9.8. 11ac HT80 2TX CDD MIMO MODE IN THE 5.3GHz BAND

9.8.1. 26 dB BANDWIDTH

LIMITS

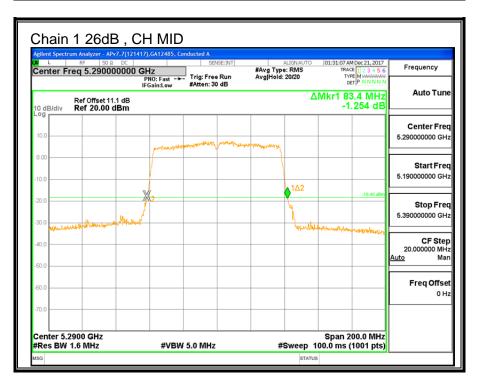
None; for reporting purposes only.

<u>RESULTS</u>

Channel	Frequency	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Mid	5290	84.2	83.4

Page 106 of 382

agient spectrum analyz ^M ∟ RF Center Freq 5.2	er - APv7.7(121417),GA 50 ฉ DC 900000000 GHz	12485, Cond		ISE:INT	#Avg Typ	ALIGNAUTO e: RMS		MDec 20, 2017 CE 1 2 3 4 5 6	Frequency
Senter Freq 5.2	PNO		Trig: Free #Atten: 30		Avg Hold	20/20	TY	PE MWWWWWW ET P N N N N N	
10 dB/div Ref 20	set 11.09 dB 0 .00 dBm					Δ		4.2 MHz).530 dB	Auto Tun
og									Center Free
10.0									5.290000000 GH
0.00		an and the second second	The state of the s	para antanana antanana antanana antana an Interna antana	an shirts we				Start Fre
10.0									5.190000000 GH
20.0						1Δ2		-21.89 dBm	Stop Fre
30.0	2					N N			5.390000000 GH
manneterster	LAN MARINA MARK					human	- martineter by	hindeline	CF Ste
40.0									20.000000 MH Auto Ma
-50.0									
60.0									Freq Offse
-70.0									



Page 107 of 382

9.8.2. 99% BANDWIDTH

DATE: JANUARY 24, 2018

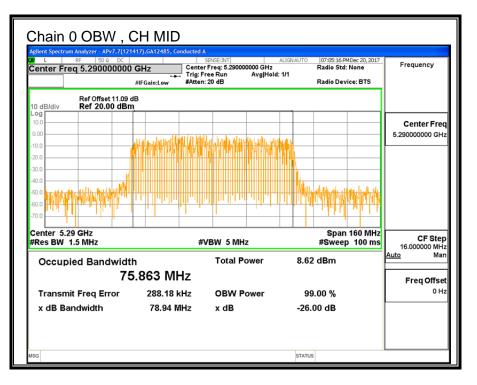
LIMITS

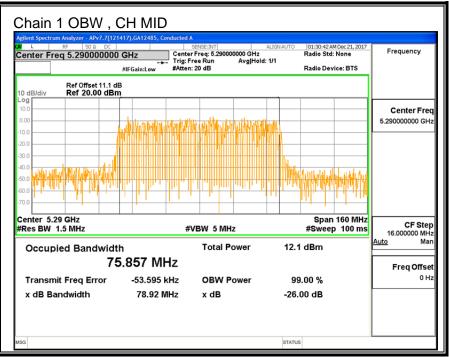
None; for reporting purposes only.

RESULTS

Channel	Frequency	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)

Page 108 of 382





Page 109 of 382

9.8.3. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1– MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

For power, the TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

5250-5350 MHz

Chain 0	Chain 1	Uncorrelated Chains
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-0.67	-4.74	-2.24

For PSD the TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

5250-5230 MHz

Chain 0	Chain 1	Correlated Chains
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
-0.67	-4.74	0.54

Page 110 of 382

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency	Min	Min	Directional	Directional
		26 dB	99%	Gain	Gain
		BW	BW	for Power	for PPSD
	(MHz)	(MHz)	(MHz)	(dBi)	(dBi)
Low	5290	83.40	75.857	-2.24	0.54

0.72

Limits

Channel	Frequency	FCC	IC	IC	Power	FCC	IC	PPSD
		Power	Power	EIRP	Limit	PPSD	PSD	Limit
		Limit	Limit	Limit		Limit	Limit	
	(MHz)	(dBm)						
Low	5290	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)

Included in Calculations of Corr'd PPSD

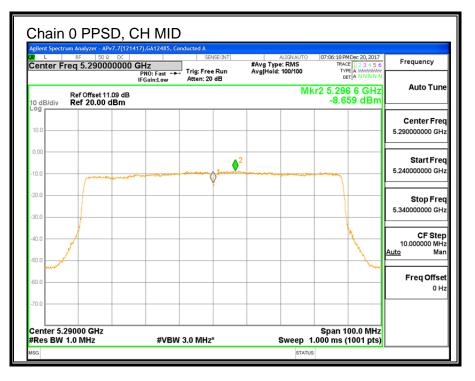
Output Power Results

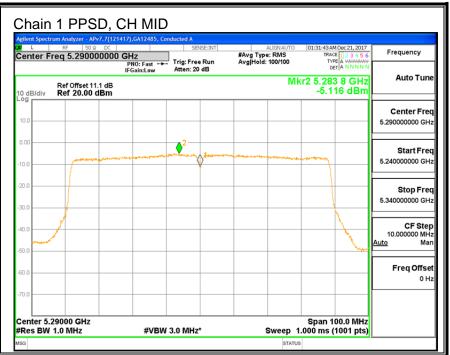
Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5290	8.51	12.43	13.91	24.00	-10.09

PPSD Results

Channel	Frequency	Chain 0	Chain 1	Total	PPSD	PPSD
		Meas	Meas	Corr'd	Limit	Margin
		PPSD	PPSD	PPSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5290	-8.659	-5.116	-2.81	11.00	-13.81

<u>Note:</u> the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.





Page 112 of 382

9.9. 11a 2TX CDD MIMO MODE IN THE 5.6GHz BAND

9.9.1. 26 dB BANDWIDTH

LIMITS

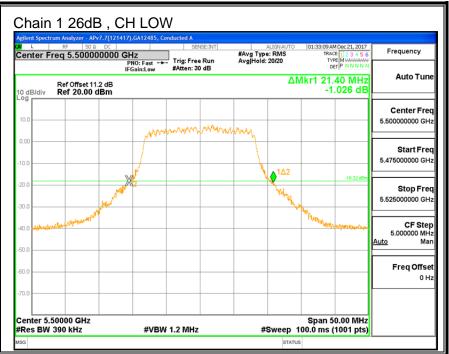
None; for reporting purposes only.

RESULTS

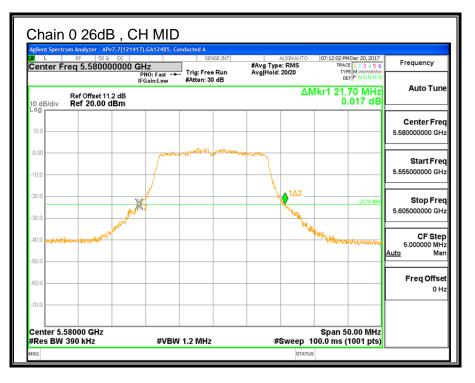
Channel	Frequency	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5500	21.90	21.40
Mid	5580	21.70	21.10
Mid (FCC)	5640	21.90	21.40
High	5700	21.65	22.25
144	5720	21.90	21.70

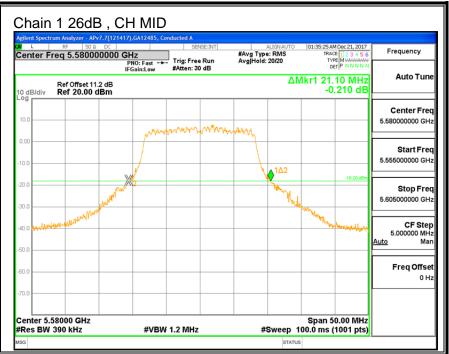
Page 113 of 382



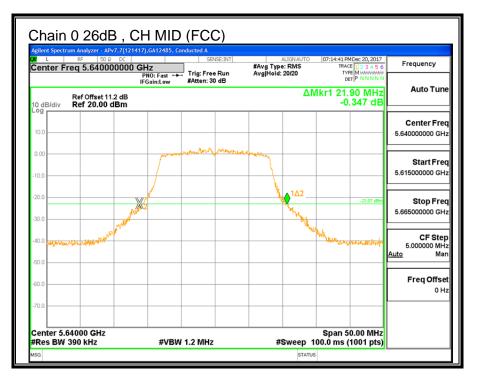


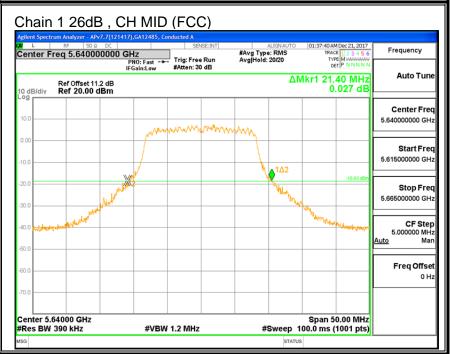
Page 114 of 382





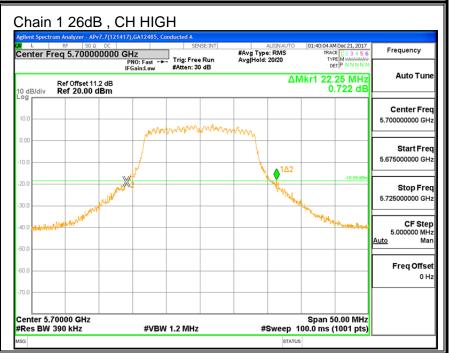
Page 115 of 382



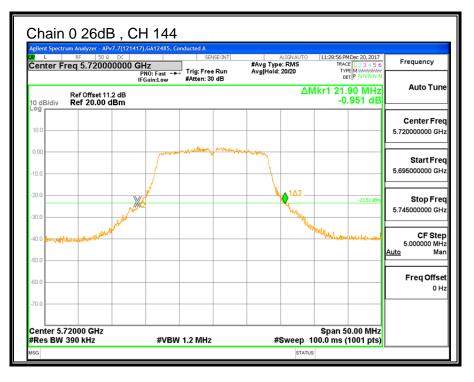


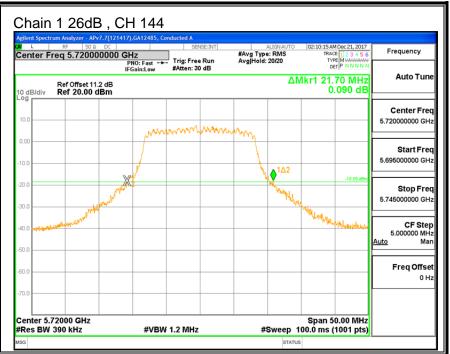
Page 116 of 382





Page 117 of 382





Page 118 of 382

9.9.2. 99% BANDWIDTH

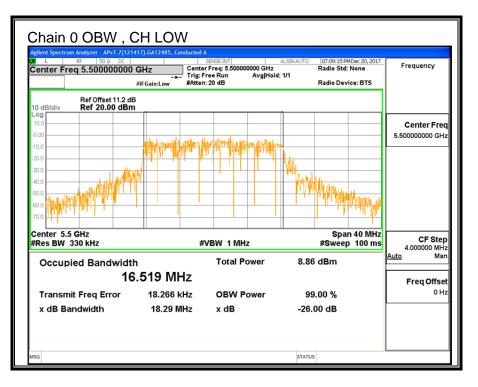
LIMITS

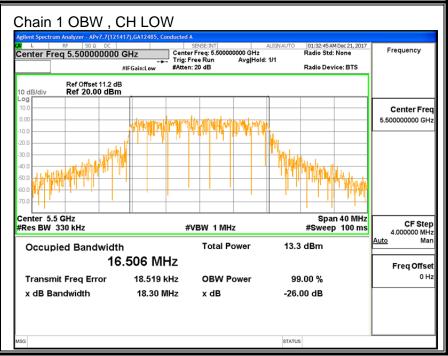
None; for reporting purposes only.

RESULTS

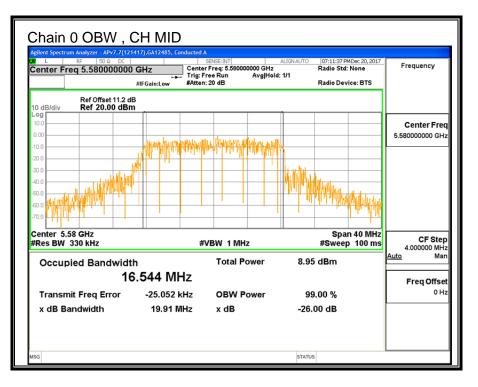
Channel	Frequency	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5500	16.519	16.506
Mid	5580	16.544	16.511
Mid (FCC)	5640	16.558	16.612
High	5700	16.451	16.572
144	5720	16.515	16.423

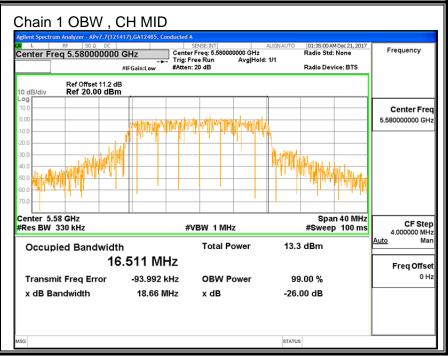
Page 119 of 382



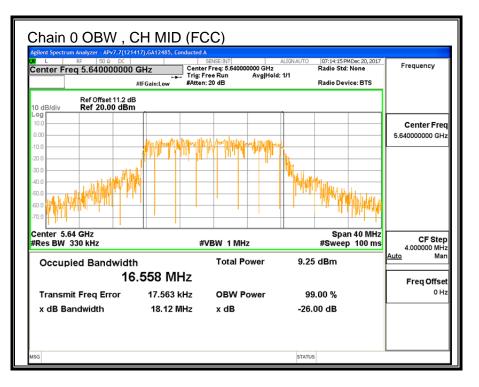


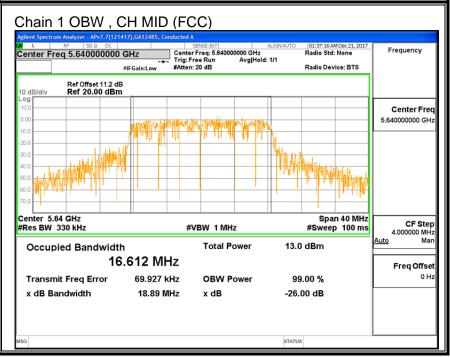
Page 120 of 382



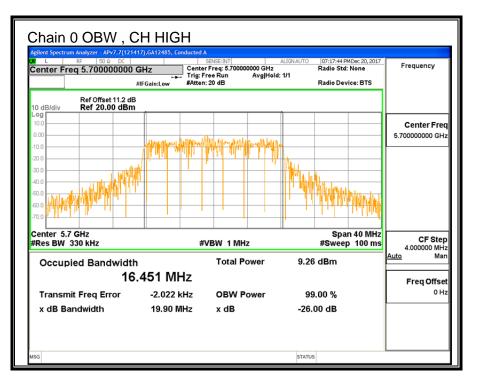


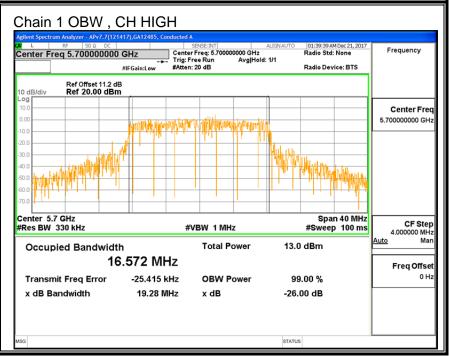
Page 121 of 382



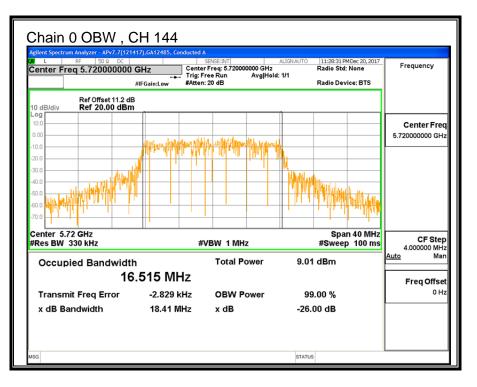


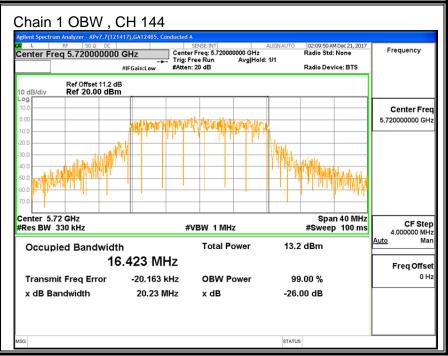
Page 122 of 382





Page 123 of 382





Page 124 of 382

9.9.3. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

For power, the TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

5470-5725 MHz

Chain 0	Chain 1	Uncorrelated Chains
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
0.96	-5.75	-1.21

For PSD the TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

5470-5725 MHz

Chain 0	Chain 1	Correlated Chains
Antenna	Antenna	Directional
Gain	Gain	Gain
(dBi)	(dBi)	(dBi)
0.96	-5.75	1.25

RESULTS

ID: GA12485	Date:	12/21/17
--------------------	-------	----------

Page 125 of 382

Bandwidth and Antenna Gain

Channel	Frequency	Min	Min	Directional	Directional
		26 dB	99%	Gain	Gain
		BW	BW	for Power	for PPSD
	(MHz)	(MHz)	(MHz)	(dBi)	(dBi)
Low	5500	21.40	16.506	-1.21	1.25
Mid	5580	21.10	16.511	-1.21	1.25
Mid (FCC)	5640	21.40	16.558	-1.21	1.25
High	5700	21.65	16.451	-1.21	1.25
144	5720	15.85	13.212	-1.21	1.25

Limits

Channel	Frequency	FCC	IC	IC	Power	FCC	IC	PPSD
		Power	Power	EIRP	Limit	PPSD	PSD	Limit
		Limit	Limit	Limit		Limit	Limit	
	(MHz)	(dBm)						
Low	5500	24.00	23.18	29.18	23.18	11.00	11.00	11.00
Mid	5580	24.00	23.18	29.18	23.18	11.00	11.00	11.00
Mid (FCC)	5640	24.00	23.19	29.19	23.19	11.00	11.00	11.00
High	5700	24.00	23.16	29.16	23.16	11.00	11.00	11.00
144	5720	23.00	22.21	28.21	22.21	11.00	11.00	11.00

Duty Cycle CF (dB)

Included in Calculations of Corr'd PPSD

Output Power Results

Channel	Frequency	Chain 0	Chain 1	Total	Power	Power
		Meas	Meas	Corr'd	Limit	Margin
		Power	Power	Power		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5500	8.78	13.21	14.55	23.18	-8.63
Mid	5580	8.52	13.42	14.64	23.18	-8.54
Mid (FCC)	5640	8.24	13.01	14.26	23.19	-8.93
High	5700	8.72	13.26	14.57	23.16	-8.59
144	5720	8.69	13.16	14.49	22.21	-7.72

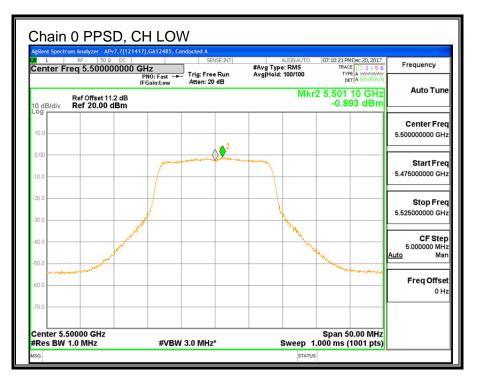
0.11

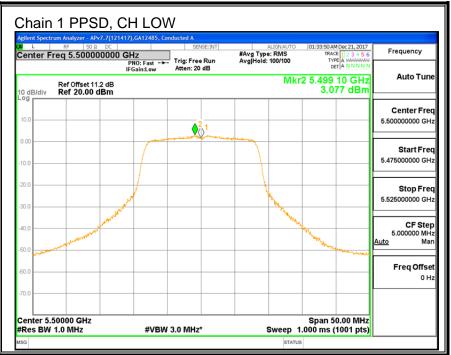
PPSD Results

Channel	Frequency	Chain 0	Chain 1	Total	PPSD	PPSD
		Meas	Meas	Corr'd	Limit	Margin
		PPSD	PPSD	PPSD		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5500	-0.893	3.077	4.65	11.00	-6.35
Mid	5580	-1.898	2.654	4.07	11.00	-6.93
Mid (FCC)	5640	-0.955	2.894	4.50	11.00	-6.50
High	5700	-1.056	3.145	4.65	11.00	-6.35
144	5720	-0.972	3.253	4.76	11.00	-6.24

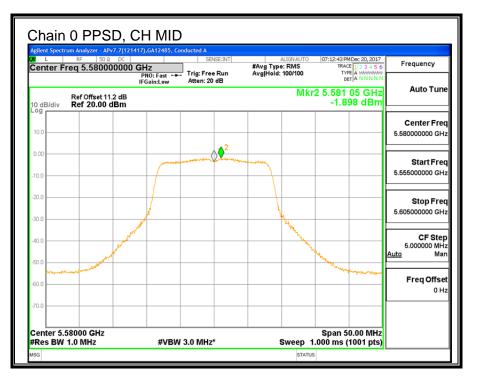
Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

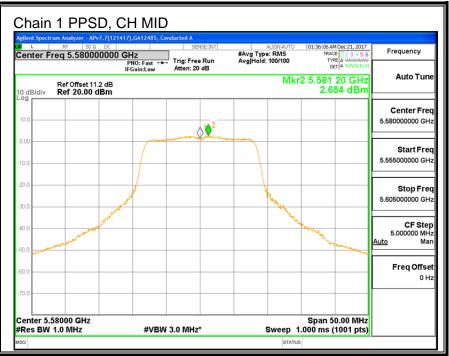
Page 126 of 382



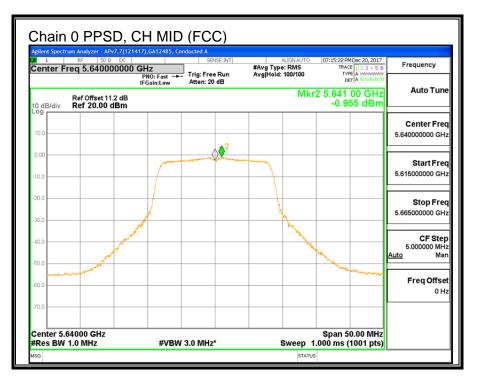


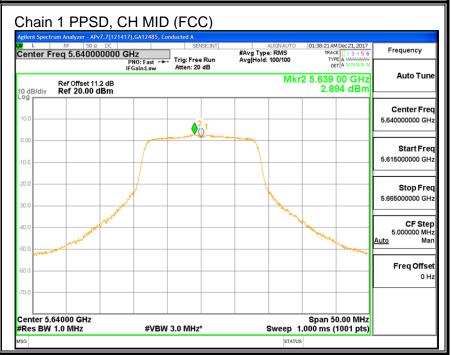
Page 127 of 382



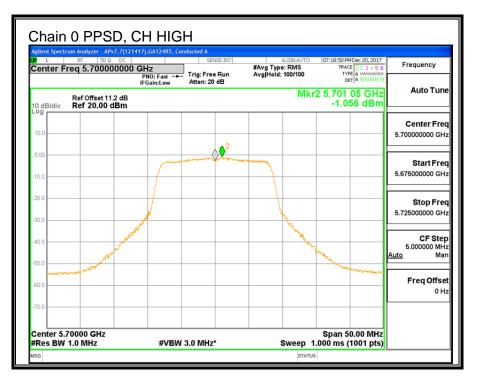


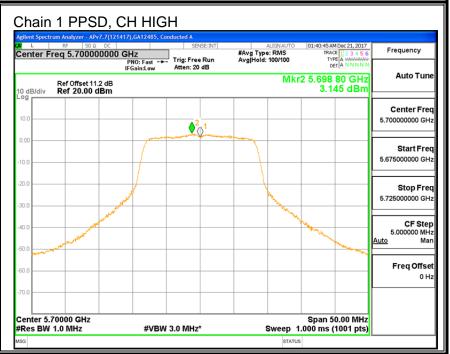
Page 128 of 382



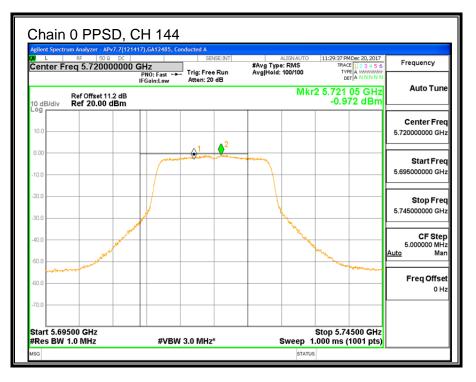


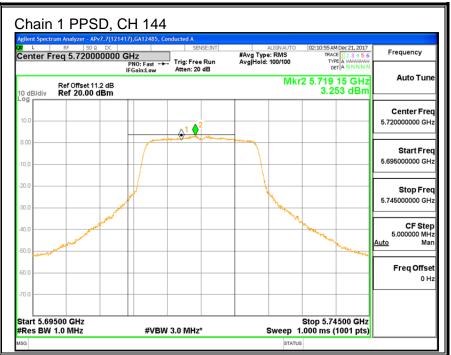
Page 129 of 382





Page 130 of 382





Page 131 of 382

9.10. 11n HT20 2TX CDD MIMO MODE IN THE 5.6GHz BAND

9.10.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

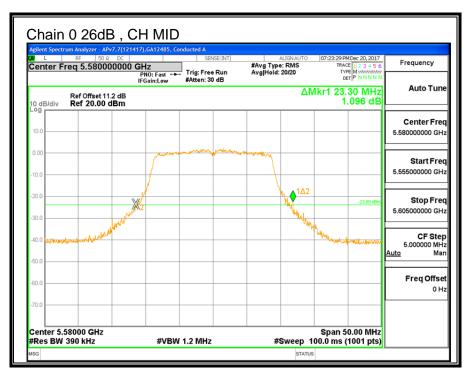
Channel	Frequency	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5500	22.50	22.35
Mid	5580	23.30	22.20
Mid (FCC)	5640	23.00	22.65
High	5700	23.30	21.70
144	5720	23.00	22.85

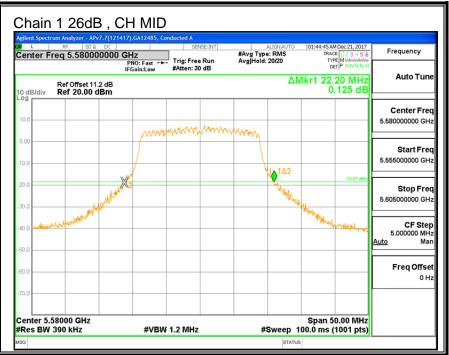
Page 132 of 382



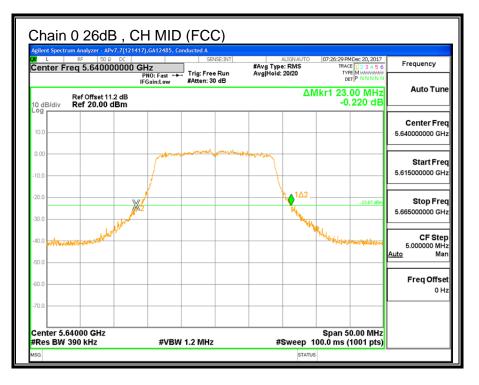


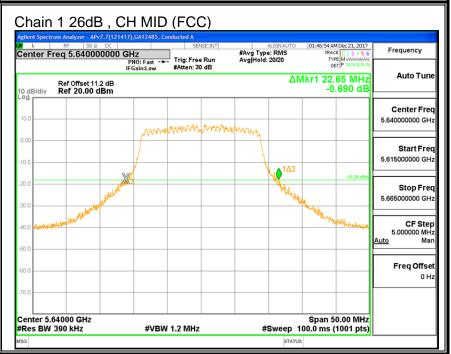
Page 133 of 382





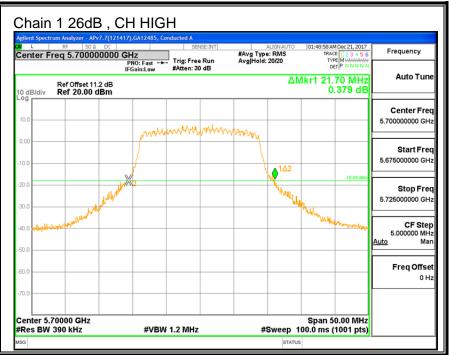
Page 134 of 382





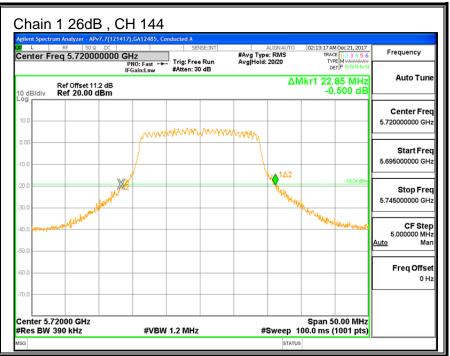
Page 135 of 382





Page 136 of 382





Page 137 of 382

9.10.2. 99% BANDWIDTH

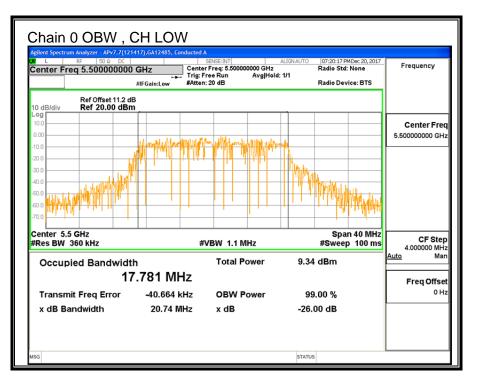
LIMITS

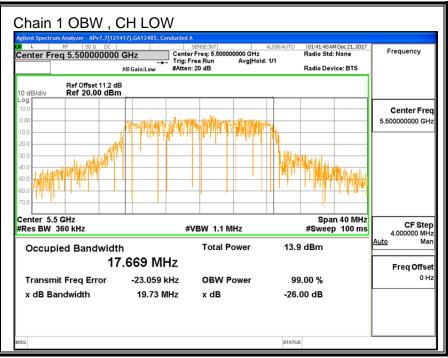
None; for reporting purposes only.

RESULTS

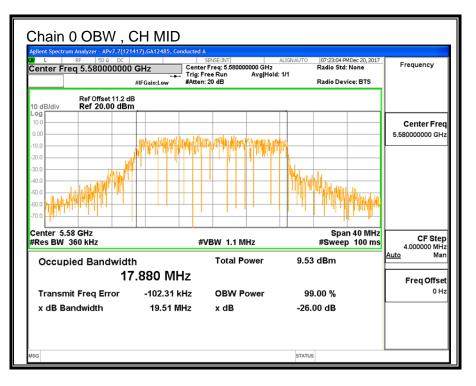
Channel	Frequency	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5500	17.781	17.669
Mid	5580	17.880	17.664
Mid (FCC)	5640	17.699	17.678
High	5700	17.703	17.663
144	5720	17.684	17.684

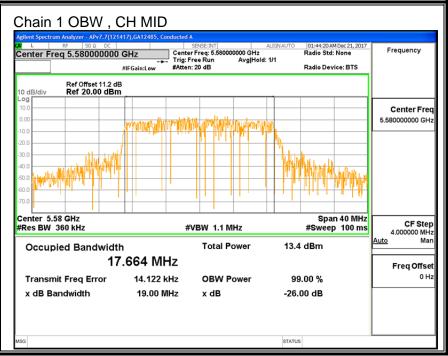
Page 138 of 382





Page 139 of 382





Page 140 of 382