



## Specification proposal for Scan failures Datalog in STDF file format

**Purpose.** Provide guidelines and details allowing scan failure datalog within STDF files.

**Requirements.** The combination of tester, tester operating system and test program implementation must provide the way of:

1. Collect at least 1K failing cycles from ATPG sequences.
2. Determine for each failing cycle the corresponding ATPG pattern, cell and pin.
3. Check if the first detected failing cycle occurs within pattern0 (chain-integrity test)
4. [Optional] Determine the total number of failures detected by the ATPG application. This number is independent by the logging capability specified at point 1

**Referenced documents.** Standard Test Data Format (STDF) Specification, Version 4, Dec 1995

### **Record Description (\* see notes)**

Scan failure data described in the requirement paragraph must be stored within a GDR (Generic Data Record) of STDF. Formatting in accordance to the following specification:

*This part covers the custom part of the GDR record.*

FLD\_CNT field indicates the number of GEN\_DATA field, where data are stored.

GEN\_DATA can be of several types, specified with a code in the first byte of data.

The first eleven fields described here after, will occur only once per GDR instance.

1. ID\_TAG reports a fixed identifier allowing retrieving concerned data from the overall stdf file. The GEN\_DATA field is a character string containing: "SCAN\_FAILURES\_DATA".
2. TEST\_NUM reports the test number associated in the test program to the execution of the concerned scan test. The GEN\_DATA field is of size U\*4.
3. Third GEN\_DATA field is used to store the Core ID: U\*1 type, 1byte unsigned integer; this is needed in case of a multiple scan-core device.
4. Fourth GEN\_DATA field is used to store the Total Number of Fails detected by the scan sequence execution: U\*4 type, 4 bytes unsigned integer;
5. Fifth GEN\_DATA field is used to store the Pattern 0 Flag: U\*1 type, 1 byte unsigned integer;
6. Sixth GEN\_DATA field is used to store Test Voltage (in mV): U\*2 type, 2 bytes unsigned integer;
7. Seventh GEN\_DATA field is used to store test Frequency (in kHz): U\*4 type, 4 bytes unsigned integer;
8. Eighth GEN\_DATA field is used to store test Temperature (in Celsius degrees): I\*2 type, 2 bytes signed integer;
9. Ninth GEN\_DATA field stores the Type Data Flag: if 0 the fail data collected are ATPG-Like Format (pattern, offset, pin-name: see last GEN\_DATA field), if 1 the fail data are Broadside Format (cycle, pin-name: in this case the cycle value is





Detected			(4 bytes unsigned integer)	
Pattern 0(zero) Flag		GEN_DATA	U*1 (1 byte unsigned integer)	
Voltage [mV]		GEN_DATA	U*2 (4 bytes unsigned integer)	
Frequency [kHz]		GEN_DATA	U*4 (4 bytes unsigned integer)	
Temperature [Celsius deg.]		GEN_DATA	I*2 (2 bytes signed integer)	
Type Data Flag		GEN_DATA	U*1 (1 byte unsigned integer)	
ATPG Truncate Option		GEN_DATA	C*n	
ATPG Pattern Name		GEN_DATA	C*n	
Structured fail data	Pattern	GEN_DATA	C*(8+n <sup>°</sup> )	U*4
	Offset			U*4
	PIN_NAME			C*n

### **Record Description Notes**

Some of the record fields specified in the Record Description paragraph could be parameters passed to the datalog function.

The following lists specifies in which cases this note applies:

- CORE\_ID
- Voltage
- Frequency
- Temperature (In this case we assume that the testing temperature is retrieved from the MIR record, whenever the passed parameter assumes a default value equals to all 1's). This comes as a second order priority.
- Type Data Flag.

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<sup>°</sup> n indicates the number of characters needed to represent the pin name. Since the GEN\_DATA field limitation, and the 8 characters used to code pattern and offset, n≤247