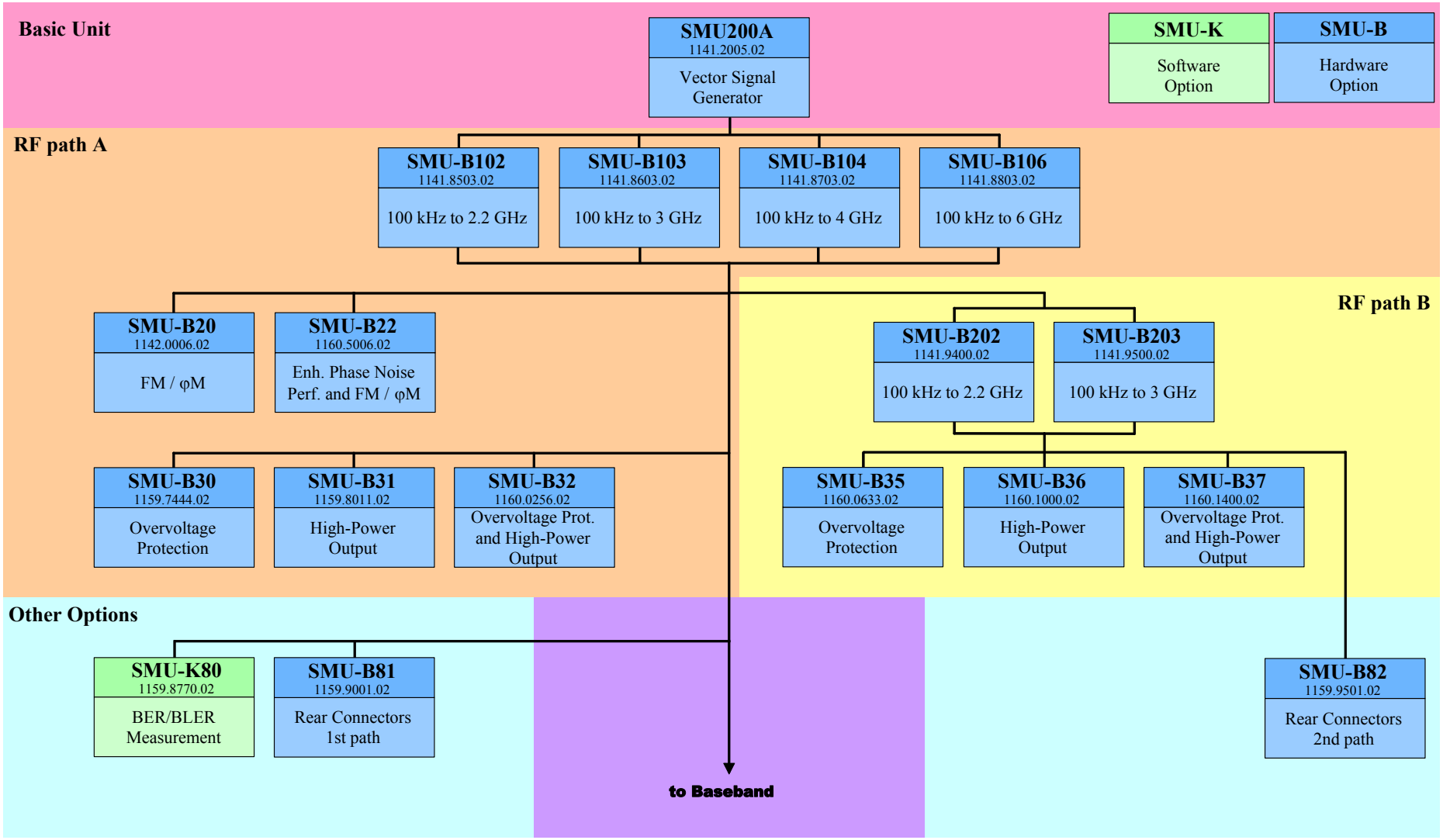
Mandatory fields that list various selectable options apply only if the step that includes them is chosen
(e.g. choosing a baseband source is mandatory only if the instrument is to be equipped with a baseband path).

The R&S SMU200A can be equipped with up to two RF paths as well as two baseband paths (A and B),
which effectively means two independent signal generators in one cabinet of only four height units.
For easier configuration of the instrument to be used, this guide has been divided into two sections:

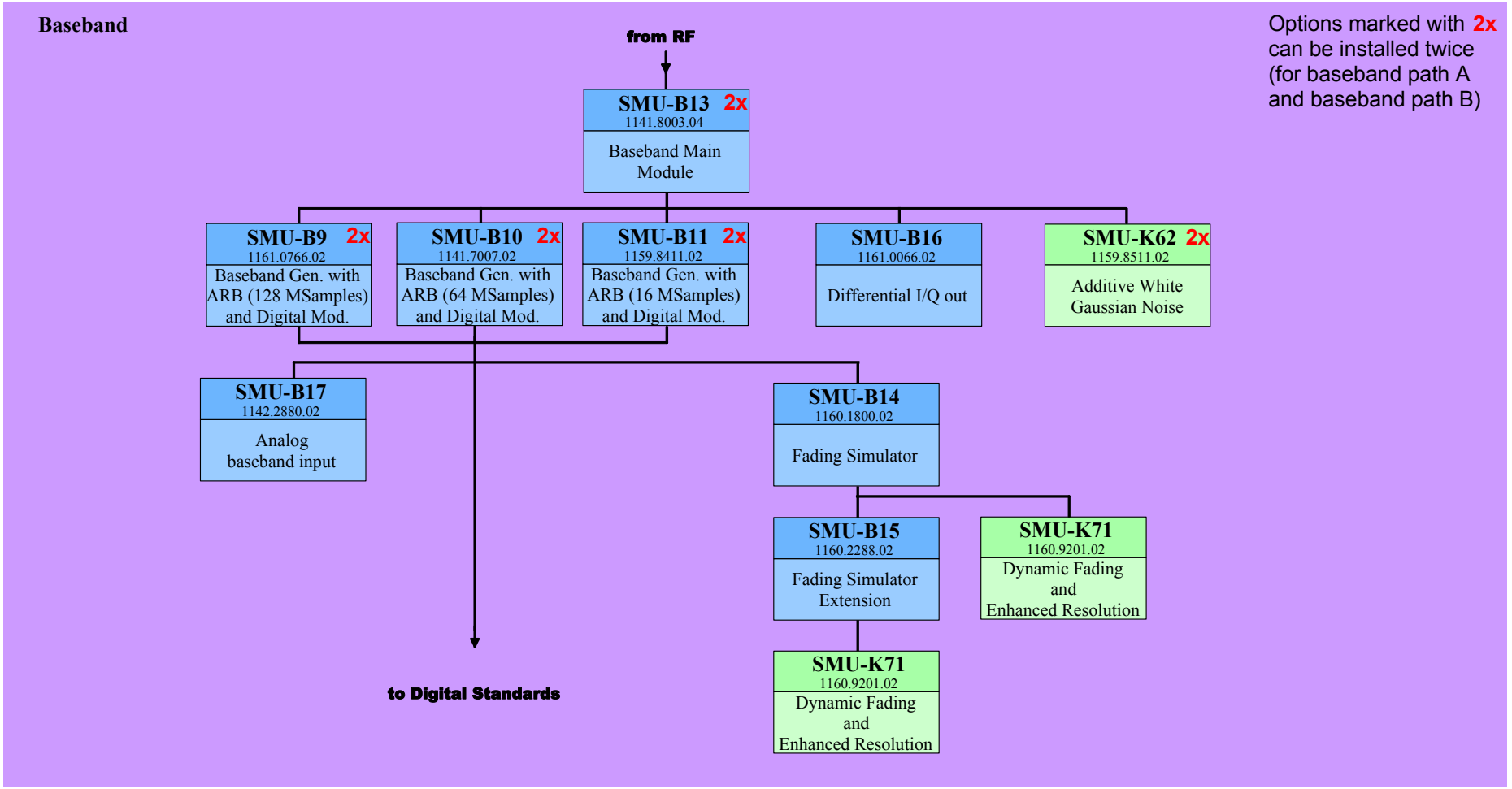
Single-path instrument – starting on page 7
Two-path instrument – starting on page 11

An overview of available options is provided on page 3 to 6.
Configuration Examples are given on page 17.

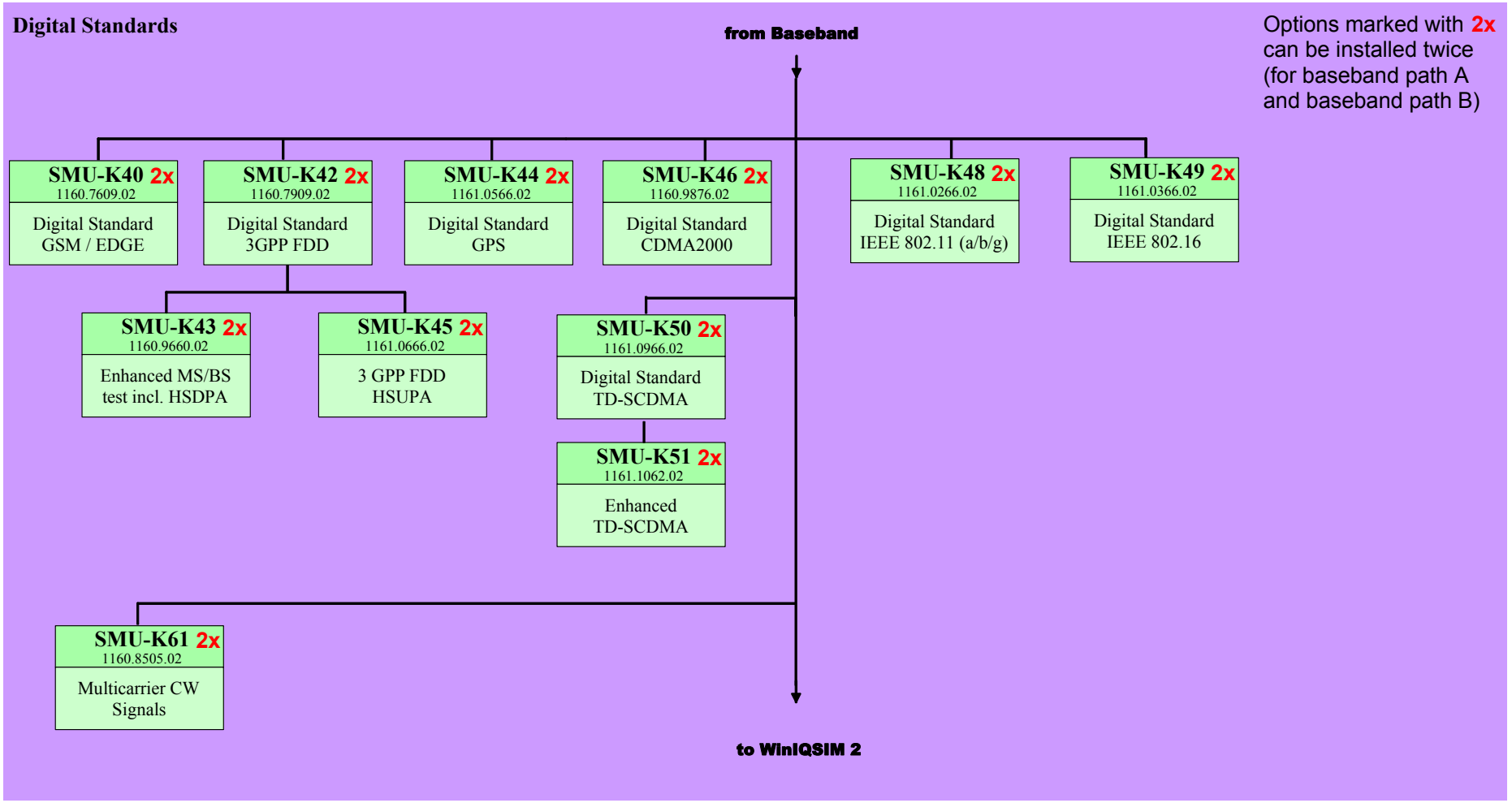
Option overview – RF



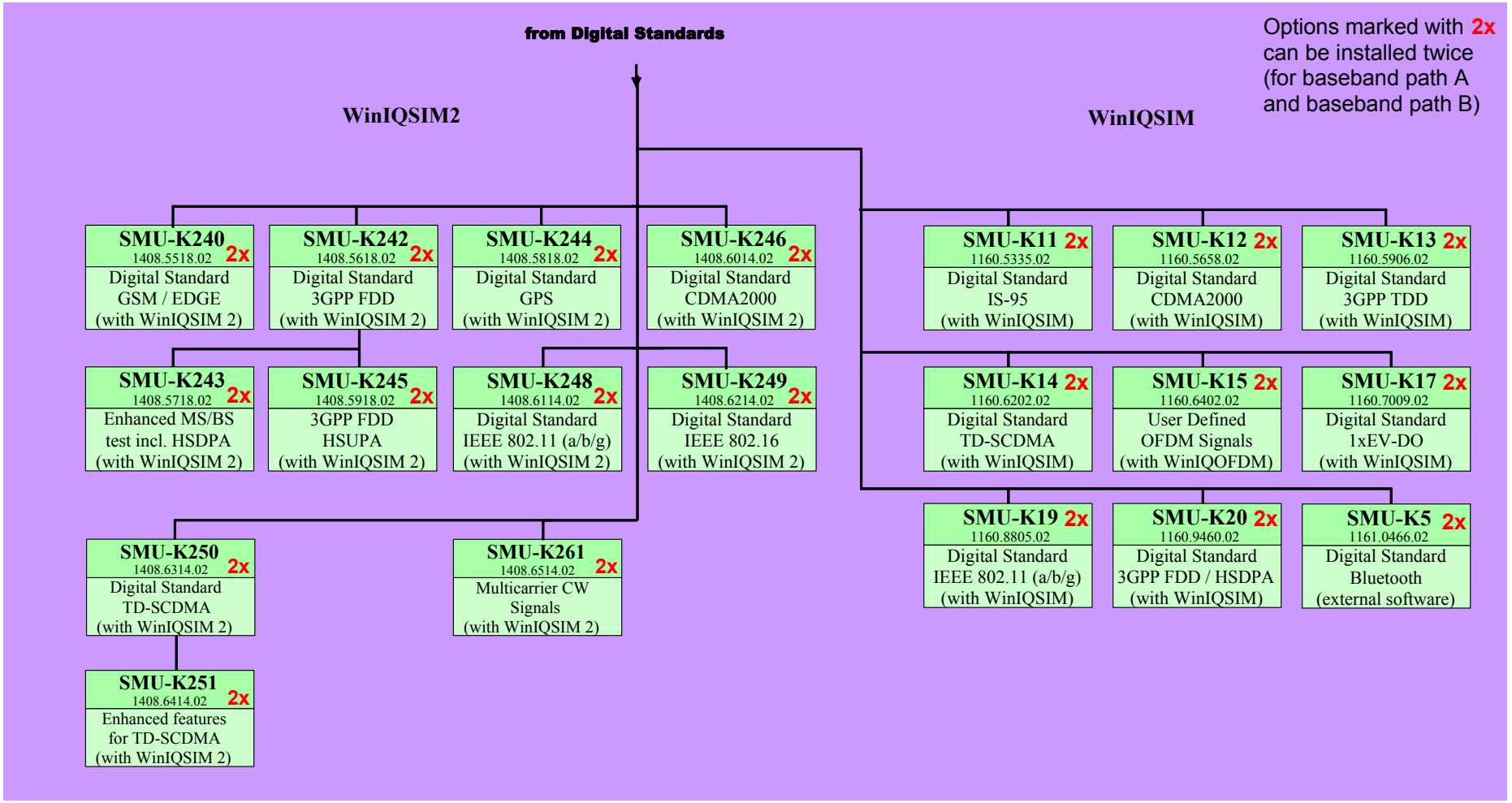
Option Overview – Baseband



Option Overview – Digital Standards



Option Overview – WinIQSIM2™ and WinIQSIM™



Single-path instrument

Applies if the instrument is equipped with one RF path and no more than one baseband path.

Step ① Configure RF path — MANDATORY

Choose frequency range (only one choice possible) — MANDATORY

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-B102	100 kHz to 2.2 GHz	SMU200A	-	HW	Factory-installed
SMU-B103	100 kHz to 3 GHz	SMU200A	-	HW	Factory-installed
SMU-B104	100 kHz to 4 GHz	SMU200A	-	HW	Factory-installed
SMU-B106	100 kHz to 6 GHz	SMU200A	-	HW	Factory-installed

Choose enhanced phase noise performance and FM/φM Modulator — OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-B20	FM/φM Modulator	SMU-B10x	SMU-B22	HW	
SMU-B22	Enhanced phase noise performance and FM/φM Modulator	SMU-B10x	SMU-B20	HW	

Choose output configuration (only one choice possible) — OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-B30	Overvoltage Protection	SMU-B10x	SMU-B104 SMU-B106	HW	Factory-installed
SMU-B31	High-Power Output	SMU-B10x	-	HW	Factory-installed
SMU-B32	Overvoltage Protection and High-Power Output	SMU-B10x	SMU-B104 SMU-B106	HW	Factory-installed

Step ② Configure baseband path — OPTIONAL

Choose baseband source — MANDATORY

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-B13	Baseband Main Module	SMU-B10x	-	HW	Requires SMU-B9, SMU-B10 or SMU-B11 or SMU-K62 to be used
SMU-B9	Baseband Generator with ARB (128 Msamples) and Digital Modulation	SMU-B13	SMU-B10, SMU-B11		
SMU-B10	Baseband Generator with ARB (64 Msamples) and Digital Modulation	SMU-B13	SMU-B9, SMU-B11	HW	
SMU-B11	Baseband Generator with ARB (16 MSamples) and Digital Modulation	SMU-B13	SMU-B9, SMU-B10	HW	
SMU-B16	Differential I/Q out	SMU-B13	-	HW	
SMU-B17	Analog baseband input	SMU-B9, -B10 or -B11	-	HW	

Choose digital modulation systems — OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K40	Dig. Std. GSM/EDGE	SMU-B9, -B10 or -B11	-	SW	
SMU-K42	Dig. Std. 3GPP FDD	SMU-B9, -B10 or -B11	-	SW	
SMU-K43	3GPP enhanced MS/BS tests incl. HSDPA	SMU-K42	-	SW	
SMU-K44	Dig,. Std. GPS	SMU-B9, -B10 or -B11	-	SW	
SMU-K45	3GPP FDD HSUPA	SMU-K42	-	SW	
SMU-K46	cdma2000 incl. 1xEV-DV	SMU-B9, -B10 or -B11	-	SW	
SMU-K48	Dig. Std. 802.11 (a/b/g)	SMU-B9, -B10 or -B11	-	SW	
SMU-K49	Dig. Std. 802.16	SMU-B9, -B10 or -B11	-	SW	
SMU-K50	Dig. Std. TD-SCDMA	SMU-B9, -B10 or -B11	-	SW	
SMU-K51	TD-SCDMA enhanced BS/MS tests incl. HSDPA	SMU-K50	-	SW	
SMU-K61	Multicarrier CW Signal Generation	SMU-B9, -B10 or -B11	-	SW	

Choose digital modulation systems using R&S WinIQSIM2™ [1]

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K240	Dig. Std. GSM/EDGE	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K242	Dig. Std. 3GPP FDD	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K243	3GPP enhanced MS/BS tests incl. HSDPA	SMU-K242	-	SW	With WinIQSIM2™
SMU-K244	Dig,. Std. GPS	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K245	3GPP FDD HSUPA	SMU-K242	-	SW	With WinIQSIM2™
SMU-K246	cdma2000 incl. 1xEV-DV	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K248	Dig. Std. 802.11 (a/b/g)	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K249	Dig. Std. 802.16	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K250	Dig. Std. TD-SCDMA	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K251	TD-SCDMA enhanced BS/MS tests incl. HSDPA	SMU-K250	-	SW	With WinIQSIM2™
SMU-K261	Multicarrier CW Signal Generation	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™

Choose digital modulation systems using R&S WinIQSIM™ [2] OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K11	Dig. Std. IS-95	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K12	Dig. Std. cdma2000	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K13	Dig. Std. 3GPP TDD	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K14	Dig. Std. TD-SCDMA	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K15	User-Defined OFDM Signals	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™ and WinIQOFDM
SMU-K17	Dig. Std. 1xEV-DO	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K19	Dig. Std. IEEE 802.11 (a/b/g)	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K20	Dig. Std. 3GPP incl. HSDPA	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™

Choose digital modulation systems using external PC Software OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K5	Dig. Std. Bluetooth	SMU-B9, -B10 or -B11	-	SW	With external PC program SM-K5

Choose noise OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K62	Additive White Gaussian Noise (AWGN)	SMU-B13	-	SW	

[1] R&S WinIQSIM2™ requires an external PC.

[2] R&S WinIQSIM™ requires an external PC.

Step ③ Configure fading — OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-B14	Fading Simulator	SMU-B9, -B10 or –B11	-	HW	
SMU-B15	Fading Simulator Extension	SMU-B14	-	HW	Extends SMU-B14 to 40 paths
SMU-K71	Dynamic Fading and enhanced resolution	SMU-B14	-	SW	

Step ④ Choose other options — OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K80	BER/BLER Measurement	SMU-B10x	-	SW	
SMU-B81	Rear Connectors	SMU-B10x	-	HW	Factory fitted

Two-path instrument

Applies if the instrument is equipped with up to two RF paths and up to two baseband paths.

Step ① Configure RF path A — MANDATORY

Choose frequency range (only one choice possible) — MANDATORY

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-B102	100 kHz to 2.2 GHz	SMU200A	-	HW	Factory-installed
SMU-B103	100 kHz to 3 GHz	SMU200A	-	HW	Factory-installed
SMU-B104	100 kHz to 4 GHz	SMU200A	-	HW	Factory-installed
SMU-B106	100 kHz to 6 GHz	SMU200A	-	HW	Factory-installed

Choose enhanced phase noise performance and FM/φM Modulator — OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-B20	FM/φM Modulator	SMU-B10x	SMU-B22	HW	
SMU-B22	Enhanced phase noise performance and FM/φM Modulator	SMU-B10x	SMU-B20	HW	

Choose output configuration (only one choice possible) — OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-B30	Overvoltage Protection	SMU-B10x	SMU-B104 SMU-B106	HW	Factory-installed
SMU-B31	High-Power Output	SMU-B10x	-	HW	Factory-installed
SMU-B32	Overvoltage Protection and High-Power Output	SMU-B10x	SMU-B104 SMU-B106	HW	Factory-installed

Step ② Configure RF path B — OPTIONAL

Choose frequency range (only one choice possible) — MANDATORY

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-B202	100 kHz to 2.2 GHz	SMU-B10x	SMU-B104/106 + SMU-B20/22	HW	If RF path A is equipped with R&S SMU-B104 or B106, and in addition with SMU-B20 or –B22, then a second RF path cannot be installed
SMU-B203	100 kHz to 3 GHz	SMU-B10x	SMU-B104/106 + SMU-B20/22	HW	If RF path A is equipped with R&S SMU-B104 or B106, and in addition with SMU-B20 or –B22, then a second RF path cannot be installed

Choose output configuration (only one choice possible) — OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-B35	Overvoltage Protection	SMU-B20x	-	HW	Factory-installed
SMU-B36	High-Power Output	SMU-B20x	-	HW	Factory-installed
SMU-B37	Overvoltage Protection and High-Power Output	SMU-B20x	-	HW	Factory-installed

Step ③ Configure baseband path A — OPTIONAL

Choose baseband source — MANDATORY

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-B13	Baseband Main Module	SMU-B10x	-	HW	Requires SMU-B9, SMU-B10 or SMU-B11 or SMU-K62 to be used
SMU-B9	Baseband Generator with ARB (128 Msamples) and Digital Modulation	SMU-B13	SMU-B10, SMU-B11	HW	
SMU-B10	Baseband Generator with ARB (64 Msamples) and Digital Modulation	SMU-B13	SMU-B9, SMU-B11	HW	
SMU-B11	Baseband Generator with ARB (16 MSamples) and Digital Modulation	SMU-B13	SMU-B9, SMU-B10	HW	
SMU-B16	Differential I/Q out	SMU-B13	-	HW	
SMU-B17	Analog baseband input	SMU-B9, -B10 or -B11	-	HW	

Choose digital modulation systems — OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K40	Dig. Std. GSM/EDGE	SMU-B9, -B10 or -B11	-	SW	
SMU-K42	Dig. Std. 3GPP FDD	SMU-B9, -B10 or -B11	-	SW	
SMU-K43	3GPP enhanced MS/BS tests incl. HSDPA	SMU-K42	-	SW	
SMU-K44	Dig,. Std. GPS	SMU-B9, -B10 or -B11	-	SW	
SMU-K45	3GPP FDD HSUPA	SMU-K42	-	SW	
SMU-K46	cdma2000 incl. 1xEV-DV	SMU-B9, -B10 or -B11	-	SW	
SMU-K48	Dig. Std. 802.11 (a/b/g)	SMU-B9, -B10 or -B11	-	SW	
SMU-K49	Dig. Std. 802.16	SMU-B9, -B10 or -B11	-	SW	
SMU-K50	Dig. Std. TD-SCDMA	SMU-B9, -B10 or -B11	-	SW	
SMU-K51	TD-SCDMA enhanced BS/MS tests incl. HSDPA	SMU-K50	-	SW	

SMU-K61	Multicarrier CW Signal Generation	SMU-B9, -B10 or -B11	-	SW	

Choose digital modulation systems using R&S WinIQSIM2™ [3]

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K240	Dig. Std. GSM/EDGE	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K242	Dig. Std. 3GPP FDD	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K243	3GPP enhanced MS/BS tests incl. HSDPA	SMU-K242	-	SW	With WinIQSIM2™
SMU-K244	Dig,. Std. GPS	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K245	3GPP FDD HSUPA	SMU-K242	-	SW	With WinIQSIM2™
SMU-K246	cdma2000 incl. 1xEV-DV	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K248	Dig. Std. 802.11 (a/b/g)	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K249	Dig. Std. 802.16	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K250	Dig. Std. TD-SCDMA	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K251	TD-SCDMA enhanced BS/MS tests incl. HSDPA	SMU-K250	-	SW	With WinIQSIM2™
SMU-K261	Multicarrier CW Signal Generation	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™

Choose digital modulation systems using R&S WinIQSIM™ [4] OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K11	Dig. Std. IS-95	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K12	Dig. Std. cdma2000	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K13	Dig. Std. 3GPP TDD	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K14	Dig. Std. TD-SCDMA	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K15	User-Defined OFDM Signals	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™ and WinIQOFDM
SMU-K17	Dig. Std. 1xEV-DO	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K19	Dig. Std. IEEE 802.11 (a/b/g)	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K20	Dig. Std. 3GPP incl. HSDPA	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™

Choose digital modulation systems using external PC Software OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K5	Dig. Std. Bluetooth	SMU-B9, -B10 or -B11	-	SW	With external PC program SM-K5

[3] R&S WinIQSIM2™ requires an external PC.

[4] R&S WinIQSIM™ requires an external PC.

Choose noise — OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K62	Additive White Gaussian Noise (AWGN)	SMU-B13	-	SW	

Step ④ Configure baseband path B — OPTIONAL

Choose baseband source — MANDATORY

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-B13	Baseband Main Module	SMU-B13 and SMU-B9, -B10 or -B11 (in baseband path A)	-	HW	Requires SMU-B10 or SMU-B11 or SMU-K62 to be used. Required to switch I/Q outputs to baseband path B.
SMU-B9	Baseband Generator with ARB (128 MSamples) and Digital Modulation	SMU-B13 and SMU-B9 (in baseband path A)	SMU-B10, SMU-B11	HW	If different baseband generators are installed in baseband paths A and B, then the baseband generator with larger ARB size is always installed in path A. Examples: SMU-B9 + SMU-B10 → B9 in path A, B10 in path B SMU-B10 + -B11 → B10 in path A, B11 in path B SMU-B9 + -B11 → B9 in path A, B11 in path B
SMU-B10	Baseband Generator with ARB (64 MSamples) and Digital Modulation	SMU-B13 and SMU-B9 or -B10 (in baseband path A)	SMU-B9, SMU-B11	HW	
SMU-B11	Baseband Generator with ARB (16 MSamples) and Digital Modulation	SMU-B13 and SMU-B9, -B10 or -B11 (in baseband path A)	SMU-B9, SMU-B10	HW	

Choose digital modulation systems — OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K40	Dig. Std. GSM/EDGE	SMU-B9, -B10 or -B11	-	SW	
SMU-K42	Dig. Std. 3GPP FDD	SMU-B9, -B10 or -B11	-	SW	
SMU-K43	3GPP enhanced MS/BS tests incl. HSDPA	SMU-K42	-	SW	
SMU-K44	Dig,. Std. GPS	SMU-B9, -B10 or -B11	-	SW	
SMU-K45	3GPP FDD HSUPA	SMU-K42	-	SW	
SMU-K46	cdma2000 incl. 1xEV-DV	SMU-B9, -B10 or -B11	-	SW	
SMU-K48	Dig. Std. 802.11 (a/b/g)	SMU-B9, -B10 or -B11	-	SW	
SMU-K49	Dig. Std. 802.16	SMU-B9, -B10 or -B11	-	SW	
SMU-K50	Dig. Std. TD-SCDMA	SMU-B9, -B10 or -B11	-	SW	
SMU-K51	TD-SCDMA enhanced BS/MS tests incl. HSDPA	SMU-K50	-	SW	
SMU-K61	Multicarrier CW Signal Generation	SMU-B9, -B10 or -B11	-	SW	

Choose digital modulation systems using R&S WinIQSIM2™ [5]

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K240	Dig. Std. GSM/EDGE	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K242	Dig. Std. 3GPP FDD	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K243	3GPP enhanced MS/BS tests incl. HSDPA	SMU-K242	-	SW	With WinIQSIM2™
SMU-K244	Dig,. Std. GPS	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K245	3GPP FDD HSUPA	SMU-K242	-	SW	With WinIQSIM2™
SMU-K246	cdma2000 incl. 1xEV-DV	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K248	Dig. Std. 802.11 (a/b/g)	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K249	Dig. Std. 802.16	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K250	Dig. Std. TD-SCDMA	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™
SMU-K251	TD-SCDMA enhanced BS/MS tests incl. HSDPA	SMU-K250	-	SW	With WinIQSIM2™
SMU-K261	Multicarrier CW Signal Generation	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM2™

Choose digital modulation systems using R&S WinIQSIM™ [6] OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K11	Dig. Std. IS-95	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K12	Dig. Std. cdma2000	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K13	Dig. Std. 3GPP TDD	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K14	Dig. Std. TD-SCDMA	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K15	User-Defined OFDM Signals	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™ and WinIQOFDM
SMU-K17	Dig. Std. 1xEV-DO	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K19	Dig. Std. IEEE 802.11 (a/b/g)	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™
SMU-K20	Dig. Std. 3GPP incl. HSDPA	SMU-B9, -B10 or -B11	-	SW	With WinIQSIM™

Choose digital modulation systems using external PC Software OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K5	Dig. Std. Bluetooth	SMU-B9, -B10 or -B11	-	SW	With external PC program SM-K5

Choose noise OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K62	Additive White Gaussian Noise (AWGN)	SMU-B13	-	SW	

[5] R&S WinIQSIM2™ requires an external PC.

[6] R&S WinIQSIM™ requires an external PC.

Step ⑤ Configure fading — OPTIONAL

Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-B14	Fading Simulator	SMU-B13	-	HW	
SMU-B15	Fading Simulator Extension	SMU-B14	-	HW	SMU-B13 in second baseband path required for dual channel fading
SMU-K71	Dynamic Fading and enhanced resolution	SMU-B14	-	SW	SMU-K71 can be installed twice if SMU-B15 is installed for dual channel fading

Step ⑥ Choose other options — OPTIONAL

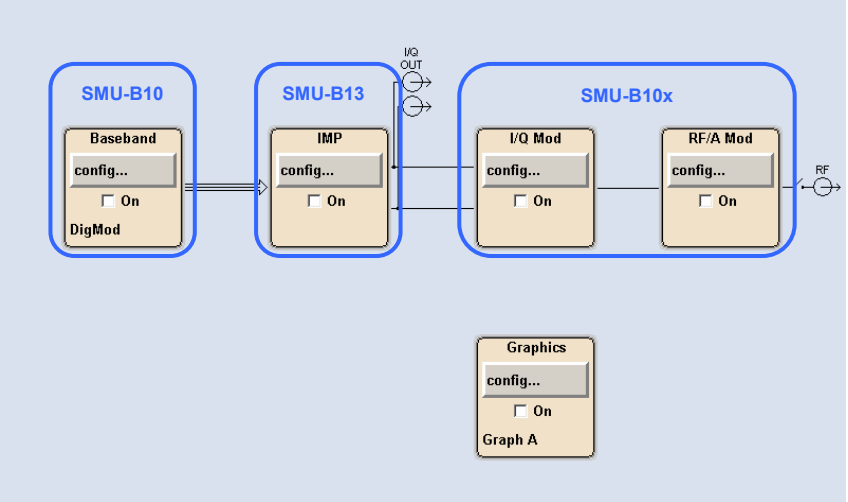
Option	Description	Requires	Not compatible with	HW or SW	Remarks
SMU-K80	BER/BLER Measurement	SMU-B10x	-	SW	
SMU-B81	Rear Connectors 1st path	SMU-B10x	-	HW	Factory fitted
SMU-B82	Rear Connectors 2nd path	SMU-B20x	-	HW	Factory fitted

Note: Digital modulation systems, noise and fading can be used either in baseband path A or baseband path B. The digital modulation systems , noise or fading will be required twice only if the baseband paths are used simultaneously. (For example, an instrument is equipped with one R&S SMU-K40 and two R&S SMU-B10. In this configuration, R&S SMU-K40 can be used either on baseband path A or baseband path B. For simultaneous use on both baseband paths, R&S SMU-K40 would be required twice.)

Configuration Examples

The modular design of the R&S SMU200A allows the instrument to be equipped with up to two paths. This allows a multitude of applications to be performed for which several signal generators were previously required.
Note: all examples use SMU-B10 as baseband generator. Instead, SMU-B9 or SMU-B11 could also be used.

One baseband generator and one RF path



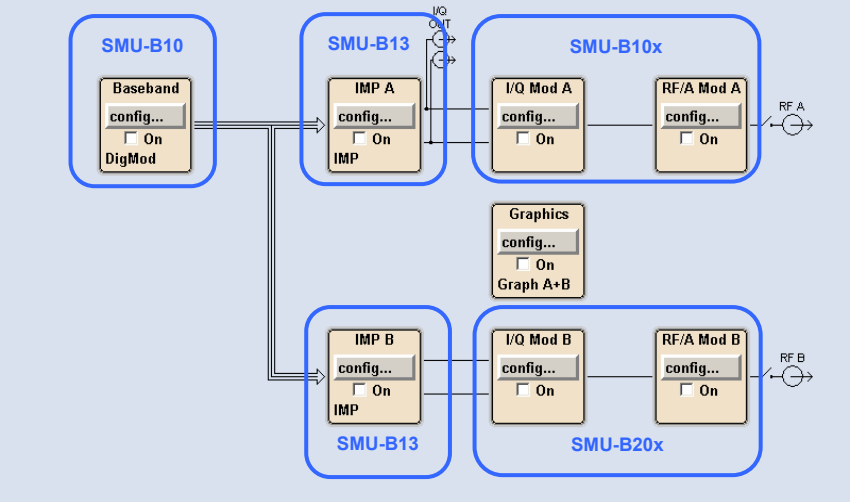
Instrument configuration

Option	Installed	Description
SMU200A	1x	Base unit
SMU-B10x	1x	Frequency option
SMU-B13	1x	Baseband main module
SMU-B10	1x	Baseband generator

Application example

- Generation of digitally modulated signals

One baseband generator and two RF paths



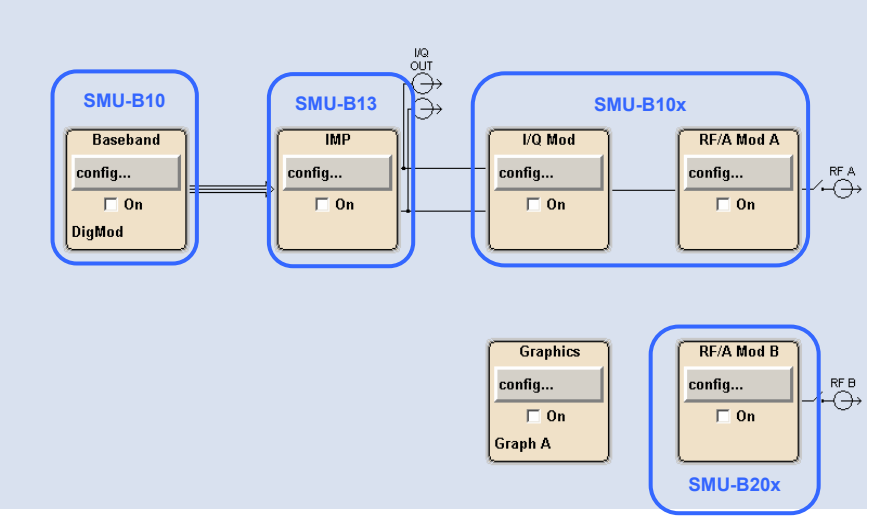
Instrument configuration

Option	Installed	Description
SMU200A	1x	Base unit
SMU-B10x	1x	Frequency option 1st RF path
SMU-B20x	1x	Frequency option 2nd RF path
SMU-B13	2x	Baseband main module
SMU-B10	1x	Baseband generator

Application example

- Simulation of antenna diversity

One baseband generator and two RF paths



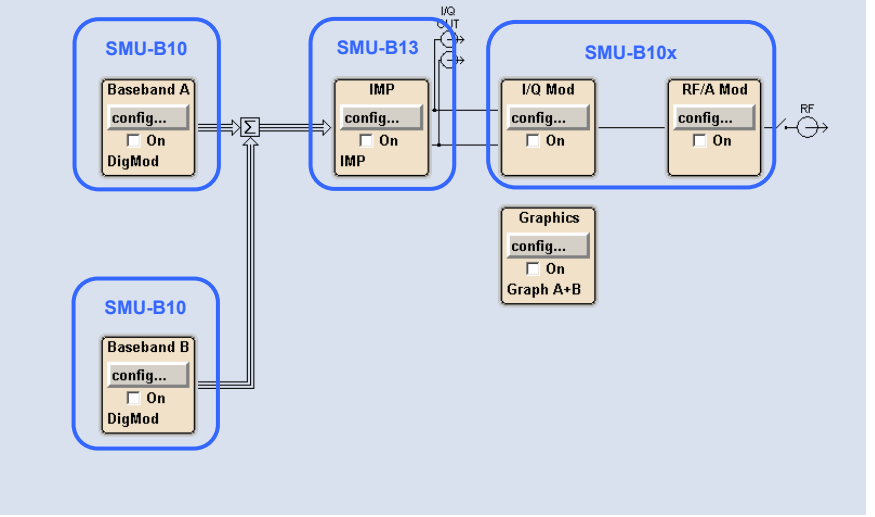
Instrument configuration

Option	Installed	Description
SMU200A	1x	Base unit
SMU-B10x	1x	Frequency option 1st RF path
SMU-B20x	1x	Frequency option 2nd RF path
SMU-B13	1x	Baseband main module
SMU-B10	1x	Baseband generator

Application example

- Generation of a modulated signal on path A and a CW interferer on path B

Two baseband generators and one RF path



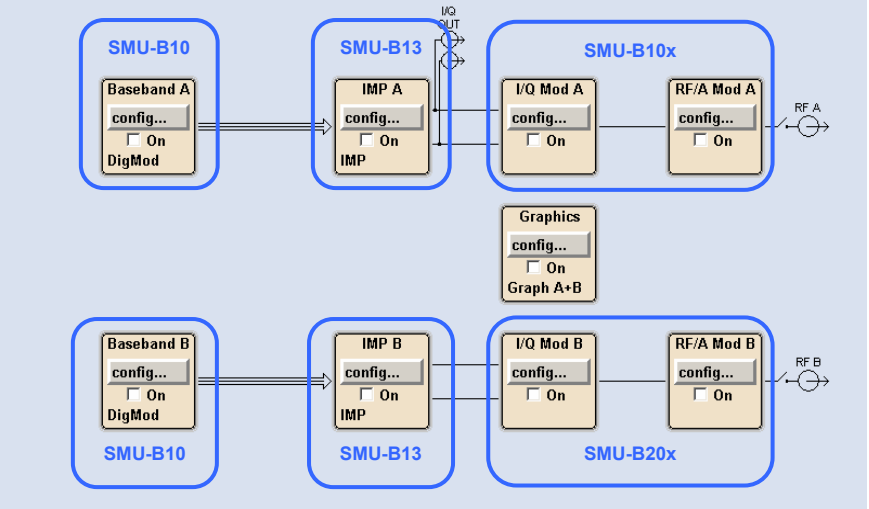
Instrument configuration

Option	Installed	Description
SMU200A	1x	Base unit
SMU-B10x	1x	Frequency option
SMU-B13	1x	Baseband main module
SMU-B10	2x	Baseband generator

Application example

- Addition of real time signals of different standards
- Generation of multicarrier signals with real time components
- Simulation of transmit diversity

Two baseband generators and two RF paths



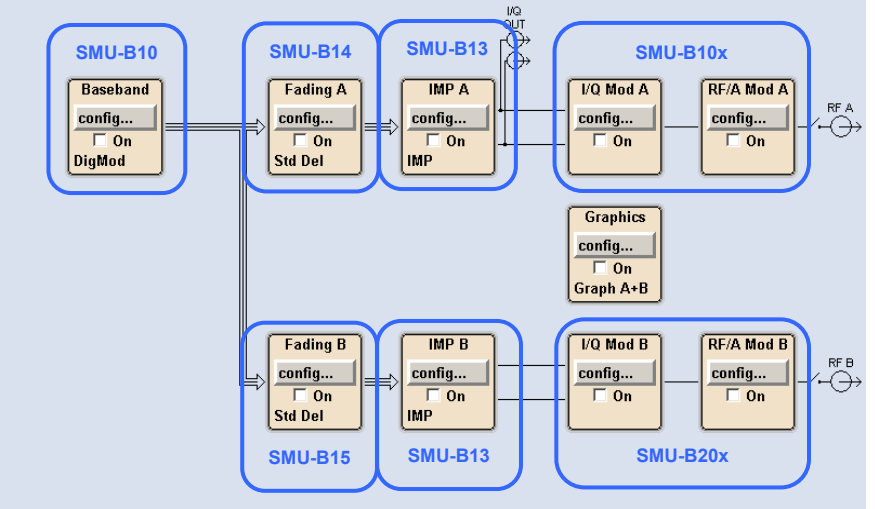
Instrument configuration

Option	Installed	Description
SMU200A	1x	Base unit
SMU-B10x	1x	Frequency option 1st RF path
SMU-B20x	1x	Frequency option 2nd RF path
SMU-B13	2x	Baseband main module
SMU-B10	2x	Baseband generator

Application example

- Generation of a wanted signal and an interfering signal for receiver tests
- Generation of multicarrier signals with extremely wide bandwidth (>80 MHz)

One baseband generator and two RF paths with fading



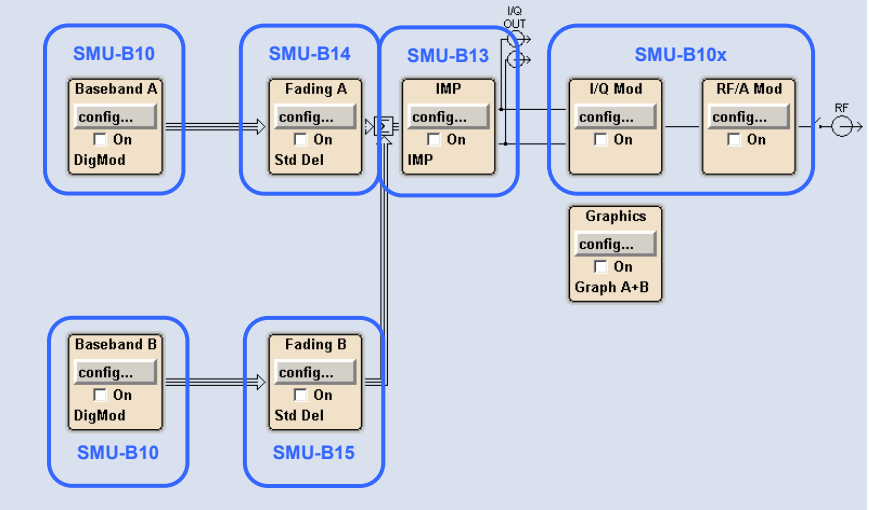
Instrument configuration

Option	Installed	Description
SMU200A	1x	Base unit
SMU-B10x	1x	Frequency option 1st RF path
SMU-B20x	1x	Frequency option 2nd RF path
SMU-B13	2x	Baseband main module
SMU-B10	1x	Baseband generator
SMU-B14	1x	Fading Simulator
SMU-B15	1x	Fading Simulator Extension

Application example

- Independent fading of baseband signal on two RF channels
- Setup for 3GPP FDD TS 25.141 Performance tests

Two baseband paths and one RF path with fading



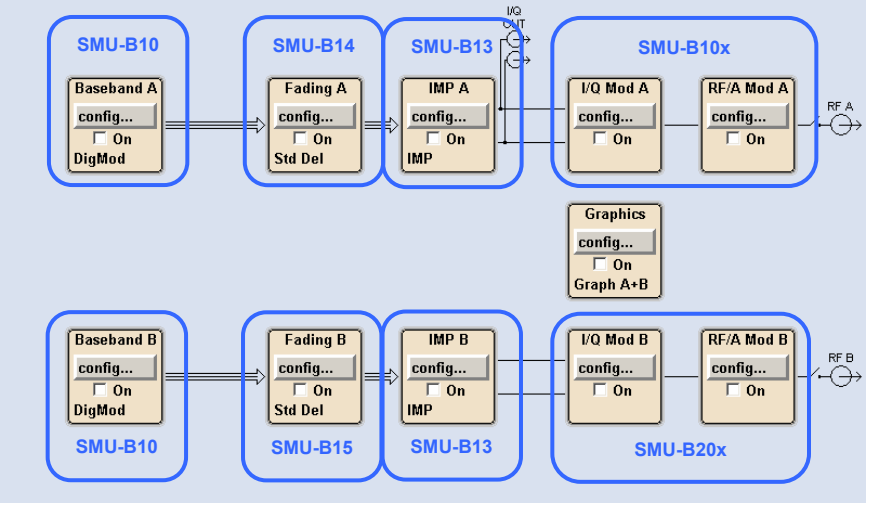
Instrument configuration

Option	Installed	Description
SMU200A	1x	Base unit
SMU-B10x	1x	Frequency option 1st RF path
SMU-B13	1x	Baseband main module
SMU-B10	2x	Baseband generator
SMU-B14	1x	Fading Simulator
SMU-B15	1x	Fading Simulator Extension

Application example

- Independent fading of two GSM slots
- Combination of birth-death and moving propagation for 3GPP

Two baseband paths and two RF paths with fading



Instrument configuration

Option	Installed	Description
SMU200A	1x	Base unit
SMU-B10x	1x	Frequency option 1st RF path
SMU-B20x	1x	Frequency option 2nd RF path
SMU-B13	2x	Baseband main module
SMU-B10	2x	Baseband generator
SMU-B14	1x	Fading Simulator
SMU-B15	1x	Fading Simulator Extension

Application example

- Setup for 3GPP TS 25.141 Receiver and Performance tests

Ordering information

Designation	Type	Order No.
Vector Signal Generator[7]	R&S SMU200A	1141.2005.02
including power cable, Quick Start Guide and CD-ROM (with operating and service manual)		
Options		
RF Path A		
100 kHz to 2.2 GHz	R&S SMU-B102	1141.8503.02
100 kHz to 3 GHz	R&S SMU-B103	1141.8603.02
100 kHz to 4 GHz	R&S SMU-B104	1141.8703.02
100 kHz to 6 GHz	R&S SMU-B106	1141.8803.02
FM/φM Modulator	R&S SMU-B20	1142.0006.02
FM/φM Modulator and Low Phase Noise	R&S SMU-B22	1160.5006.02
Overvoltage Protection	R&S SMU-B30	1159.7444.02
High-Power Output	R&S SMU-B31	1159.8011.02
Overvoltage Protection and High-Power Output	R&S SMU-B32	1160.0256.02
RF Path B		
100 kHz to 2.2 GHz	R&S SMU-B202	1141.9400.02
100 kHz to 3 GHz	R&S SMU-B203	1141.9500.02
Overvoltage Protection	R&S SMU-B35	1160.0633.02
High-Power Output	R&S SMU-B36	1160.1000.02
Overvoltage Protection and High-Power Output	R&S SMU-B37	1160.1400.02
Baseband		
Baseband Generator with ARB (128 Msample) and Digital Modulation (realtime)	R&S SMU-B9	1161.0766.02
Baseband Generator with ARB (64 Msample) and Digital Modulation (realtime)	R&S SMU-B10	1141.7007.02
Baseband Generator with ARB (16 Msample) and Digital Modulation (realtime)	R&S SMU-B11	1159.8411.02
Baseband Main Module	R&S SMU-B13	1141.8003.04
Differential I/Q Output	R&S SMU-B16	1161.0066.02
Analog Baseband Input	R&S SMU-B17	1142.2880.02

[7] The base unit can only be ordered with an R&S SMU-B10x frequency option.

Digital modulation systems		
Digital Standard GSM/EDGE	R&S SMU-K40	1160.7609.02
Digital Standard 3GPP FDD	R&S SMU-K42	1160.7909.02
3GPP Enhanced MS/BS Tests incl. HSDPA	R&S SMU-K43	1160.9660.02
Digital Standard GPS	R&S SMU-K44	1161.0566.02
3GPP FDD HSUPA	R&S SMU-K45	1161.0666.02
Digital Standard CDMA2000® incl. 1xEV-DV	R&S SMU-K46	1160.9876.02
Digital Standard IEEE 802.11 (a/b/g)	R&S SMU-K48	1161.0266.02
Digital Standard IEEE 802.16	R&S SMU-K49	1161.0366.02
Digital Standard TD-SCDMA	R&S SMU-K50	1161.0966.02
TD-SCDMA enhanced BS/MS Tests	R&S SMU-K51	1161.1062.02
Multicarrier CW Signal Generation	R&S SMU-K61	1160.8505.02

Digital modulation systems using R&S WinIQSIM2™[8]		
Digital Standard GSM/EDGE	R&S SMU-K240	1408.5518.02
Digital Standard 3GPP FDD	R&S SMU-K242	1408.5618.02
3GPP Enhanced MS/BS Tests incl. HSDPA	R&S SMU-K243	1408.5718.02
Digital Standard GPS	R&S SMU-K244	1408.5818.02
3GPP FDD HSUPA	R&S SMU-K245	1408.5918.02
Digital Standard CDMA2000® incl. 1xEV-DV	R&S SMU-K246	1408.6014.02
Digital Standard IEEE 802.11 (a/b/g)	R&S SMU-K248	1408.6114.02
Digital Standard IEEE 802.16	R&S SMU-K249	1408.6214.02
Digital Standard TD-SCDMA	R&S SMU-K250	1408.6314.02
TD-SCDMA enhanced BS/MS Tests	R&S SMU-K251	1408.6414.02
Multicarrier CW Signal Generation	R&S SMU-K261	1408.6514.02

Digital modulation systems using R&S WinIQSIM™[9]		
Digital Standard IS-95 (with R&S WinIQSIM™)	R&S SMU-K11	1160.5335.02
Digital Standard CDMA2000® (with R&S WinIQSIM™)	R&S SMU-K12	1160.5658.02
Digital Standard 3GPP TDD (with R&S WinIQSIM™)	R&S SMU-K13	1160.5906.02
Digital Standard TD-SCDMA (with R&S WinIQSIM™)	R&S SMU-K14	1160.6202.02
User-Defined OFDM Signals (with R&S WinIQSIM™ and R&S WinIQOFDM)	R&S SMU-K15	1160.6402.02
Digital Standard 1xEV-DO (with R&S WinIQSIM™)	R&S SMU-K17	1160.7009.02
Digital Standard IEEE 802.11 (a/b/g) (with R&S WinIQSIM™)	R&S SMU-K19	1160.8805.02
Digital Standard 3GPP FDD incl. HSDPA (with R&S WinIQSIM™)	R&S SMU-K20	1160.9460.02

[8] R&S WinIQSIM2 ™ requires an external PC.
[9] R&S WinIQSIM ™ requires an external PC.

Digital modulation systems using external PC software		
Digital Standard Bluetooth®	R&S SMU-K5	1161.0466.02

Fading and noise		
Fading Simulator	R&S SMU-B14	1160.1800.02
Fading Simulator Extension	R&S SMU-B15	1160.2288.02
Additive White Gaussian Noise (AWGN)	R&S SMU-K62	1159.8511.02
Dynamic Fading and Enhanced Resolution	R&S SMU-K71	1160.9201.02
Other options		
BER/BLER Measurement	R&S SMU-K80	1159.8770.02
Rear panel connectors for 1st RF path	R&S SMU-B81	1159.9001.02
Rear panel connectors for 2nd RF path	R&S SMU-B82	1159.9501.02
Recommended extras		
Hardcopy manuals (in German)		1007.9845.31
Hardcopy manuals (in English, UK)		1007.9845.32
Hardcopy manuals (in English, USA)		1007.9845.39
19" Rack Adapter	R&S ZZA-411	1096.3283.00
Adapter for Telescopic Sliders	R&S ZZA-T45	1109.3774.00
BNC Adapter for AUX I/O Connector	R&S SMU-Z5	1160.4545.02
Keyboard with USB Interface (US assignment)	R&S PSL-Z2	1157.6870.04
Mouse with USB Interface, optical	R&S PSL-Z10	1157.7060.03
External USB CD-RW Drive	R&S PSP-B6	1134.8201.22

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