

New FCC Guidelines for Installation and Operation of Outdoor Wireless LAN devices (“U-NII devices”) Operating in the 5470-5725-MHz Band.

The following Federal Communications Commission (FCC) guidelines required for operation of WLAN systems were created to help mitigate interference to Federal Aviation Administration (FAA) Terminal Doppler Weather Radar (TDWR) from Wireless LAN systems operating outdoors in the 5470-5725-MHz band. The FAA has reported interference to many of their radar systems from WLANs operating specifically in the 5600-5650-MHz TDWR band, as well as from operation of WLANs on adjacent channels.

The FCC, FAA, and National Telecommunications and Information Administration (NTIA) have been investigating the issues, and have reported to industry that the cases of interference stem from many different causes. In addition to temporarily stopping new equipment certification for outdoor devices, the FCC has asked the industry to help address the issue by applying these guidelines to customer installations and ensuring customers are aware of the guidelines and how to comply.

Note: These installation and operation guidelines apply to new systems being installed outdoors as well as current systems already installed and operating.

Requirements

The following requirements for installation and operation of outdoor systems must be addressed:

1. Operation in the 5600-5650-MHz band is not authorized for 5-GHz WLAN systems, whether operating indoor or outdoors. This does not pose a problem for Cisco® WLAN since this band is not accessible for Cisco products. Use of indoor-only equipment outdoors can lead to FCC enforcement action, such as fines or requirements to disable the system. This includes installations where the access point is placed indoors and the antenna is placed outdoors, as well as installations involving retractable roofs (for example, football stadiums).
2. For **WLAN systems being installed outdoors**, the following requirements must be met.
 - a) Systems must be **professionally installed** by a qualified engineer familiar with WLAN, including Cisco trained partners and resellers.
 - b) Operation in the 5600-5650-MHz band is prohibited.
 - c) It is recommended that the installer register the installation of their system in the Wireless Internet Service Providers Association (WISPA database). This is especially important for systems that are installed within 35 km of the FAA TDWR. (Please see the links later in this document to WISPA database with TDWR locations.)
 - d) When within 35 km distance of a TDWR, the center frequency of the WLAN must be separated from the TDWR center frequency by 30 MHz.
 - a. If the radar is operating from 5600-5610 MHz, disable the use of channel 116 (5580 MHz).
 - b. If the radar is operating from 5630-5650 MHz, disable the use of channel 132 (5660 MHz).

Note: Cisco will be disabling channels 116 and 132 for outdoor systems in the future, the instructions in (d) only applies to systems that currently have the channels enabled.

- e) Additional mitigation techniques can include first, not orienting the antennas in the main beam of the weather radar, and second, ensuring that the antenna is not positioned in line-of-sight of the FAA TDWR.
- f) Verify that the antennas used are approved for use with Cisco WLAN systems. Installers or operators using nonapproved antennas or making any unauthorized changes may be subject to enforcement action.

WISPA Database

In conjunction with industry, the Wireless Internet Service Providers Association (WISPA) has created a database for installers and operators for registration of these outdoor systems including Mesh installations. This database, accessible from the WISPA website <http://www.spectrumbridge.com/udrs/home.aspx>, should be used by the installer or operator to determine if they are within 35 km of the TDWR, as well as to register the system if operating within this range of the TDWR.

This will help the FCC and FAA address interference issues in the future. Cisco strongly urges our customers to register their outdoor systems in this database:

Instructions for WISPA Database Registration

1. Connect to the database at: <http://www.spectrumbridge.com/udrs/home.aspx>. This will take you to the main page.
2. On the main page, select Search at the upper-left. This will take you to the TDWR radar page. Enter the requested information to find the proximity of specific WLAN systems to TDWR systems.
3. If you need to register one or more WLANs, you will need an account. Click the User Signup button on the page and create a registration for your company. There is no charge for registration.
4. Once you are registered user or if already registered log in using your username and password.
5. Select "device management" - to start process to register your device.
6. Enter all information and follow procedure as instructed to complete registration. Once you complete your registration for that device, you can repeat the process for other devices needing to be registered.

Table 1 shows the TDWR information provided by NTIA, this information is here to use as a quick reference, please see WISPA web page for any changes or additions.

Table 1. TDWR Location Information

STATE	CITY	LONGITUDE	LATITUDE	FREQUENCY	TERRAIN ELEVATION (MSL) [ft]	ANTENNA HEIGHT ABOVE TERRAIN [ft]
AZ	PHOENIX	W 112 09 46	N 33 25 14	5610 MHz	1024	64
CO	DENVER	W 104 31 35	N 39 43 39	5615 MHz	5643	64
FL	FT LAUDERDALE	W 080 20 39	N 26 08 36	5645 MHz	7	113
FL	MIAMI	W 080 29 28	N 25 45 27	5605 MHz	10	113
FL	ORLANDO	W 081 19 33	N 28 20 37	5640 MHz	72	97
FL	TAMPA	W 082 31 04	N 27 51 35	5620 MHz	14	80
FL	WEST PALM BEACH	W 080 16 23	N 26 41 17	5615 MHz	20	113
GA	ATLANTA	W 084 15 44	N 33 38 48	5615 MHz	962	113
IL	MCCOOK	W 087 51 31	N 41 47 50	5615 MHz	646	97
IL	CRESTWOOD	W 087 43 47	N 41 39 05	5645 MHz	663	113
IN	INDIANAPOLIS	W 086 26 08	N 39 38 14	5605 MHz	751	97

STATE	CITY	LONGITUDE	LATITUDE	FREQUENCY	TERRAIN ELEVATION (MSL) [ft]	ANTENNA HEIGHT ABOVE TERRAIN [ft]
KS	WICHITA	W 097 26 13	N 37 30 26	5603 MHz	1270	80
KY	COVINGTON CINCINNATI	W 084 34 48	N 38 53 53	5610 MHz	942	97
KY	LOUISVILLE	W 085 36 38	N 38 02 45	5646 MHz	617	113
LA	NEW ORLEANS	W 090 24 11	N 30 01 18	5645 MHz	2	97
MA	BOSTON	W 070 56 01	N 42 09 30	5610 MHz	151	113
MD	BRANDYWINE	W 076 50 42	N 38 41 43	5635 MHz	233	113
MD	BENFIELD	W 076 37 48	N 39 05 23	5645 MHz	184	113
MD	CLINTON	W 076 57 43	N 38 45 32	5615 MHz	249	97
MI	DETROIT	W 083 30 54	N 42 06 40	5615 MHz	656	113
MN	MINNEAPOLIS	W 092 55 58	N 44 52 17	5610 MHz	1040	80
MO	KANSAS CITY	W 094 44 31	N 39 29 55	5605 MHz	1040	64
MO	SAINT LOUIS	W 090 29 21	N 38 48 20	5610 MHz	551	97
MS	DESOTO COUNTY	W 089 59 33	N 34 53 45	5610 MHz	371	113
NC	CHARLOTTE	W 080 53 06	N 35 21 39	5608 MHz	807	113
NC	RALEIGH DURHAM	W 078 41 50	N 36 00 07	5647 MHz	400	113
NJ	WOODBIDGE	W 074 16 13	N 40 35 37	5620 MHz	19	113
NJ	PENNSAUKEN	W 075 04 12	N 39 56 57	5610 MHz	39	113
NV	LAS VEGAS	W 115 00 26	N 36 08 37	5645 MHz	1995	64
NY	FLOYD BENNETT FIELD	W 073 52 49	N 40 35 20	5647 MHz	8	97
OH	DAYTON	W 084 07 23	N 40 01 19	5640 MHz	922	97
OH	CLEVELAND	W 082 00 28	N 41 17 23	5645 MHz	817	113
OH	COLUMBUS	W 082 42 55	N 40 00 20	5605 MHz	1037	113
OK	AERO. CTR TDWR #1	W 097 37 31	N 35 24 19	5610 MHz	1285	80
OK	AERO. CTR TDWR #2	W 097 37 43	N 35 23 34	5620 MHz	1293	97
OK	TULSA	W 095 49 34	N 36 04 14	5605 MHz	712	113
OK	OKLAHOMA CITY	W 097 30 36	N 35 16 34	5603 MHz	1195	64
PA	HANOVER	W 080 29 10	N 40 30 05	5615 MHz	1266	113
PR	SAN JUAN	W 066 10 46	N 18 28 26	5610 MHz	59	113
TN	NASHVILLE	W 086 39 42	N 35 58 47	5605 MHz	722	97
TX	HOUSTON INTERCONTL	W 095 34 01	N 30 03 54	5605 MHz	154	97
TX	PEARLAND	W 095 14 30	N 29 30 59	5645 MHz	36	80
TX	DALLAS LOVE FIELD	W 096 58 06	N 32 55 33	5608 MHz	541	80
TX	LEWISVILLE DFW	W 096 55 05	N 33 03 53	5640 MHz	554	31
UT	SALT LAKE CITY	W 111 55 47	N 40 58 02	5610 MHz	4219	80
VA	LEESBURG	W 077 31 46	N 39 05 02	5605 MHz	361	113
WI	MILWAUKEE	W 088 02 47	N 42 49 10	5603 MHz	820	113

Latitude and Longitude are specified in NAD 83



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