

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[™] Intelligent 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 including tri-band, dual-band, and single-band.

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
- DC cards currently available include 900/1800/2100 MHz, 850/1900/2100 MHz, and 700/800/1900 MHz — Licensing determines whether one, two, or three 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)	48 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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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	869 – 894 MHz	Physical Size	18.2 x 24.5 x 4.6 cm
(Down Converter Model 1 Tri-Band)	1930 – 1990 MHz		7.18 x 9.66 x 1.83 in
	2110 – 2170 MHz	Weight (with 2 downconverters)	1.2 kg, 2.6 lb
RF Frequency Ranges	925 – 960 MHz	Weight (with 1 downconverter)	1.1 kg, 2.4 lb
(Down Converter Model 2 Tri-Band)	1805 – 1880 MHz	Temperature Range (Operating)	0°C to +50°C
	2110 – 2170 MHz	Temperature Range (Storage)	-40°C to +85°C
RF Frequency Ranges	746 – 793 MHz	Input Voltage	10 to 16 VDC
(Down Converter Model 3 Tri-Band)	824 – 849 MHz	Input Current	4.0A (Maximum)
	1850 – 1910 MHz	Communications Interface	100 BASE-T Ethernet
RF Frequency Ranges	698 – 740 MHz		
(Down Converter Model 4 Tri-Band)	869 – 894 MHz		
	1930 – 1990 MHz		

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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



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Bulletin PA-102934.7-EN (9/09)
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