10
ANALOGUE ON-HOOK DATA TRANSMISSION

10.1
Introduction
(1) Analogue on-hook data transmission is a technique which enables information to be transmitted to the called party from the exchange. This information may be sent during or independent of the ringing cycle, and may be received without that party going off-hook. Information sent during ringing is transmitted to the called party during the long silent period between the first and second ringing cadences (ref. clause 6.3).

- *Typical "during ringing" application is for the called party to receive information about the incoming call, such as calling party number (see Section 11). Visual Message Waiting Indication is an example of information sent independent of ringing.*

- *Ref. Bellcore TR-NWT-000030*

(2) This facility is supplementary to standard Telecom telephone service. It is restricted to describing interfaces requiring connection of specialist CPE, and does not include services which use standard techniques such as DTMF tones for data transfer.

(3) The specification of this facility does not constitute a guarantee that it will be available in all circumstances.

10.2
Timing
For data transmission signals during ringing, the timing relative to the ringing cadence is as follows:-

(a) The signal starts not less than 500 ms after the first ringing cadence has ended, and,

(b) ends at least 200 ms before the start of the second ringing cadence.

10.3
Physical Layer
The physical make-up of the signal transmitted from the exchange is as follows:-

Modulation Type:	Frequency shift keying
Mark (logic 1):	1200 ± 12 Hz
Space (logic 0):	2200 ± 22 Hz
Transmission level:	-13.5 dBm ±1.5 dBm at the exchange into a standard BT3 termination
Transmission rate:	1200 ± 12 bits per second
Word format:	Each data word shall be preceded by a start bit (space) and followed by a stop bit (mark)
Word length:	8 bits
Bit order:	The least significant bit of each data byte shall be transmitted first

10.4
Data Link Layer
(1) In the data link layer, the Data Message Frame comprises the following (see Fig. 8):-

(a) Wake-up signal to alert receiver of impending transmission.

(b) Message.

(c) A checksum for error detection purposes.

(2) Details of the frame are as follows:-

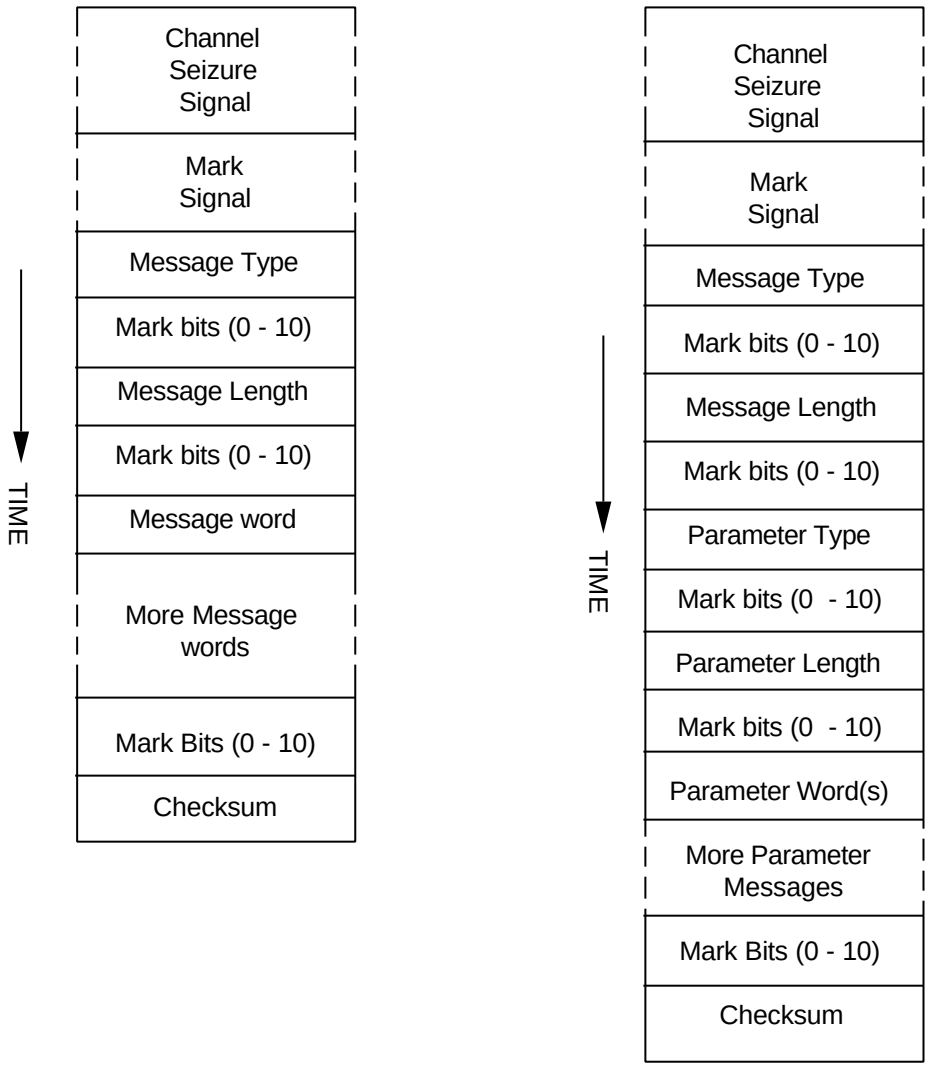
(a) Each frame commences with a Channel Seize Signal (CSS) and a Mark Signal.

(b) The CSS consists of a block of 300 continuous bits of alternating "0"s and "1"s. The first bit transmitted is a "0" and the last bit a "1".

(c) The Mark Signal consists of 180 mark bits.

(d) The format of the Message portion of the frame is shown in Figs. 9 & 10.

(e) The checksum is the last word of the frame. It is the 2's complement of the modulo 256 sum of each bit in the other words within the message.



(a) Single Data Message Format (SDMF)

(b) Multiple Data Message Format (MDMF)

FIG. 8 SINGLE AND MULTIPLE DATA MESSAGE FRAME FORMATS

10.5
Message Assembly Layer

10.5.1
Types of message
There are two message types as follows (see Figs. 9 and 10):-

(a) The Single Data Message Format (SDMF) which defines a message consisting of a message header and a message body.

(b) The Multiple Data Message Format (MDMF) which defines a sequence of messages, each consisting of a message header and a message body. The message body may contain several smaller messages called parameter messages, each of which has a header and a body.

10.5.2
Single Data Message Format (SDMF)
The Single Data Message Format (SDMF) is as follows (see Fig. 9):-

(1) Header, consisting of:-

(a) The 'Message Type', which is an 8-bit word identifying the feature generating the message.

(b) The 'Message Length', which is an 8-bit word indicating the number of message words following in the message body (1 - 255).

(2) Message Body

The message body contains up to 255 8-bit words.

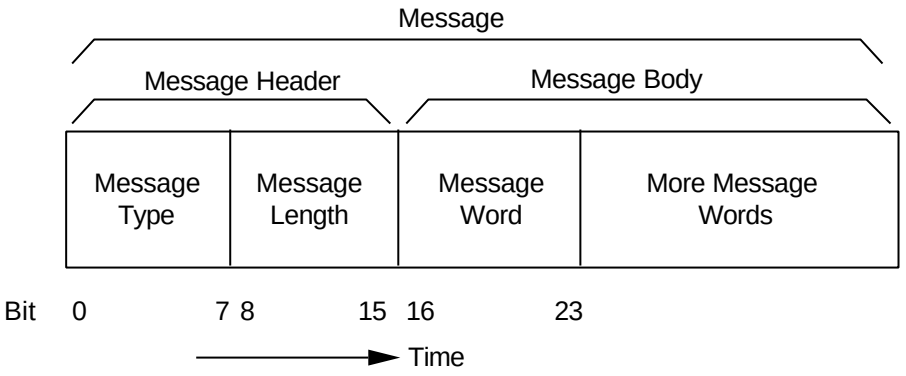


FIG. 9 SINGLE DATA MESSAGE FORMAT (SDMF)

- *In practice the message body may be limited by the ringing cadence used.*

10.5.3
Multiple Data Message Format (MDMF)
The Multiple Data Message Format (MDMF) is as follows (see Fig. 10):-

(1) Header, consisting of:-

(a) The 'Message Type', which is an 8-bit word identifying the feature generating the message.

(b) The 'Message Length', which is an 8-bit word indicating the number of message words following (1 - 255). This includes the parameter message headers as well as the parameter message bodies.

(2) Message body:-

(a) Parameter Message Header, consisting of:-

(i) The 'Parameter Message Type', which is an 8-bit word identifying the feature generating the parameter message.

(ii) The 'Parameter Message Length', which is an 8-bit word indicating the length of the parameter message.

(b) Parameter Message Body containing a series of 8-bit words.

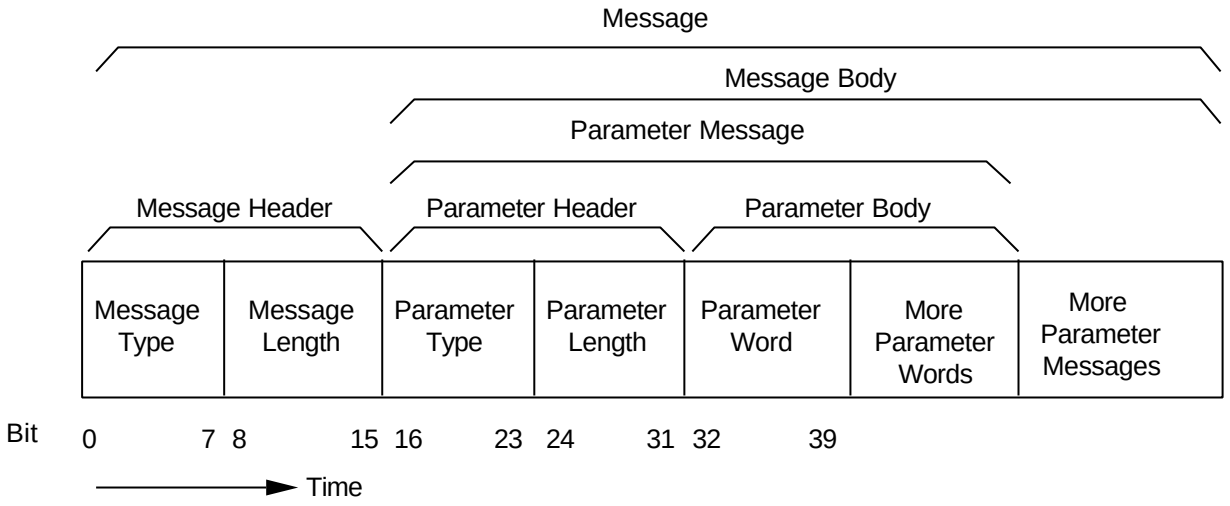


FIG. 10 MULTIPLE DATA MESSAGE FORMAT

INSERT CURRENT SECTION 11

12
VISUAL MESSAGE WAITING INDICATION

12.1
Introduction
Visual Message Waiting Indication (VMWI) is available only from those Telecom' exchanges which also provide Analogue calling Line Identification Presentation ("Caller Display") service. Unlike "Caller Display", VMWI signalling is independent of ringing. Signal transmission is enabled only for those customers subscribing to Telecom's "Call Minder" or "Message Manager" services. In such cases, "on" or "off" signals are typically transmitted within 15 seconds of either the incoming message being completed or a stored message having been listened to. However, in some circumstances, this may be delayed.

12.2
Information format
(1) Information format is as specified in Section 10 for Multiple Data Message Format (MDMF).

(2) The message type is as follows:-

Message Type word	Service
10000010	Message Waiting notification

(3) The message body is as follows:-

Parameter Type	Visual Indicator	00001011
Parameter Length	Length of Visual Indicator	00000001
Visual Indicator	Indicator On	11111111
Visual Indicator	Indicator Off	00000000