

SIGNAL MONITOR TAP

1. PURPOSE

This TAP is intended to allow users to monitor signal levels and signal qualities for each of the muxes for each of the 2 tuners. Unlike previous versions, it should operate satisfactorily on all Topsy twin-tuner terrestrial models.

2. INSTRUCTIONS FOR BASIC USE

The sequence for use is as follows:

- (1) Download the latest version from [Signal Monitor Download](#).
- (2) Using Altair or equivalent, transfer "SignalMonitor.tap" into (a subdirectory of) "/ProgramFiles" on the Topsy. Do not load into "Auto Start".
- (3) Models other than the TF5800 or TF5810 require a copy of FireBird's "Firmware.dat" which includes your firmware in one of the following locations:
 - /ProgramFiles/Settings/
 - /ProgramFiles/

If you do not have one of the UK models and your copy of Firmware.dat does not include details of your firmware, you will receive a "Flash initialisation failure, Check that your 'Firmware.dat' is compatible with your firmware" and Signal Monitor will close down. A copy of the Firmware.dat file current in September 2012 is included in the Signal Monitor download zip, and I understand FireBird is unlikely to update this, but you can check at http://www.topfield.cc/files/Firebird/FireBirdLib_TF5000.zip . N.B. You only need to update this file if you change your firmware (but not if you apply patches).

- (4) Ensure no recording is in progress or due to start shortly. (Recording appears to take priority over this TAP, but operation is not guaranteed and results will only be obtained for one tuner which may not be the one selected, and you will get a warning message whenever it is trying to user the other tuner & can't).
- (5) It is not necessary to stop other TAPs, but note that all but Remote Extender & TF5000 Display will be suspended while Topsy Monitor is running (the latter so that the front panel display continues to be updated if you are running the TF5000 Display TAP).
- (6) Load Signal Monitor by pressing Archive, navigating to where "SignalMonitor.tap" was copied, and pressing "OK". A brief message will indicate that Signal Monitor is starting, and whether or not it thinks it is on a "Masterpiece" model.
- (7) Sit back and watch the results appear in the default mode of monitoring all muxes present in your channel lists, on both tuners. The TAP looks through your TV & radio channel lists, and makes a measurement on the first channel it finds on each new mux (up to a maximum of 15). See below for notes on the measurement & display order. Having completed a set of measurements on one tuner, they are then repeated on the other.

- (8) For the mux & tuner combinations that have been measured, the last minimum, average, and maximum levels over the last relevant measurement interval are displayed thus:

SIGNAL & QUALITY LEVELS				
Measuring all Muxes on both tuners				
Data Format: Min:Av:Max %				
	T1 Signal	T1 Quality	T2 Signal	T2 Quality
LCN 1, RF Ch 44	100:100:100	100:100:100	100:100:100	100:100:100
LCN 3, RF Ch 68	71:97:100	99:99:100	67:76:80	99:99:100
LCN 10, RF Ch 49	100:100:100	100:100:100	100:100:100	100:100:100
LCN 11, RF Ch 54	74:74:75	100:100:100	73:73:74	100:100:100

Settle time (V+/-): 500 msecs - Sample time (<</>>): 5 secs.
'Red' toggles font size. 'Text' toggles channel names/RF values. 'Exit' closes TAP.

Note that the RF channel numbers will depend on your local transmitter. The number of lines appearing (and size of the text) will depend on how many Muxes are present – UK users will only have more than 5 if they have duplicated channels, and less if some muxes are not available, if you have deleted all channels (TV & radio) on one or more muxes, or if you have not scanned for some muxes. The font is reduced when the number of muxes increases to the point where they will not fit in the space available.

- (8) The sound is inhibited while the TAP is running, and restored on closure.
- (9) If any of the 6 channels are transmitting in 4:3, the aspect ratio may keep changing, in which case de-select "Auto" on your TV if you find it irritating. The Zero key on the Toppo will not work while this TAP is running.
- (10) Press "Exit" at any time to close the TAP.

3. USE WITH FONT MANAGER

Depending on the font chosen and your TV characteristics, you may find that channel data is truncated (e.g. 100/100/10 instead of 100/100/100). If this is the case, press the "Red" key to use a smaller font.

4. ALTERNATIVE CHANNEL LABELLING

Four presentations are available for the channel labels, as follows:

- LCN & RF (a.k.a. Tx) Channel number
- LCN & Channel name
- Mux I.D. and RF Channel number
- Mux I.D. and Channel name

The initial presentation will be the first of the above unless over-ruled by an ini-file entry (syntax defined in the sample files provided), and the other selected by repeated presses of the “Text” key on UK models (“Next” on other models). The availability of the last two presentations is, however, dependent on the all the mux names having been defined – see below. An example of the third presentation is:

SIGNAL & QUALITY LEVELS				
Measuring all Muxes on both tuners				
Data Format: Min:Av:Max %				
	T1 Signal	T1 Quality	T2 Signal	T2 Quality
PSB1: BBC ONE	100:100:100	100:100:100	100:100:100	100:100:100
PBS2: ITV1	100:100:100	100:100:100	72:78:80	99:99:100
COM4: ITV3	100:100:100	100:100:100	100:100:100	100:100:100
COM5: Pick TV	75:75:75	100:100:100	73:73:74	100:100:100

Settle time (V+/-): 500 msecs - Sample time (<</>>): 5 secs.
'Red' toggles font size. 'Text' toggles channel names/RF values. 'Exit' closes TAP.

5. DEFINING MUX NAMES

The names of the muxes cannot be derived from the transmitted data, and so have to be deduced from channel LCN's or names using look-up lists. Simply hard-coding these lists is not practical, as the names & allocations vary between countries, and even with time (notably at the UK Digital Switch Over, DSO). The allocations can be defined in either a “SignalMonitor.ini” file, or a “Freeview.dat” file.

The TAP looks for either an LCN or channel name match on each of the channels it finds on a particular Mux, not just the channel used for the measurement. If both “Freeview.dat” and “SignalMonitor.ini” files are present, the former will be ignored. If the relevant file does not include Mux definitions for all channels, this presentation will not be available.

Examples of “Freeview.dat” and “SignalMonitor.ini” are included in the download zip, to allow you to generate your own. The syntax of these files is defined in the comments in those files. If mux names of 1 or 2 characters are defined, they will be preceded by “Mux”. The latest version of "Freeview.dat" is available from [here](#), or can be installed using TopManager "Tools| Install Files| Freeview.dat").

N.B. When searching for mux names in the “.ini” file, the first match of non-zero LCN or channel name to be found is used.

6. DISPLAY ORDER

The order in which muxes are measured and appear on the display and log file is governed by the following rules:

- If any or all muxes have not been allocated names, they are displayed in order of increasing LCN.
- If all muxes include one or more numeric characters, they are sorted in increasing value of the first such character in the names ignoring the letters (e.g. PSB1, PSB2, COM4, COM5, and lastly COM6).
- Otherwise they are sorted in normal alphanumeric order, numbers preceding letters (e.g. 1, 2, A, B, C, and lastly D).

7. SKINS

The colours used for the display can be changed using a “skin” in “ProgramFiles/Settings/Skins/”. It looks for:

1. “SignalMonitor.mcf”. If this is not found,
2. “EMJBTaps.mcf”, which allows a common colour scheme to be used for all my TAPs. If this is not found,
3. “CurrentlySelectedSkin.mcf”. This is produced by MyStuff 5.5 onwards when you change skin to anything other than the default, and allows other TAPs to automatically change their skins in line with that in use by MyStuff.

If none of the above are found, a default colour scheme is used which is optimised for CRT TVs.

A copy of a MyStuff skin file can be used, though only the following elements are used:

- “Background=” (normal background)
- “Highlight=” (background for current channel after pressing “Info” – see below – and for warnings)
- “TextForeground=” (normal text)
- “TextHighlightedForeground=” (text for current channel after pressing “Info” – see below – and for warnings)
- “Frame=” (border round warning/info messages)

and all other entries are ignored. The keywords above should be followed by the red, green & blue values (separated by commas) in the range 0-255 with no spaces or final comma (e.g. 255,0,0 for red, 255,255,0 for yellow etc).

8. ADDITIONAL FEATURES

- (1) When not paused (see below), pressing "1" restricts the measurements to tuner 1, and "2" to measurements on tuner 2. "3" returns to measurements on both tuners. Any change resets the data on all Mux/channel combinations.
- (2) After pressing the "Info" button:
 - The current level & quality are displayed for the tuner/Mux combination being measured.
 - The number of samples used in the averaging is displayed with some other software diagnostic info.A second press of "Info" removes these indications.
- (4) Pressing the "Red key" toggles the size of the text used to display the channel identity, signal level and quality data. This can be used if the channel name is truncated, use of a non-native font leads to lost characters, or if your TV does not display the whole picture.
- (5) The settling time after channel changes can be altered with the V+ & V- buttons. The measurement duration can be changed with the << & >> buttons.
- (6) Pressing the "Pause" button will stop the movement round the channels & tuners, and brings up a continuously updated display of the current level & quality measurement thus:

The screenshot shows a menu titled "SIGNAL & QUALITY LEVELS" with the following content:

Paused monitoring RF Ch 68 with Tuner 2
Data Format: Min:Av:Max %

	T1 Signal	T1 Quality	T2 Signal	T2 Quality
Mux 1: RF Ch 49	100:100:100	100:100:100	100:100:100	100:100:100
Mux 2: RF Ch 68	100:100:100	100:100:100	76	100
Mux A: RF Ch 48	72:73:74	97:97:100	73:73:74	97:97:100
Mux B: RF Ch 39	100:100:100	100:100:100	100:100:100	100:100:100
Mux C: RF Ch 54	74:74:76	100:100:100	70:70:72	100:100:100
Mux D: RF Ch 50	53:53:54	98:99:100	54:54:55	97:97:100

Settle time (V+/-): 500 msecs - Sample time (<</>>): 5 secs.

While paused, the Up/Down arrows will step back/forward one Mux, changing tuner when appropriate if you were in 2 tuner mode when paused. Pressing "Pause" again returns to normal operation. This mode is intended for use when trying out different signal sources etc so that any large impact can be immediately recognised.

- (7) Pressing the "Record" button generates a "SignalMonitor Results.txt" file in "/ProgramFiles/Logs" which records the current values & settings approximately as the TAP display, but adds the date & time the record was made thus:

```
``Signal Monitor V0.30 Results

Measured on 16/12/2006 at 15:48
Data format: T1 Levels, T1 Quality, T2 Levels, T2 Quality, all
as Min:Average:Max %

Mux 1: BBC ONE on RF Ch 49: | 100:100:100 | 100:100:100 |
100:100:100 | 100:100:100
Mux 2: ITV1 on RF Ch 68: | 100:100:100 | 100:100:100 |
75:76:77 | 100:100:100
Mux A: Five on RF Ch 48: | 72:73:74 | 97:97:100 | 73:73:74 |
97:97:100
Mux B: BBC FOUR on RF Ch 39: | 100:100:100 | 100:100:100 |
100:100:100 | 100:100:100
Mux C: SKY THREE on RF Ch 54: | 73:74:76 | 100:100:100 |
68:70:71 | 100:100:100
Mux D: The HITS on RF Ch 50: | 53:53:54 | 98:98:100 | 54:54:55
| 98:98:100

Settle time: 500 milliseconds - Sample time: 5 seconds``
```

This can be transferred back to a PC using Altair or Antares (or Mac/Linux equivalents) and viewed with a text editor such as WordPad, and thence pasted into Topsy.org.uk posts if required. Alternatively it can be viewed on the Topsy using Media Manager if the "Show All Files" option is on, or viewed on a Windows PC using TopManager.

9. WARNINGS ETC

You use this entirely at your own risk!!!

If it crashes, or the Topsy is set to standby while the TAP is running, it will leave the Topsy volume set to zero. If closed normally, the TAP should set the volume & (TV or radio) channel to those before the TAP is run.

10. FEEDBACK

Please use <http://forum.topsy.org.uk/forum/viewtopic.php?t=6558> to report any bugs or suggestions for improvements.

11. VERSION HISTORY

- V0.1: First effort released for public use.
- V0.11 RF channel number display added, with reversion to names using "Text"
Diagnostic info now controlled by "Info"
Re-coding some of the messiest bits, hopefully without affecting functionality.

- V0.12 List of 5 channels per mux now searched to find one on your Topy. If no channel found, that mux is no longer measured.
- V0.20 ".ini" facilities added.
Record facilities added.
Minor changes to screen layout.
- V0.20a/b Attempts to correct of error in recorded data
- V0.30 Further attempt to correct garbling of channel names.
Null characters at end of results file changed to spaces (character decimal 160) to avoid problems with some text editors.
Tabs removed from results file to ease pasting into the Topy forums.
Insertion of indication that recording of results has been successful.
Suppression of MHEG "Loading .." messages for channels that are not transmitting for software versions 5.12.25, 5.12.88, & 5.13.26.
Tap, "ini" & results file names changed from "SigMon.x " to SignalMonitor.x to be more consistent with naming
Results now written into directory where Signal Monitor resides to avoid cluttering "/ProgramFiles" if this TAP is kept elsewhere.
- V0.31 Update to support firmware versions up to and including 5.13.40, but note that 5.12.99 has a firmware bug giving incorrect values with the new tuners
- V0.32 Update to support firmware versions up to and including 5.13.55, but note that 5.12.99 has a firmware bug giving incorrect values with the new tuners
- V0.4 Addition of skin file option
Removal of all dependencies on firmware version
Removal of need to stop other TAPs.
- V0.5 Major change to scanning logic to avoid use of the Pip channel, and to measure whatever Muxes are present in the Topy channel lists so as to be suitable for international use.
Change of location for results file.
- V0.51 Update of channel/mux allocation lists
Internal changes to ease development testing.
Results now written into directory "/ProgramFiles/Logs".
- V0.52 Support for Masterpiece models added.
- V0.53 Recompiled with latest FireBird library, requiring Firmware.dat file.
Tidy up of log file.
- V0.54 Removed default Mux list, and alternative use of Freeview.dat file included
Control of font size added to help Font Manager users.
Muxes sorted alpha-numerically on the display.
Need for Firmware.dat removed for UK models
Choice of four channel label options added

12. ACKNOWLEDGEMENTS

Many thanks to simonc, bdb & LordCake for help with my problems, Firebird for functions to access Toppy Channel number and control tuner selection, simonc for recording code, to those who generated the Compiler set up guide on the Berlios site, and to sl8 whose "timemon" TAP code was the starting point in my attempts to produce this TAP (though very little has survived untouched, it is a great help to a TAP newbie like me to be able to gradually modify something that works rather than start from a clean sheet).