Airline: ▮▮▮▮▮▮   **Code:** [ ]

AQP Phase: 3	**VHF TESTED?** F	**HF TESTED?** F	**SATCOM TESTED?** F
Initial/Retest: I	**VHF CAPABLE?** F	**HF CAPABLE?** F	**SATCOM CAPABLE?** F
	VDLMA TESTED? F	**AOA TESTED?** F	**ATN TESTED?** F
	VDLMA CAPABLE? F	**AOA CAPABLE?** F	**ATN CAPABLE?** F
		IRIDIUM TESTED? T	**VDLMF TESTED?** F
		IRIDIUM CAPABLE? T	**VDLMF CAPABLE?** F

Test Engineers' Initials: ▮▮▮▮   **Evaluation:** F   **Reference:** [ ]

Test Dates: **From:** 01/17/2023   **To:** 01/27/2023

Tested Configuration:

▮▮▮▮▮▮▮▮▮▮▮▮

▮▮▮▮				

▮▮▮▮▮▮

▮▮▮▮			

Applicable Aircraft: [ ]

VHF Status: P	**HFDLK Status:** [ ]	**SATCOM Status:** [ ]	**IRIDIUM Status:** P
Prekey: [ ]	**CBD:** [ ]	**Access Protocol:** [ ]	
Letter Sent: / /	**Inputs:** 0	**Intercepts:** 0	

Notes: ▮▮▮▮▮▮

▮▮▮▮

ARINC AQP SCORECARD
TEST RESULTS/DATA

Airline: ▮▮▮▮▮▮▮▮▮▮▮

Code:

AQP Phase:	**VHF TESTED?** F	**HF TESTED?** F	**SATCOM TESTED?** F
Initial/Retest: I	**VHF CAPABLE?** F	**HF CAPABLE?** F	**SATCOM CAPABLE?** F
	VDLMA TESTED? F	**AOA TESTED?** F	**ATN TESTED?** F
	VDLMA CAPABLE? F	**AOA CAPABLE?** F	**ATN CAPABLE?** F
		IRIDIUM TESTED? T	**VDLMF TESTED?** F
		IRIDIUM CAPABLE? T	**VDLMF CAPABLE?** F

Test Engineers' Initials: ▮▮▮▮ **Evaluation:** F **Reference:**

Test Dates: **From:** 01/17/2023 **To:** 01/27/2023

Tested Configuration:

▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

Applicable Aircraft:

VHF Status: P	**HFDLK Status:**	**SATCOM Status:**	**IRIDIUM Status:** P
Prekey:	**CBD:**	**Access Protocol:**	
Letter Sent: / /	**Inputs:** 0	**Intercepts:** 0	

Notes: ▮▮▮▮▮▮▮▮▮▮

Airline: ▓▓▓▓▓▓▓▓

Code:

AQP Phase: 3   **VHF TESTED?** F   **HF TESTED?** F   **SATCOM TESTED?** F

Initial/Retest: I   **VHF CAPABLE?** F   **HF CAPABLE?** F   **SATCOM CAPABLE?** F

VDLMA TESTED? F   **AOA TESTED?** F   **ATN TESTED?** F

VDLMA CAPABLE? F   **AOA CAPABLE?** F   **ATN CAPABLE?** F

IRIDIUM TESTED? T   **VDLMF TESTED?** F

IRIDIUM CAPABLE? T   **VDLMF CAPABLE?** F

Test Engineers' Initials: ▓▓▓▓   **Evaluation:** F   **Reference:**

Test Dates: From: 01/17/2023   **To:** 01/27/2023

Tested Configuration:

▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓

Applicable Aircraft:

VHF Status:	P	**HFDLK Status:**		**SATCOM Status:**		**IRIDIUM Status:**	P
Prekey:		**CBD:**		**Access Protocol:**			
Letter Sent:	/ /	**Inputs:**	0	**Intercepts:**	0		

Notes: ▓▓▓▓▓▓▓▓

01/30/2023

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PHASE 3 AQP TEST RESULTS

☐ VHF TESTED?	☐ HF TESTED?	☐ SATCOM TESTED?	☒ IRIDIUM TESTED?
☐ VHF CAPABLE?	☐ HF CAPABLE?	☐ SATCOM CAPABLE?	☒ IRIDIUM CAPABLE?
☐ VDLMA TESTED?	☐ AOA TESTED?	☐ ATN TESTED?	☐ VDLMF TESTED?
☐ VDLMA CAPABLE?	☐ AOA CAPABLE?	☐ ATN CAPABLE?	☐ VDLMF CAPABLE?
☐ SB-S TESTED?	☐ AoIP TESTED?	☐ SB-S 2.0 TESTED?	
☐ SB-S CAPABLE?	☐ AoIP CAPABLE?	☐ SB-S 2.0 CAPABLE?	

Airline/Customer: ▮▮▮▮▮

Initial/Retest: ☐   _Test Engineer_: ▮▮▮▮▮

Test Dates: From: <u>01/17/23</u>   To: <u>01/27/23</u>

TESTED CONFIGURATION

Applicable Aircraft: _____

Notes: ▮▮▮▮▮▮

IRIDIUM AQP TEST RESULTS

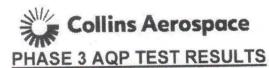| DESCRIPTION	REQUIREMENTS	RESULTS
MULTI-MEDIA		
Preferred Media	MU uses VHF as preferred media and only IDL/SATCOM/HFDL when responding to an IDL/HFDL uplink.	_____
Simultaneous Media	MU always attempts to complete on medium where originated.	_____
VHF to Iridium/SATCOM/HF	The avionics restarted failed VHF transmissions on Iridium/SATCOM/HF media and alerts the crew of the VHF NOCOMM conditions.	_____
VHF Voice to Iridium	Avionics sends downlinks via Iridium when in VHF voice mode.	_____
Iridium/SATCOM/HF to VHF	The avionics monitors the available VHF frequencies and attempts to re-establish the VHF medium (Label Q0, SA, etc.).	_____
Automatic Link Establishment	MU automatically sends a Q0 downlink followed by an SA via Iridium whenever the Iridium unit logs on. This may be an SA ES if the MU thinks it is connected to SATCOM. Same as VHF and HF.	_____
UBI/DBI Handling	The MU correctly maintains separate and independent UBI/DBI's for the VHF, HF, and Iridium links.	_____
Dual Satellite	The (C)MU supported dual satellite; Iridium and classic SATCOM simultaneously.	_____
Multi-block Message Handling	The MU correctly handles multi-block retransmission when changing media.	_____
429		
System Identifier Word	The SDU properly identifies itself to the CMU/MU as an Iridium Block 1 unit.	P
Satcom Available	The SDU properly indicates its availability status at all times using the label 270 status word.	P
Satcom Voice Available	The SDU properly indicates the Satcom voice availability status at all times using the label 270 status word	P
Satcom Standby Mode	The SDU properly indicates the correct communication status while in standby mode using the label 270 status word	_____
Satcom Voice Alert	The SDU properly indicates that a high priority call is being detected using the label 270 status word	_____
High/Low Data Bus Speed	Uses proper 429 protocol for both high and low speeds.	_____

IRIDIUM AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS	RESULTS
Dual CMU Status	The SDU properly receives and indicates the proper communication status and availability of both CMUs using the label 270 status word.	_____
END-TO-END		
Downlink Message Queue	Downlink message queue is sent correctly after an extended satellite disconnect.	P
Uplinks	All uplink applications transfer to the (C)MU in the proper format.	P
Downlinks	All downlink applications transfer to the CPS in the proper format.	P
(C)MU ACARS Retransmissions	Enable/disable the acknowledgments at the ACARS application layer. Check that the retransmission was sent at the proper time.	_____
Multi-block Messages	Test end-to-end performance of full size 16 block uplink and downlink messages. Test ATS multi-blocks. Different size multi-blocks.	P
Iridium Voice Mode	The Iridium unit supported simultaneous data and voice operation.	_____
ATS Messages	Will the avionics send ATS message downlinks on Iridium?	P
Iridium Burst Size	Compare timing of different size uplinks.	
Mismatched Tail	The avionics did not process messages addressed to another tail number (emulator).	_____
Message Source	All ACARs messages should be routed through the MU. The Iridium unit shouldn't generate ACARS messages.	_____
Simultaneous Uplink/Downlink Transmissions	The Iridium unit is able to receive uplinks and transmit downlink simultaneously without the loss of messages or message blocks	P
Iridium GES Queue Timer	The avionics set (CMU/SDU) does not acknowledge any ACARS messages older than 300 seconds (5 minutes)	_____
Simultaneous ACARS and CMU Switch	The avionics continues ACARS transmissions after switching CMUs	_____
SDU CHARACTERISTICS		
Ring Alert	The Iridium unit supported ring alert.	_____
Owner Requirements Table	The Iridium unit contains an UORT or user configurable settings.	_____
Integrated Hardness Test	The (C)MU and the IDU remained stable and did not show any strange behavior during stress testing.	_____

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IRIDIUM AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS	RESULTS
Integrated Hardness Test	The (C)MU and the IDU operated correctly and did not show any abnormal behavior during the hardness test.	_____
Uplink/Downlink Performance	Scored uplink success was at least 98%.	P

Airline: ███████████████

Code:

AQP Phase: 3	**VHF TESTED?** F	**HF TESTED?** F	**SATCOM TESTED?** F
Initial/Retest: I	**VHF CAPABLE?** F	**HF CAPABLE?** F	**SATCOM CAPABLE?** F
	VDLMA TESTED? F	**AOA TESTED?** F	**ATN TESTED?** F
	VDLMA CAPABLE? F	**AOA CAPABLE?** F	**ATN CAPABLE?** F
		IRIDIUM TESTED? T	**VDLMF TESTED?** F
		IRIDIUM CAPABLE? T	**VDLMF CAPABLE?** F

Test Engineers' Initials: ██████   **Evaluation:** F   **Reference:**

Test Dates: **From:** 02/21/2023   **To:** 02/28/2023

Tested Configuration:

Applicable Aircraft:

VHF Status: _____   **HFDLK Status:** _____   **SATCOM Status:** _____   **IRIDIUM Status:** W

Prekey: _____   **CBD:** _____   **Access Protocol:** _____

Letter Sent: / /   **Inputs:** 0   **Intercepts:** 0

Notes: IRIDIUM TEST

03/23/2023

ARINC AQP SCORECARD
TEST RESULTS/DATA

Test ID: **23.007**

Airline: ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

Code:

AQP Phase:

Initial/Retest: *I*

VHF TESTED? F
VHF CAPABLE? F
VDLMA TESTED? F
VDLMA CAPABLE? F

HF TESTED? F
HF CAPABLE? F
AOA TESTED? F
AOA CAPABLE? F
IRIDIUM TESTED? T
IRIDIUM CAPABLE? T

SATCOM TESTED? F
SATCOM CAPABLE? F
ATN TESTED? F
ATN CAPABLE? F
VDLMF TESTED? F
VDLMF CAPABLE? F

Test Engineers' Initials: ▮▮▮▮

Evaluation: F

Reference:

Test Dates: **From:** *02/21/2023* **To:** *02/28/2023*

Tested Configuration:

Applicable Aircraft:

VHF Status:

HFDLK Status:

SATCOM Status:

IRIDIUM Status: *W*

Prekey:

CBD:

Access Protocol:

Letter Sent: */ /*

Inputs: *0*

Intercepts: *0*

Notes: *IRIDIUM TEST*

▮▮▮▮▮▮▮▮▮▮

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TEST ID: 23.006,23.007

PHASE 3 AQP TEST RESULTS

☐ VHF TESTED?	☐ HF TESTED?	☐ SATCOM TESTED?	☒ IRIDIUM TESTED?
☐ VHF CAPABLE?	☐ HF CAPABLE?	☐ SATCOM CAPABLE?	☒ IRIDIUM CAPABLE?
☐ VDLMA TESTED?	☐ AOA TESTED?	☐ ATN TESTED?	☐ VDLMF TESTED?
☐ VDLMA CAPABLE?	☐ AOA CAPABLE?	☐ ATN CAPABLE?	☐ VDLMF CAPABLE?
☐ SB-S TESTED?	☐ AoIP TESTED?	☐ SB-S 2.0 TESTED?	
☐ SB-S CAPABLE?	☐ AoIP CAPABLE?	☐ SB-S 2.0 CAPABLE?	

Airline/Customer: ▮▮▮▮

Initial/Retest: ☐   _Test Engineer_: ▮▮▮▮

Test Dates: From: **02/21/23**   To: **02/28/23**

TESTED CONFIGURATION

▮▮	▮▮▮▮▮	▮▮▮	▮▮	▮▮
▮▮	▮▮▮▮▮▮▮▮▮▮▮▮▮			▮▮▮
	▮▮▮▮▮▮▮▮▮▮▮		▮	▮▮▮
▮▮	▮▮▮▮▮▮▮▮▮▮▮▮▮			

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Applicable Aircraft: _____

Notes: ____

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IRIDIUM AQP TEST RESULTS

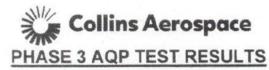| DESCRIPTION	REQUIREMENTS	RESULTS
MULTI-MEDIA		
Preferred Media	MU uses VHF as preferred media and only IDL/SATCOM/HFDL when responding to an IDL/HFDL uplink.	_____
Simultaneous Media	MU always attempts to complete on medium where originated.	_____
VHF to Iridium/SATCOM/HF	The avionics restarted failed VHF transmissions on Iridium/SATCOM/HF media and alerts the crew of the VHF NOCOMM conditions.	_____
VHF Voice to Iridium	Avionics sends downlinks via Iridium when in VHF voice mode.	_____
Iridium/SATCOM/HF to VHF	The avionics monitors the available VHF frequencies and attempts to re-establish the VHF medium (Label Q0, SA, etc.).	_____
Automatic Link Establishment	MU automatically sends a Q0 downlink followed by an SA via Iridium whenever the Iridium unit logs on. This may be an SA ES if the MU thinks it is connected to SATCOM. Same as VHF and HF.	P
UBI/DBI Handling	The MU correctly maintains separate and independent UBI/DBI's for the VHF, HF, and Iridium links.	_____
Dual Satellite	The (C)MU supported dual satellite; Iridium and classic SATCOM simultaneously.	_____
Multi-block Message Handling	The MU correctly handles multi-block retransmission when changing media.	_____
429		
System Identifier Word	The SDU properly identifies itself to the CMU/MU as an Iridium Block 1 unit.	P
Satcom Available	The SDU properly indicates its availability status at all times using the label 270 status word.	P
Satcom Voice Available	The SDU properly indicates the Satcom voice availability status at all times using the label 270 status word	_____
Satcom Standby Mode	The SDU properly indicates the correct communication status while in standby mode using the label 270 status word	_____
Satcom Voice Alert	The SDU properly indicates that a high priority call is being detected using the label 270 status word	_____
High/Low Data Bus Speed	Uses proper 429 protocol for both high and low speeds.	_____

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IRIDIUM AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS	RESULTS
Dual CMU Status	The SDU properly receives and indicates the proper communication status and availability of both CMUs using the label 270 status word.	_____
END-TO-END		
Downlink Message Queue	Downlink message queue is sent correctly after an extended satellite disconnect.	P
Uplinks	All uplink applications transfer to the (C)MU in the proper format.	P
Downlinks	All downlink applications transfer to the CPS in the proper format.	P
(C)MU ACARS Retransmissions	Enable/disable the acknowledgments at the ACARS application layer. Check that the retransmission was sent at the proper time.	_____
Multi-block Messages	Test end-to-end performance of full size 16 block uplink and downlink messages. Test ATS multi-blocks. Different size multi-blocks.	P
Iridium Voice Mode	The Iridium unit supported simultaneous data and voice operation.	_____
ATS Messages	Will the avionics send ATS message downlinks on Iridium?	P
Iridium Burst Size	Compare timing of different size uplinks.	
Mismatched Tail	The avionics did not process messages addressed to another tail number (emulator).	_____
Message Source	All ACARs messages should be routed through the MU. The Iridium unit shouldn't generate ACARS messages.	_____
Simultaneous Uplink/Downlink Transmissions	The Iridium unit is able to receive uplinks and transmit downlink simultaneously without the loss of messages or message blocks	P
Iridium GES Queue Timer	The avionics set (CMU/SDU) does not acknowledge any ACARS messages older than 300 seconds (5 minutes)	_____
Simultaneous ACARS and CMU Switch	The avionics continues ACARS transmissions after switching CMUs	_____
SDU CHARACTERISTICS		
Ring Alert	The Iridium unit supported ring alert.	_____
Owner Requirements Table	The Iridium unit contains an UORT or user configurable settings.	_____
Integrated Hardness Test	The (C)MU and the IDU remained stable and did not show any strange behavior during stress testing.	_____

IRIDIUM AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS	RESULTS
Integrated Hardness Test	The (C)MU and the IDU operated correctly and did not show any abnormal behavior during the hardness test.	_____
Uplink/Downlink Performance	Scored uplink success was at least 98%.	≈

Airline: ██████████   Code:

AQP Phase: 3

- ☐ VDLM0 (POA) Tested
- ☑ VDLM0 (POA) Capable
- ☑ VDLMA (POA) Tested
- ☑ VDLMA (POA) Capable
- ☑ VDLM2 (AOA) Tested
- ☑ VDLM2 (AOA) Capable
- ☑ VDLM2 (ATN) Tested
- ☑ VDLM2 (ATN) Capable
- ☑ VDLMF Tested
- ☑ VDLMF Capable

- ☐ Classic Aero Satcom Tested
- ☑ Classic Aero Satcom Capable
- ☐ SB-S (Swift Broadband Safety) Tested
- ☐ SB-S (Swift Broadband Safety) Capable
- ☐ SB-S 2 (Enhanced SB-S) Tested
- ☐ SB-S 2 (Enhanced SB-S) Capable
- ☐ Iridium (Block 1) Tested
- ☑ Iridium (Block 1) Capable
- ☐ Iridium CERTUS Tested
- ☐ Iridium CERTUS Capable

- ☐ AOIP (ACARS Over IP) Tested
- ☐ AOIP (ACARS Over IP) Capable
- ☐ HFDL Tested
- ☑ HFDL Capable
- ☐ HF NEXT Tested
- ☐ HF NEXT Capable
- ☐ OTHER Tested
- ☐ OTHER Capable

Test Engineers' Initials: ██████   Evaluation: Test   Reference:

Test Dates: From: *3/8/2023* To: *3/15/2023*

Tested Configuration:

██████████ █████ █████ █████

OTHER:

MU SOFTWARE PART NUMBERS

Applicable Aircraft:

VHF Status: Pass	HF NEXT Status:	SATCOM Status:	IRIDIUM Cert Status:
Letter Sent: 3/20/2023	HFDL Status:	SBS Status:	IRIDIUM Status:
Notes:	OTHER Media Status:	SBS2 Status:	ACARS Over IP Status:

Notes:

VHF test Pass
See attached file for details

Collins Aerospace

TEST ID: 23.008

PHASE 3 AQP TEST RESULTS

☐ VHF TESTED?	☐ HF TESTED?	☐ SATCOM TESTED?	☐ IRIDIUM TESTED?
☒ VHF CAPABLE?	☒ HF CAPABLE?	☒ SATCOM CAPABLE?	☒ IRIDIUM CAPABLE?
☒ VDLMA TESTED?	☒ AOA TESTED?	☐ ATN TESTED?	☒ VDLMF TESTED?
☒ VDLMA CAPABLE?	☒ AOA CAPABLE?	☒ ATN CAPABLE?	☒ VDLMF CAPABLE?
☐ SB-S TESTED?	☐ AoIP TESTED?	☐ SB-S 2.0 TESTED?	
☐ SB-S CAPABLE?	☐ AoIP CAPABLE?	☐ SB-S 2.0 CAPABLE?	

Airline/Customer: ▬▬▬

Initial/Retest: ☐   **Test Engineer:** ▬▬▬

Test Dates: From: **3/8/23**   To: **3/15/23**

TESTED CONFIGURATION

███	██████	████	██	███
	██████████████████████			

████████████			

Applicable Aircraft: _____

Notes: ____

VHF AQP TEST RESULTS

OOOI EVENTS

DESCRIPTION	REQUIREMENTS	Y/N
Message Sequencing	Messages are downlinked in a logical order according to airline documentation.	P
Message Buffering	Messages are buffered when not acknowledged. and retransmitted when radio contact resumes.	P
Timers	OFF/ON events are delayed approximately 10 seconds.	P
Filters	IN/OUT events are delayed approximately 2 seconds.	P
Source	Source of OOOI events.	DISCRETE
	If Digital 429, list peripheral(s).	P
OOOI Labels	MU uses standard QA-QV OOOI labels or unique. ON/OFF with Dept. & Dest.	P

Comments: _____

RETRANSMISSION INTERVAL

DESCRIPTION	REQUIREMENTS	DATA: Time Between Transmissions Seconds)					
		Test #/Xmission	1&2	2&3	3&4	4&5	5&6	P/F
Retransmissions	Downlinks are retransmitted							
	3-5 times at randomly spaced	1	13	12	23			P
	Intervals from 10 to 25 seconds	2	23	24	24			P
	before NOCOMM is displayed	3	25	17	24			P
		4	16	12	24			P

PREKEY TIME

DESCRIPTION	REQUIREMENTS	DATA
Unmodulated Carrier	1 millisecond maximum	
Transmission Time Prekey	85 milliseconds maximum	
Programmable Prekey	Is prekey programmable?	

Comments: _____

VHF AQP TEST RESULTS

MISCELLANEOUS

DESCRIPTION	REQUIREMENTS	DATA (P/F)
Protocol and Embedded ACKs	Avionics utilizes UBI/DBI protocol.	P
	If yes, protocol works correctly.	P
	Downlink retransmissions contain the same MSN before and after a NOCOMM condition.	P
	Avionics processes uplink with the same UBI within 10 minutes as a duplicate uplink.	P
	An embedded ACK to an uplink is changed to an embedded NAK in subsequent downlink retransmissions.	P
	Avionics properly handles embedded ACKS in uplink messages.	P
	Avionics provides embedded ACKS in downlink messages.	P

Comments: _____

U/L & D/L Multiblock Processing	Avionics accepts and prints multiblock messages.	P
	Avionics accepts and displays multiblock messages.	P
	"INCOMPLETE MESSAGE" advisory given when subsequent blocks not received in 1.5 minutes.	P
	If part of a multiblock downlink has been acknowledged, and the avionics goes NOCOMM, the entire multiblock message is resent when COMM is regained.	P

Comments: _____

Tracker Message	Tracker Message interval (minutes).	10:00
	Intervals are at 10 minutes and only in the absence of other downlinks.	P
	NOT sent while the aircraft is on the ground.	P
	Tracker Messages are not queued while the avionics is in voice mode.	P
	Tracker Timer reset by uplink ACK to a downlink.	P

Comments: _____

Contact Message	Contact Message interval.	4:00
	Sent only is no uplink traffic is heard for a defined period of time.	P
	NOT sent while the aircraft is on the ground.	P
	Contact/Tracker used on alternate (autotune) frequency?	P

Comments: _____

VHF AQP TEST RESULTS

CHANNEL ACCESS

DESCRIPTION	REQUIREMENTS	DATA (P/F)
Channel Access Algorithm	Will not transmit while receiving a 1200 Hz MSK modulated signal.	_____
	Will not transmit while receiving a 2400 Hz MSK modulated signal.	_____
	Will not transmit while receiving a random (1200/2400) MSK modulated signal.	_____
	Will not transmit while receiving actual traffic with 75ms prekey.	_____
	Must check for channel occupancy before transmitting an ACK to an uplink.	_____
Carrier Sense Multiple Access	The avionics implements a non-persistent CSMA algorithm.	

Comments: _____

AGENCY CODE, REGISTRATION NUMBER, AND FLIGHT NUMBER

DESCRIPTION	REQUIREMENTS	DATA (P/F)
Default Agency	Enter the default agency code source and list the agency code.	APM _____
Agency Code Chars.	Will the avionics accept numeric characters for the agency code?	Y
Default Reg #	Enter the default registration source and list the registration number.	APM _____
Flight Number	Flight numbers less than four characters are padded with leading zeros.	P
	Will the avionics accept alpha characters for the flight number?	Y
AN/FI Address	Avionics supports both AN and FI addressing.	P

Comments: FI 0000 doesn't work if no FI entered

ARINC EUROPEAN BASE FREQUENCY – 131.825 MHz

Is 131.825 present and enabled in the scan table?	P
Are tracker messages enabled on 131.825?	P
Are contact messages enabled on 131.825?	P
Does the avionics respond properly when autotune received while on 131.825?	P

VHF AQP TEST RESULTS

MULTI-MEDIA FUNCTIONS

DESCRIPTION	REQUIREMENTS	DATA P/F
Preferred Media & Simultaneous Media	MU uses VHF as preferred media and only communicates via SATCOM/HFDL when VHF is unavailable or when responding to an unsolicited SATCOM/HFDL U/L. MU always attempts to complete on media where originated.	P
Multiblock D/L Handling	The MU correctly handles multiblock retransmission when changing media. Entire message is retransmitted. Original MSN is retained.	P
VHF to SATCOM/HF	The avionics completes failed VHF transmissions on SATCOM/HF media and alerts the crew of the VHF NOCOMM conditions. Avionics sends downlinks via SATCOM/HF when In voice mode (if available).	P
SATCOM/HF to VHF Transitions	The avionics monitors the available VHF frequencies and attempts to re-establish the VHF media (Label QO, SA, etc.).	P
Automatic Link Establishment	MU automatically sends a QO downlink (followed by SA). via SATCOM whenever the SDU logs on. Same as VHF & HF.	P
UBI/DBI Handling	The MU correctly maintains separate and independent UBI/DBI's for the VHF, SATCOM and HF links.	P

622/623 PROTOCOL & FUNCTIONS

D/L Message Format	ATS messages are downlinked in proper format.	P
U/L Message Format	Uplinks are checked for ATS format compliance.	P
CRC	Downlinks contain proper CRC values.	P
	Uplinks are tested for proper CRC values.	P
	U/L messages w/o CRC or improper CRC are rejected.	P
	Avionics accepts U/L's with or without ending CR/LF chars.	P
ATS U/L Response	MU provides readback responses where appropriate (i.e., PDC Accept/Reject).	P
Multiblock ATS Messages	MU properly handles multiblock ATS messages.	P
Multiblock Prioritization	Avionics supports nesting of higher priority single block uplinks.	P
	Avionics supports nesting of higher priority multiblock uplinks.	P

Comments: _____

VHF AQP TEST RESULTS

STUCK CARRIER

DESCRIPTION	REQUIREMENTS	DATA (P/F)
Stuck Transmitter	Avionics does not exhibit any stuck transmitter as a result of power cycling or related testing.	P

AUTOTUNE FUNCTIONS

DESCRIPTION	REQUIREMENTS	Label	#	Data (P/F)
ACK to Command	Avionics provides ACK to autotune command before changing frequency.			P
Channel Changeover	Avionics changes to frequency specified by Autotune command.			P
Link Tests on New Frequency	Avionics immediately conducts at least 3 link tests on the new frequency.	QO	3	P
Return to Base Frequency and Conduct Link Test	Avionics returns to the base frequency immediately conducts at least 3 tests to re-establish communication.	QO	3	P
Autotune to an Autotune	If the avionics was autotuned and a subsequent autotune is received, the avionics will correctly retune and return to the base frequency if unable to establish or maintain communication.			P

Multiblock Completed After a Nested Autotune:

Downlink w/o embedded ACK in autotune	P	with embedded ACK	P
Uplink w/o embedded ACK in autotune	P	with embedded ACK	_____

DESCRIPTION	REQUIREMENTS		Data (P/F)
Power Interruption	Avionics recalls last autotuned frequency if 115VAC power is interrupted (>1 min.) and 28VDC is retained.		_____
	For how long will MU recall last autofreq with Both 115VAC and 28VDC removed?	_____	P
Frequency Tuning	Will the avionics tune between 118.000 MHz and 136.975 MHz?		P

AOA AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS	DATA P/F

Basic Link Establishment   Avionics correctly implements the basic link establishment.   P

Intramedia Switch and
Debounce Timers

	Scenario 1	From Base to AOA < 10 min	P
	Scenario 2	From Base to AOA > 10 min	P
	Scenario 3	From Autotune to AOA < 10 min	P
	Scenario 4	From Autotune to AOA > 10 min	P

Voice/Data Mode

	Scenario 1: Voice mode < 4 min	_____
	Scenario 2: Voice mode > 4 min < 10 min	_____
	Scenario 3: Voice mode > 10 min	_____

Handoff Sequence

	Scenario 1	HO Signal Level	P
	Scenario 1A	HO Signal Level Different DSP	P
	Scenario 1B	HO Unanswered	P
	Scenario 1C	HO Unanswered Different DSP	N/A
	Scenario 1D	Uplink from Previous GS	P
	Scenario 2	HO attempt after Downlink Failure	P
	Scenario 2A	HO attempt after Downlink Failure Different DSP	P
	Scenario 5	HO attempt to PECT	P
	Scenario 6	HO Time Out	P
	Scenario 6A	HO Time Out Different DSP	P

Multimedia

	Scenario 1	P
	Scenario 2	P
	Scenario 3	P

Maximum Delay Between Transmissions   P

Message Assembly Timer

	Scenario 1	_____
	Scenario 2	_____
	Scenario 3	_____

AOA AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS	DATA P/F
UBI Reset Timer		____
VAC1 Counter and VAT7 Timer		____
Retune and Autotune	POA to AOA Retune to CSC	P
	POA to AOA Retune to Alternate Frequency	P
	POA to AOA Retune Ignore Debounce Timer	P
	POA to AOA Retune Nested in Downlink	P
	POA to AOA Retune Nested in Uplink	P
	POA to AOA Retune with GS ICAO Address	P
	AOA to POA Autotune Base Frequency	P
	AOA to POA Autotune Alternate Frequency	P
	AOA to POA Autotune Debounce Timer	P
	AOA to POA Autotune Nested in Downlink	P
	AOA to POA Autotune Nested in Uplink	____
	AOA to POA Autotune Fall to POA Base	P

Comments:_____

Criss-Cross Uplink	Scenario 1	____
	Scenario 2	____
ICAO Addressing		____

Comments:_____

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VDL MULTI-FREQUENCY AQP TEST RESULTS

Test	Results	Pass	Fail	Comments
GRAIHO Test 1 – CSC to AltFreq	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____	P	_____	_____
GRAIHO Test 2 – AltFreq to CSC	Avionics retuned to 136.975 _____ Avionics handed off to Radio A _____	P	_____	_____
GRAIHO Test 3 – AltFreq1 to AltFreq2	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics retuned to 136.800 _____ Avionics handed off to Radio C _____ Avionics retuned to 136.975 _____ Avionics established link to Radio A _____	P	_____	_____
GRAIHO Test 4 – to 1st GS in RGSL	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____	P	_____	_____
GRAIHO Test 5 – to last GS in RGSL	Avionics retuned to 136.750 _____ Avionics failed HO to non-existent Radio 1 _____ Avionics failed HO to non-existent Radio 2 _____ Avionics handed off to Radio B _____	P	_____	_____
GRAIHO Test 6 – w/ all optional parameters	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____	P	_____	_____
GRAIHO Test 7 – successive GRAIHOs	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics retuned to 136.975 _____ Avionics handed off to Radio A _____	P	_____	_____
GRAIHO Test 8 – normal AIHO after GRAIHO	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics handed off to Radio C _____	P	_____	_____
GRAIHO Test 9 – fallback to CSC after GRAIHO	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics retuned to 136.975 _____ Avionics established link to Radio A _____	P	_____	_____
GRAIHO Test 11 – GRAIHO failure; fall back to CSC	Avionics retuned to 136.750 _____ Avionics failed HO to non-existent Radio 1 _____ Avionics retuned to 136.975 _____ Avionics established link with Radio A _____	P	_____	_____
GRAIHO Test 12 – GRAIHO failure to all GSs in RGSL; fallback to CSC	Avionics retuned to 136.750 _____ Avionics failed HO to non-existent Radio 1 _____ Avionics failed HO to non-existent Radio 2 _____ Avionics failed HO to non-existent Radio 3 _____ Avionics failed HO to non-existent Radio 4 _____ Avionics failed HO to non-existent Radio 5 _____ Avionics retuned to 136.975 _____ Avionics established link with Radio A _____	P	_____	_____

VDL MULTI-FREQUENCY AQP TEST RESULTS

Test	Results	Pass	Fail	Comments
GRAIHO Test 13 – GRAIHO failure to all GSs in RGSL; AIHO based on GSIF	Avionics retuned to 136.750 _____ Avionics failed HO to non-existent Radio 1 _____ Avionics failed HO to non-existent Radio 2 _____ Avionics failed HO to non-existent Radio 3 _____ Avionics failed HO to non-existent Radio 4 _____ Avionics failed HO to non-existent Radio 5 _____ Avionics handed off to Radio B _____	P	___	___
GRAIHO Test 14 – GRAIHO failure for all GSs in RGSL – frequency recovery based on FSL provided in GRAIHO	Avionics retuned to 136.750 _____ Avionics failed HO to non-existent Radio 1 _____ Avionics failed to HO non-existent Radio 2 _____ Avionics failed to HO non-existent Radio 3 _____ Avionics failed HO to non-existent Radio 4 _____ Avionics failed HO to non-existent Radio 5 _____ Avionics retuned to 136.975 _____ Avionics established link with Radio C _____	___	F	___
GRAIHO Test 15 – GRAIHO before RR	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics completed downlink to Radio B _____	P	___	___

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VDL MULTI-FREQUENCY AQP TEST RESULTS

Test	Results	Pass	Fail	Comments
FSL Test 1 – Successful FSL (retune to alt freq. matching airport coverage)	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____	P	_____	_____
FSL Test 2 – FSL ignored; non-matching airport	(On ground) avionics does NOT retune to 136.750 _____	P	_____	_____
FSL Test 3 – Successful FSL (landing and takeoff)	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ (On takeoff) avionics retuned to 136.975 _____ Avionics handed off to Radio A _____	P	_____	_____
FSL Test 4 – Successful FSL (takeoff and landing even though non-matching airport)	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ (On takeoff avionics retuned to 136.975 _____ Avionics handed off to Radio A _____	P	_____	_____
FSL Test 5 – Successful FSL retune to alt freq. with >1 GS in list	(On ground) avionics retuned to 136.750 _____ Avionics handed off to _____ Radio B or _____ Radio C (repeat test) (On ground) avionics retuned to 136.750 _____ Avionics handed off to _____ Radio B or _____ Radio C **Repeat test until avionics has handed off to both Radio B and Radio C.**	P	_____	_____
FSL Test 6 – FSL ignored (AC in air, matching airport)	Avionics does NOT retune to 136.975 _____	P	_____	_____
FSL Test 7 – FSL ignored (AC in air, non-matching airport)	Avionics does NOT retune to 136.975 _____	P	_____	_____
FSL Test 8 – Successful FSL followed by normal air-initiated handoff	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ (On takeoff) avionics retuned to 136.975 _____ Avionics handed off to Radio A _____ Avionics handed off to Radio C _____	P	_____	_____
FSL Test 9 – FSL retune fails; fallback to CSC	(On ground) avionics retuned to 136.750 _____ Avionics failed HO to non-existent Radio 1 _____ Avionics retuned to 136.975 _____ Avionics established link to Radio A _____	P	_____	_____

VDL MULTI-FREQUENCY AQP TEST RESULTS

Test	Results	Pass	Fail	Comments
FSL Test 10 – FSL retune to alt freq. fails with >1 GS in list; fallback to CSC	(On ground) avionics retuned to _____ 136.750 or _____ 136.800 Avionics fails to handoff to non-existent radio _____ Avionics retuned to _____ 136.750 or _____ 136.800 Avionics fails to handoff to non-existent radio _____ Avionics retuned to 136.975 _____ Avionics established link to Radio A _____	P	_____	_____
FSL Test 11 – FSL retune back to CSC after takeoff fails	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ (On takeoff) avionics retuned to 136.975 _____ Avionics failed HO to non-existent Radio 1 _____ Avionics established link with Radio A _____	P	_____	_____
FSL Test 12 – Successful FSL retune to alt. freq. followed by fallback to CSC	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics loses link with Radio B _____ Avionics falls back to 136.975 _____ Avionics established link with Radio A _____	P	_____	_____
FSL Test 13 – Frequency recovery – FSL ignored; AC in-air (matching airport, mismatch GND bit)	(In air) avionics did NOT retune to 136.750 _____ Avionics lost link with Radio A _____ Avionics returned to POA _____	P	_____	_____
FSL Test 14 – Frequency recovery – FSL ignored; AC in-air (non-matching airport), mismatch GND bit	(In air) avionics did NOT retune to 136.750 _____ Avionics lost link with Radio A _____ Avionics returned to POA _____	PP	_____	_____
FSL Test 15 – Frequency recovery – FSL used; AC in-air (matching airport)	(In air) avionics lost link with Radio B _____ Avionics retuned to CSC _____ Avionics established link to Radio A _____	P	_____	_____
FSL Test 16 – Frequency recovery – FSL used; AC in-air (non-matching airport)	(In air) avionics lost link with Radio B _____ Avionics retuned to CSC _____ Avionics established link to Radio A _____	P	_____	_____
FSL Test 17 – Frequency recovery – FSL used; AC on ground on CSC (matching airport)	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics lost link with Radio B _____ Avionics retuned to 136.975 _____ Avionics established link to Radio A _____	_____	F	_____
FSL Test 18 – Frequency recovery – FSL used; AC on-ground (non-matching airport)	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics lost link with Radio B _____ Avionics retuned to 136.975 _____ Avionics established link to Radio C _____	_____	F	_____

VDL MULTI-FREQUENCY AQP TEST RESULTS

Test	Results	Pass	Fail	Comments
FSL Test 19 – Frequency recovery – FSL used; AC in-air on alt. freq; followed by GRAIHO	(In air) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics lost link with Radio B _____ Avionics retuned to CSC _____ Avionics established link to Radio A _____ Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____	P	_____	_____
FSL Test 20 – Aircraft Air/Ground Bit	On ground – ground bit = 1 _____ In air – ground bit = 0 _____	P	_____	_____

VDL MULTI-FREQUENCY AQP TEST RESULTS

Test	Results	Pass	Fail	Comments
GIHO Test 1 – Successful GIHO on CSC	Avionics responded to GIHO from Radio B on 136.975 _____	P	____	____
GIHO Test 2 – Successful GIHO on altFreq	Avionics responded to GIHO from Radio C on 136.750 _____	P	____	____
GIHO Test 3 – GIHO with RGSL	Avionics handed off to Radio C from GIHO RGSL _____	____	F	____
GIHO Test 4 – Successful GIHO with all optional parameters	Avionics responded to GIHO from Radio B on 136.975 _____	P	____	____
GIHO Test 5 – Successful GIHO followed by another GIHO	Avionics responded to GIHO from Radio B on 136.975 _____ Avionics responded to GIHO from Radio C on 136.975 _____	P	____	____
GIHO Test 6 – Successful GIHO followed by fallback to CSC	Avionics responded to GIHO from Radio C on 136.750 _____ Avionics returned to 136.975 _____ Avionics sent XID_CMD_LE to Radio A on 136.975 _____	P	____	____
GIHO Test 7 – Successful GIHO followed by normal air-initiated handoff	Avionics responded to GIHO from Radio B on 136.975 _____ Avionics sent XID_CMD_HO to Radio C on 136.975 _____	P	____	____
GIHO Test 8 – GIHO retransmission	Avionics responded to GIHO from Radio B on 136.975 _____ Avionics responded to retransmitted GIHO from Radio B on 136.975 _____	P	____	____
GIHO Test 10 – Recovery after GIHO reject	Avionics responded to GIHO from Radio C on 136.975 _____ Avionics accepted DISC from Radio C on 136.975 _____ Avionics link with Radio B was not affected _____	P	____	____

Airline: ███████████████

Code: _____

AQP Phase: 3

☐ VDLM0 (POA) Tested
☐ VDLM0 (POA) Capable
☐ VDLMA (POA) Tested
☐ VDLMA (POA) Capable
☐ VDLM2 (AOA) Tested
☑ VDLM2 (AOA) Capable
☐ VDLM2 (ATN) Tested
☑ VDLM2 (ATN) Capable
☐ VDLMF Tested
☐ VDLMF Capable

☐ Classic Aero Satcom Tested
☐ Classic Aero Satcom Capable
☐ SB-S (Swift Broadband Safety) Tested
☐ SB-S (Swift Broadband Safety) Capable
☐ SB-S 2 (Enhanced SB-S) Tested
☑ SB-S 2 (Enhanced SB-S) Capable
☐ Iridium (Block 1) Tested
☐ Iridium (Block 1) Capable
☐ Iridium CERTUS Tested
☐ Iridium CERTUS Capable

☐ AOIP (ACARS Over IP) Tested
☐ AOIP (ACARS Over IP) Capable
☐ HFDL Tested
☐ HFDL Capable
☐ HF NEXT Tested
☐ HF NEXT Capable
☑ OTHER Tested   ATN OVER SBB
☑ OTHER Capable   ATN OVER SBB

Test Engineers' Initials: ███████████

AQP Type: Test
Test/Evaluation

Reference: _____

Test Dates: From: 4/17/2023   **To:** 5/15/2023

Tested Configuration:

Applicable Aircraft: _____

VHF Status: _____   **HF NEXT Status:** _____   **SATCOM Status:** _____   **IRIDIUM Cert Status:** _____

Letter Sent: _____   **HFDL Status:** _____   **SBS Status:** _____   **IRIDIUM Status:** _____

Notes: **OTHER Media Status:** Waived   **SBS2 Status:** Not Test   **ACARS Over IP Status:** _____

Appendix A

IRIS AQP DATA SHEET

Version 1.0

Section	Description	Requirement	Result
4.1 End to End ACARS and ATN Communication			
4.1.1	VDL Mode 2 Single Media	VDL communication is established over the test frequency or AQP lab connection. CM Logon to one of test ATN end systems is successful and CPDLC messages are passed end to end.	**Pass**
4.1.3	SBS 2.0 Single Media ATN + ACARS	SB-S 2.0 communication is established with the AQP lab. Avionics are able to send end to end ACARS messages. Avionics can successfully send a CM Logon to one of test ATN end systems and CPDLC messages are passed end to end.	**Pass**
4.1.5	SBS 2.0 Single Media ATN/OSI only	SB-S 2.0 communication is established with the AQP lab. CM Logon to one of test ATN end systems is successful and CPDLC messages are passed end to end.	Not Applicable
4.2 CMU Multimedia Tests for ATN			
4.2.1	Media preference during an ATN CPDLC session - SATCOM	SATCOM media preference is maintained during a CPDLC session with one of the AQP ATN End Systems. Preferred media is expected to be SB-S 2.0	**Pass**
4.2.3	Media preference during an ATN facility handover - SATCOM	SATCOM media preference is maintained during a transfer from one ATN facility to another using two of the AQP ATN End Systems. Preferred media is expected to be SB-S 2.0	**Pass**
4.2.5	Media preference during an ATN CPDLC session - VDL	VDL media preference is maintained during a CPDLC session with one of the AQP ATN End Systems. Preferred media is expected to be SB-S 2.0	**Pass** on 15May Retest. *See notes for 4/19 testing.
4.2.7	Media preference during an ATN facility handover - VDL	VDL media preference is maintained during a transfer from one ATN facility to another using two of the AQP ATN End Systems. Preferred media is expected to be SB-S 2.0	**Pass** on 15May Retest. *See notes for 4/19 testing.
4. 3 Multimedia Failover Tests			
4.3.1	Loss of VDLM2 connection	ATN CPDLC sessions are maintained during the loss of VDLM2. ATN and ACARS traffic should be carried by SB-S 2.0.	**Pass** on 15May Retest. *See notes for 4/19 testing.

4.3.3	Loss of SBS 2.0 connection	ATN CPDLC sessions are maintained during the loss of SB-S 2.0. ATN and ACARS traffic should be carried by VDLM2.	**Pass**
4.3.5	GES Handover	CPDLC session is maintained during a GES handover	Deferred

4.4 IRIS ACARS and ATN Traffic Loading

4.4.1	SB-S Only: Heavy ACARS loaded channel	Avionics (CMU/MU and SBU) remained stable, and no resets or odd behavior is noted. ATN messages are not retransmitted multiple times or timeout due to delay.	**Pass**
4.4.3	SB-S Only: Large ACARS/AOA message loading	Avionics (CMU/MU and SBU) remained stable, and no resets or odd behavior is noted. ATN messages are not retransmitted multiple times or timeout due to delay.	**Pass**
4.4.5	Multimedia: Heavy ACARS loaded channel	Avionics (CMU/MU and SBU/VDR) remained stable, and no resets or odd behavior is noted. ATN messages are not retransmitted multiple times or timeout due to delay.	**Pass** on 15May Retest. *See notes for 4/20 testing.
4.4.7	Multimedia: Large ACARS/AOA message loading	Avionics (CMU/MU and SBU/VDR) remained stable, and no resets or odd behavior is noted. ATN messages are not retransmitted multiple times or timeout due to delay.	**Pass** on 15May Retest. *See notes for 4/20 testing.

TEST NOTES

Test ID/Section	Observations and Problem Description
	April 19-20th Test Notes
4.2/4.3 (4/19)	Multimedia related tests. In VDL preferred configuration for both 4.2 and 4.3 tests, CM_LOGON was downlinked on satellite instead of VDL. All subsequent downlinks were on VDL.
4.3.1 (4/19)	First attempt (ARICTEST), CPDLC session did not continue, uplinks from the end system were not routed to the avionics. Repeated testing on ARINTEST worked correctly, all sessions continued.
4.3.1 (4/19)	@14:46z. VDL Preferred. VDL to VOICE, CPDLC did not continue on satellite. PA 14:52z
4.4.7 (4/20)	@ 13:23z, CM Logon, session started + Multiblock ACARS. 13:26z Disconnected/Session terminated on automated test – note to check audit and logs.
4.4.5 (4/20)	14:26z. ATC Reject of messages. (VDL ACARS/SBB ATN) Unrecognized MSG Ref # uplinked. (ATN was on SBB)
4.4.3	Noted on Multiblock uplink, 2 blocks were ack'ed out of order. (P/Q blocks). 14:50:09 (Q ack) 15:50:35 (P ack) 14:55:13 HX/REJ 14:59:53 RA up – no tech ack 15:01:00 RA up (repeated)
	May 15th Retest: 4.2.5, 4.2.7, 4.3.1, 4.4.5, 4.4.7
	CM_LOGON correctly downlinked on VDL.
	No other issues reported.

Page 1 of 1

Airline: ▮▮▮▮▮▮▮▮▮   **Code:** _____

AQP Phase: 3

☐ VDLM0 (POA) Tested
☐ VDLM0 (POA) Capable
☐ VDLMA (POA) Tested
☐ VDLMA (POA) Capable
☐ VDLM2 (AOA) Tested
☐ VDLM2 (AOA) Capable
☐ VDLM2 (ATN) Tested
☐ VDLM2 (ATN) Capable
☐ VDLMF Tested
☐ VDLMF Capable

☐ Classic Aero Satcom Tested
☐ Classic Aero Satcom Capable
☐ SB-S (Swift Broadband Safety) Tested
☐ SB-S (Swift Broadband Safety) Capable
☐ SB-S 2 (Enhanced SB-S) Tested
☐ SB-S 2 (Enhanced SB-S) Capable
☑ Iridium (Block 1) Tested
☑ Iridium (Block 1) Capable
☐ Iridium CERTUS Tested
☐ Iridium CERTUS Capable

☐ AOIP (ACARS Over IP) Tested
☐ AOIP (ACARS Over IP) Capable
☐ HFDL Tested
☐ HFDL Capable
☐ HF NEXT Tested
☐ HF NEXT Capable
☐ OTHER Tested
☐ OTHER Capable

Test Engineers' Initials: ▮▮▮▮▮▮▮   **AQP Type:** Test
Test/Evaluation   **Reference:** _____

Test Dates: From: 10/23/2023 **To:** 10/27/2023

Tested Configuration:

Applicable Aircraft: _____

VHF Status: ____   **HF NEXT Status:** ____   **SATCOM Status:** ____   **IRIDIUM Cert Status:** ____

Letter Sent: _____   **HFDL Status:** ____   **SBS Status:** ____   **IRIDIUM Status:** Pass

OTHER Media Status: ____   **SBS2 Status:** ____   **ACARS Over IP Status:** ____

Notes:

Airline: ▮▮▮▮▮▮▮   **Code:** [   ]

     AQP Phase: 3

- ☐ VDLM0 (POA) Tested
- ☐ VDLM0 (POA) Capable
- ☐ VDLMA (POA) Tested
- ☐ VDLMA (POA) Capable
- ☐ VDLM2 (AOA) Tested
- ☐ VDLM2 (AOA) Capable
- ☐ VDLM2 (ATN) Tested
- ☐ VDLM2 (ATN) Capable
- ☐ VDLMF Tested
- ☐ VDLMF Capable

- ☐ Classic Aero Satcom Tested
- ☐ Classic Aero Satcom Capable
- ☐ SB-S (Swift Broadband Safety) Tested
- ☐ SB-S (Swift Broadband Safety) Capable
- ☐ SB-S 2 (Enhanced SB-S) Tested
- ☐ SB-S 2 (Enhanced SB-S) Capable
- ☑ Iridium (Block 1) Tested
- ☑ Iridium (Block 1) Capable
- ☐ Iridium CERTUS Tested
- ☐ Iridium CERTUS Capable

- ☐ AOIP (ACARS Over IP) Tested
- ☐ AOIP (ACARS Over IP) Capable
- ☐ HFDL Tested
- ☐ HFDL Capable
- ☐ HF NEXT Tested
- ☐ HF NEXT Capable
- ☐ OTHER Tested
- ☐ OTHER Capable

Test Engineers' Initials: [▮▮▮   ]   **AQP Type:** [Test]   **Reference:** [   ]
Test/Evaluation

Test Dates: **From:** [*10/23/2023*] **To:** [*10/27/2023*]

Tested Configuration:

Applicable Aircraft: [   ]

VHF Status: [ ]	**HF NEXT Status:** [ ]	**SATCOM Status:** [ ]	**IRIDIUM Cert Status:** [ ]
Letter Sent: [ ]	**HFDL Status:** [ ]	**SBS Status:** [ ]	**IRIDIUM Status:** [Pass]
Notes:	**OTHER Media Status:** [ ]	**SBS2 Status:** [ ]	**ACARS Over IP Status:** [ ]

Airline: ████████████ **Code:** [   ]

AQP Phase: 3

- ☐ VDLM0 (POA) Tested
- ☐ VDLM0 (POA) Capable
- ☐ VDLMA (POA) Tested
- ☐ VDLMA (POA) Capable
- ☐ VDLM2 (AOA) Tested
- ☐ VDLM2 (AOA) Capable
- ☐ VDLM2 (ATN) Tested
- ☐ VDLM2 (ATN) Capable
- ☐ VDLMF Tested
- ☐ VDLMF Capable

- ☐ Classic Aero Satcom Tested
- ☐ Classic Aero Satcom Capable
- ☐ SB-S (Swift Broadband Safety) Tested
- ☐ SB-S (Swift Broadband Safety) Capable
- ☐ SB-S 2 (Enhanced SB-S) Tested
- ☐ SB-S 2 (Enhanced SB-S) Capable
- ☑ Iridium (Block 1) Tested
- ☑ Iridium (Block 1) Capable
- ☐ Iridium CERTUS Tested
- ☐ Iridium CERTUS Capable

- ☐ AOIP (ACARS Over IP) Tested
- ☐ AOIP (ACARS Over IP) Capable
- ☐ HFDL Tested
- ☐ HFDL Capable
- ☐ HF NEXT Tested
- ☐ HF NEXT Capable
- ☐ OTHER Tested
- ☐ OTHER Capable

Test Engineers' Initials: [███]   **AQP Type:** [Test]   **Reference:** [   ]
Test/Evaluation

Test Dates: **From:** 10/23/2023 **To:** 10/27/2023

Tested Configuration:

Applicable Aircraft: [   ]

VHF Status: [ ]	**HF NEXT Status:** [ ]	**SATCOM Status:** [ ]	**IRIDIUM Cert Status:** [ ]
Letter Sent: [ ]	**HFDL Status:** [ ]	**SBS Status:** [ ]	**IRIDIUM Status:** Pass
Notes:	**OTHER Media Status:** [ ]	**SBS2 Status:** [ ]	**ACARS Over IP Status:** [ ]

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PHASE 3 AQP TEST RESULTS

- ☐ VHF TESTED?
- ☐ VHF CAPABLE?
- ☐ VDLMA TESTED?
- ☐ VDLMA CAPABLE?
- ☐ SB-S TESTED?
- ☐ SB-S CAPABLE?

- ☐ HF TESTED?
- ☐ HF CAPABLE?
- ☐ AOA TESTED?
- ☐ AOA CAPABLE?
- ☐ AoIP TESTED?
- ☐ AoIP CAPABLE?

- ☐ SATCOM TESTED?
- ☐ SATCOM CAPABLE?
- ☐ ATN TESTED?
- ☐ ATN CAPABLE?
- ☐ SB-S 2.0 TESTED?
- ☐ SB-S 2.0 CAPABLE?

- ☒ IRIDIUM TESTED?
- ☒ IRIDIUM CAPABLE?
- ☐ VDLMF TESTED?
- ☐ VDLMF CAPABLE?

Airline/Customer: ▮▮▮▮▮▮

Initial/Retest: ☐

Test Engineer: ▮▮▮▮

Test Dates: From: 10/23/23 To: 10/27/23

TESTED CONFIGURATION

Applicable Aircraft: _____

Notes: _____

IRIDIUM AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS	RESULTS
MULTI-MEDIA		
Preferred Media	MU uses VHF as preferred media and only IDL/SATCOM/HFDL when responding to an IDL/HFDL uplink.	_____
Simultaneous Media	MU always attempts to complete on medium where originated.	_____
VHF to Iridium/SATCOM/HF	The avionics restarted failed VHF transmissions on Iridium/SATCOM/HF media and alerts the crew of the VHF NOCOMM conditions.	_____
VHF Voice to Iridium	Avionics sends downlinks via Iridium when in VHF voice mode.	_____
Iridium/SATCOM/HF to VHF	The avionics monitors the available VHF frequencies and attempts to re-establish the VHF medium (Label Q0, SA, etc.).	_____
Automatic Link Establishment	MU automatically sends a Q0 downlink followed by an SA via Iridium whenever the Iridium unit logs on. This may be an SA ES if the MU thinks it is connected to SATCOM. Same as VHF and HF.	P
UBI/DBI Handling	The MU correctly maintains separate and independent UBI/DBI's for the VHF, HF, and Iridium links.	_____
Dual Satellite	The (C)MU supported dual satellite; Iridium and classic SATCOM simultaneously.	_____
Multi-block Message Handling	The MU correctly handles multi-block retransmission when changing media.	_____
429		
System Identifier Word	The SDU properly identifies itself to the CMU/MU as an Iridium Block 1 unit.	P
Satcom Available	The SDU properly indicates its availability status at all times using the label 270 status word.	P
Satcom Voice Available	The SDU properly indicates the Satcom voice availability status at all times using the label 270 status word	P
Satcom Standby Mode	The SDU properly indicates the correct communication status while in standby mode using the label 270 status word	_____
Satcom Voice Alert	The SDU properly indicates that a high priority call is being detected using the label 270 status word	_____
High/Low Data Bus Speed	Uses proper 429 protocol for both high and low speeds.	P

IRIDIUM AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS	RESULTS
Dual CMU Status	The SDU properly receives and indicates the proper communication status and availability of both CMUs using the label 270 status word.	——
END-TO-END		
Downlink Message Queue	Downlink message queue is sent correctly after an extended satellite disconnect.	P
Uplinks	All uplink applications transfer to the (C)MU in the proper format.	P
Downlinks	All downlink applications transfer to the CPS in the proper format.	P
(C)MU ACARS Retransmissions	Enable/disable the acknowledgments at the ACARS application layer. Check that the retransmission was sent at the proper time.	——
Multi-block Messages	Test end-to-end performance of full size 16 block uplink and downlink messages. Test ATS multi-blocks. Different size multi-blocks.	P
Iridium Voice Mode	The Iridium unit supported simultaneous data and voice operation.	P
ATS Messages	Will the avionics send ATS message downlinks on Iridium?	P
Iridium Burst Size	Compare timing of different size uplinks.	
Mismatched Tail	The avionics did not process messages addressed to another tail number (emulator).	——
Message Source	All ACARs messages should be routed through the MU. The Iridium unit shouldn't generate ACARS messages.	——
Simultaneous Uplink/Downlink Transmissions	The Iridium unit is able to receive uplinks and transmit downlink simultaneously without the loss of messages or message blocks	P
Iridium GES Queue Timer	The avionics set (CMU/SDU) does not acknowledge any ACARS messages older than 300 seconds (5 minutes)	——
Simultaneous ACARS and CMU Switch	The avionics continues ACARS transmissions after switching CMUs	——
SDU CHARACTERISTICS		
Ring Alert	The Iridium unit supported ring alert.	——
Owner Requirements Table	The Iridium unit contains an UORT or user configurable settings.	——
Integrated Hardness Test	The (C)MU and the IDU remained stable and did not show any strange behavior during stress testing.	——

IRIDIUM AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS	RESULTS
Integrated Hardness Test	The (C)MU and the IDU operated correctly and did not show any abnormal behavior during the hardness test.	_____
Uplink/Downlink Performance	Scored uplink success was at least 98%.	P

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Airline: ████████ Code: [   ]

AQP Phase: 3

- ☐ VDLM0 (POA) Tested
- ☐ VDLM0 (POA) Capable
- ☐ VDLMA (POA) Tested
- ☐ VDLMA (POA) Capable
- ☐ VDLM2 (AOA) Tested
- ☐ VDLM2 (AOA) Capable
- ☐ VDLM2 (ATN) Tested
- ☐ VDLM2 (ATN) Capable
- ☐ VDLMF Tested
- ☐ VDLMF Capable

- ☐ Classic Aero Satcom Tested
- ☐ Classic Aero Satcom Capable
- ☐ SB-S (Swift Broadband Safety) Tested
- ☐ SB-S (Swift Broadband Safety) Capable
- ☐ SB-S 2 (Enhanced SB-S) Tested
- ☐ SB-S 2 (Enhanced SB-S) Capable
- ☐ Iridium (Block 1) Tested
- ☐ Iridium (Block 1) Capable
- ☐ Iridium CERTUS Tested
- ☐ Iridium CERTUS Capable

- ☐ AOIP (ACARS Over IP) Tested
- ☐ AOIP (ACARS Over IP) Capable
- ☑ HFDL Tested
- ☑ HFDL Capable
- ☐ HF NEXT Tested
- ☐ HF NEXT Capable
- ☐ OTHER Tested
- ☐ OTHER Capable

Test Engineers' Initials: [████]   AQP Type: [Test]   Reference: [   ]
Test/Evaluation

Test Dates: From: _11/13/2023_ To: _11/16/2023_

Tested Configuration:

Manufacturer	Spec	Model	Part #
████████████████████████████			████
████			

MU SOFTWARE PART NUMBERS

Applicable Aircraft: KC-135

VHF Status: [   ]   HF NEXT Status: [   ]   SATCOM Status: [   ]   IRIDIUM Cert Status: [   ]

Letter Sent: [   ]   HFDL Status: [Waived]   SBS Status: [   ]   IRIDIUM Status: [   ]

Notes: OTHER Media Status: [   ]   SBS2 Status: [   ]   ACARS Over IP Status: [   ]

Airline: ▮▮▮▮▮▮▮▮   Code: ▮

AQP Phase: 3

- ☐ VDLM0 (POA) Tested
- ☐ VDLM0 (POA) Capable
- ☐ VDLMA (POA) Tested
- ☐ VDLMA (POA) Capable
- ☐ VDLM2 (AOA) Tested
- ☐ VDLM2 (AOA) Capable
- ☐ VDLM2 (ATN) Tested
- ☐ VDLM2 (ATN) Capable
- ☐ VDLMF Tested
- ☐ VDLMF Capable

- ☐ Classic Aero Satcom Tested
- ☐ Classic Aero Satcom Capable
- ☐ SB-S (Swift Broadband Safety) Tested
- ☐ SB-S (Swift Broadband Safety) Capable
- ☐ SB-S 2 (Enhanced SB-S) Tested
- ☐ SB-S 2 (Enhanced SB-S) Capable
- ☐ Iridium (Block 1) Tested
- ☐ Iridium (Block 1) Capable
- ☐ Iridium CERTUS Tested
- ☐ Iridium CERTUS Capable

- ☐ AOIP (ACARS Over IP) Tested
- ☐ AOIP (ACARS Over IP) Capable
- ☑ HFDL Tested
- ☑ HFDL Capable
- ☐ HF NEXT Tested
- ☐ HF NEXT Capable
- ☐ OTHER Tested
- ☐ OTHER Capable

Test Engineers' Initials: ▮▮▮▮   **AQP Type:** Test   **Reference:**

Test/Evaluation

Test Dates: From: 11/13/2023 **To:** 11/16/2023

Tested Configuration:

Manufacturer	Spec	Model	Part #
▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮			
▮▮▮▮			

MU SOFTWARE PART NUMBERS

Applicable Aircraft: KC-135

VHF Status:	**HF NEXT Status:**	**SATCOM Status:**	**IRIDIUM Cert Status:**
Letter Sent:	**HFDL Status:** Waived	**SBS Status:**	**IRIDIUM Status:**
Notes:	**OTHER Media Status:**	**SBS2 Status:**	**ACARS Over IP Status:**

PHASE 3 AQP TEST RESULTS

☐ VHF TESTED?	☒ HF TESTED?	☐ SATCOM TESTED?	☐ IRIDIUM TESTED?
☐ VHF CAPABLE?	☒ HF CAPABLE?	☐ SATCOM CAPABLE?	☐ IRIDIUM CAPABLE?
☐ VDLMA TESTED?	☐ AOA TESTED?	☐ ATN TESTED?	☐ VDLMF TESTED?
☐ VDLMA CAPABLE?	☐ AOA CAPABLE?	☐ ATN CAPABLE?	☐ VDLMF CAPABLE?
☐ SB-S TESTED?	☐ AoIP TESTED?	☐ SB-S 2.0 TESTED?	
☐ SB-S CAPABLE?	☐ AoIP CAPABLE?	☐ SB-S 2.0 CAPABLE?	

**Airline/Customer**: ███████████████

**Initial/Retest**: ☐   _**Test Engineer**_: ██████

Test Dates: From: __11/13/23__   To: __11/16/23__

TESTED CONFIGURATION

Unit	Manufacturer + Model	Hardware Part #	Serial #	Software Part #
███	██			
	███			
██				
	██████████████████		████████	████████
███				

Additional CMU SOFTWARE PART NUMBERS:

**Applicable Aircraft**: KC-135

Notes: ____

HF AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS	PASS	FAIL
	Any harmonics of the test frequency should be -43 dB below the full rated output.	_____	_____
Comments:	_____	_____	_____
Intermodulation Distortion	Use two-tone audio to drive transceiver in voice mode. The 3rd and 5th order intermodulation distortion products should be at least 24 dB below either tone of the two-tone signal at full rated power.	_____	_____
	Any 7th order products should be at least 34 dB below either tone.	_____	_____
Comments:	_____	_____	_____
Receiver Sensitivity	Audio output level varies by no less than 10 dB when carrier is switched between ON and OFF with signal generator set to 1 microvolt RF output.	_____	_____
Comments:	_____	_____	_____
Receiver Selectivity	Selectivity complies with Attachment 8 of ARINC Characteristic 753 or Figure A-9 of the Test Procedures.	_____	_____
Comments:	_____	_____	_____
SYSTEM TESTS			
Log ON/OFF	Avionics tunes to next frequency in list if squitter does not meet specified criteria.	_____	_____
	Avionics makes two attempts to log on to a frequency once a squitter meets specified criteria.	P	_____
	Avionics is able to successfully log on to a frequency when error-free uplinks are received.	P	_____

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HF AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS	PASS	FAIL
	Avionics can process a log-off request sent from the ground station. Use Reason Code 6 only.	_____	_____
Comments:	Avionics logs back on to HFG after return from voice.	P	_____
Frequency Management	Avionics tunes to next frequency if a squitter announces a ground station frequency change.	P	_____
	Avionics tunes to next frequency in list if two consecutive squitters are not detected.	P	_____
	Avionics tunes to next frequency in list if three consecutive downlinks are not positively acknowledged.	P	_____
	Avionics tunes to next frequency in list if 5 or fewer out of 10 squitters are received without CRC error. Fading.	_____	_____
	Avionics recognizes the squitter Frequency Utilization Flag and responds by establishing COMM on a frequency other than the frequency displaying the Frequency Utilization Flag. (Test can only be run on an HGS equipped for multi-frequency operation).	_____	_____
Comments:	_____	_____	_____
Prekey	The prekey is no less than 249 ms.	_____	_____
Comments:	_____	_____	_____
Modulation Accuracy	Modulation at 300 bps produces the correct constellation diagram, and the following parameters compare accurately with historical data: EVM, Frequency Error, IQ Offset, and Amplitude Droop.	_____	_____
	Same measurements – 600 bps rate.	_____	_____

HF AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS	PASS	FAIL
	Same measurements – 1200 bps rate.	_____	_____
	Same measurements – 1800 bps rate.	_____	_____
Comments: _____		_____	_____
Occupied Spectrum Data Mode	Data modulation RF spectrum -20 dB points are RF +290 Hz and RF +2590 Hz according to Section 4.2.3.1 of ARINC Specification 635.	_____	_____
Comments: _____		_____	_____
Channel Access	The avionics makes use of random access and assigned slots to deliver queued downlinks.	_____	_____
	The avionics randomly accesses RA slots.	_____	_____
	The avionics will implement a back-off algorithm if transmitted LPDUs are not positively acknowledged.	_____	_____
Comments: _____		_____	_____
Retransmission Process	The avionics tunes to next frequency in list if three consecutive downlinks are not positively acknowledged.	P	_____
Comments: _____		_____	_____
End-to-End	The avionics exhibits an uplink success ratio of 98% or better. Use data sheet to record results	P	_____
	The avionics exhibits proper end-to-end performance in the presence of multi-path spread, Doppler spread, additive Gaussian, and broadband noise (future). The avionics exhibits proper end-to-end performance in the presence of other traffic on the same channel (future).	_____	_____
Comments: _____		_____	_____
ACARS Messages	Using the DLS mode, the avionics successfully sends downlink messages to the test system.	P	_____
	Using the DLS mode, the avionics successfully received multi-block uplink messages of varying length.	P	_____

HF AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS	PASS	FAIL
	Using the RLS mode, the avionics successfully sends downlink messages to the test system.	_____	_____
	Using the RLS mode, the avionics successfully receives uplink messages of varying length.	_____	_____
Comments: _____		_____	_____
Polling	The avionics responds to a ground station poll request by downlinking a Performance Data HFNPDU.	_____	_____
Comments: _____		_____	_____
System Table	Avionics requests and correctly accepts HFDL System Table uploads from HGS.	P	_____
Comments: _____		_____	_____

HF AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS	PASS	FAIL
Log-Off Request Disruption	Avionics will move to a non-operational state on receipt of a log-off request with a Reason Code of 01 hex (system disruption).	_____	_____
Comments:	_____	_____	_____
Log-Off Request Invalid AID	Avionics will tune to the next frequency if a log-off request with a Reason Code of 04 hex (invalid aircraft ID) is received. Scan continues without attempting another log-on of the HGS.	_____	_____
Comments:	_____	_____	_____
Minimum Priority	The avionics will not send ACARS traffic if the HGS minimum priority field is 8.	_____	_____
	The avionics will not send a frequency data HFNPDU if the HGS minimum priority is 7.	_____	_____
Comments:	_____	_____	_____
Large Multi-block Uplinks	The avionics can successfully process a 16-block multi-block uplink.	P	_____
Comments:	_____	_____	_____
Uplink MPDU Processing	The avionics can successfully process uplinks received on all designated uplink slots.	_____	_____
Comments:	_____	_____	_____
Uplink Data Rates	The avionics can successfully process uplinks received at 600, 1200, and 1800 bps.	_____	_____
Comments:	_____	_____	_____
Ground Station IDs	The avionics can successfully log on to HGS with different ground station identification numbers (valid range is 1 through 127).	_____	_____
Comments:	_____	_____	_____
Aircraft ID Numbers	The avionics can successfully use any possible aircraft identification number (valid range is 1 through 253) assigned by the HGS.	_____	_____

Airline: ▮▮▮▮▮▮▮▮ **Code:** [ ]

AQP Phase: 3

- ☐ VDLM0 (POA) Tested
- ☐ VDLM0 (POA) Capable
- ☑ VDLMA (POA) Tested
- ☑ VDLMA (POA) Capable
- ☑ VDLM2 (AOA) Tested
- ☑ VDLM2 (AOA) Capable
- ☐ VDLM2 (ATN) Tested
- ☐ VDLM2 (ATN) Capable
- ☐ VDLMF Tested
- ☐ VDLMF Capable

- ☐ Classic Aero Satcom Tested
- ☐ Classic Aero Satcom Capable
- ☐ SB-S (Swift Broadband Safety) Tested
- ☐ SB-S (Swift Broadband Safety) Capable
- ☐ SB-S 2 (Enhanced SB-S) Tested
- ☐ SB-S 2 (Enhanced SB-S) Capable
- ☐ Iridium (Block 1) Tested
- ☐ Iridium (Block 1) Capable
- ☐ Iridium CERTUS Tested
- ☐ Iridium CERTUS Capable

- ☐ AOIP (ACARS Over IP) Tested
- ☐ AOIP (ACARS Over IP) Capable
- ☐ HFDL Tested
- ☐ HFDL Capable
- ☐ HF NEXT Tested
- ☐ HF NEXT Capable
- ☐ OTHER Tested
- ☐ OTHER Capable

Test Engineers' Initials: ▮▮▮▮ **AQP Type:** Test (Test/Evaluation) **Reference:** [ ]

Test Dates: From: 11/27/2023 **To:** 12/6/2023

Tested Configuration:

Manufacturer	Spec	Model	Part #
▮▮▮▮▮▮▮▮▮▮▮▮	▮▮▮	▮▮▮	
▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮			
▮▮			

MU SOFTWARE PART NUMBERS

▮▮▮▮▮▮   ▮▮▮▮▮▮▮

Applicable Aircraft: [ ]

VHF Status: [ ]	**HF NEXT Status:** [ ]	**SATCOM Status:** [ ]	**IRIDIUM Cert Status:** [ ]
Letter Sent: 12/7/2023	**HFDL Status:** [ ]	**SBS Status:** [ ]	**IRIDIUM Status:** [ ]
	OTHER Media Status: [ ]	**SBS2 Status:** [ ]	**ACARS Over IP Status:** [ ]

Notes:

Non-network impacting waiver
See summary page for details

CMU HARDWARE

CMU AQP Status: Waived

▮▮▮▮▮▮▮

Service Functional Capability Level:

AEEC Spec: ▯ Vendor: ▮▮▮▮▮▮ ▮▮▮▮▮▮▮

▮▮▮▮▮▮▮ HW_Revision

▮▮▮▮▮ Core_SW_Part_Number:

☑ VDL Multi Frequency ☑ Co Channel Compliant

☐ Multi Bearer SATCOM ☐ OTHER

▮▮▮▮▮▮

Comments:

PHASE 3 AQP TEST RESULTS

☐ VHF TESTED?	☐ HF TESTED?	☐ SATCOM TESTED?	☐ IRIDIUM TESTED?
☐ VHF CAPABLE?	☐ HF CAPABLE?	☐ SATCOM CAPABLE?	☐ IRIDIUM CAPABLE?
☐ VDLMA TESTED?	☒ AOA TESTED?	☐ ATN TESTED?	☒ VDLMF TESTED?
☐ VDLMA CAPABLE?	☒ AOA CAPABLE?	☐ ATN CAPABLE?	☒ VDLMF CAPABLE?
☐ SB-S TESTED?	☐ AoIP TESTED?	☐ SB-S 2.0 TESTED?	
☐ SB-S CAPABLE?	☐ AoIP CAPABLE?	☐ SB-S 2.0 CAPABLE?	

Airline/Customer: ▮▮▮▮▮

Initial/Retest: ☐   _Test Engineer_: ▮▮▮▮

Test Dates: From: 11/27/23   To: 12/6/23

TESTED CONFIGURATION

Unit	Manufacturer + Model	Hardware Part #	Serial #	Software Part #
▮▮	▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮			
▮▮				
▮▮				
▮▮				

Additional CMU SOFTWARE PART NUMBERS:

		MMDR SW Part #s		
▮▮	▮▮▮	▮▮▮▮▮		
		▮▮▮▮▮		
		▮▮▮▮▮		
		▮▮▮▮▮		
		▮▮▮▮▮		
		▮▮▮▮▮		

Applicable Aircraft: _____

Notes: ____

VHF AQP TEST RESULTS

OOOI EVENTS

DESCRIPTION	REQUIREMENTS	Y/N
Message Sequencing	Messages are downlinked in a logical order according to airline documentation.	___
Message Buffering	Messages are buffered when not acknowledged. and retransmitted when radio contact resumes.	___
Timers	OFF/ON events are delayed approximately 10 seconds.	___
Filters	IN/OUT events are delayed approximately 2 seconds.	___
Source	Source of OOOI events. If Digital 429, list peripheral(s).	___
OOOI Labels	MU uses standard QA-QV OOOI labels or unique. ON/OFF with Dept. & Dest.	___

Comments: _____

RETRANSMISSION INTERVAL

DESCRIPTION	REQUIREMENTS	Test #/Xmission	1&2	2&3	3&4	4&5	5&6	P/F
Retransmissions	Downlinks are retransmitted	1	15	16				P
	3-5 times at randomly spaced	2	10	20				P
	Intervals from 10 to 25 seconds	3	17	12				P
	before NOCOMM is displayed	4	11	17				PP

DATA: Time Between Transmissions Seconds)

PREKEY TIME

DESCRIPTION	REQUIREMENTS	DATA
Unmodulated Carrier	1 millisecond maximum	___
Transmission Time Prekey	85 milliseconds maximum	___
Programmable Prekey	Is prekey programmable?	___

Comments: _____

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VHF AQP TEST RESULTS

MISCELLANEOUS

DESCRIPTION	REQUIREMENTS	DATA (P/F)
Protocol and Embedded ACKs	Avionics utilizes UBI/DBI protocol.	P
	If yes, protocol works correctly.	P
	Downlink retransmissions contain the same MSN before and after a NOCOMM condition.	P
	Avionics processes uplink with the same UBI within 10 minutes as a duplicate uplink.	P
	An embedded ACK to an uplink is changed to an embedded NAK in subsequent downlink retransmissions.	P
	Avionics properly handles embedded ACKS in uplink messages.	P
	Avionics provides embedded ACKS in downlink messages.	P

Comments: _____

U/L & D/L Multiblock Processing	Avionics accepts and prints multiblock messages.	_____
	Avionics accepts and displays multiblock messages.	P
	"INCOMPLETE MESSAGE" advisory given when subsequent blocks not received in 1.5 minutes.	_____
	If part of a multiblock downlink has been acknowledged, and the avionics goes NOCOMM, the entire multiblock message is resent when COMM is regained.	P

Comments: _____

Tracker Message	Tracker Message interval (minutes).	10:00
	Intervals are at 10 minutes and only in the absence of other downlinks.	P
	NOT sent while the aircraft is on the ground.	P
	Tracker Messages are not queued while the avionics is in voice mode.	P
	Tracker Timer reset by uplink ACK to a downlink.	P

Comments: _____

Contact Message	Contact Message interval.	2:05
	Sent only is no uplink traffic is heard for a defined period of time.	P
	NOT sent while the aircraft is on the ground.	P
	Contact/Tracker used on alternate (autotune) frequency?	P

Comments: _____

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VHF AQP TEST RESULTS

CHANNEL ACCESS

DESCRIPTION	REQUIREMENTS	DATA (P/F)
Channel Access Algorithm	Will not transmit while receiving a 1200 Hz MSK modulated signal.	_____
	Will not transmit while receiving a 2400 Hz MSK modulated signal.	_____
	Will not transmit while receiving a random (1200/2400) MSK modulated signal.	_____
	Will not transmit while receiving actual traffic with 75ms prekey.	_____
	Must check for channel occupancy before transmitting an ACK to an uplink.	_____
Carrier Sense Multiple Access	The avionics implements a non-persistent CSMA algorithm.	_____

Comments: _____

AGENCY CODE, REGISTRATION NUMBER, AND FLIGHT NUMBER

DESCRIPTION	REQUIREMENTS	DATA (P/F)
Default Agency	Enter the default agency code source and list the agency code.	APM GS
Agency Code Chars.	Will the avionics accept numeric characters for the agency code?	N/A
Default Reg #	Enter the default registration source and list the registration number.	_____
Flight Number	Flight numbers less than four characters are padded with leading zeros.	N/A
	Will the avionics accept alpha characters for the flight number?	N/A
AN/FI Address	Avionics supports both AN and FI addressing.	_____

Comments: fixed FI of GS0000

ARINC EUROPEAN BASE FREQUENCY – 131.825 MHz

Is 131.825 present and enabled in the scan table?	P
Are tracker messages enabled on 131.825?	P
Are contact messages enabled on 131.825?	P
Does the avionics respond properly when autotune received while on 131.825?	P

AQP Phase 3 Checklist
Version 6/14/2022
Document #62139 Rev D

Collins Aerospace

VHF AQP TEST RESULTS

STUCK CARRIER

DESCRIPTION	REQUIREMENTS	DATA (P/F)
Stuck Transmitter	Avionics does not exhibit any stuck transmitter as a result of power cycling or related testing.	_____

AUTOTUNE FUNCTIONS

DESCRIPTION	REQUIREMENTS	Label	#	Data (P/F)
ACK to Command	Avionics provides ACK to autotune command before changing frequency.			P
Channel Changeover	Avionics changes to frequency specified by Autotune command.			P
Link Tests on New Frequency	Avionics immediately conducts at least 3 link tests on the new frequency.	Q0	3	P
Return to Base Frequency and Conduct Link Test	Avionics returns to the base frequency immediately conducts at least 3 tests to re-establish communication.	Q0	3	~
Autotune to an Autotune	If the avionics was autotuned and a subsequent autotune is received, the avionics will correctly retune and return to the base frequency if unable to establish or maintain communication.			P

Multiblock Completed After a Nested Autotune:

Downlink w/o embedded ACK in autotune	P	with embedded ACK	P
Uplink w/o embedded ACK in autotune	P	with embedded ACK	_____

DESCRIPTION	REQUIREMENTS	Data (P/F)
Power Interruption	Avionics recalls last autotuned frequency if 115VAC power is interrupted (>1 min.) and 28VDC is retained.	N/A
	For how long will MU recall last autofreq with Both 115VAC and 28VDC removed? _____	P
Frequency Tuning	Will the avionics tune between 118.000 MHz and 136.975 MHz?	P

AOA AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS		DATA P/F
Basic Link Establishment	Avionics correctly implements the basic link establishment.		P
Intramedia Switch and Debounce Timers	Scenario 1	From Base to AOA < 10 min	P
	Scenario 2	From Base to AOA > 10 min	P
	Scenario 3	From Autotune to AOA < 10 min	P
	Scenario 4	From Autotune to AOA > 10 min	P
Voice/Data Mode	Scenario 1: Voice mode < 4 min		P
	Scenario 2: Voice mode > 4 min < 10 min		P
	Scenario 3: Voice mode > 10 min		P
Handoff Sequence	Scenario 1	HO Signal Level	P
	Scenario 1A	HO Signal Level Different DSP	N/A
	Scenario 1B	HO Unanswered	P
	Scenario 1C	HO Unanswered Different DSP	N/A
	Scenario 1D	Uplink from Previous GS	P
	Scenario 2	HO attempt after Downlink Failure	P
	Scenario 2A	HO attempt after Downlink Failure Different DSP	P
	Scenario 5	HO attempt to PECT	P
	Scenario 6	HO Time Out	P
	Scenario 6A	HO Time Out Different DSP	P
Multimedia		Scenario 1	_____
		Scenario 2	_____
		Scenario 3	_____
Maximum Delay Between Transmissions			P
Message Assembly Timer		Scenario 1	_____
		Scenario 2	_____
		Scenario 3	_____

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AOA AQP TEST RESULTS

DESCRIPTION	REQUIREMENTS		DATA P/F
UBI Reset Timer			___
VAC1 Counter and VAT7 Timer			P
Retune and Autotune	POA to AOA Retune to CSC		P
	POA to AOA Retune to Alternate Frequency		P
	POA to AOA Retune Ignore Debounce Timer		P
	POA to AOA Retune Nested in Downlink		P
	POA to AOA Retune Nested in Uplink		P
	POA to AOA Retune with GS ICAO Address		N/I
	AOA to POA Autotune Base Frequency		F
	AOA to POA Autotune Alternate Frequency		F
	AOA to POA Autotune Debounce Timer		P
	AOA to POA Autotune Nested in Downlink		P
	AOA to POA Autotune Nested in Uplink		
	AOA to POA Autotune Fall to POA Base		P

Comments: _____

Criss-Cross Uplink		Scenario 1	P
		Scenario 2	P
ICAO Addressing			___

Comments: _____

VDL MULTI-FREQUENCY AQP TEST RESULTS

Test	Results	Pass	Fail	Comments
GRAIHO Test 1 – CSC to AltFreq	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____	P	_____	_____
GRAIHO Test 2 – AltFreq to CSC	Avionics retuned to 136.975 _____ Avionics handed off to Radio A _____	P	_____	_____
GRAIHO Test 3 – AltFreq1 to AltFreq2	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics retuned to 136.800 _____ Avionics handed off to Radio C _____ Avionics retuned to 136.975 _____ Avionics established link to Radio A _____	P	_____	
GRAIHO Test 4 – to 1st GS in RGSL	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____	P	_____	_____
GRAIHO Test 5 – to last GS in RGSL	Avionics retuned to 136.750 _____ Avionics failed HO to non-existent Radio 1 _____ Avionics failed HO to non-existent Radio 2 _____ Avionics handed off to Radio B _____	P	_____	_____
GRAIHO Test 6 – w/ all optional parameters	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____	P	_____	_____
GRAIHO Test 7 – successive GRAIHOs	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics retuned to 136.975 _____ Avionics handed off to Radio A _____	P	_____	_____
GRAIHO Test 8 – normal AIHO after GRAIHO	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics handed off to Radio C _____	P	_____	_____
GRAIHO Test 9 – fallback to CSC after GRAIHO	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics retuned to 136.975 _____ Avionics established link to Radio A _____	P	_____	_____
GRAIHO Test 11 – GRAIHO failure; fall back to CSC	Avionics retuned to 136.750 _____ Avionics failed HO to non-existent Radio 1 _____ Avionics retuned to 136.975 _____ Avionics established link with Radio A _____	P	_____	_____
GRAIHO Test 12 – GRAIHO failure to all GSs in RGSL; fallback to CSC	Avionics retuned to 136.750 _____ Avionics failed HO to non-existent Radio 1 _____ Avionics failed HO to non-existent Radio 2 _____ Avionics failed HO to non-existent Radio 3 _____ Avionics failed HO to non-existent Radio 4 _____ Avionics failed HO to non-existent Radio 5 _____ Avionics retuned to 136.975 _____ Avionics established link with Radio A _____	P	_____	_____

VDL MULTI-FREQUENCY AQP TEST RESULTS

Test	Results	Pass	Fail	Comments
GRAIHO Test 13 – GRAIHO failure to all GSs in RGSL; AIHO based on GSIF	Avionics retuned to 136.750 _____ Avionics failed HO to non-existent Radio 1 _____ Avionics failed HO to non-existent Radio 2 _____ Avionics failed HO to non-existent Radio 3 _____ Avionics failed HO to non-existent Radio 4 _____ Avionics failed HO to non-existent Radio 5 _____ Avionics handed off to Radio B _____	P	_____	_____
GRAIHO Test 14 – GRAIHO failure for all GSs in RGSL – frequency recovery based on FSL provided in GRAIHO	Avionics retuned to 136.750 _____ Avionics failed HO to non-existent Radio 1 _____ Avionics failed to HO non-existent Radio 2 _____ Avionics failed to HO non-existent Radio 3 _____ Avionics failed HO to non-existent Radio 4 _____ Avionics failed HO to non-existent Radio 5 _____ Avionics retuned to 136.975 _____ Avionics established link with Radio C _____	_____	F	_____
GRAIHO Test 15 – GRAIHO before RR	Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics completed downlink to Radio B _____	P	_____	_____

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VDL MULTI-FREQUENCY AQP TEST RESULTS

Test	Results	Pass	Fail	Comments
FSL Test 1 – Successful FSL (retune to alt freq. matching airport coverage)	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____	P	_____	_____
FSL Test 2 – FSL ignored; non-matching airport	(On ground) avionics does NOT retune to 136.750 _____	P	_____	_____
FSL Test 3 – Successful FSL (landing and takeoff)	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ (On takeoff) avionics retuned to 136.975 _____ Avionics handed off to Radio A _____	P	_____	_____
FSL Test 4 – Successful FSL (takeoff and landing even though non-matching airport)	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ (On takeoff avionics retuned to 136.975 _____ Avionics handed off to Radio A _____	P	_____	_____
FSL Test 5 – Successful FSL retune to alt freq. with >1 GS in list	(On ground) avionics retuned to 136.750 _____ Avionics handed off to _____ Radio B or _____ Radio C (repeat test) (On ground) avionics retuned to 136.750 _____ Avionics handed off to _____ Radio B or _____ Radio C **Repeat test until avionics has handed off to both Radio B and Radio C.**	P	_____	_____
FSL Test 6 – FSL ignored (AC in air, matching airport)	Avionics does NOT retune to 136.975 _____	P	_____	_____
FSL Test 7 – FSL ignored (AC in air, non-matching airport)	Avionics does NOT retune to 136.975 _____	P	_____	_____
FSL Test 8 – Successful FSL followed by normal air-initiated handoff	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ (On takeoff) avionics retuned to 136.975 _____ Avionics handed off to Radio A _____ Avionics handed off to Radio C _____	P	_____	_____
FSL Test 9 – FSL retune fails; fallback to CSC	(On ground) avionics retuned to 136.750 _____ Avionics failed HO to non-existent Radio 1 _____ Avionics retuned to 136.975 _____ Avionics established link to Radio A _____	P		

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VDL MULTI-FREQUENCY AQP TEST RESULTS

Test	Results	Pass	Fail	Comments
FSL Test 10 – FSL retune to alt freq. fails with >1 GS in list; fallback to CSC	(On ground) avionics retuned to _____ 136.750 or _____ 136.800 Avionics fails to handoff to non-existent radio _____ Avionics retuned to _____ 136.750 or _____ 136.800 Avionics fails to handoff to non-existent radio _____ Avionics retuned to 136.975 _____ Avionics established link to Radio A _____	P	_____	_____
FSL Test 11 – FSL retune back to CSC after takeoff fails	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ (On takeoff) avionics retuned to 136.975 _____ Avionics failed HO to non-existent Radio 1 _____ Avionics established link with Radio A _____	P	_____	_____
FSL Test 12 – Successful FSL retune to alt. freq. followed by fallback to CSC	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics loses link with Radio B _____ Avionics falls back to 136.975 _____ Avionics established link with Radio A _____	P	_____	_____
FSL Test 13 – Frequency recovery – FSL ignored; AC in-air (matching airport, mismatch GND bit)	(In air) avionics did NOT retune to 136.750 _____ Avionics lost link with Radio A _____ Avionics returned to POA _____	P	_____	_____
FSL Test 14 – Frequency recovery – FSL ignored; AC in-air (non-matching airport), mismatch GND bit	(In air) avionics did NOT retune to 136.750 _____ Avionics lost link with Radio A _____ Avionics returned to POA _____	P	_____	_____
FSL Test 15 – Frequency recovery – FSL used; AC in-air (matching airport)	(In air) avionics lost link with Radio B _____ Avionics retuned to CSC _____ Avionics established link to Radio A _____	P	_____	_____
FSL Test 16 – Frequency recovery – FSL used; AC in-air (non-matching airport)	(In air) avionics lost link with Radio B _____ Avionics retuned to CSC _____ Avionics established link to Radio A _____	P	_____	_____
FSL Test 17 – Frequency recovery – FSL used; AC on ground on CSC (matching airport)	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics lost link with Radio B _____ Avionics retuned to 136.975 _____ Avionics established link to Radio A _____	_____	F	_____
FSL Test 18 – Frequency recovery – FSL used; AC on-ground (non-matching airport)	(On ground) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics lost link with Radio B _____ Avionics retuned to 136.975 _____ Avionics established link to Radio C _____	_____	F	_____

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VDL MULTI-FREQUENCY AQP TEST RESULTS

Test	Results	Pass	Fail	Comments
FSL Test 19 – Frequency recovery – FSL used; AC in-air on alt. freq; followed by GRAIHO	(In air) avionics retuned to 136.750 _____ Avionics handed off to Radio B _____ Avionics lost link with Radio B _____ Avionics retuned to CSC _____ Avionics established link to Radio A _____ Avionics retuned to 136.750 _____ Avionics handed off to Radio B _____	P	_____	_____
FSL Test 20 – Aircraft Air/Ground Bit	On ground – ground bit = 1 _____ In air – ground bit = 0 _____	P	_____	_____

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VDL MULTI-FREQUENCY AQP TEST RESULTS

Test	Results	Pass	Fail	Comments
GIHO Test 1 – Successful GIHO on CSC	Avionics responded to GIHO from Radio B on 136.975 _____	P	———	———
GIHO Test 2 – Successful GIHO on altFreq	Avionics responded to GIHO from Radio C on 136.750 _____	P	———	———
GIHO Test 3 – GIHO with RGSL	Avionics handed off to Radio C from GIHO RGSL _____	P	———	———
GIHO Test 4 – Successful GIHO with all optional parameters	Avionics responded to GIHO from Radio B on 136.975 _____	P	———	———
GIHO Test 5 – Successful GIHO followed by another GIHO	Avionics responded to GIHO from Radio B on 136.975 _____ Avionics responded to GIHO from Radio C on 136.975 _____	P	———	———
GIHO Test 6 – Successful GIHO followed by fallback to CSC	Avionics responded to GIHO from Radio C on 136.750 _____ Avionics returned to 136.975 _____ Avionics sent XID_CMD_LE to Radio A on 136.975 _____	P	———	———
GIHO Test 7 – Successful GIHO followed by normal air-initiated handoff	Avionics responded to GIHO from Radio B on 136.975 _____ Avionics sent XID_CMD_HO to Radio C on 136.975 _____	P	———	———
GIHO Test 8 – GIHO retransmission	Avionics responded to GIHO from Radio B on 136.975 _____ Avionics responded to retransmitted GIHO from Radio B on 136.975 _____	P	———	———
GIHO Test 10 – Recovery after GIHO reject	Avionics responded to GIHO from Radio C on 136.975 _____ Avionics accepted DISC from Radio C on 136.975 _____ Avionics link with Radio B was not affected _____	P	———	———

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