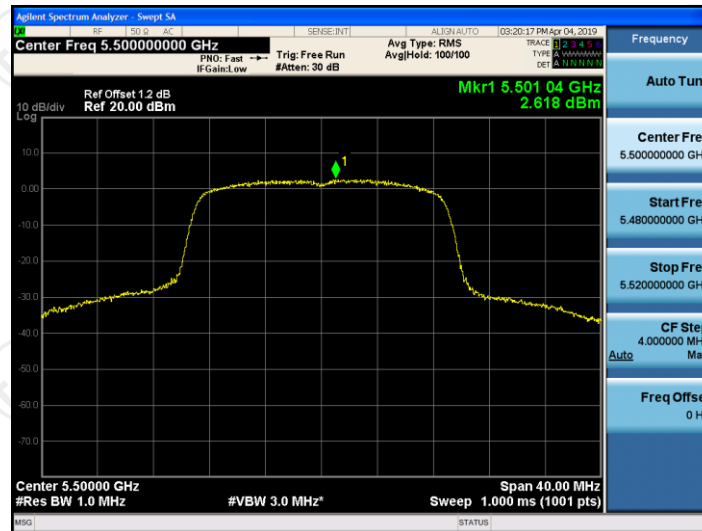
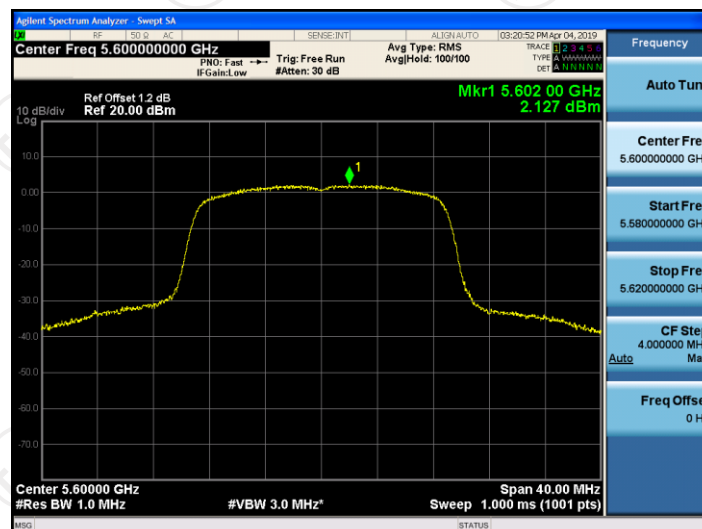


11ac(VHT20)

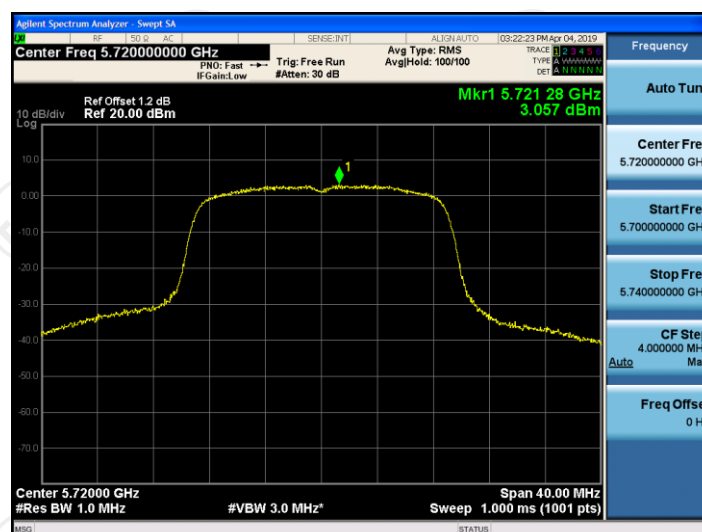
CH100



CH120

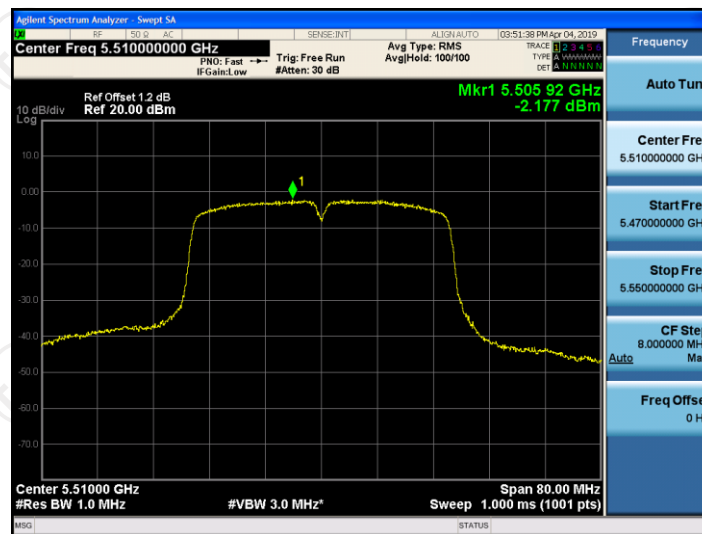


CH144

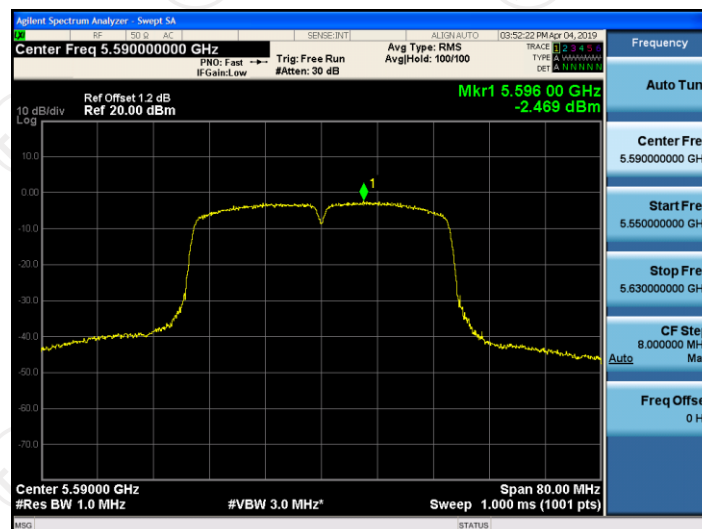


11ac(VHT40)

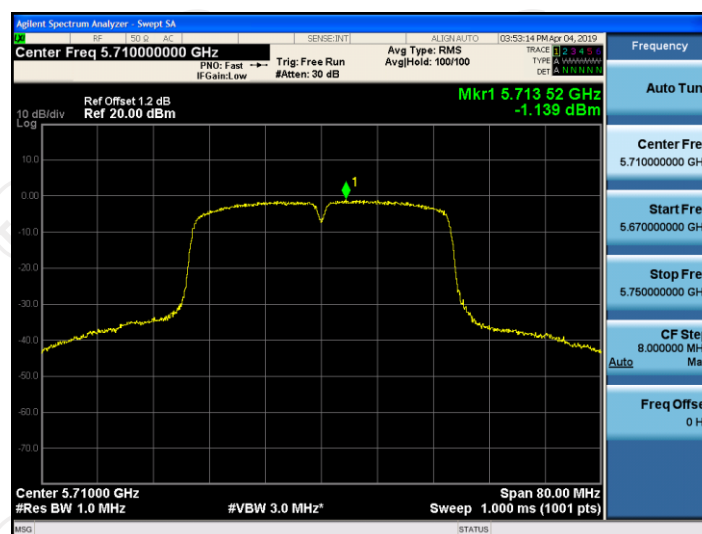
CH102



CH118

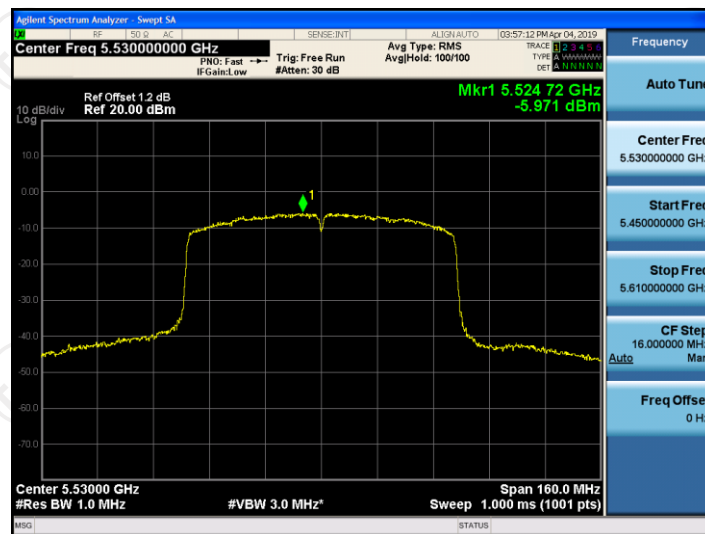


CH142

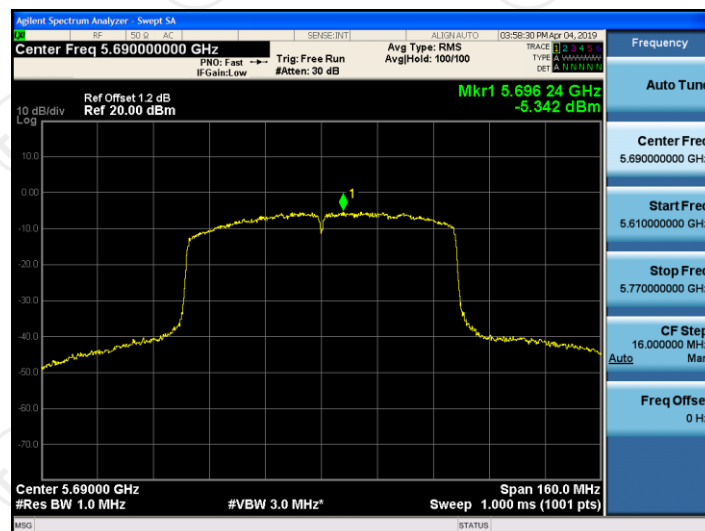


11ac(VHT80)

CH106



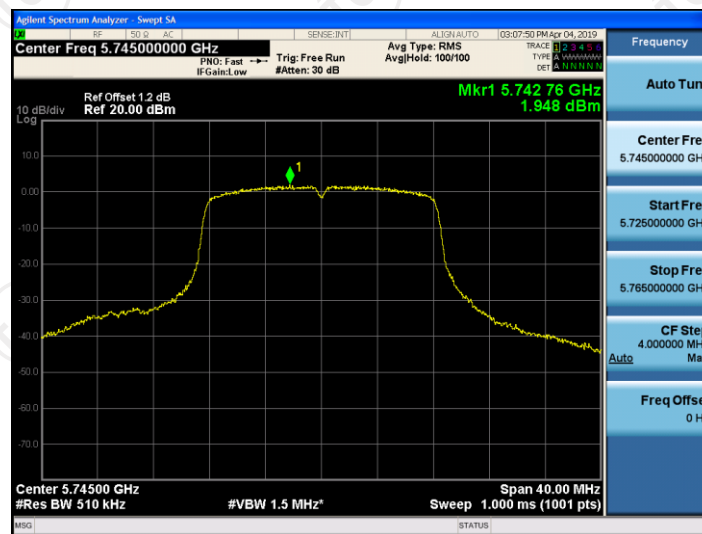
CH138



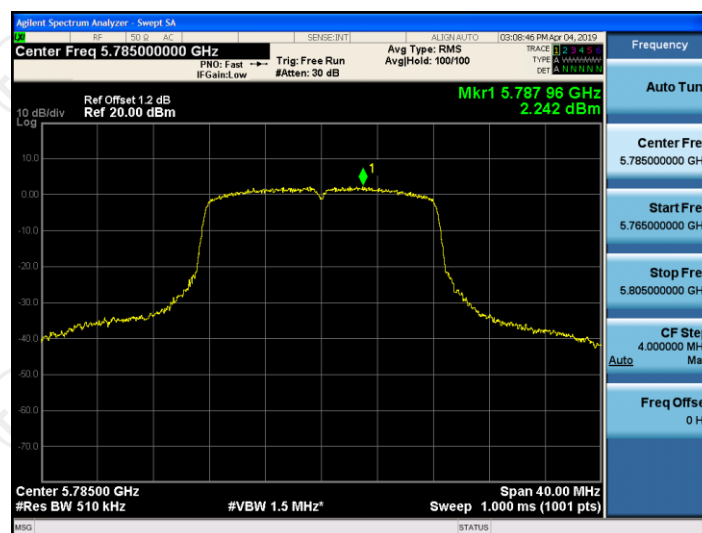
Band 3 (5745-5825MHz)

11a

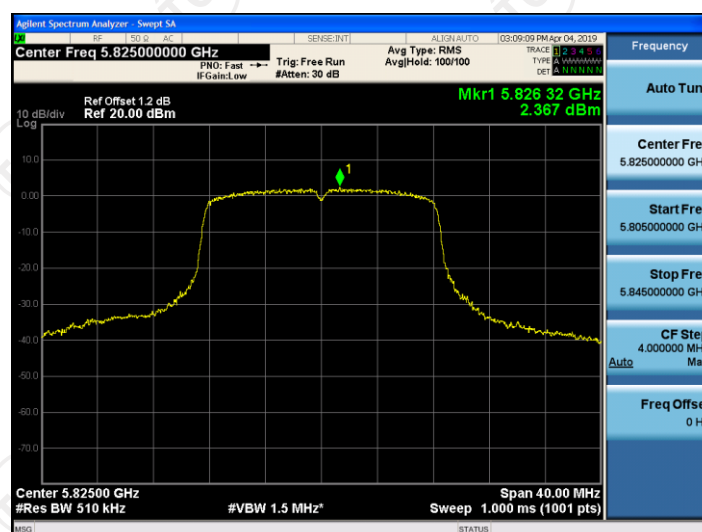
CH149



CH157

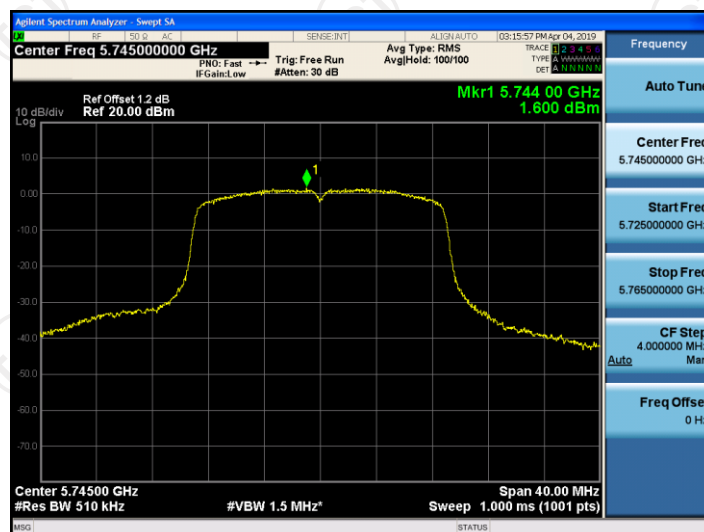


CH165

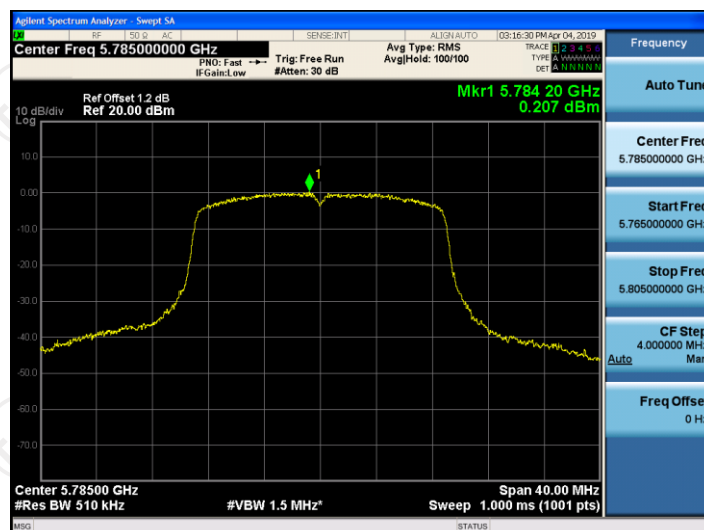


11n(HT20)

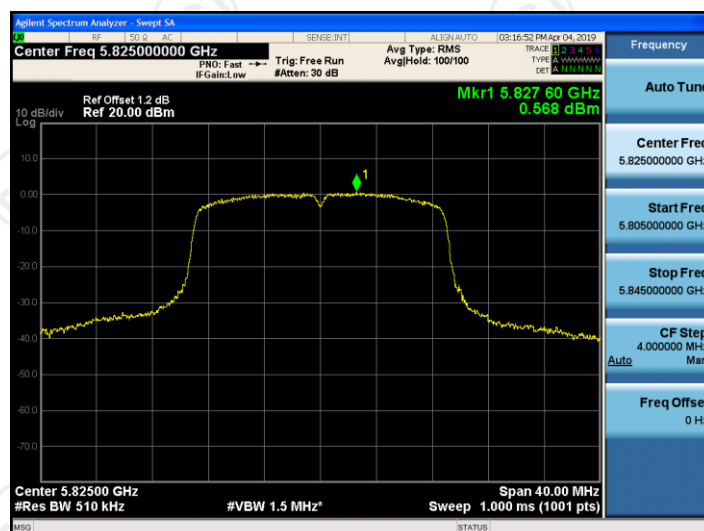
CH149



CH157

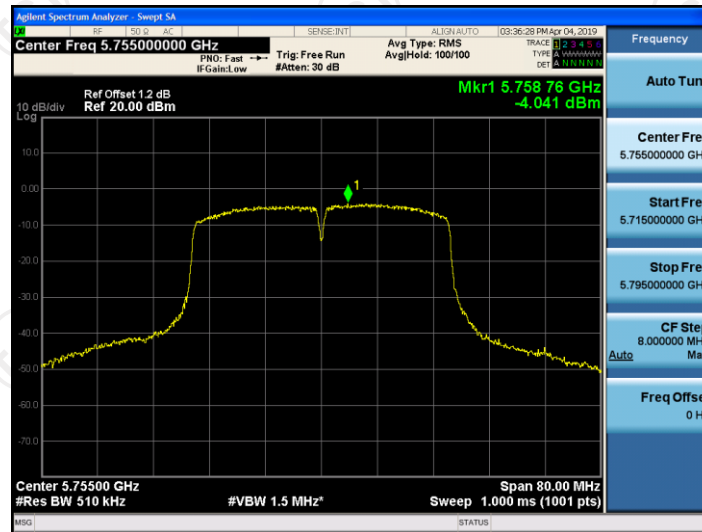


CH165

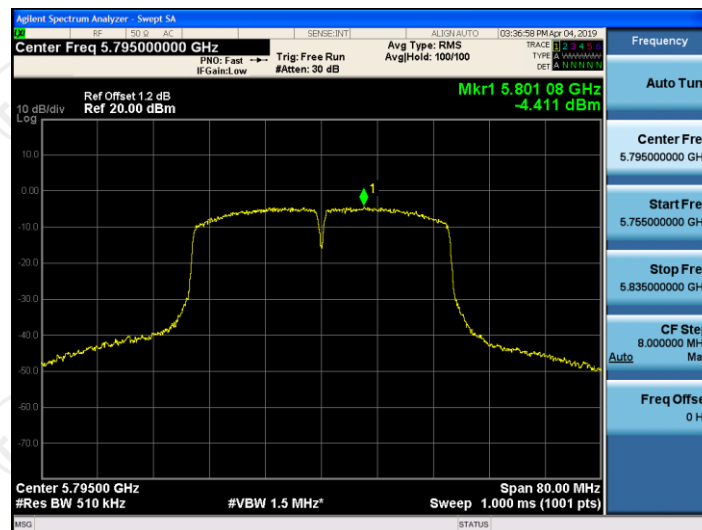


11n(HT40)

CH151

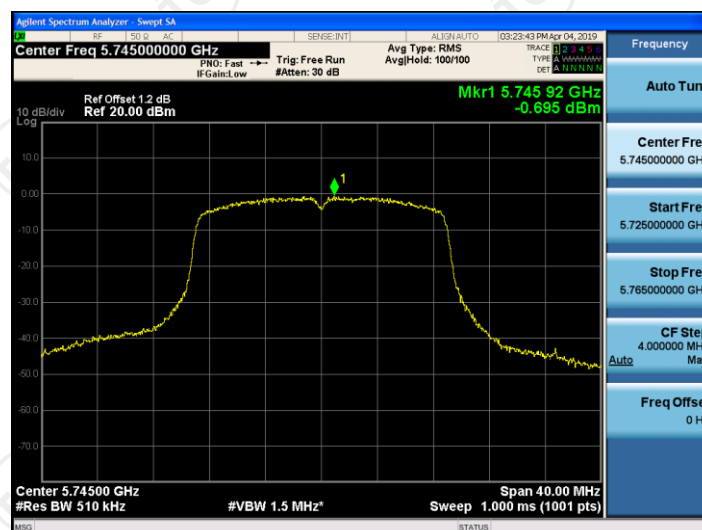


CH159

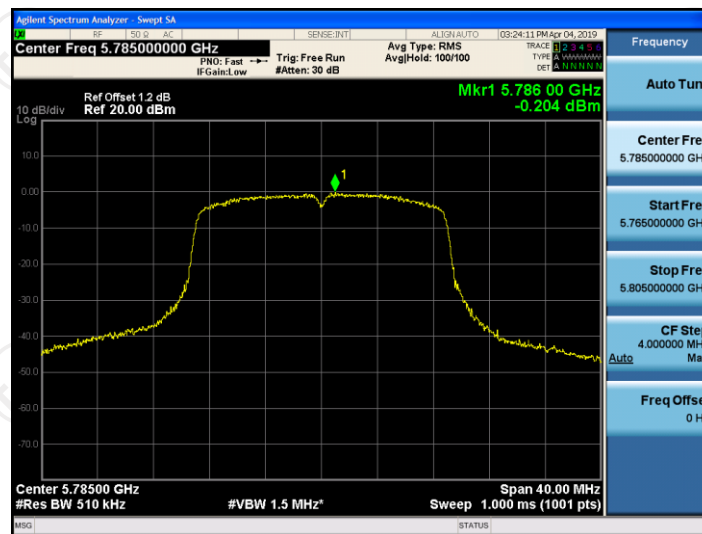


11ac(VHT20)

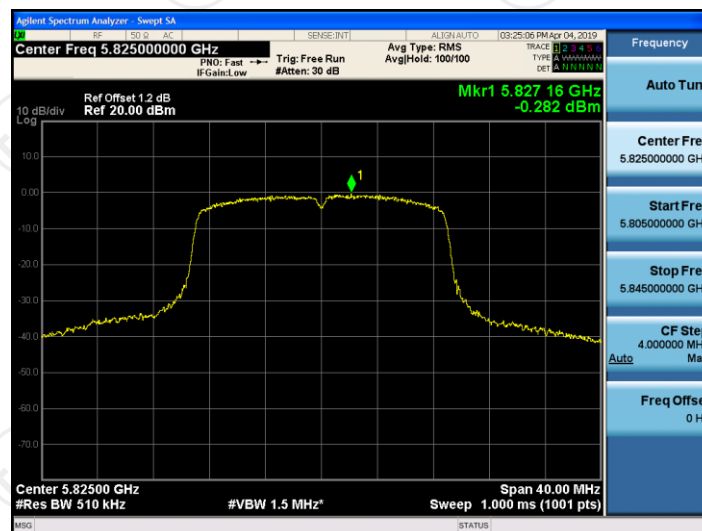
CH149



CH157

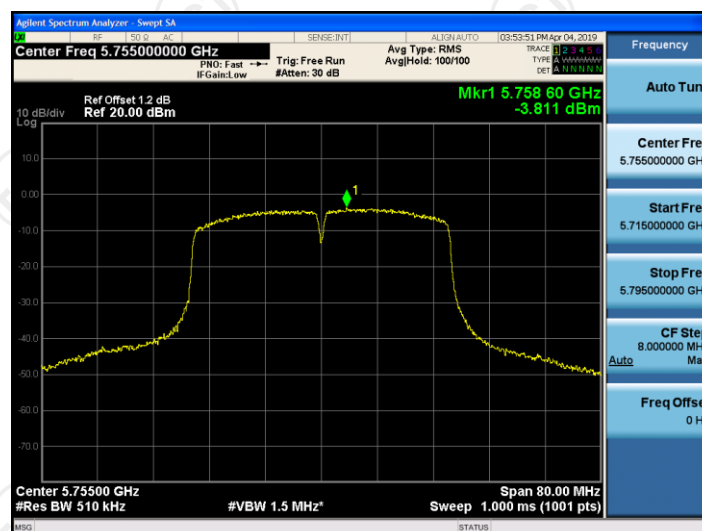


CH165

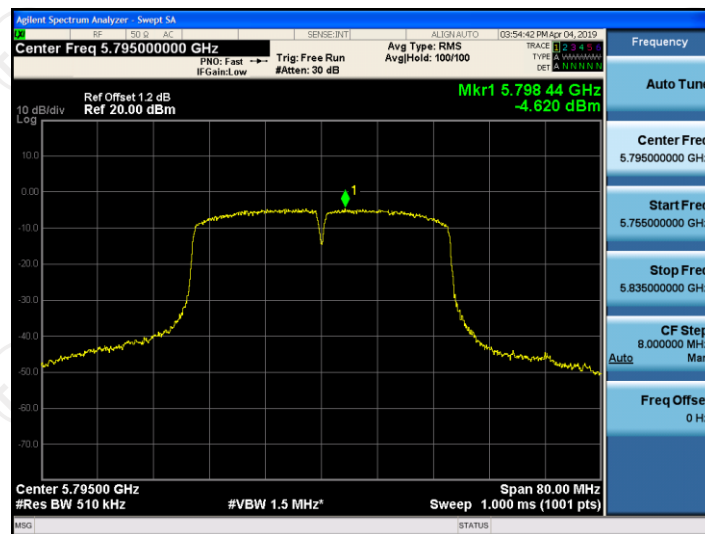


11ac(VHT40)

CH151

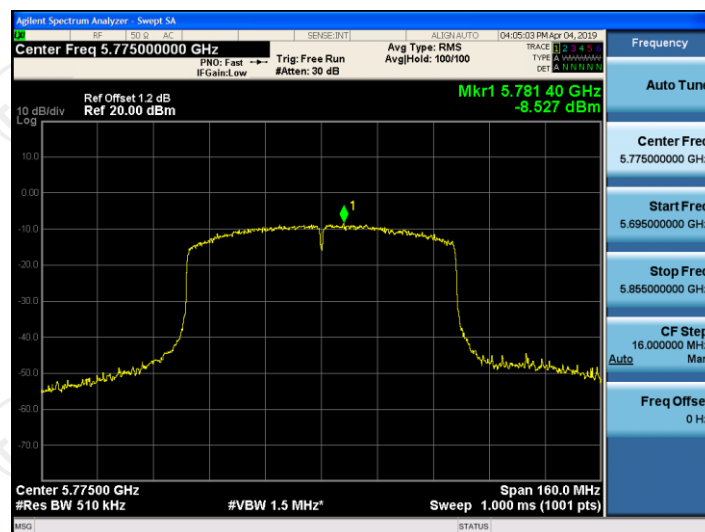


CH159



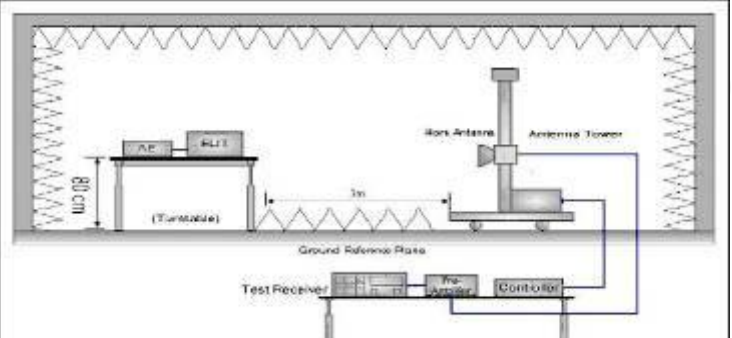
11ac(VHT80)

CH155



6.7. Band edge

6.7.1. Test Specification

Test Requirement:	FCC CFR47 Part 15E Section 15.407
Test Method:	ANSI C63.10 2013
Limit:	For Band 1&2A&2C: $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 68.2$ dB$\mu V/m$, for EIRP(dBm)= -27dBm For Band 3(5715-5725MHz&5850-5860MHz): $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 78.2$ dB$\mu V/m$, for EIRP(dBm)= -17dBm; For Band 3(other un-restricted band): $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 68.2$ dB$\mu V/m$, for EIRP(dBm)= -27dBm
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have

	10dB margin would be re-tested one by one using peak, quasipeak or average method as specified and then reported in a data sheet.
Test Result:	PASS

6.7.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	ROHDE&SCHW ARZ	ESIB7	100197	Jul. 17, 2019
Spectrum Analyzer	ROHDE&SCHW ARZ	FSQ40	200061	Sep. 20, 2019
Spectrum Analyzer	ROHDE&SCHW ARZ	FSP40	100056	Sep. 20, 2019
Spectrum Analyzer	Agilent	N9020A	MY4910061 9	Sep. 20, 2019
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 16, 2019
Pre-amplifier	HP	8447D	2727A05017	Sep. 16, 2019
Loop antenna	ZHINAN	ZN30900A	12024	Oct. 20, 2019
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 02, 2019
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Oct. 20, 2019
Horn Antenna	A-INFO	LB-180400-KF	J211020657	Sep. 16, 2019
Coax cable (9KHz-1GHz)	TCT	RE-low-01	N/A	Sep. 16, 2019
Coax cable (9KHz-40GHz)	TCT	RE-high-02	N/A	Sep. 16, 2019
Coax cable (9KHz-1GHz)	TCT	RE-low-03	N/A	Sep. 16, 2019
Coax cable (9KHz-40GHz)	TCT	RE-high-04	N/A	Sep. 16, 2019
Antenna Mast	Keleto	RE-AM	N/A	N/A
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.7.3. Test Data

802.11 a	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 1 & Band 2A	Lowest	5150	43.25	5.82	49.07	68.2	54	-4.93	H
		5150	38.65	5.82	44.47	68.2	54	-9.53	V
	Highest	5350	42.26	6.52	48.78	68.2	54	-5.22	H
		5350	39.62	6.52	46.14	68.2	54	-7.86	V
Band 2C & Band 3	Lowest	5470	43.68	5.82	49.5	68.2	54	-4.5	H
		5470	38.21	5.82	44.03	68.2	54	-9.97	V
	Highest	5850	46.38	6.52	52.9	68.2	54	-1.1	H
		5850	42.68	6.52	49.2	68.2	54	-4.8	V
Remark: Factor(dB)=Ant. Factor+Cable Loss-Amp. Factor									

802.11 n HT20	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 1 &Band 2A	Lowest	5150	45.26	6.96	52.22	68.2	54	-1.78	H
		5150	41.35	6.96	48.31	68.2	54	-5.69	V
	Highest	5350	43.24	8.21	51.45	68.2	54	-2.55	H
		5350	39.25	8.21	47.46	68.2	54	-6.54	V
Band 2C & Band 3	Lowest	5470	43.24	8.21	51.45	78.2	54	-2.55	H
		5470	43.24	8.21	51.45	78.2	54	-2.55	V
	Highest	5850	42.26	8.87	51.13	78.2	54	-2.87	H
		5850	40.28	8.87	49.15	78.2	54	-4.85	V
Remark: Factor(dB)=Ant. Factor+Cable Loss-Amp. Factor									

802.11 n HT40	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 1 &Band 2A	Lowest	5150	43.69	5.82	49.51	68.2	54	-4.49	H
		5150	38.77	5.82	44.59	68.2	54	-9.41	V
	Highest	5350	42.38	6.52	48.9	68.2	54	-5.1	H
		5350	39.74	6.52	46.26	68.2	54	-7.74	V

Band 2C & Band 3	Lowest	5470	43.8	5.82	49.62	68.2	54	-4.38	H
		5470	38.33	5.82	44.15	68.2	54	-9.85	V
	Highest	5850	45.36	6.52	51.88	68.2	54	-2.12	H
		5850	42.8	6.52	49.32	68.2	54	-4.68	V

Remark: Factor(dB)=Ant. Factor+Cable Loss-Amp. Factor

802.11 ac HT20	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 1 &Band 2A	Lowest	5150	45.38	6.96	52.34	68.2	54	-1.66	H
		5150	41.47	6.96	48.43	68.2	54	-5.57	V
	Highest	5350	43.36	8.21	51.57	68.2	54	-2.43	H
		5350	39.25	8.21	47.46	68.2	54	-6.54	V

Band 2C & Band 3	Lowest	5470	43.24	8.21	51.45	78.2	54	-2.55	H
		5470	43.24	8.21	51.45	78.2	54	-2.55	V
	Highest	5850	42.26	8.87	51.13	78.2	54	-2.87	H
		5850	40.28	8.87	49.15	78.2	54	-4.85	V

Remark: Factor(dB)=Ant. Factor+Cable Loss-Amp. Factor

802.11 ac HT40	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 1 &Band 2A	Lowest	5150	43.9	5.82	49.72	68.2	54	-4.28	H
		5150	38.98	5.82	44.8	68.2	54	-9.2	V
	Highest	5350	42.59	6.52	49.11	68.2	54	-4.89	H
		5350	39.95	6.52	46.47	68.2	54	-7.53	V

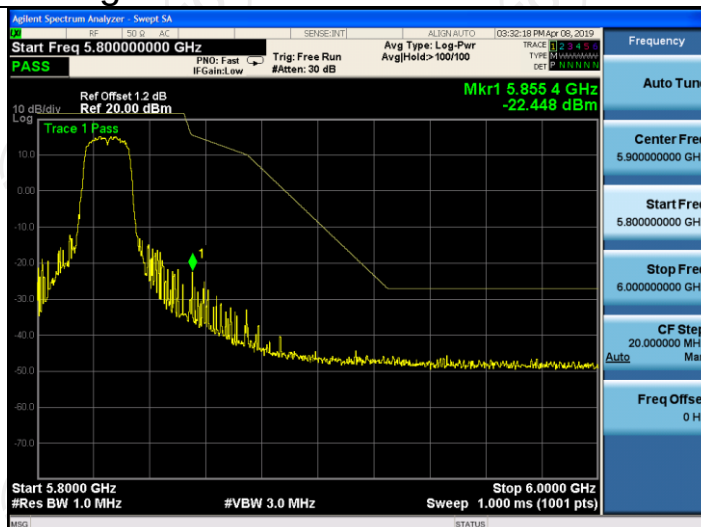
Band 2C & Band 3	Lowest	5470	44.01	5.82	49.83	68.2	54	-4.17	H
		5470	38.54	5.82	44.36	68.2	54	-9.64	V
	Highest	5850	45.57	6.52	52.09	68.2	54	-1.91	H
		5850	43.01	6.52	49.53	68.2	54	-4.47	V

Remark: Factor(dB)=Ant. Factor+Cable Loss-Amp. Factor

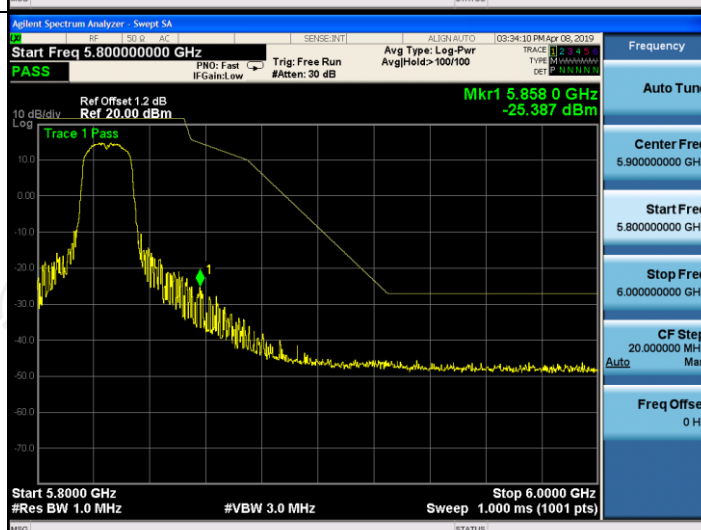
802.11 ac HT80	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m) (Avg)	Over	Ant. Pol. H/V
Band 1 &Band 2A	Lowest	5150	45.59	6.96	52.55	68.2	54	-1.45	H
		5150	41.68	6.96	48.64	68.2	54	-5.36	V
	Highest	5350	43.57	8.21	51.78	68.2	54	-2.22	H
		5350	39.58	8.21	47.79	68.2	54	-6.21	V
Band 2C & Band 3	Lowest	5470	43.57	8.21	51.78	78.2	54	-2.22	H
		5470	43.57	8.21	51.78	78.2	54	-2.22	V
	Highest	5850	42.59	8.87	51.46	78.2	54	-2.54	H
		5850	40.61	8.87	49.48	78.2	54	-4.52	V
Remark: Factor(dB)=Ant. Factor+Cable Loss-Amp. Factor									

Band 3 Band-edge for RF Conducted Emissions

802.11a
/HCH

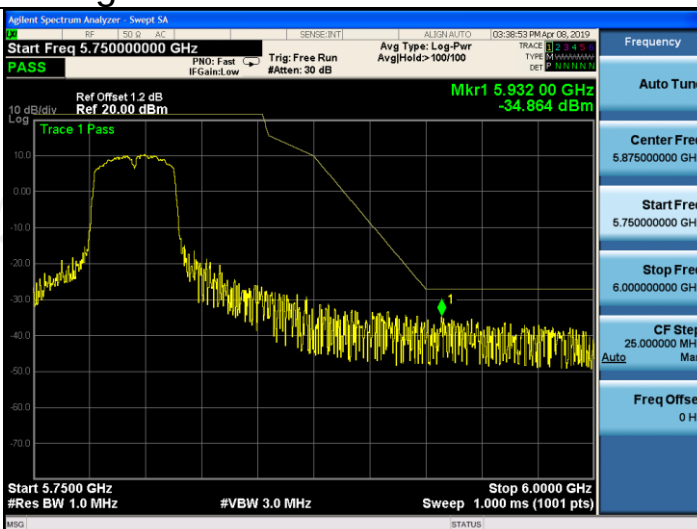


802.11n
HT20 / HCH

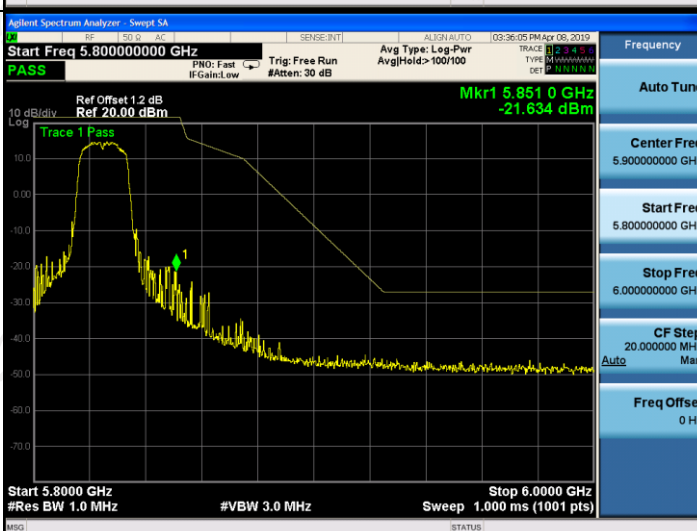


Band 3 Band-edge for RF Conducted Emissions

802.11n
HT40 /HCH

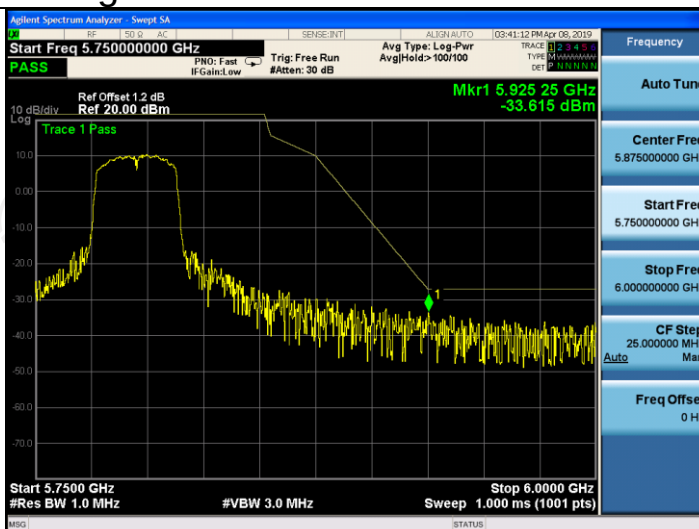


802.11ac
HT20 / HCH

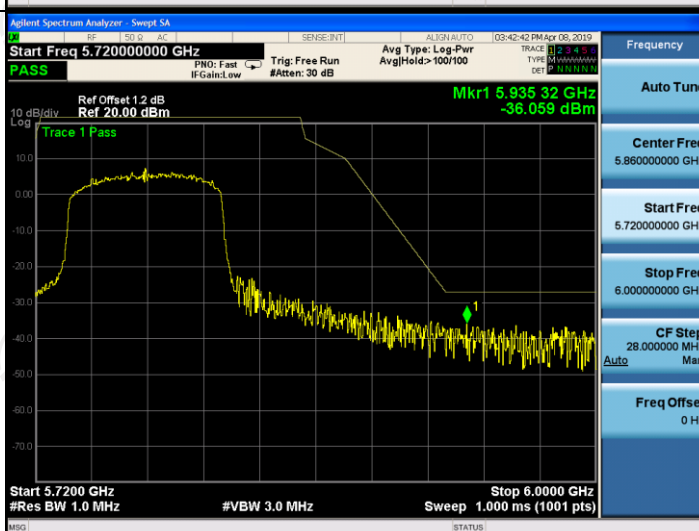


Band 3 Band-edge for RF Conducted Emissions

802.11ac
HT40 / HCH



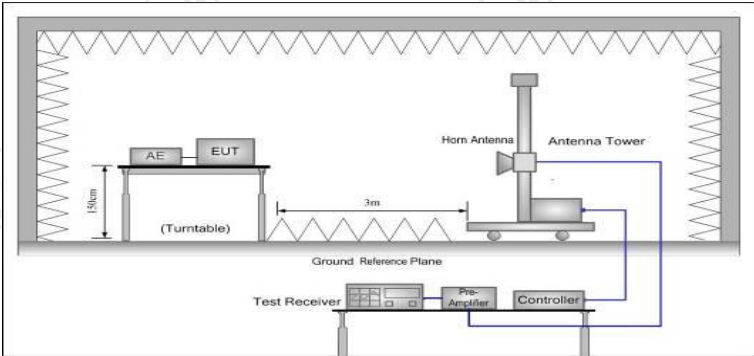
802.11ac
HT80 / HCH



6.8. Spurious Emission

6.8.1. Restrict Bands Measurement

6.8.1.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407 & 15.209 & 15.205																		
Test Method:	KDB 789033 D02 v02r01																		
Frequency Range:	Band 1 & 2A: 4.5 GHz to 5.15 GHz and 5.35GHz to 5.46GHz Band 2C &3: 5.35 GHz to 5.46 GHz																		
Measurement Distance:	3 m																		
Antenna Polarization:	Horizontal & Vertical																		
Operation mode:	Transmitting mode with modulation																		
Receiver Setup:	<table><tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr><tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr><tr><td>RMS</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr></table>					Frequency	Detector	RBW	VBW	Remark	Above 1GHz	Peak	1MHz	3MHz	Peak Value	RMS	1MHz	3MHz	Average Value
Frequency	Detector	RBW	VBW	Remark															
Above 1GHz	Peak	1MHz	3MHz	Peak Value															
	RMS	1MHz	3MHz	Average Value															
Limit:	<table><tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr><tr><td rowspan="2">Above 1GHz</td><td>74</td><td>Peak Value</td></tr><tr><td>54</td><td>Average Value</td></tr></table>					Frequency	Limit (dBuV/m @3m)	Remark	Above 1GHz	74	Peak Value	54	Average Value						
Frequency	Limit (dBuV/m @3m)	Remark																	
Above 1GHz	74	Peak Value																	
	54	Average Value																	
Test setup:	Above 1GHz 																		
Test Procedure:	1. The testing follows FCC KDB Publication No. 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement. 2. For the radiated emission test below 1GHz: The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune																		

	the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level. For the radiated emission test above 1GHz: Place the measurement antenna on a turntable with 1.5 meter above ground, which is away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. 3. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 4. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. 5. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold; (3) Set RBW = 1 MHz, VBW= 3MHz for $f > 1$ GHz for peak measurement. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is 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. (4) A 5.8GHz high -PASS filter is used during radiated emissions above 1GHz measurement.
Test results:	PASS

6.8.1.1 Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	ROHDE&SCHW ARZ	ESIB7	100197	Jul. 17, 2019
Spectrum Analyzer	ROHDE&SCHW ARZ	FSQ40	200061	Sep. 20, 2019
Spectrum Analyzer	ROHDE&SCHW ARZ	FSP40	100056	Sep. 20, 2019
Spectrum Analyzer	Agilent	N9020A	MY4910061 9	Sep. 20, 2019
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 16, 2019
Pre-amplifier	HP	8447D	2727A05017	Sep. 16, 2019
Loop antenna	ZHINAN	ZN30900A	12024	Oct. 20, 2019
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 02, 2019
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Oct. 20, 2019
Horn Antenna	A-INFO	LB-180400-KF	J211020657	Sep. 16, 2019
Coax cable (9KHz-1GHz)	TCT	RE-low-01	N/A	Sep. 16, 2019
Coax cable (9KHz-40GHz)	TCT	RE-high-02	N/A	Sep. 16, 2019
Coax cable (9KHz-1GHz)	TCT	RE-low-03	N/A	Sep. 16, 2019
Coax cable (9KHz-40GHz)	TCT	RE-high-04	N/A	Sep. 16, 2019
Antenna Mast	Keleto	CC-A-4M	N/A	N/A
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.8.1.2 Test Data

Restrict band around fundamental

11a CH36: 5180MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
5142.20	H	42.52	---	5.79	48.31	---	74	54	-5.69
5150.00	H	39.79	---	5.82	45.61	---	74	54	-8.39
5142.20	V	40.08	---	5.79	45.87	---	74	54	-8.13
5150.00	V	41.61	---	5.82	47.43	---	74	54	-6.57

11a CH64: 5320MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
5337.50	H	41.43	---	5.85	47.28	---	74	54	-6.72
5360.00	H	39.65	---	5.91	45.56	---	74	54	-8.44
5342.90	V	43.01	---	5.86	48.87	---	74	54	-5.13
5360.00	V	38.39	---	5.91	44.3	---	74	54	-9.7

11n (HT20) CH36: 5180MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (DbμV)	AV reading (dBuV)	Correction Factor (Db/m)	Emission Level		Peak limit (DbμV/m)	AV limit (DbμV/m)	Margin (Db)
					Peak (DbμV/m)	AV (DbμV/m)			
5142.20	H	43.36	---	5.79	49.15	---	74	54	-4.85
5150.00	H	41.57	---	5.82	47.39	---	74	54	-6.61
5142.20	V	40.89	---	5.79	46.68	---	74	54	-7.32
5150.00	V	42.28	---	5.82	48.1	---	74	54	-5.9

11n (HT20) CH64: 5320MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (DbμV)	AV reading (DbμV)	Correction Factor (Db/m)	Emission Level		Peak limit (DbμV/m)	AV limit (DbμV/m)	Margin (Db)
					Peak (DbμV/m)	AV (DbμV/m)			
5334.20	H	42.97	---	5.85	48.82	---	74	54	-5.18
5360.00	H	40.51	---	5.91	46.42	---	74	54	-7.58
5337.70	V	39.25	---	5.86	45.11	---	74	54	-8.89
5360.00	V	40.56	---	5.91	46.47	---	74	54	-7.53

11n(HT40) CH38: 5190MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
5135.98	H	45.11	---	5.80	50.91	---	74	54	-3.09
5150.00	H	43.77	---	5.82	49.59	---	74	54	-4.41
5135.98	V	42.59	---	5.80	48.39	---	74	54	-5.61
5150.00	V	40.54	---	5.82	46.36	---	74	54	-7.64

11n(HT40) CH62: 5310MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
5334.60	H	43.82	---	5.86	49.68	---	74	54	-4.32
5360.00	H	42.43	---	5.91	48.34	---	74	54	-5.66
5331.4	V	41.85	---	5.85	47.7	---	74	54	-6.3
5360.00	V	40.67	---	5.91	46.58	---	74	54	-7.42

11ac(VHT20) CH36: 5180MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBuV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
5142.20	H	42.62	---	5.79	48.41	---	74	54	-5.59