9. TRANSMIT POWER CONTROL

9.1. TEST CONDITIONS

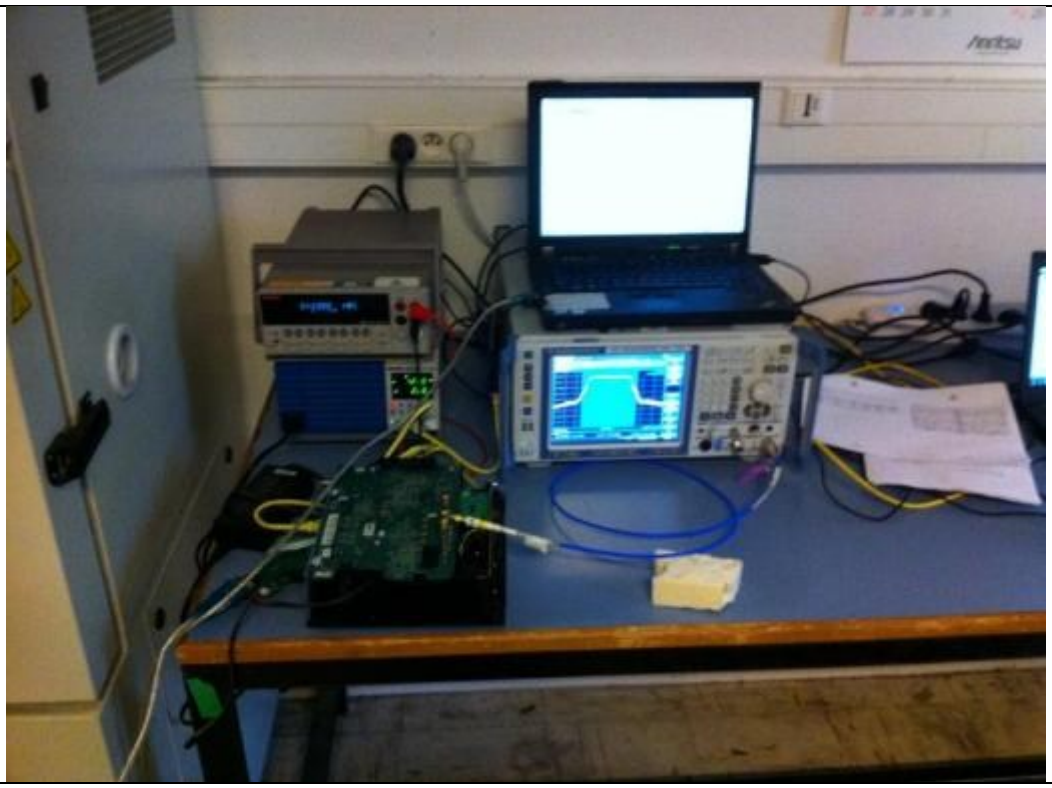
Test performed by	: Arnaud FAYETTE
Date of test	: December 7, 2016
Ambient temperature	: 22 °C
Relative humidity	: 42 %

9.2. TEST SETUP

- The Equipment Under Test is installed:
☑ On a table
☐ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:
☑ Conducted Method
☐ Radiated Method

- Test Procedure:
☑ KDB 789033 D02 General UNII Test Procedures New Rules v01r02 § E2 b) (Method SA-1) & F
☐ KDB 789033 D02 General UNII Test Procedures New Rules v01r02 § E2 c) (Method SA-2) & F
☑ KDB 662911 D01 Multiple Transmitter Output v02r01
☑ KDB 644545 D03 Guidance for IEEE 802.11ac v01



Photograph for Maximum Conducted Output Power

9.1. LIMIT

FCC Part 15.407
TPC Min (EIRP):
5250MHz-5350MHz: Shall not exceed 24dBm
5470MHz-5725MHz: Shall not exceed 24dBm

9.2. TEST EQUIPMENT LIST

DESCRIPTION	MANUFACTURER	MODEL	N° LCIE	Cal_Date	Cal_Due
Multi-meter	KEITHLEY	2000	A1242090	2016/05	2018/05
Programmable AC/DC power supply	-; KIKUSUI	PCR500M	A7040079	Verified with calibrated multimeter	Verified with calibrated multimeter
EMI receiver	ROHDE & SCHWARZ	ESR 7	A2642023	2016/03	2017/03
RF cable & 20 dB attenuator	Télédyne	920-0202-048	A5329674	2016/10	2017/10

9.3. RESULTS

9.3.1. Without Beamforming

802.11a	
C4	
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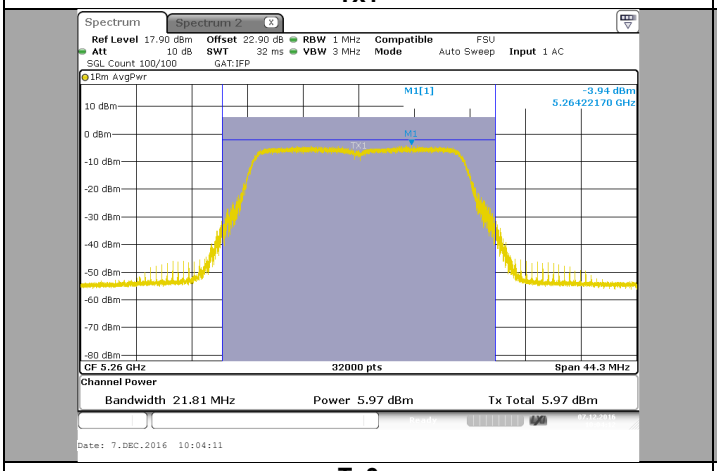	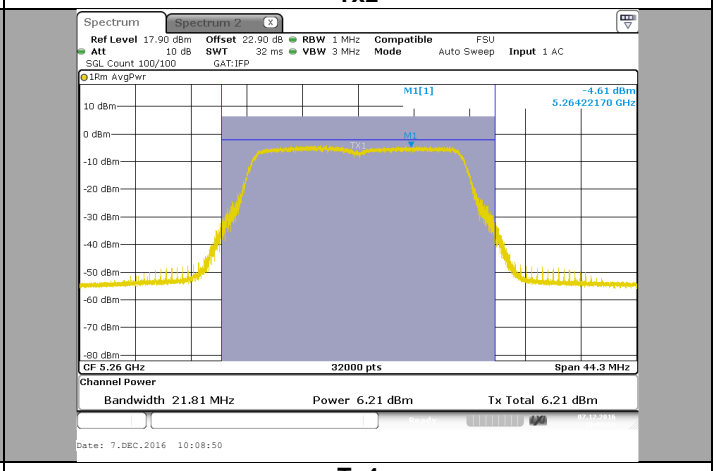
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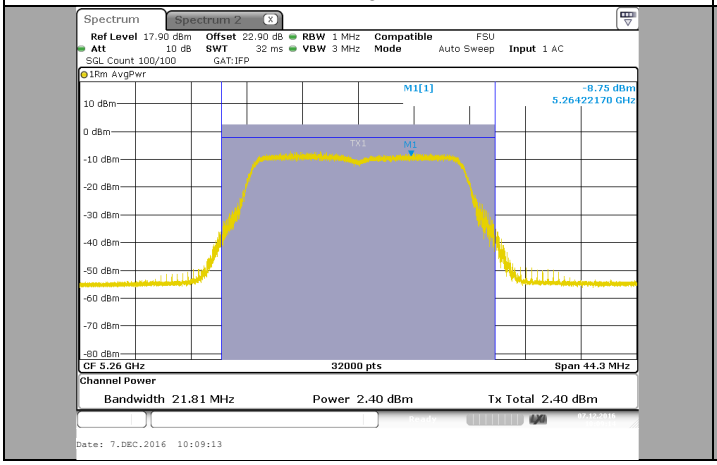	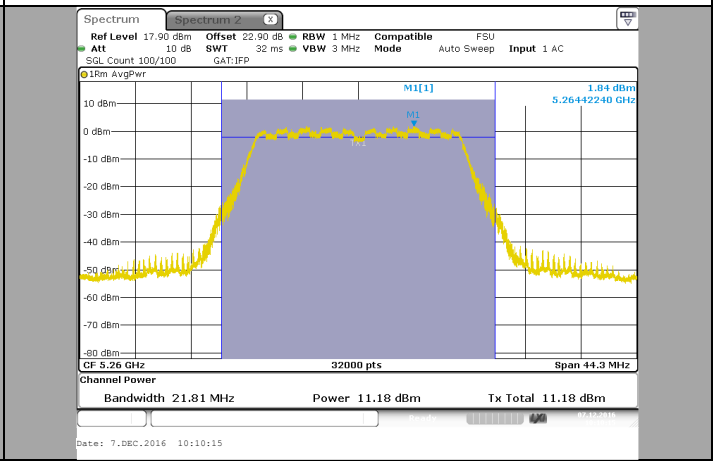

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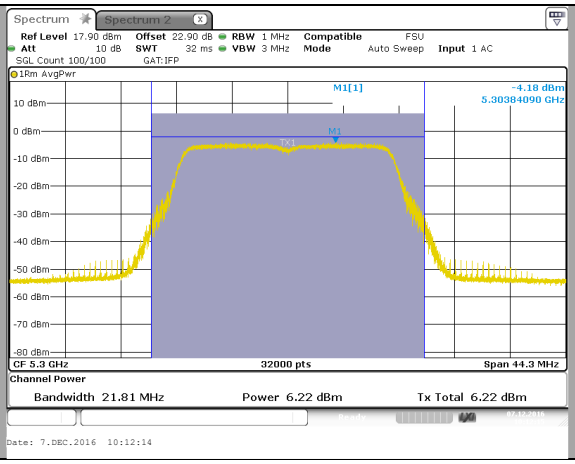	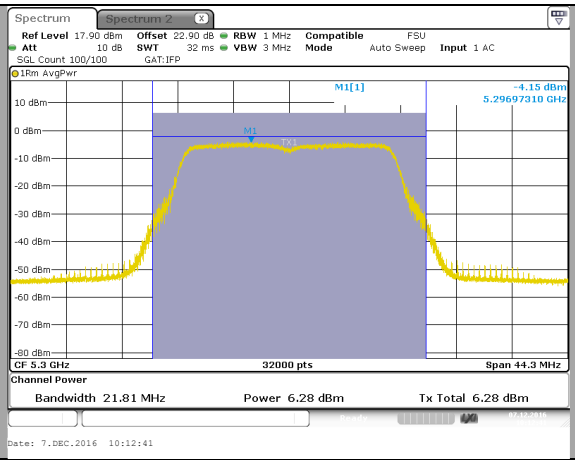
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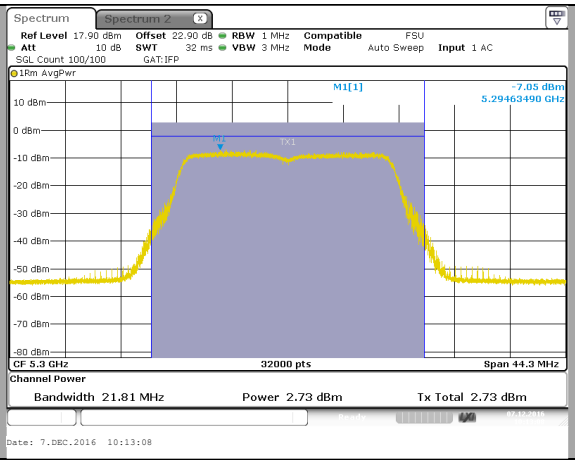	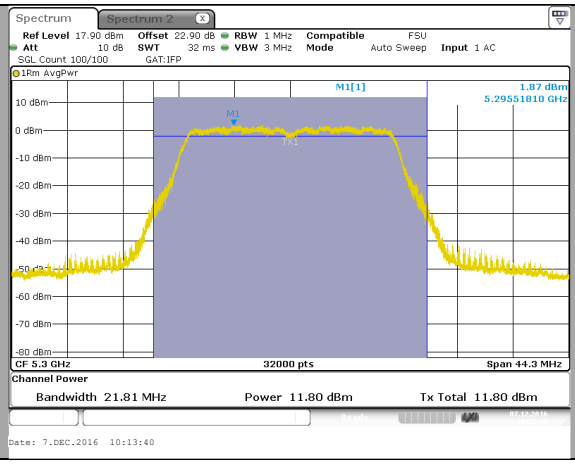

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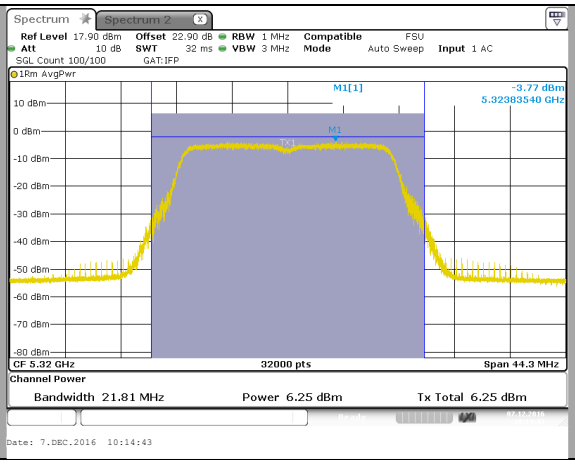	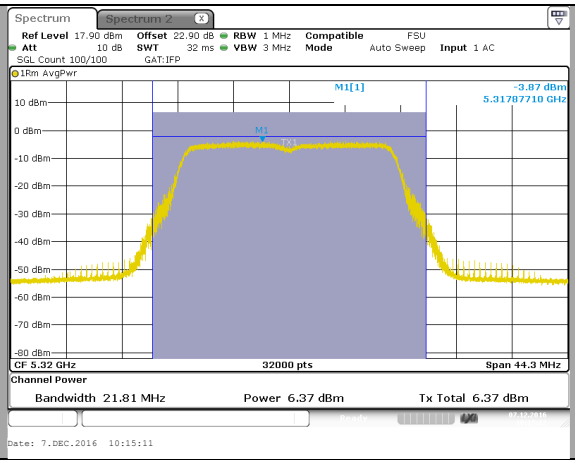
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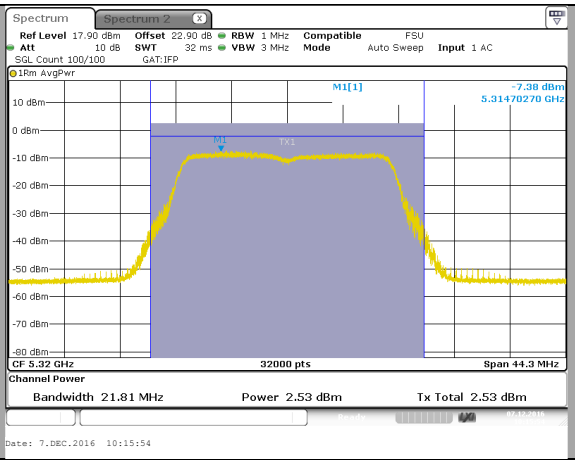	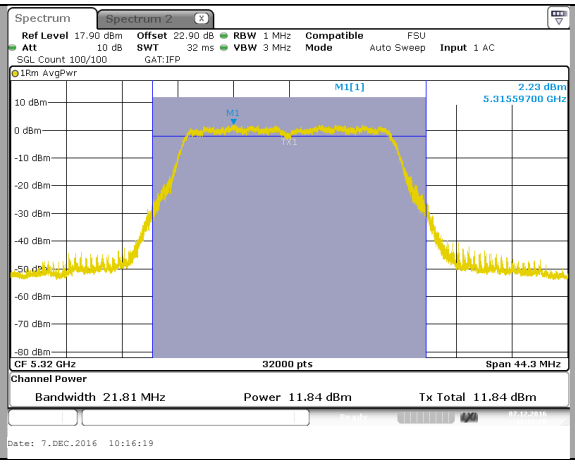

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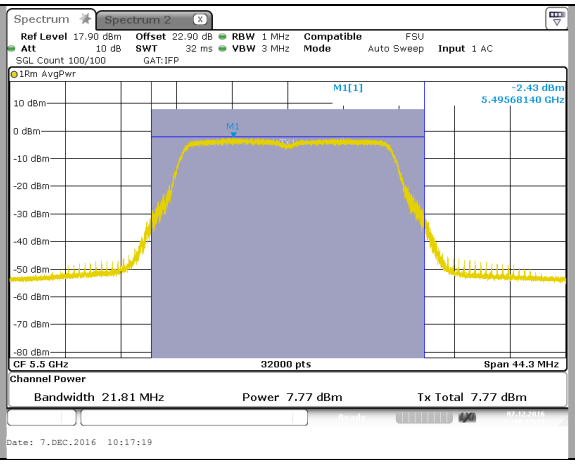	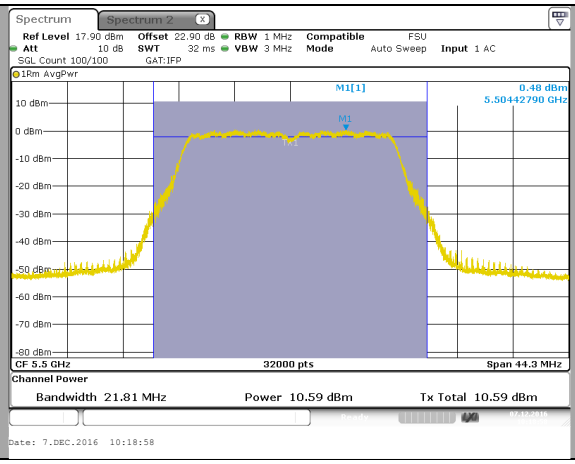
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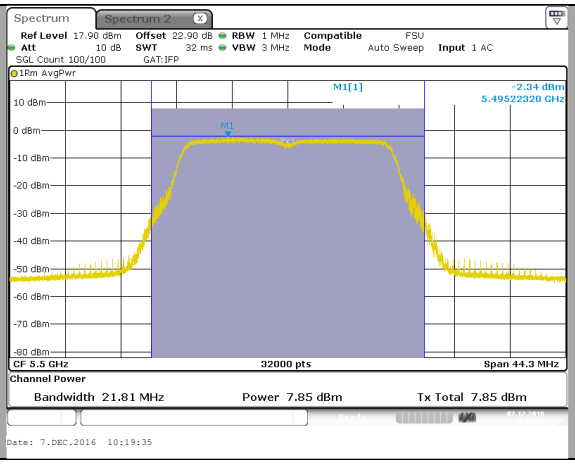	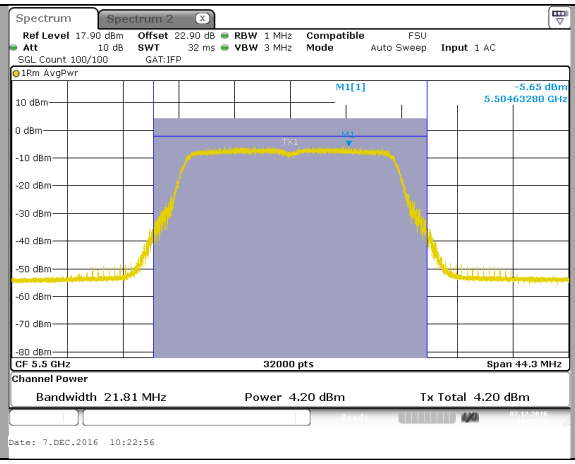

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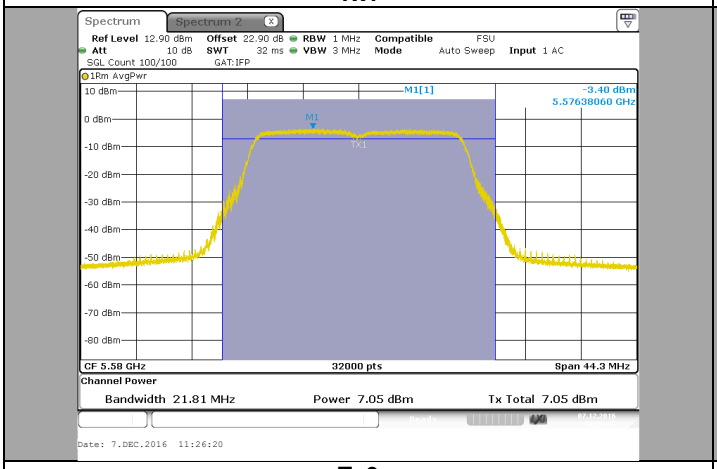	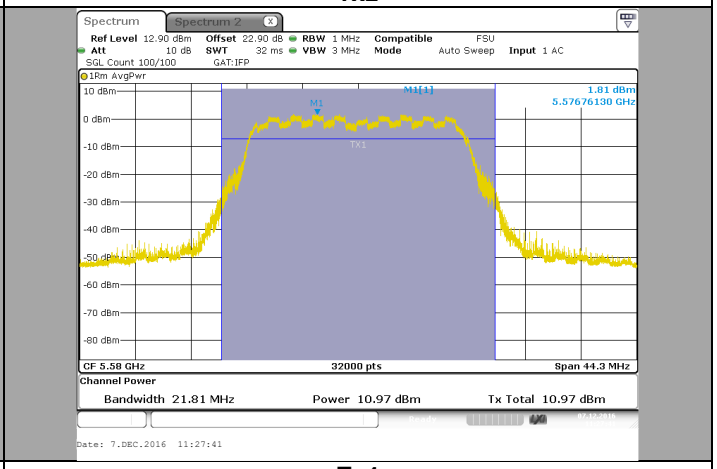
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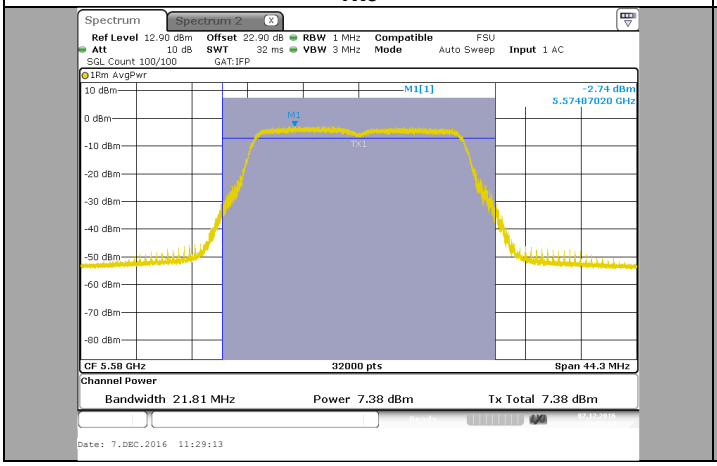	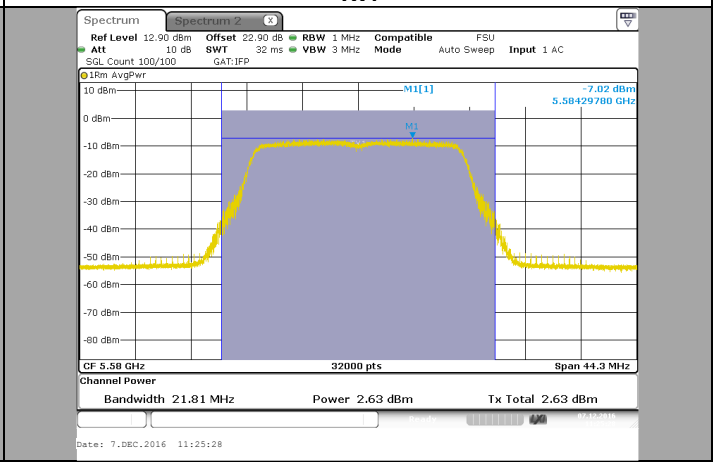

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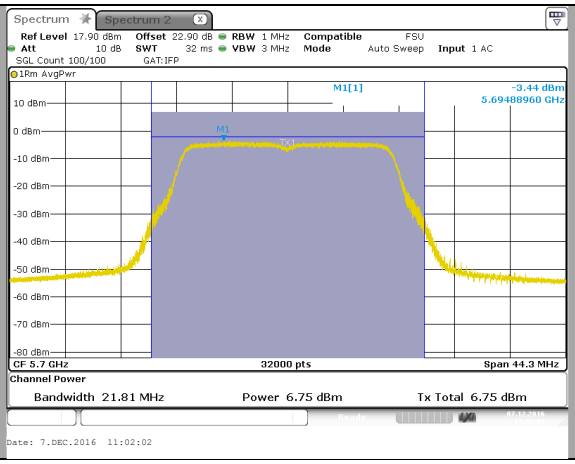	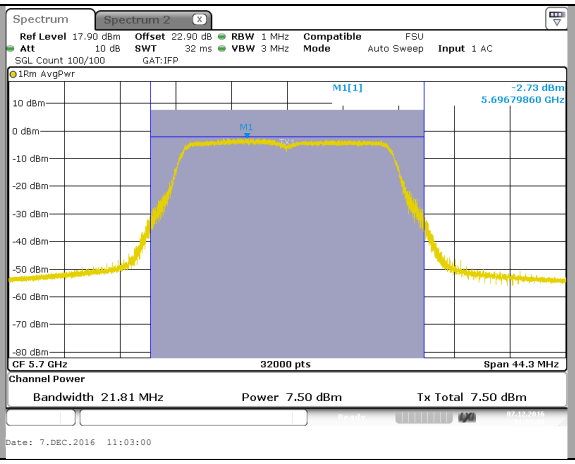
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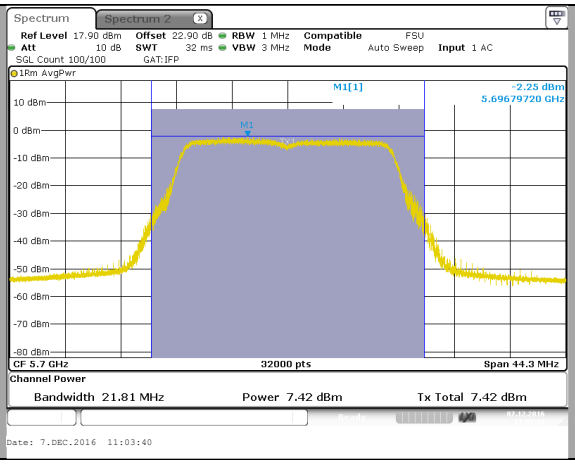	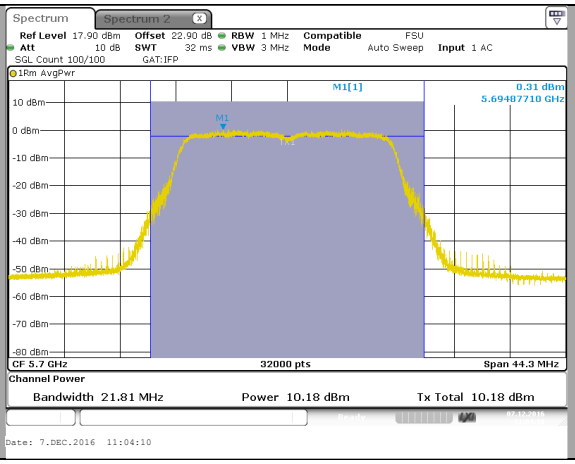

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C10 Straddle 5470MHz-5725MHz	
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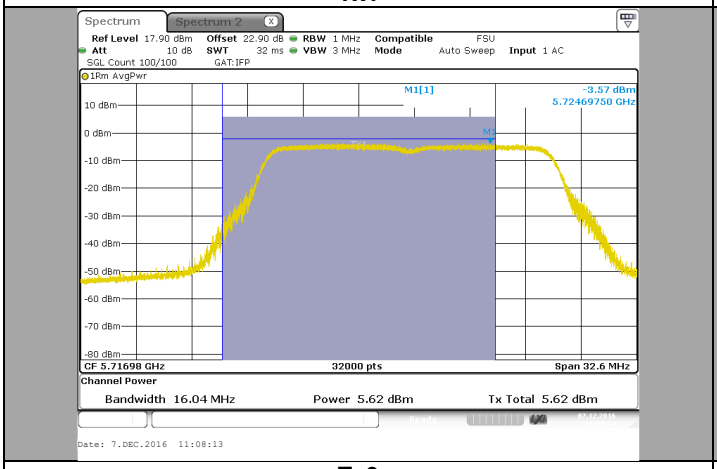	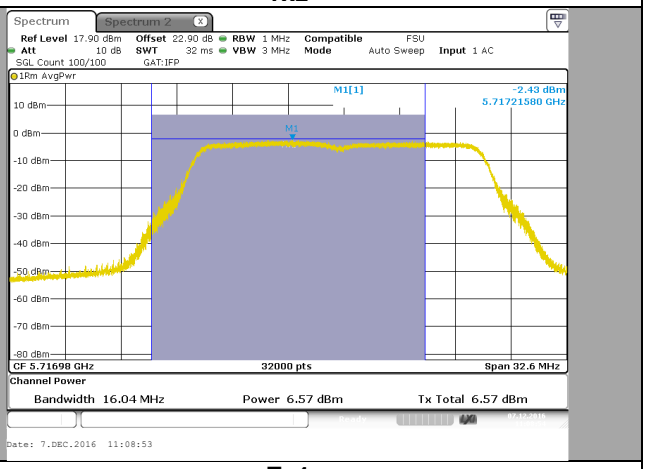
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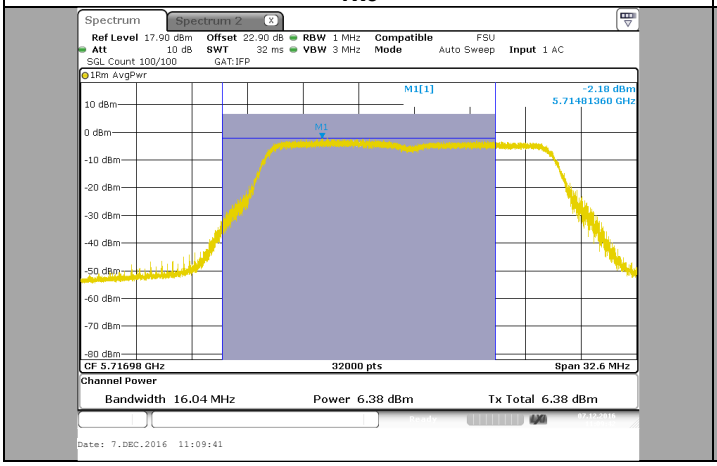	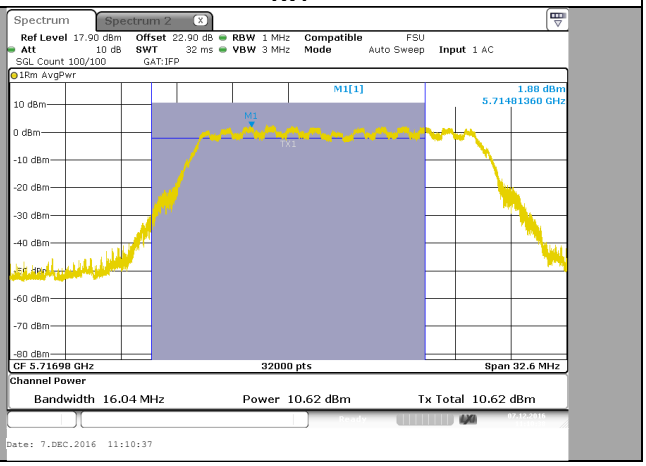

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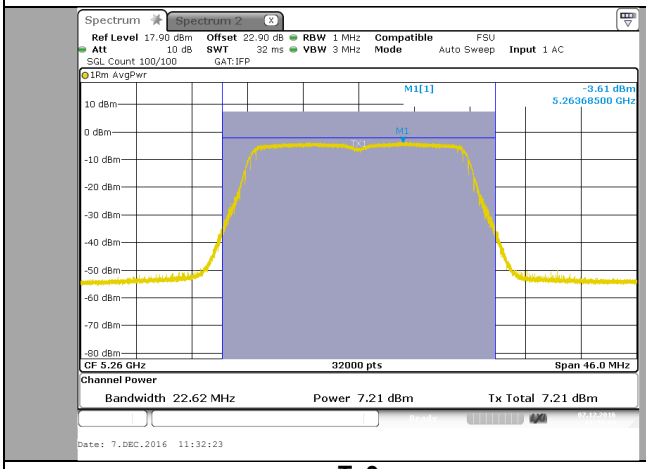	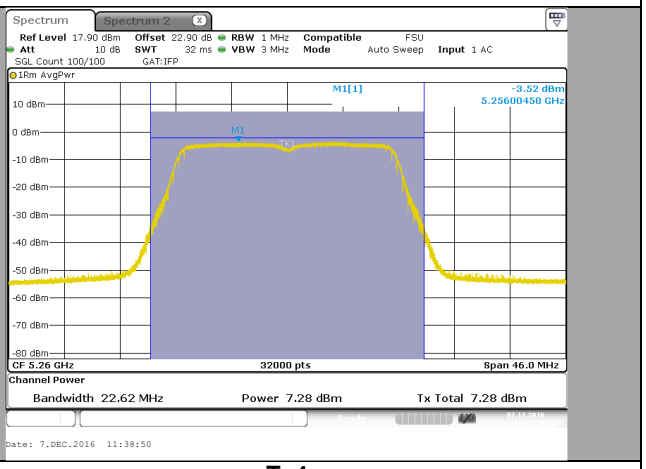
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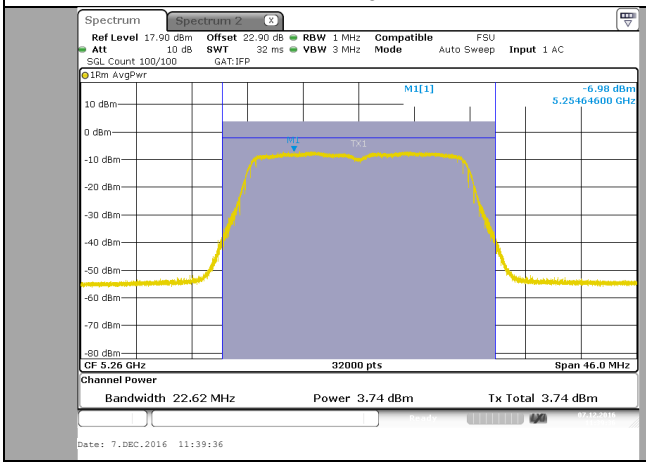	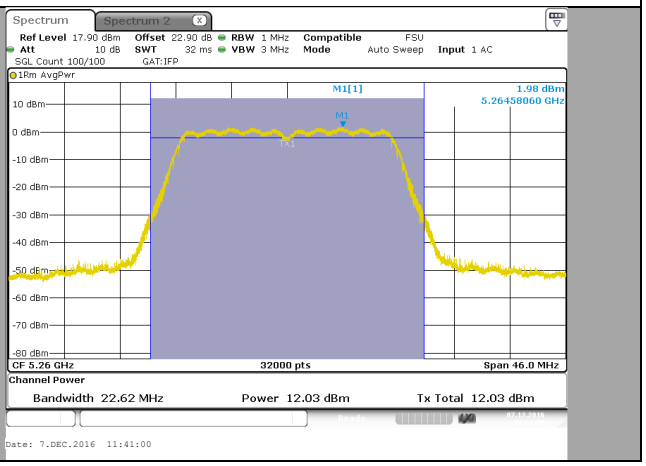

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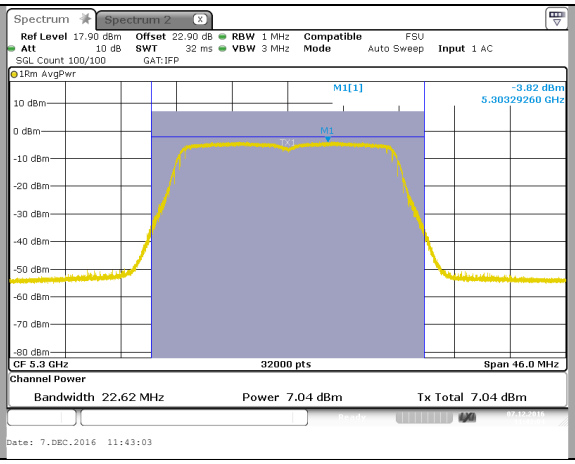	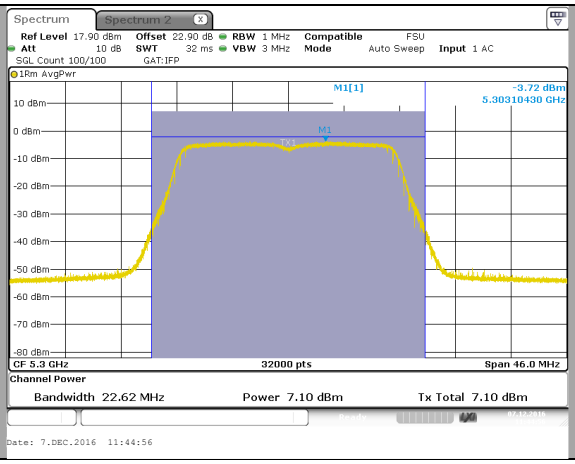
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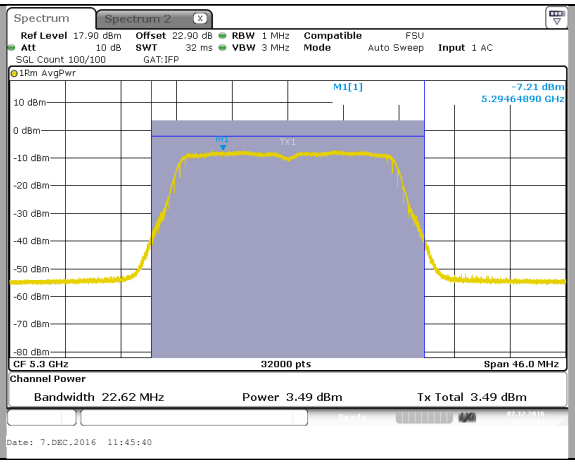	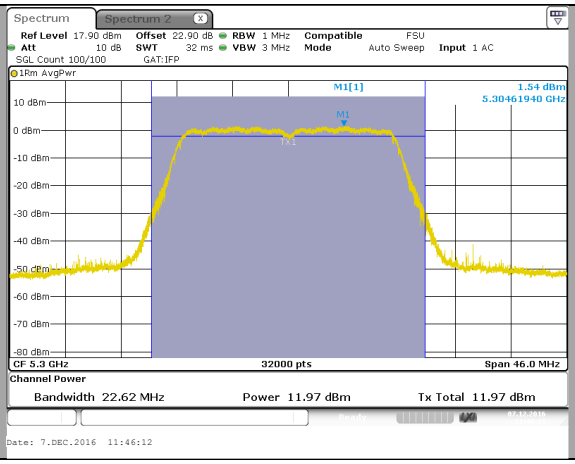

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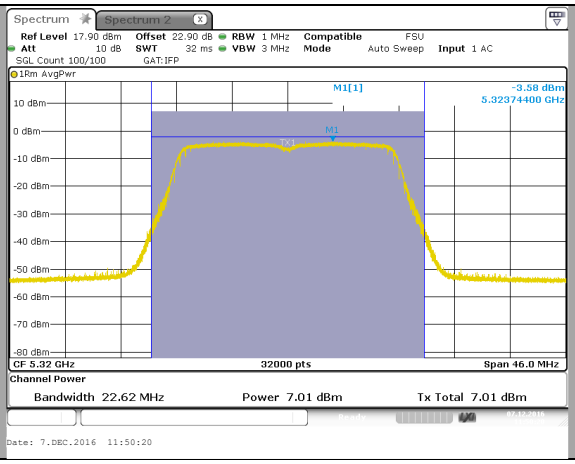	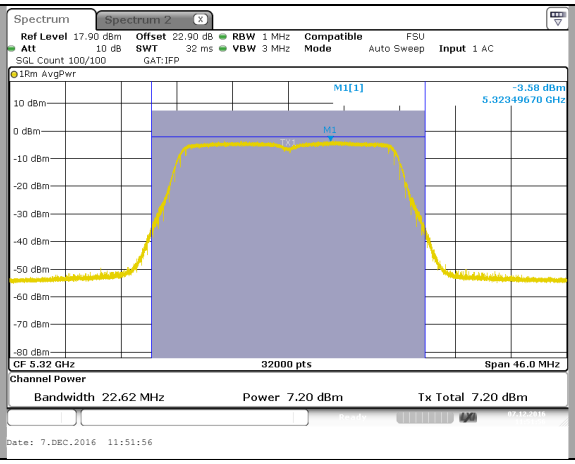
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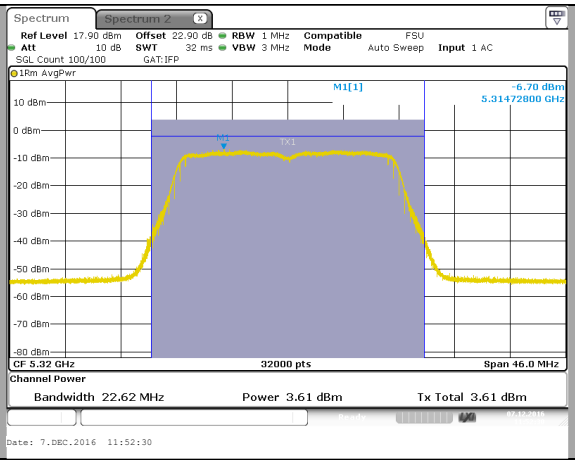	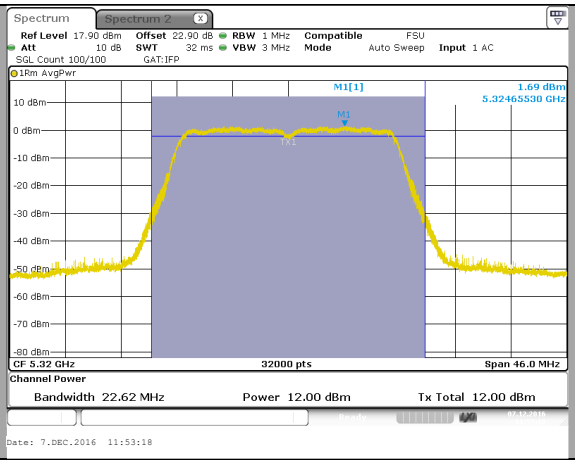

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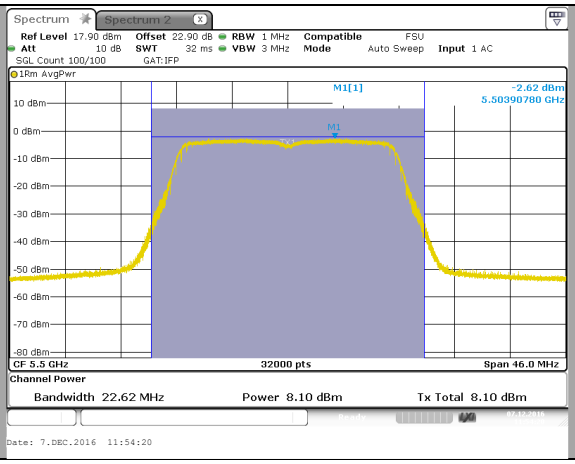	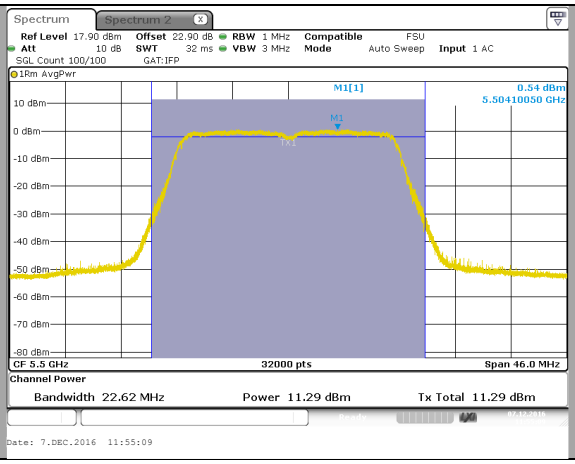
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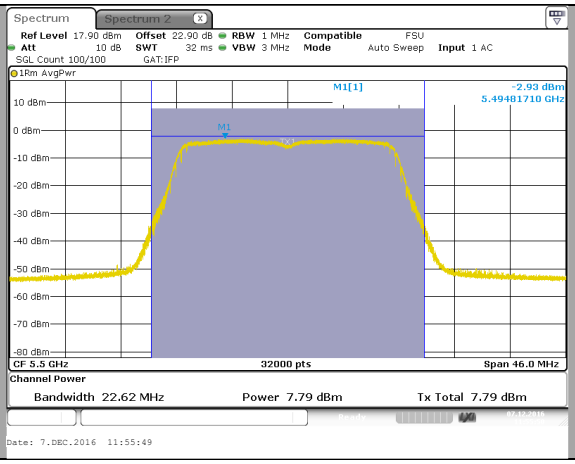	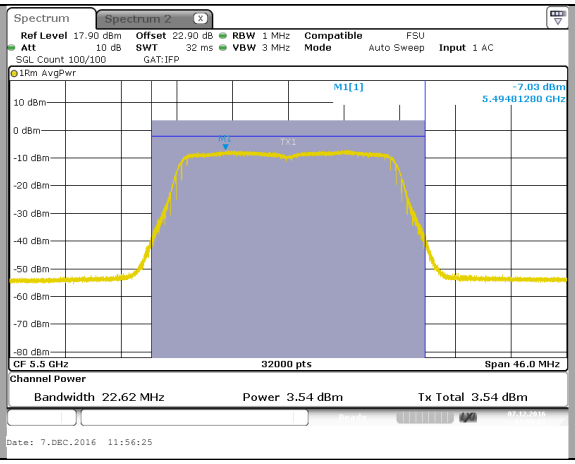

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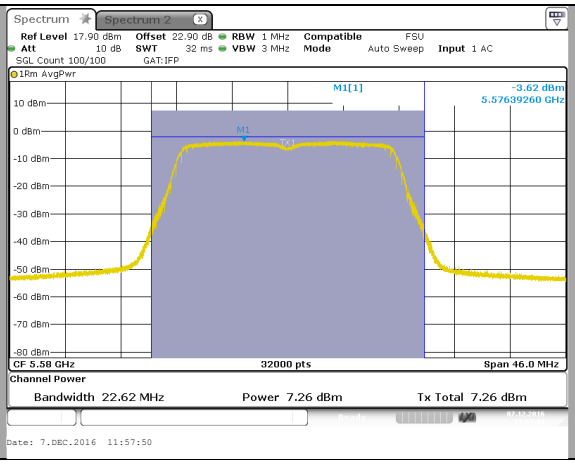	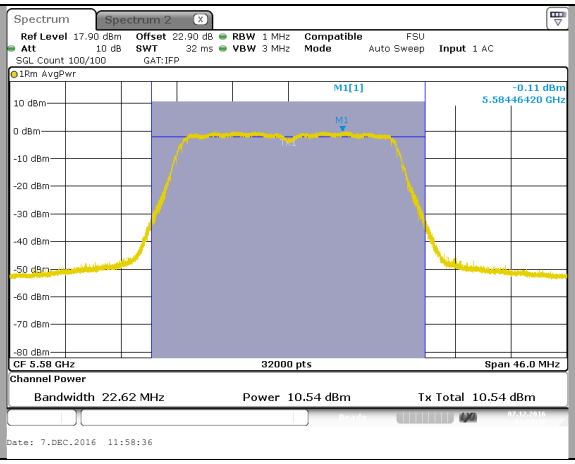
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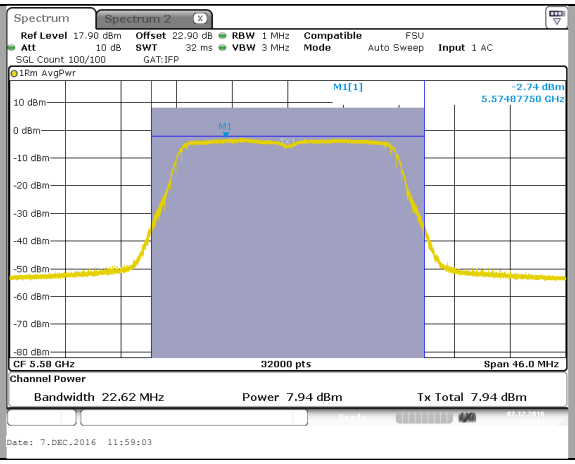	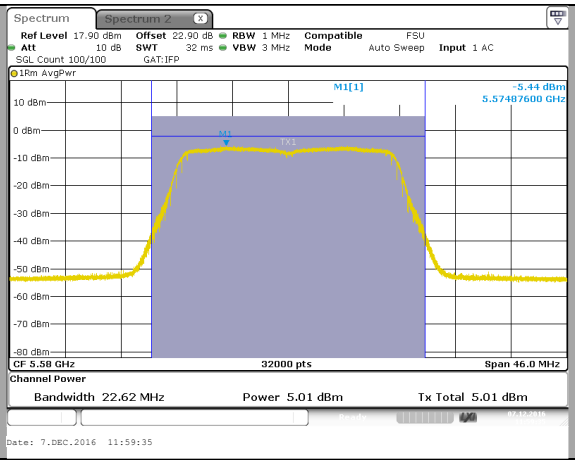

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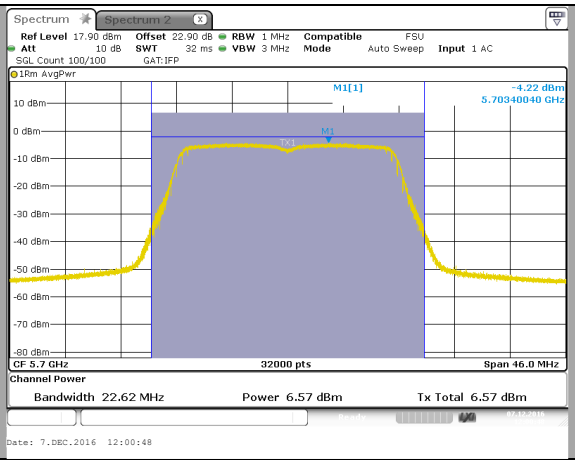	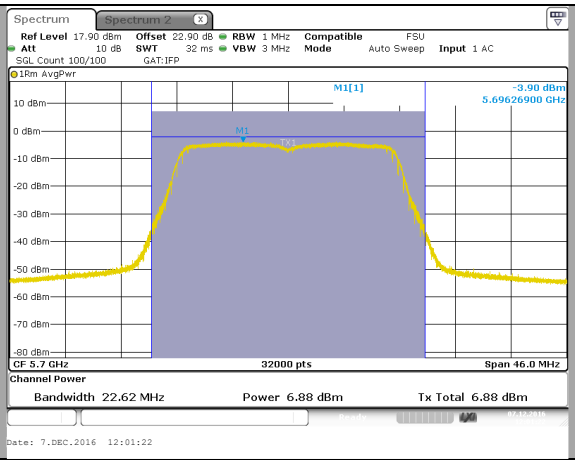
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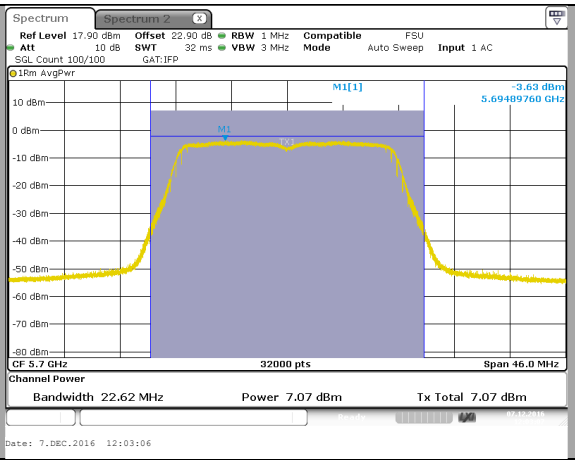	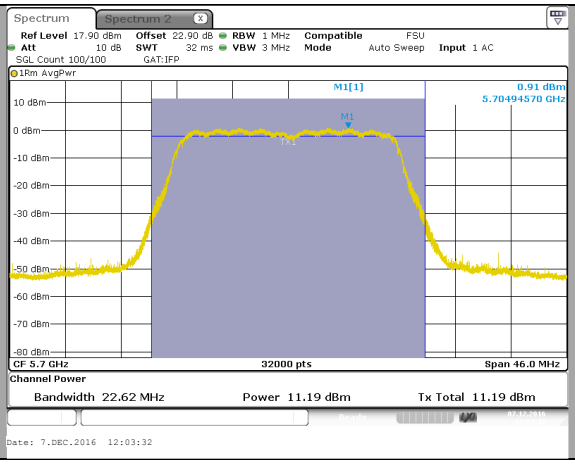

802.1111n HT20/ac VHT20	
C10 Straddle 5470MHz-5725MHz	
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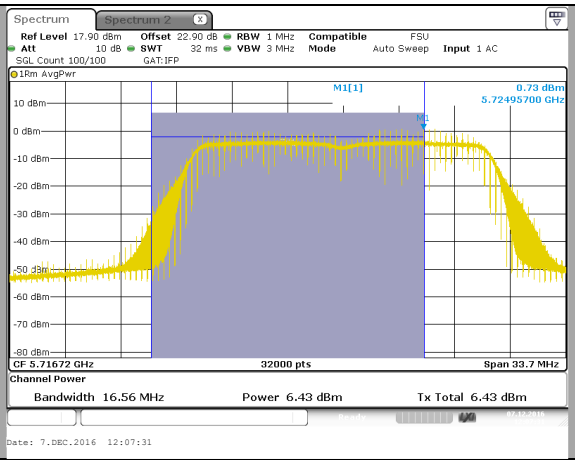
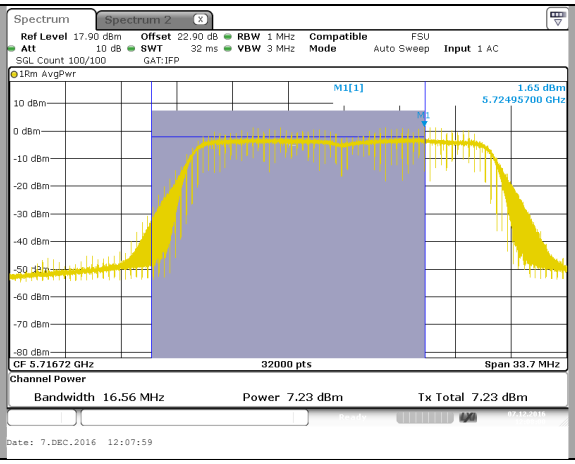
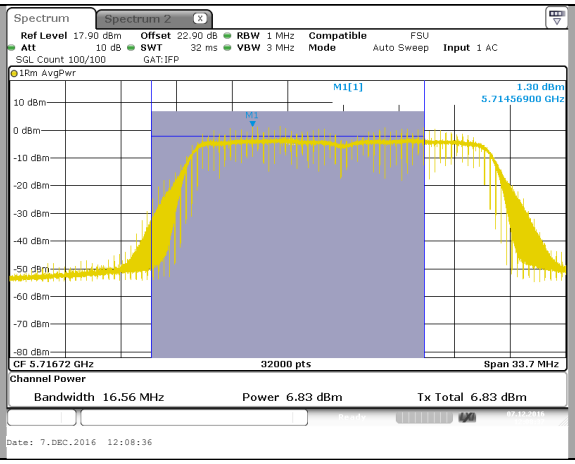
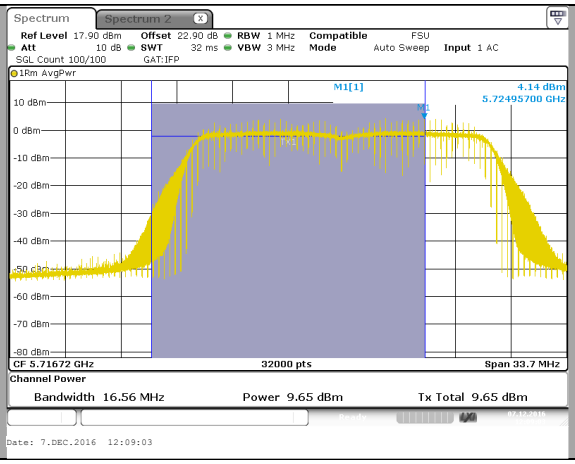
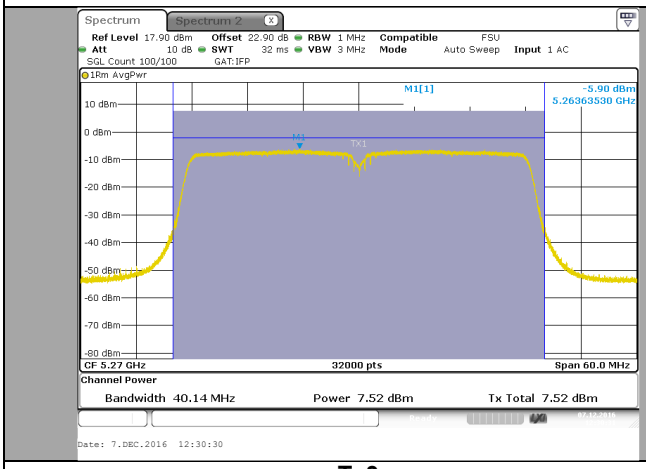
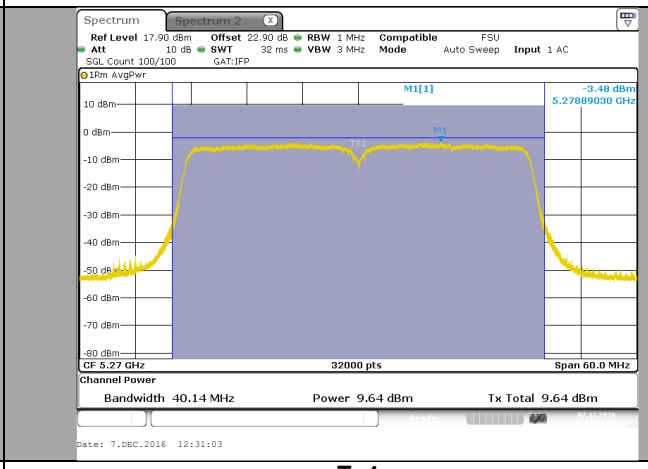
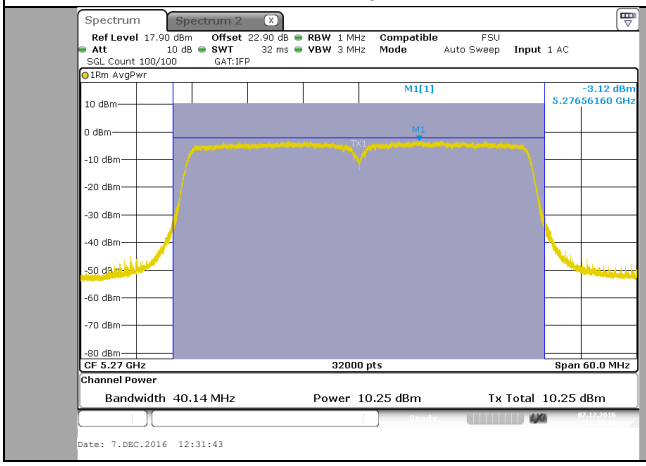
	
Tx3	Tx4
	

802.1111n HT40/ac VHT40	
C16	
Tx1	Tx2
	
Tx3	Tx4
	

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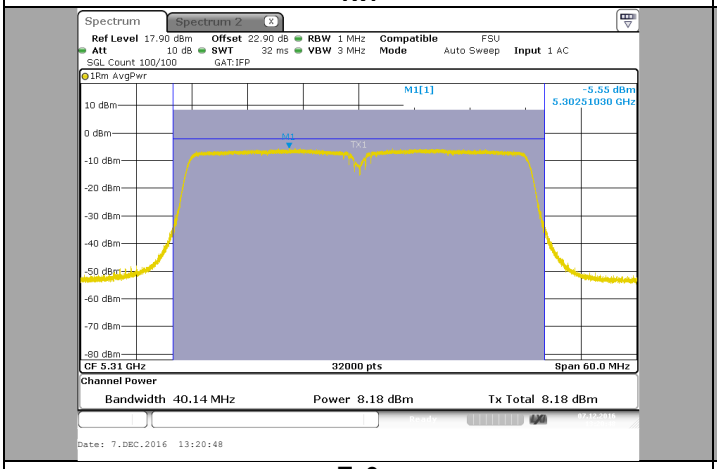
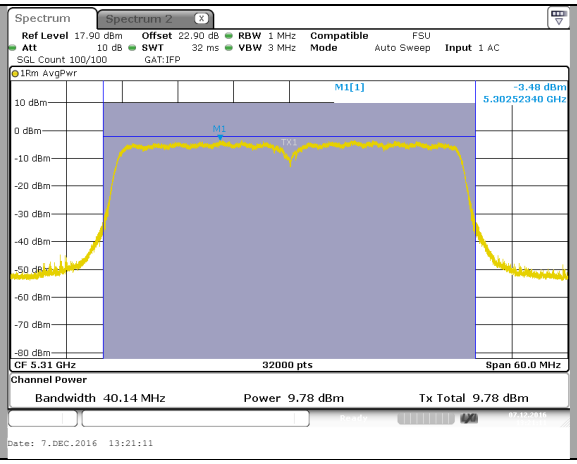
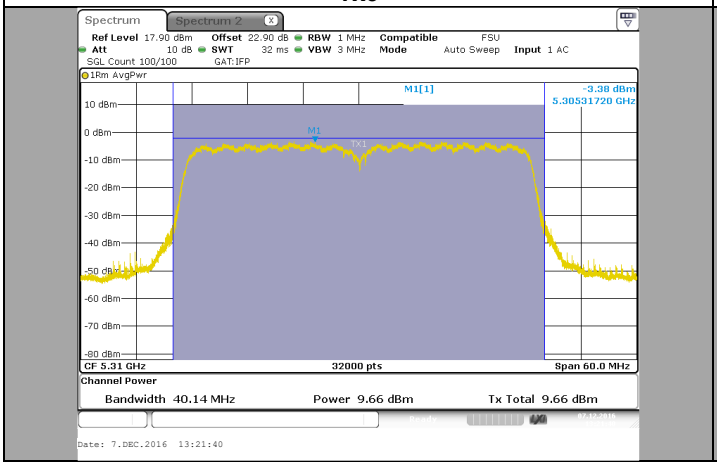
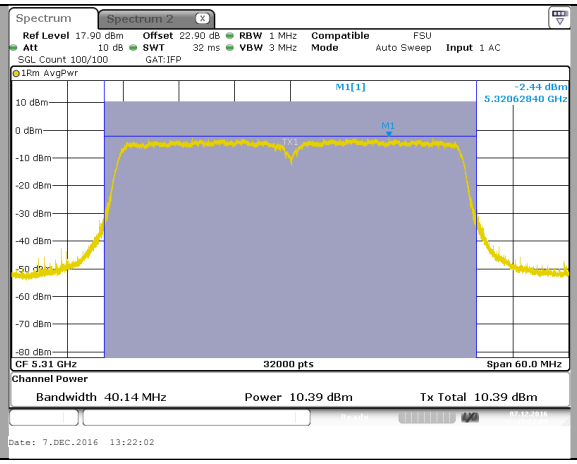
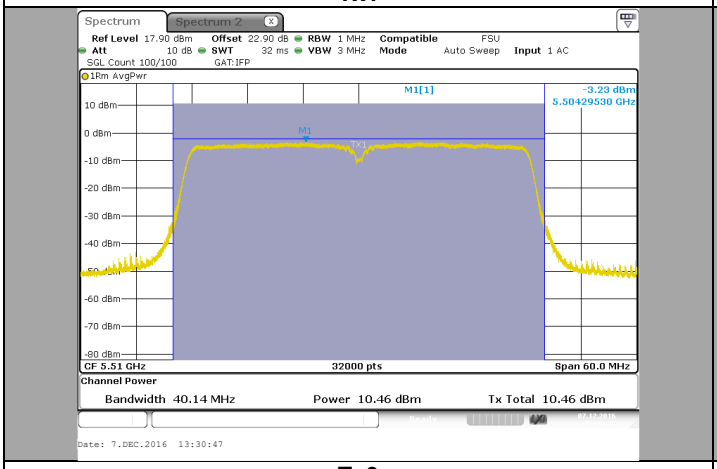
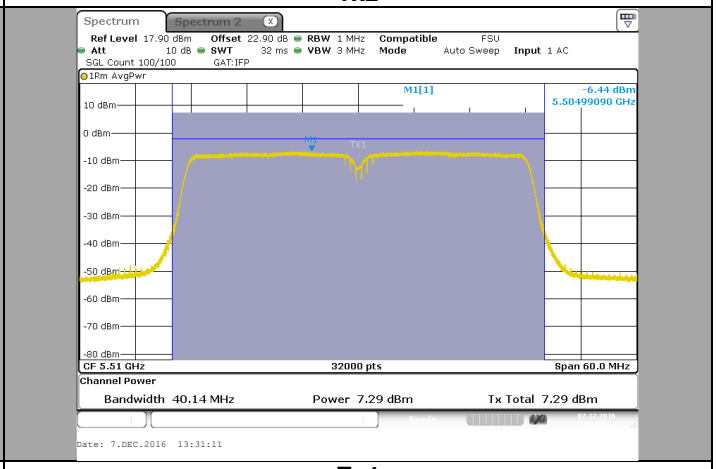
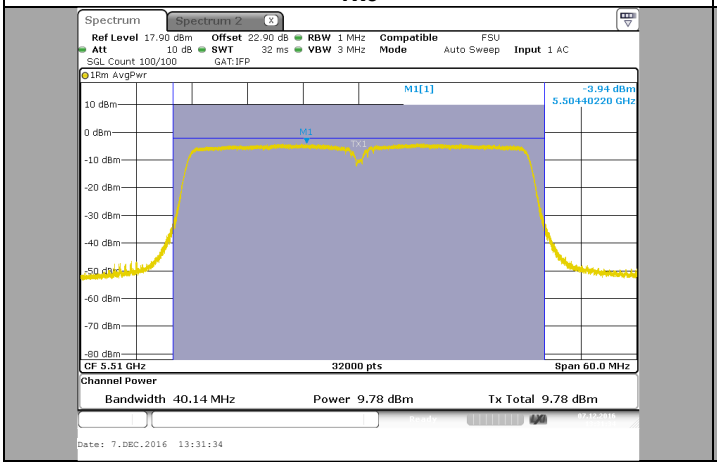
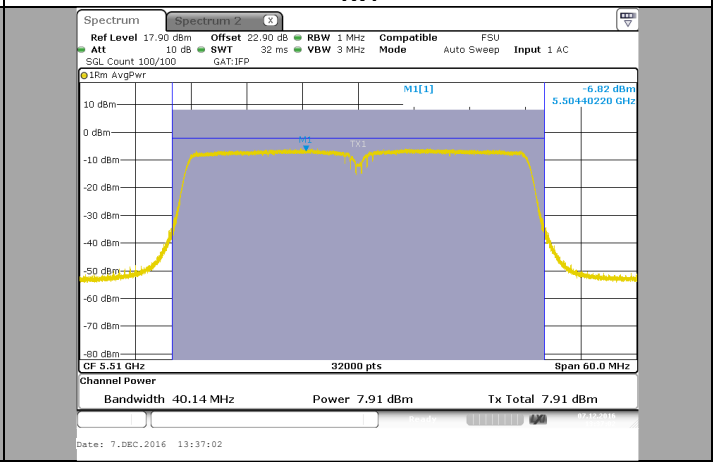
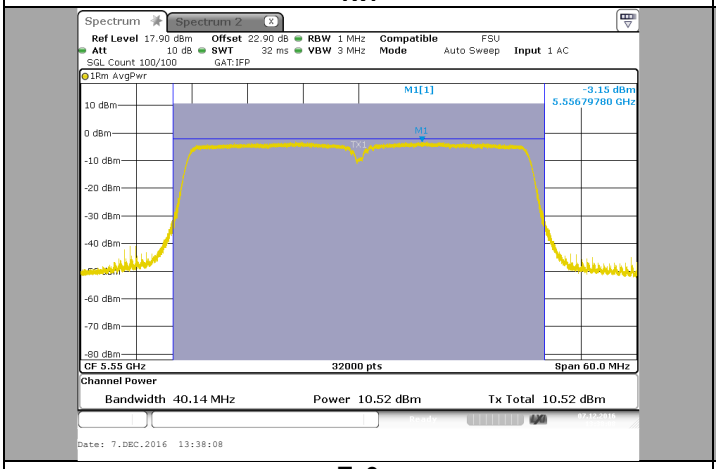
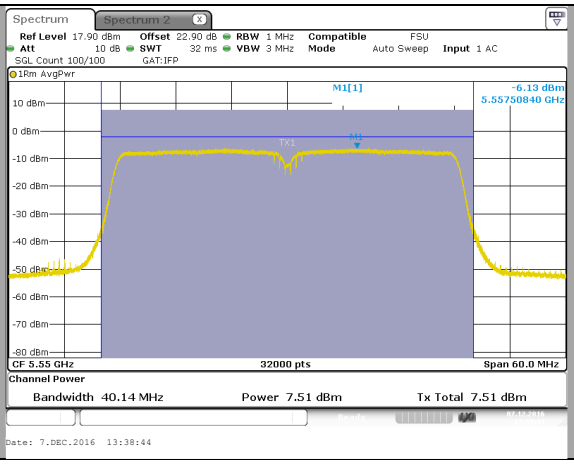
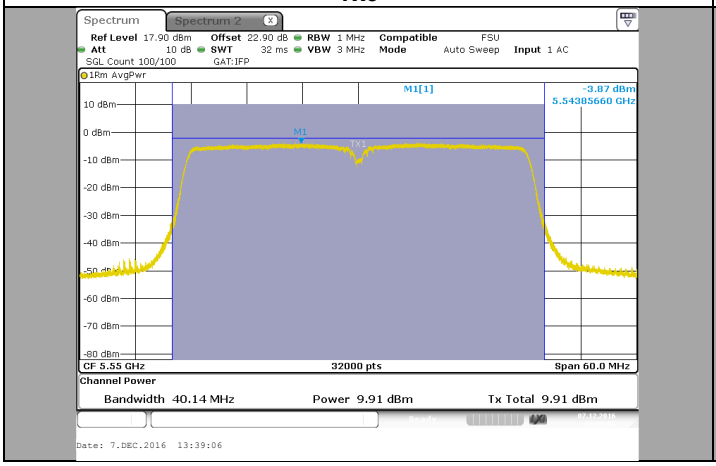
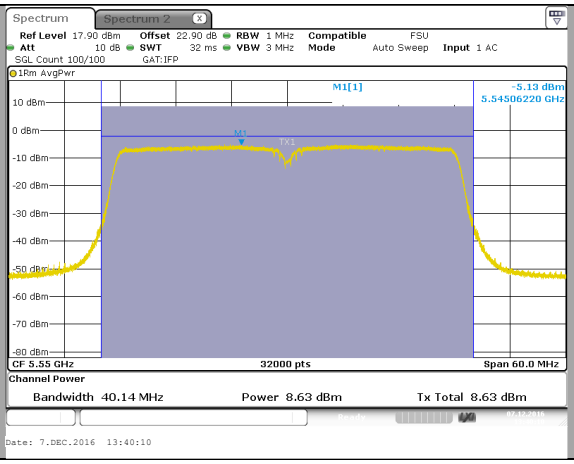
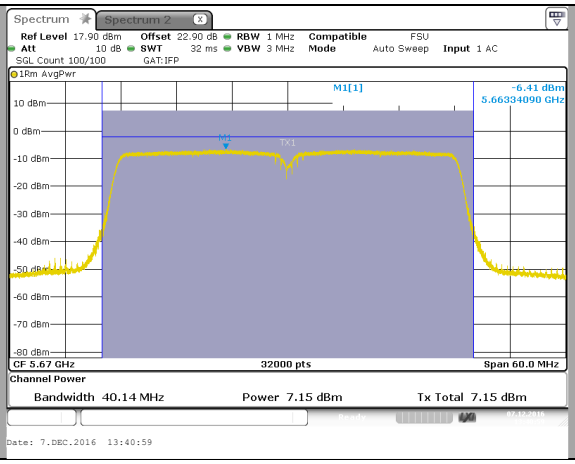
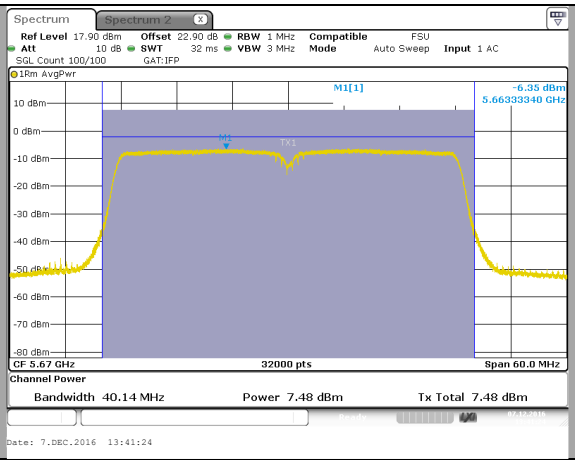
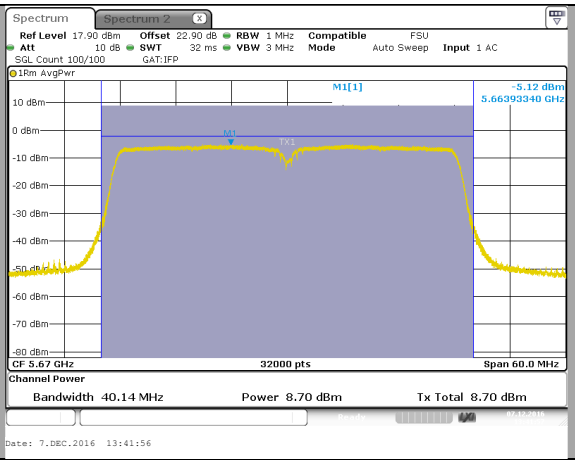
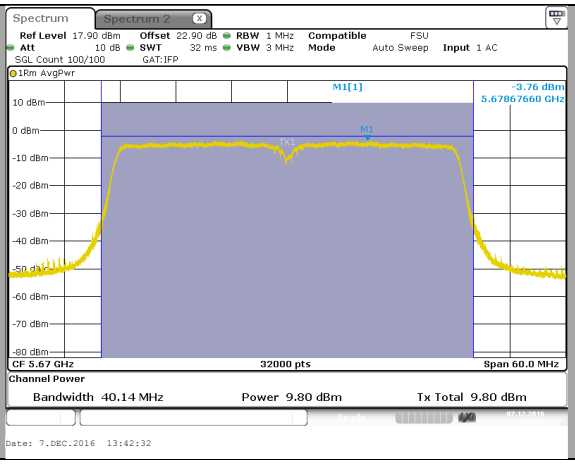
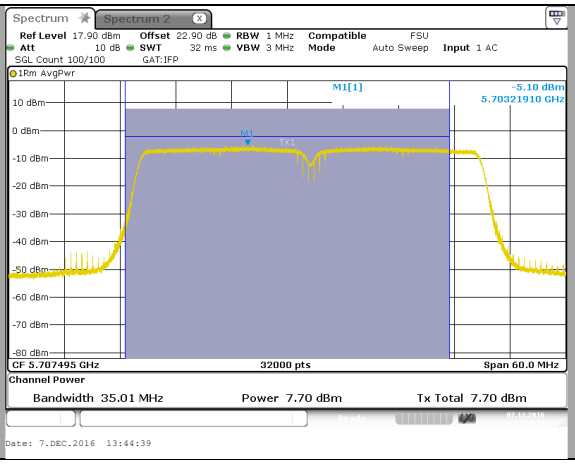
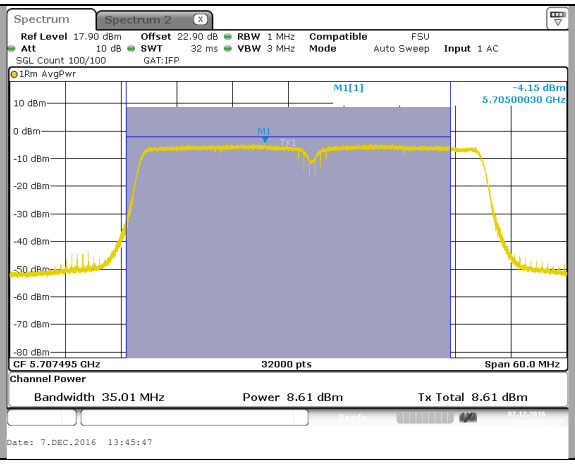
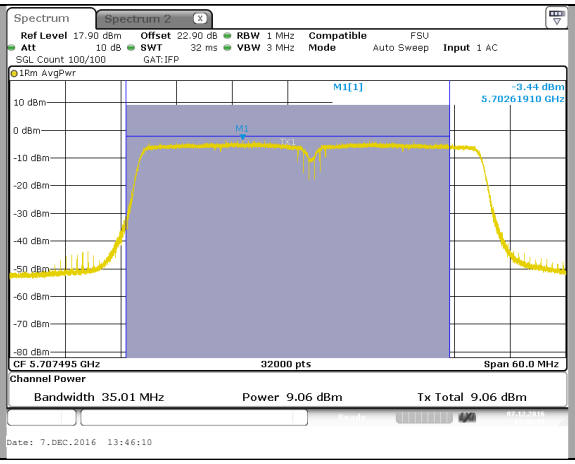
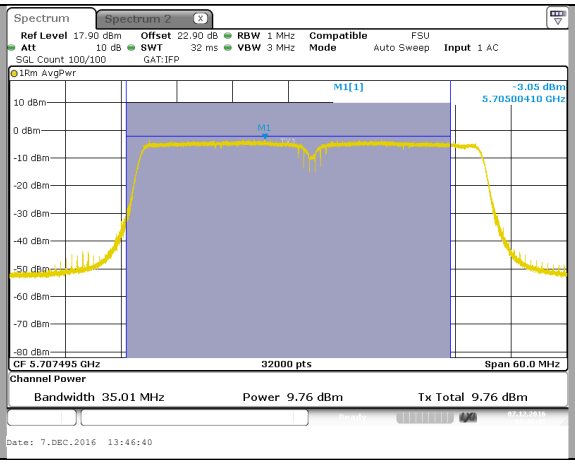
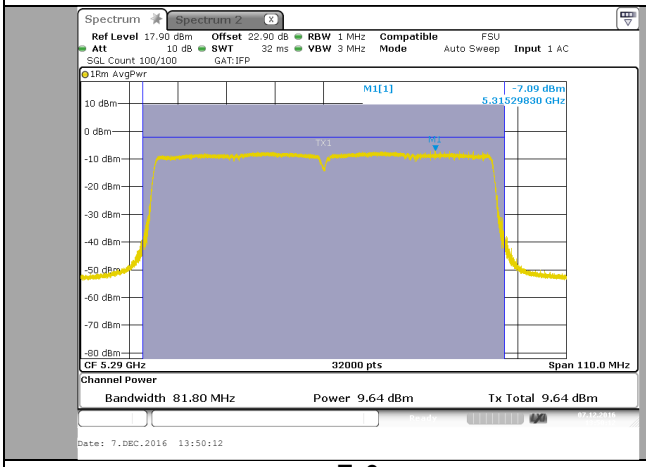
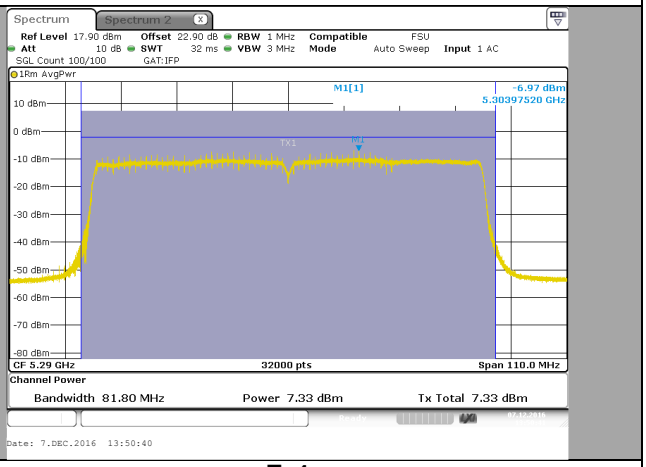
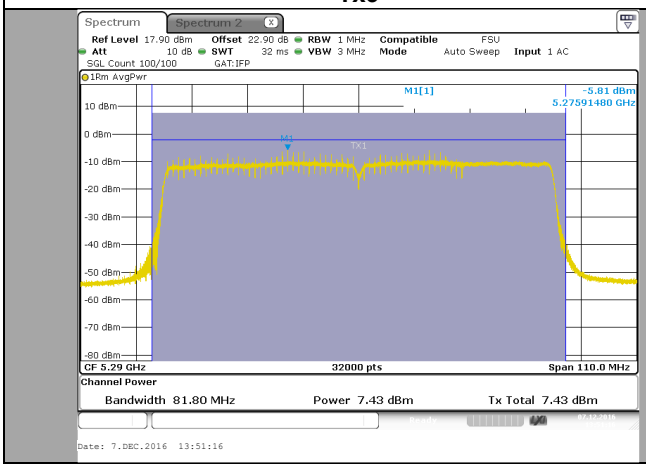
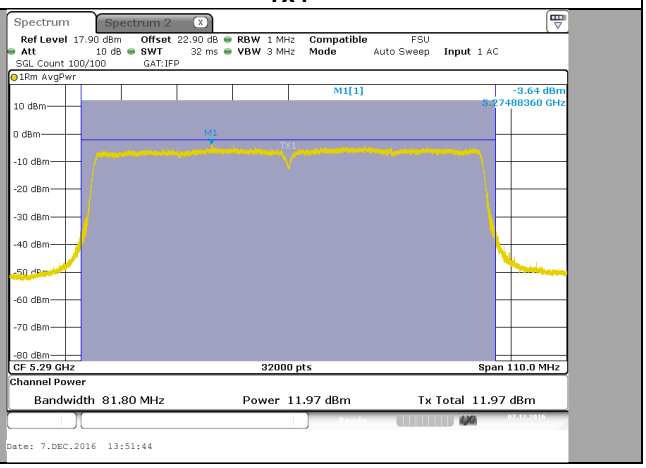
C17	
Tx1	Tx2
	
Tx3	Tx4
	

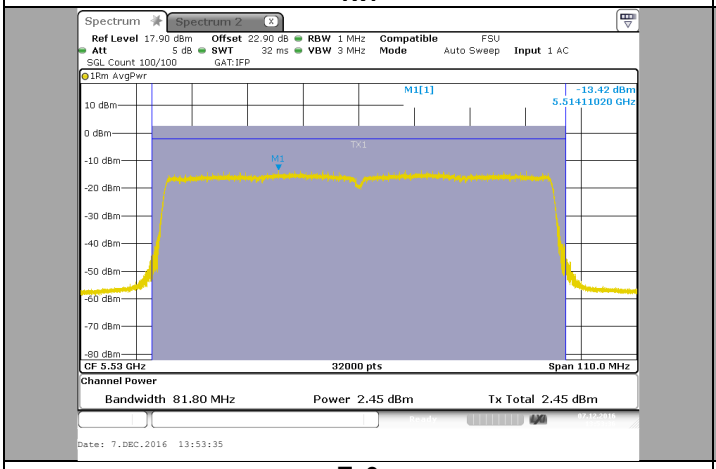
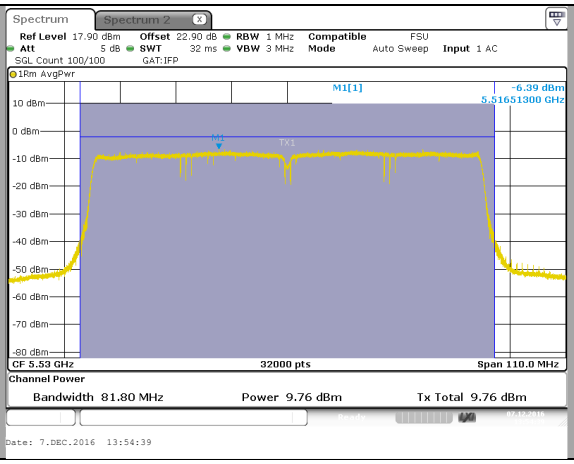
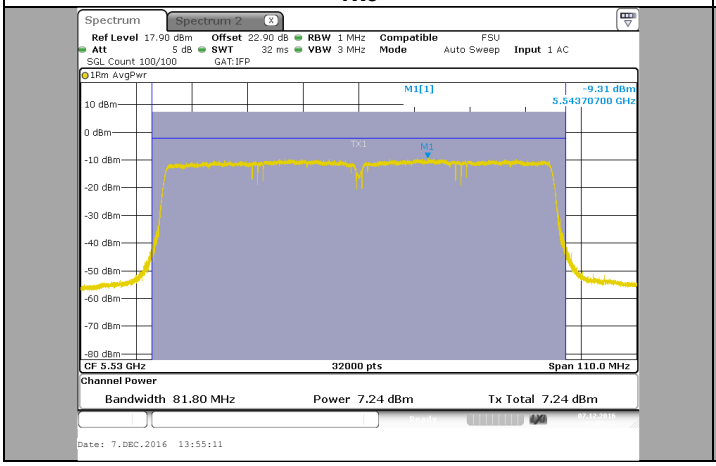
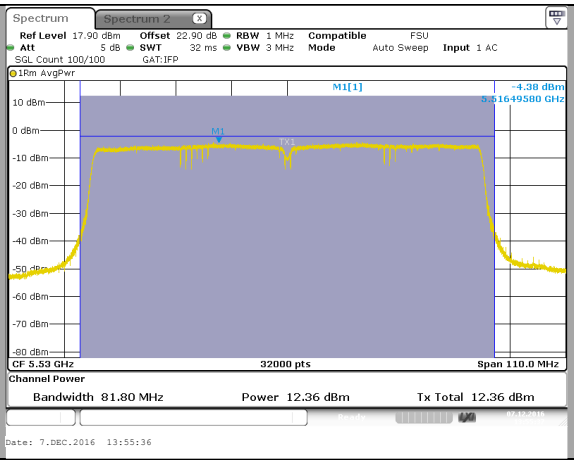
802.1111n HT40/ac VHT40	
C18	
Tx1	Tx2
	
Tx3	Tx4
	

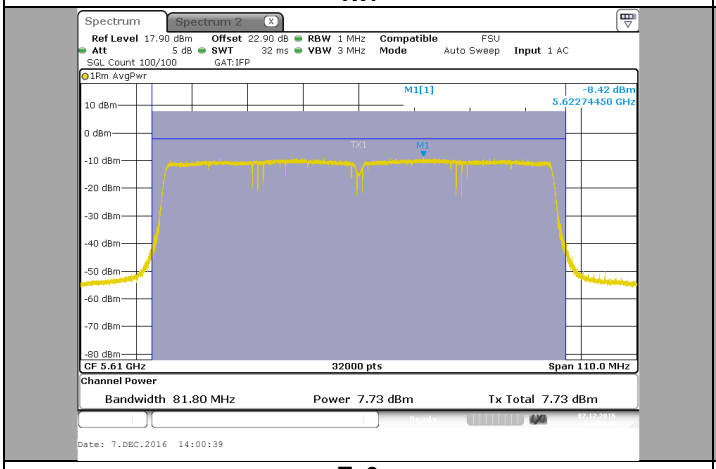
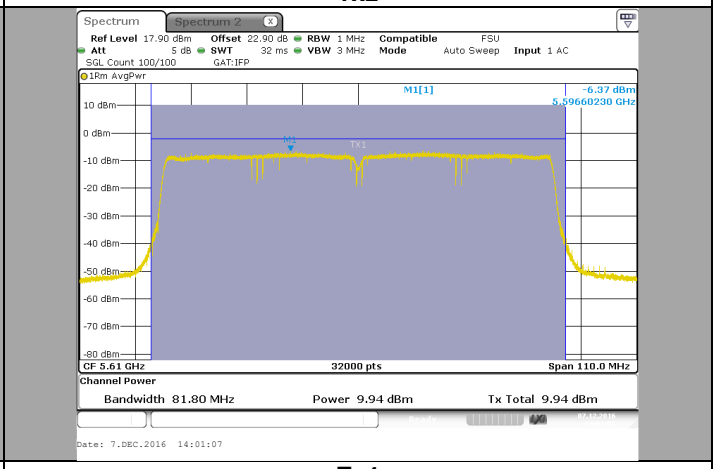
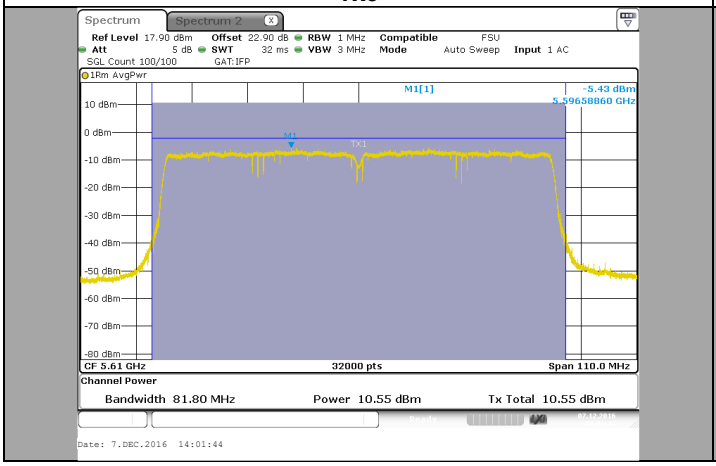
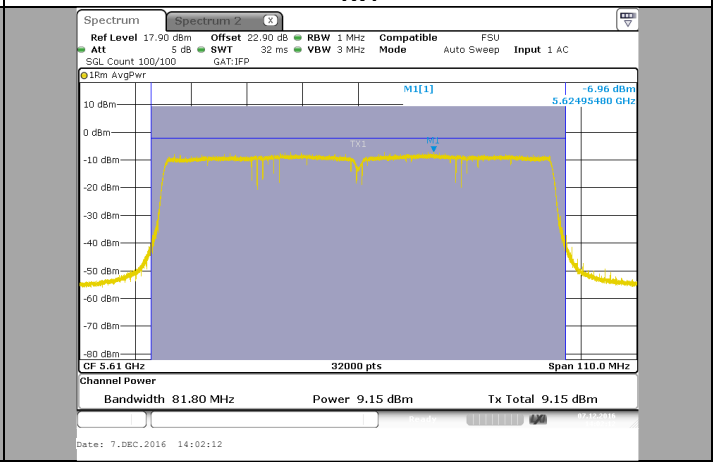
802.1111n HT40/ac VHT40	
C19	
Tx1	Tx2
	
Tx3	Tx4
	

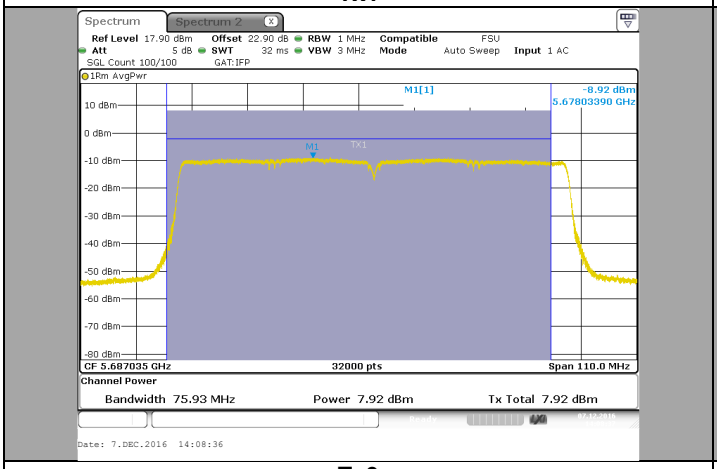
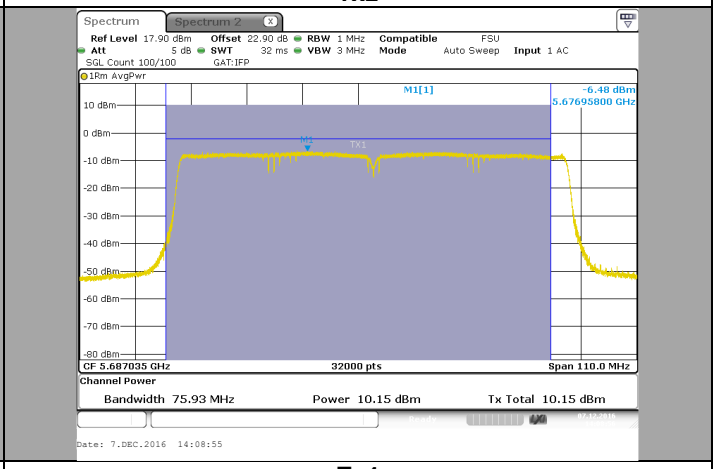
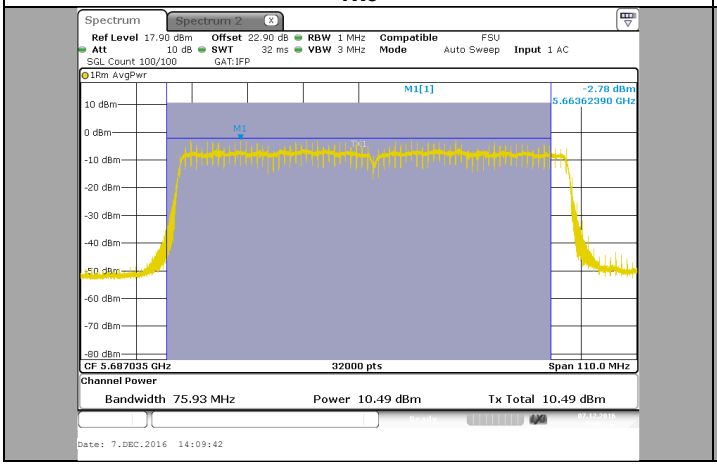
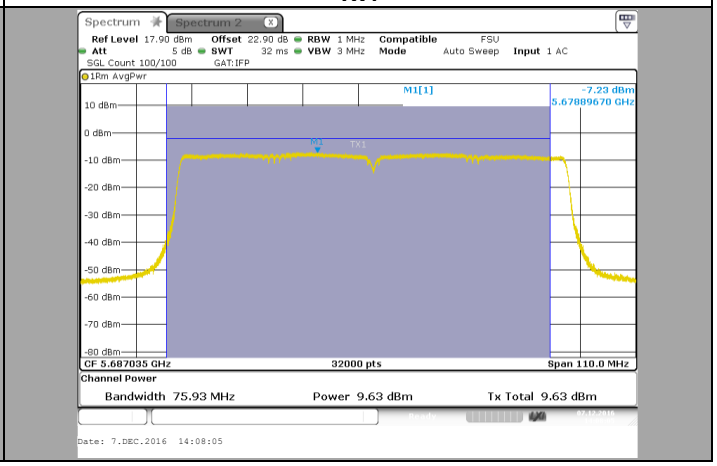
802.1111n HT40/ac VHT40	
C20	
Tx1	Tx2
	
Tx3	Tx4
	

802.1111n HT40/ac VHT40	
C21 Straddle 5470MHz-5725MHz	
Tx1	Tx2
	
Tx3	Tx4
	

802.11ac VHT80	
C25	
Tx1	Tx2
	
Tx3	Tx4
	

802.11ac VHT80	
C26	
Tx1	Tx2
	
Tx3	Tx4
	

802.11ac VHT80	
C27	
Tx1	Tx2
	
Tx3	Tx4
	

802.11ac VHT80	
C28 Straddle 5470MHz-5725MHz	
Tx1	Tx2
	
Tx3	Tx4
	

802.11a

Channel	Tx1 (dBm)	Tx2 (dBm)	Tx3 (dBm)	Tx4 (dBm)	TxAll (dBm)	AG (dBi)	TPC Min (dBm)	TPC Min Limit (dBm)
C4	5,97	6,21	2,4	11,18	13,6	8	21,6	24
C5	6,22	6,28	2,73	11,8	14,1	8	22,1	24
C6	6,25	6,37	2,53	11,84	14,1	8	22,1	24
C7	7,77	10,59	7,85	4,2	14,2	8	22,2	24
C8	7,05	10,97	7,38	2,63	14,0	8	22,0	24
C9	6,75	7,5	7,42	10,18	14,2	8	22,2	24
C10 Straddle 5470MHz-5725MHz	5,62	6,57	6,38	10,62	13,8	8	21,8	24

802.11n HT20/ac VHT20

Channel	Tx1 (dBm)	Tx2 (dBm)	Tx3 (dBm)	Tx4 (dBm)	TxAll (dBm)	AG (dBi)	TPC Min (dBm)	TPC Min Limit (dBm)
C4	7,21	7,28	3,74	12,03	14,6	8	22,6	24
C5	7,04	7,1	3,49	11,97	14,5	8	22,5	24
C6	7,01	7,2	3,61	12	14,5	8	22,5	24
C7	8,1	11,29	7,79	3,54	14,5	8	22,5	24
C8	7,26	10,54	7,94	5,01	14,2	8	22,2	24
C9	6,57	6,88	7,07	11,19	14,4	8	22,4	24
C10 Straddle 5470MHz-5725MHz	6,43	7,23	6,83	9,65	13,8	8	21,8	24

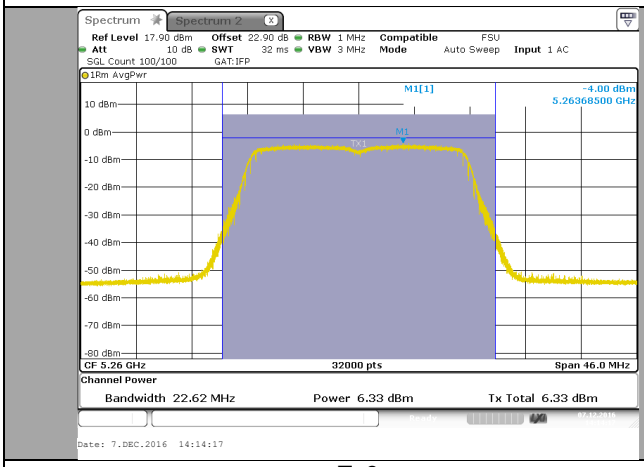
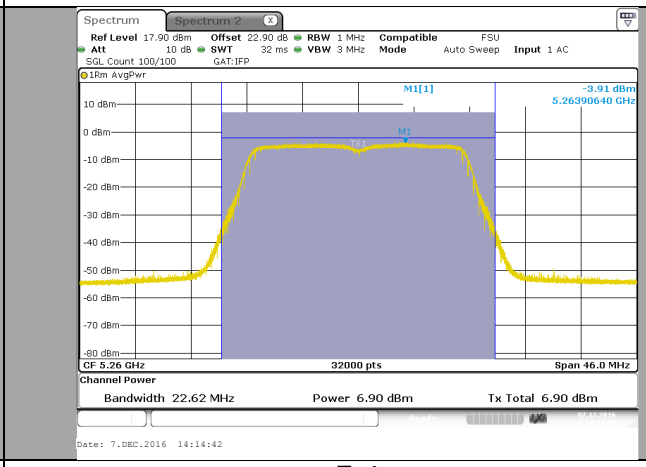
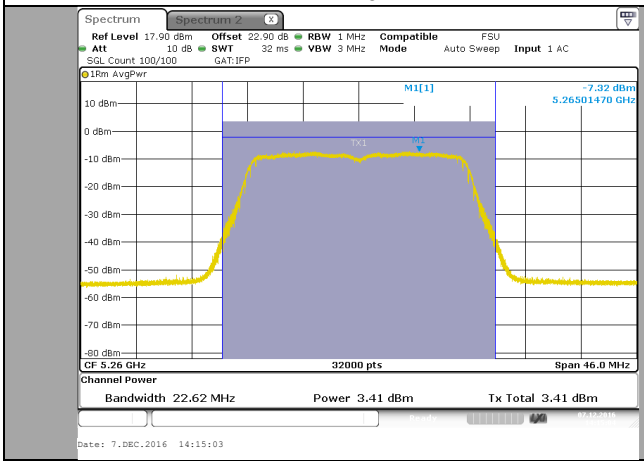
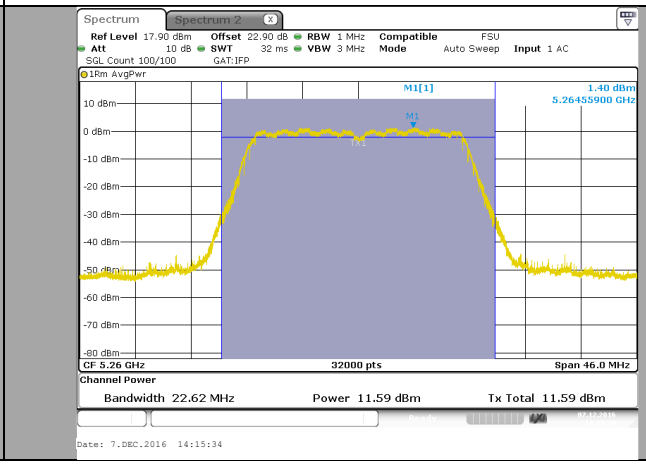
802.11n HT40/ac VHT40

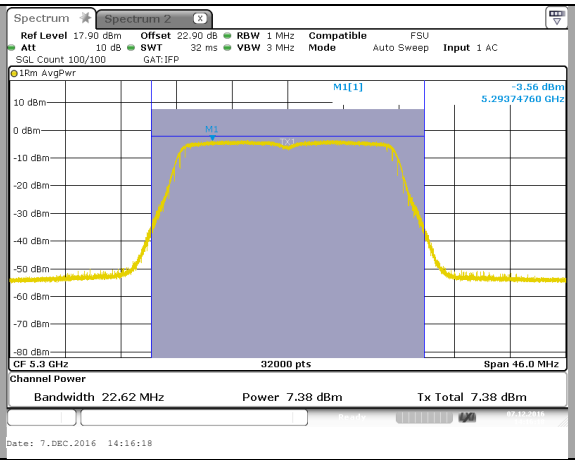
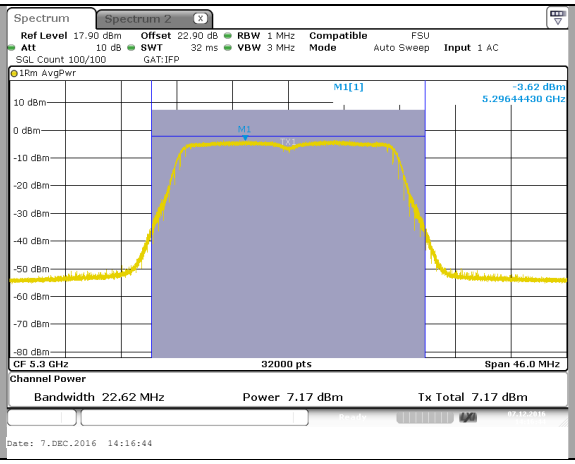
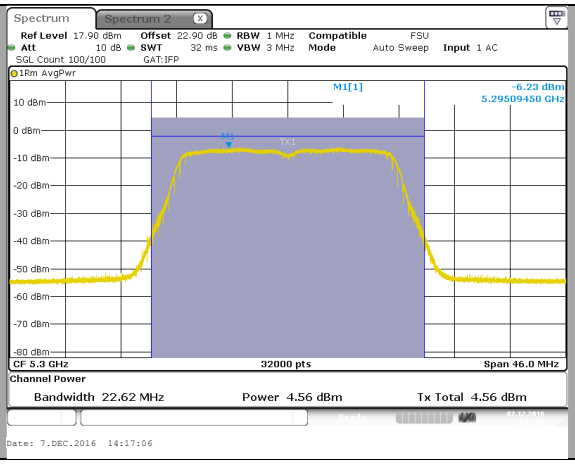
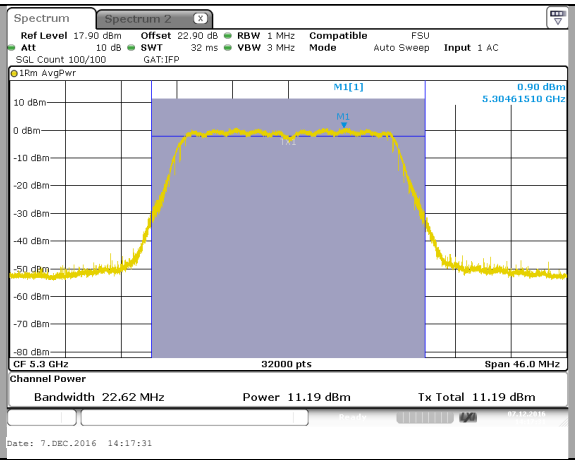
Channel	Tx1 (dBm)	Tx2 (dBm)	Tx3 (dBm)	Tx4 (dBm)	TxAll (dBm)	AG (dBi)	TPC Min (dBm)	TPC Min Limit (dBm)
C16	7,52	9,64	10,25	10,47	15,6	8	23,6	24
C17	8,18	9,78	9,66	10,39	15,6	8	23,6	24
C18	10,46	7,29	9,78	7,91	15,1	8	23,1	24
C19	10,52	7,51	9,91	8,63	15,3	8	23,3	24
C20	7,15	7,48	8,7	9,8	14,4	8	22,4	24
C21 Straddle 5470MHz-5725MHz	7,7	8,61	9,06	9,76	14,9	8	22,9	24

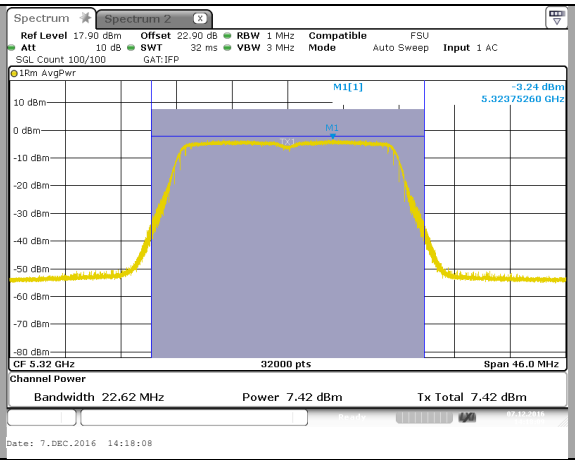
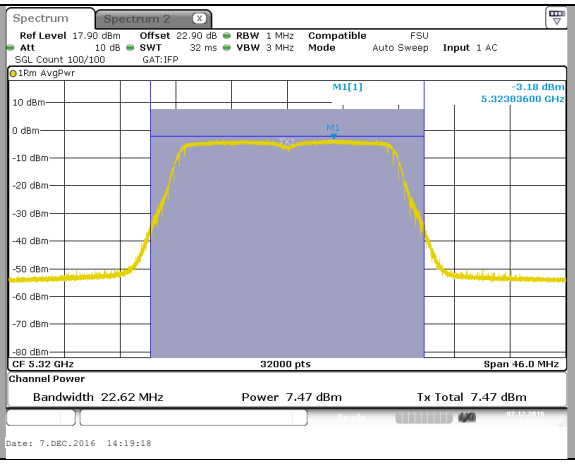
802.11ac VHT80

Channel	Tx1 (dBm)	Tx2 (dBm)	Tx3 (dBm)	Tx4 (dBm)	TxAll (dBm)	AG (dBi)	TPC Min (dBm)	TPC Min Limit (dBm)
C25	9,64	7,33	7,43	11,97	15,5	8	23,5	24
C26	2,45	9,76	7,24	12,36	15,3	8	23,3	24
C27	7,73	9,94	10,55	9,15	15,5	8	23,5	24
C28 Straddle 5470MHz-5725MHz	7,92	10,15	10,49	9,63	15,7	8	23,7	24

9.3.2. With Beamforming

802.1111n HT20/ac VHT20	
C4	
Tx1	Tx2
	
Tx3	Tx4
	

802.1111n HT20/ac VHT20	
C5	
Tx1	Tx2
	
Tx3	Tx4
	

802.1111n HT20/ac VHT20	
C6	
Tx1	Tx2
	
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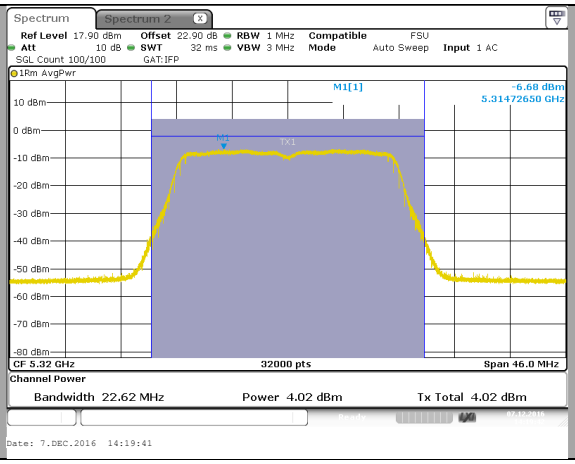	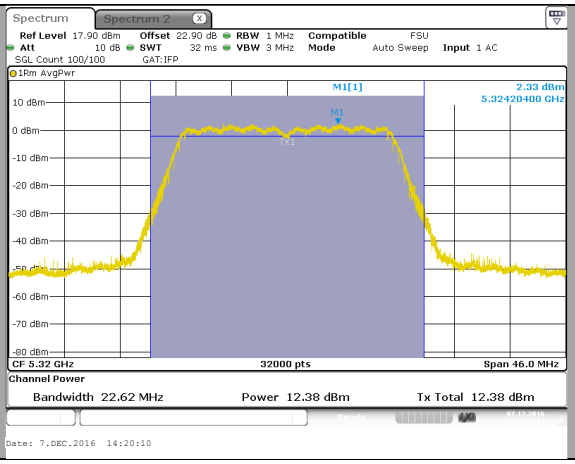

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C7	
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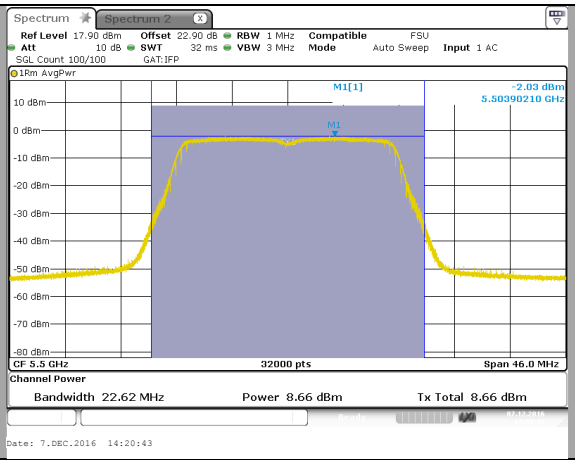	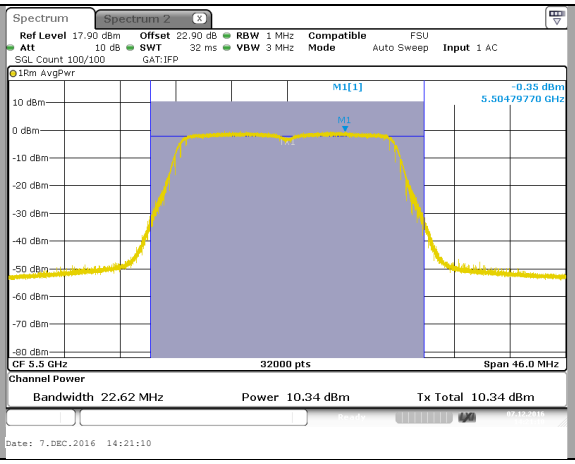
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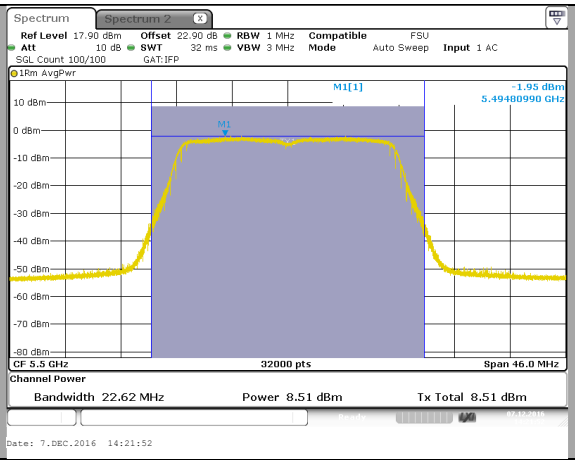	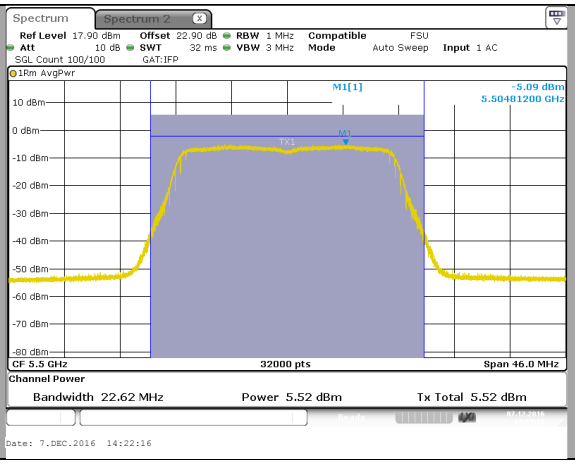

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C8	
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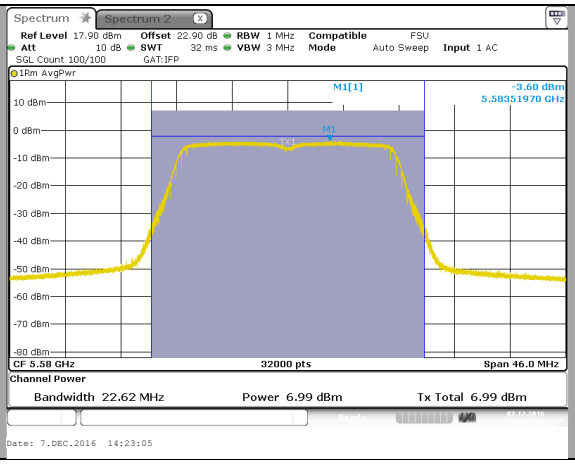	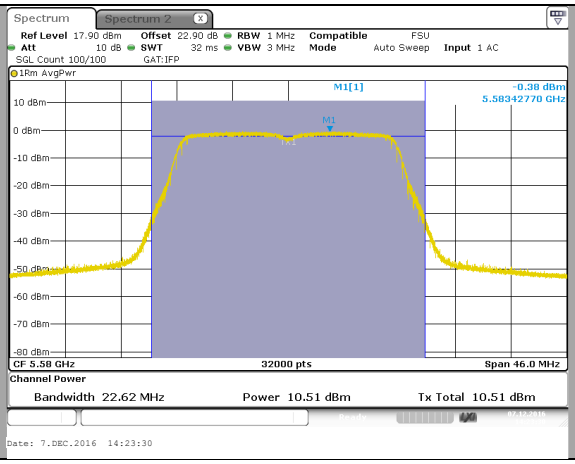
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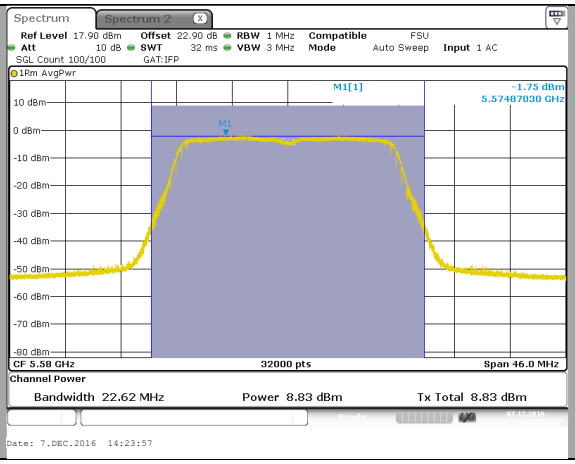	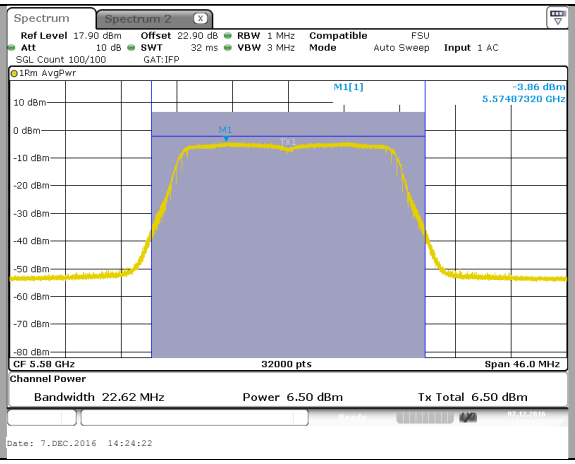

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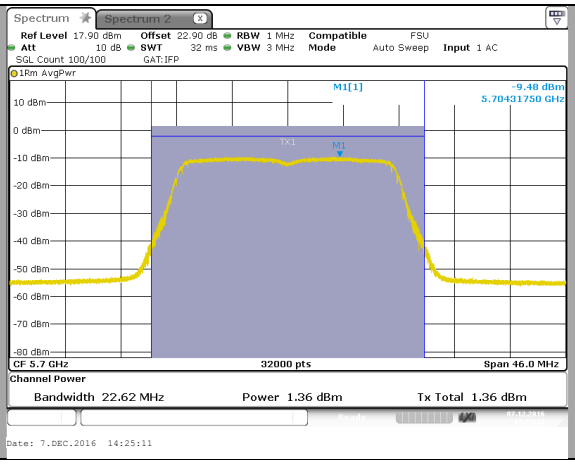
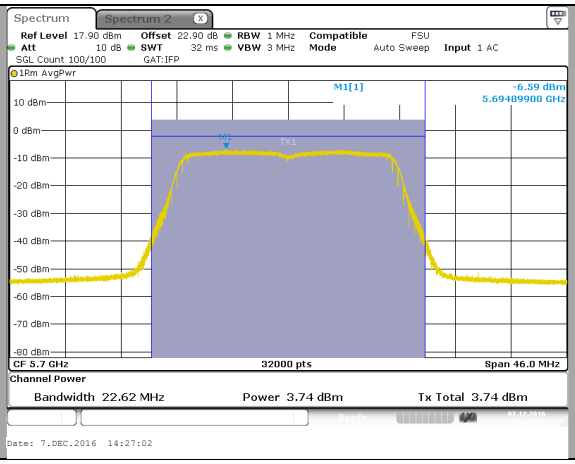
C9	
Tx1	Tx2
	
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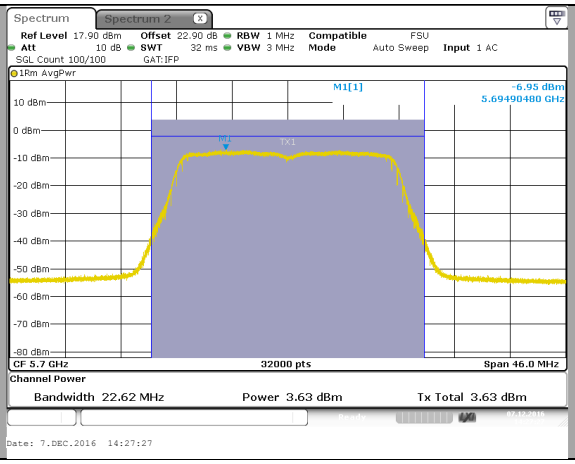
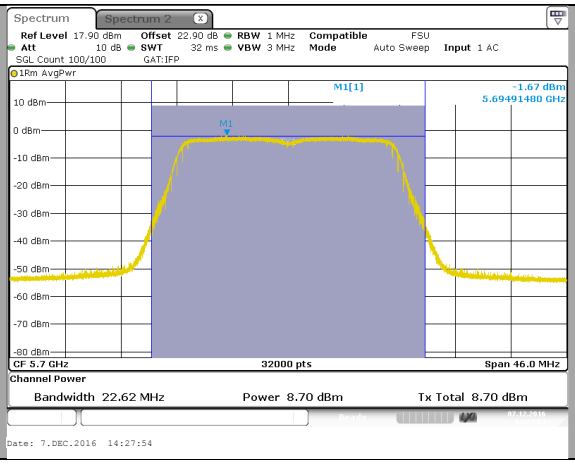
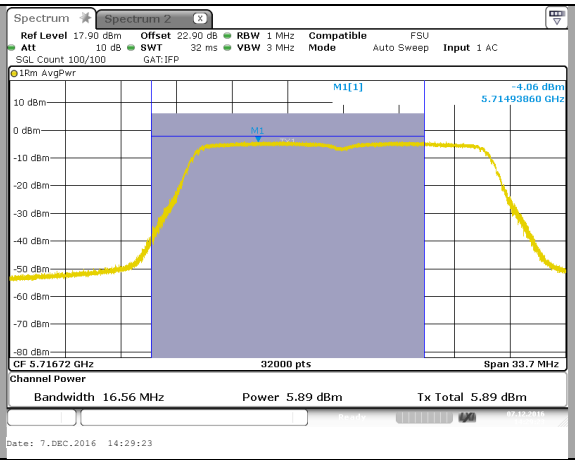
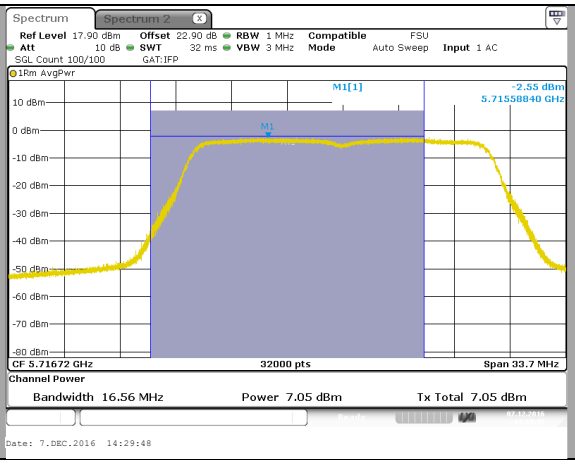
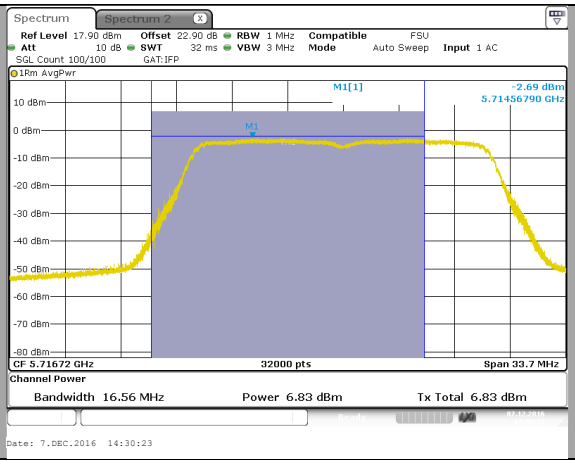
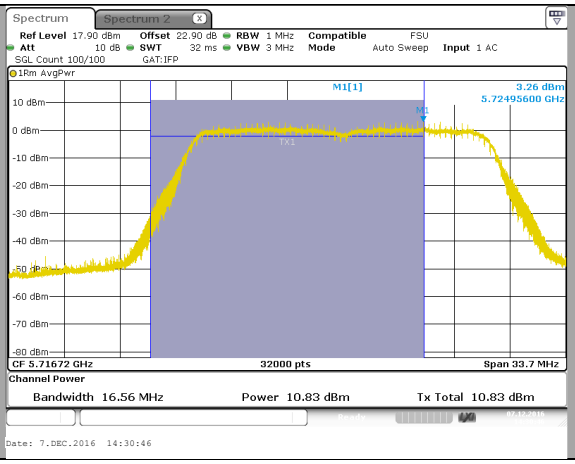
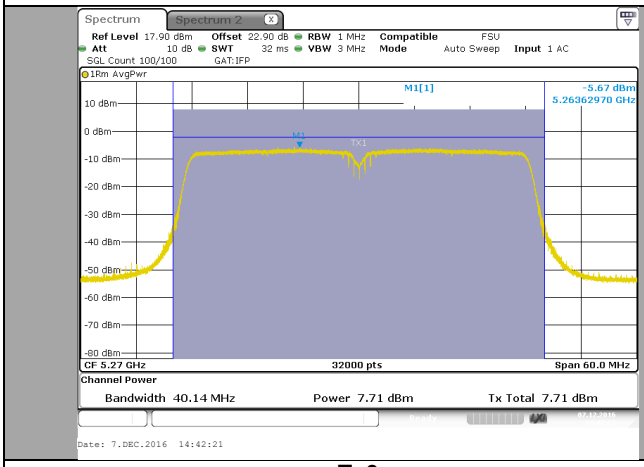
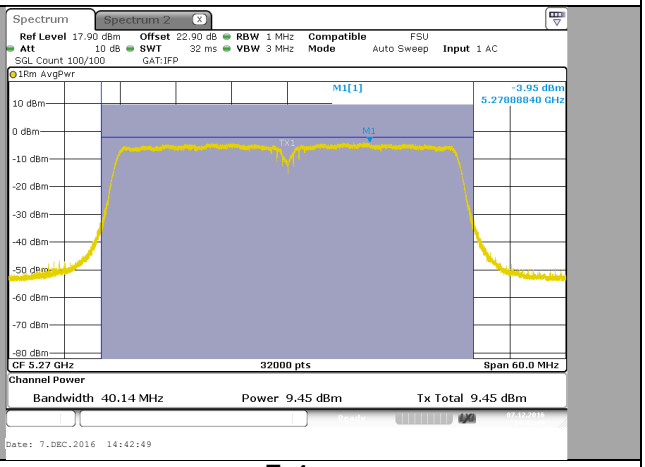
	

802.1111n HT20/ac VHT20	
C10 Straddle 5470MHz-5725MHz	
Tx1	Tx2
	
Tx3	Tx4
	

802.1111n HT40/ac VHT40	
C16	
Tx1	Tx2
	
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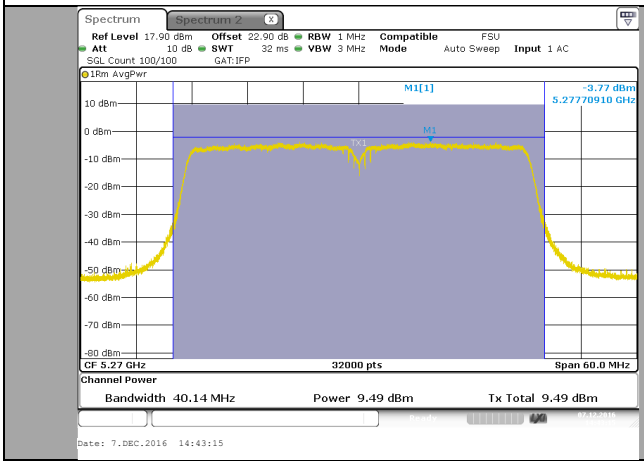	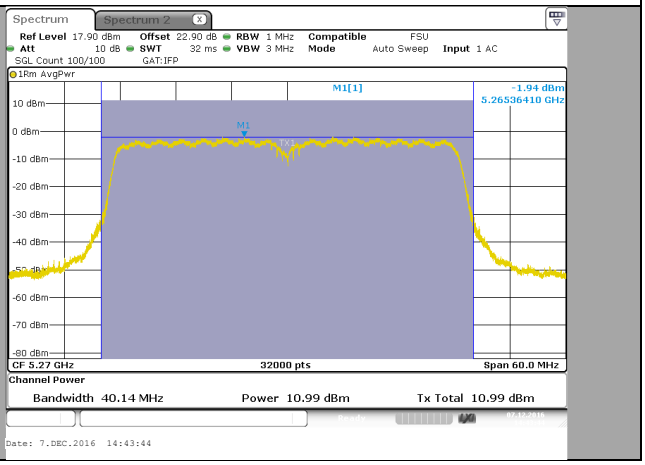

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C17	
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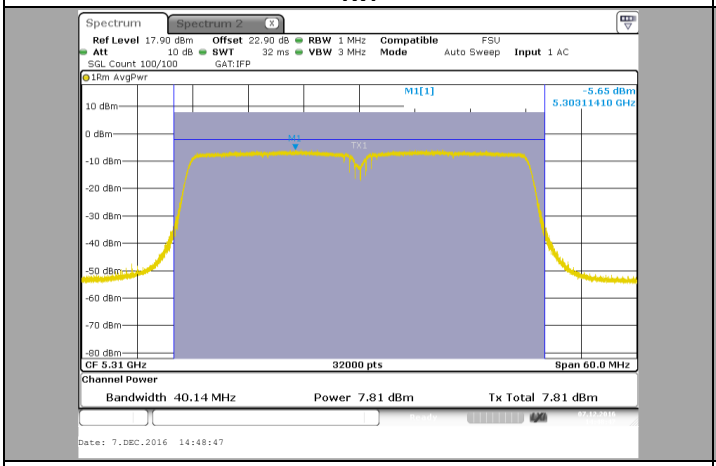
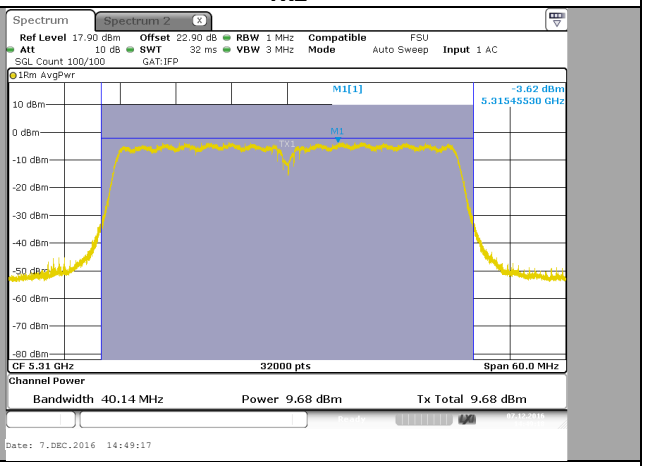
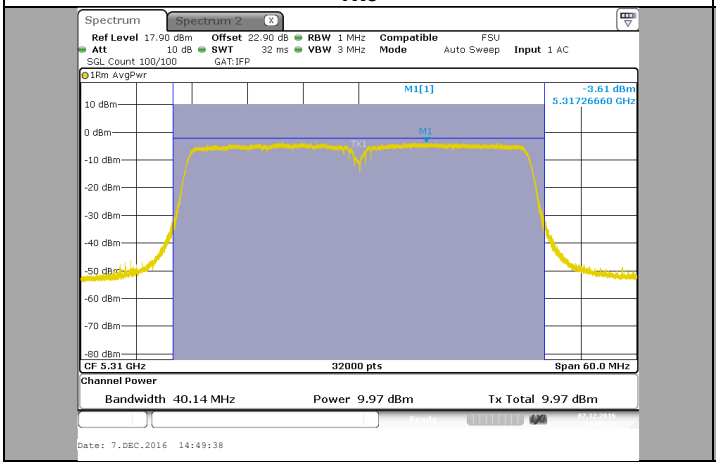
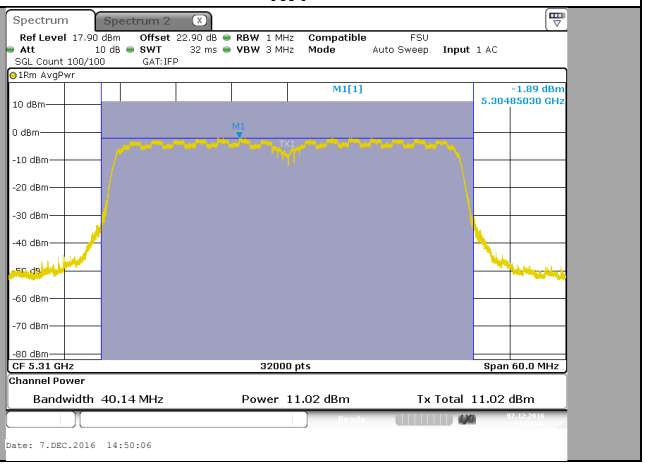
	
Tx3	Tx4
	

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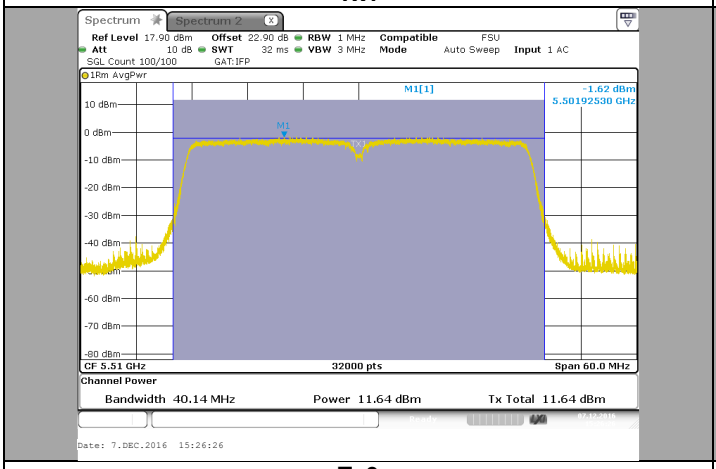
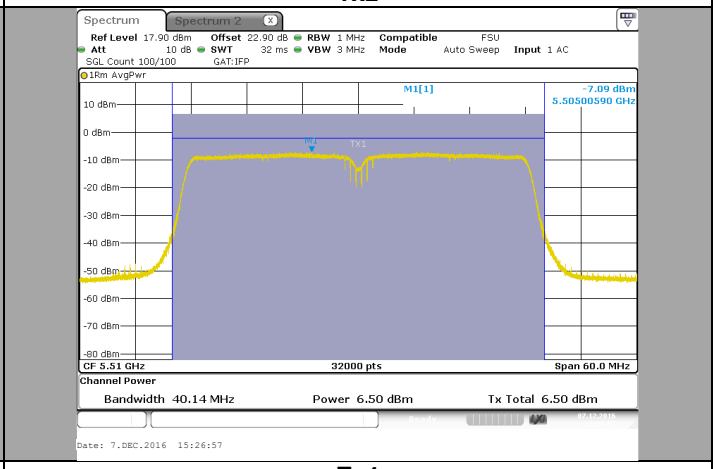
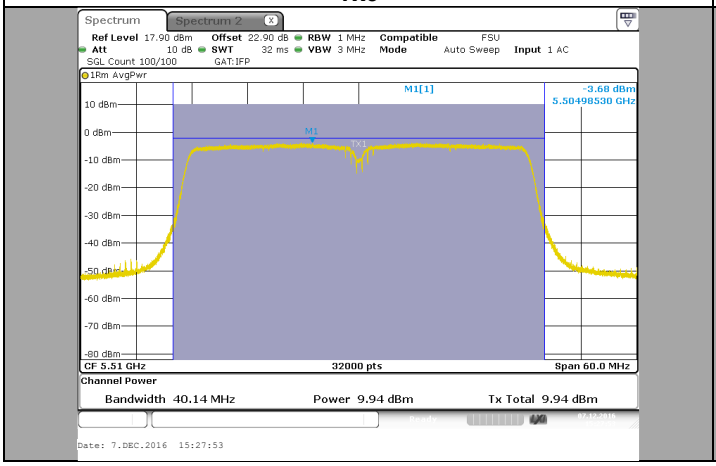
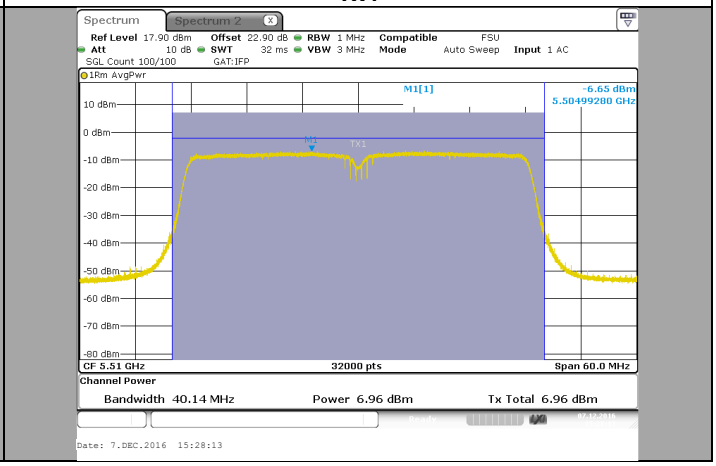
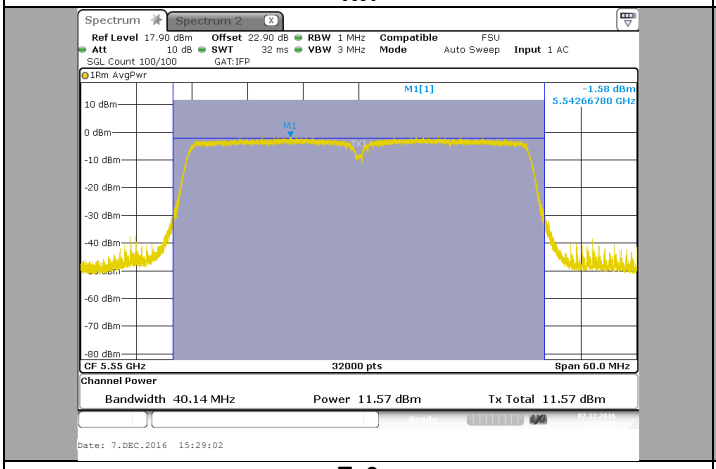
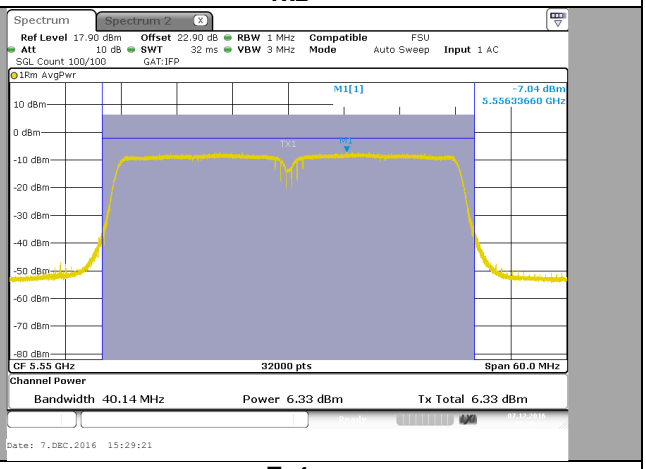
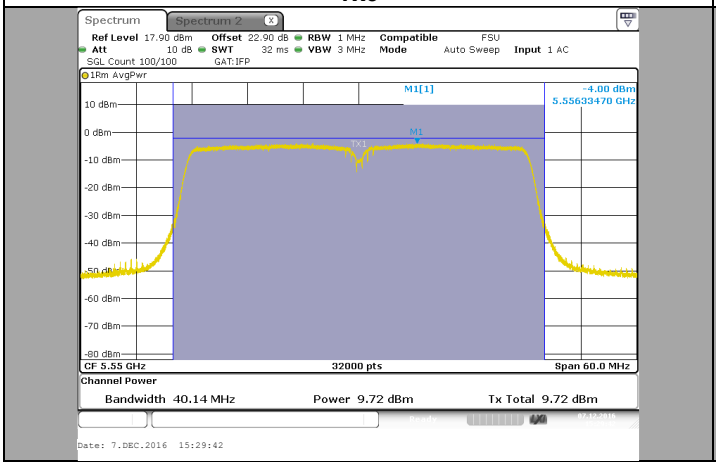
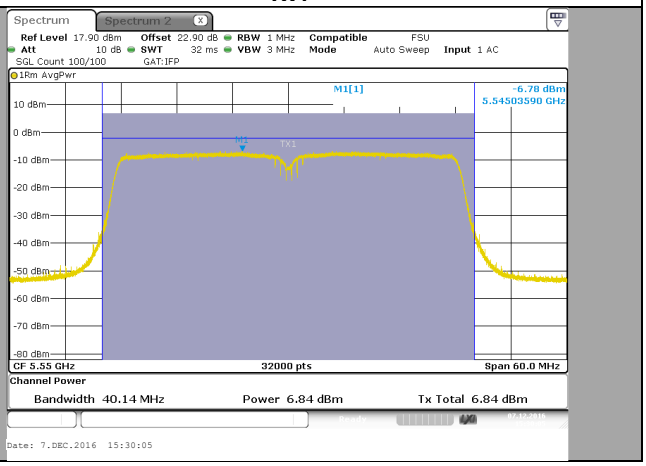
C18	
Tx1	Tx2
	
Tx3	Tx4
	

802.1111n HT40/ac VHT40	
C19	
Tx1	Tx2
	
Tx3	Tx4
	

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C20	
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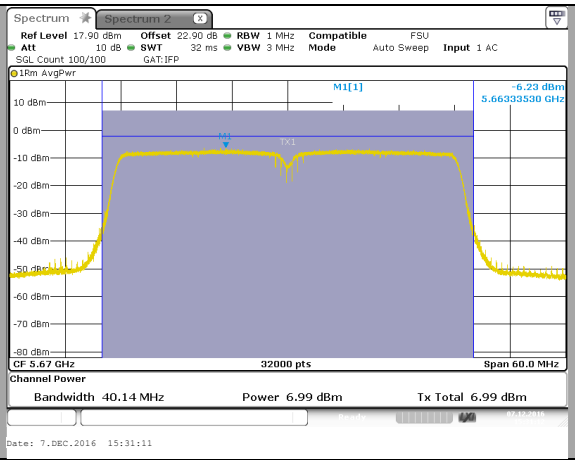
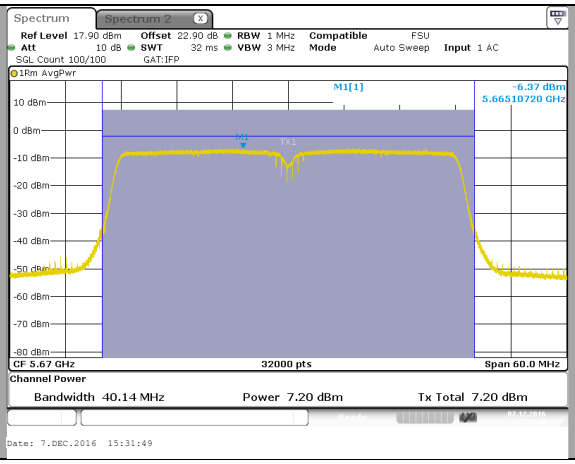
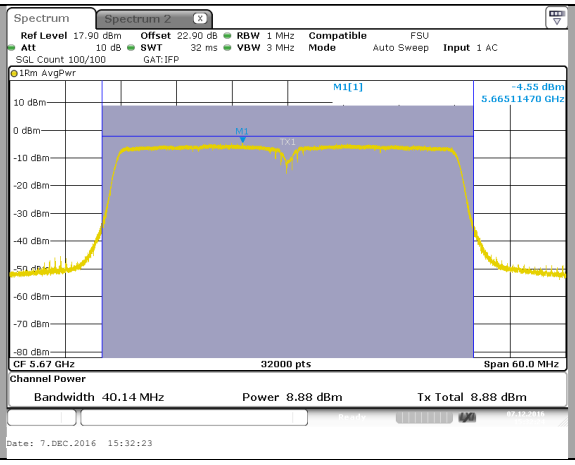
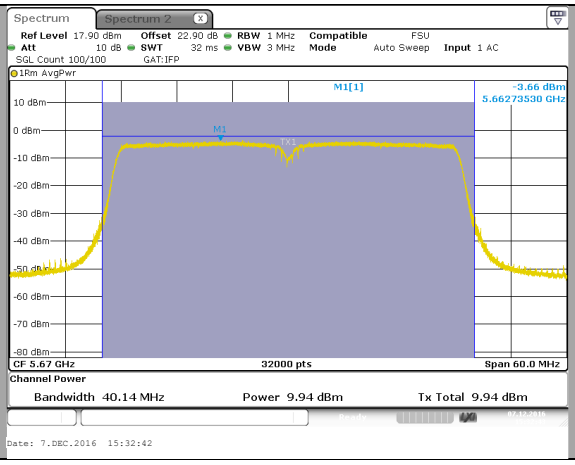
	
Tx3	Tx4
	

802.1111n HT40/ac VHT40	
C21 Straddle 5470MHz-5725MHz	
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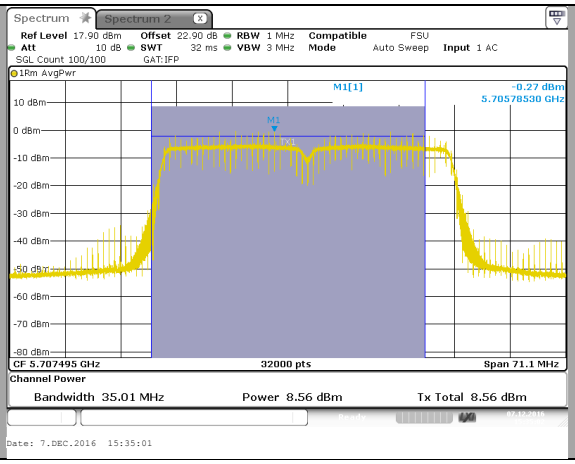
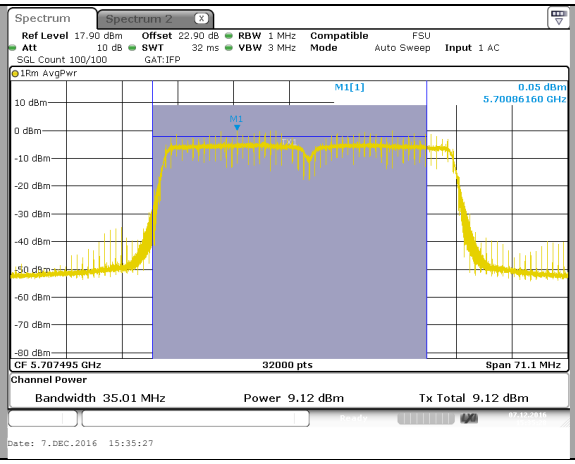
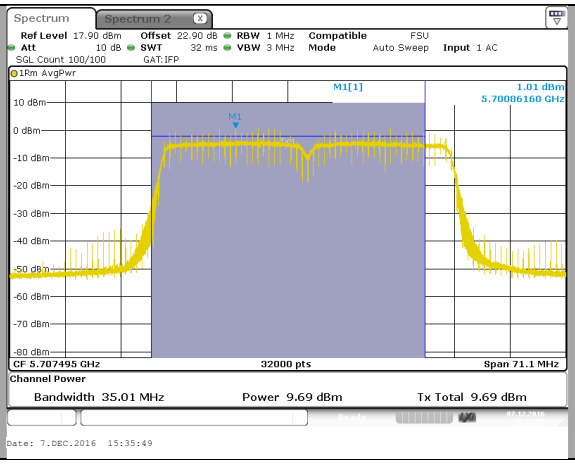
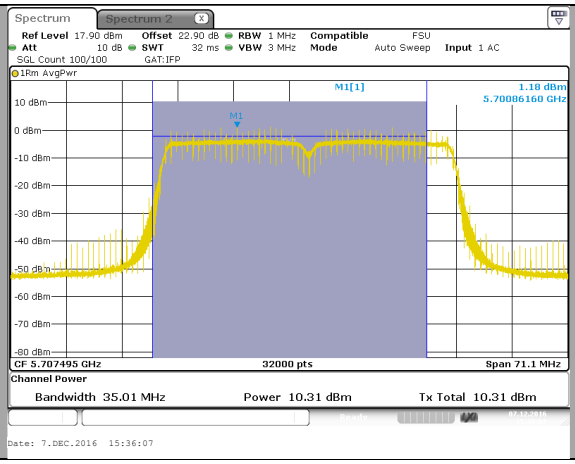
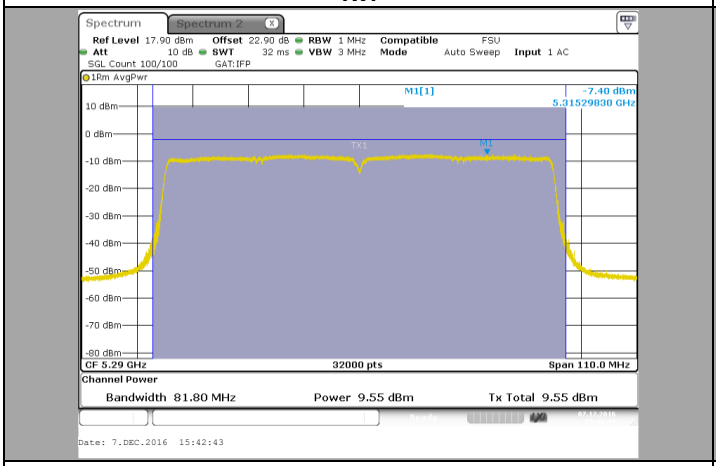
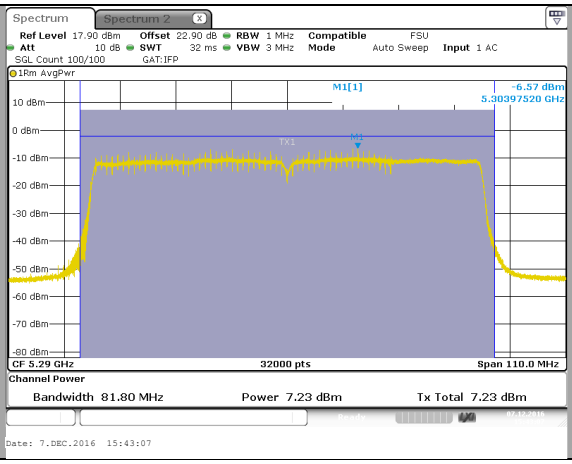
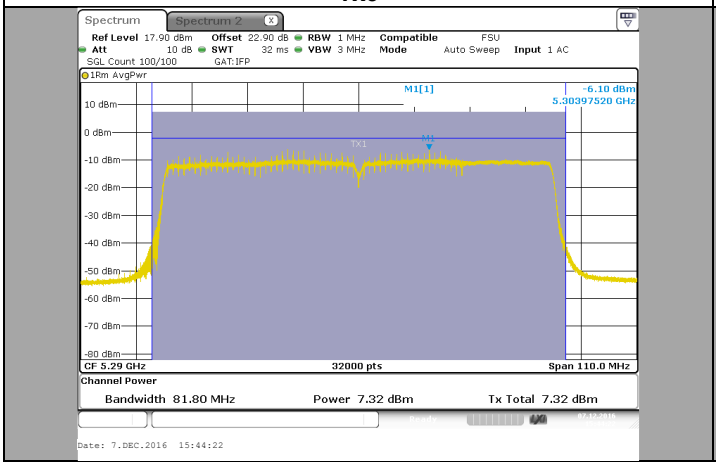
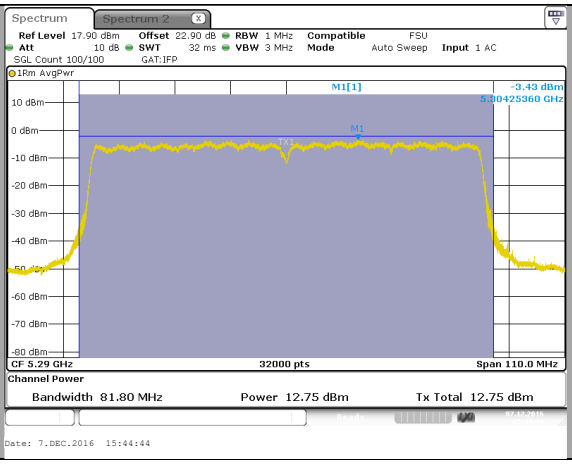
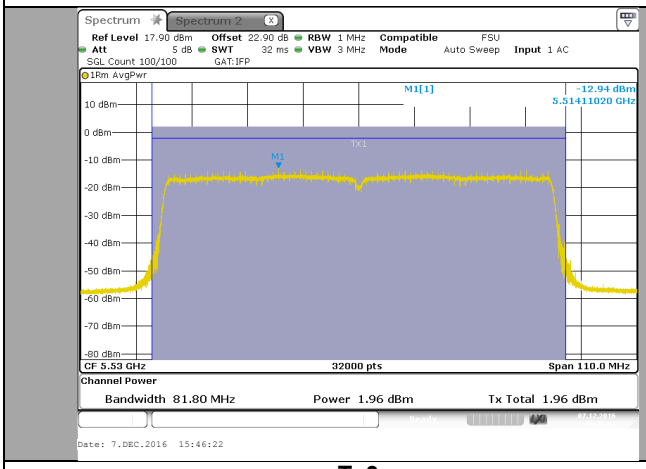
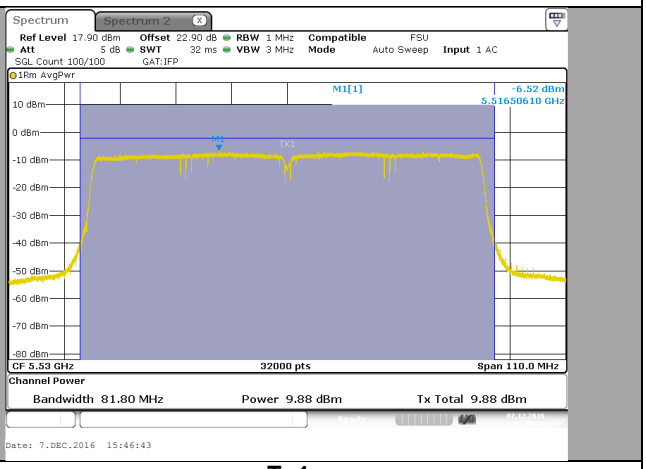
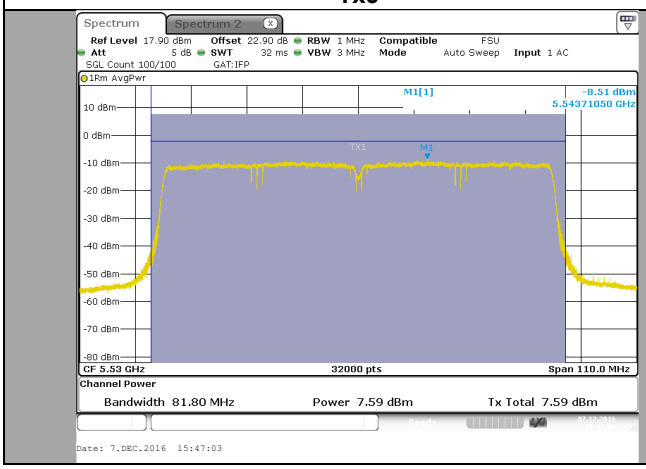
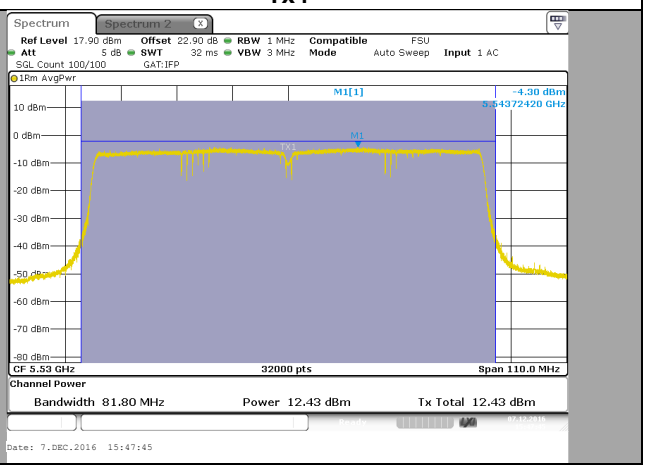
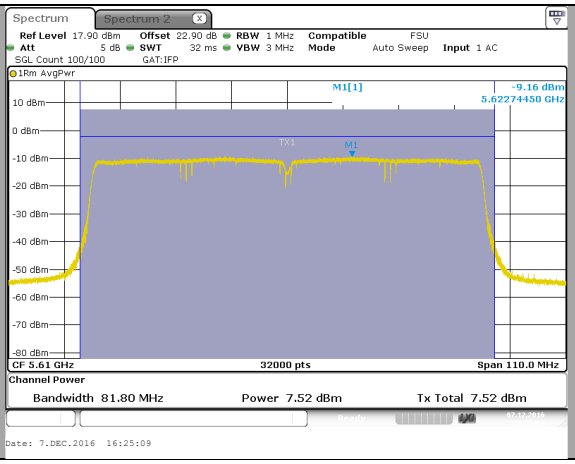
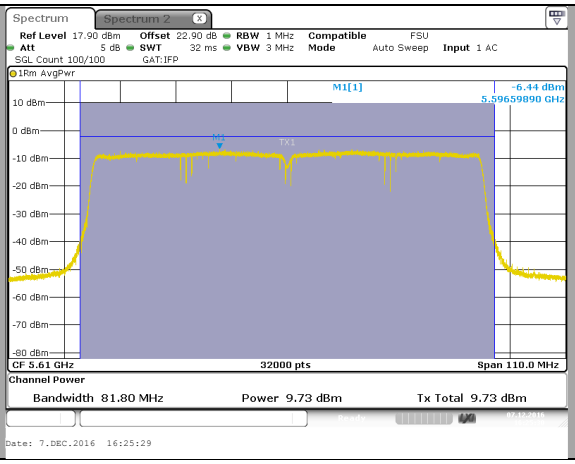
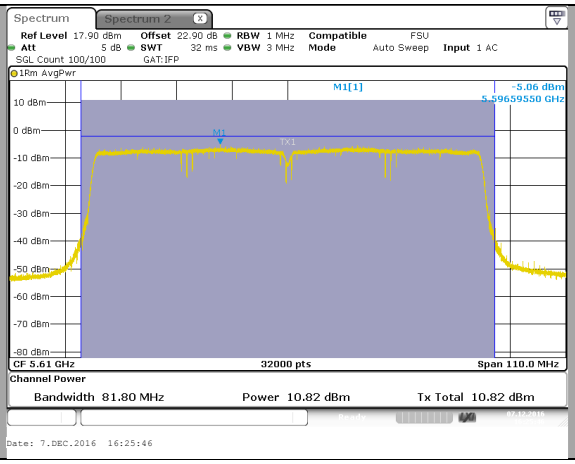
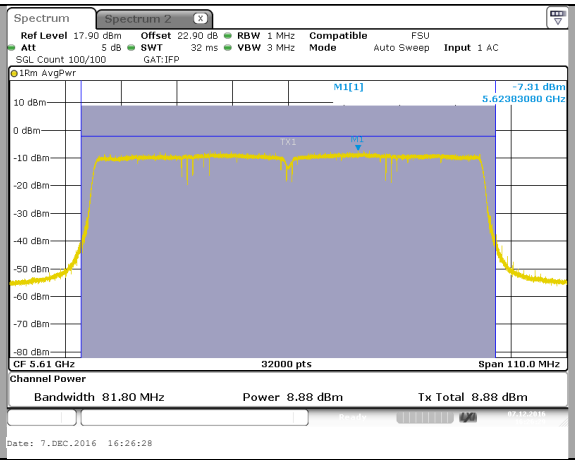
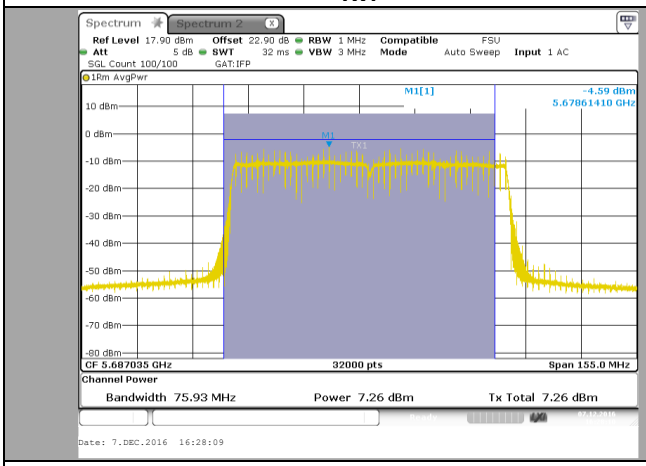
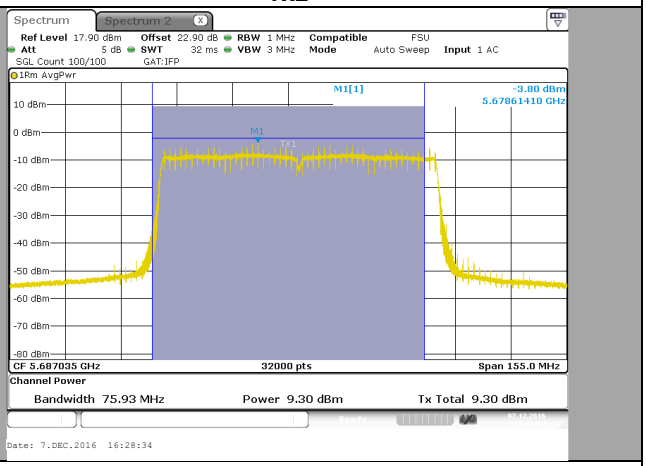
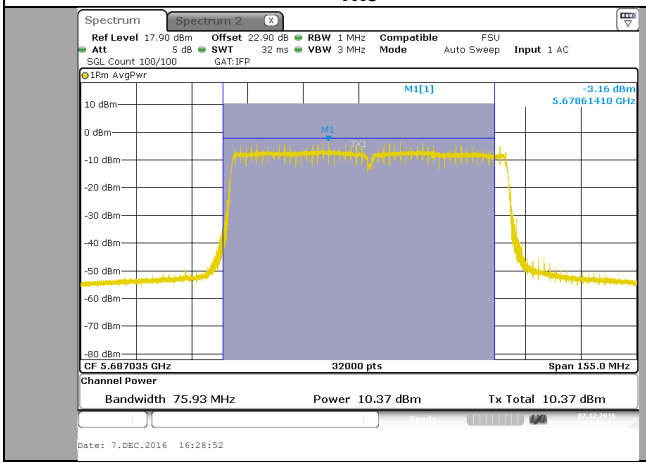
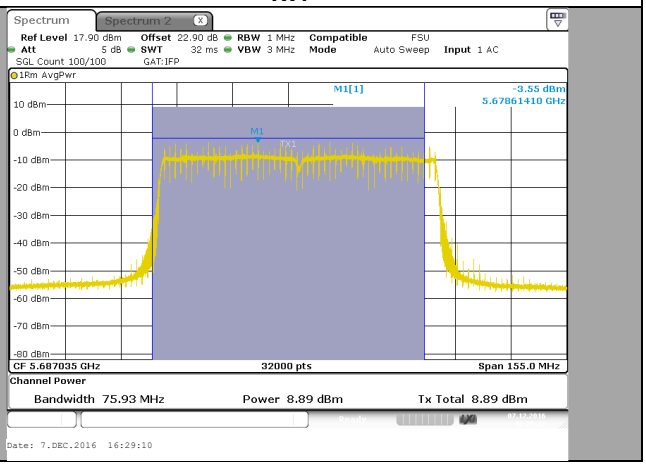
	
Tx3	Tx4
	

802.11ac VHT80	
C25	
Tx1	Tx2
	
Tx3	Tx4
	

802.11ac VHT80	
C26	
Tx1	Tx2
	
Tx3	Tx4
	

802.11ac VHT80	
C27	
Tx1	Tx2
	
Tx3	Tx4
	

802.11ac VHT80	
C28 Straddle 5470MHz-5725MHz	
Tx1	Tx2
	
Tx3	Tx4
	

802.11n HT20/ac VHT20

Channel	Tx1 (dBm)	Tx2 (dBm)	Tx3 (dBm)	Tx4 (dBm)	TxAll (dBm)	AG (dBi)	TPC Min (dBm)	TPC Min Limit (dBm)
C4	6,33	6,9	3,41	11,59	14,1	8,0	22,1	24
C5	7,38	7,17	4,56	11,19	14,3	8,0	22,3	24
C6	7,42	7,47	4,02	12,38	14,9	8,0	22,9	24
C7	8,66	10,34	8,51	5,52	14,6	8,0	22,6	24
C8	6,99	10,51	8,83	6,5	14,5	8,0	22,5	24
C9	1,36	3,74	3,63	8,7	11,3	8,0	19,3	24
C10 Straddle 5470MHz-5725MHz	5,89	7,05	6,83	10,83	14,1	8,0	22,1	24

802.11n HT40/ac VHT40

Channel	Tx1 (dBm)	Tx2 (dBm)	Tx3 (dBm)	Tx4 (dBm)	TxAll (dBm)	AG (dBi)	TPC Min (dBm)	TPC Min Limit (dBm)
C16	7,71	9,45	9,49	10,99	15,6	8,0	23,6	24
C17	7,81	9,68	9,97	11,02	15,8	8,0	23,8	24
C18	11,64	6,5	9,94	6,96	15,3	8,0	23,3	24
C19	11,57	6,33	9,72	6,84	15,2	8,0	23,2	24
C20	6,99	7,2	8,88	9,94	14,4	8,0	22,4	24
C21 Straddle 5470MHz-5725MHz	8,56	9,12	9,69	10,31	15,5	8,0	23,5	24

802.11ac VHT80

Channel	Tx1 (dBm)	Tx2 (dBm)	Tx3 (dBm)	Tx4 (dBm)	TxAll (dBm)	AG (dBi)	TPC Min (dBm)	TPC Min Limit (dBm)
C25	9,55	7,23	7,32	12,75	15,9	8,0	23,9	24
C26	1,96	9,88	7,59	12,43	15,4	8,0	23,4	24
C27	7,52	9,73	10,82	8,88	15,4	8,0	23,4	24
C28 Straddle 5470MHz-5725MHz	7,26	9,3	10,37	8,89	15,1	8,0	23,1	24

9.4. CONCLUSION

Transmit Power Control measurement performed on the sample of the product **SAGEMCOM TheBox (253697282)**, SN: **616400107098** in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.407** limits.