

4.6 Out-of-band Emissions

Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section (b)(3) of §15.247 and RSS 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in §15.209(a) and RSS-Gen are not required.

Test Procedure

Connect the transmitter output to spectrum analyzer using a low loss RF cable, and set the spectrum analyzer to RBW=100 kHz, VBW= 300 kHz, peak detector , and max hold. Measurements utilizing these setting are made of the in-band reference level, bandedge and out-of-band emissions.

Test Configuration



Test Results

Temperature	22.8°C	Humidity	56%
Test Engineer	Moon Tan	Configurations	WLAN2.4G

Remark: The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandage measurement data.

Test plot as follows:

Ant1

802.11b CH01



802.11b CH06



Reference



30MHz-3GHz



30MHz-3GHz



3GHz-25GHz

3GHz-25GHz

802.11b CH11



802.11g CH01



Reference



30MHz-3GHz



30MHz-3GHz



3GHz-25GHz

3GHz-25GHz

802.11g CH06



802.11g CH11



Reference



30MHz-3GHz



30MHz-3GHz



3GHz-25GHz

3GHz-25GHz

802.11n(HT20) CH01



802.11n(HT20) CH06



Reference



30MHz-3GHz



30MHz-3GHz



3GHz-25GHz

3GHz-25GHz

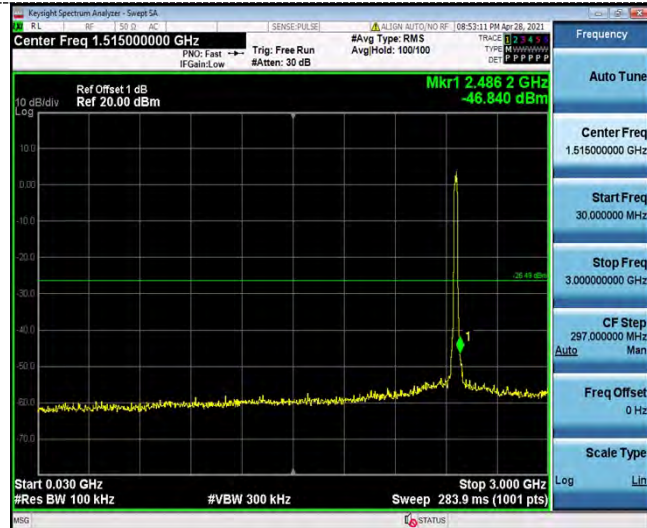
802.11n(HT20) CH11



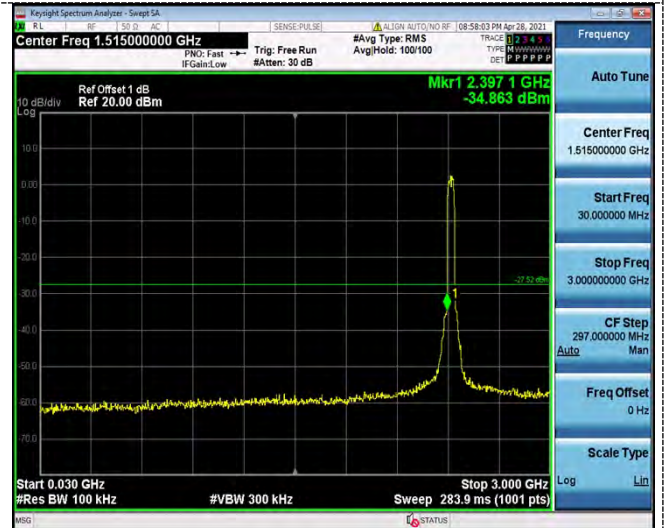
802.11n(HT40) CH03



Reference



Reference



30MHz-3GHz



30MHz-3GHz



3GHz-25GHz

3GHz-25GHz

802.11n(HT40) CH06



802.11n(HT40) CH09



Reference



Reference



30MHz-3GHz



30MHz-3GHz



3GHz-25GHz

3GHz-25GHz

Ant2

802.11b CH01



802.11b CH06



Reference



30MHz-3GHz



30MHz-3GHz



3GHz-25GHz

3GHz-25GHz

802.11b CH11



802.11g CH01



Reference



30MHz-3GHz



30MHz-3GHz



3GHz-25GHz

3GHz-25GHz

802.11g CH06



802.11g CH11



Reference



30MHz-3GHz



30MHz-3GHz



3GHz-25GHz

3GHz-25GHz

802.11n(HT20) CH01



802.11n(HT20) CH06



Reference



30MHz-3GHz



30MHz-3GHz



3GHz-25GHz

3GHz-25GHz

802.11n(HT20) CH11



802.11n(HT40) CH03



Reference



Reference



30MHz-3GHz



30MHz-3GHz



3GHz-25GHz

3GHz-25GHz

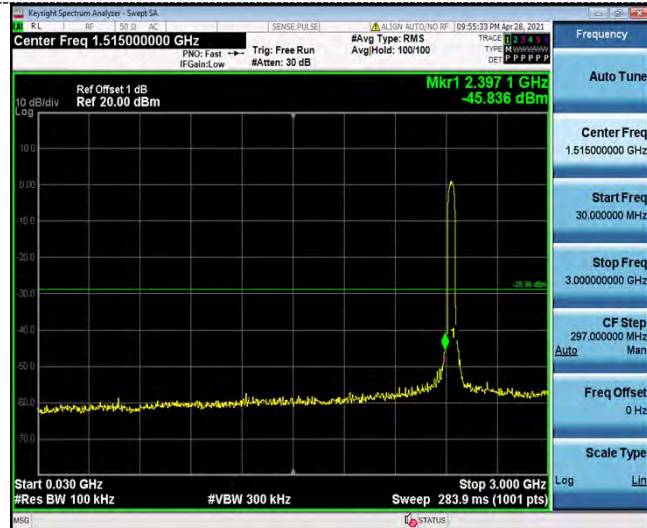
802.11n(HT40) CH06



802.11n(HT40) CH09



Reference



Reference



30MHz-3GHz



30MHz-3GHz

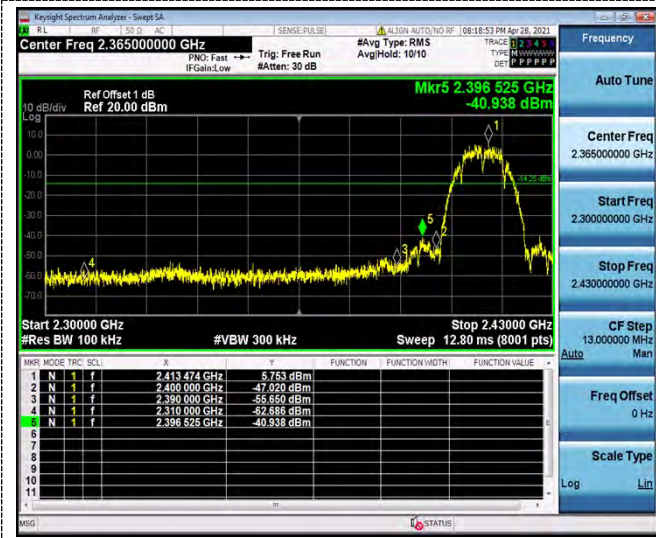


3GHz-25GHz

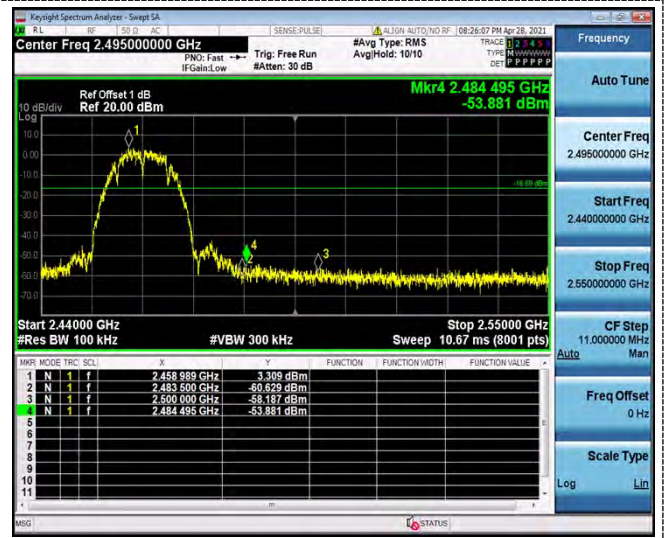
3GHz-25GHz

Band-edge Measurements for RF Conducted Emissions at antenna 1:

802.11b

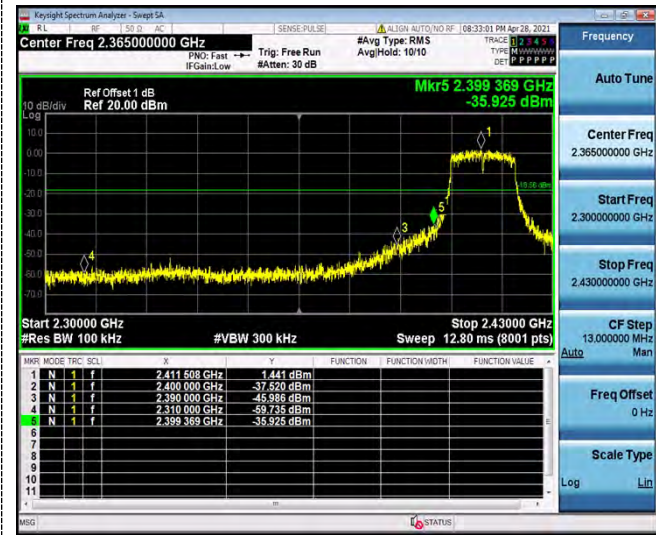


Left bandedge

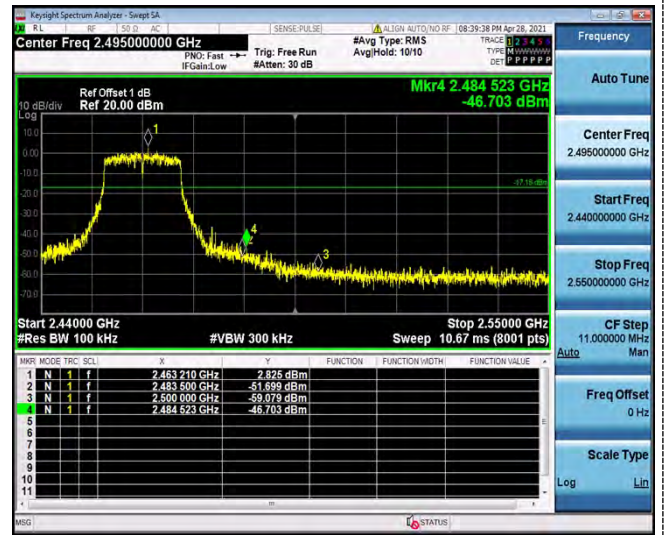


Right bandedge

802.11g

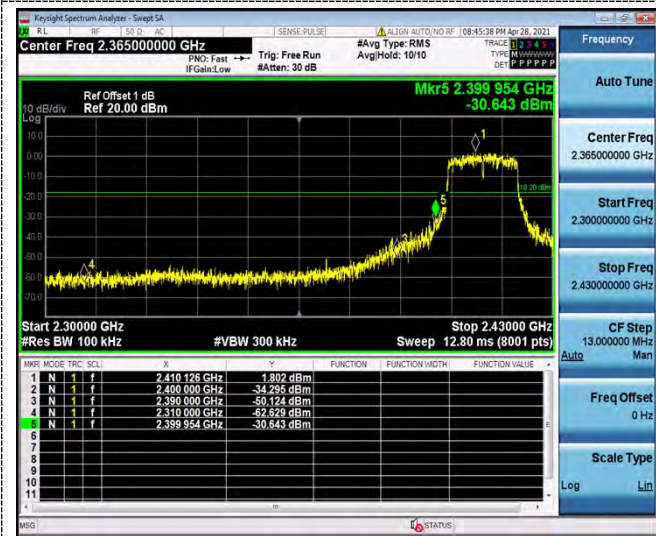


Left bandedge

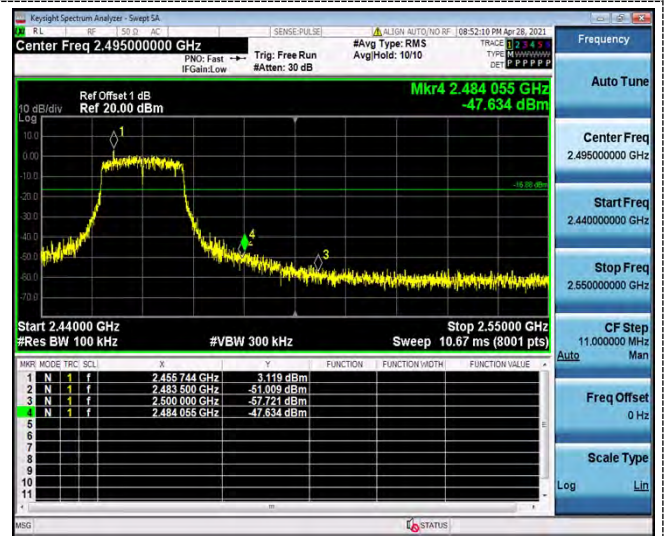


Right bandedge

802.11n(HT20)

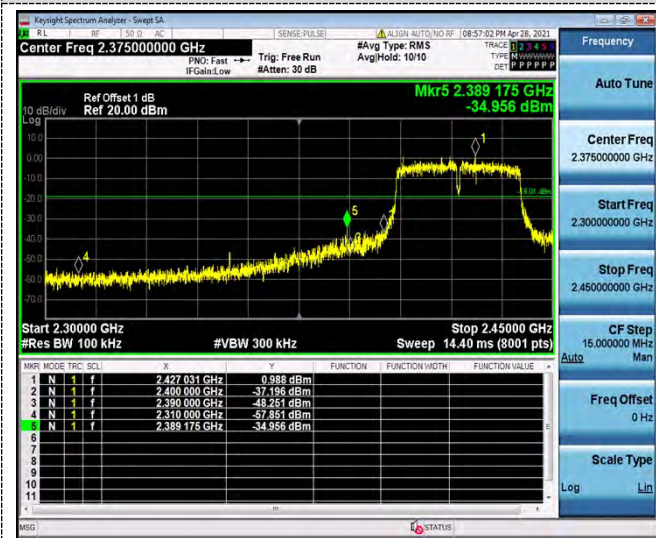


Left bandedge

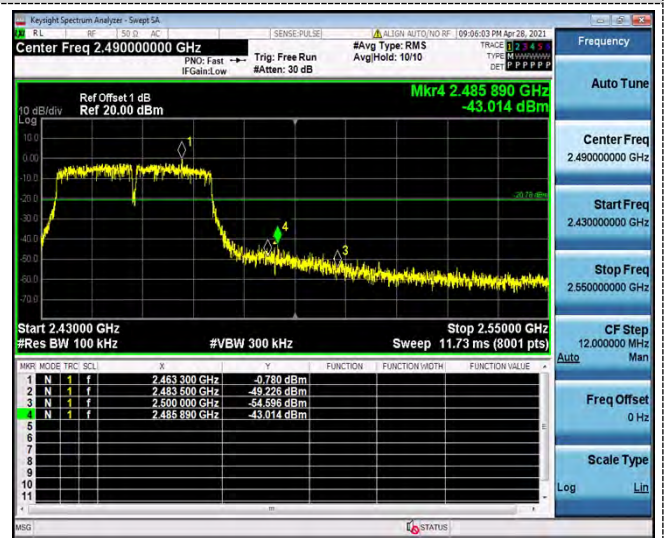


Right bandedge

802.11n(HT40)



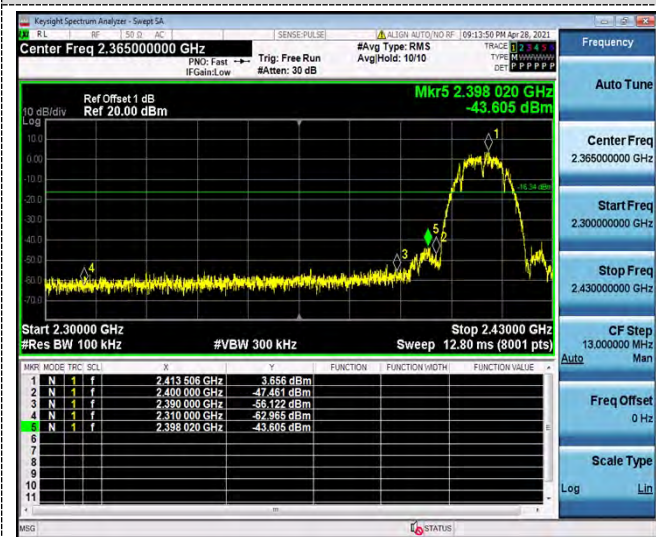
Left bandedge



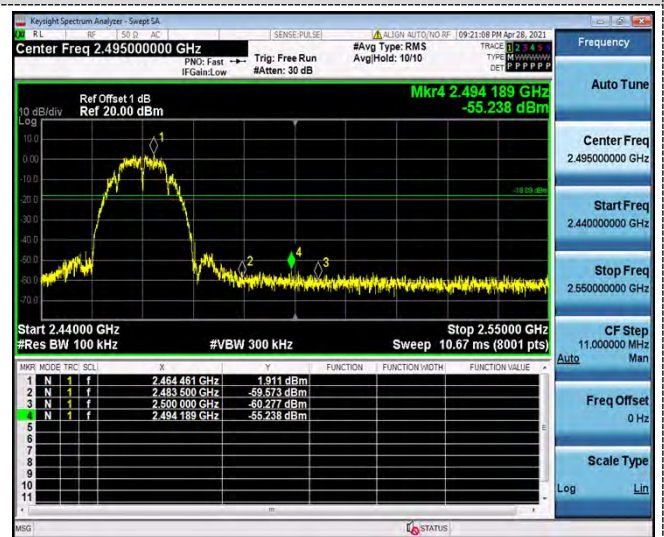
Right bandedge

Band-edge Measurements for RF Conducted Emissions at antenna 2:

802.11b

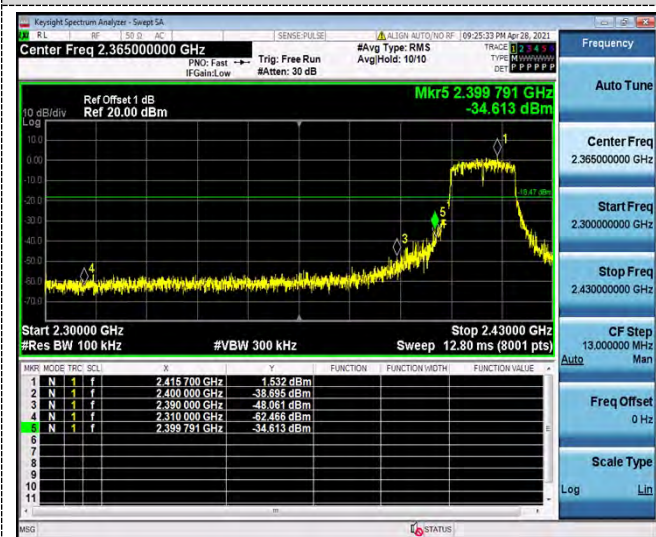


Left bandedge

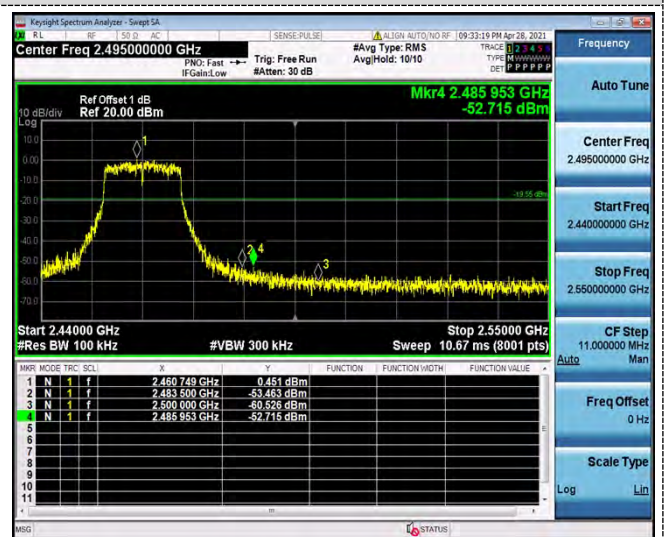


Right bandedge

802.11g

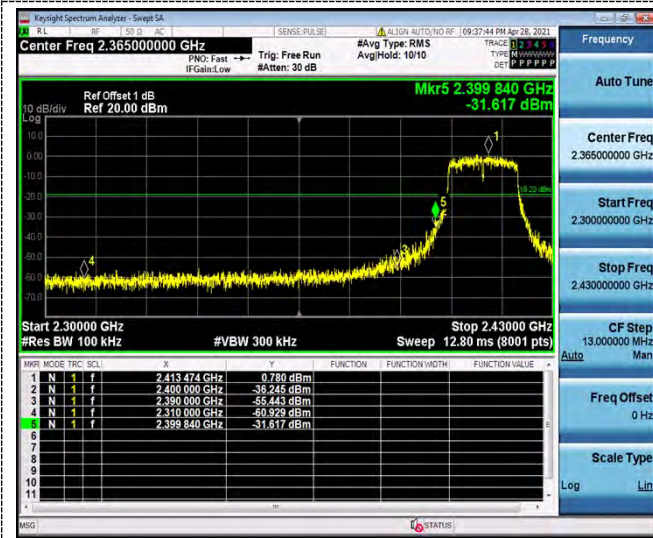


Left bandedge

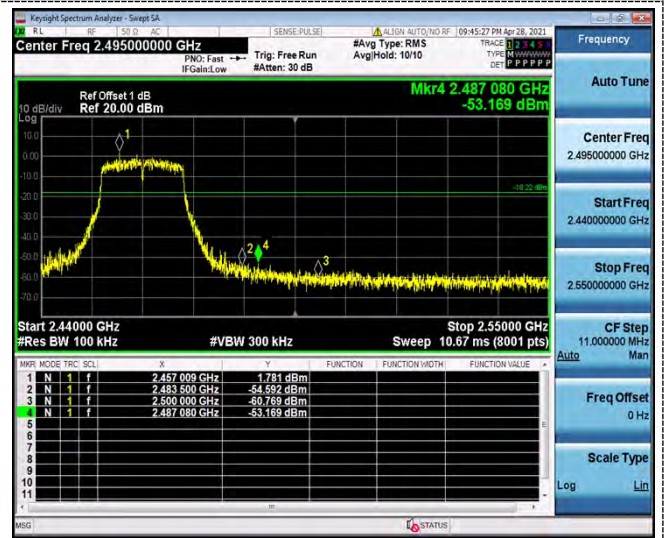


Right bandedge

802.11n(HT20)

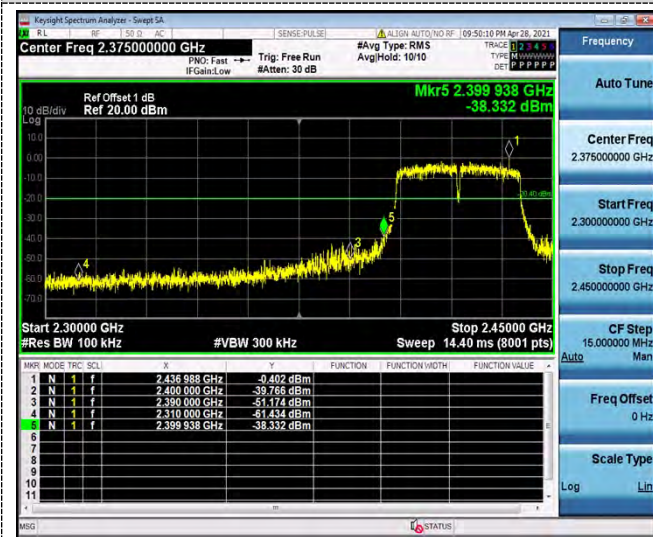


Left bandedge

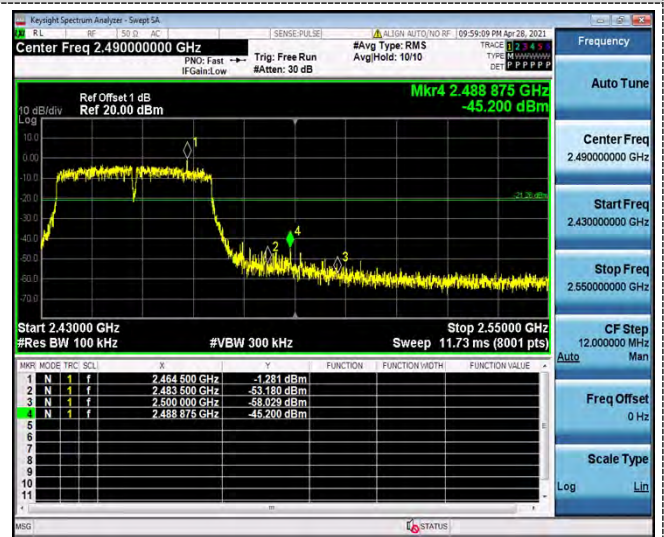


Right bandedge

802.11n(HT40)



Left bandedge



Right bandedge

4.7 Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited

FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1) (I):

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

Test Result:

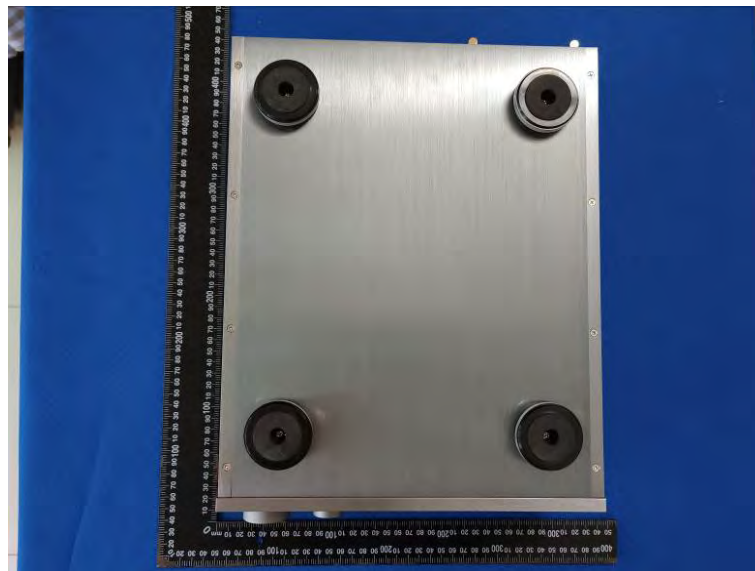
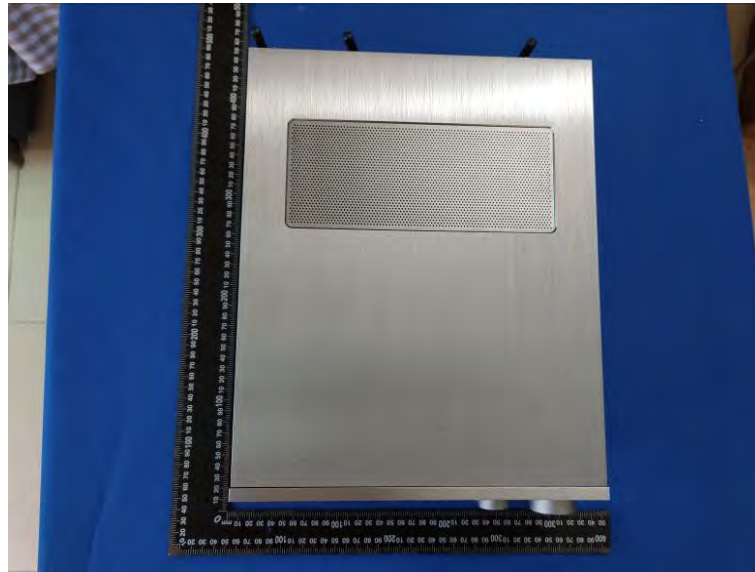
The maximum gain of antenna was 3dBi for 2.4GHz WIFI.

5 Test Setup Photos of the EUT



6 Photos of the EUT

External photos



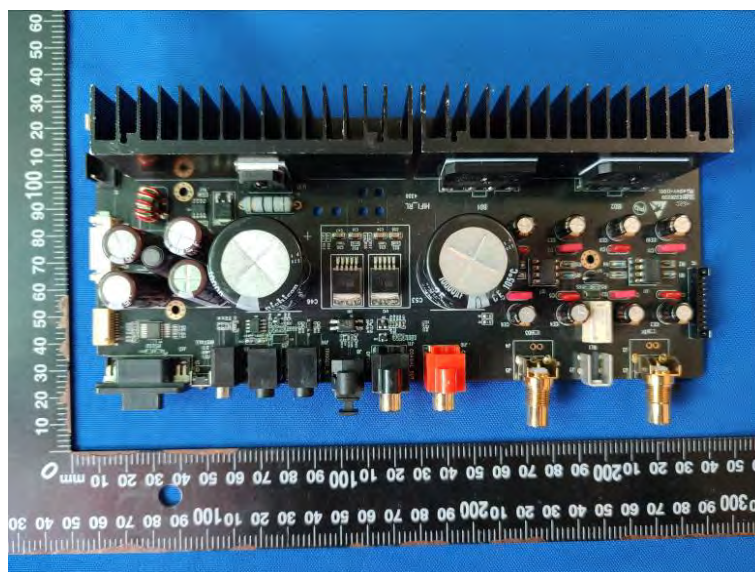


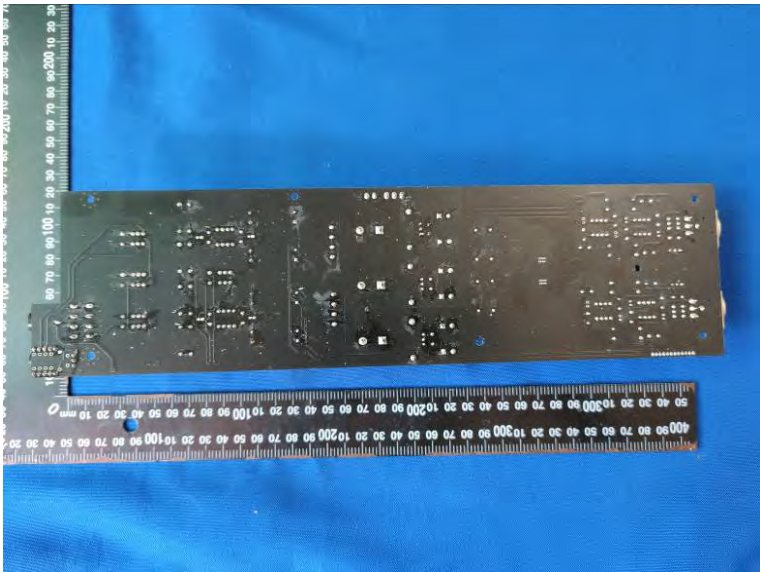
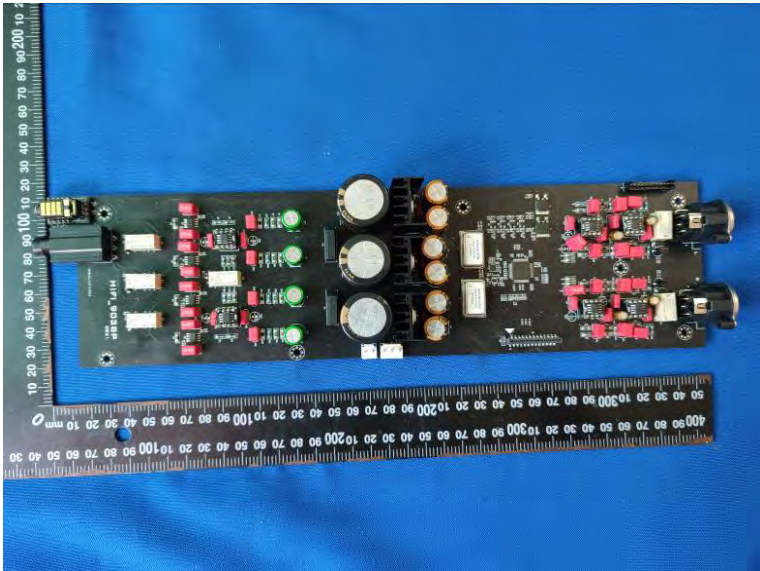
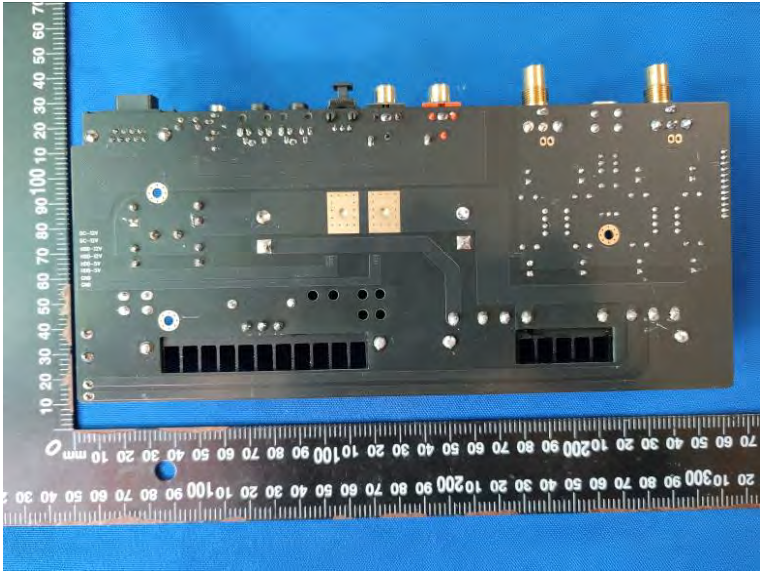
BT Antenna

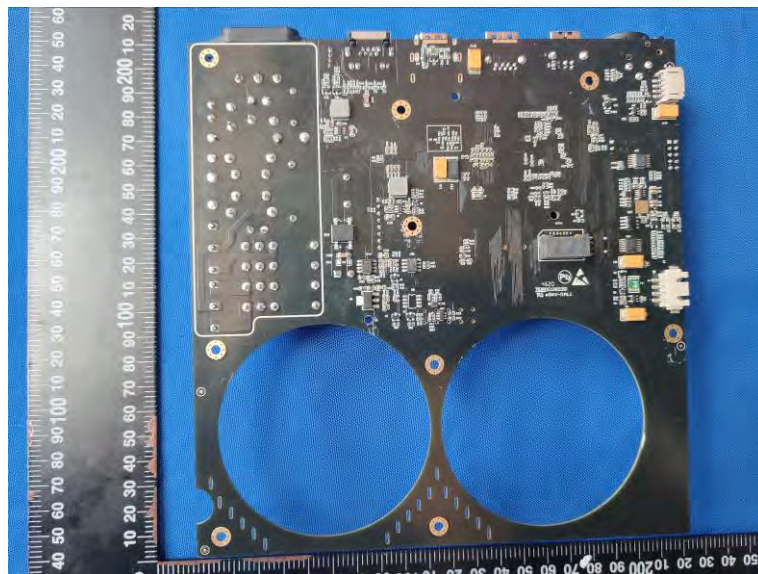
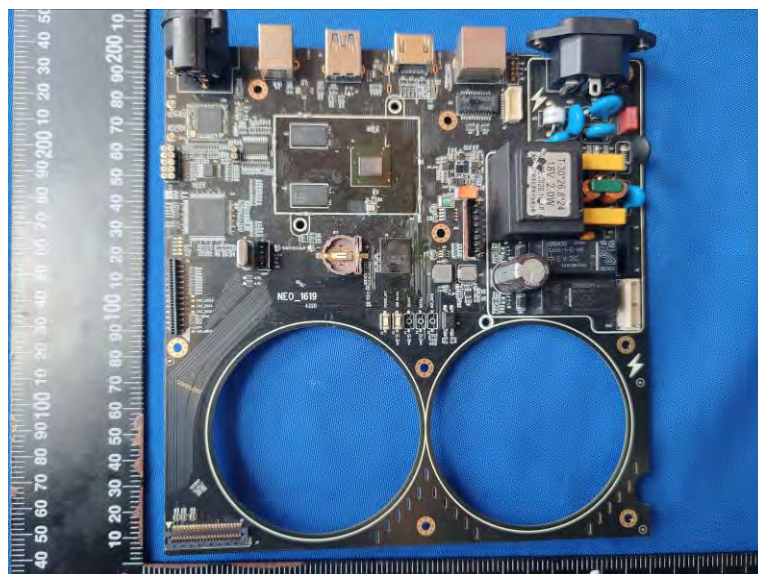
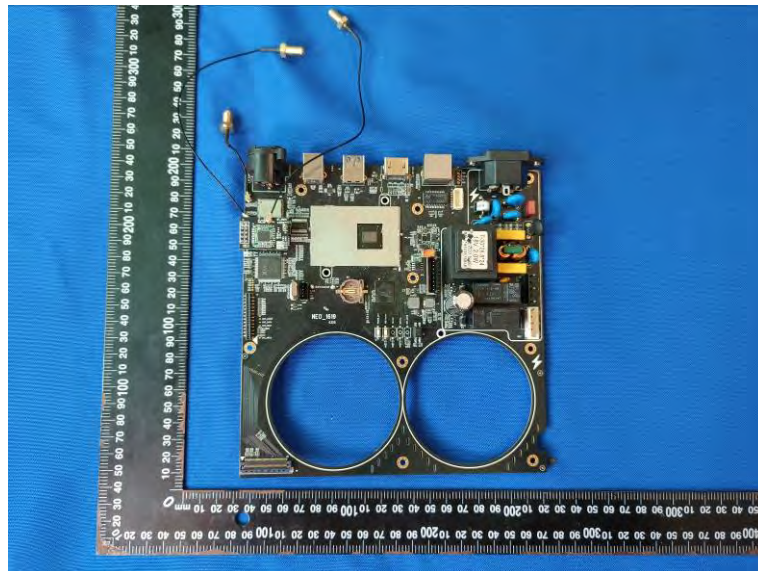
WIFI Antenna

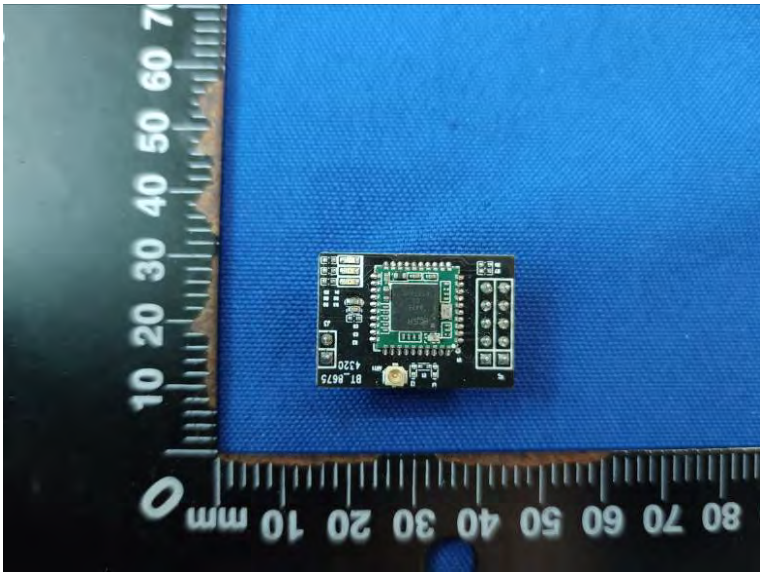
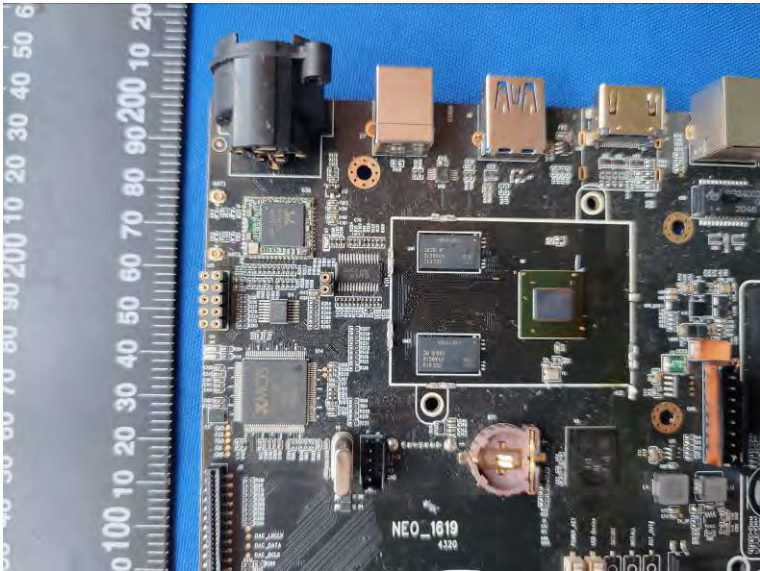
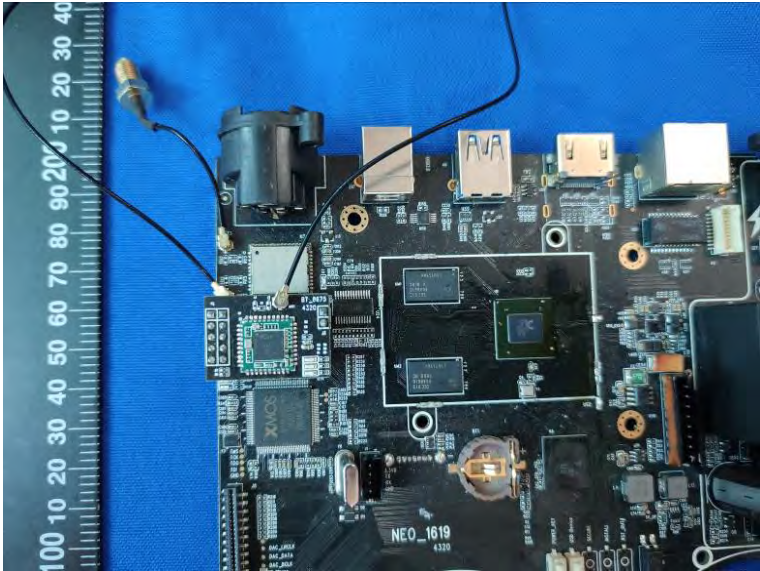


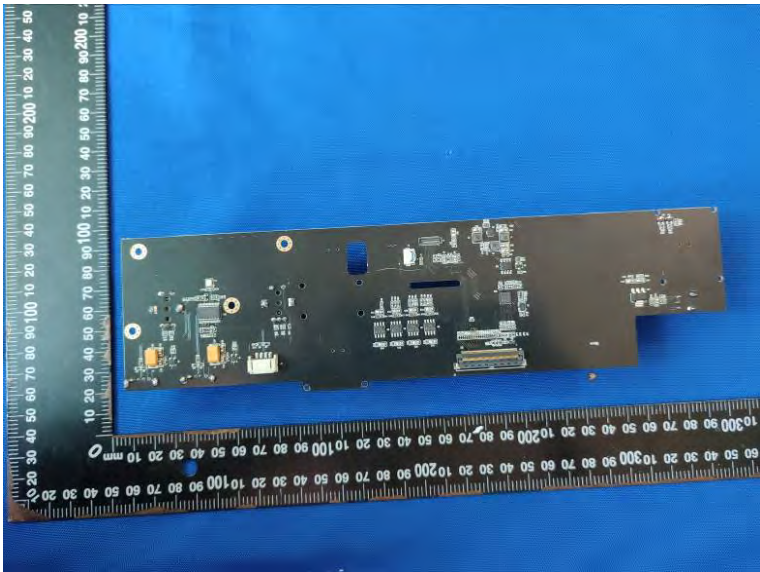
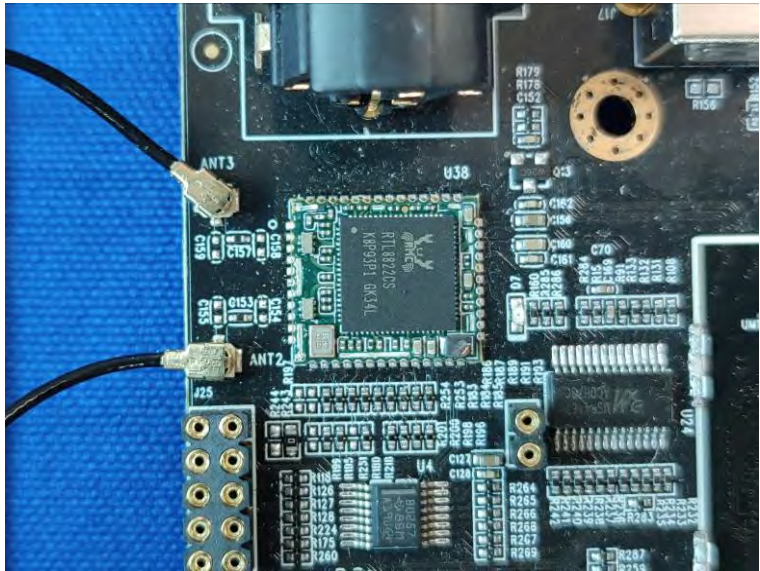
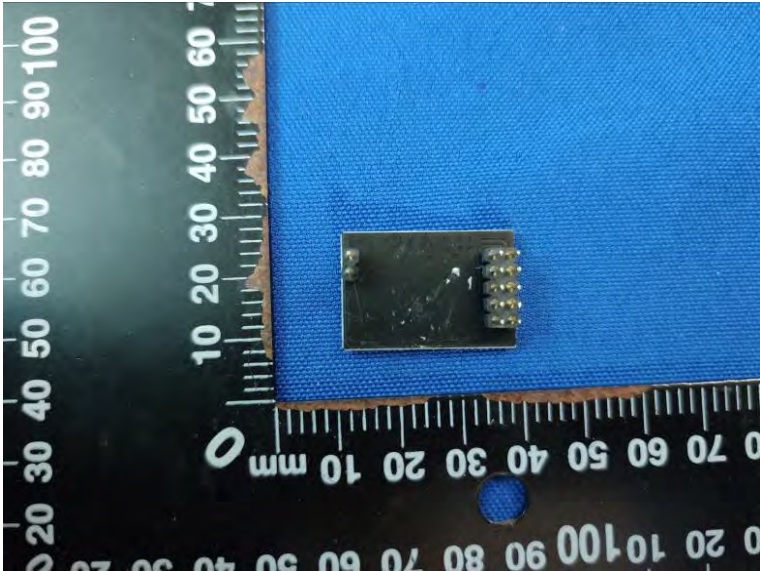
Internal Photos

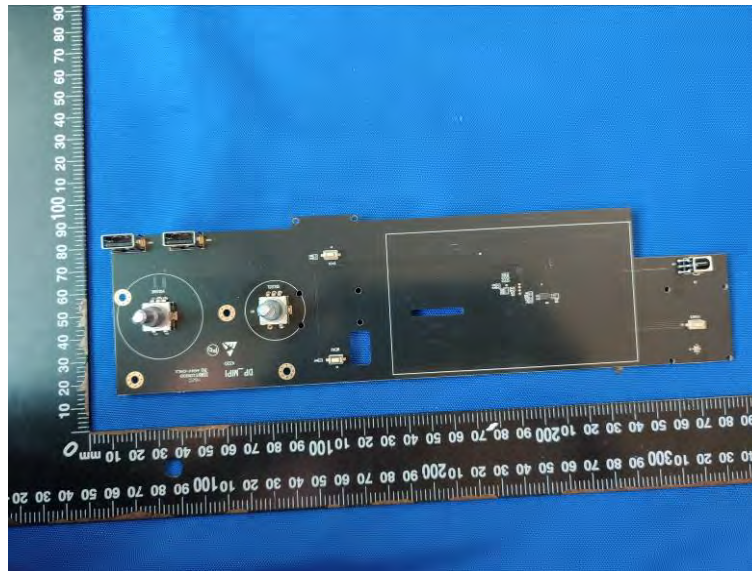












***** End of Report *****