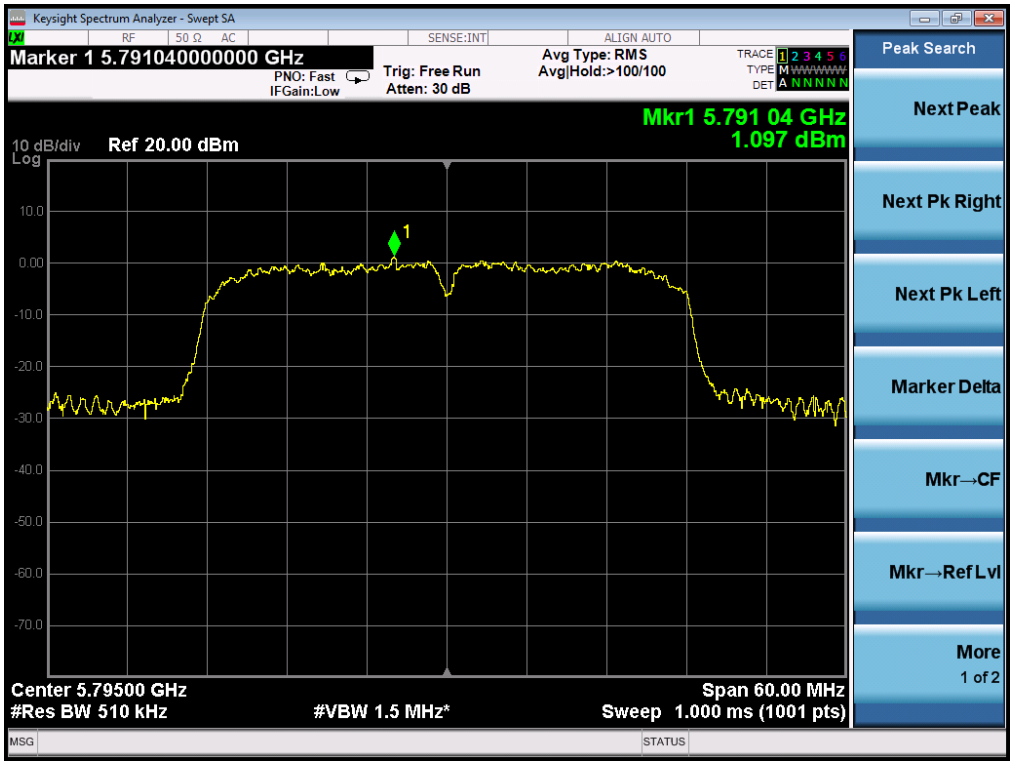
TEST PLOT OF SPECTRAL DENSITY FOR 5795MHz AT CHAIN 1



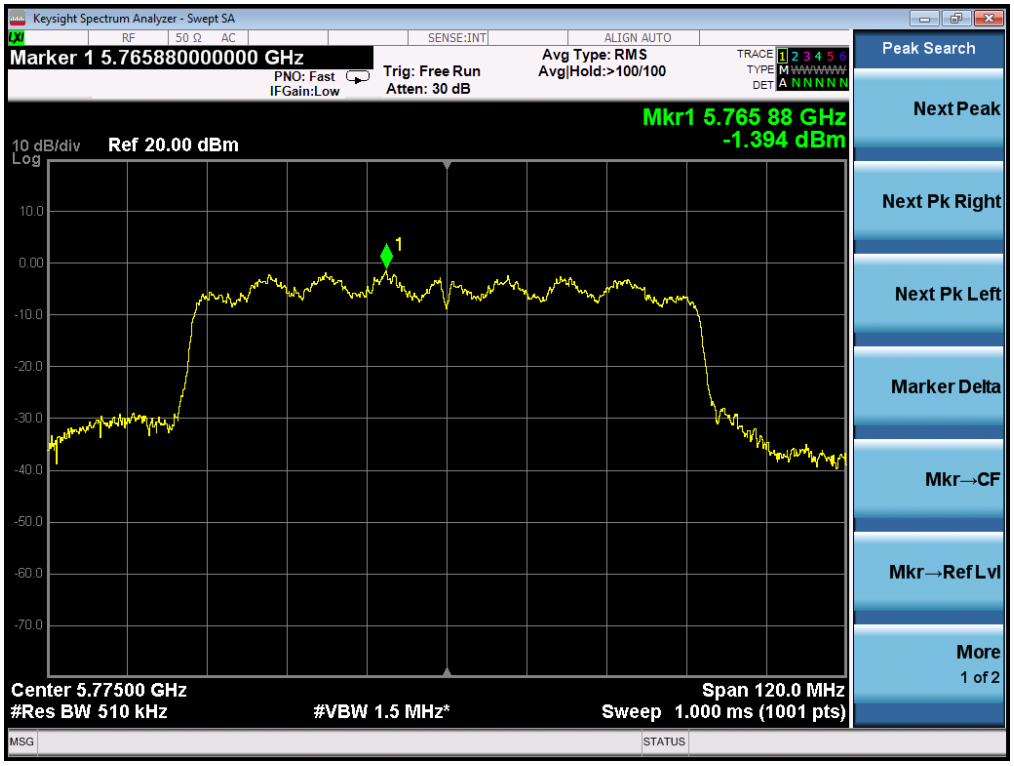

TEST PLOT OF SPECTRAL DENSITY FOR 5795MHz AT CHAIN 2

**802.11ac80 TEST RESULT**

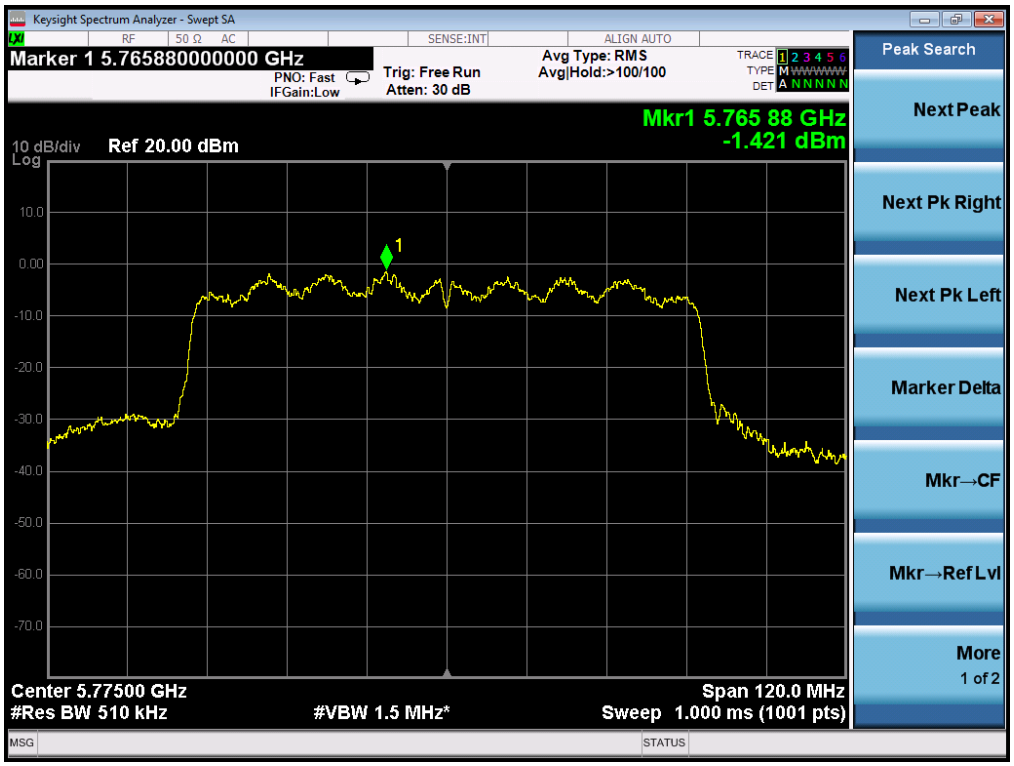
TEST PLOT OF SPECTRAL DENSITY FOR 5210MHz AT CHAIN 1


TEST PLOT OF SPECTRAL DENSITY FOR 5210MHz AT CHAIN 2

TEST PLOT OF SPECTRAL DENSITY FOR 5775MHz AT CHAIN 1




TEST PLOT OF SPECTRAL DENSITY FOR 5775MHz AT CHAIN 2



# 8. CONDUCTED SPURIOUS EMISSION

## 8.1. 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.

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

The same as described in section 8.2.

## 8.3. MEASUREMENT EQUIPMENT USED

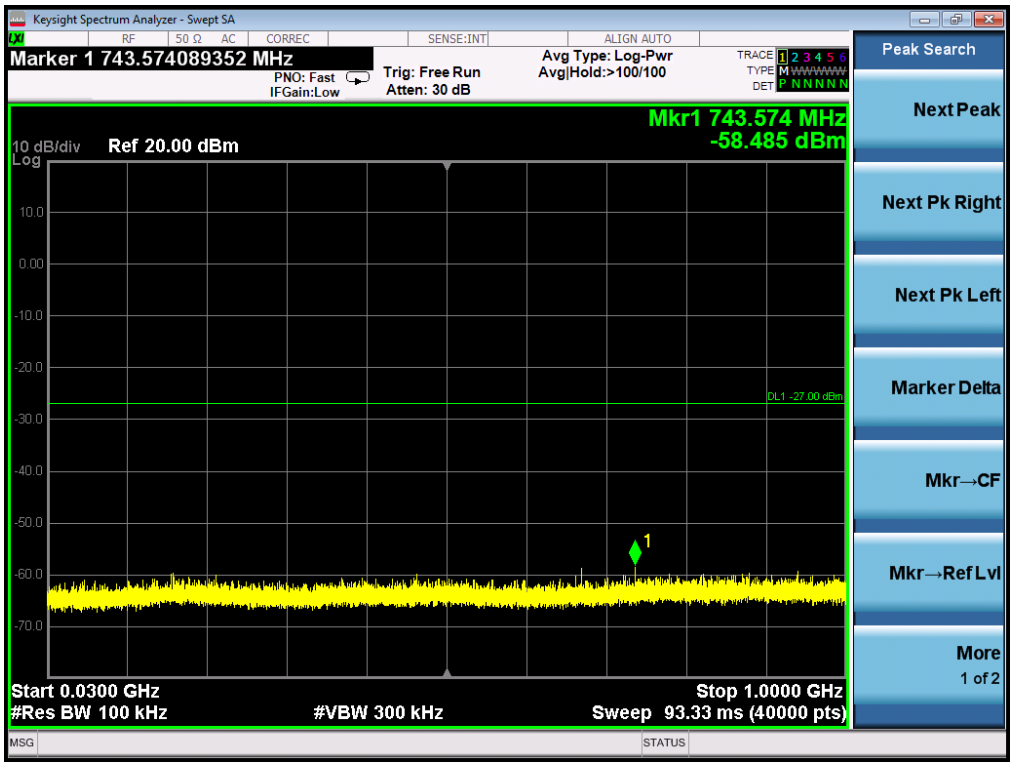
The same as described in section 6.

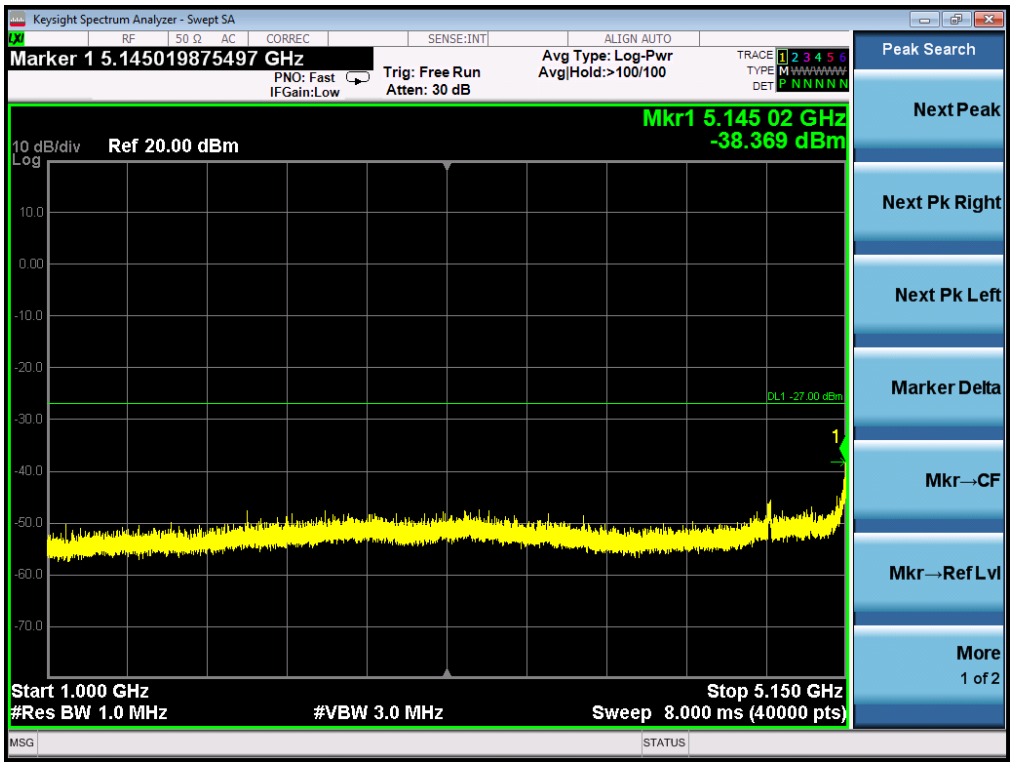
## 8.4. LIMITS AND MEASUREMENT RESULT

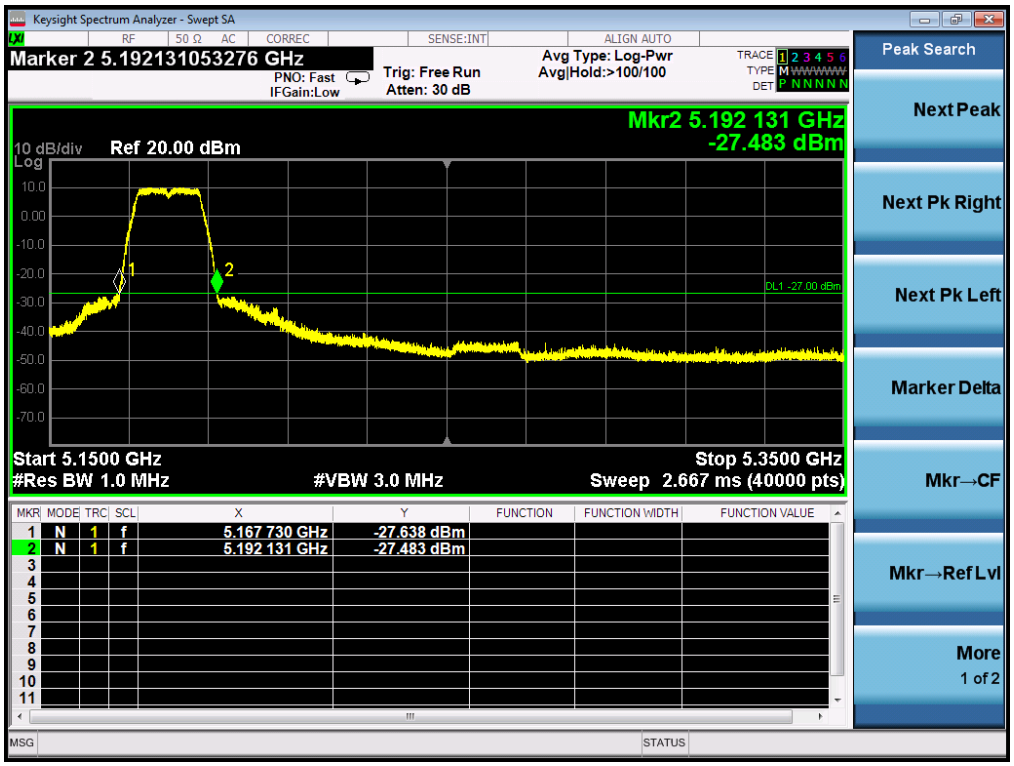
| LIMITS AND MEASUREMENT RESULT | | |
|---|---|---|
| **Applicable Limits** | **Measurement Result** | |
| | **Test channel** | **Criteria** |
| -27dBm/MHz | 5150MHz-5250MHz | PASS |
| All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edgeincreasing linearly 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. | 5725MHz-5850MHz | PASS |

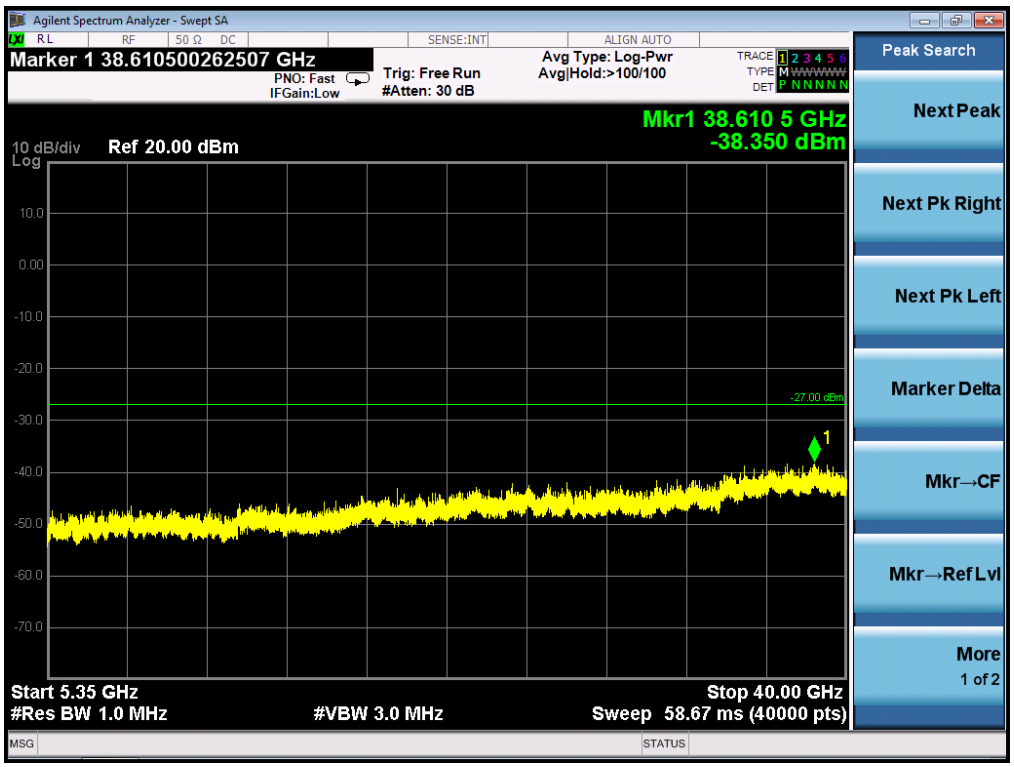
**FOR 802.11A20 MODULATION**

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

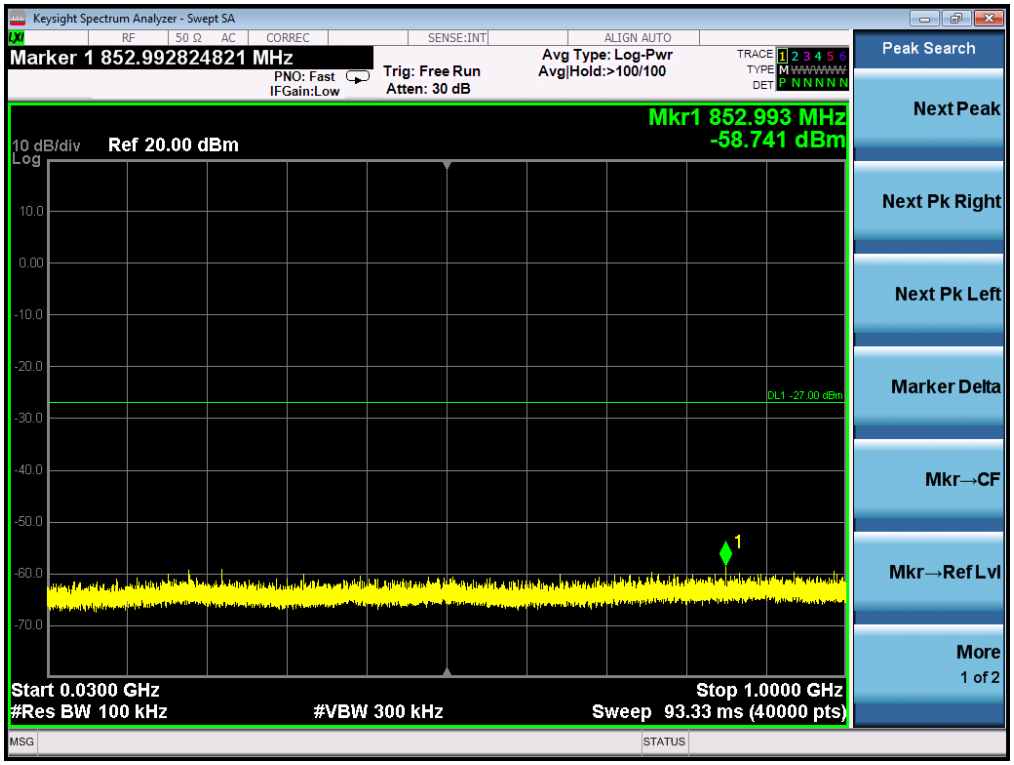


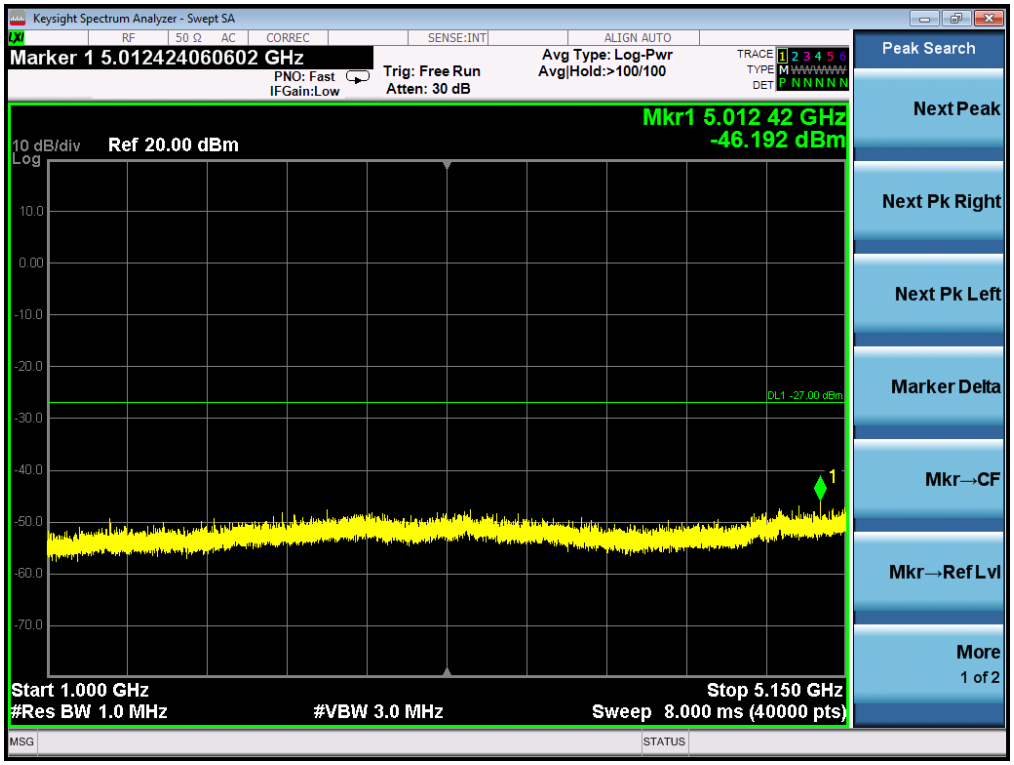



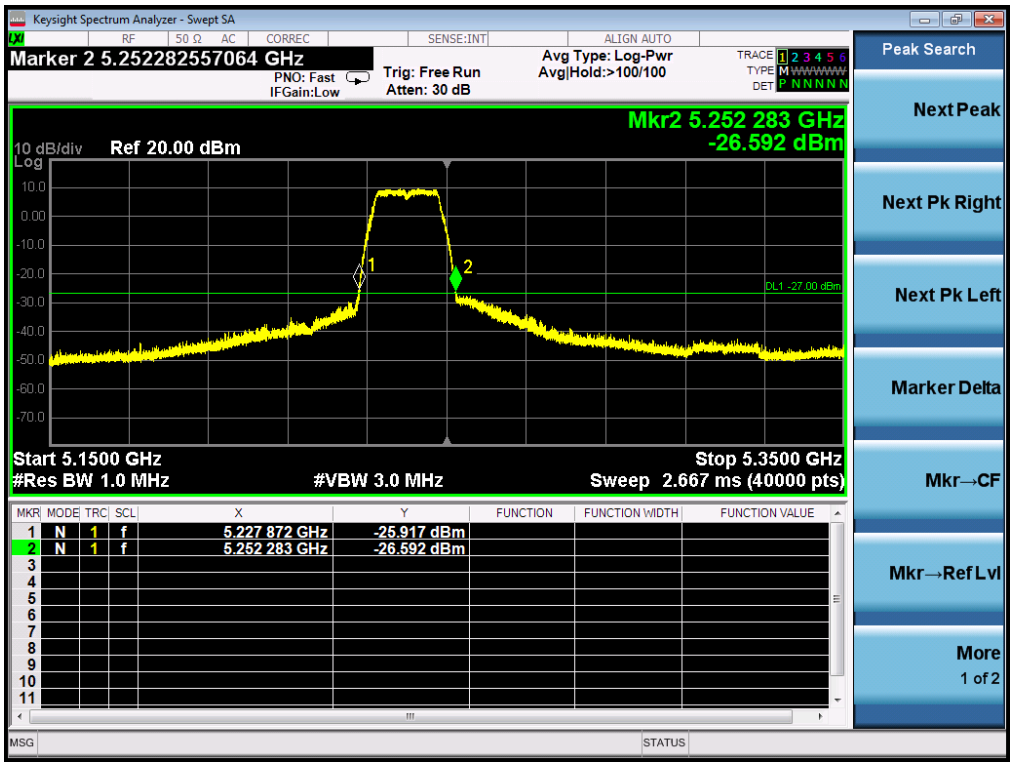

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC CORREC SENSE:INT ALIGN AUTO
Marker 2 5.192131053276 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr2 5.192 131 GHz
-27.483 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
2
DL1 -27.00 dBm
Start 5.1500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.3500 GHz
Sweep 2.667 ms (40000 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.167 730 GHz -27.638 dBm
2 N 1 f 5.192 131 GHz -27.483 dBm
3
4
5
6
7
8
9
10
11
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

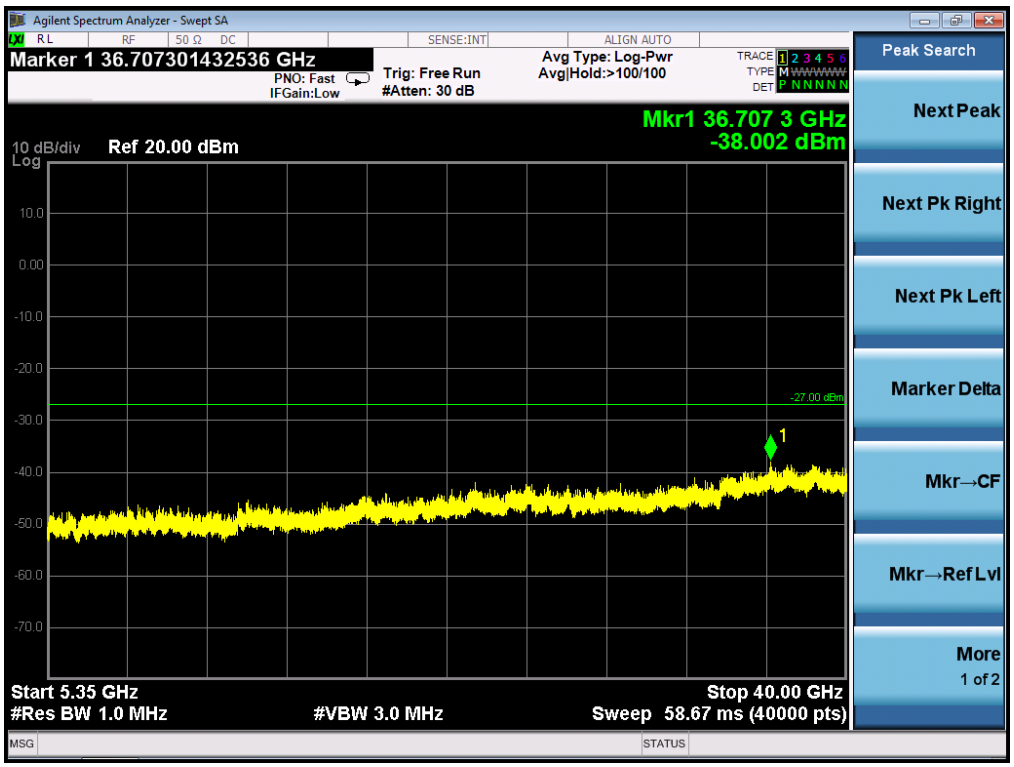

Agilent Spectrum Analyzer - Swept SA
RL RF 50 Ω DC SENSE:INT ALIGN AUTO
Marker 1 38.610500262507 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr1 38.610 5 GHz
-38.350 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-27.00 dBm
1
Start 5.35 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

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

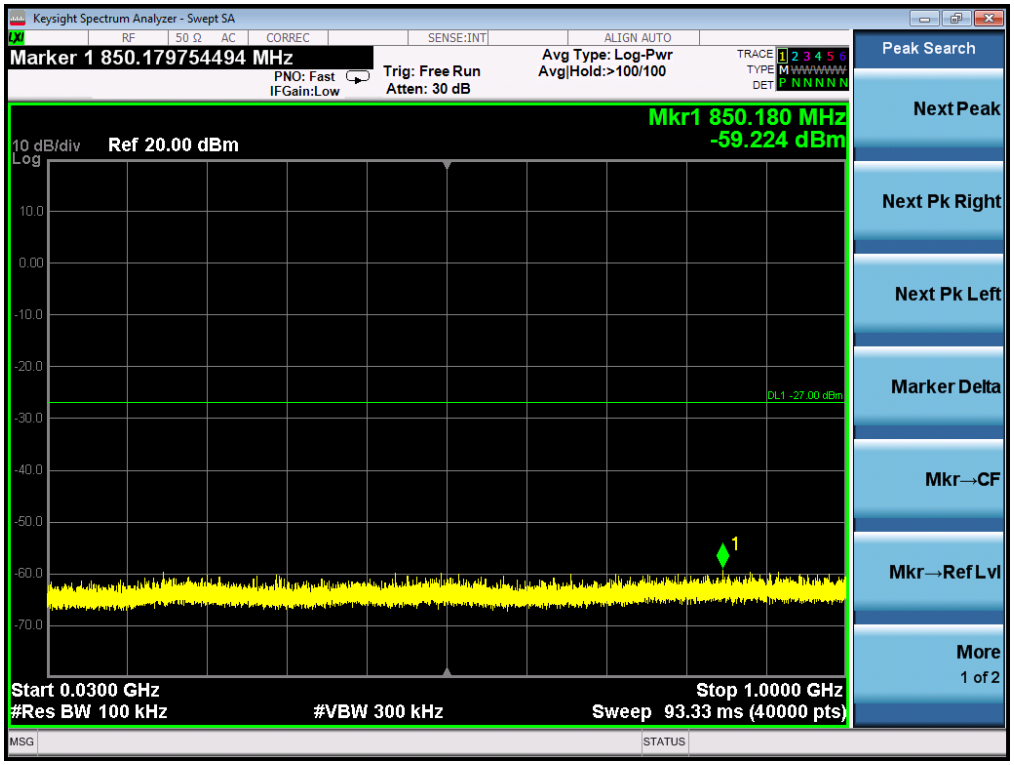


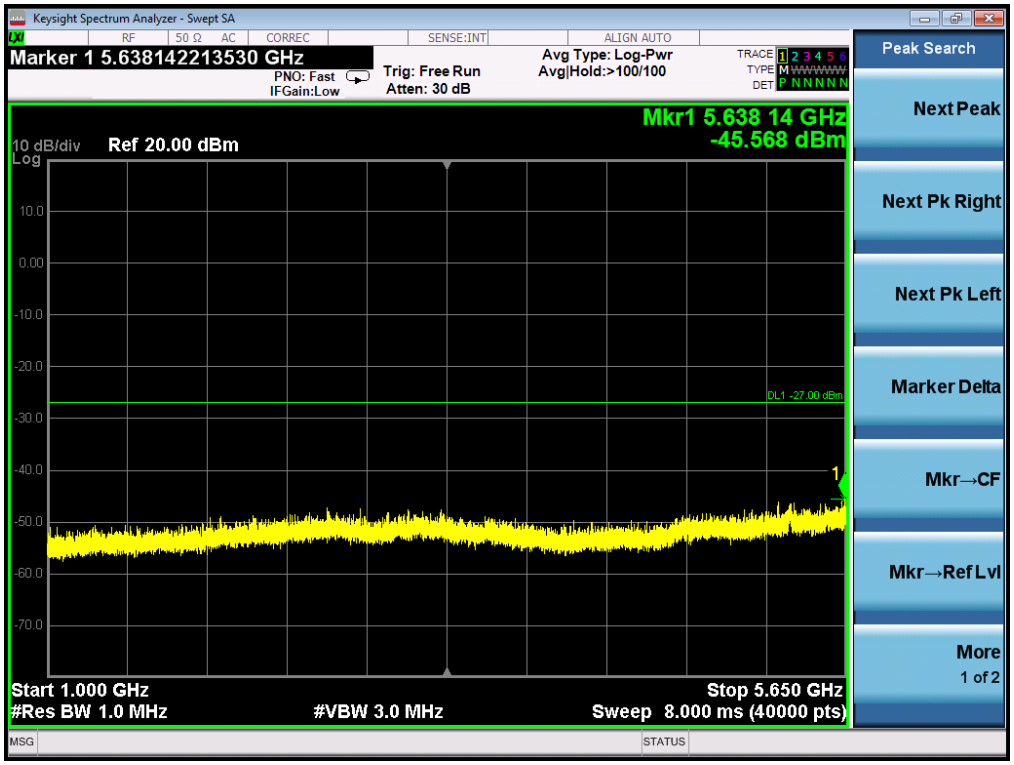



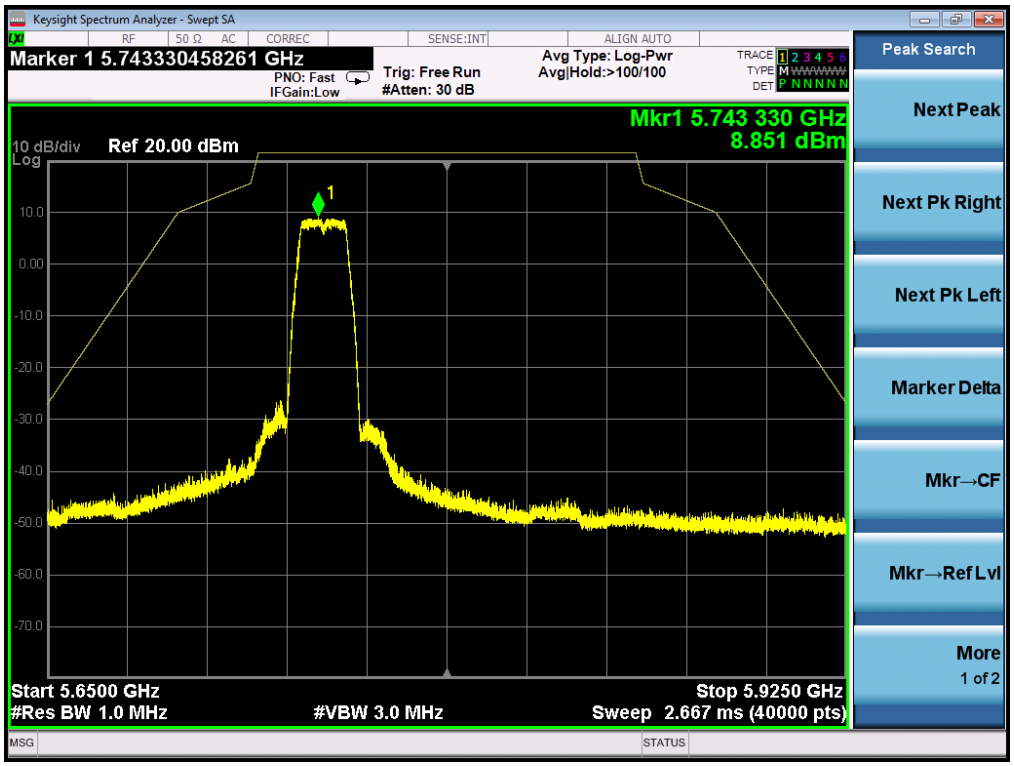

Keysight Spectrum Analyzer - Swept SA
Marker 2 5.252282557064 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr2 5.252 283 GHz
-26.592 dBm
10 dB/div
Log
Ref 20.00 dBm
DL1 -27.00 dBm
Start 5.1500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.3500 GHz
Sweep 2.667 ms (40000 pts)
1 N 1 f 5.227 872 GHz -25.917 dBm
2 N 1 f 5.252 283 GHz -26.592 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

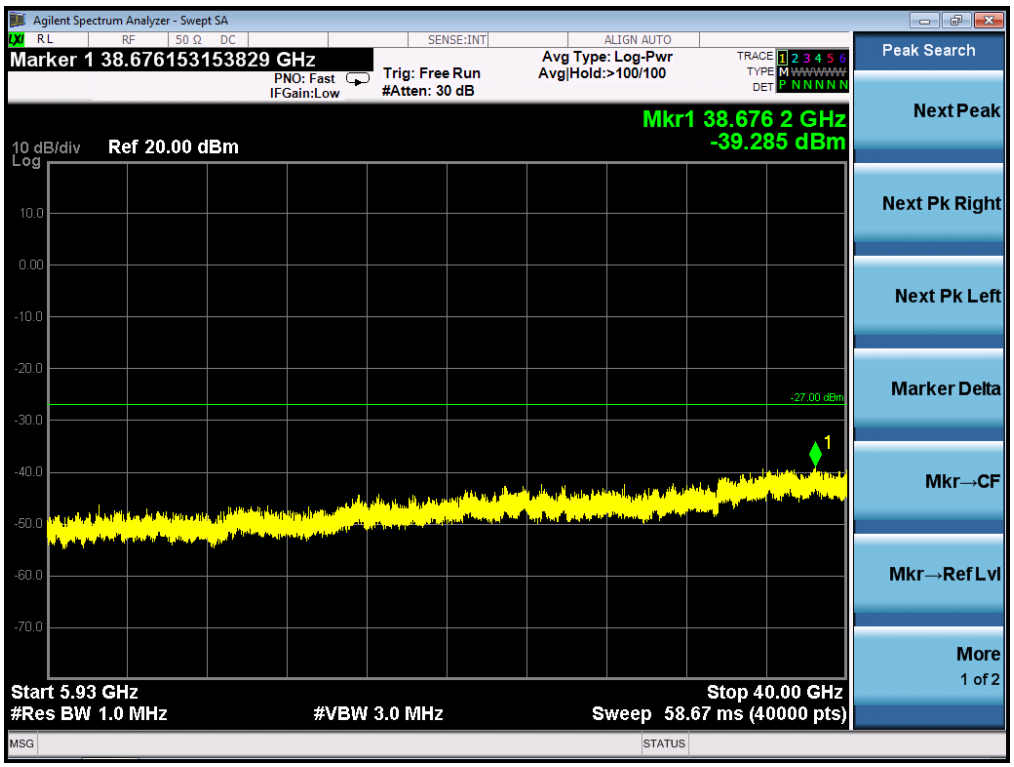

Agilent Spectrum Analyzer - Swept SA
Marker 1 36.707301432536 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 36.707 3 GHz
-38.002 dBm
10 dB/div
Log
Ref 20.00 dBm
-27.00 dBm
Start 5.35 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

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

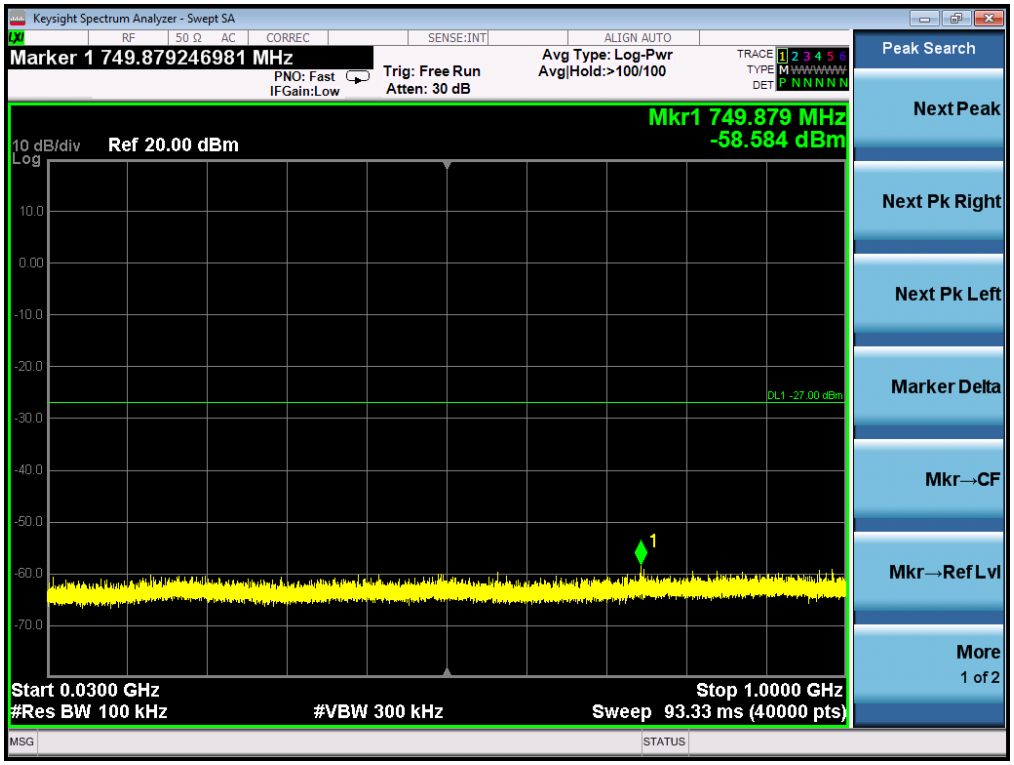


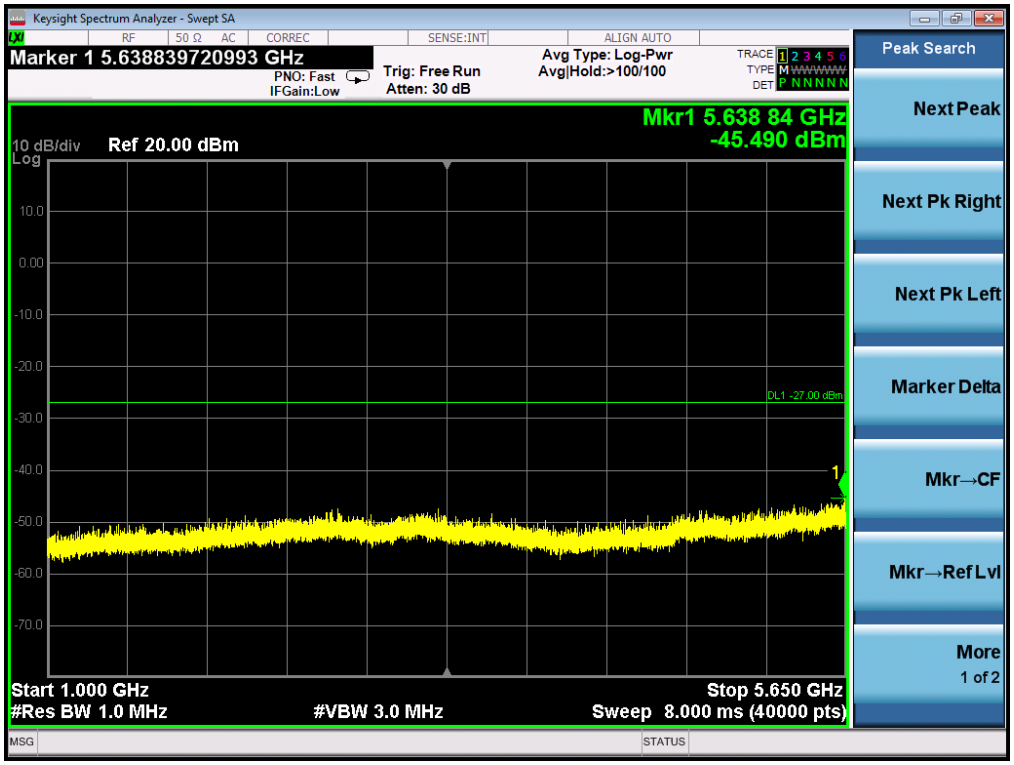



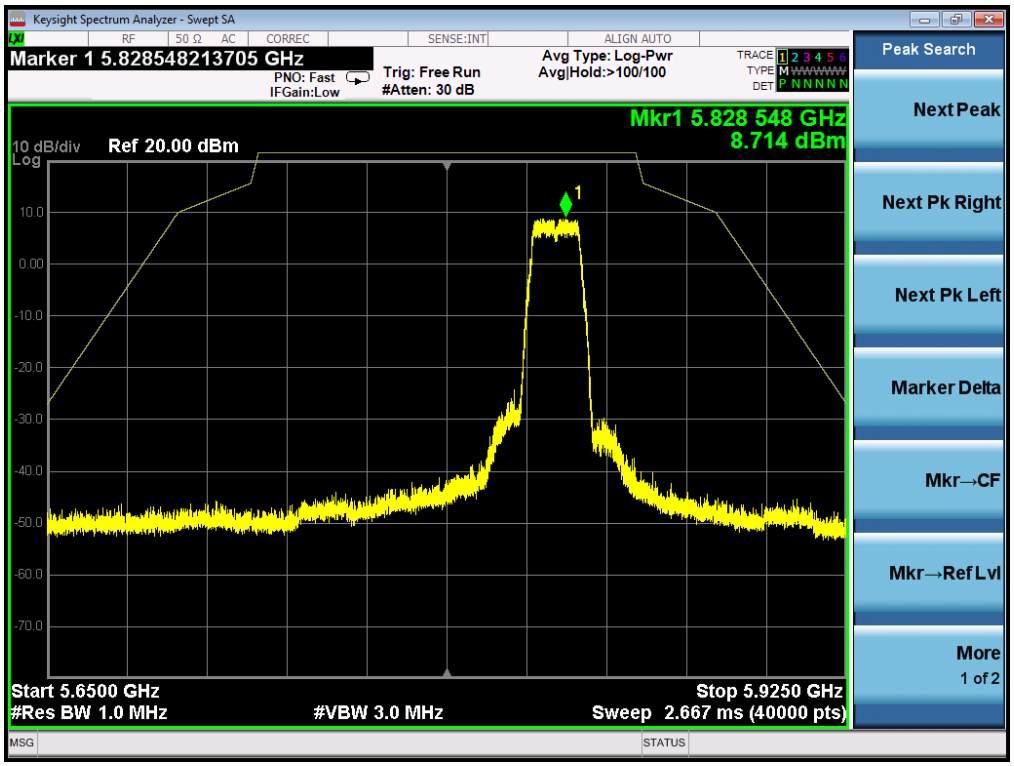

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC CORREC SENSE:INT ALIGN AUTO
Marker 1 5.743330458261 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr1 5.743 330 GHz
8.851 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 5.6500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.9250 GHz
Sweep 2.667 ms (40000 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

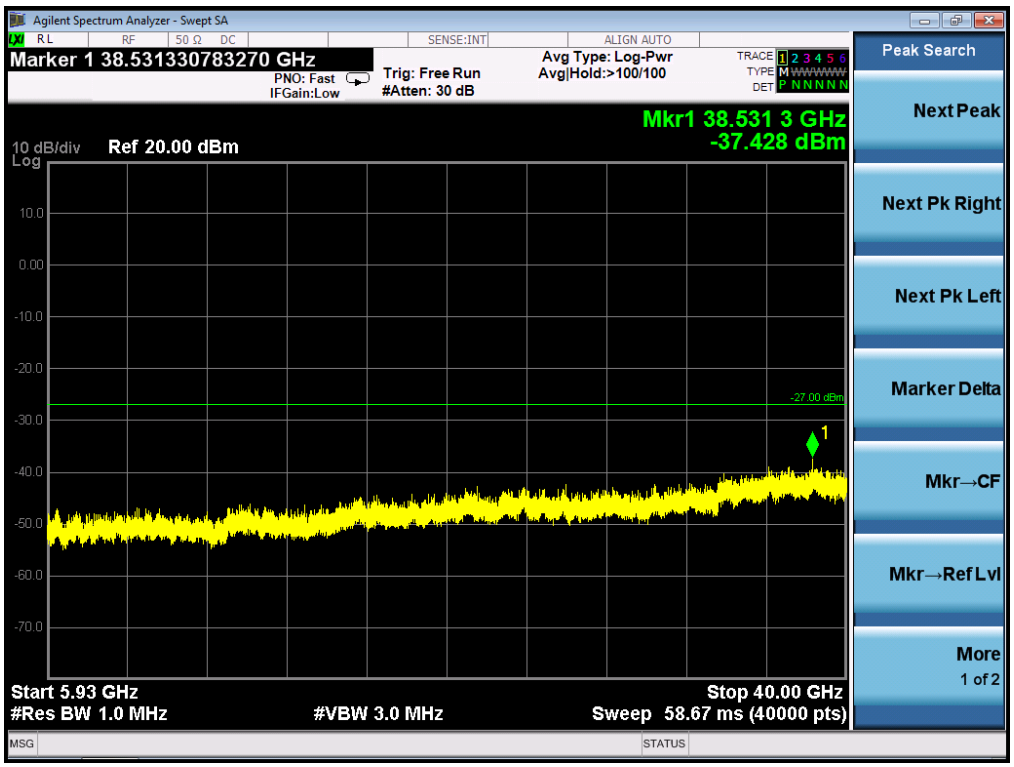

Agilent Spectrum Analyzer - Swept SA
RL RF 50 Ω DC SENSE:INT ALIGN AUTO
Marker 1 38.676153153829 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr1 38.676 2 GHz
-39.285 dBm
10 dB/div
Log
Ref 20.00 dBm
-27.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 5.93 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

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



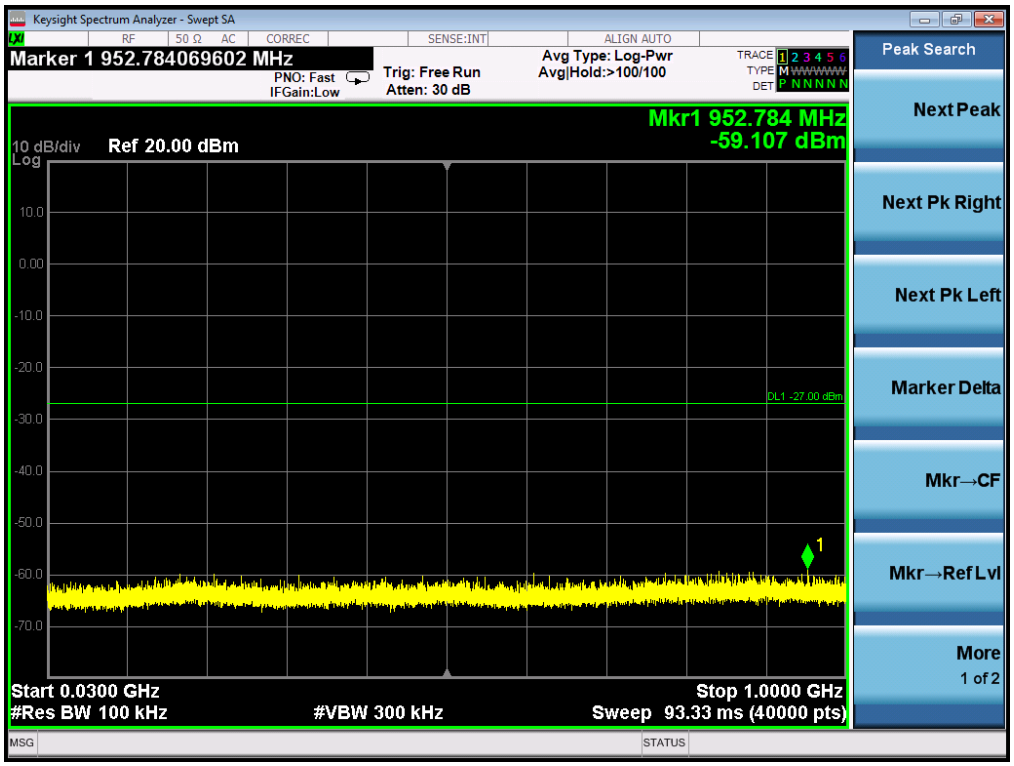



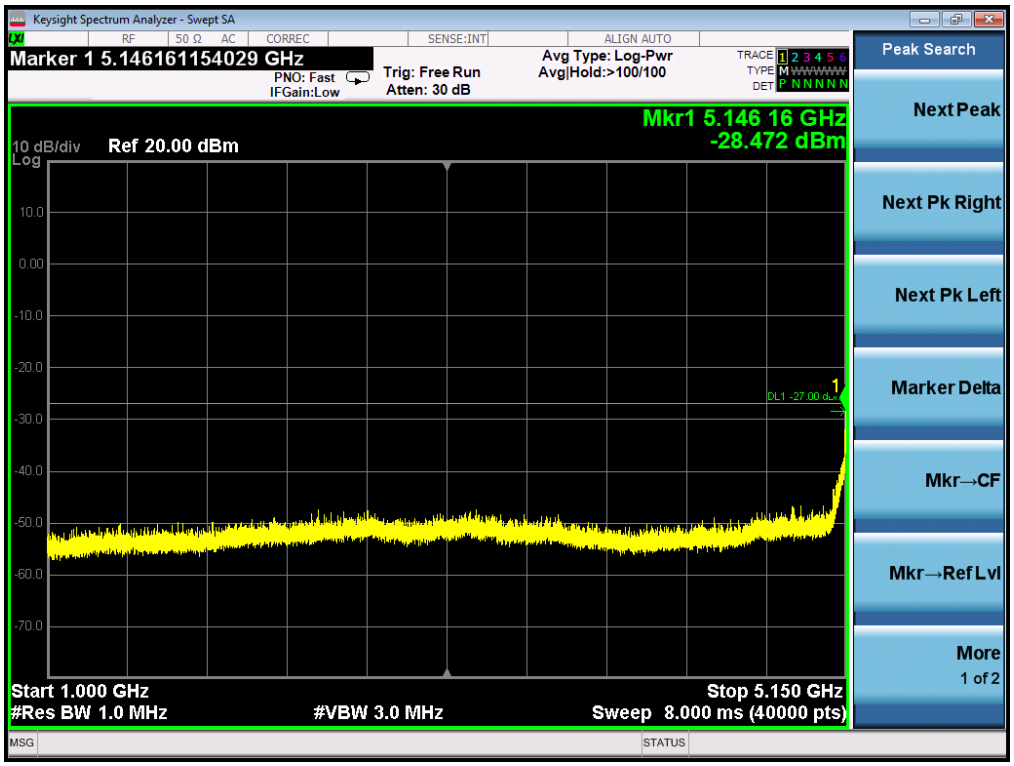

Keysight Spectrum Analyzer - Swept SA
Marker 1 5.828548213705 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 5.828 548 GHz
8.714 dBm
10 dB/div
Log
Ref 20.00 dBm
Start 5.6500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.9250 GHz
Sweep 2.667 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

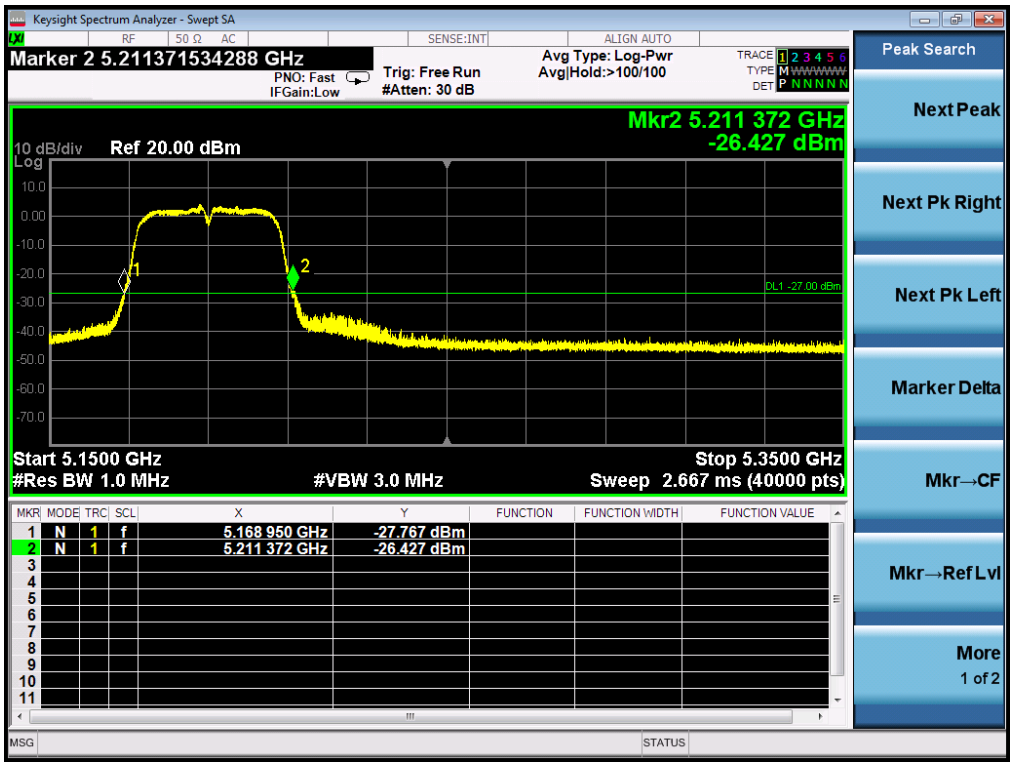

Agilent Spectrum Analyzer - Swept SA
Marker 1 38.531330783270 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 38.531 3 GHz
-37.428 dBm
10 dB/div
Log
Ref 20.00 dBm
-27.00 dBm
Start 5.93 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

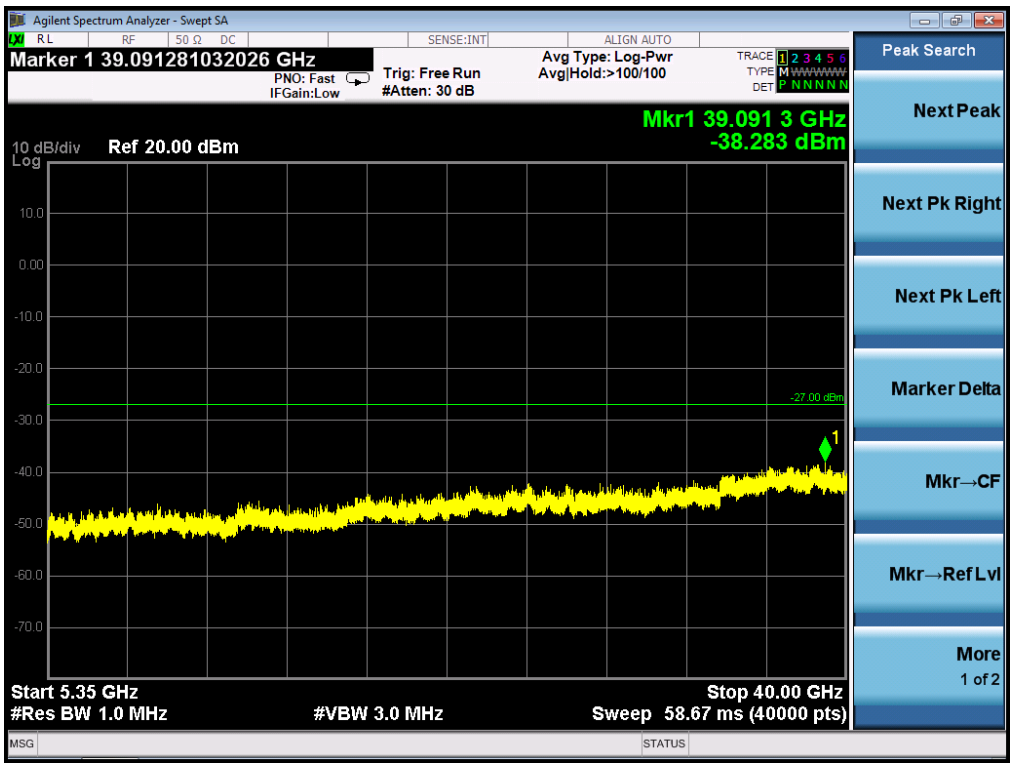
**FOR 802.11N40 MODULATION**

TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5190MHz

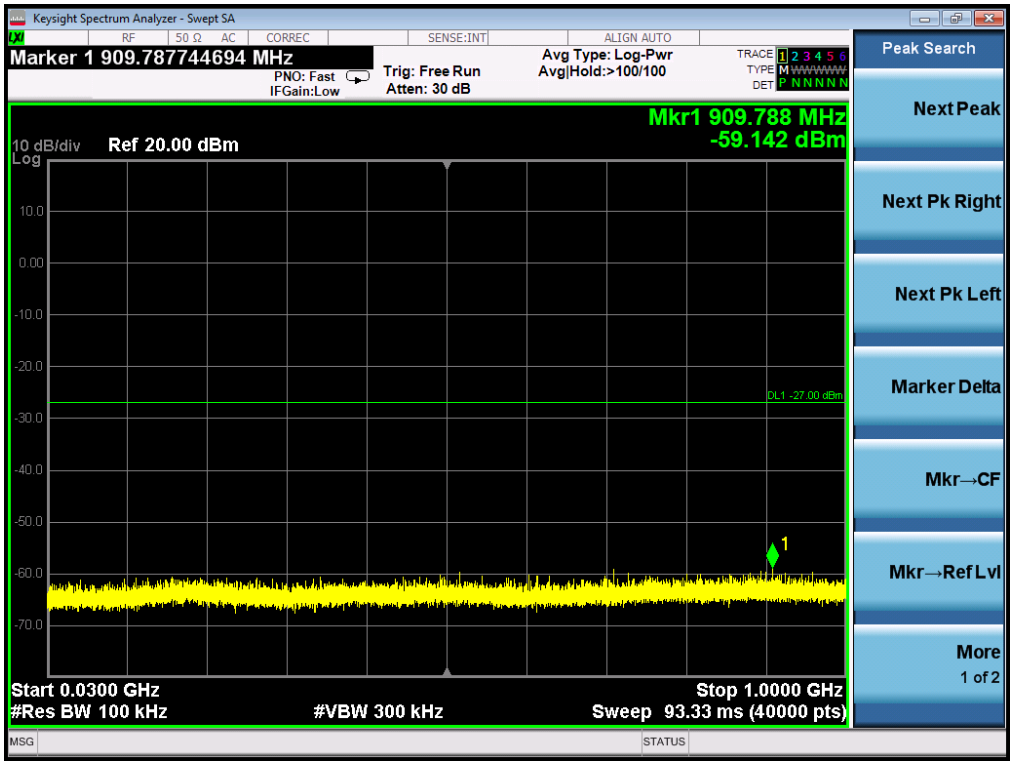


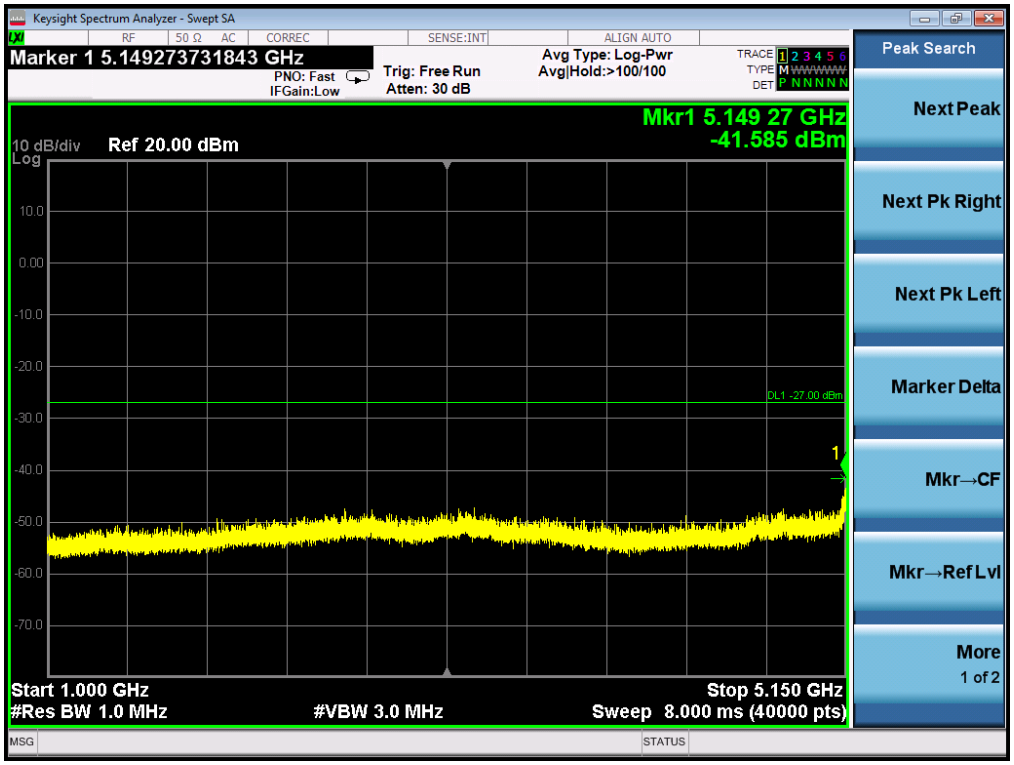



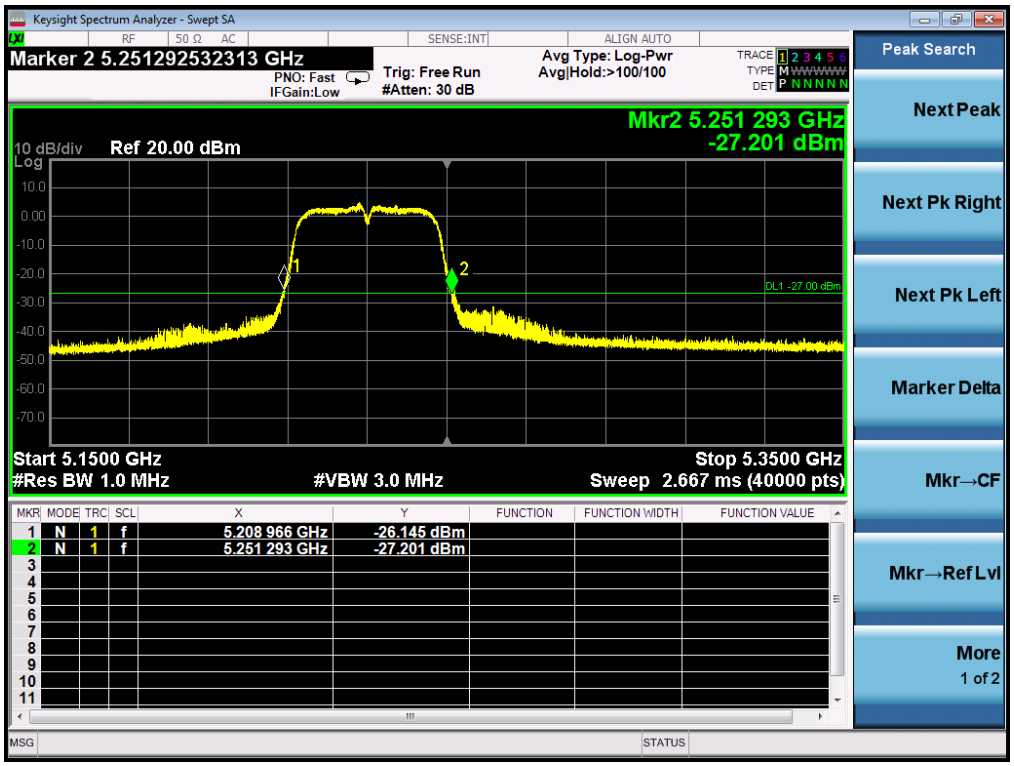

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
Marker 2 5.211371534288 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr2 5.211 372 GHz
-26.427 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
DL1 -27.00 dBm
Start 5.1500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.3500 GHz
Sweep 2.667 ms (40000 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.168 950 GHz -27.767 dBm
2 N 1 f 5.211 372 GHz -26.427 dBm
3
4
5
6
7
8
9
10
11
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

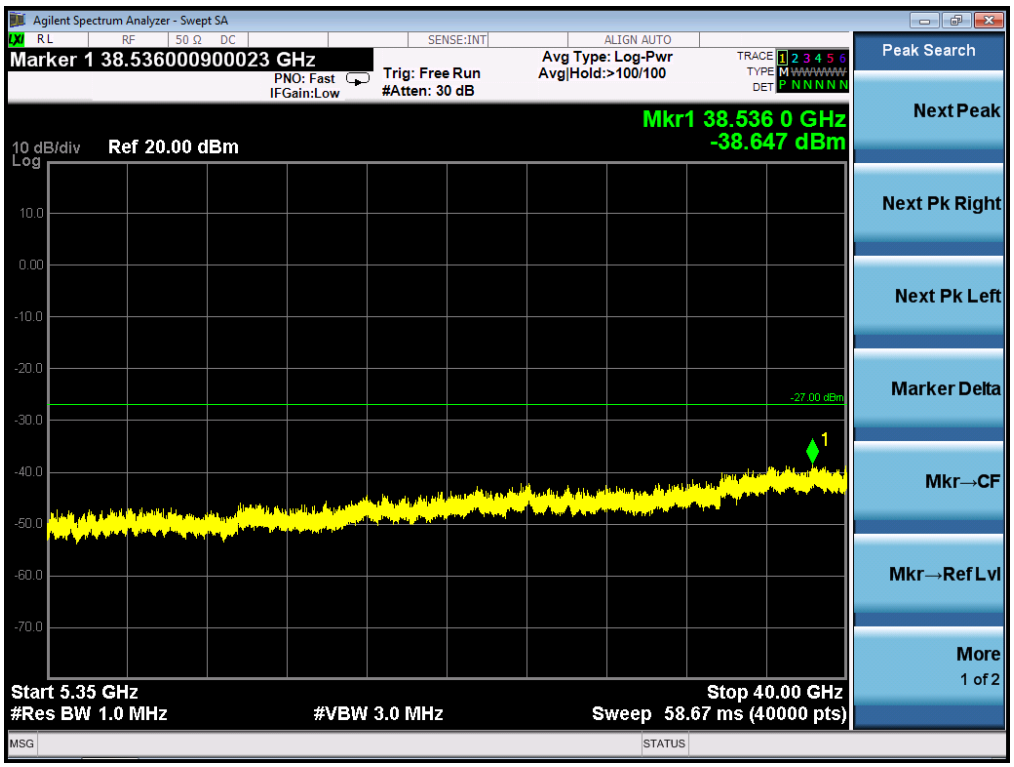

Agilent Spectrum Analyzer - Swept SA
RL RF 50 Ω DC
SENSE:INT
ALIGN AUTO
Marker 1 39.091281032026 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Mkr1 39.091 3 GHz
-38.283 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-27.00 dBm
-30.0
-40.0
-50.0
-60.0
-70.0
Start 5.35 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5230MHz

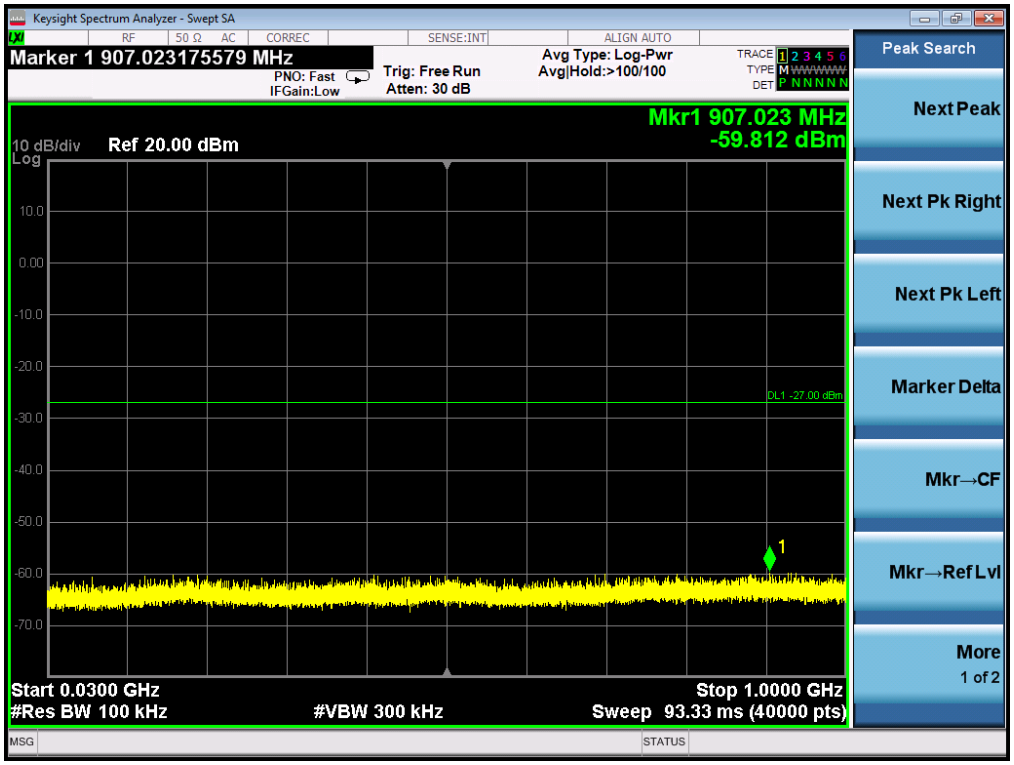


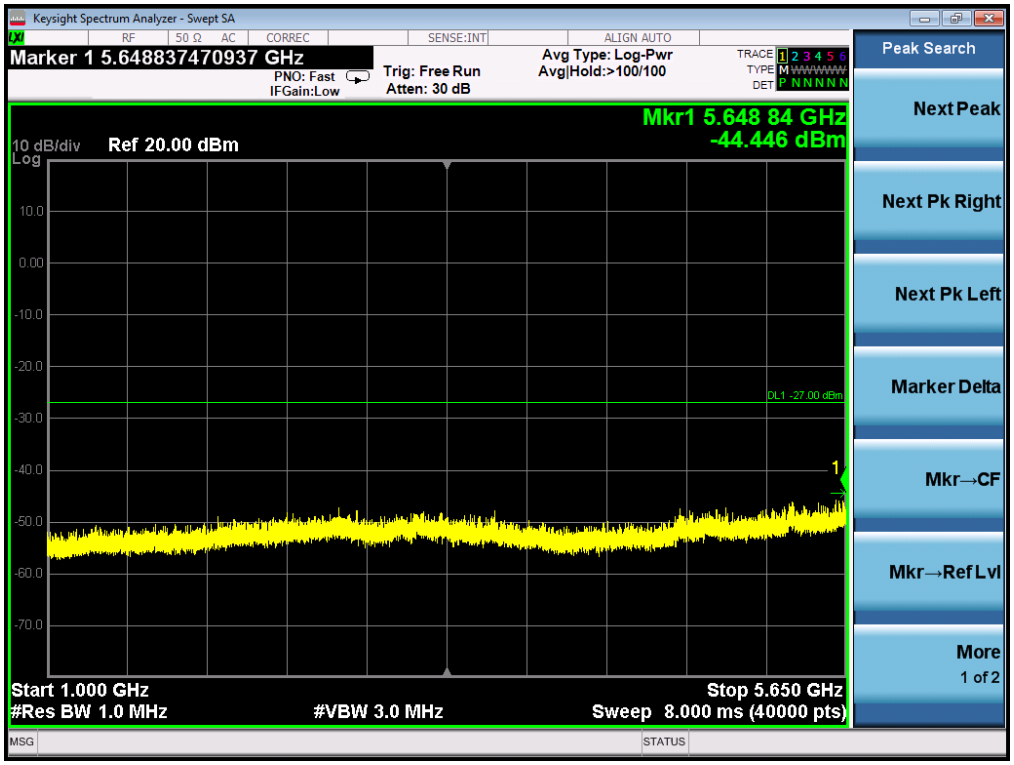



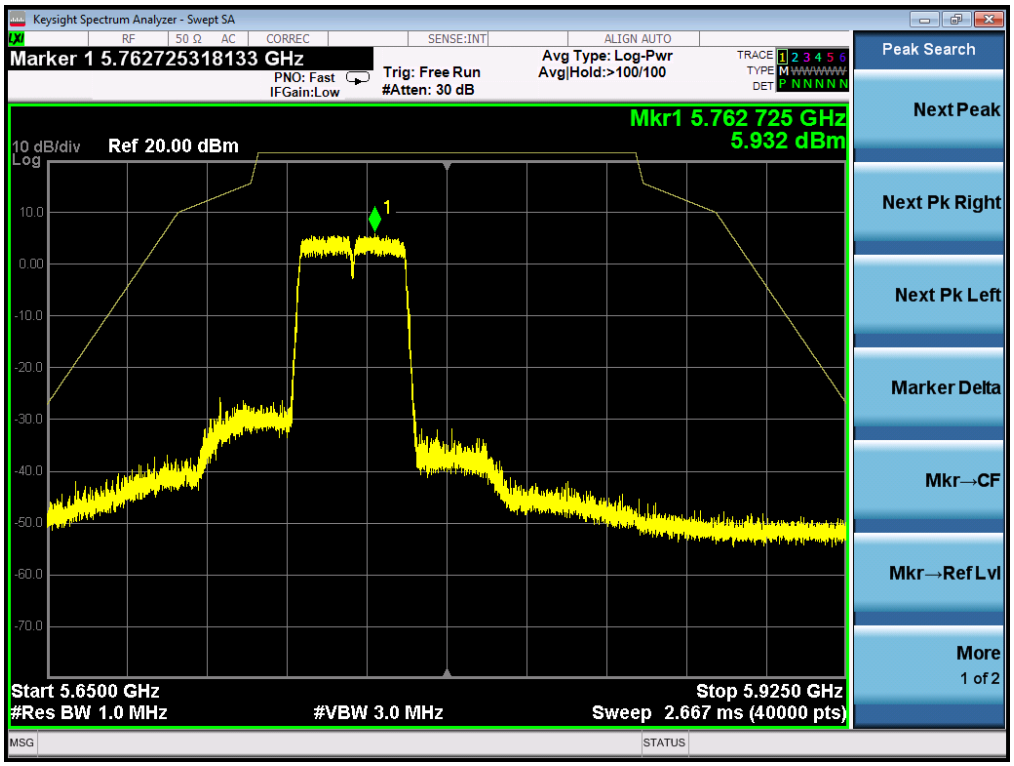

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
Marker 2 5.251292532313 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
Mkr2 5.251 293 GHz
-27.201 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
DL1 -27.00 dBm
Start 5.1500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.3500 GHz
Sweep 2.667 ms (40000 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.208 966 GHz -26.145 dBm
2 N 1 f 5.251 293 GHz -27.201 dBm
3
4
5
6
7
8
9
10
11
MSG
STATUS

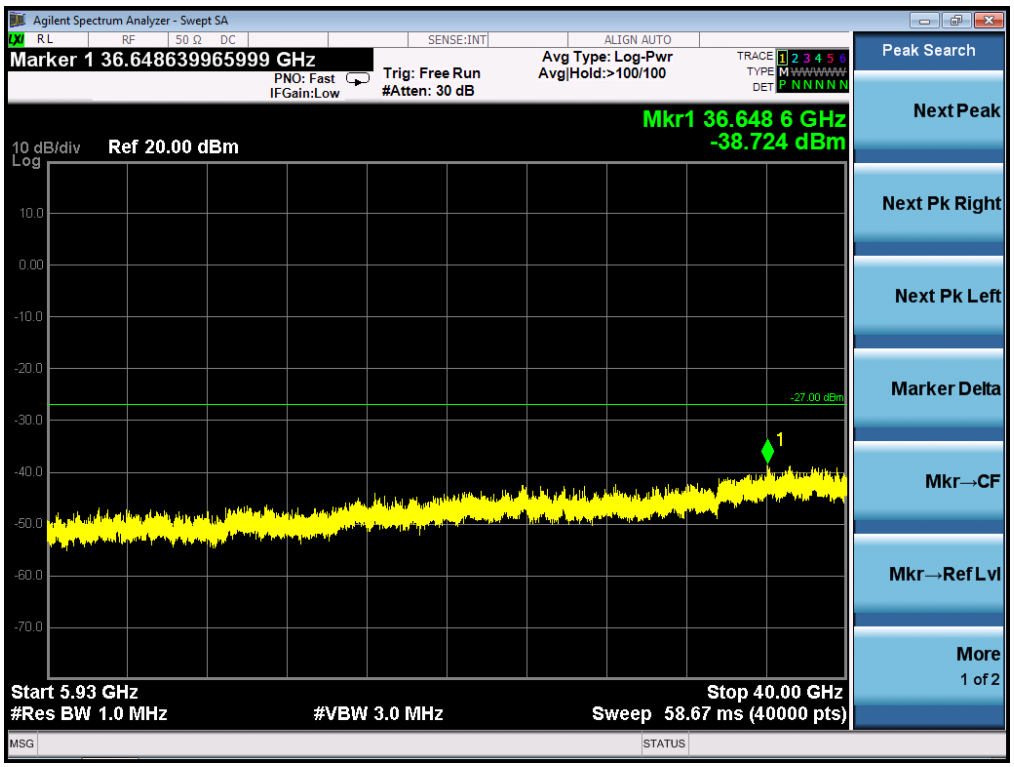

Agilent Spectrum Analyzer - Swept SA
RL RF 50 Ω DC
SENSE:INT
ALIGN AUTO
Marker 1 38.536000900023 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P N N N N N
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
Mkr1 38.536 0 GHz
-38.647 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-27.00 dBm
Start 5.35 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
MSG
STATUS

TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5755MHz

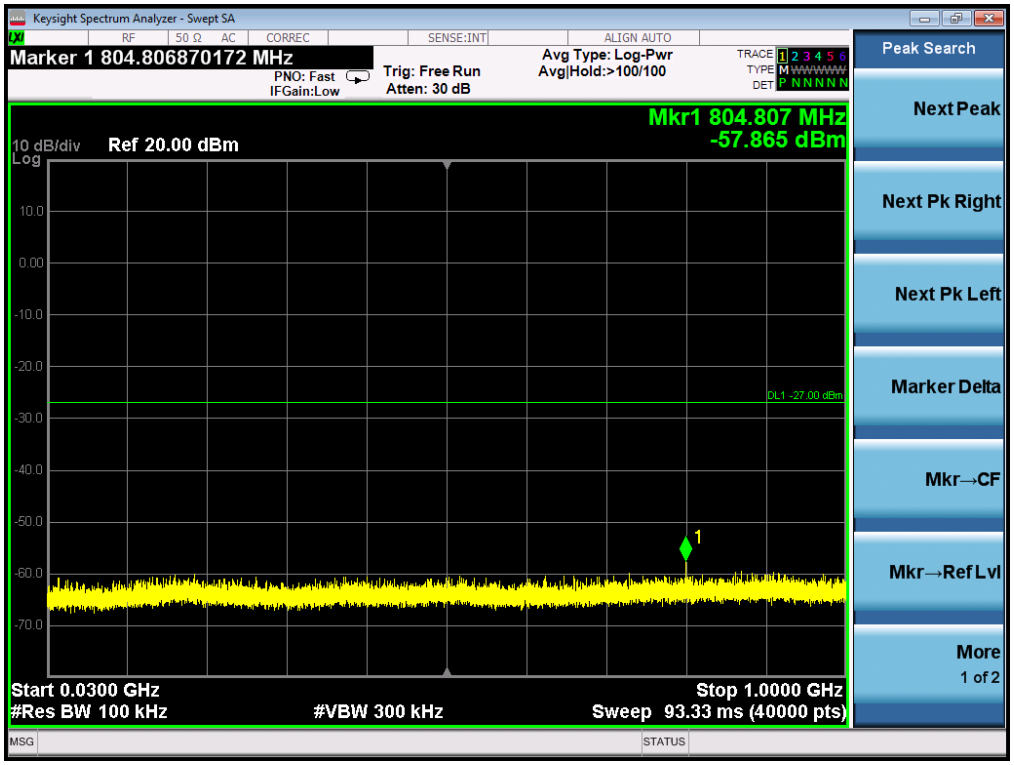


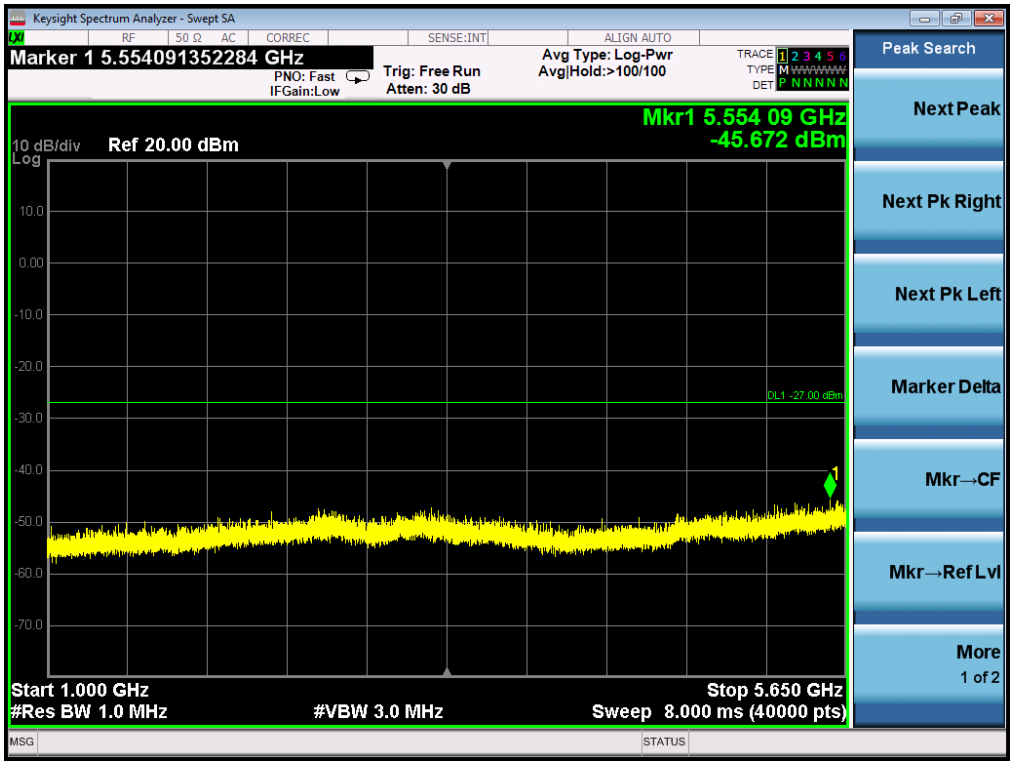



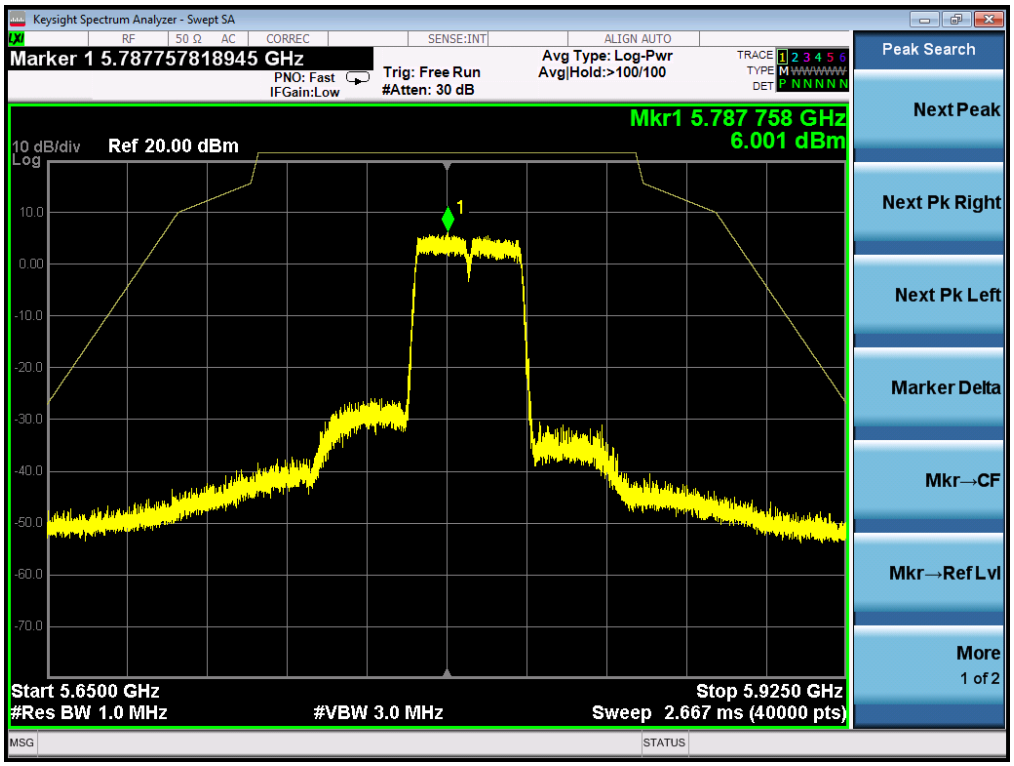

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC CORREC SENSE:INT ALIGN AUTO
Marker 1 5.762725318133 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 5.762 725 GHz
5.932 dBm
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 5.6500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.9250 GHz
Sweep 2.667 ms (40000 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

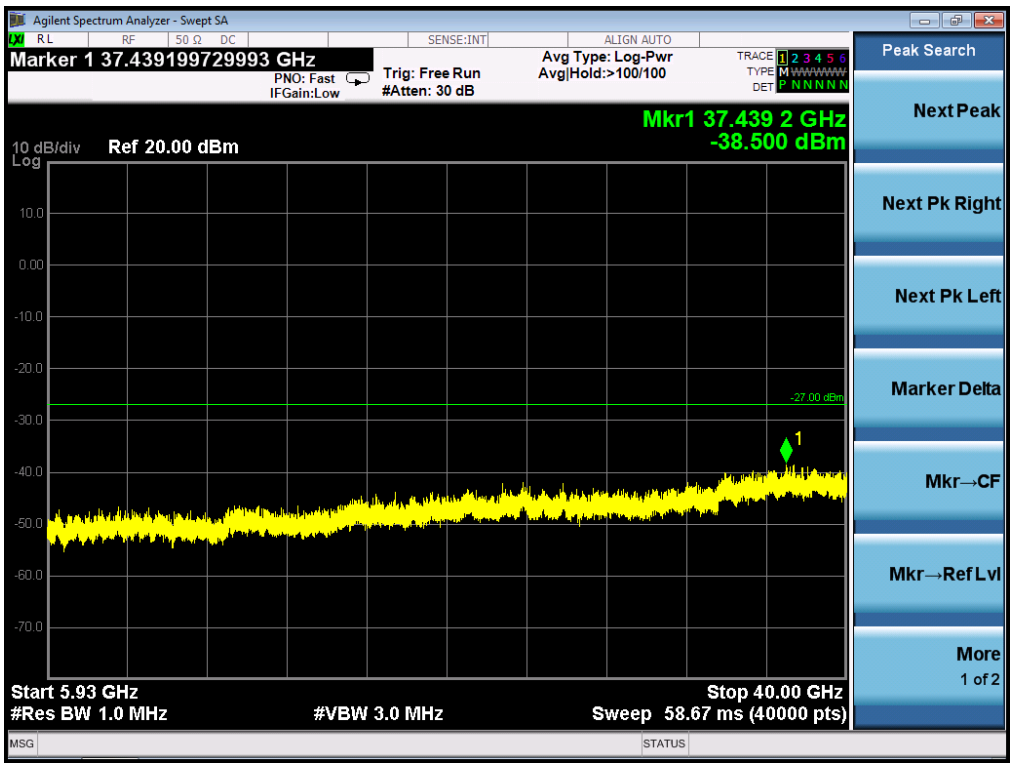

Agilent Spectrum Analyzer - Swept SA
RL RF 50 Ω DC SENSE:INT ALIGN AUTO
Marker 1 36.648639965999 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 36.648 6 GHz
-38.724 dBm
10 dB/div
Log
Ref 20.00 dBm
-27.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 5.93 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5795MHz



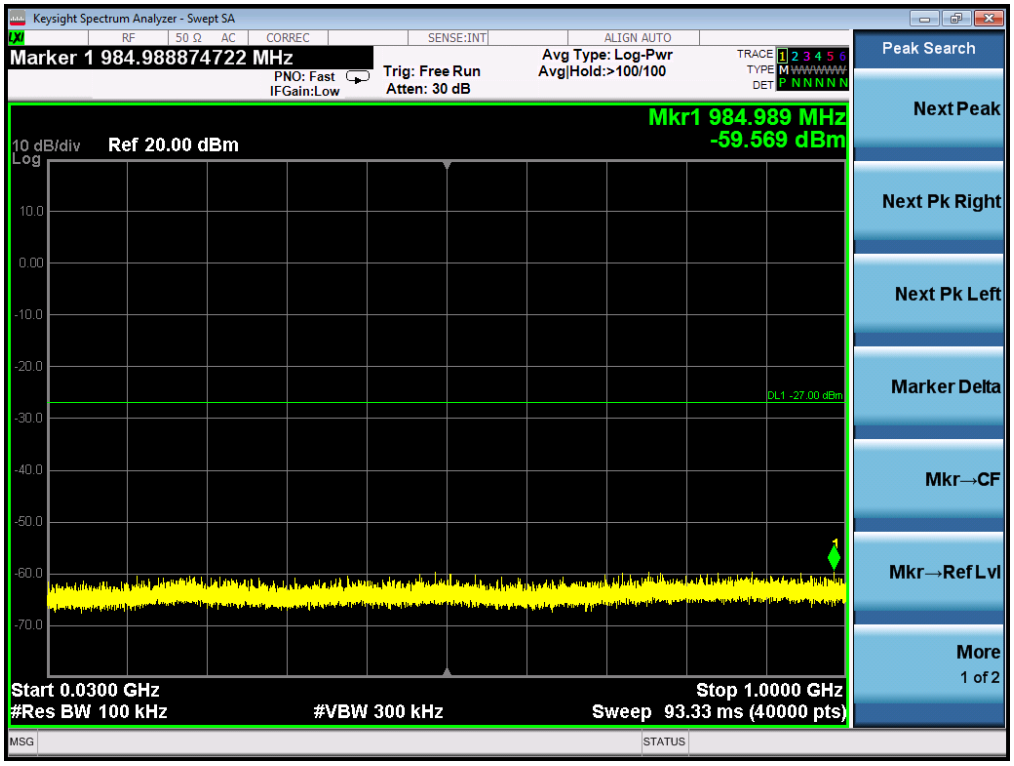



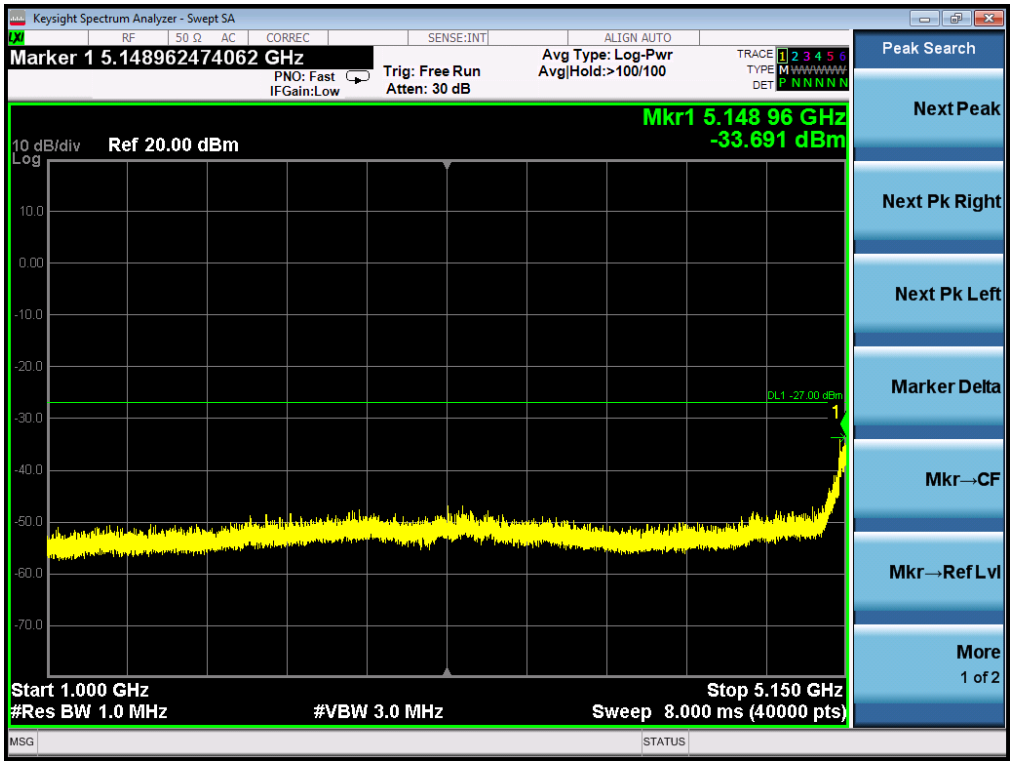

Keysight Spectrum Analyzer - Swept SA
Marker 1 5.787757818945 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 5.787 758 GHz
6.001 dBm
10 dB/div
Log
Ref 20.00 dBm
Start 5.6500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.9250 GHz
Sweep 2.667 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

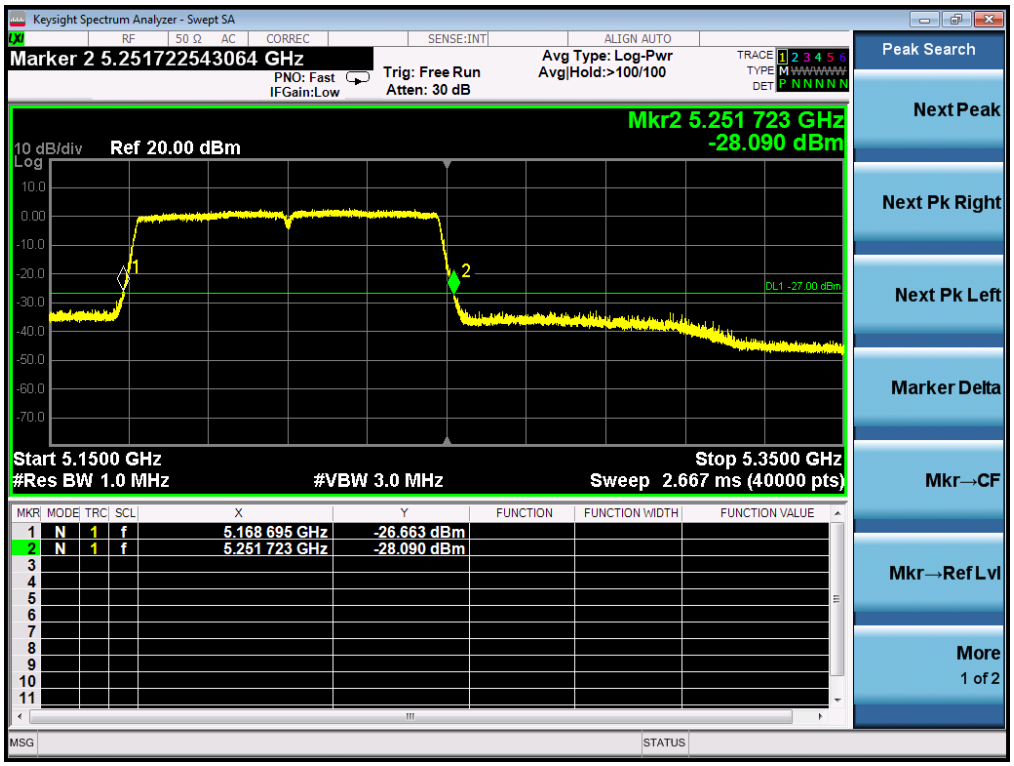

Agilent Spectrum Analyzer - Swept SA
Marker 1 37.439199729993 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 37.439 2 GHz
-38.500 dBm
10 dB/div
Log
Ref 20.00 dBm
-27.00 dBm
Start 5.93 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

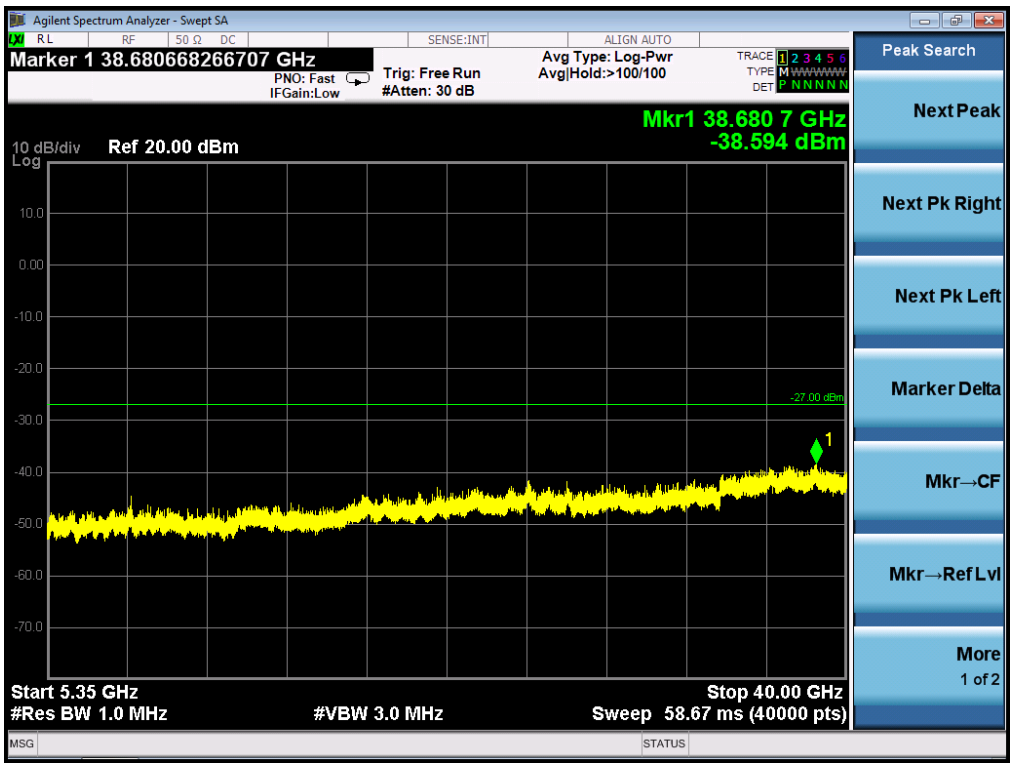
**FOR 802.11AC80 MODULATION**

TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5210MHz

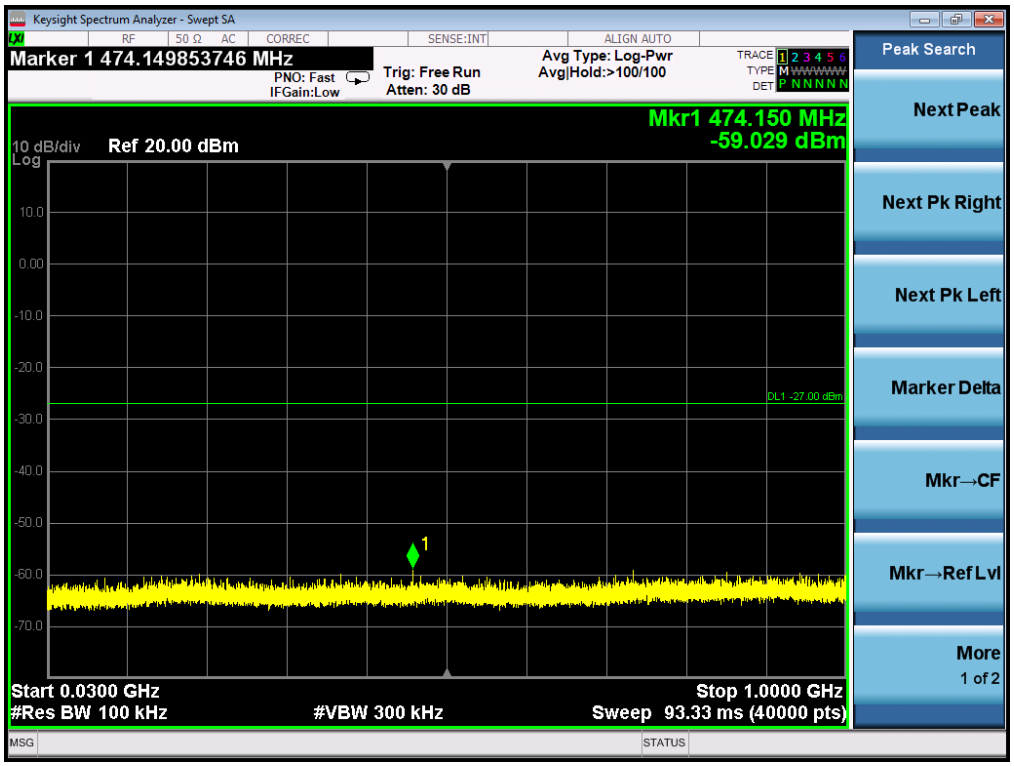


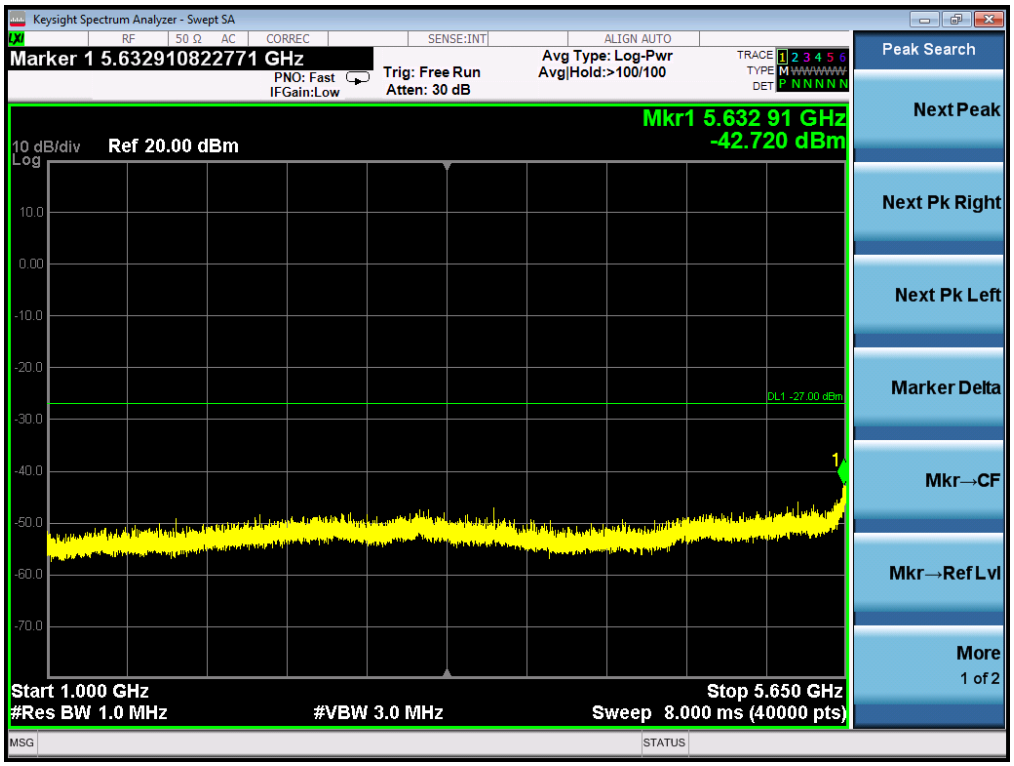



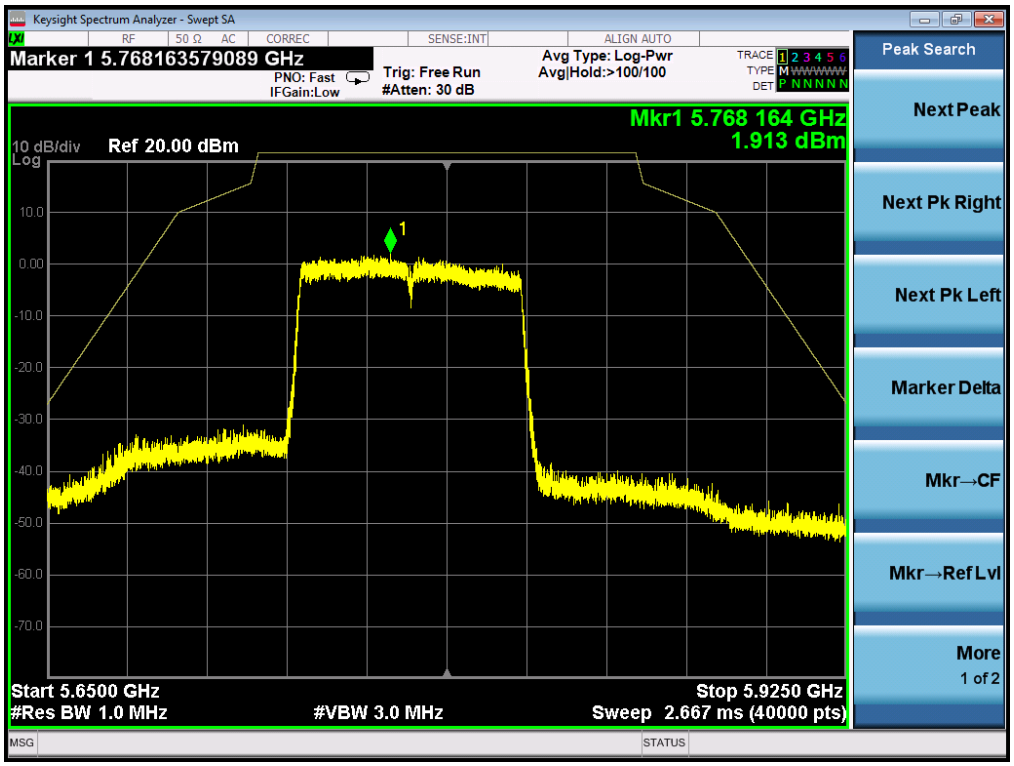

Keysight Spectrum Analyzer - Swept SA
Marker 2 5.251722543064 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr2 5.251 723 GHz
-28.090 dBm
10 dB/div
Log
Ref 20.00 dBm
DL1 -27.00 dBm
Start 5.1500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.3500 GHz
Sweep 2.667 ms (40000 pts)
1 N 1 f 5.168 695 GHz -26.663 dBm
2 N 1 f 5.251 723 GHz -28.090 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

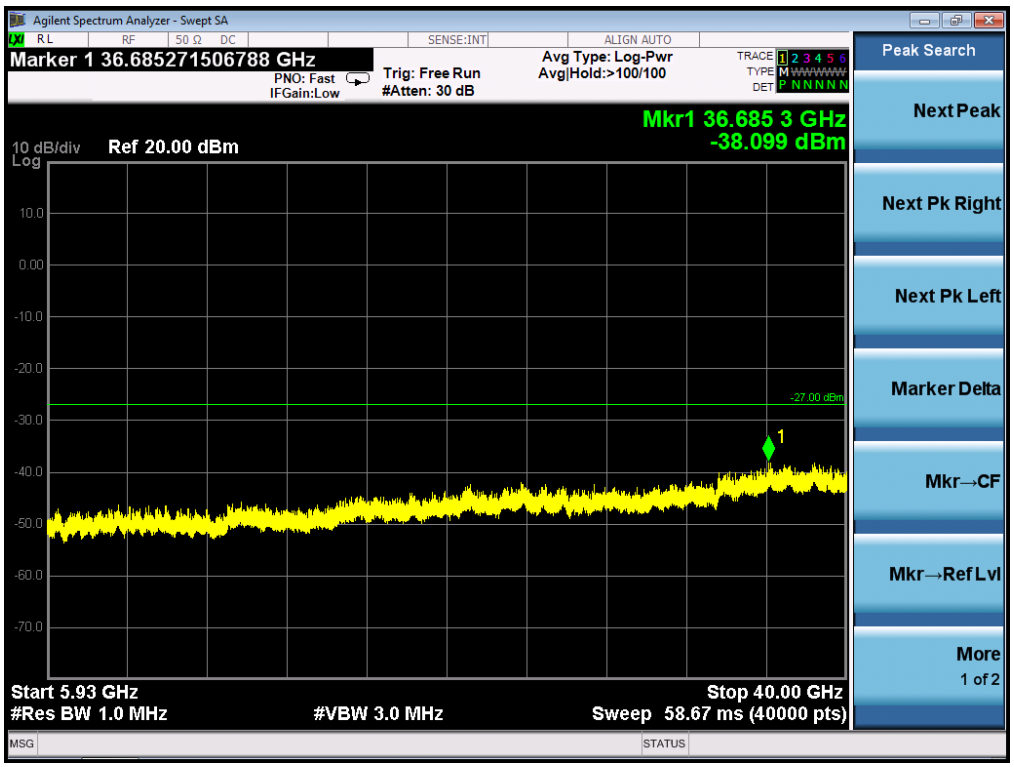

Agilent Spectrum Analyzer - Swept SA
Marker 1 38.680668266707 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 38.680 7 GHz
-38.594 dBm
10 dB/div
Log
Ref 20.00 dBm
-27.00 dBm
Start 5.35 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

TEST PLOT OF OUT OF BAND EMISSIONS FOR MODULATION IN 5775MHz




Keysight Spectrum Analyzer - Swept SA
Marker 1 5.768163579089 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 5.768 164 GHz
1.913 dBm
10 dB/div
Log
Ref 20.00 dBm
Start 5.6500 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.9250 GHz
Sweep 2.667 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
Marker 1 36.685271506788 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 36.685 3 GHz
-38.099 dBm
10 dB/div
Log
Ref 20.00 dBm
-27.00 dBm
Start 5.93 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 40.00 GHz
Sweep 58.67 ms (40000 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

Note: All the 20MHz bandwidth modulation had been tested, the 802.11a20 was the worst case and record in his test report. All the 40MHz bandwidth modulation had been tested, the 802.11N40 was the worst case and record in his test report. All the 80MHz bandwidth modulation had been tested, the 802.11ac80 was the worst case and record in his test report.

Two transmit chains had been tested, the CHAIN 2 was the worst case and record in the test report.

The spurious emission at CHAIN 2 is more than 3dB below the limits, so the MIMO results for the spurious emissions are comply with the requirement.

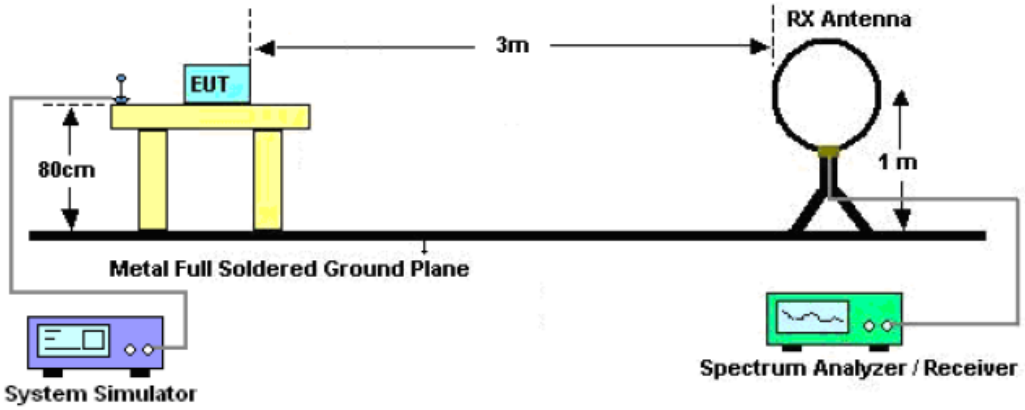
# 9. RADIATED EMISSION

## 9.1. MEASUREMENT PROCEDURE

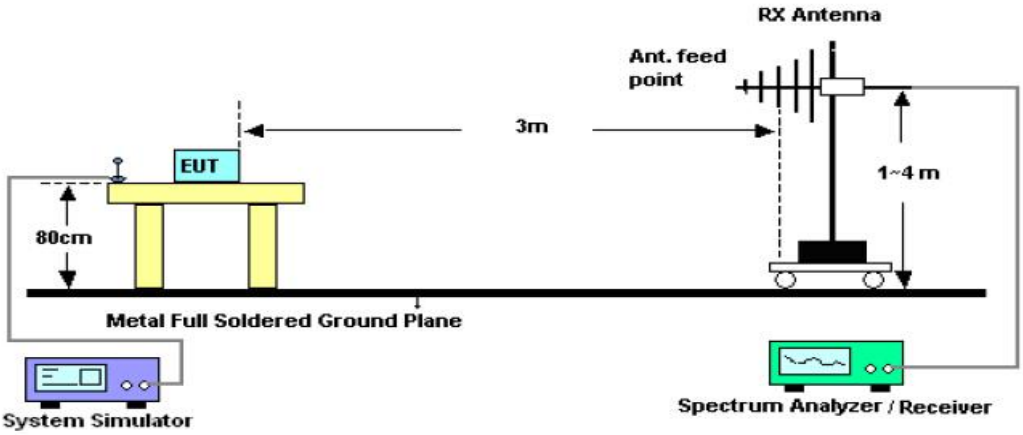
1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated 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 RBW and 3M VBW for peak reading. 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.

**9.2. TEST SETUP**

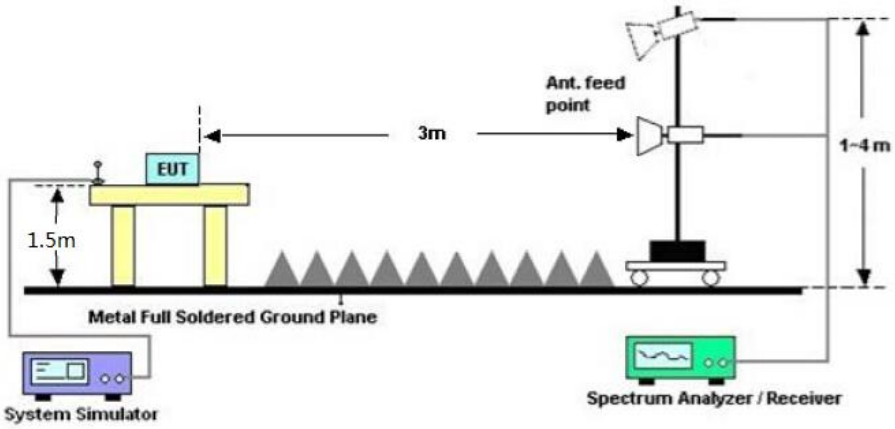
Radiated Emission Test-Setup Frequency Below 30MHz




RADIATED EMISSION TEST SETUP 30MHz-1000MHz




RADIATED EMISSION TEST SETUP ABOVE 1000MHz



### 9.3. LIMITS AND MEASUREMENT RESULT

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

| Frequencies (MHz) | Field Strength (micorvolts/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 |

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

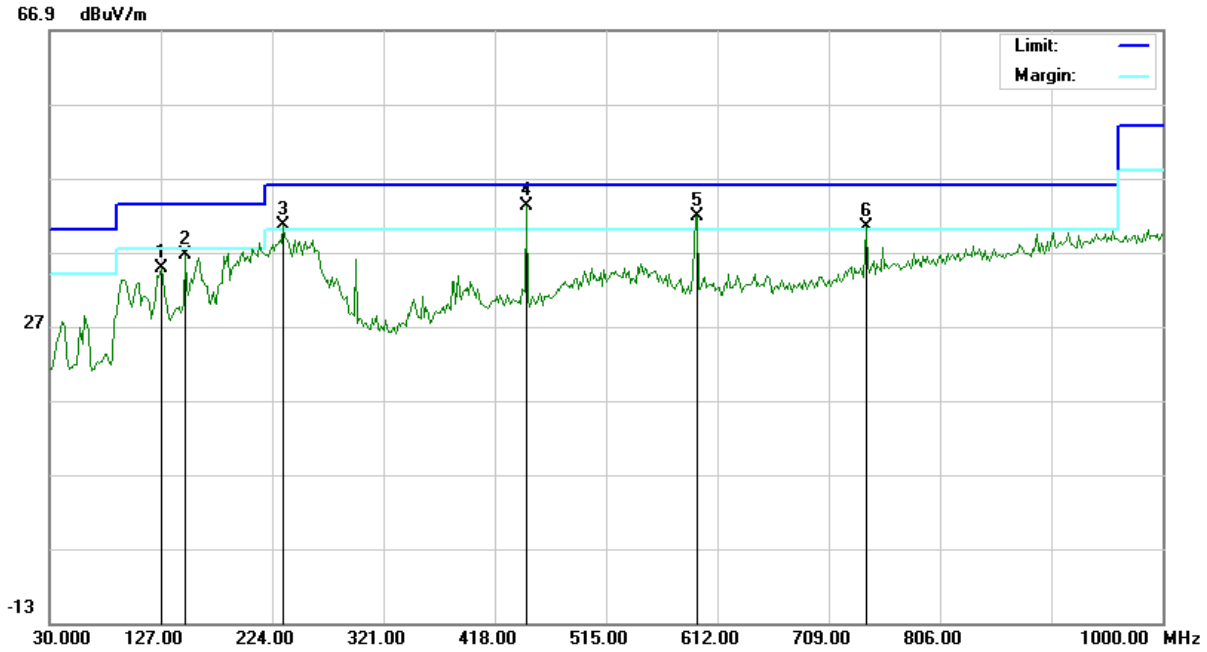
### 9.4. TEST RESULT

**RADIATED EMISSION BELOW 30MHZ**

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

**RADIATED EMISSION BELOW 1GHZ**

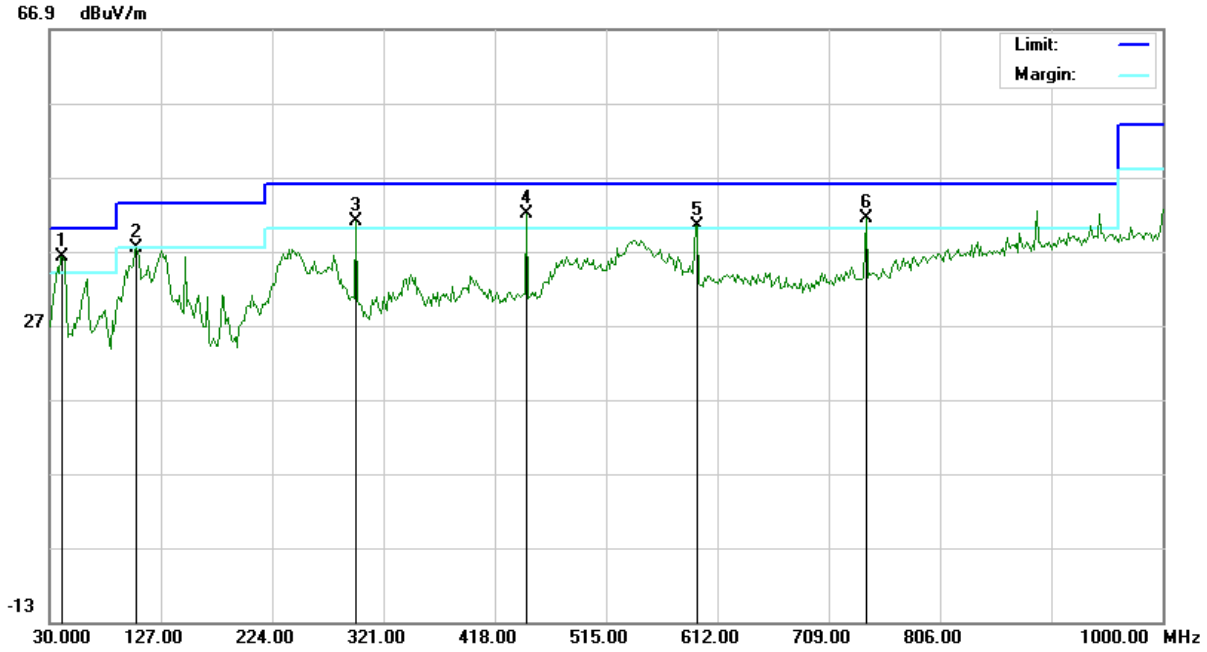
| | | | |
|---|---|---|---|
| **EUT** | 4K UST Laser Projector | **Model Name** | VA-LT002 |
| **Temperature** | 25°C | **Relative Humidity** | 55.4% |
| **Pressure** | 960hPa | **Test Voltage** | Normal Voltage |
| **Test Mode** | 802.11a20 5180MHz | **Antenna** | Horizontal |




| No. | Mk | Freq. | Reading | Factor | Measurement | Limit | Over | Detector | Antenna Height | Table Degree | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dBuV/m | dBuV/m | dBuV/m | dB | | cm | degree | |
| 1 | | 127.0000 | 15.28 | 19.57 | 34.85 | 43.50 | -8.65 | peak | | | |
| 2 | | 148.0167 | 16.15 | 20.37 | 36.52 | 43.50 | -6.98 | peak | | | |
| 3 | ! | 233.7000 | 20.83 | 19.83 | 40.66 | 46.00 | -5.34 | peak | | | |
| 4 | * | 445.4833 | 16.75 | 26.36 | 43.11 | 46.00 | -2.89 | peak | | | |
| 5 | ! | 594.2167 | 12.15 | 29.69 | 41.84 | 46.00 | -4.16 | peak | | | |
| 6 | ! | 741.3333 | 7.87 | 32.52 | 40.39 | 46.00 | -5.61 | peak | | | |

**RESULT: PASS**

| EUT | 4K UST Laser Projector | Model Name | VA-LT002 |
|---|---|---|---|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | 802.11a20 5180MHz | Antenna | Vertical |




| No. | Mk | Freq. | Reading | Factor | Measurement | Limit | Over | Detector | Antenna Height | Table Degree | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dBuV/m | dBuV/m | dBuV/m | dB | | cm | degree | |
| 1 | * | 41.3166 | 15.60 | 20.63 | 36.23 | 40.00 | -3.77 | peak | | | |
| 2 | | 105.9832 | 19.67 | 17.69 | 37.36 | 43.50 | -6.14 | peak | | | |
| 3 | ! | 296.7500 | 18.94 | 21.98 | 40.92 | 46.00 | -5.08 | peak | | | |
| 4 | ! | 445.4833 | 15.58 | 26.36 | 41.94 | 46.00 | -4.06 | peak | | | |
| 5 | ! | 594.2166 | 10.76 | 29.69 | 40.45 | 46.00 | -5.55 | peak | | | |
| 6 | ! | 741.3333 | 8.93 | 32.52 | 41.45 | 46.00 | -4.55 | 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**

| | | | |
|---|---|---|---|
| **EUT** | 4K UST Laser Projector | **Model Name** | VA-LT002 |
| **Temperature** | 25°C | **Relative Humidity** | 55.4% |
| **Pressure** | 960hPa | **Test Voltage** | Normal Voltage |
| **Test Mode** | 802.11a20 5180MHz | **Antenna** | Horizontal/Vertical |

RADIATED EMISSION ABOVE 1GHZ–Horizontal

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Value Type |
|---|---|---|---|---|---|---|
| 10360.120 | 43.15 | 9.14 | 52.29 | 74 | -21.71 | peak |
| 10360.120 | 35.34 | 9.14 | 44.48 | 54 | -9.52 | AVG |
| 15540.180 | 40.46 | 10.22 | 50.68 | 74 | -23.32 | peak |
| 15540.180 | 36.87 | 10.22 | 47.09 | 54 | -6.91 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

RADIATED EMISSION ABOVE 1GHZ–Vertical

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Value Type |
|---|---|---|---|---|---|---|
| 10360.120 | 41.64 | 9.14 | 50.78 | 74 | -23.22 | peak |
| 10360.120 | 38.53 | 9.14 | 47.67 | 54 | -6.33 | AVG |
| 15540.180 | 39.59 | 10.22 | 49.81 | 74 | -24.19 | peak |
| 15540.180 | 33.35 | 10.22 | 43.57 | 54 | -10.43 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

| EUT | 4K UST Laser Projector | Model Name | VA-LT002 |
|---|---|---|---|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | 802.11a20 5240MHz | Antenna | Horizontal/Vertical |

RADIATED EMISSION ABOVE 1GHZ–Horizontal

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Value Type |
|---|---|---|---|---|---|---|
| 10480.120 | 41.23 | 9.27 | 50.5 | 74 | -23.5 | peak |
| 10480.120 | 36.35 | 9.27 | 45.62 | 54 | -8.38 | AVG |
| 15720.180 | 35.18 | 10.38 | 45.56 | 74 | -28.44 | peak |
| 15720.180 | 34.84 | 10.38 | 45.22 | 54 | -8.78 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

RADIATED EMISSION ABOVE 1GHZ–Vertical

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Value Type |
|---|---|---|---|---|---|---|
| 10480.120 | 41.36 | 9.27 | 50.63 | 74 | -23.37 | peak |
| 10480.120 | 35.35 | 9.27 | 44.62 | 54 | -9.38 | AVG |
| 15720.180 | 39.61 | 10.38 | 49.99 | 74 | -24.01 | peak |
| 15720.180 | 33.97 | 10.38 | 44.35 | 54 | -9.65 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

| EUT | 4K UST Laser Projector | Model Name | VA-LT002 |
|---|---|---|---|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | 802.11a20 5745MHz | Antenna | Horizontal/Vertical |

RADIATED EMISSION ABOVE 1GHZ–Horizontal

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Value Type |
|---|---|---|---|---|---|---|
| 11490.120 | 36.21 | 9.42 | 45.63 | 74 | -28.37 | peak |
| 11490.120 | 31.58 | 9.42 | 41 | 54 | -13 | AVG |
| 17235.180 | 36.26 | 10.51 | 46.77 | 74 | -27.23 | peak |
| 17235.180 | 32.01 | 10.51 | 42.52 | 54 | -11.48 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

RADIATED EMISSION ABOVE 1GHZ–Vertical

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Value Type |
|---|---|---|---|---|---|---|
| 11490.120 | 40.07 | 9.42 | 49.49 | 74 | -24.51 | peak |
| 11490.120 | 35.19 | 9.42 | 44.61 | 54 | -9.39 | AVG |
| 17235.180 | 36.53 | 10.51 | 47.04 | 74 | -26.96 | peak |
| 17235.180 | 32.02 | 10.51 | 42.53 | 54 | -11.47 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

| EUT | 4K UST Laser Projector | Model Name | VA-LT002 |
|---|---|---|---|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | 802.11a20 5825MHz | Antenna | Horizontal/Vertical |

RADIATED EMISSION ABOVE 1GHZ–Horizontal

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Value Type |
|---|---|---|---|---|---|---|
| 11650.120 | 40.85 | 9.62 | 50.47 | 74 | -23.53 | peak |
| 11650.120 | 35.76 | 9.62 | 45.38 | 54 | -8.62 | AVG |
| 17475.180 | 38.54 | 10.75 | 49.29 | 74 | -24.71 | peak |
| 17475.180 | 33.43 | 10.75 | 44.18 | 54 | -9.82 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

RADIATED EMISSION ABOVE 1GHZ–Vertical

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Value Type |
|---|---|---|---|---|---|---|
| 11650.120 | 40.27 | 9.62 | 49.89 | 74 | -24.11 | peak |
| 11650.120 | 34.96 | 9.62 | 44.58 | 54 | -9.42 | AVG |
| 17475.180 | 38.42 | 10.75 | 49.17 | 74 | -24.83 | peak |
| 17475.180 | 32.14 | 10.75 | 42.89 | 54 | -11.11 | 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.

# 10. BAND EDGE EMISSION

## 10.1. 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=1MHz, VBW=3MHz / Sweep=AUTO

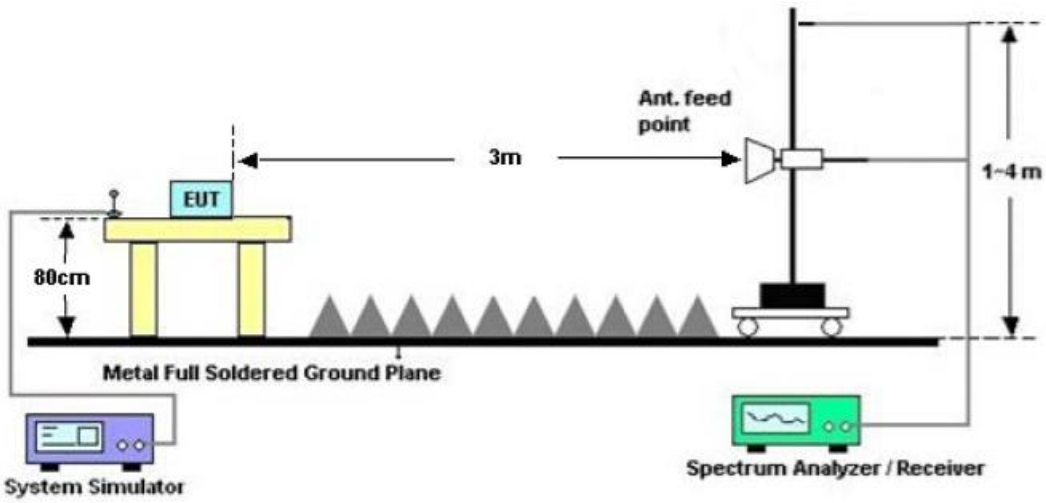
(b) AVERAGE: RBW=1MHz ; VBW=1/on time(1KHz) / Sweep=AUTO

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(μV) to represent the Amplitude. Use the F dB(μV/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.

## 10.2. TEST SET-UP

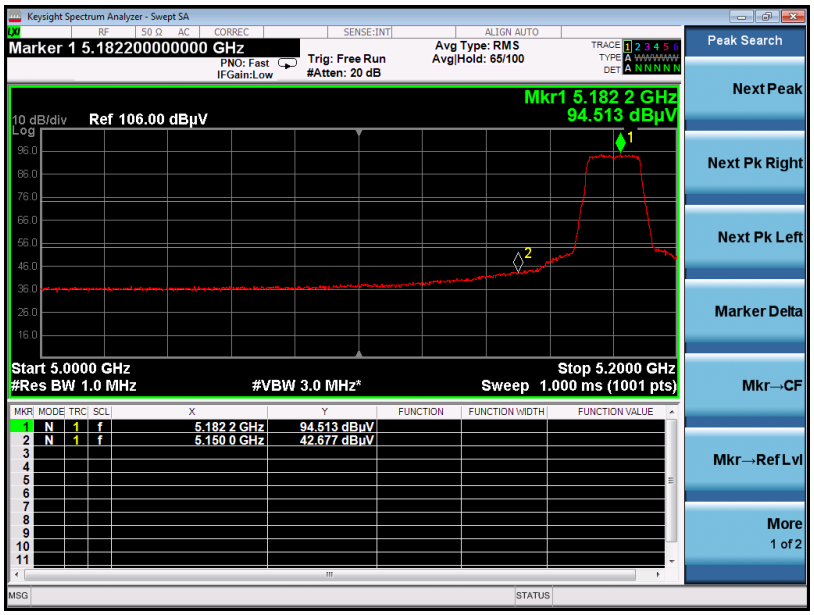


### 10.3. TEST RESULT

| EUT | 4K UST Laser Projector | Model Name | VA-LT002 |
|---|---|---|---|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | 802.11a20 5180MHz | Antenna | Horizontal |

PK Value


AV Value



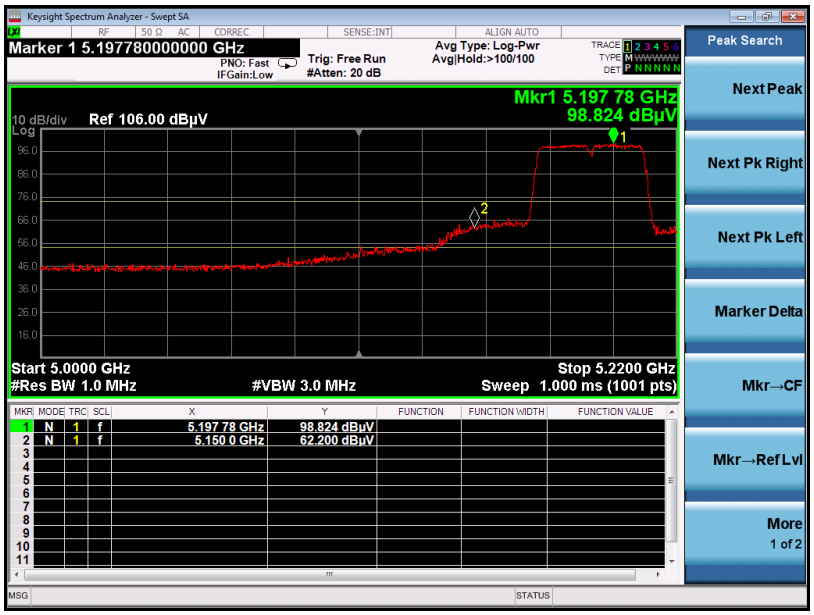
| EUT | 4K UST Laser Projector | Model Name | VA-LT002 |
|---|---|---|---|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | 802.11a20 5180MHz | Antenna | Vertical |

PK Value


AV Value

| EUT | 4K UST Laser Projector | Model Name | VA-LT002 |
|---|---|---|---|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | 802.11n40 5190MHz | Antenna | Horizontal |

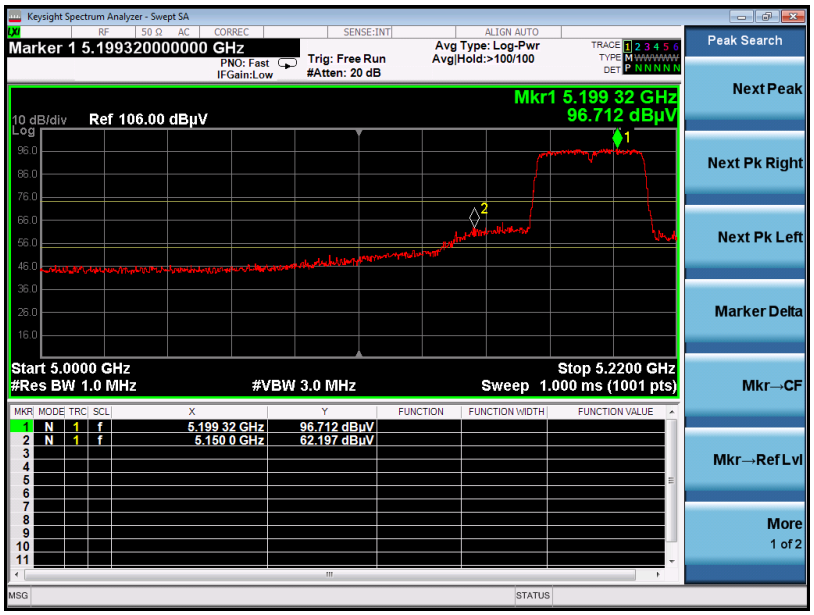
PK Value




AV Value

| EUT | 4K UST Laser Projector | Model Name | VA-LT002 |
|---|---|---|---|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | 802.11n40 5190MHz | Antenna | Vertical |

PK Value




AV Value

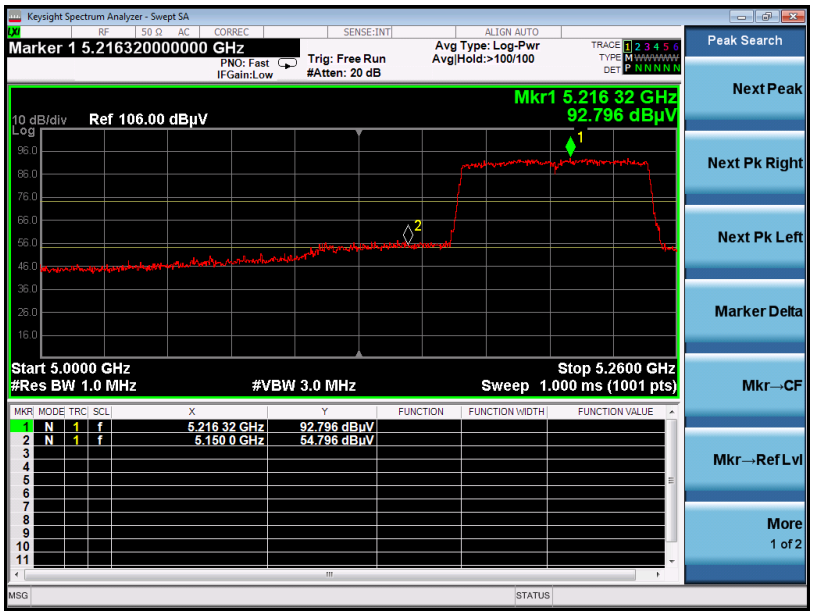
| EUT | 4K UST Laser Projector | Model Name | VA-LT002 |
|---|---|---|---|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | 802.11ac80 5210MHz | Antenna | Horizontal |

PK Value


AV Value

| EUT | 4K UST Laser Projector | Model Name | VA-LT002 |
|---|---|---|---|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | Normal Voltage |
| Test Mode | 802.11ac80 5210MHz | Antenna | Vertical |

PK Value




AV Value


**RESULT: PASS**

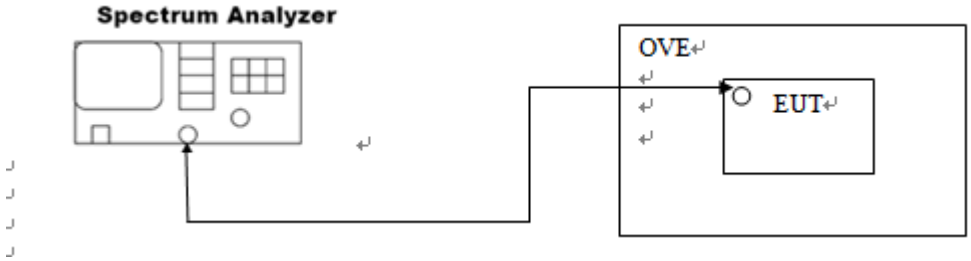
Note: All the 20MHz bandwidth modulation had been tested, the 802.11a20 was the worst case and record in his test report. All the 40MHz bandwidth modulation had been tested, the 802.11N40 was the worst case and record in his test report.

# 11. FREQUENCY STABILITY

## 11.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the operation frequency.
3. Set SPA Centre Frequency = Operation Frequency. SPAN=enough to measure the emission is maintained within the band
4. Set SPA Trace 1 Max hold, then View.
5. Extreme temperature rule is -10°C~60°C.

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



**11.3. MEASUREMENT RESULTS**

| Test Mode | Temperature | Measurement Frequency (MHz) | Result | Conclusion |
|---|---|---|---|---|
| 802.11a | - 10℃ | 5180 | within the band | PASS |
| | 0℃ | 5180 | within the band | PASS |
| | 10℃ | 5180 | within the band | PASS |
| | 20℃ | 5180 | within the band | PASS |
| | 30℃ | 5180 | within the band | PASS |
| | 40℃ | 5180 | within the band | PASS |
| | 50℃ | 5180 | within the band | PASS |
| | 60℃ | 5180 | within the band | PASS |
| | - 10℃ | 5240 | within the band | PASS |
| | 0℃ | 5240 | within the band | PASS |
| | 10℃ | 5240 | within the band | PASS |
| | 20℃ | 5240 | within the band | PASS |
| | 30℃ | 5240 | within the band | PASS |
| | 40℃ | 5240 | within the band | PASS |
| | 50℃ | 5240 | within the band | PASS |
| | 60℃ | 5240 | within the band | PASS |
| | - 10℃ | 5745 | within the band | PASS |
| | 0℃ | 5745 | within the band | PASS |
| | 10℃ | 5745 | within the band | PASS |
| | 20℃ | 5745 | within the band | PASS |
| | 30℃ | 5745 | within the band | PASS |
| | 40℃ | 5745 | within the band | PASS |
| | 50℃ | 5745 | within the band | PASS |
| | 60℃ | 5240 | within the band | PASS |
| | - 10℃ | 5825 | within the band | PASS |
| | 0℃ | 5825 | within the band | PASS |
| | 10℃ | 5825 | within the band | PASS |
| | 20℃ | 5825 | within the band | PASS |
| | 30℃ | 5825 | within the band | PASS |
| | 40℃ | 5825 | within the band | PASS |
| | 50℃ | 5825 | within the band | PASS |
| | 60℃ | 5825 | within the band | PASS |

| Test Mode | Temperature | Measurement Frequency (MHz) | Result | Conclusion |
|---|---|---|---|---|
| 802.11n20 | - 10℃ | 5180 | within the band | PASS |
| | 0℃ | 5180 | within the band | PASS |
| | 10℃ | 5180 | within the band | PASS |
| | 20℃ | 5180 | within the band | PASS |
| | 30℃ | 5180 | within the band | PASS |
| | 40℃ | 5180 | within the band | PASS |
| | 50℃ | 5180 | within the band | PASS |
| | 60℃ | 5180 | within the band | PASS |
| | - 10℃ | 5240 | within the band | PASS |
| | 0℃ | 5240 | within the band | PASS |
| | 10℃ | 5240 | within the band | PASS |
| | 20℃ | 5240 | within the band | PASS |
| | 30℃ | 5240 | within the band | PASS |
| | 40℃ | 5240 | within the band | PASS |
| | 50℃ | 5240 | within the band | PASS |
| | 60℃ | 5240 | within the band | PASS |
| | - 10℃ | 5745 | within the band | PASS |
| | 0℃ | 5745 | within the band | PASS |
| | 10℃ | 5745 | within the band | PASS |
| | 20℃ | 5745 | within the band | PASS |
| | 30℃ | 5745 | within the band | PASS |
| | 40℃ | 5745 | within the band | PASS |
| | 50℃ | 5745 | within the band | PASS |
| | 60℃ | 5240 | within the band | PASS |
| | - 10℃ | 5825 | within the band | PASS |
| | 0℃ | 5825 | within the band | PASS |
| | 10℃ | 5825 | within the band | PASS |
| | 20℃ | 5825 | within the band | PASS |
| | 30℃ | 5825 | within the band | PASS |
| | 40℃ | 5825 | within the band | PASS |
| | 50℃ | 5825 | within the band | PASS |
| | 60℃ | 5825 | within the band | PASS |

| Test Mode | Temperature | Measurement Frequency (MHz) | Result | Conclusion |
|---|---|---|---|---|
| 802.11ac20 | - 10℃ | 5180 | within the band | PASS |
| | 0℃ | 5180 | within the band | PASS |
| | 10℃ | 5180 | within the band | PASS |
| | 20℃ | 5180 | within the band | PASS |
| | 30℃ | 5180 | within the band | PASS |
| | 40℃ | 5180 | within the band | PASS |
| | 50℃ | 5180 | within the band | PASS |
| | 60℃ | 5180 | within the band | PASS |
| | - 10℃ | 5240 | within the band | PASS |
| | 0℃ | 5240 | within the band | PASS |
| | 10℃ | 5240 | within the band | PASS |
| | 20℃ | 5240 | within the band | PASS |
| | 30℃ | 5240 | within the band | PASS |
| | 40℃ | 5240 | within the band | PASS |
| | 50℃ | 5240 | within the band | PASS |
| | 60℃ | 5240 | within the band | PASS |
| | - 10℃ | 5745 | within the band | PASS |
| | 0℃ | 5745 | within the band | PASS |
| | 10℃ | 5745 | within the band | PASS |
| | 20℃ | 5745 | within the band | PASS |
| | 30℃ | 5745 | within the band | PASS |
| | 40℃ | 5745 | within the band | PASS |
| | 50℃ | 5745 | within the band | PASS |
| | 60℃ | 5240 | within the band | PASS |
| | - 10℃ | 5825 | within the band | PASS |
| | 0℃ | 5825 | within the band | PASS |
| | 10℃ | 5825 | within the band | PASS |
| | 20℃ | 5825 | within the band | PASS |
| | 30℃ | 5825 | within the band | PASS |
| | 40℃ | 5825 | within the band | PASS |
| | 50℃ | 5825 | within the band | PASS |
| | 60℃ | 5825 | within the band | PASS |

| Test Mode | Temperature | Measurement Frequency (MHz) | Result | Conclusion |
|---|---|---|---|---|
| 802.11n40 | - 10℃ | 5190 | within the band | PASS |
| | 0℃ | 5190 | within the band | PASS |
| | 10℃ | 5190 | within the band | PASS |
| | 20℃ | 5190 | within the band | PASS |
| | 30℃ | 5190 | within the band | PASS |
| | 40℃ | 5190 | within the band | PASS |
| | 50℃ | 5190 | within the band | PASS |
| | 60℃ | 5190 | within the band | PASS |
| | - 10℃ | 5230 | within the band | PASS |
| | 0℃ | 5230 | within the band | PASS |
| | 10℃ | 5230 | within the band | PASS |
| | 20℃ | 5230 | within the band | PASS |
| | 30℃ | 5230 | within the band | PASS |
| | 40℃ | 5230 | within the band | PASS |
| | 50℃ | 5230 | within the band | PASS |
| | 60℃ | 5230 | within the band | PASS |
| | - 10℃ | 5755 | within the band | PASS |
| | 0℃ | 5755 | within the band | PASS |
| | 10℃ | 5755 | within the band | PASS |
| | 20℃ | 5755 | within the band | PASS |
| | 30℃ | 5755 | within the band | PASS |
| | 40℃ | 5755 | within the band | PASS |
| | 50℃ | 5755 | within the band | PASS |
| | 60℃ | 5755 | within the band | PASS |
| | - 10℃ | 5795 | within the band | PASS |
| | 0℃ | 5795 | within the band | PASS |
| | 10℃ | 5795 | within the band | PASS |
| | 20℃ | 5795 | within the band | PASS |
| | 30℃ | 5795 | within the band | PASS |
| | 40℃ | 5795 | within the band | PASS |
| | 50℃ | 5795 | within the band | PASS |
| | 60℃ | 5795 | within the band | PASS |

| Test Mode | Temperature | Measurement Frequency (MHz) | Result | Conclusion |
|---|---|---|---|---|
| 802.11ac40 | - 10℃ | 5190 | within the band | PASS |
| | 0℃ | 5190 | within the band | PASS |
| | 10℃ | 5190 | within the band | PASS |
| | 20℃ | 5190 | within the band | PASS |
| | 30℃ | 5190 | within the band | PASS |
| | 40℃ | 5190 | within the band | PASS |
| | 50℃ | 5190 | within the band | PASS |
| | 60℃ | 5190 | within the band | PASS |
| | - 10℃ | 5230 | within the band | PASS |
| | 0℃ | 5230 | within the band | PASS |
| | 10℃ | 5230 | within the band | PASS |
| | 20℃ | 5230 | within the band | PASS |
| | 30℃ | 5230 | within the band | PASS |
| | 40℃ | 5230 | within the band | PASS |
| | 50℃ | 5230 | within the band | PASS |
| | 60℃ | 5230 | within the band | PASS |
| | - 10℃ | 5755 | within the band | PASS |
| | 0℃ | 5755 | within the band | PASS |
| | 10℃ | 5755 | within the band | PASS |
| | 20℃ | 5755 | within the band | PASS |
| | 30℃ | 5755 | within the band | PASS |
| | 40℃ | 5755 | within the band | PASS |
| | 50℃ | 5755 | within the band | PASS |
| | 60℃ | 5755 | within the band | PASS |
| | - 10℃ | 5795 | within the band | PASS |
| | 0℃ | 5795 | within the band | PASS |
| | 10℃ | 5795 | within the band | PASS |
| | 20℃ | 5795 | within the band | PASS |
| | 30℃ | 5795 | within the band | PASS |
| | 40℃ | 5795 | within the band | PASS |
| | 50℃ | 5795 | within the band | PASS |
| | 60℃ | 5795 | within the band | PASS |

| Test Mode | Temperature | Measurement Frequency (MHz) | Result | Conclusion |
|---|---|---|---|---|
| 802.11ac80 | - 10℃ | 5210 | within the band | PASS |
| | 0℃ | 5210 | within the band | PASS |
| | 10℃ | 5210 | within the band | PASS |
| | 20℃ | 5210 | within the band | PASS |
| | 30℃ | 5210 | within the band | PASS |
| | 40℃ | 5210 | within the band | PASS |
| | 50℃ | 5210 | within the band | PASS |
| | 60℃ | 5210 | within the band | PASS |
| | - 10℃ | 5775 | within the band | PASS |
| | 0℃ | 5775 | within the band | PASS |
| | 10℃ | 5775 | within the band | PASS |
| | 20℃ | 5775 | within the band | PASS |
| | 30℃ | 5775 | within the band | PASS |
| | 40℃ | 5775 | within the band | PASS |
| | 50℃ | 5775 | within the band | PASS |
| | 60℃ | 5775 | within the band | PASS |

# 12. FCC LINE CONDUCTED EMISSION TEST

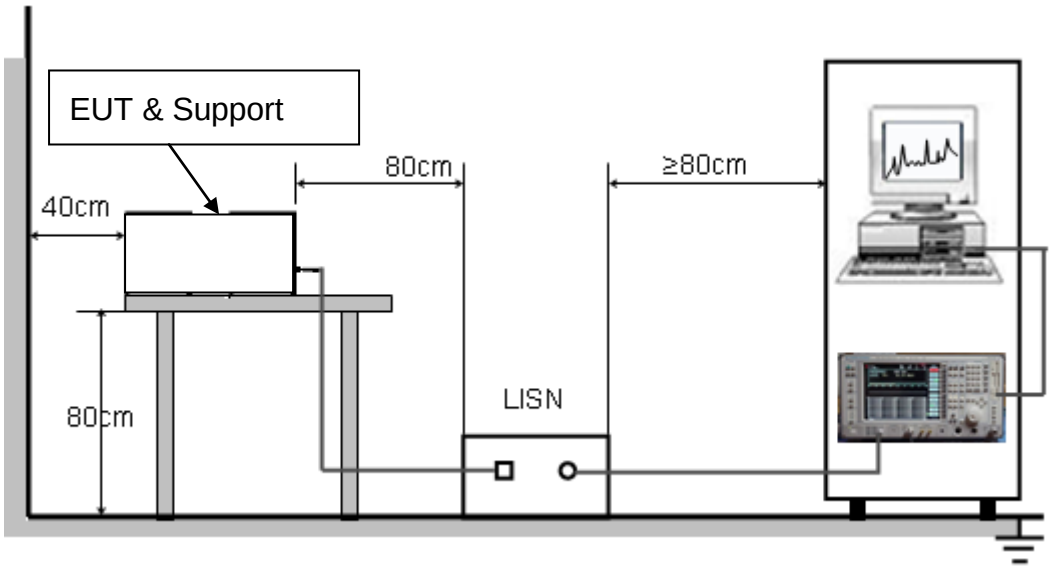
## 12.1. LIMITS OF LINE CONDUCTED EMISSION TEST

| 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.

## 12.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



### 12.3. 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/60Hzpower 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.

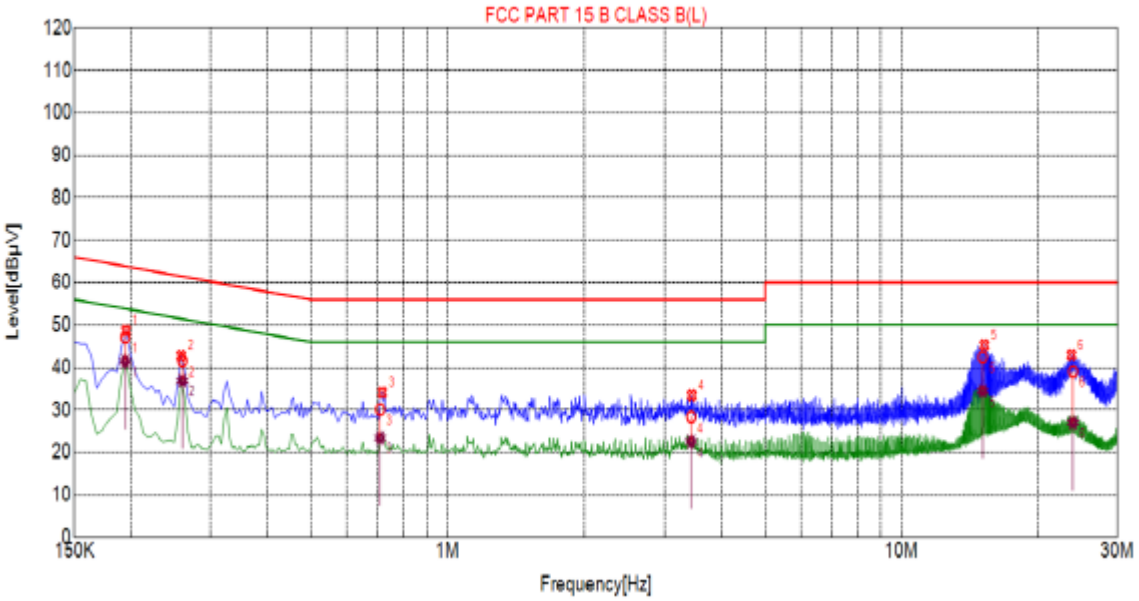
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

### 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.

## 12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

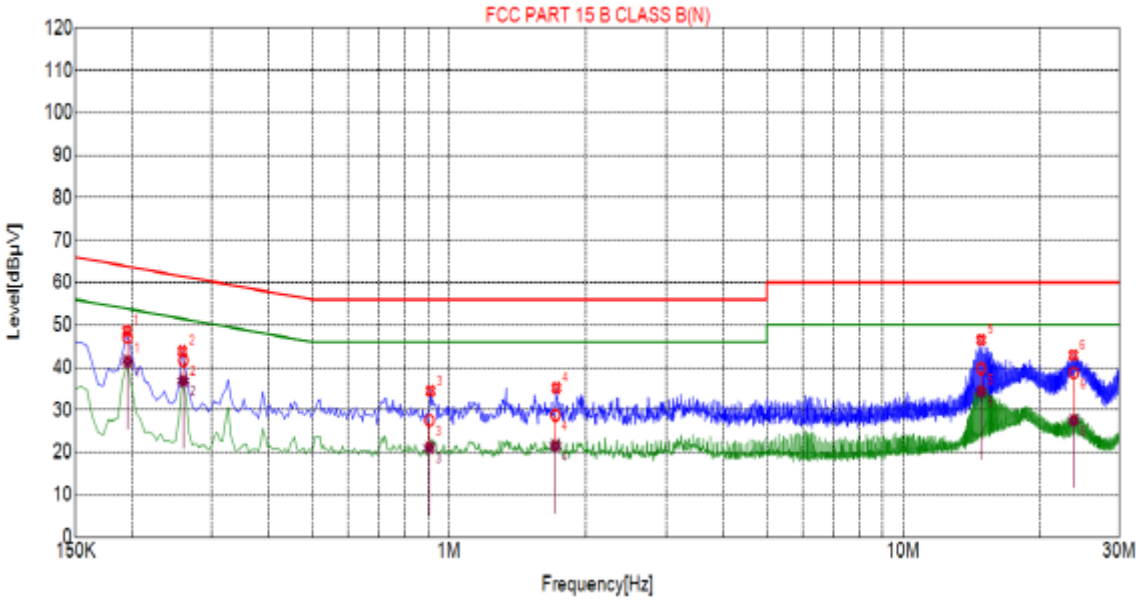
LINE CONDUCTED EMISSION TEST-L




| Suspected List | | | | | | |
|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Level [dBµV] | Factor [dB] | Limit [dBµV] | Margin [dB] | Detector |
| 1 | 0.1950 | 48.69 | 10.03 | 63.82 | 15.13 | PK |
| 2 | 0.2580 | 42.76 | 10.04 | 61.50 | 18.74 | PK |
| 3 | 0.7170 | 34.12 | 10.05 | 56.00 | 21.88 | PK |
| 4 | 3.4440 | 33.45 | 10.25 | 56.00 | 22.55 | PK |
| 5 | 15.2430 | 45.30 | 9.96 | 60.00 | 14.70 | PK |
| 6 | 23.7390 | 42.94 | 10.21 | 60.00 | 17.06 | PK |

| Final Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Factor [dB] | QP Value [dBµV] | QP Limit [dBµV] | QP Margin [dB] | AV Value [dBµV] | AV Limit [dBµV] | AV Margin [dB] |
| 1 | 0.1942 | 10.03 | 47.11 | 63.85 | 16.74 | 41.46 | 53.85 | 12.39 |
| 2 | 0.2596 | 10.03 | 41.60 | 61.45 | 19.85 | 36.93 | 51.45 | 14.52 |
| 3 | 0.7098 | 10.05 | 30.14 | 56.00 | 25.86 | 23.43 | 46.00 | 22.57 |
| 4 | 3.4332 | 10.24 | 28.38 | 56.00 | 27.62 | 22.56 | 46.00 | 23.44 |
| 5 | 15.1159 | 9.96 | 42.40 | 60.00 | 17.60 | 34.49 | 50.00 | 15.51 |
| 6 | 23.9218 | 10.22 | 39.08 | 60.00 | 20.92 | 26.99 | 50.00 | 23.01 |

LINE CONDUCTED EMISSION TEST-N



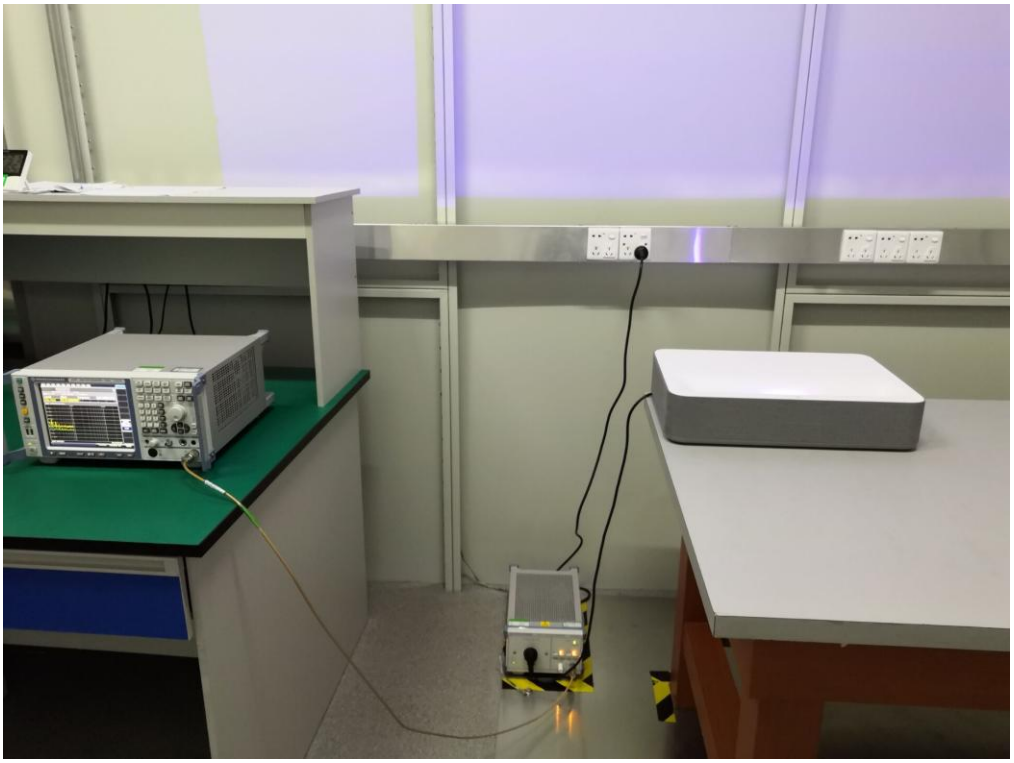

| Suspected List | | | | | | |
|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Level [dBµV] | Factor [dB] | Limit [dBµV] | Margin [dB] | Detector |
| 1 | 0.1950 | 48.63 | 10.03 | 63.82 | 15.19 | PK |
| 2 | 0.2580 | 43.81 | 10.04 | 61.50 | 17.69 | PK |
| 3 | 0.9105 | 34.51 | 10.06 | 56.00 | 21.49 | PK |
| 4 | 1.7250 | 35.23 | 10.13 | 56.00 | 20.77 | PK |
| 5 | 14.8560 | 46.48 | 9.95 | 60.00 | 13.52 | PK |
| 6 | 23.7345 | 42.91 | 10.21 | 60.00 | 17.09 | PK |

| Final Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Factor [dB] | QP Value [dBµV] | QP Limit [dBµV] | QP Margin [dB] | AV Value [dBµV] | AV Limit [dBµV] | AV Margin [dB] |
| 1 | 0.1953 | 10.03 | 47.07 | 63.81 | 16.74 | 41.42 | 53.81 | 12.39 |
| 2 | 0.2593 | 10.03 | 41.66 | 61.45 | 19.79 | 36.90 | 51.45 | 14.55 |
| 3 | 0.9054 | 10.06 | 27.54 | 56.00 | 28.46 | 21.13 | 46.00 | 24.87 |
| 4 | 1.7175 | 10.13 | 28.74 | 56.00 | 27.26 | 21.60 | 46.00 | 24.40 |
| 5 | 14.8603 | 9.95 | 39.71 | 60.00 | 20.29 | 34.41 | 50.00 | 15.59 |
| 6 | 23.7605 | 10.21 | 38.74 | 60.00 | 21.26 | 27.60 | 50.00 | 22.40 |

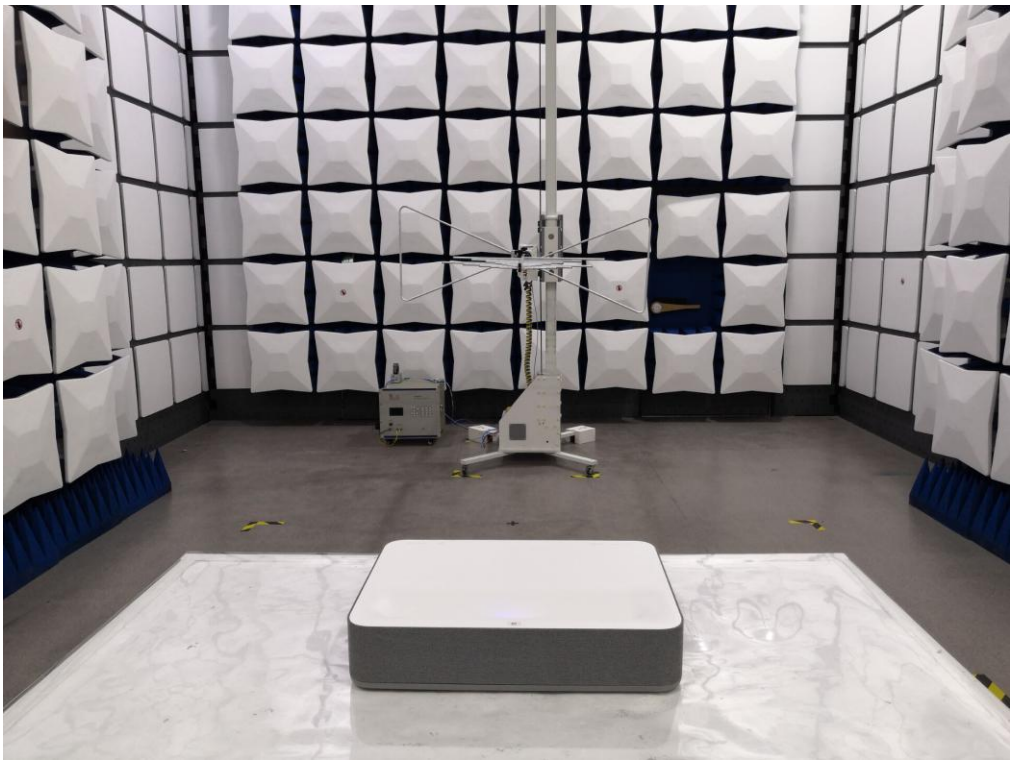
**RESULT: PASS**

# 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----**