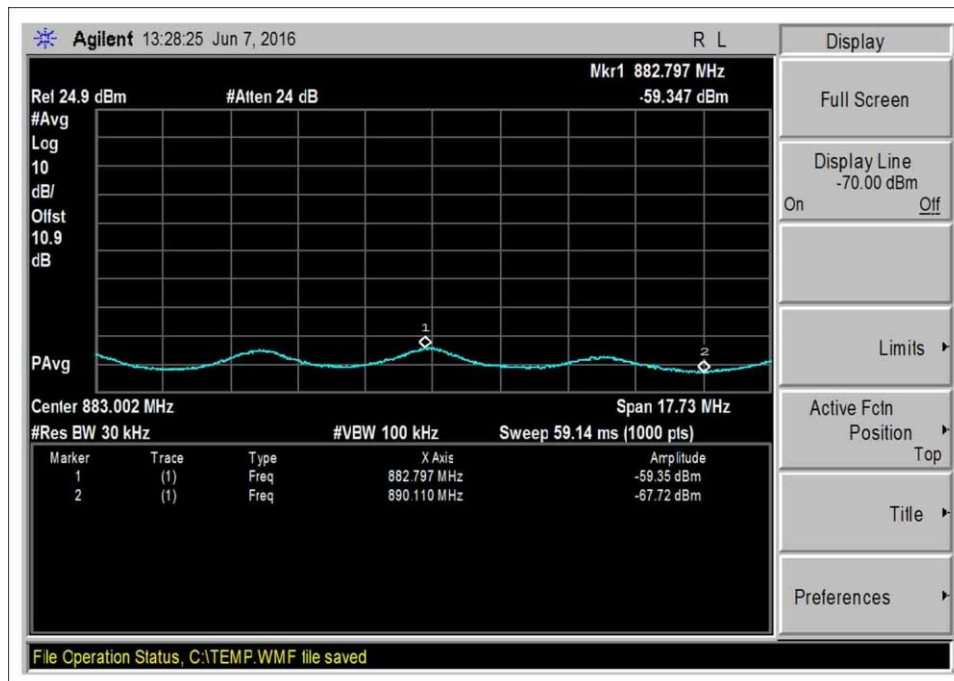
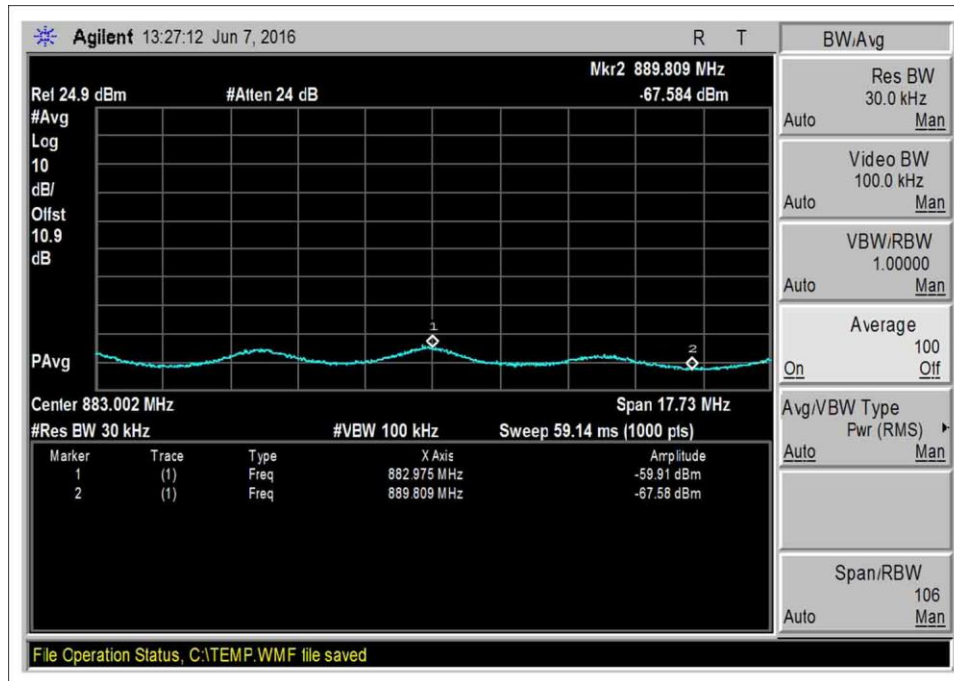


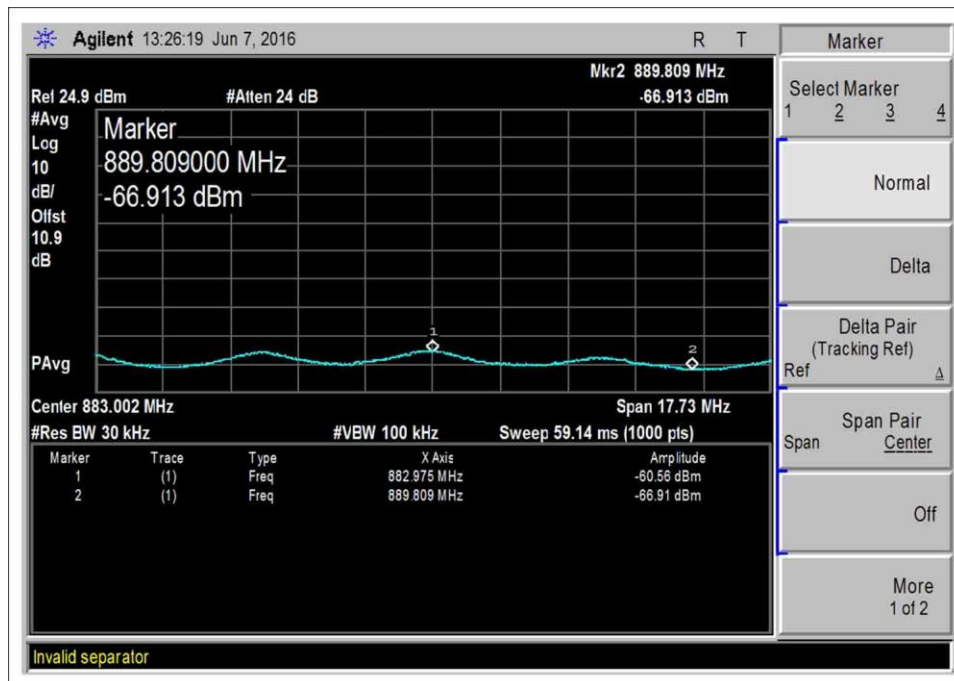
DL-869-894-AWGNL+2



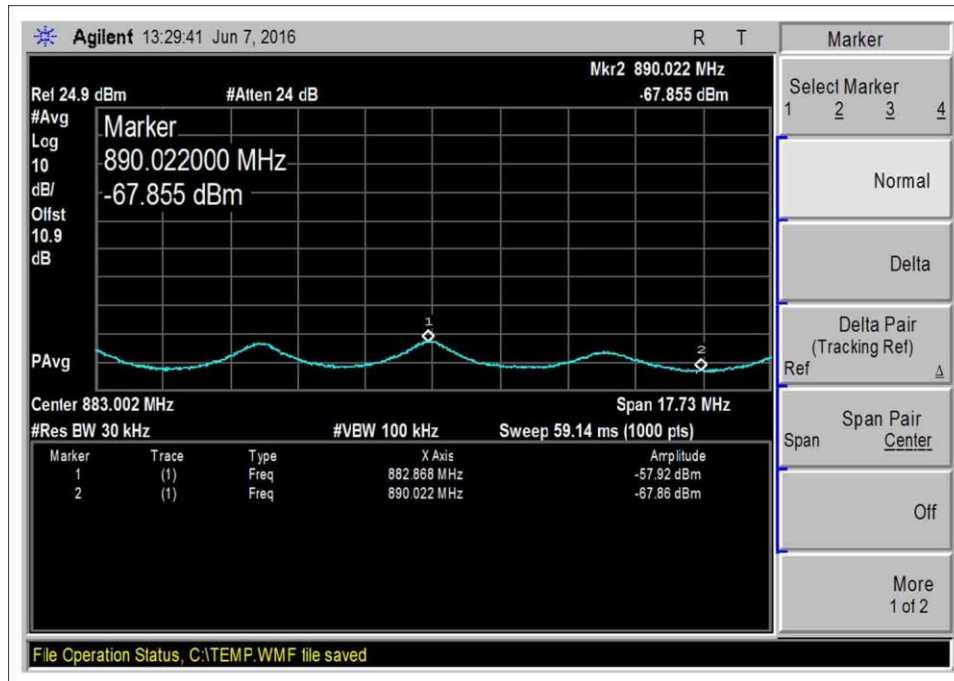
DL-869-894-AWGNL+3



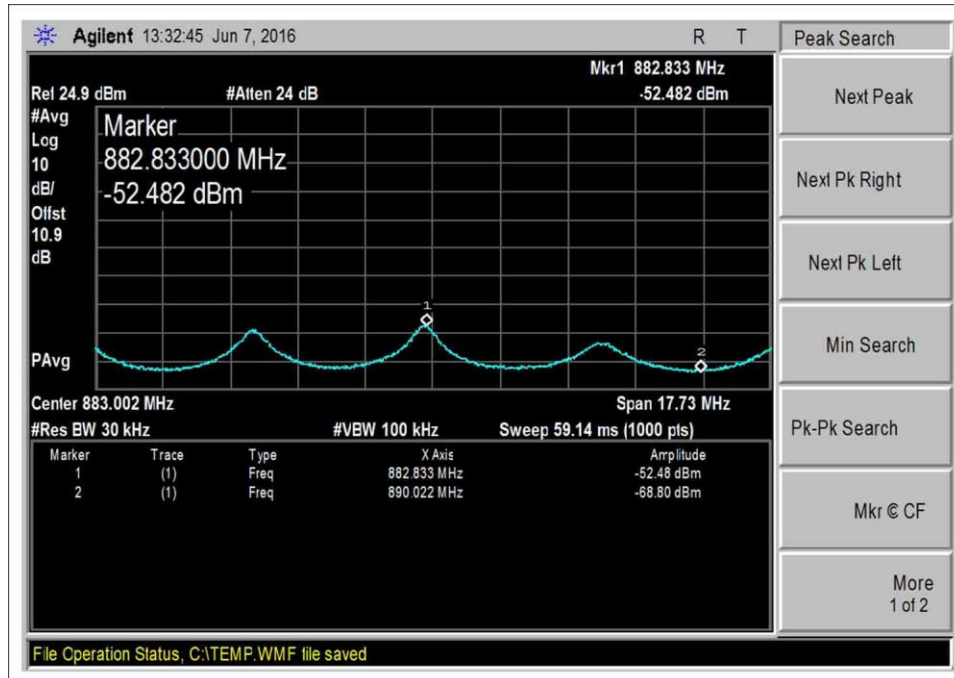
DL-869-894-AWGNL+4



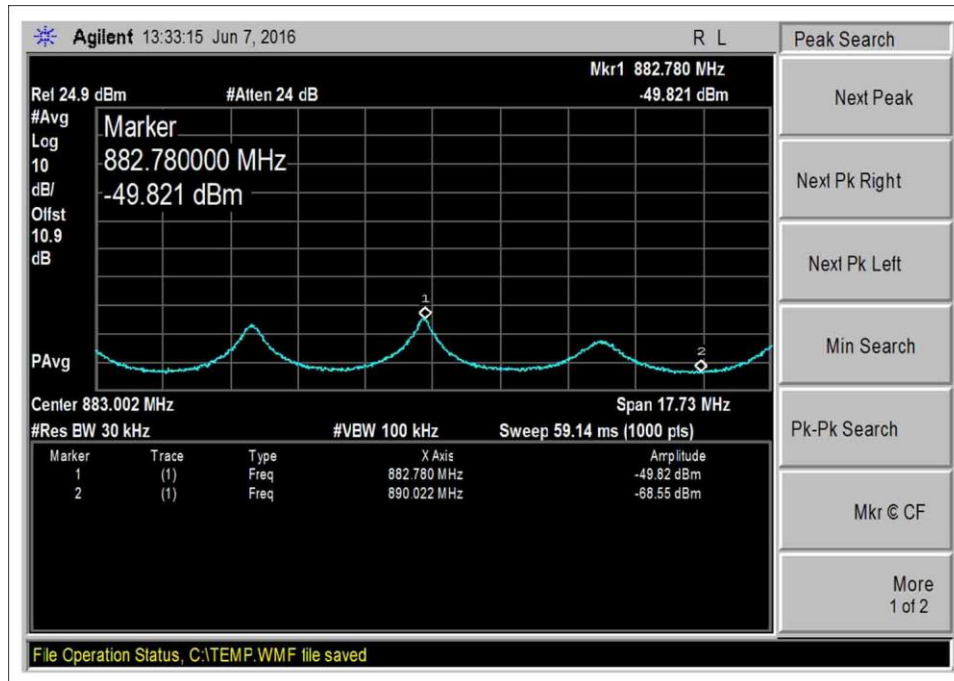
DL-869-894-AWGNL+5



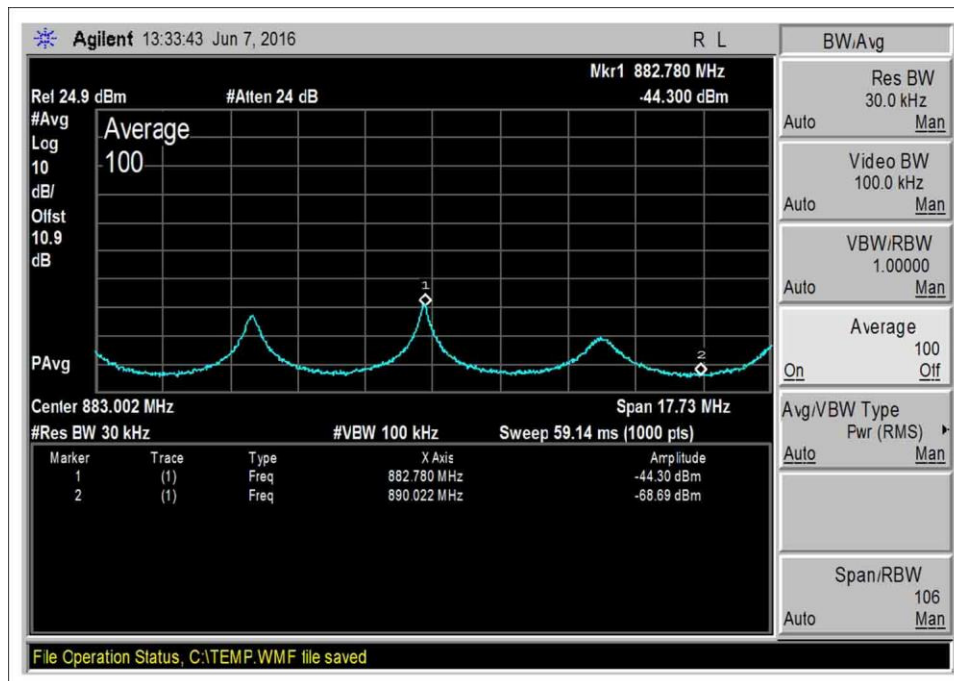
DL-869-894-AWGNL-1



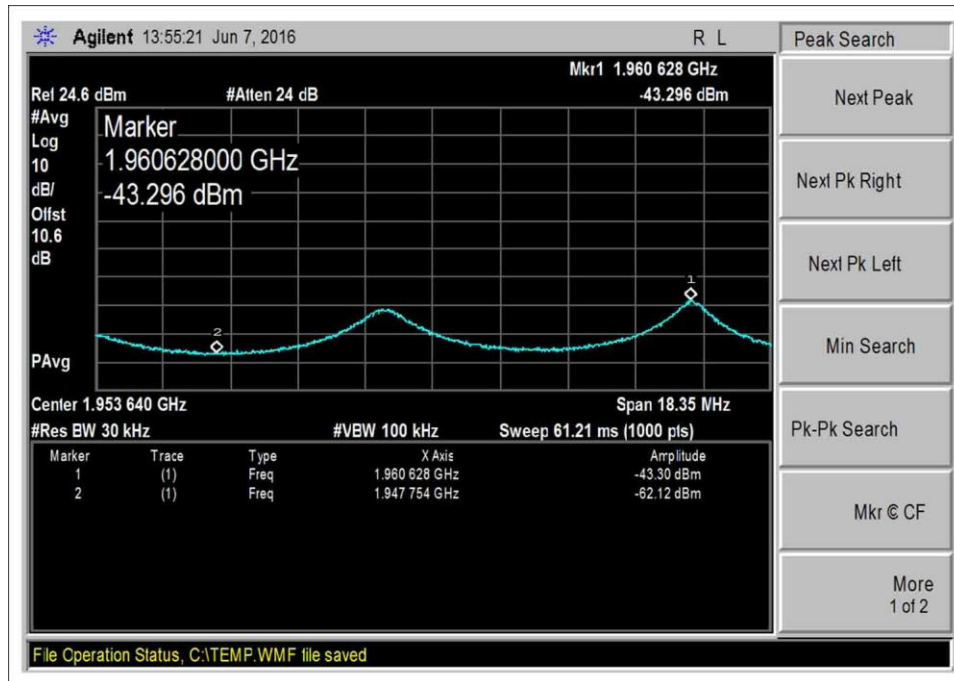
DL-869-894-AWGNL-2



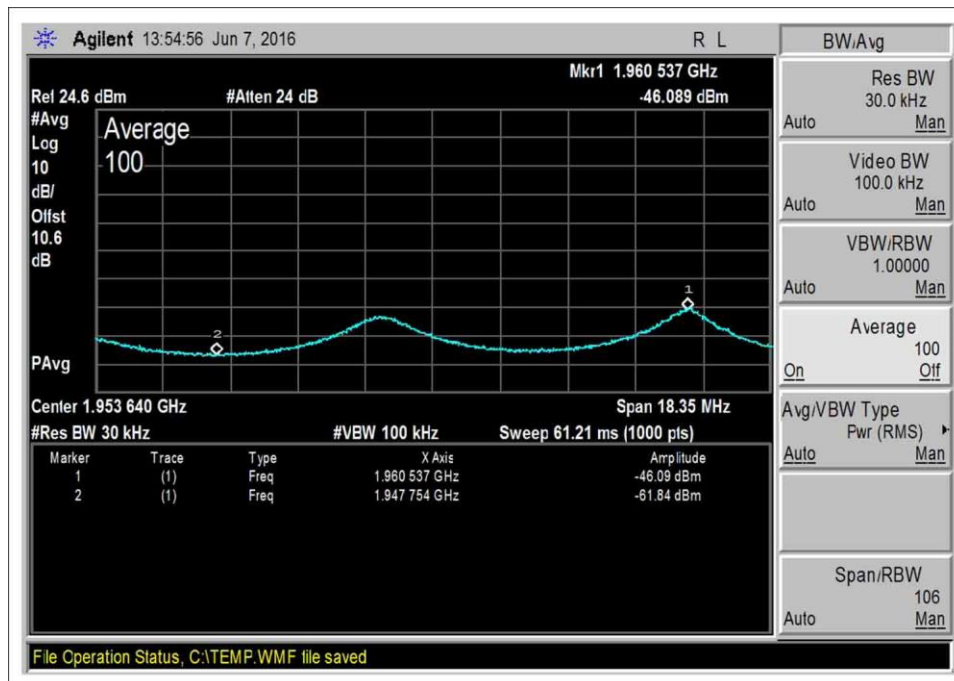
DL-869-894-AWGNL-3



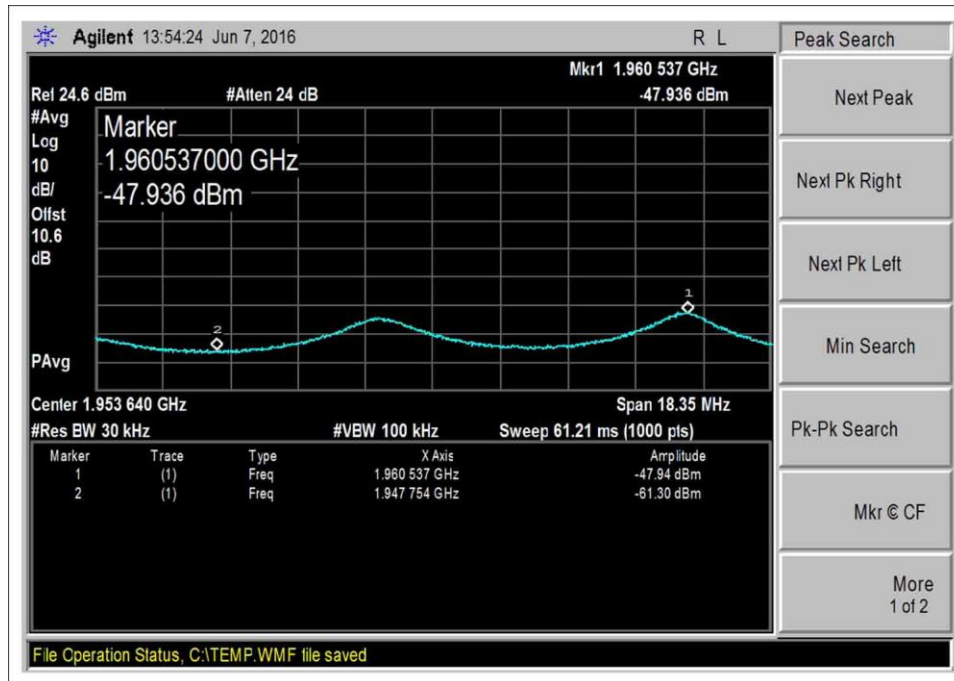
DL-869-894-AWGNL-4



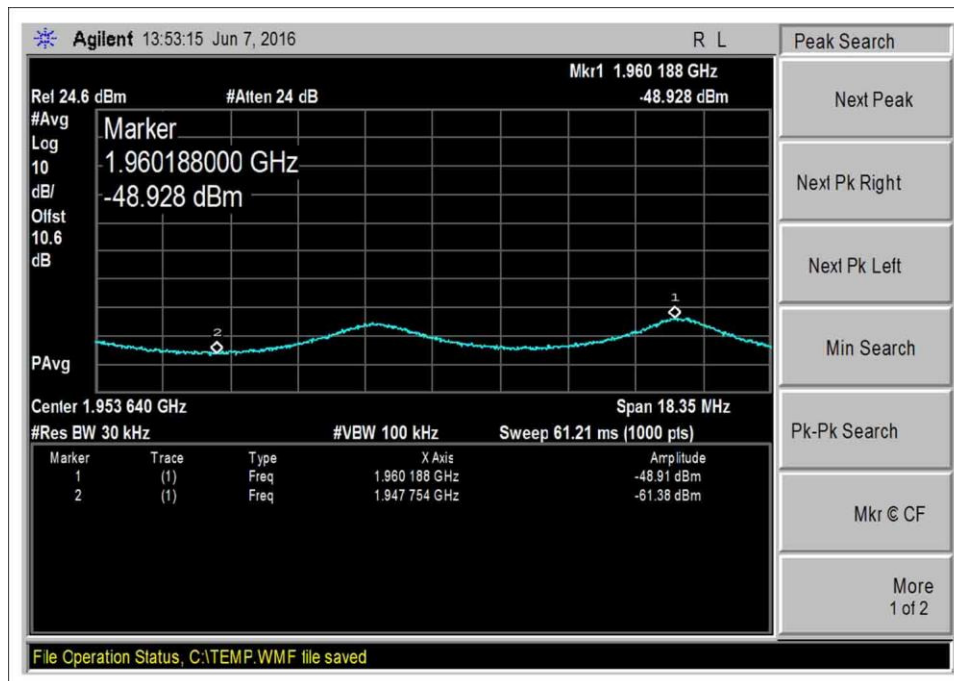
DL-1930-1995-AWGNR+0



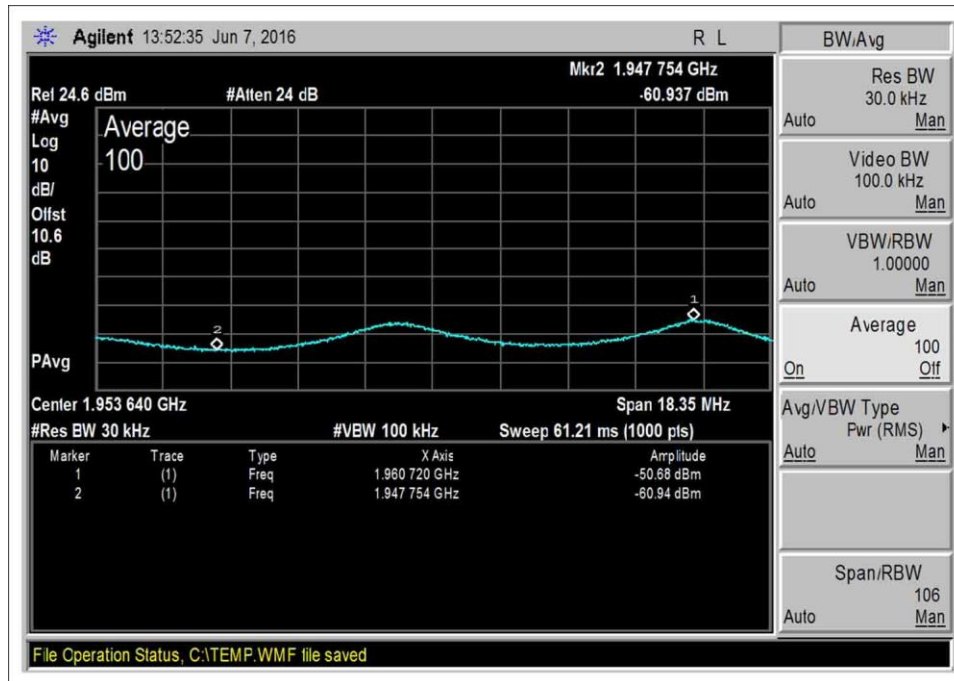
DL-1930-1995-AWGNR+1



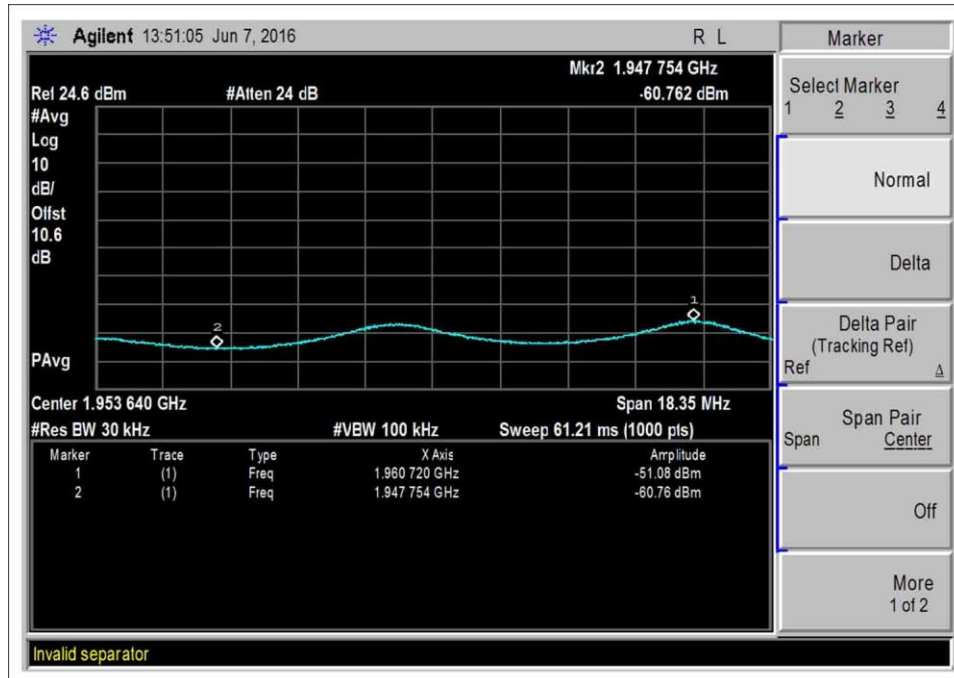
DL-1930-1995-AWGNR+2



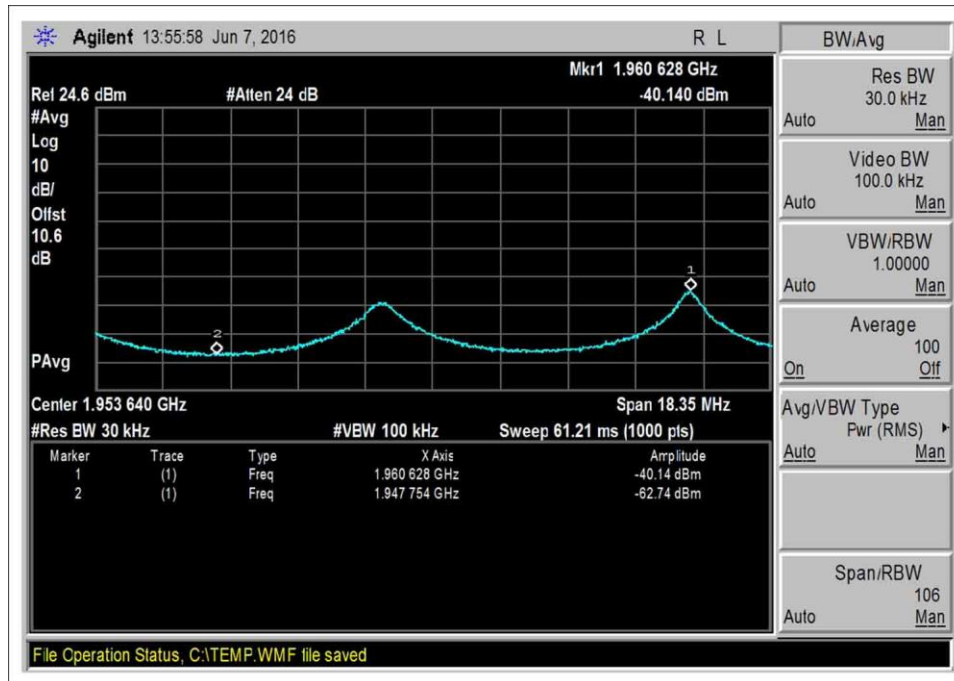
DL-1930-1995-AWGNR+3



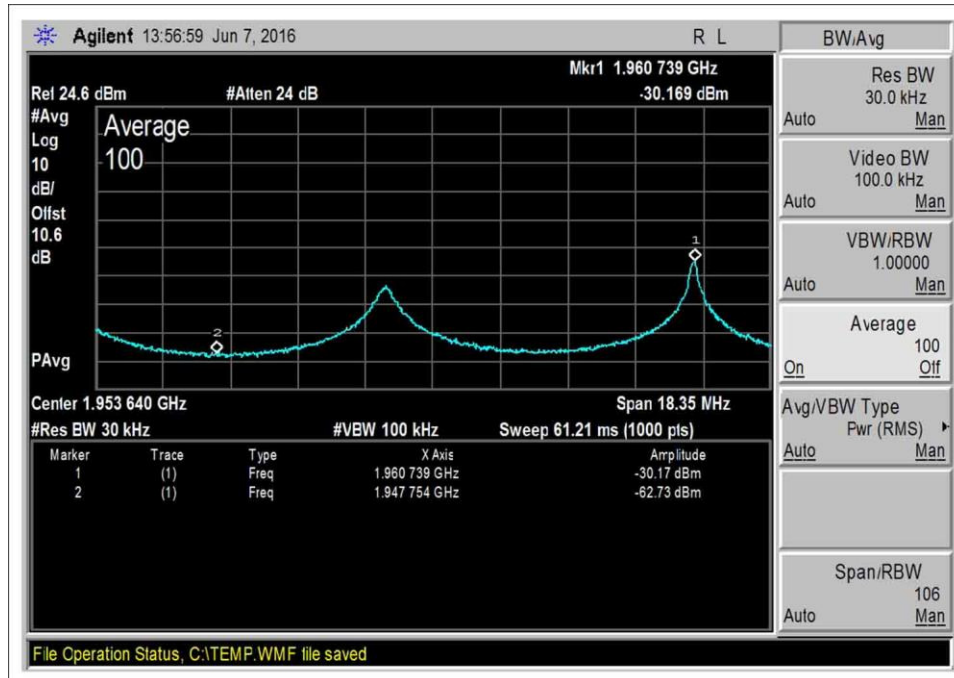
DL-1930-1995-AWGNR+4



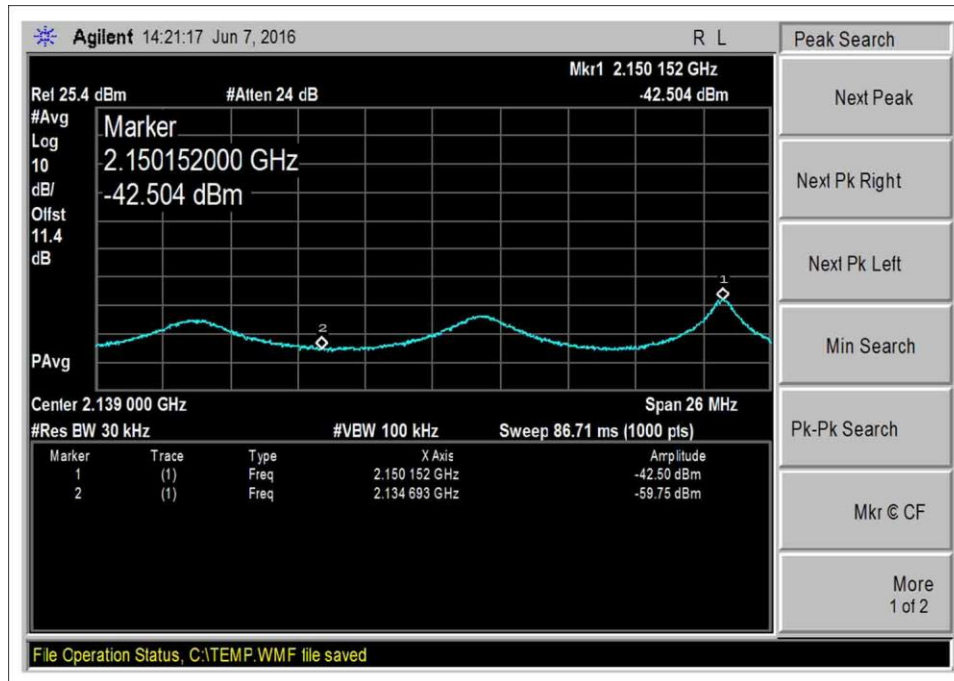
DL-1930-1995-AWGNR+5



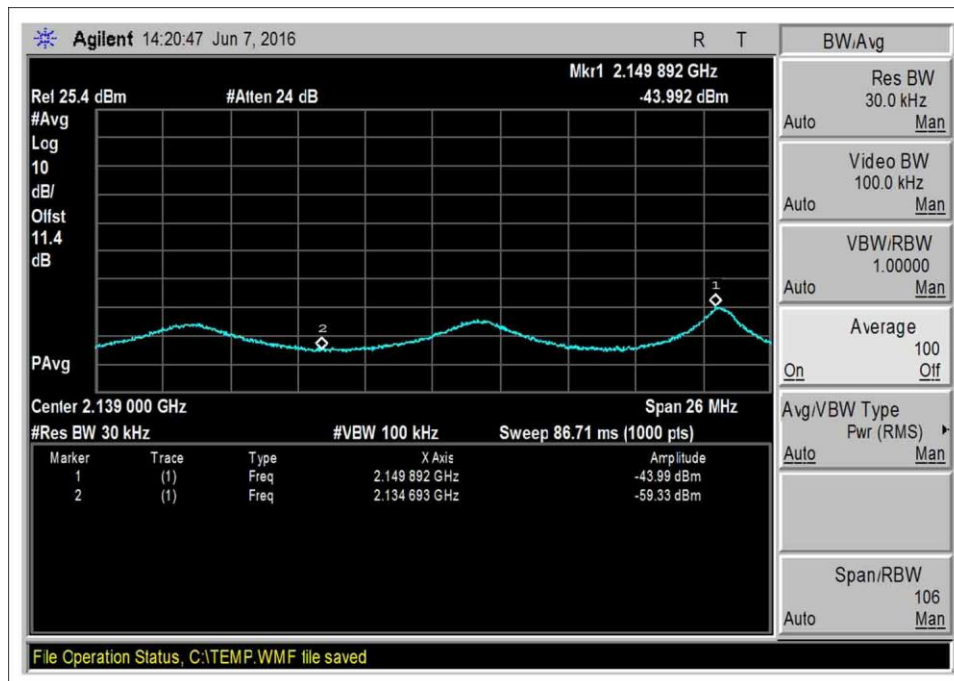
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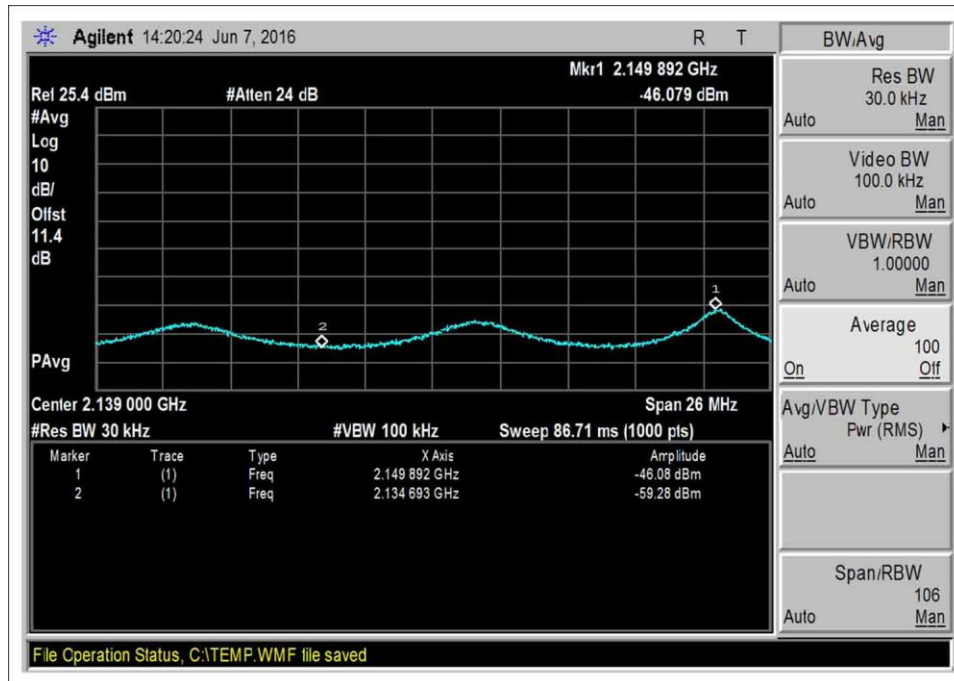




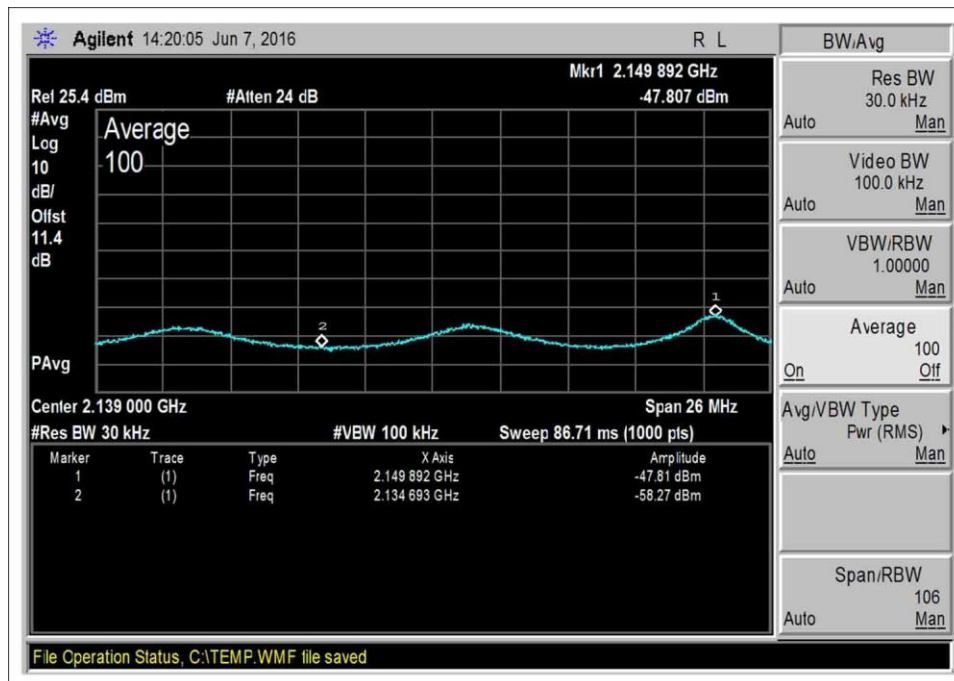
DL-2110-2155-AWGNL+1



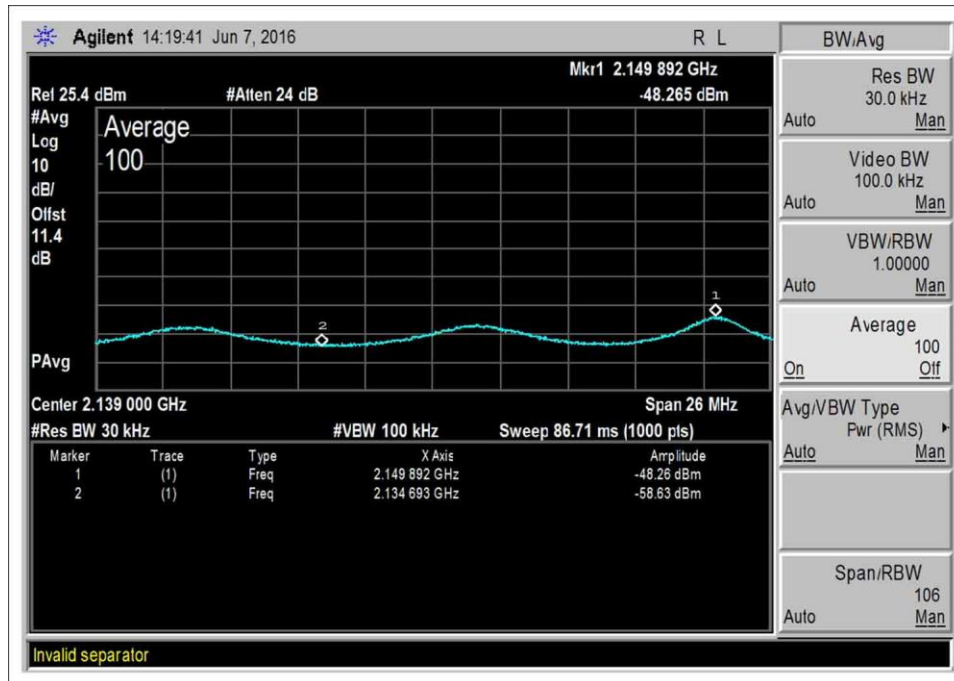
DL-2110-2155-AWGNL+2



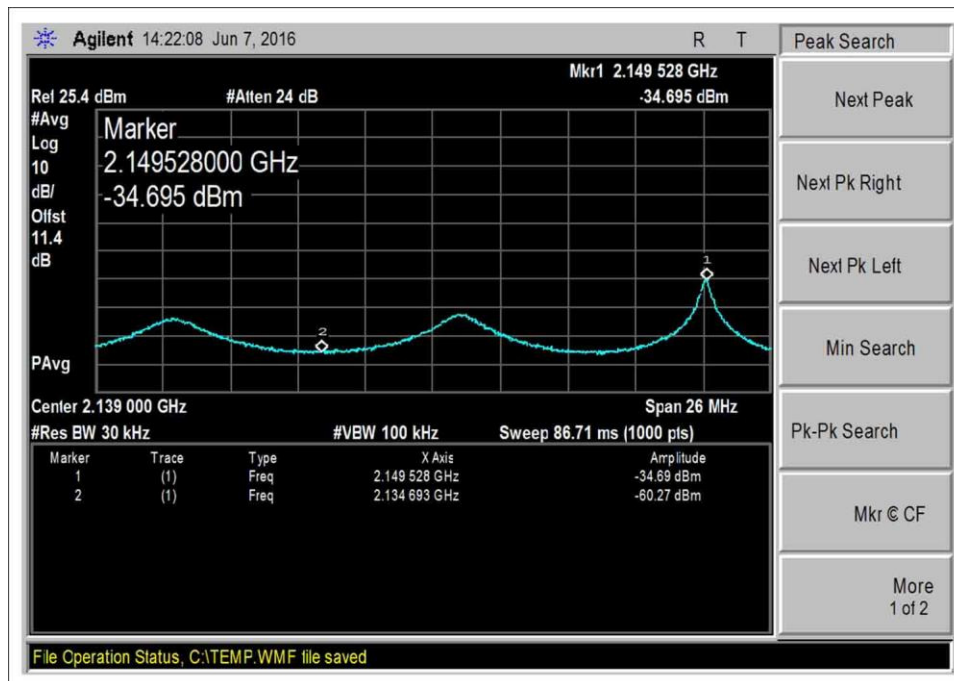
DL-2110-2155-AWGNL+3



DL-2110-2155-AWGNL+4



DL-2110-2155-AWGNL+5



DL-2110-2155-AWGNL-1



30 MHz - 1000MHz -> RBW=120 kHz VBW=120 kHz  
 1000 MHz-22000MHz -> RBW=1 MHz VBW=1 MHz

Test procedure: The test was performed in accordance with section 7.12 of the FCC document: 935210 D03 Wideband Consumer Signal Booster Measurement Guidance v04 Dated February 12, 2016.

Note:

Modification 1 was in place during testing.

Placement of the PCB is identical to test setup which is encased in a plastic housing in the final host.

Chassis is made out of material with dielectric constant near air.

No spurious emissions were found within 20dB of the limit line.

Emissions in the band 1559-1610 MHz were investigated and these were not found within 20dB of the limit line.

27.53(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

**Test Equipment:**

ID	Asset #	Description	Model	Cal Date	Cal Due Date
	AN00852	Biconilog Antenna	CBL 6111C	11/24/2014	11/24/2016
	ANP06049	Attenuator	PE7002-6	5/9/2016	5/9/2018
	ANP00880	Cable	RG214U	5/10/2016	5/10/2018
	ANP06691	Cable	PE3062-180	8/8/2014	8/8/2016
	AN00567	Preamp	8447D	1/2/2015	1/2/2017
	ANP01187	Cable	CNT-195	12/30/2014	12/30/2016
	AN02871	Spectrum Analyzer	E4440A	8/25/2015	8/25/2017
	AN02113	Horn Antenna	3115	2/3/2015	2/3/2017
	ANP06900	Cable	32022-29094K-29094K-36TC	12/30/2015	12/30/2017
	AN03303	Preamp	AMF-7D-00101800-30-10P	1/4/2016	1/4/2018
	ANP01210	Cable	FSJ1P-50A-4A	1/15/2015	1/15/2017
	AN03302	Cable	32026-29094K-29094K-72TC	1/29/2016	1/29/2018
	AN02693	Active Horn Antenna-ANSI C63.5 3m	AMFW-5F-12001800-20-10P	5/6/2015	5/6/2017
	AN02694	Horn Antenna-ANSI C63.5 3m	AMFW-5F-18002650-20-10P	5/7/2015	5/7/2017
	ANP00928	Cable	various	1/25/2016	1/25/2018
	ANP00929	Cable	various	1/25/2016	1/25/2018
	ANP06126	Cable	32022-29094K-29094K-168TC	3/18/2015	3/18/2017
	ANP06901	Cable	32022-29094K-29094K-36TC	12/30/2015	12/30/2017
	AN00432	Loop Antenna	6502	5/8/2015	5/8/2017
	ANP06710	Cable	32026-29094K-29094K-72TC	9/18/2014	9/18/2016
	ANP06467	Attenuator	PE7014-10	5/13/2015	5/13/2017

## Summary of Results

Pass: All Radiated Spurious Emissions were found with more than 20dB margin of the limit line.

**Frequency Range of measurement 9kHz -> 22GHz**

**LIMIT LINE FOR SPURIOUS RADIATED EMISSION**

**REQUIRED ATTENUATION = 43+10 LOG P (DB)**

For radiated spurious emission measured at 3 meter test distance,

Required attenuation = 43+10 Log P<sub>t at 3 meter</sub> dB  
 Limit line (dBuV) = E<sub>dBuV</sub> - Attenuation

E<sub>dBuV</sub> = Measured field strength at 3 meter in dBuV/m

**Power Density (Isotropic)**

$$P_D = \frac{P_t}{4\pi r^2}$$

P<sub>D</sub> = Power Density in Watts /m<sup>2</sup>  
 P<sub>t</sub> = Average Transmit Power  
 r = Test distance

**Field Intensity E (V/m)**

$$E = \sqrt{P_D \times 377}$$

$$E = \frac{\sqrt{P_t \times 377}}{4\pi r^2}$$

$$E = \sqrt{\frac{P_t \times 30}{r^2}}$$

$$P_t = \left( \frac{E^2 \times r^2}{30} \right)$$

$$10 \text{ Log } P_t = 10 \text{ Log } E^2 (\text{V/m}) + 10 \text{ Log } r^2 - 10 \text{ Log } 30$$

$$10 \text{ Log } P_t = 20 \text{ Log } E (\text{V/m}) + 20 \text{ Log } r - 10 \text{ Log } 30$$

At 3 meter, r = 3 m

$$10 \text{ Log } P_t = 20 \text{ Log } E (\text{V/m}) + 20 \text{ Log } 3 - 10 \text{ Log } 30$$

$$10 \text{ Log } P_t = 20 \text{ Log } E (\text{V/m}) + 9.54 - 14.77$$

$$10 \text{ Log } P_t = 20 \text{ Log } E (\text{V/m}) - 5.23$$

**Since 20 Log E (V/m) = 20 Log E (uV/m) - 120**

$$10 \text{ Log } P_t = 20 \text{ Log } E (\text{uV/m}) - 120 - 5.23$$

$$10 \text{ Log } P_t = 20 \text{ Log } E (\text{uV/m}) - 125.23$$

$$\begin{aligned} \text{Limit line (dBuV) at 3 meter} &= E_{\text{dBuV}} - \text{Attenuation} \\ &= E_{\text{dBuV}} - (43 + 10 \text{ Log } P_{t \text{ at 3 meter}}) \\ &= E_{\text{dBuV}} - 43 - 10 \text{ Log } P_{t \text{ at 3 meter}} \\ &= E_{\text{dBuV}} - 43 - (20 \text{ Log } E (\text{uV/m}) - 125.23) \\ &= E_{\text{dBuV}} - 43 - 20 \text{ Log } E (\text{uV/m}) + 125.23 \\ &= E_{\text{dBuV}} - 20 \text{ Log } E (\text{uV/m}) + 82.23 \end{aligned}$$

**Since 20 Log E (uV/m) = E in dBuV/m**

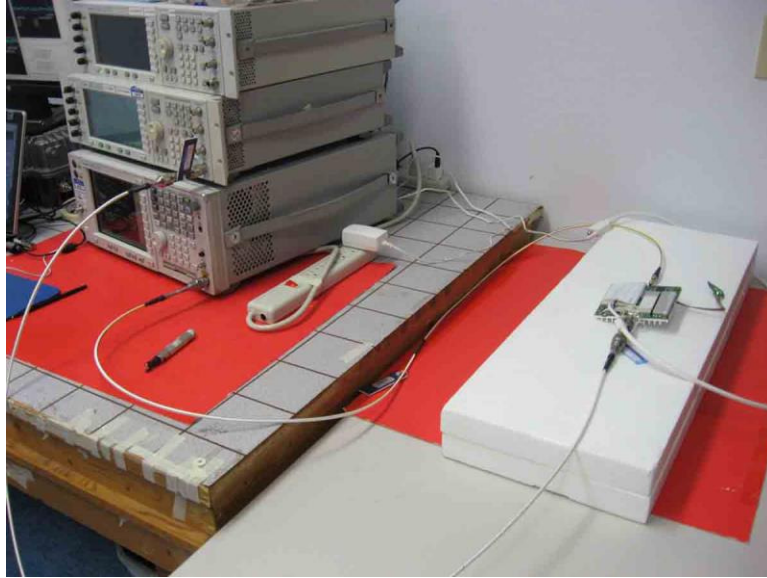
$$\begin{aligned} &= E_{\text{dBuV}} - E_{\text{dBuV}} + 82.23 \\ \text{Radiated Emission limit 3 meter} &= 82.23 \text{ dBuV at any power level measured in dBuV} \end{aligned}$$

## 7.13 Spectrum Block Filter

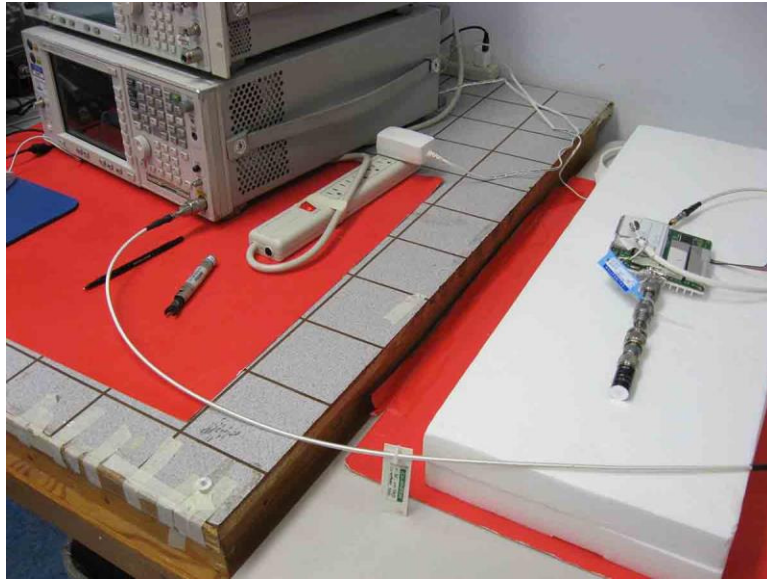
Section 7.13 not applicable because the EUT does not utilize spectrum block filtering.



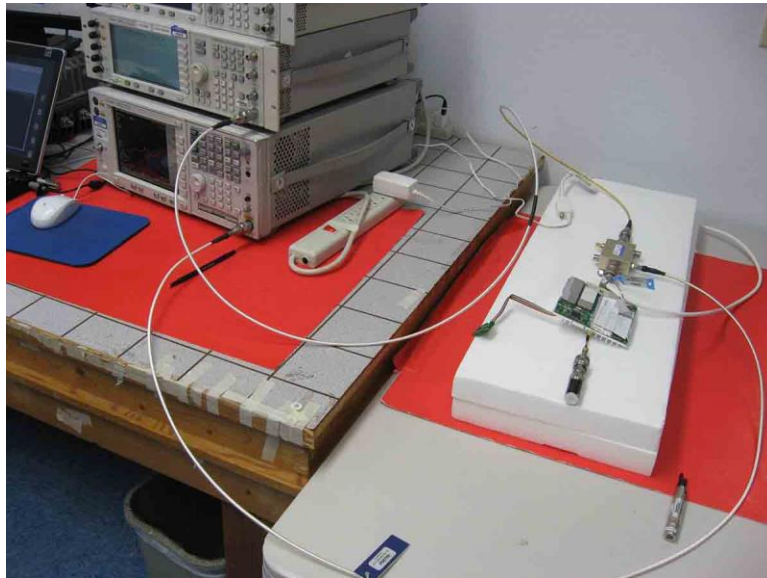
## EXHIBIT A: TEST SETUP PHOTOS



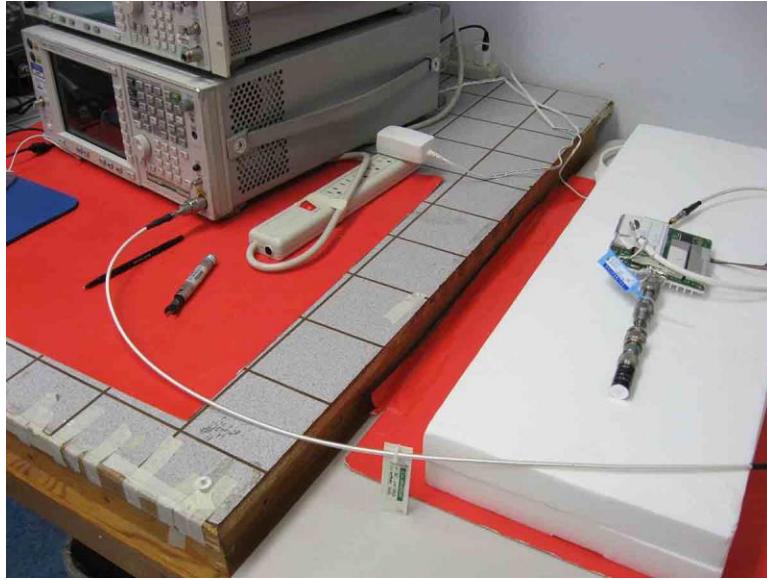
7.1, 7.2, 7.3, 7.4, 7.5, 7.6 & 7.10



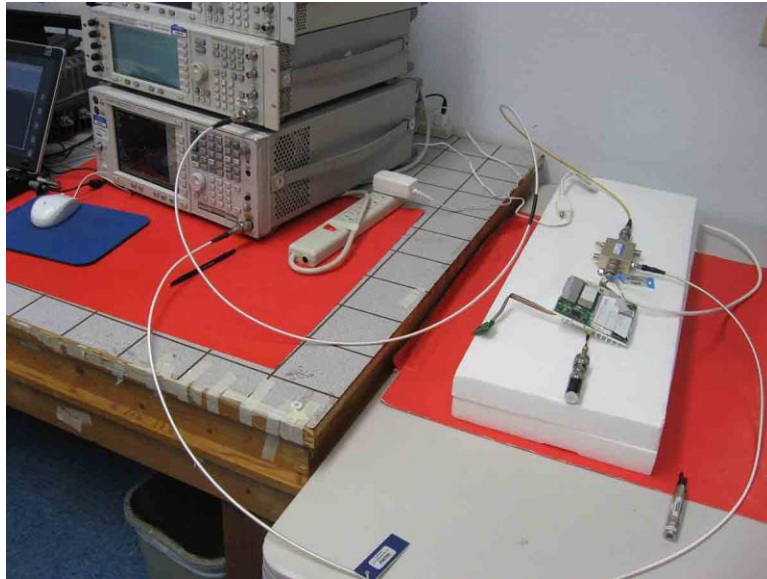
7.7.1 Noise Fig 3



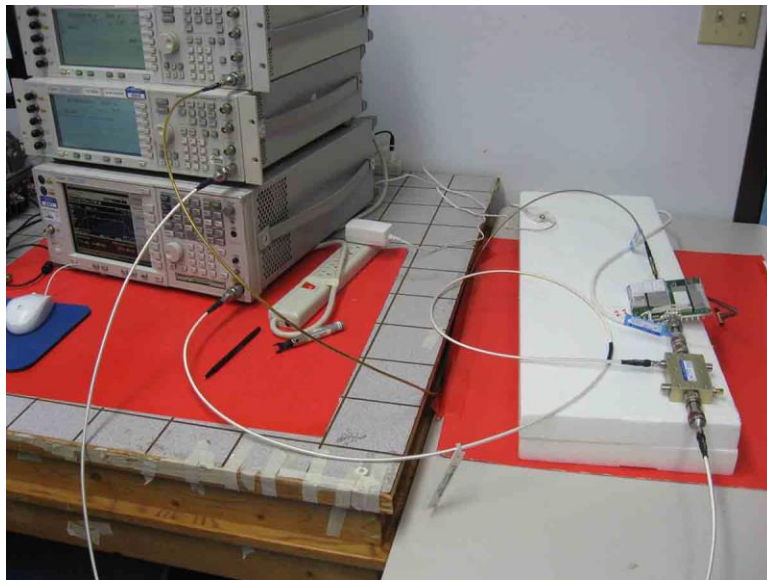
7.7.1 Noise Fig 3



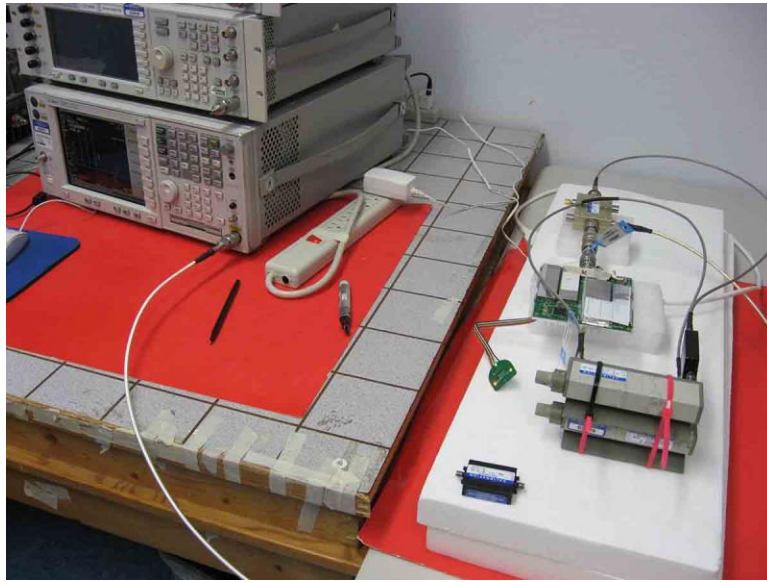
7.8 Uplink



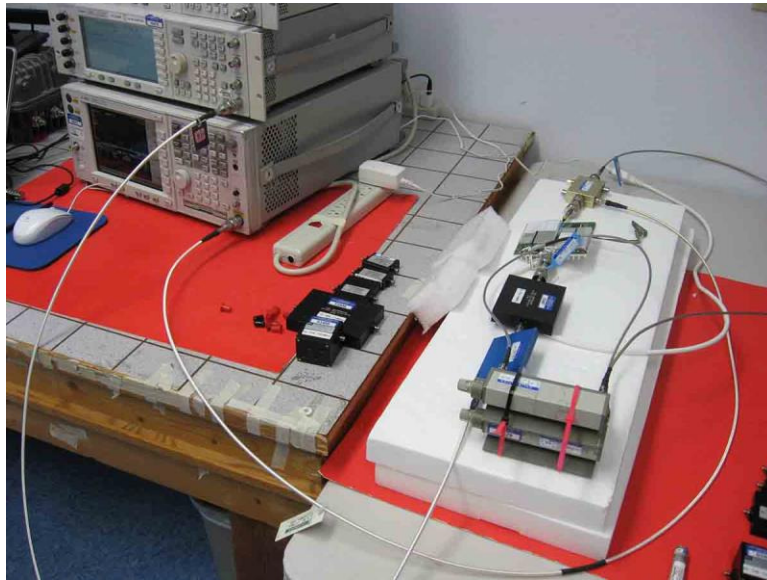
7.9.1 Max Gain



7.9.2 Variable Gain



7.11.2



7.11.3



7.12



Intended chassis installed in the final host

## SUPPLEMENTAL INFORMATION

### Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .