

**SUBJECT:**

Required maintenance for Technisonic Tactical Radio Installation.

**APPLICABILITY :**

 Aircraft with the subject modification embodied in accordance with TCCA STC  
 No. SH21-22 or any relevant foreign approvals.

AVIONICS DESIGN SERVICES APPROVED FOR RELEASE	
	April 26, 2021
BY	DATE
ORIGINAL IN RED	

THE INFORMATION CONTAINED IN THIS DOCUMENT SHALL BE TREATED AS THE PROPERTY OF AIRBUS HELICOPTERS CANADA LIMITED (AHCA). THE RECIPIENT OF THIS DOCUMENT SHALL NOT DISCLOSE ANY INFORMATION CONTAINED HEREIN TO THIRD PARTIES WITHOUT THE WRITTEN PERMISSION OF AHCA, AND SHALL NOT USE OR REPRODUCE THIS DOCUMENT IN WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN ITS ORIGINALLY INTENDED PURPOSE, OR TO EVALUATE ITS CONTENTS.

	NAME AND SIGNATURE	DATE	COMPANY DEPARTMENT
PREPARED BY:	<b>Deborah Kerr</b>	Digitally signed by Deborah Kerr Date: 2021.04.19 11:49:30 -04'00'	AHCA ENGINEERING
PREPARED BY:			
CHECKED BY:	<b>Peter Sharpe</b>	Digitally signed by Peter Sharpe Date: 2021.04.19 15:37:09 -04'00'	AHCA ENGINEERING
CHECKED BY:	<b>Dan Kapuscinsky</b>	Digitally signed by Dan Kapuscinsky Date: 2021.04.20 08:41:02 -04'00'	AHCA QUALITY ASSURANCE
REV 0 ACCEPTED (Civil A/W Authority)	(As per ICA Compliance Check Sheet)		TCCA
REV 0 RELEASED BY:	<b>Peter Sharpe</b>	Digitally signed by Peter Sharpe Date: 2021.05.18 14:22:34 -04'00'	AHCA ENGINEERING

**RECORD OF REVISIONS**

Rev.	Pages at this Revision	Description, Reason Changed Pages	Prepared (name and date)	Checked (name and date)	App'd/Acc'd (Civil A/W Authority) (name and date)	Released (name and date)
0	1 through 20	Original issue.	See page 1.	See page 1.	See page 1.	See page 1.

NOTE: Revisions to this document will be distributed to operators of this equipment by the STC holder.  
NOTE: Revised portions of affected pages are identified by a vertical black line in the margin adjacent to the change.  
NOTE: Minor changes are released in accordance with TCCA - ACCEPTED CAR 521.154 procedures (ref. DAPM- E- 0001).

### CONTENTS

SECTION	TITLE	PAGE
1	GENERAL .....	4
2	AIRWORTHINESS LIMITATIONS .....	11
3	CONTROL AND OPERATION .....	12
4	INSPECTION SCHEDULE AND MAINTENANCE ACTION .....	13
5	REPLACEMENT COMPONENTS AND REPAIR / OVERHAUL INFORMATION	15
6	TROUBLESHOOTING .....	16
7	SPECIAL TOOLING .....	17
8	REMOVAL AND REPLACEMENT .....	17
9	WEIGHT AND BALANCE DATA .....	19
10	PLACARDS AND MARKINGS .....	20

### FIGURES

FIGURE	TITLE	PAGE
1	TDFM-9100NV Transceiver on centre console .....	4
2	RC-9100NV Remote Control on ceiling panel .....	5
3	Tactical Transmit ON/OFF Switch details .....	6
4	Circuit Breaker locations .....	7
5	Antenna locations .....	8
6	Placard on Instrument Panel .....	20

### TABLES

TABLE	TITLE	PAGE
1	Frequency Bands .....	4
2	Inspection Schedule and Maintenance Action Every 12 M (Margins: 3 M) .....	13
3	Supplemental Maintenance Instructions .....	14
4	Troubleshooting Guide .....	16
5	Wiring Diagram Drawing List .....	16

**AIRBUS HELICOPTERS CANADA LIMITED**
**1. GENERAL**

- A. The Technisonic Tactical Radio Installation provides a means of FM radio communication. The TDFM-9100NV Transceiver (see Figure 1) is installed in the centre console, accessible to the pilot and co-pilot. The relevant FM frequency bands are listed in Table 1. A remote control head (RC-9100NV) is installed in the cabin ceiling panel. An inhibit switch is located on the instrument panel to stop transmission during certain phases of flight. Two antennas are used, one on the tail boom, and one on the cabin roof, right hand side. Two circuit breakers are located in the overhead panel, one for TDFM-9100NV Transceiver, and one for the RC-9100NV Remote Control.
- B. These Instructions for Continued Airworthiness are applicable to aircraft with the subject modification embodied.

Band	Frequency Range
VHF	136- 174 MHz
UHF LO	380- 470 MHz
UHF HI	450- 520 MHz
700/800	764- 870 MHz

Table 1 Frequency Bands

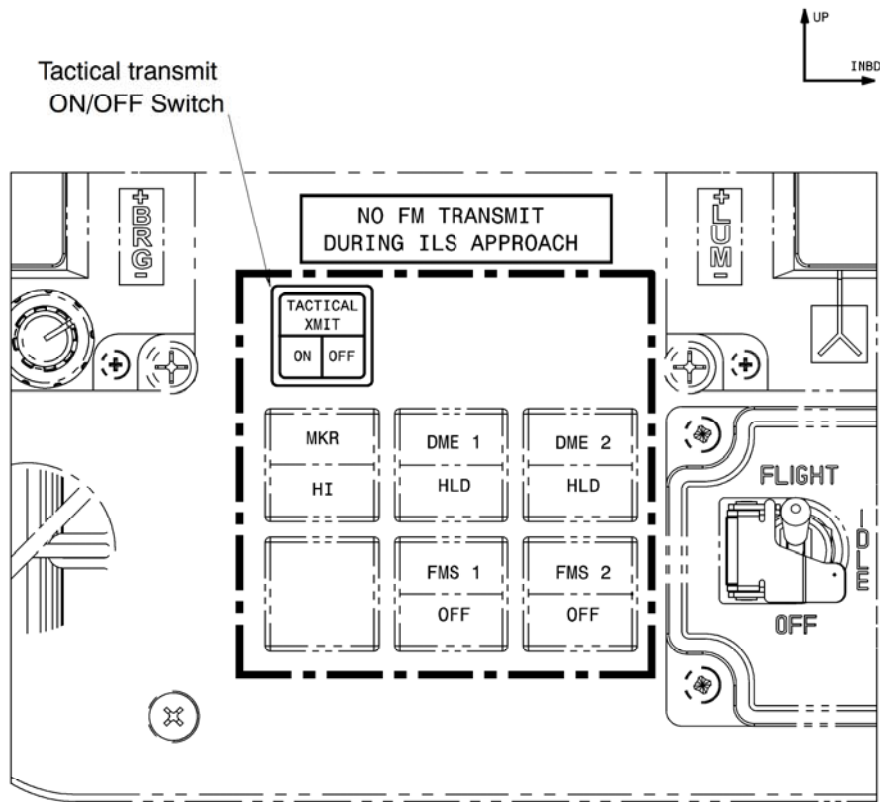


Figure 1 TDFM-9100NV Transceiver on centre console

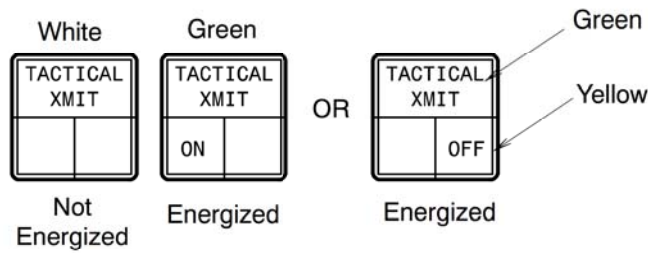
Transport Canada - Accepted



Figure 2 RC-9100NV Remote Control in ceiling panel



View showing Tactical Switch on Instrument Panel



Tactical Switch indication lights

Figure 3 Tactical Transmit ON/OFF Switch details

Transport Canada - Accepted

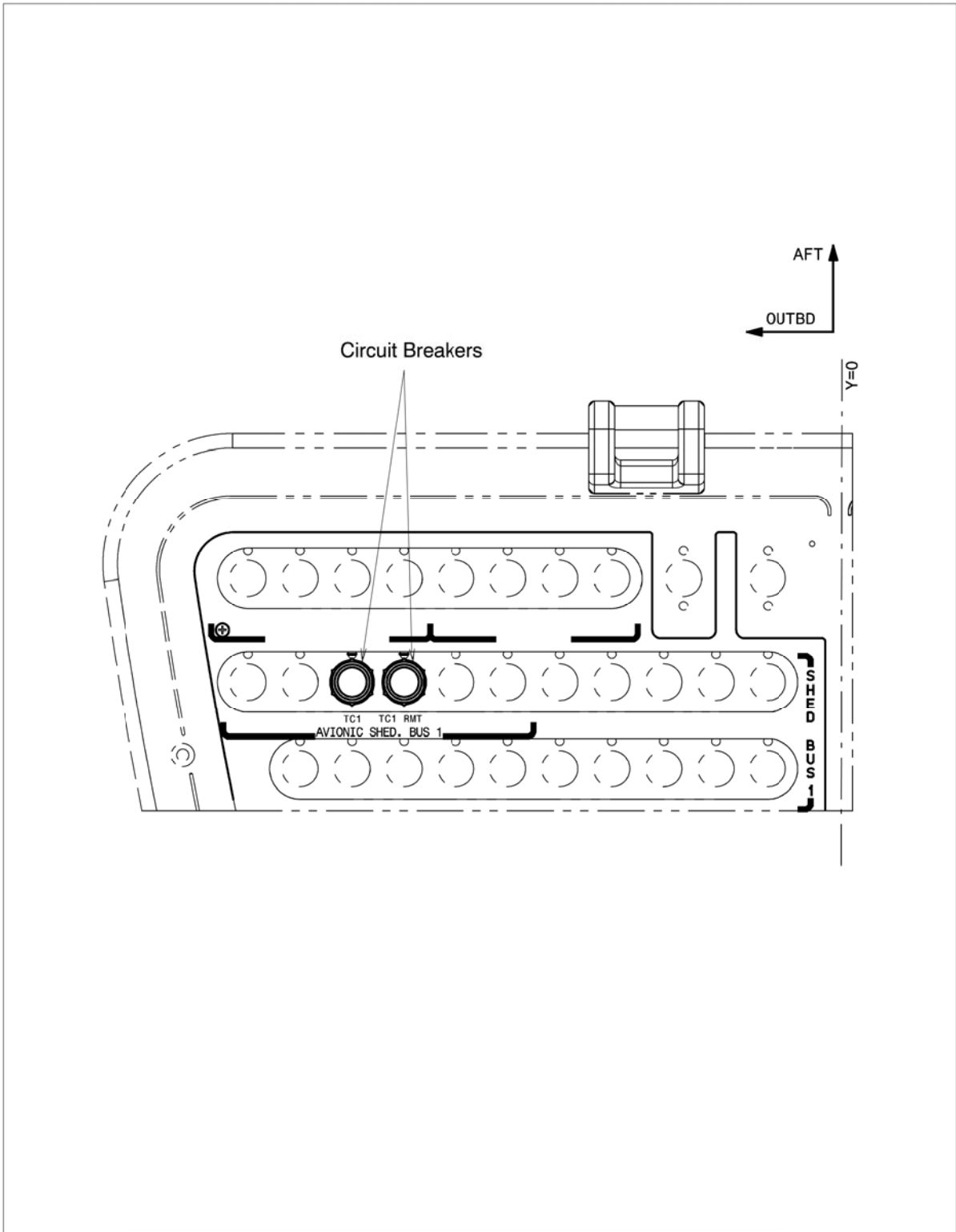


Figure 4 Circuit Breaker locations

Transport Canada - Accepted

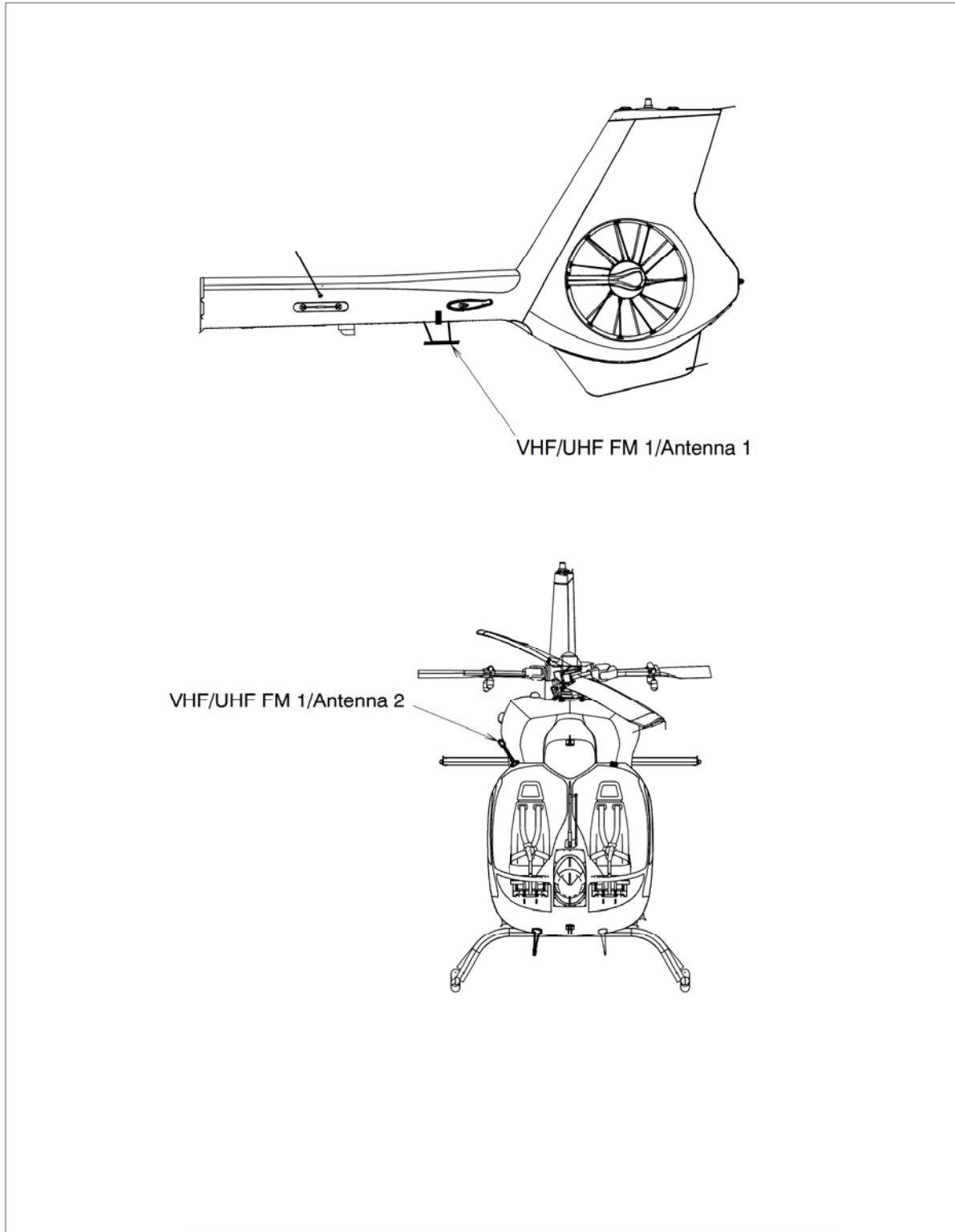


Figure 5 Antenna locations

Transport Canada - Accepted



**AIRBUS HELICOPTERS CANADA LIMITED**
**C. REFERENCES**

DOCUMENT	DOCUMENT TITLE
AMM	Aircraft Maintenance Manual
MTC (all aircraft)	Standard Practices Manual
Manual Number 13RE483	Technisonic Industries Limited TDFM- 9100 Multiband P25 Airborne Transceiver, Installation Instructions
Manual Number 13RE482	Technisonic Industries Limited TDFM- 9100 Multiband P25 Airborne Transceiver, Operating Instructions
Manual Number 14RE508	Technisonic Industries Limited RC- 9100 Multiband P25 Airborne Transceiver Remote Control, Installation Instructions
Manual Number 14RE509	Technisonic Industries Limited RC- 9100 Multiband P25 Airborne Transceiver Remote Control, Operating Instructions

**D. ABBREVIATIONS & DEFINITIONS**

ABBREVIATION	DEFINITION
Acc'd	Approved
ACU	Audio Control Unit
AHCA	Airbus Helicopters Canada Limited
App'd	Approved
A/W	Airworthiness
CAR	Canadian Aviation Regulations
DAPM	Design Approval Procedures Manual
FAA	Federal Aviation Administration
FM	Frequency modulation
GS	Glideslope
ILS	Instrument landing system
IFR	Instrument flight rules
IMC	Instrument meteorological conditions
LOC	Localizer
MHz	Megahertz
No.	Number
Rev.	Revision
STC	Supplemental Type Certificate
TCCA	Transport Canada Civil Aviation
UHF	Ultrahigh frequency
VHF	Very high frequency
VOR	VHF Omnidirectional radio ranging
VSWR	Voltage Standing Wave Ratio
XMT	Transmit

Transport Canada - Accepted

**E. UNITS OF MEASUREMENT**

ABBREVIATION / SYMBOL	UNIT OF MEASUREMENT
FH	Flight Hours
hrs	hours
in	inch
kg	kilogram
lb	pound
m	meter
M	Months

Transport Canada - Accepted



**AIRBUS HELICOPTERS CANADA LIMITED**

**INSTRUCTIONS FOR CONTINUED  
AIRWORTHINESS  
TECHNISONIC TACTICAL RADIO  
INSTALLATION  
BK117 D-2, D-3**

**2. AIRWORTHINESS LIMITATIONS**

Canadian Approval

The Airworthiness Limitations section is approved by the Minister of Transport and specifies maintenance required by any applicable airworthiness or operating rule unless an alternative program has been approved by the Minister.

No Airworthiness Limitations associated with this installation.

Transport Canada - Approved

### 3. CONTROL AND OPERATION

Apart from the following, control and operation of the aircraft remains unchanged:

The TDFM-9100NV, located in the centre console, is powered ON by pressing and holding the POWER knob until the display lights up. The knob is also a multi-function rotary knob/button that controls volume, channel, zone and NumLock depending on band selected by pressing the BAND key. Press the knob to select channel and volume. Refer to Figure 1. For information on operating the TDFM-9100NV, refer to the "Technisonic Industries Limited" Operating Instructions, Document Number 13RE482, Rev. E, dated August 2019 (or latest version).

The RC-9100NV is designed to be a secondary remote control head to the TDFM-9100NV. The RC-9100NV is located in the ceiling panel and is powered ON by pressing and holding the POWER knob until the display lights up. The display will show "CONNECTING" until it connects to the TDFM-9011. The knob is also a multi-function rotary knob/button that defaults to control the volume and pressing the knob will change the channels. Refer to Figure 2. For information on operating the RC-9100NV, refer to the "Technisonic Industries Limited" Operating Instructions, Document Number 14RE509, Rev. A, dated September 2015 (or latest version).

The Tactical Transmit Switch, shown in Figure 3, is used to stop transmission during certain phases of flight.

**4. INSPECTION SCHEDULE AND MAINTENANCE ACTION**

For information on operating the TDFM-9100NV, refer to the "Technisonic Industries Limited" Operating Instructions, Document Number 13RE482, Rev. E, dated August 2019 (or latest version). This manual is available by contacting Technisonic Industries Limited at www.til.ca.

For information on operating the RC-9100NV, refer to the "Technisonic Industries Limited" Operating Instructions, Document Number 14RE509, Rev. A, dated September 2015 (or latest version). This manual is available by contacting Technisonic Industries Limited at www.til.ca.

**4.1. INSPECTION SCHEDULE**

4.1.1. Every 12 M (Margins: 3 M) to coincide with the 12 M helicopter inspection:

ITEM	INSPECTION OR MAINTENANCE WORK	CORRECTIVE ACTION
A	- Check TDFM-9100NV transceiver, shown in Figure 1 for: a. security b. inspect external connectors for damage, dust and corrosion. Check wiring at connectors for damage.	a. Secure as required. b. If corrosion found, clean i.a.w. AMM Chapter 20-00-00, 2-12. If wiring or connectors are damaged, remove and replace i.a.w. Section 8 of this ICA.
B	- Check RC-9100NV remote control, shown in Figure 2, for: a. security b. inspect external connectors for damage, dust and corrosion. Check wiring at connectors for damage.	a. Secure as required. b. If corrosion is found, clean i.a.w. AMM Chapter 20-00-00, 2-12. If wiring or connectors are damaged, remove and replace i.a.w. Section 8 of this ICA.
C	- Visually inspect both antennas shown in Figure 5, for: a. cracking b. condition of sealant c. corrosion	a. .No cracking is allowed. If cracking is found, replace antenna or have antenna repaired by an authorized repair facility. b. Clean area and reapply antenna sealant. c. Replace antenna or have antenna repaired by an authorized repair facility.

Table 2 Inspection Schedule and Maintenance Action  
 Every 12 M to coincide with the 12 M helicopter inspection  
 (continued on following page)

**4. INSPECTION SCHEDULE AND MAINTENANCE ACTION**
**4.1. INSPECTION SCHEDULE**

4.1.1. Every 12 M (Margins: 3 M) to coincide with the 12 M helicopter inspection:

ITEM	INSPECTION OR MAINTENANCE WORK	CORRECTIVE ACTION
D	- Visually inspect antenna mounting hardware, shown in Figure 5, for: a. security b. corrosion	a. Secure as required. b. No corrosion is allowed. If corrosion is found, contact vendor for replacement hardware.
E	- Check placards and markings (Refer to Section 10) for: a. legibility b. secure mounting	a. If placards have become illegible, contact AHCA for replacement parts. b. Secure, reattach placards as required.

 Table 2 Inspection Schedule and Maintenance Action  
 Every 12 M to coincide with the 12 M helicopter inspection

4.1.2. Supplemental Maintenance Instructions:

ITEM	INSPECTION OR MAINTENANCE WORK	CORRECTIVE ACTION
A	- In the event of a hard landing incident: a. inspect aircraft in accordance with AMM	a. Refer to AMM, Chapter 05-51-00, 6-4.
B	- In the event of a lightning strike incident: a. inspect aircraft in accordance with AMM	a. Refer to AMM, Chapter 05-54-00, 6-3.

Table 3 Inspection Schedule and Maintenance Action

**5. REPLACEMENT COMPONENTS AND REPAIR / OVERHAUL INFORMATION**

Contact AHCA for replacement component parts. No overhaul information required for this installation.

For replacement components contact:

Airbus Helicopters Canada Limited  
1100 Gilmore Road, P.O. Box 250  
Fort Erie, ON  
L2A 5M9 Canada  
Telephone: (905) 871-7772

[www.airbushelicopters.ca](http://www.airbushelicopters.ca)

Return failed TDFM-9011NV Transceiver or RC-9100NV Remote Control units, contact:

Technisonic Industries Limited  
240 Traders Boulevards, East  
Mississauga, ON  
L4Z 1W7 Canada  
Telephone: (905) 890-2113

[www.til.ca](http://www.til.ca)

**6. TROUBLESHOOTING**

For electrical troubleshooting refer to Wiring Diagram list shown in Table 5 of this ICA.

ITEM	INSPECTION OR MAINTENANCE WORK	Probable Cause	CORRECTIVE ACTION
1	Annunciator light on Instrument Panel does not illuminate when TDFM-9100NV is activated.	Faulty switch	Replace switch (LED-6A-14-ND-E28YB)
2	No power to the TDFM-9100NV Transceiver	Attachment of circuit breaker (TC1)	Check circuit breaker located in overhead panel shown in Figure 4.
3	TDFM-9100NV not operating correctly	Faulty wire  Faulty component	Inspect wiring and ring out harness i.a.w. wiring diagrams.  Isolate faulty components and replace i.a.w. with this ICA (Section 8).
4	RC-9100NV Remote Control	Attachment of circuit breaker (TC1 RMT)	Check circuit breaker located in overhead panel shown in Figure 4.
5	RC-9100NV Remote Control	Faulty wire  Faulty component	Inspect wiring and ring out harness i.a.w. Wiring diagrams.  Isolate faulty components and replace i.a.w. with this ICA (Section 8).

Table 4 Troubleshooting Guide

For electrical system troubleshooting, refer to the wiring diagrams drawing list, Tactical Radio Installation.

Wiring Diagram Drawing List for the Tactical Radio Installation:

Drawing No.	Title
WD145-869854 Sht. 1	Tactical Radio Transmit Mode System
WD145-869854 Sht. 2	Tactical Radio Transmit Mode System
WD145-869854 Sht. 3	Tactical Radio Transmit Mode System
WD145-869874 Sht. 1	TDFM-9100NV Integration
WD145-869874 Sht. 2	TDFM-9100NV Integration
WD145-869874 Sht. 3	TDFM-9100NV Integration
WD145-869874 Sht. 4	TDFM-9100NV Integration
WD145-869874 Sht. 5	TDFM-9100NV Integration
WD145-869884 Sht. 1	RC-9100NV Remote Control
WD145-869884 Sht. 2	RC-9100NV Remote Control
WD145-869884 Sht. 3	RC-9100NV Remote Control

Table 5 Wiring Diagram Drawing List

Transport Canada - Accepted



**7. SPECIAL TOOLING**

No special test equipment or tools are required. Standard tools are adequate.

**8. REMOVAL AND REPLACEMENT**

## PRELIMINARIES

- De-energize helicopter electrical system in accordance with De-energize - Electrical System Electrical Power Supply, AMM, Chapter 24-32-00, 2-1.
- open and secure applicable circuit breakers before any servicing action.
- Remove overhead panel from cabin roof if removing FM1 Antenna 2 and disconnect wire connector. Retain hardware for reinstallation. Refer to Figure 5.

**A. REMOVAL**

- 1) TDFM-9100NV TRANSCEIVER (Refer to Figure 1)
  - a) Release dzus fasteners ( 4 places).
  - b) Remove the wiring connector(s) and remove the unit from the centre console.
- 2) RC-9100NV REMOTE CONTROL (Refer to Figure 2)
  - a) Release dzus fasteners ( 4 places).
  - b) Remove the wiring connector(s) and remove the unit from the roof panel.
- 3) FM 1/ANTENNA 1 (tail boom mounted) (Refer to Figure 5)
  - a) Remove sealing compound from around the antenna base.
  - b) Remove antenna mounting hardware (6 places, screw LN9136-05022).
  - c) Disconnect antenna coax cable and remove antenna and gasket.
- 4) FM 1/ANTENNA 2 (roof mounted) (Refer to Figure 5)
  - a) Remove interior panel i.a.w. AMM for access to internal nuts
  - b) Remove sealing compound from around the antenna base.
  - c) Remove antenna mounting hardware (6 places; screw EN3760-050036A, nut EN3763-050, washer LN29905-05).
  - d) Disconnect antenna coax cable and remove antenna and gasket.

**AIRBUS HELICOPTERS CANADA LIMITED****8. REMOVAL AND REPLACEMENT****B. REPLACEMENT**

**NOTE:** Use torque per MTC, Chapter 20-02-05-404, unless otherwise specified.

- Electrical Bonding - refer to MTC 20.02.07.101
- General Methods of Applying Sealing Compounds, refer to MTC, Chapter 20-05-01-102.
- 1) TDFM-9100NV TRANSCEIVER (Refer to Figure 1)
  - a) Reconnect the wiring connector(s) and align the unit with the centre console.
  - b) Secure unit using dzus fasteners (4 places).
  - c) Test in accordance with Section 8.C Operational Tests.
- 2) RC-9100NV REMOTE CONTROL (Refer to Figure 2)
  - a) Reconnect the wiring connector(s) and align the unit with roof panel.
  - b) Secure unit using dzus fasteners (4 places).
  - c) Test in accordance with Section 8.C Operational Tests.
- 3) FM 1/ANTENNA 1 (tail boom mounted) (Refer to Figure 5)
  - a) Connect antenna coax cable.
  - b) Reinstall antenna with gasket onto tail boom and secure using mounting hardware (6 places, screw LN9136-05022). Install screws wet with sealant (PR-1750 B-2).
  - c) Seal around perimeter of antenna using sealant (PR-1750 B-2).
- 4) FM 1/ANTENNA 2 (roof mounted) (Refer to Figure 5)
  - a) Connect antenna coax cable.
  - b) Reinstall antenna with gasket onto roof and secure using mounting hardware (6 places; screw EN3760-050036A, nut EN3763-050, washer LN29905-05). Install screws wet with sealant (PR-1750 B-2).
  - c) Seal around perimeter of antenna using sealant (PR-1750 B-2).
- 5) Close all circuit breakers opened in the PRELIMINARIES paragraph of this section.
- 6) Energize helicopter electrical system in accordance with Energize - Electrical System Electrical Power Supply, BK117 AMM, Chapter 24-32-00, 2-1.
- 7) Perform operational check of all systems that were serviced in accordance with the AMM procedures and the system's installation/operation manual.

Transport Canada - Accepted

**AIRBUS HELICOPTERS CANADA LIMITED**
**8. REMOVAL AND REPLACEMENT**
**C. OPERATIONAL TEST**

- 1) TDFM-9100NV TRANSCEIVER (Refer to Figure 1)
  - a) Follow General Operation, Section 2.15 in the TDFM-9100 Multiband P25 Airborne Transceiver, Operating Instructions, Document Number 13RE482, Rev. E, dated August 2019 (or latest version) to verify proper operation.
- 2) RC-9100NV REMOTE CONTROL (Refer to Figure 2)
  - a) Follow General Operation, Section 2.15 in the RC-9100 Multiband P25 Airborne Transceiver Remote Control, Operating Instructions, Document Number 14RE509, Rev. A, dated September 2015 (or latest version) to verify proper operation.
- 3) ANTENNAS (Refer to Figure 5)
  - a) Perform power check on ground using Test Set.  
 Perform VSWR check, VSWR should be less than 5.  
 Refer to manufacturers manual for power specifications.

**9. WEIGHT AND BALANCE DATA**
**A. Removed Items**

DESCRIPTION	WEIGHT		ARM		MOMENT	
	kg	lbs	m	in	kgm	lbin
(not applicable)	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00

**B. Added Items**

DESCRIPTION	WEIGHT		ARM		MOMENT	
	kg	lbs	m	in	kgm	lbin
TDFM-9100NV Transceiver	1.59	3.50	2.312	91.0	3.68	318.6
RC-9100NV Remote Control	0.34	0.75	3.593	141.5	1.22	106.1
CI-295-300 Antenna roof mounted	0.91	2.00	2.944	115.9	2.68	231.8
CI-295-300 Antenna tail boom mounted	0.91	2.00	9.466	372.7	8.61	745.4
Total	3.75	8.25	4.318	169.9	16.19	1401.8

Transport Canada - Accepted

10. PLACARDS AND MARKINGS

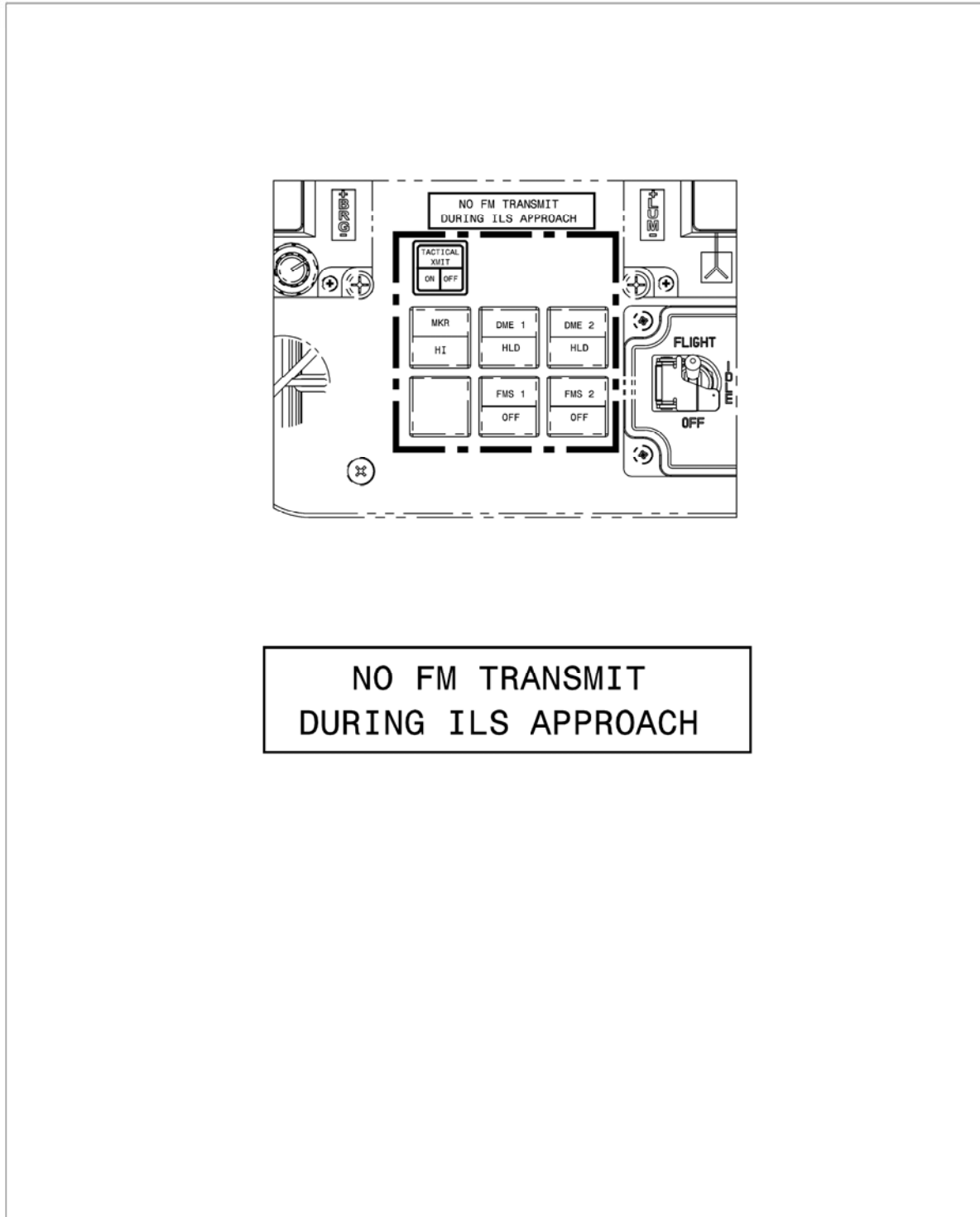


Figure 6 Placard on Instrument Panel

Transport Canada - Accepted