

 DIAGNOST X™

DX Series

The DX-2002 Diagnostics Over-the-Air (OTA) Radio Analyzer identifies, verifies and analyzes the alignment and field performance of all portable and mobile radios in a network 24/7 without user interaction while the radios are operational and deployed in the field.

NX Series

The Diagnostics NX-200 series of remote receivers is designed to extend the Diagnostics coverage of a radio system at a reduced cost. The NX-200 Remote Receivers may be used with the DX Series or with the MX Series. All results are forwarded across the Ethernet WAN back to the master unit and presented in a single consolidated view.

DX AFC Meter

The Diagnostics AFC Meter is a patented technology to determine how much AFC correction is being applied to a subscriber radio in real time while the radio is deployed in the field. It measures the temporary AFC adjustment by capturing and analyzing all control channel transmissions from the radio.

“ This new proactive maintenance technology helps to keep LMR radios at their peak operational readiness. ”

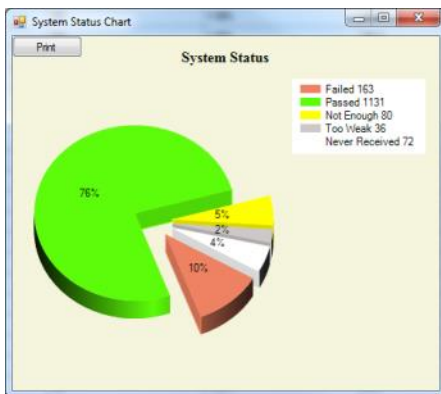
Model DX-2002

- Monitors the Base Station Receive Control Channel (Inbound) frequency
- Protocol Options: P25 Trunked, P25 Conventional, Motorola SmartNet/SmartZone, MOTOTRBO, EDACS, NXDN
- P25 system metrics:
 - RF Frequency Error
 - Symbol Frequency Error 600
 - Symbol Frequency Error 1800
 - Modulation Fidelity
 - Average Symbol Deviation
 - Emission Mask Conformance
 - RSSI, SNR and BER
- Available Frequency Bands: VHF; UHF 380-430; UHF 450-470; UHF 470-512; 700; 800; 900 MHz
- Installation: Two connections - universal AC power and an antenna. Can connect to the RX antenna multi-coupler.



“ This first-of-its-kind technology uses the airwaves to detect a problem before it becomes an emergency. ”

- One DX unit can be networked with up to three (3) NX-200 Remote Receivers to provide system wide coverage - all data is stored in a unified database accessed through DiagnostX Viewer (DV)
- Autonomous - DiagnostX is non-intrusive and has no impact on the radio network
- Portable - allows a unit to be moved to multiple sites for additional area coverage
- Optional DiagnostX Viewer (DV) licenses can be installed on any computer on the network
- User defined thresholds can be changed on the fly at any time



Example of system status report

DX-2002 Series Product Specifications

	Dimensions	Weight
DX Series	2 Rack Units – 3.5" h x 17" w x 19" d	27 lbs.
NX Series	1.5 Rack Units – 1.75" h x 17" w x 13.75" d	16 lbs.

DX-2002a	Single Protocol, Single Frequency Band
DX-2002b	Single Protocol, Dual Frequency Band
DX-2002c	Dual Protocol, Single Frequency Band
DX-2002d	Dual Protocol, Dual Frequency Band

OTA Radio Analyzer Features and Reports

- Color coded to show status at a glance
- Search box to locate a radio by ID
- Columns sort ascending or descending
- Displays total number of radios in the database
- Displays active base station receive frequency
- Tabs for individual categories ("Failed," "Passed," etc.) or for "All" radios in one comprehensive view (shown below)
- Filter on Radio ID range



VISUAL REPORTS

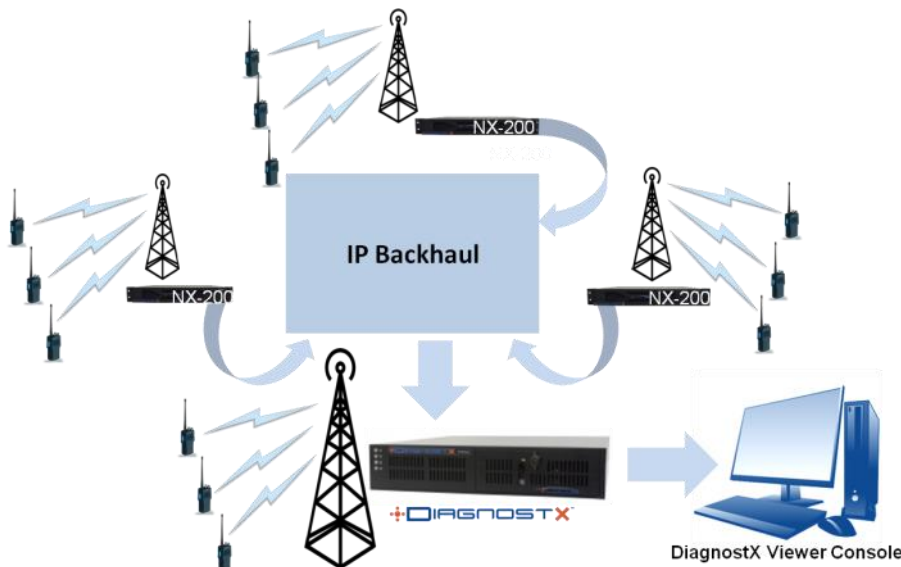
- DiagnostX Viewer (DV) - Home navigation screen
- Site Configuration, Thresholds
- Control Channels
- System status reports
- Detailed data reports for export
- Waveform visualization - time domain and frequency domain

Radio ID	Alias	RIF Frequency Error (Hz)	Symbol Frequency Error 600	Symbol Frequency Error 1800	Modulation Fidelity	Maximum Frequency Deviation (Hz)	Status	Date/Time
0	0	-10	33	141	1.81%	2122	PASSED	12/4/2014 9:14 AM
7	ALBANY FIRE	-395	-38	-87	1.99%	2124	PASSED	7/25/2014 2:57 PM
7	Moto Test	0	0	0	0.00%	0	NEVER RECEIVED	12/4/2014 9:16 AM
9	9	0	0	0	0.00%	0	TOO WEAK	4/19/2013 11:47 AM
10	ERIC	-117	-24	-43	1.98%	2778	PASSED	12/2/2014 3:12 PM
11	Eric Mob	-383	-31	-78	1.99%	2774	PASSED	12/3/2014 5:31 PM
14	Seni Eric	0	0	0	0.00%	0	NEVER RECEIVED	4/26/2014 9:16 AM
17	RM Sen Test	-146	-29	-88	1.99%	2840	PASSED	4/26/2014 9:45 AM
50	500	-611	-25	-71	1.99%	2783	FAILED	11/25/2014 10:23 AM
51	P.551	-254	-41	-114	1.99%	2737	PASSED	5/5/2014 9:17 AM
52	P.552	33	-15	-43	1.99%	2821	PASSED	11/25/2014 10:56 AM
61	TOM C	-388	-42	-110	1.99%	2731	PASSED	4/4/2014 5:40 PM
62	TOC SUPER	-117	-28	-43	1.98%	2791	PASSED	12/2/2014 9:36 AM
66	RAPPAZZO	-211	-34	-99	1.98%	2760	PASSED	12/3/2014 8:19 PM
70	70	-21	-19	-42	1.98%	2792	PASSED	5/30/2013 12:26 PM
71	71	9	-14	-40	1.99%	2817	PASSED	4/4/2013 2:21 PM
78	85	138	-34	-66	1.99%	2895	PASSED	7/11/2014 12:06 PM
101	BACKUP 1	19	-32	-82	1.99%	2785	PASSED	8/23/2014 2:34 AM
102	BACKUP 2	-496	-20	-41	1.98%	2809	PASSED	11/3/2014 4:05 PM
103	BACKUP 3	-461	-22	-70	1.98%	2791	PASSED	10/31/2014 11:30 PM
104	BACKUP 4	-186	-34	-82	1.60%	2760	PASSED	7/16/2014 11:48 AM
105	BACKUP 5	-648	-24	-59	1.99%	2801	FAILED	8/22/2014 12:12 PM
106	BACKUP 6	-501	-30	-83	1.99%	2766	FAILED	11/23/2014 1:03 AM
200	Corp Woods	-297	-15	-59	1.98%	2814	PASSED	11/19/2014 2:58 PM
201	Colonia Center	-305	-31	-84	1.99%	2777	PASSED	11/2/2014 2:52 PM
204	201	-109	-24	-48	1.98%	2781	PASSED	12/2/2014 3:03 PM
301	MOTOROLA TEST1	0	0	0	0.00%	0	NEVER RECEIVED	12/4/2014 9:16 AM
302	MOTOROLA TEST2	0	0	0	0.00%	0	NEVER RECEIVED	12/4/2014 9:16 AM
303	MOT TEST3	0	0	0	0.00%	0	NEVER RECEIVED	12/4/2014 9:16 AM
304	MOT TEST4	0	0	0	0.00%	0	NEVER RECEIVED	12/4/2014 9:16 AM
1189	1189	0	0	0	0.00%	0	NOT ENOUGH EVENTS	4/25/2012 12:34 PM



NX-200 Series

Up to three NX-200 Remote Receivers may be added to a single DX-2002 unit. All results are forwarded across the Ethernet WAN back to the DX-2002 unit and presented in a single consolidated view in DV. Data transfer rate per transmission sent is 104 kilobits (kb).

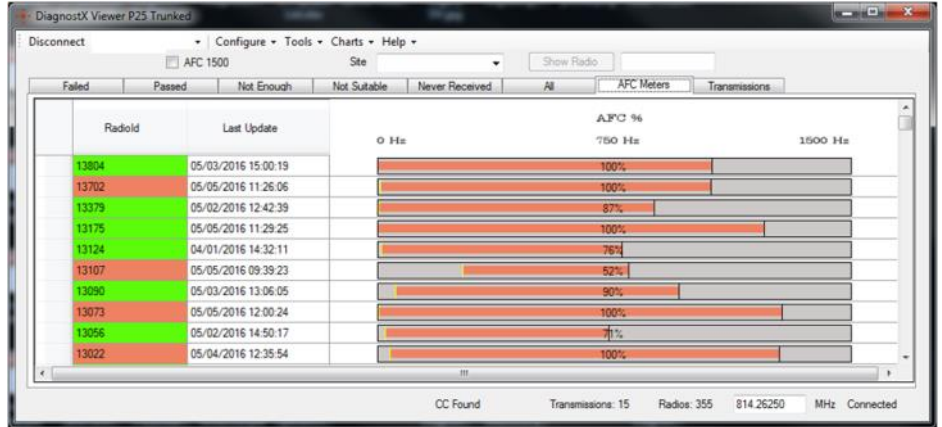


MX Series

Extend coverage of your radio system

Many agencies have moved their DiagnostX unit periodically from site to site in order to cover their entire system. Others have licensed multiple DiagnostX units to set up a networked configuration to ensure continuous system-wide coverage. Now it is possible to use the smaller, more economical NX-200 to achieve the same result.

The DiagnostX MX Series is designed to accommodate the requirements of larger systems. Utilizing more robust hardware with higher performance processors, the MX Series will handle many NX-200 units connecting simultaneously. The MX does not function as a receiver; it gathers the data from the remote NX-200 units and combines the results in a single view in the DiagnostX Viewer (DV) console.



Automatic Frequency Control (AFC) Meter

DiagnostX provides an evaluation of the radio based on specific metrics including Frequency Error (FE). Sometimes a radio will show as being within spec according to pre-set DX thresholds. The DiagnostX AFC Meter will display what percentage of AFC is being engaged. This means that there is a temporary correction of FE of up to 1000 or 1500 Hz depending on the manufacturer. A radio that is extensively misaligned will experience issues connecting to the system. The DX AFC Meter, the only tool available for identifying AFC, is an add-on feature to the DX-2002 series.

TECHNICAL BACKGROUND

Radios have their own oscillator sources which drift over time. These crystals are directly impacted by the voltages applied to them which make them resonate. These controlling voltages are affected by aging of electronics, battery power, temperature, environment and mounting conditions. The effect of these variables can be seen in the drift or detuning of oscillators which contribute to the degradation of communication devices. This is where AFC is useful because it can temporarily control and correct the oscillator drift of the radio until it is turned off. AFC attempts to correct for these variables, within limits, masking a hidden problem until total communication failure occurs.

LocusUSA is an engineering and software development company located in Melbourne on the Space Coast of Florida. It is a leader in the area of RF capture for radio location and alignment analysis. LocusUSA's patented technologies help to ensure the optimal performance of LMR radio systems throughout the United States and Canada.

US Patents: 8565096, 8948022, 9282482, 8600371, 8825042, 9432866 & 9681321B2

Canada Patents: 2746238

Australia Patents: 2010235881, 2012253596 & 2015203442

Other Patents Pending



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