

# **ARINC GLOBALink Avionics Qualification Policy**

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# **ARINC**

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**ARINC PROPRIETARY**

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# 1 SCOPE

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This policy sets forth the procedures and controls that are used to ensure end-to-end interoperability and prevent operationally detrimental impact to the ARINC GLOBALink communications networks by malfunctioning data link avionics or designs that are incompatible or exhibit inefficient operation with the ARINC systems. The ARINC GLOBALink networks include the VHF Aircraft Communications Addressing and Reporting System (ACARS), the VHF Data Link (VDL) system, the High Frequency Data Link (HFDDL) system, the Inmarsat Classic-Aeronautical and Swift Broadband-Safety Satellite Communications (SATCOM) networks, the legacy (Block 1) and Certus (Broadband) Iridium Satellite system, GateFusion, an ARINC implementation of GateLink, and ACARS-over-Internet Protocol (AoIP) implementations.

Data Link avionics systems have been designed and developed to interoperate with the GLOBALink service based on a number of industry standards and references that have primarily been prepared by the Airline Electronic Engineering Committee (AEEC). Data link avionics subject to this qualification policy include Communications Management Units (CMUs) built to AEEC Specifications 724, 724B, and 758 using protocols and formats defined in AEEC Specifications 618, 620 and 631. VHF radios built to AEEC Specifications 566/A, 716, and 750. HFDDL systems built to AEEC specifications 634, 635 and 753, and SATCOM system components built to AEEC Specifications 741, 761, 771 and 781. GateFusion Terminal Area Wireless Units (TWLUs) are built to AEEC standards 763 and 822 and use interfaces defined in an ARINC Communications Service Interface Control Document (ICD). ACARS-over-IP systems have been developed in accordance with AEEC Standards 822A and 830, and, as the specific communications media (e.g., 802.11, AeroMACS, 3G/4G cellular, ...) and equipment could vary considerably based on an airline requirements, the compatibility with this service is also defined in the ACARS over IP Traffic Gateway (AITG) Interface Control Document (ICD) document number 62446.

General Aviation and airframe-unique integrated data link equipment, while they may have not been developed with the same industry-standard form and fit, are still subject to testing are expected to meet the appropriate protocols and performance standard prior to full network access. The ARINC qualification program will provide the airline community with the capability to determine that avionics systems conform to key requirements of these specifications and also permit the capability of validating end-to-end interoperability between the avionics and a ground-based end system.

# 2 BACKGROUND

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The ARINC GLOBALink system consists of VHF ACARS/VDL, SATCOM, HF DL, Iridium Communications, and AoIP sub-networks. Each of these communication sub-networks includes a series of RF channels, multiple ground stations, and a central processor as shared resources for all airline data link avionics. As a result, a single or group of malfunctioning or incorrectly designed avionics can consume an excessive amount of system resources, making communications for other aircraft very difficult and/or impacting the cost to operate the networks.

Prior to the initiation of the AQP program in 1990, malfunctioning ACARS avionics frequently caused the slowdown or complete shutdown of the ACARS Central Processor System (CPS), interrupting service nationwide. Malfunctioning aircraft have also had a regional impact through radio frequency (RF) congestion or inadvertent jamming over a large geographical area. One example is a *stuck-carrier*, a malfunction in which the ACARS unit permanently keyed the VHF transmitter, thereby blocking the RF channel for all other message activity. Other avionics have displayed extremely inefficient behavior. For example, some avionics systems consistently received only 50% of the uplinks addressed to the aircraft, while other systems received more than 98% of all addressed uplinks.

This policy was initiated to provide the means for the industry to work with ARINC to prevent, to the greatest extent possible, severe GLOBALink service degradation caused by malfunctioning aircraft data link avionics. In addition, the AQP facility provides our airline customers with the ability to conduct end-to-end interoperability tests, providing assurance that a communications solution will work effectively, prior to conducting costly field evaluations. The performance and efficiency of almost all GLOBALink avionics systems has greatly improved since the introduction of the AQP, thereby improving the overall system performance for all customers.

Based on the success of the AQP program for the ACARS sub-network, ARINC extended the AQP program to include SATCOM in 1991, HF DL in 1997, the VDL sub-network in 1998, Iridium in 2006 and GateFusion in 2007. Furthermore, AQP for the Inmarsat Swift Broadband-Safety service was introduced in 2015 and AQP for the new Iridium Certus (Broadband) and ACARS-over-IP services are being introduced in 2017-2018. Improved avionics performance, as identified by the AQP, will provide a path for continued improvement in system capacity and performance and the continued acceptance and growth of data link for all applications including Air Traffic Services (ATS).

# 3 POLICY OVERVIEW

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This policy is intended as a cooperative effort among the airlines, avionics manufacturers, aircraft manufacturers and ARINC. ARINC has developed and maintains the necessary procedures and test devices to determine efficient, compatible, and interoperable operation of the data link avionics. It is recommended that manufacturers use ARINC procedures and test devices to complement their own in-laboratory testing. Final lab testing will be performed by ARINC at its Avionics Qualification Facility in Annapolis. Subsequently, the manufacturers and airlines may participate with ARINC in controlled and monitored flight tests. This multi-phased approach will provide the highest possible level of assurance with the least impact on scheduled delivery of equipment to airlines and entry into service. Equipment successfully completing the tests will be qualified to operate on the ARINC GLOBALink networks.

The airline or manufacturer must submit all data link avionics for qualification testing prior to operational use. Use of avionics that have been identified as nonqualified (failed or not-tested), as defined in Paragraph 5.1 of this Policy, on the ARINC networks will result in removal of the airline or manufacturer designator from the GLOBALink service access tables, thereby preventing the airline or manufacturer from all further beneficial use until the equipment is removed from service. All costs associated with isolation, troubleshooting, and restoration associated with outages or system impairments caused by nonqualified equipment will be billed to the airline or manufacturer owning the equipment.

# 4 AVIONICS QUALIFICATION PROCEDURES

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Detailed test procedures are maintained by ARINC and are available to applicable airlines and manufacturers. AQP performance criteria are based on selected key system requirements identified in the AEEC Specifications, RTCA MOPS, ARINC ICDs, and other industry documents are applicable. With an objective of compatibility and interoperability, AQP tests are select and are not intended to validate full compliance with the aforementioned standards.

The GLOBALink avionics qualification will be accomplished in the four-phase process described in the following.

## 4.1 Phase 1: Tests with Network Protocol Emulator

Phase 1 testing will provide the manufacturer with assurance, early in the design cycle, that the applications and protocols residing in the Communication Management Unit (CMU), or equivalent system, will operate compatibly with the GLOBALink network components and peer communications end systems, without putting the operational network at risk. Tests will be conducted using avionics baseband signals (MSK-audio for the VHF portion of the avionics and ARINC 429-bus I/O for VDL, HF, Satellite, and Iridium functions).

Avionics manufacturers will test all data link applications and functions of their equipment with a ground station/network emulator or equivalent, prior to proceeding to the tests set forth in Paragraph 4.2 of this Policy. So long as vendors conduct this testing without using the GLOBALink network, ARINC will not monitor or manage the Phase 1 process.

## 4.2 Phase 2: Manufacturer Lab Tests with GLOBALink Ground Station, Network, or Emulator

Phase 2 testing should be used by the manufacturer to ensure that the avionics system will operate compatibly with the ARINC GLOBALink networks. The tests will allow the manufacturer to verify proper operation of both the communications software and transmission portions of the system in a test environment. The test can also include avionics-to-airline-computer or end-to-end compatibility testing early in the development cycle while protecting the network from unqualified avionics emissions. For ACARS-over-IP solutions, testing will include the validation of IP and VPN connectivity and the mutual authentication needed to communicate on the network.

**Note:** Phase 2 is a manufacturer's option; other equivalent test configurations are possible so long as they do not include the ARINC operational networks.

ARINC will provide an appropriate GLOBALink ground station connected to the ARINC System Test Bed (STB) for in-laboratory use by the avionics manufacturer. This ground station may be a dedicated ACARS, ACARS/VDL-capable AGTS, HGS, or emulated SATCOM ground station, based on the manufacturer's specific requirements. This configuration will be used to test all applications between the avionics and data link peer end-system. The setup may also be used for complete end-to-end tests with airline host computers if desired by the vendor and airline.

All transmissions will be applied to a dummy load. There will be no RF radiation outside the manufacturer's laboratory.

Test time must be scheduled with ARINC at least 10 days in advance.

### 4.3 Phase 3: ARINC Lab Test of Data Link Avionics

ARINC will conduct a broad range of system-level tests on the avionics to verify that it will operate correctly, compatibly and efficiently with the ARINC GLOBALink networks. With the exception of Iridium, the RF emissions of the avionics will be isolated from the operational network. Qualification of the Iridium system may involve RF connectivity through the operational space segment.

Test time must be scheduled with ARINC at least 10 days in advance of the desired test start date.

The avionics manufacturer or airline will send all avionics components necessary to represent the aircraft data link configuration to ARINC for laboratory tests on the following:

- VHF ACARS/VDL:
  - CMU
  - CU/IDU/MCDU
  - VHF/VDR Transceiver

**Note:** For aircraft configurations that include devices external to the VHF transceiver responsible for the prevention of conflicting VHF transmissions (per RTCA DO-207 and 209), this device must also be submitted in the test configuration.

- AERO-SATELLITE:
  - CMU
  - SDU
  - RFU

- High Power Amp (HPA) or HDL (as appropriate for the specific equipment capabilities e.g., Aero-I, Aero-H/H+, or Swift Broadband-Safety)

- HF:

- CMU

- HFDR

- Antenna Coupler

- Radio Control Panel

- IRIDIUM: Classic / Block 1 Equipment:

- CMU

- I-SDU – Iridium Satellite Data Unit including L-band transceivers, antennas, aircraft system interfaces and connectors as appropriate for the vendor-unique solution.

- IRIDIUM: Certus / Broadband Equipment:

- CMU

- I-SDU – Iridium Satellite Data Unit which will include one of the following transceivers types: BCX, SFX, or HSX, antenna (LGA, HGA, or HGA+ as appropriate), aircraft system interfaces and connectors as appropriate for the vendor-unique solution.

- ACARS-over-IP Systems:

- CMU and/or other avionics end-system relying on ARINC for ACARS and other data delivery.

- TWLU or equivalent aircraft Interface and wireless communications device using IP protocols for connectivity between aircraft and ground-based end system for data delivery.

**Note:** ARINC maintains representative avionics, such as VHF transceivers, displays, and printers, to reduce the amount of avionics an airline must provide. Unless previously arranged, the airline should assume that all equipment listed above will be required for Phase 3.

Ten days prior to testing, the airline or avionics vendor must provide ARINC with appropriate documentation for the data link avionics. The documentation should include the aircraft system configuration, avionics specifications, detailed description of any modification performed, and the name and telephone number of the appropriate technical contact.

For previously AQP-qualified configurations that are being submitted based on hardware or software modifications, ARINC will conduct a document review of the changes and make an assessment of risk associated with these changes. If, in ARINC sole judgment, the potential for the introduction of network impacting errors are considered low, ARINC may waive the AQP test requirement. In this case, ARINC will provide that airline an avionics vendor written response indicating this conclusion and referencing the final configuration and part numbers. In all non-minor changes, ARINC will require Phase 3 AQP testing.

ARINC will provide manufacturers with current copies of the laboratory test procedures.

ARINC will execute system level, performance, and parametric test procedures in the Avionics Qualifications Facility (AQF) to verify interoperability with ARINC GLOBALink network components and compliance with selected portions of the appropriate specifications and standards.

Participation by the airline and manufacturers in these tests is encouraged.

ARINC will normally return equipment supplied for scheduled tests according to the following schedule:

VHF ACARS/VDL: 10 working days

SATCOM/IRIDIUM: 7 working days

HF Data Link: 10 working days

ACARS-over-IP: 7 working days

#### **4.4 Phase 4: Performance Trend Monitoring/Controlled Operational Tests**

Prior to 1999, the AQP process included a final coordinated operational flight test of the avionics prior to unrestricted operational use. To improve the effectiveness and efficiency of the VHF AQP program in 1999, the coordinated flight test was replaced with routine, uncoordinated ACARS performance trend monitoring for each airlines' aircraft fleet, using ACARS journal data. Coordinated operational flight tests continue to be used in the AQP process for all new (prototype) data link hardware without a proven track-record on the GLOBALink network.

Phase 4 efforts will monitor key system metrics; detailed investigations may be triggered based on significant decreases in airline GLOBALink performance. Phase 4 will also focus on successful end-to-end operation and performance.

Detailed investigations, when initiated, may include, but will not be limited to the following:

- Repeated Phase 3 lab test with focus on the observed system defect
- Coordinated Phase 4 ground and flight tests with an airline on-board observer
- A combination of lab tests, random operational audits, and coordinated flight tests until the problem has been isolated

Flight tests, if required, must be scheduled at least seven days in advance of the planned test date and will frequently involve more than one flight. If the aircraft configuration uses more than one communications media (VHF, HF, SATCOM, Iridium, and IP networks), satisfactory testing and performance should be demonstrated on each media. For aircraft supporting both ACARS and VDL, the avionics should demonstrate satisfactory transition between both media.

## 4.5 Phase 3: Problem Identification and Resolution

Two types of avionics hardware and software problems are frequently encountered during Phase 3 and 4 testing:

- Problems considered detrimental to the ACARS service that could adversely affect the communications ability for one or more users.
- Problems or incompatibilities that are not detrimental to the system, but could affect a specific airline's ability to make effective use of the communications or function provided. One example of this type of problem is a downlink message which has a format that is not in compliance with airline specifications.

Without exception, the first type of problem must be corrected by the manufacturer before the avionics can complete AQP tests and are allowed to operate on the ARINC network. The second type of problem would seldom prevent avionics from being qualified; however, the airline will be informed in writing of the problem so that they can resolve the problem with the manufacturer if they choose.

Based on years of experience with Phase 3 and 4 testing, ARINC has identified the following five testing outcomes as problems that are detrimental to the ACARS service and that could adversely affect the communications ability for one or more users, causing ARINC to designate the data link avionics configuration as "Failed" unless corrected:

1. **Stuck Message:** Data link system sends a message in an endless loop jamming up the radio channel regionally for all aircraft and users.
2. **Stuck Transmitter/Radio/Carrier:** Data link suite keys transceiver continually blocking communications for all other users on the media.
3. **Killer Message/Protocol:** Data link sends illegal or corrupted message that causes ARINC data link service component(s) to stop operating ("crash").
4. **Locking-Up Data Link Requiring Reboot:** Data link suite repeatedly enters unrecoverable fault mode ("crashes") under normal use and ceases sending downlinks and responding to all uplinks. A circuit breaker reset is required to restore ATS and AOC service.
5. **Unstable Data Link System:** Data link suite is repeatedly unresponsive to human input or addressed uplink activity making it unsatisfactory from a customer viewpoint. Typically associated with "Locking-Up."

If ARINC identifies one or more of these five problems during AQP testing, ARINC will promptly provide the appropriate notification in accordance with Section 8.1. Should the manufacturer modify the equipment to address these problems, the equipment may be resubmitted for AQP testing consistent with the procedures in the Test Plan and Procedures manuals.

# 5 EQUIPMENT

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## 5.1 Aircraft Avionics Configurations

The following equipment is subject to the qualification process and will be nonqualified to operate on the ARINC GLOBALink networks until successful completion of the qualification testing as outlined in Section 4 of this policy:

1. All data link-related avionics systems not currently qualified for use with an AQP-status of Pass or Waived.
2. All data link avionics configurations with hardware modifications
3. All data link avionics configurations with core software modifications
4. All avionics configurations using loadable avionics application files or *databases* that were updated with unqualified ground-based configuration tools. (These files are used by the MU operational software to affect the data link system operation, message formats, and system protocols)

## 5.2 Data Link Avionics Customization/Configuration Programs

Most avionics vendors have developed software programs or *tools* that operate with a common, PC-based computer and provide the customer with the ability to create files or *databases* that can be uploaded into fielded CMUs via a 429-bus dataloader or equivalent.

The resultant file or database is used by the CMU core software to customize the data link applications for a particular airline. The configuration tool may permit MCDU menu changes, development of new downlink and uplink formats, and other system changes that directly or indirectly affect GLOBALink network operation.

Because of the potential for network impact, ground-based CMU data link customization tools and the resultant custom data files are subject to the following AQP process:

- The vendor must provide ARINC with the CMU data link customization tool documentation and software for AQP evaluation and testing. The vendor must provide ARINC with updates for each tool revision.
- ARINC will evaluate and test the software tool to determine if an uploadable CMU file can be prepared that could cause significant network impact. All software tools that permit the creation of database loads that could cause network impact will be considered unqualified.
- If the software tool does not permit CMU changes that could adversely affect network operation, it will be considered AQP qualified.
- For qualified data link customization tools, the airline may develop and field revised database files without prior AQP approval or coordination with ARINC. The airline may contact ARINC if

The revised database includes new messages and/or labels that will require special processing or routing within the GLOBALink CPS system.

- Complete Phase 3 AQP testing and evaluation is required for all configurations that have database file revisions that were prepared with an unqualified or untested software tool. In most circumstances, a Phase 4 flight test audit will not be required for database load revisions.

### **5.3 Recall of AQP “Qualified” Avionics**

ARINC may recall previously AQP-tested avionics if it has been shown later to cause significant service degradation on the ARINC GLOBALink networks. Recalled avionics will be subject to an AQP retest to isolate and resolve the noted field problems.

### **5.4 Revisions to AQP Process**

The qualification process may be modified by ARINC for changes that are considered minor or for changes that improve overall network performance.

# 6 IMPLEMENTATION

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## 6.1 CPS Software

CPS software is designed to minimize operational degradation caused by both incompatible message structures and malfunctioning aircraft. Individual aircraft and/or complete agencies codes may be removed from the system and/or ground station access tables to minimize the effects of malfunctioning aircraft and/or fleets. Modifications to enhance this enforcement capability will be made from time-to-time, as appropriate.

## 6.2 Manufacturers' Avionics Test Network on the STB

A network will be connected to the STB for connection of Phase 2 ground stations that have been located at the manufacturers' or airframer locations.

Actual connection to the ground stations may be by dedicated circuits or dial-up circuits, depending on the particular manufacturer's usage. Preferred testing schedules must be provided to ARINC so the STB staff can schedule this support. Audits of the testing will be provided upon request.

## 6.3 Controlled Operational Test Procedures

When controlled on-line tests are required and approved, specific operational test procedures must be followed. ARINC must first ensure that the instructions contained in Section 4 are satisfied.

ARINC shall require the following information from the test agency:

1. Information relevant to identification of the test leader (airline, manufacturer, location, type of equipment, aircraft flight number, tail number, etc.).
2. Suggested time and date that on-line tests are to be conducted.
3. Geographical area of testing.
4. Contact number where test lead can be reached IMMEDIATELY if testing must be terminated.
5. Test lead's AVINET address, if applicable, for copy of audit to be sent via AVINET.
6. ARINC will provide the test lead with the ARINC point of contact and telephone number.

If, for any reason, the on-line test must be canceled or halted or audit must be inhibited or deleted, ARINC will advise the test lead by phone.

## 6.4 Aircraft Avionics Database

ARINC maintains a database of all aircraft using the GLOBALink service by agency and tail number. For each aircraft, ARINC tracks pertinent data including: airframe type, supported communications media (VHF ACARS, VDL, HFDDL, SATCOM, GateFusion, and Iridium), names of the manufacturers of appropriate hardware, part numbers and revision levels for hardware, and software part numbers or revision levels for each data link avionics element. Airlines are responsible for providing ARINC with this baseline information and routine updates as changes occur. This information is used for the purposes of network planning, tracking the AQP status, and identification and isolation of recurring problems.

## 6.5 Notification Procedures

GLOBALink customers are required to notify ARINC of any changes to the data link avionics hardware or core software. E-mail is the ARINC-preferred form of notification. GLOBALink customers are not required to inform ARINC of 'AOC' or 'Database' software updates in avionics systems where these applications and data link messages have been partitioned off from the core (protocol) with an individual software part number.

## 6.6 Contractual Relationship

### 6.6.1 Charges Associated with AQP Testing of Avionics

ARINC provides free-of-charge AQP testing of field-ready data link avionics for all GLOBALink customers.

Due to the extensive amount of re-testing normally associated with the qualification of prototype or first release avionics, ARINC will charge the avionics manufacturer for the AQP testing of prototype (or "new") avionics. Charges will be based on standard ARINC engineering and STB rates as well as any material required for testing non-AEEC standard avionics systems.

Prototype data link avionics, from the qualification policy standpoint, are defined to be all new hardware and/or the addition of a new communications media or service offering (e.g., VDLM2 AOA). Once a prototype system has been qualified, airline specific and other product updates will normally be provided under the standard policy for GLOBALink customers.

Some manufacturers have a history of introducing significant issues during the development of minor updates to previously AQP-approved avionics system. The AQP process becomes a time-consuming series of re-tests before the system finally meets AQP standards. As a result, ARINC, in its sole discretion, may require that some avionics manufacturers pay for each AQP test of a revised product. Manufacturers will be advised of this arrangement prior to the onset of AQP testing.

## 6.6.2 Charges Associated with AQP Testing of Ground-Based ACARS Reconfiguration Tools

The avionics vendor is expected to reimburse ARINC for all costs associated with conducting Phase 3 AQP qualification testing of ground-based software tools described in Section 5.2.

## 6.6.3 Surcharges for Operating Inefficient/Untested Avionics

Based on the test results, ARINC will assign an official AQP status or classification for a data link avionics configuration. This AQP classification will both identify approval for network access and indicate per aircraft surcharges that may be applied to provide equitable distribution of the costs for consumed network resources. The airline should refer to the Service Supplement Agreement with their contract for greater detail on charging structure. The following provides a description of AQP-status and disposition commonly used; a different AQP status may apply for each communications media:

- **Passed:** The avionics configuration did not demonstrate any deviations from the appropriate industry specifications during AQP testing.

*Disposition:* Aircraft can use the ARINC GLOBALink service without restriction or additional charges for excessive resource utilization.

- **Waived:** The avionics configuration demonstrated deviations from the appropriate specifications during AQP testing; however, these conditions will have an insignificant impact on the ARINC networks.

*Disposition:* Aircraft can use ARINC GLOBALink networks without restriction or additional charges for excessive resource utilization.

- **Waived/Network Impact:** The avionics configuration demonstrated deviations from the specifications and will require additional network resources to support. However, the conditions are not severe enough to cause interruption of the GLOBALink service.

*Disposition:* Aircraft is approved for GLOBALink access without restriction; however, a per-aircraft excessive resource utilization charge may apply. The charge is in addition to the basic service charge.

- **Failed:** The avionics configuration demonstrated serious deviations from the specifications and will be extremely disruptive to both the GLOBALink service and other customers.

*Disposition:* The airline must not operate the avionics on the GLOBALink network under any circumstances.

- **Not Tested:** The avionics configuration has been fielded without conducting AQP.

***Disposition:*** The airline must submit the configuration for AQP testing or immediately discontinue use of the service. Aircraft operated with not-tested avionics will receive a surcharge that varies per GLOBALink media but is at least twice that of the Waived/Network Impact charge. ARINC, at its sole discretion, may remove all addressing for the agency's GLOBALink traffic to minimize any adverse network impact.

# 7 QUALIFICATION BY OTHER SERVICE PROVIDERS

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Previous investigations have revealed that proper avionics interoperability must be confirmed with the actual ARINC-proprietary ground station equipment. As a result, ARINC must conduct Phase 3 AQP testing for each avionics configuration accessing the ARINC GLOBALink networks and cannot accept the test results of another service provider. Upon airline request, ARINC will release its AQP reports to other service providers.

# 8 Additional Policies

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ARINC adheres to the following additional practices and procedures in connection with the qualification program described in this Policy.

## 8.1 CONFIDENTIALITY POLICY

“Confidential Information” in this section means non-public information relating to (a) the equipment submitted to AQP for testing; (b) the features, contents, or qualities of the equipment that AQP is testing; (c) the scheduling and status of AQP Except as described in Section 8.3, ARINC does not disclose any Confidential Information that it receives or generates in connection with the testing processes described in this Policy to anyone other than to the party (or parties) that requested the AQP testing, unless ARINC receives permission to do so. This means that ARINC will not disclose Confidential Information in a manner inconsistent with this Policy to third parties that are not involved in the AQP testing process, and ARINC will not disclose Confidential Information to ARINC personnel that do not need to know the information in order to conduct, support, or supervise the AQP testing processes.

In cases where one party has requested AQP testing on another party’s behalf (for example, if an avionics manufacturer schedules testing at the request of an airline), ARINC may share Confidential Information about that testing procedure with both parties unless it is instructed to do otherwise.

ARINC is a secure facility, and ARINC restricts access to the non-public information that it receives in connection with the testing processes described in this policy (both physical and electronic media) to authorized personnel only.

ARINC follows this Confidentiality policy in addition to and not in place of any non-disclosure agreements ARINC may have with parties that undergo AQP testing.

## 8.2 NON-DISCRIMINATION POLICY

ARINC does not discriminate among avionics manufacturers in connection with the testing processes described in this Policy. This means that, (a) ARINC processes AQP testing requests on a “first in, first out” basis; (b) ARINC provides all parties with the same level of service (and, where applicable, charges all parties the same standard service fees); and (c) ARINC grants the same official AQP status or classification designation to avionics that achieve the same AQP testing results.

## 8.3 ANNUAL AQP TEST REPORTING POLICY

ARINC will produce a semi-annual report that provides a non-confidential summary of the Phase 3 AQP testing that ARINC completed over the prior six months (the “AQP Report” or the “Report”). The AQP Report will include statistics on (a) the total number of Phase 3 AQP tests ARINC completed during the past six months; (b) the number of “passed,” “waived,” “waived/network impacting,” and “failed” AQP testing designations ARINC issued during the past six months; (c) the total number of AQP-qualified avionics modifications submitted to AQP for review; and (d) the total number of AQP-qualified avionics modifications that required AQP testing. The Report also will summarize any significant trends, service changes and enhancements, or other developments in AQP testing that ARINC encountered during the past six months (if any).

ARINC will produce an annual data set that, subject to any preexisting non-disclosure agreements, contains the specific results that ARINC recorded in each Phase 3 AQP test that ARINC completed over the prior twelve months (the “AQP Data”). ARINC will exclude party names and other party-identifying information from the AQP Data. In addition, ARINC has made available on its website as a historical reference ([http://www.arinc.com/sectors/aviation/aircraft\\_operations/commercial\\_aviation/aqp.pdf](http://www.arinc.com/sectors/aviation/aircraft_operations/commercial_aviation/aqp.pdf)) the same data for AQP tests completed during 2012 and 2013.

ARINC will publish the AQP Report and the AQP Data on its website. If permitted, ARINC also will provide a summary of its most recent AQP Report during the AEEC’s annual Data Link Users Forum.

ARINC will publish these materials in addition to, and in not in place of its standard practice of giving affected customers contemporaneous notice of any revisions to this Policy or to ARINC’s AQP Test Plan and Procedures.

## 8.4 COOPERATION WITH THIRD PARTIES

It is ARINC's policy to cooperate with third parties who wish to become involved in AQP testing of data link equipment that is intended to be used on ARINC's GLOBALink<sup>SM</sup> network. Such cooperation could include, but not be limited to, supporting the efforts of such third parties to establish testing capabilities for assessing whether such data link equipment satisfies AEEC standards.

Any such cooperation will be provided in a manner consistent with:

1. ARINC's mission of protecting the integrity and performance of the GLOBALink<sup>SM</sup> network;
2. The recognition that the fulfillment of that mission requires that ARINC retain responsibility for ultimately determining whether data link equipment satisfies AEEC standards and, thereby, can be safely used with the GLOBALink<sup>SM</sup> network; and
3. ARINC's right to be compensated for the value of its efforts and the use of its property (including intellectual property), to the extent that they are requested and employed in providing such assistance.

## 8.5 COMPLIANCE POLICY

ARINC takes seriously its obligations to the industry to implement and follow the policies, practices, and procedures described by this Policy. In the event of questions or concerns about ARINC's adherence to these policies, parties may contact ARINC's compliance hotline at 877-404-0066 or ARINC's in-house counsel at 410-266-4361. Any party who is unsatisfied with the manner in which ARINC has responded to its remaining questions or concerns may present them to the AEEC's Data Link System Subcommittee ([http://www.aviation-ia.com/aeec/projects/dlk\\_systems/](http://www.aviation-ia.com/aeec/projects/dlk_systems/)). ARINC will give due consideration to the views of AEEC.