



5969 Robinson Avenue  
 Riverside, CA 92503  
 (951) 637-2630  
 FAX (951) 637-2704

**6 dB Emission Bandwidth**

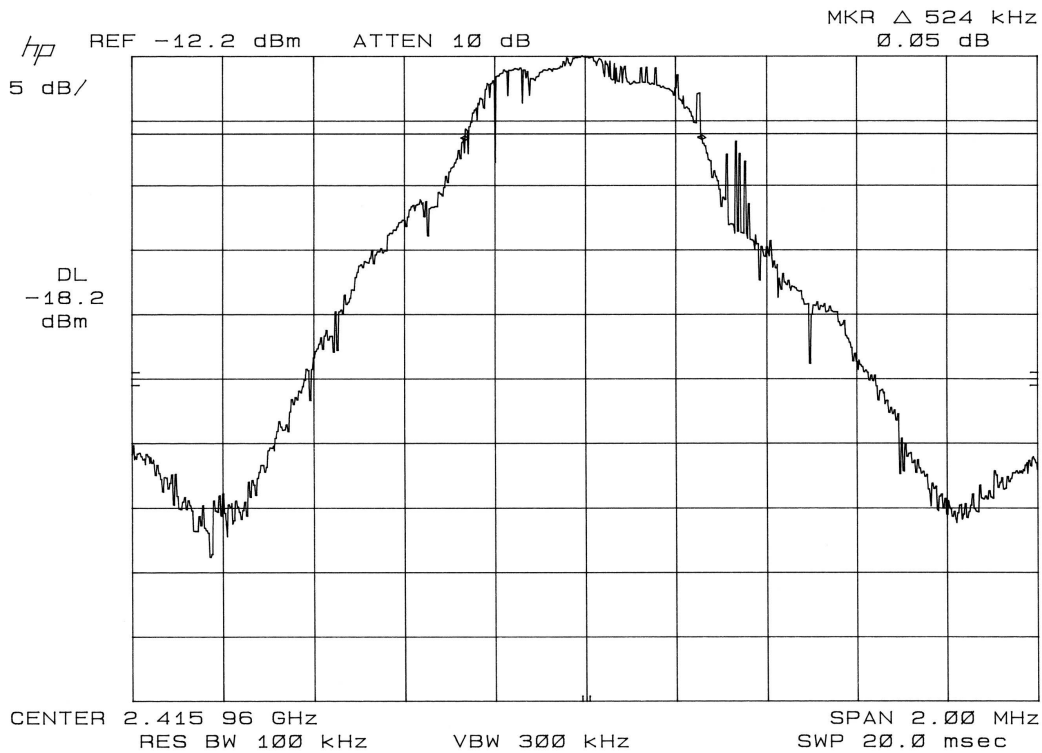
DNB Job Number:	58074	Date:	22 Nov 2004	<b>Conformance Standard</b>
Customer:	Leica Geosystems, Inc.			
Model Number:	GS20 (SR20)	Serial Number:	Proto	FCC Part 15
Description:	GPS Positioning System			<b>Clause</b> 15.247(a,2)

**Environmental Conditions**

Ambient Temperature	Relative Humidity	Barometric Pressure
22 °C	30 %	102.4 kPa

EUT performed within the requirements of the applicable standard  Yes  No *Les Payne*

Channel	Chl Freq (MHz)	6dB BW (MHz)	Min Lim (MHz)	Pass/Fail
1	2415.96	0.524	0.500	Pass

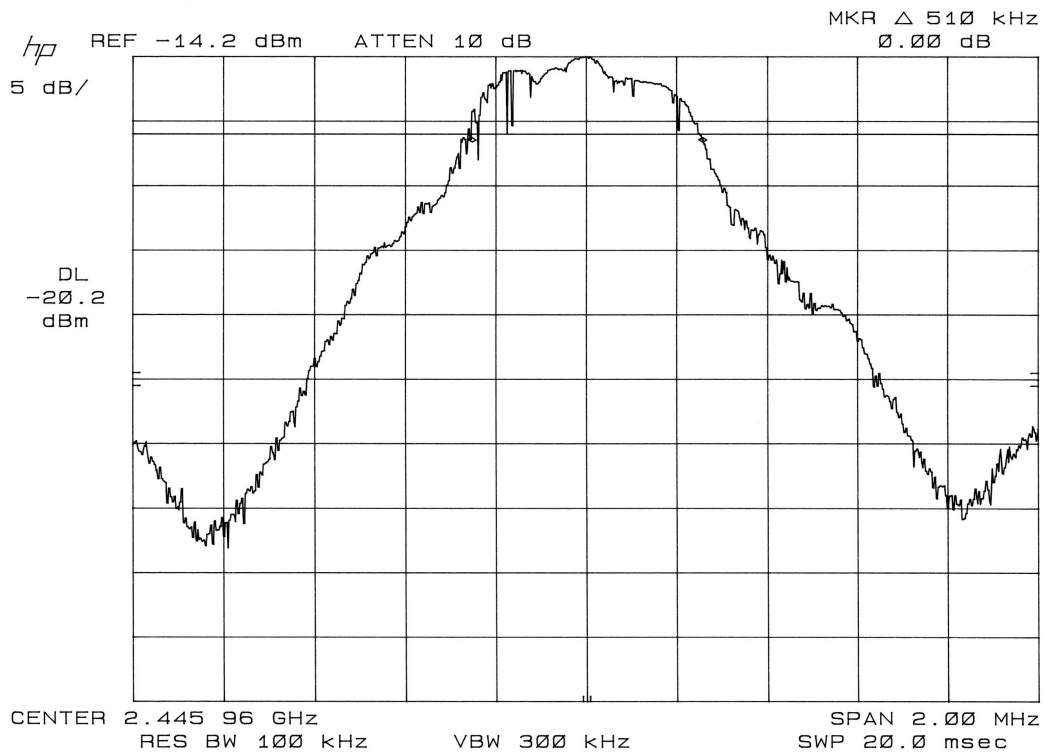




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Description:	GPS Positioning System			<b>Clause</b> 15.247(a,2)
<b>Environmental Conditions</b>				
Ambient Temperature		Relative Humidity		Barometric Pressure
22 °C		30 %		102.4 kPa
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>				
Channel	Chl Freq (MHz)	6dB BW (MHz)	Min Lim (MHz)	Pass/Fail
16	2445.96	0.510	0.500	Pass

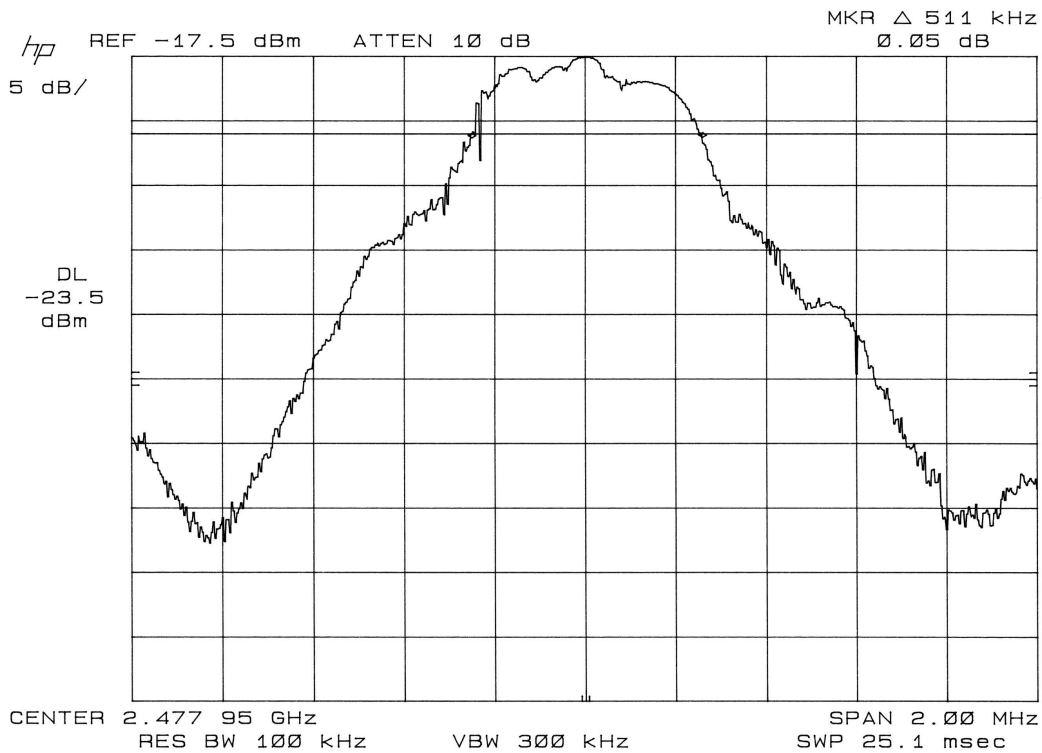




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Description:	GPS Positioning System			<b>Clause</b> 15.247(a,2)
<b>Environmental Conditions</b>				
Ambient Temperature		Relative Humidity		Barometric Pressure
22 °C		30 %		102.4 kPa
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>				
Channel	Chl Freq (MHz)	6dB BW (MHz)	Min Lim (MHz)	Pass/Fail
32	2477.95	0.511	0.500	Pass



15.247 (b,1) Maximum Peak Output Power (Conducted)

Test Procedure:

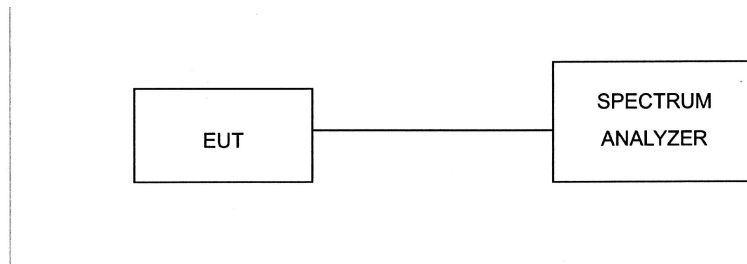
The transmitter output was connected to a spectrum analyzer with a resolution bandwidth of 300kHz and a video bandwidth of 3 MHz.

Requirement: The maximum peak output power shall not exceed 0.125W (21dBm)

EUT operating conditions:

The software provided by the client to enable the EUT to transmit continuously at the low, mid, and upper channels respectively.

Test Set Up:

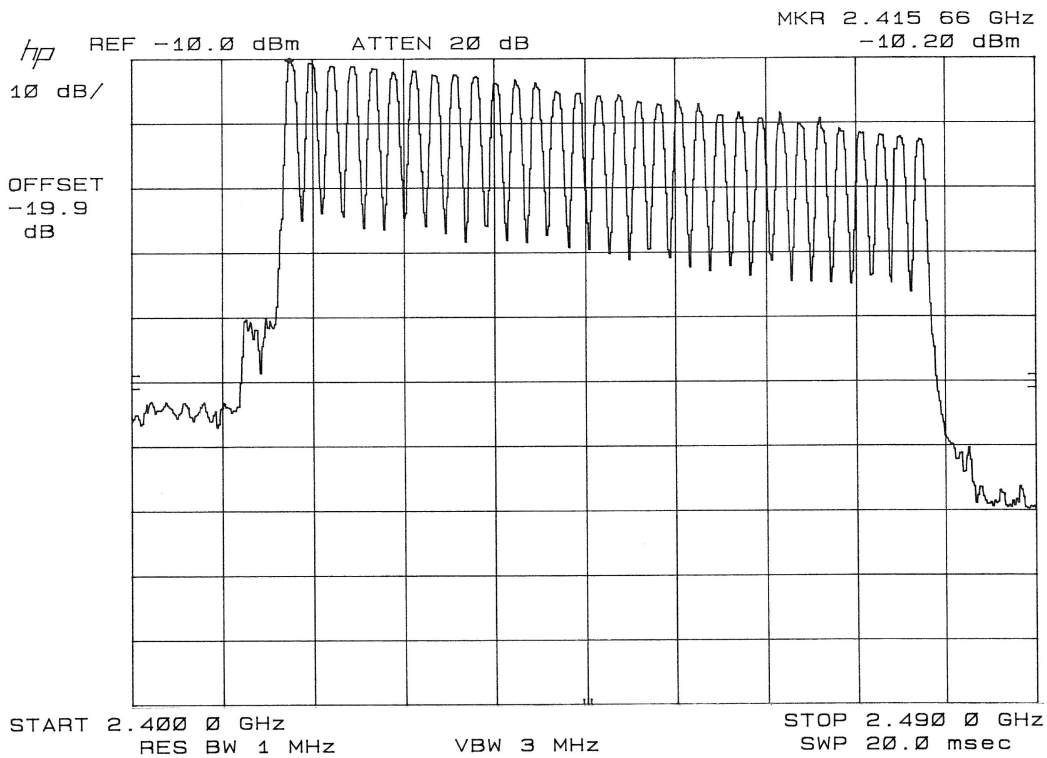




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**Peak Output Power (Cond)**

DNB Job Number:	58074	Date:	22 Nov 2004	<b>Conformance Standard</b>
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Model Number:	GS20 (SR20)	Serial Number:	Proto	FCC Part 15
Description:	GPS Positioning System			<b>Clause</b> 15.247(b,1)
<b>Environmental Conditions</b>				
Ambient Temperature		Relative Humidity		Barometric Pressure
22 °C		30 %		102.4 kPa
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Tom Elders</i>				
Frequency Span	Conducted Power	Limit	Pass/Fail	
2400 - 2490	96 (uW) -10.2 dBm	125 mW (21dBm)	Pass	



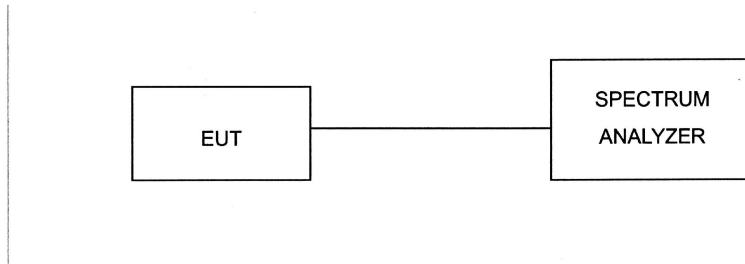
15.247 (c) Conducted Spurious Measurements

The antenna was disconnected and a fifty ohm load was installed. The signal was then directly coupled into a spectrum analyzer. The output signal from 2.400 to 2.480 GHz was transmitted so that the fundamental frequency could be observed.

Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

DL = -20dB down point

Test Set Up:

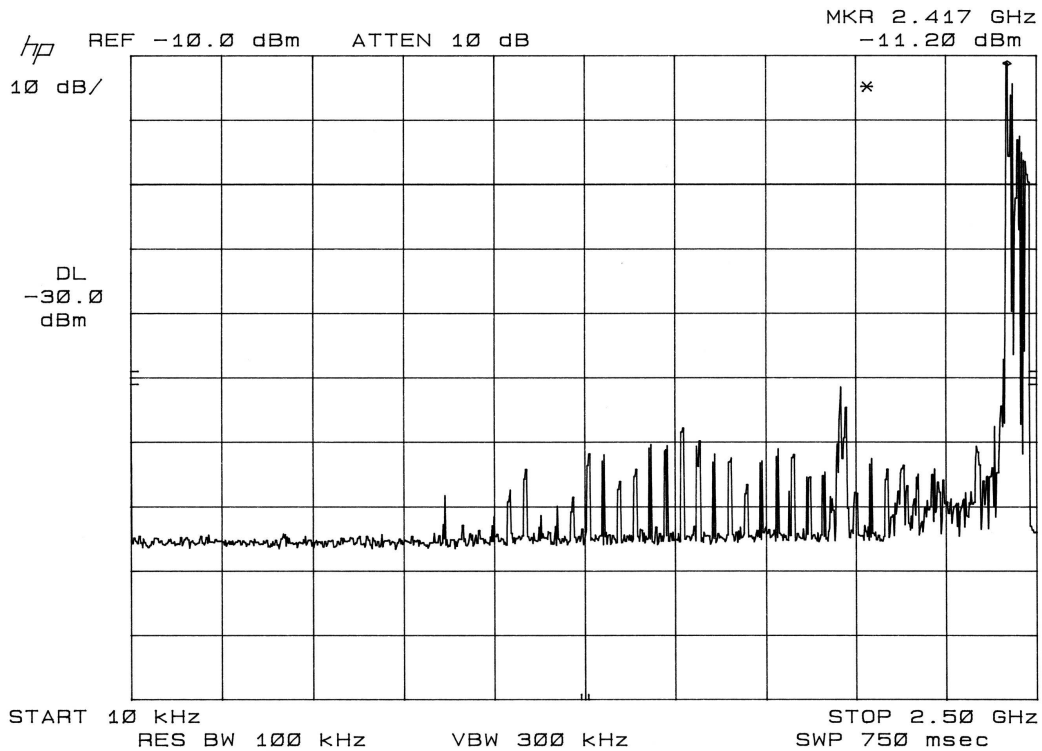




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### Conducted Spurious

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Customer:	Leica Geosystems, Inc.			
Model Number:	GS20 (SR20)	Serial Number:	Proto	
Description:	GPS Positioning System			
Ambient Temperature		Relative Humidity		Barometric Pressure
22 °C		30 %		102.4 kPa
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Tom Elders</i>				
Freq Span (MHz)	Reading	-20dBc	Pass/Fail	
0.010 - 2500	less than -60dBm	-21.2dBm	Pass	

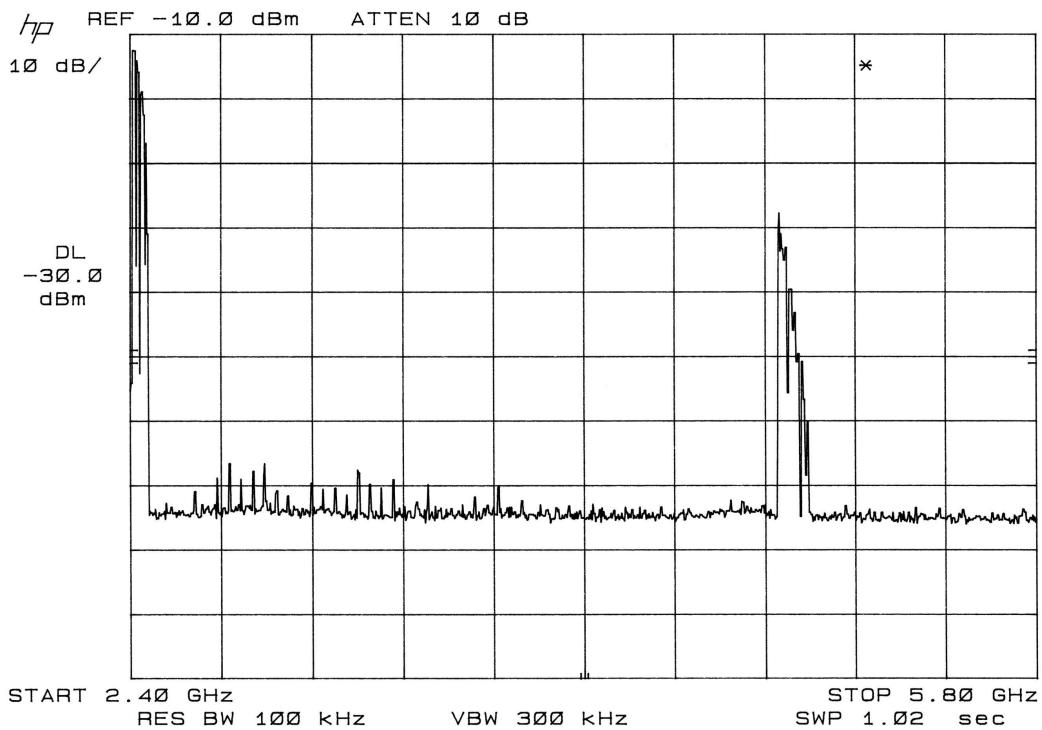




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Model Number:	GS20 (SR20)	Serial Number:	Proto	
Description:	GPS Positioning System			<b>Clause</b> 15.247(c)
Ambient Temperature		Relative Humidity		Barometric Pressure
22 °C		30 %		102.4 kPa
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Tom Elders</i>				
Freq Span (MHz)	Reading	-20dBc	Pass/Fail	
2400 - 5800	-33 dBm	-21.2dBm	Pass	



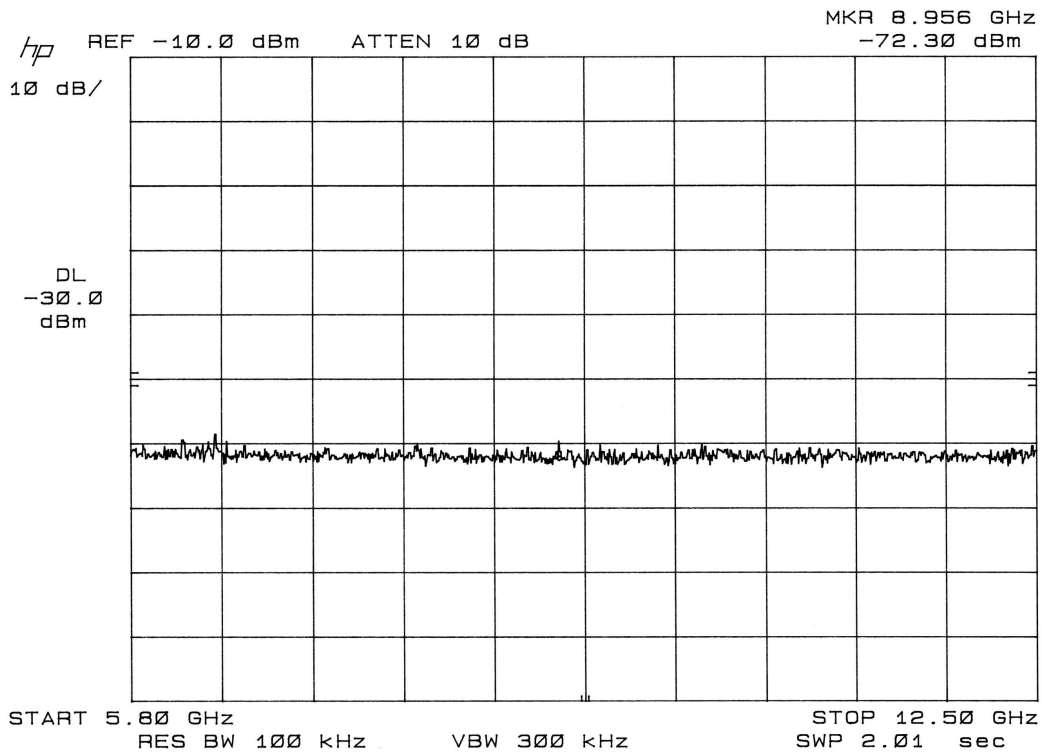




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Customer:	Leica Geosystems, Inc.			
Model Number:	GS20 (SR20)	Serial Number:	Proto	
Description:	GPS Positioning System			
Ambient Temperature		Relative Humidity		Barometric Pressure
22 °C		30 %		102.4 kPa
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Tom Elders</i>				
Freq Span (MHz)	Reading	-20dBc	Pass/Fail	
5800 -12500	less than -60dBm	-21.2dBm	Pass	

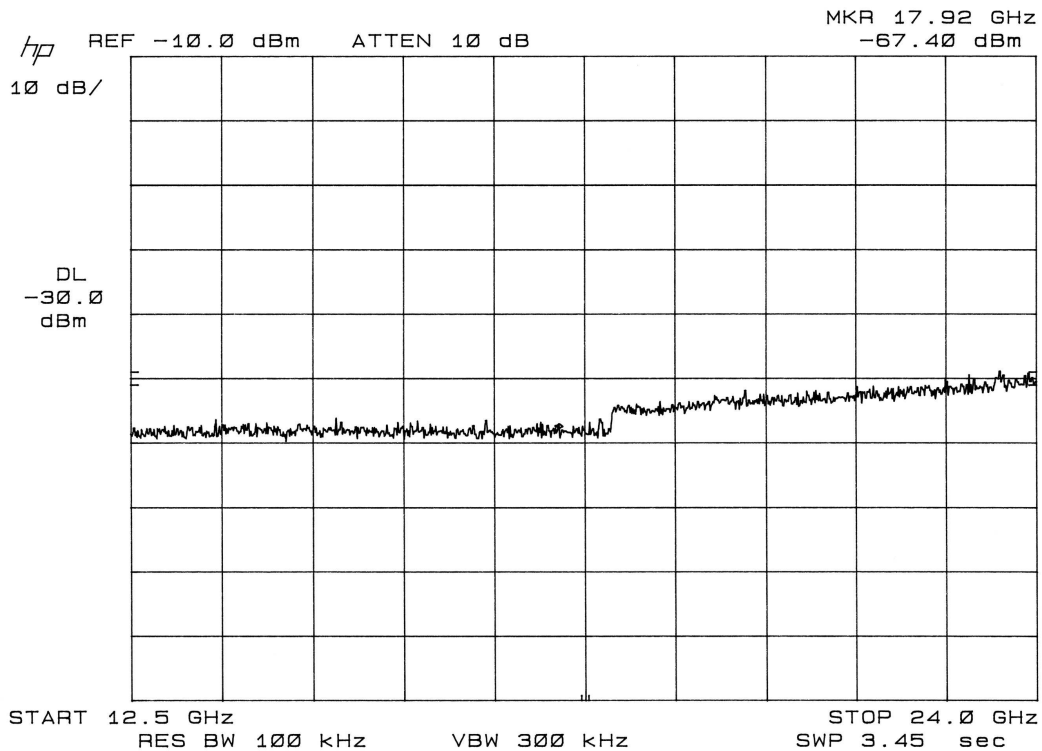




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### Conducted Spurious

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Customer:	Leica Geosystems, Inc.			
Model Number:	GS20 (SR20)	Serial Number:	Proto	
Description:	GPS Positioning System			<b>Clause</b> 15.247(c)
Ambient Temperature		Relative Humidity		Barometric Pressure
22 °C		30 %		102.4 kPa
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Tom Elders</i>				
Freq Span (MHz)	Reading	-20dBc	Pass/Fail	
12500 - 24000	less than -60dBm	-21.2dBm	Pass	



15.247 (d) Peak Power Spectral Density

Test Procedure:

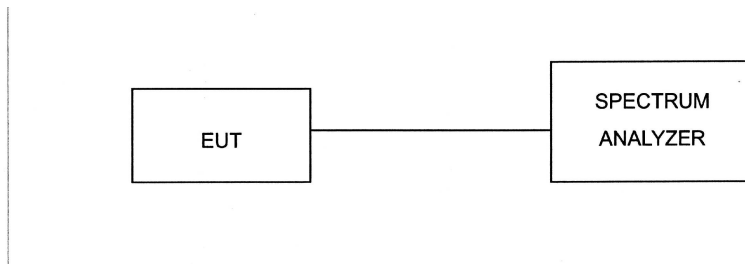
The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 10kHz VBW. Sweep time was set so that the sweep time = frequency span/3kHz. The sweep time shall be such that it was greater than the span/3KHz for a full response of the mixer in the spectrum analyzer.

Requirement: The maximum power density shall not exceed 8dBm

EUT operating conditions:

The software provided by the client to enable the EUT to transmit continuously at the low, mid, and upper channels respectively.

Test Set Up:

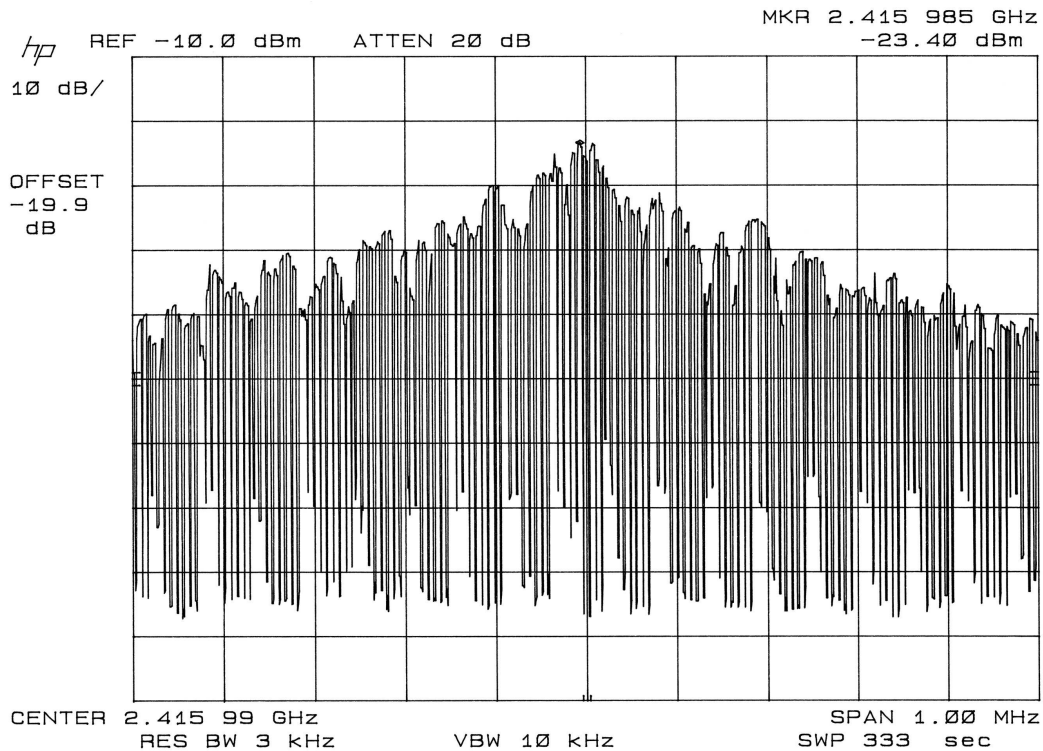




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**Peak Power Spectral Density**

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Customer:	Leica Geosystems, Inc.			
Model Number:	GS20 (SR20)	Serial Number:	Proto	
Description:	GPS Positioning System			<b>Clause</b> 15.247(d)
<b>Environmental Conditions</b>				
Ambient Temperature		Relative Humidity		Barometric Pressure
22 °C		30 %		102.4 kPa
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Tom Elders</i>				
Center Frequency	Chl Freq (MHz)	3kHz BW (MHz)	Limit in dBm	Pass/Fail
1	2415.99	-23.4 dBm	8.0	Pass



**RF Exposure Requirements**

DNB Report No: RV58074A

FCC ID: QOHSR20

RF Exposure – SAR Calculations (2402-2480 MHz Band)

Note: No SAR evaluation is required if the power is below the FCC threshold:

Tunable Range		Center of tunable range (GHz)	SAR Limitation 60/f (mW)
Freq (Low) GHz	Freq (High) GHz		
2.402	2.480	2.441	24.58

Maximum measured transmitter power			
Pout - Conducted (mW)	Pout - Conducted (dBm)	Maximum Antenna Gain (dBi)	Pout EIRP (mW)
.096	-10.2	2.7	0.178

Comparison to SAR requirements				
Maximum Tx power		SAR Limit	Delta	SAR evaluation required
Conducted	0.096 mW	24.58mW	-24.484mW	No below threshold
EIRP	0.178 mW	24.58mW	-24.402mW	No below threshold

Conclusion: ***No SAR evaluation is required since the maximum Transmitter Pout (both conducted and EIRP) are below the FCC threshold.***

End of Report