

Angel Aerial Systems, Inc.

RF EXPOSURE REPORT

SCOPE OF WORK

RF EXPOSURE CALCULATION
ON THE SCOUT 1.0

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RF EXPOSURE TEST REPORT

Report Number: 106417534LEX-004.4

Project Number: G106417534

Report Issue Date: 3/27/2026

Product Name: Scout 1.0

Product Model: V1.0

Standards: FCC Title 47 CFR Part 1.1310(e)(1) Limits for
Maximum Permissible Exposure (MPE)

RSS-102 Issue 6 RF Field Strength Limits for
Devices Used by the General Public

Tested by:
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1 Introduction and Conclusion

The tests indicated in Section 2 were performed on the product constructed as described in Section 4. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

Section	Test full name	Result
9	FCC Title 47 CFR Part 1.1310(e)(1) Limits for Maximum Permissible Exposure (MPE) (Limits for General Population / Uncontrolled Exposure)	Pass



3 Client Information

This product was tested at the request of the following:

Client Information	
Client Name:	Angel Aerial Systems, Inc.
Address:	10385 Spartan Dr. Cincinnati, OH 45215 USA
Contact:	Dennis Krause
Email:	Dennis@angelaerialsystems.com
Manufacturer Information	
Manufacturer Name:	Angel Aerial Systems, Inc.
Manufacturer Address:	10385 Spartan Dr. Cincinnati, OH 45215 USA



4 Description of Equipment under Test and Variant Models

Equipment Under Test	
Product Name	Scout 1.0
Model Number	V1.0
Embedded Module(s)	Microhard pMDDL2450 OEM Microhard HP900 OEM DroneTag DRI OEM
FCC ID	pMDDL2450: 2BUWQ18PMDDL2450 HP900: 2BUWQHP900 DRI: XPYANNAB4
Wireless Technology	pMDDL2450: 2.4 GHz 2x2 MIMO HP900: 900 MHz FHSS (ISM band) DRI: Bluetooth Low Energy
Supported Transmit Bands	pMDDL2450: 2.4GHz (2400-2483.5 MHz ISM band) HP900: 902-928MHz DRI: 2.4GHz (2401 – 2480MHz)
Antenna Gain¹	pMDDL2450: W4P42X8W04-U100D3B0A: 1.7 dBm HP900: ANT-916-CW-RH: -1.3 dBm DRI: FXP74.07.0100A: 4 dBm
Maximum Output Power¹	pMDDL2450: 30 dBm HP900: 30 dBm DRI: 6.844 dBm
Description of Equipment Under Test (provided by client)	
The UAV is a remotely operated aerial platform incorporating certified RF modules operating in the 900 MHz and 2.4 GHz bands for command, control, and video communication with the Ground Control Station. The RF modules and antennas are permanently installed within the airframe. During normal operation, the UAV is maintained at a separation distance greater than 20 cm from the operator and is not intended for handheld use while transmitting.	

4.1 Variant Models:

There were no variant models covered by this evaluation.

¹ Values are taken from documents provided by client, Intertek makes no claims of compliance for values other than those shown.



5 Output Power

5.1 2BUWQHP900 (900MHz)

The output power for the NS9HP900 was taken from UltraTech's File No.: 19MCRS108_FCC15C247. Deviations from the values below may affect compliance. Intertek does not make any claims of compliance for values other than shown below.

Transmitter Test Signals	
Frequency Band(s):	902.4 – 927.65 MHz
Frequency(ies) Tested: (Near lowest, near middle & near highest frequencies in the frequency range of operation.)	902.4 MHz, 903.0 MHz, 914.9 MHz, 915.0 MHz 927.5 MHz, 927.6 MHz, 927.65 MHz
RF Power Output: (measured maximum output power at antenna terminals)	30 dBm, 1 W (conducted)
Normal Test Modulation:	GFSK
Modulating Signal Source:	Internal

5.2 2BUWQ18PMDDL2450 (2.4GHz)

The output power for the NS918PMDDL2450 was taken from Operating Manual pMDDL2450 Document Revision: 2.2.8 MICROHARD. Deviations from the values below may affect compliance. Intertek does not make any claims of compliance for values other than shown below.

TX Power	
This setting establishes the transmit power level which will be delivered to the antenna connector(s) of the pMDDL.	Values (selection)
Unless required, the Tx Power should be set not for maximum, but rather for the minimum value required to maintain an adequate system fade margin.	7 - 30 dBm (1 dBm increments) 20 (Default)
TX Power reflects the Total RF power for the pMDDL. In MIMO mode this means that the total RF power is split between antenna interfaces. When MIMO is disabled a total of 30 dBm can be presented to the ANT 1 Antenna.	



5.3 XPYANNAB4 (Bluetooth Low Energy)

The output power for the XPYANNAB4 was taken from Attestation of Global Compliance (Shenzhen) Co., Ltd Report No.: AGC00174211202FE02. Deviations from the values below may affect compliance. Intertek does not make any claims of compliance for values other than shown below.



Report No.: AGC00174211202FE02

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2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

The EUT is designed as a "ANNA-B4". It is designed by way of utilizing the GFSK technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.402GHz to 2.480GHz
RF Output Power	BLE 1M: 6.844dBm (Max) BLE 2M: 6.829dBm (Max)
Bluetooth Version	V5.1
Modulation	BR ☐ GFSK, EDR ☐ π /4-DQPSK, ☐ 8DPSK BLE ☒ GFSK 1Mbps ☒ GFSK 2Mbps



6 Antenna Gain

6.1 W4P42X8W04-U100D3B0A (with 2BUWQ18PMDDL2450 Radio)

The antenna gain power for the W4P42X8W04-U100D3B0A, was taken from KYOCERA AVX datasheet TDS-ANT-0134 Rev 0. Deviations from the values below may affect compliance. Intertek does not make any claims of compliance for values other than shown below.

Frequency Band (GHz)	2.400– 2.480	5.150– 5.850	5925 - 7125
Return Loss	< -16 dB	< -12 dB	< -12 dB
Average Efficiency	74 %	71 %	64%
Peak Gain	1.7 dBi	3.4 dBi	4.2 dBi
Power Handling	2 W		
Feed Point Impedance	50 ohms unbalanced		
Radiation Pattern	Omni-directional		
Polarization	Linear		

6.2 ANT-916-CW-RH (with 2BUWQHP900 Radio)

The antenna gain power for the ANT-916-CW-RH, was taken from Linx Technologies datasheet ANT-916-CW-RH. Deviations from the values below may affect compliance. Intertek does not make any claims of compliance for values other than shown below.

Electrical Specifications

Center Frequency:	916MHz
Recom. Freq. Range:	900–935MHz
Bandwidth:	35MHz
Wavelength:	1/4-wave
VSWR:	< 1.9 typical at center
Peak Gain:	–1.3dBi
Impedance:	50-ohms
Connection:	RP-SMA or SMA
Oper. Temp. Range:	–40°C to +90°C

Electrical specifications and plots measured on 10.16 cm x 10.16 cm (4.00" x 4.00") reference ground plane



6.3 FXP74.07.0100A (with XPYANNAB4 Radio)

The antenna gain power for the FXP74.07.0100A, was taken from TAOGLAS datasheet SPE-12-8-137/F/OH, US Patent #9214732. Deviations from the values below may affect compliance. Intertek does not make any claims of compliance for values other than shown below.

Specification

Communication System	Bluetooth	Wi-Fi	ZigBee	2.4GHz ISM
	2401-2480	2412-2462	2410-2480	2400-2483.5
Efficiency	50%			
Gain	4dBi			
Return Loss	< -10dB			
Impedance	50 Ohms			
VSWR	≤ 2:1			
Polarization	Linear			
Power Handled	5 W			
MECHANICAL				
Dimensions	47*7*0.1 mm			
Weight	1.2 g			
Connector	I-PEX MHF® I (U.FL Compatible)			
Cable Standard	Mini-Coax 1.13 mm			
Cable Length and color	100mm, Black			
Adhesive tape	3M 467			
ENVIRONMENTAL				
Operation Temperature	-40 °C ~ +85 °C			
Storage Temperature	-40 °C ~ +85 °C			
RoHS Compliant	Yes			



7 FCC RF Exposure Limits

Title 47 CFR Part 1.1310(d)(2):

For operations within the frequency range of 300 kHz and 6 GHz (inclusive), the limits for maximum permissible exposure (MPE), derived from whole-body SAR limits and listed in Table 1 in paragraph (e)(1) of this section, may be used instead of whole-body SAR limits as set forth in paragraphs (a) through (c) of this section to evaluate the environmental impact of human exposure to RF radiation as specified in § 1.1307(b) of this part, except for portable devices as defined in § 2.1093 of this chapter as these evaluations shall be performed according to the SAR provisions in § 2.1093.

Table 1 to § 1.1310(e)(1)—Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3–3.0	614	1.63	*(100)	≤6
3.0–30	1842/f	4.89/f	*(900/f ²)	<6
30–300	61.4	0.163	1.0	<6
300–1,500			f/300	<6
1,500–100,000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	<30
1.34–30	824/f	2.19/f	*(180/f ²)	<30
30–300	27.5	0.073	0.2	<30
300–1,500			f/1500	<30
1,500–100,000			1.0	<30

f = frequency in MHz. * = Plane-wave equivalent power density.



8 Test Procedure

An RF exposure calculation was performed to show that the device was compliant with the general population exposure limits from FCC Title 47 CFR Part 1.1310(e)(1) and RSS-102 Issue 6. The maximum power density was calculated for each transmitter at a separation distance of 20cm using the maximum conducted output power (including tune up tolerance) plus antenna gain, or measured EIRP.

For each transmitter the maximum power density at a 20cm distance using the formula:

$$EIRP(dBm) = \text{Conducted Power}(dBm) + \text{Antenna Gain}(dBi)$$

$$EIRP(mW) = 10^{EIRP(dBm)/10}$$

$$\text{Power Density} \left(\frac{mW}{cm^2} \right) = \frac{EIRP(mW)}{4\pi \cdot (20cm)^2}$$

$$\text{Power Density} \left(\frac{W}{m^2} \right) = \left(\frac{100cm}{1m} \right)^2 \left(\frac{1W}{1000mW} \right) \text{Power Density} \left(\frac{mW}{cm^2} \right)$$

For transmitters that could operate simultaneously, the ratio of calculated power density to the corresponding limit for each transmitter was calculated and then summed. If the sum of the ratios was less than 1, that specific combination of transmitters was deemed to comply.



9 Results:

The calculated maximum power density at 20cm (30cm for the RFID module) was less than or equal to the limits for general population exposure in FCC Title 47 CFR Part 1.1310(e)(1) and RSS-102 Issue 6.

Additionally, to demonstrate compliance during simultaneous transmission, the worst-case power density to limit ratios for each transmitter were summed. Since the sum was less than 1 that combination of transmitters is deemed to comply with the simultaneous transmission RF exposure criteria.

FCC Title 47 CFR Part 1.1310(e)(1):

$$0.3308 + 0.0015 + 0.1989 = 0.5312$$



9.1 FCC RF Exposure Data

Band / Modulation	Frequency (MHz)	Declared Max Cond. Power (Inc. Tolerance) (dBm)	ERP (dBm)	Duty Cycle (%)	Duty Cycle Adjusted Cond. Output Power (dBm)	Antenna Gain (dB)	MPE Value @ 20cm (mW/cm ²)	MPE Limit (mW/cm ²)	MPE / Limit Ratio (for Co-Location)
900MHz FHSS (ISM Band)	902	30	26.55	100.0%	30.00	-1.3	0.1989	0.6013	0.3308
	914	30	26.55	100.0%	30.00	-1.3	0.1989	0.6093	0.3265
	928	30	26.55	100.0%	30.00	-1.3	0.1989	0.6187	0.3216
BLE	2401	6.844	8.694	100.0%	8.694	4	0.0015	1.0000	0.0015
	2440	6.844	8.694	100.0%	8.694	4	0.0015	1.0000	0.00147
	2480	6.844	8.694	100.0%	8.694	4	0.0015	1.0000	0.0015
2.4GHz 2x2 MIMO	2414	30	29.55	100.0%	30.00	1.7	0.1989	1.0000	0.1989
	2445	30	29.55	100.0%	30.00	1.7	0.1989	1.0000	0.1989
	2460	30	29.55	100.0%	30.00	1.7	0.1989	1.0000	0.1989

1 The EUT RFID calculations represent testing at 30cm. The EUT maximum conducted power does not exceed 27.5dBm.

**10 Revision History**

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	2/11/2026	106417534LEX-004	LAR	MC	Original Issue
1	2/25/2026	106417534LEX-004.1	LAR	MC	FCC ID change and antenna gain information fix
2	2/27/2026	106417534LEX-004.2	LAR	MC	DRI Antenna Information Change
3	2/27/2026	106417534LEX-004.3	LAR	MC	Duty Cycle Change for 900MHz and BLE
4	3/27/2026	106417534LEX-004.4	LAR	JP	Changed duty cycle for pMDDL2450 and HP900 from 25% to 100% Removed RSS-102 Issue 6 from report