Exhibit 2 – Technical Report

Exhibit 2 – Technical Report

TABLE OF CONTENTS

LIST OF TABLES

2.1 Name and Address (Section 2.1033 (c) (1))

The name and address of the manufacturer of the **WRT-2100 MultiScan Weather Radar Receiver/Transmitter** and applicant for certification is Rockwell Collins, Inc., 1300 Wilson Boulevard, Suite 200, Arlington, Virginia 22209.

2.2 FCC Identifier (Section 2.1033 (c) (2))

FCC ID	Description	Collins P/N
AJK8221710	**Receiver/Transmitter Unit (WRT-2100)**	**822-1710-XXX**

2.3 Installation and Operation Manuals (Section 2.1033 (c) (3))

See **Exhibit 3**.

2.4 Type or Types of Emission (Section 2.1033 (c) (4))

WRT-2100 Emission Type is 12M5P0N

The transmitter output pulses are rectangular unmodulated pulses ranging from 2 to 20 microseconds in width. Pulse repetition frequencies are from 900 Hz to 3000 Hz depending on operating mode.

Three separate pulsewidths are utilized in the maximum operating condition, 2, 6, and 20 microseconds. The Necessary Bandwidth and emission type for each of these three pulsewidths is calculated per the equation contained in Section 2.202 (g) “Table of Necessary Bandwidths” entry for “Unmodulated Pulse Emissions” : $Bn = 2K \div t$, where K=1.5, t = pulse duration

Pulse Width	Emission Type
2 uSec	1M50P0N
6 uSec	500KP0N
20 uSec	150KP0N

During operation, the WRT-2100 Receiver/Transmitter utilizes multiple frequencies over the frequency range 9327.064 MHz to 9338.689 MHz described in Exhibit 1- Product Description and described in further detail in Exhibit 9 - Required Measurements: Section 9.2-Modulation Characteristics. The Maximum Channel Span condition is when the system is utilizing frequencies including the highest and lowest extreme channels (i.e. Channels 0-63).
The Occupied Bandwidth while operating in the Maximum Channel Span condition is 12.5 MHz. Data for this Maximum Channel condition is included in Exhibit 9-Occupied Bandwidth. Therefore, the Emission Type for the Maximum Channel Span condition is 12M5P0N.

2.5 Frequency Range (Section 2.1033 (c) (5))

The **WRT-2100** frequency range is 9327.064 MHz to 9338.876 MHz. The system can operate on any of 64 channels spaced at 187.5KHz over the above frequency range. The WRT-2100 transmits and receives on the same frequency. The following table lists the transmit frequencies for each channel.

The Frequency Tolerance is +/- 1 MHz which equates to 0.0107%.

Table 1. WRT-2100 Channel Frequencies

Channel No.	Transmit Frequency (Hz)	Channel No.	Transmit Frequency (Hz)
0	9327063906	32	9333063906
1	9327251406	33	9333251406
2	9327438906	34	9333438906
3	9327626406	35	9333626406
4	9327813906	36	9333813906
5	9328001406	37	9334001406
6	9328188906	38	9334188906
7	9328376406	39	9334376406
8	9328563906	40	9334563906
9	9328751406	41	9334751406
10	9328938906	42	9334938906
11	9329126406	43	9335126406
12	9329313906	44	9335313906
13	9329501406	45	9335501406
14	9329688906	46	9335688906
15	9329876406	47	9335876406
16	9330063906	48	9336063906
17	9330251406	49	9336251406
18	9330438906	50	9336438906
19	9330626406	51	9336626406
20	9330813906	52	9336813906
21	9331001406	53	9337001406
22	9331188906	54	9337188906
23	9331376406	55	9337376406
24	9331563906	56	9337563906
25	9331751406	57	9337751406
26	9331938906	58	9337938906
27	9332126406	59	9338126406
28	9332313906	60	9338313906
29	9332501406	61	9338501406
30	9332688906	62	9338688906
31	9332876406	63	9338876406

2.6 Range of Operating Power Values (Section 2.1033 (c) (6))

The nominal power output for the WRT-2100 is 150 Watts Peak (21.8dBW). There are no means for varying the transmitter power other than in bench test conditions. There are no operator controls that affect power output.

2.6.1 Maximum Power Rating as Defined in Part 87

According to Section 87.131, there is no maximum power specified for the P0N class of emission. Note 9 states; “To be specified on license”

Due to production variations, the transmitter power can range up to 250 watts. Therefore, the maximum transmitter output power is 250 Watts Peak (23dBW).

2.7 DC Voltages and Currents (Section 2.1033 (c) (8))

The DC Voltage and Current applied to the Power Amplifier(A4) power stages is shown in the following table.

DC Supply Voltage	Maximum DC Current During Transmit Pulse	Average DC Supply Current	
+42.4 VDC	60.0 Amps	0.36 Amps	Typical

2.8 Tune Up Procedures (Section 2.1033 (c) (9))

See **Exhibit 4**.

2.9 Schematics and Circuit Diagrams (Section 2.1033 (c) (10))

See **Exhibit 5**.

2.10 Nameplate Label Drawings (Section 2.1033 (c) (11))

See **Exhibit 6**.

2.11 Equipment Photographs: External Views (Section 2.1033 (c) (12))

See **Exhibit 7**.

2.12 Equipment Photographs: Internal Views (Section 2.1033 (c) (12))

See **Exhibit 8**.

2.13 Digital Modulation System (Section 2.1033 (c) (13))

Not Applicable

2.14 Required Measurements (Section 2.1033 (c) (14))

See **Exhibit 9**.