TMR880i technical details

TETRA Terminals from CASSIDIAN fulfill the following specifications for TETRA radio equipment in the temperature range of -20 ⁰C to +55⁰C:
EN 300 392 V+D Air Interface
EN 300 394 V+D Conformance testing and
TETRA Speech codec (ACELP) according to EN 300 395

Frequency Bands

Type	Tx	Rx	DMO
RC-9 wideband	380-400 MHz, 410-430 MHz	390-400 MHz, 410-430 MHz	380-400 MHz, 410-430 MHz
RC-16	806-825 MHz	851-870 MHz	806-825 MHz, 851-870 MHz
RC-23	450-460 MHz	460-470 MHz	445-470 MHz

Option to use 5 MHz duplex spacing, normally 10 MHz is used
Use of band specific offsets in wideband networks
Possibility to configure frequency offset independently for bands 3 and 4 when using wideband configuration in 380 – 430 MHz

Size
Radio unit
Weight: 1004 g
Dimensions: 182 x 60 x 120 mm

Control unit
Weight: 240 g
Dimensions: 190 x 72 x 36 mm

Power Class
Compliant with EN300392-2 power class 3
Receiver class A
RF power control, 5 steps of 5 dB

Rx Sensitivity
Static: -112dBm
Dynamic: -103dBm

Durability
Water and dust resistant control unit CUR-3 according to IP55 classification

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TECHNICAL SPECIFICATION
TETRA Mobile radio TMR880i
Jan 2013 – 3(8)

Display
High-resolution active TFT color display
Supports up to 65,536 colors within 130 x 130 pixels
5 lines for text in basic mode with 16-pixel font
Manual display brightness adjustment
Nightvision mode
Customisable screen saver
Display texts and voice feedback in more than 25 languages
Support for Latin, Arabic, Greek, Chinese, Korean, Cyrillic and Bulgarian characters and keymats

User Interface
Full alphanumeric keypad
'Call key' with short cut to last dialled numbers
'End-call key' with short cut back to idle mode
Four-way navigation keys with short cuts
    - Programmable left and right arrow keys
Three selection keys
Power-on key
Group selector
Back key
PTT key
Red function key
Volume keys
Fast menu key
Duty key
Display brightness control key
User definable 'Go-to' short cut list
Configurable menus
Configurable fast menu
Configurable function keys
JPEG/PNG picture support
XHTML Browsing over WAP 2.0 stack
Animated screen saver, color schemes, wallpapers, grid menu

Fast Menu
Scanning activation, direct mode, and network mode activation, group call and transmission barring
activation, selection of 4 profiles, and situation indicator (up to 10 situation indicators)
Easy access with the fast menu key
Configurable content and order of the Fast menu list
Voice feedback is given in the same language as the display texts

Duty Key
Alternative functions:
- Functions as a PTT key to the home group
- Sends a callback request to the dispatcher or a situation indicator
- Dials a phone call to the dispatcher
- Sends an SDS message to a predefined address

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Call Types
Phone calls in TETRA network
Phone calls to public network
Express and group calls in TETRA network
TETRA emergency calls
- Several emergency call types with multiple data options in programming
Hidden TETRA emergency call
Public emergency calls (e.g. to 112)
Broadcast calls for background groups

Call Registers
Dialled individual calls: 10
Received individual calls: 10
Missed individual calls: 10
Time stamp for call lists
Last call duration

Group Communication
Talk groups, background groups, broadcast groups, invisible groups and 'receive only' groups
Up to 2 000 groups
Up to 200 group folders
Up to 400 groups per folder (200 fixed + 200 DGNA)
Up to 5 user-definable folders
Priority scanning
Scanning list up to 59 groups (48 in selected folder, 10 background and home groups)
Dynamic Group Number Assignment (DGNA), up to 200 DGNA groups
Configurable DGNA tone
Voice feedback for group selection
Back key for returning to the last selected group or for selecting home group
Optional home group PTT key (duty key)
Configurable PTT key: Transmission to selected group or currently scanned group
Two user levels, activation by authorized users via the menu facility
Voice override in group calls (pre-emption)
Late entry
Group journal for keeping track of group management functions
Background groups for broadcast calls, up to 10 background groups
Group calls on / off
Confirmed group call

Direct Mode Features
Up to 180 DMO groups
60 DMO channels
DMO gateway support
Support for DMO Repeater type 1A and 1B
Scanning
DMO individual call ,
Voice override, (pre-emption)
Red key call to DMO group
Red key call to TMO within TETRA network coverage

Public emergency call within TETRA network coverage
DMO SCK encryption, encryption classes 2A, 2B and 2C
DMO status messages, also during a call

Messaging
Status messages and callback requests to individual and group numbers
Text messages with concatenation
Situation indicators to a predefined address
Predictive text input T9 (for most languages)
Latin-9 character set for special characters in text messaging
Flash messages for quick text messaging
Unit alert (selective alert)
Support for store and forward
Show last sent status message in idle mode

Security
Authentication
Mutual authentication
Air Interface Encryption (AIE) with dynamic and static ciphering keys (DCK/CCK and SCK) supporting
TETRA encryption algorithms TEA-1, TEA-2, TEA-3
Support for security classes:
    - Class 1: Clear
    - Class 2: SCK
    - Class 3: DCK/CCK
    - Class 3G: GCK (requires TETRA SIM card)
SCK and GCK key delivery OTA (requires TETRA SIM card)
Phone/Security code
Two user levels with access codes
Two-level keypad lock with phone code protection
Temporary disable/enable (stun)
Permanent disable (kill)
Transmission barring (Tx inhibit)
Alert for out of network coverage
Support for smart card based end-to-end encryption (option)

TETRA SIM support (option)
TETRA SIM (TSIM) card is similar to GSM SIM card, placed in SIM card slot of radio
TSIM card contains subscriber identification information (ITSI and authentication key K)
Easy to move subscriber information with TSIM card from one radio to another
TETRA SIM supported radio can also operate without SIM card

Wireless Data
WAP 2.0 over TETRA IP Packet Data
TETRA IP packet data, single slot via data cable
Java MIDP 2.0 platform
XHTML color browser
AT-command interface for applications
Simultaneous SDS and group voice
Alternating SDS and IP packet data
Alternating individual duplex calls and IP packet data
Alternating IP packet data and group voice

Positioning
Inbuilt GPS receiver
GPS activity indicator
Sensitivity -152 dBm
Simultaneous satellites up to 12
Cold start accuracy (open sky) *
    - 5 meters (50% confidence level)
    - 10 meters (95% confidence level)
Cold start TTFF, time to first fix (open sky) *
    -40 seconds (average)
    -60 seconds (95% confidence level)

 *measured at -130 dBm

Automatic position saving at 1-second intervals
Support for ETSI location information protocol for TETRA (LIP)
Position information sending:
    - Automatically during red key calls and public emergency calls, e.g. 112 (configurable feature)
    - On single position requests
    - On periodic position requests based on following triggers:
    - Time or distance or both
    - Status messages
    - Entering network service (after being out of service)
    - System access (TMO on)
    - Transmission barring turned off
    - TMR880i is powered on
    - Emergency condition is detected
Position information on/off
Configurable GPS usage with distance based LIP triggers
Optimized usage of shared generic LIP trigger parameters
Viewing own coordinates, altitude, speed and direction on the display
Waypoint storing and sending
Waypoint guidance
Unit conversion and position display format selection
Support for compatible WAP and PC map applications
NMEA routing to serial port, future SW update required
Network-based terminal assisted positioning

Other Features

255 phone book entries
4 profiles: General, Silent, Meeting, Outdoor
Adjustable alert tones
Adjustable keypad tone volume
Adjustable ringing tone volume with 35 different tones
Adjustable warning tones
Aliasing
Animated screen saver, color schemes, wallpapers, grid menu
Anykey answer
Backlight on/off
Calculator
Calendar
Call handover type 1,3
Calling line identification presentation (CLIP)
Clock and alarm clock
Clock synhronisation to network and/or GPS time
Configurable menus
Configurable fast menu
Configurable function keys
Countdown timer
DTMF tone dialling
Duplex call barring
Energy economy
JPEG/PNG picture support
Load Directed Roaming (LDR)
Microphone selection for PTT calls
Multiple network support
Remote control through SDS and status
Secondary control channel (SCCH)
Speed dialling (one touch dialling, locations 2-9)
Stopwatch
Talking party identification (TPI)
To-do list
User definable 'Go-to' short cut list
Wallpaper

Interfaces
Control unit interface
16 configurable I/O pins
Multiple audio devices
Helmet audio device
Serial data
External power on / off
External PTT
External emergency PTT
12V supply voltage
Ignition sense
Internal slot for smart card
External smart card reader
Active GPS antenna
TETRA antenna
Service connector for programming