

EMF TEST REPORT

Test Report No. : OT-24O-RWD-032

Reception No. : 2409003280

Applicant : Westcom Wireless Inc.

Address : 2773 Leechburg Road, Lower Burrell, Pennsylvania, 15068, United States

Manufacturer : Westcom Wireless Inc.

Address : 2773 Leechburg Road, Lower Burrell, Pennsylvania, 15068, United States

Type of Equipment : ProCom

FCC ID. : 2AO37-ATLASREX-3

Model Name : Atlas REX-3

Multiple Model Name : N/A

Serial number : N/A

Total page of Report : 8 pages (including this page)

Date of Incoming : September 24, 2024

Date of issue : October 18, 2024

SUMMARY

The equipment complies with the regulation; *FCC CFR 47 PART 2.1091*

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

This report is not correlated with the "KS Q ISO/IEC 17025 and KOLAS accreditation" of Korean Laboratory Accreditation Scheme.



Tested by
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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-24O-RWD-032	October 18, 2024	Initial Release	All

1. VERIFICATION OF COMPLIANCE

Applicant : Westcom Wireless Inc.
Address : 2773 Leechburg Road, Lower Burrell, Pennsylvania, 15068, United States
Manufacturer : Westcom Wireless Inc.
Address : 2773 Leechburg Road, Lower Burrell, Pennsylvania, 15068, United States
Contact Person : Frank Girardi / President
Telephone No. : +1-724-337-1400
FCC ID : 2AO37-ATLASREX-3
Model Name : Atlas REX-3
Brand Name : -
Serial Number : N/A
Date : October 18, 2024

EQUIPMENT CLASS	DSS – PART 15 SPREAD SPECTRUM TRANSMITTER
E.U.T. DESCRIPTION	ProCom
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	KDB 447498 D01 General RF Exposure Guidance v06
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
Modifications on the Equipment to Achieve Compliance	None

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

2. GENERAL INFORMATION

2.1 Product Description

The Westcom Wireless Inc., Model Atlas REX-3(referred to as the EUT in this report) is a ProCom. Product specification information described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	ProCom	
Temperature Range	-10 °C ~ 50 °C	
OPERATING FREQUENCY	902.4 MHz ~ 927.6 MHz	
MODULATION TYPE	GFSK	
RF OUTPUT POWER	Mode 1_Normal	23.12 dBm
	Mode 2_Long	27.20 dBm
	Mode 3_Repeat	27.10 dBm
ANTENNA TYPE	Extender Antenna	
ANTENNA GAIN	5 dBi	
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	24 MHz, 30 MHz, 48 MHz	

2.2 Alternative type(s)/model(s); also covered by this test report.

-. None

3. EUT MODIFICATIONS

-. None

4. MAXIMUM PERMISSIBLE EXPOSURE

4.1 RF Exposure Calculation

According to the FCC rule 1.1310 table 1B, the limit for the maximum permissible RF exposure for an uncontrolled environment are $f/1500 \text{ mW/cm}^2$ for the frequency range between 300 MHz and 1 500 MHz and 1.0 mW/cm^2 for the frequency range between 1 500 MHz and 100 000 MHz.

The electric field generated for a 1 mW/cm^2 exposure is calculated as follows:

$$E = \sqrt{(30 * P * G)} / d, \text{ and } S = E^2 / Z = E^2 / 377, \text{ because } 1 \text{ mW/cm}^2 = 10 \text{ W/m}^2$$

Where

S = Power density in mW/cm^2 , Z = Impedance of free space, 377Ω

E = Electric field strength in V/m , G = Numeric antenna gain, and d = distance in meter

Combining equations and rearranging the terms to express the distance as a function of the remaining variable

$$d = \sqrt{(30 * P * G) / (377 * 10 \text{ S})}$$

Changing to units of mW and cm , using $P (\text{mW}) = P (\text{W}) / 1 000$, $d (\text{cm}) = 0.01 * d (\text{m})$

$$d = 0.282 * \sqrt{(P * G) / S}$$

Where

d = distance in cm , P = Power in mW , G = Numeric antenna gain, and S = Power density in mW/cm^2

4.2 EUT Description

Kind of EUT	ProCom
Device Category	<input type="checkbox"/> Portable (< 20 cm separation) <input checked="" type="checkbox"/> Mobile (> 20 cm separation) <input type="checkbox"/> Others
Exposure Evaluation Applied	<input checked="" type="checkbox"/> MPE <input type="checkbox"/> SAR <input type="checkbox"/> N/A

4.3 Calculated MPE Safe Distance

4.3.1 DATA for Mode 1_Normal

According to above equation, the following result was obtained.

Operating Freq. Band (MHz)	Frequency (MHz)	Power		Antenna Gain		Safe Distance (cm)	Power Density (mW/cm ²) @ 20 cm Separation	Limit (mW/cm ²)
		(dBm)	(mW)	Log	Linear			
902 ~ 928	902.5 MHz	23.62	230.14	5.00	3.16	7.61	0.144 8	0.601 7

According to above table, for 902 ~ 928 MHz Band, safe distance,

$$D = 0.282 * \sqrt{(230.14 * 3.16)/1.00} = 7.61 \text{ cm.}$$

For getting power density at 20 cm separation in above table, following formula was used.

$$S = P * G / (4\pi * R^2) = 230.14 * 3.16 / (4 * \pi * 20^2) = 0.144 8$$

Where:

S = Power Density,

P = Power input to the external antenna (Output power from the EUT antenna port (dBm) – cable loss (dB)),

G = Gain of Transmit Antenna (linear gain), R = Distance from Transmitting Antenna

4.3.2 DATA for Mode 2_Long

According to above equation, the following result was obtained.

Operating Freq. Band (MHz)	Operating Mode	Power		Antenna Gain		Safe Distance (cm)	Power Density (mW/cm ²) @ 20 cm Separation	Limit (mW/cm ²)
		(dBm)	(mW)	Log	Linear			
902 ~ 928	902.5 MHz	27.70	588.84	5.00	3.16	12.17	0.370 5	0.601 7

According to above table, for 902 ~ 928 MHz Band, safe distance,

$$D = 0.282 * \sqrt{(588.84 * 3.16)/1.00} = 12.17 \text{ cm.}$$

For getting power density at 20 cm separation in above table, following formula was used.

$$S = P * G / (4\pi * R^2) = 588.84 * 3.16 / (4 * \pi * 20^2) = 0.370 5$$

Where:

S = Power Density,

P = Power input to the external antenna (Output power from the EUT antenna port (dBm) – cable loss (dB)),

G = Gain of Transmit Antenna (linear gain), R = Distance from Transmitting Antenna

4.3.3 DATA for Mode 3_Repeat

According to above equation, the following result was obtained.

Operating Freq. Band (MHz)	Operating Mode	Power		Antenna Gain		Safe Distance (cm)	Power Density (mW/cm ²) @ 20 cm Separation	Limit (mW/cm ²)
		(dBm)	(mW)	Log	Linear			
902 ~ 928	902.5 MHz	27.60	575.44	5.00	3.16	12.03	0.362 0	0.601 7

According to above table, for 902 ~ 928 MHz Band, safe distance,

$$D = 0.282 * \sqrt{(575.44 * 3.16)/1.00} = 12.03 \text{ cm.}$$

For getting power density at 20 cm separation in above table, following formula was used.

$$S = P * G / (4\pi * R^2) = 575.44 * 3.16 / (4 * \pi * 20^2) = 0.362 0$$

Where:

S = Power Density,

P = Power input to the external antenna (Output power from the EUT antenna port (dBm) – cable loss (dB)),

G = Gain of Transmit Antenna (linear gain), R = Distance from Transmitting Antenna