

OFFERDAHL BROADCAST SERVICE, INC

# FM TRANSLATOR PROOF OF PERFORMANCE

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Occupied Bandwidth, Spurious Emissions,  
Harmonics and Intermodulation Products of

FM Translators owned by:  
Midwest Communications, Inc.

K252EZ 94.1Mhz Fargo, ND  
K297BW 107.3Mhz Fargo, ND

Performed October 3, 2017

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**OFFERDAHL BROADCAST SERVICE, INC.**

**705 EATON AVE N.**

**FOSSTON, MN 56542**

**218.358.0208**

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## **QUALIFICATIONS**

FM proof of performance measurements were performed by James R. Offerdahl, Chief Engineer for Offerdahl Broadcast Service, Inc. of Fosston, MN. Mr. Offerdahl has been a broadcast engineer for over 15 years and his work a matter of record with the FCC.

## **FACILITIES**

K252EZ is an FM translator operating on 94.1Mhz. K297BW is an FM translator operating on 107.3Mhz. The translators are co-located at the same tower site in South Moorhead, MN The translators operate into a Shively combiner feeding a two bay broadband antenna.

## **METHOD**

The RF was sampled from a -58dB sample port inserted in to the transmission line at the output of the combiners. Spectrum analysis was made with an Anritsu MS2721B Spectrum Analyzer.

Both transmitters were operated at the TPO required to make the permitted ERP of .250 KW as calculated by Al Murray, Chief Engineer for Midwest Communications, Inc, the owner of the translators that are the subject of this proof.

A Microwave Filter Company model 3367B50 bandstop filter was inserted between the RF sample port and the analyzer input attenuating the fundamental to prevent overloading the front end of the analyzer while measuring all out of band emissions.

## **MEASUREMENTS**

First, occupied bandwidth was measured for each station. A span of 2 MHz and was saved and are shown in the exhibits on pages 3 through 7. The exhibit on

pages 3 and 4 are with only the measured transmitter operating. The exhibits on pages 5 and 6 are with both transmitters operating.

Suppression of all harmonic, spurious and intermodulation product emissions required for FM translators operating at 250 watts effective radiate power is determined by  $43+10(\log 250)$  which equals 66.98 decibels below carrier (dBc).

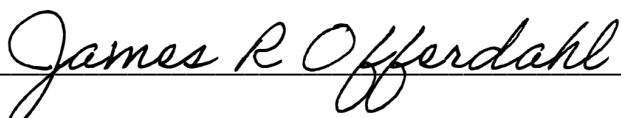
All out of band measurements for each station were taken with the bandstop filter inserted in the sample line which attenuated the fundamental by approximately 42 db.

The exhibits on pages 7 and 8 show no harmonic or spurious emissions exist that are greater than 66.98 dBc. The exhibit on page 9 is the FM band from 88 to 108 Mhz. All signals greater than 69.98 dBc are known licensed stations. 90.3 Mhz is KCCD located 10 miles away. 95.1 Mhz is KVOX located at this site. 99.1 Mhz is KBVB located at this site.

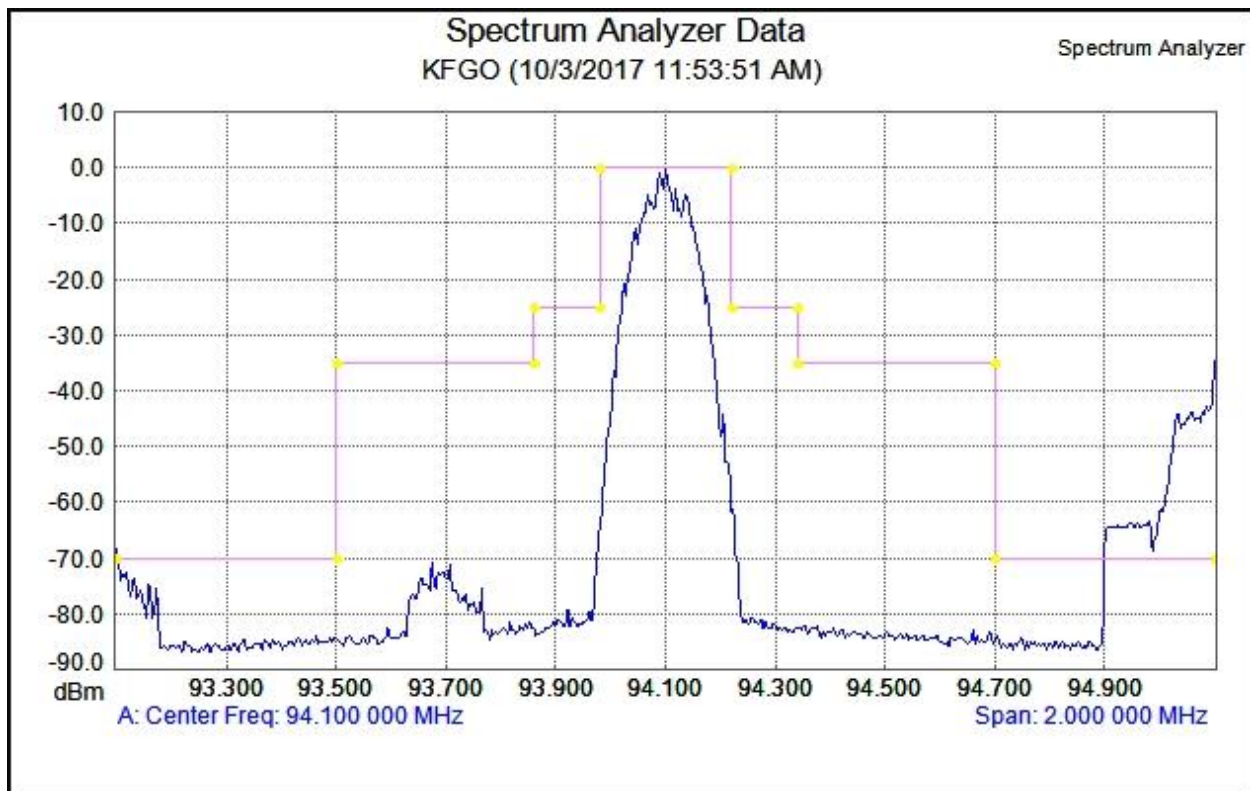
Intermodulation product measurements of 2<sup>nd</sup>, 3<sup>rd</sup>, 5<sup>th</sup> and 7<sup>th</sup> orders were calculated for the combination of the translators operating at 94.1 Mhz and 107.3 Mhz plus the two full power stations located at the same site, KVBV operating on 95.1Mhz and KVOX operating on 99.1Mhz. The exhibits on pages 10 through 45 are 2 Mhz spans for Intermodulation Products and show no emissions exist that are greater than 66.98 dBc.

## CONCLUSION

These measurements as demonstrated by the attached exhibits provide proof that K2252EZ and K297BW are in compliance with FCC Rules, Sections 72.317, 73.1590, 74.1236.

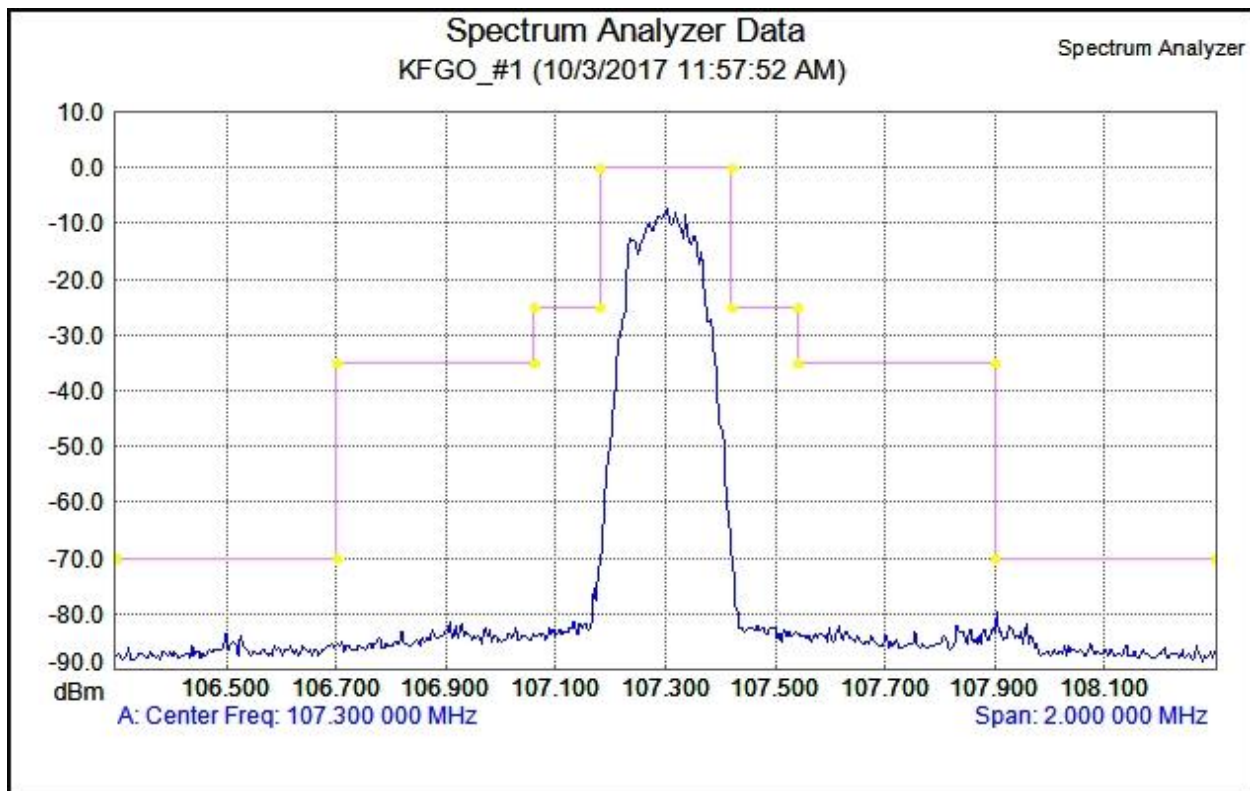
	October 14, 2017
Signature	Date

James R. Offerdahl



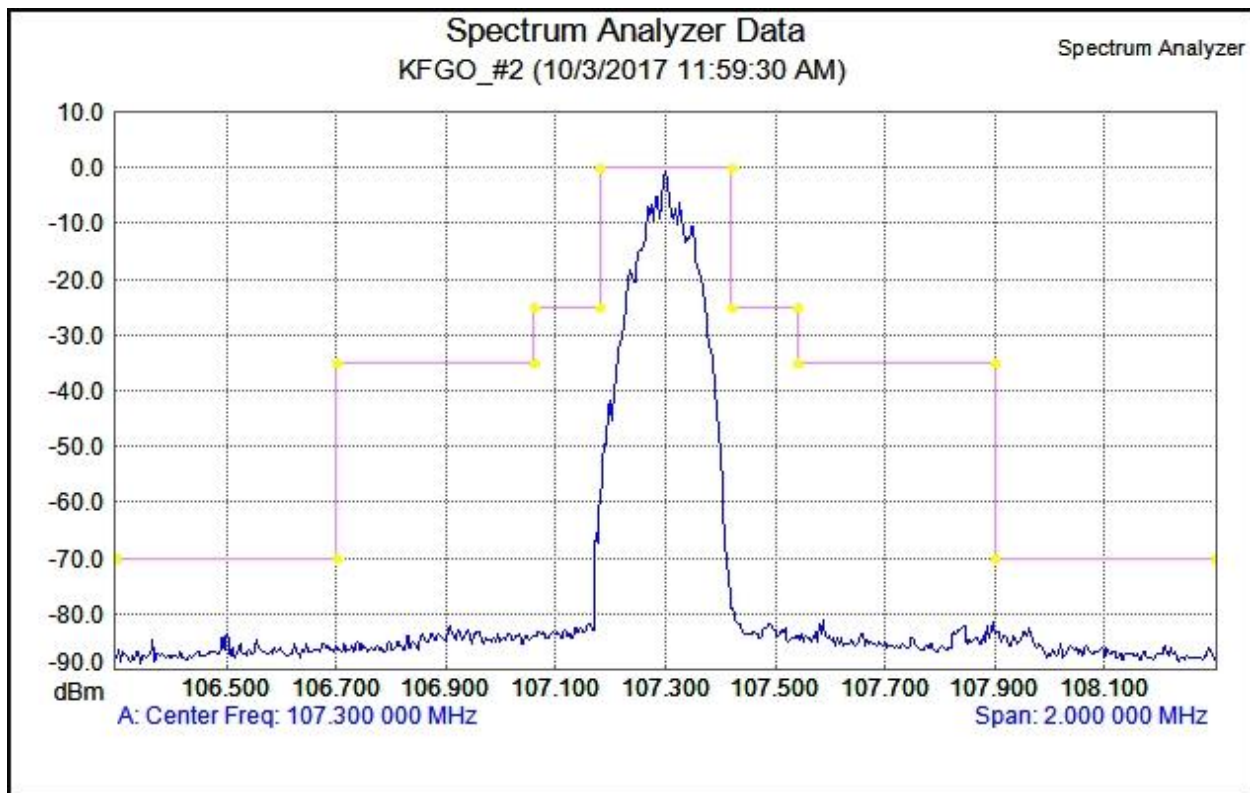
Measurement Parameters

		Stop Frequency	95.100 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	3.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-7 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	94.100 000 MHz	Date	10/3/2017 11:53:51 AM
Start Frequency	93.100 000 MHz	Device Name	



Measurement Parameters

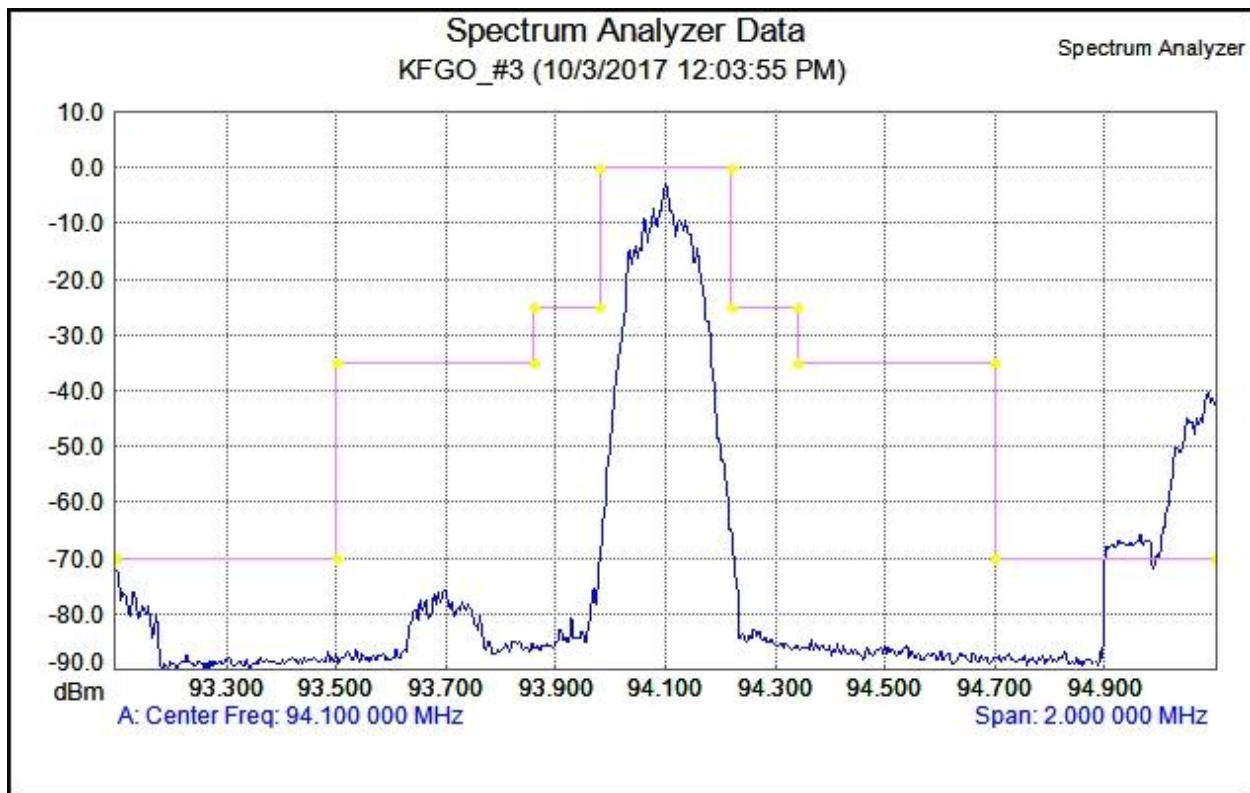
		Stop Frequency	108.300 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	6.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	107.300 000 MHz	Date	10/3/2017 11:57:52 AM
Start Frequency	106.300 000 MHz	Device Name	



Measurement Parameters

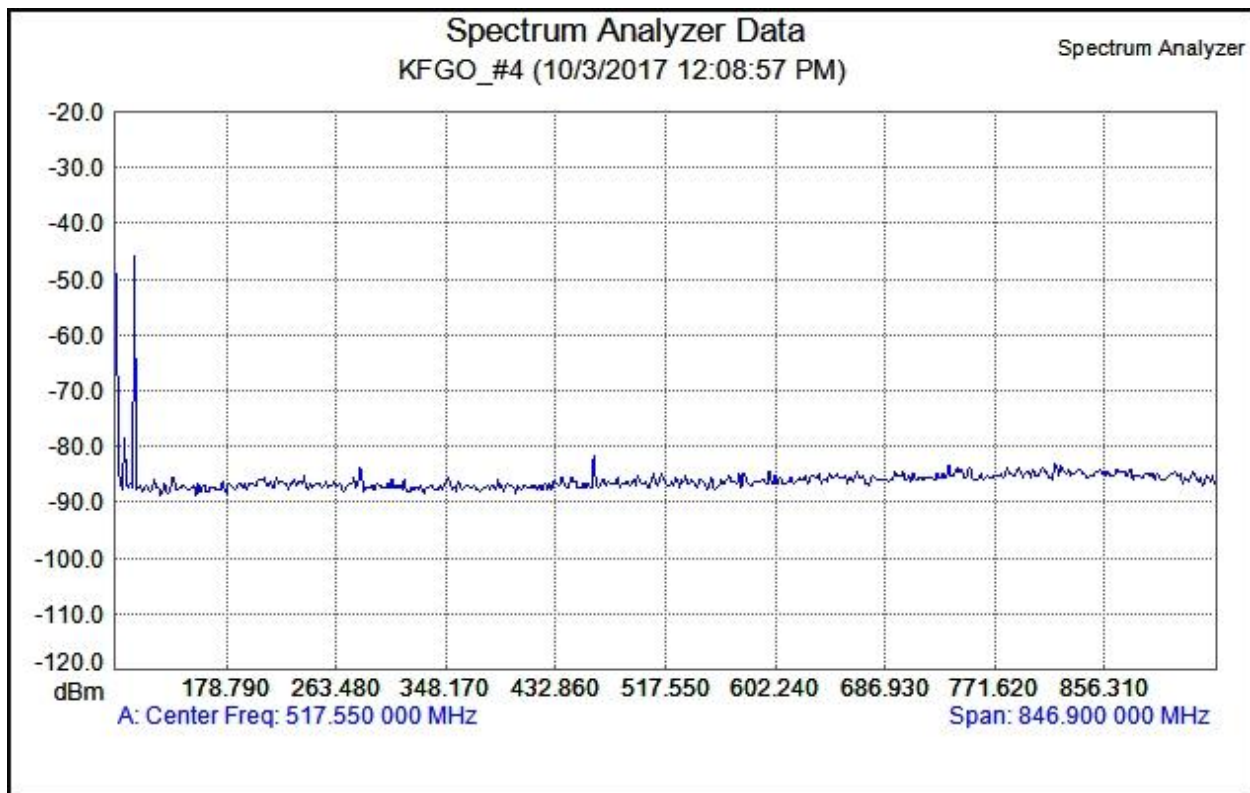
		Stop Frequency	108.300 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	6.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	107.300 000 MHz	Date	10/3/2017 11:59:30 AM
Start Frequency	106.300 000 MHz	Device Name	





Measurement Parameters

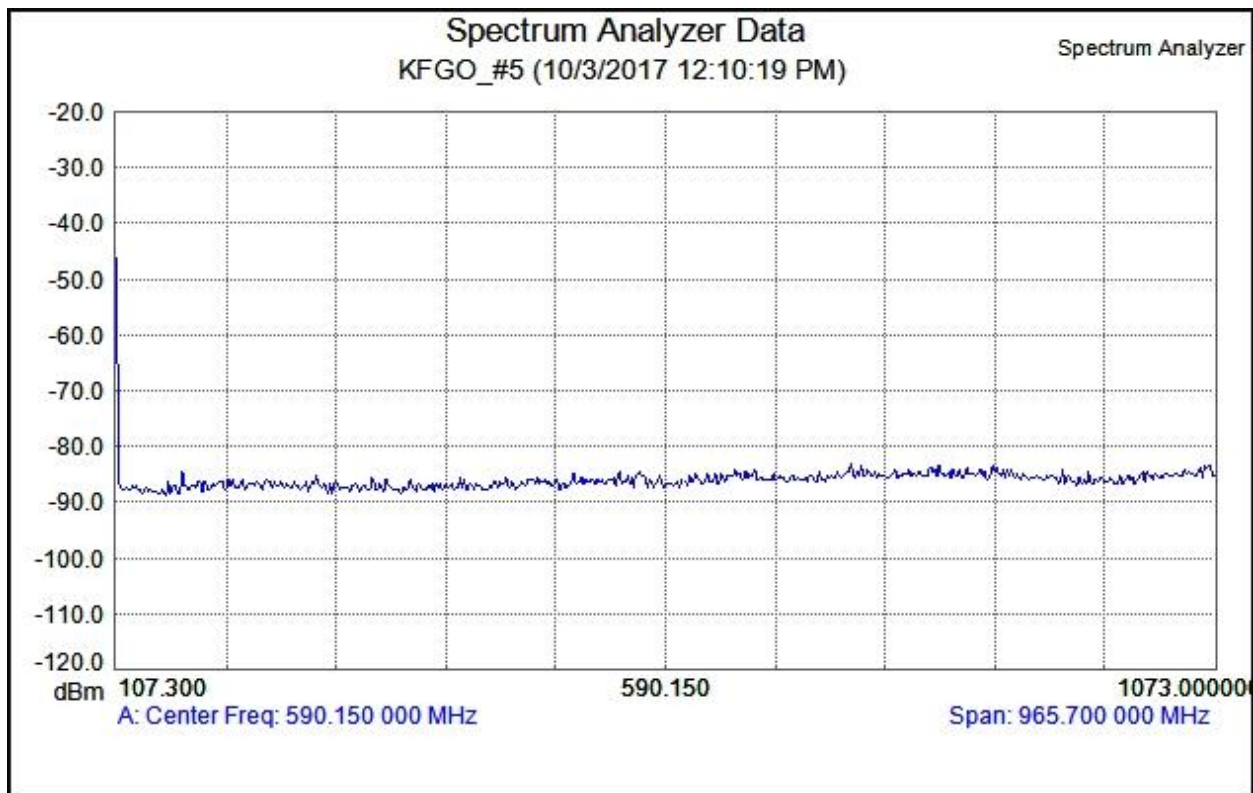
		Stop Frequency	95.100 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	6.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	94.100 000 MHz	Date	10/3/2017 12:03:55 PM
Start Frequency	93.100 000 MHz	Device Name	



**Measurement Parameters**

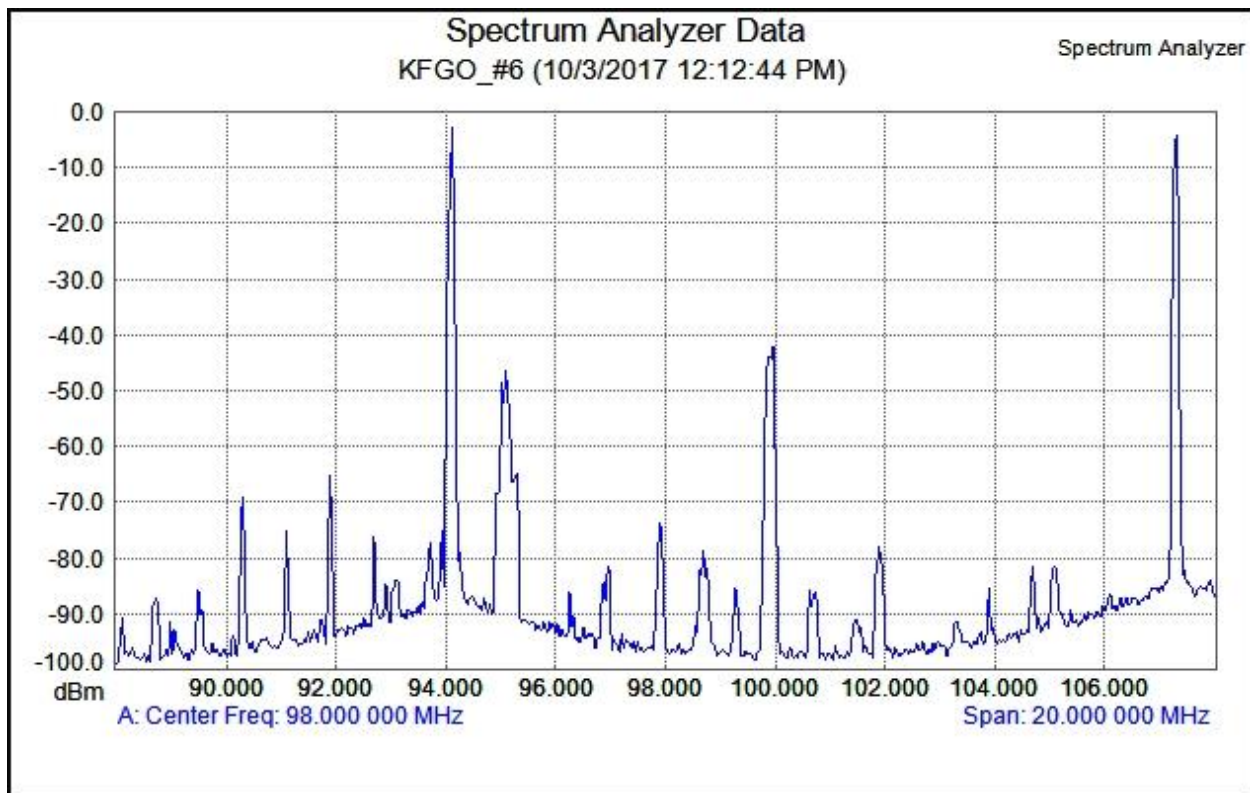
		Stop Frequency	941.000 000 MHz
Trace Mode	Max Hold	Frequency Span	846.900 000 MHz
Preamp	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	30.0 kHz	App Ver.	V5.73
VBW	10.0 kHz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	517.550 000 MHz	Date	10/3/2017 12:08:57 PM
Start Frequency	94.100 000 MHz	Device Name	





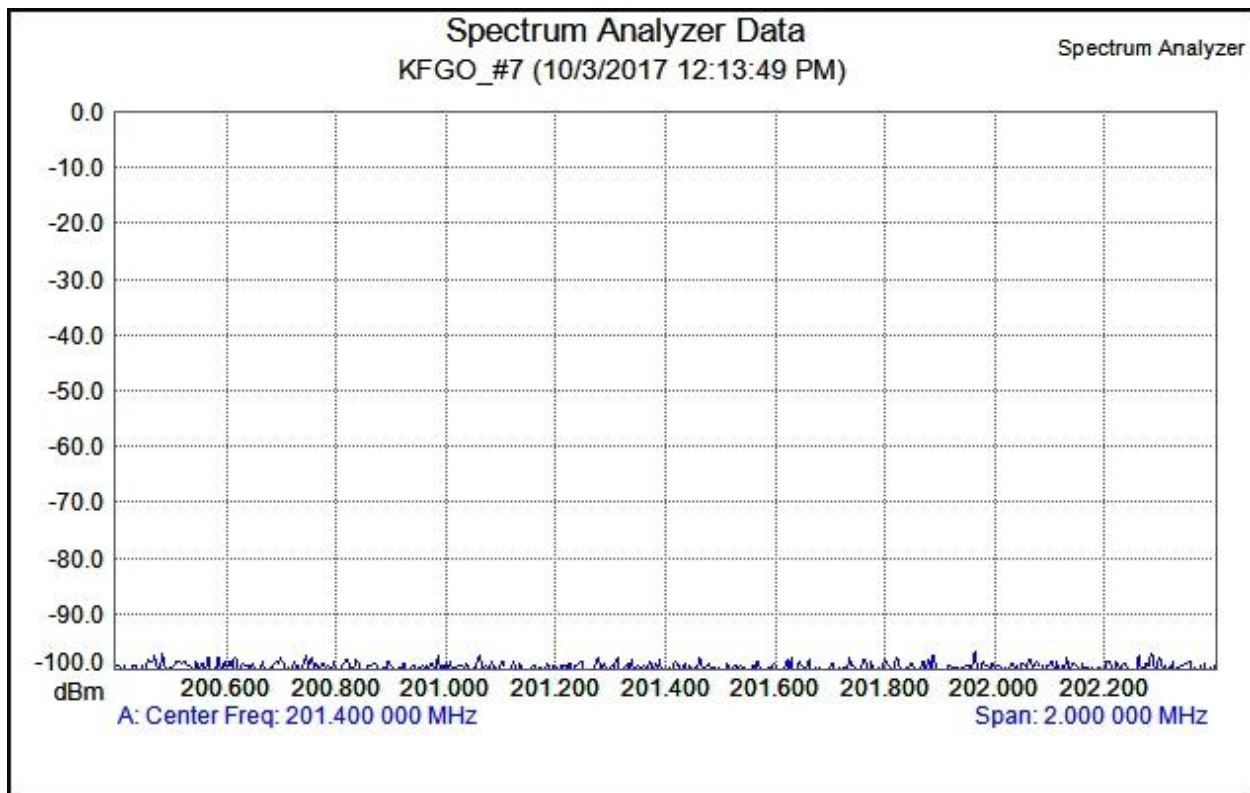
Measurement Parameters

		Stop Frequency	1.073 000 000 GHz
Trace Mode	Max Hold	Frequency Span	965.700 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	30.0 kHz	App Ver.	V5.73
VBW	10.0 kHz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	590.150 000 MHz	Date	10/3/2017 12:10:19 PM
Start Frequency	107.300 000 MHz	Device Name	



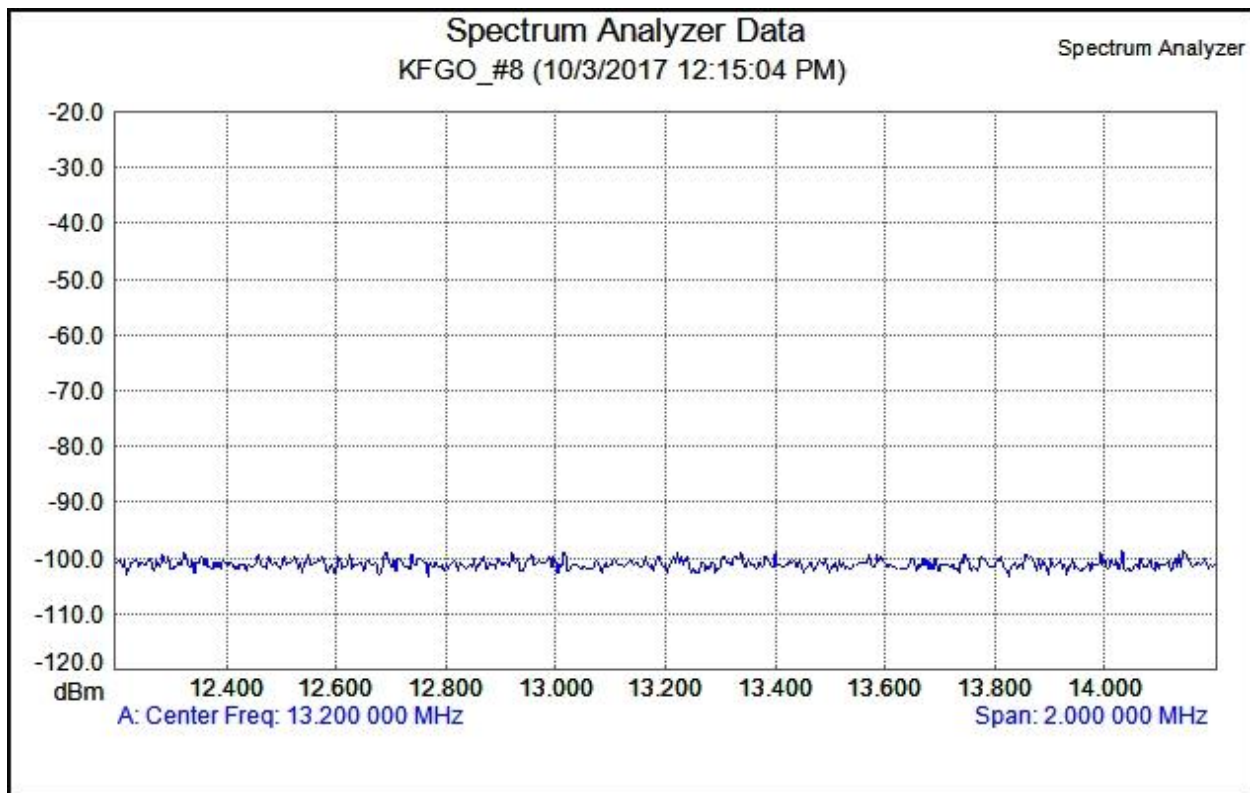
Measurement Parameters

		Stop Frequency	108.000 000 MHz
Trace Mode	Max Hold	Frequency Span	20.000 000 MHz
Preamplifier	OFF	Reference Level	-4.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	98.000 000 MHz	Date	10/3/2017 12:12:44 PM
Start Frequency	88.000 000 MHz	Device Name	



**Measurement Parameters**

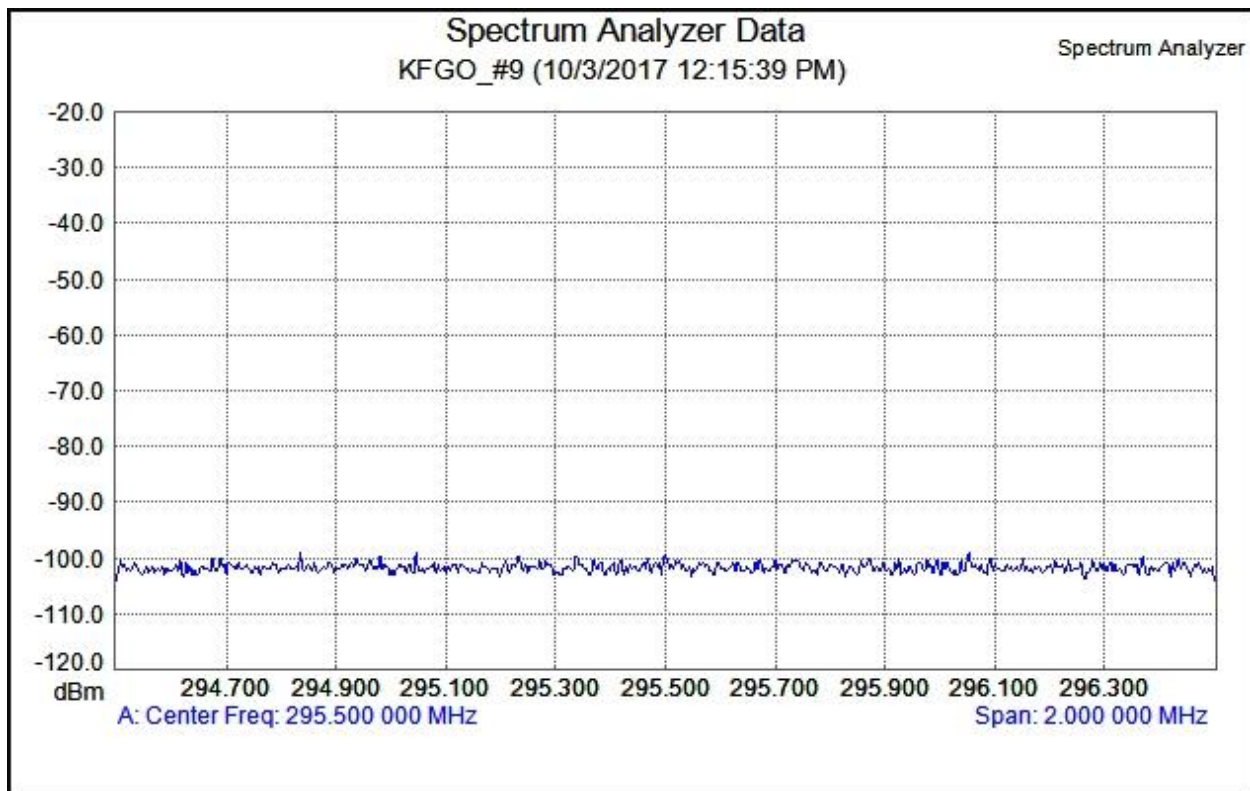
		Stop Frequency	202.400 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-4.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	201.400 000 MHz	Date	10/3/2017 12:13:49 PM
Start Frequency	200.400 000 MHz	Device Name	



Measurement Parameters

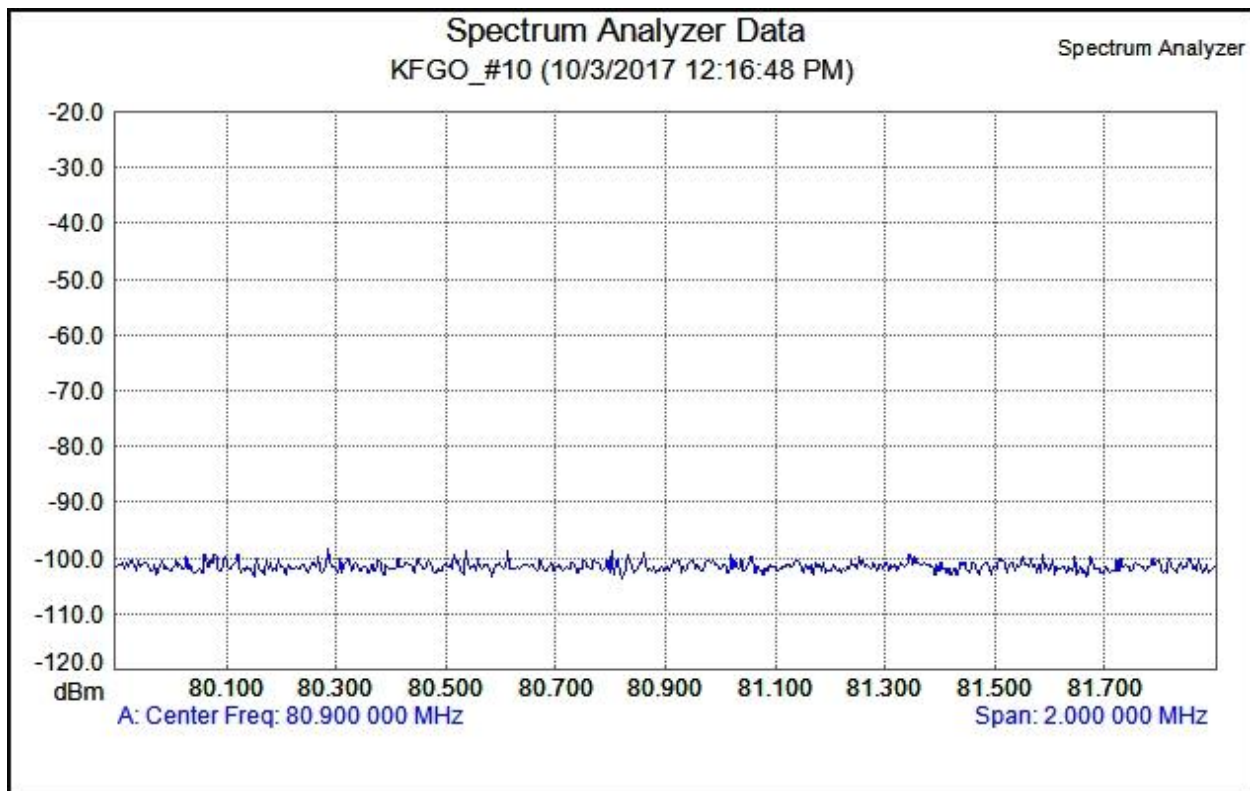
		Stop Frequency	14.200 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	13.200 000 MHz	Date	10/3/2017 12:15:04 PM
Start Frequency	12.200 000 MHz	Device Name	





**Measurement Parameters**

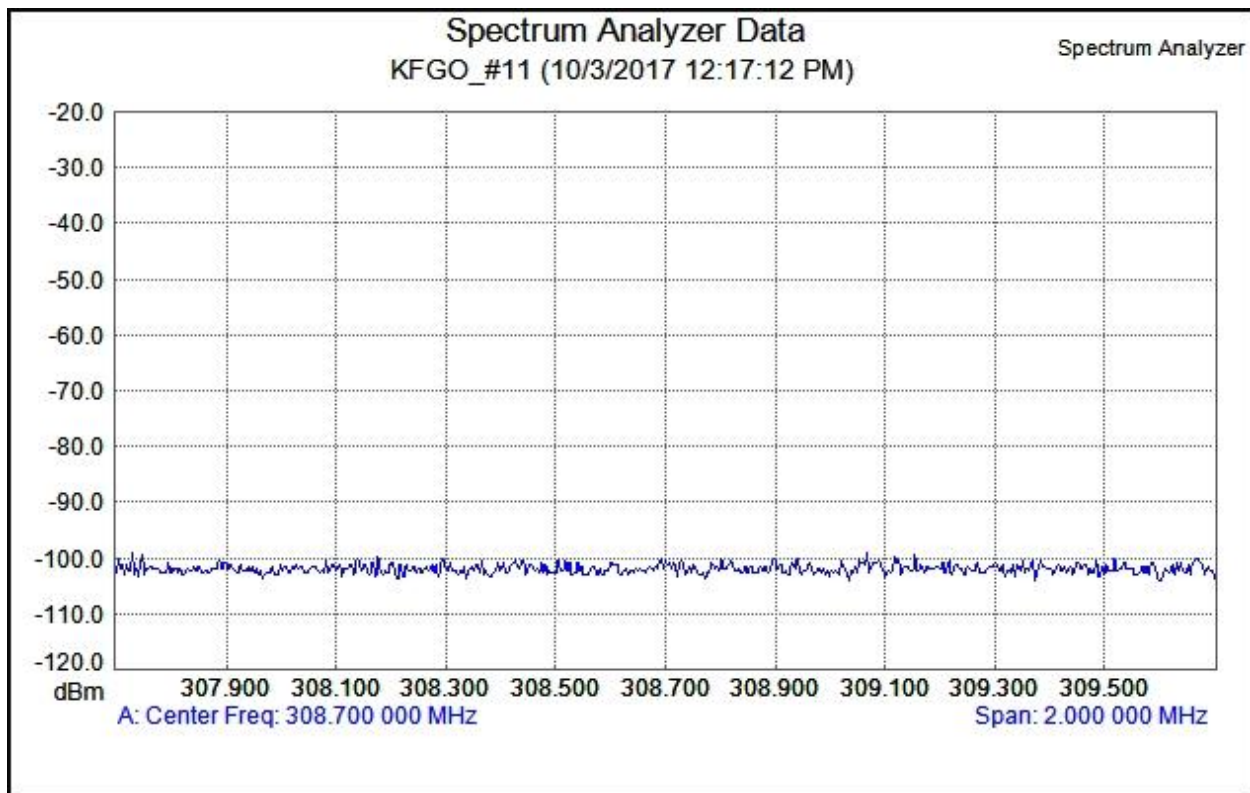
		Stop Frequency	296.500 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	295.500 000 MHz	Date	10/3/2017 12:15:39 PM
Start Frequency	294.500 000 MHz	Device Name	



**Measurement Parameters**

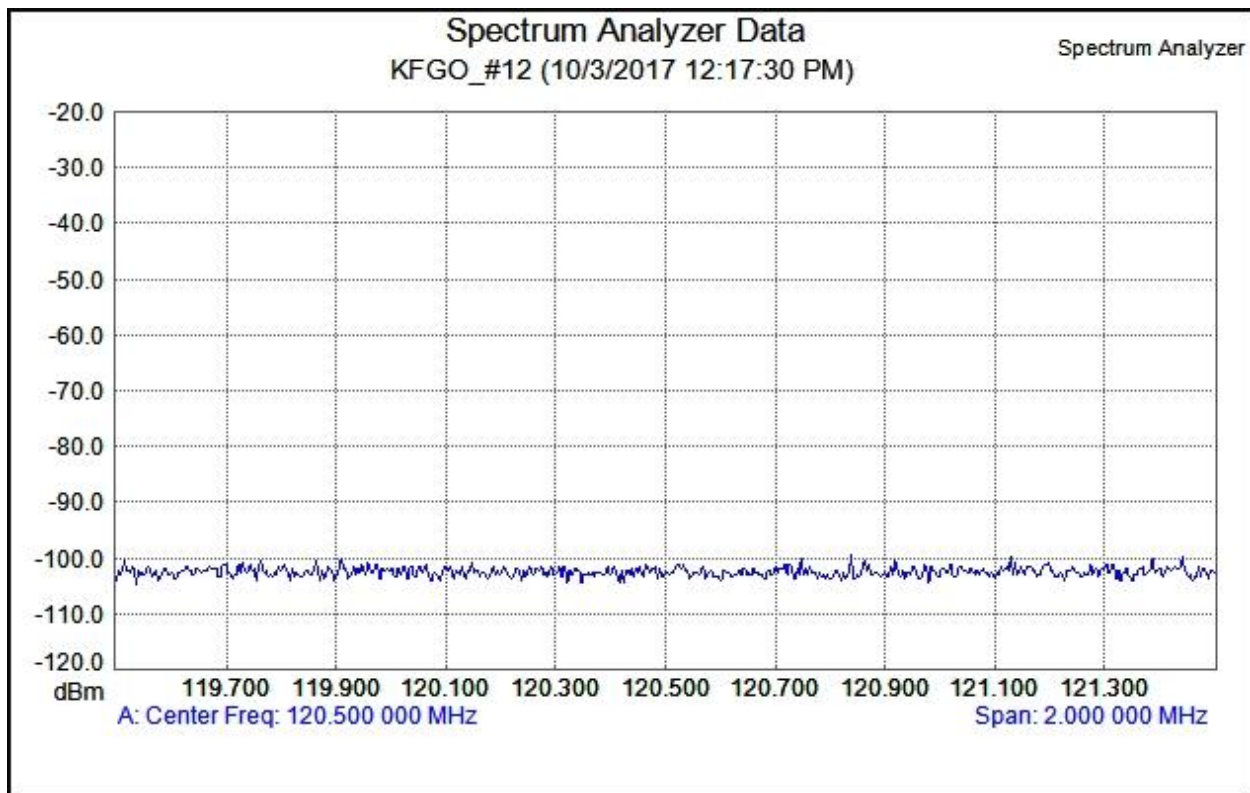
		Stop Frequency	81.900 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamp	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	80.900 000 MHz	Date	10/3/2017 12:16:48 PM
Start Frequency	79.900 000 MHz	Device Name	





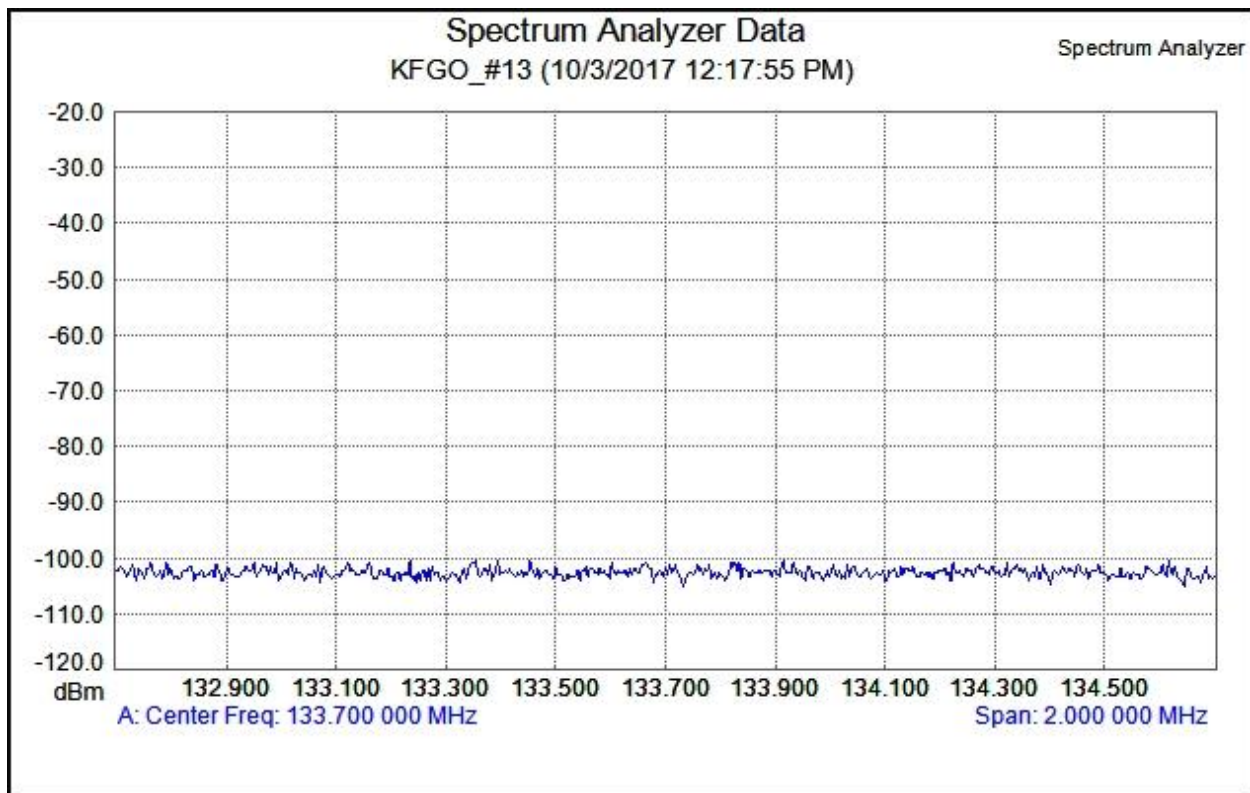
**Measurement Parameters**

		Stop Frequency	309.700 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	308.700 000 MHz	Date	10/3/2017 12:17:12 PM
Start Frequency	307.700 000 MHz	Device Name	



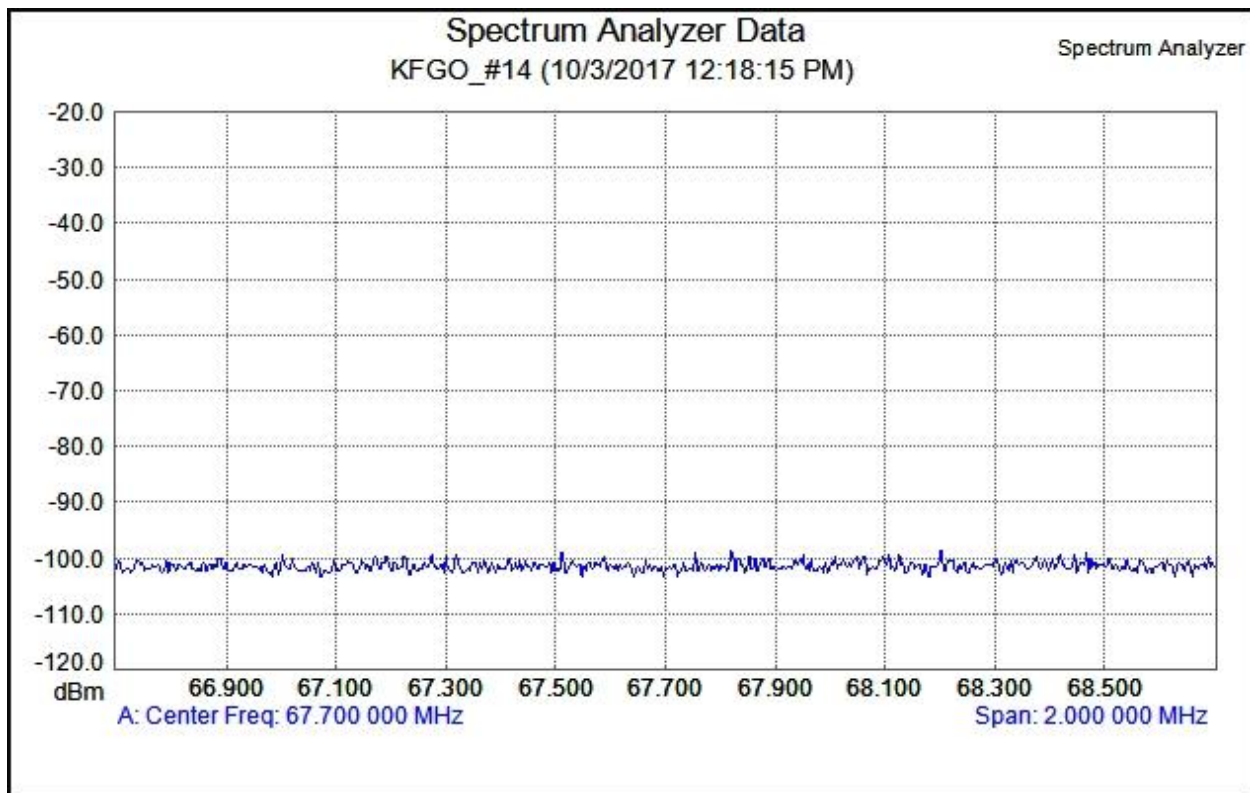
**Measurement Parameters**

		Stop Frequency	121.500 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamp	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	120.500 000 MHz	Date	10/3/2017 12:17:30 PM
Start Frequency	119.500 000 MHz	Device Name	



**Measurement Parameters**

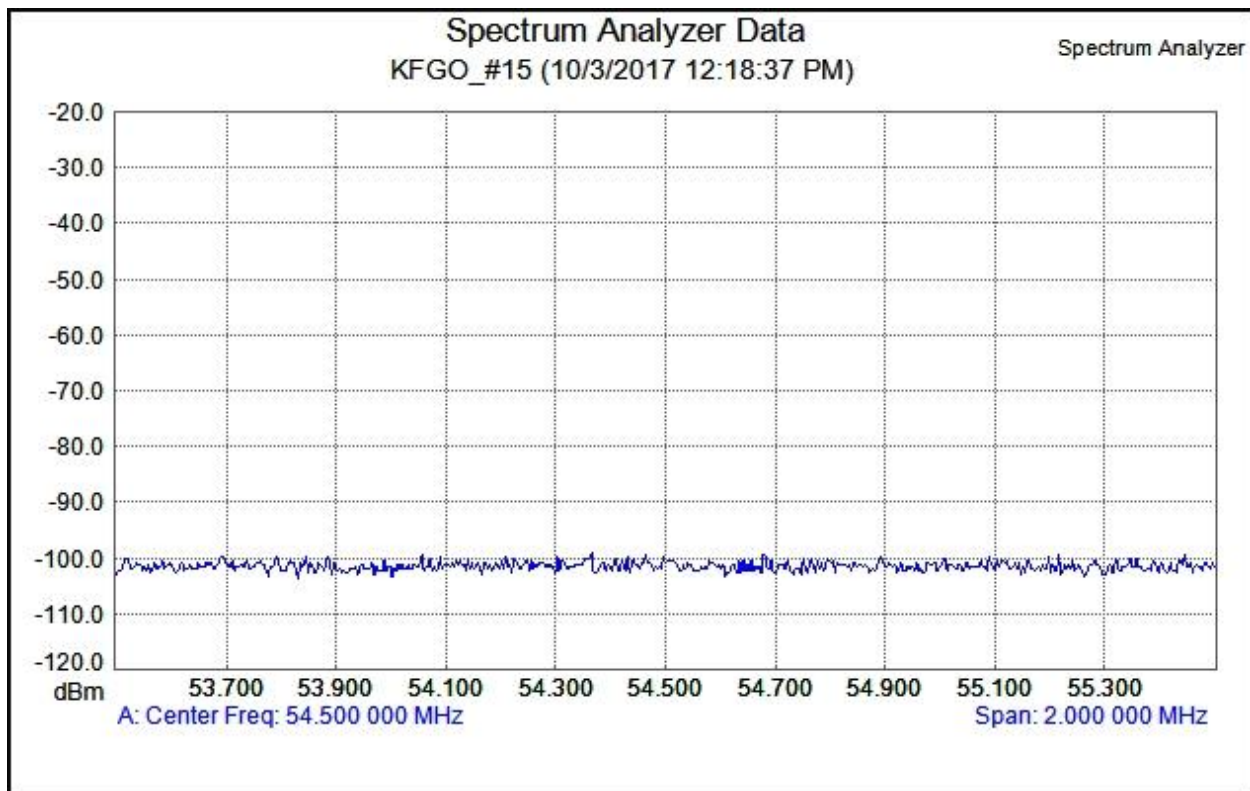
		Stop Frequency	134.700 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	133.700 000 MHz	Date	10/3/2017 12:17:55 PM
Start Frequency	132.700 000 MHz	Device Name	



Measurement Parameters

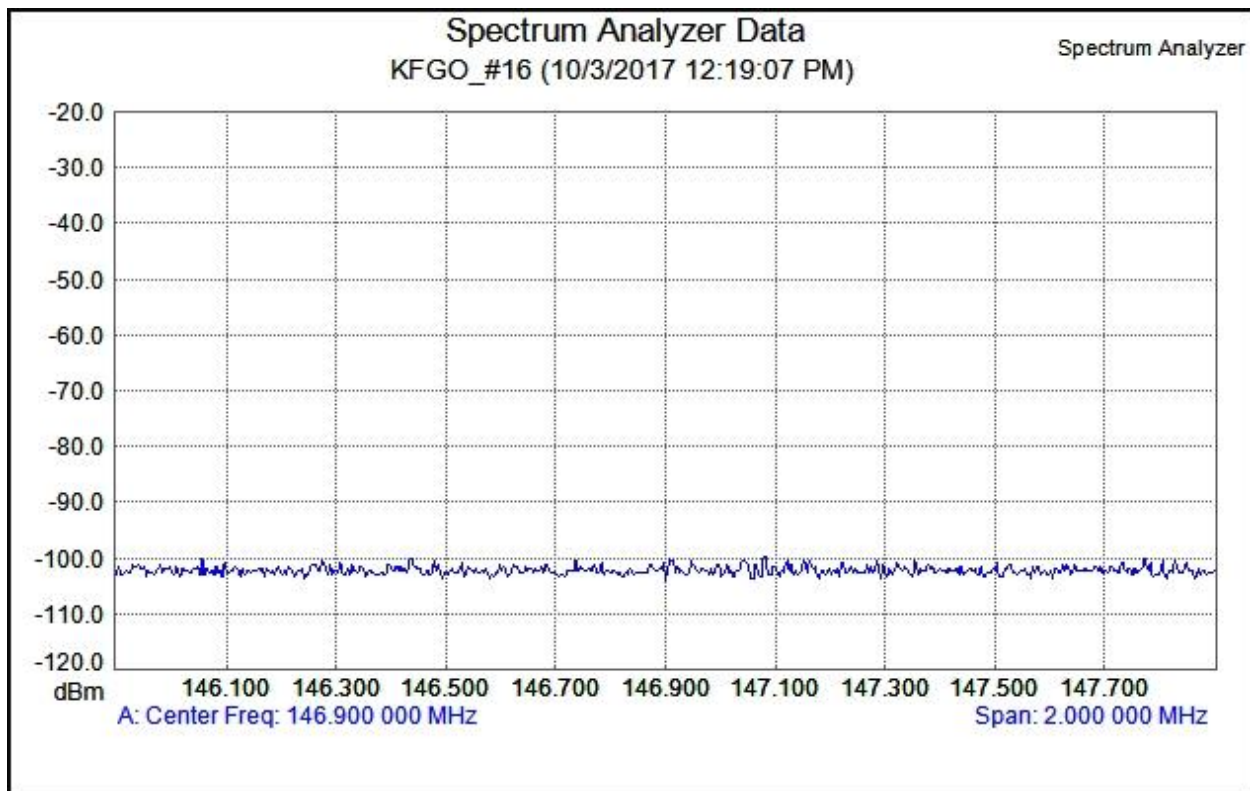
		Stop Frequency	68.700 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	67.700 000 MHz	Date	10/3/2017 12:18:15 PM
Start Frequency	66.700 000 MHz	Device Name	





Measurement Parameters

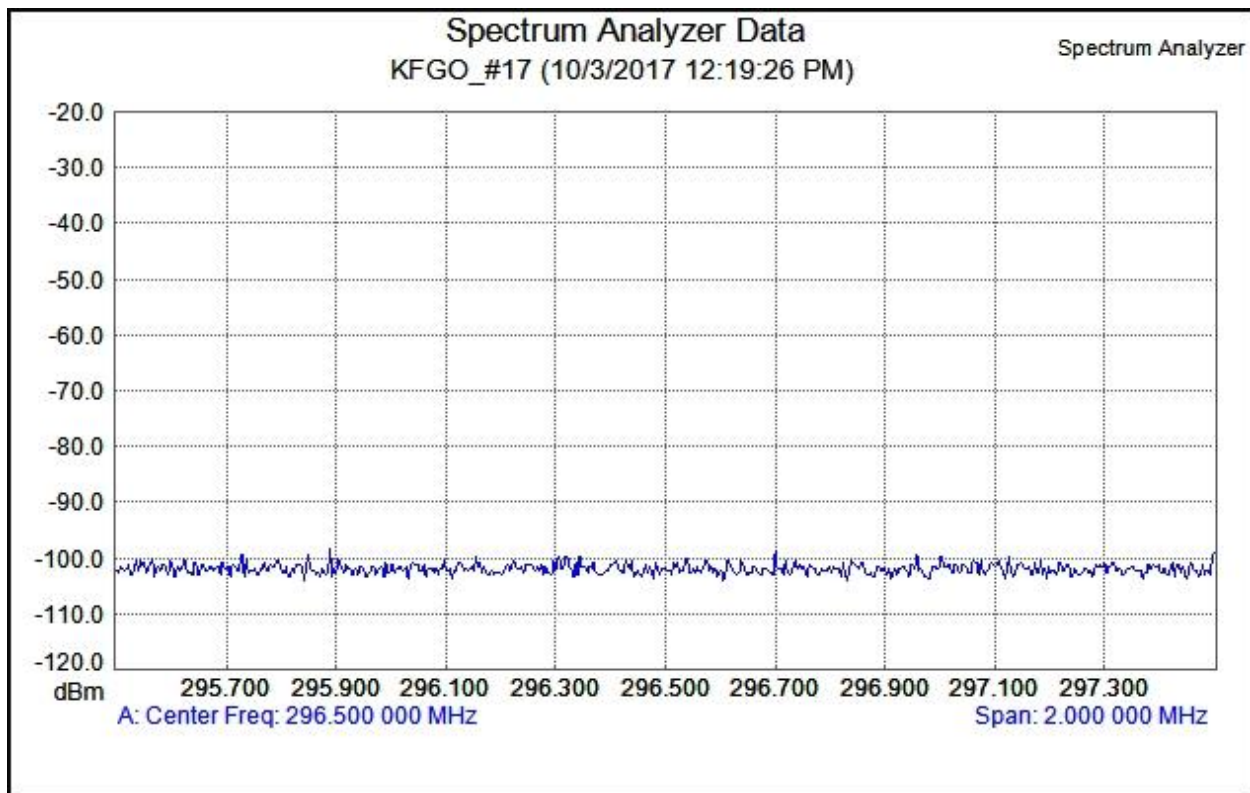
		Stop Frequency	55.500 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	54.500 000 MHz	Date	10/3/2017 12:18:37 PM
Start Frequency	53.500 000 MHz	Device Name	



**Measurement Parameters**

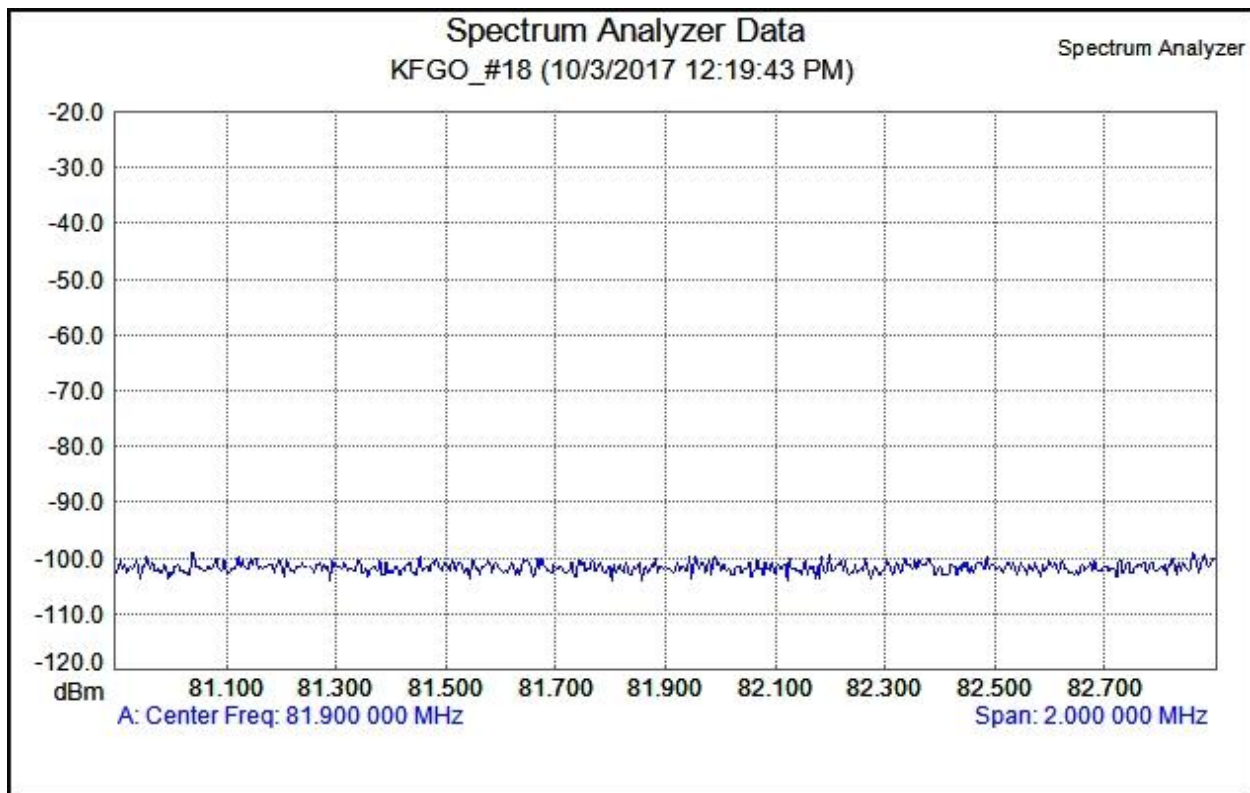
		Stop Frequency	147.900 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	146.900 000 MHz	Date	10/3/2017 12:19:07 PM
Start Frequency	145.900 000 MHz	Device Name	





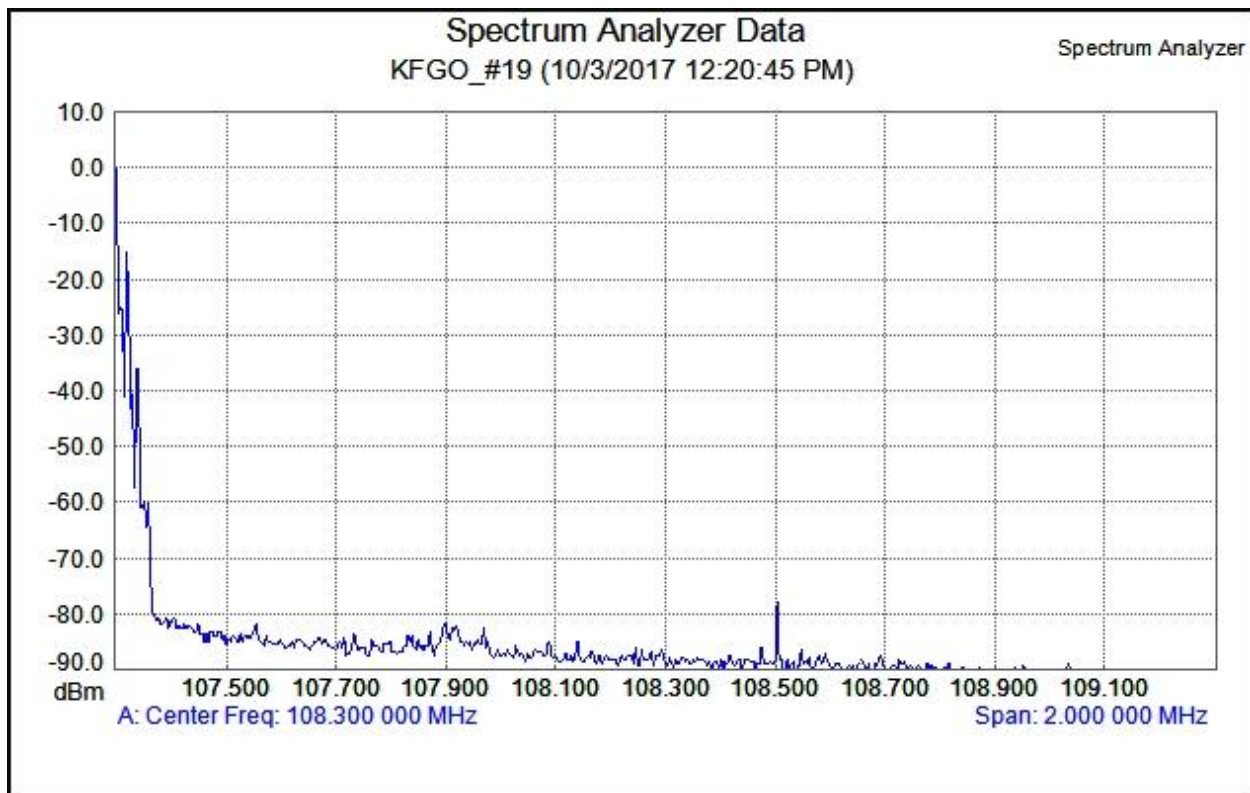
**Measurement Parameters**

		Stop Frequency	297.500 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	296.500 000 MHz	Date	10/3/2017 12:19:26 PM
Start Frequency	295.500 000 MHz	Device Name	



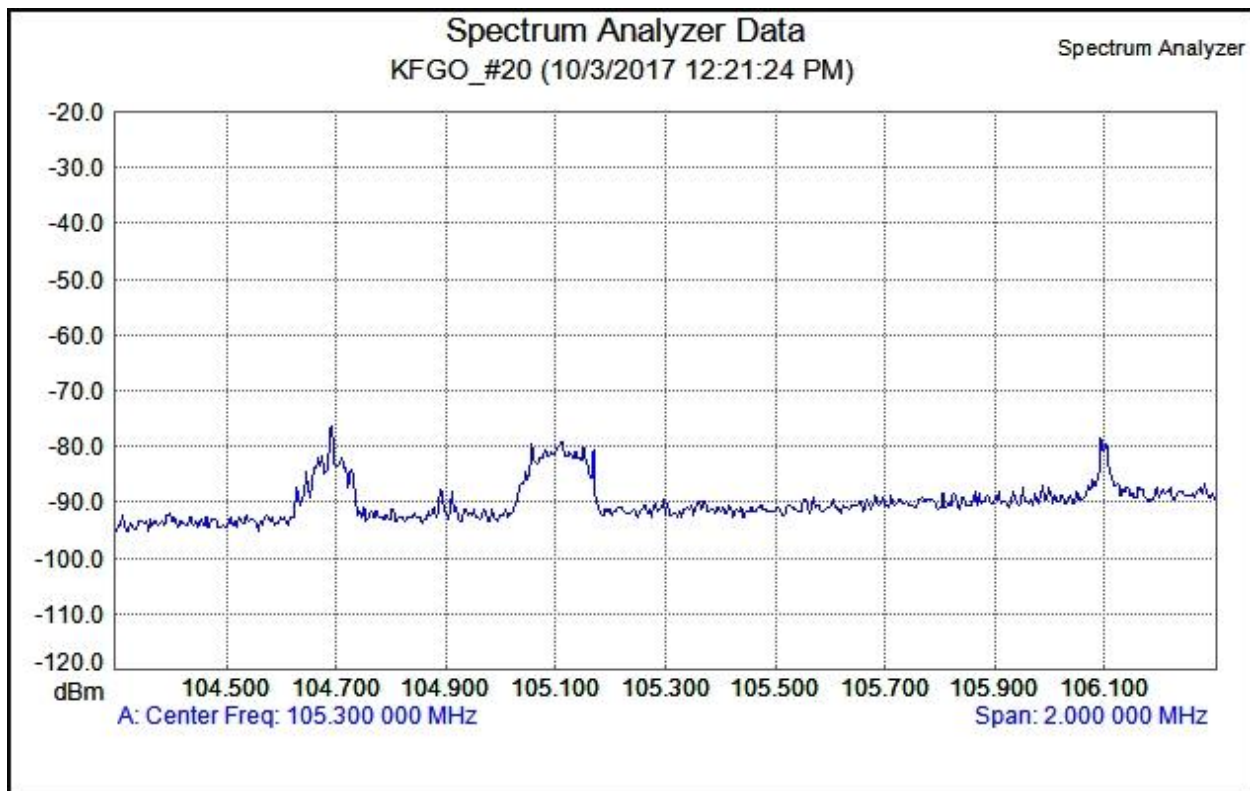
Measurement Parameters

		Stop Frequency	82.900 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	81.900 000 MHz	Date	10/3/2017 12:19:43 PM
Start Frequency	80.900 000 MHz	Device Name	



Measurement Parameters

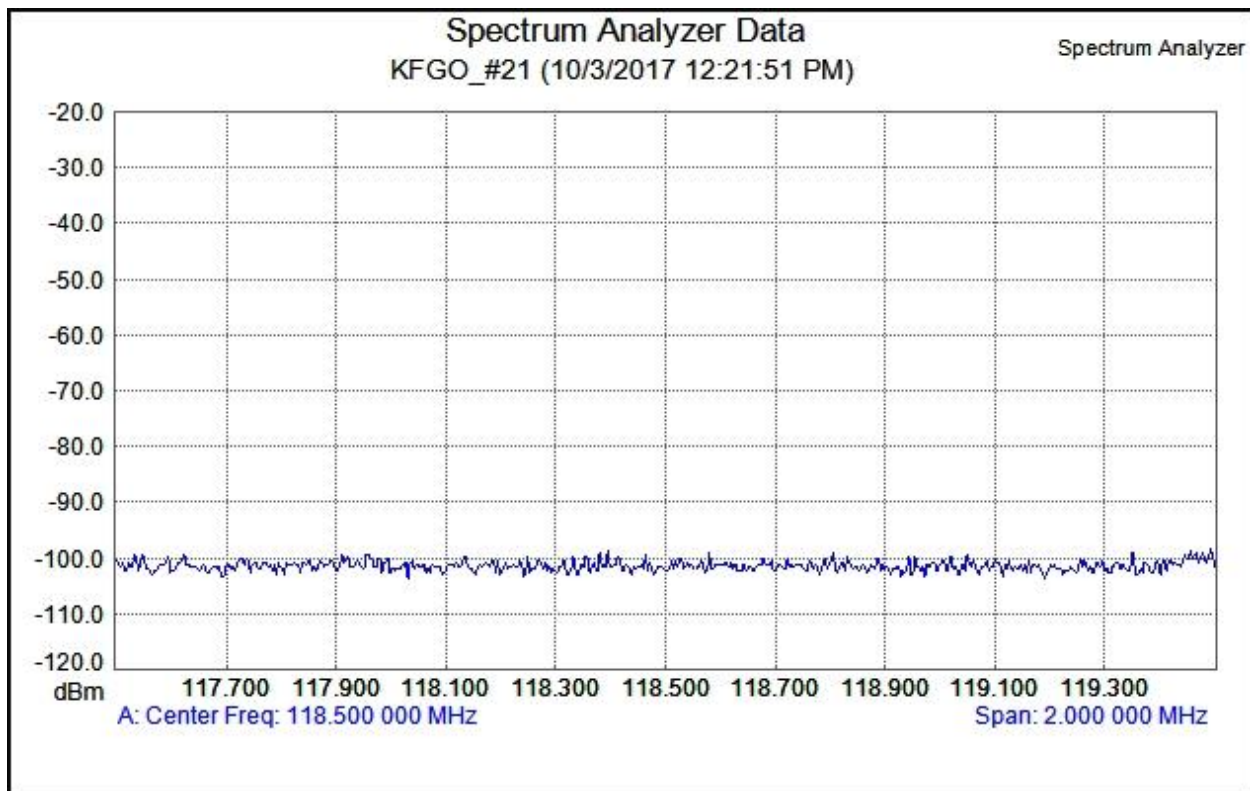
		Stop Frequency	109.300 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	6.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	108.300 000 MHz	Date	10/3/2017 12:20:45 PM
Start Frequency	107.300 000 MHz	Device Name	



Measurement Parameters

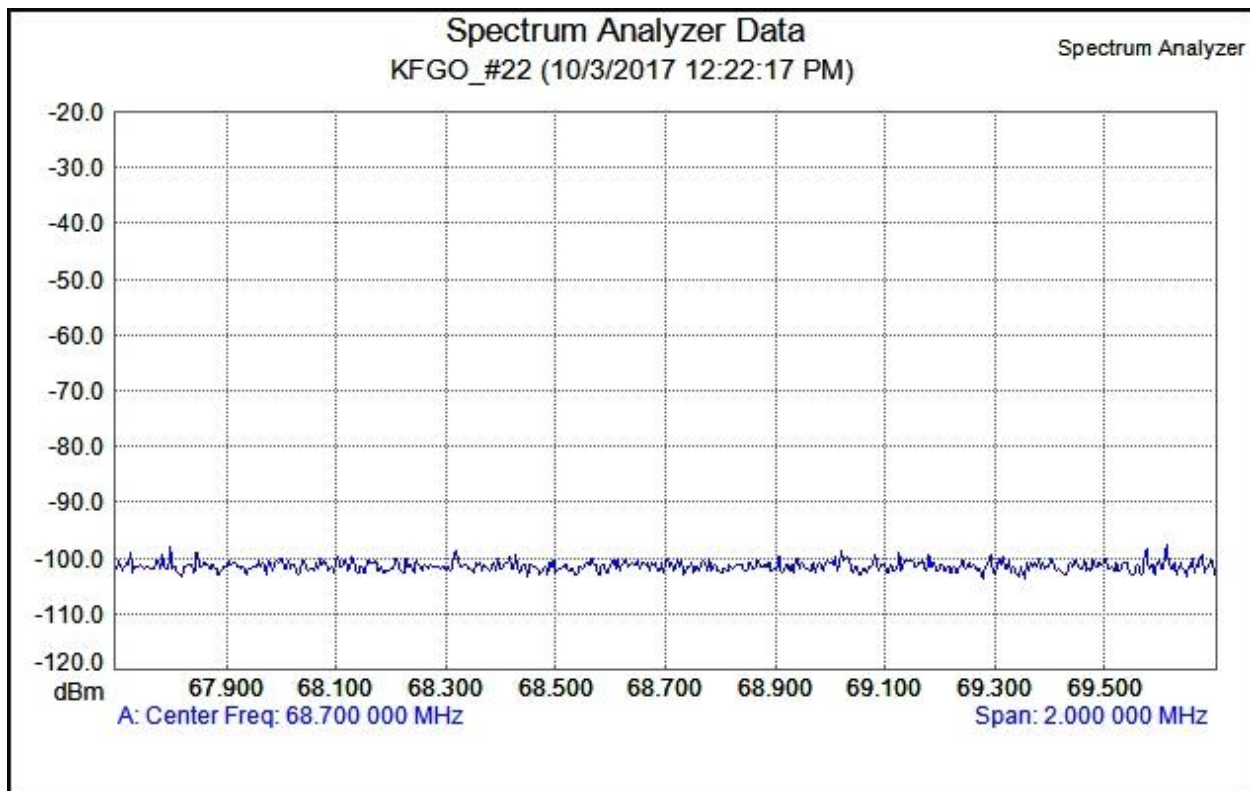
		Stop Frequency	106.300 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	105.300 000 MHz	Date	10/3/2017 12:21:24 PM
Start Frequency	104.300 000 MHz	Device Name	





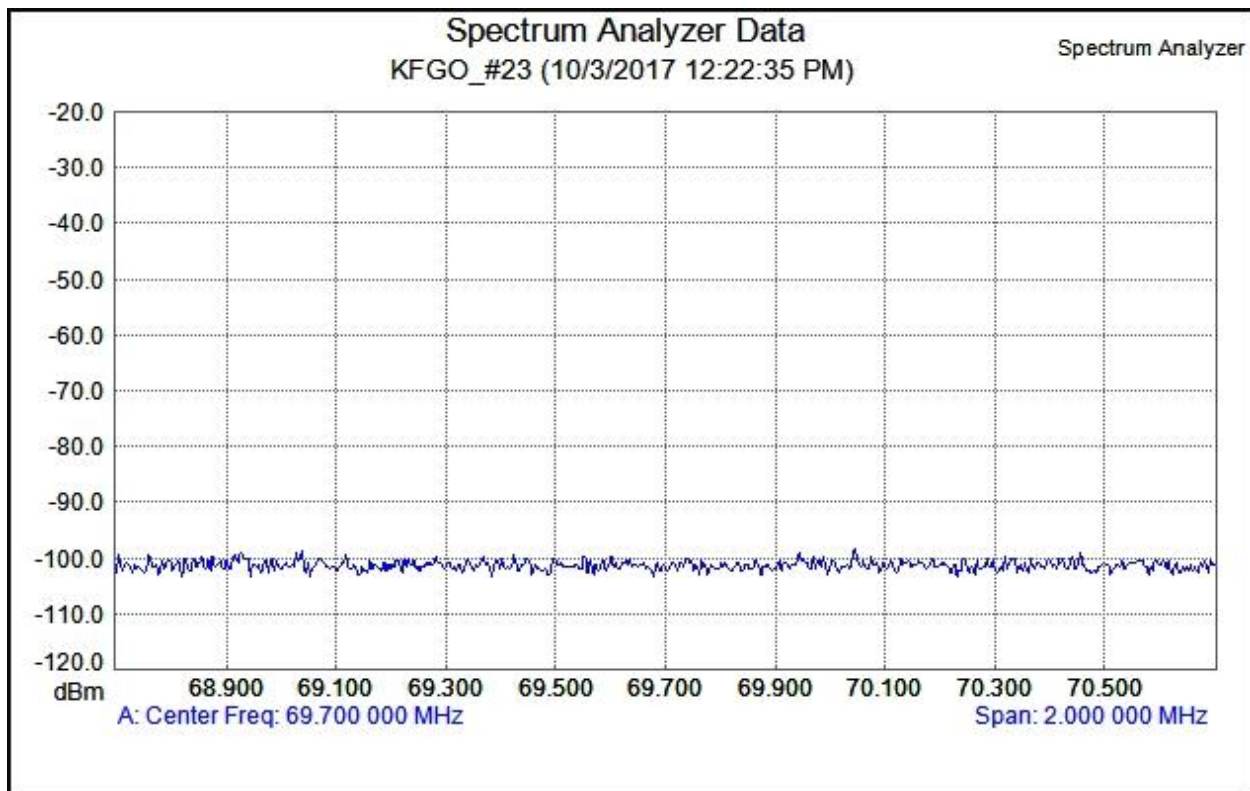
Measurement Parameters

		Stop Frequency	119.500 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	118.500 000 MHz	Date	10/3/2017 12:21:51 PM
Start Frequency	117.500 000 MHz	Device Name	



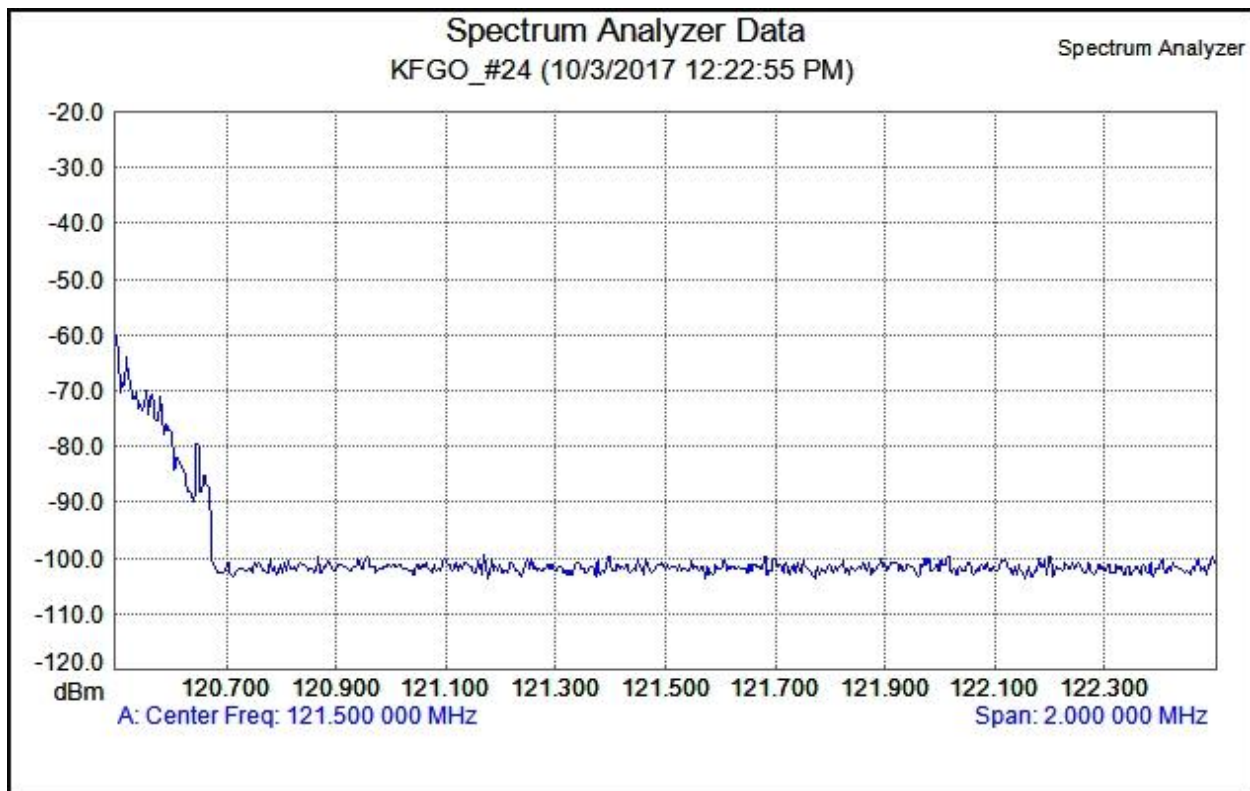
Measurement Parameters			
		Stop Frequency	69.700 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	68.700 000 MHz	Date	10/3/2017 12:22:17 PM
Start Frequency	67.700 000 MHz	Device Name	





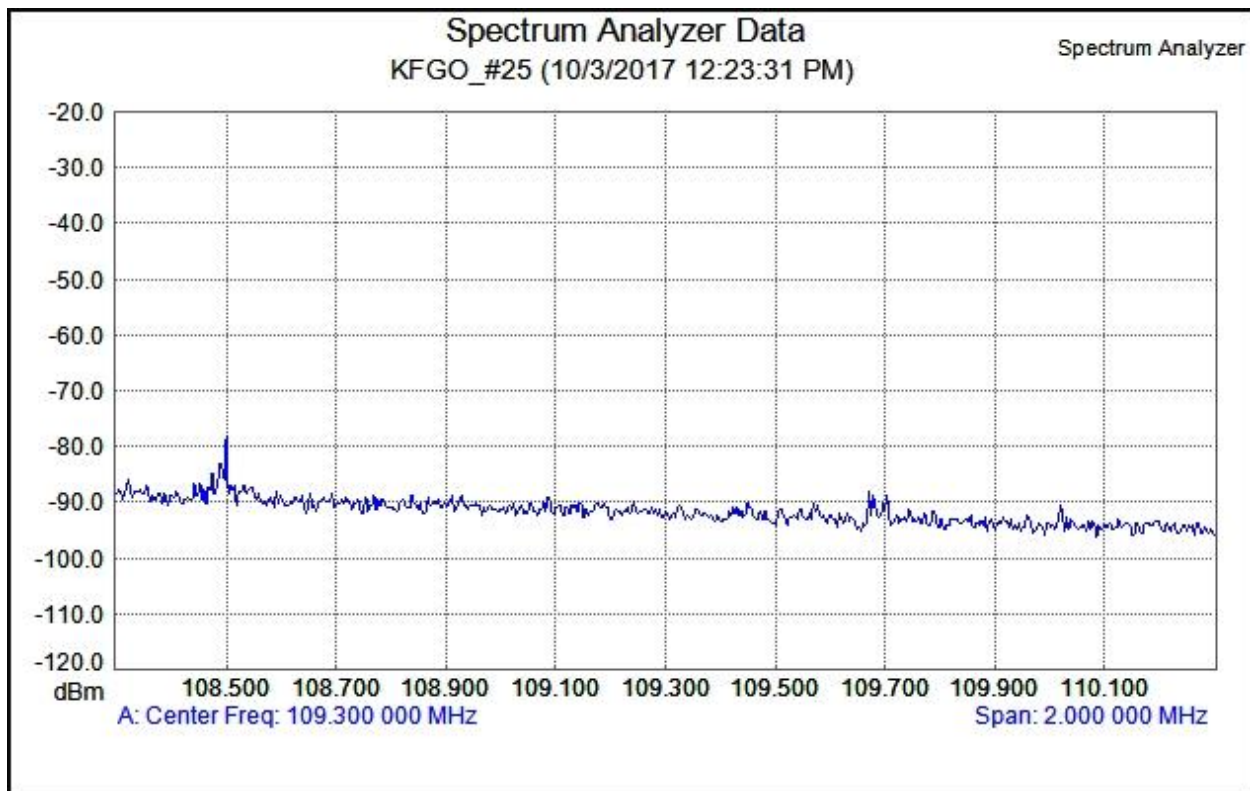
**Measurement Parameters**

		Stop Frequency	70.700 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamp	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	69.700 000 MHz	Date	10/3/2017 12:22:35 PM
Start Frequency	68.700 000 MHz	Device Name	



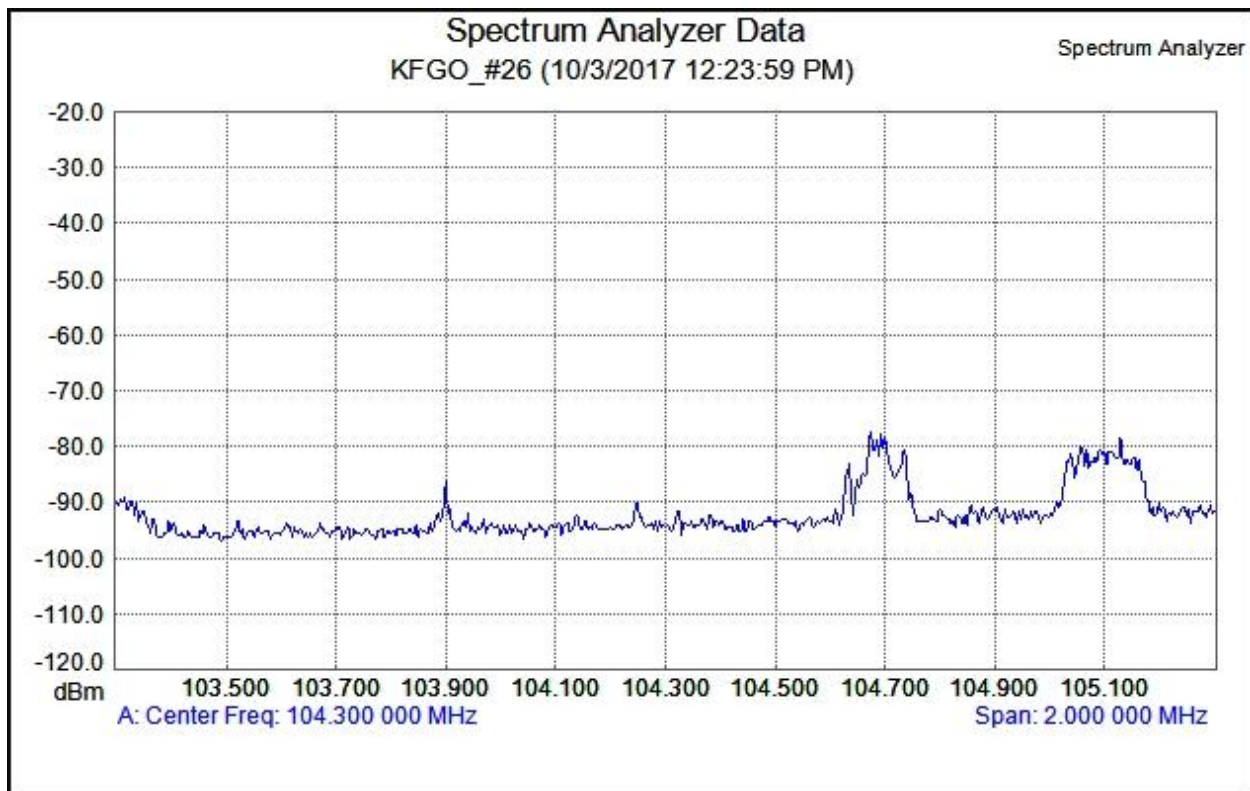
Measurement Parameters

		Stop Frequency	122.500 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	121.500 000 MHz	Date	10/3/2017 12:22:55 PM
Start Frequency	120.500 000 MHz	Device Name	



**Measurement Parameters**

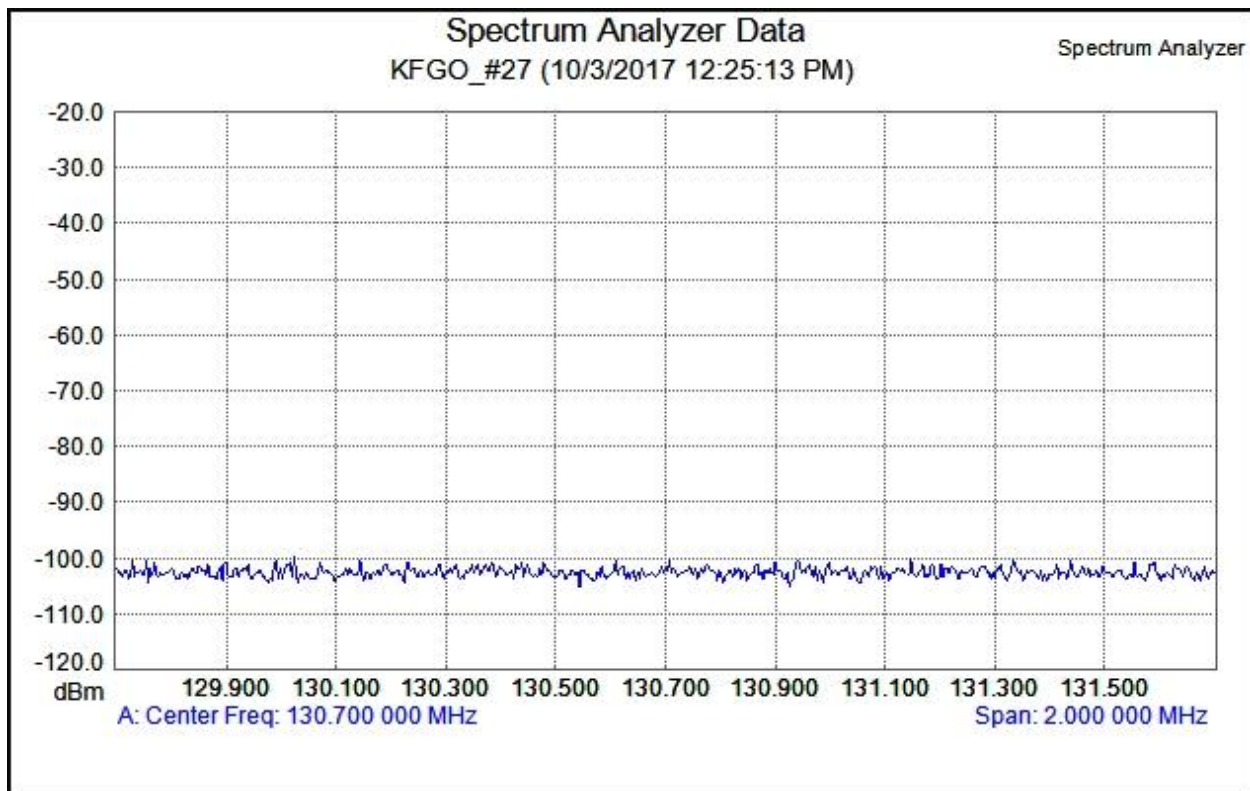
		Stop Frequency	110.300 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	109.300 000 MHz	Date	10/3/2017 12:23:31 PM
Start Frequency	108.300 000 MHz	Device Name	



**Measurement Parameters**

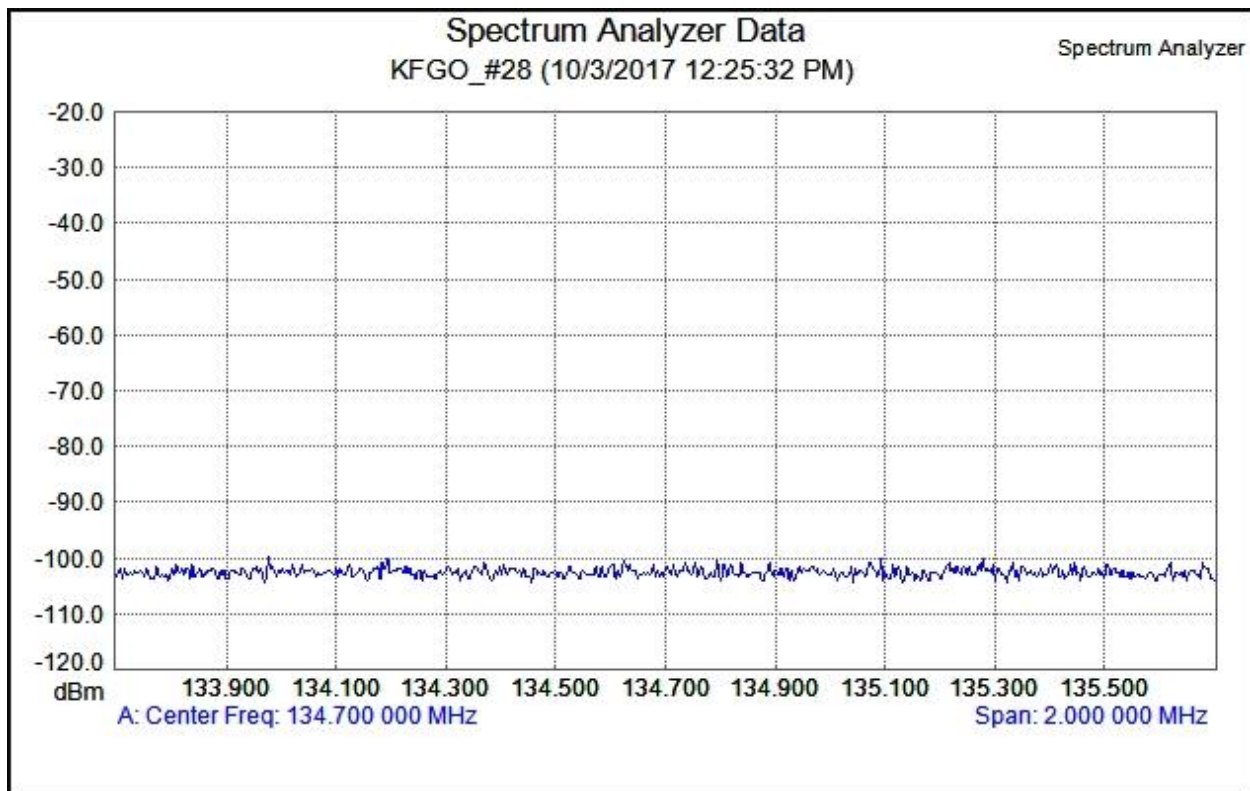
		Stop Frequency	105.300 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	104.300 000 MHz	Date	10/3/2017 12:23:59 PM
Start Frequency	103.300 000 MHz	Device Name	





**Measurement Parameters**

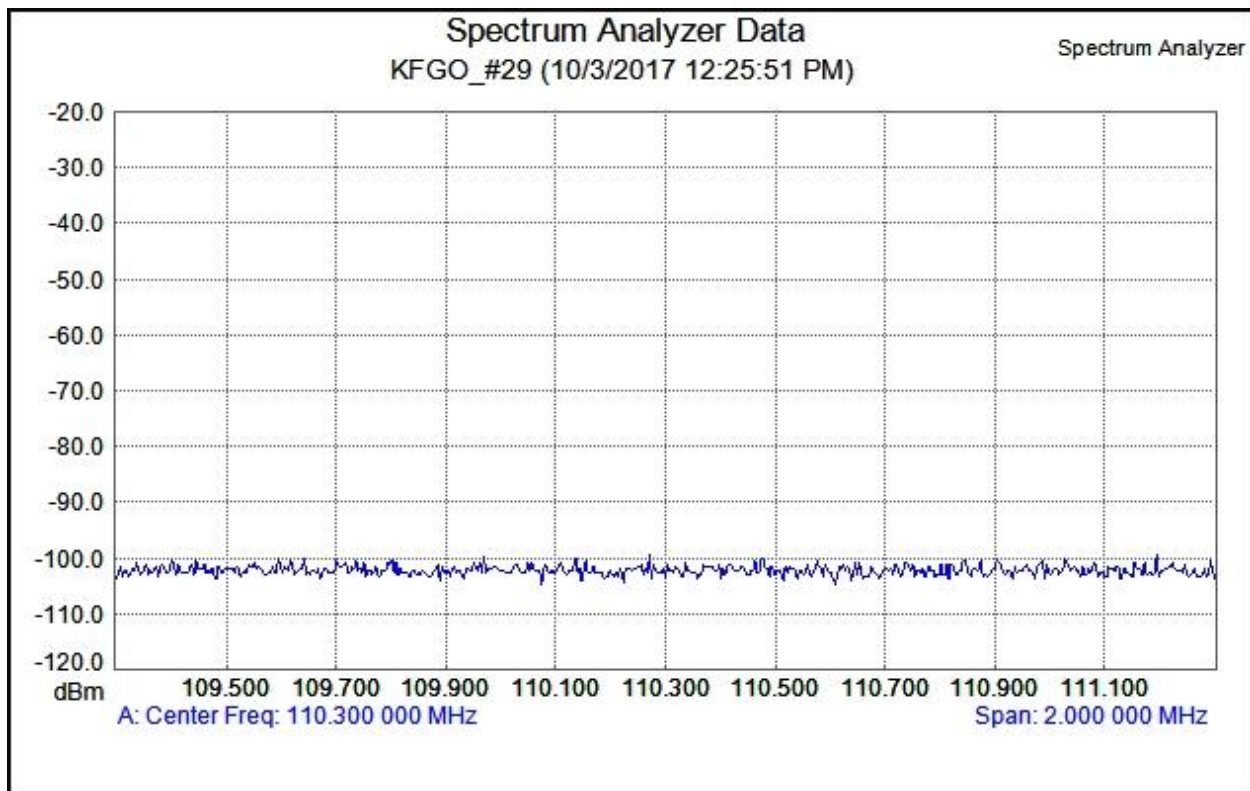
		Stop Frequency	131.700 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	130.700 000 MHz	Date	10/3/2017 12:25:13 PM
Start Frequency	129.700 000 MHz	Device Name	



**Measurement Parameters**

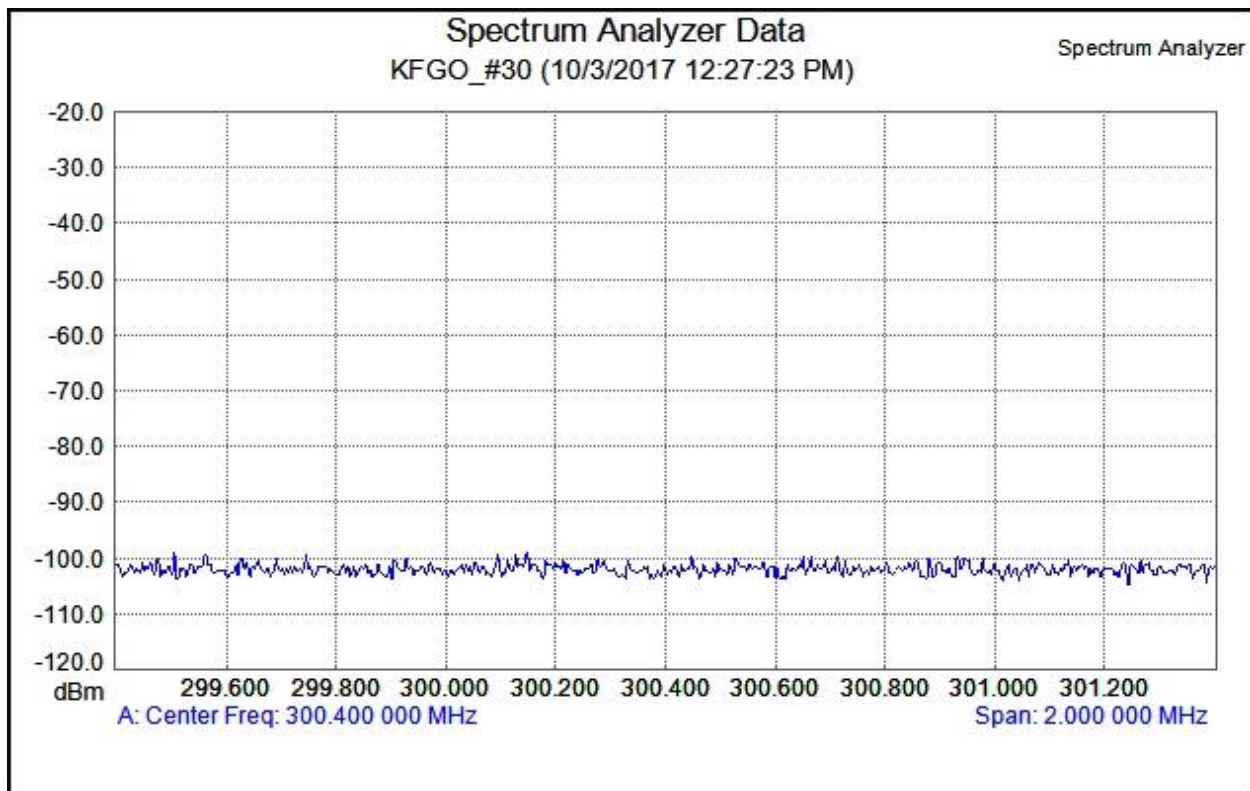
		Stop Frequency	135.700 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	134.700 000 MHz	Date	10/3/2017 12:25:32 PM
Start Frequency	133.700 000 MHz	Device Name	





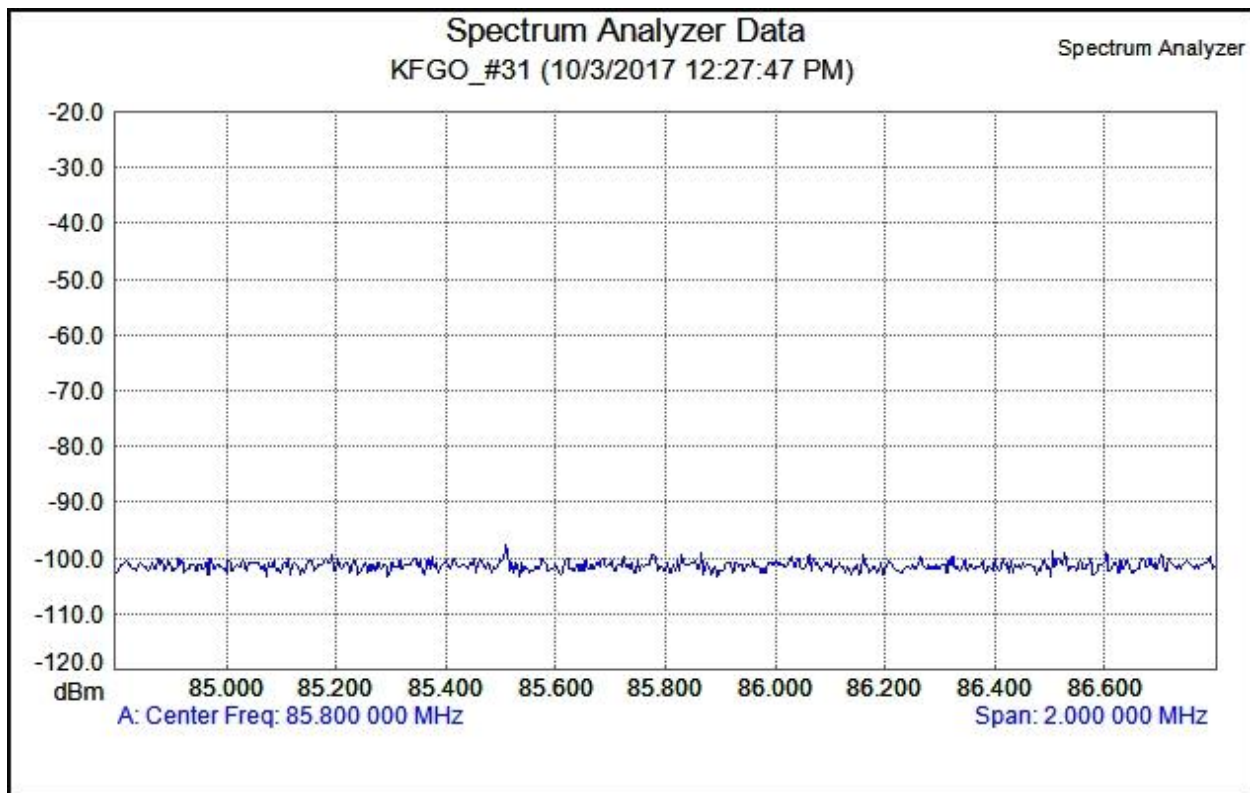
**Measurement Parameters**

		Stop Frequency	111.300 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	110.300 000 MHz	Date	10/3/2017 12:25:51 PM
Start Frequency	109.300 000 MHz	Device Name	



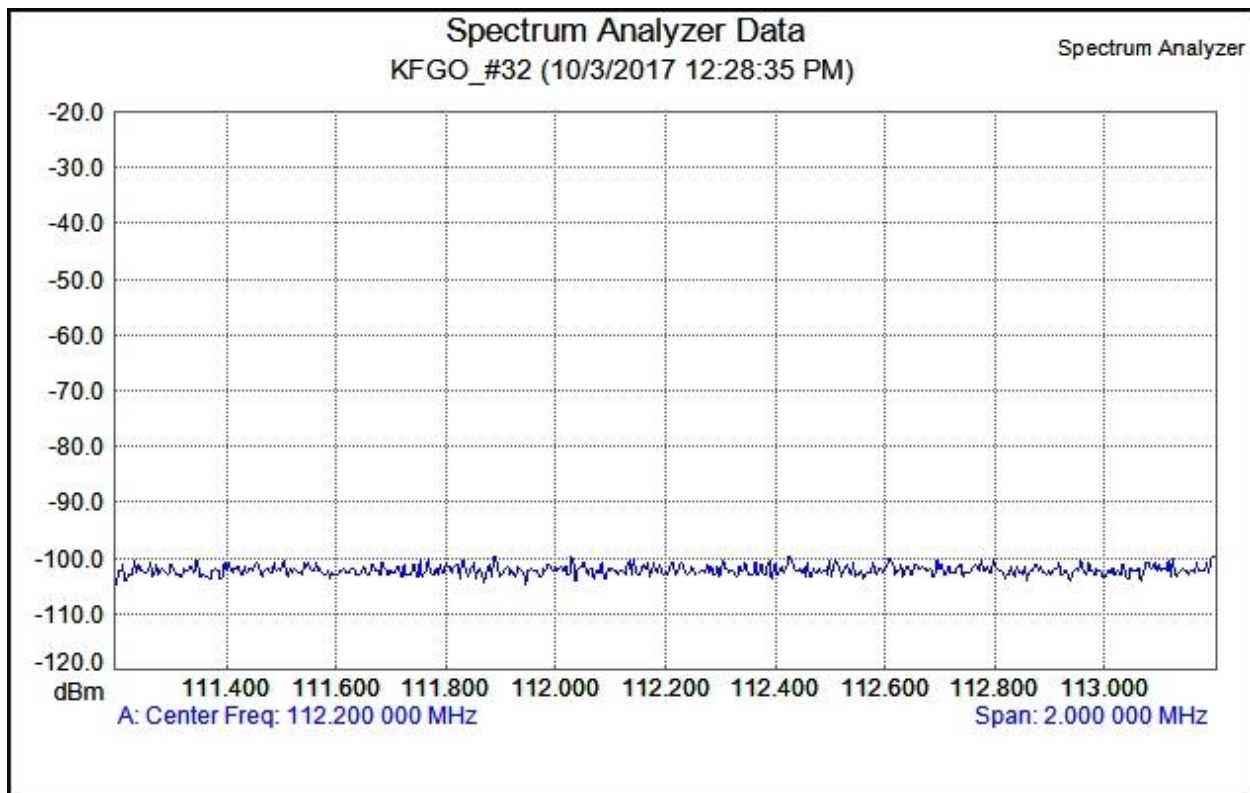
**Measurement Parameters**

		Stop Frequency	301.400 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	300.400 000 MHz	Date	10/3/2017 12:27:23 PM
Start Frequency	299.400 000 MHz	Device Name	



Measurement Parameters

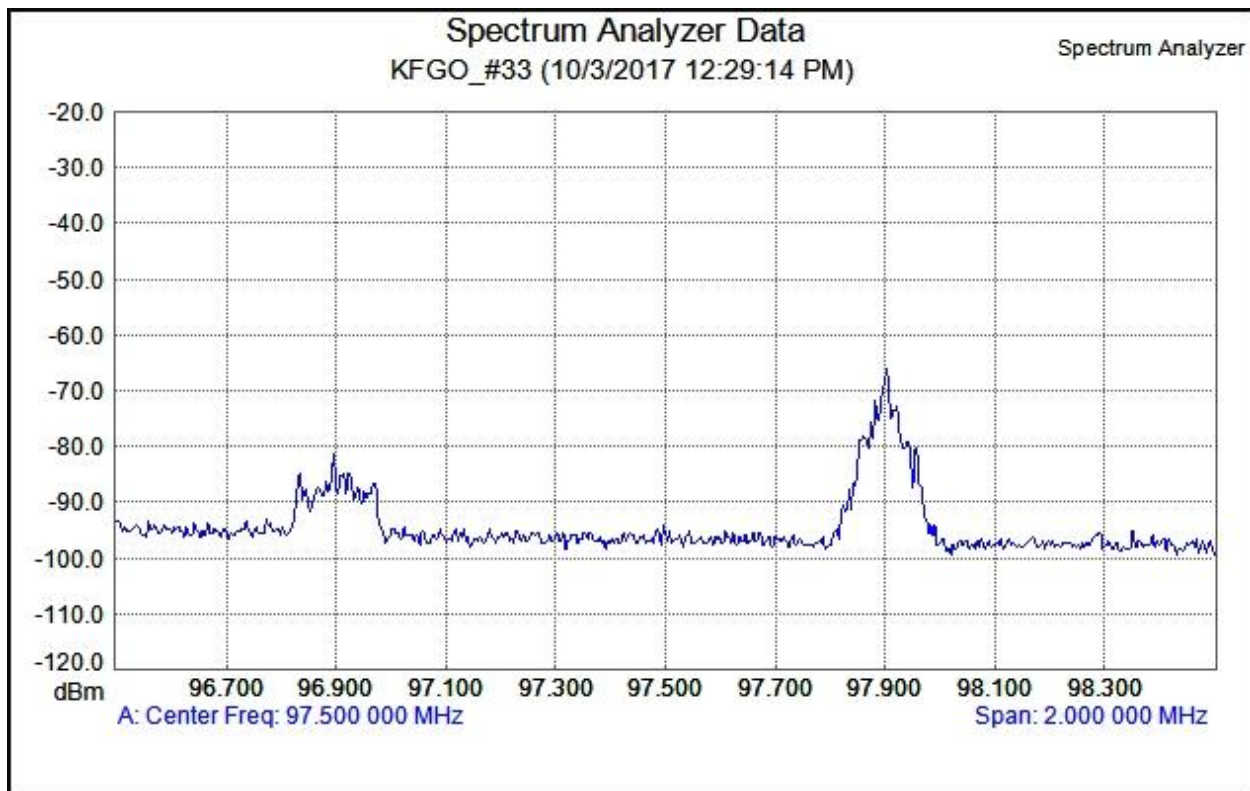
		Stop Frequency	86.800 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	85.800 000 MHz	Date	10/3/2017 12:27:47 PM
Start Frequency	84.800 000 MHz	Device Name	



**Measurement Parameters**

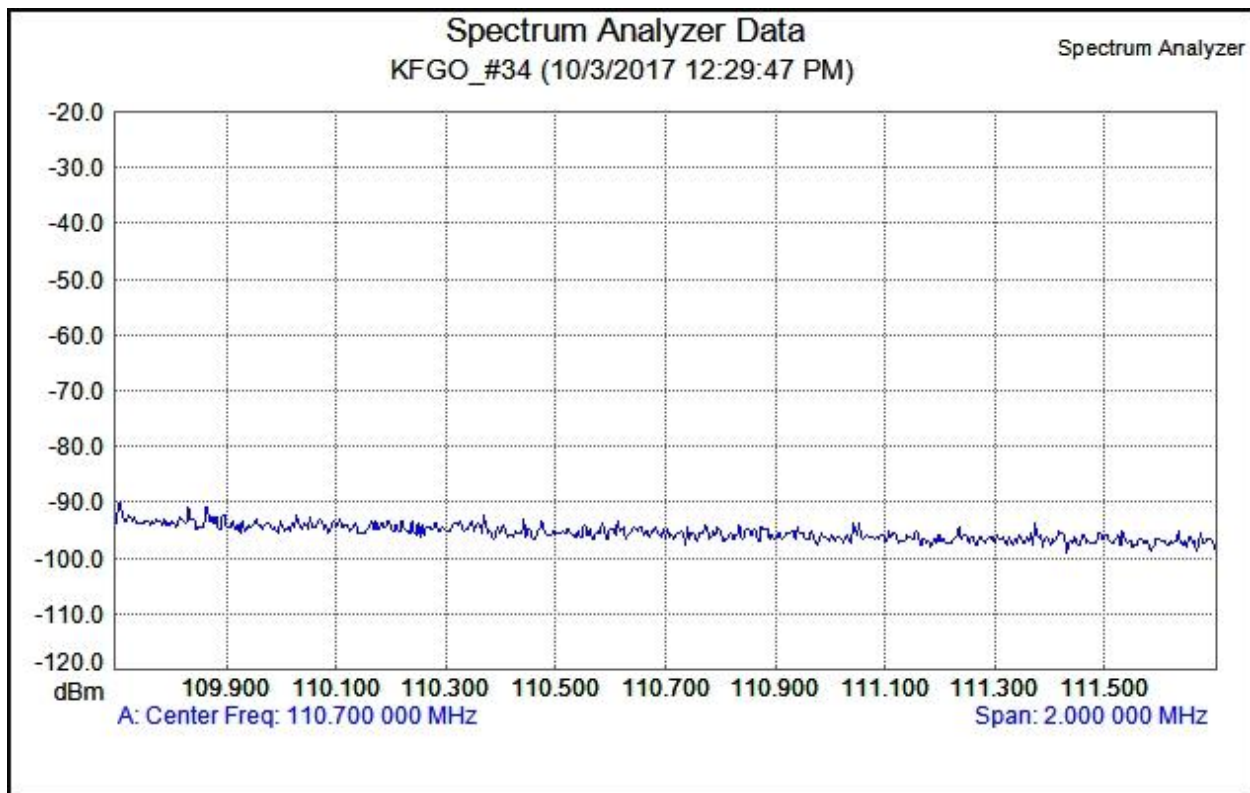
		Stop Frequency	113.200 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	112.200 000 MHz	Date	10/3/2017 12:28:35 PM
Start Frequency	111.200 000 MHz	Device Name	





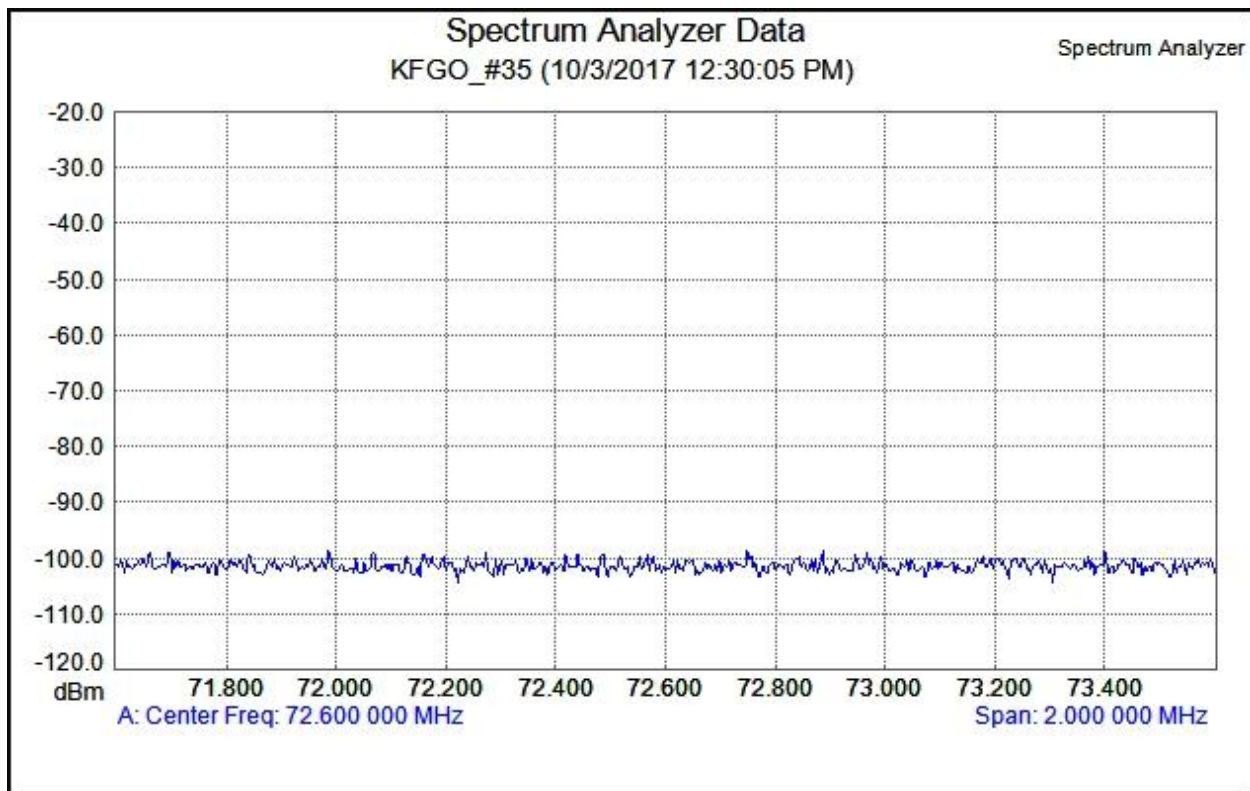
Measurement Parameters

		Stop Frequency	98.500 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	97.500 000 MHz	Date	10/3/2017 12:29:14 PM
Start Frequency	96.500 000 MHz	Device Name	

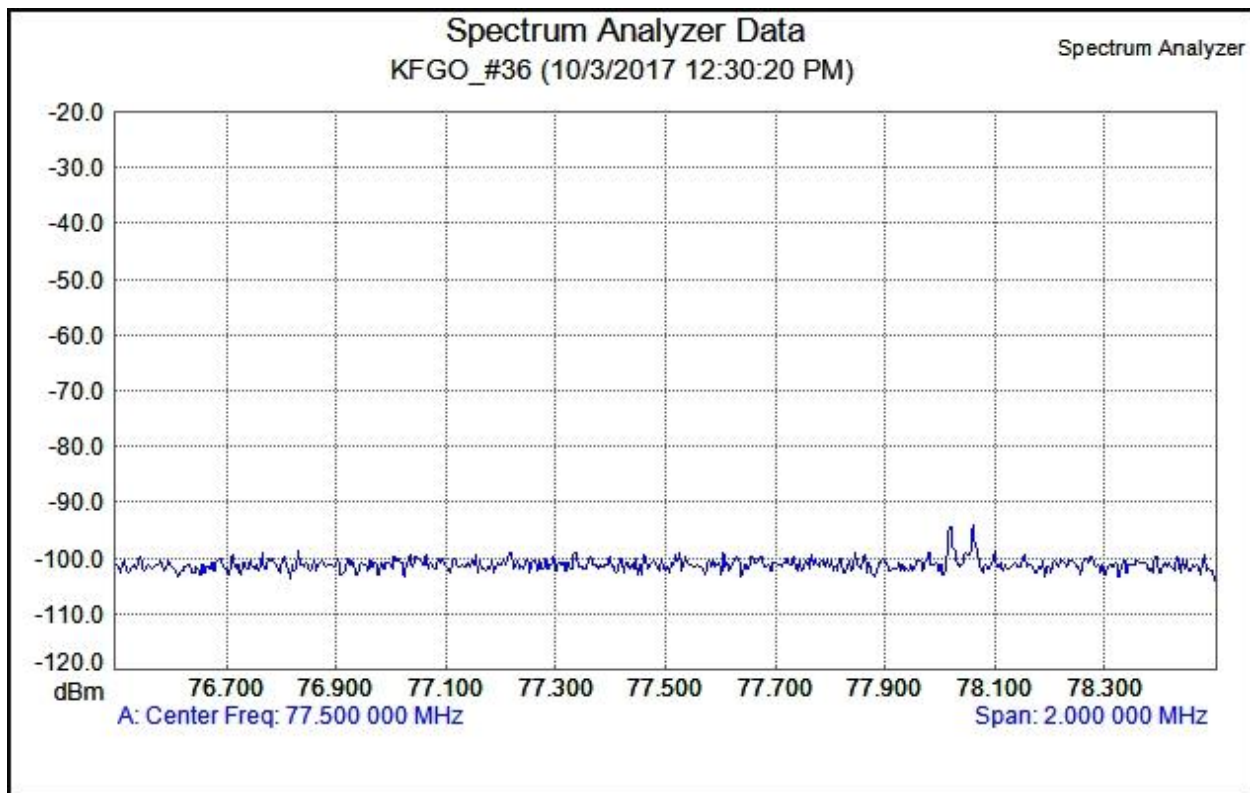


Measurement Parameters

		Stop Frequency	111.700 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	110.700 000 MHz	Date	10/3/2017 12:29:47 PM
Start Frequency	109.700 000 MHz	Device Name	



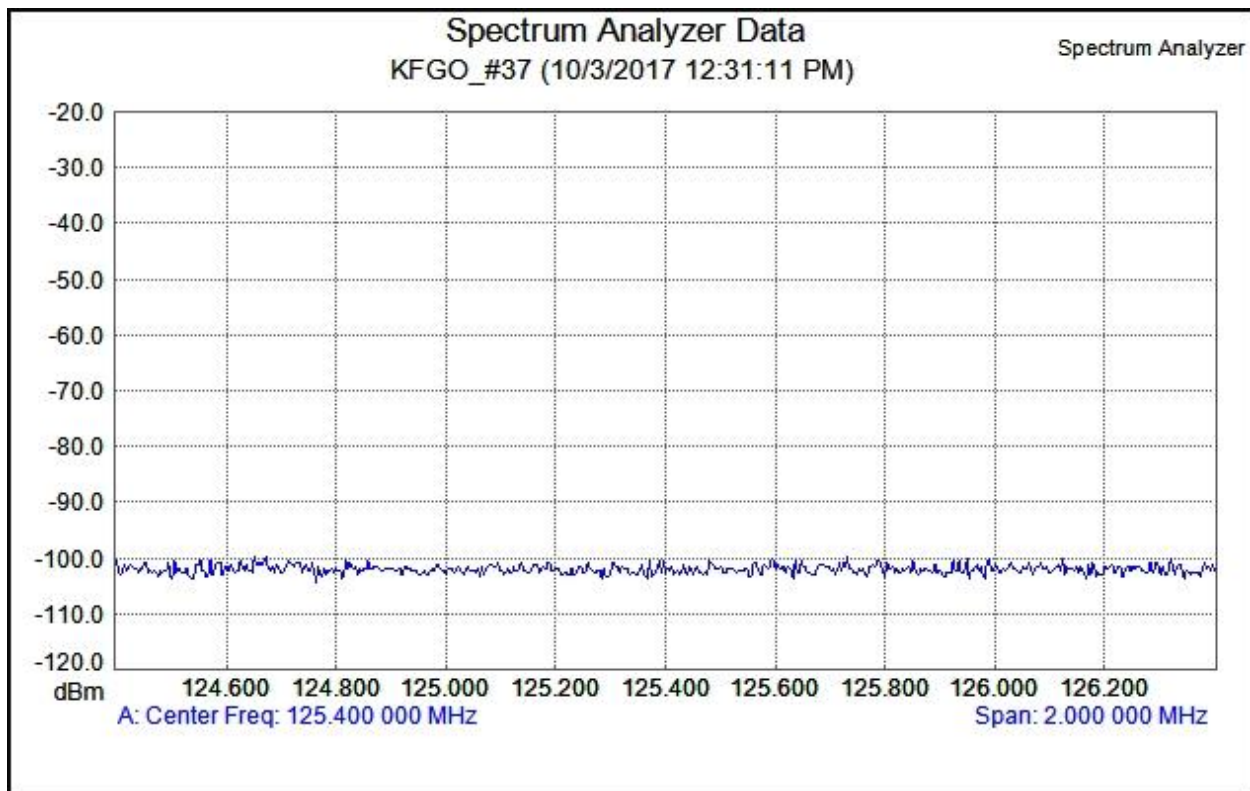
Measurement Parameters			
		Stop Frequency	73.600 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	72.600 000 MHz	Date	10/3/2017 12:30:05 PM
Start Frequency	71.600 000 MHz	Device Name	



**Measurement Parameters**

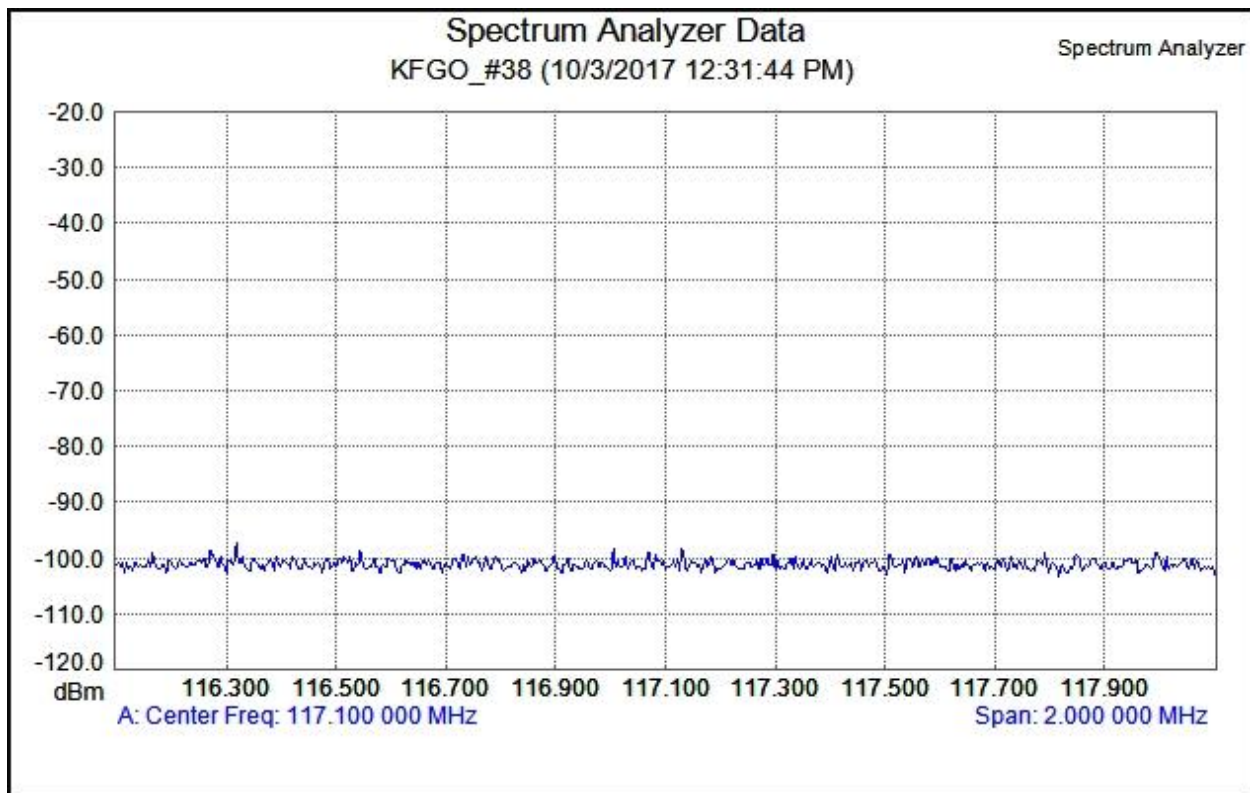
		Stop Frequency	78.500 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	77.500 000 MHz	Date	10/3/2017 12:30:20 PM
Start Frequency	76.500 000 MHz	Device Name	





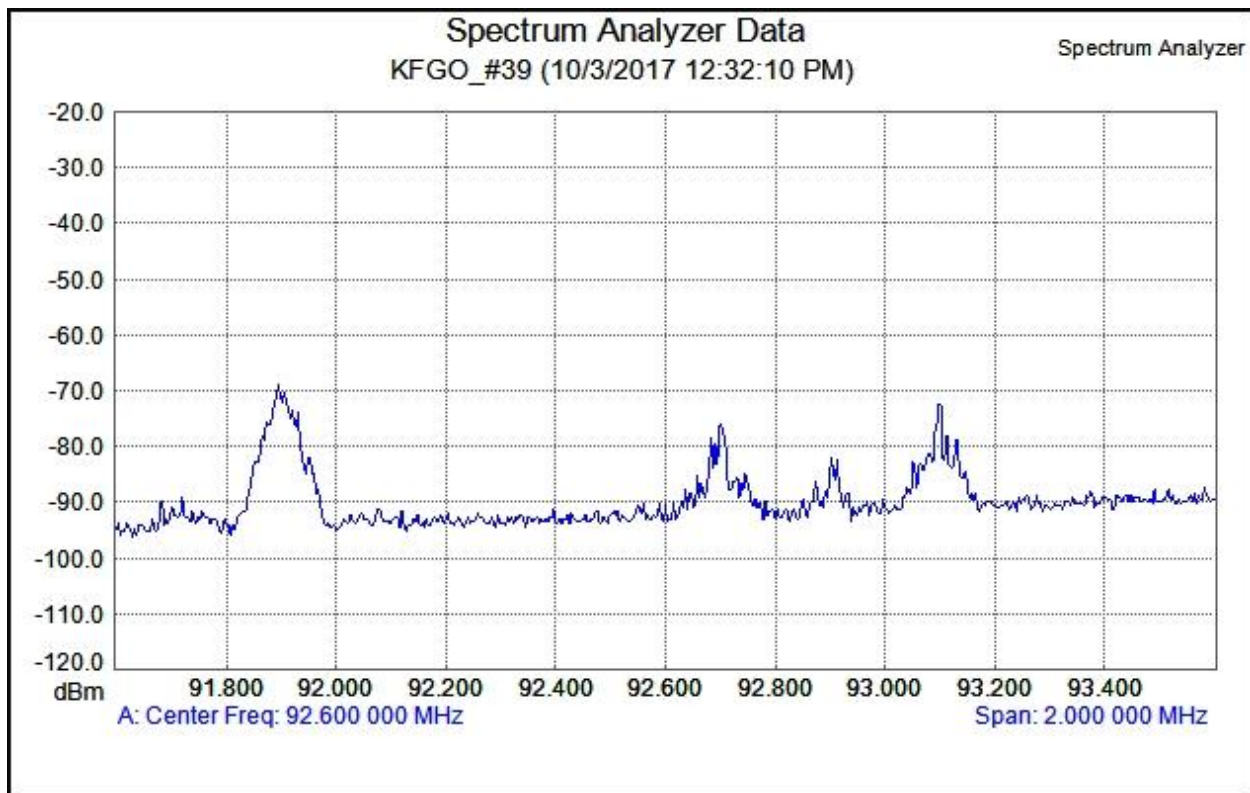
**Measurement Parameters**

		Stop Frequency	126.400 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	125.400 000 MHz	Date	10/3/2017 12:31:11 PM
Start Frequency	124.400 000 MHz	Device Name	



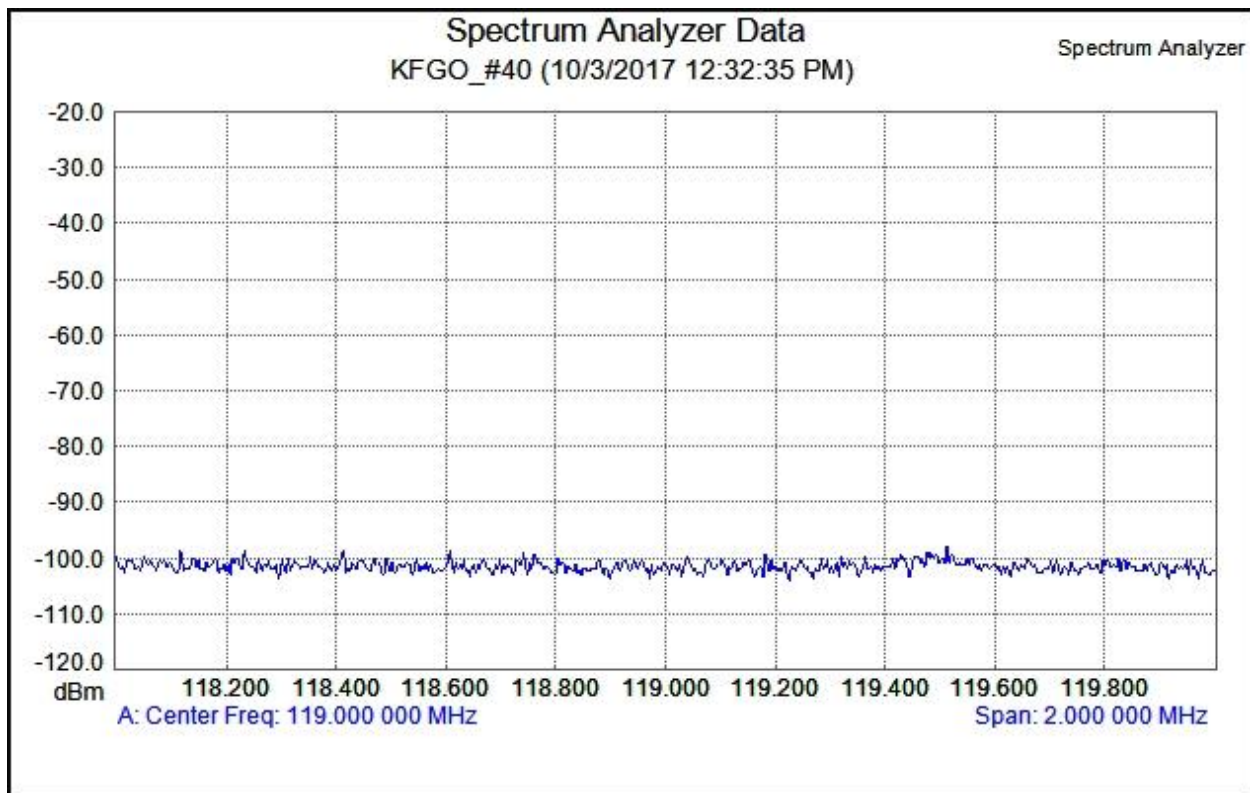
**Measurement Parameters**

		Stop Frequency	118.100 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	117.100 000 MHz	Date	10/3/2017 12:31:44 PM
Start Frequency	116.100 000 MHz	Device Name	



Measurement Parameters

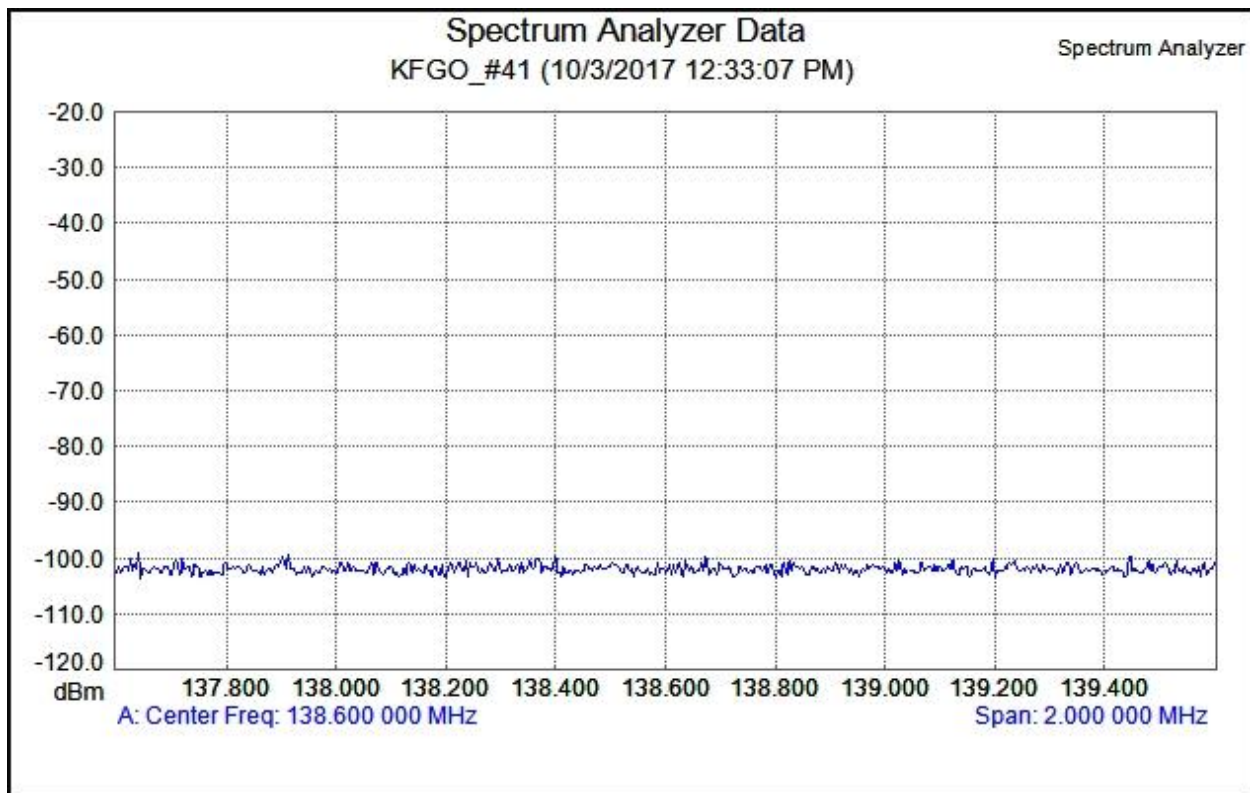
		Stop Frequency	93.600 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	92.600 000 MHz	Date	10/3/2017 12:32:10 PM
Start Frequency	91.600 000 MHz	Device Name	



**Measurement Parameters**

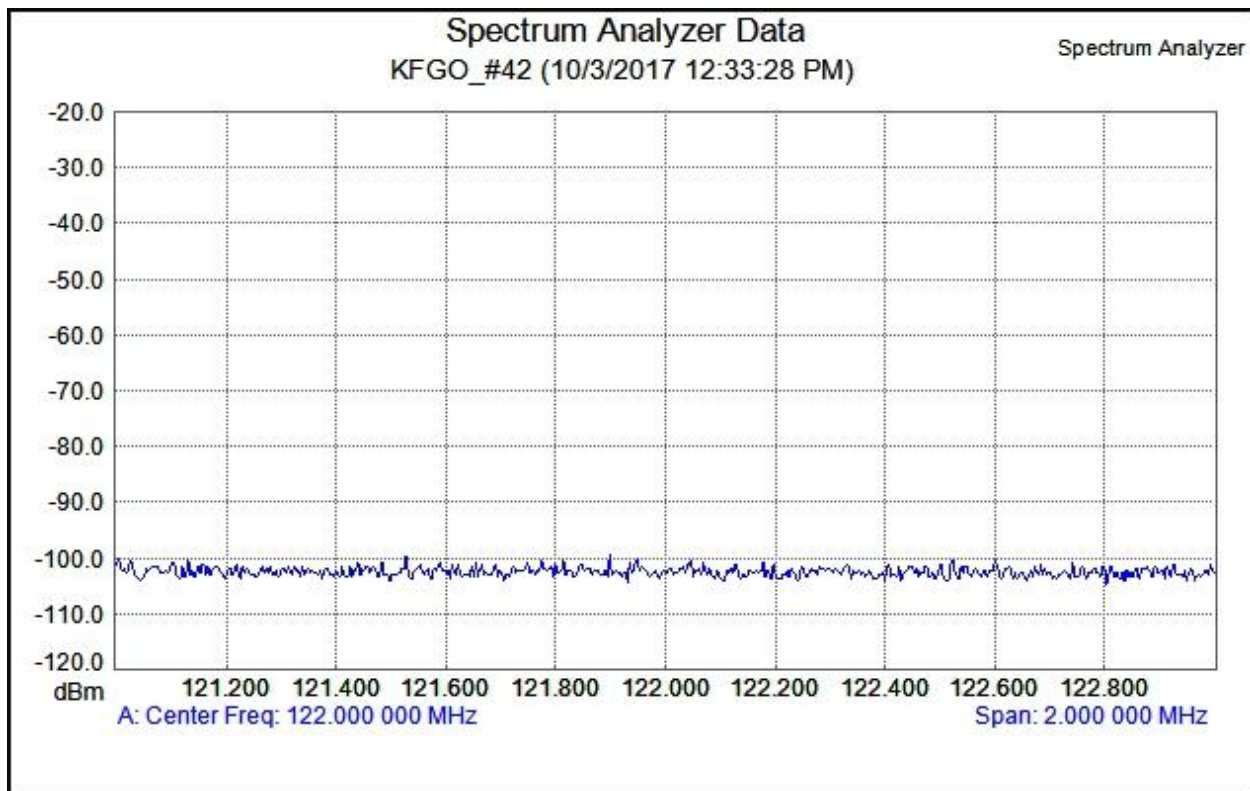
		Stop Frequency	120.000 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	119.000 000 MHz	Date	10/3/2017 12:32:35 PM
Start Frequency	118.000 000 MHz	Device Name	





**Measurement Parameters**

		Stop Frequency	139.600 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	138.600 000 MHz	Date	10/3/2017 12:33:07 PM
Start Frequency	137.600 000 MHz	Device Name	



**Measurement Parameters**

		Stop Frequency	123.000 000 MHz
Trace Mode	Max Hold	Frequency Span	2.000 000 MHz
Preamplifier	OFF	Reference Level	-24.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	-4 dB	Serial Number	843006
Input Attenuation	10.0 dB	Base Ver.	V4.32
RBW	1.0 kHz	App Ver.	V5.73
VBW	300.0 Hz	Model	MS2721B
Detection	Peak	Options	20, 31
Center Frequency	122.000 000 MHz	Date	10/3/2017 12:33:28 PM
Start Frequency	121.000 000 MHz	Device Name	