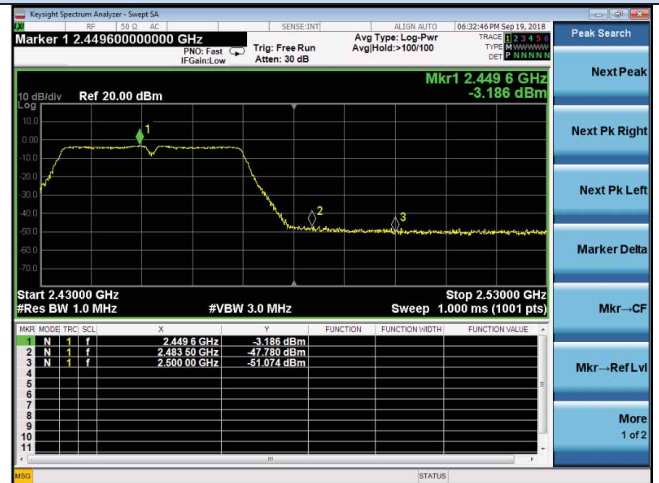


Band-edge measurements for radiated emissions
Antenna 2

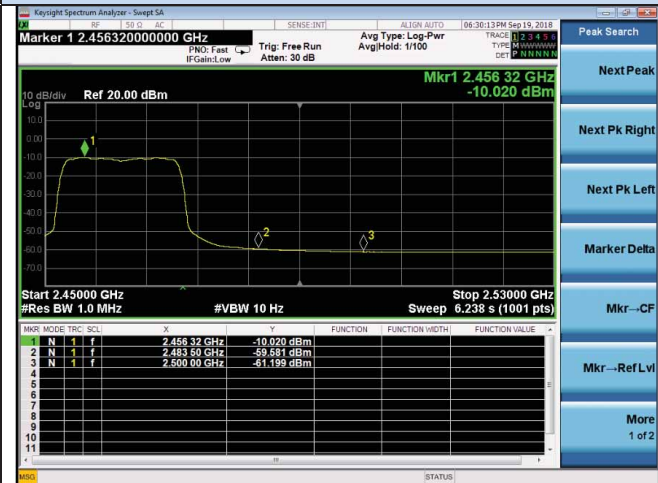
IEEE 802.11n HT20



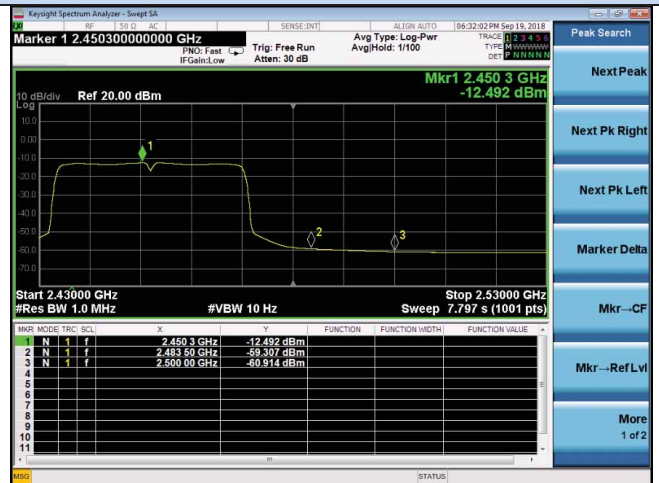
IEEE 802.11n HT40



Channel 11 / 2462 MHz – Peak



Channel 9 / 2452 MHz – Peak

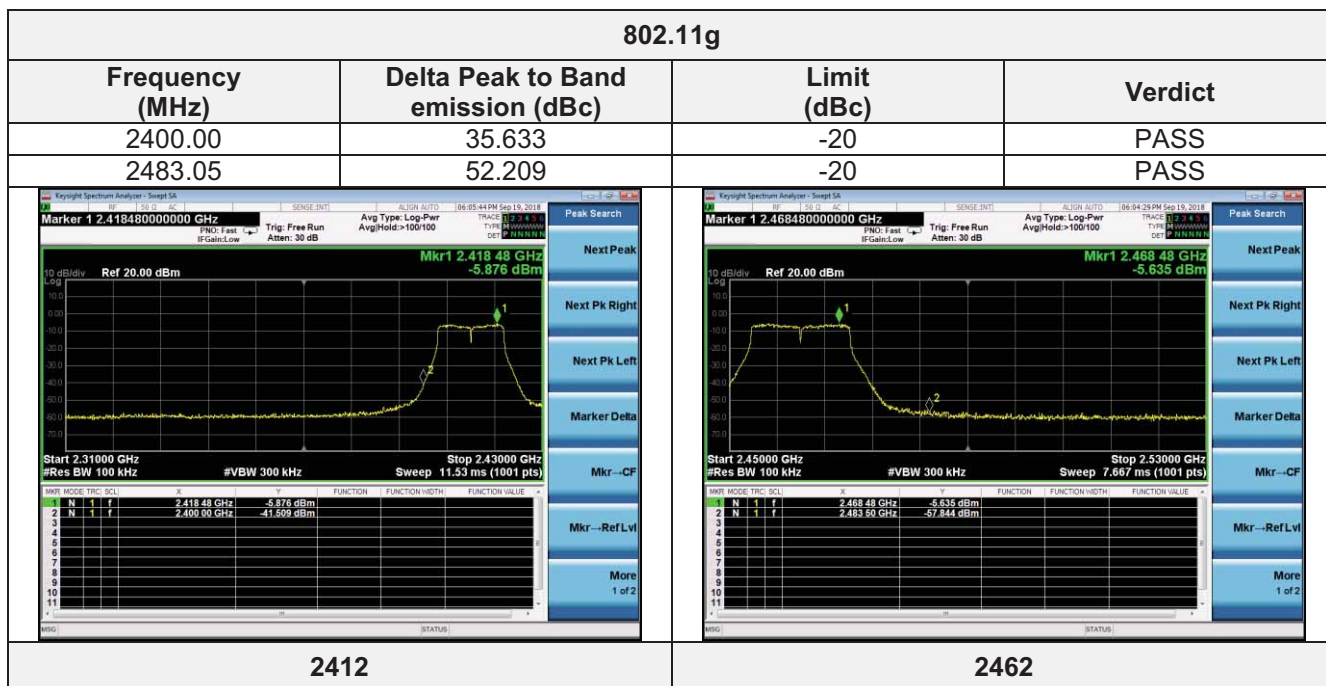
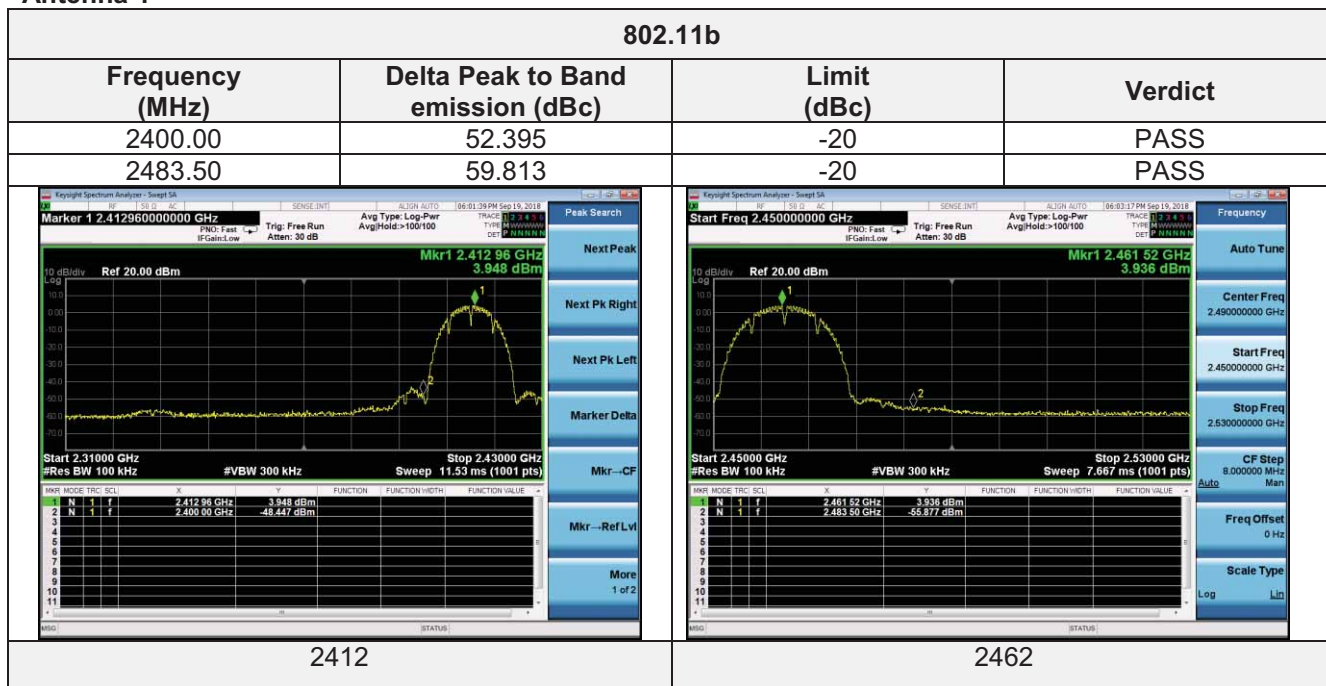


Channel 11 / 2462 MHz – Average

Channel 9 / 2452 MHz – Average

4.6.2 For Conducted Bandedge Measurement

Antenna 1



802.11n HT20			
Frequency (MHz)	Delta Peak to Band emission (dBc)	Limit (dBc)	Verdict
2400.00	35.04	-20	PASS
2483.50	50.03	-20	PASS

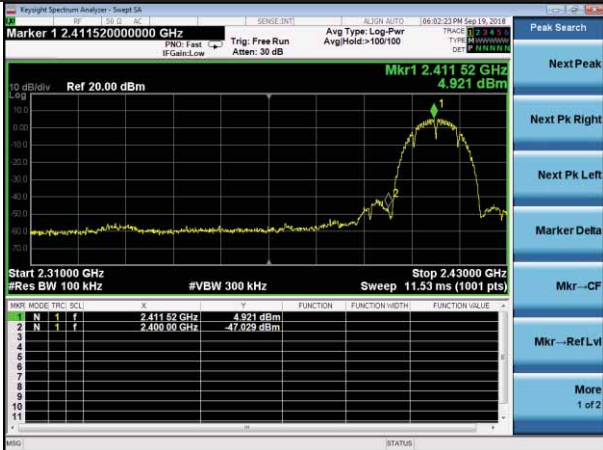

	2412
	2462

802.11n HT40			
Frequency (MHz)	Delta Peak to Band emission (dBc)	Limit (dBc)	Verdict
2400.00	31.072	-20	PASS
2483.50	46.659	-20	PASS

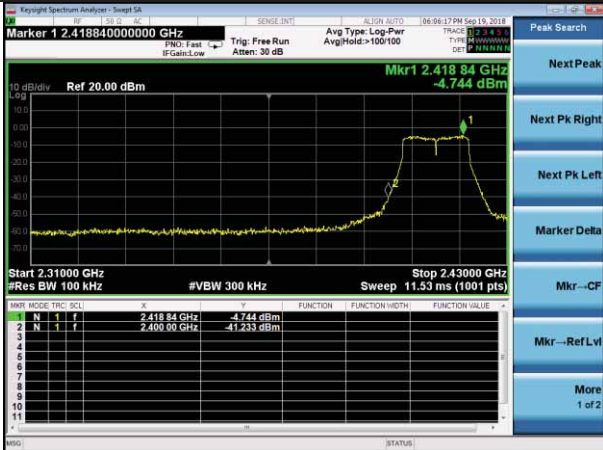
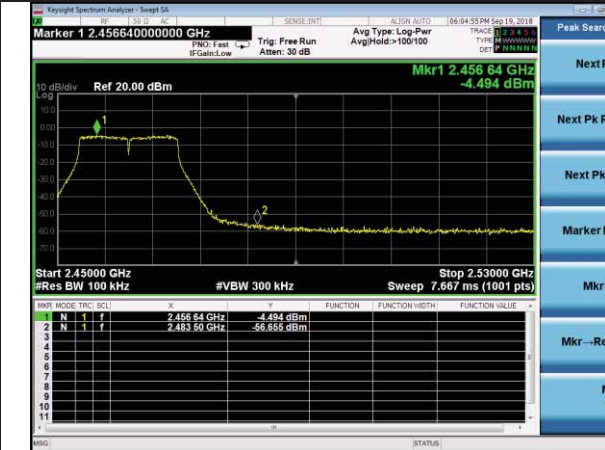
	2422
	2452

Antenna 2

802.11b			
Frequency (MHz)	Delta Peak to Band emission (dBc)	Limit (dBc)	Verdict
2400.00	51.95	-20	PASS
2483.50	61.526	-20	PASS

			
2412		2462	

802.11g			
Frequency (MHz)	Delta Peak to Band emission (dBc)	Limit (dBc)	Verdict
2400.00	36.489	-20	PASS
2483.05	52.161	-20	PASS

			
2412		2462	

802.11n HT20			
Frequency (MHz)	Delta Peak to Band emission (dBc)	Limit (dBc)	Verdict
2400.00	35.591	-20	PASS
2483.50	52.478	-20	PASS

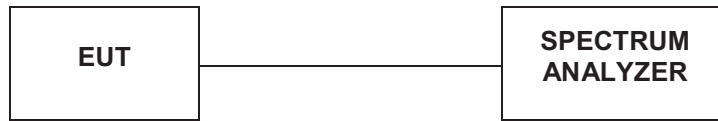
2412	2462
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802.11n HT40			
Frequency (MHz)	Delta Peak to Band emission (dBc)	Limit (dBc)	Verdict
2400.00	31.499	-20	PASS
2483.50	47.593	-20	PASS

2422	2452
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4.7. Spurious RF Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2013, For 9KHz-150kHz, Set RBW=1kHz and VBW= 3KHz;For 150KHz-10MHz, Set RBW=10kHz and VBW= 30KHz;For 10MHz-25GHz ,Set RBW=100kHz and VBW= 300KHz in order to measure the peak field strength, and measure frequency range from 9KHz to 25GHz.




LIMIT


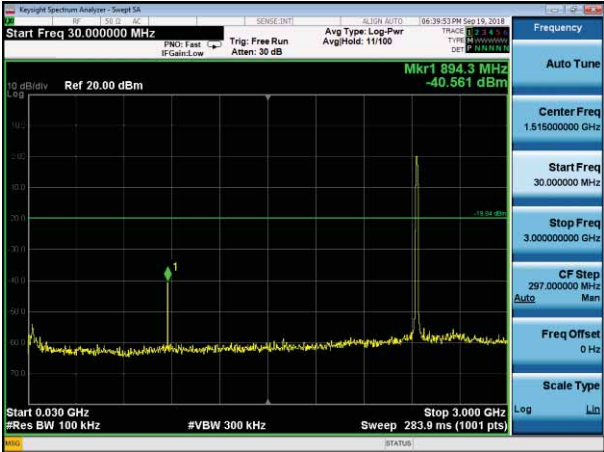

1. Below -20dB of the highest emission level in operating band.
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.
3. For below 30MHz, For 9KHz-150kHz, 150K-10MHz, We use the RBW 1KHz, 10KHz, So the limit need to calculated by " $10\lg(BW1/BW2)$ ". for example For 9KHz-150kHz, RBW 1KHz, The Limit= the highest emission level-20-10log(100/1)= the highest emission level-40.




TEST RESULTS

Remark: The measurement frequency range is from 9KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and band edge measurement data. and record the worst data in the report.




Antenna 1

Test Mode:	802.11b	Test channel :	01
			
Channel 01			
			
30MHz ~3GHz			
			
3GHz~25GHz			

Test Mode:	802.11b	Test channel :	06
			
Channel 06			
			
30MHz ~3GHz			
			
3GHz~25GHz			

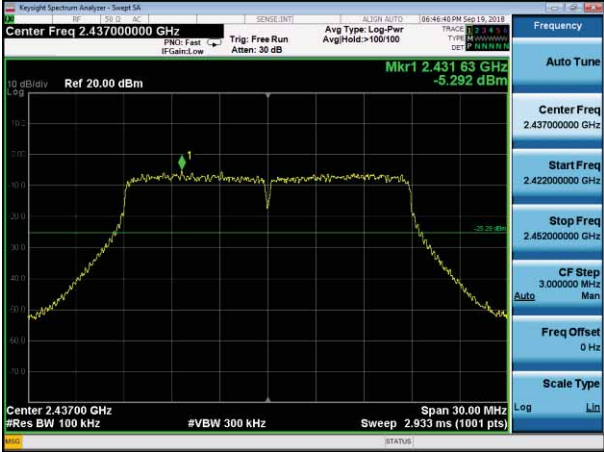
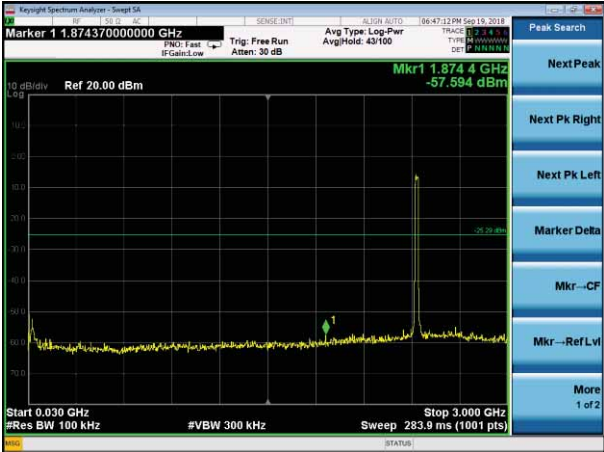

Test Mode:	802.11b	Test channel :	11
			
Channel 11			
			
30MHz ~3GHz			
			
3GHz~25GHz			

Test Mode:	802.11g	Test channel :	01
<div><div><div><div>KeySight Spectrum Analyzer - Sweep SA</div><div><div>Center Freq 2.412000000 GHz</div><div>Ref 20.00 dBm</div><div>Span 30.00 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 2.933 ms (1001 pts)</div></div><div><div>Marker 1 2.418 51 GHz</div><div>-2.873 dBm</div></div><div><div>Auto Tune</div><div>Center Freq 2.412000000 GHz</div><div>Start Freq 2.397000000 GHz</div><div>Stop Freq 2.427000000 GHz</div><div>CF Step 3.000000 MHz</div><div>Auto</div><div>Freq Offset 0 Hz</div><div>Scale Type Log</div></div></div></div><div>Channel 01</div></div>			
<div><div><div><div>KeySight Spectrum Analyzer - Sweep SA</div><div><div>Marker 1 56.730000000 MHz</div><div>Ref 20.00 dBm</div><div>Stop 3.000 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 283.9 ms (1001 pts)</div></div><div><div>Marker 1 56.7 MHz</div><div>-53.927 dBm</div></div><div><div>Peak Search</div><div>Next Peak</div><div>Next Pk Right</div><div>Next Pk Left</div><div>Marker Delta</div><div>Mkr--CF</div><div>Mkr--Ref Lvl</div><div>More 1 of 2</div></div></div></div><div>30MHz ~3GHz</div></div>			
<div><div><div><div>KeySight Spectrum Analyzer - Sweep SA</div><div><div>Marker 1 24.868000000000 GHz</div><div>Ref 20.00 dBm</div><div>Stop 25.00 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 2.103 s (1001 pts)</div></div><div><div>Marker 1 24.868 GHz</div><div>-48.542 dBm</div></div><div><div>Peak Search</div><div>Next Peak</div><div>Next Pk Right</div><div>Next Pk Left</div><div>Marker Delta</div><div>Mkr--CF</div><div>Mkr--Ref Lvl</div><div>More 1 of 2</div></div></div></div><div>3GHz~25GHz</div></div>			

Test Mode:	802.11g	Test channel :	06
			
Channel 06			
			
30MHz ~3GHz			
			
3GHz~25GHz			

Test Mode:	802.11g	Test channel :	11
<div><div><div>KeySight Spectrum Analyzer - Swept SA</div><div>Center Freq 2.462000000 GHz</div><div>Ref 20.00 dBm</div><div>Mkr1 2.468 51 GHz -2.946 dBm</div><div>10 dB/div</div><div>Center 2.46200 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 2.933 ms (1001 pts)</div><div>Frequency</div><div>Auto Tune</div><div>Center Freq 2.462000000 GHz</div><div>Start Freq 2.447000000 GHz</div><div>Stop Freq 2.477000000 GHz</div><div>CF Step 3.000000 MHz Man</div><div>Freq Offset 0 Hz</div><div>Scale Type Log</div></div></div>			
Channel 11			
<div><div><div>KeySight Spectrum Analyzer - Swept SA</div><div>Marker 1 56.730000000 MHz</div><div>Ref 20.00 dBm</div><div>Mkr1 56.7 MHz -53.447 dBm</div><div>10 dB/div</div><div>Start 0.030 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 283.9 ms (1001 pts)</div><div>Peak Search</div><div>Next Peak</div><div>Next Pk Right</div><div>Next Pk Left</div><div>Marker Delta</div><div>Mkr--CF</div><div>Mkr--Ref Lvl</div><div>More 1 of 2</div></div></div>			
30MHz ~3GHz			
<div><div><div>KeySight Spectrum Analyzer - Swept SA</div><div>Marker 1 24.604000000000 GHz</div><div>Ref 20.00 dBm</div><div>Mkr1 24.604 GHz -48.314 dBm</div><div>10 dB/div</div><div>Start 3.00 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 2.103 s (1001 pts)</div><div>Peak Search</div><div>Next Peak</div><div>Next Pk Right</div><div>Next Pk Left</div><div>Marker Delta</div><div>Mkr--CF</div><div>Mkr--Ref Lvl</div><div>More 1 of 2</div></div></div>			
3GHz~25GHz			

Test Mode:	802.11n HT20	Test channel :	01
<div><div><div>Keyight Spectrum Analyzer - Swept SA</div><div><div>Center Freq 2.412000000 GHz</div><div>Ref 20.00 dBm</div><div>10 dB/div</div><div>Log</div><div>160</div><div>140</div><div>120</div><div>100</div><div>80</div><div>60</div><div>40</div><div>20</div><div>0</div><div>-20</div><div>-40</div><div>-60</div><div>-80</div><div>-100</div></div><div><div>Marker 1 2.406 63 GHz</div><div>-5.271 dBm</div><div>-25.07 dBm</div></div><div><div>Center 2.41200 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 2.933 ms (1001 pts)</div><div>Span 30.00 MHz</div></div><div><div>Frequency</div><div>Auto Tune</div><div>Center Freq 2.412000000 GHz</div><div>Start Freq 2.397000000 GHz</div><div>Stop Freq 2.427000000 GHz</div><div>CF Step 3.000000 MHz</div><div>Auto</div><div>Man</div><div>Freq Offset 0 Hz</div><div>Scale Type Log</div><div>Lin</div></div></div></div>			
Channel 01			
<div><div><div>Keyight Spectrum Analyzer - Swept SA</div><div><div>Marker 1 1.966400000000 GHz</div><div>Ref 20.00 dBm</div><div>10 dB/div</div><div>Log</div><div>160</div><div>140</div><div>120</div><div>100</div><div>80</div><div>60</div><div>40</div><div>20</div><div>0</div><div>-20</div><div>-40</div><div>-60</div><div>-80</div><div>-100</div></div><div><div>Marker 1 1.966 4 GHz</div><div>-58.666 dBm</div><div>-25.07 dBm</div></div><div><div>Start 0.030 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 283.9 ms (1001 pts)</div><div>Stop 3.000 GHz</div></div><div><div>Peak Search</div><div>Next Peak</div><div>Next Pk Right</div><div>Next Pk Left</div><div>Marker Delta</div><div>Mkr--CF</div><div>Mkr--Ref Lvl</div><div>More 1 of 2</div></div></div></div>			
30MHz ~3GHz			
<div><div><div>Keyight Spectrum Analyzer - Swept SA</div><div><div>Marker 1 24.758000000000 GHz</div><div>Ref 20.00 dBm</div><div>10 dB/div</div><div>Log</div><div>160</div><div>140</div><div>120</div><div>100</div><div>80</div><div>60</div><div>40</div><div>20</div><div>0</div><div>-20</div><div>-40</div><div>-60</div><div>-80</div><div>-100</div></div><div><div>Marker 1 24.758 GHz</div><div>-48.272 dBm</div><div>-25.07 dBm</div></div><div><div>Start 3.00 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 2.103 s (1001 pts)</div><div>Stop 25.00 GHz</div></div><div><div>Peak Search</div><div>Next Peak</div><div>Next Pk Right</div><div>Next Pk Left</div><div>Marker Delta</div><div>Mkr--CF</div><div>Mkr--Ref Lvl</div><div>More 1 of 2</div></div></div></div>			
3GHz~25GHz			

Test Mode:	802.11n HT20	Test channel :	06
			
Channel 06			
			
30MHz ~3GHz			
			
3GHz~25GHz			


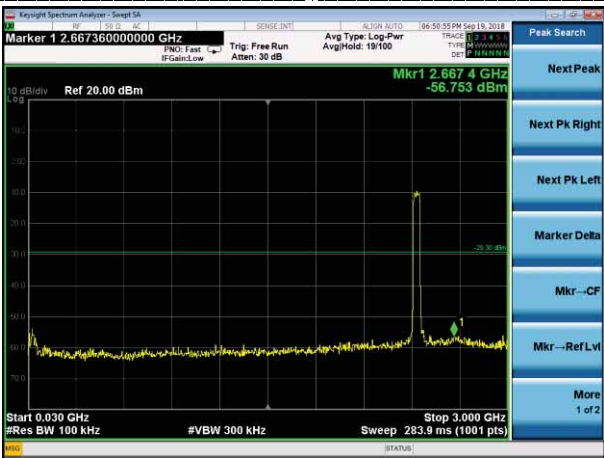

Test Mode:	802.11n HT20	Test channel :	11
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Channel 11

30MHz ~3GHz

3GHz~25GHz

Test Mode:	802.11n HT40	Test channel :	03
<div><div><div>KeySight Spectrum Analyzer - Swept SA</div><div>Center Freq 2.422000000 GHz</div><div>Ref 20.00 dBm</div><div>Mkr1 2.435 35 GHz -9.469 dBm</div><div>Center 2.42200 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Span 50.00 MHz</div><div>Sweep 4.800 ms (1001 pts)</div></div><div><div>Frequency</div><div>Auto Tune</div><div>Center Freq 2.422000000 GHz</div><div>Start Freq 2.397000000 GHz</div><div>Stop Freq 2.447000000 GHz</div><div>CF Step 5.000000 MHz Auto</div><div>Freq Offset 0 Hz</div><div>Scale Type Log</div></div></div>			
Channel 03			
<div><div><div>KeySight Spectrum Analyzer - Swept SA</div><div>Marker 1 2.088210000000 GHz</div><div>Ref 20.00 dBm</div><div>Mkr1 2.088 2 GHz -59.260 dBm</div><div>Start 0.030 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Stop 3.000 GHz</div><div>Sweep 283.9 ms (1001 pts)</div></div><div><div>Peak Search</div><div>Next Peak</div><div>Next Pk Right</div><div>Next Pk Left</div><div>Marker Delta</div><div>Mkr--CF</div><div>Mkr--Ref Lvl</div><div>More 1 of 2</div></div></div>			
30MHz ~3GHz			
<div><div><div>KeySight Spectrum Analyzer - Swept SA</div><div>Marker 1 24.186000000000 GHz</div><div>Ref 20.00 dBm</div><div>Mkr1 24.186 GHz -47.612 dBm</div><div>Start 3.00 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Stop 25.00 GHz</div><div>Sweep 2.103 s (1001 pts)</div></div><div><div>Peak Search</div><div>Next Peak</div><div>Next Pk Right</div><div>Next Pk Left</div><div>Marker Delta</div><div>Mkr--CF</div><div>Mkr--Ref Lvl</div><div>More 1 of 2</div></div></div>			
3GHz~25GHz			

Test Mode:	802.11n HT40	Test channel :	06
			
Channel 06			
			
30MHz ~3GHz			
			
3GHz~25GHz			

Test Mode:	802.11n HT40	Test channel :	09
			
Channel 09			
			
30MHz ~3GHz			
			
3GHz~25GHz			

4.8. 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.

And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Test Result

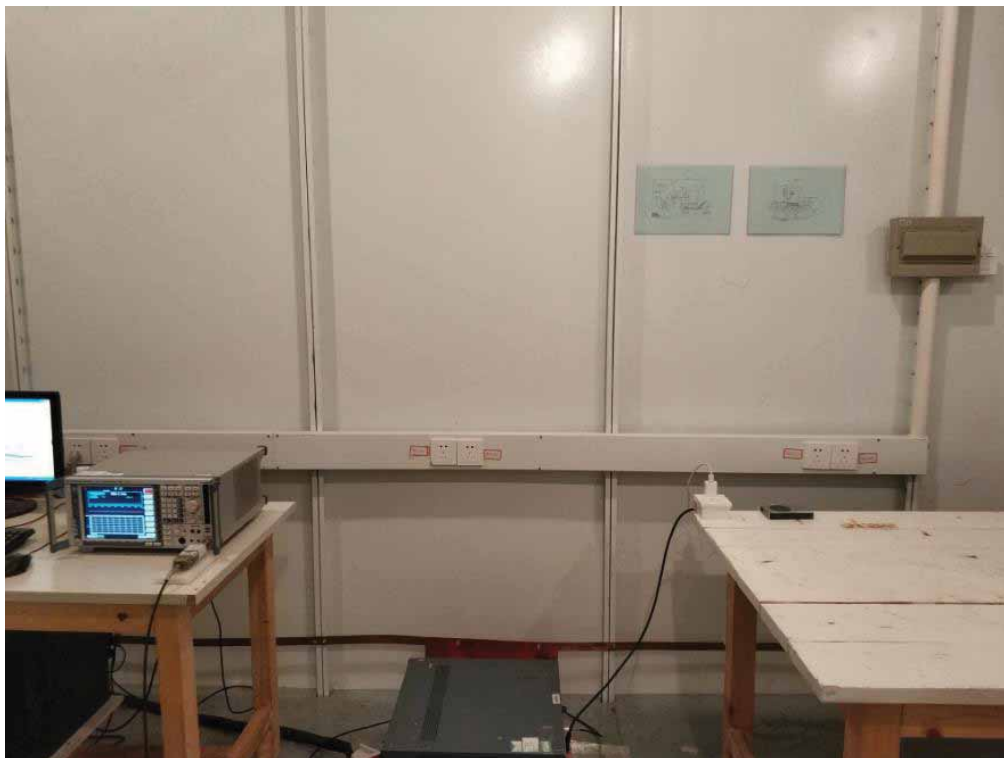
The antenna used for this product is internal Antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 0.98dB for ANT 1 and 0.82 dB for ANT 2.

5. Test Setup Photos of the EUT

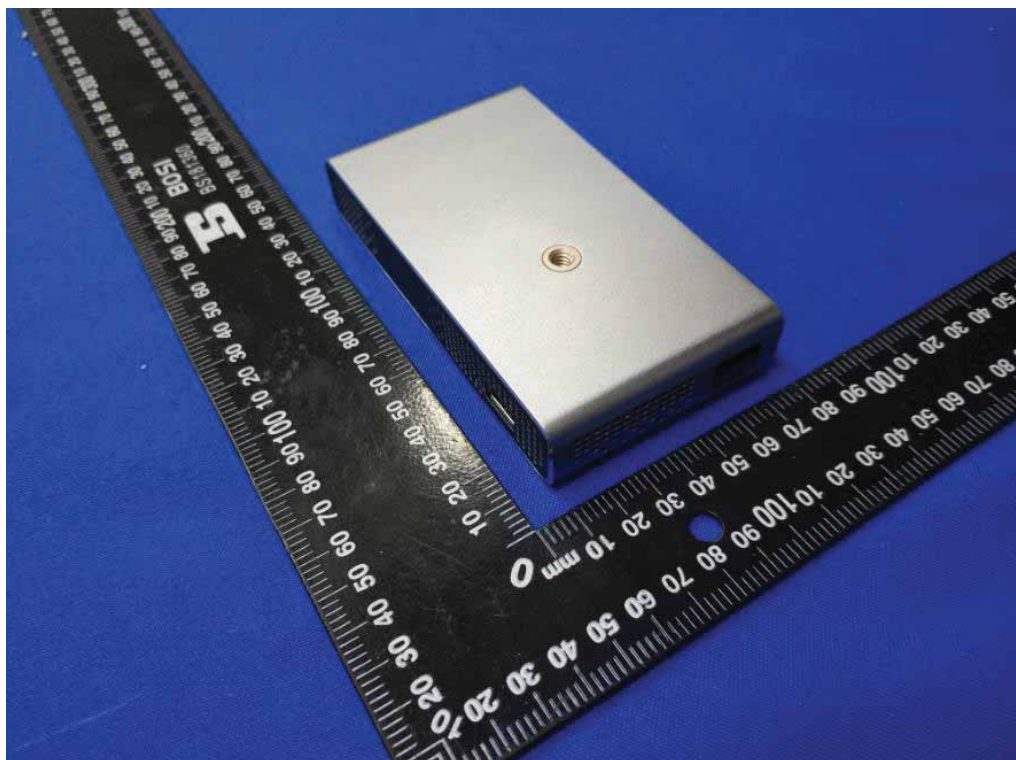
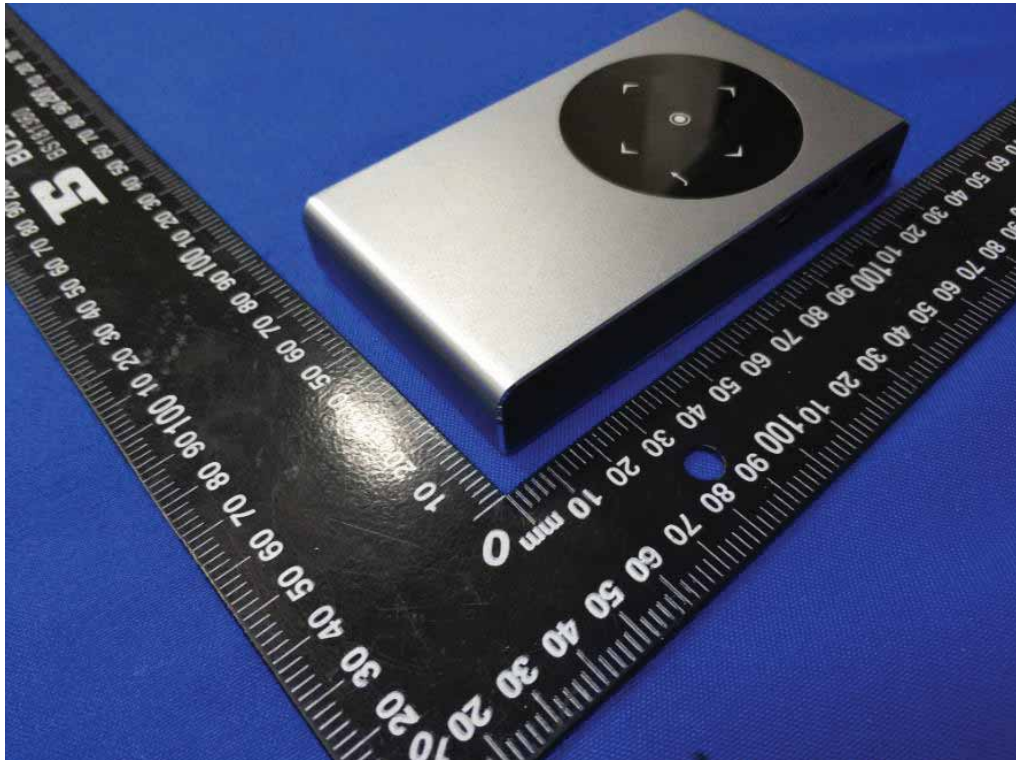
Radiated Emission Test

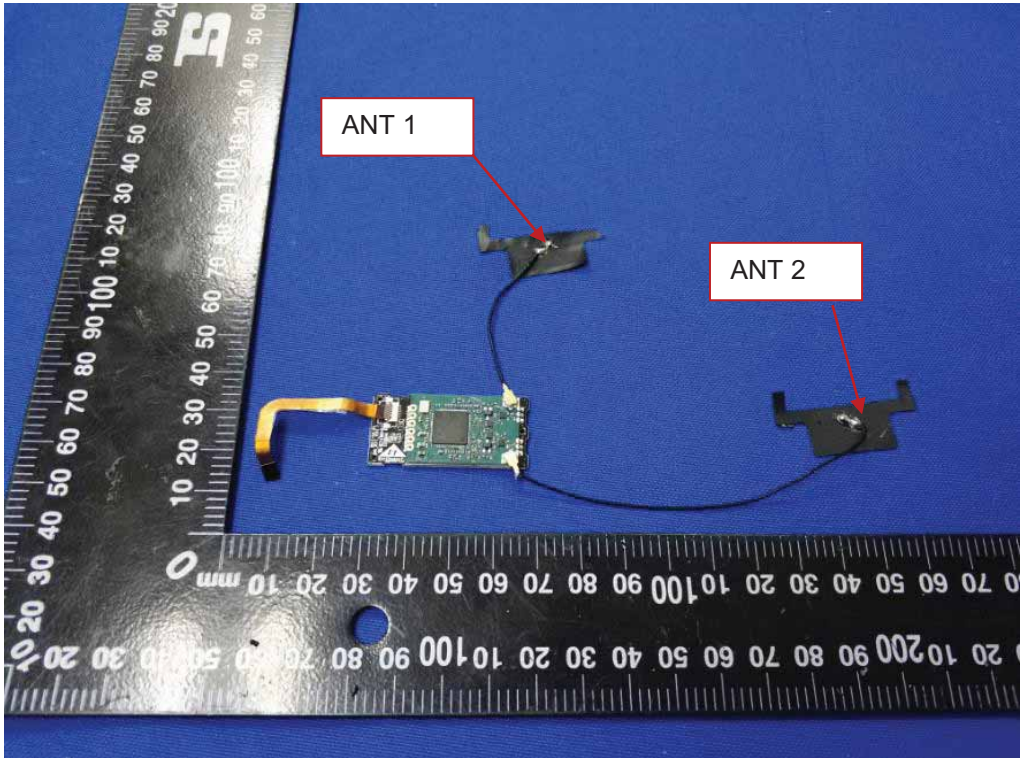
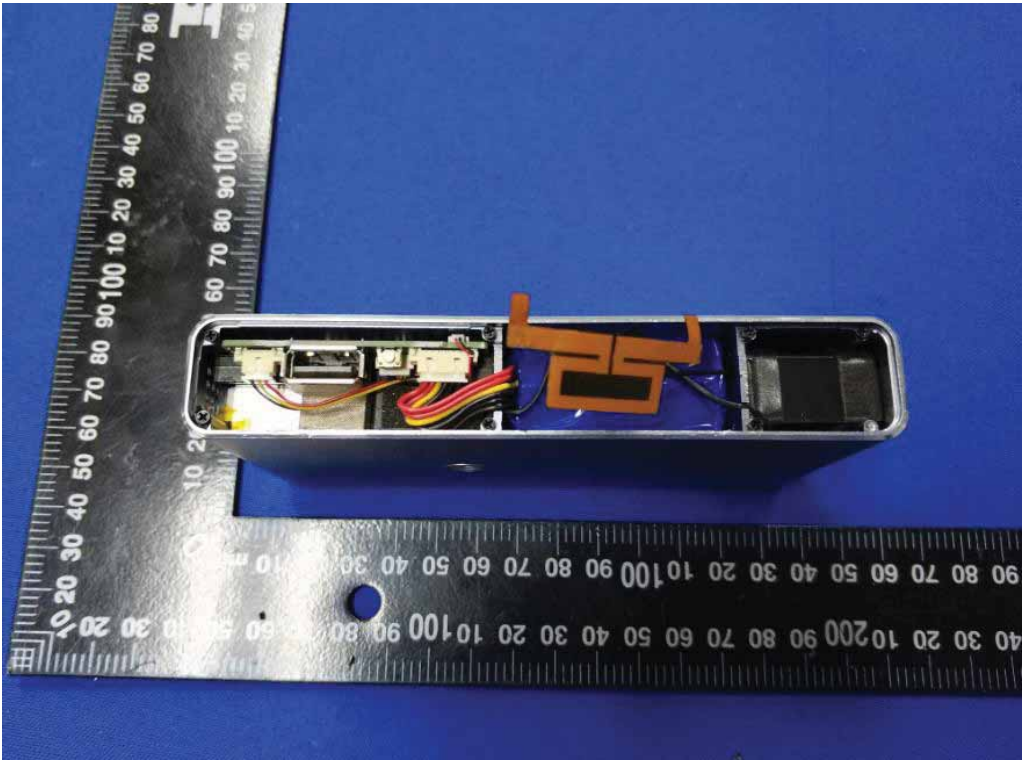


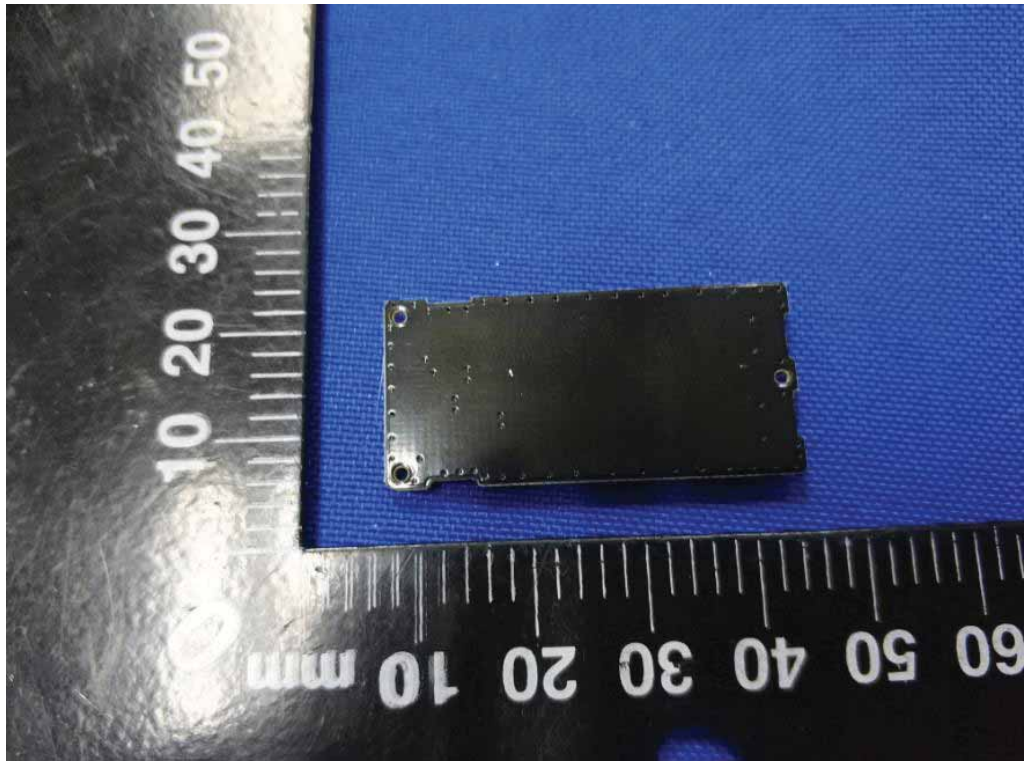
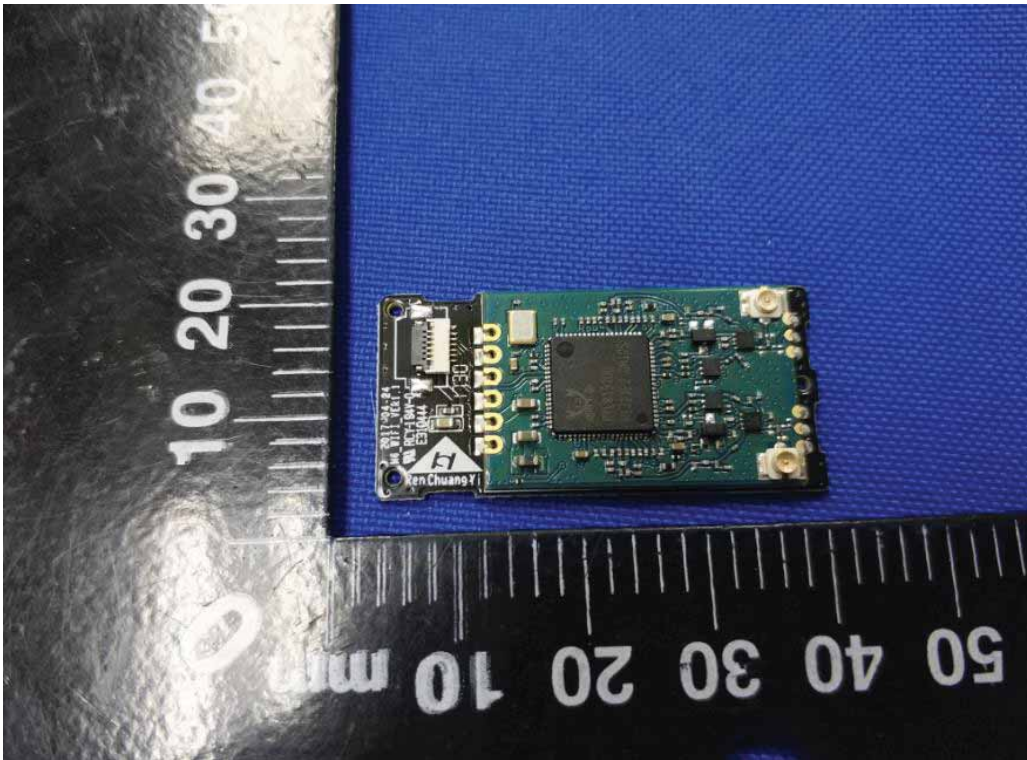
Conducted Emission

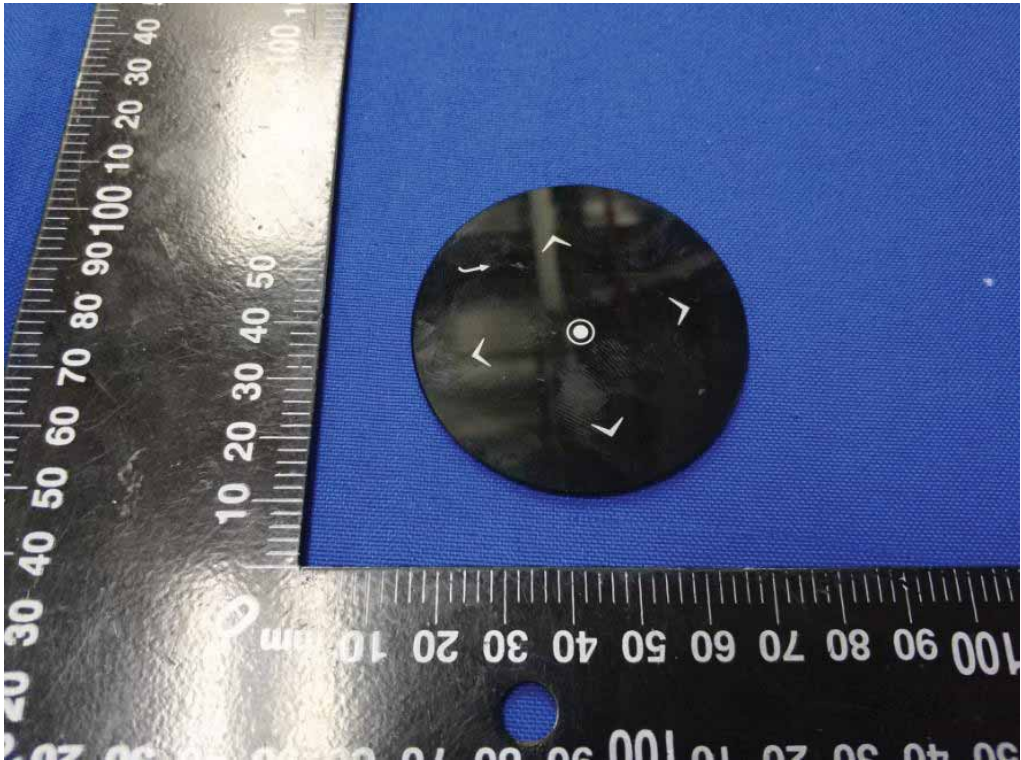
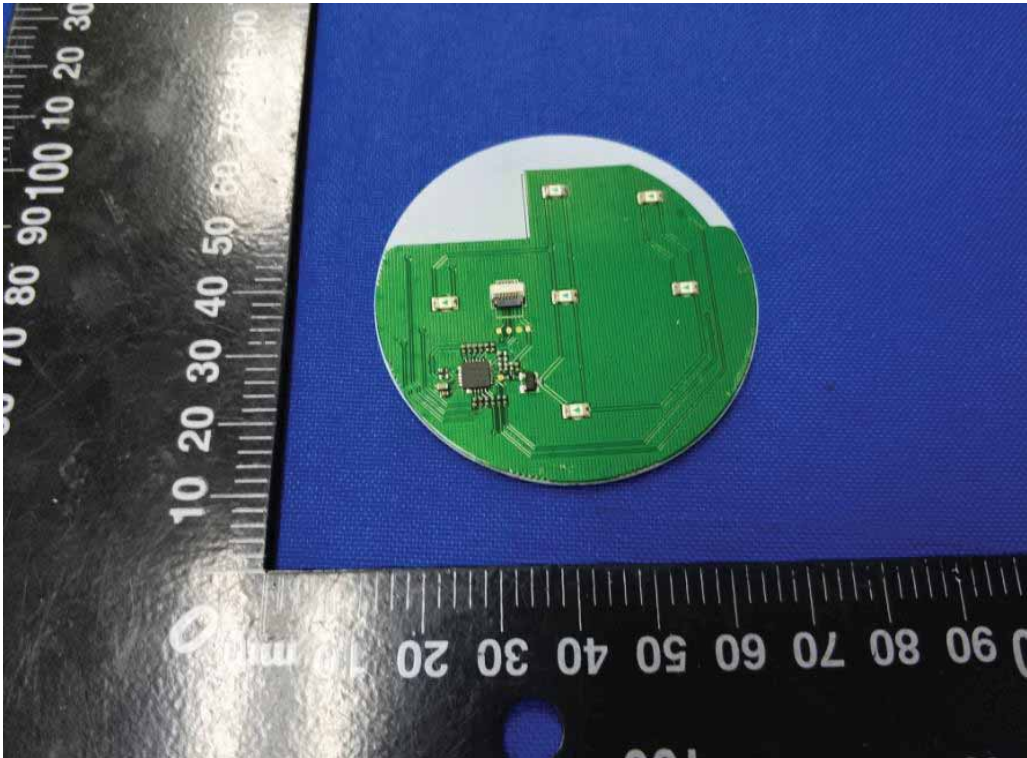


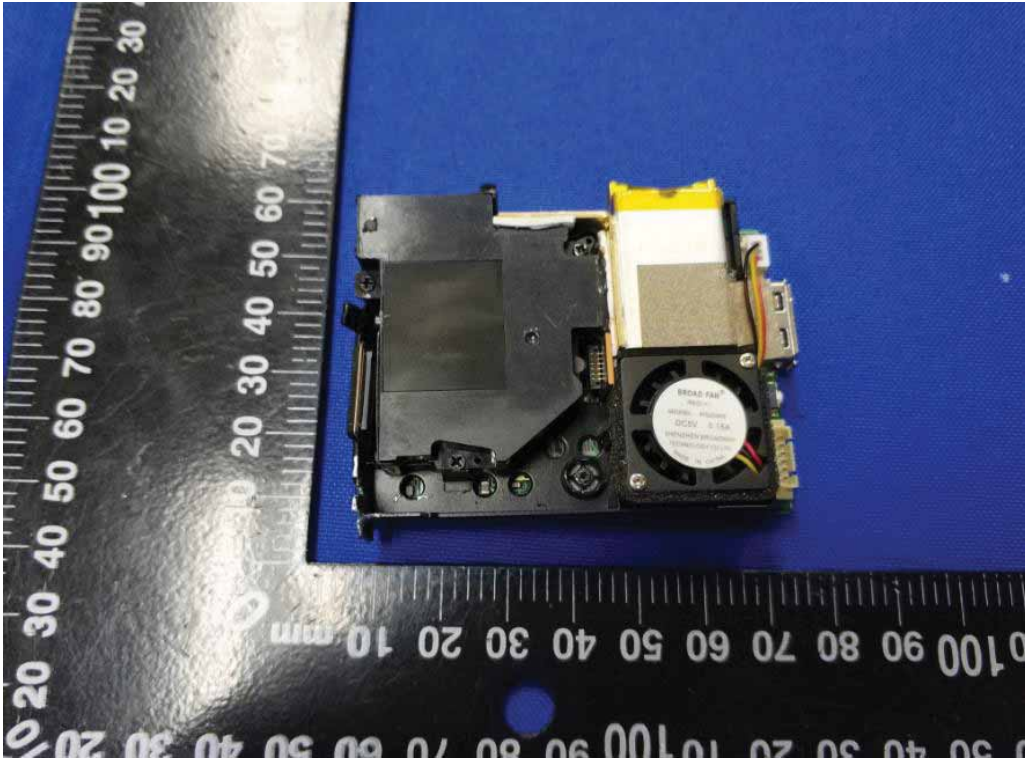
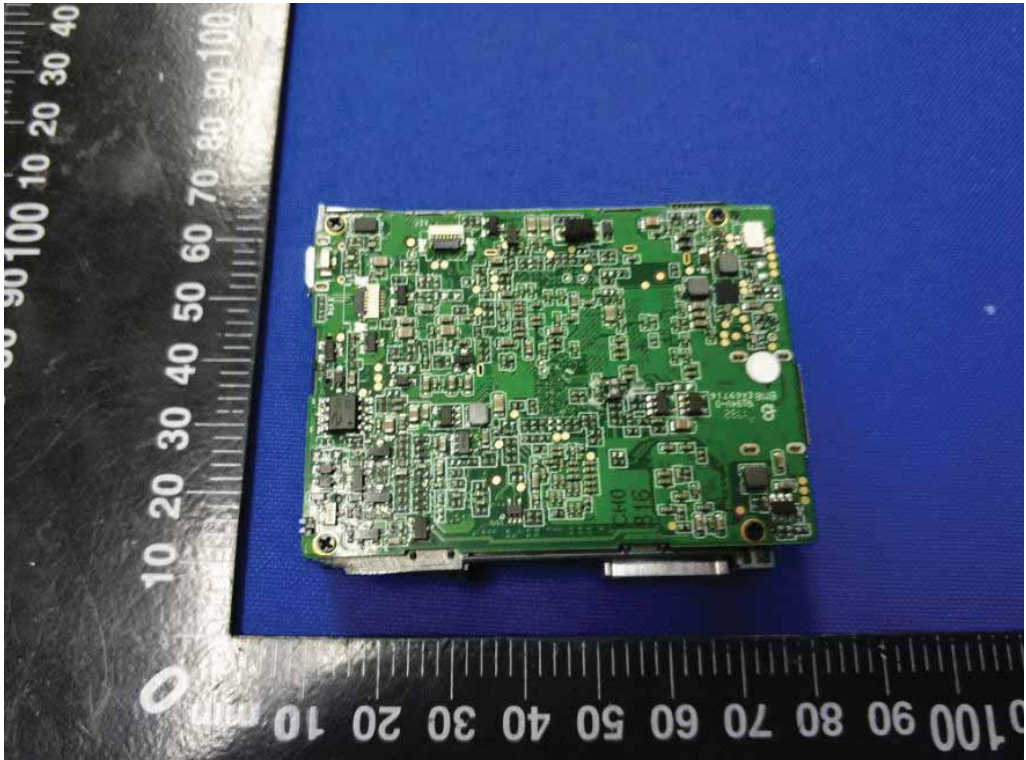
6. External and Internal Photos of the EUT

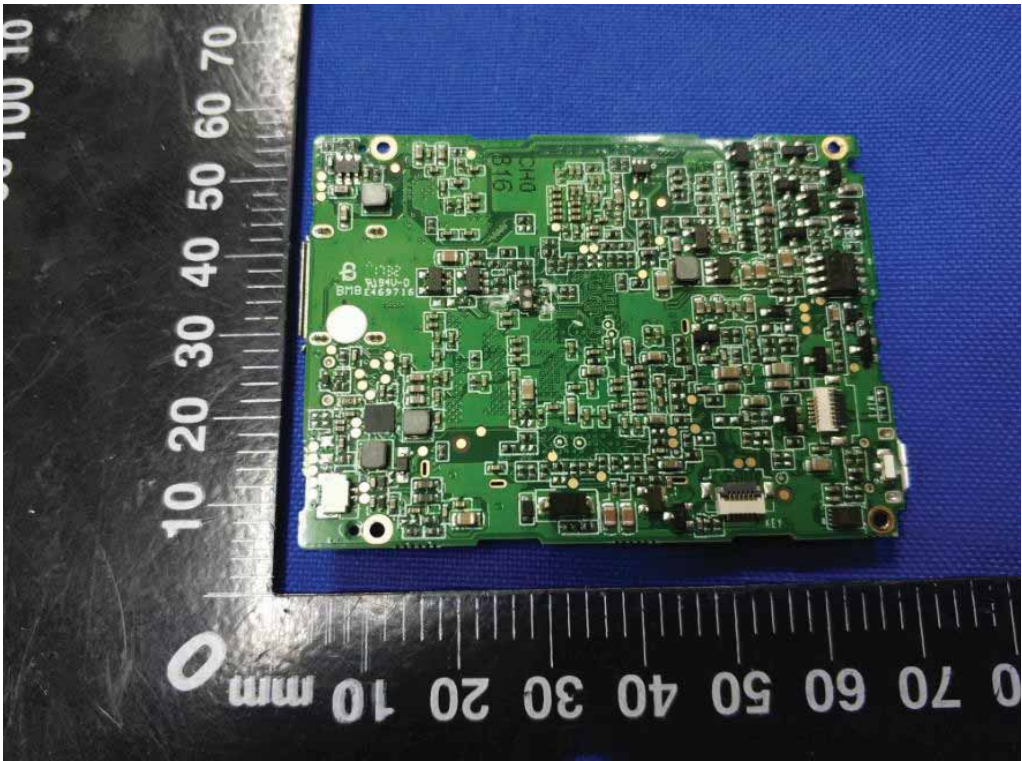
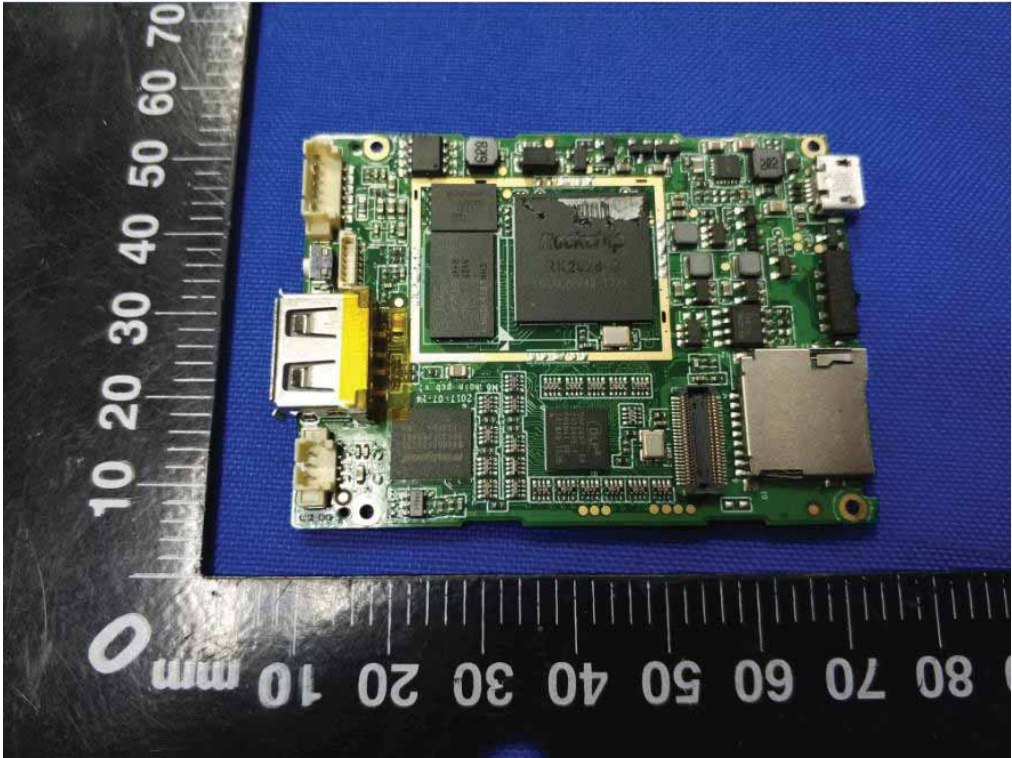


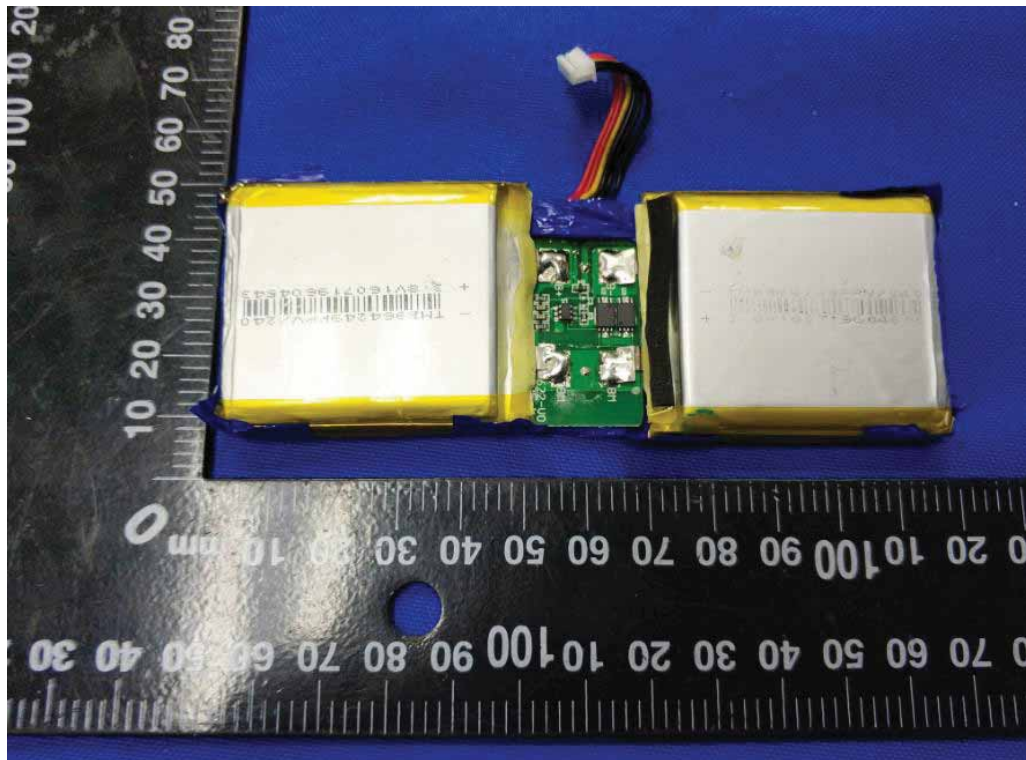












.....End of Report.....