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# FCC Test Report

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Report No.: AGC08918170301FE06

**FCC ID** : 2AF6A-Q10

**APPLICATION PURPOSE** : Original Equipment

**PRODUCT DESIGNATION** : mini projector

**BRAND NAME** : N/A

**MODEL NAME** : Q10, PA01, PA03, H3000, H5000, H6000, AN100, I100, A1, BPHW01J

**CLIENT** : Guangxi Jiaway Technology Corporation Limited

**DATE OF ISSUE** : June. 1, 2017

**STANDARD(S)** : FCC Part 15.407

**TEST PROCEDURE(S)** : KDB 789033 D02

**REPORT VERSION** : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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### Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	June. 1, 2017	Valid	Original Report

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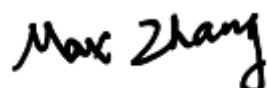
## 1. VERIFICATION OF CONFORMITY

<b>Applicant</b>	Guangxi Jiaway Technology Corporation Limited
<b>Address</b>	Building 5, China-Asean Enterprise headquarters base(Phase 2), No.3 of Headquarters road, Nanning, China
<b>Manufacturer</b>	Guangxi Jiaway Technology Corporation Limited
<b>Address</b>	Building 5, China-Asean Enterprise headquarters base(Phase 2), No.3 of Headquarters road, Nanning, China
<b>Product Designation</b>	mini projector
<b>Brand Name</b>	N/A
<b>Test Model</b>	Q10
<b>Series Model</b>	PA01, PA03, H3000, H5000, H6000, AN100, I100, A1, BPHW01J
<b>Model Difference</b>	All the same except the model name.
<b>Date of test</b>	May. 23, 2017~June. 1, 2017
<b>Deviation</b>	None
<b>Condition of Test Sample</b>	Normal
<b>Test Result</b>	Pass
<b>Report Template</b>	AGCRT-US-BGN/RF

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with requirement of FCC Part 15 Rules requirement.

Tested by



Max Zhang(Zhang Yi)

June. 1, 2017

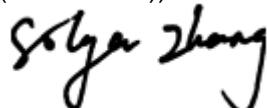
Reviewed by



Bart Xie(Xie Xiaobin)

June. 1, 2017

Approved by



Solger Zhang(Zhang Hongyi)

June. 1, 2017

Authorized Officer

## 2. GENERAL INFORMATION

### 2.1. PRODUCT DESCRIPTION

The EUT is designed as "client". It is designed by way of utilizing the OFDM technology to achieve the system operation.

A major technical description of EUT is described as following

<b>Operation Frequency</b>	5150 GHz~5250GHz;5725 GHz~5825GHz
<b>Output Power</b>	IEEE 802.11a20: <b>11.25</b> dBm: IEEE802.11n(20): <b>10.85</b> dBm
<b>Modulation</b>	BPSK, QPSK, 16QAM, 64QAM, 128QAM, 256QAM,OFDM
<b>Number of channels</b>	11
<b>Hardware Version</b>	V1.0
<b>Software Version</b>	5.90.195.89.13
<b>Antenna Designation</b>	Fixed Antenna
<b>Number of transmit chain</b>	1
<b>Antenna Gain</b>	0dBi
<b>Power Supply</b>	DC 5V by adapter

### 2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency	Frequency Band	Channel Number	Frequency
5150 GHz~ 5250GHz	36	5180 MHz	5725 GHz~ 5850GHz	149	5745 MHz
	40	5200 MHz		153	5765 MHz
	44	5220 MHz		157	5785 MHz
	48	5240 MHz		161	5805 MHz
				165	5825MHz

### **2.3. RELATED SUBMITTAL(S) / GRANT (S)**

This submittal(s) (test report) is intended for **FCC ID: 2AF6A-Q10** filing to comply with the FCC Part 15 requirements.

### **2.4. TEST METHODOLOGY**

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013). Radiated testing was performed at an antenna to EUT distance 3 meters. Others testing (listed at item 5.3) was performed according to the procedures in FCC Part 15.407 rules KDB 789033

### **2.5. SPECIAL ACCESSORIES**

Refer to section 5.2.

### **2.6. EQUIPMENT MODIFICATIONS**

Not available for this EUT intended for grant.

### 3. MEASUREMENT UNCERTAINTY

Conducted measurement: +/- 3.18dB

Radiated measurement: +/- 3.91dB

### 4. DESCRIPTION OF TEST MODES

Mode	Available channel	Tested channel	Modulation	Date rate(Mbps)
802.11a/n20	36,40,44,48,149,153,157,161,165	36,48, 149, 165	OFDM	6/6.5

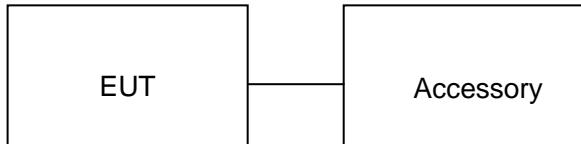
**Note:**

1. The EUT has been set to operate continuously on tested channel individually, and the EUT is operating at its maximum duty cycle>or equal 98%
2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.

## 5. SYSTEM TEST CONFIGURATION

### 5.1. CONFIGURATION OF EUT SYSTEM

Configure:



### 5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	Mini projector	Q10	2AF6A-Q10	EUT
2	Adapter	WS2U050-200	AC100-240V 50/60Hz DC5V/1A	Accessory
3	Battery	PACK(SEC-112990)	DC 3.7V 3300mAh	Accessory

### 5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.407	6dB Bandwidth and Emission Bandwidth	Compliant
§15.407	Maximum conducted output power	Compliant
§15.407	Conducted Spurious Emission	Compliant
§15.407	Maximum Conducted Output Power Density	Compliant
§15.209	Radiated Emission	Compliant
§15.407	Band Edges	Compliant
§15.207	Line Conduction Emission	Compliant

## 6. TEST FACILITY

<b>Site</b>	Dongguan Precise Testing Service Co., Ltd.
<b>Location</b>	Building D, Baoding Technology Park, Guangming Road 2, Dongcheng District, Dongguan, Guangdong, China.
<b>FCC Registration No.</b>	371540
<b>Description</b>	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2014.

## ALL TEST EQUIPMENT LIST

Radiated Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 3, 2016	July 2, 2017
Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 3, 2016	July 2, 2017
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 3, 2016	July 2, 2017
RF Cable	SCHWARZBECK	AK9515E	96221	July 3, 2016	July 2, 2017
3m Anechoic Chamber	CHENGYU	966	PTS-001	July 3, 2016	July 2, 2017
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Active loop antenna (9K-30MHz)	Schwarzbeck	FMZB1519	1519-038	July 3, 2016	July 2, 2017
Spectrum analyzer	Agilent	E4407B	MY46185649	July 3, 2016	July 2, 2017
Power Sensor	Agilent	U2021XA	MY55050474	July 3, 2016	July 2, 2017
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	July 3, 2016	July 2, 2017
Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	9170-181	June 3, 2016	June 2, 2017

Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	- Rohde & Schwarz	ESCI	101417	July 3, 2016	July 2, 2017
Artificial Mains Network	Narda	L2-16B	000WX31025	July 3, 2016	July 2, 2017
Artificial Mains Network (AUX)	Narda	L2-16B	000WX31026	July 3, 2016	July 2, 2017
RF Cable	SCHWARZBECK	AK9515E	96222	July 3, 2016	July 2, 2017
Shielded Room	CHENGYU	843	PTS-002	July 3, 2016	July 2, 2017

## 7. MAXIMUM CONDUCTED OUTPUT POWER

### 7.1. MEASUREMENT PROCEDURE

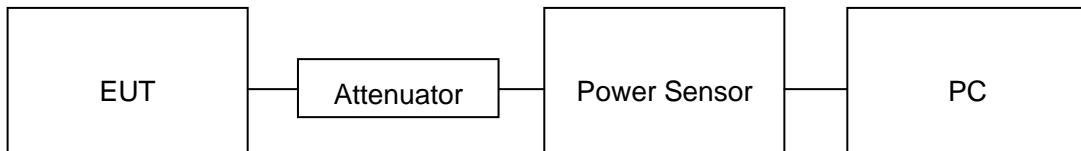
For average power test:

1. Connect EUT RF output port to power sensor through an RF attenuator.
2. Connect the power sensor to the PC.
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Record the maximum power from the software.

**Note :** The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

### 7.2. TEST SET-UP

#### AVERAGE POWER SETUP



### 7.3. LIMITS AND MEASUREMENT RESULT

<b>LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION</b>			
<b>Frequency (MHz)</b>	<b>Average Power (dBm)</b>	<b>Applicable Limits (dBm)</b>	<b>Pass or Fail</b>
5180	10.87	24	Pass
5240	10.64	24	Pass
5745	11.14	30	Pass
5825	11.25	30	Pass

<b>LIMITS AND MEASUREMENT RESULT FOR 802.11N20 MODULATION</b>			
<b>Frequency (MHz)</b>	<b>Average Power (dBm)</b>	<b>Applicable Limits (dBm)</b>	<b>Pass or Fail</b>
5180	10.21	24	Pass
5240	10.12	24	Pass
5745	10.85	30	Pass
5825	10.63	30	Pass

## 8. 6dB BANDWIDTH AND EMISSION BANDWIDTH

### 8.1. MEASUREMENT PROCEDURE

6dB bandwidth

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on operation frequency individually.
3. Set RBW = 100kHz.
4. Set the VBW  $\geq 3 \times$  RBW. Detector = Peak. Trace mode = max hold.
5. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.

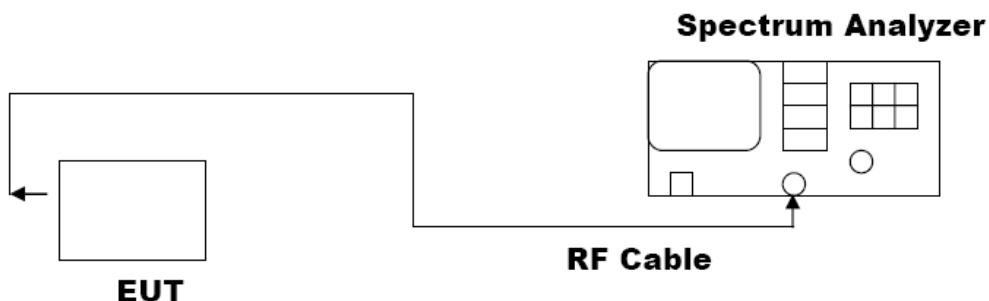
**Note:** The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

Emission bandwidth

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW  $>$  RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission.

Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

### 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



### 8.3. LIMITS AND MEASUREMENT RESULTS

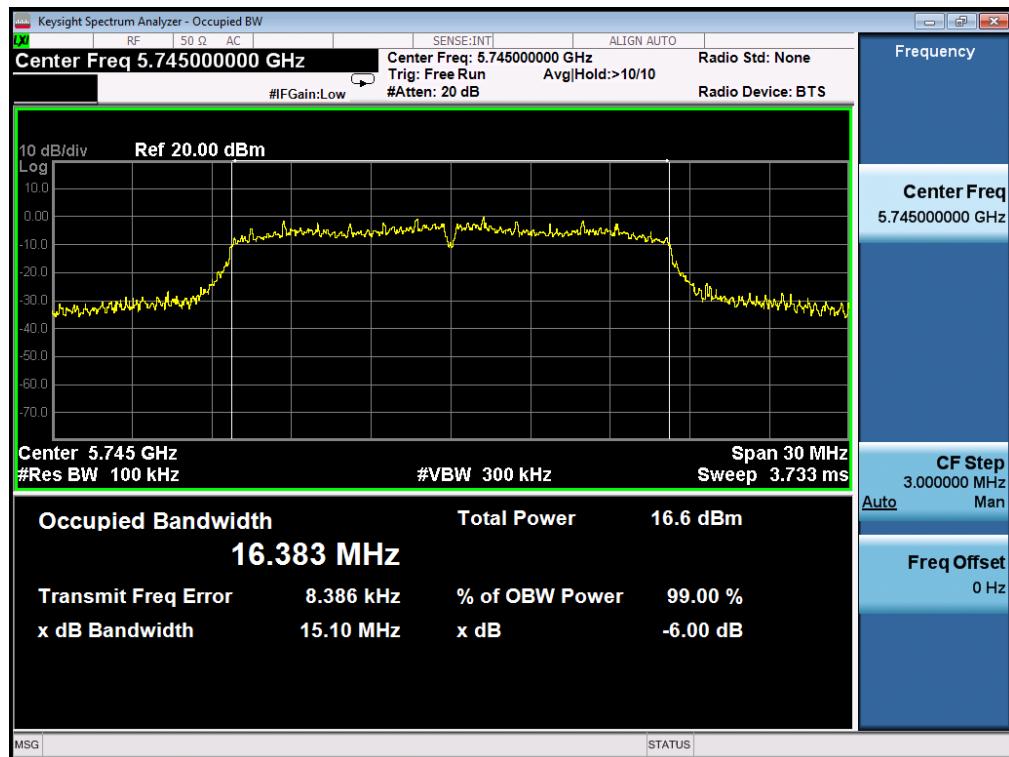
6dB bandwidth

LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION			
Applicable Limits	Applicable Limits		
	Test Data (MHz)		Criteria
>500KHZ	5745MHz	15.10	PASS
	5825MHz	15.00	PASS

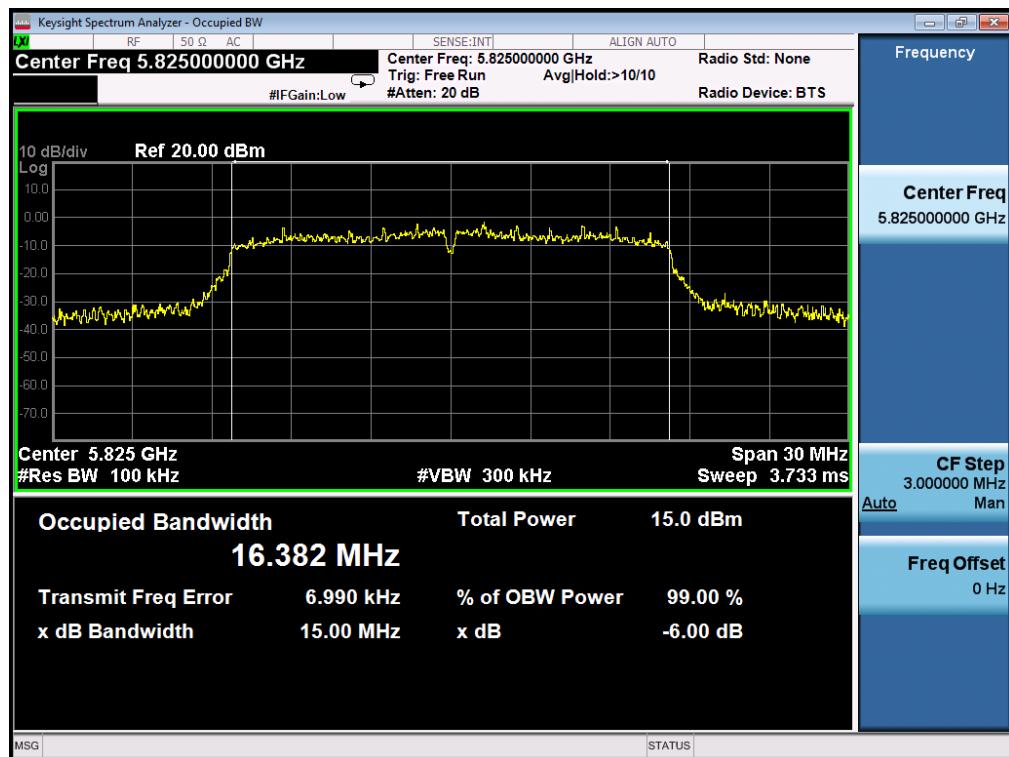
LIMITS AND MEASUREMENT RESULT FOR 802.11N20 MODULATION			
Applicable Limits	Applicable Limits		
	Test Data (MHz)		Criteria
>500KHZ	5745MHz	15.07	PASS
	5825MHz	15.04	PASS

Note: According to the KDB 789033 Section C.2, the minimum 6 dB emission bandwidth of at least 500 kHz is only for band 5.725-5.85 GHz.

## 802.11a20 TEST RESULT

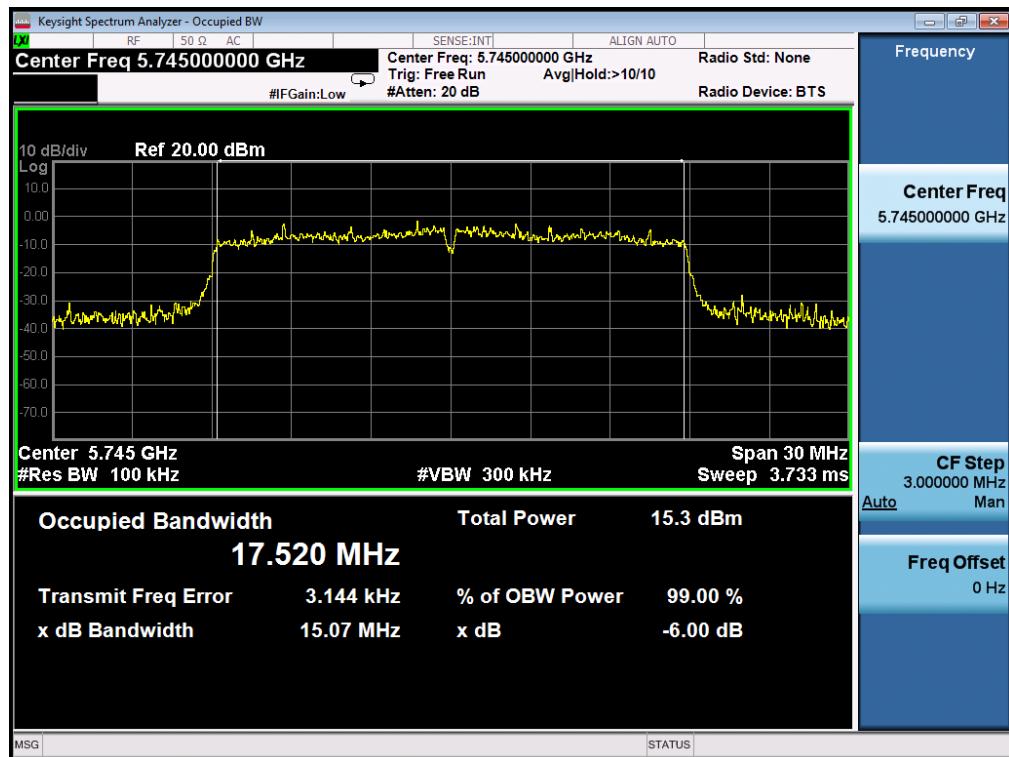


## TEST PLOT OF BANDWIDTH FOR 5825MHz

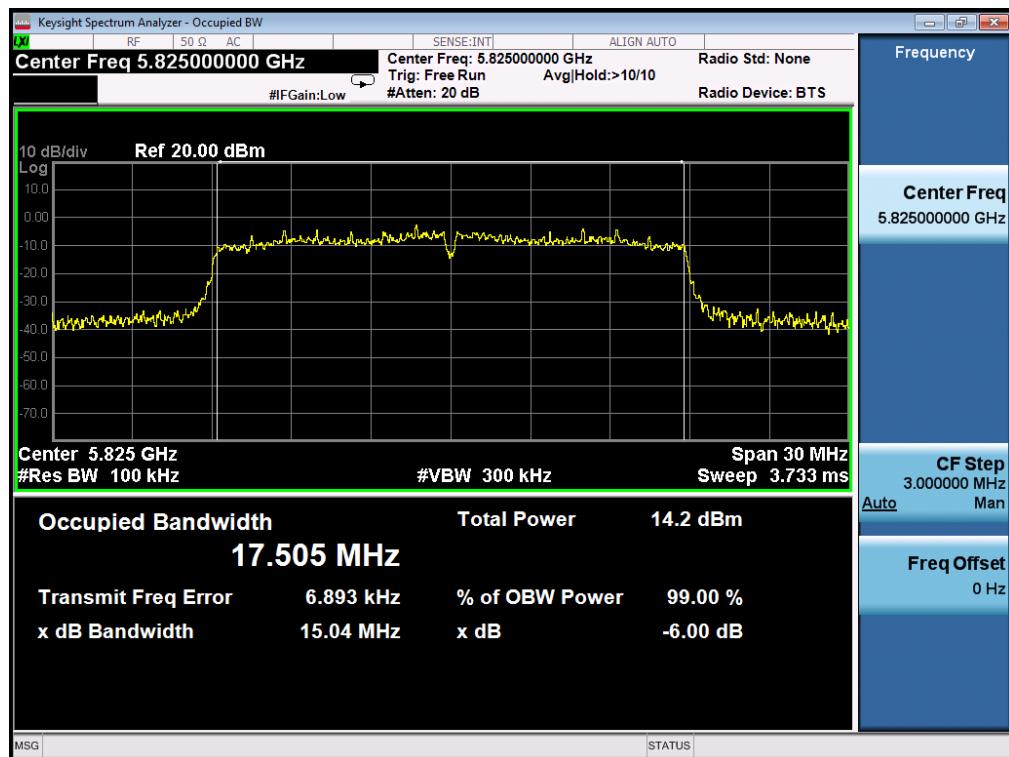


## 802.11n20 TEST RESULT

### TEST PLOT OF BANDWIDTH FOR 5745MHz



### TEST PLOT OF BANDWIDTH FOR 5825MHz



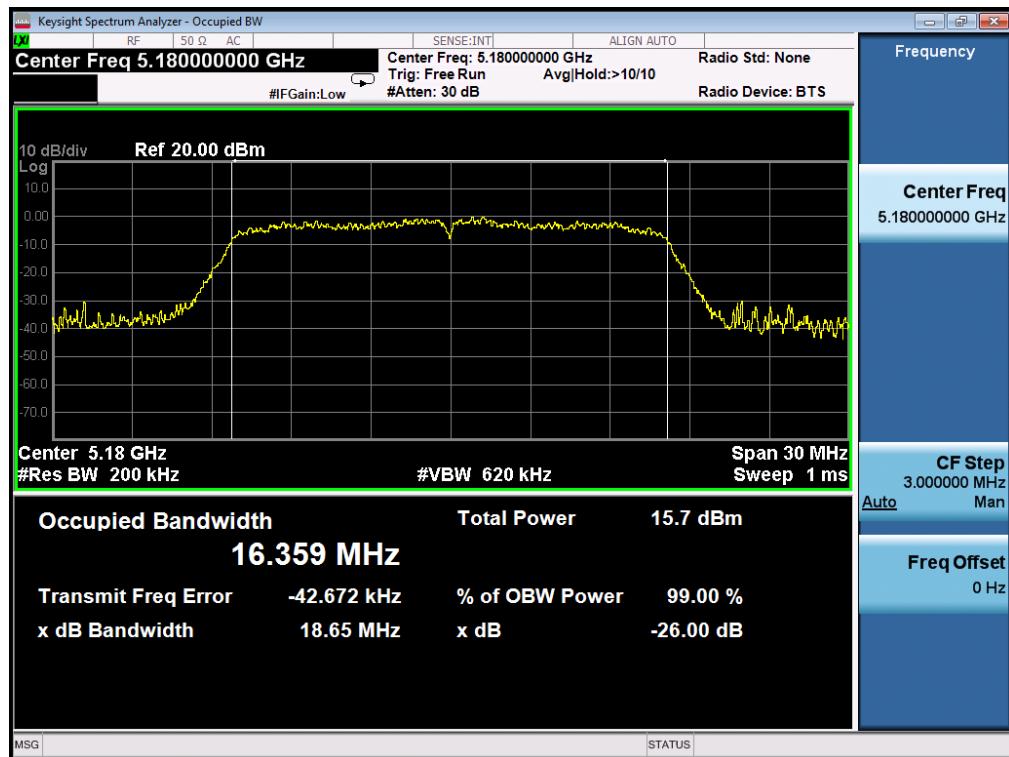
Emission bandwidth

<b>LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION</b>			
<b>Applicable Limits</b>	<b>Applicable Limits</b>		
	<b>Test Data (MHz)</b>		<b>Criteria</b>
N/A	5180MHz	18.65	PASS
	5240MHz	18.71	PASS

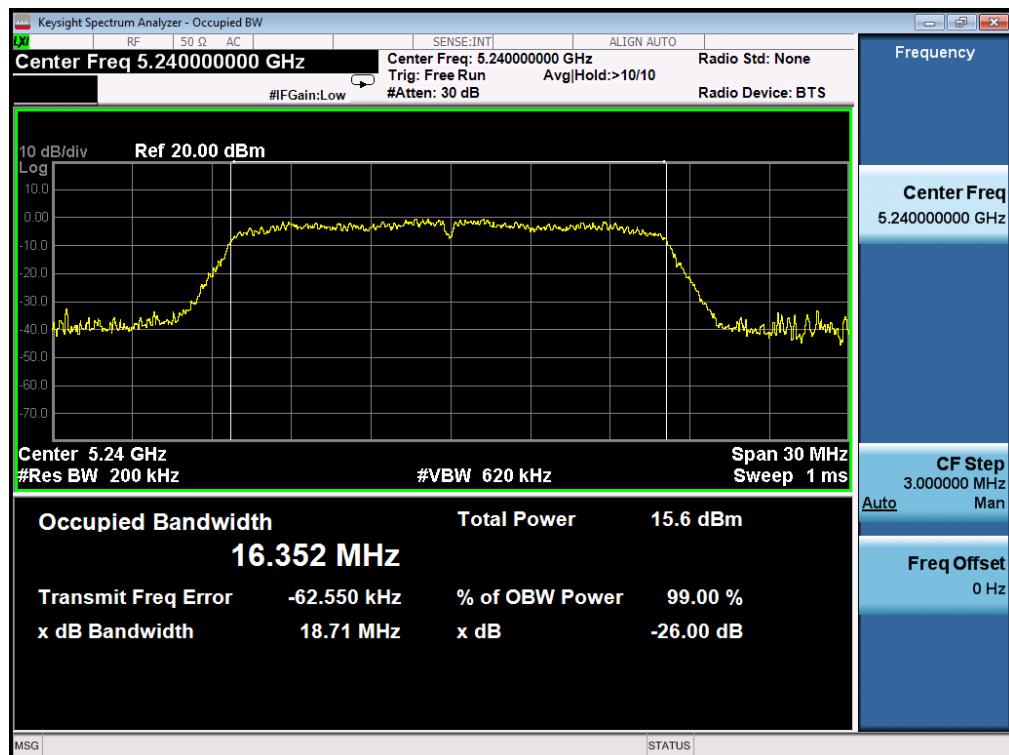
<b>LIMITS AND MEASUREMENT RESULT FOR 802.11N20 MODULATION</b>			
<b>Applicable Limits</b>	<b>Applicable Limits</b>		
	<b>Test Data (MHz)</b>		<b>Criteria</b>
N/A	5180MHz	19.02	PASS
	5240MHz	18.96	PASS

## 802.11a20 TEST RESULT

### TEST PLOT OF BANDWIDTH FOR 5180MHz

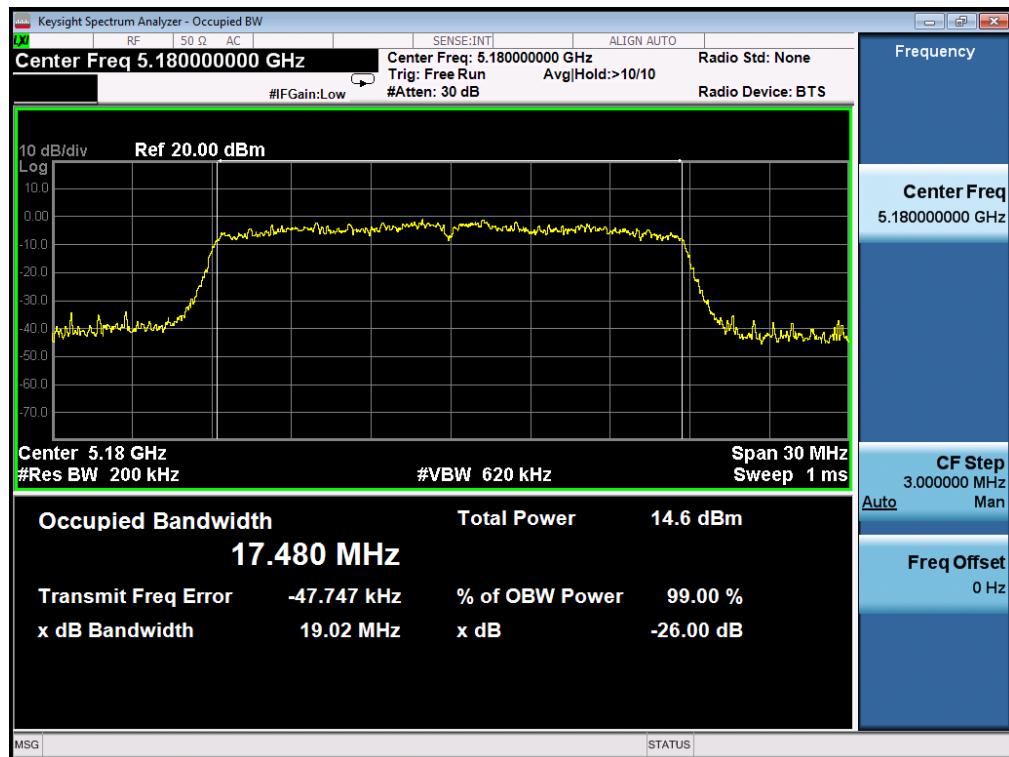


### TEST PLOT OF BANDWIDTH FOR 5240MHz

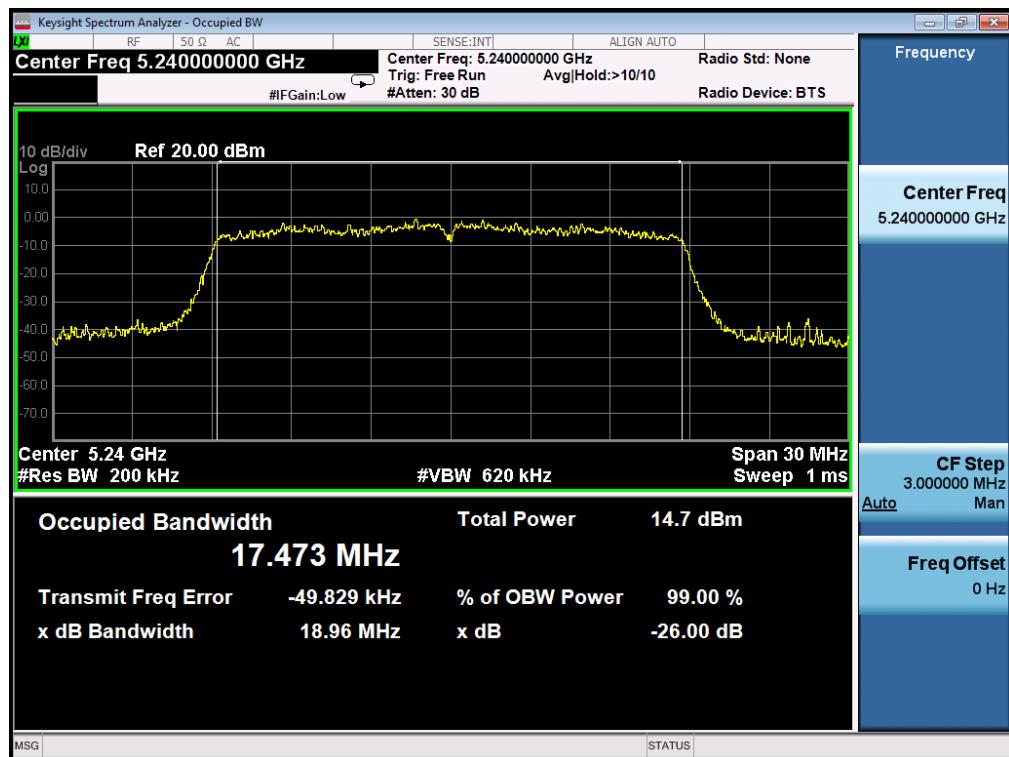


## 802.11n20 TEST RESULT

### TEST PLOT OF BANDWIDTH FOR 5180MHz



### TEST PLOT OF BANDWIDTH FOR 5240MHz



## 9. MAXIMUM CONDUCTED OUTPUT PEAK POWER SPECTRAL DENSITY

### 9.1 MEASUREMENT PROCEDURE

Refer to KDB 789033 section F

### 9.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer To Section 8.2.

### 9.3 MEASUREMENT EQUIPMENT USED

Refer To Section 6.

### 9.4 LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION			
Frequency (MHz)	Power density (dBm/MHz)	Applicable Limits (dBm/MHz)	Pass or Fail
5180	4.842	11	Pass
5240	4.378	11	Pass
Frequency (MHz)	Power density (dBm/500kHz)	Applicable Limits (dBm/500kHz)	Pass or Fail
5745	5.532	30	Pass
5825	4.282	30	Pass

LIMITS AND MEASUREMENT RESULT FOR 802.11N20 MODULATION			
Frequency (MHz)	Power density (dBm/MHz)	Applicable Limits (dBm/MHz)	Pass or Fail
5180	2.799	11	Pass
5240	3.082	11	Pass
Frequency (MHz)	Power density (dBm/500kHz)	Applicable Limits (dBm/500kHz)	Pass or Fail
5745	4.360	30	Pass
5825	3.609	30	Pass

## 802.11a20 TEST RESULT

### TEST PLOT OF BANDWIDTH FOR 5180MHz



### TEST PLOT OF BANDWIDTH FOR 5240MHz



### TEST PLOT OF BANDWIDTH FOR 5745MHz



### TEST PLOT OF BANDWIDTH FOR 5825MHz



## 802.11n20 TEST RESULT

### TEST PLOT OF BANDWIDTH FOR 5180MHz



### TEST PLOT OF BANDWIDTH FOR 5240MHz



TEST PLOT OF BANDWIDTH FOR 5745MHz



TEST PLOT OF BANDWIDTH FOR 5825MHz



## 10. CONDUCTED SPURIOUS EMISSION

### 10.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Trace 1 Max hold, then View.

**Note:** The EUT was tested according to KDB 789033 for compliance to FCC 47CFR 15.407 requirements.

### 10.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 8.2.

### 10.3. MEASUREMENT EQUIPMENT USED

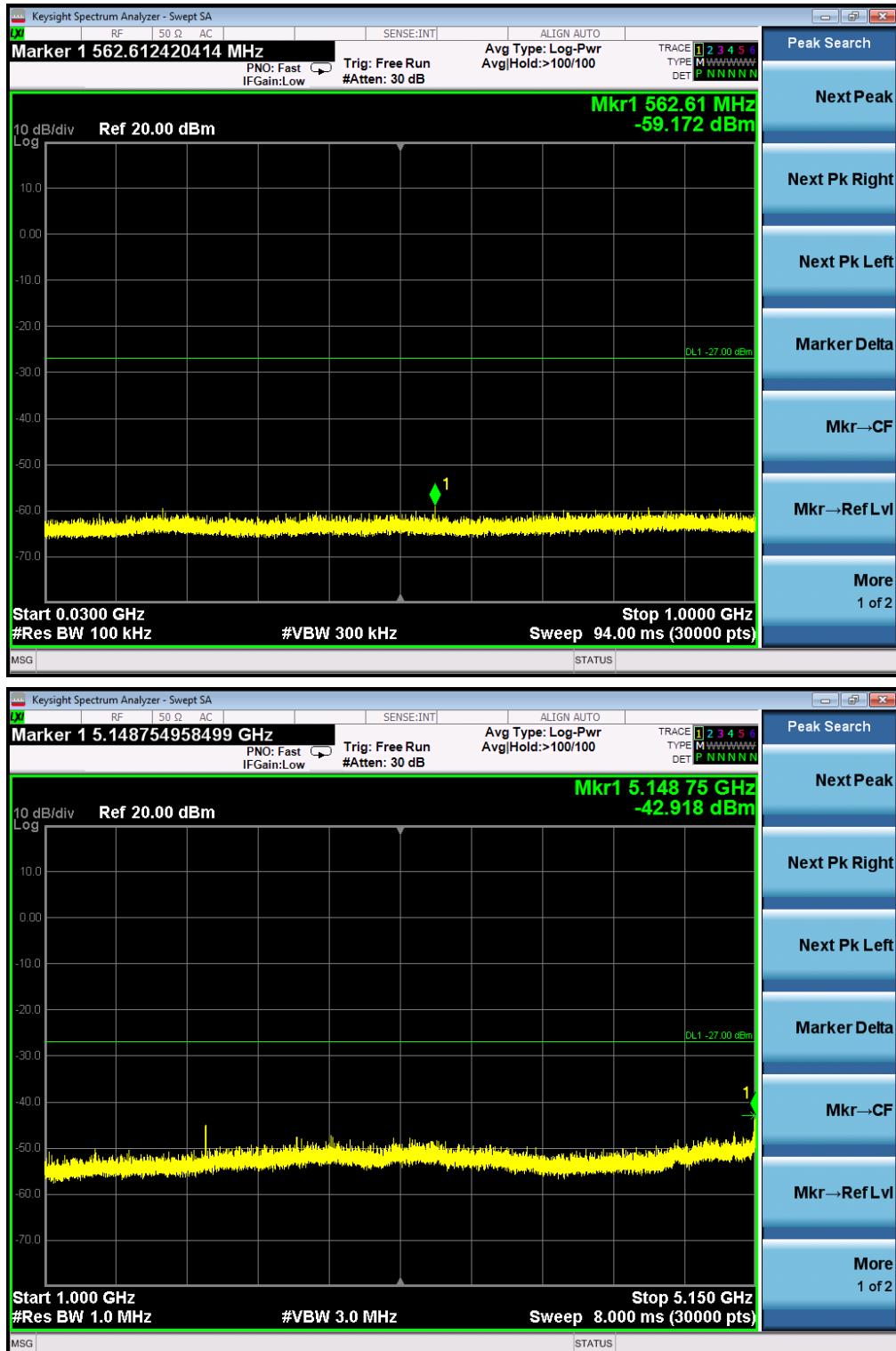
The same as described in section 6.

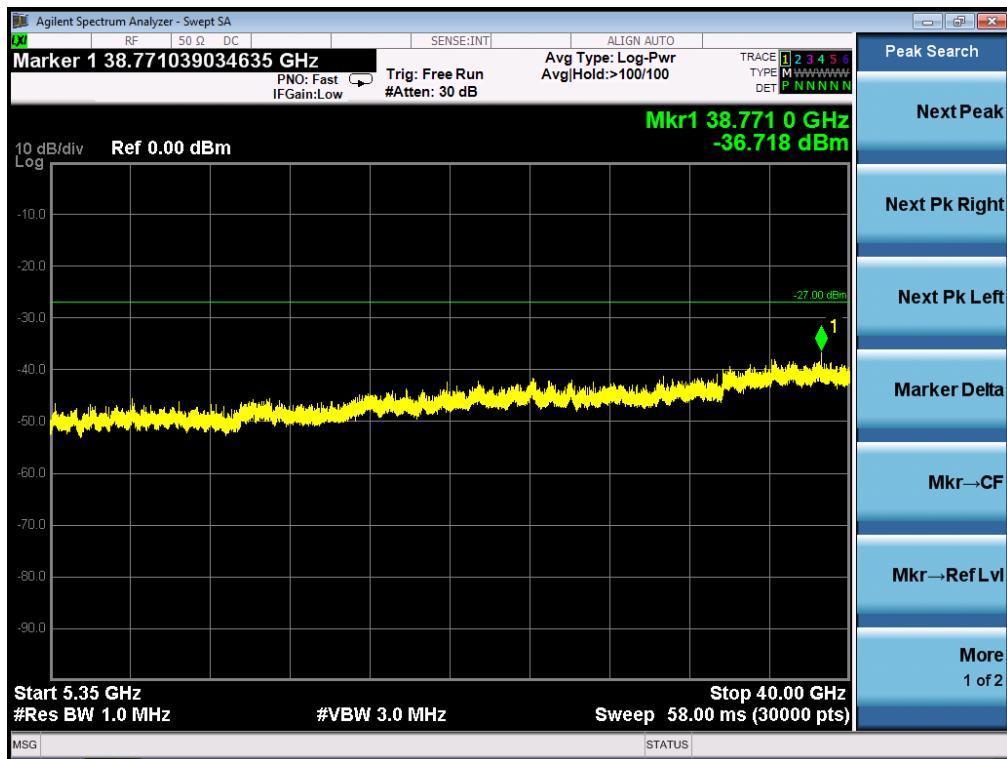
### 10.4. LIMITS AND MEASUREMENT RESULT

LIMITS AND MEASUREMENT RESULT		
Applicable Limits	Measurement Result	
	Test channel	Criteria
27dBm	5150MHz-5250MHz	PASS
17dBm within 5715-5725MHz and 5850-5860MHz 27dBm outside 5715-5860MHz	5725MHz-5825MHz	PASS

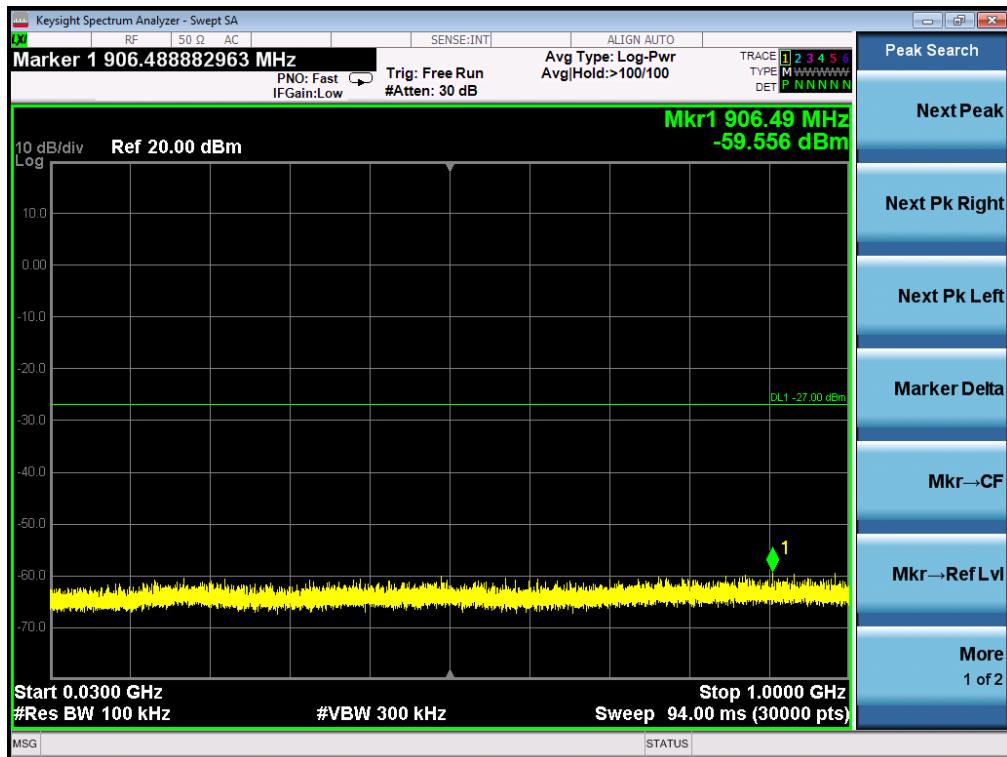
## FOR 802.11A20 MODULATION

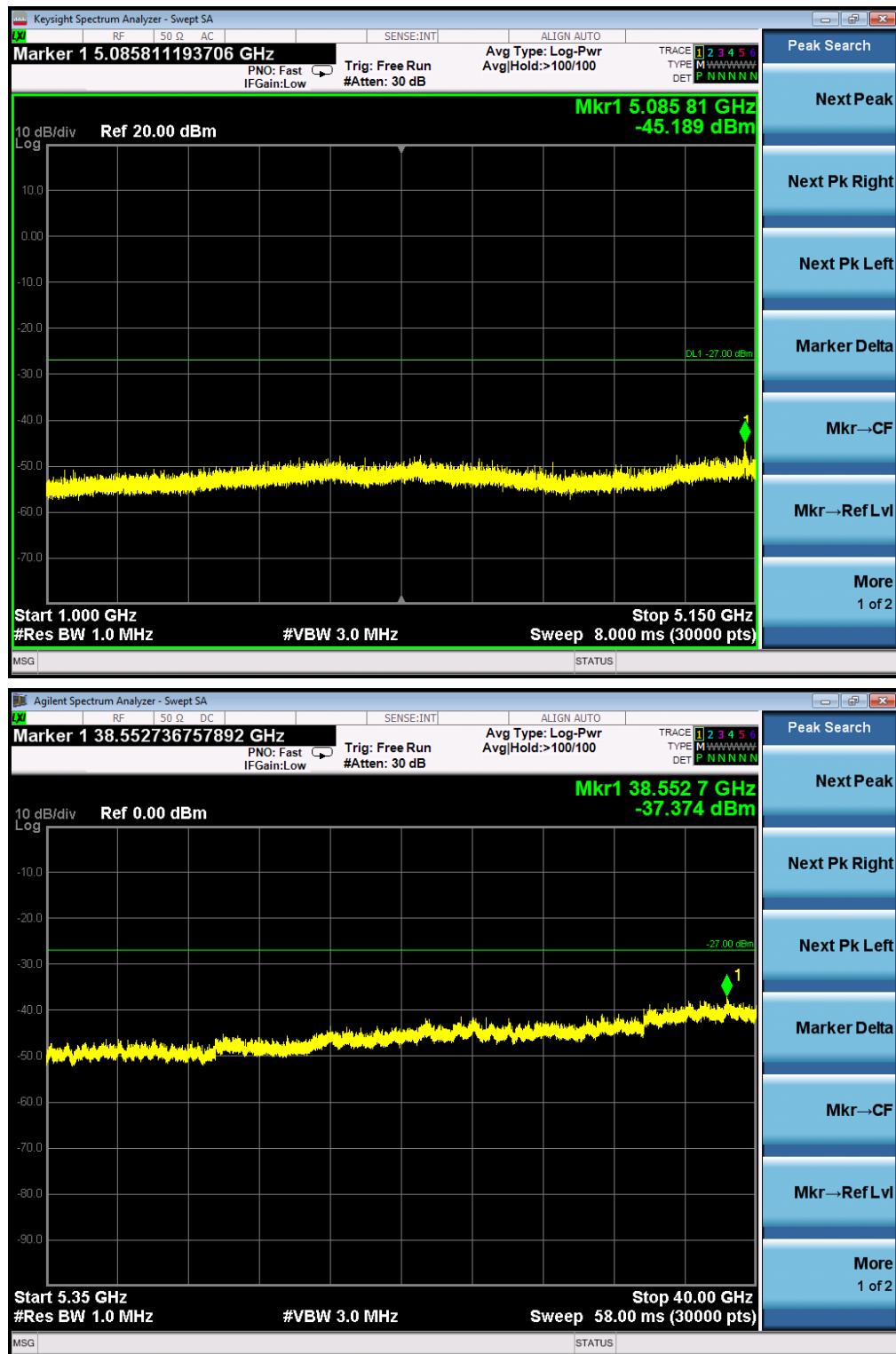
### TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5180MHz



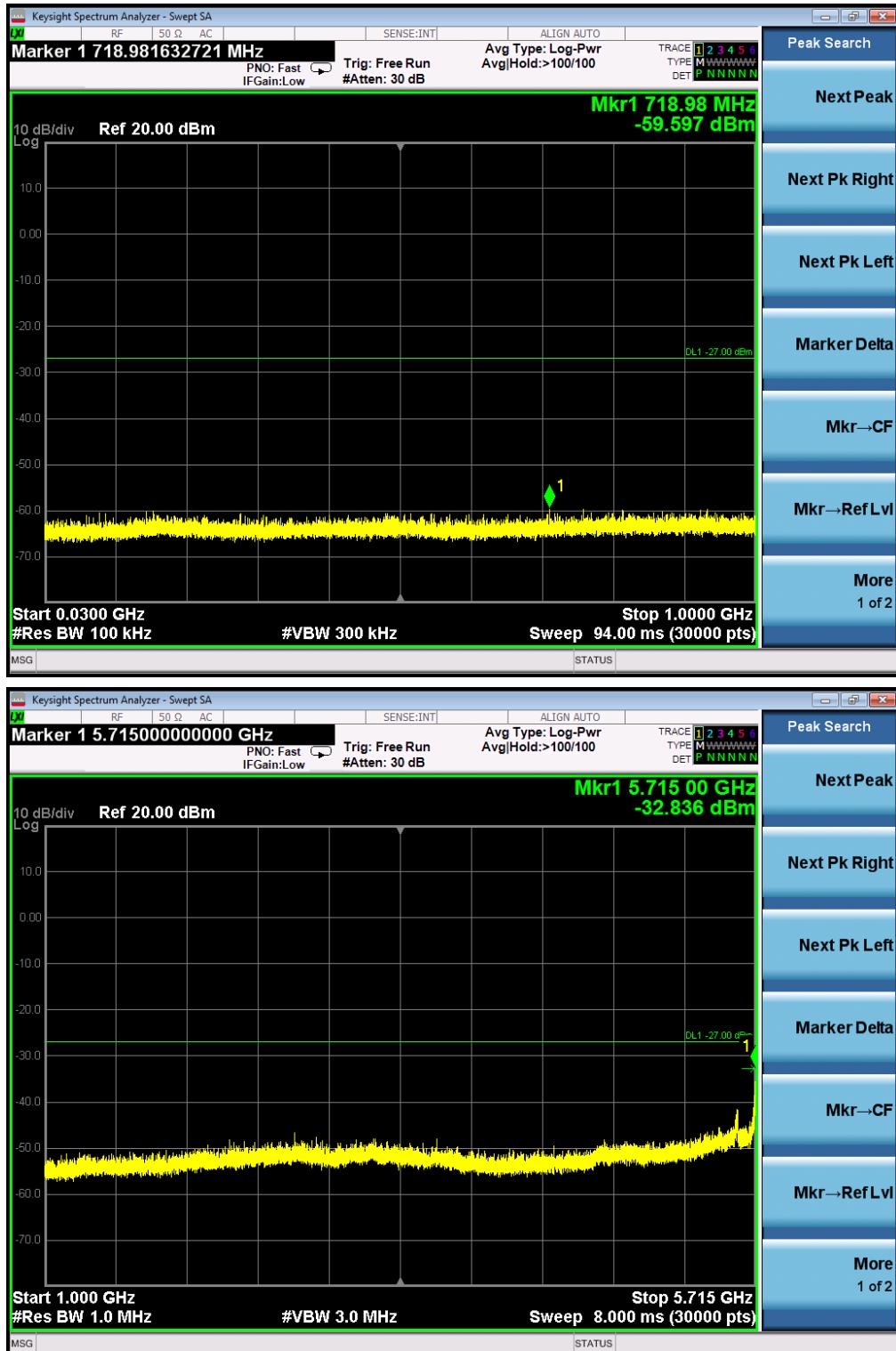


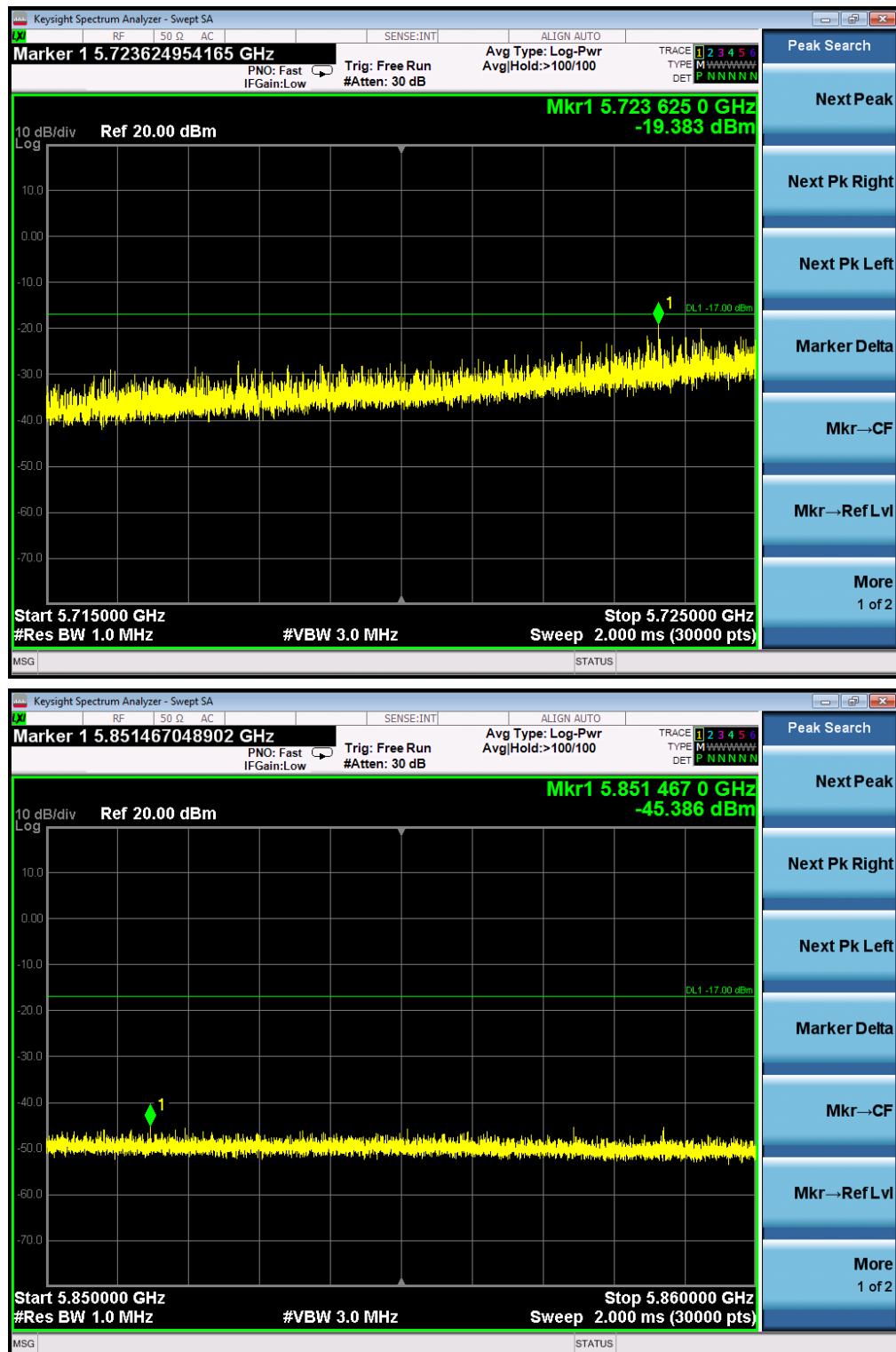
TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5240MHz

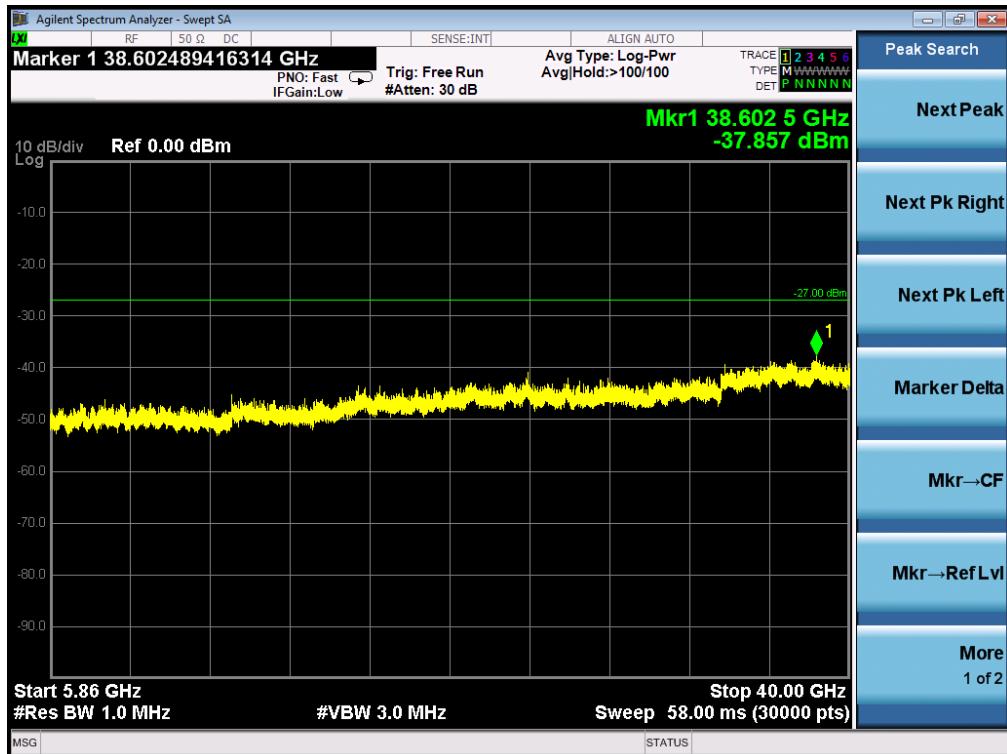




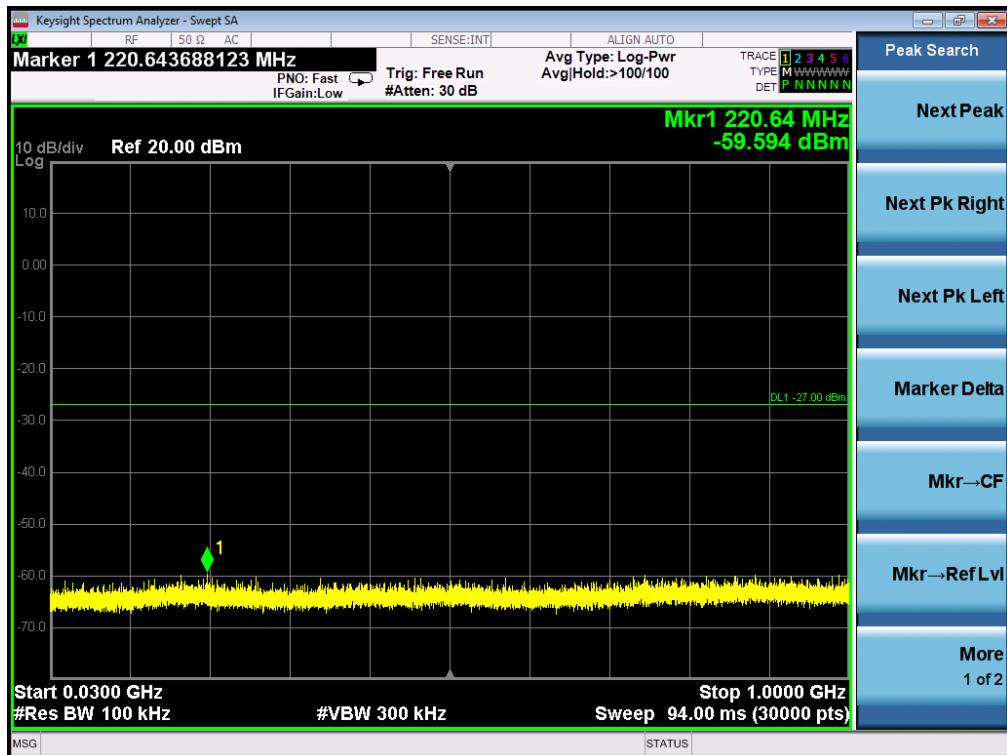
TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5745MHz

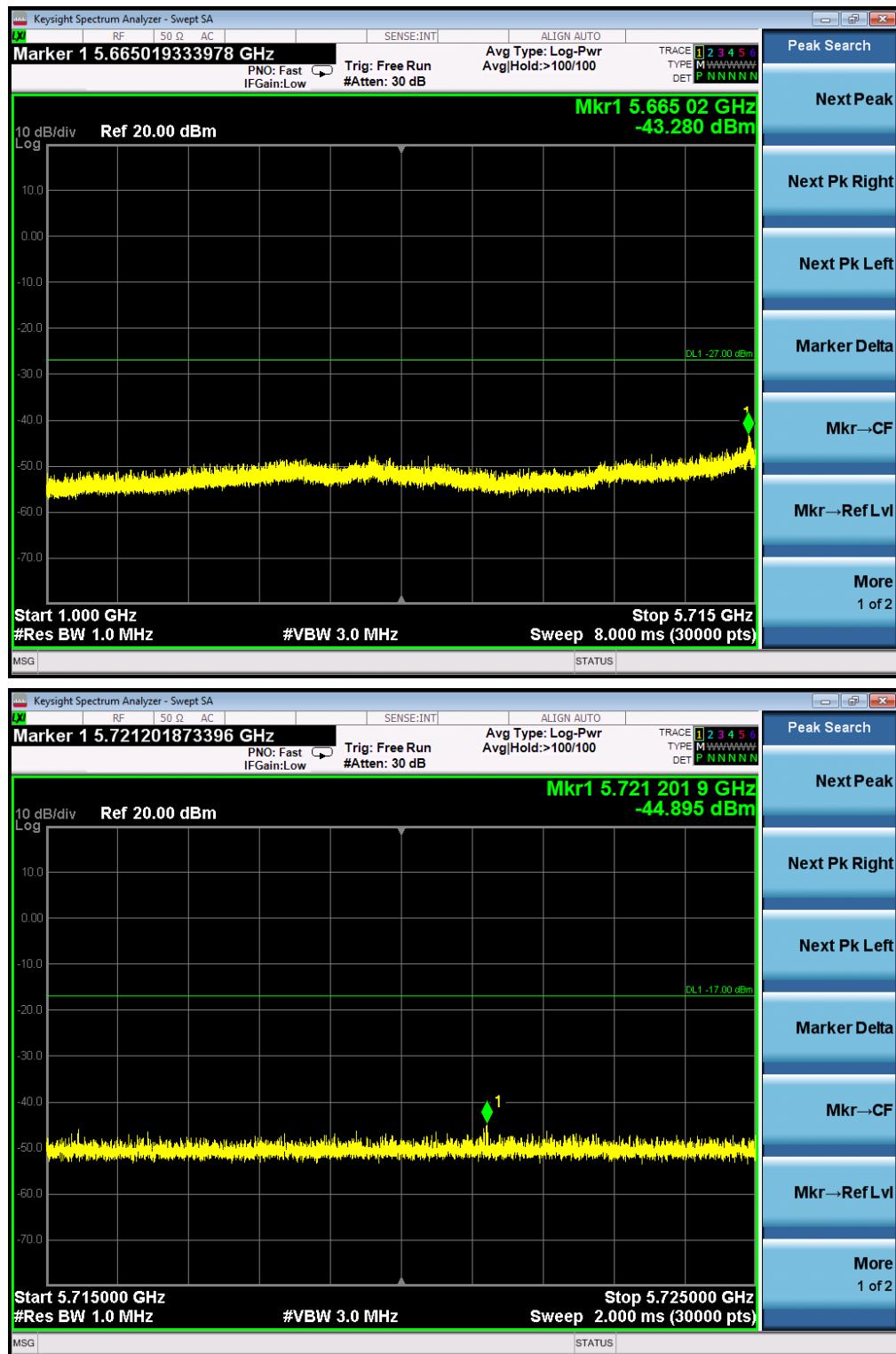


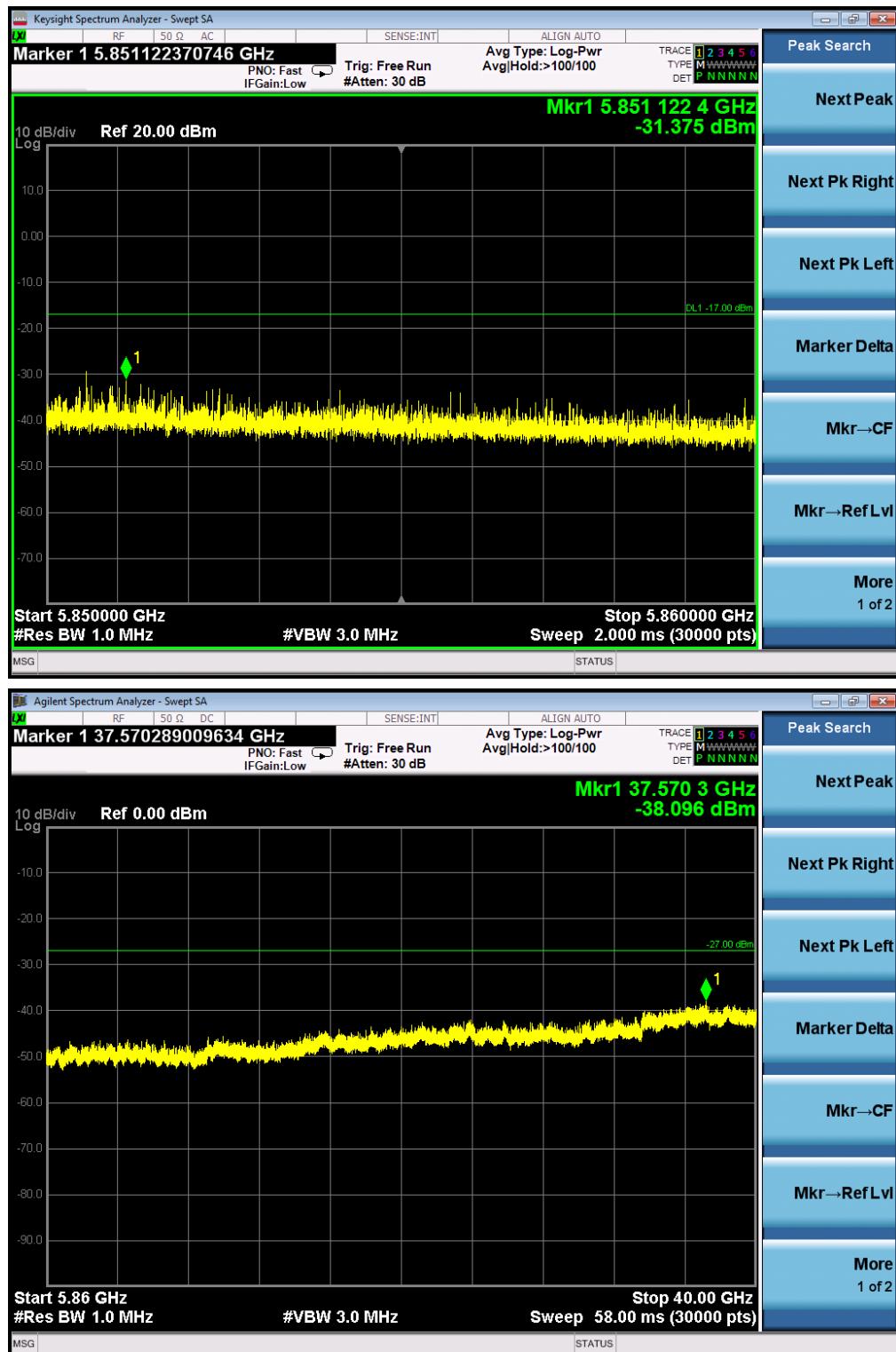




TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5825MHz

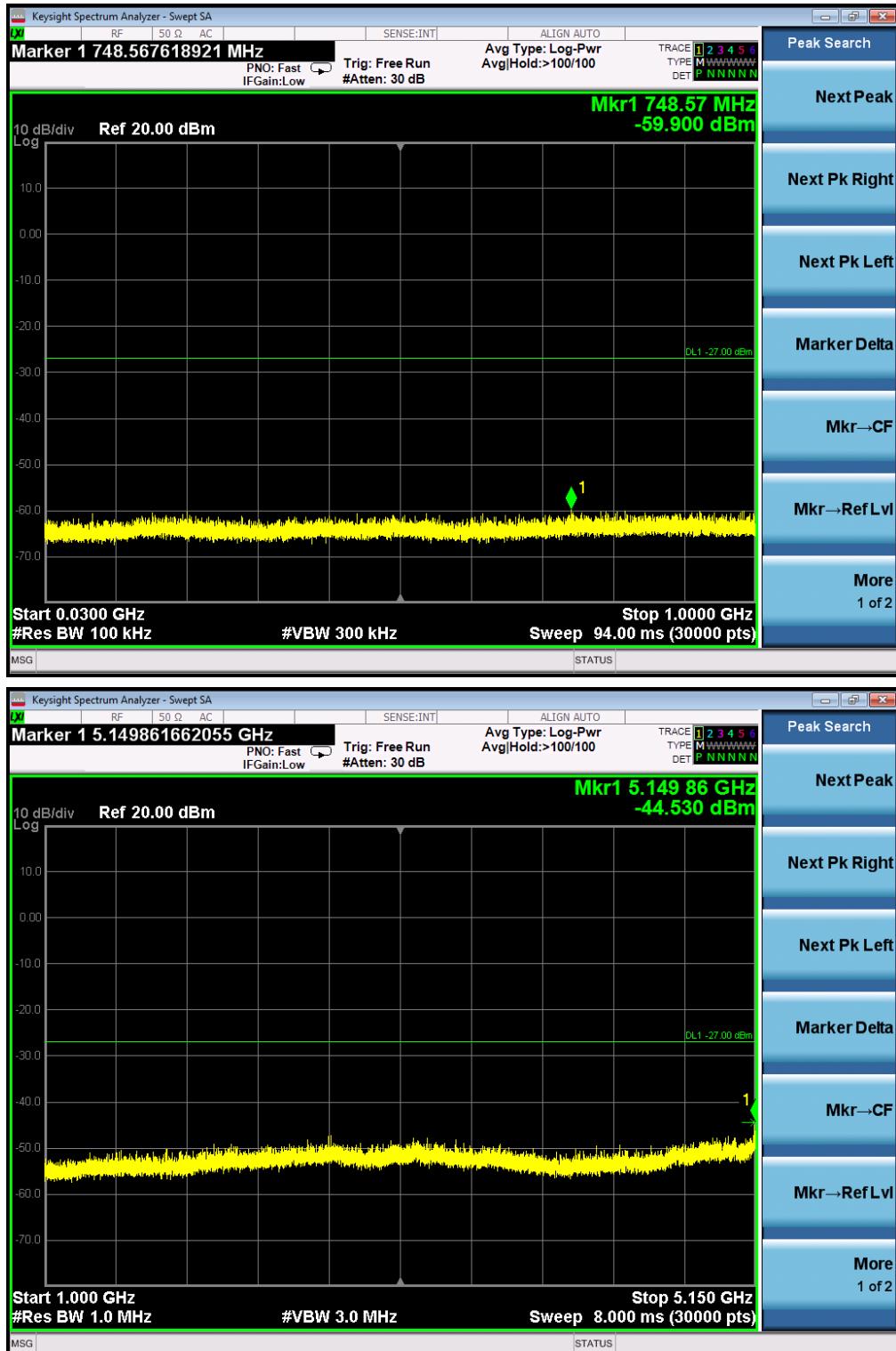


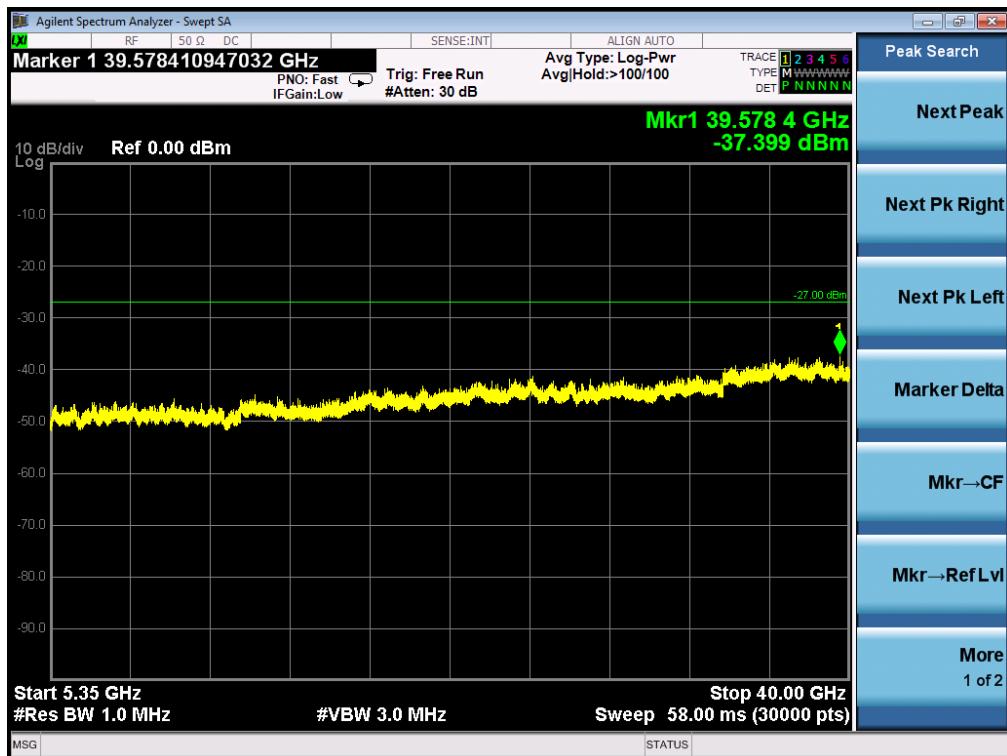




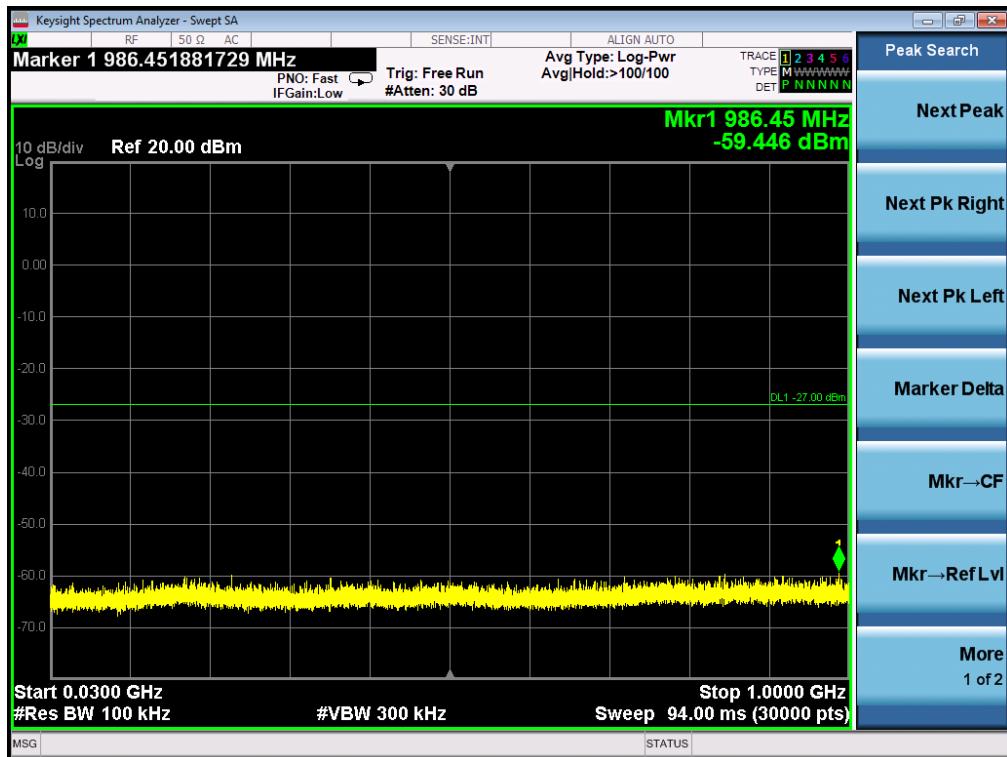
## FOR 802.11N20 MODULATION

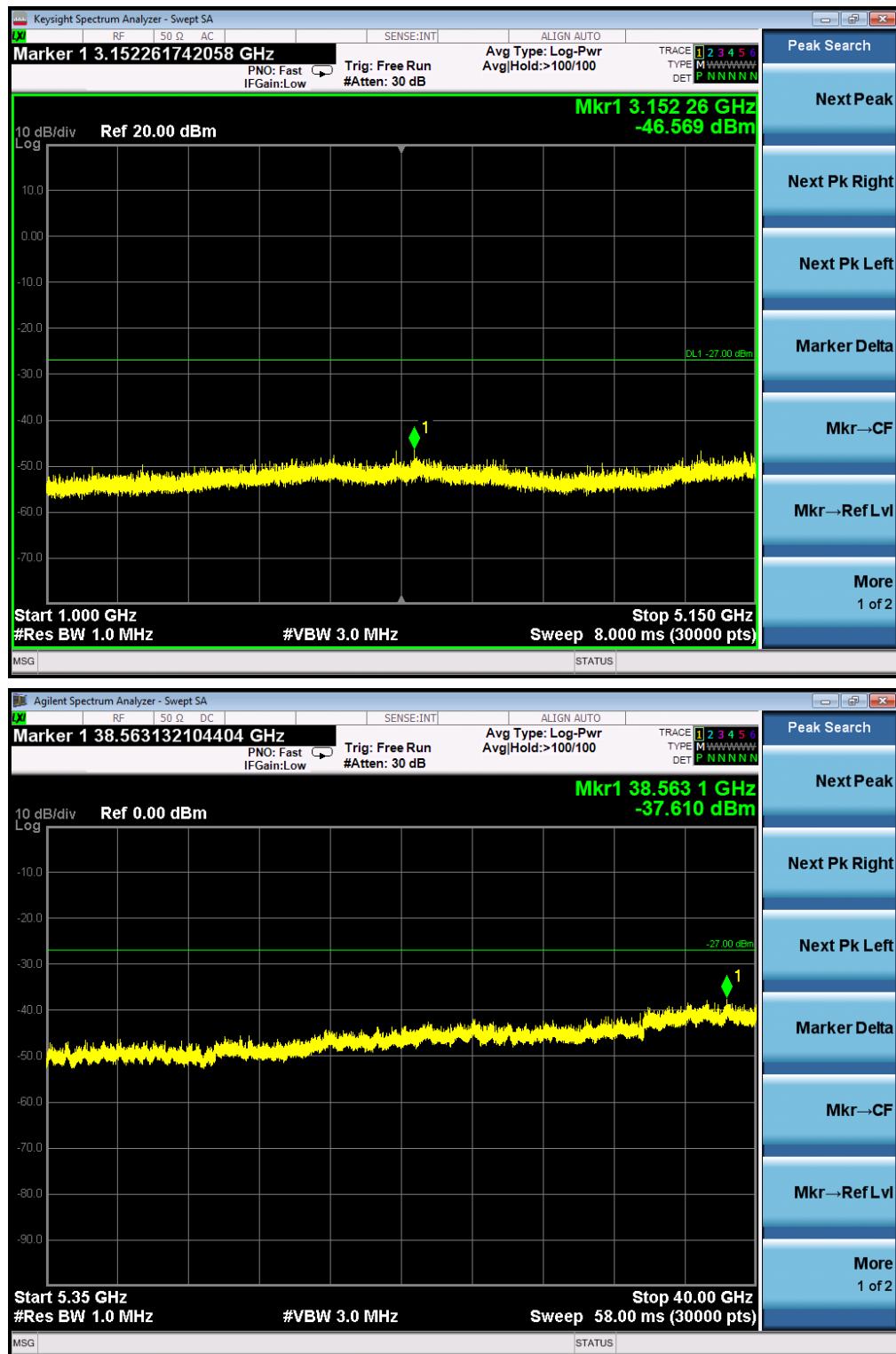
### TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5180MHz



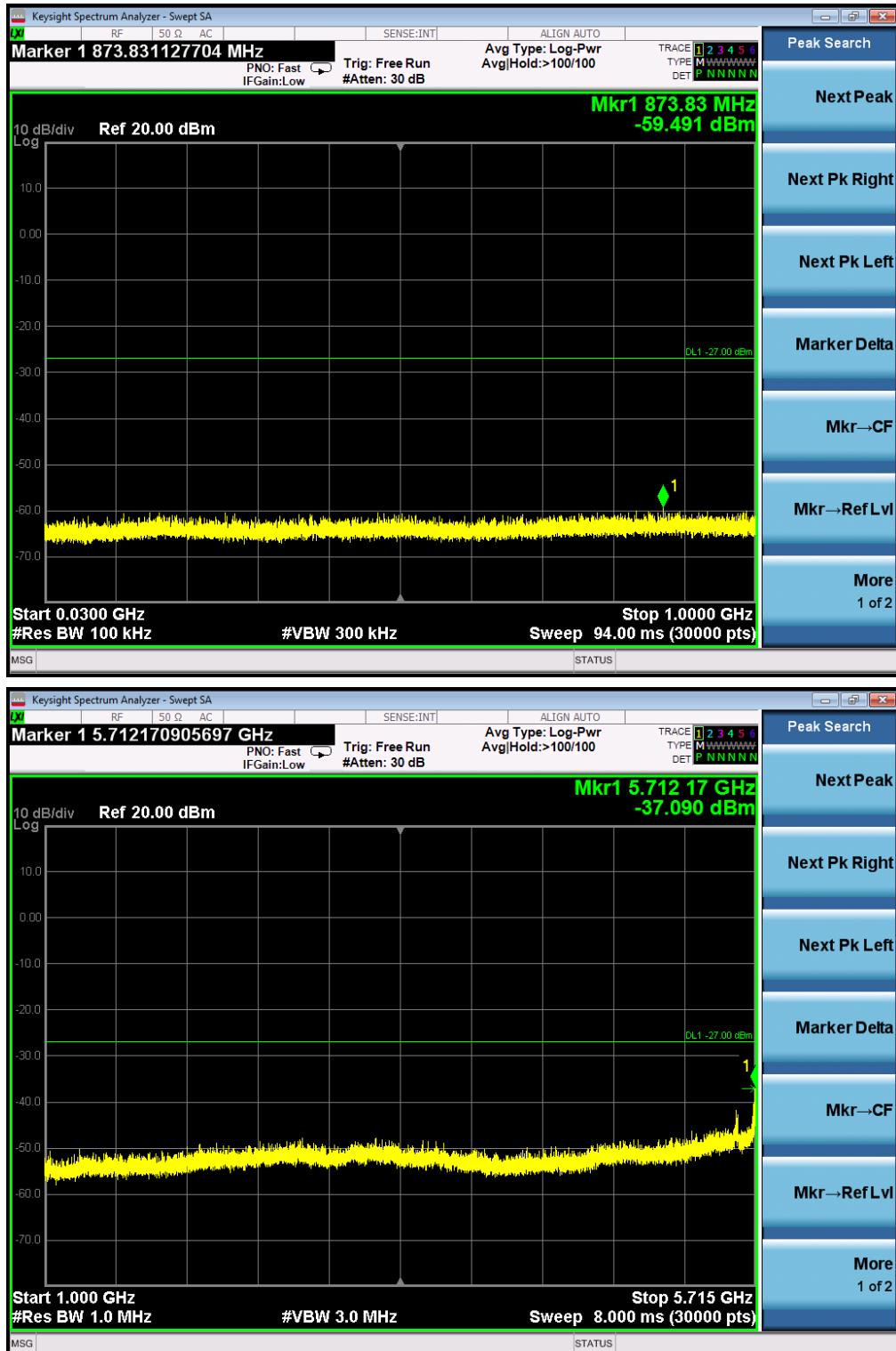


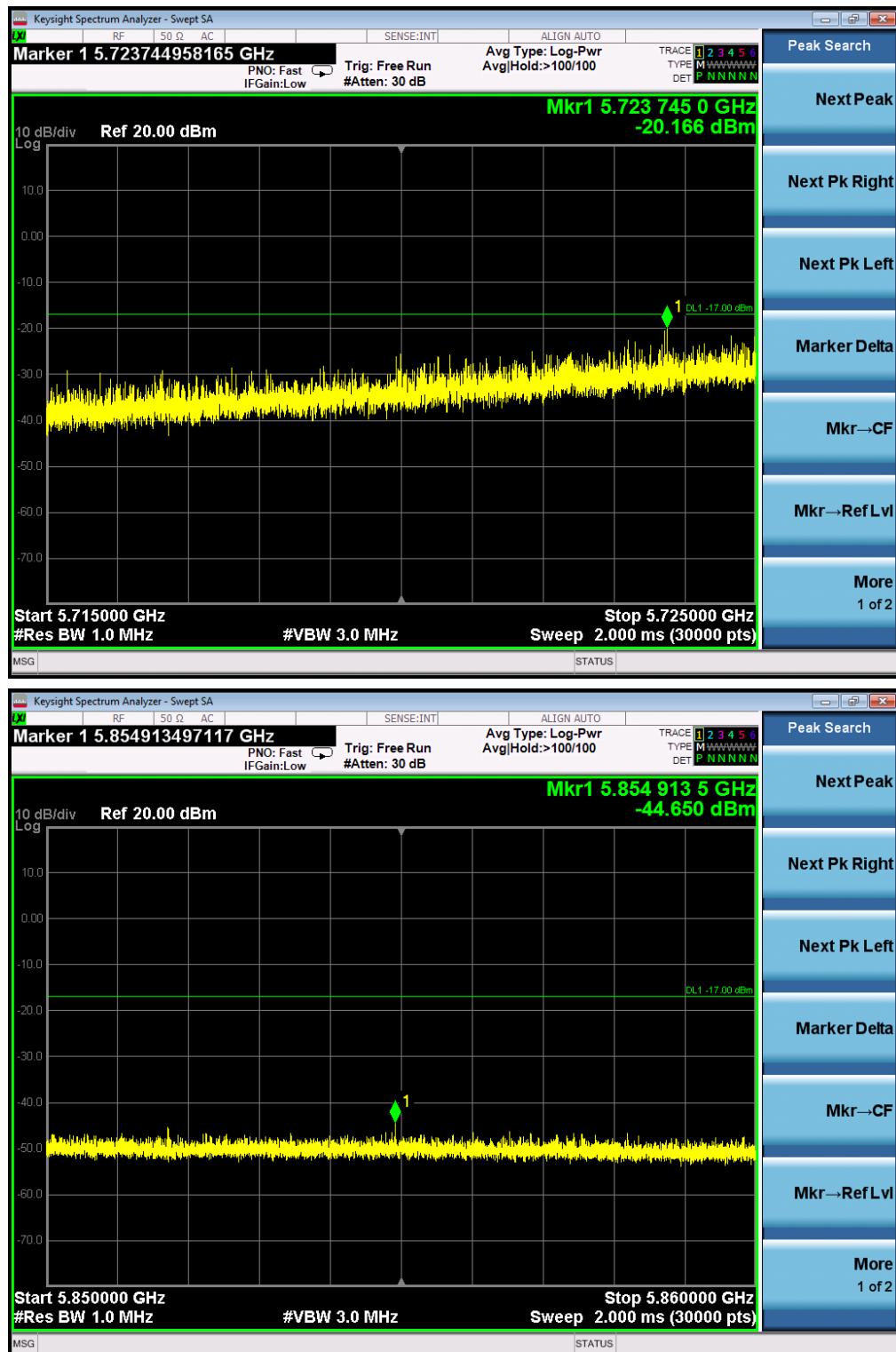
TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5240MHz

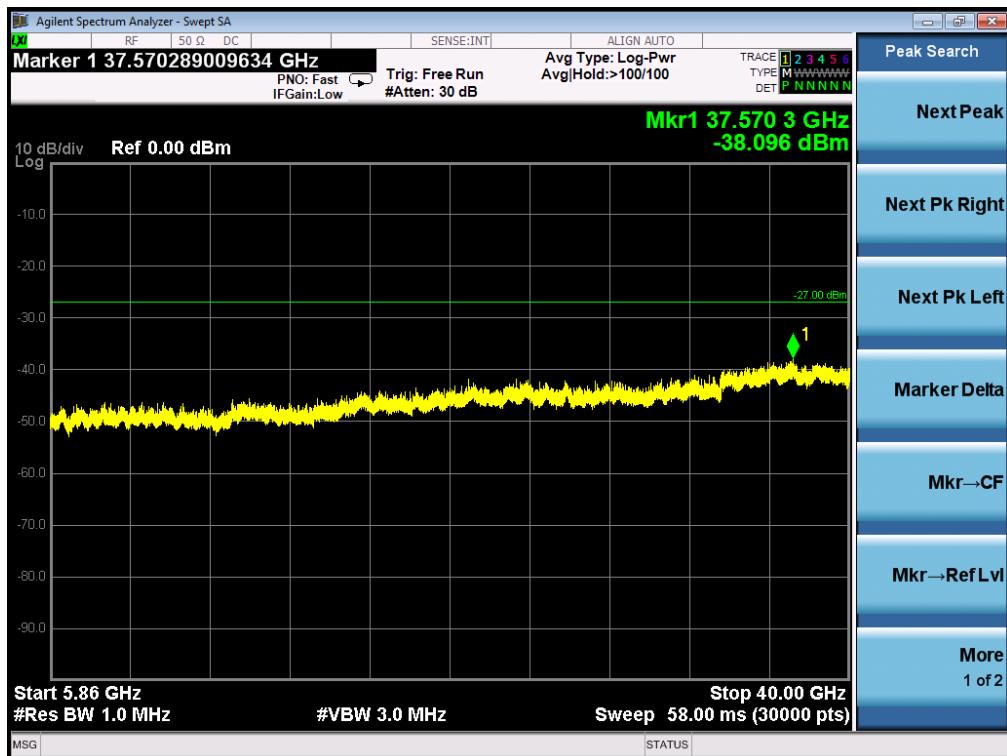




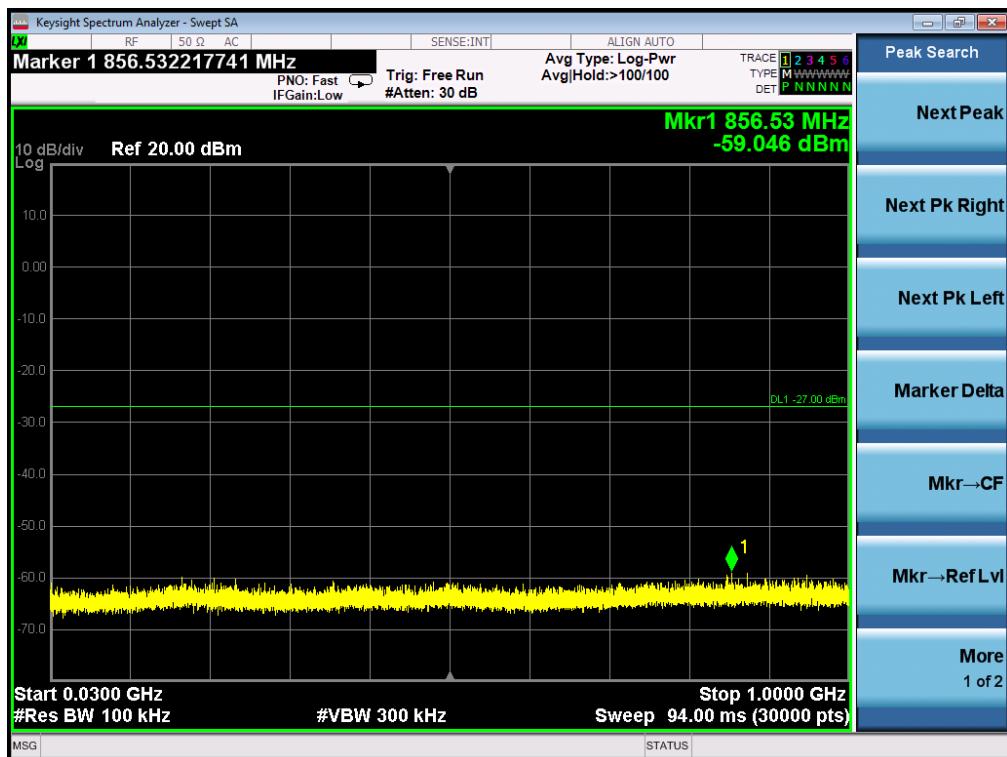
TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5745MHz

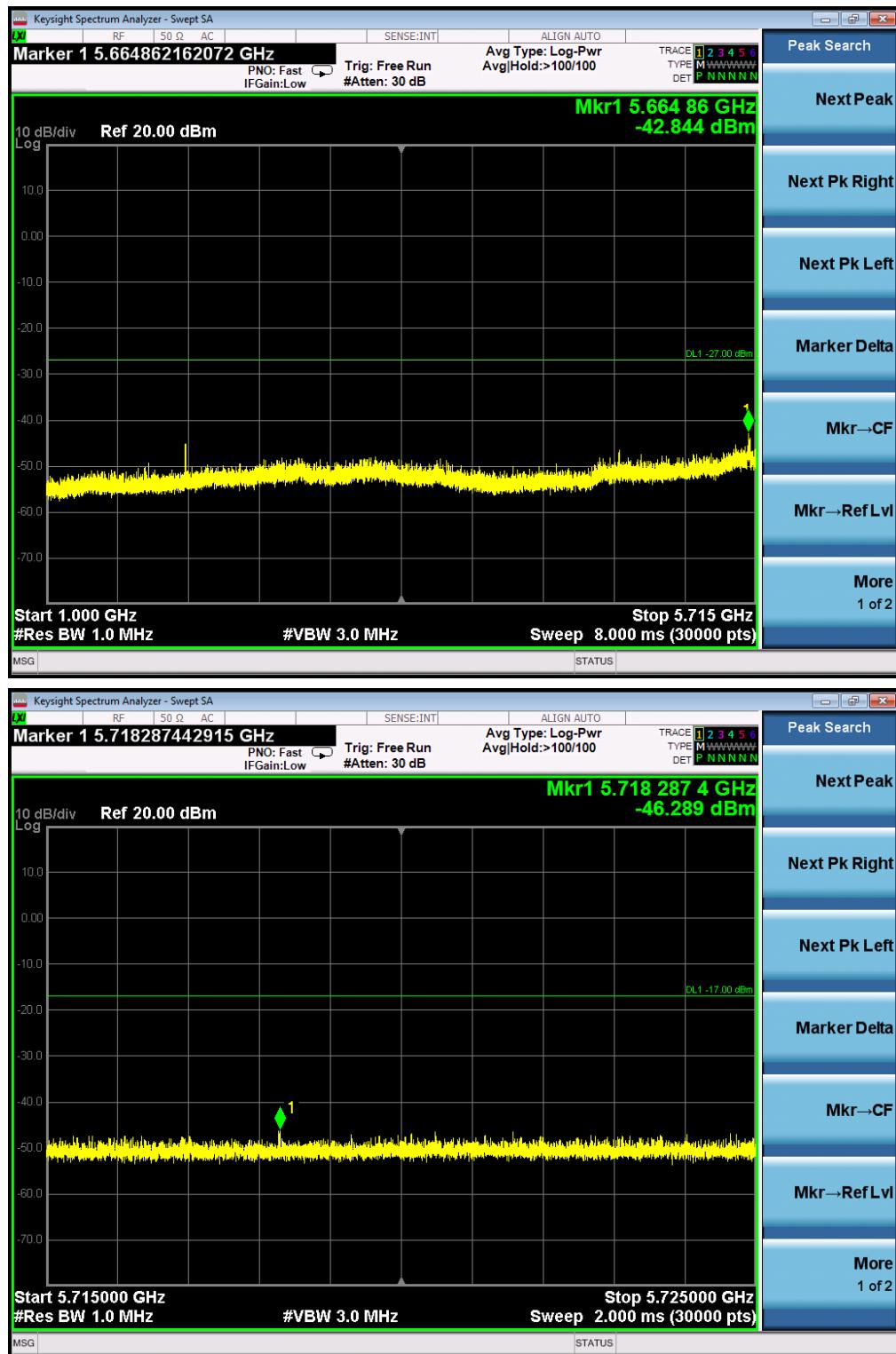


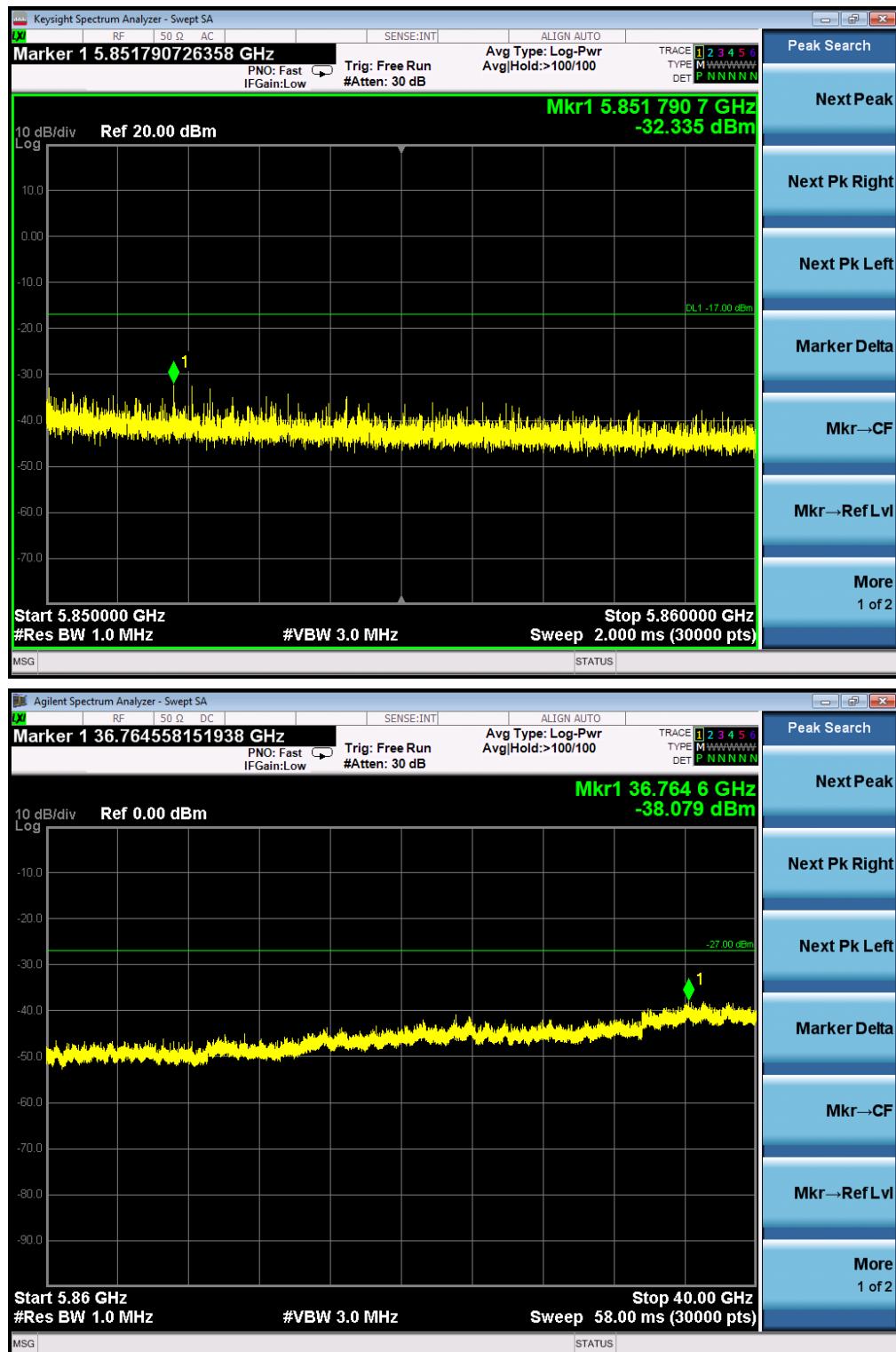




TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5825MHz







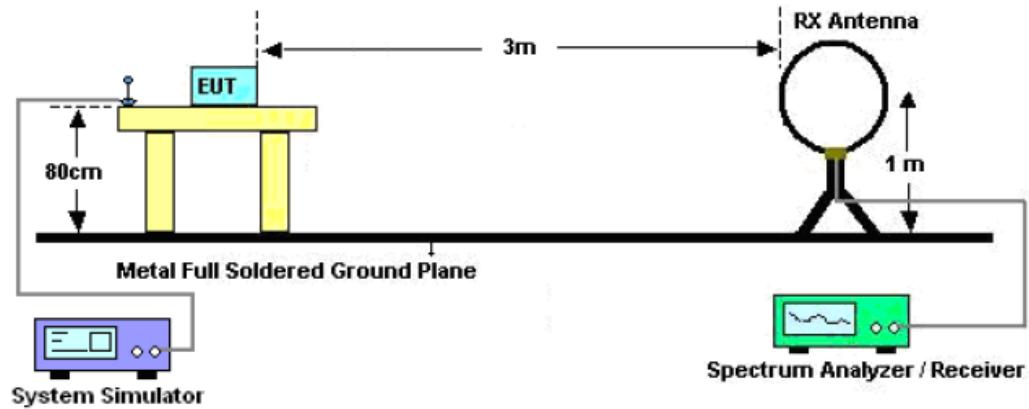
## 11. RADIATED EMISSION

### 11.1. MEASUREMENT PROCEDURE

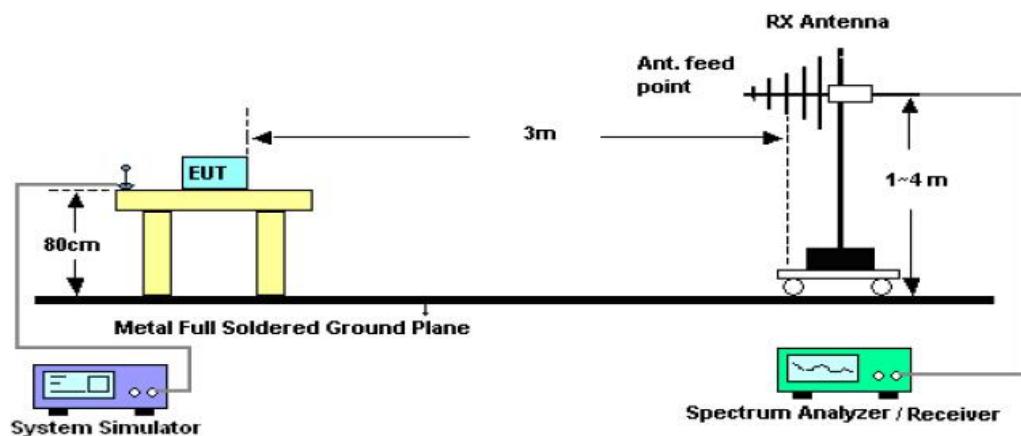
1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer. Place the measurement antenna 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.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

## 11.2. TEST SETUP

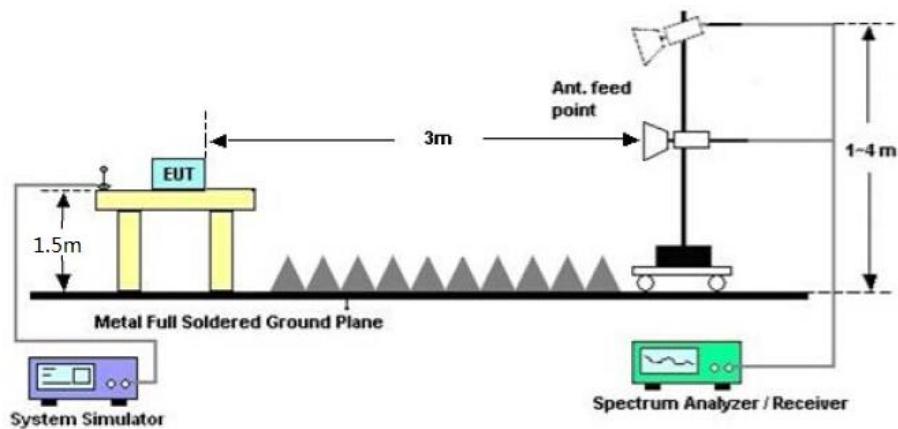
### Radiated Emission Test-Setup Frequency Below 30MHz



### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



### RADIATED EMISSION TEST SETUP ABOVE 1000MHz



### 11.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

<b>Frequencies (MHz)</b>	<b>Field Strength (micorvolts/meter)</b>	<b>Measurement Distance (meters)</b>
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

Note: All modes were tested For restricted band radiated emission,  
the test records reported below are the worst result compared to other modes.

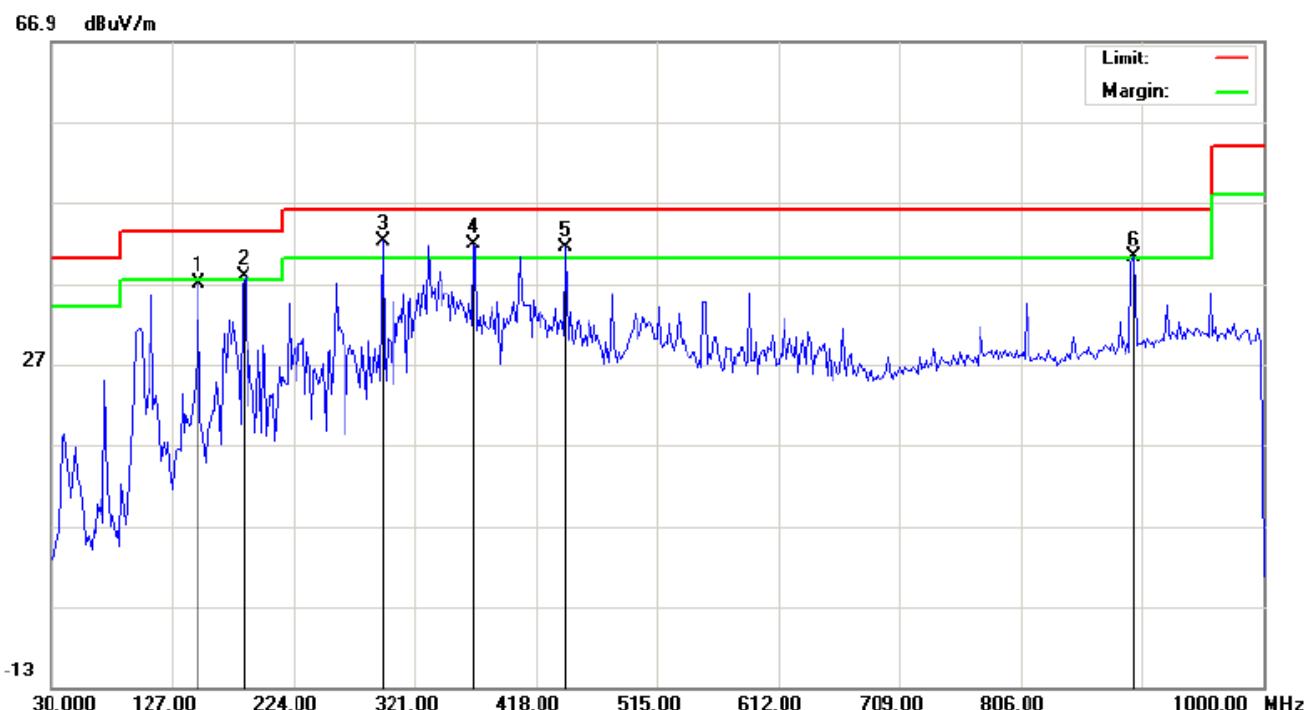
### 11.4. TEST RESULT

#### RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.

RADIATED EMISSION BELOW 1GHZ

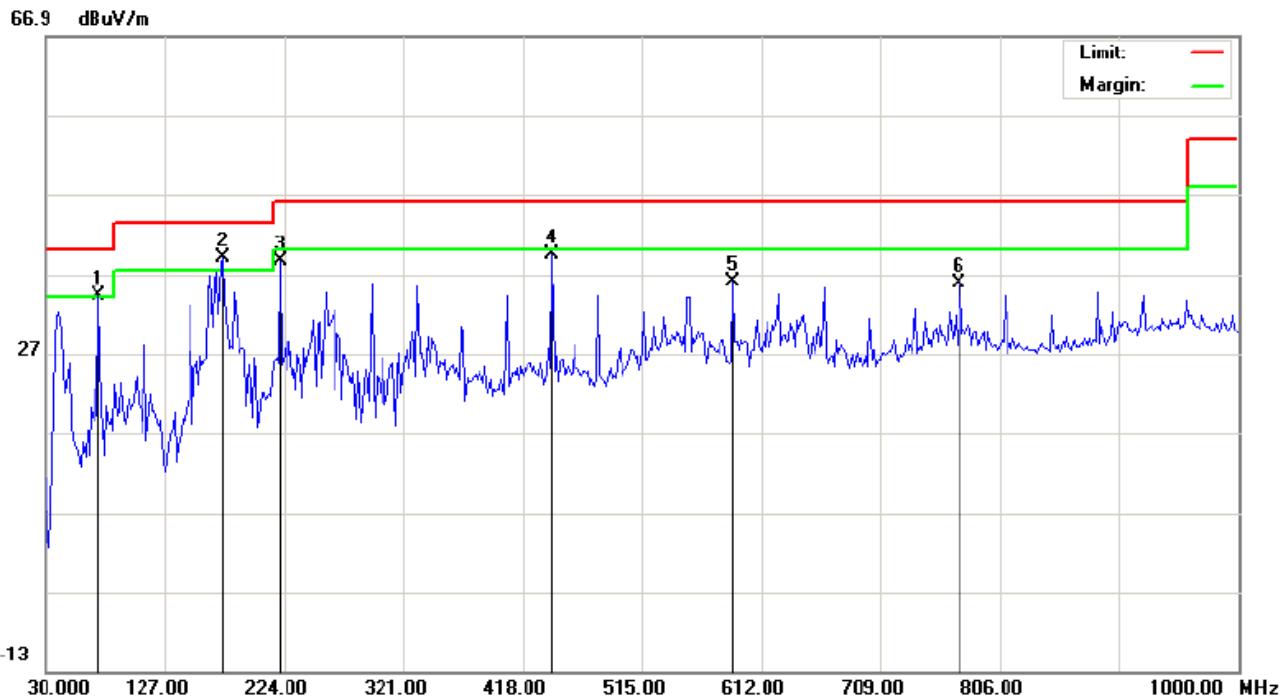
<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11a20 5180MHz	<b>Antenna</b>	Horizontal



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		148.0166	23.76	13.25	37.01	43.50	-6.49	peak			
2	!	185.1999	26.41	11.31	37.72	43.50	-5.78	peak			
3	*	295.1333	27.72	14.58	42.30	46.00	-3.70	peak			
4	!	367.8833	22.87	18.86	41.73	46.00	-4.27	peak			
5	!	442.2500	21.06	20.35	41.41	46.00	-4.59	peak			
6	!	896.5333	11.72	28.52	40.24	46.00	-5.76	peak			

RESULT: PASS

<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11a20 5180MHz	<b>Antenna</b>	Vertical



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	I	73.6500	30.79	3.36	34.15	40.00	-5.85	peak			
2	*	173.8831	24.62	14.46	39.08	43.50	-4.42	peak			
3		220.7666	27.47	11.04	38.51	46.00	-7.49	peak			
4		442.2500	19.11	20.35	39.46	46.00	-6.54	peak			
5		589.3667	13.40	22.68	36.08	46.00	-9.92	peak			
6		773.6666	8.94	26.96	35.90	46.00	-10.10	peak			

## RESULT: PASS

**Note:** All test channels had been tested. The 802.11a20 at 5180MHz is the worst case and recorded in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Level.

The "Factor" value can be calculated automatically by software of measurement system.

**RADIATED EMISSION ABOVE 1GHZ**

<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11a20 5180MHz	<b>Antenna</b>	Horizontal/Vertical

**RADIATED EMISSION ABOVE 1GHZ–Horizontal**

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Value Type
10360.120	43.12	9.14	52.26	74	-21.74	peak
10360.120	36.42	9.14	45.56	54	-8.44	AVG
15540.180	41.78	10.22	52	74	-22	peak
15540.180	35.64	10.22	45.86	54	-8.14	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

**RADIATED EMISSION ABOVE 1GHZ–Vertical**

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Value Type
10360.120	42.54	9.14	51.68	74	-22.32	peak
10360.120	36.71	9.14	45.85	54	-8.15	AVG
15540.180	40.66	10.22	50.88	74	-23.12	peak
15540.180	34.15	10.22	44.37	54	-9.63	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11a20 5240MHz	<b>Antenna</b>	Horizontal/Vertical

RADIATED EMISSION ABOVE 1GHZ–Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Value Type
10480.120	41.52	9.27	50.79	74	-23.21	peak
10480.120	36.34	9.27	45.61	54	-8.39	AVG
15720.180	39.71	10.38	50.09	74	-23.91	peak
15720.180	34.35	10.38	44.73	54	-9.27	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

RADIATED EMISSION ABOVE 1GHZ–Vertical

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Value Type
10480.120	41.38	9.27	50.65	74	-23.35	peak
10480.120	35.42	9.27	44.69	54	-9.31	AVG
15720.180	38.71	10.38	49.09	74	-24.91	peak
15720.180	33.64	10.38	44.02	54	-9.98	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11a20 5745MHz	<b>Antenna</b>	Horizontal/Vertical

RADIATED EMISSION ABOVE 1GHZ–Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Value Type
11490.120	41.25	9.42	50.67	74	-23.33	peak
11490.120	35.74	9.42	45.16	54	-8.84	AVG
17235.180	39.51	10.51	50.02	74	-23.98	peak
17235.180	35.68	10.51	46.19	54	-7.81	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

RADIATED EMISSION ABOVE 1GHZ–Vertical

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Value Type
11490.120	40.54	9.42	49.96	74	-24.04	peak
11490.120	34.71	9.42	44.13	54	-9.87	AVG
17235.180	39.68	10.51	50.19	74	-23.81	peak
17235.180	34.54	10.51	45.05	54	-8.95	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11a20 5825MHz	<b>Antenna</b>	Horizontal/Vertical

RADIATED EMISSION ABOVE 1GHZ–Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Value Type
11650.120	42.71	9.62	52.33	74	-21.67	peak
11650.120	35.57	9.62	45.19	54	-8.81	AVG
17475.180	36.52	10.75	47.27	74	-26.73	peak
17475.180	30.15	10.75	40.9	54	-13.1	AVG

Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

RADIATED EMISSION ABOVE 1GHZ–Vertical

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Value Type
11650.120	41.05	9.62	50.67	74	-23.33	peak
11650.120	34.77	9.62	44.39	54	-9.61	AVG
17475.180	36.42	10.75	47.17	74	-26.83	peak
17475.180	29.94	10.75	40.69	54	-13.31	AVG

Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

**Note:** All the case had been tested. The 802.11a modulation is the worst case and recorded in the test report.

Other frequencies radiation emission from 1GHz to 40GHz at least have 20dB margin and not recorded in the test report.

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Level.

The “Factor” value can be calculated automatically by software of measurement system.

## 12. BAND EDGE EMISSION

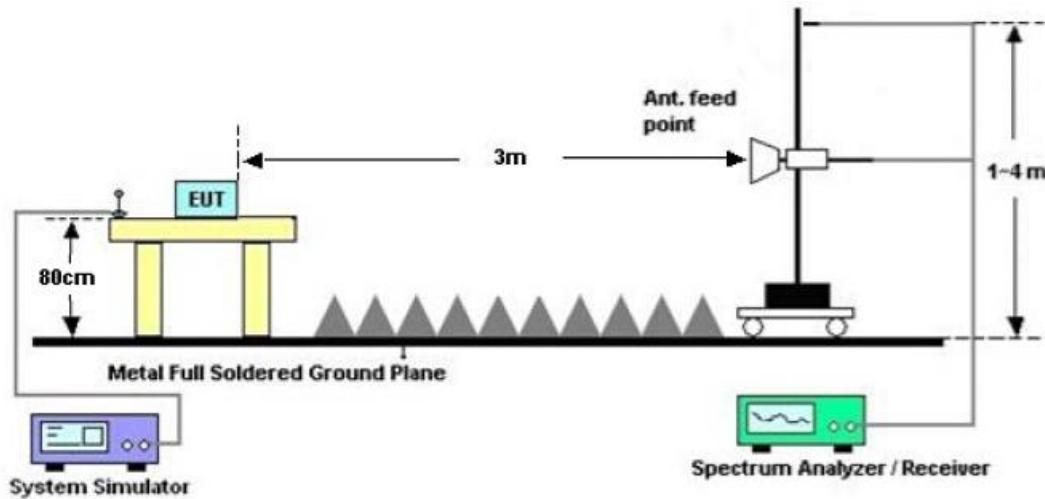
### 12.1. MEASUREMENT PROCEDURE

1. The EUT operates at transmitting mode. The operate channel is tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.
2. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission: (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO  
(b) AVERAGE: RBW=1MHz ; VBW=1/on time(1KHz) / Sweep=AUTO
3. Other procedures refer to clause 11.2.

#### Note:

1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level
2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB( $\mu$ V) to represent the Amplitude. Use the F dB( $\mu$ V/m) to represent the Field Strength. So A=F.
3. Only the data of band edge emission at the restricted band 4.5GHz-5.15GHz record in the report. Other restricted band 5.35GHz-5.46GHz and 7.25GHz-7.77GHz were considered as ambient noise. No recording in the test report.

### 12.2. TEST SET-UP



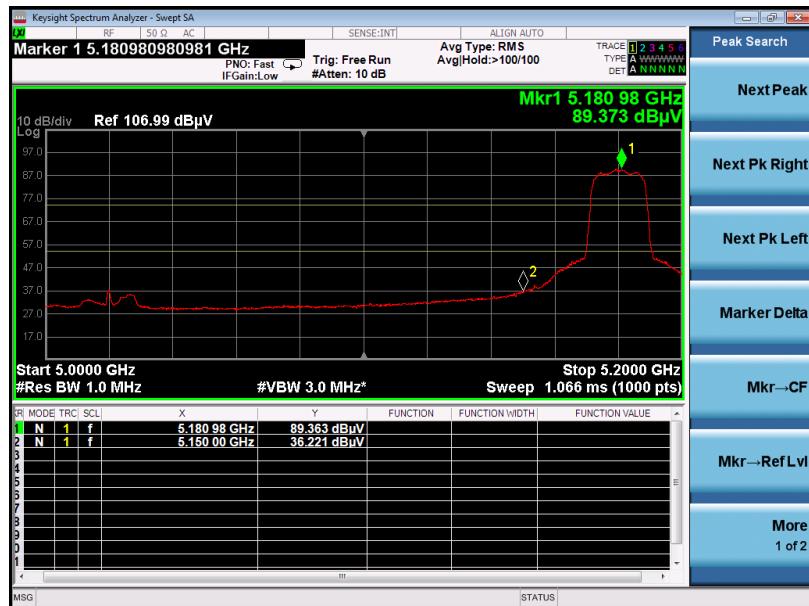
### 12.3. TEST RESULT

<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11a20 5180MHz	<b>Antenna</b>	Horizontal

PK Value



AV Value

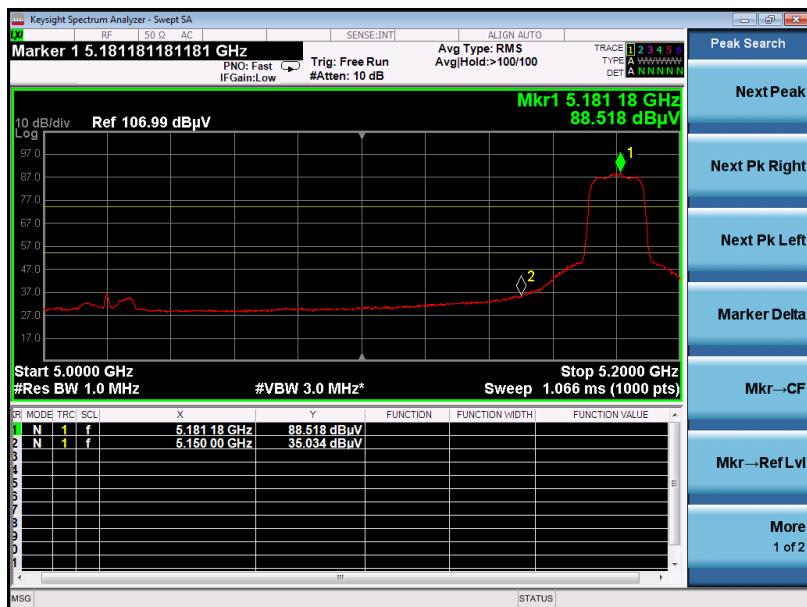


<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11a20 5180MHz	<b>Antenna</b>	Vertical

**PK Value**



**AV Value**

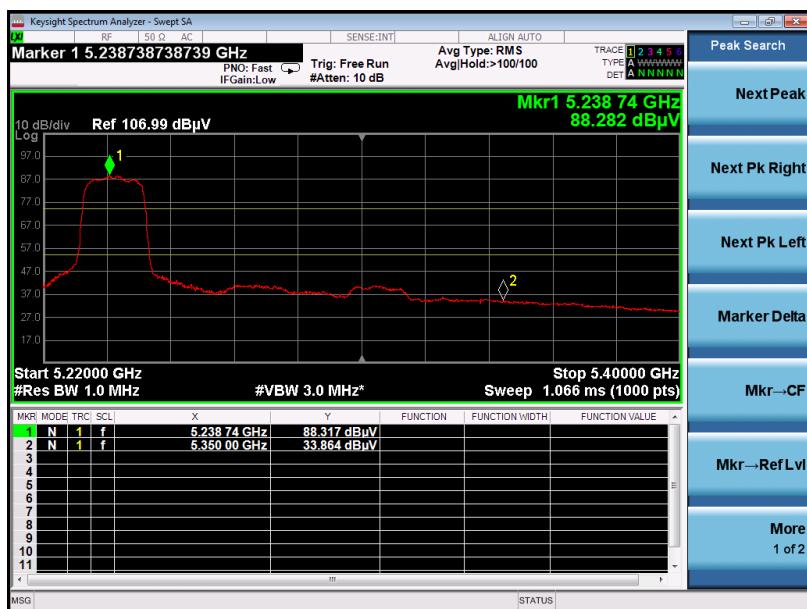


<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11a20 5240MHz	<b>Antenna</b>	Horizontal

**PK Value**



**AV Value**

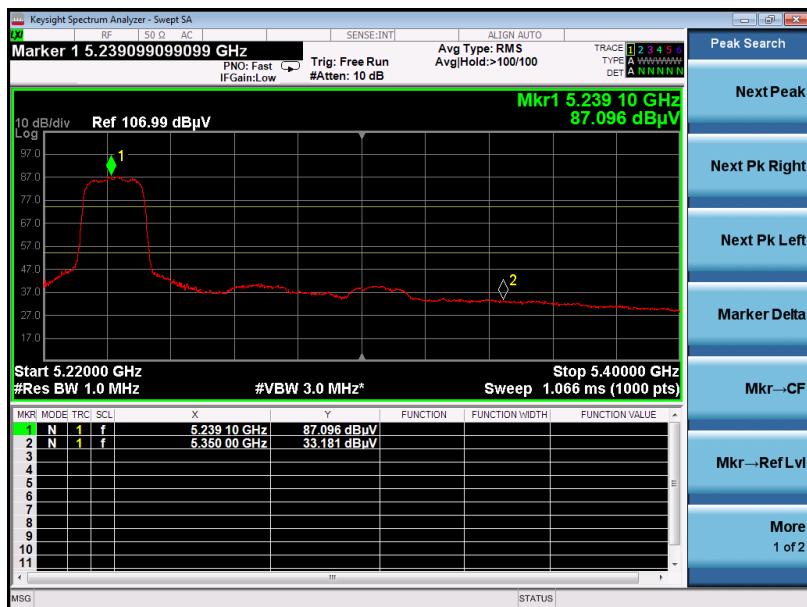


<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11a20 5240MHz	<b>Antenna</b>	Vertical

PK Value



AV Value

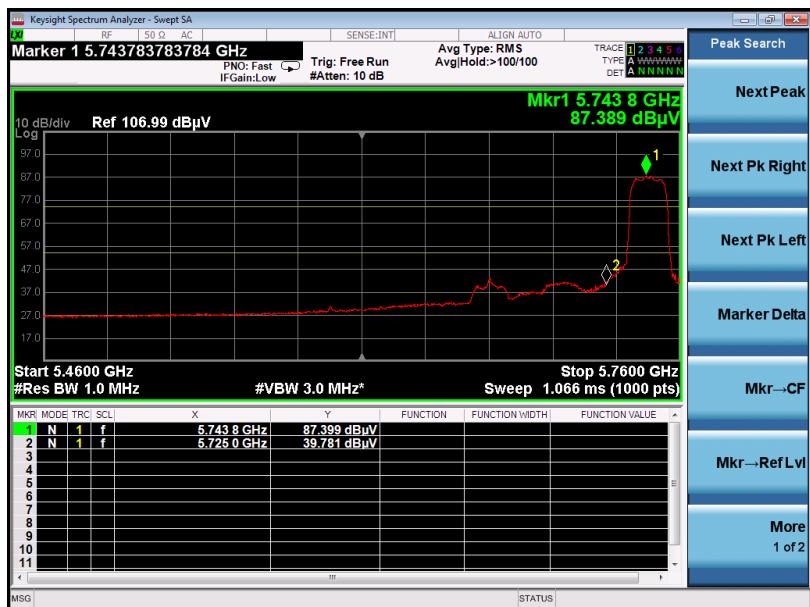


<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11a20 5745MHz	<b>Antenna</b>	Horizontal

### PK Value



### AV Value

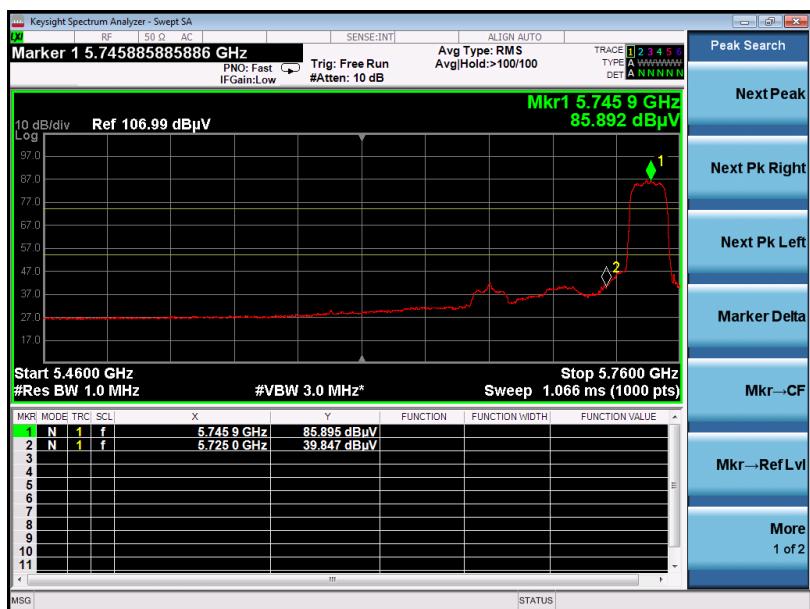


<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11a20 5745MHz	<b>Antenna</b>	Vertical

## PK Value



AV Value



<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11a20 5825MHz	<b>Antenna</b>	Horizontal

PK Value



AV Value



<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11a20 5825MHz	<b>Antenna</b>	Vertical

**PK Value**

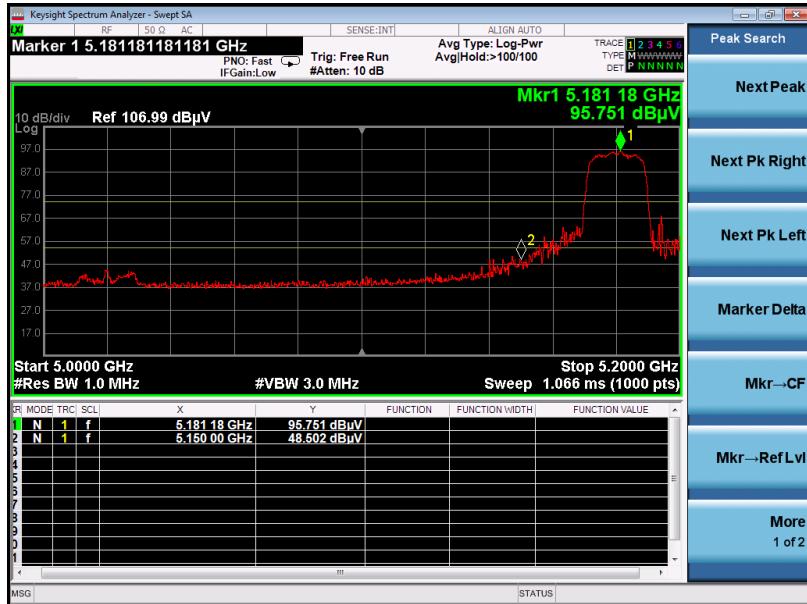


**AV Value**

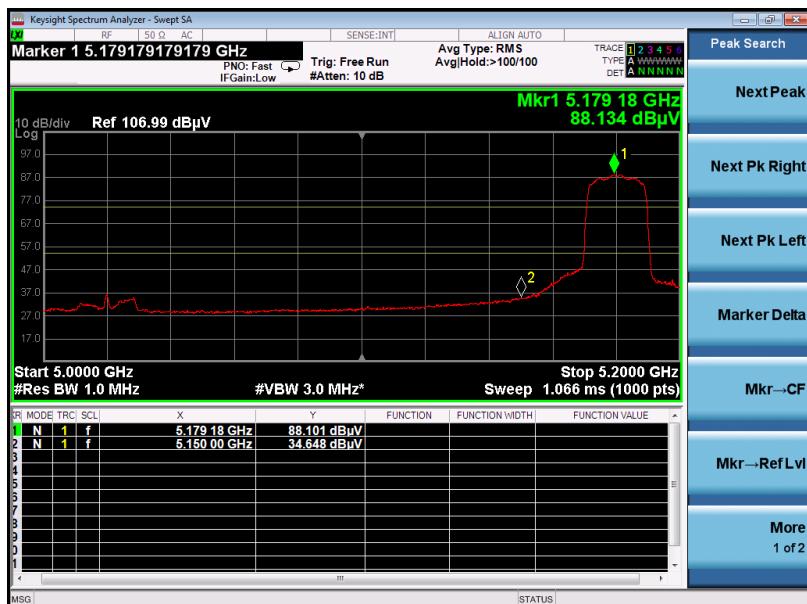


<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11n20 5180MHz	<b>Antenna</b>	Horizontal

PK Value



AV Value

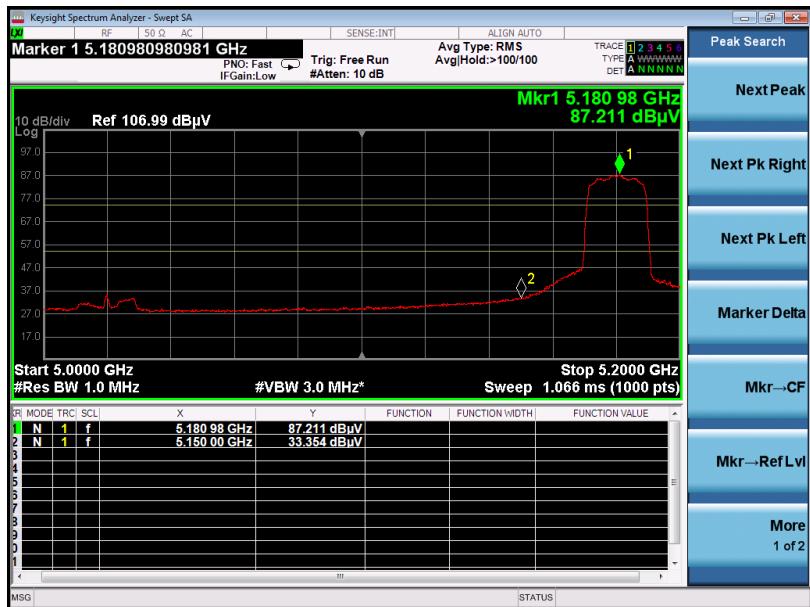


<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11n20 5180MHz	<b>Antenna</b>	Vertical

PK Value

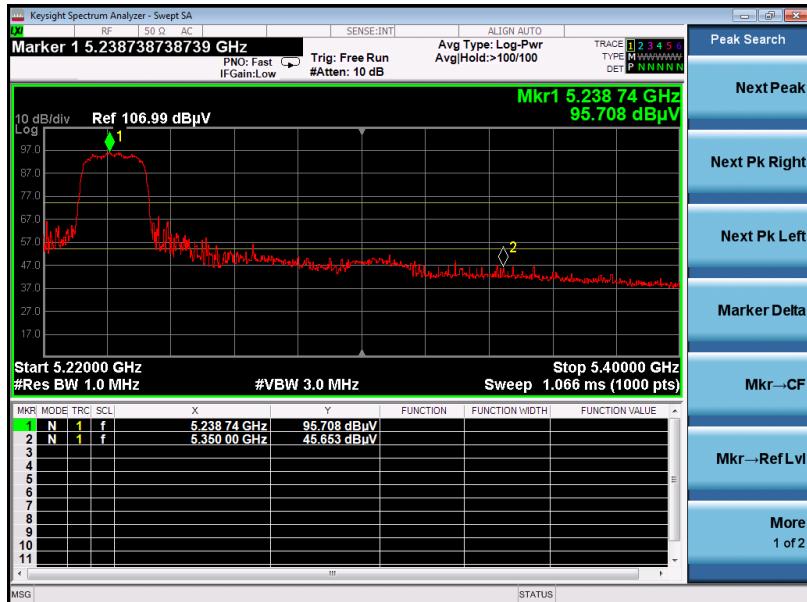


AV Value

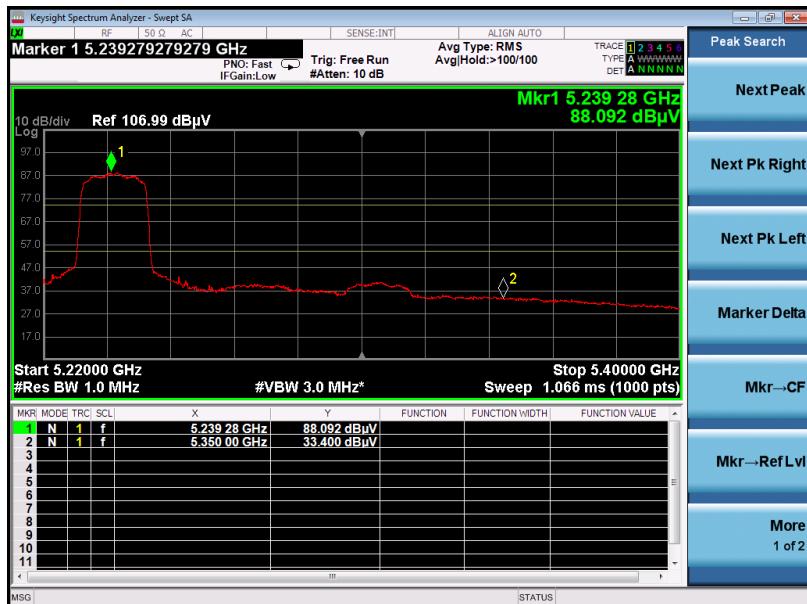


<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11n20 5240MHz	<b>Antenna</b>	Horizontal

**PK Value**



**AV Value**

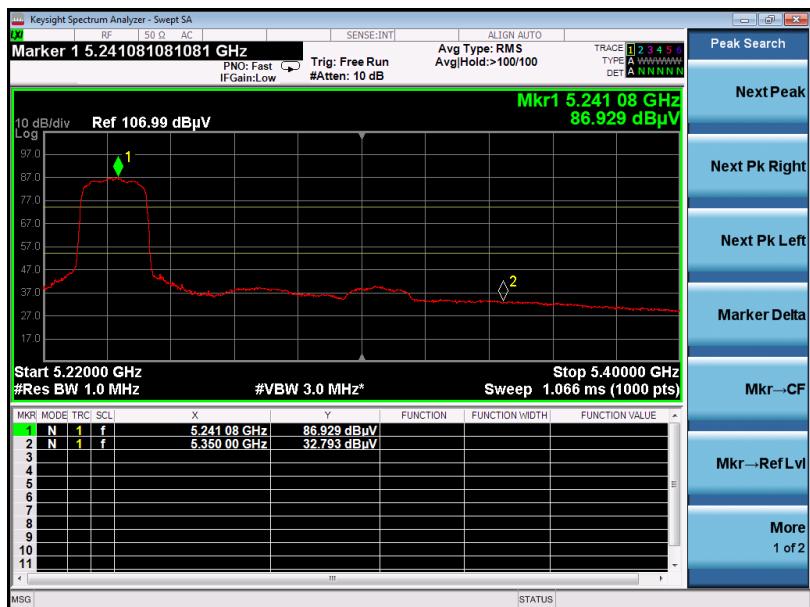


<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11n20 5240MHz	<b>Antenna</b>	Vertical

## PK Value



## AV Value

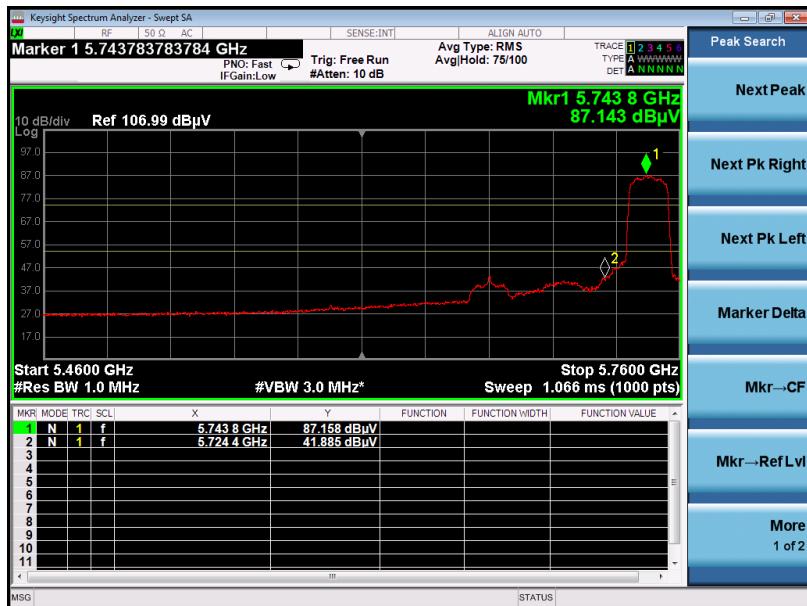


<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11n20 5745MHz	<b>Antenna</b>	Horizontal

**PK Value**



**AV Value**

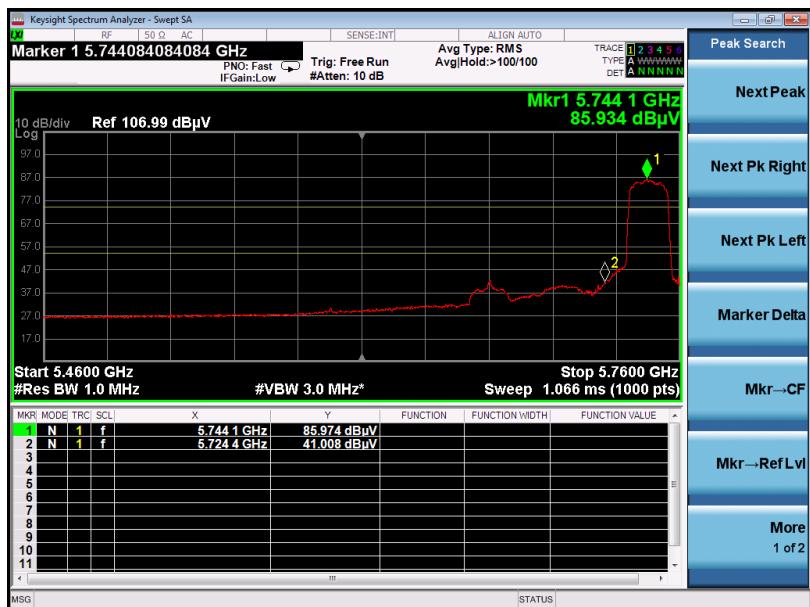


<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11n20 5745MHz	<b>Antenna</b>	Vertical

## PK Value

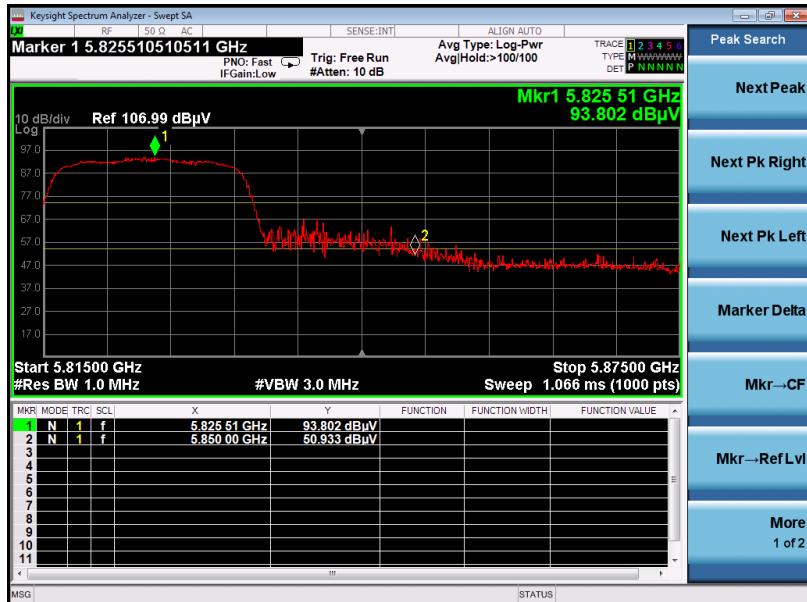


### AV Value



<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11n20 5825MHz	<b>Antenna</b>	Horizontal

**PK Value**

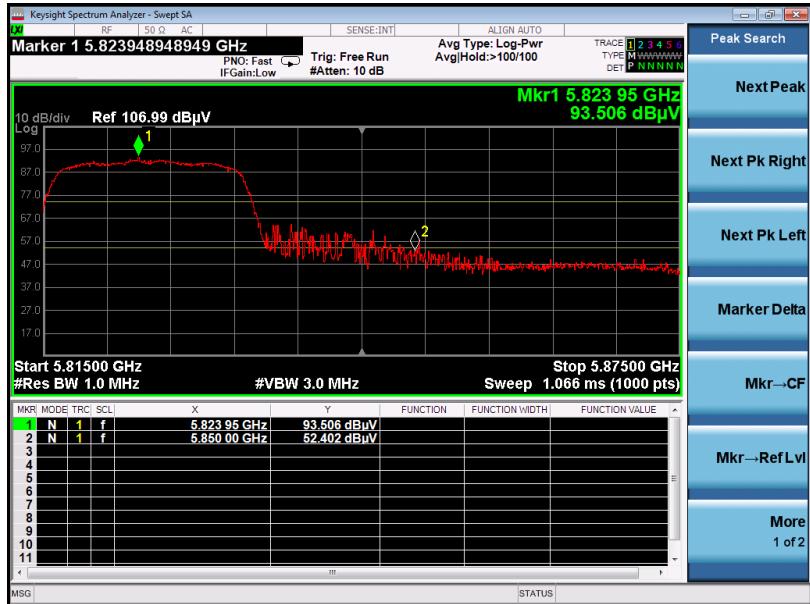


**AV Value**



<b>EUT</b>	Mini projector	<b>Model Name</b>	Q10
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11n20 5825MHz	<b>Antenna</b>	Vertical

PK Value



AV Value



**RESULT: PASS**

## 13. FCC LINE CONDUCTED EMISSION TEST

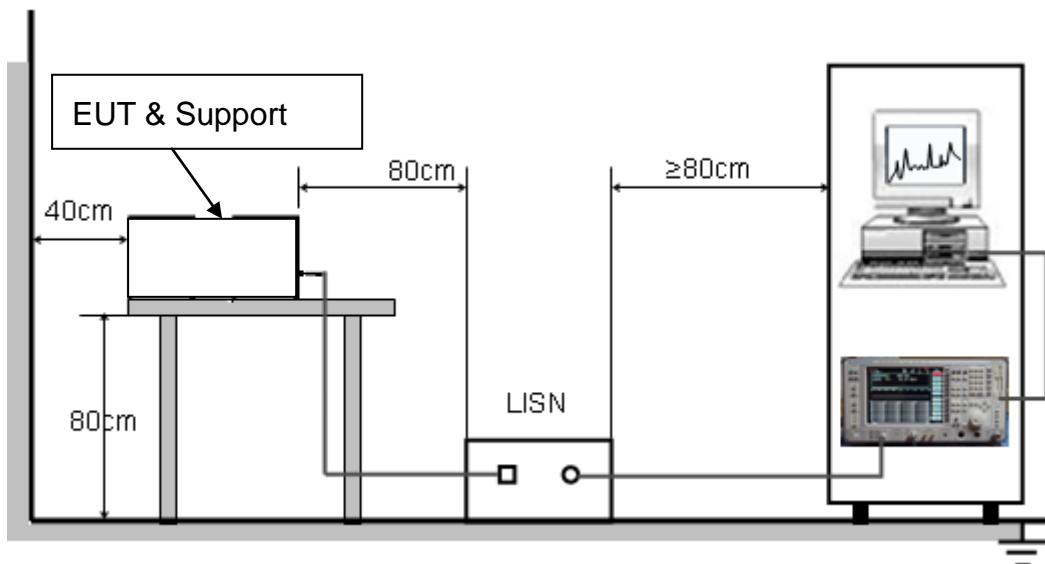
### 13.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P. (dBuV)	Average (dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.

### 13.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



### **13.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST**

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received charging voltage by adapter which received 120V/60Hz power by a LISN.
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

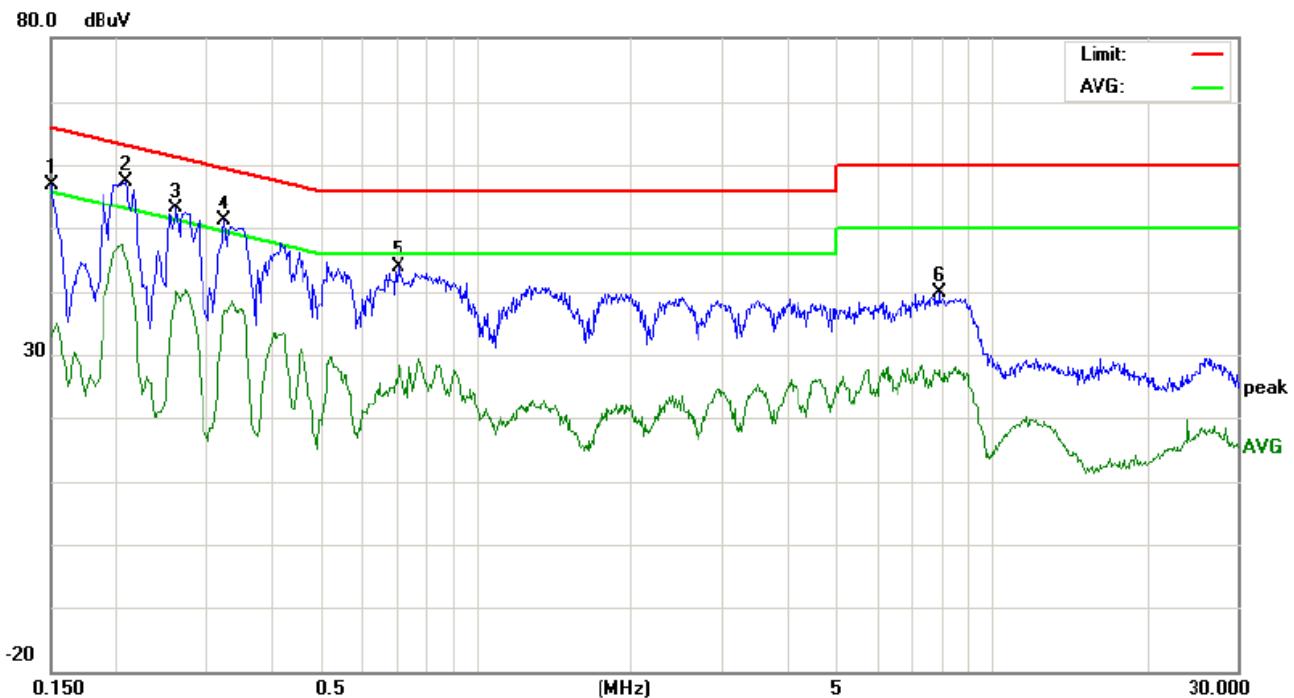
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

### **12.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST**

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

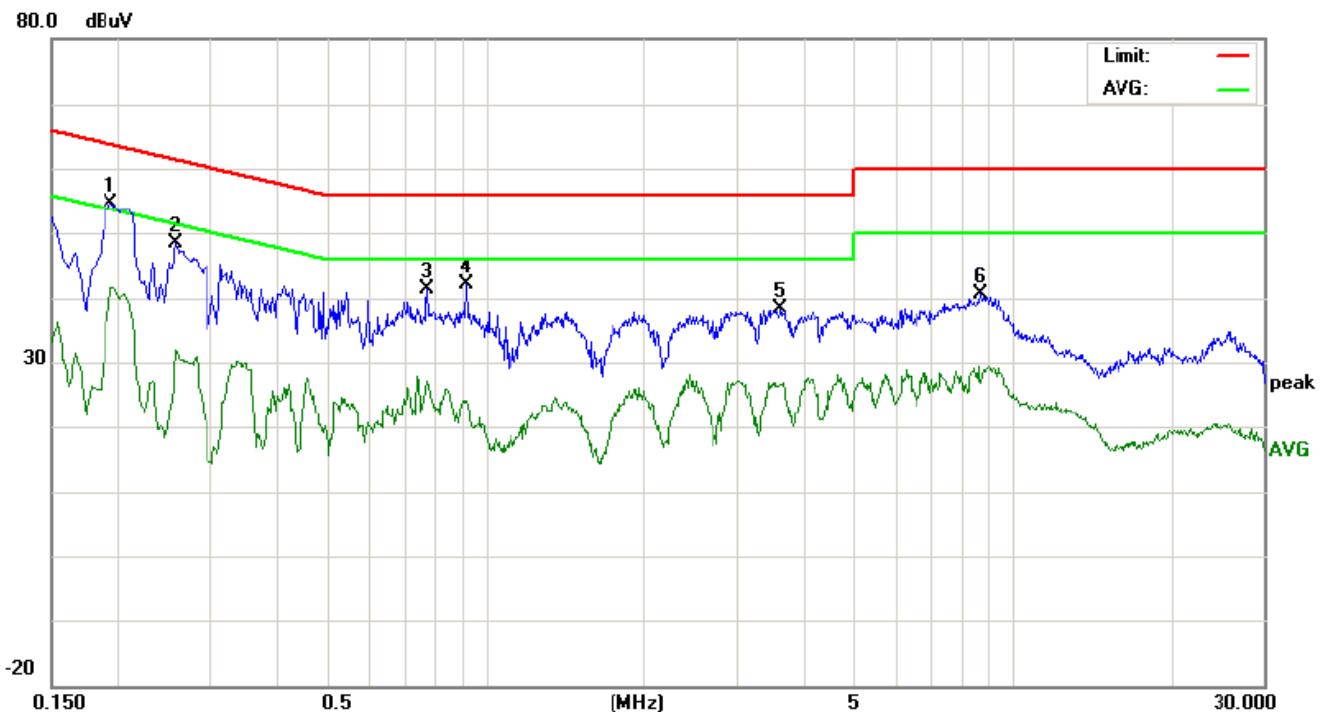
### 13.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

#### LINE CONDUCTED EMISSION TEST-L



No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1499	46.66		22.61	10.16	56.82		32.77	66.00	56.00	-9.18	-23.23	P	
2	0.2100	47.08		35.01	10.23	57.31		45.24	63.20	53.20	-5.89	-7.96	P	
3	0.2620	42.75		29.95	10.27	53.02		40.22	61.36	51.36	-8.34	-11.14	P	
4	0.3260	40.74		26.61	10.30	51.04		36.91	59.55	49.55	-8.51	-12.64	P	
5	0.7060	33.50		16.74	10.35	43.85		27.09	56.00	46.00	-12.15	-18.91	P	
6	7.9179	29.51		17.19	10.35	39.86		27.54	60.00	50.00	-20.14	-22.46	P	

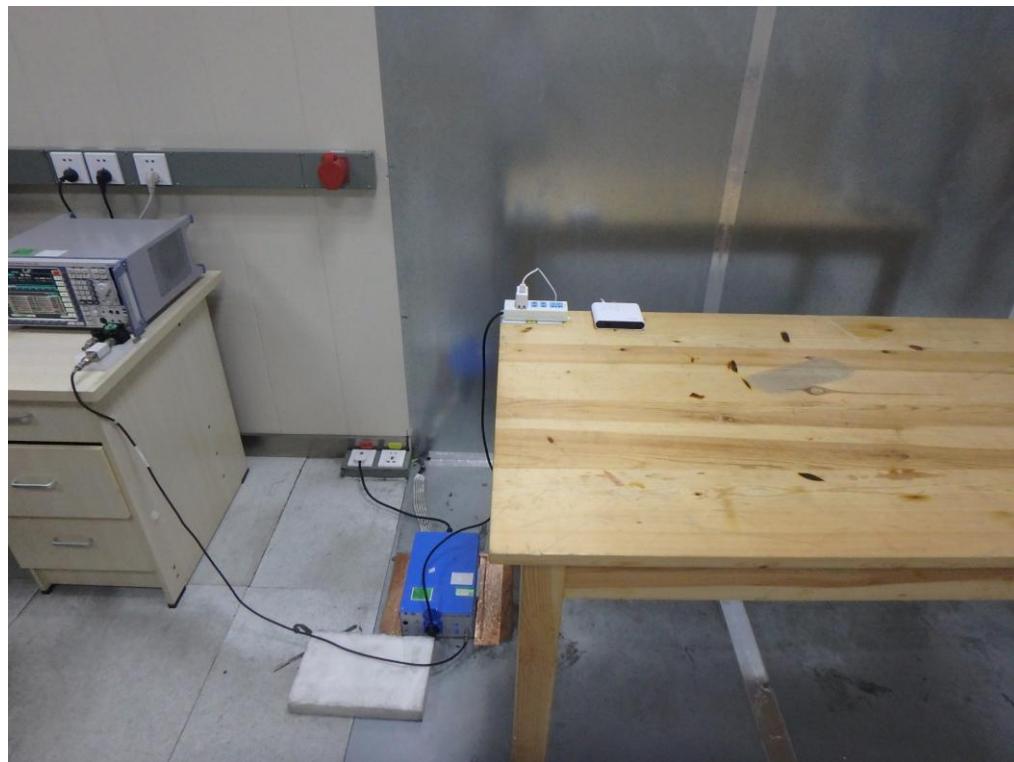
LINE CONDUCTED EMISSION TEST-N



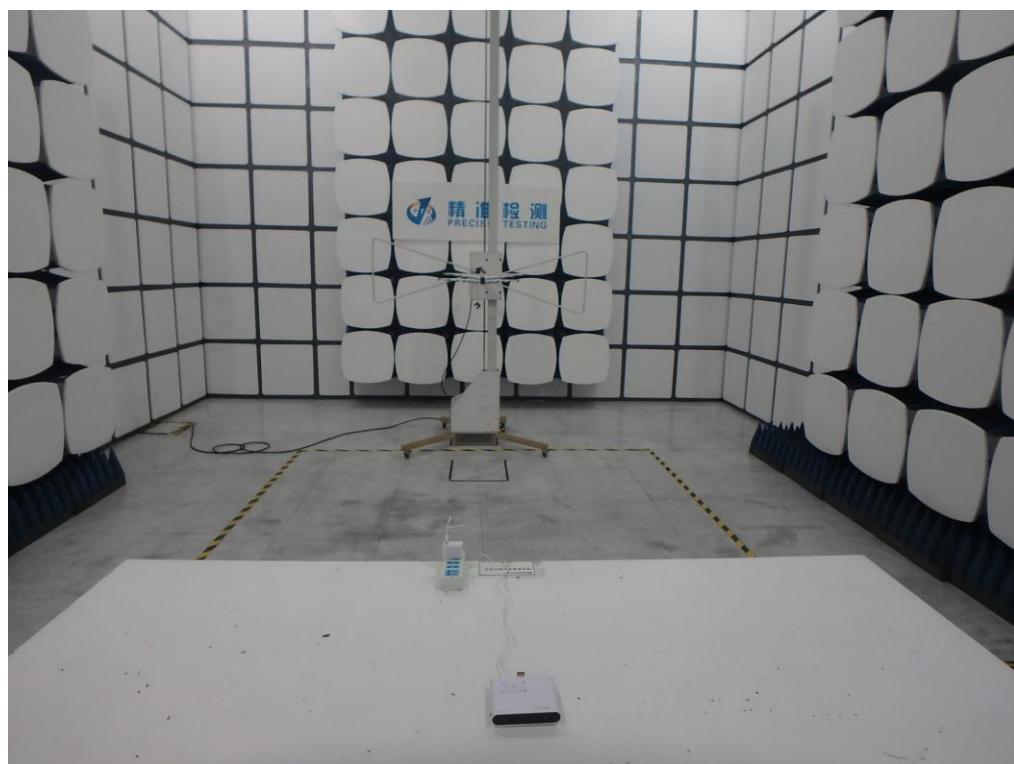
No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1940	44.37		31.39	10.21	54.58		41.60	63.86	53.86	-9.28	-12.26	P	
2	0.2580	38.17		21.67	10.27	48.44		31.94	61.49	51.49	-13.05	-19.55	P	
3	0.7780	31.01		16.72	10.30	41.31		27.02	56.00	46.00	-14.69	-18.98	P	
4	0.9220	31.72		13.73	10.40	42.12		24.13	56.00	46.00	-13.88	-21.87	P	
5	3.6300	27.91		16.02	10.49	38.40		26.51	56.00	46.00	-17.60	-19.49	P	
6	8.7059	30.31		16.68	10.29	40.60		26.97	60.00	50.00	-19.40	-23.03	P	

RESULT: PASS

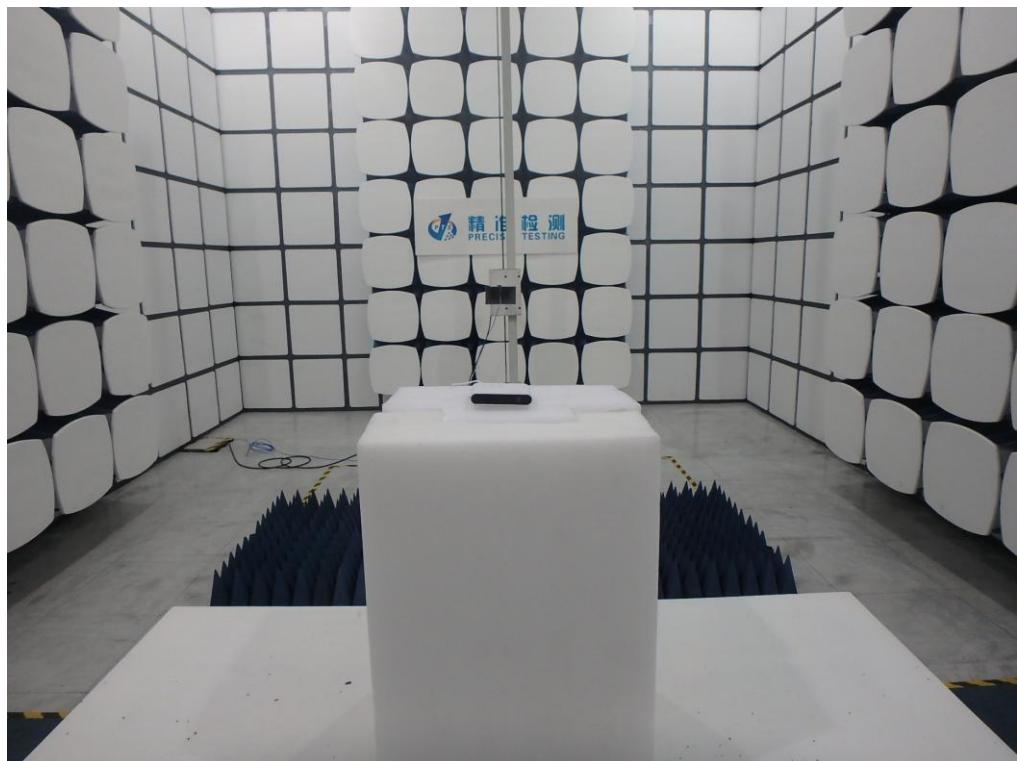
**APPENDIX A: PHOTOGRAPHS OF TEST SETUP**  
**FCC LINE CONDUCTED EMISSION TEST SETUP**



**FCC RADIATED EMISSION TEST SETUP BELOW 1GHZ**



FCC RADIATED EMISSION TEST SETUP ABOVE 1GHZ



----END OF REPORT----