What is an MFA Authorized Test Lab?

MFA Authorized Test Labs (ATLs) are labs that have been approved by the MulteFire Alliance to perform certification testing. Only test results from an ATL are used by the certification program to grant certification to a device. ATLs can be approved to perform tests for one or more types of MFA certification.

How Does a Lab Become an ATL?

A lab becomes at ATL by being an MFA Test Lab member in good standing and formally applying with the MulteFire Alliance to become an ATL. The MulteFire Alliance's Certification Authority audits the lab to make sure that they have relevant experience in certification testing and have the appropriate quality systems in place. ATLs are approved for specific kinds of testing – for example, some labs may be approved for just testing UEs, while others may only perform interoperability (IOP) testing.

Who is the Certification Authority?

The Certification Authority (CA) is an independent, unbiased and impartial referee that administers the processes and procedures of the Alliance's certification program. They work for the MulteFire Alliance, and not for any member company, nor any lab. The CA can be reached at CA@multefire.org.

What if I Disagree with the CA's Findings?

If you believe that the CA had made a decision that is incorrect, any decision made by the CA can be appealed to the MulteFire Alliance Executive Committee, and then to the MulteFire Alliance Board of Directors.

How Long Does It Take to Get a Product MFA Certified?

From start to finish, getting a device certified takes less than 2 weeks – 1 week for testing, and 1 week for review and processing. However, the ATLs that perform the testing may not have availability in their schedule for testing exactly when you need it. If there are any issues discovered in testing, additional time may be needed to resolve the problem.

What Does it Cost to Get A Product MFA Certified?

The MulteFire Alliance charges a listing fee to cover some of the administrative costs of certification. The fee depends on the type of certification, and the company's membership level.

	Full/Sponsor Members	Adopter Members
New Device	Free	USD$2,500
Variant/ECO	USD$250	USD$250

Note that the member company is also responsible for paying the ATL to perform the testing.

Who Can Get a Device MFA Certified?

Certification is open to all MulteFire Alliance members that are in good standing.

What Do I Have to Do to Maintain Certification?

The company that obtained certification is responsible for storing the records associated with the certification (test reports, etc.) for a defined period. The company also needs to notify the

certification program of any changes to the device that might impact performance. The Certification Authority may require some tests to be repeated to ensure that the device is still functioning. We call this the Engineering Change Order (ECO) Process.

What is the ECO Process?

The Engineering Change Order (ECO) Process is how device makers notify the certification program about changes to a certified device. The device maker provides information about the changes to the device to the Certification Authority. The CA then determines what (if any) tests need to be re-run to confirm that the device is still compliant with the MulteFire Alliance's certification program requirements. The device maker runs those tests (at an ATL, if needed), and the CA reviews the results. If everything is approved, certification is maintained for the device.

How Do I Certify Variants of an Already Certified Device?

If you have multiple versions of a certified device (e.g. aimed at different markets or regions), you do not have to certify each version. You can certify a "root" device, and then use the ECO process to extend that certification to each of the variants.

What Is the Difference Between an ECO/Variant and a New Certification?

The ECO process is intended to allow device makers to avoid having to certify from scratch every time there is a change to the device. When only minor changes are made to a device, requiring full certification testing would waste time and resources. In order to prevent abuse of the ECO process, the CA is responsible for assessing whether an ECO should be a new device certification.

To provide some guidance, here are some examples:

- Change to the device casing: ECO/Variant
- Change to the non-MulteFire device: ECO/Variant
- Software bug fix update: ECO/Variant
- Adding support for a new optional feature: ECO/Variant
- Component change: ECO/Variant
- Antenna change: ECO/Variant
- New band support: New device certification
- Major software update: New device certification
- New RF path: New device certification

Do You Certify Components?

No. We do not certify components of devices (chips, antennas, etc.) – we only certify end-product devices. This is because some of the internal interfaces are not well defined, so we don't have a consistent way to test the components. However, we *do* allow for re-use of test results in new devices: If a new device seeking certification uses a component from a previously certified device, the test results from the original device can be applied to the new device. The Certification Authority is responsible for determining which results can be re-used.

What Kinds of Tests Do the ATLs Perform?

Broadly speaking, the ATLs have two kinds of tests that they perform on devices – conformance testing and interoperability testing. Conformance testing is done in a lab environment using specialized test equipment to perform RF parametric and protocol testing. Interoperability testing involves testing that the device works with reference implementations in tests that represent typical use cases for those devices.

What Devices Will My Device Be Tested Against in Interoperability Testing?

The Certification Program maintains a list of devices for use in interoperability testing, called the Interoperability Device List (IDL). These are "known good" implementations that are commercially available. Your device is required to pass the interoperability tests when tested against at least three devices from the IDL. The IDL changes over time, with devices being added and removed as they enter and leave the market.

Do I Have to Pass All of the Tests?

The CA may grant certification, even if there are issues during testing. This may happen in a few select cases such as:

- If there is a known issue with a given test case, but the test is still active, related failures may be ignored.
- Minor test failures may also be ignored, especially if there is no impact on interoperability.
- If a test can't be run for technical reasons, but overall interoperability is still verified, the CA can grant certification.

More serious issues – ones that impact interoperability and/or system performance – will require a special waiver. Waiver requests are taken to the Wavier Review Board (the CA, the Executive Committee, and relevant technical experts) for review. Waivers may be granted with special restrictions, as determined by the Waiver Review Board. The Waiver Review Board may also reject the waiver request.

Can I Add My Device to the IDL?

Yes! If your device is certified, it can be added to the IDL. You do have to commit to providing support to the labs and device makers as needed to help run the tests and to providing samples under "reasonable commercial and delivery terms." The benefit to you is that new devices seeking certification will have to work with your device to get certified – greatly reducing the risk of field interoperability failures.

Doesn't GCF LTE Testing Cover This?

MulteFire uses the 3GPP LTE specifications to define many aspects of operation, but makes changes to "standard" LTE as needed to enable MulteFire operation. We rely on the existing conformance tests from 3GPP to test core LTE functionality, and we focus our testing on where MulteFire differs from LTE.

What Are the Benefits of Certification?

The primary benefit of getting your devices certified is to reduce the risk of field interoperability failures. Certification testing helps find any potential problems before the device ends up in the

hands of end users. You also get to use the MulteFire Certified logo and certification mark on the device, packaging and marketing materials, indicating to end users that your product has successfully passed certification testing. You can also have your device listed on our Certified Product List on the MulteFire Alliance website.

Do I Have to List My Device on the Certified Product Page?

No – you do not have to list your device on the certified product page. You can request to not be listed, to the general public and/or to the members. You can also wait to have your device listed until some later date, typically coinciding when the product is publicly announced.

Do I Have to Worry About Confidentiality?

No – any information you provide the CA (and the certification program in general) is kept confidential. The MulteFire Alliance is only provided with anonymized information on devices going through certification. Information about your company or your device is only disclosed with your company's express permission.

Which Tests Do I Have to Pass to Get My Device Certified?

We have defined several test cases to examine MulteFire-specific behavior in devices, across a number of MulteFire-specific test specifications. Not all of those tests have to be passed to get certified, however. You can find out which test cases are "active" and required for certification by looking at the Test Requirements Status List (TRSL). Other tests may not apply to your device, because it doesn't support a given optional feature – that is determined by looking at the Implementation Conformance Statement (ICS) for your device.

What is the TRSL?

The Test Requirements Status List (TRSL) is a spreadsheet that says which test cases are needed for certification, how those tests can be run, and which tests don't need to be run – and why. The Certification Authority assigns letter codes to each test case. Short version – run all the A and B test cases. Full details can be found in the Program Management Document (PMD).

What is the ICS?

The Implementation Conformance Statement (ICS) is a form you fill out describing your device for the certification program. It tells what features your device supports – which bands, which modes, which optional features, etc. The ATLs and the Certification Program determine which tests apply to your device by looking at the ICS.

Where Can I Find Out More Information About the Certification Program?

The first place to look is the Program Management Document (PMD). It defines the policies and procedures used by the Certification Program. You can also ask the CA – it's their job to answer your questions.

What is the PMD?

The Program Management Document (PMD) is the primary document that describes the processes, roles and policies of the MulteFire Alliance's Certification Program. It is published to the membership and is updated periodically as the program evolves.

How Do I Get My Device Certified?

The process is straightforward:

- Be a member of the MulteFire Alliance in good standing.
- Fill out an Application for Certification form.
- Fill out an ICS for your device.
- Sign the Certification Program Participation and Trademark License agreement.
- Send both documents to the CA for review.
- Contact an ATL and arrange for testing of your device.
- Provide the report to CA.
- Pay the listing fee to MulteFire Alliance (if applicable).

How Do I Perform the ECO Process?

The ECO process is pretty much the same as getting a device certified in the first place – the only difference being the agreements are already signed.

- Be a member of the MulteFire Alliance in good standing.
- Fill out the ECO form, describing the changes to your device.
- Update the ICS for your device.
- Send both documents to the CA for review.
- CA decides which tests need to be run.
- Contact an ATL and arrange for testing of your device.
- Provide the report to CA.
- Pay the ECO fee to MulteFire Alliance.

How Do I Become an ATL?

The requirements for becoming an ATL are straightforward:

- Be a Test Lab member of the MulteFire Alliance in good standing.
- Get the equipment needed to perform the tests.
- Add MFA testing to the scope of your lab's International Laboratory Accreditation Cooperation (ILAC) accreditation.
- Fill out the form to apply to become an ATL.
- Submit your lab for review by the MulteFire Alliance CA to ensure that you are able to perform the tests.
- Sign the ATL agreement.

Can I Run Tests Outside of Certification?

Yes – you are encouraged to run tests whenever you like. Ideally, you can acquire test systems and the IDL devices so you can perform the tests yourself. Or you can go to an ATL, or any other test lab for that matter, and have them run tests independent from the certification program.

Who Do I Ask If I Have More Questions?

Ask the CA! Fill out this form, and we'll get back to you in a few days. <Link to form>

