**SPA to CSV Conversion Tool**

**EXE Generation from Visual Studio**

**Prerequisite**

1. Install Visual Studio Community Pack
2. Install Windows 10 SDK Pack

**Steps to be followed**

1. Place all the .cpp and .h in a folder in **local PC.**
2. Right click and open the folder in visual studio.
3. After the files are loaded, click on the folder name in Visual Studio and Open in terminal.
4. Give the below command in the developer command prompt.

**>**

**cl /EHsc main-with-new-cla.cpp data-processing.cpp parse-command-line-args.cpp print-usage.cpp read-write.cpp str-to-int.cpp /link /out:spa-reader.exe**

1. **spa-reader.exe** file shall be generated in the same path.

**To generate a single CSV file from multiple SPA files**

1. Create a folder in Local PC and place all the SPA files to be converted to CSV
2. Place the **SPA\_to\_CSV.bat** and **spa-reader.exe** in the same folder.
3. Make sure there is no existing “combinedRawData.fullSpectrum.CSV”
4. Run the batch file.
5. New combinedRawData.fullSpectrum.CSV file shall be generated.

**Best Practice**

**DON’T USE SPACE IN ANY OF THE FILE AND FOLDER NAMES**

**Reverse engineering to find the memory address.**

Steps:

1.       First create one CSV file from the desired series SPA file and check the number of cells which has the actual data (In our example, total cells with actual data are **5913**)

2.       Load the SPA file in HEX Editor - <https://hexed.it/>

3.       Find the start address which is very easy to find. (In our case it is **0x508** which is 1288 in decimal)

4.       Now we need to find the end address by calculating how many bytes are needed to reach 5913 samples from the start address.

Rule (calculate in decimal only and at last convert the end value to HEX)

**(Actual data samples \* 4 ) + Start address – 1 = End address**

(5913 \*4) +1288 – 1 = End address

23652 + 1288 – 1 = End address

24939 = End address

**0x616B** = End address

I believe this works for any resolution now.

**GO TO CALCULATOR🡪 PROGRAMMER**

START ADD: 0x75C –> 1884

END ADD: to find?

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TOTAL CELLS WITH DATA: 2957

CAL: (2957\*4) + 1884 -1

13711 = 358F 🡪 **0x358F (8SCANS,8RESOLUTION)**

TOTAL CELLS WITH DATA: 5913

CAL: (5913\*4) + 1884 -1

25535 = 63BF 🡪 **0x63BF (4SCANS, 4RS) (100SCANS, 4RS)**

TOTAL CELLS WITH DATA: 1480

CAL: (1480\*4) + 1884 -1

9359 = 1E7B 🡪 **0x1E7B (16SCANS, 16 RESOLUTION)**

START ADD: 0x75D –> 1885

TOTAL CELLS WITH DATA: 6224

CAL: (6224\*4) + 1885 -1

26780 = 689C 🡪 **0x689C (4SCANS, 4RS) (100SCANS, 4RS) – NEW PRISM**