

Import RF data to MATLAB (`import_RFdata2MATLAB.m`)

Function allows to import acquired RF data and main acquisition parameters needed for imaging into MATLAB.

Inputs of the function:

DIR – directory of the file,
filename – name of the file with RF data, *.bin binary file recorded using ArtUS device and artus_rf_test sample.

Outputs of the function:

RF_DATA – RF data in cell format: $1 \times K$ – number of RF frames, where cells contain N (number of RF samples) $\times M$ (number of scanning lines).

RF_DATA_Q – RF data Q component obtained after Hilbert transform in cell format: $1 \times K$ – number of RF frames, where cells contain N (number of RF samples) $\times M$ (number of scanning lines). Actual for Hilbert transform output.

HEADER – RF data acquisition parameters:

HEADER{1,K}.number_of_frames – number of RF frames in a file (!Note: if the file will be recorded using Start/Stop option the field will be 0),
HEADER{1,K}.header_size – header size in bytes,
HEADER{1,K}.frame_size – RF frame size in bytes,
HEADER{1,K}.source ID – RF data source ID,
HEADER{1,K}.tx_frequency – ultrasonic wave (transmission) frequency,
HEADER{1,K}.Length_of_RF_row – number of samples in each row of RF window,
HEADER{1,K}.Number_of_RF_rows – number of RF scanning lines in a window,
HEADER{1,K}.Sampling_period_ns – sampling period in ns (25 ns for TELEMED systems),
HEADER{1,K}.sample_size – number of data bits,
HEADER{1,K}.beam_x – start point coordinates of each ultrasound beam in cm (sector width direction),
HEADER{1,K}.beam_y – start point coordinates of each ultrasound beam in cm (scanning depth direction),
HEADER{1,K}.angle – angle in radians (the angle is given relative to the perpendicular to the center of the probe's surface).
HEADER{1,1}.time_stamps – time stamps for each ultrasound scanning line

transducer_code – type (L – linear, C – convex, P – phased array probe), bandwidth limits (HF...LF), width of probe in mm, code of manufacturer,

flag – returns 1 if file was successfully imported (otherwise – 0, i.e. empty file).



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