AC Line Conducted Emissions (Graph)

Test Mode: U-NII 2A & 802.11ac VHT20 & MIMO(CDD) & 5320 MHz

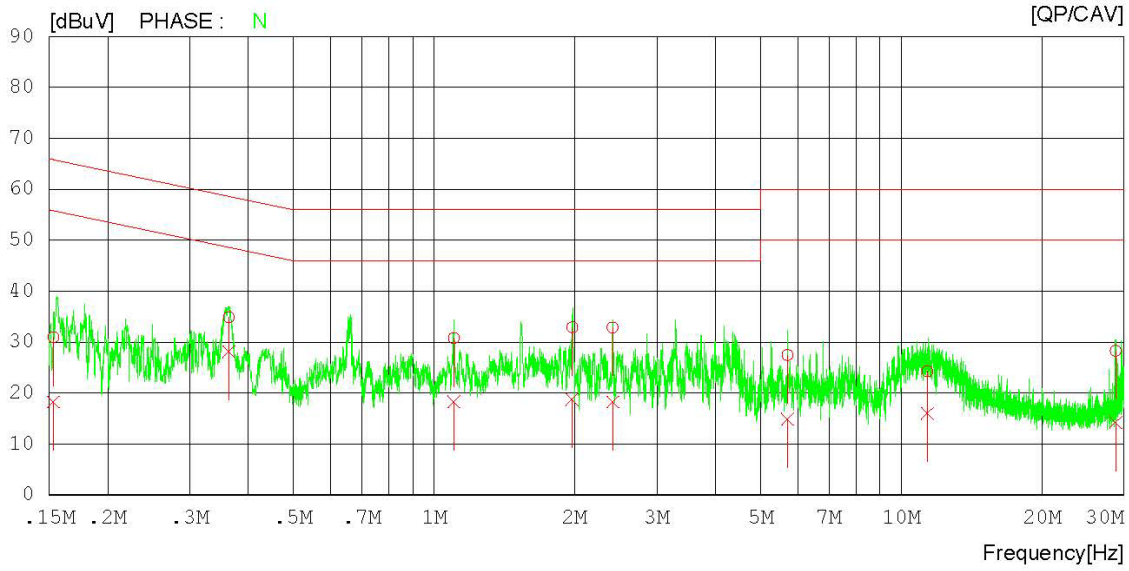
Results of Conducted Emission

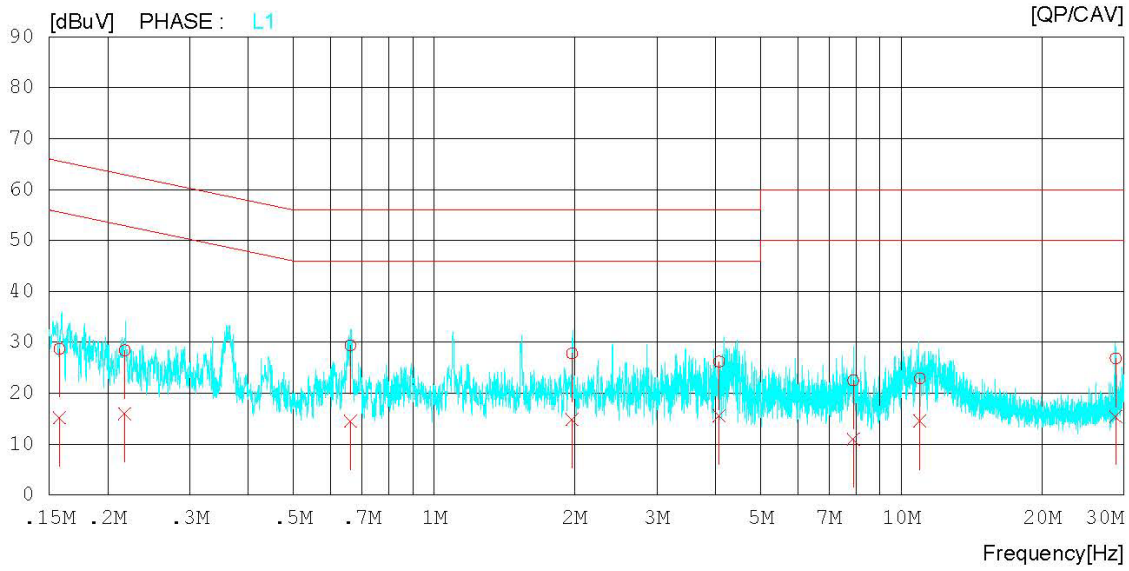
DTNC Date 2018-09-13

Order No.		Referrence No.	
Model No.	KX1801	Power Supply	120 V / 60Hz
Serial No.		Temp/Humi.	25 'C / 45 %
Test Condition	5.3GHz	Operator	Sungeun Lee

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV





AC Line Conducted Emissions (Data List)

Test Mode: U-NII 2A & 802.11ac VHT20 & MIMO(CDD) & 5320 MHz

Results of Conducted Emission

DTNC Date 2018-09-13

Order No.		Referrence No.	
Model No.	KX1801	Power Supply	120 V / 60Hz
Serial No.		Temp/Humi.	25 'C / 45 %
Test Condition	5.3GHz	Operator	Sungeun Lee

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV

NO	FREQ	READING QP	READING CAV	C.FACTOR	RESULT QP	RESULT CAV	LIMIT QP	LIMIT CAV	MARGIN QP	MARGIN CAV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.15320	20.73	8.00	10.26	30.99	18.26	65.82	55.82	34.83	37.56	N
2	0.36355	24.90	18.09	10.02	34.92	28.11	58.65	48.65	23.73	20.54	N
3	1.10220	20.74	8.25	10.05	30.79	18.30	56.00	46.00	25.21	27.70	N
4	1.97640	22.79	8.67	10.10	32.89	18.77	56.00	46.00	23.11	27.23	N
5	2.41160	22.74	8.13	10.12	32.86	18.25	56.00	46.00	23.14	27.75	N
6	5.70700	17.23	4.68	10.22	27.45	14.90	60.00	50.00	32.55	35.10	N
7	11.38040	13.88	5.61	10.38	24.26	15.99	60.00	50.00	35.74	34.01	N
8	28.76460	17.60	3.54	10.69	28.29	14.23	60.00	50.00	31.71	35.77	N
9	0.15778	18.51	5.00	10.21	28.72	15.21	65.58	55.58	36.86	40.37	L1
10	0.21765	18.45	6.02	9.97	28.42	15.99	62.91	52.91	34.49	36.92	L1
11	0.66202	19.39	4.53	10.00	29.39	14.53	56.00	46.00	26.61	31.47	L1
12	1.97360	17.73	4.84	10.06	27.79	14.90	56.00	46.00	28.21	31.10	L1
13	4.07580	16.10	5.42	10.13	26.23	15.55	56.00	46.00	29.77	30.45	L1
14	7.89660	12.28	0.74	10.25	22.53	10.99	60.00	50.00	37.47	39.01	L1
15	10.96720	12.59	4.23	10.32	22.91	14.55	60.00	50.00	37.09	35.45	L1
16	28.77640	16.21	4.81	10.63	26.84	15.44	60.00	50.00	33.16	34.56	L1

AC Line Conducted Emissions (Graph)

Test Mode: U-NII 2C & 802.11ac VHT20 & MIMO(CDD) & 5500 MHz

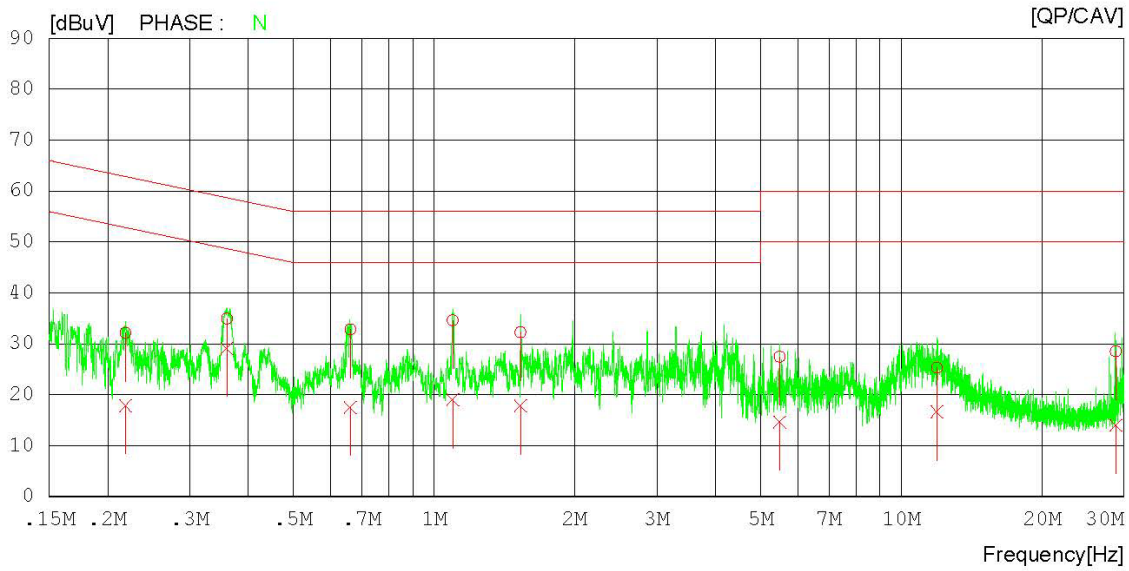
Results of Conducted Emission

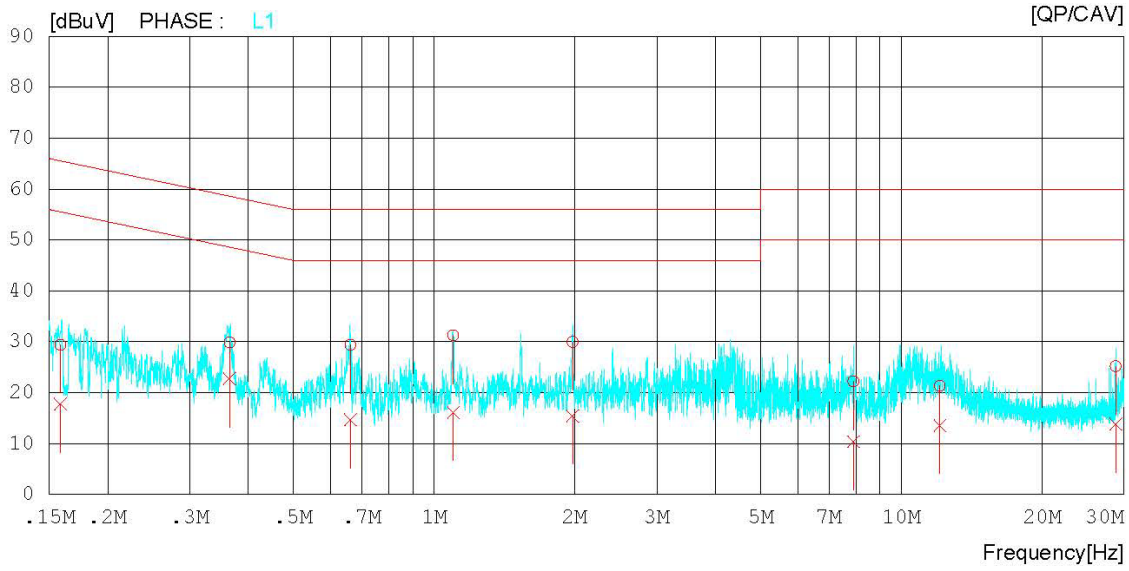
DTNC Date 2018-09-13

Order No.		Referrence No.	
Model No.	KX1801	Power Supply	120 V / 60Hz
Serial No.		Temp/Humi.	25 'C / 45 %
Test Condition	5.5GHz	Operator	Sungeun Lee

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV





AC Line Conducted Emissions (Data List)

Test Mode: U-NII 2C & 802.11ac VHT20 & MIMO(CDD) & 5500 MHz

Results of Conducted Emission

DTNC Date 2018-09-13

Order No.		Referrence No.	
Model No.	KX1801	Power Supply	120 V / 60Hz
Serial No.		Temp/Humi.	25 'C / 45 %
Test Condition	5.5GHz	Operator	Sungeun Lee

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV

NO	FREQ	READING QP	READING CAV	C.FACTOR	RESULT QP	RESULT CAV	LIMIT QP	LIMIT CAV	MARGIN QP	MARGIN CAV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.21842	22.17	7.87	9.99	32.16	17.86	62.88	52.88	30.72	35.02	N
2	0.36051	24.92	19.09	10.02	34.94	29.11	58.72	48.72	23.78	19.61	N
3	0.66158	22.82	7.50	10.04	32.86	17.54	56.00	46.00	23.14	28.46	N
4	1.09600	24.56	8.99	10.05	34.61	19.04	56.00	46.00	21.39	26.96	N
5	1.53120	22.21	7.73	10.08	32.29	17.81	56.00	46.00	23.71	28.19	N
6	5.49260	17.20	4.42	10.22	27.42	14.64	60.00	50.00	32.58	35.36	N
7	11.92180	14.90	6.25	10.39	25.29	16.64	60.00	50.00	34.71	33.36	N
8	28.76900	17.85	3.31	10.69	28.54	14.00	60.00	50.00	31.46	36.00	N
9	0.15849	19.21	7.57	10.20	29.41	17.77	65.54	55.54	36.13	37.77	L1
10	0.36479	19.83	12.75	9.98	29.81	22.73	58.62	48.62	28.81	25.89	L1
11	0.66227	19.36	4.67	10.00	29.36	14.67	56.00	46.00	26.64	31.33	L1
12	1.09980	21.25	6.10	10.02	31.27	16.12	56.00	46.00	24.73	29.88	L1
13	1.97900	19.87	5.36	10.06	29.93	15.42	56.00	46.00	26.07	30.58	L1
14	7.89660	11.96	0.13	10.25	22.21	10.38	60.00	50.00	37.79	39.62	L1
15	12.10660	10.99	3.24	10.34	21.33	13.58	60.00	50.00	38.67	36.42	L1
16	28.78240	14.54	3.19	10.63	25.17	13.82	60.00	50.00	34.83	36.18	L1

AC Line Conducted Emissions (Graph)

Test Mode: U-NII 2C & 802.11ac VHT20 & MIMO(CDD) & 5745 MHz

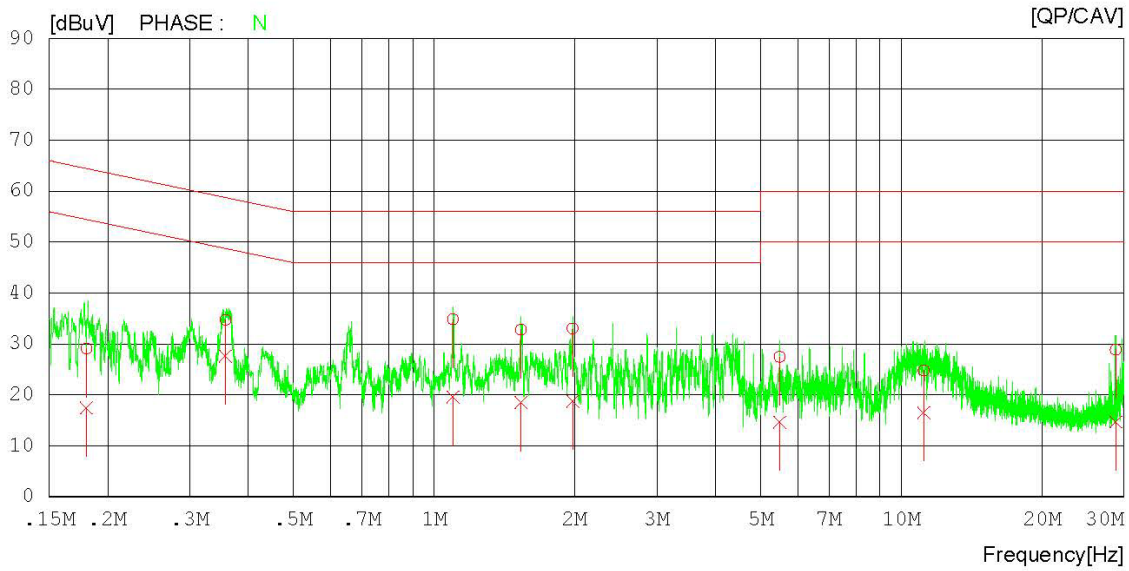
Results of Conducted Emission

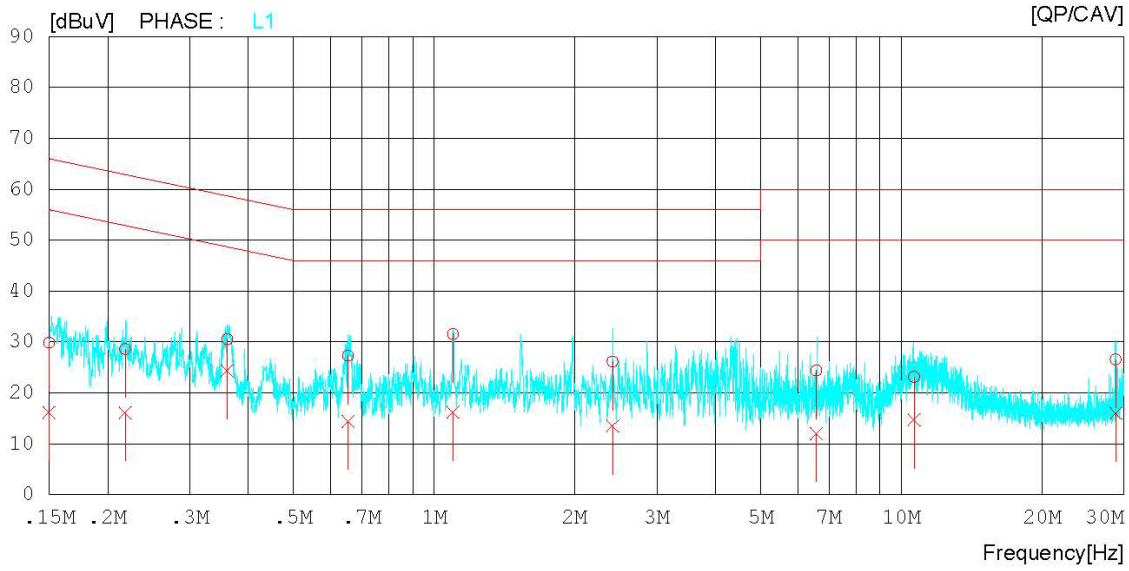
DTNC Date 2018-09-13

Order No.		Referrence No.	
Model No.	KX1801	Power Supply	120 V / 60Hz
Serial No.		Temp/Humi.	25 'C / 45 %
Test Condition	5.7GHz	Operator	Sungeun Lee

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV





AC Line Conducted Emissions (Data List)

Test Mode: U-NII 2C & 802.11ac VHT20 & MIMO(CDD) & 5745 MHz

Results of Conducted Emission

DTNC Date 2018-09-13

Order No.		Referrence No.	
Model No.	KX1801	Power Supply	120 V / 60Hz
Serial No.		Temp/Humi.	25 'C / 45 %
Test Condition	5.7GHz	Operator	Sungeun Lee

Memo

LIMIT : FCC P15.207 QP
FCC P15.207 AV

NO	FREQ	READING QP	READING CAV	C.FACTOR	RESULT QP	RESULT CAV	LIMIT QP	LIMIT CAV	MARGIN QP	MARGIN CAV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.18026	18.98	7.34	10.11	29.09	17.45	64.47	54.47	35.38	37.02	N
2	0.35801	24.70	17.60	10.02	34.72	27.62	58.77	48.77	24.05	21.15	N
3	1.09740	24.80	9.54	10.05	34.85	19.59	56.00	46.00	21.15	26.41	N
4	1.53500	22.69	8.40	10.08	32.77	18.48	56.00	46.00	23.23	27.52	N
5	1.97900	22.95	8.65	10.10	33.05	18.75	56.00	46.00	22.95	27.25	N
6	5.49060	17.22	4.41	10.22	27.44	14.63	60.00	50.00	32.56	35.37	N
7	11.17020	14.36	6.12	10.38	24.74	16.50	60.00	50.00	35.26	33.50	N
8	28.76940	18.19	4.00	10.69	28.88	14.69	60.00	50.00	31.12	35.31	N
9	0.15000	19.61	5.90	10.25	29.86	16.15	66.00	56.00	36.14	39.85	L1
10	0.21813	18.64	6.17	9.97	28.61	16.14	62.89	52.89	34.28	36.75	L1
11	0.36077	20.52	14.31	9.98	30.50	24.29	58.71	48.71	28.21	24.42	L1
12	0.65441	17.27	4.40	10.00	27.27	14.40	56.00	46.00	28.73	31.60	L1
13	1.09740	21.55	6.18	10.02	31.57	16.20	56.00	46.00	24.43	29.80	L1
14	2.41000	16.03	3.42	10.09	26.12	13.51	56.00	46.00	29.88	32.49	L1
15	6.58420	14.19	1.80	10.20	24.39	12.00	60.00	50.00	35.61	38.00	L1
16	10.65600	12.80	4.41	10.31	23.11	14.72	60.00	50.00	36.89	35.28	L1
17	28.77620	15.92	5.39	10.63	26.55	16.02	60.00	50.00	33.45	33.98	L1

9. LIST OF TEST EQUIPMENT

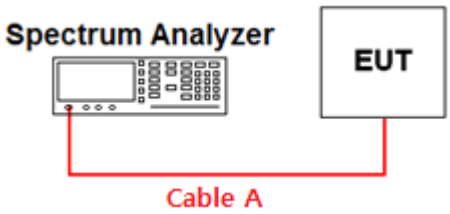
Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	18/07/06	19/07/06	US47360812
Spectrum Analyzer	Agilent Technologies	N9020A	18/01/03	19/01/03	MY48011700
Spectrum Analyzer	Agilent Technologies	N9030A	18/07/09	19/07/09	MY53310140
Multimeter	FLUKE	17B	17/12/26	18/12/26	26030065WS
Temp & Humi	SJ Science	SJ-TH-S50	18/07/06	19/07/06	U5542113
DC Power Supply	Agilent Technologies	66332A	17/12/27	18/12/27	US37473833
Signal Generator	Rohde Schwarz	SMBV100A	17/12/27	18/12/27	255571
Signal Generator	ANRITSU	MG3695C	18/02/12	19/02/12	173501
DIGITAL HUMIDITY/TEMPERATURE/BAROMETER	ACURITE	02010	18/08/06	19/08/06	N/A
Thermohygrometer	BODYCOM	BJ5478	18/07/09	19/07/09	N/A
Thermohygrometer	BODYCOM	BJ5478	1801/03	19/01/03	120612-1
HYGROMETER	TESTO	608-H1	18/02/10	19/02/10	34862883
Loop Antenna	Schwarzbeck	FMZB1513	18/01/30	20/01/30	1513-128
BILOG ANTENNA	Schwarzbeck	VULB 9160	18/07/13	20/07/13	3359
Horn Antenna	ETS-Lindgren	3115	17/01/13	19/01/13	9202-3820
Horn Antenna	Schwarzbeck	BBHA 9120C	17/12/04	19/12/04	9120C-561
Horn Antenna	A.H.Systems Inc.	SAS-574	17/07/31	19/07/31	155
PreAmplifier	tsj	MLA-10K01-B01-27	18/01/11	19/01/11	2005354
PreAmplifier	tsj	MLA-0118-J01-45	18/02/08	19/02/08	17138
PreAmplifier	tsj	MLA-1840-J02-45	18/07/06	19/07/06	16966-10728
Attenuator	SMAJK	SMAJK-2-3	18/07/04	19/07/04	4
Attenuator	SMAJK	SMAJK-50-10	18/07/03	19/07/03	3-50-10
Attenuator	SMAJK	SMAJK-2-3	18/07/02	19/07/02	3
Attenuator	Aeroflex/Weinschel	56-3	18/07/02	19/07/02	Y2370
Attenuator	SRTechnology	F01-B0606-01	18/07/02	19/07/02	13092403
Attenuator	Hefei Shunze	SS5T2.92-10-40	18/07/03	19/07/03	16012202
High Pass Filter	Wainwright Instruments	WHNX8.0/26.5-6SS	18/07/02	19/07/02	3
High Pass Filter	Wainwright Instruments	WHKX12-935-1000-15000-40SS	18/07/02	19/07/02	8
High Pass Filter	Wainwright Instruments	WHKX10-2838-3300-18000-60SS	18/07/02	19/07/02	1
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2496A MA2411B	17/12/27	18/12/27	1338004 1249303
Attenuator	SMAJK	SMAJK-50-10	18/07/04	19/07/04	2-50-10
EMI Test Receiver	Rohde Schwarz	ESR7	18/02/13	19/02/13	101061
EMI Test Receiver	Rohde Schwarz	ESCI7	18/02/12	19/02/12	100910
PULSE LIMITER	Rohde Schwarz	ESH3-Z2	17/09/29	18/09/29	101333
LISN	SCHWARZBECK	NNLK 8121	18/03/20	19/03/20	06183
Cable	DT&C	CABLE	18/07/06	19/07/06	G-13
Cable	DT&C	CABLE	18/07/06	19/07/06	G-14
Cable	Junkosha	MWX241	18/06/25	19/06/25	G-04
Cable	Junkosha	MWX241	18/06/25	19/06/25	G-07
Cable	DT&C	CABLE	18/07/05	19/07/05	RF-82
Cable	HUBER+SUHNER	SUCOFLEX	17/12/22	18/12/22	C-1
Cable	HUBER+SUHNER	SUCOFLEX	17/12/22	18/12/22	C-2
Cable	HUBER+SUHNER	SUCOFLEX	17/12/22	18/12/22	C-3
Cable	HUBER+SUHNER	SUCOFLEX	17/12/22	18/12/22	C-4

Note 1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017
Note 2: The cable is not a regular calibration item, so it has been calibrated by DT & C itself.

APPENDIX I

Conducted Test set up Diagram

▪ Conducted Measurement



APPENDIX II

Duty Cycle Information

▣ Test Procedure

Duty Cycle [X = On Time / (On + Off time)] is measured using Measurement Procedure **of KDB789033 D02v02r01**

1. Set the center frequency of the spectrum analyzer to the center frequency of the transmission.
2. Set RBW ≥ EBW if possible; otherwise, set RBW to the largest available value.
3. Set VBW ≥ RBW. Set detector = peak.
4. Note : The zero-span measurement method shall not be used unless both **RBW and VBW are > 50/*T***, where *T* is defined in section II.B.1.a), and **the number of sweep points across duration *T* exceeds 100**. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if *T* ≤ 16.7 microseconds.)

   T : The minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
   (***T* = On time** of the above table since the EUT operates with above fixed Duty Cycle and it is the minimum On time)

▣ Test Results:

Duty cycle: Single

Mode	Data Rate	Tested Frequency [MHz]	Maximum Achievable Duty Cycle (*x*) = On / (On+Off)			Duty Cycle Correction Factor [dB]	50/*T* [kHz]
			On Time [ms]	(On+Off) Time [ms]	*x*		
802.11a	6Mbps	5180	2.03	2.06	98.25	0.08	24.67
802.11n (HT20)	MCS0	5180	1.88	1.92	97.92	0.10	26.55
802.11n (HT40)	MCS0	5190	1.27	1.31	97.25	0.13	39.31
802.11ac (VHT80)	MCS0	5210	1.17	1.21	96.85	0.14	42.74

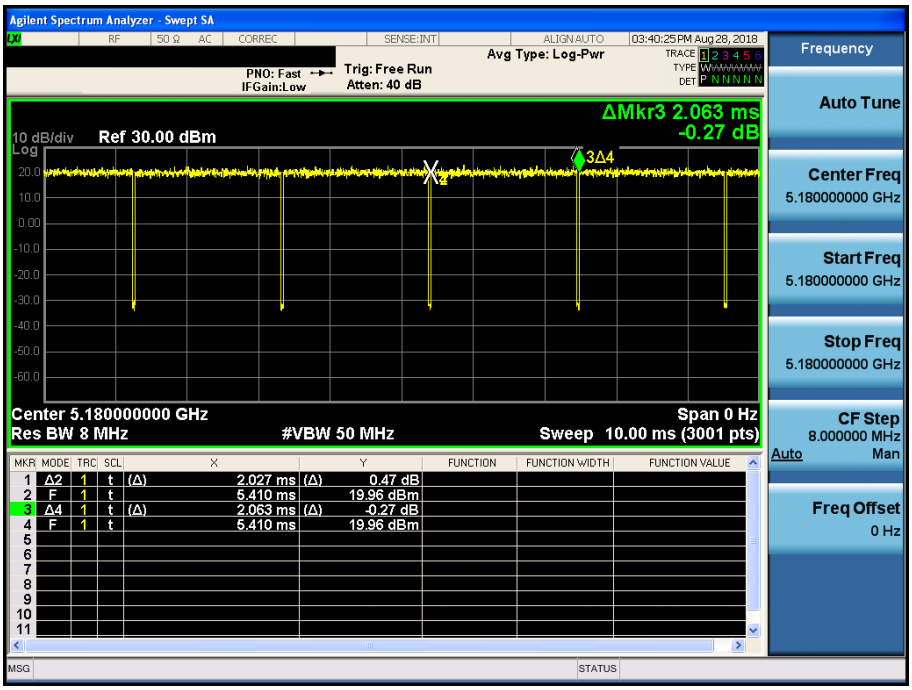
Duty cycle: SDM

Mode	Data Rate	Tested Frequency [MHz]	Maximum Achievable Duty Cycle (*x*) = On / (On+Off)			Duty Cycle Correction Factor [dB]	50/*T* [kHz]
			On Time [ms]	(On+Off) Time [ms]	*x*		
802.11n (HT20)	MCS0	5180	0.97	1.01	96.19	0.17	51.72
802.11ac (VHT40)	MCS8	5190	0.66	0.70	94.85	0.23	75.41
802.11ac (VHT80)	MCS0	5210	0.61	0.65	94.29	0.26	81.83

Single Transmit

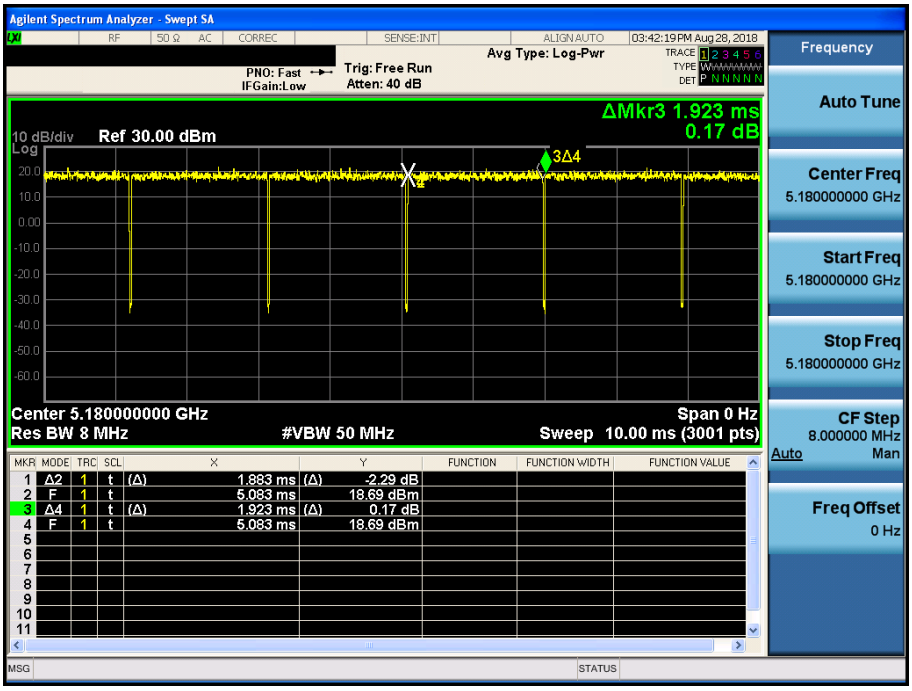
Duty Cycle

Test Mode: 802.11a & Ch.36

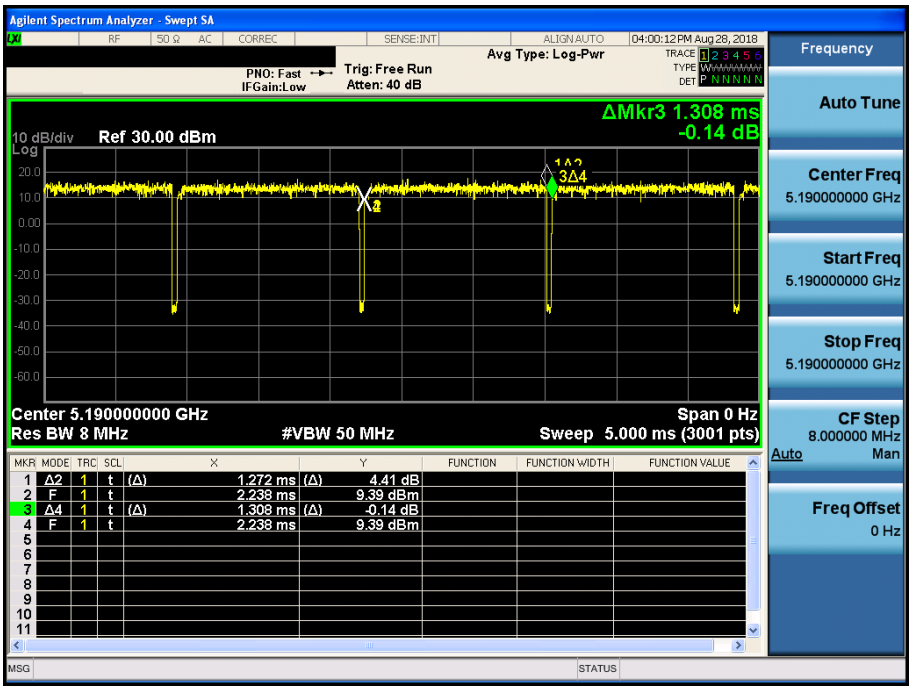


Duty Cycle

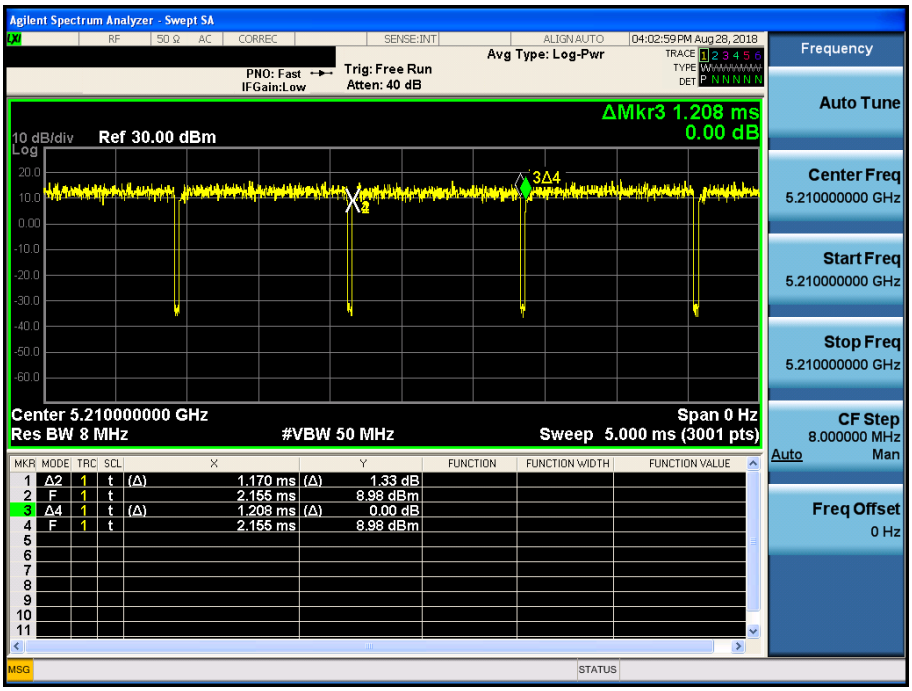
Test Mode: 802.11n HT20 & Ch.36



Duty Cycle Test Mode: 802.11n HT40 & Ch.38



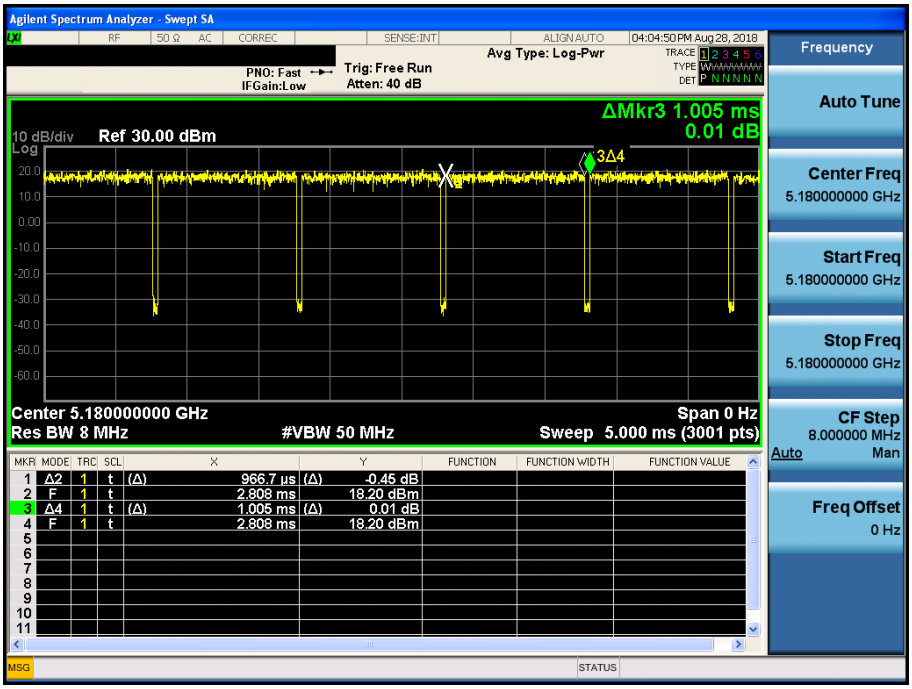
Duty Cycle Test Mode: 802.11ac VHT80 & Ch.42



Multiple Transmit _ SDM

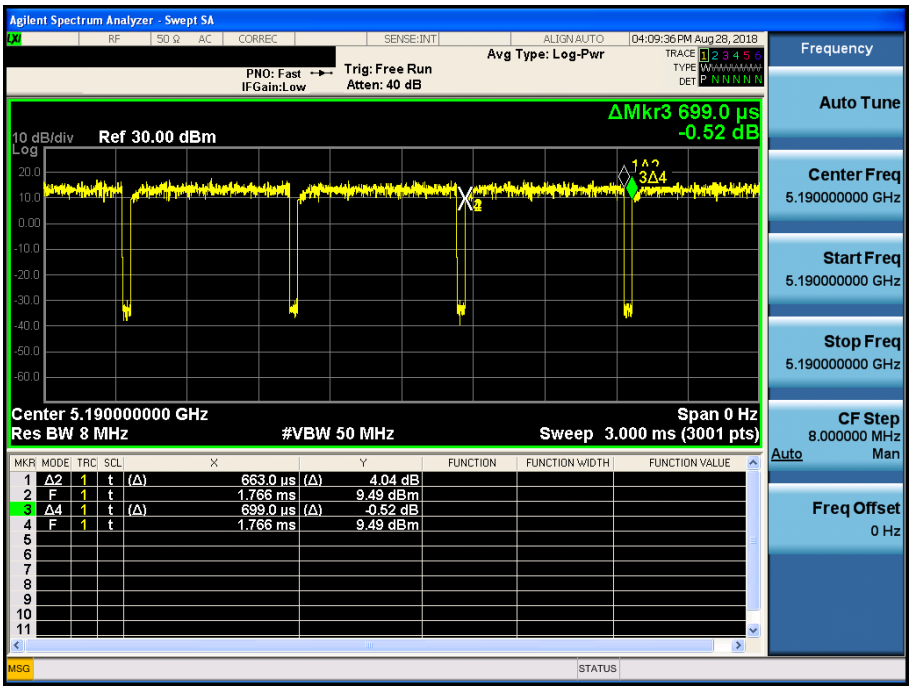
Duty Cycle

Test Mode: 802.11n HT20 & Ch.36

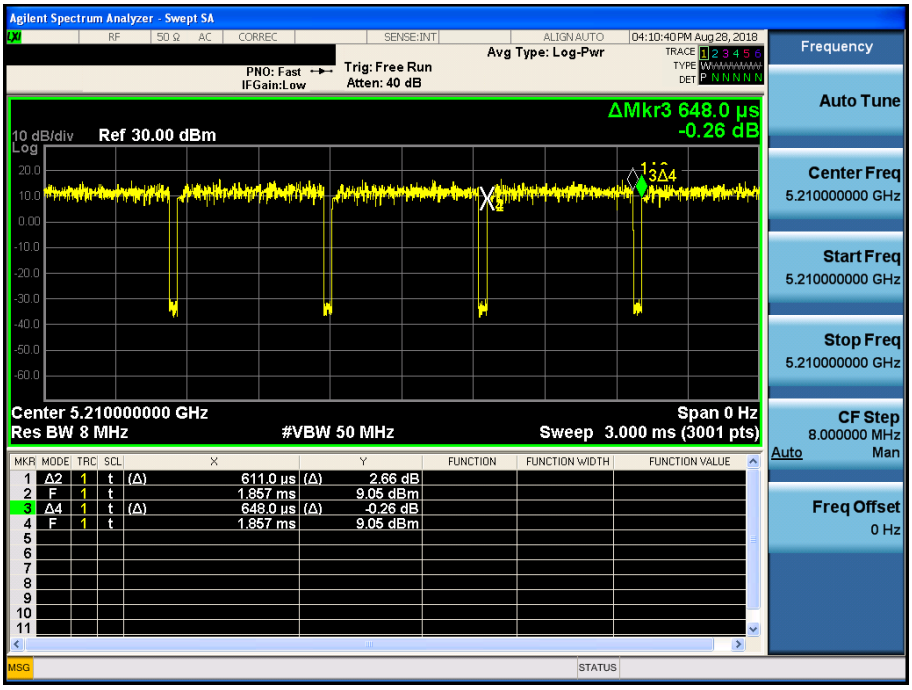


Duty Cycle

Test Mode: 802.11ac VHT40 & Ch.38



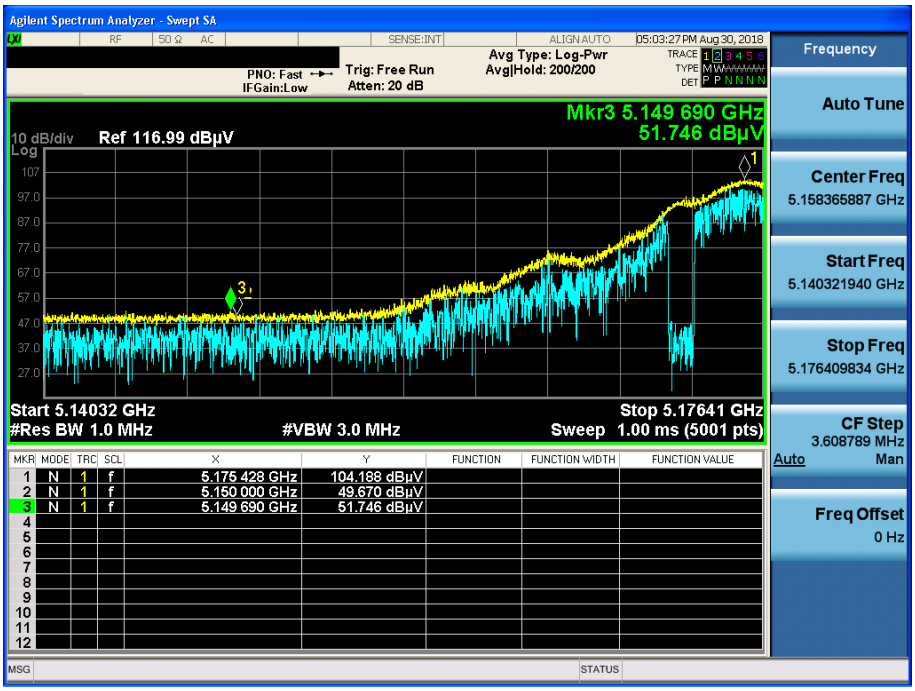
Duty Cycle Test Mode: 802.11ac VHT80 & Ch.42



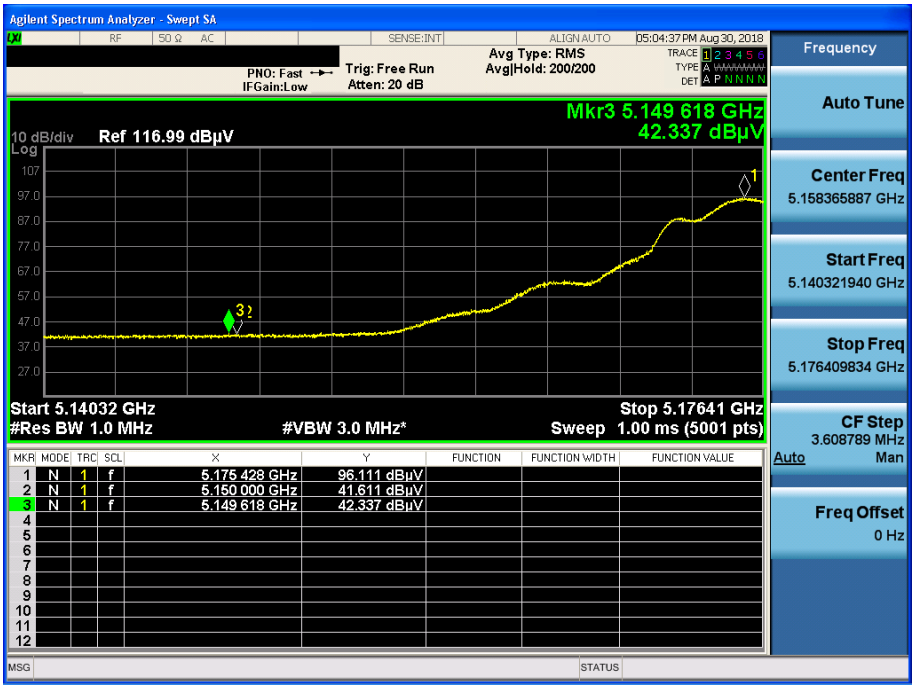
APPENDIX III

Unwanted Emissions (Radiated) Test Plot: MIMO(CDD)

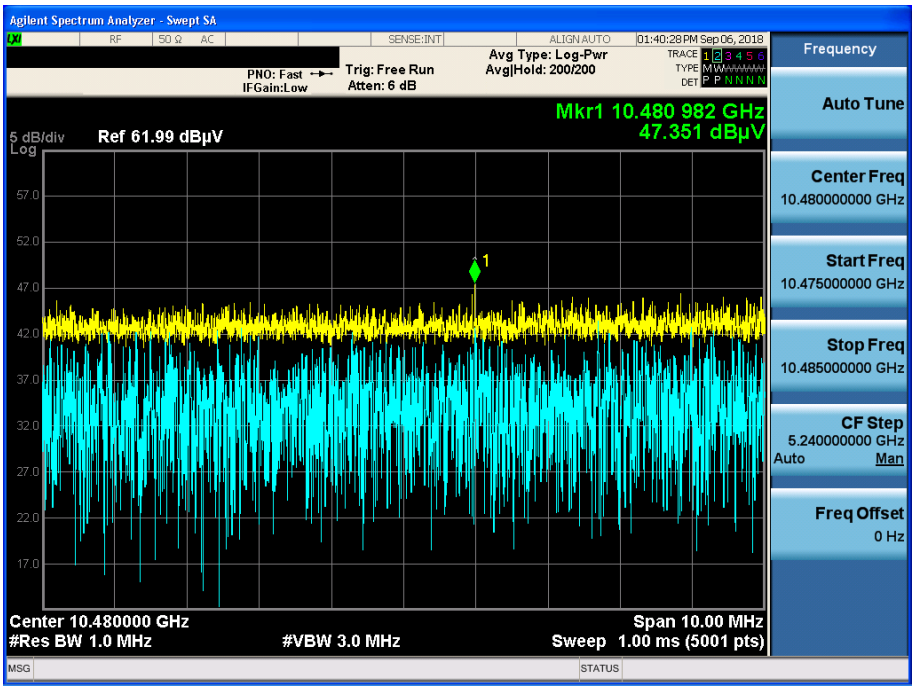
802.11a & U-NII 1 & Ch.36 & Y axis & Ver **Detector Mode : PK**



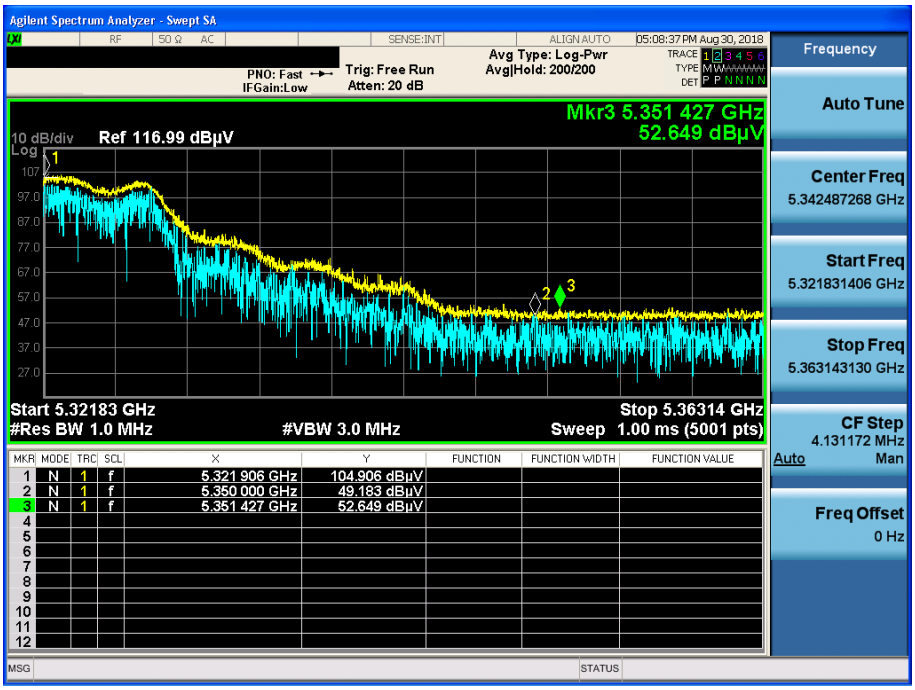
802.11a & U-NII 1 & Ch.36 & Y axis & Ver **Detector Mode : AV**



802.11a & U-NII 1 & Ch.48 & Y axis & Ver **Detector Mode : PK**

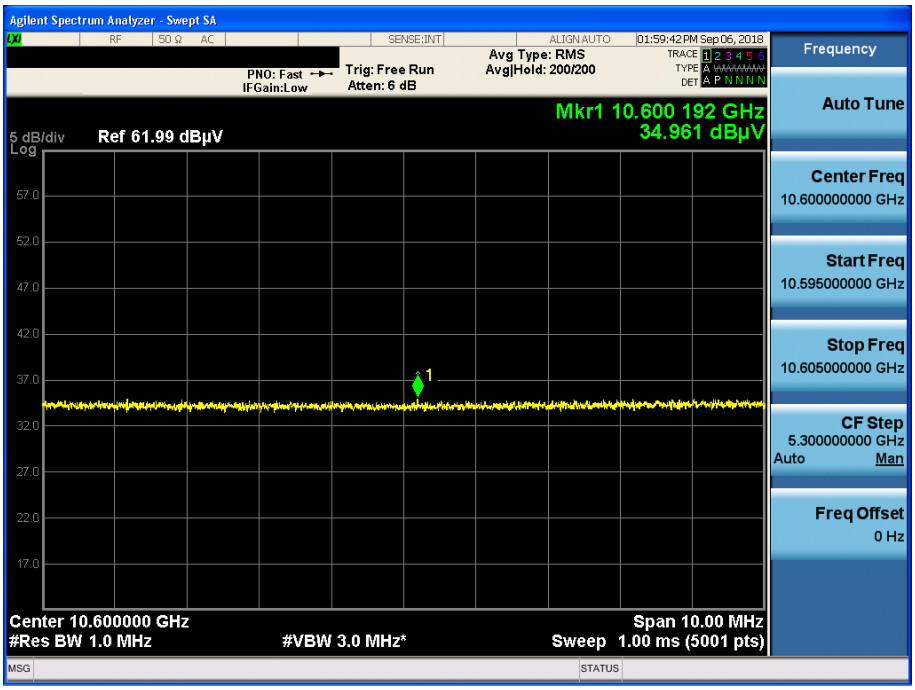


802.11a & U-NII 2A & Ch.64 & Y axis & Ver **Detector Mode : PK**

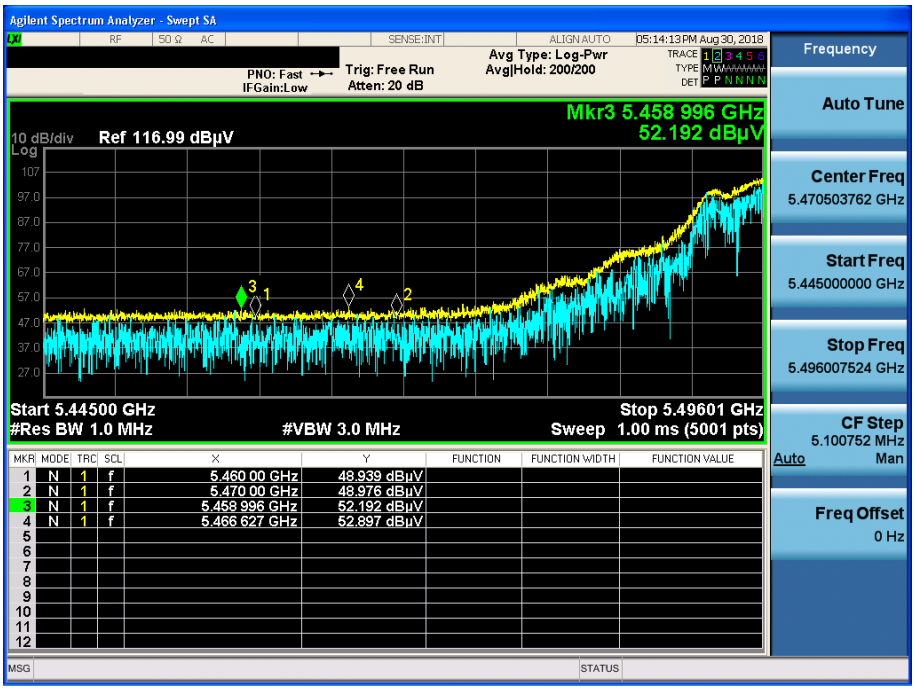


802.11a & U-NII 2A & Ch.64 & Y axis & Ver **Detector Mode : AV**

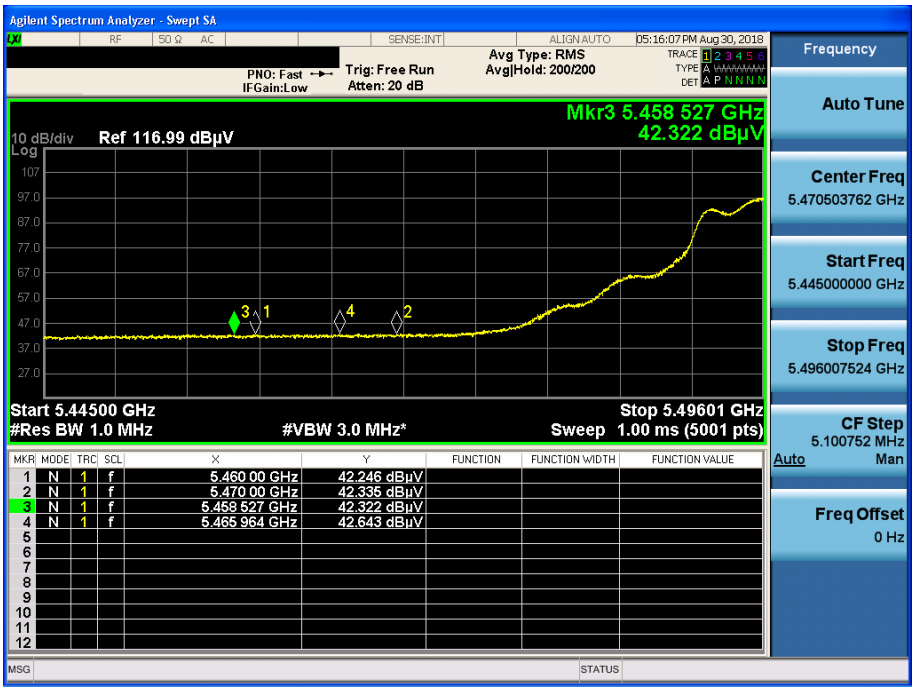
802.11a & U-NII 2A & Ch.60 & Y axis & Ver **Detector Mode : AV**



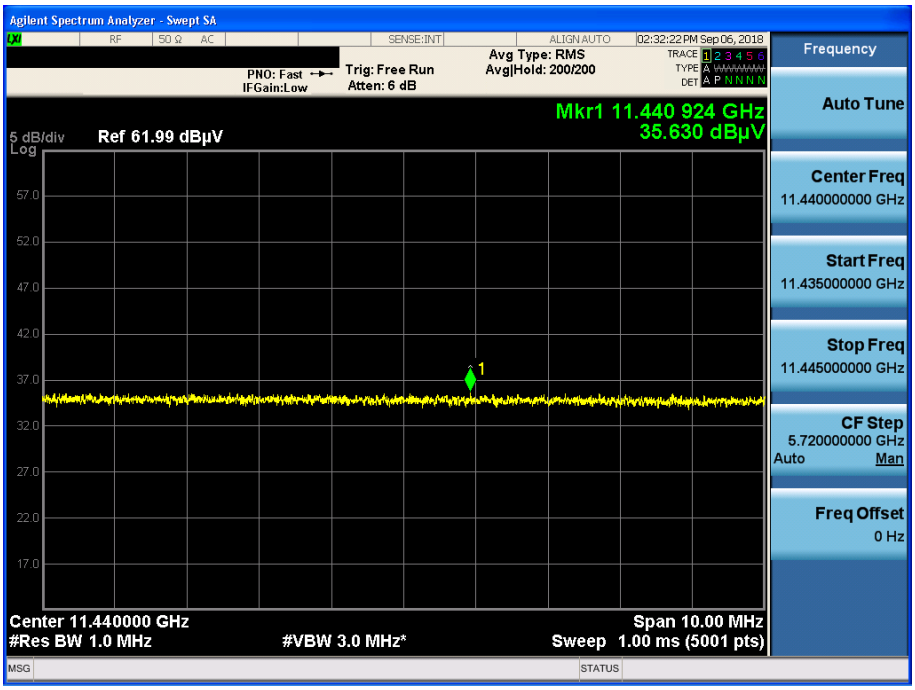
802.11a & U-NII 2C & Ch.100 & Y axis & Ver **Detector Mode : PK**



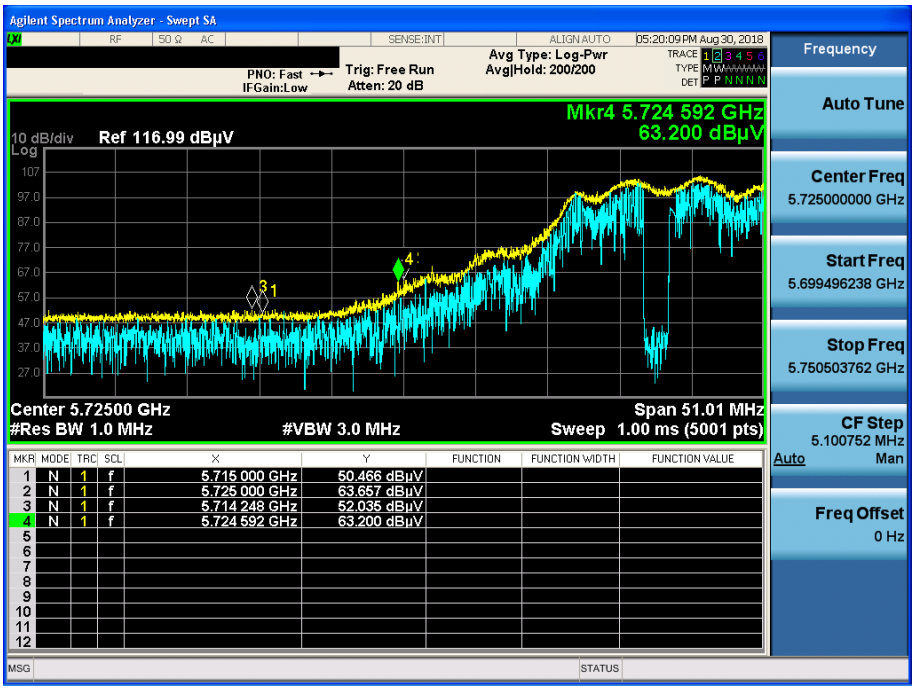
802.11a & U-NII 2C & Ch.100 & Y axis & Ver **Detector Mode : AV**



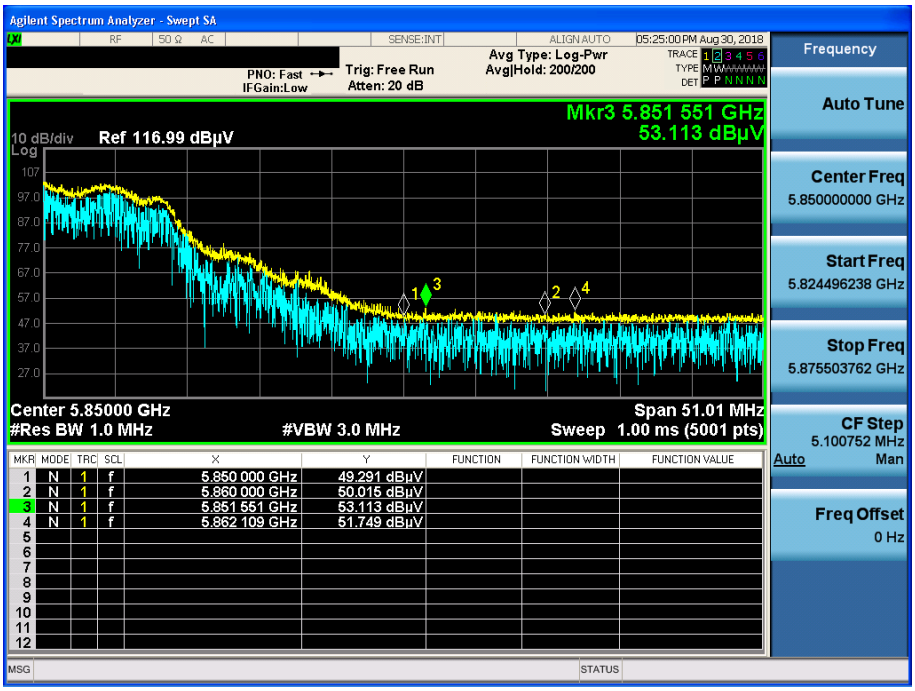
802.11a & U-NII 2C & Ch.144 & Y axis & Ver **Detector Mode : AV**



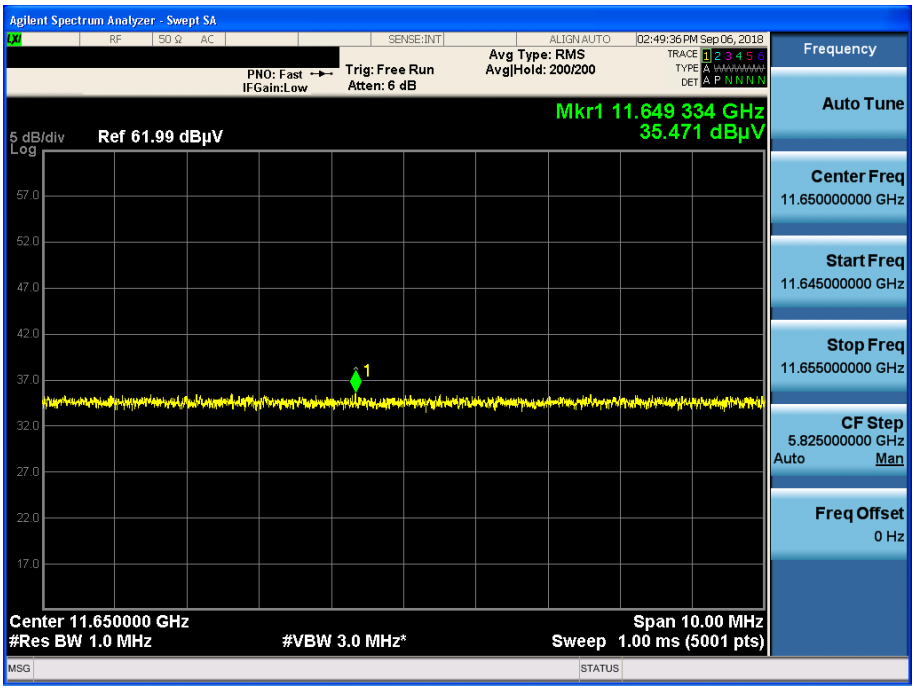
802.11a & U-NII 3 & Ch.149 & Y axis & Ver **Detector Mode : PK**



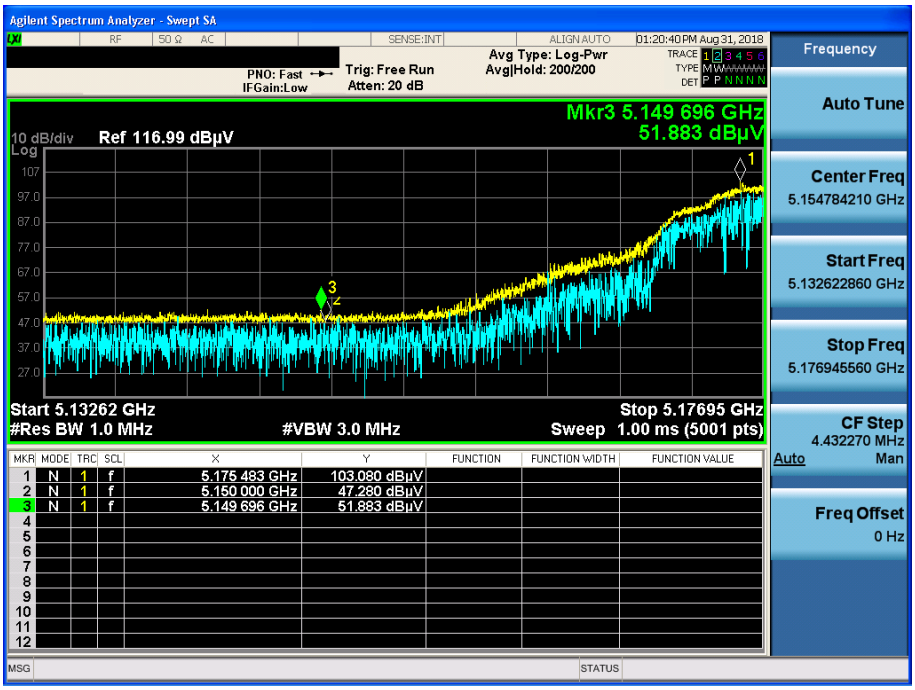
802.11a & U-NII 3 & Ch.165 & Y axis & Ver **Detector Mode : PK**



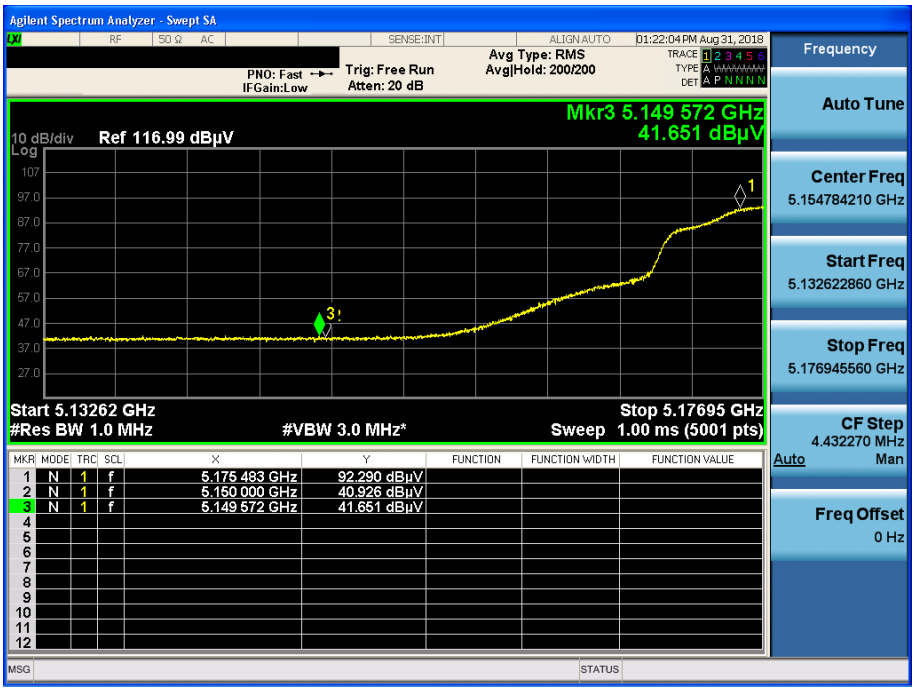
802.11a & U-NII 3 & Ch.165 & Y axis & Ver **Detector Mode : AV**



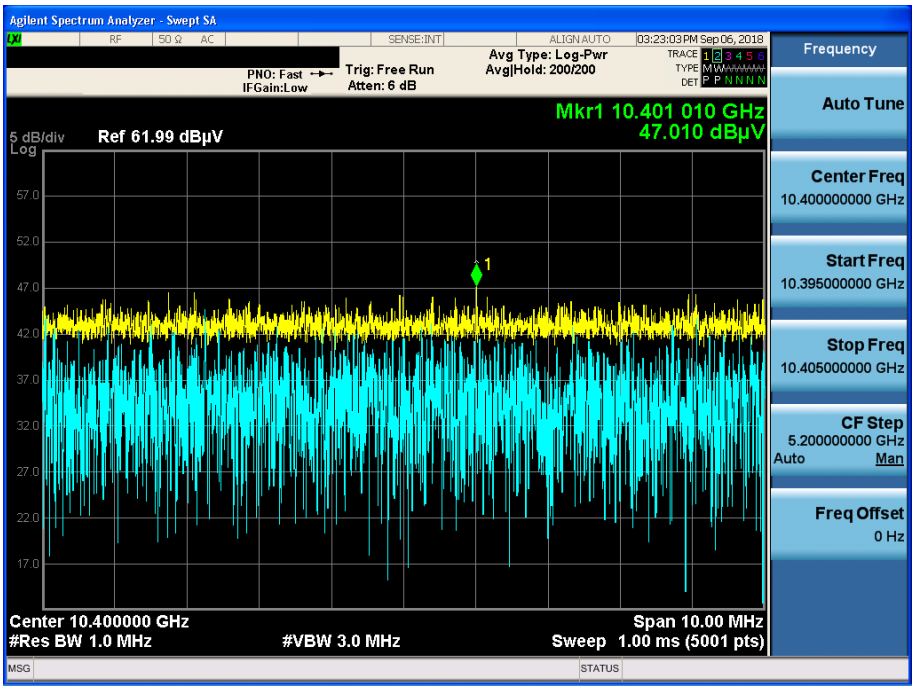
802.11n(HT20) & U-NII 1 & Ch.36 & Y axis & Ver **Detector Mode : PK**



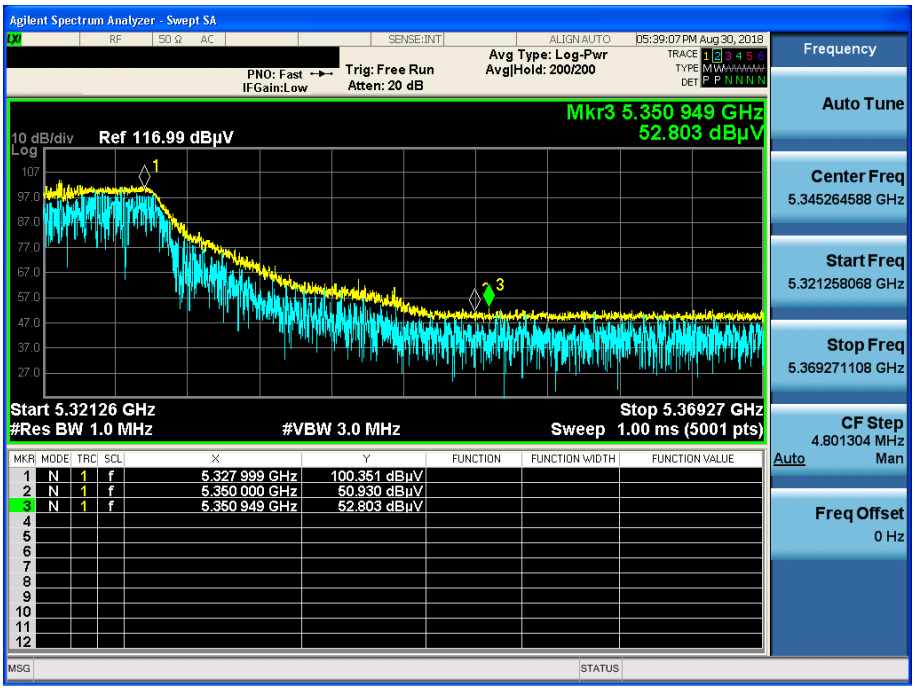
802.11n(HT20) & U-NII 1 & Ch.36 & Y axis & Ver **Detector Mode : AV**



802.11n(HT20) & U-NII 1 & Ch.40 & Y axis & Ver Detector Mode : PK

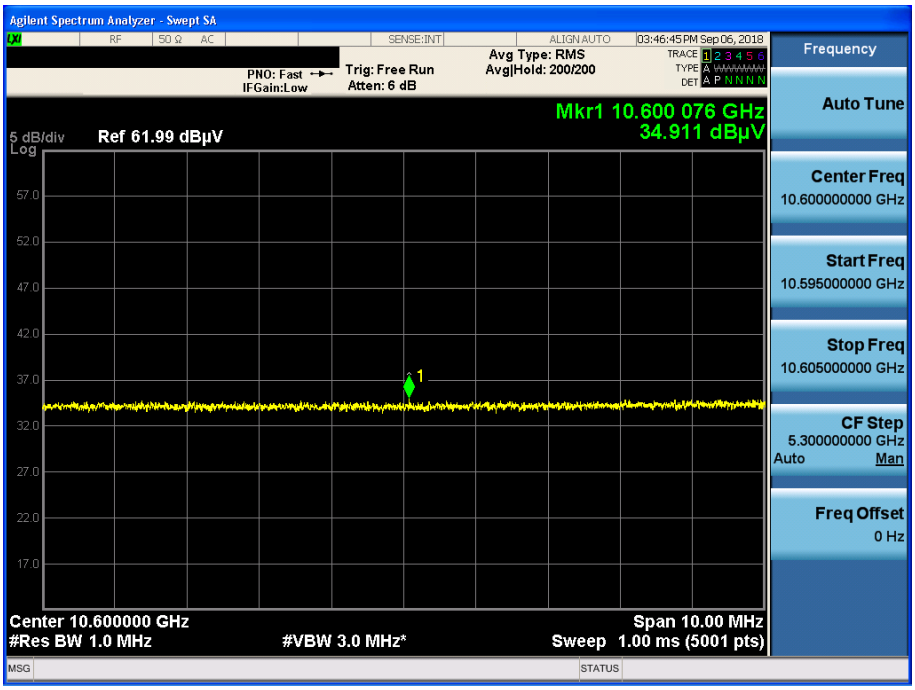


802.11n(HT20) & U-NII 2A & Ch.64 & Y axis & Ver Detector Mode : PK

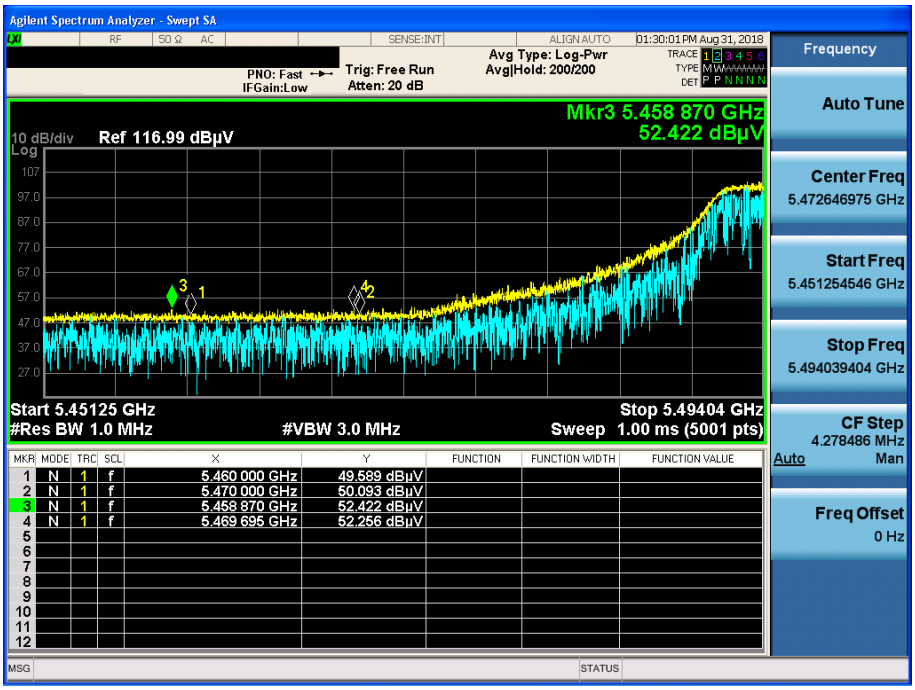


802.11n(HT20) & U-NII 2A & Ch.64 & Y axis & Ver Detector Mode : AV

802.11n(HT20) & U-NII 2A & Ch.60 & Y axis & Ver Detector Mode : AV

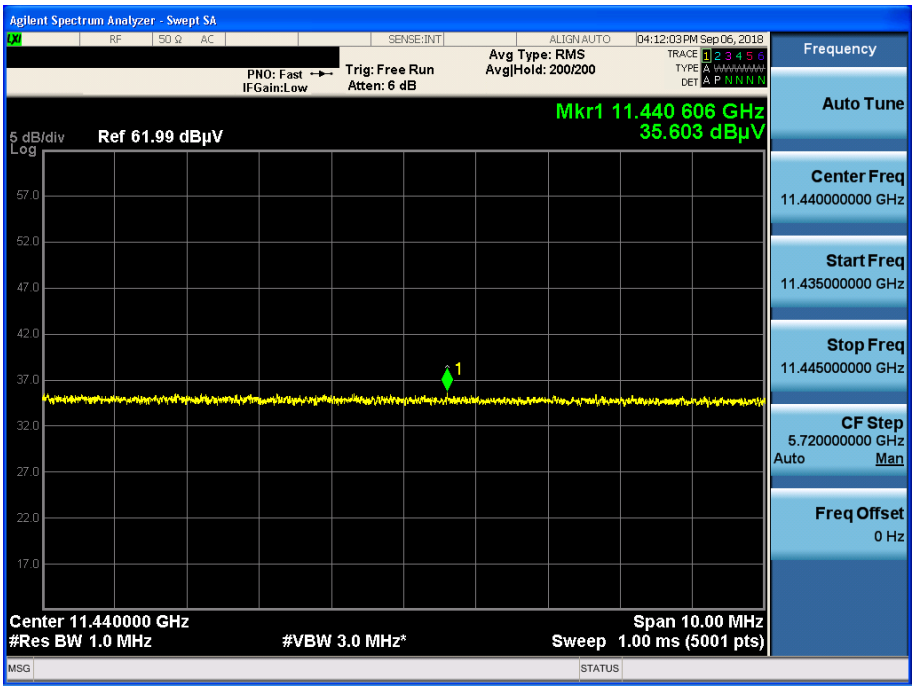


802.11n(HT20) & U-NII 2C & Ch.100 & Y axis & Ver Detector Mode : PK

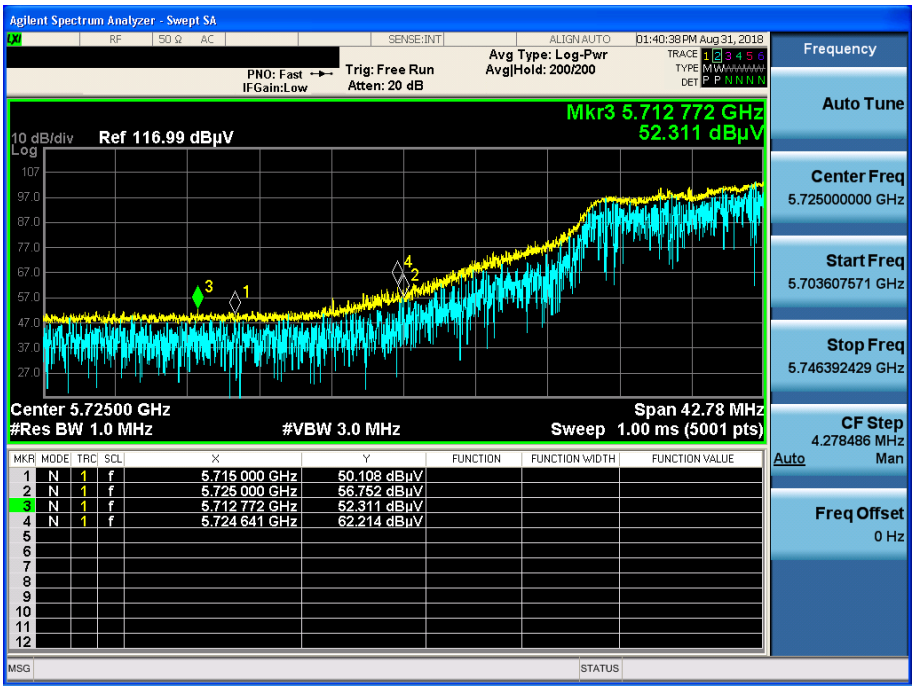


802.11n(HT20) & U-NII 2C & Ch.100 & Y axis & Ver Detector Mode : AV

802.11n(HT20) & U-NII 2C & Ch.144 & Y axis & Ver Detector Mode : AV



802.11n(HT20) & U-NII 3 & Ch.149 & Y axis & Ver Detector Mode : PK



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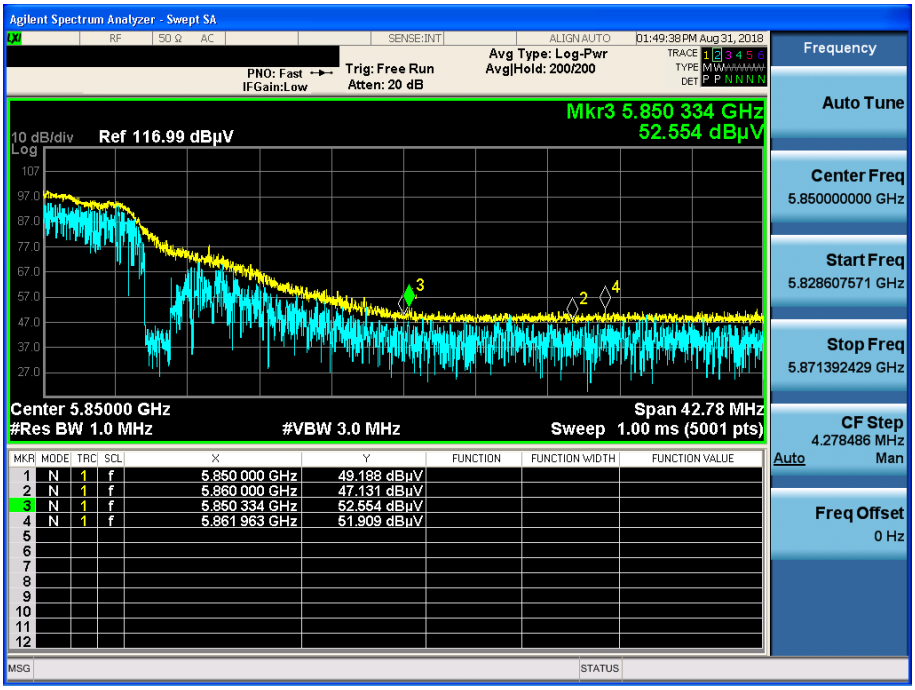

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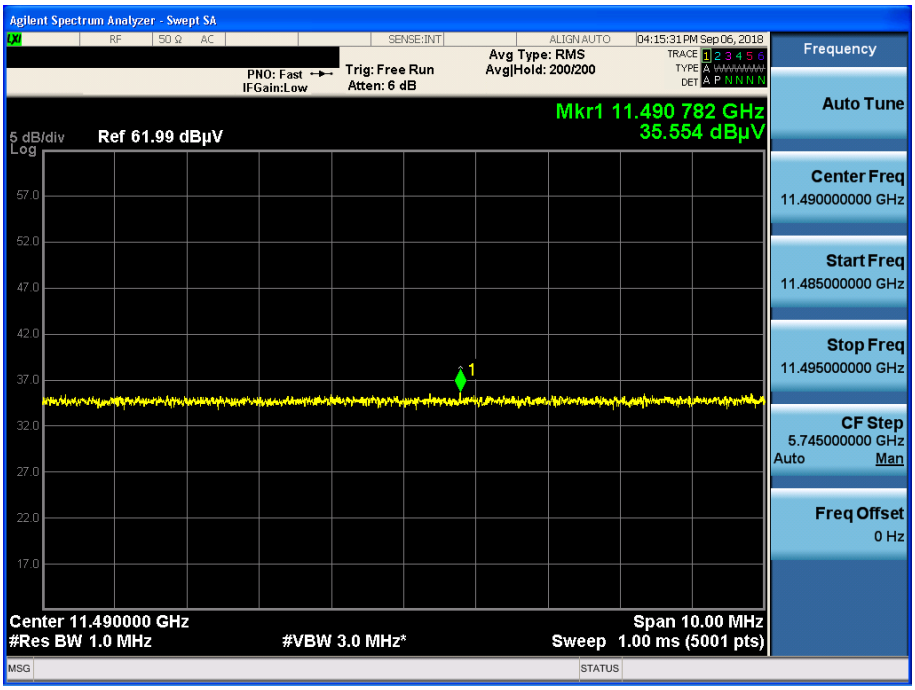
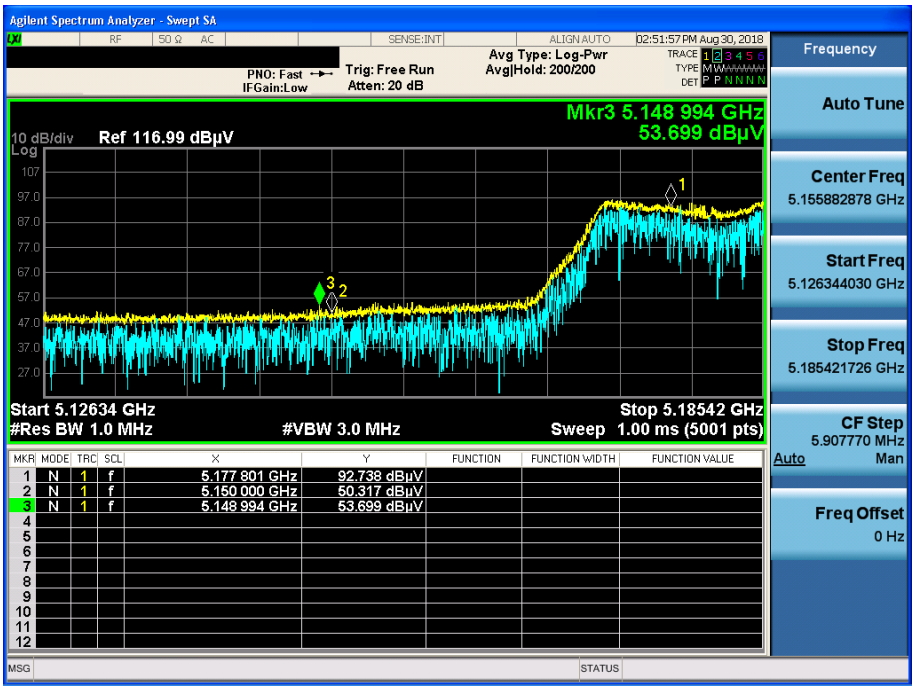


802.11n(HT40) & U-NII 1 & Ch.38 & Y axis & Ver Detector Mode : PK



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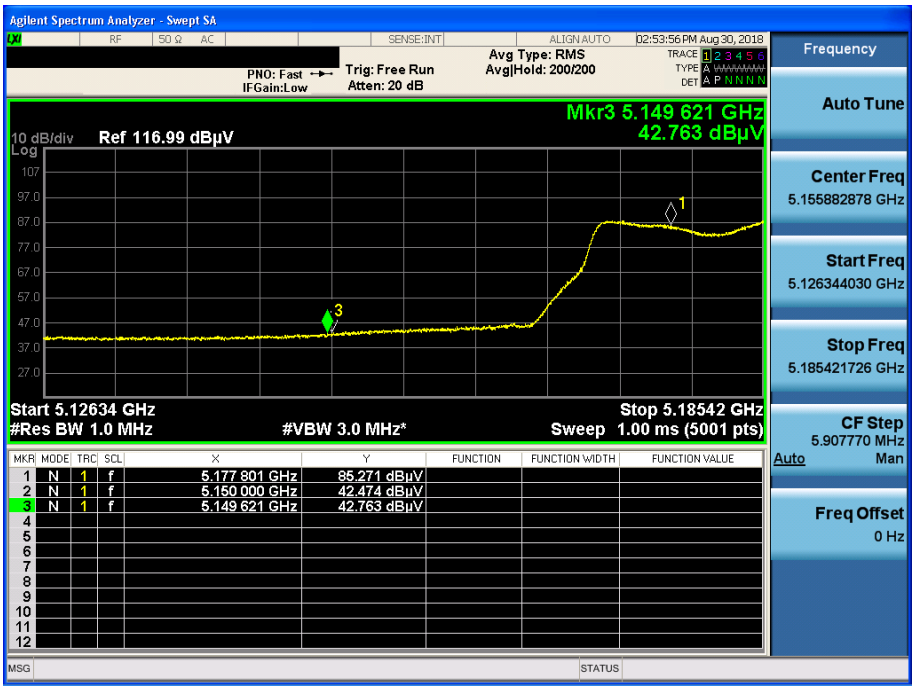
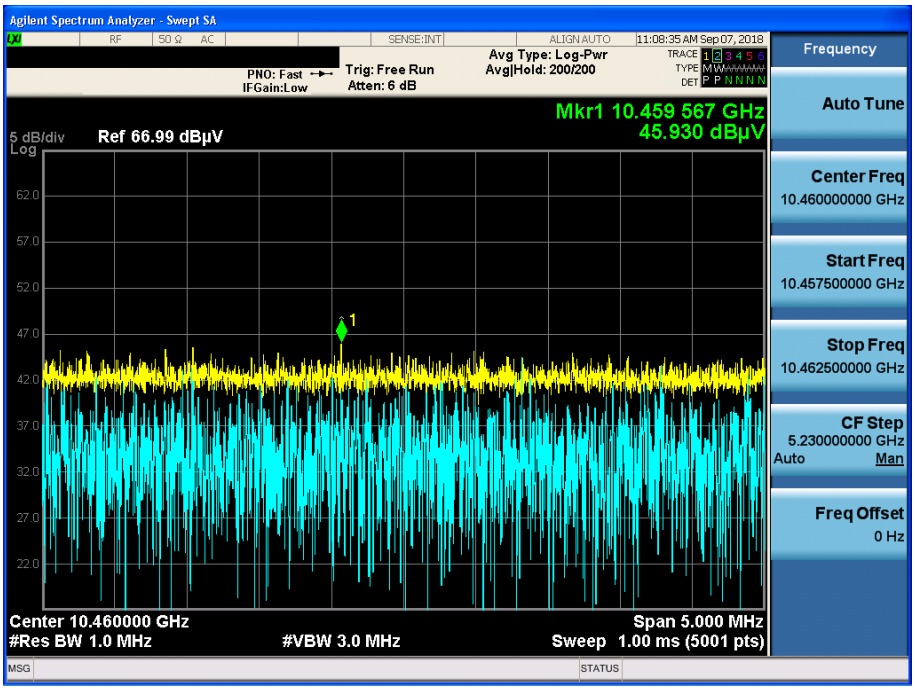
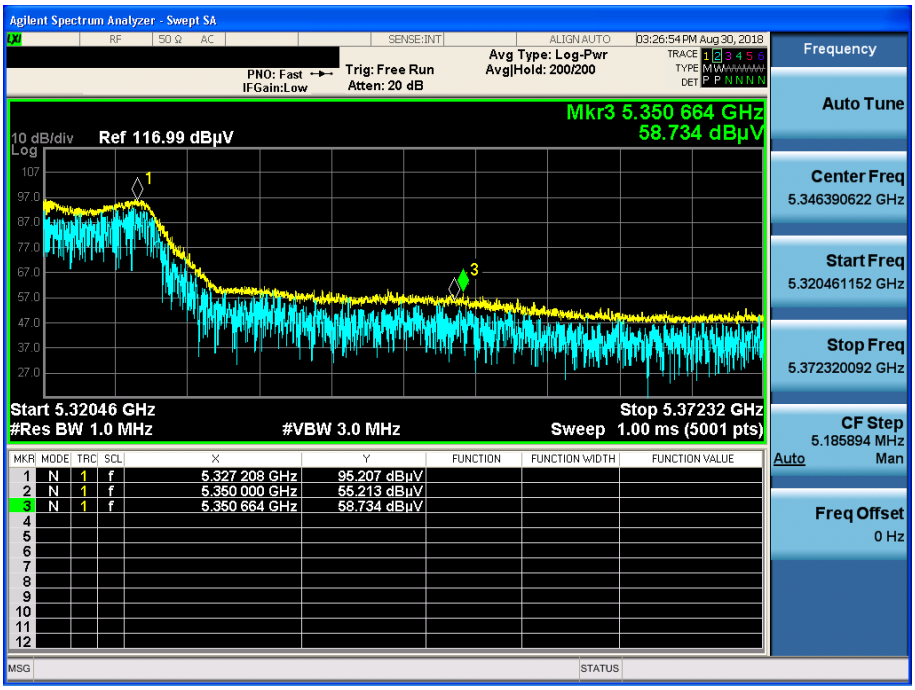


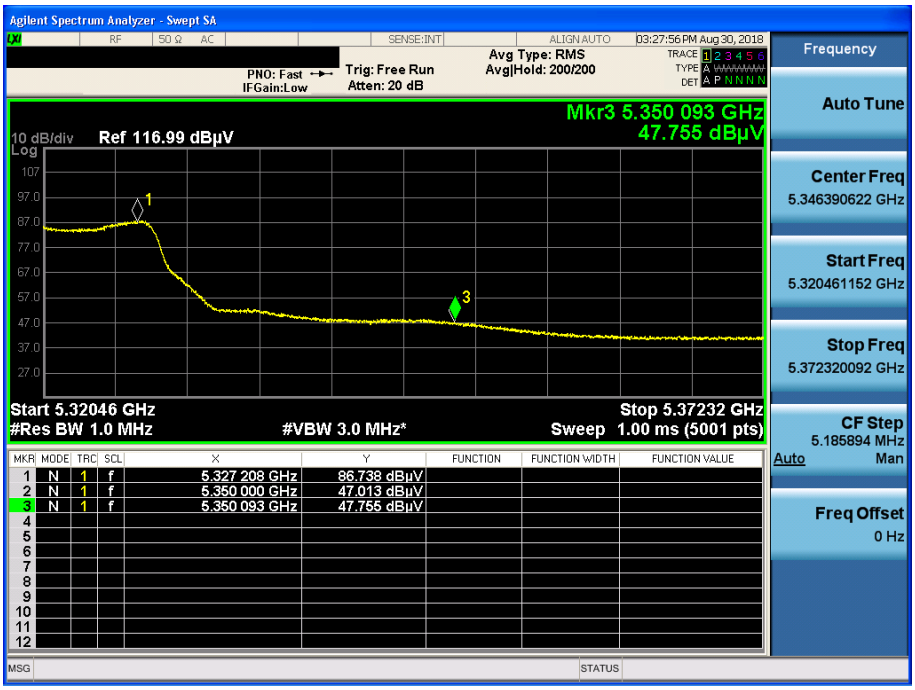
802.11n(HT40) & U-NII 1 & Ch.46 & Y axis & Ver Detector Mode : PK



802.11n(HT40) & U-NII 2A & Ch.62 & Y axis & Ver Detector Mode : PK



802.11n(HT40) & U-NII 2A & Ch.62 & Y axis & Ver Detector Mode : AV



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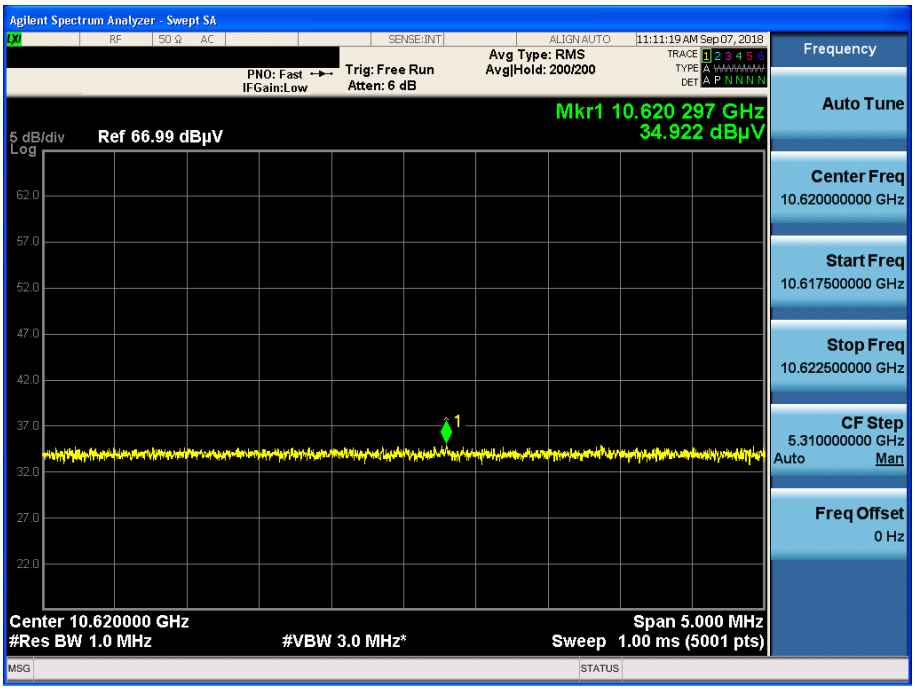
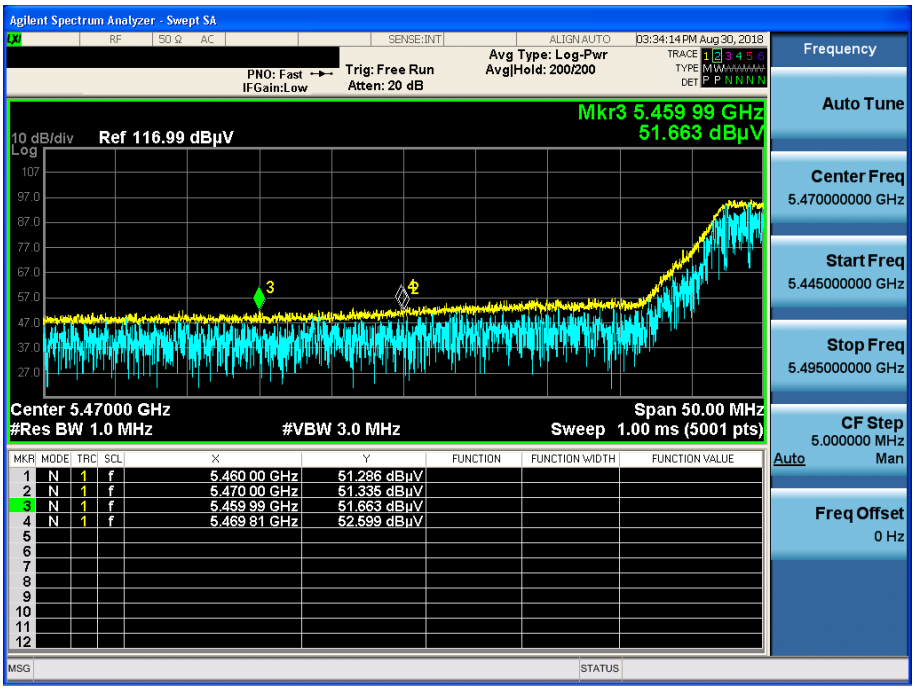
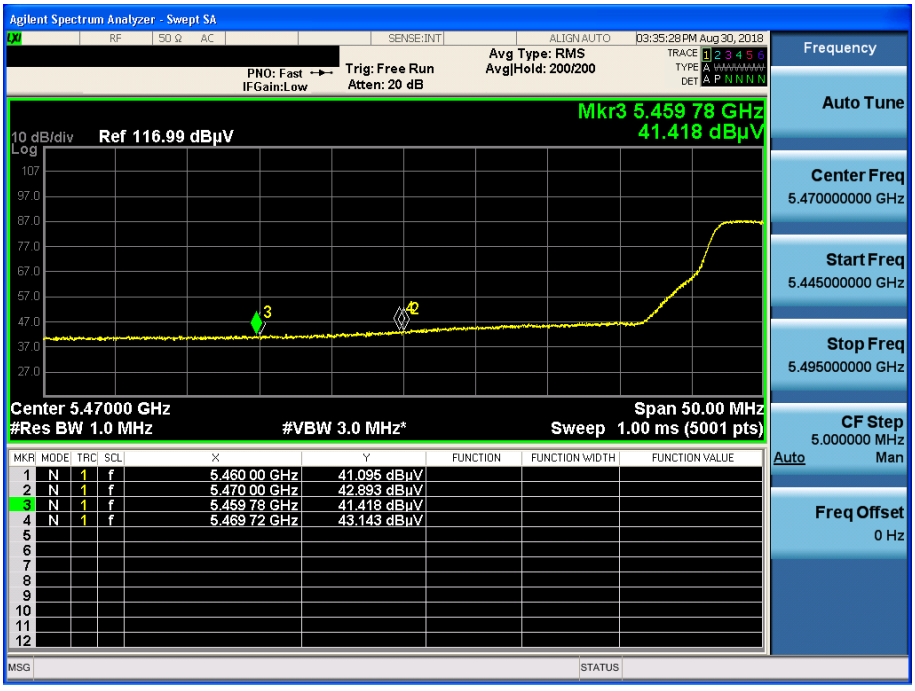


802.11n(HT40) & U-NII 2C & Ch.102 & Y axis & Ver Detector Mode : PK



802.11n(HT40) & U-NII 2C & Ch.102 & Y axis & Ver Detector Mode : AV



802.11n(HT40) & U-NII 2C & Ch.142 & Y axis & Ver Detector Mode : AV