

PRODUCT
SPECIFICATIONS



The i.Scan is a cutting-edge, modular, digital receiver that provides accurate, reliable high-speed RF measurements of wireless networks across multiple bands and technologies.

i.Scan[™]

Advanced Modular Digital Scanning Receiver Patent Pending

The i.Scan[™] Digital Scanning Receiver is an extremely fast and accurate digital receiver. Its advanced design is a radical departure from other receivers in the market featuring up to two plug-in modular RF downconverters (DC). The DC cards, which can be quickly and easily changed in the field, are available in many frequency band configurations.

Capable of measuring and decoding LTE, CDMA, EV-DO, GSM, WCDMA, and HSDPA, with WiMAX planned, the i.Scan handles today's technologies with seamless updates to future standards by simply plugging in new DC cards or flashing in new software licenses without ever returning the receiver to the factory.

The i.Scan communicates using Ethernet 100BASE-T protocol with a built-in hub making connections simple and fast.

- Two DC cards supported per i.Scan allowing testing of up to six bands in single receiver
- Internal calibration source and self-check at power-up
- Bands and technologies are independent. Technologies can be added with simple license upgrades in the field.
- Clocks locked to internal GPS for accuracy and self-calibration
- Down converter cards can be added or exchanged in the field by simply plugging the cards into i.Scan front panel slots
- Five tri-band DC card models are currently available with new models under development — Licensing determines whether one, two, three, or four bands in a DC card are enabled
- Additional bands in development include 450 MHz with 2.5 GHz, and 3.5 GHz planned.

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i.Scan™ Advanced Modular Digital Scanning Receiver

LTE Specifications

| | |
|------------------------------------|-----------------|
| RSSI Range | -10 to -107 dBm |
| Frequency Accuracy | 1 ppb |
| RSSI Accuracy (-108 to -10 dBm) | ±1 dB |
| Bandwidth | 1.08 MHz |
| Sensitivity ¹ | -104 dBm |
| Measurement Scan Rate ² | |
| (1 PSCH, 1 SSCH) | 10 scans/sec |
| (1 PSCH, 3 SSCH) | 9 scans/sec |
| (3 PSCH, 1 SSCH) | 8 scans/sec |
| (No Signal) | 13 scans/sec |

Measurements

E-UTRA Carrier RSSI
 RSRP (Reference Signal Received Power)
 RSRQ (Reference Signal Received Quality)
 Delay Spread
 Carrier Frequency Offset

P-SCH:

Power (Ips)
 Physical layer cell ID sector: N2=0-2
 Quality (Eps/Ips)

S-SCH:

Power (Iss)
 Physical layer cell ID group: N1=0-167
 Quality (Ess/Iss)

Cell ID:

0-503, computed using formula: $3*N1 + N2$



WCDMA/HSDPA (UMTS) Specifications

| | |
|--|-----------------|
| RSSI Range | -10 to -100 dBm |
| Frequency Accuracy | 1 ppb |
| RSSI Accuracy (-10 to -100 dBm) | ±1 dB |
| RSSI Scan Rate | 340 ch/sec |
| Bandwidth | 3.84 MHz |
| Sensitivity ¹ | -115 dBm |
| Measurement Range (Typical) | |
| CPICH Ec/Io (1024/4096 Correlation) | -18/-24 dB |
| PSC Ec/Io (1024/4096 Correlation) | -18/-24 dB |
| SSC Ec/Io (1024/4096 Correlation) | -18/-24 dB |
| BCCH Ec/Io (1024/4096 Correlation) | -18/-24 dB |
| Scrambling Code Decoding Scan Rate (All) | |
| (1024 CorrLen, -18dB threshold) | 13 scans/sec |
| (1024 CorrLen, -18dB threshold, no signal) | 20 scans/sec |
| (2048 CorrLen, -18dB threshold) | 11 scans/sec |
| (4096 CorrLen, -24dB threshold) | 5.5 scans/sec |

GSM/GPRS/EDGE Specifications

| | |
|---|-----------------|
| RSSI Range | -10 to -113 dBm |
| Frequency Accuracy | 1 ppb |
| RSSI Accuracy (-10 to -103 dBm) | ±1 dB |
| Adjacent Channel Selectivity | 50 dB ±200 KHz |
| RSSI Scan Rate | 1680 ch/sec |
| Bandwidth | 200 KHz |
| Sensitivity ¹ | -109 dBm |
| BSIC Scan Decode Rate | |
| 20 Channel Scan, 11 valid BSIC Channels | 18 Ch/sec |
| Wide band signals not containing BSIC | 220 Ch/sec |
| Spectrum below -110 dBm threshold | 420 Ch/sec |

¹ The sensitivity is measured as typical for > 90% detection probability.

² The LTE performance is measured on the number of unique P-SCH and S-SCH synchronization signals.

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i.Scan™ Advanced Modular Digital Scanning Receiver

1xEV-DO Specifications

| | |
|--|------------------|
| RSSI Range | -10 to -104 dBm |
| RSSI Accuracy | |
| (-10 to -100 dBm) | ±1 dB |
| (-101 to -104 dBm) | ±2 dB |
| Frequency Accuracy | 1 ppb |
| RSSI Scan Rate (I _o) | 340 ch/sec |
| Bandwidth | 1.23 MHz |
| Selectable Slots | 1 – 16 |
| Sensitivity ¹ | |
| (Slots 1, Threshold -9 dB) | -114 dBm |
| (Slots 4, Threshold -12 dB) | -117 dBm |
| (Slots 8, Threshold -16 dB) | -121 dBm |
| (Slots 16, Threshold -20 dB) | -124 dBm |
| PN Decoding Scan Rate (all 512 PN _s) | |
| (Slots 1, Threshold -20 dB) | 6.2 scans/sec |
| (Slots 4, Threshold -20 dB) | 4.8 scans/sec |
| (Slots 8, Threshold -20 dB) | 4.2 scans/sec |
| (Slots 16, Threshold -20 dB) | 2.1 scans/sec |
| PN Decoding Scan Rate (all 512 PN _s) | |
| (Slots 1, Threshold -9 dB) | 7.2 scans/sec |
| (Slots 4, Threshold -9 dB) | 5.3 scans/sec |
| (Slots 8, Threshold -9 dB) | 4.2 scans/sec |
| (Slots 16, Threshold -9 dB) | 2.1 scans/sec |
| Dynamic Range E _c /I _o (Typical) | -0.1 to -20.5 dB |

CDMA 1X Specifications

| | |
|--|---------------------|
| RSSI Range | -10 to -104 dBm |
| RSSI Accuracy | |
| (-10 to -100 dBm) | ±1 dB |
| (-101 to -104 dBm) | ±2 dB |
| Frequency Accuracy | 1 ppb |
| RSSI Scan Rate (I _o) | 340 ch/sec |
| Bandwidth | 1.23 MHz |
| Selectable Taps | 512, 1024, and 2048 |
| Sensitivity ¹ | |
| (CorrLen 512, Threshold -15 dB) | -112 dBm |
| (CorrLen 1024, Threshold -18 dB) | -115 dBm |
| (CorrLen 2048, Threshold -20 dB) | -117 dBm |
| PN Decoding Scan Rate (all 512 PN _s) | |
| (CorrLen 512, Threshold -15 dB) | 12.2 scans/sec |
| (CorrLen 1024, Threshold -15 dB) | 11.4 scans/sec |
| (CorrLen 2048, Threshold -15 dB) | 10.5 scans/sec |
| PN Decoding Scan Rate (all 512 PN _s) | |
| (CorrLen 512, Threshold -20 dB) | 9.3 scans/sec |
| (CorrLen 1024, Threshold -20 dB) | 7.3 scans/sec |
| (CorrLen 2048, Threshold -20 dB) | 7.6 scans/sec |
| Dynamic Range E _c /I _o (Typical) | -1.1 to -20.5 dB |

¹ The sensitivity is measured as typical for > 90% detection probability.

General Specifications

| | | | |
|--|---|--------------------------------|---|
| RF Frequency Ranges (Down Converter Model GWIRDC851921) | 869 – 894 MHz 1930 – 1990 MHz 2110 – 2170 MHz | Physical Size | 18.2 x 24.5 x 4.6 cm 7.18 x 9.66 x 1.83 in |
| RF Frequency Ranges (Down Converter Model GWIRDC901821) | 925 – 960 MHz 1805 – 1880 MHz 2110 – 2170 MHz | Weight (with 2 downconverters) | 1.2 kg, 2.6 lb |
| RF Frequency Ranges (Down Converter Model GWIRDC778419) | 746 – 793 MHz 824 – 849 MHz 1850 – 1910 MHz | Weight (with 1 downconverter) | 1.1 kg, 2.4 lb |
| RF Frequency Ranges (Down Converter Model GWIRDC728519) | 698 – 746 MHz 869 – 894 MHz 1930 – 1990 MHz | Temperature Range (Operating) | 0°C to +50°C |
| RF Frequency Ranges (Down Converter Model GWIRDC178318) | 1710 – 1785 MHz 824 – 849 MHz 1850 – 1910 MHz | Temperature Range (Storage) | -40°C to +85°C |
| | | Input Voltage | 10 to 16 VDC |
| | | Input Current | 4.0A (Maximum) |
| | | Communications Interface | 100 BASE-T Ethernet |

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i.Scan™ Advanced Modular Digital Scanning Receiver

Narrow band RSSI/Spectrum Scan Specifications

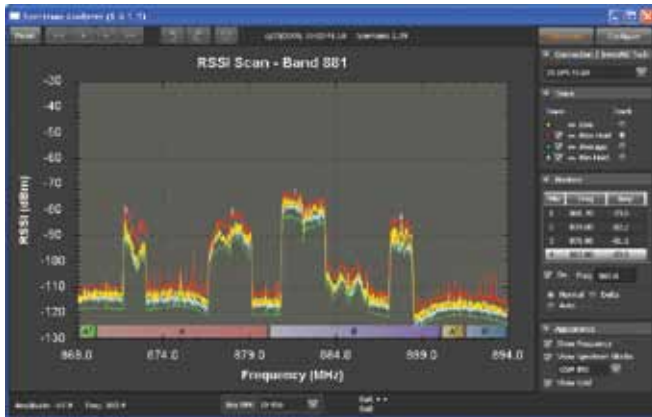
The following table represents narrow band RSSI and Spectrum scan measurements within the 10 to 60 KHz bandwidth range. For technology specific RSSI performance in a technology's native bandwidth, see the RSSI specifications for that technology.

Scan Type: Spectrum Analyzer

| Bandwidth | Bands | Scans/Sec | Data Points | MHz Scanned |
|-----------|-------|-----------|-------------|-------------|
| 15 kHz | Any | 1.30 | 3334 | 50 |
| 30 kHz | Any | 2.00 | 1668 | 50 |
| 60 kHz | Any | 3.33 | 834 | 50 |
| 15 kHz | Any | 2.33 | 1668 | 25 |
| 30 kHz | Any | 4.17 | 834 | 25 |
| 60 kHz | Any | 6.25 | 418 | 25 |
| 15 kHz | Any | 5.56 | 668 | 10 |
| 30 kHz | Any | 10.00 | 334 | 10 |
| 60 kHz | Any | 14.29 | 168 | 10 |
| 15 kHz | Any | 11.11 | 334 | 5 |
| 30 kHz | Any | 16.67 | 168 | 5 |
| 60 kHz | Any | 20.00 | 84 | 5 |

Scan Type: Channel Power (RSSI)

| Bandwidth | Bands | Scans/Sec | Data Points | MHz Scanned |
|-----------|---------------------|-----------|-------------|-------------|
| 10 kHz | 746-793 | 0.36 | 4700 | 47 |
| 30 kHz | 746-793 | 1.10 | 1567 | 47 |
| 50 kHz | 746-793 | 1.79 | 940 | 47 |
| 10 kHz | 746-757 and 776-787 | 0.77 | 2200 | 22 |
| 30 kHz | 746-757 and 776-787 | 2.13 | 733 | 22 |
| 50 kHz | 746-757 and 776-787 | 3.85 | 440 | 22 |
| 10 kHz | 746-757 or 776-787 | 1.54 | 1100 | 11 |
| 30 kHz | 746-757 or 776-787 | 4.55 | 367 | 11 |
| 50 kHz | 746-757 or 776-787 | 7.69 | 220 | 11 |



Narrow Band RSSI Scan



Narrow Band Spectrum Scan



Andrew, Solutions
140 Vista Centre Drive
Forest, VA 24551 USA
Internet: www.andrew.com

USA Office
Tel: 1-434-386-5300
Fax: 1-434-386-5324

Europe, Middle East, N.
Africa Office
Tel: +44 (0) 778 094 8703
Fax: +44 (0) 118 936 6773

Latin America Office
Tel: +55 (19) 3119-2206
Tel: +1 (815) 981-8750

Asia-Pacific Office
Tel: + (61) 3 9300-7969
Fax: + (61) 3 9357-9110

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