LPT-3000RX

Product Specifications

- Digital Signal Processing Technology
- ³ Fits 19" 1-RU Rack Space
- * Built with 4, 8, or 16 Switchable RF Input Ports
- [©] 55 dB Port Isolation
- ³ 500 µs Switching Speed
- * 310 µs Sweep Time in Fast Mode

Built-in Carrier Identification Extractor (Optional)

LP1-30000

* Built-in C, KU, KA to L - band Down-converter (Optional)



LPT-3000RX4 Specifications

The specifications apply when the LPT-3000RX4 is powered on for 45 minutes * to warm-up to a temperature of 20° C to 30° C, unless specified otherwise.

* 45 minutes typical, 90 minutes maximum

Frequency

Frequency			
	Range	9 kHz to 3.0 GHz	
	Resolution	1 Hz	
Frequency Ret	ference		
	Accuracy	±(period since last adjus	stment X aging rate) +
		stability over temperatu	re + supply voltage
		stability	
	Aging Rate	±1 ppm max.	1 year after last
			adjustment
	Frequency Stability over Temperature	±0.025 ppm	o to 50 °C
	Supply Voltage Stability	±0.02 ppm	
Frequency Rea	adout Accuracy		
	Start, Stop, Center, Marker	±(marker frequency ind reference accuracy + 10 resolution ¹)	icat ion X frequency % x RBW + frequency
	Trace points	Max 601 points, min 6 p	oints
Marker Freque	ency Counter		
- CAR	Resolution	1 Hz, 10 Hz, 100 Hz, 1 kH	lz
900 WC. 20185, WC.	Accuracy	±(marker frequency indication X frequency reference accuracy + counter resolution)	RBW/Span >=0.02 ; Mkr level to DNL>30 dB
Frequency Spa	an		
	Range	o Hz (zero span), 100 Hz to 3 GHz	
	Resolution	1 Hz	
	Accuracy	± frequency resolution ¹	RBW: Auto;
Phase Noise			
	Offset from Carrier		Fc = 1 GHz; RBW = 1 kHz, VBW = 10 Hz; $Average \ge 40$
	10 kHz	<-88 dBc/Hz	Typical ²
	100 kHz	<-95 dBc/Hz	Typical
Develor' D	1 MHz	<-113 dBc/Hz	Typical
Resolution Ba	nawidth (RBW) Filt	er	a dD han du 1 di l
	Filter Bandwidth	1 Hz to 1 MHz in 1-3-10 sequence	-3dB bandwidth
		200 Hz, 9 kHz, 120 kHz, 1MHz	-6dB bandwidth
	Accuracy	± 8%, RBW = 1MHz	Nominal ³
		± 5%, RBW < 1MHz	Nominal
	Shape Factor	< 4.5:1	Normal Bandwidth ratio: -6odB:-3dB
Video Bandwi	dth (VBW) Filter		



Filter Bandwidth 1 Hz to 1 MHz in 1-3-10 -3dB bandwidth sequence

Frequency Resolution = Span/(Trace points - 1)
Typical specifications in this datasheet mean that the performance can be exhibited in 80% of the units with a 95% confidence level over the temperature range 20 to 30 °C. They are not covered by the product warranty.
Nominal values indicate expected performance. They are not covered by the product warranty.

Amplitude

Frequency Response

Ampl	itude Range			
	Measurer Range	nent	100 kHz to 1 MHz	Displayed Average Noise Level (DANL) to 18 dBm
			1 MHz to 10 MHz	DANL to 21 dBm
			10 MHz to 3 GHz	DANL to 25 dBm
Atter	uator			
	Input Atte Range	enuator	o to 50 dB, in 1 dB step	Auto or manual setup
Maxii	num Safe Input Lev	/el		
	Average 7 Power	「otal	≤ +27 dBm	Input attenuator ≥10 dB
	DC Voltad	le	± 50 V	
1 dB (Gain Compression			
	Total Pow Mixer	ver at 1st	> o dBm	<i>Typical</i> ; Fc \geq 50 MHz; preamp. off
	Total Pow Preamp	ver at the	> -22 dBm	<i>Typical</i> ; Fc \geq 50 MHz; preamp. on
			mixer power level (dBm (dBm)-attenuation (dB	n)= input power
Displ	ayed Average Noise	e Level (D	ANL) ⁴	
	Preamp c	off	o dB attenuation; RF In 50 Ω load. RBW 10 Hz; V reference level = -600	put is terminated with a /BW 10 Hz; span 500 Hz IBm: trace average > 60
	o kHz to 1	oo kHz	< -88 dBm	ibility trace average - 40
	100 kHz t	o 1 MHz	< -85 dBm - 3 x (f/100 kHz) dB	Nominal
	1 MHz to	10 MHz	< -117 dBm	
ou	10 MHz to	3 GHz	< -117 dBm	_
	Preamp c	on .	o dB attenuation; RF In 50 Ω load ; RBW 10 Hz; reference level = -600	put is terminated with a VBW 10Hz; span 500 Hz IBm: trace average > 60
	100 kHz t	0 1 MHz	< -103 dBm - 3 x (f/100 kHz) dB	ioni, nace average <u>–</u> 40
	1 MHz to 10 MHz to	10 MHz 9 3 GHz	< -137 dBm < -137 dBm + 3 x (f/1 GHz) dB	Nominal
[4] D,	ANL spec excludes	spurious I	response.	
Abso	ute Amplitude Acc	uracy		
	Absolute	Point	Center=160 MHz ; RBW span 100 kHz; log scale, detector; 23±1°C: Signa	′ 10 kHz; VBW 1 kHz; ; 1 dB/div; peak Il at Reference Level
	Preamp c	off	± 0.3 dB	Ref level o dBm; 10 dB RF attenuation
	Preamp o	n	± 0.4 dB	Ref level -30 dBm;

o dB RF attenuation



	Preamp off	Attenuatio 30°C	n: 10 dB; Reference: 160 MHz; 20 to
	100 kHz to 2.0 GHz	± 0.5 dB	
	2GHz to 3 GHz	± 0.7 dB	
	Preamp on	Attenuatio 30°C	n: o dB; Reference: 160 MHz; 20 to
	1 MHz to 2 GHz	± 0.6 dB	
	2 GHz to 3 GHz	± 0.8 dB	
Attenuatio	n Switching Uncertain	ty	
	Attenuator setting	o to 50 dB ii	n 1 dB step
	Uncertainty	± 0.25 dB	reference: 160 MHz, 10dB attenuation
RBW Filter	Switching Uncertainty	Í	
	1 Hz to 1 MHz	± 0.25 dB	reference : 10 kHz RBW
Level Meas	urement Uncertainty		
	Overall Amplitude Accuracy	± 1.5 dB	20 to 30°C; frequency > 1 MHz; Signal input o to -50 dBm; Reference level o to -50 dBm; Input attenuation 10 dB; RBW 1 kHz; VBW 1 kHz; after cal; Preamp Off
		± 0.5 dB	Typical
Spurious Re	esponse		
	Second Harmonic Intercept		Preamp off; signal input -3odBm; o dB attenuation
		+35 dBm	Typical; 10 MHz < fc < 775 MHz
		+60 dBm	Typical; 775 MHz \leq fc < 1.5 GHz
	Third-order Intercept		Preamp off; signal input -3odBm; o dB attenuation
	and the second	> 1dBm	300 MHz to 3 GHz
	Input Related	< -60 dBc	Input signal level -30 dBm, Att. Mode, Att=odB: 20-30°C
	Residual	<-on dBm	Input terminated: o dB
	Response (inherent)	90 0011	attenuation; Preamp off

RF Port Characteristic

± 1 dB	Reference: port 1, zerc
	span
0.5 ms	without sweep time
55 dB	
	± 1 dB 0.5 ms

Sweep

Range	310 US tO 1000 S	Span > o Hz
	50 us to 1000 s	Span = o Hz; Min
		Resolution = 10 us
Sweep Mode	Cont inuous; Single	
Trigger Source	Free run; Video;	
	External	
Trigger Slope	Positive or negative	
'	edge	



RF Preamplifier

Frequency Range	1 MHz to 3 GHz	
Gain	18 dB	Nominal
		(installed as standard)

Front Panel Input/Output

Power LED

Power on mode yellow

Rear Panel Input/Output

RF Input			
	Connector Type	4-port N-type female	
	Impedance	50 ohm	Nominal
	VSWR	< 2.1 :1	300 kHz to 3 GHz; Input attenuator≥ 10 dB
Reference li	nput		
	Connector Type	BNC female	
	Input Reference	10 MHz	
	Frequency		
	Input Amplitude	-5 dBm to +10 dBm	
	Frequency Lock Range	Within ± 5 ppm of the input reference freque	ncy
RS232 Inter	face	NA S N DA KOS X 1	1
	Connector Type	D-sub 9-pin female	Tx,Rx,RTS,CTS
LAN TCP/IP	Interface		
	Connector Type	RJ-45	
	Base	10Base-T; 100Base-Tx;	Auto-MDIX
AC Power In	nput		
	Power Source	AC 100 V to 240 V, 50 / Auto range selection	6o Hz

General

Internal Data	16 MB nominal	
storage		
Power	<65 W	
Consumpt ion		
Warm-up Time	>45 minutes	
Temperature Range	+5 °C to +45 °C	Operating
	-20 °C to + 70 °C	Storage
Weight	8.16 kg (17.99 lb)	Basic
Dimensions	416x430x44 (mm)	Approximately
	16.38x16.93x1.73(in)	









Spectrum Monitoring made EASY

The LPT-3000RX4 was built for spectrum monitoring software, such as LP Technologies Automatic Spectrum Monitoring (LPT-ASM), the most effective and affordable carrier monitoring solution in the satellite industry. Using the LPT-3000RX4's multiport capability, operators can collect critical data fast while performing robust measurements with accuracy.

The LPT-3000RX4 is also compatible with several other monitoring systems on the market.

Measuring Signals with PRECISION

The LPT-3000RX4 remote spectrum analyzer is designed to fulfill all of your requirements with functionality, ease of use, and affordability in mind.

Experience clean, fast, and accurate trace data with 17 RBW and VBW filters ranging from 1 Hz to 1 MHz in a 1-3-10 step sequence.









LPT-3000RX4 Specifications



Frequency

Frequency			
	Range	9 kHz to 3.0 GHz	
	Resolution	1 Hz	
Frequency Reference			
	Accuracy	± (period since last adjustment X aging rate + stability over temperature + supply voltag stability	
	Aging Rate	± 1 ppm max.	1 year after last adjustment
	Frequency Stability over Temp.	± 0.025 ppm	0 to 50 °C
	Supply Voltage Stability	± 0.02 ppm	
Frequency Readout Ac	curacy		
	Start, Stop, Center, Marker	± (marker frequency in reference accuracy + 1 resolution ¹	ndication * frequency L0% * RBW + frequency
	Trace points	Max 601, min 6	
Marker Frequency Cou	inter		
	Resolution	1 Hz, 10 Hz, 100 Hz, 1 kHz	
	Accuracy	± (marker frequency indication * frequency reference accuracy + counter resolution	RBW/Span >=.02; Marker level to DNL>30 dB
Frequency Span			
	Range	0 Hz (zero span), 100 Hz to 3.0 GHz	
	Resolution	1 Hz	
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Phase NoiseOffset from Carrier $Fc = 1 \text{ GHz; RBW = 1}$ kHz; VBW = 10 Hz, Average ≥ 4010 KHz<-88 dBc/HzTypical²100 KHz<-95 dBc/HzTypical100 KHz<-95 dBc/HzTypical100 KHz<-113 dBc/HzTypicalResolution Bandwidth (RBW) FilterTypicalResolution Bandwidth (RBW) Filter-3dB bandwidthResolution Bandwidth (RBW) Filter-6dB bandwidthResolution Bandwidth (RBW) Filter-6dB bandwidthResolution Bandwidth (RBW) Filter-6dB bandwidthShape Factor<8%, RBW = 1 MHzNominal³Shape Factor<4.5:1Normal Bandwidth ration: -60 dB: -3 dBVideo Bandwidth (VBW)Filter-3 dB bandwidth ration: -60 dB: -3 dBVideo Bandwidth (VBW)Filter-3 dB bandwidth ration: -60 dB: -3 dBVideo Bandwidth (VBU)Filter-3 dB bandwidth ration: -60 dB: -3 dBMape Factor100 kHz to 1 MHzNormal Bandwidth ration: -60 dB: -3 dBVideo Bandwidth11Hz to 1 MHz in 1-3- ratio sequence-3 dB bandwidth ration: -60 dB: -3 dBImage Factor11Hz to 1 MHzNormal Bandwidth ration: -60 dB: -3 dBImage Factor100 kHz to 1		Accuracy	± frequency resolution ¹ RBW: Auto	
In KHz<-88 dBc/HzTypical²In KHz<-95 dBc/Hz	Phase Noise	Offset from Carrier		Fc = 1 GHz; RBW = 1 kHz; VBW = 10 Hz, Average ≥ 40
100 KHz<-95 dBc/HzTypical1 MHz<-113 dBc/Hz		10 KHz	<-88 dBc/Hz	Typical ²
1 MHz<-113 dBc/HzTypicalResolution Bandwidth (RBW) Filter-3dB bandwidth 10 sequence-3dB bandwidth 10 sequenceFilter Bandwidth1 Hz to 1 MHz in 1-3- 10 sequence-6dB bandwidth 10 sequence200 Hz, 9 kHz, 120 kHz, 1 MHz-6dB bandwidth 10 sequenceAccuracy± 8%, RBW = 1 MHzNominal³5Mape Factor± 5%, RBW < 1 MHZ		100 KHz	<-95 dBc/Hz	Typical
Resolution Bandwidth (RBW) FilterFilter Bandwidth1 Hz to 1 MHz in 1-3 10 sequence-3dB bandwidth 10 sequence200 Hz, 9 kHz, 120 kHz, 1 MHz-6dB bandwidth (kHz, 1 MHz)Accuracy± 8%, RBW = 1 MHzNominal ³ ± 5%, RBW < 1 MHZ		1 MHz	<-113 dBc/Hz	Typical
Filter Bandwidth1 Hz to 1 MHz in 1-3- 10 sequence-3dB bandwidth200 Hz, 9 kHz, 120 kHz, 1 MHz-6dB bandwidth200 Hz, 9 kHz, 120 kHz, 1 MHz-6dB bandwidthAccuracy± 8%, RBW = 1 MHzNominal³± 5%, RBW < 1 MHZ	Resolution Bandwidth	(RBW) Filter		
Accuracy200 Hz, 9 kHz, 120 kHz, 1 MHz-6dB bandwidth (Hz, 1 MHz)Accuracy± 8%, RBW = 1 MHzNominal³± 5%, RBW < 1 MHZ		Filter Bandwidth	1 Hz to 1 MHz in 1-3- 10 sequence	-3dB bandwidth
Accuracy± 8%, RBW = 1 MHzNominal³± 5%, RBW < 1 MHZ			200 Hz, 9 kHz, 120 kHz, 1 MHz	-6dB bandwidth
± 5%, RBW < 1 MHZNominalShape Factor< 4.5:1		Accuracy	± 8%, RBW = 1 MHz	Nominal ³
Shape Factor< 4.5:1Normal Bandwidth ration: -60 dB: -3 dBVideo Bandwidth (VBW) Filter1 Hz to 1 MHz in 1-3- 10 sequence-3 dB bandwidthAmplitude-3 dB bandwidth-3 dB bandwidthAmplitude Range-5 dBMeasurement Range100 kHz to 1 MHzDisplay Average Noise Level (DANL) to 18 dB,I MHz to 10 MHz1 MHz to 10 MHzDANL to 21 dBmI 0 MHz to 3 GHzDANL to 25 dBm			± 5%, RBW < 1 MHZ	Nominal
Video Bandwidth (VBW) FilterFilter Bandwidth1 Hz to 1 MHz in 1-3- 10 sequence-3 dB bandwidthAmplitudeAmplitude Range		Shape Factor	< 4.5:1	Normal Bandwidth ration: -60 dB: -3 dB
Filter Bandwidth1 Hz to 1 MHz in 1-3- 10 sequence-3 dB bandwidth 10 sequenceAmplitudeMeasurement RangeImplitude 100 kHz to 1 MHzDisplay Average Noise Level (DANL) to 	Video Bandwidth (VBW	/) Filter		
Amplitude Amplitude Range Measurement Range 100 kHz to 1 MHz Display Average Noise Level (DANL) to 18 dB, I MHz to 10 MHz DANL to 21 dBm 10 MHz to 3 GHz DANL to 25 dBm		Filter Bandwidth	1 Hz to 1 MHz in 1-3- 10 sequence	-3 dB bandwidth
Amplitude Range Measurement Range 100 kHz to 1 MHz Display Average Noise Level (DANL) to 18 dB, 1 MHz to 10 MHz DANL to 21 dBm 10 MHz to 3 GHz DANL to 25 dBm	Amplitude			
Measurement Range 100 kHz to 1 MHz Display Average Noise Level (DANL) to 18 dB, 1 MHz to 10 MHz DANL to 21 dBm 10 MHz to 3 GHz DANL to 25 dBm	Amplitude Range			
1 MHz to 10 MHzDANL to 21 dBm10 MHz to 3 GHzDANL to 25 dBm		Measurement Range	100 kHz to 1 MHz	Display Average Noise Level (DANL) to 18 dB,
10 MHz to 3 GHz DANL to 25 dBm			1 MHz to 10 MHz	DANL to 21 dBm
			10 MHz to 3 GHz	DANL to 25 dBm

	Input Attenuator Range	0 to 50 dB, in 1 dB step	Auto or manual setup
Maximum Safe Input Le	evel		
	Average Total Power	≤+27 dB,	Input attenuator ≥ 10 dB
	DC Voltage	± 50 V	
1 dB Gain Compression	I		
	Total Power at 1 st Mixer	>0 dBm	Typical, Fc ≥50 MHz, preamp off
	Total Power at the Preamp	>-22 dBm	Typical, Fc ≥50 MHz, preamp on
	Mixer power level (dBI	vl)= input power (dBm)-	attenuation (dB)
Displayed Average Nois	se Level (DANL) ⁴		
	Preamp off	0 dB attenuation, RF Ir a 50 Ω load. RBW 10 H 500 Hz, reference leve average ≥ 40	nput is terminated with z, VBW 10 Hz, span l= -60 dBm, trace
	9 KHz to 100 KHz	< -88 dBm	Nominal
	100 KHz to 1 MHz	<-85 dBm - 3*(f/100kHz) dBm	Nominal
	1 MHz to 10 MHz	< -117 dBm	Nominal
	10 MHz to 2 GHz	<-117 dBm	Nominal
	2 GHz to 3 GHz	<-117 dBm	Nominal, base model
	2 GHz to 3 GHz	<-111 dBm	Nominal, CID option
	Preamp on	0 dB attenuation, RF Ir a 50 Ω load. RBW 10 H 500 Hz, reference leve average ≥ 40	nput is terminated with z, VBW 10 Hz, span l= -60 dBm, trace
	100 kHz to 1 MHz	< -103 dBm – 3 *(f/100 kHz) dBm	Nominal

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Attenuator

	1 MHz to 10 MHz	< -137 dBm	Nominal, base model
	1 MHz to 10 MHz	<-135 dBm	Nominal, CID option
	10 MHz to 3 GHz	<-137 dBm + 3 *(f/1 GHz) dB	Nominal
Absolute Amplitude			
Accuracy			
	Absolute Point	Center = 160 MHz, RB span 100 kHz, log scal detector, 23 ± 1°C, Sig	W 10 kHz, VBW 1 kHz, e, 1 dB/div, peak nal at Reference Level
	Preamp off	± 0.3 dB	Ref level 0 dBm, 10 dB RF attenuation
	Preamp on	± 0.4 dB	Ref level -30 dBm, 0 dB RF attenuation
Frequency Response			
	Preamp off	Attenuation: 10 dB, Re	ef: 160 MHz, 20 to 30°C
	100 kHz to 2.0 GHz	± 0.5 dB	Nominal, base model
	2.0 GHz to 3.0 GHz	± 0.8 dB	Nominal, base model
	100 kHz to 2.0 GHz	± 2.0 dB	Nominal, CID option
	2.0 GHz to 3.0 GHz	± 3.0 dB	Nominal, CID option
	Preamp on	Attenuation: 0 dB, Ref	f: 160 MHz, 20 to 30°C
	1 MHz to 2 GHz	± 0.6 dB	Nominal, base model
	2 GHz to 3 GHz	± 0.8 dB	Nominal, base model
	1 MHz to 2 GHz	± 2.0 dB	Nominal, CID option
	2 GHz to 3 GHz	± 3.0 dB	Nominal, CID option
Attenuation Switching	gUncertainty		
	Attenuator Setting	0 to 50 dB in 1 dB step	
		+ 0.25 dB	Reference: 160 MHz

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RBW Filter Switching Uncertainty					
	1 Hz to 1 MHz	± 0.25 dB	Reference: 10 kHz RBW		
Level Measurement Uncertainty					
	Overall Amplitude Accuracy	± 1.5 dB	20 to 30° C, frequency > 1 MHz, signal input 0 to -50 dBm, input attenuation 10 dB, RBW 1 kHz, VBW 1 kHz, after cal, preamp off		
		± 0.5 dB	Typical		
Spurious Response					
	Second Harmonic Intercept		Preamp off, signal input -30 dBm, 0 dB attenuation		
		+ 35 dBm	<i>Typical,</i> 10 MHz < fc < 775 MHz		
		+ 60 dBm	<i>Typical,</i> 10 MHz < fc < 1.5 MHz		
	Third-order Intercept		Preamp off, signal input –30 dBm, 0 dB attenuation		
		>1dBm	300 MHz to 3.0 GHz		
	Input Related Spurious	<-60 dBc	Input signal level – 30dBm, Att. Mode= 0dB, 20- 30°C		
	Residual Response (inherent)	<-90 dBm	Input terminated, 0 dB attenuation, Preamp off		
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RF Port Characteristic				
Channel Performance				
	Channel Frequency Response	± 1 dB	All ports but port 1 Reference: port 1, zero span	
	Switching Time	0.5 ms	Without sweep time	
	Isolation	55 dB		
Sweep				
Sweep Time				
	Range	310 µs to 1000 s	Span > 0 Hz	
		50 µs to 1000 s	Span = 0 Hz, Min Resolution = 10 μs	
	Sweep Mode	Continuous, Single		
	Trigger Source	Free run, Video, External		
	Trigger Slope	Positive or negative edge		
RF Preamplifier				
	Frequency Range	1 MHz to 3 GHz		
	Gain	18 dBm	Nominal (installed as standard)	
Front Panel Input / Output				
Power LED				
	Power Mode On	Yellow		
Rear Panel Input /	Output			
RF Input				
	Connector Type	4-port N-type female		
	Impedance	50 Ω	Nominal	
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	VSWR	< 2.1:1	300 kHz to 3.0 GHz, Input attenuator ≥ 10 dB
Reference Input			
	Connector Type	BNC female	
	Input Reference Frequency	10 MHz	
	Input Amplitude	-5 dBm to +10 dBm	
	Frequency Lock Range	Within ± 5 ppm of the input reference frequency	
RS-232 Interface			
	Connector Type	D-sub 9-pin female	Tx, Rx, RTS, CTS
LAN TCP/IP interface			
	Connector Type	RJ-45	
	Base	10Base-T, 100Base- TX, Auto-MDIX	
AC Power Input			
	Power Source	AC 100 V to 240 V, 50/60 Hz Auto range selection	
OPTIONS			
	Carrier ID Extraction		
	Internal Downconverter	K band or C band to L band	
General			
	Internal Data Storage	16 MB	Nominal
	Power Consumption	< 65 W	
	Warm-up Time	>45 minutes	
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	Temperate Range	+5°C to +45°C	Operating
		-20°C to +70°C	Storage
	Weight	8.16 kg (17.99 lbs)	Basic
	Dimensions	416 x 430 x 44 (mm)	Approximately
		16.38 x 16.93 x 1.73 (in)	
[1]	Frequency Resolution = Span / (trace points -1)		
[2]	Typical specifications in this datasheet mean that the performance can be exhibited in 80% of the units with a 95% confidence level over the temperature range 20 to 30°C. They are not covered by the product warranty.		
[3]	Nomical values indicate expected performance. They are not covered by the product warranty.		
[4]	DANL spec excludes spurious response.		