

CETECOM INC.

Radio Frequency Exposure Evaluation Report

For:
Textron Aviation Inc.

Model:
6670110

Product Description:
AReS III Radio Module

FCC ID: 2BRLA6670110
IC: 34419-6670110

Applied Rules and Standards:
47 CFR Part 1 (§§ 1.1307 and 1.1310), Part 2 (§ 2.1091)
FCC KDB 447498 D01 General RF Exposure Guidance v06
ISED RSS-102 Issue 6

Report number: EMC_TEXTR_001_25001_RF_Exposure_REV1

DATE: 2026-07-10



IC recognized #
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1 Assessment

This RF Exposure evaluation report provides evidence for compliance of the below identified device with the RF exposure limits for mobile devices as defined in FCC 47 CFR Part 1 (§§ 1.1307 and 1.1310), Part 2 (§ 2.1091), FCC KDB 447498 D01 General RF Exposure Guidance v06, and ISED RSS-102 Issue 6. The evaluation was performed under worst-case conditions using source-based, time-averaged RF output power, antenna gain, minimum separation distance, installation attenuation, and simultaneous-transmission information declared by the applicant. The EUT is assessed as a mobile device for a minimum separation distance of 20 cm; portable exposure conditions under 47 CFR § 2.1093 are not claimed in this report.

In addition, maximum antenna gain or minimum distance towards the human body is calculated respectively, where relevant.

The device meets the FCC and ISED RF exposure exemption criteria for the assessed mobile-device operating conditions at a minimum 20 cm separation distance from the body. The supported simultaneous-transmission combinations and antenna/path-loss values used for this conclusion are identified in Sections 3.1, 5.1, and 5.4.

Company Name	Product Description	Model No.
Textron Aviation Inc.	ARes III Radio Module	6670110

Report Authorized by:

Responsible for testing Laboratory:

2026-07-10	Compliance	Art Thammanavarat (Lead Engineer)	Art Thammanavarat Digitally signed by: Art Thammanavarat DN: CN = Art Thammanavarat email = art.thammanavarat@cetecom.com C = AD Date: 2026.07.10 17:14:21 -07'00'
Date	Section	Name	Signature

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Date	Section	Name	Signature

The test results of this test report relate exclusively to the test item specified in Section 3.

CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Street Address:	411 Dixon Landing Road
City/Zip Code	Milpitas, CA 95035
Country	USA
Telephone:	+1 (408) 586 6200
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EMC Lab Manager:	David Bare
Responsible Project Leader:	Ruby Hall

2.2 Identification of the Client

Client Firm/Name:	Textron Aviation Inc.
Street Address:	1 Cessna Blvd.
City/Zip Code	Wichita, KS 67216
Country	USA

2.3 Identification of the Manufacturer

Manufacturer's Name:	Lee Air, Inc.
Manufacturers Address:	3000 S Hydraulic Ave
City/Zip Code	Wichita, KS 67216
Country	USA

3 Equipment under Assessment

3.1 EUT Specifications

Product Description:	AReS III Radio Module
Model:	6670110
HW Version:	6670110
SW Version:	6670211-3 (1.0.0.2)
FCC-ID:	2BRLA6670110
IC:	34419-6670110
Bands/Modes Supported	LTE: Bands 2, 4, 5, 13, 66 Module: Telit LM960A18 / FCC ID RI7LM960 / IC 5131A-LM960
	Wi-Fi: 802.11b/g/n, 2.4 GHz, Channels 1-11, 20 MHz / 40 MHz Module: MikroTik R11e-2HPnD / FCC ID TV7R11E2HPND / IC 7442A-R11E2HPND
	Iridium: 1616 MHz to 1626.5 MHz, DE-QPSK / DE-BPSK voice and data satellite transceiver
Antenna Information as declared:	External omni-directional antennas; Wi-Fi and LTE antenna separation >10 cm LTE 700 MHz to 960 MHz peak gain: 3 dBi LTE 1710 MHz to 2700 MHz peak gain: 7 dBi Wi-Fi 2400 MHz to 2500 MHz peak gain: 0.7 dBi; average gain: -3.9 dBi Iridium 50 Ω, RHCP, maximum antenna gain 3 dBi. The client declared the following total installation attenuation values for the RF antenna paths used in this assessment: J1 (LTE RX only): 1.28275 dB J2 (LTE TX/RX): 1.28275 dB J4 (WLAN1): 3.186458 dB J5 (WLAN0): 2.999208 dB J3 (Iridium): 2.978333 dB Supporting antenna datasheets, installation drawings, and/or applicant path-loss declarations are retained with the application exhibits.
Supported radio operating / co-transmission configurations as declared by the client:	- WLAN1 only – diagnostics Wi-Fi access point broadcast; no connection to an external Wi-Fi access point, cellular network, or Iridium link. - WLAN0 + WLAN1 – WLAN0 connected to a company/customer access point; WLAN1 diagnostics access point broadcast. - WLAN0 + WLAN1 + Cellular – WLAN0 connected to a company/customer access point; cellular modem in standby; WLAN1 diagnostics access point broadcast. For RF exposure, this configuration is evaluated conservatively by including the worst-case cellular transmitter ratio. - Cellular + WLAN1 – aircraft on ground with cellular network connection; WLAN1 diagnostics access point broadcast. - Iridium + WLAN1 – Iridium link available with clear line of sight; WLAN1 diagnostics access point broadcast. No additional radio operating / co-transmission combinations are declared for the submitted production configuration.
Power Supply/ Rated Operating Voltage Range	Low / Nominal / Max: 15 / 28 / 32 VDC

Operating Temperature Range	-55°C to +70°C
Sample Revision	☐ Production ☒ Pre-Production
EUT Dimensions	11.73 cm × 16.54 cm × 9.19 cm
Weight	1588 g
EUT Diameter	☒ < 60 cm ☐ Other _____
Note: The information of the EUT specifications in the table above is provided by the client.	

3.2 Antenna specification and RF path-loss evidence basis

RF path / source	Radio function	Values used in RF exposure evaluation	Evidence / basis
J2	LTE TX/RX	LTE gain: 3 dBi from 700-960 MHz; 7 dBi from 1710-2700 MHz. J2 attenuation: 1.28275 dB.	Applicant antenna installation data and cable/path-loss declaration; LTE antenna documentation retained with application exhibits.
J4	WLAN1 / Wi-Fi access point	Wi-Fi gain: 0.7 dBi peak / -3.9 dBi average. J4 attenuation: 3.186458 dB.	Laird Phantom TRA(B)24/49003(P) antenna datasheet and applicant cable/path-loss declaration.
J5	WLAN0 / Wi-Fi client	Wi-Fi gain: 0.7 dBi peak / -3.9 dBi average. J5 attenuation: 2.999208 dB.	Laird Phantom TRA(B)24/49003(P) antenna datasheet and applicant cable/path-loss declaration.
J3	Iridium	Iridium antenna: 50 ohm, RHCP, maximum gain 3 dBi. J3 attenuation: 2.978333 dB.	Applicant Iridium antenna installation data and cable/path-loss declaration retained with application exhibits.
J1	LTE RX / GNSS receive only	J1 attenuation: 1.28275 dB. No transmit source on this path for this RF exposure assessment.	Applicant installation/path-loss declaration; excluded from transmitter summation because it is not a transmit source.

4 RF Exposure Limits and FCC and ISED Basic Rules

FCC

4.1.1 § 2.1091(c)(1)

Evaluation of compliance with the exposure limits in § 1.1310 of this chapter, and preparation of an EA if the limits are exceeded, is necessary for mobile devices with single RF sources having either more than an available maximum time-averaged power of 1 mW or more than the ERP listed in Table 1 to § 1.1307(b)(3)(i)(C), whichever is greater. For mobile devices not exempt by § 1.1307(b)(3)(i)(C) at distances from 20 centimeters to 40 centimeters and frequencies from 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in § 1.1310 of this chapter is necessary if the ERP of the device is greater than ERP_{20cm} in the formula below. If the ERP of a single RF source at distances from 20 centimeters to 40 centimeters and frequencies from 0.3 GHz to 6 GHz is not easily obtained, then the available maximum time-averaged power may be used (i.e., without consideration of ERP) in comparison with the following formula only if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

$$P_{th}(\text{mW}) = ERP_{20\text{ cm}}(\text{mW}) = \begin{cases} 2040f & 0.3\text{ GHz} \leq f < 1.5\text{ GHz} \\ 3060 & 1.5\text{ GHz} \leq f \leq 6\text{ GHz} \end{cases}$$

4.1.2 § 2.1091(c)(2)

For multiple mobile or portable RF sources within a device operating in the same time averaging period, routine environmental evaluation is required if the formula in § 1.1307(b)(3)(ii)(B) of this chapter is applied to determine the exemption ratio and the result is greater than 1.

4.1.3 § 1.1307(b)(3)(ii)(B)

in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

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4.1.4 Clause 6.6 Field reference level exposure exemption limits– RF Exposure Evaluation

Field reference level (FRL) RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum EIRP. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived

5 Evaluations

5.1 Analysis of RF Exposure

Transmit-source and operating-control basis:

The assessed RF transmit sources are LTE cellular, WLAN0, WLAN1, and Iridium.

The supported radio operating / co-transmission configurations are based on the applicant-declared production software/network configuration and the co-transmission table for the AReS III system. WLAN1 operates as the diagnostics Wi-Fi access point and may be broadcast in each supported operating state. WLAN0 operates as the Wi-Fi client when connected to an external company/customer access point. The submitted configuration supports WLAN1 only, WLAN0 + WLAN1, WLAN0 + WLAN1 + Cellular with the cellular modem in standby, Cellular + WLAN1, and Iridium + WLAN1. For RF exposure, the WLAN0 + WLAN1 + Cellular standby configuration is evaluated conservatively by including the worst-case cellular transmitter ratio in the simultaneous-transmission summation. No additional simultaneous active-transmitter combinations are claimed for this filing.

Antenna gains and path-loss values used in the calculations are the applicant-declared maximum gain and minimum attenuation values identified in Section 3.1. These values are supported by retained antenna datasheets, installation drawings, and/or path-loss declarations and are used conservatively for this RF exposure assessment.

Duty Cycle

The table below illustrates the highest possible duty cycle for each type of radio during operation.

Mode	Duty Cycle	Duty Cycle Correction [dB]
LTE	1:1	0
Wi-Fi 2.4 GHz	1:1	0
Iridium	8.3 ms / 90 ms	-10.35

Note: For the Iridium transmitter, a conservative time-averaged conducted power of 0.646 W (28.10 dBm) was derived at the module output from 7 W maximum transmit-slot power and an 8.3 ms transmit slot within each 90 ms frame. The J3 installation attenuation is then applied in the RF exposure power values used in the standalone and simultaneous-transmission calculations.

The maximum output powers used in the RF exposure calculations include the client-declared total installation attenuation for the applicable transmit paths. Therefore, no additional cable-loss correction is applied in Sections 5.2 through 5.4. The power values represent the source-based, time-averaged maximum values used for RF exposure assessment at the applicable antenna path.

5.2 FCC RF Exposure (Standalone)

Tech-Band	Freq-Low _[GHz]	Pwr _[dBm]	Power _[W]	Ant-G _[dBi]	Ant-G _[lin]	EIRP _[W]	ERP _[W]	ERP _[mW]	FCC 2.1091(c)(1) P _{th} _[mW] = ERP _{20cm}	P/P _{th} ratio
LTE 2	1.8550	22.77	0.189	7.00	5.01	0.948	0.578	577.73	3060.00	0.189
LTE 4	1.7150	22.41	0.174	7.00	5.01	0.872	0.532	531.77	3060.00	0.174
LTE 5	0.8290	22.82	0.191	3.00	2.00	0.382	0.233	232.66	1691.16	0.138
LTE 13	0.7820	21.94	0.156	3.00	2.00	0.312	0.190	189.99	1595.28	0.119
LTE 66	1.7150	22.72	0.187	7.00	5.01	0.937	0.571	571.12	3060.00	0.187
Tech-Band	Freq-Low _[GHz]	Pwr _[dBm]	Power _[W]	AG _[dBi]	Ant-G _[lin]	EIRP _[W]	ERP _[W]	ERP _[mW]	FCC 2.1093(c)(1) P _{th} _[mW] = ERP _{20cm}	P/P _{th} ratio
Iridium	1.6160	25.12	0.3252	3.00	2.00	0.649	0.396	395.52	3060.00	0.129
WLAN 0	2.4120	24.00	0.2512	0.70	1.17	0.295	0.180	179.92	3060.00	0.082
WLAN 1	2.4120	23.81	0.2406	0.70	1.17	0.283	0.172	172.33	3060.00	0.079

Conclusion:

- The maximum RF emissions from the equipment satisfy the applicable RF exposure exemption threshold criteria for the assessed mobile configuration with a minimum 20 cm separation distance between the antenna(s) and the human body. No additional routine RF exposure evaluation is required for the standalone transmitter conditions identified above.

5.3 ISED RF Exposure (Standalone)

								RF Exposure		
								RSS-102 6.6 D>20 cm (300 ≤ Freq < 6000 MHz)		
Tech-Band	Freq-Low [MHz]	Pwr _[dBm]	Power _[W]	Ant-G [dBi]	Ant-G [lin]	EIRP _[W]	EIRP _[mW]	Exemption limit for Routine Evaluation	Exemption (Y/N)	EIRP _[W] /Limit
LTE 2	1855.00	22.77	0.19	7.00	5.01	0.95	947.82	2.24	Yes	0.423
LTE 4	1715.00	22.41	0.17	7.00	5.01	0.87	872.42	2.13	Yes	0.410
LTE 5	829.00	22.82	0.19	3.00	2.00	0.38	381.70	1.29	Yes	0.295
LTE 13	782.00	21.94	0.16	3.00	2.00	0.31	311.69	1.24	Yes	0.251
LTE 66	1715.00	22.72	0.19	7.00	5.01	0.94	936.97	2.13	Yes	0.441
Tech-Band	Freq-Low [MHz]	Pwr _[dBm]	Power _[W]	Ant-G [dBi]	Ant-G [lin]	EIRP _[W]	EIRP _[mW]	Exemption limit for Routine Evaluation	Exemption (Y/N)	EIRP _[W] /Limit
Iridium	1616.00	25.12	0.3252	3.00	2.00	0.65	648.88	2.04	Yes	0.318
WLAN 0	2412.00	24.00	0.25	0.70	1.17	0.30	295.17	2.68	Yes	0.110
WLAN 1	2412.00	23.81	0.24	0.70	1.17	0.28	282.72	2.68	Yes	0.105

Conclusion:

- The maximum RF emissions from the equipment satisfy the applicable RF exposure exemption threshold criteria for the assessed mobile configuration with a minimum 20 cm separation distance between the antenna(s) and the human body. No additional routine RF exposure evaluation is required for the standalone transmitter conditions identified above.

5.4 RF Exposure Test Exemptions for Simultaneous Transmission Sources

A simultaneous-transmission assessment was performed for the applicant-declared radio operating / co-transmission configurations that may operate within the same FCC/ISED time-averaging period. The production co-transmission table identifies WLAN1 only, WLAN0 + WLAN1, WLAN0 + WLAN1 + Cellular with Cellular on standby, Cellular + WLAN1, and Iridium + WLAN1. WLAN1 is the diagnostics Wi-Fi access point in each applicable mode. WLAN0 is the Wi-Fi client when connected to an external company/customer access point. The Cellular standby mode is included conservatively in the simultaneous-transmission summation using the worst-case cellular transmitter ratio.

The simultaneous-transmission assessment below is based on the standalone exemption ratios derived in Sections 5.2 and 5.3. The WLAN1-only condition is listed for operating-mode completeness and is treated as a standalone transmitter condition; all other rows below represent simultaneous-transmission configurations or conservative simultaneous-transmission assumptions.

FCC

For FCC, simultaneous-transmission exemption was assessed in accordance with 47 CFR § 1.1307(b)(3)(ii)(B), which requires summation of the fractional contributions of the applicable transmitters. Exemption is established when the summed ratio is less than or equal to 1.0. The worst-case cellular transmitter under FCC is LTE Band 2 with a standalone ratio of 0.189; WLAN0 = 0.082, WLAN1 = 0.079, and Iridium = 0.129.

Operating condition	Fractional contribution / calculation	Summed FCC ratio
WLAN1 only	0.079	0.079
WLAN0 + WLAN1	0.082 + 0.079	0.161
WLAN0 + WLAN1 + Cellular (Cellular standby; conservative)	0.189 + 0.082 + 0.079	0.350
Cellular + WLAN1	0.189 + 0.079	0.268
Iridium + WLAN1	0.129 + 0.079	0.208

The worst-case FCC simultaneous-transmission condition is WLAN0 + WLAN1 + Cellular standby, conservatively evaluated with the worst-case cellular transmitter ratio, with a summed ratio of 0.350. Since the summed FCC ratio is less than or equal to 1.0, the EUT qualifies for simultaneous-transmission exemption from routine RF exposure evaluation under the assessed FCC conditions and declared operating restrictions.

ISED

For ISED, where the device is claimed for use at a separation distance greater than 20 cm, RSS-102 Issue 6 requires summation of the applicable simultaneous-transmission exposure ratios. Exemption is established when the summed ratio is less than or equal to 1.0. The worst-case cellular transmitter under ISED is LTE Band 66 with a standalone ratio of 0.441; WLAN0 = 0.110, WLAN1 = 0.105, and Iridium = 0.318.

Operating condition	Fractional contribution / calculation	Summed ISED ratio
WLAN1 only	0.105	0.105
WLAN0 + WLAN1	0.110 + 0.105	0.215
WLAN0 + WLAN1 + Cellular (Cellular standby; conservative)	0.441 + 0.110 + 0.105	0.656
Cellular + WLAN1	0.441 + 0.105	0.546
Iridium + WLAN1	0.318 + 0.105	0.423

The worst-case ISED simultaneous-transmission condition is WLAN0 + WLAN1 + Cellular standby, conservatively evaluated with the worst-case cellular transmitter ratio, with a summed ratio of 0.656. Since the summed ISED ratio is less than or equal to 1.0, the EUT satisfies the simultaneous-transmission exemption criterion under RSS-102 Issue 6 for the assessed supported operating conditions and declared operating restrictions.

Conclusion:

Under all supported radio operating / co-transmission configurations assessed in this report, including the conservative WLAN0 + WLAN1 + Cellular standby condition, the EUT satisfies the simultaneous-transmission exemption criteria under both FCC and ISED at a minimum 20 cm separation distance. The conclusion is based on the applicant-declared production configuration, supported antenna/path-loss exhibits, and the operating restrictions identified in Sections 3.1 and 5.1. Therefore, no additional routine RF exposure evaluation is required for the supported operating / co-transmission configurations evaluated in this report.

6 Revision History

Date	Report Name	Changes to report	Report prepared by
2026-04-23	EMC_TEXTR_001_25001_RF_Exposure	Initial Version	Cheng Song
2026-07-10	EMC_TEXTR_001_25001_RF_Exposure_REV1	Updated to clarify simultaneous-transmission control requirements, antenna and path-loss supporting evidence, source-based time-averaged power and path-loss methodology, and FCC/ISED RF exposure compliance conclusions. Updated the supported radio operating and co-transmission configurations, as well as the simultaneous-transmission RF exposure summations, based on operating conditions declared by the client.	Cheng Song

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