



A Textron Company

May 13, 2020

**Federal Communications Commission 445 12th Street SW
Washington, DC 20554**

Title: Bell Textron License Request – STA – Graford, TX

Dear FCC,

This request for Special Temporary Authority (STA) is submitted pursuant to 47 CFR 5.61 to request frequency authorization.

Bell plans to conduct testing of a small model aircraft known as the Micro-UAV with a weight of less than one pound. Testing is planned at Wrangler Field (Bell Textron) just south of Graford, Texas in Palo Pinto County. The STA is for frequency licensing of the bi-directional datalink controlling the Micro-UAV. The datalink hardware is the Microhard model MHS118200 – pDDL1800 which is a single frequency communication device operating within the band of 1810-1850 MHz. Bell would like to perform testing within the four different bandwidths indicated by the emission designators below. In the interest of resolving any potential frequency conflict, Bell is requesting licensing for the operational range from channels 1 through 56; however, only one channel will be used at any given time.

Location:

Wrangler Field – Bell Textron
Graford, TX 76449
Palo Pinto County
Maximum Flight Altitude 600 ft AGL
Test Area Center Point: 32° 53' 34.9" N 98° 14' 06.1" W
MIRAD: 3.0 (300 m)
Reference figures 1 and 2 below.

Dates of operation:

06/01/2020 to 12/01/2020

Frequency:

1811 - 1869 MHz S-band (1MHz BW, CH 1-59)
1812 - 1868 MHz S-band (2MHz BW, CH 2-58)
1813 - 1867 MHz S-band (4MHz BW, CH 3-57)
1814 - 1866 MHz S-band (8MHz BW, CH 4-56)

Emission Designators:

- 1M06X2D
- 2M12X2D
- 4M23X2D
- 8M38X2D

Power:

2 Watts (Max)

Effective Radiated Power (ERP):

2 Watts (Max)

Antenna:

Three-inch linear polarized whip antenna (unity gain).

Operations:

Flight operations will be performed during daylight hours in clear and calm weather conditions. Most, if not all, flights will be limited to the Wrangler Field area. The additional spectrum coverage out to 3 miles is intended to test the performance of the Micro-Hard datalinks using small portable towers for elevation or roof top of pickup utility truck on dirt roads. Figure 1 shows a graphical depiction of the test coverage area centered at Wrangler Field. Figure 2 shows areas of trees and structures surrounding test area that would help to attenuate or contain the radio frequency emissions.

Exhibit A contains technical information regarding the Micro-Hard data link module.

Figure 1: Test Site Location Wrangler Field – Bell Textron

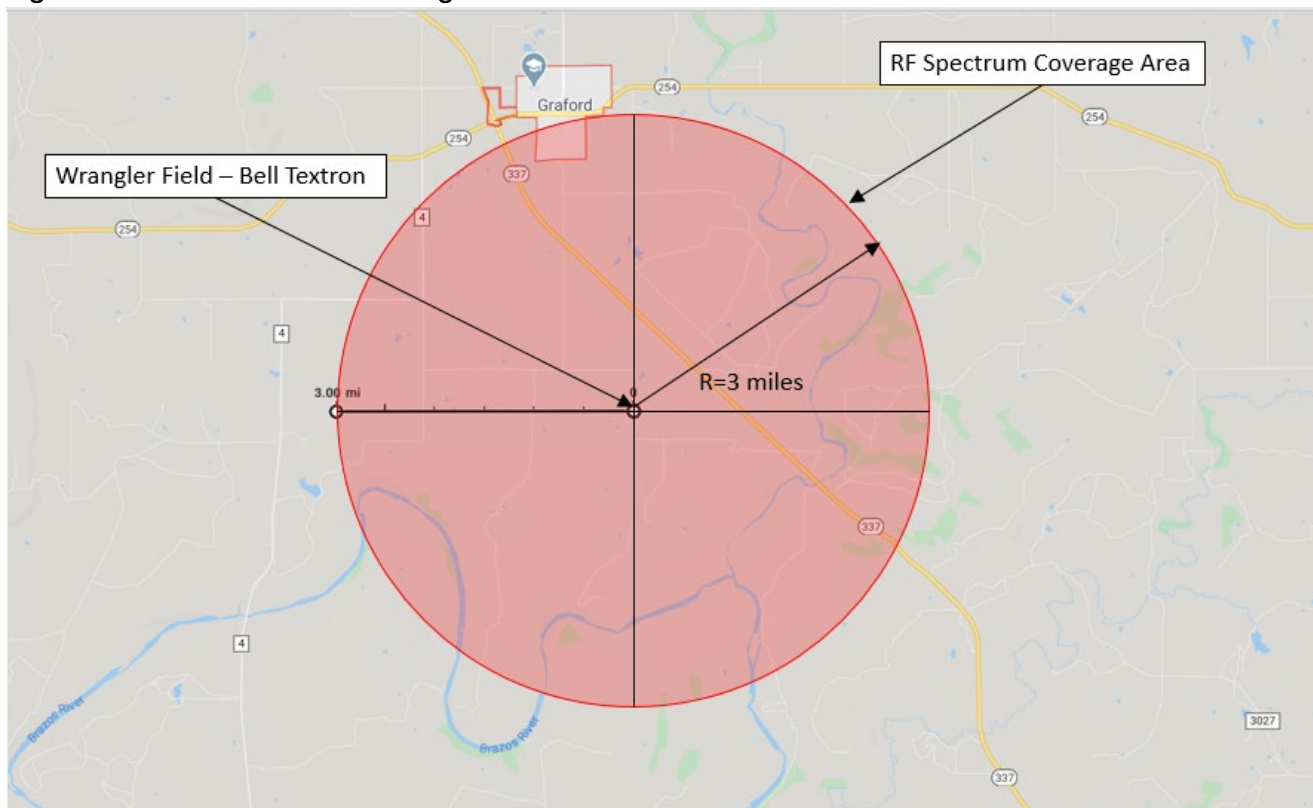
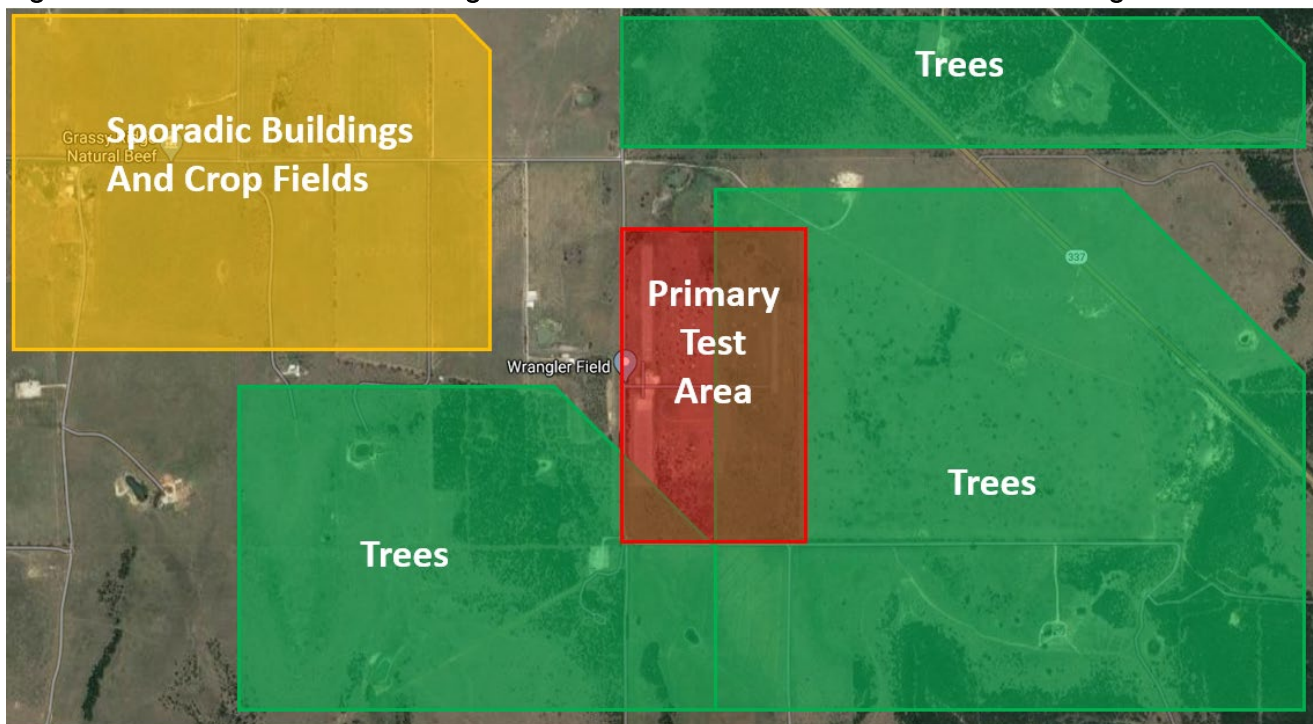


Figure 2: Test Site Location Showing Areas of Trees and Structures in the Surrounding Area



Stop Buzzer Contact:
Mark Stoufflet
Bell Textron
(817) 280-7984

Kind Regards,

A handwritten signature in blue ink, appearing to read "Mark Stoufflet", with a horizontal line extending from the end of the signature.

Mark Stoufflet
Bell Frequency Coordinator

EXHIBIT A:

Hardware Specifications

Miniature OEM 900MHz/2.4 GHz Digital Data Link

The Pico Digital Data Link is a dual frequency, software selectable 900 MHz & 2.4 GHz wireless OEM solution that provides the bandwidth and range needed for complex data intensive applications. The pDDL900 features secure, simultaneous Ethernet and Serial Data communications. Robust digital modulation technology provides secure data transfer and long range capabilities.

Up to 25Mbps

900 MHz & 2.4 GHz

Ethernet + Serial

Up to 1 Watt

PTP & Multipoint

Weights only 10g!



1.3" X 1.05" X 0.30"

Features

- Software Selectable 900 MHz & 2.4 GHz
- Up to 25 Mbps Input Throughput @ 8MHz channel (-78dBm)
- Extremely small foot print and very lightweight
- Serial Communication Port
- Dual 10/100 Ethernet Ports (LAN/WAN)
- Supports Point-to-Point and Point-to-Multipoint Networks
- Master & Remote Operating Modes.
- Adjustable transmit power (up to 1W)
- Interface through local console, telnet, and web browser
- Local and remote wireless firmware upgrading through FTP

Interface Options



pDDL Motherboard



pDDL Enclosed

◆ Dual Frequency

◆ Ethernet

◆ Serial

◆ Security

Specifications

Frequencies (selectable)		902 - 928 MHz / 2.402 - 2.478 GHz		Performance Specifications			
Error Detection		32 bits of CRC, ARQ		Modulation	Multicast IPerf Throughput (Mbps)	Throughput @ Sensitivity (dBm)	Maximum Tx Power (dBm) +/- 1dB
Encryption (Requires Export Permit)		128-bit AES					
Ports		Serial Data/Console Ethernet USB		8 MHz			
		RS232 TTL level (300bps to 921kbps) Dual 10/100BaseT IEEE802.3 (LAN/WAN) 2.0 (Future Development)		BPSK_1/2	3	-96	30dBm
Firewall		Port Forwarding, Access Control, IP/MAC List.		QPSK_1/2	6	-94	30dBm
Operating Modes		Point-to-Point, Point-to-Multipoint, Mesh (future)		QPSK_3/4	9	-91	30dBm
Diagnostics		Remote Diagnostics, Ping, Traceroute, ARP table, DHCP active leases, SNR, RSSI		16QAM_1/2	12	-88	29dBm
Management		Local Serial Port Console, Telnet, WebUI, SNMP, FTP Upgrade, TFTP, CLI (Command Line Interface)		16QAM_3/4	17	-85	29dBm
Rejection		Excellent strong signal interference & rejection characteristics		64QAM_2/3	23	-80	27dBm
Input Voltage		OEM Motherboard/ENC		64QAM_3/4	25	-78	27dBm
		Digital Voltage = 3.3V / RF Voltage = 5V 7 - 30 VDC		64QAM_5/6	28	-76	27dBm
Connectors:		OEM		4 MHz			
		Motherboard/ENC		BPSK_1/2	1.5	-99	30dBm
		Antenna: UFL x2 (900MHz, 2.4 GHz) Data: 80 Pin SMT		QPSK_1/2	3	-98	30dBm
		Antenna (Enclosed): RP-SMA Female x2 Data: RJ-45 x2 (Ethernet) Female DB9 (Serial) USB Type A (Future) 4 PIN Interlock (Vin, I/O)		QPSK_3/4	4.5	-96	30dBm
Environmental		Temperature Humidity		16QAM_1/2	6	-92	29dBm
		-40°F to 185°F (-40°C to +85°C) 5-95%, non-condensing		16QAM_3/4	9	-88	29dBm
Weight		OEM Motherboard Enclosed		64QAM_2/3	11.5	-83	27dBm
		Approx. 10 grams Approx. 55 grams Approx. 175 grams		64QAM_3/4	12.5	-82	27dBm
Dimensions		OEM Motherboard Enclosed		64QAM_5/6	14	-80	27dBm
		Approx. 1.05" x 1.3" x .30" (27mm x 33mm x 8mm) Approx. 2.5" x 3.0" x 0.70" (64mm x 76mm x 18mm) Approx. 3.05" x 2.2" x 1.1" (77mm x 55mm x 28mm)		2 MHz			
Approvals		FCC IC		BPSK_1/2	0.78	-101	30dBm
Frequency Options				QPSK_1/2	1.5	-100	30dBm
				QPSK_3/4	2.2	-97	30dBm
MHS118100 - pDDL900				16QAM_1/2	2.9	-93	29dBm
MHS118200 - pDDL1800				16QAM_3/4	4.3	-90	29dBm
				64QAM_2/3	5.5	-86	27dBm
				64QAM_3/4	6	-84	27dBm
				64QAM_5/6	6.5	-82	27dBm

Contact Information

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