ALPINE IDA-X001 APN FILE FORMAT

Written by Expanders of Xoned.net Team

- AUTHOR NOTE

  This paper is not a complete manual of file specs, it was made just to explain the most tricky parts of structure.
  To fully understand how to create a working "apn" please refer to the XND_x001 converter source code.

  IMPORTANT

  This paper and the XND_x001 converter was written only for EDUCATIONAL PURPOSES. You are not allowed to sell them or using them for commercial purposes. The author reserves the right not to be responsible for any unallowed use or for any possible damage caused by the software.

- GREETING

  Greeting for this project goes to Enox666 and Shane Taylor for beta testing, SPECH for help on mathematics, and pride-rock.com forum for the support.

- INTRO

  Alpine's IDA-X001 use an innovative wallpaper image completely different from past models.
  File format is plaintext, and consist in 4 types of blocks: header tag, colours-data tag, cumulative checksum tag and footer tag. Each row in the file has to end with his checksum. Checksums are (unsigned char)s.

- FILE STRUCTURE

  Here's a shoot of file structure

```
S00E0000524742504 14C202061706EBA
S325086 00000001F001F001F001F001F001F001F001F001F001E081E081E081E081E081E60
S325086 00020081E081E081E081E081D101D101D101D101D101D101D101D101D101C181CA0
S325086 00040181C181C181C181C181C181C181C181C181B201B201B201B201B201B201BC2
……
……
S325086 257C0E7E3E7E3E7E3E7E2EFE2EFE2EFE2EFE2EFE2EFE2EFE2EFE2EFE2EFE1F7E1F7E159
S325086 257E0F7E1F7E1F7E1F7E1F7E1F7E1F7E1F7E0FFE0FFE0FFE0FFE0FFE0FFE0FFE0FFE082
S306086 258003FF8
S705860000074
```

  In purple is the header tag
  In light blue is the ascii title of the file encoded in plaintext
  In olive green is the title checksum (See mathematic n°1)
  In red are the data tags
  In black is the the index counter, (each row consists in 0x20 bytes of colours)
  In blue are colours data (see colours section).
  In orange are the colours checksums(See mathematic n°2)

In grey is the cumulative checksum tag
In pink is the cumulative checksum(See mathematic n°3)
In green is the footer tage

Counter goes from 0x00000 to 0x25800.

- COLOURS

  IDA-X001 screen is 320x240 72dpi and uses 16bpp colours structured in 565 format:

  1 2 3 4 5 1 2 3 4 5 6 1 2 3 4 5
  RRRRRGGGGGGBBBBB
  ----------16 bit----------

  Each row contain 32 bytes, so each row draw 16 pixels.

- MATHEMATICS

  1. Title checksum can be obtained summing each byte of the title then using this formula
     CHECKSUM = 0x72 – BYTESUM

  2. To obtain a working colours checksum you first have to reduce the index counter to an (unsigned char), then you have to sum each of the 32 bytes contained in the row (incrementing by 1 each byte) then use this formula
     CHECKSUM = 0x92 – REDUCEINDEX – BYTESUM

  3. Cumulative can be obtained summing each colour byte then using this formula
     CHECKUM = 0xFF – FULLBYESUM