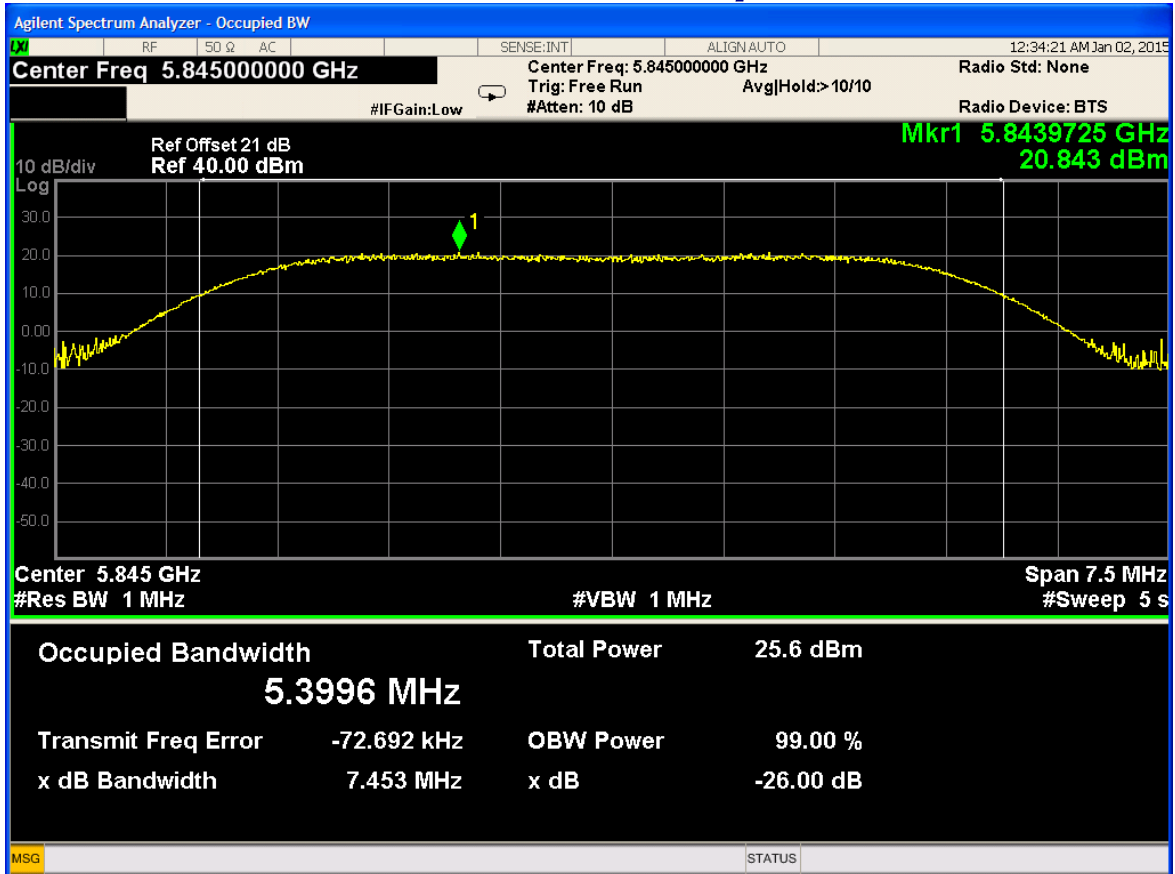
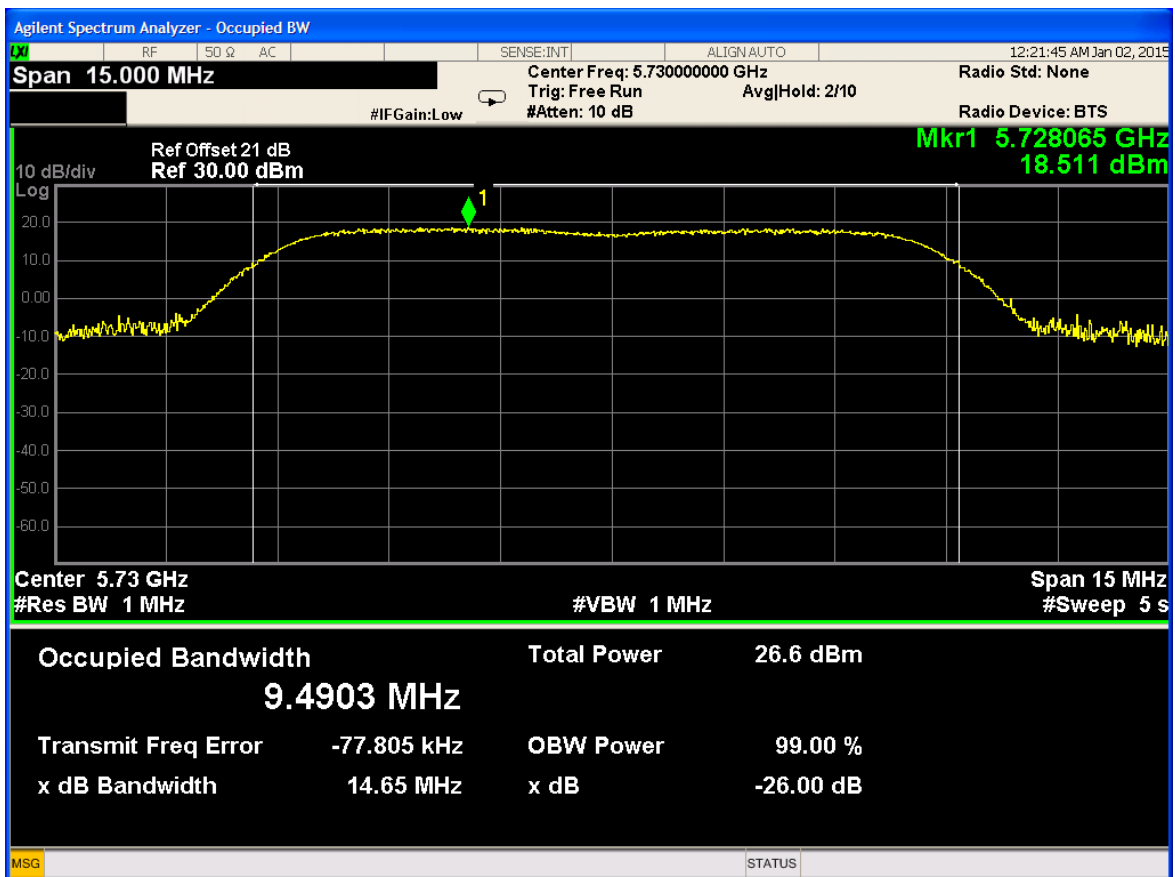
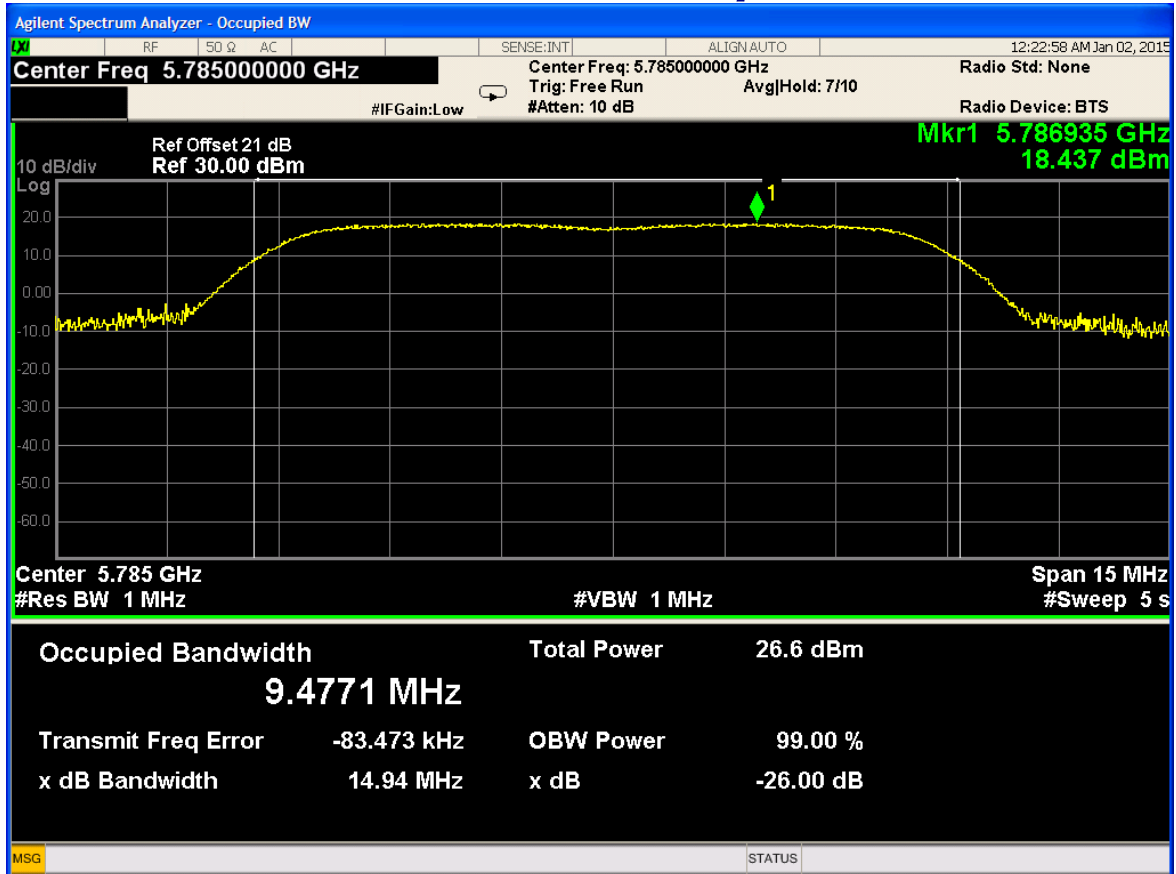




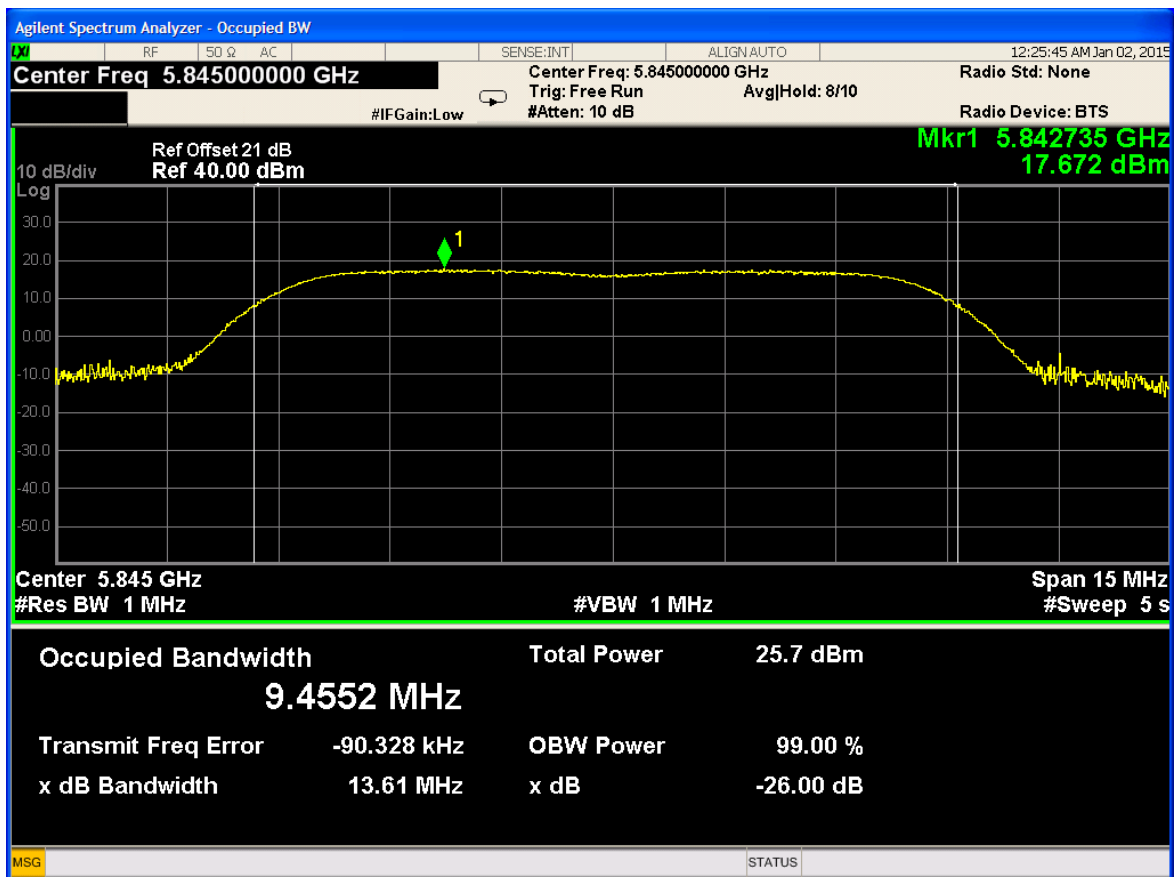
Plot Peak Output Power/ 15



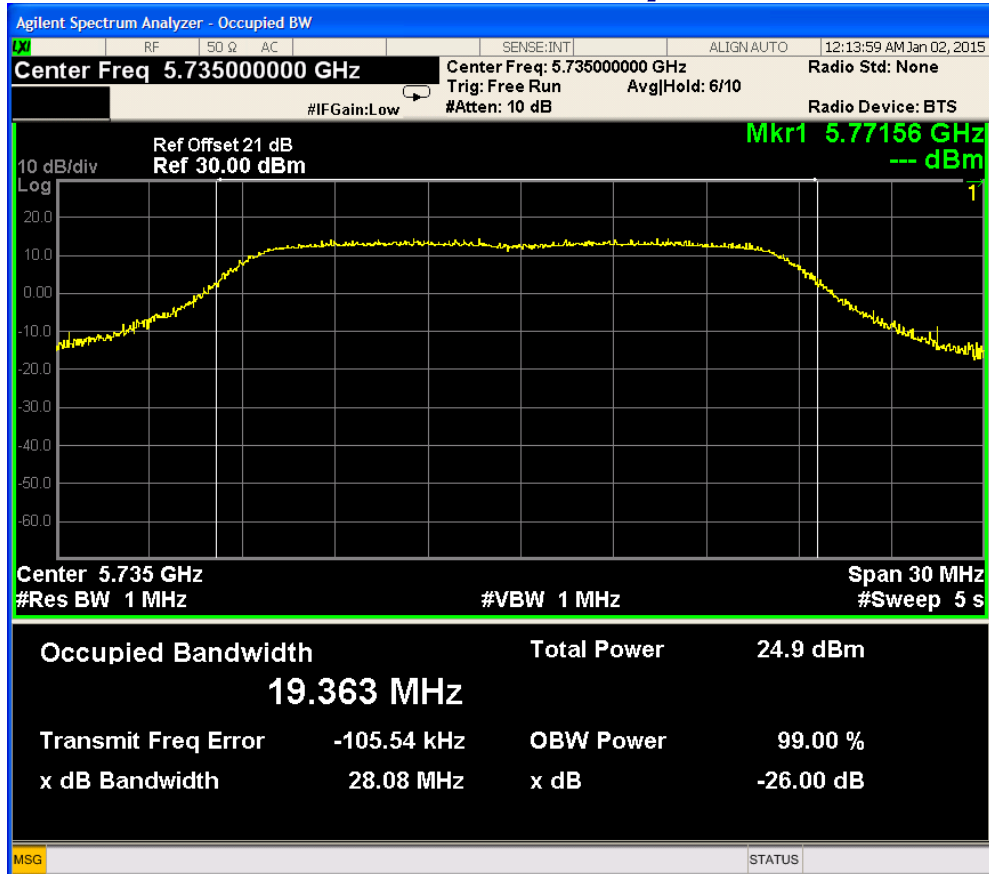
Plot Peak Output Power/ 16



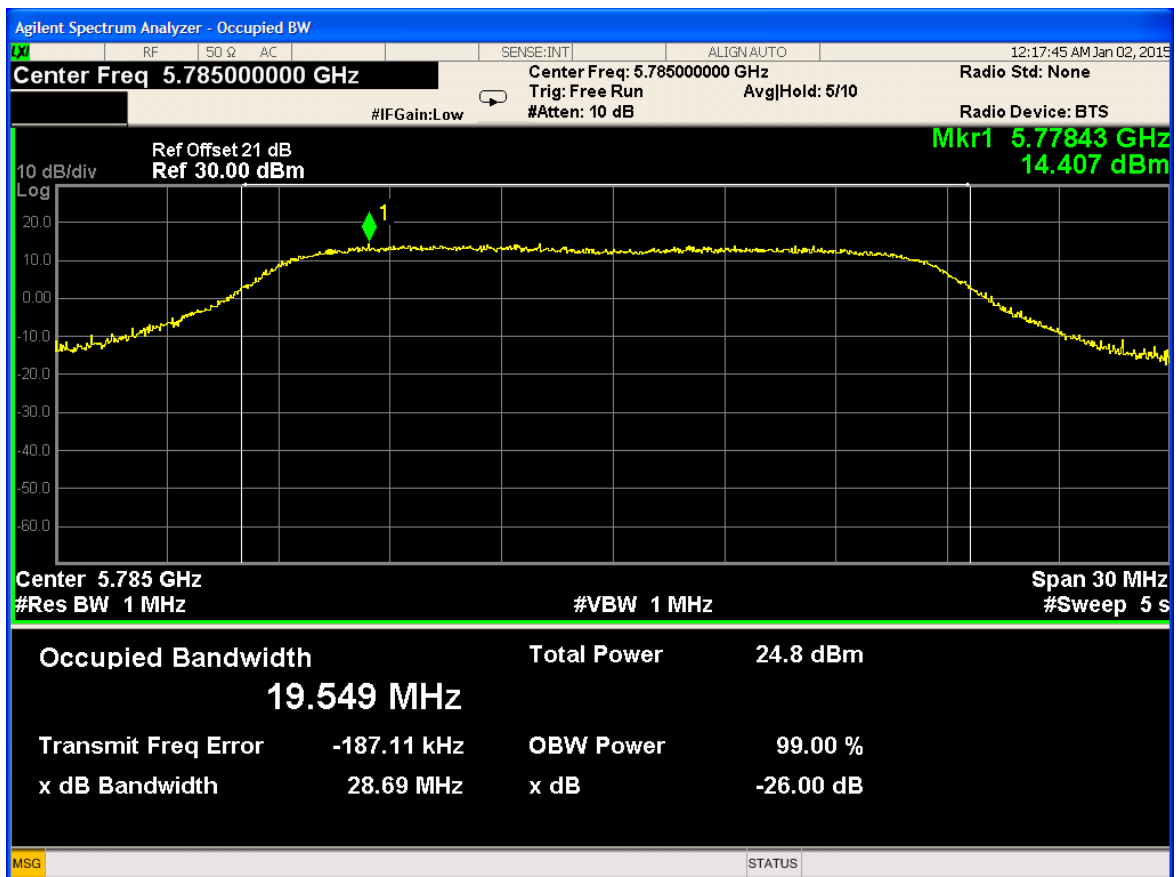
Plot Peak Output Power/ 17



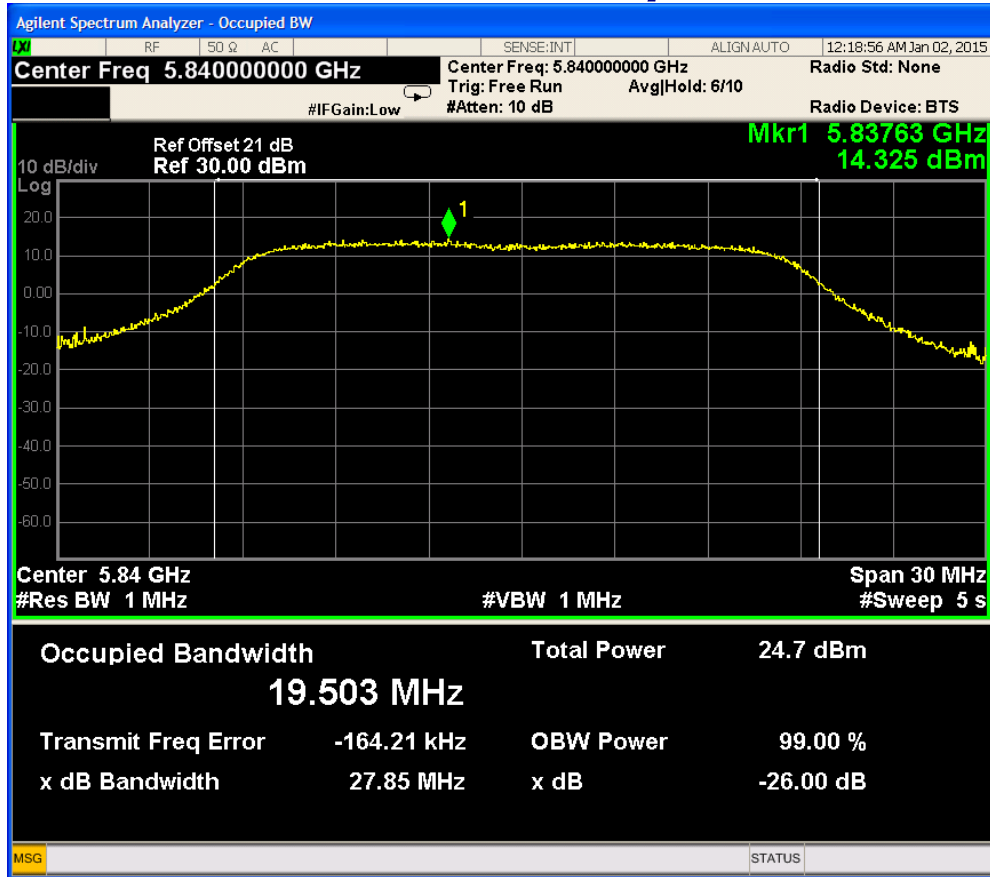
Plot Peak Output Power/ 18



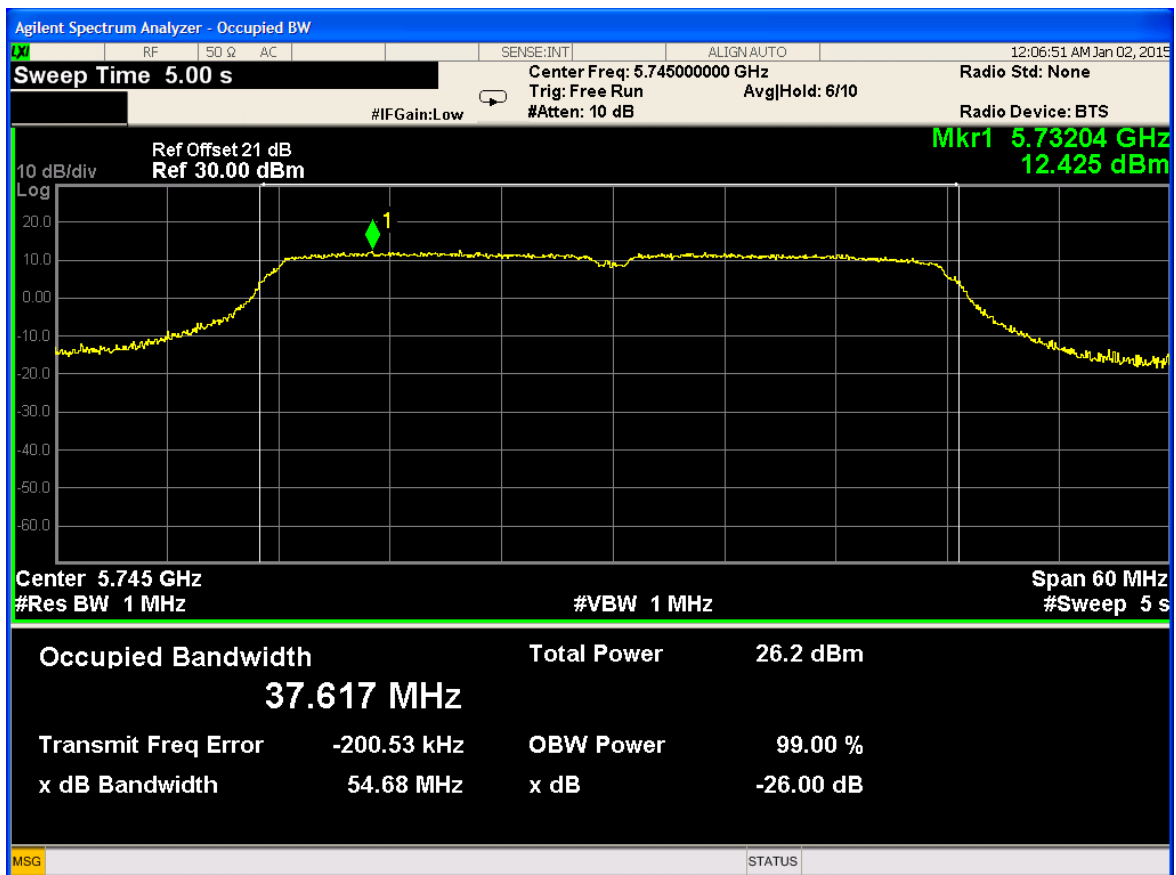
Plot Peak Output Power/ 19



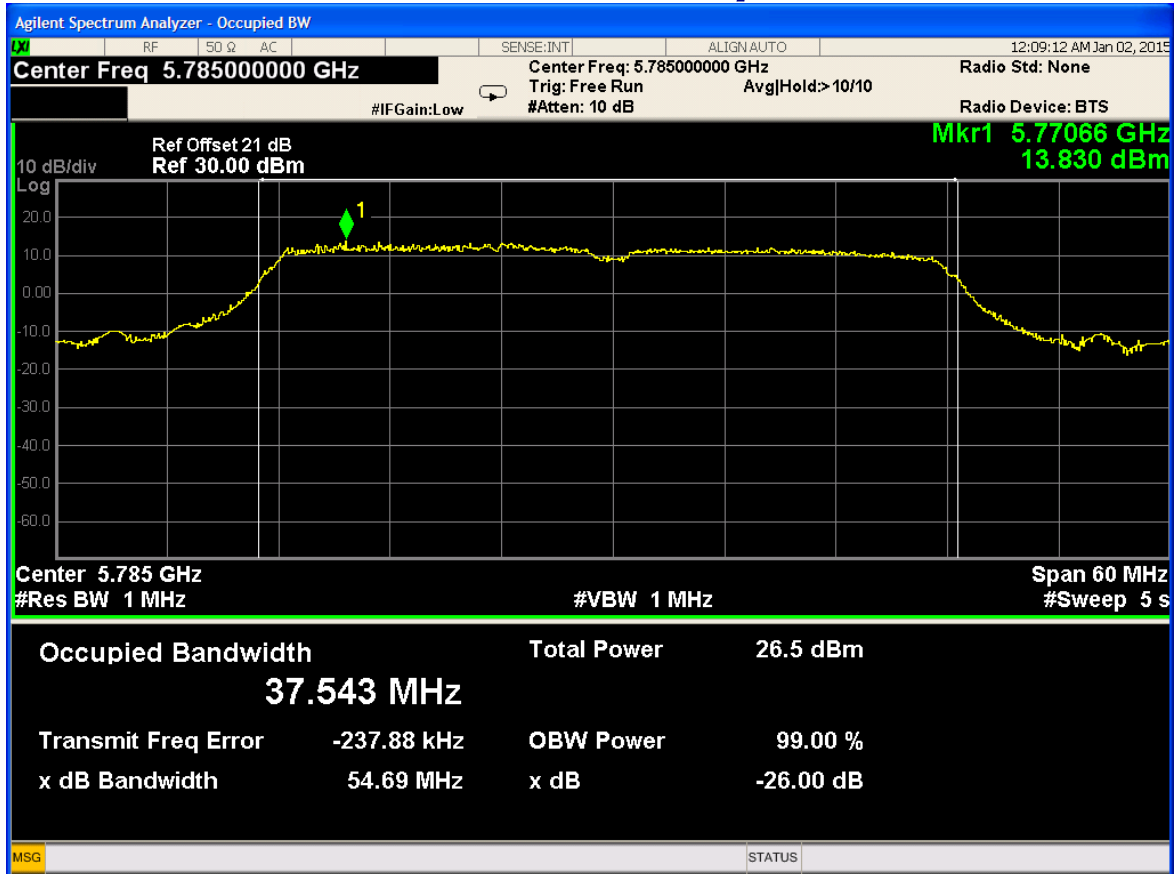
Plot Peak Output Power/ 20



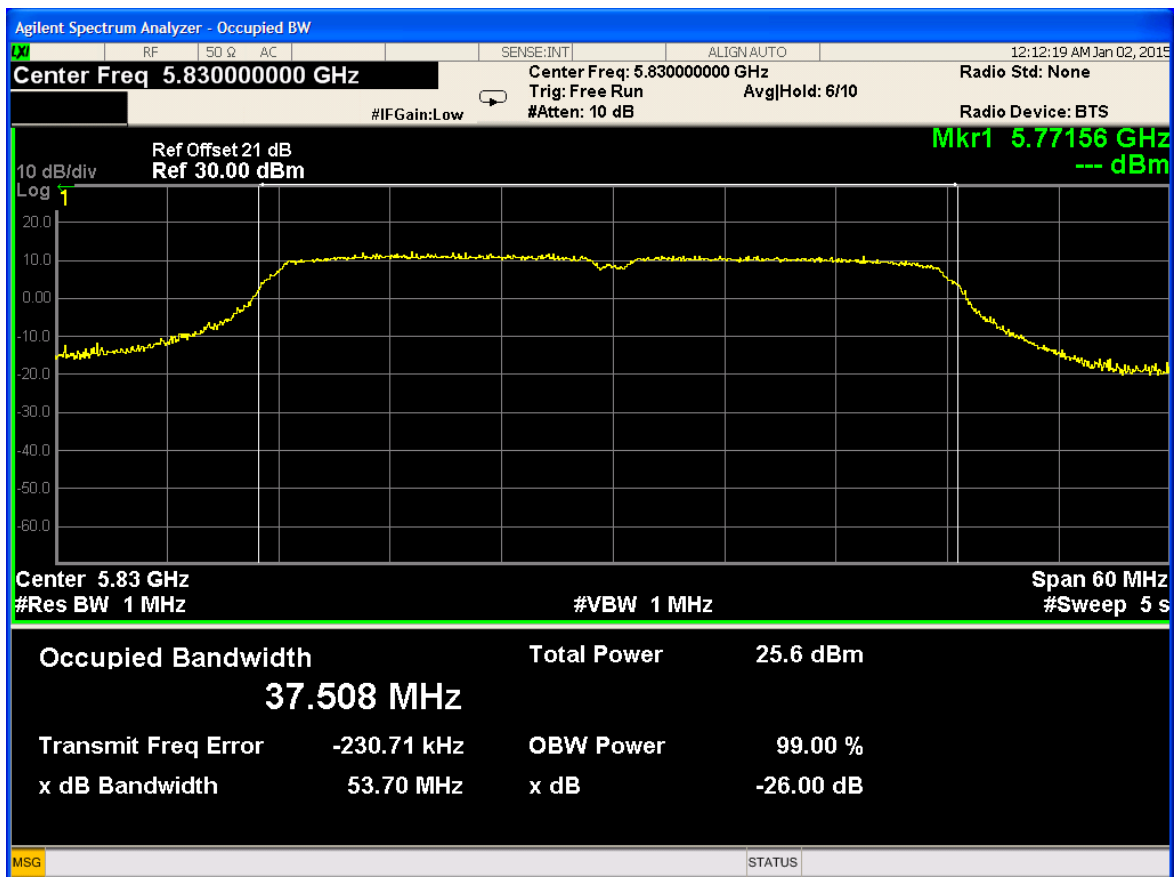
Plot Peak Output Power/ 21



Plot Peak Output Power/ 22



Plot Peak Output Power/ 23



Plot Peak Output Power/ 24

7. POWER IN PTMP MODE

Equipment Under Test	WipAir 8000 5X
Test Method	FCC New Guidance on Measurements for DTS in section 15.247(b), Option 2, Method #3.
Date	12.05.2015
Relative Humidity	40%
Ambient Temperature	25 ⁰ C
Air Pressure	1010 hPa
Test Setup	Figure 2

Testing Engineer: I. Arbitman 

Date 12.05.2015

7.1. Test Results Summary & Conclusions

The E.U.T was found in compliance with Peak Output Power requirements

7.2. Limits of Peak Output Power according 15.247 (b)

The test unit shall meet the limits of Table 1

Table 25: Limits for Fundamental

Assigned Frequency (MHz)	Modulation Envelope Reference Points* (dBi)	Peak Output Power	
		W	dBm
902.0 – 928.0	6.0	1.0	30.0
2400.0 – 2483.5			
5725.0 – 5850.0			

*: If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power limit shall be reduced below the .stated value as follows:

- By 1 dB for every 3 dB that the directional gain of antenna exceeds 6 dBi for fixed point to point transmitters operate in 2400 – 2483.5 MHz band.
- Without any corresponding reduction for fixed-point-to-point transmitters operate in 5725 – 5850 MHz band;
- By the amount in dB that the directional gain of antenna exceeds 6 dBi for the rest of transmitters.

7.3. Test Instrumentation and Equipment

Table 26: Test Instrumentation and Equipment

Item	Model	Manufacturer	P/N	Next Date of Calibration
Spectrum Analyzer	N9020A	Agilent	20041738908	04.04.2015
20 dB Attenuator	8343-206	TENULINE		13.03.2016

7.4. Test Procedure

The EUT was set to transmit at 100% duty cycle, at appropriate output power levels for 2 typical antenna gain of 23 dBi and 28.5 dBi.

Power measurements were performed for top, middle and bottom frequencies, for each channel, BW 5, 10, 20 and 40 MHz

The EUT was connected to the spectrum analyzer through an appropriate attenuator and accounted for cable loss in the settings.

Note: The 20dB attenuator has been considered in the measurements results.

The automatic Peak Power measurement capability of a spectrum analyzer was employed.

Each port was measured separately at RBW 1MHz and VBW $\geq$ RBW"

Total output power was calculated as a sum of 'Peak output power Channel A + Peak output power Channel B

7.5. Test Setup

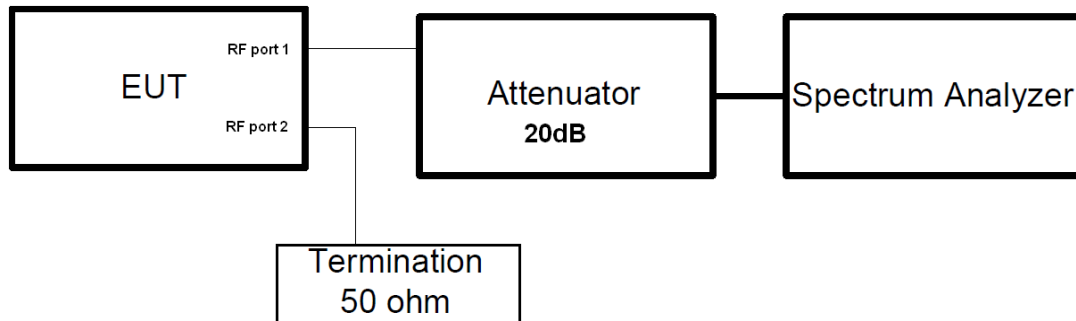


Figure 4: Field strength of fundamental test setup

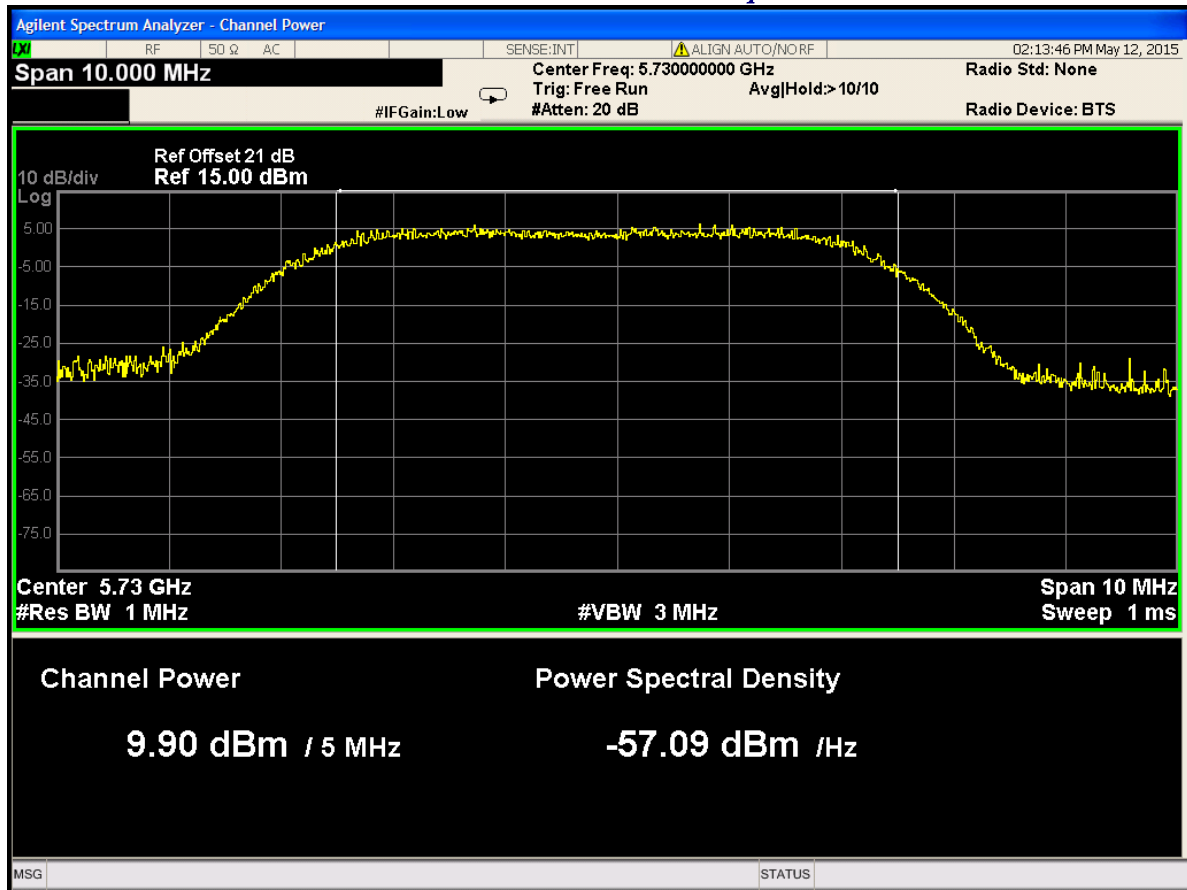
7.6. Calculated Results for both ports

Table 27: Settings for 23 dBi Antenna PTMP mode

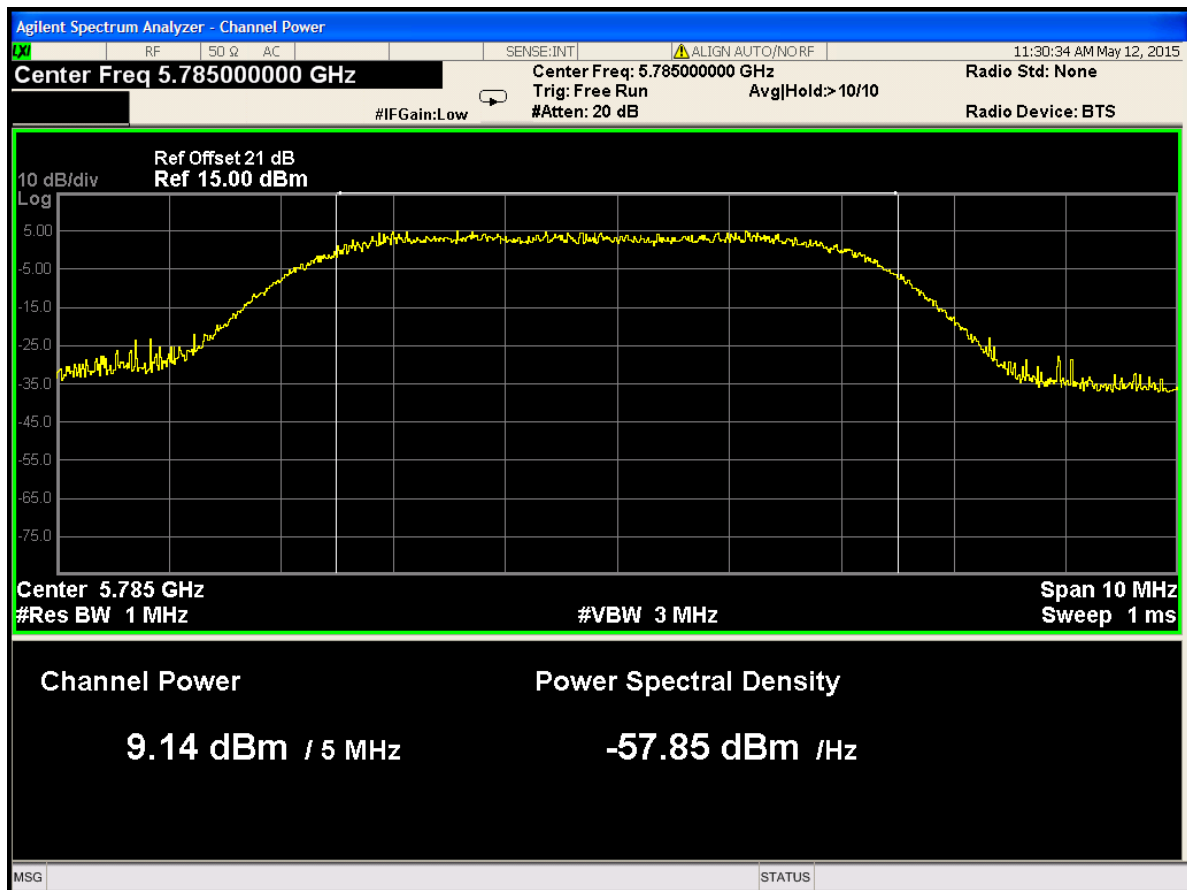
Frequency MHz	BW MHz	Port A dBm	Port B dBm	Total Power dBm	Antenna Gain dBi	EIRP	Limit EIRP	Pass/Fail
5730	5	9.9	9.11	12.53323829	23	35.53323829	36	Pass
5785	5	9.14	9.01	12.08578636	23	35.08578636	36	Pass
5845	5	9.87	9.55	12.7232466	23	35.7232466	36	Pass
5735	10	9.22	9.16	12.20040357	23	35.20040357	36	Pass
5785	10	9.71	9.24	12.49165487	23	35.49165487	36	Pass
5840	10	9.94	9.02	12.51461589	23	35.51461589	36	Pass
5735	20	9.71	9.70	12.71530283	23	35.71530283	36	Pass
5785	20	9.62	9.53	12.58553309	23	35.58553309	36	Pass
5840	20	9.12	8.97	12.05594753	23	35.05594753	36	Pass
5745	40	9.46	8.84	12.1713545	23	35.1713545	36	Pass
5785	40	9.56	9.05	12.32278194	23	35.32278194	36	Pass
5830	40	9.71	9.06	12.40744915	23	35.40744915	36	Pass

Table 28: Settings for 28.5 dBi Antenna PTMP mode

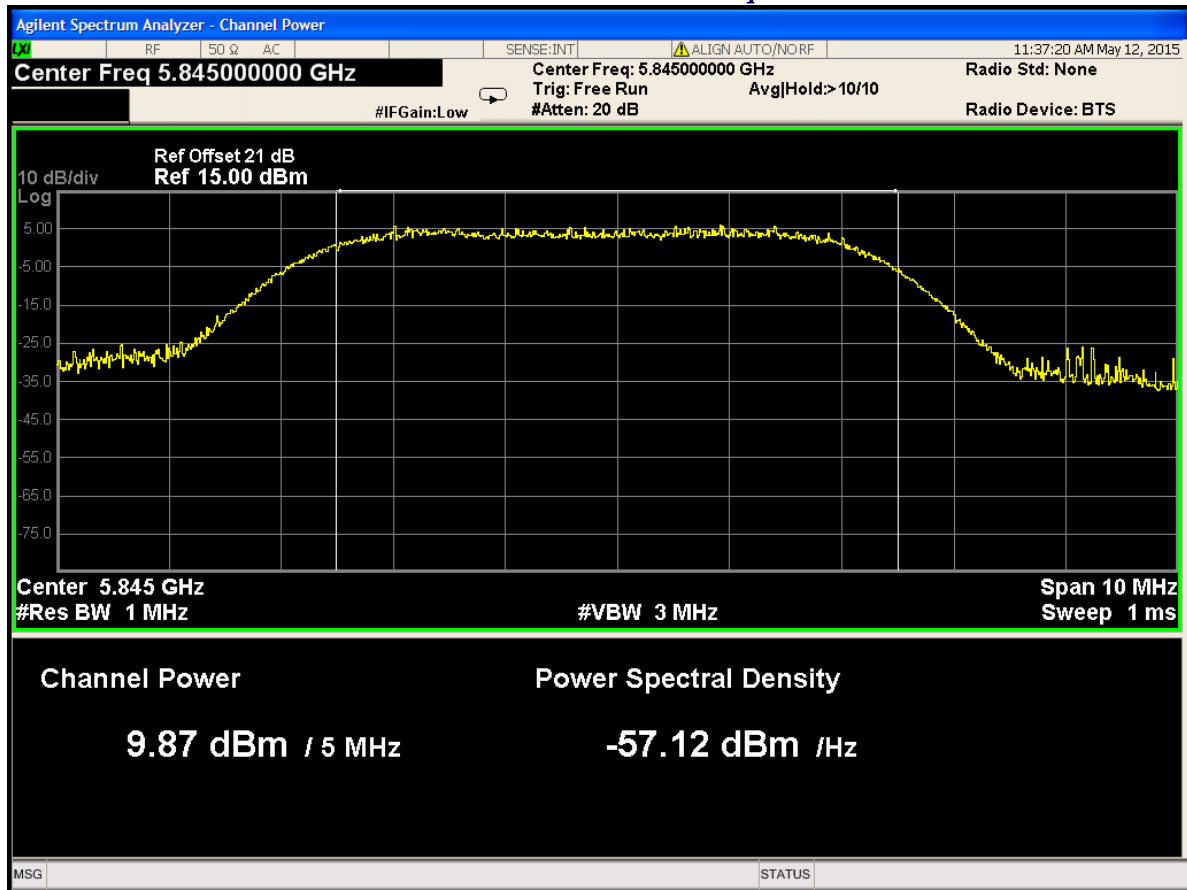
Frequency MHz	BW MHz	Port A dBm	Port B dBm	Total Power dBm	Antenna Gain dBi	EIRP	Limit EIRP	Pass/Fail
5730	5	3.34	3.07	6.217397849	28.5	34.71739785	36	Pass
5785	5	3.14	3.09	6.125371912	28.5	34.62537191	36	Pass
5845	5	3.55	3.26	6.4177201	28.5	34.9177201	36	Pass
5735	10	3.48	3.34	6.420864066	28.5	34.92086407	36	Pass
5785	10	3.86	3.57	6.7277201	28.5	35.2277201	36	Pass
5840	10	3.56	3.28	6.432556099	28.5	34.9325561	36	Pass
5735	20	3.41	3.01	6.2249035	28.5	34.7249035	36	Pass
5785	20	3.54	3.49	6.525371912	28.5	35.02537191	36	Pass
5840	20	3.30	3.10	6.211451147	28.5	34.71145115	36	Pass
5745	40	3.91	3.48	6.710619634	28.5	35.21061963	36	Pass
5785	40	3.61	3.58	6.605325861	28.5	35.10532586	36	Pass
5830	40	3.75	3.70	6.735371912	28.5	35.23537191	36	Pass



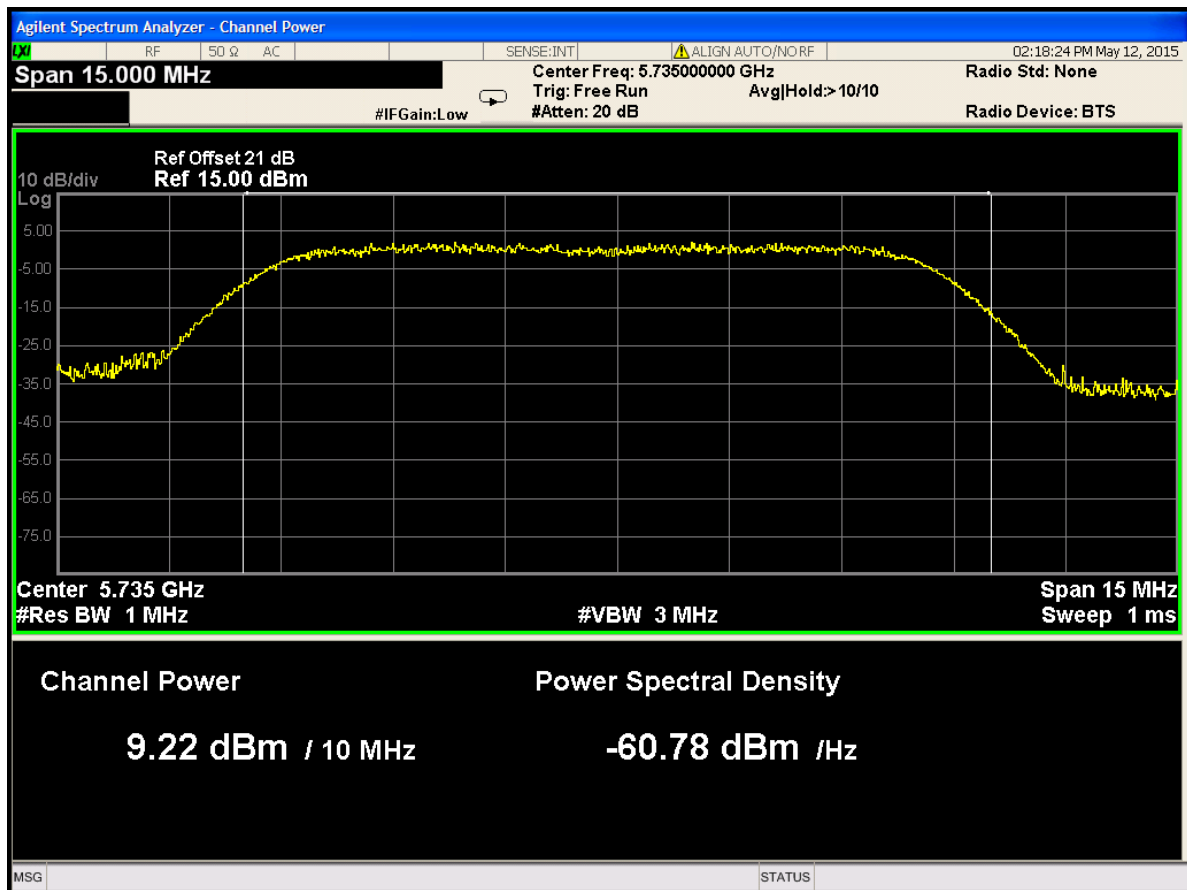
PTMP Power for 23dBi Antenna/ 1



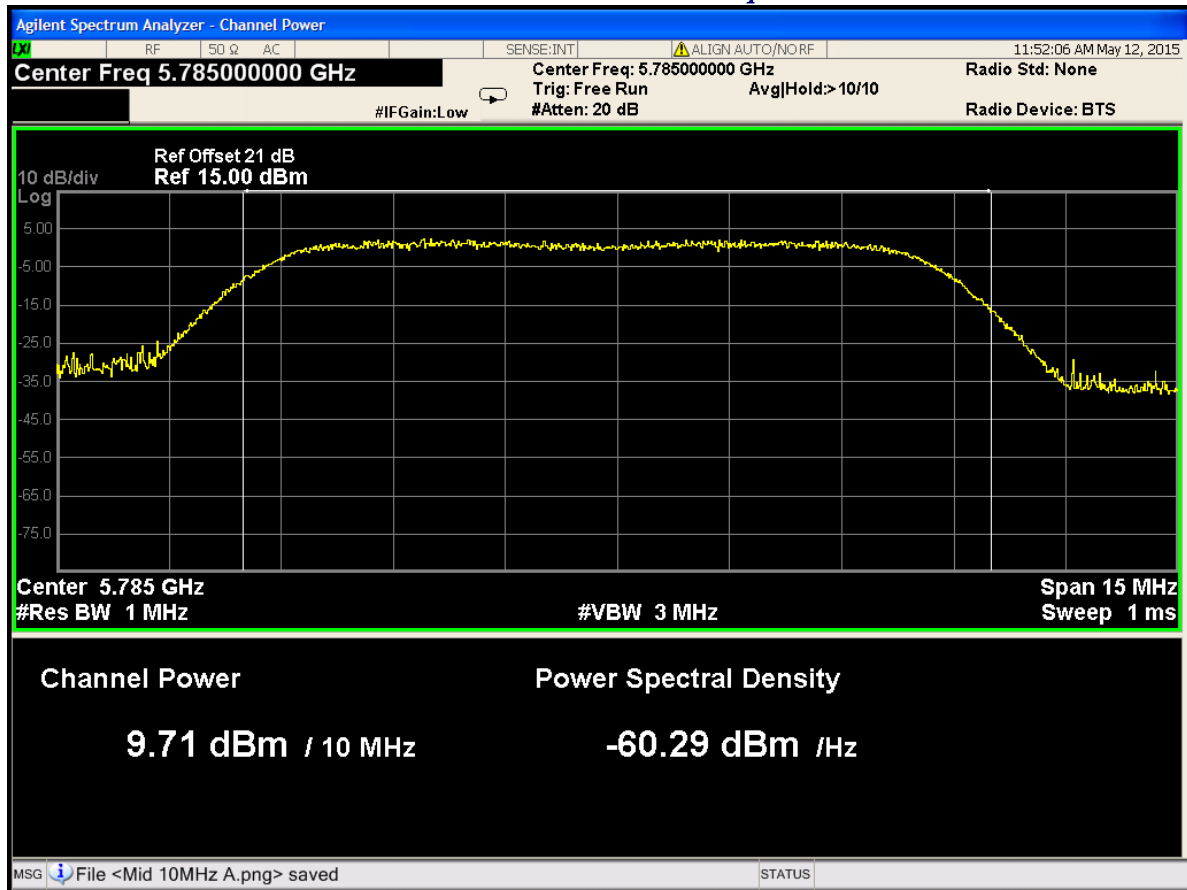
PTMP Power for 23dBi Antenna/ 2



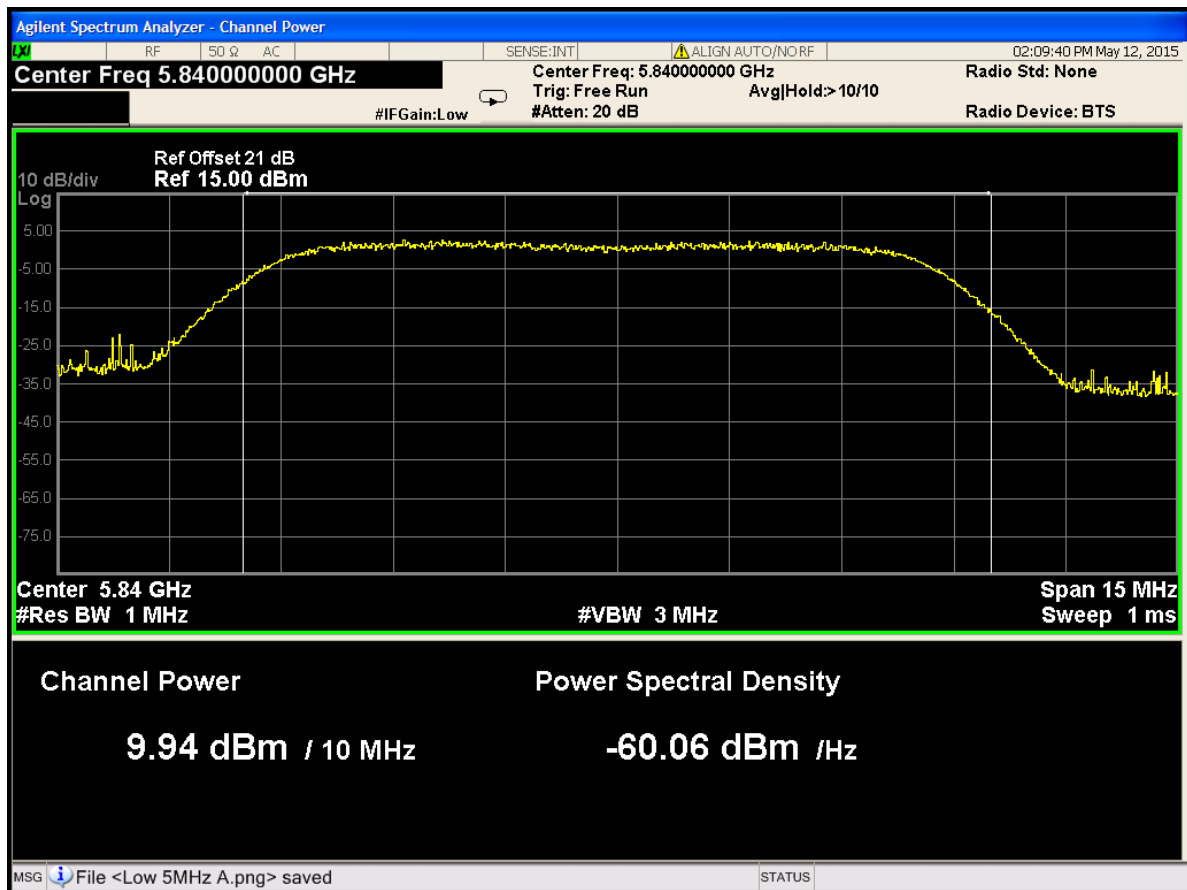
PTMP Power for 23dBi Antenna/ 3



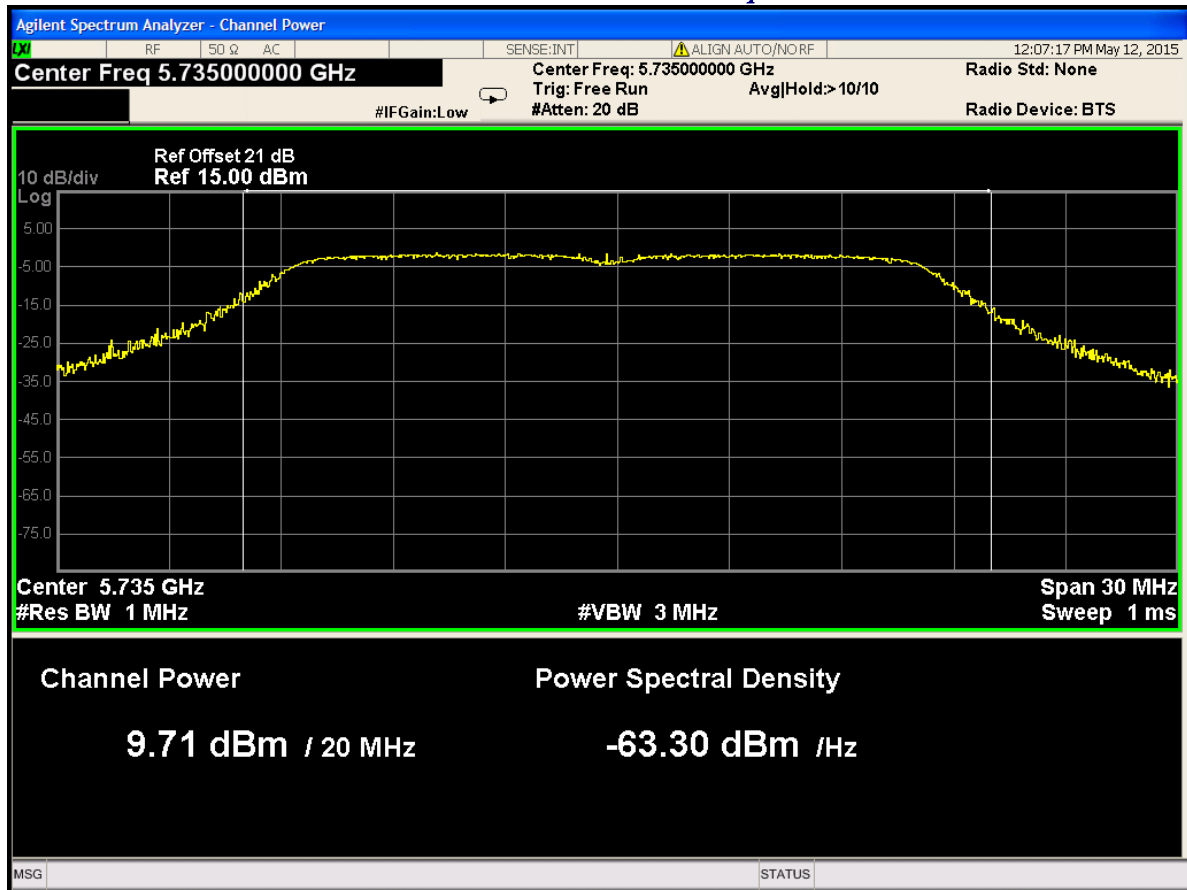
PTMP Power for 23dBi Antenna/ 4



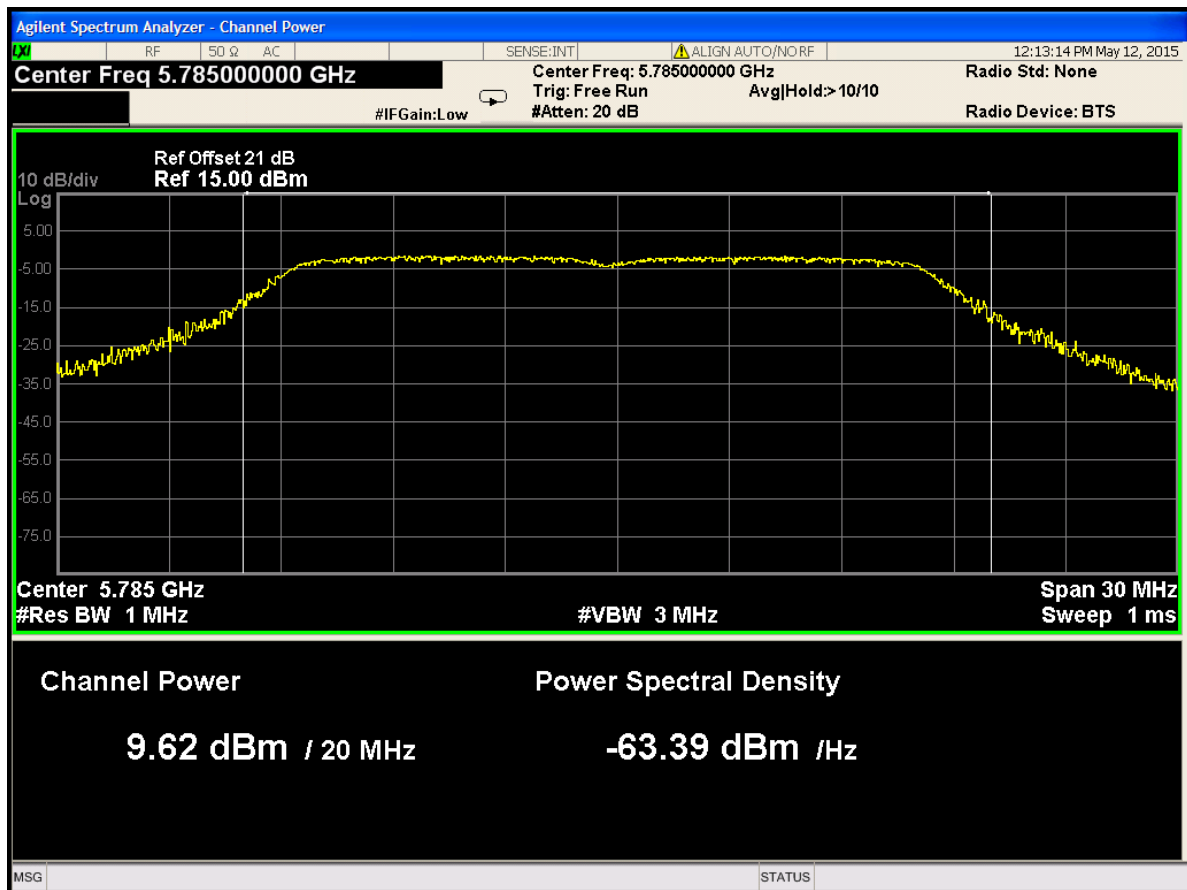
PTMP Power for 23dBi Antenna/ 5



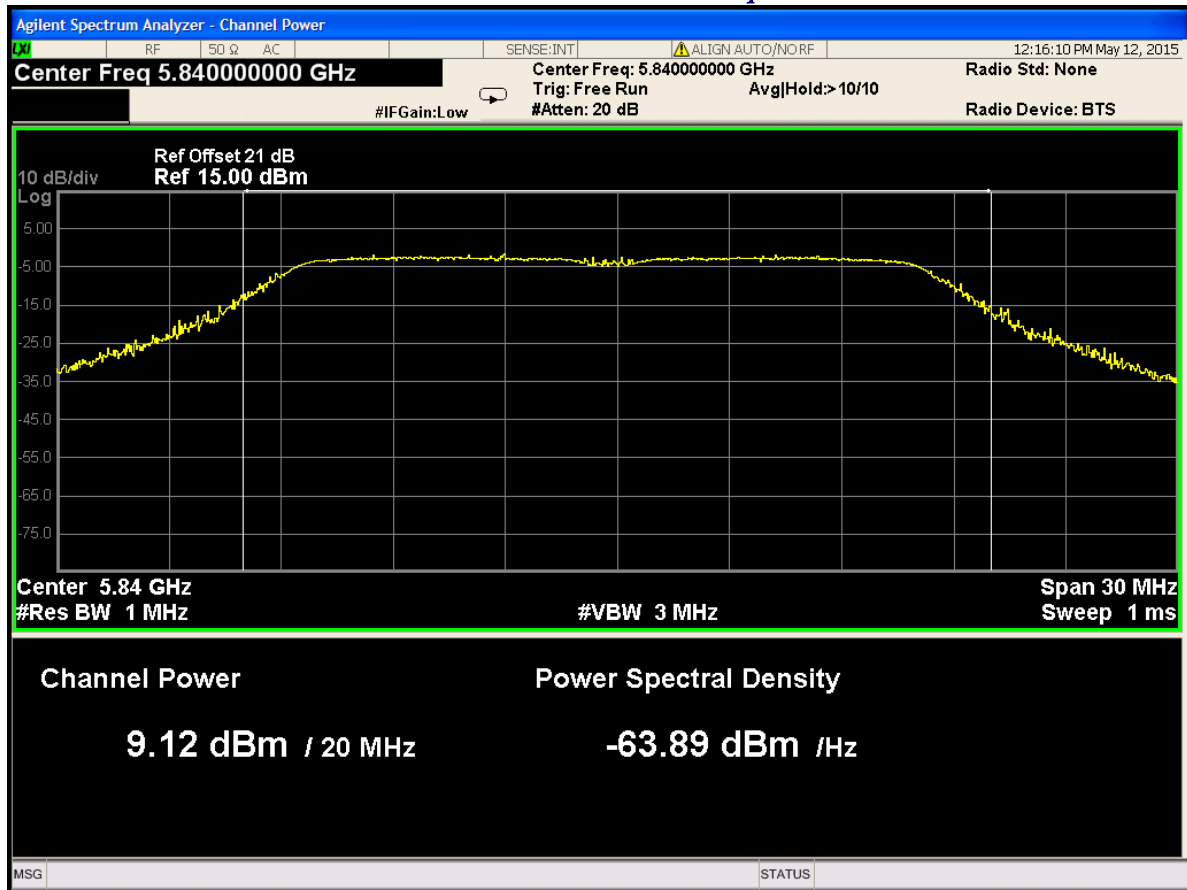
PTMP Power for 23dBi Antenna/ 6



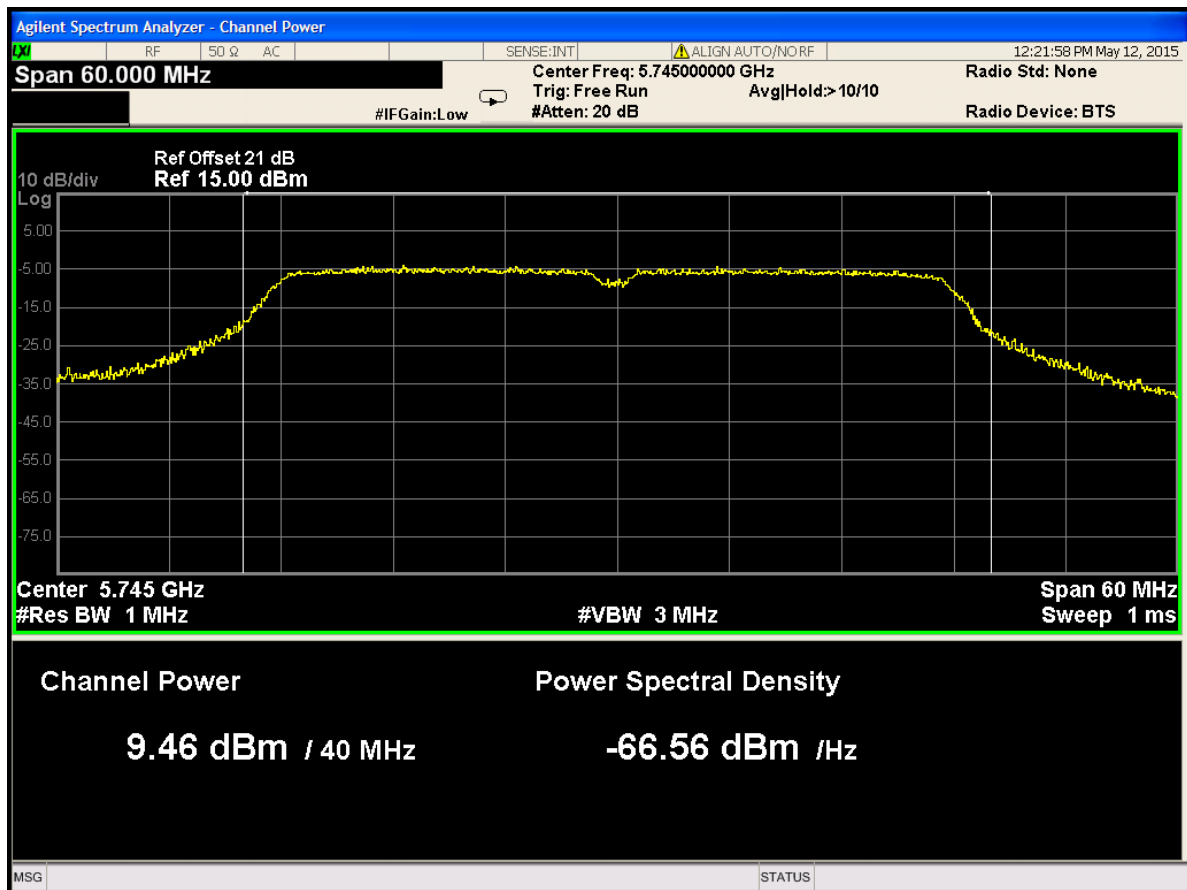
PTMP Power for 23dBi Antenna/ 7



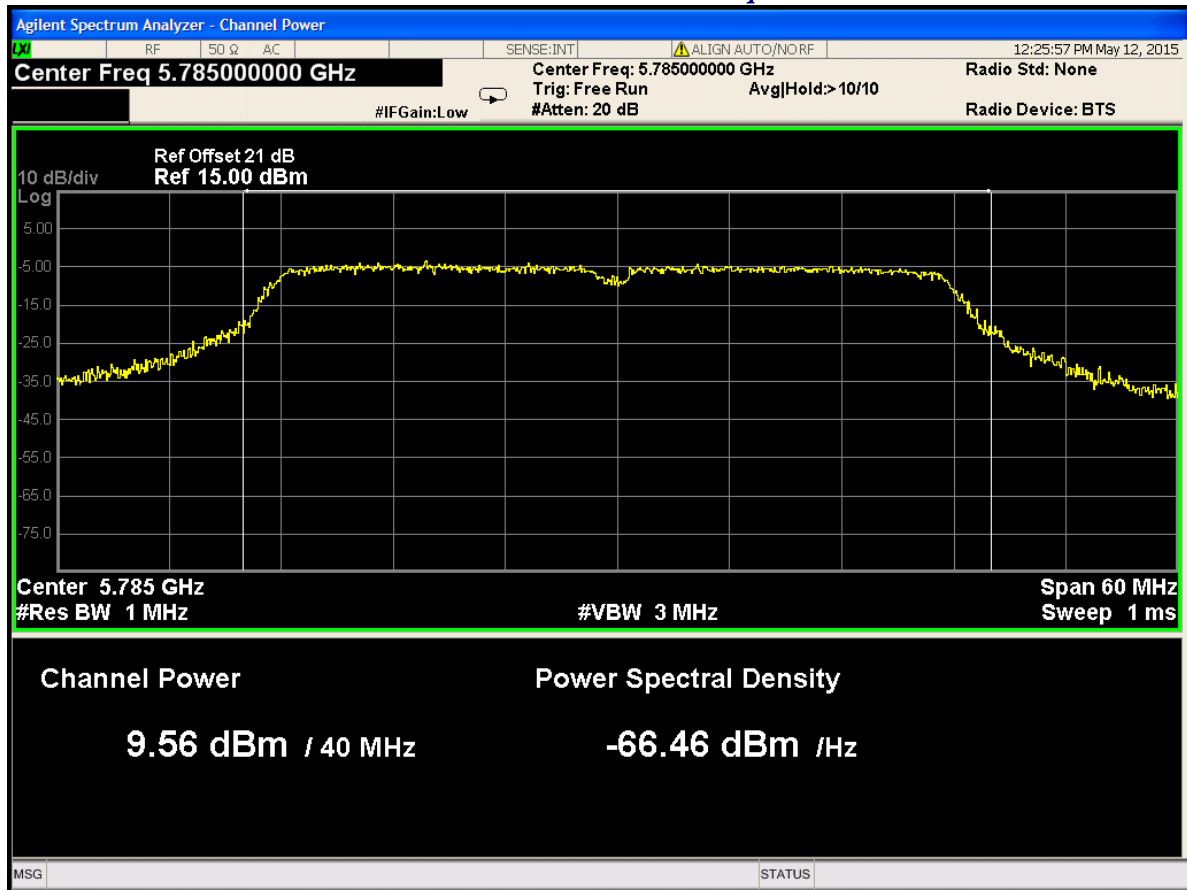
PTMP Power for 23dBi Antenna/ 8



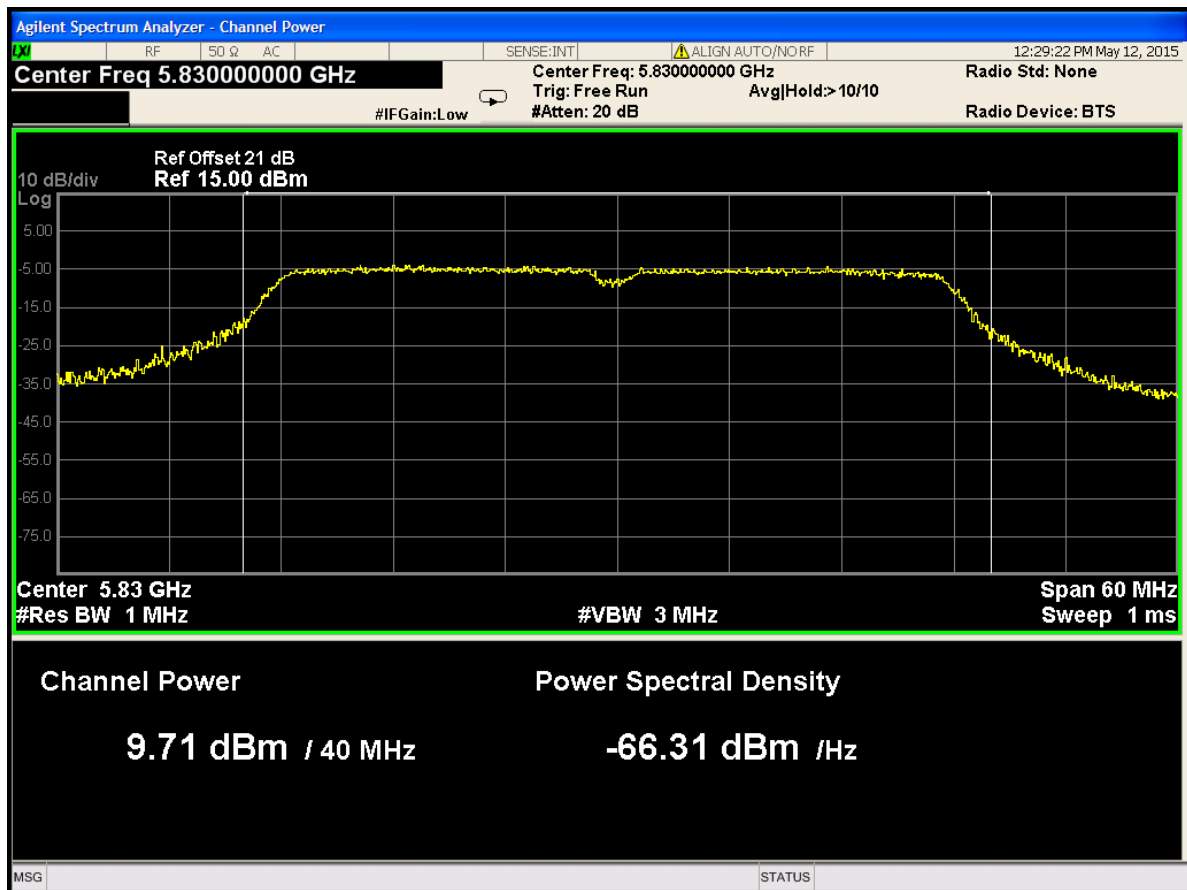
PTMP Power for 23dBi Antenna/ 9



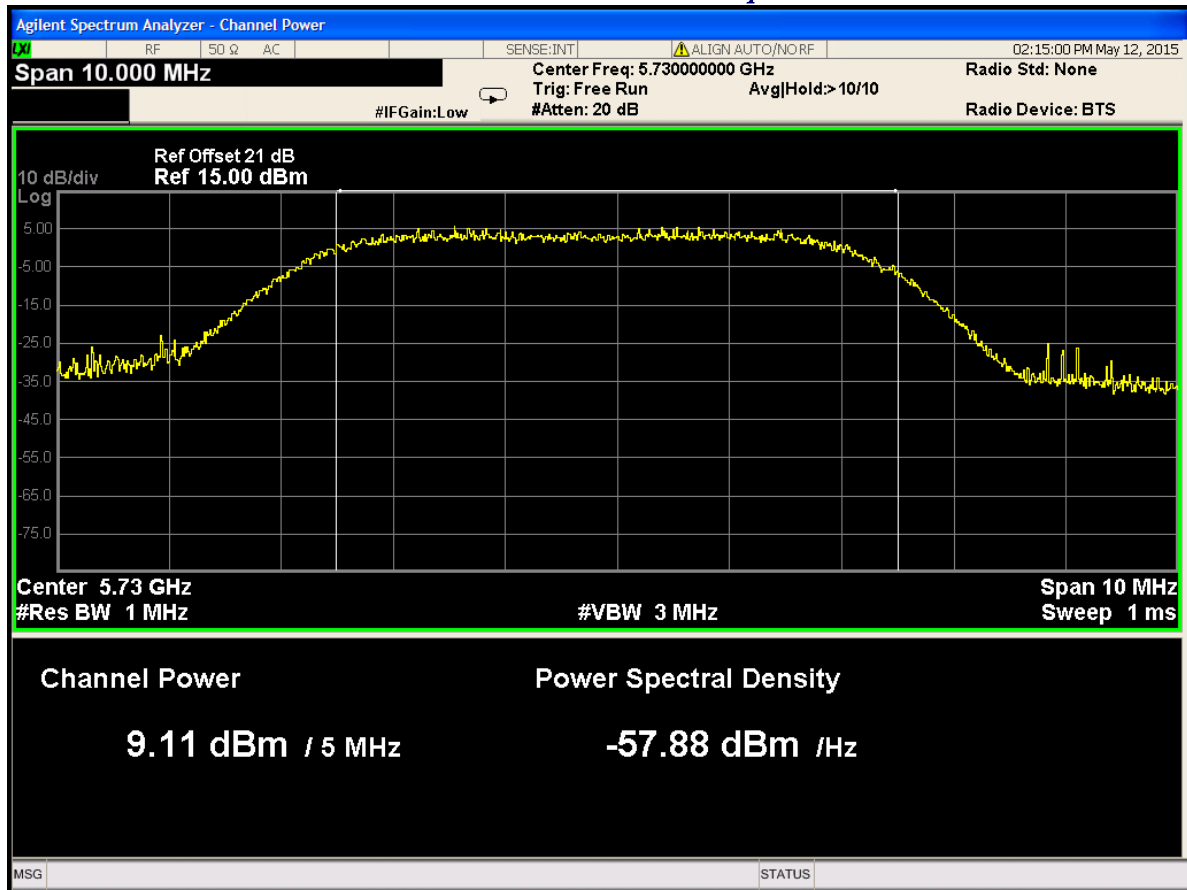
PTMP Power for 23dBi Antenna/ 10



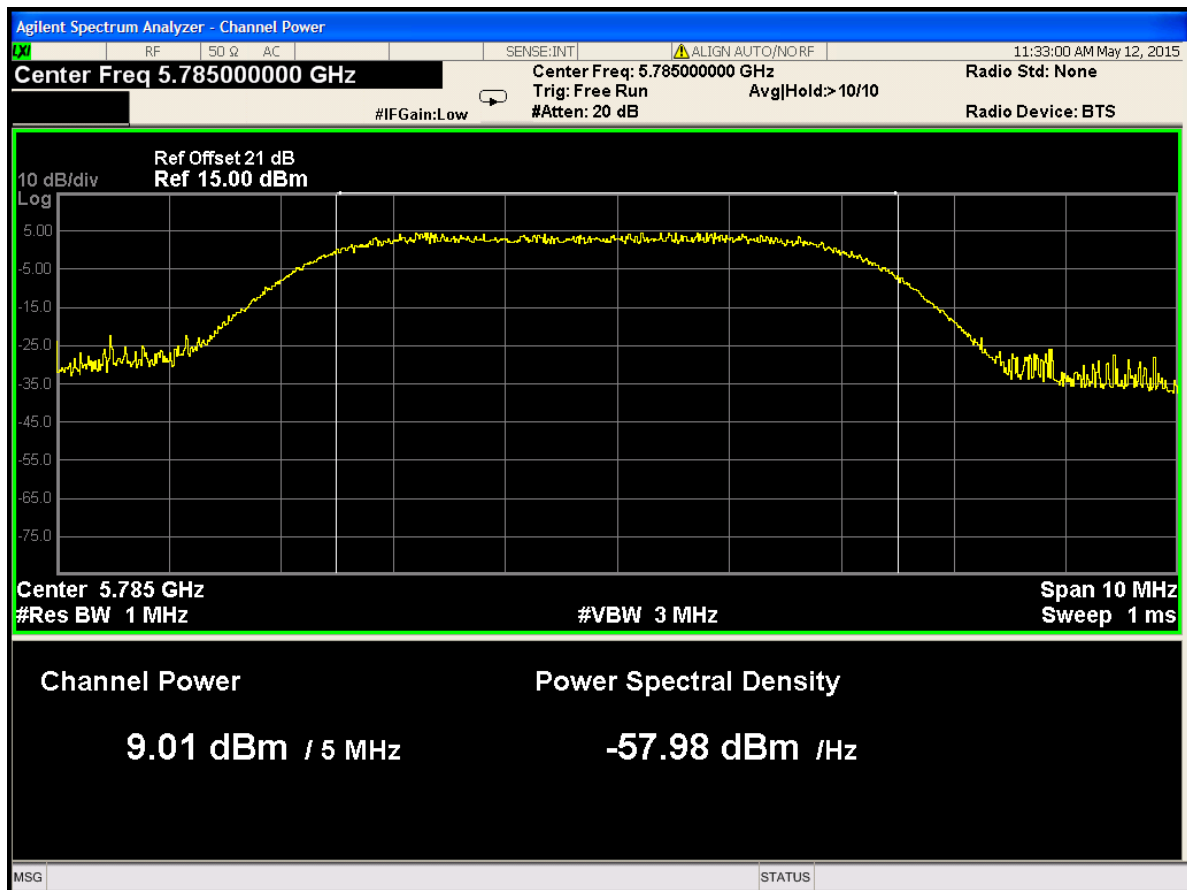
PTMP Power for 23dBi Antenna/ 11



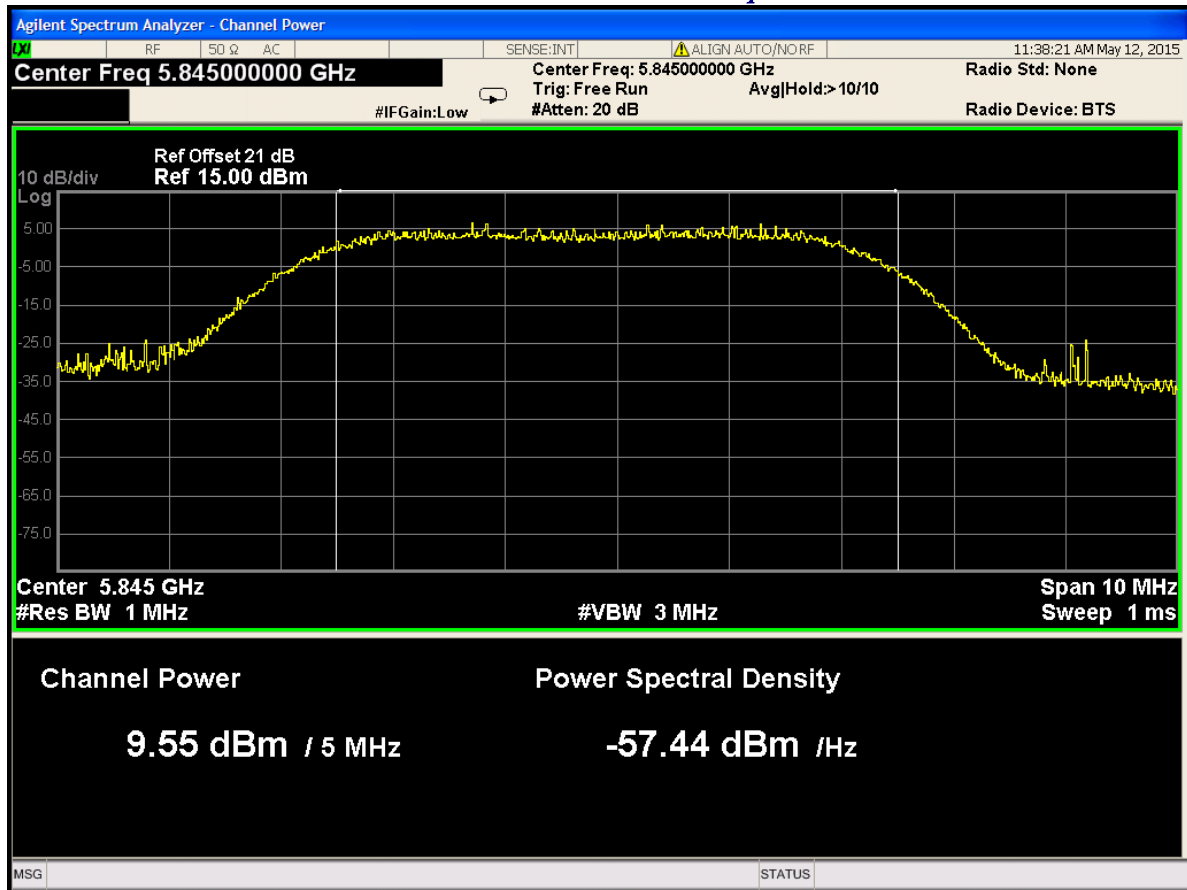
PTMP Power for 23dBi Antenna/ 12



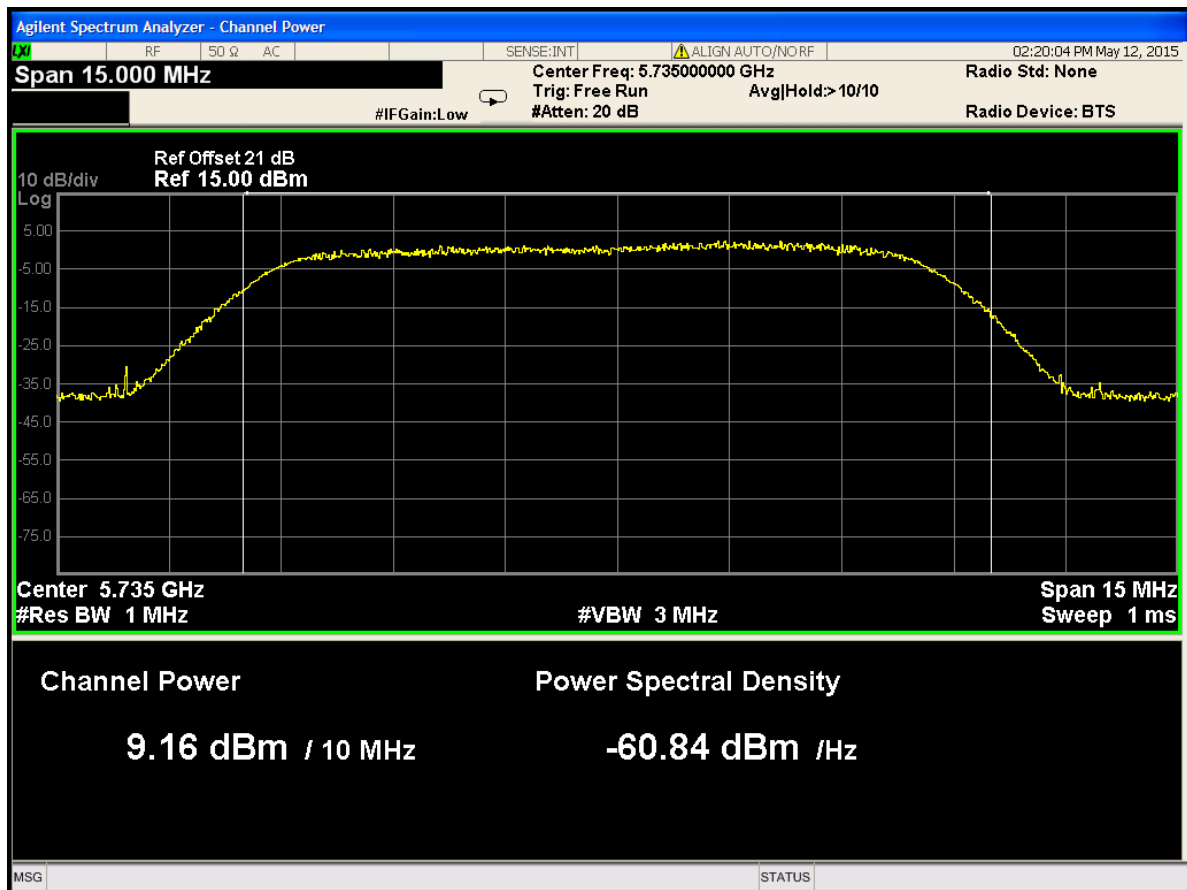
PTMP Power for 23dBi Antenna/ 13



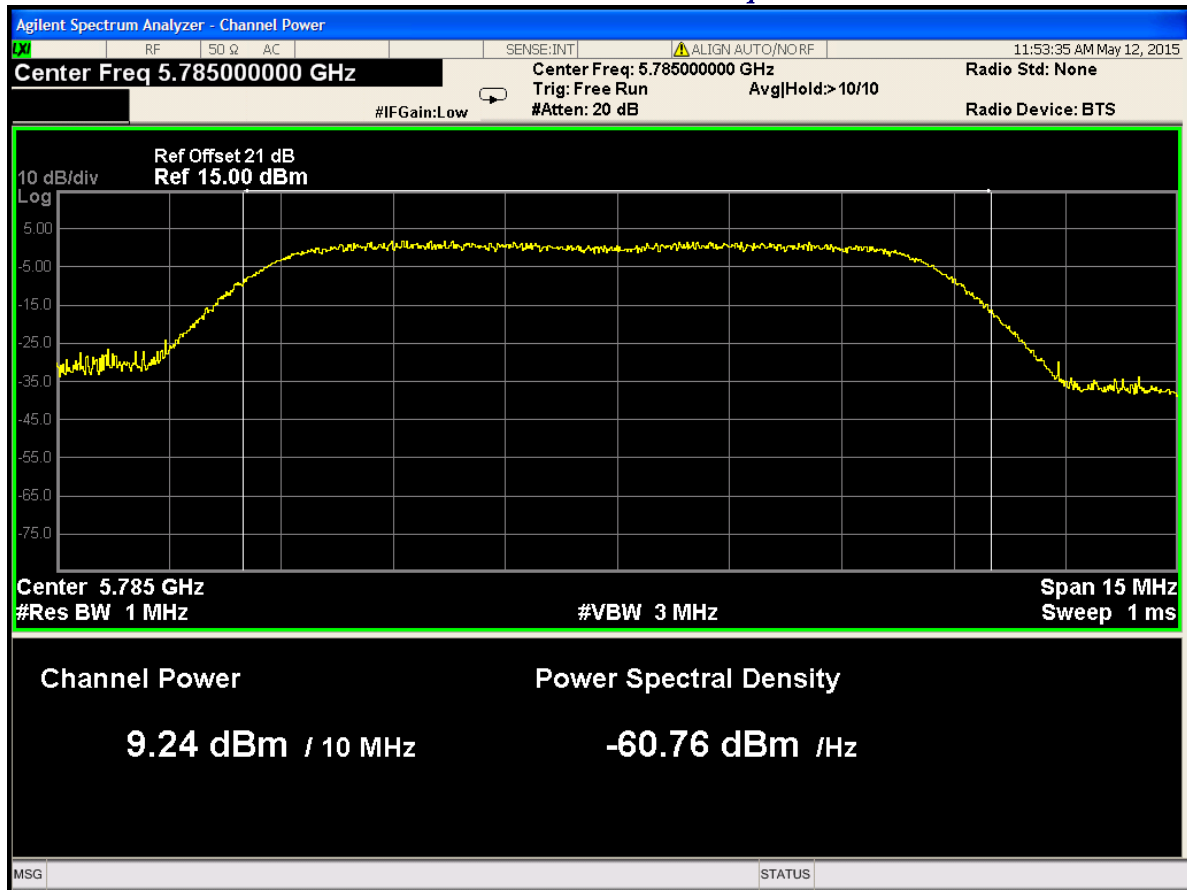
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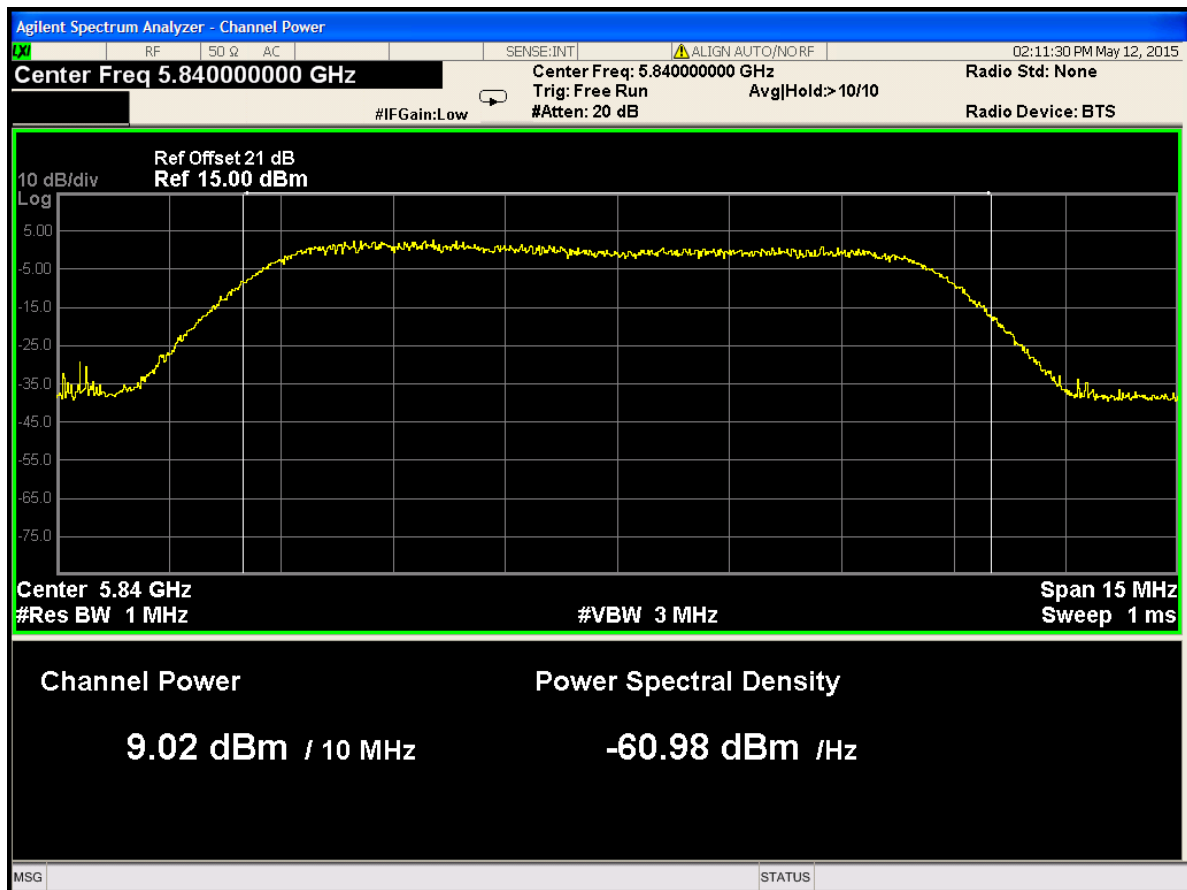
PTMP Power for 23dBi Antenna/ 15



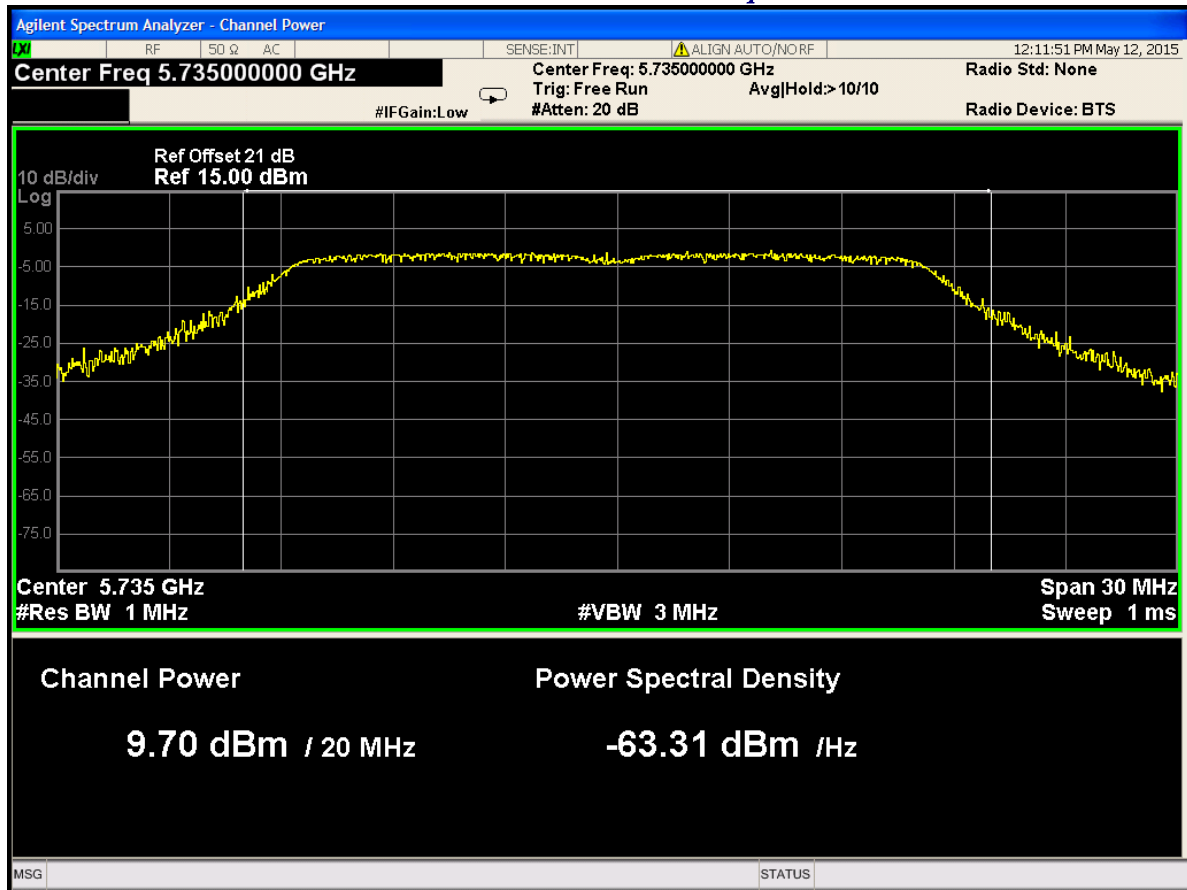
PTMP Power for 23dBi Antenna/ 16



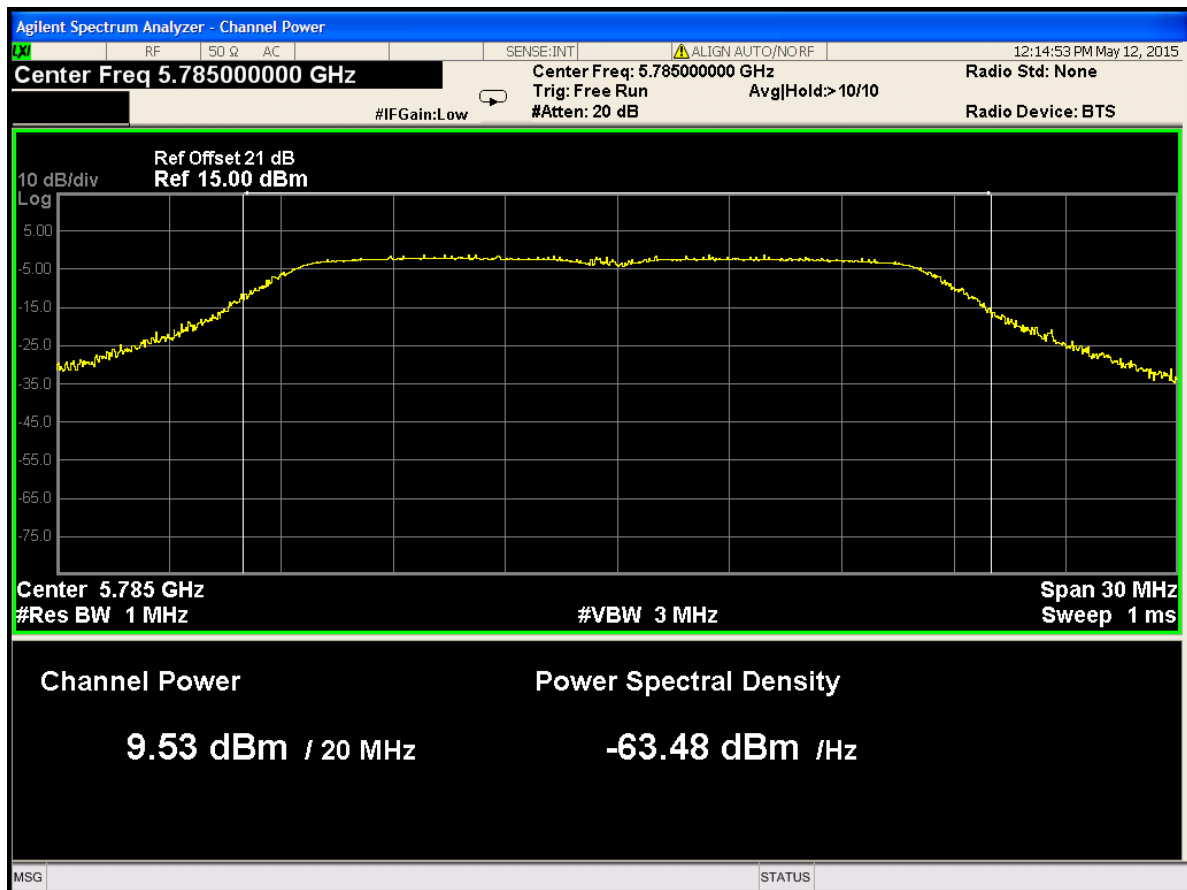
PTMP Power for 23dBi Antenna/ 17



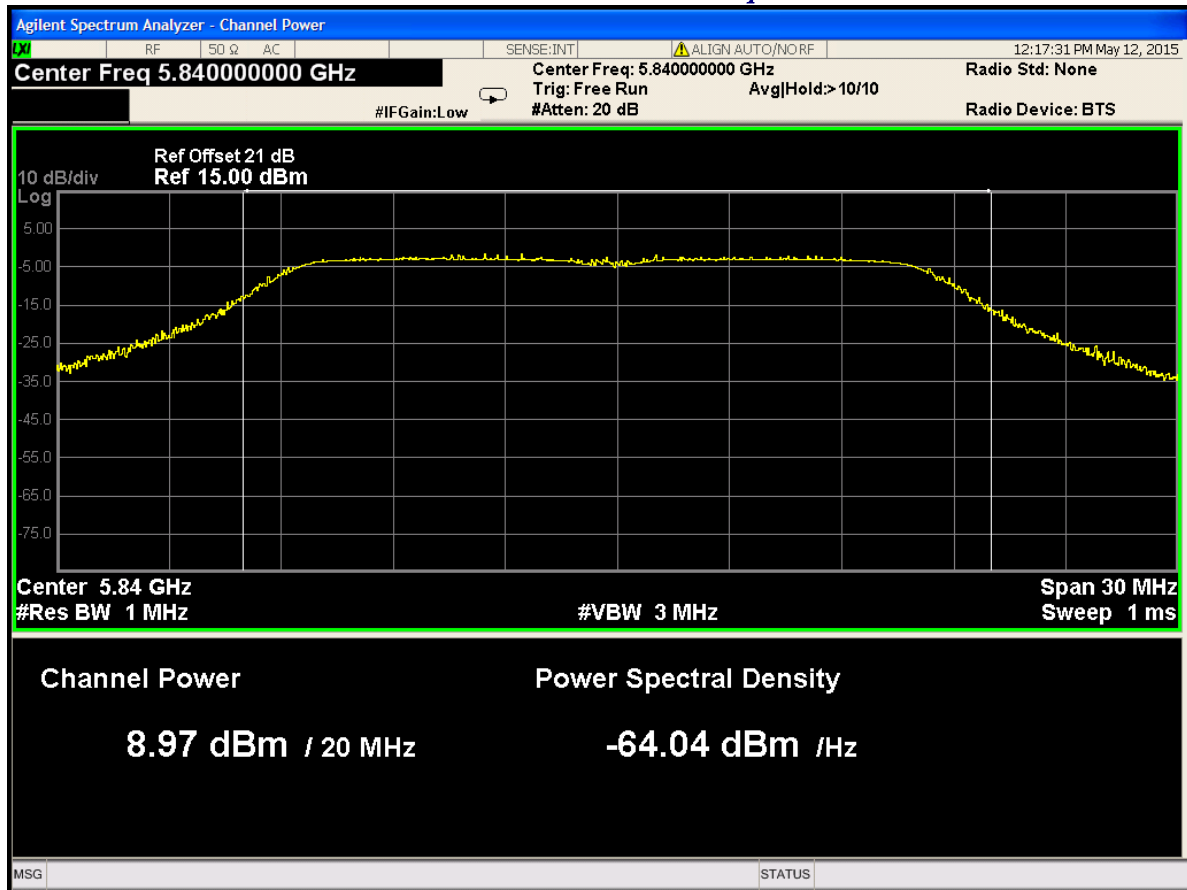
PTMP Power for 23dBi Antenna/ 18



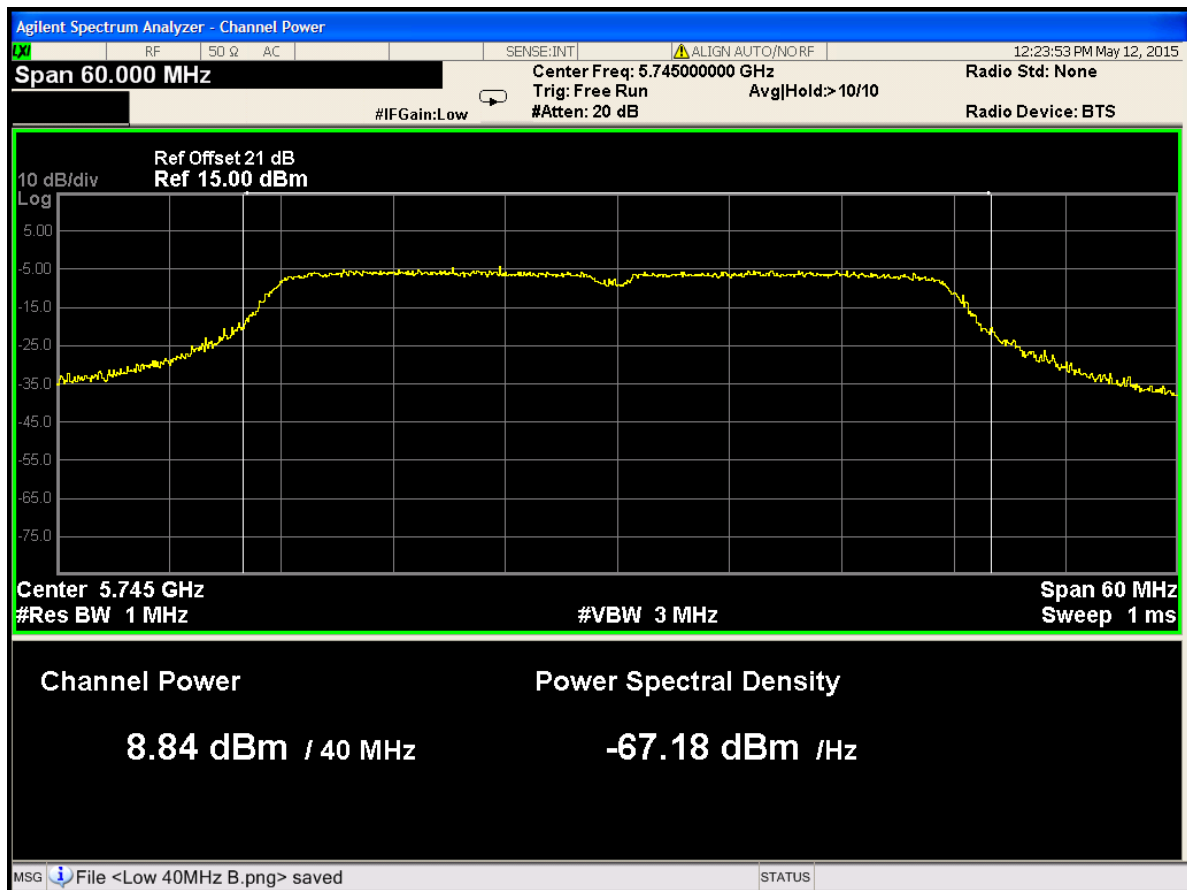
PTMP Power for 23dBi Antenna/ 19



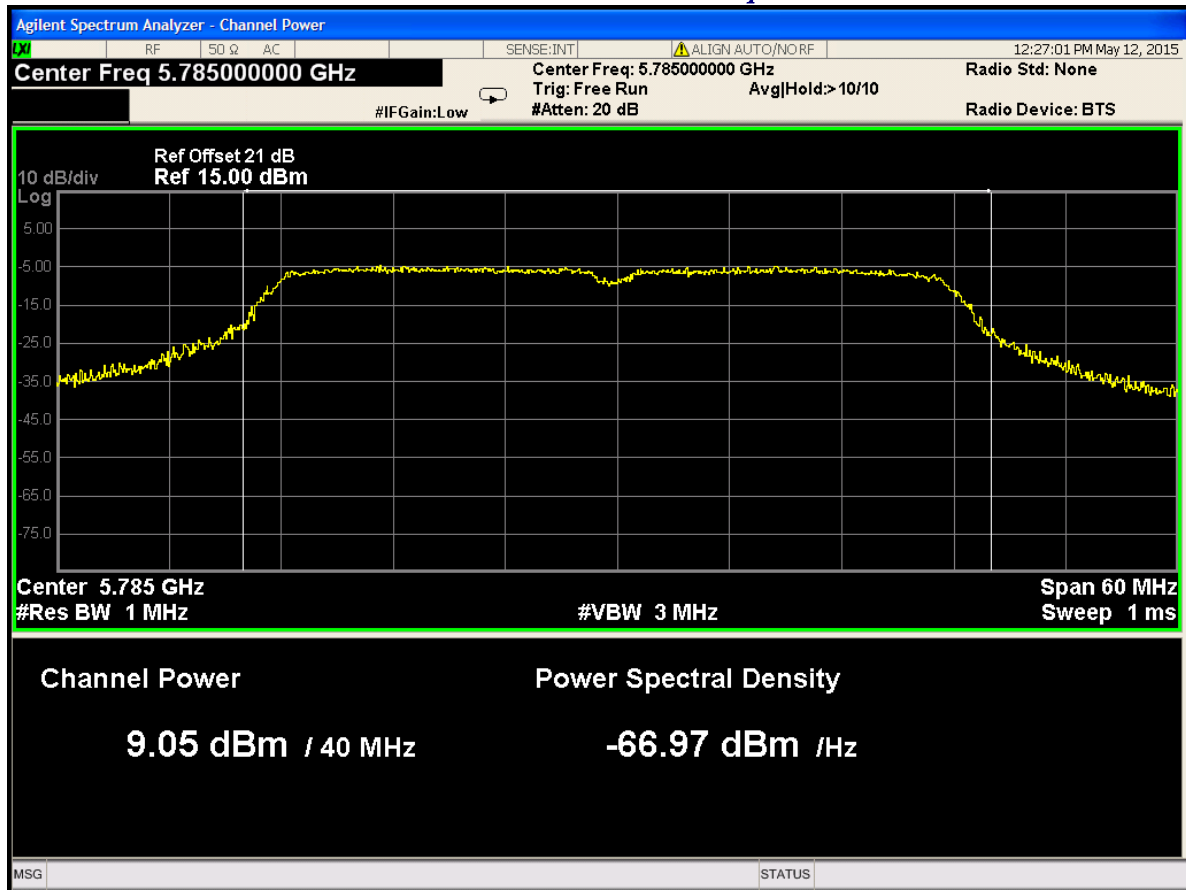
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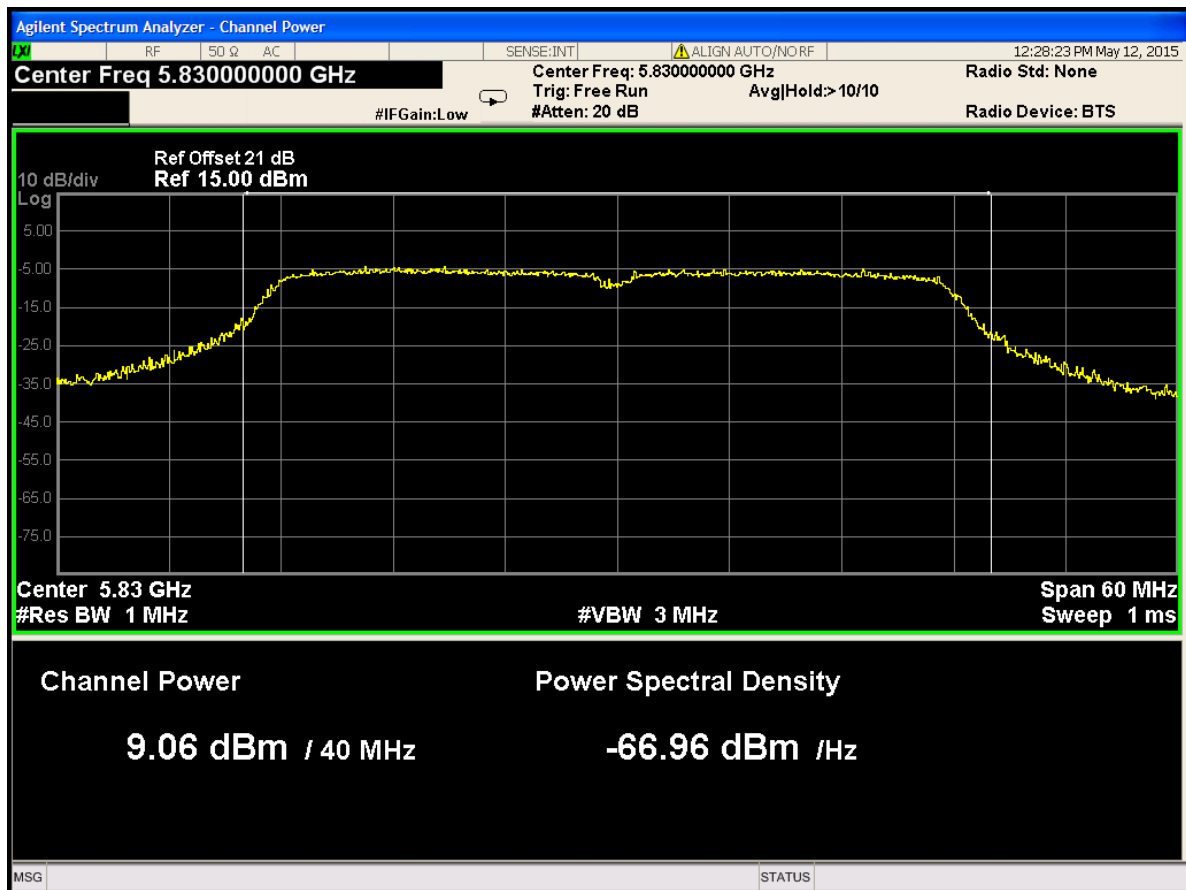
PTMP Power for 23dBi Antenna/ 21



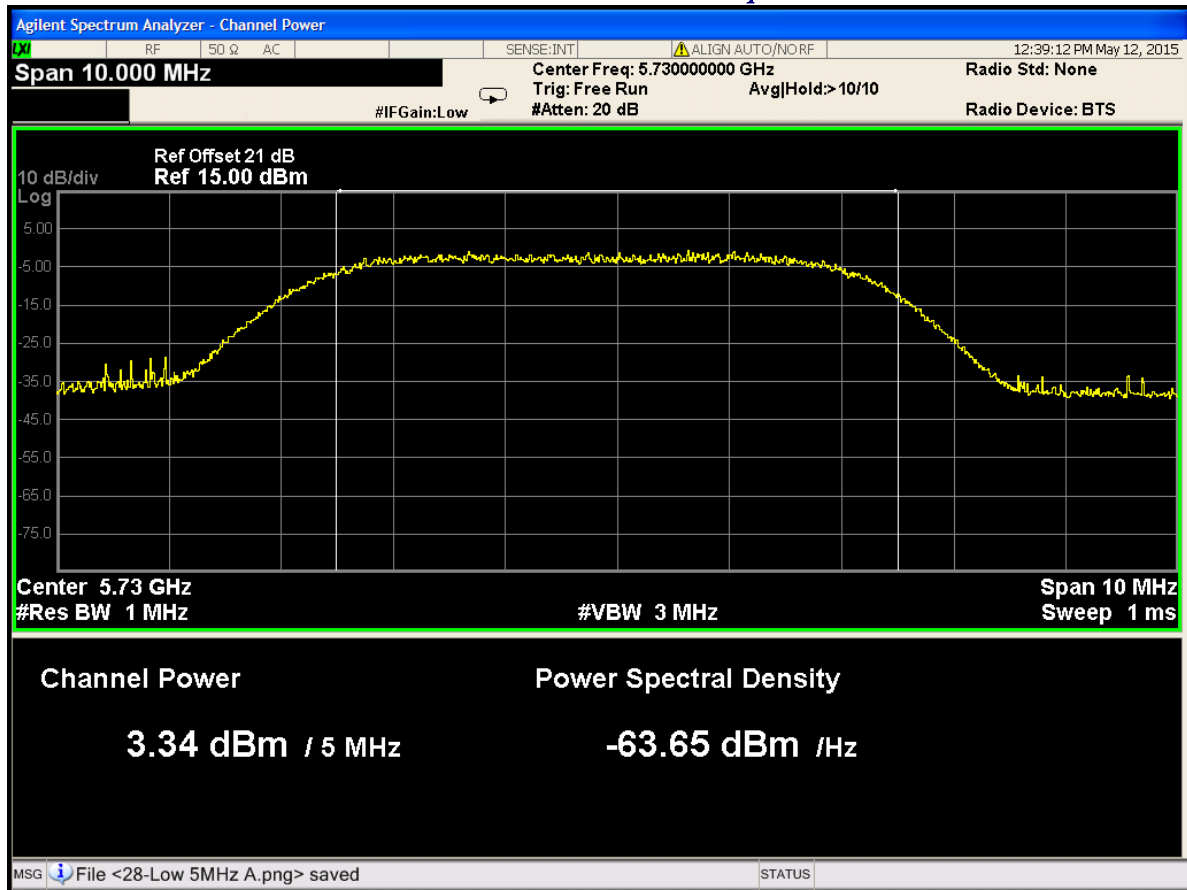
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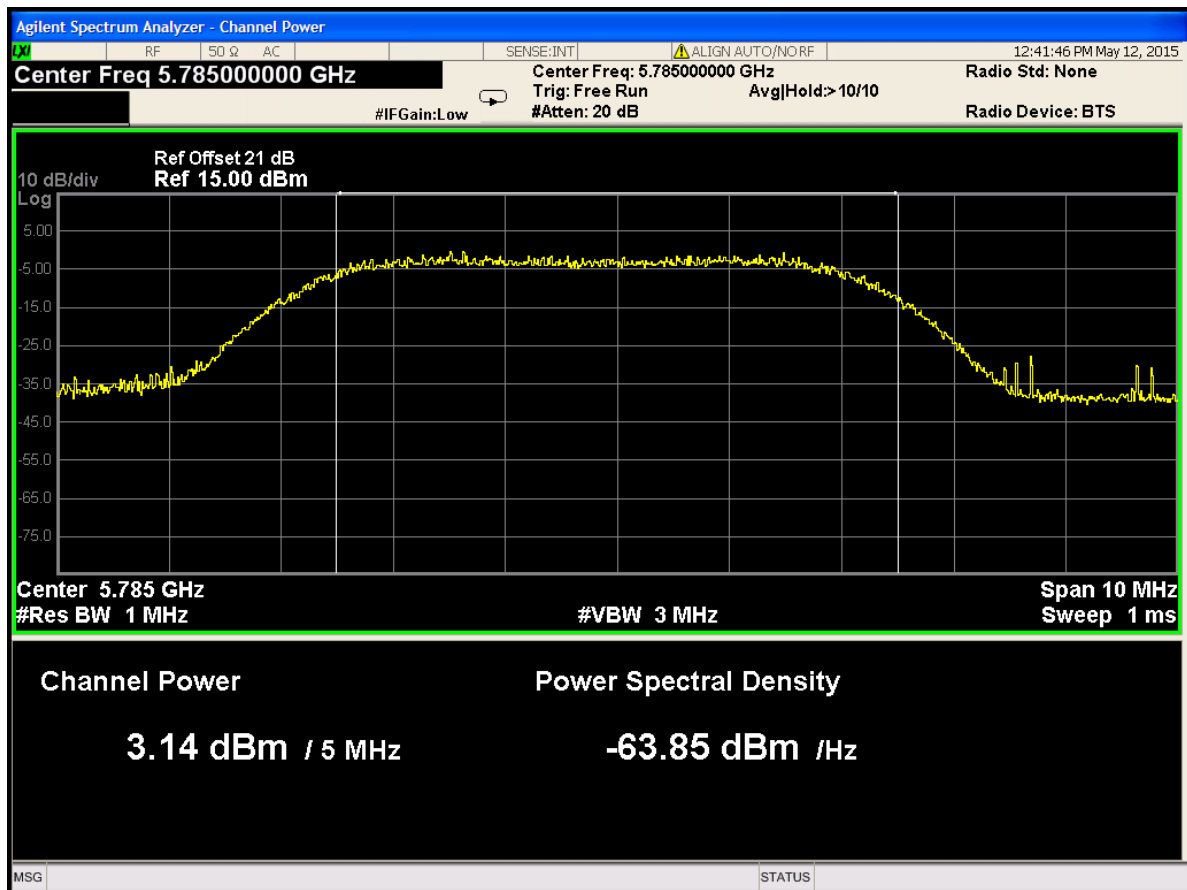
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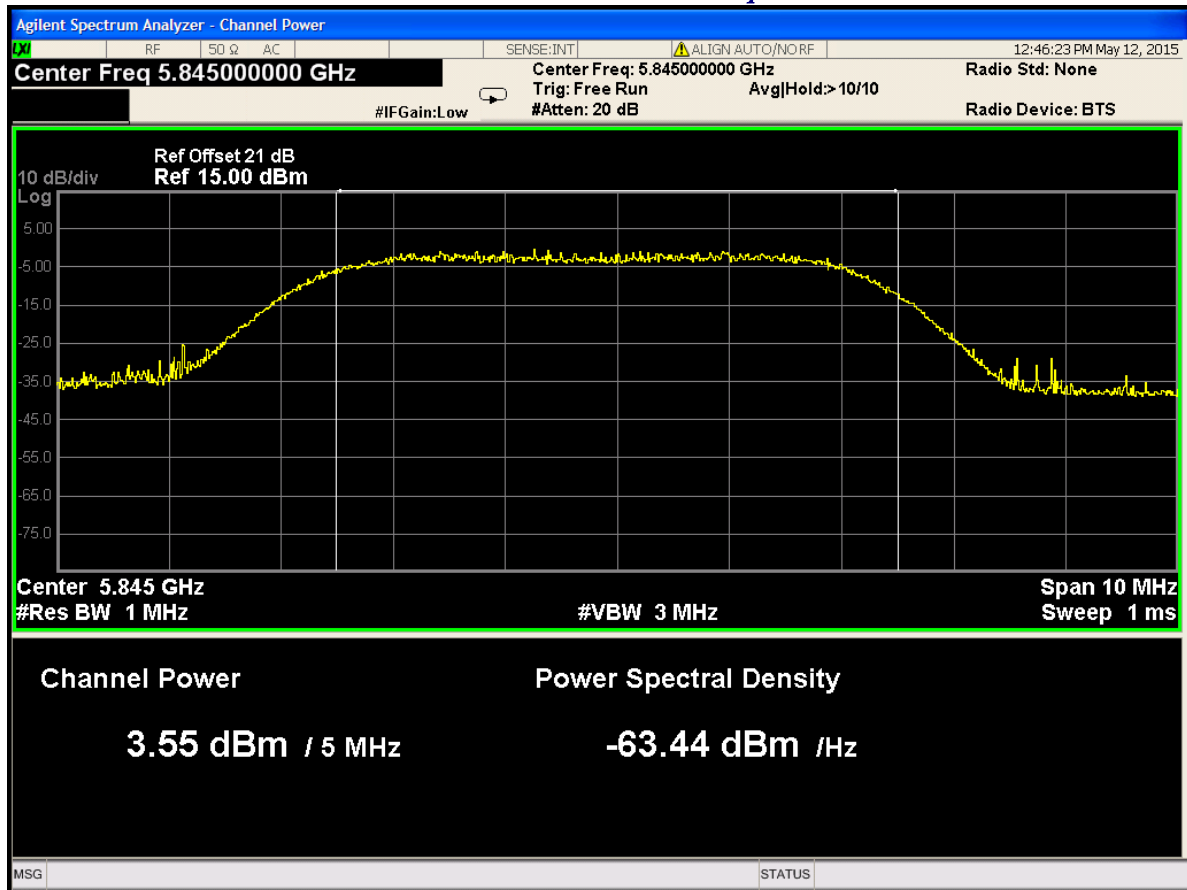
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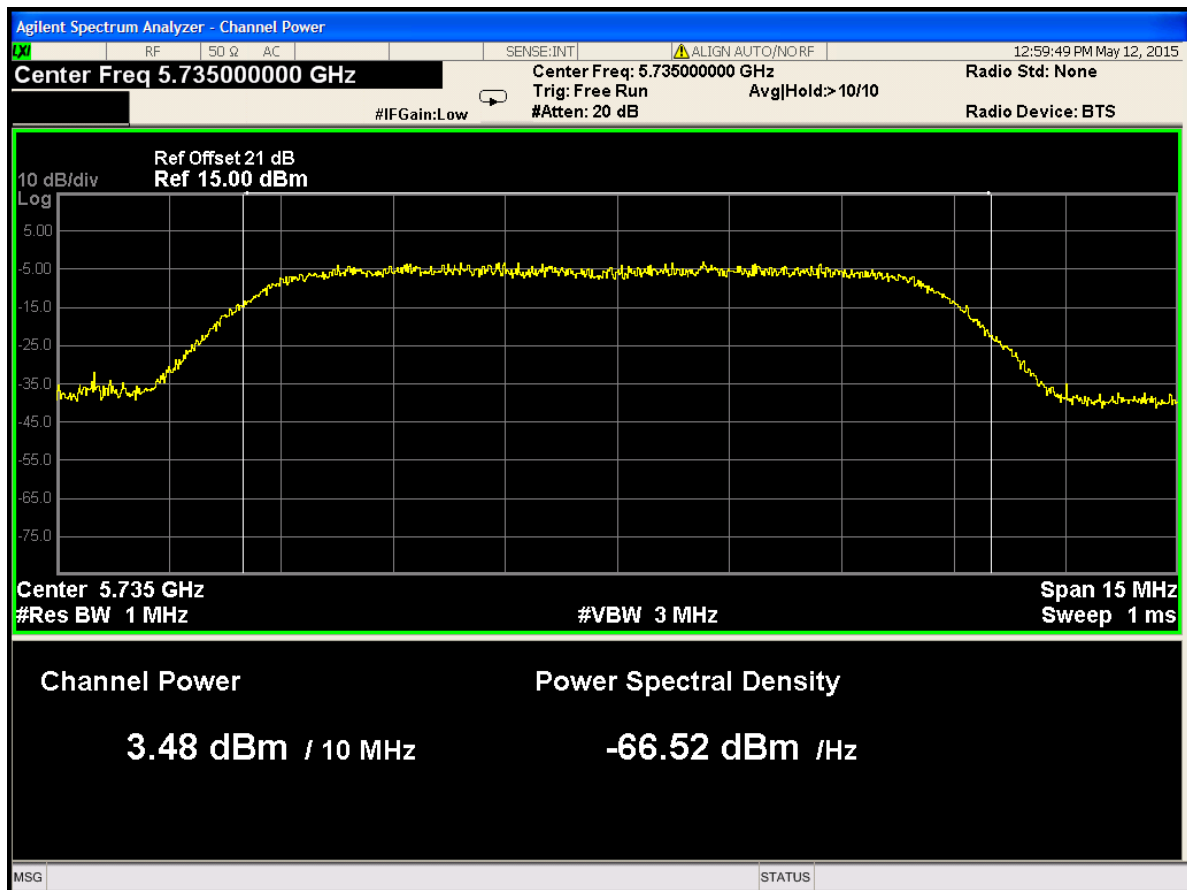
PTMP Power for 28.5dBi Antenna/ 25



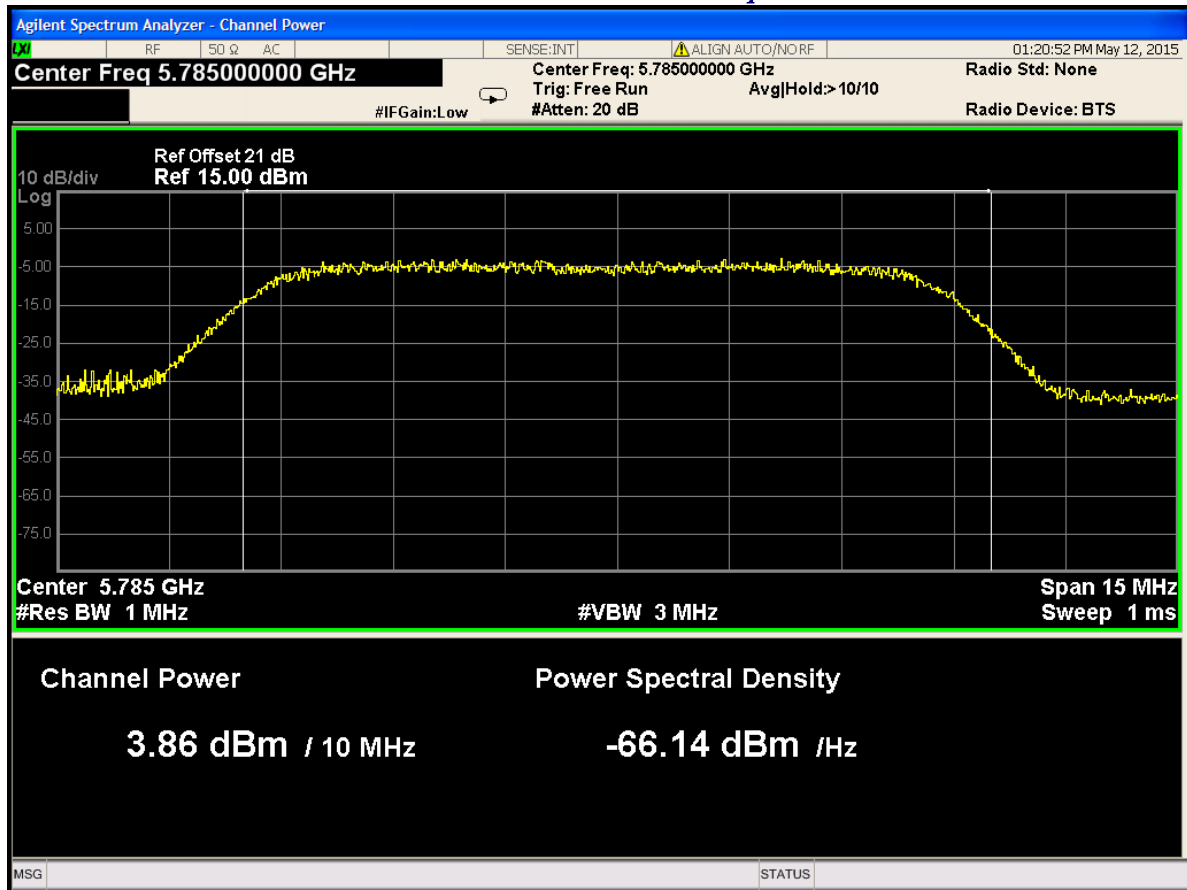
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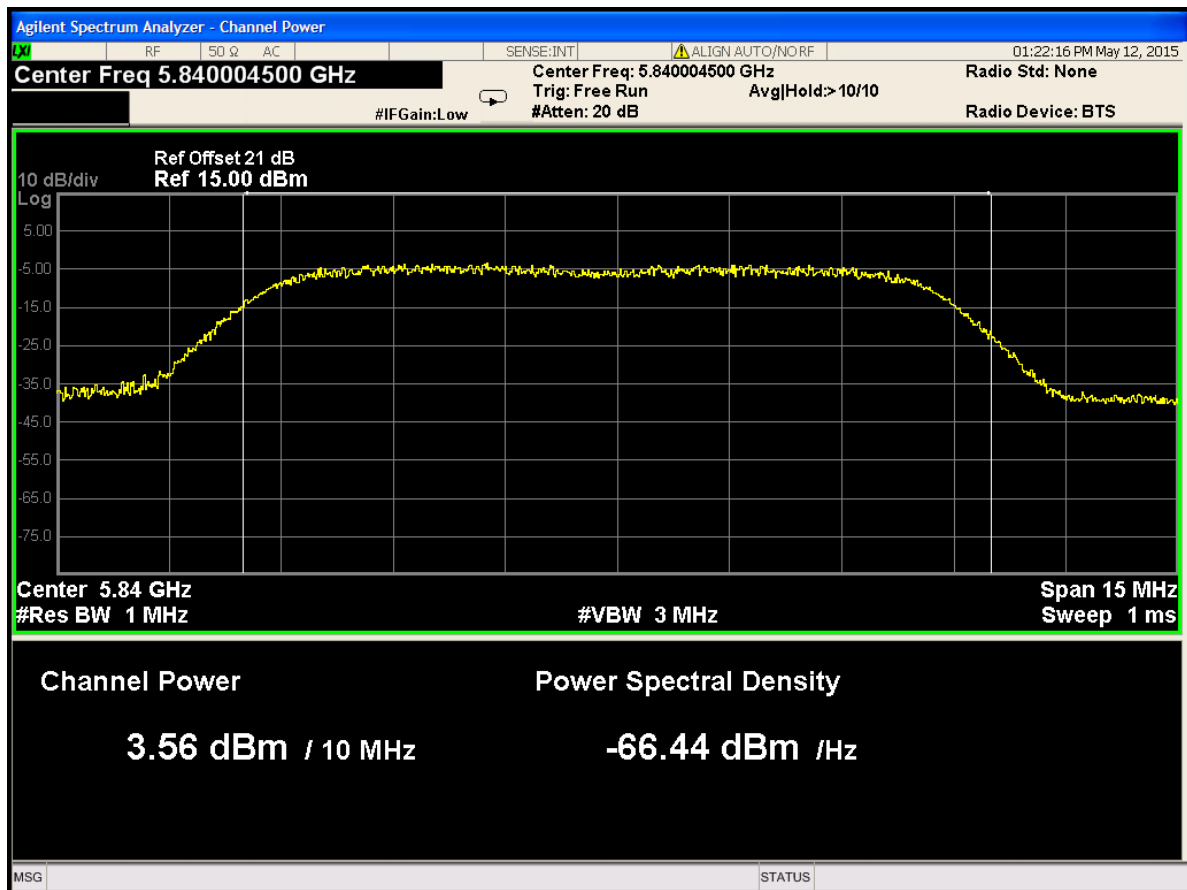
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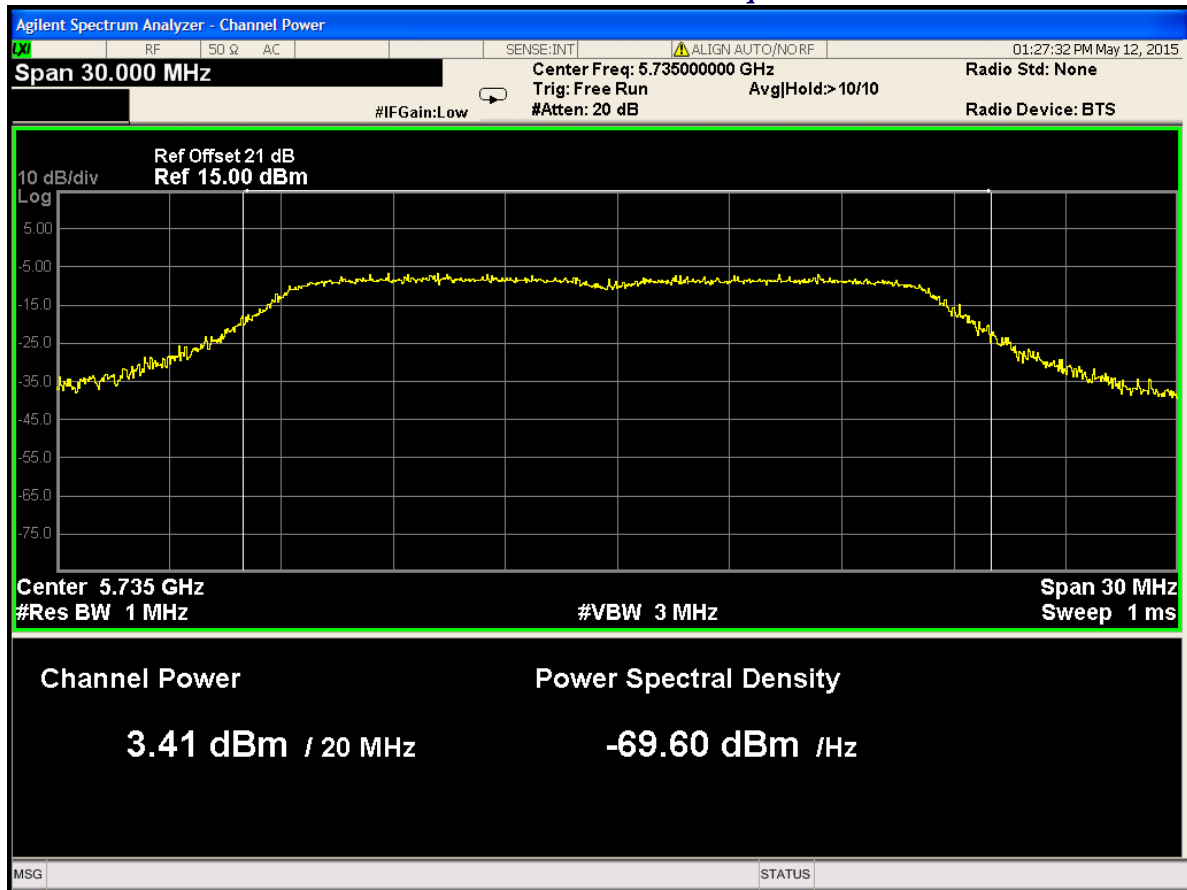
PTMP Power for 28.5dBi Antenna/ 28



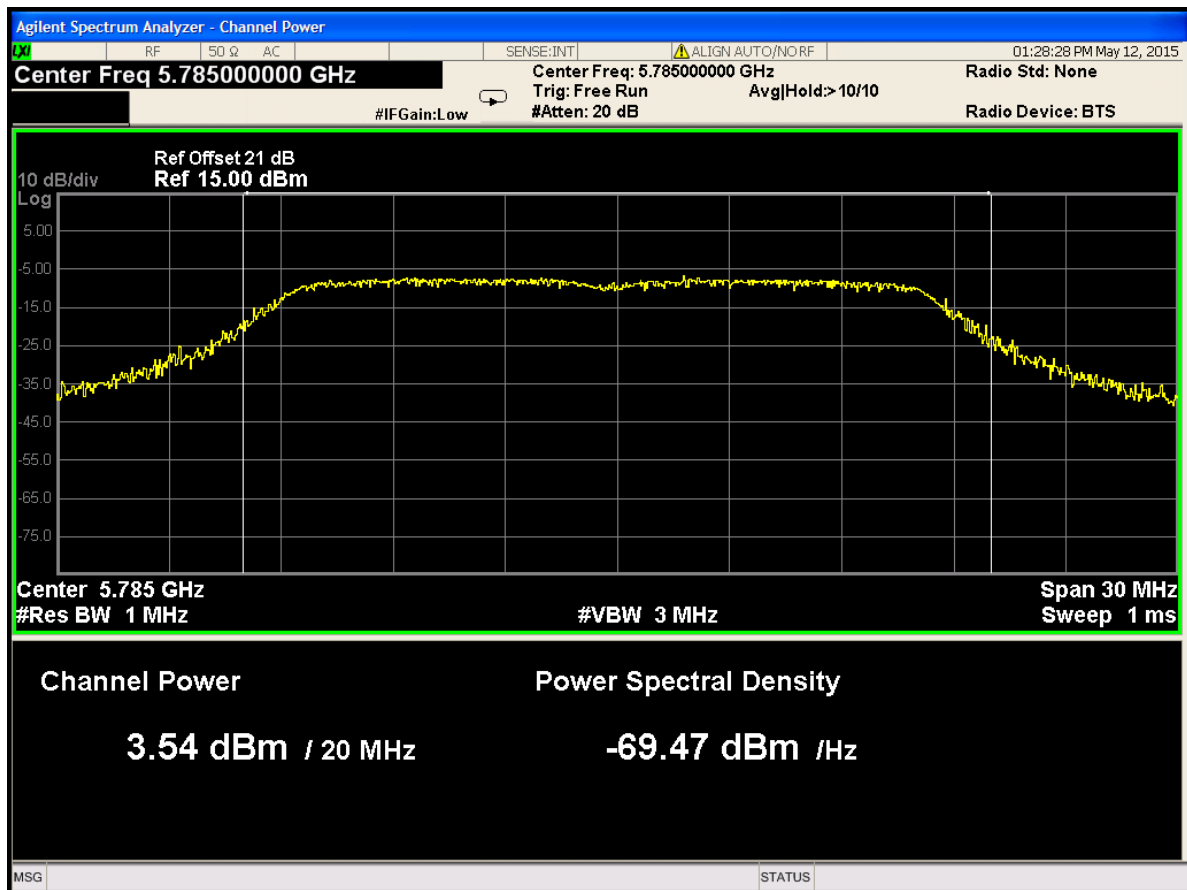
PTMP Power for 28.5dBi Antenna/ 29



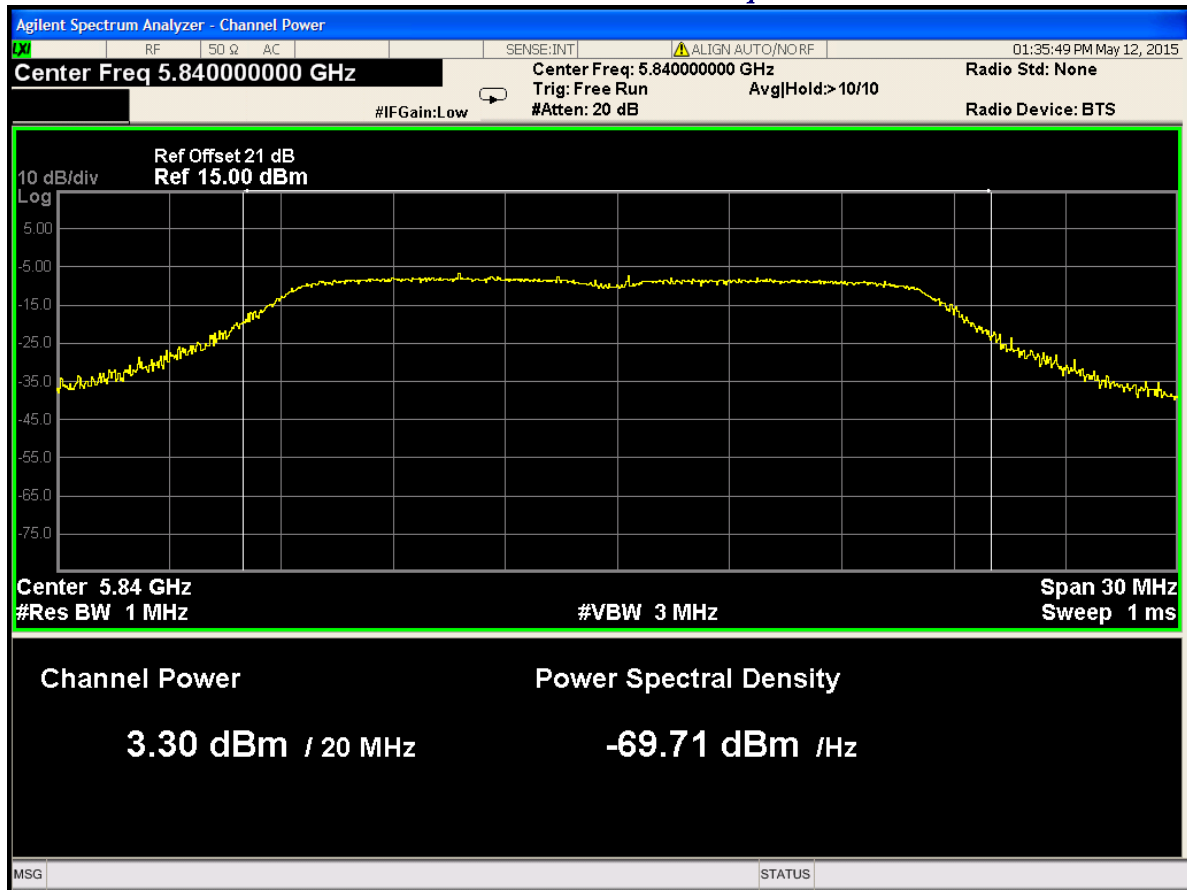
PTMP Power for 28.5dBi Antenna/ 30



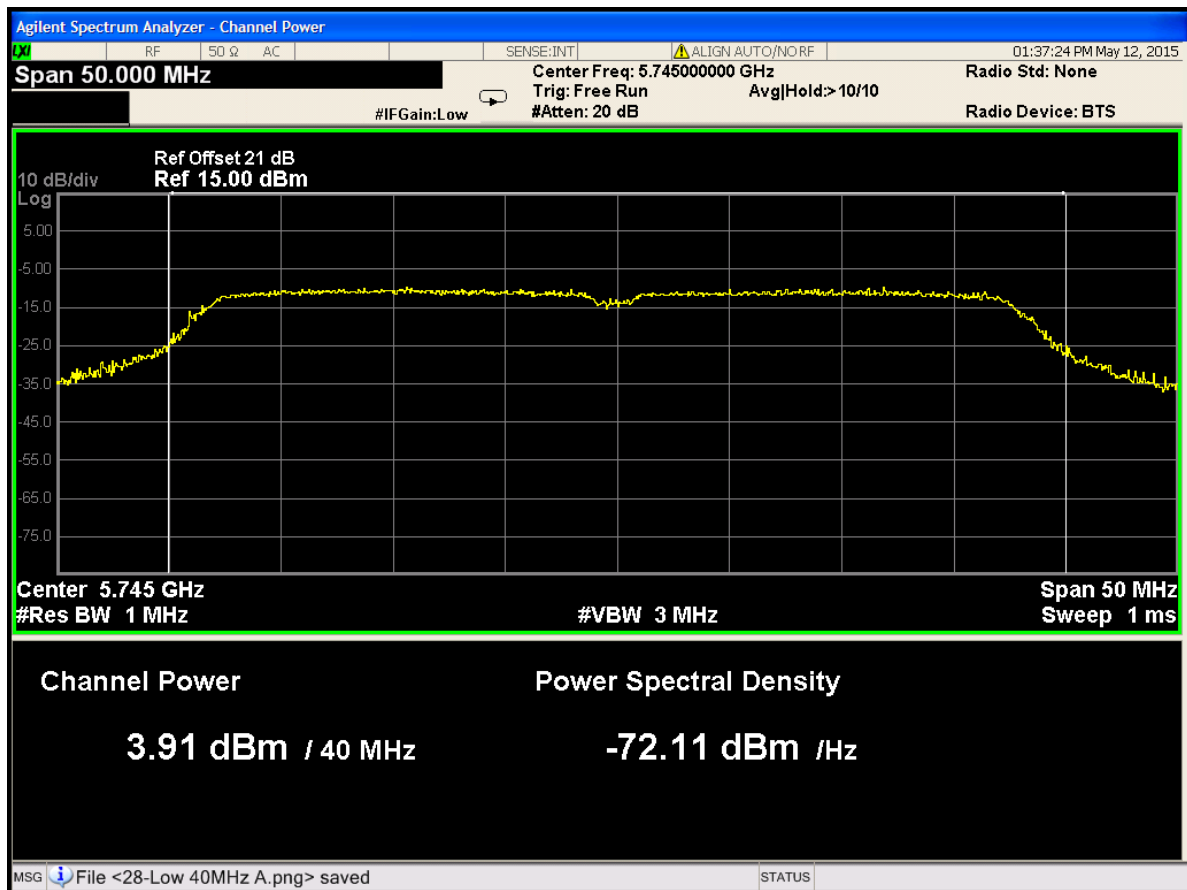
PTMP Power for 28.5dBi Antenna/ 31



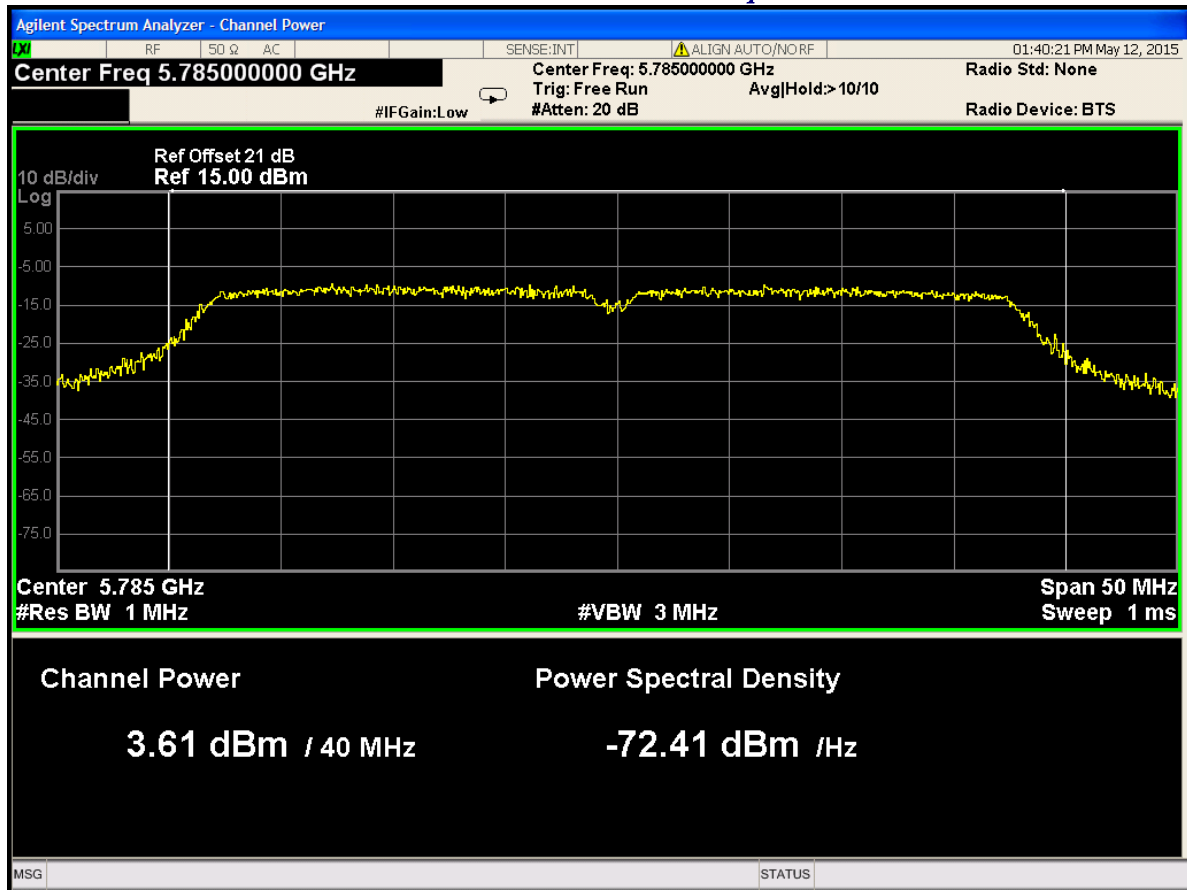
PTMP Power for 28.5dBi Antenna/ 32



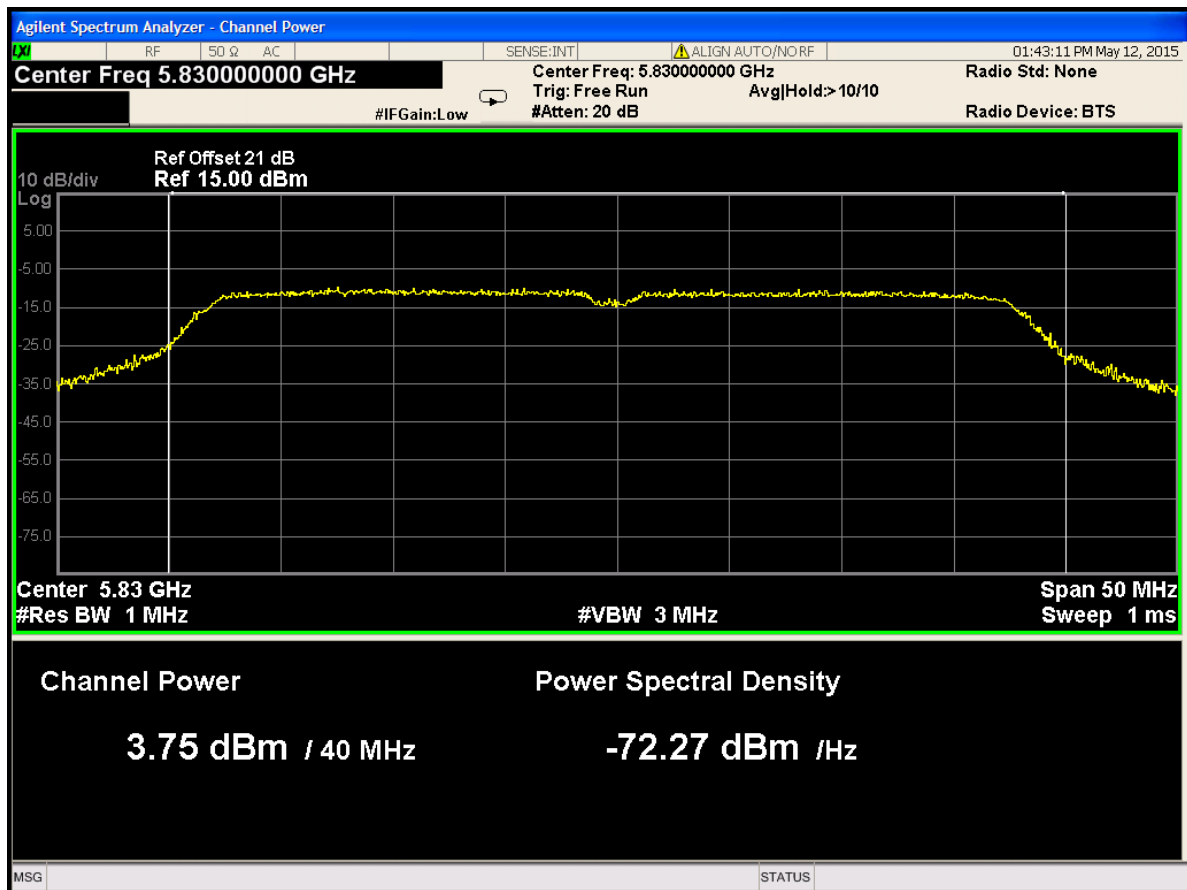
PTMP Power for 28.5dBi Antenna/ 33



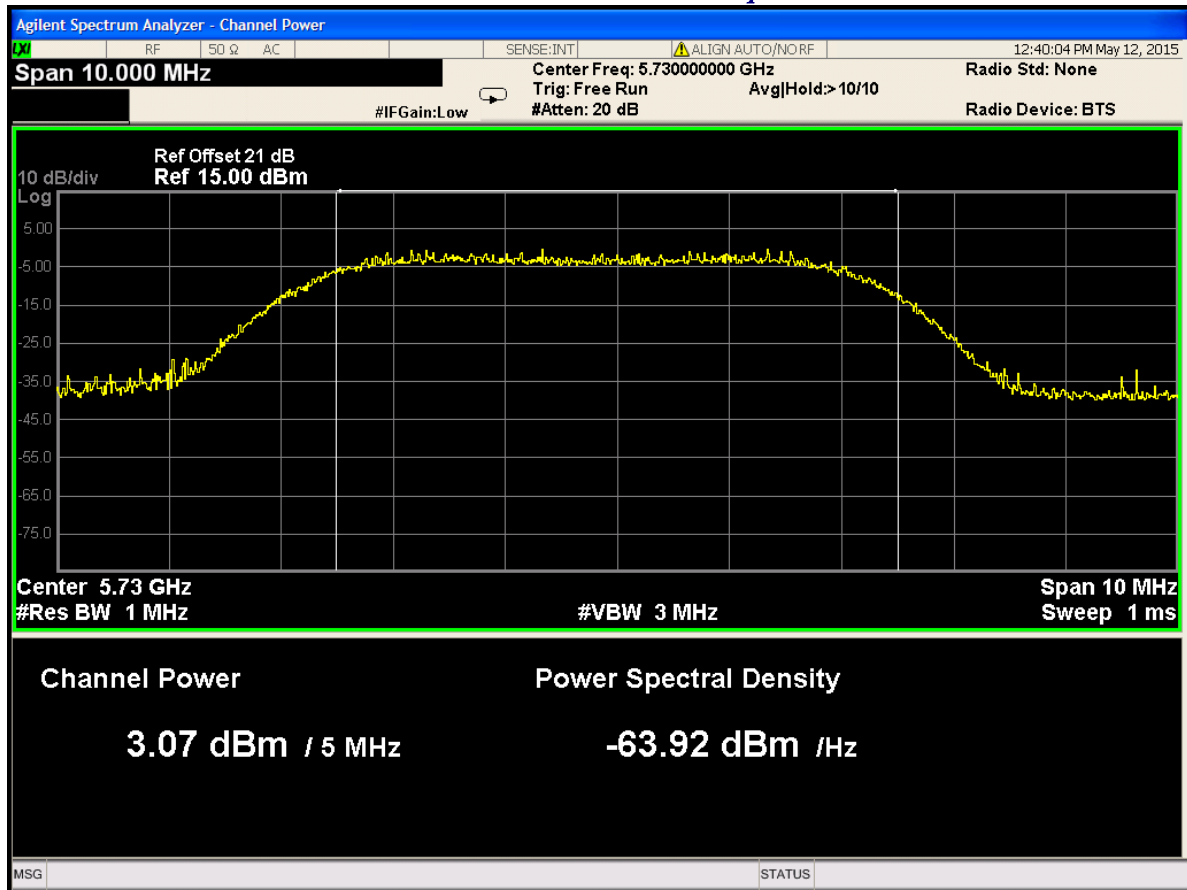
PTMP Power for 28.5dBi Antenna/ 34



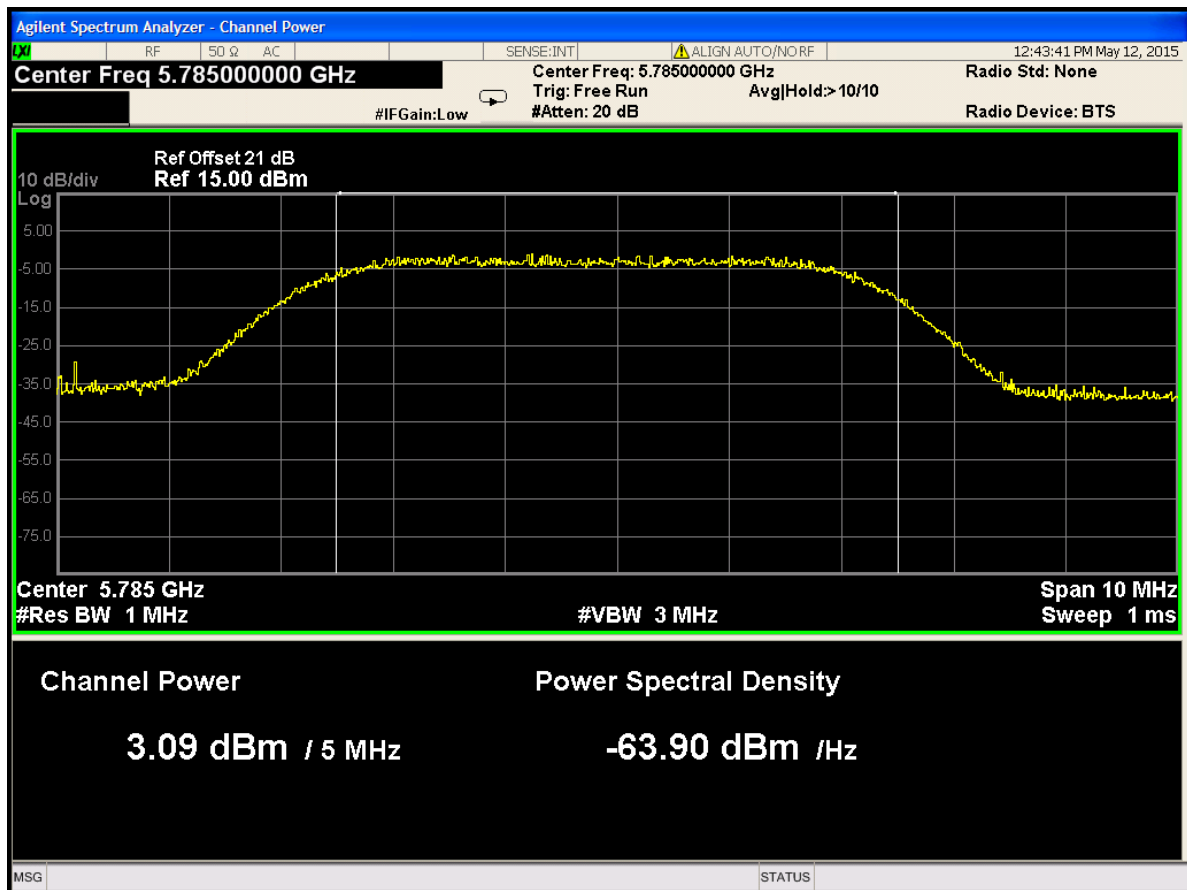
PTMP Power for 28.5dBi Antenna/ 35



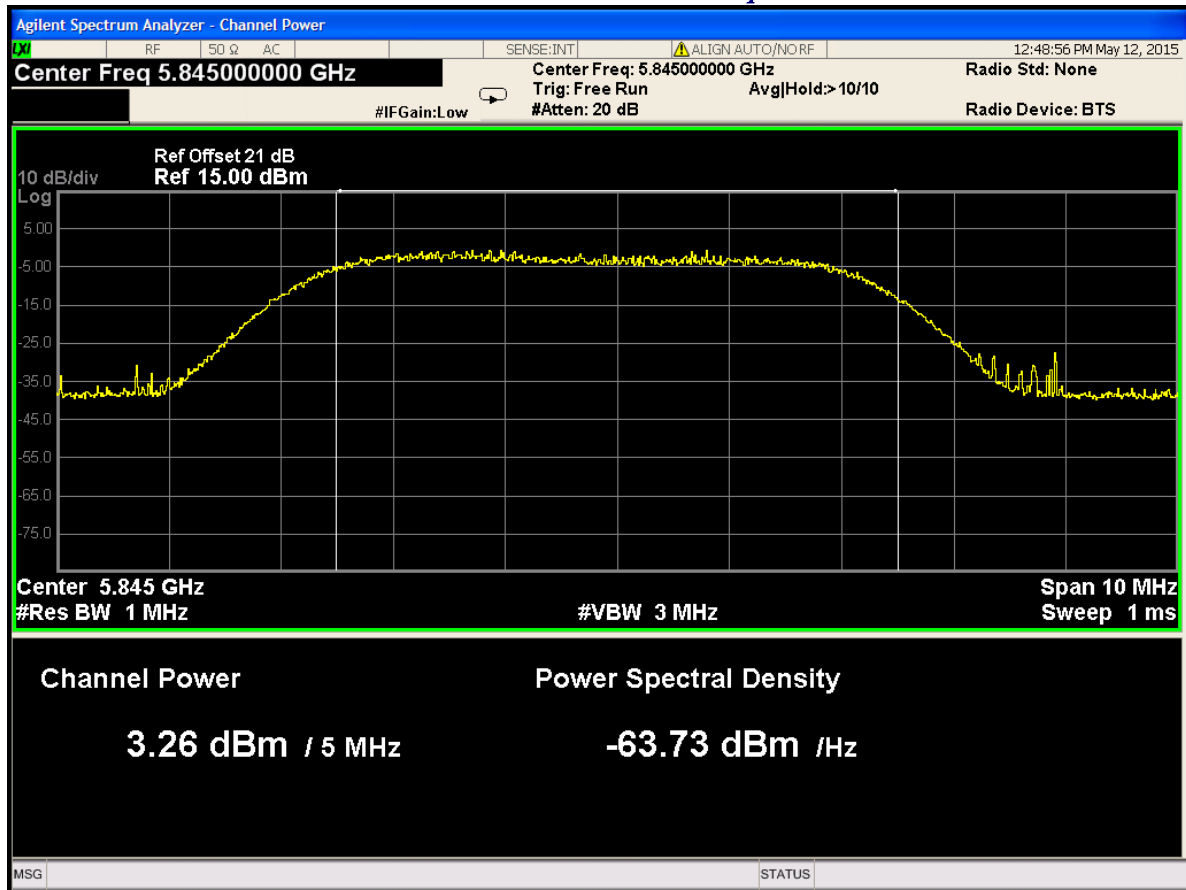
PTMP Power for 28.5dBi Antenna/ 36



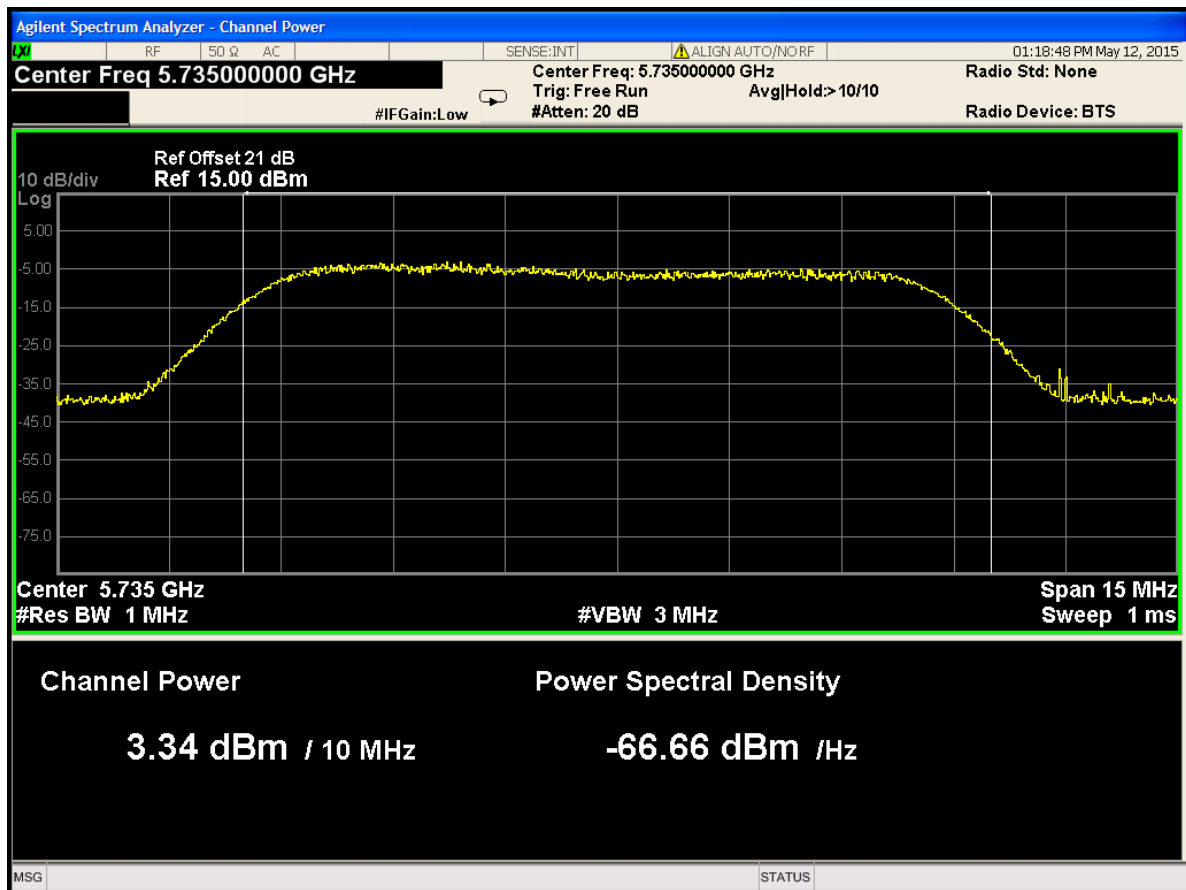
PTMP Power for 28.5dBi Antenna/ 37



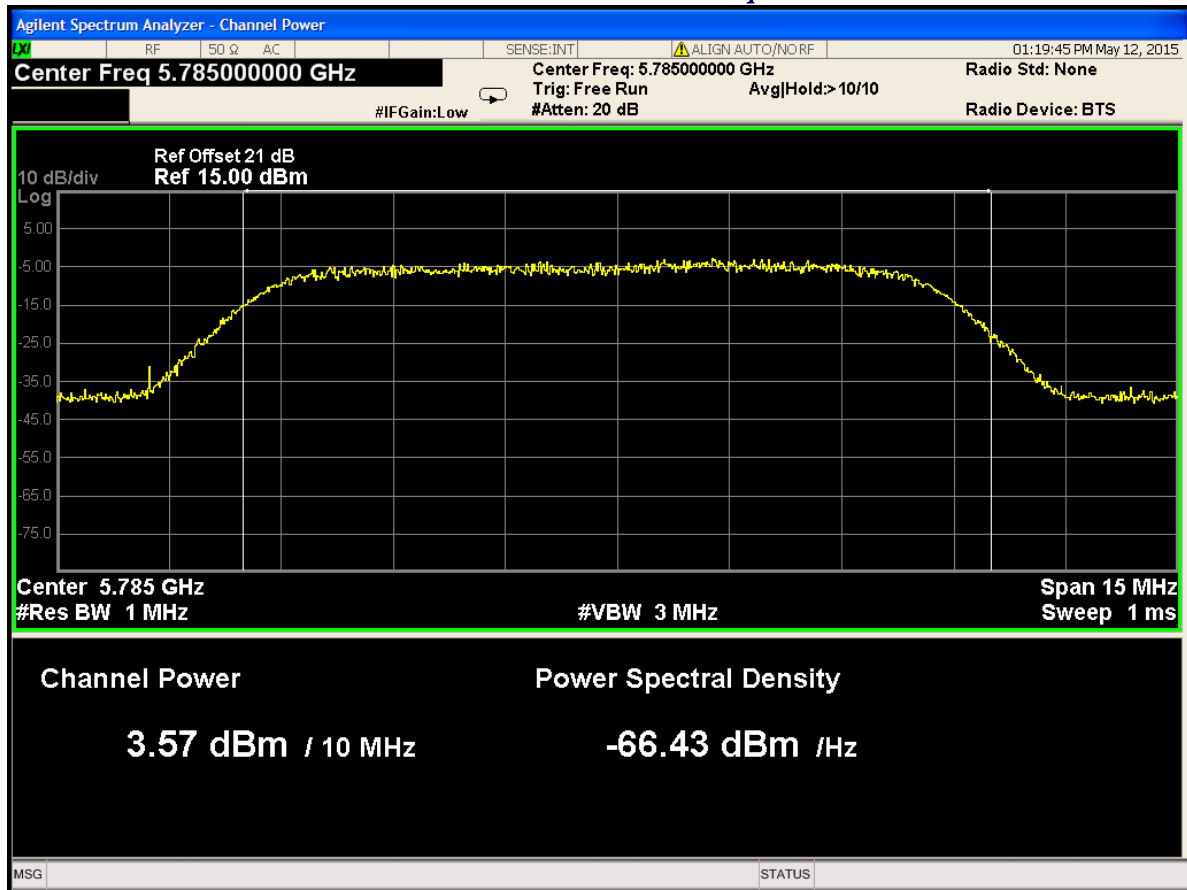
PTMP Power for 28.5dBi Antenna/ 38



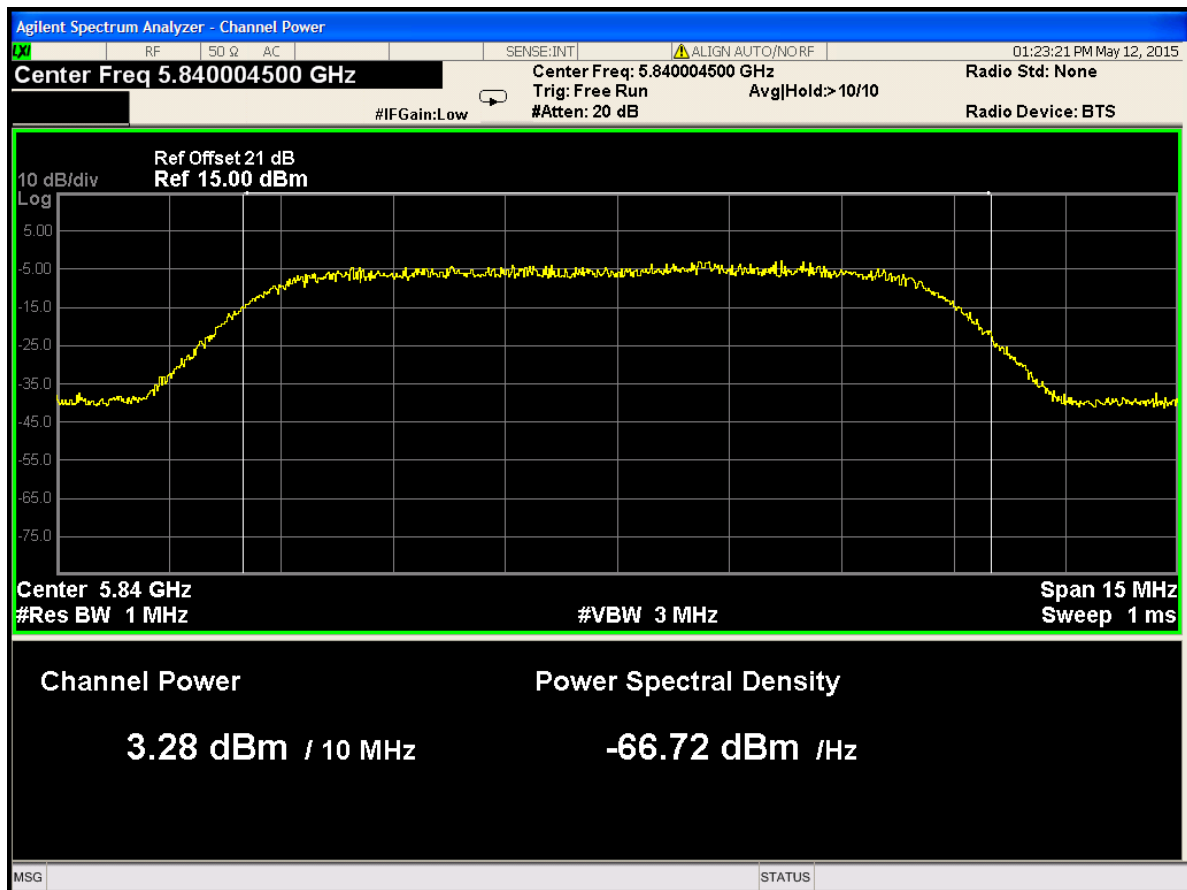
PTMP Power for 28.5dBi Antenna/ 39



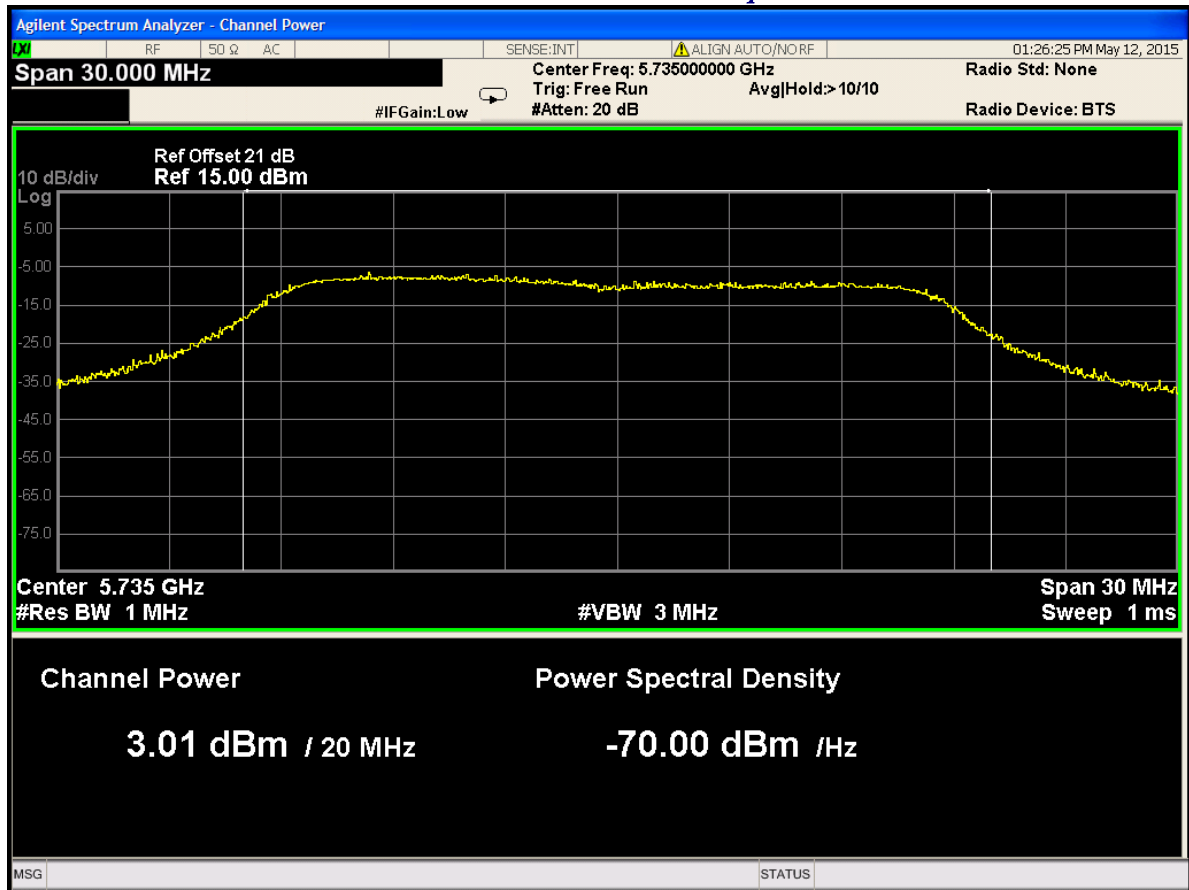
PTMP Power for 28.5dBi Antenna/ 40



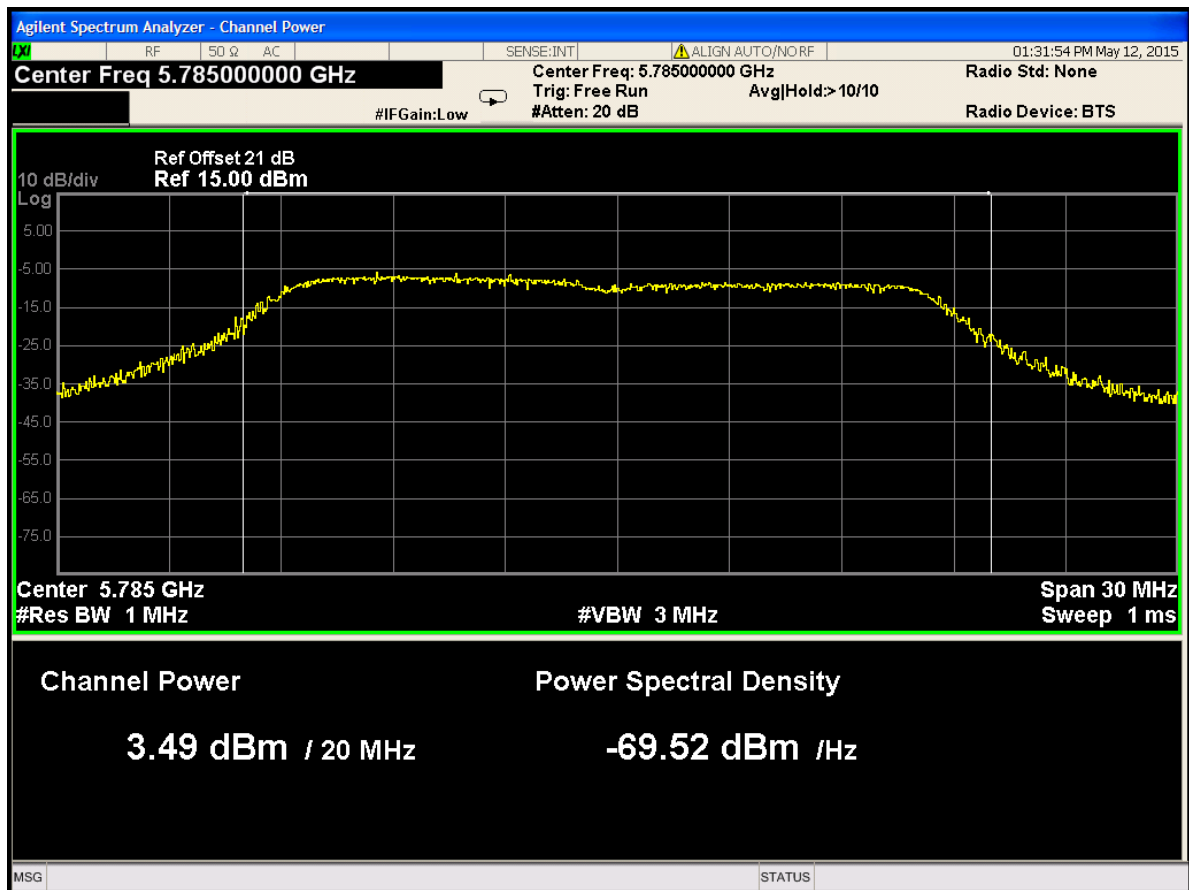
PTMP Power for 28.5dBi Antenna/ 41



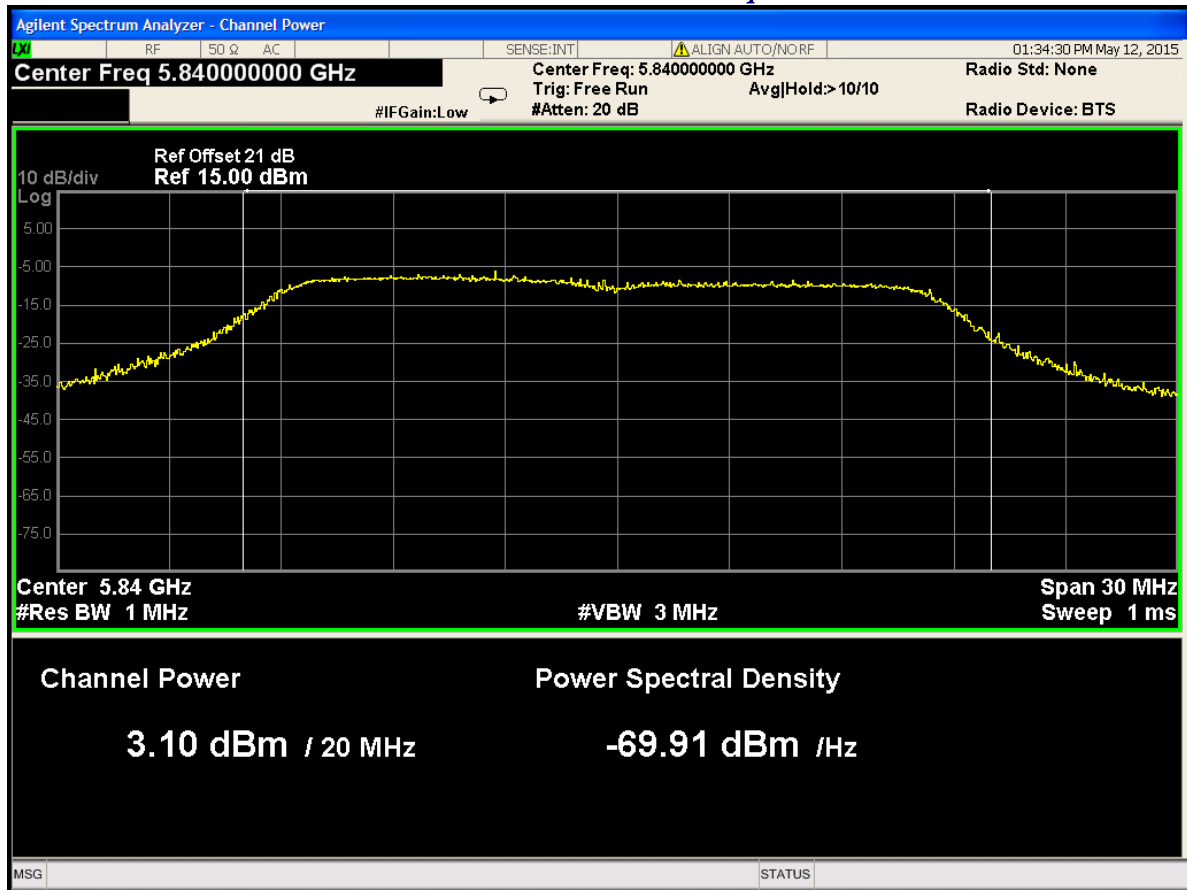
PTMP Power for 28.5dBi Antenna/ 42



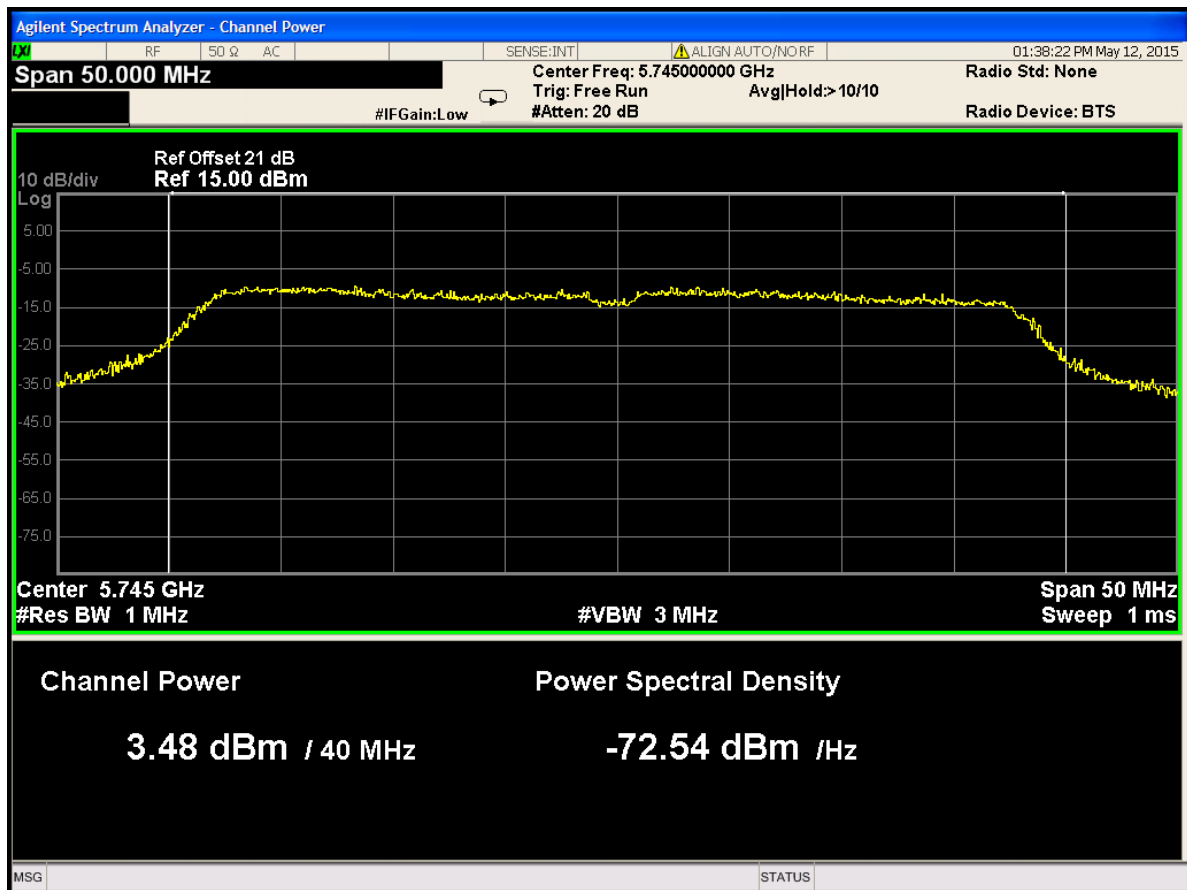
PTMP Power for 28.5dBi Antenna/ 43



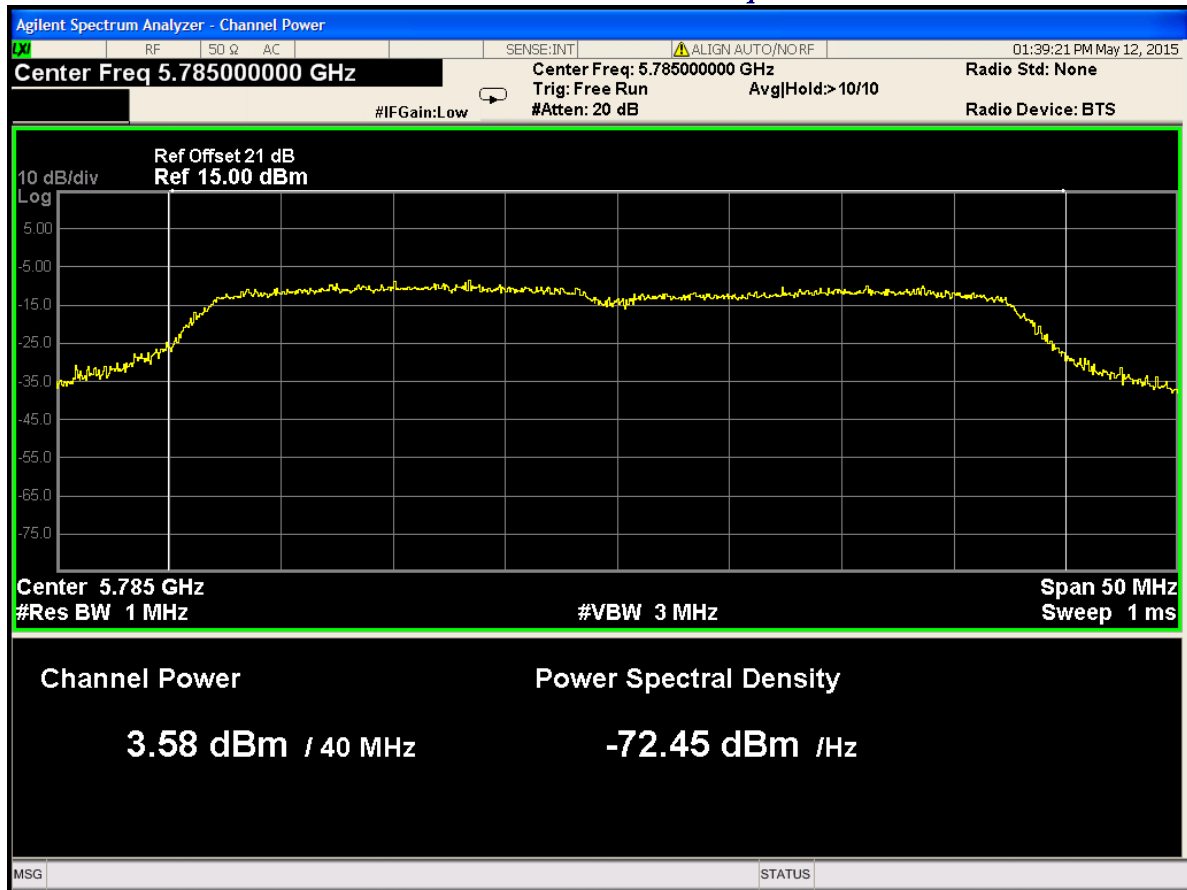
PTMP Power for 28.5dBi Antenna/ 44



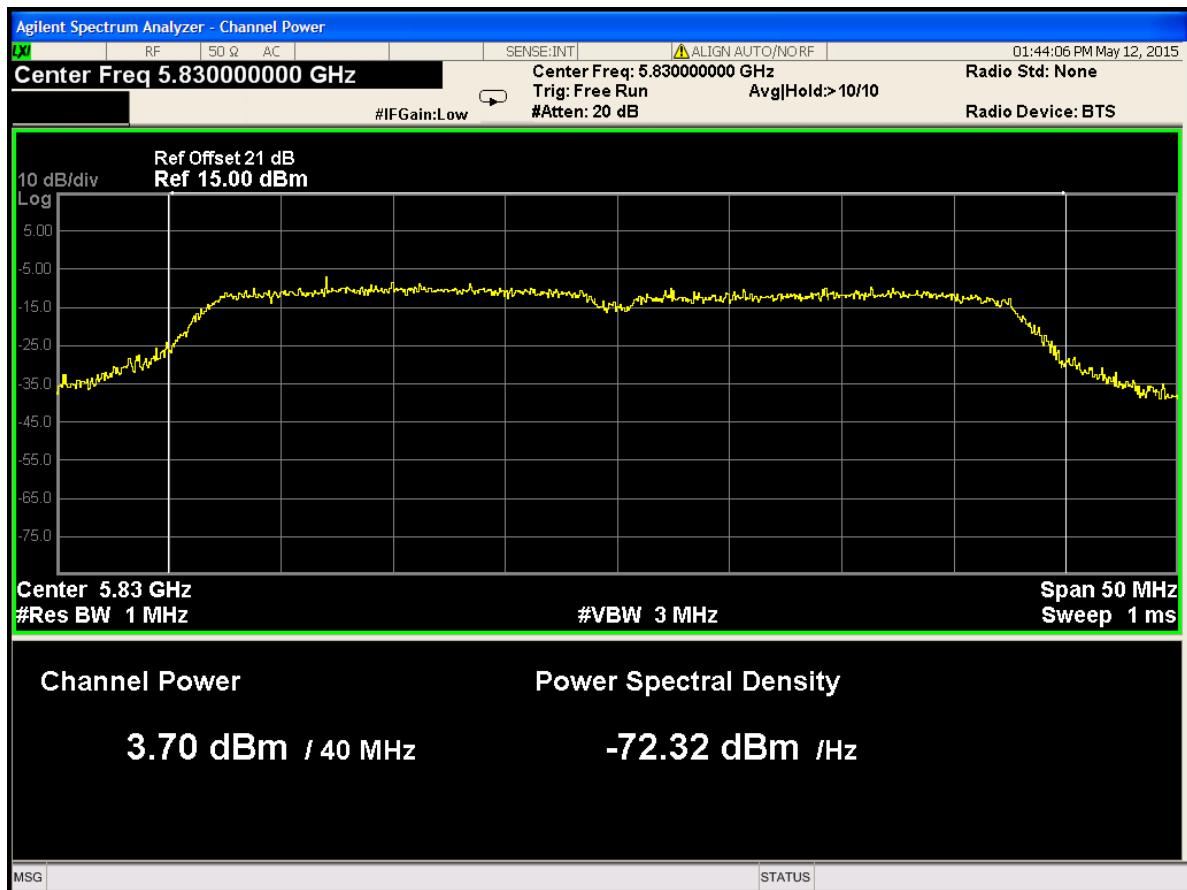
PTMP Power for 28.5dBi Antenna/ 45



PTMP Power for 28.5dBi Antenna/ 46



PTMP Power for 28.5dBi Antenna/ 47



PTMP Power for 28.5dBi Antenna/ 48

8. OUT OF BAND CONDUCTED EMISSION

Equipment Under Test	WipAir 8000
Test Method	FCC New Guidance on Measurements for DTS in section 15.247(d).
Date	01.01.2015
Relative Humidity	40%
Ambient Temperature	25 ⁰ C
Air Pressure	1010 hPa
Test Setup	Figure 2

Testing Engineer: I. Arbitman



Date : 01.01.2015

8.1. Test Results Summary & Conclusions

The E.U.T was found in compliance with 15.247 (d) conducted emission requirements

8.2. Limits of Conducted Emission at Antenna Terminals

The test unit shall meet the limits of Table 25 for FCC Part 15 Para 15.247 equipment.

Table 29: Limits for 15.247 (d)

Frequency* (MHz)	Attenuation below carrier** (dBc)
0.009-10 th harmonic	20.00 (30.00)

*: This limit applies from the lowest frequency generated in the device, without going below 9 kHz up to the tenth harmonic of the highest fundamental frequency.

**: Spurious emission limit is provided in terms of attenuate peak of modulated carrier measured with the same resolution bandwidth.

8.3. Test Instrumentation and Equipment

Table 30: Test Instrumentation and Equipment

Item	Model	Manufacturer	P/N	Next Date of Calibration
Spectrum Analyzer	N9020A	Agilent	20041738908	04.04.2015
20 dB Attenuator	8343-206	TENULINE		13.03.2016

8.4. Test Procedure

The EUT was set to transmit at 100% duty cycle, modulation PRBS..

Conducted spurious and Band Edge were measured to each terminal, using spectrum analyzer at a limit of 20dBc.

Reference level was established by using the following procedure:

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set the span to ≥ 1.5 times the DTS bandwidth.
- c) Set the RBW = 100 kHz.
- d) Set the VBW $\geq 3 \times$ RBW.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) The peak marker function is used to determine the maximum fundamental emission level.

Emission level measurement

- a) Set the center frequency and span to encompass frequency range to be measured.
- b) Set the RBW = 100 kHz.
- c) Set the VBW $\geq 3 \times$ RBW.
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) The peak marker function is used to determine the maximum amplitude level

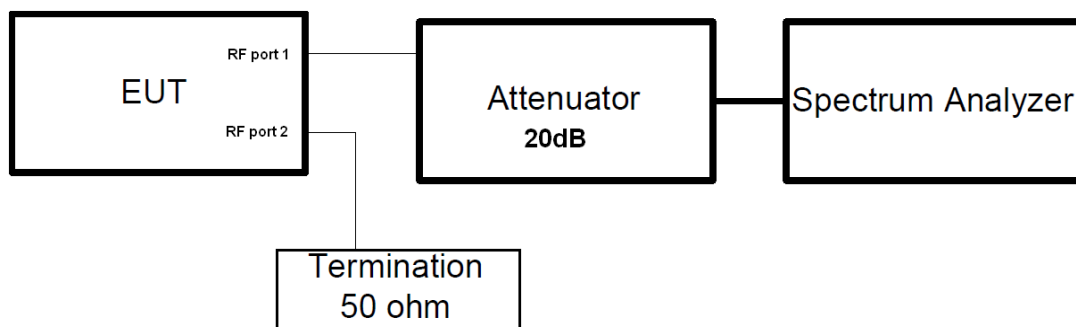
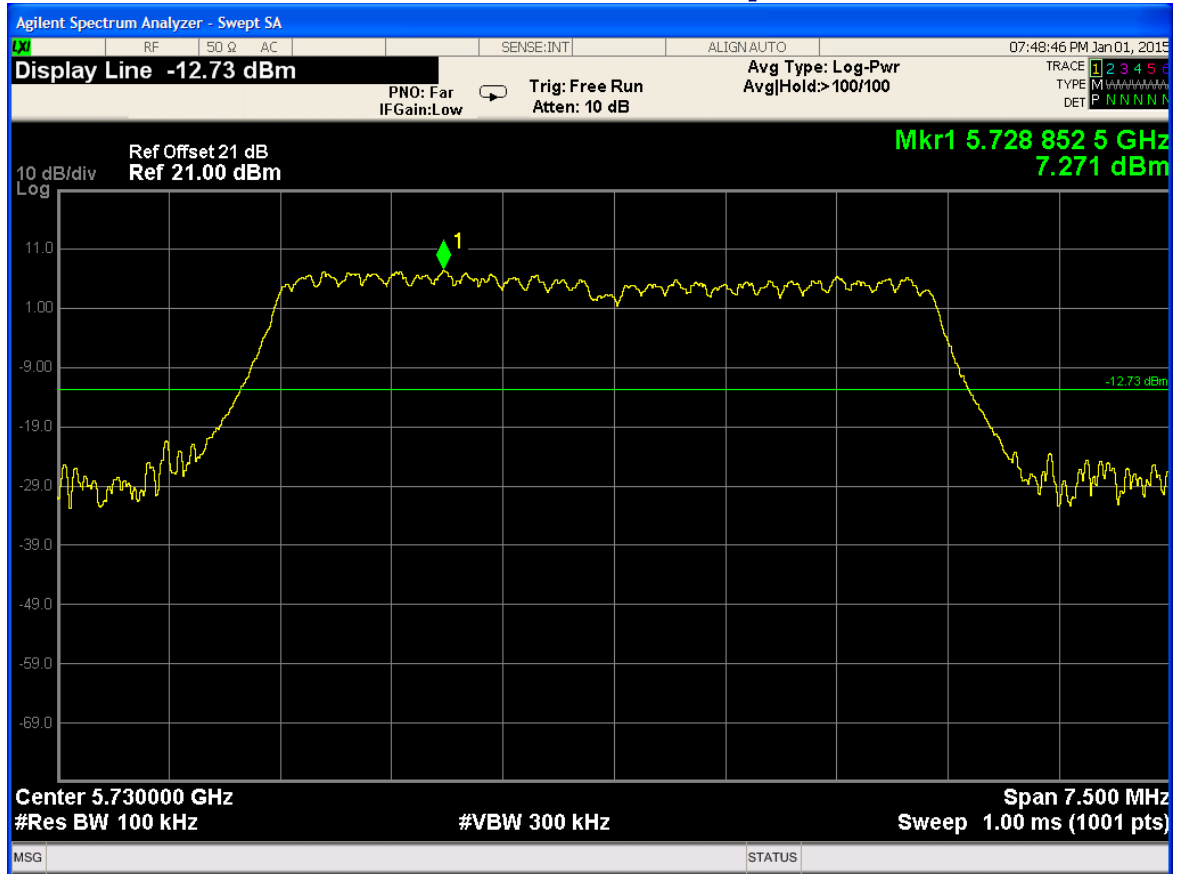


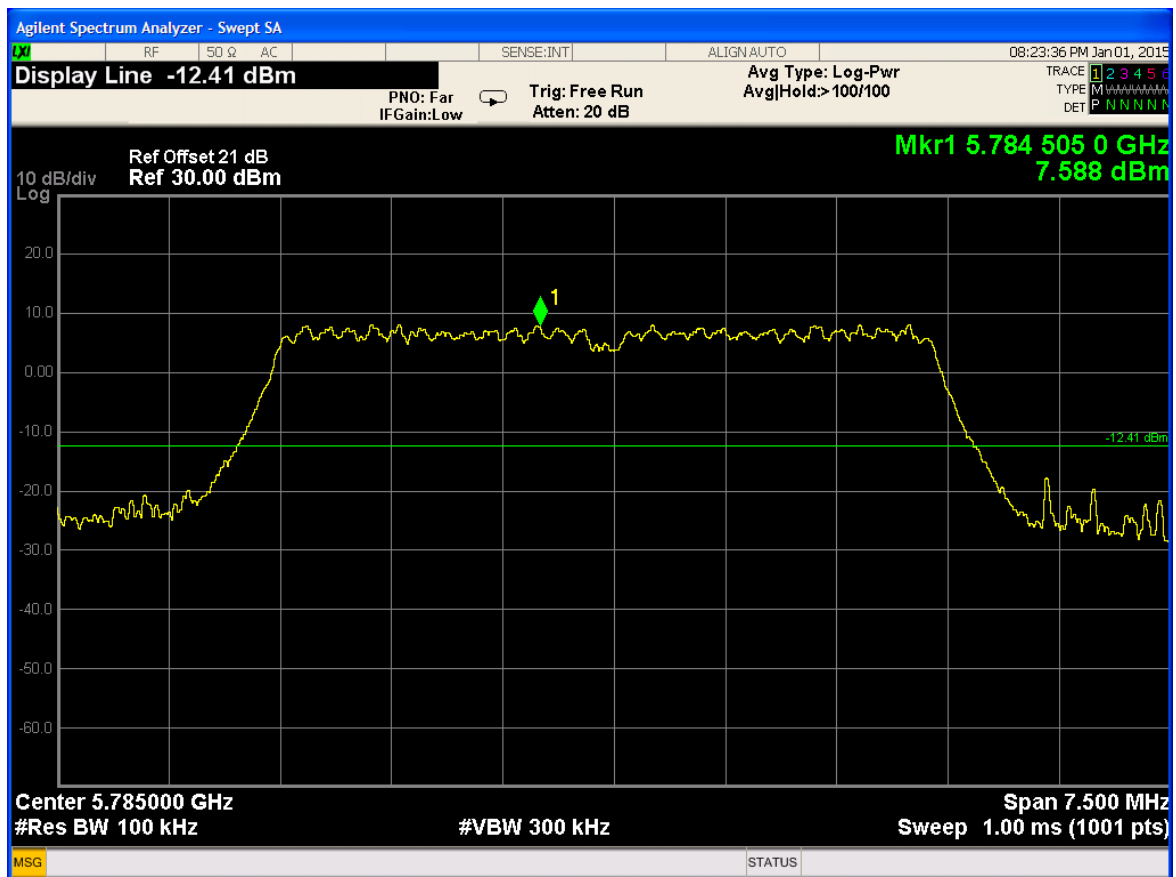
Figure 5: Test Setup for Out of Band Conducted measurements

8.5. Results

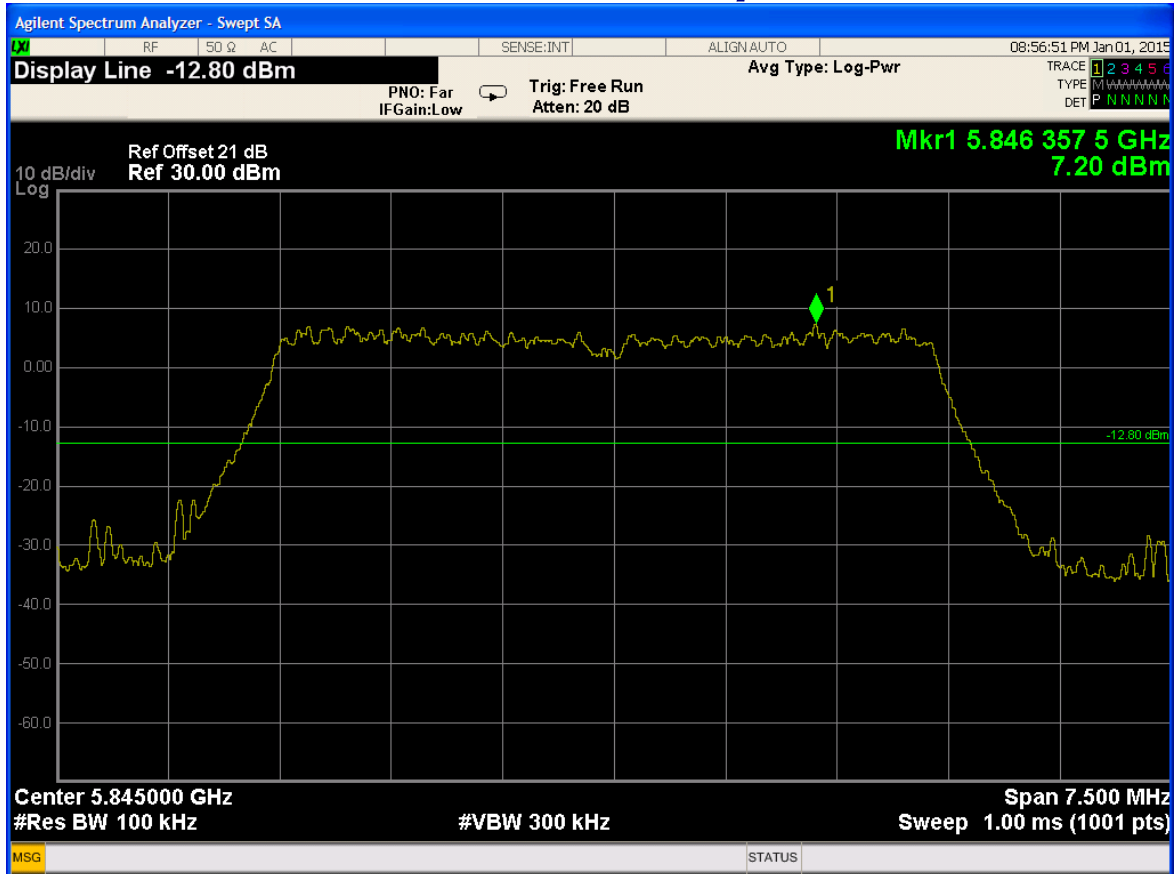
No emissions found above limit 20dBc. See plots 1 – 88.



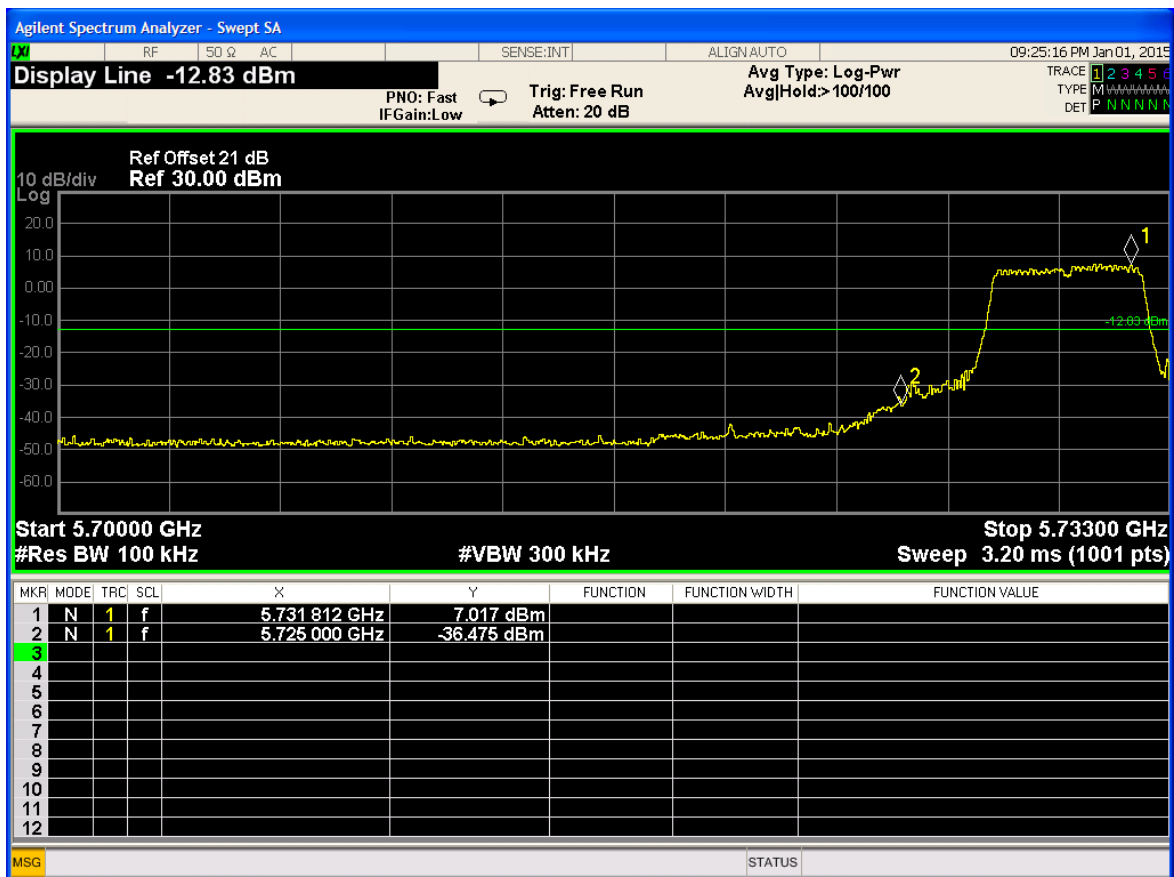
Plot Out of Band Conducted Emission/ 1



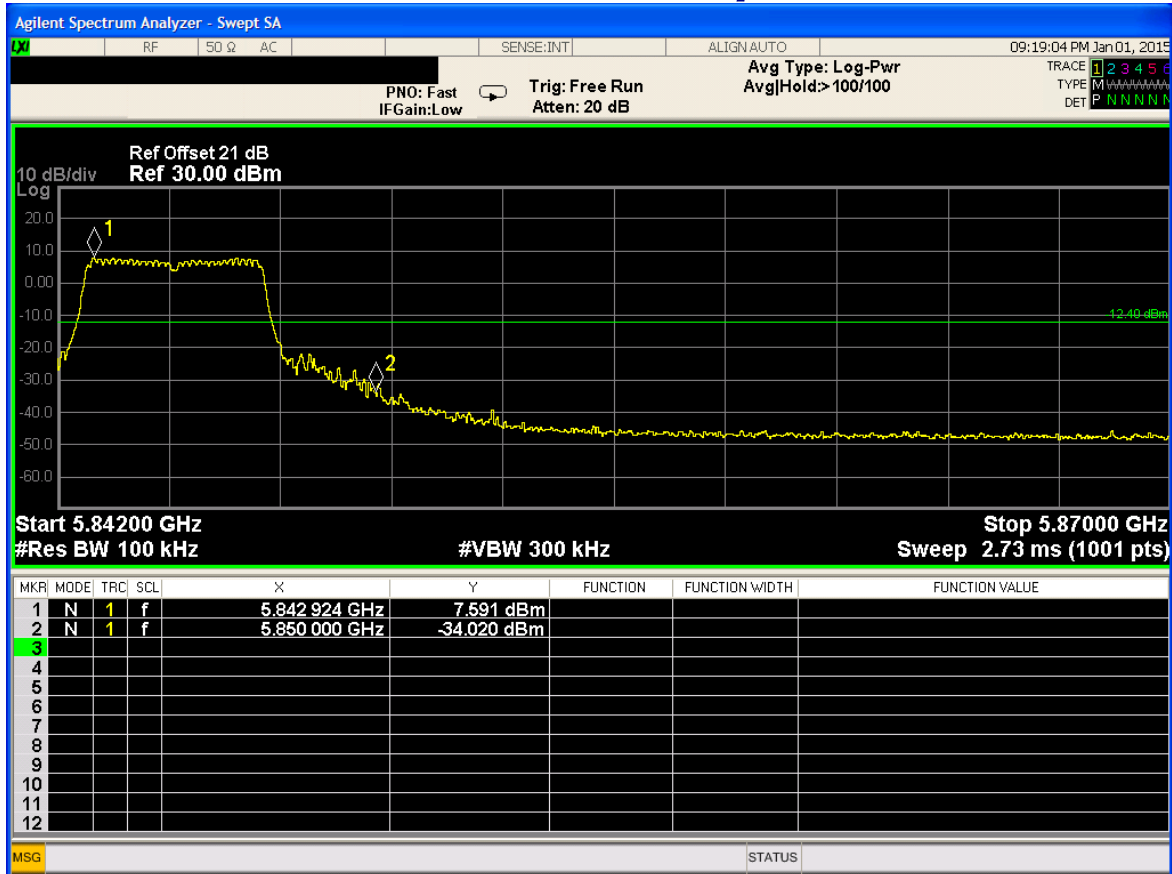
Plot Out of Band Conducted Emission/ 2



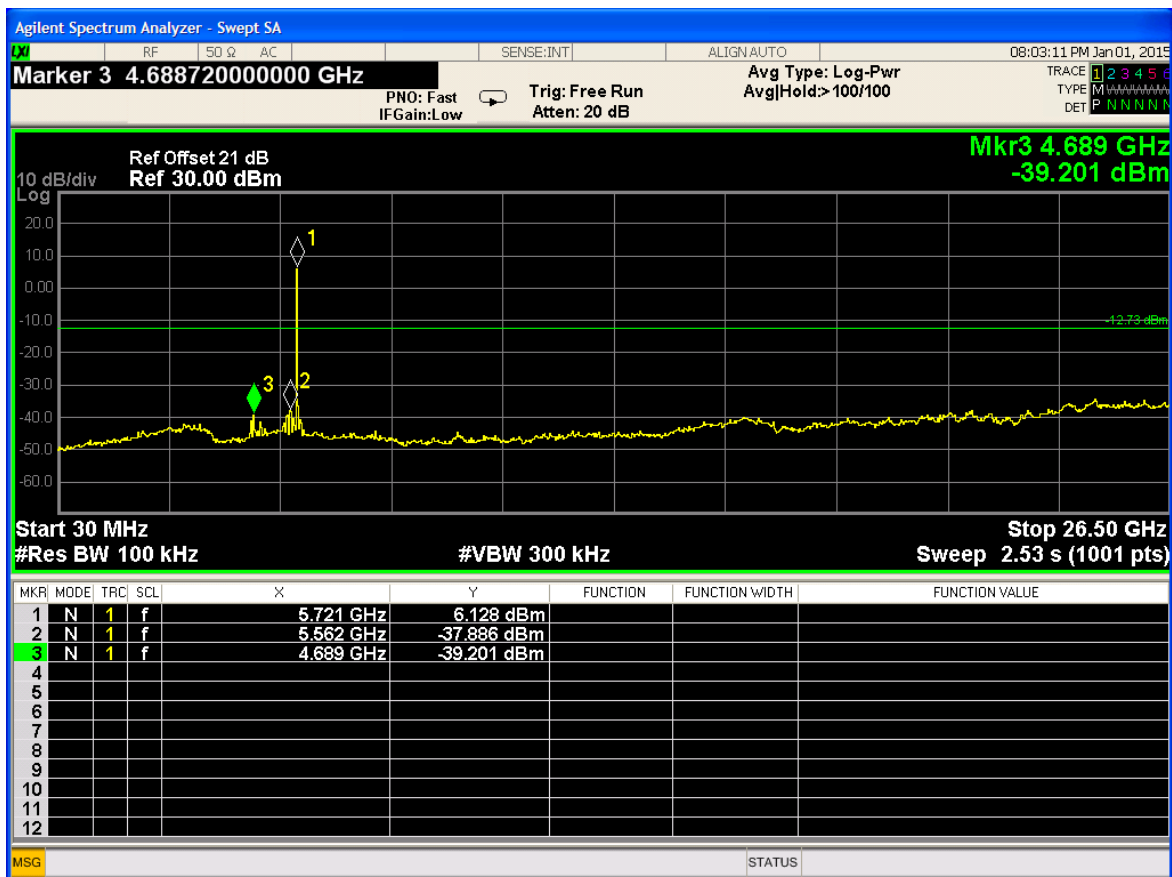
Plot Out of Band Conducted Emission/ 3



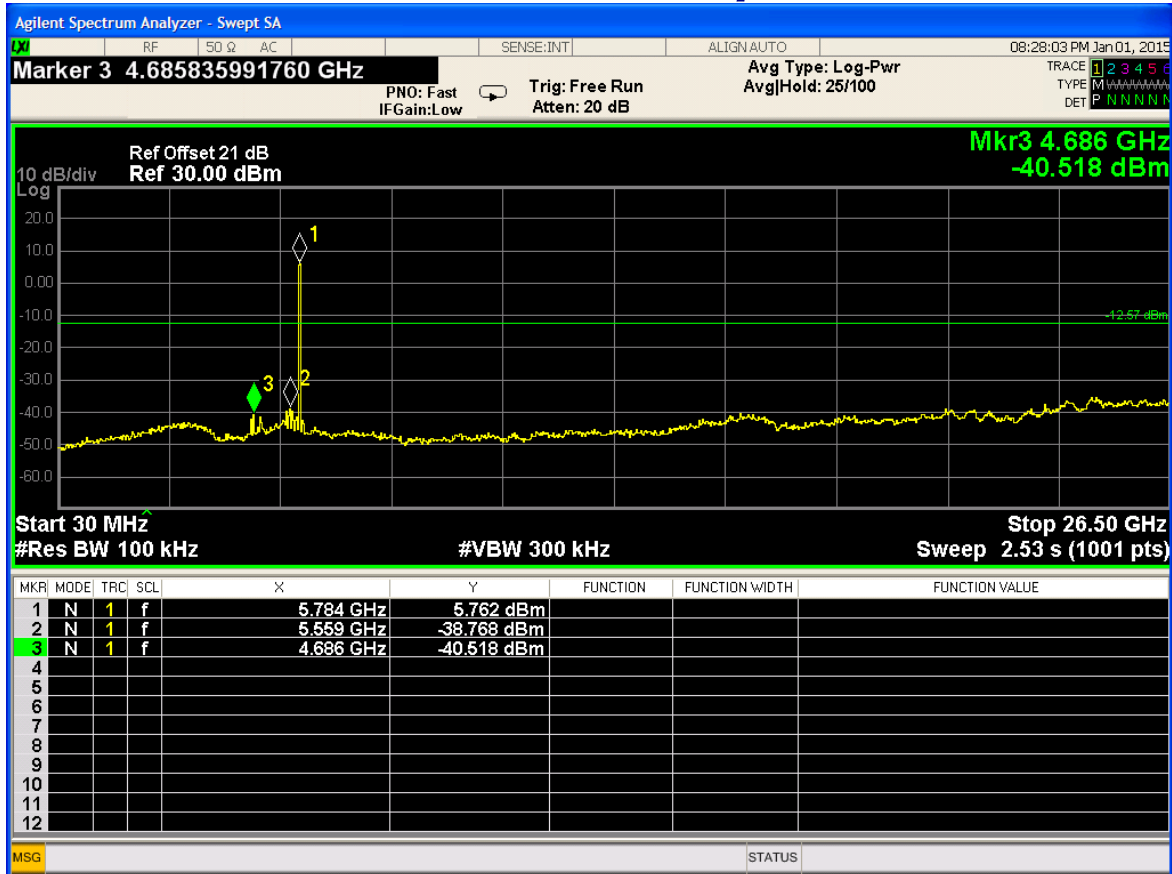
Plot Out of Band Conducted Emission/ 4



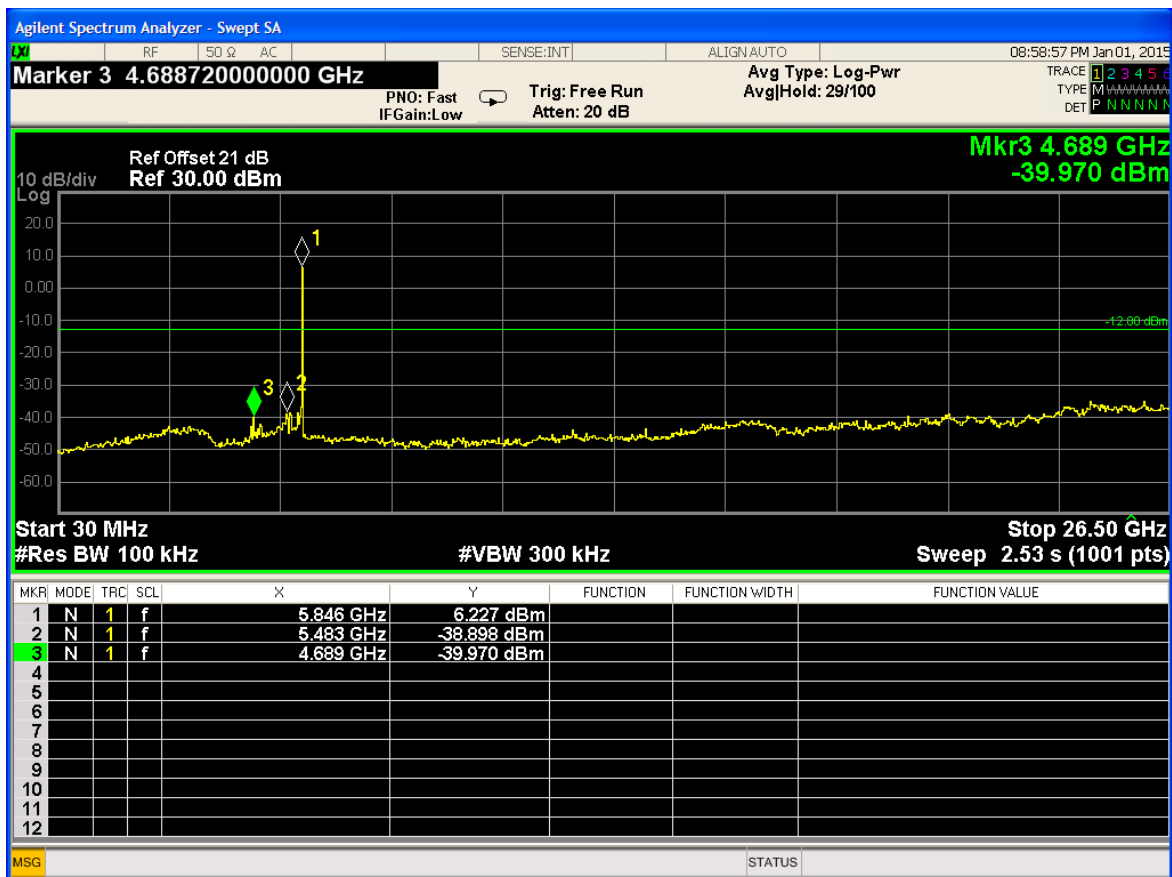
Plot Out of Band Conducted Emission/ 5



Plot Out of Band Conducted Emission/ 6



Plot Out of Band Conducted Emission/ 7



Plot Out of Band Conducted Emission/ 8