

Interference Engineering Analysis for FCC RFI #103586
Ref: File #1280-EX-ST-2026

Northrop Grumman Systems Corporation (NGSC) hereby provides this Interference Engineering Analysis in response to FCC RFI #103586. This experiment is not likely to cause harmful interference to licensed incumbents operating in the frequency range of 10.7-11.7 GHz.

A review of known license holders operating in the frequency range of 10.7-11.7 GHz for the requested four locations as listed in *EXH. 1 Experimental STA request #1280-EX-ST-2026*:

-Elk River, MN (2.5km)	45° 24' 30" N 093° 27' 39" W
-Fort McCoy, WI (2.5km)	44° 02' 23" N 090° 43' 04" W
-Dahlgren, VA (10km)	38° 19' 37" N 077° 01' 34" W
-Dugway, UT (10km)	40° 13' 45" N 112° 43' 40" W

An FCC search on incumbent Fixed Microwave Service licensees for the above locations is noted below. There are only fixed microwave licenses in the vicinity of Dahlgren. This engineering interference analysis will address the Dahlgren location.

For Elk River there are none.

Specified Search

Latitude='45-24-30 N' Longitude='093-27-39 W' Radius = 3 Kilometers

Status = Active

Frequency Upper Band >= 11700

Frequency Assigned <= 10700

Exclude Leases

No matches found To try again, you can perform a [new search](#) or [refine your existing search](#).

For Fort McCoy there are none.

Specified Search

Latitude='44-02-23 N' Longitude='090-43-04 W' Radius = 3 Kilometers

Status = Active

Frequency Upper Band >= 11700

Frequency Assigned <= 10700

Exclude Leases

No matches found To try again, you can perform a [new search](#) or [refine your existing search](#).

For Dahlgren there are six

Specified Search

Latitude='38-19-37 N' Longitude='077-01-34 W' Radius = 11 Kilometers

Status = Active

Frequency Upper Band >= 11700

Frequency Assigned <= 10700

Exclude Leases

Matches 1- 6 (of 6)

Page 1							
	Call Sign/Lease ID	Name	FRN	Radio Service	Status		
1	W08N807	King George County	0002065977	MW	Active	11/15/2034	
2	W08N809	King George County	0002065977	MW	Active	11/15/2034	
3	W08N810	King George County	0002065977	MW	Active	11/15/2034	
4	W08B872	Westmoreland, County of	0012227328	MW	Active	12/23/2035	
5	W02I700	T-Mobile MW LLC	0036989010	CF	Active	03/16/2036	
6	W8CS004	Westmoreland, County of	0012227328	MW	Active	12/21/2028	

For Dugway there are none

Specified Search

Latitude='40-13-45 N' Longitude='112-43-40 W' Radius = 11 Kilometers

Status = Active

Frequency Upper Band >= 11700

Frequency Assigned <= 10700

Exclude Leases

No matches found To try again, you can perform a [new search](#) or [refine your existing search](#).

Interference Mitigation

Refer to Appendix A for details on each of the six Dahlgren, VA Fixed Microwave licensees. The image below is a map from Google Earth showing the Dahlgren test range and the location of the Fixed Microwave antennas.



Antenna and Beamwidth:

Both the fixed ground station and the mobile station use highly directional antennas. During the test setup, the antennas will be pointed such that their main lobes are aligned toward each other (fixed station toward the mobile unit and the mobile unit toward the fixed station). The fixed ground antenna has an approximate beamwidth of $\pm 1.7^\circ$, and the mobile antenna has an approximate beamwidth of $\pm 15^\circ$.

The zone of operation test range at Dahlgren shown with the yellow triangle noted in image above is constrained to the defined area based on these pointing angles. The fixed station uses a static antenna and does not perform beam steering during operation; therefore, emissions are restricted to the defined pointing sector.

Frequency Mitigation (Bandwidth):

The frequency window for the test range is reduced to 11.0 - 11.5 GHz and at the time of test will be reduced to a specific frequency with a 125 MHz bandwidth.

Power Mitigation:

The mobile unit has a power output of 0.63W and an ERP of 1.12W. This reduce level of transmit power will be verified in a calibrated laboratory environment to ensure it does not exceed the specified level.

Transmission Mitigation:

Emissions are not continuous. Both the fixed and mobile units transmit in a pulsed mode at 1 ms intervals using time-division multiplexing. It is estimated that transmission activities will be <10% of each hour during the test events.

Summary:

Due to the controlled antenna pointing, the narrow fixed-station beamwidth, and the lower mobile-unit transmit power, the test emissions are expected not to interfere with incumbent Fixed Microwave Service licensees.

Daily Checks and Controls:

1. The test event is scheduled for two specific separate weeks between Oct and Dec 2026.
2. The transmission times will be limited to 3-5 days during the regular work week from 7am to 4pm.
3. Prior to any transmission, the test crew will establish the required antenna pointing angle based on system analysis using System Tool Kit (STK).
4. We are bound by daily controls with the Dahlgren Test Center Naval Surface Warfare Center Frequency Management Office when we are ready to start transmissions at the beginning of the day and when we are shutting down transmissions for the day.
5. One of the Stop Buzzer contacts will be onsite during the two test events for immediate shutdown of our system. Both Stop Buzzer contacts listed in the STA request are lead test engineers and have authority to control the test and have the power and authority to shut down and cease all transmissions and testing activities.

Appendix A FCC RFI #103586 Ref: File #1280-EX-ST-2026

Dahlgren, VA Fixed Microwave licensees within 11 km

Specified Search						
Latitude='38-19-37 N' Longitude='077-01-34 W' Radius = 11 Kilometers						
Status = Active						
Frequency Upper Band >= 11700						
Frequency Assigned <= 10700						
Exclude Leases						
Matches 1- 6 (of 6)						
Call Sign/Lease ID	Name	FRN	Radio Service	Status	Expiration Date	
1 WQBN807	King George County	0002065977	MW	Active	11/15/2034	
2 WQBN809	King George County	0002065977	MW	Active	11/15/2034	
3 WQBN810	King George County	0002065977	MW	Active	11/15/2034	
4 WQEB872	Westmoreland, County of	0012227328	MW	Active	12/23/2035	
5 WQXI700	T-Mobile MW LLC	0036989010	CF	Active	03/16/2036	
6 WRCS504	Westmoreland, County of	0012227328	MW	Active	12/21/2028	

*Call Sign WQBN807, Licensee: King George County, Radio Service MW - Microwave Public Safety Pool
Transmit Location: ACCURATE - 6269 Caledon Rd., King George, VA KING GEORGE County, Coordinates 38-18-53.8 N, 077-14-14.4 W

-Path 2 point to point communication with Receive Location EMS TOWER (Call Sign WQBN810), Coordinates 38-16-58.5 N, 077-11-51.2 W on the frequency 11365.000 MHz

*Call Sign WQBN809, Licensee: King George County, Radio Service MW - Microwave Public Safety Pool
Transmit Location: OWENS TOWER - RT 624 & RT 206, OWEN, VA KING GEORGE County, Coordinates 38-20-19.0 N, 077-05-14.0 W

-Path 2 point to point communication with Receive Location EMS TOWER (Call Sign WQBN810), Coordinates 38-16-58.5 N, 077-11-51.2 W on the frequency 11365.000 MHz

*Call Sign WQBN810, Licensee: King George County, Radio Service MW - Microwave Public Safety Pool
Transmit Location: EMS TOWER - 8562 Dahlgren Rd. - WA33XC006, King George, VA KING GEORGE County, Coordinates 38-16-58.5 N, 077-11-51.2 W

-Path 7 point to point communication with Receive Location ACCURATE (Call Sign WQBN807), Coordinates 38-18-53.8 N, 077-14-14.4 W on the frequency 10875.000 MHz

-Path 12 point to point communication with Receive Location EOC (Call Sign WRWA900), Coordinates 38-16-34.4 N, 077-12-26.2 W on the frequency 10915.000 MHz

*Call Sign WQEB872, Licensee: Westmoreland, County of, Radio Service MW - Microwave Public Safety Pool
Transmit Location: MORRIS STORE - 7272 KINGS HIGHWAY, MONTROSS, VA WESTMORELAND County, Coordinates 38-09-15.8 N, 076-55-54.8 W

-Path 3 point to point communication with Receive Location OAK GROVE (Call Sign WQEB871), Coordinates 38-10-59.0 N, 077-00-34.0 W on the frequency 11265.000 MHz

-Path 4 point to point communication with Receive Location MONTROSS (Call Sign WQEB873), Coordinates 38-05-47.0 N, 076-49-57.0 W on the frequency 11305.000 MHz

-Path 5 point to point communication with Receive Location Grant's Hill (Call Sign WRCS503), Coordinates 38-07-59.4 N, 076-57-39.7 W on the frequency 11505.000 MHz

-Path 6 point to point communication with Receive Location James Monroe Transfer (Call Sign WRCS504), Coordinates 38-14-20.6 N, 076-59-27.4 W on the frequency 11425.000 MHz

*Call Sign WQXI700, Licensee: T-Mobile MW LLC, Radio Service CF - Common Carrier Fixed Point to Point Microwave

Transmit Location: 7FBU101A - 176 Stoney Knoll Rd. (VA09742-S), Colonial Beach, VA WESTMORELAND County, Coordinates 38-12-43.2 N, 077-00-00.6 W

-Path 3 point to point communication with Receive Location 7FBU020A (Call Sign WQXI698), Coordinates 38-16-01.2 N , 077-08-27.8 W on the frequencies 11075.000 MHz & 11155.000 MHz

*Call Sign WRCS504, Licensee: Westmoreland, County of, Radio Service MW - Microwave Public Safety Pool

Transmit Location: James Monroe Transfer - 0.31 NM northeast of the intersection of Charles Way and James Monroe Highway, Colonial Beach, VA WESTMORELAND County, Coordinates 38-14-20.6 N, 076-59-27.4 W

-Path 1 point to point communication with Receive Location Flat Iron/ MORRIS STORE (Call Sign WQEB872), Coordinates 38-09-15.8 N , 076-55-54.8 W on the frequency 10935.000 MHz