

Features

- Miniature SIL package
- Single conversion FM Super-het
- Incorporates AGC resulting in improved dynamic range
- Dynamic range better than 120dB
- Fully shielded
- Analogue and true RSSI outputs
- Full speech 20KHz bandwidth
- Operation on 863 – 865 MHz
- HIGH SENSITIVITY (-105 dBm)
- Very low current consumption (6mA)
- SINGLE 5V SUPPLY

Applications

- Wireless microphones
- Wireless speakers
- Walky Talkies
- Wireless intercomm

General Description

The RS-MKR3 miniature UHF radio receiver module provides wireless audio reception from the RS-MKT3 transmitter. one of the compatible MK transmitter modules

The receiver is based on the classical single conversion superhet principle utilising a crystal based phase lock loop for accurate generation of the local oscillator. This allows use of high Q bandpass filters resulting in good adjacent channel selectivity and high interference immunity.

Compatible Transmitter Modules

- RS-MKT3-XXX

The RS-MKR3 module will suit one-to-one and multi-node wireless links in applications including building and car security, remote industrial process monitoring and computer networking. Because of its small size and low power requirements, the module is ideal for use in portable battery powered wireless applications

The module is highly suited for operation in harsh electrical environments where a reliable wireless link is essential.

Absolute Maximum Ratings: Receiver

Operating temperature: -10°C to +55°C
 -40 to +80 deg C option available

Storage temperature: -40°C to +100°C

Supply Voltage (pin 5) 7V
 RF Input (pin 1) +20 dBm (100mW)

Electrical Characteristics: Receiver

	pin	min.	typ.	max.	units	notes
DC LEVELS						
Supply voltage	5	4.5	5	5.5	V	
Supply current	5		6		mA	
Supply ripple		-	-	10	mV _{P-P}	
AF output level	6		5		mV	
AF frequency (3dB) response	6		0.1-20		KHz	
RF						
RF sensitivity	1		-105		dBm	
IF Bandwidth			230		KHz	1
Initial frequency accuracy			±10		KHz	
Max R.F. input			20		dBm	
E.M.C.						
Spurious responses upto 1GHz			<60		dB	
LO leakage, conducted			<60		dBm	
LO leakage, radiated			<60		dBm	
DYNAMIC TIMING						
Power up to stable AF (<i>With RF signal present</i>)	6		6		mS	2
Signal to stable audio out (<i>With power supply already on</i>)			5		mS	2
Power up to valid RSSI (<i>with RF signal present</i>)			2		mS	2

Notes

- 1) IF bandwidth available down to 27KHz
- 2) Timings are to be confirmed

Connection Details

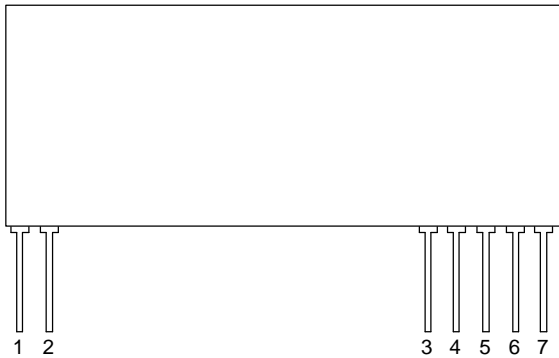


Figure 1: MKR3 Receiver

Pin Description

RF IN (pin 1)

50 Ω RF input from antenna, connect using shortest possible route.

RF GND (pin 2)

RF ground connection, preferably connected to a solid ground plane.

RSSI / Squelch (pin 3)

The Received Signal Strength Indicator provides a DC output voltage proportional to the RF input signal. The amplitude of the RSSI voltage increases with increasing RF signal strength. A simple transistor interface can yield a squelch function.

Gnd (pin 4)

Connect to power supply ground

V_{CC} (pin 5)

+Ve supply pin. Operation from a 5V supply able to source 10mA at less than 10mV_{P,P} ripple.

AF (pin 6)

Audio frequency output (max 40uA source)

NC (pin 7)

This pin is internally not connected.

Application Information

Antenna Design

The design and positioning of the antenna is as crucial as the module performance itself in achieving a good wireless system range. The following will assist the designer in maximising system performance.

The antenna should be kept as far away from sources of electrical interference as physically possible. If necessary, additional power line decoupling capacitors should be placed close to the module.

The antenna ‘hot end’ should be kept clear of any objects, especially any metal as this can severely restrict the efficiency of the antenna to receive power. Any earth planes restricting the radiation path to the antenna will also have the same effect.

Best range is achieved with either a straight piece of wire, rod or PCB track @ ¼ wavelength (7cm @ 863MHz). Further range may be achieved if the ¼ wave antenna is placed perpendicular in the middle of a solid earth plane measuring at least 10cm radius. In this case, the antenna should be connected to the module via some 50 ohm characteristic impedance coax

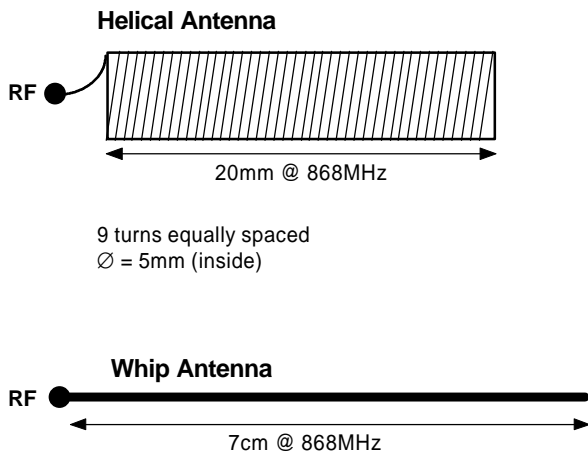


Figure 2: Antenna Configurations To Be Used With The MK receiver Module

Application Circuit

The application circuit shows how the MKR3 Receiver can easily be integrated into a system to form a wireless audio link.

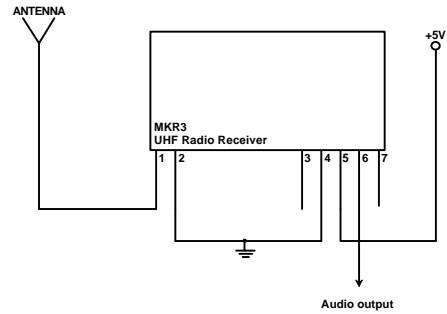


Figure 3: MK Receiver Application Circuit

RSSI Values

The RS-MKR3 RSSI output provides a DC output proportional to the RF input signal. The table below shows the typical RSSI value depending on the RF signal strength.

RF Signal Strength / dBm	RSSI / V
-120	1,35
-110	1,41
-100	1,57
-90	1,79
-80	1,8
-70	1,8
-60	2,15
-50	2,45
-40	2,58
-30	2,59
-20	2,59

Mechanical Dimensions

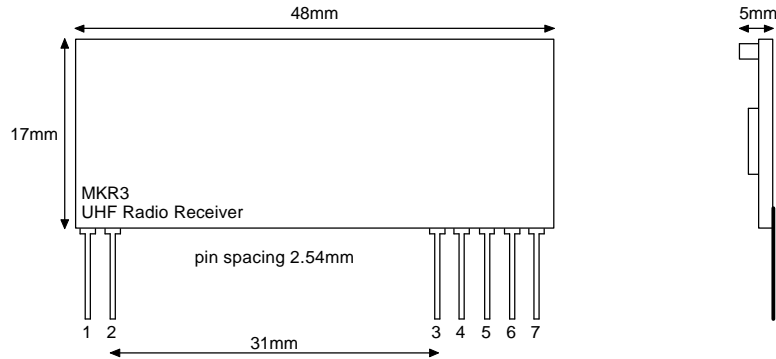


Figure 4: MKR3 Receiver

Ordering Information

Standard Product;

Part No	Description
RS-MKR3-4	863,4 MHz receiver
RS-MKR3-8	863,8 MHz receiver
RS-MKR3-2	864,2 MHz receiver
RS-MKR3-6	864,6 MHz receiver

Please note only the RS-MKR3-2 is available initially. Other channels available in June.

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