

# Report No.:I21W00017-WLAN\_5G\_Rev1

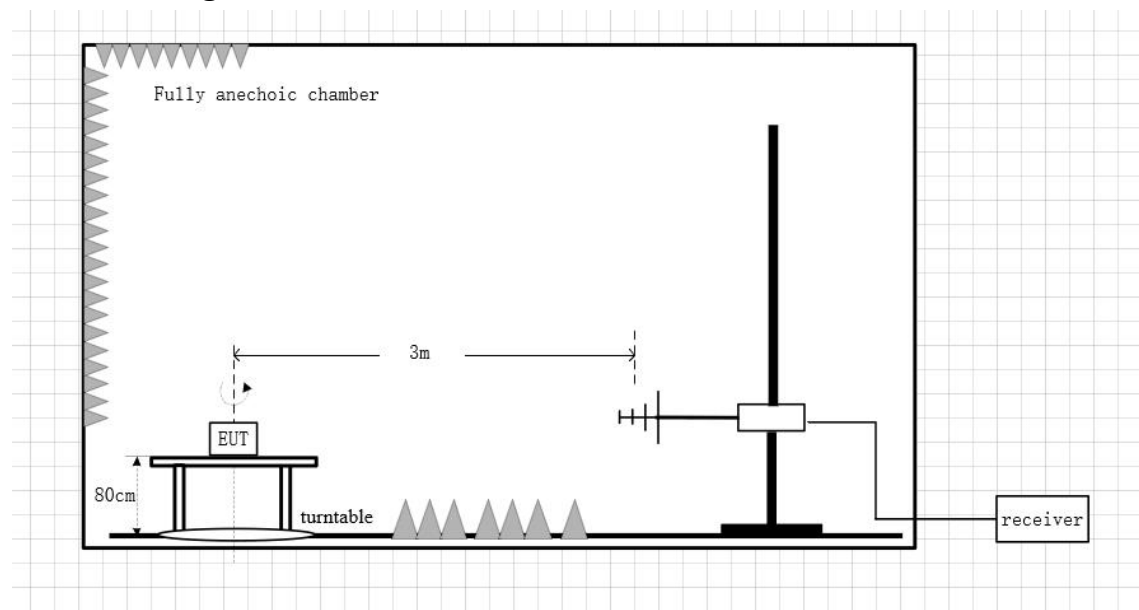
	165	1GHz-3GHz	Fig.73	Pass
		3GHz-6GHz	Fig.74	
		6GHz-18GHz	Fig.75	
All channels		18GHz-26.5GHz	Fig.76	Pass
All channels		26.5GHz-40GHz	Fig.77	Pass

Note: The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement –X, Y, and Z-plane. The X-plane results were found as the worst case and were shown in this report.

Transmitter Spurious Emission-Radiated H and V are tested together, The test result is maximum hold. Therefore, the result is only one set of data. Found the emission level are attenuated 20dB below the limits for frequency range 9kHz to 30MHz, so it does not recorded in report.

The 30MHz-1GHz, 18GHz-26.5GHz and 26.5GHz-40GHz results were found as the worst case and were shown in this report.

## Test block diagram:

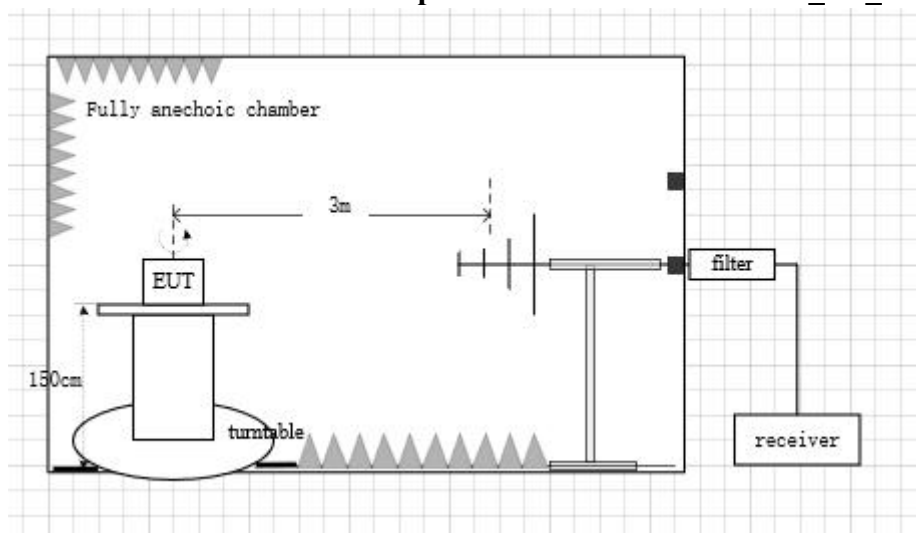


30MHz-1GHz

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Above 1GHz

**Conclusion: PASS**

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Test graphs as below:

RE 30MHz-1GHz

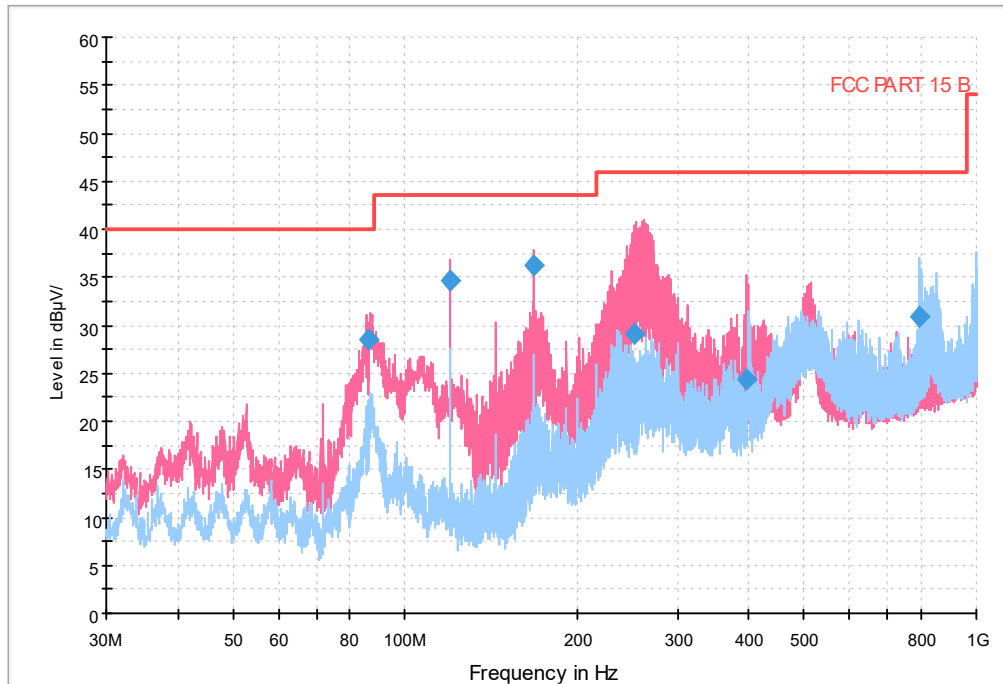


Fig.39 Radiated emission:30MHz-1GHz

## Final Result 1

Frequency (MHz)	QuasiPeak dB $\mu$ V/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
86.493500	28.5	5000.0	120.000	117.0	V	260.0	-22.4	11.5
120.016000	34.6	5000.0	120.000	102.0	V	260.0	-21.4	8.9
168.031000	36.2	5000.0	120.000	102.0	V	100.0	-20.9	7.3
252.751500	29.2	5000.0	120.000	102.0	V	170.0	-16.6	16.8
396.869000	24.4	5000.0	120.000	102.0	V	270.0	-12.7	21.6
796.542500	30.9	5000.0	120.000	102.0	H	100.0	-5.3	15.1

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RE 1GHz-3GHz

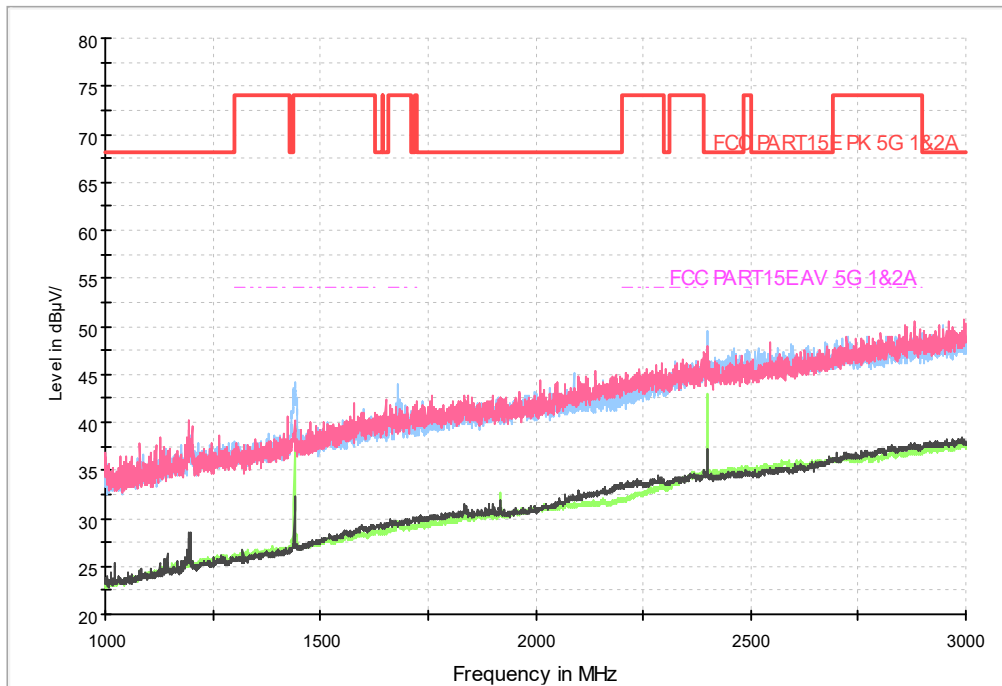


Fig.40 Radiated emission: 802.11a,CH36, 1GHz-3GHz

RE 3GHz-18GHz

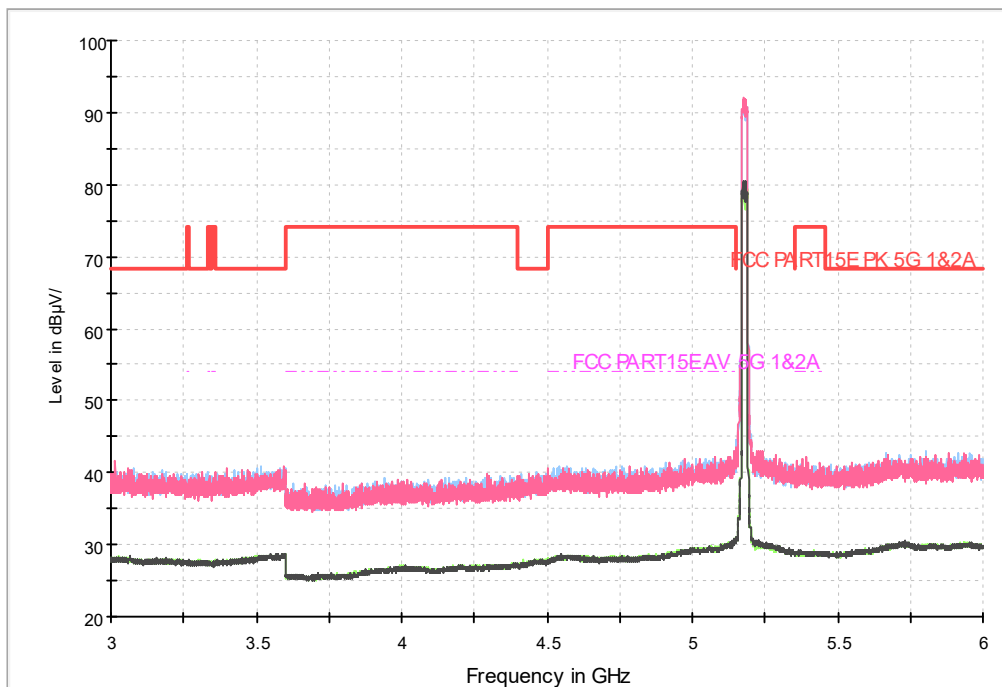


Fig.41 Radiated emission: 802.11a,CH36, 3GHz-6GHz

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5G WIFI BAND 1 RE 6GHz-18GHz

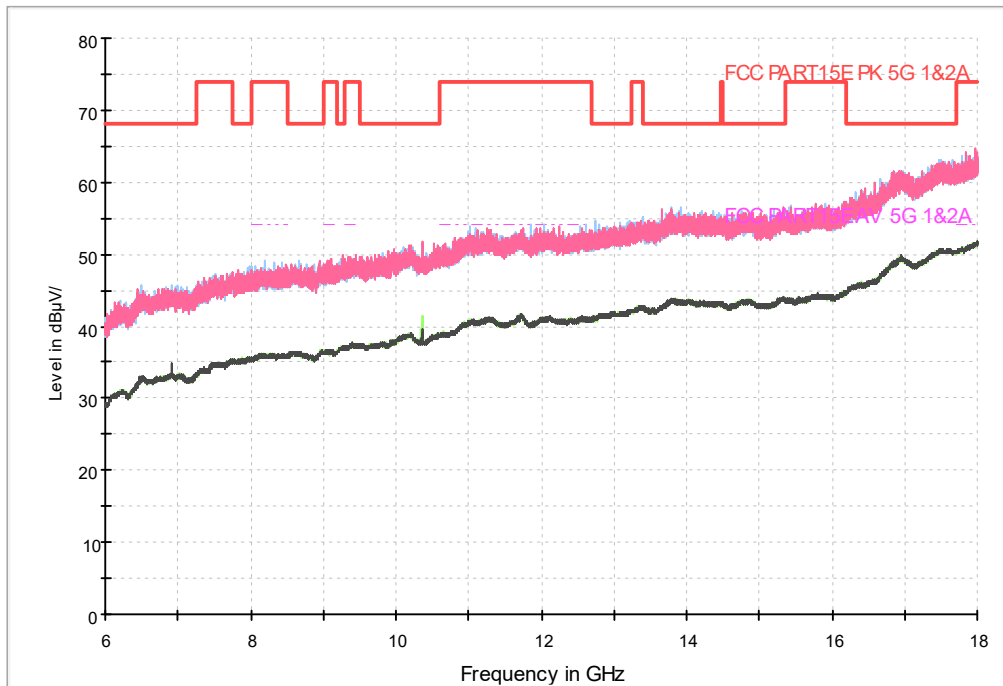


Fig.42 Radiated emission:802.11a,CH36, 6GHz-18GHz

RE 1GHz-3GHz

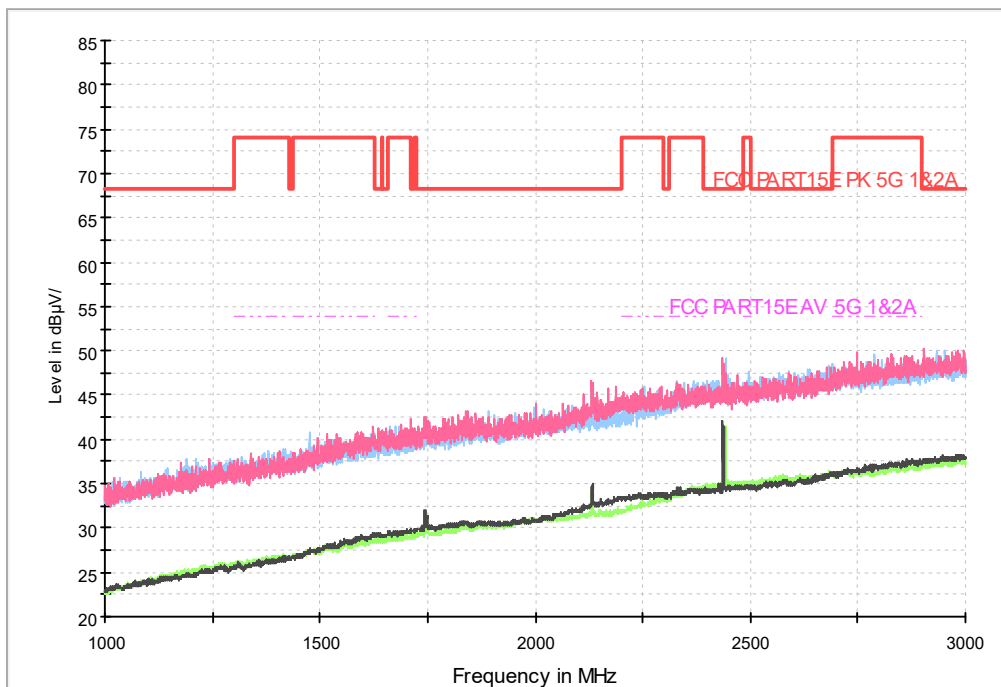


Fig.43 Radiated emission:802.11a, Ch40, 1GHz-3GHz

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RE 3GHz-18GHz

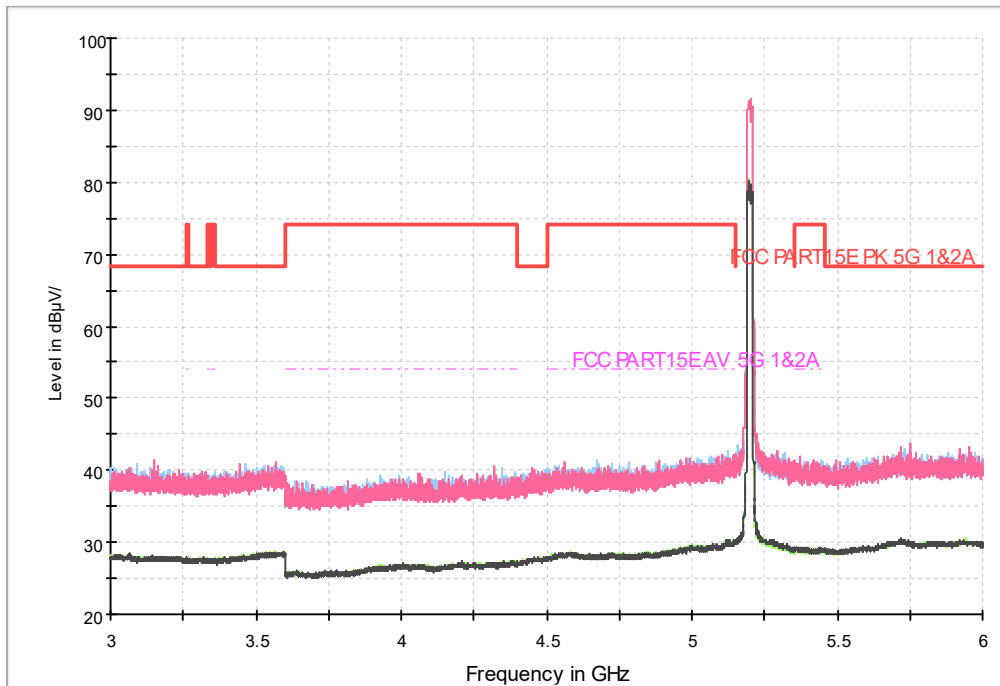


Fig.44 Radiated emission:802.11a, Ch40, 3GHz-6GHz

5G WIFI BAND 1 RE 6GHz-18GHz

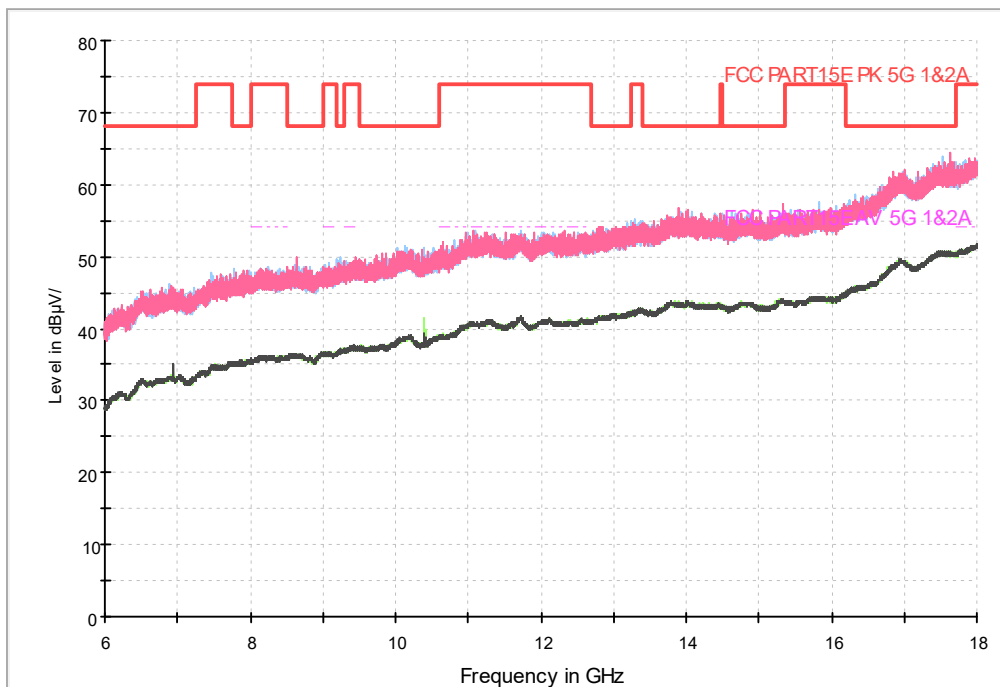


Fig.45 Radiated emission: 802.11a,Ch40,6GHz-18GHz

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RE 1GHz-3GHz

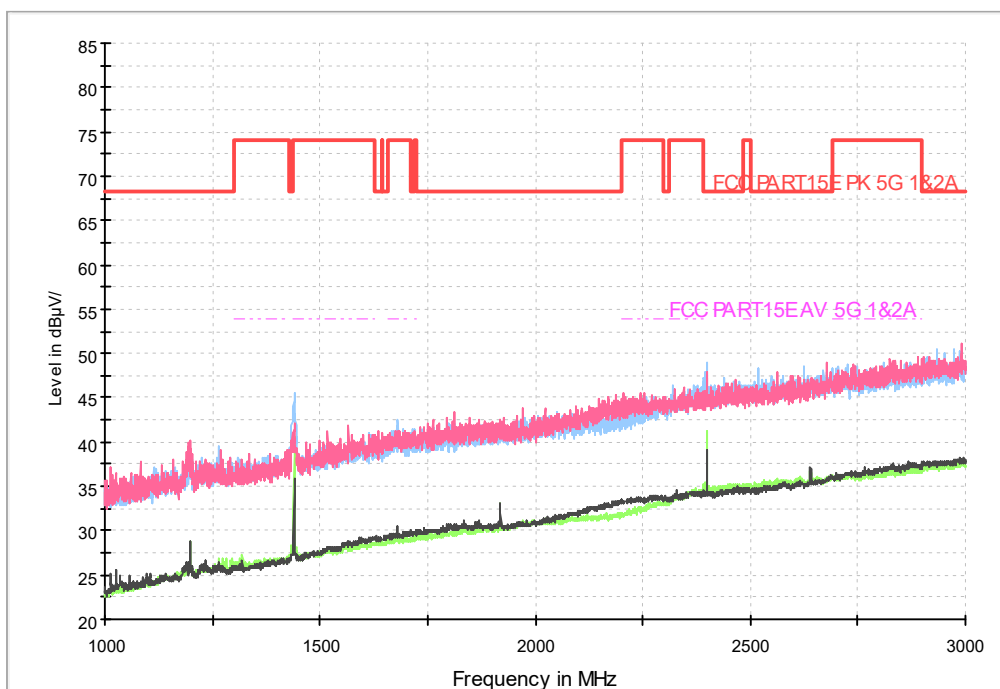


Fig.46 Radiated emission: 802.11a,Ch48, 1GHz-3GHz

RE 3GHz-18GHz

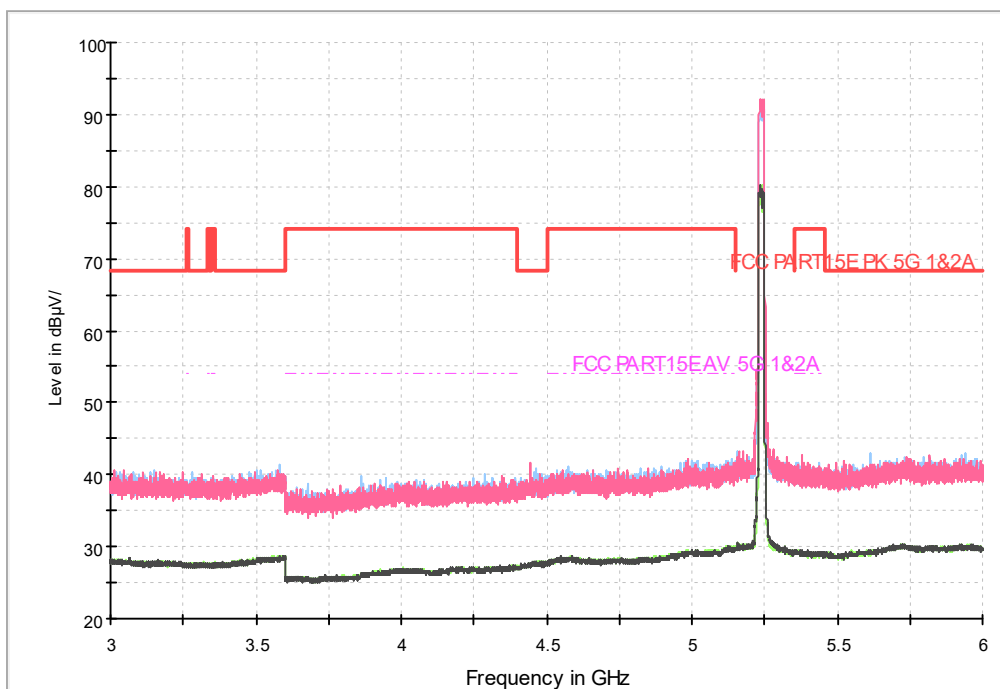


Fig.47 Radiated emission: 802.11a,Ch48, 3GHz-6GHz

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5G WIFI BAND 1 RE 6GHz-18GHz

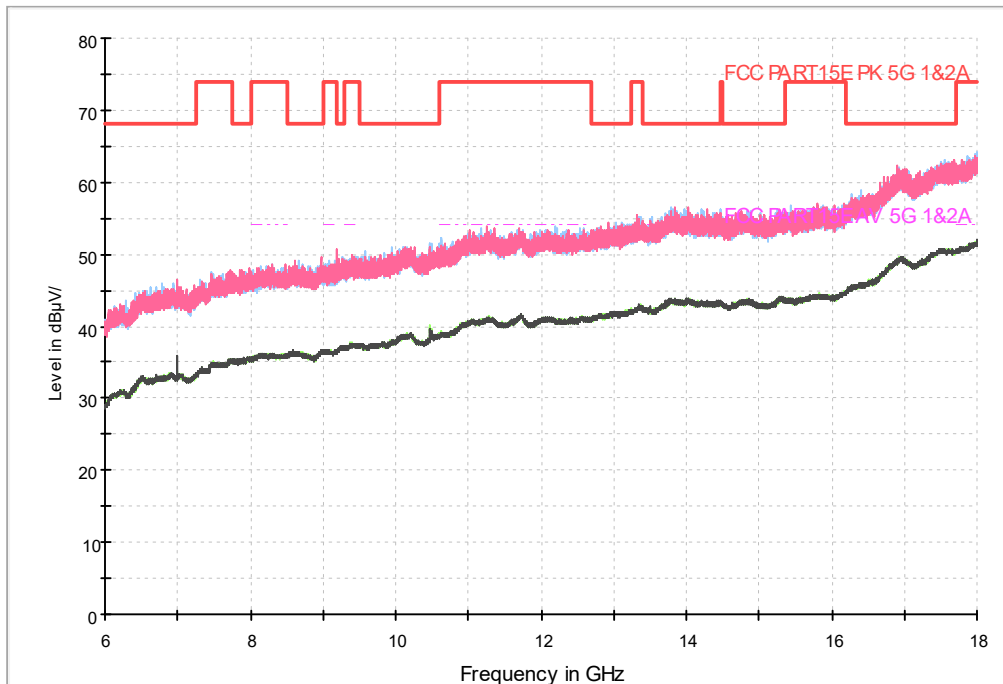


Fig.48 Radiated emission: 802.11a,Ch48, 6GHz-18GHz

RE 1GHz-3GHz

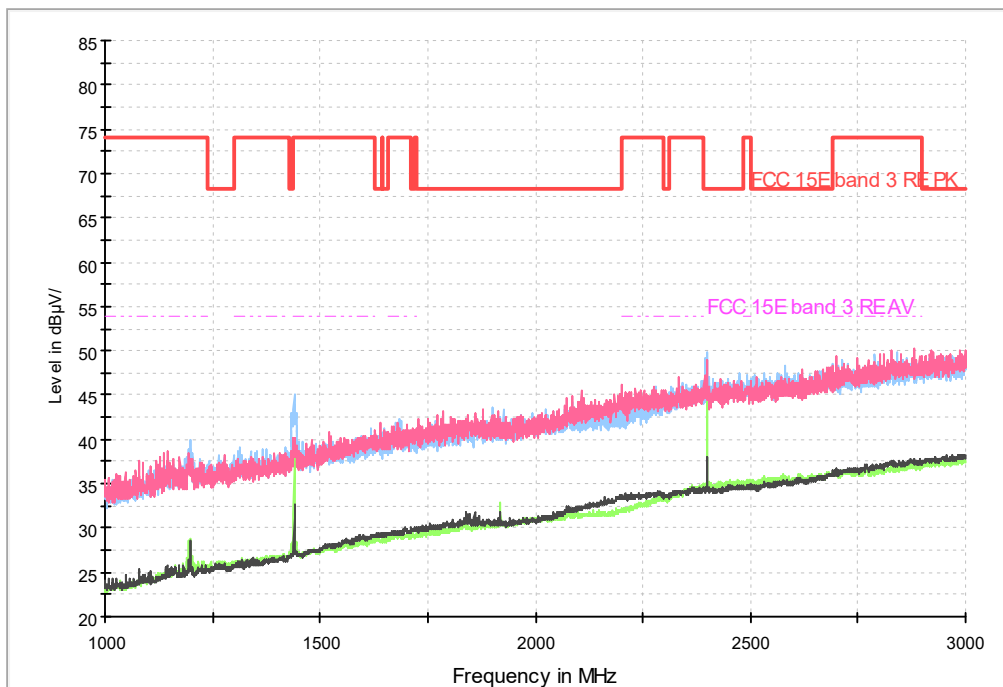


Fig.49 Radiated emission: 802.11a,Ch149, 1GHz-3GHz

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RE 3GHz-18GHz

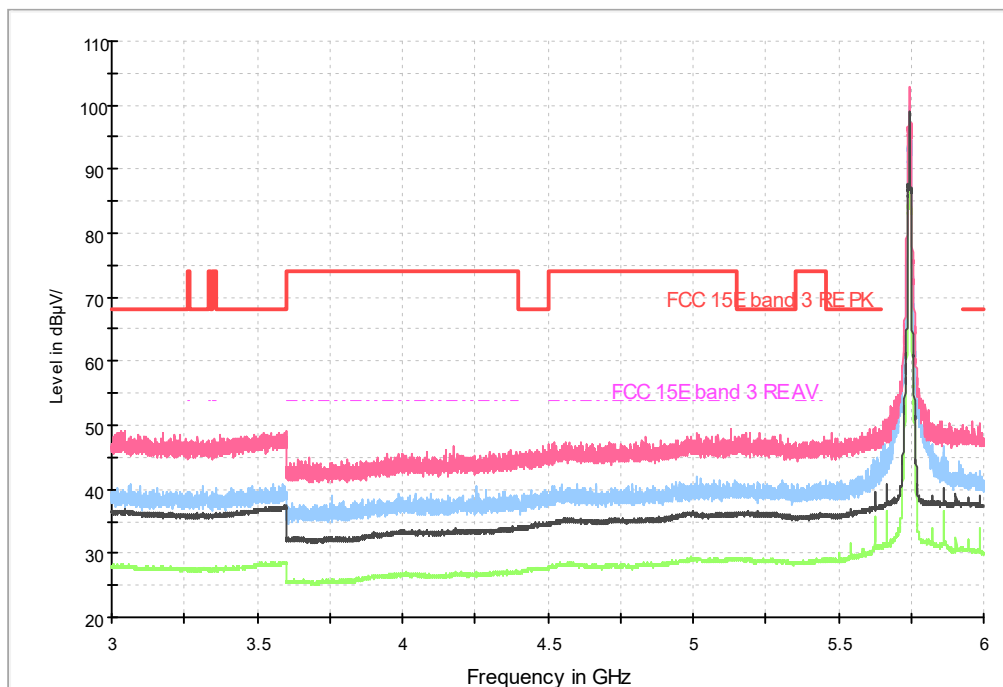


Fig.50 Radiated emission: 802.11a,Ch149, 3GHz-6GHz

5G WIFI BAND 3 RE 6GHz-18GHz

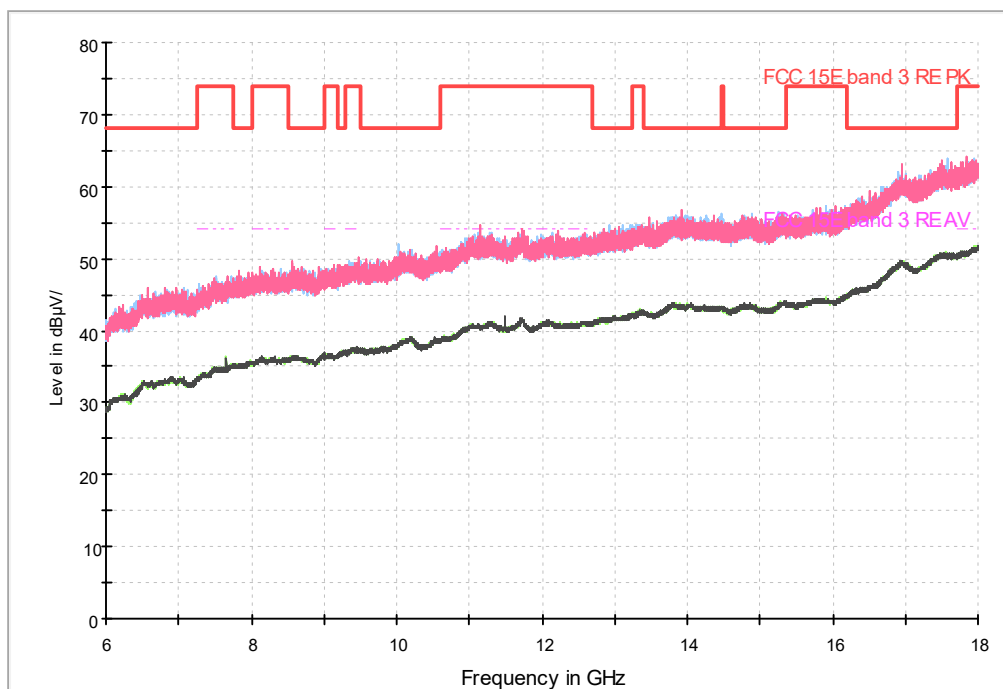


Fig.51 Radiated emission: 802.11a,Ch149, 6GHz-18GHz

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RE 1GHz-3GHz

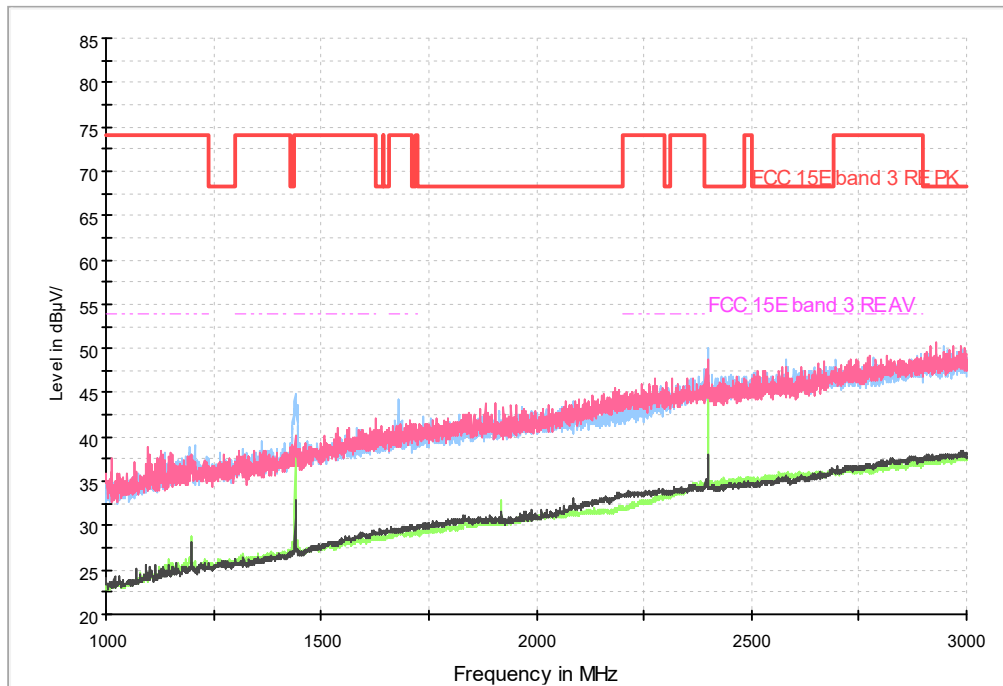


Fig.52 Radiated emission: 802.11a,Ch157, 1GHz-3GHz

RE 3GHz-18GHz

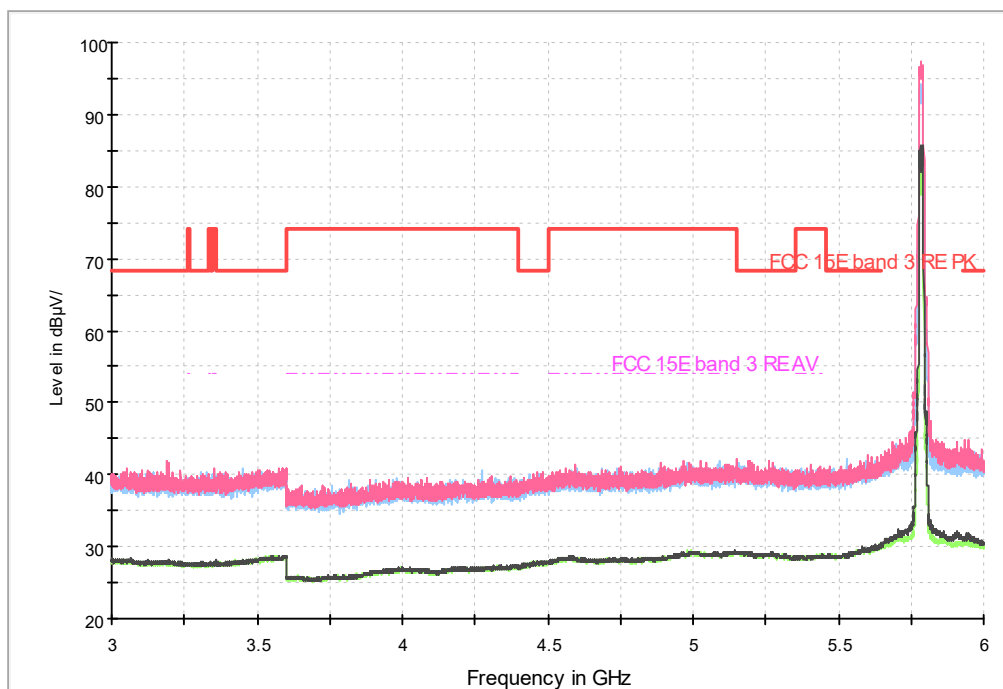


Fig.53 Radiated emission: 802.11a,Ch157, 3GHz-6GHz

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5G WIFI BAND 3 RE 6GHz-18GHz

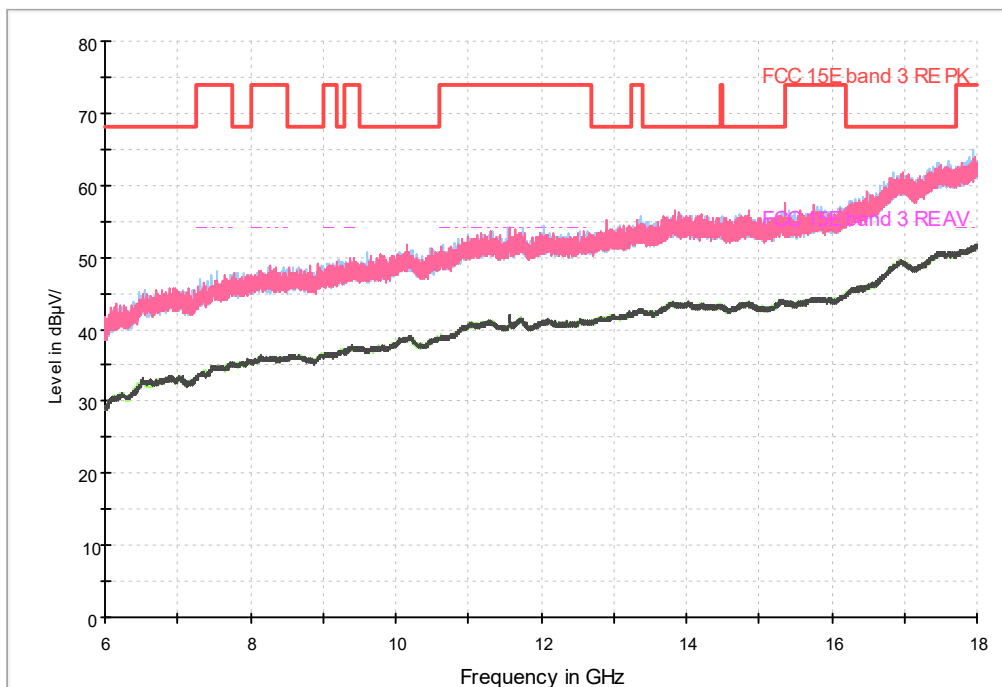


Fig.54 Radiated emission: 802.11a,Ch157, 6GHz-18GHz

RE 1GHz-3GHz

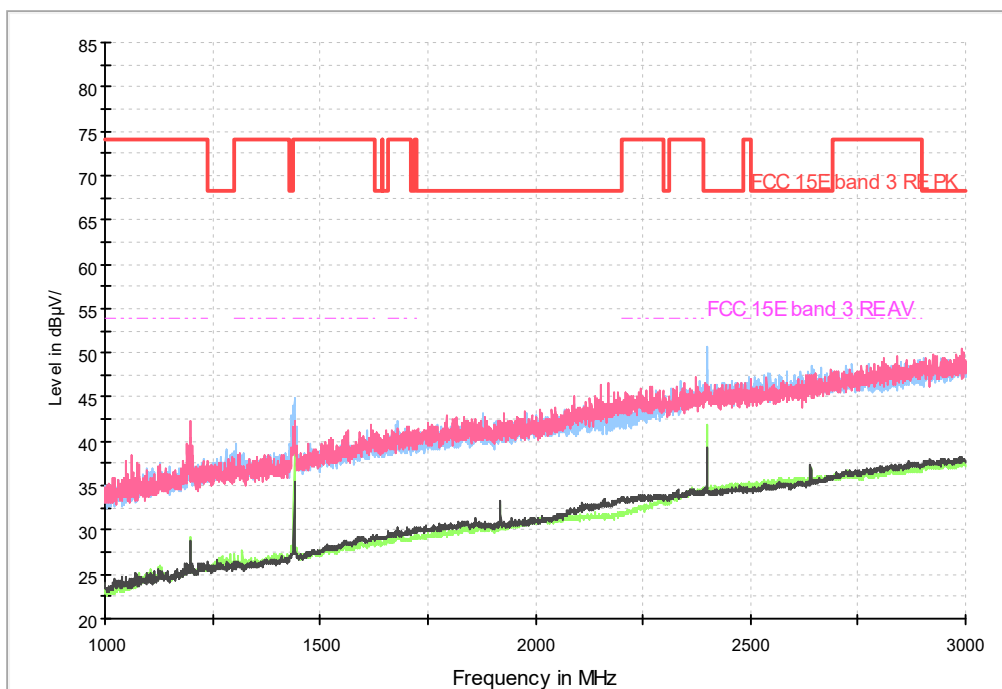


Fig.55 Radiated emission: 802.11a,Ch165, 1GHz-3GHz

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RE 3GHz-18GHz

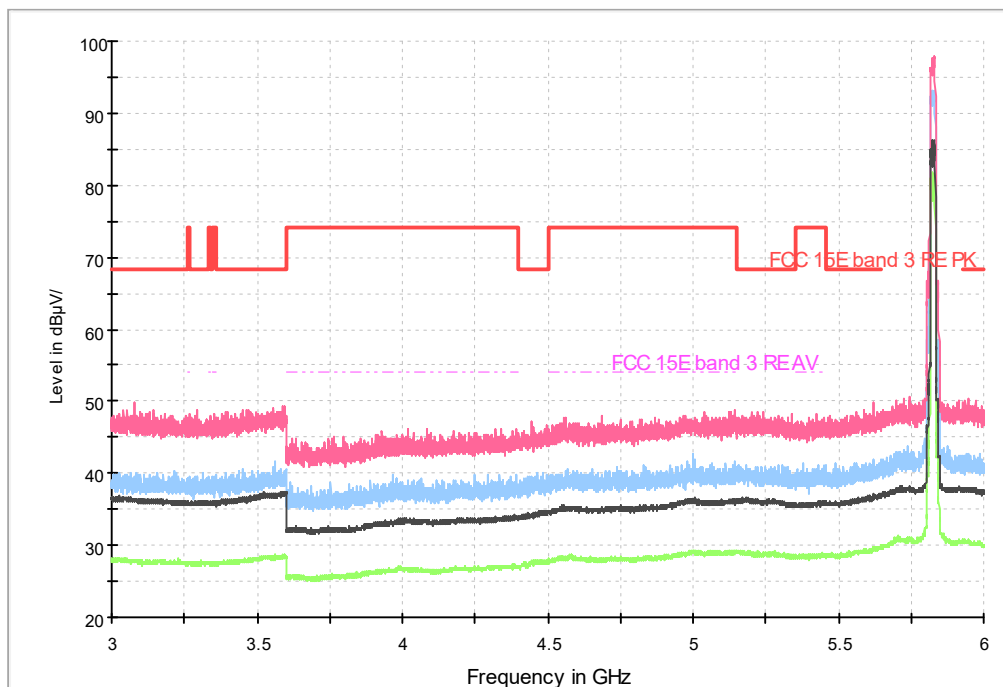


Fig.56 Radiated emission: 802.11a,Ch165, 3GHz-6GHz

RE 3GHz-18GHz

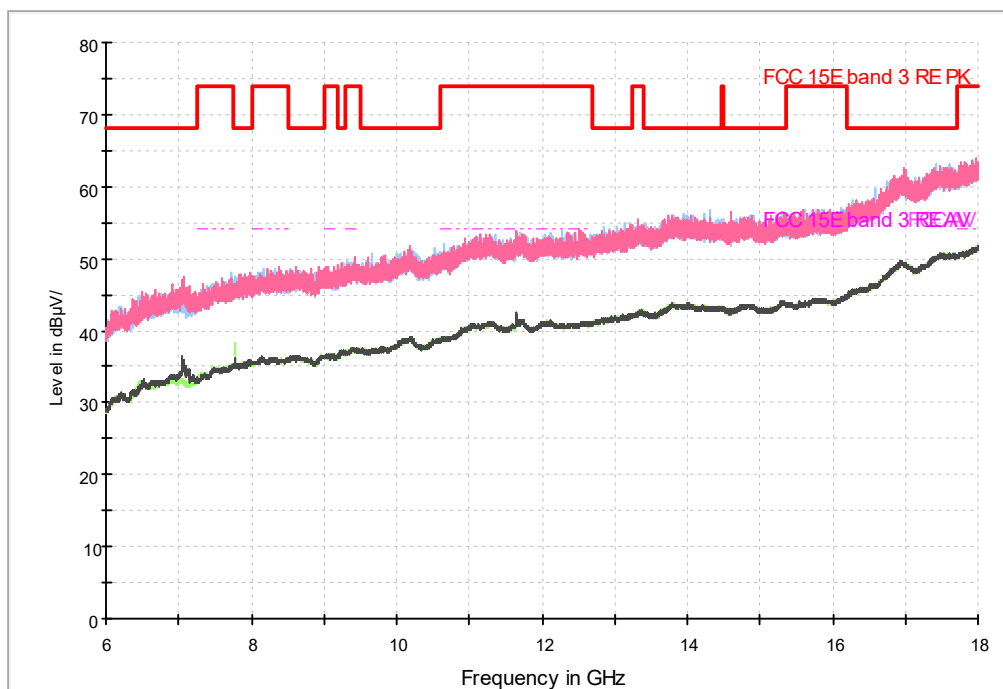


Fig.57 Radiated emission: 802.11a,Ch165, 6GHz-18GHz

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RE 1GHz-3GHz

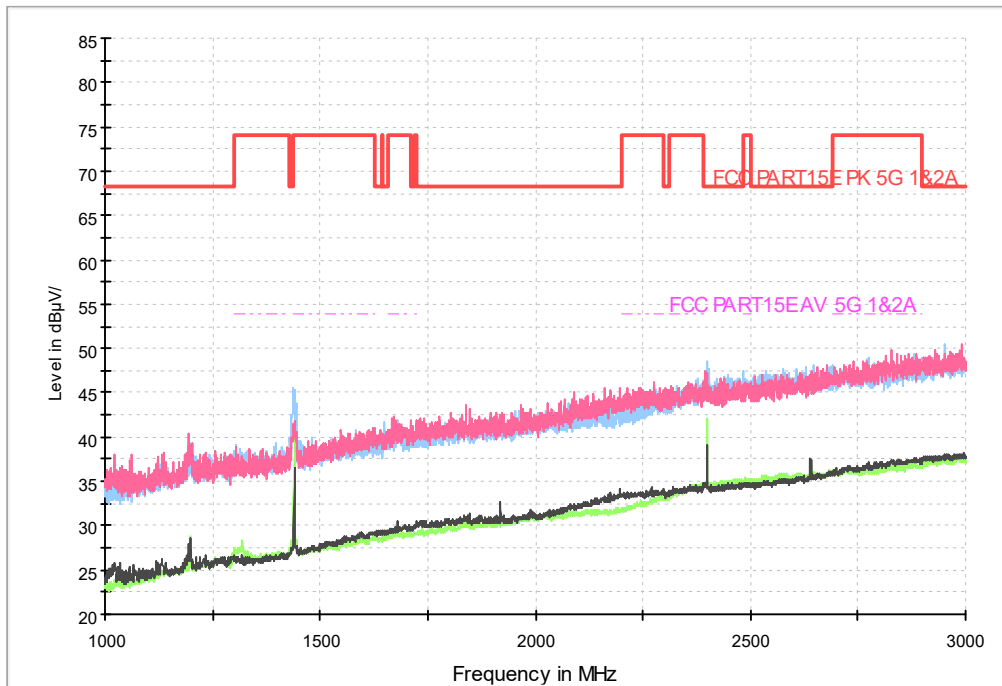


Fig.58 Radiated emission: 802.11n,Ch36, 1GHz-3GHz

RE 3GHz-18GHz

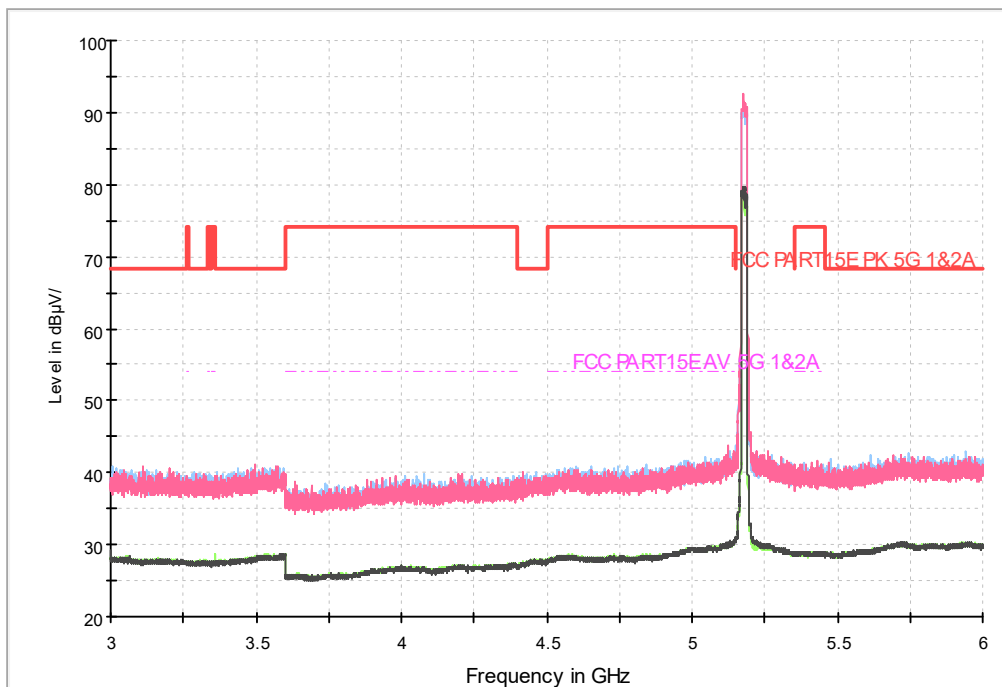


Fig.59 Radiated emission: 802.11n,Ch36, 3GHz-6GHz

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5G WIFI BAND 1 RE 6GHz-18GHz

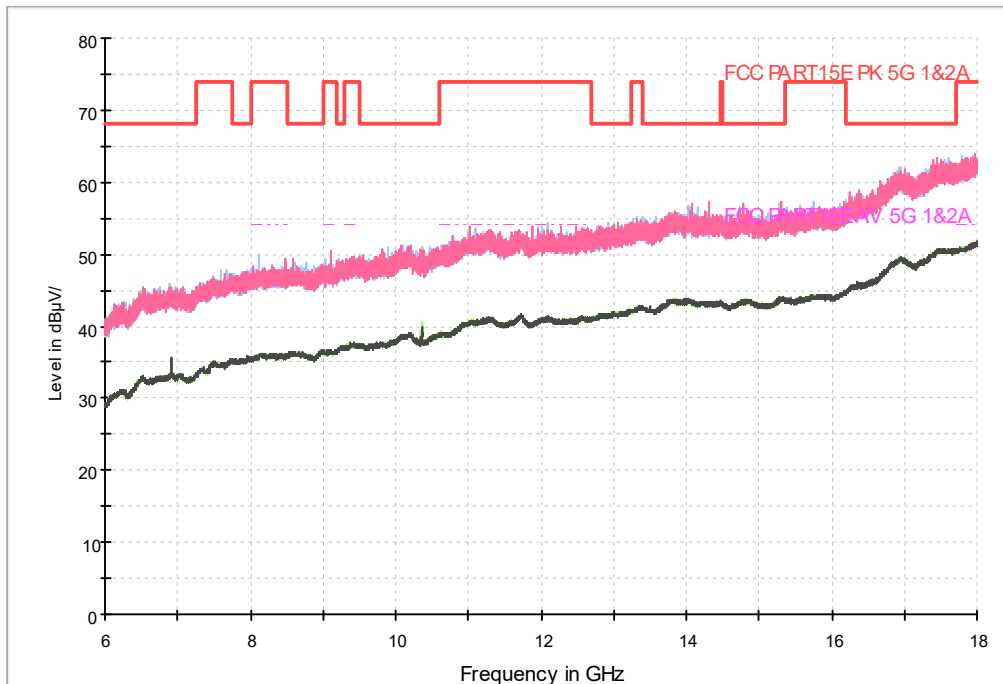


Fig.60 Radiated emission: 802.11n,Ch36, 6GHz-18GHz

RE 1GHz-3GHz

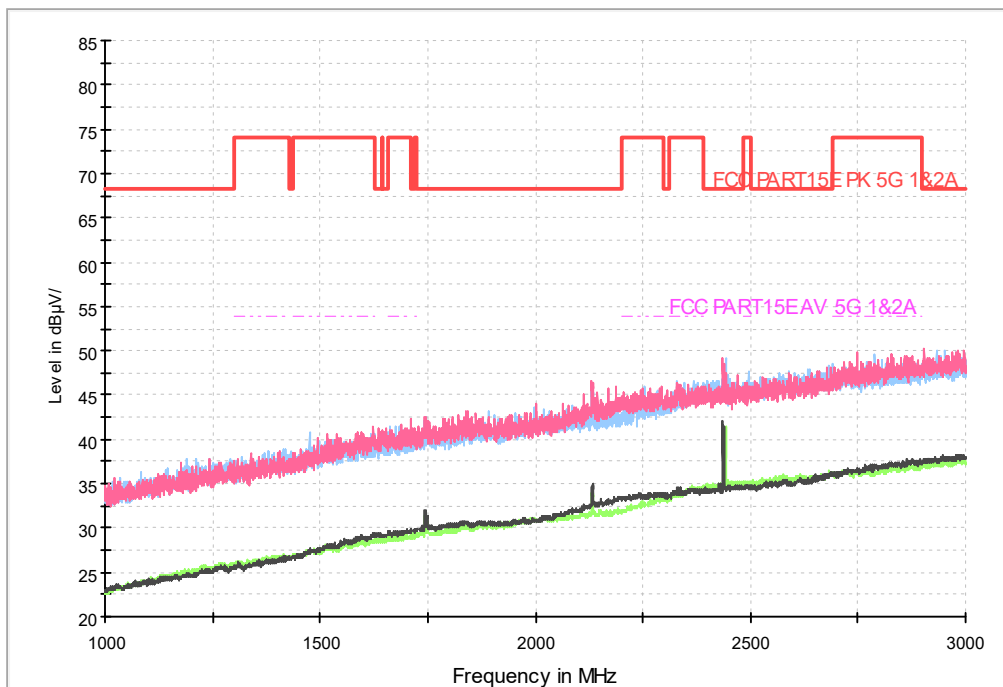


Fig.61 Radiated emission: 802.11n,Ch40, 1GHz-3GHz

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RE 3GHz-18GHz

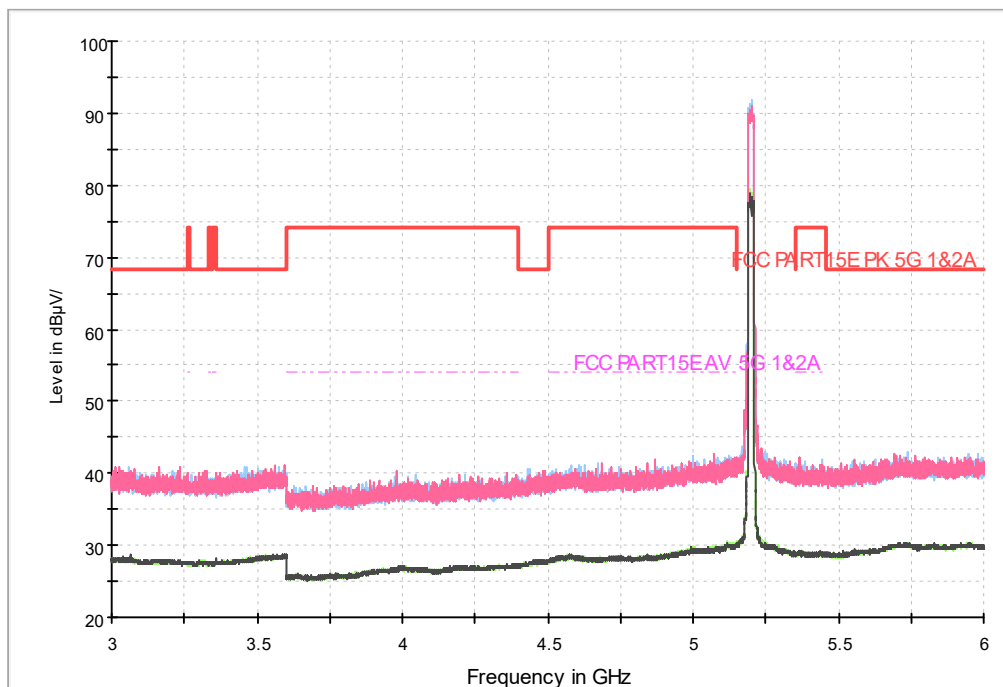


Fig.62 Radiated emission: 802.11n,Ch40, 3GHz-6GHz

5G WIFI BAND 1 RE 6GHz-18GHz

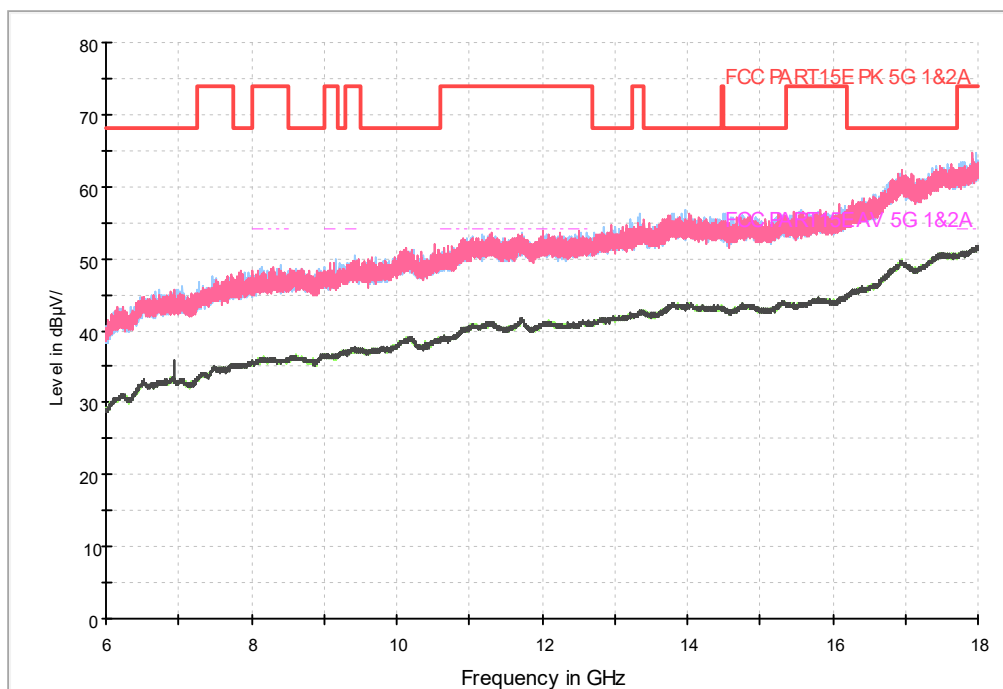


Fig.63 Radiated emission: 802.11n,Ch40, 6GHz-18GHz

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RE 1GHz-3GHz

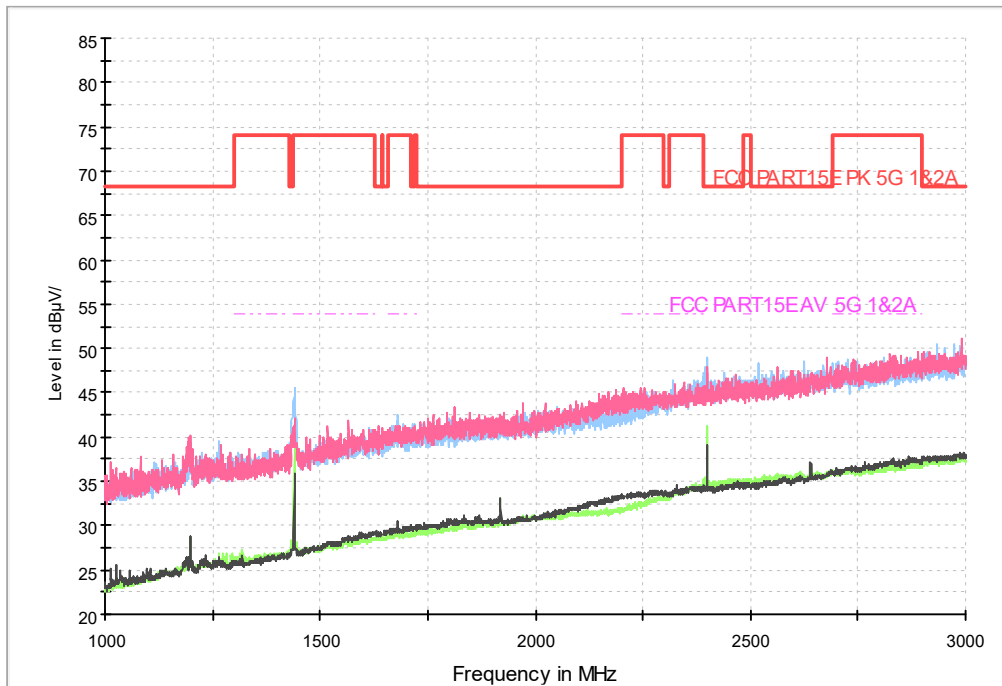


Fig.64 Radiated emission: 802.11n,Ch48, 1GHz-3GHz

RE 3GHz-18GHz

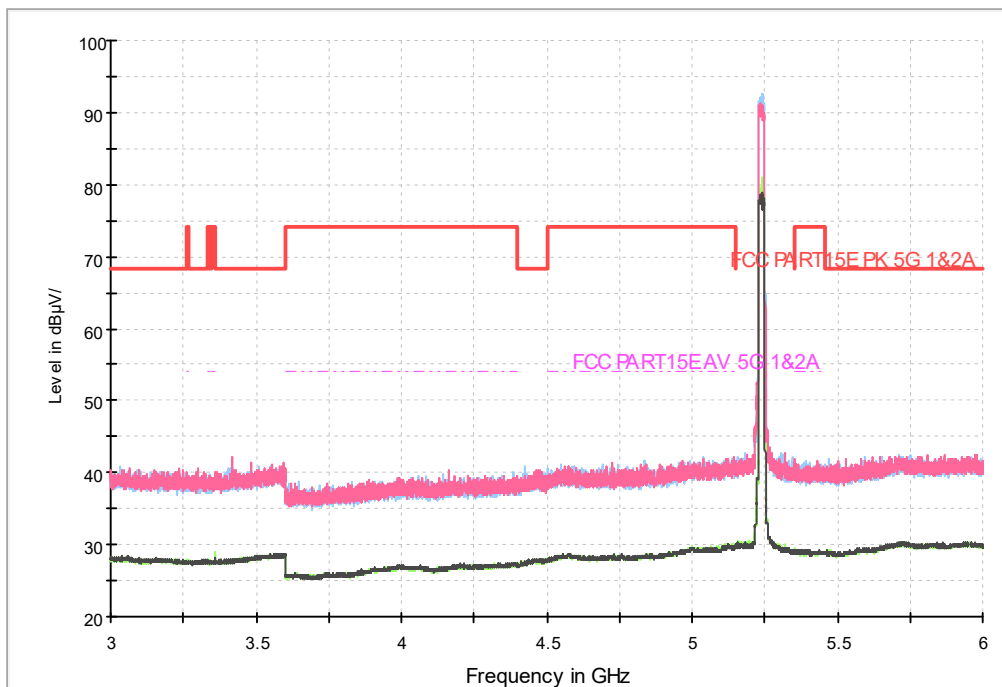


Fig.65 Radiated emission: 802.11n,Ch48, 3GHz-6GHz

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5G WIFI BAND 1 RE 6GHz-18GHz

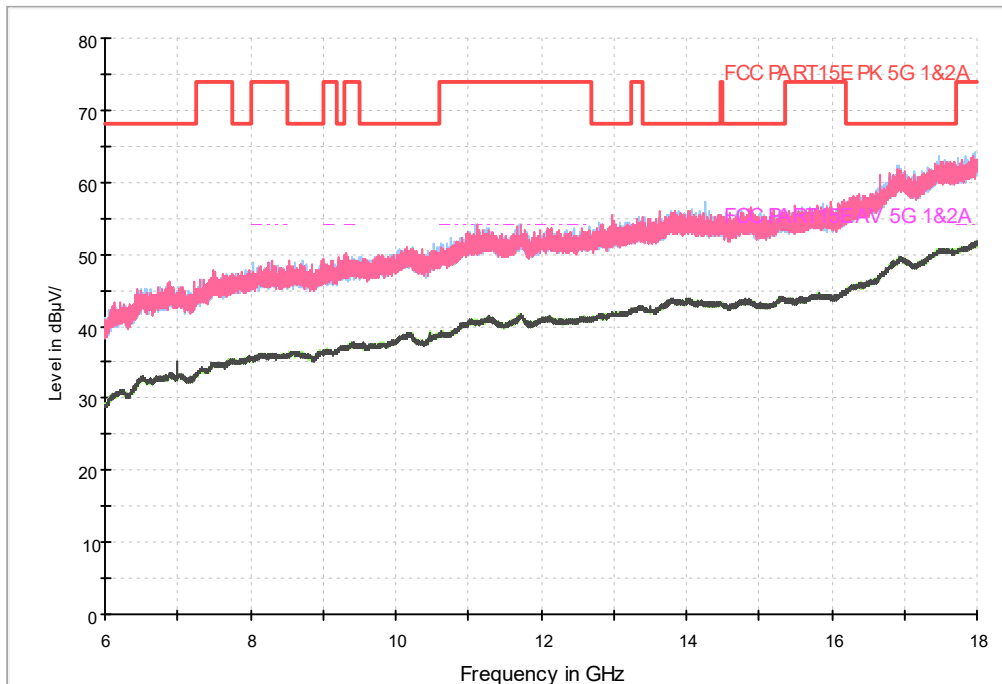


Fig.66 Radiated emission: 802.11n,Ch48, 6GHz-18GHz

RE 1GHz-3GHz

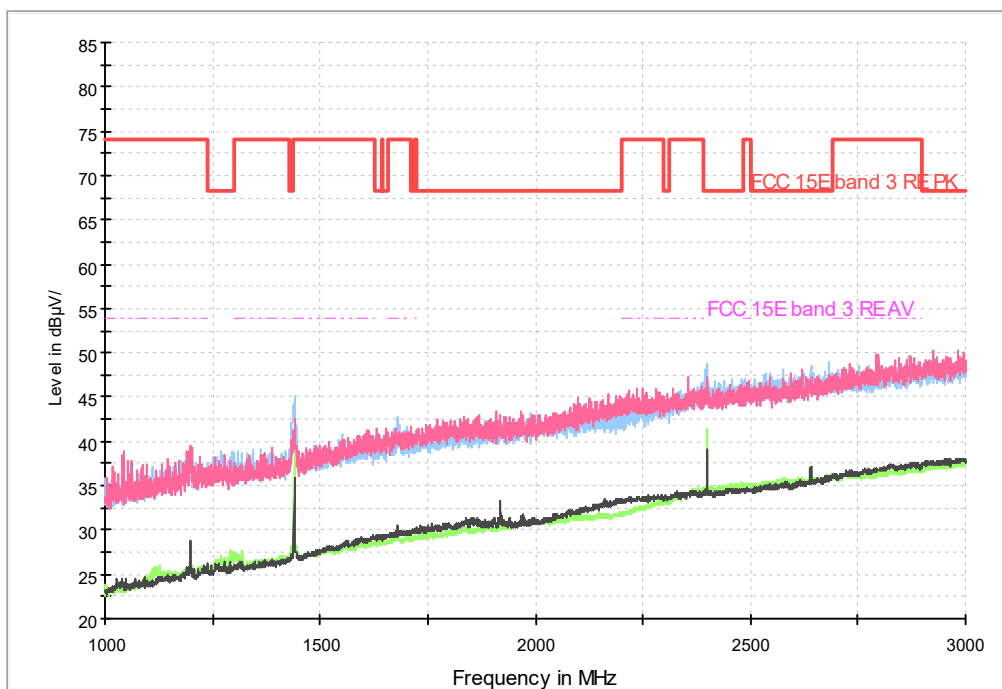


Fig.67 Radiated emission: 802.11n,Ch149, 1GHz-3GHz

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RE 3GHz-18GHz

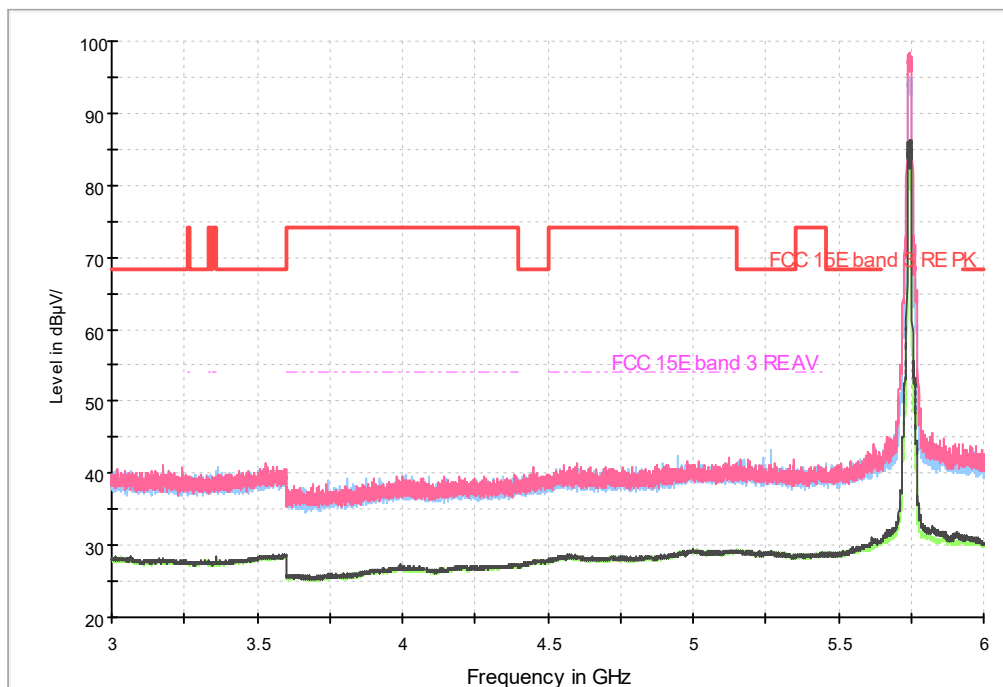


Fig.68 Radiated emission: 802.11n,Ch149, 3GHz-6GHz

5G WIFI BAND 3 RE 6GHz-18GHz

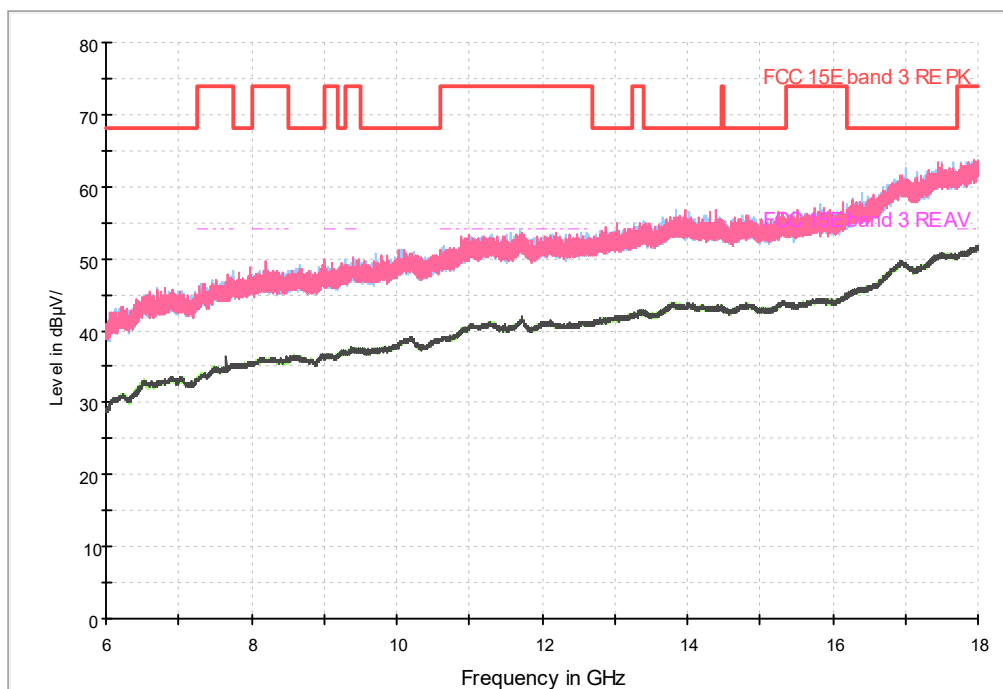


Fig.69 Radiated emission: 802.11n,Ch149, 6GHz-18GHz

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RE 1GHz-3GHz

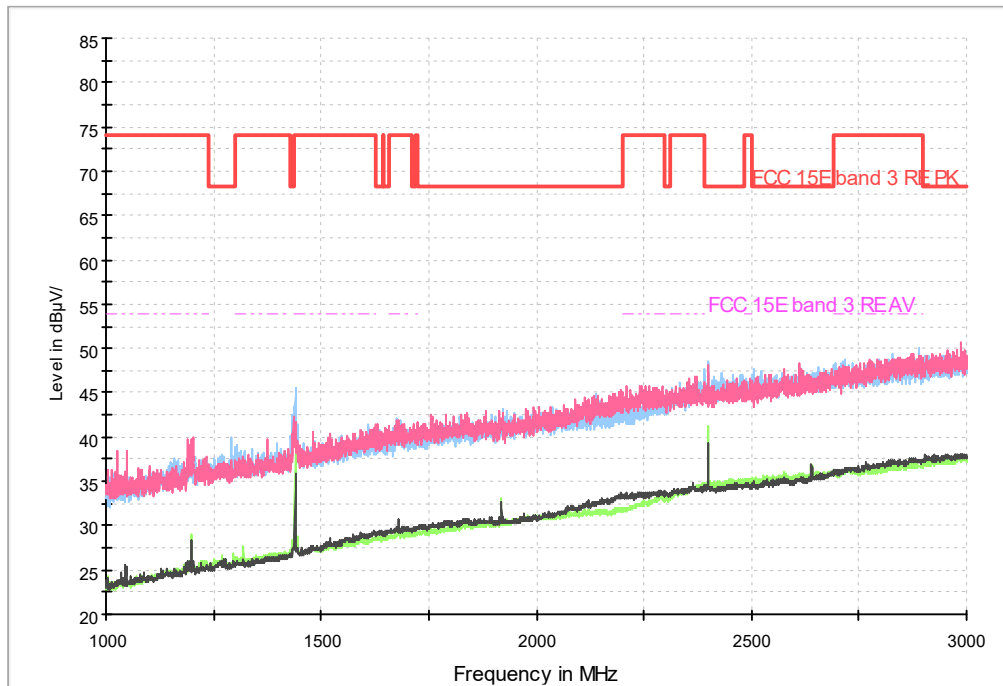


Fig.70 Radiated emission: 802.11n,Ch157, 1GHz-3GHz

RE 3GHz-18GHz

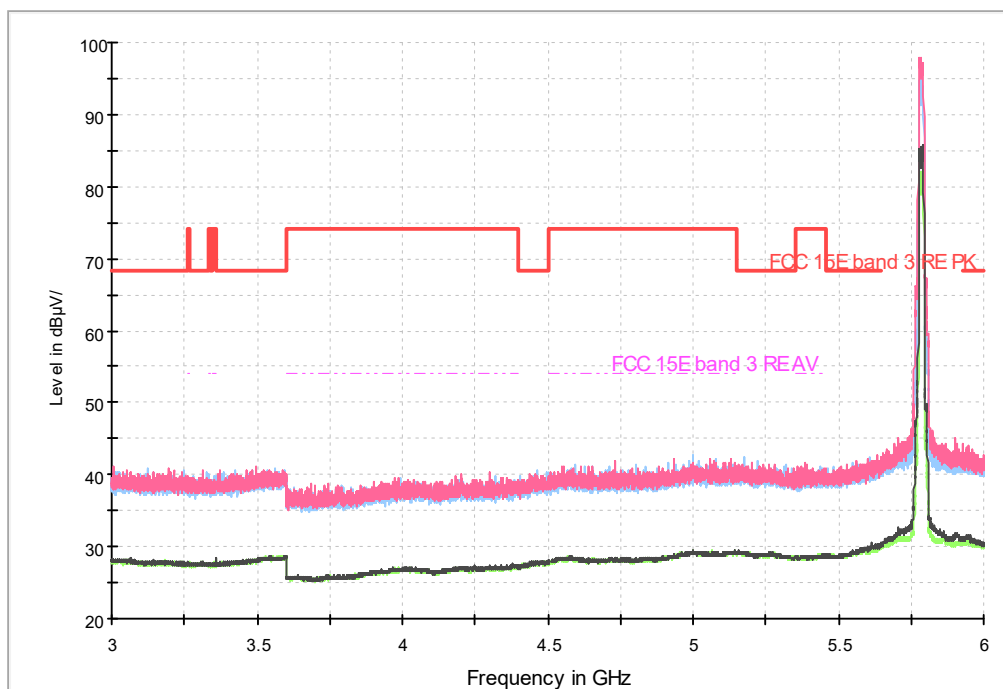


Fig.71 Radiated emission: 802.11n,Ch157, 3GHz-6GHz

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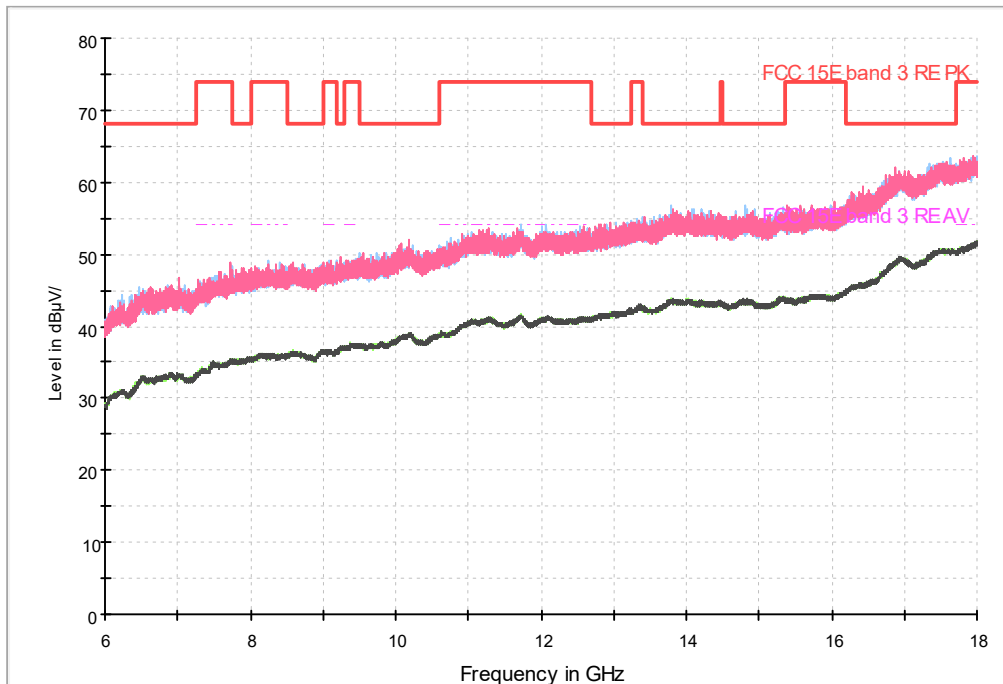


Fig.72 Radiated emission: 802.11n,Ch157, 6GHz-18GHz

RE 1GHz-3GHz

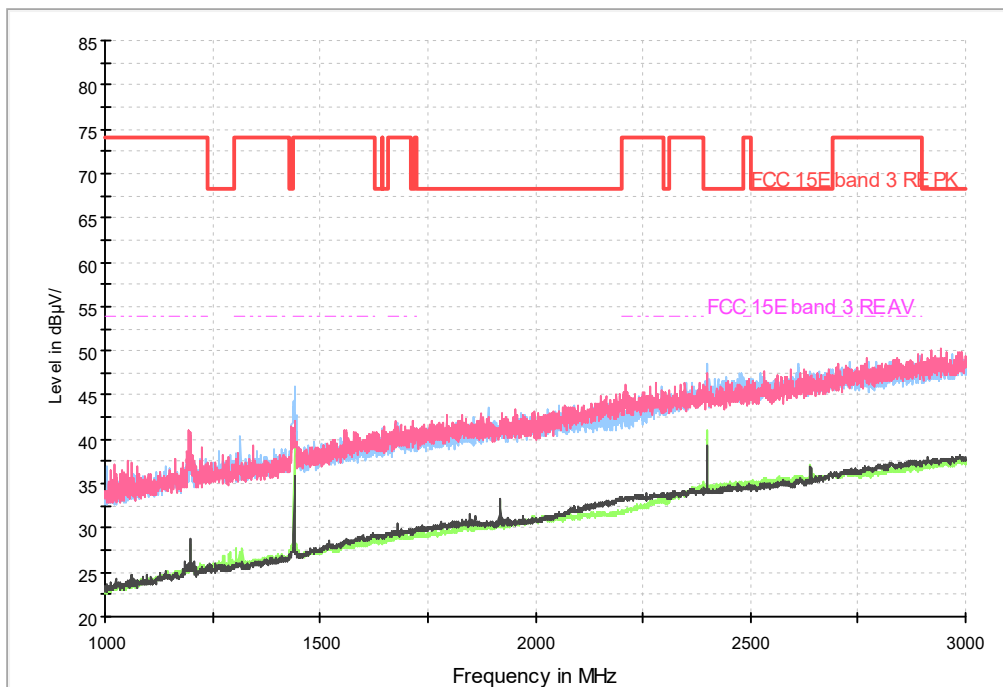


Fig.73 Radiated emission: 802.11n,Ch165, 1GHz-3GHz

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RE 3GHz-18GHz

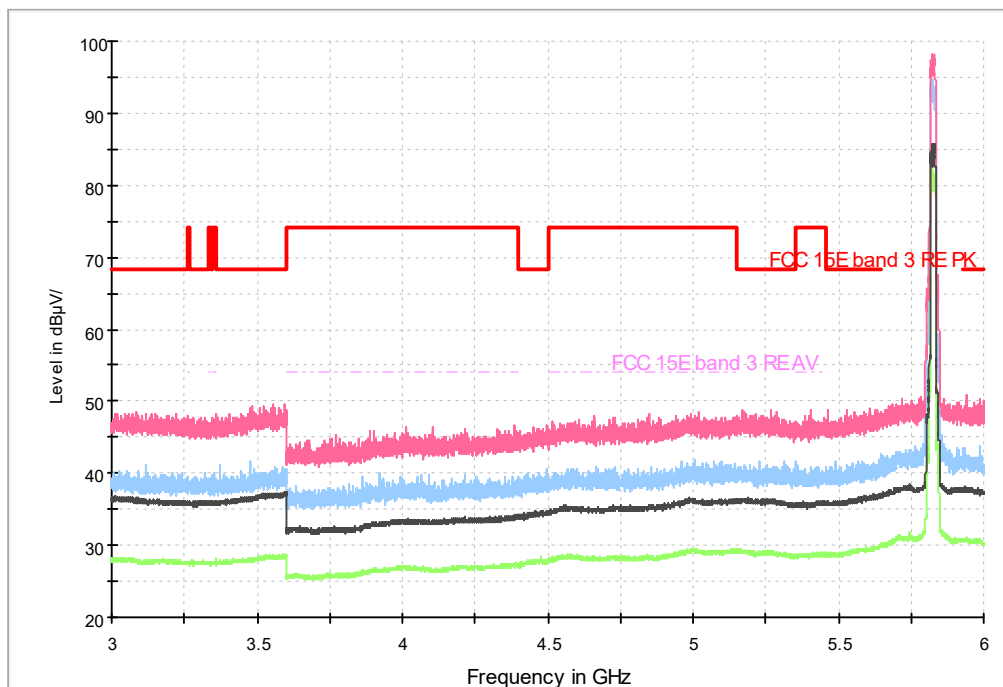


Fig.74 Radiated emission: 802.11n,Ch165, 3GHz-6GHz

5G WIFI BAND 3 RE 6GHz-18GHz

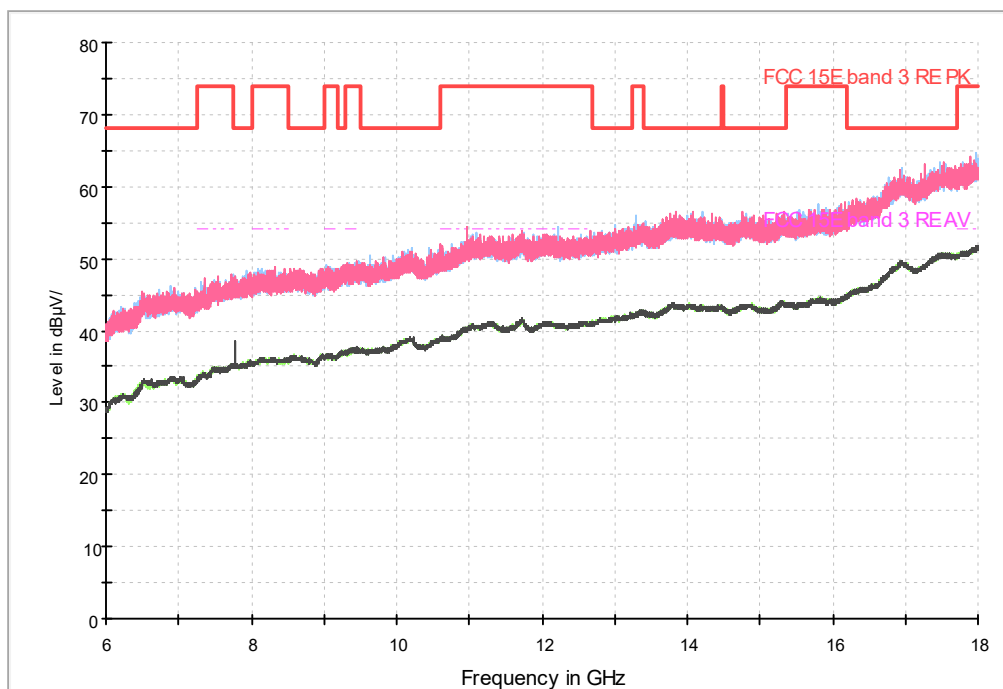


Fig.75 Radiated emission: 802.11n,Ch165, 6GHz-18GHz

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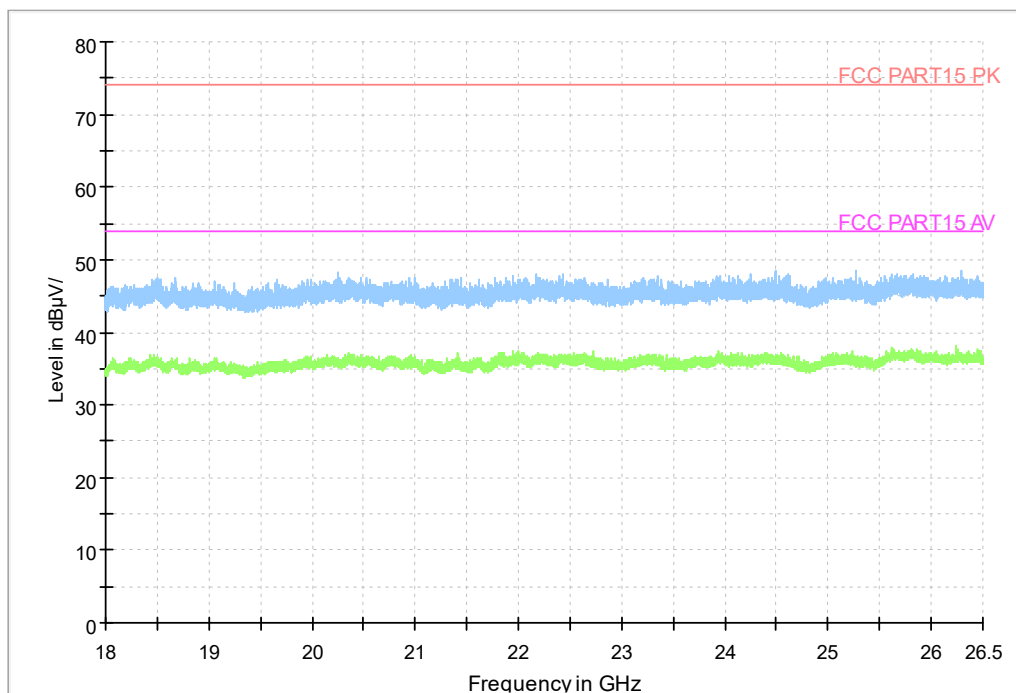


Fig.76 Radiated emission: 18 GHz – 26.5GHz

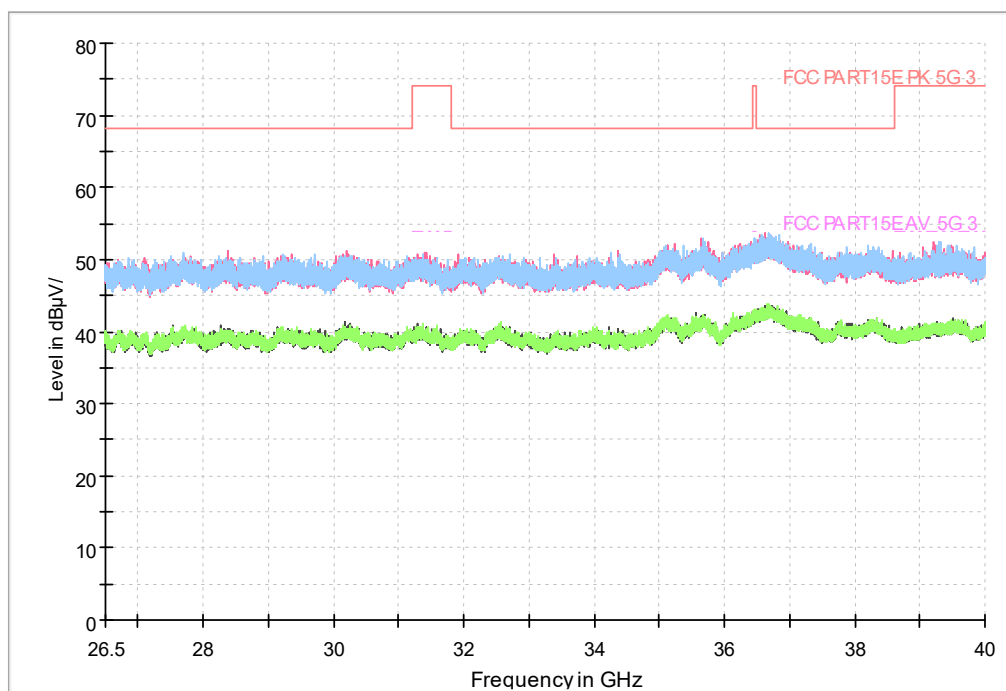


Fig.77 Radiated emission: 26.5 GHz – 40GHz

### Test photo

See the Pic1- Pic 2 in document" PA32 \_Wifi\_BT\_Test Setup Photos".

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### 5.7 Power line Conducted Emissions

<b>Specifications:</b>	15.207
<b>DUT Serial Number:</b>	866884045658127
<b>Test conditions:</b>	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
<b>Test Results:</b>	Pass

#### Limit

The EUT meets the requirement of having a peak to average ratio of less than 13dB.

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolt (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

#### Measurement Uncertainty:

Frequency Range	Uncertainty
150 kHz to 30 MHz	1.83

#### Limits of the conducted disturbance at the AC mains ports:

Frequency range	Limit(Quasi-peak)	Limit(Average)
0.15 MHz to 0.5 MHz	66 dBμV – 56 dBμV	56 dBμV – 46 dBμV
>0.5 MHz to 5MHz	56 dBμV	46 dBμV
>5 MHz to 30 MHz	60 dBμV	50 dBμV
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

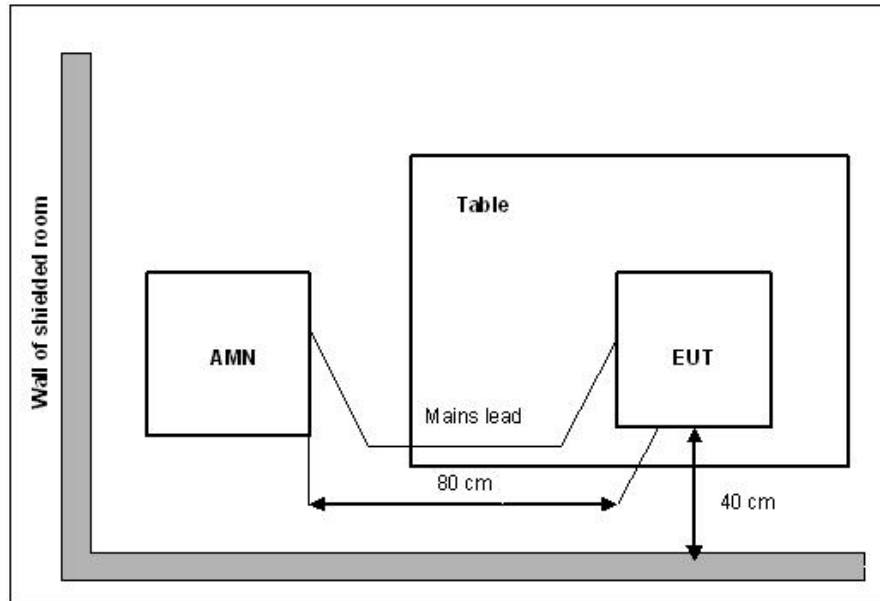
#### Test Setup

The EUT was placed in a shielding room. The WLAN TESTER was used to set the TX channel and power level. The ac adapter output is connected to Receiver through an AMN (Artificial Mains Network).

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### Test Procedure

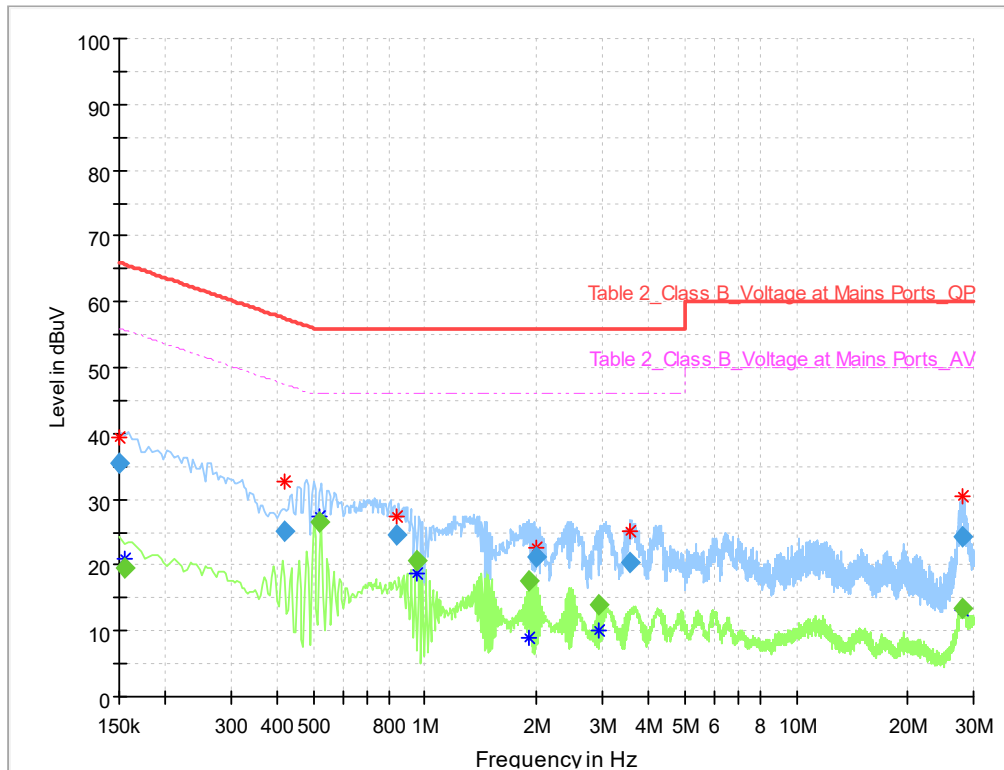
1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.

The measurement is made according to ANSI C63.10-2013.



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### Test Result:



### Final\_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit dBuV	Margin (dB)	Meas. Time (ms)	Line	Filter	Corr. (dB)
0.150000	35.41	---	66.00	30.59	1000.0	N	ON	10.9
0.154500	---	19.67	55.75	36.08	1000.0	N	ON	10.6
0.416228	25.18	---	57.52	32.34	1000.0	L1	ON	10.0
0.518625	---	26.58	46.00	19.42	1000.0	N	ON	10.1
0.841698	24.63	---	56.00	31.37	1000.0	N	ON	9.9
0.952544	---	20.78	46.00	25.22	1000.0	N	ON	9.9
1.904779	---	17.60	46.00	28.40	1000.0	N	ON	9.8
2.003779	21.30	---	56.00	34.70	1000.0	N	ON	9.8
2.941412	---	13.96	46.00	32.04	1000.0	N	ON	9.8
3.556191	20.40	---	56.00	35.60	1000.0	N	ON	9.8
27.989184	24.17	---	60.00	35.83	1000.0	N	ON	10.3
28.012897	---	13.40	50.00	36.60	1000.0	L1	ON	10.2

### Test photo

See the Pic3 in document" PA32 \_Wifi Test Setup Photos".

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**5.8 FREQUENCY STABILITY**

<b>Specifications:</b>	FCC Part 15. 407 (g)
<b>DUT Serial Number:</b>	866884045658127
<b>Test conditions:</b>	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
<b>Test Results:</b>	Pass

**Limit Level Construction:**

According to §15.407(g), manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

**Measurement Uncertainty:**

Item	Uncertainty
Expanded Uncertainty	18Hz (k=2)

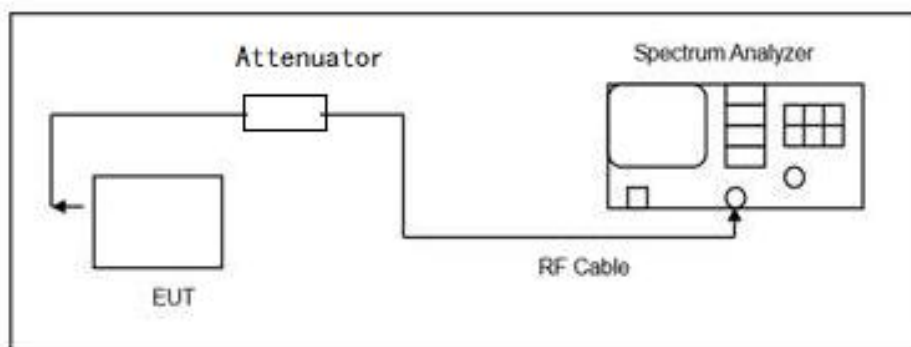
**Test Procedure:**

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -20℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

**Note: --**

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Test block diagram:



Test Result:

Measurement Results:

Voltage vs. Frequency Stability

5150-5250MHz:

Voltage	Measurement Frequency (MHz)
(V)	5180.0000
4.2	5179.9733
3.8	5179.9817
3.5	5179.9862
Max. Deviation (MHz)	0.027
Max. Deviation (ppm)	5.15

5725-5850MHz:

Voltage	Measurement Frequency (MHz)
(V)	5745.0000
4.2	5744.9768
3.8	5744.9872
3.5	5744.9782
Max. Deviation (MHz)	0.023
Max. Deviation (ppm)	4.04

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**Report No.:I21W00017-WLAN\_5G\_Rev1****Temperature vs. Frequency Stability**

5150-5250MHz:

<b>Voltage</b>	<b>Measurement Frequency (MHz)</b>
(°C)	5180.0000
-20	5179.9821
-10	5179.9839
0	5179.9746
10	5179.9844
20	5179.9621
30	5179.9740
40	5179.9712
50	5179.9682
Max. Deviation (MHz)	0.038
Max. Deviation (ppm)	7.32

5725-5850MHz:

<b>Voltage</b>	<b>Measurement Frequency (MHz)</b>
(°C)	5745.0000
-20	5744.9873
-10	5744.9815
0	5744.9902
10	5744.9807
20	5744.9507
30	5744.9688
40	5744.9792
50	5744.9742
Max. Deviation (MHz)	0.049
Max. Deviation (ppm)	8.58

**Conclusion: PASS**

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## **Annex A EUT Photos**

See the document” PA32 -External Photos”.

See the document” PA32 -Internal Photos”.

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**ANNEX B Deviations from Prescribed Test Methods**

No deviation from Prescribed Test Methods.

**\*\*\*End Of Report\*\*\***