



# Spectrum Intelligence

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## Spectrum Intelligence

The Spectrum Intelligence feature scans for non-Wi-Fi radio interference on 2.4-GHz and 5-GHz bands. Spectrum intelligence provides basic functions to detect interferences of three types, namely microwave, continuous wave (like video bridge and baby monitor), wi-fi and frequency hopping (Bluetooth and frequency-hopping spread spectrum (FHSS) cordless phone).

The following Cisco access points (APs) support Spectrum Intelligence feature:

- Cisco Catalyst 9115 Series Wi-Fi 6 APs
- Cisco Aironet 1852E/I APs
- Cisco Aironet 1832I APs
- Cisco Aironet 1815W/T/I/M APs
- Cisco Aironet 1810W/T APs
- Cisco Aironet 1800I/S APs
- Cisco Aironet 1542D/I APs



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**Note** You must enable Spectrum Intelligence feature on the Cisco Aironet 1832 and 1852 series APs to get radio details, such as noise, air-quality, interference, and radio utilization on the Cisco Catalyst Center Assurance AP health.

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### Restrictions

- SI APs only report a single interference type in Local mode.

- SI does not support high availability for air quality or interference reports. High Availability is not supported because interference report/device reported will not be copied to standby after switchover. We expect AP to send it again, if at all interferer is still there.
- Spectrum Intelligence detects only three types of devices:
  - Microwave
  - Continuous wave—(video recorder, baby monitor)
  - SI-FHSS—(Bluetooth, Frequency hopping Digital European Cordless Telecommunications (DECT) phones)

## Configuring Spectrum Intelligence

Follow the procedure given below to configure spectrum intelligence:

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
<b>Step 2</b>	<b>ap dot11 {24ghz   5ghz} SI</b> <b>Example:</b> Device(config)# ap dot11 24ghz SI	Configures the 2.4-GHz or 5-GHz Spectrum Intelligence feature on the 802.11a or 802.11b network.  Add <b>no</b> form of the command to disable SI on the 802.11a or 802.11b network.

## Verifying Spectrum Intelligence Information

Use the following commands to verify spectrum intelligence information:

To display the SI information for a 2.4-GHz or 5-GHz band, use the following command:

```
Device# show ap dot11 24ghz SI config

SI Solution..... : Enabled
Interference Device Settings:
  SI_FHSS..... : Enabled
Interference Device Types Triggering Alarms:
  SI_FHSS..... : Disabled
```

To display SI interferers of type Continuous transmitter for a 2.4-GHz band, use the following command:

```
Device# show ap dot11 24ghz SI device type cont_tx
RSSI = Received Signal Strength Index (dBm)
DevID = Device ID

Mac Address          DevID  Type          AP Name          RSSI  Channel
```

```
-----
xxxx.xxxx.xxxx      0xf001 Continuous TX Cisco-AP                -47
To display 802.11a interference devices information for the given AP for 5-GHz, use the following command:
Device# show ap dot11 5ghz SI device type ap

DC      = Duty Cycle (%)
ISI     = Interference Severity Index (1-Low Interference, 100-High Interference)
RSSI    = Received Signal Strength Index (dBm)
DevID   = Device ID
AP type = CA, clean air, SI spectrum intelligence

No ClusterID/BSSID  DevID  Type    AP Type AP Name                ISI  RSSI  DC   Channel
-----
-----
```

To display SI interferers of type Continuous transmitter for a 5-GHz band, use the following command:

```
Device# show ap dot11 5ghz SI device type cont_tx
RSSI = Received Signal Strength Index (dBm)
DevID = Device ID

Mac Address          DevID  Type          AP Name                RSSI  Channel
-----
xxxx.xxxx.xxx1      0xf001 Continuous TX Cisco-AP                -88
xxxx.xxxx.xxx2      0xf002 Continuous TX Cisco-AP                -88
```

To display all Cisco CleanAir interferers for a 2.4-GHz band, use the following command:

```
Device# show ap dot11 24ghz cleanair device type all
```

## Debugging Spectrum Intelligence on Supported APs (CLI)

You need to enter these commands in the AP console. For information about APs that support this feature see [https://www.cisco.com/c/en/us/td/docs/wireless/access\\_point/feature-matrix/ap-feature-matrix.html](https://www.cisco.com/c/en/us/td/docs/wireless/access_point/feature-matrix/ap-feature-matrix.html).

### Procedure

- Generate major Spectrum Intelligence logs for an AP by entering this command:  
**debug cleanair major**
- Verify the Spectrum Intelligence scan schedule of 5 seconds on an AP by entering this command:  
**debug cleanair event**
- Generate logs at 10-minute interval, when interference is not detected or reported by the AP, by entering this command:  
**debug cleanair raw 10**

This command creates three files under **/tmp** directory from dev shell.

- spectrum.fft

- spectrum.dbg
  - spectrum.int
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- View the Spectrum Intelligence detected interfering devices by entering this command:  
**show cleanair interferers**
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- View the Spectrum Intelligence configuration status by entering this command:  
**show cleanair status**