



A10-TX
Digital Transmitter
— User Guide —



Copyright / Doc Rev History Info

Model A10-TX. See separate documentation for A10-TX-US model.

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Revision	Date	Description
1A	Dec 2017	Initial Publication
1B	Feb 2018	Added note re: Bluetooth remote range
1C	Mar 2018	Edits made in sections: Specifications and Certifications
1D	Apr 2018	Added v1.04 change (i.e. model A10-TX-D to Specs)
1E	May 2018	Added v1.05 change (i.e. Orientation setting)
(1F) 2A	July 2018	Minor edits (v2.00)
2B	Nov 2018	Added v2.50 change (i.e. User Groups)
3A	Jun 2019	Added v2.70 changes (Mute Button and Mute function)
3B	Jan 2020	Added v2.80 changes (i.e. Locking/Power button changes)
3C	Mar 2020	Updates for v2.90 (New RF overload indicator, conform to CSV)
4A	Apr 2022	Updates for v5.00 (Modulation and SD-Utility)
4B	June 2022	Update for v5.10 new Frequency icon

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Overview

- Low-noise, studio-grade balanced input for microphones and line level inputs with analogue limiter and 48 V phantom power.
- State-of-the-art 100% digital long-range modulation delivers the longest transmission distance of any system on the market.
- Standard and long-range modulations offer full bandwidth (10 Hz – 20 kHz), ultra-low distortion, and high dynamic range.
- Integrated digital recorder with ultra-accurate timecode generator.
- Records to removable microSD cards.
- Simultaneous wireless transmission and recording.
- Built-in Bluetooth® to remotely control the A10-TX from an Android or iOS device using the A10-TX Remote app.
- Powered by two AA (LR6) batteries,

Digital wireless for today and tomorrow.

The A10 Digital Wireless System is designed for the technical demands and requirements of today's RF-hostile, multi-channel productions. The A10-TX and A20-Mini digital transmitter and A10-RX two channel receiver deliver broadcast-quality audio and reliable digital RF performance with an easy, multi-system setup.

The A10's proprietary digital RF topology and Advanced Digital Diversity System is the result of years of research, laboratory experimentation, and customer experience. The result is a wireless link with full 20 kHz audio bandwidth, high dynamic range, ultra-low distortion, an extremely low 2 millisecond end-to-end delay in Standard modulation. The A10 System allows the user to operate up to 20 channels in an 8 MHz TV channel, maximizing spectrum efficiency.

With firmware version 5.00, the A10/A20 Wireless System delivers the longest transmission distance of any system on the market.¹ The state-of-the-art, 100% digital long-range modulation offers the same great audio quality (10 Hz – 20 kHz) as our Standard modulation scheme with a longer range for both line-of-sight and heavy multipath transmission.

The core of the A10-TX transmitter is its low-noise, high-dynamic-range analog input. It accepting signals from low-level lavalier microphones to balanced line-level. The 3-pin LEMO input offers analogue limiters, 5 volt bias for lavalier microphones, as well as 12 and 48 volt phantom power for balanced microphones.

The A10-TX transmitter includes an integrated high-quality digital recorder. Timecode-stamped files are recorded to removable microSD cards. Free Mac and Windows software SD-Utility converts the proprietary .mic files into monophonic, 24-bit, 48 kHz broadcast WAV files with its associated timecode.

¹ When comparing systems with same transmit power, same antennas, and same transmission frequency.

System Quickstart

The A10 Digital Wireless System is easy to use. Follow the steps below for basic setup and operation.

At the Receiver

1. Fit the included straight and right-angled antennas to the A10-RX receiver.
2. Connect the receiver to a power source. It will immediately power on.
3. Using the scanning tool in the Selection menu find an available open frequency. If multiple wireless systems are in use, make certain to keep frequencies least 400 kHz apart.
4. Connect the audio output from channel 1, channel 2, or both to an audio input on a mixer, recorder, camera, or PA system.
5. Ensure that the receiver audio output type and level are set based on the input type.

At the Transmitter

1. Attach the straight antenna to the A10-TX.
2. Attach an audio source to the 3-pin LEMO input connector.
3. Insert AA batteries into the A10-TX battery compartment and power on the unit with the red On/Off button.
4. Set the audio input type to set to match the connected input.
5. Set the transmitting frequency on the A10-TX match the frequency set on the A10-RX receiver channel.
6. Adjust the audio gain according to your environment and source, taking care not to overload the signal. This is indicated by a red LED.

At the Receiver

1. Confirm that the blue channel power LED is solid blue.
2. Confirm that the RF status LEDs and display indicate good RF strength.
3. Confirm that the audio level at the receiver corresponds to the audio connected to the A10-TX input.
4. The system is now ready for use.

Connectors, Controls Description

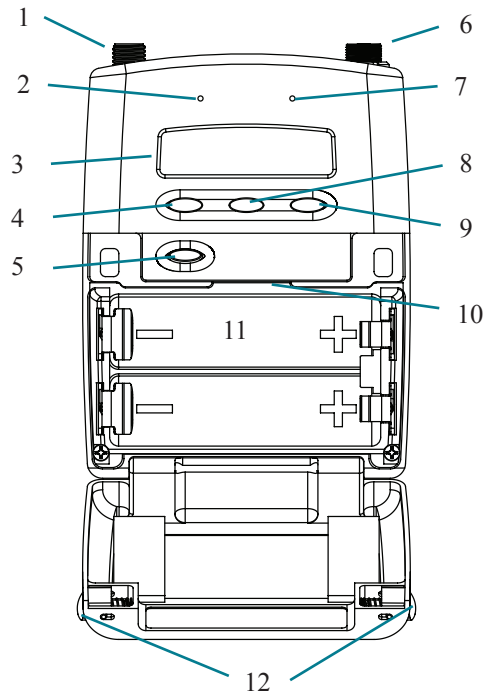


Figure 1: A10-TX transmitter with open battery compartment

1 -Antenna Socket

SMA connector, 50 ohm, connects to included 1/4-wave whip antenna.

2 -Power LED

Blue LED illuminates when unit is powered on and screensave is active. Solid blue LED can be turned off in the Menu. The LED flashes blue when unit is in Sleep mode.

3 -Display

OLED screen. Screen automatically turns off during operation for battery savings.

4 -Left Button

Moves selection in menu to the left, or decrements values. When Mute Button option is On, press and hold to mute/unmute.

5 -Power Button

Press to power on the unit. Press and hold to power down the unit. Press and hold while holding Right button to lock/unlock the unit.

6 -Audio Input Connector

Balanced LEMO-3 connector. Accepts multiple audio input types including unbalanced lavalier, balanced microphone, balanced line. Also used for timecode input and output.

7 -Input Overload LED

Red LED illuminates when input signal is 3dB before clipping.

8 -Menu Button

Enters the menu selection. Also used to select options in the menu.

9 -Right Button

Moves menu selection to the right, or increments values.

10 - microSD Card Slot

The card slot is used to record files and load firmware updates on the unit.

11 - Battery Tray

Accepts two AA LR6 batteries.

12 - Battery Door Latch

Press both latches to open the battery door.

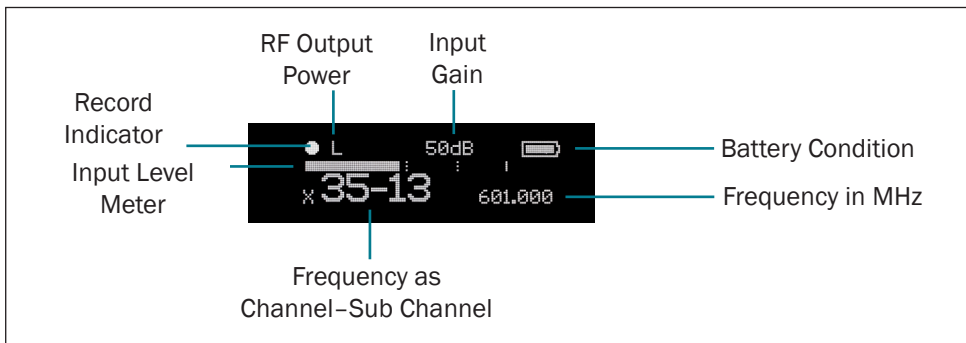
Powering

The A10-TX is powered by two AA (LR6) batteries. For the longest runtime, use Lithium primary cells. The transmitter also accepts alkaline primary and Nickel Metal Hydride rechargeable batteries. Select the battery type used in the menu to ensure that the battery condition is indicated accurately in both the transmitter display and receiver.

1. Open the battery compartment by simultaneously pressing both mechanical releases of the battery door latch. (See Figure 1.)
2. Insert two fresh AA type (LR6) batteries. Note correct battery polarity.
3. Momentarily press the red On/Off button. The blue power LED will light and the display will illuminate. The transmitter is now powered on.
4. To turn the transmitter off, press and hold the red button until the “turning off” progress bar completes and the unit goes dark.

Main Display

After powering on the A10-TX the display shows the following.



- **RF Output Power** - three power levels are indicated, **Low** (10 mW), **Medium** (20 mW), **High** (50 mW)
- **Input Gain** - gain applied to the input source, in dB
- **Battery Condition** - shows the battery voltage level of the transmitter batteries, five-segments
- **Frequency in MHz** - the transmitting frequency is shown
- **Frequency in Region-Channel-Sub Channel** - the transmitting frequency is shown in region, channel, and sub channel.

↳ *X, Y, and Z regions are selected by the TV Channel Map setting.*

- **Input Level Meter** - shows audio input signal level
- **Record “dot” Indicator** - flashes in top left corner when recording is underway

Press the Left button, to view the name of the transmitter. The serial number of the transmitter is the default name of the transmitter. The transmitter name may be changed via the A10-TX Remote app.

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By pressing the Right button, the user can view the recording status, which displays the current file name, time elapsed, time remaining, timecode and current frame rate.

Menu Control and Menu Selections









The A10-TX transmitter is controlled through its menu. Enter the menu via the centre Menu button. Once in the menu, the Left and Right buttons toggle among options, and the Menu button makes the selection.

The Menu Lock feature on the A10-TX provides a way to lock the buttons. Press and hold the Power button while holding the Right button to lock/unlock access to menu settings. When menu access is locked, a Lock icon (shown right) appears in the main display.








↪ *When locked, the Power button remains active.*







Main Menu

Selections	Icon	Description	Options
Exit		Returns to the main display screen.	
Frequency		Sets the transmitter's frequency. Frequency selection and channel increments change based on the region of operation the unit is set.	<ul style="list-style-type: none"> • TV Channel • Sub Channel • Tune Frequency increments in 25 kHz steps
Audio Gain		Controls the gain range of the audio input. Gain range is input type dependent. Gain control is in 1 dB increments.	<ul style="list-style-type: none"> • Lavalier: 0 dB to +40 dB • Line setting: -10 to 16 dB • Mic setting: 16 to 40 dB w/20dB pad • Mic setting: 36 to 60 dB
Audio Setup		Enters the Audio Setup sub-menu.	<ul style="list-style-type: none"> • Low Cut • Limiter • Lav / Mic / Line • Mute Button
Record / TC		Enters the Record / TC sub-menu.	<ul style="list-style-type: none"> • Record / Stop • File Info • TX / Record Mode • Timecode • Frame Rate
Privacy		<p>Activates transmission privacy with a four-number key set on the transmitter and receiver. When active, the receiver must be set to the corresponding key for audio to pass.</p> <p>New Key option generates a key. The key symbol is displayed on main default screen when privacy is active.</p>	<ul style="list-style-type: none"> • New Key - generates new key • Off - encryption cleared, set to ----, not active
Settings		Enters the Setting sub-menu.	<ul style="list-style-type: none"> • Bluetooth • RF Power • Modulation • Battery Type • User Groups • TV Ch Map • Display
System		Enters the System sub-menu.	<ul style="list-style-type: none"> • Sleep • Lock Menu • Set Time/Date • Format Card • Restore • Info • Update Firmware










Audio Setup Menu

Selections	Icon	Description	Options
Exit		Returns to the main menu.	
Low Cut		Activates a low frequency cut filter to the audio input. 18 dB/octave	<ul style="list-style-type: none"> • Off • 40 Hz • 60 Hz • 80 Hz • 100 Hz • 200 Hz
Limiter		The limiter reduces peak levels of the analogue audio input before digital conversion to prevent audio overload. The recommended setting is On.	<ul style="list-style-type: none"> • On • Off
Lav / Mic / Line		Selects the input type at the LEMO-3 connection. ↪ <i>For Mic/Line, the AC-BAL-XLR accessory is required.</i>	<ul style="list-style-type: none"> • Lav • Mic • Line • P48 - mic level with 48 V phantom • P12 - mic level with 12 V phantom
Mute Button		Enables or disables mute button shortcut.	<ul style="list-style-type: none"> • On - Transmitter mute can be toggled on or off by holding Left or Right button for 1 second. • Off - Shortcut is disabled.





Record / TC Menu

Selections	Icon	Description	Options
Exit		Returns to the main menu.	
Record		Select Record to enter Record mode (This begins recording). The Record status is remembered across sleep and power cycles.	<ul style="list-style-type: none"> • Record (displayed while Stopped) • Stop (displayed while Recording)
File Info		Shows important information about the file being recorded.	<ul style="list-style-type: none"> • Time Elapsed • Time Remaining • Timecode • File Name
TX / Record Mode		Select the operational mode of the A10-TX.	<ul style="list-style-type: none"> • TX / Rec - simultaneous wireless transmission and recording • Rec Only - recording function only
Timecode		Enter Timecode menu. Timecode values from either the attached external timecode generator or the internal generator are shown. ↪ <i>While in this menu, wireless transmission is suspended, and timecode may be sent via AC-TCBNC-OUT or AC-TCLEMO accessories.</i>	<ul style="list-style-type: none"> • Time of Day • External • Jam - applies external timecode to the internal generator. <p>↪ <i>Jamming to an external timecode source requires the AC-TCBNC-IN or AC-TCLEMO accessories.</i></p>
Frame Rate		Sets the frame rate of the timecode clock. Select a rate that matches the incoming timecode rate. ↪ <i>Rejam is required after setting frame rate.</i>	<ul style="list-style-type: none"> • 23.98 • 24 • 25 • 29.97 • 29.97 DF • 30 • 30 DF









Settings Menu

Selections	Icon	Description	Options
Exit		Returns to the main menu.	
Bluetooth		Toggles Bluetooth On or Off. Bluetooth offers external control of the A10-TX via the A10-TX Remote App (for iOS or Android).	<ul style="list-style-type: none"> • On • Off
RF Power		Sets the RF output power of the transmitter.	<ul style="list-style-type: none"> • Low - 10 mW • Med - 20 mW • High - 50 mW
Modulation		<p>Selects Standard or Long Range Modulation.</p> <p> <i>The Modulation setting must match between the A10-TX and the A10-RX in order for the transmitted signal to be received.</i></p>	<ul style="list-style-type: none"> • Std (Standard) • LR (Long Range)
Battery Type		For accurate display of battery condition on the transmitter and receiver select the battery type from the available options.	<ul style="list-style-type: none"> • Alkaline • NiMH • Lithium
User Groups		Sets whether transmitter utilizes user groups (User) or manual frequency selection (Factory).	<ul style="list-style-type: none"> • User <ul style="list-style-type: none"> - Use - Load New • Factory
TV Ch Map		Selects the TV channel spacing in MHz to ensure channel selection corresponds to a specific geographic region. See frequency chart.	<ul style="list-style-type: none"> • X – 6 MHz • Y – 7 MHz • Z – 8 MHz
Display		Enters the Display sub-menu.	<ul style="list-style-type: none"> • Brightness • Blue LED • Orientation

Display Sub-Menu

Selections	Icon	Description	Options
Exit		Returns to the main menu.	
Brightness		Sets the brightness of the OLED screen	Five increments, 1–5, 5 is brightest
Blue LED		If set to On, the LED illuminates blue when powered on and screensaver is active.	<ul style="list-style-type: none"> • On • Off
Orientation		Sets orientation of display — ideal for when transmitter is attached upside down on boom pole.	<ul style="list-style-type: none"> • Normal (default) • Flipped

System Menu

Selections	Icon	Description	Options
Exit		Returns to the main menu.	
Sleep		When selected, the A10-TX goes into low-power Sleep mode. The blue LED flashes when the unit is in a sleep state. The unit returns to normal power operation when any button is pressed or the transmitter is activated from the A10-TX Remote App.	<ul style="list-style-type: none"> • Sleep
Lock Menu		Activates a button lock to prevent unintentional changes to menu selections.	<ul style="list-style-type: none"> • Unlock • Lock
Set Time / Date		Sets the time and date of the realtime clock. This value is applied to any recorded files.	
Format Card		Deletes all files and data present on the inserted microSD card and prepares it for new recordings.	OK - begins formatting process.
Restore		The restore function allows the user to reset the A10-TX to the factory default settings.	
Info		Shows numerous attributes of the transmitter.	<ul style="list-style-type: none"> • Serial Number • Firmware Revision • Frequency Band
Update (Firmware)		Updates the firmware of the transmitter using a firmware .PRG file on the microSD card.	

Basic Operation

Frequency Selection

The A10 Digital Wireless System operates in the UHF frequency band from 470 to 694 MHz. There are three models (two in some geographic markets) of the A10-TX transmitter to cover this frequency range.

Multiple A10 Digital Wireless systems can be used simultaneously on nearby adjacent frequencies without worry of intermodulation interference since the A10 Digital Wireless System and its digital RF transmission is inherently immune to intermodulation. Systems can be used together when separated by at least 400 kHz. Use the scan tool on the A10-RX receiver to search for available frequencies.

↳ *When using A10 Digital Wireless systems in conjunction with analogue RF systems, an intermodulation plan needs to be addressed for analogue receivers.*

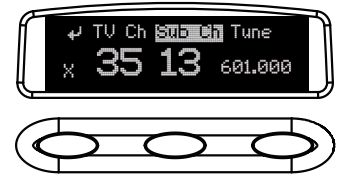
Channel, Sub Channel, Tune

To simplify frequency selection, frequencies are divided into channels and sub channels. Frequencies corresponding to channels and sub channels depend on the TV Channel Mapping selected in the Systems menu. Three options are available, 6, 7, and 8 MHz spacing, X, Y, and Z respectively. These three settings generally correspond to three main geographic regions, USA, Australia/New Zealand, and Europe, respectively.

- **Channel** - corresponds to broadcast television channels used in geographic regions. Depending on the selected channel mapping, channels cover 6, 7, or 8 MHz.
- **Sub Channel** - channels are divided in 400 kHz increments called sub channels to speed up frequency selection. The number of sub channels depends on the channel mapping selected.

- **Tune** - specific frequencies within the transmitter’s tuning range can be selected in 25 kHz increments.

To change TV channels, use the Left button to highlight the TV Channel. Press the centre Menu button to select the TV channel. Select Sub Channel until the desired sub-channel is selected.



↳ *Remember, for a given channel / sub channel, the actual frequency will change depending on the TV Channel Mapping setting.*

The frequency is displayed with an asterisk (*) when the tune value does not fall within the pre-allocated sub channel.

See the [Frequency Tables](#) in this guide for a complete list of frequencies corresponding to the channel and sub channel selections.

Modulation

Modulation can be set to Standard (Std) or Long Range (LR) in *Menu > Settings > Modulation*. When compared to Standard Modulation, Long Range Modulation has better sensitivity. This increased sensitivity results in more robust performance in challenging RF environments.

↳ *The Modulation setting must match between the A10-TX and the A10-RX in order for the transmitted signal to be received.*

Audio Input and Control

The A10-TX input accepts a wide range of audio input types, including lavalier microphones, balanced microphones, and balanced and unbalanced line level signals. 12 V and 48 V phantom power is available for balanced microphones. The Selection Menu offers options for input type, limiters, and low cut filter.

Lavalier Microphones

Unbalanced lavalier microphones wired in two-wire mode, are directly compatible with the A10-TX input. When connected, the A10-TX auto-detects the presence of a lavalier microphone.

Balanced Microphones with Phantom

Balanced microphones, including phantom powered shotgun microphones, can be connected to the A10-TX. 12 V and 48 V phantom power are available for microphones requiring it. For microphones that can properly operate on 12 V phantom, such as the Schoeps CMIT, select 12 V phantom to significantly increase battery runtime.

Line-Level Sources

Wireless systems are often used as “camera hop” systems. For most camera hop applications the output of a field mixer is connected to a wireless transmitter. The wireless receiver output is connected to the camera input. The line level input selection simplifies using the A10 System as a camera hop. Select Line in the Selection Menu to accept balanced or unbalanced line level inputs.

↳ *To connect balanced microphone or line level sources to the A10-TX, a cable wired as described in the specifications or the AC-BALXLR cable is required. This connects the shell of the LEMO connector to pin-1 of an XLR connector.*

Audio Level Control

Input levels are controlled from the Audio Gain option in the Selection Menu. The gain range available is source-dependent as follows:

- Lavalier setting: 0 dB to 40 dB, 1 dB increments
- Line setting: -10 to 16 dB, 1 dB increments
- Mic setting (with 20 dB pad): 16 to 40 dB, 1 dB increments
- Mic setting (with no pad): 36 to 60 dB

Set input levels so that the limiter is active only on the strongest peaks.

Mute Button

When the Mute Button function is enabled, holding the Left button for 1 second toggles Mute on or off. While Muted, the transmitter LED flashes red. The paired Receiver channel display Muted on the channel screens. Audio is muted at the transmitter input, this means both recorded and transmitted audio will be silent.

Antenna

The SMA antenna connector is used to mount the included 1/4-wave whip antenna. The use of any other type is forbidden.

For best operation and transmission power with the included 1/4-wave antenna keep it in the free field. If worn on a body keep the antenna away from direct contact with the wearer's body.

Recording

The A10-TX incorporates a data recorder that stores encoded digital waveform and timecode data in proprietary, data-compressed binary MIC files. The MIC files generated directly on the A10-TX are not usable until converted. Sound Devices provides a free Windows and Mac app called SD-Utility that converts MIC files into Broadcast WAV files. See SD-Utility File Conversion for more details.

After conversion, a usable 48 kHz digital audio WAV file is made. Files recorded in the A10-TX are approximately 1/3 the size of WAV files generated from corresponding MIC files, saving valuable space on the microSD card. Files have a maximum duration of six hours. After six hours the file is automatically split into another recording. Resulting WAV files are sample accurate across file splits.

To begin recording on the A10-TX:

- » Select Menu > Record/TC > Record.

Recording can also be initiated from the A10-TX Remote App. The default file name of the MIC file is the serial number of the A10 transmitter; however, the file name may be renamed via the A10-TX Remote app. For more information, see [Remote Control](#).

An indicator flashes in the display to show that the A10-TX is recording. This indicator is also shown on the A10-RX, in the TX data screen, accessed by pressing the Right button on the A10-RX receiver.

From the main screen on the transmitter, pressing the Right button shows record status information, such as file name (when recording), file duration, remaining record time, timecode values, and frame rate.

File Storage

Proprietary MIC files generated by the A10-TX are stored on FAT32-formatted microSD cards. The microSD card slot is located in the battery compartment and is accessed by removing the battery nearest the display.

If no microSD card is inserted in the unit, a 'No card detected' message is indicated.

New cards, or cards with material that can be overwritten, can be formatted in the A10-TX.

↳ **Formatting deletes all existing recordings present on the card.**

There is no provision to manage files from the A10-TX. File management, including file renaming and individual file deletion, is done when the microSD card is mounted to a computer via a card reader.

Timecode and Time-of-Day Clocks

The A10-TX includes high-precision internal clocks to maintain time-of-day/date and SMPTE timecode. These clock runs continuously when AA batteries are in the unit and draw negligible current (less than 1 uA). The A10-TX design incorporates a supercapacitor to power the time-of-day clock for several days in the absence of batteries. The supercapacitor reaches full charge when batteries have been in the unit for five minutes.

Time-of-Day Clock

The time and date clock holds time and date for files recorded on the A10-TX, and can be used for the Time of Day timecode value.

To set time and date:

1. Enter the Selection Menu option real time clock. (*Menu > System > Set Time/Date*)
2. Use the centre Menu button to move between year, month, day, hours, and minutes. Use the Left and Right buttons to change the values.
3. Press the centre Menu button to select the Return arrow and view current values. Press again to exit.

External LTC Jamming

External LTC timecode can be applied to the A10-TX to synchronize its internal timecode clock. Synchronization of timecode clocks is called “jam syncing”. To jam the A10-TX timecode clock, navigate to *Menu > Record/TC > Timecode* in the Selection menu. Connect an LTC timecode source to the 3-pin LEMO™ input connector using either the AC-TCLEMO or AC-TCBNC-IN cables. The A10-TX will jam its timecode clock from the incoming timecode signal.

↳ *While in the Timecode menu, RF transmission and recording are deactivated on the A10-TX.*

The timecode clock remains accurate when the transmitter is powered or in standby mode. When the unit is powered down accurate timecode is held for six hours. After six hours the timecode clock is reset to its default value.

Timecode Output

The A10-TX 3-pin LEMO connector also functions as a timecode output connection. In the Selection menu navigate to *Menu > Record/TC > Timecode*. While in this screen timecode can be sent out of the A10-TX using the AC-TCLEMO or AC-TCBNC-OUT cables.

Upon exiting the timecode menu the 3-pin LEMO reverts back to the selected lavalier, microphone, or line input. RF transmission is reactivated and recording is available.

Remote Control

The A10-TX can be remotely controlled from an Android or iOS device running the A10-TX Remote app. The app is available as a free download from the Google Play store and iOS App store, respectively.

With the A10-TX Remote app, you can:

1 - Change the transmitter's name; the serial number is used at default. When using User Groups, the user name is displayed.

2 - View timecode and frame rate

3 - Monitor Sleep status, Battery status, Bluetooth signal strength, Record status, Mute Status

☞ *Touch the Circle-I icon to send identification signal to the transmitter.*

4 - Turn Sleep mode On/Off

5 - Mute/Unmute the transmitter

6 - Start/Stop recording at the transmitter

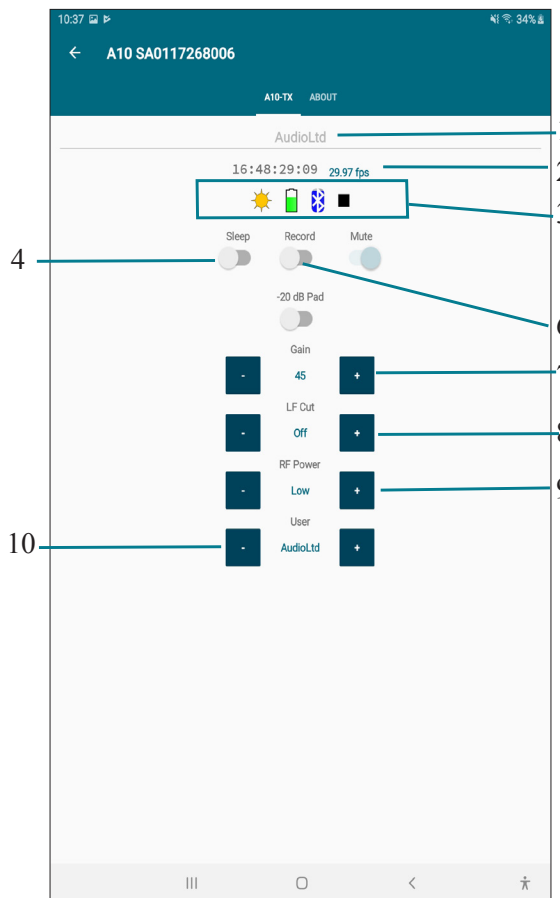
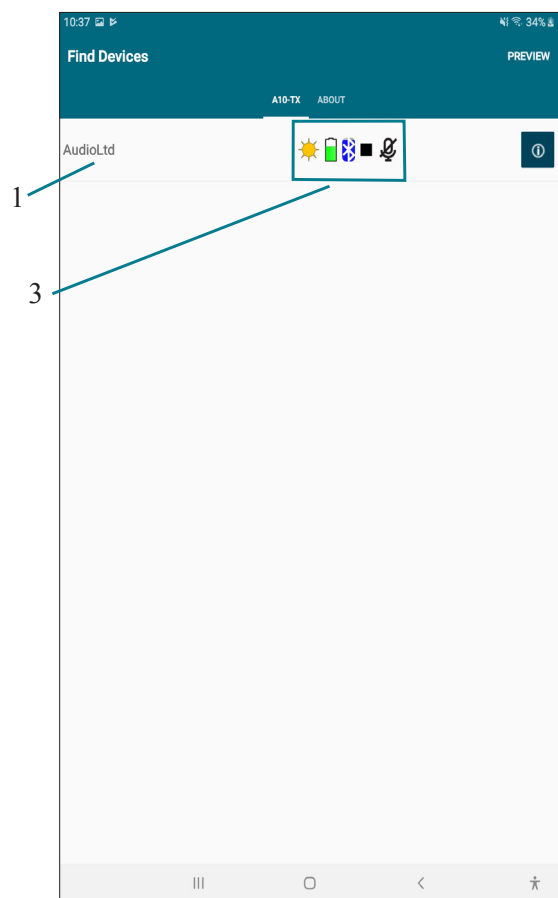
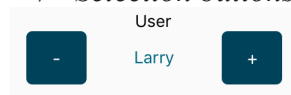
7 - Adjust Gain

8 - Set the low-cut filter

9 - Adjust RF Power

10 - Change TV Ch, Sub Ch and Frequency

☞ *When a user group is loaded, the TV Ch/ Sub Ch/Frequency section changes to User, displaying the user names between + / - Selection buttons as shown below:*



Touch the name (left image) to access more information (right image) about the transmitter.

☞ *The Bluetooth operational range is very short. Maintain close proximity to the transmitter for reliable connection.*

User Groups

The User Groups feature allows for easy, intuitive naming of specific frequencies for each A10 transmitter used on set, and grouped together for faster tuning. The operator of an A10 receiver may then easily switch between transmitters by choosing alphanumeric names, such as “Jack” and “Jill”, instead of having to remember and manually tune to different, specific numerical frequencies.

For instance, a producer or director may want to monitor several different actors’ wireless transmitters. Rather than having to keep a list of all of their frequencies, each transmitter may be pre-assigned a frequency and given an actor’s name. Then only those pre-assigned frequencies that have been named will be available as possible options for tuning.

User Group files are created using SD-Utility—a Windows and Mac application available for free download from the Sound Devices website.

<https://www.sounddevices.com/download/?prod=sd-utility>

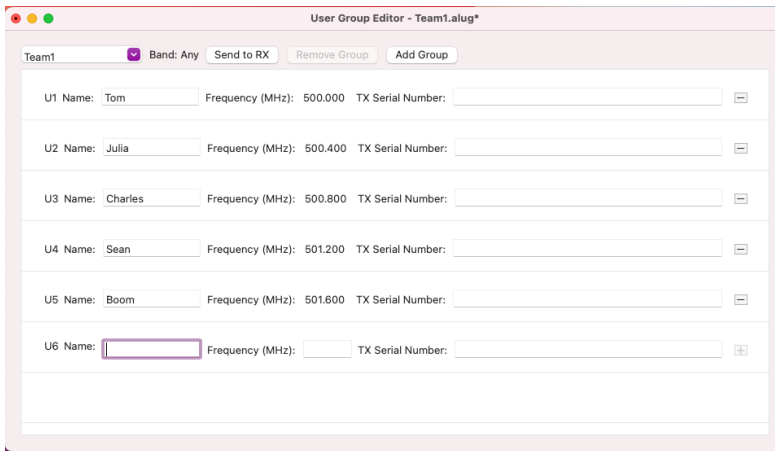
Once created, the User Group files are uploaded to A10 transmitters and receivers.

To create a new user group:

1. Open SD-Utility on your computer.
 2. Do one of the following:
 - On a Mac, select User Group File > New.
 - On a PC, select File > User Groups > Create a new file.
 3. Name the new group.
 4. Select a range of frequencies via the Band drop-down list. Options include A, B, C, D and Any. This will automatically restrict users in the group to the frequencies within that band. Selecting Any will make frequencies within all bands available for assignment to users in the group.
- ↳ *All A10-TX will have the available bands listed on the printed label inside the battery compartment door as well as displaying the frequencies capable of being generated by the transmitter in Menu > System > Info.*
5. Select OK. The User Group Editor screen appears with fields for the first user (U1) available.
 6. Enter a Name and Frequency for U1 in the fields provided. The A10-TX transmitter’s serial number is optional.

Entry of ineligible frequencies (or characters) will cause the text in the field to appear red. SD-Utility automatically fills in .000 as the subchannel variable for frequencies entered as a whole number. SD-Utility automatically follows the best-practice method of spacing adjacent transmitters by at least one subchannel, preventing possible interference from other transmitters.

7. Click Add (on a PC) —or the Plus (+) button on a Mac— to add the user to the group. This also adds a new line for the next user (U2, U3, etc). Each user in a group can be given a name and frequency, which after upload, will then be displayed on A10 receivers and transmitters. Each group can have up to 32 users.



SD-Utility supports the creation of up to eight user groups, each with a max of 32 users, per Audio Limited User Group (ALUG) file.

To add additional user groups:

1. In SD-Utility, select Add Group.
2. Name the new group and select the band of frequencies for the group.
3. Add users (defining name and frequencies) to the group.

Audio Limited User Group files (ALUG) may be saved for future use and modification. When saving the ALUG file, SD-Utility will default the file name to the first User Group name in the drop-down list.

To load an ALUG file into SD-Utility:

1. In SD-Utility, select User Group File > Open.
2. Choose an ALUG file on your computer.

To remove a user group:

1. In SD-Utility, select a User Group in the drop-down list.
2. Select Remove Group.

Loading User Groups onto A10 Transmitters

A user group is transferred to the A10-TX via the microSD card inserted into the transmitter.

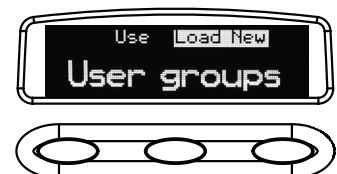
↳ For instructions on sending a user group to A10 receivers, see the A10-RX User Guide.

To load a user group on an A10-TX:

1. If the microSD card has not been formatted by the transmitter already, do so by inserting it into the transmitter and select System > Format Card > OK.
2. Remove the microSD card from the transmitter and insert it into your computer.
3. Drag and drop the entire ALUG file to the microSD card.

↳ Saving an ALUG file from the SD-Utility application only saves the user group selected from the drop-down list.

4. Eject the microSD card and insert it back into the transmitter.
5. Press the centre Menu button, then select Settings > User Groups > User > Load New.



- Use the left and right buttons to navigate through the available User Groups. Press the centre button to select and load the user group.

With a user group loaded, the transmitter's Frequency control changes between different users in the group and their pre-assigned frequencies.

To dial in a specific user (and its frequency):

- Press the center Menu button on the transmitter.
- Select Frequency.
- Press the left or right buttons to navigate through available user names, then press the centre button to select the user names. The frequency appears along with the name and user number (1-32).



↪ *While in User mode, only user group frequencies are selectable. To revert back to factory frequency selection, set Menu > Settings > User Groups to Factory.*

Firmware Updates

Periodically Sound Devices issues new firmware for the A10-TX transmitter. Make certain to register your product at the Sound Devices website to receive firmware update notifications. Firmware is installed on the A10-TX using the A10-TX menu. Download the latest firmware PRG from the Sound Devices website at:

<https://www.sounddevices.com/download/>

A Change List of new features for the latest firmware can also be found on this webpage..

To update firmware:

- Download the new firmware PRG update file from the Sound Devices website and copy the file onto an approved microSD card that has been formatted in the A10-TX.
- Insert the microSD card in the unit.
- Insert fresh AA batteries in the unit.
- Power on the A10-TX. Then Enter the System menu and choose Update. The unit will indicate the revision of firmware to update.
- Confirm that you want to update the unit. The update process begins after confirmation.
- Do not power down the unit until instructed to do so. When the update process has completed the following message displays on the screen:
Update Success
Unit will power down.
OK

Press the centre button to select 'OK'. The A10-TX automatically powers off.

- Press the red power button to power on the A10-TX. Verify the revision of firmware on the unit from Menu>System>Info.

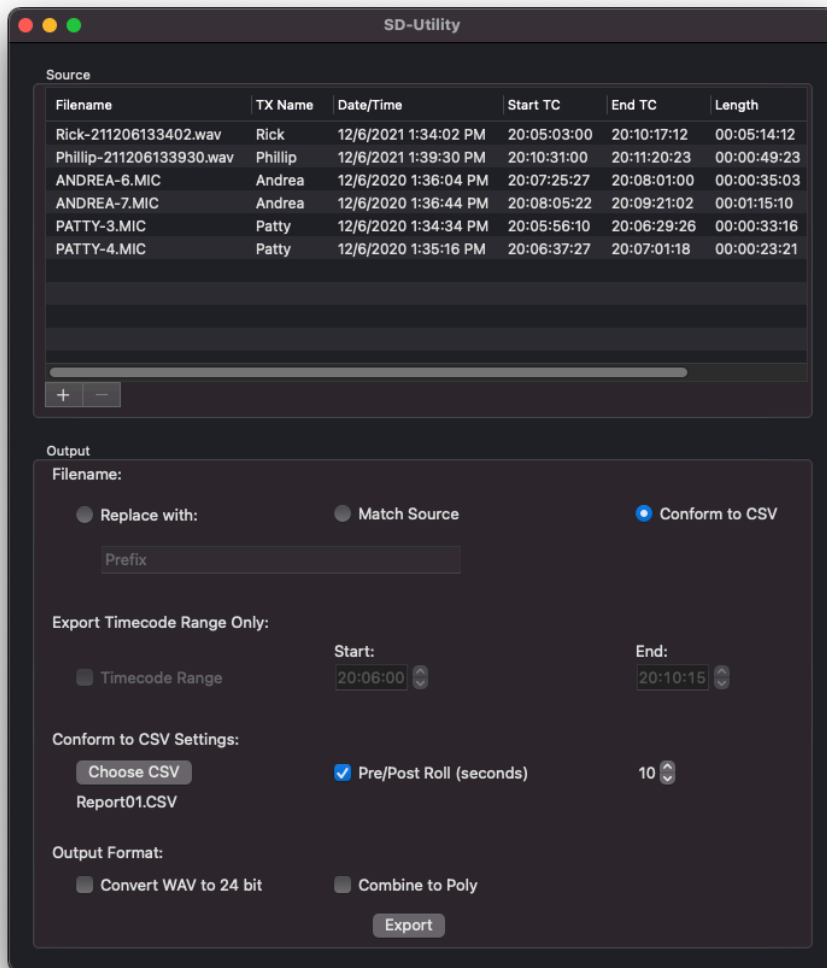
SD-Utility File Conversion



Sound Devices SD-Utility is a companion application for MacOS and Windows. This application can be used to process MIC files recorded by the A10-TX into standard Broadcast WAV files. The application offers various export options to suit to the given workflow.

A10-TX MIC files can be renamed, snipped by timecode values, conformed to a CSV Sound Report, exported as WAV, and more.

SD-Utility is also a companion application for the Audio Ltd A10-RX and the Sound Devices A20-Mini. For details specific to those products, please refer to their respective user guides.



Installing SD-Utility

1. Download the SD-Utility Installer for MacOS or Windows from: <https://www.sounddevices.com/download/?prod=sd-utility>
2. Open the installer and install the application by following the on-screen instructions.

Minimum operating requirements:

MacOS 10.11+, 64-bit

Windows 10+, 64-bit

Importing Files into SD-Utility

SD-Utility accepts monophonic WAV and RF64 WAV files recorded by the A20-Mini or MIC files recorded by the Audio Ltd A10-TX. There are three methods for importing files into SD-Utility.

- Drag-and-drop WAV or MIC files or volumes/folders containing MIC and/or WAV files into the Source window.
- Navigate File > Add and select MIC and/or WAV file(s) for import.
- On the bottom left of the Source window, click + in Mac or Add in Windows, then select file(s) for import.

The Source window displays the following information for all imported files.

- Filename
- Transmitter name
- Date and time of file creation
- Start timecode
- End timecode
- Length of recording
- Frame Rate

Removing files from the Source Window

There are three methods for removing MIC and/or WAV files from the Source window.

- Highlight the file(s) to be removed from the Source window, then click - on Mac or Remove on Windows.
- Highlight the file(s) to be removed from the Source window, then navigate File > Remove.
- Highlight the file(s) to be removed from the Source window, then press the Delete key.

Organizing Source Files

Click on a Information Header cell to order the list of files in the Source Window by information. For example, click the Start TC cell to arrange the files by timecode start times from lowest to highest. Click again to reverse the order from highest to lowest.

To manually order the list of source files, click and hold a file row and drag it into the desired position.

Selecting Files to Export

Highlight the file(s) to process and export from the Source window. Multiple files can be selected using keyboard modifiers, Apple and Shift in MacOS, Ctrl and Shift in Windows. If no files are selected, processing is applied to all files in the Source window. **Naming of Processed Files**

Exported WAV files will be named according to the Filename selection.

Match Source uses the source file's name in the exported WAV file.

Replace with allows the exported file to be named based on the custom entry.

Conform to CSV uses the take information from a CSV Sound Report to determine the exported file names. See Conforming A10-TX Files to CSV sound reports.

Creating Shorter WAV Files Based on Timecode Range

When a shorter WAV file is needed than the original recording, you can use the Timecode Range feature to create a shorter WAV file. The length and content of the exported file is based on the entered timecode start and stop times.

1. Highlight the source file(s) from the Source window.
2. Select the Timecode Range check box.
3. Enter valid timecode start and end times. The values must fall within the range of the source file.
4. Select Export.

Conforming A10-TX MIC Files to CSV Sound Reports

CSV sound report files generated by Sound Devices recorders can be used to extract only relevant audio from the A20-Mini WAV or A10-TX MIC files. Audio is extracted and a new WAV file is created based on the timecode in/out values of takes listed within the CSV.

The exported WAV file names and embedded metadata are changed to match the filenames and metadata of the corresponding takes in the CSV sound report.

Adding Pre- and Post-Roll

Adding Pre- and Post-Roll to conformed files can benefit post production with access to audio just prior to and following head and tail slates.

To add pre- and post-roll to conformed WAV files, select the Pre/Post Roll check box and enter a value from 0 to 10 seconds in 1 second steps.

If the source file does not contain audio data for the duration of the pre- or post-roll location, the exported file will begin and end at the closest point to the pre- and post-roll location where audio data is present.

Combining to Poly

Combine to Poly allows for the export of a single polyphonic WAV file containing audio tracks from each relevant transmitter for takes of the CSV Sound Report or a select timecode range.

Select the Combine to Poly check box to export a polyphonic WAV file, leave unchecked to export monophonic WAV files for each transmitter.

Combine to Poly is available with the following setups:

- Conform to CSV is selected
- Replace with: and Timecode Range are selected

The interleave order of the polyphonic WAV tracks are determined by the order of the files in the Source Window. Silence is written to a track of the exported polyphonic WAV file whenever audio data is not available from the source files.

Input Connector Wiring Diagram

The A10-TX LEMO input connector accepts numerous input types. Select the input type in the Selection Menu before connecting an audio source.

Input Type	LEMO Connection			
	pin-1	pin-2	pin-3	shell
Two-Wire Lavalier Microphone	shield	open	audio/bias	shield or open
Three-Wire Lavalier Microphone	not compatible			
Balanced Microphone	XLR pin-3	XLR pin-2	XLR pin-1	XLR pin-1, shell optional
Balanced Line-Level	XLR pin-3	XLR pin-2	XLR pin-1	XLR pin-1, shell optional
Unbalanced Microphone	earth	signal	earth	earth
Unbalanced Line-Level	earth	signal	earth	earth
Timecode	earth	LTC out of A10-TX	LTC into A10-TX	earth or open

↳ *Phantom power can be activated only when the shell of the LEMO-3 is connected to pin-3 of the LEMO-3 connector.*

Battery Runtime Chart

There are many factors that will alter run times, including the mic in use.

This section's chart shows approximate battery runtime in minutes based on the listed operation.

Operation	Battery Type		
	NiMH (2450 mAh)	Alkaline	Lithium (Energizer Ultimate)
recording only	18 hr 53 min	14 hr 26 min	33 hr 5 min
10 mW (RF Power Low)	8 hr 12 min	4 hr 7 min	12 hr 18 min
20 mW (RF Power Med)	7 hr 29 min	3 hr 56 min	11 hr 31 min
50 mW (RF Power High)	4 hr 33 min	2 hr 21 min	7 hr 57 min
recording only, 48 V	9 hr 47 min	6 hr 2 min	17 hr 44 min
50 mW, 48 V	3 hr 29 min	1 hr 33 min	6 hr 20 min

↳ *The 48 V tests were run with a Schoeps CMIT Mini. Other settings used for tests to compile the chart are: Low Cut Off, Limiter On, 40 dB gain (for 48 V)/30 dB gain (for Lavalier), freshly formatted 8G card (16 hr record time), Bluetooth On, Blue LED On, and Brightness set to 5.*

Warranty

Audio Ltd warrants the items listed above against defects in materials and workmanship for a period of two (2) years from date of original retail purchase. Products must be purchased through authorized Audio Ltd resellers to qualify for Warranty coverage. Damage resulting from the opening of an Audio Ltd product or attempted repairs by non-authorized personnel will void warranty coverage.

This is a non-transferable warranty that extends only to the original purchaser. Audio Ltd will repair or replace the product at its discretion at no charge. Warranty claims due to severe service conditions will be addressed on an individual basis.

This warranty does not apply to defects caused by misuse, abuse or altered goods. There are no express or implied warranties which extend beyond the warranty made here. All warranty submissions must include an unaltered copy of the original sales receipt from an authorized Audio Ltd reseller.

For additional information about warranty-related claims, contact support.

Certifications

Industry Canada Conformity

EN: This device complies with Industry Canada RSS-210. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

FR :Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio RSS-210. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC Conformity

The A10-TX transmitter complies with the following requirements:

FCC (Federal Communications Commission) Part 74

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Changes or modification not expressly approved.

A10-TX frequency ranges supplied for use in USA:

- 470.2–547.8 MHz
- 518.2–607.4 MHz

↪ *Frequency range 608–614 MHz is forbidden for use in US.*

↪ ***Warning! Any modifications or changes made to this device, unless explicitly approved by Audio Ltd. may invalidate the authorisation of this device. Operation of an unauthorised device is prohibited under Section 302 of the Communications act of 1934, as amended, and Subpart 1 of Part 2 of Chapter 47 of the Code of Federal Regulations.***

Output power is conducted average. This device is certified for portable use.

Declaration of Conformity

The Declaration of Conformity documentation is provide online at:

<https://www.sounddevices.com/audio-ltd-doc/>.

Before putting the products into operation, please observe the respective country-specific regulations.

Minimize RF Exposure

To avoid the possibility of exceeding the FCC RF exposure limits, body-worn operations are restricted to belt-clips, holsters or similar accessories that have no metallic component in the assembly and which provide at least 7mm separations between the device and the user's body.

Frequency Tables

The A10-TX offers preselected frequencies based on channels and sub channels. Three sets of frequencies are available based on either 6, 7, or 8 MHz channel bandwidth. Select the channel bandwidth based on the geographic region where the unit is operating.

X Frequencies (6 MHz Per TV Channel)

The chart below shows all frequencies available for the A10 wireless system. Not all channels are available on all transmitters.

		Sub Channel														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Channel	14	470.2	470.6	471	471.4	471.8	472.2	472.6	473	473.4	473.8	474.2	474.6	475	475.4	475.8
	15	476.2	476.6	477	477.4	477.8	478.2	478.6	479	479.4	479.8	480.2	480.6	481	481.4	481.8
	16	482.2	482.6	483	483.4	483.8	484.2	484.6	485	485.4	485.8	486.2	486.6	487	487.4	487.8
	17	488.2	488.6	489	489.4	489.8	490.2	490.6	491	491.4	491.8	492.2	492.6	493	493.4	493.8
	18	494.2	494.6	495	495.4	495.8	496.2	496.6	497	497.4	497.8	498.2	498.6	499	499.4	499.8
	19	500.2	500.6	501	501.4	501.8	502.2	502.6	503	503.4	503.8	504.2	504.6	505	505.4	505.8
	20	506.2	506.6	507	507.4	507.8	508.2	508.6	509	509.4	509.8	510.2	510.6	511	511.4	511.8
	21	512.2	512.6	513	513.4	513.8	514.2	514.6	515	515.4	515.8	516.2	516.6	517	517.4	517.8
	22	518.2	518.6	519	519.4	519.8	520.2	520.6	521	521.4	521.8	522.2	522.6	523	523.4	523.8
	23	524.2	524.6	525	525.4	525.8	526.2	526.6	527	527.4	527.8	528.2	528.6	529	529.4	529.8
	24	530.2	530.6	531	531.4	531.8	532.2	532.6	533	533.4	533.8	534.2	534.6	535	535.4	535.8
	25	536.2	536.6	537	537.4	537.8	538.2	538.6	539	539.4	539.8	540.2	540.6	541	541.4	541.8
	26	542.2	542.6	543	543.4	543.8	544.2	544.6	545	545.4	545.8	546.2	546.6	547	547.4	547.8
	27	548.2	548.6	549	549.4	549.8	550.2	550.6	551	551.4	551.8	552.2	552.6	553	553.4	553.8
	28	554.2	554.6	555	555.4	555.8	556.2	556.6	557	557.4	557.8	558.2	558.6	559	559.4	559.8
	29	560.2	560.6	561	561.4	561.8	562.2	562.6	563	563.4	563.8	564.2	564.6	565	565.4	565.8
	30	566.2	566.6	567	567.4	567.8	568.2	568.6	569	569.4	569.8	570.2	570.6	571	571.4	571.8
	31	572.2	572.6	573	573.4	573.8	574.2	574.6	575	575.4	575.8	576.2	576.6	577	577.4	577.8
	32	578.2	578.6	579	579.4	579.8	580.2	580.6	581	581.4	581.8	582.2	582.6	583	583.4	583.8
	33	584.2	584.6	585	585.4	585.8	586.2	586.6	587	587.4	587.8	588.2	588.6	589	589.4	589.8
	34	590.2	590.6	591	591.4	591.8	592.2	592.6	593	593.4	593.8	594.2	594.6	595	595.4	595.8
	35	596.2	596.6	597	597.4	597.8	598.2	598.6	599	599.4	599.8	600.2	600.6	601	601.4	601.8
	36	602.2	602.6	603	603.4	603.8	604.2	604.6	605	605.4	605.8	606.2	606.6	607	607.4	607.8
	37	608.2	608.6	609	609.4	609.8	610.2	610.6	611	611.4	611.8	612.2	612.6	613	613.4	613.8
	38	614.2	614.6	615	615.4	615.8	616.2	616.6	617	617.4	617.8	618.2	618.6	619	619.4	619.8
	39	620.2	620.6	621	621.4	621.8	622.2	622.6	623	623.4	623.8	624.2	624.6	625	625.4	625.8
	40	626.2	626.6	627	627.4	627.8	628.2	628.6	629	629.4	629.8	630.2	630.6	631	631.4	631.8
	41	632.2	632.6	633	633.4	633.8	634.2	634.6	635	635.4	635.8	636.2	636.6	637	637.4	637.8
	42	638.2	638.6	639	639.4	639.8	640.2	640.6	641	641.4	641.8	642.2	642.6	643	643.4	643.8
	43	644.2	644.6	645	645.4	645.8	646.2	646.6	647	647.4	647.8	648.2	648.6	649	649.4	649.8
	44	650.2	650.6	651	651.4	651.8	652.2	652.6	653	653.4	653.8	654.2	654.6	655	655.4	655.8
45	656.2	656.6	657	657.4	657.8	658.2	658.6	659	659.4	659.8	660.2	660.6	661	661.4	661.8	
46	662.2	662.6	663	663.4	663.8	664.2	664.6	665	665.4	665.8	666.2	666.6	667	667.4	667.8	
47	668.2	668.6	669	669.4	669.8	670.2	670.6	671	671.4	671.8	672.2	672.6	673	673.4	673.8	
48	674.2	674.6	675	675.4	675.8	676.2	676.6	677	677.4	677.8	678.2	678.6	679	679.4	679.8	
49	680.2	680.6	681	681.4	681.8	682.2	682.6	683	683.4	683.8	684.2	684.6	685	685.4	685.8	
50	686.2	686.6	687	687.4	687.8	688.2	688.6	689	689.4	689.8	690.2	690.6	691	691.4	691.8	
51	692.2	692.6	693	693.4	693.8	694.2	694.6	695	695.4	695.8	696.2	696.6	697	697.4	697.8	

Y Frequencies (7 MHz Per TV Channel)

		Sub Channels																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Channels	22	485.3	485.7	486.1	486.5	486.9	487.3	487.7	488.1	488.5	488.9	489.3	489.7	490.1	490.5	490.9	491.3	491.7
	23	492.3	492.7	493.1	493.5	493.9	494.3	494.7	495.1	495.5	495.9	496.3	496.7	497.1	497.5	497.9	498.3	498.7
	24	499.3	499.7	500.1	500.5	500.9	501.3	501.7	502.1	502.5	502.9	503.3	503.7	504.1	504.5	504.9	505.3	505.7
	25	506.3	506.7	507.1	507.5	507.9	508.3	508.7	509.1	509.5	509.9	510.3	510.7	511.1	511.5	511.9	512.3	512.7
	26	513.3	513.7	514.1	514.5	514.9	515.3	515.7	516.1	516.5	516.9	517.3	517.7	518.1	518.5	518.9	519.3	519.7
	27	520.3	520.7	521.1	521.5	521.9	522.3	522.7	523.1	523.5	523.9	524.3	524.7	525.1	525.5	525.9	526.3	526.7
	28	527.3	527.7	528.1	528.5	528.9	529.3	529.7	530.1	530.5	530.9	531.3	531.7	532.1	532.5	532.9	533.3	533.7
	29	534.3	534.7	535.1	535.5	535.9	536.3	536.7	537.1	537.5	537.9	538.3	538.7	539.1	539.5	539.9	540.3	540.7
	30	541.3	541.7	542.1	542.5	542.9	543.3	543.7	544.1	544.5	544.9	545.3	545.7	546.1	546.5	546.9	547.3	547.7
	31	548.3	548.7	549.1	549.5	549.9	550.3	550.7	551.1	551.5	551.9	552.3	552.7	553.1	553.5	553.9	554.3	554.7
	32	555.3	555.7	556.1	556.5	556.9	557.3	557.7	558.1	558.5	558.9	559.3	559.7	560.1	560.5	560.9	561.3	561.7
	33	562.3	562.7	563.1	563.5	563.9	564.3	564.7	565.1	565.5	565.9	566.3	566.7	567.1	567.5	567.9	568.3	568.7
	34	569.3	569.7	570.1	570.5	570.9	571.3	571.7	572.1	572.5	572.9	573.3	573.7	574.1	574.5	574.9	575.3	575.7
	35	576.3	576.7	577.1	577.5	577.9	578.3	578.7	579.1	579.5	579.9	580.3	580.7	581.1	581.5	581.9	582.3	582.7
	36	583.3	583.7	584.1	584.5	584.9	585.3	585.7	586.1	586.5	586.9	587.3	587.7	588.1	588.5	588.9	589.3	589.7
	37	590.3	590.7	591.1	591.5	591.9	592.3	592.7	593.1	593.5	593.9	594.3	594.7	595.1	595.5	595.9	596.3	596.7
	38	597.3	597.7	598.1	598.5	598.9	599.3	599.7	600.1	600.5	600.9	601.3	601.7	602.1	602.5	602.9	603.3	603.7
	39	604.3	604.7	605.1	605.5	605.9	606.3	606.7	607.1	607.5	607.9	608.3	608.7	609.1	609.5	609.9	610.3	610.7
	40	611.3	611.7	612.1	612.5	612.9	613.3	613.7	614.1	614.5	614.9	615.3	615.7	616.1	616.5	616.9	617.3	617.7
	41	618.3	618.7	619.1	619.5	619.9	620.3	620.7	621.1	621.5	621.9	622.3	622.7	623.1	623.5	623.9	624.3	624.7
	42	625.3	625.7	626.1	626.5	626.9	627.3	627.7	628.1	628.5	628.9	629.3	629.7	630.1	630.5	630.9	631.3	631.7
	43	632.3	632.7	633.1	633.5	633.9	634.3	634.7	635.1	635.5	635.9	636.3	636.7	637.1	637.5	637.9	638.3	638.7
	44	639.3	639.7	640.1	640.5	640.9	641.3	641.7	642.1	642.5	642.9	643.3	643.7	644.1	644.5	644.9	645.3	645.7
	45	646.3	646.7	647.1	647.5	647.9	648.3	648.7	649.1	649.5	649.9	650.3	650.7	651.1	651.5	651.9	652.3	652.7
	46	653.3	653.7	654.1	654.5	654.9	655.3	655.7	656.1	656.5	656.9	657.3	657.7	658.1	658.5	658.9	659.3	659.7
	47	660.3	660.7	661.1	661.5	661.9	662.3	662.7	663.1	663.5	663.9	664.3	664.7	665.1	665.5	665.9	666.3	666.7
	48	667.3	667.7	668.1	668.5	668.9	669.3	669.7	670.1	670.5	670.9	671.3	671.7	672.1	672.5	672.9	673.3	673.7
	49	674.3	674.7	675.1	675.5	675.9	676.3	676.7	677.1	677.5	677.9	678.3	678.7	679.1	679.5	679.9	680.3	680.7
	50	681.3	681.7	682.1	682.5	682.9	683.3	683.7	684.1	684.5	684.9	685.3	685.7	686.1	686.5	686.9	687.3	687.7
	51	688.3	688.7	689.1	689.5	689.9	690.3	690.7	691.1	691.5	691.9	692.3	692.7	693.1	693.5	693.9	694.3	694.7

Z Frequencies (8 MHz Per TV Channel)

		Sub Channels																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Channels	21	470.2	470.6	471.0	471.4	471.8	472.2	472.6	473.0	473.4	473.8	474.2	474.6	475.0	475.4	475.8	476.2	476.6	477.0	477.4	477.8
	22	478.2	478.6	479.0	479.4	479.8	480.2	480.6	481.0	481.4	481.8	482.2	482.6	483.0	483.4	483.8	484.2	484.6	485.0	485.4	485.8
	23	486.2	486.6	487.0	487.4	487.8	488.2	488.6	489.0	489.4	489.8	490.2	490.6	491.0	491.4	491.8	492.2	492.6	493.0	493.4	493.8
	24	494.2	494.6	495.0	495.4	495.8	496.2	496.6	497.0	497.4	497.8	498.2	498.6	499.0	499.4	499.8	500.2	500.6	501.0	501.4	501.8
	25	502.2	502.6	503.0	503.4	503.8	504.2	504.6	505.0	505.4	505.8	506.2	506.6	507.0	507.4	507.8	508.2	508.6	509.0	509.4	509.8
	26	510.2	510.6	511.0	511.4	511.8	512.2	512.6	513.0	513.4	513.8	514.2	514.6	515.0	515.4	515.8	516.2	516.6	517.0	517.4	517.8
	27	518.2	518.6	519.0	519.4	519.8	520.2	520.6	521.0	521.4	521.8	522.2	522.6	523.0	523.4	523.8	524.2	524.6	525.0	525.4	525.8
	28	526.2	526.6	527.0	527.4	527.8	528.2	528.6	529.0	529.4	529.8	530.2	530.6	531.0	531.4	531.8	532.2	532.6	533.0	533.4	533.8
	29	534.2	534.6	535.0	535.4	535.8	536.2	536.6	537.0	537.4	537.8	538.2	538.6	539.0	539.4	539.8	540.2	540.6	541.0	541.4	541.8
	30	542.2	542.6	543.0	543.4	543.8	544.2	544.6	545.0	545.4	545.8	546.2	546.6	547.0	547.4	547.8	548.2	548.6	549.0	549.4	549.8
	31	550.2	550.6	551.0	551.4	551.8	552.2	552.6	553.0	553.4	553.8	554.2	554.6	555.0	555.4	555.8	556.2	556.6	557.0	557.4	557.8
	32	558.2	558.6	559.0	559.4	559.8	560.2	560.6	561.0	561.4	561.8	562.2	562.6	563.0	563.4	563.8	564.2	564.6	565.0	565.4	565.8
	33	566.2	566.6	567.0	567.4	567.8	568.2	568.6	569.0	569.4	569.8	570.2	570.6	571.0	571.4	571.8	572.2	572.6	573.0	573.4	573.8
	34	574.2	574.6	575.0	575.4	575.8	576.2	576.6	577.0	577.4	577.8	578.2	578.6	579.0	579.4	579.8	580.2	580.6	581.0	581.4	581.8
	35	582.2	582.6	583.0	583.4	583.8	584.2	584.6	585.0	585.4	585.8	586.2	586.6	587.0	587.4	587.8	588.2	588.6	589.0	589.4	589.8
	36	590.2	590.6	591.0	591.4	591.8	592.2	592.6	593.0	593.4	593.8	594.2	594.6	595.0	595.4	595.8	596.2	596.6	597.0	597.4	597.8
	37	598.2	598.6	599.0	599.4	599.8	600.2	600.6	601.0	601.4	601.8	602.2	602.6	603.0	603.4	603.8	604.2	604.6	605.0	605.4	605.8
	38	606.2	606.6	607.0	607.4	607.8	608.2	608.6	609.0	609.4	609.8	610.2	610.6	611.0	611.4	611.8	612.2	612.6	613.0	613.4	613.8
	39	614.2	614.6	615.0	615.4	615.8	616.2	616.6	617.0	617.4	617.8	618.2	618.6	619.0	619.4	619.8	620.2	620.6	621.0	621.4	621.8
	40	622.2	622.6	623.0	623.4	623.8	624.2	624.6	625.0	625.4	625.8	626.2	626.6	627.0	627.4	627.8	628.2	628.6	629.0	629.4	629.8
	41	630.2	630.6	631.0	631.4	631.8	632.2	632.6	633.0	633.4	633.8	634.2	634.6	635.0	635.4	635.8	636.2	636.6	637.0	637.4	637.8
	42	638.2	638.6	639.0	639.4	639.8	640.2	640.6	641.0	641.4	641.8	642.2	642.6	643.0	643.4	643.8	644.2	644.6	645.0	645.4	645.8
	43	646.2	646.6	647.0	647.4	647.8	648.2	648.6	649.0	649.4	649.8	650.2	650.6	651.0	651.4	651.8	652.2	652.6	653.0	653.4	653.8
	44	654.2	654.6	655.0	655.4	655.8	656.2	656.6	657.0	657.4	657.8	658.2	658.6	659.0	659.4	659.8	660.2	660.6	661.0	661.4	661.8
	45	662.2	662.6	663.0	663.4	663.8	664.2	664.6	665.0	665.4	665.8	666.2	666.6	667.0	667.4	667.8	668.2	668.6	669.0	669.4	669.8
	46	670.2	670.6	671.0	671.4	671.8	672.2	672.6	673.0	673.4	673.8	674.2	674.6	675.0	675.4	675.8	676.2	676.6	677.0	677.4	677.8
	47	678.2	678.6	679.0	679.4	679.8	680.2	680.6	681.0	681.4	681.8	682.2	682.6	683.0	683.4	683.8	684.2	684.6	685.0	685.4	685.8
	48	686.2	686.6	687.0	687.4	687.8	688.2	688.6	689.0	689.4	689.8	690.2	690.6	691.0	691.4	691.8	692.2	692.6	693.0	693.4	693.8

Channel Assignments by Region

Region	AL Frequency Region
North America, South Korea, Philippines	X
UK and Western Europe , Greenland, Asia, Africa	Z
Australia and New Zealand	Y
Japan	X
Taiwan	X
China	X

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