



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 9105 Series Wi-Fi 6 APs
- 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



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.

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
Step 1	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 2	ap dot11 {24ghz 5ghz} SI Example: 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 no 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
```

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

```
Mac Address      DevID  Type      PD   AP Name      RSSI  Channel
      Last Update Time
```

```
3400.0401.0006      0x0006 BT Discovery   No   RRM-TSIM-3           -88   40
                  12/16/2020 18:11:28 UTC
```

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.

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

- View the Spectrum Intelligence detected interfering devices by entering this command:

show cleanair interferers

- View the Spectrum Intelligence configuration status by entering this command:

show cleanair status