

IDA 2

Detect, Analyze and Locate RF Signals

The IDA 2 is a light and portable field proven signal analyzer for detecting, analyzing and localizing RF signals and interference in the frequency range from 9 kHz to 6 GHz. IDA 2 combines a frequency scanner/receiver, transmitter detector, spectrum analyzer, signal analyzer and triangulation software in a single mobile device. It provides GPS, precision directional antennas as well as an antenna handle with built-in electronic compass, and switchable preamplifier.

- › Extremely fast with a sweep rate of 12 GHz/s
- › Impressively sensitive with a noise figure of 7 dB
- › One of the lightest in its class with a weight of less than 3 kg
- › Long operating times by hot-swappable batteries
- › Embedded GPS receiver and electronic compass for easy emitter localization
- › Convenient interference search with smartDF®: Automatic localization by triangulation of the bearings with result displayed on a map (optional)
- › I/Q Analyzer with real-time trigger, spectrograms with time resolution down to 1 μ s and digital afterglow effect (Persistence Spectrum)



<http://signals.narda-sts.com>

Several applications – one device



Portable device with GPS receiver

Description

IDA 2 combines excellent RF signal selectivity with fast monitor capabilities and integrated tools such as electronic 3-axis compass, GPS and map display for determining the location of RF sources.

The main tasks of the IDA 2 are the detection, analysis and localization of RF signals. Outstanding features are the Horizontal Scan with automatic azimuth determination and smartDF® for the calculation of the emitter position. The robust, ergonomic design is protected against mechanical stress, weather effects and high-power RF irradiation. The available operating modes include:

- Direction Finding
- Level Meter
- Multi-Channel Power
- Time Domain (Scope)
- I/Q Analyzer

Applications

The risk of RF interference due to unintentional emissions and interactions has greatly increased with the growth in the use of wireless technologies.

Some example applications of IDA 2:

- Eliminating faults in mobile telecommunications equipment
- Tracing interference caused by industrial plants
- Securing communication at large events
- Locating interference transmitters / jammers
- Monitoring radio frequencies and frequency bands
- Detecting signals in security operations
- Localizing bug transmitters (TSCM)
- Signal monitoring for border protection
- Localizing SOS beacons (SAR)

Definitions and Conditions

Conditions

Unless otherwise noted, specifications apply after 30 minutes warm-up time within the specified environmental conditions provided the product is within the recommended calibration cycle.

Specifications with limits

These describe product performance for the given parameter covered by warranty. Specifications with limits (shown as $<$, \leq , $>$, \geq , \pm , max., min.) apply under the given conditions for the product and are tested during production, taking measurement uncertainty into account.

Specifications without limits

These describe product performance for the given parameter covered by warranty. Specifications without limits represent values with negligible deviations which are ensured by design (e.g. dimensions or resolution of a setting parameter).

Typical values (typ.)

These characterize product performance for the given parameter that is not covered by warranty. When stated as a range or as a limit (shown as $<$, \leq , $>$, \geq , \pm , max., min.), they represent the performance met by approximately 80% of the instruments. Otherwise, they represent the mean value. The measurement uncertainty is not taken into account.

Nominal values (nom.)

These characterize expected product performance for the given parameter that is not covered by warranty. Nominal values are verified during product development but are not tested during production.

Uncertainties

These characterize an interval for a given measure and estimated to have a level of confidence of approximately 95 percent. Uncertainty is stated as the standard uncertainty multiplied by the coverage factor $k=2$ based on the normal distribution. The evaluation has been carried out in accordance with the rules of the "Guide for the Expression of Uncertainty in Measurement" (GUM).

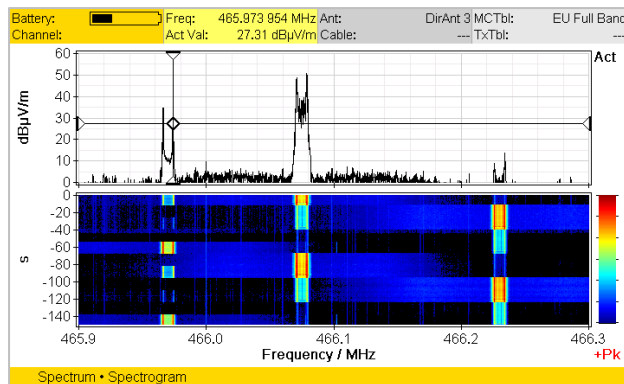
Operating Modes

An extensive set of equipment comprising frequency scanner/receiver, transmitter detector, spectrum analyzer, signal analyzer, directional antennas, amplifier, compass, triangulation software and maps was usually necessary in order to reliably detect, analyze and localize RF signals and interference. IDA 2 combines all these functions in one portable device.

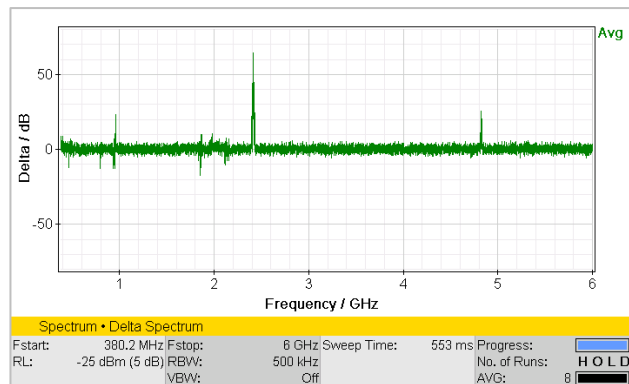
| Operating Modes | | |
|-----------------|--------------------------------------|---|
| Operating modes | Measurements vs. frequency | Spectrum (including Spectrogram) Multi-Channel Power [Option] I/Q Analyzer [Option] |
| | Measurements vs. time | Level Meter [Option] Time Domain (Scope) [Option] I/Q Analyzer [Option] |
| | Measurement vs. orientation/position | Direction Finding [Option] including Horizontal Scan and Localization |

Become aware of present signals

| Spectrum | | |
|---|------------------------------|---|
| Measurement principle | | High resolution spectrum analysis with up to 27,000 frequency points per spectrum |
| Resolution bandwidth RBW, (-3 dB nominal) | | 10 Hz to 20 MHz (1-2-3-5 steps) |
| Video bandwidth VBW and RMS detection | | 0.2 Hz to 2 MHz (1-2-3-5 steps) or off Coupled with selected RBW (VBW = RBW/10 ... RBW/1,000) RMS detection time: $T \approx 0.32 / \text{VBW}$ |
| Filter | Type | Gaussian |
| | Shape factor (-60 dB/ -3 dB) | 3.8 typical |
| Measurement | | Spectrum: Graphical analysis, peak table, channel power Delta Spectrum: Display of selected traces relative to reference trace (Ref) Spectrogram: Visual representation of recorded spectra Spectrogram & Spectrum: Visual representation of recorded spectra with simultaneous view of the actual trace |
| Trace (Spectrum) | | Act: Clears previous spectrum, displays actual spectrum Max: Maximum hold function Avg: RMS averaging over selectable number of spectra (4 to 256) or selectable time period (1 to 30 min) Min: Minimum hold function Ref: User-definable reference trace (any measurement trace can be stored) |
| Detector (Spectrogram) | | +Peak: Maximum value within an interval RMS: Root mean square average power within an interval -Peak: Minimum value within an interval All three detectors are used simultaneously for spectrogram recording |
| Spectrogram recording | | Frequency resolution: $\geq F_{\text{span}} / 860$ Up to 400 traces Observation period: approx. 4 s up to 40 hours Time resolution: as fast as possible, 10 ms to 5 min (1-2-5 steps) or 6 min |
| Magnifier | | Selected spectrum + magnified section of interest (10x or 50x) |



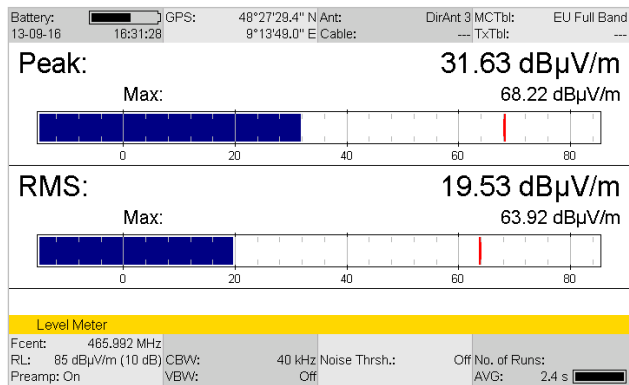
Spectrum and Spectrogram view for transient detection



Spectrum → Delta Spectrum: Measurement Trace (e.g.AVG) vs. Reference Trace. Example shows an ISM band transmitter

Observe a specific channel

| Level [Option] | | |
|-------------------------------|---------------------------|--|
| Measurement principle | | Selective level measurement (zero span mode at a tunable fixed frequency) |
| Detector | Peak (hold time = 120 ms) | |
| | RMS (120 ms up to 30 min) | |
| | Peak & RMS simultaneously | |
| Channel bandwidth CBW (-6 dB) | | 100 Hz to 32 MHz (in steps of 100, 125, 160, 200, 250, 320, 400, 500, 640, 800, 1000 Hz, ..., 10 MHz, 13.33 MHz, 16 MHz, 20 MHz, 26.67 MHz, 32 MHz) |
| Filter | Type | Steep cut-off channel filter (app. raised cosine) |
| | Roll-off factor | 0.16 |
| Video bandwidth (VBW) | | 0.01 Hz to 32 MHz or off Coupled with selected CBW (VBW = CBW/1 ... CBW/10,000) |
| Max Hold | | Available for peak and RMS detectors |
| Noise threshold | | Selectable at 0, 3, 6, 10, 15, or 20 dB relative to device noise floor. Measurement values below threshold are shown as "< absolute threshold value". |



Level Meter for gapless signal measurements

Observe up to 500 channels

| Multi-Channel Power [Option] | | |
|--|--|--|
| Measurement principle | Spectrum analysis, followed by channel power evaluation | |
| Number of channels | 1 to 500 | |
| Channel bandwidth CBW, (-3 dB nominal) | Individually selectable for each channel, from 40 Hz to 6 GHz | |
| Roll-off factor | $< 4 * RBW / CBW$ | |
| Applied RBW | Automatic: $RBW \leq CBW / 4$ ($RBW \leq 20$ MHz) Manually: 10 Hz to 20 MHz (1-2-3-5 steps), ($RBW \leq CBW / 4$) Individual: separately defined for each channel using IDA Tools | |
| Channel lists | Automatic creation on the unit or by PC configuration software. Channel name can be assigned automatically or by PC (15 characters max.). "Others" summarizes results of all frequency gaps within the list of channels. | |
| Detection | Root mean square value (RMS), integration time $T = 1 / RBW$ | |
| Trace, RBW | See spectrum analysis mode | |
| Display/Views | Table | Channel name, corresponding frequency band, measurement result, RBW if set individually for each channel. Sort function according to columns. Selectable evaluation function: distribution of each channel in relation to total amount |
| | Bar Graph | For measurement result of each channel |
| Noise threshold | Selectable at 0, 3, 6, 10, 15, or 20 dB relative to device noise floor. Measurement values below threshold are shown as "< absolute threshold value". | |



Multi-Channel Power for an overview of who is on air

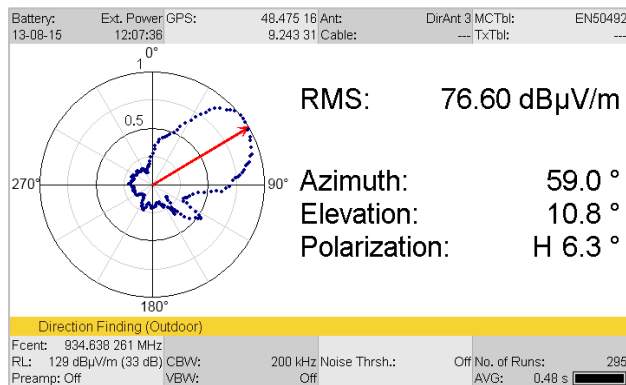
| Table View: Detailed | | | | |
|----------------------|----------|----------------|----------------|--------------|
| Index | Channel | Fmin | Fmax | RMS |
| 1 | Srv_0000 | 87,450 000 MHz | 87,550 000 MHz | 31.27 dBuV/m |
| 2 | Srv_0001 | 87,550 000 MHz | 87,650 000 MHz | 29.65 dBuV/m |
| 3 | Srv_0002 | 87,650 000 MHz | 87,750 000 MHz | 29.48 dBuV/m |
| 4 | Srv_0003 | 87,750 000 MHz | 87,850 000 MHz | 27.72 dBuV/m |
| 5 | Srv_0004 | 87,850 000 MHz | 87,950 000 MHz | 29.11 dBuV/m |
| 6 | Srv_0005 | 87,950 000 MHz | 88,050 000 MHz | 30.39 dBuV/m |
| 7 | Srv_0006 | 88,050 000 MHz | 88,150 000 MHz | 31.43 dBuV/m |
| 8 | Srv_0007 | 88,150 000 MHz | 88,250 000 MHz | 37.45 dBuV/m |
| 9 | Srv_0008 | 88,250 000 MHz | 88,350 000 MHz | 69.32 dBuV/m |
| 10 | Srv_0009 | 88,350 000 MHz | 88,450 000 MHz | 41.30 dBuV/m |
| 11 | Srv_0010 | 88,450 000 MHz | 88,550 000 MHz | 29.64 dBuV/m |
| 12 | Srv_0011 | 88,550 000 MHz | 88,650 000 MHz | 24.14 dBuV/m |
| 13 | Srv_0012 | 88,650 000 MHz | 88,750 000 MHz | 31.16 dBuV/m |
| Total | | | | 77.66 dBuV/m |

| | | | |
|----------------------|--------------------|-------------------|-----------------|
| RL: 98 dBuV/m (0 dB) | RBW: 20 kHz (Auto) | Sweep Time: 72 ms | Progress: 2.415 |
| Preamp: Off | Noise Thrsh.: | Off No. of Runs: | AVG: 0 |

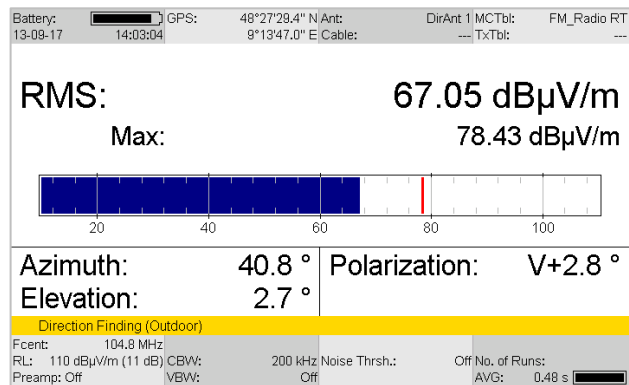
Multi-Channel Power provides 1 to 500 channels also as table view

Smart tools for transmitter and interference hunting

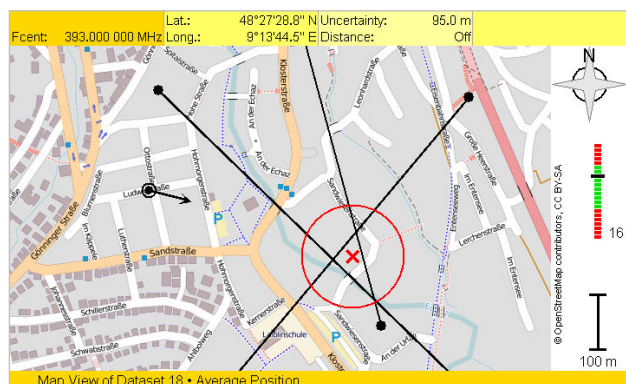
| Direction Finding – requires Narda Active Antenna Handle [Option] | | |
|---|---|---|
| Measurement principle | Selective level measurement (zero span mode at a tunable fixed frequency) Possible parameters and settings as specified under “Level Meter” | |
| Antenna direction indication | Numerical display of azimuth, elevation and polarization | |
| Position indication | Outdoor | Latitude and longitude (GPS WGS84) + graphical indication (optional) |
| | Indoor | Set manually on an editable rectangular room layout |
| Detector | Peak or RMS detection RMS averaging time: selectable, 120 ms to 30 min | |
| Display modes | Manual Bearing | Bar graph + numerical display of the signal level and indication of the direction |
| | Horizontal Scan | Polar diagram of signal level vs. antenna orientation. Automatic direction indication |
| | smartDF® Localization | Graphical indication of triangulation results for all measurement positions. Possible with Manual Bearing or Horizontal Scan. Display of estimated emitter coordinates with Mapping Option. |
| Horizontal Scan | Continuous | Updated every 120 ms with current signal level and compass data. Key press for Start and Stop. 4 min maximum duration of scan. Automatic calculation of target azimuth. |
| | Discrete | Key press for updating polar diagram with current signal level and compass data. Minimum of 3 samples. Maximum 2,000 samples. Useful for longer averaging times. |
| | Discrete with Max Hold | Pushbutton for updating polar diagram with Max Hold signal level and compass data. Allows determination of the direction of even intermittent signals. |
| smartDF® Localization | Shows vector of target azimuth related to measurement position. Calculates triangulation results and displays geo coordinates of potential transmitter position. | |
| Transmitter Table | Simplifies frequency settings and speeds up finding multiple transmitting sources at different frequencies. Tables can be created on-site and include Fcent and CBW. | |
| Maps (Option) | Display of high-resolution street maps in various zoom levels. OpenStreetMap bitmap tiles can be downloaded from Internet free of charge using the Narda Map Download Tool. Map data are stored on microSD card and then plugged into the IDA card slot for portable use. | |



Horizontal scan is a quick direction finding tool



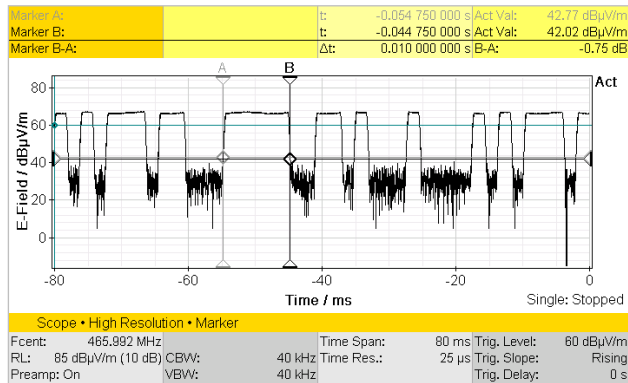
Direction finding using Manual Bearing



Optional maps support easier localization of an emitter

Get signal characteristics in time domain

| Time Domain (Scope) [Option] | | |
|---|-----------------------|--|
| Measurement principle | | Selective level measurement vs. time (zero span mode at a tunable fixed frequency) |
| Channel bandwidth CBW, (-6 dB nominal) | | 100 Hz to 32 MHz (in steps of 100, 125, 160, 200, 250, 320, 400, 500, 640, 800, 1000 Hz,...,10 MHz, 13.33 MHz, 16 MHz, 20 MHz, 26.67 MHz, 32 MHz) |
| Filter | Type | Steep cut-off channel filter (app. raised cosine) |
| | Roll-off factor | 0.16 |
| Video bandwidth (VBW) | | 0.01 Hz to 32 MHz or off Coupled with selected CBW (VBW = CBW/1 ... CBW/10,000) |
| Measurement | High Resolution Scope | Measures the actual magnitude Time resolution coupled to 1/CBW (31.25 ns to 10 ms), up to 250,000 samples |
| | Long-Time Scope | Uses selectable detectors. Sweep time 4 μ s to 24 h (resolution \geq 250 ns), up to 62,500 samples |
| Detector | | +Peak, RMS, -Peak can be selected individually for Long-Time Scope |
| Magnifier | | Selected period + magnified section of interest (long-time: 10x or 50x, high resolution: 25x or 500x) |
| Duty Cycle / Time Domain Power | | Measurement function for average power, maximum power and ratio of both |
| Triggering (VBW taken into account) | | Free-run, single, multiple, time-controlled. Programmable trigger level, trigger slope and trigger delay. Auto Save. |



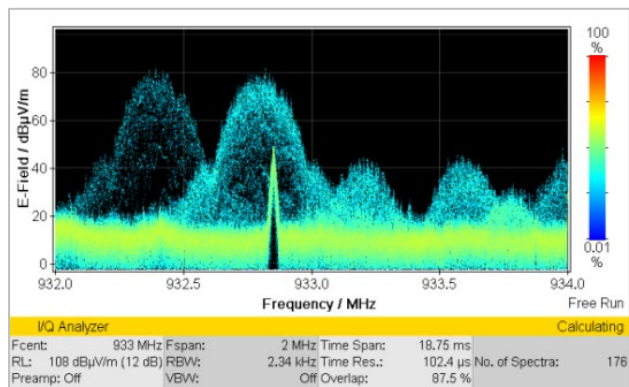
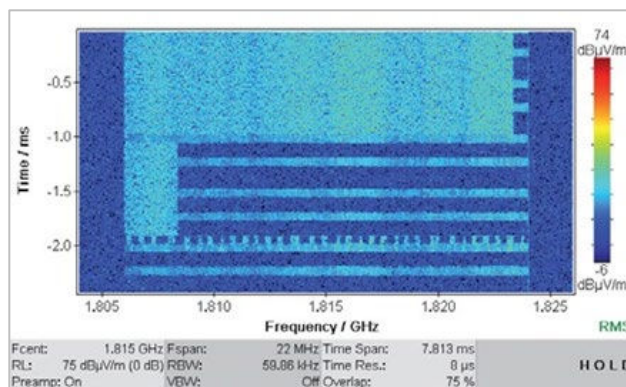
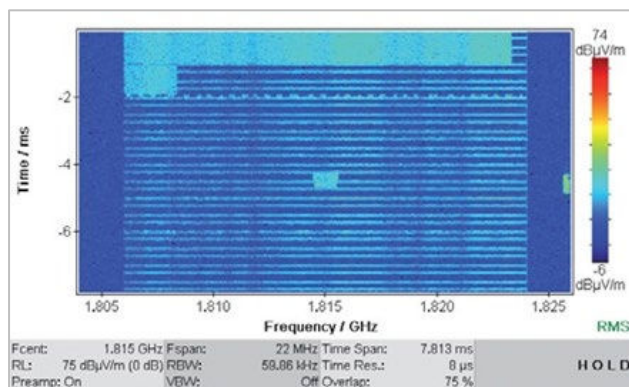
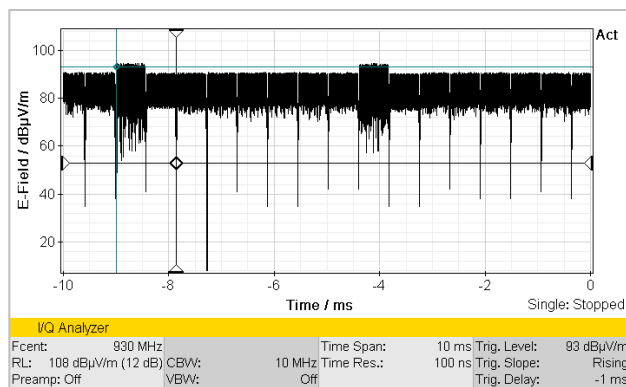
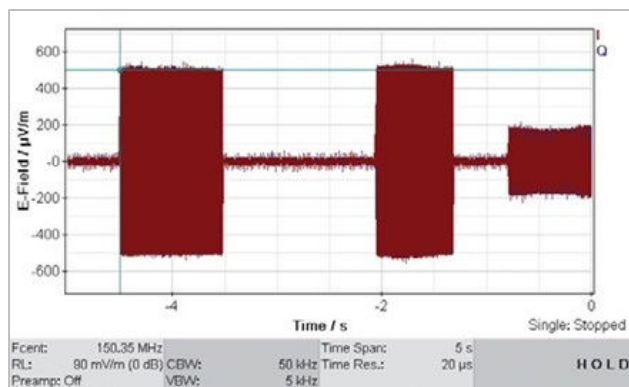
Scope view for detailed analysis versus time

Discover hidden signals and signal details

| I/Q Analyzer [Option] | | |
|---|-------------------------|--|
| Measurement principle | | The real (in-phase) and / or imaginary (quadrature phase) parts of the signal (up to 250,000 measured values each) are recorded and then evaluated. The tuning frequency and channel bandwidth are user adjustable. |
| Fast Fourier Transformation (FFT) | | FFT points selectable: 256, 512, 1024, 2048 FFT overlapping selectable: 50%, 75%, 87.5% FFT windowing: Nuttall filter |
| Channel bandwidth CBW, (-6 dB nominal) | | 100 Hz to 32 MHz (in steps of 100, 125, 160, 200, 250, 320, 400, 500, 640, 800, 1000 Hz,...,10 MHz, 13.33 MHz, 16 MHz, 20 MHz, 26.67 MHz, 32 MHz) |
| Filter | Type | Steep cut-off channel filter (app. raised cosine) |
| | Roll-off factor | 0.16 |
| Video bandwidth (VBW) | | 0.01 Hz to 32 MHz or off Coupled with selected CBW (VBW = CBW/1 ... CBW/10,000) Can be set to smooth the signal for triggering. |
| Views | I/Q* | Displays the captured raw data as I (in-phase demodulated signal) and Q (quadrature demodulated signal) components vs. time for determining modulation type and interference. Time resolution coupled to 1/CBW (31.25 ns to 10 ms), up to 250,000 samples |
| | Magnitude* | Displays signal power vs. time. The magnitude is also used as a trigger source in the I/Q Analyzer. A video bandwidth VBW can be set to smooth the signal for triggering. Time resolution coupled to 1/CBW (31.25 ns to 10 ms), up to 250,000 samples |
| | HiRes Spectrogram Zoom* | Displays signal as a gapless spectrogram with time resolution down to 1 μ s. Colors represent the signal level. In Hold mode, you can scroll through the spectrogram, which can consist of up to 7,805 spectra. Fspan = CBW \times 0.8 (< 22 MHz) |
| | HiRes Spectrogram Full* | Compressed time scale provides an overview of the entire measurement. The actual data are not compressed and can be selected with full resolution using the marker and viewed as spectra. Fspan = CBW \times 0.8 (< 22 MHz) |
| | Persistence Spectrum* | Displays spectra as level versus frequency. Color indicates rate of occurrence allowing sporadic to CW signals to be viewed. The persistence range can be set automatically or selected manually. Fspan = CBW \times 0.8 (< 22 MHz) |
| Detector (Spectrogram view) | HiRes Spectrogram Full | +Peak, RMS or -Peak (maximum value, averaged value or minimum value) selectable within compressed time and frequency range. The actual data are not compressed and can be selected with full resolution using the marker and viewed as spectra. |
| | HiRes Spectrogram Zoom | +Peak, RMS or -Peak (maximum value, averaged value or minimum value) selectable within compressed frequency range. The actual data are not compressed and can be selected with full resolution using the marker and viewed as spectra. |
| Magnifier | | Selected period + magnified section of interest (I/Q: 25x or 500x, magnitude: 25x or 500x). |
| Trigger (magnitude; VBW taken into account) | | Free-run, single, multiple, time-controlled Programmable trigger level, trigger slope, trigger delay. Auto Save on trigger |
| Probability of intercept – POI | | Shortest signal duration for 100% probability of capture within an I/Q recording. HiRes Spectrogram/Persistence: $T_{POI} = 9 \mu$ s with $dT_{FFT} = 1 \mu$ s and RBW = 239.43 kHz Magnitude: $T_{POI} \leq 64$ ns (@ CBW = 32 MHz) |
| I/Q Streaming (Option), I/Q Data | | Controlled via the Ethernet interface using remote control commands. Gapless streaming possible for CBW settings from 100 Hz up to 400 kHz. Additionally, up to 250,000 I/Q data pairs can be retrieved block by block for all CBW settings. |

*See screenshot on next page

IDA 2 – Detect, Analyze and Locate RF Signals



General Specifications

Basic Unit IDA-3106/02 (IDA 2) - RF DATA ^{a)}

| Frequency | | | |
|---|--|---|--|
| Frequency range | 9 kHz to 6 GHz | | |
| Phase noise (SSB) | f _c | df = 10 kHz | df = 100 kHz |
| | 57.5 MHz | ≤ -121 dBc/Hz | ≤ -126 dBc/Hz |
| | 2.1405 GHz | ≤ -92 dBc/Hz | ≤ -100 dBc/Hz |
| | 4.5005 GHz | ≤ -97 dBc/Hz | ≤ -100 dBc/Hz |
| Reference frequency | Initial deviation: | < 1 ppm | |
| | Aging: | < 1 ppm/year, < 5 ppm over 15 years | |
| | Thermal drift: | < 1.5 ppm (-10°C to +50°C) | |
| | | | |
| Amplitude | | | |
| Display range | From Displayed Average Noise Level (DANL) to +20 dBm | | |
| Reference level (RL) | -30 dBm to +20 dBm in steps of 1 dB | | |
| RF input attenuation | 0 to 50 dB in steps of 1 dB (coupled with reference level) | | |
| Reference level setting | Set individually from a list or using the “RL Search” function for determining the optimum reference level at a given time | | |
| Level uncertainty | ≤ 1.2 dB (15°C to 30°C) valid for Spectrum Analysis and Multi-Channel Power modes | | |
| Displayed Average Noise Level (DANL) Basic unit only | f ≤ 50 MHz: | < -160 dBm/Hz (noise figure < 14 dB) | |
| | f ≤ 2 GHz: | < -156 dBm/Hz (noise figure < 18 dB) | |
| | f ≤ 4 GHz: | < -155 dBm/Hz (noise figure < 19 dB) | |
| | f ≤ 6 GHz: | < -150 dBm/Hz (noise figure < 24 dB) | |
| Displayed Average Noise Level (DANL) with Active Antenna Handle, preamp on (typ.) | f ≤ 3 GHz: | < -167 dBm/Hz (noise figure < 7 dB) | |
| | f ≤ 4 GHz: | < -166 dBm/Hz (noise figure < 8 dB) | |
| | f ≤ 6 GHz: | < -164 dBm/Hz (noise figure < 10 dB) | |
| 3rd order intermodulation (IP3) | f ≤ 50 MHz: | < -76 dBc for two single tones with a level of 6 dB below RL, 1 MHz or more apart IP3 ≥ +22 dBm (@ RL = -10 dBm) | |
| | f > 50 MHz: | < -60 dBc for two single tones with a level of 6 dB below RL, 1 MHz or more apart IP3 ≥ +14 dBm (@ RL = -10 dBm) | |
| Spurious response (input related) | < -60 dBc or RL -60 dB (whichever is worse) and a carrier offset of 100 kHz or more | | |
| Spurious response (residual) | < -90 dBm (RL=-30 dBm, input attenuation = 0 dB) | | |
| | | | |
| RF input | | | |
| Type | N-Connector, 50 Ω, female | | |
| Maximum RF power level | +27 dBm (destruction limit) | | |
| Maximum DC voltage | ±50 V | | |
| Return loss | > 12 dB (typ.), f ≤ 4.5 GHz > 10 dB (typ.), f > 4.5 GHz | | Reference level RL ≥ -28 dBm (input attenuation ≥ 2 dB) |

a) RF data apply in the temperature range of 20°C to 26°C and a relative humidity between 25% and 75%.

| General Specifications – Basic Unit | | |
|-------------------------------------|-------------------------|---|
| Instrument display | Type | TFT color display with backlight |
| | Size, resolution | 7 inch (152 mm × 91 mm), 800 × 480 pixels |
| Interface | | USB mini B (USB 2.0) |
| | | Optical RS 232 (115,200 baud) |
| | | Ethernet (100BaseT) |
| | | Headphone 3.5 mm TRS, ≥ 16 ohms (mono), switches off the integrated speaker when connected |
| | | microSD-card interface for maps and export of measurement data, screenshots and WAV |
| Cables and external devices | | Narda RF cables automatically detected (type, frequency response, etc.) other cables and external devices possible. |
| Antenna detection | | Narda Directional Antennas automatically detected (type, polarization, consideration of typical antenna factors, etc.), other antennas possible. |
| Result units | Anytime | dBm, dBV, dBmV, dBμV |
| | With antenna | V/m, A/m, W/m ² , mW/cm ² , dBV/m, dBmV/m, dBA/m, dBμV/m, dBm, dBV, dBmV, dBμV |
| Display functions | | Y-scale reference: -130 dBm to 40 dBm Y-scale range: 20 dB, 40 dB, 60 dB, 80 dB, 100 dB, 120 dB Y-scale auto: automatic scaling |
| Marker functions | | For graphical analysis of Spectrum, Spectrogram, Time Domain (Scope), I/Q Analyzer, MCP Bar Graph Single marker or Delta marker Peak marker: Highest, next, left, right. Adjustable peak threshold and excursion. Peak tracking (selectable) |
| Demodulation (Option) | Modulation types | AM, FM, LSB, USB, CW (Spectrum, Level Meter and Direction Finding modes) Demodulation bandwidth 100 Hz to 200 kHz (max. 16 kHz for LSB, USB) |
| | Audio output | Instrument speaker or external earphone |
| | Squelch | -120 dB to -40 dB nominal, off |
| | Audio recording | Format 16 kHz / 16 bit wave file recording (WAV) |
| Digital audio streaming (Option) | | Capability to stream demodulated AM, FM, LSB, USB or CW signals over Ethernet. Demodulation bandwidth 100 Hz to 200 kHz (max. 16 kHz for LSB, USB). |
| Fast frequency setting | | Manual frequency entry or by selection list |
| Fast mode switch | | “Go to: mode” transfers center or marker frequency to selected operating mode |
| Setups | | Up to 200 device configurations |
| Results Storage | Measurement results | ASCII format for further evaluation and import |
| | Comments | Voice (WAV file format) or text comments (ASCII) |
| | Screenshots | File format PNG |
| | Demodulation records | File format WAV |
| | Auto Save (on trigger) | Automatic saving of up to 500 results (Time Domain (Scope) and I/Q Analyzer mode only) |
| | Time Controlled Storing | Long-term monitoring up to 99 hours (Spectrum, Multi-Channel Power, Level Meter mode). Settings for: start date, start time, duration and time interval (6 s to 60 min) |
| | Memory capacity | 128 MB internal memory to store up to 8,000 spectra or up to 4,000 screenshots |
| GPS / Compass | | GPS receiver for position detection (WGS84) and electronic compass |

General Specifications – Basic Unit (continued)

| | | | |
|----------------------------------|---|--|---|
| Environmental | MIL-STD-810G, MIL-PRF-28800F Class 2 | Temperature | |
| | | Humidity | |
| | | Vibration | |
| | | Functional Shock | |
| | Altitude – operating | 4,600 m or 15,000 ft | |
| | Temperature – operating | -10°C to +55°C with battery | |
| | | 0°C to +40°C with external power supply | |
| | Humidity | < 29 g/m ³ (< 93% RH at +30°C), non-condensing | |
| Compliance | Climatic | Storage | 1K3 (IEC 60721-3) extended to -10°C to +55°C |
| | | Transport | 2K4 (IEC 60721-3) restricted -30°C to +70°C due to display |
| | | Operating | 7K2 (IEC 60721-3) extended to -10°C to +55°C |
| | Mechanical | Storage | 1M3 (IEC 60721-3) |
| | | Transport | 2M3 (IEC 60721-3) |
| | | Operating | 7M3 (IEC 60721-3) |
| | Ingress Protection | | IP 52 (with antenna attached and interface protector closed) IP 67 (stored in the hardcase) |
| | EMC | European Union | Complies with EMC Directive 2014/30/EU (previously 2004/108/EC) and IEC/EN 61326-1: 2013 |
| | | Immunity | IEC/EN: 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6, 61000-4-11 Basic unit tested up to 200 V/m (RF input power limited to permissible values) |
| | | Emissions | IEC/EN: 61000-3-2, 61000-3-3, IEC/EN 55011 (CISPR 11) Class B |
| | Safety | | Complies with European Low Voltage Directive 2014/35/EU (previously 2006/95/EC) and IEC/EN 61010-1: 2010 |
| Weight | | 2.8 kg / 6.2 lbs (basic unit including battery) | |
| Dimensions (H × W × D) | | 213 mm × 297 mm × 77 mm (8.4" × 11.7" × 3.0") | |
| Power supply | Battery | Lithium-ion rechargeable battery pack, hot-swappable during operation Operating time: 3 hours (nominal) Charging time: 5.5 hours (nominal) | |
| | External power supply | Input: 9 to 15 VDC Adapter 100–240 VAC / 12 V DC, 2.5 A | |
| Recommended calibration interval | | 24 months | |
| Country of origin | | Germany | |

Specifications of Antennas

| General Specifications – Antenna Handle and Antennas | | | |
|--|-----------------------|---|---|
| Environmental | Operating temperature | -10°C to +50°C | |
| | Humidity | < 29 g/m³ (< 93% RH at +30°C), non-condensing | |
| Compliance | Climatic | Storage | 1K3 (IEC 60721-3) extended to -10°C to +50°C |
| | | Transport | 2K4 (IEC 60721-3) |
| | | Operating | 7K2 (IEC 60721-3) extended to -10°C to +50°C |
| | Mechanical | Storage | 1M3 (IEC 60721-3) |
| | | Transport | 2M3 (IEC 60721-3) |
| | | Operating | 7M3 (IEC 60721-3) |
| | EMC | European Union | Complies with EMC Directive 2014/30/EU and IEC/EN 61326 -1: 2013 |
| | | Immunity | IEC/EN: 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-5, 61000-4-6, 61000-4-11 Complete set tested up to 100 V/m (limited by the max. permissible field for the antennas) |
| | | Emissions | IEC/EN: 61000-3-2, 61000-3-3, IEC/EN 55011 (CISPR 11) Class B |
| | Safety | Complies with European Low Voltage Directive 2014/35/EU and IEC/EN 61010-1:2010 | |
| Dimensions (L × W × H), Weight (size without cable) | | Handle: | 165 mm × 165 mm × 43 mm (6.5" × 6.5" × 1.7"), 470 g / 1.04 lbs |
| | | Dir. Antenna 1: | 325 mm × 255 mm × 80 mm (12.8" × 10.0" × 3.1"), 400 g / 0.88 lbs |
| | | Dir. Antenna 2: | 285 mm × 410 mm × 43 mm (11.2" × 16.1" × 1.7"), 300 g / 0.66 lbs |
| | | Dir. Antenna 3: | 478 mm × 332 mm × 50 mm (18.8" × 13.1" × 2.0"), 350 g / 0.77 lbs |
| | | Loop antenna 3100/14: | 430 mm × 370 mm × 42 mm (16.9" × 14.6" × 1.7"), 380 g / 0.84 lbs |
| Country of origin | | Germany | |
| Automatic frequency response correction | | Typical antenna factor correction is applied automatically when used in conjunction with the IDA basic unit and Narda Active Antenna Handle | |

Active Antenna Handle (3100/10) - with Electronic Compass and Preamplifier



| | |
|--|---|
| Frequency range ^{a)} | 9 kHz to 6 GHz Automatic frequency response correction |
| Preamplifier | Built in, can be switched off Amplification 20 dB, noise figure < 6 dB |
| Compass | Embedded electronic compass |
| Compass uncertainty (typ.) | Azimuth uncertainty < 1.5° RMS for tilt < 15° Pitch and roll uncertainty < 3° RMS in the range of +/- 30° (RMS means the standard deviation of the specified error) |
| Connection cable to IDA basic unit | RF cable and control cable combined in a flexible tube, length 1 m |
| RF connector to basic unit | N-connector, male, 50 Ω |
| RF connector to Narda directional antennas | BMA 50 Ω (female on handle side) |
| Antenna connectivity | Horizontal or vertical polarization, type and polarization detected automatically |
| Power supply | From basic unit |
| Mounting | Connecting thread on the underside of the handle for tripod mounting |

a) Preamplifier lower frequency is limited to 20 MHz for antenna handles produced before year 2013.

Directional Antenna 1 (3100/11)



| | |
|-----------------|--|
| Frequency range | 20 MHz to 250 MHz |
| Antenna type | Loop antenna |
| Antenna factor | 21 dB (1/m) typical @ 200 MHz (passive mode) |

Directional Antenna 2 (3100/12)



| | |
|-----------------|--|
| Frequency range | 200 MHz to 500 MHz |
| Antenna type | Dipole antenna |
| Antenna factor | 21 dB (1/m) typical @ 350 MHz (passive mode) |

Directional Antenna 3 (3100/13)



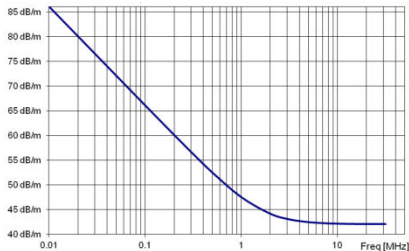
| | |
|-----------------|--|
| Frequency range | 400 MHz to 6 GHz |
| Antenna type | Log-periodic antenna |
| Antenna factor | 18.5 dB (1/m) typical @ 500 MHz (passive mode) |

Loop Antenna, H-FIELD (3100/14)



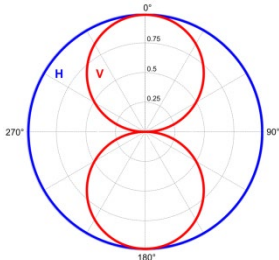
Frequency range 9 kHz to 30 MHz
Antenna type Shielded loop antenna

Antenna factor / Radiation pattern



Passive mode (preamp. off):
66.0 dB (1/m) typical @ 100 kHz
47.5 dB (1/m) typical @ 1 MHz
42.0 dB (1/m) typical @ f > 10 MHz

Antenna (Loop) 9 kHz to 30 MHz



Radiation pattern (typ.) for a horizontal scan and vertical polarization (V) or horizontal polarization (H)

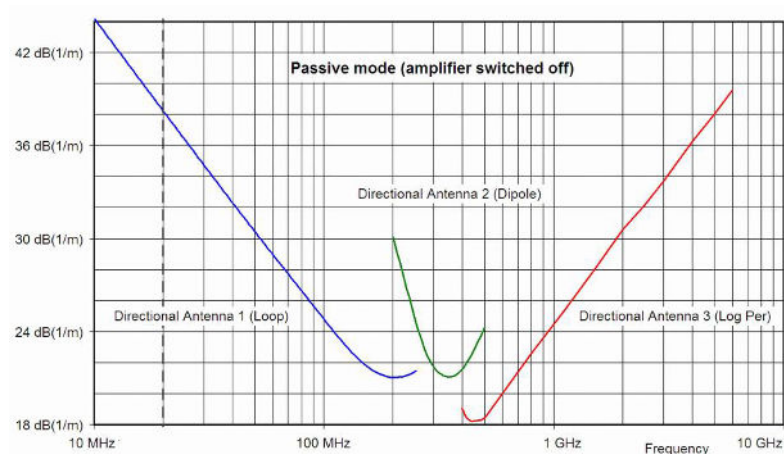
Antenna Adapter, N Male (3100/15)



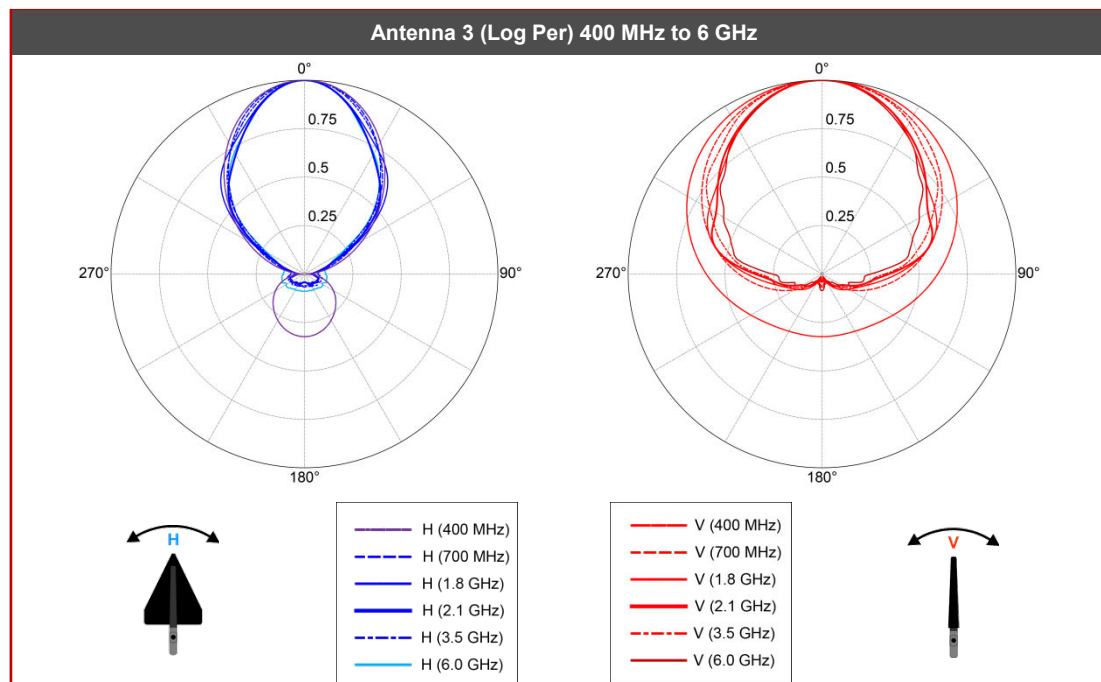
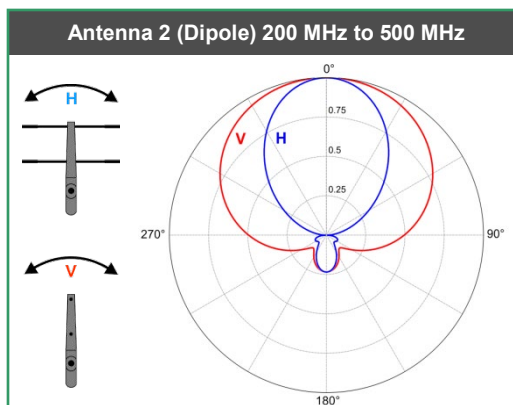
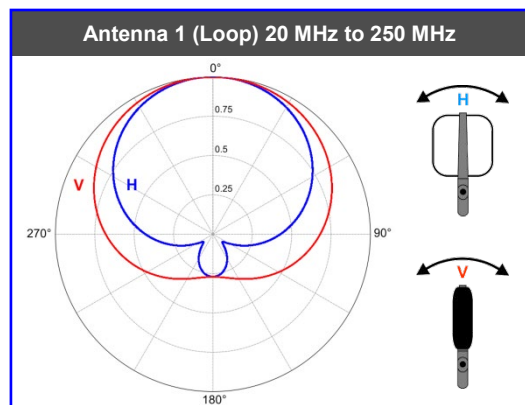
Description With an adapter the internal 3D compass, built-in switchable preamplifier, and automatic polarization detection can be used with third-party antennas. Selects last third party antenna automatically.

Directional Antennas and Characteristics

Antenna Factors (typical)



Radiation Pattern (typical)



Ordering Information

There are many applications in which IDA 2 can help make work easier and faster. Therefore, IDA 2 is equipped with several operating modes and accessories that are specially designed to meet the needs of these applications.

IDA 2 Basic Unit:

All configurations are based on the IDA 2 Basic Unit set.

| IDA 2 Basic Unit Set | Part number |
|---|-----------------|
| <p>The Basic Unit set contains the IDA 2 as well as some basic accessories and supports spectrum analysis, delta spectrum and spectrogram.</p> <p>Includes:</p> <ul style="list-style-type: none"> • IDA-3106/02 Basic Unit • Battery Pack, Rechargeable • Power supply Input: 100-240VAC, Output: 12VDC • Cable, USB 2.0, A/B mini, 1.8 m • Mem-Card Reader, microSD / USB • Memory Card, microSD 8 GB • Spectrum, Spectrogram, Delta Spectrum • Configuration Software IDA Tools • Operating Manual IDA-3106, English • Calibration Report | 3106/204 |

Application Packages

The application packages are a tailor-made solution allowing you to adapt IDA 2 to your needs. A package typically consists of application dependent hardware accessories and/or firmware options and has a discount compared to an individual purchase. If needed, additional packages can be purchased also at a later time. Your local Narda representative will be happy to help you select the right application packages for your application.

| Receiver | Part number |
|--|-------------------|
| <p>The Receiver Application Package provides functions for monitoring of 1 to 500 radio channels. It also enables demodulation of AM, FM, LSB, USB, and CW signals, which can then be saved, reproduced or streamed via the network.</p> <p>Includes:</p> <ul style="list-style-type: none"> 3100/95.08 Option Multi-Channel Power 3100/95.06 Option Level Meter 3100/95.07 Option Demodulation 3100/95.11 Option Audio Streaming | 3106/92.01 |

| Direction Finding | Part number |
|---|-------------------|
| <p>This Application Package provides comprehensive functions to support hunting of interference signals and hidden transmitters. The device based GPS and the antenna handle with build in electronic compass make it possible to conveniently take bearings on a transmitter from various locations. Also included, the mode "Direction Finding" and the option "Mapping" provides automatic computation of several bearings to give a transmitter location, which is then displayed on a map.</p> <p>Includes:</p> <ul style="list-style-type: none"> 3100/95.09 Option Direction Finding, including Horiz. Scan, Tone Search, Localization 3100/95.01 Option Mapping 3100/10 Active Antenna Handle 3100/90.10 Arm Support | 3106/92.02 |

| Antenna Basic Kit (Mobile Operators) | Part number |
|---|-------------------|
| <p>This Application Package provides you with a light weight yet robust directional antenna for the frequency range from 400 MHz to 6 GHz and covers the cellular communication as well as other service bands. The Package also includes an antenna adapter that allows you to use your own antennas together with the IDA2 Antenna Handle. This enables you to benefit from the integrated compass, low noise amplifier, and automatic polarization detector in the handle when using your own antennas.</p> <p>Includes:</p> <ul style="list-style-type: none"> 3100/13 Directional Antenna 3, 400 MHz - 6 GHz 3100/10 Antenna Adapter, N Male for Handle | 3106/92.03 |

IDA 2 – Detect, Analyze and Locate RF Signals

| Antenna Extension Kit | Part number |
|--|-------------------|
| <p>This Application Package complements and completes the Antenna Basic Kit Application Package so that you can make the best use of the entire frequency range of the IDA 2 from 9 kHz to 6 GHz.</p> <p>Includes:</p> <p>3100/11 Directional Antenna 1, 20 MHz - 250 MHz</p> <p>3100/12 Directional Antenna 2, 200 MHz - 500 MHz</p> <p>3100/14 Loop Antenna, H-Field, 9 kHz-30 MHz</p> | 3106/92.04 |
| Off-Site Extension | Part number |
| <p>This Application Package provides suitable accessories for applications that involve operation in vehicles or outdoors. A hard shell case with wheels and a retractable handle provides secure (IP 67) the transport of the IDA and all accessories. The DC adapter enables powering the device from a vehicle. An easily and quickly worn carry strap provides hands-free support for viewing the IDA allowing even long term measurements to be made comfortably.</p> <p>Includes:</p> <p>2260/90.56 Power Supply DC Vehicle Adapter for SRM, IDA</p> <p>3100/90.01 Hardcase for IDA Sets</p> <p>3100/90.12 Carrying Strap for IDA/SRM Basic Unit</p> <p>3100/90.16 Protective Rubber Cover for IDA/SRM Basic Unit</p> | 3106/92.05 |
| I/Q Analyzer | Part number |
| <p>If there are hidden signals or burst signals to analyze, you will appreciate these powerful detection tools to find even the most hidden or elusive emitters.</p> <p>Includes:</p> <p>3100/95.05 Option I/Q Analyzer including I/Q, Magnitude, HRS, Persistence</p> <p>3100/95.10 Option I/Q Streaming for IDA</p> | 3106/92.06 |

Typical Configurations

The following table shows some example configurations depending on typical applications.

| | Basic Unit Set | Receiver | Direction Finding | Antenna Basic Kit | Antenna Extension Kit | Off-Site Extension | I/Q Analyzer | Time Domain |
|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| APPLICATION | 3106/204 | 3106/92.01 | 3106/92.02 | 3106/92.03 | 3106/92.04 | 3106/92.05 | 3106/92.06 | 3100/95.04 |
| Laboratory measurements in industry and universities | <input checked="" type="checkbox"/> | | | | | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Mobile communication interference finding | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | <input checked="" type="checkbox"/> | | |
| Border control | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| Signal intelligence | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Frequency spectrum regulation | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

IDA 2 – Detect, Analyze and Locate RF Signals

Accessories

An application package has a discount compared to a single purchase but you can of course also order all firmware options and accessories separately. Your local Narda representative will inform you of all possible options and will be pleased to provide you with advice.

| Accessory description | Part number |
|--|-------------|
| Tripod, Non-Conductive, 1.65 m | 2244/90.31 |
| Tripod Extension, 0.50 m | 2244/90.45 |
| Power supply Input: 100-240VAC, Output: 12VDC | 2259/92.04 |
| Power Supply DC Vehicle Adapter | 2260/90.56 |
| Charger Set, External | 3001/90.07 |
| Battery Pack, Rechargeable | 3001/90.15 |
| Cable, USB2.0 | 2260/90.55 |
| O/E Converter USB, RP-02/USB | 2260/90.07 |
| Cable, FO Duplex, RP-02, 2 m | 2260/91.02 |
| Cable, FO Duplex, RP-02, 5 m | 2260/91.09 |
| Cable, FO Duplex, RP-02, 10 m | 2260/91.07 |
| Cable, FO Duplex, RP-02, 20 m | 2260/91.03 |
| Cable, FO Duplex, RP-02, 50 m | 2260/91.04 |
| N-Connector Saver | 3001/90.14 |
| RF-Cable, 9kHz-6GHz, 1.5m | 3602/01 |
| RF-Cable, 9kHz-6GHz, 5m | 3602/02 |
| Carrying Strap | 3100/90.12 |
| Protective Soft Carrying Bag for SRM-3006, IDA | 3001/90.13 |
| Hardcase | 3100/90.01 |
| Protective Rubber Cover | 3100/90.16 |
| Active Antenna Handle | 3100/10 |
| Arm Support | 3100/90.10 |
| Directional Antenna 1 | 3100/11 |
| Directional Antenna 2 | 3100/12 |
| Directional Antenna 3 | 3100/13 |
| Loop Antenna, H-Field | 3100/14 |
| Antenna Adapter, N Male | 3100/15 |
| Headphone, 3.5 mm Plug | 3100/90.11 |
| Memory Card, microSD 8 GB | 3100/90.13 |
| Filter Mounting Kit for IDA | 3100/90.30 |
| Filters for IDA | On request |

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