Technical Support

TECHNICAL NOTE

Technical Note TN-814

Squelch options available in the TM8000 Mobile radio

3 November 2003

Applicability

This Technical Note identifies the squelch options available in the TM8000 mobile radio and how to decide which best suits user's applications.

1. Information

Squelch type options

Under the NETWORKS > BASIC SETTINGS menu option is a tab called BASIC NETWORK SETTINGS, on that tab is a field called Squelch Detect Type. Refer to screenshot Figure 1.

The options available in this field are Noise Level using a SINAD value and Signal Strength which uses specific RSSI values.

The type of squelch required can be defined on a per-network basis. This allows some channels to be defined as Noise Level and others as Signal Strength if required.

Signal Strength (RSSI)

Select Signal Strength where the users' application requires fast squelch operation response (close to 3ms) and the radio will be operating in moderate to high signal-strength conditions (such as greater than –110 dBm).
This option is particularly useful when receiving data, where there is a need for the fast response times.

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Noise Level (SINAD)

This has been the only squelch operation used to date in older terminal products such as the T2000.
In most situations where voice is the predominant transmission Noise Level using SINAD values will provide the best sensitivity at lower signal levels, and where squelch response times close to 20 ms is quite acceptable.
There is no issue with using Noise Level (SINAD) on data channels other than noting the capture speed even on good signal-to-noise ratios will be marginally slower than Signal Strength.
This is the suggested squelch type for networks set-up as voice applications.

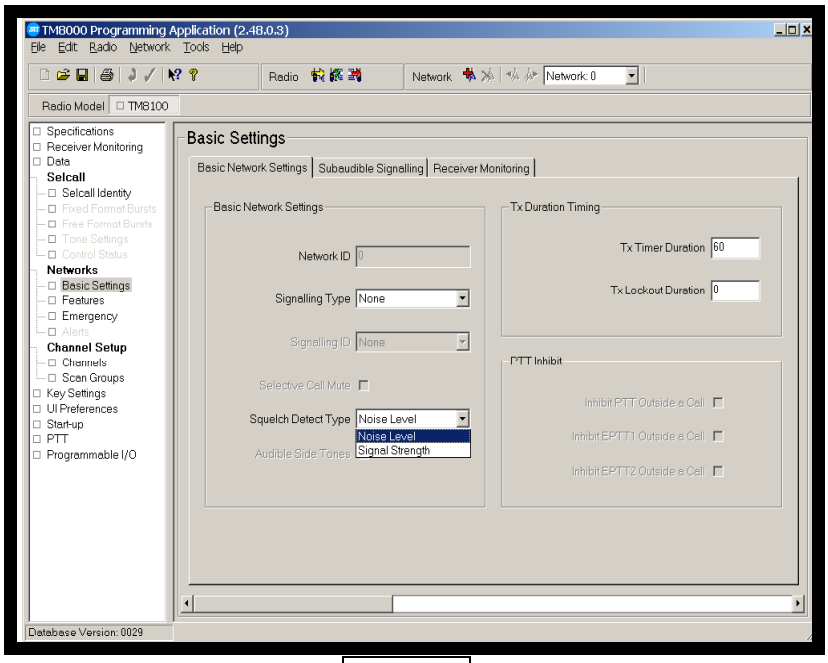

Figure 1

Carrier Squelch Options

The TM8000 mobile radio's squelch gating point is selectable between opening points of 8 and 20 dB SINAD.

The RF carrier squelch threshold can be set on a per-channel basis using the Squelch field of the either the SUMMARY or DETAILED tabs of the CHANNELS page. The options available from the drop-down box are:
Country (8 dB SINAD)
City (12 dB SINAD) or
Hard (20 dB SINAD)
Refer to screenshot Figure 2.

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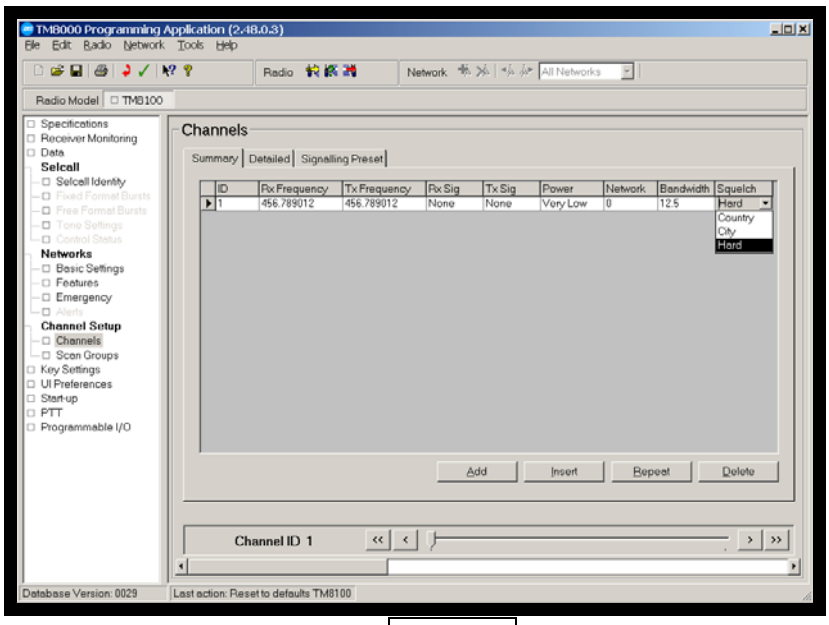

Figure 2

Points to Note setting up Squelch types

Using Signal Strength when Scanning voice channels:
The main impact of this set-up is false capture of channels when the radio is scanning.

The radio is more susceptible to false detection when the following situation arises:
The scanned channels are programmed to use Signal Strength squelch detect and Country squelch setting, and a channel in the group has a carrier on it greater than -105 dBm but that channel is not captured due to invalid sub-audible signalling.

Channels that are falsely captured result in a quick "sshhkk" noise on every false capture. The channel is then held for the duration of the Group Hold Timer before scanning is resumed. Depending on how often the channel false detects, it could severely slow down the scan rate.

Another point to note is that RSSI is inaccurate at low signal levels with the level of averaging applied. With an input RF level of, say -124 dBm, the radio will un-mute as the hysteresis of RSSI values (9dB with Country) drops below -119 dBm (the default Country setting).
Unfortunately applying more averaging would require a trade-off against scanning speed.

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Compliance	None.
CSO Instruction	Please inform all technical staff and accredited dealers of the descriptions of squelch modes available in the TM8100 mobile radio.

2. Issuing Authority

Name and Position of Issuing Officer	Graham Brenchley Technical Support Engineer
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