Update：2019/09/24

N-CAM Image analysis software (Demodulation_Image_For_Public.exe)

●Software overview

This is software that converts data downlinked from satellites into image in Image data downlink. This software consists of the following three parts.

①Execution software(Demodulation_Image_For_Public.exe)
②Image information file(file_info.txt)
③Input file(Downlink data)
※Put all these files in the same folder.

Hereafter, each will be explained.

①Execution software (Demodulation_Image_For_Public.exe)

When the exe file is executed, analysis starts and an image is output as "output.jpg". Note that “output.jpg” does not become an image if there is a shortage of downlink data or if the input file format is incomplete.

The screen at the time of execution is shown below.

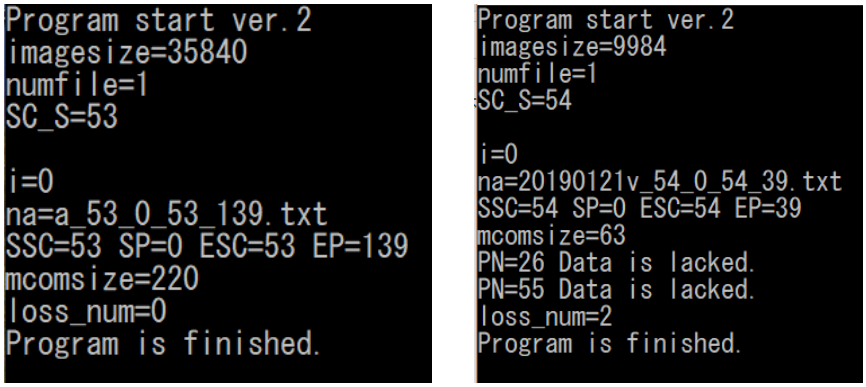

Figure 1(Left：Normal,　Right：There is a defect in the readout range)

The meanings of the variables shown in Figure 1 are as follows.

・imagesize　　: Movie size(bytes)
・numfile　　: Number of input files
・SC_S　　: Movie reading start sector
・i　　: Input file number
・na　　: Read file name

・SSC : Read start sector
・SP : Read start page
・ESC : Read end sector
・EP : Read end page
・mcomsize : Number of downlink packets for one path
・loss_num : Number of loss packets
・PN : Packet number

When the downlink data is insufficient, "PN=x is lacked." is output. Next, I will explain PN.The ROM image storage area has the following structure:.

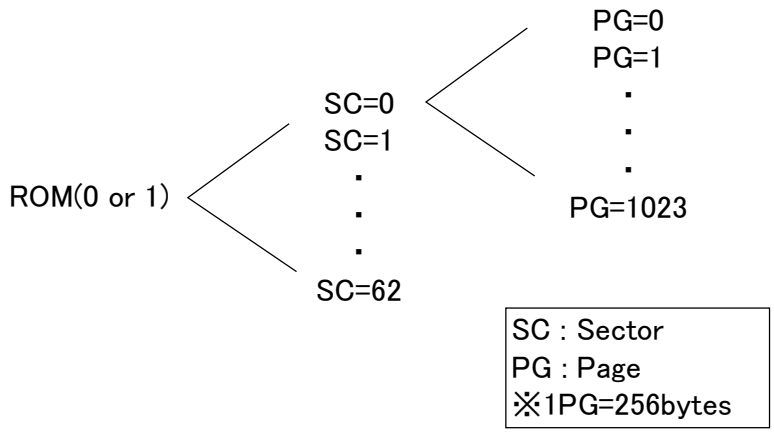

Figure 2 ROM image storage area

The captured images are saved from PG = 0 with SC = 0-62. Based on this, some explanations of the above variables are given below.

・SC_S(Image reading start sector) : Refers to the head sector where the image is stored
・SSC(Read start sector) : The first sector in the input file
・SP(Read start page) : First page included in the input file
・ESC(Read end sector) : Last sector in the input file
・EP(Read end page) : Last page in the input file

Since it is difficult, the following shows an example when the image saved from SC = 3 (data size: 10240 bytes) is downlinked in 3 steps.

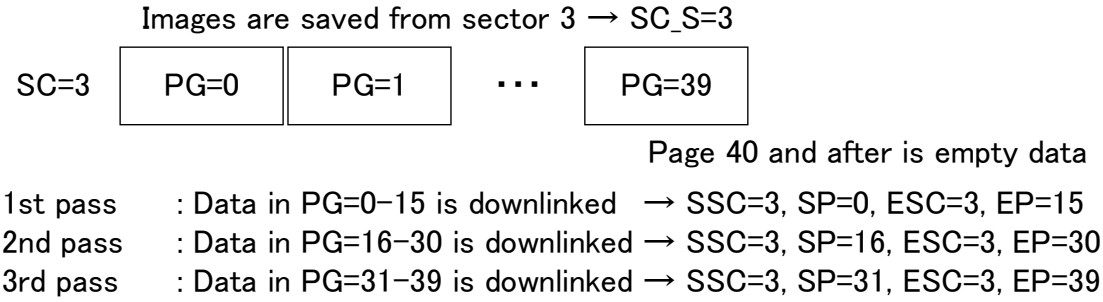

Figure 3 Example 1

See “Operational information page (http://nexusoperation.seesaa.net/)” and “Satellite images page (http://sat.aero.cst.nihon-u.ac.jp/nexus/E3_SatImages.html)”for values(SC_S, SSC, SP, ESC, EP).In downlink, image data is stored every 163 bytes per packet. A specific example is as Figure 4.

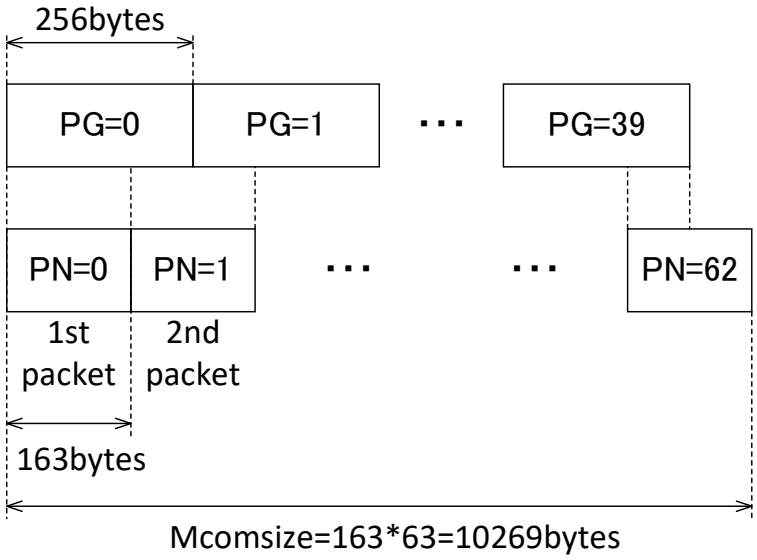

Figure 4 Example 2

In this example, the image is divided into 63 packets.63 個すべてがダウンリンクできれば, 画像になる.

If All packets are downlinked, it becomes an image. If the downlink data is missing and 10 out of 63 are missing, “loss_num=10” is displayed. The location of missing data is x of A“PN=x Data is lacked.”.

②Image information file(file_info.txt)

Enter the information required for “Demodulation_Movie_For_Public1.exe” in“file_info.txt”. The contents of “file_info.txt” are as Figure 5.

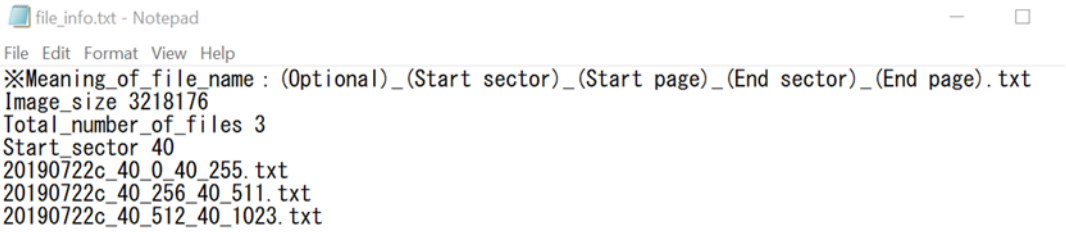

Figure 5 Contents of “file_info.txt”

A description of each line of “file_info.txt” is shown below.

・First line : Comment text(Meaningless)

・Second line : Movie size (bytes)

Enter the movie size. Movie size will be released in “Operational information page (http://nexusoperation.seesaa.net/)” and “Satellite images page (http://sat.aero.cst.nihon-u.ac.jp/nexus/E3_SatImages.html)”.

・3rd line : Total number of files

Enter the total number of input files.

・4th line : Start sector

Enter the first sector number(SC_S) in the read range. See “Operational information page (http://nexusoperation.seesaa.net/)” and “Satellite images page (http://sat.aero.cst.nihon-u.ac.jp/nexus/E3_SatImages.html)”for values(SC_S).

・5th line and after : The name of the input file

Enter the file name of the read file. When reading three files, enter each file with a line feed. The format of the file name is as follows.

“(Optional)_(SSC)_(SP)_(ESC)_(EP).txt(Line feed)”

※Do not put "_" in “Optional”.

For reference, here is an example of using three input files.

③Input file (Downlink data)

This refers to the file where the downlink data is saved. The contents of the input file are based on the following format.

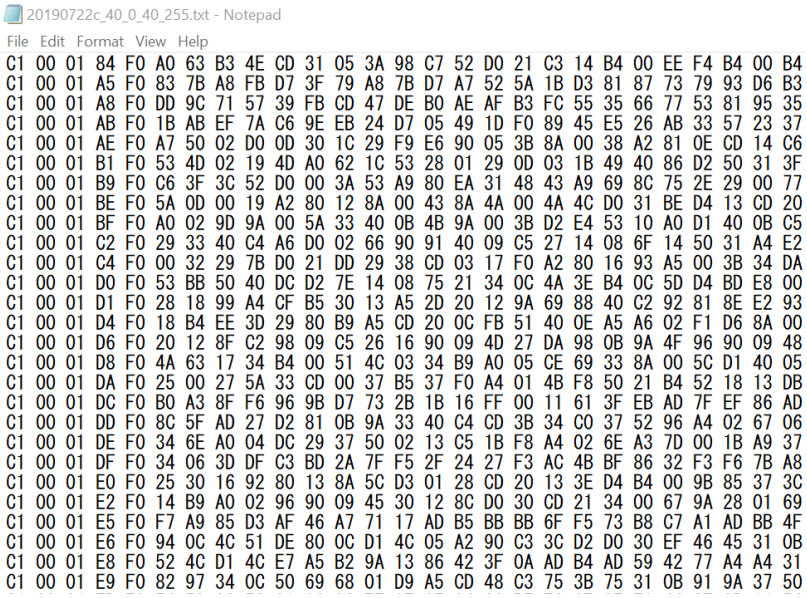

Figure 6 File format

・One packet of downlink data is stored for each row.

→The specific contents are shown in "FM telemetry format, Figure 6, Image data downlink".

※FM Telemetry Format：

http://sat.aero.cst.nihon-u.ac.jp/nexus/download/NEXUS_FM_telemetry_format_e.pdf