

# MX921 LOW CURRENT BASE STATION/REPEATER SPECIFICATIONS



## Overview

The **MX921**, low current Repeater and Base Station solution, is designed from the ground up for the absolute lowest power consumption and features the lowest current draw of any professional high performance Repeater/Base Station on the market today. Advanced circuit design and optimization is demonstrated by the very high level of RF performance achieved whilst maintaining very low power consumption levels. MX921 sets a new industry benchmark by avoiding dated techniques that try to save power wastage by constantly duty cycling the receiver on and off or degrading the RF performance to unacceptable levels. The MX921 does not sacrifice any of these critical requirements and achieves a level of performance few competing products can provide at any power consumption level.



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Minimum performance to exceed the following for 148MHz to 520MHz\*:

AS4295-1995,  
R&TTE EC Directive 1995/05/EC  
EN300 086 –1,2 (2001- 03),  
EN 300 113, EN 301 489 – 1,5 (2002 – 08)  
EN 60950 (2000)  
RFS25, RFS26, RFS32,  
TIA/EIA-603,  
BAPT 225 ZV 1/2098 (German soft keying),  
FCC Part 22, 74, 90, 90.210, 80.475,  
MIL-STD-810E (Parts thereof),  
RSS119 Issue 6

\*Conforms but not all approved

## Approvals:

FCC: OKRMX920  
CE/R&TTE: CE1313!  
**SAFETY** (art 3.1.a): EN 60065. (2002)  
**EMC/ERM** (art 3.1.b): EN 301 489 – 1,  
EN 301 489 – 5. (2002-2008)  
**SPECTRUM** (art 3. 2): EN 300 086 – 1,  
EN 300 086– 2. (2001-2003)  
IC: 50605A  
AUST: AS4295

## GENERAL

Frequency Range:

Coverage 148-520 MHz.

Band D3 148-174 MHz  
Band L3 350-385 MHz  
Band N2 400-435 MHz

Band O2 435-470 MHz  
Band P2 450-485 MHz  
Band Q 485-520 MHz

Synthesis Method:	Non mixing PLL Fractional N synthesizer.
Modulation:	Direct FM two point method.
Channel Spacing:	Programmable 25kHz / 12.5 kHz.
Synthesizer Step Size:	6.25kHz or 5kHz auto select.
Channels:	100 front panel selectable, 255 PC software selectable.
Supply Voltage:	13.8 +/- 20%.
Operating Temperature:	-30 to +60C.
Physical Size:	2RU Case, 325mm deep including fan..
Standard LED indicators:	Power, RX, TX, Tone, Alert, Repeater.
Standard Switches:	Two press button type.



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Standard Controls:	Volume knob, Squelch screwdriver adjust.
Interface:	Front panel Microphone accessory socket, speaker, rear connector DB25. Location for DB9 x 2, DB15, RJ45.
Weight:	8kg.

## CURRENT CONSUMPTION

Standby:	<56mA receive, typical 55mA.
Receiving:	<59mA receive, typical 57mA.
Receiving and *2Watt TX RF output:	<850mA (1Watt PA module)
Receiving and 25Watt TX RF output:	<5.5A, typical 4.9A.
Receiving and 50Watt TX RF output:	<10A, typical 7.8A.

*\* 2W RF Output, not guaranteed when using 1W PA module.*

## TRANSMITTER

MEASURED IN ACCORDANCE WITH TIA/EIA-603 STANDARDS

RF Power Output:	1W to 50W or 0.1 to 2W* UHF PA opt (1W nominal)
Frequency Stability >300MHz:	1.5PPM for -10 to 60C, 2.5PPM for -30 to -10C.
<300MHz:	2.5PPM for -10 to 60C, 5PPM for -30 to -10C.
Audio Response:	Flat within +1,-3dB across BW.
Audio Bandwidth:	300Hz to 3000Hz.
Modulation Distortion:	Less than 3% @ 60% deviation.
S/N Ratio:	Better than 50dB, (WB). Better than 44dB, (NB).
Conducted Spurious Emissions:	Better than -90dBc.
Conducted Harmonic Emissions:	Better than -90dBc.
RF Switching Bandwidth:	Full Sub band.
RF Switching Bandwidth PA:	Full Sub band.
Duty Cycle:	100% for 50W RF output.
RF Rise Time:	<50mS with VCO in cold standby

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## RECEIVER

MEASURED IN ACCORDANCE WITH TIA/EIA-603 STANDARDS

Sensitivity:	Better than -120dBm for 12dB SINAD. Typical -123dBm
Selectivity 135-520MHz:	More than 85dB for 25kHz adj channel. Typical 90dB more than 75dB for 12.5kHz adj channel.
Audio Bandwidth:	300Hz to 3000Hz (+1,-3dB).
Image Freq Rejection:	Better than 100dB
Spurious Response Immunity:	Better than 85dB.
Intermodulation Immunity:	Better than 82dB. Typical 84dB
Blocking:	Better than 100dB at +/- 1MHz point.
Distortion:	Less than 3% @ 60% deviation.
Frequency Stability:	1.5PPM for -10 to 60C, 2.5PPM for -30 to -10C.
S/N Ratio:	Better than 50dB (WB). Better than 44dB (NB).
Co-Channel Rejection:	Better than 5dB.
RF Switching Bandwidth:	Equal to Sub band allocation.
Receiver Front End BW:	Equal to Sub band allocation.
Receiver Audio Power:	1 Watt.



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## ANCILLARIES and FEATURES summary

- ❖ Very Low current consumption
- ❖ No need for receiver duty cycling
- ❖ System Interface
- ❖ Fully Programmable / Configurable via PC or serial device
- ❖ System independent, no additional software program required
- ❖ High Speed CTCSS, Full Duplex DCS/DPL
- ❖ Remote controllable Multi tone CTCSS community decoder
- ❖ 100% full power duty cycle
- ❖ 5 Tone signaling
- ❖ High Accuracy Real Time Clock.
- ❖ Multi staged TX VF processing with triple limiters
- ❖ Flash Firmware Upgrade Capable
- ❖ Battery backup system option
- ❖ Built In Test Equipment (B.I.T.E.) and remote diagnostics
- ❖ Broad Band High Efficiency LDMOS PA module
- ❖ RX & TX Switching BW covers full sub band
- ❖ Fast Serial Data Interface
- ❖ Full Digital alignment and calibration
- ❖ Field interchangeable PA module needs no re-alignment
- ❖ Pre calibrated power and deviation alignment. Digital value
- ❖ Low RFI and EMI emission design
- ❖ Controlled TX RF envelope
- ❖ DTMF decoder
- ❖ DTMF Remote control
- ❖ Latest technology, full SMD
- ❖ Advanced and optimized RF design
- ❖ High performance 16 bit Flash processor
- ❖ Programmable 12.5/25kHz channel spacing
- ❖ Configurable Function Front Panel LEDs
- ❖ Low current LEDs with digital intensity control
- ❖ Simple and fast disassembly for service
- ❖ Precision internal shielding system
- ❖ Minimal technician adjustments for future maintenance
- ❖ Design spec -40 to 70 degrees C
- ❖ Low aging oscillators
- ❖ Universal microphone input circuit
- ❖ Minimal interconnections
- ❖ Options can be easily retrofitted
- ❖ Minimal mechanical adjustments
- ❖ Front end RX filter never needs realignment
- ❖ Built in TX modulation alignment audio oscillator
- ❖ Built in auto alignment software guides technician
- ❖ Fast and simple disassembly
- ❖ Built on proven technology
- ❖ Configuration password protected
- ❖ Virtual elimination of internal wiring
- ❖ Elimination of helical filters, quadrature coils, MCF matching and trim potentiometers



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## OPTIONS

System Interface expansion	T45
Low Loss Solar Regulator and intelligent Battery Manager	T46
Simplex Coaxial Changeover Relay Assembly	T47
RX Input N-Type connector	T48
Desk Microphone	U16
Fist Microphone	U30
Programming cable	U37
Extended Warranty Std plus 1 year (For base station & including factory fitted options)	U64
Extended Warranty Std plus 2 year (For base station & including factory fitted options)	U65
Extended low temperature (-30deg) factory verify test certification.	U68
MX921 / MX800 Additional Power plug.	U03
DC Power Lead MXPS15 Power supply to MX800 / MX921	U06

### **NOTES:**

*Not all items and features initially available.*

*Future software releases and features can be Flash Memory upgraded.*

*Due to ongoing development we reserve the right to alter specifications without notice.*



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