

# BIRDS GS Operation

## MANUAL

Name	Version	Date
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# GS EQUIPMENT

- Start of Operation (at least 10 mins before)

1. Turn ON Rotator Controller
2. Turn ON ICOM power Supply
3. Turn ON ICOM radio
4. Turn ON TNC



- END of Operation

1. Turn OFF TNC
2. Turn OFF ICOM radio
3. Turn OFF ICOM power Supply
4. Turn OFF Rotator Controller



# Required Software's

- ☐ GS Software

- ☐ Kyutech Amateur Satellite Operation by UHF v1.5.0

- ☐ Command List (ZIMSAT-1, PEARLAFRICASAT-1, TAKA, KISTUNE)

- ☐ CW Skimmer=> Commercial software

- ☐ CW decoder

- ☐ Orbitron => Download or purchase online

- ☐ BandiCam => Download or purchase online

- ☐ Hex Combiner => Download or purchase online

- ☐ FavBinEdit => Download or purchase online

# Settings

☐ When you open the GS software application go to settings:

- COM ports (TNC, Radio and Rotator) should connect automatically else press connect or refresh if ports are not reading
  - ✓ Baud rate is 9600kbps
  - ✓ Make sure all ports are connected
- File IO
  - ✓ TLE => for first passes load the ISS TLE for the 3 satellites. TLE file is .txt files
  - ✓ Load the satellites TLE when the information is availed
  - ✓ Make sure the frequency list csv file is also loaded.
  - ✓ Choose a folder to save your data
- Radio
  - ✓ No changes use ICOM and CIV address remains the same
- Rotator
  - ✓ Select model of your rotator
  - ✓ Input the parking positions of your antenna (the AZ and EL)
- Ground Station location
  - ✓ This is the location of your GS
- When operation is finished disconnect the ports, stop tracking and you close the software

AZ. 100.0 EL. 90.0  
Freq. 000.000000

Main Setting SatInfo

COM port

TNC COM3 9600 Connect

Radio 9600 Connect

Rotator 9600 Connect

Refresh COM port

Do not change the following items in normal operation.

File IO

TLE

Frequency List

Saving Folder ./20221201

\*Saving Folder is automatically updated.

Radio

Model ICOM CI-V address 7C

Rotator

Model Pro-Sis-Tel Combo Home(AZ) 100.0 Home(EL) 90.0

Ground Station Location

Latitude 0.0000

Longitude 0.0000

Height 0.0

Frequency list csv file

t1e.txt - Notepad

```
File Edit Format View Help
ISS (ZARYA)
1 25544U 98067A 22326.03334696 .00009489 00000+0 17318-3 0 9991
2 25544 51.6437 274.6386 0007051 99.8116 354.6036 15.50131174369666
KITSUNE
1 52148U 98067TK 22325.87312330 .00056698 00000+0 53967-3 0 9997
2 52148 51.6385 263.1904 0006855 114.6291 284.6946 15.66233799 37801
FUTABA
1 53463U 98067UC 22325.57188506 .00076365 00000+0 81691-3 0 9999
2 53463 51.6359 272.5016 0010408 124.0769 236.1214 15.63126368 15766
```

# Automatically update TLE.

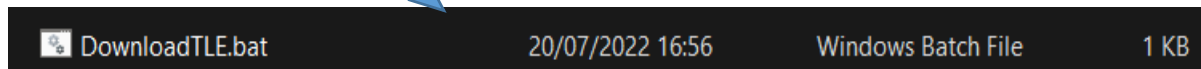
```
File Edit View Window Help get_TLE.py - D:\setting files
SSBPSKFreqconf1.py x demo1.py x get_TLE.py x
1 #!/usr/bin/env python3
2 # get_TLE.py : get latest TLE from celestrak
3
4 import urllib.request
5
6 sourceURL = "http://celestrak.org/NORAD/elements/stations.txt"
7 nameList = ["ISS (ZARYA)", "KITSUNE", "FUTABA"]
8
9 with urllib.request.urlopen(sourceURL) as f:
10     obj = f
11     str = obj.read().decode("cp932")
12     lines = str.split("\n")
13
14     for i, line in enumerate(lines):
15         for name in nameList:
16             if(name in line):
17                 print(lines[i].strip())
18                 print(lines[i+1].strip())
19                 print(lines[i+2].strip())
20
```

LightEdit mode. Access full IDE v 1:1 LF UTF-8 Autosave: off

- Click on sourceURL, check for ZIMSAT, PEARLAFRICASAT and TAKA satellites
- As written from the URL, write the satellite name on name list

- Click the .bat software, the TLE will be auto updated
- Name of TLE file should be same as you saved it for the GS software

CLICK this to update



```
C:\Windows\system32\cmd.exe
D:\setting files>cd /d D:\setting files\
D:\setting files>Python get_TLE.py 1>t1e.txt
D:\setting files>timeout /t 10
Waiting for 5 seconds, press a key to continue ...
```

# Frequency list CSV file

SatelliteName	NoradID	CW beacn	Uplink	Downlink	Remark	Folder name (len<8)	
ISS (BIRDS-5)	25544	437375000	435313000	437375000	ISS repeater	ISS repeater(BIRDS-5)	
ISS (KITSUNE init op. using JAXA orbital element)	90000	437375000	435313000	437375000	KITSUNE	KITSUNE	
KITSUNE (SatNOGS)	99415	437375000	435313000	437375000	KITSUNE	KITSUNE	
KITSUNE	52148	437377000	435310000	437376000	KITSUNE	KITSUNE	
ISS (BIRDS-5)	25544	437375000	435313000	437375000	BIRDS-5	BIRDS-5	
FUTABA	53463	437375000	437375000	437375000	FUTABA (ID: 53463)	FUTABA	
TAKA		437375000	435313000	437375000	BIRDS-5		
ZIMSAT-1		437375000	435313000	437375000	BIRDS-5		
PearlAfricaSat-1		437375000	435313000	437375000	BIRDS-5		

- Add ZIMSAT-1, PearlAfrica-1 and Taka NORAD IDs when they are availed.
- Add your folder name where you are saving the data

# Command List Window

- ❑ The commands for all the satellites will be loaded through the command list window
  - Initially Kyutech GS will be the central GS to generate the commands and distribute them to all BIRDS Network GS.
  - All commands have a **comment and remark** to tell what the command is for, the satellite and possibly an instructions to follow. **Kindly read it well.**
  - To select the command list csv file got to **OPEN**.
  - To insert the command on MAIN window, click on the command and use **INSERT** button.
  - To delete press **Delete** only if needed.

Command List

The screenshot shows a window titled "Command List" with a tabbed interface. The active tab is "ZIMSAT-1", with other tabs labeled "PearlAfricaSat-1", "TAKA", "KITSUNE", and "Missing command". Below the tabs is a table with three columns: "Command", "Comments", and "Remark". The first row of the table has a small asterisk (\*) in the "Command" column. The rest of the table is shaded gray, indicating it is not currently displaying data. At the bottom of the window, there are three buttons: "Open", "Delete", and "Insert".

	Command	Comments	Remark
*			



# Main Window

- ☐ Select the **Satellite Name**
- ☐ To track with GS antenna during operation click/tick on **Tracking** checkbox
- ☐ To operate BIRDS5 click on **BIRDS-5 format** as shown
- ☐ The inserted commands from the **Command List** should appear on the **Command (Hex)** Text box. You can also manually insert the command.
- ☐ The Infor or comment of each command appears in the **Comments** text box
  - ☐ Note: All the command are 11 bytes long
- ☐ To transmit or uplink a command click **Transmit** button.
- ☐ Tick the **auto retry until ACK** (acknowledgement) for automatic transmission
  - ☐ Untick during CW transmission
- ☐ When you hear CW tick **CW** radio button and for uplink and downlink tick **FM Data**
- ☐ Whenever you receive packets the **Received packet(s)** counter changes corresponding to the successful downlink
- ☐ The command and received data will be obtained from the **CMD and Receive Data** Text Box
- ☐ When you are done with the command i.e. download the data of get acknowledgement click **Analyse, Save and Clear**
- ☐ Then go/insert the next command from the command list
- ☐ Manually tune the **RX freq fine tuning** incase you are not seeing CW on CW skimmer software

Kyutech Amateur Satellite Operation by UHF v1.5.0

AZ. 100.0 EL. 90.0  
Freq. 000.000000

Main Setting SatInfo

Satellite Name ☒ Tracking ☒ BIRDS-5Format RX freq fine tuning 0 Hz RadioMode ☒ CW ☐ FM-data

+500Hz +1kHz +5kHz  
-500Hz -1kHz -5kHz

Command(HEX) 00 00 00 00 00 00 00 00 00 00 00 00  
Comments None

Transmit

CMD and Receive Data ☐ Auto Retry until ACK

Received packet(s) : 0 Open Folder Analyze, Save and Clear

☒ Add missing packet into Command List



# Sat-Info Window

- You can also select the satellite name from this window.
- When you select the satellite name, the information about the satellite is displayed as saved from the frequency list CSV file.

Kyutech Amateur Satellite Operation by UHF v1.5.0

AZ. 100.0 EL. 90.0  
Freq. 000.000000

Main Setting SatInfo

Satellite Name






NORAD ID

DL Freq  MHz

UP Freq  MHz

Remark

Folder name

# CW Decoder

- Insert your **GS name** and **GS Callsign**
- **Select Satellite** you are operating
- Insert your **saving path**
- Only insert CW morse code 10 characters on **CW**
- The rest automatically fills and you can check and record the health of the satellite

The screenshot displays the BIRDS-5 CW DECODER application window. The interface is divided into several sections for configuration and monitoring. At the top, there are input fields for 'GS Name' (Kyutech) and 'GS Callsign' (JG6YBW). Below these is a 'Select Satellite' section with three radio buttons: 'Taka JG6YOE', 'PearlAfricaSat-1 JG6Y0D' (which is selected), and 'ZimSat-1 JG6YOC'. A 'CW' input field contains 'D7ef000000', and a 'Decode' button is next to it. The 'SavingPath' is set to 'C:\Users\Public\20221201\20221201\_JG6YBW\_CWlog.csv'. Below the CW input, there are fields for 'CW HK (Type1)' (D7EF000000) and 'Time' (2051:15). The interface also features two main monitoring panels: 'CW HK TYPE 1' and 'CW HK TYPE 2'. The 'CW HK TYPE 1' panel includes 'Battery' status (5.47 V, -5362 mA, 75.0 °C), 'Solar Panels' status (+Y, +Z, -X, -Y, -Z), 'Kill SW (Main)' (OFF), 'Antenna Status' (Not deployed), 'Operation Mode' (Low), and 'Time after Reset' (0 hrs). The 'CW HK TYPE 2' panel includes 'GyroScope' status (X-axis, Y-axis, Z-axis in deg/s) and a list of mission status indicators (COM-MAIN, RESET-MAIN, FAB-MAIN, Reservation, Uplink Success, Mission Status) with corresponding checkboxes. A large orange box with the word 'EXAMPLE' and a green arrow points to the example configuration.

BIRDS-5 CW DECODER

GS Name  GS Callsign

Select Satellite

☐ Taka JG6YOE ☒ PearlAfricaSat-1 JG6Y0D ☐ ZimSat-1 JG6YOC

CW:

SavingPath

CW HK (Type1)  Time:  CW HK (Type2)  Time:

**CW HK TYPE 1**

**Battery**

[V]  [mA]  [°C]

**Solar Panels**

+Y  +Z  -X  -Y  -Z

Kill SW (Main)  (FAB)

Antenna Status

Operation Mode

Time after Reset  [hrs]

**CW HK TYPE 2**

**GyroScope**

X-axis  [deg/s] Y-axis  [deg/s] Z-axis  [deg/s]

COM-MAIN ☐ RESET-MAIN ☐ FAB-MAIN ☐ Reservation ☐ Uplink Success ☐ Mission Status ☐

**EXAMPLE**

# ANNEX

## BIRSD GS Operations Training Demonstrations

## Command List

Command	Comments	Remark
44 11 00 CC CC CC CC 00 00 32	50x1 (StartAdd : CC CC CC CC)	Taka
44 11 00 CC CC DC 9E 00 00 32	50x2 (StartAdd : CC CC CC CC)	Taka
44 11 00 CC CC EC 70 00 00 32	50x3 (StartAdd : CC CC CC CC)	Taka
44 11 00 CC CC FC 42 00 00 32	50x4 (StartAdd : CC CC CC CC)	Taka
44 11 00 CC CD 0C 14 00 00 32	50x5 (StartAdd : CC CC CC CC)	Taka
APRS/Store and Forward Operation		
44 A0 5E 00 E0 00 00 00 00 00	Turn On APRS /Store and Forward Mission	Taka
44 A0 55 00 E0 00 00 00 00 FF 00	Clear SF_Ward Flash Memory	Taka
44 A0 53 00 E0 05 FF 00 00 32	Transfer 50 packets from SF FM to SCF	Taka
44 11 00 03 91 00 00 00 32	Downlink 50 Packets from SCF to GS	Taka
44 A0 50 00 E0 00 00 00 00 00	Turn Off Store and Forward Mission	Taka

Open

Delete

Insert

CW Skimmer 2.1 - Registered to Mengu Cho

File View Commands Help

## CW Skimmer



E S A E S A N S I S A E S I S I S I E E S A E S A E S A E S A T S

Decoders: 4 of 4 SNR: -32 dB 06 WPM TIn: OFF

**BANDICAM** UNREGISTERED

00:00:00  
0 bytes / 3.09TB

REC

1920x1080 - (0, 0), (1920, 1080) - Display 1

Home Options **BandCam**

## Main Operation Software

AZ. 103.0 EL. 90.0

Freq. 437.375500

Main Setting SatInfo

Satellite Name ☐ Tracking

RX freq fine tuning -1500 Hz

RadioMode

KITSUNE

+500Hz

+1kHz

+5kHz

☒ CW☐ FM-data

-500Hz

-1kHz

-5kHz

Command(HEX) 44 11 00 03 91 00 00 00 00 32

Comments Downlink 50 Packets from SCF to GS

Transmit

☐ Auto Retry until ACK

CMD and Receive Data

```
#(2022/11/24 05:02:36) CMD: 44 11 00 03 91 00 00 00 00 32
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 01 4A 47 36 59 42 41 3E 41 50 48 30 30 33 2C 57 49 44 45 31 2D 31 3A
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 02 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 03 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 04 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 05 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 06 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 07 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 08 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 09 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 0A FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 0B FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 0C FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 0D FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 0E FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 0F FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 10 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 11 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 12 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 13 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 14 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 15 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 16 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 17 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 18 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 19 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 1A FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 1B FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 1C FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 1D FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
C0 00 4A 47 36 59 42 57 30 4A 47 36 59 4F 44 30 3E F0 FF F0 FF 00 00 1E FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

☒ Add missing packet into Command List

Received packet(s) : 50

Open Folder

Analyze, Save and Clear


 GS Name  GS Callsign

Select Satellite  
☒ Taka JG6YOE    ☐ PearlAfricaSat-1 JG6Y0D    ☐ ZimSat-1 JG6Y0C

CW:

SavingPath

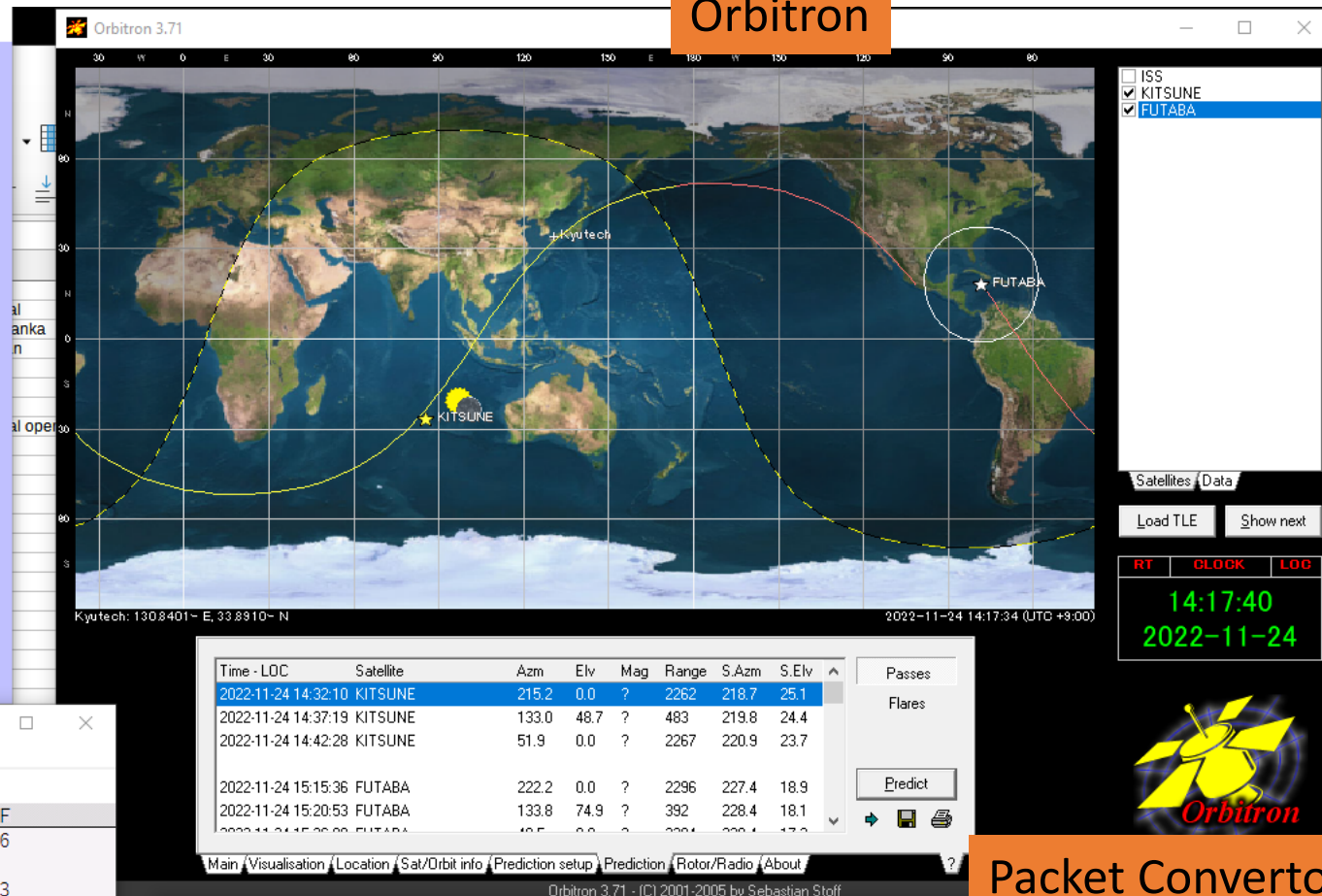
CW HK (Type1)  Time:  CW HK (Type2)  Time:

**CW HK TYPE 1**  
 Battery  [V]  [mA]  [°C]  
 Kill SW (Main)  (FAB)   
 Antenna Status   
 Operation Mode   
 Time after Reset  [hrs]

**CW HK TYPE 2**  
 GyroScope   
 X-axis  [deg/s]  
 Y-axis  [deg/s]  
 Z-axis  [deg/s]

COM-MAIN   
 RESET-MAIN   
 FAB-MAIN   
 Reservation   
 Uplink Success   
 Mission Status

Solar Panels 



無題(1) - FavBinEdit

ファイル(F) 編集(E) 検索(S) 移動(I) ウォッチ(W) 設定(S) ヘルプ(H)

<



## Main Window

Main	Setting	SatInfo
------	---------	---------

KITSUNE

Comments 

None

RX freq fine tuning 0 Hz

+500Hz +1kHz +5kHz

-500Hz -1kHz -5kHz

RadioMode

☐ CW ☒ FM-data

Transmit

☐ Auto Retry until ACK[illegible]☒ Add missing packet into Command List

Received packet(s) : 54

Open Folder      Analyze, Save and Clear

## Settings Window



AZ. 103.0 EL. 90.0

Freq. 437.377000

Main Setting SatInfo

COM port

TNC COM6 9600 Disconnect  
Radio COM5 9600 Disconnect  
Rotator COM7 9600 Disconnect

Refresh  
COM port

Do not change the following items in normal operation.

File IO

TLE C:\Ham OP repos\setting files\tle.txt

Frequency List C:\Ham OP repos\setting files\freqList.csv

Saving Folder C:\Ham OP repos\operation data\20221124

\*Saving Folder is automatically updated.

Radio

Model ICOM CI-V address 7C

Rotator

Model Pro-Sis-Tel Combo Home(AZ) 103.0 Home(EL) 90.0

Ground Station Location

Latitude 33.8926  
Longitude 130.8401  
Height 40.0

tle.txt - Notepad

File Edit Format View Help

ISS (ZARYA)

```
1 25544U 98067A 22326.03334696 .00009489 00000+0 17318-3 0 9991  
2 25544 51.6437 274.6386 0007051 99.8116 354.6036 15.50131174369666
```

KITSUNE

```
1 52148U 98067TK 22325.87312330 .00056698 00000+0 53967-3 0 9997  
2 52148 51.6385 263.1904 0006855 114.6291 284.6946 15.66233799 37801
```

FUTABA

```
1 53463U 98067UC 22325.57188506 .00076365 00000+0 81691-3 0 9999  
2 53463 51.6359 272.5016 0010408 124.0769 236.1214 15.63126368 15766
```



## Frequency List file

File Edit View Insert Format Styles Sheet Data Tools Window Help



Liberation Sans

10 pt

**B***I*U**A**

A1

SatelliteName

	A	B	C	D	E	F	G
1	SatelliteName	NoradID	CW beacn	Uplink	Downlink	Remark	Folder name (len<8)
2	NepaliSat	44331	437375000	435313000	437375000	BIRDS-3 Nepal	NEPALI
3	Raavana1	44329	437375000	435313000	437375000	BIRDS-3 Sri Lanka	RAAVANA
4	Uguisu	44330	437375000	435313000	437375000	BIRDS-3 Japan	UGUISU
5	RS-44	44909	435605000	435605000	435605000	Amsat	RS44
6	EXOCUBE	40380	437270000	437270000	437270000	Amsat	EXOCUBE
7	CUTE-1	27844	436836500	436836500	436836500	TEST	CUTE1
8	BIRDS-4 (JAXA)	99999	437375000	435313000	437375000	BIRDS-4 (initial operation)	BIRDS4
9	Tsuru (satNOGS)	99772	437375000	435313000	437375000	sat NOGS	BIRDS4
10	Guaranisat-1(satNOGS)	99774	437375000	435313000	437375000	sat NOGS	BIRDS4
11	TAUSAT1?(Norad)	85421	437375000	435313000	437375000	Norad	BIRDS4
12	1st/1nd dep? (Norad85418)	85418	437375000	435313000	437375000	Norad	BIRDS4
13	1st/1nd dep? (Norad85419)	85419	437375000	435313000	437375000	Norad	BIRDS4
14	1st/1nd dep? (Norad85420)	85420	437375000	435313000	437375000	Norad	BIRDS4
15	1st/1nd dep? (Norad85421)	85422	437375000	435313000	437375000	Norad	BIRDS4
16	1st/1nd dep? (Norad85422)	85423	437375000	435313000	437375000	Norad	BIRDS4
17	1st/1nd dep? (Norad85424)	85424	437375000	435313000	437375000	Norad	BIRDS4
18	Norad(47924) WARP-01	47924	437425000	437425000	437425000	Norad	NULL
19	Norad(47925) RSP-01	47925	145810000	145810000	145810000	Norad	NULL
20	Norad(47926) TAUSAT-1	47926	436400000	436400000	436400000	Norad	NULL
21	TSURU	47927	437376500	435313000	437375000	Norad	Tsuru
22	Norad(47928) STARS-EC	47928	437245000	437245000	437255000	Norad	NULL
23	MAYA-2	47929	437375000	435313000	437375000	Norad	Maya2
24	Norad(47930) Hirogari	47930	145900000	145900000	145900000	Norad	NULL
25	GUARANISAT-1	47931	437375000	435313000	437375000	Norad	GuaraniSat1
26	HORYU-IV	41340	437375000	145000000	437375000	HORYU4	HORYU4
27	MIRSAT-1	48868	436925000	145987500	436925000	MIRSAT-1	MIRSAT-1
28	KOSEN-1	99991	435525000	435525000	435525000	KOSEN-1	KOSEN-1
29	ISS	25544	437800000	437800000	437800000	ISS repeater	ISS repeater
30	MAYA-3	49273	437377000	437375000	437375000	Deployed at 10/6 CW freq. updated at 6/23	Maya3
31	MAYA-4	49274	437377000	437375000	437375000	Deployed at 10/6 CW freq. updated at 6/23	Maya4
32	DIWATA-2	43678	437500000	437500000	437500000	PH	DIWATA-2
33	ISS (KITSUNE init op. using JAXA orbital element)	90000	437375000	435313000	437375000	KITSUNE	KITSUNE
34	KITSUNE (SatNOGS)	99415	437375000	435313000	437375000	KITSUNE	KITSUNE
35	KITSUNE	52148	437377000	435310000	437376000	KITSUNE	KITSUNE
36	ISS	25544	437375000	437800000	437375000	ISS repeater	ISS repeater
37	FUTABA	53463	437375000	437375000	437375000	FUTABA (ID: 53463)	FUTABA
38	TAKA		437375000	435313000	437375000	BIRDS-5	
39	ZIMSAT-1		437375000	435313000	437375000	BIRDS-5	
40	PearlAfricaSat-1		437375000	435313000	437375000	BIRDS-5	
41							

Kistune

Ready for BIRDS5

AZ. 103.0 EL. 90.0

Freq. 437.377000

## Sat Information Window



Main Setting SatInfo

Satellite Name

KITSUNE

NORAD ID 52148

DL Freq 437.376 MHz

UP Freq 435.31 MHz

Remark KITSUNE

Folder name KITSUNE

# International Morse Code

A	• —
B	— • • •
C	— • — •
D	— • •
E	•
F	• • — •
G	— — •
H	• • • •
I	• •
J	• — — —
K	— • —
L	• — • •
M	— —
N	— •
O	— — —
P	• — — •
Q	— — • —
R	• — •
S	• • •
T	—

U	• • —
V	• • • —
W	• — —
X	— • • —
Y	— • — —
Z	— — • •

1	• — — — —
2	• • — — —
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4	• • • • —
5	• • • • •
6	— • • • •
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8	— — — • •
9	— — — — •
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