



TEST REPORT

Test Report No. : UL-RPT-RP10407443JD04A V3.0

Manufacturer : Apple Inc.
Model No. : A1600
FCC ID : BCGA1600
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 3.0 supersedes all previous versions

Date of Issue: 14 September 2014

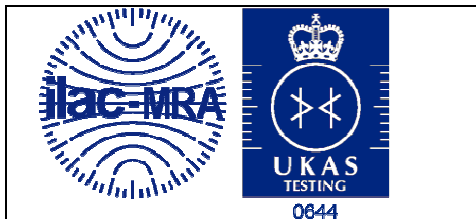
Checked by:

Sarah Williams
Engineer, Radio Laboratory

Issued by :

pp

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Quality Manager,
UL VS LTD



This laboratory is accredited by UKAS.
The tests reported herein have been
performed in accordance with its' terms
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1. Customer Information














| | |
|----------------------|--|
| Company Name: | Apple Inc. |
| Address: | 1 Infinite Loop Cupertino, CA 95014 U.S.A. |

2. Summary of Testing

2.1. General Information

| | |
|---------------------------------|---|
| Specification Reference: | 47CFR15.407 and 47CFR15.403 |
| Specification Title: | Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart E (Unlicensed National Information Infrastructure Devices) – Sections 15.403 and 15.407 |
| Specification Reference: | 47CFR15.207 and 47CFR15.209 |
| Specification Title: | Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart C (Intentional Radiators) – Sections 15.207 and 15.209 |
| Site Registration: | 209735 |
| Location of Testing: | UL VS LTD, Unit 3 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom |
| Test Dates: | 24 July 2014 to 17 August 2014 |

2.2. Summary of Test Results

| FCC Reference (47CFR) | Measurement | Result |
|--|---|---|
| Part 15.207 | Transmitter AC Conducted Emissions |  |
| Part 15.403(i) | Transmitter 26 dB Emission Bandwidth |  |
| Part 15.407(e) | Transmitter Minimum 6 dB Bandwidth (5.725-5.85 GHz band) |  |
| 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) |  |
| Part 15.407(a)(2) | Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) |  |
| Part 15.407(a)(3) | Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) |  |
| Part 15.407(a)(1)(iv) | Transmitter Maximum Power Spectral Density (5.15-5.25 GHz band) |  |
| Part 15.407(a)(2) | Transmitter Maximum Power Spectral Density (5.25-5.35 GHz & 5.47-5.725 GHz bands) |  |
| Part 15.407(a)(3) | Transmitter Maximum Power Spectral Density (5.725-5.85 GHz band) |  |
| Part 15.407(b)/15.209(a) | Transmitter Out of Band Radiated Emissions |  |
| Part 15.407(b)/15.209(a) | Transmitter Band Edge Radiated Emissions |  |
| Part 15.407(g) | Transmitter Frequency Stability (Temperature & Voltage Variation) | Note 2 |
| Part 15.407(h)(1) | Transmitter Power Control | Note 3 |
| Key to Results  = Complied  = Did not comply | | |

Note(s):

1. The measurement was performed to assist in the calculation of the level of average output power, power spectral density, peak excursion 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).

2.3. Methods and Procedures

| | |
|-------------------|---|
| Reference: | ANSI C63.4 (2009) |
| Title: | American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz |
| Reference: | ANSI C63.10 (2009) |
| Title: | American National Standard for Testing Unlicensed Wireless Devices |
| Reference: | KDB 789033 D02 General UNII Test Procedures New Rules v01 June 6, 2014 |
| Title: | Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E |
| Reference: | KDB 662911 D01 Multiple Transmitter Output v02r01 October 31, 2013 |
| Title: | Emissions Testing of Transmitters 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: | A1600 |
| Test Sample IMEI: | 352025060307270 (<i>Radiated Sample</i>) |
| Hardware Version Number: | REV1.0 |
| Software Version Number: | iOS 12A314 BB: 3.08.08 |
| FCC ID: | BCGA1600 |

| | |
|---------------------------------|---|
| Brand Name: | Apple |
| Model Name or Number: | A1600 |
| Test Sample IMEI: | 352025060005387 (<i>Conducted Sample</i>) |
| Hardware Version Number: | REV1.0 |
| Software Version Number: | iOS 12A314 BB: 3.08.08 |
| FCC ID: | BCGA1600 |

3.2. Description of EUT

The Equipment Under Test was a tablet with GSM/GPRS/EGPRS/UMTS/LTE and CDMA technologies. It also supports IEEE 802.11a/b/g/n (MIMO 2x2) and *Bluetooth®*. 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

| | | | | |
|--|-------------------------------|-------------------------------------|--------------------------------|-------------|
| Technology Tested: | WLAN (IEEE 802.11a,n) / U-NII | | | |
| Type of Unit: | Transceiver | | | |
| Modulation: | BPSK, QPSK, 16QAM, & 64QAM | | | |
| Data rates: | 802.11a | 6, 9, 12, 18, 24, 36, 48 & 54 Mbps | | |
| | 802.11n HT20 (SISO) | MCS0 to MCS7 | | |
| | 802.11n HT20 (MIMO) | MCS0 to MCS15 (CDD MCS0 to MCS7) | | |
| | 802.11n HT40 (SISO) | MCS0 to MCS7 | | |
| | 802.11n HT40 (MIMO) | MCS0 to MCS15 (CDD MCS0 to MCS7) | | |
| Power Supply Requirement(s): | Nominal | 3.8 VDC via 120 VAC 60 Hz adaptor | | |
| | Antenna Gains: | Frequency (GHz) | ANT1 | ANT2 |
| | 5.15 to 5.25 | 0.0 dBi | 3.1 dBi | 4.7 dBi |
| | 5.25 to 5.35 | 0.8 dBi | 3.3 dBi | 5.1 dBi |
| | 5.47 to 5.725 | 2.4 dBi | 4.3 dBi | 6.4 dBi |
| | 5.725 to 5.85 | 2.7 dBi | 3.8 dBi | 6.3 dBi |
| Maximum Conducted Output Power: | 20 MHz | 17.8 dBm | | |
| | 40 MHz | 16.3 dBm | | |
| Channel Spacing: | 20 MHz | | | |
| Transmit Frequency Band: | 5150 MHz to 5250 MHz | | | |
| Transmit Channels Tested: | Channel ID | Channel Number | Channel Frequency (MHz) | |
| | Bottom | 36 | 5180 | |
| | Middle | 40 | 5200 | |
| | Top | 48 | 5240 | |
| Transmit Frequency Band: | 5250 MHz to 5350 MHz | | | |
| Transmit Channels Tested: | Channel ID | Channel Number | Channel Frequency (MHz) | |
| | Bottom | 52 | 5260 | |
| | Middle | 60 | 5300 | |
| | Top | 64 | 5320 | |

Additional Information Related to Testing (continued)

| | | | |
|----------------------------------|----------------------|-----------------------|--------------------------------|
| Transmit Frequency Band: | 5470 MHz to 5725 MHz | | |
| Transmit Channels Tested: | Channel ID | Channel Number | Channel Frequency (MHz) |
| | Bottom | 100 | 5500 |
| | Middle | 116 | 5580 |
| | Top | 140 | 5700 |
| Transmit Frequency Band: | 5725 MHz to 5850 MHz | | |
| Transmit Channels Tested: | Channel ID | Channel Number | Channel Frequency (MHz) |
| | Bottom | 149 | 5745 |
| | Middle | 157 | 5785 |
| | Top | 165 | 5825 |
| Channel Spacing: | 40 MHz | | |
| Transmit Frequency Band: | 5150 MHz to 5250 MHz | | |
| Transmit Channels Tested: | Channel ID | Channel Number | Channel Frequency (MHz) |
| | Bottom | 38 | 5190 |
| | Top | 46 | 5230 |
| Transmit Frequency Band: | 5250 MHz to 5350 MHz | | |
| Transmit Channels Tested: | Channel ID | Channel Number | Channel Frequency (MHz) |
| | Bottom | 54 | 5270 |
| | Top | 62 | 5310 |
| Transmit Frequency Band: | 5470 MHz to 5725 MHz | | |
| Transmit Channels Tested: | Channel ID | Channel Number | Channel Frequency (MHz) |
| | Bottom | 102 | 5510 |
| | Middle | 110 | 5550 |
| | Top | 134 | 5670 |
| Transmit Frequency Band: | 5725 MHz to 5850 MHz | | |
| Transmit Channels Tested: | Channel ID | Channel Number | Channel Frequency (MHz) |
| | Bottom | 151 | 5755 |
| | Top | 159 | 5795 |

3.5. Support Equipment

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

| | |
|------------------------------|----------------|
| Description: | Laptop PC |
| Brand Name: | Dell |
| Model Name or Number: | Latitude E5400 |
| Serial Number: | 00788 |

| | |
|------------------------------|----------------------|
| Brand Name: | Not stated |
| Description: | USB Diagnostic cable |
| Model Name or Number: | Not stated |
| Serial Number: | Not stated |

| | |
|------------------------------|------------|
| Brand Name: | Apple |
| Description: | USB Cable |
| Model Name or Number: | A1480 |
| Serial Number: | Not stated |

| | |
|------------------------------|-------------|
| Brand Name: | Apple |
| Description: | USB Charger |
| Model Name or Number: | A1399 |
| Serial Number: | Not stated |

| | |
|------------------------------|-----------------|
| Brand Name: | Apple |
| Description: | PHF |
| Model Name or Number: | Apple Ear Plugs |
| Serial Number: | 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):

- Controlled using a bespoke application on the laptop PC supplied by the customer. The application was used to enable continuous transmission and to select the test channels, data rates and modulation schemes as required.
- The customer declared the following data rates to be used for all measurements as:
 - 802.11a – BPSK / 6 Mbps
 - 802.11n HT20 SISO – BPSK / 6.5 Mbps / MCS0
 - 802.11n HT40 SISO – BPSK / 13.5 Mbps / MCS0
 - 802.11n HT20 MIMO – BPSK / 6.5 Mbps / MCS0
 - 802.11n HT40 MIMO – BPSK / 13.5 Mbps / MCS0
- The EUT has two separate antennas which correspond to two separate antenna ports. Port 1 and Port 2 correspond to antenna 1 and antenna 2 respectively.
- For 802.11a the EUT transmits from only 1 antenna, both antennas were investigated and the conducted measurements for Port 1 were found to be worst-case. All conducted measurements were performed on Port 1 only.
- For 802.11n the EUT can transmit from both antennas, therefore conducted measurements were performed on both ports.
- For 802.11n SISO radiated measurements, the antenna gain was added to the conducted power measurements and antenna 2 was found to be worst-case. All SISO measurements were performed on antenna 2 only.
- For 802.11n MIMO radiated measurements, the EUT was transmitting from both ports.
- Transmitter spurious emissions and AC conducted tests were performed with the EUT transmitting with a data rate of 6.5 Mbps / MCS0 (802.11n HT20 / MIMO). This was found to be the worst case modulation scheme with regards to emissions after preliminary investigations and, as this mode emits the highest transmit output power level, it was deemed to be the worst case.
- Transmitter radiated spurious emissions and AC conducted tests were performed with the AC Charger and PHF connected to the EUT as this was found to be the worst case during pre-scans. All the accessories were individually connected and measurements made during the pre-scans to determine the worst case combination.
- The conducted sample with IMEI 352025060005387 was used for 26 dB bandwidth, minimum 6 dB bandwidth, duty cycle, maximum output power and peak power spectral density tests.
- The radiated sample with IMEI 352025060307270 was used for all other tests

4.3. Worst case Justification

Table of test reduction and modes covering other modes:

| Mode | Covered by |
|-------------------------|----------------------------|
| 802.11a CDD (2TX) | 80211n HT20 MIMO (CDD 2TX) |
| 802.11n HT20 STBC (2TX) | 80211n HT20 MIMO (CDD 2TX) |
| 802.11n HT20 SDM (2TX) | 80211n HT20 MIMO (CDD 2TX) |
| 802.11n HT40 STBC (2TX) | 80211n HT40 MIMO (CDD 2TX) |
| 802.11n HT40 SDM (2TX) | 80211n HT40 MIMO (CDD 2TX) |

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 AC Conducted Spurious Emissions****Test Summary:**

| | | | |
|--------------------------|-----------------|-------------------|--------------|
| Test Engineer: | Georgios Vrezas | Test Date: | 25 July 2014 |
| Test Sample IMEI: | 352025060307270 | | |

| | |
|--------------------------|---|
| FCC Reference: | Part 15.207 |
| Test Method Used: | As detailed in ANSI C63.10 Section 6.2 referencing ANSI C63.4 |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 23 |
| Relative Humidity (%): | 41 |

Results: Live / Quasi Peak

| Frequency (MHz) | Line | Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|------|--------------------|--------------------|-------------|----------|
| 0.420 | Live | 24.9 | 57.4 | 32.5 | Complied |
| 0.560 | Live | 23.8 | 56.0 | 32.2 | Complied |
| 0.753 | Live | 27.9 | 56.0 | 28.1 | Complied |
| 0.947 | Live | 26.4 | 56.0 | 29.6 | Complied |
| 1.752 | Live | 25.7 | 56.0 | 30.3 | Complied |
| 28.779 | Live | 31.8 | 60.0 | 28.2 | Complied |

Results: Live / Average

| Frequency (MHz) | Line | Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|------|--------------------|--------------------|-------------|----------|
| 0.749 | Live | 23.8 | 46.0 | 22.2 | Complied |
| 1.752 | Live | 24.5 | 46.0 | 21.5 | Complied |
| 3.255 | Live | 24.2 | 46.0 | 21.8 | Complied |
| 4.254 | Live | 23.1 | 46.0 | 22.9 | Complied |
| 26.282 | Live | 26.7 | 50.0 | 23.3 | Complied |
| 28.779 | Live | 28.5 | 50.0 | 21.5 | Complied |

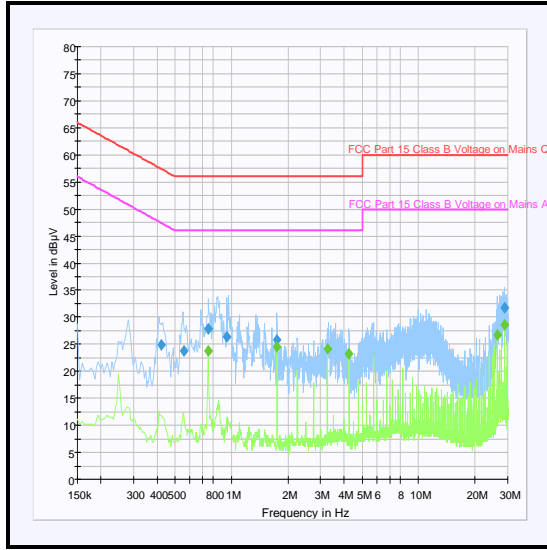
Transmitter AC Conducted Spurious Emissions (continued)**Results: Neutral / Quasi Peak**

| Frequency (MHz) | Line | Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|---------|--------------------|--------------------|-------------|----------|
| 0.420 | Neutral | 24.1 | 57.4 | 33.4 | Complied |
| 0.870 | Neutral | 25.8 | 56.0 | 30.2 | Complied |
| 0.956 | Neutral | 25.7 | 56.0 | 30.3 | Complied |
| 1.518 | Neutral | 19.3 | 56.0 | 36.7 | Complied |
| 3.053 | Neutral | 15.3 | 56.0 | 40.7 | Complied |
| 5.496 | Neutral | 17.0 | 60.0 | 43.0 | Complied |

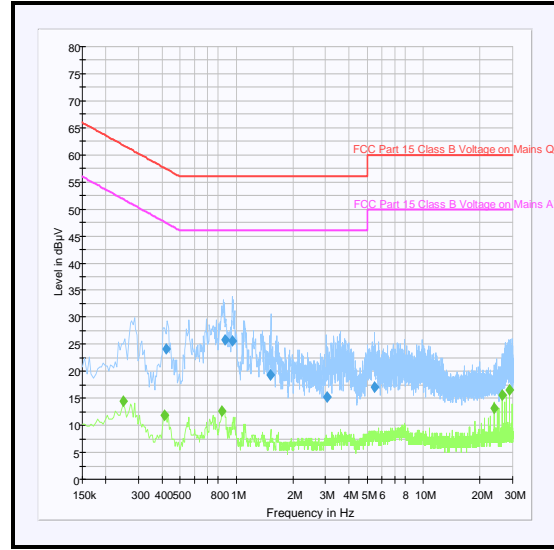
Results: Neutral / Average

| Frequency (MHz) | Line | Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|---------|--------------------|--------------------|-------------|----------|
| 0.249 | Neutral | 14.5 | 51.8 | 37.3 | Complied |
| 0.416 | Neutral | 11.8 | 47.5 | 35.7 | Complied |
| 0.839 | Neutral | 12.6 | 46.0 | 33.4 | Complied |
| 23.771 | Neutral | 13.3 | 50.0 | 36.7 | Complied |
| 26.277 | Neutral | 15.7 | 50.0 | 34.3 | Complied |
| 28.779 | Neutral | 16.5 | 50.0 | 33.5 | Complied |

Transmitter AC Conducted Spurious Emissions (continued)



Live



Neutral

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test Equipment Used:

| Asset No. | Instrument | Manufacturer | Type No. | Serial No. | Date Calibration Due | Cal. Interval (Months) |
|-----------|------------------|-----------------|------------|-------------|----------------------|------------------------|
| M1625 | Thermohygrometer | JM Handelpunkt | 30.5015.06 | None stated | 31 Dec 2014 | 12 |
| A004 | LISN | Rohde & Schwarz | ESH3-Z5 | 890604/027 | 18 Nov 2014 | 12 |
| A1830 | Pulse Limiter | Rohde & Schwarz | ESH3-Z2 | 100668 | 27 Feb 2015 | 12 |
| M1263 | Test Receiver | Rohde & Schwarz | ESIB 7 | 100265 | 14 Oct 2014 | 12 |

5.2.2. Transmitter 26 dB Emission Bandwidth**Test Summary:**

| | | | |
|--------------------------|----------------------------------|--------------------|-----------------------------------|
| Test Engineers: | Nick Steele & Georgios Vrezas | Test Dates: | 25 July 2014 to 12 August 2014 |
| Test Sample IMEI: | 352025060005387 | | |

| | |
|--------------------------|---|
| FCC Reference: | Part 15.403(i) |
| Test Method Used: | As detailed in KDB 789033 D02 Section II.C.1. |

Environmental Conditions:

| | |
|-------------------------------|----------|
| Temperatures (°C): | 23 to 25 |
| Relative Humidity (%): | 39 to 44 |

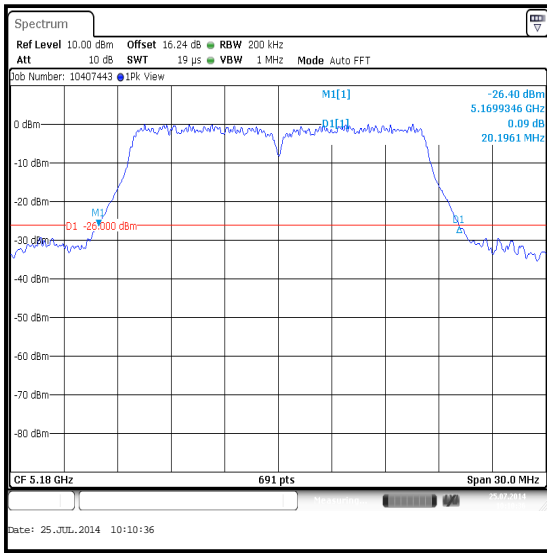
Note(s):

1. The customer declared the following data rates to be used for all measurements as:
 - o 802.11a – BPSK / 6 Mbps
 - o 802.11n HT20 SISO – BPSK / 6.5 Mbps / MCS0
 - o 802.11n HT40 SISO – BPSK / 13.5 Mbps / MCS0
 - o 802.11n HT20 MIMO – BPSK / 6.5 Mbps / MCS0
 - o 802.11n HT40 MIMO – BPSK / 13.5 Mbps / MCS0
2. Final measurements were performed in each supported operating band using the above configurations on the bottom, middle and top channels in accordance with KDB 789033 Section II.C.1. Emission Bandwidth (EBW) test procedure.
3. The signal analyser was connected to the RF port on the EUT using suitable attenuation and RF cable.

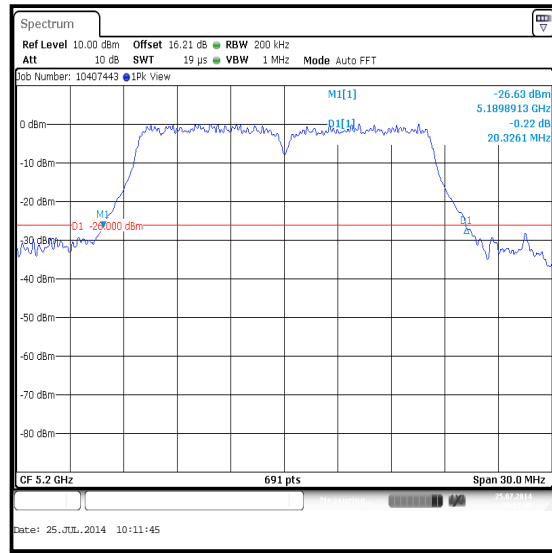
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11a / 20 MHz / 5.15-5.25 GHz band / Port 1

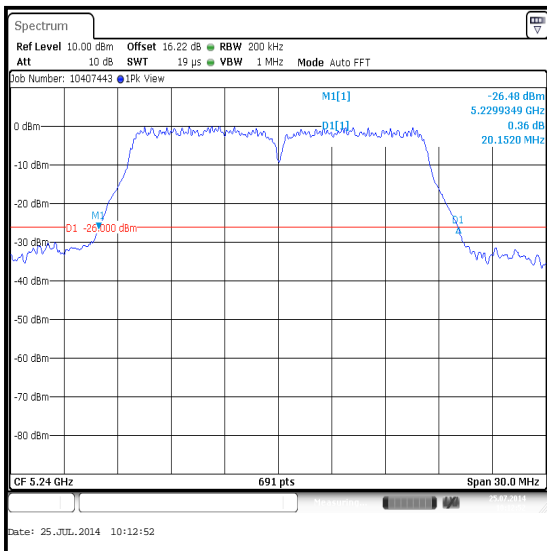
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------|--------------------------------|
| Bottom | 5180 | BPSK | 6 | 20.196 |
| Middle | 5200 | BPSK | 6 | 20.326 |
| Top | 5240 | BPSK | 6 | 20.152 |



Bottom Channel



Middle Channel

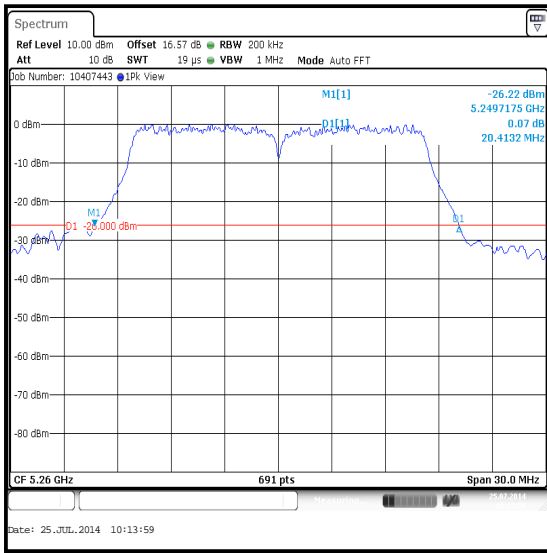


Top Channel

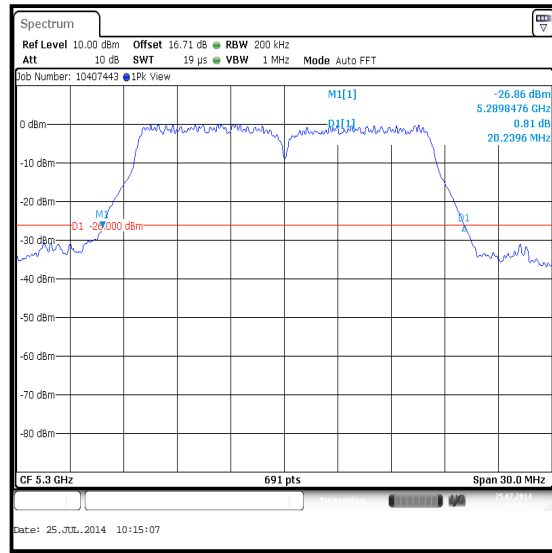
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11a / 20 MHz / 5.25-5.35 GHz band / Port 1

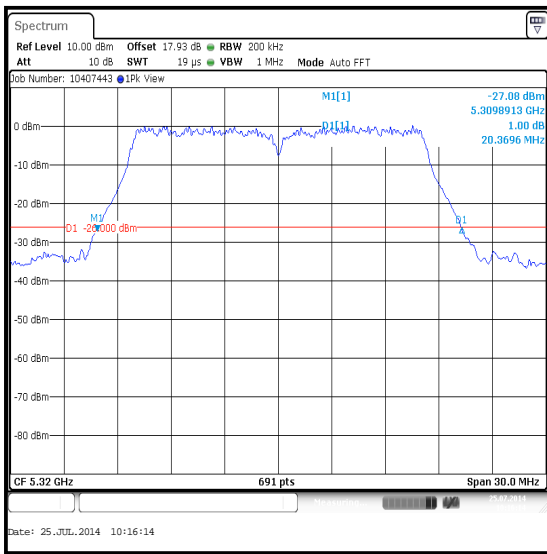
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------|--------------------------------|
| Bottom | 5260 | BPSK | 6 | 20.413 |
| Middle | 5300 | BPSK | 6 | 20.240 |
| Top | 5320 | BPSK | 6 | 20.370 |



Bottom Channel



Middle Channel

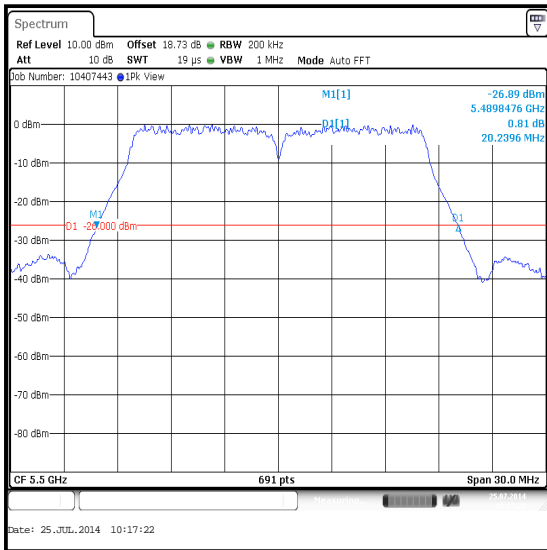


Top Channel

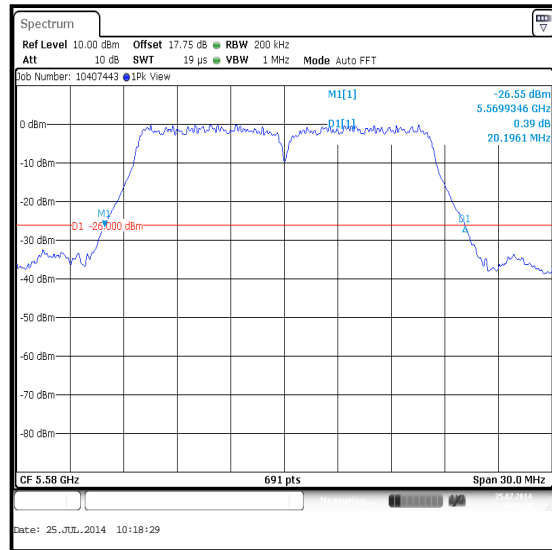
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11a / 20 MHz / 5.47-5.725 GHz band / Port 1

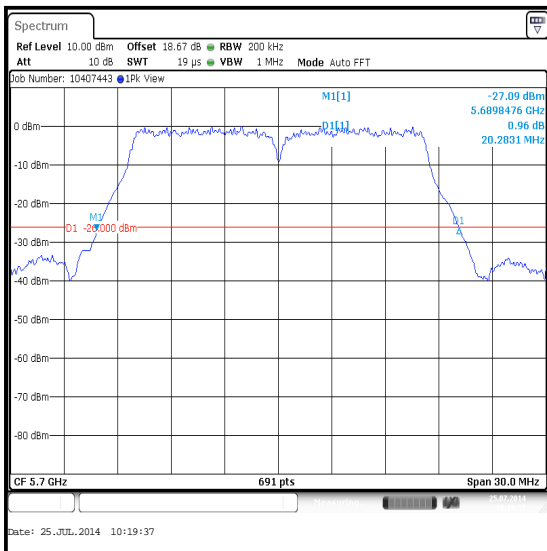
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------|--------------------------------|
| Bottom | 5500 | BPSK | 6 | 20.240 |
| Middle | 5580 | BPSK | 6 | 20.196 |
| Top | 5700 | BPSK | 6 | 20.283 |



Bottom Channel



Middle Channel

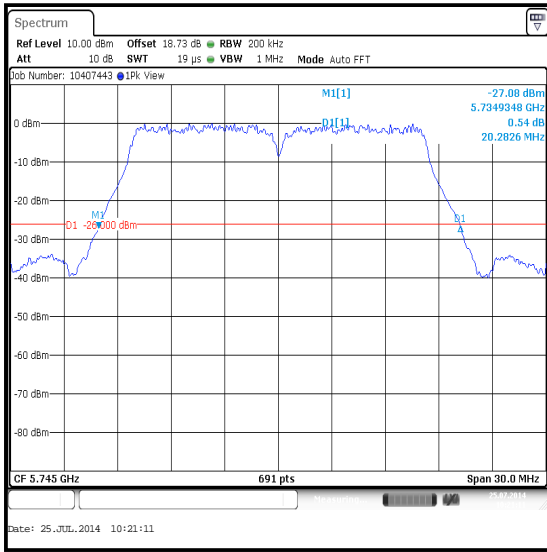


Top Channel

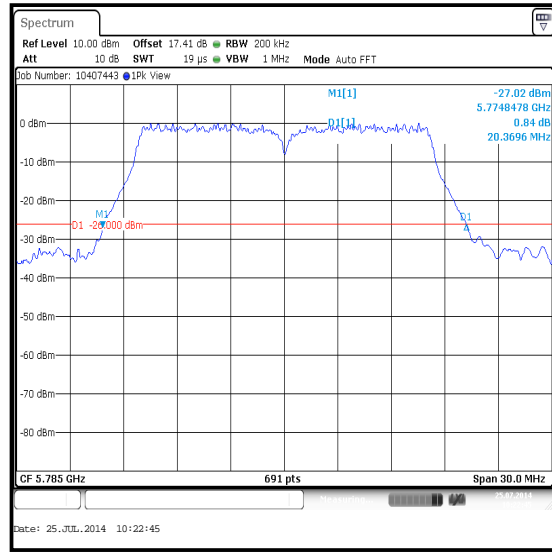
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11a / 20 MHz / 5.725-5.85 GHz band / Port 1

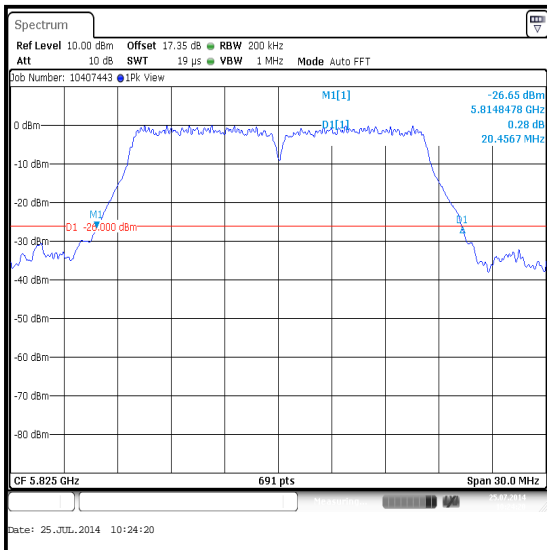
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------|--------------------------------|
| Bottom | 5745 | BPSK | 6 | 20.283 |
| Middle | 5785 | BPSK | 6 | 20.370 |
| Top | 5825 | BPSK | 6 | 20.457 |



Bottom Channel



Middle Channel

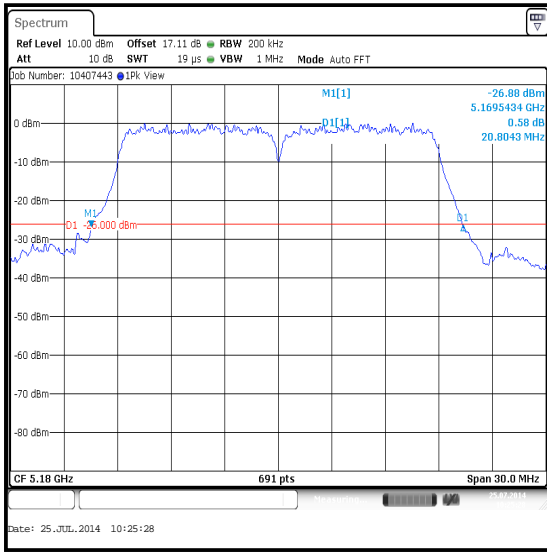


Top Channel

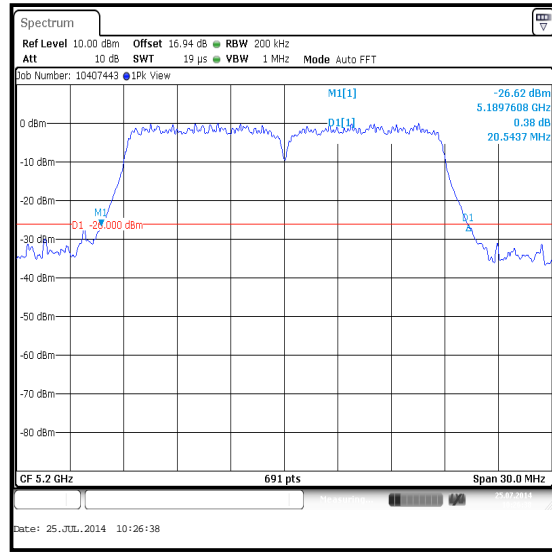
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / SISO / 5.15-5.25 GHz band / Port 1

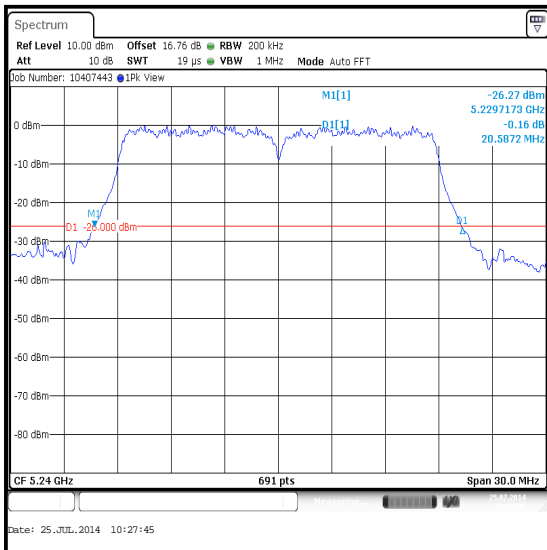
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5180 | BPSK | 6.5 / 0 | 20.804 |
| Middle | 5200 | BPSK | 6.5 / 0 | 20.544 |
| Top | 5240 | BPSK | 6.5 / 0 | 20.587 |



Bottom Channel



Middle Channel

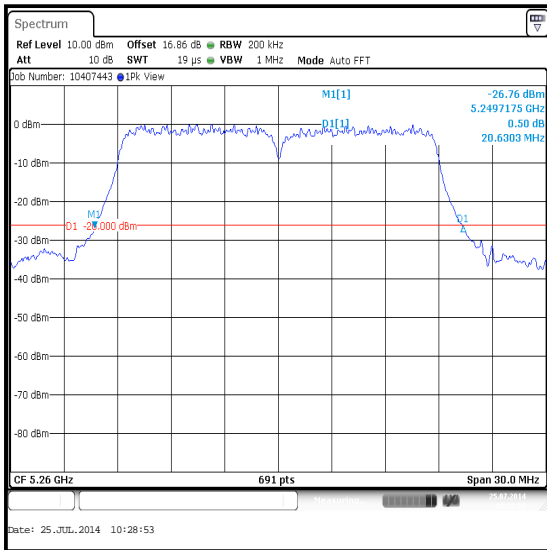


Top Channel

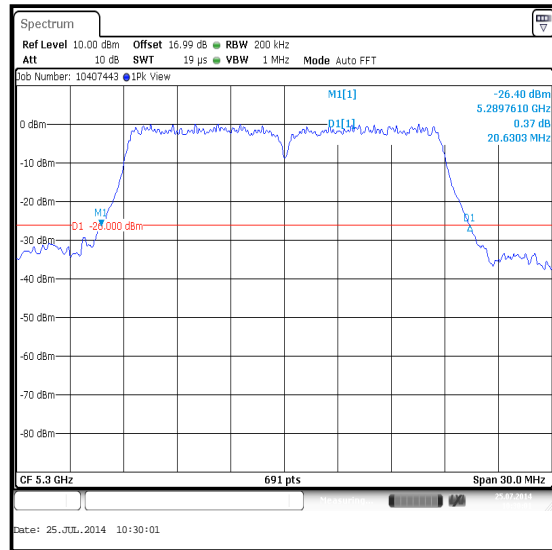
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / SISO / 5.25-5.35 GHz band / Port 1

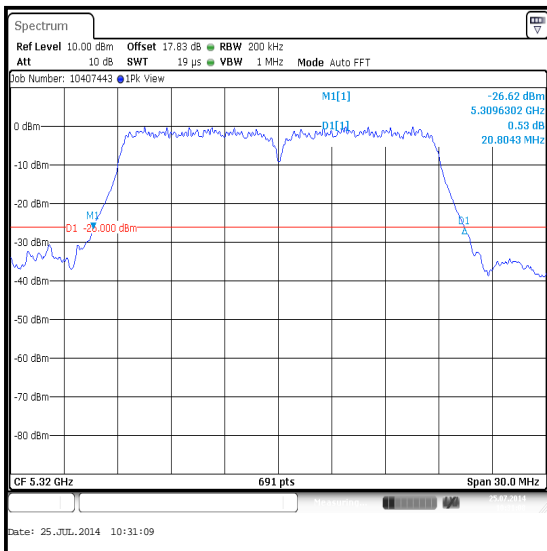
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5260 | BPSK | 6.5 / 0 | 20.630 |
| Middle | 5300 | BPSK | 6.5 / 0 | 20.630 |
| Top | 5320 | BPSK | 6.5 / 0 | 20.804 |



Bottom Channel



Middle Channel

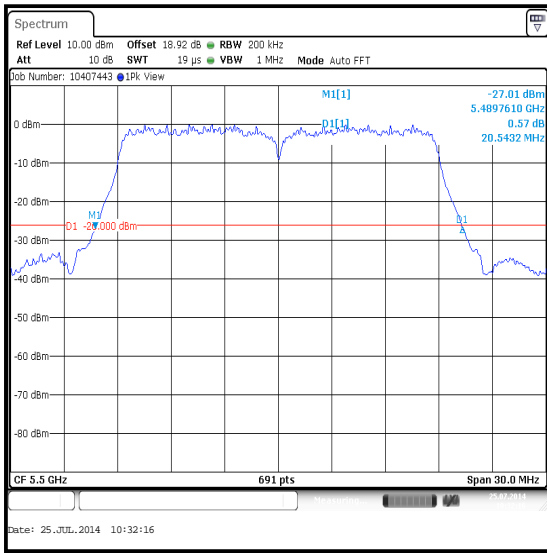


Top Channel

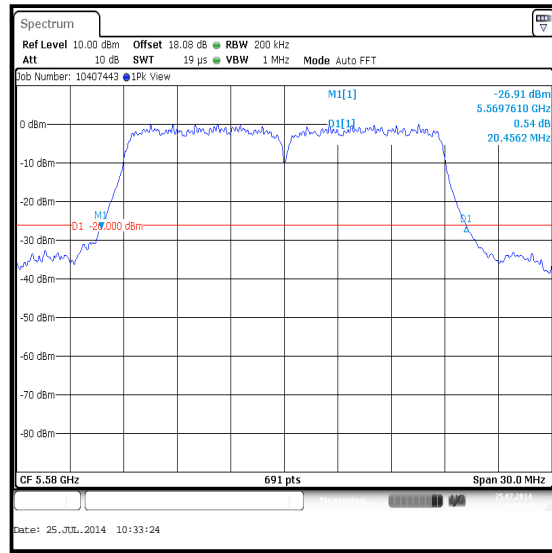
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / SISO / 5.47-5.725 GHz band / Port 1

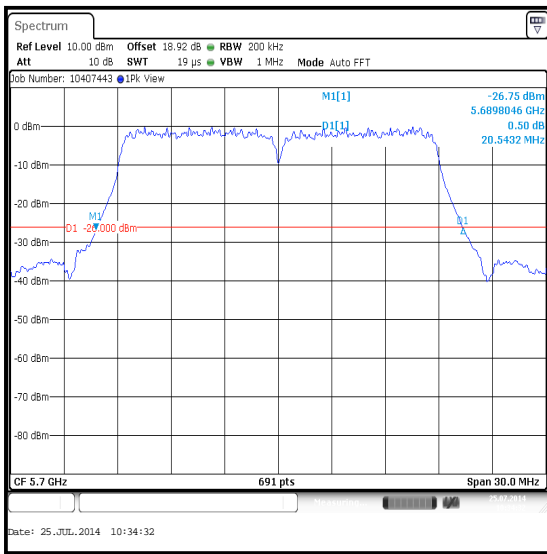
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5500 | BPSK | 6.5 / 0 | 20.543 |
| Middle | 5580 | BPSK | 6.5 / 0 | 20.456 |
| Top | 5700 | BPSK | 6.5 / 0 | 20.543 |



Bottom Channel



Middle Channel

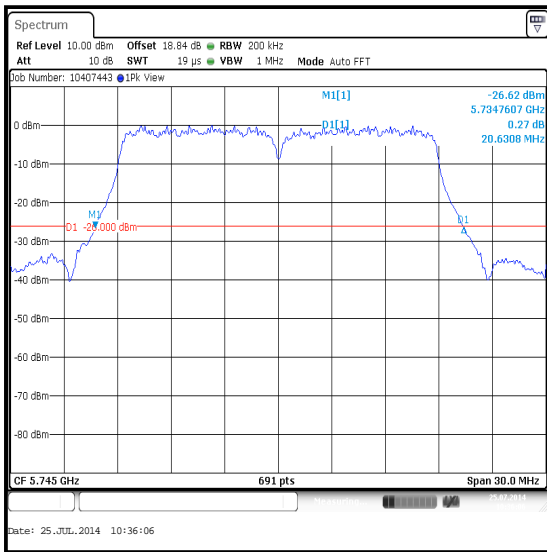


Top Channel

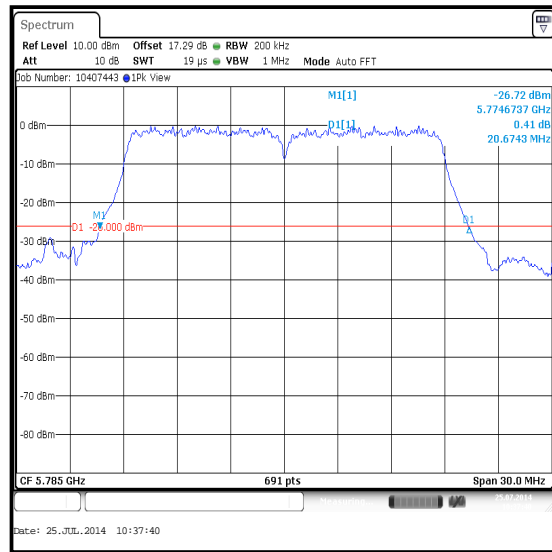
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / SISO / 5.725-5.85 GHz band / Port 1

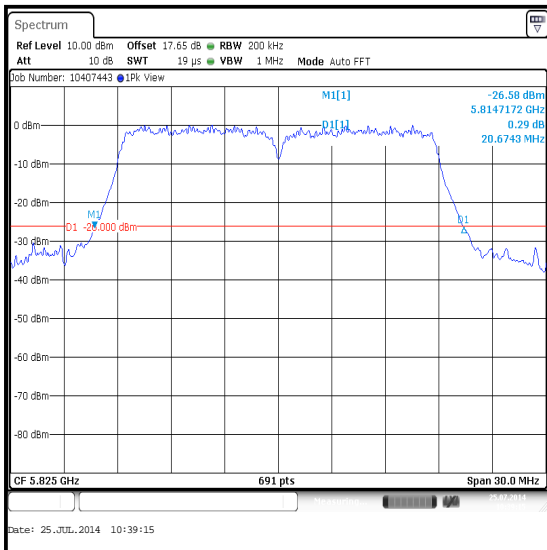
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5745 | BPSK | 6.5 / 0 | 20.631 |
| Middle | 5785 | BPSK | 6.5 / 0 | 20.674 |
| Top | 5825 | BPSK | 6.5 / 0 | 20.674 |



Bottom Channel



Middle Channel

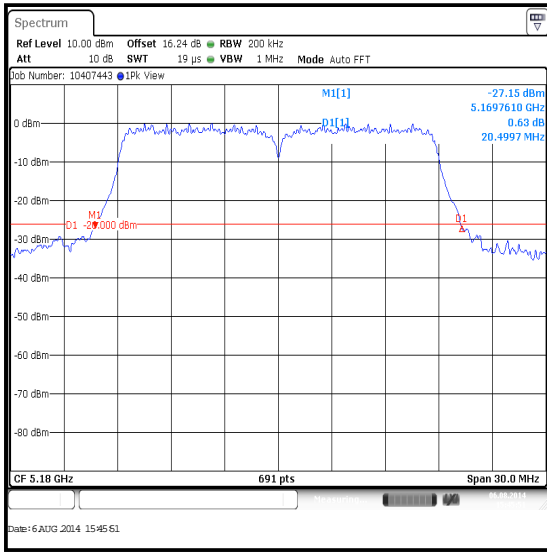


Top Channel

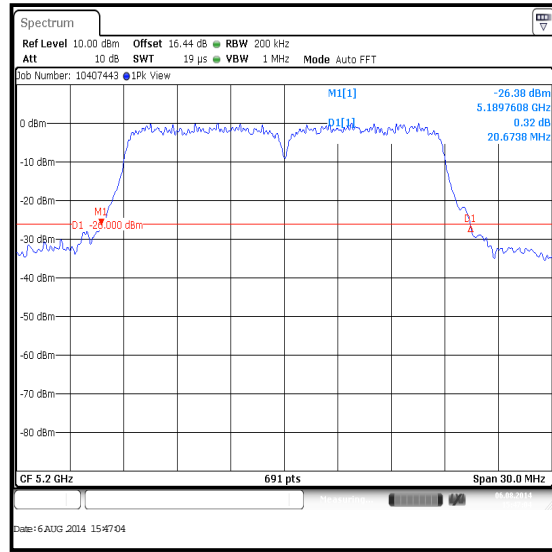
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / SISO / 5.15-5.25 GHz band / Port 2

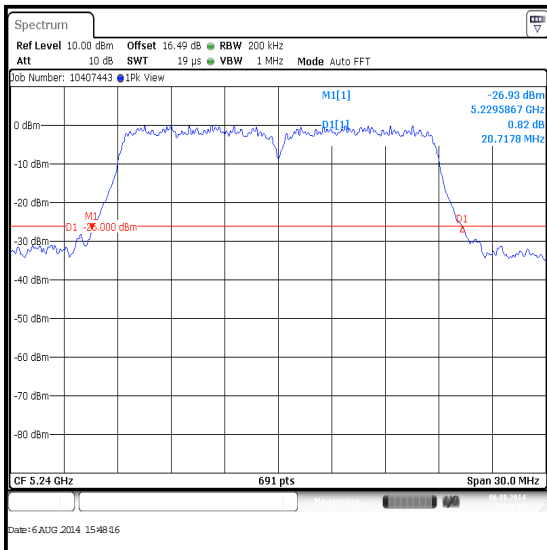
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5180 | BPSK | 6.5 / 0 | 20.500 |
| Middle | 5200 | BPSK | 6.5 / 0 | 20.674 |
| Top | 5240 | BPSK | 6.5 / 0 | 20.718 |



Bottom Channel



Middle Channel

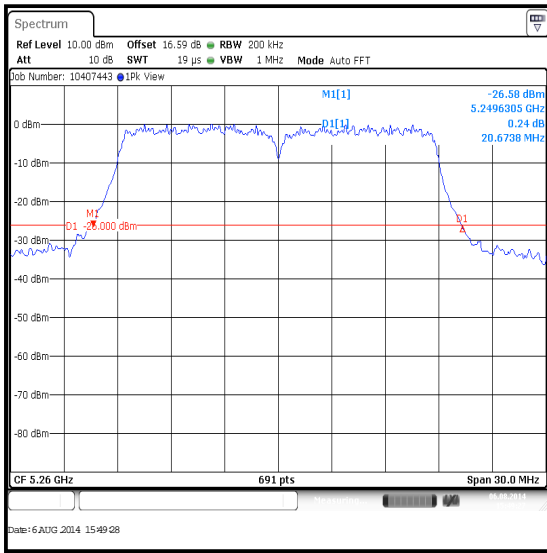


Top Channel

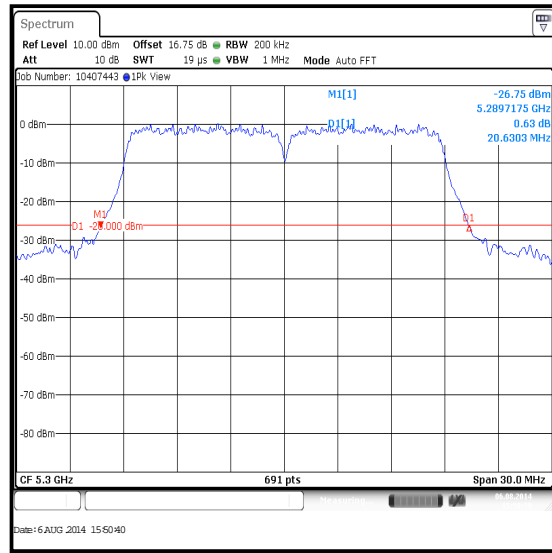
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / SISO / 5.25-5.35 GHz band / Port 2

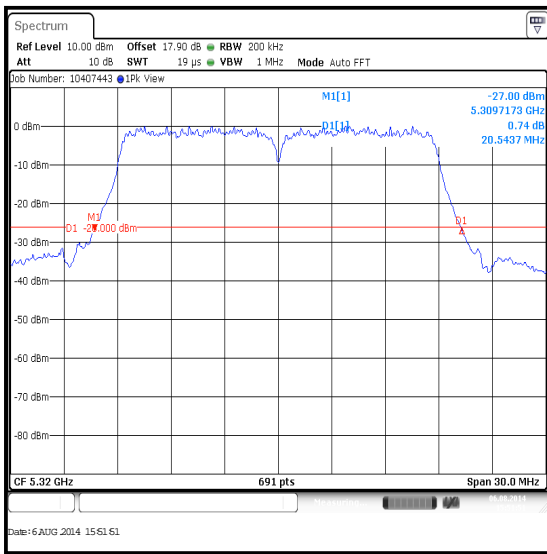
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5260 | BPSK | 6.5 / 0 | 20.674 |
| Middle | 5300 | BPSK | 6.5 / 0 | 20.630 |
| Top | 5320 | BPSK | 6.5 / 0 | 20.544 |



Bottom Channel



Middle Channel

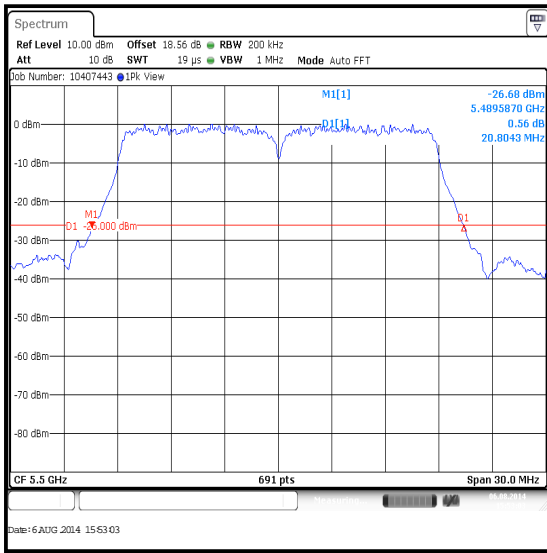


Top Channel

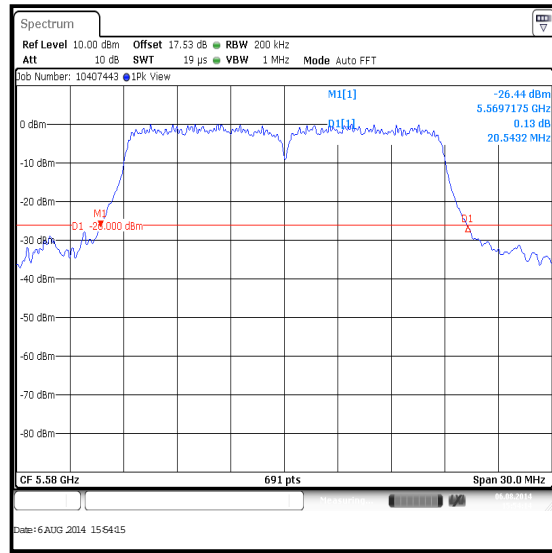
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / SISO / 5.47-5.725 GHz band / Port 2

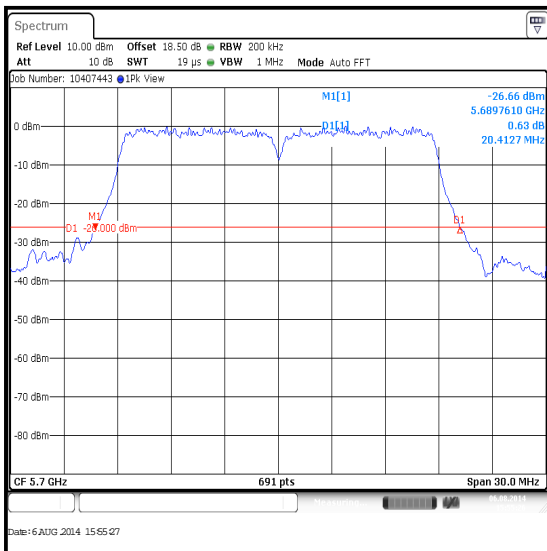
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5500 | BPSK | 6.5 / 0 | 20.804 |
| Middle | 5580 | BPSK | 6.5 / 0 | 20.543 |
| Top | 5700 | BPSK | 6.5 / 0 | 20.413 |



Bottom Channel



Middle Channel

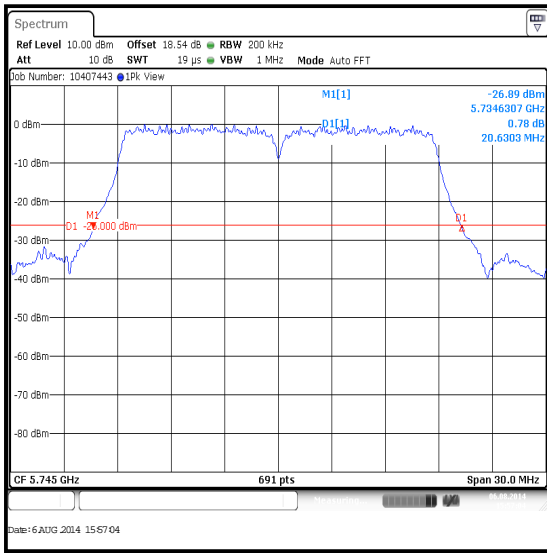


Top Channel

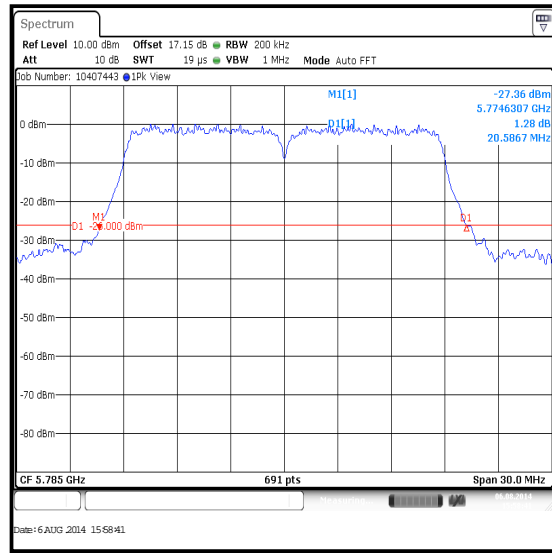
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / SISO / 5.725-5.85 GHz band / Port 2

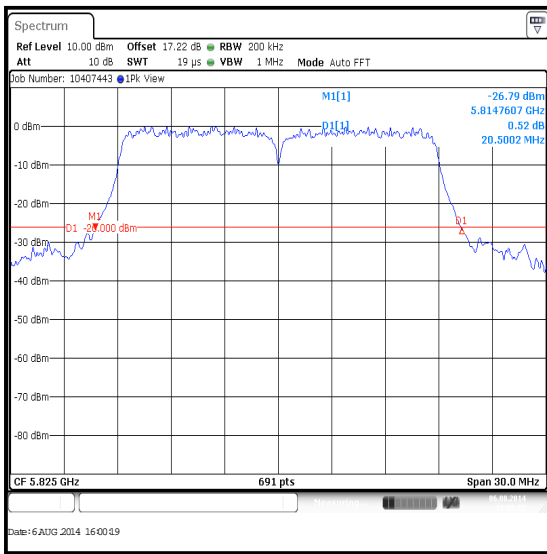
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5745 | BPSK | 6.5 / 0 | 20.630 |
| Middle | 5785 | BPSK | 6.5 / 0 | 20.587 |
| Top | 5825 | BPSK | 6.5 / 0 | 20.500 |



Bottom Channel



Middle Channel

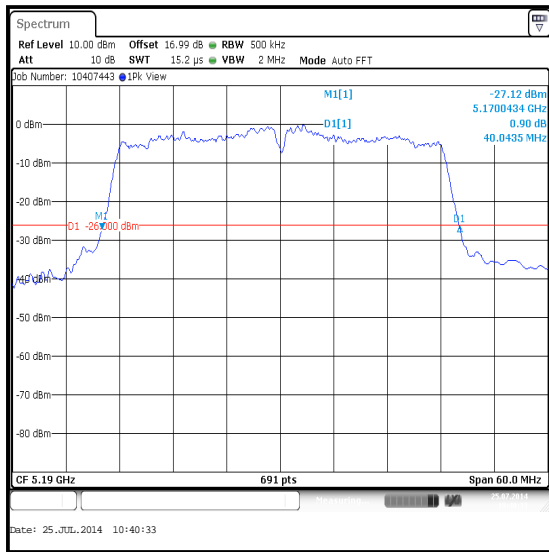


Top Channel

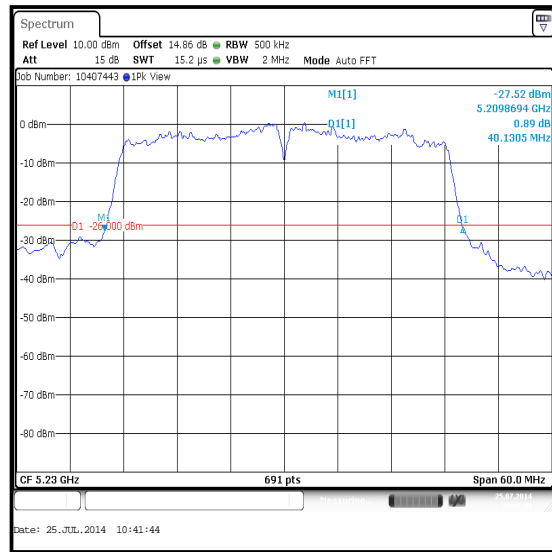
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 40 MHz / SISO / 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 | 40.043 |
| Top | 5230 | BPSK | 13.5 / 0 | 40.131 |



Bottom Channel

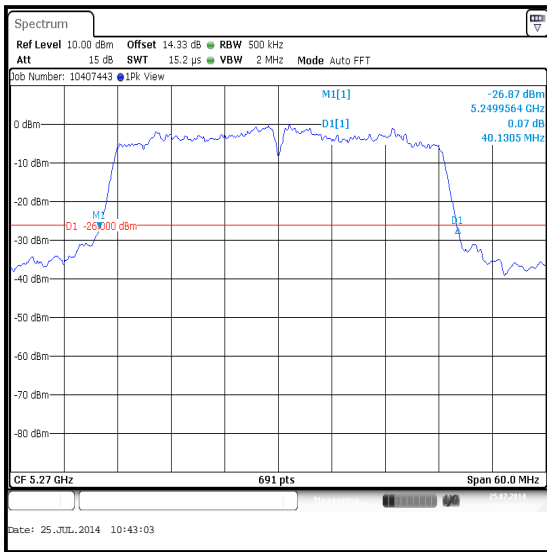


Top Channel

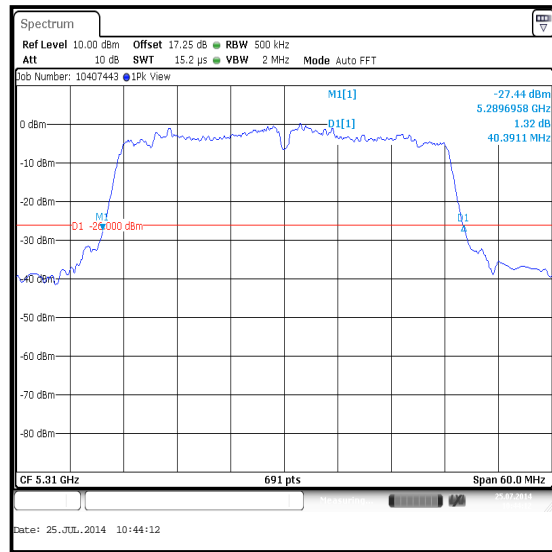
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 40 MHz / SISO / 5.25-5.35 GHz band / Port 1

| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5270 | BPSK | 13.5 / 0 | 40.131 |
| Top | 5310 | BPSK | 13.5 / 0 | 40.391 |



Bottom Channel

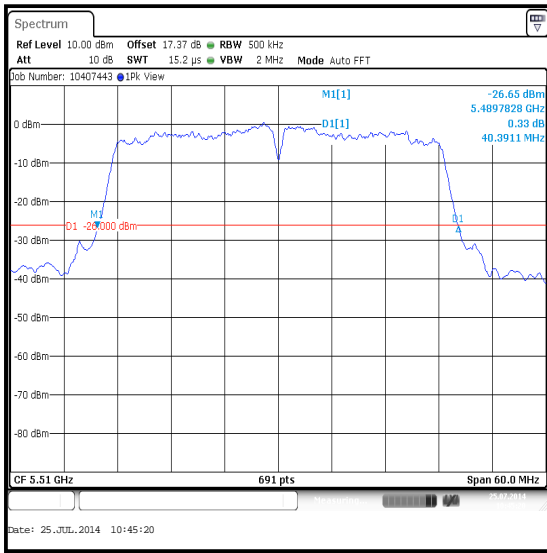


Top Channel

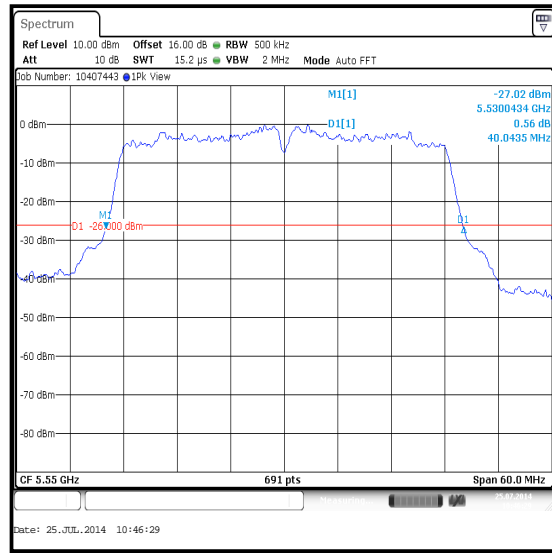
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 40 MHz / SISO / 5.47-5.725 GHz band / Port 1

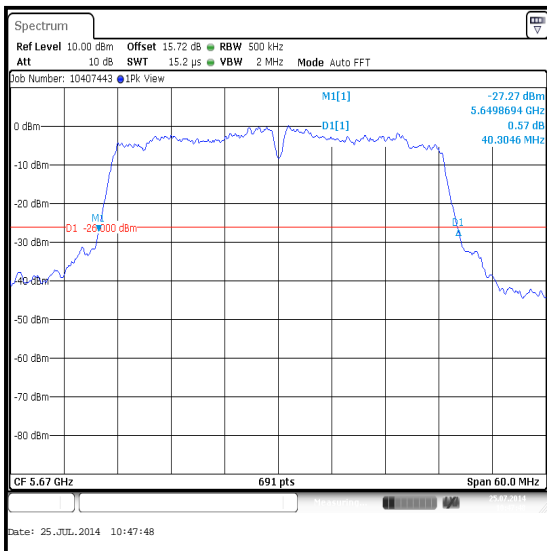
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5510 | BPSK | 13.5 / 0 | 40.391 |
| Middle | 5550 | BPSK | 13.5 / 0 | 40.043 |
| Top | 5670 | BPSK | 13.5 / 0 | 40.305 |



Bottom Channel



Middle Channel

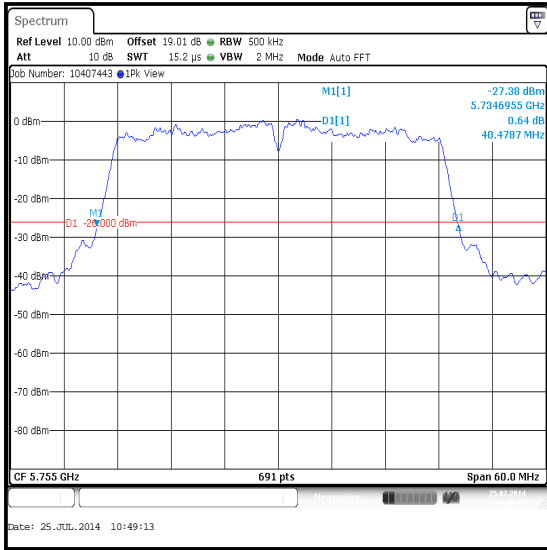


Top Channel

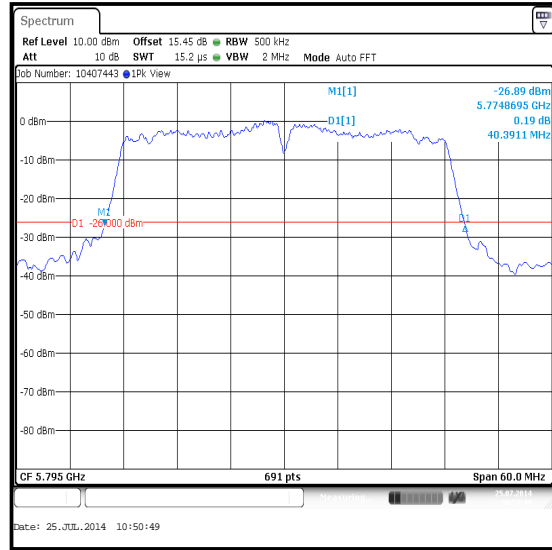
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 40 MHz / SISO / 5.725-5.85 GHz band / Port 1

| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5755 | BPSK | 13.5 / 0 | 40.479 |
| Top | 5795 | BPSK | 13.5 / 0 | 40.391 |



Bottom Channel

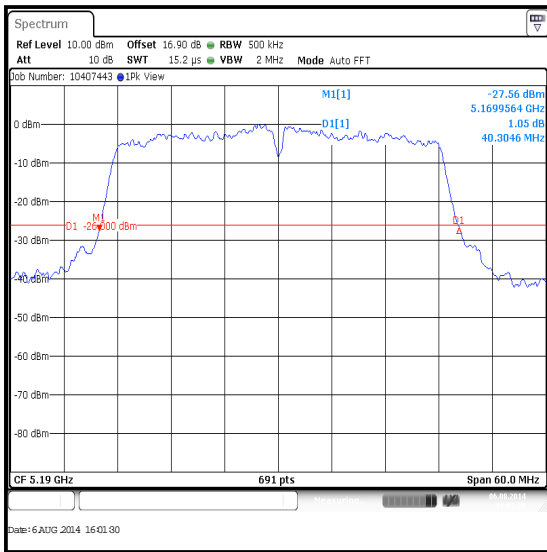


Top Channel

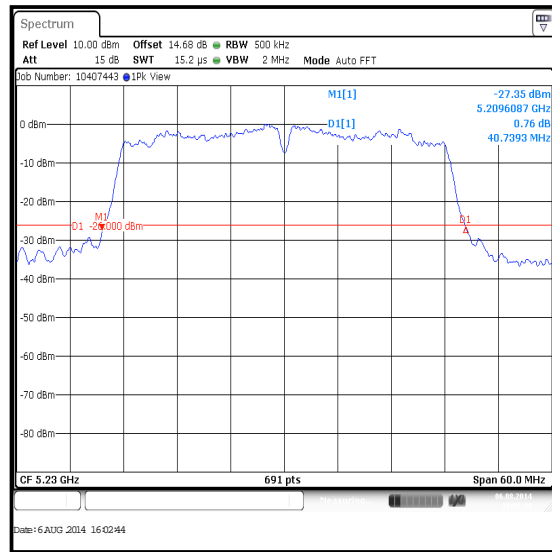
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 40 MHz / SISO / 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 | 40.305 |
| Top | 5230 | BPSK | 13.5 / 0 | 40.739 |



Bottom Channel

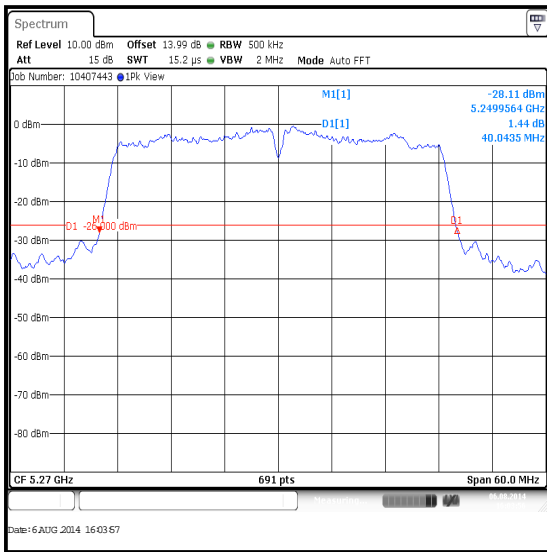


Top Channel

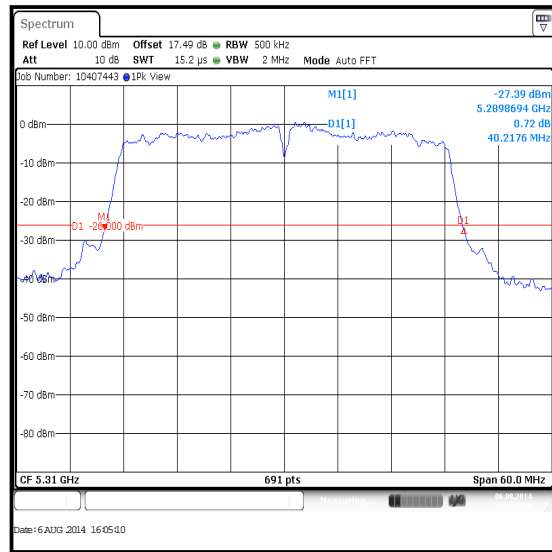
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 40 MHz / SISO / 5.25-5.35 GHz band / Port 2

| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5270 | BPSK | 13.5 / 0 | 40.043 |
| Top | 5310 | BPSK | 13.5 / 0 | 40.218 |



Bottom Channel

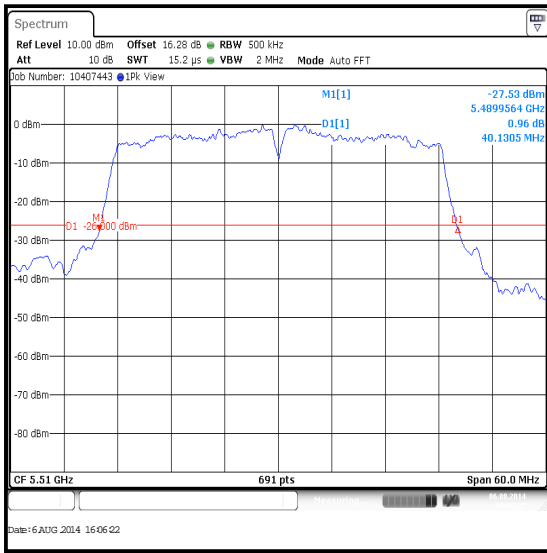


Top Channel

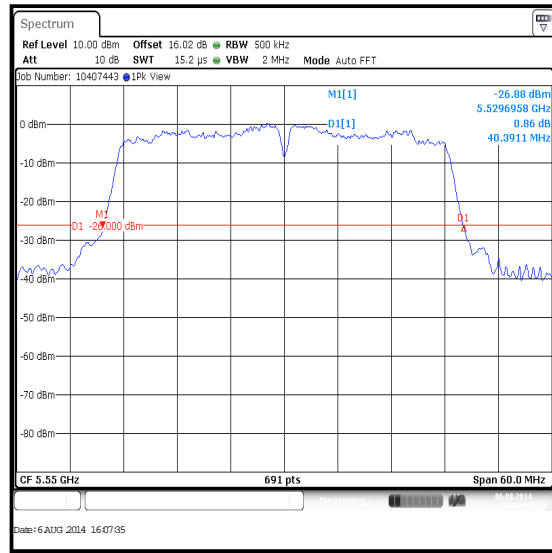
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 40 MHz / SISO / 5.47-5.725 GHz band / Port 2

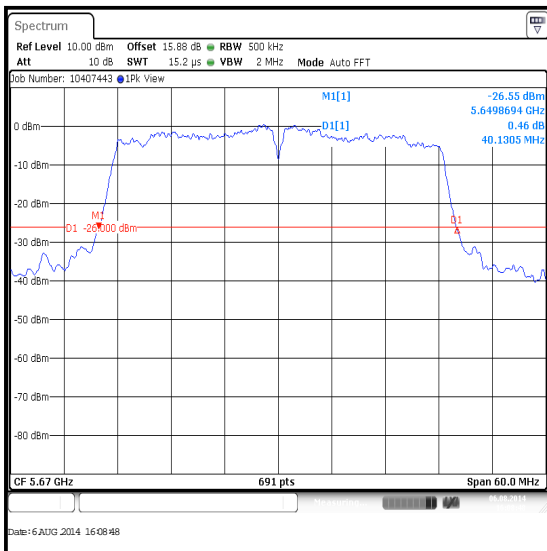
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5510 | BPSK | 13.5 / 0 | 40.131 |
| Middle | 5550 | BPSK | 13.5 / 0 | 40.391 |
| Top | 5670 | BPSK | 13.5 / 0 | 40.131 |



Bottom Channel



Middle Channel

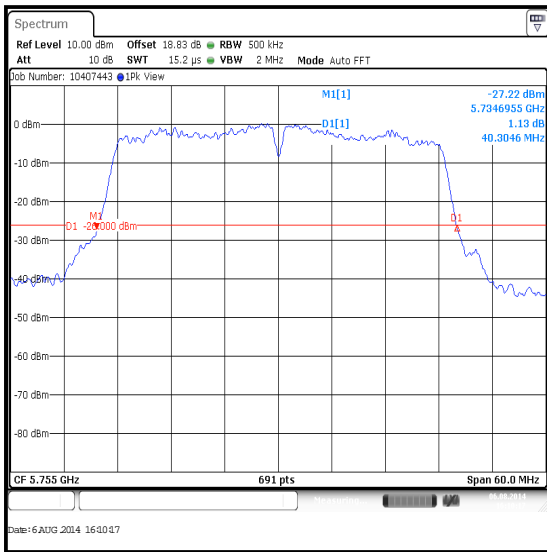


Top Channel

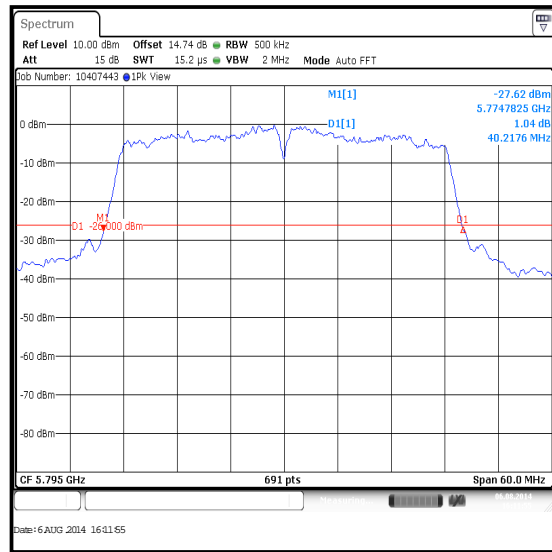
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 40 MHz / SISO / 5.725-5.85 GHz band / Port 2

| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5755 | BPSK | 13.5 / 0 | 40.305 |
| Top | 5795 | BPSK | 13.5 / 0 | 40.218 |



Bottom Channel

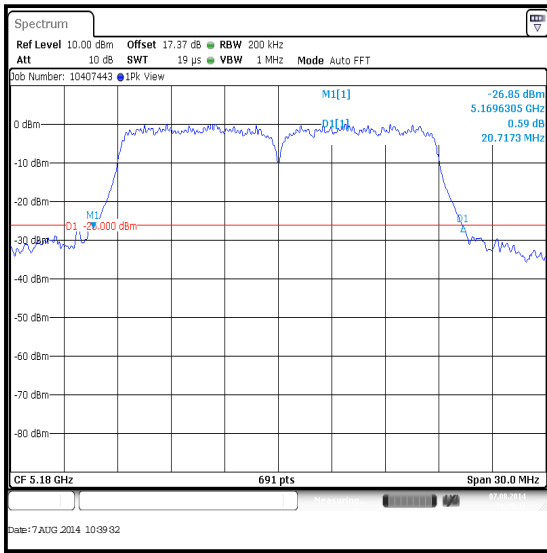


Top Channel

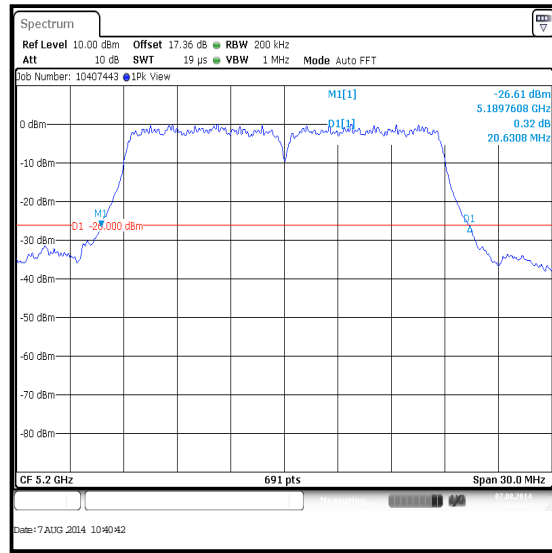
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / MIMO / 5.15-5.25 GHz band / Port 1

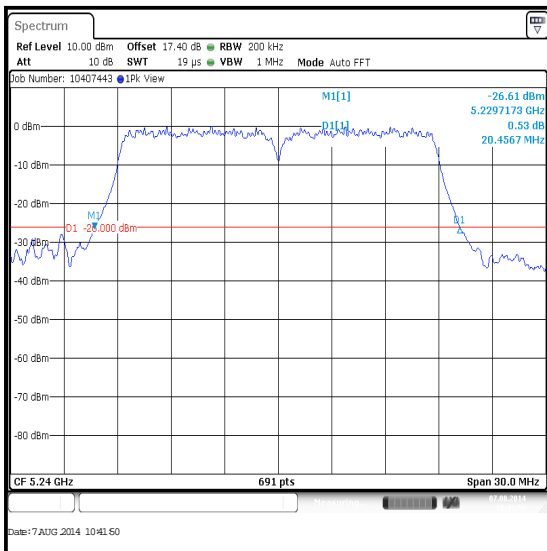
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5180 | BPSK | 6.5 / 0 | 20.717 |
| Middle | 5200 | BPSK | 6.5 / 0 | 20.631 |
| Top | 5240 | BPSK | 6.5 / 0 | 20.457 |



Bottom Channel



Middle Channel

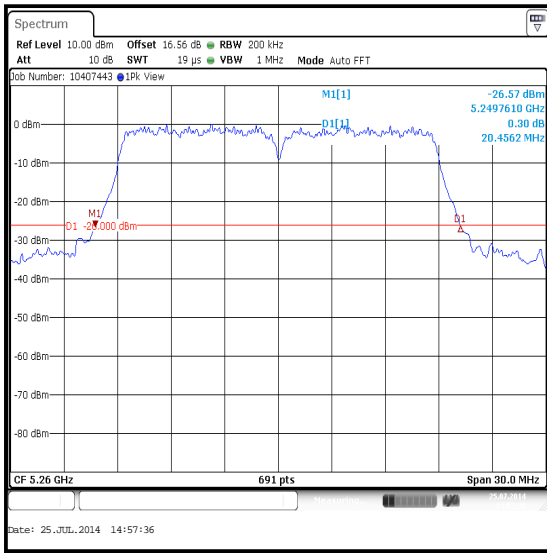


Top Channel

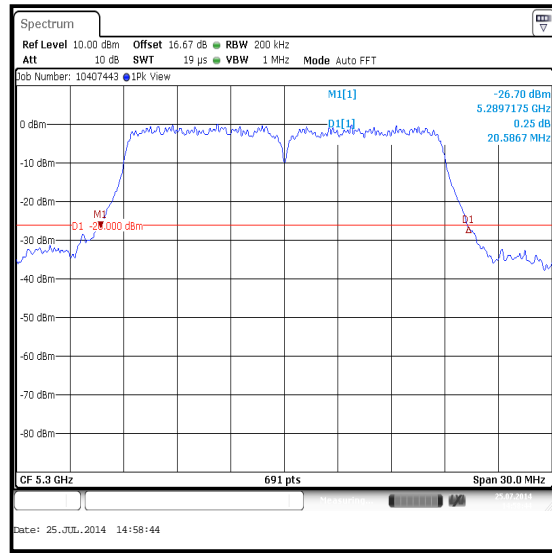
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / MIMO / 5.25-5.35 GHz band / Port 1

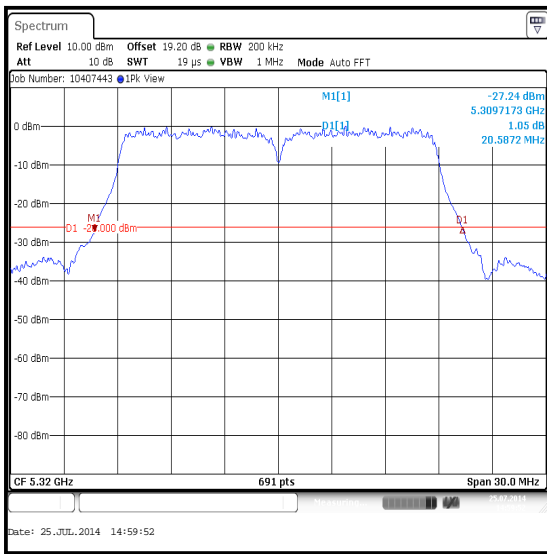
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5260 | BPSK | 6.5 / 0 | 20.456 |
| Middle | 5300 | BPSK | 6.5 / 0 | 20.587 |
| Top | 5320 | BPSK | 6.5 / 0 | 20.587 |



Bottom Channel



Middle Channel

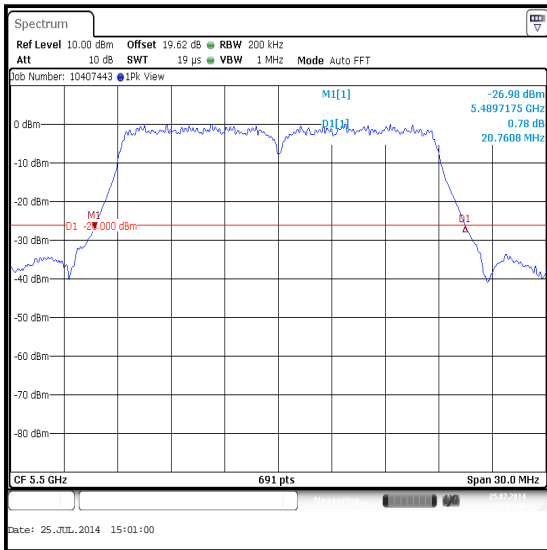


Top Channel

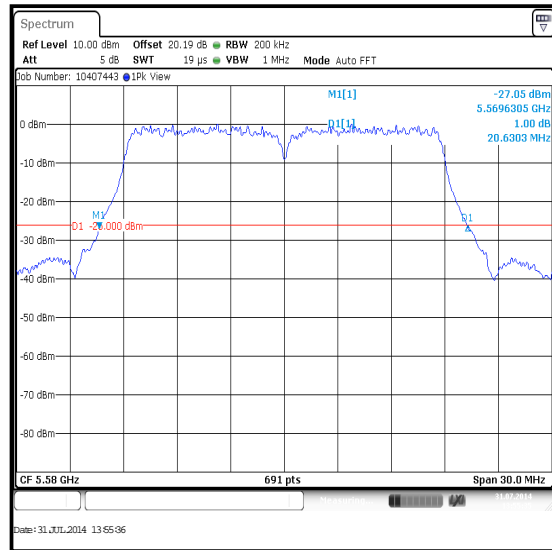
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / MIMO / 5.47-5.725 GHz band / Port 1

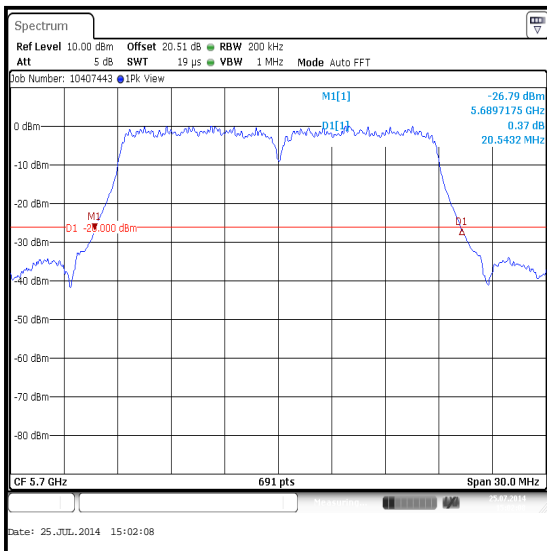
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5500 | BPSK | 6.5 / 0 | 20.761 |
| Middle | 5580 | BPSK | 6.5 / 0 | 20.630 |
| Top | 5700 | BPSK | 6.5 / 0 | 20.543 |



Bottom Channel



Middle Channel

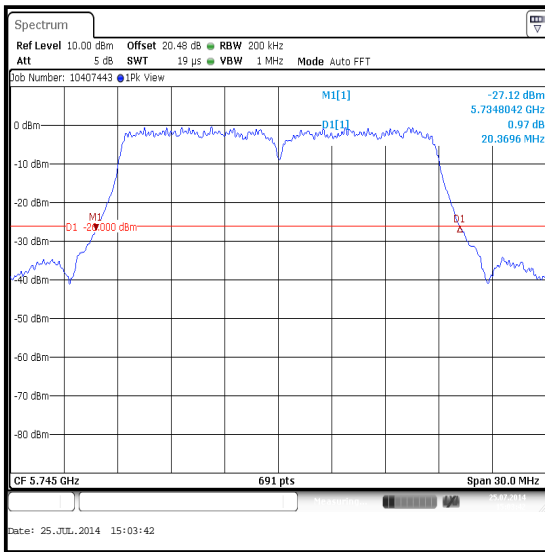


Top Channel

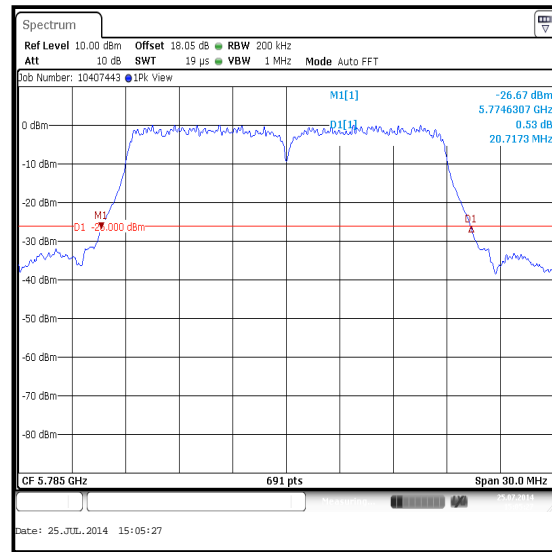
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / MIMO / 5.725-5.85 GHz band / Port 1

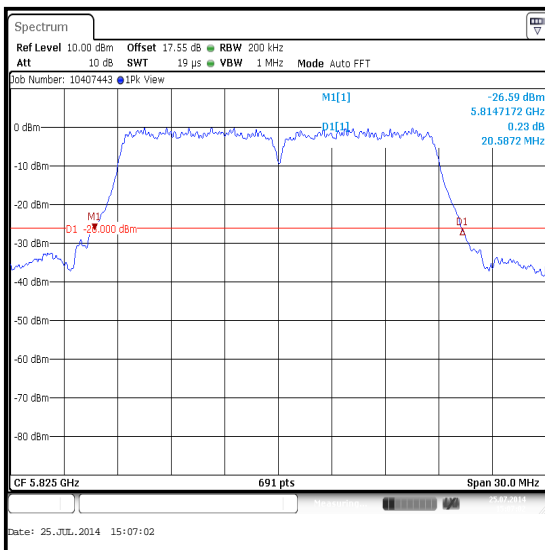
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5745 | BPSK | 6.5 / 0 | 20.370 |
| Middle | 5785 | BPSK | 6.5 / 0 | 20.717 |
| Top | 5825 | BPSK | 6.5 / 0 | 20.587 |



Bottom Channel



Middle Channel

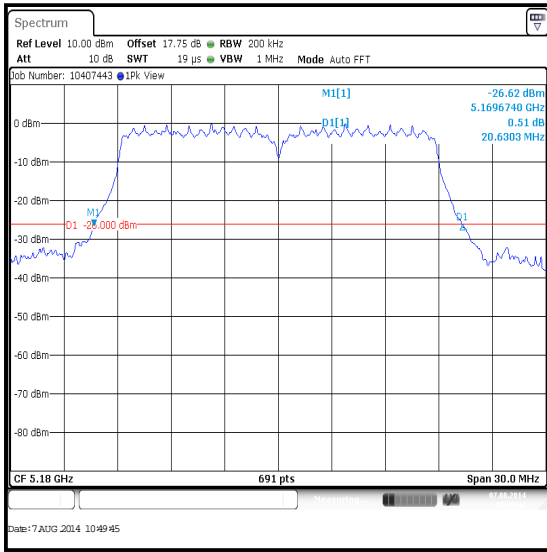


Top Channel

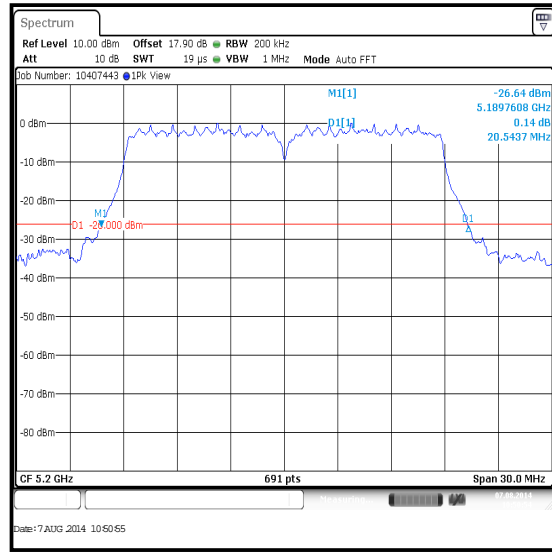
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / MIMO / 5.15-5.25 GHz band / Port 2

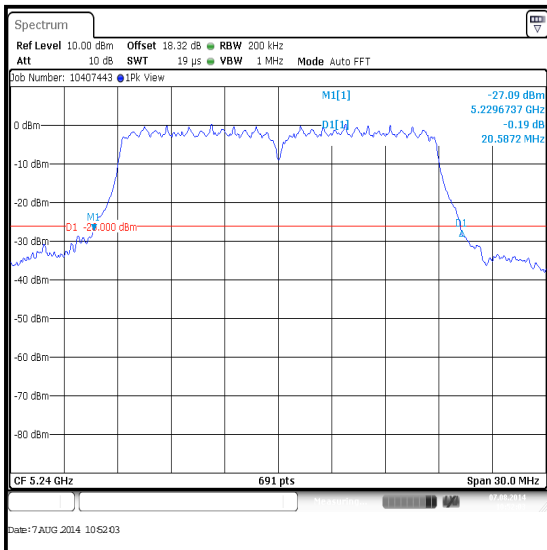
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5180 | BPSK | 6.5 / 0 | 20.630 |
| Middle | 5200 | BPSK | 6.5 / 0 | 20.544 |
| Top | 5240 | BPSK | 6.5 / 0 | 20.587 |



Bottom Channel



Middle Channel

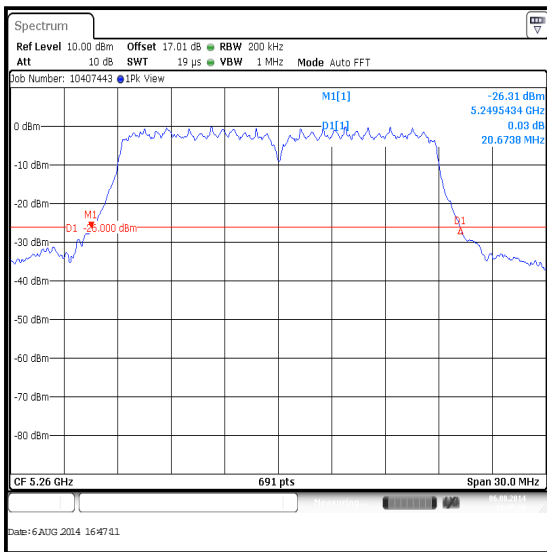


Top Channel

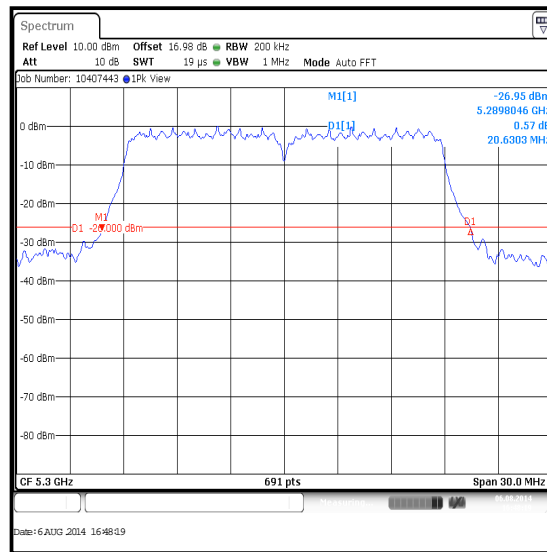
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / MIMO / 5.25-5.35 GHz band / Port 2

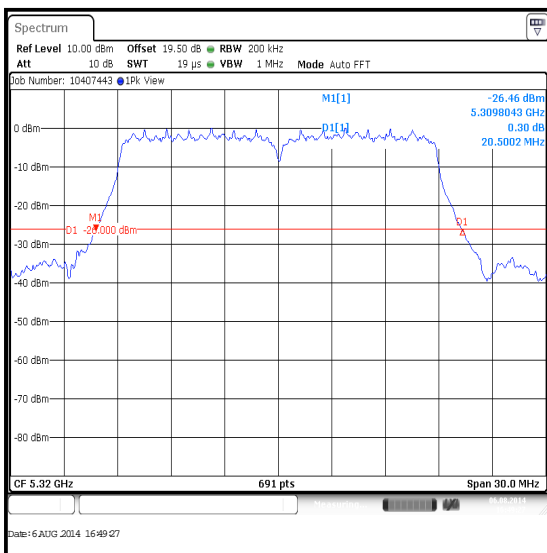
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5260 | BPSK | 6.5 / 0 | 20.674 |
| Middle | 5300 | BPSK | 6.5 / 0 | 20.630 |
| Top | 5320 | BPSK | 6.5 / 0 | 20.500 |



Bottom Channel



Middle Channel

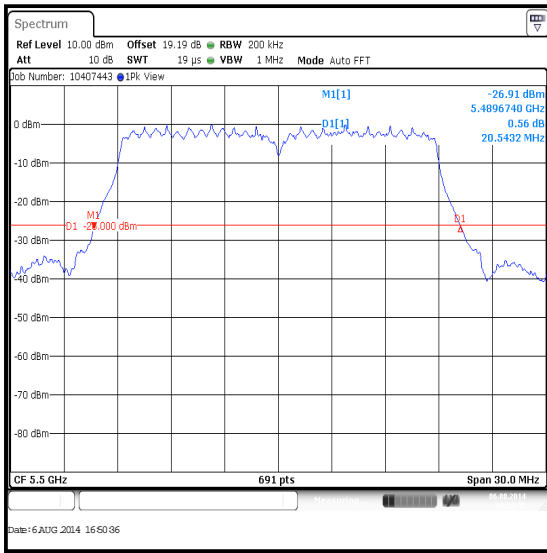


Top Channel

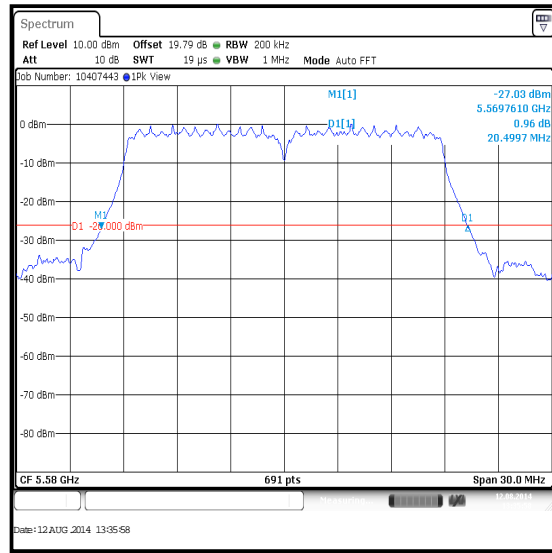
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / MIMO / 5.47-5.725 GHz band / Port 2

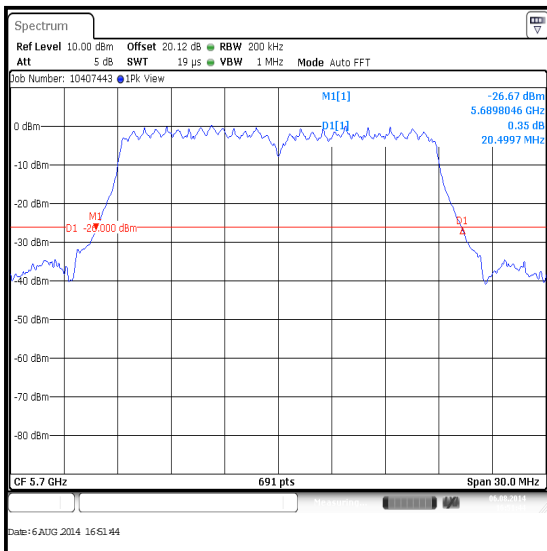
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5500 | BPSK | 6.5 / 0 | 20.543 |
| Middle | 5580 | BPSK | 6.5 / 0 | 20.500 |
| Top | 5700 | BPSK | 6.5 / 0 | 20.500 |



Bottom Channel



Middle Channel

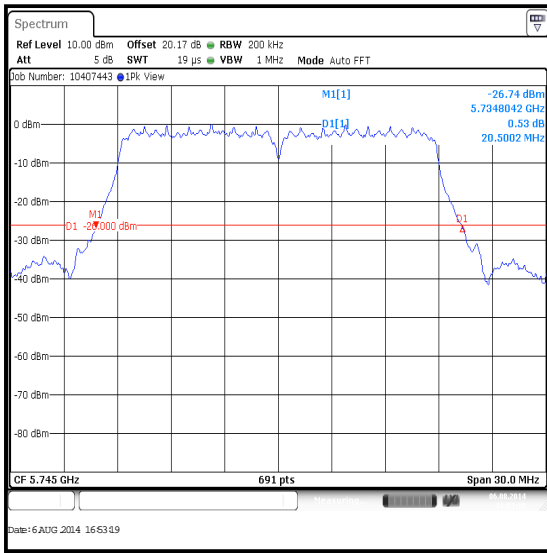


Top Channel

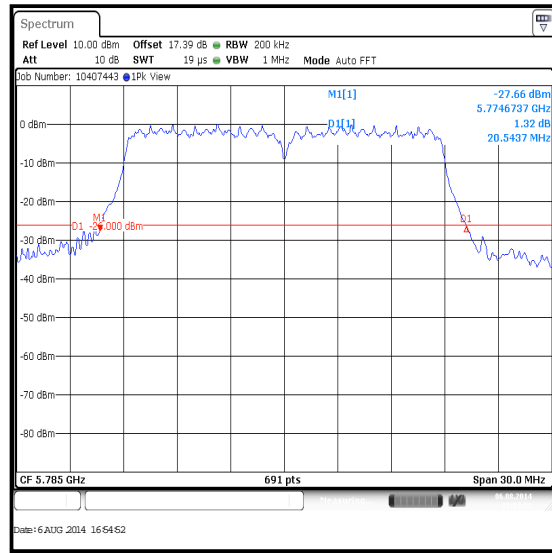
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / MIMO / 5.725-5.85 GHz band / Port 2

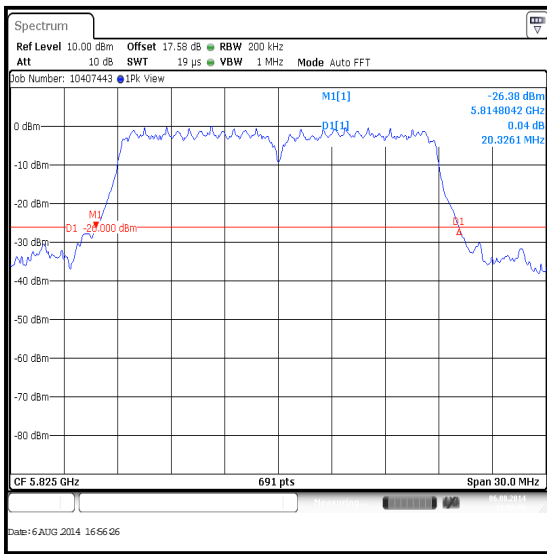
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5745 | BPSK | 6.5 / 0 | 20.500 |
| Middle | 5785 | BPSK | 6.5 / 0 | 20.544 |
| Top | 5825 | BPSK | 6.5 / 0 | 20.326 |



Bottom Channel



Middle Channel

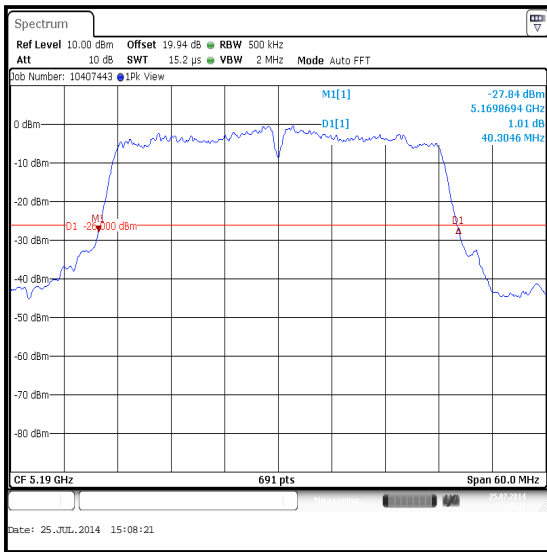


Top Channel

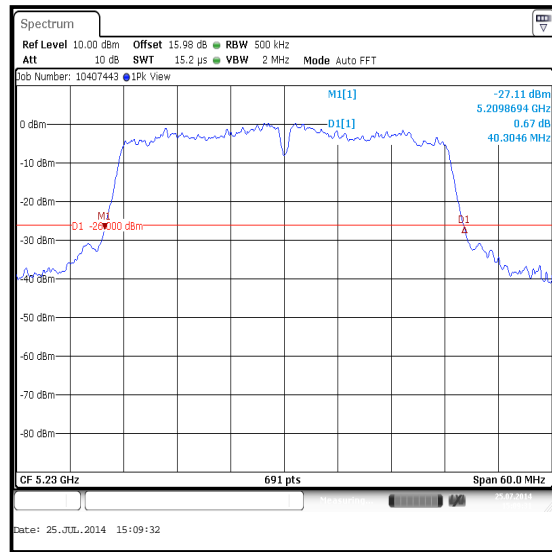
Transmitter 26 dB Emission Bandwidth (continued)

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 | 40.305 |
| Top | 5230 | BPSK | 13.5 / 0 | 40.305 |



Bottom Channel

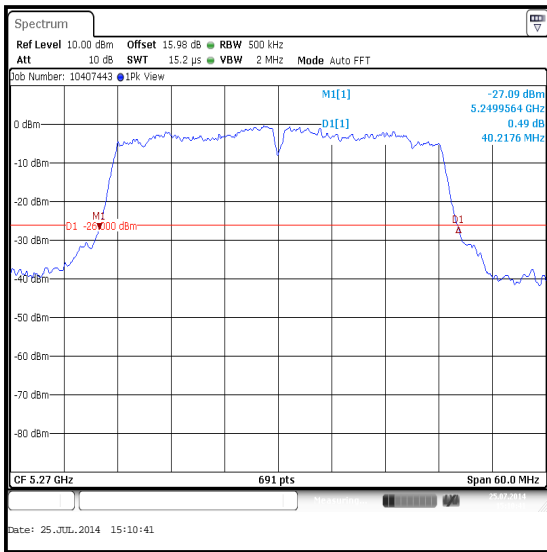


Top Channel

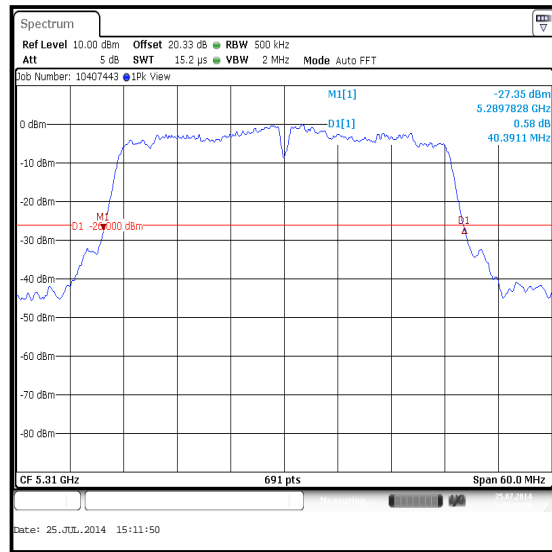
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 40 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 | 5270 | BPSK | 13.5 / 0 | 40.218 |
| Top | 5310 | BPSK | 13.5 / 0 | 40.391 |



Bottom Channel

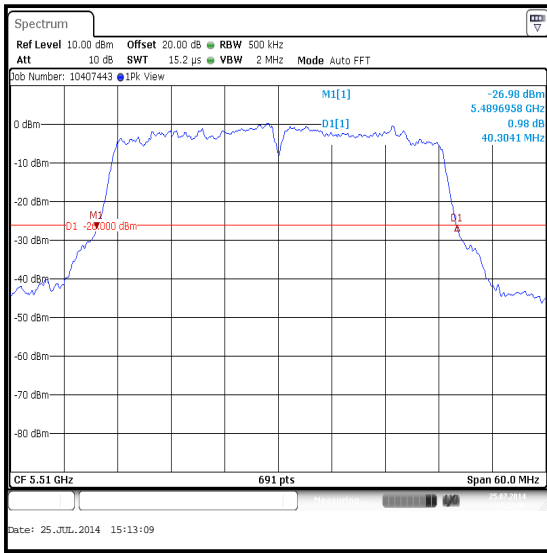


Top Channel

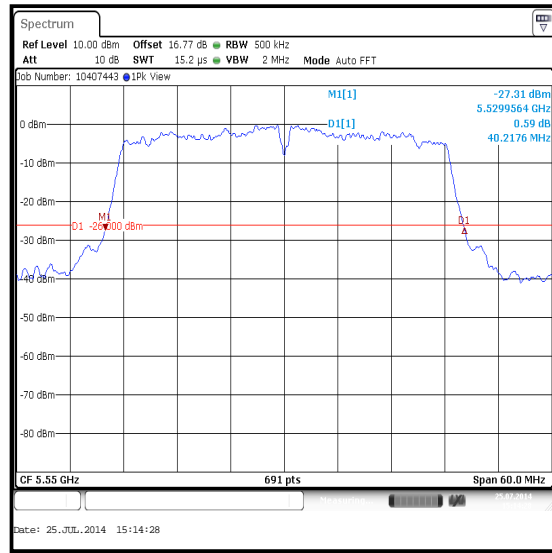
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 40 MHz / MIMO / 5.47-5.725 GHz band / Port 1

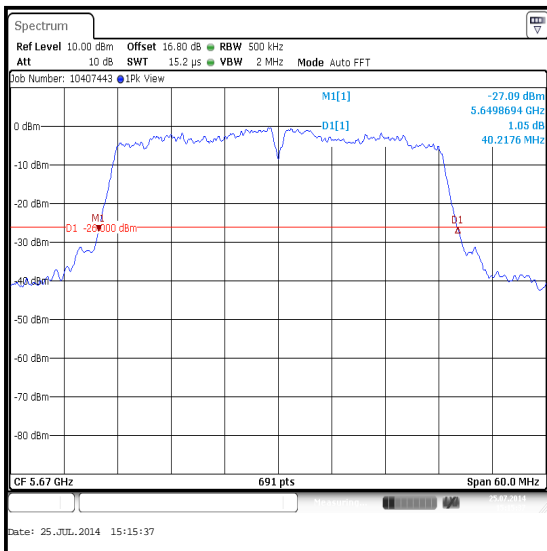
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5510 | BPSK | 13.5 / 0 | 40.304 |
| Middle | 5550 | BPSK | 13.5 / 0 | 40.218 |
| Top | 5670 | BPSK | 13.5 / 0 | 40.218 |



Bottom Channel



Middle Channel

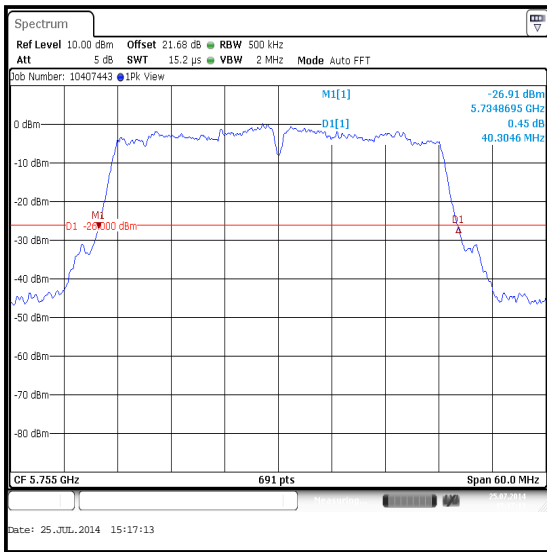


Top Channel

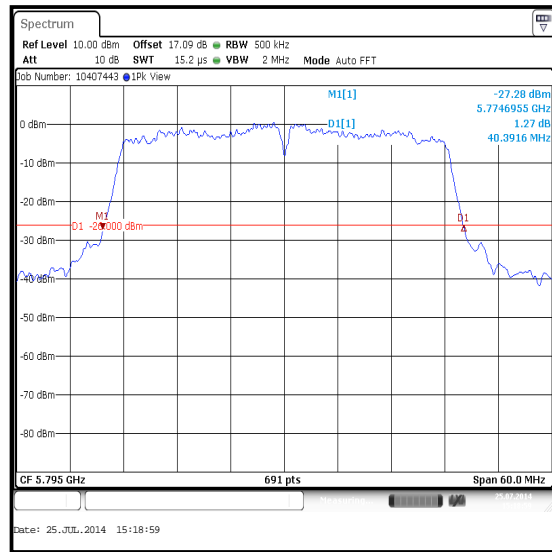
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 40 MHz / MIMO / 5.725-5.85 GHz band / Port 1

| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5755 | BPSK | 13.5 / 0 | 40.305 |
| Top | 5795 | BPSK | 13.5 / 0 | 40.392 |



Bottom Channel

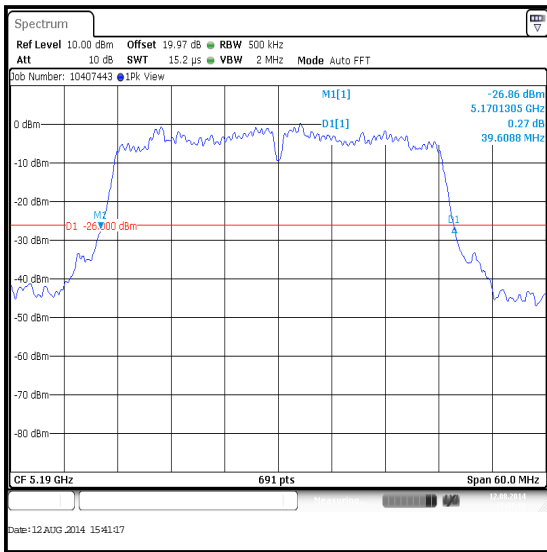


Top Channel

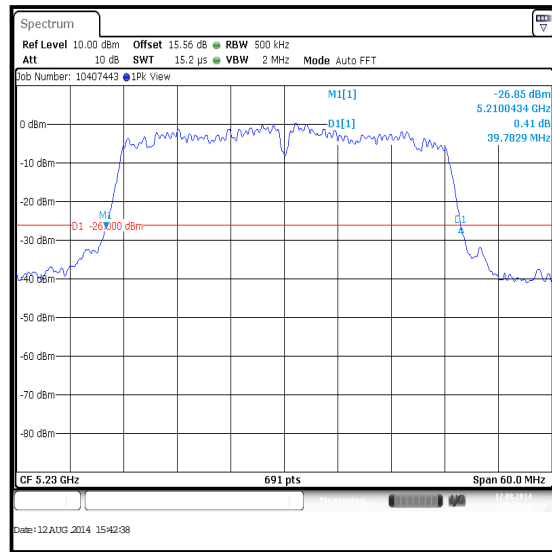
Transmitter 26 dB Emission Bandwidth (continued)

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 | 39.609 |
| Top | 5230 | BPSK | 13.5 / 0 | 39.783 |



Bottom Channel

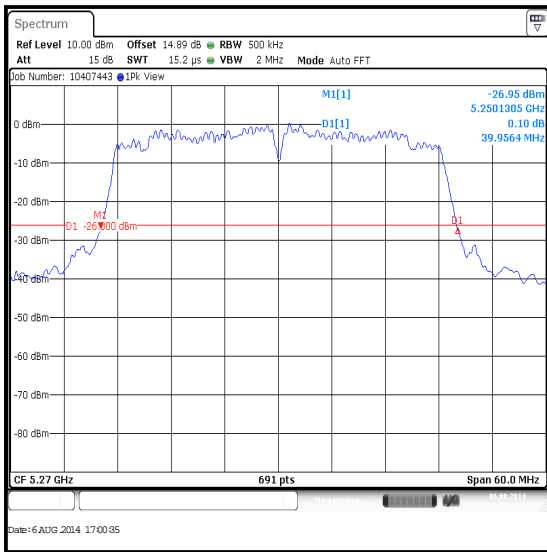


Top Channel

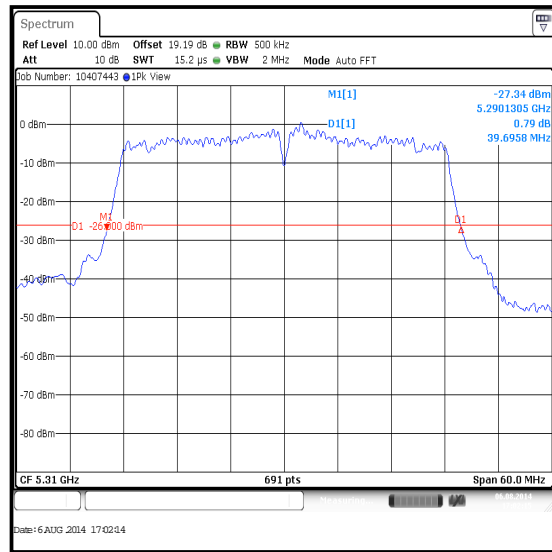
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 40 MHz / MIMO / 5.25-5.35 GHz band / Port 2

| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5270 | BPSK | 13.5 / 0 | 39.956 |
| Top | 5310 | BPSK | 13.5 / 0 | 39.696 |



Bottom Channel

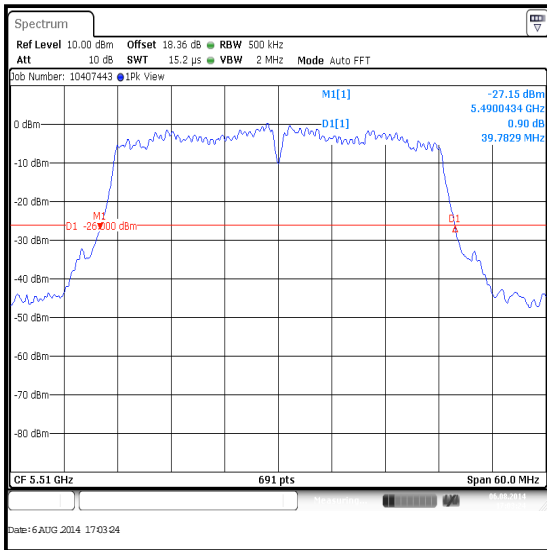


Top Channel

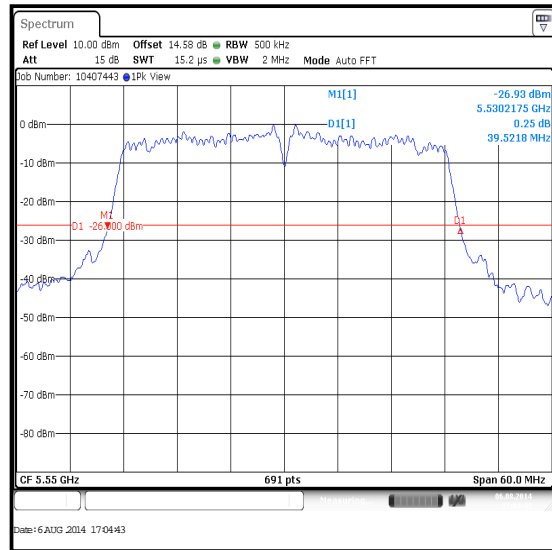
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 40 MHz / MIMO / 5.47-5.725 GHz band / Port 2

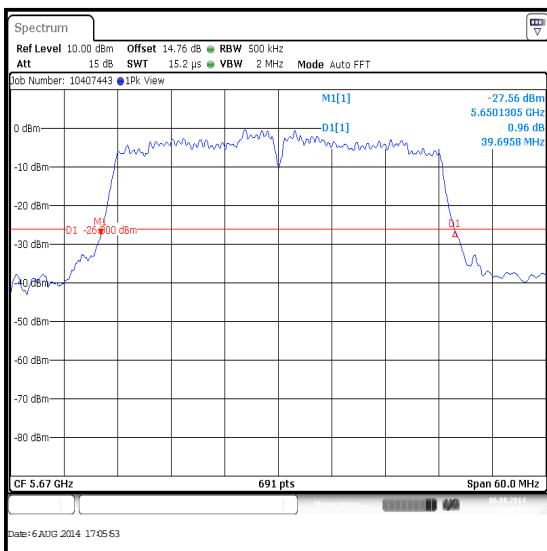
| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5510 | BPSK | 13.5 / 0 | 39.783 |
| Middle | 5550 | BPSK | 13.5 / 0 | 39.522 |
| Top | 5670 | BPSK | 13.5 / 0 | 39.696 |



Bottom Channel



Middle Channel

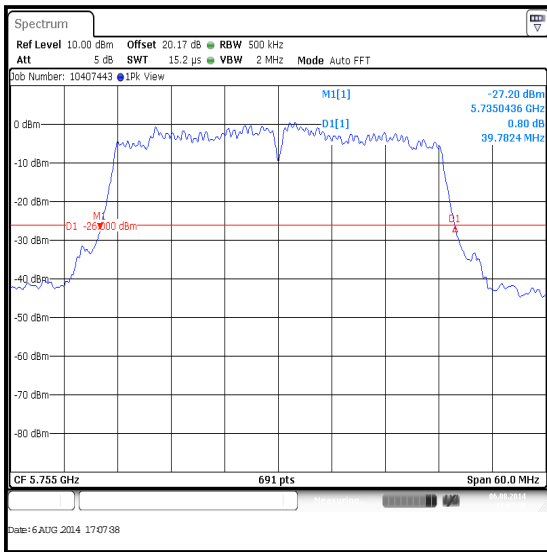


Top Channel

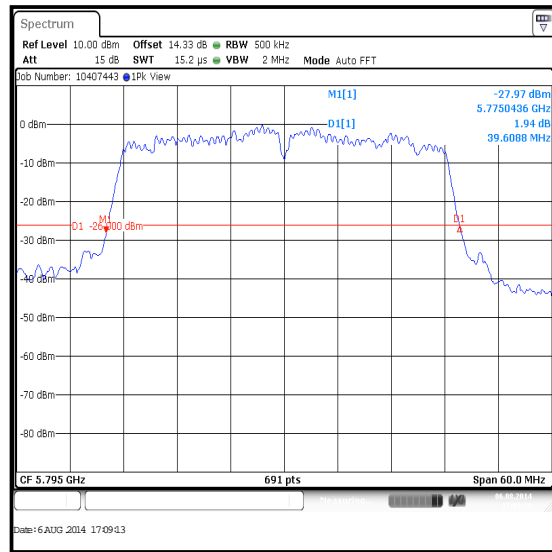
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 40 MHz / MIMO / 5.725-5.85 GHz band / Port 2

| Channel | Frequency (MHz) | Modulation scheme | Data Rate Mbps / MCS | 26 dB Emission Bandwidth (MHz) |
|---------|-----------------|-------------------|----------------------|--------------------------------|
| Bottom | 5755 | BPSK | 13.5 / 0 | 39.782 |
| Top | 5795 | BPSK | 13.5 / 0 | 39.609 |



Bottom Channel



Top Channel

Test Equipment Used:

| Asset No. | Instrument | Manufacturer | Type No. | Serial No. | Date Calibration Due | Cal. Interval (Months) |
|-----------|------------------|-----------------|------------|-------------|-----------------------|------------------------|
| M1658 | Thermohygrometer | JM Handelspunkt | 30.5015.13 | None stated | 14 Mar 2015 | 12 |
| L1128 | Signal Analyser | Rohde & Schwarz | FSV13 | 101835 | 25 Apr 2015 | 12 |
| A1998 | Attenuator | Huber & Suhner | 6820.17.B | 07101 | Calibrated before use | - |
| S0558 | DC Power Supply | TTI | EL 303R | 395825 | Calibrated before use | - |
| M1251 | Multimeter | Fluke | 175 | 89170179 | 19 May 2015 | 12 |

5.2.3. Transmitter Minimum 6 dB Bandwidth (5.725-5.85 GHz band)**Test Summary:**

| | | | |
|--------------------------|-----------------|--------------------|----------------------------------|
| Test Engineer: | Nick Steele | Test Dates: | 25 July 2015 & 06 August 2014 |
| Test Sample IMEI: | 352025060005387 | | |

| | |
|--------------------------|---|
| FCC Reference: | Part 15.407(e) |
| Test Method Used: | As detailed in KDB 789033 D02 Section II.C.2. |

Environmental Conditions:

| | |
|-------------------------------|----------|
| Temperature (°C): | 23 to 25 |
| Relative Humidity (%): | 39 to 44 |

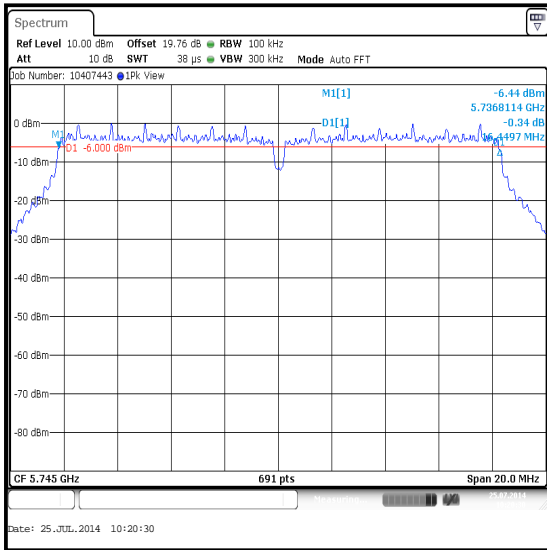
Note(s):

1. The customer declared the following data rates to be used for all measurements as:
 - o 802.11a – BPSK / 6 Mbps
 - o 802.11n HT20 SISO – BPSK / 6.5 Mbps / MCS0
 - o 802.11n HT40 SISO – BPSK / 13.5 Mbps / MCS0
 - o 802.11n HT20 MIMO – BPSK / 6.5 Mbps / MCS0
 - o 802.11n HT40 MIMO – BPSK / 13.5 Mbps / MCS0
2. Final measurements were performed using the above configurations on the bottom, middle and top channels in accordance with KDB 789033 Section II.C.2. Minimum Emission Bandwidth for the band 5.725-5.85 GHz measurement procedure.
3. The signal analyser was connected to the RF port on the EUT using suitable attenuation and RF cable.

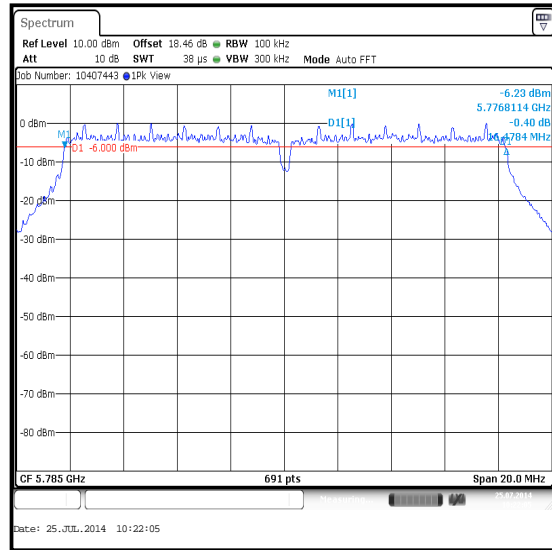
Transmitter Minimum 6 dB Bandwidth (5.725-5.85 GHz band) (continued)

Results: 802.11a / 20 MHz / BPSK / 6 Mbps / Port 1

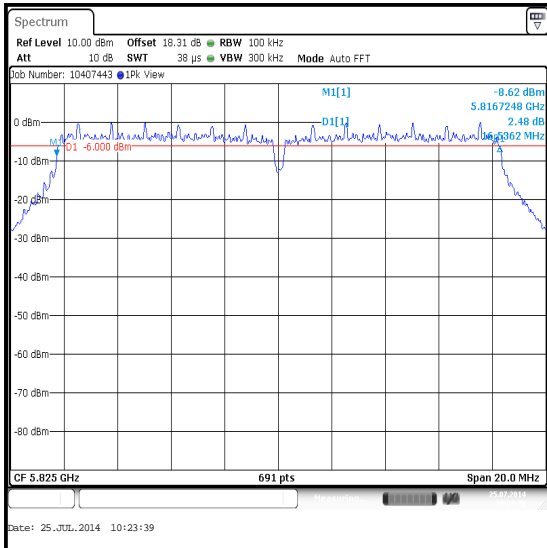
| Channel | 6 dB Bandwidth (kHz) | Limit (kHz) | Margin (kHz) | Result |
|---------|----------------------|-------------|--------------|----------|
| Bottom | 16450 | ≥500 | 15950 | Complied |
| Middle | 16478 | ≥500 | 15978 | Complied |
| Top | 16536 | ≥500 | 16036 | Complied |



Bottom Channel



Middle Channel

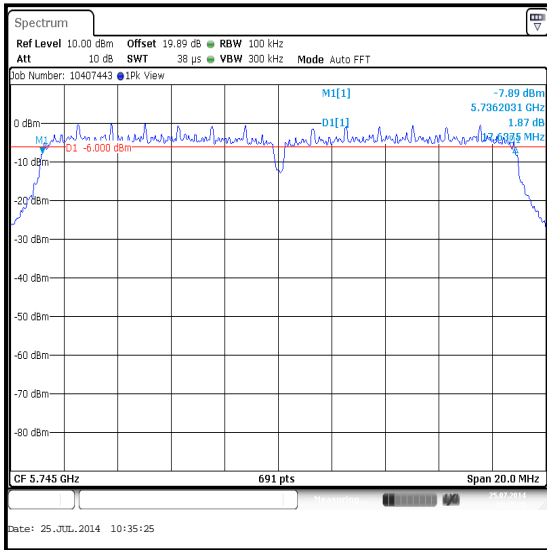


Top Channel

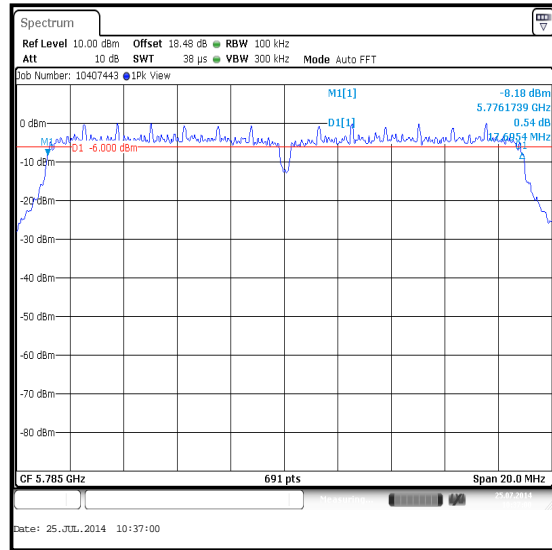
Transmitter Minimum 6 dB Bandwidth (5.725-5.85 GHz band) (continued)

Results: 802.11n / 20 MHz / SISO / BPSK / MCS0 / Port 1

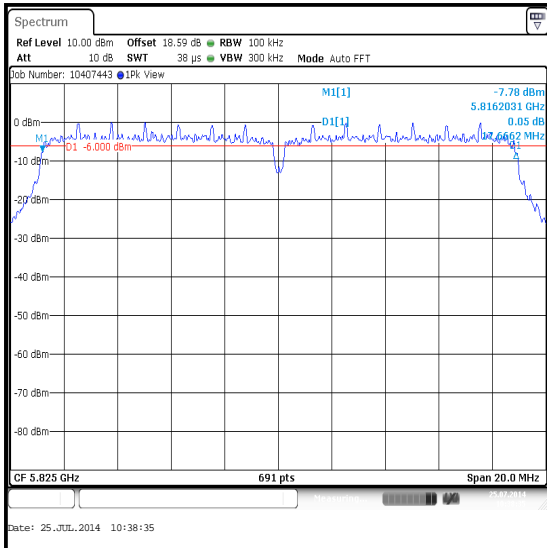
| Channel | 6 dB Bandwidth (kHz) | Limit (kHz) | Margin (kHz) | Result |
|---------|----------------------|-------------|--------------|----------|
| Bottom | 17638 | ≥500 | 17138 | Complied |
| Middle | 17695 | ≥500 | 17195 | Complied |
| Top | 17666 | ≥500 | 17166 | Complied |



Bottom Channel



Middle Channel

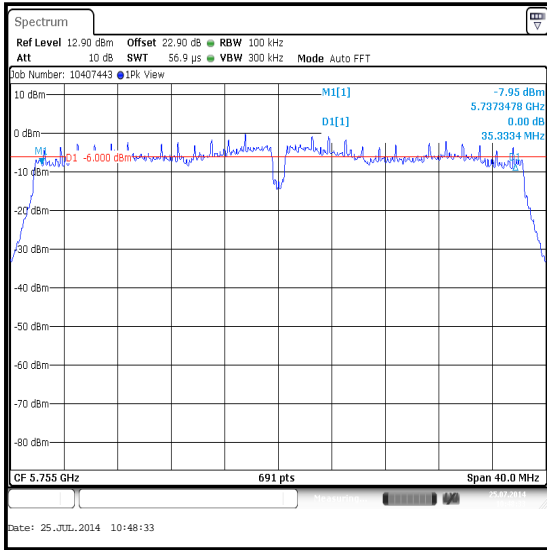


Top Channel

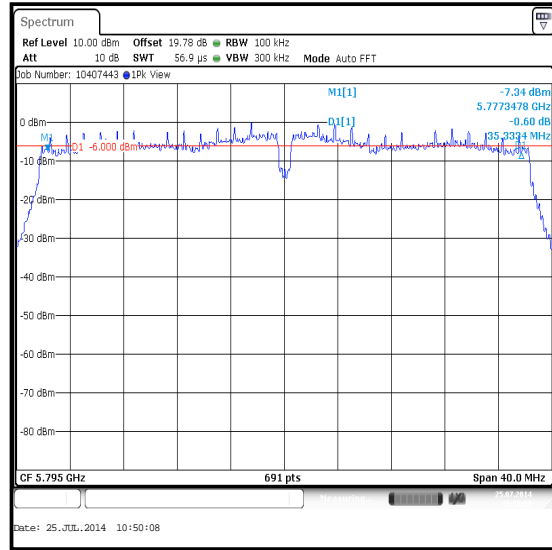
Transmitter Minimum 6 dB Bandwidth (5.725-5.85 GHz band) (continued)

Results: 802.11n / 40 MHz / SISO / BPSK / MCS0 / Port 1

| Channel | 6 dB Bandwidth (kHz) | Limit (kHz) | Margin (kHz) | Result |
|---------|----------------------|-------------|--------------|----------|
| Bottom | 35333 | ≥500 | 34833 | Complied |
| Top | 35333 | ≥500 | 34833 | Complied |



Bottom Channel

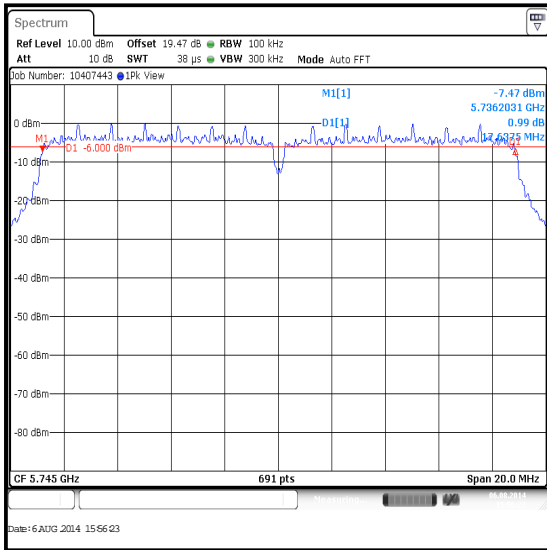


Top Channel

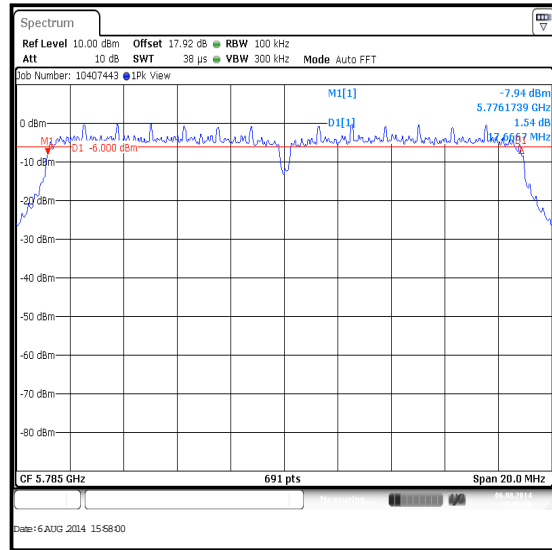
Transmitter Minimum 6 dB Bandwidth (5.725-5.85 GHz band) (continued)

Results: 802.11n / 20 MHz / SISO / BPSK / MCS0 / Port 2

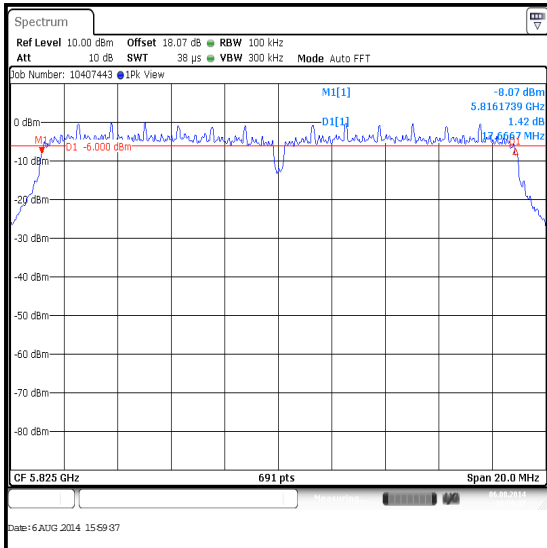
| Channel | 6 dB Bandwidth (kHz) | Limit (kHz) | Margin (kHz) | Result |
|---------|----------------------|-------------|--------------|----------|
| Bottom | 17638 | ≥500 | 17138 | Complied |
| Middle | 17667 | ≥500 | 17167 | Complied |
| Top | 17667 | ≥500 | 17167 | Complied |



Bottom Channel



Middle Channel

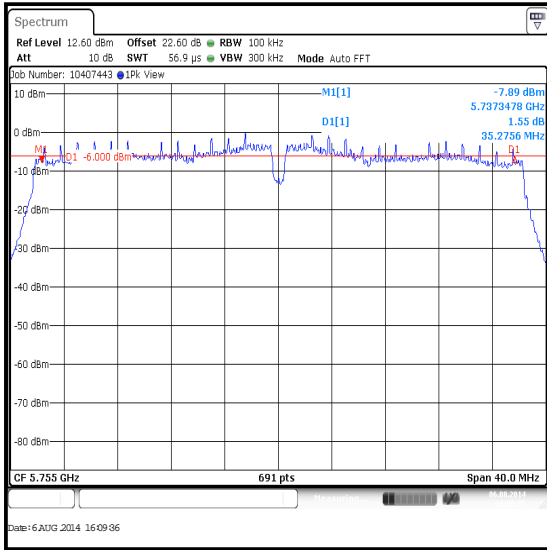


Top Channel

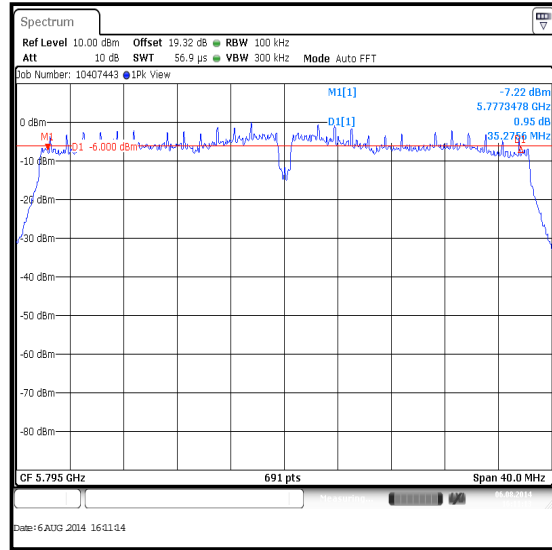
Transmitter Minimum 6 dB Bandwidth (5.725-5.85 GHz band) (continued)

Results: 802.11n / 40 MHz / SISO / BPSK / MCS0 / Port 2

| Channel | 6 dB Bandwidth (kHz) | Limit (kHz) | Margin (kHz) | Result |
|---------|----------------------|-------------|--------------|----------|
| Bottom | 35276 | ≥500 | 34776 | Complied |
| Top | 35276 | ≥500 | 34776 | Complied |



Bottom Channel

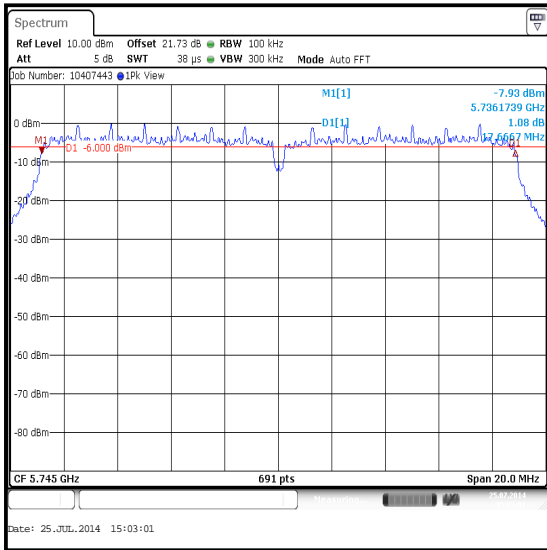


Top Channel

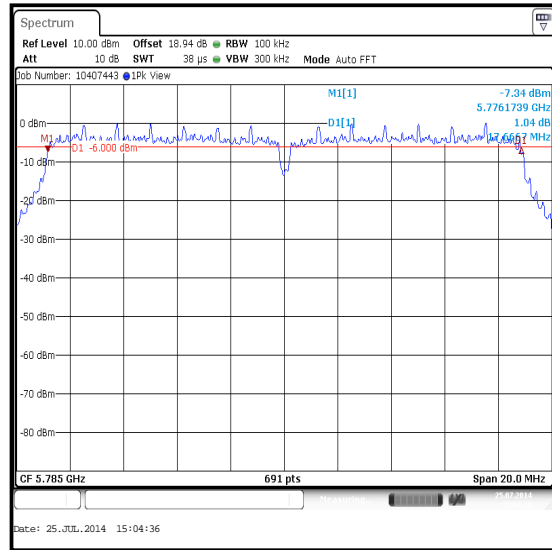
Transmitter Minimum 6 dB Bandwidth (5.725-5.85 GHz band) (continued)

Results: 802.11n / 20 MHz / MIMO / BPSK / MCS0 / Port 1

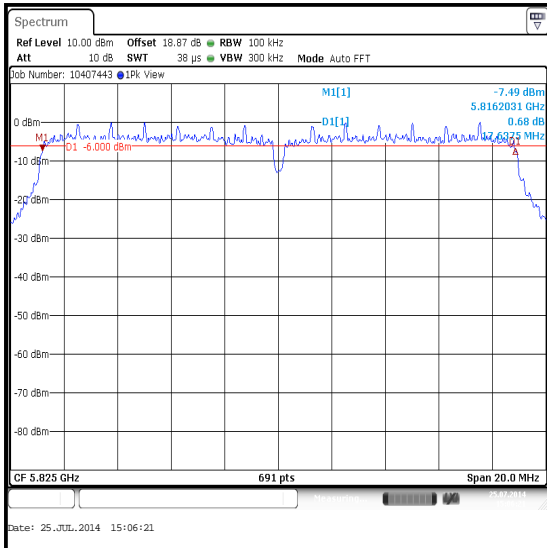
| Channel | 6 dB Bandwidth (kHz) | Limit (kHz) | Margin (kHz) | Result |
|---------|----------------------|-------------|--------------|----------|
| Bottom | 17667 | ≥500 | 17167 | Complied |
| Middle | 17667 | ≥500 | 17167 | Complied |
| Top | 17638 | ≥500 | 17138 | Complied |



Bottom Channel



Middle Channel

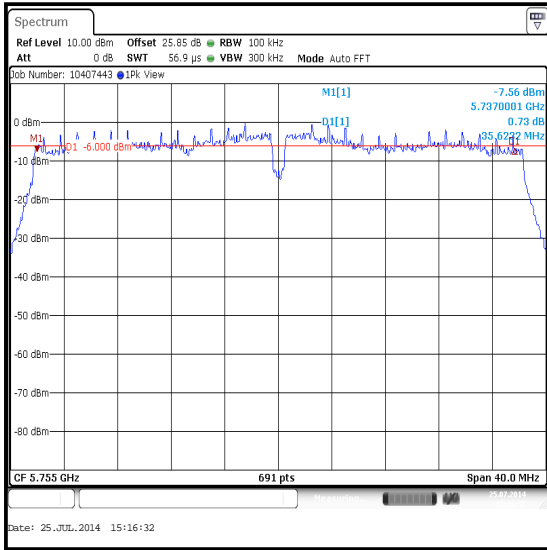


Top Channel

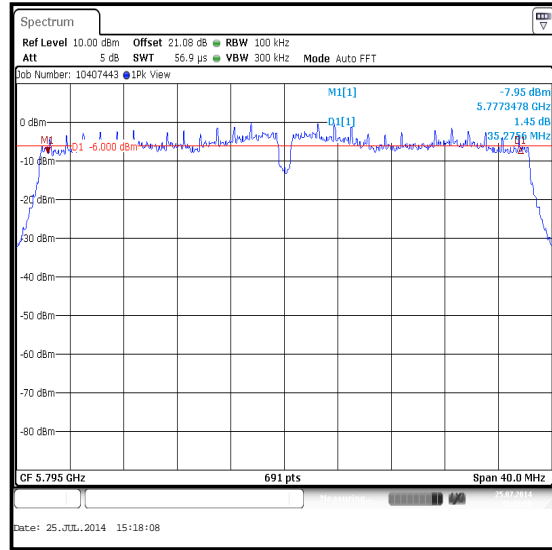
Transmitter Minimum 6 dB Bandwidth (5.725-5.85 GHz band) (continued)

Results: 802.11n / 40 MHz / MIMO / BPSK / MCS0 / Port 1

| Channel | 6 dB Bandwidth (kHz) | Limit (kHz) | Margin (kHz) | Result |
|---------|----------------------|-------------|--------------|----------|
| Bottom | 35623 | ≥500 | 35123 | Complied |
| Top | 35276 | ≥500 | 34776 | Complied |



Bottom Channel

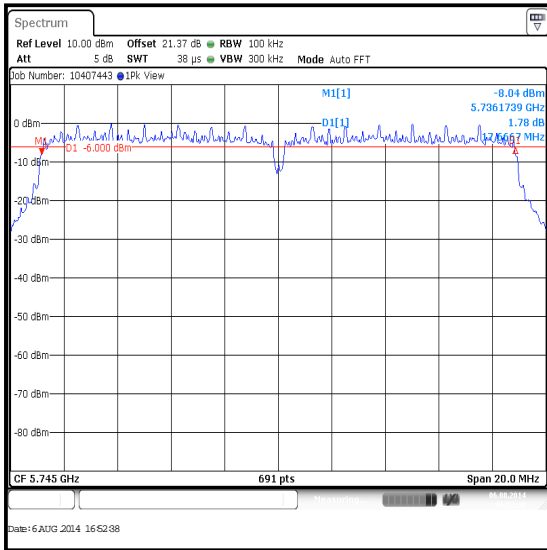


Top Channel

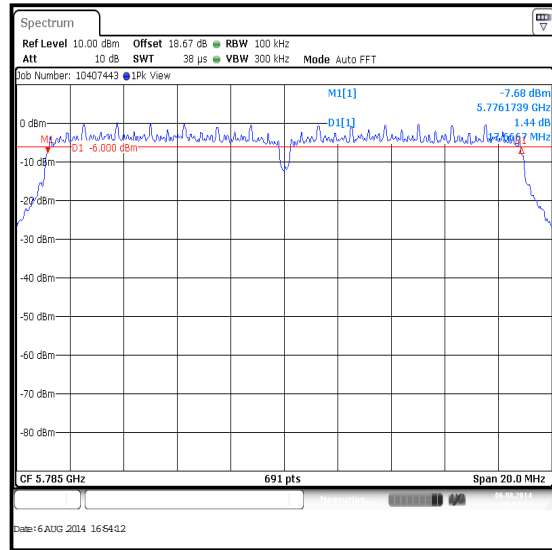
Transmitter Minimum 6 dB Bandwidth (5.725-5.85 GHz band) (continued)

Results: 802.11n / 20 MHz / MIMO / BPSK / MCS0 / Port 2

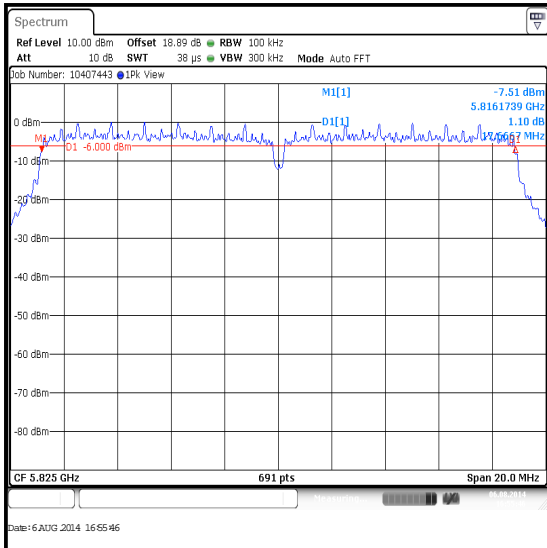
| Channel | 6 dB Bandwidth (kHz) | Limit (kHz) | Margin (kHz) | Result |
|---------|----------------------|-------------|--------------|----------|
| Bottom | 17667 | ≥500 | 17167 | Complied |
| Middle | 17667 | ≥500 | 17167 | Complied |
| Top | 17667 | ≥500 | 17167 | Complied |



Bottom Channel



Middle Channel

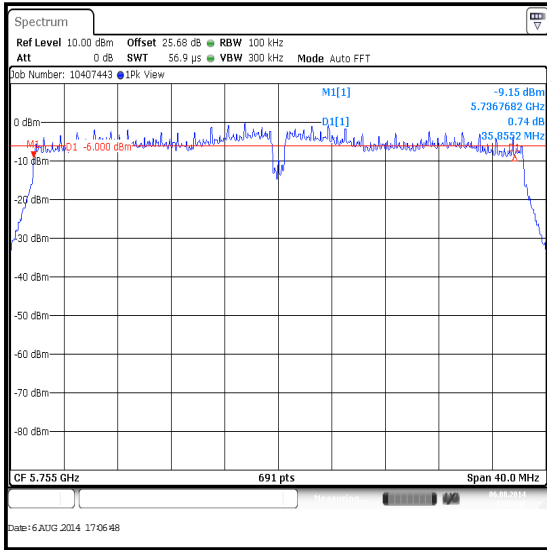


Top Channel

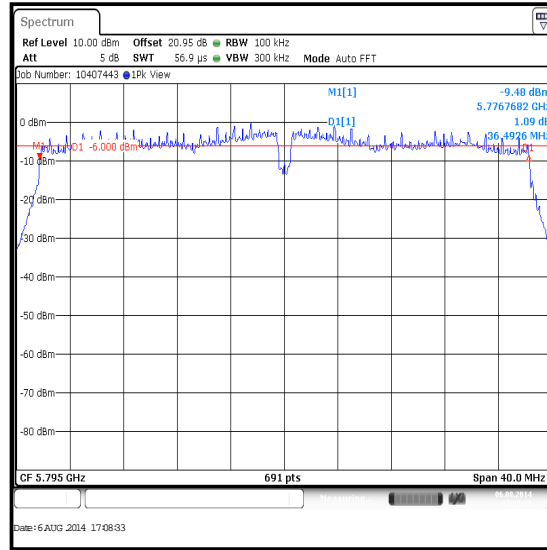
Transmitter Minimum 6 dB Bandwidth (5.725-5.85 GHz band) (continued)

Results: 802.11n / 40 MHz / MIMO / BPSK / MCS0 / Port 2

| Channel | 6 dB Bandwidth (kHz) | Limit (kHz) | Margin (kHz) | Result |
|---------|----------------------|-------------|--------------|----------|
| Bottom | 35855 | ≥500 | 35355 | Complied |
| Top | 36493 | ≥500 | 35993 | Complied |



Bottom Channel



Top Channel

Test Equipment Used:

| Asset No. | Instrument | Manufacturer | Type No. | Serial No. | Date Calibration Due | Cal. Interval (Months) |
|-----------|------------------|-------------------|------------|-------------|-----------------------|------------------------|
| M1658 | Thermohygrometer | JM Handlungspunkt | 30.5015.13 | None stated | 14 Mar 2015 | 12 |
| L1128 | Signal Analyser | Rohde & Schwarz | FSV13 | 101835 | 25 Apr 2015 | 12 |
| A1998 | Attenuator | Huber & Suhner | 6820.17.B | 07101 | Calibrated before use | - |
| S0558 | DC Power Supply | TTI | EL 303R | 395825 | Calibrated before use | - |
| M1251 | Multimeter | Fluke | 175 | 89170179 | 19 May 2015 | 12 |

5.2.4. Transmitter Duty Cycle**Test Summary:**

| | | | |
|--------------------------|-----------------|-------------------|--------------|
| Test Engineer: | Nick Steele | Test Date: | 24 July 2014 |
| Test Sample IMEI: | 352025060005387 | | |

| | |
|--------------------------|---|
| FCC Reference: | Part 15.35(c) |
| Test Method Used: | As detailed in KDB 789033 D02 Section II.B.2.b) |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 23 |
| Relative Humidity (%): | 40 |

Note(s):

- In order to assist with the determination of the average level of fundamental and spurious emissions field strength, measurements were made of duty cycle to determine the transmission duration and the silent period time of the transmitter. The transmitter duty cycle was measured using a spectrum analyser in the time domain and calculated by using the following calculation:

$$10 \log 1 / (\text{On Time} / [\text{Period or } 100\text{ms whichever is the lesser}]).$$

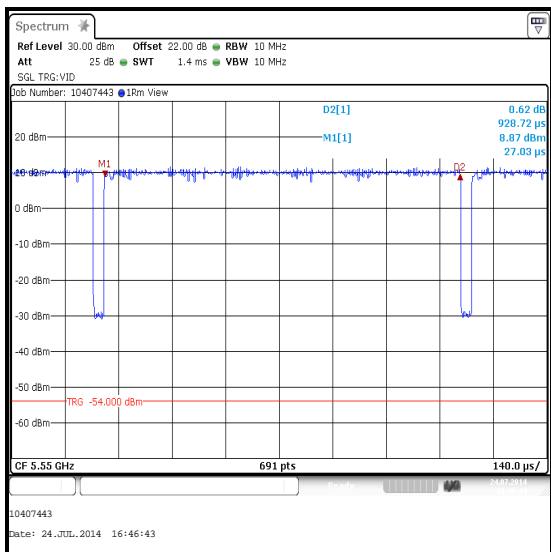
$$802.11n / 13.5 \text{ Mbps duty cycle: } 10 \log (1 / (0.929/0.961)) = 0.1$$

- For all other data rates the duty cycle was measured to be greater than 98%.

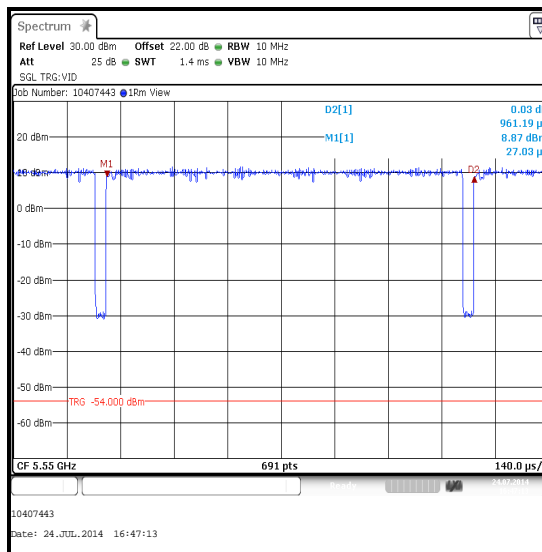
Transmitter Duty Cycle (continued)

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0

| | |
|--------------------------------|----------------------------|
| Pulse Duration (µs) | Duty Cycle (dB) |
| 928.72 | 0.1 |
| Period (µs) | |
| 961.19 | |



TX on time



TX on + off time

Test Equipment Used:

| Asset No. | Instrument | Manufacturer | Type No. | Serial No. | Date Calibration Due | Cal. Interval (Months) |
|-----------|------------------|-----------------|------------|-------------|-----------------------|------------------------|
| M1658 | Thermohygrometer | JM Handelpunkt | 30.5015.13 | None stated | 14 Mar 2015 | 12 |
| L1128 | Signal Analyser | Rohde & Schwarz | FSV13 | 101835 | 25 Apr 2015 | 12 |
| A1998 | Attenuator | Huber & Suhner | 6820.17.B | 07101 | Calibrated before use | - |
| S0558 | DC Power Supply | TTI | EL 303R | 395825 | Calibrated before use | - |
| M1251 | Multimeter | Fluke | 175 | 89170179 | 19 May 2015 | 12 |