



Wi-Fi Module

User Manual

DFWM-GIB02

*An IEEE 802.11b Low-Power Wireless
System-On-Chip module*

INTRODUCTION

This document describes a simple method for characterizing DFWM-GIB02 WLAN module based RF parameters, such as transmitted spectra and receiver sensitivity. It will be described step by step below that how to control and setup.

Step 1 : Extract to CDM20814_WHQL_Certified.zip, it is a USB to UART driver, then setup it.

Step 2 : Setup *teraterm_utf8-4.58.exe* program, this program can help to send command to module.

Step 3 : Double click UTF-8 execute file as shown below, it will occur after completing step2 install.

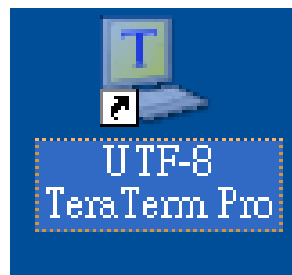


Figure 1

Step 4 : When implement UTF-8, selecting Serial port correctly.



Figure 2

Step 5 : After entering UTF-8, send command at. If connection is successful, it will reply ok.

Step 6 : Now any legal command can be keyed in and if UTF-8 reply ok, the command is implemented successful like below figure.

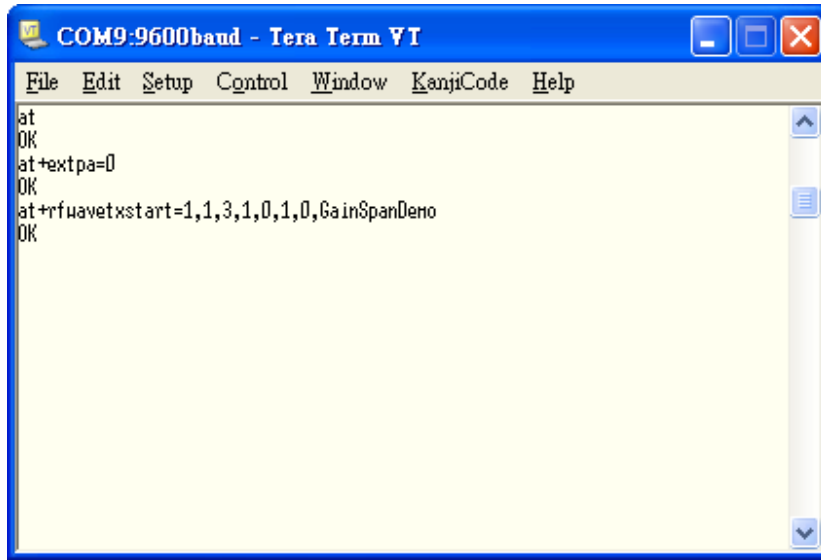


Figure 3

A series of legal command: Internal PA Transmitted

Transmitted Tx at 11Mbps for every channel		
Command	Action	
at+extpa=0	Start up internal Power Amplifier	
at+rfwavetxstart=1,1,3,1,0,1,0,GainSpanDemo	Continuous Tx Channel 1, 11Mbps	
at+rfwavetxstart=1,2,3,1,0,1,0,GainSpanDemo	Continuous Tx Channel 2, 11Mbps	
at+rfwavetxstart=1,3,3,1,0,1,0,GainSpanDemo	Continuous Tx Channel 3, 11Mbps	
at+rfwavetxstart=1,4,3,1,0,1,0,GainSpanDemo	Continuous Tx Channel 4, 11Mbps	
at+rfwavetxstart=1,5,3,1,0,1,0,GainSpanDemo	Continuous Tx Channel 5, 11Mbps	
at+rfwavetxstart=1,6,3,1,0,1,0,GainSpanDemo	Continuous Tx Channel 6, 11Mbps	
at+rfwavetxstart=1,7,3,1,0,1,0,GainSpanDemo	Continuous Tx Channel 7, 11Mbps	
at+rfwavetxstart=1,8,3,1,0,1,0,GainSpanDemo	Continuous Tx Channel 8, 11Mbps	
at+rfwavetxstart=1,9,3,1,0,1,0,GainSpanDemo	Continuous Tx Channel 9, 11Mbps	
at+rfwavetxstart=1,10,3,1,0,1,0,GainSpanDemo	Continuous Tx Channel 10, 11Mbps	



at+rfwavetxstart=1,11,3,1,0,1,0,GainSpanDemo	Continuous Tx Channel 11, 11Mbps	
at+rfwavetxstart=1,12,3,1,0,1,0,GainSpanDemo	Continuous Tx Channel 12, 11Mbps	
at+rfwavetxstart=1,13,3,1,0,1,0,GainSpanDemo	Continuous Tx Channel 13, 11Mbps	
at+rfwavetxstart=1,14,3,1,0,1,0,GainSpanDemo	Continuous Tx Channel 14, 11Mbps	
At+rfstop	Stop action	
Transmitted Tx at 5.5Mbps for every channel		
at+extpa=0	Start up internal Power Amplifier	
at+rfwavetxstart=1,1,2,1,0,1,0,GainSpanDemo	Continuous Tx Channel 1, 5.5Mbps	
at+rfwavetxstart=1,2,2,1,0,1,0,GainSpanDemo	Continuous Tx Channel 2, 5.5Mbps	
at+rfwavetxstart=1,3,2,1,0,1,0,GainSpanDemo	Continuous Tx Channel 3, 5.5Mbps	
at+rfwavetxstart=1,4,2,1,0,1,0,GainSpanDemo	Continuous Tx Channel 4, 5.5Mbps	
at+rfwavetxstart=1,5,2,1,0,1,0,GainSpanDemo	Continuous Tx Channel 5, 5.5Mbps	
at+rfwavetxstart=1,6,2,1,0,1,0,GainSpanDemo	Continuous Tx Channel 6, 5.5Mbps	
at+rfwavetxstart=1,7,2,1,0,1,0,GainSpanDemo	Continuous Tx Channel 7, 5.5Mbps	
at+rfwavetxstart=1,8,2,1,0,1,0,GainSpanDemo	Continuous Tx Channel 8, 5.5Mbps	
at+rfwavetxstart=1,9,2,1,0,1,0,GainSpanDemo	Continuous Tx Channel 9, 5.5Mbps	
at+rfwavetxstart=1,10,2,1,0,1,0,GainSpanDemo	Continuous Tx Channel 10, 5.5Mbps	
at+rfwavetxstart=1,11,2,1,0,1,0,GainSpanDemo	Continuous Tx Channel 11, 5.5Mbps	
at+rfwavetxstart=1,12,2,1,0,1,0,GainSpanDemo	Continuous Tx Channel 12, 5.5Mbps	
at+rfwavetxstart=1,13,2,1,0,1,0,GainSpanDemo	Continuous Tx Channel 13, 5.5Mbps	
at+rfwavetxstart=1,14,2,1,0,1,0,GainSpanDemo	Continuous Tx Channel 14, 5.5Mbps	
At+rfstop	Stop action	
Transmitted Tx at 2Mbps for every channel		
at+extpa=0	Start up internal Power Amplifier	
at+rfwavetxstart=1,1,1,1,0,1,0,GainSpanDemo	Continuous Tx Channel 1, 2Mbps	
at+rfwavetxstart=1,2,1,1,0,1,0,GainSpanDemo	Continuous Tx Channel 2, 2Mbps	
at+rfwavetxstart=1,3,1,1,0,1,0,GainSpanDemo	Continuous Tx Channel 3, 2Mbps	
at+rfwavetxstart=1,4,1,1,0,1,0,GainSpanDemo	Continuous Tx Channel 4, 2Mbps	
at+rfwavetxstart=1,5,1,1,0,1,0,GainSpanDemo	Continuous Tx Channel 5, 2Mbps	
at+rfwavetxstart=1,6,1,1,0,1,0,GainSpanDemo	Continuous Tx Channel 6, 2Mbps	
at+rfwavetxstart=1,7,1,1,0,1,0,GainSpanDemo	Continuous Tx Channel 7, 2Mbps	
at+rfwavetxstart=1,8,1,1,0,1,0,GainSpanDemo	Continuous Tx Channel 8, 2Mbps	
at+rfwavetxstart=1,9,1,1,0,1,0,GainSpanDemo	Continuous Tx Channel 9, 2Mbps	
at+rfwavetxstart=1,10,1,1,0,1,0,GainSpanDemo	Continuous Tx Channel 10, 2Mbps	
at+rfwavetxstart=1,11,1,1,0,1,0,GainSpanDemo	Continuous Tx Channel 11, 2Mbps	
at+rfwavetxstart=1,12,1,1,0,1,0,GainSpanDemo	Continuous Tx Channel 12, 2Mbps	
at+rfwavetxstart=1,13,1,1,0,1,0,GainSpanDemo	Continuous Tx Channel 13, 2Mbps	



at+rfwavetxstart=1,14,1,1,0,1,0,GainSpanDemo	Continuous Tx Channel 14, 2Mbps	
At+rfstop	Stop action	
Transmitted Tx at 1Mbps for every channel		
at+extpa=0	Start up internal Power Amplifier	
at+rfwavetxstart=1,1,0,1,0,1,0,GainSpanDemo	Continuous Tx Channel 1, 1Mbps	
at+rfwavetxstart=1,2,0,1,0,1,0,GainSpanDemo	Continuous Tx Channel 2, 1Mbps	
at+rfwavetxstart=1,3,0,1,0,1,0,GainSpanDemo	Continuous Tx Channel 3, 1Mbps	
at+rfwavetxstart=1,4,0,1,0,1,0,GainSpanDemo	Continuous Tx Channel 4, 1Mbps	
at+rfwavetxstart=1,5,0,1,0,1,0,GainSpanDemo	Continuous Tx Channel 5, 1Mbps	
at+rfwavetxstart=1,6,0,1,0,1,0,GainSpanDemo	Continuous Tx Channel 6, 1Mbps	
at+rfwavetxstart=1,7,0,1,0,1,0,GainSpanDemo	Continuous Tx Channel 7, 1Mbps	
at+rfwavetxstart=1,8,0,1,0,1,0,GainSpanDemo	Continuous Tx Channel 8, 1Mbps	
at+rfwavetxstart=1,9,0,1,0,1,0,GainSpanDemo	Continuous Tx Channel 9, 1Mbps	
at+rfwavetxstart=1,10,0,1,0,1,0,GainSpanDemo	Continuous Tx Channel 10, 1Mbps	
at+rfwavetxstart=1,11,0,1,0,1,0,GainSpanDemo	Continuous Tx Channel 11, 1Mbps	
at+rfwavetxstart=1,12,0,1,0,1,0,GainSpanDemo	Continuous Tx Channel 12, 1Mbps	
at+rfwavetxstart=1,13,0,1,0,1,0,GainSpanDemo	Continuous Tx Channel 13, 1Mbps	
at+rfwavetxstart=1,14,0,1,0,1,0,GainSpanDemo	Continuous Tx Channel 14, 1Mbps	
At+rfstop	Stop action	

External PA Transmitted

Transmitted Tx at 11Mbps for every channel		
Command	Action	
at+extpa=1	Start up internal Power Amplifier	
at+rfwavetxstart=1,1,3,1,0,1,2,GainSpanDemo	Continuous Tx Channel 1, 11Mbps	
at+rfwavetxstart=1,2,3,1,0,1,2,GainSpanDemo	Continuous Tx Channel 2, 11Mbps	
at+rfwavetxstart=1,3,3,1,0,1,2,GainSpanDemo	Continuous Tx Channel 3, 11Mbps	
at+rfwavetxstart=1,4,3,1,0,1,2,GainSpanDemo	Continuous Tx Channel 4, 11Mbps	
at+rfwavetxstart=1,5,3,1,0,1,2,GainSpanDemo	Continuous Tx Channel 5, 11Mbps	
at+rfwavetxstart=1,6,3,1,0,1,2,GainSpanDemo	Continuous Tx Channel 6, 11Mbps	
at+rfwavetxstart=1,7,3,1,0,1,2,GainSpanDemo	Continuous Tx Channel 7, 11Mbps	
at+rfwavetxstart=1,8,3,1,0,1,2,GainSpanDemo	Continuous Tx Channel 8, 11Mbps	
at+rfwavetxstart=1,9,3,1,0,1,2,GainSpanDemo	Continuous Tx Channel 9, 11Mbps	
at+rfwavetxstart=1,10,3,1,0,1,2,GainSpanDemo	Continuous Tx Channel 10, 11Mbps	
at+rfwavetxstart=1,11,3,1,0,1,2,GainSpanDemo	Continuous Tx Channel 11, 11Mbps	
at+rfwavetxstart=1,12,3,1,0,1,2,GainSpanDemo	Continuous Tx Channel 12, 11Mbps	



at+rfwavetxstart=1,13,3,1,0,1,2,GainSpanDemo	Continuous Tx Channel 13, 11Mbps	
at+rfwavetxstart=1,14,3,1,0,1,2,GainSpanDemo	Continuous Tx Channel 14, 11Mbps	
At+rfstop	Stop action	
Transmitted Tx at 5.5Mbps for every channel		
at+extpa=1	Start up internal Power Amplifier	
at+rfwavetxstart=1,1,2,1,0,1,2,GainSpanDemo	Continuous Tx Channel 1, 5.5Mbps	
at+rfwavetxstart=1,2,2,1,0,1,2,GainSpanDemo	Continuous Tx Channel 2, 5.5Mbps	
at+rfwavetxstart=1,3,2,1,0,1,2,GainSpanDemo	Continuous Tx Channel 3, 5.5Mbps	
at+rfwavetxstart=1,4,2,1,0,1,2,GainSpanDemo	Continuous Tx Channel 4, 5.5Mbps	
at+rfwavetxstart=1,5,2,1,0,1,2,GainSpanDemo	Continuous Tx Channel 5, 5.5Mbps	
at+rfwavetxstart=1,6,2,1,0,1,2,GainSpanDemo	Continuous Tx Channel 6, 5.5Mbps	
at+rfwavetxstart=1,7,2,1,0,1,2,GainSpanDemo	Continuous Tx Channel 7, 5.5Mbps	
at+rfwavetxstart=1,8,2,1,0,1,2,GainSpanDemo	Continuous Tx Channel 8, 5.5Mbps	
at+rfwavetxstart=1,9,2,1,0,1,2,GainSpanDemo	Continuous Tx Channel 9, 5.5Mbps	
at+rfwavetxstart=1,10,2,1,0,1,2,GainSpanDemo	Continuous Tx Channel 10, 5.5Mbps	
at+rfwavetxstart=1,11,2,1,0,1,2,GainSpanDemo	Continuous Tx Channel 11, 5.5Mbps	
at+rfwavetxstart=1,12,2,1,0,1,2,GainSpanDemo	Continuous Tx Channel 12, 5.5Mbps	
at+rfwavetxstart=1,13,2,1,0,1,2,GainSpanDemo	Continuous Tx Channel 13, 5.5Mbps	
at+rfwavetxstart=1,14,2,1,0,1,2,GainSpanDemo	Continuous Tx Channel 14, 5.5Mbps	
At+rfstop	Stop action	
Transmitted Tx at 2Mbps for every channel		
at+extpa=1	Start up internal Power Amplifier	
at+rfwavetxstart=1,1,1,1,0,1,2,GainSpanDemo	Continuous Tx Channel 1, 2Mbps	
at+rfwavetxstart=1,2,1,1,0,1,2,GainSpanDemo	Continuous Tx Channel 2, 2Mbps	
at+rfwavetxstart=1,3,1,1,0,1,2,GainSpanDemo	Continuous Tx Channel 3, 2Mbps	
at+rfwavetxstart=1,4,1,1,0,1,2,GainSpanDemo	Continuous Tx Channel 4, 2Mbps	
at+rfwavetxstart=1,5,1,1,0,1,2,GainSpanDemo	Continuous Tx Channel 5, 2Mbps	
at+rfwavetxstart=1,6,1,1,0,1,2,GainSpanDemo	Continuous Tx Channel 6, 2Mbps	
at+rfwavetxstart=1,7,1,1,0,1,2,GainSpanDemo	Continuous Tx Channel 7, 2Mbps	
at+rfwavetxstart=1,8,1,1,0,1,2,GainSpanDemo	Continuous Tx Channel 8, 2Mbps	
at+rfwavetxstart=1,9,1,1,0,1,2,GainSpanDemo	Continuous Tx Channel 9, 2Mbps	
at+rfwavetxstart=1,10,1,1,0,1,2,GainSpanDemo	Continuous Tx Channel 10, 2Mbps	
at+rfwavetxstart=1,11,1,1,0,1,2,GainSpanDemo	Continuous Tx Channel 11, 2Mbps	
at+rfwavetxstart=1,12,1,1,0,1,2,GainSpanDemo	Continuous Tx Channel 12, 2Mbps	
at+rfwavetxstart=1,13,1,1,0,1,2,GainSpanDemo	Continuous Tx Channel 13, 2Mbps	
at+rfwavetxstart=1,14,1,1,0,1,2,GainSpanDemo	Continuous Tx Channel 14, 2Mbps	
At+rfstop	Stop action	



Transmitted Tx at 1Mbps for every channel		
at+extpa=1	Start up internal Power Amplifier	
at+rfwavetxstart=1,1,0,1,0,1,2,GainSpanDemo	Continuous Tx Channel 1, 1Mbps	
at+rfwavetxstart=1,2,0,1,0,1,2,GainSpanDemo	Continuous Tx Channel 2, 1Mbps	
at+rfwavetxstart=1,3,0,1,0,1,2,GainSpanDemo	Continuous Tx Channel 3, 1Mbps	
at+rfwavetxstart=1,4,0,1,0,1,2,GainSpanDemo	Continuous Tx Channel 4, 1Mbps	
at+rfwavetxstart=1,5,0,1,0,1,2,GainSpanDemo	Continuous Tx Channel 5, 1Mbps	
at+rfwavetxstart=1,6,0,1,0,1,2,GainSpanDemo	Continuous Tx Channel 6, 1Mbps	
at+rfwavetxstart=1,7,0,1,0,1,2,GainSpanDemo	Continuous Tx Channel 7, 1Mbps	
at+rfwavetxstart=1,8,0,1,0,1,2,GainSpanDemo	Continuous Tx Channel 8, 1Mbps	
at+rfwavetxstart=1,9,0,1,0,1,2,GainSpanDemo	Continuous Tx Channel 9, 1Mbps	
at+rfwavetxstart=1,10,0,1,0,1,2,GainSpanDemo	Continuous Tx Channel 10, 1Mbps	
at+rfwavetxstart=1,11,0,1,0,1,2,GainSpanDemo	Continuous Tx Channel 11, 1Mbps	
at+rfwavetxstart=1,12,0,1,0,1,2,GainSpanDemo	Continuous Tx Channel 12, 1Mbps	
at+rfwavetxstart=1,13,0,1,0,1,2,GainSpanDemo	Continuous Tx Channel 13, 1Mbps	
at+rfwavetxstart=1,14,0,1,0,1,2,GainSpanDemo	Continuous Tx Channel 14, 1Mbps	
At+rfstop	Stop action	

Received command

Command	Action	
AT+RFRXSTART=1,1	Rx on channel 1	
AT+RFRXSTART=2,1	Rx on channel 2	
AT+RFRXSTART=3,1	Rx on channel 3	
AT+RFRXSTART=4,1	Rx on channel 4	
AT+RFRXSTART=5,1	Rx on channel 5	
AT+RFRXSTART=6,1	Rx on channel 6	
AT+RFRXSTART=7,1	Rx on channel 7	
AT+RFRXSTART=8,1	Rx on channel 8	
AT+RFRXSTART=9,1	Rx on channel 9	
AT+RFRXSTART=10,1	Rx on channel 10	
AT+RFRXSTART=11,1	Rx on channel 11	
AT+RFRXSTART=12,1	Rx on channel 12	
AT+RFRXSTART=13,1	Rx on channel 13	
AT+RFRXSTART=14,1	Rx on channel 14	
At+rfstop	Stop action	



Canada, Industry Canada (IC) Notices

This Class B digital apparatus complies with Canadian ICES-003 and RSS-210.

Operation is subject to the following two conditions : (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Radio Frequency (RF) Exposure Information

The radiated output power of the Dell Wireless Device is below the Industry Canada (IC) radio frequency exposure limits. The Dell Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized.

This device has been evaluated for and shown compliant with the IC Specific Absorption Rate (“SAR”) limits when installed in specific host products operated in portable exposure conditions (antennas are less than 20 centimeters of a person's body).

This device has been certified for use in Canada. Status of the listing in the Industry Canada’s REL (Radio Equipment List) can be found at the following web address:

<http://www.ic.gc.ca/app/sitt/reltel/srch/nwRdSrch.do?lang=eng>

Additional Canadian information on RF exposure also can be found at the following web address:

<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08792.html>



Canada, avis d'Industry Canada (IC)

Cet appareil numérique de classe B est conforme aux normes canadiennes ICES-003 et RSS-210.

Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférence et (2) cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

Informations concernant l'exposition aux fréquences radio (RF)

La puissance de sortie émise par l'appareil de sans fil Dell est inférieure à la limite d'exposition aux fréquences radio d'Industry Canada (IC). Utilisez l'appareil de sans fil Dell de façon à minimiser les contacts humains lors du fonctionnement normal.

Ce périphérique a été évalué et démontré conforme aux limites SAR (Specific Absorption Rate – Taux d'absorption spécifique) d'IC lorsqu'il est installé dans des produits hôtes particuliers qui fonctionnent dans des conditions d'exposition à des appareils portables (les antennes se situent à moins de 20 centimètres du corps d'une personne).

Ce périphérique est homologué pour l'utilisation au Canada. Pour consulter l'entrée correspondant à l'appareil dans la liste d'équipement radio (REL - Radio Equipment List) d'Industry Canada rendez-vous sur:

<http://www.ic.gc.ca/app/sitt/reltel/srch/nwRdSrch.do?lang=eng>

Pour des informations supplémentaires concernant l'exposition aux RF au Canada rendez-vous sur :
<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08792.html>



Federal Communications Commission (FCC) Statement

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

Section 15.105 (a) for Class A Device

For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

15.105(b) for Class B Device (usual)

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is



connected.

-Consult the dealer or an experienced radio/TV technician for help.

[Part 15.19\(a\)\(3\) unlicensed project \(WLAN Device\)](#)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1) this device may not cause harmful interference, and
- 2) this device must accept any interference received, including interference that may cause undesired operation of the device.

End Product Labeling:

The final end product must be labeled in a visible area with the following: “Contains FCC ID: H79DFWM-GIB02”.

Manual Information That Must be Included:

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove. This RF module in the user’s manual of the end product which integrates this module. The user’s manual for OEM Integrators must include the following information in a prominent location

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.