

Narrow band multi channel radio transmitter/receiver for industrial use R&TTE and RoHS compliant, "Class 1" receiver

Circuit Design, Inc. has recently developed and begun delivery of the CDP-TX-02E-R transmitter and CDP-RX-02E-R receiver as the successor models to the CDP-02 series industrial use radio modules. The new products comply with the RoHS Directive that comes into force in Europe from July 1, 2006.

The R&TTE compliant narrowband multi channel radio module CDP-02 series has been very well received in the marketplace, with a total of over 150,000 sets sold since the product went on sale, and the units have found uses in many applications.

The shape and interface of the RoHS Directive compliant successor model maintains compatibility with the earlier models, but thanks to improvements made in basic performance, reliability and stability have been enhanced.

With the development of new circuits using TCXO, the minimum operating temperature has been expanded from -10°C in the earlier models to -20°C. RF output complies with the European ISM band RF power limit^{*1}, and you can select either 10 mW or 1 mW. In this way the modules can be used in applications where continuous transmission is necessary in all 32 channels. In order to maintain high reliability and stability even in a tough condition for radio, we have improved the blocking performance and selectivity of the receiver, to achieve receiver class 1^{*2} classification as defined in EN300220.

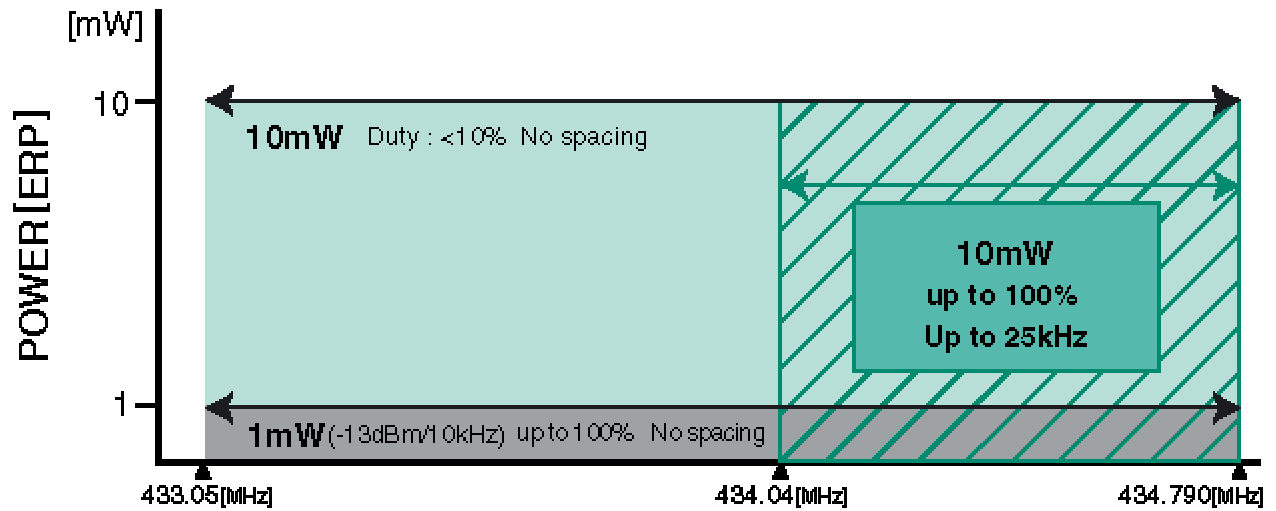
The features of CDP-TX-02E-R / CDP-RX-02E-R are as follows.

- R&TTE and RoHS compliant radio modules
- Class 1 receiver supported by high reliability
 - Blocking or desensitization: 84 dB (All)
 - Adjacent channel selectivity – in band: 60 dB (25 kHz channel spacing)
 - Adjacent band selectivity: 60 dB
- Achieves an operating temperature range from -20 to +60°C using a TCXO-based temperature compensation circuit
- 1 mW/10 mW RF output selection
- A transmission circuit structure that is highly resistant to reflection
- 25 kHz step 32 multi channels
- Improved shock and vibration resistance
- Uses a custom SAW filter to avoid radio interference from other radio equipment
- High receiver sensitivity using double superheterodyne receiver circuits: -120 dBm (12 dB SINAD)
- Achieves stable operation with all high frequency circuits required for transmitting and receiving enclosed inside the casing
- Reduced impact of interfering radio waves from external sources through improved shielding effectiveness



*1 434 MHz ISM band power restriction

CEPT/ERC Rec 70-03, 434MHz Band Plan



*2 Receiver class 1

Excerpt from EN300220:

4.1.1 Receiver classification

The receiver used in short range radio devices is divided into three classes of receiver, see table 2, each having its own set of minimum performance criteria. This classification is based upon the impact on persons in case the equipment does not operate above the specified minimum performance level.

Table 2

Receiver class	Relevant receiver clauses	Risk assessment of receiver performance
1	9.1, 9.2, 9.3 and 9.4	Highly reliable SRD communication media; e.g. serving human life inherent systems (may result in a physical risk to a person)
2	9.3 and 9.4	Medium reliable SRD communication media e.g. causing inconvenience to persons, which cannot simply be overcome by other means
3	9.4	Standard reliable SRD communication media e.g. inconvenience to persons, which can simply be overcome by other means (e.g. manual)

NOTE: With reference to the present document, manufacturers are recommended to declare classification of their devices in accordance with Table 2 and EN 300 220-3 [11], subclause 4.2, as relevant. In particular where an SRD which may have inherent safety of human life implications, manufacturers and users should pay particular attention to the potential for interference from other systems operating in the same or adjacent bands.

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