

DIFI Certification Process

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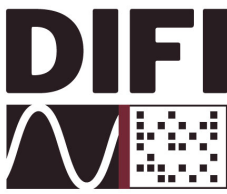
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Types of Certifications

- “DIFI Compliant” – Self-Certification with DIFI Consortium reviewing the test data before “DIFI Compliant” status is given out.
- “DIFI Certified” – 3rd Party Certification with DIFI Consortium reviewing the test data.



Certification Timeline



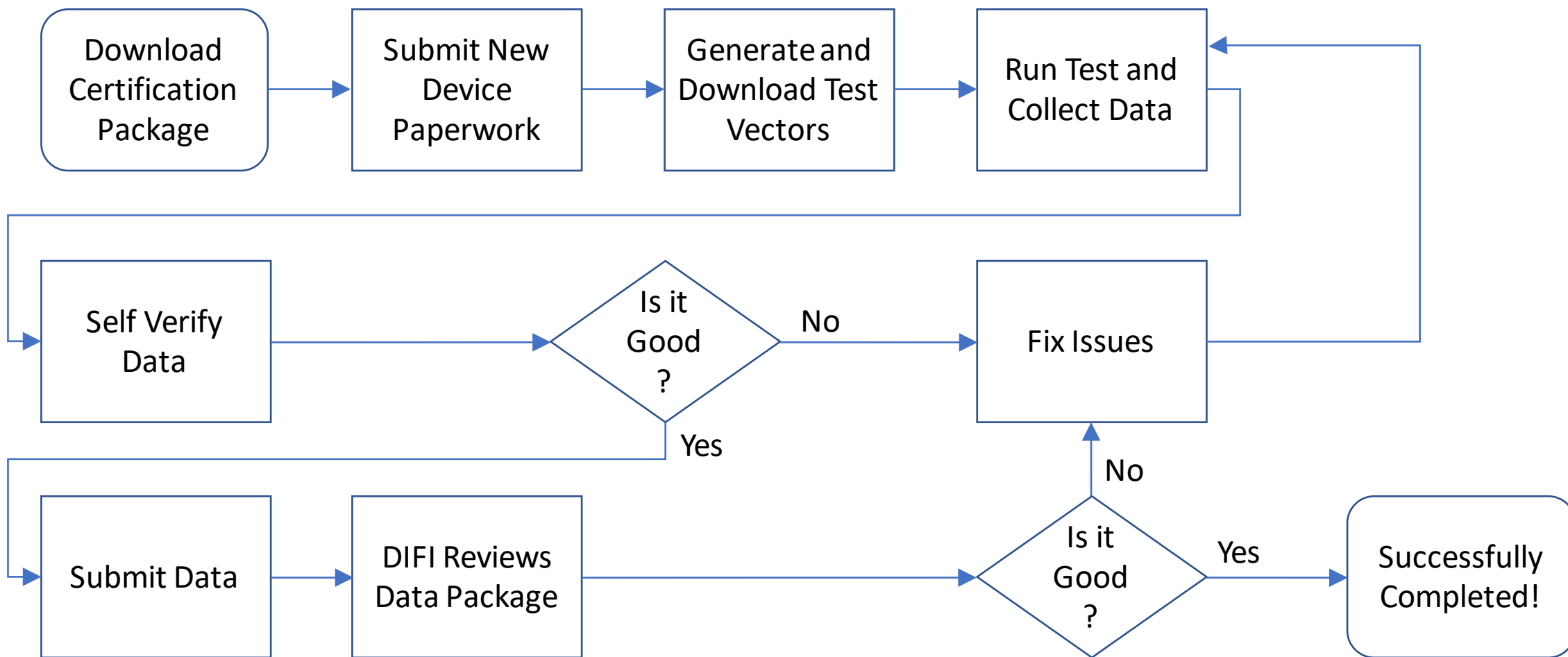
Trial Certifications

- Several companies will be going through the Self-Certification Process in the next several months.
- The Certification Working Group will review the data packages for these trial runs.
- Lessons learned will be applied to future revisions of the Certification Plan and Process.

Certification Process Status

- The Certification Process is currently being documented but is mostly defined. Should be completed before the end of the year.
- Website will be created to allow for an easy interface to follow the certification process and submit data.

“DIFI Compliant” Process (Self)



Certification Process Open Issues

- A 3rd Party Company will eventually handle the adjudication process for the certifications for the DIFI Consortium.
 - This allows for an impartial entity to grant/deny compliance.
 - This potentially may be a higher workload that the Certification Working Group can handle.
- Cost for Certifications are still TBD.
- Number of Certifications included with the membership are TBD at the moment.
- Thresholds for trigger a recertification still needs to be determined.

Certification Process Open Issues

- A 3rd party company will eventually handle the adjudication process for the certifications for the DIFI Consortium.
 - This allows for an impartial entity to grant/deny compliance.
 - This potentially may be a higher workload that the Certification Working Group can handle.
- 3rd Party Certifications
 - Once the Self-Certification Process/Plan have matured, 3rd Party Certifications will be available.

Certification Website

- Goal is have this in place by end of Q2 2025.
- Public Facing
 - General Information about the Certification Plan and Process
 - Product Lookup for Certification Status
- Member Portal Side
 - Download Certification Plan(s) based on Revision
 - Download Python or Wireshark verification tools
 - Generate and Download Test Vectors
 - Create a New Device Record
 - View Existing Device Records
 - Update Data for Certification review
 - Review Device Certification Status

Certification Plan Status

- The Certification Working Group has been working on Certification Plan version 1.1 which corresponds to Specification version 1.1.
- NOTE: Certification Plan version number will track the Specification version number.
- Version 1.1 of the Specification establishes the first two Information Classes (IC0, IC1). Version 1.2 is a much more complicated and we felt we needed to establish a solid foundation that would enable us to address version 1.2 on solid ground.

Certification Plan Status

- Version 1.1 of the Certification Plan has been conditionally approved by the Board.
- Version 1.2 – work will commence in late 2024 after all the open issues with 1.1 are resolved.

Certification Plan Strategy

- Functional Testing form the foundation of the certification plan.
 - These devices will be subjected to a rudimentary functional test limited to test basic behavior. This is NOT a performance based test.
 - For instance, on some of the products, the signal in the DIFI Output Stream will be demodulated and verified it can at least carry data at a 10^{-4} bit error rate (BER).
 - The DIFI Specification and data stream syntax will be verified as part of the functional testing.

Product Types

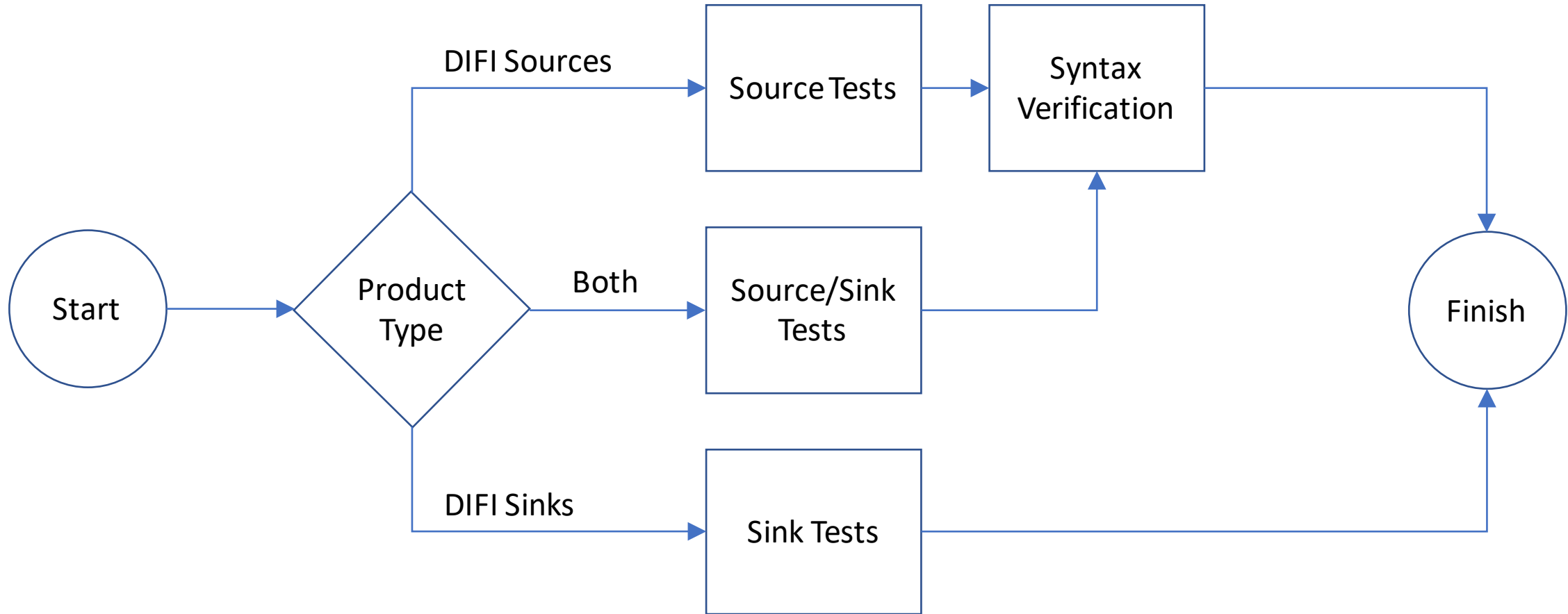
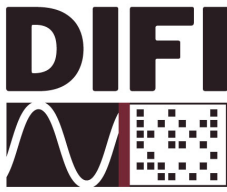
DIFI Sources	DIFI Sources/Sinks	DIFI Sinks
Digitizers – ADC	Channelizers	Digitizers – DAC
Signal Generators	Combiners	Recorders
	Modems	Spectrum Analyzers

Two things to note about product types:

- Upconverters are treated as Digitizers – DAC.
- Downconverters Are treated as Digitizers - ADC

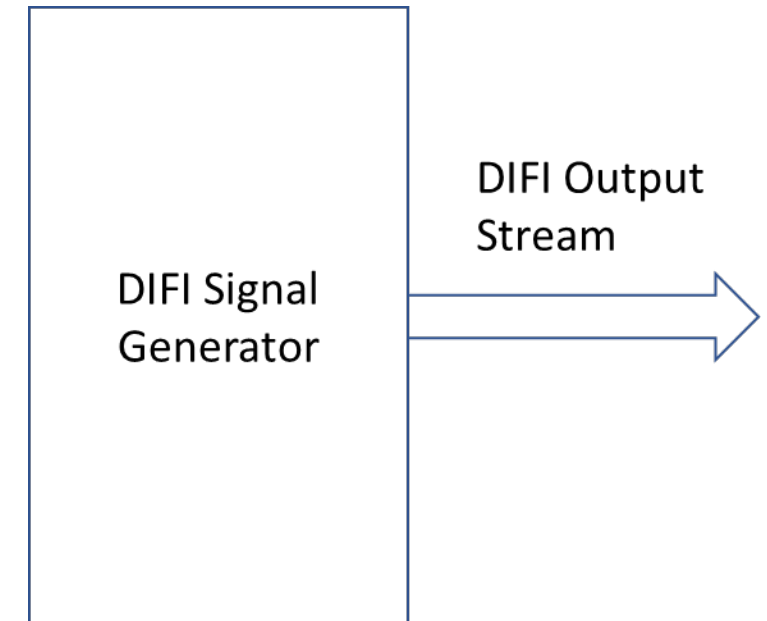


Certification Plan



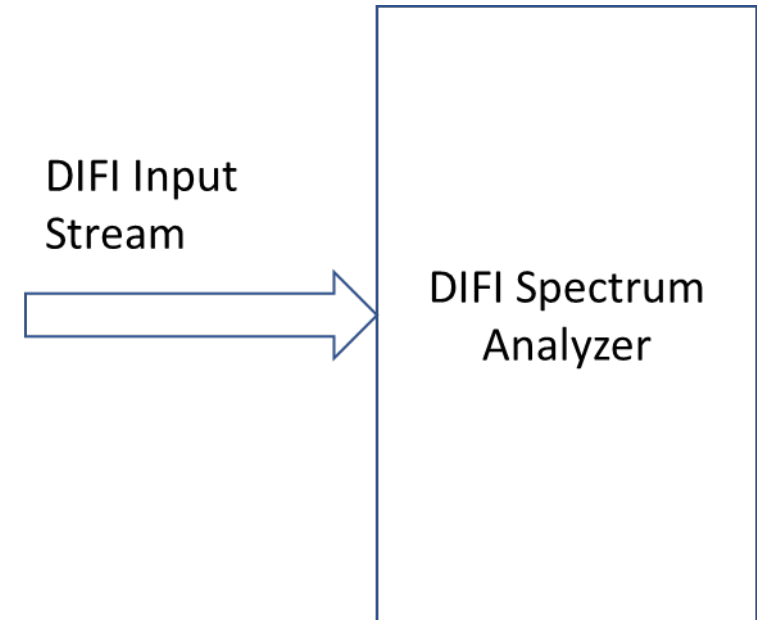
Source Certification Plan

- Device is configured to transmit a DIFI Stream with a known signal contained in the stream.
 - Low, Medium, and High Sample Rates
 - Jumbo Packets (if applicable)
 - IPv6 (if applicable)
- DIFI Stream is captured and syntax, and metadata are verified to match the expected metadata.
- The properties of the signal contained in the DIFI Stream are then verified as well.



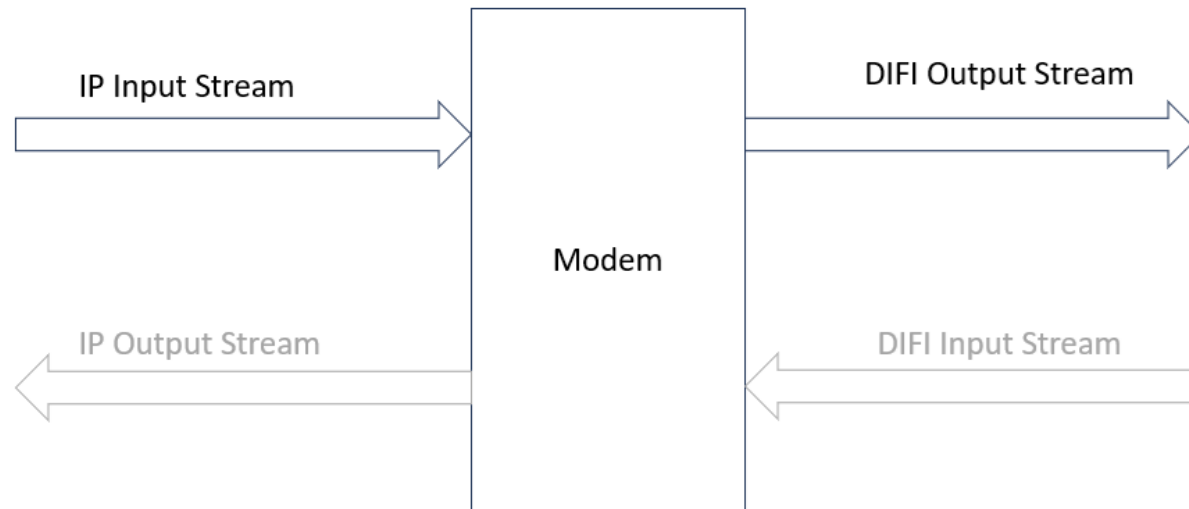
Sink Certification Plan

- Version 1.1 of the DIFI Specification does not have ACK/NACK packets available.
- This complicates the testing for these types of products.
- For some of the product types, we are limited as to what can be verified.
- This issue is addressed in Version 1.3 of the DIFI Specification and will be further developed in Version 1.3 of the Certification Plan.



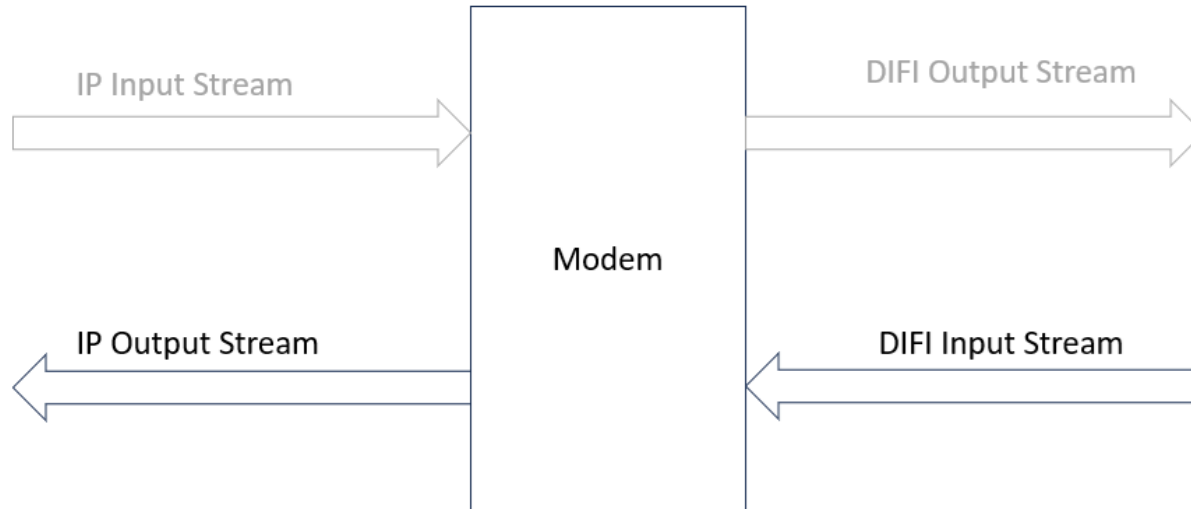
Source/Sink Certification Plan

- The certification for these types of products will be split into two components; source testing, and sink testing.
- The DIFI Source side of the device will output a DIFI Stream which will be captured and then verified just the same as any other DIFI Source.



Source/Sink Certification Plan

- The DIFI Sink side of the device will be subjected to a known valid DIFI Stream that is generated to match this type of product.



Syntax Verification

- Network Properties are first validated
 - Source IP Address
 - IPv4 Fragmenting
 - UDP Packet formatting
- Information Class – Make sure all packets are allowed within the current Information Class.
- Scan through each of the packets and verify that they meet the specification.

Open Issues

- Clearly defining test vectors for DIFI Sink products
 - DIFI Source Streams will be generated with an identical message but the Sample Rate and the Bit Depth will be tailored to the device being tested.
- Low cost DIFI Spectrum Analyzer alternative