

Industry's Leading RF Interference Analysis Tool for Over 30 Years



The Professional Tool For Identifying and Preventing Wireless Communications Site Interference!

WirelessSite-RFI Will Analyze Sites for Six Major Modes of Interference

Interference Analysis Mode	Type Mix	Status	Summary	Worst-Case Margin (dB)
Transmitter Noise	N/A	Passed	No Interference was predicted	44.1
Receiver Desensitization	N/A	Passed	No Interference was predicted	77.4
Transmitter Intermodulation	1 Tx	Passed	No Interference was predicted	N/A
Transmitter Intermodulation	2 Tx	Passed	No Interference was predicted	N/A
Transmitter Intermodulation	3 Tx	Passed	No Interference was predicted	N/A
Transmitter Intermodulation	4 Tx	Passed	No Interference was predicted	N/A
Transmitter Intermodulation	5 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	1 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	2 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	3 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	4 Tx	Passed	No Interference was predicted	N/A
Receiver Intermodulation	5 Tx	Passed	No Interference was predicted	N/A
Transmitter Harmonics	N/A	Passed	No Interference was predicted	N/A
Transmitter Spurious Output	N/A	Passed	No Interference was predicted	N/A

WirelessSite-RFI Saves Time and Effort

WirelessSite-RFI (WS-RFI) is a single integrated easy-to-use wireless communications site interference analysis package. This powerful PC-based software eliminates the arduous and repetitious work associated with site interference analysis. It also eliminates the "shotgun" approach to site design and management.

Field Tested and Approved

WS-RFI was developed by a communications engineer with over 45 years of wireless communication systems experience and a strong background in software design. The result is a high quality, user friendly technical software application.

WS-RFI is highly acclaimed among hundreds of site managers, communications engineers, technicians, and consultants already using the program throughout the world.

Supports Wide Range of Technologies

WS-RFI supports all communication system technologies.

This includes FM Land Mobile, AM Aeronautical, ACSSB, AM, FM and TV Broadcast, Microwave, AMPS, AMPS-CDMA, PCS TDMA, PCS CDMA, W-CDMA, GSM-900, GSM-1900, iDEN, 800 Trunking, SMR, ESMR, Paging, GPS, Wireless Data, WiMax, LTE, AWS, 5G, UMTS and others.

Saves time, increases productivity, avoids mistakes and saves money.

Frequency range from 50 KHz to 40 GHz.

Libraries provided for antenna patterns, filters/multicouplers, RF components and equipment.

Determines isolation values required to prevent receiver degradation due to transmitter noise and receiver desensitization.

Determines isolation values required to prevent receiver degradation caused by transmitter or receiver produced intermodulation (IM) products.

Perform calculations based on Carrier-to-Interference ratio or 12 dB SINAD ratio for digital and analog applications.

Evaluates first through eleventh order IM products, up to five transmitters at a time.

Passive IM (PIM) evaluates RF devices for PIM for overall interference signal level analysis.

Includes Wizards which provide step-by-step methods for configuring site parameters and analysis reporting options.

Built in Frequency Tables to assist with data entry.

Provides a Template Library feature which allow users to store and retrieve pre-defined communication systems.

Co-Location Interference Analysis reports automatically created in Microsoft Word documents.

Graphic Drawing Editor for automatic creation of site and equipment configuration block diagram drawings.

System Setup Wizard

The Communications System Setup Wizard provides a simple step-by-step method for configuring each wireless communications system by providing dropdown selection list-boxes for configuring the system technology, frequency band, equipment manufacturer and other technical parameters.

Once you select the technology, frequency band and equipment manufacturer, WS-RFI will obtain the equipment specifications from an equipment library and enter all of the required data automatically. The manufacturers include Ericsson, Lucent, Motorola, Nortel and many other manufacturers.

Enter the Provider/System name and select the type of system and equipment:

Provider/System Name: 800 MHz System

IM Hit List Only

Technology: 800 MHz Trunking

Frequency Band: 806 - 896 MHz - Land Mobile

Equipment Manufacturer: Motorola

Equipment Configuration: Duplex/Rptr Station

Buttons: Cancel, < Back, Next >, Finish

It is easy to configure the communications system by simply selecting the System Configuration from a drop-down list box. Equipment parameters are automatically entered from the Equipment library. Your only step is to enter the number of transmitters and select the operating frequencies from the built in frequency tables. This feature provides easy selection of multiple groups of frequencies.

Provide system and equipment details:

System Configuration: Omni Cell

Freq Table Combined Stations Sep Tx/Rx Antennas Rx Diversity

Transmitter

Qty of Transmitters: 5

Power (watts): 75

Frequencies:

	ChLabel	Frequency
1	Chan 1	851.012500
2	Chan 3	851.062500
3	Chan 5	851.112500
4	Chan 7	851.162500
5	Chan 9	851.212500

Receiver

Qty of Receivers: 5

Sensitivity (dBm): -116

Frequencies:

	ChLabel	Frequency
1	Chan 1	806.012500
2	Chan 3	806.062500
3	Chan 5	806.112500
4	Chan 7	806.162500
5	Chan 9	806.212500

Buttons: Cancel, < Back, Next >, Finish

Configure the antenna systems:

System Configuration: Omni Cell

Ant Mounting Type: Triangle Platform (12-Ant)

Ant Mount Name: 800 System

Ant Systems:

	AntPos	AntUse	Model	Gain	Height	Orient	LineType
1	1	Dplx	10017-1 (818 MHz)	10	125	360	7/8 in. Air

Buttons: Cancel, < Back, Next >, Finish

The antenna system can be setup for single or sectorized configurations. You add the antennas by simply selecting an antenna from the library of over 22,000 antennas. Then you assign the antenna to any one of several mounting positions on an Antenna Mount. The available Antenna Mounts are selected from a drop-down list box. All of the antenna positioning and spacing data will be determined automatically.

The antenna grid has a "ditto" function for copying individual cells or entire rows of data. This feature provides rapid, error-free data entry.

Once you have completed the selections, you simply click the "Finish" button and WS-RFI will automatically configure and enter all of the station and antenna data. In the past, it would take several hours to setup a communications site that had many different providers co-located.

The Wizard gets it done in just a few minutes!

Analysis Setup Wizard

The interference analysis and reporting options are set up with another Wizard called the Interference Analysis Setup Wizard. This Wizard provides a simple, step-by-step method for setting up the analysis and report options.

To set up the interference analysis options, you simply select the type of report you want, fill in a few data fields and click the Next button to set up the next group of options.

A graphic image is shown on the next page that depicts the IM interference analysis set up options.

When you have selected all of the analysis and report options, WS-RFI will automatically perform all modes of interference analysis and create a custom report in Microsoft Word.

Interference Analysis Setup Wizard

Select the Intermodulation Run Options:

Transmitters Mixing

2 Transmitters

3 Transmitters

4 Transmitters

5 Transmitters

IM Order(s)

Start

End

Include Tx Mod BW Multiplication

Exclusions

Tx Groups

Rx Groups

Wideband Spectral Analysis

Turn On

Slice BW Greater Than: KHz

Qty of Slices per Carrier:

The report includes a customizable Cover Page, Table of Contents, Executive Summary, Site Description, Communication Systems Listing, Antenna Systems Listing and Frequency Listings.

Tables are also provided that present signal margins for transmitter noise, receiver desensitization, transmitter and receiver generated intermodulation interference, transmitter harmonic output, transmitter spurious output analysis and interference C/(I+N) ratio summing results.

The document is concise and provides a presentation quality report suitable for distribution to engineers, managers, city/county governments, siting councils and other agencies requiring proof of co-location interference analysis.

Built-In Frequency Tables

To simplify frequency data entry, WS-RFI has built-in frequency tables for the wireless spectrum. You can select individual channels or block select a group of channels with a keyboard or a mouse. WS-RFI will automatically enter the frequencies into the site data file. You can also add your own custom frequency tables as needed.

RFI 700 MHz 6.25KHz Channels

	1	2	3	4	5	6	7	8
1	769.003125	769.009375	769.015625	769.021875	769.028125	769.034375	769.040625	769.046875
2	769.128125	769.134375	769.140625	769.146875	769.153125	769.159375	769.165625	769.171875
3	769.253125	769.259375	769.265625	769.271875	769.278125	769.284375	769.290625	769.296875
4	769.378125	769.384375	769.390625	769.396875	769.403125	769.409375	769.415625	769.421875
5	769.503125	769.509375	769.515625	769.521875	769.528125	769.534375	769.540625	769.546875
6	769.628125	769.634375	769.640625	769.646875	769.653125	769.659375	769.665625	769.671875
7	769.753125	769.759375	769.765625	769.771875	769.778125	769.784375	769.790625	769.796875
8	769.878125	769.884375	769.890625	769.896875	769.903125	769.909375	769.915625	769.921875
9	770.003125	770.009375	770.015625	770.021875	770.028125	770.034375	770.040625	770.046875
10	770.128125	770.134375	770.140625	770.146875	770.153125	770.159375	770.165625	770.171875
11	770.253125	770.259375	770.265625	770.271875	770.278125	770.284375	770.290625	770.296875
12	770.378125	770.384375	770.390625	770.396875	770.403125	770.409375	770.415625	770.421875
13	770.503125	770.509375	770.515625	770.521875	770.528125	770.534375	770.540625	770.546875
14	770.628125	770.634375	770.640625	770.646875	770.653125	770.659375	770.665625	770.671875

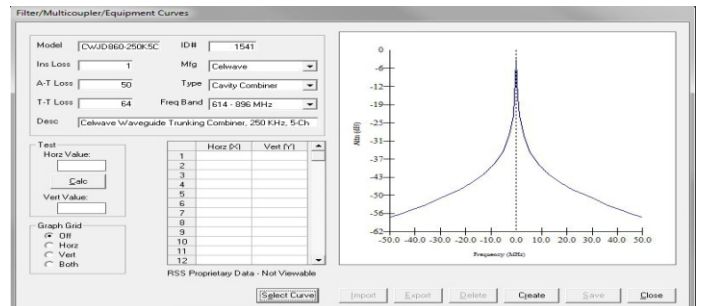
View: Chan Nbr Frequency

Site Receive Frequency (MHz)

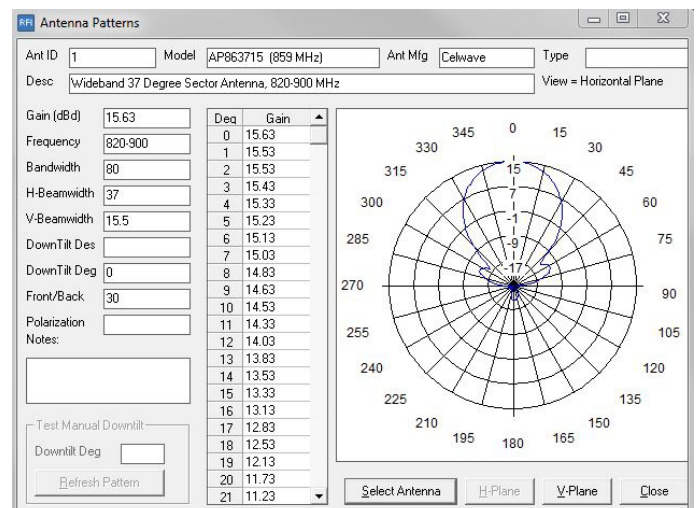
Comprehensive Libraries

WS-RFI includes comprehensive libraries that includes Filters/Multicouplers and other RF components, Antenna Gain Patterns, Base Station equipment, Frequency Tables and other Libraries. The user can add additional data to the libraries.

There are several Filter/Multicoupling libraries that include manufacturers, such as Celwave, Decibel Products, Sinclair, Telewave, Tx-Rx, Wacom and others. These libraries have been exclusively digitized for WS-RFI use.



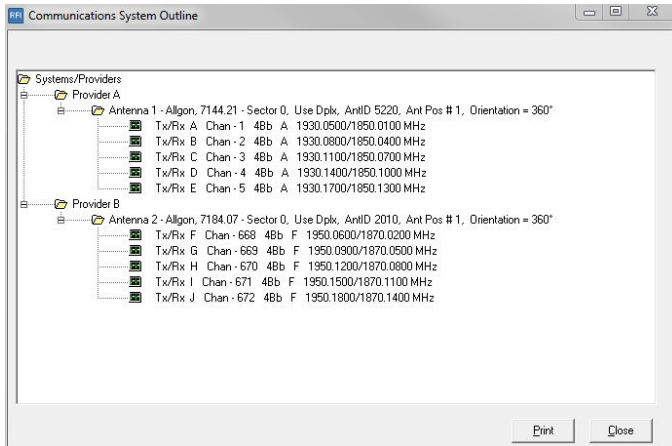
The Antenna library consists of over 22,000 popular manufacturers' horizontal and vertical antenna patterns. During interference analysis, WS-RFI utilizes a three dimensional model to determine the overall antenna directional gain. This gain is based on the orientation of the antennas and their directional radiation pattern characteristics in both the horizontal (H) and vertical (E) planes. This feature provides a more precise way of determining total antenna gain and isolation between each set of antennas at the site.



WS-RFI completely automates the repetitive tasks associated with interference analysis, automatically looking up equipment manufacturers' transmitter noise and receiver desense curves, vertical and horizontal space isolation graphs, antenna gain patterns, insertion and rejection losses for duplexers, bandpass/notch cavity filters, combiners, isolators, preselectors, and other RF filter component devices.

View Site Data in Outline Form

When Site files include many communication systems, it helps to get an overall perspective of how the Site is configured. The View System Outline feature provides this visibility. The Site data is displayed in a hierarchical tree view format. By clicking on any component, WS-RFI will drill down and provide detailed information for that component.

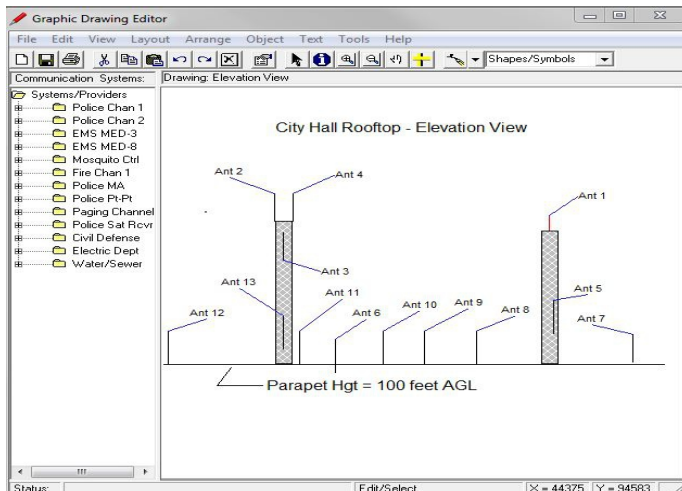


System Template Feature

The System Template provides a rapid method for entering communications systems data. Once you have a system configured, you can save it as a template. The next time you need the same or a similar type of system, you can select the system template and WS-RFI will enter all of the data automatically for you.

Graphic Drawing Editor

A full featured vector based graphic drawing editor for automatically creating Site Top View and Elevation View drawings as well as communications system block diagrams. These drawings can be included in the MS Word presentation quality reports.



Full Featured and Easy To Use

Calculates antenna spacing distances and isolation values for horizontal, vertical and other complex antenna positioning configurations.

Distance/Azimuth, Unit Conversion and Antenna Space Loss calculators.

Data entry defaults, lookup tables, and list boxes minimize keystrokes and avoid data entry errors.

Online help and tutorials available to get you up and running fast.

270 Page User Guide.

Program and Library updates available on the Internet.

Network version available.

System Requirements

System requirements vary with the WS-RFI configuration you purchase. The basic minimum requirements are listed below:

Pentium III, 1 GHz processor or equivalent.

Windows 7 or higher.

1 GB of RAM.

60 MB minimum hard disk space.

SVGA monitor.

CD-ROM drive.

A printer supported by Windows.

Microsoft Word 2007 or higher installed on computer.

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