Electromagnetic Compatibility Test Report

Tests Performed on a Westell Technologies, Incorporated

Booster Amplifier, Model DSP95-PAW

Radiometrics Document RP-8442B

Product Detail:
FCC ID: NVRDSP95-PAW Equipment type: 1710-1755, 1850-1910, 1930-1990 & 2110-2155 MHz industrial Booster amplifier
Test Standards:
FCC KDB 935210: 2016 FCC Parts 2, 24 and 27 CFR Title 47: 2016

Tests Performed For:	*Test Facility:*
Westell Technologies, Incorporated 670 N. Commercial St. Manchester, NH 03101	**Radiometrics Midwest Corporation** 12 East Devonwood Romeoville, IL 60446 Phone: (815) 293-0772

Test Date(s): (Month-Day-Year)
September 28 thru October 20, 2016

Document RP-8442B Revisions:

Rev.	Issue Date	Affected Sections	Revised By
0	November 2, 2016		
1	November 14, 2016	Cover, 14.3	Joseph Strzelecki
2	December 8, 2016	Cover, 15 Model Change	Joseph Strzelecki
3	December 20, 2016	11.2.1, 14.3, 15.5	Joseph Strzelecki

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1.0 ADMINISTRATIVE DATA

Equipment Under Test:	
An Westell, Incorporated Booster Amplifier Model: DSP95-PAW; Serial Number: CNH60713 This will be referred to as the EUT in this Report	
Date EUT Received at Radiometrics: (Month-Day-Year)	*Test Date(s): (Month-Day-Year)*
August 31, 2016	September 28 thru October 20, 2016
Test Report Written By:	*Test Witnessed By:*
Joseph Strzelecki Senior EMC Engineer	The tests were not witnessed by personnel from Westell Technologies, Incorporated
Radiometrics' Personnel Responsible for Test:	*Test Report Approved By*
Joseph Strzelecki 12/20/2016 Date Joseph Strzelecki Senior EMC Engineer NARTE EMC-000877-NE Richard L. Tichgelaar EMC Technician	Chris W. Carlson Director of Engineering NARTE EMC-000921-NE

2.0 TEST SUMMARY AND RESULTS

The EUT (Equipment Under Test) is a Booster Amplifier, Model DSP95-PAW, manufactured by Westell Technologies, Incorporated. The detailed test results are presented in a separate section. The following is a summary of the test results.

Transmitter Requirements

Environmental Phenomena	Frequency Range	FCC KDB 935210 section	Test Result
AGC Threshold	1710-2155 MHz	3.2	Pass
Amplifier Bandwidth	1710-2155 MHz	3.3	Pass
Mean output power	1710-2155 MHz	3.4	Pass
Amplifier Gain	1710-2155 MHz	3.5	Pass
Band Edge	1710-2155 MHz	3.6.2	Pass
Spurious Emissions	30-22,000 MHz	3.6.3	Pass
Frequency Stability	N/A	3.7	Note 1
Field Strength of Spurious Radiated emissions	30-22,000 MHz	3.8	Pass

Note 1: Test not required since the amplifier, repeater does not alter the input signal in any way.

3.0 EQUIPMENT UNDER TEST (EUT) DETAILS

3.1 EUT Description

The EUT is a Booster Amplifier, Model DSP95-PAW, manufactured by Westell Technologies, Incorporated. The RF communications link is encrypted in both directions. The EUT was in good working condition during the tests, with no known defects.

The EUT was tested at 100-240 VAC 60 Hz input power 1.7 to 3.2 Amps.
The EUT has a gain of 85 +/-2 dB, Power of 27 dBm and a frequency range of 1710-1755 MHz for AWS
The EUT has a gain of 90 +/-2 dB, Power of 37 dBm and a frequency range of 2110-2155 MHz for AWS
The EUT has a gain of 90 +/-2 dB, Power of 27 dBm and a frequency range of 1850-1910 MHz for PCS
The EUT has a gain of 90 +/-2 dB, Power of 37 dBm and a frequency range of 1930-1990 MHz for PCS
The output signal coupling attenuation is 0 dB
There is no frequency stability since it does not translate frequency.

4.0 TESTED SYSTEM DETAILS

4.1 Tested System Configuration

The system was configured for testing in a typical fashion. The testing was performed in conditions as close as possible to installed conditions. Wiring was consistent with manufacturer's recommendations. The XCVR was tested as a stand alone device. The TX/RX Module was used to terminate the receiver ports only. The identification for all equipment, used in the tested system, is:

Tested System Configuration List

Item	Description	Type*	Manufacturer	Model Number	Serial Number
1	Booster Amplifier	E	Westell Technologies, Incorporated	DSP95-PAW	CNH60713
2	AC-DC Power supply	S	Westell Technologies, Incorporated	UDIT-PSCH-148VMOD	C101EG166393

* Type: E = EUT, S = Support Equipment

4.2 EUT Operating Modes

The following are descriptions of the operating states of the amplifier. The mode number in the first column will be listed elsewhere in this report.

Mode	Description	Type	Frequency MHz
1	Server out; AWGN	AWS	2110-2155
2	Donor out at 1732.5 MHz AWGN	AWS	1710-1755
3	Server out at 1960 MHz; AWGN	PCS	1930-1990
4	Donor out at 1880 MHz; AWGN	PCS	1850-1910
5	Server out at 2132.5 MHz; MSK	AWS	2110-2155
6	Donor out at 1732.5 MHz MSK	AWS	1710-1755
7	Server out at 1960 MHz; MSK	PCS	1930-1990
8	Donor out at 1880 MHz; MSK	PCS	1850-1910
9	Server out at 2132.5 MHz; CW	AWS	2110-2155
10	Donor out at 1732.5 MHz; CW	AWS	1710-1755

Mode	Description	Type	Frequency MHz
11	Server out at 1960 MHz; CW	PCS	1930-1990
12	Donor out at 1880 MHz; CW	PCS	1850-1910

Modulations used

Modulation	Description
CW	Continuous Wave; No Modulation
QPSK	Broadband modulation with an occupied bandwidth (OBW) of 1.4, 3, 5, & 10 MHz.
16QAM	Broadband modulation with an occupied bandwidth (OBW) of 1.4, 3, 5, & 10 MHz.
CDMA	CDMA 2000 Modulation 1.4 MHz OBW
GSM	GSM Modulation with 360 kHz OBW

4.3 Special Accessories

No special accessories were used during the tests in order to achieve compliance.

5.0 TEST SPECIFICATIONS AND RELATED DOCUMENTS

Document	Date	Title
FCC KDB 935210 D05	2016	Measurements Guidance for Industrial and Non-Consumer Signal Booster, Repeater, and Amplifier Devices; v01r01
FCC KDB 971168	2014	Measurement Guidance for Certification of Licensed Digital Transmitters
TIA-603-D	2010	Land Mobile FM or PM Communications Equipment – Measurement and Performance Standards

6.0 RADIOMETRICS' TEST FACILITIES

The results of these tests were obtained at Radiometrics Midwest Corp. in Romeoville, Illinois, USA. Radiometrics is accredited by A2LA (American Association for Laboratory Accreditation) to conform to ISO/IEC 17025: 2005 "General Requirements for the Competence of Calibration and Testing Laboratories". Radiometrics' Lab Code is 121191 and Certification Number is 1495.01. A copy of the accreditation can be accessed on our web site (www.radiomet.com). Radiometrics accreditation status can be verified at A2LA's web site (www.a2la2.org).

The following is a list of shielded enclosures located in Romeoville, Illinois used during the tests:

Chamber A: Is an anechoic chamber that measures 24' L X 12' W X 12' H. The walls and ceiling are fully lined with ferrite absorber tiles. The floor has a 10' x 10' section of ferrite absorber tiles located in the center. Panashield of Rowayton, Connecticut manufactured the chamber. The enclosure is NAMAS certified.

Chamber B: Is a shielded enclosure that measures 20' L X 12' W X 8' H. Erik A. Lindgren & Associates of Chicago, Illinois manufactured the enclosure.

Chamber E: Is a custom made anechoic chamber that measures 52' L X 30' W X 18' H. The walls and ceiling are fully lined with RF absorber. Pro-shield of Collinsville, Oklahoma manufactured the chamber.

A separate ten-foot long, brass plated, steel ground rod attached via a 6 inch copper braid grounds each of the above chambers. Each enclosure is also equipped with low-pass power line filters.

The FCC has accepted these sites as test site number US1065. The FCC test site Registration Number is 732175. Details of the site characteristics are on file with the Industry Canada as site number IC3124A-1.

7.0 DEVIATIONS AND EXCLUSIONS FROM THE TEST SPECIFICATIONS

There were no deviations or exclusions from the test specifications.

8.0 CERTIFICATION

Radiometrics Midwest Corporation certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specification. The results relate only to the EUT listed herein. Any modifications made to the EUT subsequent to the indicated test date will invalidate the data and void this certification.

9.0 TEST EQUIPMENT TABLE

RMC ID	Manufacturer	Description	Model No.	Serial No.	Frequency Range	Cal Period	Cal Date
AMP-05	Celeritek	Pre-amplifier	MW110G	1001	1.0-12GHz	12 Mo.	01/05/16
AMP-20	Avantek	Pre-amplifier	SF8-0652	15221	8-18GHz	12 Mo	01/05/16
ANT-03	Tensor	Biconical Antenna	4104	2231	20-250MHz	24 Mo.	12/07/15
ANT-04	Tensor	Biconical Antenna	4104	2246	20-250MHz	24 Mo.	05/16/16
ANT-06	EMCO	Log-Periodic Ant.	3146	1248	200-1000MHz	24 Mo.	11/25/15
ANT-07	RMC	Log-Periodic Ant.	LP1000	1001	200-1000MHz	24 Mo.	08/10/16
ANT-13	EMCO	Horn Antenna	3115	2502	1.0-18GHz	24 Mo.	12/01/14
ANT-36	Ailtech-Eaton	Horn Antenna	96001	2013	1.0-18GHz	24 Mo.	10/20/14
ANT-48	RMC	Std Gain Horn	HW2020	1001	18-26 GHz	24 Mo.	12/15/15
ATT-27	Narda	Attenuator(6dB)	757B-6	3131	DC - 6 GHz	24 Mo.	12/01/15
ATT-28	Narda	Attenuator(6dB)	757B-6	3131	DC - 6 GHz	24 Mo.	12/01/15
ATT-45	Narda	Attenuator(10dB)	779C-10dB	03078	DC-18 GHz	12 Mo.	12/03/15
ATT-47	HP	Attenuator(20dB)	8491A	53862	DC-23 GHz	24 Mo.	9/18/2015
ATT-51	China	Attenuator(20dB)	ATT-51 20dB	ATT-51	DC-3GHz	12 Mo.	08/29/16
ATT-53	Weinschel	Attenuator(20dB)	23-20-34	CG7857	DC-23 GHz	12 Mo.	09/26/16
ATT-MC	Mini-Circuits	Variable Attenuator	ZX73-2500M-S	RUU45501601	10-2500MHz	N/A	NCR
CAB-065A	Times Wire	Coaxial Cable	N/A	065A	DC-4 GHz	24 Mo.	04/19/16
CAB-069A	Storm	Coaxial Cable	N/A	069A	DC-18 GHz	24 Mo.	04/19/16
CAB-094A	Times Wire	Coaxial Cable	N/A	094A	DC-4 GHz	24 Mo.	04/19/16
CAB-110A	Times Wire	Coaxial Cable	N/A	110A	DC-4 GHz	24 Mo.	04/19/16
CAB-142G	Storm	Coaxial Cable	N/A	142G	DC-18 GHz	24 Mo.	04/21/16
CAB-142H	Storm	Coaxial Cable	N/A	142H	DC-18 GHz	24 Mo.	04/27/16
CAB-210B	Storm	Coaxial Cable	N/A	210B	DC-18 GHz	24 Mo.	04/21/16
CAB-418A	Times Wire	Coaxial Cable	N/A	418A	DC-4 GHz	24 Mo.	04/19/16
COM-01	Anaren	Coupler	10023-3	COM-01	250-1000MHz	N/A	NCR
COM-W1	CSI	Combiner/Splitter	CSI-S2BSC	None	500-3000MHz	12 Mo.	9/22/16
REC-11	HP / Agilent	Spectrum Analyzer	E7405A	US39110103	9kHz-26.5GHz	12 Mo.	03/23/16
REC-20	HP / Agilent	Spectrum Analyzer	85460A 84562A	33330A00135 3410A00178	30Hz-6GHz	24 Mo.	07/13/16
REC-21	Agilent	Spectrum Analyzer	E7405A	MY45118341	9Hz-26.5 GHz	12 Mo.	12/22/15
SIG-28	Hittite	RF Synthesizer	HMC-T2240	0000426	10MHz-40GHz	12 Mo.	03/31/16

RMC ID	Manufacturer	Description	Model No.	Serial No.	Frequency Range	Cal Period	Cal Date
SIG-30	Rohde & Schwarz	Signal Generator	SMC100A	102914	9k-3.2GHz	24 Mo.	10/07/15
SIG-W1	Agilent	Signal Generator	N5182B	MY51350062	9kHz-6GHz	36 Mo.	10/04/14
SIG-W2	Agilent	Signal Generator	E4432B	US40052748	250kHz-3.0 GHz	24 Mo.	03/17/16
THM-03	Fluke	Temp/Humid Meter	971	95850465	N/A	12 Mo.	01/11/16

Note: All calibrated equipment is subject to periodic checks.
NCR – No Calibration Required. Device monitored by calibrated equipment. N/A: Not Applicable.

10.0 TEST SECTIONS

The following sections are the detailed results in accordance to FCC KDB 935210 D05.

11.0 AGC THRESHOLD

11.1 Applicable Standard

The EUT shall comply with FCC KDB 935210 section 3.2.

11.2 Test procedures

a) A signal generator was connected to the input of the EUT.
b) A spectrum analyzer or power meter was connected to the output of the EUT using appropriate attenuation as necessary.
c) The signal generator was initially configured to produce either of the required test signals (i.e., broadband AWGN or narrowband MSK)
d) The signal generator frequency was set to the center frequency of the EUT operating band.
e) While monitoring the output power of the EUT, measured using the methods of 3.5.3 of KDB 935210, the input level was increased until a 1 dB increase in the input signal power no longer causes a 1 dB increase in the output signal power.
f) This level was recorded as the AGC threshold level.
g) The procedure was repeated with the remaining test signals.

11.2.1 AGC Threshold Test Results

Model	DSP95-PAW	Specifications	FCC KDB 935210 D05 Sec. 3.2
Serial Number	CNH60713	Test Date	September 5 & 7, 2016
Test Personnel	Richard L. Tichgelaar	Test Location	Chamber B
Test Equipment	Spectrum Analyzer (REC-21)		

The spectrum analyzer was set to Band power measurements using 100 trace average in the RMS peak mode.

Modul	Mode	Generator Output MHz	Generator Output dBm	Anal. Reading dBm	EUT Output Change dB	Anal. ATT dB	Anal. Cable Loss dB	Output Power dBm	Spec An settings RBW MHz	Span MHz	Min # of points
AWGN	**1**	2132.5	-34.0	12.4	start ref	20.0	0.5	32.9	0.1	8	160
AWGN	**1**	2132.5	-33.0	13.4	1.0	20.0	0.5	33.9	0.1	8	160
AWGN	**1**	2132.5	-32.0	14.3	0.9	20.0	0.5	34.8	0.1	8	160
AWGN	**1**	2132.5	-31.0	15.4	1.0	20.0	0.5	35.9	0.1	8	160
AWGN	**1**	2132.5	**-30.0**	16.3	0.9	20.0	0.5	36.8	0.1	8	160
AWGN	**1**	2132.5	-29.0	16.8	0.5	20.0	0.5	37.3	0.1	8	160
AWGN	**2**	1732.5	-38.0	3.9	start ref	20.0	0.5	24.4	0.1	8	160
AWGN	**2**	1732.5	-37.0	4.9	1.0	20.0	0.5	25.4	0.1	8	160
AWGN	**2**	1732.5	-36.0	5.9	1.0	20.0	0.5	26.4	0.1	8	160
AWGN	**2**	1732.5	**-35.0**	6.8	0.9	20.0	0.5	27.3	0.1	8	160
AWGN	**2**	1732.5	-34.0	6.7	-0.1	20.0	0.5	27.2	0.1	8	160
AWGN	**3**	1960.0	-35.0	12.7	start ref	20.0	0.5	33.2	0.1	8	160
AWGN	**3**	1960.0	-34.0	13.7	1.0	20.0	0.5	34.2	0.1	8	160
AWGN	**3**	1960.0	-33.0	14.7	1.0	20.0	0.5	35.2	0.1	8	160
AWGN	**3**	1960.0	**-32.0**	15.6	0.9	20.0	0.5	36.1	0.1	8	160
AWGN	**3**	1960.0	-31.5	16.1	0.5	20.0	0.5	36.6	0.1	8	160
AWGN	**3**	1960.0	-31.0	16.2	0.1	20.0	0.5	36.7	0.1	8	160
AWGN	**4**	1880.0	-43.0	5.0	start ref	20.0	0.5	25.5	0.1	8	160
AWGN	**4**	1880.0	-42.0	6.0	1.0	20.0	0.5	26.5	0.1	8	160
AWGN	**4**	1880.0	**-41.5**	6.5	0.5	20.0	0.5	27.0	0.1	8	160
AWGN	**4**	1880.0	-41.0	6.6	0.1	20.0	0.5	27.1	0.1	8	160
MSK	**5**	2132.5	-33.0	13.5	start ref	20.0	0.5	34.0	0.01	1	200
MSK	**5**	2132.5	-32.0	14.4	0.9	20.0	0.5	34.9	0.01	1	200
MSK	**5**	2132.5	**-31.5**	14.9	0.5	20.0	0.5	35.4	0.01	1	200
MSK	**6**	1732.5	-36.0	5.8	start ref	20.0	0.5	26.3	0.01	1	200
MSK	**6**	1732.5	-35.0	6.8	1.0	20.0	0.5	27.3	0.01	1	200
MSK	**6**	1732.5	**-34.5**	7.3	0.5	20.0	0.5	27.8	0.01	1	200
MSK	**6**	1732.5	-34.0	7.4	0.1	20.0	0.5	27.9	0.01	1	200
MSK	**7**	1960.0	-35.0	13.0	start ref	20.0	0.5	33.5	0.01	1	200
MSK	**7**	1960.0	-34.0	14.0	1.0	20.0	0.5	34.5	0.01	1	200
MSK	**7**	1960.0	-33.0	15.1	1.1	20.0	0.5	35.6	0.01	1	200

MSK	**7**	1960.0	-32.5	15.6	0.5	20.0	0.5	36.1	0.01	1	200
MSK	**7**	1960.0	**-32.0**	16.1	0.5	20.0	0.5	36.6	0.01	1	200
MSK	**7**	1960.0	-31.5	16.2	0.1	20.0	0.5	36.7	0.01	1	200
MSK	**8**	1880.0	-43.0	5.0	start ref	20.0	0.5	25.5	0.01	1	200
MSK	**8**	1880.0	-42.0	6.0	1.0	20.0	0.5	26.5	0.01	1	200
MSK	**8**	1880.0	**-41.5**	6.5	0.5	20.0	0.5	27.0	0.01	1	200
MSK	**8**	1880.0	-41.0	6.6	0.1	20.0	0.5	27.1	0.01	1	200

The Highlighted cells are the AGC Threshold. This is Level where a 1 dB change in increase in the input signal power no longer causes a 1 dB increase in the output signal power.

Note that there was a 20-dB attenuator between the Generator output and the EUT input.

12.0 OUT OF BAND REJECTION

12.1 Applicable Standard

The EUT shall comply with sections 3.3 of FCC KDB 935210 for passband gain.

12.2 Test Procedures

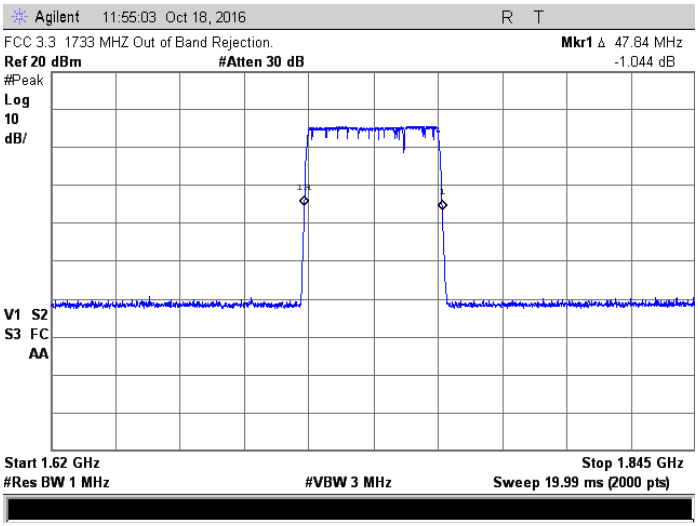
a) A signal generator was connected to the input of the EUT. A spectrum analyzer was connected to the output of the EUT using an external attenuator.
b) The swept CW signal was configured with the following parameters:
1) For each band, the analyzer and signal generator was set to a Frequency range ± 250 % of the passband, for each applicable band.
2) The generator level was set to a level so that the out-of-band rejection is > 20 dB above the noise floor and will not engage the AGC during the entire sweep
3) The Dwell time of each frequency step was at least 10 ms.
4) Number of points was set to at least SPAN/(RBW/2).
c) The resolution bandwidth (RBW) was set to 1 MHz and the video bandwidth (VBW) was set to 3 MHz.
d) The detector was set to Peak, Max-Hold and waited for the spectrum analyzer's spectral display to fill.
e) A marker was placed to the peak of the frequency response and record this frequency as f0.
f) Two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display, were placed such that each marker was at or slightly below the −20 dB down amplitude, to determine the 20 dB bandwidth.
g) The frequency response of the EUT was captured.
h) The procedure was repeated for all frequency bands applicable for use by the EUT.

12.3 Passband Bandwidth Test Results

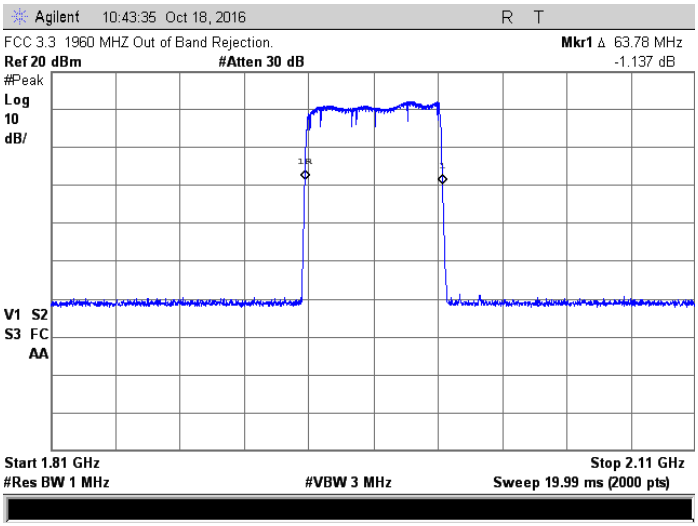
Model	DSP95-PAW	Specification	KDB 935210 D05 Sec 3.3
Serial Number	CNH60713	Test Date	October 18, 2106
Test Personnel	Richard L. Tichgelaar	Test Location	Chamber B
Test Equipment	EMI Receiver (REC-21)		

RBW MHz	VBW MHz	Mode	Display points	Min Display # of points	20 dB Down 1st Freq. MHz	20 dB Down 2nd Freq. MHz	20 dB BW MHz	Max Reading Max Rdg F0 MHz	Max Reading Max Rdg F0 dBm
1	3	9	2000	500	2108.6	2156.3	47.7	2129.18	11.15
1	3	10	2000	600	1708.6	1756.4	47.8	1745.1	5.49
1	3	11	2000	600	1928.26	1992.06	63.8	1976.2	11.92
1	3	12	2000	600	1848.30	1911.7	63.5	1863.27	6.86

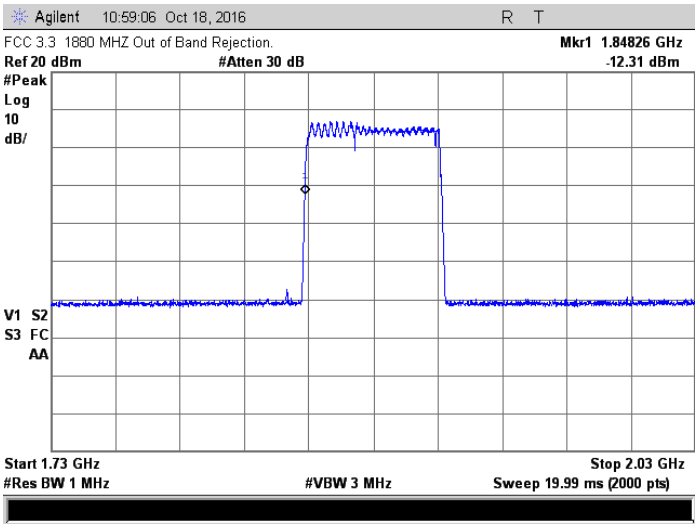
Judgement: Pass; the 20 dB bandwidth did not exceed the nominal bandwidth stated by the manufacturer. Outside of the 20 dB bandwidth, the gain did not exceed the gain at the 20 dB point.



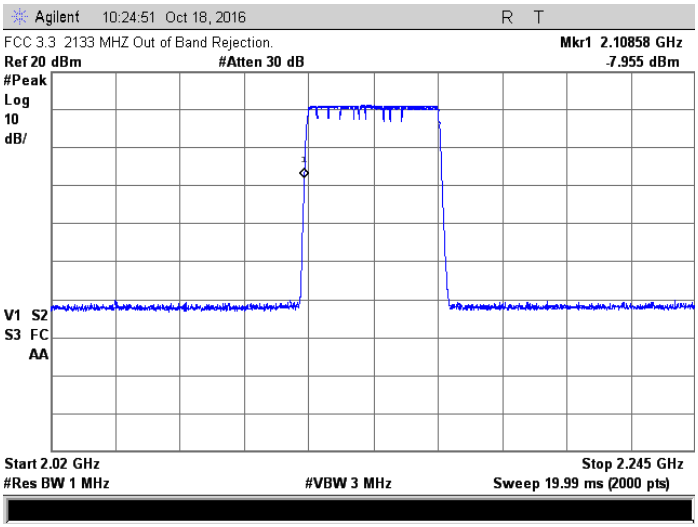
AWS 1710-1755 MHz



PCS 1930-1990 MHz



PCS 1850-1910 MHz



AWS 2110-2155 MHz

13.0 INPUT VS OUTPUT COMPARISON; WITH OCCUPIED BANDWIDTH

13.1 Applicable Standard

The EUT shall comply with FCC KDB 935210 section 3.4.

13.2 Test procedures

A 26 dB bandwidth measurement was performed on the input signal and the output signal.

a) A signal generator was connected to the input of the EUT.
b) The signal generator was configured to transmit the AWGN signal.
c) The signal generator amplitude was configured to be zero to 0.5 dB below the AGC threshold level.
d) A spectrum analyzer was connected to the output of the EUT using an external attenuator.
e) The spectrum analyzer center frequency was set to the center frequency of the operational band under test. The span range of the spectrum analyzer was between 2 times to 5 times the occupied bandwidth (OBW).
f) The nominal RBW was in the range of 1 % to 5 % of the anticipated OBW, and the VBW was ≥ 3 × RBW.
g) The reference level of the instrument was set as required to preclude the signal from exceeding the maximum spectrum analyzer input mixer level for linear operation.
h) The noise floor of the spectrum analyzer at the selected RBW was at least 36 dB below the reference level.
i) The spectrum analyzer detection function was set to positive peak.
j) The trace mode was set to max hold.
k) The reference value was determined by: Allowing the trace to stabilize, setting the spectrum analyzer marker to the highest amplitude level of the displayed trace (this is the reference value), and recording the associated frequency as f_0.
l) Two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display, were placed such that each marker is at or slightly below the −26 dB down amplitude. The 26 dB OBW is the positive frequency difference between the two markers. If the spectral envelope crosses the −26 dB down amplitude at multiple points, the lowest or highest frequency was selected as the frequencies that are the furthest removed from the center frequency at which the spectral envelope crosses the −26 dB down amplitude point.
m) Steps e) to l) were repeated with the input signal connected directly to the spectrum analyzer (i.e., input signal measurement).
n) The spectral plot of the input signal (determined from step m) was compared to the output signal (determined from step l) to affirm that they are similar (in passband and roll off characteristic features and relative spectral locations).
o) The procedure [steps e) to n)] was repeated with the input signal amplitude set to 3 dB above the AGC threshold.
p) Steps e) to o) were repeated with the signal generator set to the narrowband signal.
q) Steps e) to p) were repeated for all frequency bands authorized for use by the EUT.

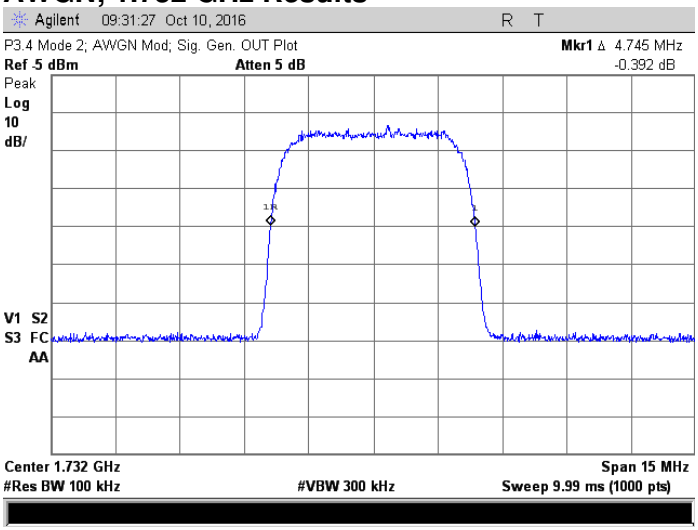
13.2.1 Input Vs Output Test Results

Model	DSP95-PAW	Specifications	FCC KDB 935210 D05 Sec. 3.4
Serial Number	CNH60713	Test Date	October 12, 2016
Test Personnel	Richard L. Tichgelaar	Test Location	Chamber B
Test Equipment	Spectrum Analyzer (REC-21)		

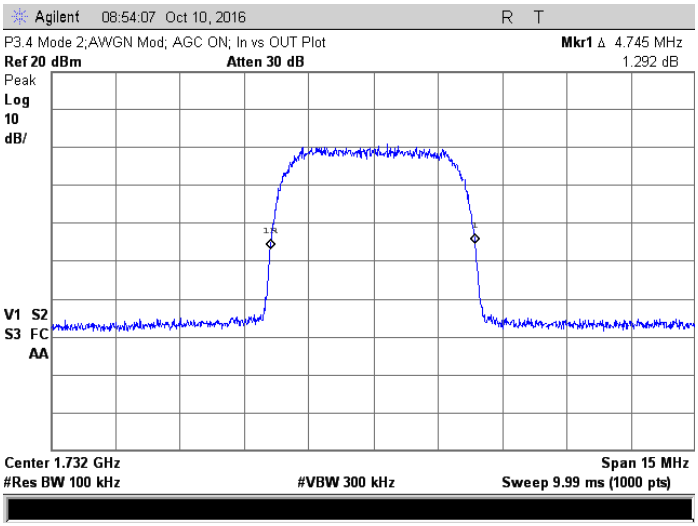
Band Type	Mod Mode	Measured Mode	Generator MHz	RBW MHz	VBW MHz	Peak Rdg F0 Freq MHz	Peak Rdg F0 AMP dBm	26 dB Reading MHz	EUT AGC Mode
AWS	AWGN	Sig Gen Out	2132.5	0.1	0.3	2132.8	-18.4	4.7	N/A
AWS	AWGN	Server out	2132.5	0.1	0.3	2132.8	11.9	4.75	Non AGC
AWS	AWGN	Server out	2132.5	0.1	0.3	2132.8	12.4	4.7	AGC ON
AWS	AWGN	Sig Gen Out	1732.5	0.1	0.3	1732.9	-18.5	4.75	N/A
AWS	AWGN	Donor Out	1732.5	0.1	0.3	1732.8	0.23	4.71	Non AGC

Band Type	Mod Mode	Measured Mode	Generator MHz	RBW MHz	VBW MHz	Peak Rdg F0 Freq MHz	Peak Rdg F0 AMP dBm	26 dB Reading MHz	EUT AGC Mode
AWS	AWGN	Donor Out	1732.5	0.1	0.3	1732.8	0.90	4.75	AGC ON
PCS	AWGN	Sig Gen Out	1960.0	0.1	0.3	1959.4	-19.35	4.71	N/A
PCS	AWGN	Service Out	1960.0	0.1	0.3	1961	9.95	4.75	Non AGC
PCS	AWGN	Service Out	1960.0	0.1	0.3	1961.6	11.75	4.75	AGC ON
PCS	AWGN	Sig Gen Out	1880.0	0.1	0.3	1880.4	-18.6	4.73	N/A
PCS	AWGN	Donor Out	1880.0	0.1	0.3	1881.4	1.27	4.75	Non AGC
PCS	AWGN	Donor Out	1880.0	0.1	0.3	1880.6	1.60	4.73	AGC ON
AWS	MSK	Sig Gen Out	2132.5	0.01	0.03	2132.5	-15.7	0.314	N/A
AWS	MSK	Service out	2132.5	0.01	0.03	2132.5	14.1	0.317	Non AGC
AWS	MSK	Service out	2132.5	0.01	0.03	2132.5	14.6	0.314	AGC ON
AWS	MSK	Sig Gen Out	1732.5	0.01	0.03	1732.5	-16.0	0.316	N/A
AWS	MSK	Donor Out	1732.5	0.01	0.03	1732.5	5.9	0.313	Non AGC
AWS	MSK	Donor Out	1732.5	0.01	0.03	1732.6	5.20	0.323	AGC ON
PCS	MSK	Sig Gen Out	1960.0	0.01	0.03	1960	-15.97	0.318	N/A
PCS	MSK	Service out	1960.0	0.01	0.03	1960	12.97	0.323	Non AGC
PCS	MSK	Service out	1960.0	0.01	0.03	1960	13.38	0.321	AGC ON
PCS	MSK	Sig Gen Out	1880.0	0.01	0.03	1880.1	-15.9	0.314	N/A
PCS	MSK	Donor Out	1880.0	0.01	0.03	1880	3.78	0.314	Non AGC
PCS	MSK	Donor Out	1880.0	0.01	0.03	1880	3.99	0.315	AGC ON

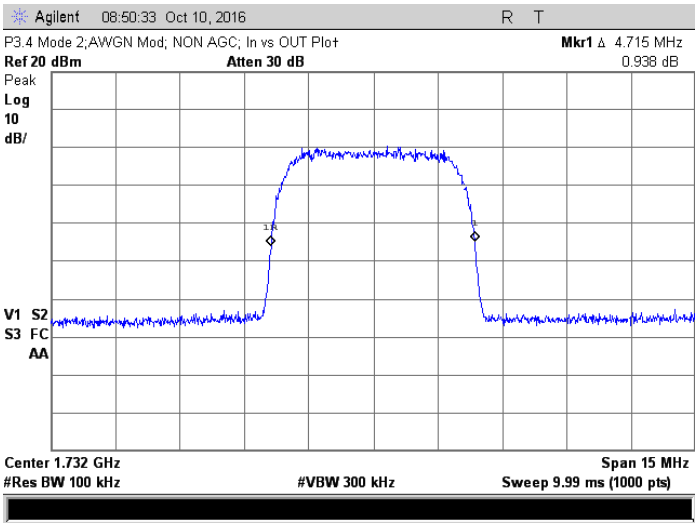
AWGN; 1.732 GHz Results



Generator output; 1.732 GHz, AWGN

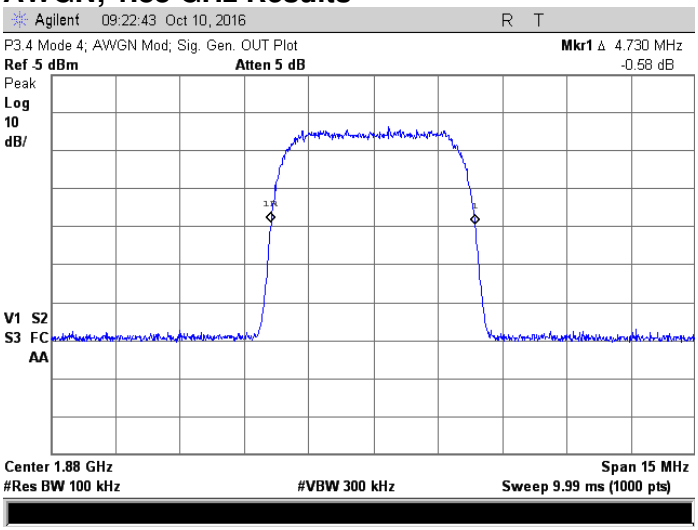


Amp output with AGC; 1.732 GHz, AWGN

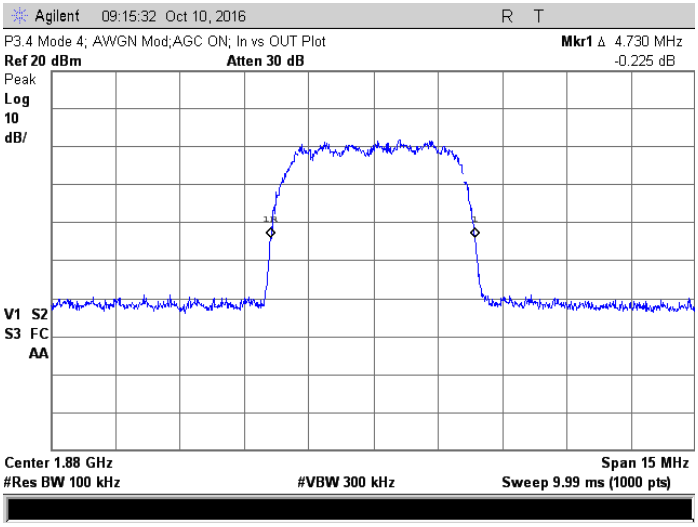


Amp output, no AGC; 1.732 GHz, AWGN

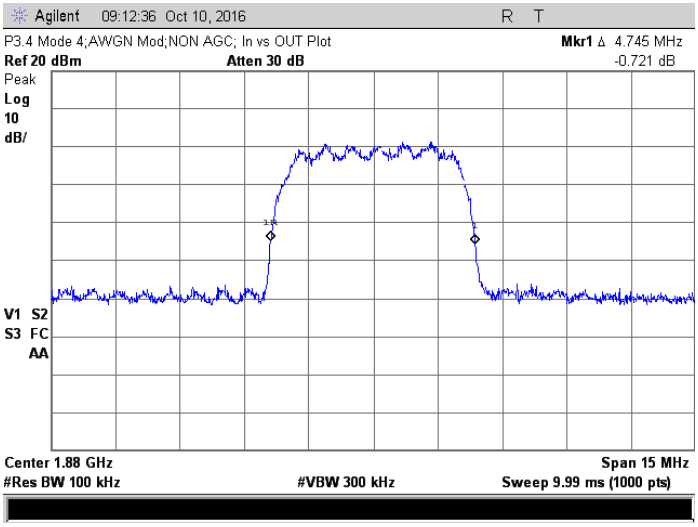
AWGN; 1.88 GHz Results



Generator output; 1.88 GHz, AWGN

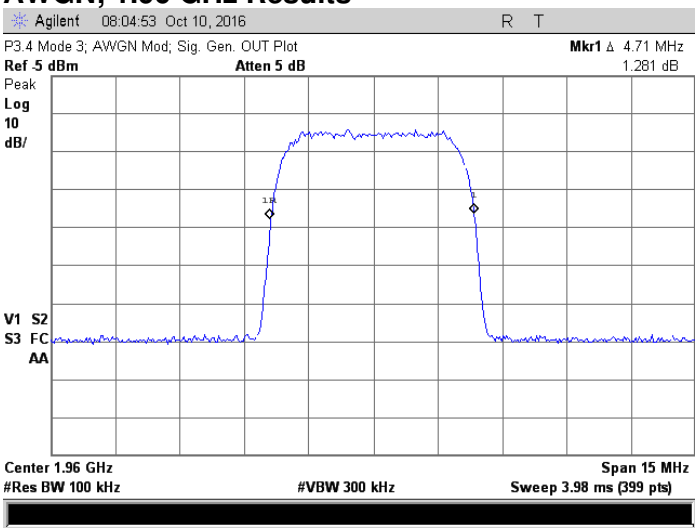


Amp output with AGC; 1.88 GHz, AWGN

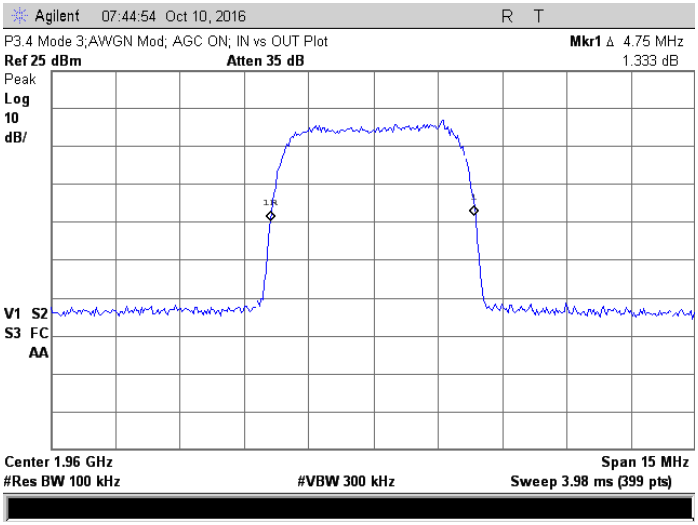


Amp output, no AGC; 1.88 GHz, AWGN

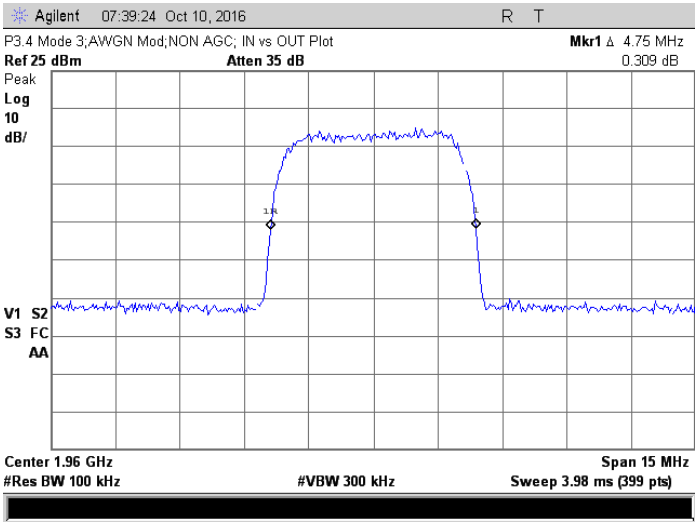
AWGN; 1.96 GHz Results



Generator output; 1.96 GHz, AWGN

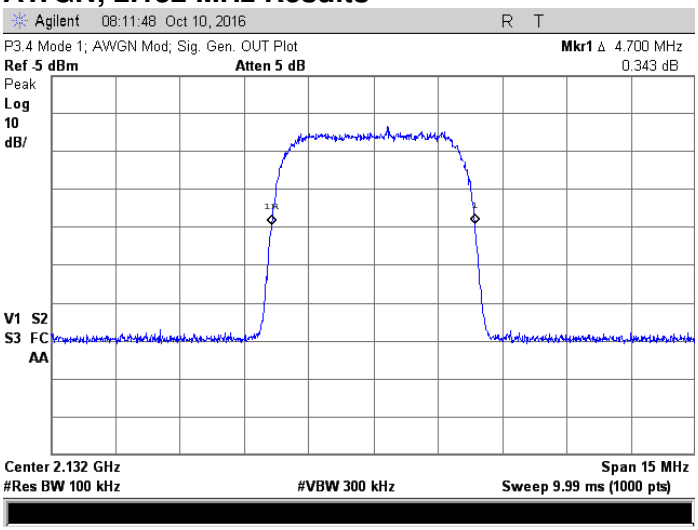


Amp output with AGC; 1.96 GHz, AWGN

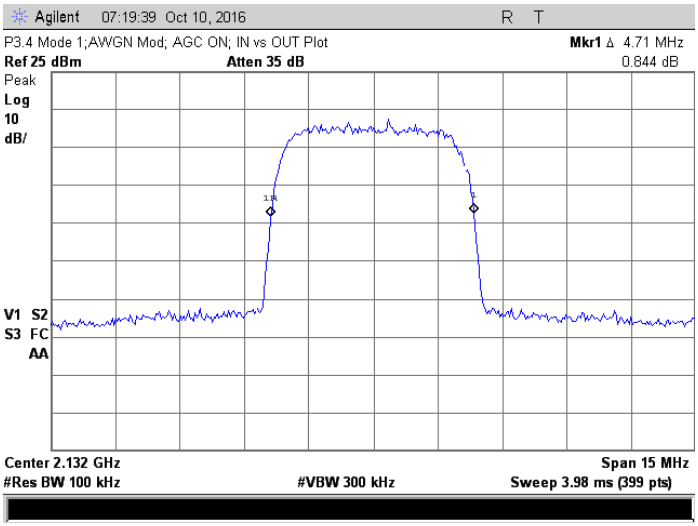


Amp output, no AGC; 1.96 GHz, AWGN

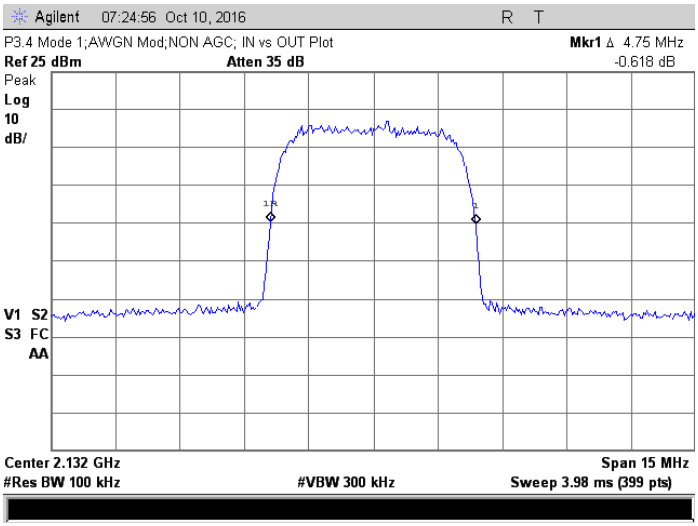
AWGN; 2.132 MHz Results



Generator output; 2.132 GHz, AWGN

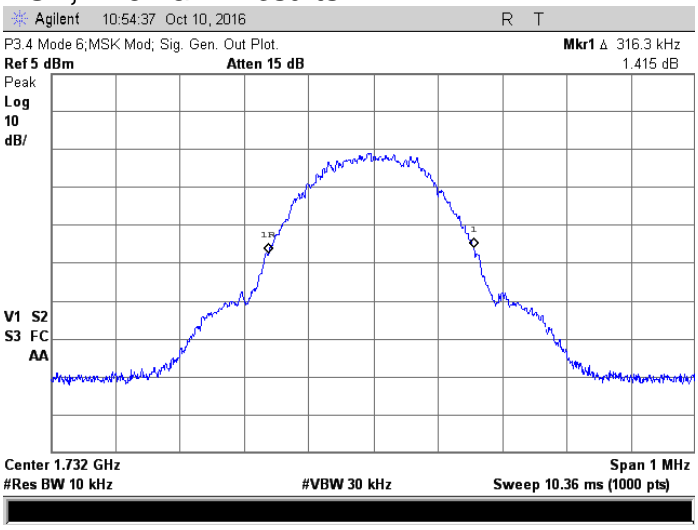


Amp output with AGC; 2.132 GHz; AWGN

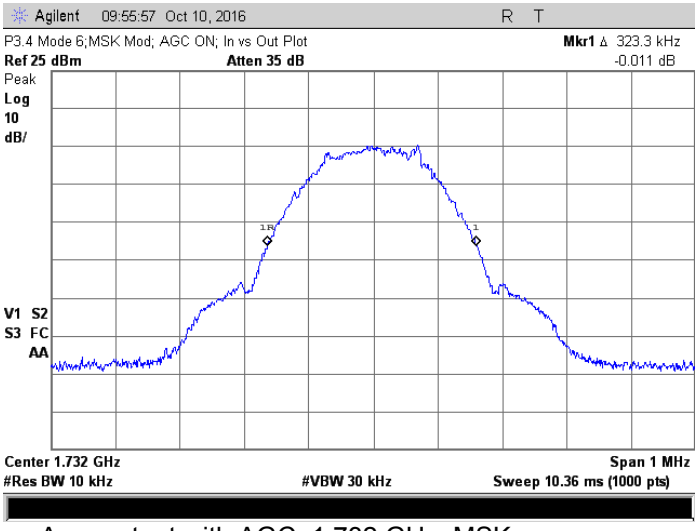


Amp output, no AGC; 2.132 GHz, AWGN

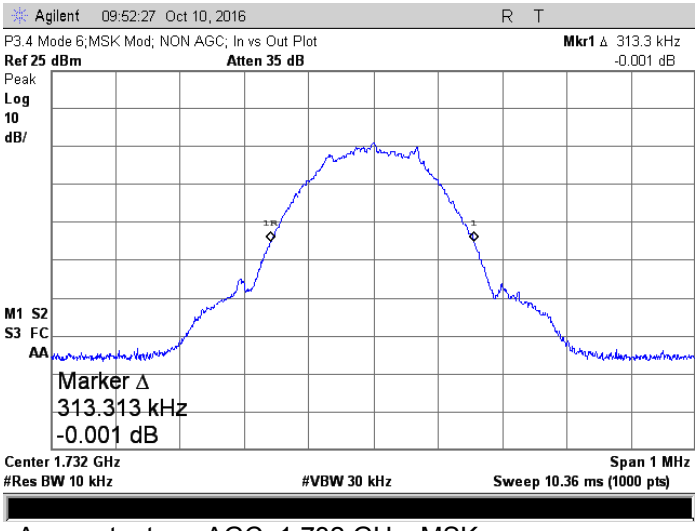
MSK; 1.732 GHz Results



Generator output; 1.732 GHz, MSK

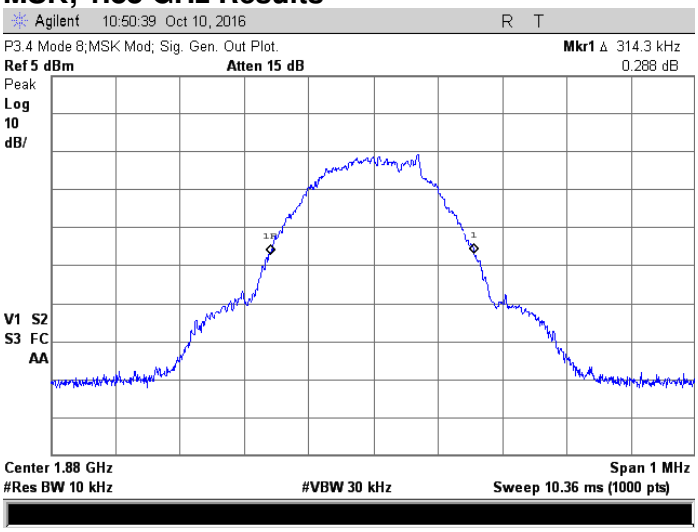


Amp output with AGC; 1.732 GHz, MSK

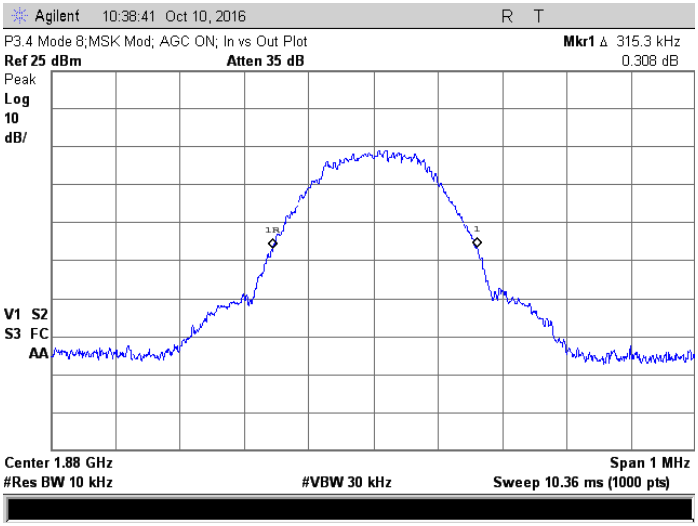


Amp output, no AGC; 1.732 GHz, MSK

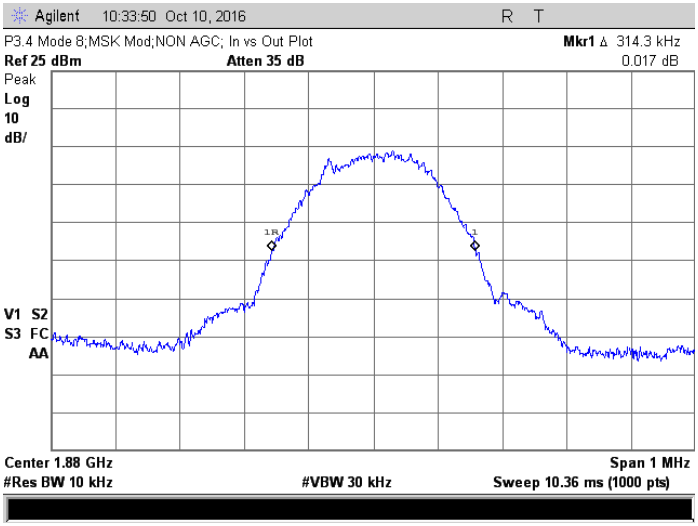
MSK; 1.88 GHz Results



Generator output; 1.88 GHz, MSK

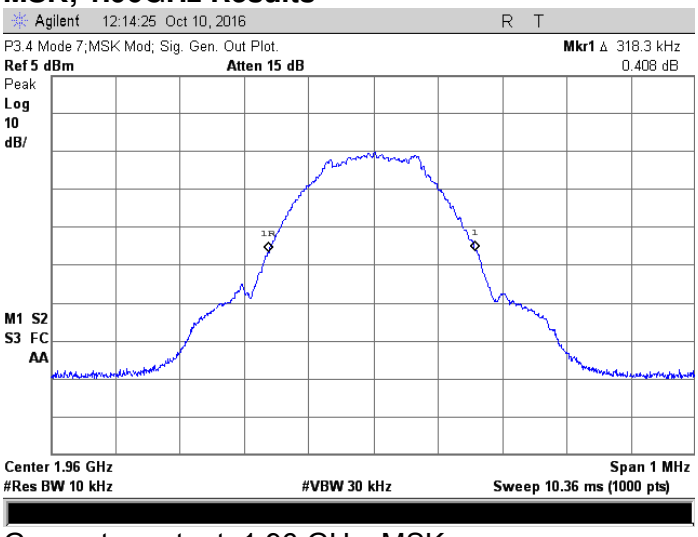


Amp output with AGC; 1.88 GHz, MSK

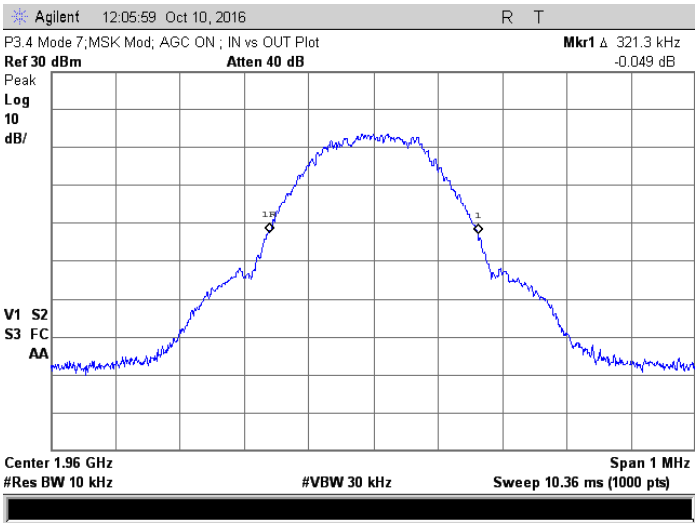


Amp output, no AGC; 1.88 GHz, MSK

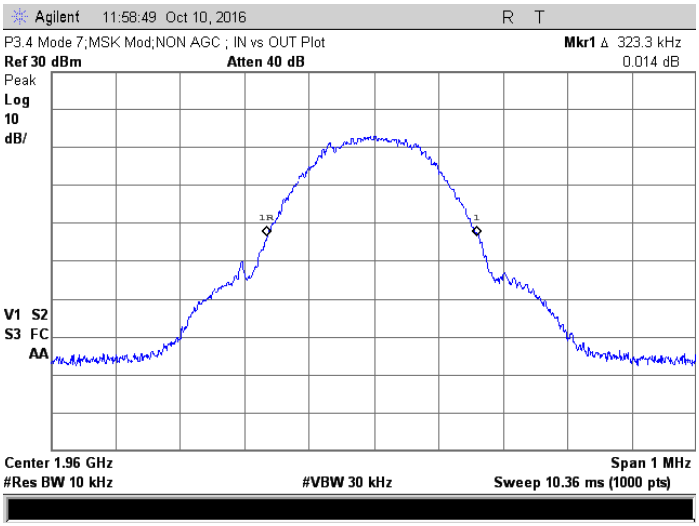
MSK; 1.96GHz Results



Generator output; 1.96 GHz, MSK

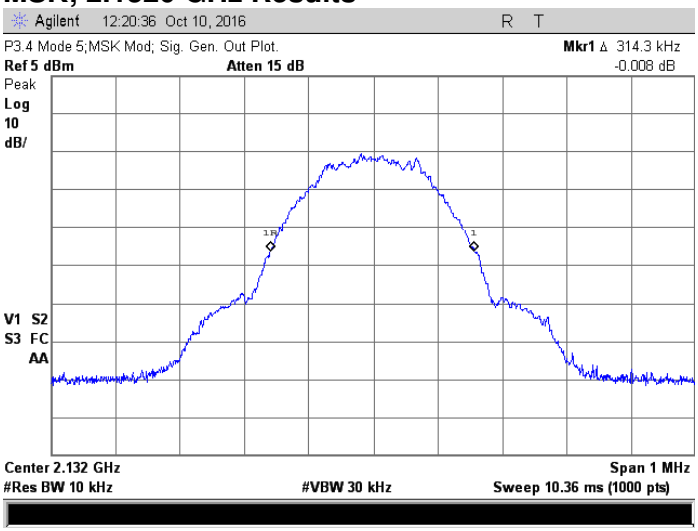


Amp output with AGC; 1.96 GHz, MSK

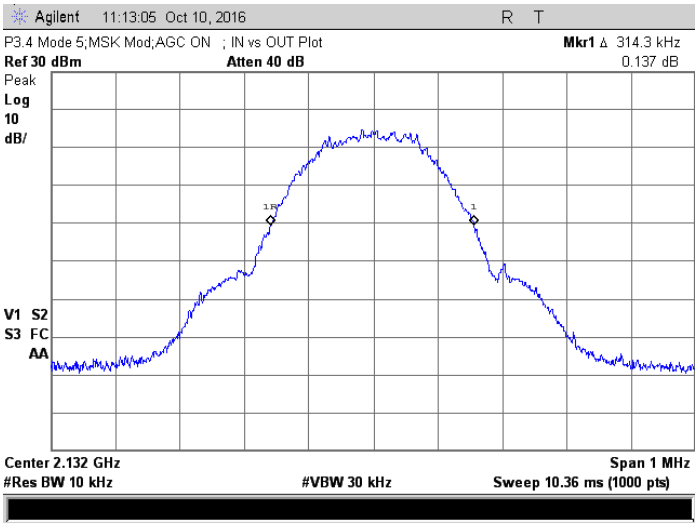


Amp output, no AGC; 1.96 GHz, MSK

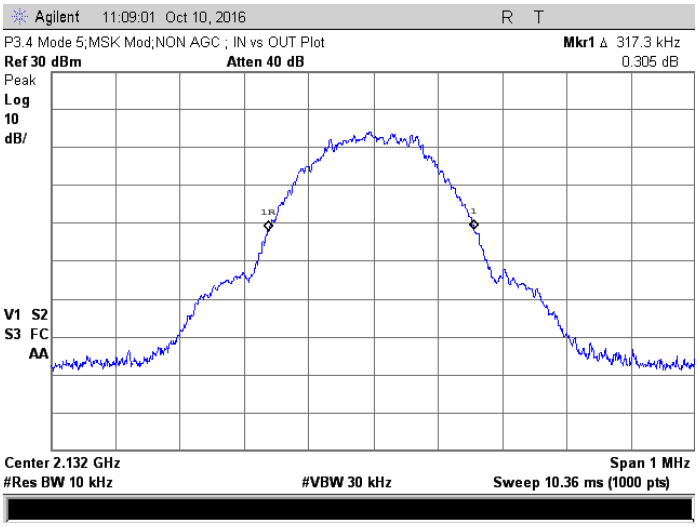
MSK; 2.1320 GHz Results



Generator output; MSK 2.132 GHz, MSK



Amp output with AGC; 2.132 GHz, MSK



Amp output, no AGC; 2.132 GHz, MSK

Judgement: Pass

14.0 MEAN POWER OUTPUT AND AMPLIFIER GAIN

14.1 Applicable Standard

The EUT shall comply with FCC KDB 935210 section 3.5.

In accordance with section 3.5 of KDB 935210 D05, the mean input and output power and the amplifier gain was measured by adjusting the internal gain control of the EUT to the maximum gain for which equipment certification is sought. Any EUT attenuation settings were set to their minimum value.

Input power levels (uplink and downlink) were set to maximum input ratings while confirming that the device is not capable of operating in saturation (non-linear mode) at the rated input levels, including during the performance of the input/output power measurements.

14.2 Test procedures

a) A signal generator was connected to the input of the EUT.
b) The signal generator was configured to generate the AWGN (broadband) test signal.
c) The frequency of the signal generator was set to the frequency f0 as determined from 3.3 of KDB 935210.
d) A spectrum analyzer was connected to the output of the EUT using an external attenuator.
e) The signal generator amplitude was configured to be zero to 0.5 dB below the AGC threshold level.
f) The output power of the EUT measured and recorded; using 3.5.3 KDB 935210 for power measurement.
g) The EUT was removed from the measurement setup. Using the same signal generator settings, the power measurement was repeated at the signal generator port, which was used as the input signal to the EUT, and recorded as the input power. EUT gain may be calculated as described in 3.5.5 KDB 935210.
h) Steps f) and g) were repeated with input signal amplitude set to 3 dB above the AGC threshold level.
i) Steps e) to h) were repeated with the narrowband test signal.
j) Steps e) to i) were repeated for all frequency bands authorized for use by the EUT.

The mean gain was reported for each authorized operating frequency band and each test signal stimulus.

After the mean input and output power levels have been measured as described in the preceding subclauses, the mean gain of the EUT can be determined from:
Gain (dB) = output power (dBm) − input power (dBm).

14.3 Gain Test Results

Model	DSP95-PAW	Specification	FCC KDB 935210 Sec. 3.5
Serial Number	CNH60713	Test Date	October 18, 2016
Test Personnel	Richard L. Tichgelaar	Test Location	Chamber B
Test Equipment	EMI Receiver (REC-21)		

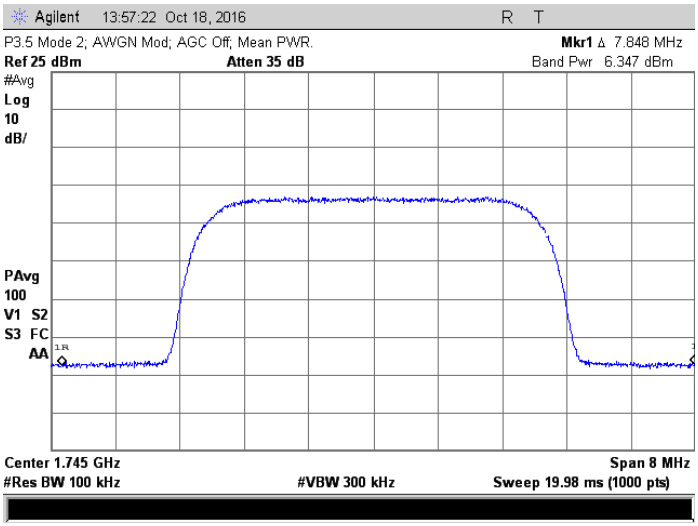
The spectrum analyzer was set to band power measurements using 100 trace average in the RMS peak mode. VBW>=3xRBW

EUT Mode	Fo GeneratorMHz	Modul. Type	AGC	RBW MHz	Input to Amp dBm	Amp out dBm	Output Atten dB	Input Atten dB	Cable Loss dB	EUT Pwr. dBm	EUT Pwr. Watts	EUT Gain dB
1	2129	AWGN	Off	0.1	-32.0	15.3	20	20	0.5	35.8	3.802	87.8
1	2129	AWGN	On	0.1	-29.0	16.9	20	20	0.5	37.4	5.495	86.4

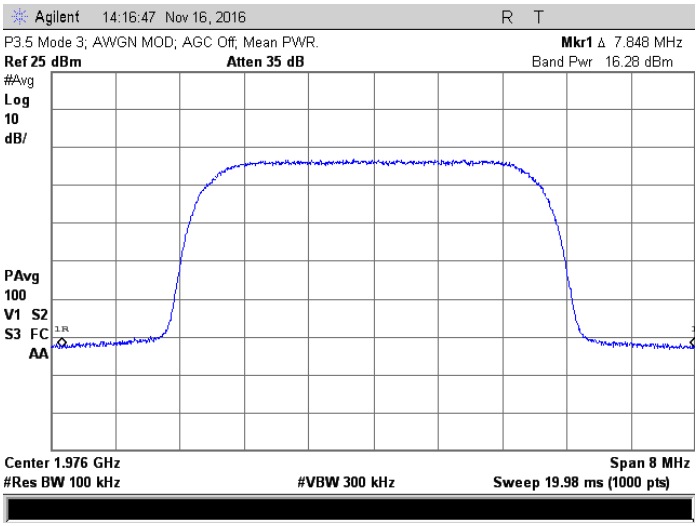
EUT Mode	Fo GeneratorMHz	Modul. Type	AGC	RBW MHz	Input to Amp dBm	Amp out dBm	Output Atten dB	Input Atten dB	Cable Loss dB	EUT Pwr. dBm	EUT Pwr. Watts	EUT Gain dB
2	1745.0	AWGN	Off	0.1	-37.0	6.3	20	20	0.5	26.8	0.479	83.8
2	1745.0	AWGN	On	0.1	-34.0	7.3	20	20	0.5	27.8	0.603	81.8
3	1976.2	AWGN	Off	0.1	-35.1	16.3	20	20	0.5	36.8	4.742	91.9
3	1976.2	AWGN	On	0.1	-32.1	16.4	20	20	0.5	36.9	4.898	89.0
4	1863.0	AWGN	Off	0.1	-45.0	5.9	20	20	0.5	26.4	0.437	91.4
4	1863.0	AWGN	On	0.1	-42.0	6.5	20	20	0.5	27.0	0.501	89.0
5	2129	MSK	Off	0.01	-32.4	15.7	20	20	0.5	36.2	4.169	88.6
5	2129	MSK	On	0.01	-29.4	16.0	20	20	0.5	36.5	4.467	85.9
6	1745.0	MSK	Off	0.01	-36.0	6.9	20	20	0.5	27.4	0.547	83.4
6	1745.0	MSK	On	0.01	-33.6	7.4	20	20	0.5	27.9	0.617	81.5
7	1976.2	MSK	Off	0.01	-34.9	15.8	20	20	0.5	36.3	4.266	91.2
7	1976.2	MSK	On	0.01	-31.9	15.8	20	20	0.5	36.3	4.295	88.2
8	1863.3	MSK	Off	0.01	-44.9	5.9	20	20	0.5	26.4	0.434	91.2
8	1863.3	MSK	On	0.01	-41.4	6.7	20	20	0.5	27.2	0.522	88.6

EUT output Power (dBm) = Amp out dBm + Output Atten (dB) + Cable Loss (dB)
EUT Gain (dB) = Amp out (dBm) – Input to Amp (dBm) + Output Atten (dB) + Input Atten (dB) + Cable Loss (dB)

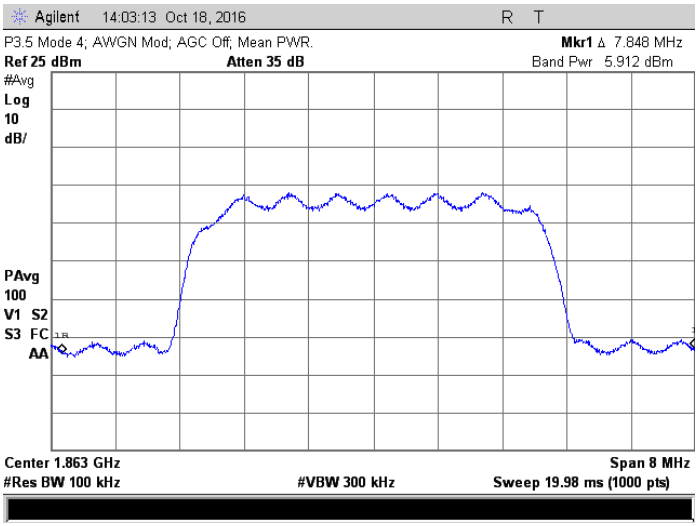
Judgement: Pass; The passband gain did not exceed the nominal gain by more than 1.0 dB.



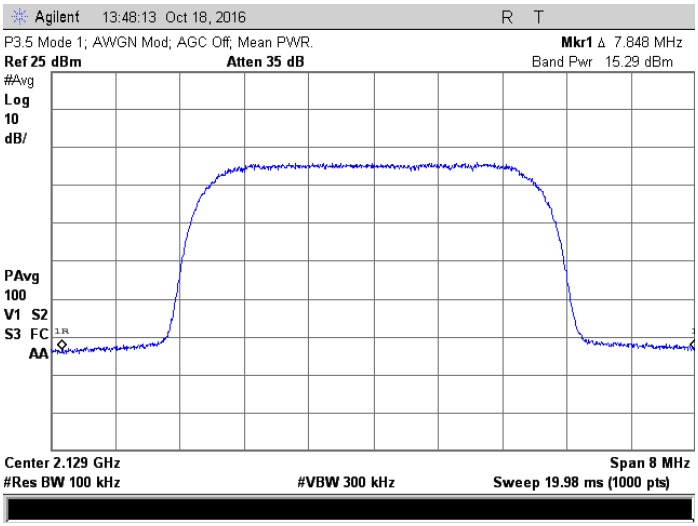
1745 MHz AWGN



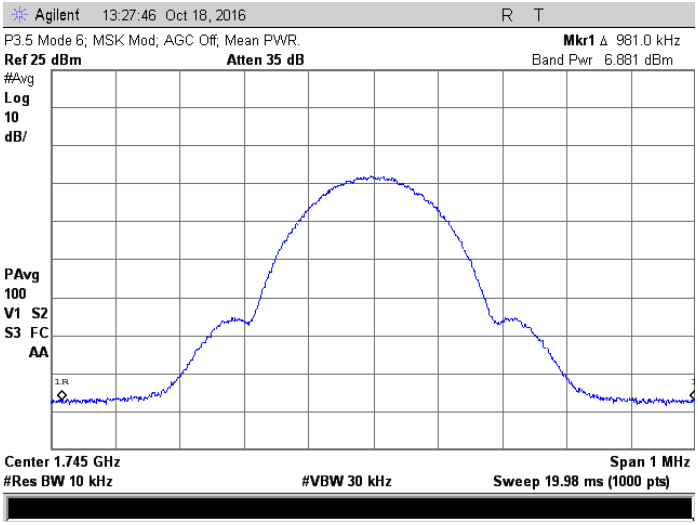
1973 MHz; AWGN



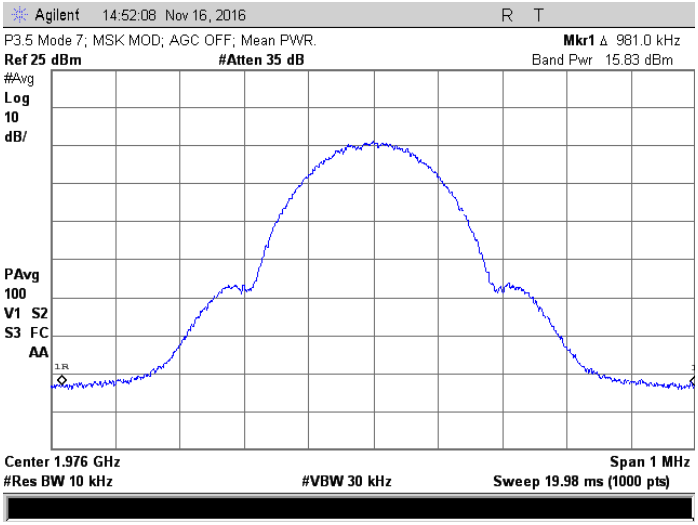
1863 MHz AWGN



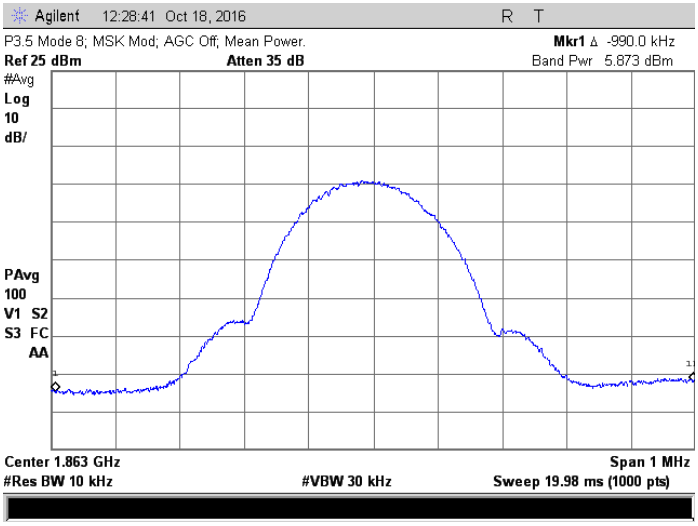
2129 MHz; AWGN



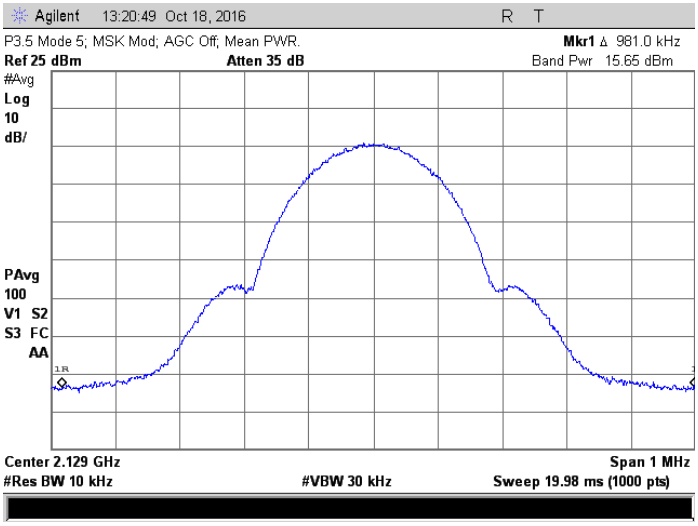
1745 MHz MSK



1976.2 MHz; MSK



1863 MHz MSK



2129 MHz; MSK

15.0 SPURIOUS EMISSIONS

15.1 Applicable Standard

The EUT shall comply with sections 3.6.2 and 3.6.3 of KDB 935210 D05, since it is a Multi-Channel Enhancer.

For a multi-channel enhancer, any intermodulation product level must be attenuated, relative to P, by at least: $43+10xLog_{10}P$, or 70 dB, whichever is less stringent, where P is the total RF output power of the test tones in watts. Since $43 +10xLog_{10}P$ is less stringent than 70 dB, that limit was used.

Spurious emissions shall be measured using a single test signal sequentially tuned to the low, middle, and high channels or frequencies within each authorized frequency band of operation.

Out-of-band/out-of-block emissions (including intermodulation products) was measured under each of the following two stimulus conditions:
a) two adjacent test signals sequentially tuned to the lower and upper frequency band/block edges;
b) a single test signal, sequentially tuned to the lowest and highest frequencies or channels within the frequency band/block under examination.

15.2 Test procedures for section 3.6.2

a) Two signal generators were connected to the input of the Device Under Test (EUT), via a combiner.
b) The signal generator was set to produce two AWGN signals as previously described (e.g., 4.1 MHz OBW).
c) The center frequencies were set such that the AWGN signals occupy adjacent channels at the upper edge of the frequency band or block under test.
d) The composite power levels were set to be zero to 0.5 dB below the AGC threshold level.
e) A spectrum analyzer was connected to the output of the EUT using an external attenuator.
f) The RBW = reference bandwidth was set in accordance with the applicable rule section for the supported frequency band (typically 1 % of the OBW or 100 kHz or 1 MHz).
g) The RBW was set so that the VBW = 3 × RBW.
h) The detector was set to power averaging (rms) detector.
i) The sweep time was set so that sweep time = auto-couple.
j) The spectrum analyzer start frequency was set to the upper block edge frequency, and the stop frequency to the upper block edge frequency plus 300 kHz or 3 MHz, for frequencies below and above 1 GHz, respectively.
k) Trace averaged at least 100 traces in power averaging (rms) mode.
l) The marker function was used to find the maximum power level.
m) The spectrum analyzer trace of the power level was captured for inclusion in the test report.
n) Steps k) thru m) were repeated with the composite input power level set to 3 dB above the AGC threshold.
o) The frequencies of the input signals were reset to the lower edge of the frequency block or band under test.
p) The spectrum analyzer start frequency was reset to the lower block edge frequency minus 300 kHz or 3 MHz, for frequencies below and above 1 GHz, respectively, and the stop frequency to the lower band or block edge frequency.
q) Steps k) to n) were repeated.
r) Steps a) to q) were repeated with the signal generator configured for a single test signal tuned as close as possible to the block edges.
s) Steps a) to r) were repeated with the narrowband test signal.
t) Steps a) to s) were repeated for all authorized frequency bands or blocks used by the EUT.

On any frequency outside the authorized bandwidth shall be attenuated by at least 43 + 10 log (P) dB. This corresponds to an absolute level of -13 dBm.

15.3 Results for Section 3.6.2

Model	DSP95-PAW	Specification	FCC KDB 935210 Sec. 3.6.2
Serial Number	CNH60713	Test Date	October 19 & 20, 2016
Test Personnel	Richard L. Tichgelaar	Test Location	Chamber B
Test Equipment	EMI Receiver (REC-21)		

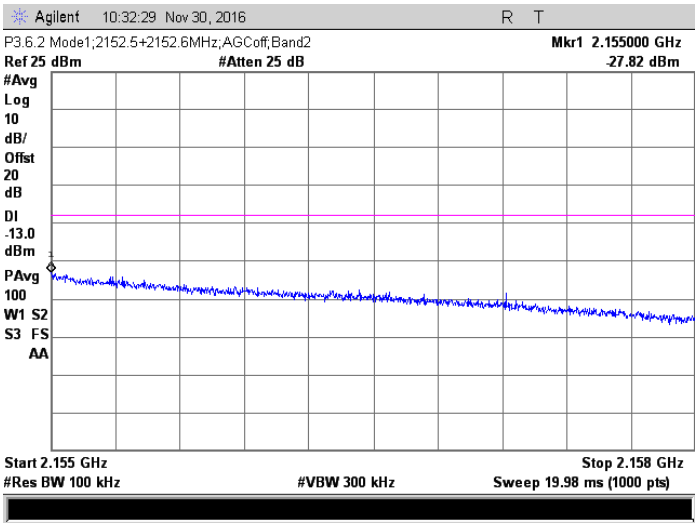
The spectrum analyzer was set to 100 trace average in the RMS mode.

					Sig Gen			Freq of Plot		Max Reading	
3.6.2 Plot #	RBW MHz	VBW MHz	Mode	Modul	#1 MHz	#2 MHz	AGC	Start MHz	Stop MHz	Freq MHz	Max dBm
1	0.1	0.3	1	AWGN	2148	2153	off	2155	2158	2155	-27.8
2	0.1	0.3	1	AWGN	2148	2153	on	2155	2158	2155	-23.4
3	0.1	0.3	1	AWGN	2113	2118	off	2107	2110	2110	-24.6
4	0.1	0.3	1	AWGN	2113	2118	on	2107	2110	2110	-23.5
5	0.01	0	5	MSK	2155	2155	off	2155	2158	2115	-19.1
6	0.01	0	5	MSK	2155	2155	on	2155	2158	2115	-18.1
7	0.01	0	5	MSK	2110	2110	off	2107	2110	2110	-18.6
8	0.01	0	5	MSK	2110	2110	on	2107	2110	2110	-16.4
9	0.1	0.3	2	AWGN	1748	1753	off	1755	1758	1755	-35.7
10	0.1	0.3	2	AWGN	1748	1753	on	1755	1758	1755	-35.3
11	0.1	0.3	2	AWGN	1718	1713	off	1707	1710	1710	-34.1
12	0.1	0.3	2	AWGN	1718	1713	on	1707	1710	1710	-32.5
13	0.01	0	6	MSK	1755	1755	off	1755	1758	1755	-30.8
14	0.01	0	6	MSK	1755	1755	on	1755	1758	1755	-29.9
15	0.01	0	6	MSK	1710	1710	off	1707	1710	1710	-29.4
16	0.01	0	6	MSK	1710	1710	on	1707	1710	1710	-28.2
17	0.1	0.3	3	AWGN	1983	1988	off	1990	1993	1990	-17.3
18	0.1	0.3	3	AWGN	1983	1988	on	1990	1993	1990	-14.0
19	0.1	0.3	3	AWGN	1938	1933	off	1927	1930	1930	-19.5
20	0.1	0.3	3	AWGN	1938	1933	on	1927	1930	1930	-14.9
21	0.01	0	7	MSK	1990	1990	off	1990	1993	1990	-17.7
22	0.01	0	7	MSK	1990	1990	on	1990	1993	1990	-16.8
23	0.01	0	7	MSK	1930	1930	off	1927	1930	1930	-18.2
24	0.01	0	7	MSK	1930	1930	on	1927	1930	1930	-16.6
25	0.1	0.3	4	AWGN	1903	1908	off	1910	1913	1910	-27.1
26	0.1	0.3	4	AWGN	1903	1908	on	1910	1913	1910	-29.5
27	0.1	0.3	4	AWGN	1858	1853	off	1847	1850	1850	-28.0
28	0.1	0.3	4	AWGN	1858	1853	on	1847	1850	1850	-28.8
29	0.01	0	8	MSK	1910	1910	off	1910	1913	1910	-31.6
30	0.01	0	8	MSK	1910	1910	on	1910	1913	1910	-29.9
31	0.01	0	8	MSK	1850	1850	off	1847	1850	1850	-27.1
32	0.01	0	8	MSK	1850	1850	on	1847	1850	1850	-26.0
33	0.1	0.3	1	AWGN	2153	None	off	2155	2158	2155	-26.2
34	0.1	0.3	1	AWGN	2153	None	on	2155	2158	2155	-25.2
35	0.1	0.3	1	AWGN	2113	None	off	2107	2110	2110	-26.4

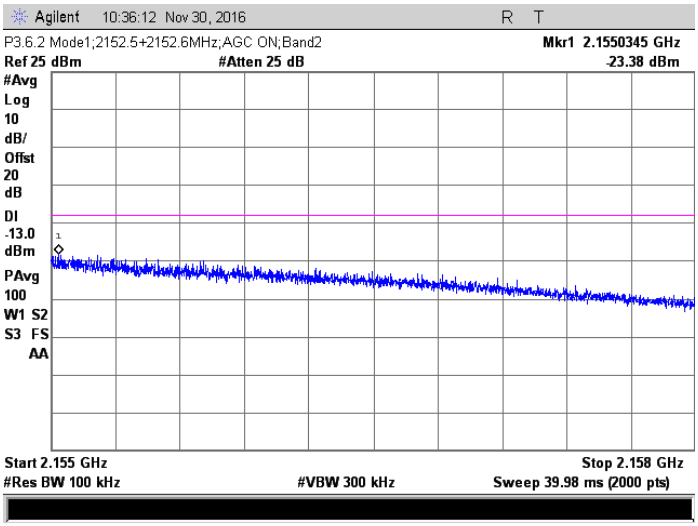
					Sig Gen			Freq of Plot		Max Reading	
3.6.2 Plot #	RBW MHz	VBW MHz	Mode	Modul	#1 MHz	#2 MHz	AGC	Start MHz	Stop MHz	Freq MHz	Max dBm
36	0.1	0.3	1	AWGN	2113	None	on	2107	2110	2110	-26.7
37	0.01	0	5	MSK	2155	None	off	2155	2158	2155	-16.7
38	0.01	0	5	MSK	2155	None	on	2155	2158	2155	-15.0
39	0.01	0	5	MSK	2110	None	off	2107	2110	2110	-16.3
40	0.01	0	5	MSK	2110	None	on	2107	2110	2110	-14.0
41	0.1	0.3	2	AWGN	1753	None	off	1755	1758	1755	-34.5
42	0.1	0.3	2	AWGN	1753	None	on	1755	1758	1755	-33.2
43	0.1	0.3	2	AWGN	1713	None	off	1707	1710	1710	-33.2
44	0.1	0.3	2	AWGN	1713	None	on	1707	1710	1710	-31.0
45	0.01	0	6	MSK	1755	None	off	1755	1758	1755	-24.9
46	0.01	0	6	MSK	1755	None	on	1755	1758	1755	-24.2
47	0.01	0	6	MSK	1710	None	off	1707	1710	1710	-24.9
48	0.01	0	6	MSK	1710	None	on	1707	1710	1710	-23.1
49	0.1	0.3	3	AWGN	1988	None	off	1990	1993	1990	-25.8
50	0.1	0.3	3	AWGN	1988	None	on	1990	1993	1990	-23.3
51	0.1	0.3	3	AWGN	1933	None	off	1927	1930	1930	-24.1
52	0.1	0.3	3	AWGN	1933	None	on	1927	1930	1930	-20.7
53	0.01	0	7	MSK	1990	None	off	1990	1993	1990	-16.2
54	0.01	0	7	MSK	1990	None	on	1990	1993	1990	-13.8
55	0.01	0	7	MSK	1930	None	off	1927	1930	1930	-16.5
56	0.01	0	7	MSK	1930	None	on	1927	1930	1930	-14.3
57	0.1	0.3	4	AWGN	1908	None	off	1910	1913	1910	-28.7
58	0.1	0.3	4	AWGN	1908	None	on	1910	1913	1910	-28.5
59	0.1	0.3	4	AWGN	1853	None	off	1847	1850	1850	-28.3
60	0.1	0.3	4	AWGN	1853	None	on	1847	1850	1850	-29.5
61	0.01	0	8	MSK	1910	None	off	1910	1913	1910	-26.6
62	0.01	0	8	MSK	1910	None	on	1910	1913	1910	-24.4
63	0.01	0	8	MSK	1850	None	off	1847	1850	1850	-22.4
64	0.01	0	8	MSK	1850	None	on	1847	1850	1850	-20.1

Judgement: Pass

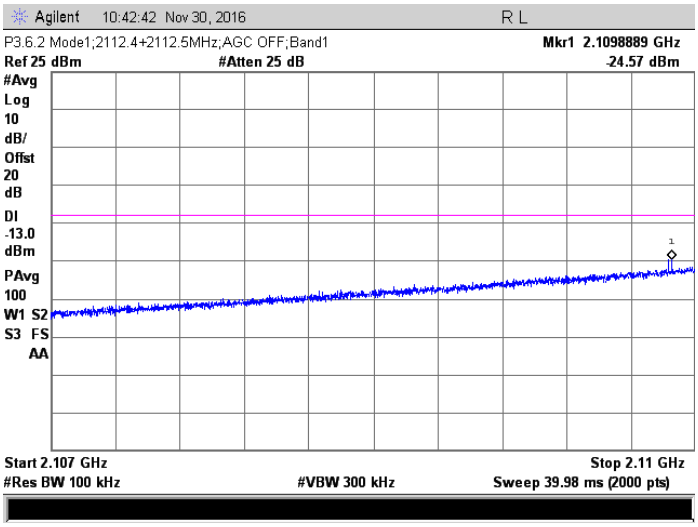
15.3.1 Combined Output Results



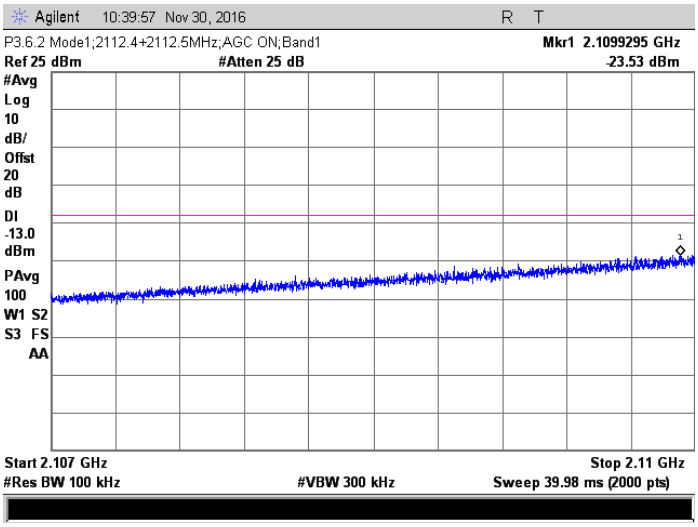
AWGN; 2152.5 + 2152.6 MHz Injected Signals; AGC off



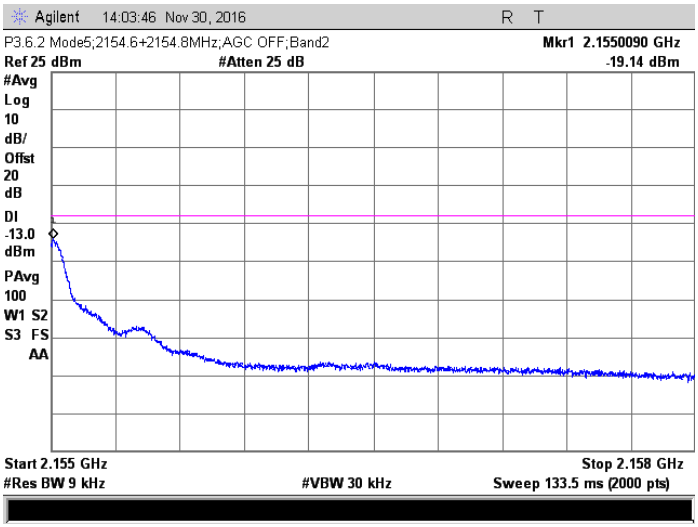
AWGN; 2152.5 + 2152.6 MHz Injected Signals; AGC on



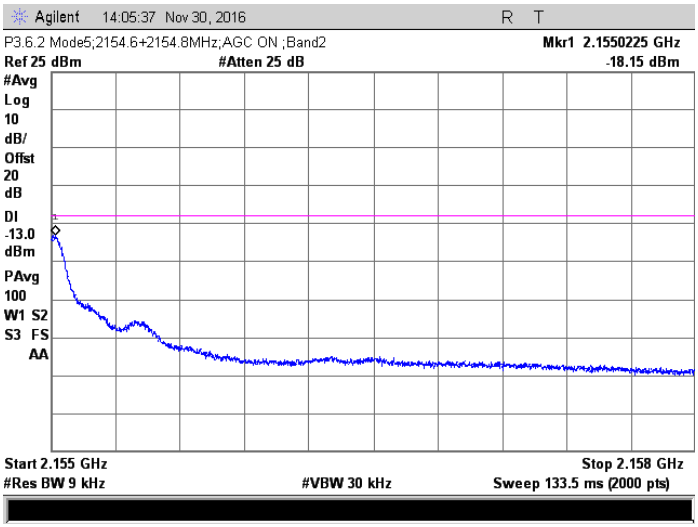
AWGN; 2112.4 + 2112.5 MHz Injected Signals; AGC off



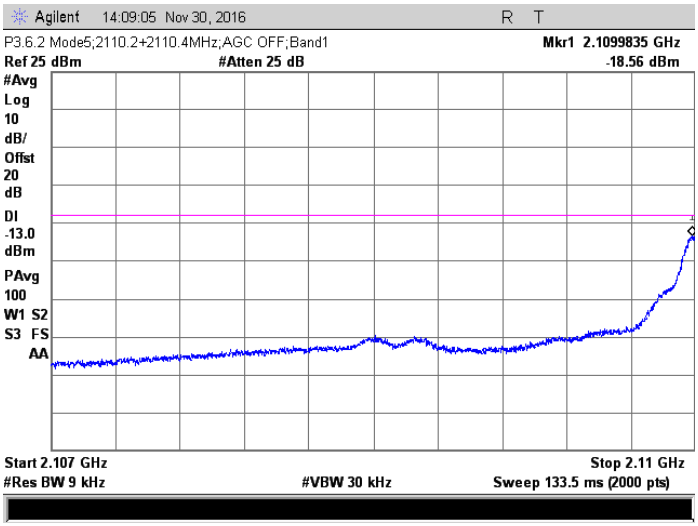
AWGN; 2112.4 + 2112.5 MHz Injected Signals; AGC on



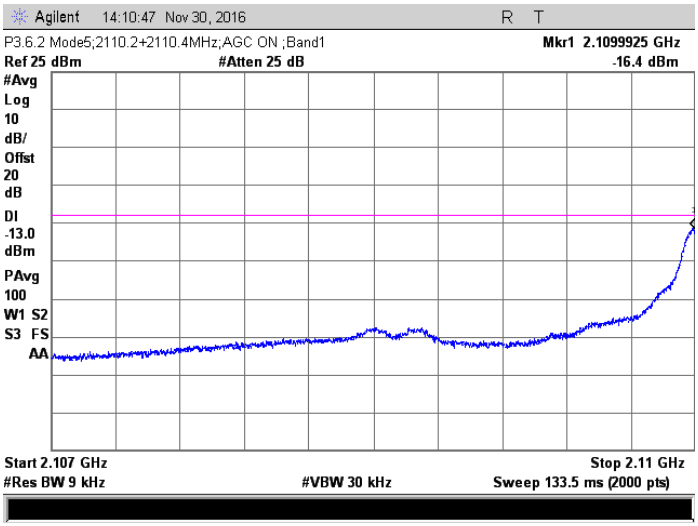
MSK; 2154.6 + 2154.8 MHz Injected Signals; AGC off



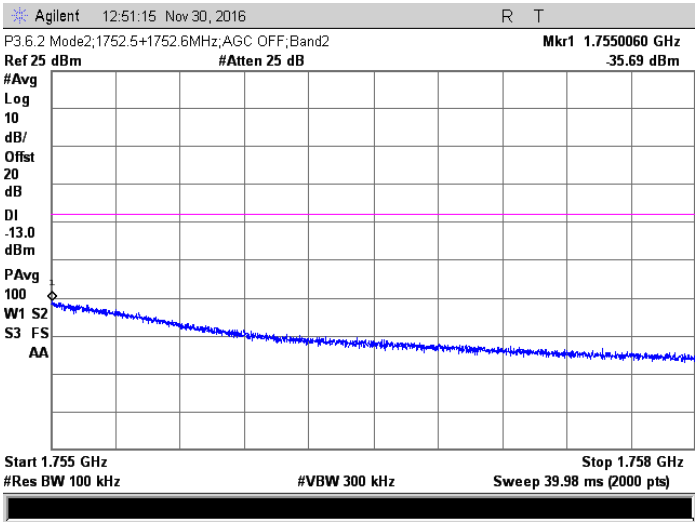
MSK; 2154.6 + 2154.8 MHz Injected Signals; AGC on



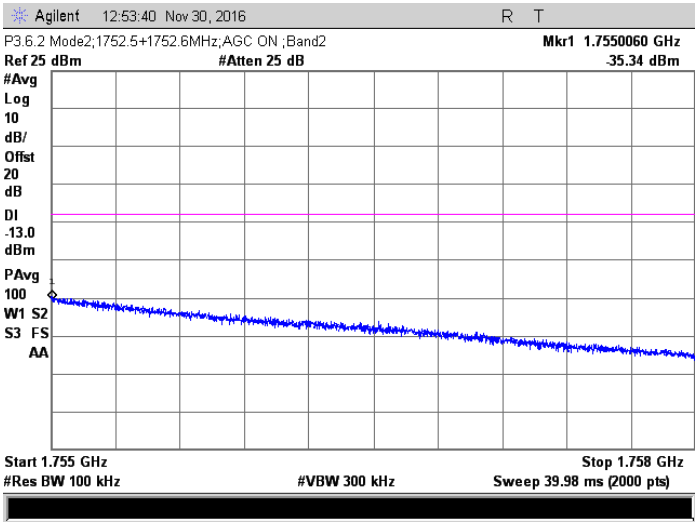
MSK; 2110.2 + 2110.4 MHz Injected Signals; AGC off



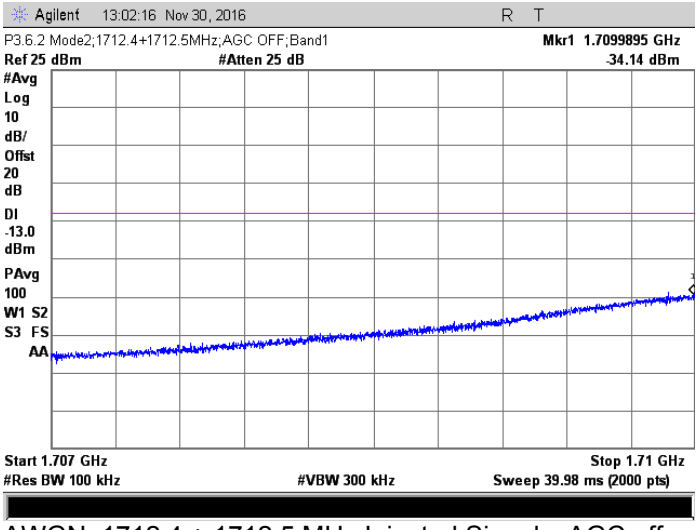
MSK; 2110.2 + 2110.4 MHz Injected Signals; AGC on



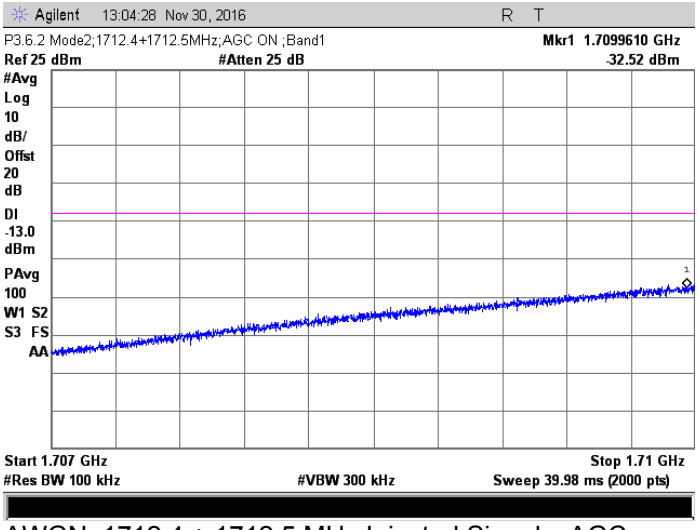
AWGN; 1752.5 + 1752.6 MHz Injected Signals; AGC off



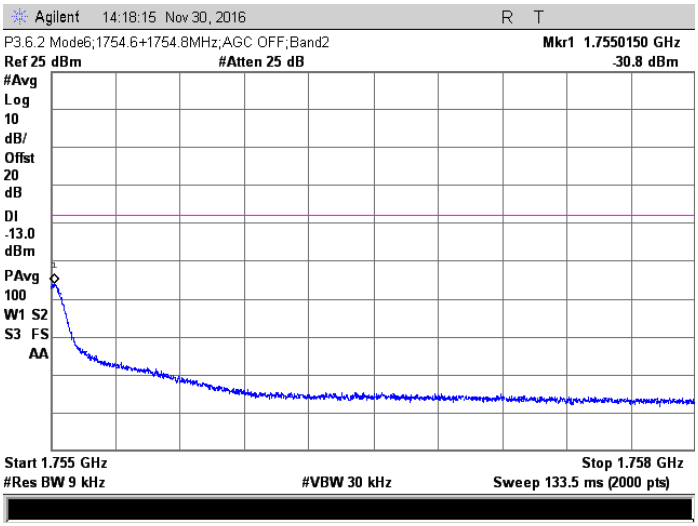
AWGN; 1752.5 + 1752.6 MHz Injected Signals; AGC on



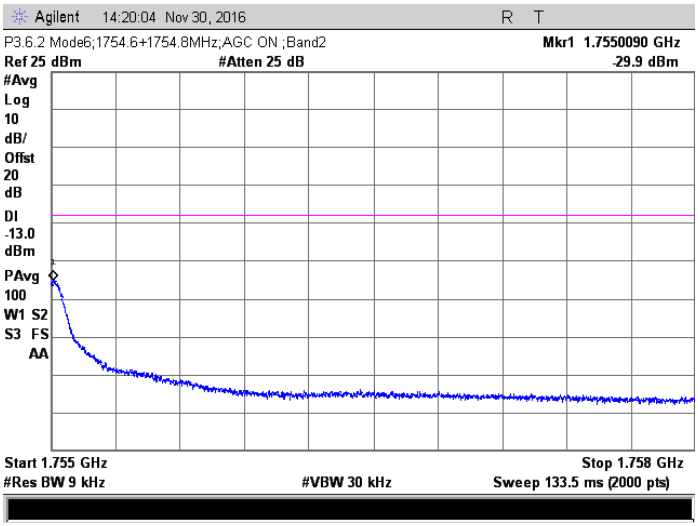
AWGN; 1712.4 + 1712.5 MHz Injected Signals; AGC off



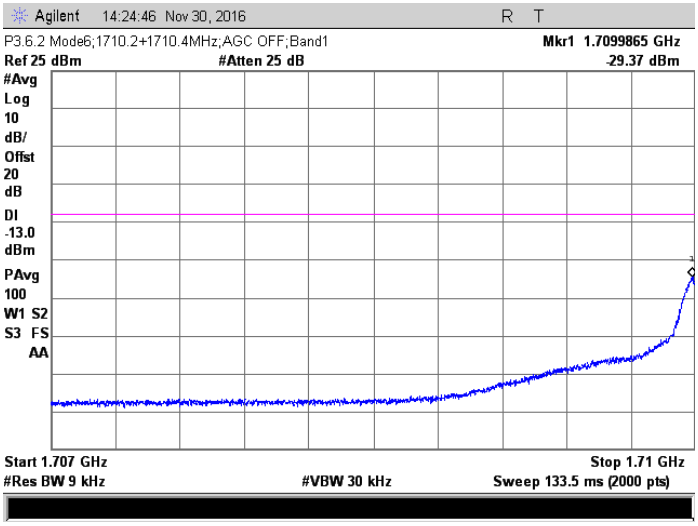
AWGN; 1712.4 + 1712.5 MHz Injected Signals; AGC on



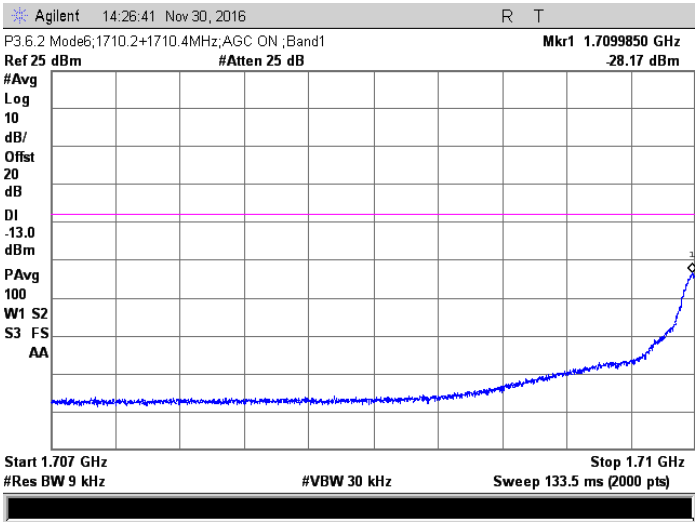
MSK; 1754.6 + 1754.8 MHz Injected Signals; AGC off



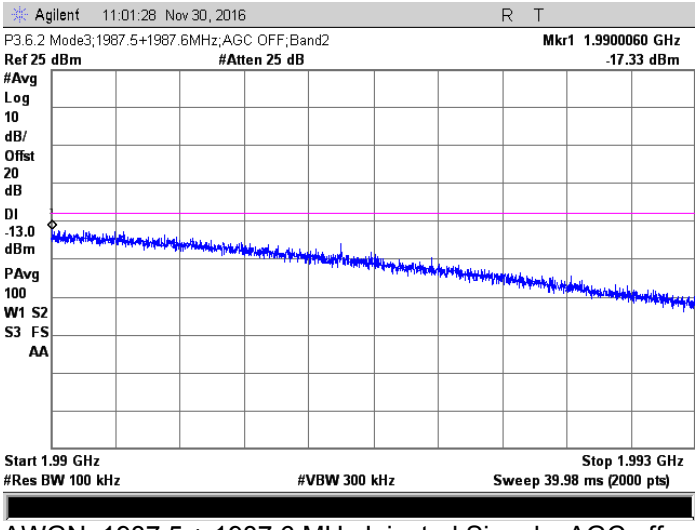
MSK; 1754.6 + 1754.8 MHz Injected Signals; AGC on



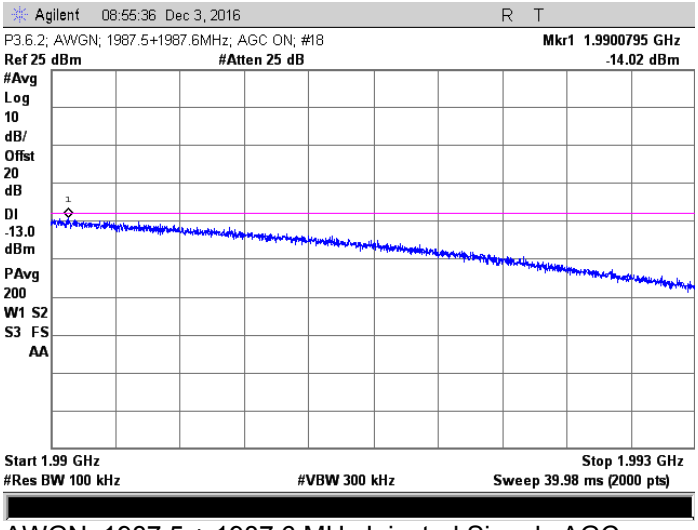
MSK; 1710.2 + 1710.4 MHz Injected Signals AGC off



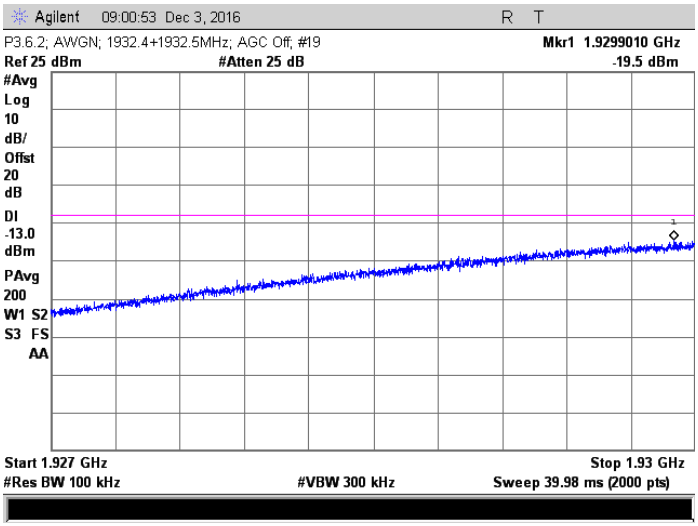
MSK; 1710.2 + 1710.4 MHz Injected Signals AGC on



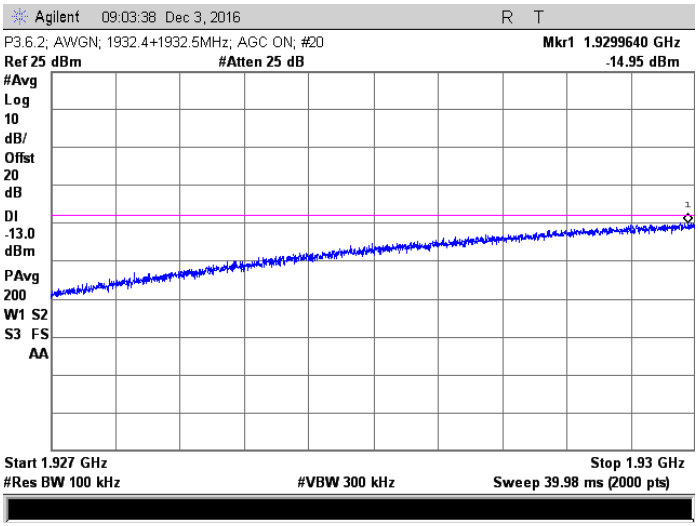
AWGN; 1987.5 + 1987.6 MHz Injected Signals; AGC off



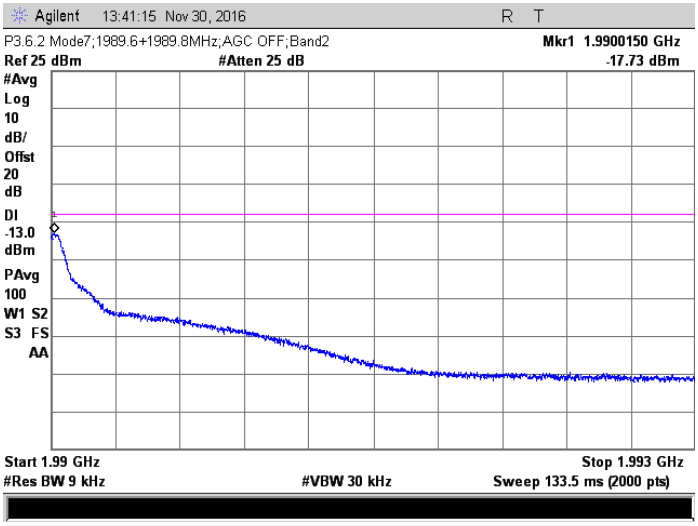
AWGN; 1987.5 + 1987.6 MHz Injected Signals AGC on



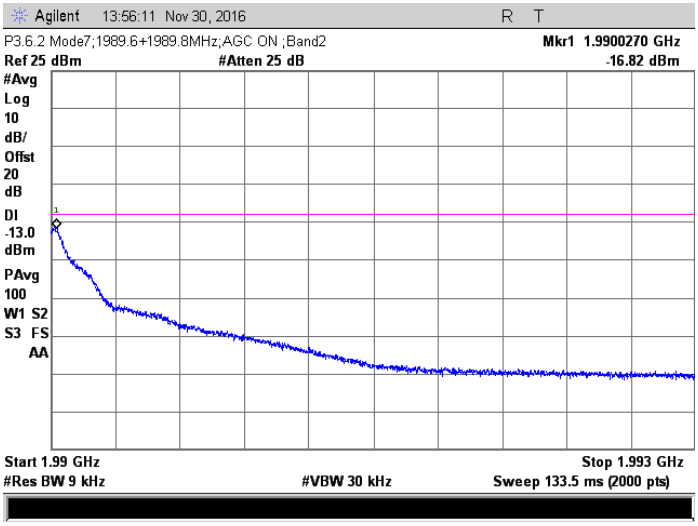
AWGN; 1932.4 + 1932.5 MHz Injected Signals; AGC off



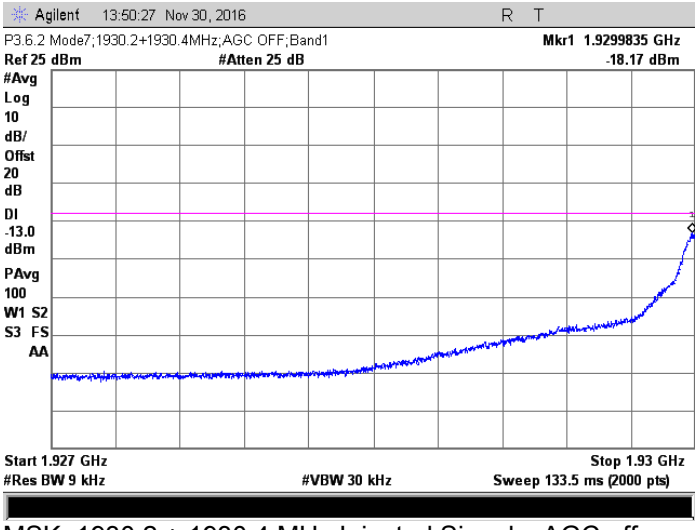
AWGN; 1932.4 + 1932.5 MHz Injected Signals; AGC on



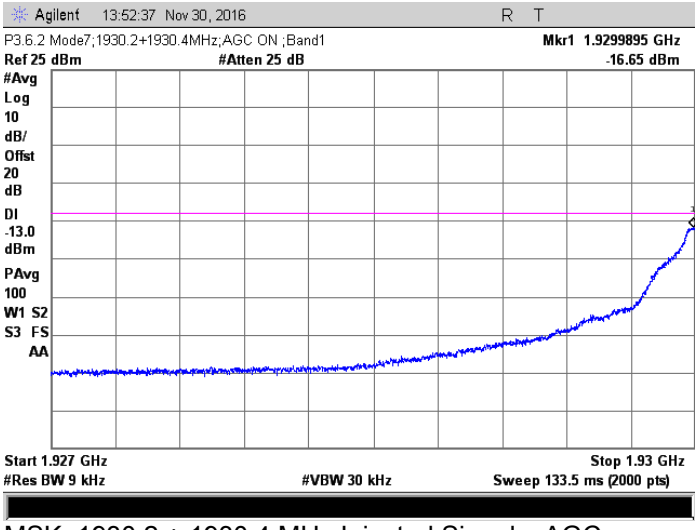
MSK; 1989.6 + 1989.8 MHz Injected Signals; AGC off



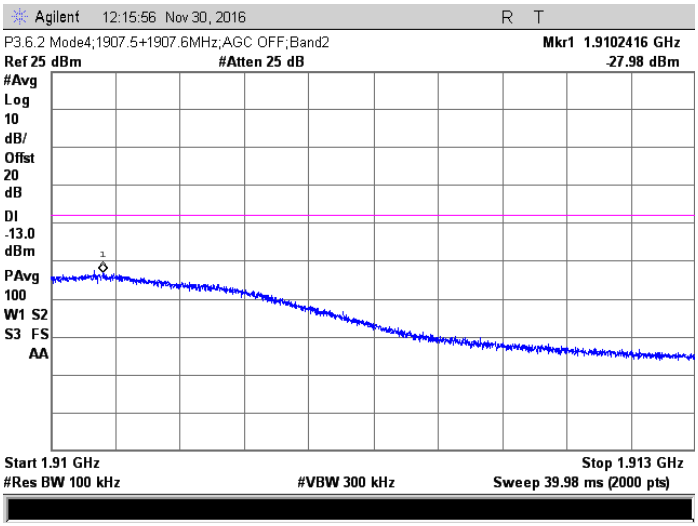
MSK; 1989.6 + 1989.8 MHz Injected Signals; AGC on



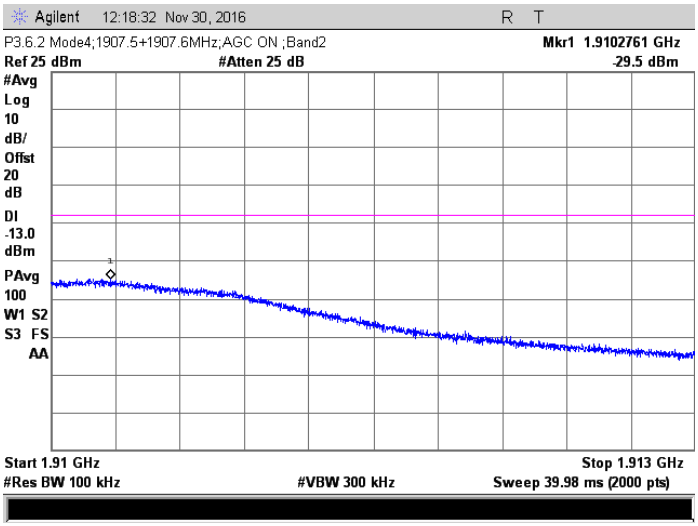
MSK; 1930.2 + 1930.4 MHz Injected Signals; AGC off



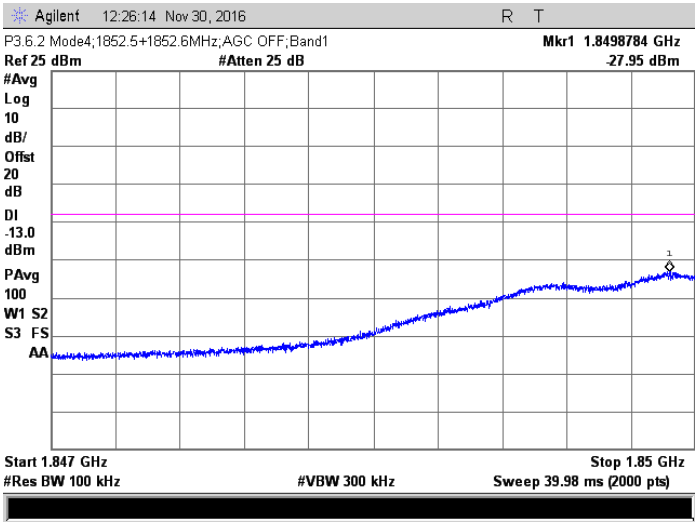
MSK; 1930.2 + 1930.4 MHz Injected Signals; AGC on



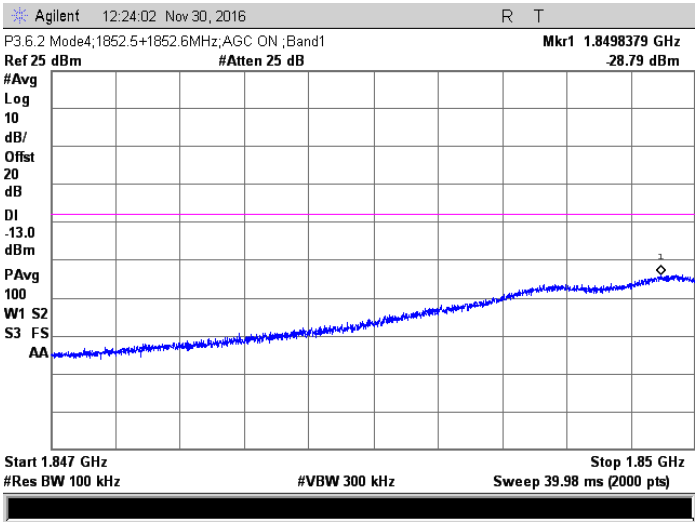
AWGN; 1907.5 + 1907.6 MHz Injected Signals; AGC off



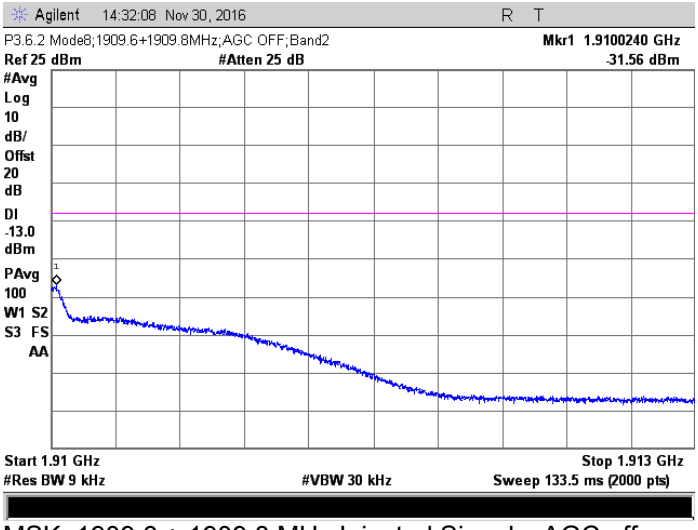
AWGN; 1907.5 + 1907.6 MHz Injected Signals; AGC on



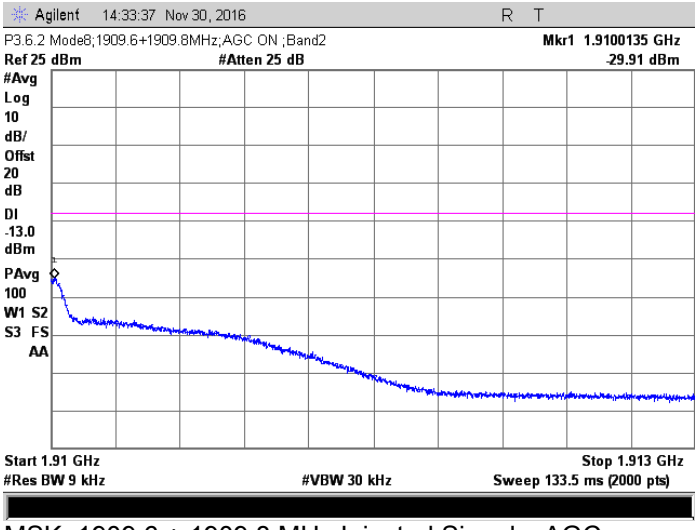
AWGN; 1852.5 + 1852.6 MHz Injected Signals; AGC off



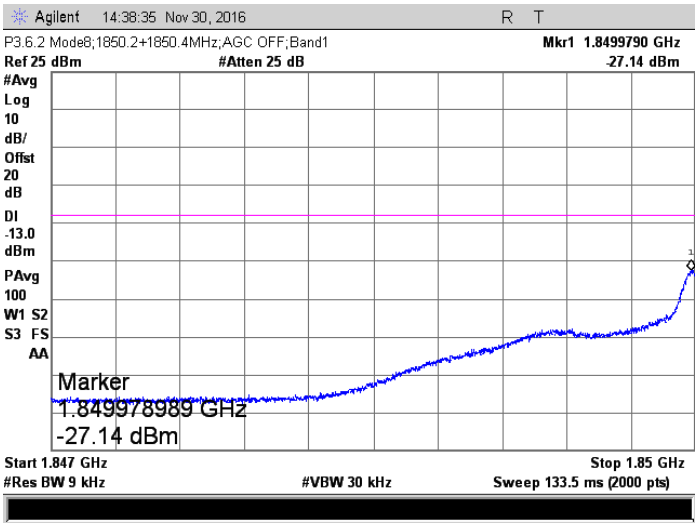
AWGN; 1852.5 + 1852.6 MHz Injected Signals; AGC on



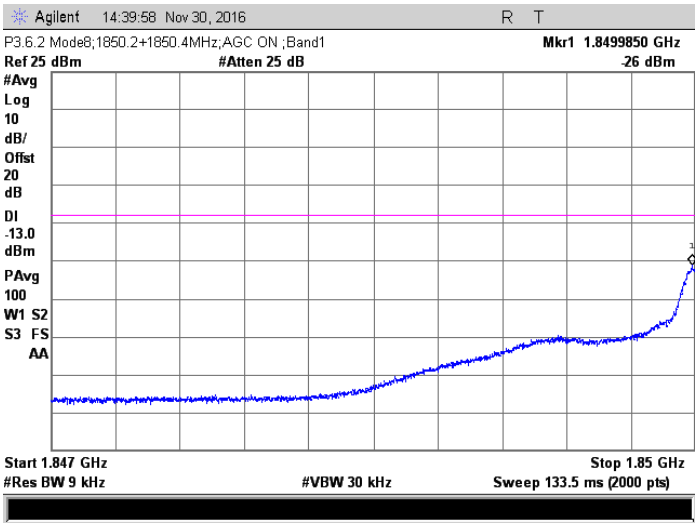
MSK; 1909.6 + 1909.8 MHz Injected Signals; AGC off



MSK; 1909.6 + 1909.8 MHz Injected Signals; AGC on

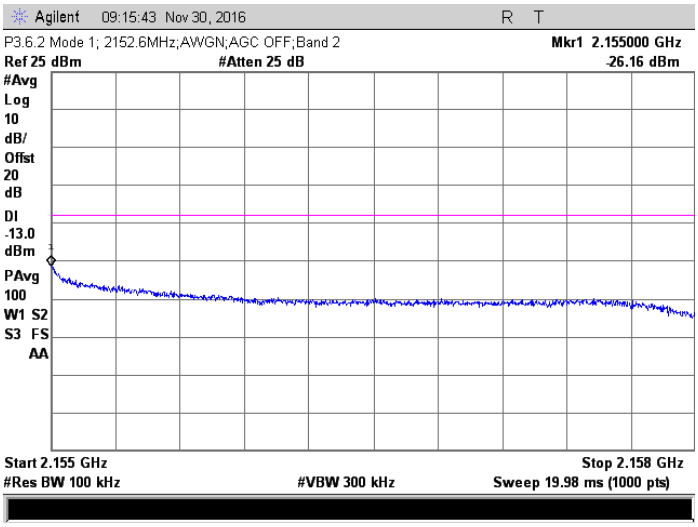


MSK; 1850.2 + 1850.4 MHz Injected Signals; AGC off

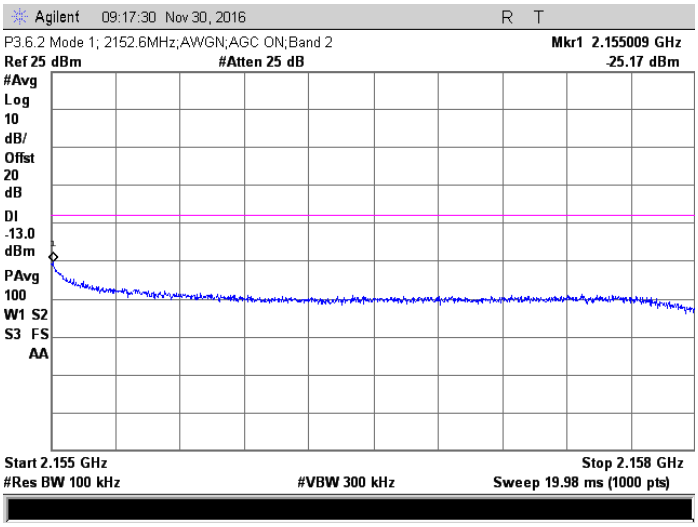


MSK; 1850.2 + 1850.4 MHz Injected Signals; AGC on

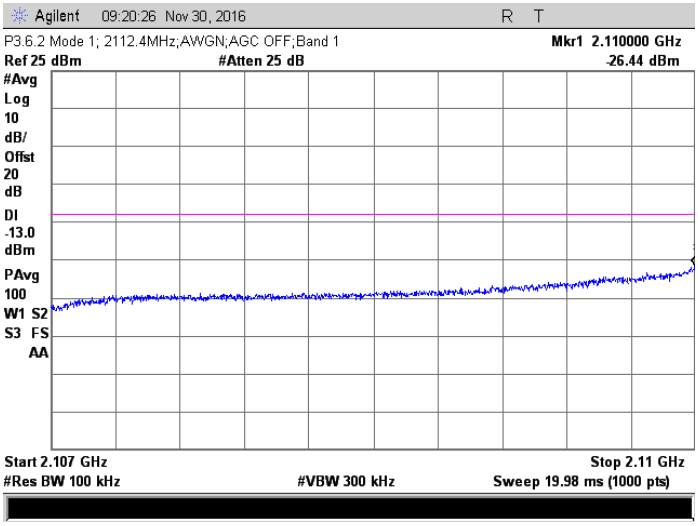
Single Signal Results



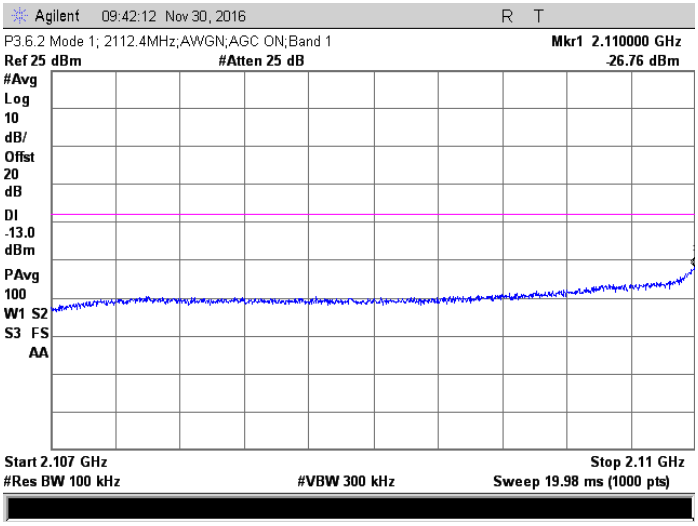
AWGN; 2152.6 MHz Injected Signal; AGC off



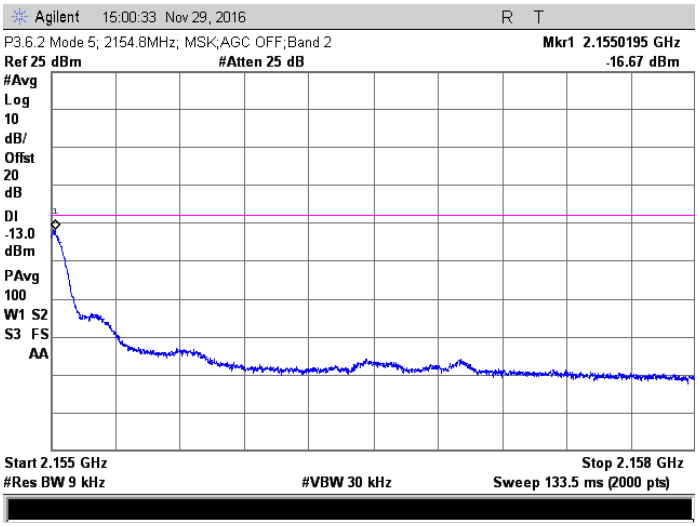
AWGN; 2152.6 MHz Injected Signal; AGC on



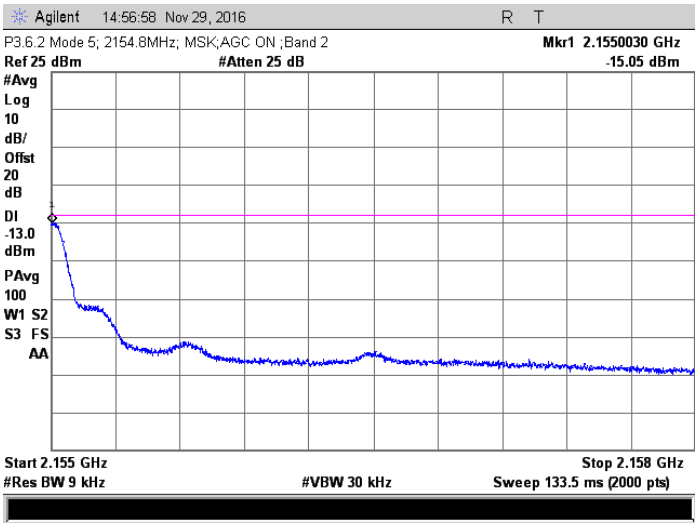
AWGN; 2112.4 MHz Injected Signal; AGC off



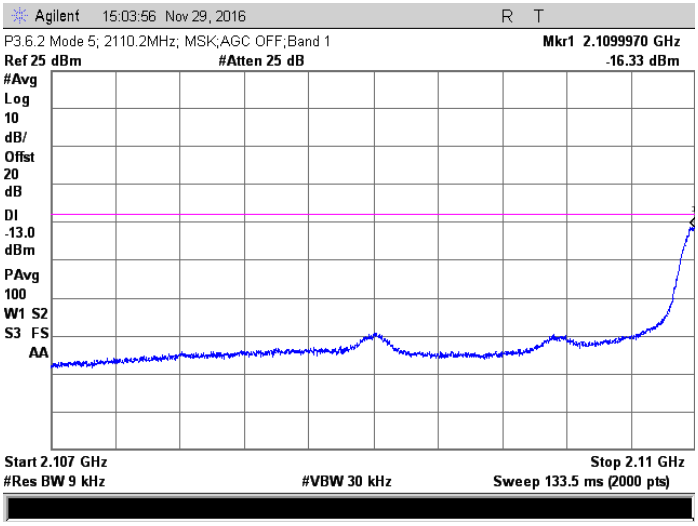
AWGN; 2112.4 MHz Injected Signal; AGC on



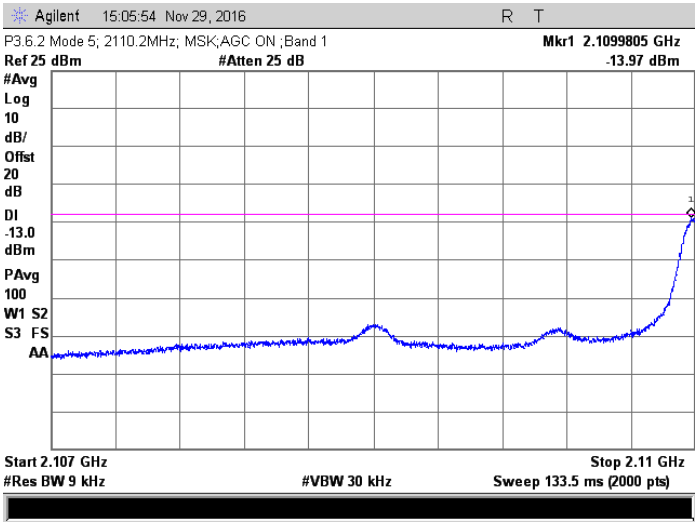
MSK; 2154.8 MHz Injected Signal; AGC off



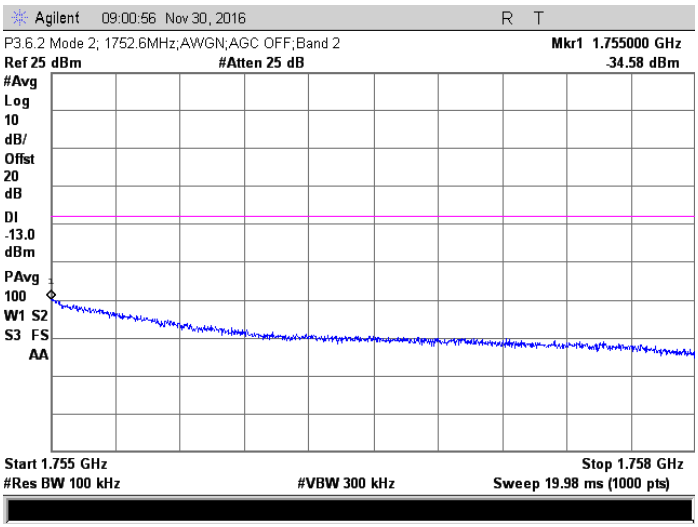
MSK; 2154.8 MHz Injected Signal; AGC on



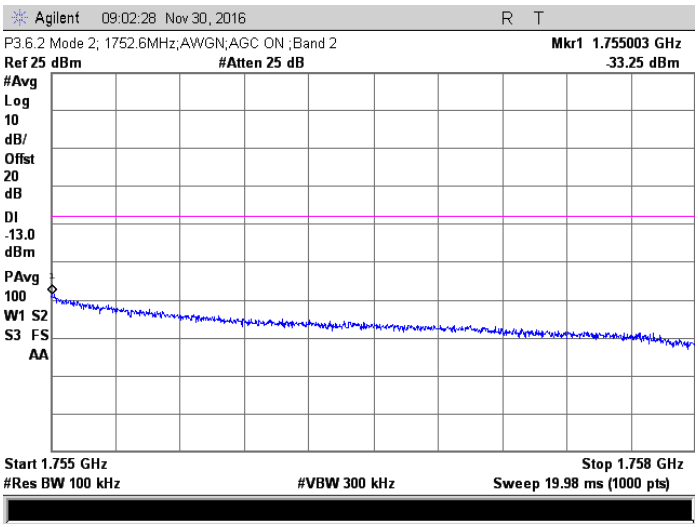
MSK; 2110.2 MHz Injected Signal; AGC off



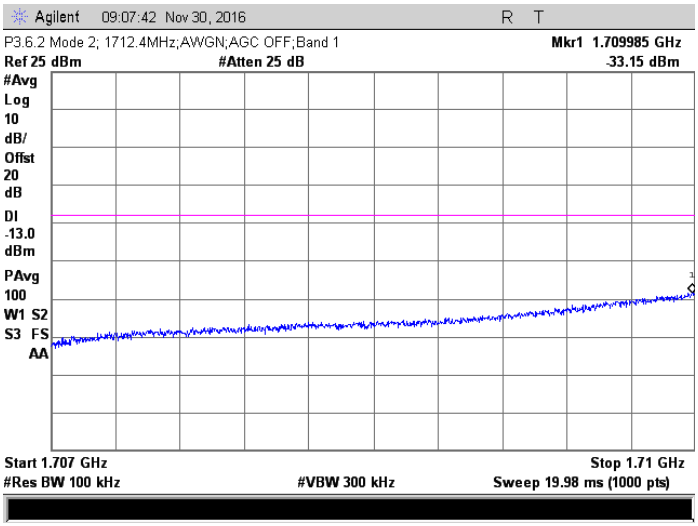
MSK; 2110.2 MHz Injected Signal; AGC on



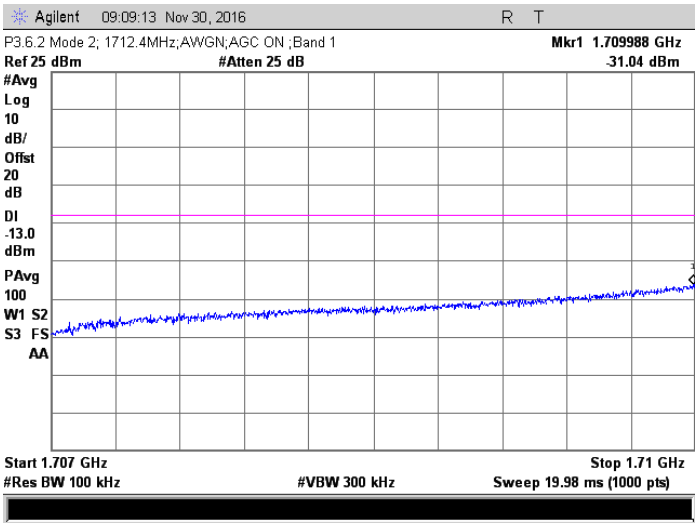
AWGN; 1752.6 MHz Injected Signal; AGC off



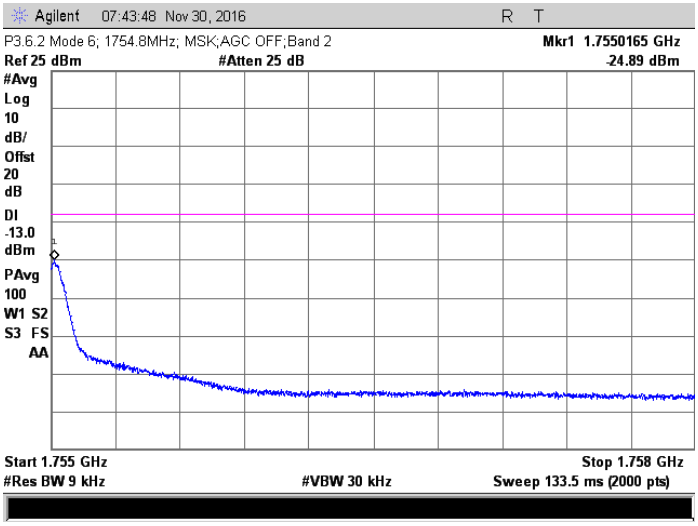
AWGN; 1752.6 MHz Injected Signal; AGC on



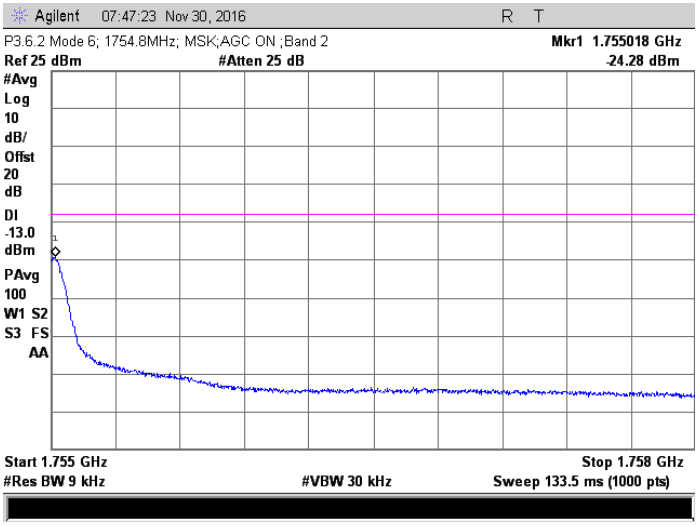
AWGN; 1712.4 MHz Injected Signal; AGC off



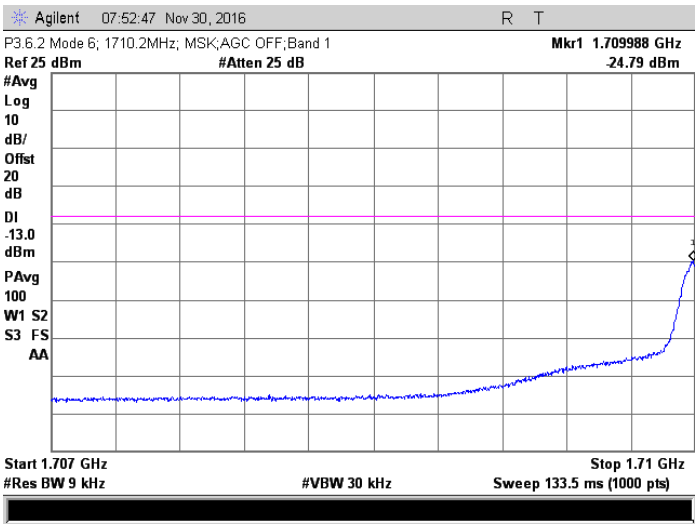
AWGN; 1712.4 MHz Injected Signal; AGC on



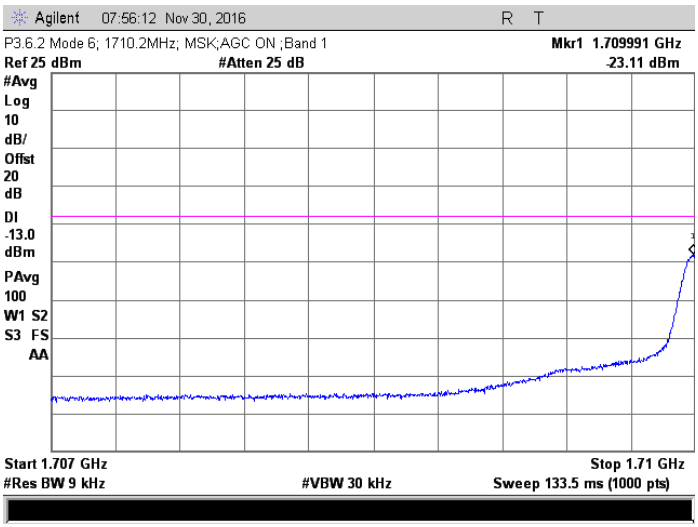
MSK; 1754.8 MHz Injected Signal; AGC off



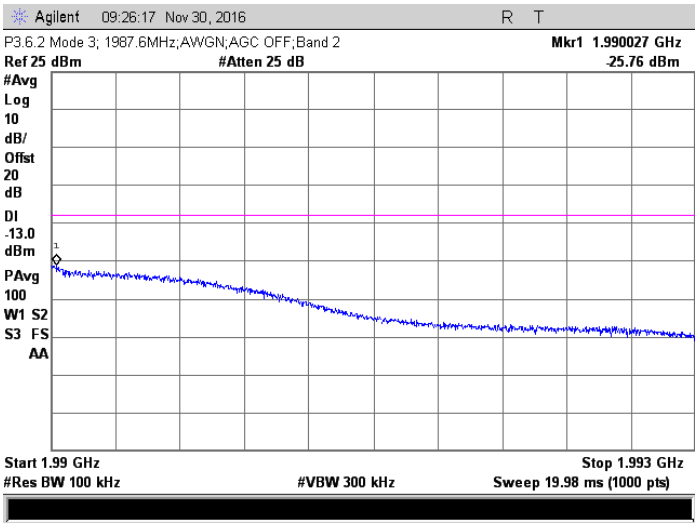
MSK; 1754.8 MHz Injected Signal; AGC on



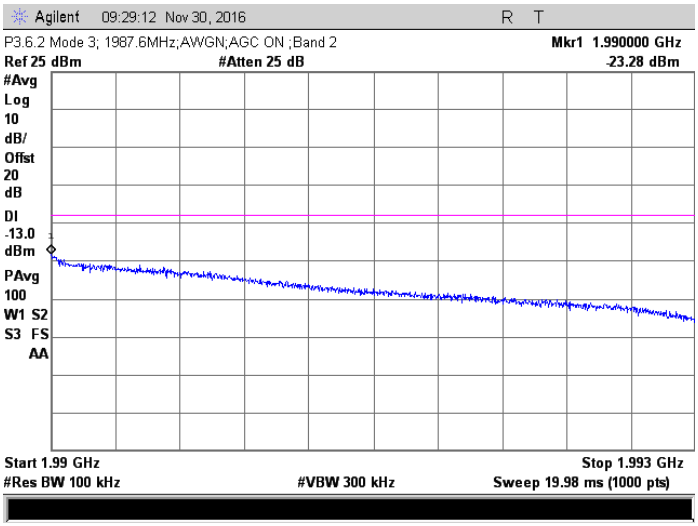
MSK; 1710.2 MHz Injected Signal; AGC off



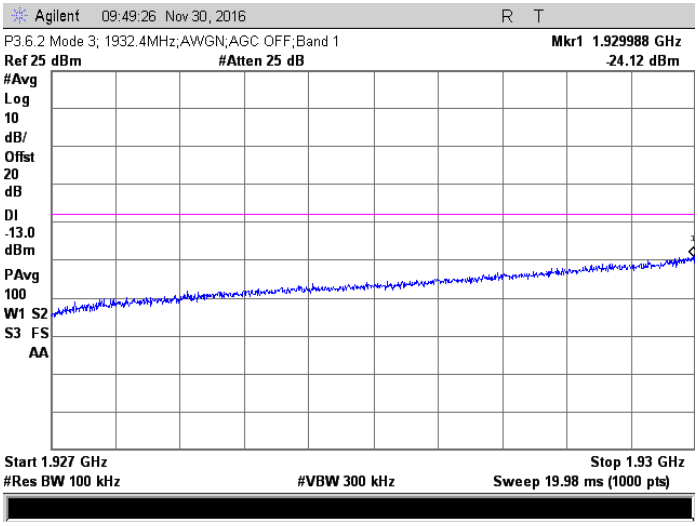
MSK; 1710.2 MHz Injected Signal; AGC on



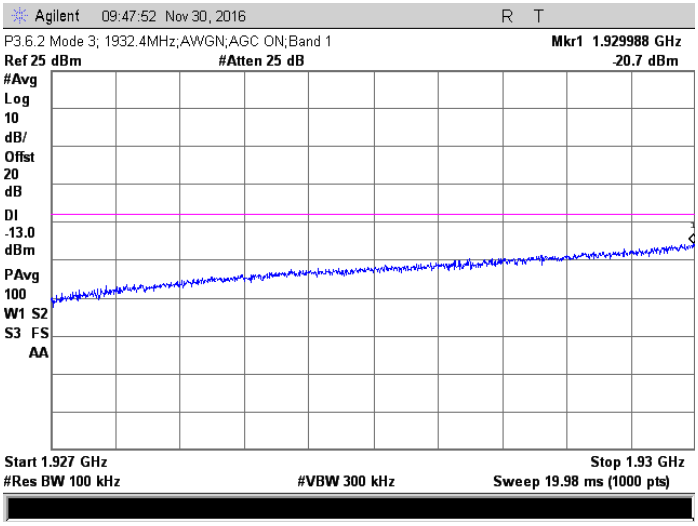
AWGN; 1987.6 MHz Injected Signal; AGC off



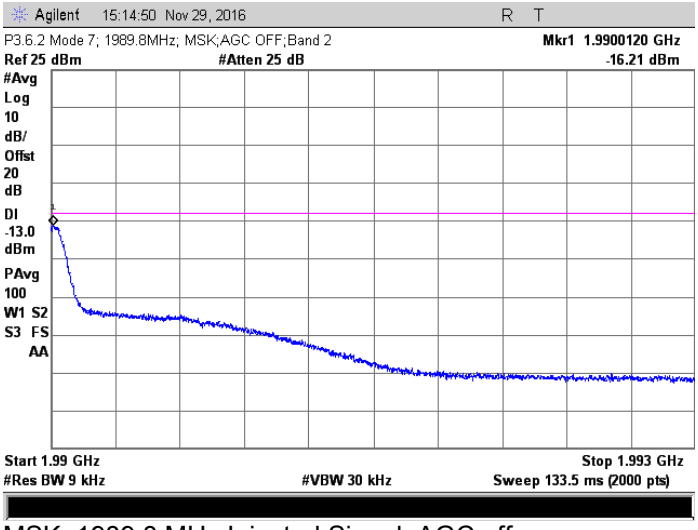
AWGN; 1987.6 MHz Injected Signal; AGC on



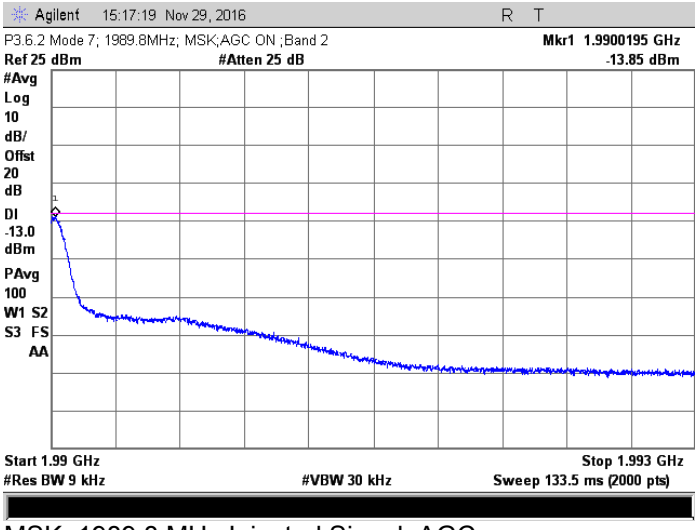
AWGN; 1932.4 MHz Injected Signal; AGC off



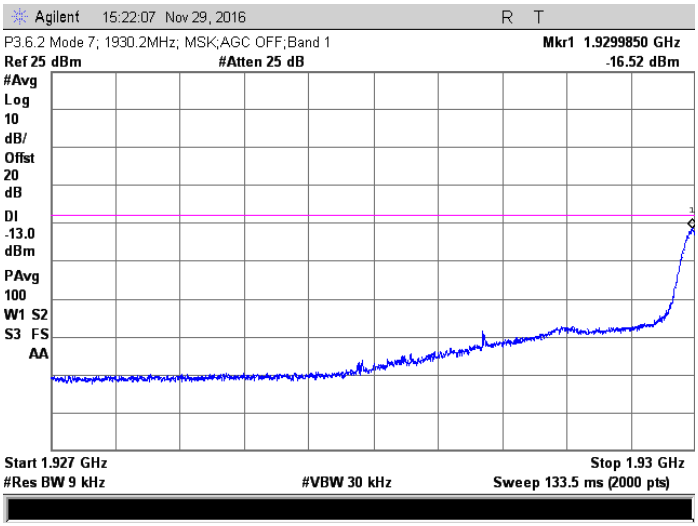
AWGN; 1932.4 MHz Injected Signal; AGC on



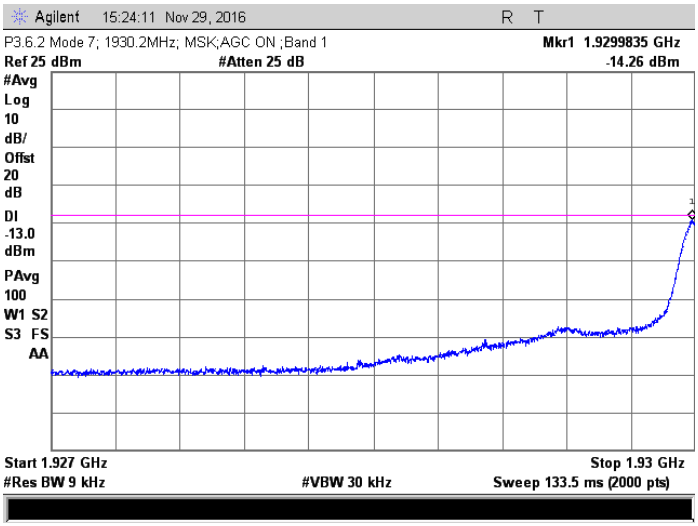
MSK; 1989.8 MHz Injected Signal; AGC off



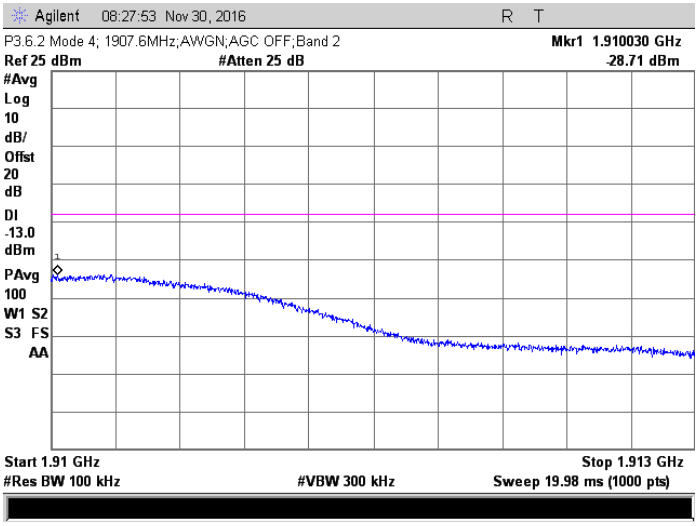
MSK; 1989.8 MHz Injected Signal; AGC on



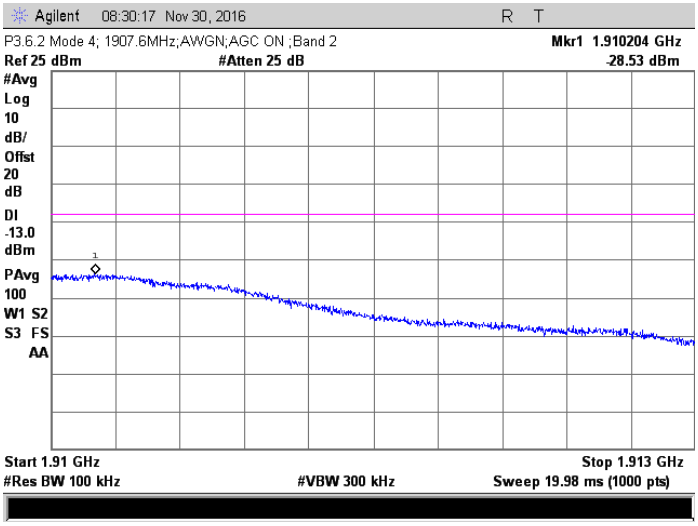
MSK; 1930.2 MHz Injected Signal; AGC off



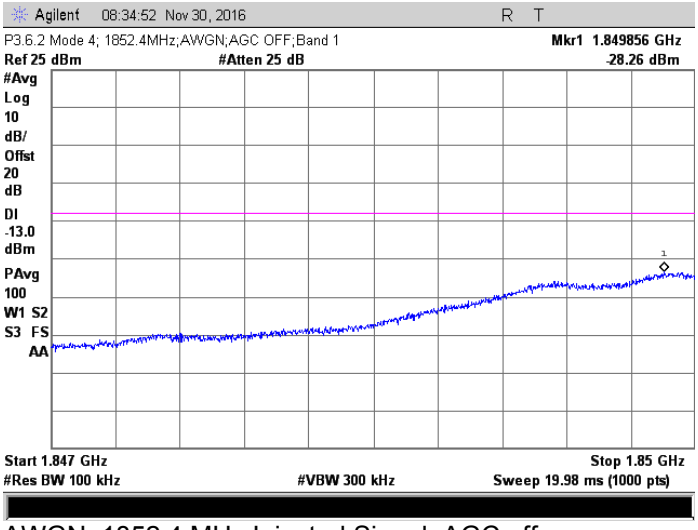
MSK; 1930.2 MHz Injected Signal; AGC on



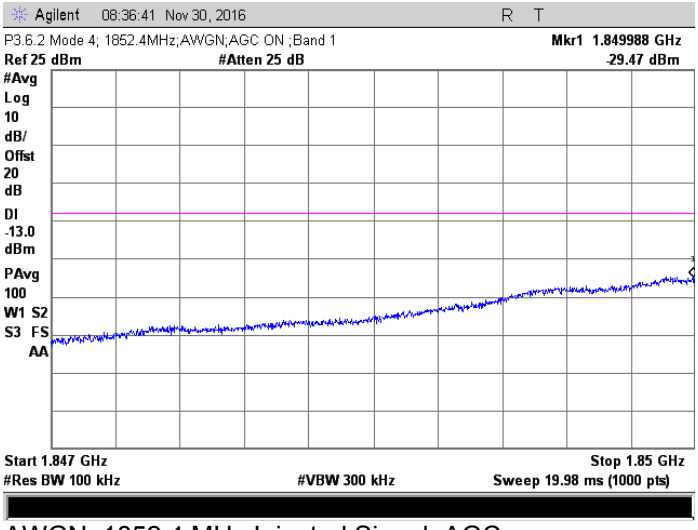
AWGN; 1907.6 MHz Injected Signal; AGC off



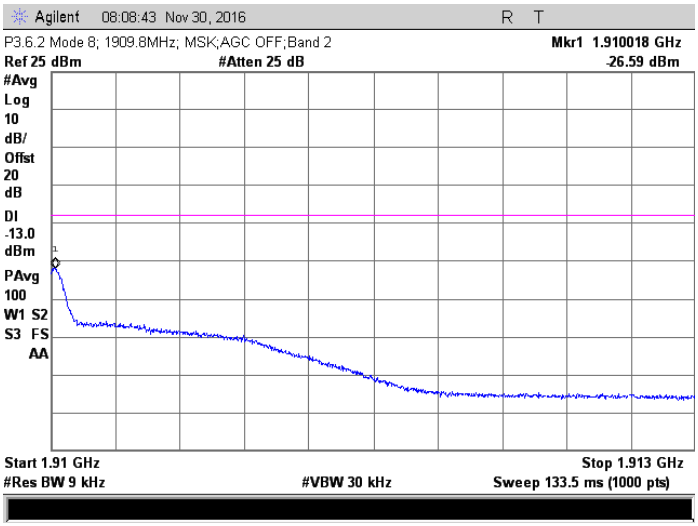
AWGN; 1907.6 MHz Injected Signal; AGC on



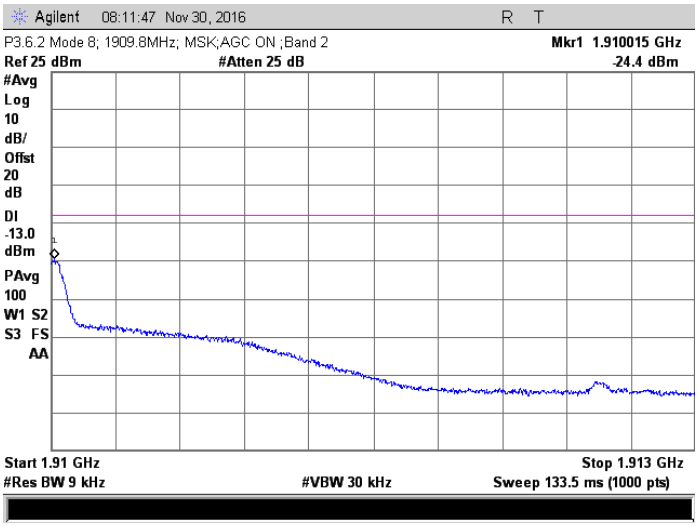
AWGN; 1852.4 MHz Injected Signal; AGC off



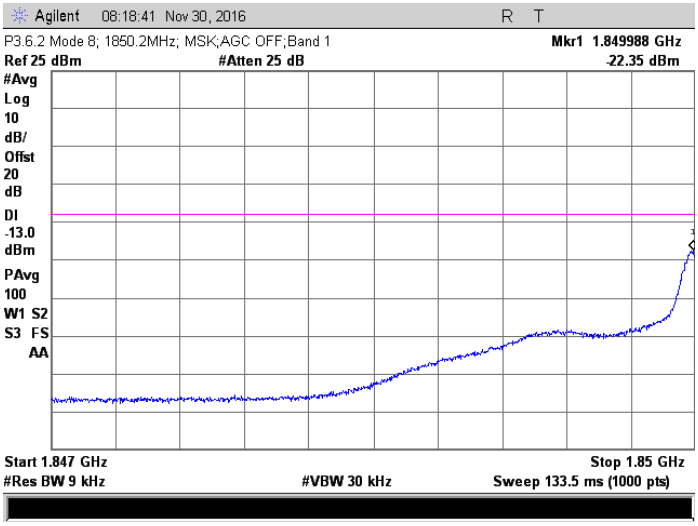
AWGN; 1852.4 MHz Injected Signal; AGC on



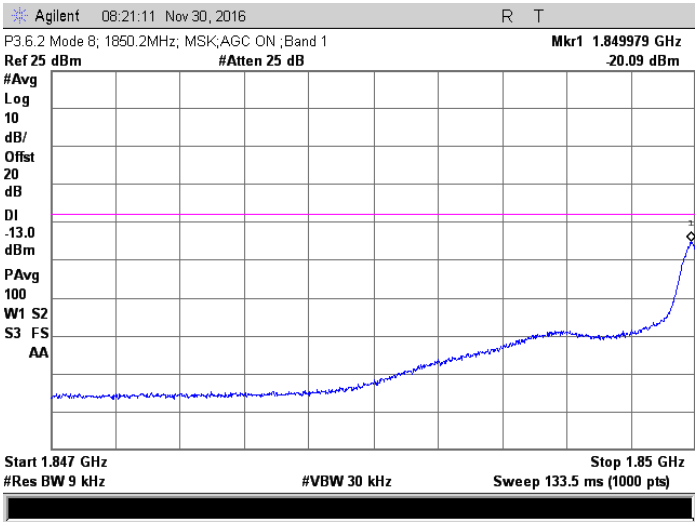
MSK; 1909.8 MHz Injected Signal; AGC off



MSK; 1909.8 MHz Injected Signal; AGC on



MSK; 1850.2 MHz Injected Signal; AGC off



MSK; 1850.2 MHz Injected Signal; AGC on

15.4 Test procedures 3.6.3

a) A signal generator was connected to the input of the EUT.
b) The signal generator was set to produce the broadband test signal as previously described (i.e., 4.1 MHz OBW AWGN).
c) The center frequency of the test signal was set to the lowest available channel within the frequency band or block.
d) The EUT input power was set to zero to 0.5 dB below the AGC threshold level.
e) A spectrum analyzer was connected to the output of the EUT using appropriate attenuation as necessary.
f) Set the RBW = reference bandwidth in the applicable rule section for the supported frequency band of operation (e.g., reference bandwidth is typically 100 kHz or 1 MHz).
g) The VBW was set as ≥ 3 × RBW.
h) The Sweep time was set to equal auto-couple.
i) The spectrum analyzer start frequency was set to the lowest RF signal generated in the equipment, without going below 9 kHz, and the stop frequency to the lower band/block edge frequency minus 100 kHz or 1 MHz, as specified in the applicable rule part. The number of measurement points in each sweep must be ≥ (2 × span/RBW), which may require that the measurement range defined by the start and stop frequencies be subdivided, depending on the available number of measurement points provided by the spectrum analyzer.

j) The power averaging (rms) detector function was selected.
k) A trace average measurement with at least 10 traces in power averaging (rms) mode was performed.
l) The peak marker function was used to identify the highest amplitude level over each measured frequency range. The frequency and amplitude were recorded and captured in a plot.
m) The spectrum analyzer start frequency was reset to the upper band/block edge frequency plus 100 kHz or 1 MHz, as specified in the applicable rule part, and the spectrum analyzer stop frequency to 10 times the highest frequency of the fundamental emission. The number of measurement points in each sweep was ≥ (2 × span/RBW), which may require that the measurement range defined by the start and stop frequencies be subdivided, depending on the available number of measurement points provided by the spectrum analyzer.
n) Trace averages were at least 10 traces in power averaging (rms) mode.
o) The peak marker function was used to identify the highest amplitude level over each of the measured frequency ranges. The frequency and amplitude were recorded and captured in a plot for inclusion in the test report; also providing tabular data, if required.
p) Steps i) to o) were repeated with the input test signals firstly tuned to a middle band/block frequency/channel, and then tuned to a high band/block frequency/channel.
q) Steps b) to p) were repeated with the narrowband test signal.
r) Steps b) to q) were repeated for all authorized frequency bands/blocks used by the EUT.

On any frequency outside the authorized bandwidth shall be attenuated by at least 50 + 10 log (P) dB. This corresponds to an absolute level of -13 dBm.

15.5 Test Results for Section 3.6.3

Model	DSP95-PAW	Specifications	FCC KDB 935210 Secs. 3.6.2, 3.6.3
Serial Number	CNH60713	Test Date	Nov. 27, 2016 Thru Dec. 02,2016
Test Personnel	Richard L. Tichgelaar, Joseph Strezelecki	Test Location	Chamber C
Test Equipment	EMI Receiver (REC-21)		

* The reading has a +20 dB offset due to an external attenuator.
The spectrum analyzer was set to 20 trace average in the RMS mode.

Spur				Sig Gen					Max reading	
3.6.3 Plot #	RBW MHz	VBW MHz	EUT Mode	Modul	MHz	Start MHz	Stop MHz	Min # points	Freq MHz	Reading dBm
1	0.1	0.3	1	AWGN	2112.4	5	400	7900	284.6	-47.5
2	0.1	0.3	1	AWGN	2112.4	400	700	6000	596.4	-48.8
3	0.1	0.3	1	AWGN	2112.4	700	1000	6000	833.7	-48.9
4	1	3	1	AWGN	2112.4	1000	2108	2218	2108	-25.2
5	1	3	1	AWGN	2112.4	2156	6000	7688	2157	-38.9
6	1	3	1	AWGN	2112.4	6000	10000	8000	7430.2	-38.9
7	1	3	1	AWGN	2112.4	10000	14000	8000	13808	-38.9
8	1	3	1	AWGN	2112.4	14000	18000	8000	15246	-38.2
9	1	3	1	AWGN	2112.4	18000	22000	8000	21354	-38.5
10	0.1	0.3	1	AWGN	2132.5	5	400	7900	385.3	-48.0
11	0.1	0.3	1	AWGN	2132.5	400	700	6000	559.6	-48.8
12	0.1	0.3	1	AWGN	2132.5	700	1000	6000	801.5	-48.5
13	1	3	1	AWGN	2132.5	1000	2109	2218	2109	-33.8
14	1	3	1	AWGN	2132.5	2156	6000	7688	2156	-37.0
15	1	3	1	AWGN	2132.5	6000	10000	8000	7390	-39.7

Spur				Sig Gen					Max reading	
3.6.3 Plot #	RBW MHz	VBW MHz	EUT Mode	Modul	MHz	Start MHz	Stop MHz	Min # points	Freq MHz	Reading dBm
16	1	3	1	AWGN	2132.5	10000	14000	8000	13788	-38.8
17	1	3	1	AWGN	2132.5	14000	18000	8000	14241	-37.6
18	1	3	1	AWGN	2132.5	18000	22000	8000	20364	-38.2
19	0.1	0.3	1	AWGN	2152.6	5	400	7900	396.5	-48.2
20	0.1	0.3	1	AWGN	2152.6	400	700	6000	609.3	-48.9
21	0.1	0.3	1	AWGN	2152.6	700	1000	6000	856.1	-48.8
22	1	3	1	AWGN	2152.6	1000	2109	2218	2109	-33.1
23	1	3	1	AWGN	2152.6	2157	6000	7688	2157	-20.7
24	1	3	1	AWGN	2152.6	6000	10000	8000	7597	-39.6
25	1	3	1	AWGN	2152.6	10000	14000	8000	13988	-38.8
26	1	3	1	AWGN	2152.6	14000	18000	8000	14781	-38.1
27	1	3	1	AWGN	2152.6	18000	22000	8000	21829	-38.3
28	0.1	0.3	5	MSK	2110.2	5	400	7900	149.5	-47.8
29	0.1	0.3	5	MSK	2110.2	400	700	6000	642.8	-48.1
30	0.1	0.3	5	MSK	2110.2	700	1000	6000	847.3	-48.4
31	1	3	5	MSK	2110.2	1000	2107	2216	2107	-24.2
32	1	3	5	MSK	2110.2	2156	6000	7686	2156	-37.3
33	1	3	5	MSK	2110.2	6000	10000	8000	7380	-39.8
34	1	3	5	MSK	2110.2	10000	14000	8000	13389	-38.4
35	1	3	5	MSK	2110.2	14000	18000	8000	15293	-38.1
36	1	3	5	MSK	2110.2	18000	22000	8000	21451	-38.3
37	0.1	0.3	5	MSK	2132.5	5	400	7900	149.5	-47.2
38	0.1	0.3	5	MSK	2132.5	400	700	6000	608.4	-48.4
39	0.1	0.3	5	MSK	2132.5	700	1000	6000	936.1	-48.9
40	1	3	5	MSK	2132.5	1000	2109	2218	2109	-33.8
41	1	3	5	MSK	2132.5	2156	6000	7688	2156	-38.4
42	1	3	5	MSK	2132.5	6000	10000	8000	7417	-39.4
43	1	3	5	MSK	2132.5	10000	14000	8000	13228	-39.0
44	1	3	5	MSK	2132.5	14000	18000	8000	15290	-38.4
45	1	3	5	MSK	2132.5	18000	22000	8000	21357	-38.0
46	0.1	0.3	5	MSK	2154.8	5	400	7900	194	-42.1
47	0.1	0.3	5	MSK	2154.8	400	700	6000	611.2	-48.5
48	0.1	0.3	5	MSK	2154.8	700	1000	6000	838.5	-48.9
49	1	3	5	MSK	2154.8	1000	2109	2216	2109	-33.2
50	1	3	5	MSK	2154.8	2158	6000	7686	2158	-17.0
51	1	3	5	MSK	2154.8	6000	10000	8000	7454	-39.0
52	1	3	5	MSK	2154.8	10000	14000	8000	13976	-38.8
53	1	3	5	MSK	2154.8	14000	18000	8000	15316	-37.8
54	1	3	5	MSK	2154.8	18000	22000	8000	21394	-38.2
55	0.1	0.3	2	AWGN	1712.4	5	400	7900	375.7	-47.4
56	0.1	0.3	2	AWGN	1712.4	400	700	6000	544.1	-48.9
57	0.1	0.3	2	AWGN	1712.4	700	1000	6000	854.4	-48.7
58	1	3	2	AWGN	1712.4	1000	1709	1416	1709	-14.7

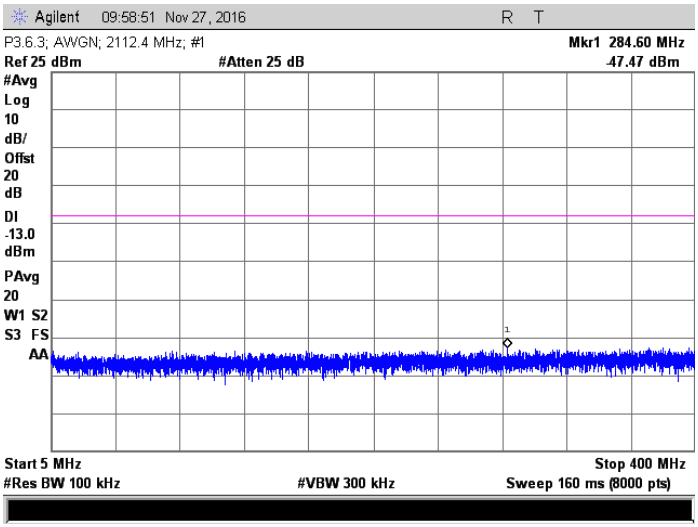
Spur				Sig Gen					Max reading	
3.6.3 Plot #	RBW MHz	VBW MHz	EUT Mode	Modul	MHz	Start MHz	Stop MHz	Min # points	Freq MHz	Reading dBm
59	1	3	2	AWGN	1712.4	1756	5500	7486	3028	-39.6
60	1	3	2	AWGN	1712.4	5500	9500	8000	7447	-39.2
61	1	3	2	AWGN	1712.4	9500	13500	8000	12628	-38.8
62	1	3	2	AWGN	1712.4	13500	17550	8100	15920	-38.1
63	0.1	0.3	2	AWGN	1732.5	5	400	7900	391.4	-47.6
64	0.1	0.3	2	AWGN	1732.5	400	700	6000	607.9	-48.8
65	0.1	0.3	2	AWGN	1732.5	700	1000	6000	852.8	-48.6
66	1	3	2	AWGN	1732.5	1000	1709	1418	1709	-37.6
67	1	3	2	AWGN	1732.5	1756	5500	7488	1764	-38.8
68	1	3	2	AWGN	1732.5	5500	9500	8000	7406	-40.0
69	1	3	2	AWGN	1732.5	9500	13500	8000	13233	-38.7
70	1	3	2	AWGN	1732.5	13500	17550	8100	13698	-38.0
71	0.1	0.3	2	AWGN	1752.6	5	400	7900	352.1	-47.8
72	0.1	0.3	2	AWGN	1752.6	400	700	6000	650.4	-48.3
73	0.1	0.3	2	AWGN	1752.6	700	1000	6000	846.3	-48.6
74	1	3	2	AWGN	1752.6	1000	1709	1416	1700	-34.1
75	1	3	2	AWGN	1752.6	1756	5500	7486	1756	-14.3
76	1	3	2	AWGN	1752.6	5500	9500	8000	7387	-39.2
77	1	3	2	AWGN	1752.6	9500	13500	8000	12624	-38.4
78	1	3	2	AWGN	1752.6	13500	17550	8100	16016	-37.9
79	0.1	0.3	6	MSK	1710.2	5	400	7900	129.1	-48.1
80	0.1	0.3	6	MSK	1710.2	400	700	6000	639.5	-48.6
81	0.1	0.3	6	MSK	1710.2	700	1000	6000	834.9	-49.1
82	1	3	6	MSK	1710.2	1000	1708	1416	1708	-18.2
83	1	3	6	MSK	1710.2	1756	5500	7486	2905	-39.0
84	1	3	6	MSK	1710.2	5500	9500	8000	7383	-38.9
85	1	3	6	MSK	1710.2	9500	13500	8000	13492	-39.5
86	1	3	6	MSK	1710.2	13500	17550	8100	13871	-38.47
87	0.1	0.3	6	MSK	1732.5	5	400	7900	292.7	-47.8
88	0.1	0.3	6	MSK	1732.5	400	700	6000	609.9	-48.9
89	0.1	0.3	6	MSK	1732.5	700	1000	6000	839.6	-49.1
90	1	3	6	MSK	1732.5	1000	1709	1416	1709	-36.1
91	1	3	6	MSK	1732.5	1756	5500	7486	1765	-34
92	1	3	6	MSK	1732.5	5500	9500	8000	7379	-39.2
93	1	3	6	MSK	1732.5	9500	13500	8000	13252	-38.2
94	1	3	6	MSK	1732.5	13500	17550	8100	14343	-38.5
95	0.1	0.3	6	MSK	1754.8	5	400	7900	390.3	-47.6
96	0.1	0.3	6	MSK	1754.8	400	700	6000	629.2	-48.1
97	0.1	0.3	6	MSK	1754.8	700	1000	6000	890.3	-47.8
98	1	3	6	MSK	1754.8	1000	1709	1416	1700	-36.6
99	1	3	6	MSK	1754.8	1757	5500	7486	1757	-15.6
100	1	3	6	MSK	1754.8	5500	9500	8000	7410	-39.0
101	1	3	6	MSK	1754.8	9500	13500	8000	13263	-39.0

Spur				Sig Gen					Max reading	
3.6.3 Plot #	RBW MHz	VBW MHz	EUT Mode	Modul	MHz	Start MHz	Stop MHz	Min # points	Freq MHz	Reading dBm
102	1	3	6	MSK	1754.8	13500	17550	8100	13955	-38.0
103	0.1	0.3	3	AWGN	1932.4	5	400	7900	309.7	-47.7
104	0.1	0.3	3	AWGN	1932.4	400	700	6000	622.6	-48.1
105	0.1	0.3	3	AWGN	1932.4	700	1000	6000	854.5	-48.3
106	1	3	3	AWGN	1932.4	1000	1928	1856	1928	-23.5
107	1	3	3	AWGN	1932.4	1991	5500	7016	1999	-26.2
108	1	3	3	AWGN	1932.4	5500	9500	8000	7376	-39.5
109	1	3	3	AWGN	1932.4	9500	13500	8000	12646	-39.3
110	1	3	3	AWGN	1932.4	13500	17500	8000	15424	-38.0
111	1	3	3	AWGN	1932.4	17500	20000	5000	19958	-38.8
112	0.1	0.3	3	AWGN	1960	5	400	7900	272	-46.4
113	0.1	0.3	3	AWGN	1960	400	700	6000	446.4	-47.7
114	0.1	0.3	3	AWGN	1960	700	1000	6000	882.5	-47.1
115	1	3	3	AWGN	1960	1000	1929	1856	1929	-21.4
116	1	3	3	AWGN	1960	1991	5500	7016	1991	-26.9
117	1	3	3	AWGN	1960	5500	9500	8000	7454	-39.6
118	1	3	3	AWGN	1960	9500	13500	8000	12500	-38.9
119	1	3	3	AWGN	1960	13500	17500	8000	15934	-38.3
120	1	3	3	AWGN	1960	17500	20000	5000	18791	-38.6
121	0.1	0.3	3	AWGN	1987.6	5	400	7900	26.6	-46.5
122	0.1	0.3	3	AWGN	1987.6	400	700	6000	609.9	-48.4
123	0.1	0.3	3	AWGN	1987.6	700	1000	6000	841.4	-48.6
124	1	3	3	AWGN	1987.6	1000	1929	1856	1928	-21.2
125	1	3	3	AWGN	1987.6	1992	5500	7016	1992	-18.6
126	1	3	3	AWGN	1987.6	5500	9500	8000	7439	-39.5
127	1	3	3	AWGN	1987.6	9500	13500	8000	13218	-38.7
128	1	3	3	AWGN	1987.6	13500	17500	8000	14448	-38.4
129	1	3	3	AWGN	1987.6	17500	20000	5000	18104	-38.9
130	0.1	0.3	7	MSK	1930.2	5	400	7900	320.5	-48.1
131	0.1	0.3	7	MSK	1930.2	400	700	6000	620.5	-48.3
132	0.1	0.3	7	MSK	1930.2	700	1000	6000	840.2	-48.9
133	1	3	7	MSK	1930.2	1000	1927	1856	1927	-25.47
134	1	3	7	MSK	1930.2	1991	5500	7016	1991	-28.7
135	1	3	7	MSK	1930.2	5500	9500	8000	7397	-38.9
136	1	3	7	MSK	1930.2	9500	13500	8000	13477	-38.7
137	1	3	7	MSK	1930.2	13500	17500	8000	14088	-38.2
138	1	3	7	MSK	1930.2	17500	20000	5000	19371	-39
139	0.1	0.3	7	MSK	1960	5	400	7900	369.9	-47.8
140	0.1	0.3	7	MSK	1960	400	700	6000	623.6	-48.8
141	0.1	0.3	7	MSK	1960	700	1000	6000	862	-48.5
142	1	3	7	MSK	1960	1000	1929	1856	1929	-28.2
143	1	3	7	MSK	1960	1991	5500	7016	1999.8	-30.8
144	1	3	7	MSK	1960	5500	9500	8000	7358	-39.3

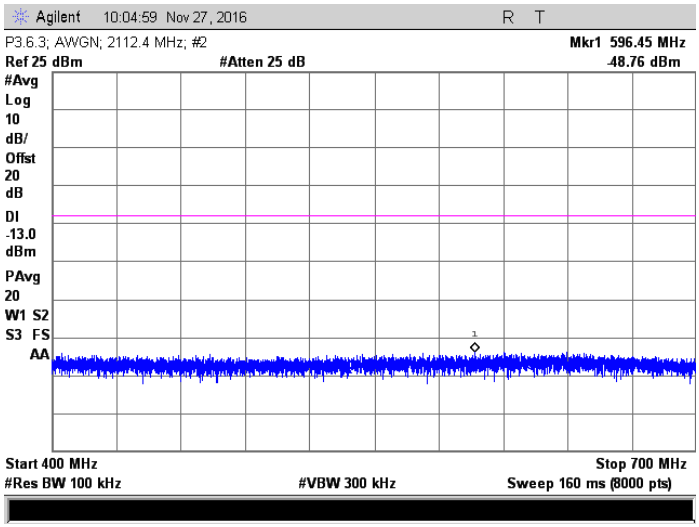
Spur				Sig Gen					Max reading	
3.6.3 Plot #	RBW MHz	VBW MHz	EUT Mode	Modul	MHz	Start MHz	Stop MHz	Min # points	Freq MHz	Reading dBm
145	1	3	7	MSK	1960	9500	13500	8000	12488	-39.3
146	1	3	7	MSK	1960	13500	17500	8000	13721	-38.0
147	1	3	7	MSK	1960	17500	20000	5000	18081	-38.4
148	0.1	0.3	7	MSK	1989.8	5	400	7900	384.5	-48.1
149	0.1	0.3	7	MSK	1989.8	400	700	6000	615	-48.5
150	0.1	0.3	7	MSK	1989.8	700	1000	6000	859.8	-48.7
151	1	3	7	MSK	1989.8	1000	1929	1856	1929	-29.7
152	1	3	7	MSK	1989.8	1993	5500	7014	1993	-16.1
153	1	3	7	MSK	1989.8	5500	9500	8000	7437	-39.4
154	1	3	7	MSK	1989.8	9500	13500	8000	12590	-38.9
155	1	3	7	MSK	1989.8	13500	17500	8000	13868	-38.4
156	1	3	7	MSK	1989.8	17500	20000	5000	18141	-38.5
157	0.1	0.3	4	AWGN	1852.4	5	400	7900	362.5	-46.9
158	0.1	0.3	4	AWGN	1852.4	400	700	6000	628.6	-48.5
159	0.1	0.3	4	AWGN	1852.4	700	1000	6000	844.4	-49.0
160	1	3	4	AWGN	1852.4	1000	1849	1696	1849	-17.7
161	1	3	4	AWGN	1852.4	1911	5500	7176	1911	-29.2
162	1	3	4	AWGN	1852.4	5500	9500	8000	7422	-39.0
163	1	3	4	AWGN	1852.4	9500	13500	8000	13229	-39.0
164	1	3	4	AWGN	1852.4	13500	17500	8000	13898	-38.1
165	1	3	4	AWGN	1852.4	17500	20000	5000	17749	-41.9
166	0.1	0.3	4	AWGN	1880	5	400	7900	288.9	-47.0
167	0.1	0.3	4	AWGN	1880	400	700	6000	614.3	-48.0
168	0.1	0.3	4	AWGN	1880	700	1000	6000	866.4	-48.5
169	1	3	4	AWGN	1880	1000	1849	1696	1849	-27.8
170	1	3	4	AWGN	1880	1911	5500	7176	1911	-30.8
171	1	3	4	AWGN	1880	5500	9500	8000	7410	-39.5
172	1	3	4	AWGN	1880	9500	13500	8000	13204	-38.8
173	1	3	4	AWGN	1880	13500	17500	8000	16311	-38.0
174	1	3	4	AWGN	1880	17500	20000	5000	19670	-41.6
175	0.1	0.3	4	AWGN	1907.6	5	400	7900	399.2	-46.8
176	0.1	0.3	4	AWGN	1907.6	400	700	6000	610.3	-48.6
177	0.1	0.3	4	AWGN	1907.6	700	1000	6000	842.1	-48.2
178	1	3	4	AWGN	1907.6	1000	1849	1696	1840	-21.3
179	1	3	4	AWGN	1907.6	1911	5500	7176	1911	-14.9
180	1	3	4	AWGN	1907.6	5500	9500	8000	7435	-39.0
181	1	3	4	AWGN	1907.6	9500	13500	8000	13292	-38.9
182	1	3	4	AWGN	1907.6	13500	17500	8000	15852	-37.6
183	1	3	4	AWGN	1907.6	17500	20000	5000	18124	-38.7
184	0.1	0.3	8	MSK	1850.2	5	400	7900	367.7	-47.7
185	0.1	0.3	8	MSK	1850.2	400	700	6000	554.7	-48.3
186	0.1	0.3	8	MSK	1850.2	700	1000	6000	848.6	-48.2
187	1	3	8	MSK	1850.2	1000	1848	1696	1848	-20.1

Spur				Sig Gen					Max reading	
3.6.3 Plot #	RBW MHz	VBW MHz	EUT Mode	Modul	MHz	Start MHz	Stop MHz	Min # points	Freq MHz	Reading dBm
188	1	3	8	MSK	1850.2	1911	5500	7176	1911	-29.6
189	1	3	8	MSK	1850.2	5500	9500	8000	7413	-38.5
190	1	3	8	MSK	1850.2	9500	13500	8000	12738	-38.5
191	1	3	8	MSK	1850.2	13500	17500	8000	15886	-37.9
192	1	3	8	MSK	1850.2	17500	20000	5000	18084	-38.7
193	0.1	0.3	8	MSK	1880	5	400	7900	369.7	-47.5
194	0.1	0.3	8	MSK	1880	400	700	6000	627.4	-48.8
195	0.1	0.3	8	MSK	1880	700	1000	6000	857.9	-48.5
196	1	3	8	MSK	1880	1000	1849	1698	1849	-28.1
197	1	3	8	MSK	1880	1911	5500	7178	1911	-29.2
198	1	3	8	MSK	1880	5500	9500	8000	7404	-38.8
199	1	3	8	MSK	1880	9500	13500	8000	13297	-38.4
200	1	3	8	MSK	1880	13500	17500	8000	13935	-37.2
201	1	3	8	MSK	1880	17500	20000	5000	18145	-38.3
202	0.1	0.3	8	MSK	1909.8	5	400	7900	157.7	-47.7
203	0.1	0.3	8	MSK	1909.8	400	700	6000	642.7	-48.4
204	0.1	0.3	8	MSK	1909.8	700	1000	6000	849.2	-48.7
205	1	3	8	MSK	1909.8	1000	1849	1698	1840	-19.9
206	1	3	8	MSK	1909.8	1912	5500	7176	1912	-21.5
207	1	3	8	MSK	1909.8	5500	9500	8000	7409	-38.7
208	1	3	8	MSK	1909.8	9500	13500	8000	12607	-38.5
209	1	3	8	MSK	1909.8	13500	17500	8000	13798	-37.5
210	1	3	8	MSK	1909.8	17500	20000	5000	18049	-38.3

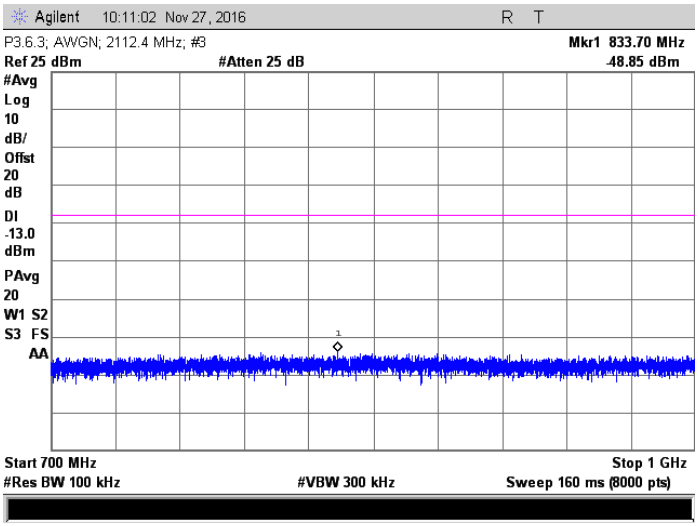
Judgement: Pass



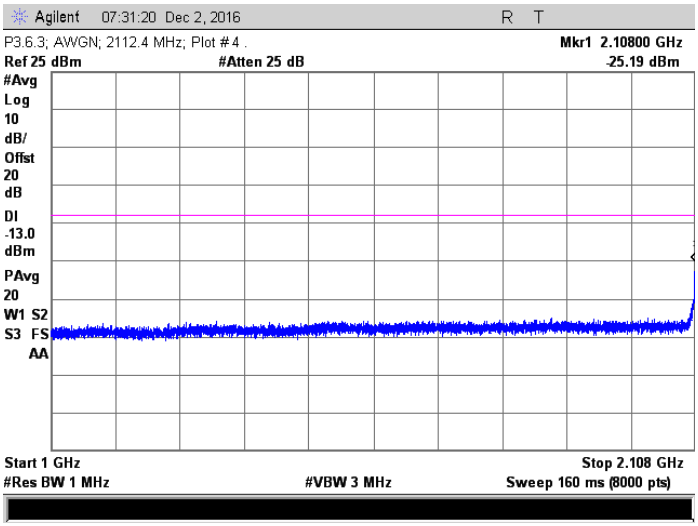
AWGN; 2112.4 MHz Injected Signal



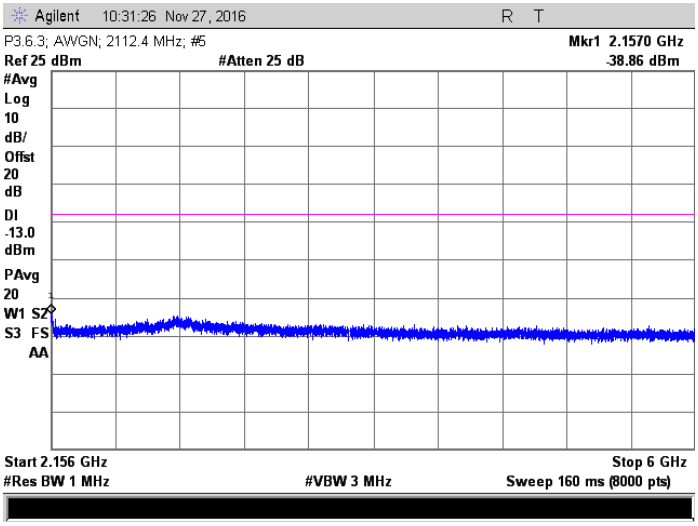
AWGN; 2112.4 MHz Injected Signal



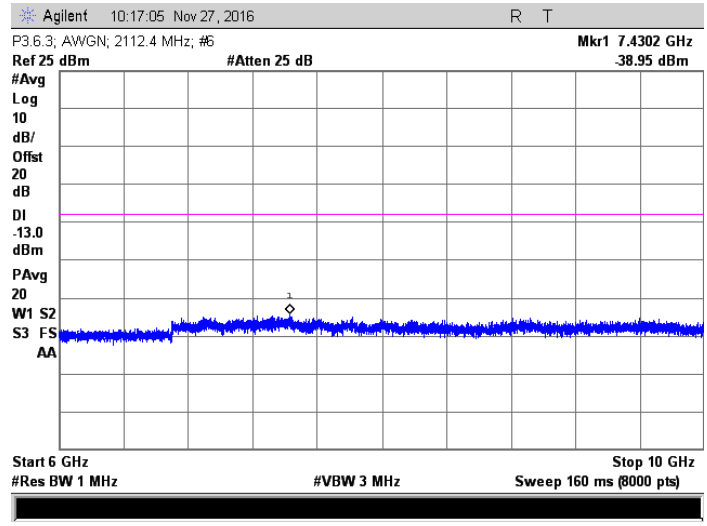
AWGN; 2112.4 MHz Injected Signal



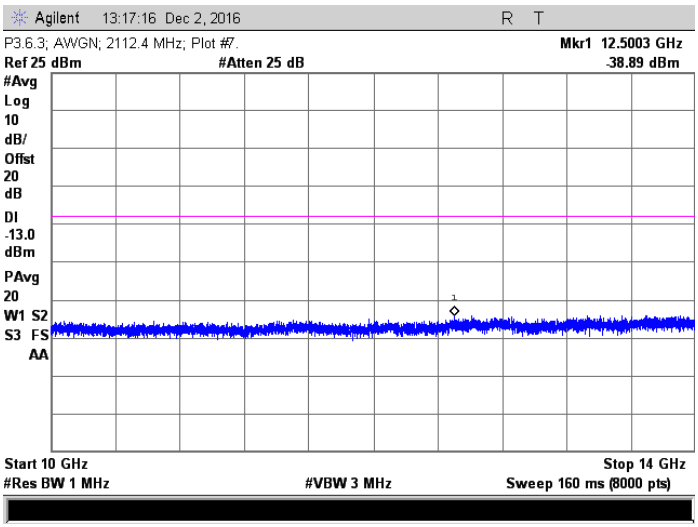
AWGN; 2112.4 MHz Injected Signal



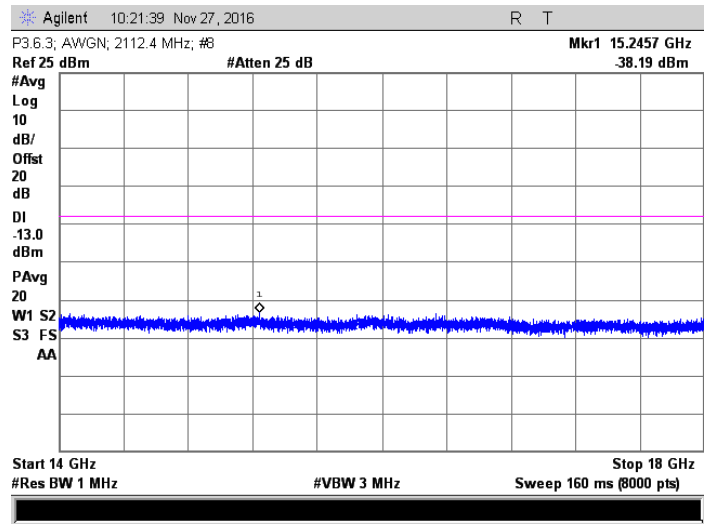
AWGN; 2112.4 MHz Injected Signal



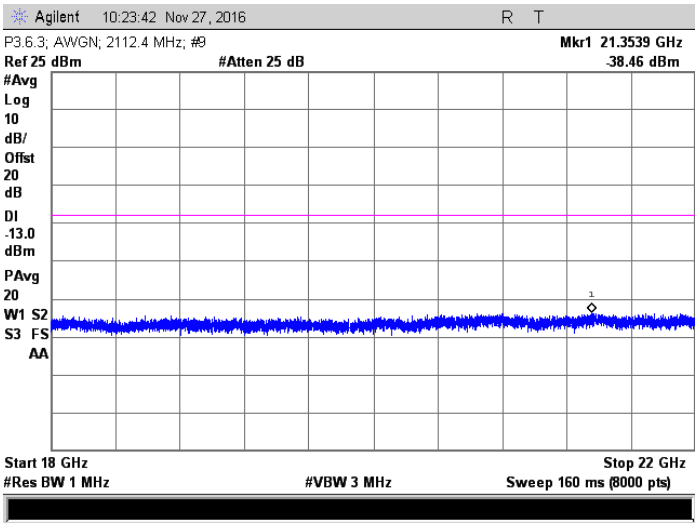
AWGN; 2112.4 MHz Injected Signal



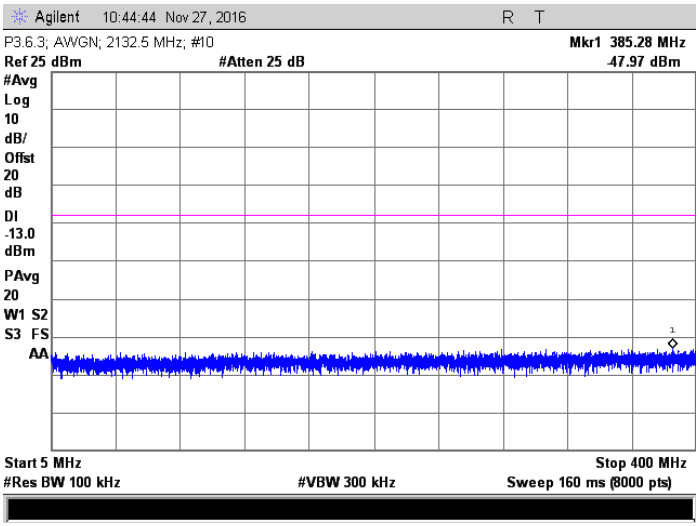
AWGN; 2112.4 MHz Injected Signal



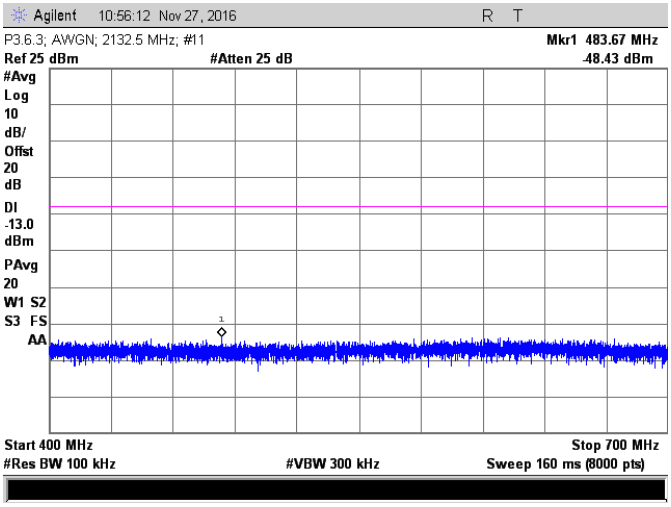
AWGN; 2112.4 MHz Injected Signal



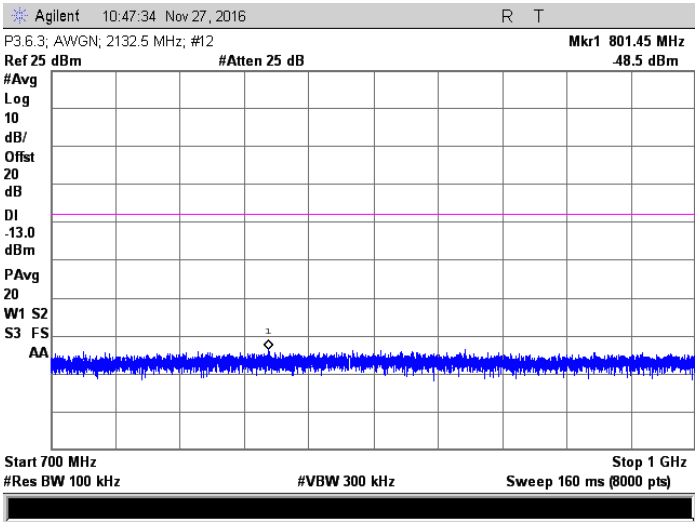
AWGN; 2112.4 MHz Injected Signal



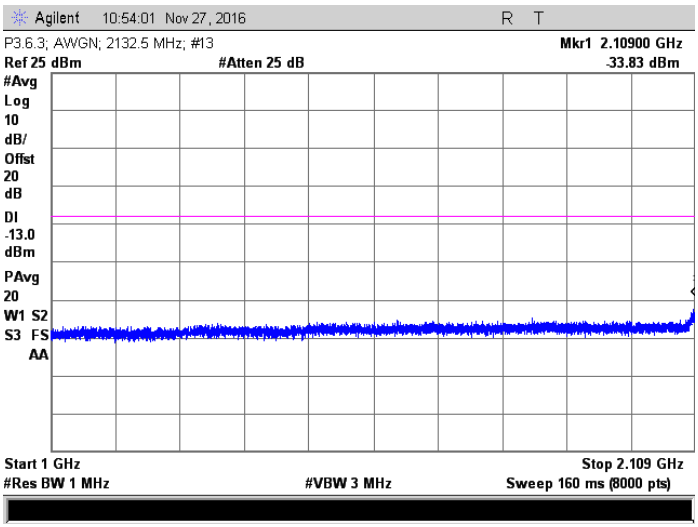
AWGN; 2132.5 MHz Injected Signal



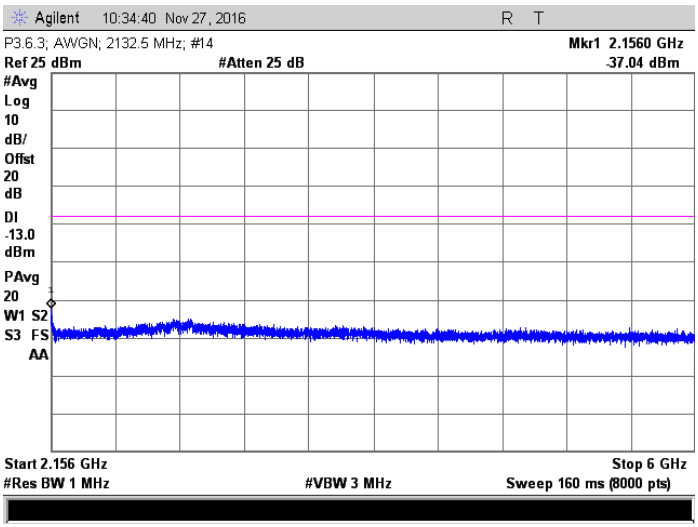
AWGN; 2132.5 MHz Injected Signal



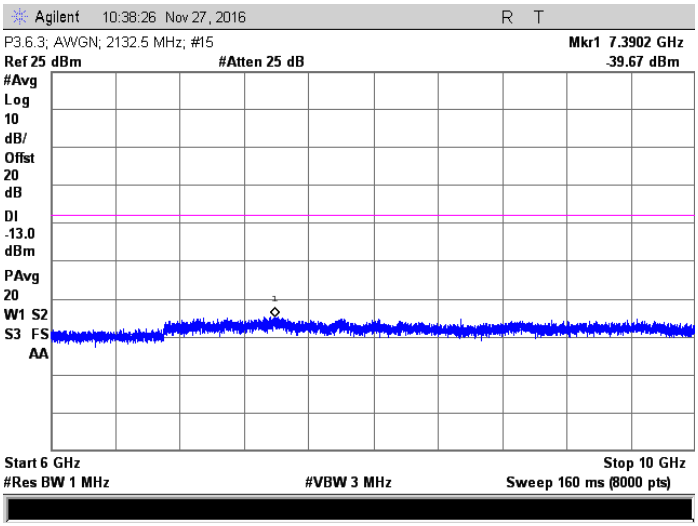
AWGN; 2132.5 MHz Injected Signal



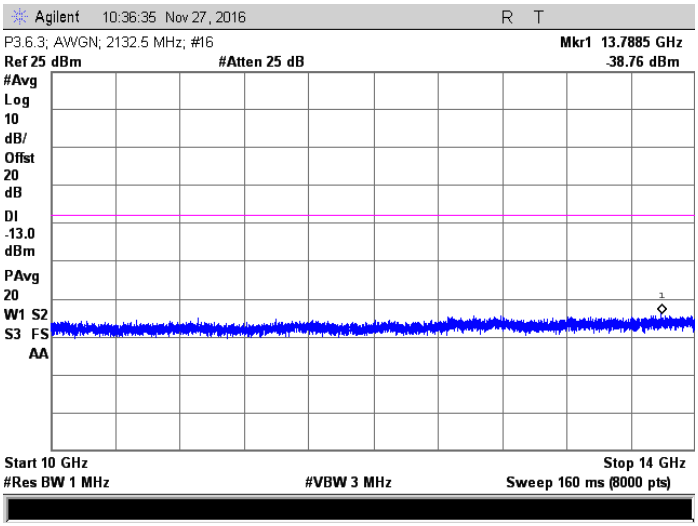
AWGN; 2132.5 MHz Injected Signal



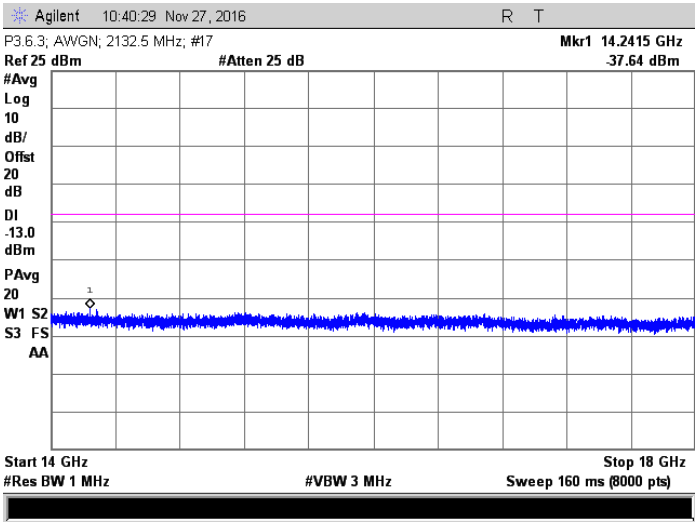
AWGN; 2132.5 MHz Injected Signal



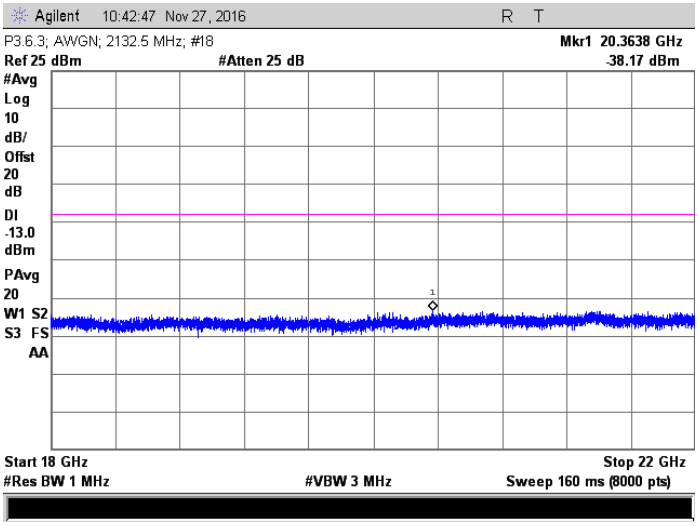
AWGN; 2132.5 MHz Injected Signal



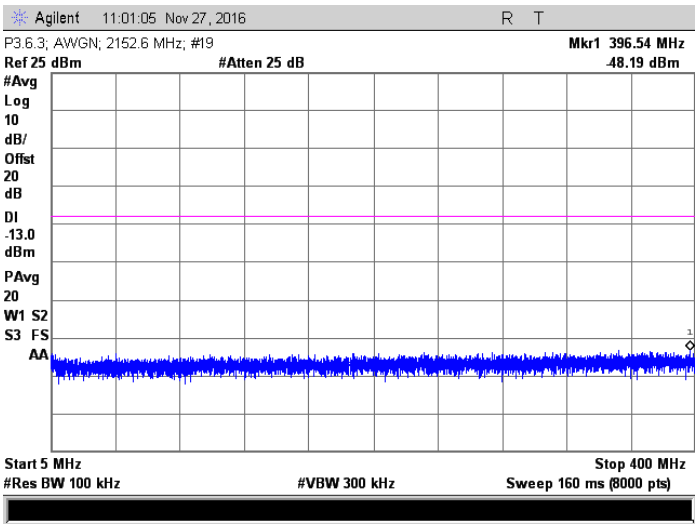
AWGN; 2132.5 MHz Injected Signal



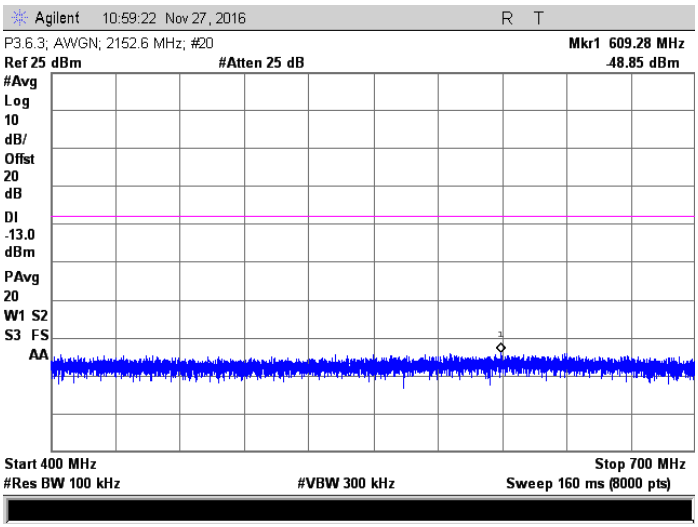
AWGN; 2132.5 MHz Injected Signal



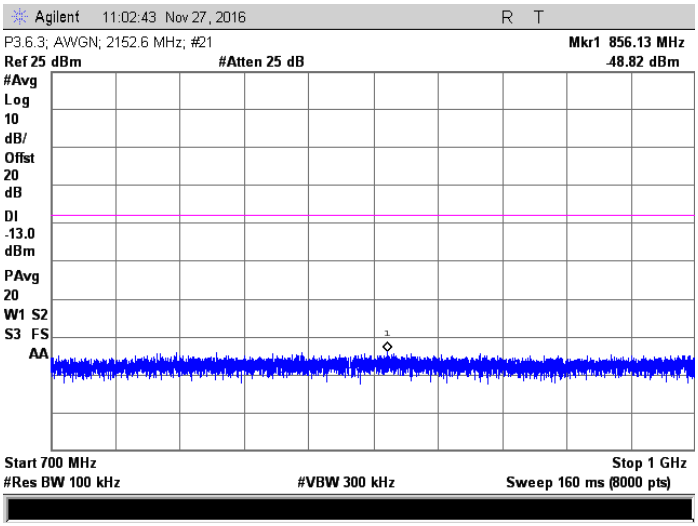
AWGN; 2132.5 MHz Injected Signal



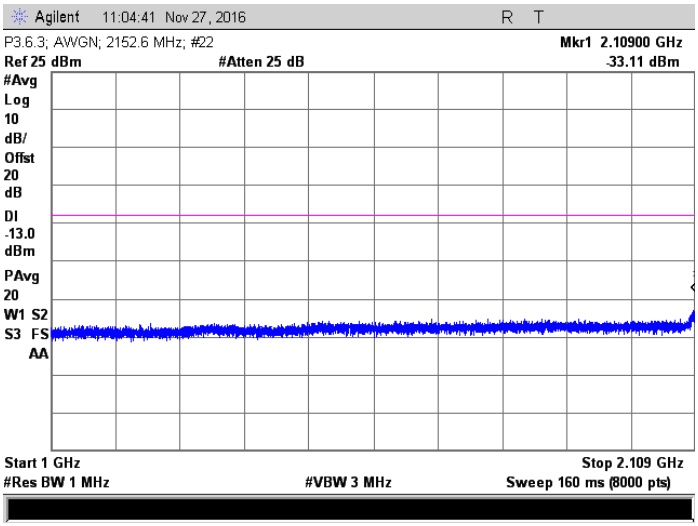
AWGN; 2152.6 MHz Injected Signal



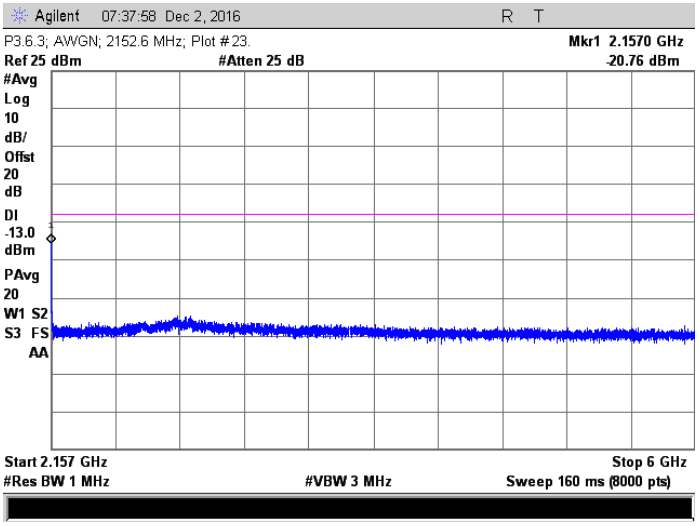
AWGN; 2152.6 MHz Injected Signal



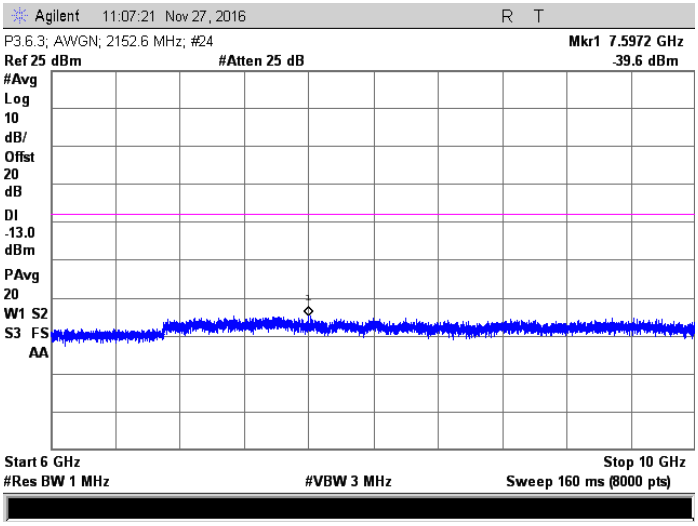
AWGN; 2152.6 MHz Injected Signal



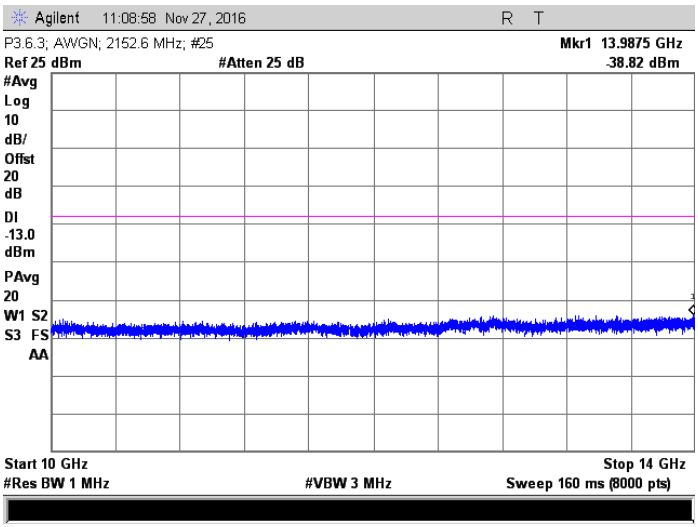
AWGN; 2152.6 MHz Injected Signal



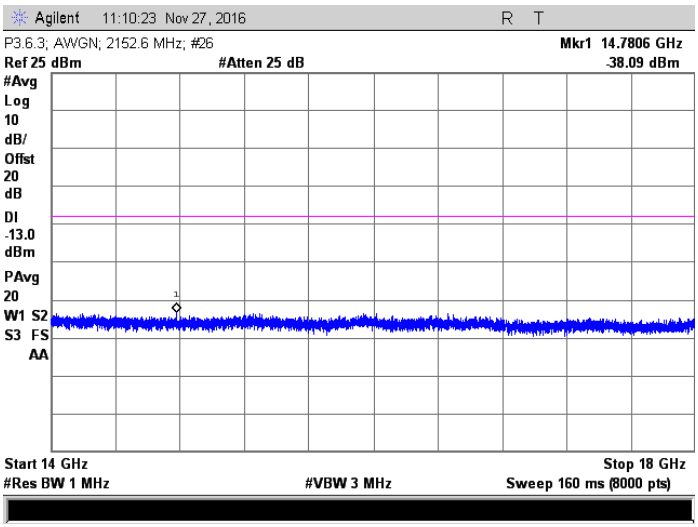
AWGN; 2152.6 MHz Injected Signal



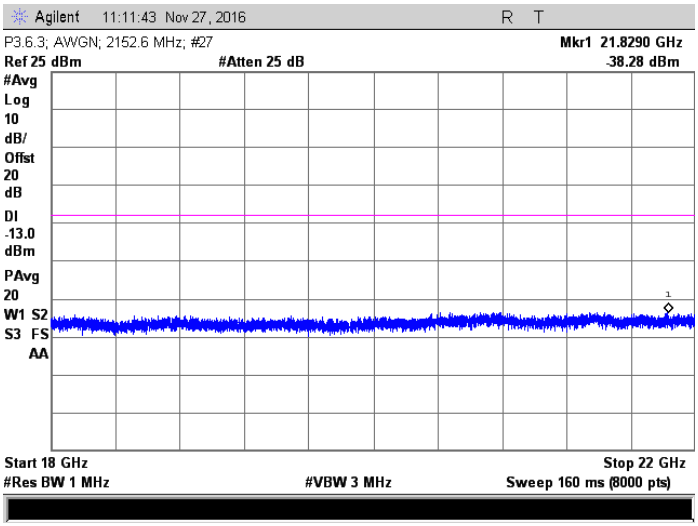
AWGN; 2152.6 MHz Injected Signal



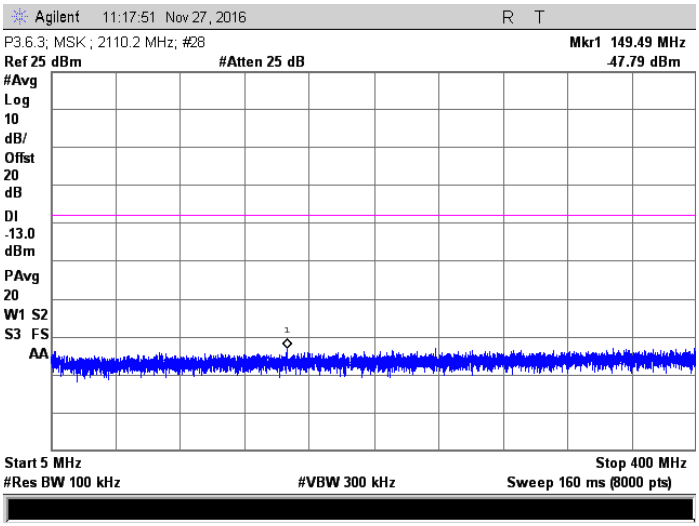
AWGN; 2152.6 MHz Injected Signal



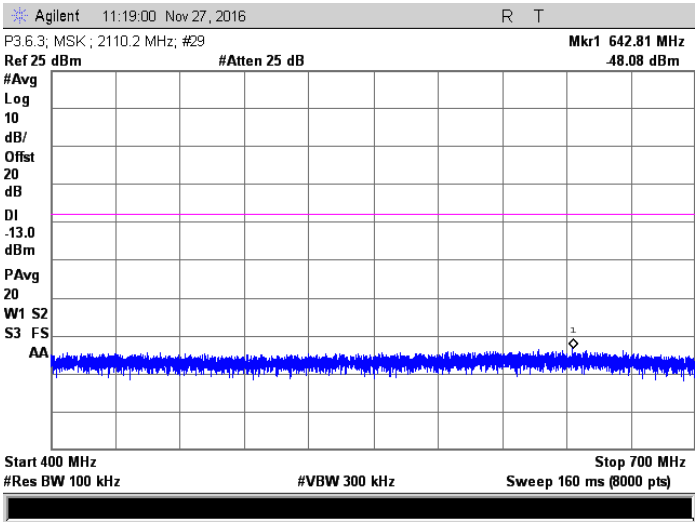
AWGN; 2152.6 MHz Injected Signal



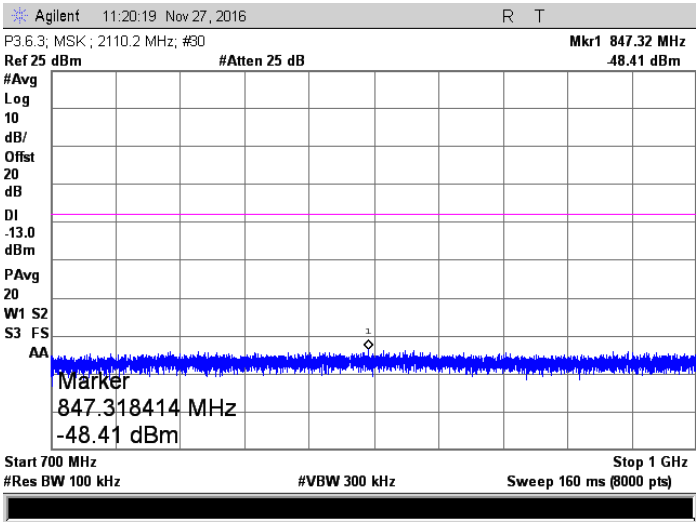
AWGN; 2152.6 MHz Injected Signal



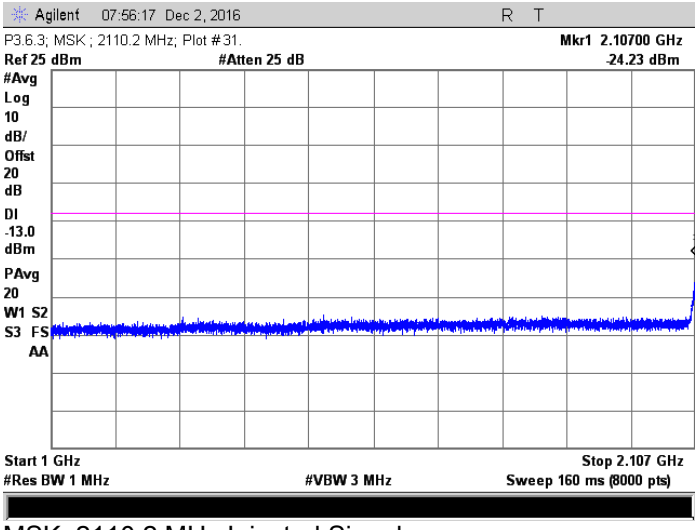
MSK; 2110.2 MHz Injected Signal



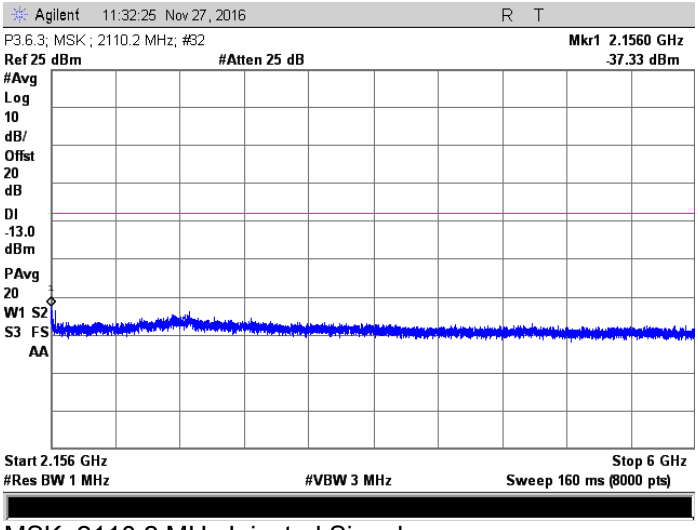
MSK; 2110.2 MHz Injected Signal



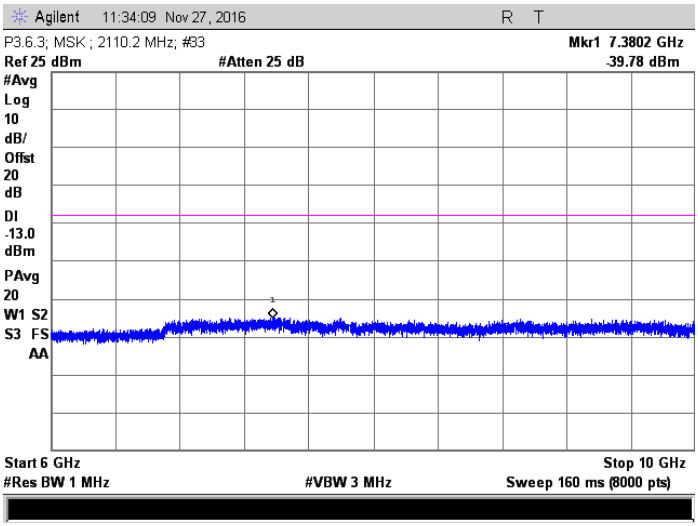
MSK; 2110.2 MHz Injected Signal



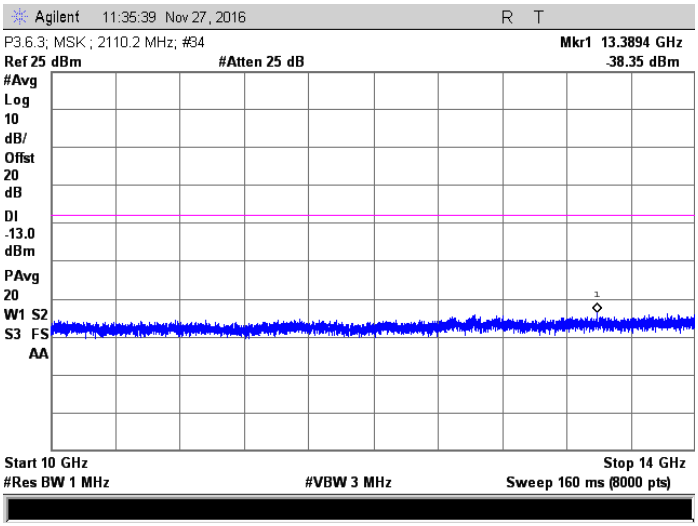
MSK; 2110.2 MHz Injected Signal



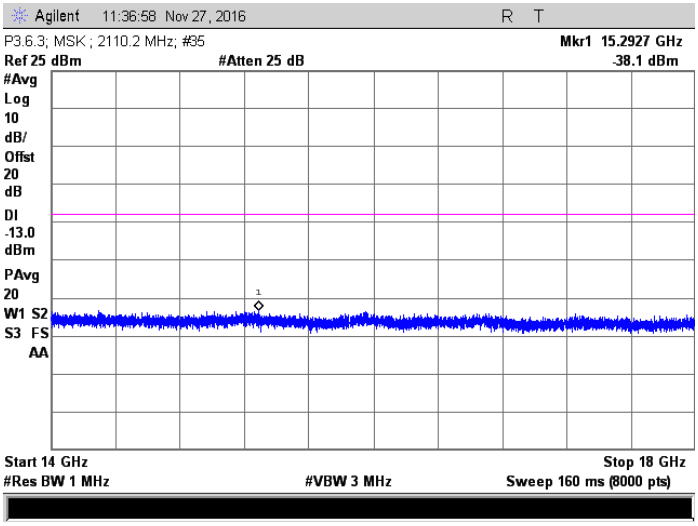
MSK; 2110.2 MHz Injected Signal



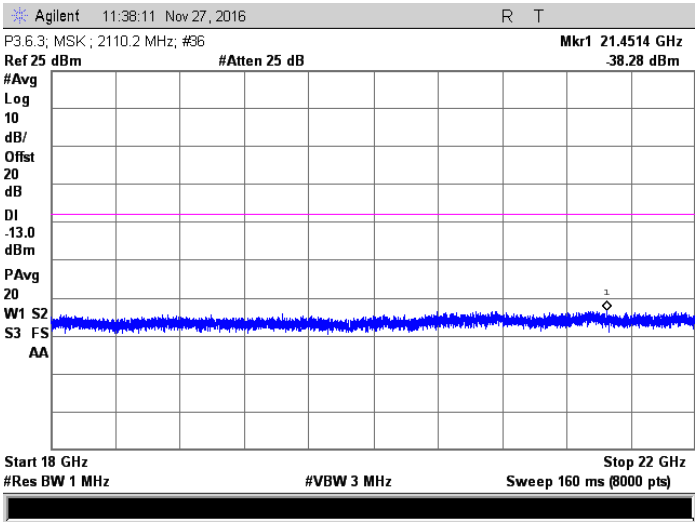
MSK; 2110.2 Injected Signal



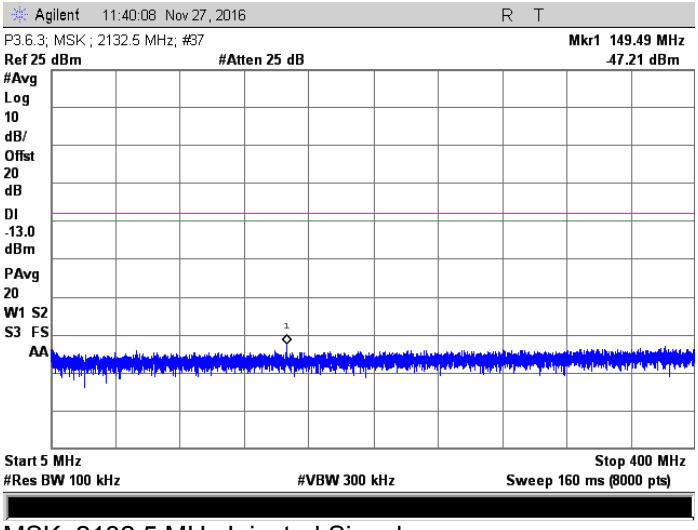
MSK; 2110.2 MHz Injected Signal



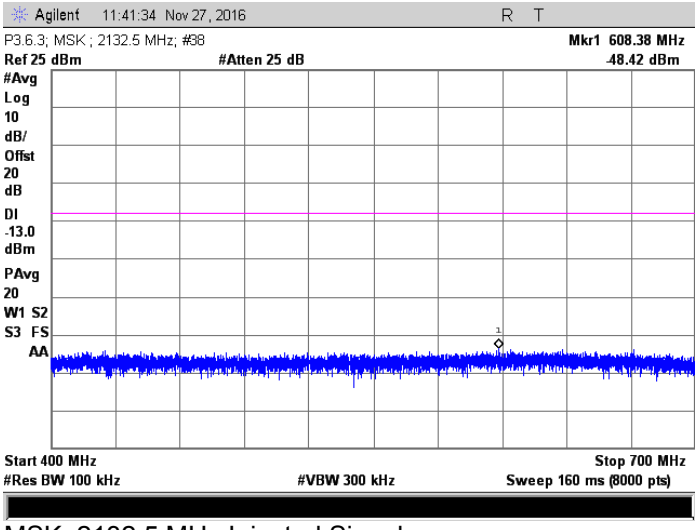
MSK; 2110.2 Injected Signal



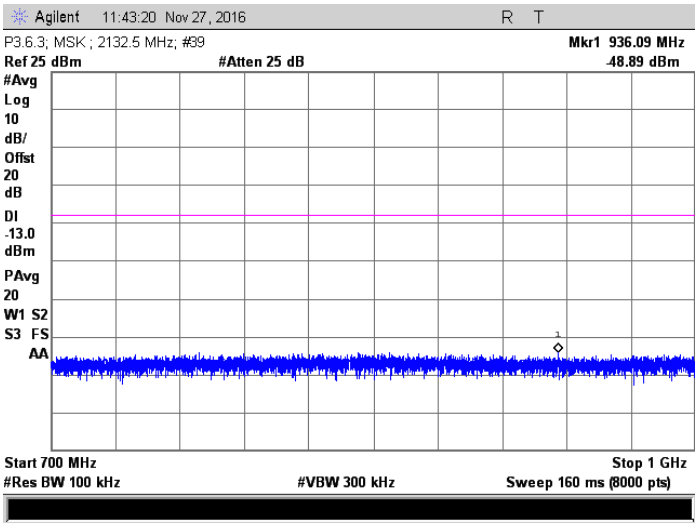
MSK; 2110.2 MHz Injected Signal



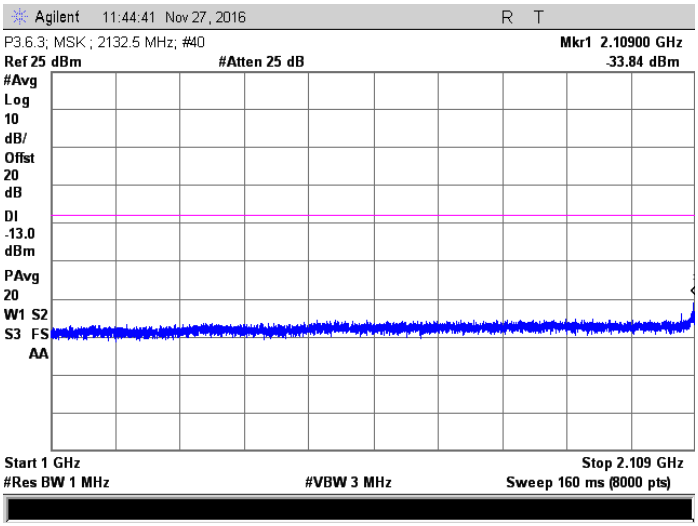
MSK; 2132.5 MHz Injected Signal



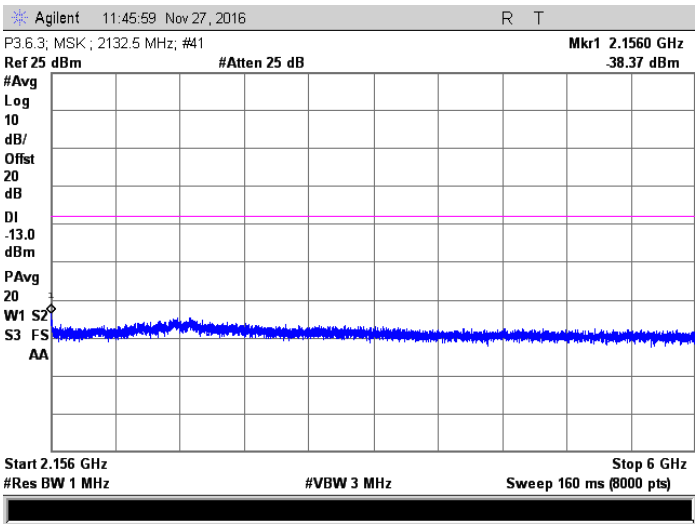
MSK; 2132.5 MHz Injected Signal



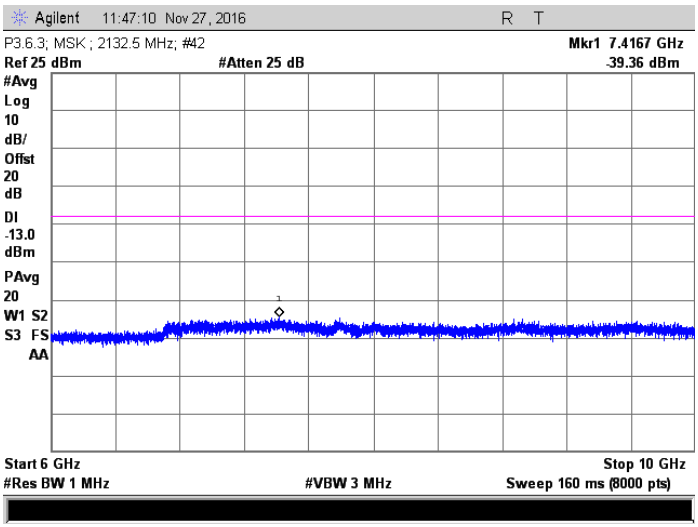
MSK; 2132.5 MHz Injected Signal



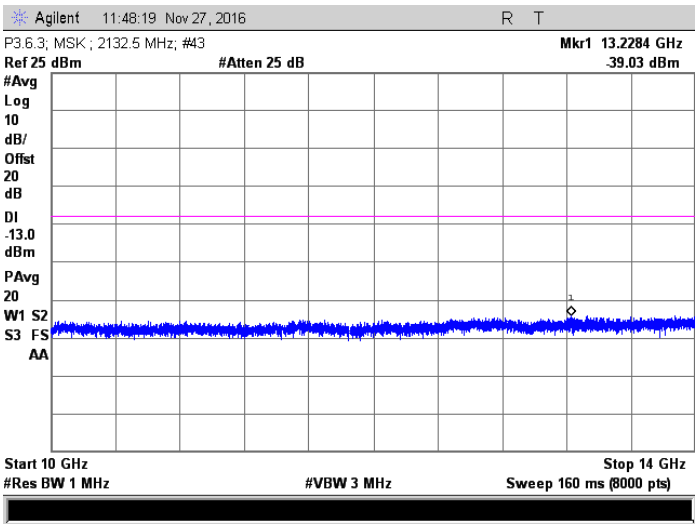
MSK; 2132.5 MHz Injected Signal



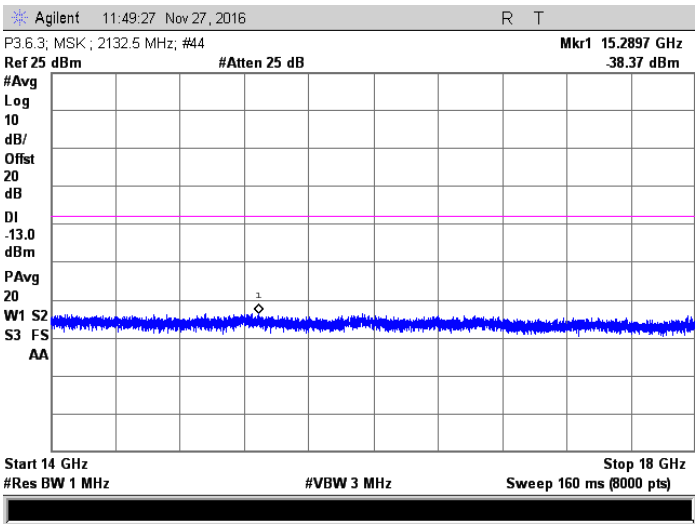
MSK; 2132.5 MHz Injected Signal



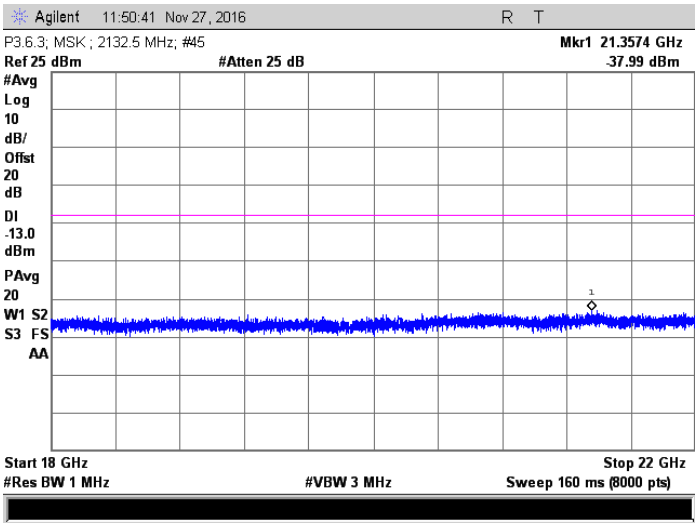
MSK; 2132.5 MHz Injected Signal



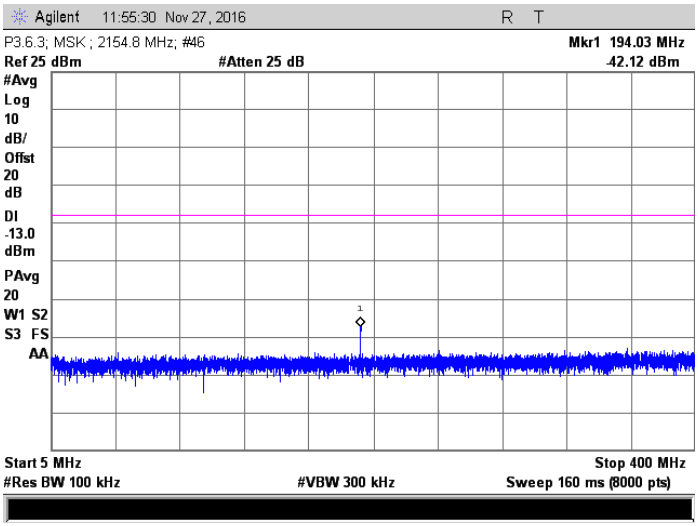
MSK; 2132.5 MHz Injected Signal



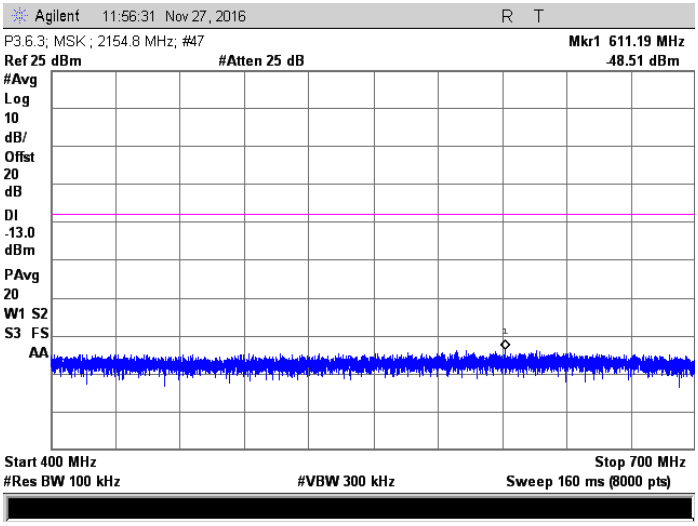
MSK; 2132.5 MHz Injected Signal



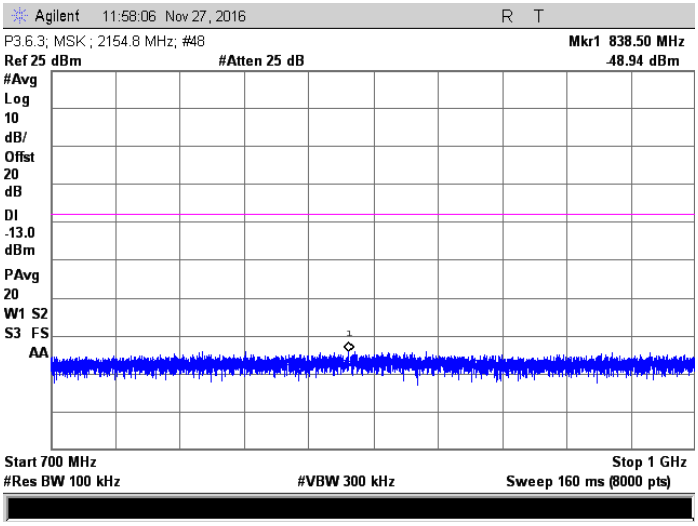
MSK; 2132.5 MHz Injected Signal



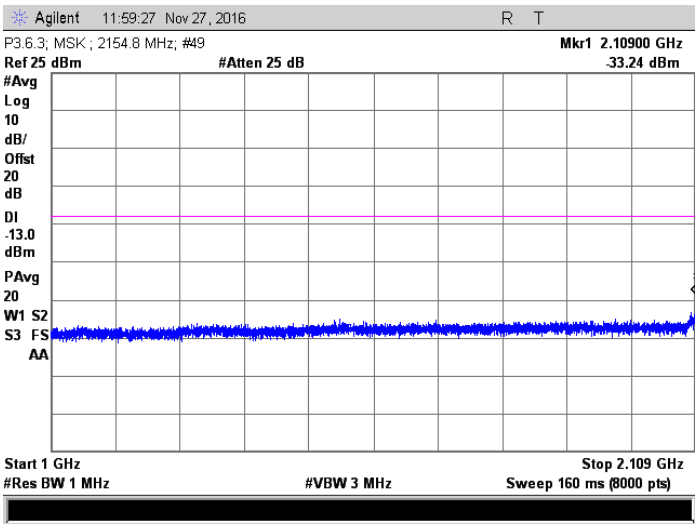
MSK; 2154.8 MHz Injected Signal



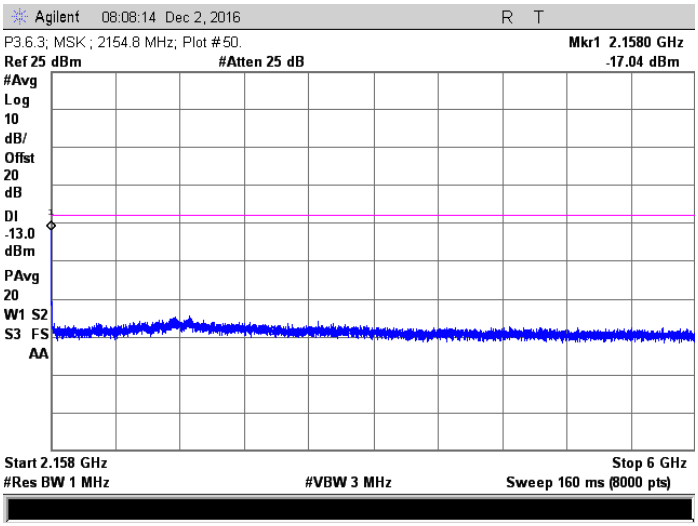
MSK; 2154.8 MHz Injected Signal



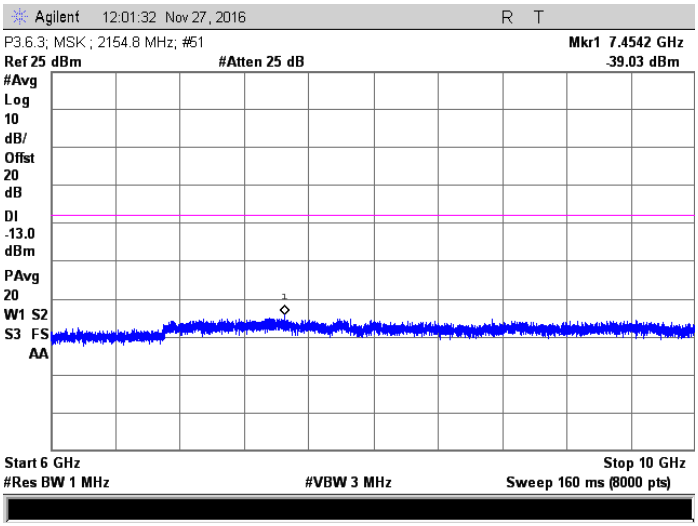
MSK; 2154.8 MHz Injected Signal



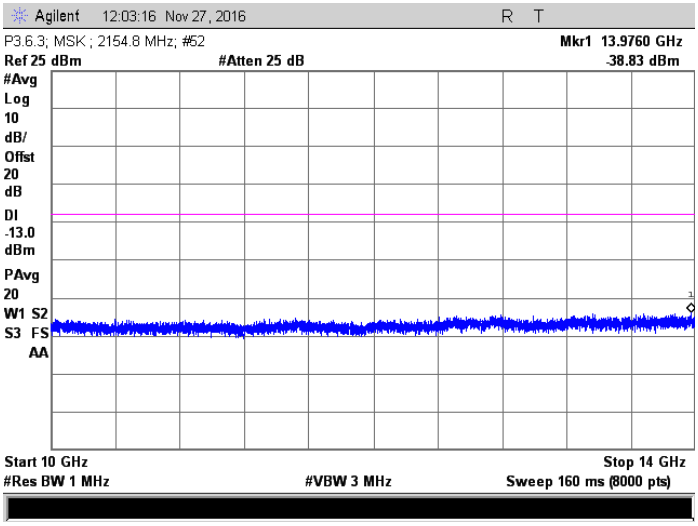
MSK; 2154.8 MHz Injected Signal



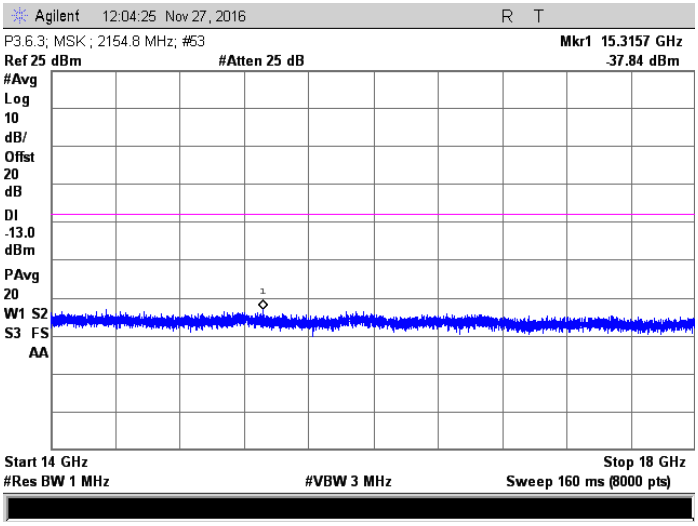
MSK; 2154.8 MHz Injected Signal



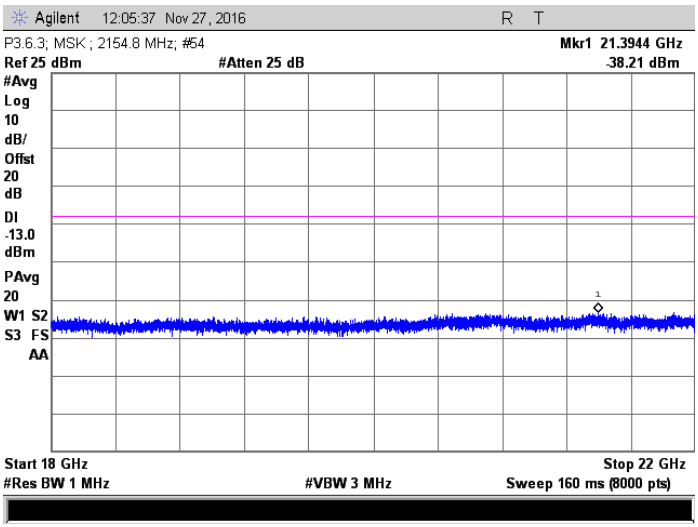
MSK; 2154.8 MHz Injected Signal



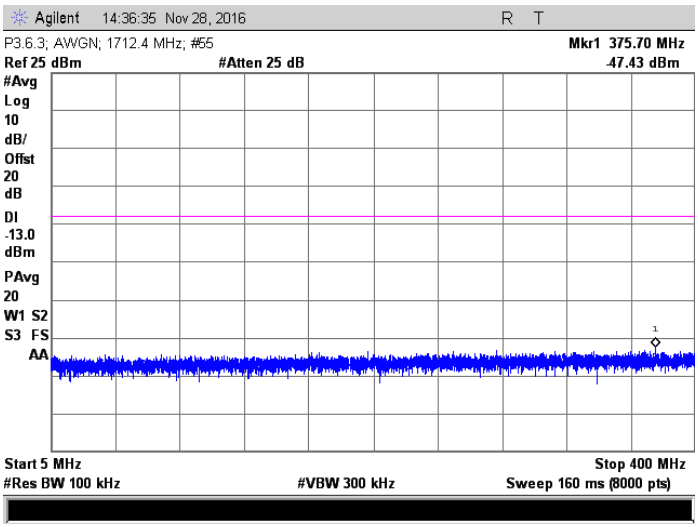
MSK; 2154.8 MHz Injected Signal



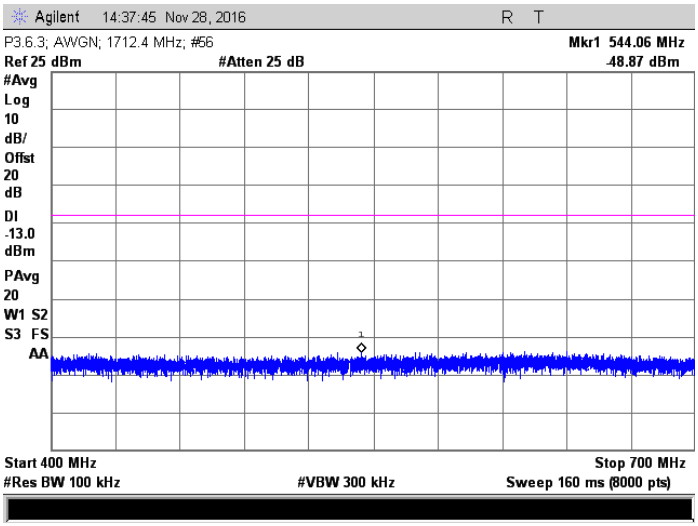
MSK; 2154.8 MHz Injected Signal



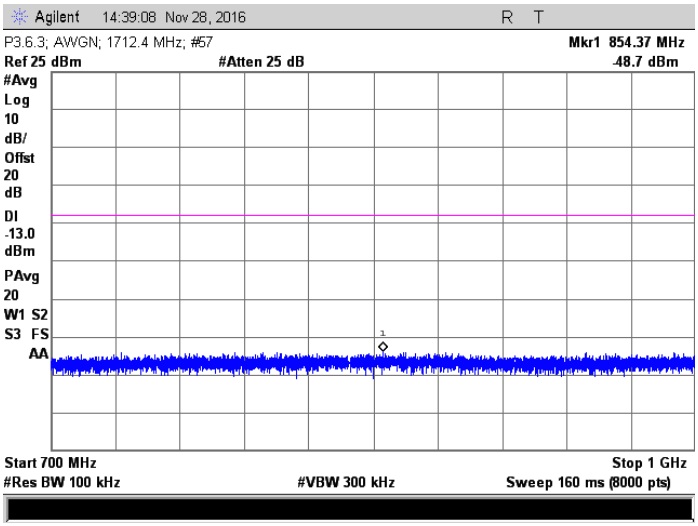
MSK; 2154.8 MHz Injected Signal



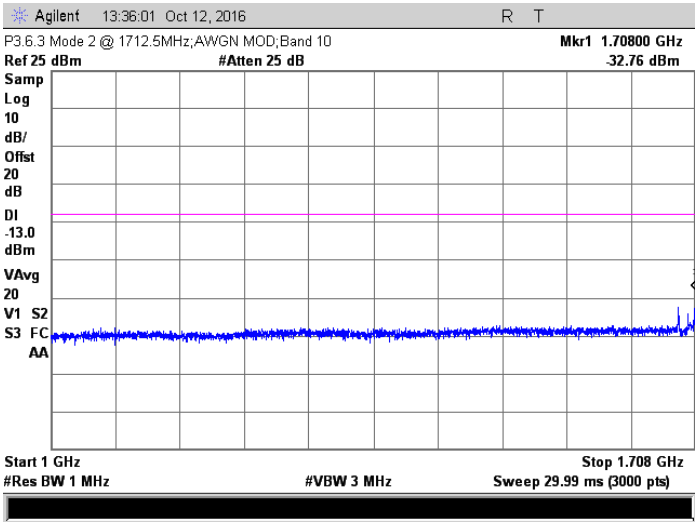
AWGN; 1712.4 MHz Injected Signal



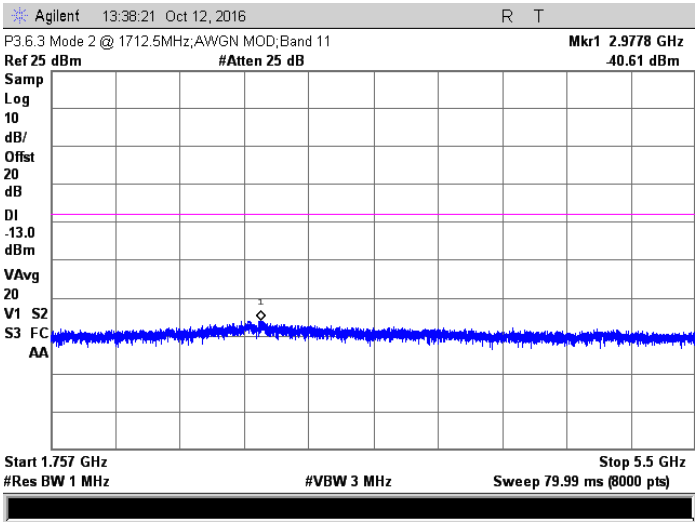
AWGN; 1712.4 MHz Injected Signal



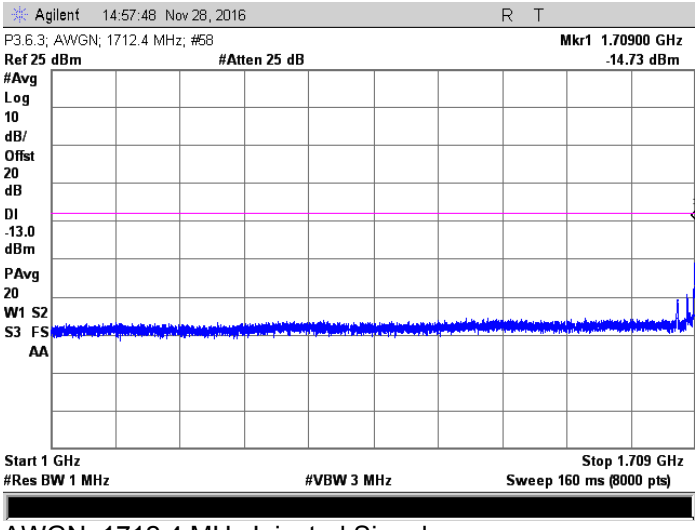
AWGN; 1712.4 MHz Injected Signal



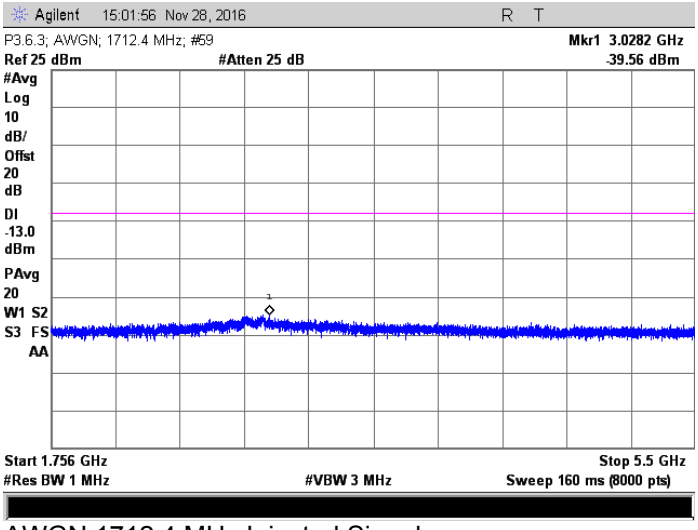
AWGN; 1712.5 MHz Injected Signal



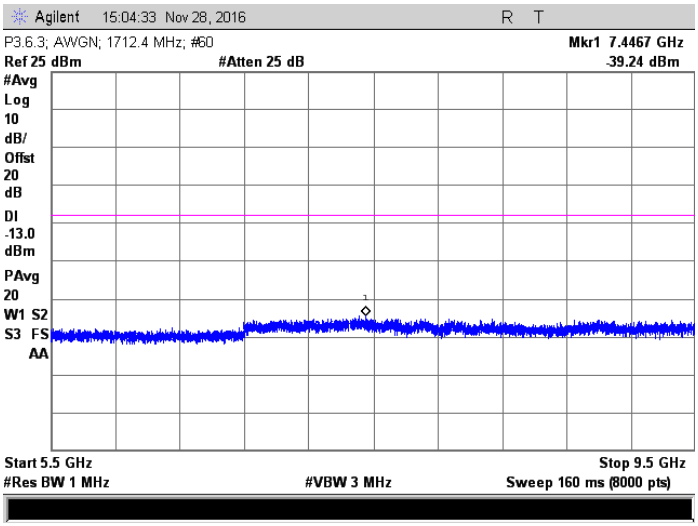
AWGN; 1712.5 MHz Injected Signal



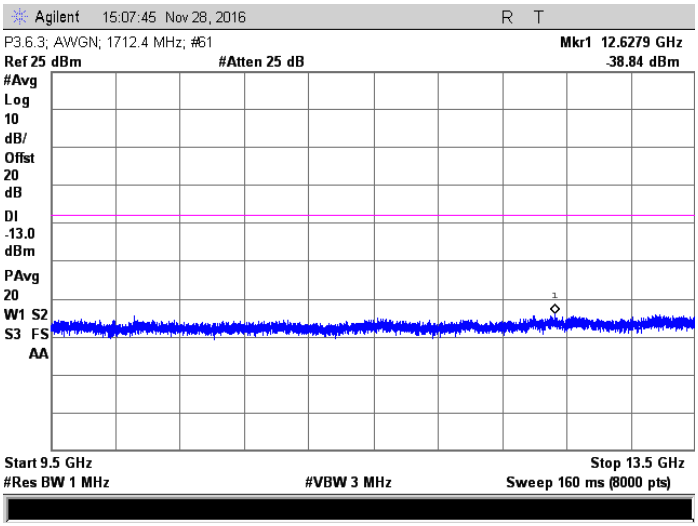
AWGN; 1712.4 MHz Injected Signal



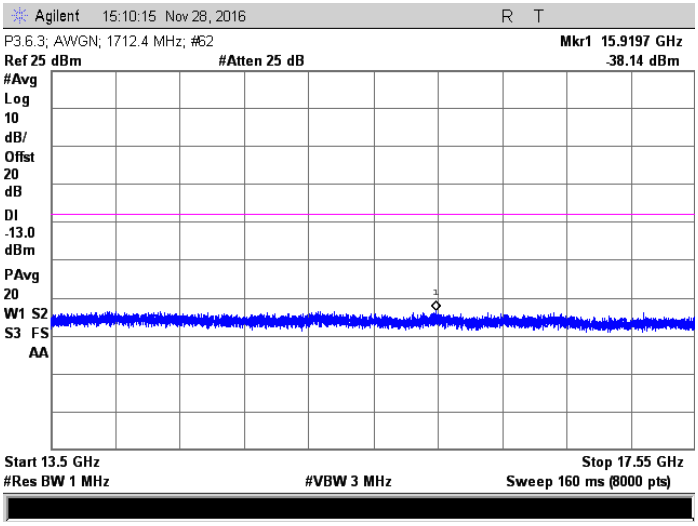
AWGN;1712.4 MHz Injected Signal



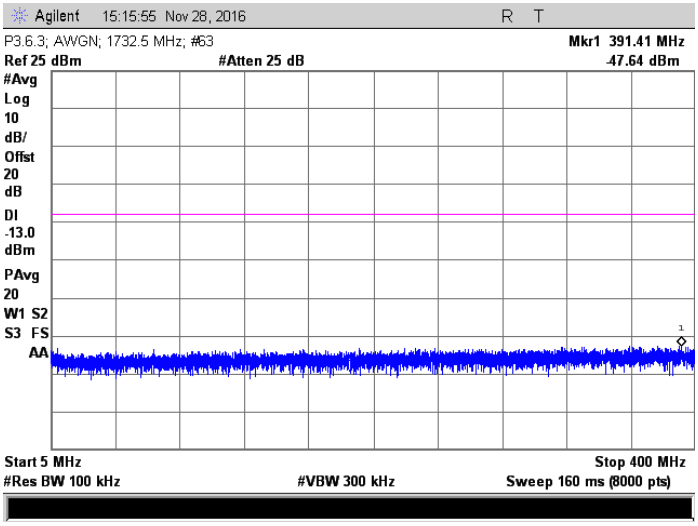
AWGN; 1712.4 MHz Injected Signal



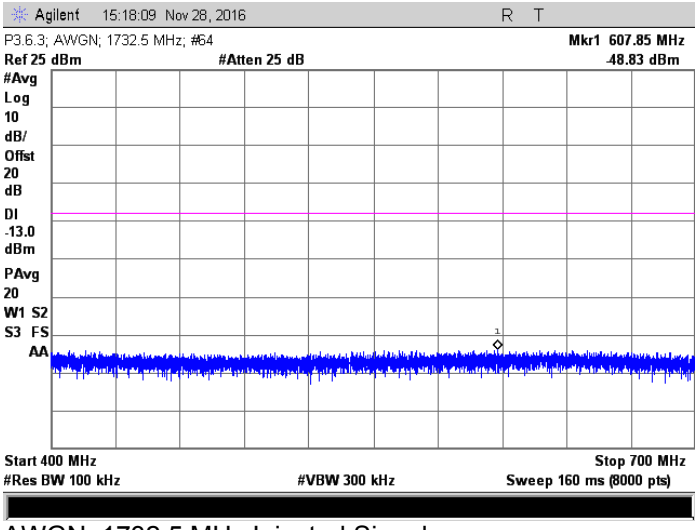
AWGN; 1712.4 MHz Injected Signal



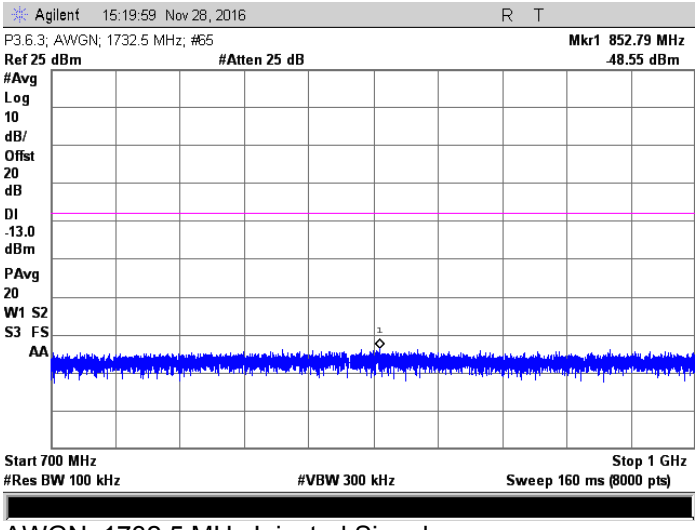
AWGN; 1712.4 MHz Injected Signal



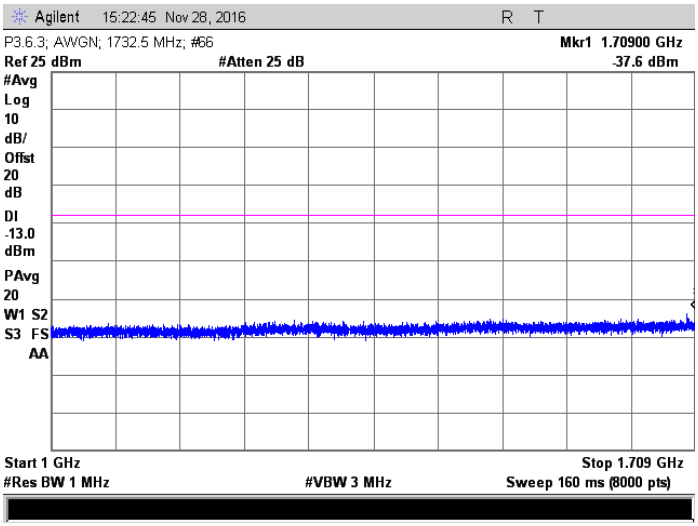
AWGN; 1732.5 MHz Injected Signal



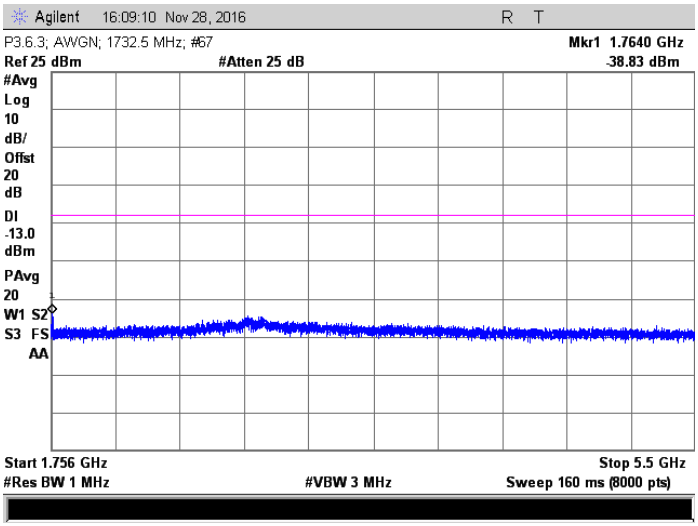
AWGN; 1732.5 MHz Injected Signal



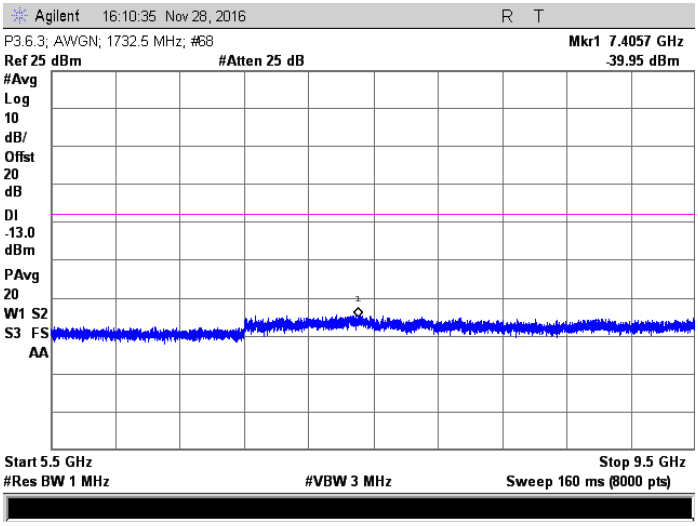
AWGN; 1732.5 MHz Injected Signal



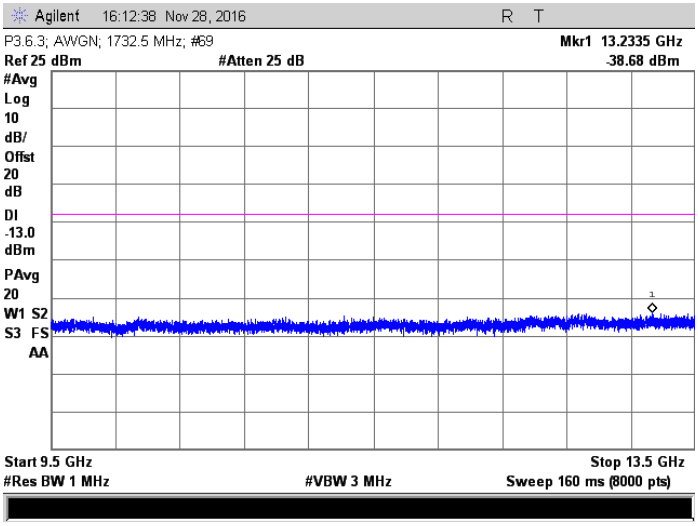
AWGN; 1732.5 MHz Injected Signal



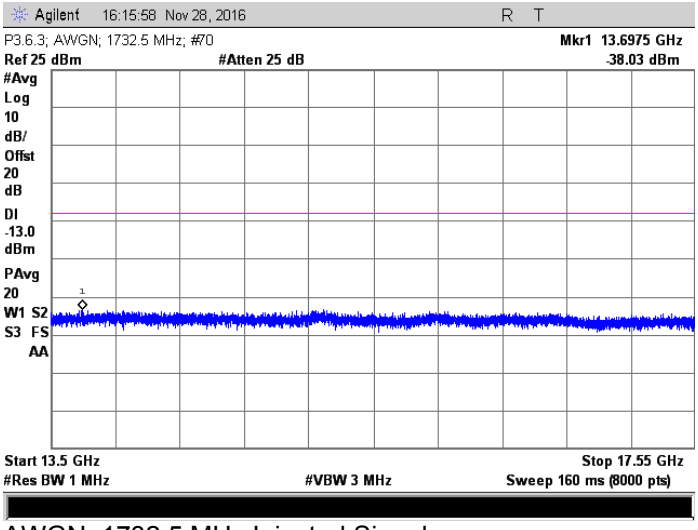
AWGN; 1732.5 MHz Injected Signal



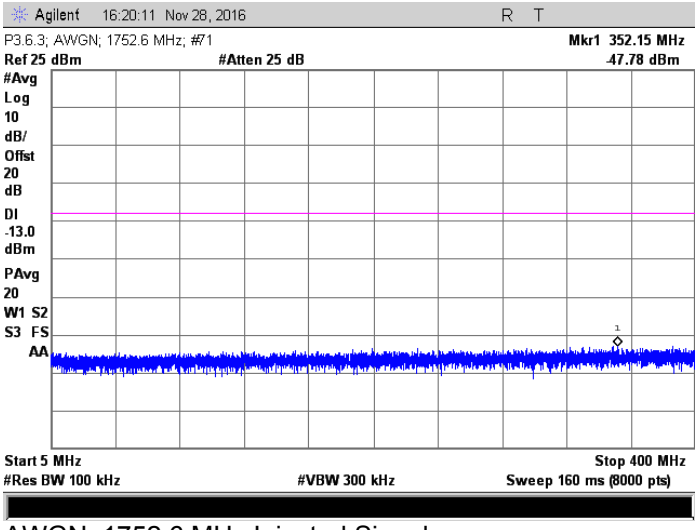
AWGN; 1732.5 MHz Injected Signal



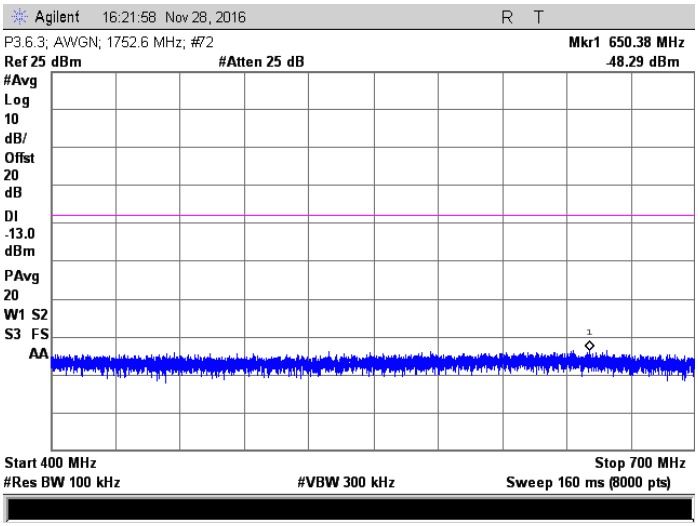
AWGN; 1732.5 MHz Injected Signal



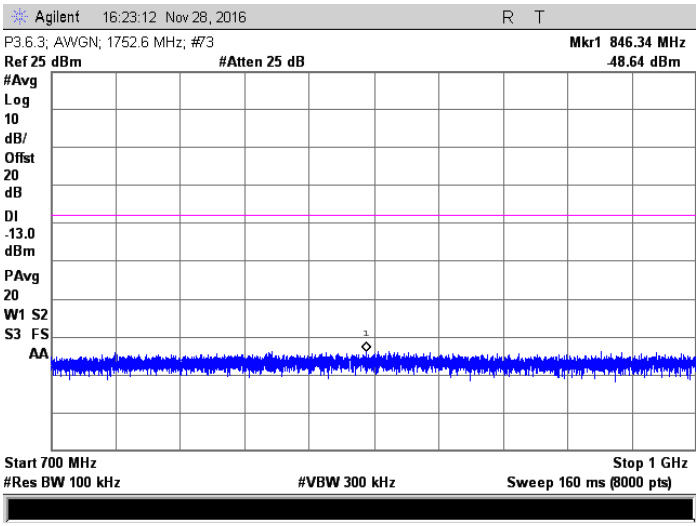
AWGN; 1732.5 MHz Injected Signal



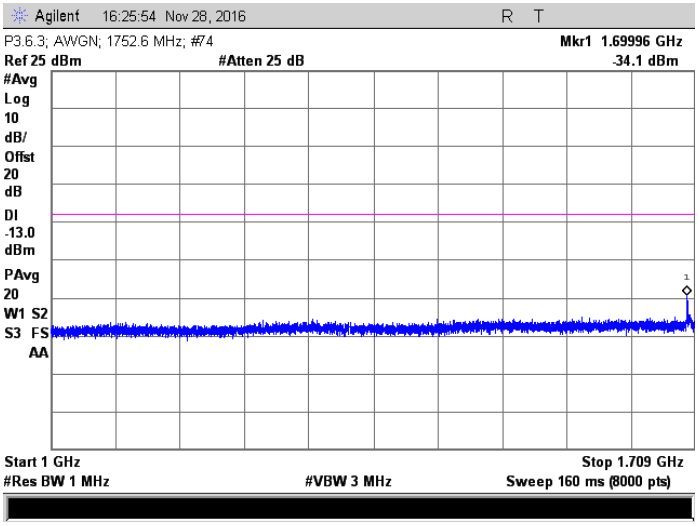
AWGN; 1752.6 MHz Injected Signal



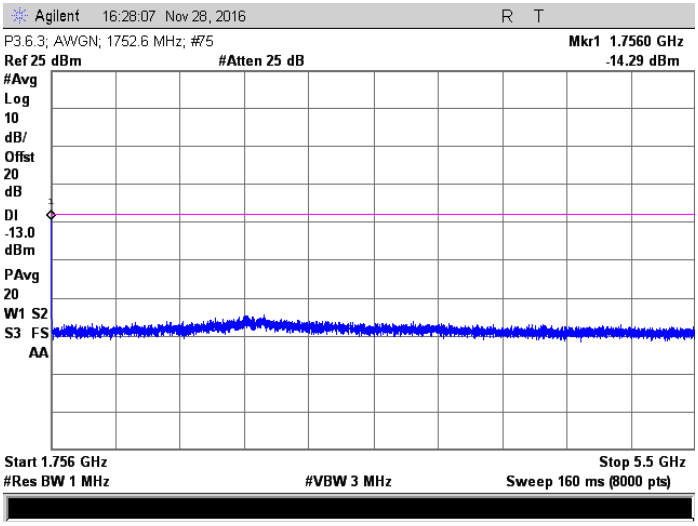
AWGN; 1752.6 MHz Injected Signal



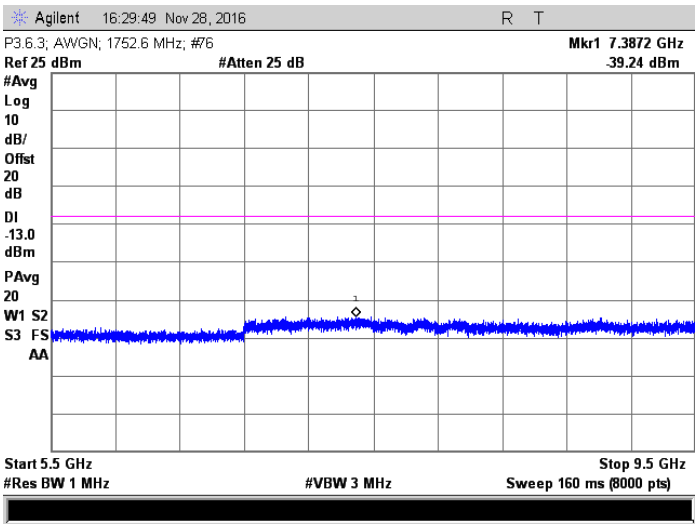
AWGN; 1752.6 MHz Injected Signal



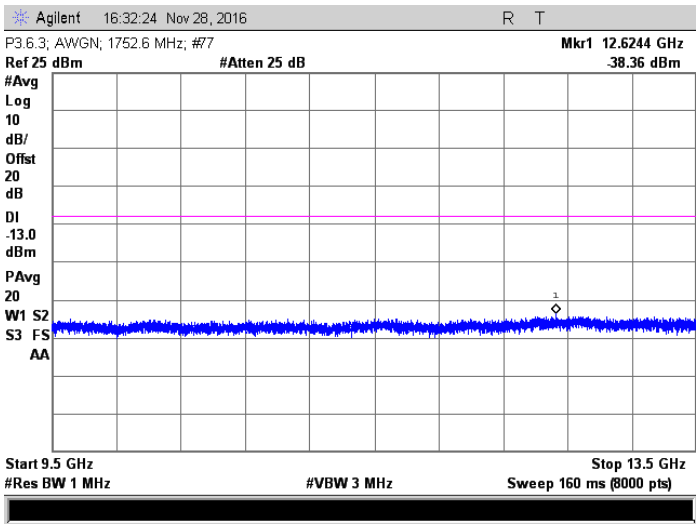
AWGN; 1752.6 MHz Injected Signal



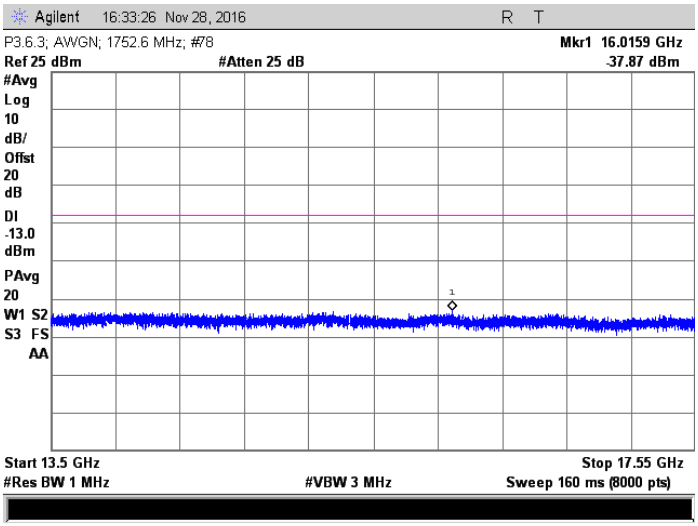
AWGN; 1752.6 MHz Injected Signal



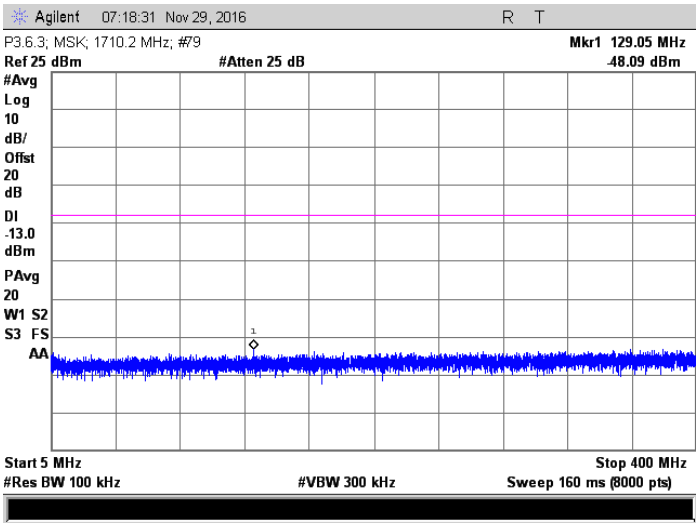
AWGN; 1752.6 MHz Injected Signal



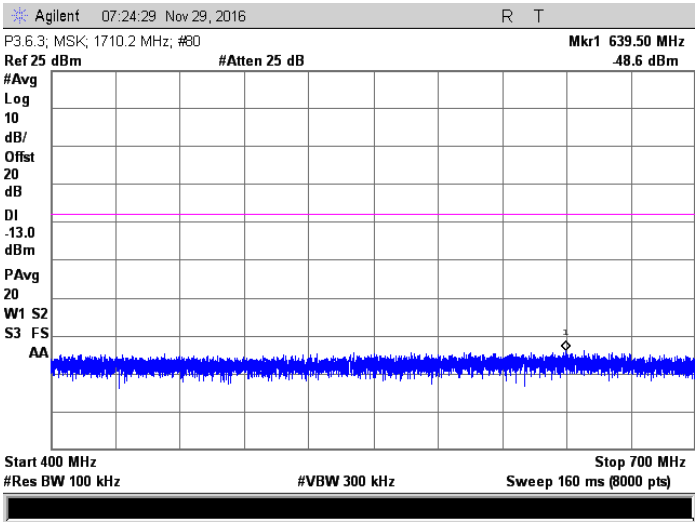
AWGN; 1752.6 MHz Injected Signal



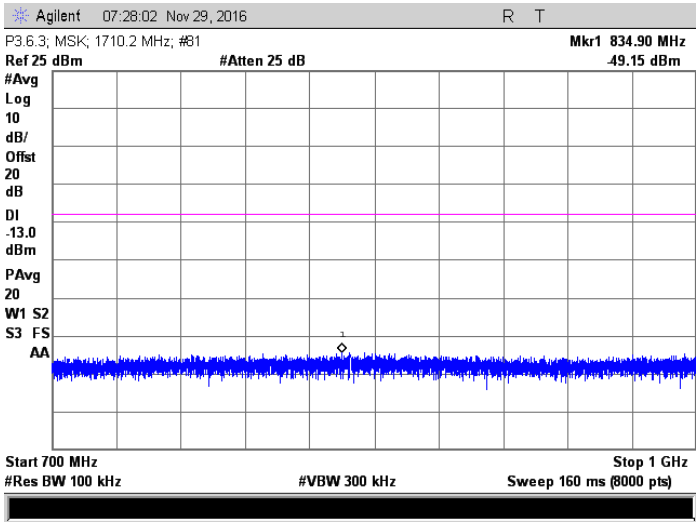
AWGN; 1752.6 MHz Injected Signal



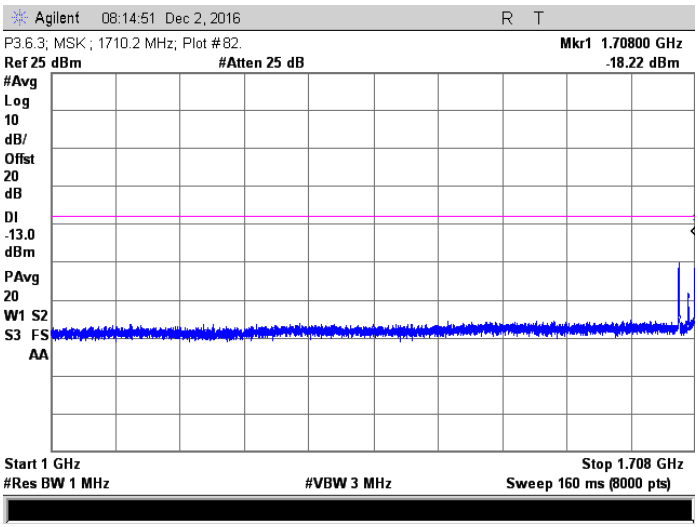
MSK; 1710.2 MHz Injected Signal



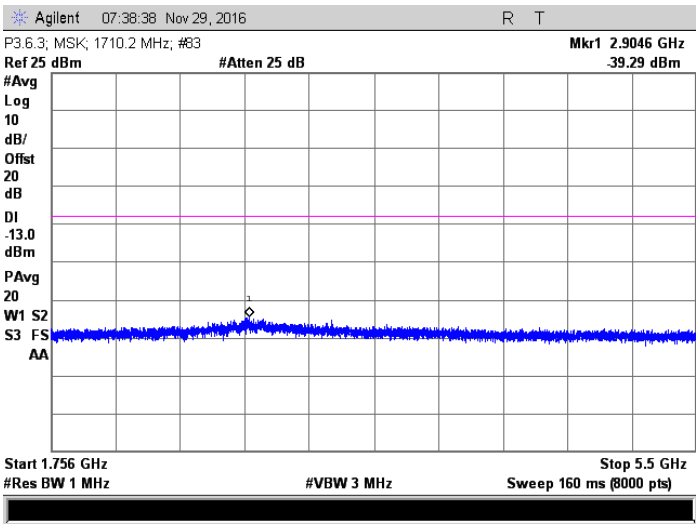
MSK; 1710.2 MHz Injected Signal



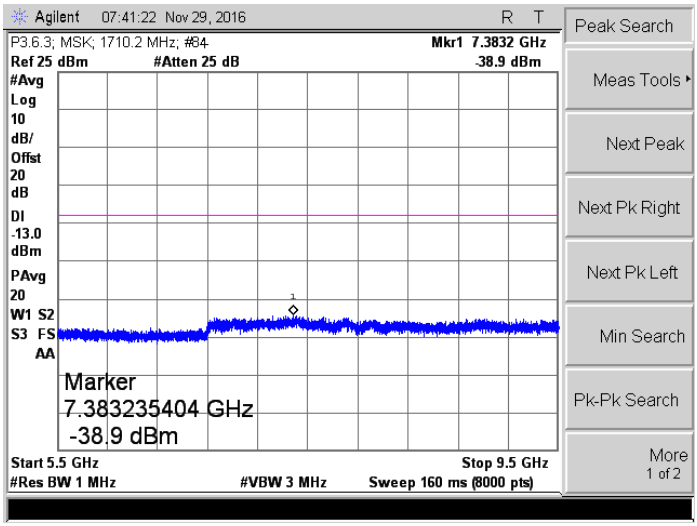
MSK; 1710.2 MHz Injected Signal



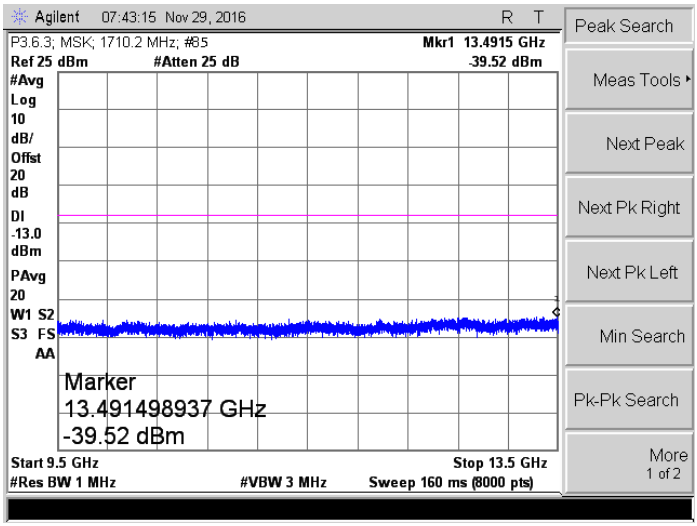
MSK; 1710.2 MHz Injected Signal



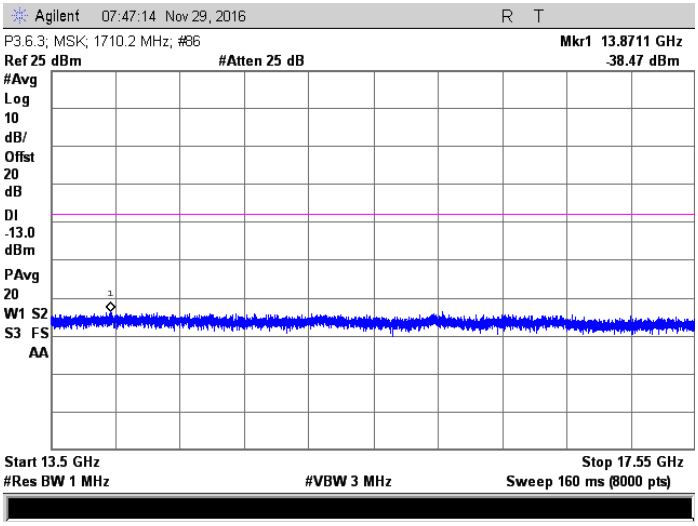
MSK; 1710.2 MHz Injected Signal



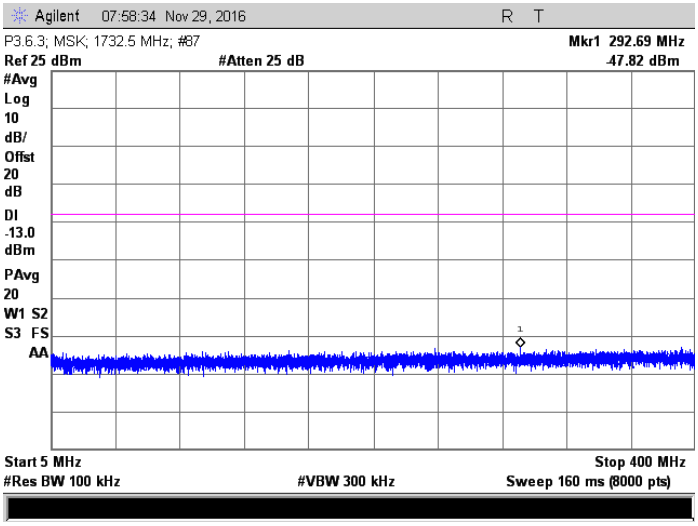
MSK; 1710.2 MHz Injected Signal



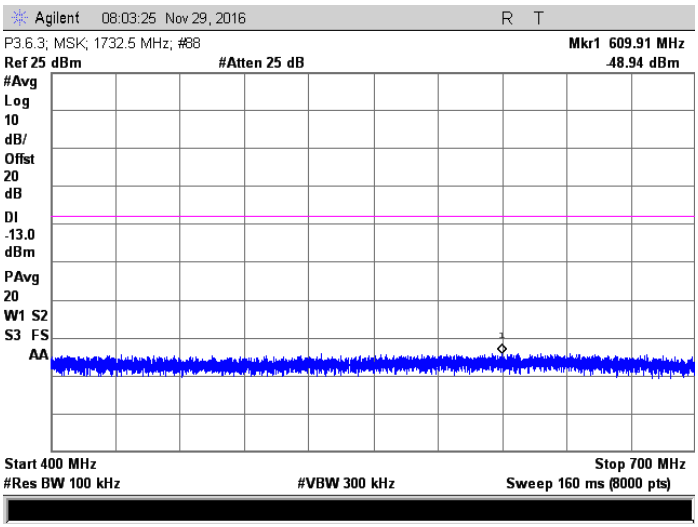
MSK; 1710.2 MHz Injected Signal



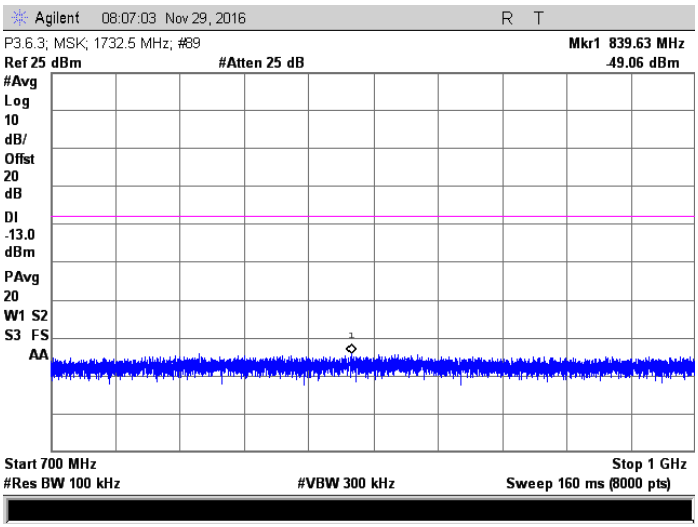
MSK; 1710.2 MHz Injected Signal



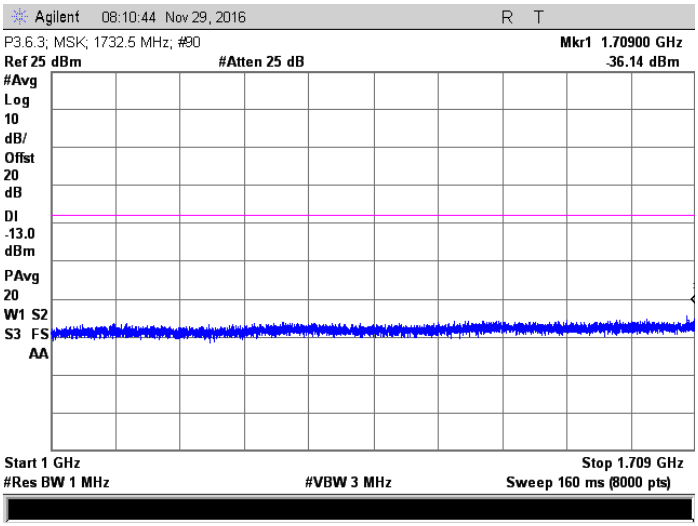
MSK; 1732.5 MHz Injected Signal



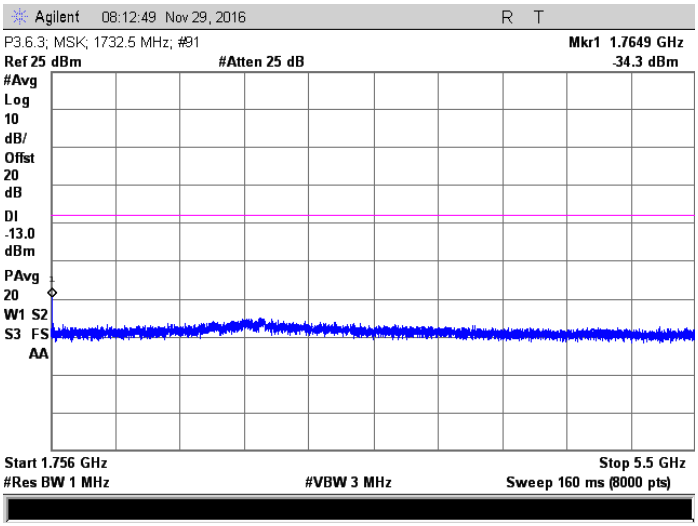
MSK; 1732.5 MHz Injected Signal



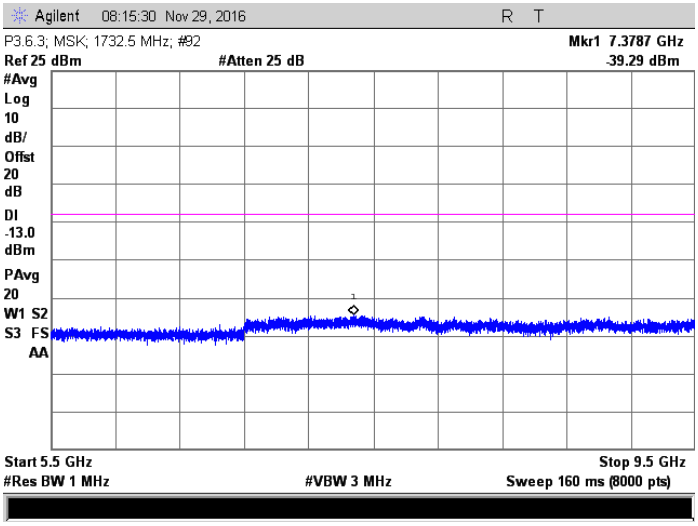
MSK; 1732.5 MHz Injected Signal



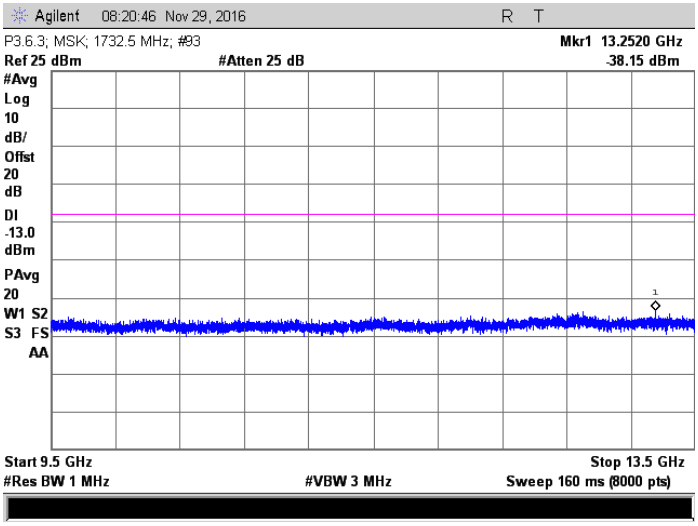
MSK; 1732.5 MHz Injected Signal



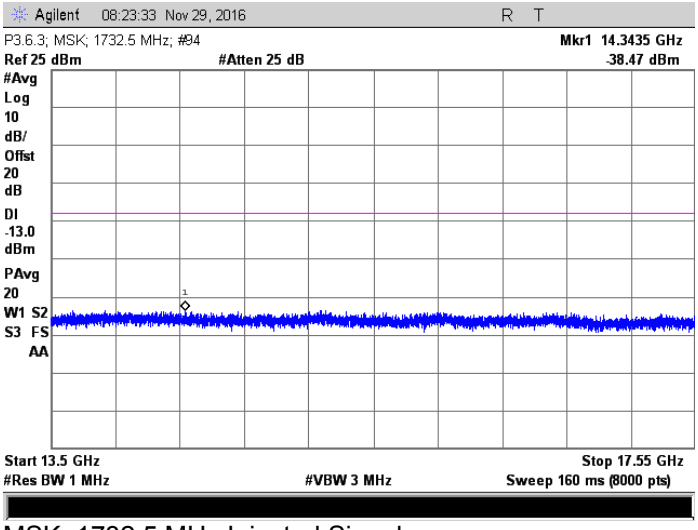
MSK; 1732.5 MHz Injected Signal



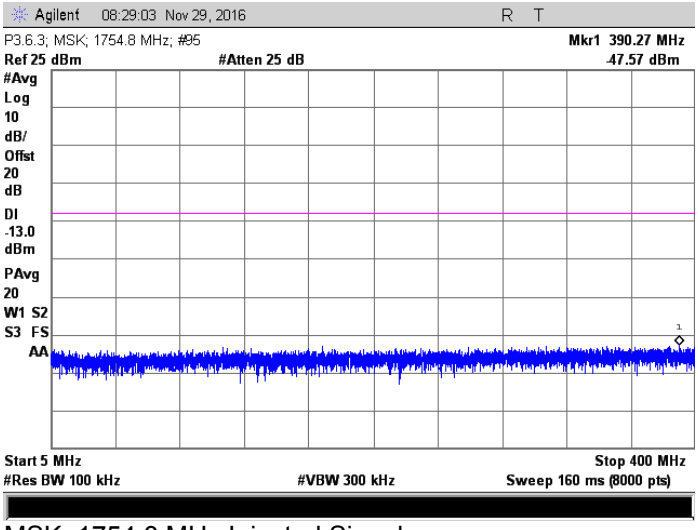
MSK; 1732.5 MHz Injected Signal



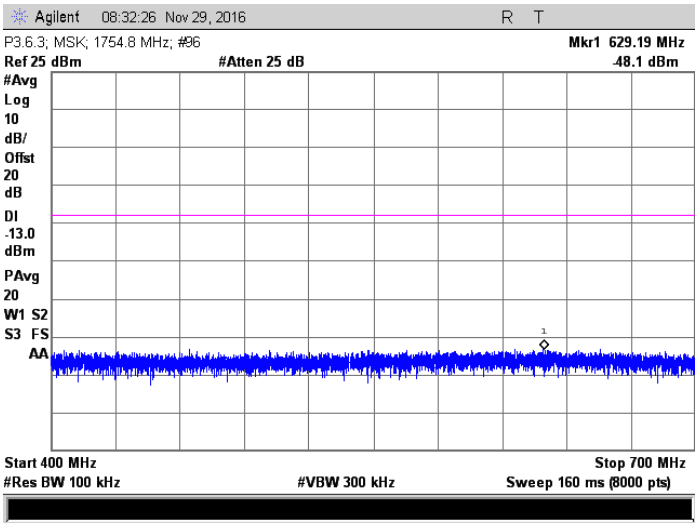
MSK; 1732.5 MHz Injected Signal



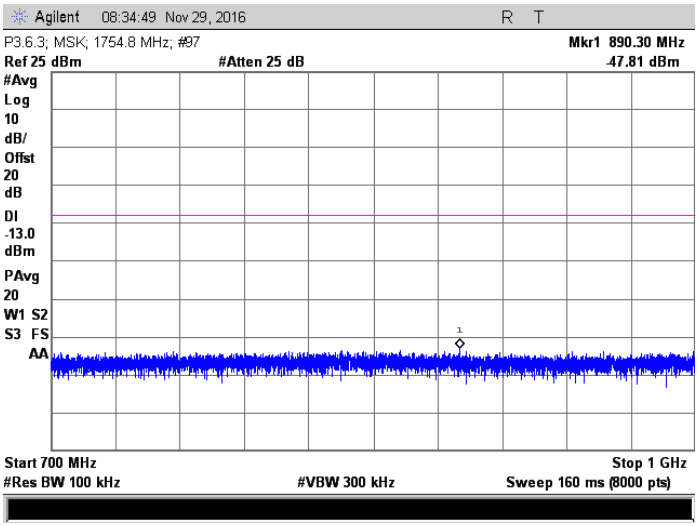
MSK; 1732.5 MHz Injected Signal



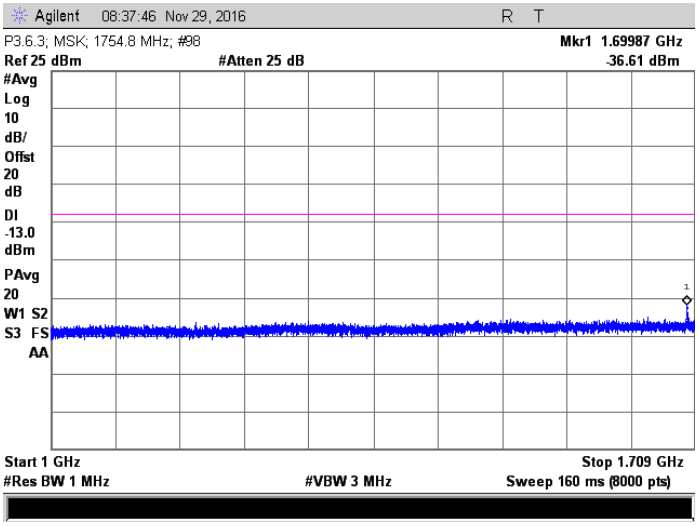
MSK; 1754.8 MHz Injected Signal



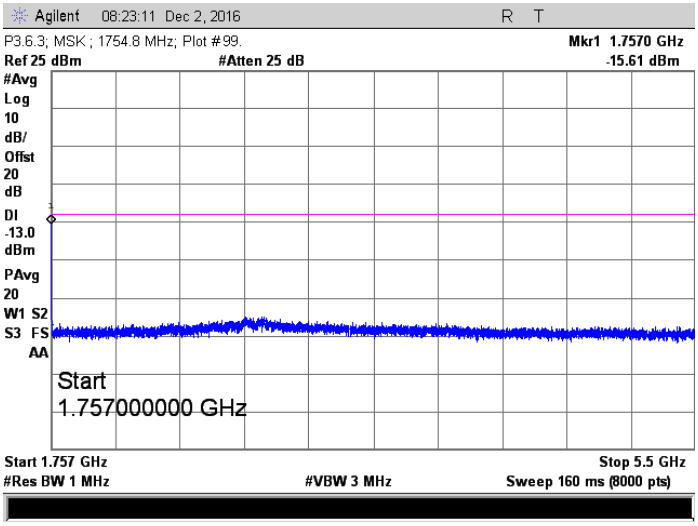
MSK; 1754.8 MHz Injected Signal



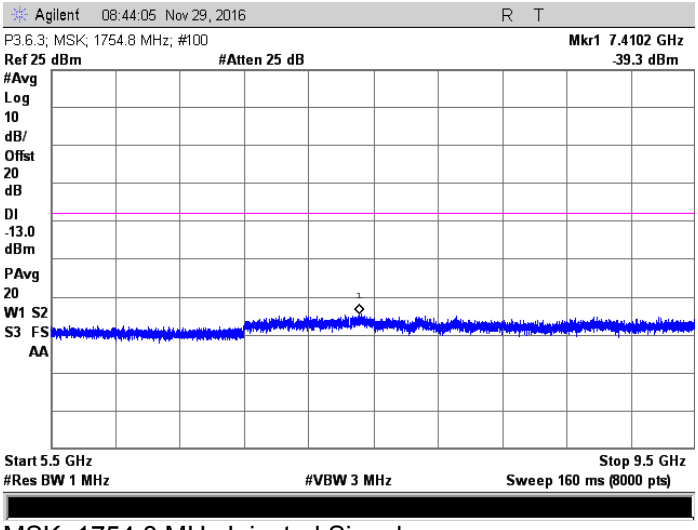
MSK; 1754.8 MHz Injected Signal



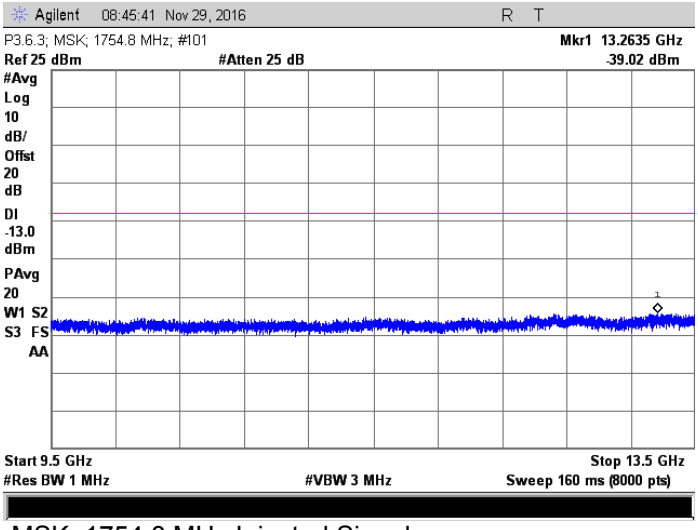
MSK; 1754.8 MHz Injected Signal



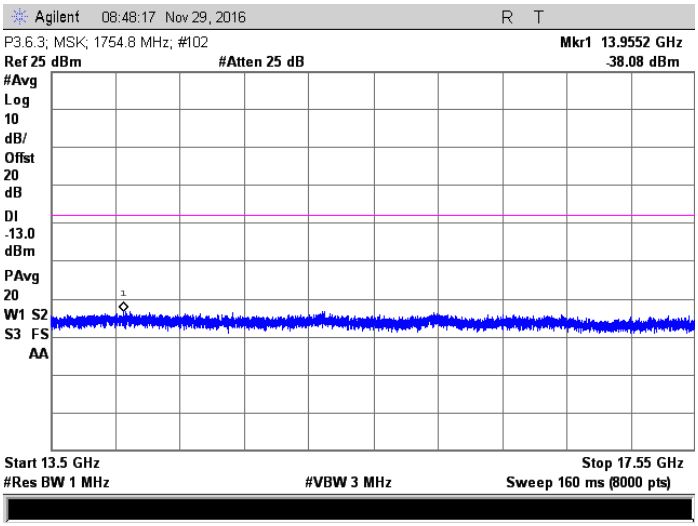
MSK; 1754.8 MHz Injected Signal



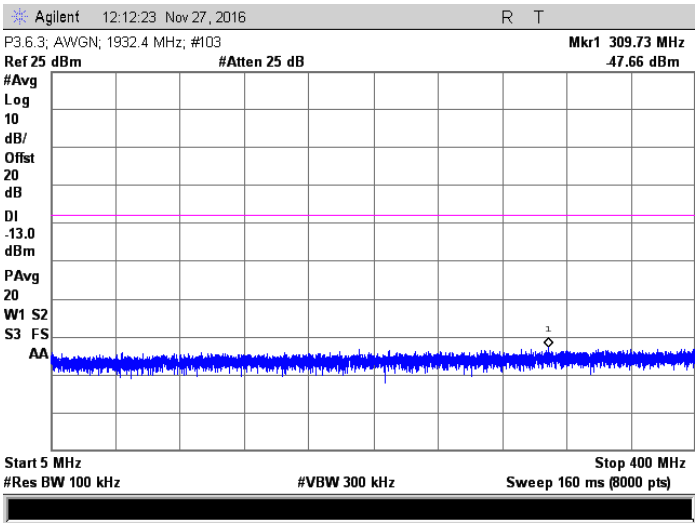
MSK; 1754.8 MHz Injected Signal



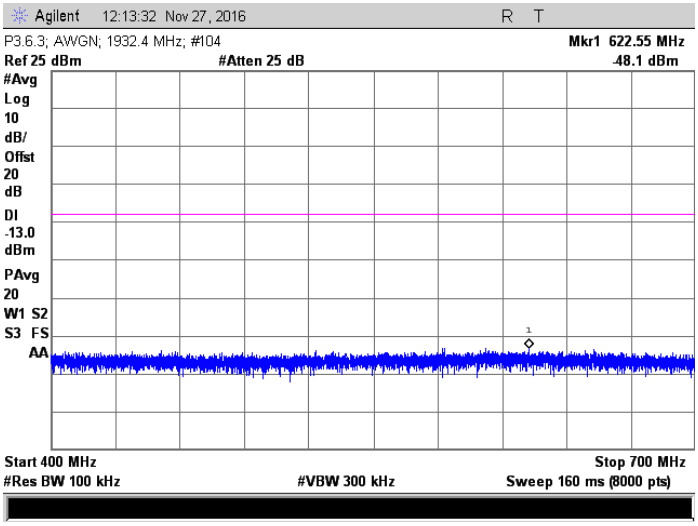
MSK; 1754.8 MHz Injected Signal



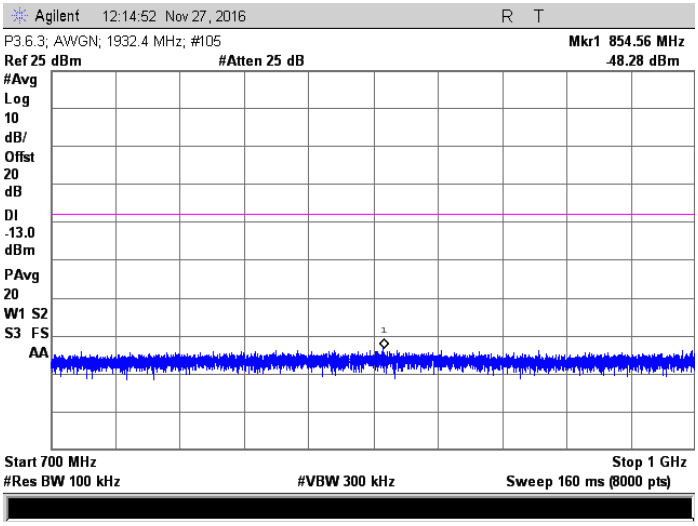
MSK; 1754.8 MHz Injected Signal



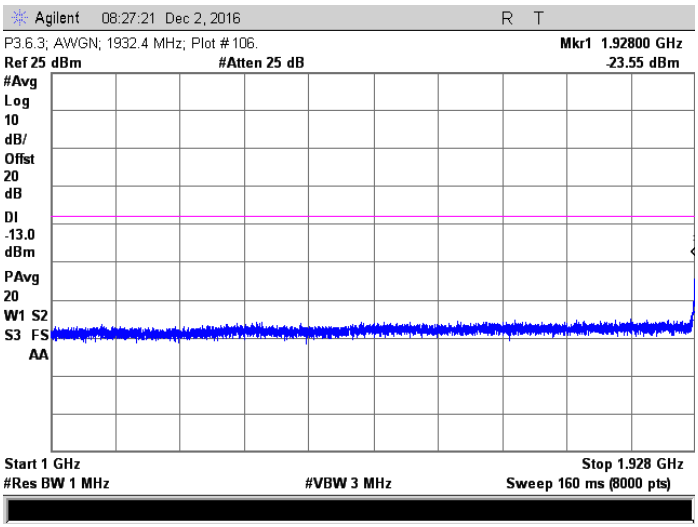
AWGN; 1932.4 MHz Injected Signal



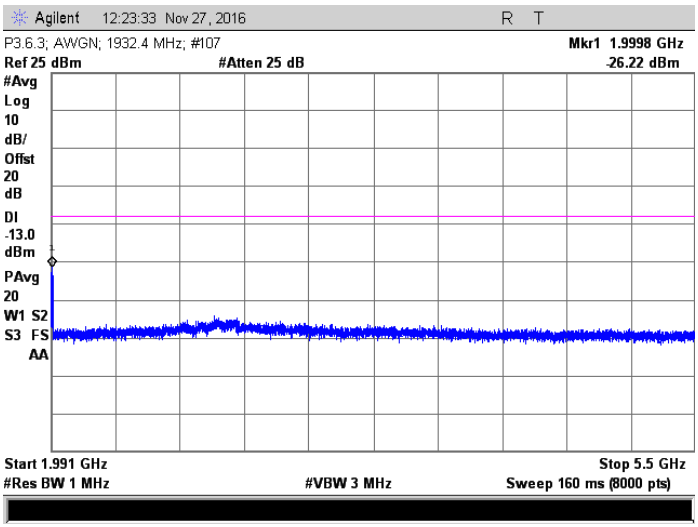
AWGN; 1932.4 MHz Injected Signal



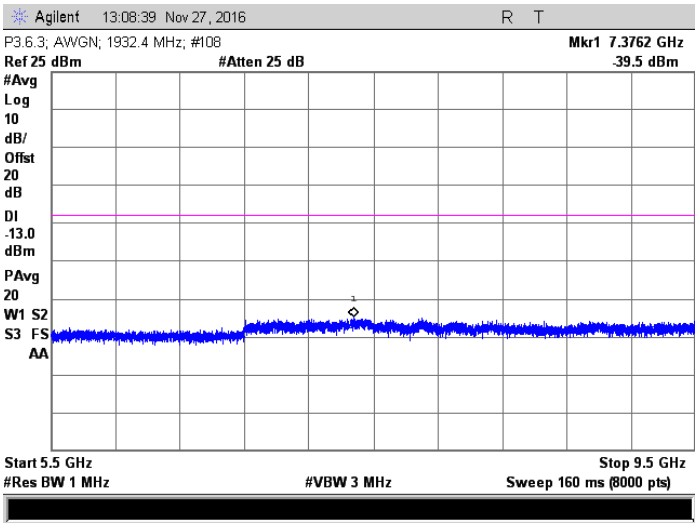
AWGN; 1932.4 MHz Injected Signal



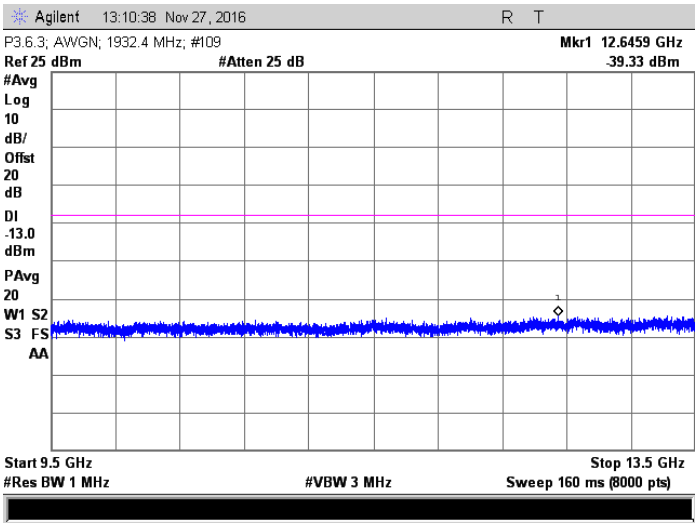
AWGN; 1932.4 MHz Injected Signal



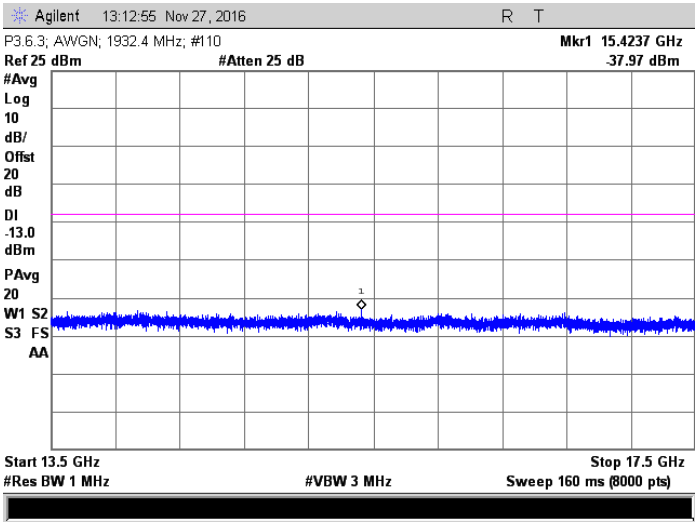
AWGN; 1932.4 MHz Injected Signal



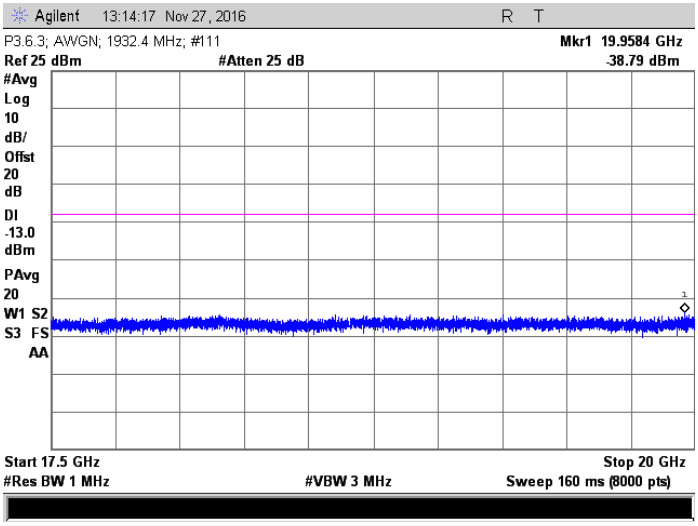
AWGN; 1932.4 MHz Injected Signal



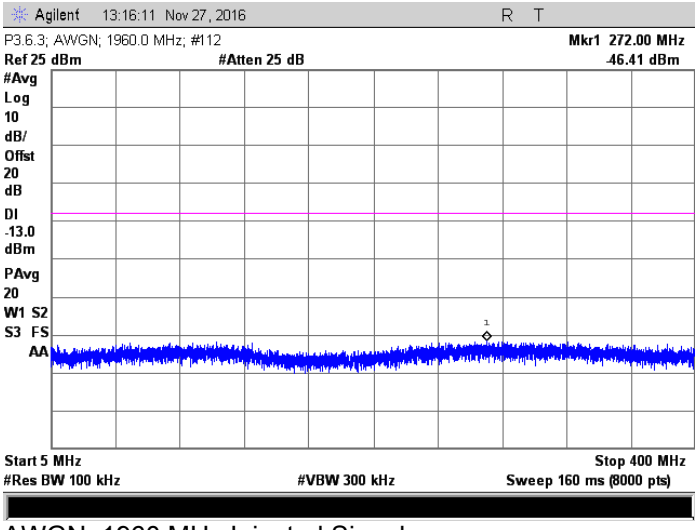
AWGN; 1932.4 MHz Injected Signal



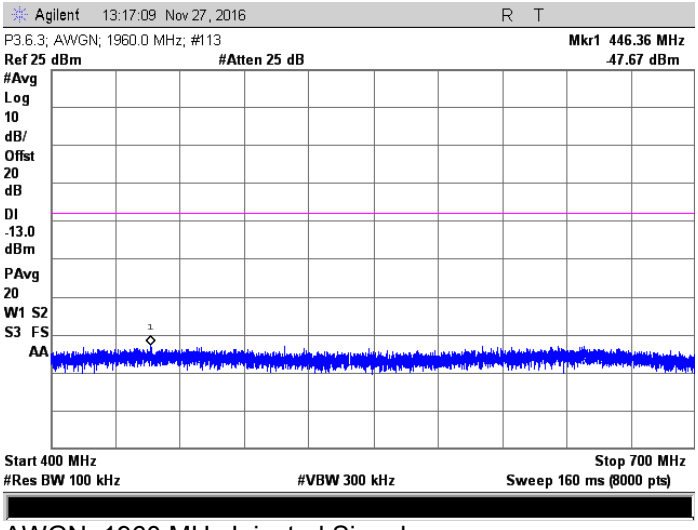
AWGN; 1932.4 MHz Injected Signal



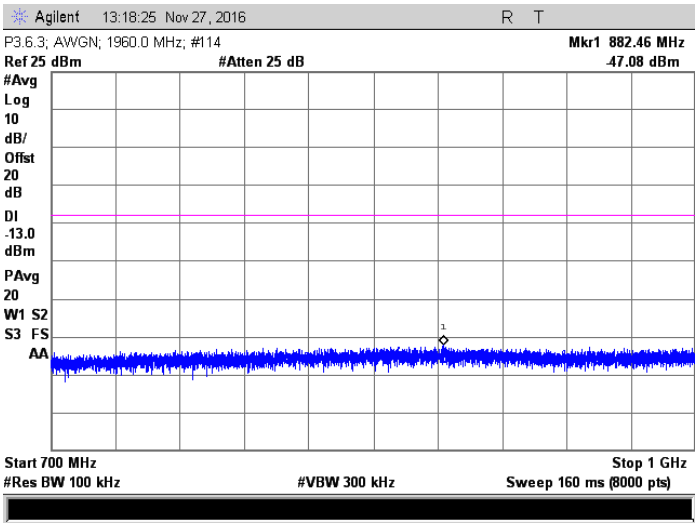
AWGN; 1932.4 MHz Injected Signal



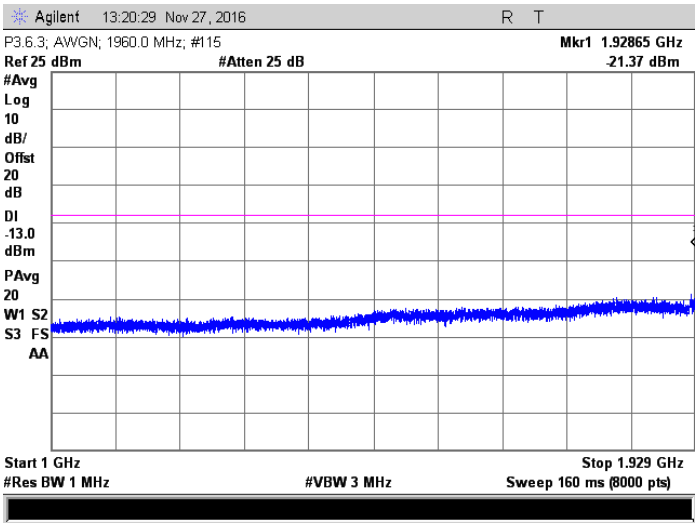
AWGN; 1960 MHz Injected Signal



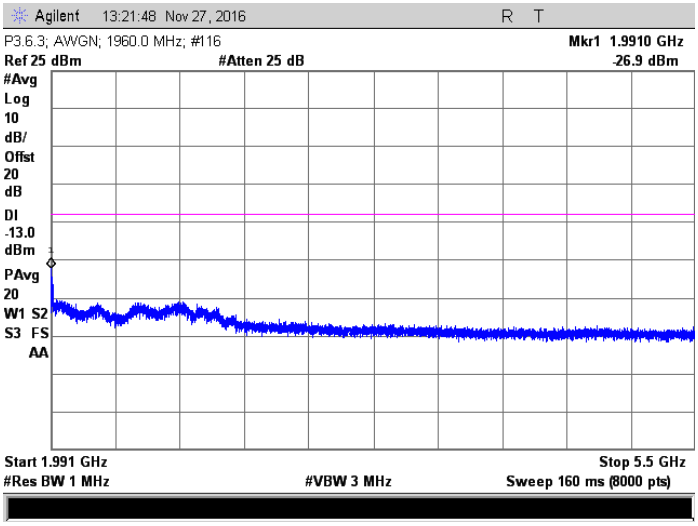
AWGN; 1960 MHz Injected Signal



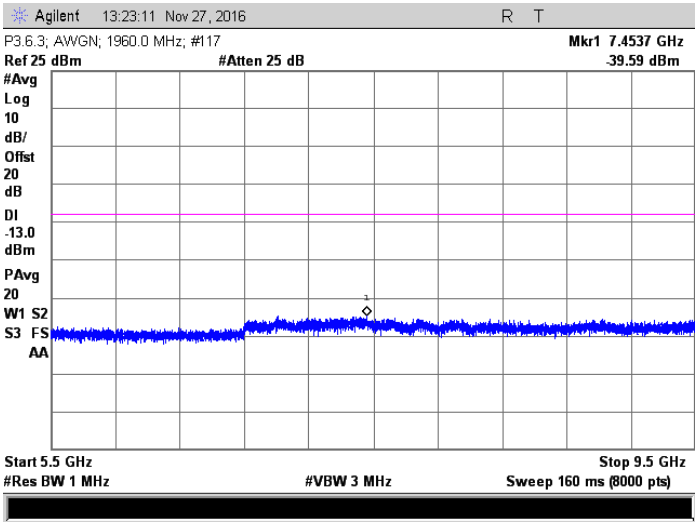
AWGN; 1960 MHz Injected Signal



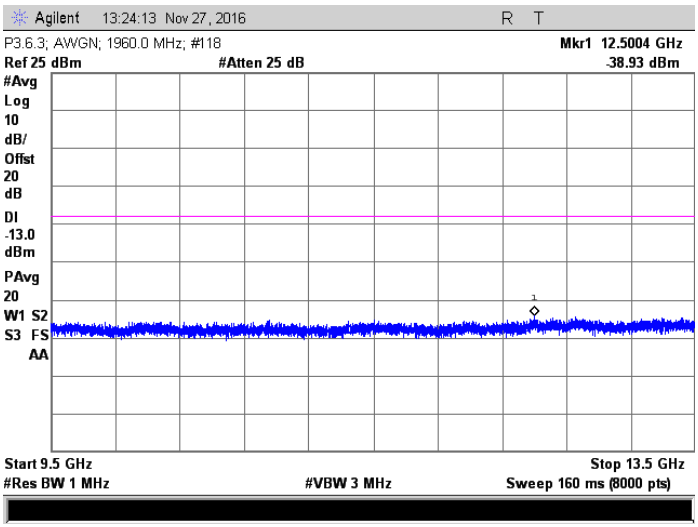
AWGN; 1960 MHz Injected Signal



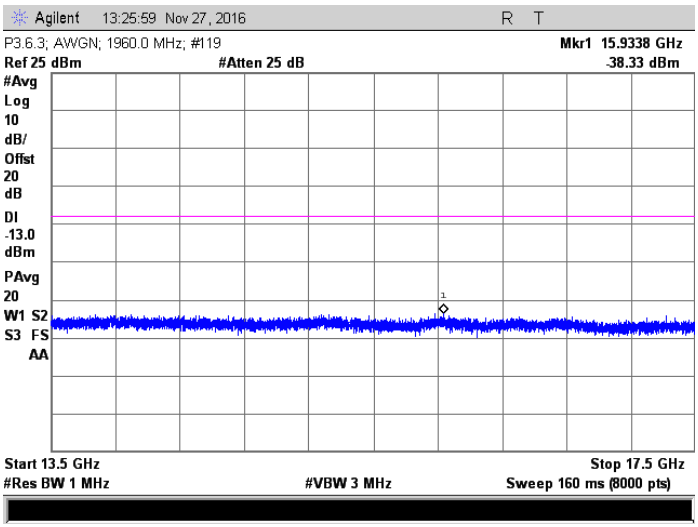
AWGN; 1960 MHz Injected Signal



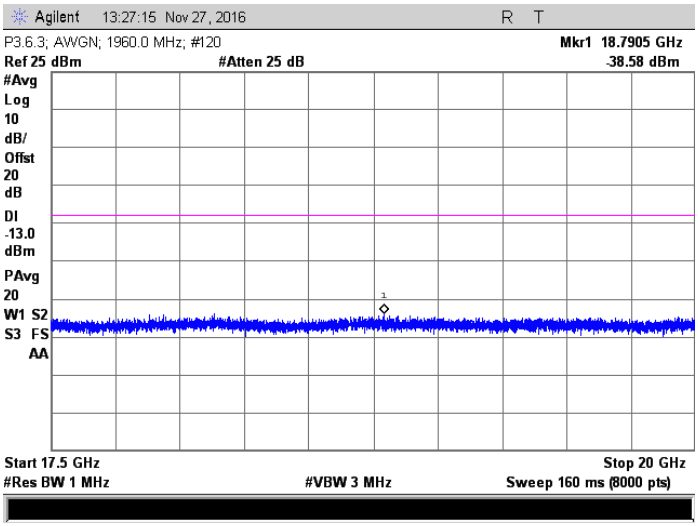
AWGN; 1960 MHz Injected Signal



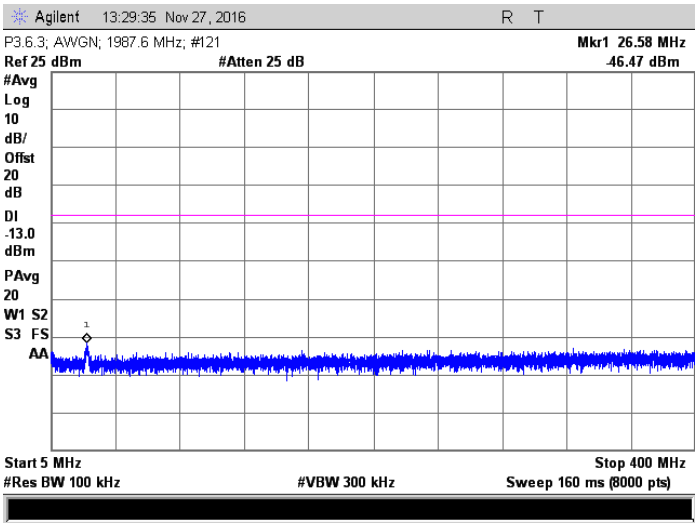
AWGN; 1960 MHz Injected Signal



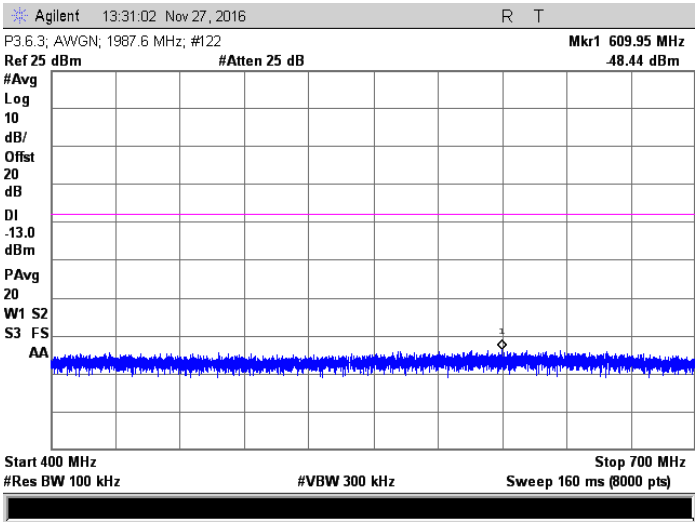
AWGN; 1960 MHz Injected Signal



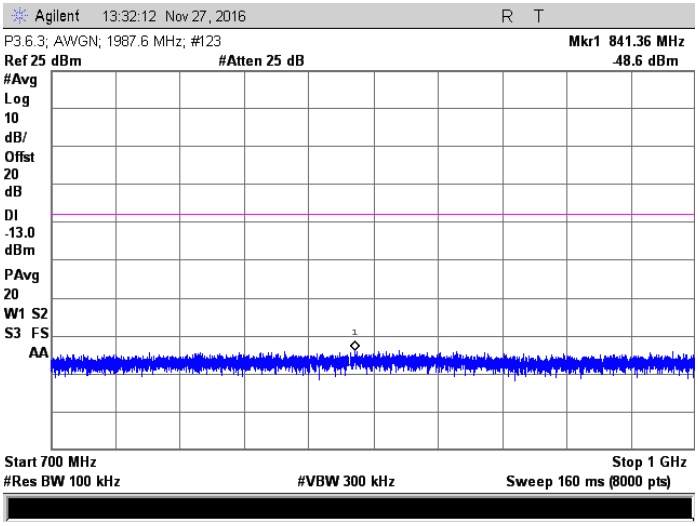
AWGN; 1960 MHz Injected Signal



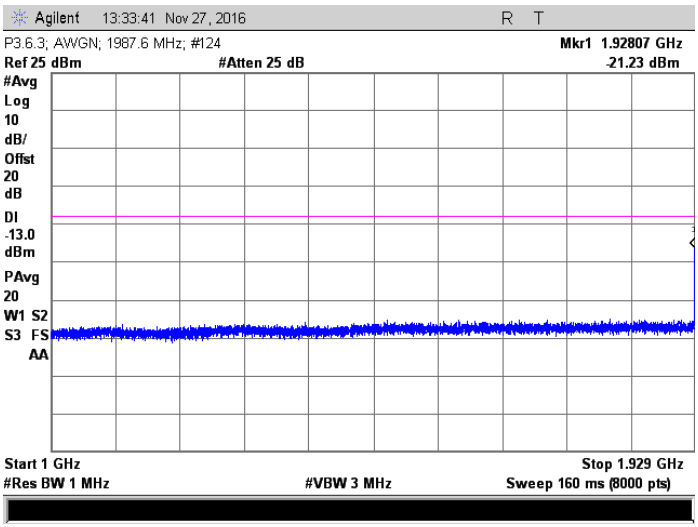
AWGN; 1987.6 MHz Injected Signal



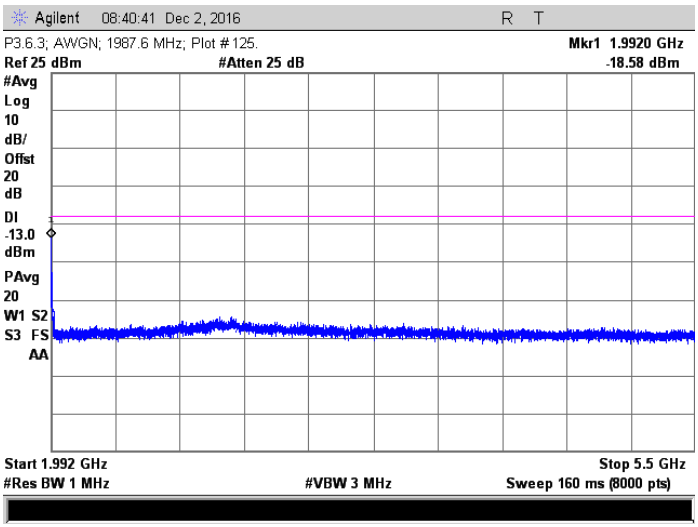
AWGN; 1987.6 MHz Injected Signal



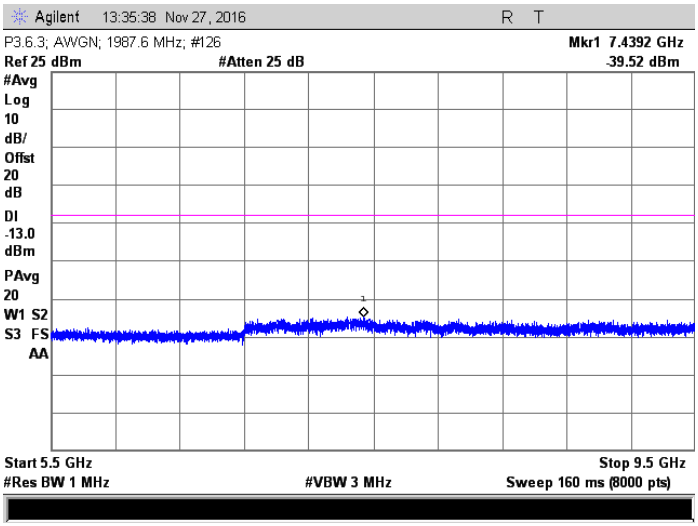
AWGN; 1987.6 MHz Injected Signal



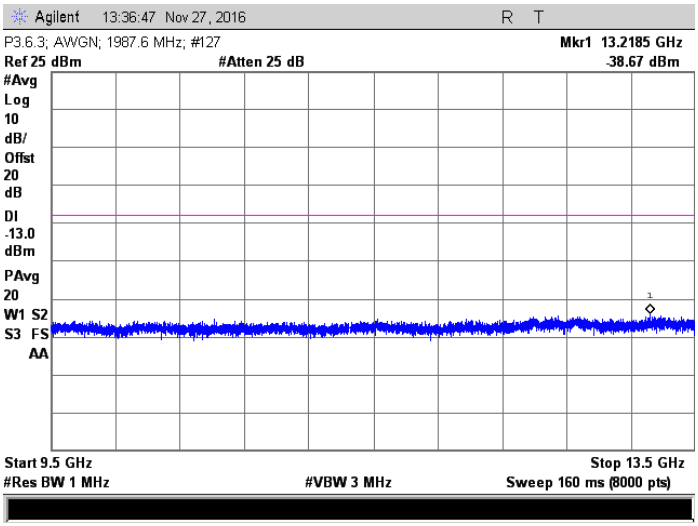
AWGN; 1987.6 MHz Injected Signal



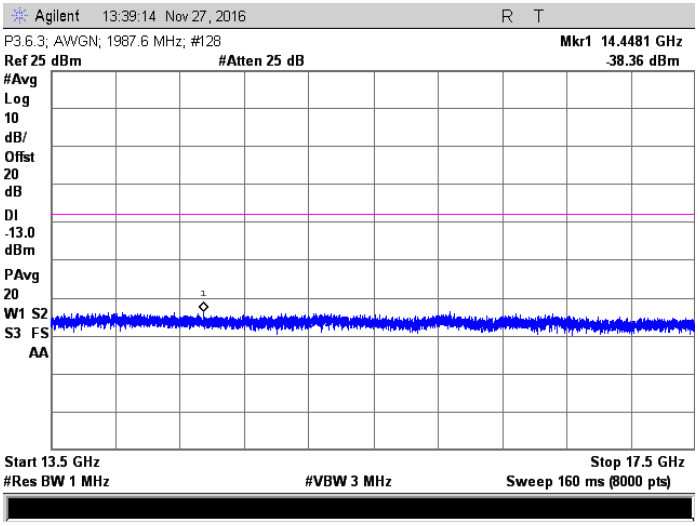
AWGN; 1987.6 MHz Injected Signal



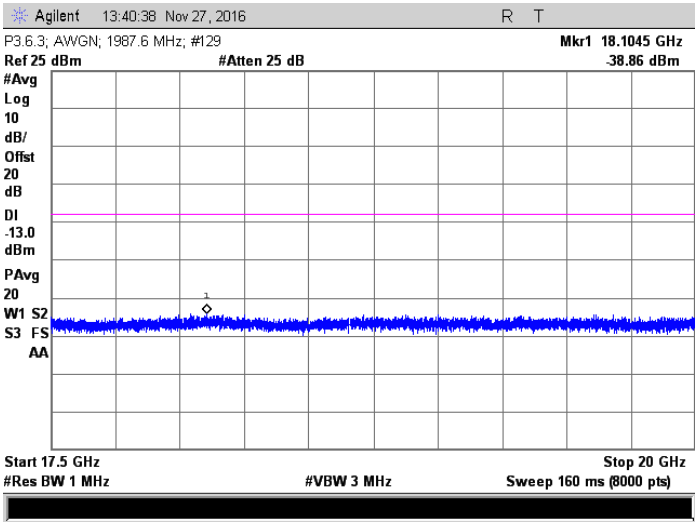
AWGN; 1987.6 MHz Injected Signal



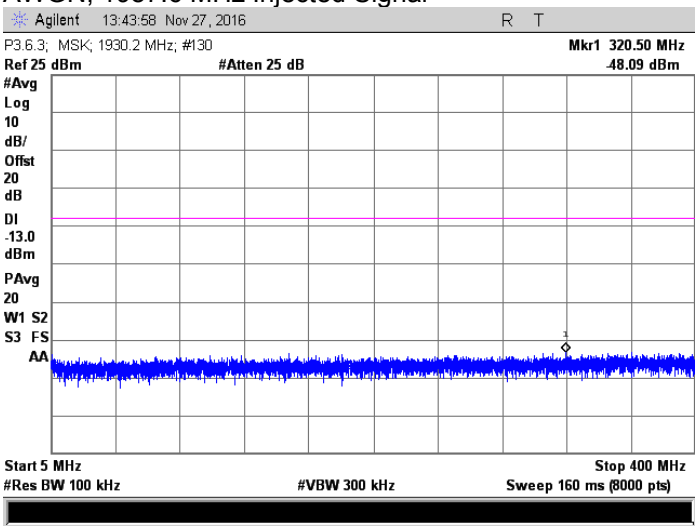
AWGN; 1987.6 MHz Injected Signal



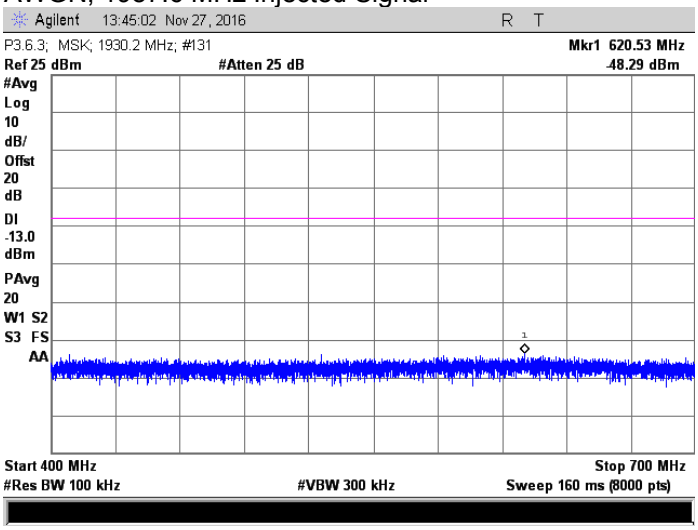
AWGN; 1987.6 MHz Injected Signal



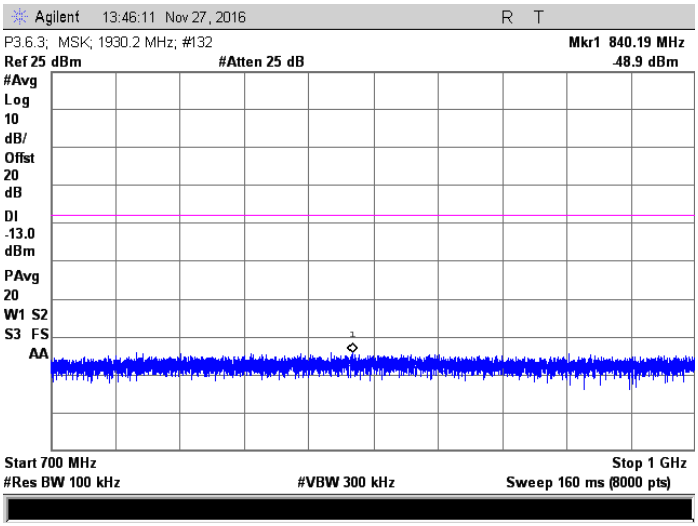
AWGN; 1987.6 MHz Injected Signal



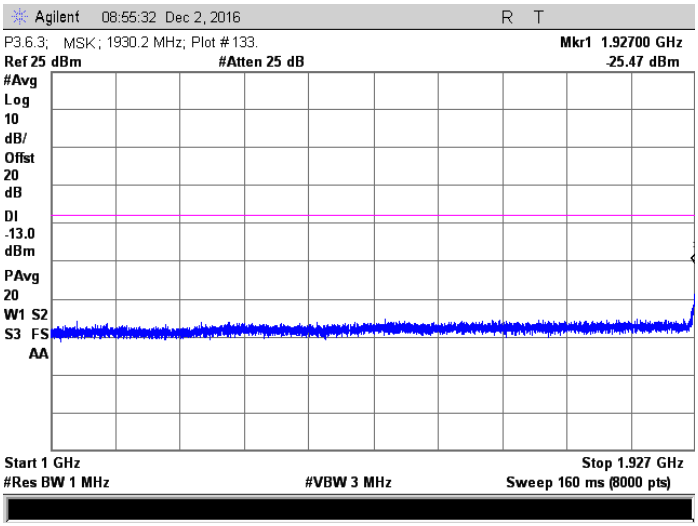
MSK; 1930.2 MHz Injected Signal



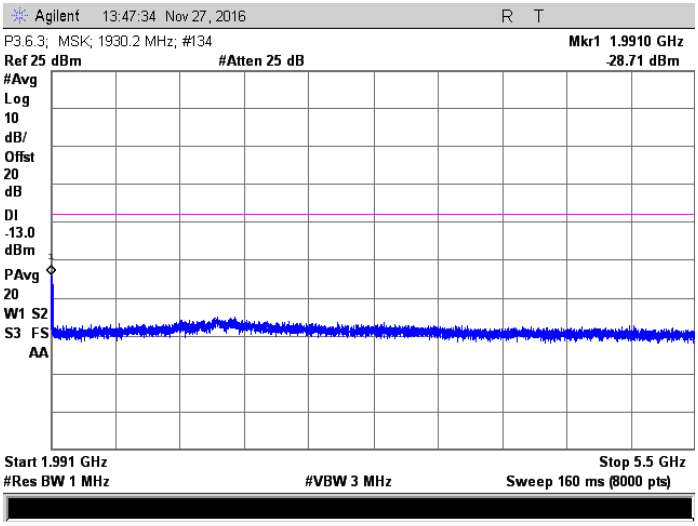
MSK; 1930.2 MHz Injected Signal



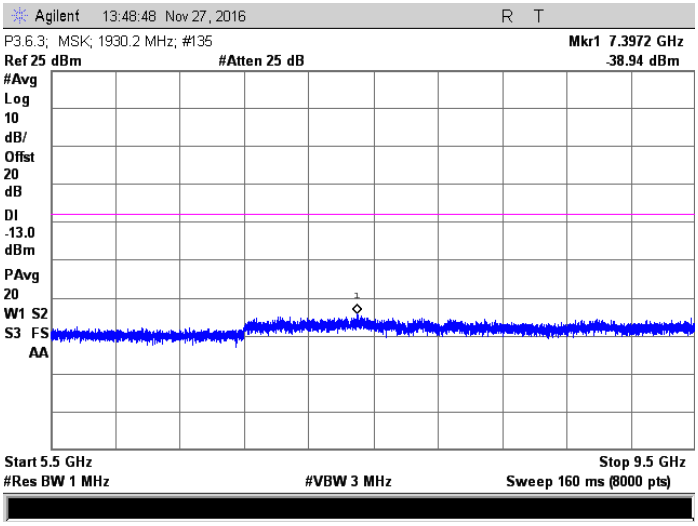
MSK; 1930.2 MHz Injected Signal



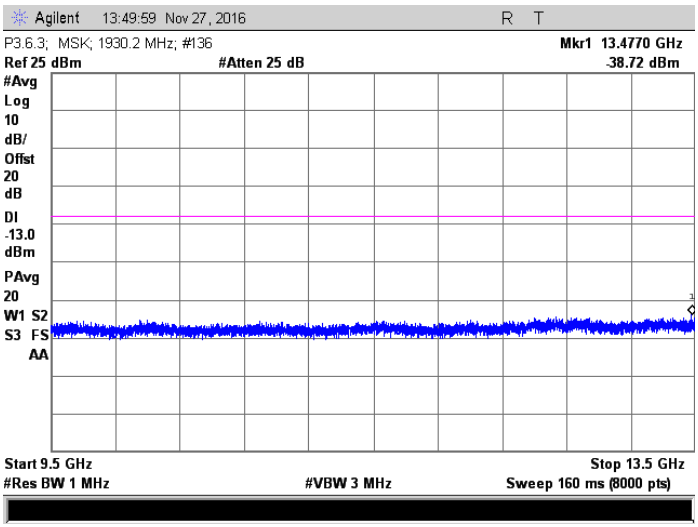
MSK; 1930.2 MHz Injected Signal



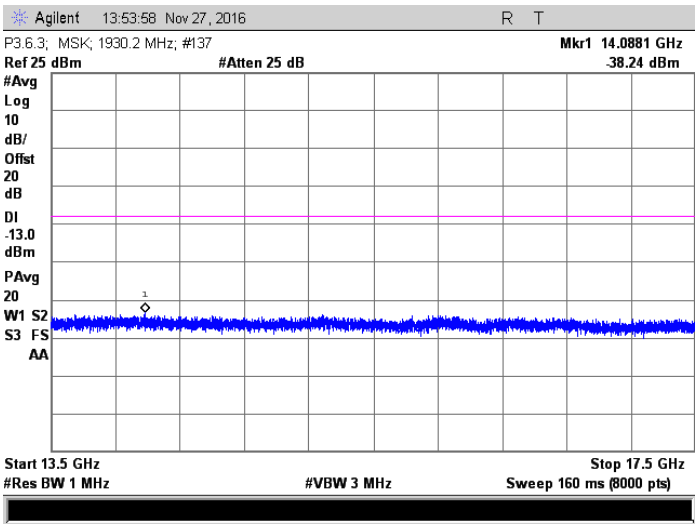
MSK; 1930.2 MHz Injected Signal



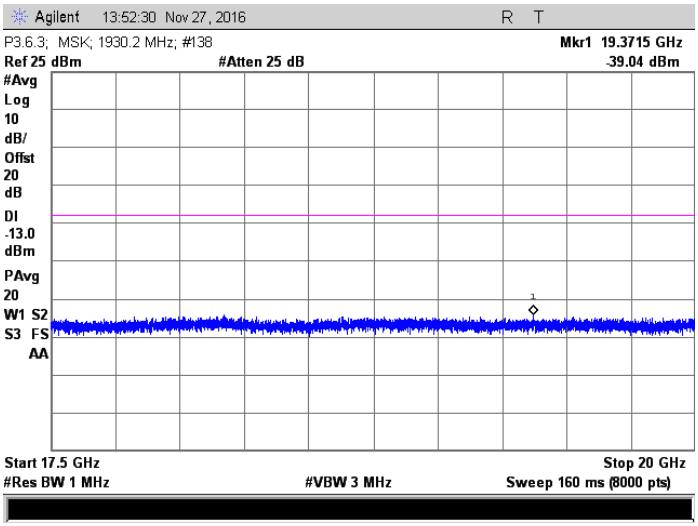
MSK; 1930.2 MHz Injected Signal



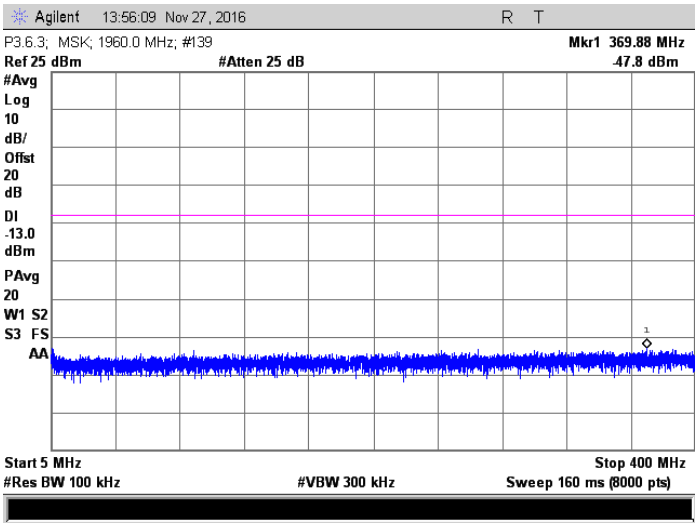
MSK; 1930.2 MHz Injected Signal



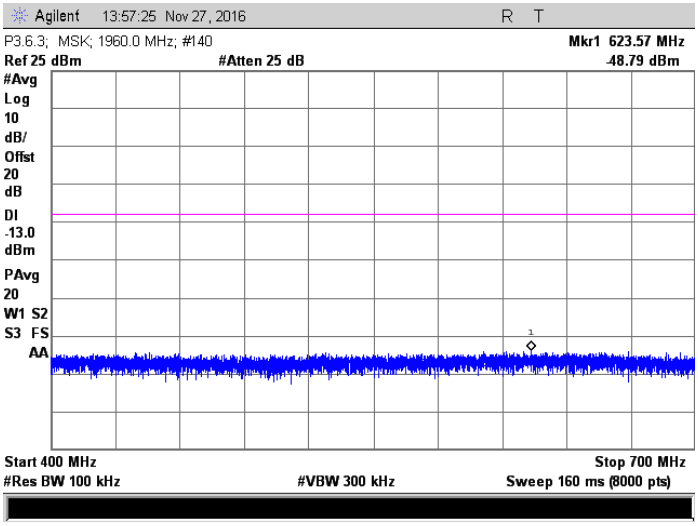
MSK; 1930.2 MHz Injected Signal



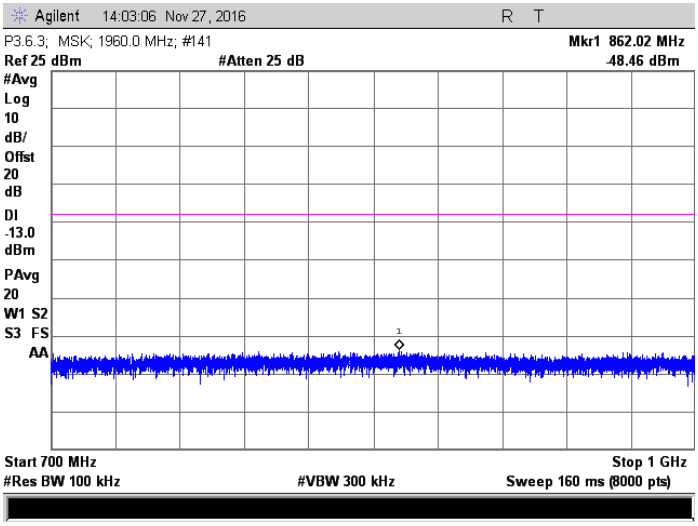
MSK; 1930.2 MHz Injected Signal



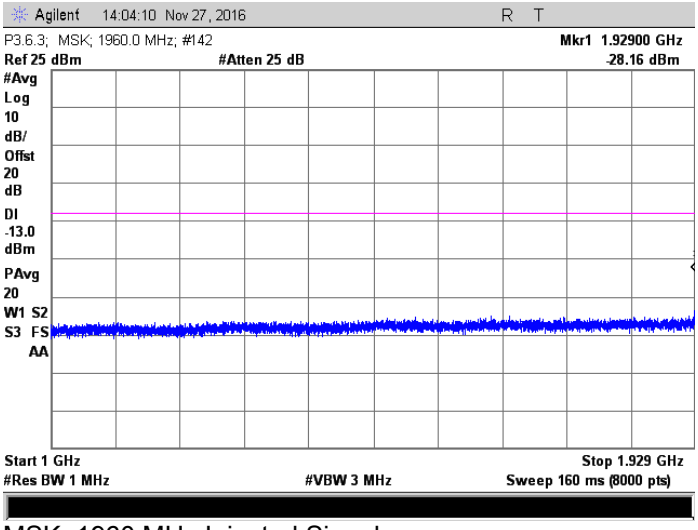
MSK; 1960 MHz Injected Signal



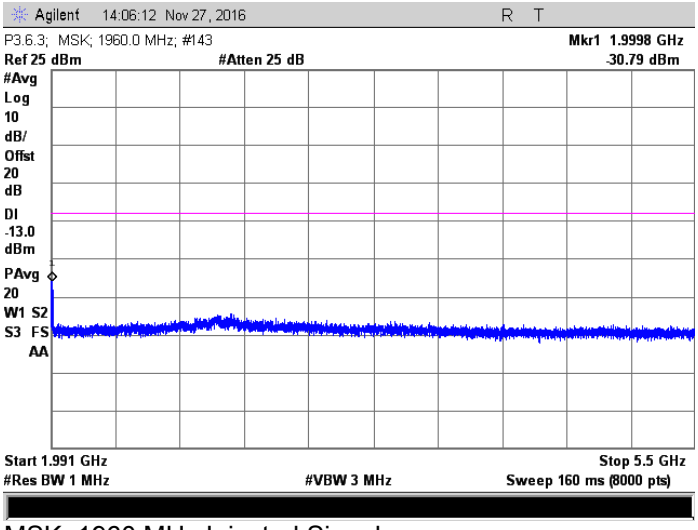
MSK; 1960 MHz Injected Signal



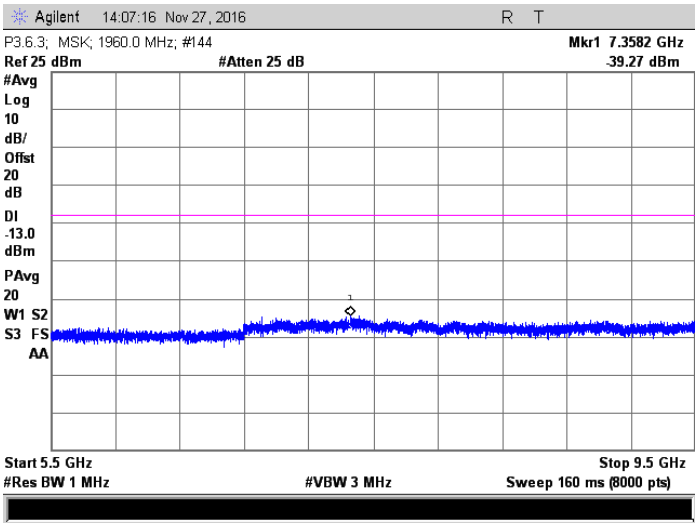
MSK; 1960 MHz Injected Signal



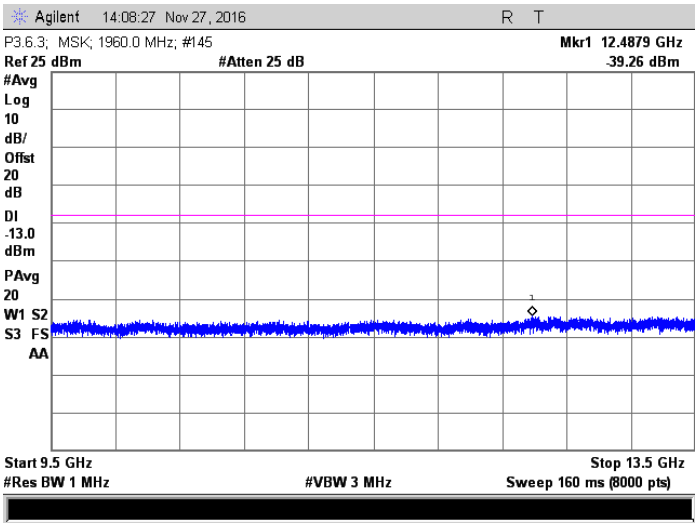
MSK; 1960 MHz Injected Signal



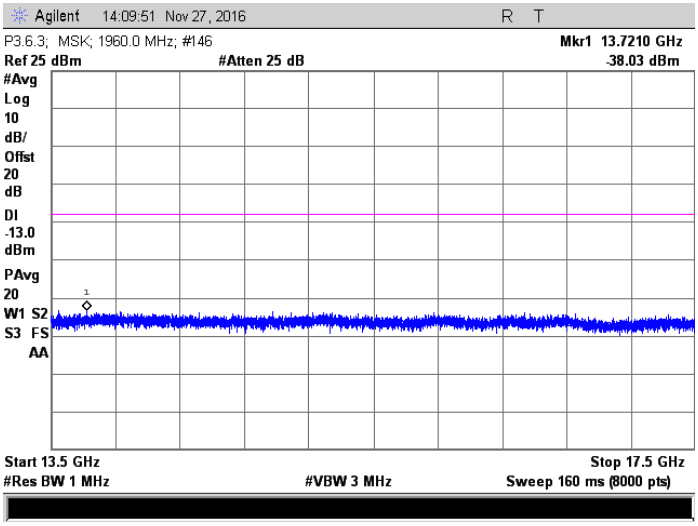
MSK; 1960 MHz Injected Signal



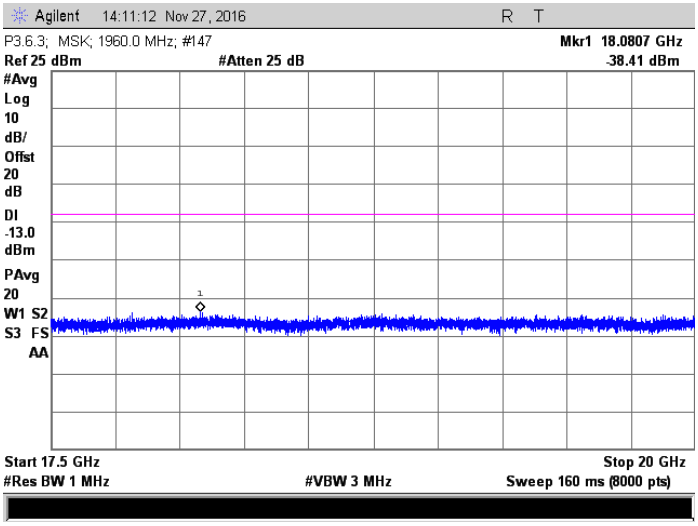
MSK; 1960 MHz Injected Signal



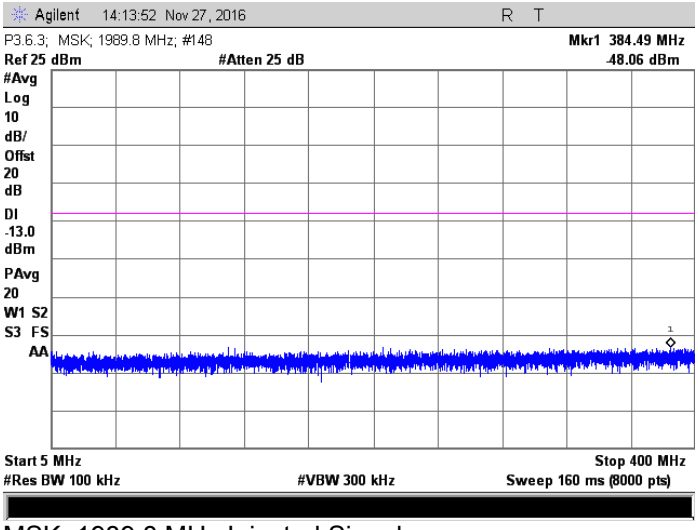
MSK; 1960 MHz Injected Signal



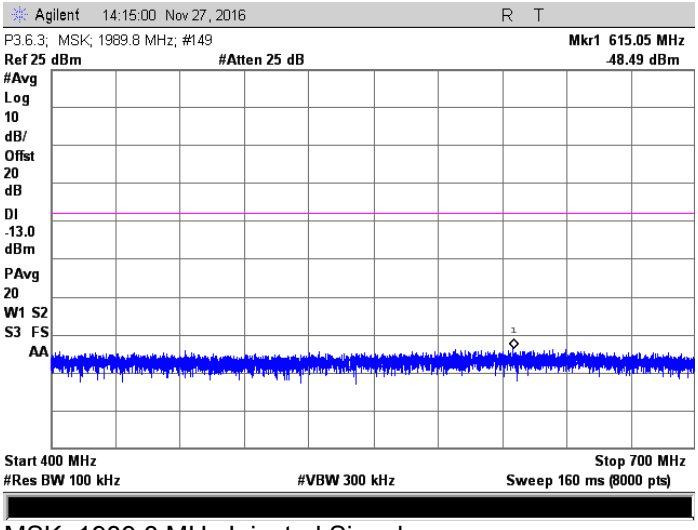
MSK; 1960 MHz Injected Signal



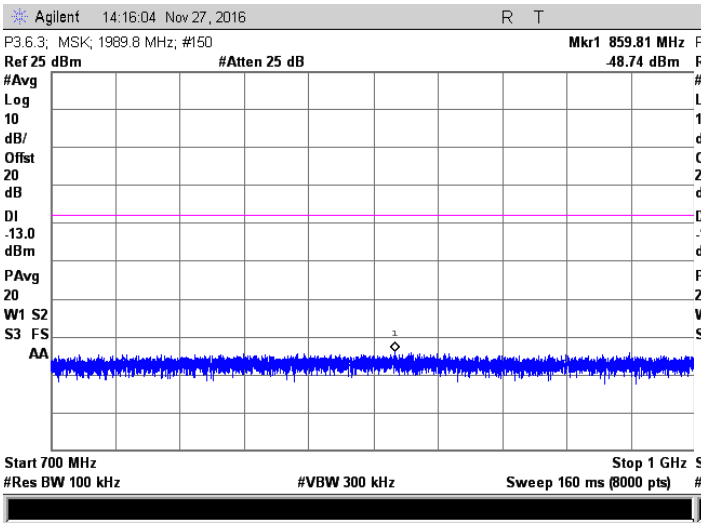
MSK; 1960 MHz Injected Signal



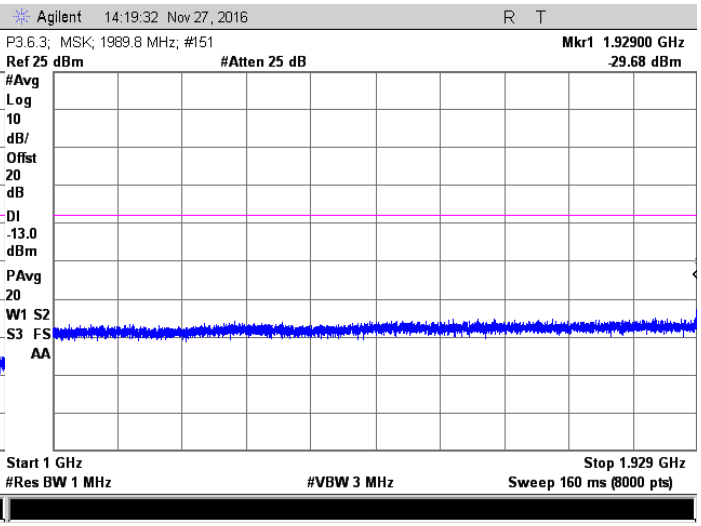
MSK; 1989.8 MHz Injected Signal



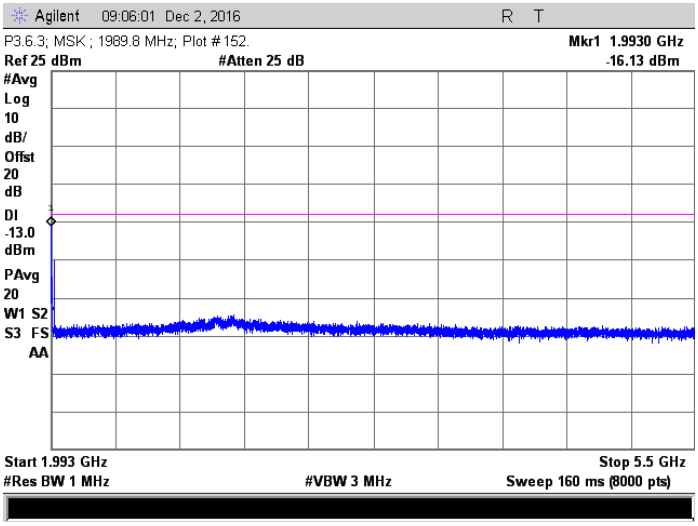
MSK; 1989.8 MHz Injected Signal



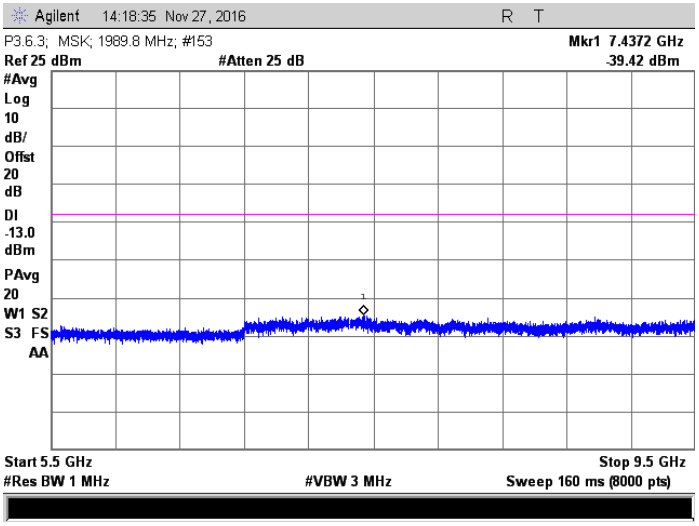
MSK; 1989.8 MHz Injected Signal



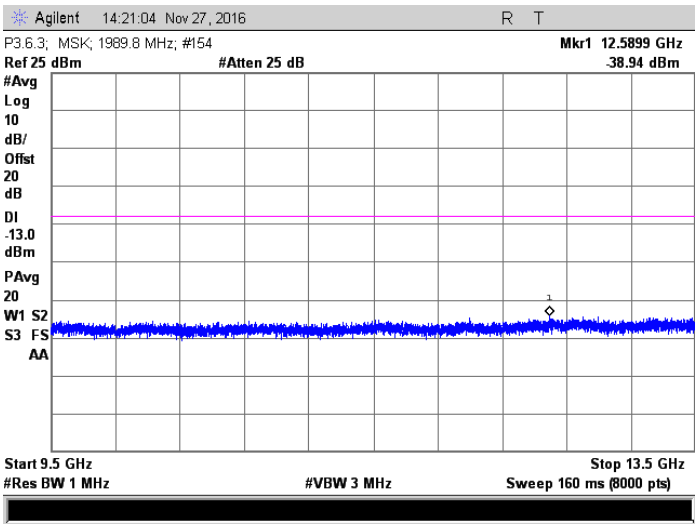
MSK; 1989.8 MHz Injected Signal



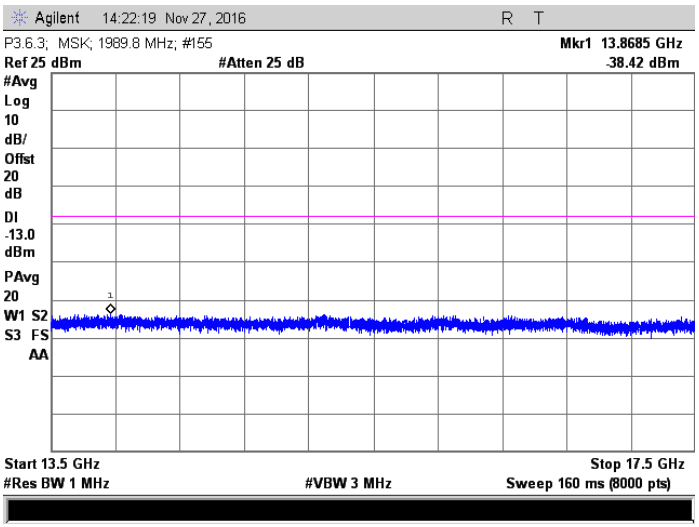
MSK; 1989.8 MHz Injected Signal



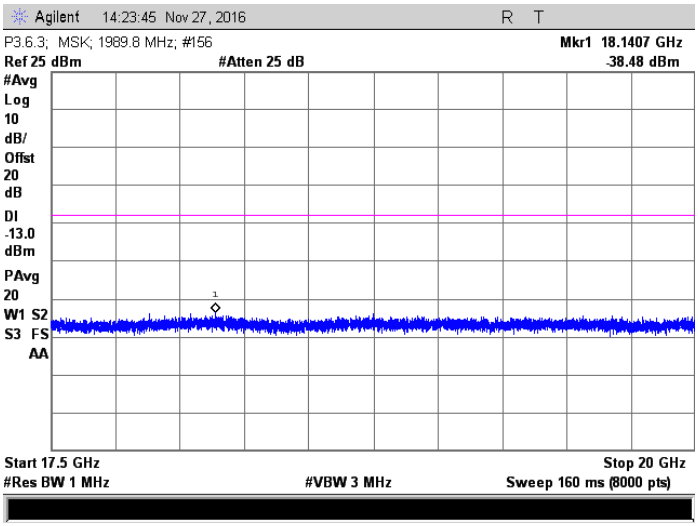
MSK; 1989.8 MHz Injected Signal



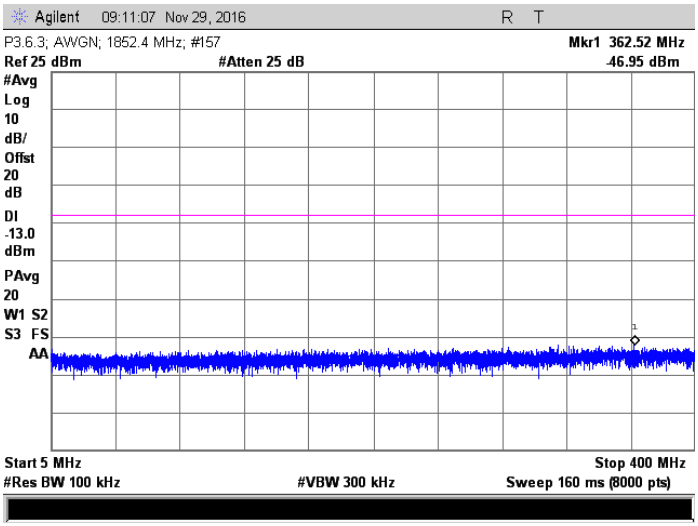
MSK; 1989.8 MHz Injected Signal



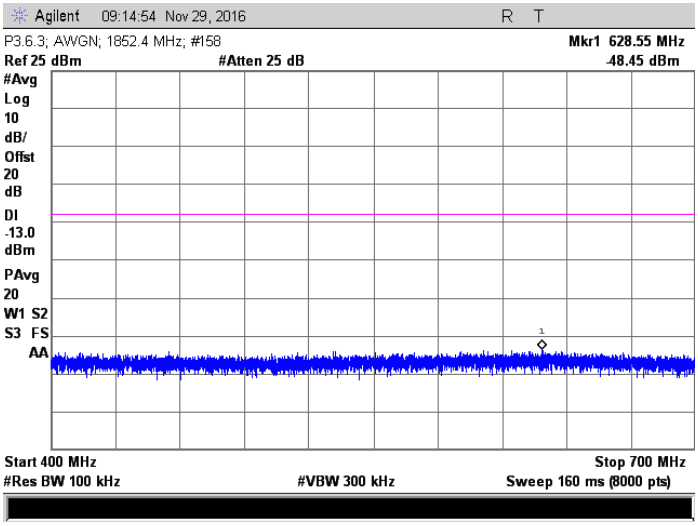
MSK; 1989.8 MHz Injected Signal



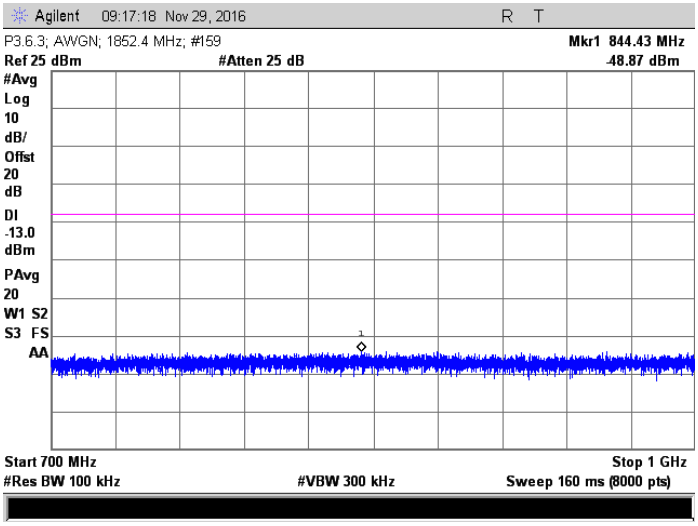
MSK; 1989.8 MHz Injected Signal



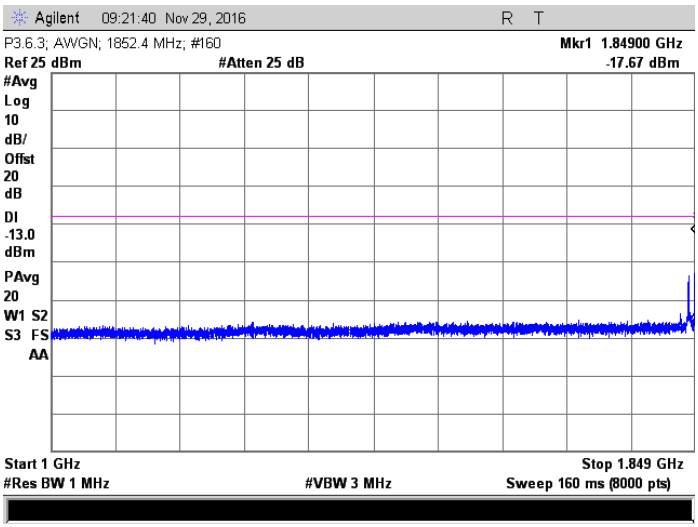
AWGN; 1852.4 MHz Injected Signal



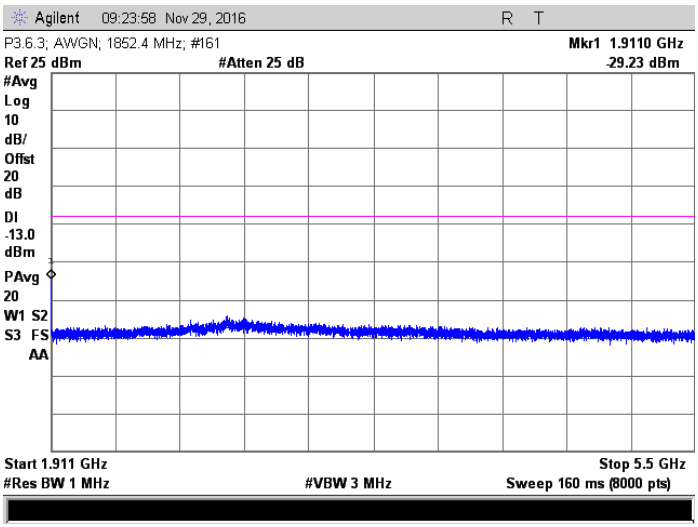
AWGN; 1852.4 MHz Injected Signal



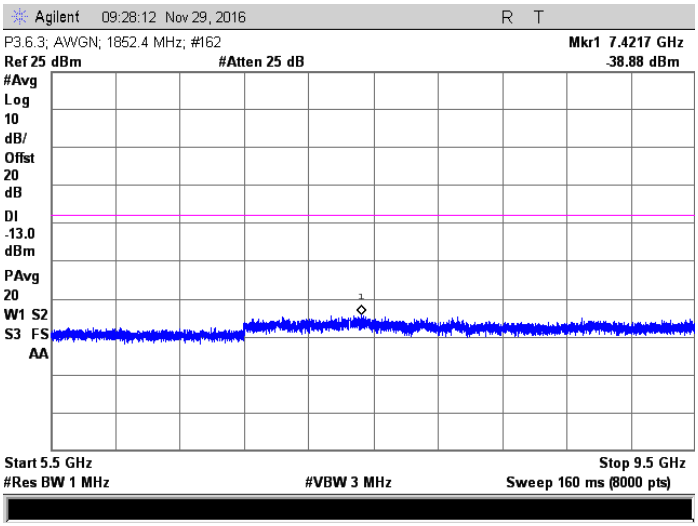
AWGN; 1852.4 MHz Injected Signal



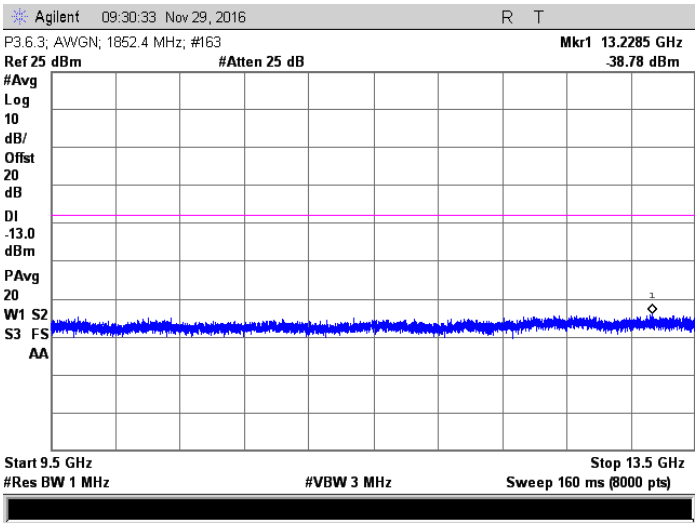
AWGN; 1852.4 MHz Injected Signal



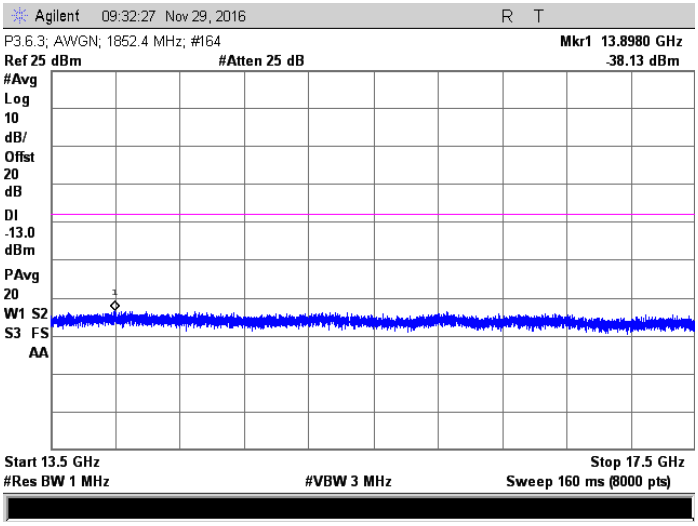
AWGN; 1852.4 MHz Injected Signal



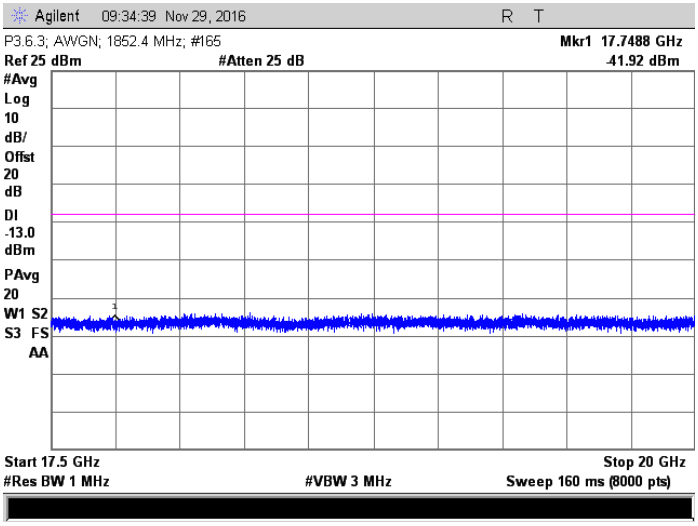
AWGN; 1852.4 MHz Injected Signal



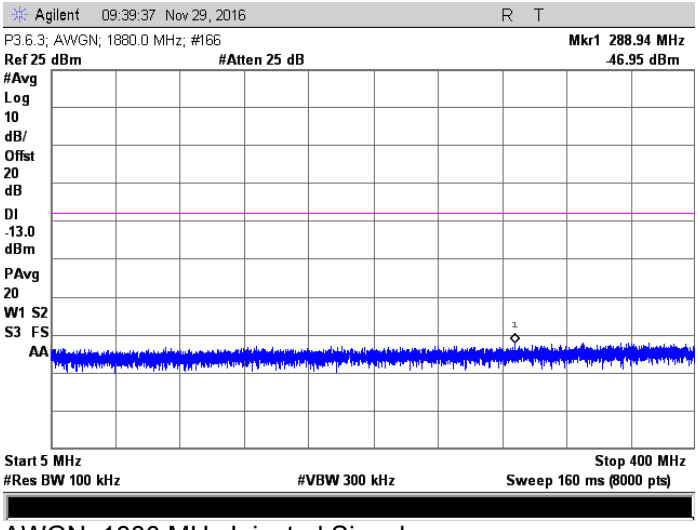
AWGN; 1852.4 MHz Injected Signal



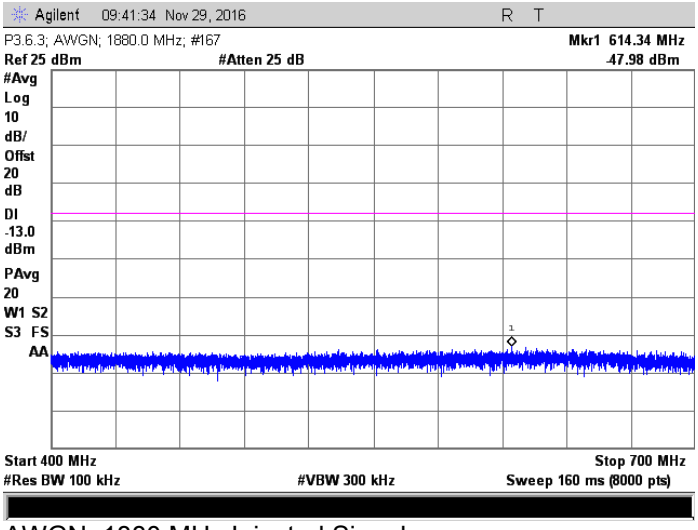
AWGN; 1852.4 MHz Injected Signal



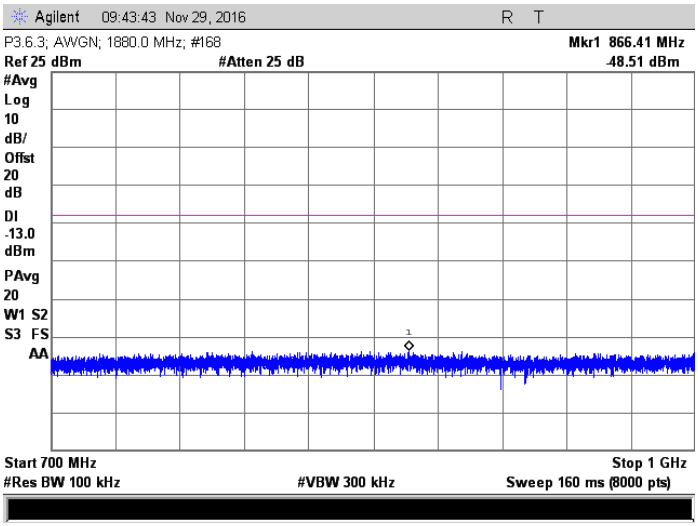
AWGN; 1852.4 MHz Injected Signal



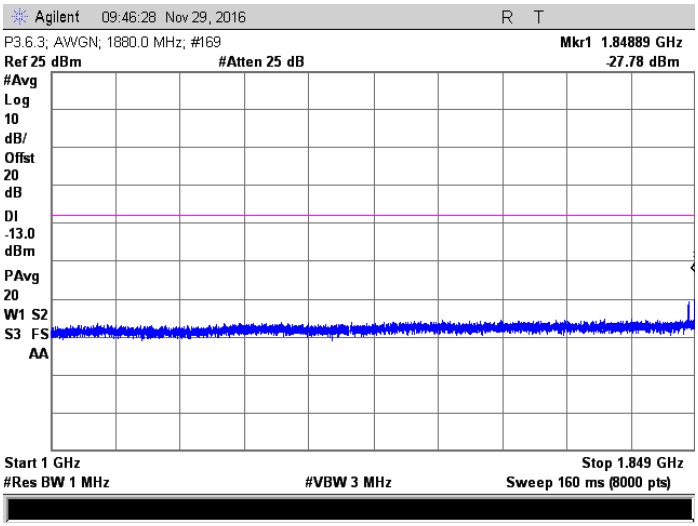
AWGN; 1880 MHz Injected Signal



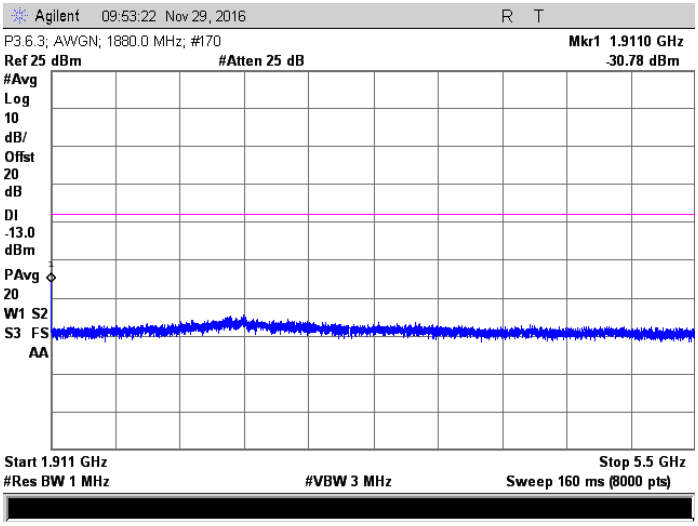
AWGN; 1880 MHz Injected Signal



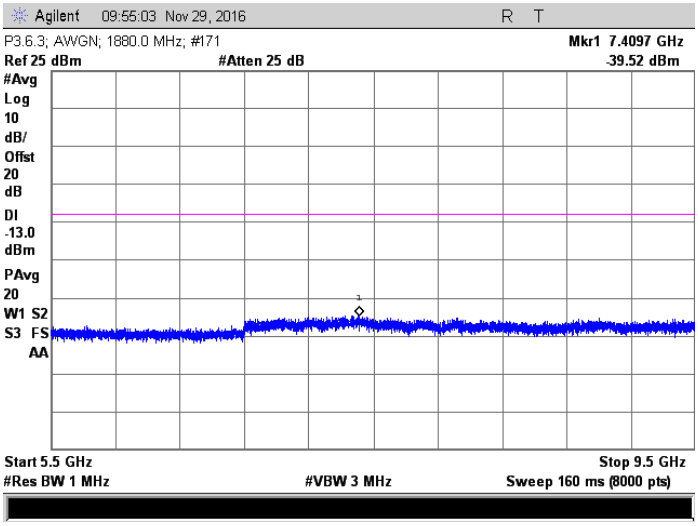
AWGN; 1880 MHz Injected Signal



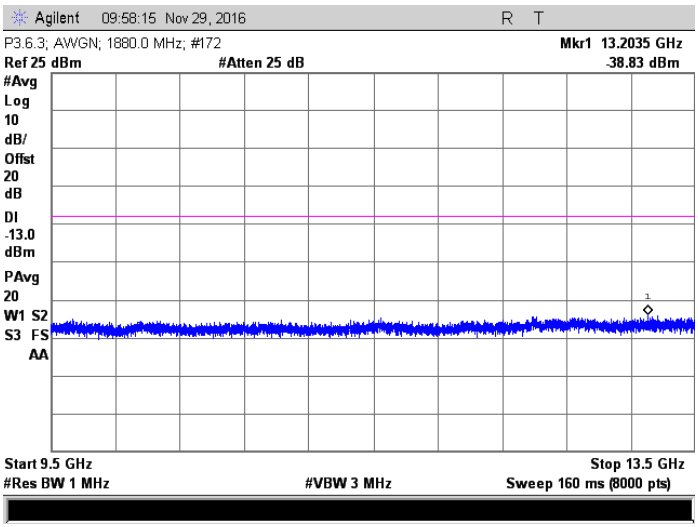
AWGN; 1880 MHz Injected Signal



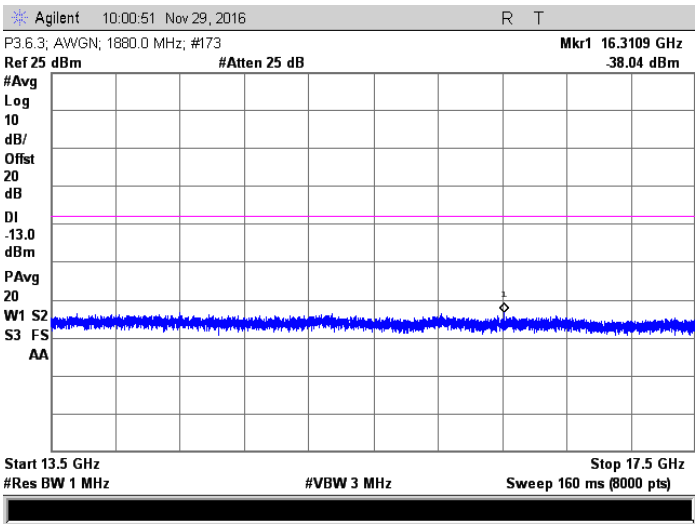
AWGN; 1880 MHz Injected Signal



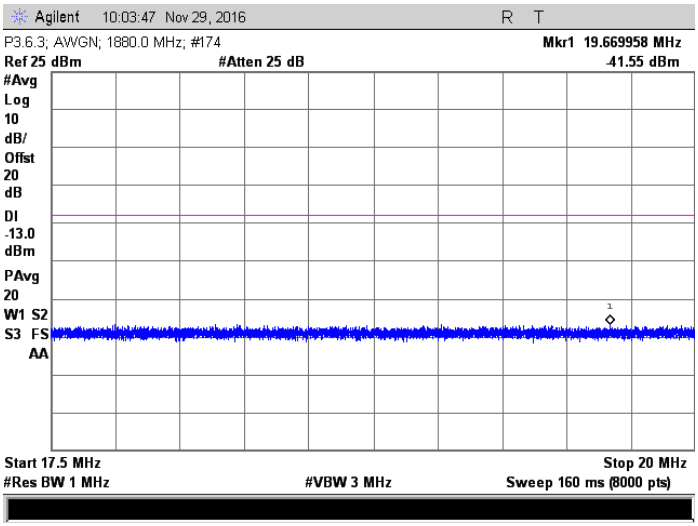
AWGN; 1880 MHz Injected Signal



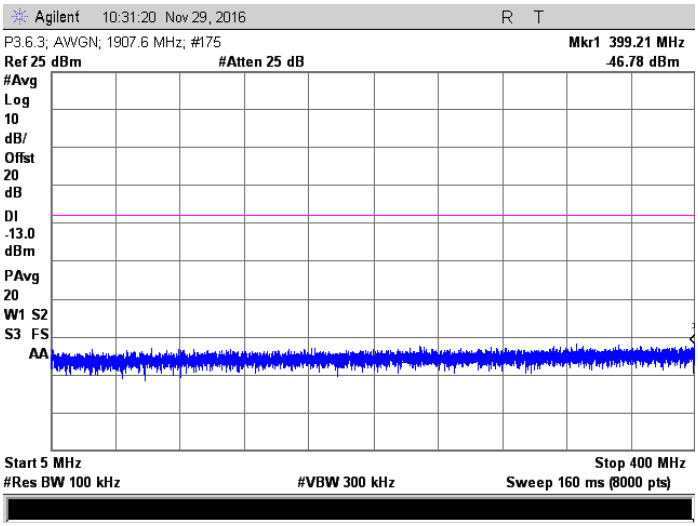
AWGN; 1880 MHz Injected Signal



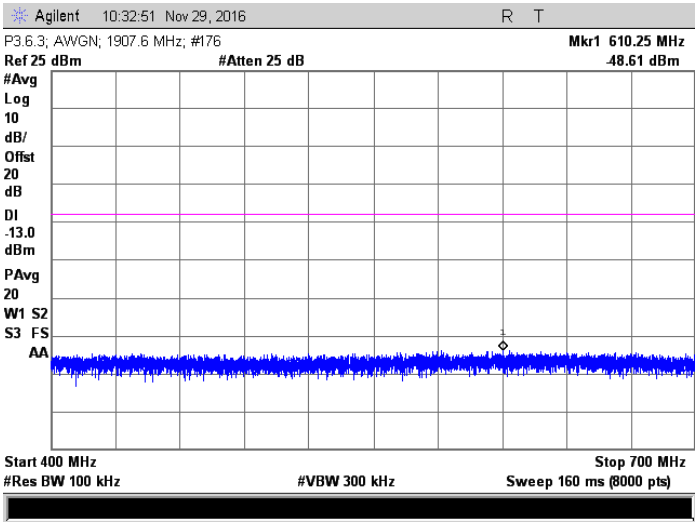
AWGN; 1880 MHz Injected Signal



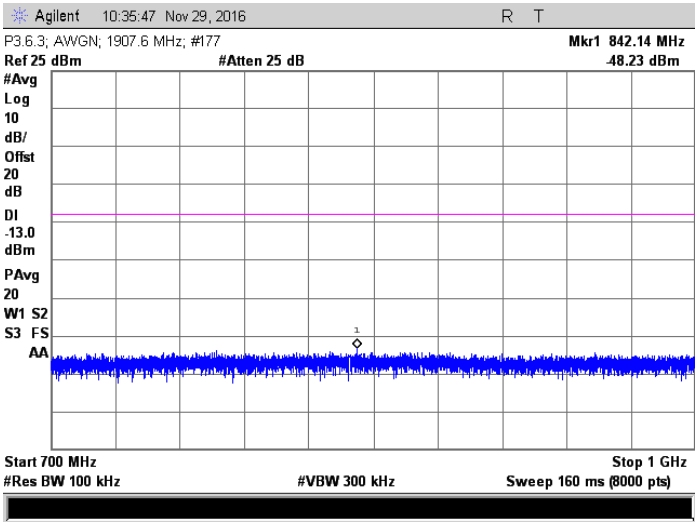
AWGN; 1880 MHz Injected Signal



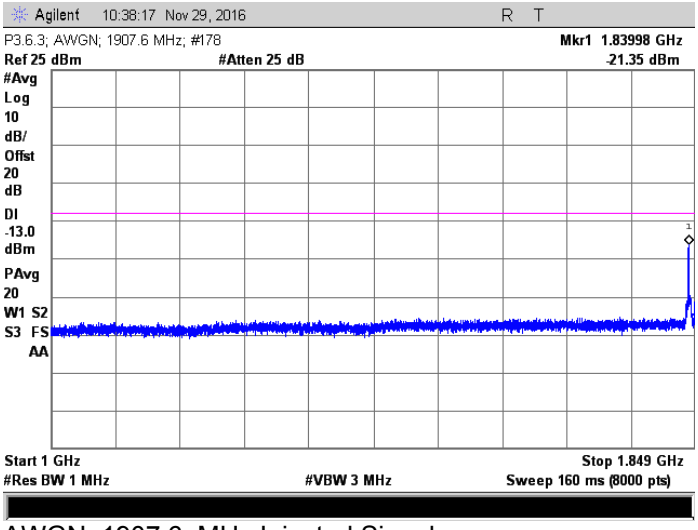
AWGN; 1907.6 MHz Injected Signal



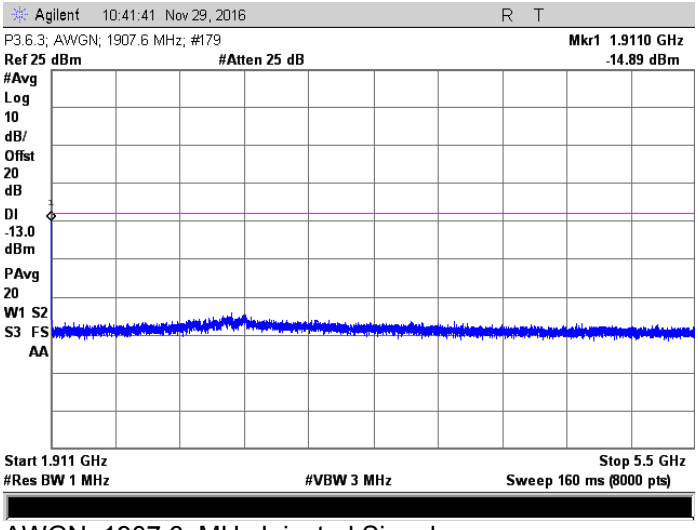
AWGN; 1907.6 MHz Injected Signal



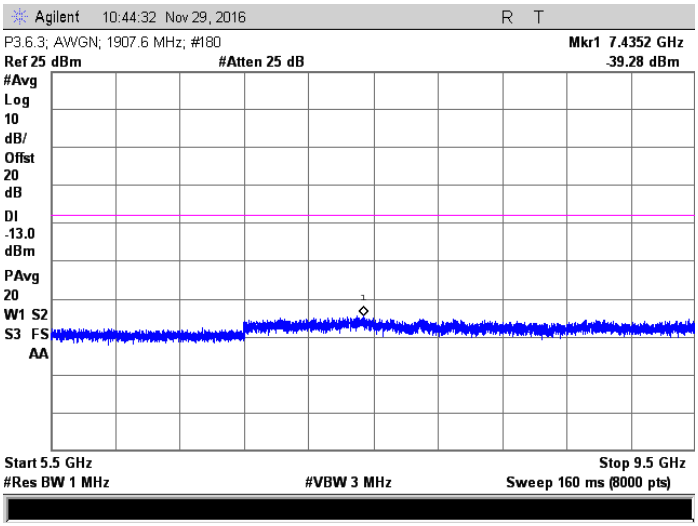
AWGN; 1907.6 MHz Injected Signal



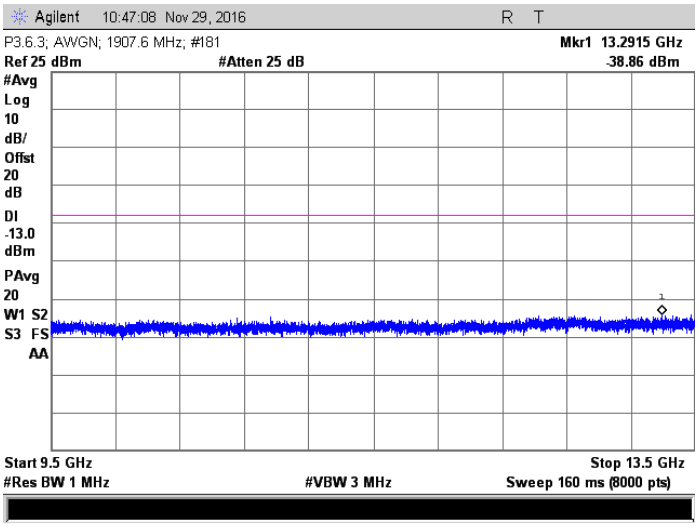
AWGN; 1907.6 MHz Injected Signal



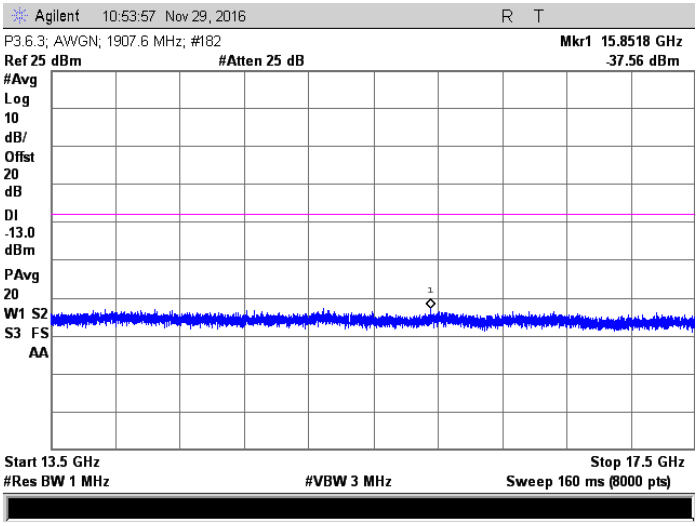
AWGN; 1907.6 MHz Injected Signal



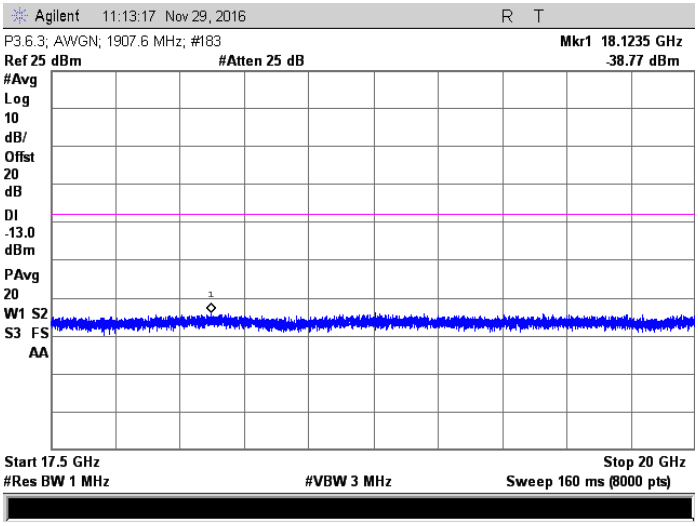
AWGN; 1907.6 MHz Injected Signal



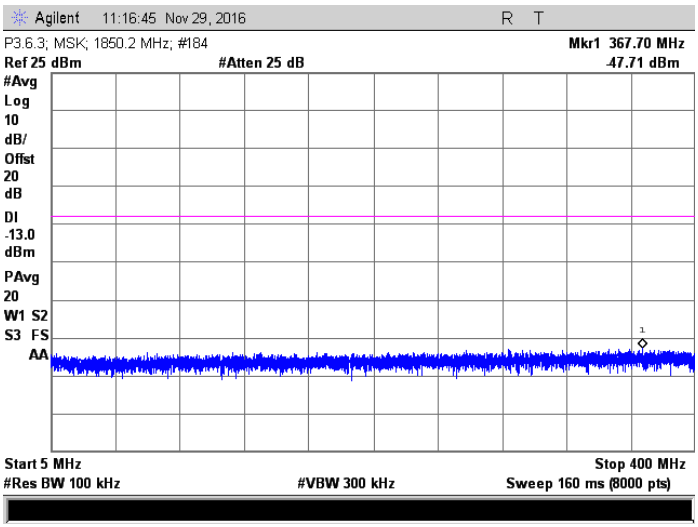
AWGN; 1907.6 MHz Injected Signal



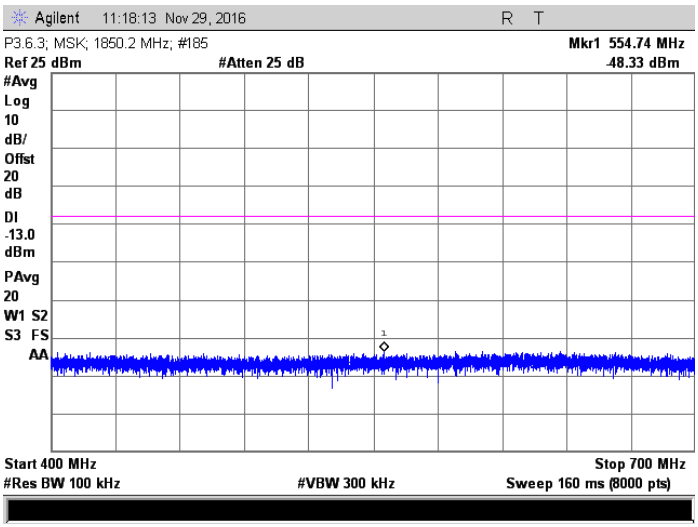
AWGN; 1907.6 MHz Injected Signal



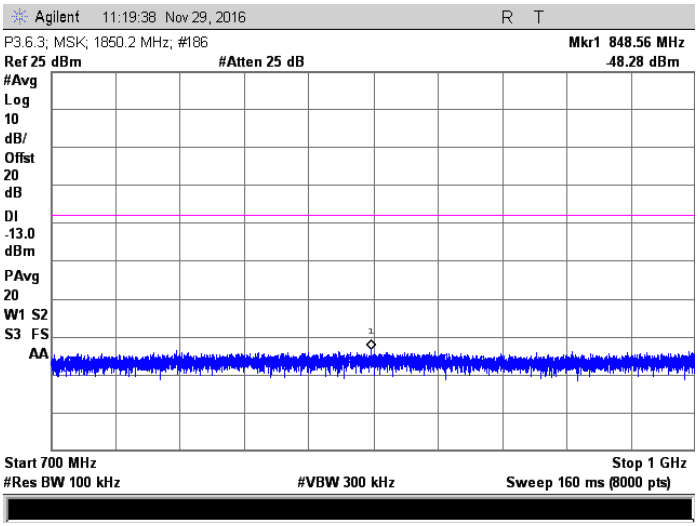
AWGN; 1907.6 MHz Injected Signal



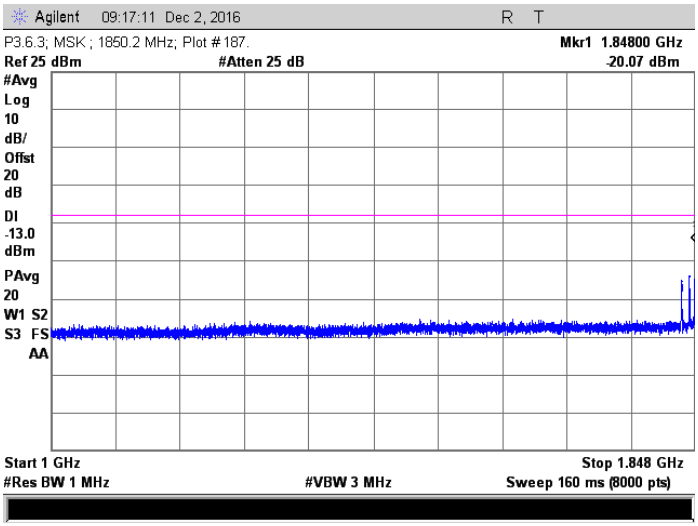
MSK; 1850.2 MHz Injected Signal



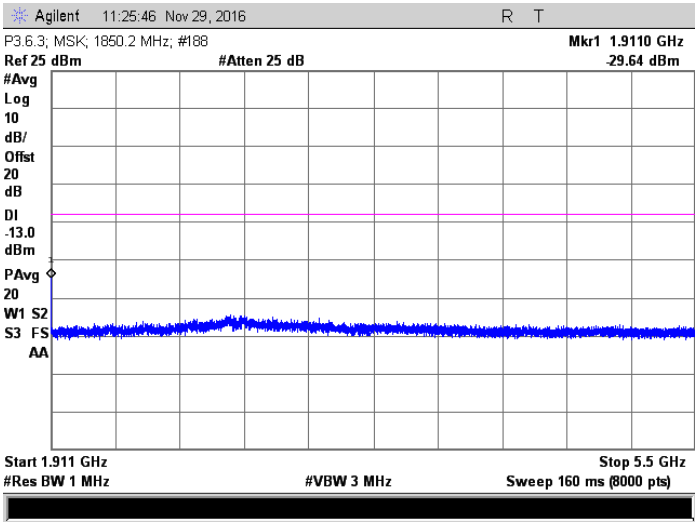
MSK; 1850.2 MHz Injected Signal



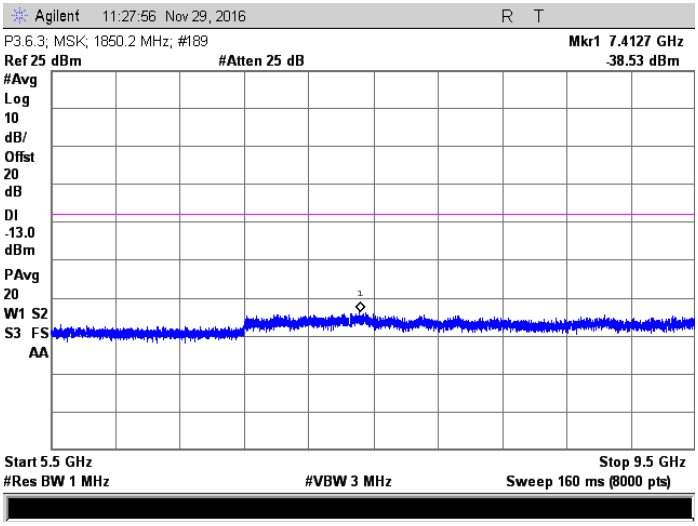
MSK; 1850.2 MHz Injected Signal



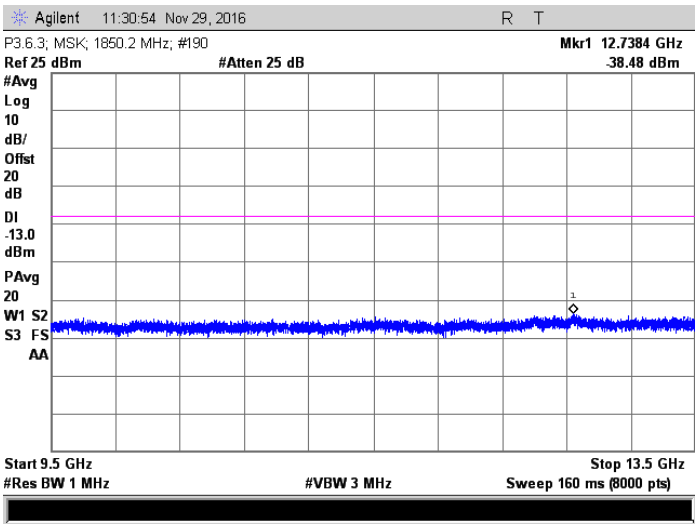
MSK; 1850.2 MHz Injected Signal



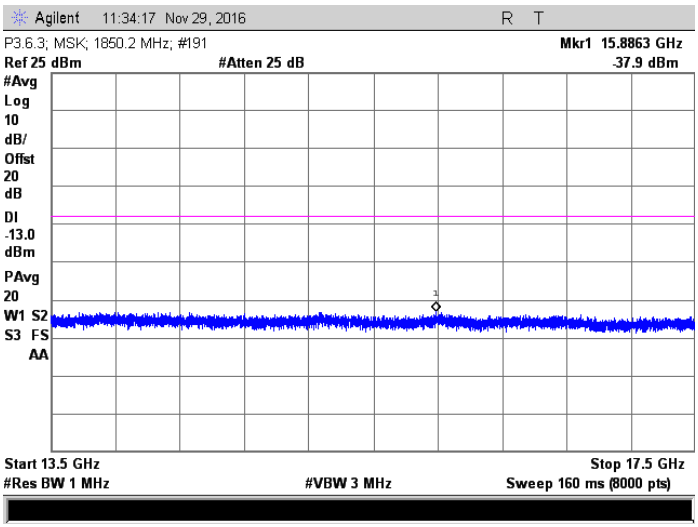
MSK; 1850.2 MHz Injected Signal



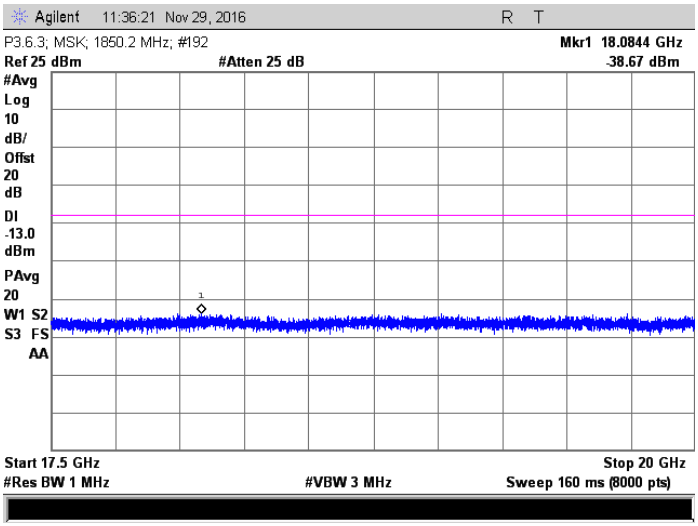
MSK; 1850.2 MHz Injected Signal



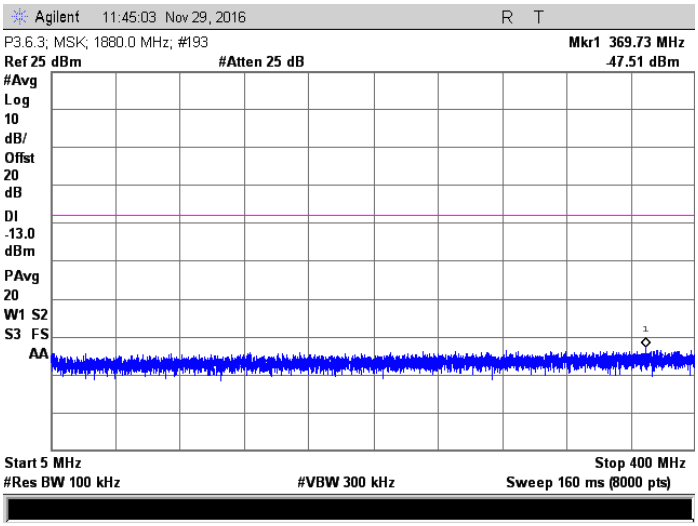
MSK; 1850.2 MHz Injected Signal



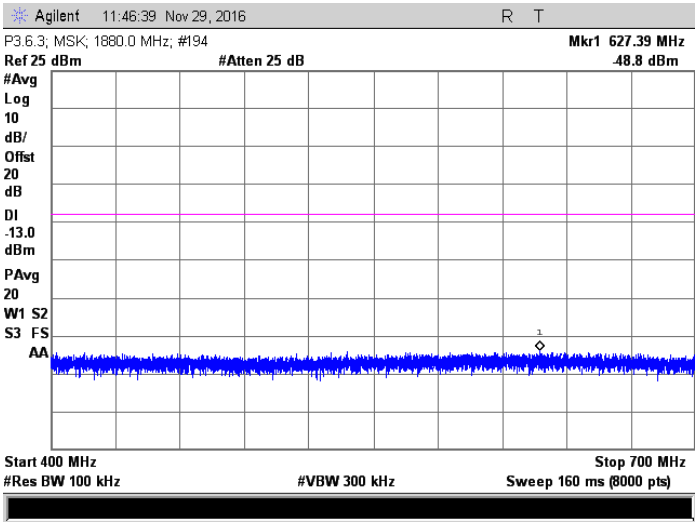
MSK; 1850.2 MHz Injected Signal



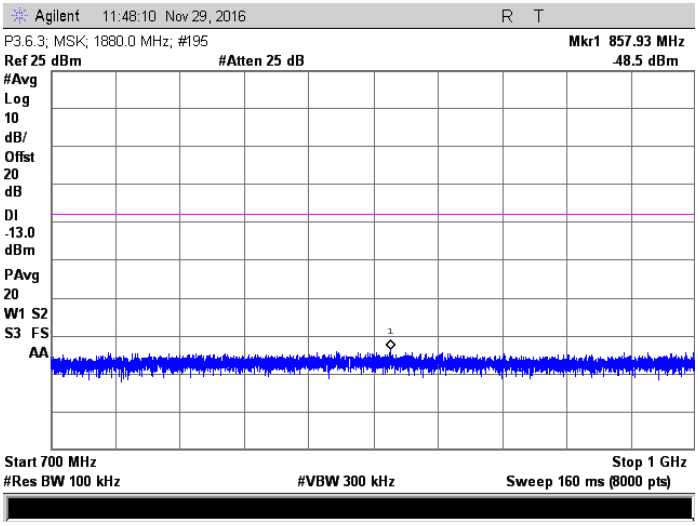
MSK; 1850.2 MHz Injected Signal



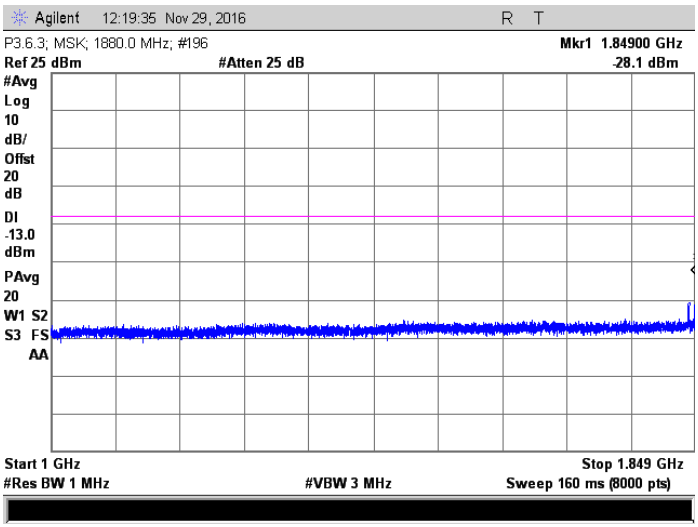
MSK; 1880 MHz Injected Signal



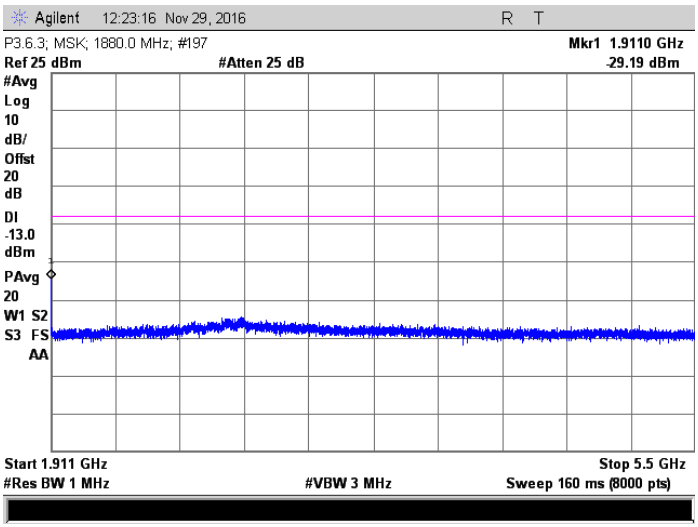
MSK; 1880 MHz Injected Signal



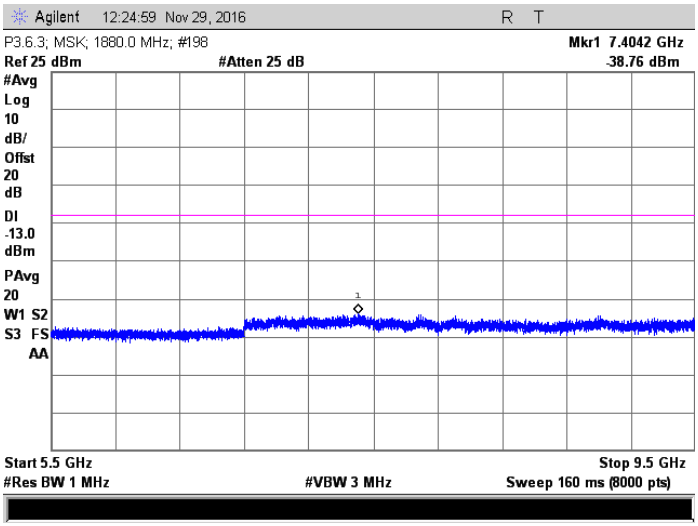
MSK; 1880 MHz Injected Signal



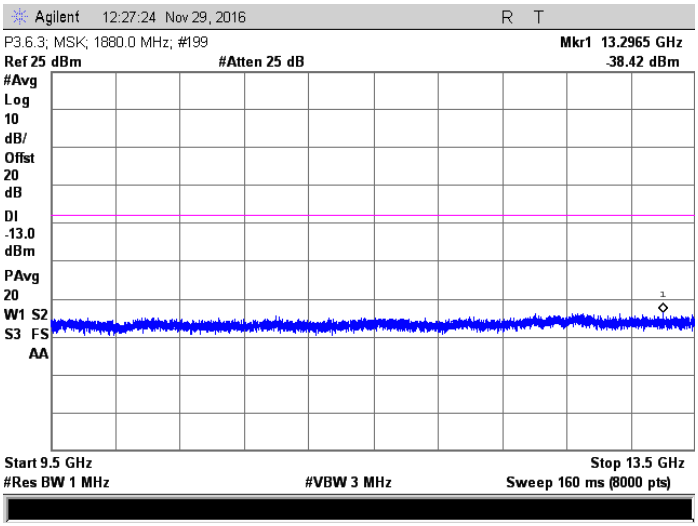
MSK; 1880 MHz Injected Signal



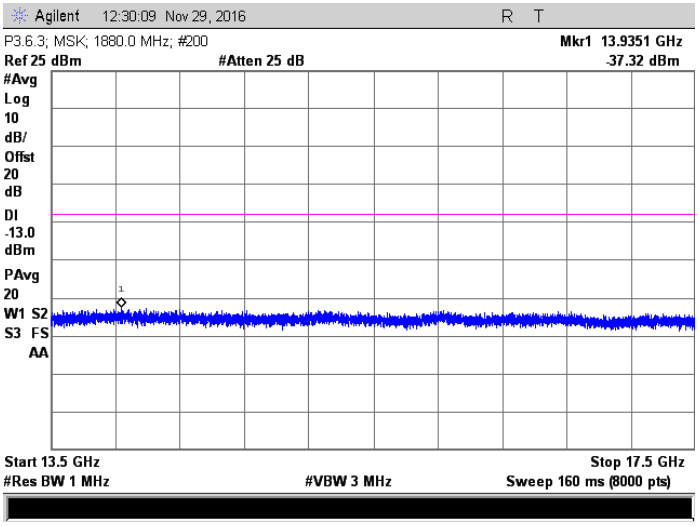
MSK; 1880 MHz Injected Signal



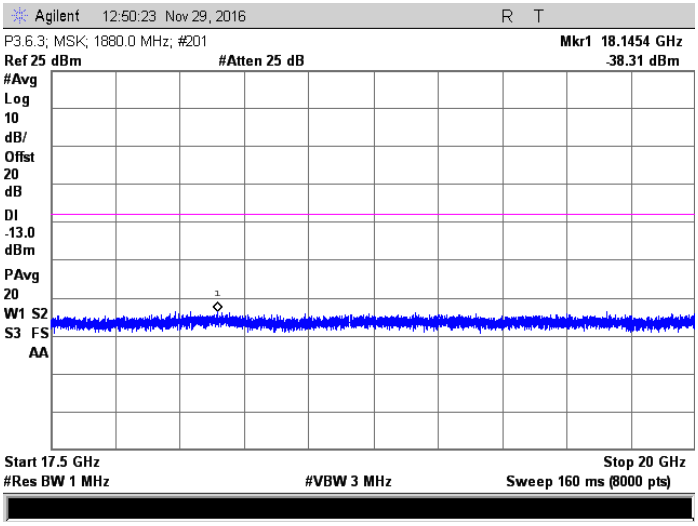
MSK; 1880 MHz Injected Signal



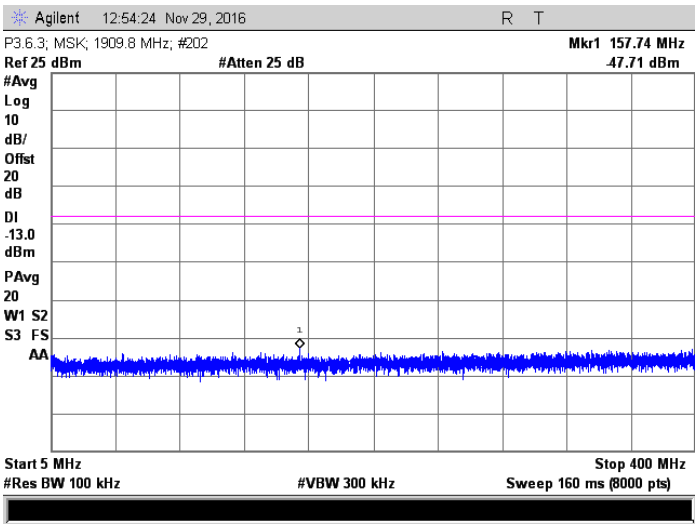
MSK; 1880 MHz Injected Signal



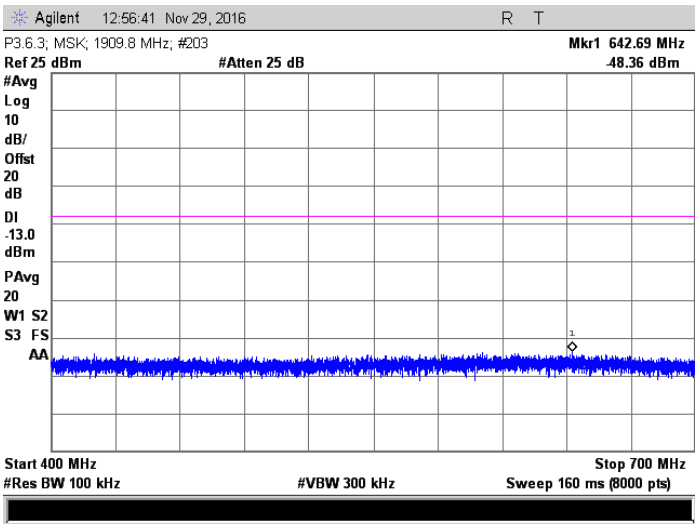
MSK; 1880 MHz Injected Signal



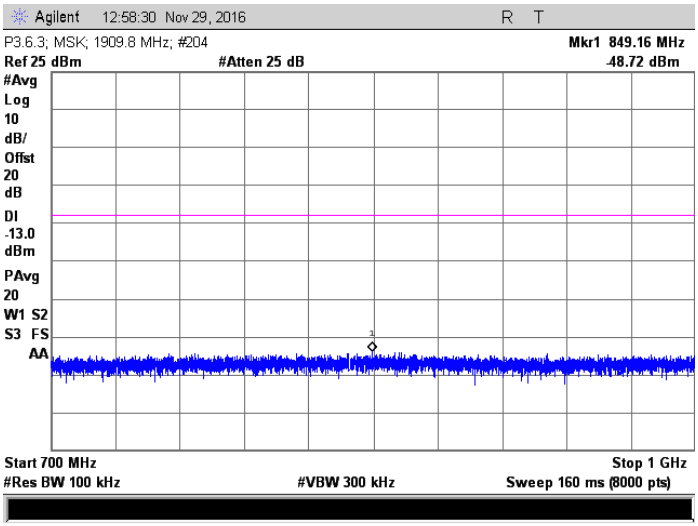
MSK; 1880 MHz Injected Signal



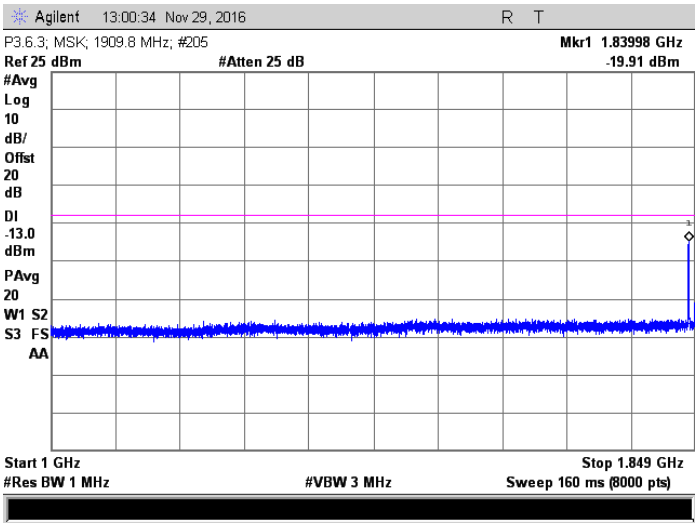
MSK; 1909.8 MHz Injected Signal



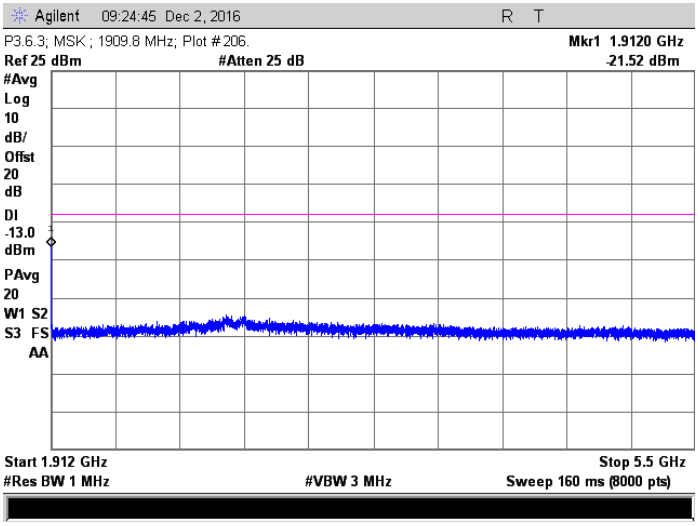
MSK; 1909.8 MHz Injected Signal



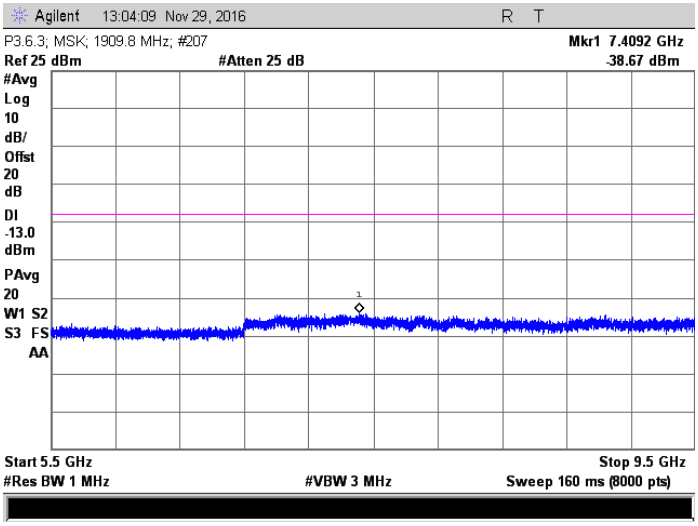
MSK; 1909.8 MHz Injected Signal



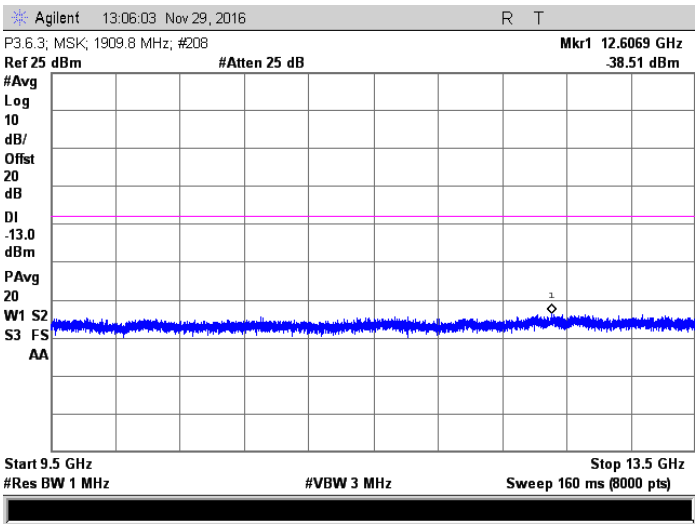
MSK; 1909.8 MHz Injected Signal



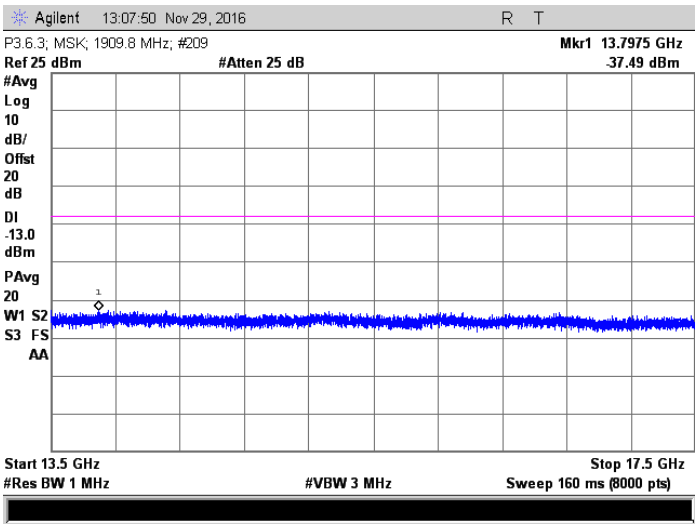
MSK; 1909 MHz Injected Signal



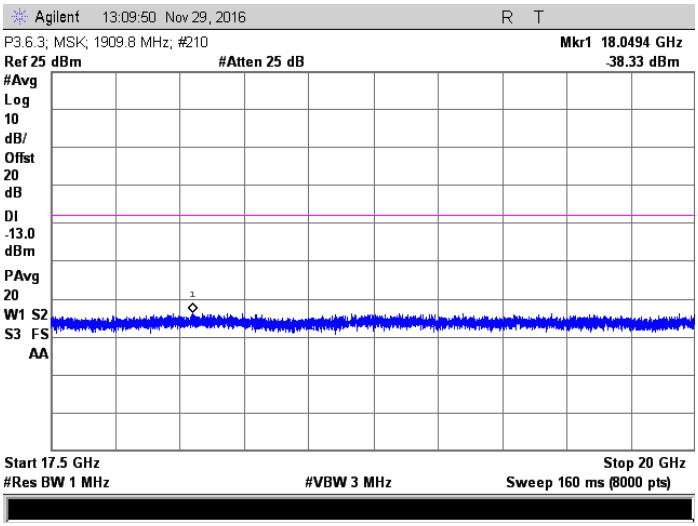
MSK; 1909 MHz Injected Signal



MSK; 1909.8 MHz Injected Signal



MSK; 1909.8 MHz Injected Signal



MSK; 1909.8 MHz Injected Signal

16.0 FIELD STRENGTH OF SPURIOUS RADIATED EMISSIONS

16.1 Applicable Standard

The EUT shall comply with section 3.8 of FCC KDB 935210 D05 and FCC Part 2.1053. This test is intended to capture any emissions that radiate directly from the case, cabinet, control circuits, etc., instead of via the antenna output port, and thus would not be captured in conducted spurious emission measurements.

Spurious emissions of zone enhancers shall be suppressed as much as possible. Any emission must be attenuated below the power (P) of the highest emission contained within the authorized band, by at least: $43+10xLog_{10}P$, or 70 dB, whichever is less stringent, where P is the total RF output power of the test tones in watts. Since $43 +10xLog_{10}P$ is less stringent than 70 dB, that limit was used.

16.2 Test Procedures

Radiated emission measurements in the restricted bands were performed with linearly polarized broadband antennas. The results obtained with these antennas can be correlated with results obtained with a tuned dipole antenna. A 10 dB linearity check is performed prior to start of testing in order to determine if an overload condition exists. Radiated emissions measurements were performed in the anechoic chamber at a test distance of 3 meters. The entire frequency range from 30 to 7500 MHz was slowly scanned and the emissions in the restricted frequency bands were recorded. Measurements were performed using the peak detector function.

The spectrum analyzer was adjusted for the following settings:

1) Resolution Bandwidth = 100 kHz for spurious emissions below 1 GHz, and 1 MHz for spurious emissions above 1GHz.
2) Video Bandwidth = 300 kHz for spurious emissions below 1 GHz, and 3 MHz for spurious emissions above 1 GHz.
3) Sweep Speed slow enough to maintain measurement calibration.
4) Detector Mode = Positive Peak.

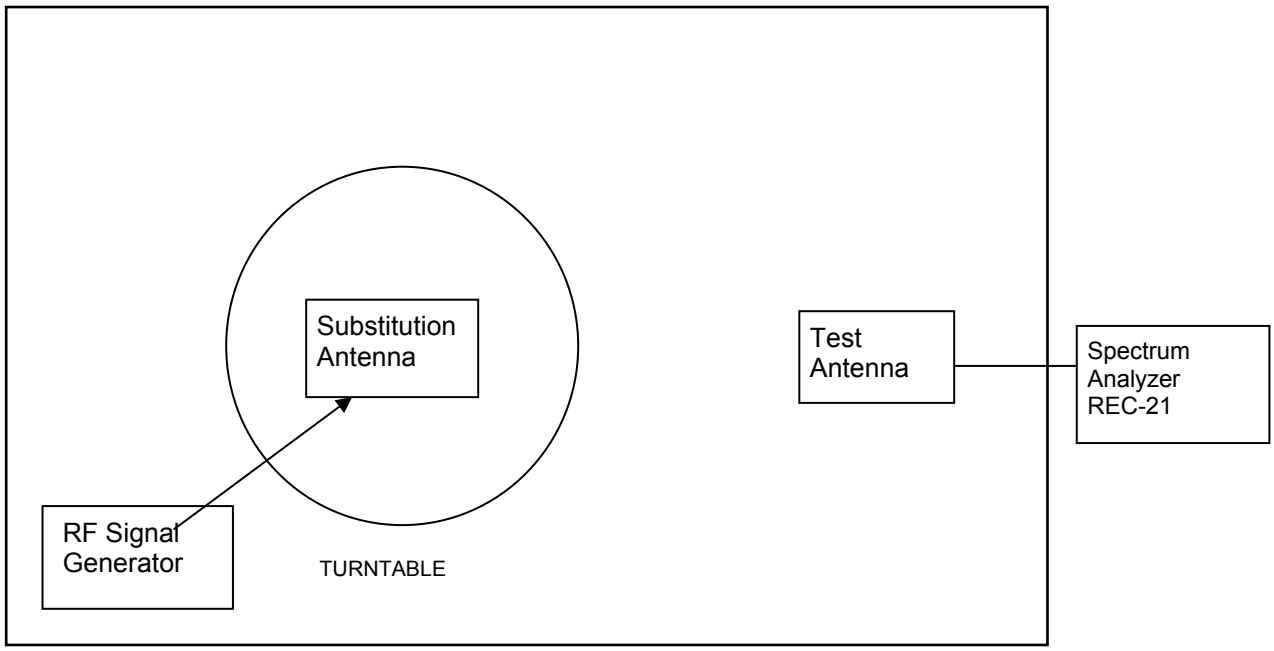
The transmitter to be tested was placed on the turntable in the standard test site, or an FCC listed site compliant with ANSI C63.4. The transmitter is transmitting into a non-radiating load that is placed on the turntable (except for the fundamental reading which had an antenna). Since the transmitter has an integral antenna, the tests are to be run with the unit operating into the integral antenna. Measurements were made

from the lowest radio frequency generated in the equipment to the tenth harmonic of the carrier. The transmitter was keyed during the tests.

For each spurious frequency, the test antenna was raised and lowered from 1 m to 4m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Then the turntable was rotated 360°to determine the maximum reading. This procedure was repeated to obtain the highest possible reading. This maximum reading was recorded.

Each measurement was repeated for each spurious frequency with the test antenna polarized vertically.

Figure 1. Drawing of Radiated Emissions Setup



ANSI C63.4 Listed Test Site

Notes:
- Test Antenna height varied from 1 to 4 meters
- Distance from antenna to tested system is 3 meters
- Not to Scale

Frequency MHz	Test Antenna	Substitution Antenna	Receiver	Signal Generator
30 - 200	ANT-03	ANT-04	REC-21	SIG-28
200 - 1000	ANT-06	ANT-07	REC-21	SIG-28
1000-18,000	ANT-13	ANT-36	REC-21	SIG-28
18,000-23,000	ANT-48	N/A	REC-21	SIG-28

There were no detected signals above 18 GHz, so no substitution antenna was used above 18 GHz.

The transmitter was removed and replaced with a broadband substitution antenna. The substitution antenna is calibrated so that the gain relative to a dipole is known. The center of the substitution antenna was approximately at the same location as the center of the transmitter.

The substitution antenna was fed at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized, and with the signal generator tuned to a particular spurious frequency, the test antenna was raised and lowered to obtain a maximum reading at the spectrum analyzer. The level of the signal generator output was adjusted until the previously recorded maximum reading for this set of conditions was obtained. The measurements were repeated with both antennas horizontally and vertically polarized for each spurious frequency.

The power in dBm into a reference ideal half-wave dipole antenna was calculated by reducing the readings obtained in steps k) and l) by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula:
Pd(dBm) = *Pg*(dBm) – *cable loss* (dB) + *antenna gain* (dB)

where:
Pd is the dipole equivalent power and
Pg is the generator output power into the substitution antenna.
The *Pd* levels record in step m) are the absolute levels of radiated spurious emissions in dBm.

Since by mathematical definition, P(dBm) – (43+10xLOG P(W)) = -13 dBm, the limit for spurious emissions was set to -13 dBm equivalent radiated power.

16.2.1 Spurious Radiated Emissions Test Results

Model	DSP95-PAW	Specification	FCC KDB 935210
Serial Number	CNH60713	Test Date	09/29/2016 & 10/3/16
Test Distance	3 Meters	Notes	Transmit Mode

Note	Transmit at 1710-1755 MHz

Freq. MHz	Dect.	Ant. Pol.	EUT dBm	Limit dBm	Margin Under Limit dB
118.6	P	H	-30.1	-13.0	17.1
136.7	P	H	-32.9	-13.0	19.9
216.4	P	H	-30.0	-13.0	17.0
224.1	P	H	-29.3	-13.0	16.3
246.1	P	H	-35.3	-13.0	22.3
278.8	P	H	-36.0	-13.0	23.0
801.3	P	H	-35.2	-13.0	22.2
1200.0	P	H	-37.2	-13.0	24.2
1400.0	P	H	-37.6	-13.0	24.6
2200.0	P	H	-36.0	-13.0	23.0
2400.0	P	H	-36.6	-13.0	23.6
3465.0	P	H	-35.5	-13.0	22.5
42.7	P	V	-29.3	-13.0	16.3
55.3	P	V	-38.2	-13.0	25.2
115.3	P	V	-29.7	-13.0	16.7
116.3	P	V	-30.1	-13.0	17.1
220.9	P	V	-35.1	-13.0	22.1

Freq. MHz	Dect.	Ant. Pol.	EUT dBm	Limit dBm	Margin Under Limit dB
226.4	P	V	-37.0	-13.0	24.0
801.3	P	V	-37.1	-13.0	24.1
1200.0	P	V	-36.7	-13.0	23.7
1400.0	P	V	-37.7	-13.0	24.7
1732.5	P	V	-29.9	-13.0	16.9
2200.0	P	V	-37.7	-13.0	24.7

Note	Transmit at 1850-1910 MHz

Freq. MHz	Dect.	Ant. Pol.	EUT dBm	Limit dBm	Margin Under Limit dB
116.9	P	H	-31.6	-13.0	18.6
119.1	P	H	-28.5	-13.0	15.5
133.9	P	H	-33.4	-13.0	20.4
216.4	P	H	-29.7	-13.0	16.7
224.7	P	H	-30.8	-13.0	17.8
243.9	P	H	-34.0	-13.0	21.0
253.1	P	H	-38.7	-13.0	25.7
278.8	P	H	-37.0	-13.0	24.0
801.3	P	H	-34.1	-13.0	21.1
1400.0	P	H	-37.8	-13.0	24.8
2200.0	P	H	-35.6	-13.0	22.6
2400.0	P	H	-36.6	-13.0	23.6
2600.0	P	H	-37.2	-13.0	24.2
2800.0	P	H	-38.2	-13.0	25.2
42.7	P	V	-29.5	-13.0	16.5
54.2	P	V	-38.6	-13.0	25.6
114.7	P	V	-31.2	-13.0	18.2
116.3	P	V	-31.2	-13.0	18.2
219.8	P	V	-37.8	-13.0	24.8
220.9	P	V	-37.3	-13.0	24.3
277.5	P	V	-38.0	-13.0	25.0
278.1	P	V	-37.9	-13.0	24.9
801.3	P	V	-37.5	-13.0	24.5
1200.0	P	V	-37.6	-13.0	24.6
1400.0	P	V	-37.6	-13.0	24.6

Note	Transmit at 1930-1990 MHz

Freq. MHz	Dect.	Ant. Pol.	EUT dBm	Limit dBm	Margin Under Limit dB
119.1	P	H	-28.4	-13.0	15.4
121.3	P	H	-28.9	-13.0	15.9
135.1	P	H	-30.8	-13.0	17.8
224.7	P	H	-28.4	-13.0	15.4
225.8	P	H	-29.0	-13.0	16.0
250.0	P	H	-34.0	-13.0	21.0
252.5	P	H	-37.5	-13.0	24.5

Freq. MHz	Dect.	Ant. Pol.	EUT dBm	Limit dBm	Margin Under Limit dB
279.4	P	H	-34.7	-13.0	21.7
801.3	P	H	-35.9	-13.0	22.9
1400.0	P	H	-36.1	-13.0	23.1
1960.0	P	H	-27.9	-13.0	14.9
2200.0	P	H	-35.3	-13.0	22.3
2400.0	P	H	-37.1	-13.0	24.1
2600.0	P	H	-36.3	-13.0	23.3
2800.0	P	H	-38.0	-13.0	25.0
3920.0	P	H	-27.2	-13.0	14.2
42.1	P	V	-28.3	-13.0	15.3
120.2	P	V	-29.2	-13.0	16.2
220.3	P	V	-36.2	-13.0	23.2
227.4	P	V	-36.3	-13.0	23.3
278.1	P	V	-37.7	-13.0	24.7
400.0	P	V	-37.8	-13.0	24.8
801.3	P	V	-37.0	-13.0	24.0
1400.0	P	V	-34.9	-13.0	21.9
2400.0	P	V	-37.6	-13.0	24.6
3920.0	P	V	-28.9	-13.0	15.9

Note	Transmit at 2110-2155 MHz

Freq. MHz	Dect.	Ant. Pol.	EUT dBm	Limit dBm	Margin Under Limit dB
119.7	P	H	-29.3	-13.0	16.3
120.8	P	H	-28.5	-13.0	15.5
224.1	P	H	-28.0	-13.0	15.0
250.0	P	H	-34.5	-13.0	21.5
276.9	P	H	-34.8	-13.0	21.8
278.8	P	H	-35.1	-13.0	22.1
400.0	P	H	-38.4	-13.0	25.4
801.3	P	H	-34.9	-13.0	21.9
1000.0	P	H	-37.1	-13.0	24.1
1200.0	P	H	-37.6	-13.0	24.6
1400.0	P	H	-36.7	-13.0	23.7
1800.0	P	H	-37.7	-13.0	24.7
2200.0	P	H	-34.9	-13.0	21.9
2400.0	P	H	-37.7	-13.0	24.7
2600.0	P	H	-36.9	-13.0	23.9
4265.0	P	H	-32.6	-13.0	19.6
6400.0	P	H	-27.8	-13.0	14.8
30.0	P	V	-38.5	-13.0	25.5
42.1	P	V	-28.2	-13.0	15.2
116.9	P	V	-31.9	-13.0	18.9
118.0	P	V	-29.2	-13.0	16.2
199.9	P	V	-39.3	-13.0	26.3
223.1	P	V	-34.8	-13.0	21.8
276.3	P	V	-37.8	-13.0	24.8

Freq. MHz	Dect.	Ant. Pol.	EUT dBm	Limit dBm	Margin Under Limit dB
278.1	P	V	-37.7	-13.0	24.7
801.3	P	V	-34.7	-13.0	21.7
1400.0	P	V	-34.5	-13.0	21.5
2200.0	P	V	-37.0	-13.0	24.0
2400.0	P	V	-37.0	-13.0	24.0
4265.0	P	V	-36.5	-13.0	23.5
6397.5	P	V	-36.0	-13.0	23.0

Judgment: Passed by 14.8 dB.

17.0 MEASUREMENT INSTRUMENTATION UNCERTAINTY

Measurement	Uncertainty
Radiated Emissions, E-field, 3 meters, 30 to 200 MHz	3.3 dB
Radiated Emissions, E-field, 3 meters, 200 to 1000 MHz	4.9 dB
Radiated Emissions, E-field, 3 meters, 1 to 18 GHz	4.8 dB
Bandwidth using marker delta method	1% of frequency span
Conducted power	0.8 dB
Amplitude measurement 1-8000 MHz;	1.5 dB

The uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2 in accordance with CISPR 16-4-2.