



# TEST REPORT

**Test Report No. :** UL-RPT-RP11265293JD07F

**Manufacturer** : Apple Inc.  
**Model No.** : A1785  
**FCC ID** : BCG-E3088A  
**Technology** : WLAN  
**Test Standard(s)** : FCC Parts 15.207, 15.209(a) & 15.407

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2. The results in this report apply only to the sample(s) tested.
3. The sample tested is in compliance with the above standard(s).
4. The test results in this report are traceable to the national or international standards.
5. Version 1.0

**Date of Issue:** 03 August 2016

**Checked by:**

Steven White  
Service Lead, Radio Laboratory

**Company Signatory:**

Sarah Williams  
Senior Engineer, Radio Laboratory  
UL VS LTD



This laboratory is accredited by UKAS.  
The tests reported herein have been  
performed in accordance with its terms  
of accreditation.

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## UL VS LTD

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**1. Customer Information**

<b>Company Name:</b>	Apple Inc.
<b>Address:</b>	1 Infinite Loop Cupertino, CA 95014 U.S.A.

## **2. Summary of Testing**

### **2.1. General Information**

<b>Specification Reference:</b>	47CFR15.407 and 47CFR15.403
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart E (Unlicensed National Information Infrastructure Devices) – Sections 15.403 and 15.407
<b>Site Registration:</b>	209735
<b>Location of Testing:</b>	UL VS LTD, Unit 3 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom
<b>Test Dates:</b>	07 July 2016 to 01 August 2016

## 2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
Part 15.403(i)	Transmitter 26 dB Emission Bandwidth	Complied
Part 15.407(e)	Transmitter Minimum 6 dB Bandwidth (5.725-5.85 GHz band)	Complied
Part 15.407(e)	Transmitter Minimum 6 dB Bandwidth (Channels that straddle the U-NII-2C and U-NII-3 bands at 5725 MHz)	Complied
Part 15.35(c)	Transmitter Duty Cycle	Note 1
Part 15.407(a)(1)(iv)	Transmitter Maximum Conducted Output Power (5.15-5.25 GHz band)	Complied
Part 15.407(a)(2)	Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands)	Complied
Part 15.407(a)(2)	Transmitter Maximum Conducted Output Power (Channels that straddle the U-NII-2C and U-NII-3 bands at 5725 MHz)	Complied
Part 15.407(a)(3)	Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band)	Complied
Part 15.407(a)(1)(iv)	Transmitter Peak Power Spectral Density (5.15-5.25 GHz band)	Complied
Part 15.407(a)(2)	Transmitter Peak Power Spectral Density (5.25-5.35 GHz & 5.47-5.725 GHz bands)	Complied
Part 15.407(a)(2)	Transmitter Peak Power Spectral Density (Channels that straddle the U-NII-2C and U-NII-3 bands at 5725 MHz)	Complied
Part 15.407(a)(3)	Transmitter Peak Power Spectral Density (5.725-5.85 GHz band)	Complied
Part 15.407(b)/15.209(a)	Transmitter Out of Band Radiated Emissions	Complied
Part 15.407(b)/15.209(a)	Transmitter Band Edge Radiated Emissions	Complied
Part 15.407(g)	Transmitter Frequency Stability (Temperature & Voltage Variation)	Note 2
Part 15.407(h)(1)	Transmitter Power Control	Note 3

### **Note(s):**

1. The measurement was performed to assist in the calculation of the level of average output power, power spectral density and emissions as the EUT employs pulsed operation.
2. Frequency stability is better than 20 ppm which ensures that the signal remains in the allocated bands under all operational conditions stated in the user manual.
3. Transmit Power Control was not tested as the maximum EIRP is less than 500 mW (27 dBm).
4. There are two vendors of the WiFi/Bluetooth radio modules, Vendor 1 and Vendor 2.
5. The WiFi/Bluetooth radio modules have the same mechanical outline (e.g. the same packaging dimension and pin layout), use the same on-board antenna matching circuit, have an identical antenna structure and are built and tested to conform to the same specification and to operate within the same tolerances.  
Baseline testing was performed on the two vendors to determine the worst case.

**2.3. Methods and Procedures**

<b>Reference:</b>	ANSI C63.10-2013
<b>Title:</b>	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
<b>Reference:</b>	KDB 789033 D02 General UNII Test Procedures New Rules v01r02 April 8, 2016
<b>Title:</b>	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E
<b>Reference:</b>	KDB 662911 D01 Multiple Transmitter Output v02r01 October 31, 2013
<b>Title:</b>	Emissions Testing of Transmitter with Multiple Outputs in the Same Band

**2.4. Deviations from the Test Specification**

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specifications identified above.

### **3. Equipment Under Test (EUT)**

#### **3.1. Identification of Equipment Under Test (EUT)**

Brand Name:	Apple
Model Name or Number:	A1785
Test Sample Serial Number:	C39RV00CHFMP ( <i>Radiated sample #1</i> )
Test Sample IMEI:	358640070268884
Hardware Version:	REV1.0
Firmware Version:	9.44.11.27
Test Utility Software:	wl 1.359 RC65.0
FCC ID:	BCG-E3088A

Brand Name:	Apple
Model Name or Number:	A1785
Test Sample Serial Number:	C39RV00UHFML ( <i>Radiated sample #2</i> )
Test Sample IMEI:	358640070289070
Hardware Version:	REV1.0
Firmware Version:	9.44.11.27
Test Utility Software:	wl 1.359 RC65.0
FCC ID:	BCG-E3088A

Brand Name:	Apple
Model Name or Number:	A1785
Test Sample Serial Number:	C39RW006HFML ( <i>Conducted sample</i> )
Test Sample IMEI:	358640070307567
Hardware Version:	REV1.0
Firmware Version:	9.15.225.19
Test Utility Software:	wl 1.359 RC65.0
FCC ID:	BCG-E3088A

#### **3.2. Description of EUT**

The Equipment Under Test was a mobile phone with GSM/GPRS/EGPRS/UMTS/LTE/TD-SCDMA and CDMA technologies. It also supports IEEE 802.11a/b/g/n/ac, Bluetooth®, GPS and NFC. The rechargeable battery is not user accessible.

#### **3.3. Modifications Incorporated in the EUT**

No modifications were applied to the EUT during testing.



**3.4. Additional Information Related to Testing**

<b>Technology Tested:</b>	WLAN (IEEE 802.11a,n,ac) / U-NII			
<b>Type of Unit:</b>	Transceiver			
<b>Modulation:</b>	BPSK, QPSK, 16QAM, 64QAM & 256QAM			
<b>Data rates:</b>	802.11a	6, 9, 12, 18, 24, 36, 48 & 54 Mbps		
	802.11n HT20	MCS0 to MCS7 (1 spatial stream) with or without CDD / (SISO, or MIMO with CDD/STBC) MCS8 to MCS15 (2 spatial streams) (MIMO SDM)		
	802.11n HT40	MCS0 to MCS7 (1 spatial stream) with or without CDD / (SISO, or MIMO with CDD/STBC) MCS8 to MCS15 (2 spatial streams) (MIMO SDM)		
	802.11ac VHT20	MCS0 to MCS8 (1 spatial stream) with or without CDD / (SISO, or MIMO with CDD/STBC) MCS0 to MCS8 (2 spatial streams) (MIMO SDM)		
	802.11ac VHT40	MCS0 to MCS9 (1 spatial stream) with or without CDD / (SISO, or MIMO with CDD/STBC) MCS0 to MCS9 (2 spatial streams) (MIMO SDM)		
	802.11ac VHT80	MCS0 to MCS9 (1 spatial stream) with or without CDD / (SISO, or MIMO with CDD/STBC) MCS0 to MCS9 (2 spatial streams) (MIMO SDM)		
<b>Power Supply Requirement(s):</b>	Nominal	3.8 VDC via 120 VAC 60 Hz adaptor		
<b>Antenna Gains:</b>	<b>Frequency (GHz)</b>	<b>Antenna 1</b>	<b>Antenna 2</b>	<b>Directional Gain</b>
	5.15 to 5.25	-3.1 dBi	-0.9 dBi	1.1 dBi
	5.25 to 5.35	-2.1 dBi	-0.5 dBi	1.7 dBi
	5.47 to 5.725 GHz	0.7 dBi	0.1 dBi	3.4 dBi
	5.725 to 5.85 GHz	0.0 dBi	0.1 dBi	3.1 dBi
<b>Maximum Conducted Output Power:</b>	20 MHz	23.0 dBm		
	40 MHz	22.2 dBm		
	80 MHz	21.8 dBm		

**Additional Information Related to Testing (continued)**

<b>Channel Spacing:</b>	20 MHz		
<b>Transmit Frequency Band:</b>	5150 MHz to 5250 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Bottom	36	5180
	Middle	44	5220
	Top	48	5240
<b>Transmit Frequency Band:</b>	5250 MHz to 5350 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Bottom	52	5260
	Middle	56	5280
	Top	64	5320
<b>Transmit Frequency Band:</b>	5470 MHz to 5725 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Bottom	100	5500
	Middle	116	5580
	Top	140	5700
<b>Transmit Frequency Band:</b>	Channels that straddle the U-NII-2C and U-NII-3 bands at 5725 MHz		
<b>Transmit Channel Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Single	144	5720
<b>Transmit Frequency Band:</b>	5725 MHz to 5850 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Bottom	149	5745
	Middle	157	5785
	Top	165	5825

**Additional Information Related to Testing (continued)**

<b>Channel Spacing:</b>	40 MHz		
<b>Transmit Frequency Band:</b>	5150 MHz to 5250 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Bottom	38	5190
	Top	46	5230
<b>Transmit Frequency Band:</b>	5250 MHz to 5350 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Bottom	54	5270
	Top	62	5310
<b>Transmit Frequency Band:</b>	5470 MHz to 5725 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Bottom	102	5510
	Middle	118	5590
	Top	134	5670
<b>Transmit Frequency Band:</b>	Channels that straddle the U-NII-2C and U-NII-3 bands at 5725 MHz		
<b>Transmit Channel Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Single	142	5710
<b>Transmit Frequency Band:</b>	5725 MHz to 5850 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Bottom	151	5755
	Top	159	5795

**Additional Information Related to Testing (continued)**

<b>Channel Spacing:</b>	80 MHz		
<b>Transmit Frequency Band:</b>	5150 MHz to 5250 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Single	42	5210
<b>Transmit Frequency Band:</b>	5250 MHz to 5350 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Single	58	5290
<b>Transmit Frequency Band:</b>	5470 MHz to 5725 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Bottom	106	5530
	Top	122	5610
<b>Transmit Frequency Band:</b>	Channels that straddle the U-NII-2C and U-NII-3 bands at 5725 MHz		
<b>Transmit Channel Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Single	138	5690
<b>Transmit Frequency Band:</b>	5725 MHz to 5850 MHz		
<b>Transmit Channels Tested:</b>	<b>Channel ID</b>	<b>Channel Number</b>	<b>Channel Frequency (MHz)</b>
	Single	155	5775

### **3.5. Support Equipment**

The following support equipment was used to exercise the EUT during testing:

<b>Description:</b>	Laptop PC
<b>Brand Name:</b>	Lenovo
<b>Model Name or Number:</b>	ThinkPad L440
<b>Serial Number:</b>	R9-019E92

<b>Description:</b>	Test Laptop
<b>Brand Name:</b>	Apple
<b>Model Name or Number:</b>	MacBook Pro
<b>Serial Number:</b>	C2QH700QDY20

<b>Description:</b>	USB Power Adapter
<b>Brand Name:</b>	Apple
<b>Model Name or Number:</b>	A1357
<b>Serial Number:</b>	Not stated

<b>Description:</b>	USB diagnostic cable
<b>Brand Name:</b>	Not stated
<b>Model Name or Number:</b>	Kong
<b>Serial Number:</b>	202D5E

<b>Description:</b>	Personal Hands-Free
<b>Brand Name:</b>	Apple
<b>Model Name or Number:</b>	Apple Ear Plugs
<b>Serial Number:</b>	Not stated

## **4. Operation and Monitoring of the EUT during Testing**

### **4.1. Operating Modes**

The EUT was tested in the following operating mode(s):

- Continuously transmitting with a modulated carrier at maximum power on the bottom, middle and top channels as required using the supported data rates/modulation types.

## **4.2. Configuration and Peripherals**

The EUT was tested in the following configuration(s):

- For radiated measurements: Controlled using a bespoke application on the laptop PC supplied by the customer. The application was used to enable a continuous transmission mode and to select the test channels, data rates and modulation schemes as required.
- For conducted measurements: Controlled using software *RePlay v.2.6.0.7* on a laptop PC. The application was used to enable a continuous transmission mode and to select the test channels, data rates and modulation schemes as required. The customer supplied a document with test instructions, titled *Power\_Tables\_for\_5GHz\_conducted.xlsx*.
- The customer declared the following data rates to be used for all measurements as:

On U-NII bands 1 and 2A:

- 802.11a – BPSK / 6 Mbps / Port 2
- 802.11n HT20 SISO – BPSK / 6.5 Mbps / MCS0 / Port 2
- 802.11n HT40 SISO – BPSK / 13.5 Mbps / MCS0 / Port 2
- 802.11ac VHT80 SISO – BPSK / 29.3 Mbps / MCS0 / Port 2
- 802.11n HT20 MIMO – BPSK / 6.5 Mbps / MCS0
- 802.11n HT40 MIMO – BPSK / 13.5 Mbps / MCS0
- 802.11ac VHT80 MIMO – BPSK / 29.3 Mbps / MCS0x1

On U-NII bands 2C and 3:

- 802.11a – BPSK / 6 Mbps / Port 1
- 802.11n HT20 SISO – BPSK / 6.5 Mbps / MCS0 / Port 1
- 802.11n HT40 SISO – BPSK / 13.5 Mbps / MCS0 / Port 1
- 802.11ac VHT80 SISO – BPSK / 29.3 Mbps / MCS0 / Port 1
- 802.11n HT20 MIMO – BPSK / 6.5 Mbps / MCS0
- 802.11n HT40 MIMO – BPSK / 13.5 Mbps / MCS0
- 802.11ac VHT80 MIMO – BPSK / 29.3 Mbps / MCS0x1
- The EUT has two separate antennas which correspond to two separate antenna ports. Port 1 and Port 2 correspond to antenna 1 (UAT) and antenna 2 (LAT) respectively.
- The EUT was placed in three orthogonal orientations X, Y and Z to determine the worst case orientation for radiated spurious emissions. The worst case orientation was Z.
- RF cables and attenuators connecting the test equipment to the EUT were calibrated before use and the calibration data incorporated into the conducted measurement results.
- Transmitter spurious emissions were performed with the EUT transmitting with the following data rates data rates:
  - 802.11a – BPSK / 6 Mbps / Port 2
  - 802.11n HT20 MIMO – BPSK / 6.5 Mbps / MCS0

These were found to be the worst case modulation scheme with regards to emissions after preliminary investigations and, as these modes emit the highest transmit output power level, they were deemed to be the worst case.

- Transmitter radiated spurious emissions tests were performed with the PHF connected to the EUT.
- The worst-case radiated emission among all accessories is determined by the manufacturer to be with the headset connected. The compliance lab performed final testing only with the headset.

## **5. Measurements, Examinations and Derived Results**

### **5.1. General Comments**

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to *Section 6 Measurement Uncertainty* for details.

In accordance with UKAS requirements all the measurement equipment is on a calibration schedule. All equipment was within the calibration period on the date of testing.



## **5.2. Test Results**

### **5.2.1. Transmitter 26 dB Emission Bandwidth**

#### **Test Summary:**

<b>Test Engineer:</b>	Georgios Vrezas	<b>Test Dates:</b>	12 July 2016 to 25 July 2016
<b>Test Sample Serial Number:</b>	C39RW006HFML		

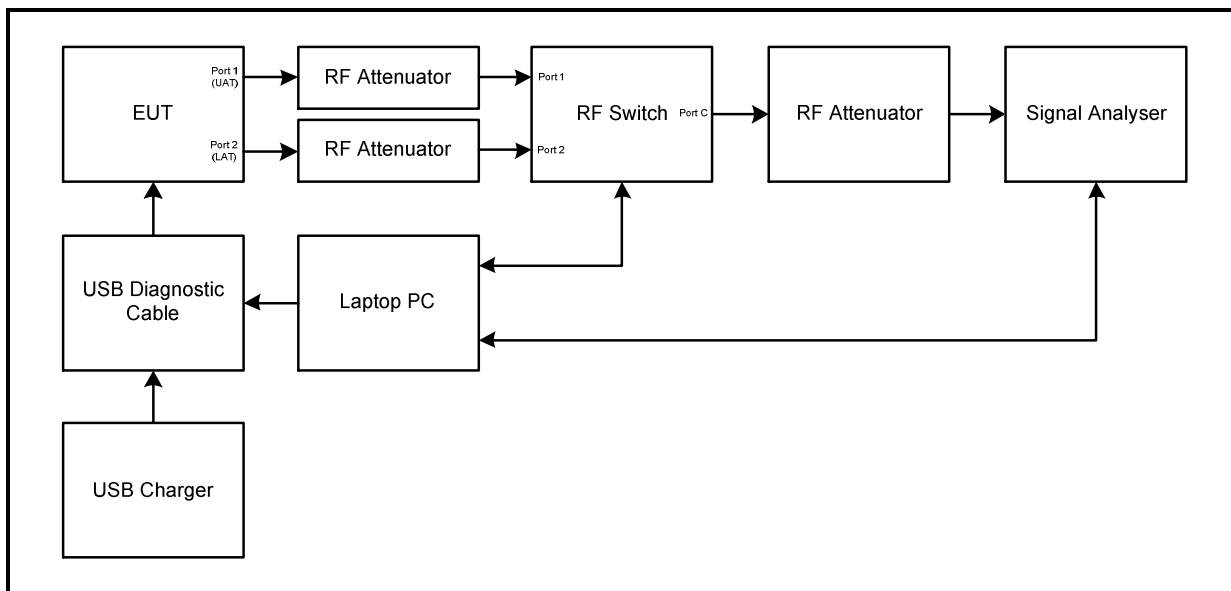
<b>FCC Reference:</b>	Part 15.403(i)
<b>Test Method Used:</b>	KDB 789033 D02 Section II.C.1.

#### **Environmental Conditions:**

<b>Temperature (°C):</b>	24 to 25
<b>Relative Humidity (%):</b>	40 to 43

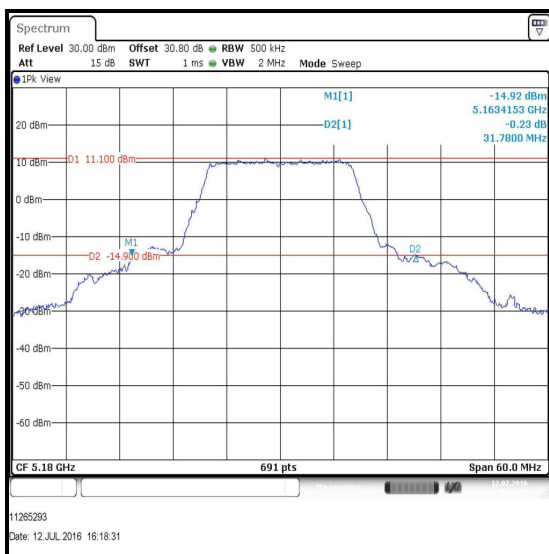
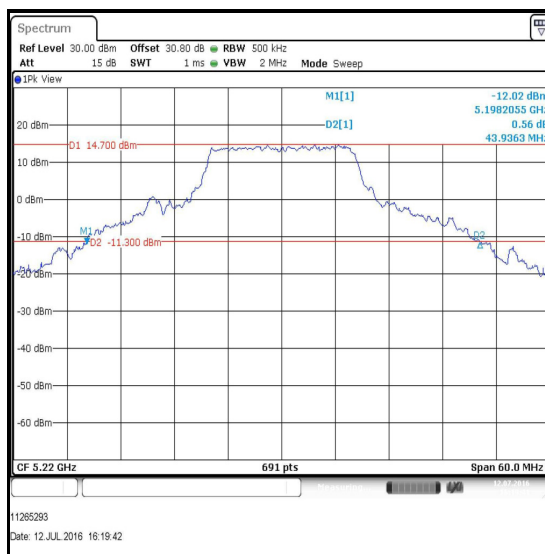
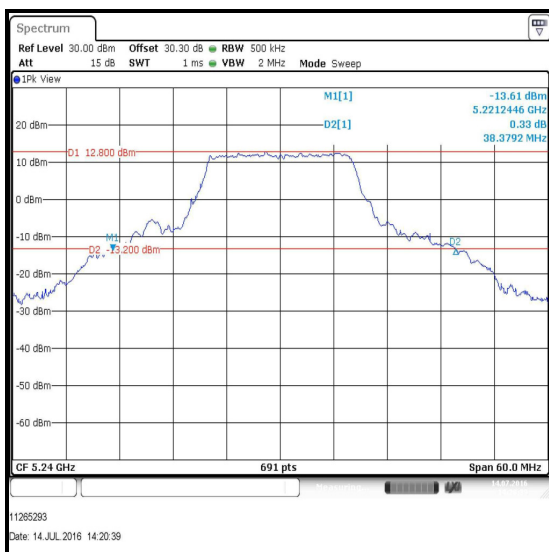
#### **Note(s):**

1. The customer declared the following data rates to be used for all measurements as:  
On U-NII bands 1 and 2A:
  - 802.11a – BPSK / 6 Mbps / Port 2
  - 802.11n HT20 SISO – BPSK / 6.5 Mbps / MCS0 / Port 2
  - 802.11n HT40 SISO – BPSK / 13.5 Mbps / MCS0 / Port 2
  - 802.11ac VHT80 SISO – BPSK / 29.3 Mbps / MCS0 / Port 2
  - 802.11n HT20 MIMO – BPSK / 6.5 Mbps / MCS0
  - 802.11n HT40 MIMO – BPSK / 13.5 Mbps / MCS0
  - 802.11ac VHT80 MIMO – BPSK / 29.3 Mbps / MCS0x1On U-NII bands 2C and 3:
  - 802.11a – BPSK / 6 Mbps / Port 1
  - 802.11n HT20 SISO – BPSK / 6.5 Mbps / MCS0 / Port 1
  - 802.11n HT40 SISO – BPSK / 13.5 Mbps / MCS0 / Port 1
  - 802.11ac VHT80 SISO – BPSK / 29.3 Mbps / MCS0 / Port 1
  - 802.11n HT20 MIMO – BPSK / 6.5 Mbps / MCS0
  - 802.11n HT40 MIMO – BPSK / 13.5 Mbps / MCS0
  - 802.11ac VHT80 MIMO – BPSK / 29.3 Mbps / MCS0x1
2. The signal analyser's resolution bandwidth was set to 1 – 5% of the measured 26 dB emission bandwidth.
3. Final measurements were performed in each supported operating band using the above configurations on the relevant channels.
4. The signal analyser was connected to the RF port on the EUT using an RF switch, suitable attenuation and RF cables. An RF level offset was entered on the signal analyser to compensate for the loss of the switch, attenuators and RF cables.

**Transmitter 26 dB Emission Bandwidth (continued)****Test setup:**

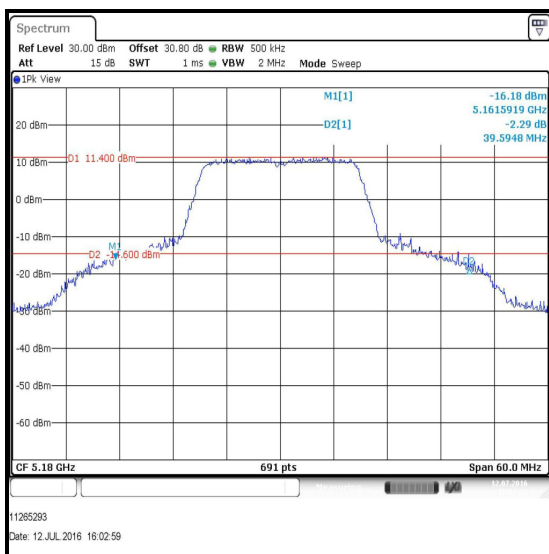
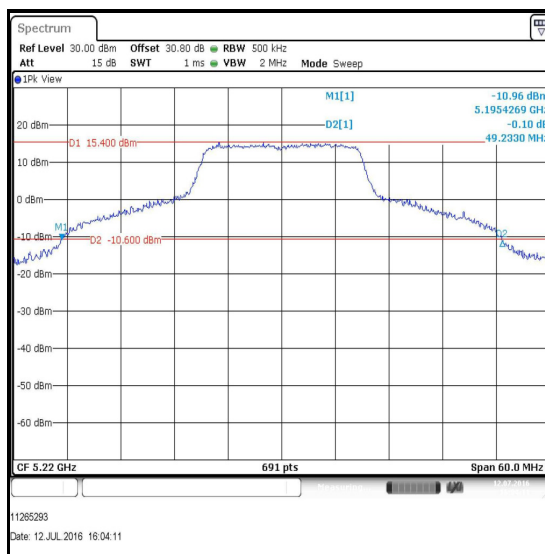
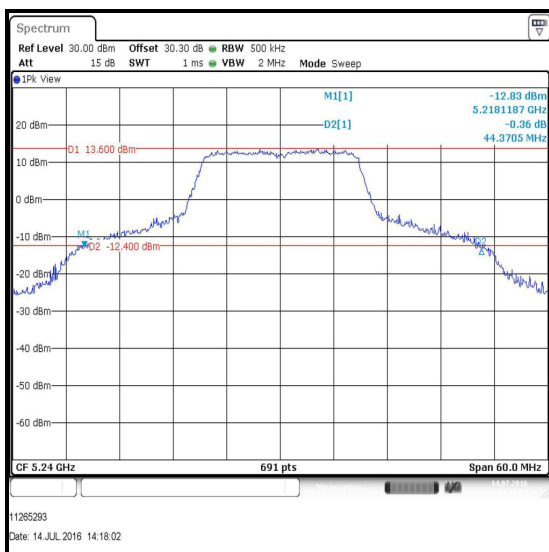
**Transmitter 26 dB Emission Bandwidth (continued)****Results: 802.11a / 20 MHz / 5.15-5.25 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps	26 dB Emission Bandwidth (MHz)
Bottom	5180	BPSK	6	31.780
Middle	5220	BPSK	6	43.936
Top	5240	BPSK	6	38.379

**Bottom Channel****Middle Channel****Top Channel**

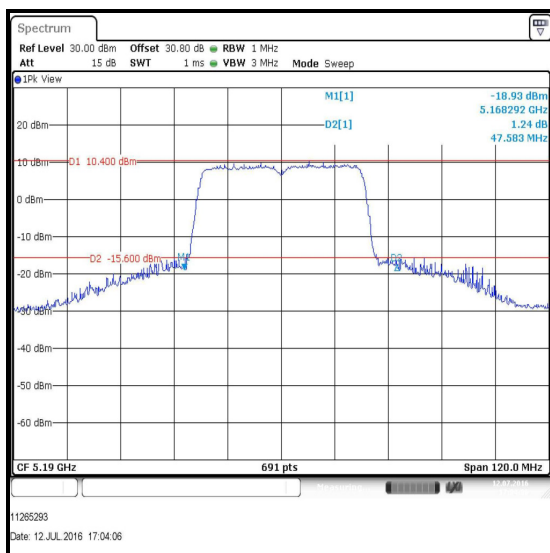
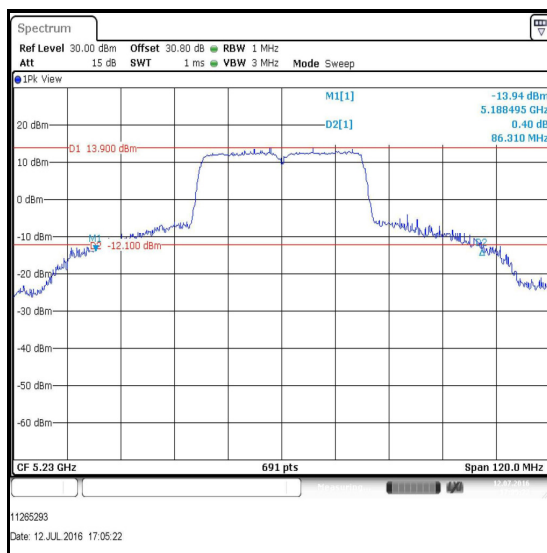
**Transmitter 26 dB Emission Bandwidth (continued)****Results: 802.11n / 20 MHz / SISO / 5.15-5.25 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5180	BPSK	6.5 / 0	39.595
Middle	5220	BPSK	6.5 / 0	49.233
Top	5240	BPSK	6.5 / 0	44.370

**Bottom Channel****Middle Channel****Top Channel**

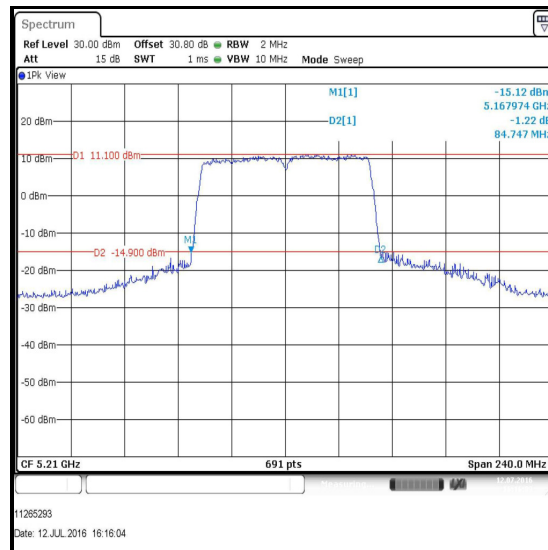
**Transmitter 26 dB Emission Bandwidth (continued)****Results: 802.11n / 40 MHz / SISO / 5.15-5.25 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5190	BPSK	13.5 / 0	47.583
Top	5230	BPSK	13.5 / 0	86.310

**Bottom Channel****Top Channel**

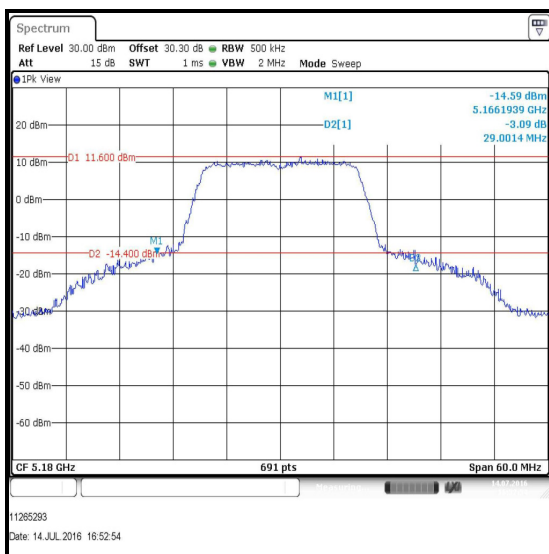
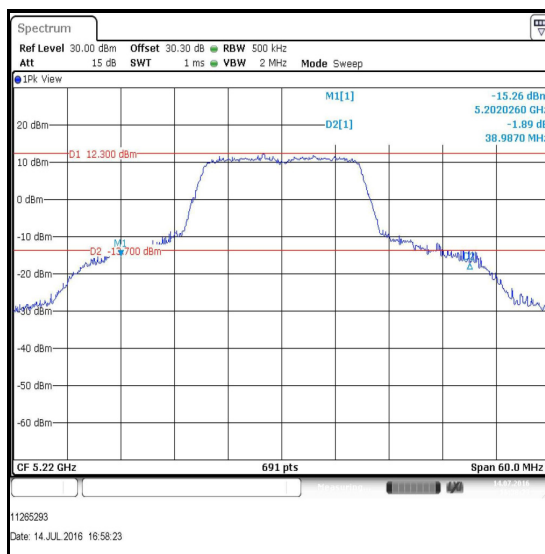
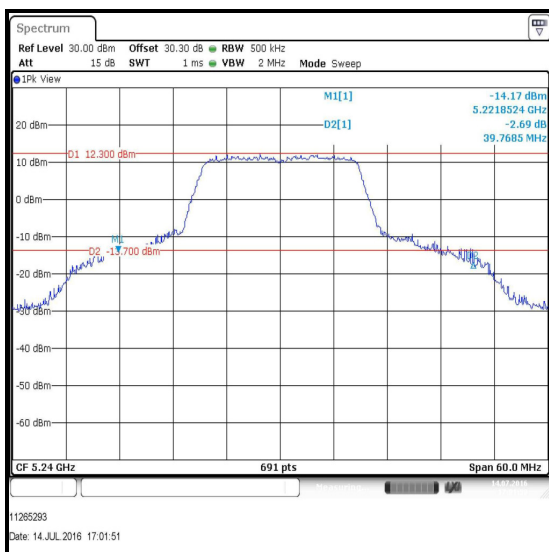
**Transmitter 26 dB Emission Bandwidth (continued)****Results: 802.11ac / 80 MHz / SISO / 5.15-5.25 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Single	5210	BPSK	29.3 / 0	84.747

**Single Channel**

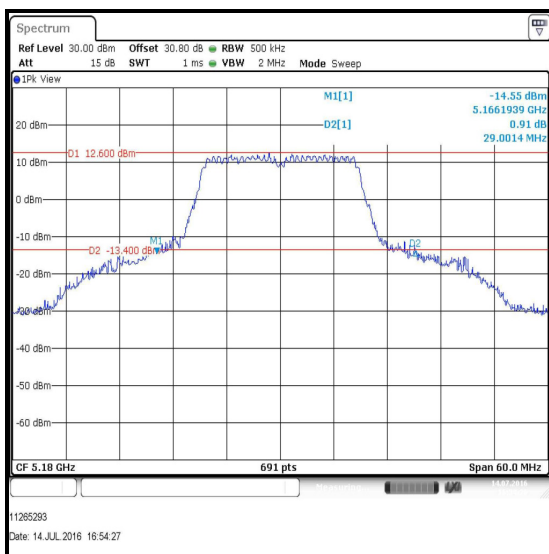
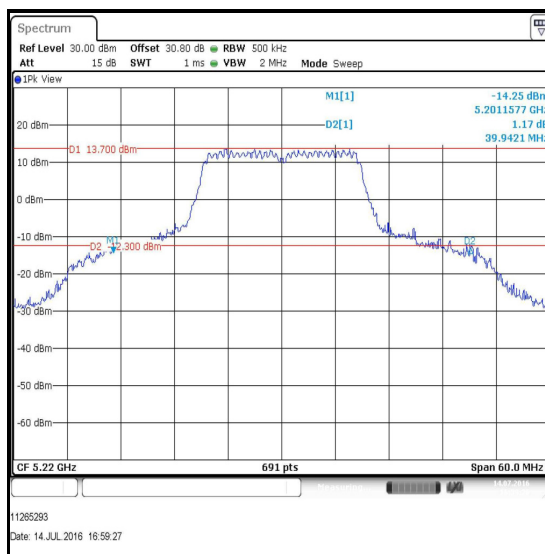
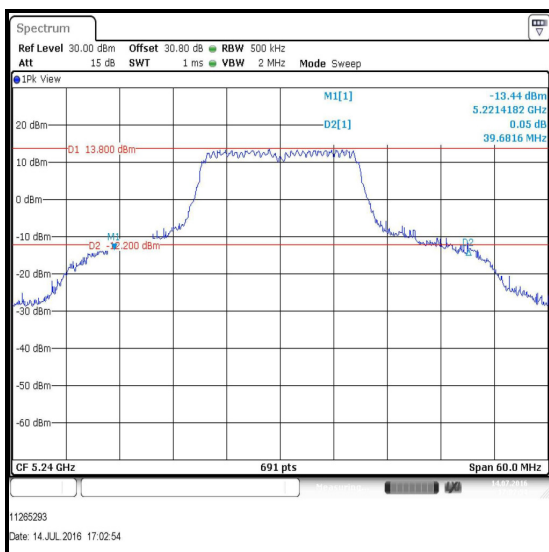
**Transmitter 26 dB Emission Bandwidth (continued)****Results: 802.11n / 20 MHz / MIMO / 5.15-5.25 GHz band / Port 1**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5180	BPSK	6.5 / 0	29.001
Middle	5220	BPSK	6.5 / 0	38.987
Top	5240	BPSK	6.5 / 0	39.769

**Bottom Channel****Middle Channel****Top Channel**

**Transmitter 26 dB Emission Bandwidth (continued)****Results: 802.11n / 20 MHz / MIMO / 5.15-5.25 GHz band / Port 2**

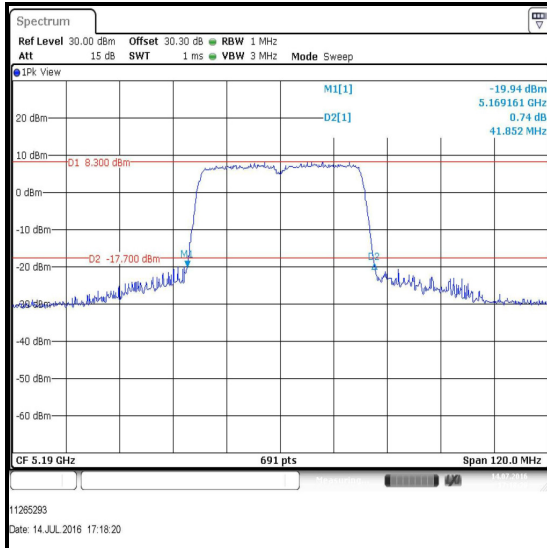
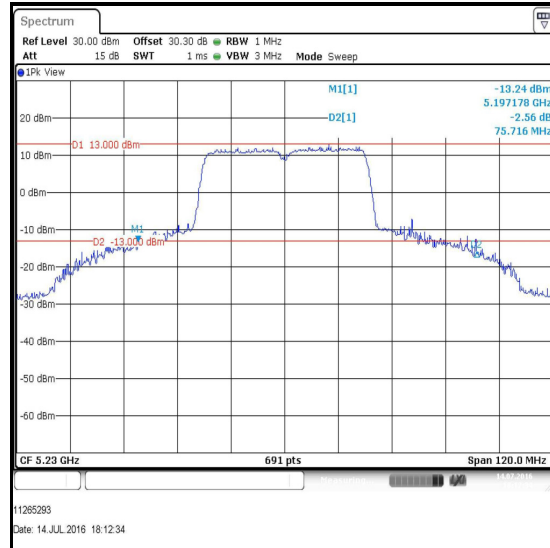
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5180	BPSK	6.5 / 0	29.001
Middle	5220	BPSK	6.5 / 0	39.942
Top	5240	BPSK	6.5 / 0	39.682

**Bottom Channel****Middle Channel****Top Channel**



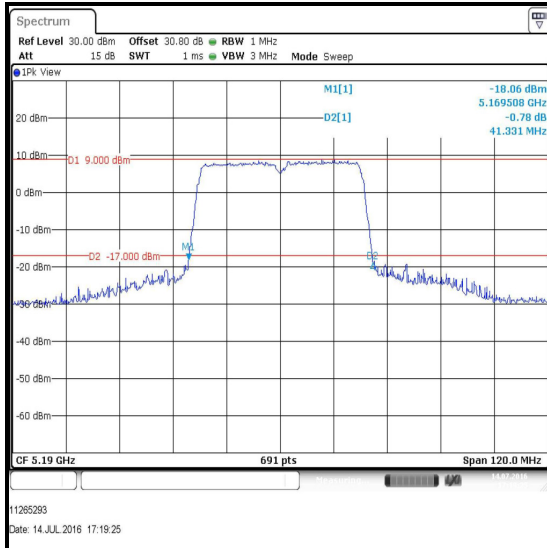
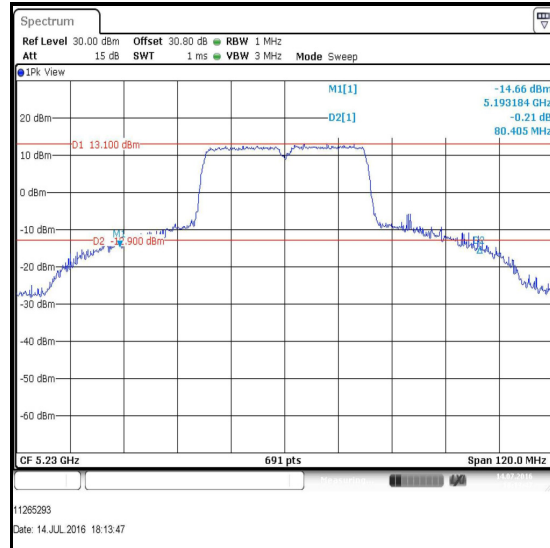
**Transmitter 26 dB Emission Bandwidth (continued)****Results: 802.11n / 40 MHz / MIMO / 5.15-5.25 GHz band / Port 1**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5190	BPSK	13.5 / 0	41.852
Top	5230	BPSK	13.5 / 0	75.716

**Bottom Channel****Top Channel**

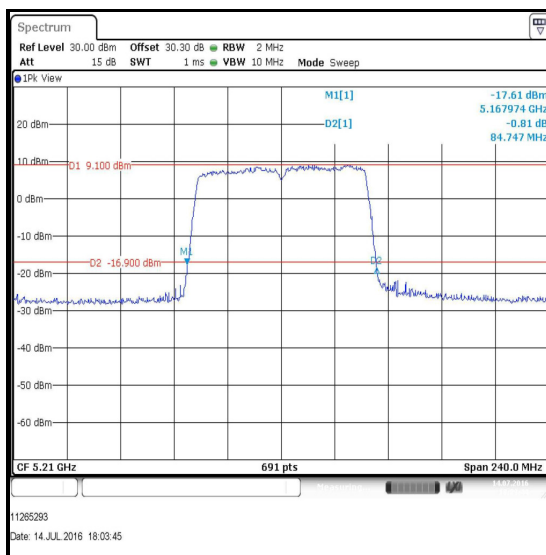
**Transmitter 26 dB Emission Bandwidth (continued)****Results: 802.11n / 40 MHz / MIMO / 5.15-5.25 GHz band / Port 2**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5190	BPSK	13.5 / 0	41.331
Top	5230	BPSK	13.5 / 0	80.405

**Bottom Channel****Top Channel**

**Transmitter 26 dB Emission Bandwidth (continued)****Results: 802.11ac / 80 MHz / MIMO / 5.15-5.25 GHz band / Port 1**

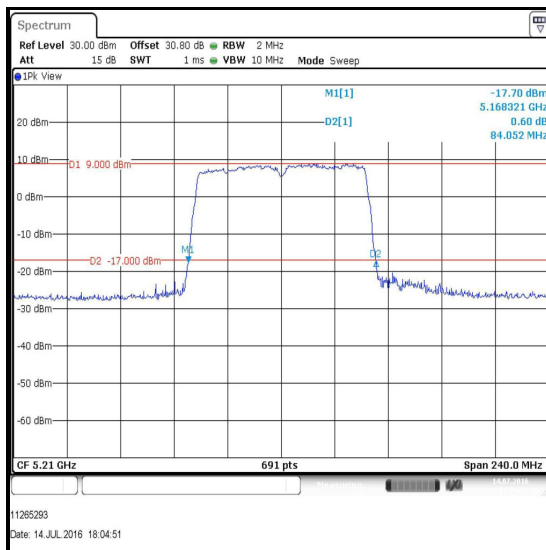
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Single	5210	BPSK	29.3 / 0x1	84.747



Single Channel

**Results: 802.11ac / 80 MHz / MIMO / 5.15-5.25 GHz band / Port 2**

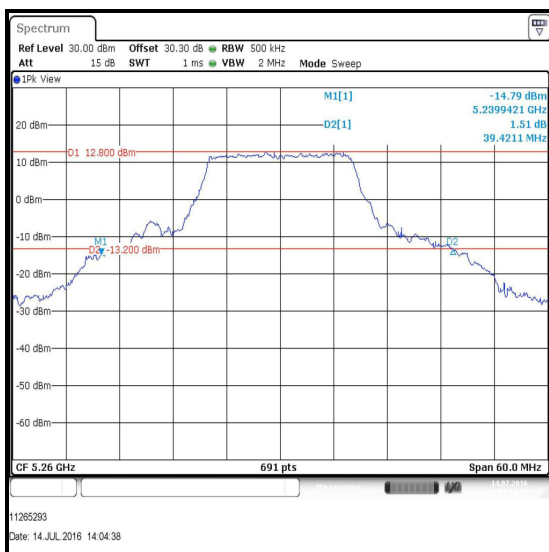
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Single	5210	BPSK	29.3 / 0x1	84.052



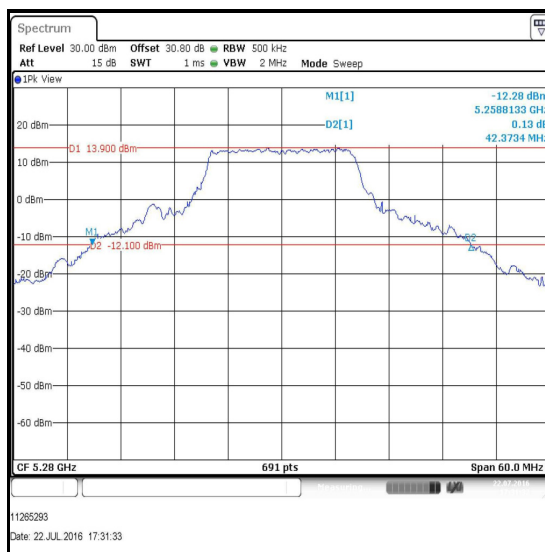
Single Channel

**Transmitter 26 dB Emission Bandwidth (continued)****Results: 802.11a / 20 MHz / 5.25-5.35 GHz band**

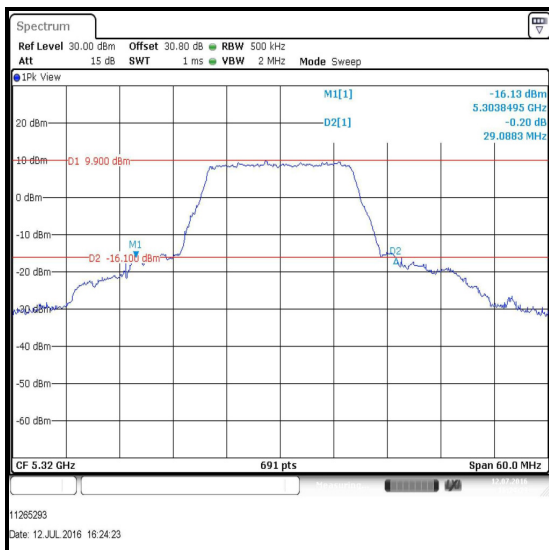
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps	26 dB Emission Bandwidth (MHz)
Bottom	5260	BPSK	6	39.421
Middle	5280	BPSK	6	42.373
Top	5320	BPSK	6	29.088



Bottom Channel



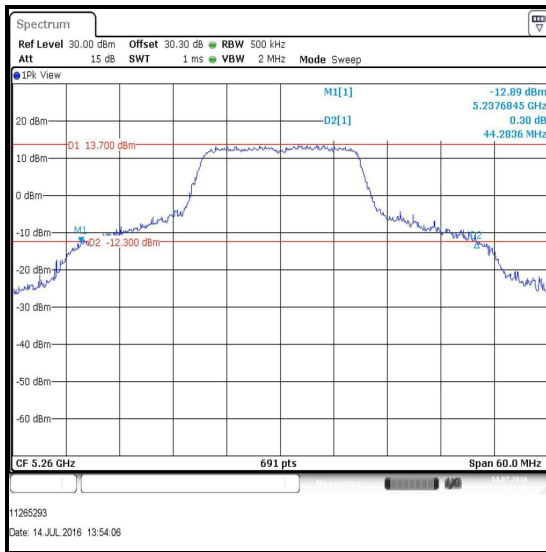
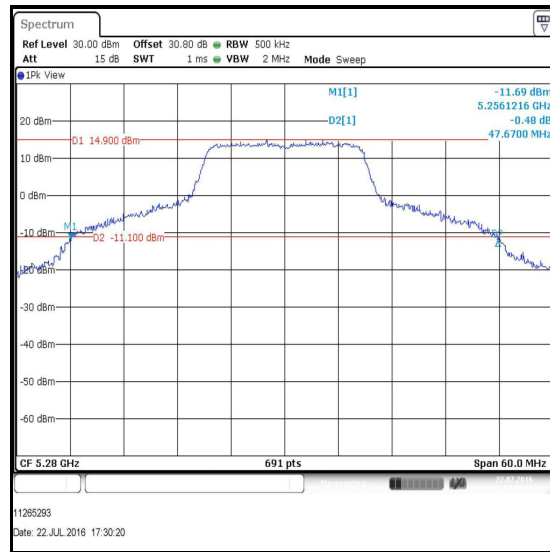
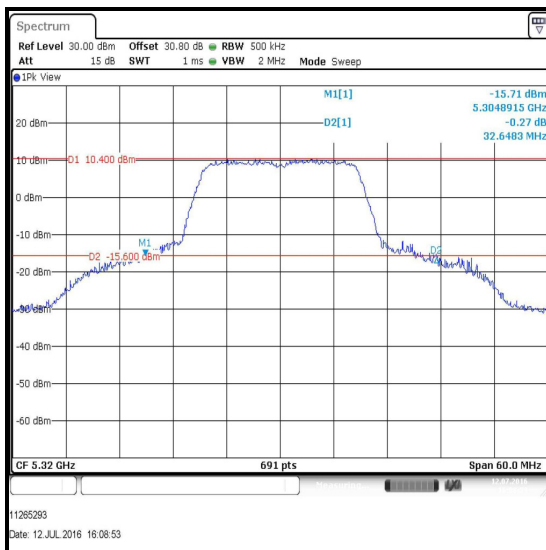
Middle Channel



Top Channel

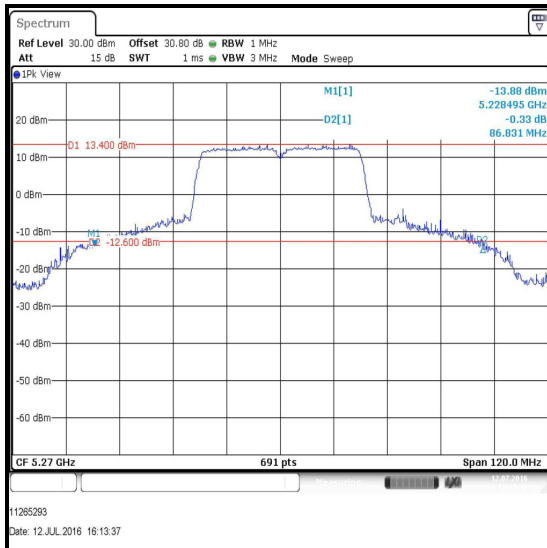
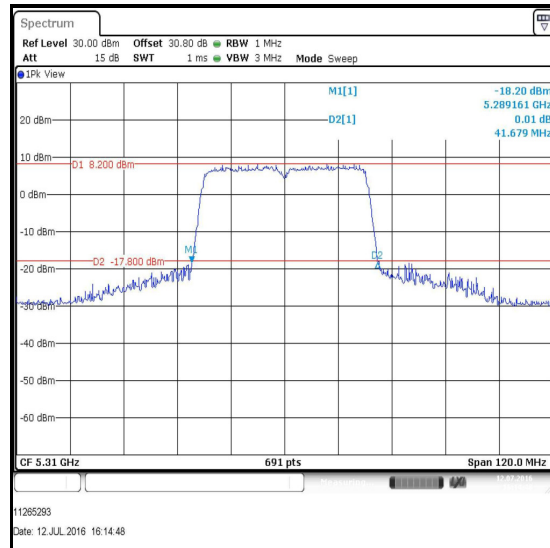
**Transmitter 26 dB Emission Bandwidth (continued)****Results: 802.11n / 20 MHz / SISO / 5.25-5.35 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5260	BPSK	6.5 / 0	44.284
Middle	5280	BPSK	6.5 / 0	47.670
Top	5320	BPSK	6.5 / 0	32.648

**Bottom Channel****Middle Channel****Top Channel**

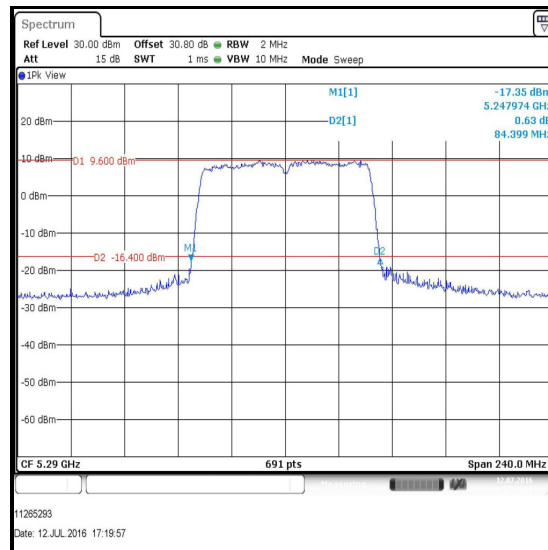
**Transmitter 26 dB Emission Bandwidth (continued)****Results: 802.11n / 40 MHz / SISO / 5.25-5.35 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5270	BPSK	13.5 / 0	86.831
Top	5310	BPSK	13.5 / 0	41.679

**Bottom Channel****Top Channel**

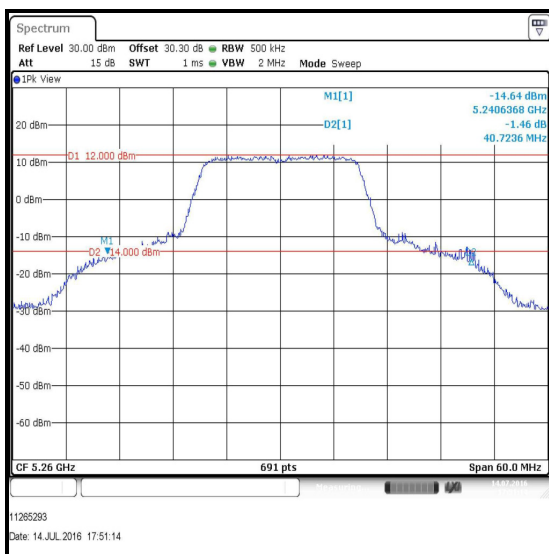
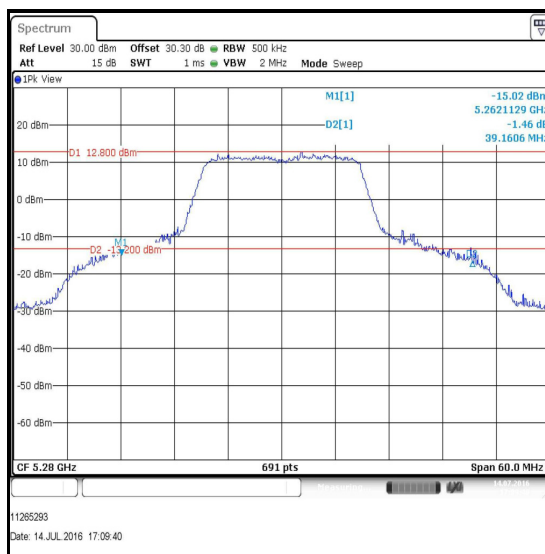
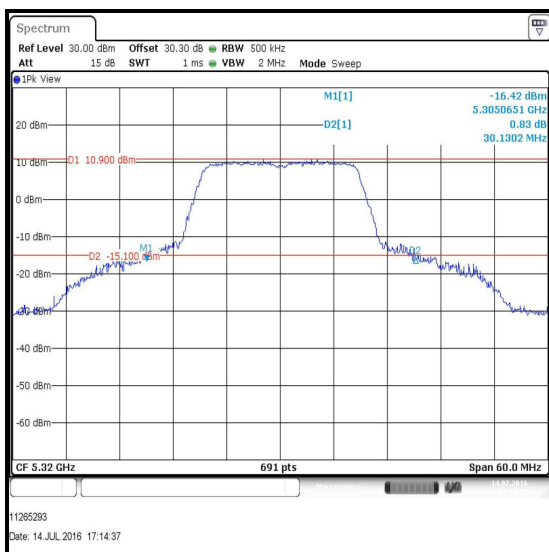
**Transmitter 26 dB Emission Bandwidth (continued)****Results: 802.11ac / 80 MHz / SISO / 5.25-5.35 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Single	5290	BPSK	29.3 / 0	84.399

**Single Channel**

**Transmitter 26 dB Emission Bandwidth (continued)****Results: 802.11n / 20 MHz / MIMO / 5.25-5.35 GHz band / Port 1**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5260	BPSK	6.5 / 0	40.724
Middle	5280	BPSK	6.5 / 0	39.161
Top	5320	BPSK	6.5 / 0	30.130

**Bottom Channel****Middle Channel****Top Channel**