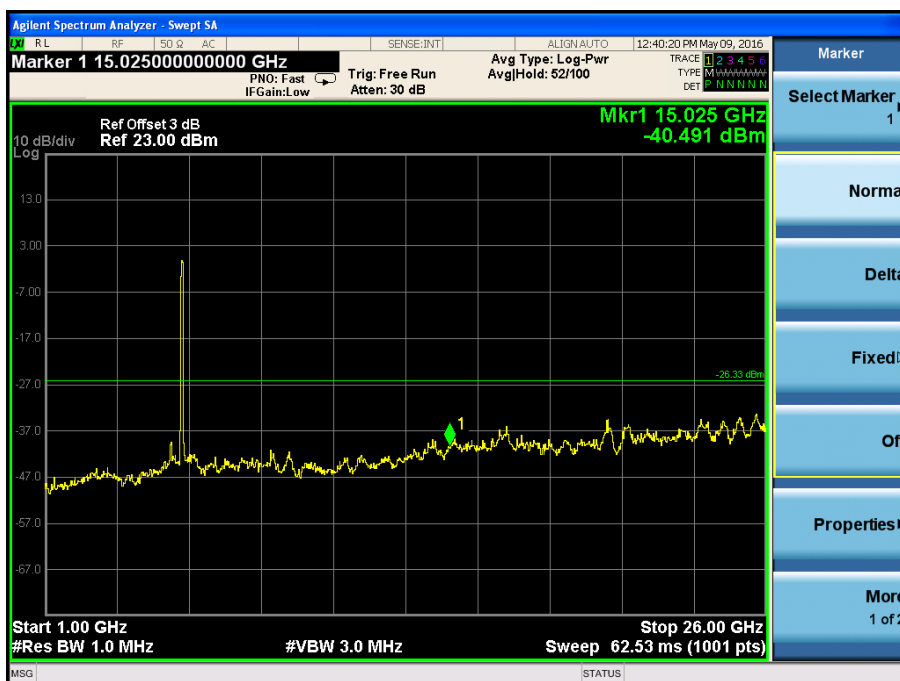
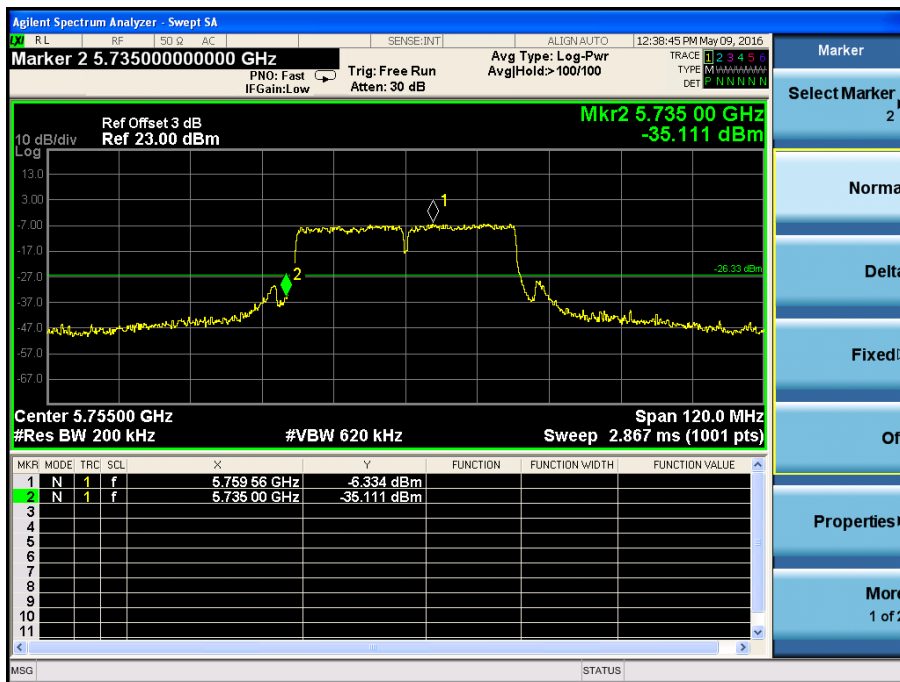
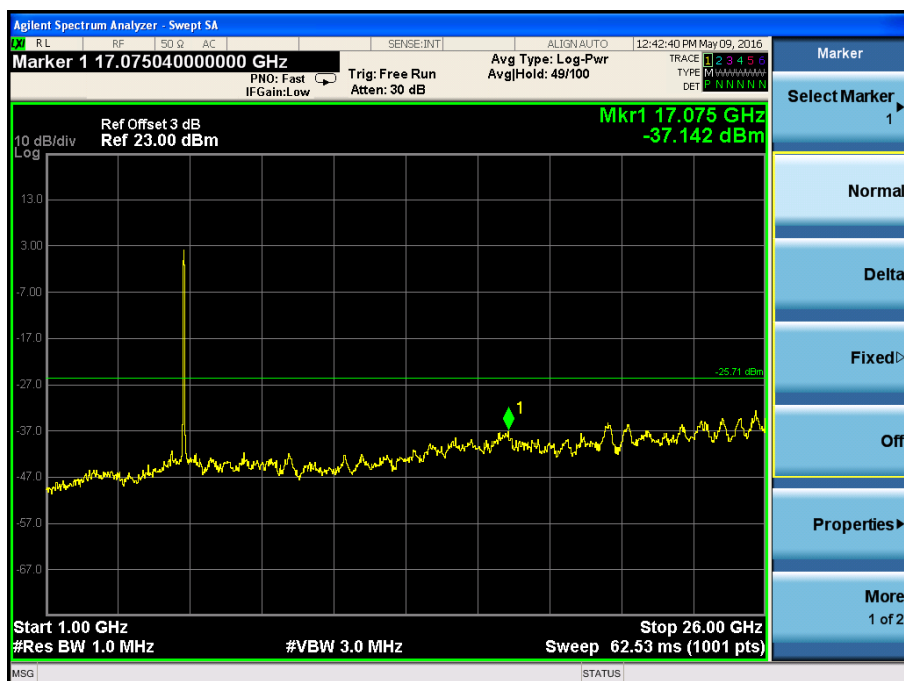
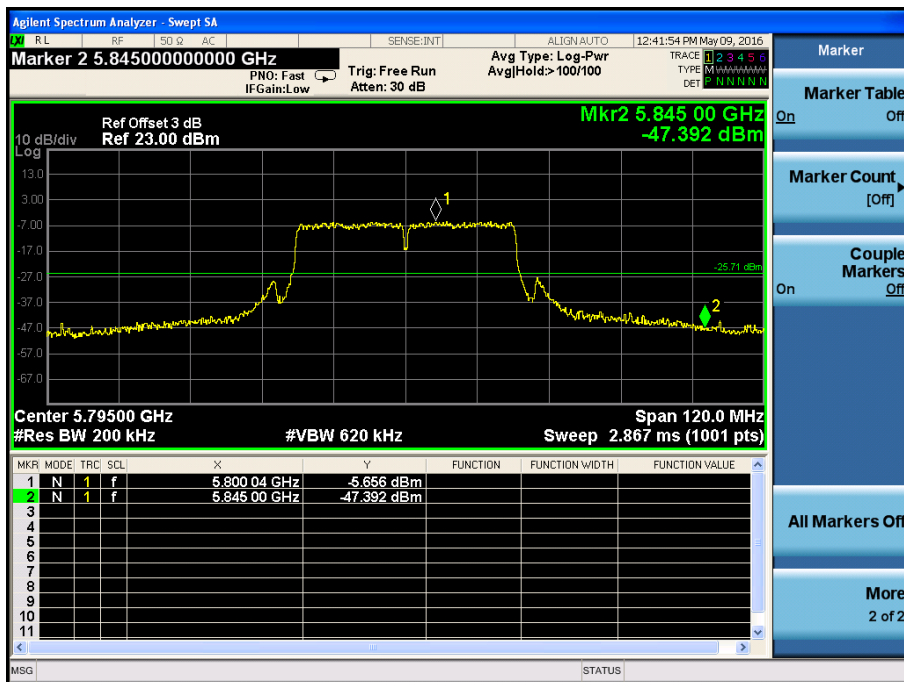


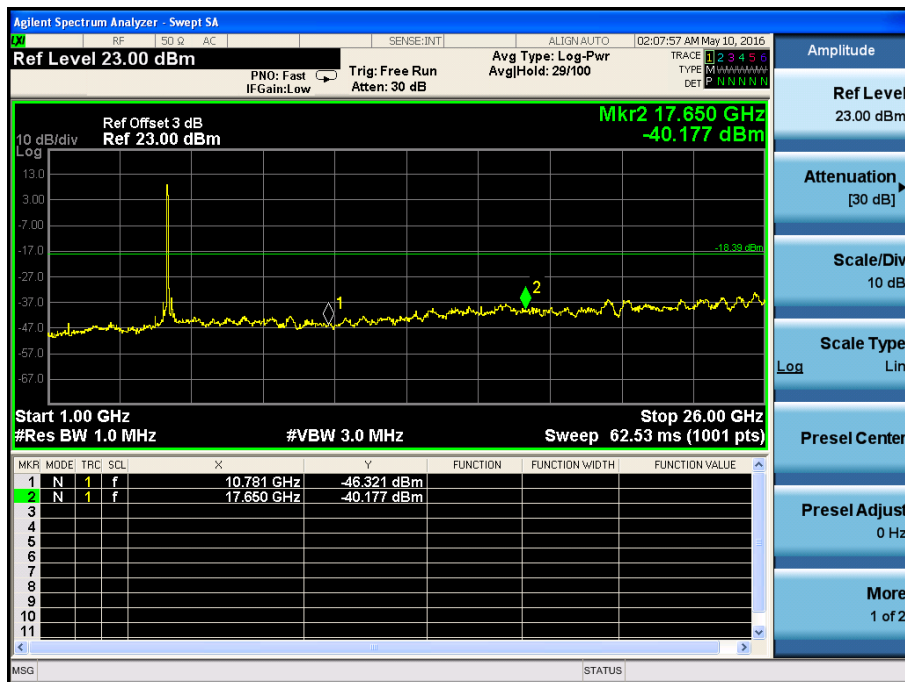
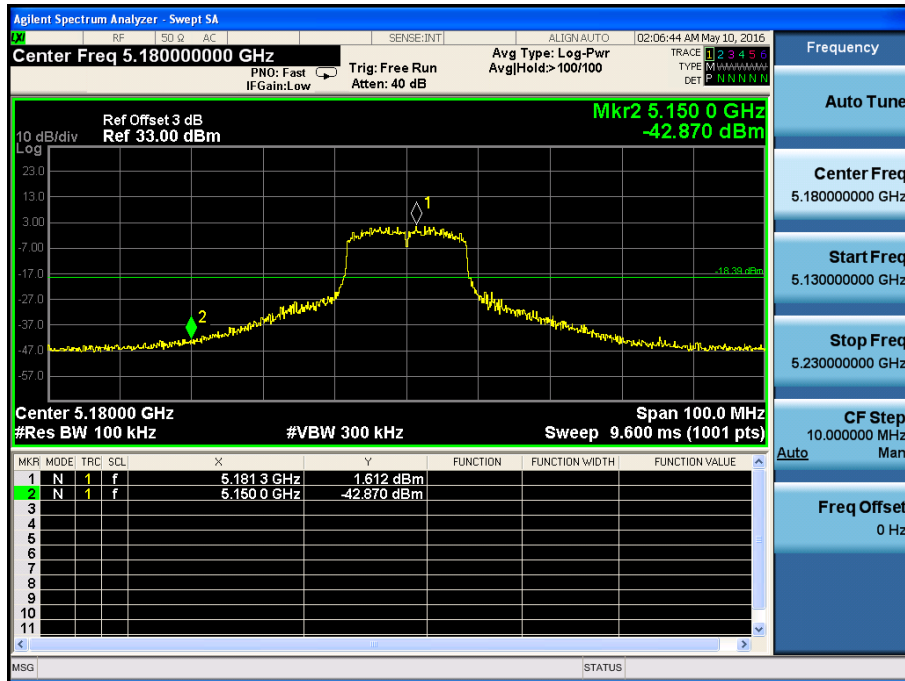
5755MHz



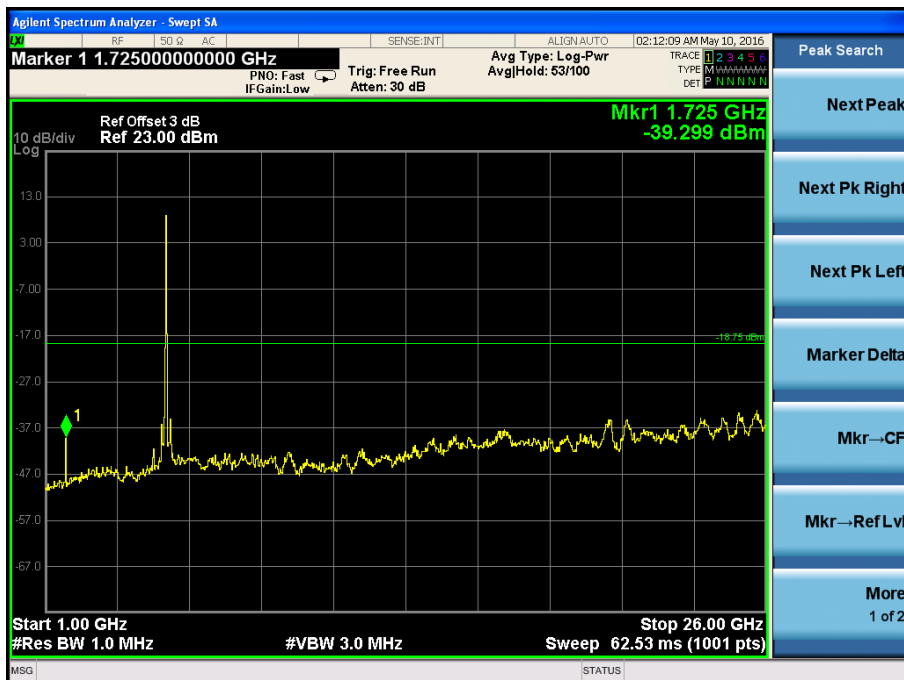
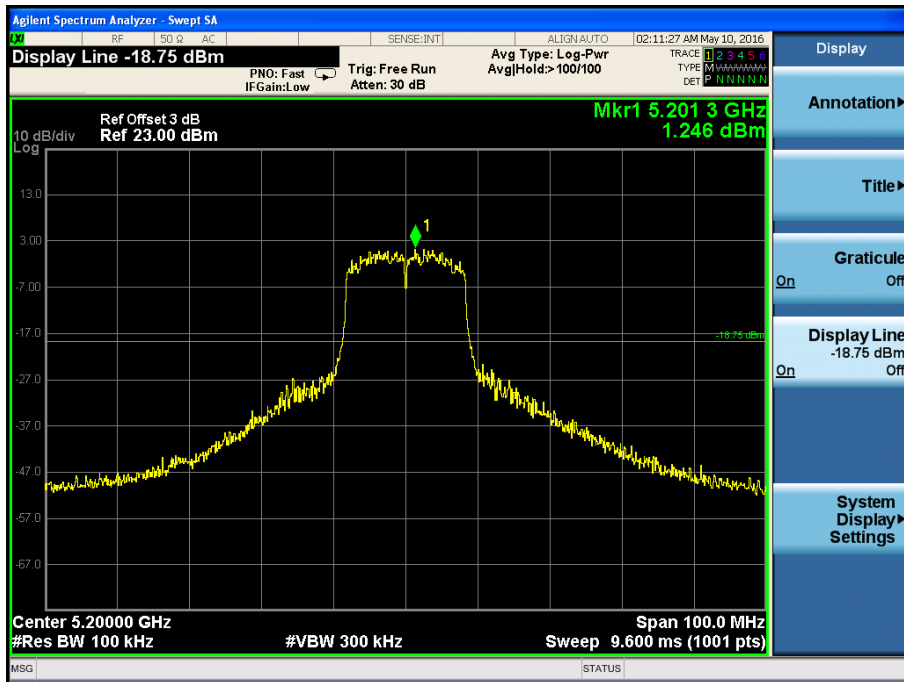
5795MHz



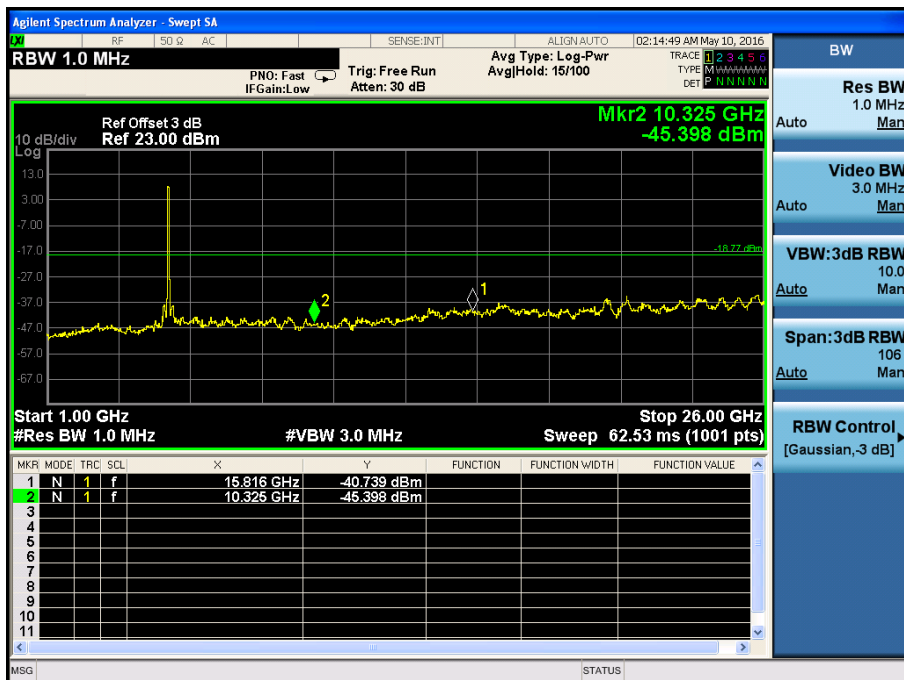
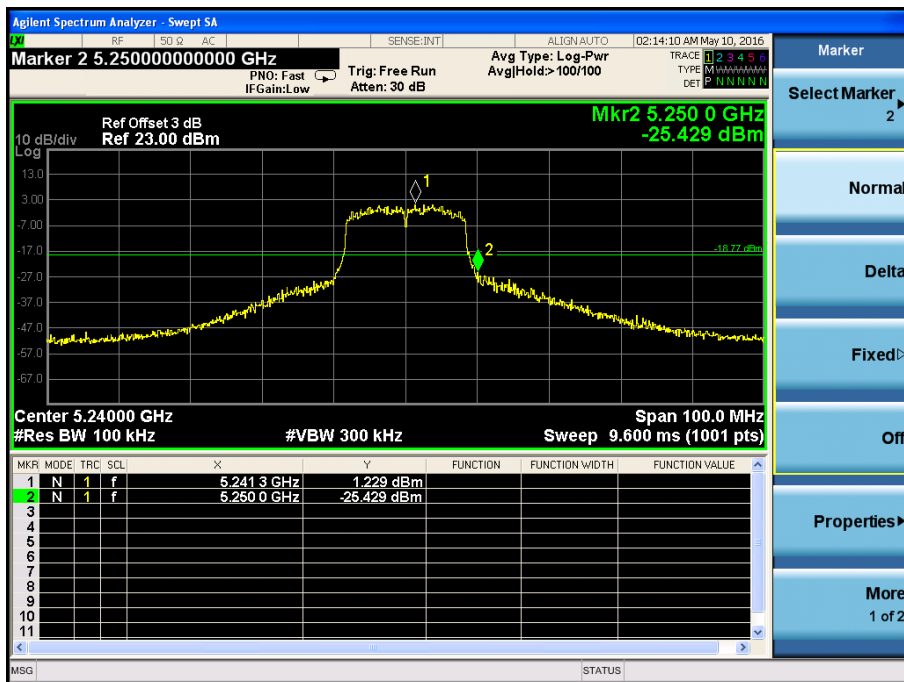
Antenna 2  
802.11a  
5180MHz



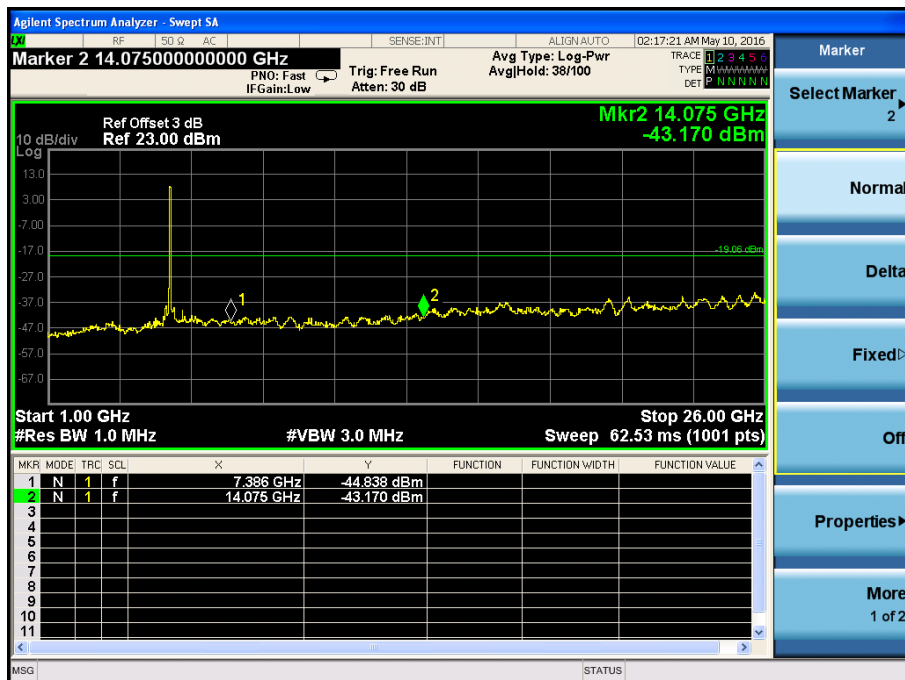
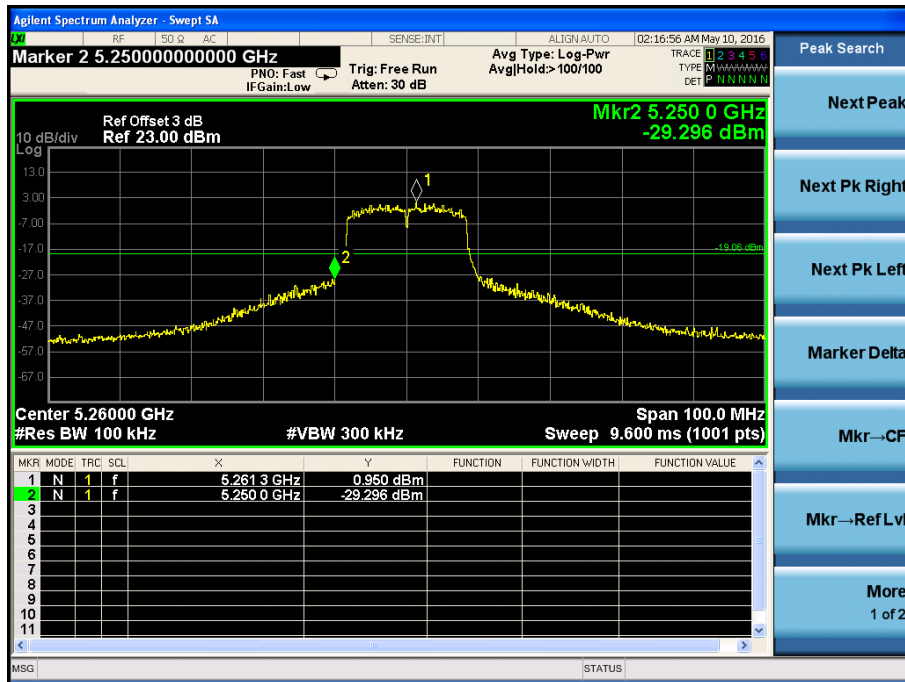
5200MHz



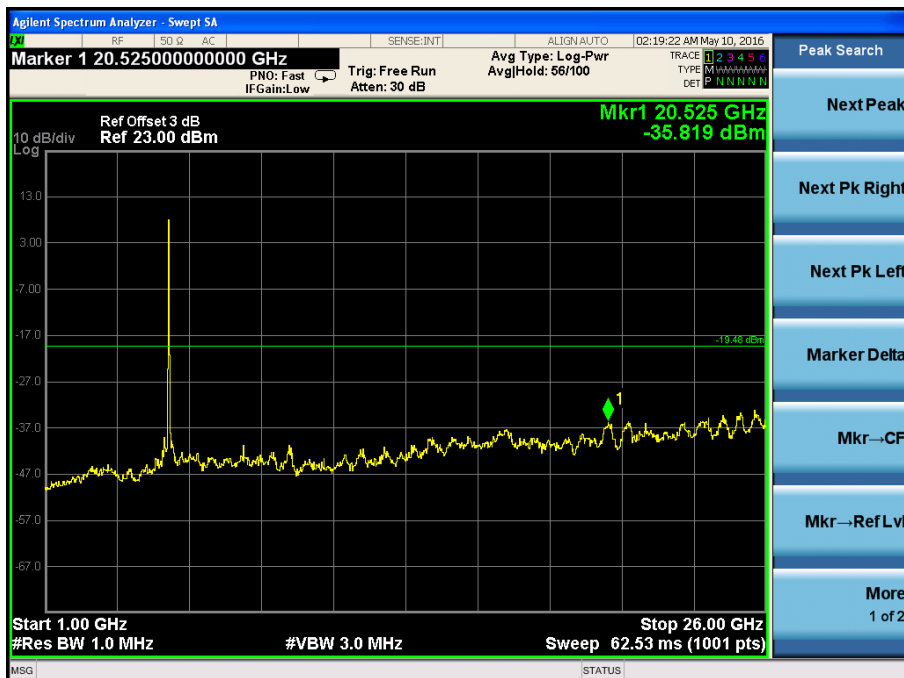
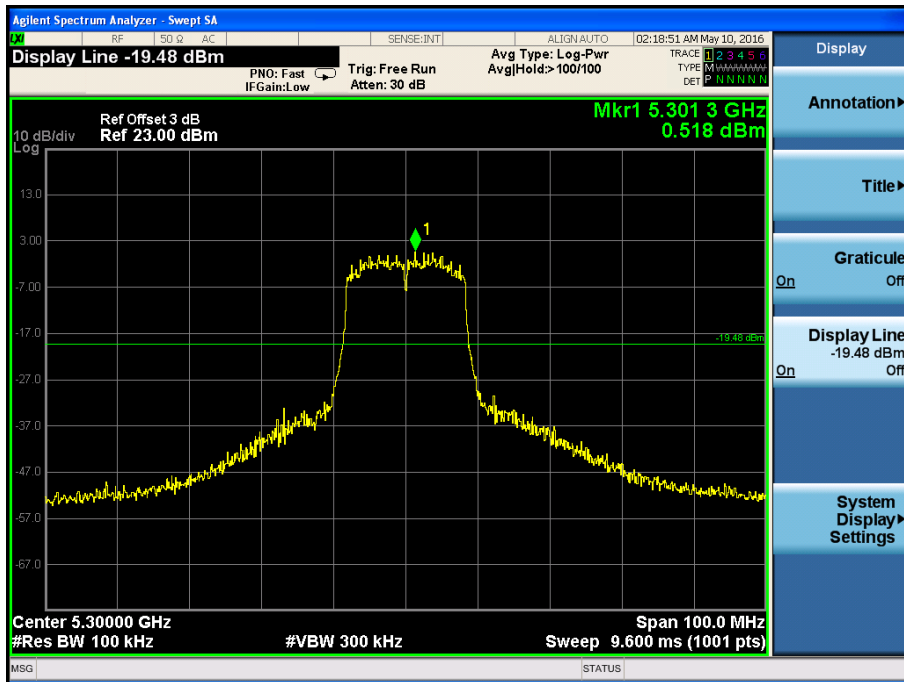
5240MHz



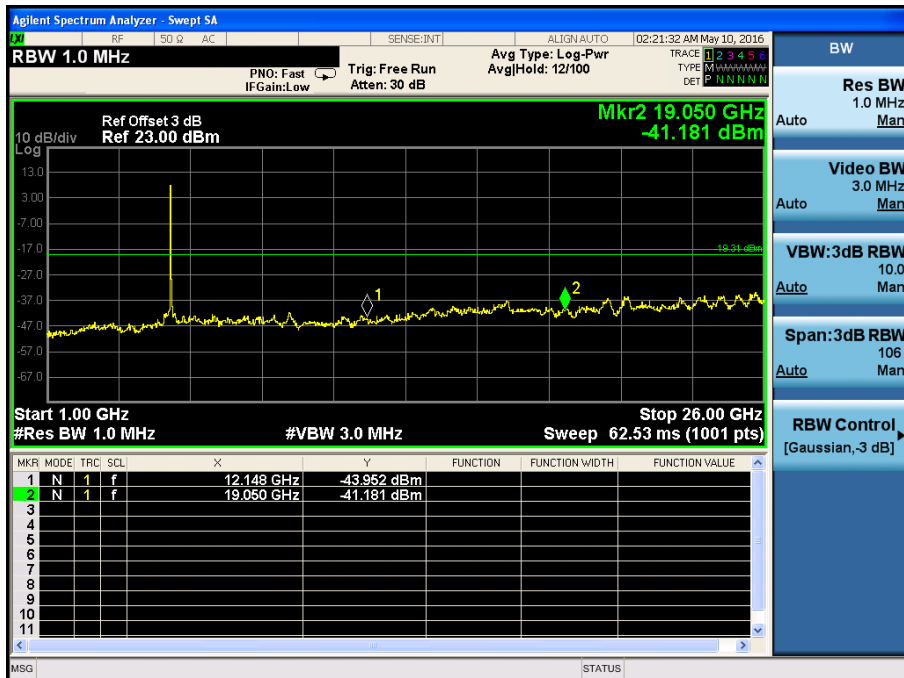
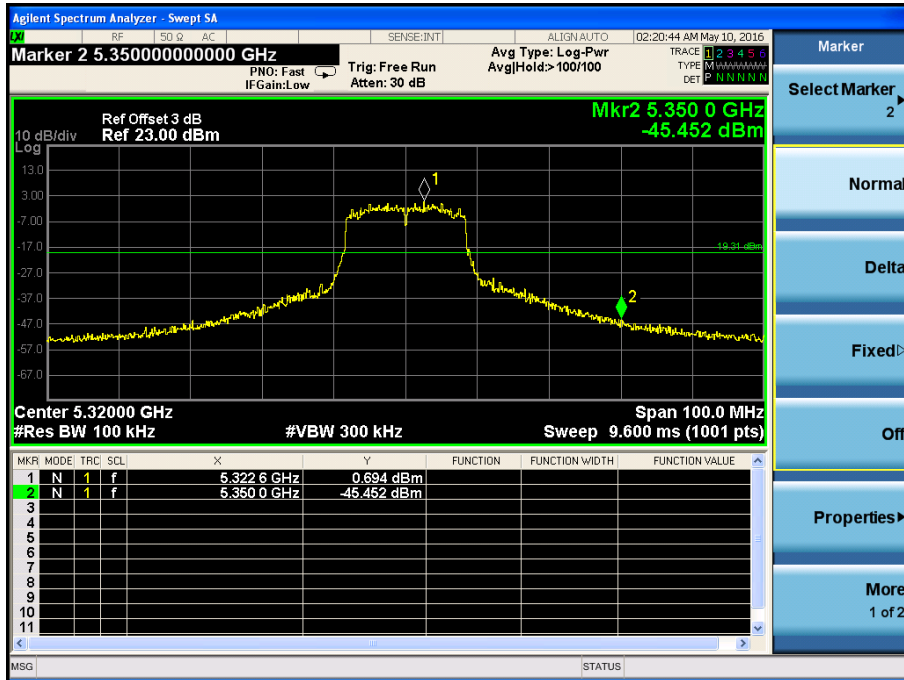
5260MHz



5300MHz

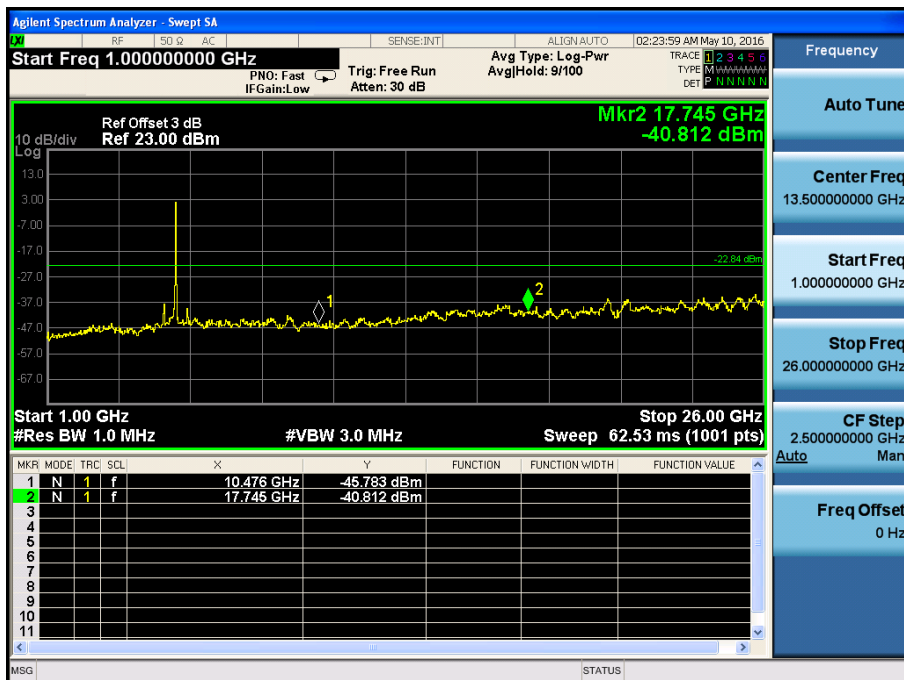
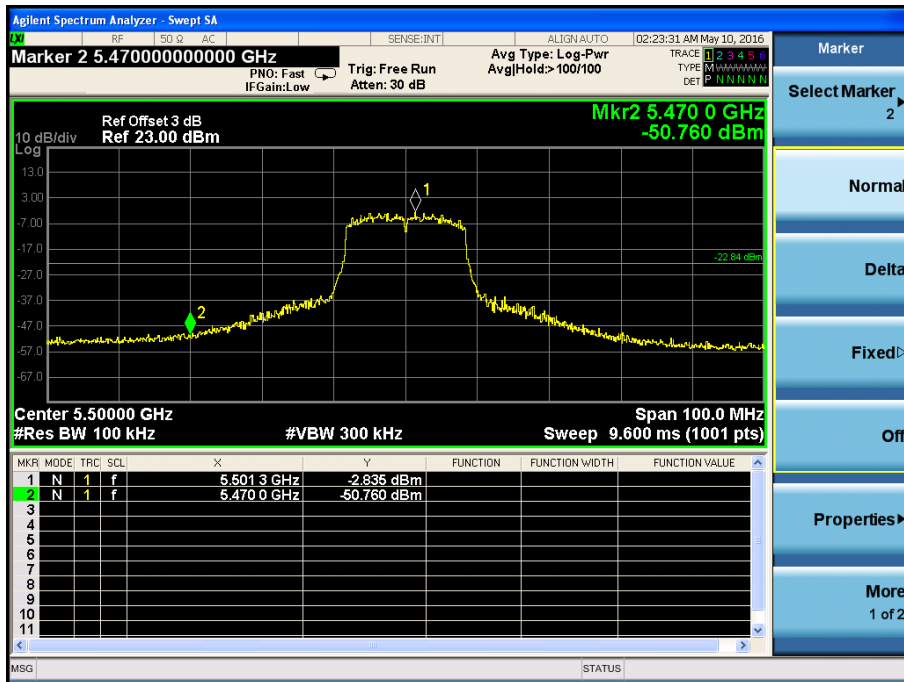


5320MHz

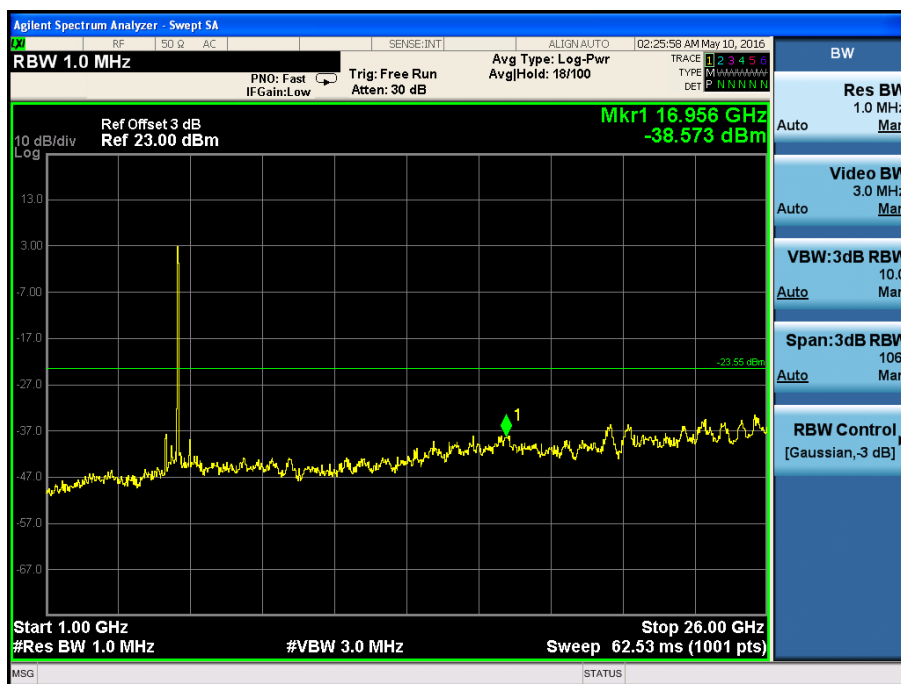
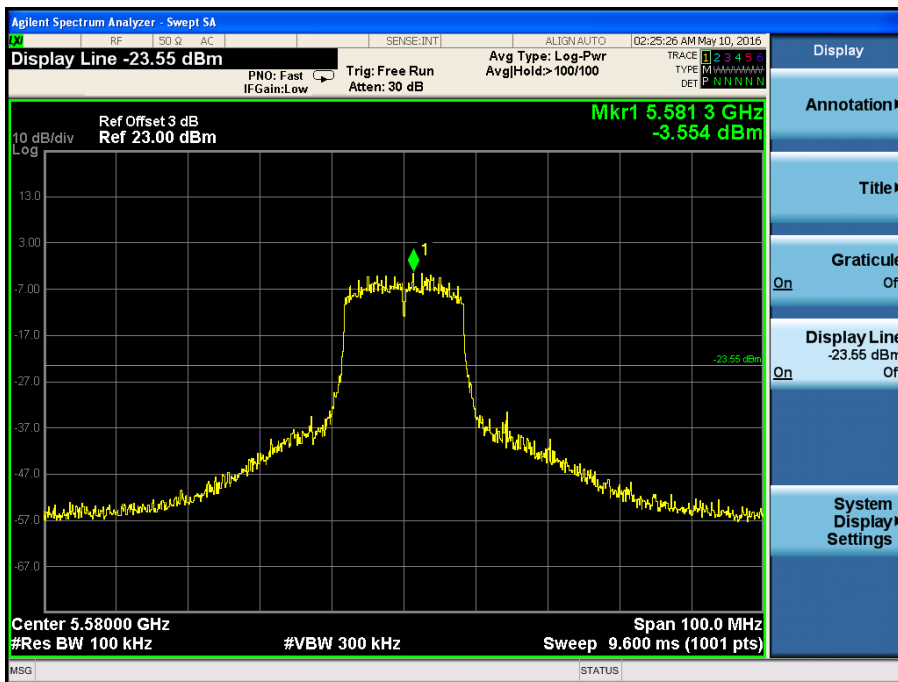




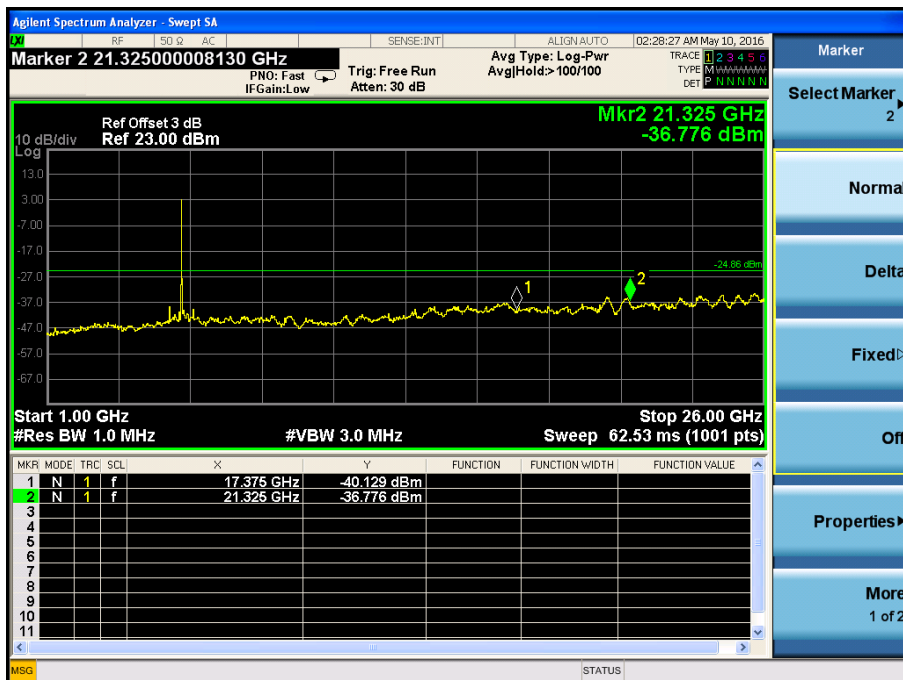
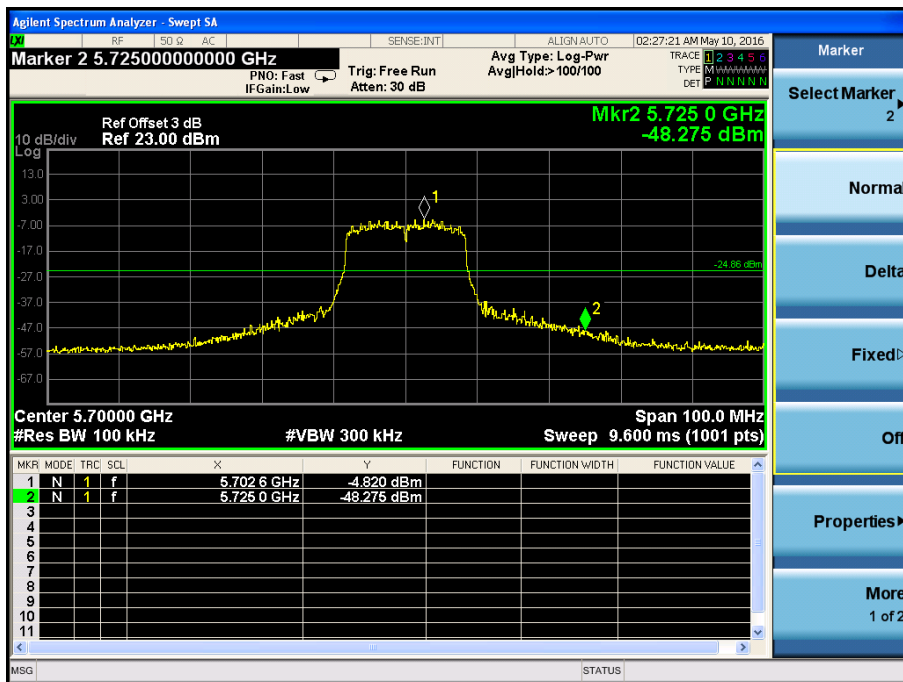
5500MHz



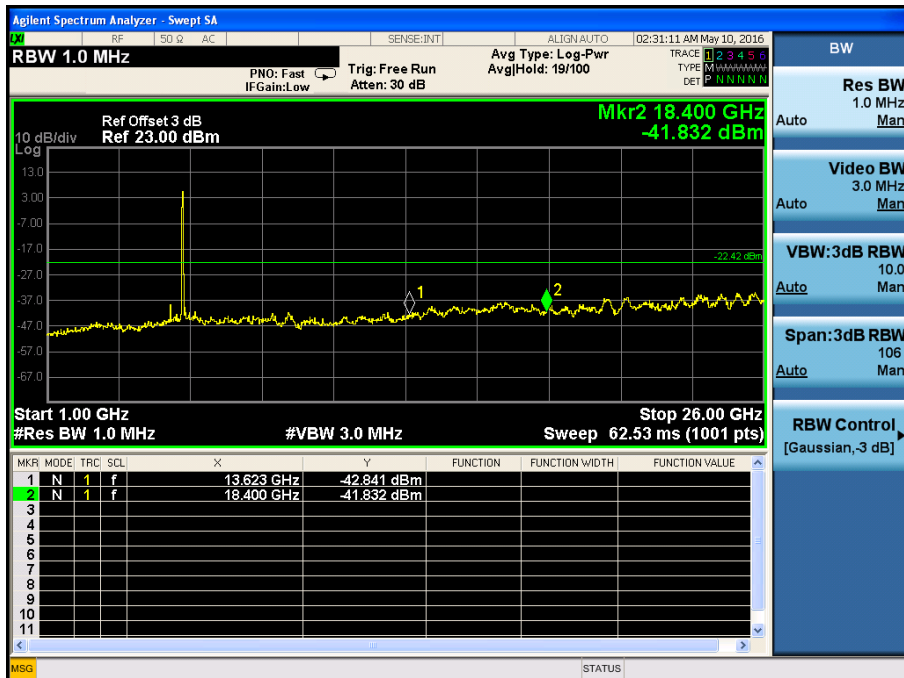
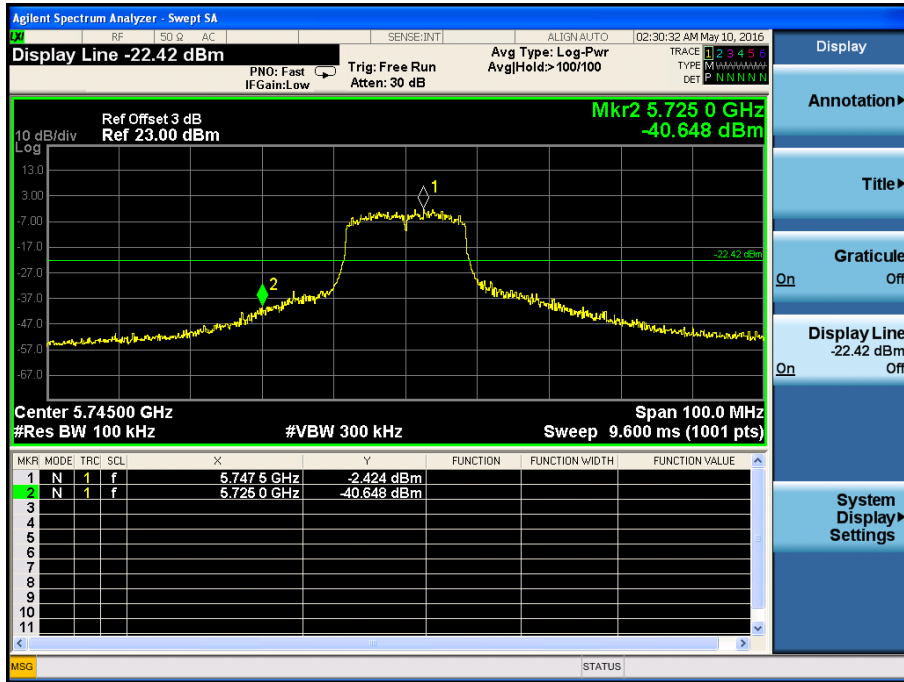
5580MHz



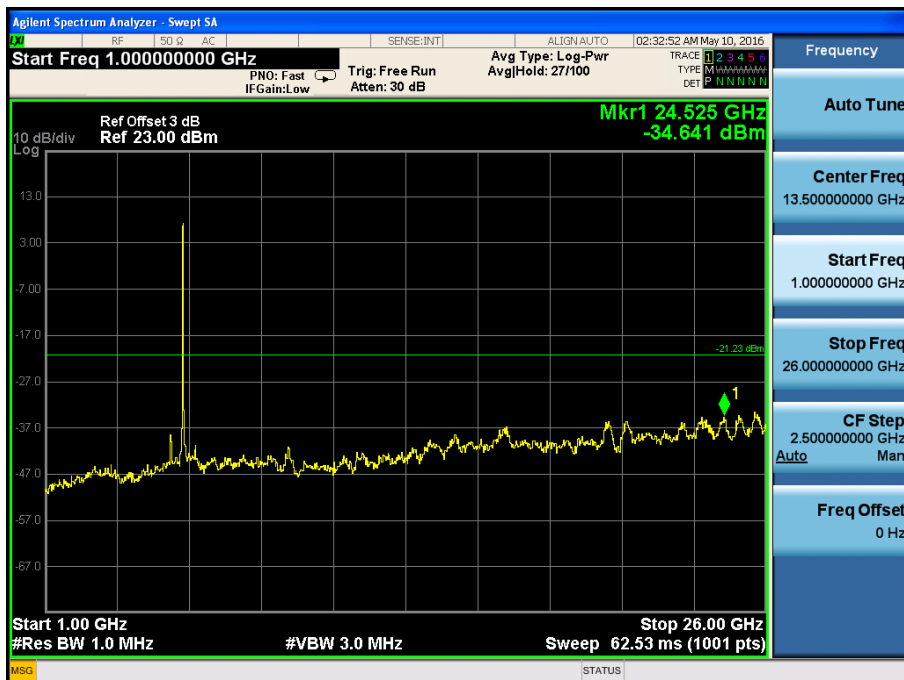
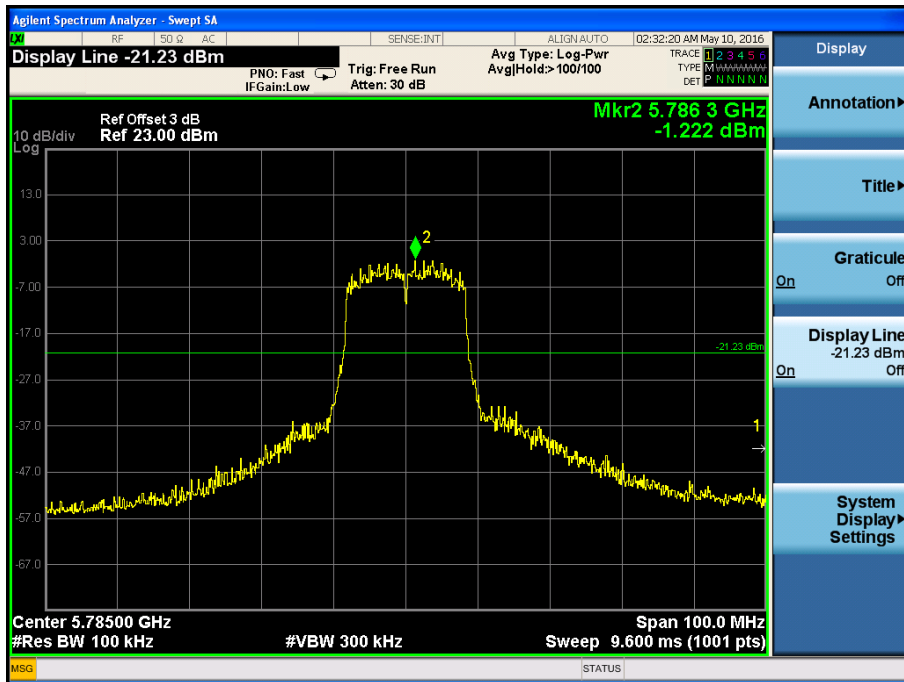
5700MHz



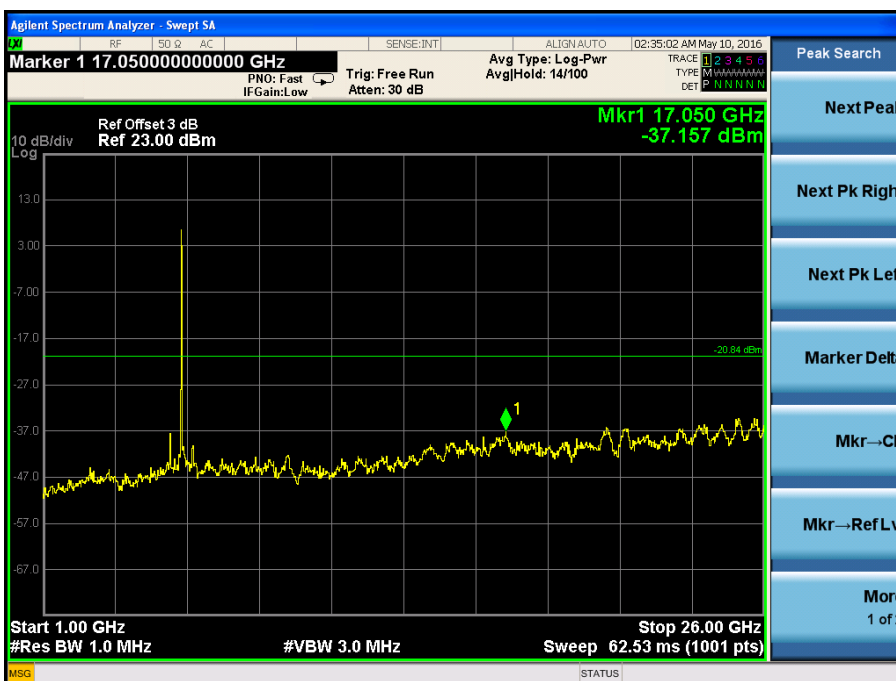
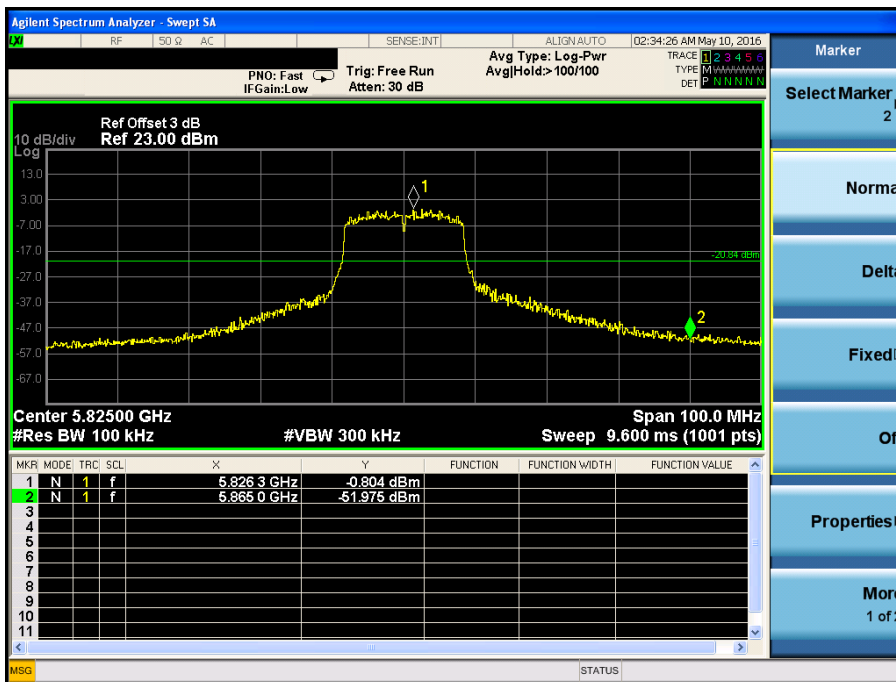
5745MHz



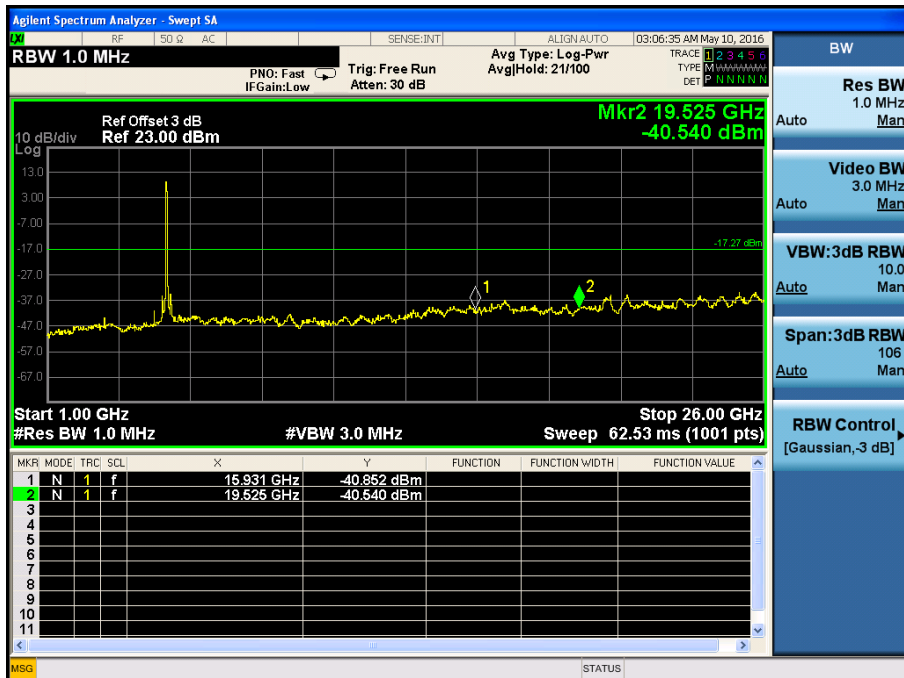
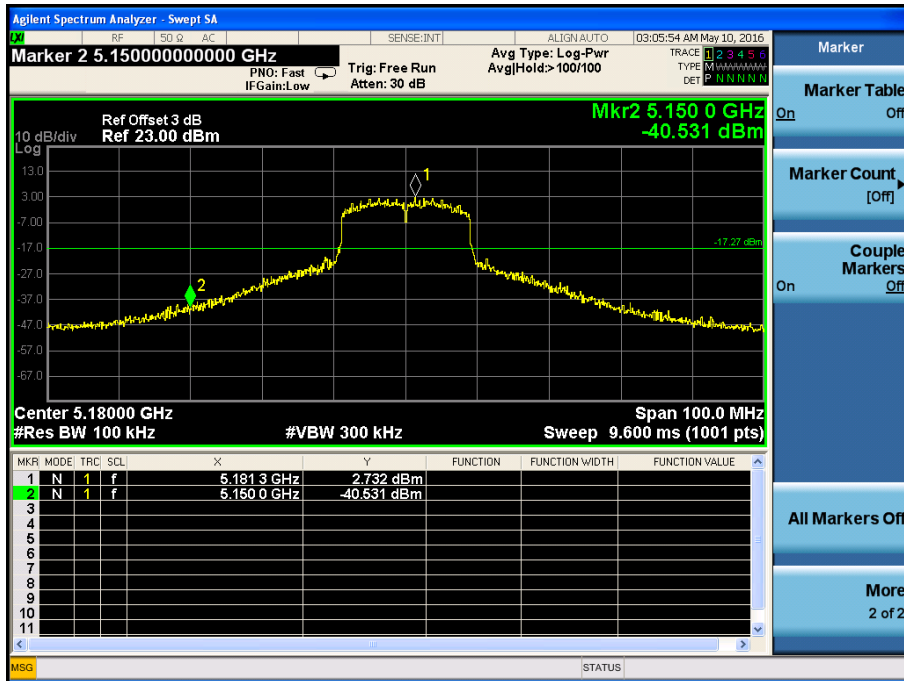
5785MHz



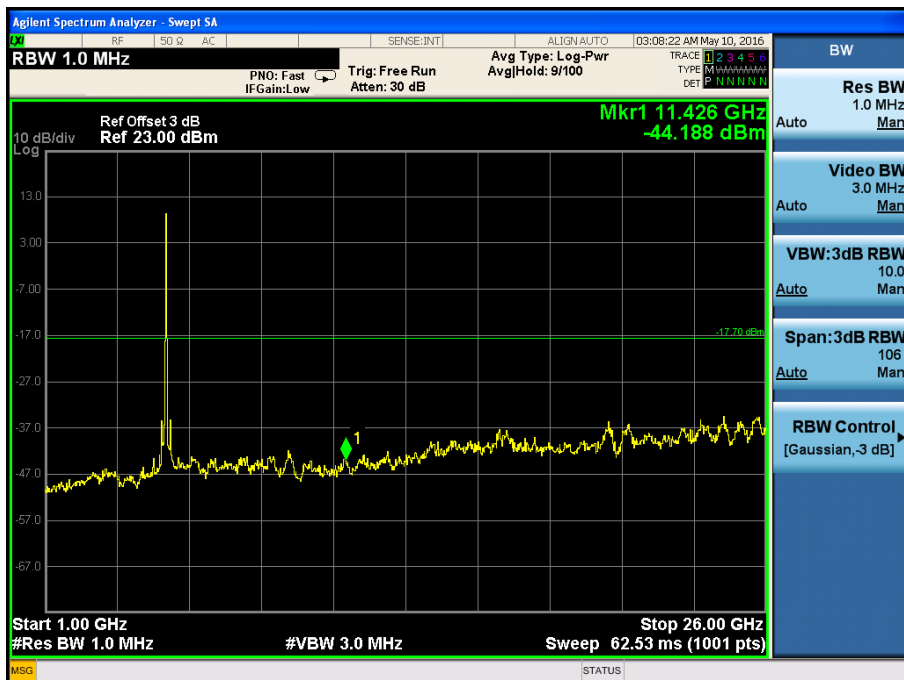
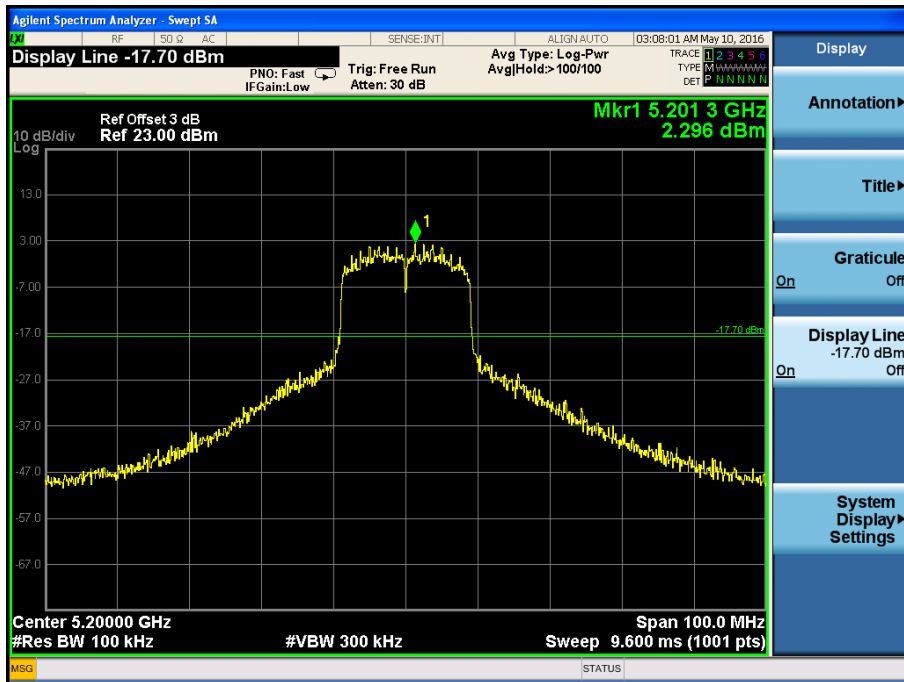
5825MHz



802.11n-HT20  
5180MHz

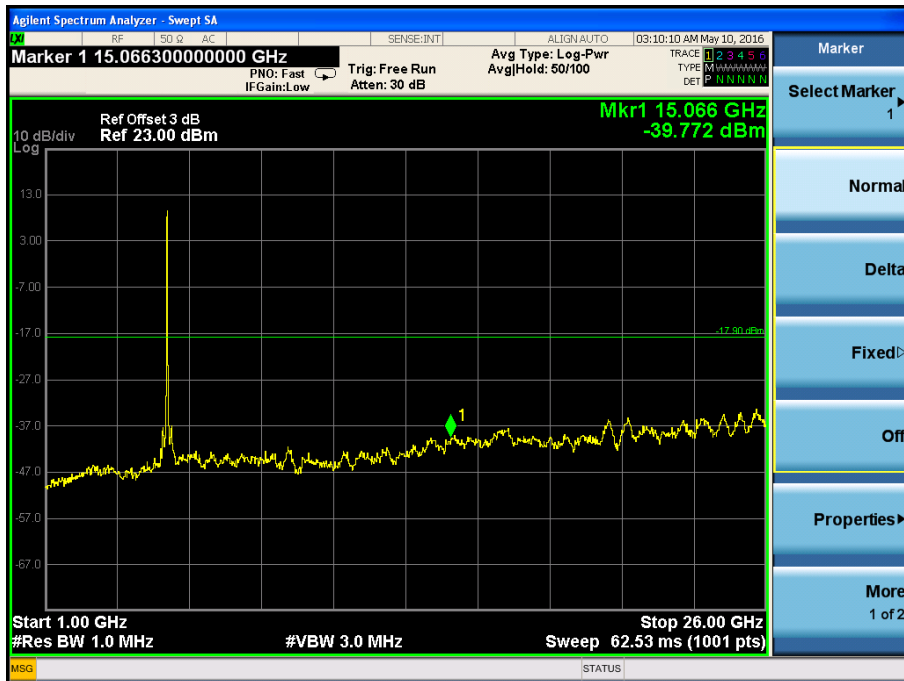
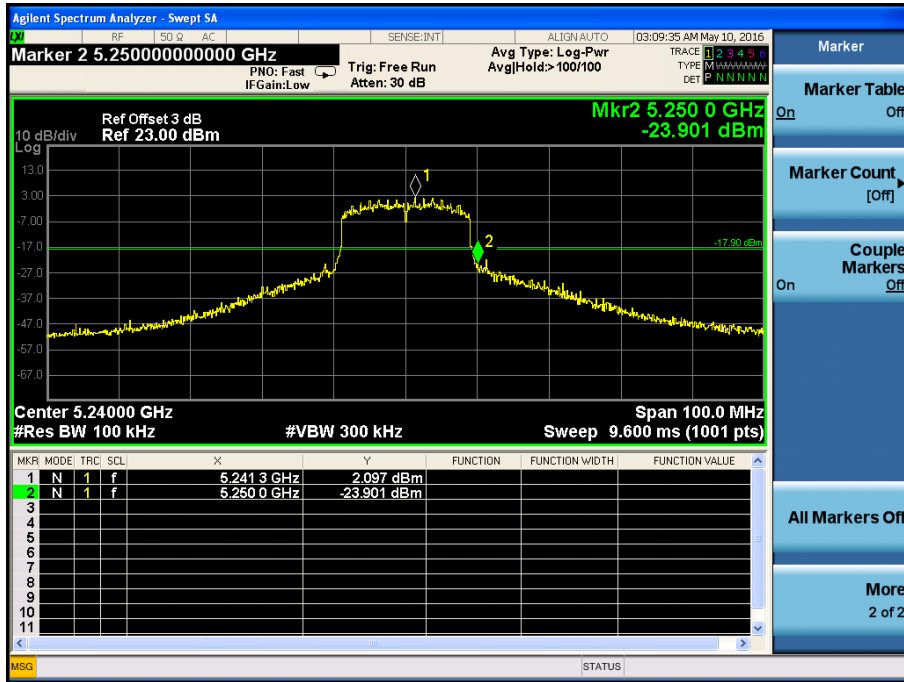


5200MHz

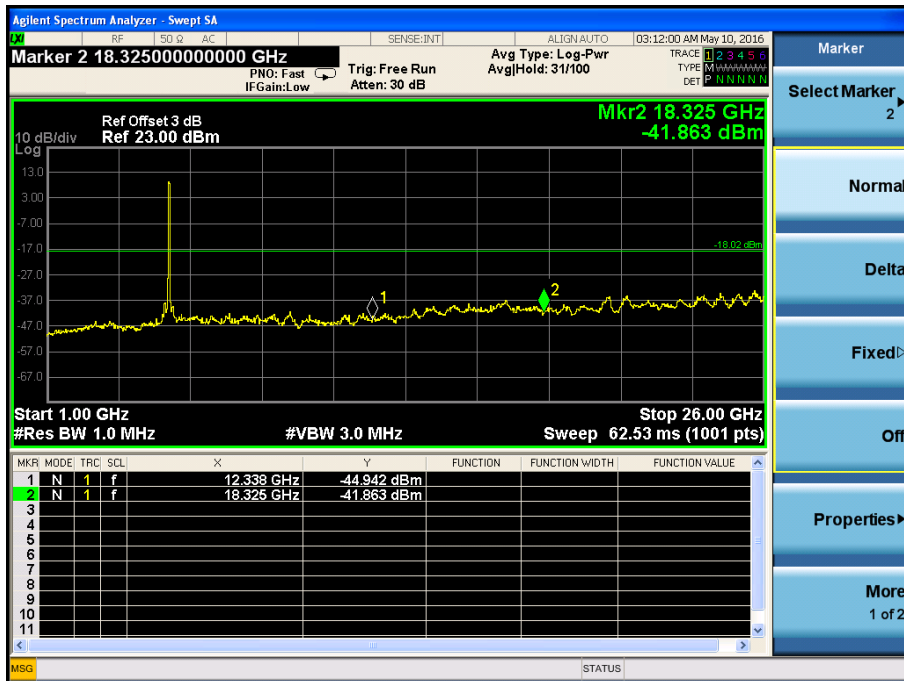
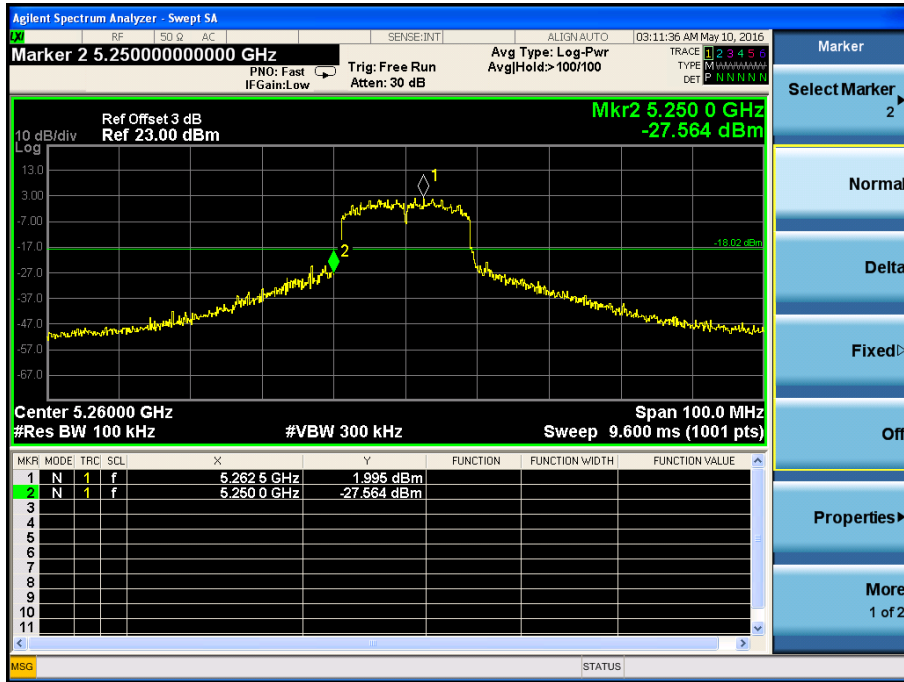




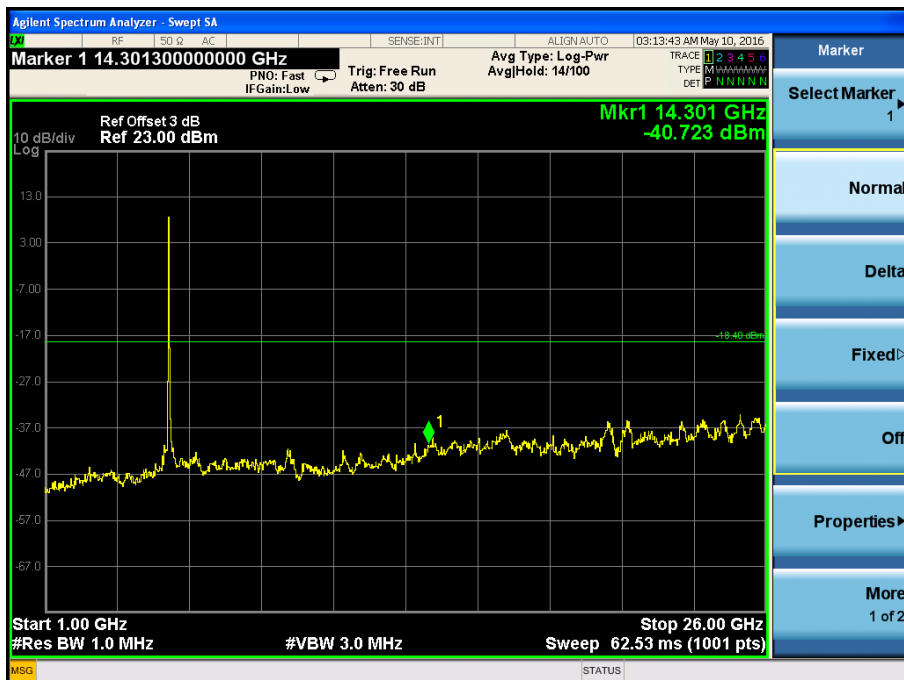
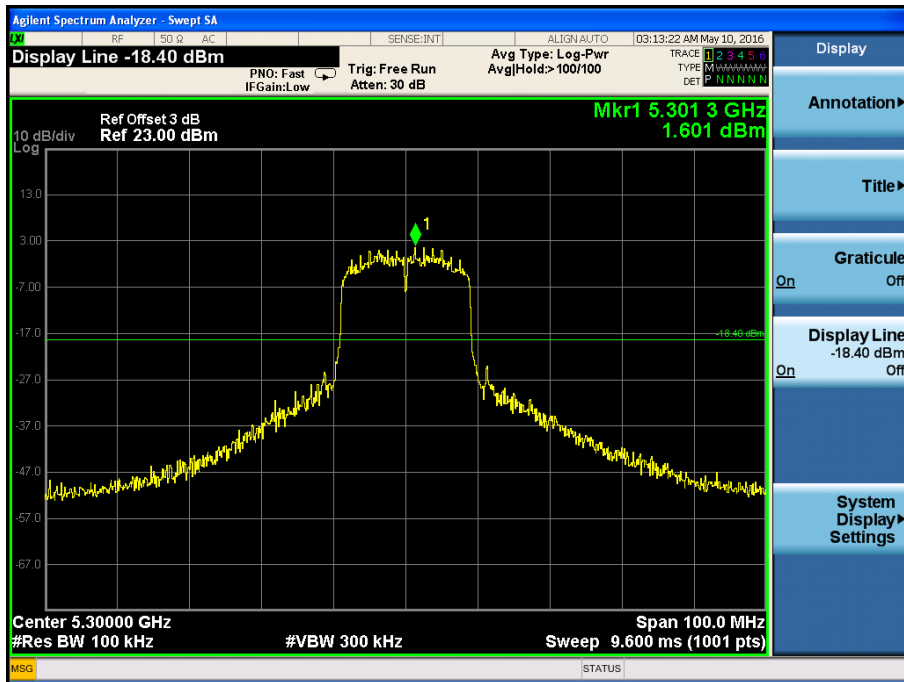
5240MHz



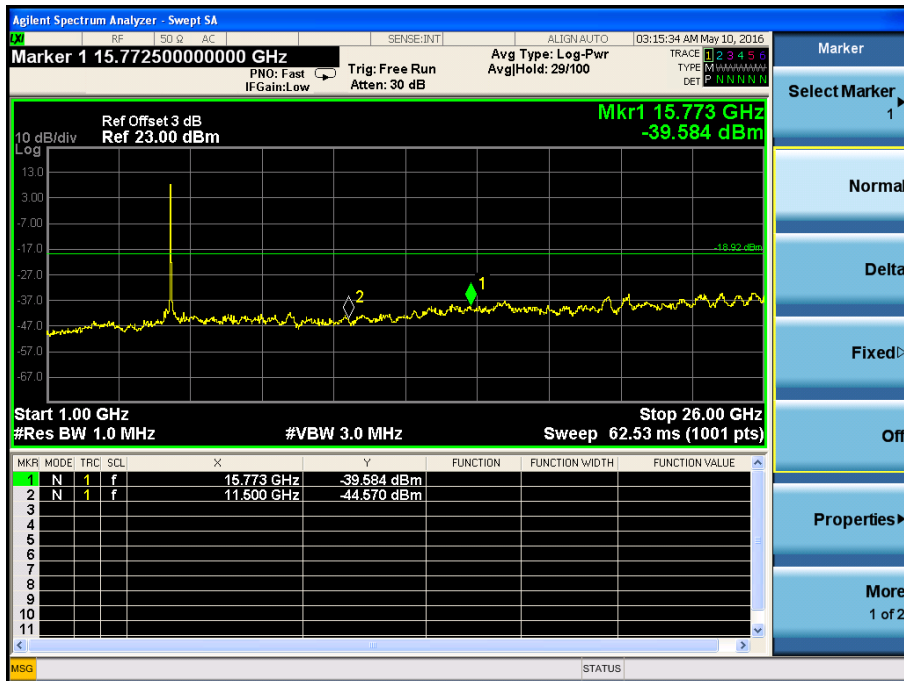
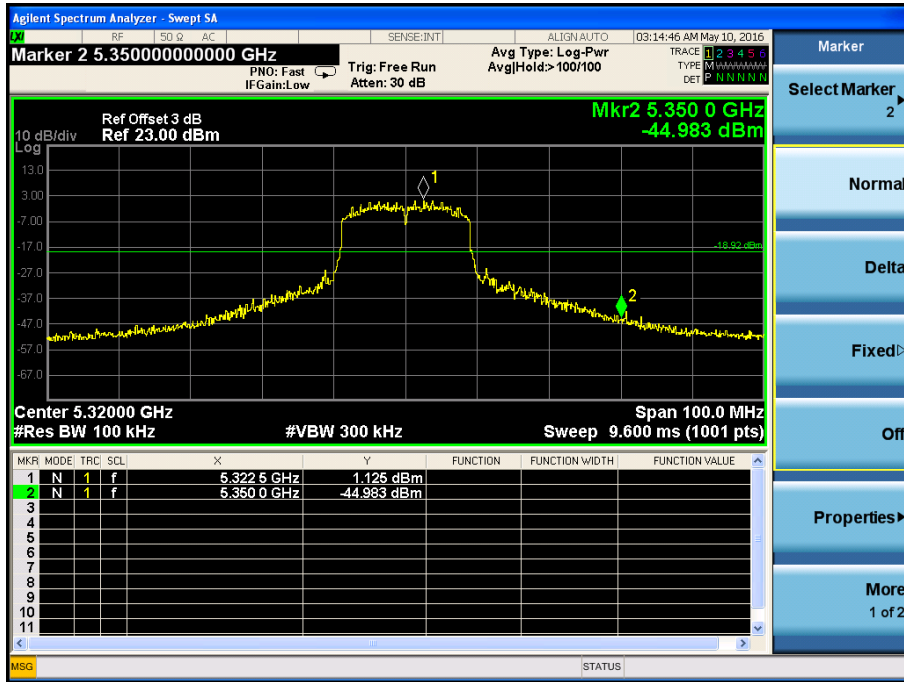
5260MHz



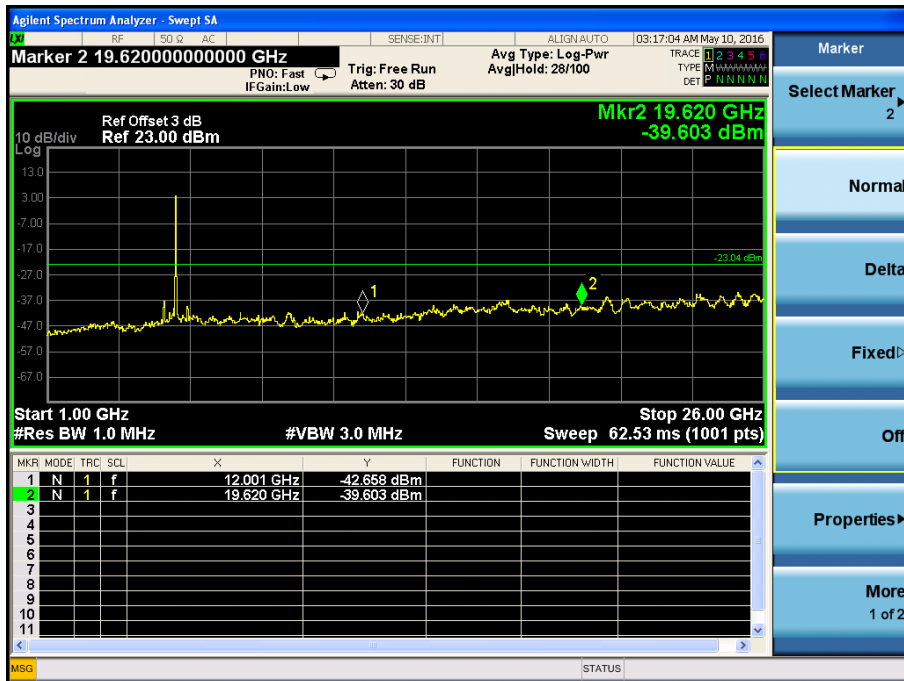
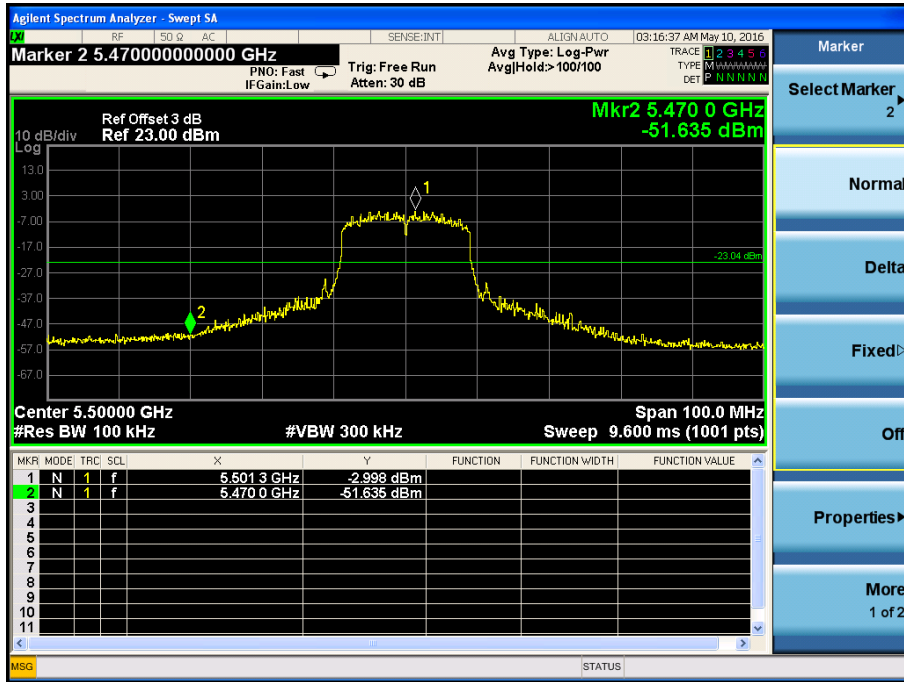
5300MHz



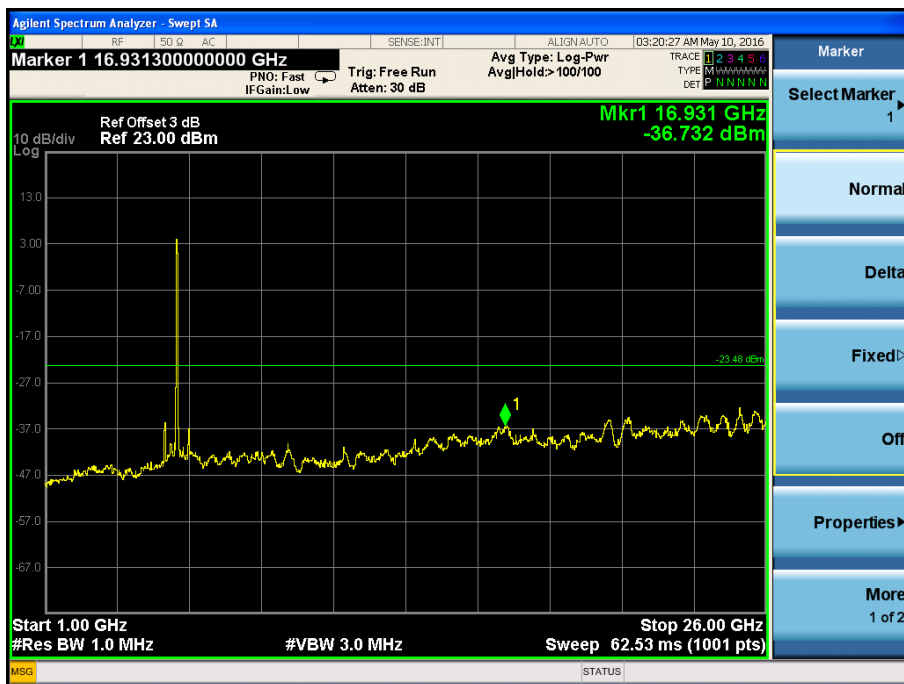
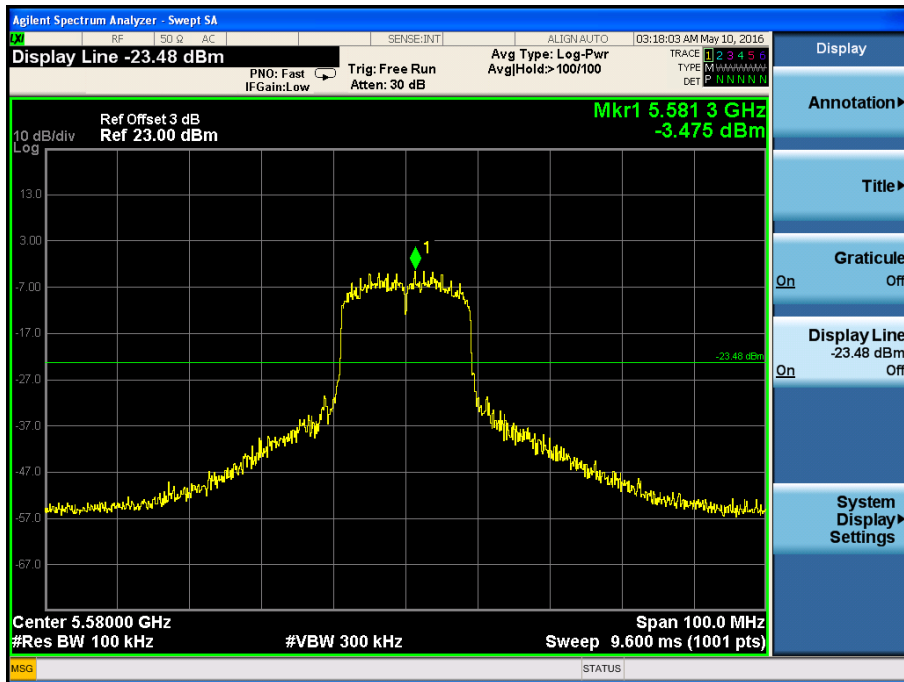
5320MHz



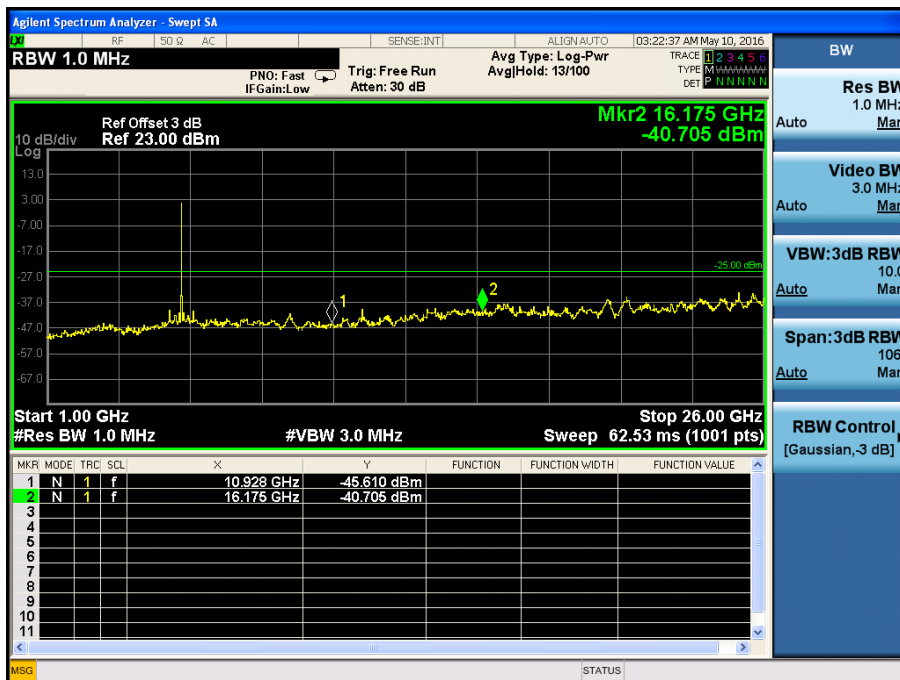
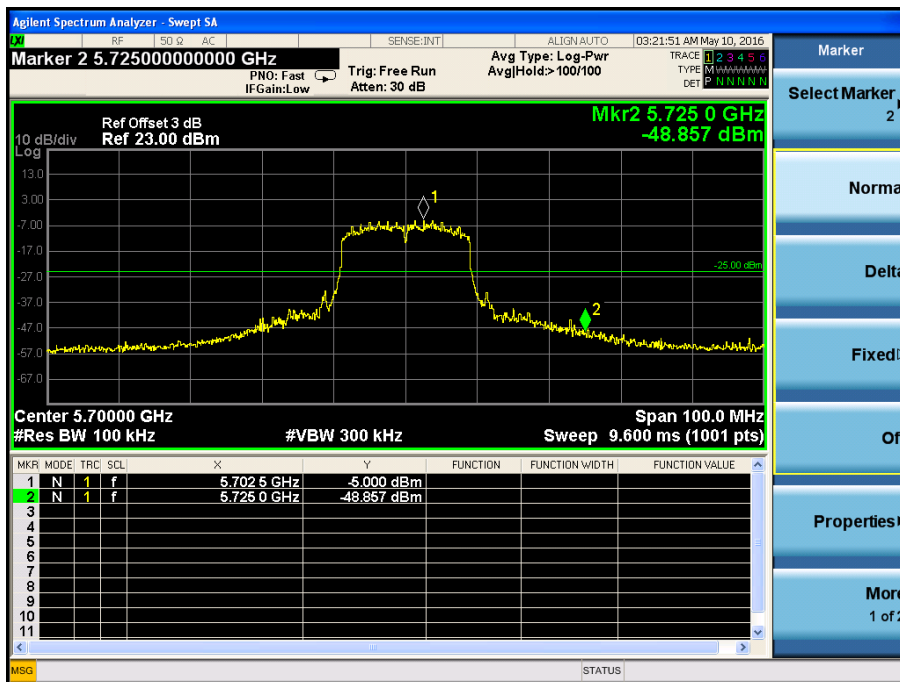
5500MHz



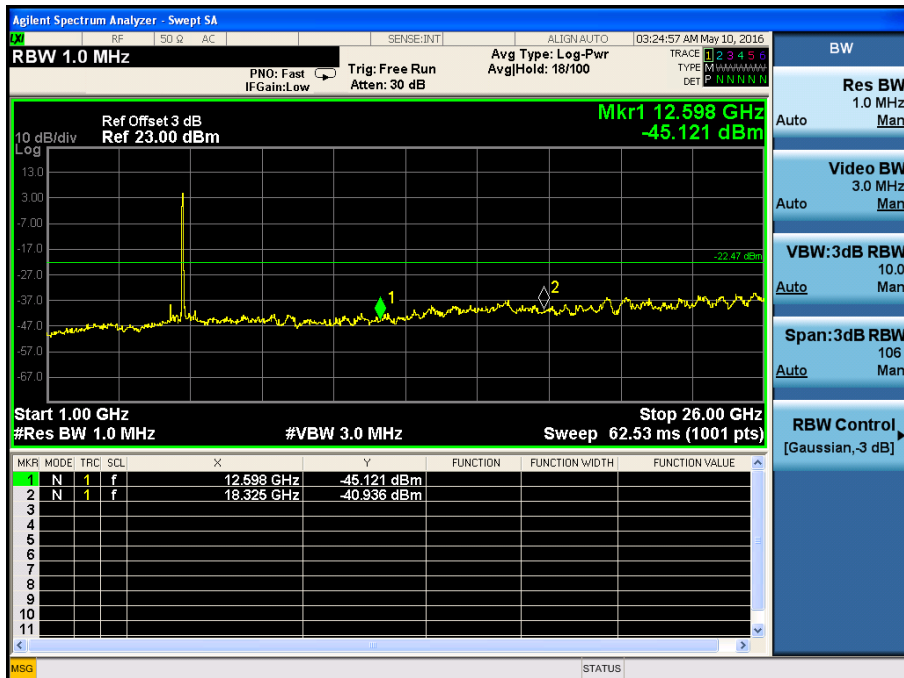
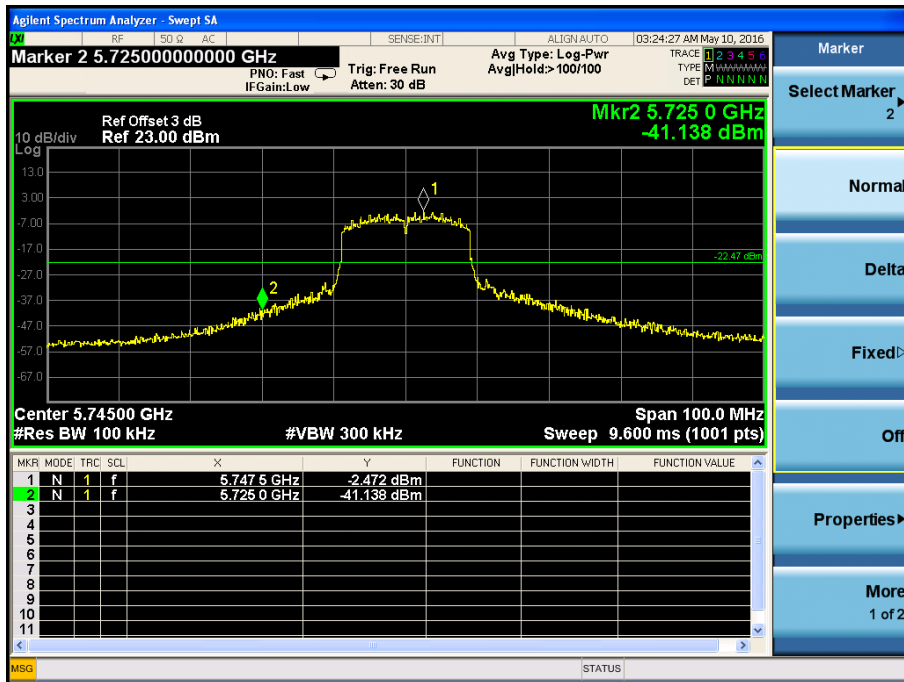
5580MHz



5700MHz

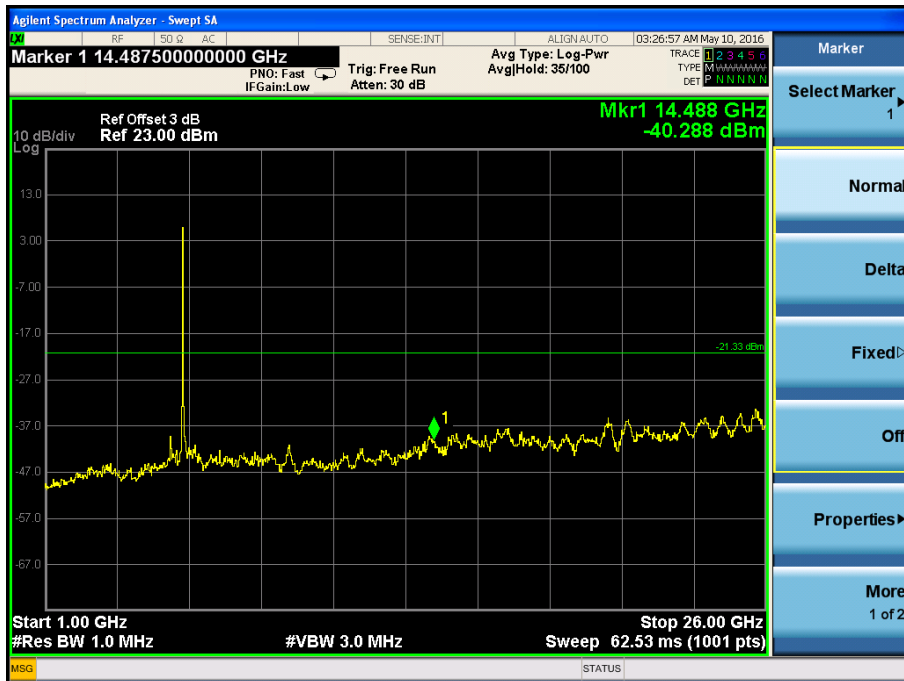
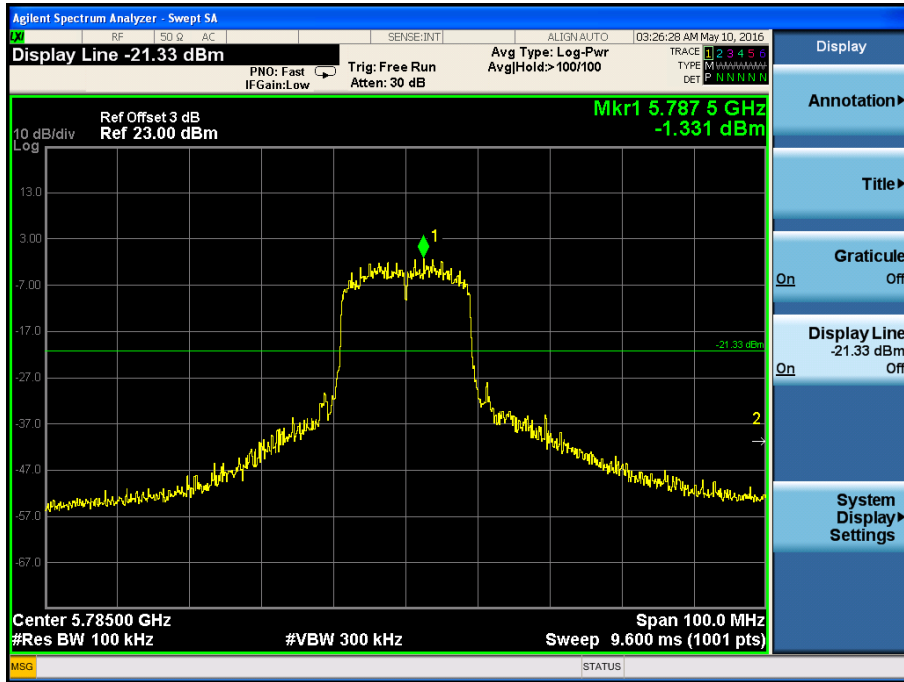


5745MHz

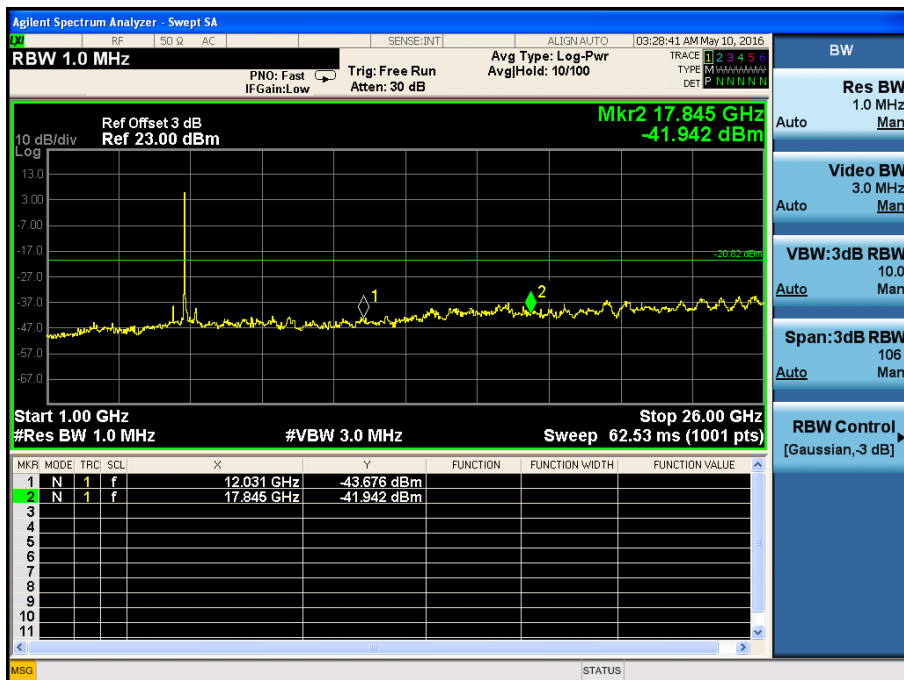
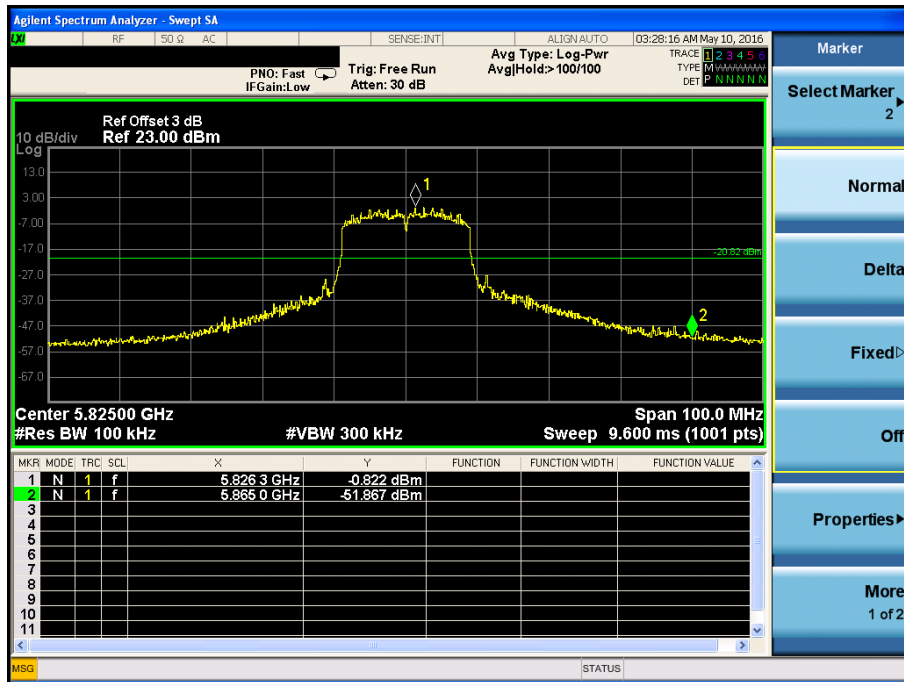




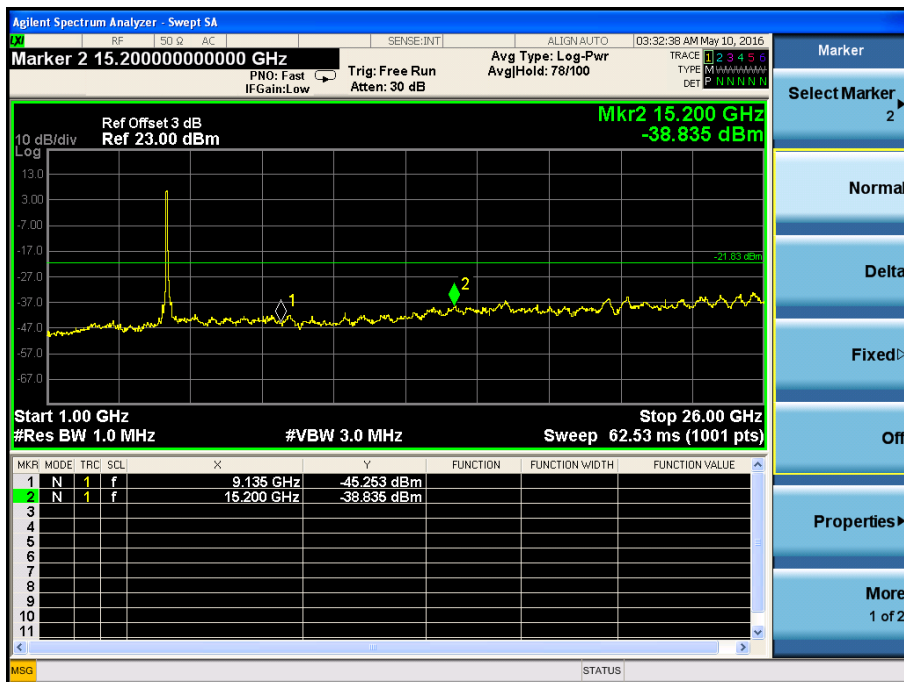
5785MHz



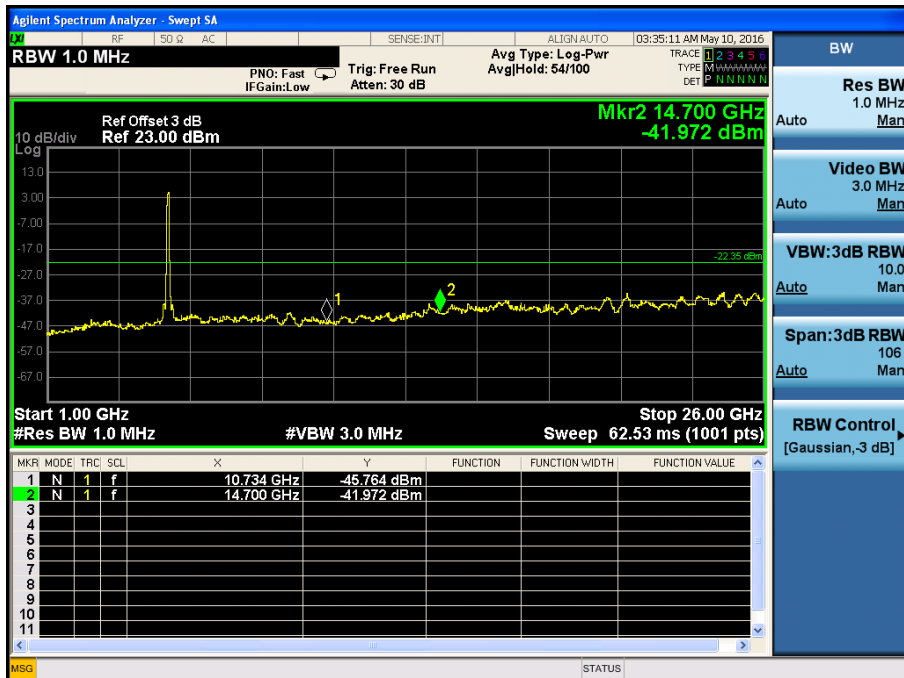
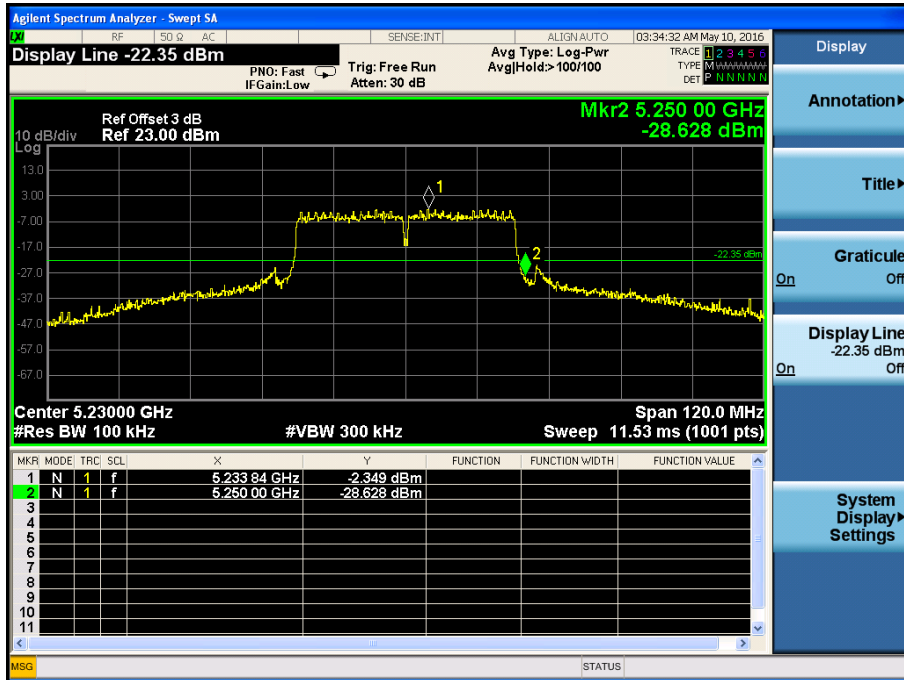
5825MHz



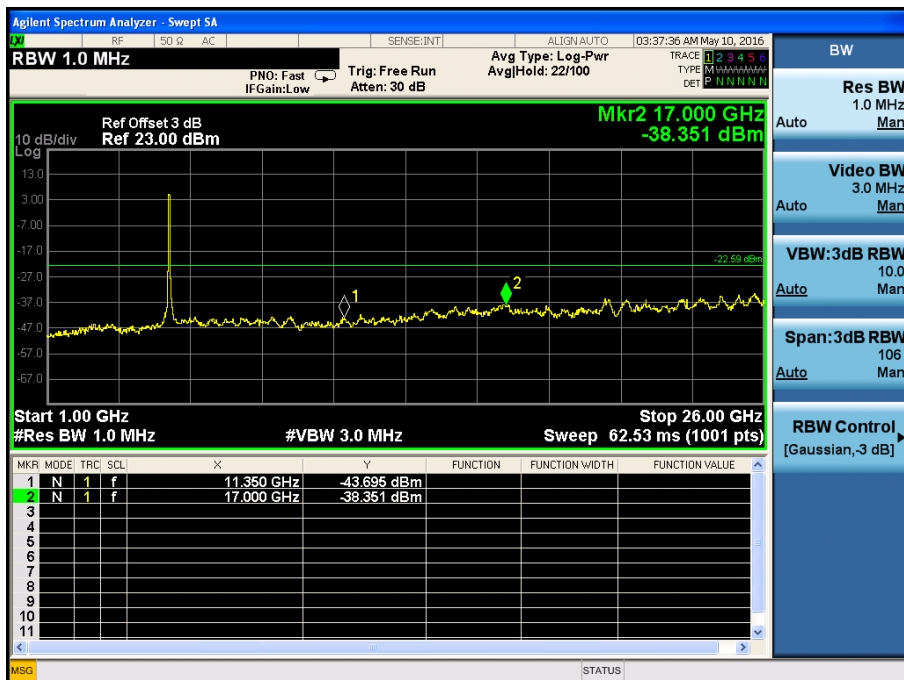
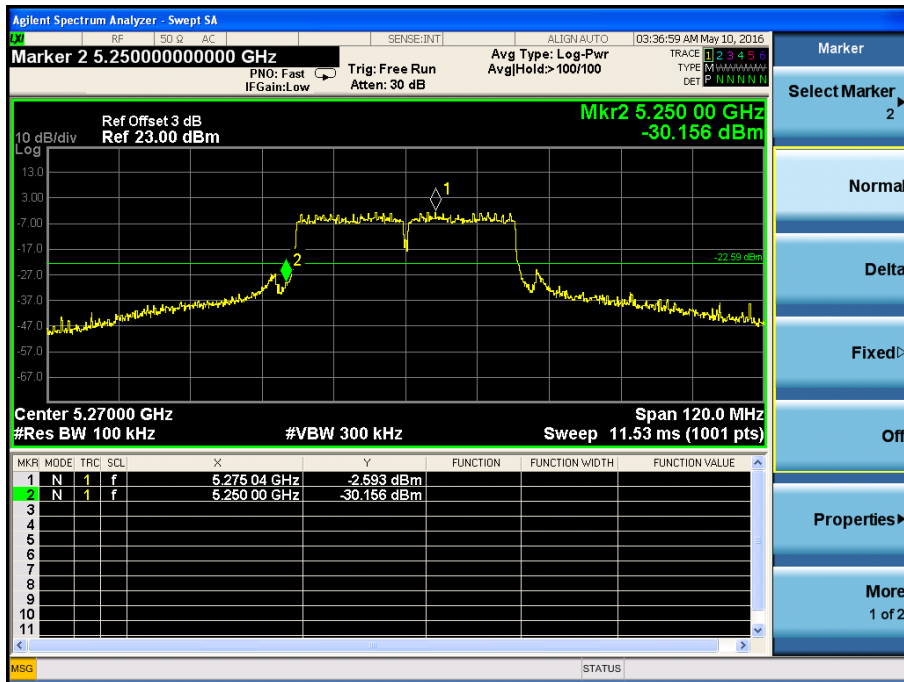
802.11n-HT40  
5190MHz



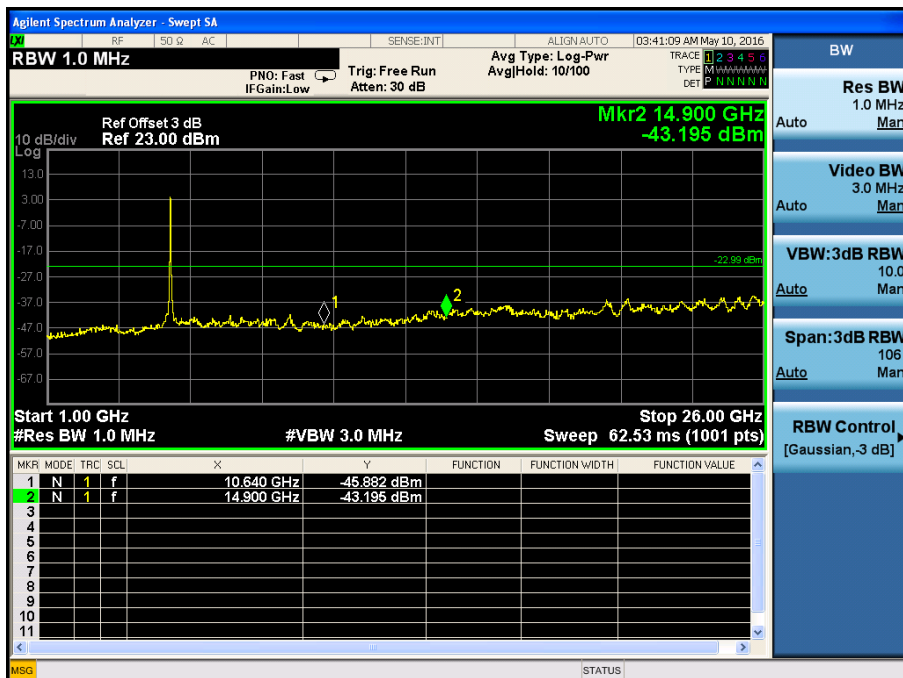
5230MHz



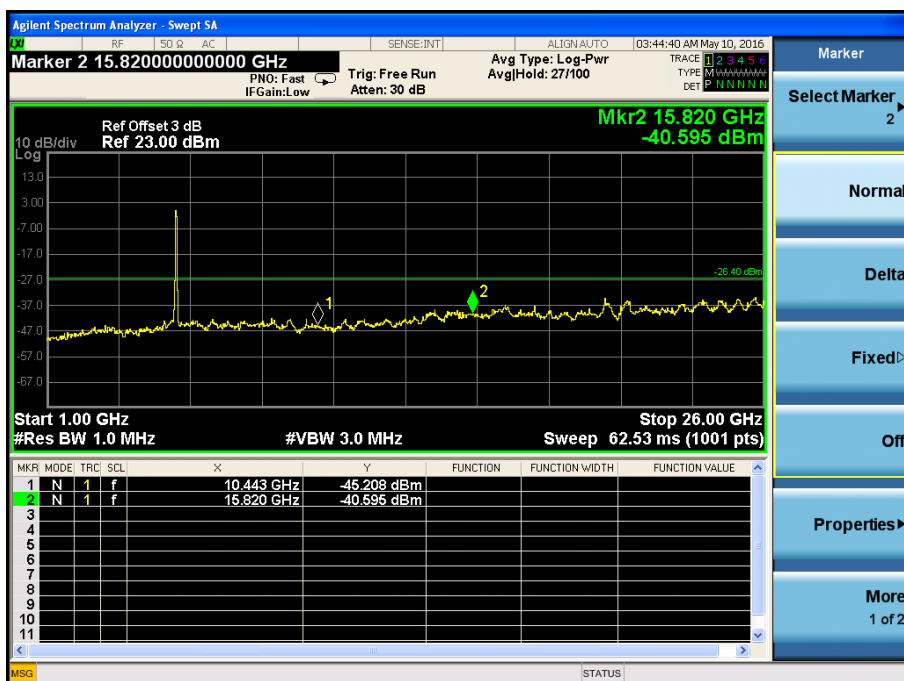
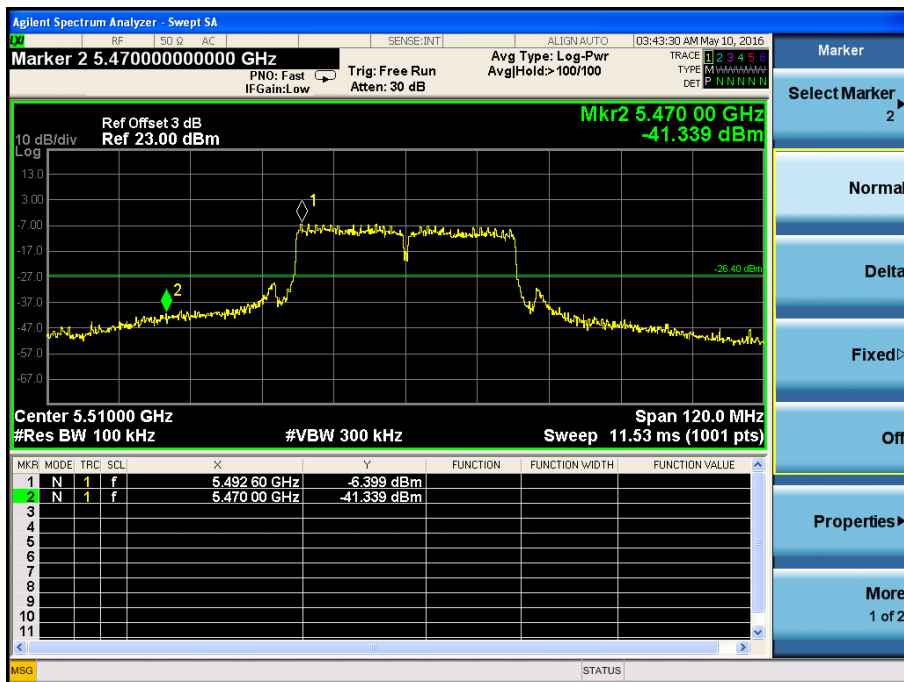
5270MHz



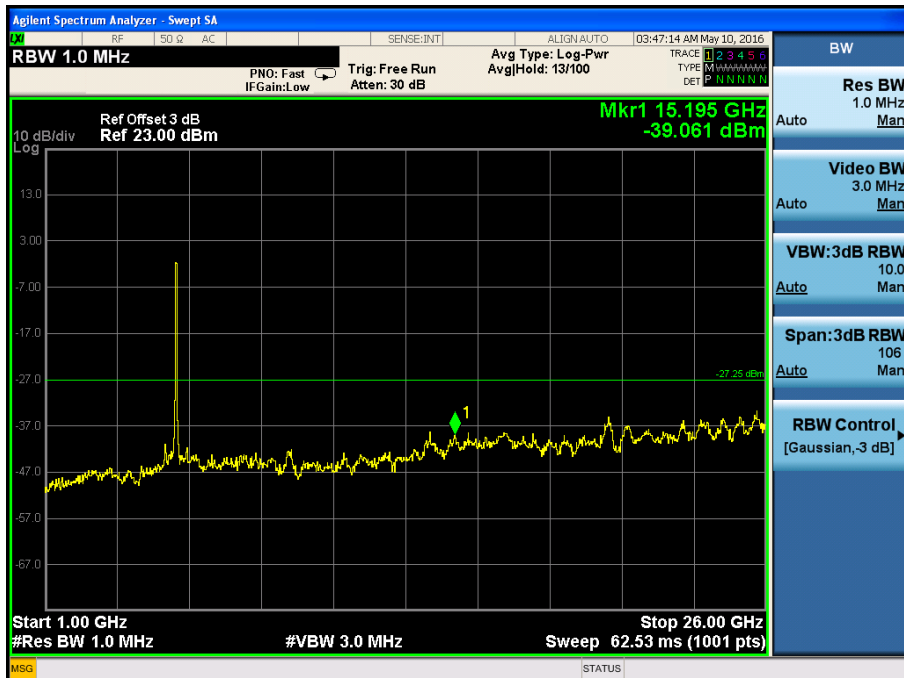
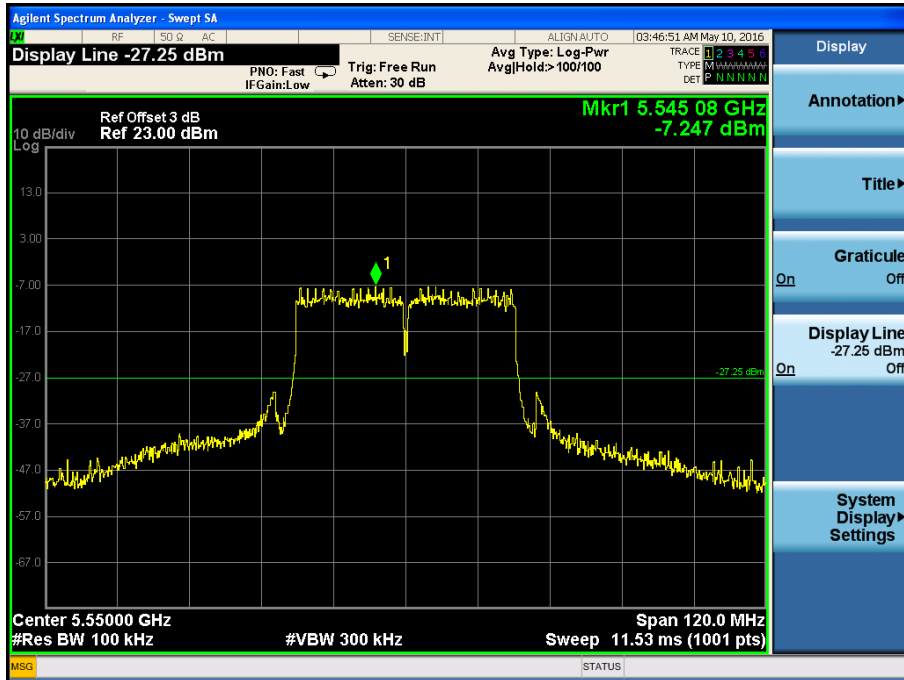
5310MHz



5510MHz

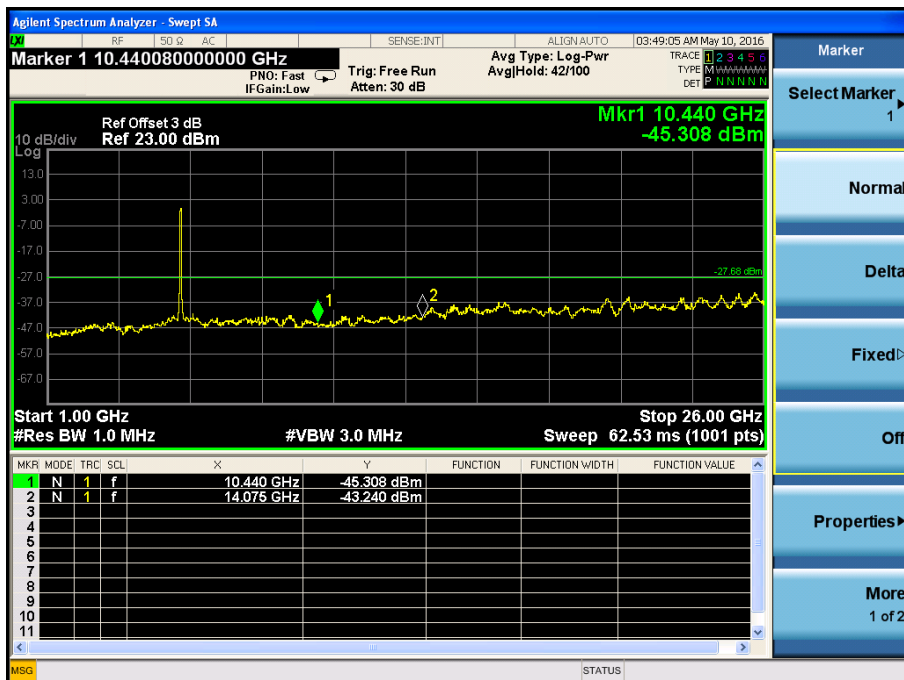
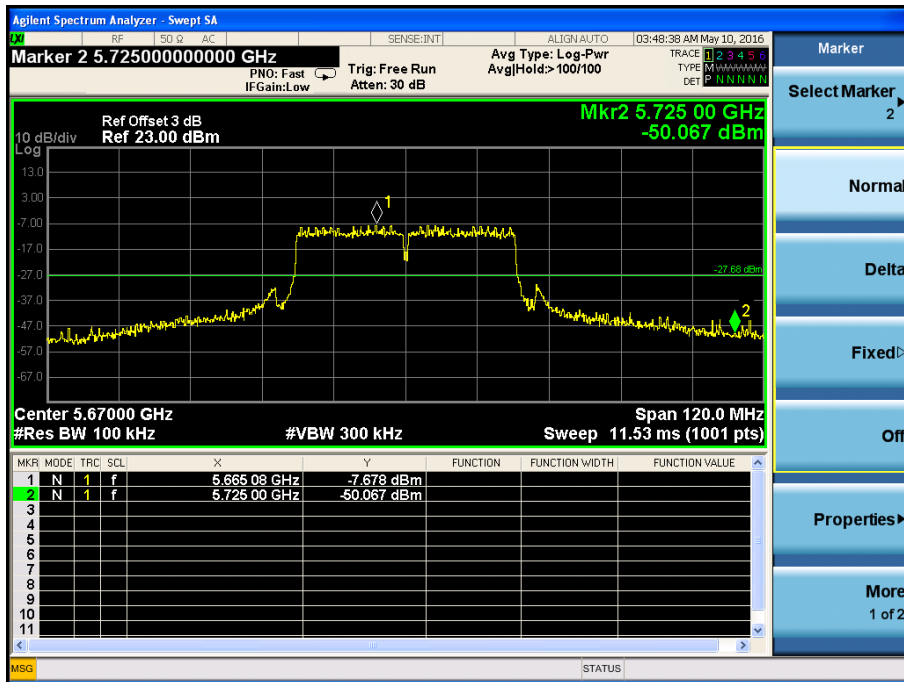


5550MHz

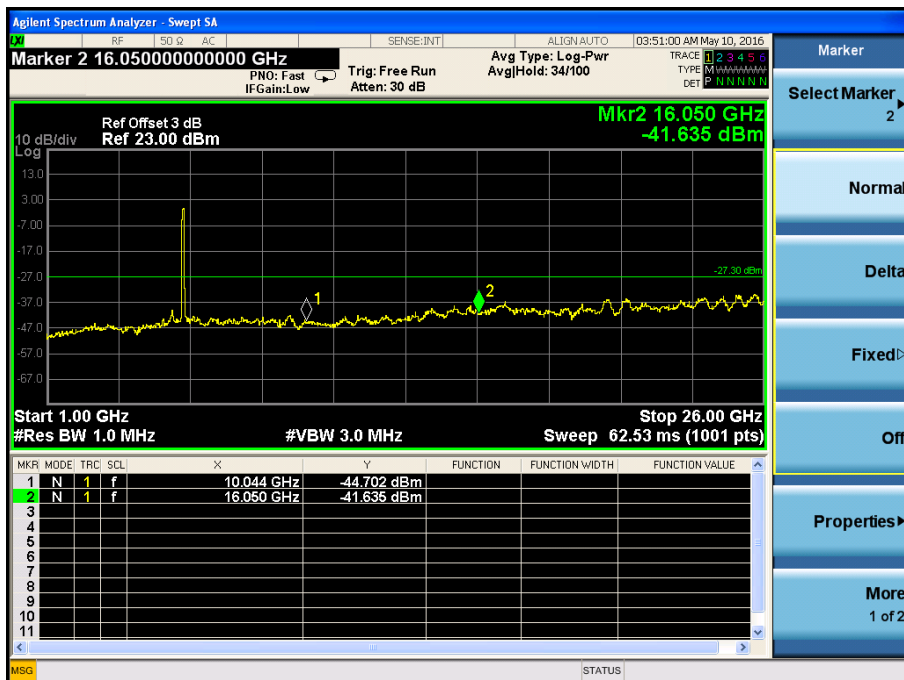
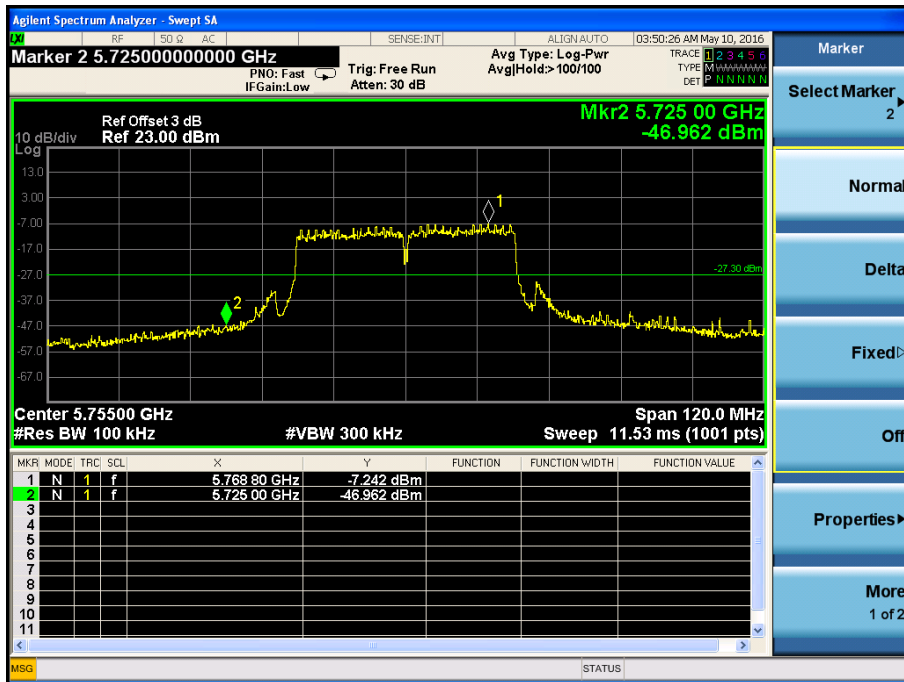




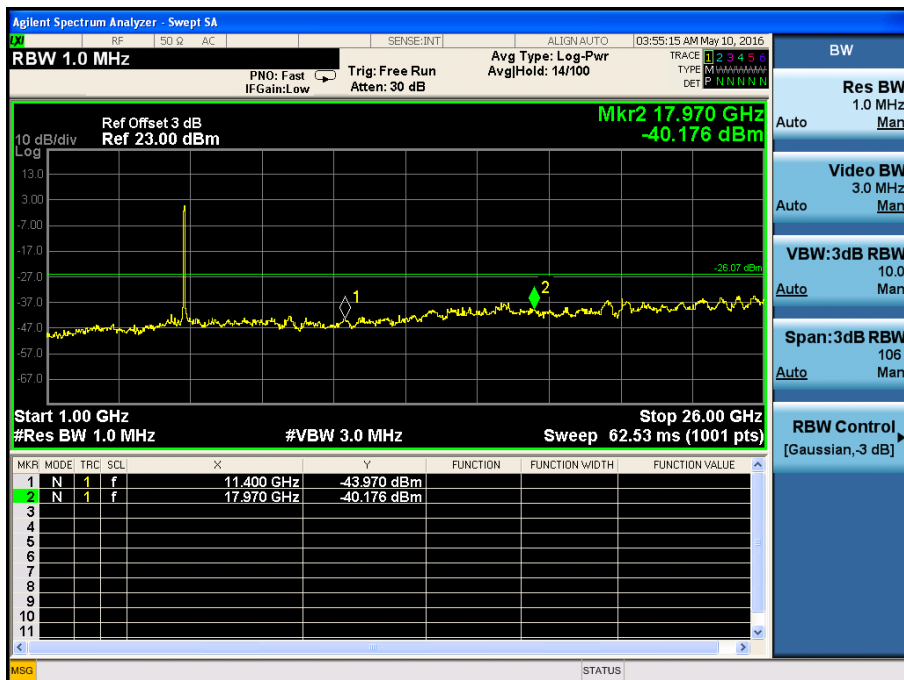
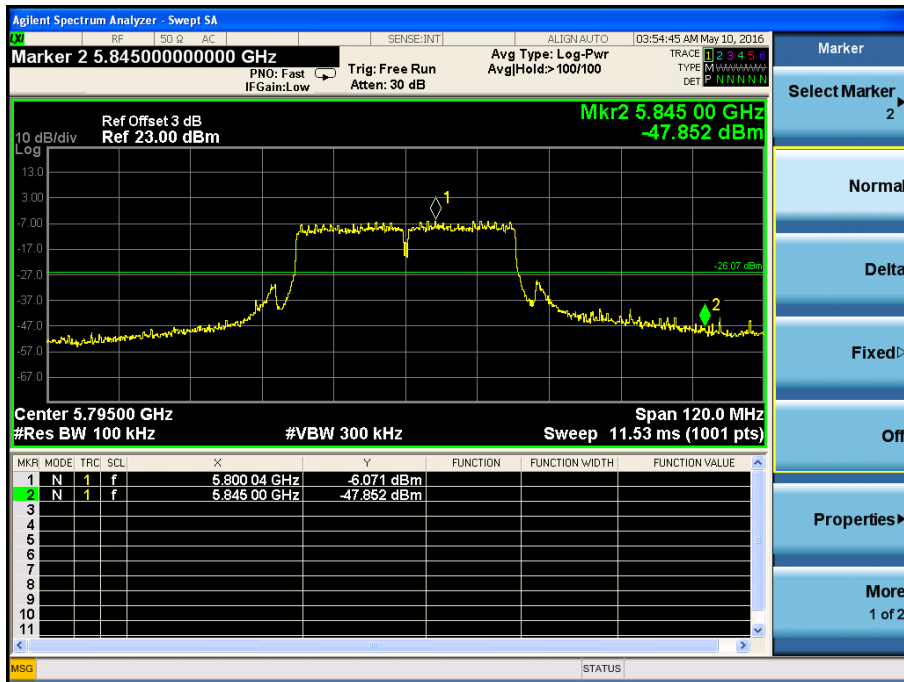
5670MHz



5755MHz



5795MHz



## 10. Frequency Stability

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### 10.1 Standard Applicable

According to §15.407(g), Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

### 10.2 Test Procedure

According to §2.1055, the following test procedure was performed.

The Frequency Stability is measured directly with a Frequency Domain Analyzer. Frequency Deviation in ppm is calculated from the measured peak to peak value.

The Carrier Frequency Stability over Power Supply Voltage and over Temperature is measured with a Frequency Domain Analyzer in histogram mode

Temperature:	Supply Voltage
20°C	DC 3.3-4.2V declared nominal voltage
-30°C to +50°C	Normal

### 10.3 Environmental Conditions

Temperature:	20°C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

## 10.4 Summary of Test Results/Plots

5150-5250MHz

802.11a

Reference Frequency(Middle Channel): 5180 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	137	0.0264
40	3.7	139	0.0268
30	3.7	149	0.0288
20	3.7	150	0.0290
10	3.7	136	0.0263
0	3.7	142	0.0274
-10	3.7	150	0.0290
-20	3.7	149	0.0288
-30	3.7	130	0.0251

802.11n20

Reference Frequency(Middle Channel): 5200 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	162	0.0312
40	3.7	164	0.0315
30	3.7	175	0.0337
20	3.7	177	0.0340
10	3.7	164	0.0315
0	3.7	153	0.0294
-10	3.7	149	0.0287
-20	3.7	157	0.0302
-30	3.7	164	0.0315

## 802.11n40

Reference Frequency(Middle Channel): 5230 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	161	0.0308
40	3.7	159	0.0304
30	3.7	149	0.0285
20	3.7	166	0.0317
10	3.7	159	0.0304
0	3.7	153	0.0293
-10	3.7	138	0.0264
-20	3.7	157	0.0300
-30	3.7	155	0.0296

## 5250-5350MHz

## 802.11a

Reference Frequency(Middle Channel): 5300 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	149	0.0281
40	3.7	163	0.0308
30	3.7	154	0.0291
20	3.7	141	0.0266
10	3.7	155	0.0292
0	3.7	152	0.0287
-10	3.7	140	0.0264
-20	3.7	167	0.0315
-30	3.7	170	0.0321

## 802.11n\_HT20

Reference Frequency(Middle Channel): 5300MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	145	0.0274
40	3.7	160	0.0302
30	3.7	152	0.0287
20	3.7	144	0.0272
10	3.7	165	0.0311
0	3.7	133	0.0251
-10	3.7	169	0.0319
-20	3.7	128	0.0242
-30	3.7	160	0.0302

## 802.11n\_HT40

Reference Frequency(Middle Channel): 5300 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	157	0.0296
40	3.7	143	0.0270
30	3.7	149	0.0281
20	3.7	148	0.0279
10	3.7	146	0.0275
0	3.7	155	0.0292
-10	3.7	135	0.0255
-20	3.7	136	0.0257
-30	3.7	159	0.0300

5470-5725MHz

802.11a

Reference Frequency(Middle Channel): 5600 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	161	0.0288
40	3.7	154	0.0275
30	3.7	174	0.0311
20	3.7	173	0.0309
10	3.7	147	0.0263
0	3.7	161	0.0288
-10	3.7	129	0.0230
-20	3.7	143	0.0255
-30	3.7	160	0.0286

802.11n\_HT20

Reference Frequency(Middle Channel): 5600 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	154	0.0275
40	3.7	135	0.0241
30	3.7	163	0.0291
20	3.7	135	0.0241
10	3.7	127	0.0227
0	3.7	127	0.0227
-10	3.7	140	0.0250
-20	3.7	135	0.0241
-30	3.7	128	0.0229



802.11n\_HT40

Reference Frequency(Middle Channel): 5600 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	162	0.0289
40	3.7	168	0.0300
30	3.7	167	0.0298
20	3.7	135	0.0241
10	3.7	159	0.0284
0	3.7	146	0.0261
-10	3.7	130	0.0232
-20	3.7	127	0.0227
-30	3.7	174	0.0311

5725-5850MHz

802.11a

Reference Frequency(Middle Channel): 5785 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	140	0.0242
40	3.7	130	0.0225
30	3.7	140	0.0242
20	3.7	129	0.0223
10	3.7	148	0.0256
0	3.7	167	0.0289
-10	3.7	174	0.0301
-20	3.7	136	0.0235
-30	3.7	133	0.0230

## 802.11n\_HT20

Reference Frequency(Middle Channel): 5785 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	131	0.0226
40	3.7	175	0.0303
30	3.7	125	0.0216
20	3.7	147	0.0254
10	3.7	162	0.0280
0	3.7	167	0.0289
-10	3.7	159	0.0275
-20	3.7	156	0.0270
-30	3.7	135	0.0233

## 802.11n\_HT40

Reference Frequency(Middle Channel): 5785 MHz			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Measure with Time Elapsed	
		MCF (Hz)	Error (ppm)
50	3.7	137	0.0237
40	3.7	153	0.0264
30	3.7	153	0.0264
20	3.7	134	0.0232
10	3.7	132	0.0228
0	3.7	149	0.0258
-10	3.7	166	0.0287
-20	3.7	131	0.0226
-30	3.7	160	0.0277

So, Frequency Stability Versus Input Voltage is:

5150-5250MHz

**802.11a**

Reference Frequency(Middle Channel): 5180 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	146	0.0282
	3.7	150	0.0290
	4.2	147	0.0284

**802.11n20**

Reference Frequency(Middle Channel): 5200 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	160	0.0308
	3.7	177	0.0340
	4.2	168	0.0323

**802.11n40**

Reference Frequency(Middle Channel): 5230MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	138	0.0264
	3.7	166	0.0317
	4.2	156	0.0298

5250-5350MHz

802.11a

Reference Frequency(Middle Channel): 5300 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	138	0.0260
	3.7	141	0.0266
	4.2	128	0.0242

802.11n\_HT20

Reference Frequency(Middle Channel): 5300 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	159	0.0300
	3.7	144	0.0272
	4.2	153	0.0289

802.11n\_HT40

Reference Frequency(Middle Channel): 5300 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	138	0.0260
	3.7	148	0.0279
	4.2	151	0.0285

5470-5725MHz

802.11a

Reference Frequency(Middle Channel): 5600 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	170	0.0304
	3.7	173	0.0309
	4.2	149	0.0266

802.11n\_HT20

Reference Frequency(Middle Channel): 5600 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	140	0.0250
	3.7	135	0.0241
	4.2	157	0.0280

802.11n\_HT40

Reference Frequency(Middle Channel): 5600 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	130	0.0232
	3.7	135	0.0241
	4.2	146	0.0261

5725-5850MHz

802.11a\_HT20

Reference Frequency(Middle Channel): 5785 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	140	0.0242
	3.7	129	0.0223
	4.2	153	0.0264

802.11n\_HT20

Reference Frequency(Middle Channel): 5785 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	131	0.0226
	3.7	147	0.0254
	4.2	139	0.0240

802.11n\_HT40

Reference Frequency(Middle Channel): 5785 MHz			
Environment Temperature (°C)	Power Supplied (VAC)	Frequency Measure with Time Elapsed	
		Frequency (Hz)	Error (ppm)
20	3.3	156	0.0270
	3.7	134	0.0232
	4.2	144	0.0249

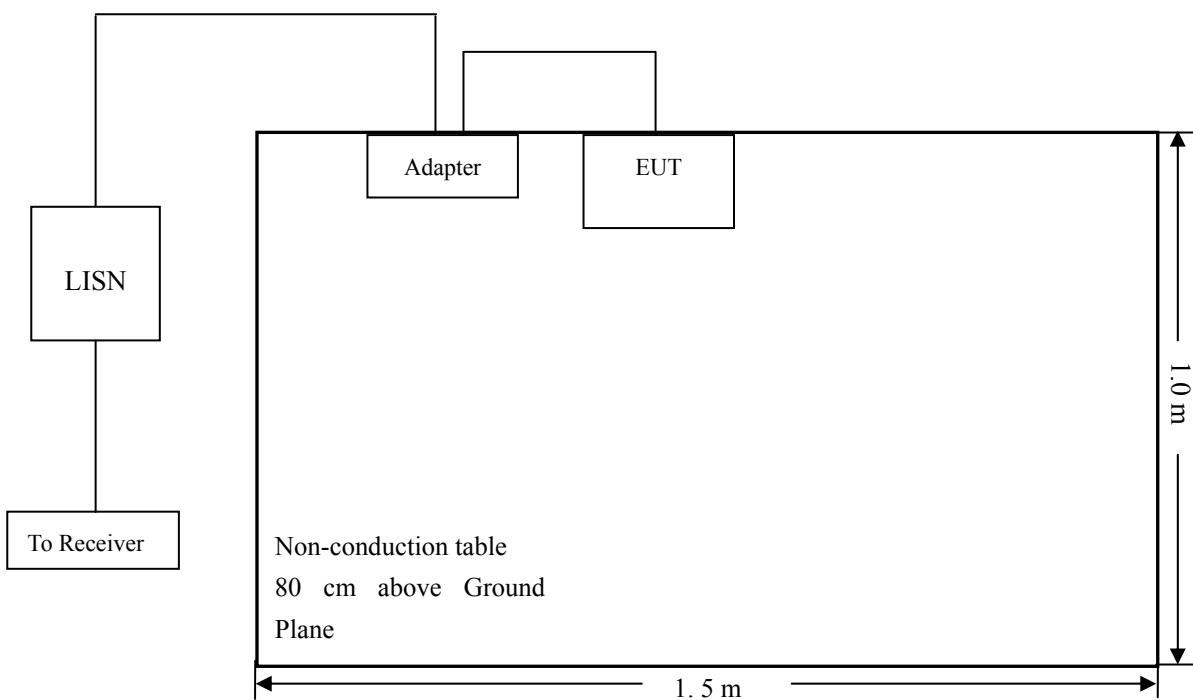
## 11. Conducted Emissions

### 11.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.207 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

### 11.2 Basic Test Setup Block Diagram



### 11.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

## 11.4 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency ..... 150 kHz  
Stop Frequency..... 30 MHz  
Sweep Speed ..... Auto  
IF Bandwidth..... 10 kHz  
Quasi-Peak Adapter Bandwidth ..... 9 kHz  
Quasi-Peak Adapter Mode ..... Normal

## 11.5 Summary of Test Results/Plots

According to the data in section 11.6, the EUT complied with the FCC Part 15.207 Conducted margin for this device, with the *worst* margin reading of:

**-6.54 dB at 0.1980 MHz in the Line mode, peak detector, 0.15-30MHz**

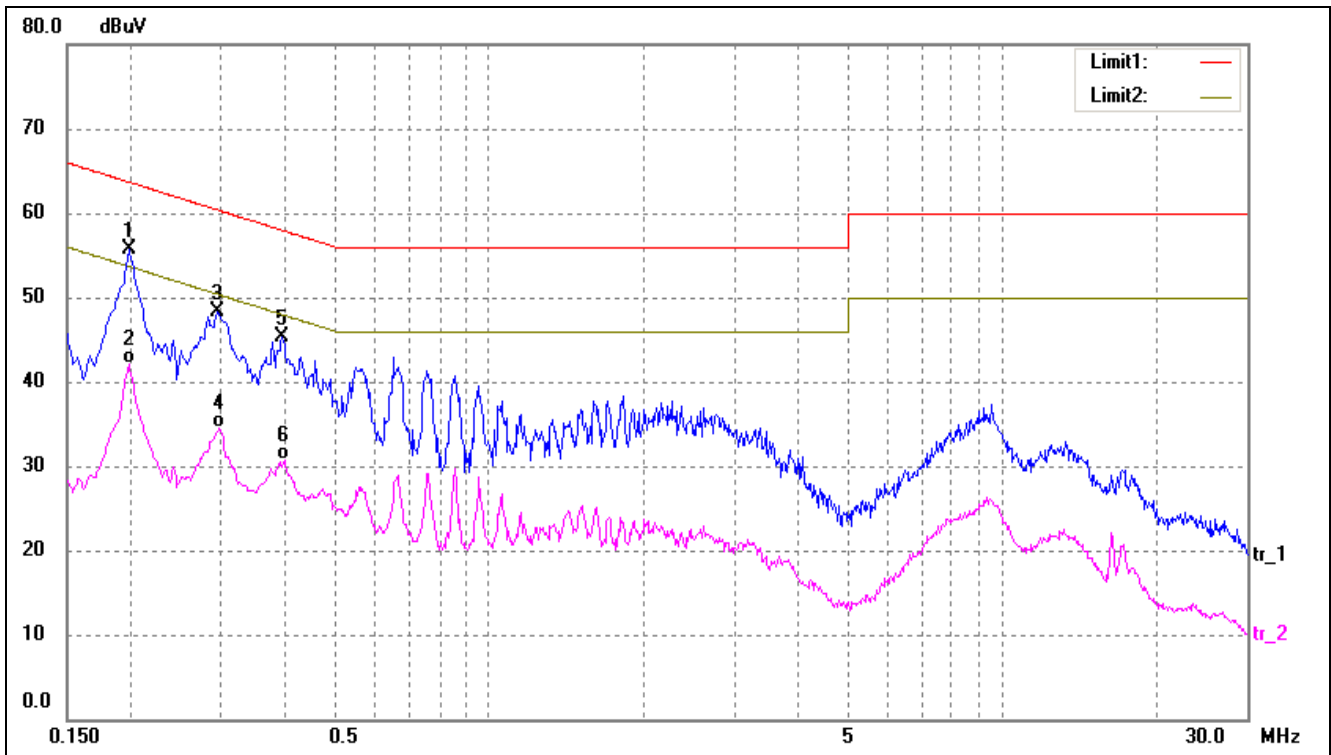
## 11.6 Conducted Emissions Test Data



**Plot of Conducted Emissions Test Data**

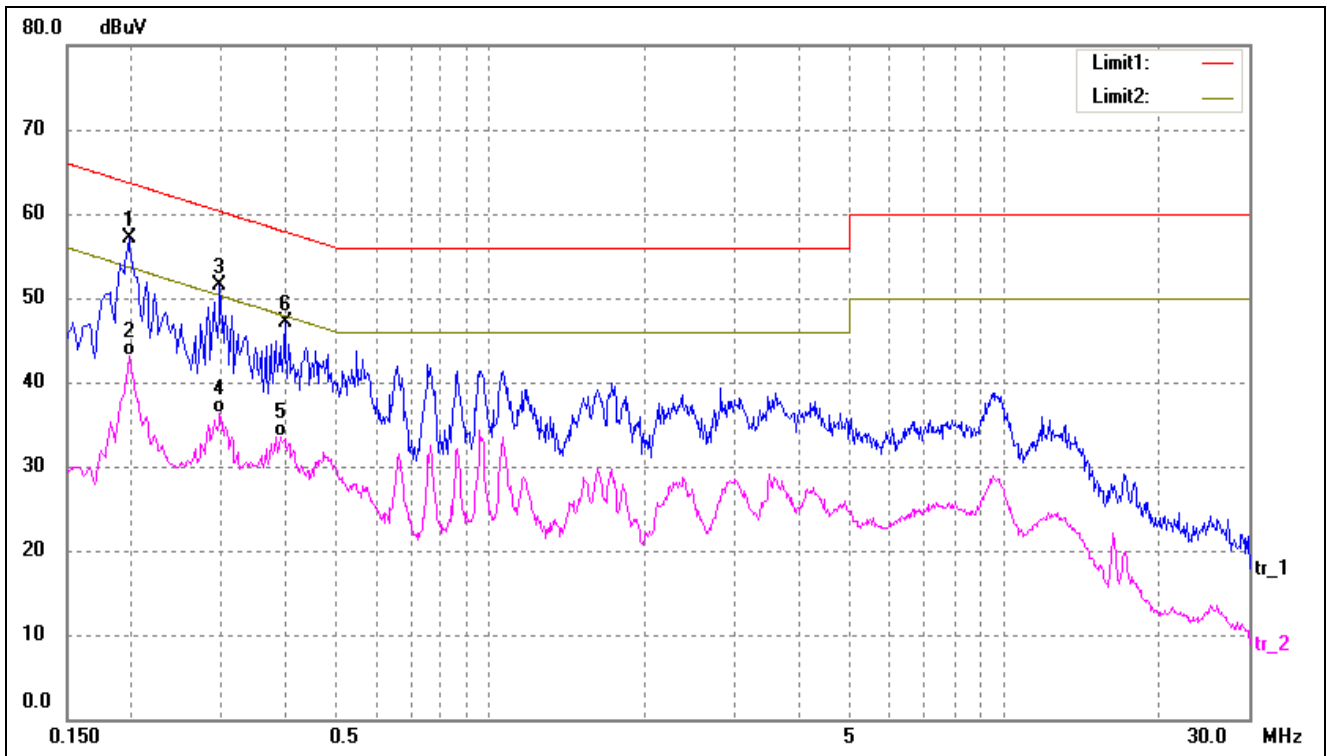
EUT: *MID*  
 Tested Model: *T01*  
 Operating Condition: *Transmitting*  
 Comment: *AC 120V/60Hz; Adapter DC 5V*

Test Specification: *Neutral*



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1980	45.90	9.80	55.70	63.69	-7.99	peak
2	0.1980	32.38	9.80	42.18	53.69	-11.51	AVG
3	0.2940	38.50	9.80	48.30	60.41	-12.11	peak
4	0.2980	24.65	9.80	34.45	50.30	-15.85	AVG
5	0.3940	35.60	9.80	45.40	57.98	-12.58	peak
6	0.3980	20.88	9.80	30.68	47.90	-17.22	AVG

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1980	47.35	9.80	57.15	63.69	-6.54	peak
2	0.1980	33.37	9.80	43.17	53.69	-10.52	AVG
3	0.2980	41.70	9.80	51.50	60.30	-8.80	peak
4	0.2980	26.60	9.80	36.40	50.30	-13.90	AVG
5	0.3900	23.77	9.80	33.57	48.06	-14.49	AVG
6	0.3980	37.32	9.80	47.12	57.90	-10.78	peak

\*\*\*\*\* END OF REPORT \*\*\*\*\*