

# RF TEST REPORT

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#### HK WEIYIKE TECHNOLOGY LIMITED

**Product Name: Dash Cam** 

Test Model(s).: V80-4CH, V8, V80, V8 Plus, V8 MAX

Report Reference No. : POCE231020004RF001

FCC ID : 2BDCW-V8

Applicant's Name : HK WEIYIKE TECHNOLOGY LIMITED

Address UNIT 2508A, 25/F BANK OF AMERICA TOWER 12 HARCOURT ROAD

CENTRAL HONG KONG

**Testing Laboratory**: Shenzhen POCETesting Technology Co., Ltd.

Address 101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology

Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China

47 CFR Part 15E

Test Specification Standard : ANSI C63.10-2013

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Date of Receipt : October 18, 2023

Date of Test : October 20, 2023 to October 26, 2023

Data of Issue : October 26, 2023

Result : Pass

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# **Revision History Of Report**

Version	Description	REPORT No.	Issue Date	
V1.0	Original	POCE231020004RF001	October 26, 2023	

#### NOTE1:

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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#### 1 TEST SUMMARY

#### 1.1 Test Standards

The tests were performed according to following standards:

47 CFR Part 15E: Unlicensed National Information Infrastructure Devices

#### 1.2 Summary of Test Result

Item	Standard	Method	Result
Duty Cycle	47 CFR Part 15E	ANSI C63.10-2013 section 12.2 (b)	Pass
Maximum conducted output power	47 CFR Part 15E	ANSI C63.10-2013, section 12.3	Pass
Power spectral density	47 CFR Part 15E	ANSI C63.10-2013, section 12.5	Pass
Emission bandwidth and occupied bandwidth	47 CFR Part 15E	ANSI C63.10-2013, section 6.9.3 & 12.4 KDB 789033 D02, Clause C.2	Pass
Band edge emissions (Radiated)	47 CFR Part 15E	ANSI C63.10-2013, section 12.7.4, 12.7.5, 12.7.6	Pass
Undesirable emission limits (below 1GHz)	47 CFR Part 15E	ANSI C63.10-2013, section 12.7.4, 12.7.5, 12.7.6	Pass
Undesirable emission limits (above 1GHz)	47 CFR Part 15E	ANSI C63.10-2013, section 12.7.4, 12.7.5, 12.7.6	Pass

Note: 1.N/A -this device(EUT) is not applicable to this testing item

2. RF-conducted test results including cable loss.



#### 2 GENERAL INFORMATION

#### 2.1 Client Information

Applicant's Name : HK WEIYIKE TECHNOLOGY LIMITED

Address : UNIT 2508A, 25/F BANK OF AMERICA TOWER 12 HARCOURT ROAD

CENTRAL HONG KONG

Manufacturer : Shenzhen WEIYIKE Technology Co.,Ltd

Address : Room503, NO.4, Maojinghua SOHO Yi Luan Building, Xixiang Rood,

NO.230, Baoan, District, ShenZhen, P.R.China.

#### 2.2 Description of Device (EUT)

Product Name:	Dash Cam
sample number:	231020011-1
Model/Type reference:	V80-4CH
Series Model:	V8, V80, V8 Plus, V8 MAX
Model Difference:	The appearance of the product is consistent, and the BOM and PCB are also consistent. Different versions of built-in software result in different product names, but it does not affect the emc and rf performance of the product.
Trade Mark:	1
Product Description:	Dash Cam
Power Supply:	DC5.0V from car-adapter(DC12V from car-battery)
Operation Frequency:	802.11a/n(HT20): U-NII Band 3: 5745MHz to 5825MHz; 802.11n(HT40): U-NII Band 3: 5755MHz to 5795MHz;
Number of Channels:	802.11a/n(HT20): U-NII Band 3: 5; 802.11n(HT40): U-NII Band 3: 2;
Modulation Type:	802.11a: OFDM(BPSK, QPSK, 16QAM, 64QAM); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM);
Antenna Type:	PCB ANT
Antenna Gain:	0.68dBi
Hardware Version:	V0.2
Software Version:	V1.0

#### **Operation Frequency each of channel**

802.11a/n(HT20)

	U-NII Band 3	
Channel	Frequency	
1	5745 MHz	
2	5765 MHz	
3	5785 MHz	
4	5805 MHz	
5	5825 MHz	

802.11n(HT40)

	U-NII Band 3		
Channel	Frequency		
1	5755 MHz		
2	5795 MHz		



#### Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see

#### 802.11a/n(HT20)

	U-NII Band 3		
Test channel	Frequency (MHz)		
Lowest channel	5745 MHz		
Middle channel	5785 MHz		
Highest channel	5825 MHz		

#### 802.11n(HT40)

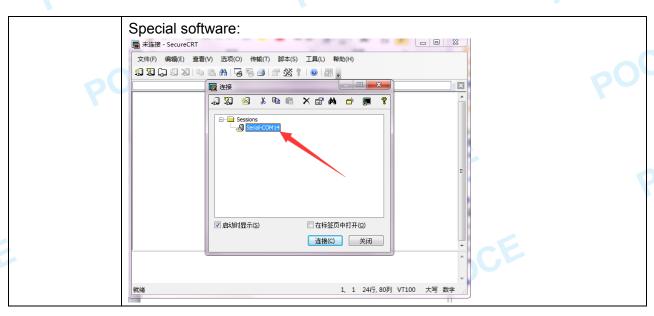
	U-NII Band 3
Test channel	Frequency (MHz)
Lowest channel	5755 MHz
Highest channel	5795 MHz

## **Description of Test Modes**

No	Title	Description		
TM1	802.11a mode	Keep the EUT in continuously transmitting mode with 802.11a modulation type. All data rates has been tested and found the data rate @ 6Mbps is the worst case. Only the data of worst case is recorded in the report.		
TM2	802.11n(HT20) mode	Keep the EUT in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.		
TM3	802.11n(HT40) mode	Keep the EUT in continuously transmitting mode with 802.11n modulation type. All bandwidth and data rates has been tested and found the data rate @ MCS0 is the worst case. Only the data of worst case is recorded in the report.		
Descri	ption			
Keep tl	he EUT works in continuous	ly transmitting mode (100%duty cycle or max duty cycle).		
Spe	ecial software is used.			
Through engineering command into the engineering mode.				
engineering command: *#*#3646633#*#*				
⊠Oth	er method: SecureCRT			

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#### 2.4 Description of Support Units

The EUT was tested as an independent device.

#### 2.5 Equipments Used During The Test

Conducted Emission at AC power line					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal. Due Date
Shielding room	CY	8*4*3	20160102	2023/1/26	2025/1/25
Pulse Limiter	Schwarzbeck	VTSD 9561	561-G071	2023/2/27	2024/2/26
Cable	Schwarzbeck	/	1	2023/2/27	2024/2/26
Test Receiver	Rohde & Schwarz	ESPI	1164.6607K03- 102109-MH	2023/6/13	2024/6/12
L.I.S.N	R&S	ESH3-Z5	831.5518.52	2022/12/29	2023/12/28
L.I.S.N	Schwarzbeck	NSLK 8126	NSLK 8126	2023/8/8	2024/8/7
50ΩCoaxial Switch	Anritsu	MP59B	M20531	/	/
EMI Testsoftware	Farad	EZ -EMC	V1.1.42	/	1

Emissions in restricted frequency bands and RF									
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date				
Test Receiver	R&S	ESCI	102109	2023/6/13	2024/6/12				
Spectrum Analyzer	R&S	FSP30	1321.3008K40- 101729-jR	2023/6/14	2024/6/13				
966 Chamber	CY	9*6*6	20160101	2023/1/26	2025/1/25				
Bore-sighting Antenna rack	PBB	1308503	16033	1	/				
Loop antenna	ZHINAN	ZN30900C	ZN30900C	2021/7/5	2024/7/4				
Broadband Antenna	Sunol Sciences	JB6 Antenna	A090414	2023/5-21	2025/5-20				
Horn Antenna	Sunol Sciences	DRH-118	A091114	2023/5/13	2025/5/12				
Horn antenna	COM-POWER	AH-1840(40G)	10100008	2023/4/5	2025/4/4				
Power APM(LF)	Schwarzbeck	BBV9743	9743-151	2023/6/13	2024/6/12				

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Power APM(HF)	Schwarzbeck	BBV9718	9718-282	2023/6/13	2024/6/12
Cable(LF)#2	Schwarzbeck	1	1	2023/2/27	2024/2/26
Cable(LF)#1	Schwarzbeck	1		2023/2/27	2024/2/26
Cable(HF)#2	Schwarzbeck	AK9515E	96250	2023/2/28	2024/2/27
Cable(HF)#1	Schwarzbeck	SYV-50-3-1	1	2023/2/27	2024/2/26
Power divider	MIDEWEST	PWD-2533	SMA-79	2023/5/11	2026/5/10
signal generator	Keysight	N5181A	MY48180415	2022/12/10	2023/12/9
signal generator	Keysight	N5182A	MY50143455	2022/12/29	2023/12/28
Spectrum Analyzer	Keysight	N9020A	MY53420323	2022/12/29	2023/12/28
Power meter	Agilent	E4417A	MY45102835	2022/12/29	2023/12/28
RF Sensor Unit	TACHOY	TR1029-2	000001		1
RF Control Unit	TACHOY	TR1029-1	000001		/
Position Controller	MF	MF-7802	1		1
EMI Testsoftware	Farad	EZ -EMC	V1.1.42	1	1
RF TestSoftware	TACHOY	RTS-01	V2.0.0.0	1	1

#### **Statement Of The Measurement Uncertainty**

Test Item		Measurement Uncertainty
Conducted Disturbance (0.15~30MHz)		±3.41dB
Duty cycle		±3.1%
RF conducted power	OCT	±0.733dB
RF power density	PO	±0.234%
Occupied Bandwidth		±3.63%
Radiated Emission (Above 1GHz)		±5.46dB
Radiated Emission (Below 1GHz)		±5.79dB

Note: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

#### 2.7 **Authorizations**

Company Name:	Shenzhen POCE Technology Co., Ltd.
Address:	101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252

#### Identification of the Responsible Testing Location

Company Name:	Shenzhen POCE Technology Co., Ltd.					
Address:	101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China					
Phone Number:	+86-13267178997					
Fax Number:	86-755-29113252					
FCC Registration Number:	0032847402					
Designation Number:	CN1342					
Test Firm Registration No.:	778666					
A2LA Certificate Number:	6270.01					



#### 2.8 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by POCE and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) We hereby declare that the laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant. the laboratory is not responsible for the accuracy of the information provided by the client. When the information provided by the customer may affect the effectiveness of the results, the responsibility lies with the customer, and the laboratory does not assume any responsibility.

# 3 Evaluation Results (Evaluation)

#### 3.1 Antenna requirement

Test Requirement:

Refer to 47 CFR Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

#### 3.1.1 Conclusion:





# 4 Radio Spectrum Matter Test Results (RF)

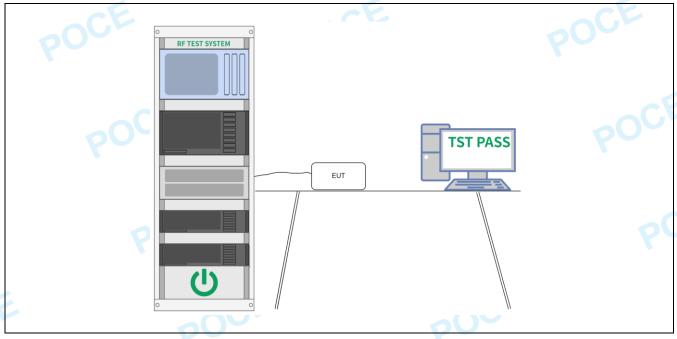
## 4.1 Duty Cycle

Test Requirement:	All measurements are to be performed with the EUT transmitting at 100% duty cycle at its maximum power control level; however, if 100% duty cycle cannot be achieved, measurements of duty cycle, x, and maximum-power transmission duration, T, are required for each tested mode of operation.
Test Limit:	No limits, only for report use.
Test Method:	ANSI C63.10-2013 section 12.2 (b)
Procedure:	<ul> <li>i) Set the center frequency of the instrument to the center frequency of the transmission.</li> <li>ii) Set RBW &gt;= EBW if possible; otherwise, set RBW to the largest available value.</li> <li>iii) Set VBW &gt;= RBW.</li> <li>iv) Set detector = peak.</li> <li>v) The zero-span measurement method shall not be used unless both RBW and VBW are &gt; 50/T, where T is defined in item a1) of 12.2, and the number of sweep points across duration T exceeds 100.</li> </ul>

#### 4.1.1 E.U.T. Operation:

Operating Environment:							
Temperature:	22.1 °C		Humidity:	47.9 %	Atmospheric Pressure:	101 kPa	
Pre test mode:		TM1,	TM2, TM3		<b>Y</b>		
Final test mode:		TM1,	TM2, TM3				

#### 4.1.2 Test Setup Diagram:



#### 4.1.3 Test Data:

Please Refer to Appendix for Details.

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#### 4.2 Maximum conducted output power

4.2 Maximum cond	ducted output power
Test Requirement:	47 CFR Part 15.407(a)(3)(i)
Test Limit:	For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.  If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.  However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.  ANSI C63.10-2013, section 12.3
Procedure:	Method SA-1 a) Set span to encompass the entire 26 dB EBW or 99% OBW of the signal. b) Set RBW = 1 MHz. c) Set VBW >= 3 MHz. d) Number of points in sweep >= [2 × span / RBW]. (This gives bin-to-bin spacing <= RBW / 2, so that narrowband signals are not lost between frequency bins.) e) Sweep time = auto.
POCE	f) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode. g) If transmit duty cycle < 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. The transmitter shall operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no OFF intervals) or at duty cycle >= 98%, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run."
POCI	h) Trace average at least 100 traces in power averaging (rms) mode. i) Compute power by integrating the spectrum across the 26 dB EBW or 99% OBW of the signal using the instrument's band power measurement function, with band limits set equal to the EBW or OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW or 99% OBW of the spectrum.

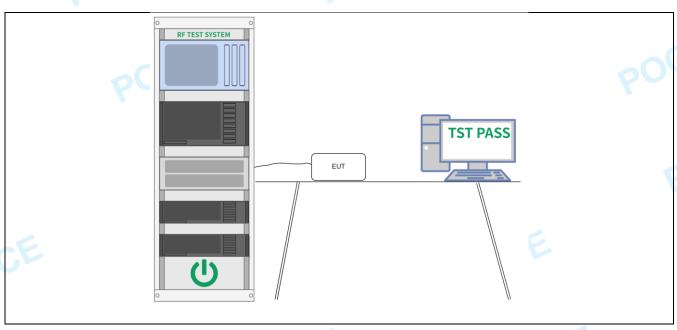
#### 4.2.1 E.U.T. Operation:

Operating Envir	onment:				000	4	
Temperature:	22.1 °C		Humidity:	47.9 %	Atmospheric Pressure:	101 kPa	
Pre test mode:		TM1,	TM2, TM3				
Final test mode:		TM1,	TM2, TM3				

#### 4.2.2 Test Setup Diagram:

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#### 4.2.3 Test Data:

Please Refer to Appendix for Details.



#### 4.3 Power spectral density

Tat Daniment	
Test Requirement:	47 CFR Part 15.407(a)(3)(i)
Test Limit:	For the band 5.725-5.850 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.  If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.  Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
Test Method:	ANSI C63.10-2013, section 12.5
Procedure:	a) Create an average power spectrum for the EUT operating mode being tested by following the instructions in 12.3.2 for measuring maximum conducted output power using a spectrum analyzer or EMI receiver; that is, select the appropriate test method (SA-1, SA-2, SA-3, or their respective alternatives) and apply it up to, but not including, the step labeled, "Compute power" (This procedure is required even if the maximum conducted output power measurement was performed using the power meter method PM.) b) Use the peak search function on the instrument to find the peak of the spectrum. c) Make the following adjustments to the peak value of the spectrum, if applicable: 1) If method SA-2 or SA-2A was used, then add [10 log (1 / D)], where D is the duty cycle, to the peak of the spectrum. 2) If method SA-3A was used and the linear mode was used in step h) of 12.3.2.7, add 1 dB to the final result to compensate for the difference between linear averaging and power averaging. d) The result is the PPSD.
POCI	e) The procedure in item a) through item c) requires the use of 1 MHz resolution bandwidth to satisfy the 1 MHz measurement bandwidth specified by some regulatory authorities. This requirement also permits use of resolution bandwidths less than 1 MHz "provided that the measured power is integrated to show the total power over the measurement bandwidth" (i.e., 1 MHz). If measurements are performed using a reduced resolution bandwidth and integrated over 1 MHz bandwidth, the following adjustments to the procedures apply:  1) Set RBW >= 1 / T, where T is defined in 12.2 a).  2) Set VBW >= [3 × RBW].  3) Care shall be taken such that the measurements are performed during a period
	of continuous transmission or are corrected upward for duty cycle.

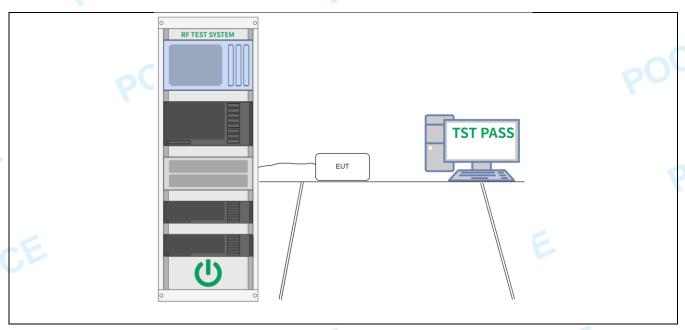
#### 4.3.1 E.U.T. Operation:

Operating Environment:						
Temperature:	22.1 °C		Humidity:	47.9 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Pre test mode: TM1, TM2, TM3					
Final test mode:		TM1,	TM2, TM3			

#### 4.3.2 Test Setup Diagram:

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#### 4.3.3 Test Data:

Please Refer to Appendix for Details.



#### 4.4 Emission bandwidth and occupied bandwidth

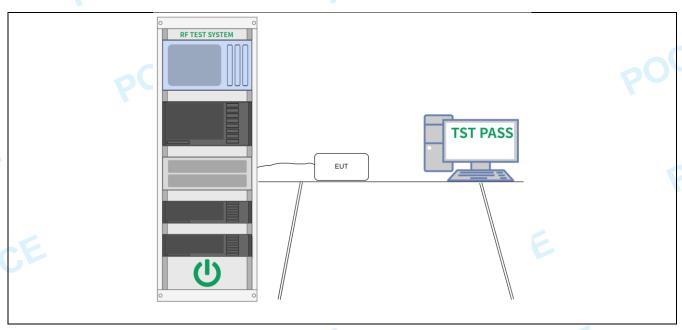
Test Requirement:	U-NII 3, U-NII 4: 47 CFR Part 15.407(e)
Test Limit:	U-NII 3, U-NII 4: Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.
Test Method:	ANSI C63.10-2013, section 6.9.3 & 12.4 KDB 789033 D02, Clause C.2
Procedure:	Occupied bandwidth:  a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.  b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
E	c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2. d) Step a) through step c) might require iteration to adjust within the specified range.
OCE	e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used. f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth. g) If the instrument does not have a 99% power bandwidth function, then the trace
POCE	data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
POCI	h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).
P	6 dB emission bandwidth:  a) Set RBW = 100 kHz.  b) Set the video bandwidth (VBW) ≥ 3 >= RBW.  c) Detector = Peak.  d) Trace mode = max hold.  e) Sweep = auto couple.  f) Allow the trace to stabilize.  g) Measure the maximum width of the emission that is constrained by the
	frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

#### 4.4.1 E.U.T. Operation:

Operating Environment:								
Temperature:	22.1 °C		Humidity:	47.9 %	Atmospheric Pressure:	101 kPa		
Pre test mode:		TM1,	TM2, TM3			CE		
Final test mode: TM1			TM2, TM3		20			

#### 4.4.2 Test Setup Diagram:





#### 4.4.3 Test Data:

Please Refer to Appendix for Details.

	nissions (Radiated)								
Test Requirement:	47 CFR Part 15.407(b)(4 47 CFR Part 15.407(b)(1			<u> </u>					
Test Limit:	For transmitters operating solely in the 5.725-5.850 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.								
	MHz	MHz	MHz						
	0.090-0.110	16.42-16.423	399.9-410	GHz 4.5-5.15					
	10.495-0.505	16.69475-16.69525	608-614	5.35-5.46					
	2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75					
	4.125-4.128	25.5-25.67	1300-1240	8.025-8.5					
	4.17725-4.17775	37.5-38.25	1435-1626.						
	4.20725-4.20775	73-74.6	1645.5-1646						
	6.215-6.218	74.8-75.2	1660-1710	10.6-12.7					
	6.26775-6.26825	108-121.94	1718.8-1722						
	6.31175-6.31225	123-138	2200-2300	14.47-14.5					
	8.291-8.294	149.9-150.05	2310-2390	15.35-16.2					
	8.362-8.366	156.52475-	2483.5-2500						
	0.302-0.300	156.52525	2403.3-2300	17.7-21.4					
	8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12					
	8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0					
	12.29-12.293	167.72-173.2 3332-3339		31.2-31.8					
	12.51975-12.52025	240-285	3345.8-3358	36.43-36.5					
	12.57675-12.57725	322-335.4	3600-4400	(2)					
	13.36-13.41								
		ii iio i ooti lotoa baria oric							
	<sup>2</sup> Above 38.6  The field strength of emisexceed the limits shown MHz, compliance with the measurement instrument MHz, compliance with the on the average value of these measurements.  Except as provided elsevores.	in § 15.209. At frequen e limits in § 15.209shal tation employing a CISI e emission limits in § 1. The measured emission where in this subpart, the	these freque cies equal to I be demonstr PR quasi-pea 5.209shall be s. The provisi	ncy bands shall not or less than 1000 rated using k detector. Above 100 demonstrated based ons in § 15.35apply to					
	<sup>2</sup> Above 38.6  The field strength of emisexceed the limits shown MHz, compliance with the measurement instrument MHz, compliance with the on the average value of these measurements.  Except as provided elsew radiator shall not exceed	ssions appearing within in § 15.209. At frequen e limits in § 15.209shal tation employing a CISI e emission limits in § 1 the measured emission where in this subpart, the field strength level	these freque cies equal to I be demonstr PR quasi-pea 5.209shall be s. The provisi	ncy bands shall not or less than 1000 rated using k detector. Above 100 demonstrated based ons in § 15.35apply to from an intentional the following table:					
	<sup>2</sup> Above 38.6  The field strength of emisexceed the limits shown MHz, compliance with the measurement instrument MHz, compliance with the on the average value of these measurements.  Except as provided elsevores.	ssions appearing within in § 15.209. At frequen e limits in § 15.209shal tation employing a CISI e emission limits in § 1. the measured emission where in this subpart, the	these freque cies equal to I be demonstr PR quasi-pea 5.209shall be s. The provisi	ncy bands shall not or less than 1000 rated using k detector. Above 100 demonstrated based ons in § 15.35apply to from an intentional the following table:  Measurement distance					
	<sup>2</sup> Above 38.6  The field strength of emisexceed the limits shown MHz, compliance with the measurement instrument MHz, compliance with the on the average value of these measurements.  Except as provided elsew radiator shall not exceed Frequency (MHz)	essions appearing within in § 15.209. At frequence limits in § 15.209shal tation employing a CISI e emission limits in § 1. The measured emission where in this subpart, the field strength level Field strength (microvolts/meter)	these freque cies equal to I be demonstr PR quasi-pea 5.209shall be s. The provisi	ncy bands shall not or less than 1000 rated using k detector. Above 100 demonstrated based ons in § 15.35apply to from an intentional the following table:  Measurement distance (meters)					
	<sup>2</sup> Above 38.6  The field strength of emisexceed the limits shown MHz, compliance with the measurement instrument MHz, compliance with the on the average value of these measurements.  Except as provided elsew radiator shall not exceed Frequency (MHz)	ssions appearing within in § 15.209. At frequen e limits in § 15.209shal tation employing a CISI e emission limits in § 1she measured emission where in this subpart, the field strength level Field strength (microvolts/meter)	these freque cies equal to I be demonstr PR quasi-pea 5.209shall be s. The provisi	ncy bands shall not or less than 1000 rated using k detector. Above 100 demonstrated based ons in § 15.35apply to from an intentional the following table:  Measurement distance (meters) 300					
	<sup>2</sup> Above 38.6  The field strength of emisexceed the limits shown MHz, compliance with the measurement instrument MHz, compliance with the on the average value of these measurements.  Except as provided elsew radiator shall not exceed Frequency (MHz)  0.009-0.490 0.490-1.705	ssions appearing within in § 15.209. At frequen e limits in § 15.209shal tation employing a CISI e emission limits in § 1she measured emission where in this subpart, the field strength level   Field strength (microvolts/meter)   2400/F(kHz)   24000/F(kHz)	these freque cies equal to I be demonstr PR quasi-pea 5.209shall be s. The provisi	ncy bands shall not or less than 1000 rated using k detector. Above 100 demonstrated based ons in § 15.35apply to from an intentional the following table:  Measurement distance (meters) 300 30					
	<sup>2</sup> Above 38.6  The field strength of emisexceed the limits shown MHz, compliance with the measurement instrument MHz, compliance with the on the average value of these measurements.  Except as provided elsew radiator shall not exceed Frequency (MHz)  0.009-0.490 0.490-1.705 1.705-30.0	ssions appearing within in § 15.209. At frequen e limits in § 15.209shal tation employing a CISI e emission limits in § 1she measured emission where in this subpart, the field strength level   Field strength (microvolts/meter)   2400/F(kHz)   24000/F(kHz)   30	these freque cies equal to I be demonstr PR quasi-pea 5.209shall be s. The provisi	ncy bands shall not or less than 1000 rated using k detector. Above 100 demonstrated based ons in § 15.35apply to from an intentional the following table:  Measurement distance (meters)  300  30  30					
	<sup>2</sup> Above 38.6  The field strength of emisexceed the limits shown MHz, compliance with the measurement instrument MHz, compliance with the on the average value of these measurements.  Except as provided elsew radiator shall not exceed Frequency (MHz)  0.009-0.490 0.490-1.705 1.705-30.0 30-88	ssions appearing within in § 15.209. At frequen e limits in § 15.209shal tation employing a CISI e emission limits in § 1 the measured emission where in this subpart, the field strength level   Field strength (microvolts/meter)   2400/F(kHz)   24000/F(kHz)   30   100 **	these freque cies equal to I be demonstr PR quasi-pea 5.209shall be s. The provisi	ncy bands shall not or less than 1000 rated using k detector. Above 100 demonstrated based ons in § 15.35apply to from an intentional the following table:  Measurement distance (meters)  300  30  30  30  30					
	<sup>2</sup> Above 38.6  The field strength of emisexceed the limits shown MHz, compliance with the measurement instrument MHz, compliance with the on the average value of these measurements.  Except as provided elsew radiator shall not exceed Frequency (MHz)  0.009-0.490 0.490-1.705 1.705-30.0	ssions appearing within in § 15.209. At frequen e limits in § 15.209shal tation employing a CISI e emission limits in § 1she measured emission where in this subpart, the field strength level Field strength (microvolts/meter)  2400/F(kHz) 24000/F(kHz) 30 100 ** 150 **	these freque cies equal to I be demonstr PR quasi-pea 5.209shall be s. The provisi	ncy bands shall not or less than 1000 rated using k detector. Above 100 demonstrated based ons in § 15.35apply to from an intentional the following table:  Measurement distance (meters)  300  30  30  3  3					
	<sup>2</sup> Above 38.6  The field strength of emisexceed the limits shown MHz, compliance with the measurement instrument MHz, compliance with the on the average value of these measurements.  Except as provided elsew radiator shall not exceed Frequency (MHz)  0.009-0.490 0.490-1.705 1.705-30.0 30-88	ssions appearing within in § 15.209. At frequen e limits in § 15.209shal tation employing a CISI e emission limits in § 1 the measured emission where in this subpart, the field strength level   Field strength (microvolts/meter)   2400/F(kHz)   24000/F(kHz)   30   100 **	these freque cies equal to I be demonstr PR quasi-pea 5.209shall be s. The provisi	ncy bands shall not or less than 1000 rated using k detector. Above 100 demonstrated based ons in § 15.35apply to from an intentional the following table:  Measurement distance (meters) 300 30 30 30 3 3 3 3 3 3 3					
	<sup>2</sup> Above 38.6  The field strength of emisexceed the limits shown MHz, compliance with the measurement instrument MHz, compliance with the on the average value of these measurements.  Except as provided elsew radiator shall not exceed Frequency (MHz)  0.009-0.490 0.490-1.705 1.705-30.0 30-88 88-216	ssions appearing within in § 15.209. At frequen e limits in § 15.209shal tation employing a CISI e emission limits in § 1she measured emission where in this subpart, the field strength level Field strength (microvolts/meter)  2400/F(kHz) 24000/F(kHz) 30 100 ** 150 **	these freque cies equal to I be demonstr PR quasi-pea 5.209shall be s. The provisi	ncy bands shall not or less than 1000 rated using k detector. Above 100 demonstrated based ons in § 15.35apply to from an intentional the following table:  Measurement distance (meters)  300  30  30  3  3					
est Method:	<sup>2</sup> Above 38.6  The field strength of emisexceed the limits shown MHz, compliance with the measurement instrument MHz, compliance with the on the average value of these measurements.  Except as provided elsew radiator shall not exceed Frequency (MHz)  0.009-0.490 0.490-1.705 1.705-30.0 30-88 88-216 216-960	ssions appearing within in § 15.209. At frequen e limits in § 15.209 shal tation employing a CISI e emission limits in § 1. The measured emission where in this subpart, the field strength level Field strength (microvolts/meter)  2400/F(kHz) 24000/F(kHz) 30 100 ** 150 ** 200 **	these freque cies equal to I be demonstr PR quasi-pea 5.209shall be s. The provisi ne emissions to s specified in	ncy bands shall not or less than 1000 rated using k detector. Above 100 demonstrated based ons in § 15.35apply to from an intentional the following table:  Measurement distance (meters)  300  30  30  3  3  3  3					
est Method:	<sup>2</sup> Above 38.6  The field strength of emisexceed the limits shown MHz, compliance with the measurement instrument MHz, compliance with the on the average value of these measurements.  Except as provided elsever adiator shall not exceed Frequency (MHz)  0.009-0.490 0.490-1.705 1.705-30.0 30-88 88-216 216-960 Above 960	ssions appearing within in § 15.209. At frequen e limits in § 15.209 shal tation employing a CISI e emission limits in § 1. The measured emission where in this subpart, the field strength level Field strength (microvolts/meter)  2400/F(kHz) 24000/F(kHz) 30 100 ** 150 ** 200 **	these freque cies equal to I be demonstr PR quasi-pea 5.209shall be s. The provisi ne emissions to s specified in	ncy bands shall not or less than 1000 rated using k detector. Above 100 demonstrated based ons in § 15.35apply to from an intentional the following table:  Measurement distance (meters)  300  30  30  3  3  3  3					

above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. 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.
- d. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. 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 retested one by one using peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete. Remark:
- 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
- 2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
- 4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

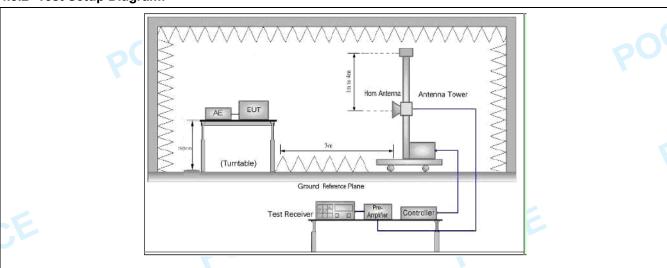
#### 4.5.1 E.U.T. Operation:

Operating Environment:								
Temperature:	22.1 °C		Humidity:	47.9 %	Atmospheric Pressure:	101 kPa		
Pre test mode:	0	TM1,	TM2		000			
Final test mode:		TM1,	TM2					

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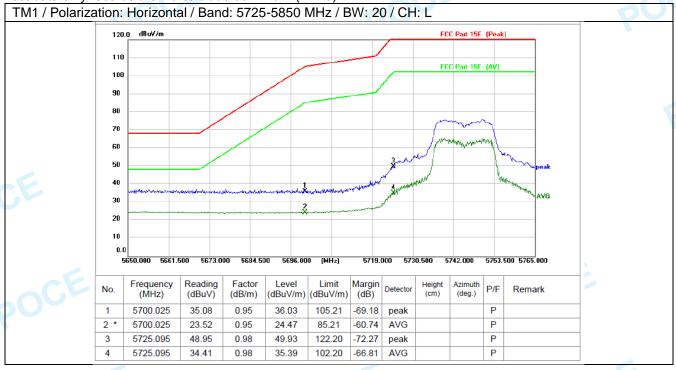


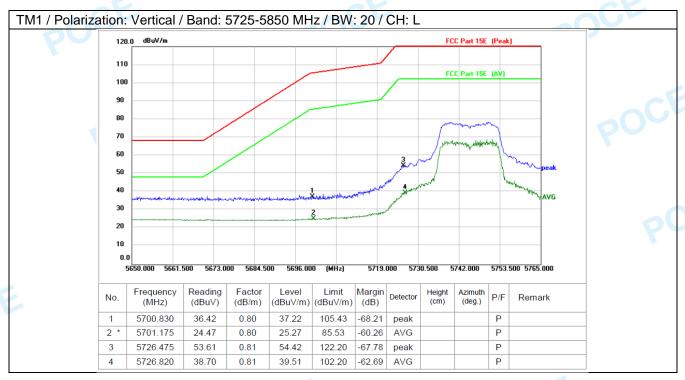
#### 4.5.2 Test Setup Diagram:



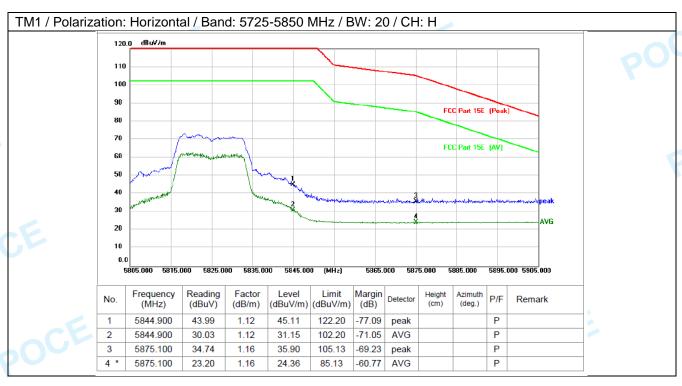
#### 4.5.3 Test Data:

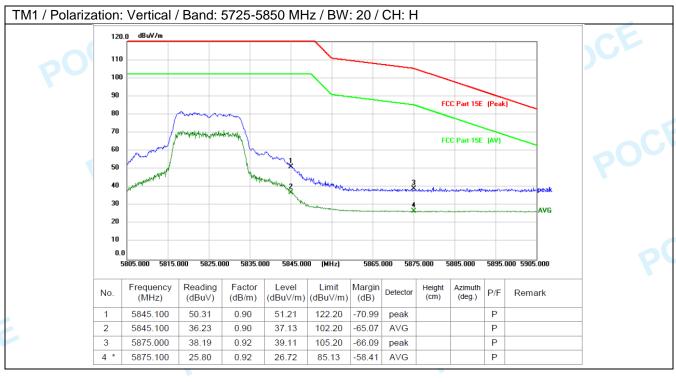
Test data only records the worst mode 802.11a/n (HT20).



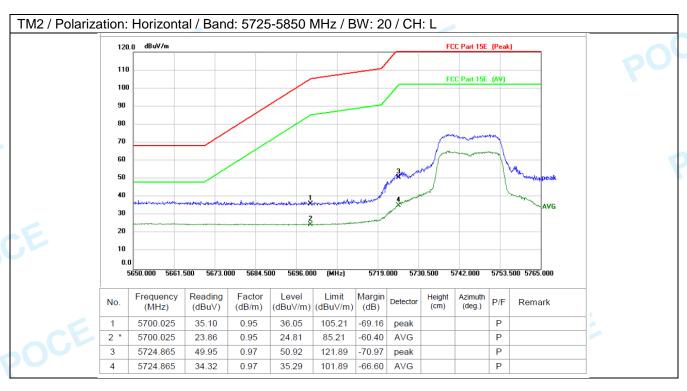


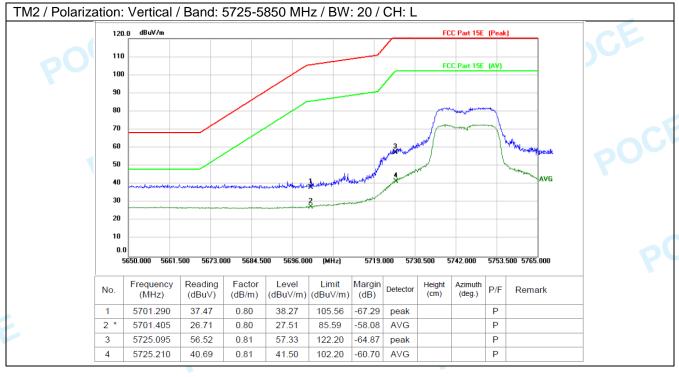




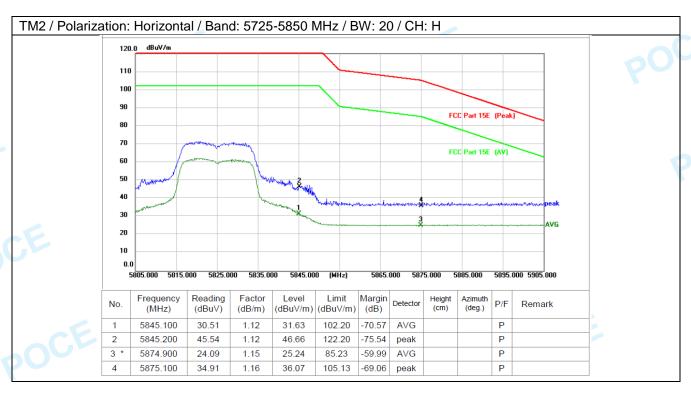


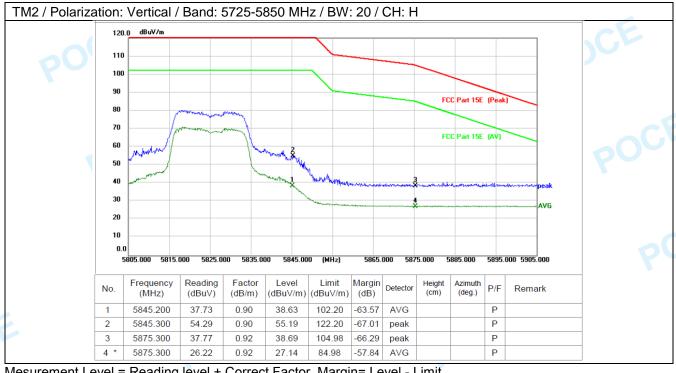












Mesurement Level = Reading level + Correct Factor, Margin= Level - Limit

## 4.6 Undesirable emission limits (below 1GHz)

Test Requirement:	47 CFR Part 15.407(b)	(9)								
Test Limit:	Unwanted emissions be set forth in § 15.209.	Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209.								
		Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:								
	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)							
	0.009-0.490	2400/F(kHz)	300							
	0.490-1.705	24000/F(kHz)	30							
	1.705-30.0	30	30							
	30-88	100 **	3							
	88-216	150 **	3							
	216-960	200 **	3							
	Above 960	500	3							
Test Method:	ANSI C63.10-2013, sed	ction 12.7.4, 12.7.5, 12.7.6								
Procedure:	Below 1GHz:									
OCE	a. For below 1GHz, the		o of a rotating table 0.8 meters onber. The table was rotated 360							
		ne position of the highest ra								
			interference-receiving antenna,							
		the top of a variable-height	•							
			our 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.  d. For each suspected emission, the EUT was arranged to its worst case and then								
			Inged to its worst case and then I meters (for the test frequency of							
			meter) and the rotatable table							
		ees to 360 degrees to find t								
		stem was set to Peak Detect								
			r Function and Specified							
		Bandwidth with Maximum Hold Mode.								
	f. 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 retested one by one using quasi-peak method as specified and then reported in a									
		g quasi-peak method as spe	somed and then reported in a							
	data sheet.									
	g. Test the EUT in the lowest channel, the middle channel, the Highest channel.  h. The radiation measurements are performed in X. Y. Z. axis positioning for									
	h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.									
	i. Repeat above procedures until all frequencies measured was complete.  Remark:									
		Cable Loss+ Antenna Facto	or- Preamn Factor							
		1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor 2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The								
		e plots are the highest emis								
		points had been displayed.								
			nore than 20dB below the limit							
	need not be reported.	acor which are attenuated if	10.0 than 2000 below the little							
		ow 1GHz was very low and t	the harmonics were the highest							
		nen testing, so only the above								
	displayed.	on testing, so only the above	TO HAITHOUNGS HAD DEEH							
	Talopia you.									

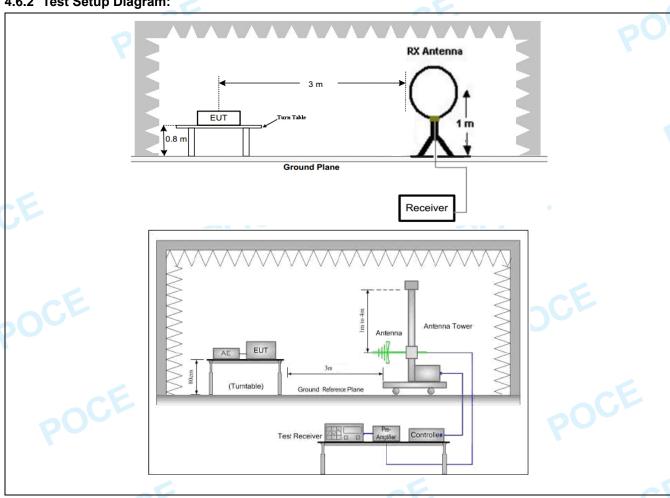
## 4.6.1 E.U.T. Operation:

Operating Environment:							
Temperature:	22.1 °C		Humidity:	47.9 %		Atmospheric Pressure:	101 kPa
Pre test mode:		TM1		6			



Final test mode: TM1

#### 4.6.2 Test Setup Diagram:



#### 4.6.3 Test Data:

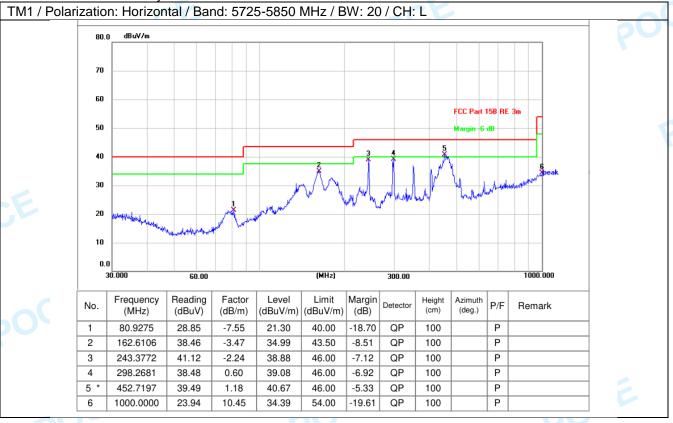
Between 9KHz - 30MHz

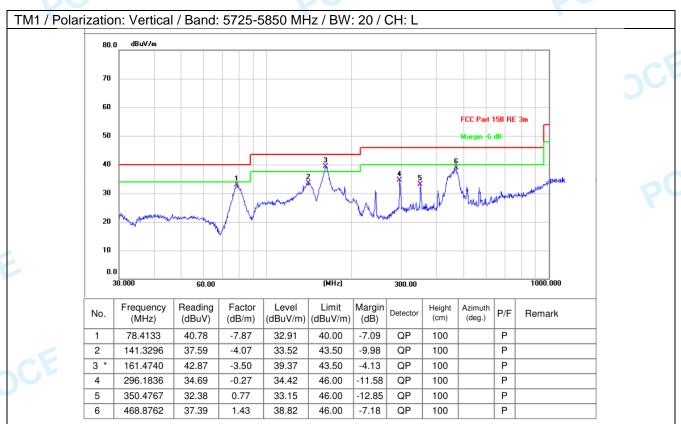
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

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#### 4.6.4 Test Data:

NOTE: The test results only show the worst mode or worst channel.





Mesurement Level = Reading level + Correct Factor, Margin= Mesurement - Limit



#### 4.7 Undesirable emission limits (above 1GHz)

4.7 Undesirable er	nission limits (abov	re IGHZ)							
Test Requirement:	47 CFR Part 15.407(b)( 47 CFR Part 15.407(b)(		E						
Test Limit:	For transmitters operating solely in the 5.725-5.850 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.								
	MHz	MHz	MHz	GHz					
	0.090-0.110	16.42-16.423	399.9-410	4.5-5.15					
	10.495-0.505	16.69475-16.69525	608-614	5.35-5.46					
	2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75					
	4.125-4.128	25.5-25.67	1300-1427	8.025-8.5					
	4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2					
	4.20725-4.20775	73-74.6	1645.5- 1646.5	9.3-9.5					
	6.215-6.218	74.8-75.2	1660-1710	10.6-12.7					
	6.26775-6.26825	108-121.94	1718.8- 1722.2	13.25-13.4					
	6.31175-6.31225	123-138	2200-2300	14.47-14.5					
	8.291-8.294	149.9-150.05	2310-2390	15.35-16.2					
	8.362-8.366	156.52475- 156.52525	2483.5-2500	17.7-21.4					
	8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12					
	8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0					
	12.29-12.293	167.72-173.2	3332-3339	31.2-31.8					
	12.51975-12.52025	240-285	3345.8-3358	36.43-36.5					
	12.57675-12.57725 13.36-13.41	322-335.4	3600-4400	(2)					
Test Method:	<sup>1</sup> Until February 1, 1999 <sup>2</sup> Above 38.6 ANSI C63.10-2013, sec	PU		oto MHZ.					
Procedure:		5, 12, 12							
P	Above 1GHz:  a. For above 1GHz, the above the ground at a 3 degrees to determine the b. The EUT was set 3 n was mounted on the top c. The antenna height is determine the maximum	3 meter fully-anechoic one position of the higher neters away from the irp of a variable-height as varied from one meters.	chamber. The ta est radiation. nterference-rece intenna tower. er to four meters	ble was rotated 360 iving antenna, which 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.  d. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table								
	was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. 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 tested one by one using a data sheet.	e emissions that did no g peak or average met	t have 10dB mai hod as specified	rgin would be re- and then reported in					
OCE	g. Test the EUT in the lo h. The radiation measu longfa Science & Technology P	rements are performed	l in X, Y, Z axis բ	ositioning for					

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Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete.

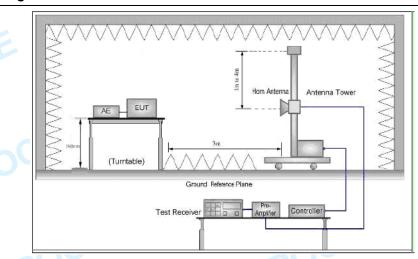
Remark:

- 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
- 2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
- 4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

#### 4.7.1 E.U.T. Operation:

Operating Environment:								
Temperature:	22.1 °C		Humidity:	47.9 %	Atmospheric Pressure:	101 kPa		
Pre test mode:		TM1,	TM2	CE		OCE		
Final test mode:	1	TM1,	TM2		O			

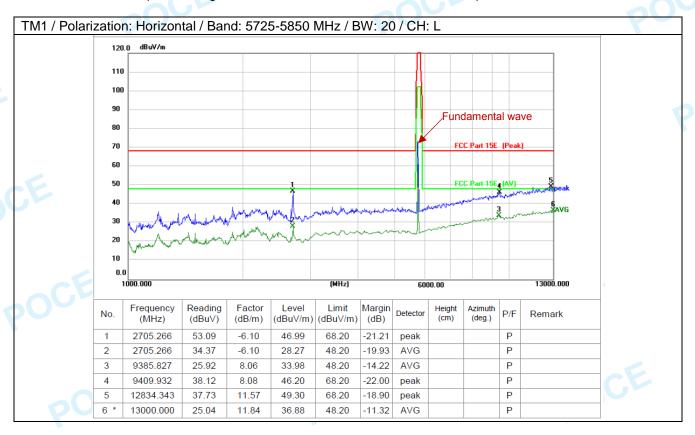
#### 4.7.2 Test Setup Diagram:

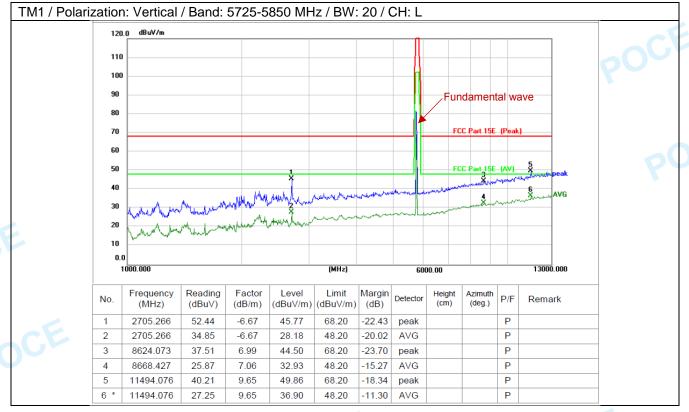


H1 Building 102, H Building 1/F, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China Web:http://www.poce-cert.com Tel: 86-755-29113252 E-mail: service@poce-cert.com Page 30 of 75

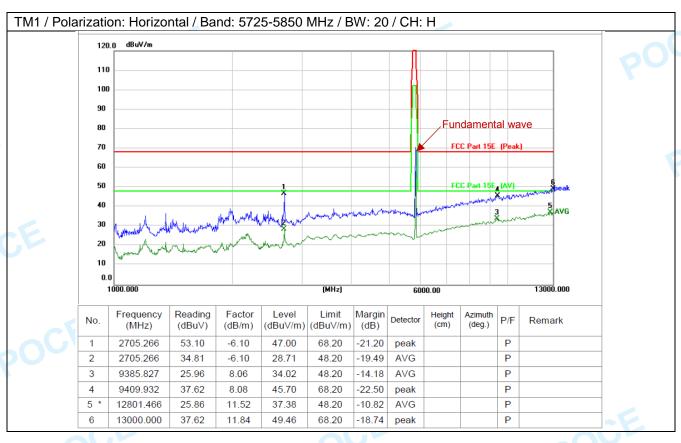
#### 4.7.3 Test Data:

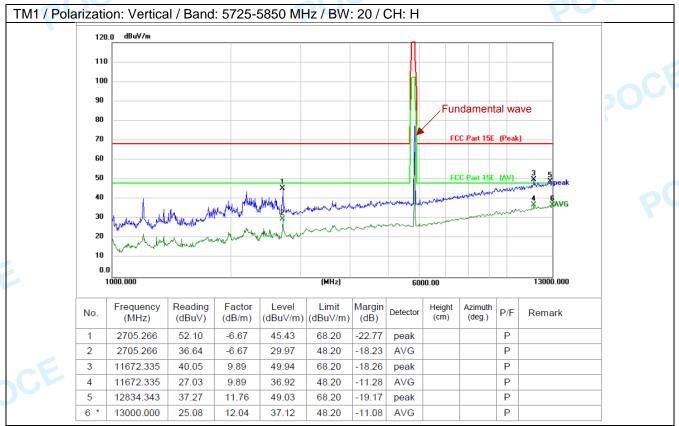
Only the worst mode and channel are recorded, The testing frequency reach up to 25GHz, but 13GHz-25GHz has no waveform except for background noise, so it was not recorded in the report.



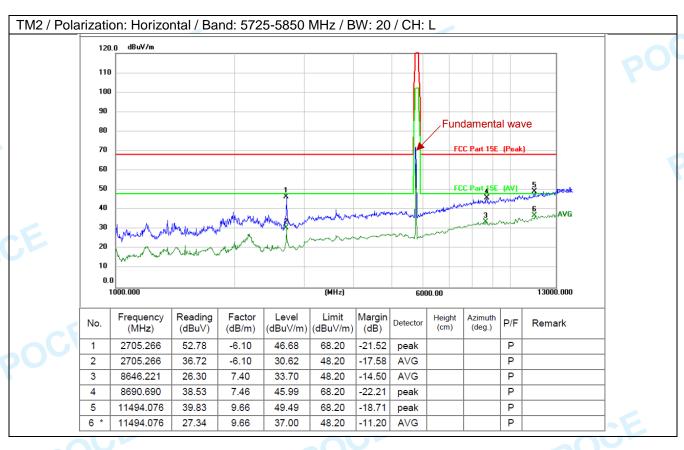


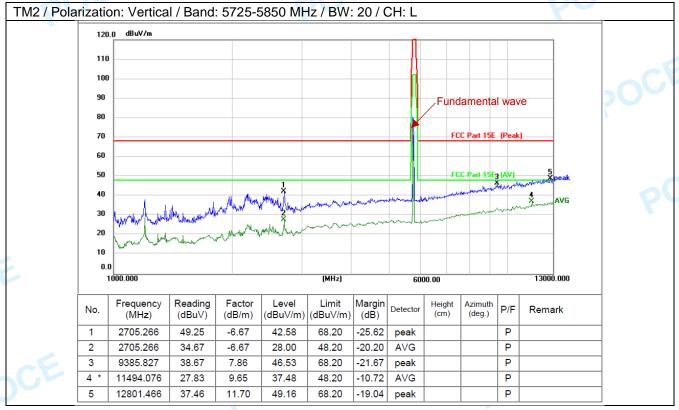




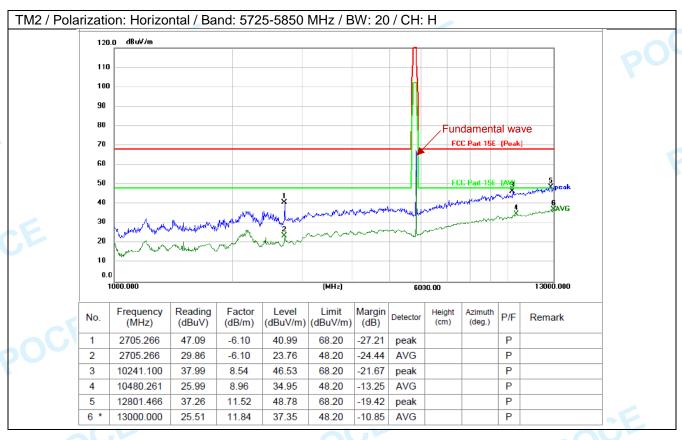


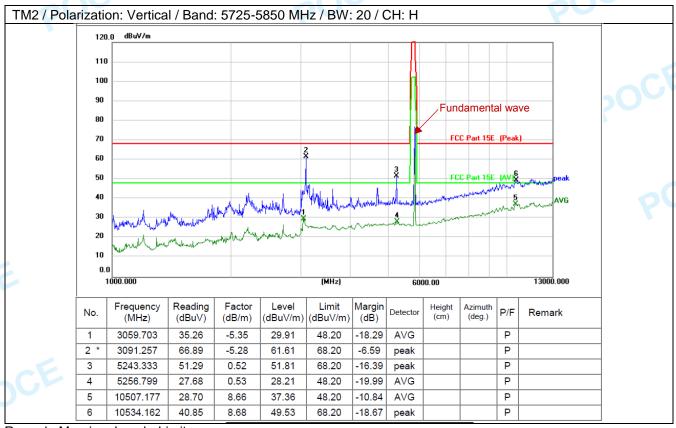












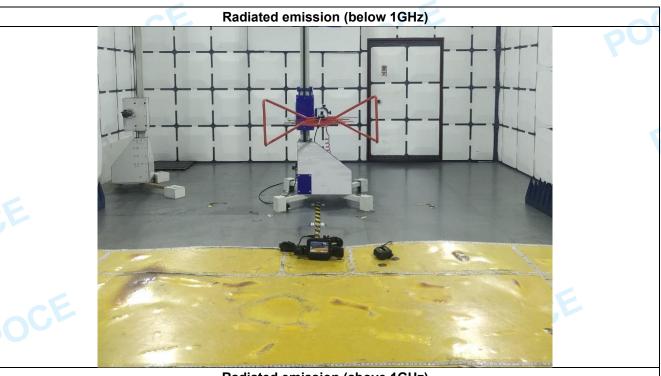
Remark: Margin = Level - Limit

Correction Factor= Antenna Factor + Cable loss - Pre-amplifier

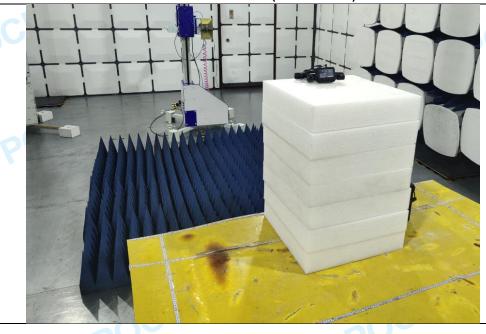
Level=Test receiver reading + correction factor



## 5 TEST SETUP PHOTOS









## 6 PHOTOS OF THE EUT















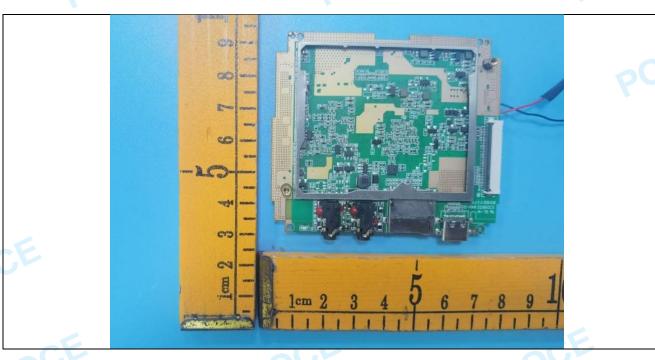


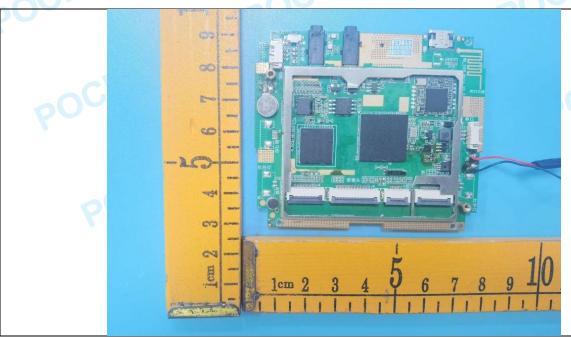




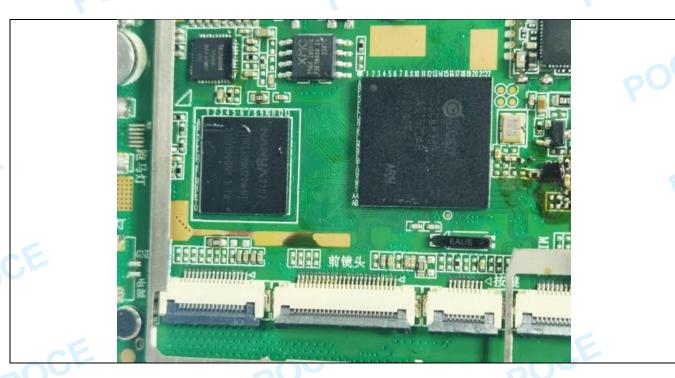












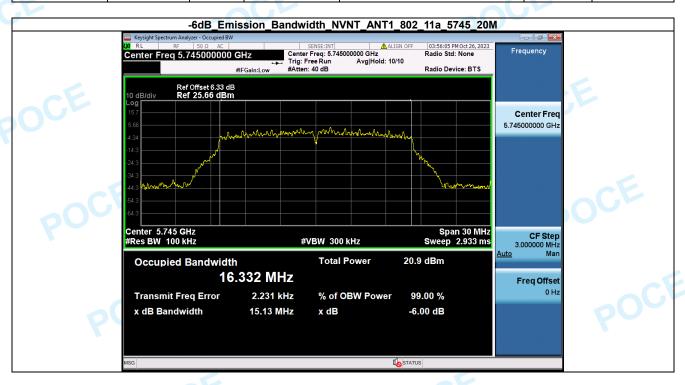




# Appendix

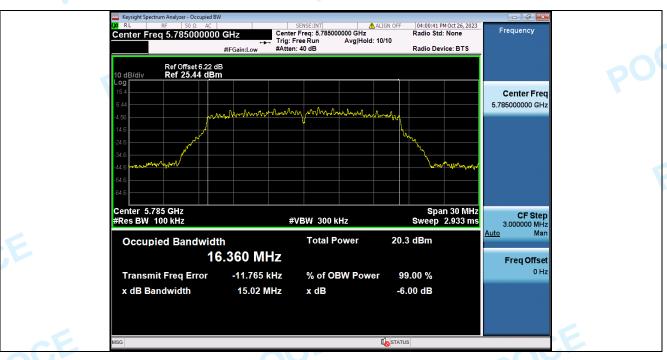
#### 1. -6dB Emission Bandwidth

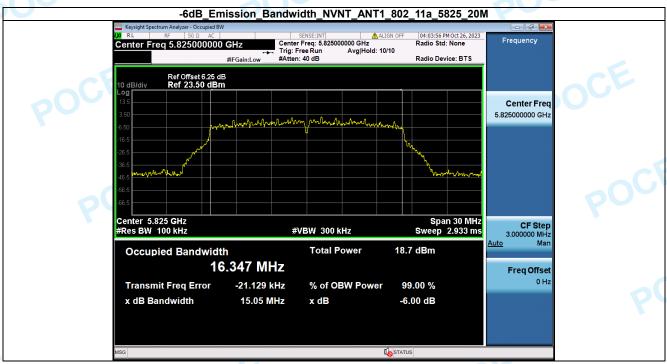
Condition	Antenna	Mode	Frequency(MHz)	-6dB_Emission_Bandwidth(MHz)	Limit(MHz)	Result
NVNT	ANT1	LCH	5745.00	15.128	0.500	Pass
NVNT	ANT1	MCH	5785.00	15.023	0.500	Pass
NVNT	ANT1	HCH	5825.00	15.052	0.500	Pass
NVNT	ANT1	LCH	5745.00	15.143	0.500	Pass
NVNT	ANT1	MCH	5785.00	16.018	0.500	Pass
NVNT	ANT1	HCH	5825.00	16.291	0.500	Pass
NVNT	ANT1	LCH	5755.00	35.149	0.500	Pass
NVNT	ANT1	HCH	5795.00	35.129	0.500	Pass



-6dB Emission Bandwidth NVNT ANT1 802 11a 5785 20M

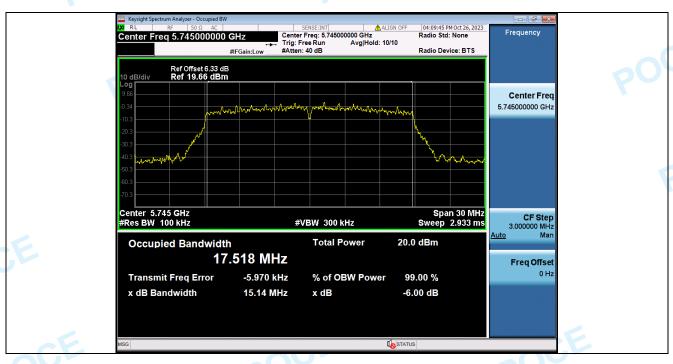


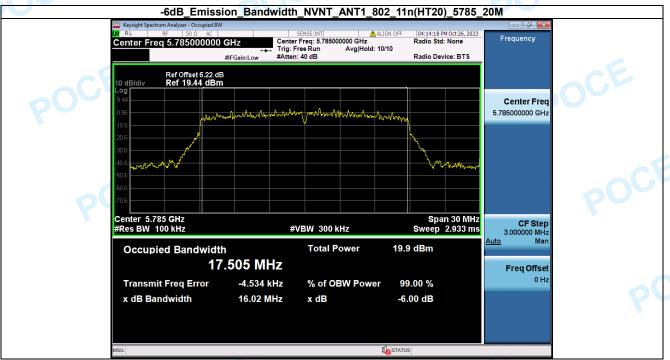




-6dB\_Emission\_Bandwidth\_NVNT\_ANT1\_802\_11n(HT20)\_5745\_20M



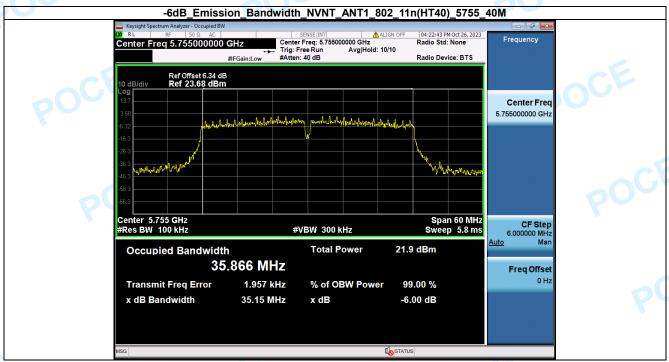




-6dB\_Emission\_Bandwidth\_NVNT\_ANT1\_802\_11n(HT20)\_5825\_20M







-6dB\_Emission\_Bandwidth\_NVNT\_ANT1\_802\_11n(HT40)\_5795\_40M