8.5. Test Result and Data (99% Occupied Bandwidth)

In the 5.8G Band

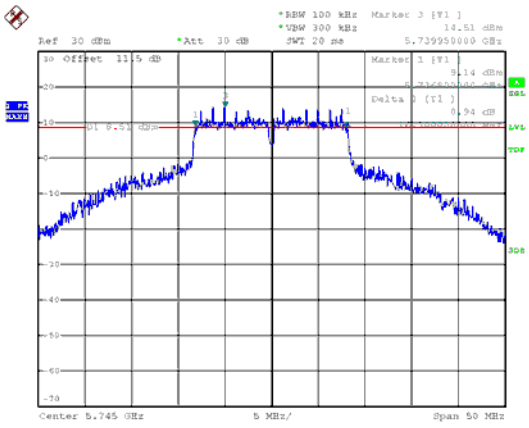
(Non-Beamforming)

Modulation Type	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			ANT A	ANT B
802.11a	149	5745	28.40	27.95
	157	5785	27.10	26.10
	165	5825	28.10	24.90
802.11ac VHT20	149	5745	27.00	26.15
	157	5785	27.80	27.20
	165	5825	29.55	25.85
802.11ac VHT40	151	5755	50.60	49.90
	159	5795	57.80	52.80
802.11ac VHT80	155	5775	**76.32**	**76.32**

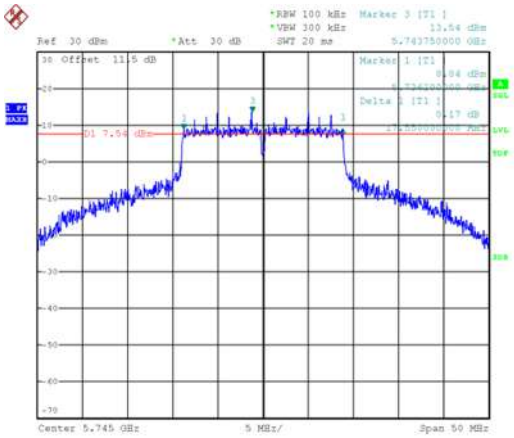
(Beamforming)

Modulation Type	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			ANT A	ANT B
802.11ac VHT20	149	5745	27.00	26.15
	157	5785	27.80	27.20
	165	5825	29.55	25.85
802.11ac VHT40	151	5755	49.00	47.70
	159	5795	57.80	52.80
802.11ac VHT80	155	5775	**76.80**	**76.80**

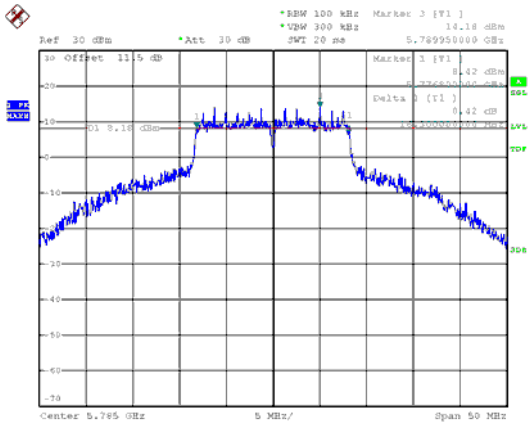
6dB Bandwidth
ANT A**(Non-Beamforming)**
Modulation Type: 802.11a (6Mbps)
CH149



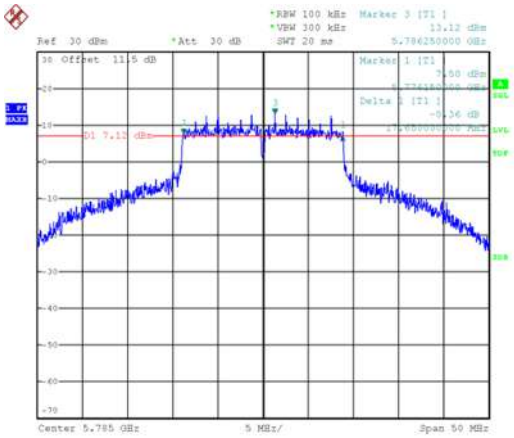
Modulation Type: 802.11ac, VHT20 (6.5Mbps)
CH149



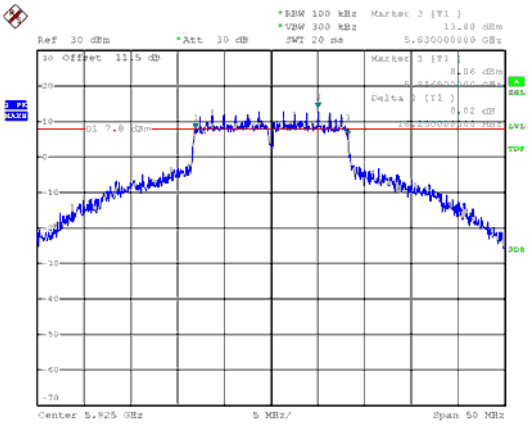
CH157



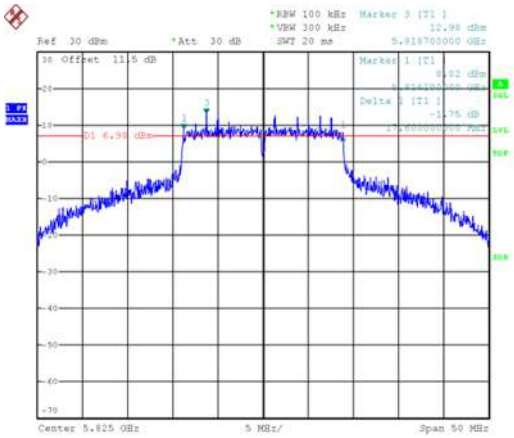
CH157



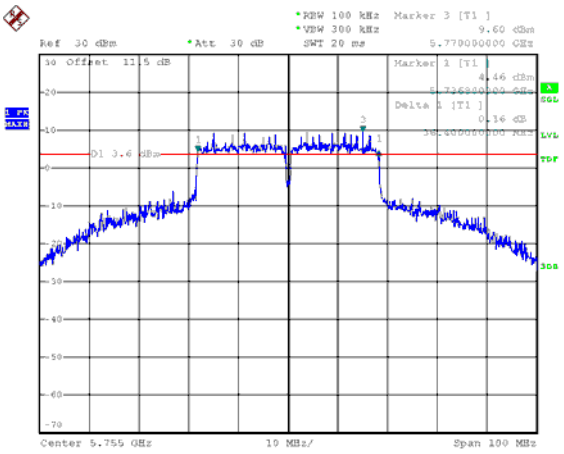
CH165



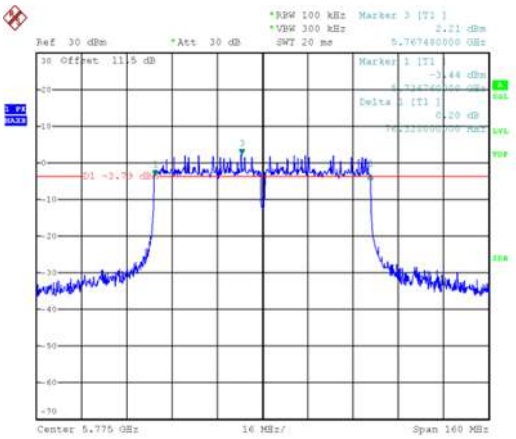
CH165



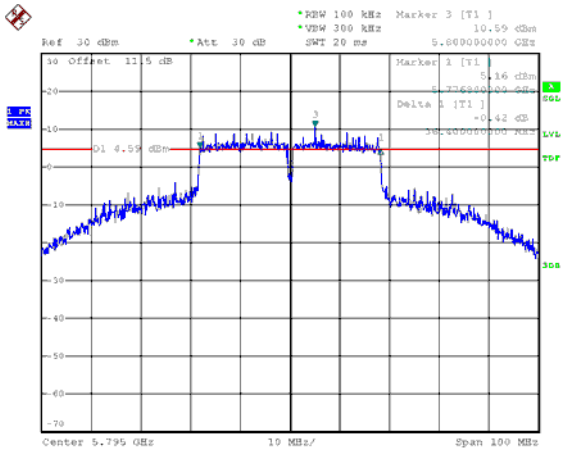
Modulation Type: 802.11ac, VHT40 (13.5Mbps)
CH151



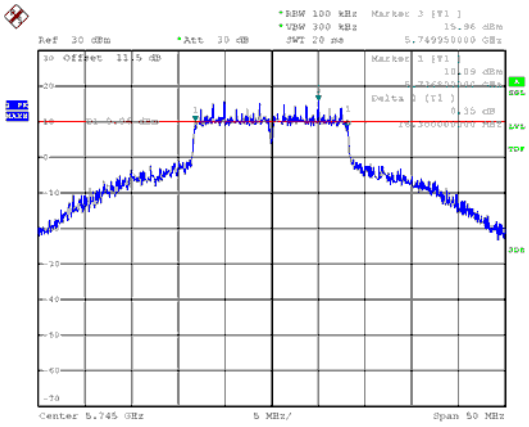
Modulation Type: 802.11ac, VHT80 (29.3Mbps)
CH155



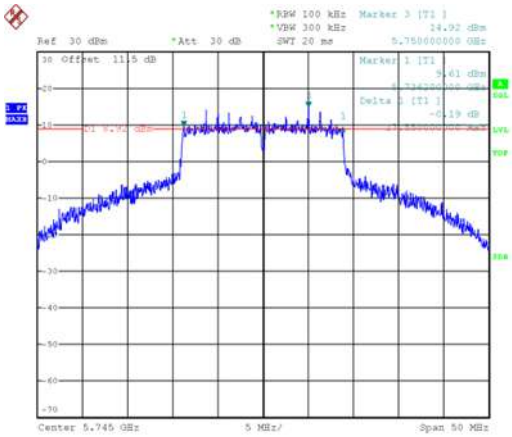
CH159



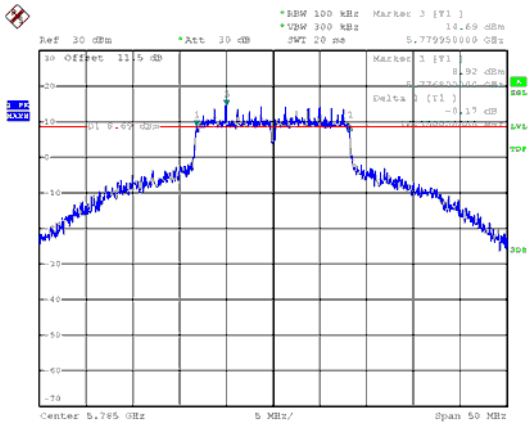
ANT B **(Non-Beamforming)**
Modulation Type: 802.11a (6Mbps)
CH149



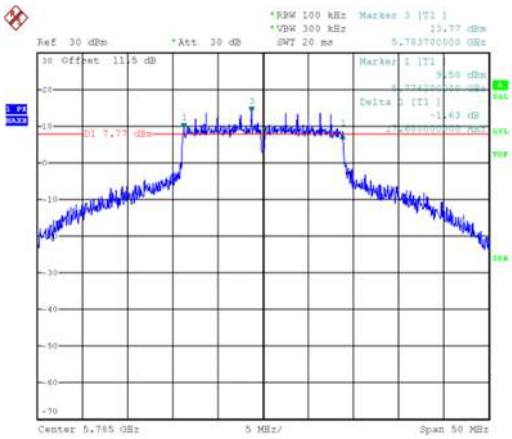
Modulation Type: 802.11ac, VHT20 (6.5Mbps)
CH149



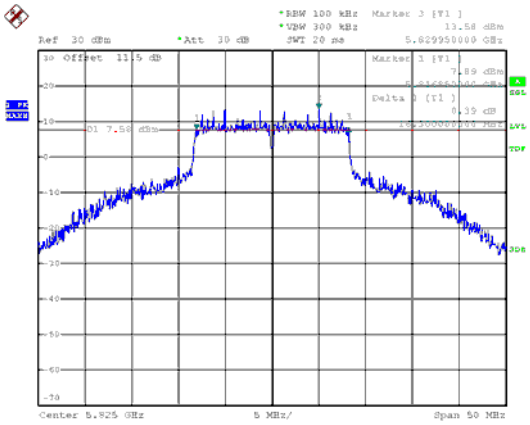
CH157



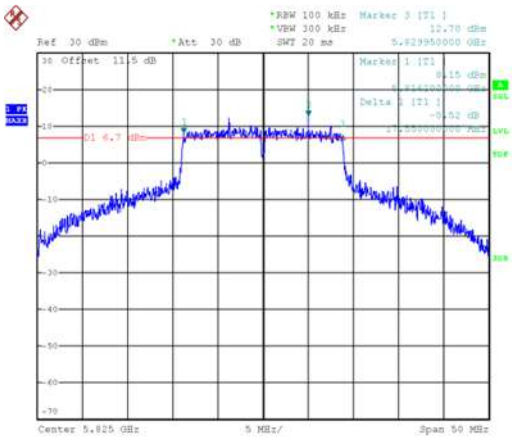
CH157



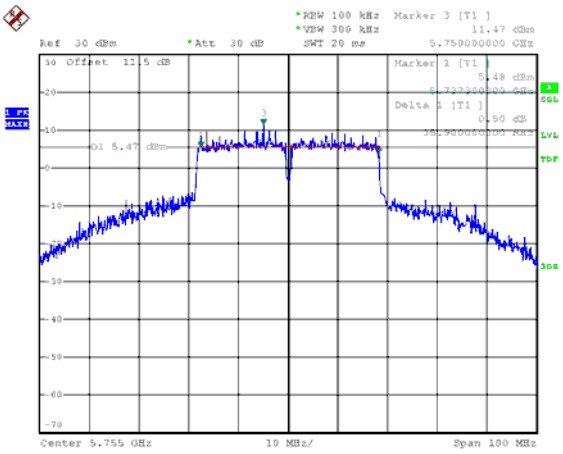
CH165



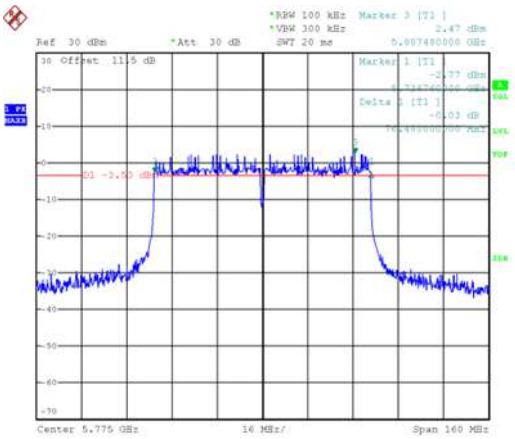
CH165



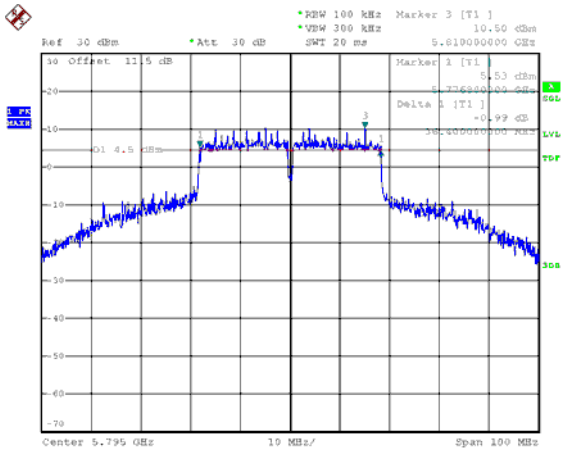
Modulation Type: 802.11ac, VHT40 (13.5Mbps)
CH151



Modulation Type: 802.11ac, VHT80 (29.3Mbps)
CH155



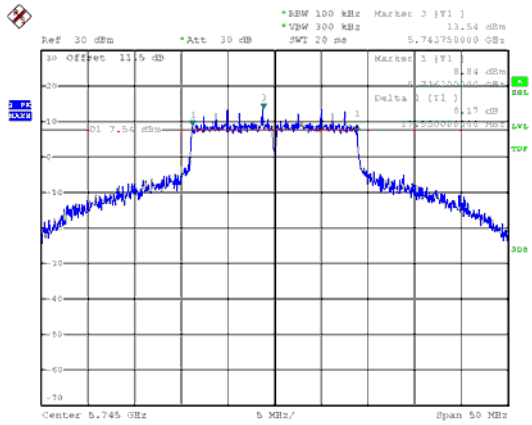
CH159



ANT A**(Beamforming)**

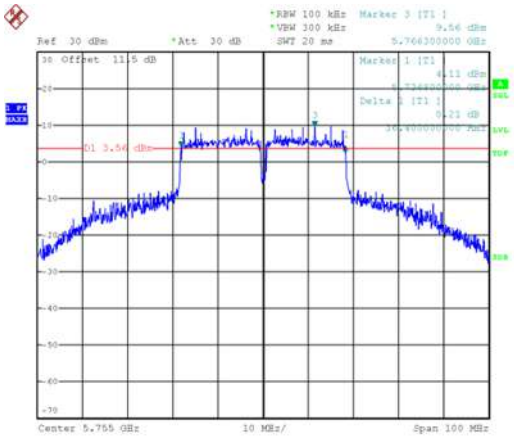
Modulation Type: 802.11ac, VHT20 (6.5Mbps)

CH149

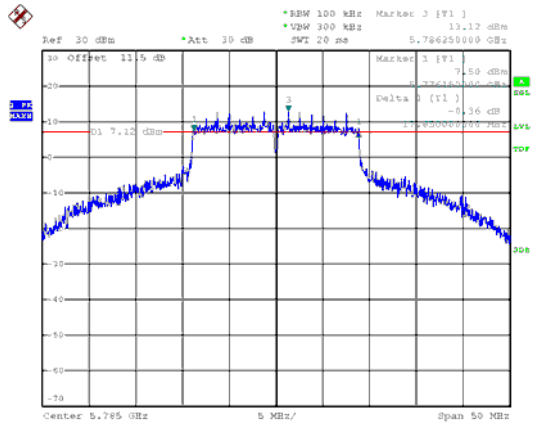


Modulation Type: 802.11ac, VHT40 (13.5Mbps)

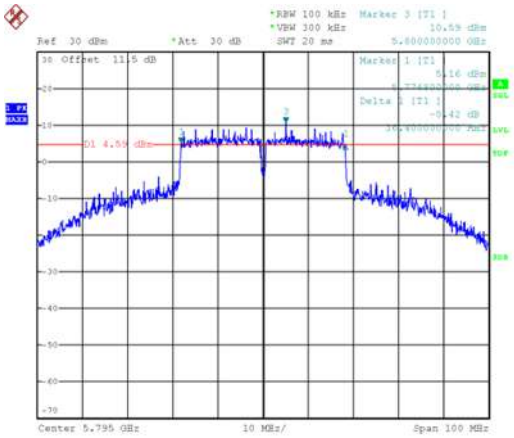
CH151



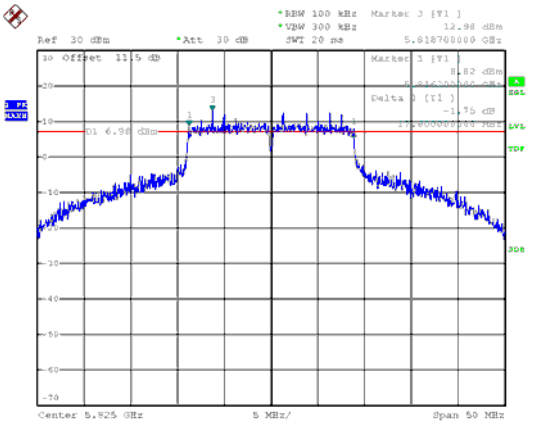
CH157



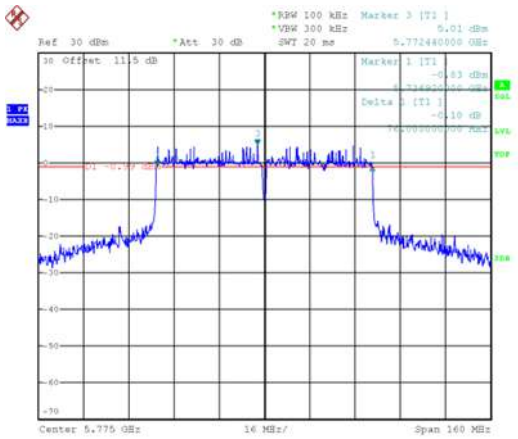
CH159



CH165



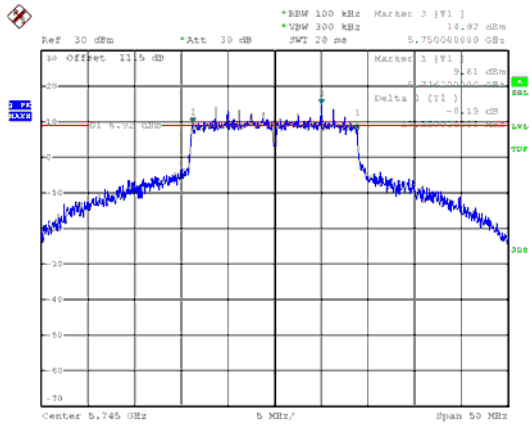
Modulation Type: 802.11ac, VHT80 (29.3Mbps)
CH155



ANT B **(Beamforming)**

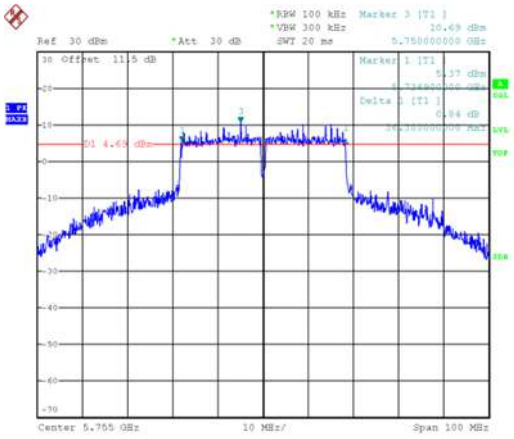
Modulation Type: 802.11ac, VHT20 (6.5Mbps)

CH149

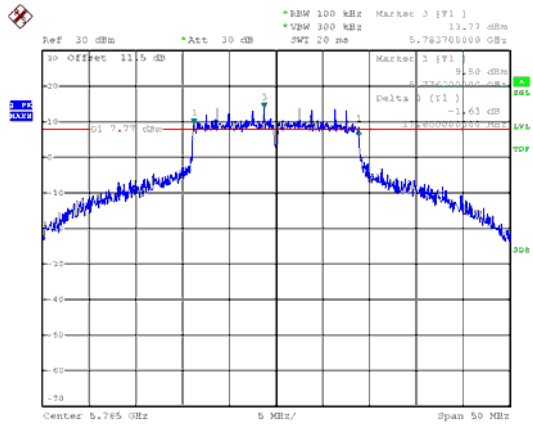


Modulation Type: 802.11ac, VHT40 (13.5Mbps)

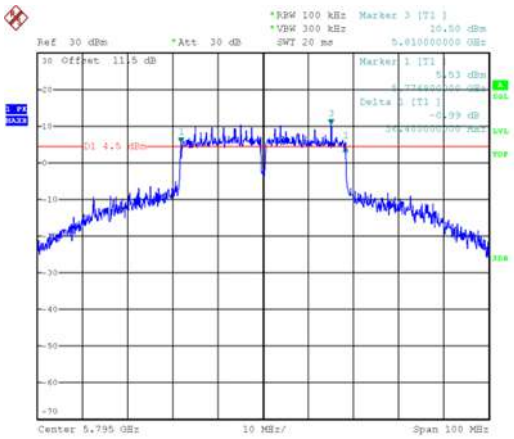
CH151



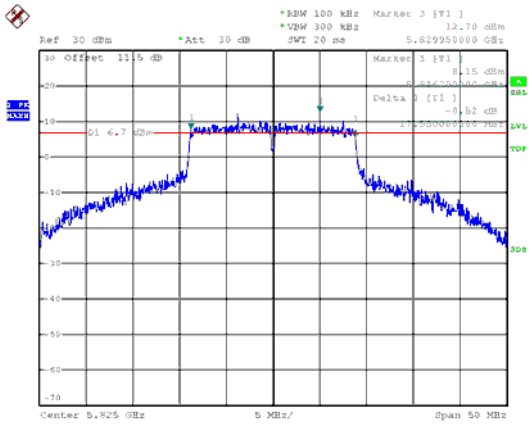
CH157



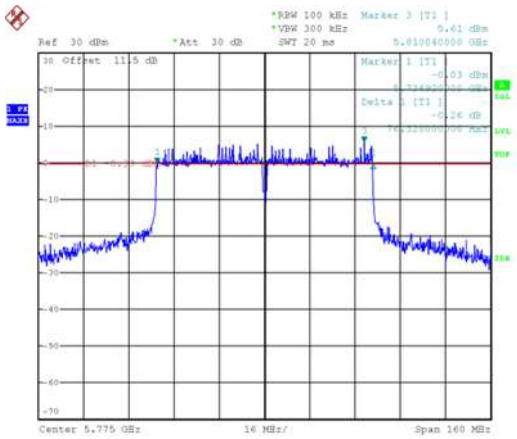
CH159



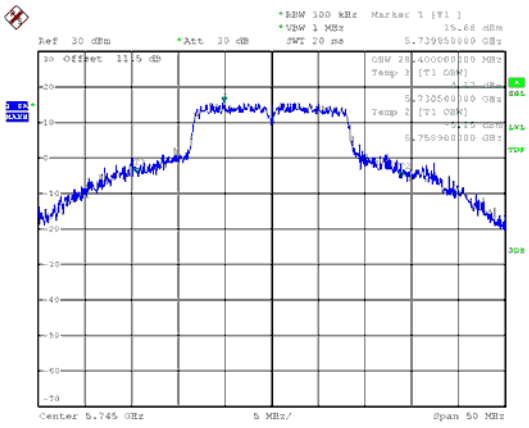
CH165



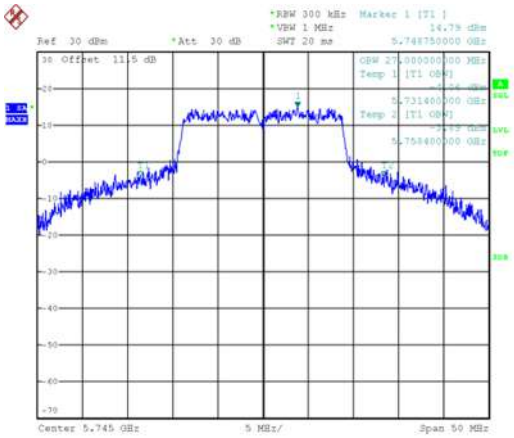
Modulation Type: 802.11ac, VHT80 (29.3Mbps)
CH155



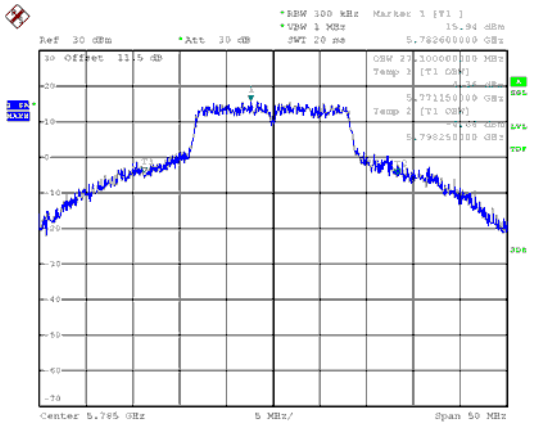
99% Occupied Bandwidth
ANT A**(Non-Beamforming)**
Modulation Type: 802.11a (6Mbps)
CH149



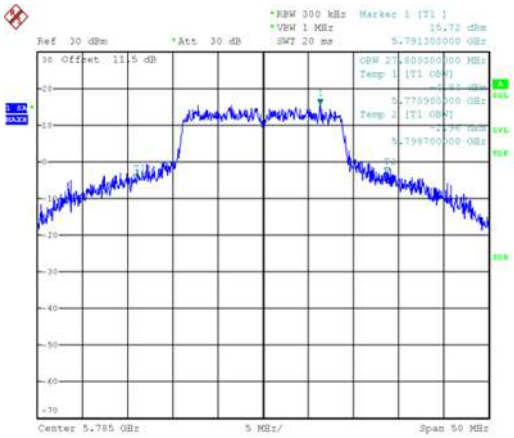
Modulation Type: 802.11ac, VHT20 (6.5Mbps)
CH149



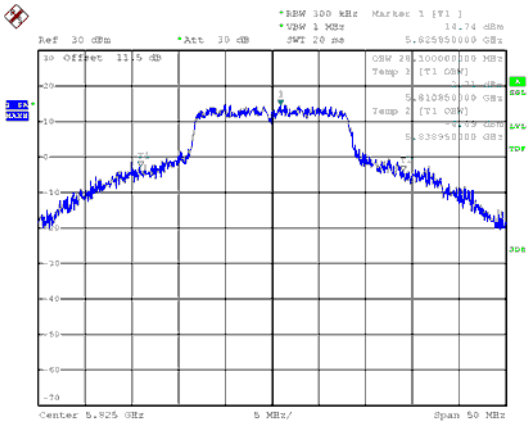
CH157



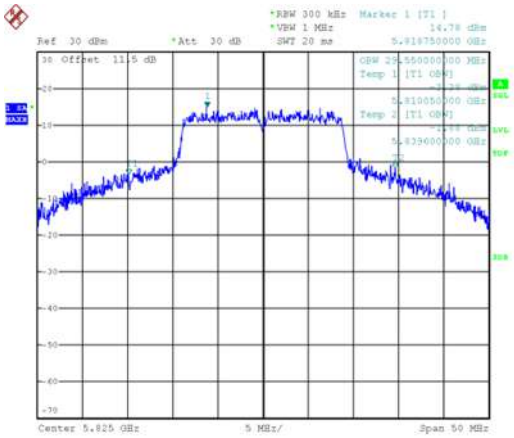
CH157



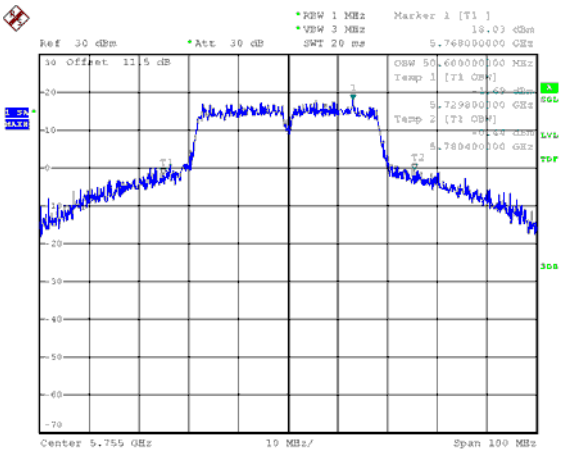
CH165



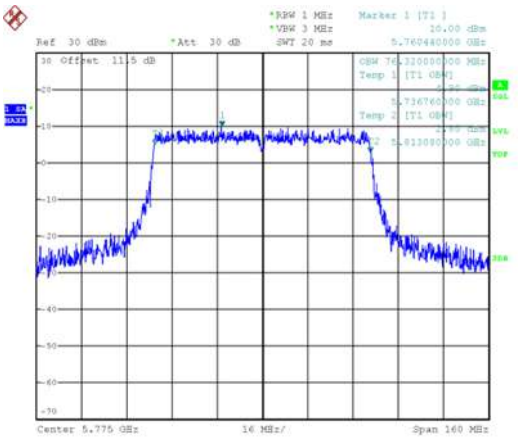
CH165



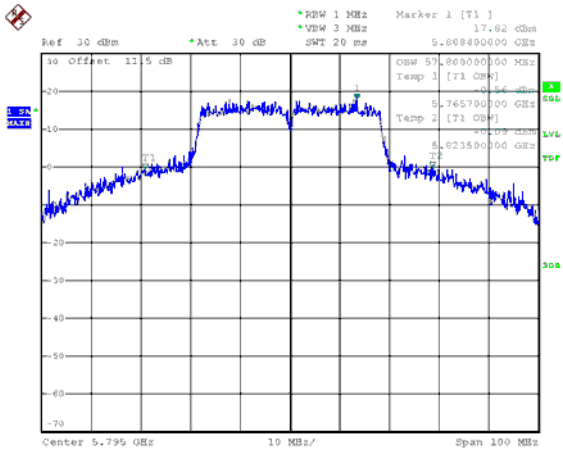
Modulation Type: 802.11ac, VHT40 (13.5Mbps)
CH151



Modulation Type: 802.11ac, VHT80 (29.3Mbps)
CH155



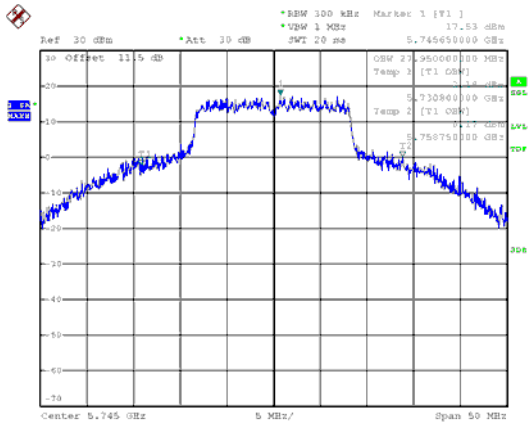
CH159



ANT B**(Non-Beamforming)**

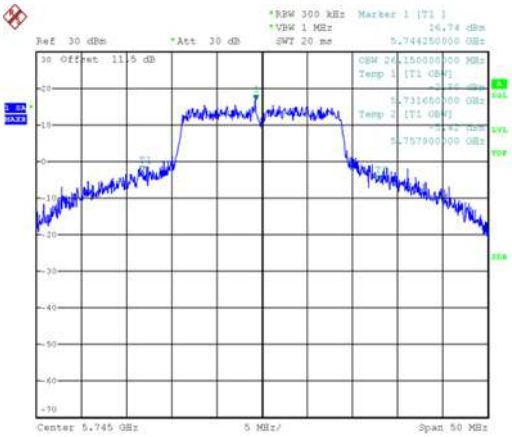
Modulation Type: 802.11a (6Mbps)

CH149

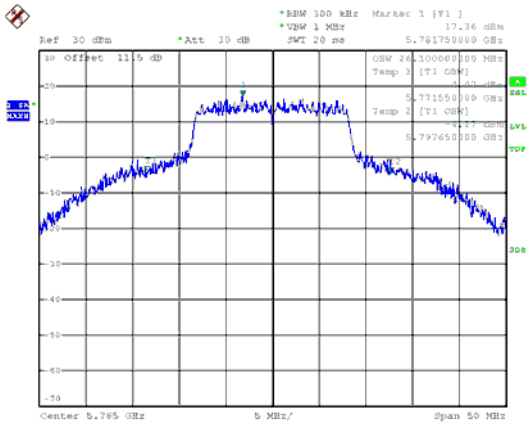


Modulation Type: 802.11ac, VHT20 (6.5Mbps)

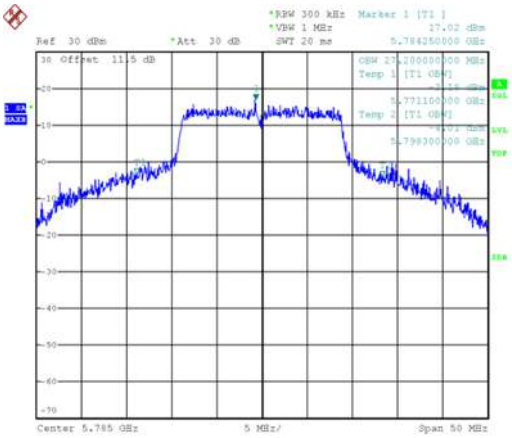
CH149



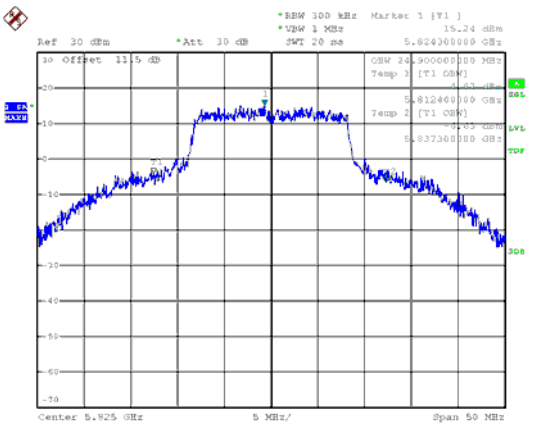
CH157



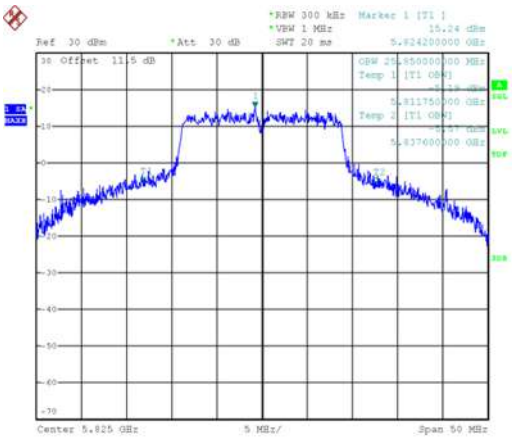
CH157



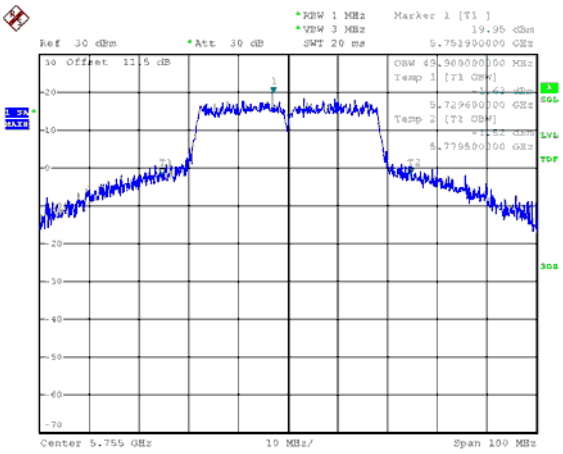
CH165



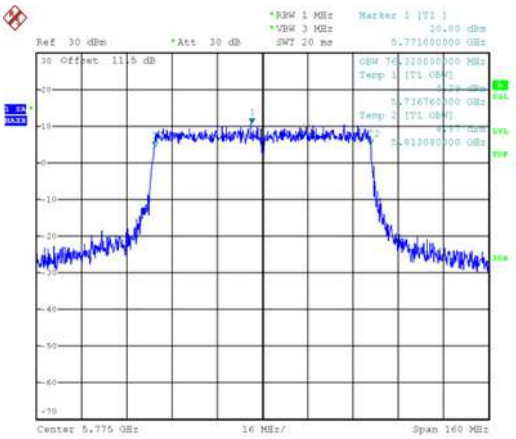
CH165



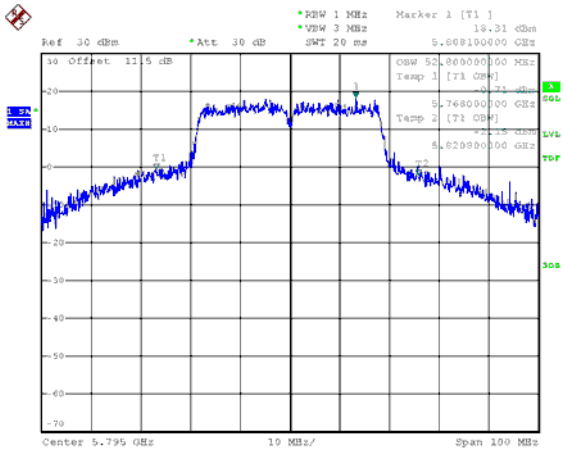
Modulation Type: 802.11ac, VHT40 (13.5Mbps)
CH151



Modulation Type: 802.11ac, VHT80 (29.3Mbps)
CH155



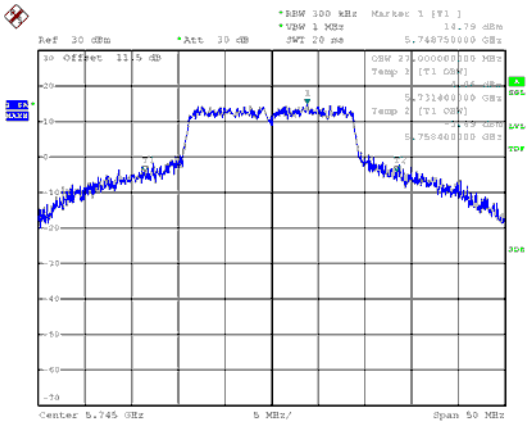
CH159



ANT A**(Beamforming)**

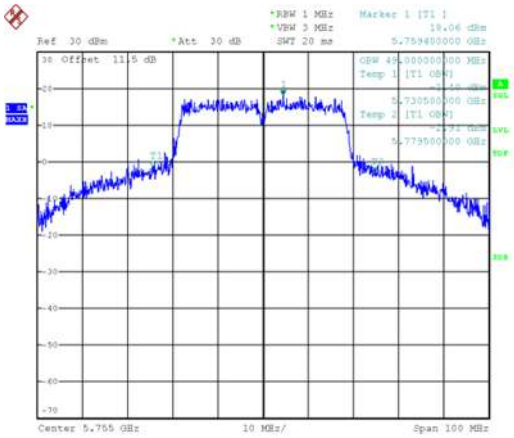
Modulation Type: 802.11ac, VHT20 (6.5Mbps)

CH149

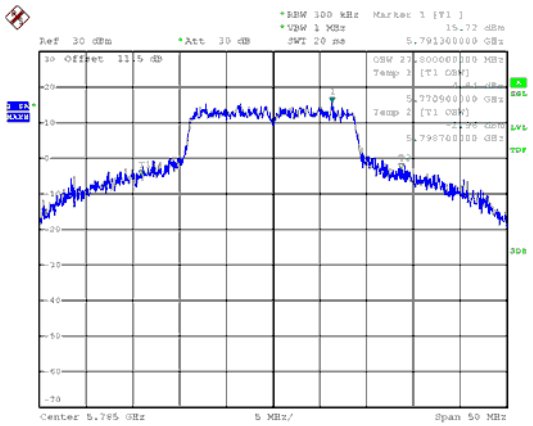


Modulation Type: 802.11ac, VHT40 (13.5Mbps)

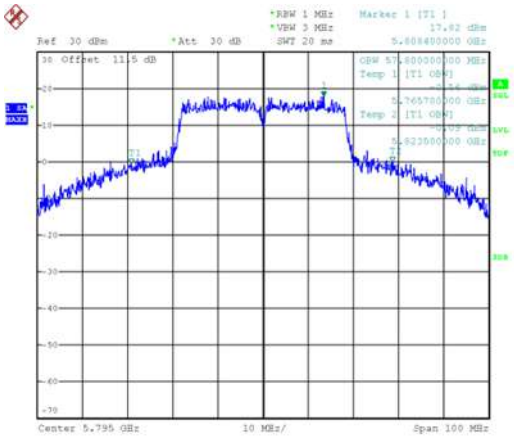
CH151



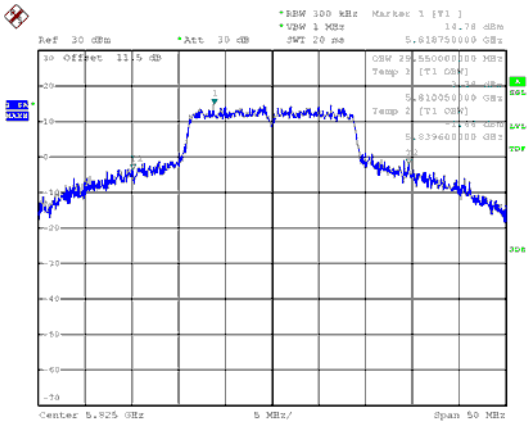
CH157



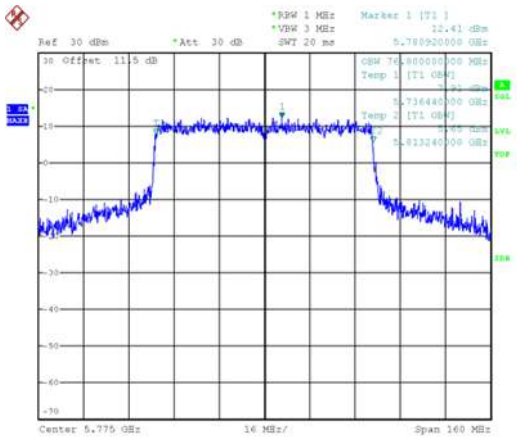
CH159



CH165



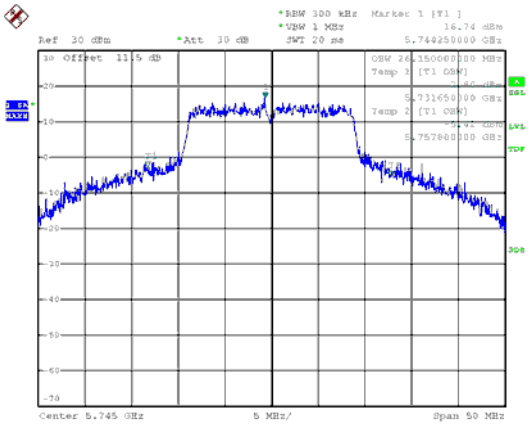
Modulation Type: 802.11ac, VHT80 (29.3Mbps)
CH155



ANT B**(Beamforming)**

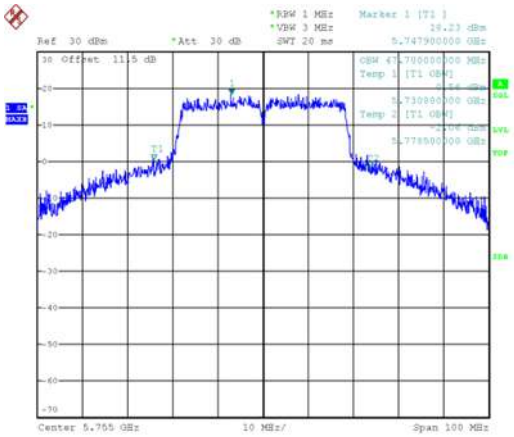
Modulation Type: 802.11ac, VHT20 (6.5Mbps)

CH149

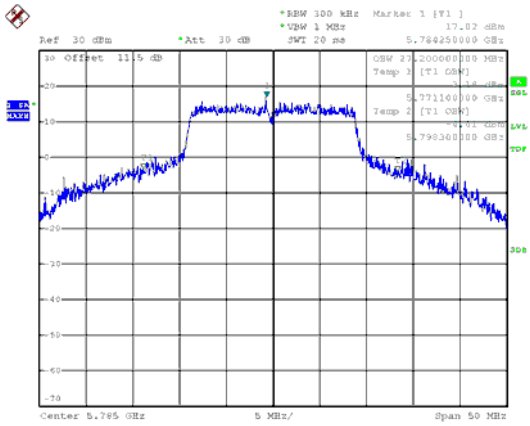


Modulation Type: 802.11ac, VHT40 (13.5Mbps)

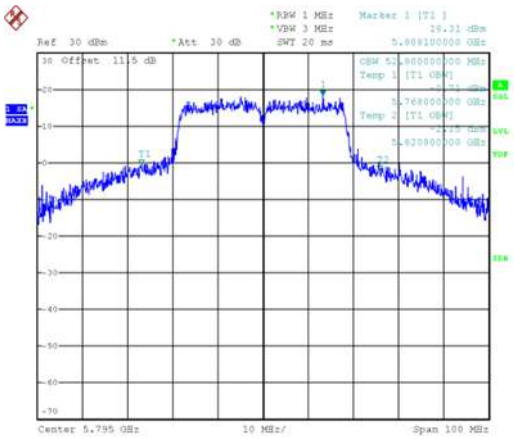
CH151



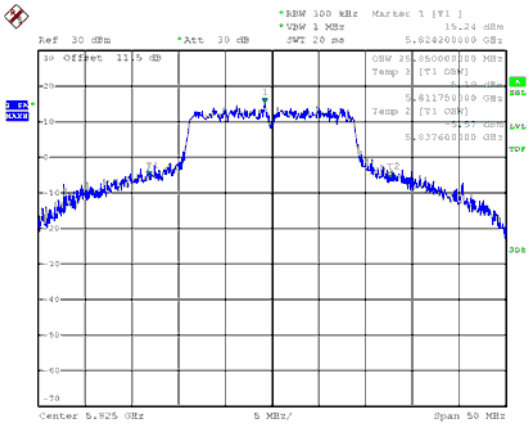
CH157



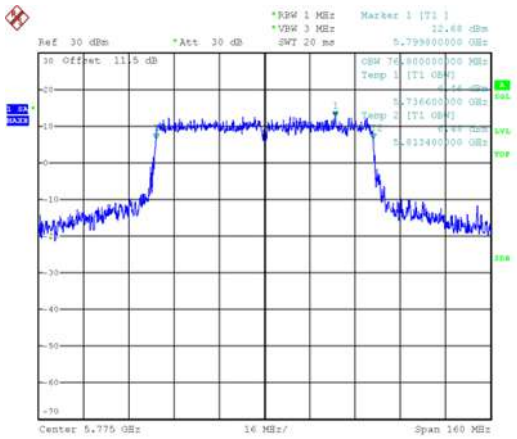
CH159



CH165



Modulation Type: 802.11ac, VHT80 (29.3Mbps)
CH155



9. 26dB Bandwidth & 99% Occupied Bandwidth

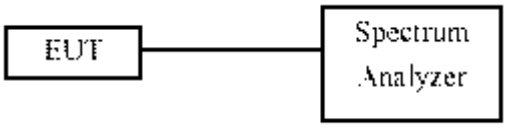
9.1. Test Limit

None; for reporting purposes only.

9.2. Test Procedure

Reference to 789033 D02 General UNII Test Procedures New Rules v01: The transmitter output is connected to a spectrum analyzer with the RBW = approximately 1% of the emission bandwidth, the VBW >= 3 x RBW, peak detector and max hold.

9.3. Test Setup Layout



9.4. Test Result and Data (26dB Bandwidth)

In the 5.2G Band

(Non-Beamforming)

Client

Modulation Type	Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
			ANT A	ANT B
802.11a	36	5180	22.05	21.70
	44	5220	22.05	21.65
	48	5240	21.95	21.55
802.11ac VHT20	36	5180	23.65	22.95
	44	5220	23.60	22.85
	48	5240	23.60	22.95
802.11ac VHT40	38	5190	46.10	46.50
	46	5230	46.30	47.00
802.11ac VHT80	42	5210	**90.24**	88.80

Master

Modulation Type	Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
			ANT A	ANT B
802.11a	36	5180	22.20	21.80
	44	5220	36.30	34.50
	48	5240	35.70	35.05
802.11ac VHT20	36	5180	23.60	23.15
	44	5220	40.70	35.70
	48	5240	38.75	35.65
802.11ac VHT40	38	5190	46.20	46.30
	46	5230	59.50	56.80
802.11ac VHT80	42	5210	**90.24**	89.12

(Beamforming)

Client

Modulation Type	Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
			ANT A	ANT B
802.11ac VHT20	36	5180	23.65	22.95
	44	5220	23.60	22.85
	48	5240	23.60	22.95
802.11ac VHT40	38	5190	46.30	46.50
	46	5230	46.20	46.60
802.11ac VHT80	42	5210	**89.92**	88.96

Master

Modulation Type	Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
			ANT A	ANT B
802.11ac VHT20	36	5180	25.10	23.45
	44	5220	34.65	31.40
	48	5240	34.45	31.70
802.11ac VHT40	38	5190	46.30	46.30
	46	5230	63.20	60.90
802.11ac VHT80	42	5210	**90.08**	89.12

9.5. Test Result and Data (99% Occupied Bandwidth)

(Non-Beamforming)

In the 5.2G Band

Client

Modulation Type	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			ANT A	ANT B
802.11a	36	5180	16.85	16.70
	44	5220	16.85	16.80
	48	5240	16.80	16.75
802.11ac VHT20	36	5180	18.05	17.95
	44	5220	18.05	17.90
	48	5240	18.05	17.95
802.11ac VHT40	38	5190	36.80	36.90
	46	5230	36.90	37.10
802.11ac VHT80	42	5210	**76.32**	76.16

Master

Modulation Type	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			ANT A	ANT B
802.11a	36	5180	16.85	16.80
	44	5220	19.35	18.95
	48	5240	19.60	19.30
802.11ac VHT20	36	5180	18.00	17.90
	44	5220	20.50	20.05
	48	5240	20.45	20.35
802.11ac VHT40	38	5190	36.90	37.10
	46	5230	37.20	37.40
802.11ac VHT80	42	5210	**76.32**	**76.32**

(Beamforming)

In the 5.2G Band

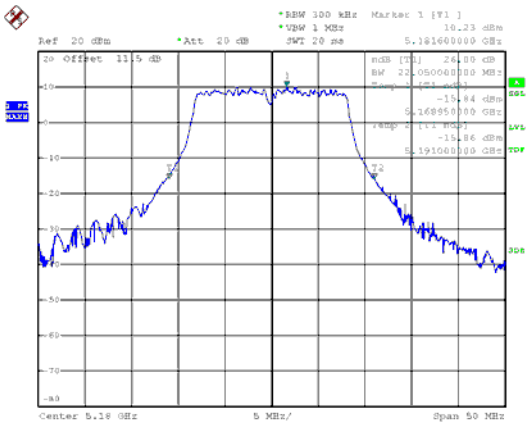
Client

Modulation Type	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			ANT A	ANT B
802.11ac VHT20	36	5180	18.05	17.95
	44	5220	18.05	17.90
	48	5240	18.05	17.95
802.11ac VHT40	38	5190	37.10	37.10
	46	5230	37.00	36.90
802.11ac VHT80	42	5210	76.32	**76.48**

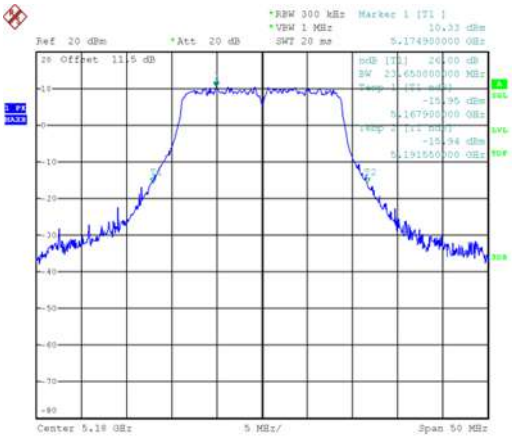
Master

Modulation Type	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			ANT A	ANT B
802.11ac VHT20	36	5180	18.15	18.00
	44	5220	18.95	18.60
	48	5240	18.65	18.60
802.11ac VHT40	38	5190	36.90	36.90
	46	5230	37.50	37.50
802.11ac VHT80	42	5210	**76.48**	76.16

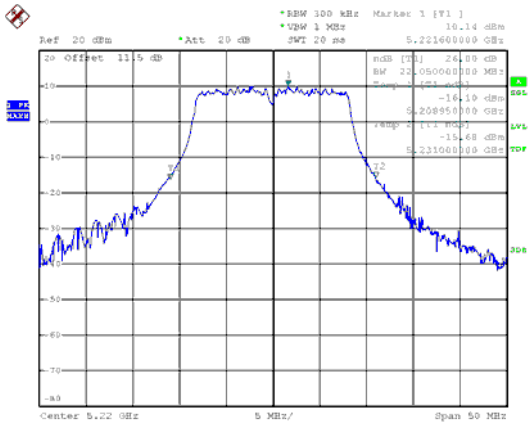
26dB Bandwidth
ANT A**(Non-Beamforming) (Client)**
Modulation Type: 802.11a (6Mbps)
CH36



802.11ac VHT20 (6.5Mbps)
CH36



CH44



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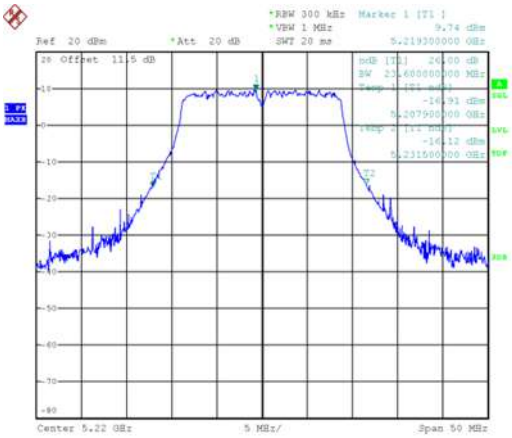
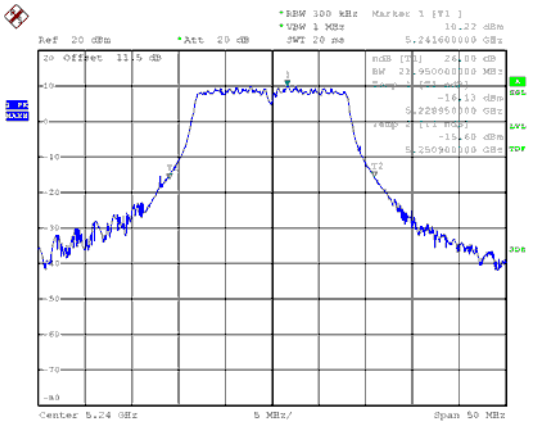
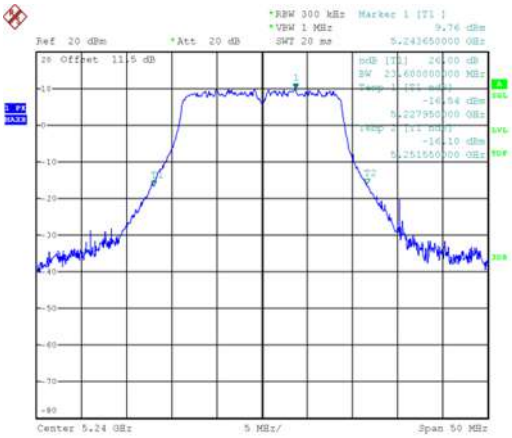


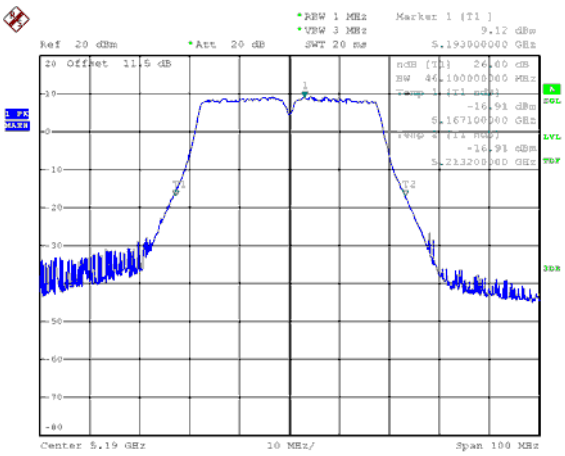
CH48



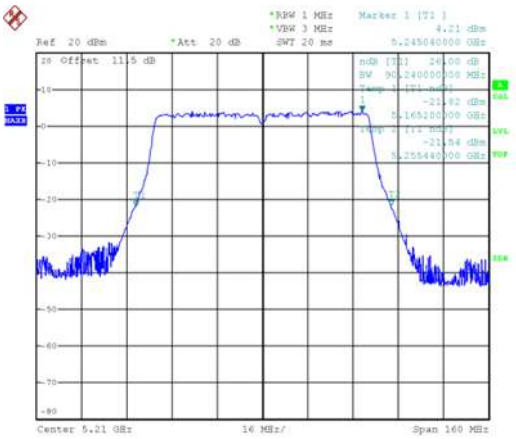
CH48



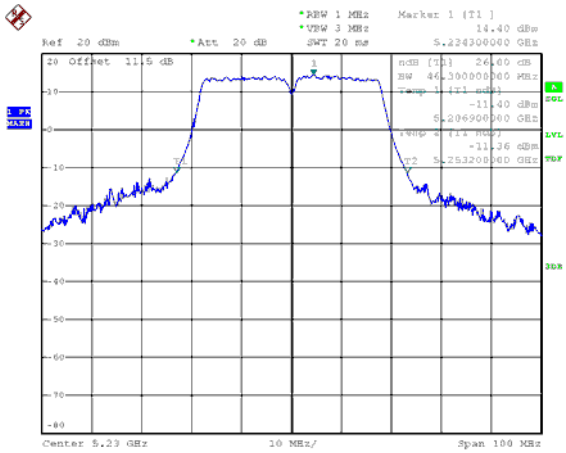
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



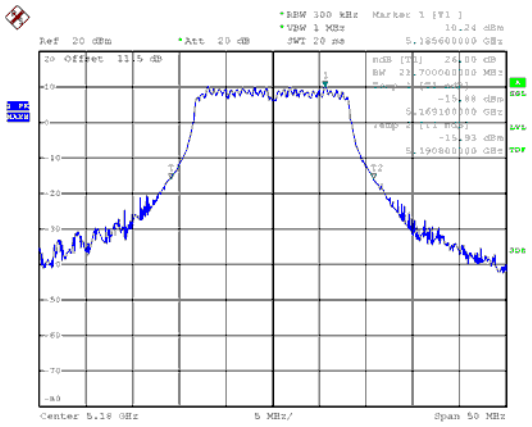
CH46



ANT B

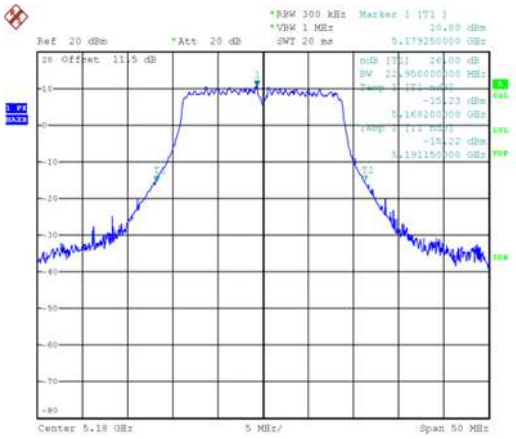
Modulation Type: 802.11a (6Mbps)

CH36



802.11ac VHT20 (6.5Mbps)

CH36



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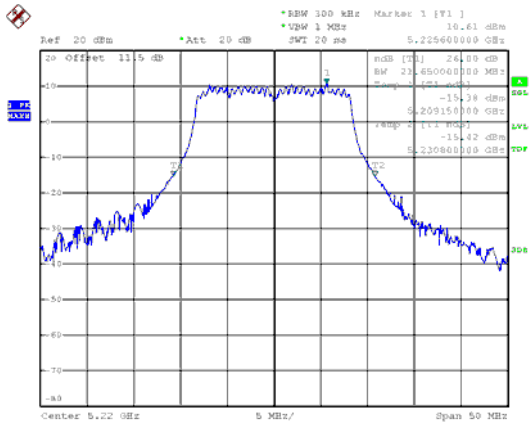

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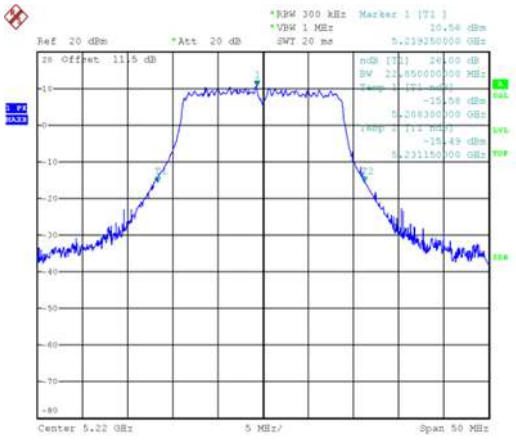
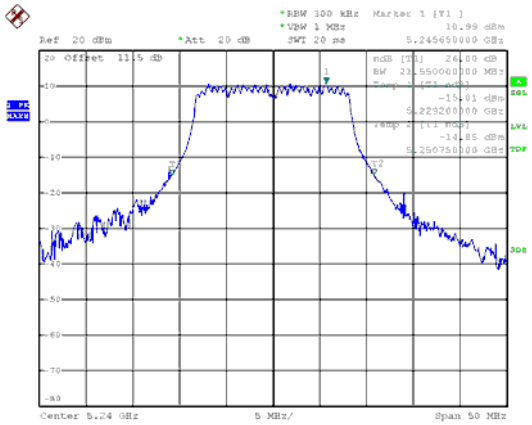


CH48



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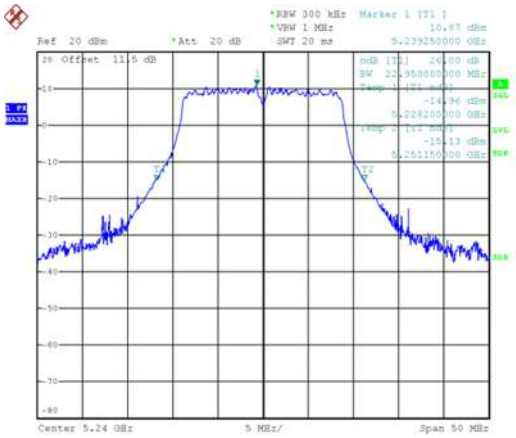
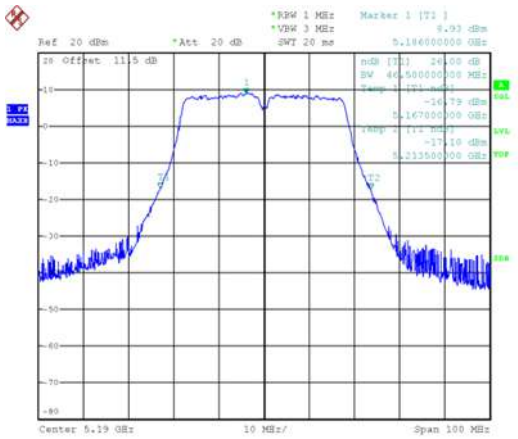
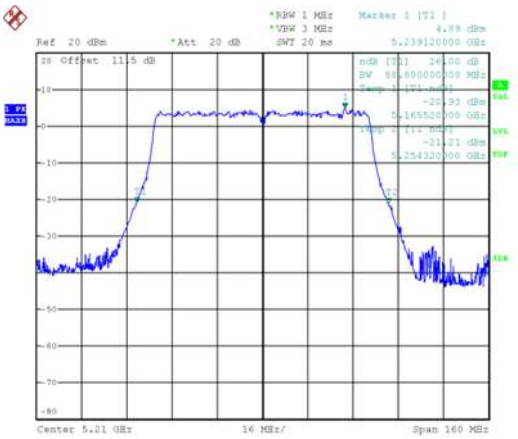


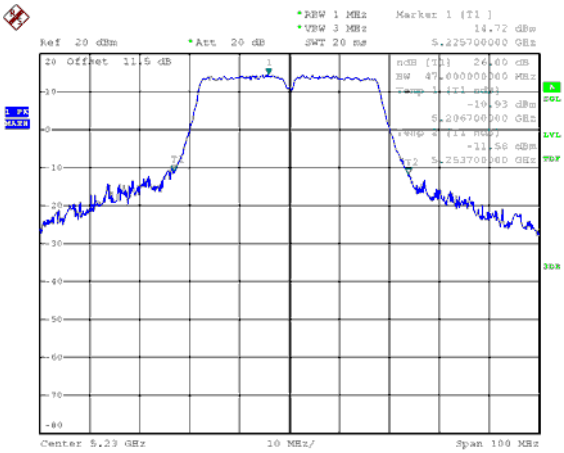
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



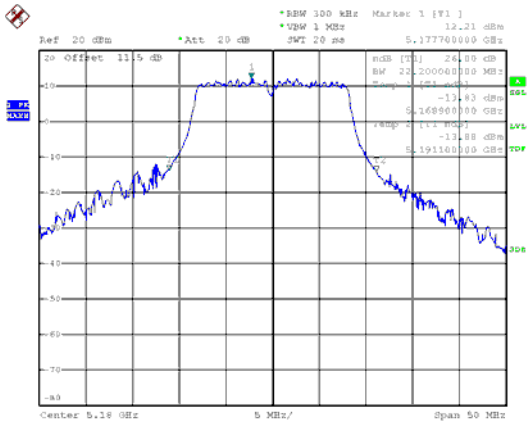
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



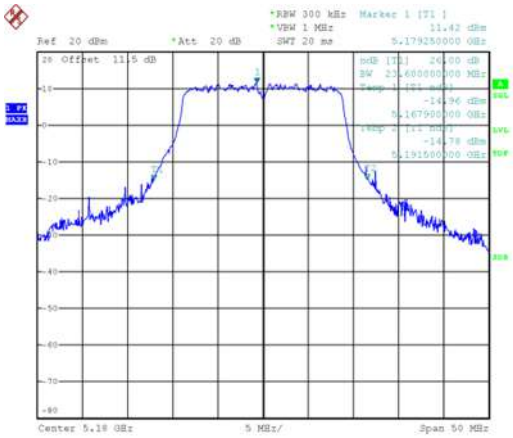
CH46



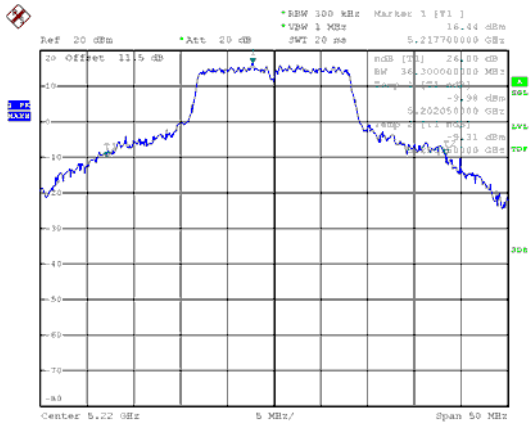
ANT A**(Non-Beamforming) (Master)**
Modulation Type: 802.11a (6Mbps)
CH36



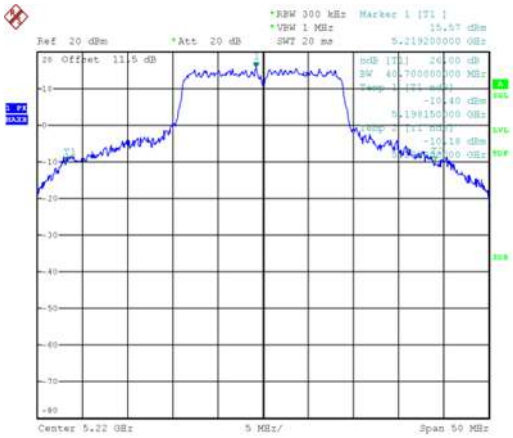
802.11ac VHT20 (6.5Mbps)
CH36



CH44



CH44



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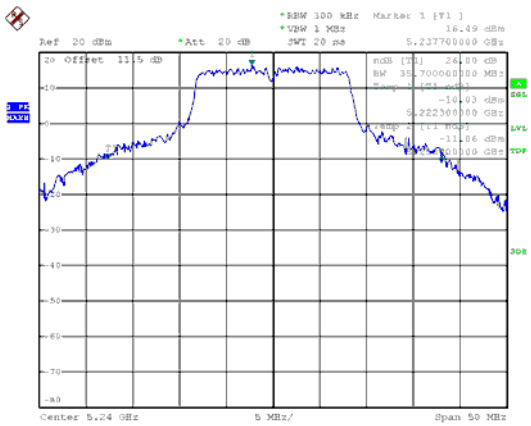
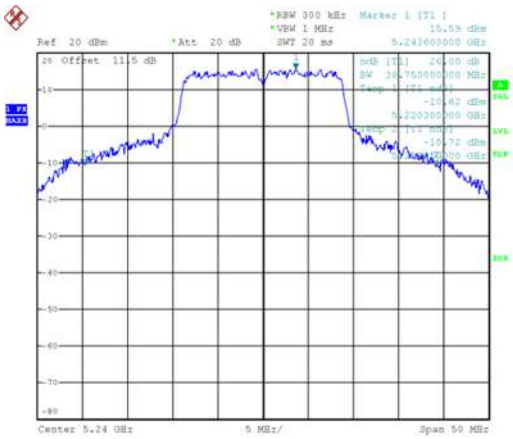
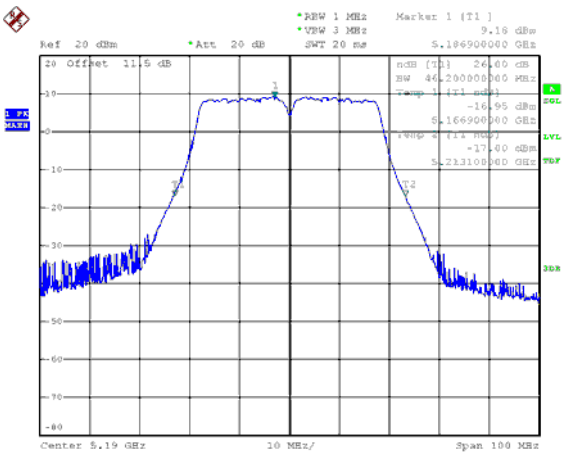


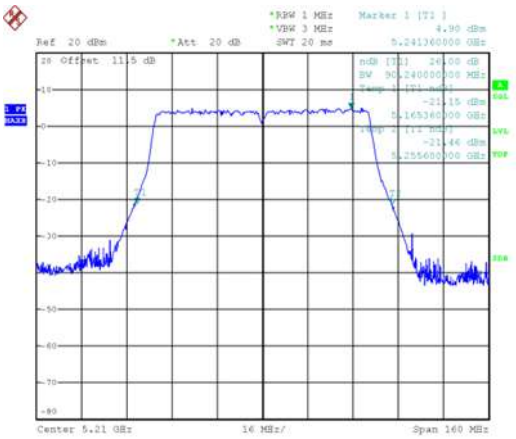
CH48



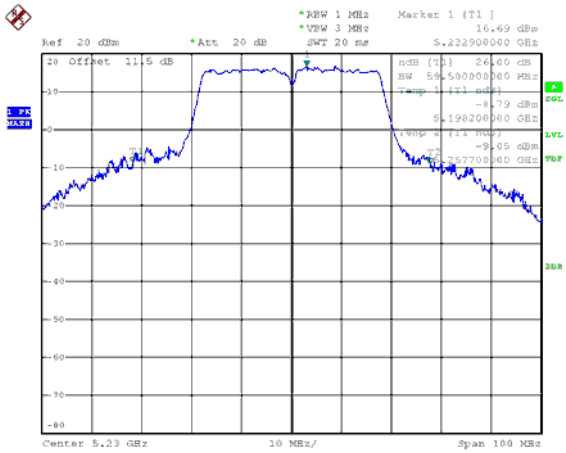
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



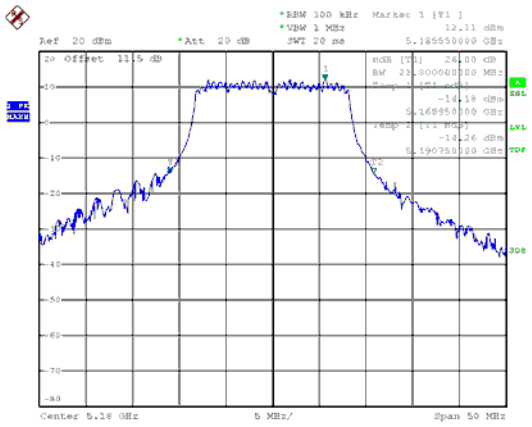
CH46



ANT B

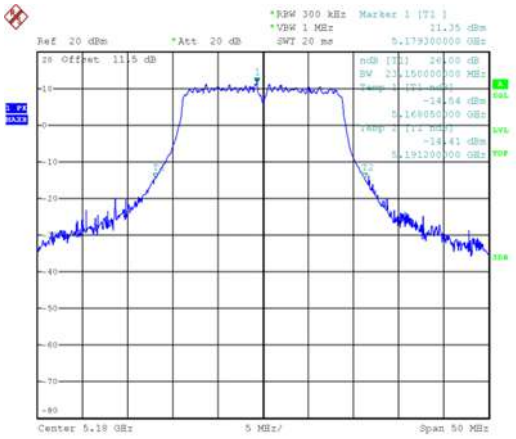
Modulation Type: 802.11a (6Mbps)

CH36

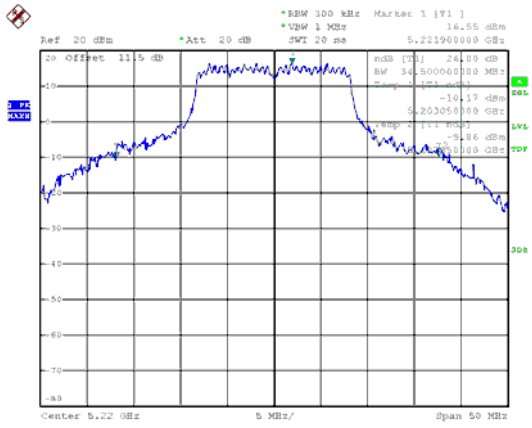


802.11ac VHT20 (6.5Mbps)

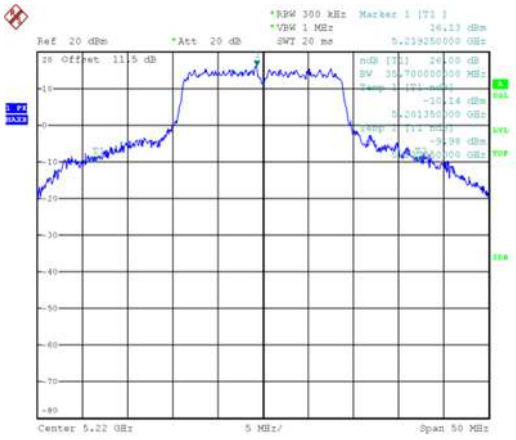
CH36



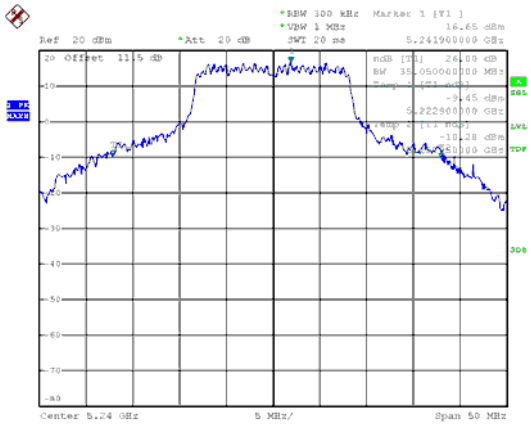
CH44



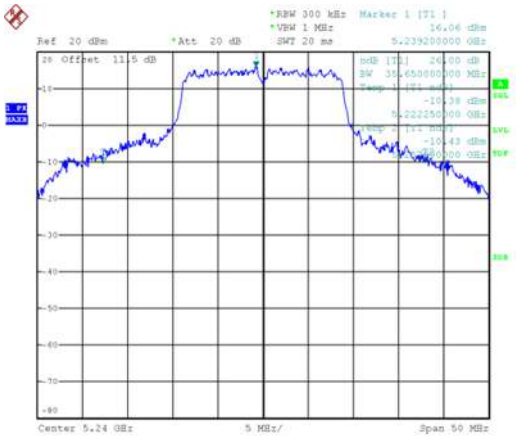
CH44



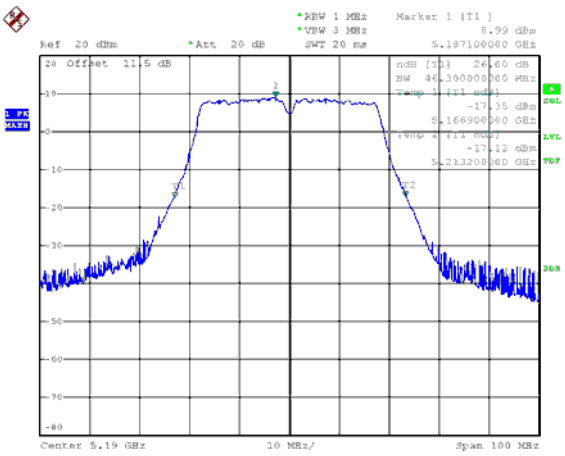
CH48



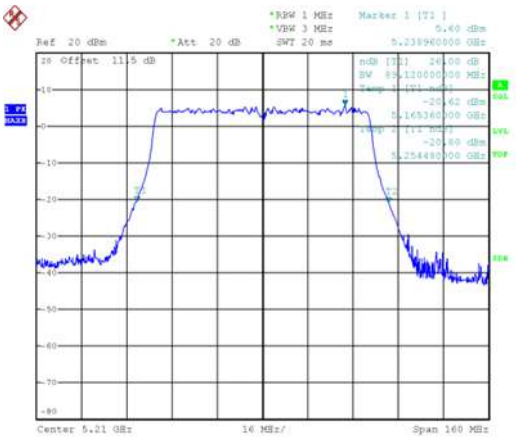
CH48



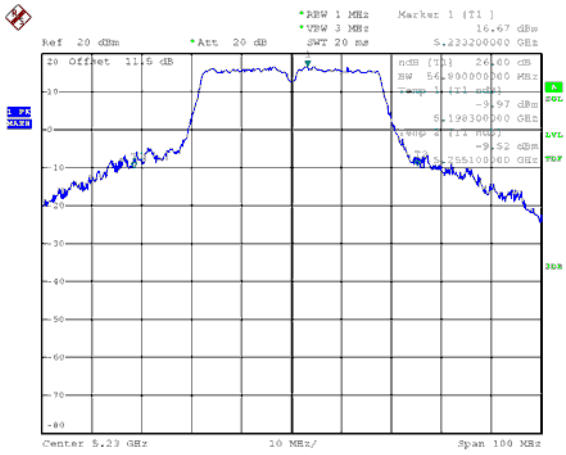
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



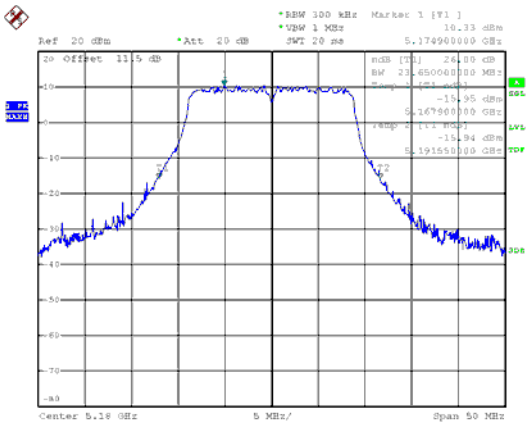
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



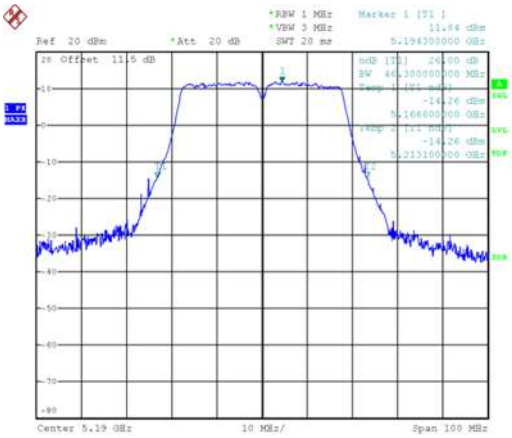
CH46



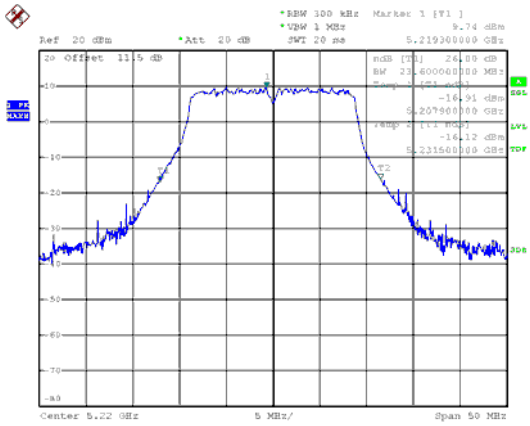
26dB Bandwidth
ANT A**(Beamforming) (Client)**
802.11ac VHT20 (6.5Mbps)
CH36



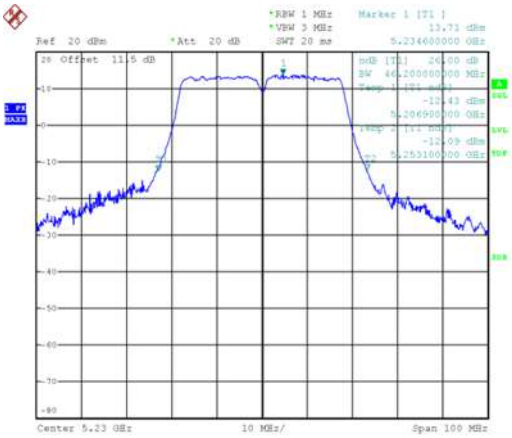
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



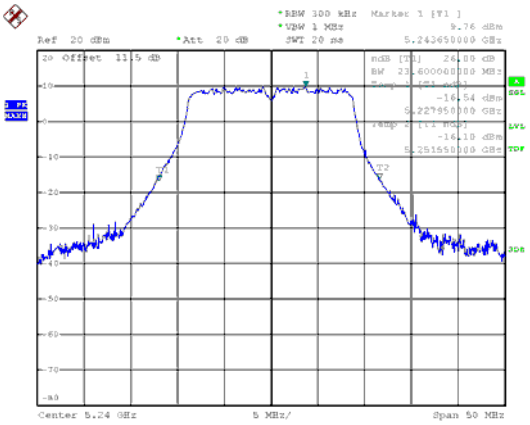
CH44



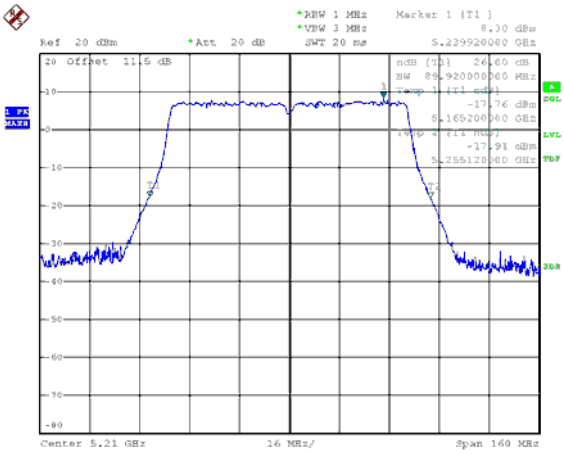
CH46



CH48



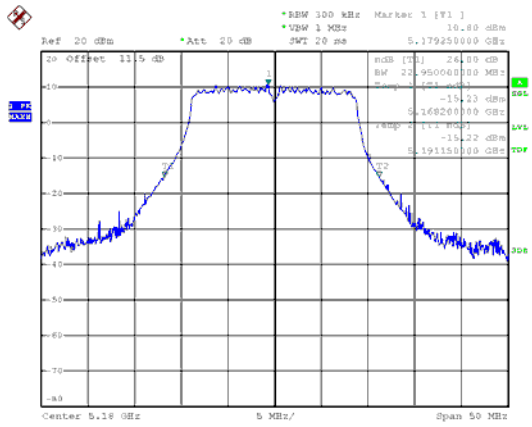
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



ANT B

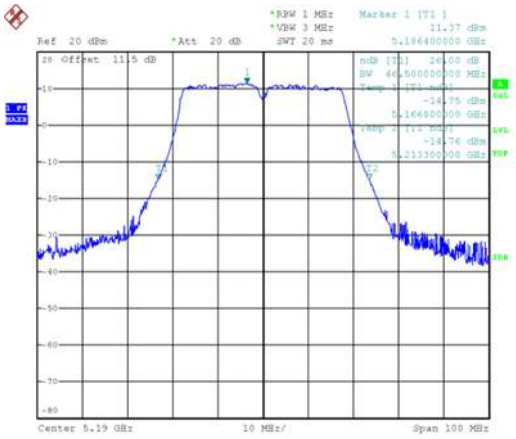
802.11ac VHT20 (6.5Mbps)

CH36

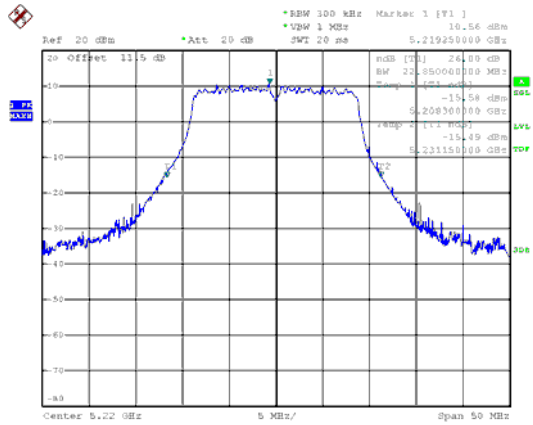


Modulation Type: 802.11ac VHT40 (13.5Mbps)

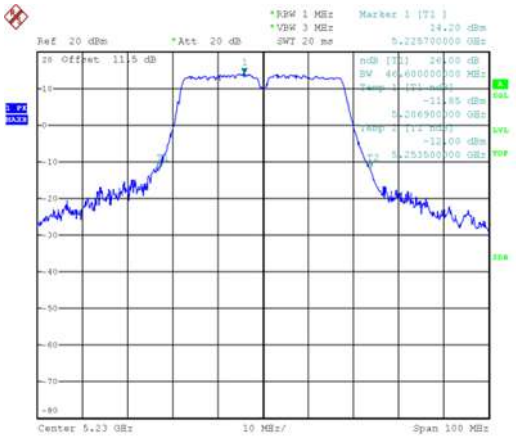
CH38



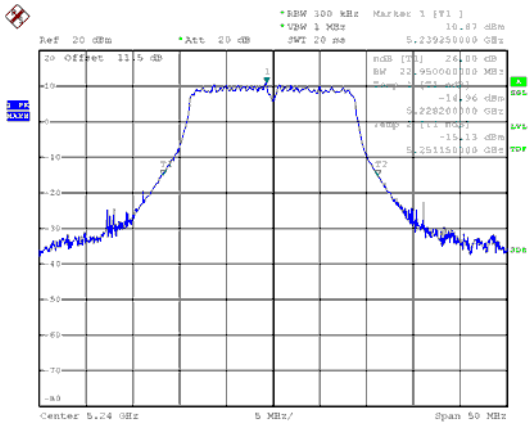
CH44



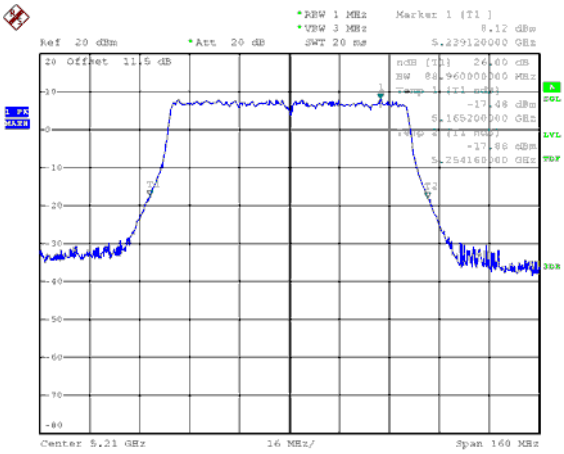
CH46



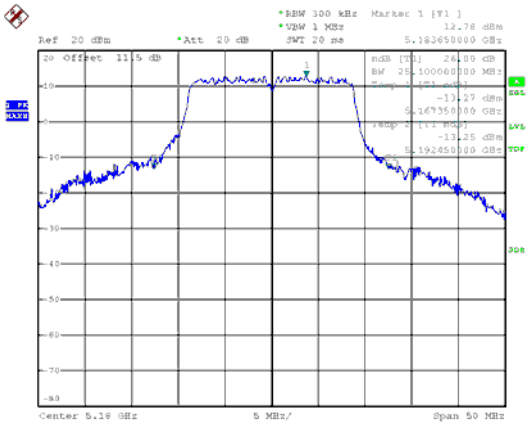
CH48



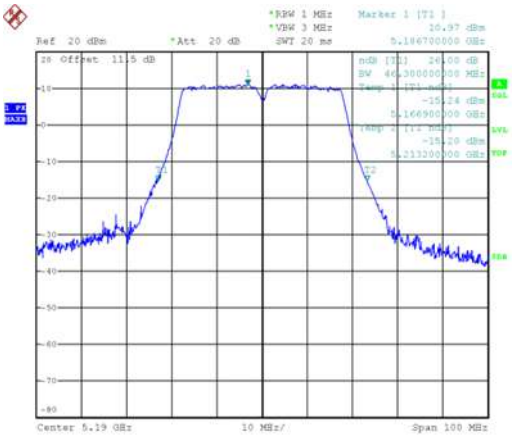
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



ANT A**(Beamforming) (Master)**
802.11ac VHT20 (6.5Mbps)
CH36



Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



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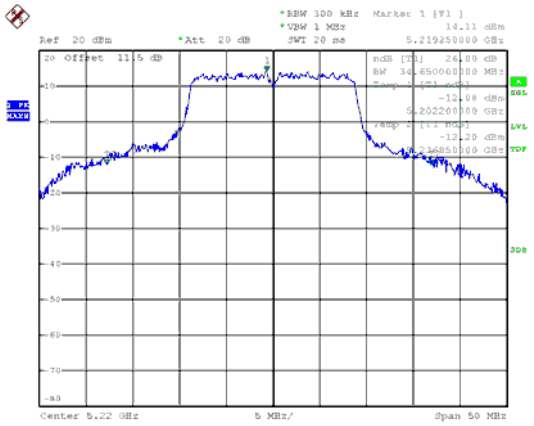

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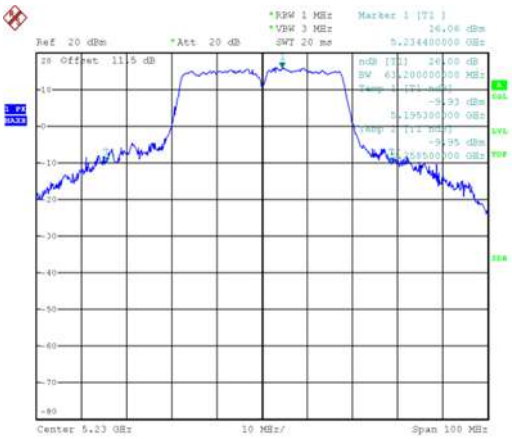

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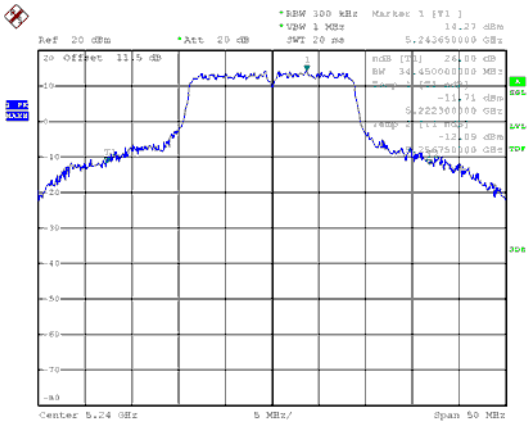
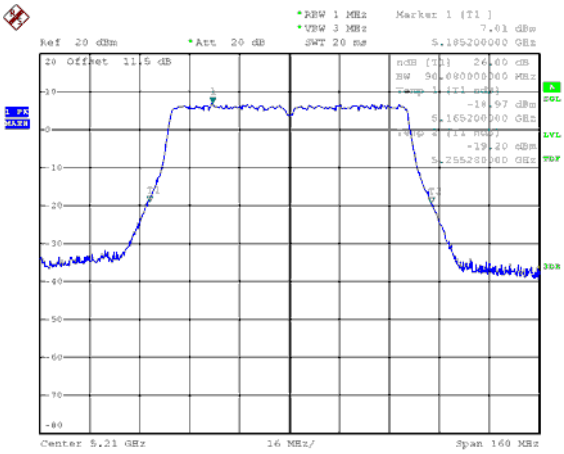
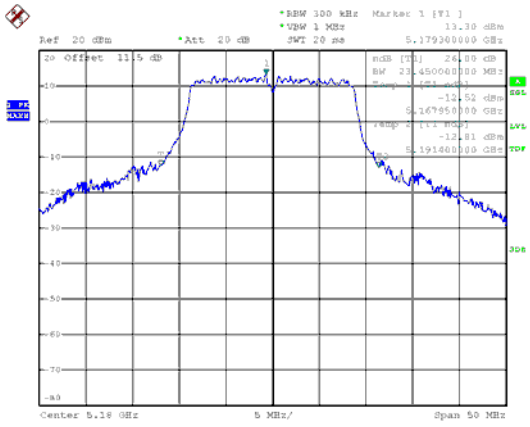


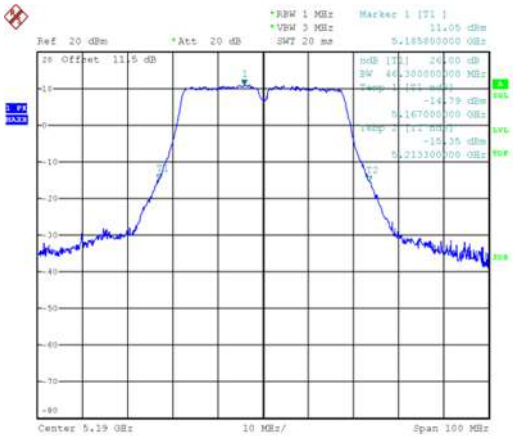
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



ANT B
802.11ac VHT20 (6.5Mbps)
CH36



Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



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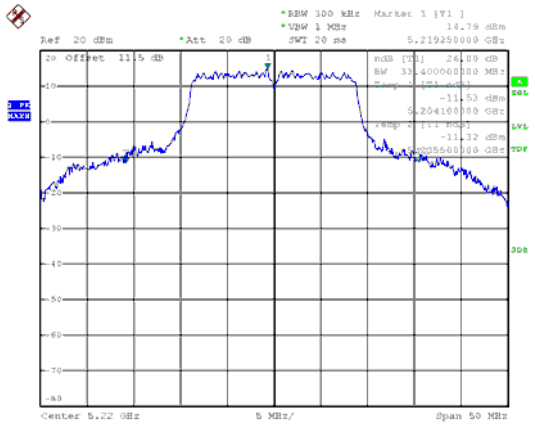

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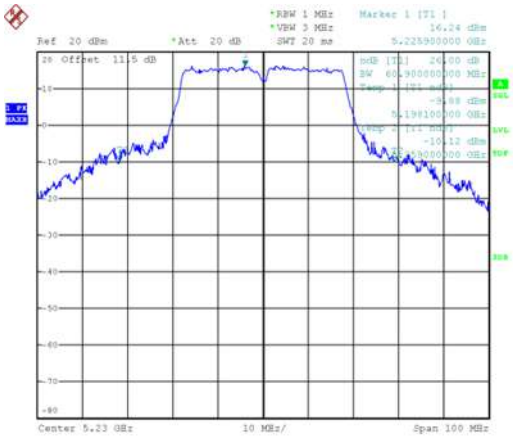

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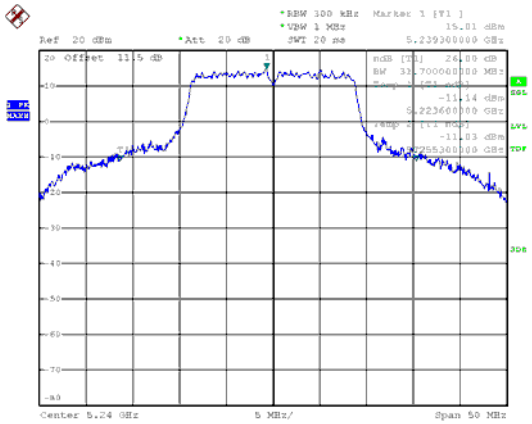
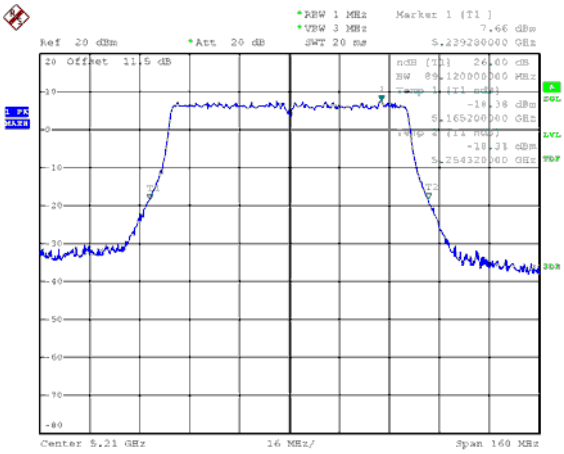
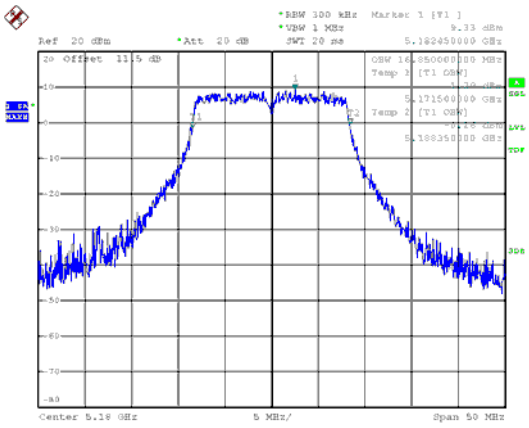


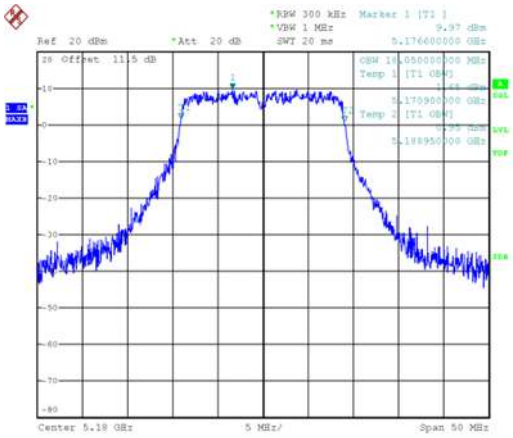
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



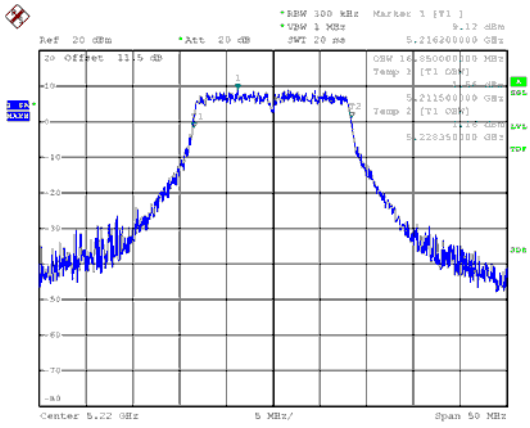
99% Occupied Bandwidth
ANT A**(Non-Beamforming) (Client)**
Modulation Type: 802.11a (6Mbps)
CH36



Modulation Type: 802.11ac VHT20 (6.5Mbps)
CH36



CH44



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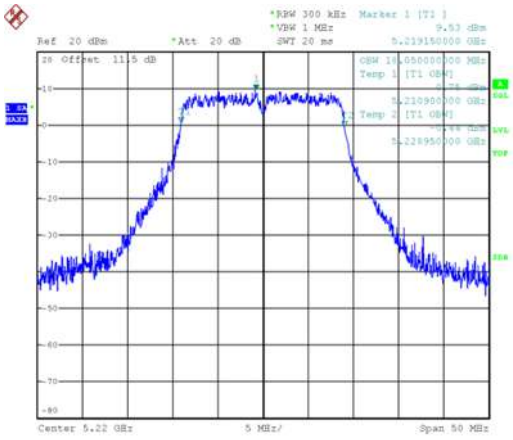

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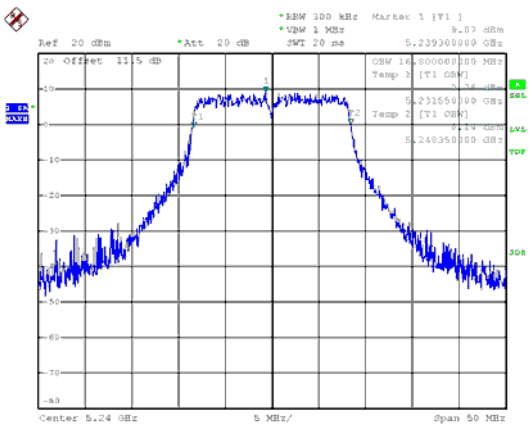
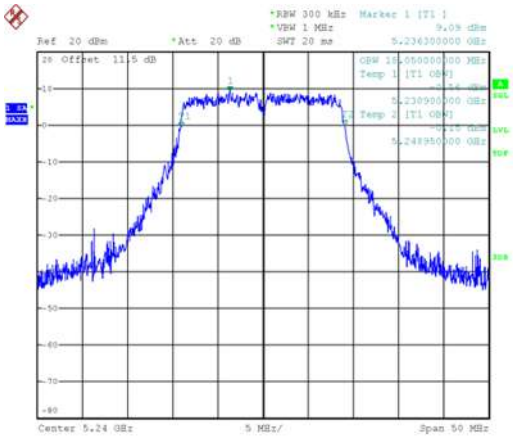
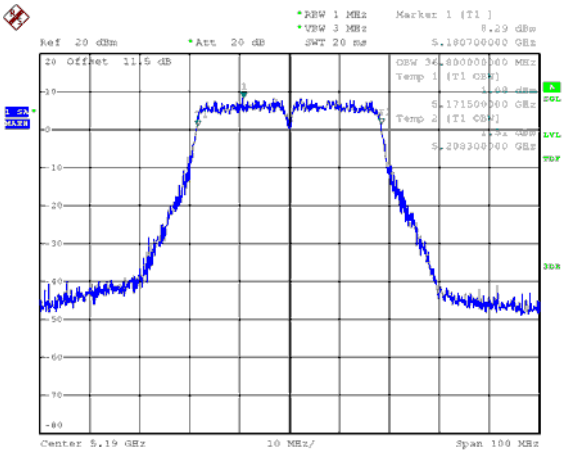


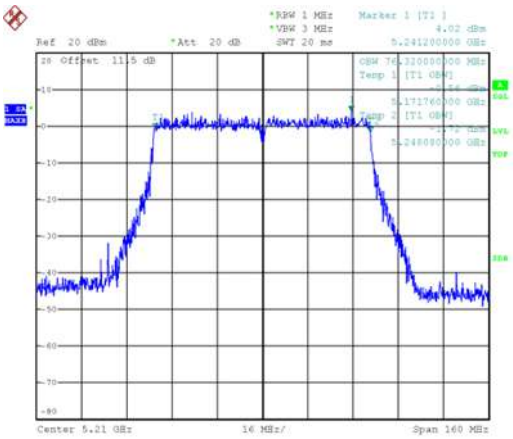
CH48



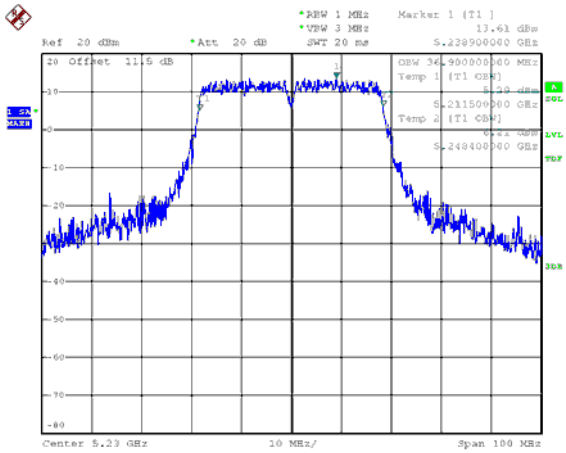
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



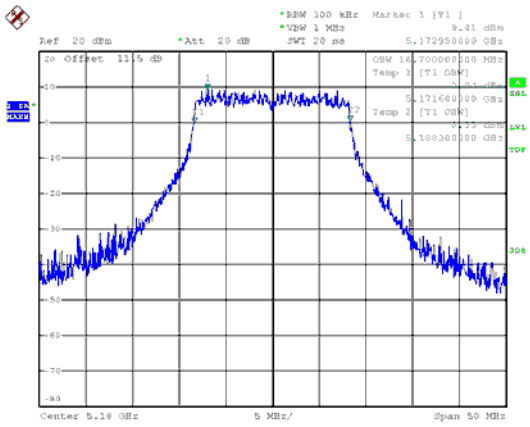
CH46



ANT B

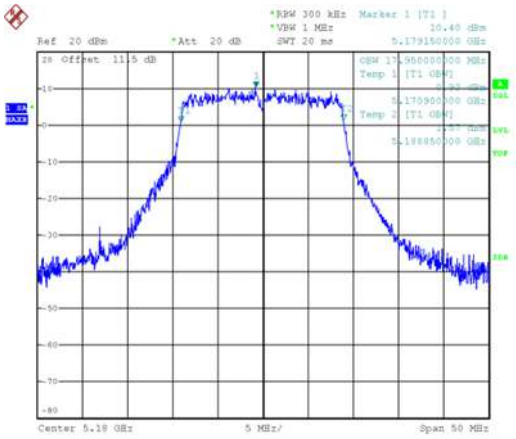
Modulation Type: 802.11a (6Mbps)

CH36



Modulation Type: 802.11ac VHT20 (6.5Mbps)

CH36



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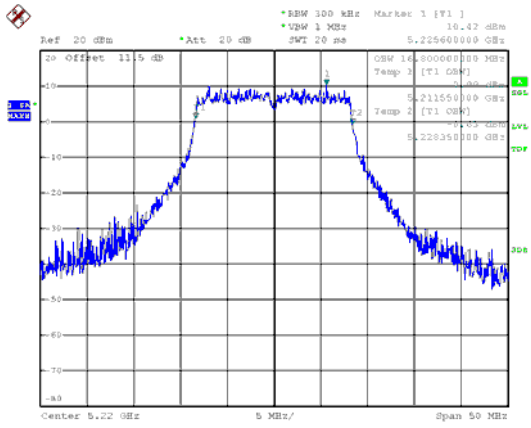

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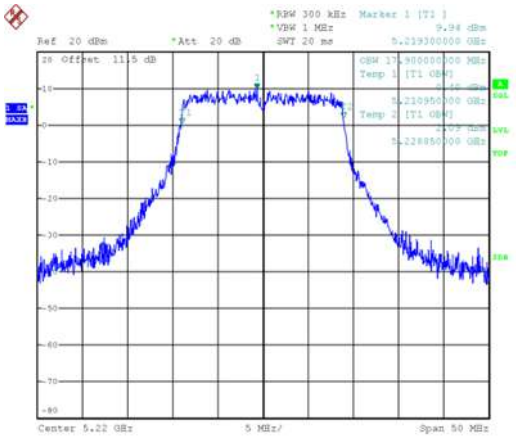

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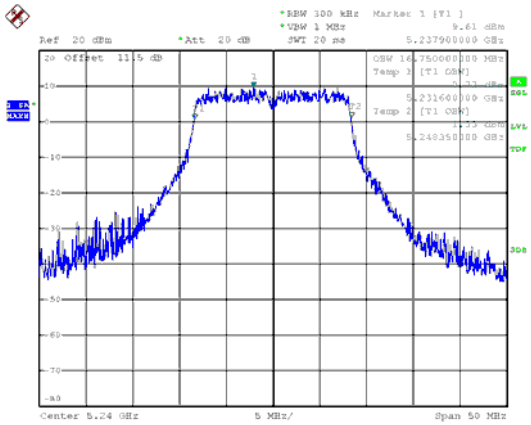

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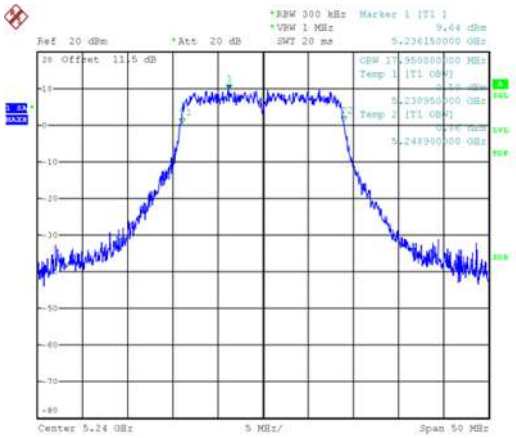
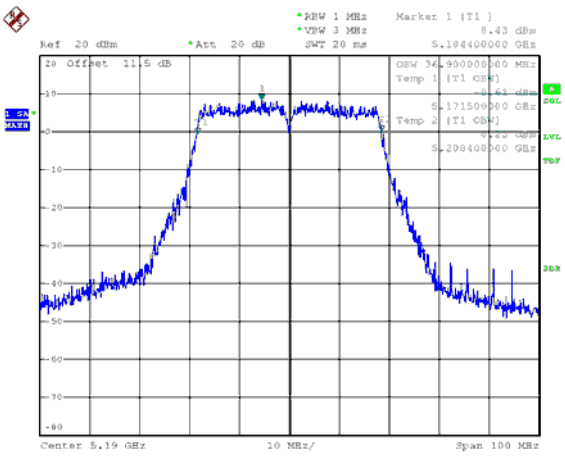
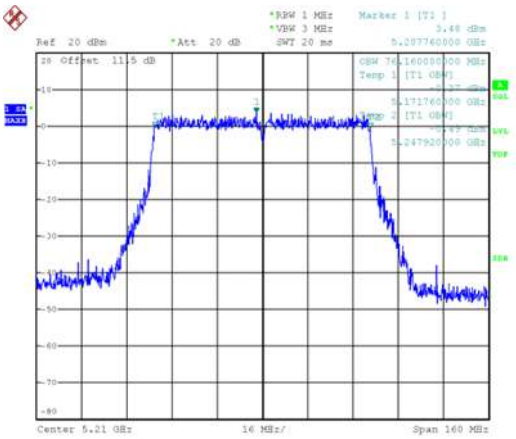


Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



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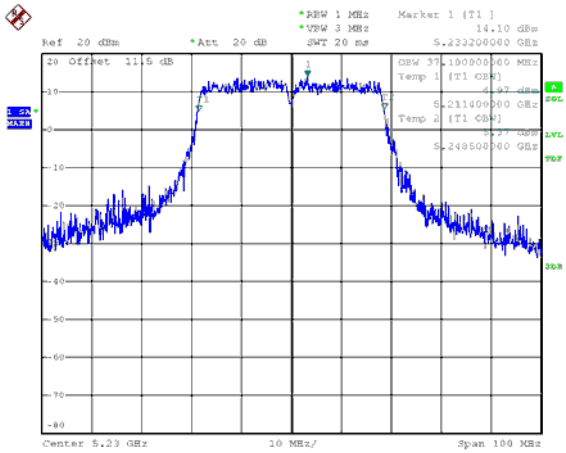
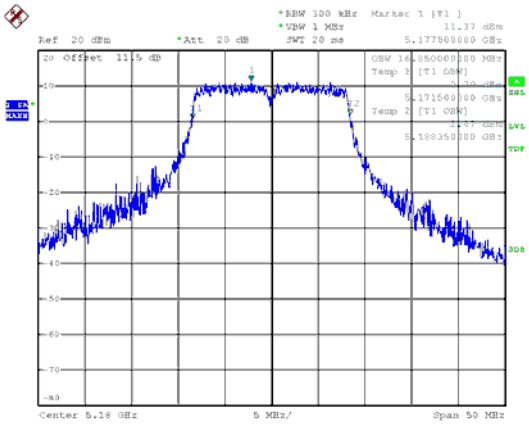
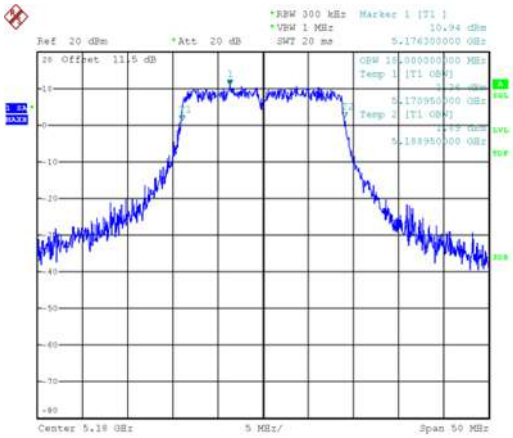


ANT A**(Non-Beamforming) (Master)**
Modulation Type: 802.11a (6Mbps)
CH36



Modulation Type: 802.11ac VHT20 (6.5Mbps)
CH36



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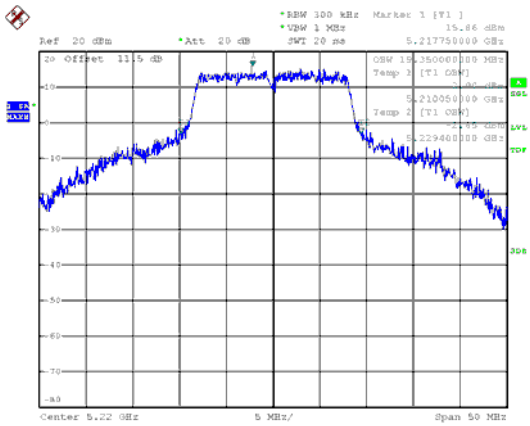

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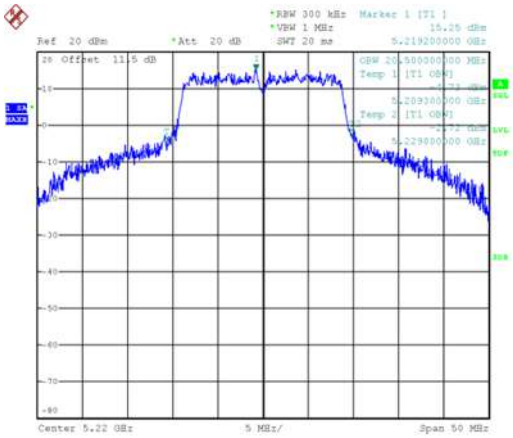

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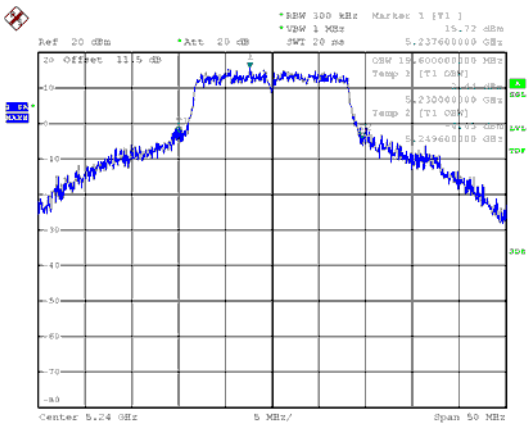

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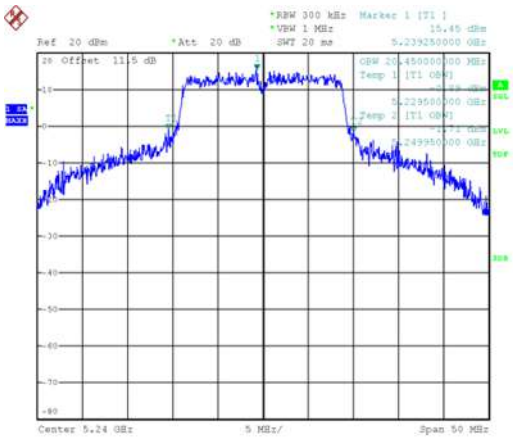
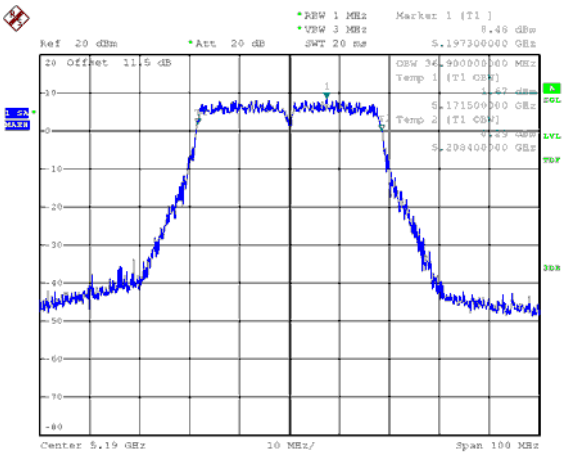
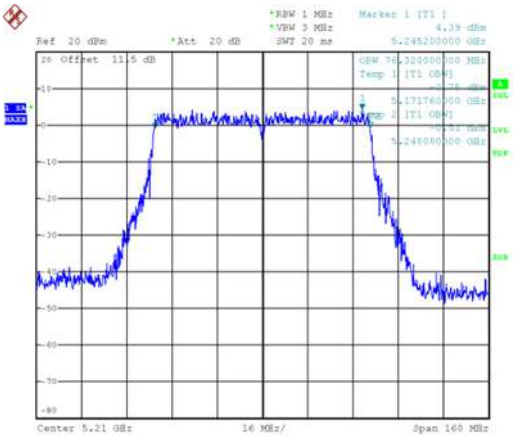


Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



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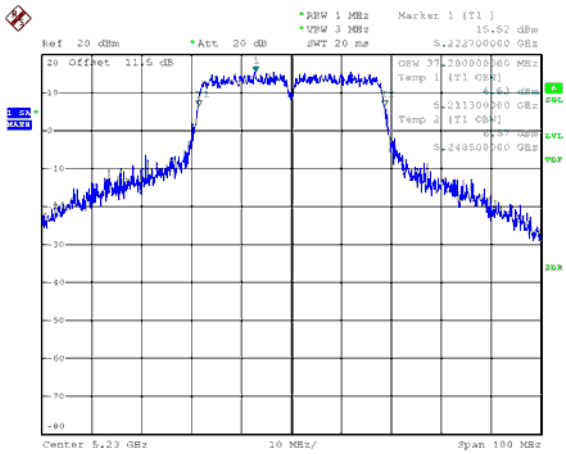
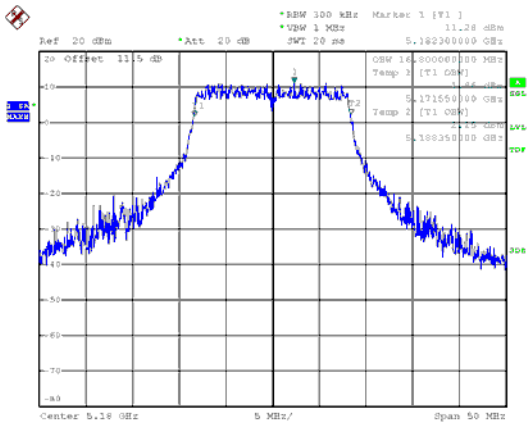


ANT B

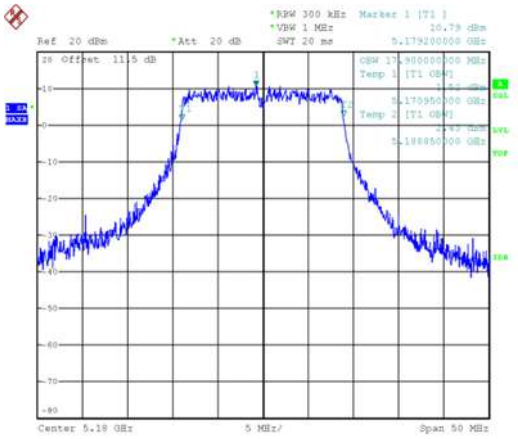
Modulation Type: 802.11a (6Mbps)

CH36

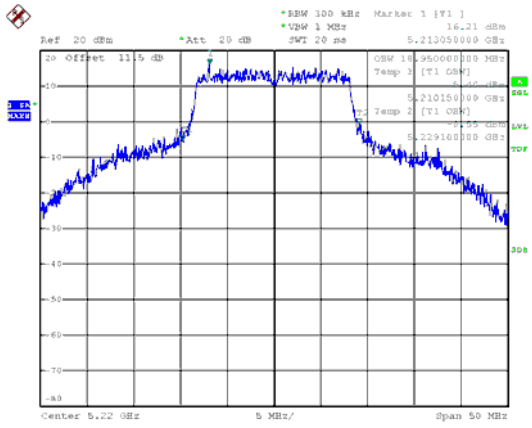


Modulation Type: 802.11ac VHT20 (6.5Mbps)

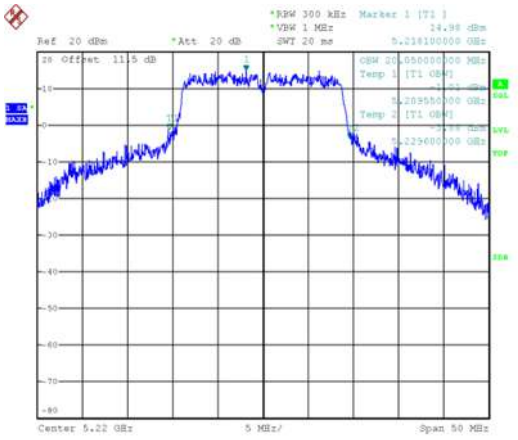
CH36



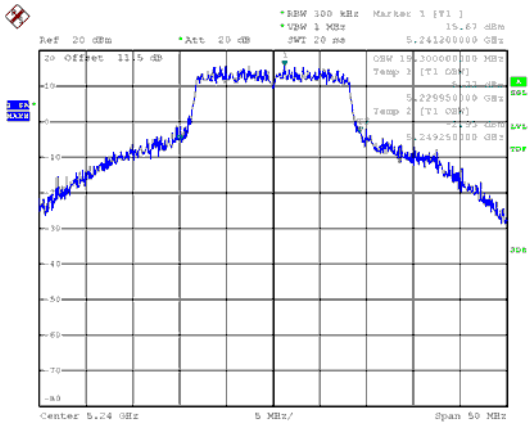
CH44



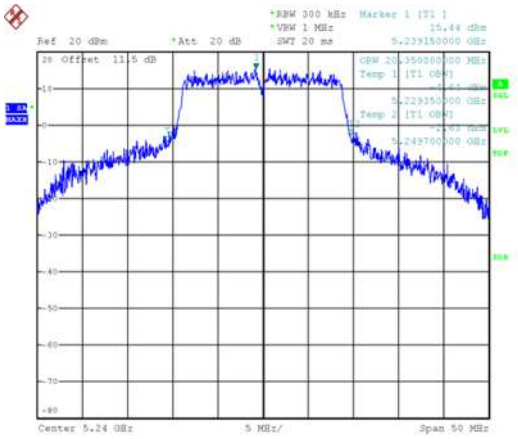
CH44



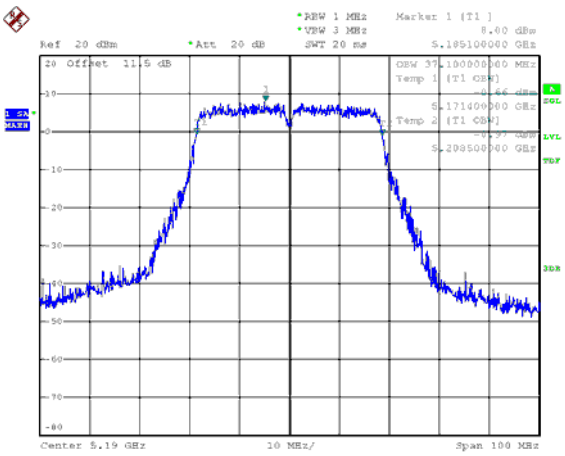
CH48



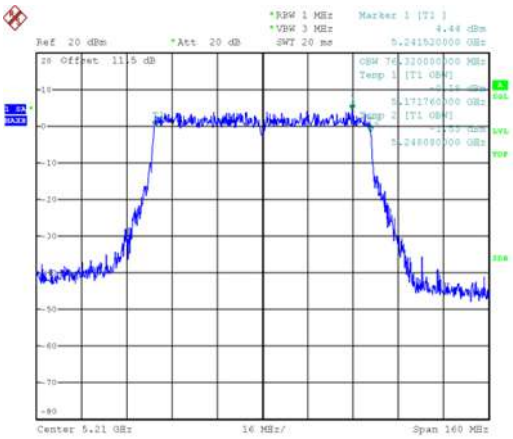
CH48



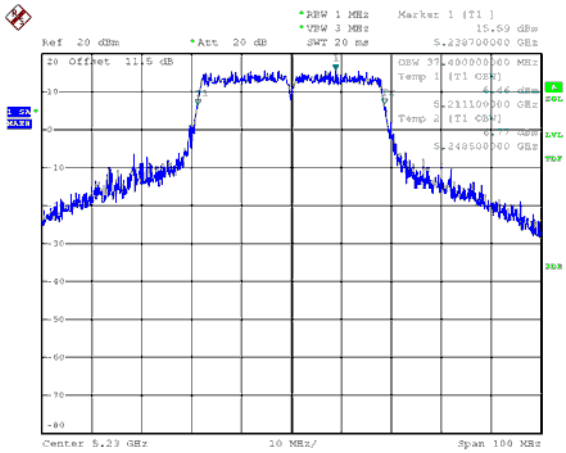
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



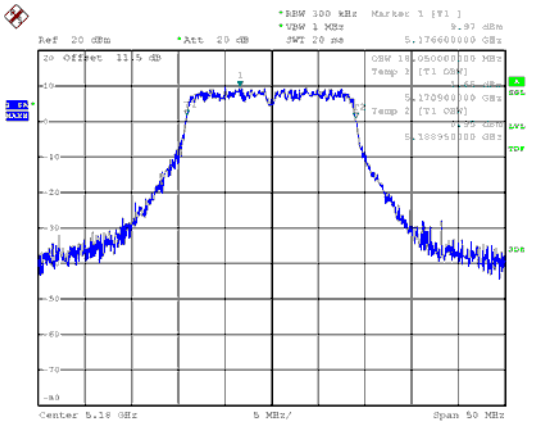
CH46



ANT A**(Beamforming) (Client)**

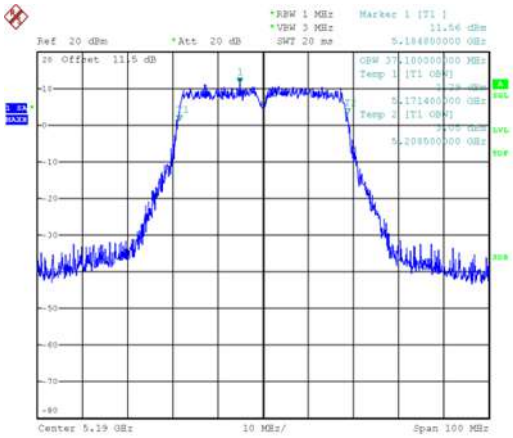
Modulation Type: 802.11ac VHT20 (6.5Mbps)

CH36

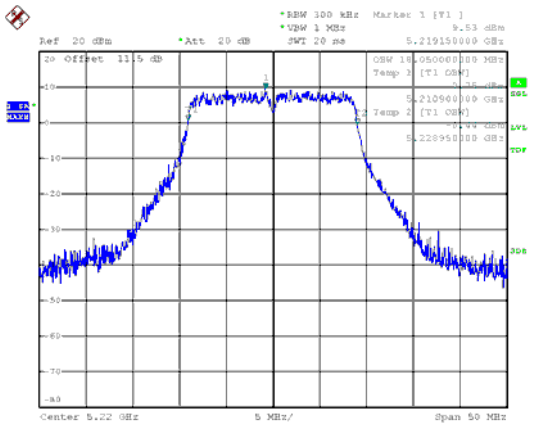


Modulation Type: 802.11ac VHT40 (13.5Mbps)

CH38



CH44



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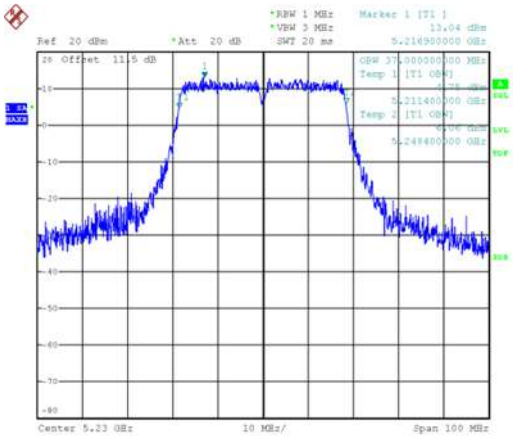
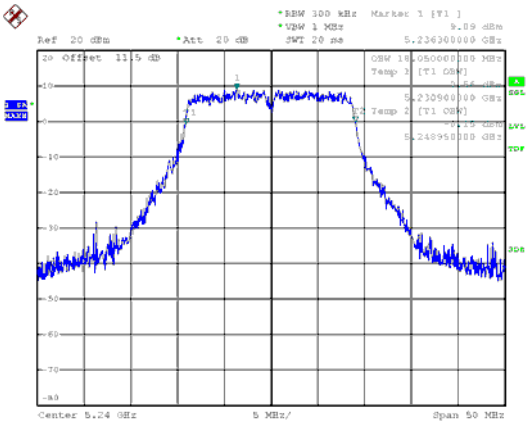
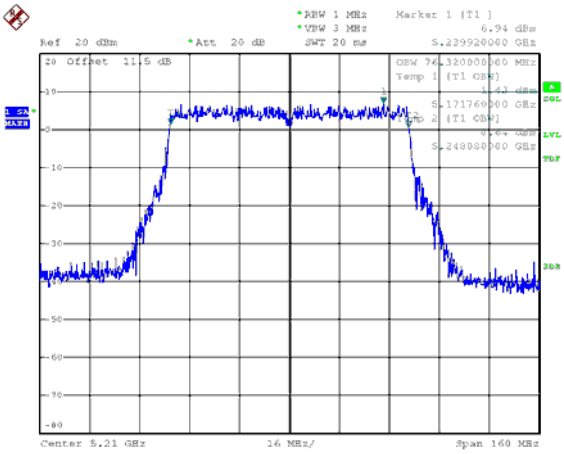


CH48



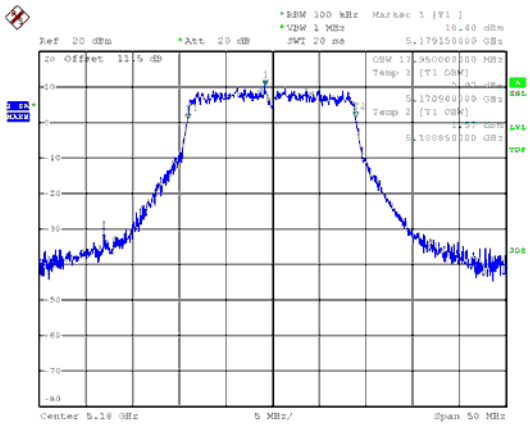
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



ANT B

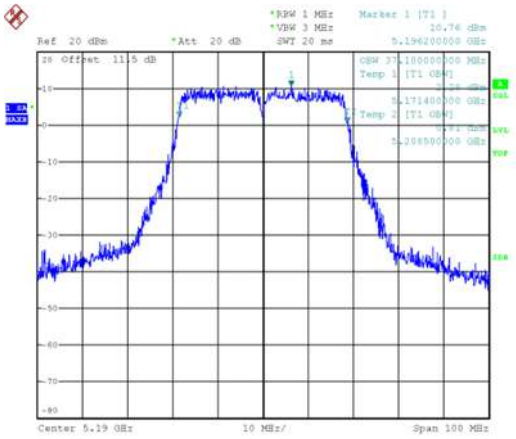
Modulation Type: 802.11ac VHT20 (6.5Mbps)

CH36

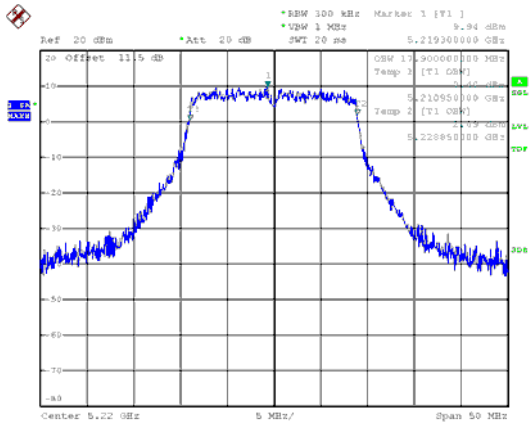


Modulation Type: 802.11ac VHT40 (13.5Mbps)

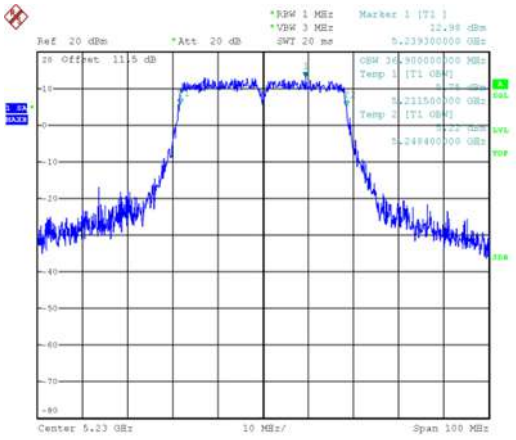
CH38



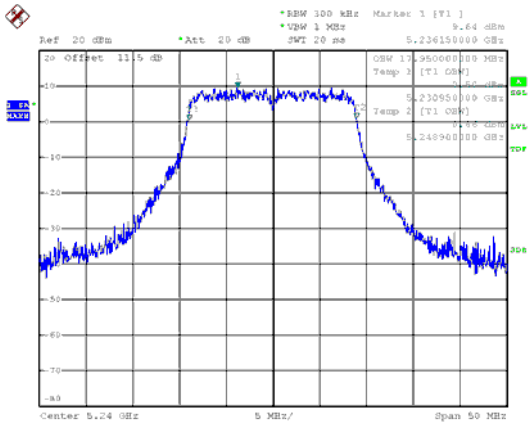
CH44



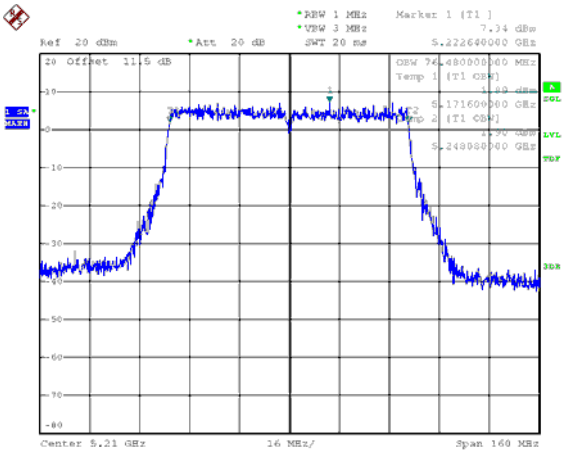
CH46



CH48



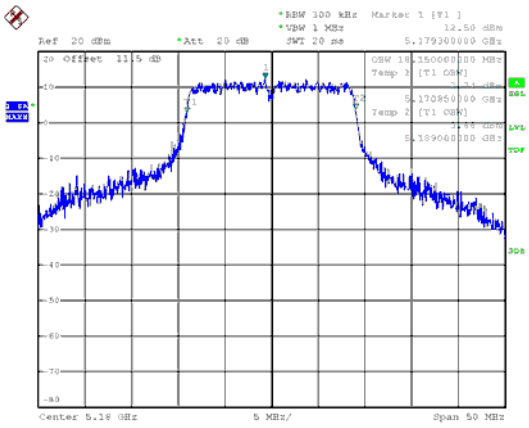
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



ANT A**(Beamforming) (Master)**

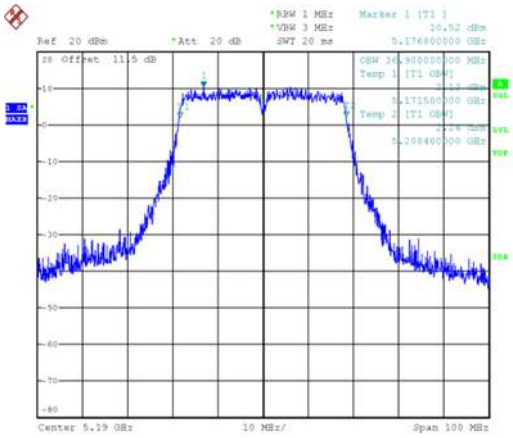
Modulation Type: 802.11ac VHT20 (6.5Mbps)

CH36



Modulation Type: 802.11ac VHT40 (13.5Mbps)

CH38



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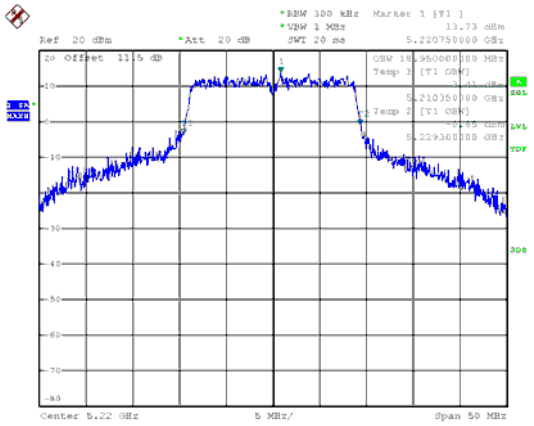

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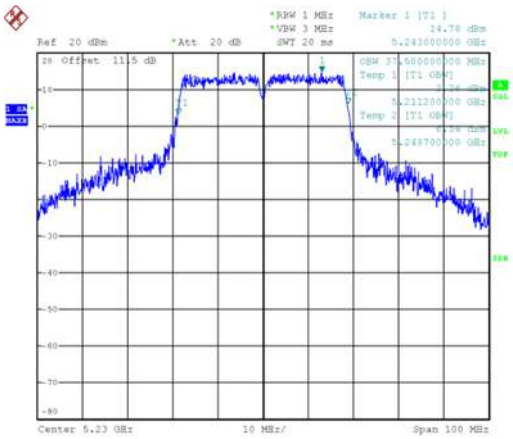

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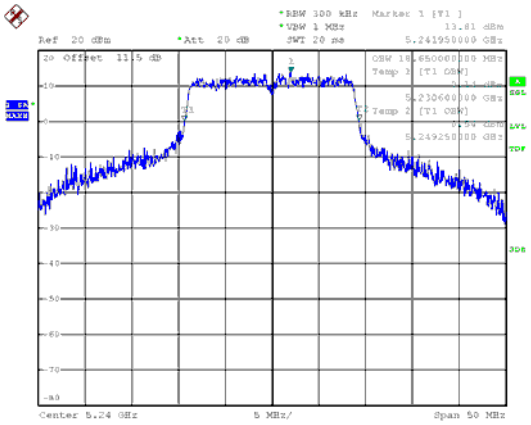
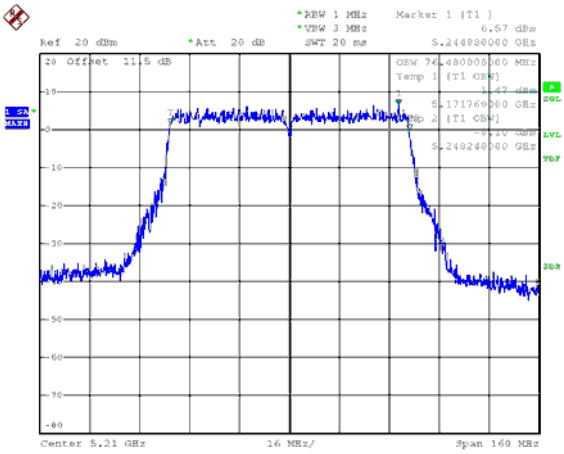


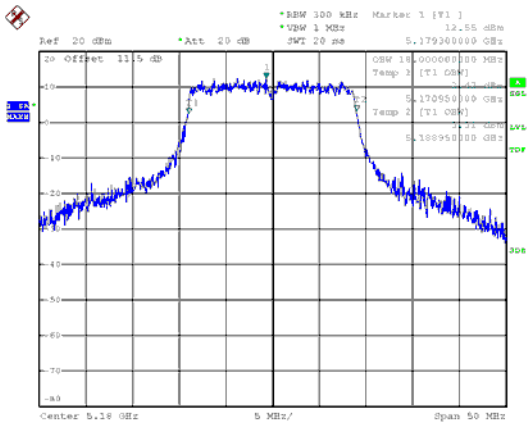
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



ANT B

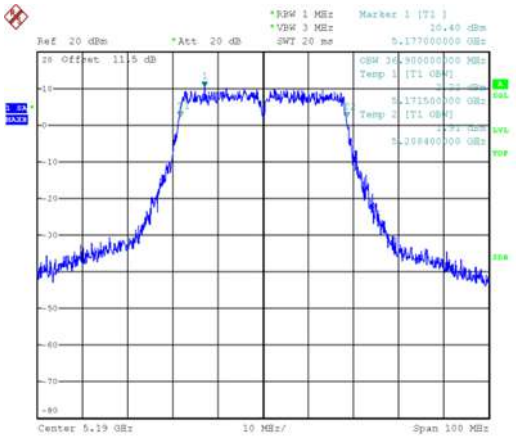
Modulation Type: 802.11ac VHT20 (6.5Mbps)

CH36



Modulation Type: 802.11ac VHT40 (13.5Mbps)

CH38



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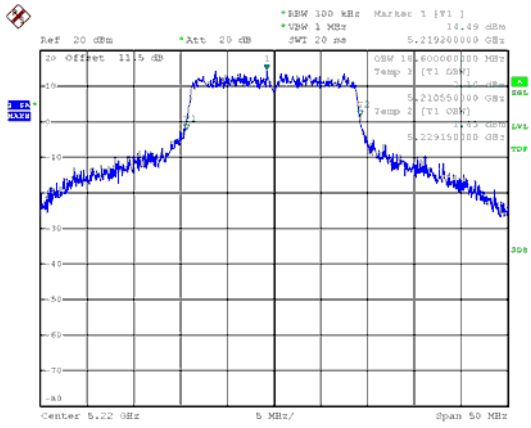
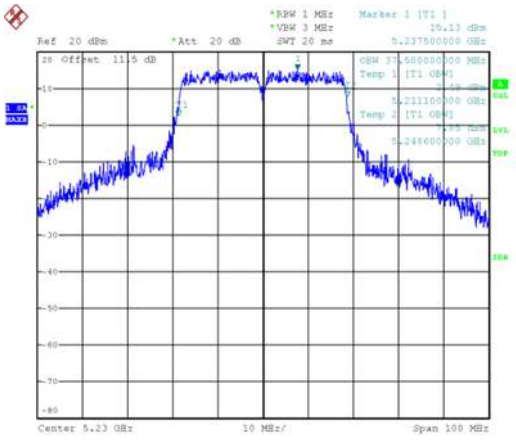


CH46



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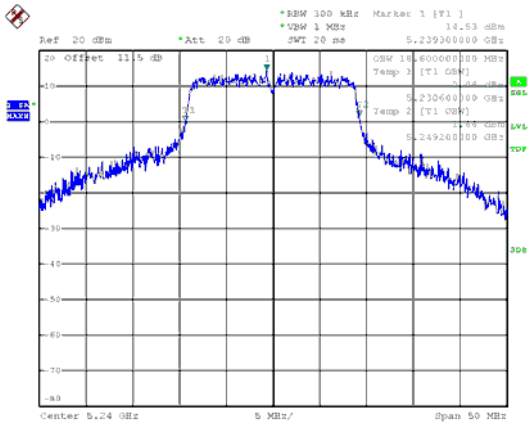
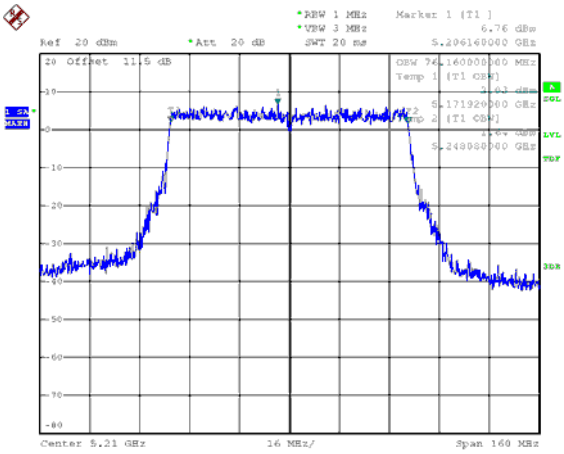


Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



10. Average Power

10.1. Test Limit

Output Power:

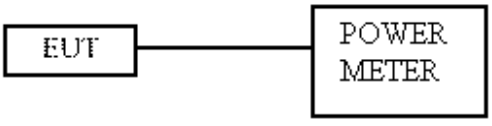
Frequency Band			Limit
☒	5.15~5.25GHz		
	Operating Mode		
	☐	Outdoor access point	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30degrees as measured from the horizon must not exceed125 mW (21 dBm).
	☒	Indoor access point	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
	☐	Fixed point-to-point access points	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.
	☒	client devices	The maximum conducted output power over the frequency band of operation shall not exceed 250 mW (24dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Frequency Band		Limit
☐	5.25-5.35 GHz	The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
☐	5.470-5.725 GHz	
☒	5.725~5.85 GHz	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.

10.2. Test Procedure

The transmitter output is connected to a power meter.
The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

10.3. Test Setup Layout



10.4.Test Result and Data

(Non-Beamforming)
In the 5.2G Band

Client

Modulation Type	Data Rate	Setting	Channel	Frequency (MHz)	Measured value of each antenna port (dBm)		Total power (dBm)	FCC Limit (dBm)
					ANT A	ANT B		
11a	6 Mbps	18	36	5180	17.65	17.73	20.70	24.00
11a	6 Mbps	18.5	44	5220	17.91	18.14	21.04	24.00
11a	6 Mbps	18.5	48	5240	17.78	18.30	21.06	24.00
11n HT20	MCS 0	19	36	5180	18.64	18.63	21.65	24.00
11n HT20	MCS 0	19	44	5220	18.20	18.81	21.53	24.00
11n HT20	MCS 0	19	48	5240	18.24	18.80	21.54	24.00
11n HT40	MCS 0	14.5	38	5190	14.70	15.69	18.23	24.00
11n HT40	MCS 0	20	46	5230	20.17	20.30	23.25	24.00
11ac VHT20	MCS0-NSS1	19	36	5180	18.67	18.69	21.69	24.00
11ac VHT20	MCS0-NSS1	19	44	5220	18.24	18.83	21.56	24.00
11ac VHT20	MCS0-NSS1	19	48	5240	18.26	18.84	21.57	24.00
11ac VHT40	MCS0-NSS1	14.5	38	5190	14.73	15.73	18.27	24.00
11ac VHT40	MCS0-NSS1	20	46	5230	20.19	20.68	**23.45**	24.00
11ac VHT80	MCS0-NSS1	13.5	42	5210	13.60	14.36	17.01	24.00

Master

Modulation Mode	Data Rate	Setting	Channel	Frequency (MHz)	Measured value of each antenna port (dBm)		Total pozwer (dBm)	Total power (mW)	FCC Limit (dBm)
					ANT A	ANT B			
11a	6 Mbps	19	36	5180	19.26	19.89	22.60	181.832	30.00
11a	6 Mbps	25	44	5220	25.84	24.19	28.10	646.129	30.00
11a	6 Mbps	24	48	5240	25.18	25.13	**28.17**	655.446	30.00
11n HT20	MCS 0	20	36	5180	19.67	19.31	22.50	177.993	30.00
11n HT20	MCS 0	25	44	5220	25.80	24.06	28.03	634.872	30.00
11n HT20	MCS 0	25	48	5240	24.50	24.78	27.65	582.446	30.00
11n HT40	MCS 0	14.5	38	5190	15.23	14.84	18.05	63.822	30.00
11n HT40	MCS 0	22	46	5230	22.61	22.65	25.64	366.467	30.00
11ac VHT20	MCS0-NSS1	20	36	5180	19.69	19.32	22.52	178.617	30.00
11ac VHT20	MCS0-NSS1	25	44	5220	25.82	24.08	28.05	637.803	30.00
11ac VHT20	MCS0-NSS1	25	48	5240	24.53	24.81	27.68	586.483	30.00
11ac VHT40	MCS0-NSS1	14.5	38	5190	14.73	15.73	18.27	67.128	30.00
11ac VHT40	MCS0-NSS1	21	46	5230	22.78	22.91	25.86	385.105	30.00
11ac VHT80	MCS0-NSS1	13.5	42	5210	13.60	14.36	17.01	50.198	30.00

(Non-Beamforming)
In the 5.8G Band

Modulation Mode	Data Rate	Setting	Channel	Frequency (MHz)	Measured value of each antenna port (dBm)		Total power (dBm)	Total power (mW)	FCC Limit (dBm)
					ANT A	ANT B			
11a	6 Mbps	25	149	5745	24.59	26.41	**28.60**	725.262	30.00
11a	6 Mbps	25	157	5785	24.25	24.56	27.42	551.832	30.00
11a	6 Mbps	25	165	5825	24.43	25.88	28.23	664.590	30.00
11n HT20	MCS 0	25	149	5745	24.78	25.09	27.95	623.457	30.00
11n HT20	MCS 0	25	157	5785	24.02	24.68	27.37	546.113	30.00
11n HT20	MCS 0	25	165	5825	24.59	24.83	27.72	591.828	30.00
11n HT40	MCS 0	23.5	151	5755	23.69	24.13	26.93	492.705	30.00
11n HT40	MCS 0	25	159	5795	24.72	25.11	27.93	620.823	30.00
11ac VHT20	MCS0-NSS1	25	149	5745	24.81	25.13	27.98	628.528	30.00
11ac VHT20	MCS0-NSS1	25	157	5785	24.03	24.71	27.39	548.731	30.00
11ac VHT20	MCS0-NSS1	25	165	5825	24.62	24.86	27.75	595.931	30.00
11ac VHT40	MCS0-NSS1	23	151	5755	23.86	24.71	27.32	539.022	30.00
11ac VHT40	MCS0-NSS1	25	159	5795	24.09	25.93	28.12	648.190	30.00
11ac VHT80	MCS0-NSS1	20	155	5775	19.86	19.95	22.92	195.683	30.00

(Beamforming)
In the 5.2G Band

Client

Modulation Mode	Data Rate	Setting	Channel	Frequency (MHz)	Measured value of each antenna port (dBm)		Total power (dBm)	FCC Limit (dBm)
					ANT A	ANT B		
11ac VHT20	MCS0-NSS1	19	36	5180	18.67	18.69	21.69	23.34
11ac VHT20	MCS0-NSS1	19	44	5220	18.24	18.83	21.56	23.34
11ac VHT20	MCS0-NSS1	19	48	5240	18.26	18.84	21.57	23.34
11ac VHT40	MCS0-NSS1	17	38	5190	17.75	17.36	20.57	23.34
11ac VHT40	MCS0-NSS1	19.5	46	5230	19.32	20.07	**22.72**	23.34
11ac VHT80	MCS0-NSS1	17	42	5210	17.59	17.72	20.67	23.34

Master

Modulation Mode	Data Rate	Setting	Channel	Frequency (MHz)	Measured value of each antenna port (dBm)		Total power (dBm)	FCC Limit (dBm)
					ANT A	ANT B		
11ac VHT20	MCS0-NSS1	22	36	5180	22.15	21.84	25.01	29.34
11ac VHT20	MCS0-NSS1	24	44	5220	23.50	23.78	26.65	29.34
11ac VHT20	MCS0-NSS1	24	48	5240	23.61	23.70	**26.67**	29.34
11ac VHT40	MCS0-NSS1	17	38	5190	17.75	17.36	20.57	29.34
11ac VHT40	MCS0-NSS1	22	46	5230	22.41	22.67	25.55	29.34
11ac VHT80	MCS0-NSS1	17	42	5210	17.59	17.72	20.67	29.34

In the 5.8G Band

Modulation Mode	Data Rate	Setting	Channel	Frequency (MHz)	Measured value of each antenna port (dBm)		Total power (dBm)	FCC Limit (dBm)
					ANT A	ANT B		
11ac VHT20	MCS0-NSS1	25	149	5745	24.35	24.97	27.68	28.39
11ac VHT20	MCS0-NSS1	25	157	5785	24.19	24.82	27.53	28.39
11ac VHT20	MCS0-NSS1	25	165	5825	24.18	24.64	27.43	28.39
11ac VHT40	MCS0-NSS1	25	151	5755	24.93	25.61	28.29	28.39
11ac VHT40	MCS0-NSS1	25	159	5795	24.95	25.62	**28.31**	28.39
11ac VHT80	MCS0-NSS1	23	155	5775	22.47	22.89	25.70	28.39

11. Power Spectral Density

11.1.Test Limit

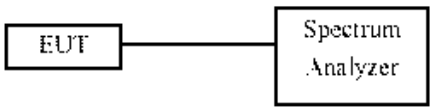
PSD:

Frequency Band			Limit
☒	5.15~5.25GHz		
	Operating Mode		
	☐	Outdoor access point	17 dBm/MHz
	☒	Indoor access point	17 dBm/MHz
	☐	Fixed point-to-point access points	17 dBm/MHz
	☒	Mobile and portable client devices	11 dBm/MHz
☐	5.725~5.85 GHz		11 dBm/MHz
☐	5.470-5.725 GHz		11 dBm/MHz
☒	5.725~5.85 GHz		30 dBm/500kHz

11.2.Test Procedure

Reference to KDB789033 D02 General UNII Test Procedures New Rules v02r01

11.3.Test Setup Layout



11.4. Test Result and Data

(Non-Beamforming)

In the 5.2G Band

Client

Modulation Type	CH	Freq. (MHz)	Meas PSD (dBm/MHz)		Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PSD (dBm/MHz)	PSD Limit (dBm/MHz)
			ANT A	ANT B				
802.11a	36	5180	6.44	6.65	9.56	0.15	9.71	10.34
	44	5220	6.46	6.83	9.66	0.15	9.81	10.34
	48	5240	6.45	6.92	9.70	0.15	9.85	10.34
802.11ac VHT20	36	5180	7.14	7.21	10.19	0.00	10.19	10.34
	44	5220	6.58	7.28	9.95	0.00	9.95	10.34
	48	5240	6.71	7.45	10.11	0.00	10.11	10.34
802.11ac VHT40	38	5190	0.39	0.37	3.39	0.00	3.39	10.34
	46	5230	5.75	6.23	9.01	0.00	9.01	10.34
802.11ac VHT80	42	5210	-3.44	-3.47	-0.44	0.23	-0.21	10.34

Master

Modulation Type	CH	Freq. (MHz)	Meas PSD (dBm/MHz)		Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PSD (dBm/MHz)	PSD Limit (dBm/MHz)
			ANT A	ANT B				
802.11a	36	5180	8.93	8.42	11.69	0.15	11.84	16.34
	44	5220	12.76	12.94	15.86	0.15	16.01	16.34
	48	5240	12.94	12.84	15.90	0.15	16.05	16.34
802.11ac VHT20	36	5180	8.32	8.29	11.32	0.00	11.32	16.34
	44	5220	12.44	12.69	15.58	0.00	15.58	16.34
	48	5240	12.60	12.80	15.71	0.00	15.71	16.34
802.11ac VHT40	38	5190	0.39	0.37	3.39	0.00	3.39	16.34
	46	5230	7.85	8.28	11.08	0.00	11.08	16.34
802.11ac VHT80	42	5210	-3.44	-3.47	-0.44	0.23	-0.21	16.34

(Non-Beamforming)

In the 5.8G Band

Modulation Type	CH	Freq. (MHz)	Meas PSD (dBm/MHz)		Sum chain (dBm)	Duty Cycle CF(dB)	10log(500KHz/RBW) CF (dB)	Total Corr'd PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)
			ANT A	ANT B					
802.11a	149	5745	13.00	13.68	16.36	0.15	-3.01	13.50	28.39
	157	5785	12.61	13.46	16.07	0.15	-3.01	13.21	28.39
	165	5825	12.34	13.19	15.80	0.15	-3.01	12.94	28.39
802.11ac VHT20	149	5745	12.38	13.23	15.84	0.00	-3.01	12.83	28.39
	157	5785	11.92	13.07	15.54	0.00	-3.01	12.53	28.39
	165	5825	12.85	12.76	15.82	0.00	-3.01	12.81	28.39
802.11ac VHT40	155	5755	9.30	9.96	12.65	0.00	-3.01	9.64	28.39
	159	5795	9.84	10.74	13.32	0.00	-3.01	10.31	28.39
802.11ac VHT80	155	5775	1.49	2.02	4.77	0.23	-3.01	1.99	28.39

(Beamforming)

In the 5.2G Band

Client

Modulation Mode	Channel	Frequency (MHz)	Meas PSD (dBm/MHz)		Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PSD (dBm/MHz)	PSD Limit (dBm/MHz)
			ANT A	ANT B				
11ac VHT20	36	5180	6.38	6.65	9.53	0.74	10.27	10.34
11ac VHT20	44	5220	5.88	6.79	9.37	0.74	10.11	10.34
11ac VHT20	48	5240	6.08	6.83	9.48	0.74	10.22	10.34
11ac VHT40	38	5190	3.02	2.74	5.89	0.62	6.51	10.34
11ac VHT40	46	5230	4.69	5.51	8.13	0.62	8.75	10.34
11ac VHT80	42	5210	-0.03	0.13	3.06	0.40	3.46	10.34

Master

Modulation Mode	Channel	Frequency (MHz)	Meas PSD (dBm/MHz)		Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PSD (dBm/MHz)	PSD Limit (dBm/MHz)
			ANT A	ANT B				
11ac VHT20	36	5180	10.02	9.93	12.99	0.74	13.73	16.34
11ac VHT20	44	5220	11.39	11.70	14.56	0.74	15.30	16.34
11ac VHT20	48	5240	11.38	11.75	14.58	0.74	15.32	16.34
11ac VHT40	38	5190	3.02	2.74	5.89	0.62	6.51	16.34
11ac VHT40	46	5230	7.78	7.99	10.90	0.62	11.52	16.34
11ac VHT80	42	5210	-0.03	0.13	3.06	0.40	3.46	16.34

In the 5.8G Band

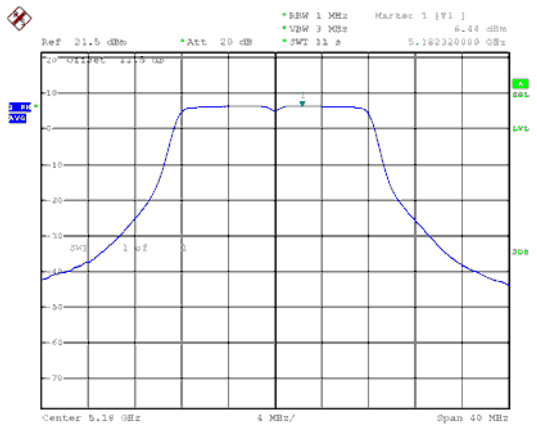
Modulation Mode	Channel (MHz)	Frequency (MHz)	Meas PSD (dBm/MHz)		Sum chain (dBm)	Duty Cycle CF(dB)	10log(500KHz /RBW) CF (dB)	Total Corr'd PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)
			ANT A	ANT B					
11ac VHT20	149	5745	12.38	12.63	15.52	0.74	-3.01	13.25	28.39
11ac VHT20	157	5785	11.92	12.54	15.25	0.74	-3.01	12.98	28.39
11ac VHT20	165	5825	11.76	12.21	15.00	0.74	-3.01	12.73	28.39
11ac VHT40	151	5755	10.41	10.89	13.67	0.62	-3.01	11.28	28.39
11ac VHT40	159	5795	10.25	10.53	13.40	0.62	-3.01	11.01	28.39
11ac VHT80	155	5775	5.34	4.99	8.18	0.40	-3.01	5.57	28.39

(Non-Beamforming)

5.2G Band 1, ANT A, **(Client)**

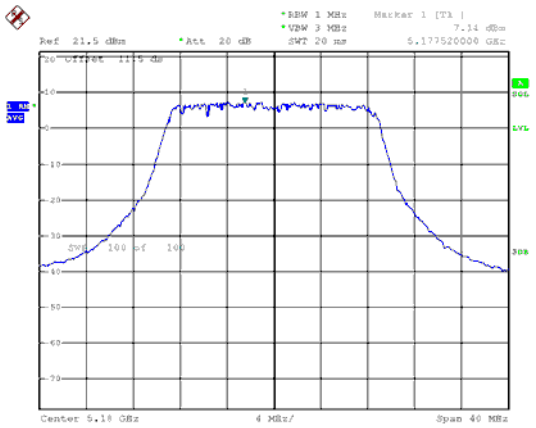
Modulation Type: 802.11a (6Mbps)

CH36

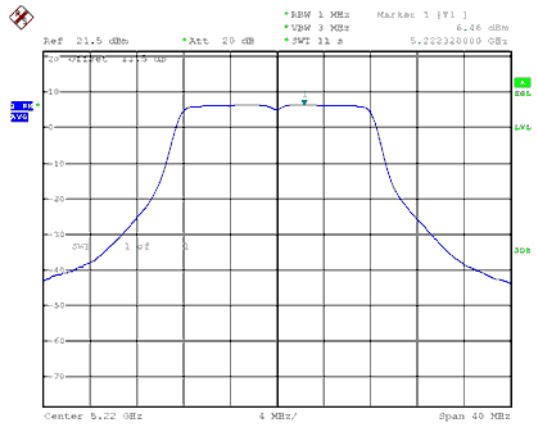


Modulation Type: 802.11ac VHT20 (6.5Mbps)

CH36



CH44



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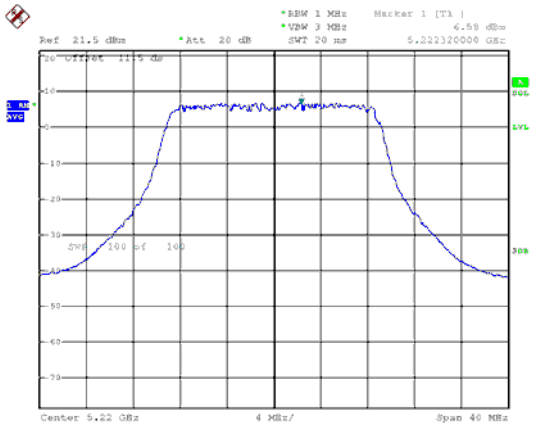
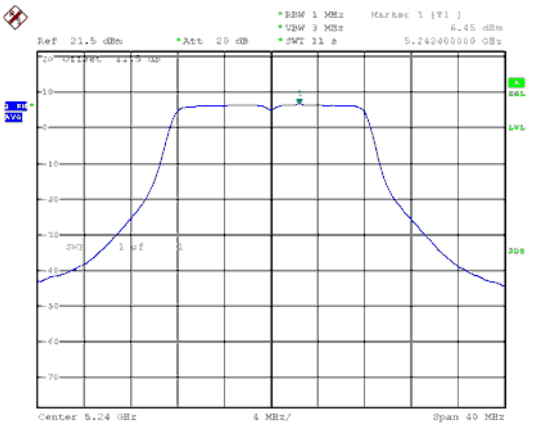


CH48



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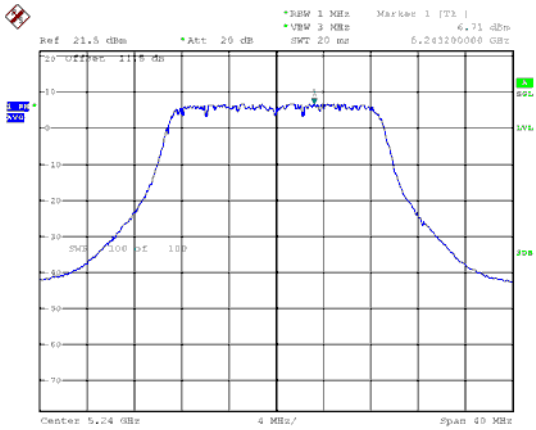
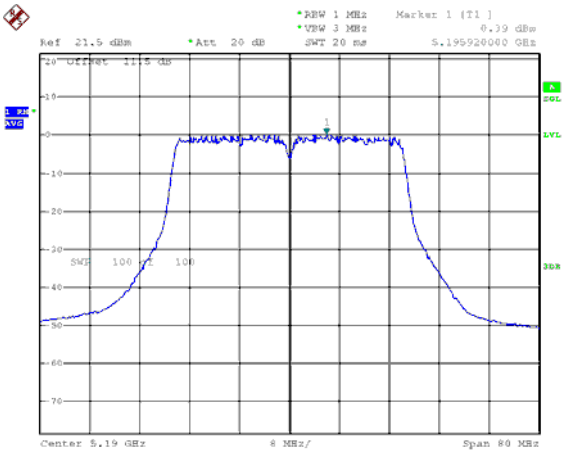
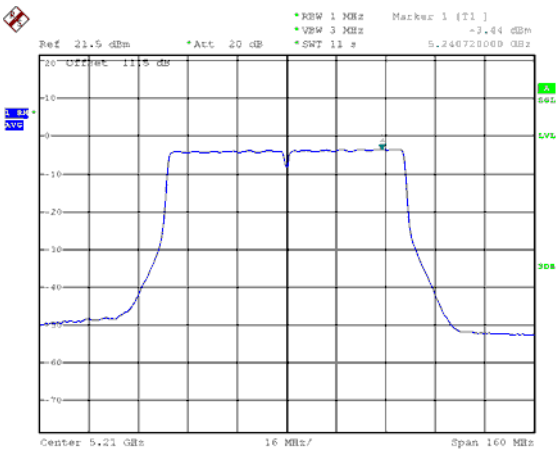


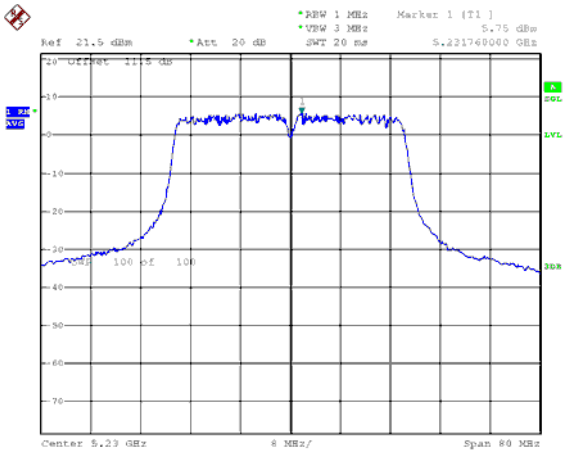
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



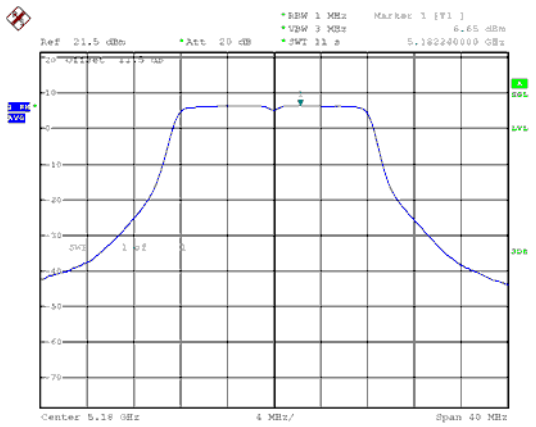
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



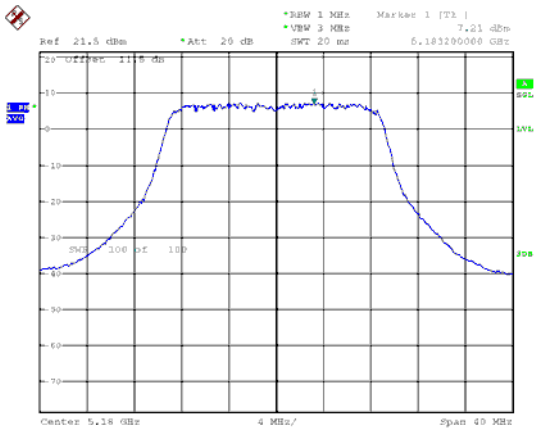
CH46



5.2G Band 1, ANT B
Modulation Type: 802.11a (6Mbps)
CH36



Modulation Type: 802.11ac VHT20 (6.5Mbps)
CH36



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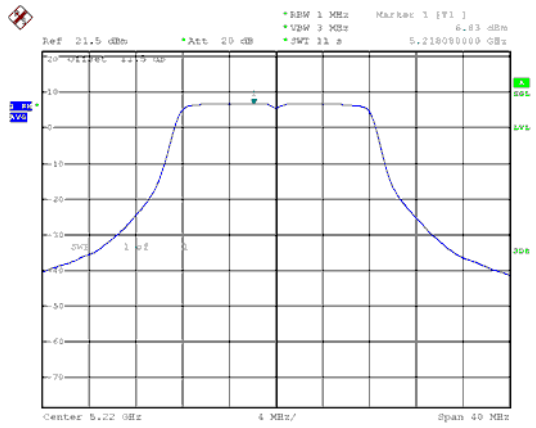

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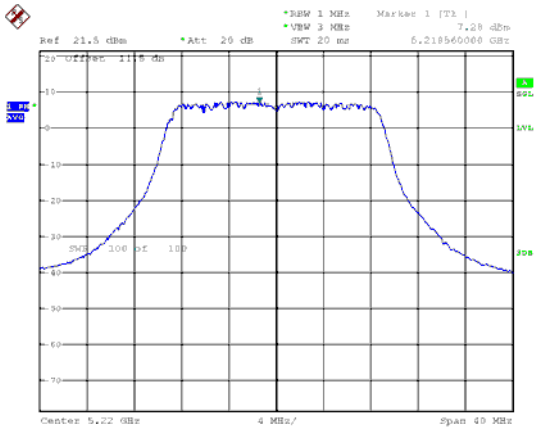
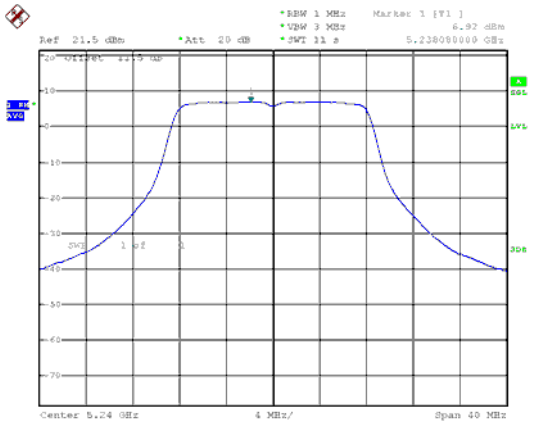


CH48



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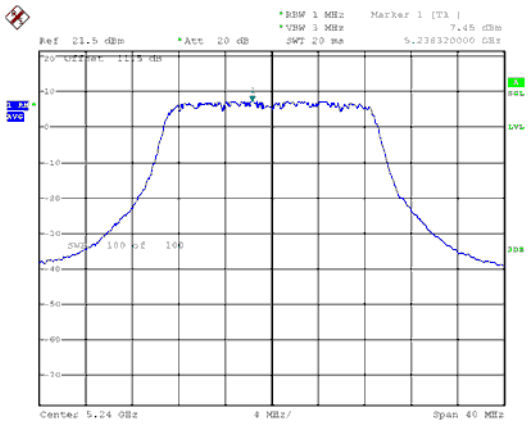
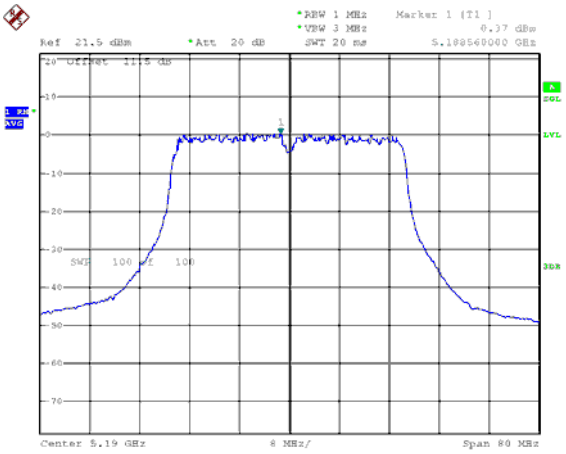
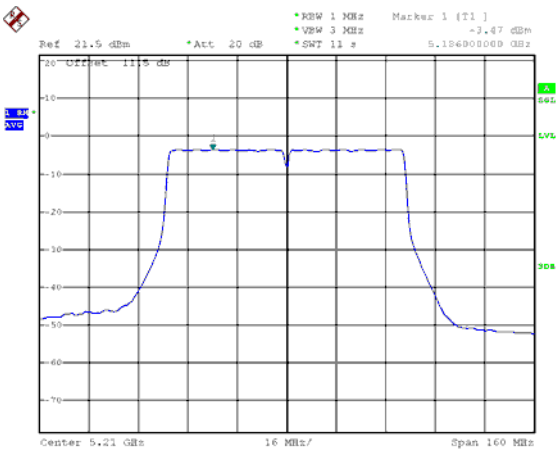


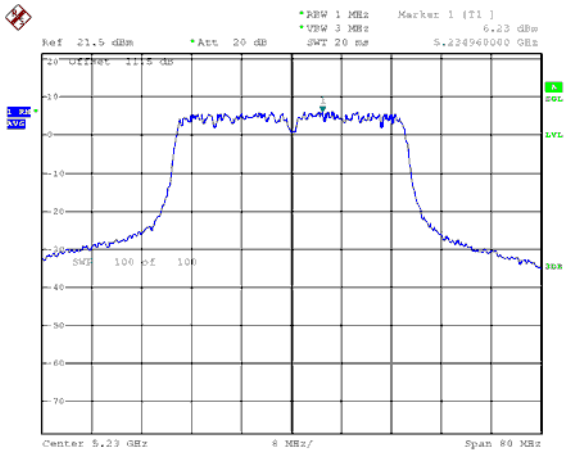
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



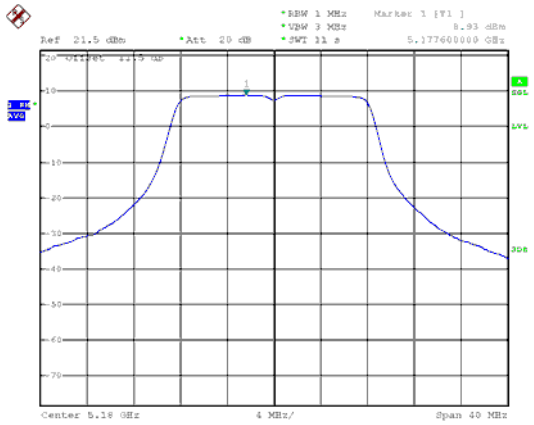
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



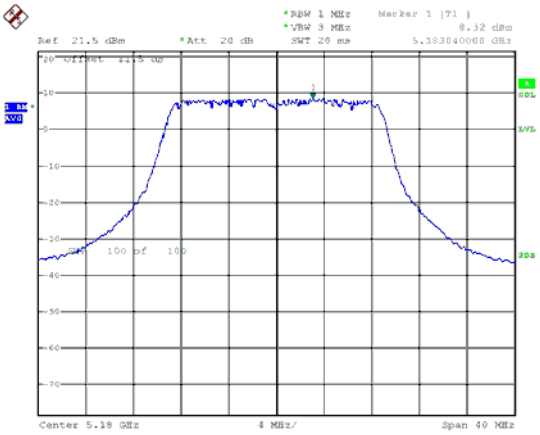
CH46



5.2G Band 1, ANT A, **(Master)**
Modulation Type: 802.11a (6Mbps)
CH36



Modulation Type: 802.11ac VHT20 (6.5Mbps)
CH36



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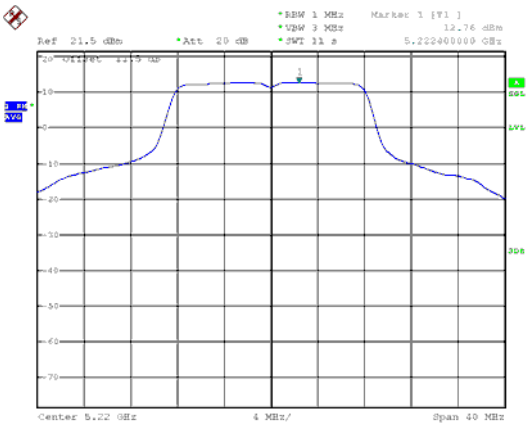

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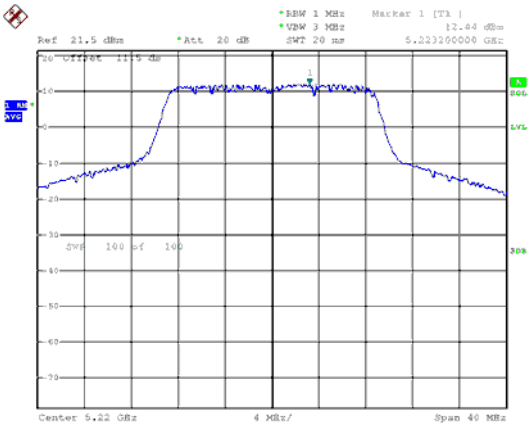

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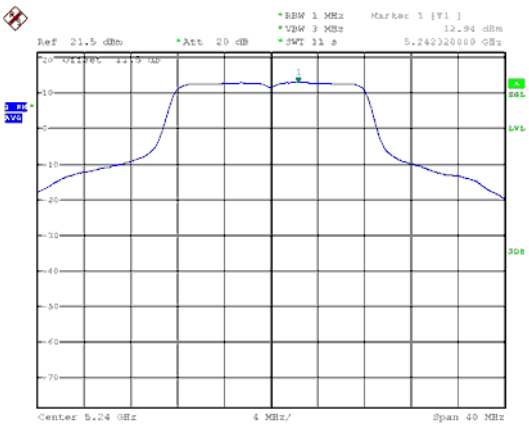

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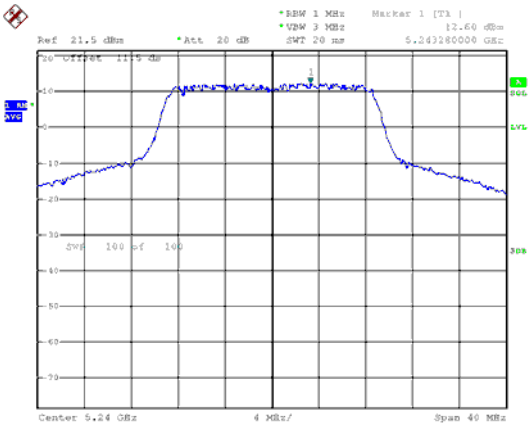
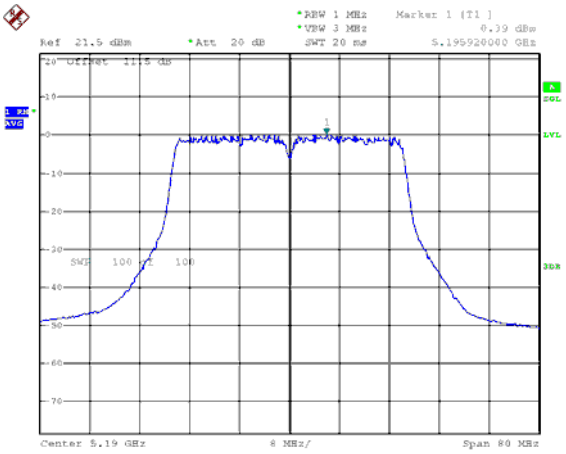
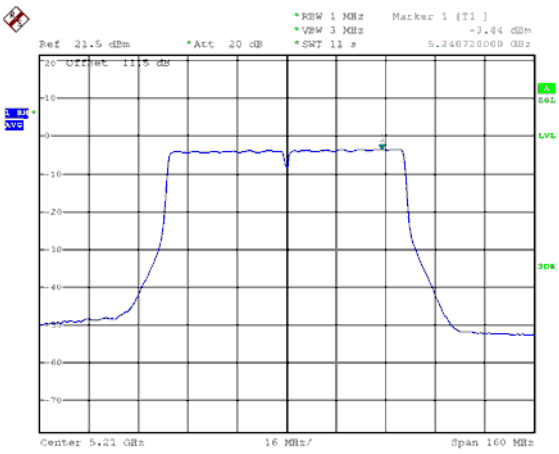


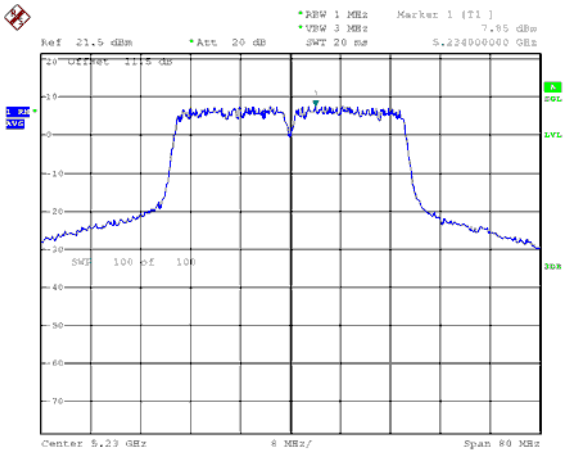
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



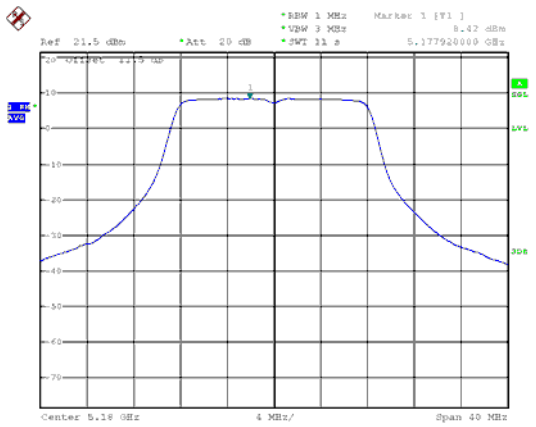
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



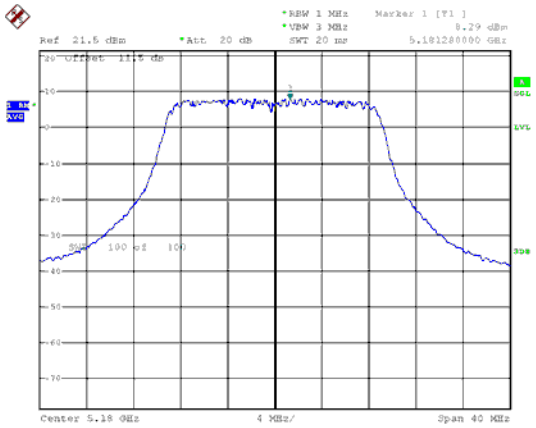
CH46



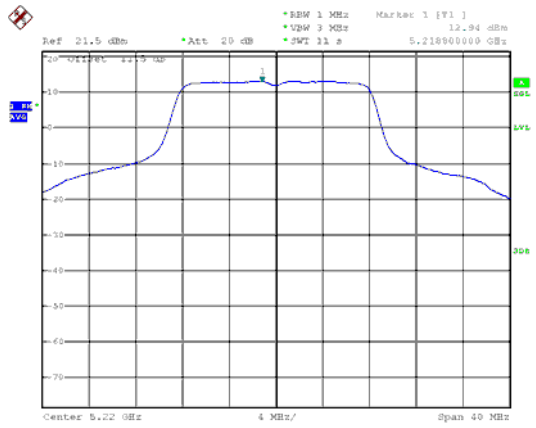
5.2G Band 1, ANT B
Modulation Type: 802.11a (6Mbps)
CH36



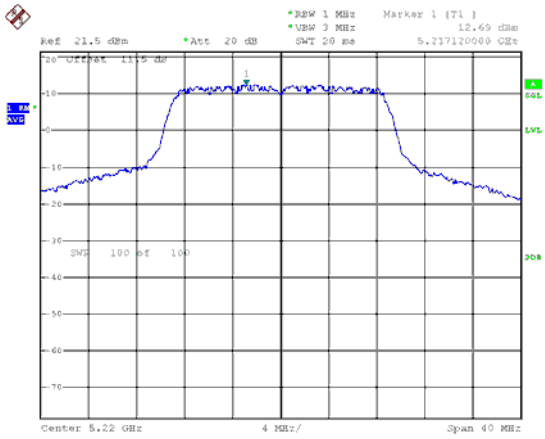
Modulation Type: 802.11ac VHT20 (6.5Mbps)
CH36



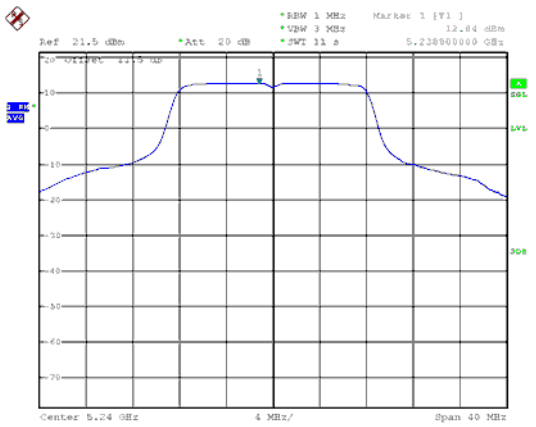
CH44



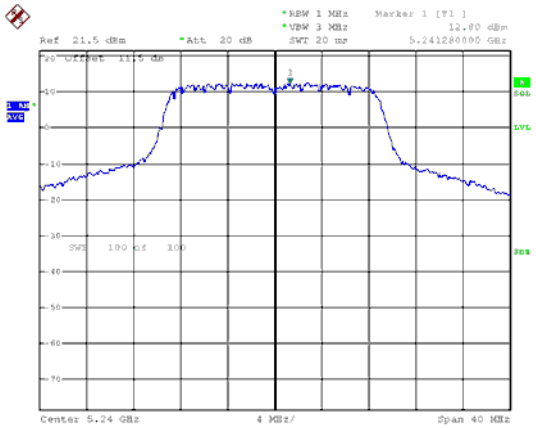
CH44



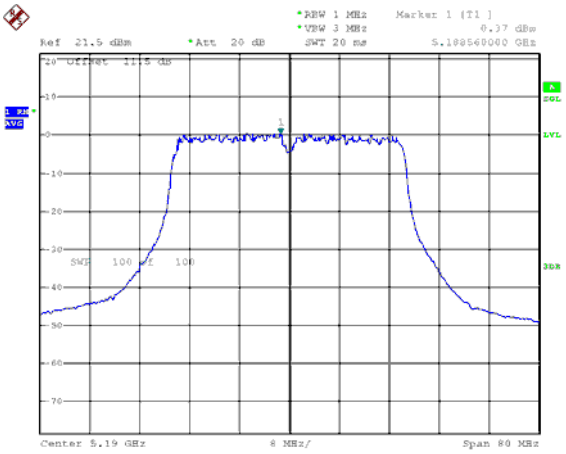
CH48



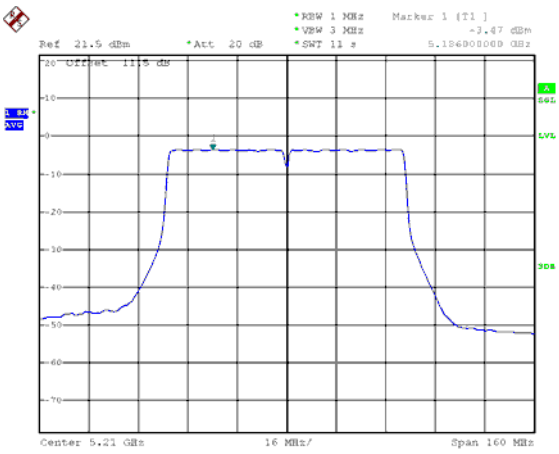
CH48



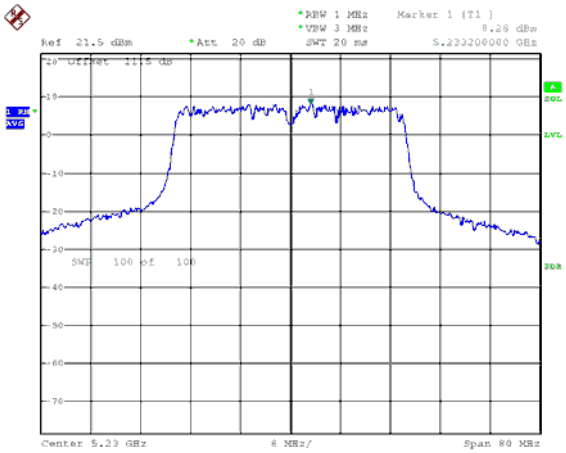
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



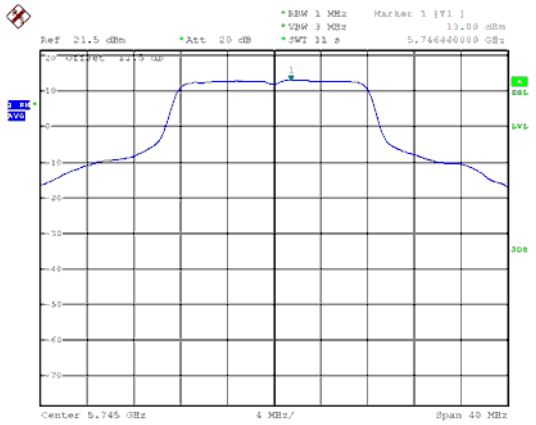
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



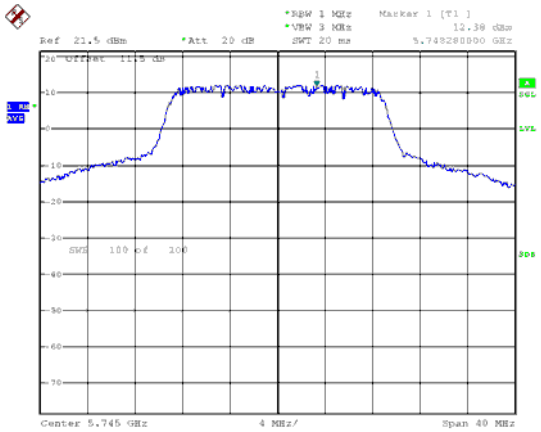
CH46



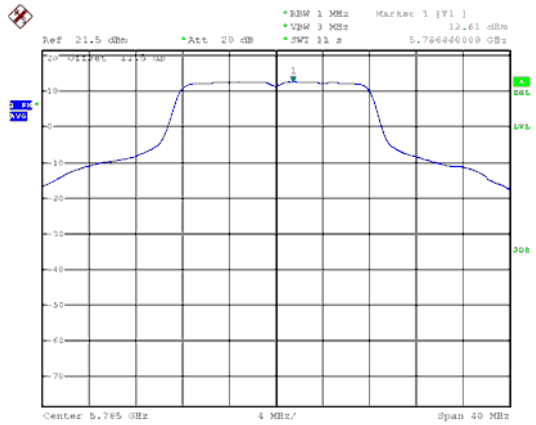
5.8G Band 4, ANT A
Modulation Type: 802.11a (6Mbps)
CH149



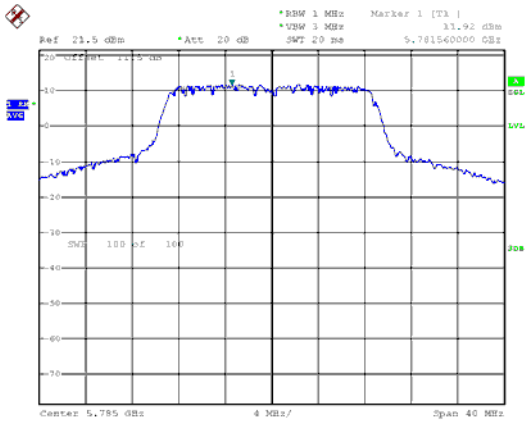
Modulation Type: 802.11ac VHT20 (6.5Mbps)
CH149



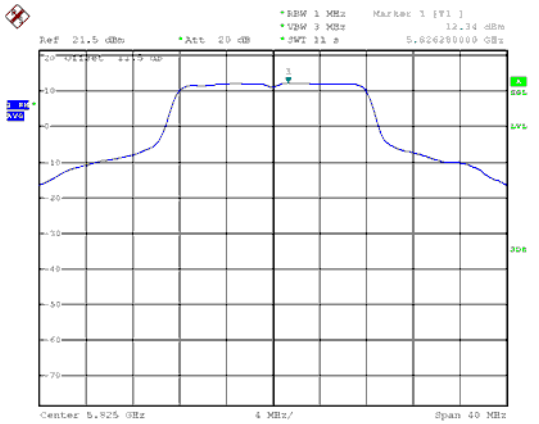
CH157



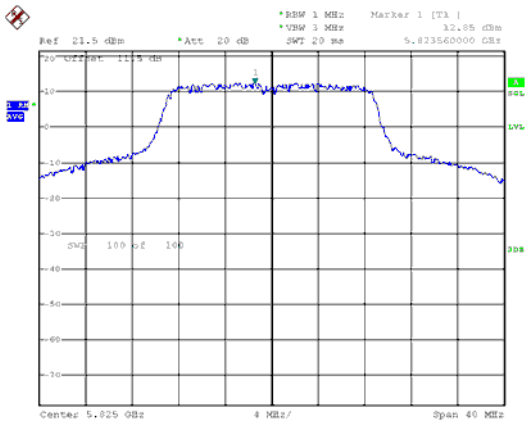
CH157



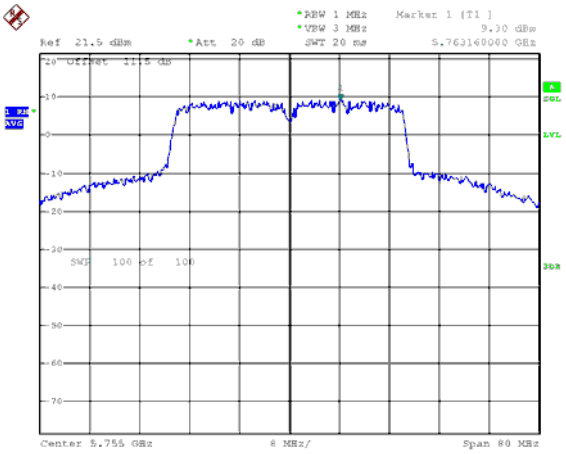
CH165



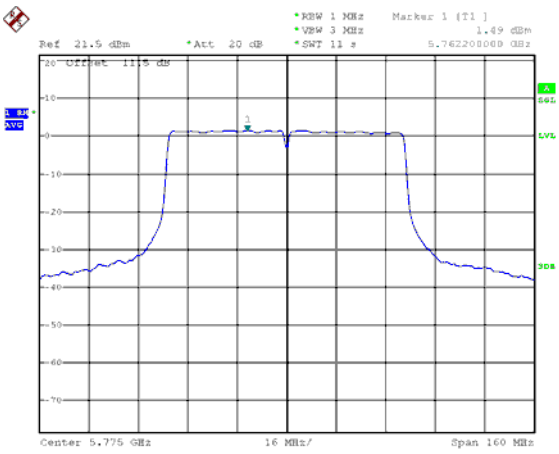
CH165



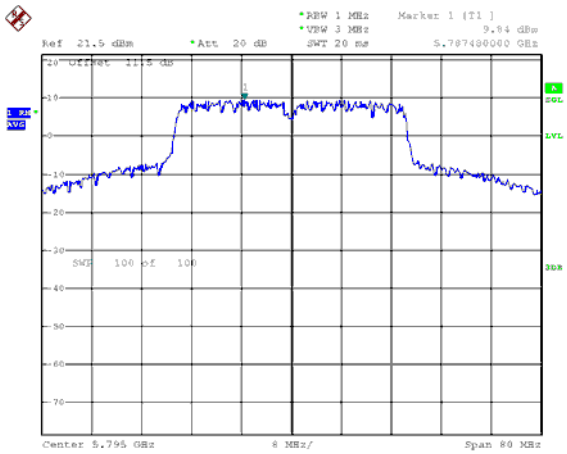
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH151



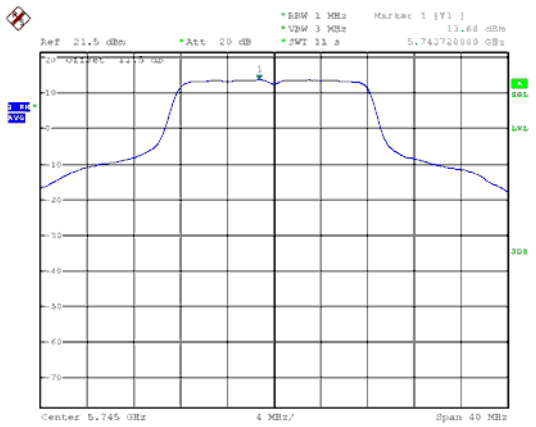
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH155



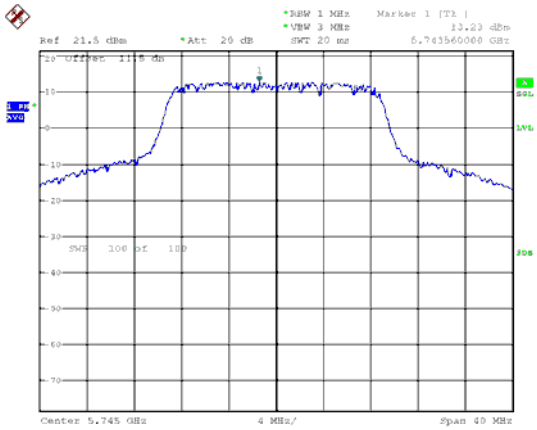
CH159



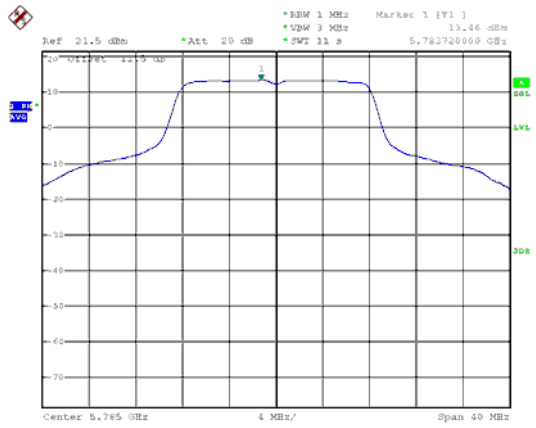
5.8G Band 4, ANT B
Modulation Type: 802.11a (6Mbps)
CH149



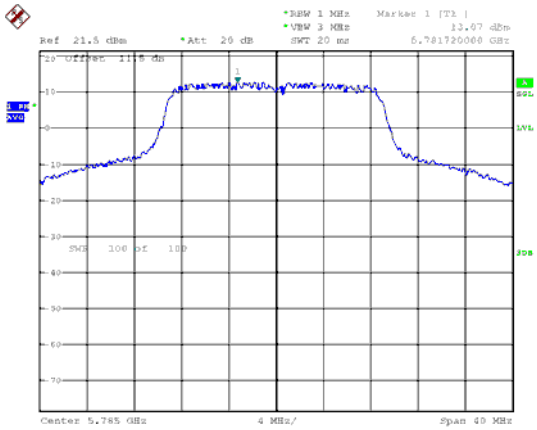
Modulation Type: 802.11ac VHT20 (6.5Mbps)
CH149



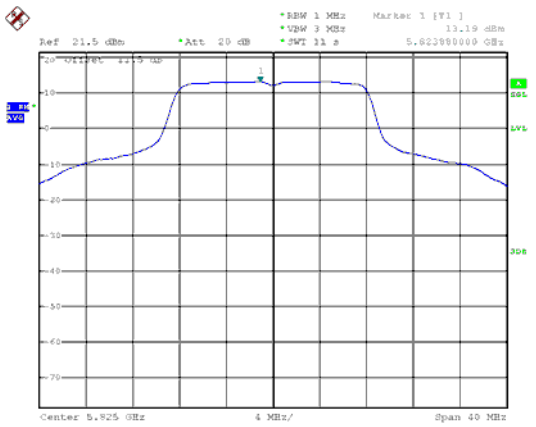
CH157



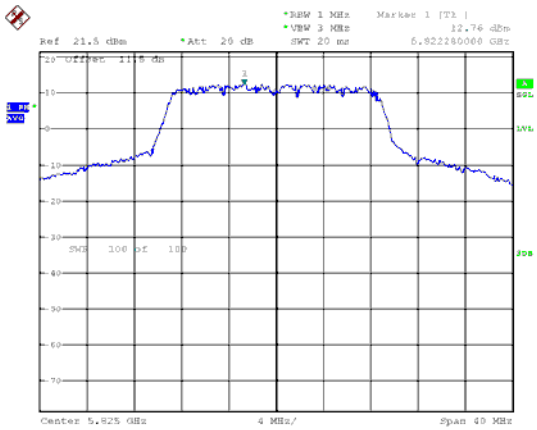
CH157



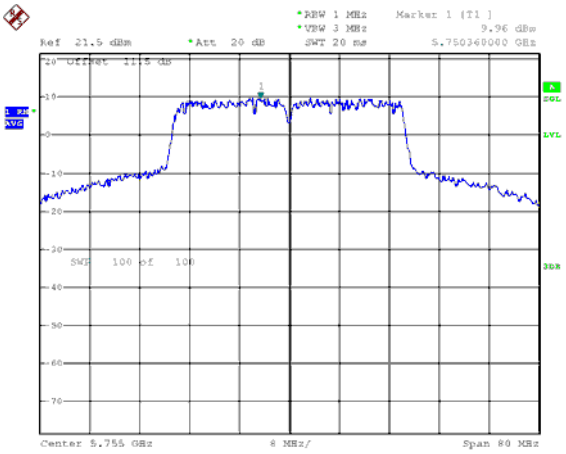
CH165



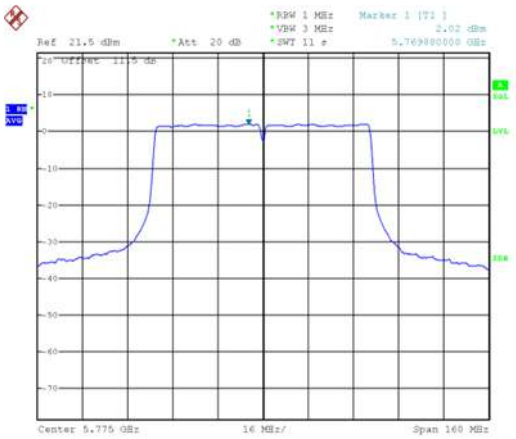
CH165



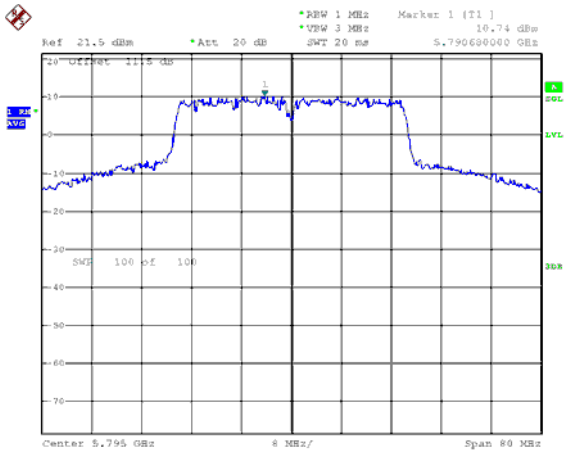
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH151



Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH155



CH159

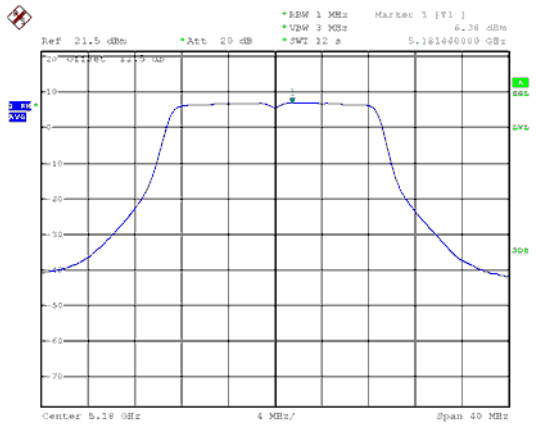


(Beamforming)

5.2G Band 1, ANT A, **(Client)**

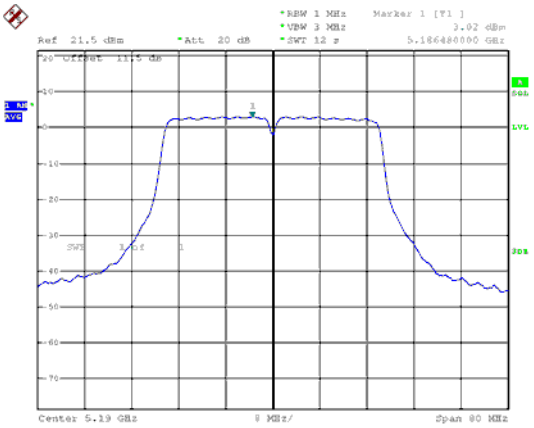
Modulation Type: 802.11ac VHT20 (6.5Mbps)

CH36

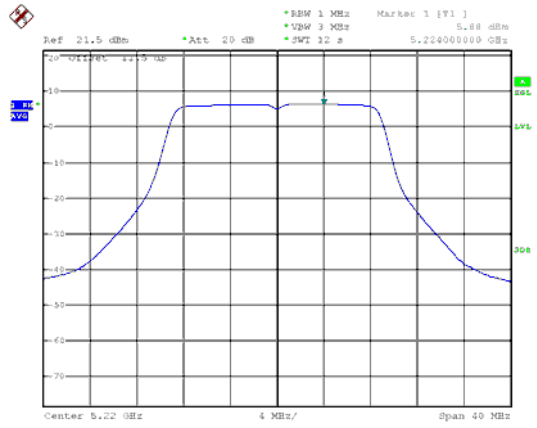


Modulation Type: 802.11ac VHT40 (13.5Mbps)

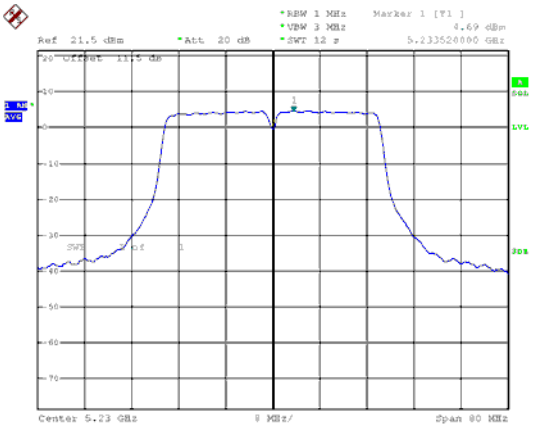
CH38



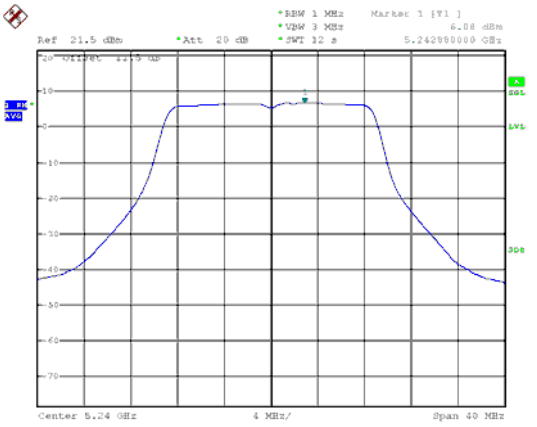
CH44



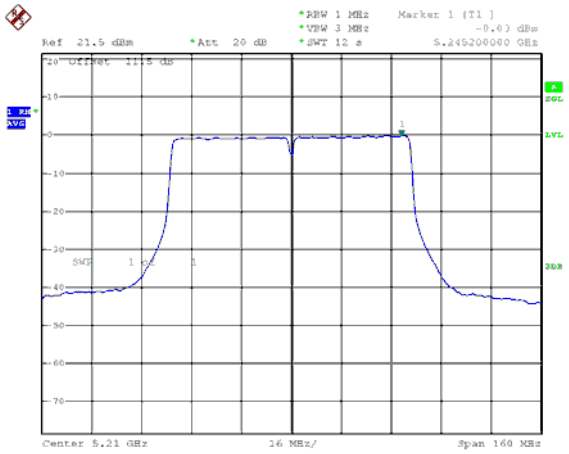
CH46



CH48



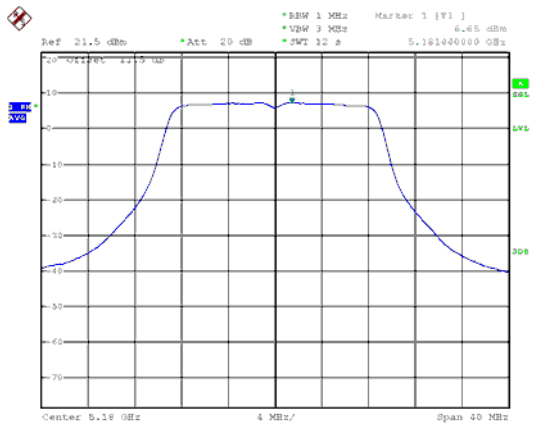
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



ANT B

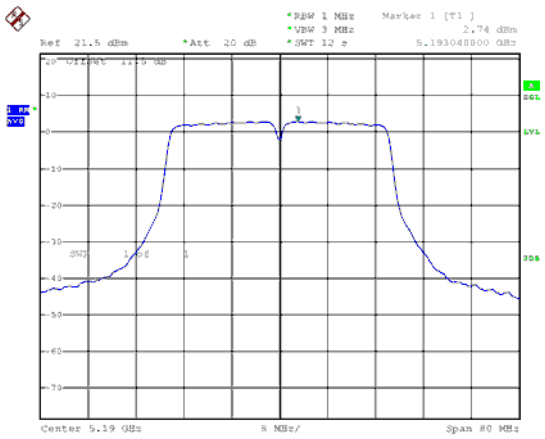
Modulation Type: 802.11ac VHT20 (6.5Mbps)

CH36



Modulation Type: 802.11ac VHT40 (13.5Mbps)

CH38



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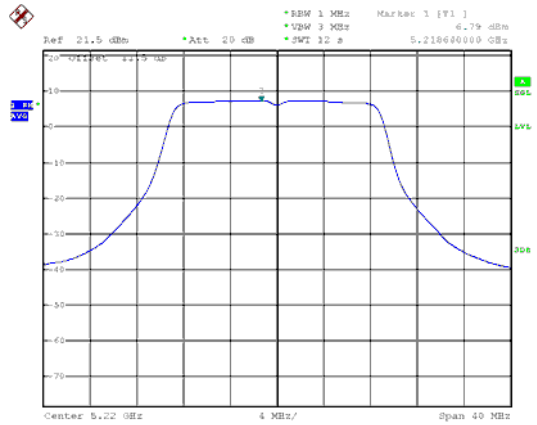
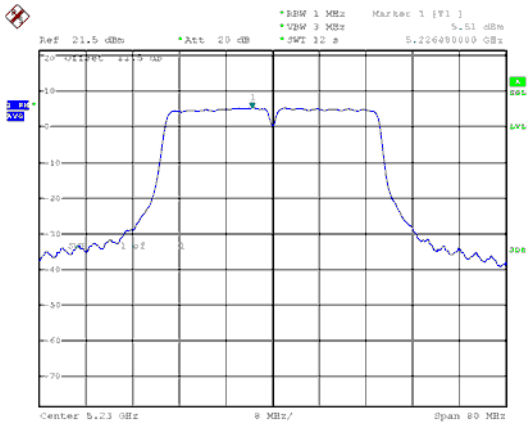
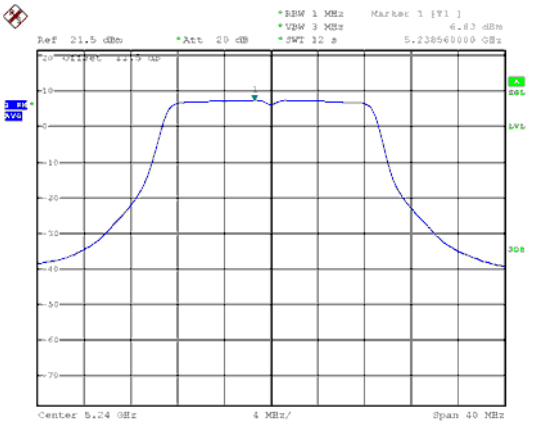


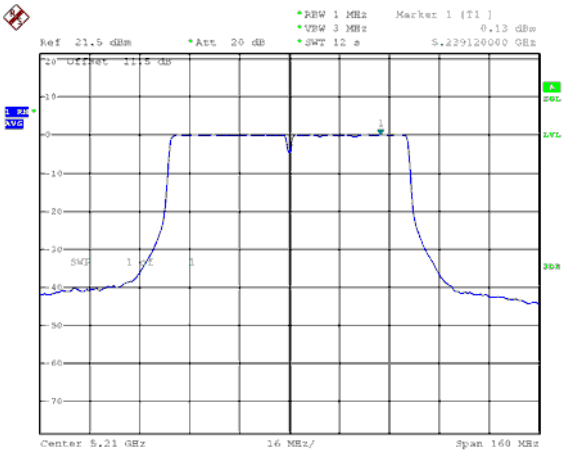
CH46



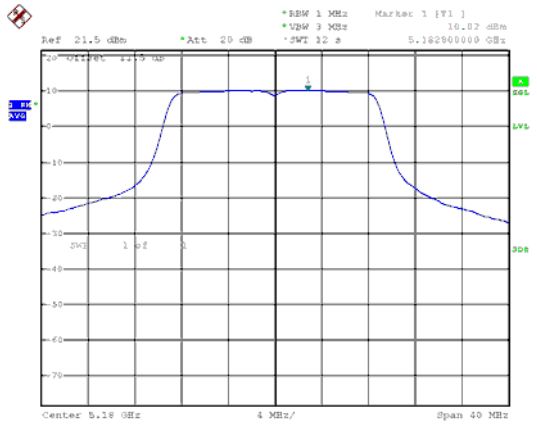
CH48



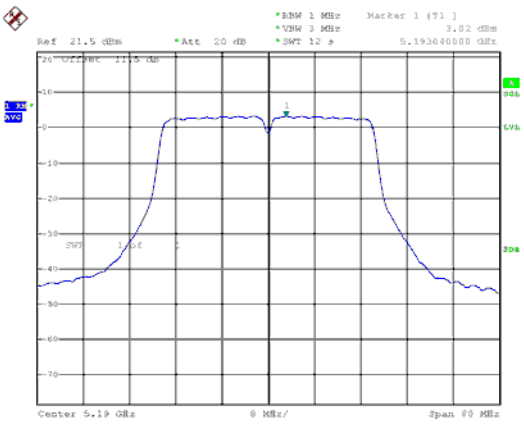
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



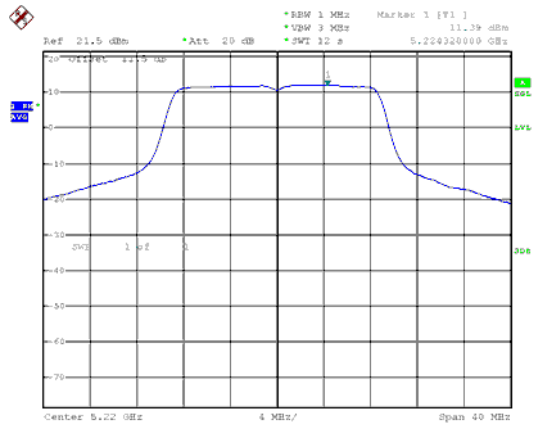
5.2G Band 1, ANT A, **(Master)**
Modulation Type: 802.11ac VHT20 (6.5Mbps)
CH36



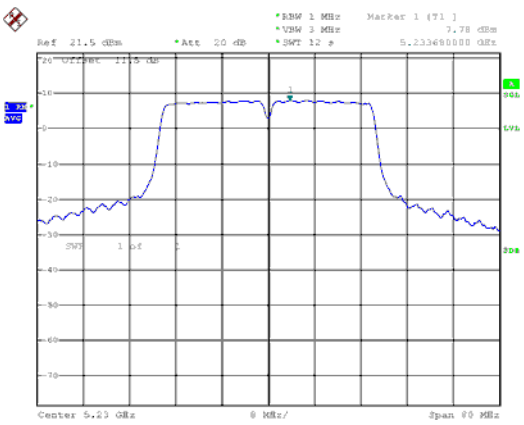
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



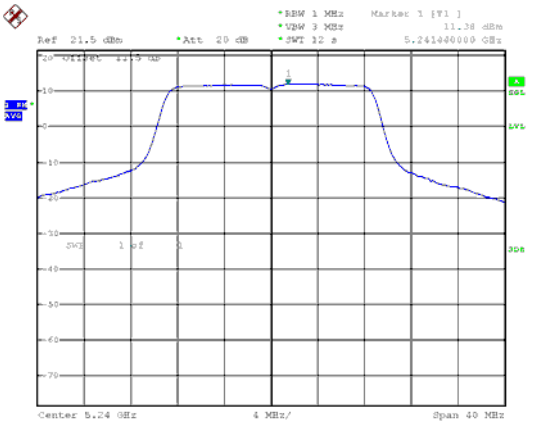
CH44



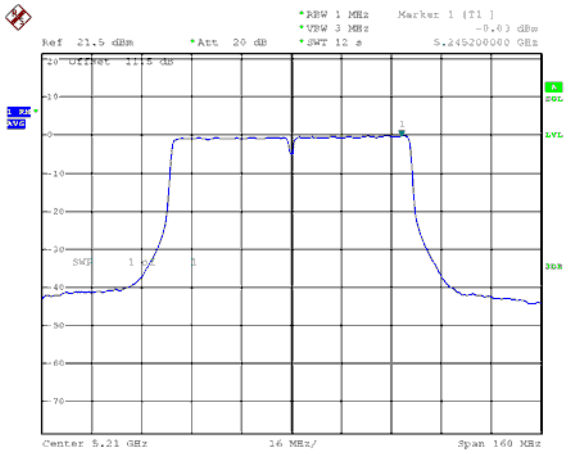
CH46



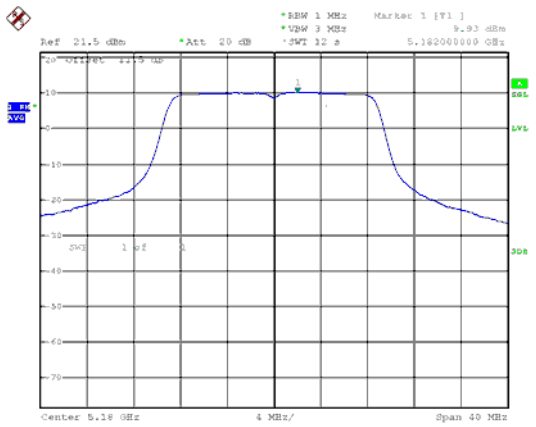
CH48



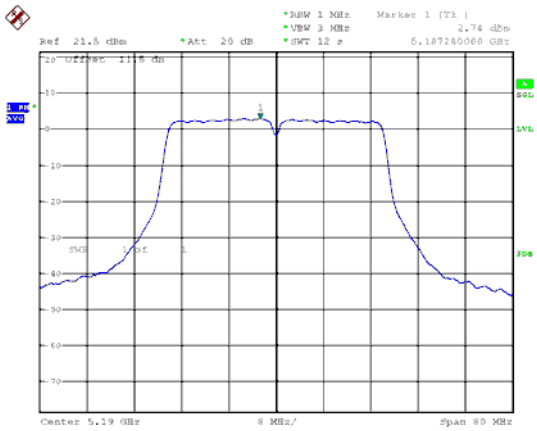
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



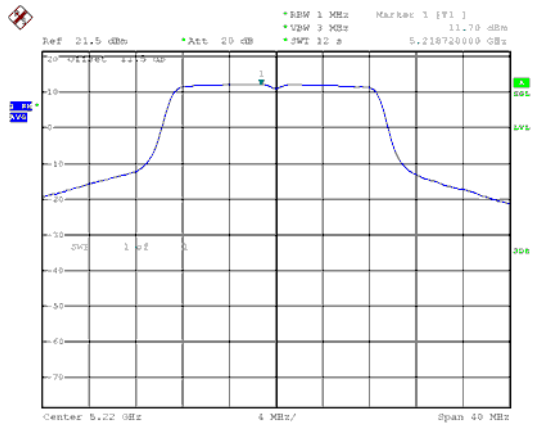
5.2G Band 1, ANT B
Modulation Type: 802.11ac VHT20 (6.5Mbps)
CH36



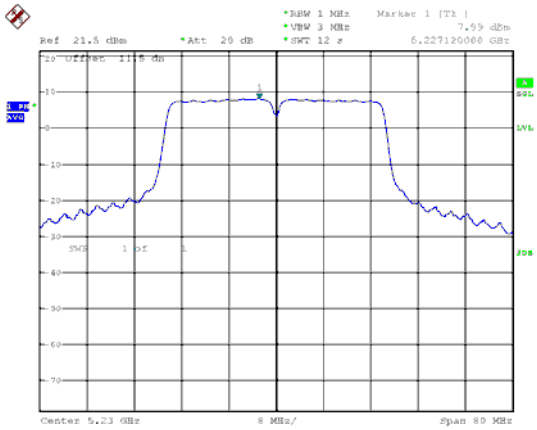
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH38



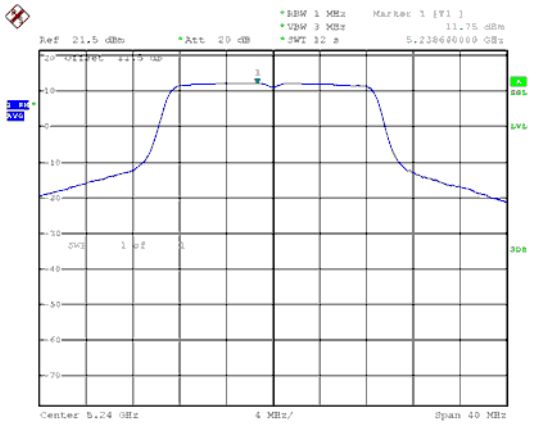
CH44



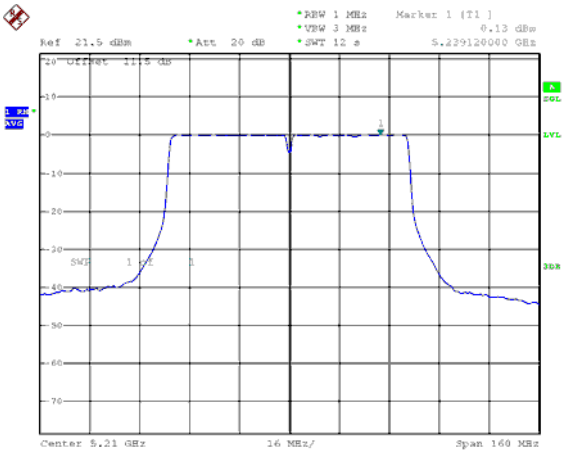
CH46



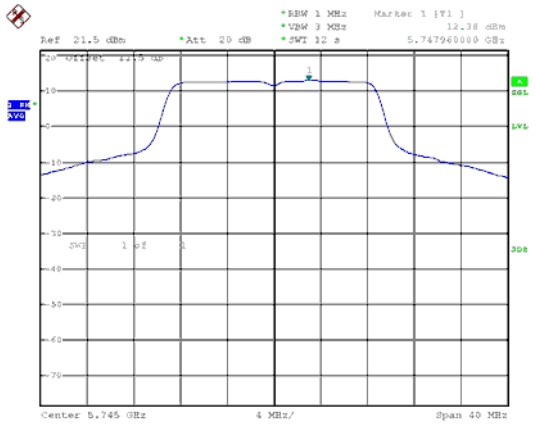
CH48



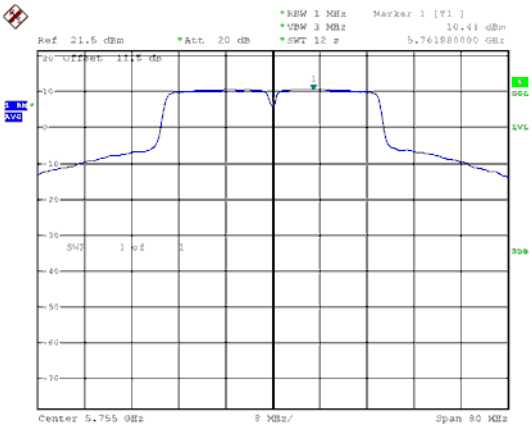
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH42



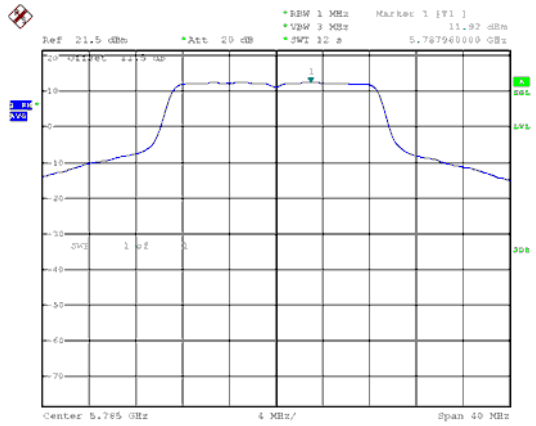
5.8G Band 4, ANT A, **(Master)**
Modulation Type: 802.11ac VHT20 (6.5Mbps)
CH149



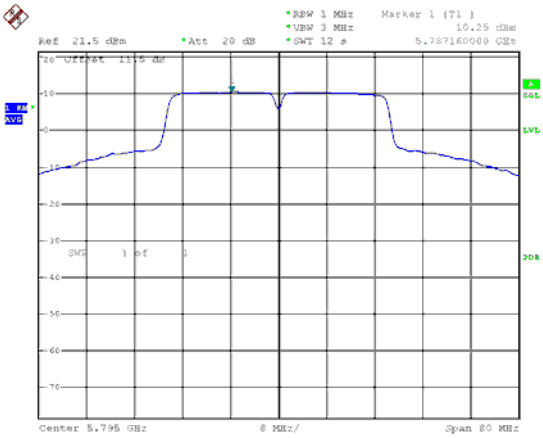
Modulation Type: 802.11ac VHT40 (13.5Mbps)
CH151



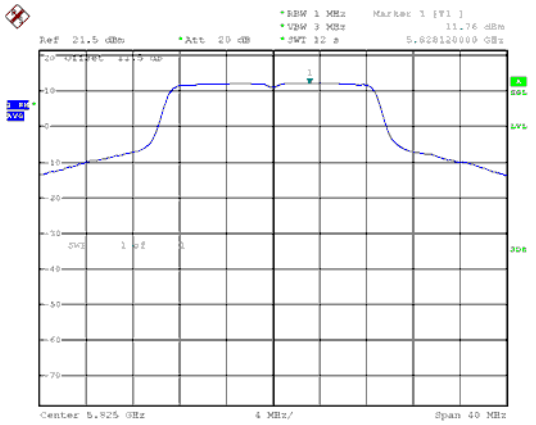
CH157



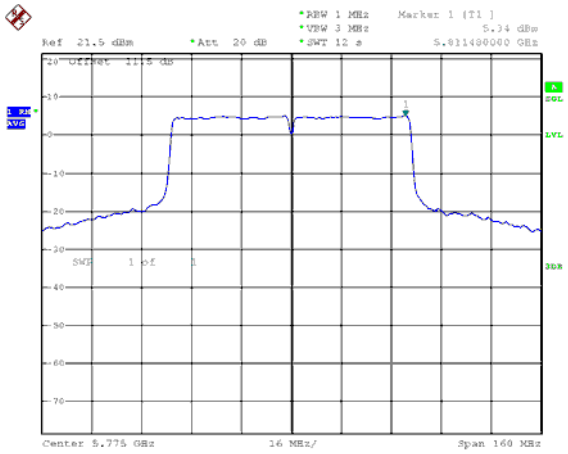
CH159



CH165



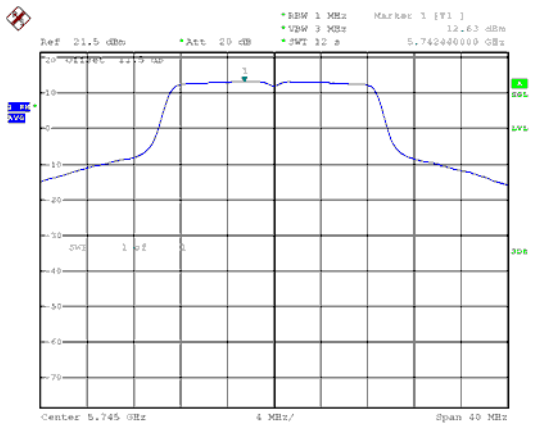
Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH155



ANT B

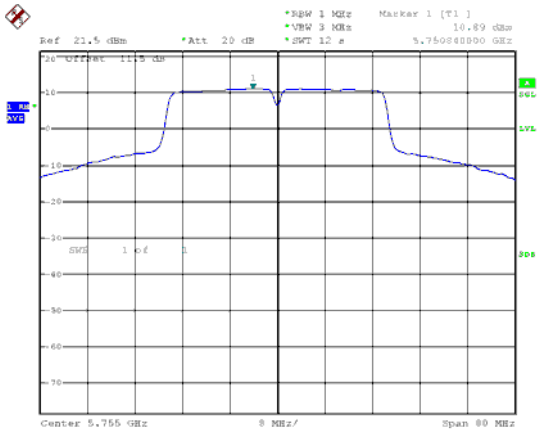
Modulation Type: 802.11ac VHT20 (6.5Mbps)

CH149

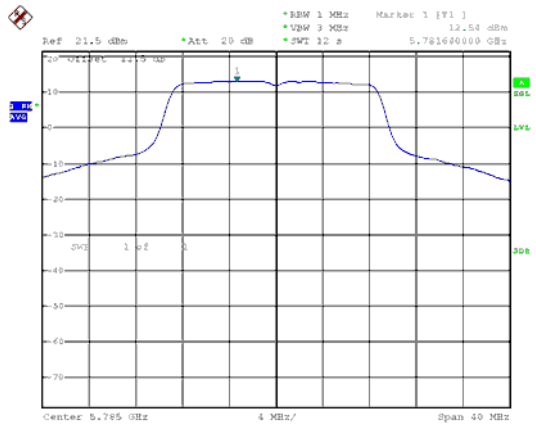


Modulation Type: 802.11ac VHT40 (13.5Mbps)

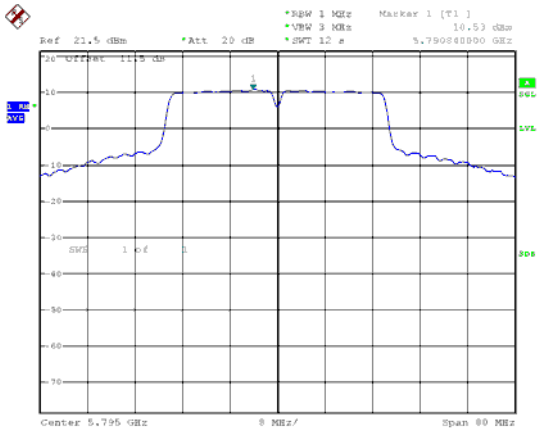
CH151



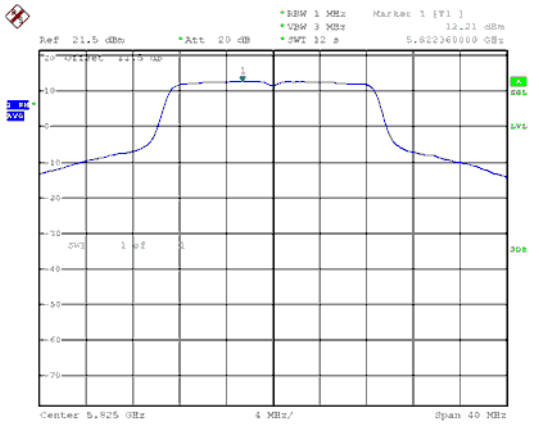
CH157



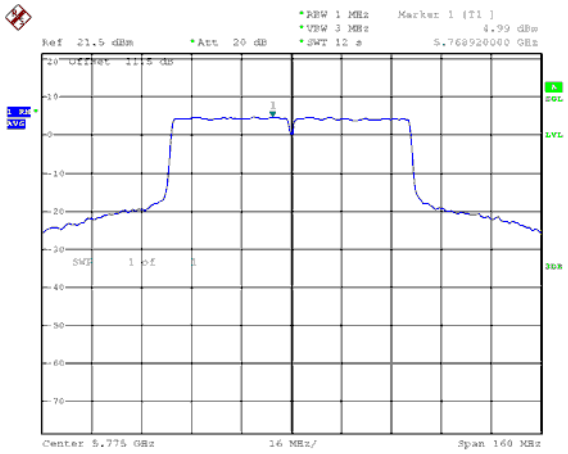
CH159



CH165



Modulation Type: 802.11ac VHT80 (29.3Mbps)
CH155

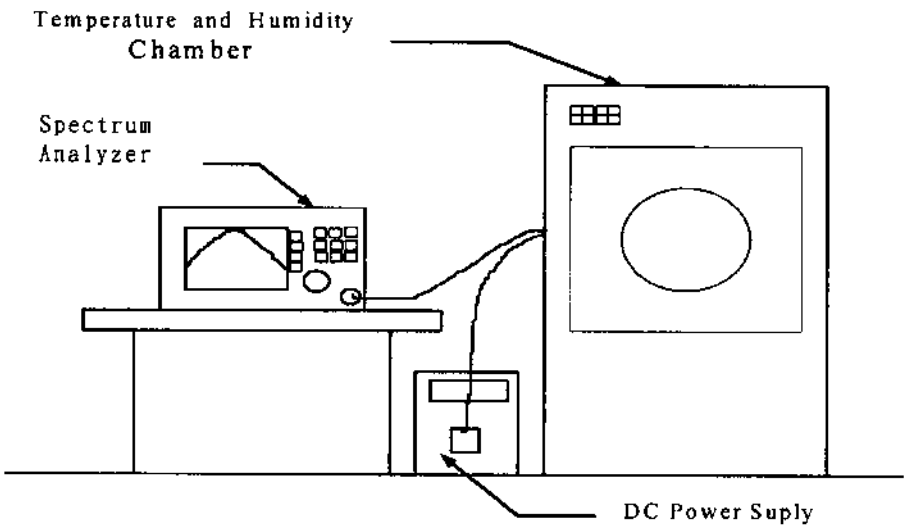


12. Frequency Stability

12.1.Test Procedure

1. The EUT was placed inside the Temperature and Humidity chamber.
2. The transmitter output was connected to spectrum analyzer.
3. Turn the EUT on and couple its output to a spectrum analyzer.
4. Turn the EUT off and set the chamber to the highest temperature specified.
5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
6. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
7. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

12.2.Test Setup Layout



12.3.Test Result and Data

Operating frequency: 5180 MHz							
Temp	Power supply	2 minute		5 minute		10 minute	
(℃)	(V)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	102	5179.9456	-0.001050	5179.9654	-0.000668	5179.9875	-0.000241
	120	5179.9455	-0.001052	5179.9652	-0.000672	5179.9875	-0.000241
	138	5179.9453	-0.001056	5179.9652	-0.000672	5179.9873	-0.000245
40	102	5179.9344	-0.001266	5179.9428	-0.001104	5179.9542	-0.000884
	120	5179.9344	-0.001266	5179.9426	-0.001108	5179.9540	-0.000888
	138	5179.9343	-0.001268	5179.9425	-0.001110	5179.9540	-0.000888
30	102	5179.9379	-0.001199	5179.9342	-0.001270	5179.9334	-0.001286
	120	5179.9376	-0.001205	5179.9342	-0.001270	5179.9333	-0.001288
	138	5179.9375	-0.001207	5179.9341	-0.001272	5179.9331	-0.001292
20	102	5179.9449	-0.001064	5179.9345	-0.001264	5179.9327	-0.001299
	120	5179.9447	-0.001068	5179.9344	-0.001266	5179.9327	-0.001299
	138	5179.9446	-0.001069	5179.9342	-0.001270	5179.9325	-0.001303
10	102	5179.9525	-0.000917	5179.9466	-0.001031	5179.9389	-0.001180
	120	5179.9524	-0.000919	5179.9465	-0.001033	5179.9389	-0.001180
	138	5179.9522	-0.000923	5179.9463	-0.001037	5179.9388	-0.001181
0	102	5179.9745	-0.000492	5179.9639	-0.000697	5179.9495	-0.000975
	120	5179.9743	-0.000496	5179.9638	-0.000699	5179.9494	-0.000977
	138	5179.9742	-0.000498	5179.9638	-0.000699	5179.9492	-0.000981
-10	102	5179.9972	-0.000054	5179.9780	-0.000425	5179.9661	-0.000654
	120	5179.9971	-0.000056	5179.9780	-0.000425	5179.9660	-0.000656
	138	5179.9969	-0.000060	5179.9779	-0.000427	5179.9660	-0.000656
-20	102	5179.9895	-0.000203	5179.9846	-0.000297	5179.9802	-0.000382
	120	5179.9894	-0.000205	5179.9846	-0.000297	5179.9801	-0.000384
	138	5179.9892	-0.000208	5179.9843	-0.000303	5179.9801	-0.000384
-30	102	5180.0109	0.000210	5180.0062	0.000120	5179.9998	-0.000004
	120	5180.0107	0.000207	5180.0061	0.000118	5179.9997	-0.000006
	138	5180.0106	0.000205	5180.0061	0.000118	5179.9995	-0.000010

Limit:
Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.