Agilent 71910A and 71910P Wide Bandwidth Receiver

Data Sheet

100 Hz to 26.5 GHz

The Agilent Technologies 71910A/P is a receiver for monitoring signals from 100 Hz to 26.5 GHz. It provides a cost effective combination of search and wide-bandwidth collection capabilities for surveillance and signal monitoring applications. Its flexibility makes it an ideal downconverter in stimulus-response applications.

To search for signals, it sweeps over user-specified spans up to 26.5 GHz wide using bandwidths up to 3 MHz. Wide dynamic range ensures signals of various amplitudes are quickly identified.

Once a signal is located, the receiver is fixed-tuned and the wide IF bandwidths are used for signal collection. (Bandwidths up to 36 MHz are available with microwave preselection, and up to 100 MHz unpreselected). A linear IF signal path provides good signal fidelity with standard outputs of 321.4 MHz IF and linear video. Optional outputs include 70 and 140 MHz IF, analog I/Q, and demodulated FM.

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Agilent 71910A/P Collection Receiver Specifications

Frequency

Frequency Range	100 Hz to 26.5 GHz (to 110 GHz with 11970 series millimeter mixers or 75 GHz with 11974 series preselected millimeter mixers.)	
Tuning Resolution	1 Hz	
Frequency Reference	w/ 70310A	w/o 70310A
Accuracy	(standard)	(Option 110)
Aging	< 1 x 10^{-7}/ year, < 5 x 10^{-10}/day (7-day avg.)	< 3 x 10^{-6}/year
Temperature Drift	< 7 x 10^{-10}	< 1 x 10^{-5}

IF Bandwidth	(–3 dB, five pole synchronously tuned)
Range	10 MHz to 100 MHz in 10% steps[1]
Accuracy	±15%, 321.4 MHz IF Output ±20%, Video Output
Selectivity(–60 dB/–3 dB)	<12:1 <8:1 with preselector *(characteristic)*
Video Bandwidth	
Range	10 kHz to 30 MHz; and >100 MHz (1, 3, 10 sequence)
Accuracy *(characteristic)*	±30% (10 kHz to 30 MHz)

Gain

RF/IF Gain	+5 dB *(characteristic)*[2]
RF Attenuation	0 to 65 dB in 5 dB steps
RF Preamplifier Gain	*+28 dB (characteristic)* *(requires option 016 or 017)*
IF Gain	0 to 70 dB in 1 dB steps
IF Step Gain Accuracy	±.75 dB, 10 to 40 dB
(0 to 55° C)	±1, 50 to 70 dB
IF Step Gain Accuracy	±.25 dB, 10 to 40 dB
(20 to 30° C)	±.30 dB, 50 to 60 dB ±.75 dB, 70 dB

Dynamic Range

Third-Order Intercept

	Standard	Option 016 or 017[3] *(characteristic)*	
		Preamp Bypass	Preamp On
20 MHz to 2.9 GHz	9 dBm	11 dBm	–16 dBm
2.7 GHz to 6.2 GHz	4 dBm	6 dBm	–21 dBm
6 GHz to 26.5 GHz	2 dBm	4 dBm	–23 dBm

One Tone Spurious-Free Dynamic Range[4] *(characteristic)*

10 MHz to 12 GHz	*67 dB*	*70 dB*	*56 dB*
12 GHz to 26.5 GHz	*70 dB*	*70 dB*	*70 dB*

1-dB Gain Compression *(characteristic)*

Standard	Option 016 or 017[3]	
	Preamp Bypass	Preamp On
≤ –5 dBm	≤ –5 dBm	≤ –33 dBm

Image Rejection

for RF input levels < 0 dBm, attenuation > 10 dB

Image Frequency	Center Frequency	Rejection
642.8 MHZ	100 kHz to 2.9 GHz	–85 dBc
	2.7 to 18.0 GHz	–70 dBc
	18.0 to 26.5 GHz	–60 dBc

Internally Generated Spurs[5]	–60 dBm *(characteristic)* (for CF < 2.9 GHz and IF BW >30 MHz)
Linear Detector Dynamic Range[6]	30 dB *(characteristic)*

Noise

Noise Figure

	Standard	Option 016 or 017[3]	
		Preamp Bypass	Preamp On
1 MHz to 12.8 GHz	32 dB	33 dB	13 dB
12.6 GHz to 22 GHz	39 dB	41 dB	18 dB
22 GHz to 26.5 GHz	43 dB	46 dB	21 dB

Phase Noise

	Noise sideband (dBc/Hz)		
Carrier Offset[7]	N=1	N=2	N=4
10 kHz	< –108	< –102	< –96

Phase Jitter, SSB, 100 Hz to 25 MHz, *(characteristic)*

10 MHz to 6.2 GHZ	*0.2° RMS*
6 GHz to 12.8 GHz	*0.4° RMS*
12.6 GHz to 26.5 GHz	*0.8° RMS*

1. RF/IF bandwidth may be limited by 70910A preselector (>36 MHz) or low band filter (>48 MHz).
2. At 321.4 MHz Out (assumes 0 dB RF ATTEN and 0 dB IF Gain). RF/IF Gain is –5 dB at 70 MHz IF Output (Option 001). –14 dB at 140 MHz IF Output (Option 002), and +5 dB for 70 MHz IF channel filter output (Option 007).
3. Use preamp bypass characteristics below 100 kHz for Option 016 and below 1 GHz for Option 017. Noise figure, TOI, and dynamic range with preamplifier on are measured with 5 dB RF attenuation.1 dB gain compression with preamplifier on is measured with 10 dB RF attenuation.
4. Normalized to 1 MHz IF bandwidth. Values given for 0 dB step gain varies with step gain.
5. 300 MHz residual generated in low band of 70910A module. Appears 21.4 MHz away from IF center frequency.
6. Refers to dynamic range at video output of 70911A. Assumes IF gain set properly.
7. N is the harmonic mixing number; N=1- from 100 Hz to 6.2 GHz, N=2- from 6 GHz to 12.8 GHz. and N=4+ from 12.6 GHz to 26.5 GHz.

Agilent 71910A/P Collection Receiver Characteristics

Inputs and Outputs (Characteristics)

Values given on this page are characteristics except where noted. Connectors are on the front panel except as noted. For more detailed information, see 70000 Modular Measurement System Catalog, Literature Number 5965-2818E.

70900B LO Section

300 MHz Calibrator Output	BNC (f), 50 Ω (nominal)
Output power	–10 dBm ±0.3 dB (specified)

70910A Wide Bandwidth RF Section

RF Input	APC 3.5, 50 5 Ω (nominal)
VSWR (> 10 dB attenuation)	
0 to 6.2 GHz	*< 1.4:1*
6 GHz to 26.5 GHz	*< 2.0:1*
VSWR (< 10 dB attenuation)	*< 3.0:1*

LO Emissions (> 10 dB attenuation)

	Preselector On	Preselector Bypass
0 to 2.9 GHz	< –100 dBm	< –80 dBm
2.7 GHz to 26.5 GHz	< –100 dBm	< –50 dBm

RF Bandwidth[8]	Preselector On	Preselector Bypass
0 to 2.9 GHz	*> 48 MHz*	*> 48 MHz*
2.7 GHz to 26.5 GHz	*> 36 MHz*	*> 200 MHz*

Maximum Safe Input Level (specification)	
DC	±0 Volts
AC	+15 dBm (attenuation = 0), +30 dBm (attenuation ≥ 10 dB)
Pulse	100 W, 10µs (attenuation ≥50 dB)

321.4 MHz External Mixer IF Input	
	SMA (f), 50 Ω (nominal)
Return loss	≥ *14 dB* from 271.4 to 371.4 MHz
Maximum safe Input level (spec.)	AC: 0 dBm, DC: ±3 V
Noise Figure	*< 7 dB*
SHI	*> (+30 Conv Loss) dBm*
TOI	*> (+10 Conv Loss) dBm*

Tune and Span Output	BNC (f), > 10 kΩ load impedance
Voltage Range	*0 to +13.25 V*
Tuning Sensitivity	RF input chosen, *0.5 V/GHz RF freq.* External mixer, *1.5 V/GHz LO freq.*

First LO Output	SMB (f), 50 Ω, VSWR < 2.1:1	
Frequency Range	3 to 6.6 GHz (spec)	
Output Power (spec)	25°C ±5°C	0°C 55°C
Minimum	14.5 dBm	14 dBm
Maximum	17.0 dBm	17.5 dBm

70911A Ultra-Wide Bandwidth IF Section[9]

Video Output	BNC (f), 50 Ω (nominal)
Bandwidth (–3 dB)	*As selected by IF and video BW*[8]
Level	*0–1 Volts*
VSWR	*< 1.5:1*
Risetime	*< 10 ns*

321.4 MHz Out	Rear panel SMB (m), 50 Ω (nominal) (for access, user must disconnect from 321.4 MHz OPT IN.)
Bandwidth (-3 dB)	IF Bandwidth, as selected10
Group Delay Variation[11]	5 ns (preselector bypassed) 0 to 55°C 3 ns (preselector bypassed) 20 to 40°C
VSWR	*< 2.0:1*

321.4 MHz Option Output	Rear panel SMB (m), 50 Ω (nominal)
Bandwidth (–3 dB)	IF bandwidth, as selected[10]
VSWR	< 2.0:1

I and Q Video Outputs	
(Option 004)	BNC (f), 50 Ω (nominal)
Level	*±0. 5 V*
Bandwidth (–3 dB)	*50 MHz (each channel)*
Quadrature Error	*6°*
I/Q Gain Imbalance	*1.25 dB*
Total Harmonic Distortion	*< 1 % (< –40 dBc)*
Spurious Emissions	*–70 dBc (non-harmonic)*
Rise Time (10–90%)	*10 nsec*
Residual DC Offset	*±25 mV*
VSWR	< 1.5:1

FM Video Output		
(Option 005)	BNC (f), 50 Ω (nominal)	
Level	*±0.5 V*	
VSWR	*< 1.5:1*	
Pk-Pk Deviation	FM Sensitivity	Linearity
10 MHz	*0.1 V/MHz*	*±0.5%*
40 MHz	*0.025 V/MHz*	*±0.15%*
Modulation Frequency	12 MHz (max.)	
Spurious Emissions	–35 dBm	

8. Measured at RF Section 321.4 MHz IF Output. For access, user must disconnect from 70911A 321.4 MHz IF Input.
9. IF and demod outputs are inverted for CF <12.8 GHz due to "minus harmonic mixing."
10. Maximum IF BW =100 MHz or 2.7 GHz <CF <26.5 GHz and preselector in bypass. Preselector limits BW to >36 MHz. For CF <2.9 GHz, 70910A filter limits BW to >48 MHz. (Special option available or wider filter).

Agilent 71910A/P Collection Receiver Characteristics

70 and 140 MHz IF Outputs

(Options 001 and 002)	Rear panel SMB (m), 50 Ω (nominal)
VSWR	< 1.5:1 (70 MHz); < 2.0:1 (140 MHz)

		IF Frequency	
	Preselector	70 MHz	140 MHz
Bandwidth (–3 dB)	ON	36 MHz	36 MHz
	BYPASS	40 MHz	70 MHz
Group Delay Variation[11]	ON	25 ns	25 ns
	BYPASS	25 ns	25 ns
Amplitude Variation[11]		2.0 dB	4.5 dB

Symbol Error Rate[12]	*1 x 10 $^{-6}$ for E_b/N_o > 25 dB*
Noise Power Ratio[13]	*> 40 dB, asymtotic*

70 MHz IF Channel Filters (Option 007, requires Option 001)
five switchable channel filters, six pole, 0.1-dB ripple Chebyshev –3-dB
IF bandwidths are 1.25, 5,10, 20,& 36 MHz

Custom Channel Filters (requires Option 001 or Option 002 and Special Option) Up to five filters, installed and tested by Agilent. Contact your sales representative for a quote on a Special Handling Option.

71910A/P Search Receiver Specifications

Frequency

Frequency Range see Collection Receiver Specifications

Frequency Readout Accuracy

Span ≤10 MHz x N[14]	±[(Freq. readout x freq. ref. accuracy) +1% of span + 10 Hz]
Span> 10 MHz x N[14]	
Sweep ≥ 20 ms	±[(Freq. readout x freq. ref. accuracy) +1.5% of span + 10 Hz]
10 ms ≤ sweep < 20 ms	±[(Freq. readout x freq. ref. accuracy) +2.5% of span + 10 Hz]

Frequency Span 0 to 26.5 GHz in 0.5% increments

Accuracy

Span < 10 MHz x N[14]	±[1% of span+ (span x freq. ref. accuracy)]
Span > 10 MHz x N[14]	
sweep ≥ 50 ms	±[1.5% of span+(span x freq ref acc.)]
50 ms > sweep 2 20 ms	±[2.5% of span+(span x freq ref acc.)]
20 ms> sweep 2 10 ms	±[4% of span+(span x freq ref acc.)]

Tuning Resolution see Collection Receiver Specifications

Frequency Reference Accuracy see Collection Receiver Specifications

Phase Noise

	Noise sideband (dBc/Hz) *(characteristic)*		
Carrier Offset[14]	N=1	N=2	N=4
100 Hz	–85	–79	–73
300 Hz	–88	–82	–76
1 kHz	–94	–88	–82
3 kHz	–104	–98	–92
10 kHz (spec)	<–108	<–102	<–96
30 kHz	–111	–105	–99
100 kHz	–115	–109	–103
300 kHz	–123	–117	–111
1 MHz	–135	–129	–123
3 MHz	–145	–139	–133
10 MHz	–153	–147	–141

Line and System Related Sidebands < 65 dBc + 20 log N[1]

Residual FM

Span > 10 MHz x N[14]	<N[14] x 25 kHz p-p in 0.1s (measurement bandwidth = 100 kHz)
Span < 10 MHz x N[14]	Determined by phase noise. (see Phase Noise section of Collection Receiver Specifications)

Frequency Drift	±1 kHz/s, during sweep
(Span > 10 MHz x N[14])	not cumulative from sweep to sweep
	±150 kHz/°C

Sweep Time

Range	10 ms to 1000s (continuous)
Accuracy	±2%
with 70700A	Swept freq. spans: 15 ms to 355 s
	Fixed freq (zero span): 80 µs to 355 s with 800-point trace

Trigger Free run, Line, Video, External

IF Resolution Bandwidth	10 Hz to 300 kHz (70902A)
	100 kHz to 3 MHz (70903A)
	(1,3,10 sequence and 10% increments except 3 kHz to 10 kHz)
Accuracy	±20 %
Selectivity (–60 dB/–3 dB)	
10 Hz to 3 kHz	<12:1 (fivepole, synchron. tuned)
10 kHz to 3 MHz	<16:1 (fourpole, synchron. tuned)

Video Bandwidth

Range	3 Hz to 300 kHz (70902A)
	300 Hz to 3 MHz (70903A)
	(1, 3, 10 sequence)
Accuracy	*20% (characteristic)*
	When set to maximum (300 kHz or 3 MHz) bandwidth is > 300 kHz (70902A), > 4.5 MHz (70903A).

11. Maximum peak-to-peak variation over 80% of the IF output bandwidth.
12. Symbol error rate measurement with 64-QAM signal at 150 Mbit/s with 2 GHz < CF < 12 GHz.
13. For 2700-channel loading in a 36-MHz band with 2 GHz < CF < 12 GHz.
14. N is the harmonic mixing number; N=1 from 100 Hz to 6.2 GHz, N=2 from 6.0 GHz to 12.8 GHz. and N=4+ from 12.6 GHz to 26.5 GHz.

Agilent 71910A/P Search Receiver Specifications

Amplitude

Total Amplitude Range –138 to ±30 dBm

Displayed Average Noise Level

	Frequency	DANL
10 Hz Res BW.	*100 Hz*	*<–92 dBm (char)*
0 dB attenuation,	*300 Hz*	*<–95 dBm (char)*
3 Hz Video BW,	*1 kHz*	*<–101 dBm (char)*
Ref Level <-75 dBm	*3 kHz*	*<–111 dBm (char)*
	10 kHz	*<–118 dBm (char)*
	30 kHz	*<–118 dBm (char)*
	100 kHz	*<–122 dBm (char)*
	300 kHz	*<–130 dBm (char)*
	1 MHz	*<–139 dBm (char)*
	3 MHz	*<–139 dBm (char)*
	10 MHz to 2 GHz	–138 dBm
	2 to 12.8 GHz	–137 dBm
	12.6 to 22 GHz	–130 dBm
	22 to 26.5 GHz	–128 dBm
with 70620B	1 to 12.8 GHz	–155 dBm
(Option 016/017)	12.6 to 22 GHz	–150 dBm
	22 to 26.5 GHz	–148 dBm

Gain Compression Level
(10 dB input attenuation) ≤ 0.5 dB for signal levels ≤ 0 dBm

Spurious Responses	Band	Response
Except as listed below,	100 Hz to 10 MHz	< –60 dBc
for < –30 dBm total	10 MHz to 26.5 GHz	< –70 dBc
signal power at the RF	(preselector ON)	
input with 10 dB attn.		

Second Harmonic Distortion	Band	Response
(preselector ON)	100 Hz to 20 MHz	< –60 dBc
	20 MHz to 2.9 GHz	< –75 dBc
	2.9 to 26.5 GHz	< –100 dBc

Third Order Intermodulation

70902A	Center	Intermod.	Equiv.
For two signals each	Frequency	Products	TOI
≤ –20 dBm total	100 Hz to 20 MHz	< –64 dBc	+2 dBm
signal power at RF	20 MHz to 2.9 GHz	< –78 dBc	+9 dBm
input 10 dB atten.,	2.7 to 6.2 GHz	< –68 dBc	+4 dBm
20–30°C	6 to 26.5 GHz	< –64 dBc	+2 dBm

70903A	Center	Intermod.	Equiv.
For two signals	Frequency	Products	TOI
each ≤ –15 dBm	100 Hz to 20 MHz	< –54 dBc	+2 dBm
at the RF input,	20 MHz to 2.9 GHz	< –68 dBc	+9 dBm
10 dB atten.,	2.7 to 6.2 GHz	< –58 dBc	+4 dBm
20–30°C	6 to 26.5 GHz	< –54 dBc	+2 dBm

15. Referenced to 300 MHz. –10 dBm calibrator. Does not include ±0.3 dB Δ6 calibrator amplitude error.

Image Responses RF input ≤ 0 dBm, attenuation ≥ 10 dB

6 MHz	< –85 dBc
42.8 MHz	< –85 dBc
642.8 MHz	see Image Rejection section of Collection Receiver Specifications

Residual Responses	Range	Responses
(0 dB attn.,	10 MHz to 26.5 GHz	< –100 dBm
input terminated)		

Multiple and Out of Band Responses < –70 dBc
For inputs ≤ 26.5 GHz and RF levels ≤ 0 dBm, ≥ 10 dB attenuation, preselector ON

Display Range	(10 divisions)
Scale (Log)	0.01 to 20 dB/div in 0.5% increments
Scale (Linear)	10% of reference level per division
Reference Level (Log)	+30 to –140 dBm
Reference Level (Linear)	7.07 V to 22 nV

Frequency Response (10 dB attn., preselector peaked)

Frequency Range	0–55°C Peak Variation	20–30°C Ref. to Calibrator[15]	0–55°C Ref. to Calibrator[15]
100 Hz to 2.9 GHz	±1.5 dB	±2.0 dB	±2.0 dB
2.7 to 6.2 GHz	±2.0 dB	±2.0 dB	±3.0 dB
6 to 12.8 GHz	±2.0 dB	±2.0 dB	±3.0 dB
12.6 to 22 GHz	±2.0 dB	±2.0 dB	±3.5 dB
22 to 26.5 GHz	±2.5 dB	±2.5 dB	±4.0 dB

(preset preselector DAC, 20–30°C, ref. to calibrator[15])

2.7 to 22.0 GHz	*+2.0, –3.0 dB (characteristic)*
22.0 to 26.5 GHz	*+2.5 –3.5 dB (characteristic)*
(for spans ≤100 MHz)	

Input Attenuator

Range	0 to 65 dB in 5 dB steps
Switching Repeatability	±0.2 dB
Accuracy, referenced to 10 dB setting *(characteristic)*	
0 to 2.9 GHz	*±1.2 dB*
2.9 to 12.7 GHz	*±2.3 dB*
12.7 to 19.9 GHz	*±2.8 dB*
19.9 to 26.5 GHz	*±4.8 dB*
Preselector Bypass Switch Repeatability	< ±0.2 dB

IF Gain Accuracy	Gain	20–30°C	0–55°C
70902A	10 dB	±0.2 dB	±0.2 dB
	20 dB	±0.2 dB	±0.2 dB
	30 dB	±0.2 dB	±0.5 dB
	50 dB	±0.2 dB	±0.6 dB
	60 dB	±0.4 dB	±0.8 dB
70903A	10 dB		±0.1 dB
	20 dB		±0.3 dB

Agilent 71910A/P Search Receiver Specifications

Scale Fidelity		
Log (corrected)	Bandwidth	Fidelity
70902A	< 30 Hz	±0.7 dB
(0 to 90 dB)	30 Hz to 100 kHz	±0.5 dB
	> 100 kHz	±0.7 dB
70903A	≤ 1 MHz	±0.5 dB
(0 to 75 dB)	≥ 1 MHz	±0.7 dB
Log (uncorrected)	all	±3.0 dB
Incremental fidelity	0.1 dB/dB, all bandwidths	
Linear	±7.5 % of reference level	

Amplitude Temperature	
Drift *(characteristic)*	±0.05 dB/°C at 300 MHz
–10 dBm Ref. Level,	100 Hz Res. BW (70902A)
10 dB Input Attn.	300 kHz Res. BW (70903A)
	(Accumulated error is eliminated by running internal correction routine.)
Resolution Bandwidth Switching Repeatability	±0.2 dB in 1, 3, 10 sequence ±3 dB (uncorrected)
Marker Resolution	±0.03 dB

Inputs and Outputs (also see page 3)

70902A IF Section	
Auxiliary Video Output	BNC (f), 0-1 V, 1 kΩ (nominal)
3 MHz IF Output (linear)	BNC (f), 50 Ω
	<1.5:1 VSWF (characteristic)
Output Level	–15 dBm (nominal) with –10 dBm at RF input, 0 dB atten., –10 dBm reference level
70903A IF Section	
Auxiliary Video Output	BNC (f), 0–1 V, 100 Ω (nominal)
21.4 IF Output	BNC (f), 50 Ω
	<1.5:1 VSWR *(characteristic)*
Output Level	–15 dBm (nominal) with –10 dBm at RF input, 0 dB atten., –10 dBm reference level

General Specifications

71910A system components	**71910P system components**
70001A mainframe	70001A mainframe
70004A display/mainframe	70207B E05 PC display for MMS
70900B Option 512 local oscillator (2 slots)	70900B Option 512 local oscillator (2 slots)
70310A precision frequency reference (1 slot)	70310A precision frequency reference (1 slot)
70902A IF section (1 slot)	70903A IF section (1 slot)
70903A IF section (1 slot)	70910A wide bandwidth RF section (2 slots)
70910A wide bandwidth RF section (2 slots)	70911A ultrawide bandwidth IF section (2 slots)
70911A ultrawide bandwidth IF section (2 slots)	

Note: When adding or exchanging modules, be sure that the final count will fit into 8-slot 70001A mainframe or 4-slot 70004M display/mainframe. Note: For 71910P only the 70902A IF section has been removed to provide a single mainframe configuration.

Environmental	
Temperature	0 to 55°C, operational –40 to +75°C, storage
Humidity	0 to 95% relative humidity at 45°C, operational
EMC	Conducted and radiated interference is in compliance with CISPR publication 11, FTZ 526/1979, and MIL-STD 461B, RE02/part 7.
Power requirements (characteristic)	404 W
Weight, standard system (nominal)	55.6 kg (122.3 lb)
Dimensions	
70001A mainframe	177 mm (7 in) high, 426 mm (16.75 in) wide, 526 mm (20.7 in) long
70004A display/ mainframe	222 mm (8.7 in) high, 426 mm (16.75 in) wide, 526 mm (20.7 in) long
Calibration cycle	3 years recommended

Specifications describe the instrument's warranted performance over the 0°C to +55°C temperature range after performing a front-panel "CAL ALL." ***Characteristics*** provide information about non-warranted instrument performance. ***Nominal values*** indicate the expected value of the parameter. All specifications apply after the instrument's temperature has been stabilized for one-hour, self-calibrated routines have been run, and the preselector peak function has been executed. Where specifications are subject to minimization with error correction routines, corrected limits are given. Values given on pages 2, 4, and 5 are specifications, except where noted.

The 71910A/P wide bandwidth receiver has two modes of operation: **search** and **collection**. In the search mode, the receiver sweeps across user-specified frequency spans with IF bandwidths of 3 MHz and below, reporting signal amplitudes to the display and GPIB port. A signal may be investigated using the **collection** mode, in which the receiver is fixed-tuned with IF bandwidths from 10 to 100 MHz. IF and demodulated outputs are available from the 70911A IF module. **Search** specifications refer to displayed and reported signals. **Collection** specifications and characteristics refer to the 321.4 MHz IF and Video outputs of the 70911A IF module.

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