NV-T2SIR/FAM and NV-T2DAB Serial Control Protocol

Date 7/8/2010

Revision 003

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Document Information

Document title:	NV-T2SIR/FAM and NV-T2DAB Serial Control Protocol
Document file name:	NV-T2SR SerialControlProtocol.doc
Revision number:	<003>
Issued by:	Attero Tech
Issue Date:	7/8/2010
Status:	Release

Revision History

Revision	Date	Author	Description of change
001_b	1/29/09	amc	Update document to match NV-T2SIR/FAM code
002	1/30/09	sms	Release
003	7/7/10	amc	Update for NV-T2DAB commands

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1 Objective

This document describes the NuVo NV-T2SIR/FAM and NV-T2DAB Tuner RS232 Serial Control command and response protocol. This protocol allows a component outside the NuVo NV-T2SIR/FAM or NV-T2DAB system to communicate with the unit to solicit its current state or change operational parameters.

2 System Description

The NuVo NV-T2SIR/FAM is a dual AM/FM tuner. If Sirius satellite radio is desired, Sirius receivers can be connected to one or both tuners. The NV-T2SIR/FAM provides Radio Data Service, RDS, for FM channels, which displays artist and song information.

Similarly, the NuVo NV-T2DAB is a dual DAB/FM tuner. The NV-T2DAB provides RDS for both DAB and FM channels. In addition to artist and song information, the RDS data also provides station information.

The particular RS232 commands and their use are described later in this document.

3 Serial Port Connections

The NuVo NV-T2SIR/FAM and NV-T2DAB connect to an external device via a DB9 connector on the back of the unit. This connector is labeled “RS 232”. A pass-through cable with DB9 male one end and DB9 female on the other is required to connect the NV-T2SIR/FAM or NV-T2DAB to a PC or most external devices.

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4 Serial Control Data Format

The NuVo Tuner serial port is set to 57600 baud, no parity and 1 stop bit. No hardware/software handshaking is required. The commands are simple enough that they may be issued using a terminal emulator like HyperTerm or Tera Term Pro. The specifics of the protocol are:

1) The data is all ASCII characters with exception of the terminating character: carriage return <CR> (or 0x0D hex). Upper or lower case characters may be used.

2) All numerical fields are coded as ASCII digit characters. When sending a string to the NuVo Tuner, double quotes (") and asterisks (*) must be escaped by a backslash

3) All strings are enclosed in double quotes.

4) Arguments are delimited by commas.

5) All arguments must be specified.

6) Each Command string is STARTED with an ASCII "*****" character and terminated by a <CR>.

7) Each Response string issued by the NuVo Tuner will START with an ASCII "**#**" character and be terminated with a <CR>.

8) If a command has an error in it (does not adhere to exact command syntax), the NuVo Tuner will respond with "**#T'x'?<*CR*>**". No response will be generated if the command is not recognized at all. (i.e. "***XYZ<*CR*>**"and "***T'C'XYZ<*CR*>**"will get no response while "***T'A'XYZ<*CR*>**" will get an error response.

9) Most serial commands DO NOT have a dedicated acknowledge response. Most commands change the state of the NuVo Tuner and the automatic unsolicited status indicators indicate the action performed.

4.1 Command Example

This example will request the version information from the NuVo NV-T2SIR/FAM:

CMD	***VER<CR>**
RSP	**#VER NV-T2SIR FWv1.00 HWv02"<CR>**

This will be the format for all the commands listed in this manual. The <CR> will not be shown with the commands in this manual but MUST be assumed.

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5 Unsolicited Status Messages

Whenever the status of the Tuner changed, a serial status string is sent indicating the new state of the tuner. It does not matter what caused the state change (front panel buttons, Control Pads, serial commands, radio information, etc.) These indicators will allow an external controller to stay in sync with the tuner.

5.1 Tuner OFF Status

This message is sent when the tuner is turned off.

RSP	**#OFF**

5.2 Tuner ON Status

This message is sent when the tuner is turned on or if the source, band, or frequency changes. For FM frequencies, the frequency is displayed either as XX.X or 1XX.X (i.e. 98.5 or 103.5) unless fine-tuning is enabled or the current frequency ends with .05 (i.e. 101.15) where one additional digit is added to the end. For AM frequencies, the frequency is displayed either as XXX or 1XXX (i.e. 550 or 1530). For Sirius stations, the station is displayed as X, XX, or XXX (0 to 255). For DAB stations, the channel number is displayed as XX or XXX (i.e. 5A or 12C).

There are three special cases. If the band has been disabled from either the front panel or from the control pad, the DISABLED message will be returned. Secondly, the SR UNAVAILABLE message will be returned if no Sirius receiver is connected to the tuner or if the Sirius receiver has not completed its initial power-up procedure. Additionally, if the currently tuned DAB station is unavailable, '????' will be returned.

RSP	**#T'x'ON,FM103.5** or **#T'x'ON,AM700** or **#T'x'ON,SR14** or **#T'x'ON,DAB12C** or **#T'x'ON,AM DISABLED** or **#T'x'ON,SR UNAVAILABLE** or **#T'x'ON,DAB???**
Response Packet Breakdown	
x=A	Tuner A was turned on or source, band or frequency changed
x=B	Tuner B was turned on or source, band or frequency changed

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5.3 Supported Bands

This message is sent to indicate the frequency bands that are supported by the tuner. This message is always sent at startup and will also be sent when a band becomes available or unavailable. Bands can be enabled and disabled through the front panel menu and with the Configurator software. External receiver modules can also be plugged in and unplugged.

RSP	**#T'x'BANDSa[,b][,c]…**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
a[,b][,c]…	The bands that are supported by the tuner. Possible values are AM, FM, SR, (and possibly XM, DAB, and HD in future products) Example: **T'A'BANDS"AM","FM","SR"** or **T'A'BANDS"FM","SR"** or **T'A'BANDS"FM"** or **T'A'BANDS"FM","DAB"**

5.4 Tuner Is Tuned to a Preset

This message is sent when the Tuner is tuned to a frequency that corresponds to a preset. It does not necessarily mean that a preset button was used; manually tuning to the frequency will also trigger this message.

RSP	**#T'x'PRESETyyy,"z"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
yyy	First digit is preset bank (1-5). Second and third digits are preset number in bank (1-20)
z	Preset Description (16 characters maximum)

5.5 Channel Name for Current Station

This message indicates the channel name for the current station. When the active band is FM, this is the RDS Program Service string.

RSP	**#T'x'CHAN"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current channel name (80 characters maximum)

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5.6 Category Name for Current Station

This message indicates the category name for the current station.

RSP	**#T'x'CAT"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current category name (80 characters maximum)

5.7 DAB Component Name for Current Station

This message indicates the DAB Component Name for the current station.

RSP	**#T'x'COMPONENT"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current DAB Component text (16 characters maximum)

5.8 DAB Service Name for Current Station

This message indicates the DAB Service Name for the current station.

RSP	**#T'x'SERVICE"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current DAB Service text (16 characters maximum)

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5.9 Now Playing Artist Name

This message indicates the title of the now playing artist.

RSP	**#T'x'ARTIST"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current artist name (80 characters maximum)

5.10 Now Playing Song / Program Title

This message indicates the title of the now playing song or program. When the active band is FM, this is the RDS Radio Text string.

RSP	**#T'x'TITLE"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current title text (80 characters maximum)

5.11 Now Playing Album Name

This message indicates the name of the now playing album.

RSP	**#T'x'ALBUM"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current album text (80 characters maximum)

5.12 Now Playing Composer Name

This message indicates the name of the composer of the now playing song or program.

RSP	**#T'x'COMPOSER"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current composer text (80 characters maximum)

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6 Primary Commands

All commands must be addressed to only one of the two tuners in the NV-T2SIR/FAM or NV-T2DAB. All tuner commands begin with *T'x' (x is either A or B indicating either Tuner-A or Tuner-B). These commands are recommended for external control use because the results are deterministic. Commands in the "Other Commands" section emulate individual button pushed and are for interactive use. The results of one command depend on the commands before and after.

6.1 Get Version Information

This command will request the version information from the NuVo NV-T2SIR/FAM.

CMD	***VER**
Command Parameters	
None	
RSP	**#VER NV-T2xxx FWvy.yy HWvzz**
Response Packet Breakdown	
xxx=SIR	NV-T2SIR Tuner
xxx=FAM	NV-T2FAM Tuner
xxx=DAB	NV-T2DAB Tuner
y.yy	Firmware version
zz	Hardware version

6.2 Get Tuner Status

The STATUS command initiates an immediate Status Indicator ON or OFF response.

CMD	***T'x'STATUS**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**#T'A'ON,FM103.5** or **#T'A'ON,AM700** or **#T'B'ON,SR14** or **#T'A'ON,DAB12C** or **#T'B'ON,AM DISABLED** or **#T'B'ON,SR UNAVAILABLE** or **#T'A'ON,DAB???** **#OFF**
Response Packet Breakdown	
	See Section **5.1** and **5.2** for description of status message

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6.3 Turn Tuner ON

This command will turn on the tuner from a pseudo-off state. If the tuner is already on, this command will have no effect. **This command will not work when the tuner is attached to the NuVoNet network.**

CMD	***ON**
RSP	Tuner ON Status (refer to section **5.2** for description of status message)

6.4 Turn Tuner OFF

This command will turn off a tuner (to a pseudo-off state). If the tuner is already off, this command will have no effect. **This command will not work when the tuner is attached to the NuVoNet network.**

CMD	***OFF**
RSP	**#OFF**

6.5 Get Supported Bands

This command can be used to determine which bands are supported by the tuner.

CMD	***T'x'BANDS**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**#T'x'BANDSa[,b][,c]…**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
a[,b][,c]…	The bands that are supported by the tuner. Possible values are AM, FM, SR, DAB Example: **T'A'BANDS"AM","FM","SR"** or **T'A'BANDS"FM","SR"** or **T'B'BANDS"FM","DAB"**

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6.6 Tune to AM Frequency

This command will tune directly to the specified frequency. Direct tuning is not limited by frequency spacing settings and can be in 1 kHz increments. This command will have no effect if the AM band is disabled.

CMD	***T'x'AMffff (where ffff is 2 to 4 characters)**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
ffff	3 or 4 digit AM freq (in kHz) - Example: ***T'A'AM1361**
RSP	**None**

6.7 Tune to FM Frequency

This command will tune directly to the specified frequency. Direct tuning is not limited by frequency spacing settings and can be in 0.01 MHz increments. This command will have no effect if the FM band is disabled.

CMD	***T'x'FMffffff (where ffffff is 2 to 6 characters, including the ".")**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
ffffff	FM freq (in MHz) - Example: ***T'A'FM102.5** Tunes to 102.5 MHz FM
RSP	**None**

6.8 Tune to Sirius Station

This command will tune directly to the specified Sirius station. This will only work on tuner that has Sirius capability.

CMD	***T'x'SRs**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
s	Sirius Station: 1 to 255 - Example: ***T'B'SR14 t**unes to channel 14
RSP	**None**

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6.9 Tune to DAB Station

This command will tune directly to the specified DAB station. This will only work on tuner that has DAB capability.

CMD	***T'x'DABy,z,"s"**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
y	DAB Ensemble ID: 1 to 65535
z	DAB Is Secondary: 0 or 1 (primary or secondary designation)
s	String containing DAB component name (max 80 character length)
	Example: ***T'A'DAB0,1,"S1Sec"*** Refer to the 'Get DAB Channel List' section for details on how to retrieve DAB Ensemble IDs, DAB Component Names, and Secondary flag information from the NV-T2DAB
RSP	**None**

6.10 Tune to a Preset

This command tunes to the specified preset on the specified bank. Preset banks start numbering with 1. Each bank can contain 20 presets, numbered 1 through 20. This command will have no effect if the preset's band is disabled.

CMD	***T'x'PRESETyyy**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
yyy	Preset number. First digit is preset bank (1-5). Second and third digits are preset number inside bank (1-20)
	Example: ***T'A'PRESET14*** Tunes to preset 4 in the first preset bank
	Example: ***T'A'PRESET210*** Tunes to preset 10 in the second preset bank
RSP	**None**

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6.11 Tune Up One Step

This command will tune up by one step.

CMD	***T'x'TUNE+**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

6.12 Tune Down One Step

This command will tune down by one step.

CMD	***T'x'TUNE-**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

6.13 Seek Up

This command will seek up to the next valid station in the current band. If the current band does not have seek capabilities, this command will tune up one step.

CMD	***T'x'SEEK+**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

6.14 Seek Down

This command will seek down to the next valid station in the current band. If the current band does not have seek capabilities, this command will tune down one step.

CMD	***T'x'SEEK-**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

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6.15 Next Preset

This command will tune to the next higher station in the current band that is saved as a preset.

CMD	***T'x'PRESET+**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

6.16 Previous Preset

This command will tune to the next lower station in the current band that is saved as a preset.

CMD	***T'x'PRESET-**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

6.17 Change Band to AM

This command changes the band to AM on the NV-T2SIR/FAM. The frequency will be the last AM frequency used. The command is equivalent to cycling with the "Source" button until the AM band is selected. If the AM band has been disabled via the front panel or control pad, the NV-T2SIR/FAM will respond with the disabled response message.

CMD	***T'x'SRCAM**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

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6.18 Change Band to FM

This command changes the band to FM. The frequency will be the last FM frequency used. The command is equivalent to cycling with the "Source" button until the FM band is selected. If the FM band has been disabled via the front panel or control pad, the NV-T2SIR/FAM or NV-T2DAB will respond with the disabled response message.

CMD	***T'x'SRCFM**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

6.19 Change Band to Sirius

This command changes the band to Sirius. The station will be the last Sirius station used. The command is equivalent to cycling with the "Source" button until the Sirius band is selected. This will only work on tuner that has Sirius capability.

If the Sirius band has been disabled via the front panel or control pad, the NV-T2SIR will respond with the disabled response message. If a Sirius receiver is not connected to the tuner or it is in the process of powering-up, the NV-T2SIR will respond with the unavailable response message.

CMD	***T'x'SRCSR**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

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6.20 Change Band to DAB

This command changes the band to DAB. The station will be the last DAB station used. The command is equivalent to cycling with the "Source" button until the DAB band is selected. This will only work on tuner that has DAB capability (NV-T2DAB).

If the DAB band has been disabled via the front panel or control pad, the NV-T2DAB will respond with the disabled response message. If a DAB channel is not available, the NV-T2DAB will respond with the '???" response message.

CMD	***T'x'SRCDAB**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

6.21 Change to Next Available Band

This command changes to the next available band.

CMD	***T'x'SRC+**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

6.22 Get Channel Name for Current Station

This message can be used to query the channel name for the current station.

CMD	***T'x'CHAN**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**#T'x'CHAN"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current channel name (80 characters maximum)

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6.23 Get Category Name for Current Station

This message can be used to query the category name for the current station. This message is only valid on an NV-T2SIR tuner.

CMD	***T'x'CATEGORY**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**#T'x'CATEGORY"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current category name (80 characters maximum)

6.24 Get Now Playing Artist Name

This message can be used to query the title of the now playing artist. This message is only valid on an NV-T2SIR tuner.

CMD	***T'x'ARTIST**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**#T'x'ARTIST"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current artist name (80 characters maximum)

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6.25 Get Now Playing Song / Program Title

This message can be used to query the title of the now playing song or program.

CMD	***T'x'TITLE**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**#T'x'TITLE"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current title text (80 characters maximum)

6.26 Get Now Playing Album Name

This message can be used to query the name of the now playing album. This message is only valid on an NV-T2SIR tuner.

CMD	***T'x'ALBUM**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**#T'x'ALBUM"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current album text (80 characters maximum)

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6.27 Get Now Playing Composer Name

This message can be used to query the name of the composer of the now playing song or program. This message is only valid on an NV-T2SIR tuner.

CMD	***T'x'COMPOSER**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**#T'x'COMPOSER"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current composer text (80 characters maximum)

6.28 Get DAB Service Name

This message can be used to query the service name of the currently tuned DAB station. This message is only valid on an NV-T2DAB tuner.

CMD	***T'x'SERVICE**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**#T'x'SERVICE"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current composer text (16 characters maximum)

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6.29 Get DAB Component Name

This message can be used to query the name of the component name of the currently tuned DAB station. This message is only valid on an NV-T2DAB tuner.

CMD	***T'x'COMPONENT**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**#T'x'COMPONENT"y"**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y	String containing current composer text (16 characters maximum)

6.30 Get DAB Channel List

This message can be used to query the list of available channels on the NV-T2DAB tuner. This message is only valid on an NV-T2DAB tuner.

CMD	***T'x'DABLIST**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**#T'x'DABLISTy1,z1,"s1"** **#T'x'DABLISTyn,zn,"sn"** **#T'x'DABLIST0,0,""**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
y#	DAB Ensemble ID: 1 to 65535
z#	DAB Is Secondary: 0 or 1 (primary or secondary designation)
s#	String containing DAB component name (max 80 character length)
	Note: The response will return a list of all available channels. The end of the list is designated by the reception of the #T'x'DABLIST0,0,"" response.

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6.31 Scan for DAB Channels

This message can be used to query the name of the component name of the currently tuned DAB station. This message is only valid on an NV-T2DAB tuner.

CMD	***T'x'SCANDAB**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**#T'x'DAB SCAN COMPLETE**
Response Packet Breakdown	
x=A	Tuner A
x=B	Tuner B
	NOTE: The DAB Channel Scan may take several minutes to complete. The response message is not returned until the channel scan has completed.

6.32 Suspend Tuner Status Messages

This command is will tell the Tuner to suspend its sending of status messages out the RS232 port. This means that nothing will be reported. Even issuing commands will not generate any status updates.

CMD	***OFFLINE**
RSP	**None**

6.33 Resume Tuner Status Messages

This command is will tell the tuner to resume its sending of status messages out the RS232 port.

CMD	***ONLINE**
RSP	**None**

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7 Other Commands

All commands must be addressed to only one of the two tuners in the NV-T2SIR/FAM or NV-T2DAB. All tuner commands begin with *T'x' (x is either A or B indicating either Tuner-A or Tuner-B). These emulate individual button pushed and are for interactive use. The results of one command depend on the commands before and after.

7.1 '1' Button

This command is equivalent to pushing '1' button. If the tuner is currently in direct tuning mode, the command will be interpreted as another digit in the frequency otherwise a preset will be initiated.

CMD	***T'x'ONE**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

7.2 '2' Button

This command is equivalent to pushing '2' button. If the tuner is currently in direct tuning mode, the command will be interpreted as another digit in the frequency otherwise a preset will be initiated.

CMD	***T'x'TWO**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

7.3 '3' Button

This command is equivalent to pushing '3' button. If the tuner is currently in direct tuning mode, the command will be interpreted as another digit in the frequency otherwise a preset will be initiated.

CMD	***T'x'THREE**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

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7.4 '4' Button

This command is equivalent to pushing '4' button. If the tuner is currently in direct tuning mode, the command will be interpreted as another digit in the frequency otherwise a preset will be initiated.

CMD	***T'x'FOUR**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

7.5 '5' Button

This command is equivalent to pushing '5' button. If the tuner is currently in direct tuning mode, the command will be interpreted as another digit in the frequency otherwise a preset will be initiated.

CMD	***T'x'FIVE**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

7.6 '6' Button

This command is equivalent to pushing '6' button. If the tuner is currently in direct tuning mode, the command will be interpreted as another digit in the frequency otherwise a preset will be initiated.

CMD	***T'x'SIX**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

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7.7 '7' Button

This command is equivalent to pushing '7' button. If the tuner is currently in direct tuning mode, the command will be interpreted as another digit in the frequency otherwise a preset will be initiated.

CMD	***T'x'SEVEN**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

7.8 '8' Button

This command is equivalent to pushing '8' button. If the tuner is currently in direct tuning mode, the command will be interpreted as another digit in the frequency otherwise a preset will be initiated.

CMD	***T'x'EIGHT**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

7.9 '9' Button

This command is equivalent to pushing '9' button. If the tuner is currently in direct tuning mode, the command will be interpreted as another digit in the frequency otherwise a preset will be initiated.

CMD	***T'x'NINE**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

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7.10 '0' Button

This command is equivalent to pushing '0' button. If the tuner is currently in direct tuning mode, the command will be interpreted as another digit in the frequency otherwise a preset will be initiated.

CMD	***T'x'ZERO**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

7.11 Enter

This command is equivalent to pushing 'OK' button on the NV-T2SIR/FAM or NV-T2DAB. It requests a tune of a previously entered channel or preset.

CMD	***T'x'ENTER**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

7.12 Preset Entry Mode

This command will temporarily enter preset entry mode. This means that successive numeric buttons will be interpreted as a preset number instead of a direct frequency. This mode is disabled when a valid preset is entered or after a 5 second timeout.

CMD	***T'x'PRE**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

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7.13 Direct Frequency Entry Mode

This command will change numeric keys into “direct frequency entry” mode. Note that direct frequency entry mode is the default mode, so this command is only necessary to force direct frequency entry mode when currently in the temporary preset entry mode.

CMD	***T’x’DIR**
Command Parameters	
x=A	Tuner A
x=B	Tuner B
RSP	**None**

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