Operation Manual

DTMF

Annex to TSW200E1's Operation Manual

Version: 1
Revision: 2
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Summary

1 - Introduction

The TSW200E1 DTMF Module allows simulating the process of calling an end user using DTMF. The digits can be manually inserted using the equipment keyboard or automatically by means of a user-selectable number of up to 16 digits. The user can also edit the CAS pattern used and the following tone characteristics: active time, interval time between tones and tone level. The only interface used in this module is the G703-2M.

2 - DTMF Module Operation

2.1 - DTMF test Configuration

The configuration of this module is very simple and consists of two screens. To navigate between the two screens, use the <F1> (BACK) key or <F4> (NEXT) key. The <F3>(MODULE) key returns to the module screen.

After selecting the DTMF module at the module screen, the first configuration screen is shown, as displayed in the figure below. At this screen, the user programs the line parameters. To modify any parameters, move the cursor up to the parameter line that is to be changed and use the ← and → keys to modify the parameters.

```
┌──────────────────────────────────────────┐
│                  DTMF                      │
│                                            │
│   PCM:              PCM30C         ←        │
│   Termination:      75 Ohms UNBAL          │
│   Line Code:        HDB3                    │
│   Polarity:         NORMAL                  │
│   Channel:          30                      │
│                                            │
│                                            │
│          MODULE                 NEXT        │
└──────────────────────────────────────────┘
      F1          F2          F3          F4
```

- **PCM**: Selects the frame structure. The structures are PCM30 and PCM30C.
- **Termination**: The cable termination impedance can be chosen as 75 ohms UNBAL, 120 ohms BAL, HIGH-Z UNBAL or HIGH-Z BAL.
- **Line Code**: Allows choosing the line code as HDB3 or AMI.
- **Polarity**: Selects the polarity signal as NORMAL, where the selected pattern bits are transmitted normally or INVERTED, where the bits are inverted.
- **Channel**: Channel in which the equipment will initiate the calls.

The next configuration screen, shown in the following figure, selects the parameters for the transmitted tones and CAS signalization.

```
                        DTMF

   Speed Dial:          1234567890#*1234 ⬅
   On hook:             0101
   Off Hook:            0111
   DTMF Level:          -08 dBm
   DTMF On:             200 ms
   DTMF Off:            100 ms

   BACK          MODULE
```

| **F1** | **F2** | **F3** | **F4** |

- **Speed Dial**: It is a sequence of up to 16 digits (including numbers from 0 to 9, * and #) that is user-selectable so that the tones corresponding to these digits are transmitted in sequence. To edit the number, press the <DATA> key with the cursor pointing to this parameter and, at the editing screen, use the alphanumeric keys to enter the desired number. The <CLEAR> key clears editing. These numbers can have up to 16 digits. Shorter numbers are allowed.
- **On Hook**: Selects the CAS pattern transmitted to indicate that an unused channel is either in the *On Hook* or *Idle* status. To edit this value, press the <DATA> key with the cursor pointing to this parameter and, at the editing screen, use the 0 and 1 keys to enter the desired number. The <CLEAR> key erases the value.
- **Off Hook**: Selects the CAS pattern transmitted to indicate that a channel that is being used is in the *Off Hook* or *Seize* status. To edit this value, press the <DATA> key with the cursor pointing to this parameter and, at the editing screen, use the 0 and 1 keys to enter the desired number. The <CLEAR> key erases the value.
- **DTMF Level**: Selects the level or amplitude of the tones that will be coded and sent in the chosen channel. The level can be selected from 0 to -53 dBm. To modify this parameter, use the ← and → keys.
- **DTMF On**: Selects the active time of a DTMF tone. It can be chosen from 35 to 999 milliseconds. To edit this parameter, use the ← and → keys or press the <DATA> key.
- **DTMF Off**: Selects the silence time between sending the DTMF tones. It can be chosen from 35 to 999 milliseconds. To edit this parameter, use the keys ← and → or press the <DATA> key.

2.2 - *Performing the DTMF test*

The test can be started after all the parameters have been chosen. To do this, simply press the <START/STOP> key at any of the two configuration screens.

The running test presents a single screen, displayed in the following figure.

```
          CH : 30              ON    HOOK
30/04/2005        ABCD    EVENT
14:11:29:068             TX WINK
14:11:29:073      0111   RX CAS
14:11:34:076      0101   RX CAS
14:11:43:960             Speed Dial
14:11:59:697             DTMF Tone 2




    HOOK         DIAL         WINK        FREEZE
     F1           F2           F3           F4
```

The channel being used, its status (On Hook or Off Hook) and an event log are displayed.

Pressing the <F1> (HOOK) key changes the channel status from On Hook to Off Hook or from Off Hook to On Hook.

The <F2> (DIAL) key transmits sequentially the tones for the Speed Dial parameter digits. The length of the tones is defined by the DTMF On parameter and the silence interval between each tone is defined by the DTMF Off parameter.

The <F3> key sends a WINK sequence (On Hook, Off Hook, On Hook) if the channel status is On Hook or a FLASH sequence (Off Hook, On Hook, Off Hook) if the channel status is Off Hook.

The <F4> key freezes the event log and allows the navigation using the ←, ↑, → and ↓ keys.

The <CLEAR> key clears the time log, erasing the events that occurred.

The event log presents the moment of the occurrence of each event with millisecond precision and an event description. Events are:

- CAS changes in the transmission and in the reception. In this case, the new ABCD bits values corresponding to the observed channel are shown.
- Sending of a WINK or FLASH sequence
- Sending of a keyboard tone
- Sending of the Speed Dial digits

All data received are sent to the equipment loudspeaker. The data sent by the TSW200E1 during the call are the generated tones or audio entering the microphone. While the equipment sends no tone (or the silence of the interval between tones), any data entering the microphone are sent.

The test ends by pressing the <START/STOP> key.