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5.3.2 ATA, ANSWER A CALL

The DCE can support a DTE command to answer an incoming call using the ATA command.

The DTE may issue an Answer command in response to an incoming ring.

If the Answer command is unsuccessful, the DCE will report an appropriate failure or error type result code, such as NO CARRIER.

MANUAL CALL ANSWER

If this call is successful, the typical DCE response (answer and receiver) is:

```
+FCON
[+FTSI:<remote ID string>]
+FDSC:<T.30 subparameter string>
OK
(DTE should issue +FDR command here)
```

On receipt of an Answer command from the DTE, the DCE answers and generates the CED tone. The DCE then generates a DIS frame (derived from the +FDIS parameter) and hunts for the first T.30 negotiation frames. On detection of the first Phase B preamble (V.21ch 2 modulated by 300 bit/s HDLC flags), it reports the "+FCON" message to the DTE.

The DTE should report the initial received T.30 negotiation messages, including the DCS frame. The +FDSC: report will be followed by the OK final result code.

AUTOMATIC ANSWER

The FAX Modem provides for automatic answering of incoming calls. If configured for automatic answer, the FAX Modem answers an incoming call in compliance with T.30 and reports the same messages as described for manual answer.

CONNECTION AS A DATA FAX MODEM

If configured to do so by the +FAA parameter, the DCE will adaptively answer as a facsimile DCE or as a data DCE. IF the DCE answers as a data DCE, it resets the +FCLASS parameter to 0 and issues the appropriate final result code (e.g., CONNECT, or NO CARRIER) to the DTE.

5.3.3 +FDT, DATA TRANSMISSION

Syntax: +FDT<CR>

The +FDT command prefixes Phase C data transmission. When the DCE is ready to accept Phase C data, it issues the negotiation responses and the connect result code to the DTE. In phase B, the +FDT command release the DCE to proceed with negotiation, and releases the DCS message to the

remote station. In Phase C, the +FDT command resumes transmission after the end of a prior transmit data stream.

INITIATE PAGE TRANSMISSION

Phase B DCE polled response:

[+FCSI:<remote ID string>] - If new CSI received
[+FDIS:<subparameters from remote station>] - If new DIS received
+FDCS:<T.30 subparameter string>
CONNECT
<XON> - when ready for data.

After placing a call, or after finishing a document exchange, the DTE may command the DCE to re-enter T.30 Phase B to attempt to negotiate a document transmission.

CONTINUE A PAGE

CONNECT <XON>

The DTE may issue more than one +FDT command for a given page, so that different files may be concatenated together. These files must have the same format.

PHASE C DATA FRAMING

Phase C data must be presented to the DCE in stream mode. The DCE expects Phase C data to follow until it detects <DLE> <EOX> termination characters. The DCE will filter the stream as described in Section 5.1.2.

The DCE will acknowledge the end of the data by returning the OK result code to the DTE.

If there is data underrun before the next +FDT or +FET= command, the DCE will zero-fill pad as per T.4 until the Phase C timeout (+FPHCTO) is reached, or until more data is received. The DCE appends an RTS pattern to the transmit data after an +FET command is received from the DTE.

PHASE C DATA FORMAT

The Phase C data will be the format specified by the negotiated T.30 DCS frame. The +FDCS:<string> response is defined in Section 5.4.2. The subparameter values are described in Table 5-2.

The DCE will use the negotiated minimum Scan Time parameter from the DCS frames, and insert sufficient fill bits to pad each line to the minimum scan time. This is reported in the +FDCS; ST subparameter.

TABLE 5-2 TA.30 SESSION SUBPARAMETER CODES

LABEL	FUNCTION	VALUE	DESCRIPTION
VR	Vertical	0	Normal 98 dpi
	Resolution	1	Fine, 196 lpi

BR	Bit Rate	0	2400 bit/s V.27 ter		
		1	4800 bit/s V.27 ter		
		2	7200 bit/s V.29 or V.17		
		(See Note 1)	3	9600 Bit/s V.29 or V.17	
		*4	1200 bit/s V.33 or V.17		
		*5	14400 bit/s V.33 or V.17		
WD	Page Width	0	1728 pixels in 215 mm		
		1	2048 pixels in 255 mm		
		2	2432 pixels in 303 mm		
		*3	1216 pixels in 151 mm		
		*4	864 pixels in 107 mm		
LN	Page Length	0	A4, 297 mm		
		*1	B4, 364 mm		
		*2	Unlimited Length		
DF	Data	0	1-D modified Huffman		
	Compression	1	2-D modified Read		
	Format	*2	2-D uncompressed mode		
		*3	2-D modified modified Read		
EC	Error	0	Disable ECM		
	Correction	*1	Enable ECM, 64 bytes/frame		
		*2	Enable ECM, 256 bytes/frame		
BF	Binary File	0	Disable BFT		
	Transfer	*1	Enable BFT		
ST	Scan Time/Line		VR = Normal	VR = Fine	
		0	0 ms	0 ms	
		1	5 ms	5 ms	
		2	10 ms	10 ms	
		3	20 ms	10 ms	
		4	20 ms	10 ms	
		5	20 ms	20 ms	
		6	40 ms	20 ms	
7	40 ms	40 ms			

NOTE: CCITT T.30 does not provide for the answering station to specify all speeds exactly using the DIS frame. Implementation of some BR codes (e.g., code 2) by an answering DCE is manufacturer specific.

2 * = Not supported

If the DCE finds more than one consecutive EOL in Phase C dat (e.g, RTC), it will send only one EOL

NOTE 1: Phase C data must conform to T.4 specifications

NOTE 2: The DTE need not include a final RTC, since the DCE will append an RTC in response to an FET= command.

NOTE 3: Some facsimile machines may treat two EOLs as an RTC.

<CAN>, Escape from transmission.

The DCE may request the DTE to halt Phase C transmission, by sending an cancel <CAN> character (024) to DTE. In this case, the DTE should terminate Phase C transmission, issue <CAN> and wait for the OK response code from the DCE.

5.3.4 +FET=TRANSMIT PAGE PUNCTUATION

Syntax: +FET +<ppm> [.<pc>,<bc>,<fc>]

DCE response:

+FPTS : <ppr> when receive from remote
OK

This command is used to punctuate page and document transmission, after one or more +FDT commands. This command generates T.30 Post Page Messages, selected by the <ppm> code (Table 5-3).

The +FET = <ppm> command indicates that the current page is complete; no more data will be appended to it. The Value indicates if any additional pages are to be send and, if so, whether ther is achange in any of the document parameters.

The DTE can command the DCE to generate PRI-Q messages with the +FET = <ppm> command, using ppm codes 4-6 (see Table 5-3).

This command must be sent within the time out specified by +FPHCTO after sending Phase C data, or else the DCE will end the page and document transmission. If the Phace C timeout is reached, the DCE sends an EOP post message and terminates the session.

The remote facsimile station should respond to the post page message with a post page response. The DCE will report this using the +FPTS: <ppr> response (Table 5-4).

END A PAGE

The +FET= command causes the DCE to append an ETC. (6 EOL) pattern as needed, and enter Phase D by sending the selected T.30 Post Page message.

The +FET = 1 (EOM) command signals the remote station that the next document will have a new DCE negotiated; this causes the session to re-enter Phase B.

5.3.5 +FDR. BEGIN OR CONTINUES PHASE C RECEIVE DATA

Syntax : +FDR<CR>

Default value : 3 seconds in some places.

The +FDR command initiates transition to Phase C data reception. This can occur after answering, after dialing, after a document is received, or after a page is received. The DCE reports the negotiated T.30 parameters, with the remote ID information if available. When the DCE is ready to commerce data transfer, it issues a CONNECT response code. If the DCE cannot resume data transfer because there is not more data, it responds OK when the DTE is ready to accept data, it issues an <DC2> character(018) to the DCE. If the DTE issues an <XOFF> character to the DCE for flow control, the DCE signals the DTE when its buffers are empty, by sending a <DLE> DC2> (<016><018>) character pair.

When the DCE delivers that last byte of a page. The DCE reports the Page Transfer Status via the +FPTS: <ppr> response (Table 5-4).

After a Page Transfer Status report, the DCE reports the post page message from the remote facsimile station via the +FET = <ppm> response (Table 5-3), which signals the intentions of the remote station.

TABLE 5-3 T.30 POST PAGE MESSAGE CODES

ppm CODE	MNEMONIC	DESCRIPTION
0	[PPS-] MPS	Another page next, same document
1	[PPS-] EOM	Another document next
2	[PPS-] EOP	No more pages or document
3	PPS-NULL	Another partial page next
4	[PPS-] PRI-MPS	Another page, procedure interrupt
5	[PPS-] PRI-EOM	Another doc., procedure interrupt
6	[PPS-] PRI-EOP	All done, procedure interrupt
7	CTC	Continue to correct
8-15 =8+ppm	EOR-	End-of-Retransmission (8) + Post Page Message (ppm code)

TABLE 5-4 T.30 POST PAGE RESPONSE MESSAGE CODES

ppr CODE	MNEMONIC	DESCRIPTION
0	PPR	Partial Page Errors
1	MCF	Page good
2	RTN	Page bad; retain requested
3	RTP	Page good; retain requested
4	PIN	Page bad; interrupt requested
5	PIP	Page good; interrupt requested

The DCE holds the post page response message to the remote facsimile station (MDF, etc.), represented in the +FPTS parameter until the next +FDR command. The DTE may modify the +FPTS parameter before issuing the +FDR command which releases that message. The DTE must issue a +FDR command to release Post Page Messages.

INITIATE DOCUMENT RECEPTION

The +FDR command may be issued in Phase B after an answer command, or in Phase B after a previous document.

The DCE response in stream mode is:

```
+FCFR when CFR sent
[+FTSI:<remote ID string>] if new TSI receives
+FDCS:<T.30 subparameter string>] if new DCS
```

```
CONNECT
(<DC2> needed from DTE here)
<Phase C data stream>
<DLE><ETX>
```

+FPTS:<ppr>,<ic>
+FET:<ppm>
OK
(DTE must issue +FDR command to release post page response).

CONTINUE DOCUMENT RECEPTION

The DTE may issue a +FDR command in Phase D, which releases the post page message, and indicates readiness to receive another page after receipt of a Multipage (+FET:0) or PPS-NULL (+FET:3) message. The DCE response will be:

CONNECT
(<DC2> needed from DTE here)
<Phase C data stream>
<DLE><ETX>
+FPTS:<ppr>,<ic>
+FET:<ppm>
OK
(DTE must issue +FDR command to release post page response).

If done receiving:
+FHNG: <hangup cause code>
OK

Continue page reception

PHASE C DATA FRAMING

Phase C data may be presented to the DTE in stream mode. The DCE will transfer a stream of data to the DTE, followed by the <DLE> <ETX> stream termination character. The DCE will filter the stream as described in 5.2.1.

PHASE C DATA FORMAT

The received data format is negotiated under T.30, reported by the +FDCS: VR, BR, WD, LN, DF, EC, BF, ST response.

The DCE will delete the terminating RTC (6 EOLs) patterns. The DCE may strip zero fill bits from the data, to minimize storage needs.

<CAN>, ESCAPE FROM RECEPTION

From the +FDR command until the end of Phase D Data, the DCE is in a data transfer state, and will not respond to DTE command characters. The DCE will respond to three ASCII control characters: <DC1>(017) and <DC3> (019) flow control characters, and cancel <CAN> (024).

On receipt of the <CAN> character, the DCE will terminate reporting of received data by sending trailing <DLE><ETX> characters to the DTE, then execute an implied +FK command in order to conduct an orderly disconnection.

5.3.6 +FK, SESSION TERMINATION

Syntax: +FK

The +FK command causes the DCE to terminate the session in an orderly manner. In particular, it will send a DCN message at the next opportunity and hang up. At the end of the termination process, the DCE will report the +FHNG response with result code (Table 5-5).

This operation can be invoked by using the cancel <CAN> character during Phase C data reception (see prior section).

The DCE will wait until the current page completes, except in reception of the unlimited length; in that case, the DCE may halt reception and terminate the session at any time.

5.4 SERVICE CLASS 2 DCE RESPONSES

The DCE sends information responses to the DTE as a facsimile session proceeds. They indicate the state of the facsimile session and convey needed information. These messages are solicited messages generated in execution of DTE action commands described in Section 5.3.

For all of the following information responses, the DCE precedes them with <CR><LF>, and follows them with <CR><CF>.

The DCE provides the on-line status of several session parameters when they are available in the T.30 handshaking. These include the remote ID string and the DIS/DCS parameters. These responses report the T.30 session parameter frames. The subparameters are described in Tables 5-2.

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