



TEST REPORT

Test Report No. : UL-RPT-RP10014929JD04A

Manufacturer : Sony Mobile Communications AB
Type No. : PM-0470-BV
FCC ID : PY7PM-0470
Technology : WLAN
Test Standard(s) : FCC Parts 15.207, 15.209(a), 15.403(i) & 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: 01 August 2013

Checked by:

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Issued by :

pp

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The tests reported herein have been
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1. Customer Information

Company Name:	Sony Mobile Communications AB
Address:	Nya Vattentorget Lund SE-221 88 Sweden

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:	FCC: 209735
Location of Testing:	UL VS LTD, Unit 3 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom
Test Dates:	16 July 2013 to 25 July 2013

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 15.35(c)	Transmitter Duty Cycle	Note 1
Part 15.407(a)(1)	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)	Transmitter Peak Power Spectral Density (5.15-5.25 GHz band)	
Part 15.407(a)(2)	Transmitter Peak Power Spectral Density (5.25-5.35 GHz & 5.47-5.725 GHz bands)	
Part 15.407(a)(3)	Transmitter Peak Power Spectral Density (5.725-5.85 GHz band)	
Part 15.407(a)(6)	Transmitter Peak Excursion	
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 D01 v01r03 April 8, 2013
Title:	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E
Reference:	KDB 644545 D02 v01 6/7/2012
Title:	Alternative Guidance for IEEE 802.11ac and Pre-ac Device Emissions Testing

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:	Sony
IMEI:	004402451250389 (<i>Radiated sample #1</i>)
Serial Number:	CB5124VVEN
Hardware Version Number:	AP2
Software Version Number:	14.1.C.0.130
FCC ID:	PY7PM-0470

Brand Name:	Sony
IMEI:	004402451245827 (<i>Radiated sample #2</i>)
Serial Number:	CB5124VVCG
Hardware Version Number:	AP2
Software Version Number:	14.1.C.0.130
FCC ID:	PY7PM-0470

Brand Name:	Sony
IMEI:	004402451246254 (<i>Conducted sample</i>)
Serial Number:	CB5124VVKV
Hardware Version Number:	AP2
Software Version Number:	14.1.C.0.130
FCC ID:	PY7PM-0470

Brand Name:	Sony
Description:	AC Charger
Model Name or Number:	EP880

Brand Name:	Generic
Description:	MHL Cable
Model Name or Number:	Not marked or stated

Brand Name:	Sony
Description:	MHL Adaptor
Model Name or Number:	IM750

Identification of Equipment Under Test (EUT) (continued)

Brand Name:	Sony
Description:	Magnetic Plug
Model Name or Number:	EC21

Brand Name:	Sony
Description:	USB cable
Model Name or Number:	EC801

Brand Name:	Sony
Description:	PHF
Model Name or Number:	MH750

3.2. Description of EUT

The equipment under test (EUT) is a model of GSM/UMTS/LTE mobile phone with integrated antenna and inbuilt Li-Polymer battery.

The EUT supports GSM 850/900/1800/1900MHz bands, WCDMA FDD bands 1/2/5 and LTE FDD bands 1/3. It also supports GPRS service with multi-slots class 33 and EGPRS service with multi-slots class 33 too. The HSDPA and HSUPA features are also supported. It has MP3, camera, FM radio, USB memory, GPS receiver, NFC, Mobile High-Definition Link (MHL), Bluetooth (EDR and Bluetooth 4.0), WLAN (802.11 a/b/g/n/ac) and Wi-Fi hotspot functions.

The EUT supports DFS as a Client without Radar Detection.

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,ac) / U-NII		
Type of Unit:	Transceiver		
Modulation:	BPSK, QPSK, 16QAM, 64QAM, 256QAM		
Data rates:	802.11a	6, 9, 12, 18, 24, 36, 48 & 54 Mbps	
	802.11n HT20	MCS0 to MCS7 (1 spatial stream) GI = 800 ns or 400 ns Greenfield & Mixed modes	
	802.11n HT40	MCS0 to MCS7 (1 spatial stream) GI = 800 ns or 400 ns Greenfield & Mixed modes	
	802.11ac VHT20	MCS0 to MCS8 (1 spatial stream) GI = 800 ns or 400 ns Greenfield & Mixed modes	
	802.11ac VHT40	MCS0 to MCS9 (1 spatial stream) GI = 800 ns or 400 ns Greenfield & Mixed modes	
	802.11ac VHT80	MCS0 to MCS9 (1 spatial stream) GI = 800 ns or 400 ns Greenfield & Mixed modes	
Power Supply Requirement(s):	Nominal	3.8 VDC	
Antenna Gains:	5.15 to 5.35 GHz	-1.2 dBi	
	5.47 to 5.725 GHz	-0.6 dBi	
	5.725 to 5.85 GHz	-2.8 dBi	
Maximum Conducted Output Power:	20 MHz	17.6 dBm	
	40 MHz	16.8 dBm	
	80 MHz	15.9 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	56	5280
	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	118	5590
	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

Additional Information Related to Testing (continued)

Channel Spacing:	80 MHz		
Transmit Frequency Band:	5150 MHz to 5250 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Single	42	5210
Transmit Frequency Band:	5250 MHz to 5350 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Single	58	5290
Transmit Frequency Band:	5470 MHz to 5725 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Single	106	5530
Transmit Frequency Band:	5725 MHz to 5850 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Single	155	5775

3.5. Support Equipment

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

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

Description:	2 GB Micro SD Card
Brand Name:	Not marked or stated
Model Name or Number:	Not marked or stated

Brand Name:	Logik
Description:	22" High Definition Television
Model Name or Number:	L22FE12A
Serial Number:	1309020661

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.
- All supported modes and channel widths were initially investigated on one channel. The modes that produced the highest power and widest bandwidth for all bands were:
 - Highest power
 - 802.11a – QPSK / 12 Mbps
 - 802.11n HT20 – QPSK / 19.5 Mbps / MCS2 (GI = 800 ns)
 - 802.11n HT40 – QPSK / 27 Mbps / MCS1 (GI = 800 ns)
 - 802.11ac VHT20 – BPSK / 7.2 Mbps / MCS0 (GI = 400 ns)
 - 802.11ac VHT40 – 64QAM / 120 Mbps / MCS5 (GI = 400 ns)
 - 802.11ac VHT80 – BPSK / 32.5 Mbps / MCS0 (GI = 400 ns)
 - Highest power spectral density
 - 802.11a – 64QAM / 54 Mbps
 - 802.11n HT20 – 16QAM / 28.9 Mbps / MCS3 (GI = 400 ns)
 - 802.11n HT40 – QPSK / 27 Mbps / MCS1 (GI = 800 ns)
 - 802.11ac VHT20 – BPSK / 7.2 Mbps / MCS0 (GI = 400 ns)
 - 802.11ac VHT40 – 64QAM / 120 Mbps / MCS5 (GI = 400 ns)
 - 802.11ac VHT80 – 64QAM / 325 Mbps / MCS7 (GI = 400 ns)
 - Widest bandwidth
 - 802.11a – QPSK / 12 Mbps
 - 802.11n HT20 – QPSK / 19.5 Mbps / MCS2 (GI = 800 ns)
 - 802.11n HT40 – 16QAM / 60 Mbps / MCS3 (GI = 400 ns)
 - 802.11ac VHT20 – QPSK / 14.4 Mbps / MCS1 (GI = 400 ns)
 - 802.11ac VHT40 – QPSK / 30 Mbps / MCS1 (GI = 400 ns)
 - 802.11ac VHT80 – 64QAM / 325 Mbps / MCS7 (GI = 400 ns)

Pre-scan results for all modes are archived on the Company server and available for inspection if required.

- 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.

Configuration and Peripherals

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

- Transmitter radiated spurious emission tests were performed with the following configurations, employing all available accessories:
 - Configuration 1 – Handset with the AC charger, USB Cable, MHL cable (terminated in to a television), MHL adaptor and PHF
 - Configuration 2 – Handset with the AC charger, Magnetic plug and PHF
- Pre-scans below 1 GHz were performed in both configurations 1 and 2, with final measurements limited to the configuration which provided worst case results. Pre-scans above 1 GHz were performed in the configuration that employed the most accessories (Configuration 1), with any final measurements being performed in both configurations.
- Transmitter spurious emissions were performed with the EUT transmitting with a data rate of 12 Mbps. 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.
- The conducted sample with IMEI 004402451246254 was used for 26 dB bandwidth, maximum output power, peak power spectral density and peak excursion tests.
- The radiated sample with IMEI 004402451245827 was used for radiated band edge emissions tests.
- The radiated sample with IMEI 004402451250389 was used for radiated emissions and AC conducted emissions.

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:	Mark Percival	Test Date:	24 July 2013
Test Sample IMEI:	004402451250389		

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):	22
Relative Humidity (%):	54

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

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.150	Live	54.2	66.0	11.8	Complied
0.154	Live	53.8	65.8	12.0	Complied
0.433	Live	42.9	57.2	14.3	Complied
1.446	Live	42.1	56.0	13.9	Complied
3.138	Live	37.8	56.0	18.2	Complied

Results: Live / Average

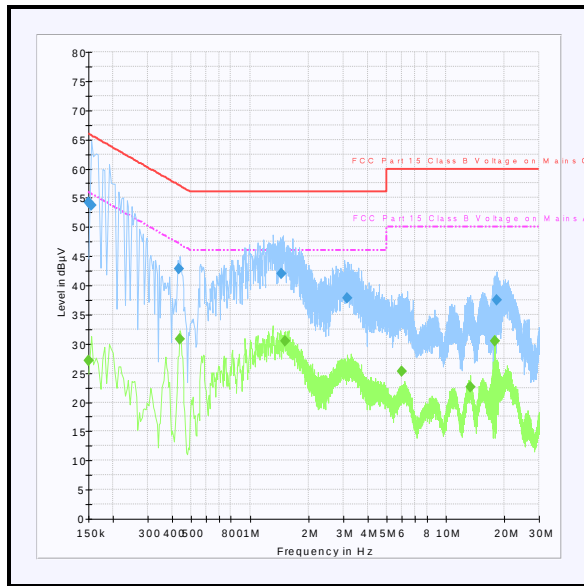
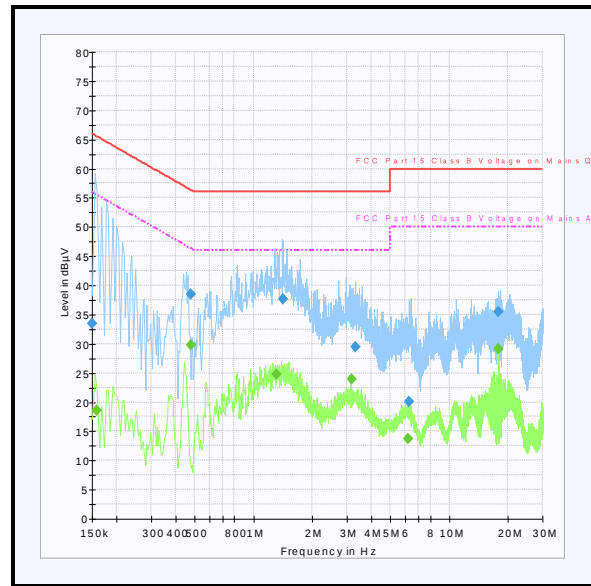
Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.150	Live	27.1	56.0	28.9	Complied
0.438	Live	30.7	47.1	16.4	Complied
1.509	Live	30.5	46.0	15.5	Complied
5.941	Live	25.3	50.0	24.7	Complied
17.817	Live	30.4	50.0	19.6	Complied

Results: Neutral / Quasi Peak

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.478	Neutral	38.4	56.4	18.0	Complied
1.419	Neutral	37.7	56.0	18.3	Complied
3.304	Neutral	29.5	56.0	26.5	Complied
17.799	Neutral	35.5	60.0	24.5	Complied

Results: Neutral / Average

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.478	Neutral	29.7	46.4	16.7	Complied
1.306	Neutral	24.8	46.0	21.2	Complied
3.178	Neutral	23.9	46.0	22.1	Complied
17.866	Neutral	29.2	50.0	20.8	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	Thermometer / Hygrometer station	JM Handelspunkt	30.5015.13	None stated	09 Jan 2014	12
A004	LISN	Rohde & Schwarz	ESH3-Z5	890604/027	30 Out 2013	12
A1830	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100668	19 Feb 2014	12
M1020	Test Receiver	Rohde & Schwarz	SME-03	834617/030	14 Dec 2013	12

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

Test Engineer:	Nick Steele	Test Date:	22 July 2013
Test Sample IMEI:	004402451246254		

FCC Reference:	Part 15.403(i)
Test Method Used:	As detailed in FCC KDB 789033 Section C)

Environmental Conditions:

Temperatures (°C):	23
Relative Humidity (%):	39

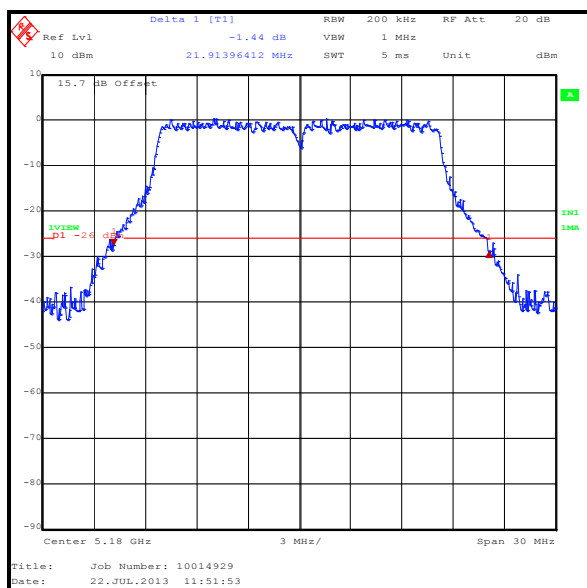
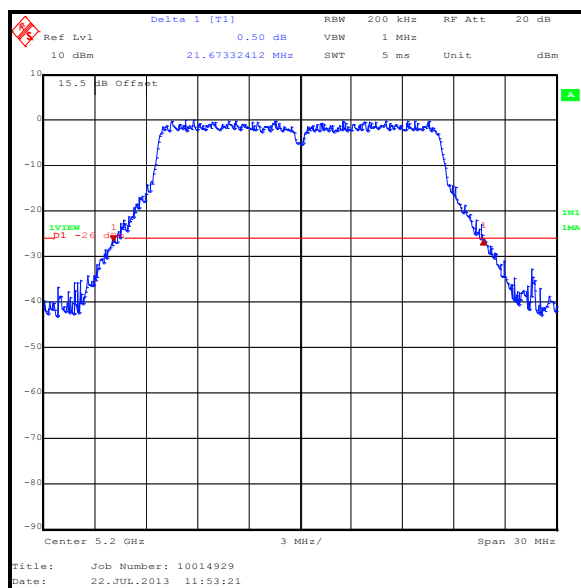
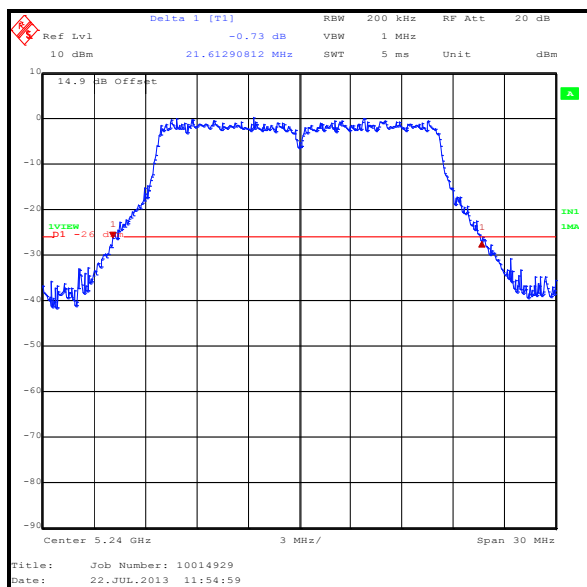
Note(s):

1. All configurations supported by the EUT were investigated on the one channel in accordance with KDB 789033 Section C Emission bandwidth test procedure. The data rates that produced the widest bandwidth and therefore deemed worst case were:
 - 802.11a – QPSK / 12 Mbps
 - 802.11n HT20 – QPSK / 19.5 Mbps / MCS2 (GI = 800 ns)
 - 802.11n HT40 – 16QAM / 60 Mbps / MCS3 (GI = 400 ns)
 - 802.11ac VHT20 – QPSK / 14.4 Mbps / MCS1 (GI = 400 ns)
 - 802.11ac VHT40 – QPSK / 30 Mbps / MCS1 (GI = 400 ns)
 - 802.11ac VHT80 – 64QAM / 325 Mbps / MCS7 (GI = 400 ns)
2. Final measurements were performed in each supported operating band using the above configurations on the bottom, middle and top or single channels.
3. Plots for all data rates are archived on the Company server and available for inspection upon request.
4. The test receiver was connected to the RF port on the EUT using suitable attenuation and RF cable.
5. For the power measurements in this report, the highest power output level was recorded when the EUT was configured as:
 - 802.11a – QPSK / 12 Mbps
 - 802.11n HT20 – QPSK / 19.5 Mbps / MCS2 (GI = 800 ns)
 - 802.11n HT40 – QPSK / 27 Mbps / MCS1 (GI = 800 ns)
 - 802.11ac VHT20 – BPSK / 7.2 Mbps / MCS0 (GI = 400 ns)
 - 802.11ac VHT40 – 64QAM / 120 Mbps / MCS5 (GI = 400 ns)
 - 802.11ac VHT80 – BPSK / 32.5 Mbps / MCS0 (GI = 400 ns)

Emission bandwidth plots in these configurations have been included as 'Reference plots' at the end of this Section and the results used for calculations in Section 5.2.4.

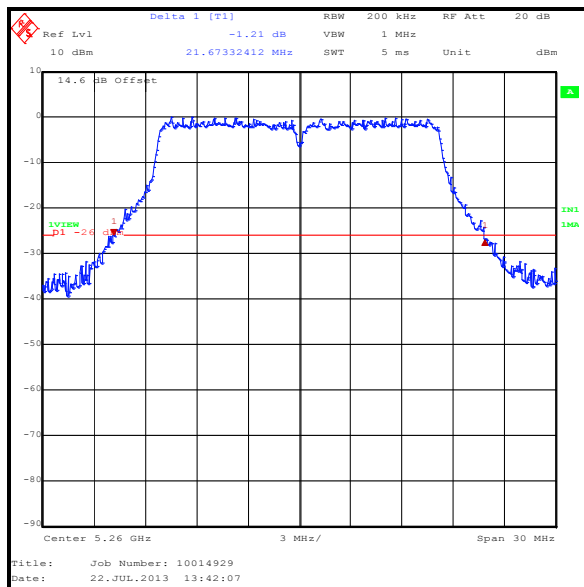
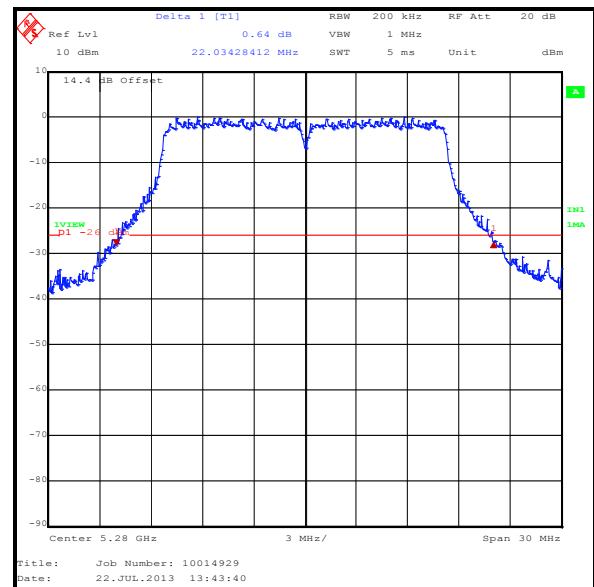
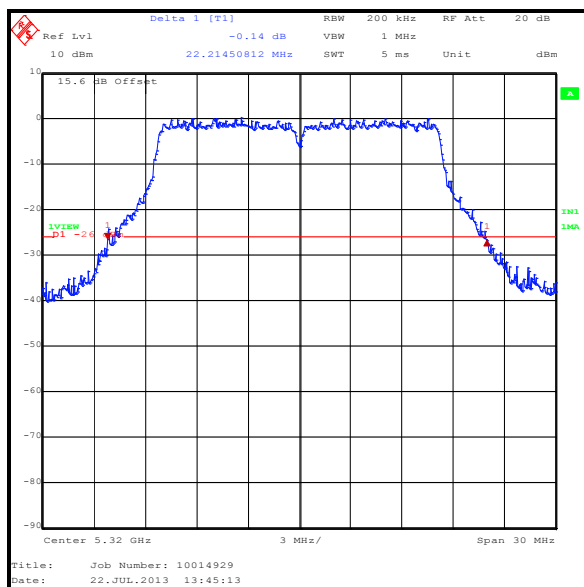
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11a / 20 MHz / 5.15-5.25 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps	26 dB Emission Bandwidth (MHz)
Bottom	5180	QPSK	12	21.914
Middle	5200	QPSK	12	21.673
Top	5240	QPSK	12	21.613

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

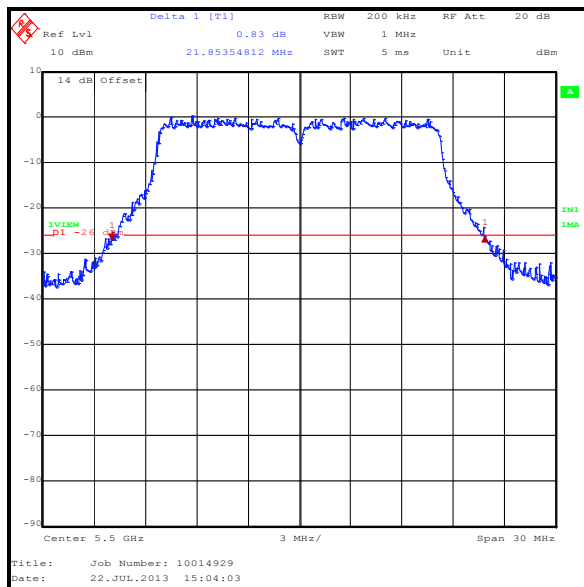
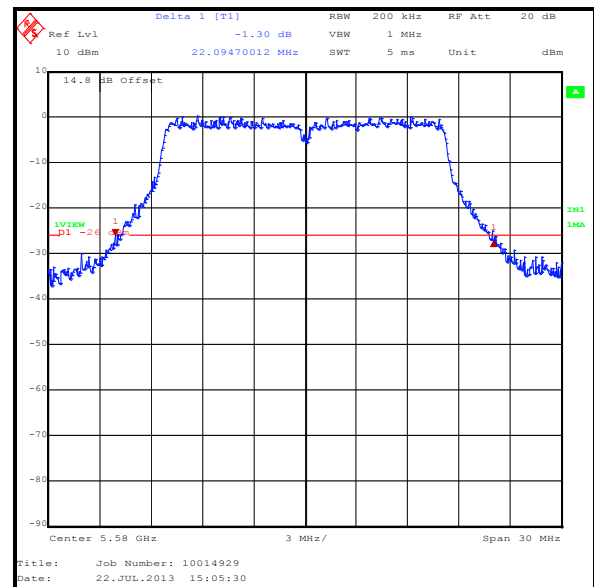
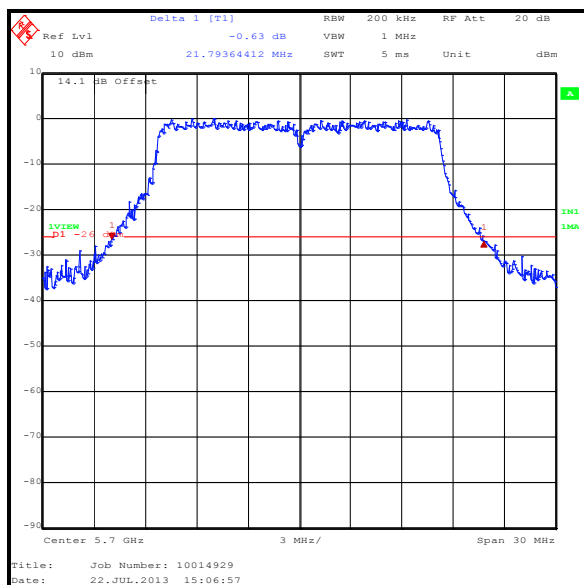
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11a / 20 MHz / 5.25-5.35 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps	26 dB Emission Bandwidth (MHz)
Bottom	5260	QPSK	12	21.673
Middle	5280	QPSK	12	22.034
Top	5320	QPSK	12	22.215

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

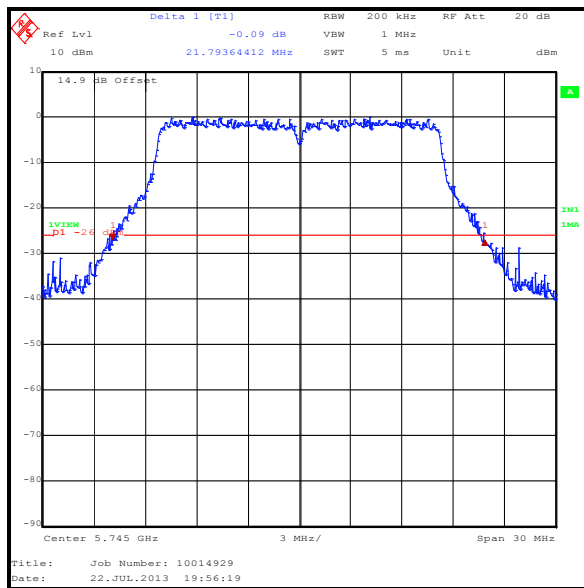
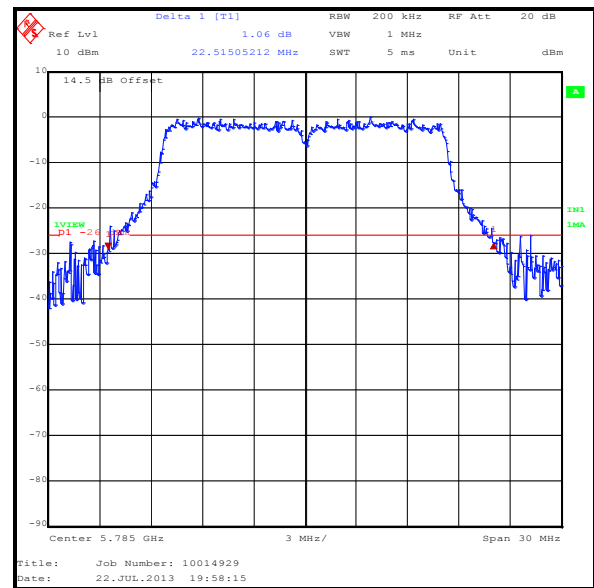
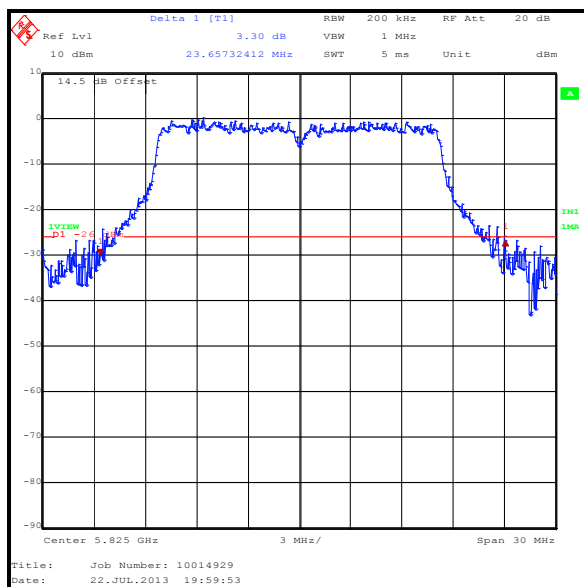
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11a / 20 MHz / 5.47-5.725 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps	26 dB Emission Bandwidth (MHz)
Bottom	5500	QPSK	12	21.854
Middle	5580	QPSK	12	22.095
Top	5700	QPSK	12	21.794

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

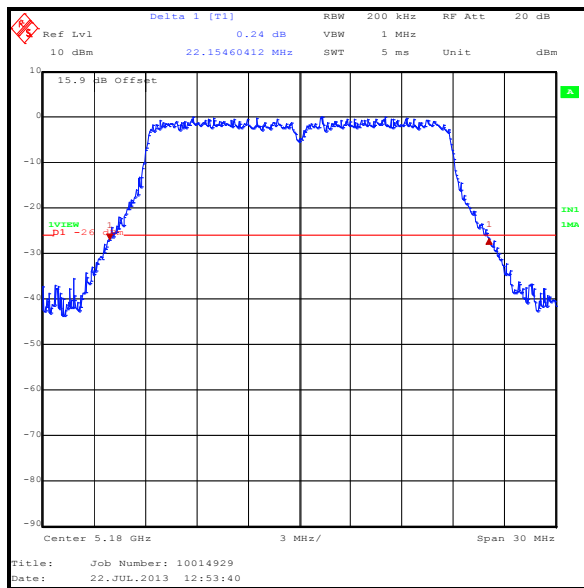
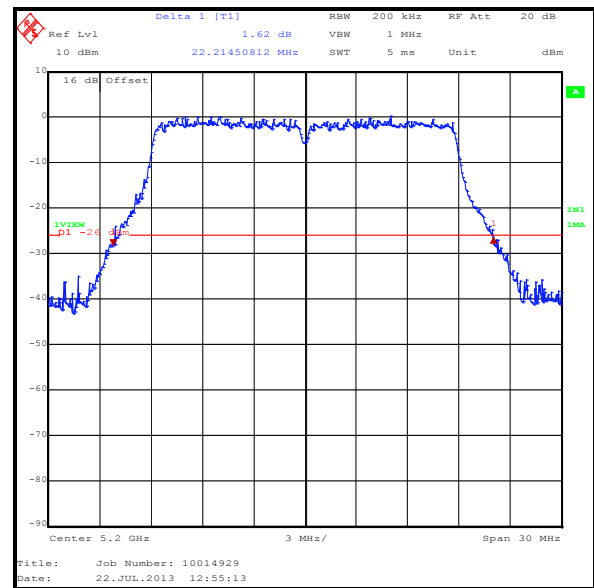
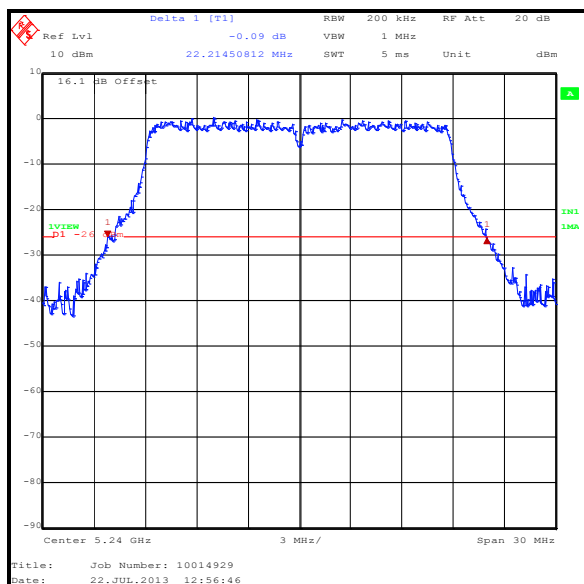
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11a / 20 MHz / 5.725-5.85 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps	26 dB Emission Bandwidth (MHz)
Bottom	5745	QPSK	12	21.794
Middle	5785	QPSK	12	22.515
Top	5825	QPSK	12	23.657

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

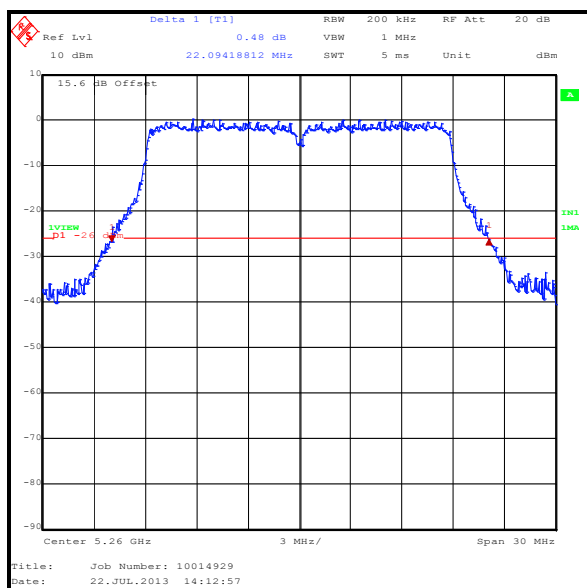
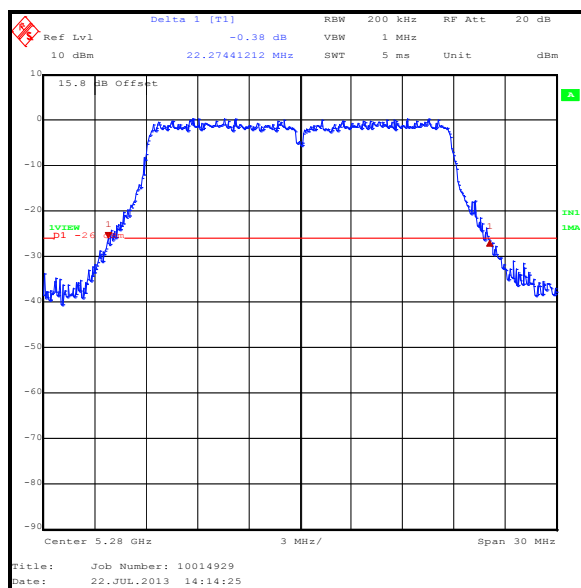
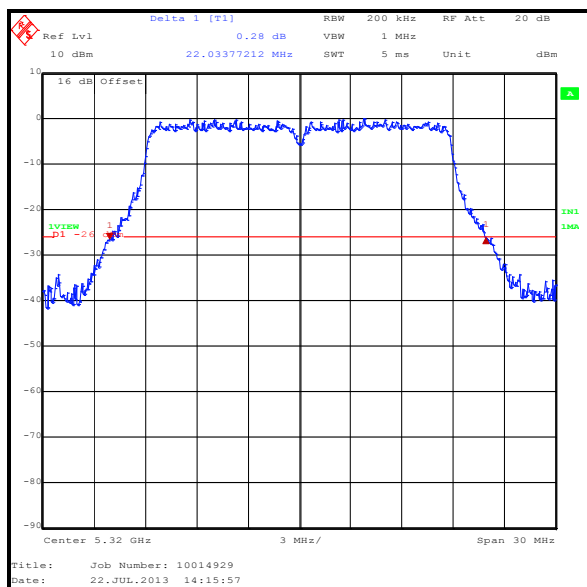
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11n / 20 MHz / 5.15-5.25 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5180	QPSK	19.5 / 2	22.155
Middle	5200	QPSK	19.5 / 2	22.215
Top	5240	QPSK	19.5 / 2	22.215

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

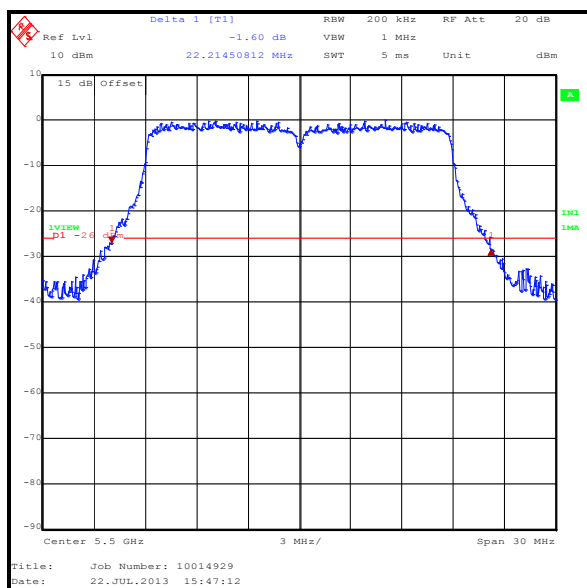
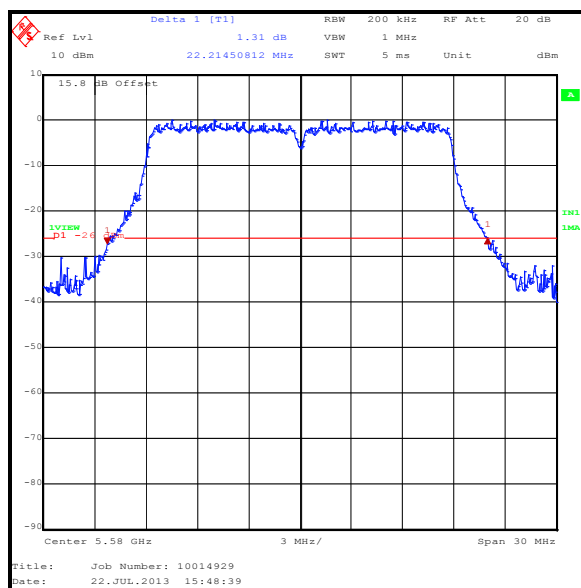
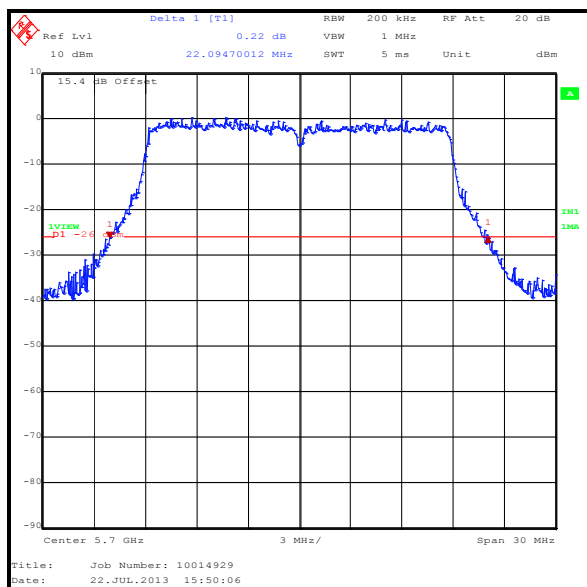
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11n / 20 MHz / 5.25-5.35 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5260	QPSK	19.5 / 2	22.094
Middle	5280	QPSK	19.5 / 2	22.274
Top	5320	QPSK	19.5 / 2	22.034

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

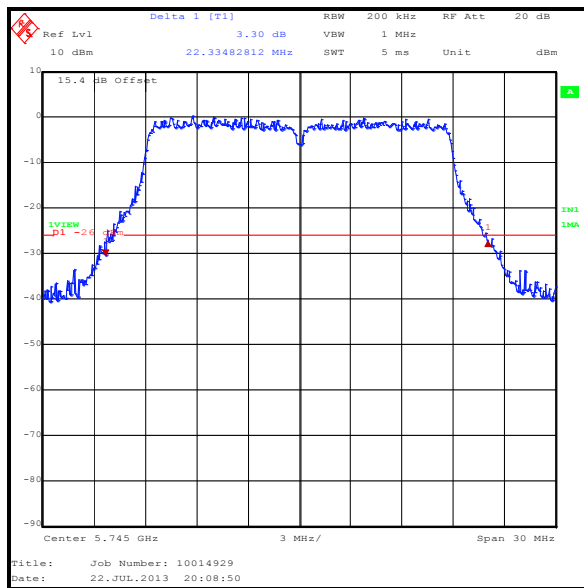
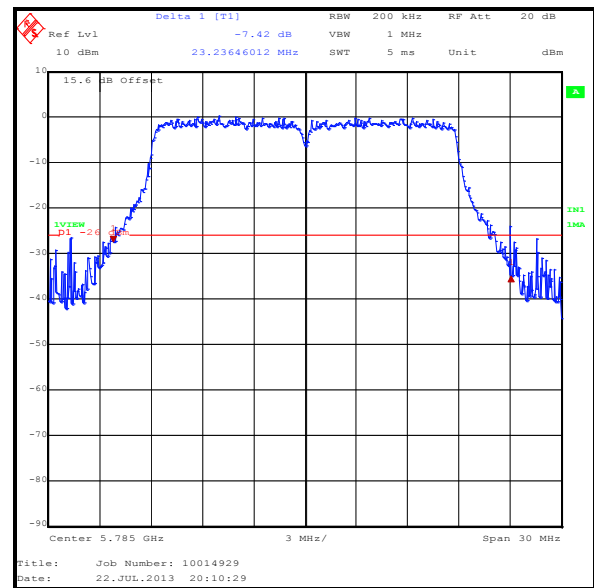
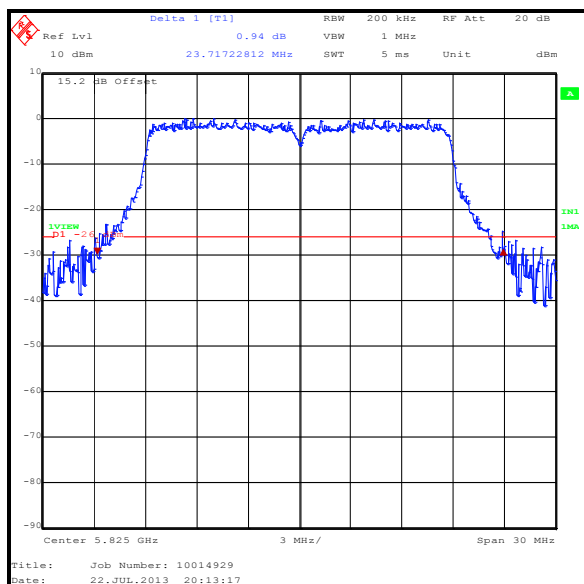
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11n / 20 MHz / 5.47-5.725 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5500	QPSK	19.5 / 2	22.215
Middle	5580	QPSK	19.5 / 2	22.215
Top	5700	QPSK	19.5 / 2	22.095

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

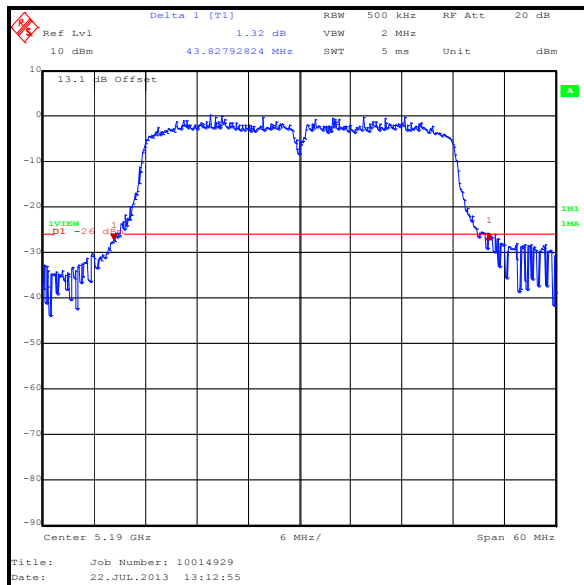
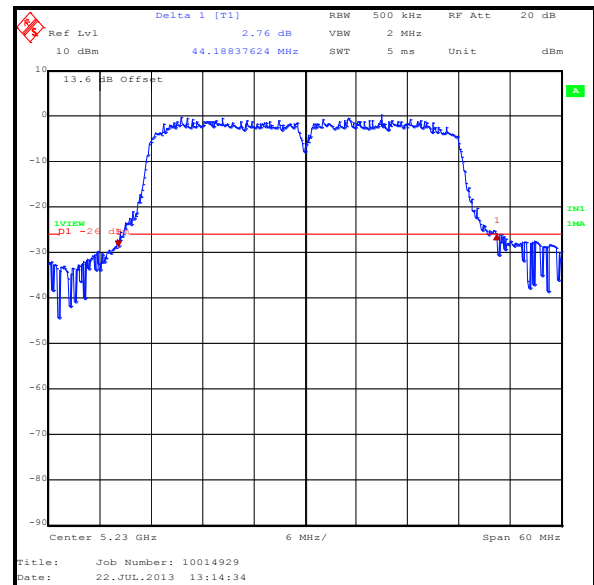
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11n / 20 MHz / 5.725-5.85 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5745	QPSK	19.5 / 2	22.335
Middle	5785	QPSK	19.5 / 2	23.236
Top	5825	QPSK	19.5 / 2	23.717

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

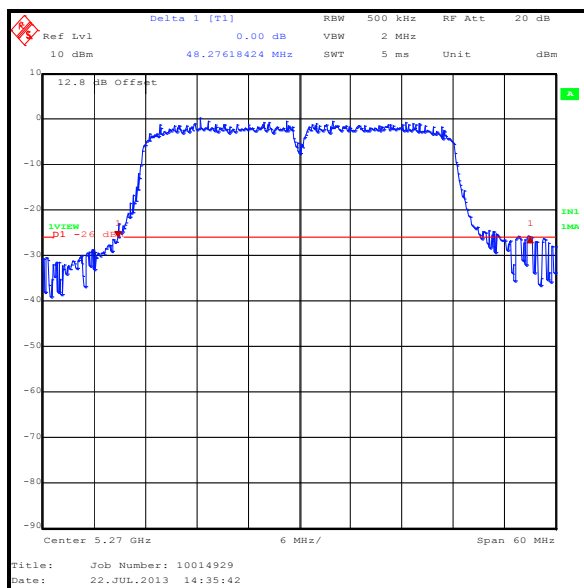
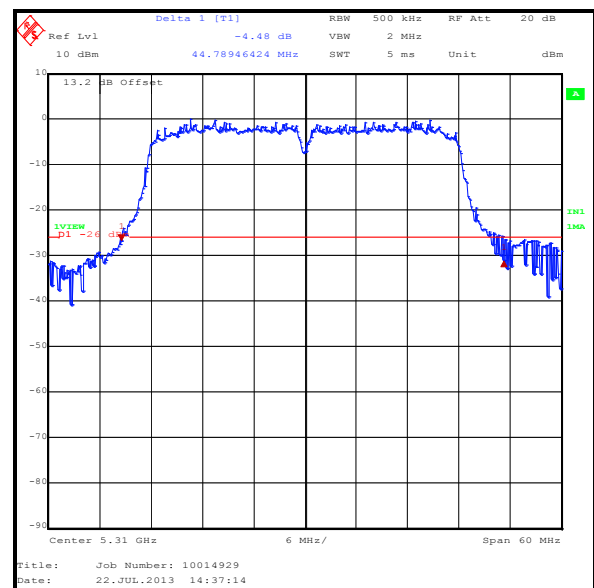
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11n / 40 MHz / 5.15-5.25 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5190	16QAM	60 / 3	43.828
Top	5230	16QAM	60 / 3	44.188

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

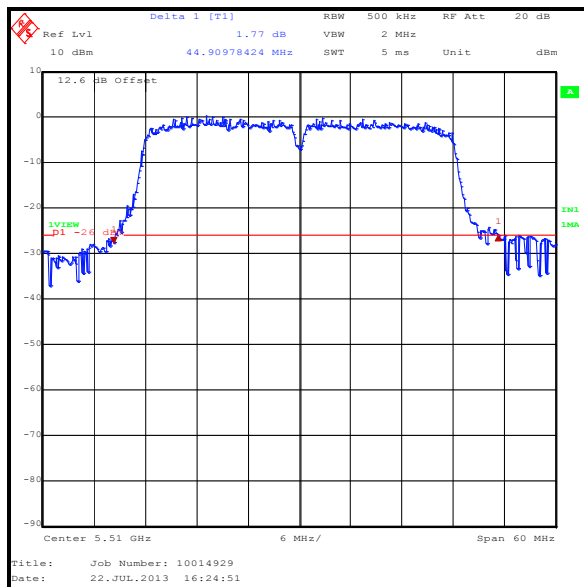
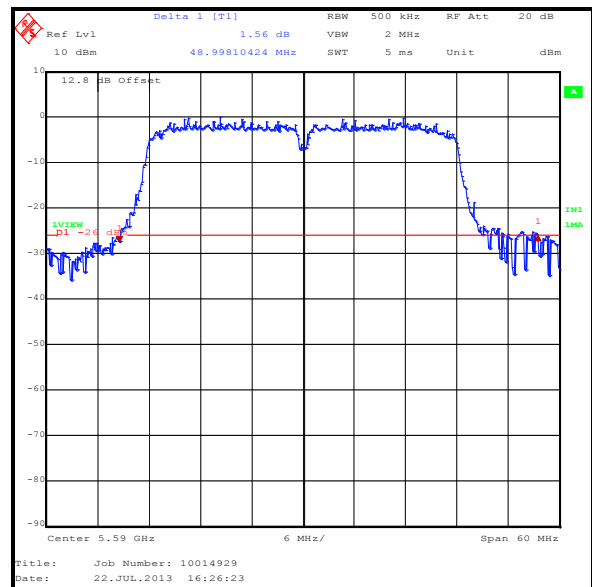
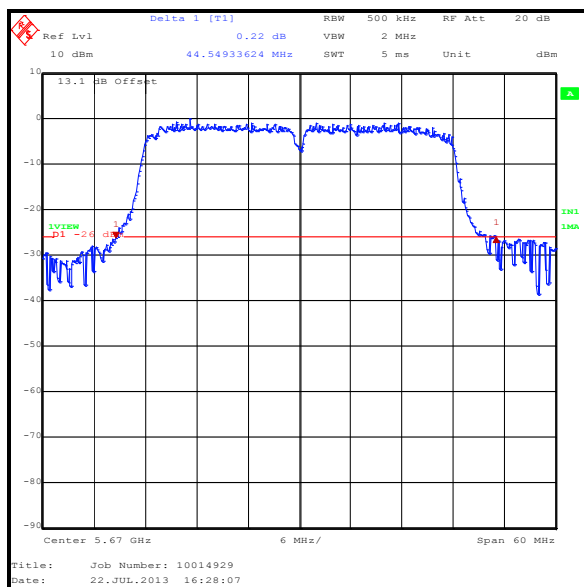
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11n / 40 MHz / 5.25-5.35 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5270	16QAM	60 / 3	48.276
Top	5310	16QAM	60 / 3	44.789

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

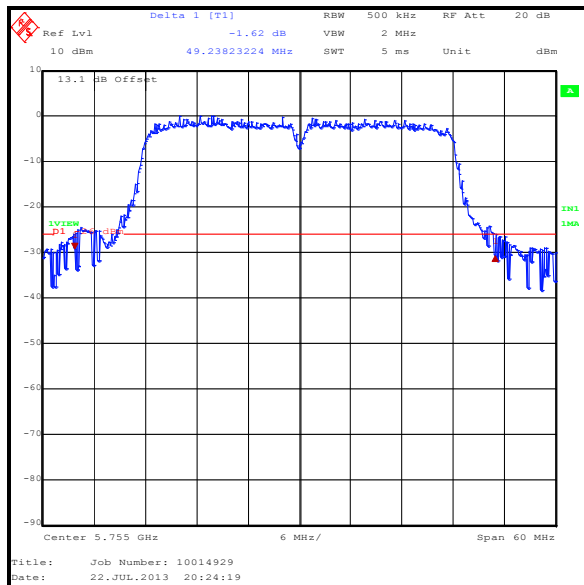
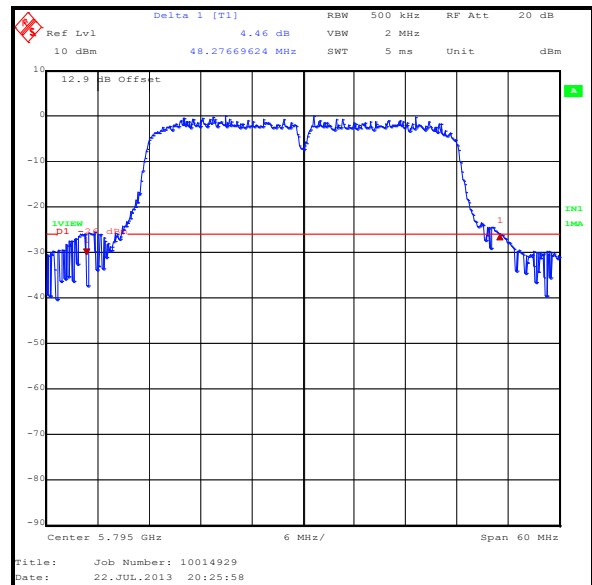
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11n / 40 MHz / 5.47-5.725 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5510	16QAM	60 / 3	44.910
Middle	5590	16QAM	60 / 3	48.998
Top	5670	16QAM	60 / 3	44.549

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

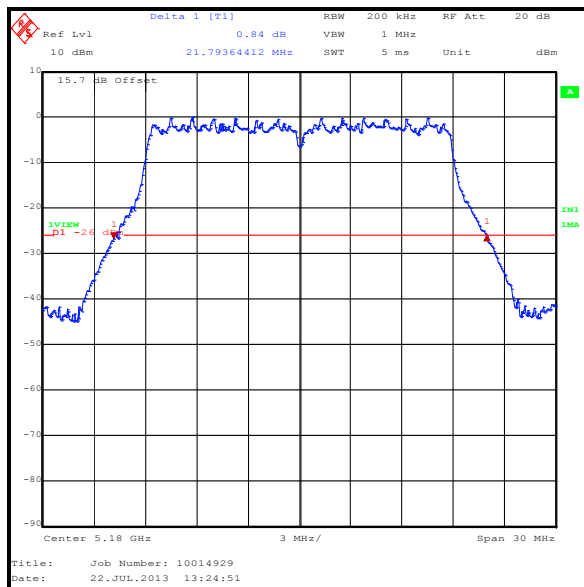
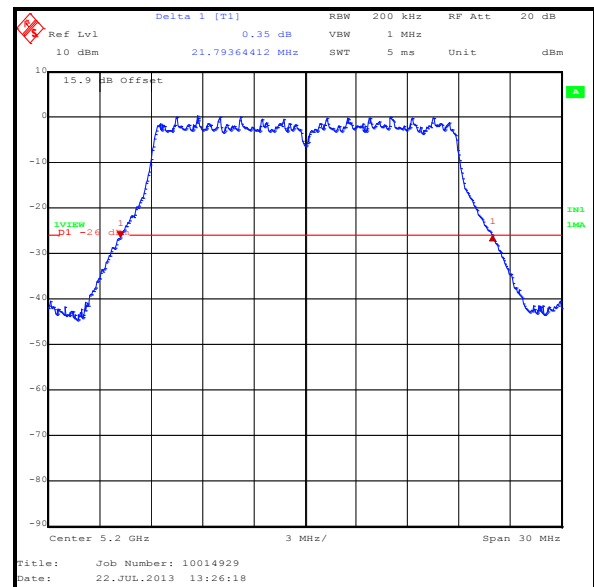
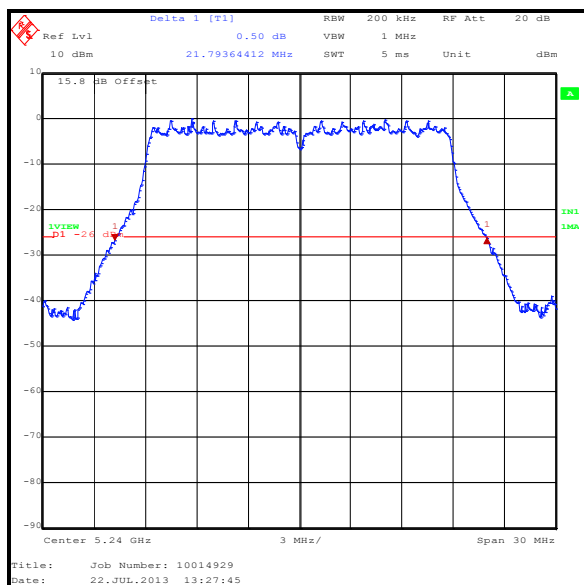
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11n / 40 MHz / 5.725-5.85 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5755	16QAM	60 / 3	49.238
Top	5795	16QAM	60 / 3	48.277

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

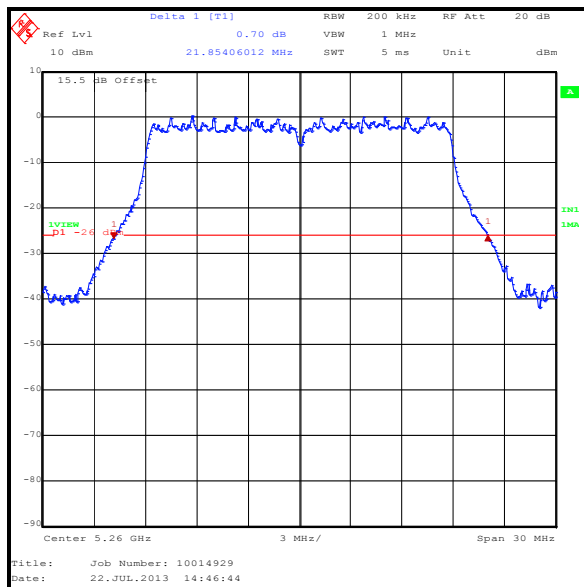
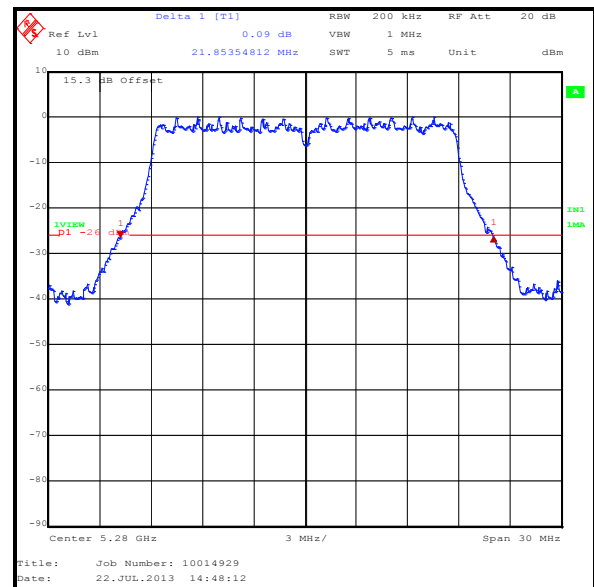
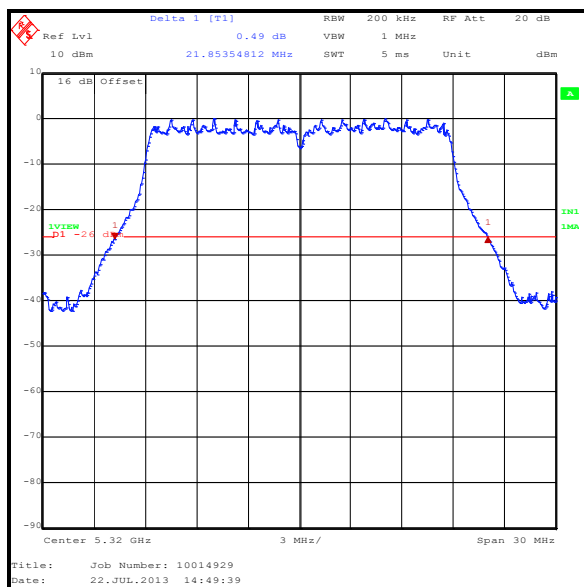
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 20 MHz / 5.15-5.25 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5180	QPSK	14.4 / 1	21.794
Middle	5200	QPSK	14.4 / 1	21.794
Top	5240	QPSK	14.4 / 1	21.794

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

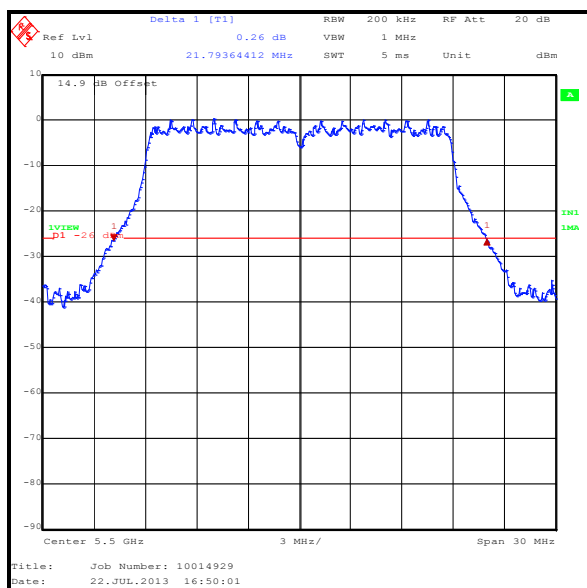
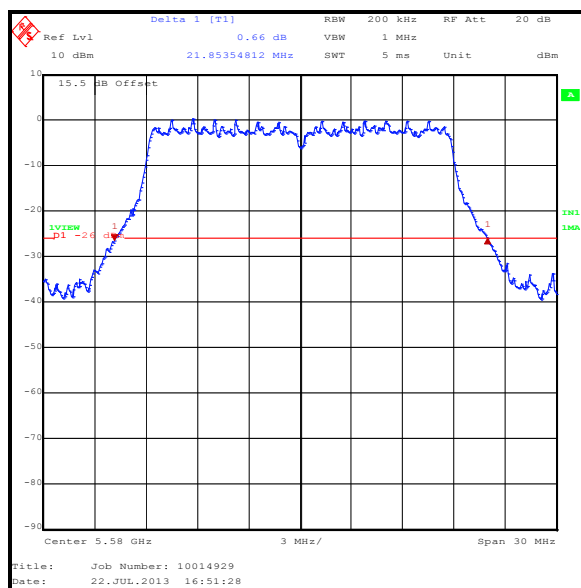
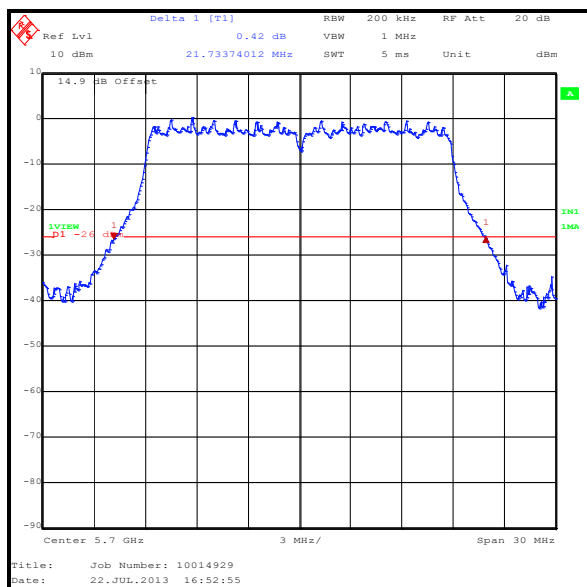
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 20 MHz / 5.25-5.35 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5260	QPSK	14.4 / 1	21.854
Middle	5280	QPSK	14.4 / 1	21.854
Top	5320	QPSK	14.4 / 1	21.854

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

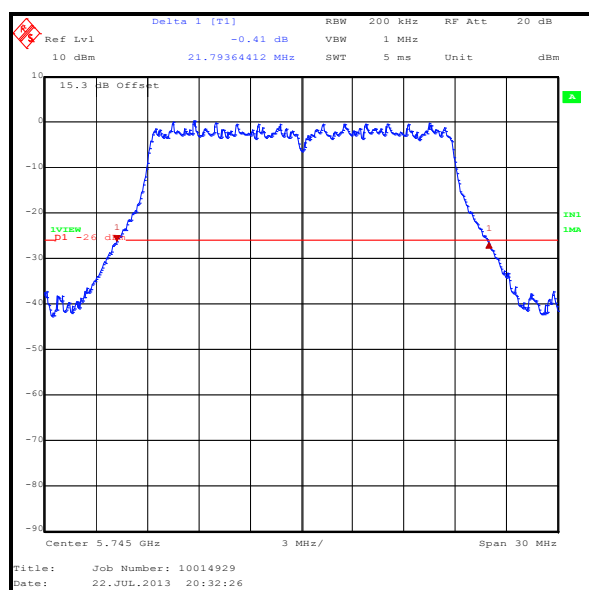
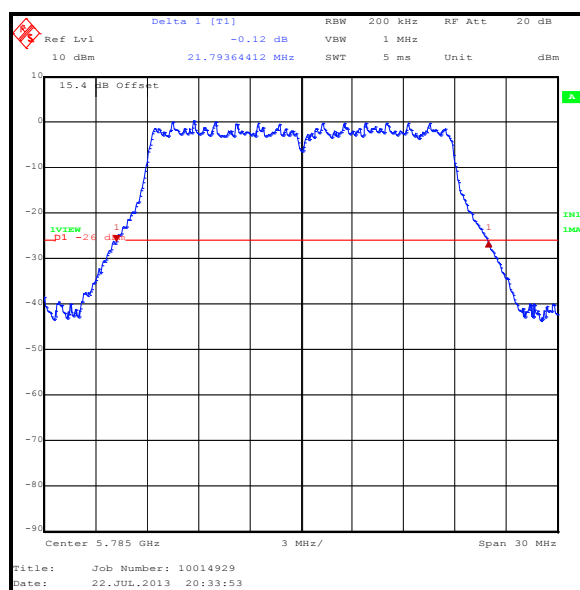
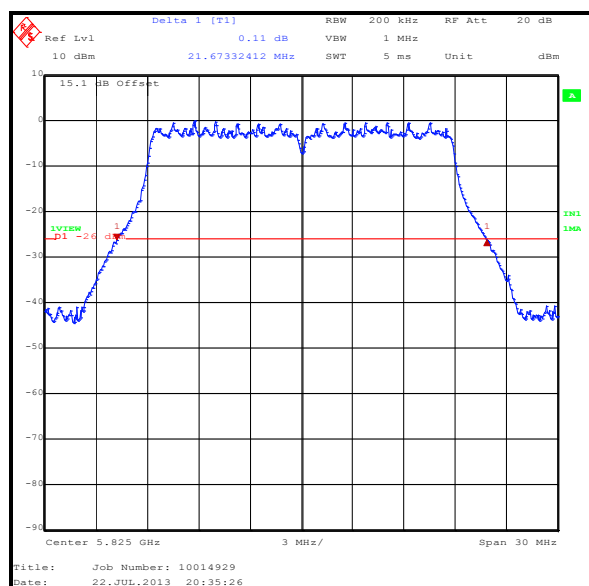
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 20 MHz / 5.47-5.725 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5500	QPSK	14.4 / 1	21.794
Middle	5580	QPSK	14.4 / 1	21.854
Top	5700	QPSK	14.4 / 1	21.734

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

Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 20 MHz / 5.725-5.85 GHz band**

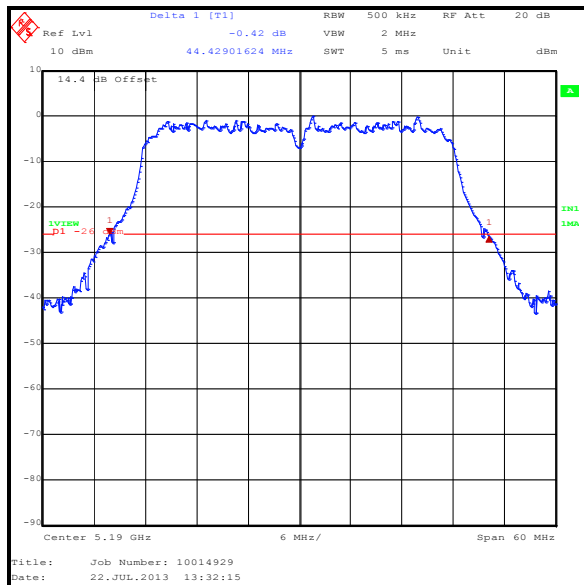
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5745	QPSK	14.4 / 1	21.794
Middle	5785	QPSK	14.4 / 1	21.794
Top	5825	QPSK	14.4 / 1	21.673

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

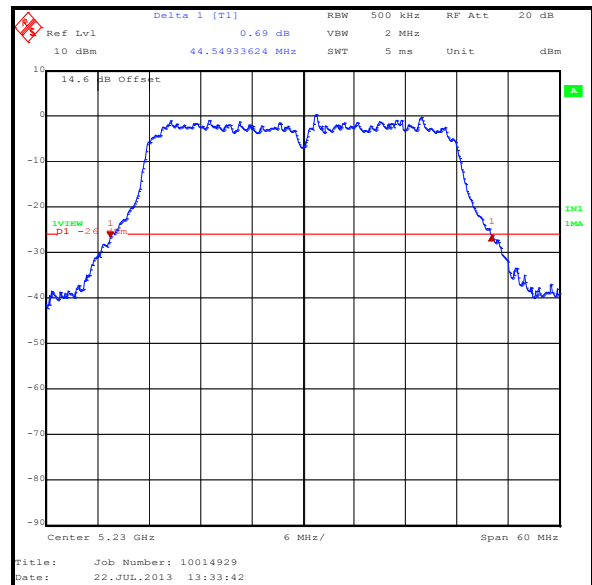
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11ac / 40 MHz / 5.15-5.25 GHz band

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5190	QPSK	30 / 1	44.429
Top	5230	QPSK	30 / 1	44.549



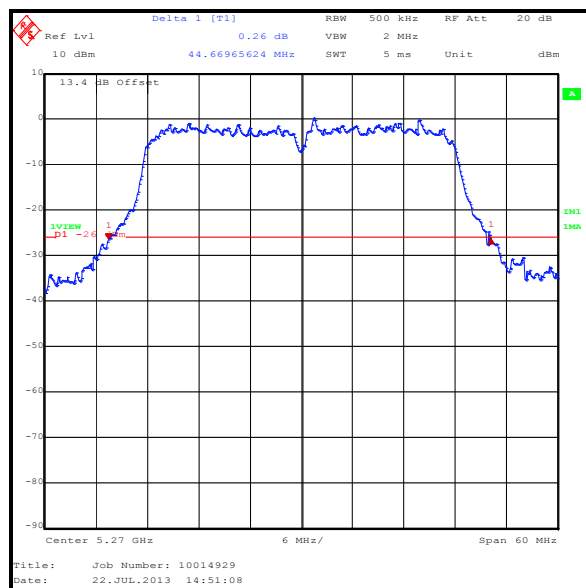
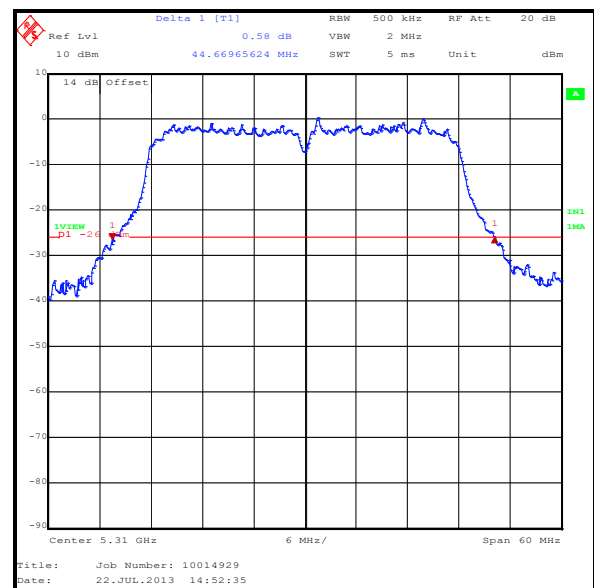
Bottom Channel



Top Channel

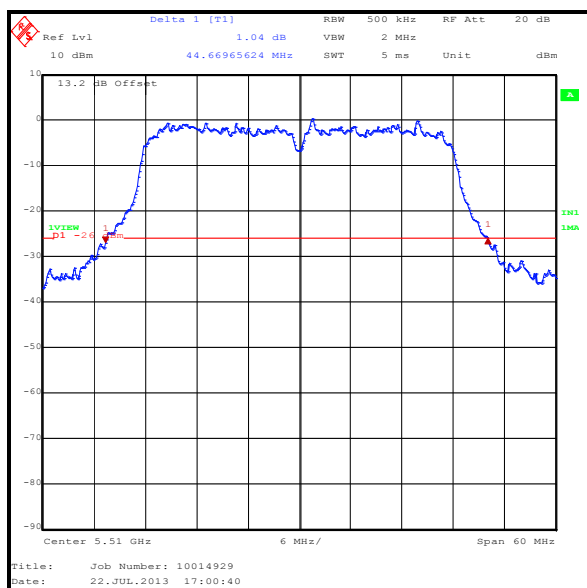
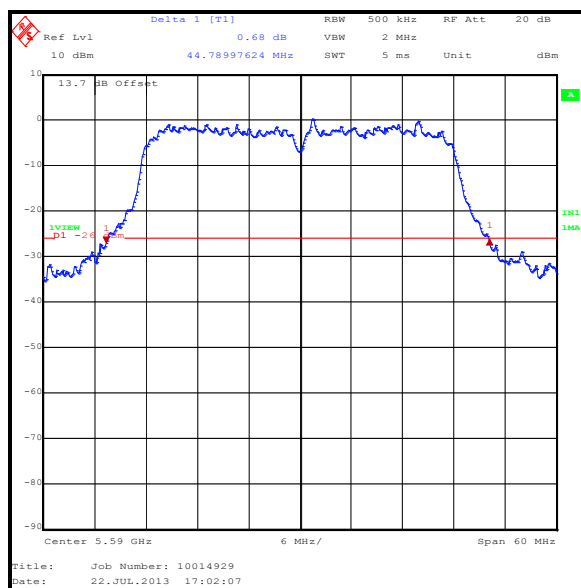
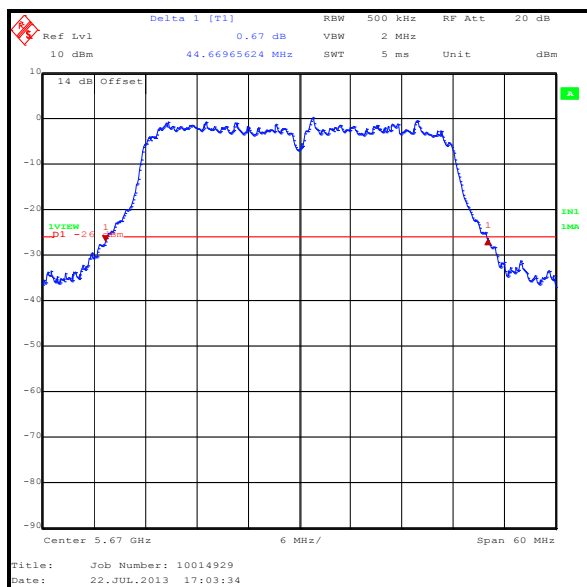
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 40 MHz / 5.25-5.35 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5270	QPSK	30 / 1	44.670
Top	5310	QPSK	30 / 1	44.670

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

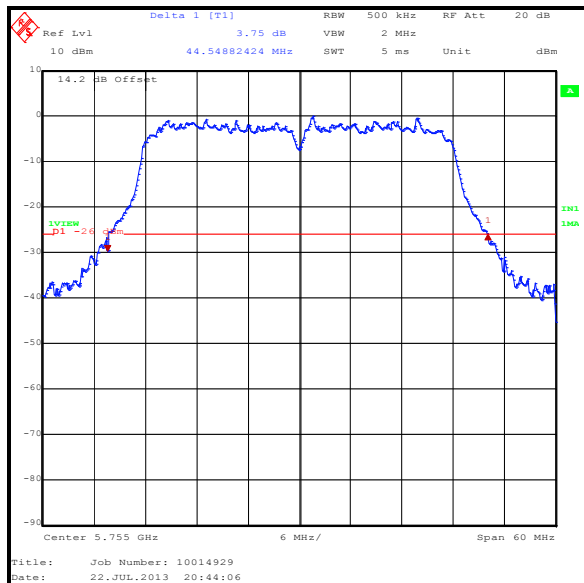
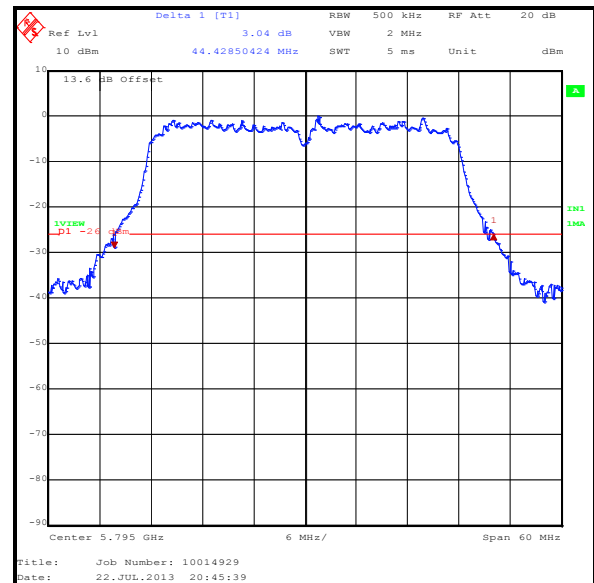
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 40 MHz / 5.47-5.725 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5510	QPSK	30 / 1	44.670
Middle	5590	QPSK	30 / 1	44.790
Top	5670	QPSK	30 / 1	44.670

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

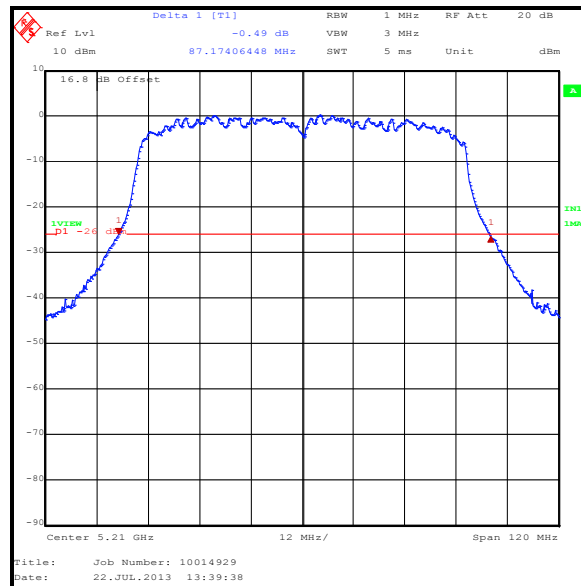
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 40 MHz / 5.725-5.85 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5755	QPSK	30 / 1	44.549
Top	5795	QPSK	30 / 1	44.429

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

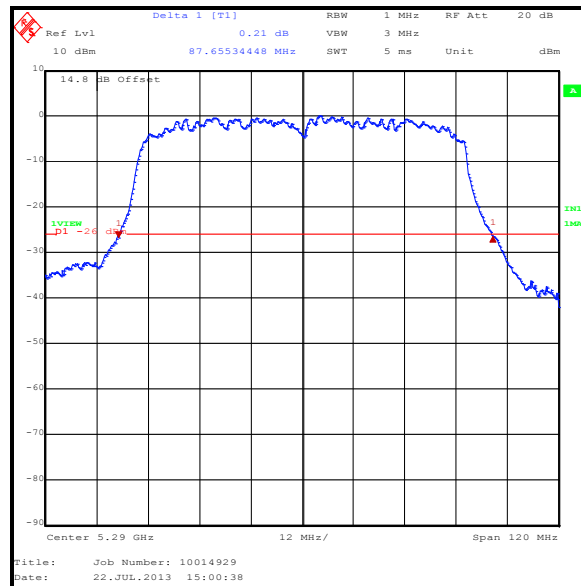
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 80 MHz / 5.15-5.25 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Single	5210	64QAM	325 / 7	87.174

**Single Channel**

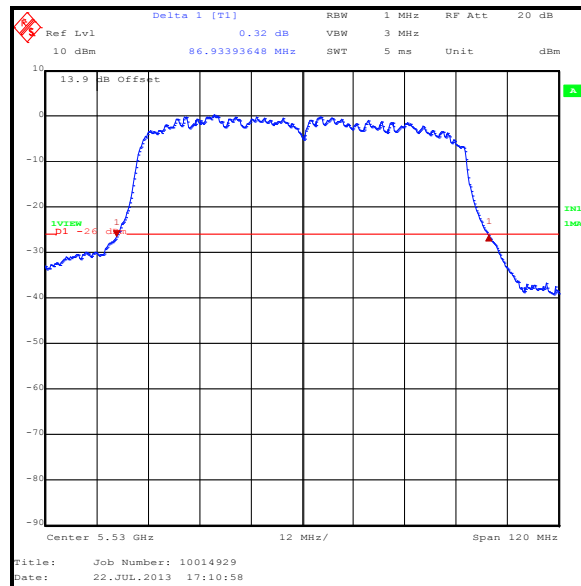
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 80 MHz / 5.25-5.35 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Single	5290	64QAM	325 / 7	87.655

**Single Channel**

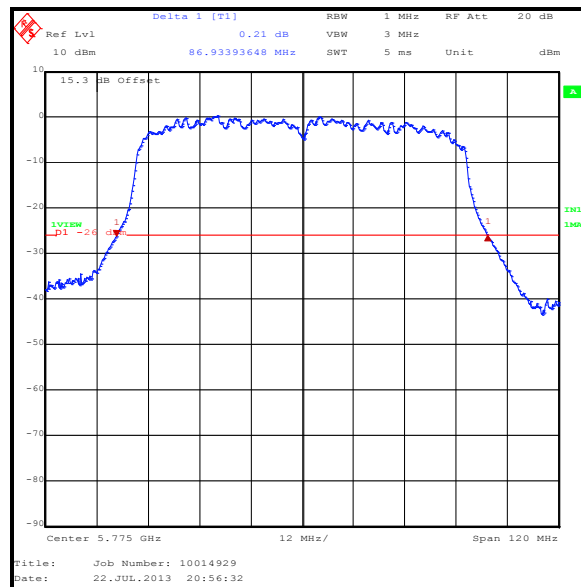
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 80 MHz / 5.47-5.725 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Single	5530	64QAM	325 / 7	86.934

**Single Channel**

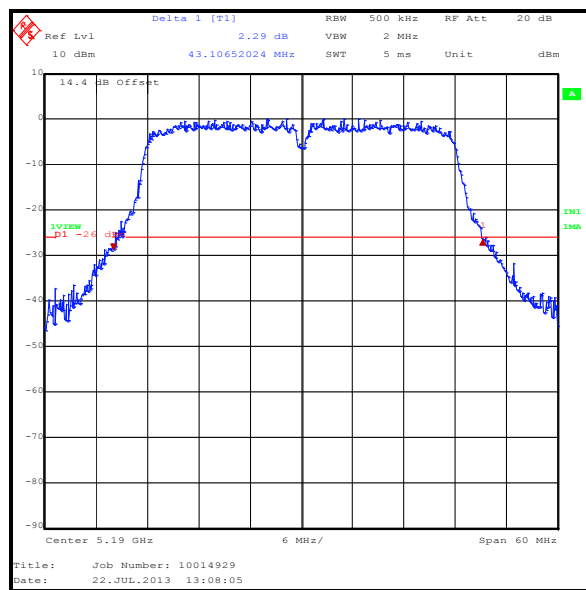
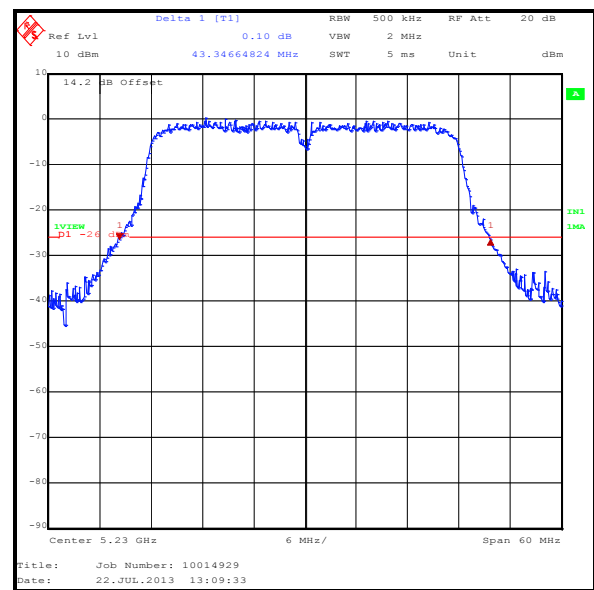
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 80 MHz / 5.725-5.85 GHz band**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Single	5775	64QAM	325 / 7	86.934

**Single Channel**

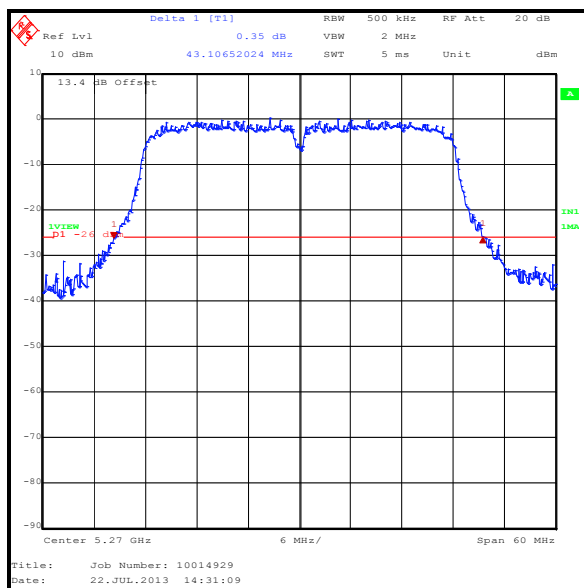
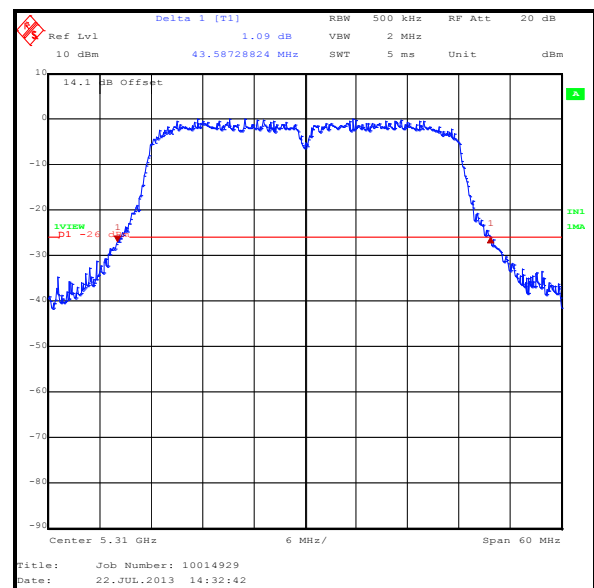
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11n / 40 MHz / 5.15-5.25 GHz band (Reference plots)**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5190	QPSK	27 / 1	43.107
Top	5230	QPSK	27 / 1	43.347

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

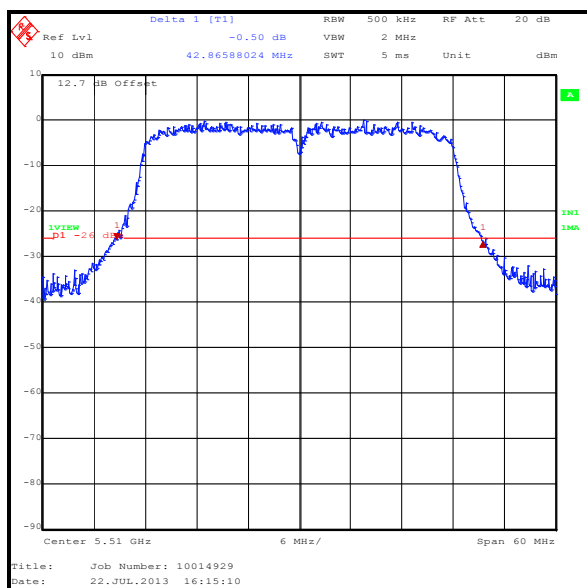
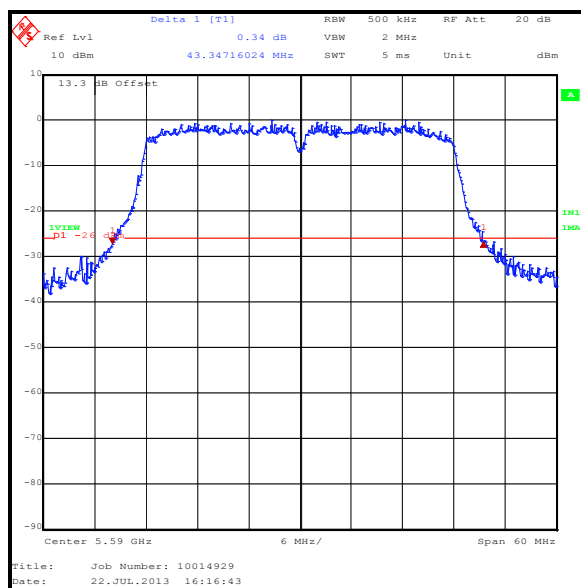
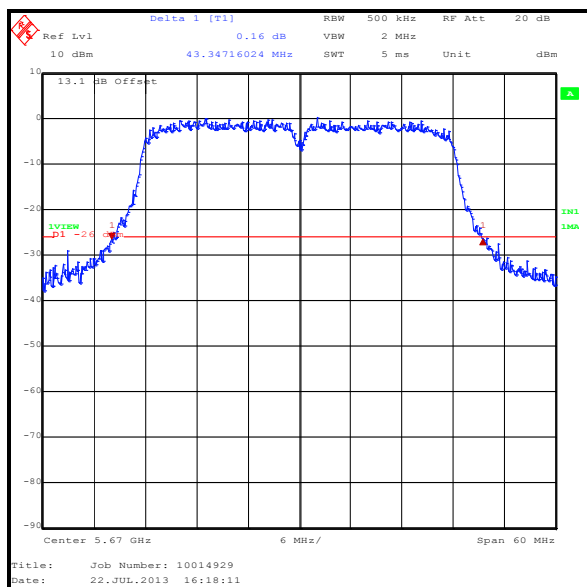
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11n / 40 MHz / 5.25-5.35 GHz band (Reference plots)**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5270	QPSK	27 / 1	43.107
Top	5310	QPSK	27 / 1	43.587

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

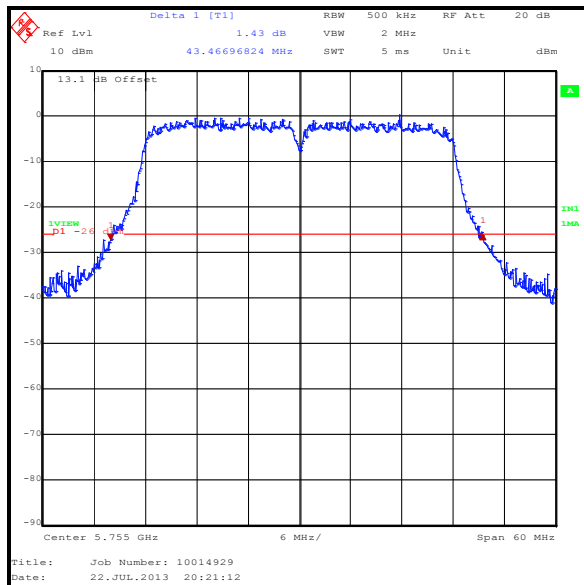
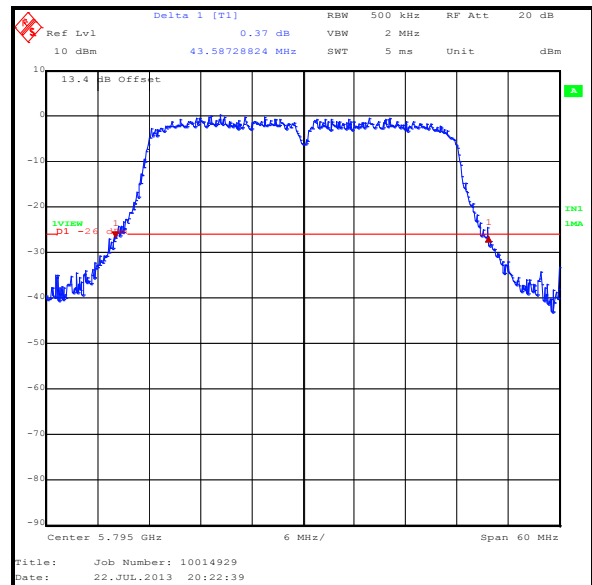
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11n / 40 MHz / 5.47-5.725 GHz band (Reference plots)**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5510	QPSK	27 / 1	42.866
Middle	5590	QPSK	27 / 1	43.347
Top	5670	QPSK	27 / 1	43.347

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

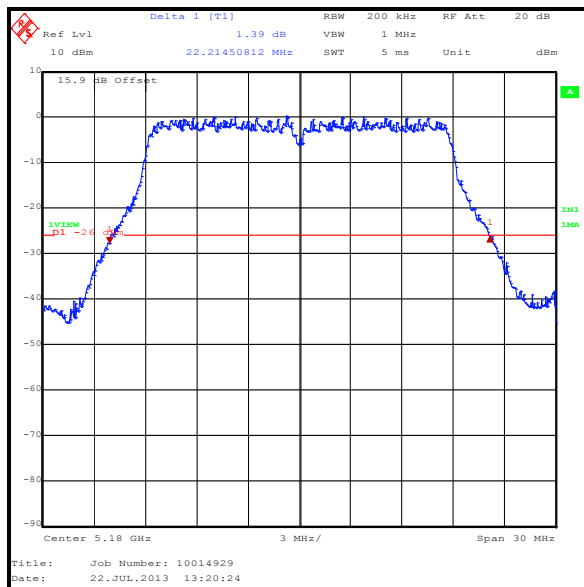
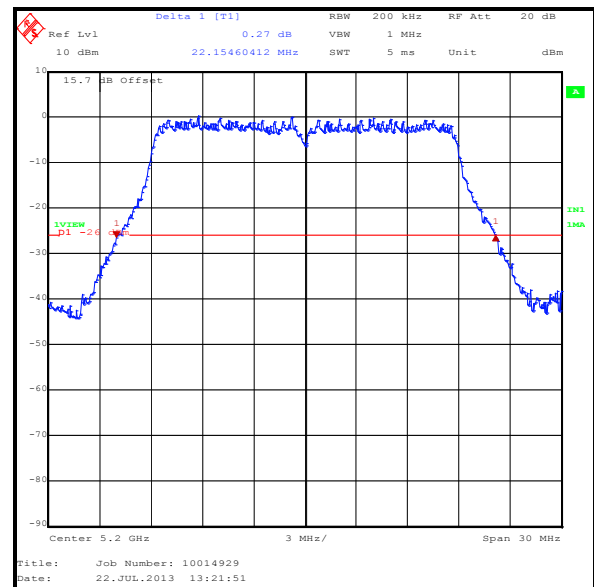
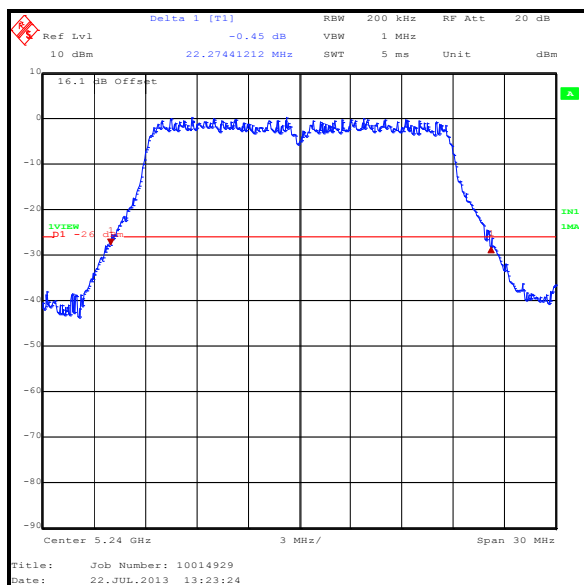
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11n / 40 MHz / 5.725-5.85 GHz band (Reference plots)**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5755	QPSK	27 / 1	43.467
Top	5795	QPSK	27 / 1	43.587

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

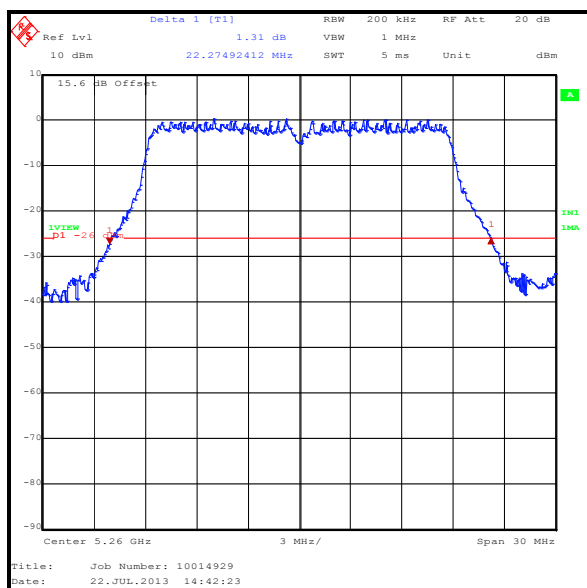
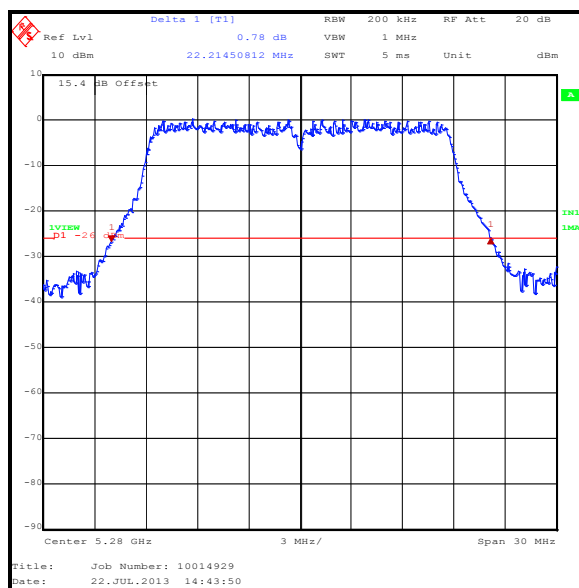
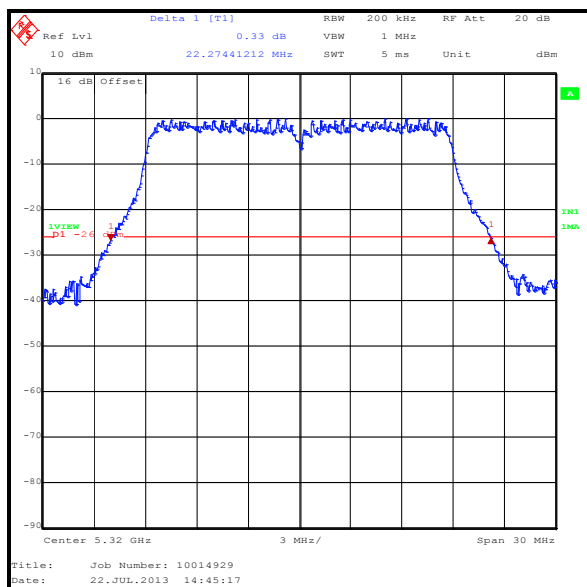
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 20 MHz / 5.15-5.25 GHz band (Reference plots)**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5180	BPSK	7.2 / 0	22.215
Middle	5200	BPSK	7.2 / 0	22.155
Top	5240	BPSK	7.2 / 0	22.274

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

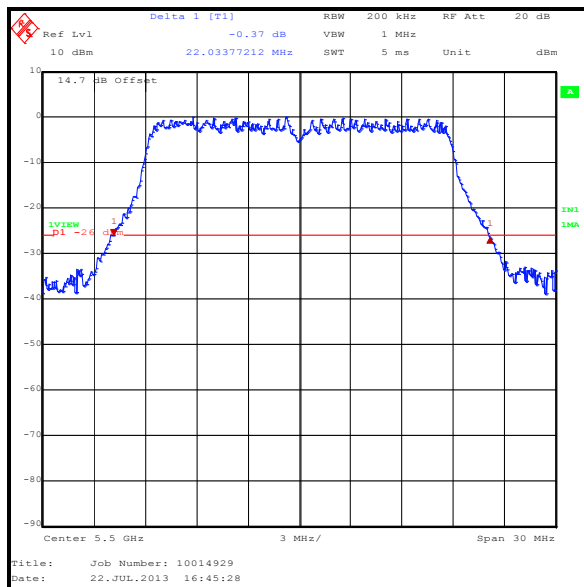
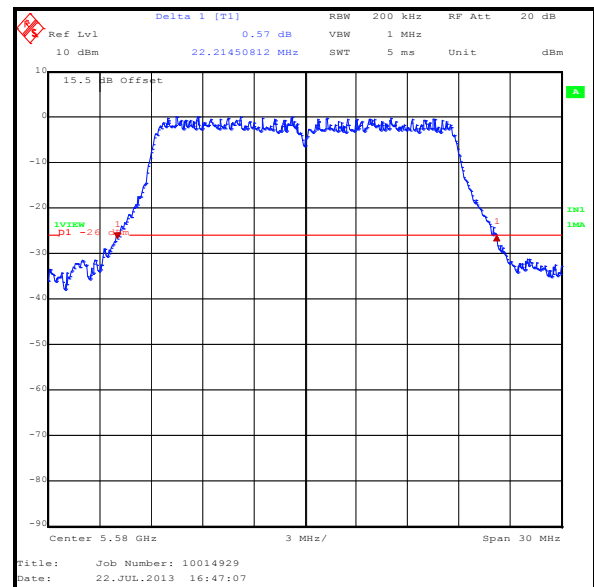
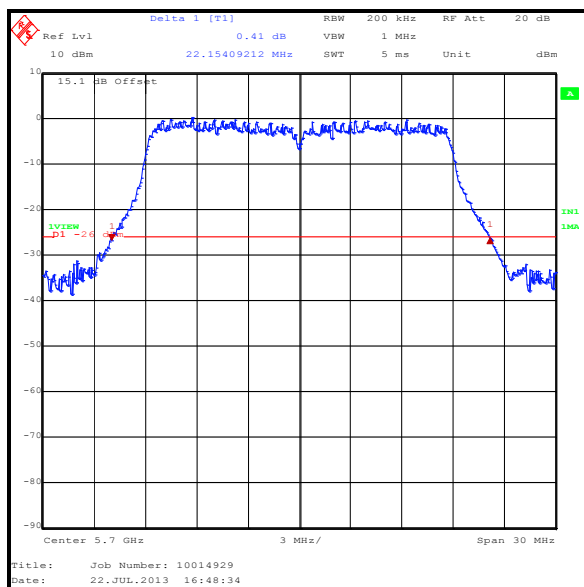
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 20 MHz / 5.25-5.35 GHz band (Reference plots)**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5260	BPSK	7.2 / 0	22.725
Middle	5280	BPSK	7.2 / 0	22.215
Top	5320	BPSK	7.2 / 0	22.274

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

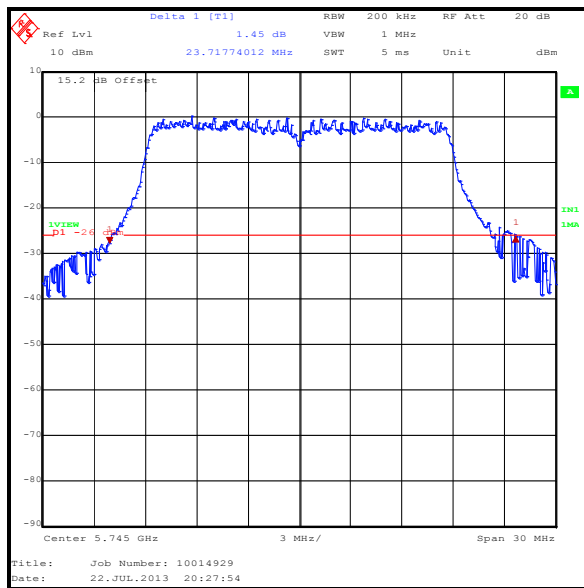
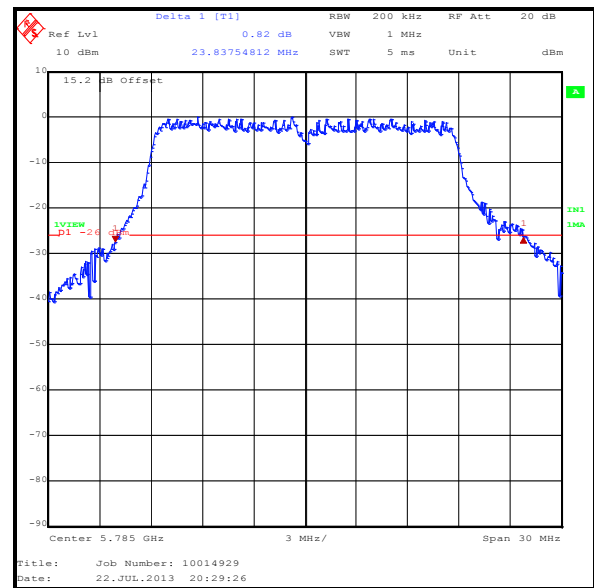
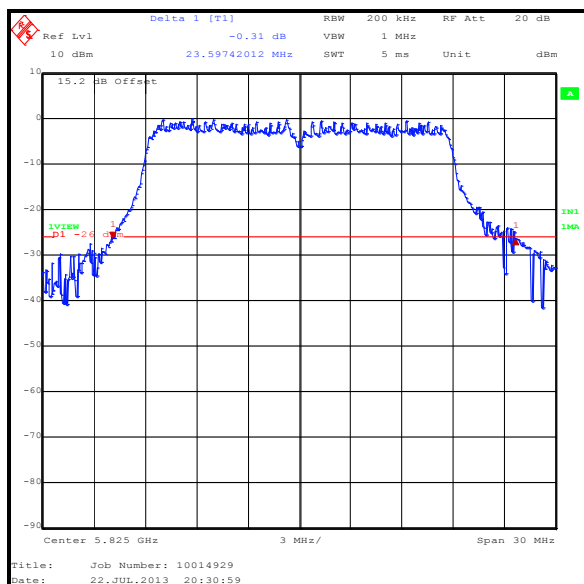
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 20 MHz / 5.47-5.725 GHz band (Reference plots)**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5500	BPSK	7.2 / 0	22.034
Middle	5580	BPSK	7.2 / 0	22.215
Top	5700	BPSK	7.2 / 0	22.154

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

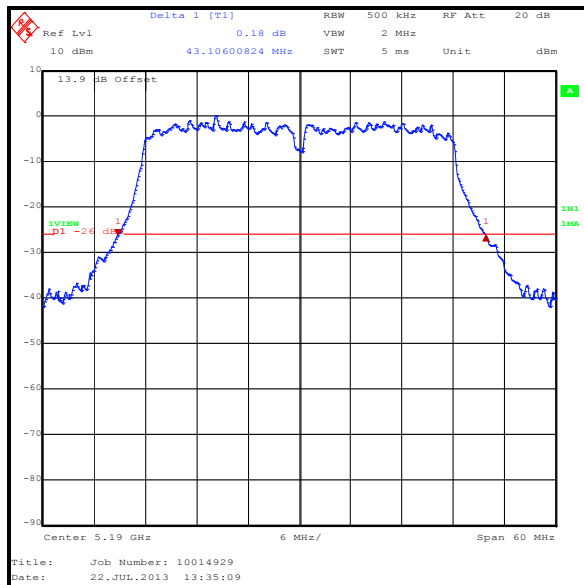
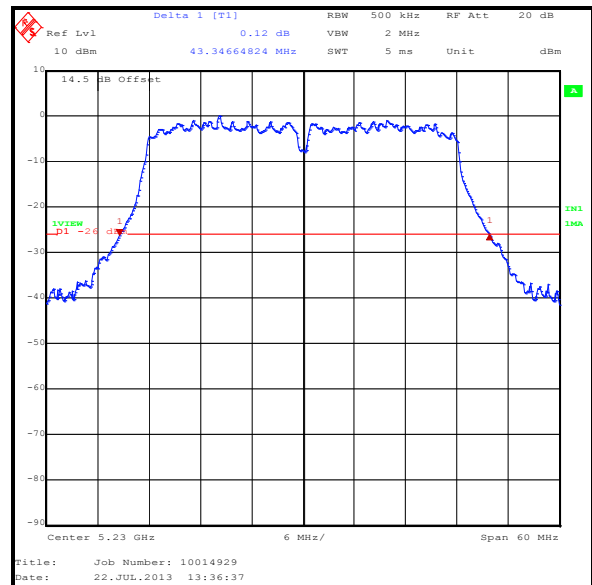
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 20 MHz / 5.725-5.85 GHz band (Reference plots)**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5745	BPSK	7.2 / 0	23.718
Middle	5785	BPSK	7.2 / 0	23.838
Top	5825	BPSK	7.2 / 0	23.597

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

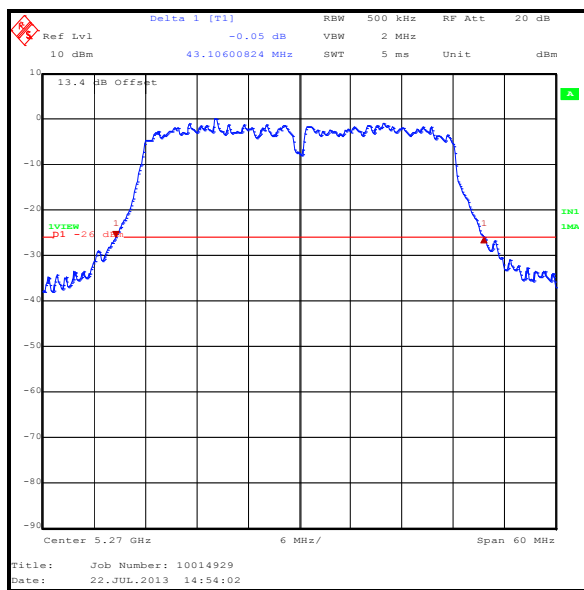
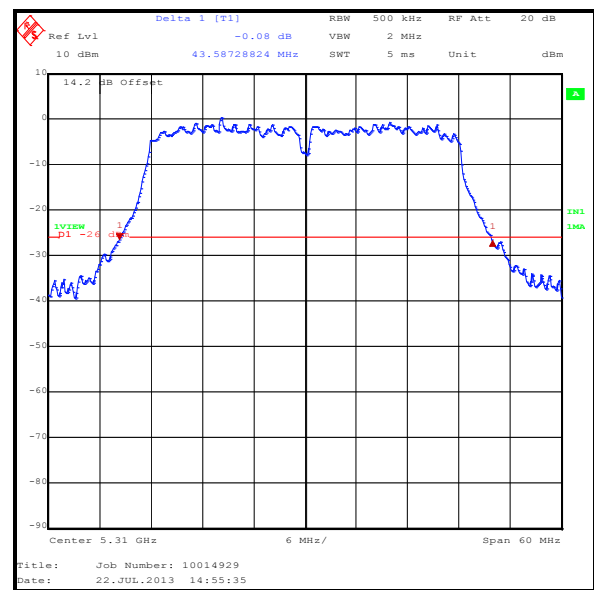
Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 40 MHz / 5.15-5.25 GHz band (Reference plots)**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5190	64QAM	120 / 5	43.106
Top	5230	64QAM	120 / 5	43.347

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

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

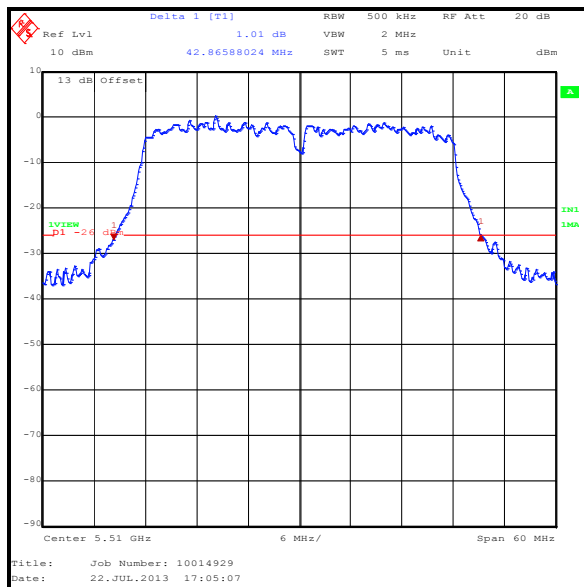
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5270	64QAM	120 / 5	43.106
Top	5310	64QAM	120 / 5	43.587

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

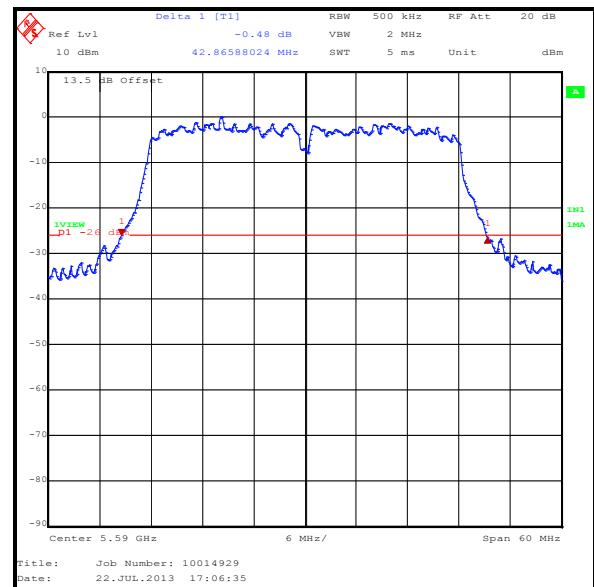
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11ac / 40 MHz / 5.47-5.725 GHz band (Reference plots)

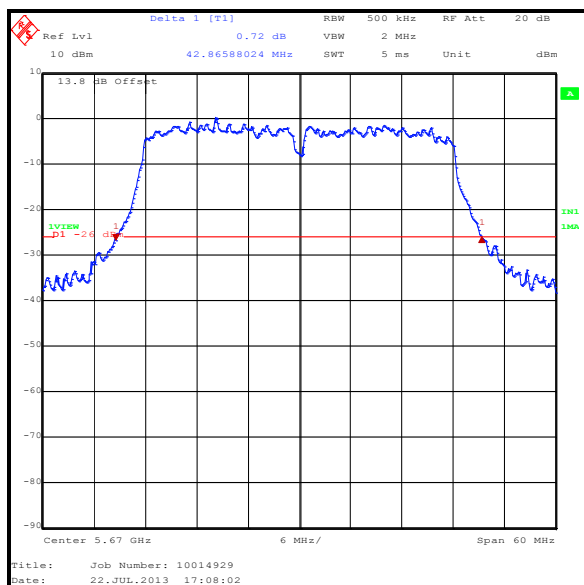
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5510	64QAM	120 / 5	42.866
Middle	5590	64QAM	120 / 5	42.866
Top	5670	64QAM	120 / 5	42.866



Bottom Channel



Middle Channel

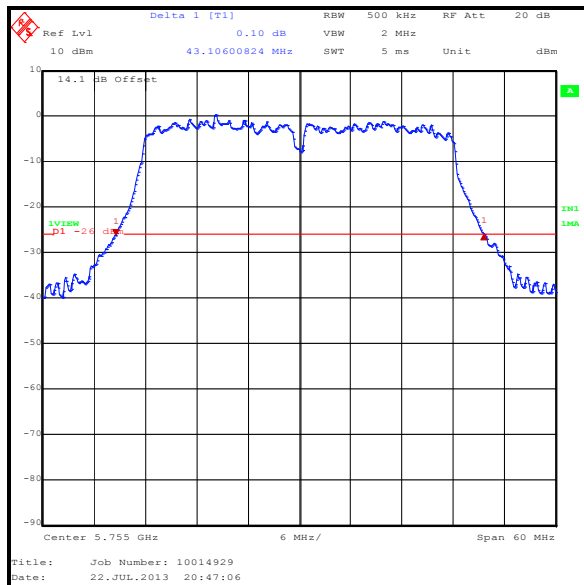


Top Channel

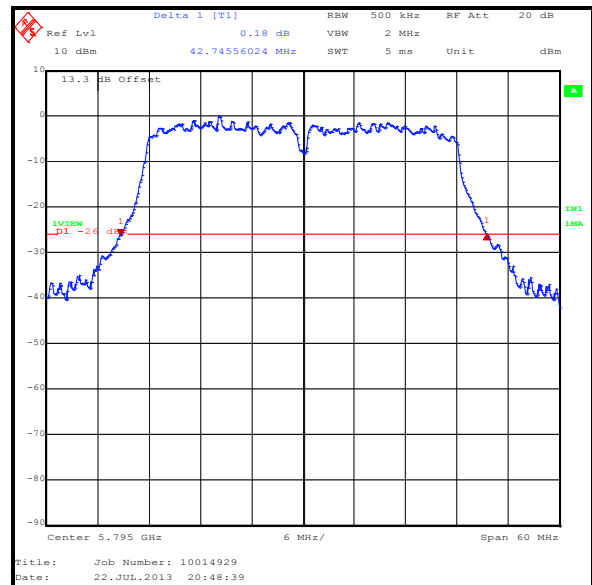
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11ac / 40 MHz / 5.725-5.85 GHz band (Reference plots)

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5755	64QAM	120 / 5	43.106
Top	5795	64QAM	120 / 5	42.746



Bottom Channel

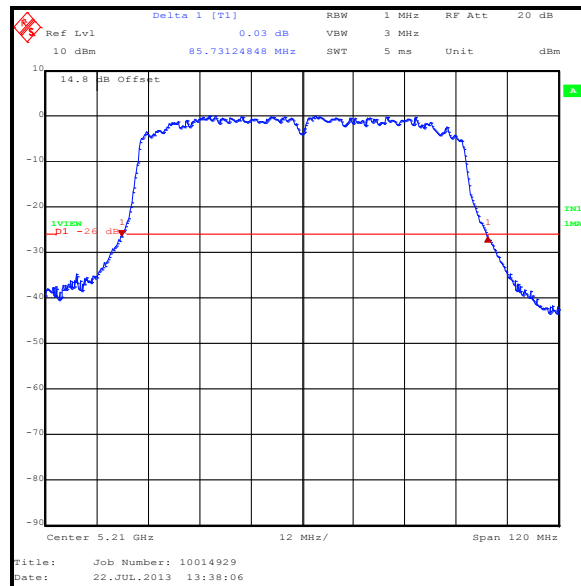


Top Channel

Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11ac / 80 MHz / 5.15-5.25 GHz band (Reference plots)

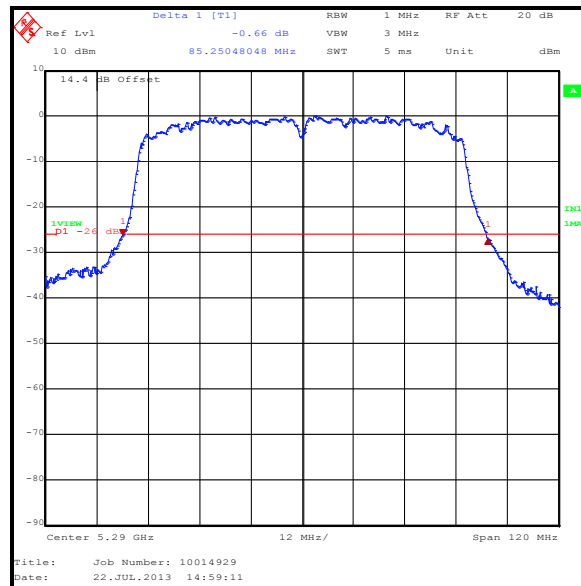
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Single	5210	BPSK	32.5 / 0	85.731



Single Channel

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

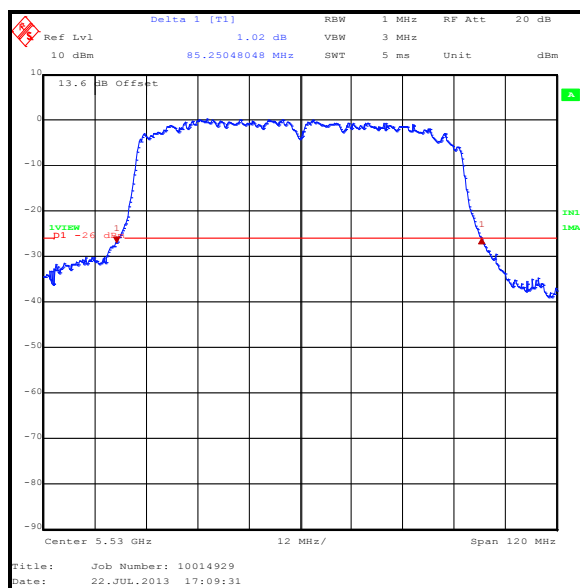
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Single	5290	BPSK	32.5 / 0	85.250

**Single Channel**

Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11ac / 80 MHz / 5.47-5.725 GHz band (Reference plots)

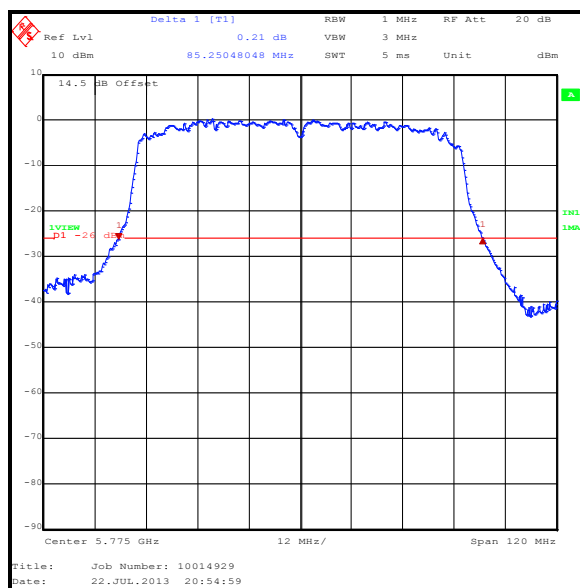
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Single	5530	BPSK	32.5 / 0	85.250



Single Channel

Transmitter 26 dB Emission Bandwidth (continued)**Results: 802.11ac / 80 MHz / 5.725-5.85 GHz band (Reference plots)**

Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Single	5775	BPSK	32.5 / 0	85.250

**Single Channel****Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermometer / Hygrometer station	JM Handelspunkt	30.5015.13	None stated	24 May 2014	12
A1999	Attenuator	Huber + Suhner	6820.17.B	07101	05 Apr 2014	12
S0520	DC Power Supply	GW instek	GPC-3030	E835141	Calibrated before use	-
M1269	Multimeter	Fluke	179	90250210	30 Jul 2013	12
M1379	Test Receiver	Rohde & Schwarz	ESIB7	100330	15 Oct 2013	12

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

Test Engineers:	Ahmed Ali & Nick Steele	Test Dates:	16 July 2013 to 24 July 2013
Test Sample IMEI:	004402451246254		

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

Environmental Conditions:

Temperature (°C):	23 to 25
Relative Humidity (%):	35 to 39

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:

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

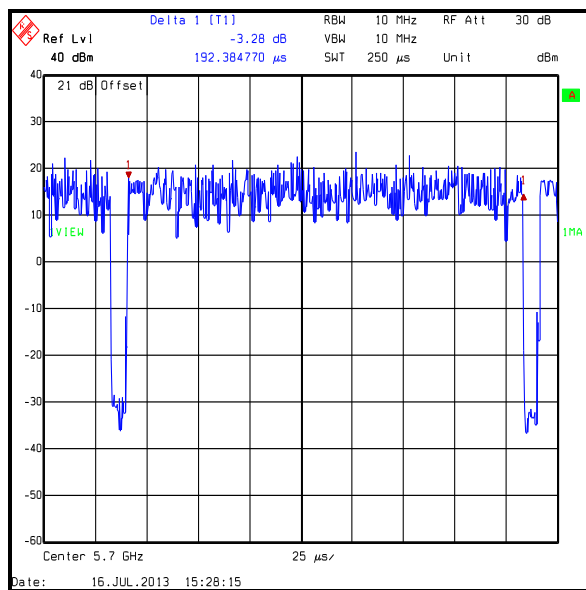
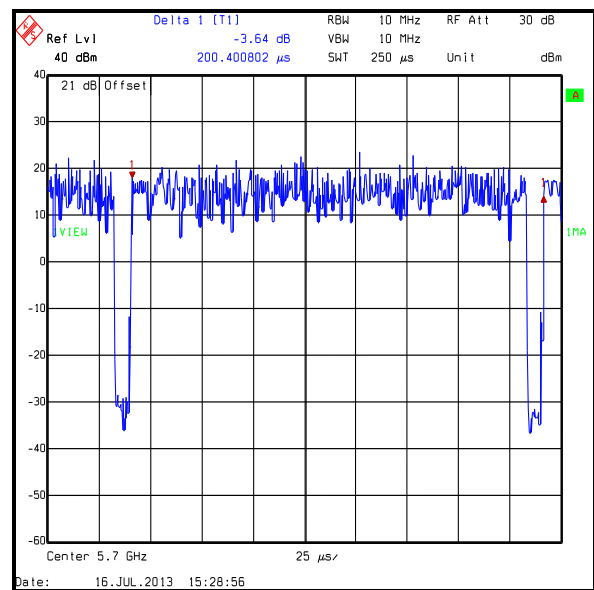
802.11a / 12 Mbps duty cycle: $\geq 98\%$
802.11a / 54 Mbps duty cycle: $10 \log (1 / (0.192/0.200)) = 0.2$
802.11n HT20 / 19.5 Mbps / MCS2 duty cycle: $\geq 98\%$
802.11n HT20 / 28.9 Mbps / MCS3 duty cycle: $\geq 98\%$
802.11n HT20 / 6.5 Mbps / MCS0 duty cycle: $\geq 98\%$
802.11n HT20 / 39 Mbps / MCS4 duty cycle: $\geq 98\%$
802.11n HT20 / 65 Mbps / MCS7 duty cycle: $\geq 98\%$
802.11n HT40 / 27 Mbps / MCS1 duty cycle: $\geq 98\%$
802.11n HT40 / 60 Mbps / MCS3 duty cycle: $\geq 98\%$
802.11n HT40 / 13.5 Mbps / MCS0 duty cycle: $\geq 98\%$
802.11n HT40 / 40.5 Mbps / MCS2 duty cycle: $\geq 98\%$
802.11n HT40 / 81 Mbps / MCS4 duty cycle: $\geq 98\%$
802.11n HT40 / 135 Mbps / MCS7: $10 \log (1 / (0.276/0.286)) = 0.2$
802.11ac VHT20 / 7.2 Mbps / MCS0 duty cycle: $\geq 98\%$
802.11ac VHT20 / 14.4 Mbps / MCS1 duty cycle: $\geq 98\%$
802.11ac VHT20 / 78 Mbps / MCS8: $10 \log (1 / (0.112/0.120)) = 0.3$
802.11ac VHT40 / 30 Mbps / MCS1 duty cycle: $10 \log (1 / (0.245/0.255)) = 0.2$
802.11ac VHT40 / 120 Mbps / MCS5 duty cycle: $10 \log (1 / (0.094/0.103)) = 0.4$
802.11ac VHT40 / 200 Mbps / MCS9 duty cycle: $10 \log (1 / (0.071/0.080)) = 0.5$
802.11ac VHT80 / 29.3 Mbps / MCS0 duty cycle: $10 \log (1 / (0.248/0.259)) = 0.2$
802.11ac VHT80 / 32.5 Mbps / MCS0 duty cycle: $10 \log (1 / (0.227/0.237)) = 0.2$
802.11ac VHT80 / 87.8 Mbps / MCS2 duty cycle: $10 \log (1 / (0.112/0.122)) = 0.4$
802.11ac VHT80 / 175.5 Mbps / MCS4 duty cycle: $10 \log (1 / (0.076/0.086)) = 0.5$
802.11ac VHT80 / 292.5 Mbps / MCS7 duty cycle: $10 \log (1 / (0.064/0.074)) = 0.6$
802.11ac VHT80 / 325 Mbps / MCS7 duty cycle: $10 \log (1 / (0.062/0.072)) = 0.6$
802.11ac VHT80 / 390 Mbps / MCS9 duty cycle: $10 \log (1 / (0.055/0.065)) = 0.7$

- Plots below are for data rates with a duty cycle less than 98%. Results for all other modes are archived on the Company server and available for inspection if required.

Transmitter Duty Cycle (continued)**Results: 802.11a / 20 MHz / 54 Mbps**

Pulse Duration (ms)	Duty Cycle (dB)
0.609	0.2

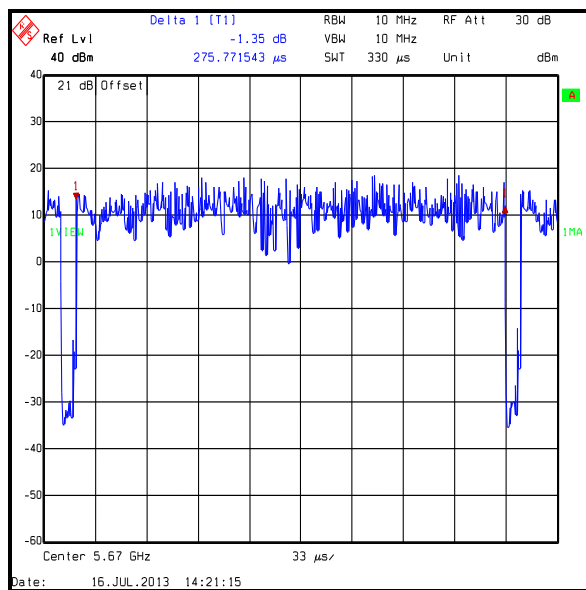
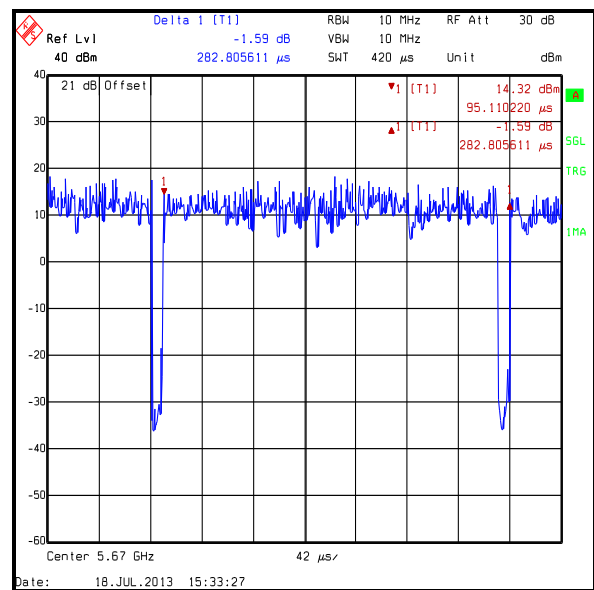
Period (ms)
0.617

**TX on time****TX on + off time**

Transmitter Duty Cycle (continued)**Results: 802.11n / 40 MHz / 135 Mbps**

Pulse Duration (ms)	Duty Cycle (dB)
0.276	0.2

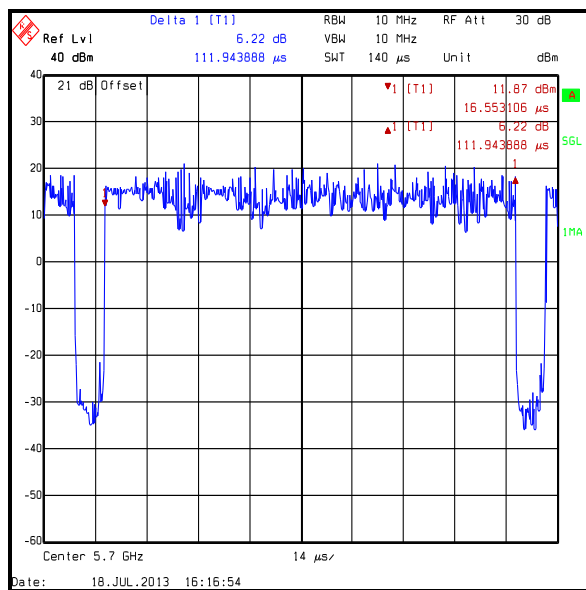
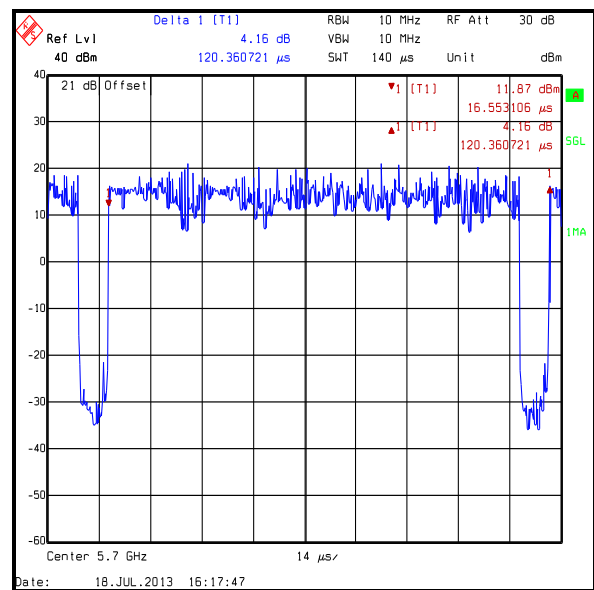
Period (ms)
0.286

**TX on time****TX on + off time**

Transmitter Duty Cycle (continued)**Results: 802.11ac / 20 MHz / 78 Mbps**

Pulse Duration (ms)	Duty Cycle (dB)
0.112	0.3

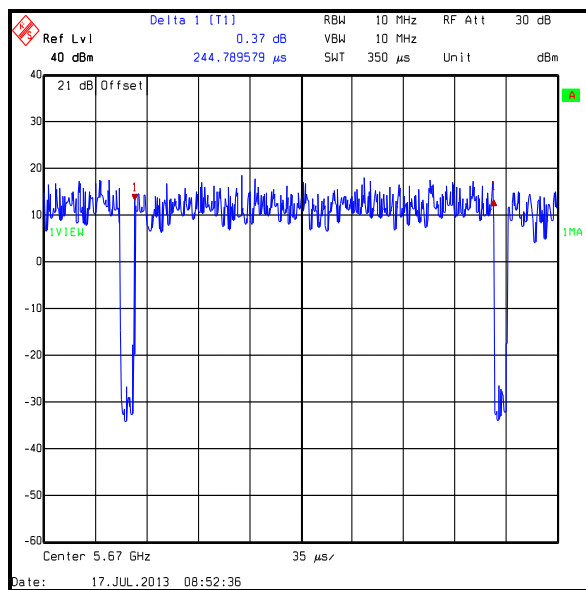
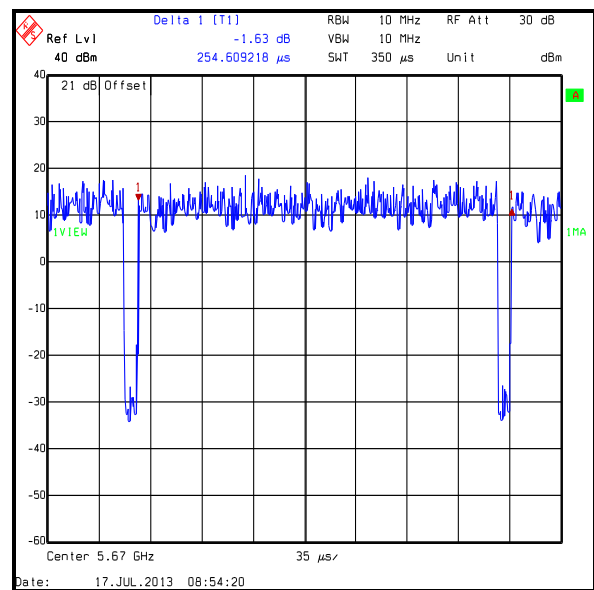
Period (ms)
0.120

**TX on time****TX on + off time**

Transmitter Duty Cycle (continued)**Results: 802.11ac / 40 MHz / 30 Mbps**

Pulse Duration (ms)	Duty Cycle (dB)
0.245	0.2

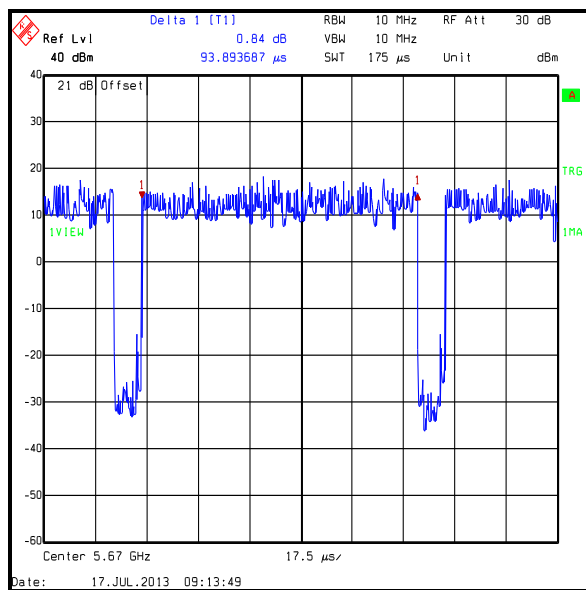
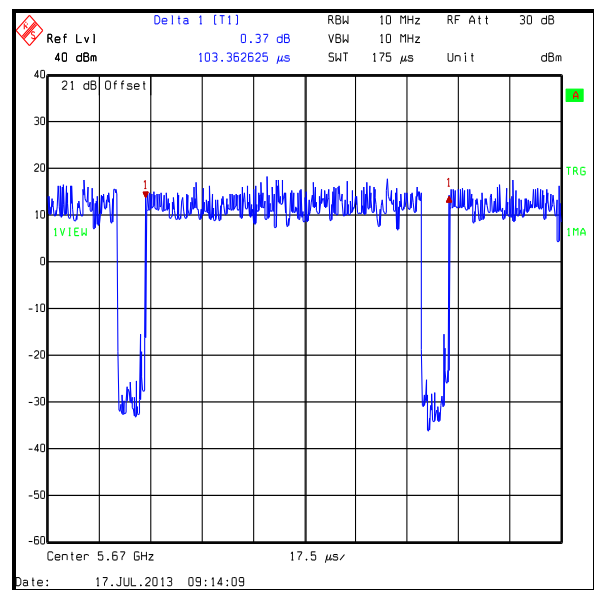
Period (ms)
0.255

**TX on time****TX on + off time**

Transmitter Duty Cycle (continued)**Results: 802.11ac / 40 MHz / 120 Mbps**

Pulse Duration (ms)	Duty Cycle (dB)
0.094	0.4

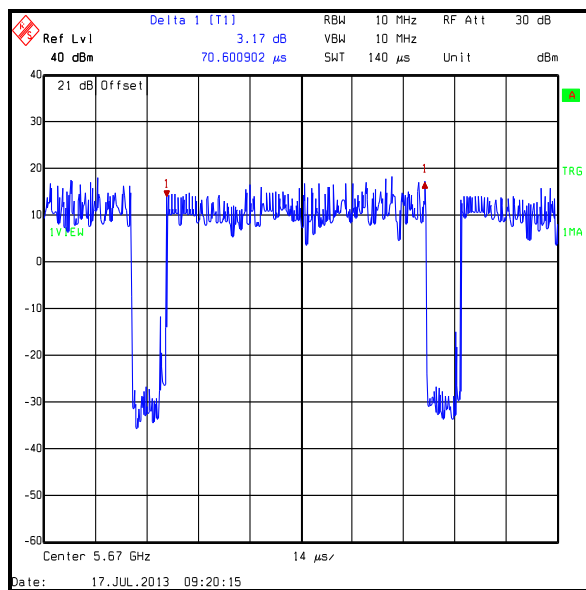
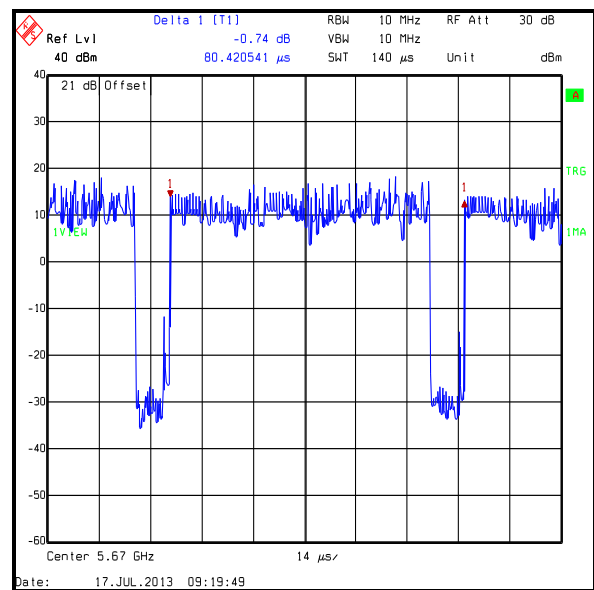
Period (ms)
0.103

**TX on time****TX on + off time**

Transmitter Duty Cycle (continued)**Results: 802.11ac / 40 MHz / 200 Mbps**

Pulse Duration (ms)	Duty Cycle (dB)
0.071	0.5

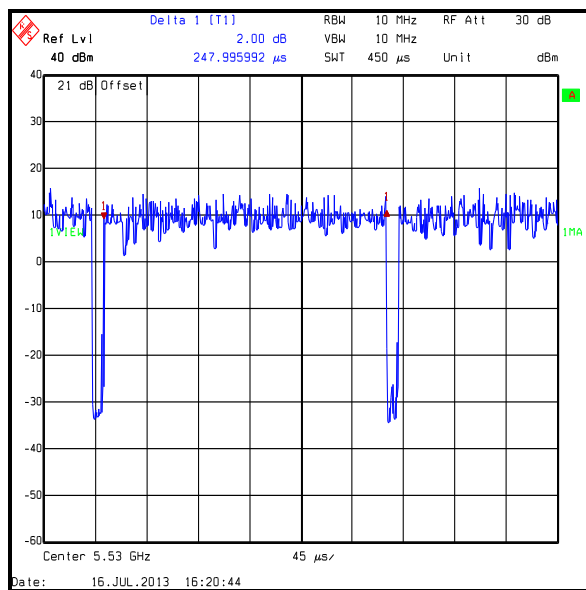
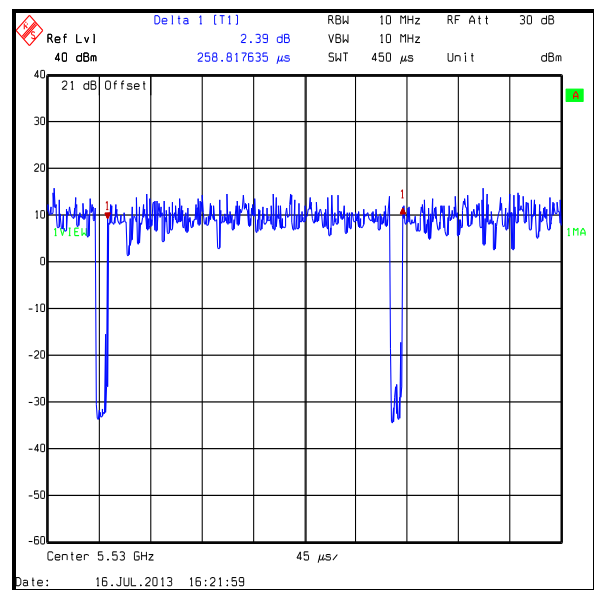
Period (ms)
0.080

**TX on time****TX on + off time**

Transmitter Duty Cycle (continued)**Results: 802.11ac / 80 MHz / 29.3 Mbps / MCS0**

Pulse Duration (ms)	Duty Cycle (dB)
0.248	0.2

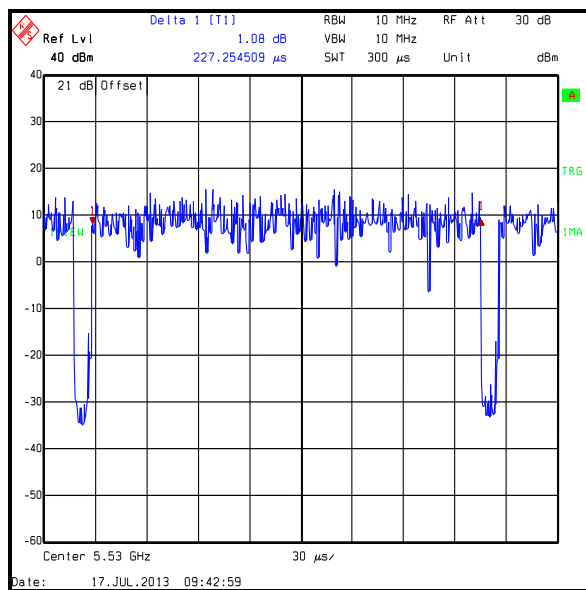
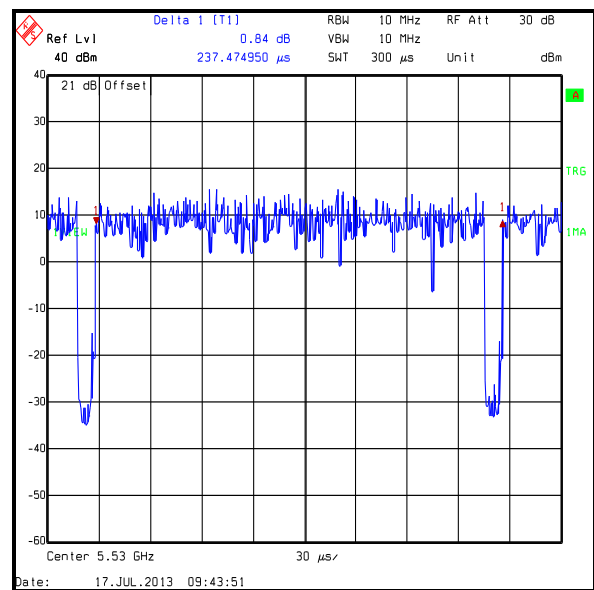
Period (ms)
0.259

**TX on time****TX on + off time**

Transmitter Duty Cycle (continued)**Results: 802.11ac / 80 MHz / 32.5 Mbps / MCS0**

Pulse Duration (ms)	Duty Cycle (dB)
0.227	0.2

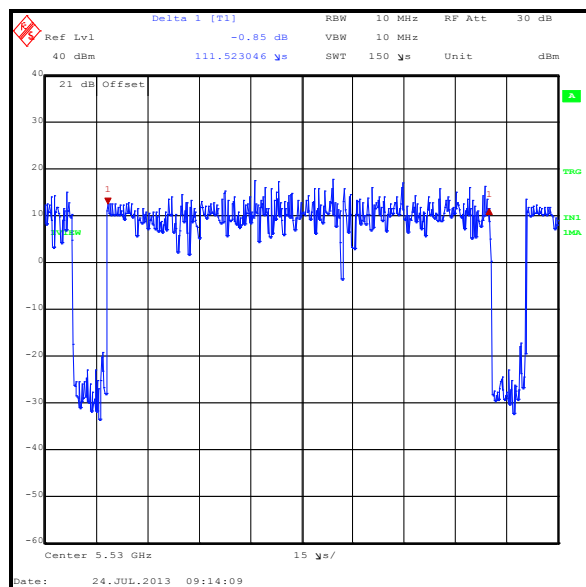
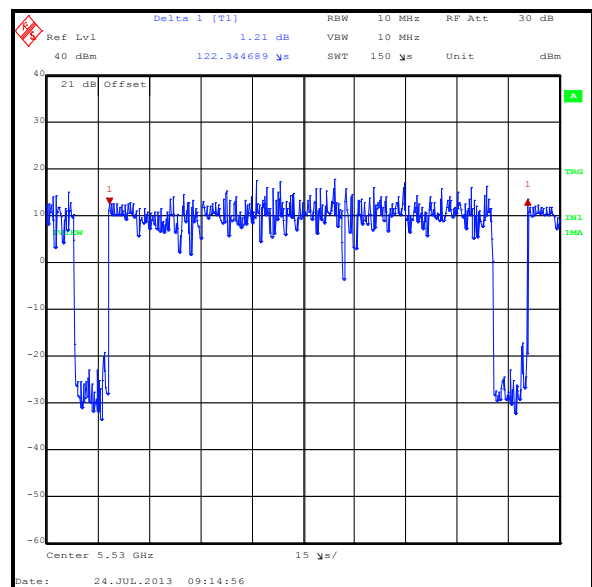
Period (ms)
0.237

**TX on time****TX on + off time**

Transmitter Duty Cycle (continued)**Results: 802.11ac / 80 MHz / 87.8 Mbps / MCS2**

Pulse Duration (ms)	Duty Cycle (dB)
0.112	0.4

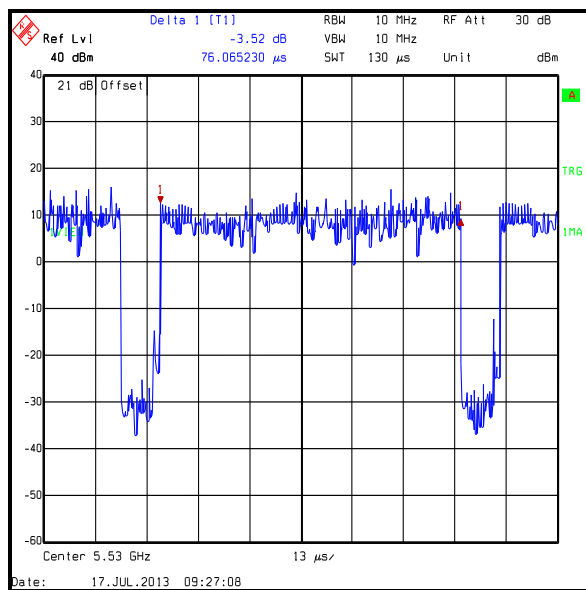
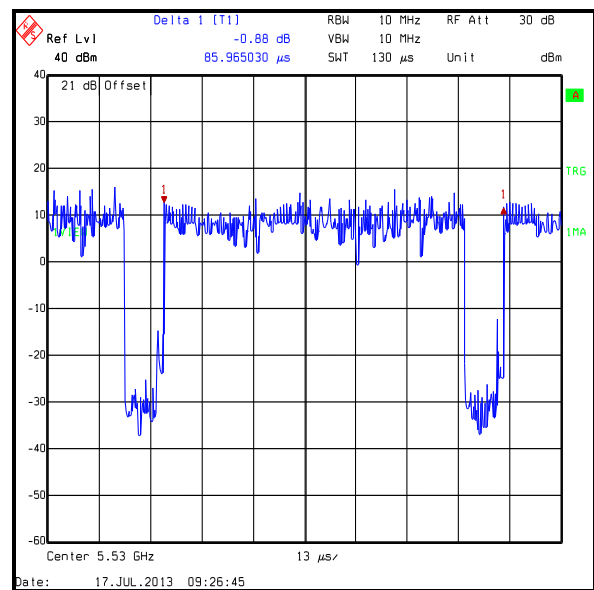
Period (ms)
0.122

**TX on time****TX on + off time**

Transmitter Duty Cycle (continued)**Results: 802.11ac / 80 MHz / 175.5 Mbps / MCS4**

Pulse Duration (ms)	Duty Cycle (dB)
0.076	0.5

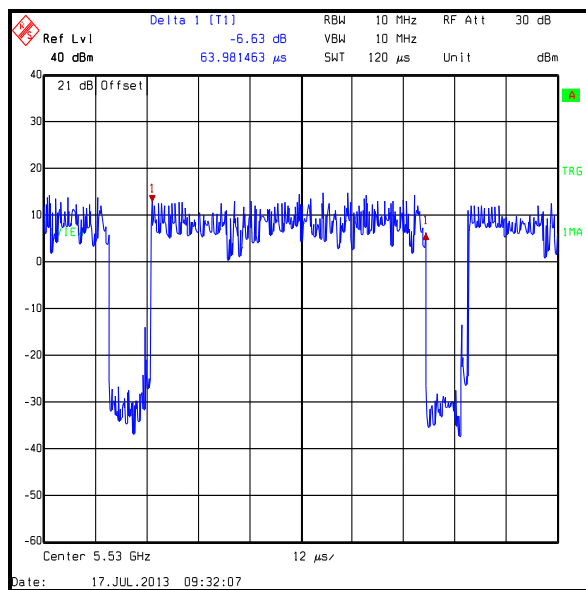
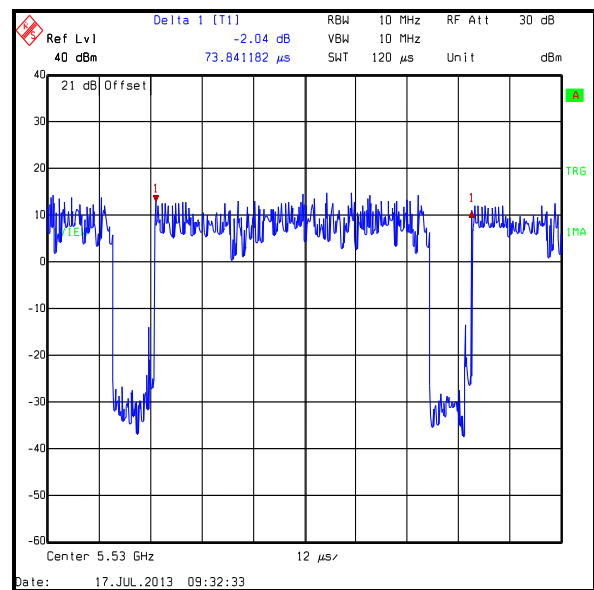
Period (ms)
0.086

**TX on time****TX on + off time**

Transmitter Duty Cycle (continued)**Results: 802.11ac / 80 MHz / 292.5 Mbps / MCS6**

Pulse Duration (ms)	Duty Cycle (dB)
0.064	0.6

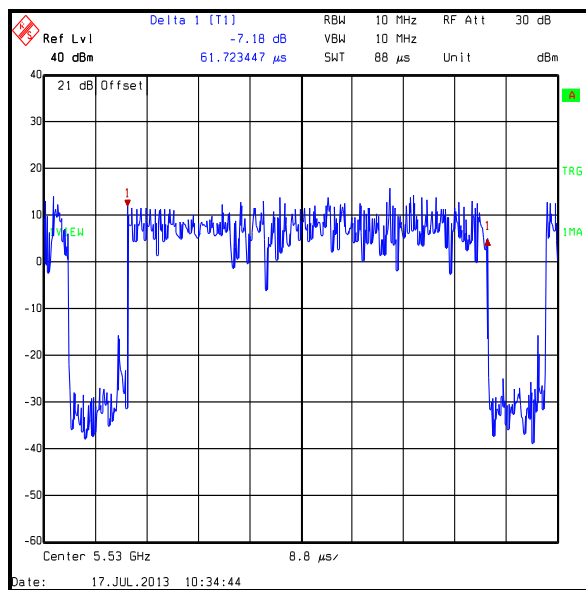
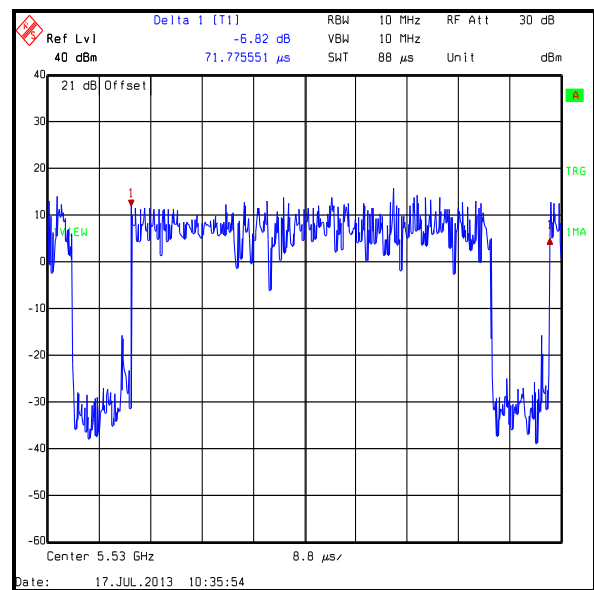
Period (ms)
0.074

**TX on time****TX on + off time**

Transmitter Duty Cycle (continued)**Results: 802.11ac / 80 MHz / 325 Mbps / MCS7**

Pulse Duration (ms)	Duty Cycle (dB)
0.062	0.6

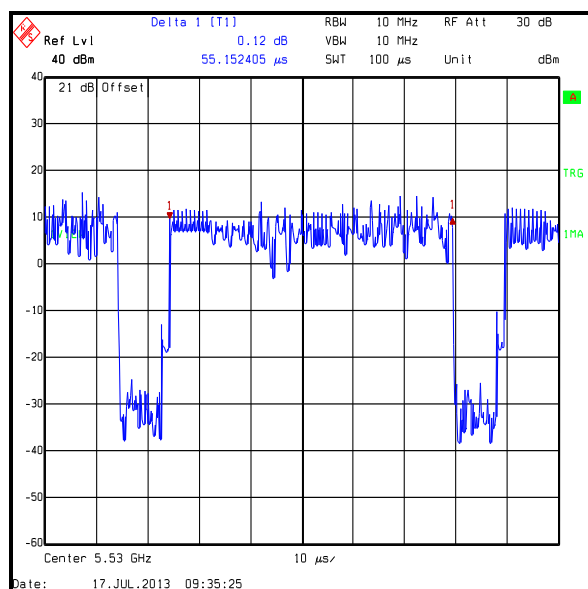
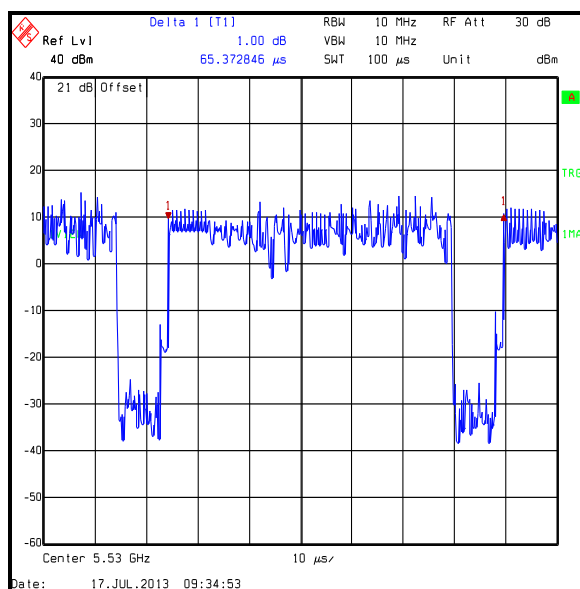
Period (ms)
0.072

**TX on time****TX on + off time**

Transmitter Duty Cycle (continued)**Results: 802.11ac / 80 MHz / 390 Mbps / MCS8**

Pulse Duration (ms)	Duty Cycle (dB)
0.055	0.7

Period (ms)
0.065

**TX on time****TX on + off time****Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermometer / Hygrometer station	JM Handelspunkt	30.5015.13	None stated	24 May 2014	12
A1999	Attenuator	Huber + Suhner	6820.17.B	07101	05 Apr 2014	12
S0520	DC Power Supply	GW instek	GPC-3030	E835141	Calibrated before use	-
M1269	Multimeter	Fluke	179	90250210	30 Jul 2013	12
M1379	Test Receiver	Rohde & Schwarz	ESIB7	100330	15 Oct 2013	12
M127	Spectrum Analyser	Rohde & Schwarz	FSEB 30	842 659/016	13 Aug 2013	12

5.2.4. Transmitter Maximum Conducted Output Power**Test Summary:**

Test Engineer:	Nick Steele	Test Date:	22 July 2013
Test Sample IMEI:	004402451246254		

FCC Reference:	Part 15.407(a)(1)
Test Method Used:	As detailed in FCC KDB 789033 D01 Section E)2)e)

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	39

Transmitter Maximum Conducted Output Power (5.15-5.25 GHz band) (Continued)**Note(s):**

1. All conducted power tests were performed using a test receiver in accordance with FCC KDB 789033 E)2)e) Method SA-2 Alternative.
2. All supported modes and channel widths were initially investigated on one channel. The modes that produced the highest power and therefore deemed worst case were:
 - 802.11a – QPSK / 12 Mbps
 - 802.11n HT20 – QPSK / 19.5 Mbps / MCS2 (GI = 800 ns)
 - 802.11n HT40 – QPSK / 27 Mbps / MCS1 (GI = 800 ns)
 - 802.11ac VHT20 – BPSK / 7.2 Mbps / MCS0 (GI = 400 ns)
 - 802.11ac VHT40 – 64QAM / 120 Mbps / MCS5 (GI = 400 ns)
 - 802.11ac VHT80 – BPSK / 32.5 Mbps / MCS0 (GI = 400 ns)

Measurements were then performed in these modes on bottom, middle and top channels in all operating bands.

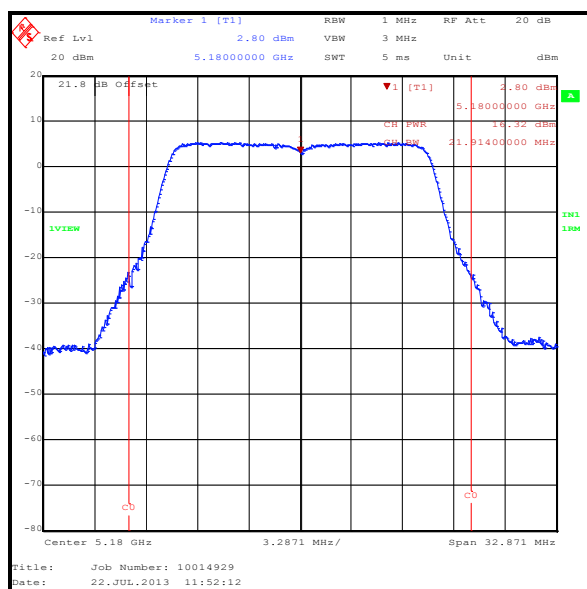
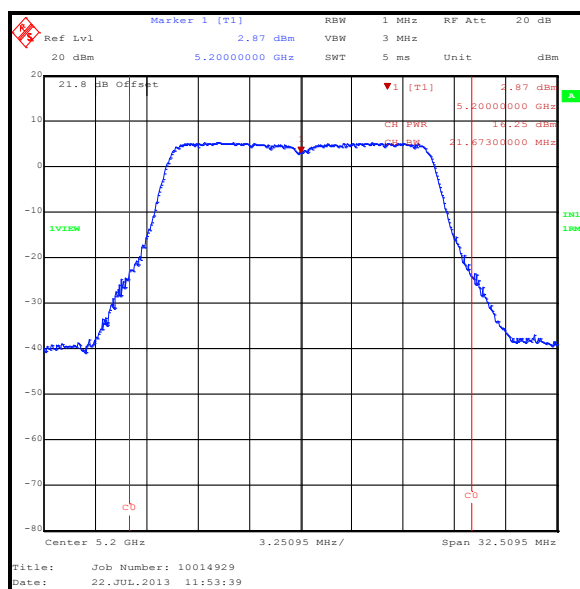
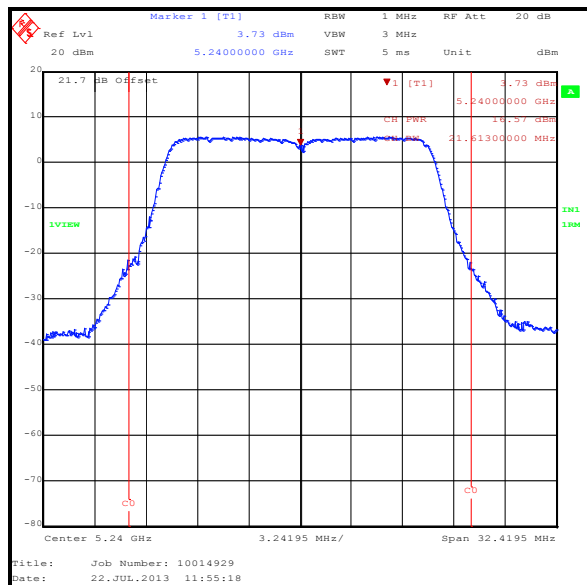
3. For data rates where the EUT was transmitting at <98% duty cycle, the calculated duty cycle in section 5.2.3 was added to the measured power in order to compute the average power during the actual transmission time.
4. The EUT antenna has a gain of <6 dBi.
5. The test receiver was connected to the RF port on the EUT using suitable attenuation and RF cable. An RF level offset was entered on the test receiver to compensate for the loss of the attenuator and RF cable.
6. The Part 15.407(a)(1) limit is the lesser of 50 mW (17.0 dBm) or $4 \text{ dBm} + 10 \log_{10} B$, where B is the previously measured 26 dB emission bandwidth in MHz. The limit for each channel was calculated as below:

802.11a 20 MHz channel width / Bottom channel = $4 \text{ dBm} + 10 \log_{10} 21.9 = 17.4 \text{ dBm}$
802.11a 20 MHz channel width / Middle channel = $4 \text{ dBm} + 10 \log_{10} 21.7 = 17.4 \text{ dBm}$
802.11a 20 MHz channel width / Top channel = $4 \text{ dBm} + 10 \log_{10} 21.6 = 17.3 \text{ dBm}$
802.11n 20 MHz channel width / Bottom channel = $4 \text{ dBm} + 10 \log_{10} 22.2 = 17.5 \text{ dBm}$
802.11n 20 MHz channel width / Middle channel = $4 \text{ dBm} + 10 \log_{10} 22.2 = 17.5 \text{ dBm}$
802.11n 20 MHz channel width / Top channel = $4 \text{ dBm} + 10 \log_{10} 22.2 = 17.5 \text{ dBm}$
802.11n 40 MHz channel width / Bottom channel = $4 \text{ dBm} + 10 \log_{10} 43.1 = 20.3 \text{ dBm}$
802.11n 40 MHz channel width / Top channel = $4 \text{ dBm} + 10 \log_{10} 43.3 = 20.4 \text{ dBm}$
802.11ac 20 MHz channel width / Bottom channel = $4 \text{ dBm} + 10 \log_{10} 22.2 = 17.5 \text{ dBm}$
802.11ac 20 MHz channel width / Middle channel = $4 \text{ dBm} + 10 \log_{10} 22.2 = 17.5 \text{ dBm}$
802.11ac 20 MHz channel width / Top channel = $4 \text{ dBm} + 10 \log_{10} 22.3 = 17.5 \text{ dBm}$
802.11ac 40 MHz channel width / Bottom channel = $4 \text{ dBm} + 10 \log_{10} 43.1 = 20.3 \text{ dBm}$
802.11ac 40 MHz channel width / Top channel = $4 \text{ dBm} + 10 \log_{10} 43.3 = 20.4 \text{ dBm}$
802.11ac 80 MHz channel width / Single channel = $4 \text{ dBm} + 10 \log_{10} 85.7 = 23.3 \text{ dBm}$

Therefore the lesser of the two limits is the fixed limit of 50 mW (17 dBm). This was applied to the results.

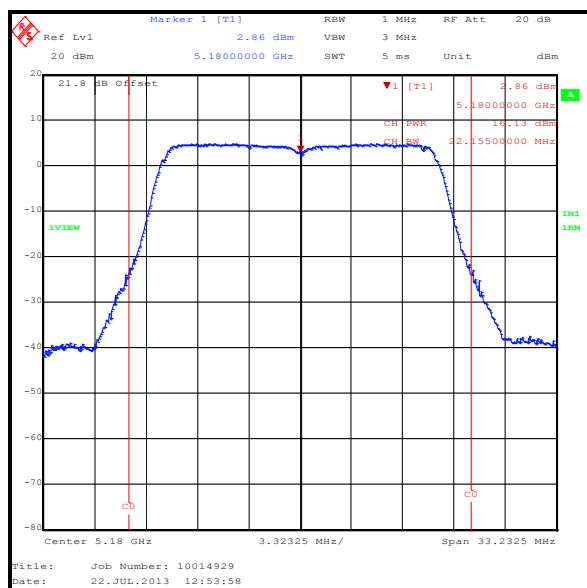
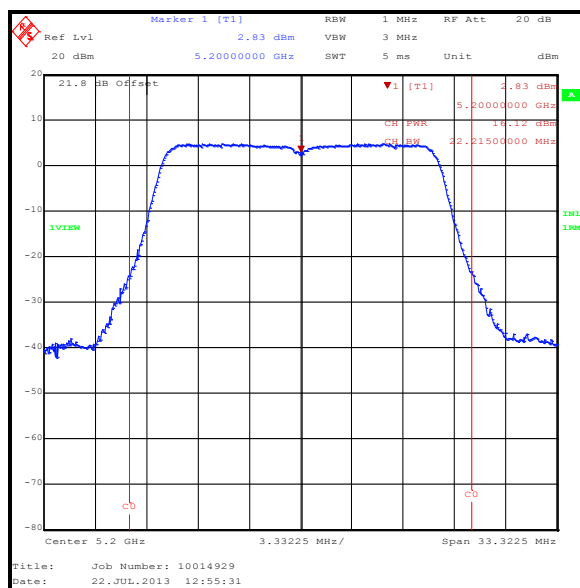
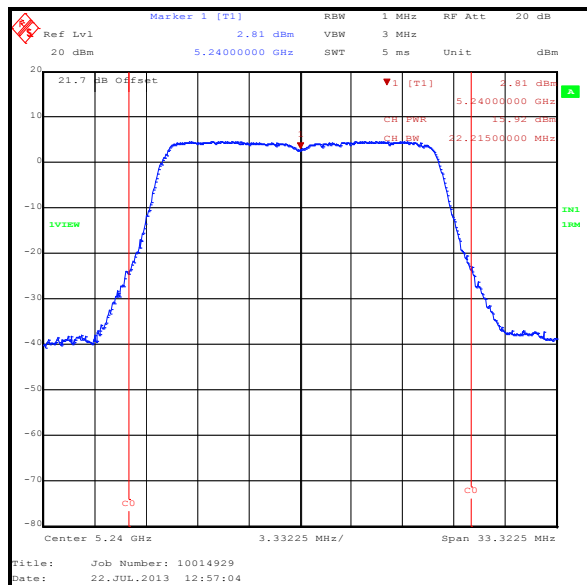
Transmitter Maximum Conducted Output Power (5.15-5.25 GHz band) (Continued)**Results: 802.11a / 20 MHz / QPSK / 12 Mbps**

Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5180	16.3	17.0	0.7	Complied
Middle	5200	16.3	17.0	0.7	Complied
Top	5240	16.6	17.0	0.4	Complied

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

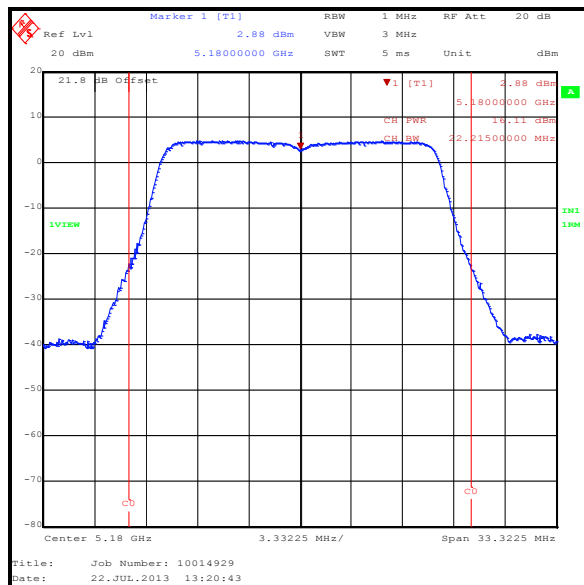
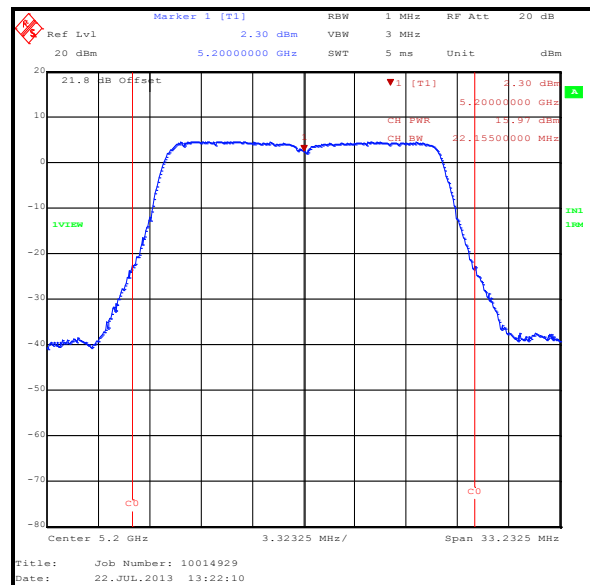
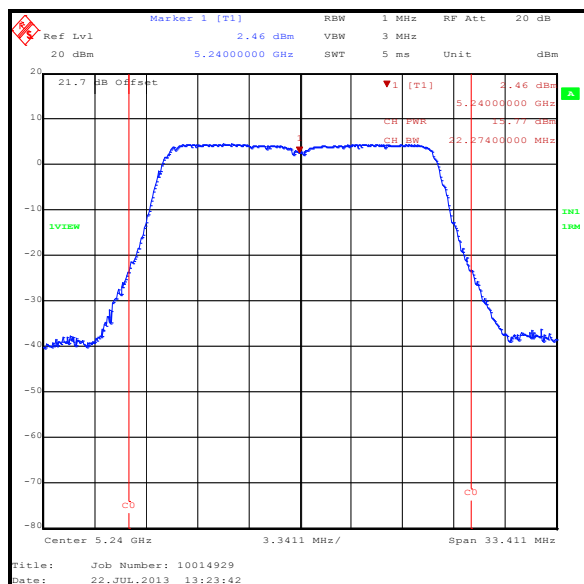
Transmitter Maximum Conducted Output Power (5.15-5.25 GHz band) (Continued)**Results: 802.11n / 20 MHz / QPSK / 19.5 Mbps / MCS2**

Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5180	16.1	17.0	0.9	Complied
Middle	5200	16.1	17.0	0.9	Complied
Top	5240	15.9	17.0	1.1	Complied

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

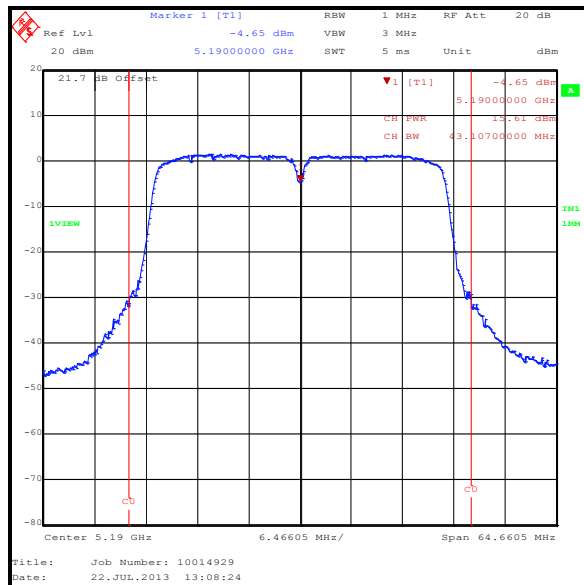
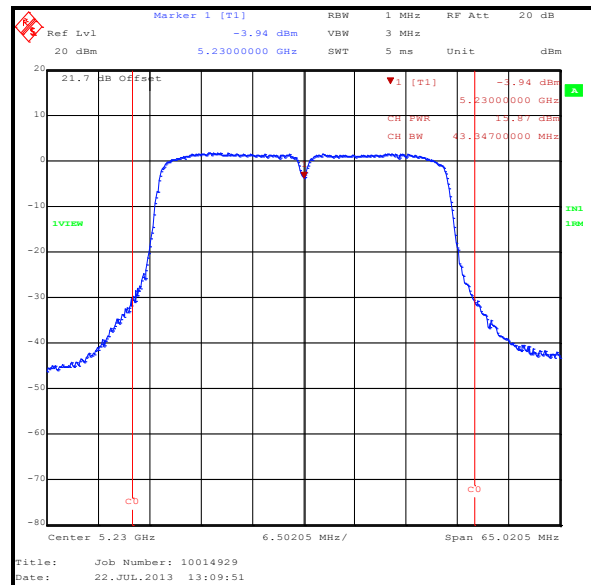
Transmitter Maximum Conducted Output Power (5.15-5.25 GHz band) (Continued)**Results: 802.11ac / 20 MHz / BPSK / 7.2 Mbps / MCS0**

Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5180	16.1	17.0	0.9	Complied
Middle	5200	16.0	17.0	1.0	Complied
Top	5240	15.8	17.0	1.2	Complied

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

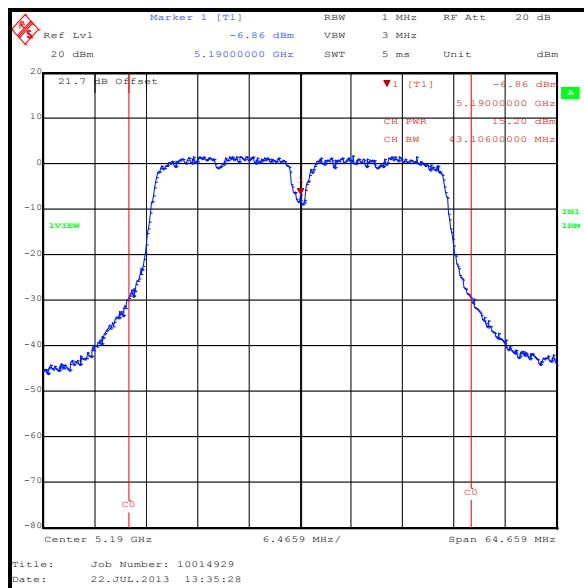
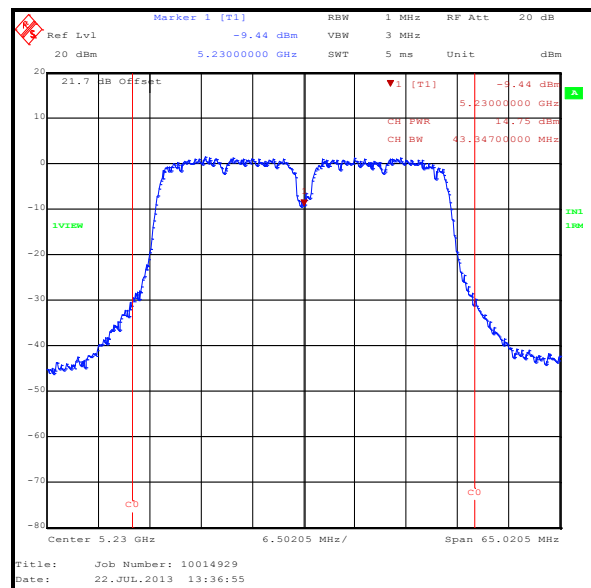
Transmitter Maximum Conducted Output Power (5.15-5.25 GHz band) (Continued)**Results: 802.11n / 40 MHz / QPSK / 27 Mbps / MCS1**

Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5190	15.6	17.0	1.4	Complied
Top	5230	15.9	17.0	1.1	Complied

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

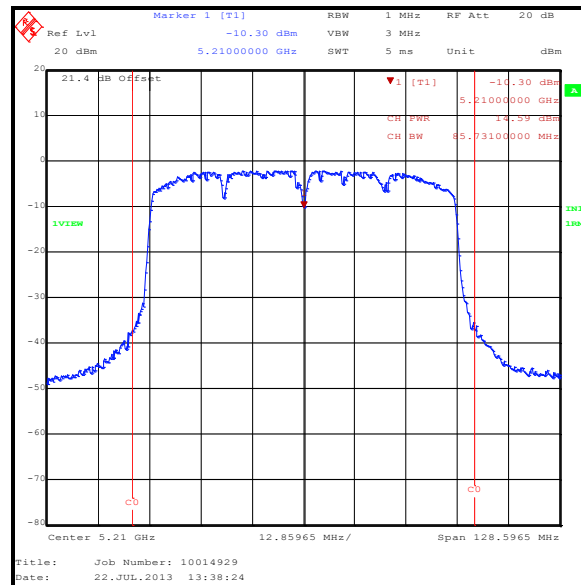
Transmitter Maximum Conducted Output Power (5.15-5.25 GHz band) (Continued)**Results: 802.11ac / 40 MHz / 64QAM / 120 Mbps / MCS5**

Channel	Frequency (MHz)	Conducted Power (dBm)	Duty cycle correction factor (dB)	Corrected Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5190	15.2	0.4	15.6	17.0	1.4	Complied
Top	5230	14.8	0.4	15.2	17.0	1.8	Complied

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

Transmitter Maximum Conducted Output Power (5.15-5.25 GHz band) (Continued)**Results: 802.11ac / 80 MHz / BPSK / 32.5 Mbps / MCS0**

Channel	Frequency (MHz)	Conducted Power (dBm)	Duty cycle correction factor (dB)	Corrected Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Single	5210	14.6	0.2	14.8	17.0	2.2	Complied

**Single Channel**

Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands)**Test Summary:**

Test Engineer:	Nick Steele	Test Date:	22 July 2013
Test Sample IMEI:	004402451246254		

FCC Reference:	Part 15.407(a)(2)
Test Method Used:	As detailed in FCC KDB 789033 D01 Section E)2)e)

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	39

Note(s):

- The FCC Part 15.407(a)(2) limit is the lesser of 250 mW (24.0 dBm) or $11 \text{ dBm} + 10 \log_{10} B$, where B is the previously measured 26 dB emission bandwidth in MHz. The limit for each channel was calculated as below:

5.25-5.35 GHz band

802.11a 20 MHz channel width / Bottom channel = $11 \text{ dBm} + 10 \log_{10} 21.7 = 24.4 \text{ dBm}$
 802.11a 20 MHz channel width / Middle channel = $11 \text{ dBm} + 10 \log_{10} 22.0 = 24.4 \text{ dBm}$
 802.11a 20 MHz channel width / Top channel = $11 \text{ dBm} + 10 \log_{10} 22.2 = 24.5 \text{ dBm}$
 802.11n 20 MHz channel width / Bottom channel = $11 \text{ dBm} + 10 \log_{10} 22.1 = 24.4 \text{ dBm}$
 802.11n 20 MHz channel width / Middle channel = $11 \text{ dBm} + 10 \log_{10} 22.3 = 24.5 \text{ dBm}$
 802.11n 20 MHz channel width / Top channel = $11 \text{ dBm} + 10 \log_{10} 22.0 = 24.4 \text{ dBm}$
 802.11n 40 MHz channel width / Bottom channel = $11 \text{ dBm} + 10 \log_{10} 43.1 = 27.3 \text{ dBm}$
 802.11n 40 MHz channel width / Top channel = $11 \text{ dBm} + 10 \log_{10} 43.6 = 27.4 \text{ dBm}$
 802.11ac 20 MHz channel width / Bottom channel = $11 \text{ dBm} + 10 \log_{10} 22.7 = 24.6 \text{ dBm}$
 802.11ac 20 MHz channel width / Middle channel = $11 \text{ dBm} + 10 \log_{10} 22.2 = 24.5 \text{ dBm}$
 802.11ac 20 MHz channel width / Top channel = $11 \text{ dBm} + 10 \log_{10} 22.3 = 24.5 \text{ dBm}$
 802.11ac 40 MHz channel width / Bottom channel = $11 \text{ dBm} + 10 \log_{10} 43.1 = 27.3 \text{ dBm}$
 802.11ac 40 MHz channel width / Top channel = $11 \text{ dBm} + 10 \log_{10} 43.6 = 27.4 \text{ dBm}$
 802.11ac 80 MHz channel width / Single channel = $11 \text{ dBm} + 10 \log_{10} 85.3 = 30.3 \text{ dBm}$

5.47-5.725 GHz band

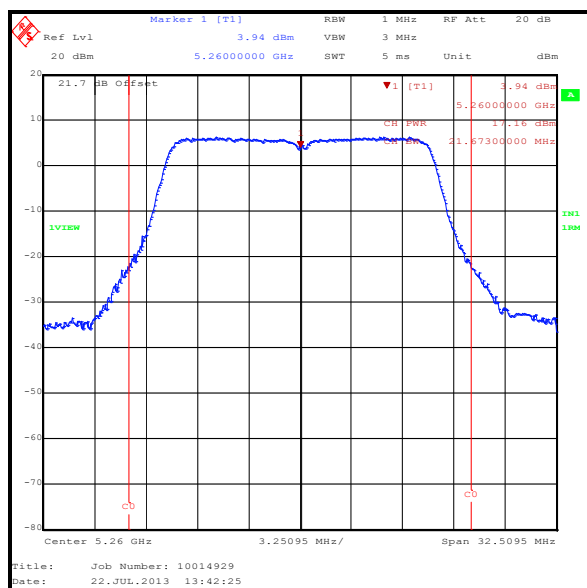
802.11a 20 MHz channel width / Bottom channel = $11 \text{ dBm} + 10 \log_{10} 21.9 = 24.4 \text{ dBm}$
 802.11a 20 MHz channel width / Middle channel = $11 \text{ dBm} + 10 \log_{10} 22.1 = 24.4 \text{ dBm}$
 802.11a 20 MHz channel width / Top channel = $11 \text{ dBm} + 10 \log_{10} 21.8 = 24.4 \text{ dBm}$
 802.11n 20 MHz channel width / Bottom channel = $11 \text{ dBm} + 10 \log_{10} 22.2 = 24.5 \text{ dBm}$
 802.11n 20 MHz channel width / Middle channel = $11 \text{ dBm} + 10 \log_{10} 22.2 = 24.5 \text{ dBm}$
 802.11n 20 MHz channel width / Top channel = $11 \text{ dBm} + 10 \log_{10} 22.1 = 24.4 \text{ dBm}$
 802.11n 40 MHz channel width / Bottom channel = $11 \text{ dBm} + 10 \log_{10} 42.9 = 27.3 \text{ dBm}$
 802.11n 40 MHz channel width / Middle channel = $11 \text{ dBm} + 10 \log_{10} 43.3 = 27.4 \text{ dBm}$
 802.11n 40 MHz channel width / Top channel = $11 \text{ dBm} + 10 \log_{10} 43.3 = 27.4 \text{ dBm}$
 802.11ac 20 MHz channel width / Bottom channel = $11 \text{ dBm} + 10 \log_{10} 22.0 = 24.4 \text{ dBm}$
 802.11ac 20 MHz channel width / Middle channel = $11 \text{ dBm} + 10 \log_{10} 22.2 = 24.5 \text{ dBm}$
 802.11ac 20 MHz channel width / Top channel = $11 \text{ dBm} + 10 \log_{10} 22.2 = 24.5 \text{ dBm}$
 802.11ac 40 MHz channel width / Bottom channel = $11 \text{ dBm} + 10 \log_{10} 42.9 = 27.3 \text{ dBm}$
 802.11ac 40 MHz channel width / Middle channel = $11 \text{ dBm} + 10 \log_{10} 42.9 = 27.3 \text{ dBm}$
 802.11ac 40 MHz channel width / Top channel = $11 \text{ dBm} + 10 \log_{10} 42.9 = 27.3 \text{ dBm}$
 802.11ac 80 MHz channel width / Single channel = $11 \text{ dBm} + 10 \log_{10} 85.3 = 30.3 \text{ dBm}$

The lesser of the two limits is the fixed limit of 250 mW (24.0 dBm). This was applied to the results.

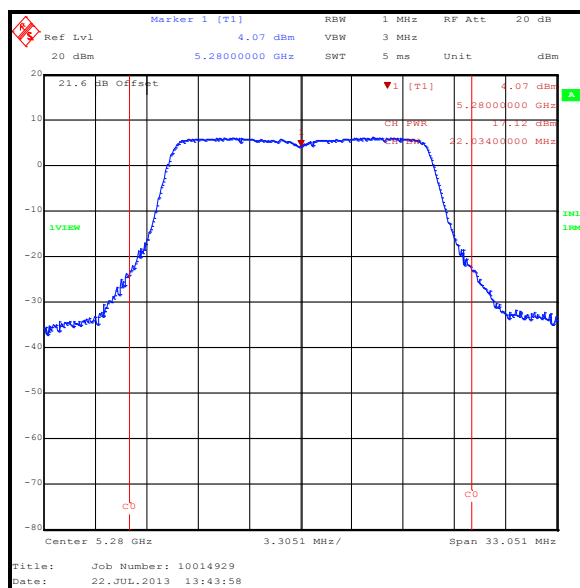
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) **(continued)**

Results: 802.11a / 20 MHz / QPSK / 12 Mbps / 5.25-5.35 GHz band

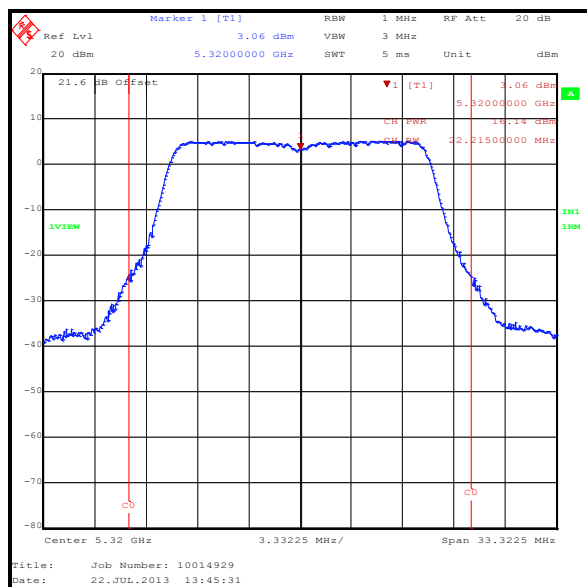
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5260	17.2	24.0	6.8	Complied
Middle	5280	17.1	24.0	6.9	Complied
Top	5320	16.1	24.0	7.9	Complied



Bottom Channel



Middle Channel

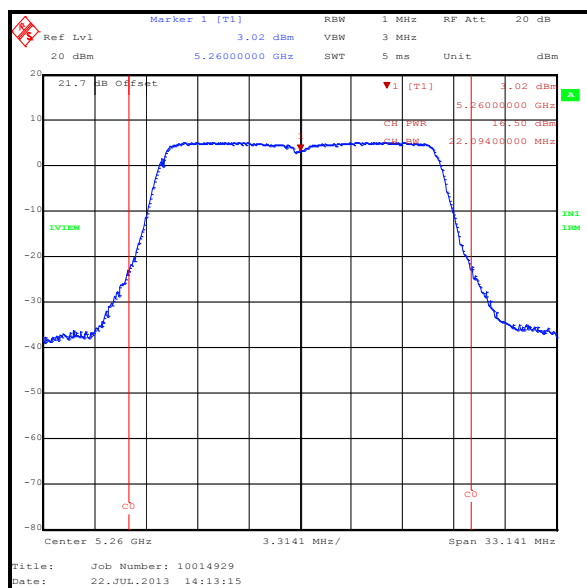


Top Channel

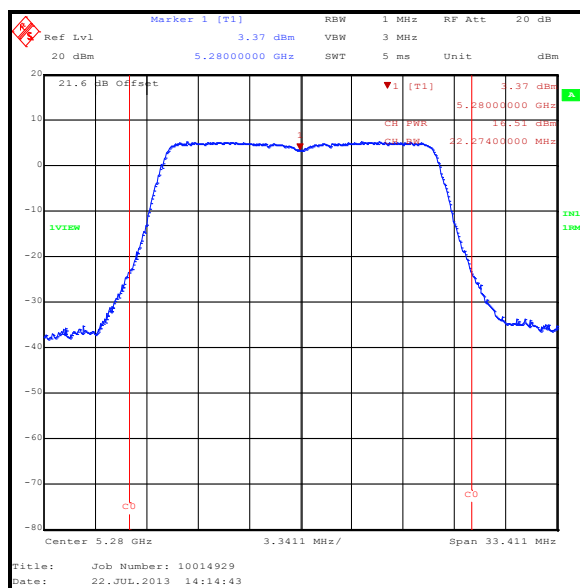
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) **(continued)**

Results: 802.11n / 20 MHz / QPSK / 19.5 Mbps / MCS2 / 5.25-5.35 GHz band

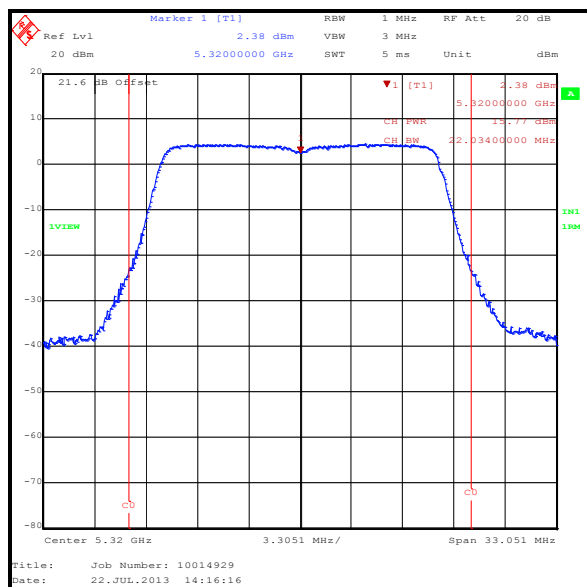
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5260	16.5	24.0	7.5	Complied
Middle	5280	16.5	24.0	7.5	Complied
Top	5320	15.8	24.0	8.2	Complied



Bottom Channel



Middle Channel

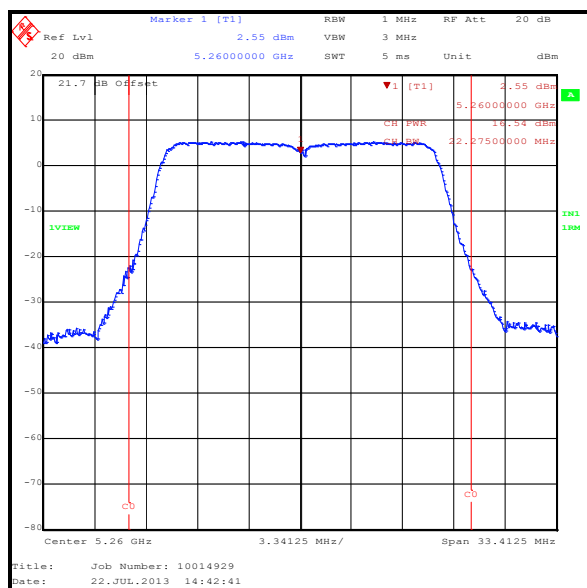


Top Channel

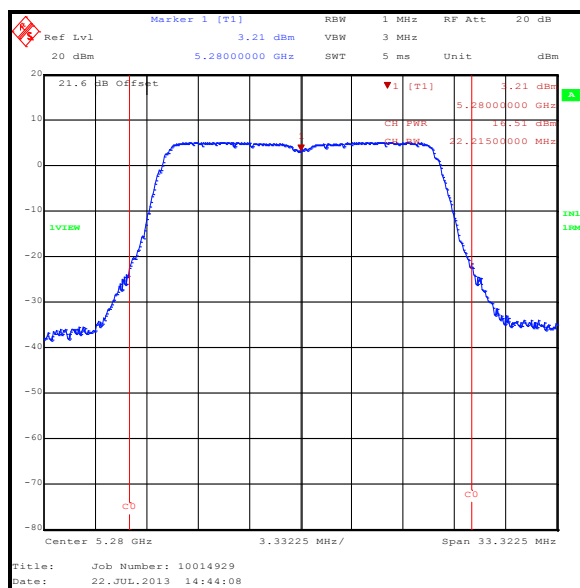
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) **(continued)**

Results: 802.11ac / 20 MHz / BPSK / 7.2 Mbps / MCS0 / 5.25-5.35 GHz band

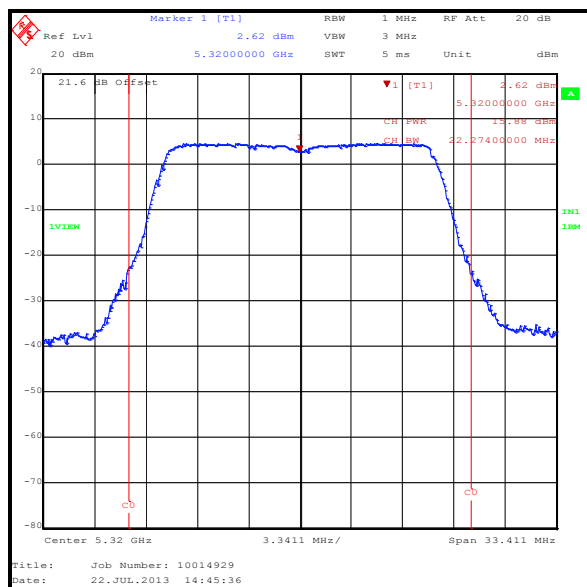
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5260	16.5	24.0	7.5	Complied
Middle	5280	16.5	24.0	7.5	Complied
Top	5320	15.9	24.0	8.1	Complied



Bottom Channel



Middle Channel

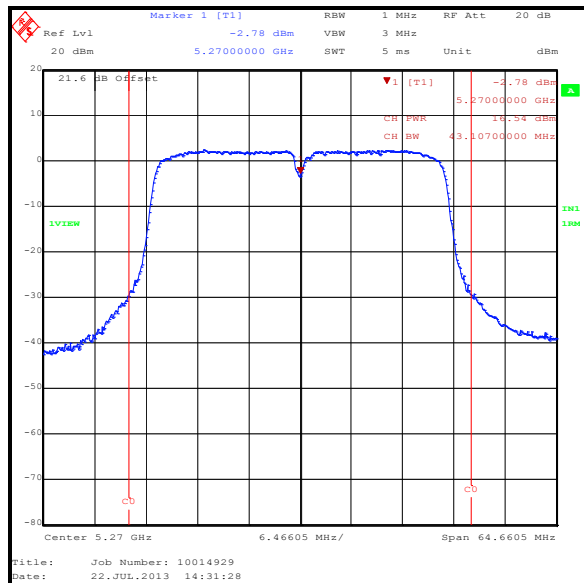


Top Channel

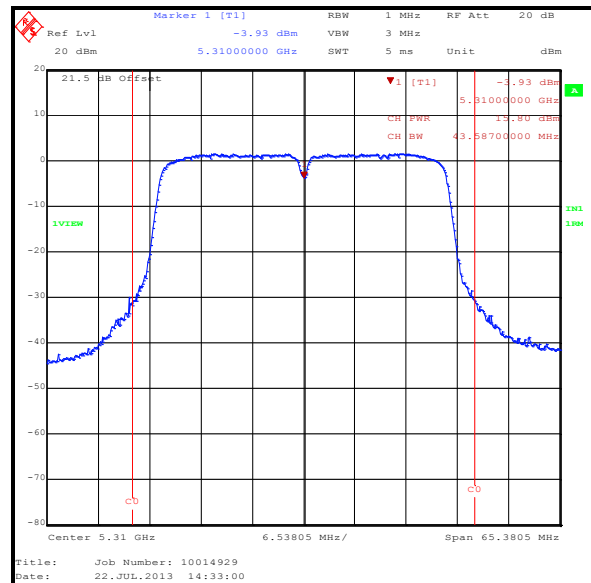
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands)

Results: 802.11n / 40 MHz / QPSK / 27 Mbps / MCS1 / 5.25-5.35 GHz band

Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5270	16.5	24.0	7.5	Complied
Top	5310	15.8	24.0	8.2	Complied



Bottom Channel

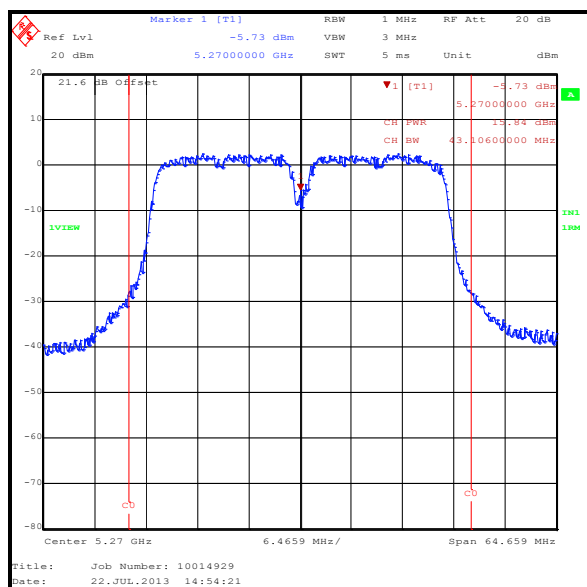


Top Channel

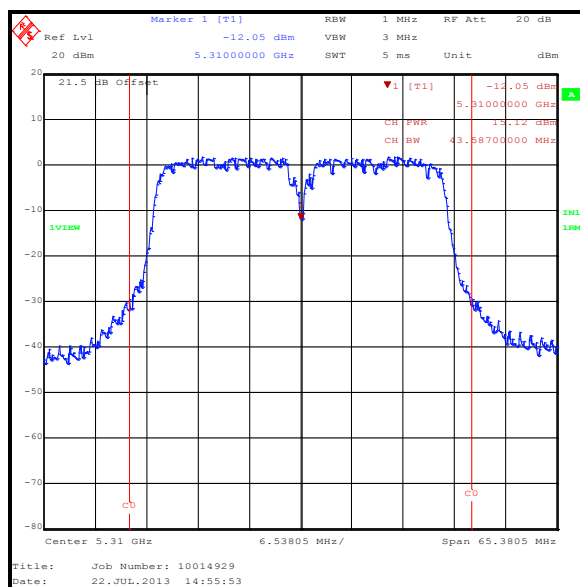
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) **(continued)**

Results: 802.11ac / 40 MHz / 64QAM / 120 Mbps / MCS5 / 5.25-5.35 GHz band

Channel	Frequency (MHz)	Conducted Power (dBm)	Duty cycle correction factor (dB)	Corrected Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5270	15.8	0.4	16.2	24.0	7.8	Complied
Top	5310	15.1	0.4	15.5	24.0	8.5	Complied



Bottom Channel

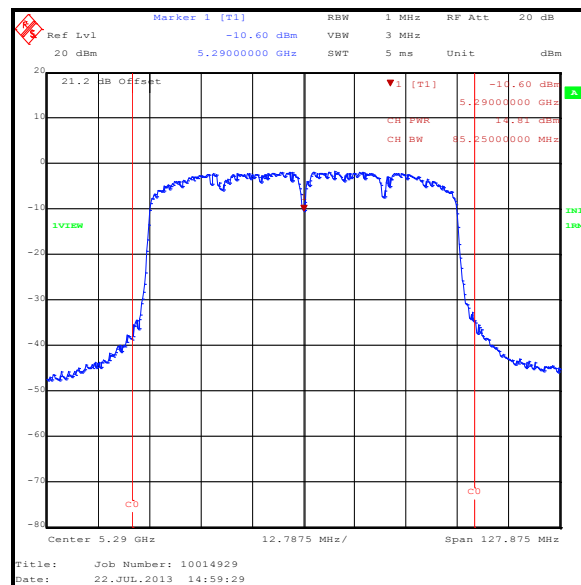


Top Channel

Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) **(continued)**

Results: 802.11ac / 80 MHz / BPSK / 32.5 Mbps / MCS0 / 5.25-5.35 GHz band

Channel	Frequency (MHz)	Conducted Power (dBm)	Duty cycle correction factor (dB)	Corrected Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Single	5290	14.8	0.2	15.0	24.0	9.0	Complied

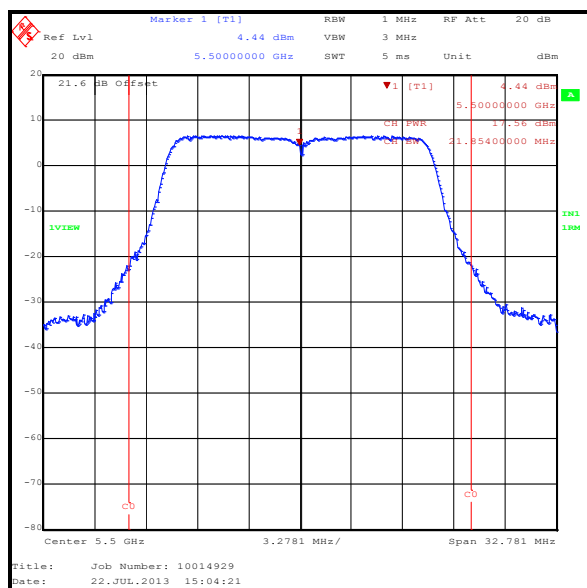


Single Channel

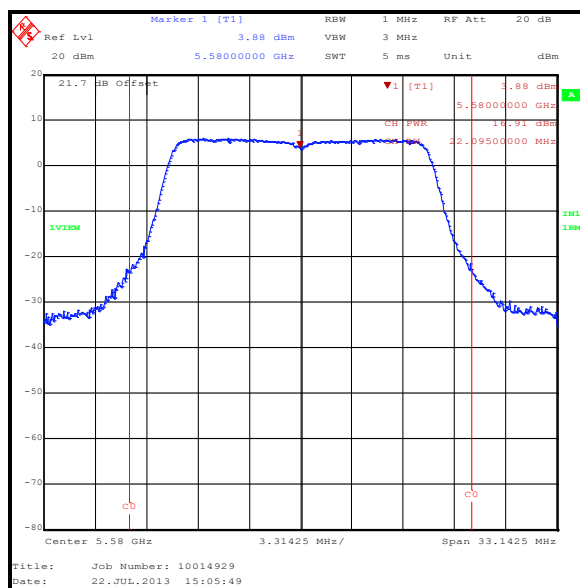
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) **(continued)**

Results: 802.11a / 20 MHz / QPSK / 12 Mbps / 5.47-5.725 GHz band

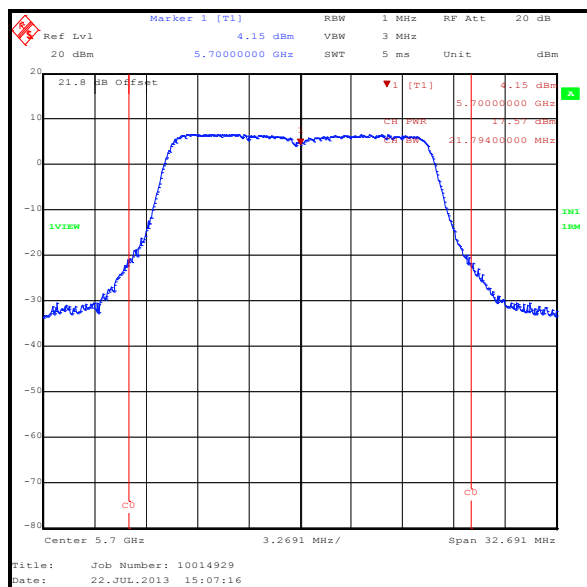
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5500	17.6	24.0	6.4	Complied
Middle	5580	16.9	24.0	7.1	Complied
Top	5700	17.6	24.0	6.4	Complied



Bottom Channel



Middle Channel

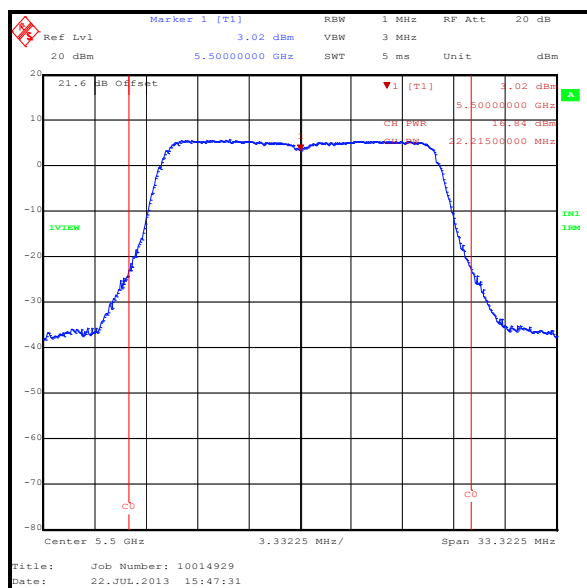


Top Channel

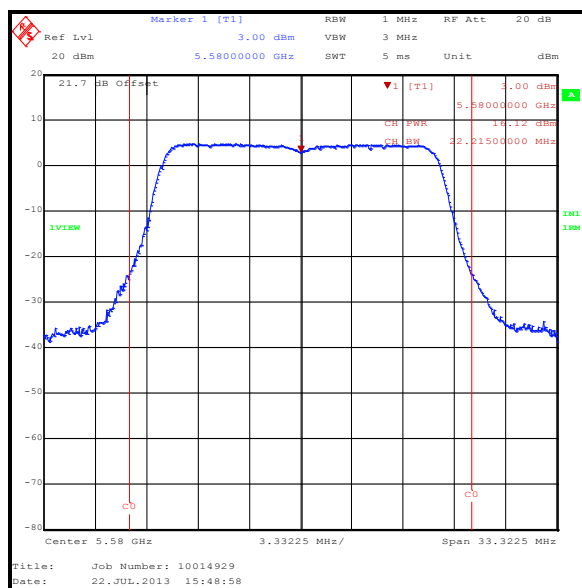
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) **(continued)**

Results: 802.11n / 20 MHz / QPSK / 19.5 Mbps / MCS2 / 5.47-5.725 GHz band

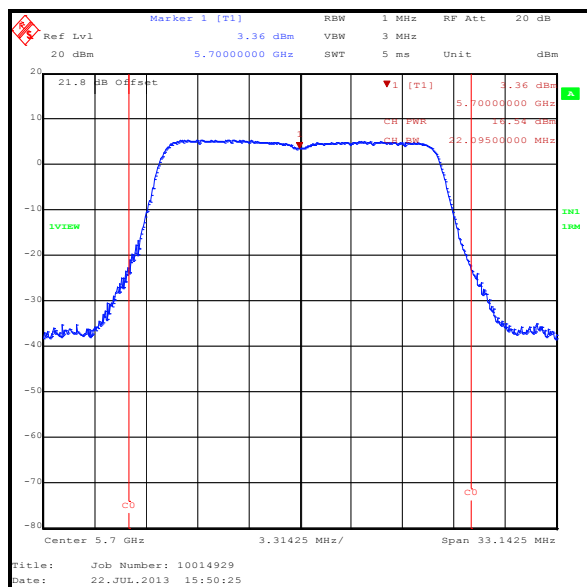
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5500	16.8	24.0	7.2	Complied
Middle	5580	16.1	24.0	7.9	Complied
Top	5700	16.5	24.0	7.5	Complied



Bottom Channel



Middle Channel

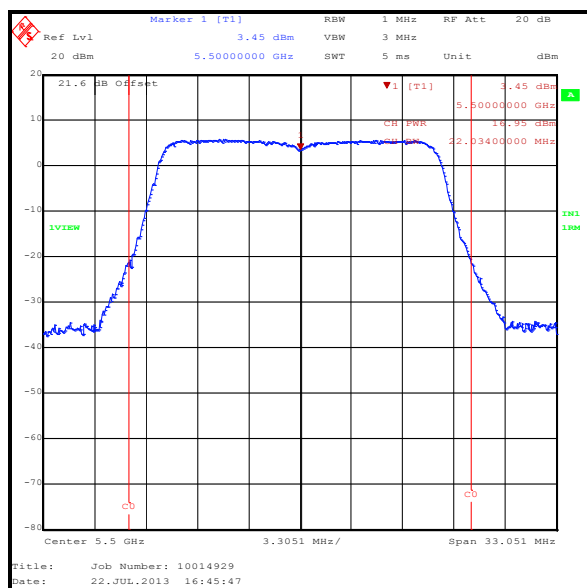


Top Channel

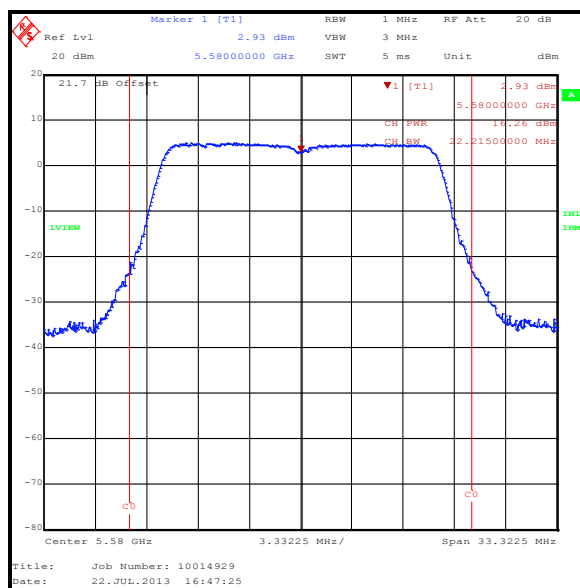
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) **(continued)**

Results: 802.11ac / 20 MHz / BPSK / 7.2 Mbps / MCS0 / 5.47-5.725 GHz band

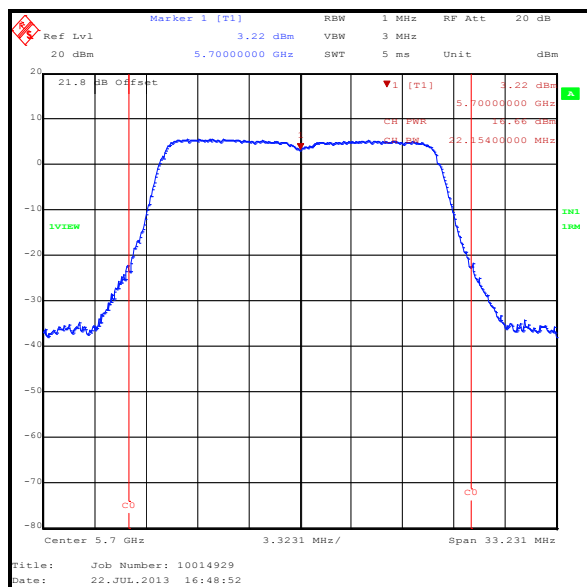
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5500	17.0	24.0	7.0	Complied
Middle	5580	16.3	24.0	7.7	Complied
Top	5700	16.7	24.0	7.3	Complied



Bottom Channel



Middle Channel

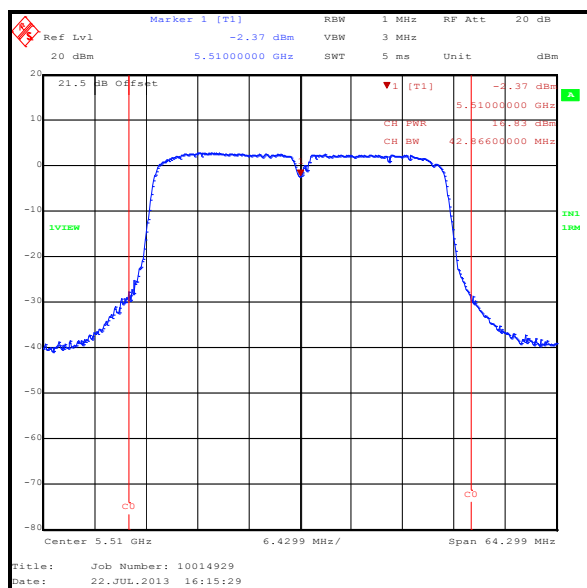


Top Channel

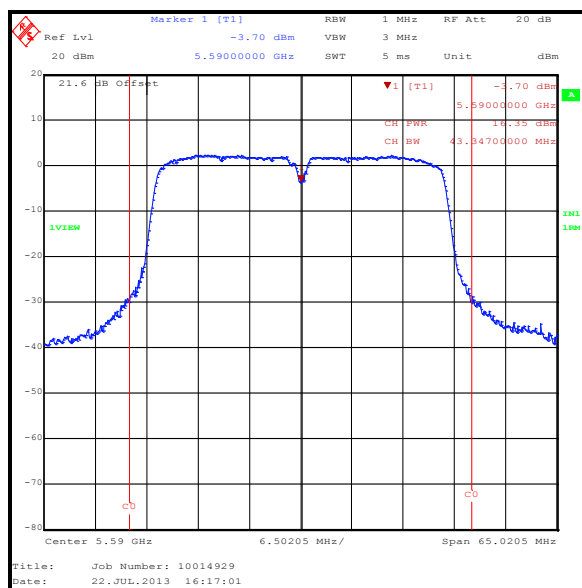
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) **(continued)**

Results: 802.11n / 40 MHz / QPSK / 27 Mbps / MCS1 / 5.47-5.725 GHz band

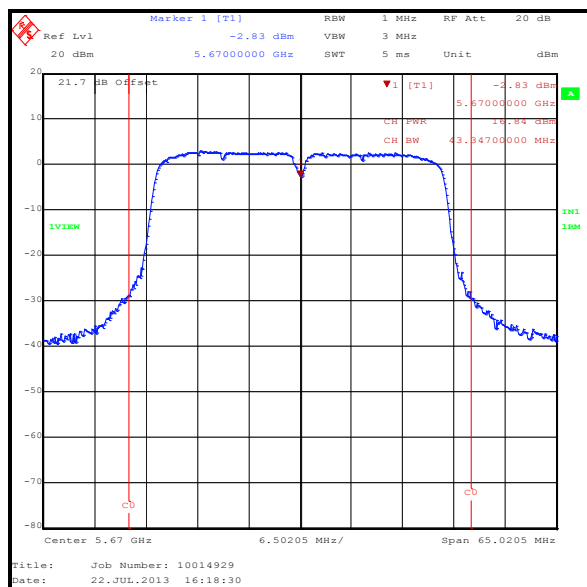
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5510	16.8	24.0	7.2	Complied
Middle	5590	16.4	24.0	7.6	Complied
Top	5670	16.8	24.0	7.2	Complied



Bottom Channel



Middle Channel

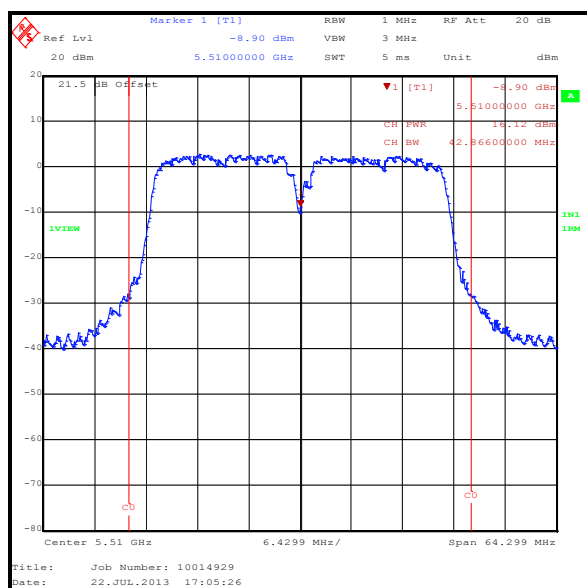


Top Channel

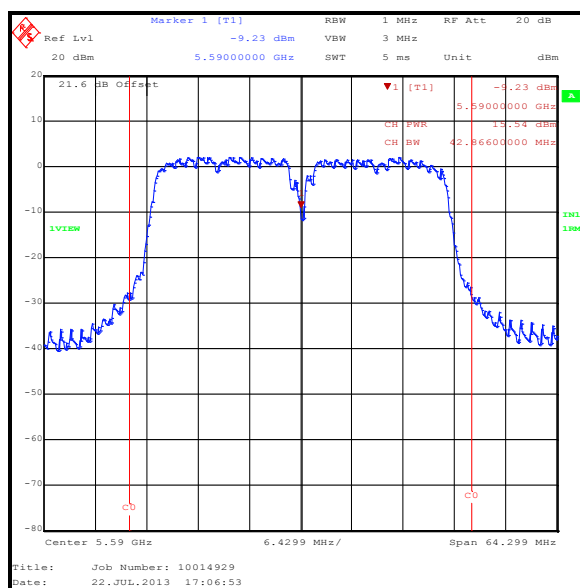
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) **(continued)**

Results: 802.11ac / 40 MHz / 64QAM / 120 Mbps / MCS5 / 5.47-5.725 GHz band

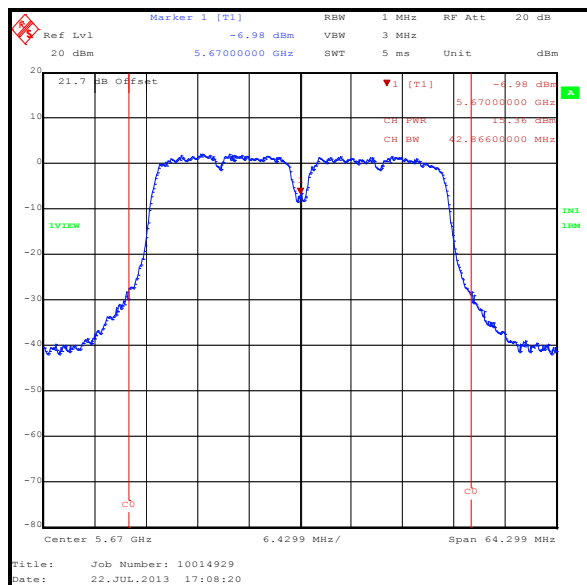
Channel	Frequency (MHz)	Conducted Power (dBm)	Duty cycle correction factor (dB)	Corrected Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5510	16.1	0.4	16.5	24.0	7.5	Complied
Middle	5590	15.5	0.4	15.9	24.0	8.1	Complied
Top	5670	15.4	0.4	15.8	24.0	8.2	Complied



Bottom Channel



Middle Channel

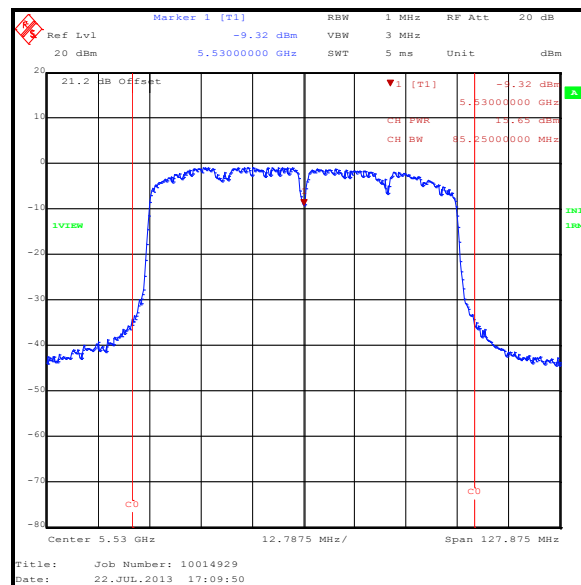


Top Channel

Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) **(continued)**

Results: 802.11ac / 80 MHz / BPSK / 32.5 Mbps / MCS0 / 5.47-5.725 GHz band

Channel	Frequency (MHz)	Conducted Power (dBm)	Duty cycle correction factor (dB)	Corrected Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Single	5530	15.7	0.2	15.9	24.0	8.1	Complied



Single Channel

Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band)**Test Summary:**

Test Engineer:	Nick Steele	Test Date:	22 July 2013
Test Sample IMEI:	004402451246254		

FCC Reference:	Part 15.407(a)(3)
Test Method Used:	As detailed in FCC KDB 789033 D01 Section E)2)e)

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	39

Note(s):

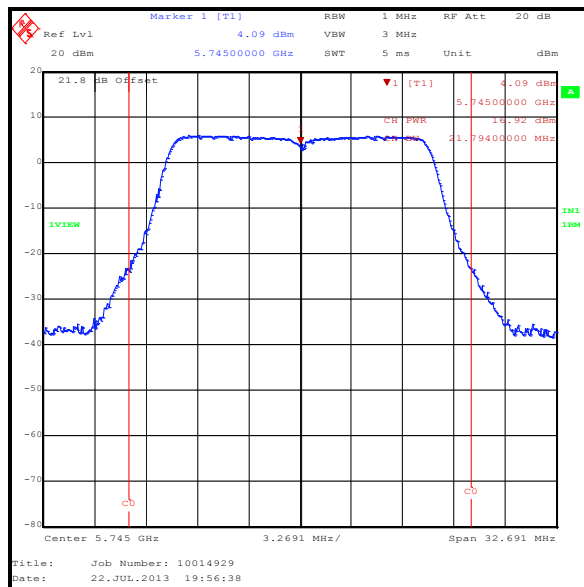
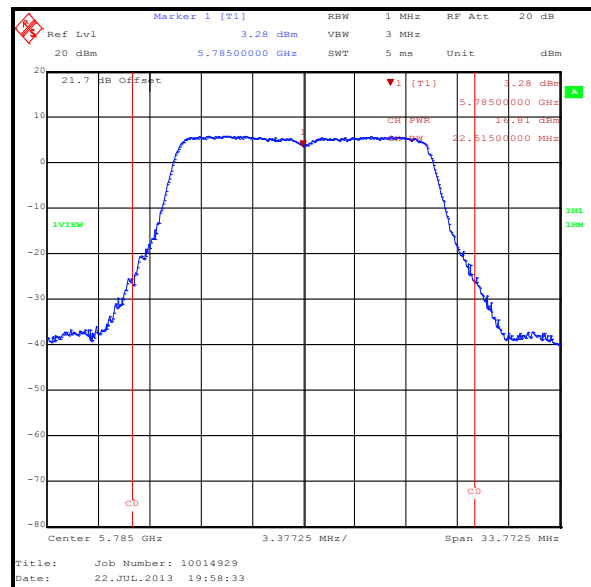
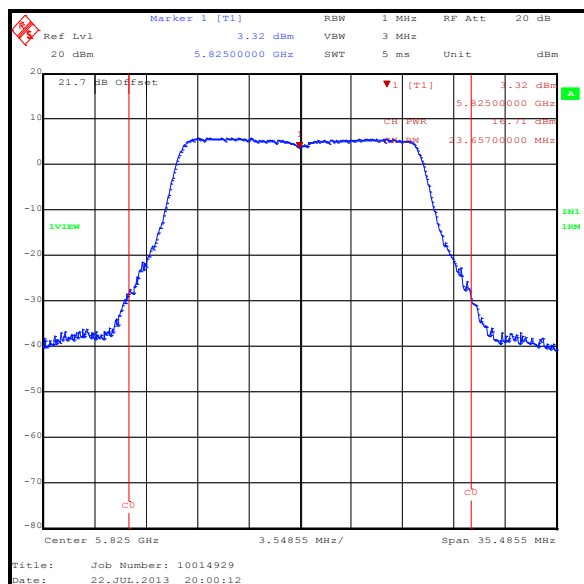
- The FCC Part 15.407(a)(3) limit is the lesser of 1 W (30.0 dBm) or $17 \text{ dBm} + 10 \log_{10} B$, where B is the previously measured 26 dB emission bandwidth in MHz. The limit for each channel was calculated as below:

$802.11a \text{ 20 MHz channel width / Bottom channel} = 17 \text{ dBm} + 10 \log_{10} 21.8 = 30.4 \text{ dBm}$
 $802.11a \text{ 20 MHz channel width / Middle channel} = 17 \text{ dBm} + 10 \log_{10} 22.5 = 30.5 \text{ dBm}$
 $802.11a \text{ 20 MHz channel width / Top channel} = 17 \text{ dBm} + 10 \log_{10} 23.7 = 30.7 \text{ dBm}$
 $802.11n \text{ 20 MHz channel width / Bottom channel} = 17 \text{ dBm} + 10 \log_{10} 22.3 = 30.5 \text{ dBm}$
 $802.11n \text{ 20 MHz channel width / Middle channel} = 17 \text{ dBm} + 10 \log_{10} 23.2 = 30.7 \text{ dBm}$
 $802.11n \text{ 20 MHz channel width / Top channel} = 17 \text{ dBm} + 10 \log_{10} 23.7 = 30.7 \text{ dBm}$
 $802.11n \text{ 40 MHz channel width / Bottom channel} = 17 \text{ dBm} + 10 \log_{10} 43.5 = 33.4 \text{ dBm}$
 $802.11n \text{ 40 MHz channel width / Top channel} = 17 \text{ dBm} + 10 \log_{10} 43.6 = 33.4 \text{ dBm}$
 $802.11ac \text{ 20 MHz channel width / Bottom channel} = 17 \text{ dBm} + 10 \log_{10} 23.7 = 30.7 \text{ dBm}$
 $802.11ac \text{ 20 MHz channel width / Middle channel} = 17 \text{ dBm} + 10 \log_{10} 23.8 = 30.8 \text{ dBm}$
 $802.11ac \text{ 20 MHz channel width / Top channel} = 17 \text{ dBm} + 10 \log_{10} 23.6 = 30.7 \text{ dBm}$
 $802.11ac \text{ 40 MHz channel width / Bottom channel} = 17 \text{ dBm} + 10 \log_{10} 43.1 = 33.3 \text{ dBm}$
 $802.11ac \text{ 40 MHz channel width / Top channel} = 17 \text{ dBm} + 10 \log_{10} 42.7 = 33.3 \text{ dBm}$
 $802.11ac \text{ 80 MHz channel width / Single channel} = 17 \text{ dBm} + 10 \log_{10} 85.3 = 36.3 \text{ dBm}$

The lesser of the two limits is the fixed limit of 1 W (30.0 dBm). This was applied to the results.

Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)**Results: 802.11a / 20 MHz / QPSK / 12 Mbps**

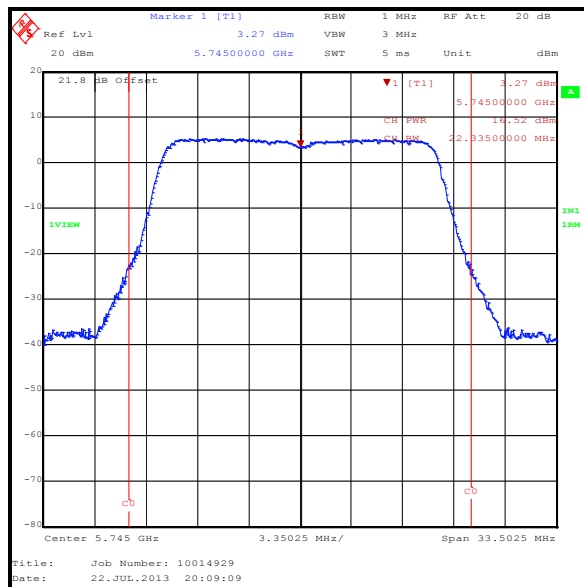
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5745	16.9	30.0	13.1	Complied
Middle	5785	16.8	30.0	13.2	Complied
Top	5825	16.7	30.0	13.3	Complied

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

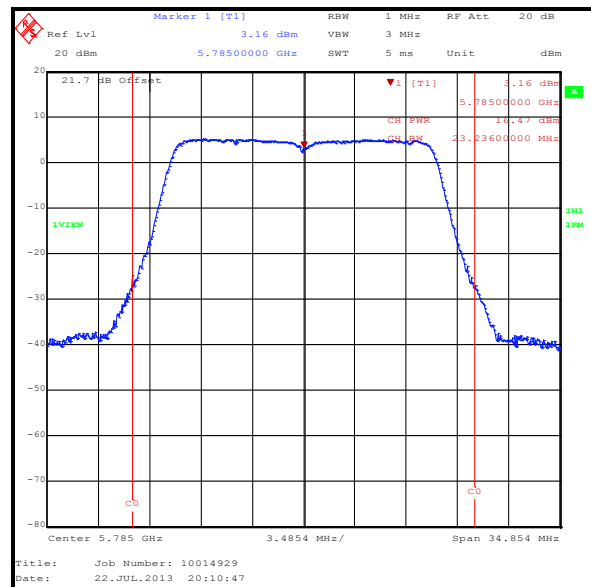
Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)

Results: 802.11n / 20 MHz / QPSK / 19.5 Mbps / MCS2

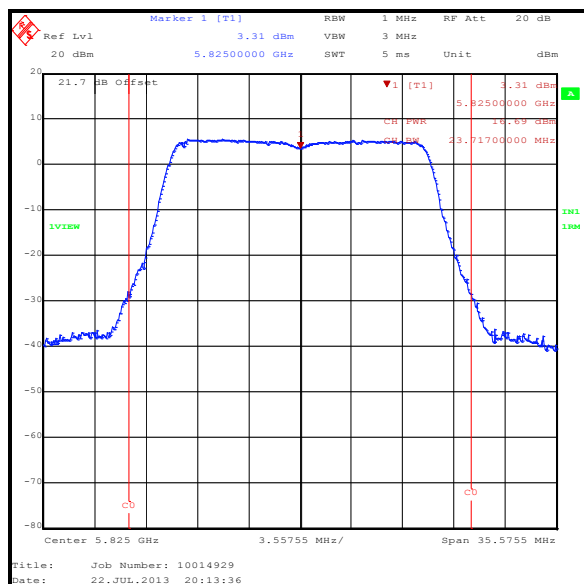
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5745	16.5	30.0	13.5	Complied
Middle	5785	16.5	30.0	13.5	Complied
Top	5825	16.7	30.0	13.3	Complied



Bottom Channel



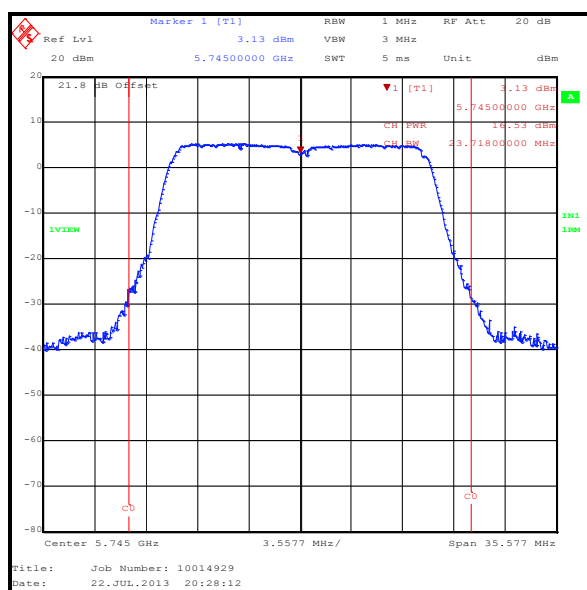
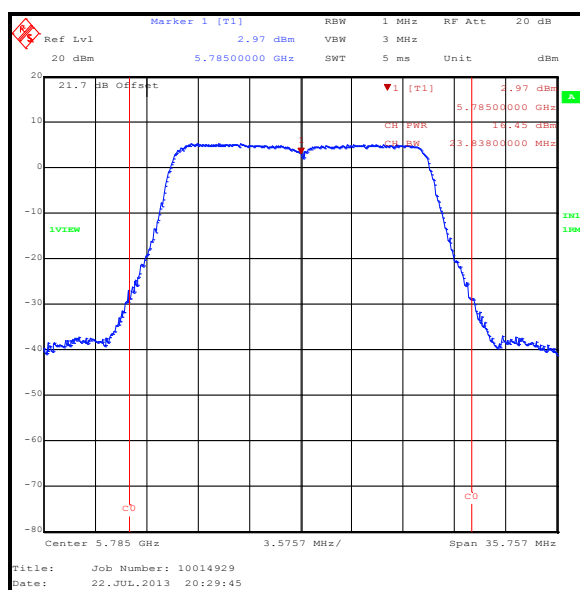
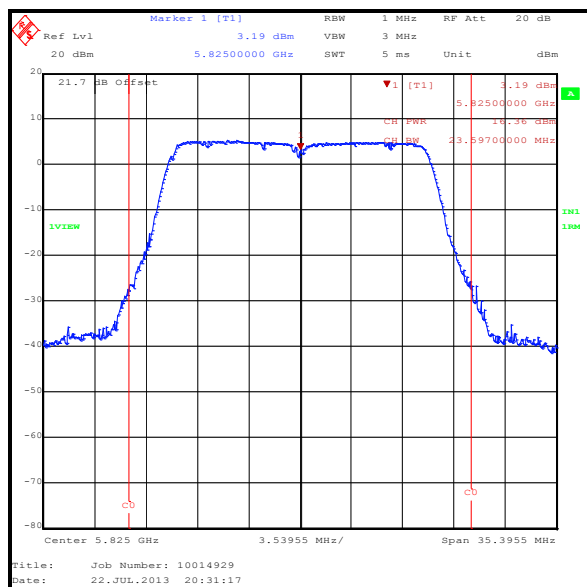
Middle Channel



Top Channel

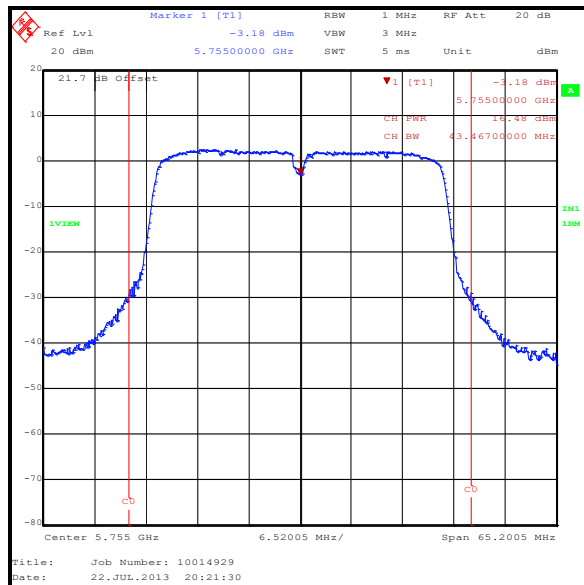
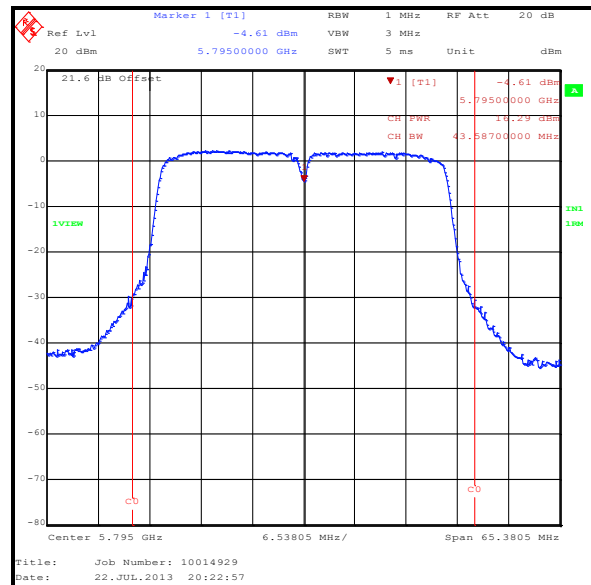
Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)**Results: 802.11ac / 20 MHz / BPSK / 7.2 Mbps / MCS0**

Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5745	16.5	30.0	13.5	Complied
Middle	5785	16.5	30.0	13.5	Complied
Top	5825	16.4	30.0	13.6	Complied

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

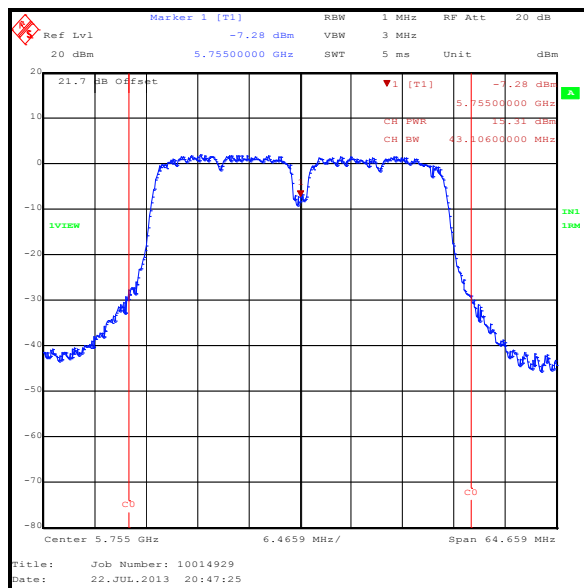
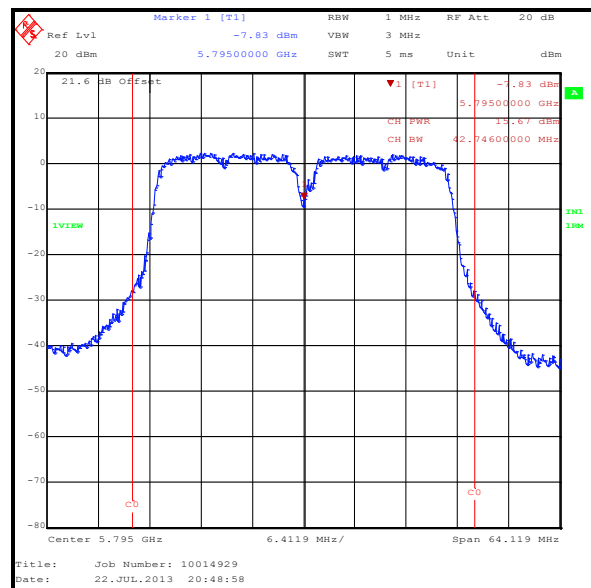
Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)**Results: 802.11n / 40 MHz / QPSK / 27 Mbps / MCS1**

Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5755	16.5	30.0	13.5	Complied
Top	5795	16.3	30.0	13.7	Complied

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

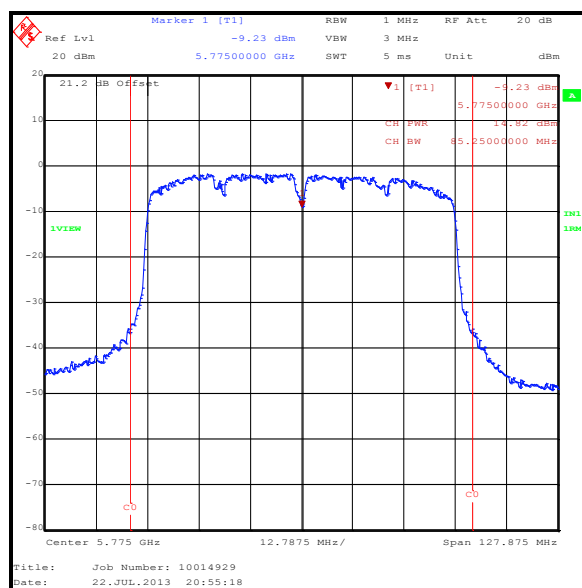
Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)**Results: 802.11ac / 40 MHz / 64QAM / 120 Mbps / MCS5**

Channel	Frequency (MHz)	Conducted Power (dBm)	Duty cycle correction factor (dB)	Corrected Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5755	15.3	0.4	15.7	30.0	14.3	Complied
Top	5795	15.7	0.4	16.1	30.0	13.9	Complied

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

Transmitter Maximum Conducted Output Power (5.725-5.85 GHz band) (continued)**Results: 802.11ac / 80 MHz / BPSK / 32.5 Mbps / MCS0**

Channel	Frequency (MHz)	Conducted Power (dBm)	Duty cycle correction factor (dB)	Corrected Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Single	5775	14.8	0.2	15.0	30.0	15.0	Complied

**Single Channel****Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermometer / Hygrometer station	JM Handelspunkt	30.5015.13	None stated	24 May 2014	12
A1999	Attenuator	Huber + Suhner	6820.17.B	07101	05 Apr 2014	12
S0520	DC Power Supply	GW instek	GPC-3030	E835141	Calibrated before use	-
M1269	Multimeter	Fluke	179	90250210	30 Jul 2013	12
M1379	Test Receiver	Rohde & Schwarz	ESIB7	100330	15 Oct 2013	12
M199	Power Meter	Rohde & Schwarz	NRVS	827023/075	15 May 2014	12
M1267	Thermal Power Sensor	Rohde & Schwarz	NRV-Z52	100155	14 May 2014	12
M1021	Signal Generator	Rohde & Schwarz	SMP-02	833286/004	05 Feb 2014	12