



Specification For The MSB Design CLI Tester CLIP-1

Introduction

The MSB Design Calling Line Identification Service Tester CLIP-1 provides a self-contained means of testing equipment for conformance to the specifications laid down in the relevant documents for this service. There are two documents referring to this service that are relevant, at least in the UK, the first being the BT SIN 242 and the second being the Cable Authority Exception Document Relating To SIN 227. All references in this specification to the 'documents' will refer to these two publications.

The SIN 242 specification is that used for the BT CDS service, whereas the SIN 227 Exception Document is that used by the Cable companies and the US Networks. They are both very similar in the core specification, the main difference being in the way the service 'wakes up' the receiving apparatus. In this specification we will refer to this apparatus, when under test, as the UUT (unit under test).

The CLIP-1 provides all of the test sequences that are referred to in the documents, and they are performed in the same way as you would expect to experience when connected to the relevant service. The unit is totally self-contained, providing the dc voltage feed to the on-hook UUT, sending the required wake-up signals and following data, and finishing with exchange ringing until requested to stop. When the UUT is taken off-hook a constant current feed is presented.

The unit is mains powered, 240v ac @ 50Hz. All functions are controlled via six front panel push-buttons in conjunction with a four line LCD display, and operation is very straightforward.

Let us look in more detail at the unit :-

Operation

Looking at the front panel you will see that there is a four line by twenty character LCD display. This display is back-lit to make it more visible in poor lighting conditions, and this also helps with off-angle viewing. Beside the display there are six push-buttons, and these are used to access all the functions of the unit. Let's look at them individually :-

Screen

The unit parameters are presented on three different pages, or screens, and they can be cycled through by repeated pressing of the button marked 'screen'. When the button is pressed at the third screen it wraps round to the first again, and this wrapping occurs with all the functions.

Option

In any screen the various parameters displayed can be accessed by pressing the button marked 'option'. This will move the flashing cursor about the screen from one parameter to the next.

Forward

Pressing this button will change the value of the parameter selected by the cursor. Repeated pressing will cycle through the list of possible values.

Back

This button moves through the value list in the reverse direction, to save having to go all the way round if a value has been passed.

Go

Pressing this button once will start the test sequence running. The screen will display the words "TEST RUNNING" until the test is complete.

Stop

As you may guess pressing this button once will terminate the test. When the test has completed the UUT is presented with exchange ringing until either the UUT is taken off-hook or the 'stop' button is pressed.

So, with these buttons we can go to a screen that displays the parameter we want to change, move the cursor to that parameter, and select from a list of values for that parameter. Once all the parameters have been chosen, pressing the 'go' button will start the test sequence running automatically, and when it has completed the UUT is presented with ringing until stopped.

When the CLIP-1 is first powered up the LCD display will firstly show a title page, which amongst other things contains the version number of the current software. This is a useful piece of information in the event of any future enquires, so remember where it is. After a short pause the unit goes through its initialisation sequence, during which all three screen pages are briefly displayed, after which the first page is visible. Note that the unit always powers up to the same default values, and these are always a valid combination, so any UUT should respond favourably to the power on parameter values.

Now let's examine the test sequence itself :-

Test Sequence

The two different systems, BT and Cable / US, differ mostly in the way the UUT is 'woken up', otherwise the rest of the sequence is the same. Let's start with BT.

BT

The first occurrence is a line reversal of the dc feed voltage, and this is followed by a period of silence, named Silence Period 1. After this, a tone, the Alert Tone, is sent, and this is followed by another period of silence, Silence Period 2, during which the UUT is expected to produce a 'wetting pulse' used to clear the resistance from the mechanical features on the line. Next the start of the data is heralded by a Channel Seizure signal, followed by a Mark, and then the Data proper. The Data section is sent as specified in V23 signalling requirements. Finally exchange ringing is presented to the UUT.

Cable / US

In this specification the line reversal is followed by a burst of exchange ringing, then Silence Period 2, and the normal rest of the sequence. The UUT is not expected to provide the 'wetting pulse' as the first burst of ringing does the same function. The data is sent as specified in Bell 202 signalling requirements.

The **CLIP-1** provides these sequences, as selected via the front panel controls. The documents specify a range of possible values that may be used to exercise the UUT, some of which are deemed valid and some deemed invalid, and the UUT can be tested to examine its performance when presented with these different parameter values. All of the parameter values listed in SIN 242 are available, and can be mixed as required.

Parameters

There follows a listing of the various parameters available on each screen. Pressing the button marked 'screen' will cycle through the three screens.

Screen 1

- Line Reversal
- Line Voltage
- Silence Period 1
- Silence Period 2
- Noise
- Alert Tone
- Twist
- Tone Level
- Tone Duration

Screen 2 Channel Seizure Length
Mark Length
Message Type
Message Length
Call Type
Signalling Specification
Date & Time

Screen 3 Calling Line Number
Called Line Number
Caller Name or Text
Network Status
Checksum

Values

Let's now look at the values available for each parameter, and talk a little about each parameter section.

Line Reversal +ve to -ve
-ve to +ve

The direction in which the line reversal takes place can be selected here.

Line Feed Voltage 15 volt 30 mS
50 volt 1 mS
70 volt 500 uS

Three different voltages are available, and each has an associated slew rate for the reversal. The rates are fixed for each voltage and are automatically selected with that voltage.

Silence Period 1 100 mS
4.8 S

The first silence period can be selected from the two choices above.

Silence Period 2 45 mS
4.8 S

The second period can also be selected from two choices.

Noise On
Off

White noise can be added to the Alert Tones, at a level 20dB down on the tone level. This noise level is automatically selected for each tone level.

Alert Tones Single 2110 Hz
Single 2130 Hz
Single 2055 Hz
Single 2205 Hz
Single 2150 Hz
Single 2720 Hz
Single 2750 Hz
Single 2655 Hz
Single 2845 Hz
Single 2780 Hz
Dual 2130 + 2750 Hz
Dual 2110 + 2745 Hz
Dual 2150 + 2780 Hz
Dual 2205 + 2845 Hz
Dual 2055 + 2655 Hz

These Alert Tones are sinusoidal tones of either Single or Dual tone form.

Twist 0 dB
 + 7dB
 - 7dB

Provision is made for either positive or negative twist for each of the selected tones. Of course, this only applies to the dual tone situation, so make sure that twist is not applied to a single tone or the level will be incorrect.

Level - 2.2 dBV
 - 40 dBV
 - 46 dBV

This refers to the overall tone level, and will be the same for either a single or a dual tone.

Tone Duration 19 mS
 28 mS
 88 mS
 110 mS

Straightforward enough, I think.

Channel Seizure Length 0 bits
 32 bits
 96 bits
 205 bits
 315 bits
 999 bits

The Channel Seizure signal is purely a sequence of 1's and 0's.

Mark 0 bits
 25 bits
 55 bits
 255 bits

Self explanatory.

Message Type 0 ; possible type
 80 ; CLIP message
 7f ; possible type
 ff ; possible type

The valid CLIP message type is H80. The others are possible future examples.

Message Length OK
 Error

The message length is both correctly and incorrectly sent.

Call Type 01 ; Voice
 02 ; Ring Back When Free
 7f ; Voice
 80 ; Data
 81 ; Message Waiting
 No Parameter Sent

Signalling Specification V23
 V23 + 1%
 V23 - 1%
 Bell
 Bell + 1%
 Bell - 1%

These choices refer to the data rate which can be varied +/- 1%. Selecting one of the V23 choices will also select the BT test sequence. Selecting one of the Bell choices will select the Cable / US test sequence.

Date & Time	03 15 10:30 11 07 00:00 02 29 00:01 12 31 23:59 No Parameter Sent
Calling Line Number	0351-3210 01223 893073 00-44-1223-893073 010 1 512 12345678 Reason for absence : P (withheld) Reason for absence : O (unavailable) Reason for absence : X (example) No Parameter Sent
Called Line Number	0123-4567 01223 893073 00-44-1223-893073 010 1 512 12345678 No Parameter Sent
Caller Name / Text	A-Test M.S.B.Design ABCDEFGHIJKLMNQRST UVWXYZabcdefghijklmnop opqrstuvwxyz01234567 Reason for absence : P (withheld) Reason for absence : O (unavailable) Reason for absence : Y (example)
Network Status	No Status ; No Status Status : 0 ; No messages Status : 1 ; 1 or more
Checksum	OK Error

The checksum can be sent as okay or incorrectly computed.

That completes the listing of the various parameters and their respective values. All these values can be mixed, and selected, at will, whether they be valid or not as far as the UUT is concerned.

Specification

dc Feed	40 mA constant current, backed by Feed Voltage selected
Ringling Voltage	approximately 60 v RMS
Ringling Frequency	25 Hz Sinewave
Ringling Cadence	PSTN - 400mS, 200mS, 400mS, 2S
All Other Parameters	as selected
Tolerances	voltage +/- 5% current +/- 5% frequency +/- 1% cadence +/- 1mS period +/- 1mS level +/- 5%

The unit is housed in a steel / aluminium enclosure, with all switches and connectors on the front and rear panels. It is mains powered, via an IEC connector on the rear panel. Enclosure dimensions are 220mm x 220mm x 70mm.