Meridian 1

Flexible Tone and Digit Switch cards

Description

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Contents

About this document

The Tone and Digit Switch (TDS) is used in the Meridian 1 to provide ringing, DTMF tones, dial tones, and call status tones, such as call waiting. The manufacturer programs the Flexible TDS cards to provide the required tones and cadences for the customer's environment.

Flexible Tones and Cadences (FTC) is an optional feature that allows tone and cadence modification using LD 56 and the tone and cadence tables provided in this document.

This document supports both North American and International capabilities. The p1 to p7 notation in the "Alphabetical list of prompts" on page 30 identifies LD 56 international prompts.

Flexible Tones and Cadences (FTC)

Flexible Tones and Cadences (FTC) is an option that customizes telephone system tones. FTC is primarily intended for international markets that require tones different from those in North America.

Program 56 is used to modify the tones and cadences. If the FTC feature (package 125) is not equipped, North American tones and cadences are used.

What are tones and cadences?

Tones provide call status to telephone users. A tone is defined by the frequency and volume of the sound.

A tone's cadence repeats on/off phases. For example, the default cadence for normal ringing is 2 seconds on, 4 seconds off, 2 seconds on, 4 seconds off, and so on.

Flexible Tones and Cadences tables

Many FTC tables can be created to define the tones and cadences for various calling features. Associate a table with one or more customers and trunk routes by entering the table number in response to prompt TTBL in LD 15 and LD 16.

Master Cadence Table (MCAD)

The Master Cadence Table (MCAD) contains up to 256 Software Controlled Cadences, each with as many as 10 on/off phases. Entry 0 is reserved for continuous tone and cannot be changed. Entries 1–15 are reserved for ringing cadences.

Most of the software cadences repeat continuously, although prompts ACBT, AOBT, INTU, and OVRD repeat only their last eight phases, permitting a special initial tone burst. To repeat the first cycle for these prompts, the first and last cycles should be identical. Prompts AHRC and HCAD do not repeat.

Define a cadence at the CDNC prompt by entering the time for each on and off phase. The time depends on the settings for the TMRK prompt in LD 17, which sets the software cadence increments to 96 or 128 ms. For each phase, enter the closest multiple of 5 ms equal to the multiple of 96 or 128 ms that gives a time equal to or greater than the time required.

For example, to establish a repeating 2 seconds on/4 seconds off cadence with the LD 17 TMRK set to 128 ms:

1 Determine the ON phase (2 seconds = 2000 ms)

2000/128 = 15.625 = 16 (always round up)

128 x 16 = 2048 ms

multiple of 5 closest to 2048 ms = 2050

Entry for prompt CDNC = 2050/5 = 0410

2 Determine the OFF phase (4 seconds = 4000 ms). By using the same calculation, the entry for prompt CDNC = 0820.

3 To define the cadence, respond to the prompts as follows:

REQ	NEW, CHG
TYPE	MCAD
WCAD	1-255
CDNC	0410 0820

To define the cadence 2 s on, 4 s off, 4 s on, 2 s off, repeat cycle 1 and 2, enter

CDNC 0410 0820 0820 0410

To define the cadence 2 s on, then steady off, enter

CDNC 0410

or

CDNC 0410 0000

If an odd number of nonzero phases are entered, software ends the tone after the last ON phase. A carriage return at any phase results in zero for the remaining phases.

Once the cadence is defined, it can be entered in response to the CDNC prompt for a given feature. For example, CDNC is output after the Call Waiting Tone prompt.

Firmware Cadence Table (FCAD)

The Firmware Cadence Table (FCAD) defines cadences controlled by an NT8D17 Conference/TDS card.

The FCAD can have 256 entries (0–255), each with up to 10 on/off phases. Entry 0 is reserved for continuous tone and cannot be changed. Entries 1–15 are reserved for ringing cadences. Each phase is in multiples of 5 ms.

FCAD cadences have the following capabilities:

— Each cadence can be defined to end at the “on” phase or the “off” phase, or to repeat after a single pass through the defined on/off cycles. Any or all of the five cycles can be repeated.

— Unique tones can be defined for each “on” phase and stored in the Conference/TDS firmware.

To have the same ringing cadences on 500/2500/digital telephones and Meridian 1 telephones, the MCAD and FCAD entries 0–15 are identical. Changes to MCAD entries 1–15 automatically change FCAD entries 1–15. The FCAD entries 1–15 can only be changed by changing the MCAD entries 1–15.

The Conference/TDS card must be disabled and then reenabled to download changed firmware cadences. The following are examples of creating firmware cadences:

— For a cadence of 2 s on, 4 s off, repeat

REQ	NEW, CHG, PRT
TYPE	FCAD
WCAD	1–255
CDNC	0410 0820
END	REPT
CYCS	1 (on/off cycles to be repeated)
WTON	NO (use default tone for this cadence)

— For a cadence of 2 s on, 4 s off, 3 s on, 5 s off, repeat

REQ	NEW, CHG, PRT
TYPE	FCAD
WCAD	1–255
CDNC	0410 0820 0614 0998
END	REPT
CYCS	1 2 (on/off cycles to be repeated)
WTON	NO (use default tone for this cadence)

— For a cadence of

0.1 s on at 950 Hz, 19 dB below overload A-law, 0.1 off
0.1 s on at 1400 Hz, 20 dB below overload A-law, 0.1 off
0.1 s on at 1800 Hz, 20 dB below overload A-law, steady off

REQ	NEW, CHG, PRT
TYPE	FCAD
WCAD	1–255
CDNC	0020 0020 0020 0020 0020
END	OFF
WTON	YES (define tones for this cadence)
TONES	134 135 136 (see NT8D17 Conference/TDS tone table)

TDS and NT8D17 Conference/TDS/MFS cards

There are two types of cards providing tones and cadences:

— Tone and Digit Switch (TDS) cards

— NT8D17 Conference/TDS cards

There are a variety of TDS cards. Each card provides a different set of tones and cadences. When a TDS card is used for Meridian 1 sets, a hexadecimal code identifies each tone and cadence. Enter the decimal equivalents for hex codes at the TDSH prompt for each calling feature.

Refer to the *Flexible Tone and Digit Switch cards description* (553-2711-180) for the appropriate codes.

When the NT8D17 Conference/TDS cards are used, the tones and cadences are defined by the following prompts:

XCAD = 0–255—entry in the Firmware Cadence Table (FCAD)

XTON = 0–255—tone stored in the card firmware

CDNC = 0–255—entry in the Master Cadence Table (MCAD)

Note: The ringing cadences for all telephones use the Master Cadence Table (MCAD). MCAD entries 1–15 are downloaded to the Peripheral Controller to provide ringing.

Time interval for Call Forward

In Call Forward No Answer (CFNA), the time interval before a call is forwarded is measured by the time interval for one ring cycle (defined at the NCAD prompt) times the number of ring cycles (defined by the CFN0, CFN1, and CFN2 prompts in LD 15).

All other types of ringing forward a call after this same time interval regardless of cadence. For example, those with a faster cadence will forward after more rings, those with a slower cadence after fewer rings.

Installing FTC

These steps outline the process to install the FTC feature and change the default tones and cadences for one or more calling features.

> ***Note:*** To assist in fault clearing, it is recommended that you keep a record of all changes.

1 Load program 56.

2 Define new MCAD cadences.

3 Define new FCAD tones and cadences.

4 Create one or more FTC tables (one for each trunk route requiring different tones and cadences).

5 Define the nondefault tones and cadences for each FTC table.

6 Enter the FTC table number for each trunk route (LD 16 prompt TTBL).

7 If a Conference/TDS card is equipped, then follow these steps:

- **a** set options in LD 97
- **b** initialize the system (INIT)
- **c** disable and enable each Conf/TDS/MFS card (LD 34)
- **d** disable and enable each Controller (LD 32)

Create, change, or print FTC table

An FTC table number can be entered for each trunk route at prompt TTBL in LD 16. Table 0 is the default for all trunk routes and contains the defaults for North America.

REQ	NEW, CHG, PRT	Create, change, or print
TYPE	FTC	Flexible Tones and Cadences
TABL	0–31	FTC table number
USER	Yes, (No)	Print customer and route users of the table(s)
DFLT	0–31	Default FTC table. Use a copy of this table to create and modify a new one.

FTC Ring Table entries

For systems with NT8D17 Conference/TDS cards, all telephones share the same ringing cadence. Meridian 1 telephones require an NT8D17 tone (XTON).

REQ	NEW, CHG	Create or change
TYPE	FTC	Flexible Tones and Cadences
TABL	0–31	FTC table number
DFLT	0–31	Default FTC table. Use a copy of this table to create and modify a new one.
RING	Yes	Modify the Ringing feature definitions
NCAD	(1)–255	500/2500/digital set normal ringing MCAD index number
NBCS		Normal cadence for Meridian 1 set ringing
_TDSH	0032	TDS external, burst, cadence and tone
_XTON	002	NT8D17 TDS Tone code
DCAD	0–(2)–15	500/2500/digital set distinctive ringing MCAD table index
DBCS		Distinctive cadence for Meridian 1 set ringing
_TDSH	0082	TDS external, burst, cadence and tone
_XTON	002	NT8D17 TDS Tone code
ICAD	0–(5)–15	500/2500/digital Dial Intercom distinctive ringing MCAD table index
IBCS		Meridian 1 set distinctive Dial Intercom ringing TDS code
_TDSH	0012	TDS external, burst, cadence and tone
_XTON	002	NT8D17 TDS Tone code
NDR1 PBX	0–255	First DRNG cadence MCAD entry
NDR1 BCS	i bb cc tt	First DRNG TDS tones and cadences
NDR2 PBX	0–255	Second DRNG cadence MCAD entry
NDR2 BCS	i bb cc tt	Second DRNG TDS tones and cadences
NDR3 PBX	0–255	Third DRNG cadence MCAD entry
NDR3 BCS	i bb cc tt	Third DRNG TDS tones and cadences
NDR4 PBX	0–55	Fourth DRNG MCAD cadence
NDR4 BCS	i bb cc tt	Fourth DRNG TDS tones and cadences

RCAD	0–(1)–255	500/2500/digital Call Park Recall ringing MCAD table index
RBCS		Meridian 1 Call Park Recall Ring Cadence
_TDSH	0032	TDS external, burst, cadence and tone
_XTON	002	NT8D17 TDS Tone code
GCAD	0–(1)–255	500/2500/digital set Group Call ringing MCAD table index
GBCS		Meridian 1 Group Call Ring Cadence
_TDSH	0082	TDS external, burst, cadence and tone
_XTON	002	NT8D17 TDS Tone code
HCAD	0–(3)–255	500/2500/digital set Held Call reminder MCAD table index
HBCS		Meridian 1 Held Call Reminder ring cadence
_TDSH	0002	TDS external, burst, cadence and tone
_XTON	002	NT8D17 TDS Tone code
PCAD	0–(1)–255	500/2500/digital set ringing on recall or misoperation MCAD cadence
PBCS	i bb cc tt	Meridian 1 set ringing on recall or misoperation TDS cadence
_TDSH	0032	TDS external, burst, cadence and tone
_XTON	000	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD

FTC Hardware Controlled Cadences

For systems with NT8D17 Conference/TDS cards, each feature requires a firmware cadence (XCAD) and tone (XTON). For other TDS cards, the tone and cadence is defined by prompt TDSH. See the alphabetical list of prompts for the default values.

REQ	NEW, CHG	Create or change
TYPE	FTC	Flexible Tones and Cadences
TABL	0–31	FTC table number
DFLT	0–31	Default FTC table. Use a copy of this table to create and modify a new one.
RING	<cr>	.
HCCT	Yes	Change the TDS card controlled cadence tones
DIAL		Dial Tone
_TDSH	0004	TDS external, burst, cadence and tone
_XTON	004	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
SPCL		Special Dial Tone
_TDSH	0004	TDS external, burst, cadence and tone
_XTON	004	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
CDT		Control dial tone
_TDSH	0004	TDS external, burst, cadence and tone
_XTON	004	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
CFDT		Call Forward dial tone
_TDSH	0004	TDS external, burst, cadence and tone
_XTON	0004	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
MWDT		Message Waiting Tone
_TDSH	0024	TDS external, burst, cadence and tone
_XTON	004	NT8D17 TDS Tone code
_XCAD	017	NT8D17 cadence code for FCAD
CFMW		Call Forward Message Waiting tone
_TDSH	0024	TDS external, burst, cadence and tone

_XTON	004	NT8D17 TDS Tone code
_XCAD	017	NT8D17 cadence code for FCAD
ACTN		Active feature dial tone
_TDSH	0024	TDS external, burst, cadence and tone
_XTON	004	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
BUSY		Busy tone
_TDSH	0017	TDS external, burst, cadence and tone
_XTON	007	NT8D17 TDS Tone code
_XCAD	016	NT8D17 cadence code for FCAD
RGBK		Ringback Tone
_TDSH	0035	TDS external, burst, cadence and tone
_XTON	005	NT8D17 TDS Tone code
_XCAD	031	NT8D17 cadence code for FCAD
ARBK		ACD Ring Again ringback tone
_TDSH	008D	TDS external, burst, cadence and tone
_XTON	011	NT8D17 TDS Tone code
_XCAD	002	NT8D17 cadence code for FCAD
FFCT		FFC Confirmation tone cadence
_TDSH	0004	TDS external, burst, cadence and tone
_XTON	004	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
LIMT		ACD Log In Mode Tone for 500/2500 telephone sets
_TDSH	i bb cc tt	TDS external, burst, cadence and tone
_XTON	0–255	NT8D17 TDS Tone code
_XCAD	0–255	NT8D17 cadence code for FCAD
NRMT		ACD Not Ready (NRDY) Mode Tones
_TDSH	i bb cc tt	TDS external, burst, cadence and tone
_XTON	0–255	NT8D17 TDS Tone code
_XCAD	0–255	NT8D17 cadence code for FCAD
AWUT		Automatic Wake-Up special error tone
_TDSH	0027	TDS external, burst, cadence and tone
_XTON	007	NT8D17 TDS Tone code

_XCAD	017	NT8D17 cadence code for FCAD
OVFL		Overflow Tone
_TDSH	0027	TDS external, burst, cadence and tone
_XTON	007	NT8D17 TDS Tone code
_XCAD	017	NT8D17 cadence code for FCAD
TEST		Test Tone
_TDSH	0008	TDS external, burst, cadence and tone
_XTON	007	NT8D17 TDS Tone code
_XCAD	017	NT8D17 cadence code for FCAD
HOWL	0027	Howler tone (default is overflow tone)
ERWT		Expensive Route Warning Tone
_TDSH	0003	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
PCWT		Precedence Call Waiting Tone
_TDSH	000	TDS external, burst, cadence and tone
_XTON	0–255	NT8D17 TDS Tone code
_XCAD	0–255	NT8D17 cadence code for FCAD
ACFT		ACD call force tone
_TDSH	0003	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
TLP		Tone to last party
_TDSH	0003	TDS external, burst, cadence and tone
_XTON	007	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
TLPT	(0)–30	Tone to last party timer in seconds; no tone = 0

Centralized Attendant Service Cadences

Systems with NT8D17 Conference/TDS cards require a firmware cadence (XCAD), a software cadence (CNDN), and a tone (XTON) for each feature. Due to the finer resolution of the firmware cadence (5 ms) compared to the software (96/128 ms), the software cadence should be long enough to cover the full duration of the firmware cadence.

For example, to define a cadence of 0.1 s on, 0.1 s off, 0.1 s on, steady off

CDNC 0020 0020 0020 0000
END OFF
SPCL

The software cadence is then 0.3 s (600 ms). If the software precision is 128 ms, the software cadence is calculated as follows:

600 ms/128 = 4.6 = 5 (rounded up)
128 x 5 = 640

Entry to ON phase = 640/5 = 0128, and to define the cadence enter 0128 at prompt CDNC.

REQ	NEW, CHG	Create or change
TYPE	FTC	Flexible Tones and Cadences
TABL	0–31	FTC table number
DFLT	0–31	Default FTC table. Use a copy of this table to create and modify a new one.
RING	<cr>	.
HCCT	<cr>	.
CAST	Yes	Change Centralized Attendant Service tones
LDN		Listed Directory Number Tone
_TDSH	0346	TDS external, burst, cadence and tone
_XTON	000	NT8D17 TDS Tone code
_XCAD	024	NT8D17 cadence code for FCAD
_CDNC	016	MCAD table entry for this cadence
DI0		Dial “0” Recall Tone
_TDSH	0283	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code

_XCAD	022	NT8D17 cadence code for FCAD
_CDNC	016	MCAD table entry for this cadence
HLDC		Hold Confirmation Tone
_TDSH	0346	TDS external, burst, cadence and tone
_XTON	000	NT8D17 TDS Tone code
_XCAD	024	NT8D17 cadence code for FCAD
_CDNC	016	MCAD table entry for this cadence
CPNC		Camp-on confirmation tone
_TDSH	0243	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	021	NT8D17 cadence code for FCAD
_CDNC	017	MCAD table entry for this cadence

Software Controlled Cadences

Systems with NT8D17 Conference/TDS cards require a firmware cadence (XCAD) and a tone number (XTON). Refer to the Conference/TDS tone table.

REQ	NEW, CHG	Create or change
TYPE	FTC	Flexible Tones and Cadences
TABL	0–31	FTC table number
DFLT	0–31	Default FTC table. Use a copy of this table to create and modify a new one.
RING	<cr>	.
HCCT	<cr>	.
CAST	<cr>	.
SCCT	Yes.	Change software controlled cadence tone definitions
CAMP		Camp-on tone
_TDSH	0003	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
_CDNC	017	MCAD table entry for this cadence
RPAW	i bb cc tt	Radio paging warning tone
CLN	1–31	Length of camp-on tone burst in 96 or 128 ms increments
AOBT		Agent observe tone
_TDSH	0003	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
_CDNC	018	MCAD table entry for this cadence
INTU		Intrusion Tone
_TDSH	0003	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
_CDNC	019	MCAD table entry for this cadence

CWT		Call Waiting tone
_TDSH	0003	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
_CDNC	020	MCAD table entry for this cadence
OBKT		Observe Blocking Tone
_TDSH	0003	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
_CDNC	017	MCAD table entry for this cadence
OVRD		Override Tone
_TDSH	0003	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
_CDNC	018	MCAD table entry for this cadence
OHQ		Off Hook Queuing Tone
_TDSH	0003	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
_CDNC	003	MCAD table entry for this cadence
SRT		Automatic Set Relocation Tone
_TDSH	0003	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
_CDNC	021	MCAD table entry for this cadence
TMAT		Telephone Messaging Alert Tone
_TDSH	0003	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
_CDNC	022	MCAD table entry for this cadence

TMOT		Telephone Messaging OK Tone
_TDSH	0003	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
_CDNC	023	MCAD table entry for this cadence
TSUT		Tel Status Update Tone
_TDSH	0003	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
_CDNC	023	MCAD table entry for this cadence

Intercept Treatment Cadences (International)

Eight intercept source tones can be defined. These tones are entered in LD 15 in response to the various intercept treatment prompts.

REQ	NEW, CHG, PRT	Create, change, or print
TYPE	FTC	Flexible Tones and Cadences
TABL	0–31	FTC table number
DFLT	0–31	Default FTC table. Use a copy of this table to create and modify a new one.
RING	<cr>	.
HCCT	<cr>	.
CAST	<cr>	.
SCCT	<cr>	.
SRC	Yes	Change Source Tones (SRC1-SRC8)
SRC1		Source Tone 1
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	000	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
SRC2		Source Tone 2
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	000	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
SRC3		Source Tone 3
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	000	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
SRC4		Source Tone 4
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	000	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
SRC5		Source Tone 5
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	000	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD

SRC6		Source Tone 6
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	000	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
SRC7		Source Tone 7
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	000	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
SRC8		Source Tone 8
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	000	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
CFSN		Call forward all calls MCAD and tone code
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	004	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
CPOQ		Call park or off hook queuing MCAD and tone code
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	003	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
RGAR		Ring again applied by another telephone MCAD and tone code
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	004	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
RPCT		Confirmation tone replaced by announcement MCAD and tone code
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	004	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
RGAB		Call to busy station, ring again allowed MCAD and tone code
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	004	NT8D17 TDS Tone code

_XCAD	000	NT8D17 cadence code for FCAD
MWAN	0–255 0–255	Message waiting MCAD and tone code
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	004	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
DNDA		Do not disturb MCAD and tone code
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	004	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD
SSLK		Set status lockout MCAD and tone code
_TDSH	0000	TDS external, burst, cadence and tone
_XTON	004	NT8D17 TDS Tone code
_XCAD	000	NT8D17 cadence code for FCAD

Flexible Pulse Timers

REQ	NEW, CHG, PRT	Create, change, or print
TYPE	FTC	Flexible Tones and Cadences
TABL	0-31	FTC table number
DFLT	0-31	Default FTC table. Use a copy of this table to create and modify a new one.
RING	<cr>	.
HCCT	<cr>	.
CAST	<cr>	.
SCCT	<cr>	.
SRC	<cr>	.
PULS	<cr>	.
P10	Yes	Codes for make/break ratio for 10 pps
ID1	256–(768)–1024	P10 interdigital pause in ms
ID2	256–(512)–1024	P20 interdigital pause in ms
IDD	256–(384/512)–1024	DTMF interdigital pause in ms
RVDL	(0)–2	Reverse dial format, 0 = disabled

Flexible Dial Tone Detection data (International)

REQ	NEW, CHG, PRT	Create, change, or print
TYPE	FTTD	Flexible Dial Tone Detection data
TABL	0–31	FTC table number
ACNO	1–4	Outgoing Access Code to be used (4 codes per table)
OACn	xxxx	Outgoing Access Code (1 to 4 digits)
DTPn	(Yes), No	Dial tone detector is reconnected immediately after outgoing access
CNT	(0)–15	Number of digits outpulsed before dial tone detector reconnection
DGTS	xxxx	Outgoing Access Code digits (1–4)

Trunk barring access restrictions (International)

REQ	NEW, CHG, PRT	Create, change, or print
TYPE	FTTD	Trunk barring access restrictions
TABL	0–31	FTC table number
ART	1–63	Access restriction table
DENY	xxx xxx ..., ALL	Access restriction digits denied to Originating Trunk Connection (OTC)

Route access restrictions (International)

REQ	NEW, CHG, PRT	Create, change, or print
TYPE	FTTD	Route access restrictions
TABL	0–31	FTC table number
CUST	(0)–99	Customer number
ROUT	(0)–511	Route number
ART	1–63	Access restriction table
DENY	xxx xxx ..., ALL	Access restriction digits denied to Originating Trunk Connection (OTC)

Route category default table (International)

REQ	CHG, PRT	Change or print
TYPE	FTTD	Route category default table
TABL	0–31	FTC table number
COT	(0)–63	ART table number for COT, FX, and WATS routes
DID	(0)–63	ART table number for DID routes
TIE	(0)–63	ART table number for ATVN, CAA, CAM, CSA, and TIE routes
OTH	(0)–63	ART table number for ADM, DIC, MDM, PAGA, and RCD routes

Default MCAD table

REQ	PRT		Print
TYPE	MCAD		Master Cadence Table
WCAD	000	CDNC =	0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
WCAD	001	CDNC =	0410 0800 0000 0000 0000 0000 0000 0000 0000 0000
WCAD	002	CDNC =	0308 0076 0308 0076 0000 0000 0000 0000 0000 0000
WCAD	003	CDNC =	0205 0000 0000 0000 0000 0000 0000 0000 0000 0000
WCAD	004	CDNC =	0102 0102 0205 0819 0000 0000 0000 0000 0000 0000
WCAD	005	CDNC =	0100 0100 0000 0000 0000 0000 0000 0000 0000 0000
WCAD	016	CDNC =	0160 0000 0000 0000 0000 0000 0000 0000 0000 0000
WCAD	017	CDNC =	0051 0000 0000 0000 0000 0000 0000 0000 0000 0000
WCAD	018	CDNC =	0205 3072 0051 3072 0000 0000 0000 0000 0000 0000
WCAD	019	CDNC =	0205 1229 0051 1229 0000 0000 0000 0000 0000 0000
WCAD	020	CDNC =	0051 0026 0051 2048 0000 0000 0000 0000 0000 0000
WCAD	021	CDNC =	0410 0000 0000 0000 0000 0000 0000 0000 0000 0000
WCAD	022	CDNC =	0102 0000 0000 0000 0000 0000 0000 0000 0000 0000
WCAD	023	CDNC =	0512 0000 0000 0000 0000 0000 0000 0000 0000 0000
	For Japan TDS		(all other entries are null)
WCAD	001	CDNC =	0050 0050 0050 0450 0000 0000 0000 0000 0000 0000
WCAD	002	CDNC =	0200 0400 0000 0000 0000 0000 0000 0000 0000 0000

Default FCAD table

```
REQ     PRT     Print
TYPE    FCAD    Firmware Cadence Table
WCAD    000     Cadence number in the Master Cadence table (MCAD)
        CDNC =  0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
        END =   off
        SPCL =  no
WCAD    001     Cadence number in the Master Cadence table (MCAD)
        CDNC =  0410 0800 0000 0000 0000 0000 0000 0000 0000 0000
        END =   rept
        CYCS =  1
        SPCL =  no
WCAD    002     Cadence number in the Master Cadence table (MCAD)
        CDNC =  0308 0076 0308 0076 0000 0000 0000 0000 0000 0000
        END =   rept
        CYCS =  1 2
        SPCL =  no
WCAD    003     Cadence number in the Master Cadence table (MCAD)
        CDNC =  0205 0000 0000 0000 0000 0000 0000 0000 0000 0000
        END =   off
        SPCL =  no
WCAD    004     Cadence number in the Master Cadence table (MCAD)
        CDNC =  0102 0102 0205 0819 0000 0000 0000 0000 0000 0000
        END =   rept
        CYCS =  1 2
        SPCL =  no
WCAD    005     Cadence number in the Master Cadence table (MCAD)
        CDNC =  0100 0100 0000 0000 0000 0000 0000 0000 0000 0000
        END =   rept
        CYCS =  1
        SPCL =  no
```

```
WCAD  016     Cadence number in the Master Cadence table (MCAD)
      CDNC =  0100 0100 0000 0000 0000 0000 0000 0000 0000 0000
      END =   rept
      CYCS =  1
      SPCL =  no
WCAD  017     Cadence number in the Master Cadence table (MCAD)
      CDNC =  0050 0050 0000 0000 0000 0000 0000 0000 0000 0000
      END =   rept
      CYCS =  1
      SPCL =  no
WCAD  018     Cadence number in the Master Cadence table (MCAD)
      CDNC =  0010 0010 0000 0000 0000 0000 0000 0000 0000 0000
      END =   rept
      CYCS =  1
      SPCL =  no
WCAD  019     Cadence number in the Master Cadence table (MCAD)
      CDNC =  0040 0060 0000 0000 0000 0000 0000 0000 0000 0000
      END =   rept
      CYCS =  1
      SPCL =  no
WCAD  020     Cadence number in the Master Cadence table (MCAD)
      CDNC =  0015 0000 0000 0000 0000 0000 0000 0000 0000 0000
      END =   off
      SPCL =  no
WCAD  021     Cadence number in the Master Cadence table (MCAD)
      CDNC =  0020 0000 0000 0000 0000 0000 0000 0000 0000 0000
      END =   off
      SPCL =  no
WCAD  022     Cadence number in the Master Cadence table (MCAD)
      CDNC =  0020 0020 0020 0000 0000 0000 0000 0000 0000 0000
      END =   off
      SPCL =  no
```

```
WCAD  023      Cadence number in the Master Cadence table (MCAD)
      CDNC =   0060 0000 0000 0000 0000 0000 0000 0000 0000 0000
      END =    off
      SPCL =   no
WCAD  024      Cadence number in the Master Cadence table (MCAD)
      CDNC =   0020 0000 0020 0000 0020 0000 0000 0000 0000 0000
      END =    off
      SPCL =   yes
WCAD  025      Cadence number in the Master Cadence table (MCAD)
      CDNC =   0200 0000 0000 0000 0000 0000 0000 0000 0000 0000
      END =    off
      SPCL =   no
WCAD  026      Cadence number in the Master Cadence table (MCAD)
      CDNC =   0050 0000 0000 0000 0000 0000 0000 0000 0000 0000
      END =    off
      SPCL =   no
WCAD  027      Cadence number in the Master Cadence table (MCAD)
      CDNC =   0400 0000 0000 0000 0000 0000 0000 0000 0000 0000
      END =    off
      SPCL =   no
WCAD  028      Cadence number in the Master Cadence table (MCAD)
      CDNC =   0125 0000 0000 0000 0000 0000 0000 0000 0000 0000
      END =    off
      SPCL =   no
WCAD  029      Cadence number in the Master Cadence table (MCAD)
      CDNC =   0330 0070 0000 0000 0000 0000 0000 0000 0000 0000
      END =    rept
      CYCS =   1
      SPCL =   no
```

For Japan TDS		(all other entries are null)
WCAD	001	Cadence number in the Master Cadence table (MCAD)
	DNC =	0050 0050 0050 0450 0000 0000 0000 0000 0000 0000
	END =	rept
	CYCS =	1 2
	SPCL =	no
WCAD	002	Cadence number in the Master Cadence table (MCAD)
	CDNC =	0200 0400 0000 0000 0000 0000 0000 0000 0000 0000
	END =	rept
	CYCS =	1
	SPCL =	no
WCAD	017	Cadence number in the Master Cadence table (MCAD)
	CDNC =	0100 0050 0000 0000 0000 0000 0000 0000 0000 0000
	END =	rept
	CYCS =	1

Alphabetical list of prompts

ACFT — ACD call force tone. ftc-13

When defining the hex codes for this tone, only the code for the frequency/level is required as the cadence is provided by software. Enter 0 for the other values (e.g., TDSH = 0 0 0 xx, XTON = xxx, XCAD = 000).

Defaults:

TDSH = 0003
XTON = 003
XCAD = 000

ACNO **1–4—**Outgoing Access Code to be used (4 codes per table). ftc-p4

ACTN — Active feature dial tone. ftc-p4

Defaults:

TDSH = 0024
XTON = 004
XCAD = 000

AOBT — Agent observe tone. ftc-13

Defaults:

TDSH = 0003
XTON = 003
XCAD = 000
CDNC = 018

This cadence repeats the last eight on/off phases to allow for a special tone burst on the first cycle. For example, a cadence is defined as 3 s on, 3 s off, 1 s on, 3 s off. After the initial burst, the tone repeats in a 1 s on, 3 s off pattern. In order to repeat the initial 3 s burst, it must be entered as the first and last cycle because the first cycle is not repeated. In this case the cadence is defined as: 3 s on, 3 s off, 1 s on, 3 s off, 3 s on, 3 s off.

ARBK — ACD Ring Again ringback tone. ftc-13

Defaults:

TDSH = 008D
XTON = 011
XCAD = 002

ART **1–63—**Access restriction table. ftc-p2

AWUT — Automatic Wake-Up special error tone. mlwu-16

Defaults:

TDSH = 0027
XTON = 007
XCAD = 017

BUSY — Busy tone. ftc-13

Defaults:

TDSH = 0017
XTON = 007
XCAD = 016

CAMP — Camp-on tone. ftc-13

Defaults:

TDSH = 0003
XTON = 003
XCAD = 000
CDNC = 017

CAST **Yes, (No)—**Change Centralized Attendant Service tones. ftc-13

CDNC **0–255—** MCAD table entry for this cadence. ftc-14

This prompt occurs when defining a cadence in the Master Cadence Table (MCAD) and when defining specific cadences.

To define a cadence in MCAD, see the description of the Master Cadence Table (MCAD) in this section.

CDT — Control dial tone. ftc-13

Defaults:

TDSH = 0004
XTON = 004
XCAD = 000

CFDT — Call Forward dial tone. ftc-13

Defaults:

TDSH = 0014
XTON = 004
XCAD = 016

CFMW — Call Forward Message Waiting tone. ftc-13

Defaults:

TDSH = 0024
XTON = 004
XCAD = 017

CFSN — Call forward all calls MCAD and tone code. ftc-p6

Defaults:

TDSH = 0000
XTON = 004
XCAD = 000

CLN **1–31—**Length of camp-on tone burst in 96 or 128 ms increments. ftc-p1

See prompt TMRK in LD 17.

CNT **(0)–15—**Number of digits outpulsed before dial tone detector reconnection. ftc-p4

Use "0" if digit counting is not required.

COT **(0)–63—**ART table number for COT, FX, and WATS routes. ftc-p2

CPNC — Camp-on confirmation tone. ftc-13

Defaults:

TDSH = 0243
XTON = 003
XCAD = 021
CDNC = 017

CPOQ — Call park or off hook queuing MCAD and tone code. ftc-p6

Defaults:

TDSH = 0000
XTON = 003
XCAD = 000

CUST **(0)–99—**Customer number. ftc-p2

CWT — Call Waiting tone. ftc-13

Defaults:

TDSH = 0003
XTON = 003
XCAD = 000
CDNC = 020

CYCS **x x x x x—**On/off cycles (1 to 5) to be repeated. ftc-14

Only prompted is END = REPT. Default is no repeats.

DBCS — Distinctive cadence for Meridian 1 set ringing. ftc-13

Defaults:

TDSH = 0082
XTON = 002

DCAD **0–(2)–15—**500/2500/digital set distinctive ringing MCAD table index. ftc-13

Enter the MCAD table index number for 500/2500 and digital sets. It is also used for Meridian 1 sets in systems with NT8D17 Conference/TDS cards.

DENY **xxxx.., ALL—**Access restriction digits denied to Originating Trunk Connection (OTC). ftc-p2

Precede with "X" to remove (XALL, Xxxx).

DFLT **0–31—**Default FTC table. Use a copy of this table to create and modify a new one. ftc-13

Prompted for REQ = NEW only. Enter the FTC table number from which the new FTC table will be copied.

DGTS **xxxx—**Outgoing Access Code digits (1–4). ftc-p4

The system waits for a dial tone after these additional digits. This prompt repeats until <cr> is entered. Precede with "X" to remove.

DI0 — Dial "0" Recall Tone. ftc-13

Defaults:

TDSH = 0283
XTON = 003
XCAD = 022
CDNC = 016

DIAL — Dial Tone. ftc-13

Defaults:

TDSH = 0004
XTON = 004
XCAD = 000

DID **(0)–63—**ART table number for DID routes. ftc-p2

DNDA — Do not disturb MCAD and tone code. ftc-p6

Defaults:

TDSH = 0000
XTON = 004
XCAD = 000

DTPn **(Yes), No—**Dial tone detector is reconnected immediately after outgoing access. ftc-p4

END **REPT, ON, OFF—**End treatment for cadence (repeat, on or off). ftc-14

REPT = repeating cycles (defined by CYCS prompt)
ON = end cadence on the "on" phase
OFF = end cadence on the "off" phase

ERWT — Expensive Route Warning Tone. ftc-13

When defining the hex codes for this tone, only the code for the frequency/level is required as the cadence is provided by software. Enter 0 for the other values (e.g., TDSH = 0 0 0 xx, XTON = xxx, XCAD = 000).

Defaults:

TDSH = 0003
XTON = 003
XCAD = 000

FFCT — FFC Confirmation tone cadence. ffc-15

Defaults:

TDSH = 0004
XTON = 0004
XCAD = 0

GBCS — Meridian 1 Group Call Ring Cadence. grp-13

Defaults:

TDSH = 0082
XTON = 002

GCAD **0–(1)–255—**500/2500/digital set Group Call ringing MCAD table index. grp-14

Enter the MCAD table index number for 500/2500 and digital sets. It is also used for Meridian 1 sets in systems with NT8D17 Conference/TDS cards.

HBCS — Meridian 1 Held Call Reminder ring cadence. ftc-13

Defaults:

TDSH = 0002
XTON = 002

HCAD **0–(3)–255—**500/2500/digital set Held Call reminder MCAD table index. ftc-13

Enter the MCAD table index number for 500/2500 and digital sets. It is also used for Meridian 1 sets in systems with NT8D17 Conference/TDS cards.

HCCT **Yes, (No)—**Change the TDS card controlled cadence tones. ftc-13

HLDC — Hold Confirmation Tone. ftc-13

Defaults:

TDSH = 0346
XTON = 000
XCAD = 024
CDNC = 016

HOWL **i bb cc tt—**Howler tone (default is overflow tone). ftc-p4

IBCS — Meridian 1 set distinctive Dial Intercom ringing TDS code. ftc-13

Defaults:

TDSH = 0012
XTON = 002

ICAD **0–(5)–15—**500/2500/digital Dial Intercom distinctive ringing MCAD table index. ftc-13

Enter the MCAD table index number for 500/2500 and digital sets. It is also used for Meridian 1 sets in systems with NT8D17 Conference/TDS cards.

ID1 **256–(768)–1024—**P10 interdigital pause in ms. ftc-13

ID2 **256–(512)–1024—**P20 interdigital pause in ms. ftc-13

IDD **256–(384/512)–1024—**DTMF interdigital pause in ms. ftc-13

Default is 512 if 100 is the response to prompt DTRB in LD 17. Otherwise, the default is 384.

INTU — Intrusion Tone. ftc-13

Defaults:

TDSH = 0003
XTON = 003
XCAD = 000
CDNC = 019

This cadence repeats the last eight on/off phases to allow for a special tone burst on the first cycle. For example, a cadence is defined as 3 s on, 3 s off, 1 s on, 3 s off. After the initial burst, the tone repeats in a 1 s on, 3 s off pattern. In order to repeat the initial 3 s burst, it must be entered as the first and last cycle because the first cycle is not repeated. In this case the cadence is defined as: 3 s on, 3 s off, 1 s on, 3 s off, 3 s on, 3 s off.

LDN — Listed Directory Number Tone. ftc-13

Defaults:

TDSH = 0346
XTON = 000
XCAD = 024
CDNC = 016

LIMT — ACD Log In Mode Tone for 500/2500 telephone sets. bacd-16

This is the tone setting for ACD services to 500/2500 agent sets.

MWAN **0–255 0–255—**Message waiting MCAD and tone code. ftc-p6

Defaults:

TDSH = 0000
XTON = 004
XCAD = 000

MWDT — Message Waiting Tone. ftc-13

Defaults:

TDSH = 0024
XTON = 004
XCAD = 017

NBCS — Normal cadence for Meridian 1 set ringing. ftc-13

Defaults:

TDSH = 0032
XTON = 002

NCAD **(1)–255—**500/2500/digital set normal ringing MCAD index number. ftc-13

Enter the MCAD table index number for 500/2500 and digital sets. It is also used for Meridian 1 sets in systems with NT8D17 Conference/TDS cards.

NDR1 BCS **i bb cc tt—**First DRNG TDS tones and cadences. ftc-p7

NDR1 PBX **0–255—**First DRNG cadence MCAD entry. ftc-p7

NDR2 BCS **i bb cc tt—**Second DRNG TDS tones and cadences. ftc-p7

NDR2 PBX **0–255—**Second DRNG cadence MCAD entry. ftc-p7

NDR3 BCS **i bb cc tt—**Third DRNG TDS tones and cadences. ftc-p7

NDR3 PBX **0–255—**Third DRNG cadence MCAD entry. ftc-p7

NDR4 BCS **i bb cc tt—**Fourth DRNG TDS tones and cadences. ftc-p7

NDR4 PBX **0–255—**Fourth DRNG MCAD cadence. ftc-p7

NRMT — ACD Not Ready (NRDY) Mode Tones. bacd-16

This is the tone setting for the NRDY function within ACD services to 500/2500 agent sets. You must have Flexible Tones and Cadences supported for this feature to function properly.

OACn **xxxx—**Outgoing Access Code (1 to 4 digits). ftc-p4

Where n = ACNO response. Precede with "X" to remove.

OBKT — Observe Blocking Tone. ftc-13

Defaults:

TDSH = 0003
XTON = 003
XCAD = 000
CDNC = 017

OHQ — Off Hook Queuing Tone. ftc-13

Defaults:

TDSH = 0003
XTON = 003
XCAD = 000
CDNC = 003

OTH **(0)–63—**ART table number for ADM, DIC, MDM, PAGA, and RCD routes. ftc-p2

OVFL — Overflow Tone. ftc-13

Defaults:

TDSH = 0027
XTON = 007
XCAD = 017

OVRD — Override Tone. ftc-13

Defaults:

TDSH = 0003
XTON = 003
XCAD = 000
CDNC = 018

This cadence repeats the last eight on/off phases to allow for a special tone burst on the first cycle. For example, a cadence is defined as 3 s on, 3 s off, 1 s on, 3 s off. After the initial burst, the tone repeats in a 1 s on, 3 s off pattern. In order to repeat the initial 3 s burst, it must be entered as the first and last cycle because the first cycle is not repeated. In this case the cadence is defined as: 3 s on, 3 s off, 1 s on, 3 s off, 3 s on, 3 s off.

P10 **4, (8)—**Codes for make/break ratio for 10 pps. ftc-13

8 = North American make/break ratio (prompt S10P in LD 97)
4 = other make/break ratio (prompt S10P in LD 97)
See also CLS P10 in LD 14

PBCS **i bb cc tt—**Meridian 1 set ringing on recall or misoperation TDS cadence. ftc-p4

Defaults:

TDSH = 0032
XTON = 004
XCAD = 000

PCAD **0–(1)–255—**500/2500/digital set ringing on recall or misoperation MCAD cadence. ftc-p4

PCWT — Precedence Call Waiting Tone ftc-

When defining the hex codes for this tone, only the code for the frequency/level is required as the cadence is provided by software. Enter zero for the other values (e.g., TDSH = 0 0 0 xx, XTON = xxx, XCAD = 000).

PULS **Yes, (No)—**Change Pulse Timers. ftc-13

RBCS — Meridian 1 Call Park Recall Ring Cadence. ftc-14

Defaults:

TDSH = 0032
XTON = 002

RCAD **0–(1)–255—**500/2500/digital Call Park Recall ringing MCAD table index. ftc-14

It is also used for Meridian 1 sets in systems with NT8D17 Conference/TDS cards.

REQ **aaa—**Action request. ftc-13

NEW = add new data to the system
CHG = modify existing data
PRT = print data
OUT = remove data block
END = terminate program activity

RGAB — Call to busy station, ring again allowed MCAD and tone code. ftc-p6

Defaults:

TDSH = 0000
XTON = 007
XCAD = 000

RGAR — Ring again applied by another telephone MCAD and tone code. ftc-p6

Defaults:

TDSH = 0000
XTON = 004
XCAD = 000

RGBK — Ringback Tone. ftc-13

Defaults:

TDSH = 0035
XTON = 005
XCAD = 031

RING **Yes, (No)—**Modify the Ringing feature definitions. ftc-13

ROUT **(0)–511—**Route number. ftc-p2

RPAW **i bb cc tt—**Radio paging warning tone. ftc-p6

RPCT — Confirmation tone replaced by announcement MCAD and tone code. ftc-p6

Defaults:

TDSH = 0000
XTON = 004
XCAD = 000

RVDL **(0)–2—**Reverse dial format, 0 = disabled. ftc-p2

SCCT **Yes, (No)—**Change software controlled cadence tone definitions. ftc-13

SPCL — Special Dial Tone. ftc-13

When defining the hex codes for this tone, only the code for the frequency/level is required as the cadence is provided by software. Enter 0 for the other values (e.g., TDSH = 0 0 0 xx, XTON = xxx, XCAD = 000).

Defaults:

TDSH = 0004
XTON = 004
XCAD = 000

SRC **Yes, (No)—**Change Source Tones (SRC1-SRC8). ftc-13

SRC1 — Source Tone 1. ftc-13

Defaults:

TDSH = 0000
XTON = 000
XCAD = 000

SRC2 — Source Tone 2. ftc-13

Defaults:

TDSH = 0000
XTON = 000
XCAD = 000

SRC3 — Source Tone 3. ftc-13

Defaults:

TDSH = 0000
XTON = 000
XCAD = 000

SRC4 — Source Tone 4. ftc-13

Defaults:

TDSH = 0000
XTON = 000
XCAD = 000

SRC5 — Source Tone 5. ftc-13

Defaults:

TDSH = 0000
XTON = 000
XCAD = 000

SRC6 — Source Tone 6. ftc-13

Defaults:

TDSH = 0000
XTON = 000
XCAD = 000

SRC7 — Source Tone 7. ftc-13

Defaults:

TDSH = 0000
XTON = 000
XCAD = 000

SRC8 — Source Tone 8. ftc-13

Defaults:

TDSH = 0000
XTON = 000
XCAD = 000

SRT — Automatic Set Relocation Tone. ftc-13

Defaults:

TDSH = 0003
XTON = 003
XCAD = 000
CDNC = 022

SSLK — Set status lockout MCAD and tone code. ftc-p6

Defaults:

TDSH = 0000
XTON = 004
XCAD = 000

TABL **0–31—**FTC table number. ftc-13

FTC tables define the tones and cadences used on a specific trunk route. To associate an FTC table with a trunk route, enter the table number in response to prompt TTBL in LD 16.

TDSH **i bb cc tt—** TDS external, burst, cadence and tone. ftc-14

Only prompted for systems equipped with Tone and Digit cards.

i = internal (0) or external (1) source
bb = burst
cc = cadence
tt = frequency/level

Prompts with the response x xx xx xx define the burst, cadence, and frequency/level, respectively. Enter the decimal equivalent of the TDS hex code defined in “Flexible TDS cards” on page 45.

The first field is usually 0. If an external source is used, the entry is 1 and the fourth field is 0–7 for the specified channel.

Note: The decimal equivalent of the hexadecimal values are entered with spaces between each digit. However, when printing the TDSH values, the equivalent hexadecimal values are output without spaces.

TDSH (cont)

100#SS—#SS: 0–7 external music source

XTON 75-82—Tone 75–82 A law to reference external music source:

Tone 75= External music source #0

.
.
.

Tone 82= External music source #7

This applies to all tone types. XTON specifies XCT tone #.

Note: For specific information how to configure the external souce on the NT8D17 Conference/TDS card, refer to *Appendix A* in this document.

TEST — Test Tone. ftc-13

When defining the TDS hex codes for this tone, only the code for the frequency/level is required as the cadence is provided by software. Enter 0 for the other values (e.g., 0 0 0 xx).

Defaults:

TDSH = 0008
XTON = 008
XCAD = 000

TIE **(0)–63—**ART table number for ATVN, CAA, CAM, CSA, and TIE routes. ftc-p2

TLP — Tone to last party. ftc-p5

Defaults:

TDSH = 003
XTON = 007
XCAD = 000

TLPT **(0)–30—**Tone to last party timer in seconds. No tone = 0. ftc-p5

TMAT — Telephone Messaging Alert Tone. ftc-13

Defaults:

TDSH = 0003
XTON = 003
XCAD = 000
CDNC = 022

TMOT — Telephone Messaging OK Tone. ftc-13

Defaults:

TDSH = 0003
XTON = 003
XCAD = 000
CDNC = 023

TONES **ttt ttt ....—**NT8D17 tones (0–255) to be used with each phase of the cadence. ftc-14

The default is no tones (0 0 0 0 0).

TSUT — Tel Status Update Tone. ftc-13

Defaults:

TDSH = 0003
XTON = 003
XCAD = 000
CDNC = 023

TYPE **aaa—**Type of data. ftc-13

TYPE **FCAD—**Firmware cadence table. ftc-15

TYPE **FTC—**Flexible tone and cadences. ftc-13

TYPE **MCAD—**Master cadence table. ftc-14

USER **Yes, (No)—**Print customer and route users of the table(s). ftc-13

WCAD **0–255—**Cadence number in the Master Cadence Table (MCAD). ftc-14

Cadence table 0 can be printed here, but it cannot be changed. Please consult with your Northern Telecom representative.

WTON **Yes, (No)—**Define tones associated with the cadence. ftc-14

Only prompted for systems equipped with Conference/TDS/MF Sender cards.

XCAD **0–255—** NT8D17 cadence code for FCAD. ftc-14

Enter the FCAD table entry number.

XTON **0–255—** NT8D17 TDS Tone code. ftc-14

Enter the tone table index number. These tones are defined in firmware.

Flexible TDS cards

The flexible TDS cards provide 31 outpulsing tones (one in each time slot except 0) and can generate

— cadences with 25 or 50 ms resolution

— multi-tones per single request

— DTMF (Digitone) as 100 ms bursts or steady (for all TDSs) plus 50/50 ms (QPC609), 60/90 ms (QPC608), and 70/70 ms (QPC605, QPC606, QPC607, NTD9770)

— outpulsing control at 10 and 20 pps

— Meridian 1 tone ringing with standard or distinctive cadence

— test tone, where permitted, at 1020 Hz coded at 16 dB below overload

The following Flexible TDS cards are available:

QPC251/QPC609	(μ-Law) basic Flexible TDS, with tones for CAS
QPC252	(μ-Law) Singapore, Malaysia, and Philippines
QPC253/QPC606	(μ-Law) UK, Denmark, Middle East, and Latin America
QPC254/QPC605	(A-Law) UK, Denmark, Norway, and Finland
QPC255	(μ-Law) Hong Kong with ACD
QPC606	(μ-Law) CCITT for UK, Denmark, Norway, and Finland
QPC605	(A-Law) CCITT for UK, Denmark, Norway, and Finland
QPC258	(μ-Law) Korea
QPC259	(μ-Law) Hong Kong
QPC607	(A-Law) Switzerland
QPC608	(A-Law) Australia
QPC611	(A-Law) with tones for CAS in Australia
QPC262	(μ-Law) Japan
NTD9770	(A-Law) CCITT for Sweden

Note: When using the Announcement feature, all TDS cards must be QPC605 to QPC611, or NTD9770.

Enable/disable switch

The TDS card has an enable/disable switch on its faceplate. Prior to disabling and after enabling the card with the switch, use LD 34 to disable or enable the card in software. The switch should always be set to the DIS position before inserting or removing the card from the network shelf.

Light Emitting Diode

An illuminated Light Emitting Diode (LED) on the faceplate of the TDS card indicates that the card is either faulty or disabled. Extinguish the LED by using LD 34 when the enable/disable switch is set to ENB and there is no fault present.

Maintenance diagnostic

The TDS maintenance diagnostic (LD 34) allows TDSs to be tested manually or automatically by the system. When the program is invoked manually, a complete test or certain parts of the test can be performed as required. LD 34 is also used to enable and disable TDS cards in software. See *X11 input/output guide* (553-3001-400).

CCITT TDS

The CCITT Tone and Digit Switch (QPC605, QPC606, NTD9770) provides an Interdigital Pause (IDP) of 70 ms between Digitone multifrequency bursts (DTMF). The pause is controlled by a 32-digit buffer. The TDS also provides information tones as specified by the CCITT.

The CCITT TDS cards (QPC606 μ-Law, QPC605 A-Law, QPC611, and NTD9770 A-Law) are backward compatible, providing the same features as the QPC253/254 TDS. (However, they cannot be intermixed.)

Software data

LD 17, Configuration Record, contains a prompt for fast DTMF Outpulsing Option (TDSO). The user responds YES to the prompt TDSO if the CCITT TDS is required (default is NO).

Compatibility

The fast DTMF Outpulsing Option requires the CCITT TDS cards (QPC605, QPC606, QPC611, NTD9770). If the fast DTMF Outpulsing Option is not required, then the QPC253/QPC254 (or QPC605/QPC606/NTD9770) or the QPC256/QPC257 (or CCITT QPC605/QPC606/NTD9770) TDS cards can be used.

Calculating tone and cadence hexadecimal codes

The following tables show the specific tones and cadences that can be generated by a TDS card. TDS cards can be preprogrammed with tones and cadences suitable for a particular country or group of countries. Partial hexadecimal (HEX) codes are provided for each of the four available functions (tone, ringing, cadence, and burst). One partial HEX code for tone must be combined with one for ringing, cadence, or burst to produce a complete HEX code. The decimal equivalent of the HEX code is then entered at prompt TSDH in LD 56.

> ***Note:*** To convert a HEX number to its decimal equivalent, the HEX digits 0–9 remain unchanged and the HEX digits A–F are replaced with the decimal numbers 10–15.

Example

For a specific application of busy tone, a suitable tone is provided by the partial HEX code XXXD, and a suitable cadence for busy tone is provided by the partial HEX code 002X. The partial HEX codes combine to produce HEX code 0 0 2 13, which is entered in software.

> ***Note:*** The system prints out the value in HEX. In the above example the printout is “002D.”

Cadences

Some tones have software controlled cadence (intrusion tone, call waiting tone, override tone), identified in the Data Administration NTP for the applicable generic and release. In these cases the actual cadence is entered in software as a whole number that represents multiples of 96 ms. The cadences given in the table for these tones represent the default values for a particular tone on a particular TDS.

Tone levels

To estimate the absolute level of tones on lines or trunks, the dB below overload level must be compared to the overload level of the line or trunk card used. The overload level for the line or trunk card is obtained from the descriptive NTP for that card.

Example

Meridian 1 line cards description (553-3001-105) lists the overload level of a line card as +2 dBm. A tone with a level of 16 dB below overload leaves the card at –14 dBm.

Notes about the tables

The following notes apply to all the tables that follow, except where indicated.

Note 1: Levels are given in dB below overload.

Note 2: Actual programmed frequencies versus nominal frequencies are F (programmed) = F (nom) x (400÷399).

NTS9770C tones and cadences (Part 1 of 2)

Partial HEX code	Frequency in Hz	Level	Remarks
xxx0	—	—	No tone
xxx1	Info. tone	29	Number unobtainable
xxx2	553-667	14.5	10 Hz Meridian 1 warble, standard cadence, distinctive
xxx3	1400	29	Warning tone for paging, override, call waiting for PBX telephones (Burst)
xxx4	1400	23	Intrusion
xxx5	420	13	Dial tone and special dial tone, camp on, control dial tone, call forward dial tone, ringback, busy, congestion tone
xxx7	420	19	Busy, ringback
xxxA	1020	13	Test tone
xxxD	350+440	16	Message waiting, call forward, message waiting

NTS9770C tones and cadences (Part 2 of 2)

Partial HEX code	Cadence in ms (On-Off-On-Off…)	Function
000x	Steady	Dial tone, special dial tone, override, warning tone for paging, test tone, no tone
001x	250–250	Busy
002x	250–750	Congestion tone
003x	1100–4900	Ringback; 10 Hz Meridian 1 warble (standard cadence)
004x	350–25	Call forward: dial tone, CF message waiting
005x	550–50	Control dial tone
020x	200–550–200 [15000]	Call waiting for PBX telephones (burst), camp on
024x	100–[1500]	Intrusion (Barge-in)
02Cx	350–25-350–25–350–1150	Number unobtainable
038x	350-250-350-4950	Distinctive ringing (10 Hz)

QPC251/QPC609 tones and cadences (Part 1 of 2)

Partial HEX code	Frequency in Hz	Level	Remarks
xxx0	—	—	No tone
xxx1	350+440	23	Dial tone #1 (low)
xxx2	533/666@10Hz	23	10 Hz Meridian 1 warble
xxx3	440	23	Misc. tone #1
xxx4	350+440	19	Dial tone #1 (standard)
xxx5	440+480	25	Audible ringback #1
xxx6	480	23	High tone #1
xxx7	480+620	30	Low tone #1
xxx8	1020	16	Test tone
xxxA	600	23	Dial tone #2 (low)
xxxC	600	16	Dial tone #2 (standard)
xxxD	480+440	22	Audible ringback #2
xxxE	480+350	23	High tone #2
xxxF	440+620	24	Low tone #2

QPC251/QPC609 tones and cadences (Part 2 of 2)

Partial HEX code	Cadence in ms (On-Off-On-Off…)	Function
003x	—	Ringing req., Phase 5
008x	1650–350	AUTOVON ringing req.
00Cx	500–500–1000–4000	Distinct ringing req. (QPC609D only)
000x	Steady ON	Cadences
001x	500–500	—
002x	250–250	—
004x	50–50	—
005x	200–300	—
020x	750 ON then OFF	Burst #1
024x	100 ON then OFF	Burst #2
028x	100–100 x 3 then ON	Burst #3
02Cx	300 ON then OFF	Burst #4
0346	100@480, 100@440, 100@480 then OFF	Burst #5

QPC252A tones and cadences

Partial HEX code	Frequency in Hz	Level	Remarks
xxx0	—	—	No tone
xxx1	350+440	19	
xxx2	533/666@10 Hz	23	10 Hz Meridian 1 warble
xxx3	400	25	
xxx4	400	19	
xxx5	400	14	
xxx6	400+450	14	
xxx7	350+440	16	
xxx8	1020	16	Test tone
xxx9	533/666@20Hz	23	20 Hz Meridian 1 warble
xxxA	440+480	25	
xxxB	480+620	30	
xxxC	440	23	
xxxD	480	23	
Partial HEX code	**Cadence in ms (On-Off-On-Off…)**		**Function**
003x	400–200–400–2000		Ringing
008x	2000–4000		
000x	Steady ON		Cadences
001x	2800–200		
002x	500–500		
004x	400–350–225–525		
005x	250–250		
006x	750–750		
020x	250–125–250 then OFF		Bursts
028x	125–125 x 3 then ON		

QPC252B tones and cadences

Partial HEX code	Frequency in Hz	Level	Remarks
xxx0	—	—	No tone
xxx1	350+440	19	
xxx2	553/666@10 Hz	23	10 Hz Meridian 1 warble
xxx3	400	25	
xxx4	400	19	
xxx5	400	14	
xxx6	400+450	14	
xxx7	400	11	
xxx8	1020	16	Test tone
xxx9	533/666@20Hz	23	20 Hz Meridian 1 warble
xxxA	440+480	25	
xxxB	480+620	30	
xxxC	440	23	
xxxD	400@50Hz	14	Modulated at 50 Hz
Partial HEX code	**Cadence in ms (On-Off-On-Off…)**		**Function**
003x	400–200–400–2000		Ringing
008x	2000–4000		
000x	Steady ON		Cadences
001x	2500–500		
002x	500–500		
004x	400–350–225–525		
005x	250–250		
006x	750–750		
020x	250–125–250 then OFF		Bursts
028x	125–125 x 3 then ON		

QPC253-254 tones and cadences

Partial HEX code	Frequency in Hz	Level	Remarks
xxx0	—	—	No tone
xxx1	350+440	17	
xxx2	553/666@10 Hz	23	Meridian 1 10 Hz warble
xxx3	400	17	
xxx4	1400	26	
xxx5	440	23	
xxx6	400+450	17	
xxx7	420	9	
xxx8	—	—	Not used
xxx9	533/666@20Hz	23	Meridian 1 20 Hz warble
Partial HEX code	**Cadence in ms (On-Off-On-Off…)**		**Function**
003x	425–225–425–2125		Ringing
038x	950–3850		
000x	Steady ON		Cadences
001x	350–350		
002x	250–250		
004x	600–50		
005x	500–500		
033x	200–300–200–300–200–800		
037x	425–375–250–550		
03Fx	300–300		
020x	250–125–250 then OFF		Bursts
024x	25 then OFF		
028x	125–125 x 3 then ON		

QPC255 tones and cadences

Partial HEX code	Frequency in Hz	Level	Remarks
xxx3	400	19	Dial tone
xxx4	350+400	15	Dial tone
xxx5	440+480	15	Audible ringback #2
xxx7	480+620	15	Audible ringback #1
xxx8	1020	16	Test tone
xxxA	440+480	25	Audible ringback #3
xxxB	480+620	30	Low tone #2
xxxC	440	23	Misc. tone #2
xxxD	400@50Hz	14	Ringback #4 (50Hz)
Partial HEX code	**Cadence in ms (On-Off-On-Off…)**		**Function**
			Ringing:
008x	425–225–425–2125		USA, Phases A–C
038x	950–3850		BPO-Hong Kong, Phases a–e
000x	Steady ON		Bursts
001x	500–500		
080x	100 ms Digitone		
090x	50 ms Digitone		
084x	500–500		

QPC255C tones and cadences

Partial HEX code	Frequency in Hz	Level	Remarks
xxx3	400	19	Dial tone
xxx4	350+440	15	Dial tone
xxx5	440+480	19	Audible ringback #2
xxx6	480	19	Miscellaneous tone
xxx7	480+620	19	Audible ringback #1
xxx8	1020	16	Test tone
Partial HEX code	**Cadence in ms (On-Off-On-Off…)**		**Function**
000x	Steady ON		Bursts
001x	500–500		Tone interruption
002x	Steady ON		
003x	400–200–400–3000		BPO for Hong Kong, Phases a–e
004x	50–50		
005x	250–250		
006x	750–750		
008x	2000–4000		North America, Phases A–C
024x	100 then OFF		Burst #1
028x	100–100–100 then OFF		Burst #2
02Cx	300 then OFF		Burst #3
0346	100@480, 100@440, 100@480 then OFF		Burst #4

QPC258 tones and cadences

Partial HEX code	Frequency in Hz	Level	Remarks
xxx1	390	17	Intrusion tones
xxx2	553/666@10Hz	23	10 Hz Meridian 1 warble
xxx3	490	17	
xxx4	350+440	17	Dial tone
xxx5	440+480	17	Ringback
xxx6	590	17	
xxx7	480+620	17	Busy/overflow/unobtainable
xxx8	820	7	Test tone
xxxA	553/666@20Hz	23	20 Hz Meridian 1 warble
xxxC	440	23	Miscellaneous
Partial HEX code	**Cadence in ms (On-Off-On-Off…)**		**Function**
			Ringing:
008x	1000–2000		Std, phase A–C
003x	400–200–400–200		Distinct ph a–e
			Bursts:
341x	500–500–1500 then OFF		Intrusion warning
028x	150–150 x 3 then ON		Special dial tone
080x	100 ms burst		Digitone
090x	50 ms burst		Digitone
088x	10 pps, 67% break		Dial pulsing
084x	10 pps, 67% break		Dial pulsing
08Cx	20 pps, 67% break		Dial pulsing
			Interruptions:
005x	1000–250		Dial tone
002x	500–500		Busy tone
001x	300–200		Overflow tone
004x	150–250–150–1600		Number unobtainable

QPC259 tones and cadences

Partial HEX code	Frequency in Hz	Level	Remarks
xxx0	—	—	Silence
xxx1	350+440	15	Dial tone
xxx2	533/666	23	Standard ringing
xxx3	400	25	Intrusion tone
xxx4	400	19	Call waiting tone
xxx5	480+620	15	Busy/unobtainable tone
xxx6	440+480	15	Ringback tone
xxx8	1020	16	Test tone
Partial HEX code	**Cadence in ms (On-Off-On-Off…)**		**Function**
000x	—		Steady tone
002x	500–500		Busy
003x	400–200–400–3000		Ringback
008x	2000–4000		Distinctive BCS ringing
028x	500–500 x 3 then ON		Special dial tone

QPC262 tones and cadences

Partial HEX code	Frequency	Level	Remarks
xxx2	553/666@10Hz	23	10 Hz Meridian 1 warble
xxx4	440	19	Dial tone
xxx5	400@20Hz, 85%	—	Ringback tone
xxx8	1020	18	Test tone
xxxC	440	21	Miscellaneous tone
Partial HEX code	**Cadence in ms (On-Off-On-Off…)**		**Function**
001x	500–250		Overflow tone
002x	500–500		Busy tone
003x	400–200–400–2000		Distinctive ringing
005x	1000–500		Spare
006x	250–250		Dial tone
008x	1000–2000		Ringing
028x	125–125 x 3 then ON		Special dial tone
080x	100 ms burst		Digitone
084x	10 pps, 67% break		Dial pulse
088x	10 pps, 67% break		Dial pulse
08Cx	20 pps, 67% break		Dial pulse
090x	50 ms burst		Digitone

QPC605-606 tones and cadences

Values for cadences are the same as for the QPC253-54. Digitone duration can be 70 ms or 100 ms.

Partial HEX code	Frequency in Hz	Level	Remarks
xxxC	350+440	17	Dial tone, UK
xxxA	400+450	17	Audible ringback, UK
xxxD	400	17	Busy tone, UK
xxx4	1400	26	Special tone, UK
xxx5	440	23	Miscellaneous tone 1, UK
xxxE	420	9	Miscellaneous tone 2, Denmark, Norway, Finland
xxx2	553/666@10Hz	21	10 Hz Meridian 1 warble, all
xxxF	553/666@20Hz	21	20 Hz Meridian 1 warble, all
xxx1	950	12	Information tone
xxx3	1400	12	Information tone
xxx6	1800	12	Information tone

QPC607 tones and cadences (Part 1 of 2)

Partial HEX code	Frequency in Hz	Level	Remarks
xxx5	420	8	Dial tone, equipment busy, special dial, ringing tone, busy tone, confirmation
xxx2	553/666@10Hz	23	10 Hz Meridian 1 warble
xxxF	533/666@20Hz	23	20 Hz Meridian 1 warble
xxx3	490	17	
xxxD	380	8	Special dial tone
xxx1	950	13	Information tones
xxx3	1400	13	
xxx6	1800	13	
xxx4	1400	32	Warning tone, intrusion tone
xxxC	440	23	Misc. tone
xxxA	820	7	Test tone
xxx7	850	8	Confirmation tone
xxxE	420	32	Call waiting

QPC607 tones and cadences (Part 2 of 2)

Partial HEX code	Cadence in ms (On-Off-On-Off…)	Function
		Interruptions:
002x	500–500	Busy tone
009x	200–200	Equipment busy
		Bursts:
020x	300–300–300–1100	Information
0245	200–200–200–200	Confirmation
080x	100 ms burst	Digitone
090x	50 ms burst	Digitone
088x	10 pps, 49% break	Dial pulsing
084x	10 pps, 61.6% break	Dial pulsing
08Cx	20 pps, 61.8% break	Dial pulsing
028x	750–750	Special dial tone
008x	1050–3750	Internal ringing
003x	350–350–350–3750	External ringing

QPC608 tones and cadences

Partial HEX code	Frequency in Hz	Level	Remarks
xxx1	420@25 Hz	12	Ringback tone
xxx2	553/666@10Hz	16.5	10 Hz Meridian 1 warble
xxx3	420	22	Congestion tone
xxx4	350+440	15	Dial tone
xxx5	1400	19	Recording tone
xxx6	420	12	Busy, overflow, unobtainable
xxxA	820	14	Test tone
xxxC	420	25	Intrusion tone
xxxD	400	19	Override tone
xxxE	400	12	Miscellaneous
xxxF	533/666@20Hz	16.5	20 Hz Meridian 1 warble

Partial HEX code	Cadence in ms (On-Off-On-Off…)	Function
001x	400–400	Tone interrupt #1
002x	250–250 & 250–275	Tone interrupt #2
003x	425–225–425–2125	UK ring
004x	2650–550	Tone interrupt #3
005x	500–500 & 475–475	Tone interrupt #4
020x	250–125–150 then OFF	Burst #1
024x	375–375	Burst #2
028x	125–125 x 3 then ON	Burst #3
033x	200–275–200–275–200–775	Tone interrupt #5
038x	950–3850	Denmark/Norway/Finland Ringing
03Fx	300–300	Tone interrupt #7

QPC611 tones and cadences (Part 1 of 2)

Partial HEX code	Frequency in Hz	Level	Remarks
000	—	—	No tone
001	420 x 25	12	Ringback tone
002	(553+666) x 10	16.5	10 Hz Meridian 1 Ringing
00F	(553+666) x 20	16.5	20 Hz Meridian 1 Ringing
003	1400	19	Recording tone
004	480	22	Centralized Attendant Service (CAS) tone
005	420	22	Congestion tone
006	420	25	Intrusion warning tone
007	350+440	15	Dial tone
00A	820	14	Test tone
00C	420	12	Busy, overflow, number unobtainable tone
00D	400	19	Override tone
00E	400	12	Miscellaneous tone

Digitone keypad key tones

Designation	Frequency	Designation	Frequency
Key 1	700+1210	Key 9	850+1480
Key 2	700+1340	Key 0	940+1340
Key 3	700+1480	Key *	940+1210
Key 4	770+1210	Key #	940+1480
Key 5	770+1340	Key A	700+1630
Key 6	770+1480	Key B	770+1630
Key 7	850+1210	Key C	850+1630
Key 8	850+1340	Key D	940+1630

Level of low group DTMF tones (700, 770, 850, 940 Hz) are 17 dB below overload.
Level of high group DTMF tones (1210, 1340, 1480, 1630 Hz) are 15 dB below overload.
Actual programmed frequencies are: F (programmed) = F (nominal x 400/399).

QPC611 tones and cadences (Part 2 of 2)

Partial HEX code	Cadence in ms (On-Off-On-Off…)	Function
01x	400–400	Tone interrupt #1
02x	50–50	CAS
03x	475–225–425–2125	UK ring
04x	2650–550	Tone interrupt #3
05x	500–500 & 475–475	Tone interrupt #4
30C	375–375	Burst #1
	60 or 100 (optional)	Digitone burst
	10 pps, 67% break, State 4	Dial pulsing
	10 pps, 67% break, State 8	Dial pulsing
	20 pps, 67% break, State C	Dial pulsing
38x	95–3850	Denmark, Norway, Finland, (phases a–e) ring
24x	—	CAS burst; 0.1 s ON–steady OFF
28x	—	CAS burst; 0.1 s ON–0.1 sec OFFs
344	480–420–480–22	CAS burst; 0.1 s 480 Hz– 0.1 s 420 Hz –0.1 s 480 Hz–steady OFF
2Cx	—	CAS burst; 0.3 s ON then steady OFF

NT8D17 Conference/TDS tone tables

This chapter lists the NT8D17 Conference/TDS tones. The first table provides the complete list of tones. Other tables describe tones provided by other TDS cards and the equivalent NT8D17 tones.

Note 1: Overload level = +3.17 dBm0 μ-Law, +3.14 dBm0 A-Law.

Note 2: Define the tone by entering the tone number in response to the prompt XTON in LD 56. XTON 1 to 104 are μ-Law tones, XTON 105 and higher are A-Law tones.

Note 3: When translating the level below overload into dBm at the PE interface:

"x" dB below overload + overload level –D/A loss of PE = "y" dBm

For example, XTON 3: 440 Hz @ –23 dB below overload results in –22.33 dBm at the North American NT8D09 Analog Message Waiting Line Card. Since D/A = +2.5 dB loss, then –23 + 3.17 – 2.5 ≈ –22.33 dBm.

NT8D17 Conference/TDS tones (Part 1 of 6)

Tone (XTON)	Tone frequency	Level dB below overload	Comments
0	No tone (silent)		
1	350/440	–23/–23	
2	(533+566) x 10	–23	10 Hz Meridian 1 warble
3	440	–23	
4	350/440	–19/–19	
5	440/480	–25/–25	
6	480	–23	
7	480/620	–30	
8	1020	–16	
9	600	–23	
10	600	–16	
11	440/480	–22/–22	
12	350/480	–23/–23	
13	440/620	–24/–24	
14	940/1630	–12/–10	DTMF digit D
15	700/1210	–12/–10	DTMF digit 1
16	700/1340	–12/–10	DTMF digit 2
17	700/1480	–12/–10	DTMF digit 3
18	770/1210	–12/–10	DTMF digit 4
19	770/1340	–12/–10	DTMF digit 5
20	770/1480	–12/–10	DTMF digit 6
21	850/1210	–12/–10	DTMF digit 7
22	850/1340	–12/–10	DTMF digit 8
23	850/1480	–12/–10	DTMF digit 9
24	940/1340	–12/–10	DTMF digit 0
25	940/1210	–12/–10	DTMF digit *

NT8D17 Conference/TDS tones (Part 2 of 6)

Tone (XTON)	Tone frequency	Level dB below overload	Comments
26	940/1480	–12/–10	DTMF digit #
27	700/1630	–12/–10	DTMF digit A
28	770/1630	–12/–10	DTMF digit B
29	850/1630	–12/–10	DTMF digit C
30	10 pps dial pulse, 56.25% break		
31	10 pps dial pulse, 62.25% break		
32	20 pps dial pulse, 62.5% break		
33	400	–19	
34	[400 * (20@85%)]	–19	
35–50	same as tones 14–29	–17/–15	
51	10 pps dial pulse, 67.5% break		
52	20 pps dial pulse, 68.5% break		
53	1300/1500	–13/–13	MF digit 0
54	700/900	–13/–13	MF digit 1
55	700/1100	–13/–13	MF digit 2
56	900/1100	–13/–13	MF digit 3
57	700/1300	–13/–13	MF digit 4
58	900/1300	–13/–13	MF digit 5
59	1100/1300	–13/–13	MF digit 6
60	700/1500	–13/–13	MF digit 7
61	900/1500	–13/–13	MF digit 8
62	1100/1500	–13/–13	MF digit 9
63	700/1700	–13/–13	MF digit A
64	900/1700	–13/–13	MF digit B
65	1100/1700	–13/–13	MF digit C
66	1300/1700	–13/–13	MF digit D

NT8D17 Conference/TDS tones (Part 3 of 6)

Tone (XTON)	Tone frequency	Level dB below overload	Comments
67	1500/1700	–13/–13	MF digit E
68	400	–11	
69	400	–14	
70	400x50	–14	
71	(533+666) x 20	–23	20 Hz Meridian 1 warble
72	20 pps, dial pulse, 52% break		
73	350/440	–15/–15	
74	480/620	–15/–15	
75	440/480	–15/–15	
76	400	–25	
77	400/450	–14/–14	
78	480/620	–19/–19	
79	440/480	–19/–19	
80	480	–19	
81	420	–9	
82	440	–29	
83	10 pps dial pulse, 61% break		
84	350/440	–17/–17	
85	400/450	–17/–17	
86	400	–17	
87	1400	–26	
88	950	–12	
89	1400	–12	
90	1800	–12	
91	470	0	
92	940	0	

NT8D17 Conference/TDS tones (Part 4 of 6)

Tone (XTON)	Tone frequency	Level dB below overload	Comments
93	1300	0	
94	1500	0	
95	1880	0	
96–100	TBD		
101	600	–19	
102	800	–19	
103	1400	–23	
104	820	–7	
105	350/440	–17/–17	
106	400/450	–17/–17	
107	1400	–26	
108	440	–23	
109	420	–9	
110	950	–12	
111	1400	–12	
112	1800	–12	
113–128	same frequencies as 14–29	–12/–10	DTMF digits
129	350/440	–22/–22	
130	400	–19	
131	400	–25	
132	400/450	–22/–22	
133	1400	–15	
134	950	–19	
135	1400	–20	
136	1800	–20	
137	420	–19	

NT8D17 Conference/TDS tones (Part 5 of 6)

Tone (XTON)	Tone frequency	Level dB below overload	Comments
138–153	same frequencies as 14–29	–18/–17	DTMF digits
154	(533+666) x 10	–23	10 Hz Meridian 1 warble
155	(533+666) x 20	–23	20 Hz Meridian 1 warble
156	400	–12	
157	820	–14	
158	420	–12	
159	420	–25	
160	420 x 25	–12	
161	(533+666) x 10	–16.5	10 Hz Meridian 1 warble
162	(533+666) x 20	–16.5	20 Hz Meridian 1 warble
163	420	–22	
164	480	–22	
165	330	–11	
166	330/440	–11/–14	
167	1700	–19	
168	440	–14	
169	380	–8	
170	1400	–32	
171	820	–7	
172	850	–8	
173	420	–32	
174	10 pps dial pulse, 50% break		
175	420	–6	
176	420	–2	
177	1020	–13	
178	1800	–17	

NT8D17 Conference/TDS tones (Part 6 of 6)

Tone (XTON)	Tone frequency	Level dB below overload	Comments
179	1400	–23	
180	950	–29	
181	1400	–22	
182	1800	–29	
183	950	–22	
184	470	0	
185	940	0	
186	1880	0	
187	400	–22	
188	420 x 25	–17	
189	950	–16	
190	950	–25	
191–206	same frequencies as 14–29	–9/–7	DTMF digits
207	420	–10	
208	420	–8	
209	420	–4	
210	1400	–18	
211	1400	–9	
212	350/420	–9/–9	
213	420	–14	
214	450	–12	
215	450	–22	
216	820	–16	
217	350/420	–14/–14	
218–233	same frequencies as 14–29	–14/–12	DTMF digits

Australia

These tones are based on QPC611, QPC608, and QPC261 A-Law and are the same as the QPC611 without the CAS tone.

Purpose	NT8D17 tone (XTON)
Dial, special dial tone	105
10 Hz Meridian 1 warble	161
20 Hz Meridian 1 warble	162
Busy, congestion, number unobtainable, overflow tones	158
Intrusion (warning, busy verify, barge-in)	159
Override	130
Ringback	160
Camp-on, call waiting	156
Test tone	157
Congestion	163
Recording	135
CAS tone	164
DTMF tones	138–153
Dial pulsing	51, 72

Belgium (based on NTD9521B A-Law)

Purpose	NT8D17 tone (XTON)
Dial tone	105
Audible ringback	106
Override (congestion) tone	130
Intrusion (warning, busy verify), call waiting tones	133
Misc. tone #1	168
Dial, special dial, busy (overflow), number unobtainable, ringback tones	109
10 Hz Meridian 1 warble	154
20 Hz Meridian 1 warble	155
Test tone	157
Special information tones	110–112
DTMF tones	138–153
Dial pulsing	83, 51, 72

Belgium A-Law (new)

Purpose	NT8D17 tone (XTON)
Ringback, immediate ringback, busy	158
Ringback, immediate ringback, busy	207
Ringback, immediate ringback, busy	208
Ringback, immediate ringback, busy	209
Ringback, immediate ringback, busy	176
Barge-in #1, replace receiver #1	111
Barge-in #2, replace receiver #2	210
Barge-in #3, replace receiver #3	211
DTMF tones	191–206
Dial pulsing	51

Brazil (based on NTD9520B A-Law)

Purpose	NT8D17 tone (XTON)
Dial tone	105
Audible ringback	106
Busy tone	130
Special dial tone	107
Misc. tone #1	168
Dial, busy, number unobtainable (overflow), ringback, intrusion (barge-in, busy verify), distinctive ringback, call waiting, camp-on, override tones	109
10 Hz Meridian 1 warble	154
20 Hz Meridian 1 warble	155
Test tone	157
DTMF tones	138–153
Dial pulsing	83, 51, 72

CCITT A-Law (based on QPC605 A-Law)

This is used in Italy, United Kingdom, Norway, and Finland, replacing the QPC254 and QPC257; it includes NTD9870.

Purpose	NT8D17 tone (XTON)
Dial, special dial tone	105
Ringback	106
Busy (OVFL), number unobtainable, override, congestion tones	130
Intrusion (warning, busy verify, barge-in) tones	107
Call waiting, camp-on, override tones	108
Dial, special dial, busy (OVFL), number unobtainable, ringback tones	109
10 Hz Meridian 1 warble	154
20 Hz Meridian 1 warble	155
Special information tones	110, 111, 112
DTMF tones	138–153
Dial pulsing	83, 51, 72

CCITT Announcement TDS (based on QPC606 μ-Law)

The QPC606 card replaces QPC253 and QPC256.

Purpose	NT8D17 tone (XTON)
Dial, special dial tone	84
Ringback	85
Busy (OVFL), number unobtainable, override, congestion tones	86
Intrusion (warning, busy verify, barge-in) tones	87
Call waiting, camp-on, override tones	3
Dial, special dial, busy (OVFL), number unobtainable, ringback	81
10 Hz Meridian 1 warble	2
20 Hz Meridian 1 warble	71
Information tone	88, 89, 90
DTMF tones	35–50
Dial pulsing	83, 51, 72

China (based on QPC610 A-Law)

Purpose	NT8D17 tone (XTON)
Dial, conference dial, special dial tone, busy, ringback, vacant number, override, overflow congestion tones	214
Call waiting, camp-on, toll announcement tones	215
Intrusion (warning, busy verify), acknowledgment tones	183
Howler tones	184–186
Dial, conference dial, special dial tone, busy, ringback, vacant number, override, overflow congestion tones	156
Call waiting, camp-on, toll announcement tones	187
10 Hz Meridian 1 warble	154
20 Hz Meridian 1 warble	155
Test tone	216
Misc. tone	105
Reminding tone	179
DTMF tones	113–128
Dial pulsing	31, 72

Commonwealth of Independent States (CIS) A-Law (new)

Purpose	NT8D17 tone (XTON)
Call waiting	213
Dial, ringback, busy, congestion, supervision of call waiting	158
Special information tones	110–112
Misc. tone #1	137
Misc. tone #2	210
DTMF tones	218–233

Finland A-Law

Purpose	NT8D17 tone (XTON)
Dial, special dial tone, busy, ringback tones	109
Busy, ringback	168
Intrusion tone #1	137
Intrusion tone #2	108
Special information tones #1	110–112
Special information tones #2	189, 178, 133
Waiting #1	134, 135
Recording warning #1	135
Waiting #2	190, 107
Recording warning #2	107
DTMF tones	191–206
Dial pulsing	83

France (based on ST/PAA/TPA/CRE, Edition 4, A-Law)

Purpose	NT8D17 tone (XTON)
Dial tone	165
10 Hz Meridian 1 warble	161
20 Hz Meridian 1 warble	162
Special dial, number unobtainable (overflow)	166
Transfer tone	167
Misc. tone #1	158
Camp-on	156
Misc. tone #2	130
Test tone	157
Call on hold, special dial, number unobtainable (overflow) tones	168
DTMF tones	191–206
Dial pulsing	51, 72

Germany (based on NTD9879B A-Law)

Purpose	NT8D17 tone (XTON)
Dial, special dial tone	105
Ringback	106
Busy, overflow, number unobtainable, ringback, special dial tones	175
Misc. tone	107
Intrusion, override, camp-on tones	108
Busy, overflow, number unobtainable	176
10 Hz Meridian 1 warble	154
20 Hz Meridian 1 warble	155
Information tones	110, 111, 112
DTMF tones	113–128
Dial pulsing	83, 51, 72

Holland (based on NTD9707 A-Law)

Purpose	NT8D17 tone (XTON)
Dial, special dial tone	105
Ringback	106
Misc. tone #1	130
Misc. tone #2	107
Test tone	177
Dial busy, congestion, number unobtainable (OVFL), ringback, warning tones	109
10 Hz Meridian 1 warble	154
20 Hz Meridian 1 warble	155
Information tones	133, 134, 178
DTMF tones	218–233
Dial pulsing	51, 72

Hong Kong (based on QPC259 μ-Law)

Purpose	NT8D17 tone (XTON)
Dial, special dial tone	73
Busy, number unobtainable (OVFL) tones	74
Ringback	75
10 Hz Meridian 1 warble	2
20 Hz Meridian 1 warble	71
Intrusion (barge-in) tone	76
Call waiting, override, camp-on tones	33
Test tone	8
DTMF tones	14–29
Dial pulsing	31, 51, 72

Hong Kong/Malaysia/Philippines (based on QPC252 μ-Law)

Purpose	NT8D17 tone (XTON)
Dial, special dial tone	4
Call waiting, camp-on, override tones	33
Intrusion (barge-in) tone	76
Busy, number unobtainable (NU), special dial, intrusion (barge-in, busy verify), call waiting, camp-on, override tones	69
Ringback	77
Dial tone	68
Ringback	5
Busy, number unobtainable (OVFL) tones	7
Barge-in (busy verify, intrusion), call waiting, camp-on, override tones	3
Ringback	70
Test tone	8
DTMF tones	14–29
Dial pulsing	31, 51, 72

Hong Kong (based on QPC255 μ-Law)

Purpose	NT8D17 tone (XTON)
Dial, special dial tone	73
Intrusion call waiting, camp-on, override tones	33
Busy, number unobtainable (OVFL) tones	78
Ringback	79
Misc. tone	80
Test tone	8
DTMF tones	35–50
Dial pulsing	31, 51, 72

Italy (based on NTD9517B μ-Law)

Same as QPC606B except there is one cadence different.

Italy (NTD9221)

This card is identical to the QPC253A μ-Law card except that it can outpulse 1 to 30 pulses.

Italy (Olivetti ACD, based on NTD9237 μ-Law)

Purpose	NT8D17 tone (XTON)
Dial, busy, overflow, audible ringback, special dial tones	81
10 Hz Meridian 1 warble	2
20 Hz Meridian 1 warble	71
Camp-on, call waiting, override, intrusion (barge-in, busy verify) tones	82
DTMF tones	14–29
Dial pulsing	83, 51, 32

Italy A-Law (new)

Purpose	NT8D17 tone (XTON)
Dial tone #1	212
Dial tone #2	217
Ringback #1, congestion #1, busy #1, overflow #1, camp-on #1, confirmation #1	109
Ringback #2, congestion #2, busy #2, overflow #2, camp-on #2, confirmation #2, intrusion #1, conference #1, call waiting #1	213
Intrusion #2, conference #2, call waiting #2	137
DTMF set #1	191–206
DTMF set #2	218–233
Dial pulsing	83, 174

Japan tones (based on QPC646A μ-Law)

Purpose	NT8D17 tone (XTON)
Dial tone #1 (low)	1
10 Hz Meridian 1 warble	2
Misc. tone #1	3
Dial tone	33
Audible ringback tone	34
High tone #1	6
Test tone	8
Dial tone #1 (standard)	4
Dial tone #2 (low)	9
Audible ringback #1 (low)	5
Dial tone #2 (standard)	10
High tone #2	12
Low tone #2	13
DTMF tones	35–50
Dial pulsing	30, 51, 52
MF, ANI	53–67

Japan μ-Law

Purpose	NT8D17 tone (XTON)
Howler tone (low)	91–95
Howler tone (high)	96–100

Korea (based on QPC632 μ-Law)

Purpose	NT8D17 tone (XTON)
Dial, special dial, call waiting tones	84
10 Hz Meridian 1 warble	2
20 Hz Meridian 1 warble	71
Busy, overflow, number unobtainable tones	74
Intrusion warning tone	86, 80, 10
Ringback	75
Misc. tone	3
Test tone	104
DTMF tones	35–50
Dial pulsing	83, 51, 52

Malaysia

Purpose	NT8D17 tone (XTON)
10 Hz Meridian 1 warble	154
20 Hz Meridian 1 warble	155
Dial, special dial, control dial, call forward dial, test, camp-on, call waiting tones	159
Ringback	188
Overflow, busy, intrusion warning, override	31, 72

Malaysia (based on NTD9251 ACD μ-Law and QPC252 A or B)

Purpose	NT8D17 tone (XTON)
Dial, special dial tone	68
Busy, number unobtainable (OVFL), intrusion, barge-in, busy verify, call waiting, camp-on, override tones	69
Ringback	70
10 Hz Meridian 1 warble	2
20 Hz Meridian 1 warble	71
Test tone	8
DTMF tones	14–29
Dial pulsing	31, 51, 72

Malaysia/Singapore A-Law (CAS)

Purpose	NT8D17 tone (XTON)
LDN	164
LDN, camp-on, dial “0” recall, hold configuration	108
DTMF tones	218–233
Dial pulsing	51, 72

North America (based on QPC609 μ-Law)

Purpose	NT8D17 tone (XTON)
Dial tone #1 (low)	1
10 Hz Meridian 1 warble	2
Misc. tone #1	3
Dial tone #1 (standard)	4
Audible ringback #1	5
High tone #1	6
Low tone #1	7
Test tone	8
Dial tone #2 (low)	9
Dial tone #2 (standard)	10
Audible ringback #2 (high)	11
High tone #2	12
Low tone #2	13
DTMF tones	14–29
Dial pulsing	30, 31, 32

QPC631 μ-Law

Purpose	NT8D17 tone (XTON)
Dial tone (standard)	4
Dial tone (low)	1
Audible ringback	5
Music tone #1	3
High tone	6
Low tone	7
Test tone	8
DTMF tones	14–29
Dial pulsing	30, 31, 32

QPC632 μ-Law

Purpose	NT8D17 tone (XTON)
Dial tone #1 (low)	1
10 Hz Meridian 1 warble	2
Misc. tone #1	3
Dial tone #1 (standard)	4
Audible ringback #1 (low)	5
High tone #1	6
Low tone #1	7
Test tone	8
Dial tone #2 (low)	9
Dial tone #2 (standard)	10
Audible ringback #2 (high)	11
High tone #2	12
Low tone #2	13
DTMF tones	14–29
Dial pulsing	30, 31, 32

Singapore

Purpose	NT8D17 tone (XTON)
Dial, acceptance (confirmation), call waiting tones	137
Ringback	160
Busy, number unobtainable, congestion tones	158
Intrusion tone	163

Spain A-Law (new)

Purpose	NT8D17 tone (XTON)
DTMF tones	191–206
Dial pulsing	51

Sweden (based on NTD9770D A-Law)

Purpose	NT8D17 tone (XTON)
Dial, special dial tone, call forward, control dial, busy, ringback, congestion, camp-on	158
Busy, ringback tones	137
Message waiting, call forward message waiting tones	105
Intrusion tone (barge-in)	179
Test tone	177
Number unobtainable tone	180
Call waiting, override, warning tone for paging	181–182
10 Hz Meridian 1 warble	161
20 Hz Meridian 1 warble	162
DTMF tones	138–153
Dial pulsing	31, 72

Switzerland (based on QPC607, QPC260 A-Law)

Purpose	NT8D17 tone (XTON)
Dial tone, busy, ringback, equipment busy, confirmation tones	109
10 Hz Meridian 1 warble	154
20 Hz Meridian 1 warble	155
Special dial tone	169
Information tone	110, 111, 112
Warning, intrusion tones	170
Override, camp-on tones	108
Test tone	171
Confirmation tone	172
Call waiting tone	173
DTMF tones	218–233
Dial pulsing	31, 174, 32

United Kingdom A-Law

Purpose	NT8D17 tone (XTON)
Dial tone	129
Busy, short congestion, number unobtainable tones	130
Long congestion tone	131
Ringback	132
Intrusion tone	133
Information tone	134, 135, 136
Camp-on tone	137
DTMF tones	138–153
10 Hz Meridian 1 warble	154
20 Hz Meridian 1 warble	155
Dial pulsing	51

Appendix A: Configuring the external music source

This appendix explains how to program external music sources on the NT8D17 Conference/DTS card as tones 75 to 82 for international A-law system using Flexible Tones and Cadences Program LD 56. It also describes and illustrates the hardware configuration for this purpose.

Software configuration

The Flexible Tones and Cadences Program LD 56 software allows tones 75 to 82 to be reserved for 8 external music sources SCR0 through SCR7.

Example: configure dial tone provided by SCR0

Load Flexible Tones and Cadences Program LD 56 and at the prompt enter:

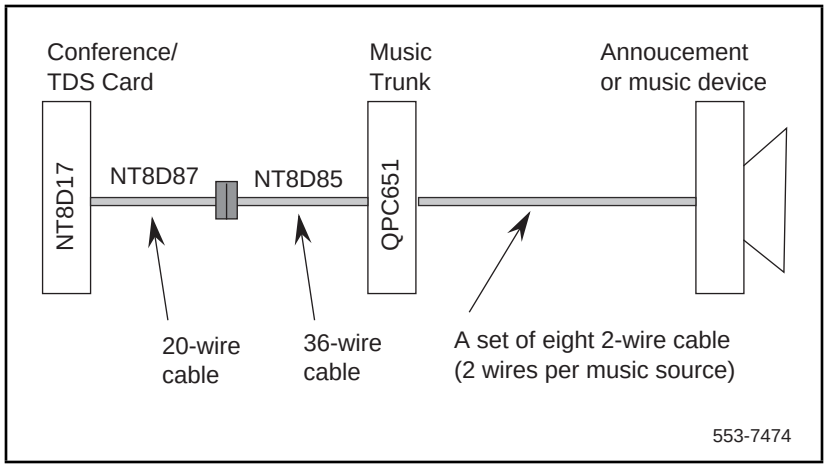
REQ	CHA	Change request
TYPE	FTC	Flexible Tones and Cadences
TABL	0	FTC table number
DIAL		Dial tone
XTON	75	NT8D17 TDS Tone code (source 0)
XCAD	0	NT8D17 cadence code for FCAD (steady signal

Hardware configuration

To provide music and announcement to the system from external sources, you must connect the NT8D17 XCT card that provides 8 music sources to the QPC651 Music Trunk (A-law) and the announcement or analog music machine using the appropriate cables as shown in the figure below.

Figure 1 shows the hardware configuration when providing external music sources or announcement to the system.

Figure 1
Hardware configuration for the external music source implementation



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