The AR2603 Radio Frequency (RF) Module is a single-output radio transmitter/receiver controlled by an Amtech-brand reader. Upon command from the reader, the AR2603 RF module generates a signal in the 2450 MHz RF band and delivers the signal to an antenna for broadcast. The AR2603 RF module then receives and demodulates the reflected tag signal returned through the antenna and preamplifies and conditions the demodulated signal before sending it to the reader.

Controlled by the reader, the AR2603 RF module can operate continuously or can activate in response to a sensor input signal indicating the detected presence of an object.

Range sensitivity adjustment allows controlled introduction of a signal tailored to mask stray signals without reducing RF power as occurs with attenuation. Sensitivity circuit potentiometers access a wide range of settings, from maximum broadcast range (range sensitivity OFF) to maximum signal rejection (range sensitivity fully ON). A patented homodyne receiver increases system immunity to noise and prevents signal dropout, allowing the system to read tags moving at high speed.

The preamplifier provides analog signal output capable of driving up to 1000 feet (305 m) of cable. These balanced signal lines are low impedance and incorporate electrostatic discharge protection. The AR2603 RF Module interface board filters DC power received from the reader or power supply and protects output circuitry from damage due to transients on the cable.

The AR2603 RF Module connects to the reader through cables attached to the module’s interface board. All control and data connections secure at a quick-disconnect type terminal strip on the AR2603 interface board.
AR2603 RF Module

COMMUNICATIONS

Frequency Range
2430-2465 MHz

The 2450-MHz setting is the primary manufactured frequency for the AR2603 RF Module. TransCore recommends separate frequencies for multiple RF modules at one site. TransCore can assign additional frequencies in the 2450 MHz band according to the following table.

<table>
<thead>
<tr>
<th>NUMBER OF FREQUENCIES REQUIRED</th>
<th>ORDER FREQUENCY</th>
<th>SEPARATION ACHIEVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2450 MHz</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>2440 MHz</td>
<td>10 MHz</td>
</tr>
<tr>
<td>3</td>
<td>2460 MHz</td>
<td>10 MHz</td>
</tr>
<tr>
<td>4</td>
<td>2430 MHz</td>
<td>10 MHz</td>
</tr>
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<td>5</td>
<td>2445 MHz</td>
<td>5 MHz</td>
</tr>
<tr>
<td>6</td>
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<tr>
<td>7</td>
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<td>5 MHz</td>
</tr>
<tr>
<td>8</td>
<td>2465 MHz</td>
<td>5 MHz</td>
</tr>
</tbody>
</table>

All other frequencies require special order.

HARDWARE FEATURES

RF Connectors
Type N female

POWER

Nominal RF Power
(measured at output port)
300 mW ±30 mW

TransCore sets output power of each AR2603 RF Module at the factory to comply with local regulations in the installation environment.

Frequency Stability
±400 ppm

Nominal Input Voltage
12.5V DC

Harmonic Output
-50 dBC

Spurious Output
-60 dBC

PHYSICAL

Dimensions
Size: 13.5 x 13.0 x 6.36 in (34.3 x 33 x 16.2 cm)
Weight: 22 lb (10 kg)

ENVIRONMENTAL

Operating Air Temperature
-40°F to +158°F (-40°C to +70°C)

STANDARDS

ISO Compatible
The AR2603 RF Module meets the criteria for equipment configuration and performance specified by the International Organization for Standardization (ISO) for container identification standard.

Safety Standards

The AR2603 RF Module complies with United States and international RF safety standards as specified by ANSI C95.1, IEC Pub 215 and 657 and NRPB.

LICENSING

Equipment License

This equipment uses 2450-MHz frequency and thus does NOT comply with FCC frequency allocation requirements for the U.S.

Users in all countries should check with the appropriate local authorities for licensing requirements.

OPTIONS

Custom Frequencies

The factory can set the AR2603 RF Module to a discrete narrow RF band to avoid mutual interference among closely situated reading stations. When requesting special order frequencies, allow four weeks’ additional lead time.

ACCESSORIES

Attenuators

One-watt signal attenuator pads are available for the AR2603 RF Module. Variable and fixed attenuators ranging from 1 dB to 24 dB have Type N connectors. The attenuation of output signal only — up to 3 dB — may also be accomplished with type SMA pads installed at the AR2603 RF Module’s jumper line.

Hex Key

For removing and installing RF module and reader circuit boards

For more information:
Call 214.461.6443 (Sales Support) • 505.856.8007 (Technical Support)

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