

R&S®M3AR MR6000R

R&S®M3AR MR6000L

Software Defined Radios

Specifications



CONTENTS

Specifications for the fixed-frequency base unit	3
Built-in interfaces	3
General technical information	3
General performance data	5
Transmitter characteristics	6
<i>Carrier-related</i>	6
<i>Modulation-related (voice)</i>	6
<i>Modulation-related (wideband)</i>	6
Receiver characteristics	7
<i>Main receiver</i>	7
<i>Guard receiver</i>	7
AF-related outputs of receiver	8
<i>Narrowband output</i>	8
<i>Wideband output</i>	8
Environmental data	9
<i>General environment</i>	9
<i>Mechanical environment</i>	10
Electromagnetic compatibility (EMC)	11
Display color and control panel lighting	12
Referenced standards	13
Ordering information	14



R&S®MR6000R

R&S®MR6000L

These two transceivers, which come in ARC-164 housings, differ in that the R&S®MR6000R is designed for installation in the avionic bay and can only be remotely controlled, while the R&S®MR6000L is installed in the cockpit and can also be controlled by a local control panel.

Specifications for the fixed-frequency base unit

Data without tolerance limits is not binding.

Built-in interfaces

MIL-STD-1553B data bus (depending on option)	for interaction with the aircraft's avionic bus system	dual redundant
Serial interface	for remote control, e.g. via R&S®GB6500	RS-485
	for service purposes	RS-232
RF connector for antenna	common for tactical VHF, VHF and UHF	TNC type
Interface for logic converter unit	for active antenna	Manchester-coded frequency word
AF interfaces	for voice and user data	narrowband and wideband (baseband/diphase), PTT line
Timing system	for TOD loading	input in line with ICD-GPS-060
Fill interface	R&S®KDD, e.g. KYK-13 and AN/CYZ-10	depending on available waveform, RS-232 for R&S®SECOS, DS-102 for HAVE QUICK/SATURN
External crypto devices	KY-58, KY-100, ELCRODAT 4-2; others on request	wideband interface, delayed PTT, etc.
Improved data modem	IDM	wideband interface, including hop indication for use with HAVE QUICK
ADF broadband interface (R&S®MR6000L only)	for use with external ADF device	broadband output
Miscellaneous interfaces		e.g. TX/RX inhibit, squelch, emergency clear, switched DC for external devices

General technical information

Power supply		
Nominal supply voltage		+28 V DC
DC supply range	negative terminal connected to chassis	+22.5 V to +30 V DC
Emergency mode		+16 V to +30 V DC
DC power consumption	in transmit mode under extreme voltage and/or VSWR conditions	≤ 190 W
	in receive mode	≤ 30 W
	in switched-off state	≤ 0.1 W
Transients		> 36 V DC: transmission interrupted, < 14 V DC: transceiver reboots, in line with MIL-STD-704A cat. B
Built-in test (BIT)	local and functional error identification down to module level; error messages reported via MIL-STD-1553B data bus, local control panel and serial interface, to be stored in non-volatile memory at unit level	
	PBIT	automatic initialization of BIT at power-on of transceiver
	CBIT	continuous monitoring during operation
	IBIT	initialization of BIT upon command received via MIL-STD-1553B data bus, local control panel or serial interface
Temperature		
Operating temperature range		–40 °C to +55 °C
Functional temperature range	R&S®MR6000R	–54 °C to +71 °C
	R&S®MR6000L	–40 °C to +71 °C
Storage temperature range		–54 °C to +90 °C

MTBF		
R&S®MR6000L transceiver	AIF, +40 °C	> 3000 h, in line with MIL-HBK-217F, notice 2
	AIC, +25 °C	> 6000 h, in line with MIL-HBK-217F, notice 2
	ARW, +25 °C	> 2400 h, in line with MIL-HBK-217F, notice 2
R&S®MR6000R transceiver	AUF, +40 °C	> 2200 h, in line with MIL-HBK-217F, notice 2
	AUC, +25 °C	> 4600 h, in line with MIL-HBK-217F, notice 2
	ARW, +25 °C	> 2700 h, in line with MIL-HBK-217F, notice 2
RF connector	common for tactical VHF, VHF and UHF and guard receiver	TNC type
Impedance		Z = 50 Ω (nom.)
Dimensions (W × H × D)		
R&S®MR6000R transceiver	body with lids and connector	127 mm × 121 mm × 209 mm (5 in × 4.8 in × 8.2 in)
	body only	127 mm × 121 mm × 176 mm (5 in × 4.8 in × 6.9 in)
R&S®MR6000L transceiver	body with lids, connector and control panel	146 mm × 124 mm × 219 mm (5.7 in × 4.9 in × 8.6 in)
	body only	127 mm × 121 mm × 165 mm (5 in × 4.8 in × 6.5 in)
Typical values shown – see mechanical interface description for exact values		
Weight		
R&S®MR6000R transceiver		≤ 3.6 kg (7.9 lb)
R&S®MR6000L transceiver		≤ 3.8 kg (8.4 lb)
Typical values shown – see mechanical interface description for exact values		
Color		RAL 9005 (black)

General performance data

All data is valid for plain mode, unless otherwise stated.

Operating frequency ranges		
Tactical VHF	30 MHz to 87.975 MHz	30 MHz to 399.975 MHz FM (F3E, F1D), in line with STANAG 4204
VHF	108 MHz to 117.975 MHz	AM (A3E), receive only
	118 MHz to 155.975 MHz	AM (A3E)
	136 MHz to 173.975 MHz	FM (F3E, F1D)
	156 MHz to 173.975 MHz	FM (G3E)/maritime PM
UHF	225 MHz to 399.975 MHz	AM/FM (A3E, A1D, F3E, F1D), in line with STANAG 4205
		MSK (R&S®SECOS, SATURN in line with STANAG 4372)
		AM (A3E, A1D)
		(HAVE QUICK in line with STANAG 4246)
Frequency accuracy	from –40 °C to +55 °C	≤ ±0.5 ppm
	from +55 °C to +71 °C	≤ ±5.0 ppm
	aging/1st year	≤ ±1.0 ppm
	aging/following years	≤ ±0.5 ppm
Channel spacing and presets		
Channel spacing (MMI display on R&S®MR6000L transceiver in line with ICAO, annex 10, vol. 5)	all bands	25 kHz
	in ATC VHF frequency range (118.000 MHz to 136.975 MHz)	8.33 kHz and 25 kHz
Number of preset channels		2 sets of 100 each, + 1 guard channel
Number of manual channels		1
The information in the preset channels and in the manual operation channel is stored in non-volatile memory. It is possible to store channel identification names with a maximum length of 15 characters together with the operational parameters in the preset channels. ¹		
EPM (ECCM) mode (depending on option)	in UHF band (225 MHz to 399.975 MHz)	STANAG 4246 (HAVE QUICK I/II), STANAG 4372 (SATURN), R&S®SECOS
Changeover times (10 W RF carrier and 1 mV receive signal)	receive to transmit	≤ 50 ms
	transmit to receive	≤ 50 ms
	in EPM (ECCM) mode	in line with STANAG 4246 (HAVE QUICK), STANAG 4372 (SATURN), in line with R&S®SECOS specification
Channel changing time	specified for fixed-frequency mode	≤ 50 ms
Duty cycle (transmit/receive)		
High-power mode	≤ 1 min transmit, 5 min receive	convictional cooling in operating temperature range up to +55 °C
	> 1 min transmit, 5 min receive	forced air cooling required

¹ Only the first eight characters of the preset description will be displayed on the MMI of the R&S®MR6000L transceiver or of the R&S®GB6500 remote control unit.

Transmitter characteristics

All data is valid for a 50 Ω non-reactive termination and carrier power measured at a supply voltage from 24 V to 30 V DC, unless otherwise stated.

Carrier-related

Output power		
High-power mode	fixed-frequency AM/ HAVE QUICK I/II mode	≥ 10 W
	fixed-frequency FM/MSK mode	≥ 15 W
Medium-power mode	fixed-frequency AM/ HAVE QUICK I/II mode	1.0 W to 2.0 W
	fixed-frequency FM/MSK mode	1.5 W to 3.0 W
Low-power mode	fixed-frequency AM/ HAVE QUICK I/II mode	0.10 W to 0.20 W
	fixed-frequency FM/MSK mode	0.15 W to 0.30 W
RF carrier power degradation (relevant only in high-power mode)	at +22 V DC	≤ 1.5 dB
	at VSWR = 2	≤ 1.0 dB
	at +55 °C to +71 °C and duty cycle $\leq 1:5$	≤ 3.0 dB
Emergency operation (high-power mode under all conditions)		
DC supply voltage	in line with MIL-STD-704A	$\geq +16$ V DC
RF carrier power		≥ 1 W
Modulation distortion		≤ 15 %
Modulation depth		≥ 60 %
Transmit broadband noise	$\Delta f = \pm 25$ kHz	≤ -70 dBm (1 Hz)
	$\Delta f = \pm 10$ MHz	≤ -115 dBm (1 Hz)
	$\Delta f \geq \pm 20$ MHz	≤ -120 dBm (1 Hz)
Harmonic spurious signals	2nd harmonic	≤ -57 dBc
	3rd harmonic	≤ -60 dBc
	4th to 7th harmonic	≤ -70 dBc
Non-harmonic spurious signals		≤ -34 dBm
Pilot tone in tactical VHF range	added to TX AF signal	150 Hz (nom.), $d = 1.5$ kHz
Calling tone		$f = 1020$ Hz ± 20 Hz, $m \geq 0.8$, $k \leq 10$ %

Modulation-related (voice)

Input impedance	R&S®MR6000R transceiver	$600 \Omega \pm 60 \Omega$ or $150 \Omega \pm 30 \Omega$
	R&S®MR6000L transceiver	$150 \Omega \pm 30 \Omega$
AF narrowband input sensitivity	for $m \geq 0.8$ (AM) or $d \geq 5.7$ kHz (FM)	-6 dBm to +14 dBm, adjustable
AF narrowband frequency response with 1 kHz signal	25 kHz channel spacing	300 Hz to 3500 Hz, flat within ≤ 3 dB; ≥ 12 dB at 200 Hz; ≥ 20 dB at 6 kHz
	8.33 kHz channel spacing	300 Hz to 2500 Hz, flat within ≤ 6 dB
AF narrowband modulation distortion	$m = 0.8$, $f_{\text{mod}} = 1$ kHz	≤ 10 %
Signal-to-noise ratio	ITU-T weighted, $m = 0.80$, $f_{\text{mod}} = 1$ kHz	≥ 40 dB
Synchronous FM in AM mode	ITU-T weighted, $m = 0.8$, $f_{\text{mod}} = 1$ kHz	≤ 2 kHz
Synchronous AM in FM mode	ITU-T weighted, $d = 5.7$ kHz, $f_{\text{mod}} = 1$ kHz	≤ 4 %

Modulation-related (wideband)

AF wideband input		
Balanced input		$600 \Omega \pm 60 \Omega$
AF wideband input sensitivity	for $m \geq 0.80$ (AM)	4 V (V_{pp}) into 600 Ω input
	for 30 MHz to 88 MHz (FM): $\Delta f = 5.0$ kHz ± 1 kHz in line with STANAG 4204	
	for 108 to 400 MHz (FM): $\Delta f = 5.5$ kHz ± 1 kHz in line with STANAG 4205	
AF wideband frequency response	baseband from 30 Hz to 11 kHz	≤ 4 dB
	diphase from 30 Hz to 22 kHz	≤ 4 dB
	at 50 kHz	≥ 20 dB

Receiver characteristics

Main receiver

Sensitivity	10 dB (S+N)/N unweighted, $f_{\text{mod}} = 1 \text{ kHz}$	
	30 MHz to 400 MHz, $\Delta f = 2.4 \text{ kHz}$	−104 dBm
	108 MHz to 400 MHz, $m = 0.30$	−101 dBm
Internal noise level		≥ 30 dB
Selectivity (IF bandwidth)		
Clear voice (ICAO 8.33 kHz)	bandwidth at 6 dB	> 7 kHz
	bandwidth at 60 dB	< 11 kHz (digital filter)
Clear voice (ICAO 25 kHz)	bandwidth at 6 dB	> 22 kHz
	bandwidth at 60 dB	< 50 kHz (digital filter)
Wideband	bandwidth at 6 dB	> 50 kHz
	bandwidth at 60 dB	< 60 kHz (digital filter)
EPM modes	bandwidth at 6 dB	> 40 kHz
	bandwidth at 60 dB	< 60 kHz (digital filter)
Passband ripple		≤ 3 dB
Spurious response rejection		
IF rejection		≥ 70 dB
Image rejection		≥ 70 dB
Spurious rejection	at $\Delta f > 1 \text{ MHz}$	≥ 70 dB
For a limited number of frequencies (≤ 5) mathematically related to the tuned frequency, a deviation of max. 10 dB from the specific value is possible.		
Crossmodulation rejection	at $\Delta f \geq 3 \text{ MHz}$, $V_{\text{interf}}/V_{\text{useful}} = 10 \%$, relative to sensitivity limit ($V_{\text{interf}} m = 0.6$)	≥ 70 dB
Third-order intermodulation rejection	at $\Delta f > 10 \text{ MHz}$ for tactical VHF and $\Delta f > 10 \%$ for VHF/UHF	≥ 80 dB
Internal spurious		
Number of channels with (S+N)/N degraded due to internal spurious	tactical VHF	≤ 10 channels
	VHF	≤ 15 channels
	UHF	≤ 20 channels
AGC/ALC characteristic	AM, −98 dBm to +0 dBm	≤ 6 dB
	FM, −102 dBm to +0 dBm	≤ 6 dB
	no blocking up to	+7 dBm
	no damage up to	+30 dBm
Squelch	nominal setting	10 dB (S+N)/N
	overlap for nominal setting	1.5 dB to 6.0 dB
	adjustable to	6.0 dB to 15.5 dB (S+N)/N
	attack time	≤ 50 ms

Guard receiver

The guard receiver shares the RF antenna input with the main receiver, and both the main receiver and the guard receiver are able to receive RF signals simultaneously.

Supported guard frequencies	tactical VHF	40.500 MHz; FM
	VHF	121.500 MHz; AM
	UHF	243.000 MHz; AM
Sensitivity	40.500 MHz, $f_{\text{mod}} = 1 \text{ kHz}$, $\Delta f = \pm 2.4 \text{ kHz}$	
	for (S+N)/N = 10 dB	≤ −104 dBm
	121.5 MHz, 243.0 MHz, $m = 0.30$, $f_{\text{mod}} = 1 \text{ kHz}$	
	for (S+N)/N = 10 dB	≤ −101 dBm
Internal noise level		≥ 30 dB
Frequency accuracy		≤ ±5 ppm
Selectivity (IF bandwidth)		
Guard	6 dB bandwidth	> 28 kHz
	60 dB bandwidth	< 80 kHz
Spurious response rejection		
IF rejection		≥ 70 dB
Image rejection		≥ 70 dB
Spurious rejection	same conditions as for main receiver	≥ 70 dB
Crossmodulation rejection	same conditions as for main receiver	≥ 70 dB
Intermodulation rejection	same conditions as for main receiver	≥ 70 dB

AGC/ALC characteristics	AM –98 dBm to +0 dBm	≤ 6 dB
	FM –102 dBm to +0 dBm	≤ 6 dB
	no blocking up to	+7 dBm
	no damage up to	+30 dBm
Squelch	nominal setting	10 dB (S+N)/N
	overlap for nominal setting	1.5 dB to 6.0 dB
	adjustable to	8 dB to 15.5 dB
	attack time	≤ 50 ms

AF-related outputs of receiver

Narrowband output

Characteristics are specified for an RF receive level of 1 mV, $f_{\text{mod}} = 1$ kHz.

Output impedance	150 Ω radio version	≤ 50 Ω (150 Ω nominal load impedance)
	600 Ω radio version	≤ 200 Ω (600 Ω nominal load impedance)
Audio level	at $m = 0.6$ (AM) or $\Delta f = 4.8$ kHz (FM)	1.5 mW to 200 mW into 150 Ω or 600 Ω , adjustable, set via MIL-STD-1553B data bus or serial configuration command
AF frequency response	300 Hz to 3500 Hz, main receiver	≤ 3 dB
	350 Hz to 3500 Hz, guard receiver	≤ 3 dB
	at 200 Hz	≥ 12 dB
	at 6 kHz	≥ 20 dB
Audio distortion	at $m = 0.6$ (AM) or $\Delta f = \pm 4.8$ kHz (FM)	≤ 5 %

Wideband output

Output impedance		≤ 200 Ω (600 Ω nominal load impedance)
Output level	$m = 0.80$ (AM) or $\Delta f = \pm 6.25$ kHz (FM)	5.6 V to 9.0 V (V_{pp})
Frequency response	30 Hz to 22 kHz	≤ 4 dB
	at 50 kHz	≥ 20 dB
Audio distortion	$m = 0.8$ (AM) or $\Delta f = \pm 6.25$ kHz (FM)	≤ 10 %

Environmental data

The tests performed for environmental compatibility depend on the type of transceiver.

Right columns (Rem. and Loc.) point out the applicability where Rem. means the test is applicable for the remote controlled radio R&S®MR6000R and Loc. means the test is applicable for the local controlled transceiver R&S®MR6000L.

General environment

Subject	Additional information	Applied standard	Rem.	Loc.
Temperature				
Low operating temperature	–54 °C ambient (degraded performance)	MIL-STD-810E, method 502.3, proc. II,	•	•
	–40 °C ambient	MIL-STD-810E, method 502.3, proc. II MIL-STD-810B, method 502, proc. I	• •	• •
High operating temperature	+71 °C ambient (degraded performance)	MIL-STD-810E, method 501.3, proc. II,	•	•
	+71 °C ambient	MIL-STD-810B, method 501, proc. I	•	•
	+55 °C ambient	MIL-STD-810E, method 501.3, proc. II	•	•
Low storage temperature	–54 °C ambient	MIL-STD-810E, method 502.3, proc. I	•	•
		MIL-STD-810B, method 502, proc. I	•	•
High storage temperature	+90 °C ambient	MIL-STD-810E, method 501.3, proc. I	•	•
	+95 °C ambient	MIL-STD-810B, method 501, proc. I	•	•
Temperature variation and shock	–40 °C to +75 °C (non-operational mode)	MIL-STD-810E, method 503.3, cat. A1, C2	•	–
	–54 °C to +71 °C (operational mode), < 70 s transfer time	MIL-STD-810B, method 503	–	•
Contamination by fluids		MIL-STD-810F, method 504	•	•
Solar radiation (sunshine)		MIL-STD-810E, method 505.3, proc. II	–	•
		MIL-STD-810B, method 505, proc. I	–	•
Touch temperature	+60 °C (metal), +68 °C (glass), +85 °C (plastic), +49 °C (metal pushbutton), +69 °C (plastic pushbutton)	MIL-STD-1472D	–	•
Rain (drip)		MIL-STD-810E, method 506.3, proc. II	•	–
		MIL-STD-108E	–	•
Humidity	aggravated, +30 °C to +60 °C, 85 % to 95 %	MIL-STD-810E, method 507.3, proc. III,	•	•
Fungus resistance		MIL-STD-810E, method 508.4	•	•
		MIL-STD-810B, method 508	–	•
Salt fog	aggravated screening	MIL-STD-810E, method 509.3, proc. I	•	•
		MIL-STD-810B, method 509, proc. I	–	•
Sand and dust	blowing dust	MIL-STD-810D, method 510.2, proc. I	•	•
		MIL-STD-810B, method 510 proc. I	–	•
Explosive atmosphere	55 000 ft to ground level, +71 °C	MIL-STD-810E, method 511.3, proc. I	•	•
		MIL-STD-810B, method 511, proc. I	–	•
Temperature/humidity/altitude	–40/+75 °C, 60 % rel., 70 000/25 000 ft	MIL-STD-810E, method 520.1, proc. III	•	•
Temperature/altitude/solar	40 000/60 000/78 000 ft, 883 W/m ²	tailored to specific customer program	–	•
Surrounding air pressure	1.04 psia to 21.0 psia, (72 hPa to 1448 hPa)	tailored to specific customer program	•	•
Explosive decompression	8 000 ft to 23 000 ft, 77.2 psi/s change rate	MIL-STD-810F, method 500.4, proc. IV	–	•
Icing/freezing rain		MIL-STD-810E, method 521.1	•	•

Mechanical environment

Subject	Additional information	Applied standard	Rem.	Loc.
Acceleration	13.5 g in all directions (structural)	MIL-STD-810E, method 513.4, proc. I	●	—
	9 g in all directions (operational)	MIL-STD-810E, method 513.4, proc. II	●	—
	40 g in all directions (structural)	MIL-STD-810B, notice 4, method 513.1, proc. I	—	●
	10 g in all directions (operational)	MIL-STD-810B, notice 4, method 513.1, proc. II	—	●
Vibration				
Jet aircraft	$w_0 = 0.04 \text{ g}^2/\text{Hz}$	MIL-STD-810E, method 514.4, proc. I, category 5	●	●
	$w_0 = 0.04 \text{ g}^2/\text{Hz}$	MIL-STD-810B, notice 4, method 514.1, jet	●	—
	$w_0 = 0.025 \text{ g}^2/\text{Hz}$	MIL-STD-810B, notice 4, method 514.1, jet	—	●
Propeller aircraft	$w_0 = 0.01 \text{ g}^2/\text{Hz}$	MIL-STD-810E, method 514.4, proc. I, category 4	●	●
Helicopter aircraft	$w_0 = 0.02 \text{ g}^2/\text{Hz}$	MIL-STD-810E, method 514.4, proc. I, category 6, profile UH-60	●	—
Gunfire	$w_{\max} = 0.071 \text{ g}^2/\text{Hz}$	MIL-STD-810E, method 519.4	●	—
	$w_{\max} = 0.0217 \text{ g}^2/\text{Hz}$, $G_{\text{peak}} = 5.1 \text{ g}$	MIL-STD-810B, notice 4, method 519.1	—	●
	$w_{\max} = 0.0657 \text{ g}^2/\text{Hz}$, $G_{\text{peak}} = 15.3 \text{ g}$	MIL-STD-810B, notice 4, method 519.1	●	—
Shock				
Functional shock	20 g, 6 ms to 9 ms	MIL-STD-810E, method 516.4, proc. I	●	●
	15 g, 11 ms	MIL-STD-810B, notice 4, method 516.1, proc. I	●	●
Crash hazard	40 g, 6 ms to 9 ms	MIL-STD-810E, method 516.4, proc. V	●	●
	40 g, 11 ms	MIL-STD-810B, notice 4, method 516.1, proc. III	●	●
Bump	25 g, 6 ms, shock repetition frequency = 1 Hz	EN 60068-2-29	●	●

Electromagnetic compatibility (EMC)

Right columns (Rem. and Loc.) point out the applicability where Rem. means the test is applicable for the remote controlled radio R&S®MR6000R and Loc. means the test is applicable for the local controlled transceiver R&S®MR6000L.

Subject	Additional information	Applied standard	Rem.	Loc.
Conducted emission				
Power leads	10 kHz to 10 MHz	MIL-STD-461D, MIL-STD-462D, method CE 102 ²	•	•
Antenna terminal	100 kHz to 8 GHz	MIL-STD-461D, MIL-STD-462D, method CE 106	•	•
Conducted susceptibility				
Power leads	30 Hz to 50 kHz	MIL-STD-461D, MIL-STD-462D, method CS 101	•	•
Antenna port intermodulation	5 MHz to 650 MHz	MIL-STD-461D, MIL-STD-462D, method CS 103	•	•
Antenna port rejection of undesired signals	5 MHz to 650 MHz	MIL-STD-461D, MIL-STD-462D, method CS 104	•	•
Antenna port crossmodulation	5 MHz to 650 MHz	MIL-STD-461D, MIL-STD-462D, method CS 105	•	•
Bulk cable injection (BCI) test	10 kHz to 400 MHz	MIL-STD-461D, MIL-STD-462D, method CS114	•	•
Bulk cable injection (BCI) impulse; pulse excitation		MIL-STD-461D, MIL-STD-462D, method CS115	•	•
Bulk cable injection (BCI) transient; damped sinusoidal transient	10 kHz to 100 MHz	MIL-STD-461D, MIL-STD-462D, method CS116	•	•
Radiated emission				
Electric field	2 MHz to 4 GHz	MIL-STD-461D, MIL-STD-462D, method RE102 ²	•	•
Radiated susceptibility				
Electric field	10 kHz to 40 GHz	MIL-STD-461D, MIL-STD-462D, method RS103 aircraft internal	•	•
Electrostatic discharge (ESD)	±15 kV, 10 pulses	RTCA/DO-160D, sect. 25	•	—
Electric power input characteristics (transient, ripple, steady state, DC voltage)		MIL-STD-704A, cat. B (modified in line with power supply specification)	•	•

² Only in fixed-frequency mode.

Display color and control panel lighting

(applicable for R&S®MR6000L)

Night vision imaging system (NVIS) compatible transceiver		
Illumination of front panel and keyboard, chromaticity		
Green A		NVIS green A, in line with MIL-L-85762A ³
Illumination of front panel and keyboard, luminance		3.43 Cd/m ² ± 1.72 Cd/m ² , in line with MIL-L-85762A ³
Illumination of front panel and keyboard, NVIS radiance		
Type I/II, class A and B		NR _a < 1.7 × 10 ⁻¹⁰ , NR _b < 1.7 × 10 ⁻¹⁰ , scaled to 0.343 Cd/m ² , in line with MIL-L-85762A ³
Display and status indicators, chromaticity		
Display	green	567 nm dominant wavelength (typ.)
Status indicators	green	555 nm dominant wavelength (typ.)
Display and status indicators, NVIS radiance		
Type I/II, class A and B		NR _a < 1.7 × 10 ⁻¹⁰ , NR _b < 1.6 × 10 ⁻¹⁰ , scaled to 0.343 Cd/m ² , in line with MIL-L-85762A ³
Aviation color compatible transceiver		
White illuminated control panel		
Illumination of front panel and keyboard, chromaticity		
White		instrument and panel white, type 1g, in line with MIL-C-25050
Illumination of front panel and keyboard, luminance		
White		6.86 Cd/m ² ± 3.43 Cd/m ² , in line with MIL-P-7788F
Display and status indicators chromaticity		
Display	red	626 nm dominant wavelength (typ.)
Status indicators	green	555 nm dominant wavelength (typ.)

³ MIL-STD-3009 includes exactly the same technical criteria for class A and class B NVIS compatibility as required by MIL-L-85762.

Referenced standards

Standard	Edition/revision and date	Title
STANAG 4204	edition 2, May 1988	Technical standard for single channel VHF radio equipment
STANAG 4205	edition 2, May 1988	Technical standard for single channel UHF radio equipment
STANAG 4372	edition 3, April 1999	SATURN – a fast frequency hopping EPM mode for UHF radio
STANAG 4246	edition 3, September 2006	HAVE QUICK UHF EPM communications equipment
MIL-STD-461	MIL-STD-461D, January 1993	Electromagnetic emission and susceptibility requirements for the control of electromagnetic interference
MIL-STD-462	MIL-STD-462D, January 1993	Measurement of electromagnetic interference characteristics
MIL-STD-704	MIL-STD-704A, August 1966	Electric power, aircraft, characteristics and utilization of
MIL-STD-810	MIL-STD-810B, September 1970; MIL-STD-810D, July 1983; MIL-STD-810E, July 1989; MIL-STD-810F, August 2002	Environmental test methods and engineering guidelines
MIL-STD-1472	MIL-STD-1472D, March 1989	Human engineering design criteria for military systems, equipment and facilities
MIL-STD-1553	MIL-STD-1553B, April 1975	Digital time division command/response multiplex data bus
MIL-STD-3009	February 2001	Lighting, aircraft, interior, night vision imaging systems (NVIS) compatible
MIL-L-85762	MIL-L-85762A, August 1988	Military specification: lighting, aircraft, interior, night vision imaging systems (NVIS) compatible
MIL-C-25050	MIL-C-25050A, September 1971	General requirements for color, aeronautical lights and lighting equipment
MIL-P-7788	MIL-P-7788F, November 1992	Panel, information, integrally illuminated
MIL-HDBK-217	MIL-HDBK-217F, notice 2, February 1995	Reliability prediction of electronic equipment
RTCA/DO 160	RTCA/DO 160D, July 1997	Environmental conditions and test procedures for airborne equipment
ICAO Annex 10	Volume V, 2nd edition, July 2001	Aeronautic radio frequency spectrum utilization
DS-102	September 1987	Common fill device interface
ICD-GPS-060	revision B, February 2002	Interface control document for the precise time and time interval (PTTI) interface
ITU-R Recommendation M.489-2	1974/1978/1995	Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz

Ordering information

Designation	Type	Order No.
R&S®MR6000L (extract of available equipment), ARC-164 housing – local control (alternative illumination on request)		
Frequency bands: 30 MHz to 88 MHz, 108 MHz to 174 MHz, 225 MHz to 400 MHz; EPM (ECCM): fixed frequency; interfaces: RS-485, MIL-STD-1553B trafo coupling; illumination: NVIS (green A); display: green; indicator lights: green; audio output: 150 Ω/600 Ω	R&S® XM6012	Please contact your local Rohde & Schwarz sales office.
Frequency bands: 30 MHz to 88 MHz, 108 MHz to 174 MHz, 225 MHz to 400 MHz; EPM (ECCM): HAVE QUICK I/II; interfaces: RS-485, MIL-STD-1553B trafo coupling; illumination: NVIS (green A); display: green; indicator lights: green; audio output: 150 Ω/600 Ω	R&S® XM6112	
Frequency bands: 30 MHz to 88 MHz, 108 MHz to 174 MHz, 225 MHz to 400 MHz; EPM (ECCM): R&S®SECOS 5/16 voice and data, HAVE QUICK I/II; interfaces: RS-485, MIL-STD-1553B trafo coupling; illumination: NVIS (green A); display: green; indicator lights: green; audio output: 150 Ω/600 Ω	R&S® XM6412D	
Frequency bands: 30 MHz to 88 MHz, 108 MHz to 174 MHz, 225 MHz to 400 MHz; EPM (ECCM): R&S®SECOS 5/16 voice and data; interfaces: RS-485, MIL-STD-1553B trafo coupling; illumination: NVIS (green A); display: green; indicator lights: green; audio output: 150 Ω/600 Ω	R&S® XM6512D	
Frequency bands: 30 MHz to 88 MHz, 108 MHz to 174 MHz, 225 MHz to 400 MHz; EPM (ECCM): SATURN/HAVE QUICK I/II; interfaces: RS-485, MIL-STD-1553B trafo coupling; illumination: NVIS (green A); display: green; indicator lights: green; audio output: 150 Ω/600 Ω	R&S® XM6912	
The following control panel illumination is available for the R&S®MR6000L: 1. Illumination: NVG (green A); display: green; 2. Illumination: white; display: red; 3. Illumination: red; display: red		
R&S®MR6000R (extract of available equipment), ARC-164 housing – remote control		
Frequency bands: 30 MHz to 88 MHz, 108 MHz to 174 MHz, 225 MHz to 400 MHz; EPM (ECCM): fixed frequency; interfaces: RS-485, MIL-STD-1553B trafo coupling; fill interface; audio output: 150 Ω/600 Ω	R&S®XM6013	Please contact your local Rohde & Schwarz sales office.
Frequency bands: 30 MHz to 88 MHz, 108 MHz to 174 MHz, 225 MHz to 400 MHz; EPM (ECCM): HAVE QUICK I/II; interfaces: RS-485, MIL-STD-1553B trafo coupling; fill interface; audio output: 150 Ω/600 Ω	R&S®XM6113	
Frequency bands: 30 MHz to 88 MHz, 108 MHz to 174 MHz, 225 MHz to 400 MHz; EPM (ECCM): R&S®SECOS 5/16 voice and data, HAVE QUICK I/II; interfaces: RS-485, MIL-STD-1553B trafo coupling; fill interface; audio output: 150 Ω/600 Ω	R&S®XM6413D	
Frequency bands: 30 MHz to 88 MHz, 108 MHz to 174 MHz, 225 MHz to 400 MHz; EPM (ECCM): R&S®SECOS 5/16 voice and data; interfaces: RS-485, MIL-STD-1553B trafo coupling; fill interface; audio output: 150 Ω/600 Ω	R&S®XM6513D	
Frequency bands: 30 MHz to 88 MHz, 108 MHz to 174 MHz, 225 MHz to 400 MHz; EPM (ECCM): SATURN/HAVE QUICK I/II; interfaces: RS-485, MIL-STD-1553B trafo coupling; fill interface; audio output: 150 Ω/600 Ω	R&S®XM6913	

Designation	Type	Order No.
Accessories		
Mating connector sets (R&S®M3AR)		
Mating Connector for R&S®MR6000L	R&S®ZR6000	6085.0215.05
Mating Connector for R&S®MR6000R	R&S®ZR6000	6085.0215.07
Trays (R&S®M3AR)		
Mounting Tray for R&S®MR6000R	R&S®KR6010	6131.5426.02
Cooling Tray for R&S®MR6000R	R&S®KR6010	6131.5426.03
Service and maintenance tools (R&S®M3AR)		
Maintenance Connection Box for R&S®MR6000L/R&S®MR6000R	R&S®ZK6000L/R&S®ZK6000R	6131.3681.03
Base Station Adapter for R&S®MR6000L (local control)	R&S®BA6000L	6121.6513.02
Base Station Adapter for R&S®MR6000R (remote control)	R&S®BA6000R	6121.6520.02
Radio Commander	R&S®CP6000	6026.9026.22
PC Maintenance Tool Software	R&S®ZS6001	6026.9078.02

The system delivered has the configuration as confirmed in the order.

For product brochure, see PD 0758.1970.12 and www.rohde-schwarz.com

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