

6.11.2. Test Instruments

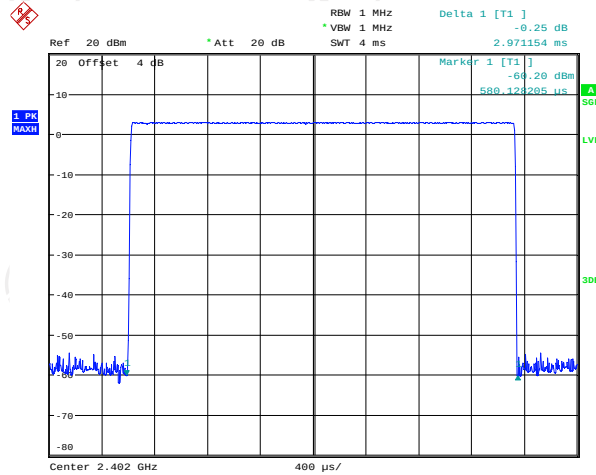
Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	ROHDE&SCHW ARZ	ESIB7	100197	Jul. 29, 2020
Spectrum Analyzer	ROHDE&SCHW ARZ	FSQ40	200061	Sep. 11, 2020
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 08, 2020
Pre-amplifier	HP	8447D	2727A05017	Sep. 08, 2020
Loop antenna	ZHINAN	ZN30900A	12024	Oct. 27, 2020
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 06, 2020
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 06, 2020
Horn Antenna	A-INFO	LB-180400-KF	J211020657	Sep. 06, 2020
Antenna Mast	Keleto	RE-AM	N/A	N/A
Coax cable (9KHz-40GHz)	TCT	RE-high-02	N/A	Sep. 08, 2020
Coax cable (9KHz-40GHz)	TCT	RE-high-04	N/A	Sep. 08, 2020
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

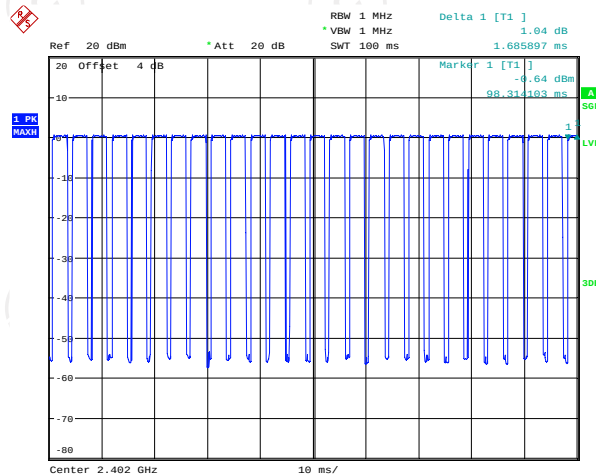
6.11.3. Test Data

Duty cycle correction factor for average measurement

DH5 on time (One Pulse) Plot on Channel 00



DH5 on time (Count Pulses) Plot on Channel 00



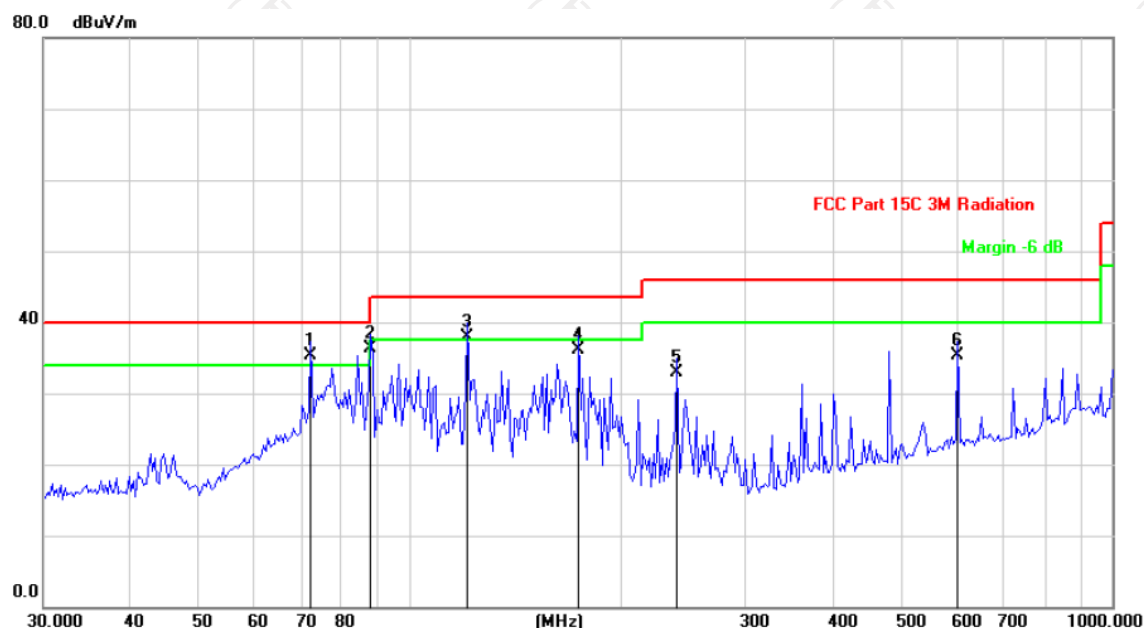
Note:

1. Worst case Duty cycle = on time/100 milliseconds = $(2.971 \times 26 + 1.686) / 100 = 0.7893$
2. Worst case Duty cycle correction factor = $20 \times \log(\text{Duty cycle}) = -2.06\text{dB}$
3. DH5 has the highest duty cycle worst case and is reported.
4. The average levels were calculated from the peak level corrected with duty cycle correction factor (-2.06dB) derived from $20 \log(\text{dwell time}/100\text{ms})$. This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

Please refer to following diagram for individual

Below 1GHz

Horizontal:



Site

Polarization: **Horizontal**

Temperature: 25

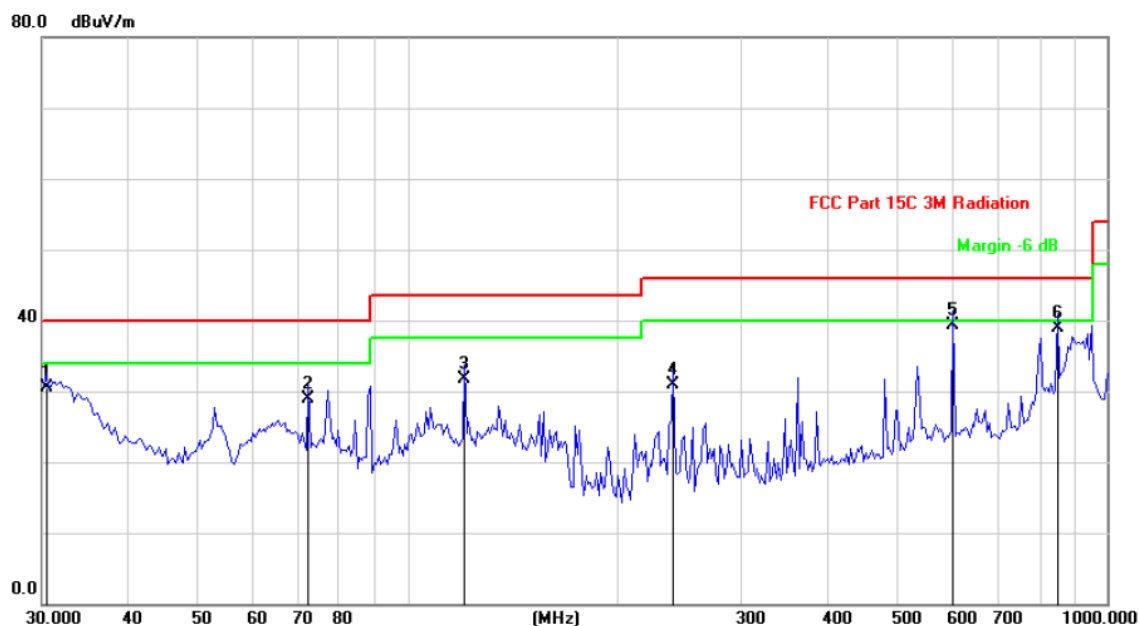
Limit: FCC Part 15C 3M Radiation

Power: AC 120V/60Hz

Humidity: 55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	!	72.2111	51.47	-16.14	35.33	40.00	-4.67	QP
2	*	87.9136	48.42	-12.09	36.33	40.00	-3.67	QP
3	!	120.6118	50.01	-12.20	37.81	43.50	-5.69	QP
4		173.8146	51.53	-15.50	36.03	43.50	-7.47	QP
5		240.1442	45.86	-13.05	32.81	46.00	-13.19	QP
6		602.9287	40.74	-5.42	35.32	46.00	-10.68	QP

Vertical:



Site: Polarization: **Vertical** Temperature: 25
Limit: FCC Part 15C 3M Radiation Power: AC 120V/60Hz Humidity: 55 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		30.4246	41.65	-11.14	30.51	40.00	-9.49	QP
2		72.2111	44.97	-16.14	28.83	40.00	-11.17	QP
3		120.6118	43.87	-12.20	31.67	43.50	-11.83	QP
4		240.1442	44.04	-13.05	30.99	46.00	-15.01	QP
5	*	602.9287	44.67	-5.42	39.25	46.00	-6.75	QP
6		850.7603	42.11	-3.16	38.95	46.00	-7.05	QP

Note: 1. The low frequency, which started from 9KHz~30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported

2. Measurements were conducted in all three channels (high, middle, low) and three modulation (GFSK, Pi/4 DQPSK, 8DPSK) and the worst case Mode (Lowest channel and GFSK) was submitted only.

3. Freq. = Emission frequency in MHz

Measurement (dBuV/m) = Reading level (dBuV) + Corr. Factor (dB)

Correction Factor = Antenna Factor + Cable loss - Pre-amplifier

Limit (dBuV/m) = Limit stated in standard

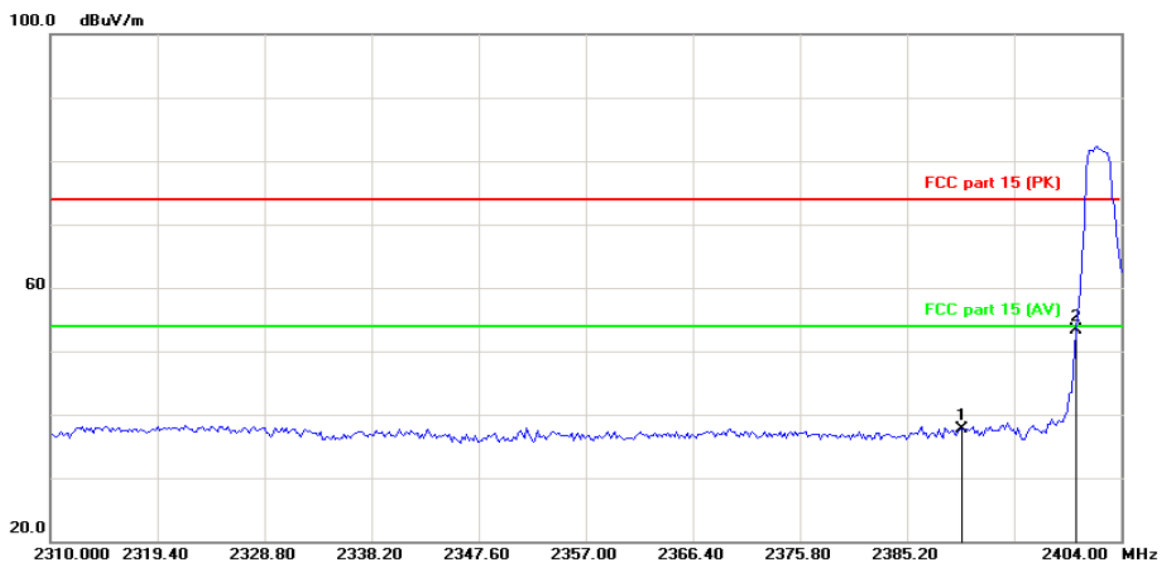
Margin (dB) = Measurement (dBuV/m) - Limits (dBuV/m)

* is meaning the worst frequency has been tested in the test frequency range

Test Result of Radiated Spurious at Band edges

Lowest channel 2402:

Horizontal:



Site
Limit: FCC part 15 (PK)

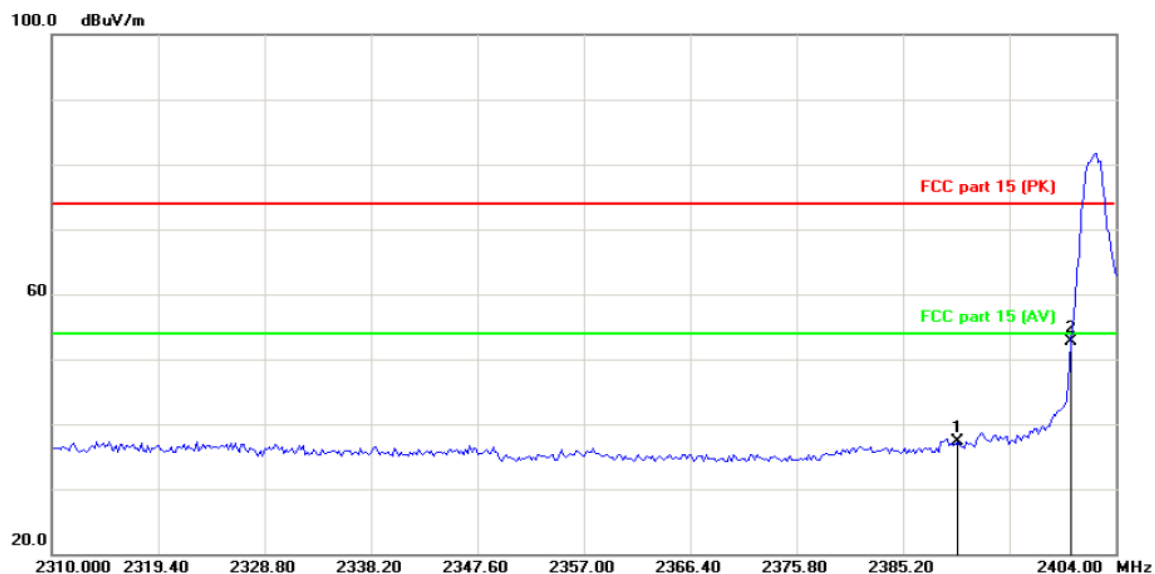
Polarization: **Horizontal**

Temperature: 25

Power:

Humidity: 55 %

Vertical:



Site
Limit: FCC part 15 (PK)

Polarization: **Vertical**

Temperature: 25

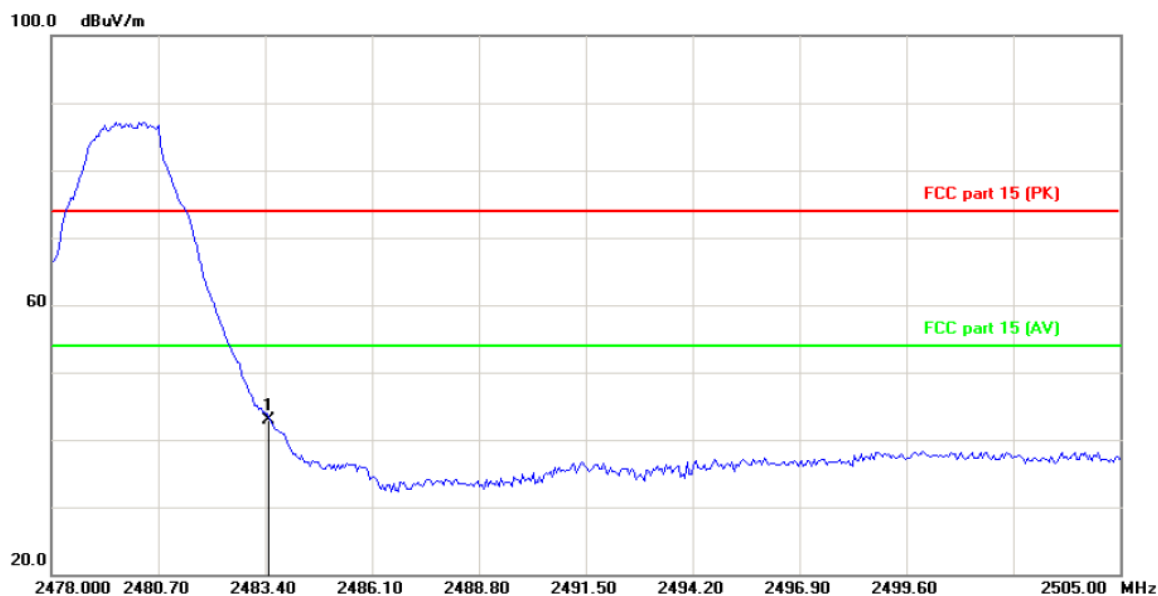
Power:

Humidity: 55 %

Frequency (MHz)	Ant. Pol. H/V	Peak (dBuV/m)	Duty cycle factor (dB/m)	AV (dBuV/m)	Peak limit (dBuV/m)	AV limit (dBuV/m)	PK Margin (dB)	AVG Margin (dB)
2390	H	37.77	-2.06	35.71	74	54	-36.23	-18.29
2390	V	37.39	-2.06	35.33	74	54	-36.61	-18.67
2400	H	53.30	-2.06	51.24	74	54	-20.70	-2.76
2400	V	52.69	-2.06	50.63	74	54	-21.31	-3.37

Highest channel 2480:

Horizontal:



Site

Polarization: **Horizontal**

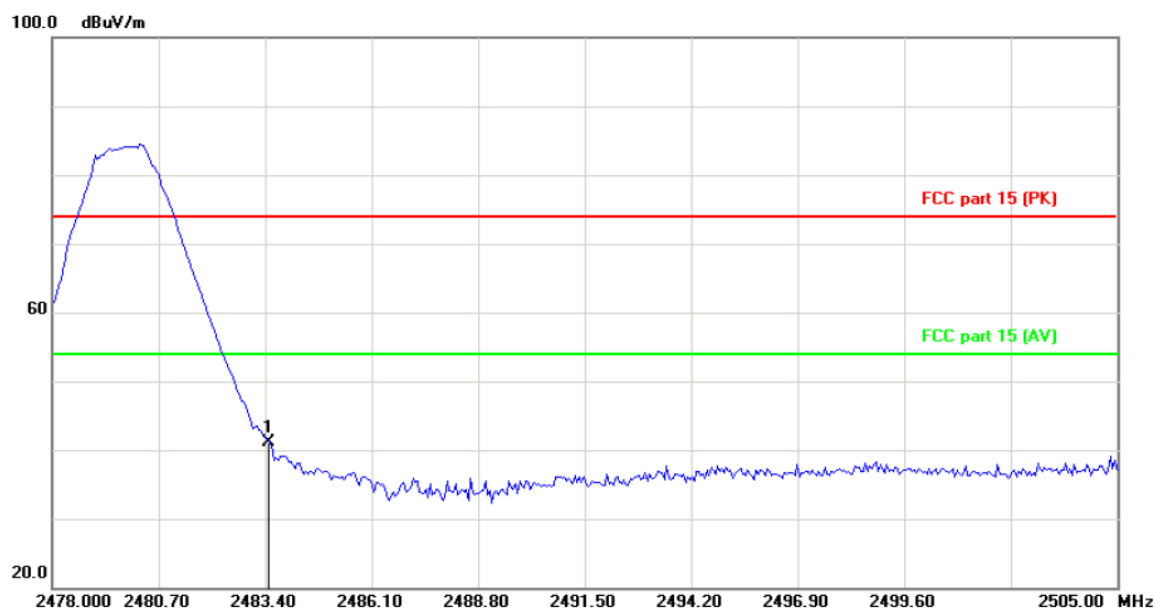
Temperature: 25

Limit: FCC part 15 (PK)

Power:

Humidity: 55 %

Vertical:



Site

Polarization: **Vertical**

Temperature: 25

Limit: FCC part 15 (PK)

Power:

Humidity: 55 %

Frequency (MHz)	Ant. Pol. H/V	Peak (dBμV/m)	Duty cycle factor (dB/m)	AV (dBμV/m)	Peak limit (dBμV/m)	AV limit (dBμV/m)	PK Margin (dB)	AVG Margin (dB)
2483.5	H	42.85	-2.06	40.79	74	54	-31.15	-13.21
2483.5	V	41.19	-2.06	39.13	74	54	-32.81	-14.87

Note: Measurements were conducted in all three modulation (GFSK, Pi/4DQPSK, 8DPSK), and the worst case Mode (GFSK) was submitted only.

Above 1GHz

Modulation Type: GFSK

Low channel: 2402 MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4804	H	45.57	---	0.66	46.23	---	74	54	-7.77
7206	H	37.21	---	9.50	46.71	---	74	54	-7.29
---	H	---	---	---	---	---	---	---	---
4804	V	44.95	---	0.66	45.61	---	74	54	-8.39
7206	V	35.38	---	9.50	44.88	---	74	54	-9.12
---	V	---	---	---	---	---	---	---	---

Middle channel: 2441 MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4882	H	45.16	---	0.99	46.15	---	74	54	-7.85
7323	H	34.84	---	9.87	44.71	---	74	54	-9.29
---	H	---	---	---	---	---	---	---	---
4882	V	44.72	---	0.99	45.71	---	74	54	-8.29
7323	V	37.05	---	9.87	46.92	---	74	54	-7.08
---	V	---	---	---	---	---	---	---	---

High channel: 2480 MHz

Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
4960	H	46.69	---	1.33	48.02	---	74	54	-5.98
7440	H	38.14	---	10.22	48.36	---	74	54	-5.64
---	H	---	---	---	---	---	---	---	---
4960	V	47.28	---	1.33	48.61	---	74	54	-5.39
7440	V	37.06	---	10.22	47.28	---	74	54	-6.72
---	V	---	---	---	---	---	---	---	---

Note:

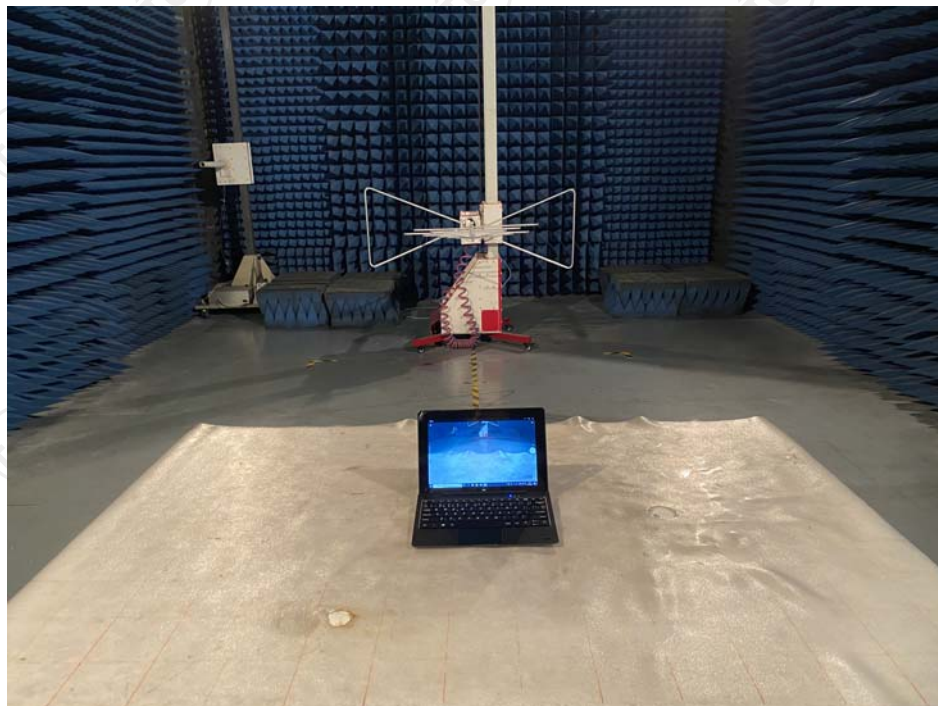
1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier
2. Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency.
5. Data of measurement shown "----" in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.
6. Measurements were conducted in all three modulation (GFSK, Pi/4 DQPSK, 8DPSK), and the worst case Mode (GFSK) was submitted only.
7. All the restriction bands are compliance with the limit of 15.209.

Appendix A: Photographs of Test Setup

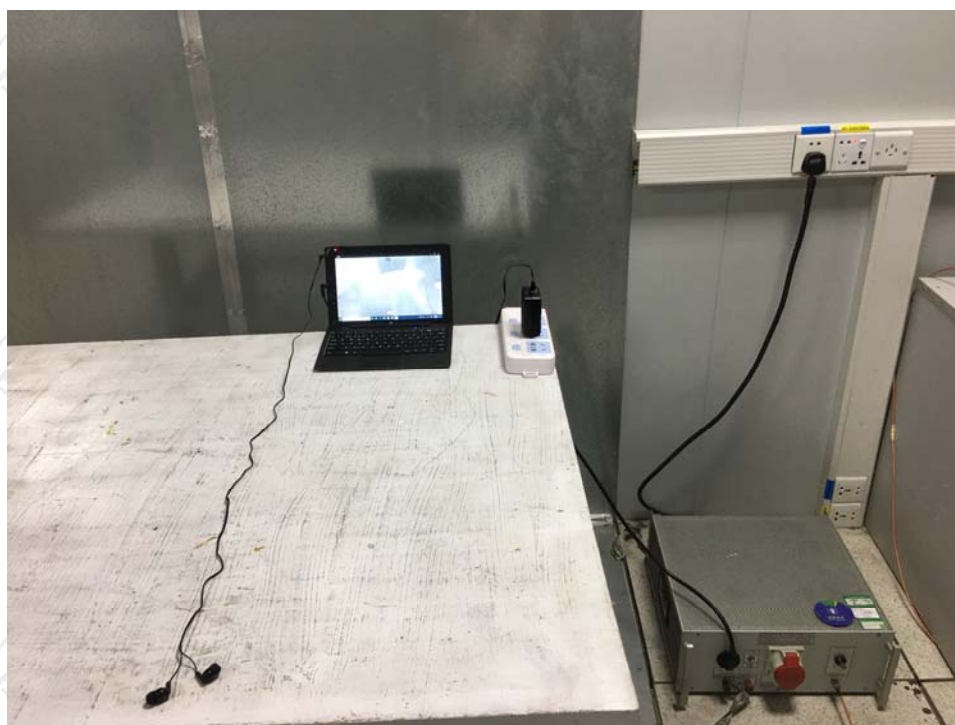
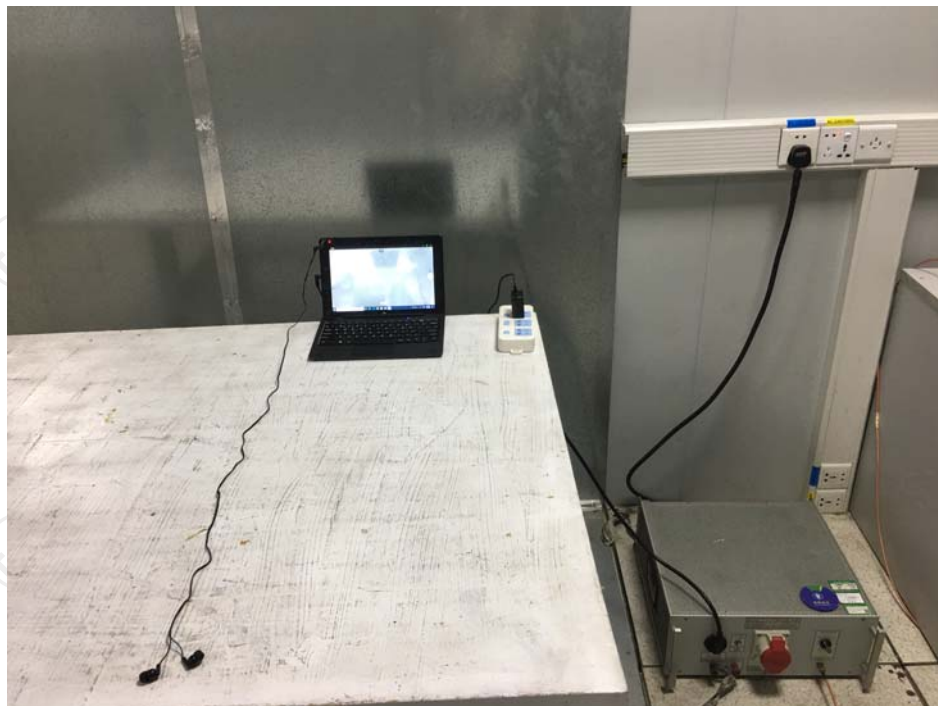
Product: 2 in 1 Tablet

Model: MAGNUS III

Radiated Emission



Conducted Emission



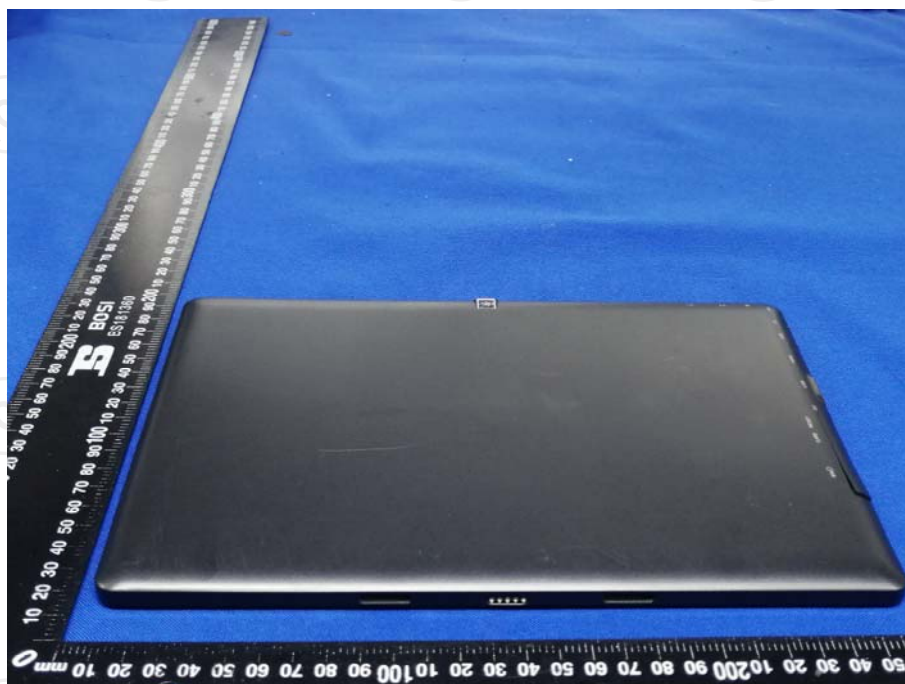
Appendix B: Photographs of EUT
Product: 2 in 1 Tablet
Model: MAGNUS III
External Photos

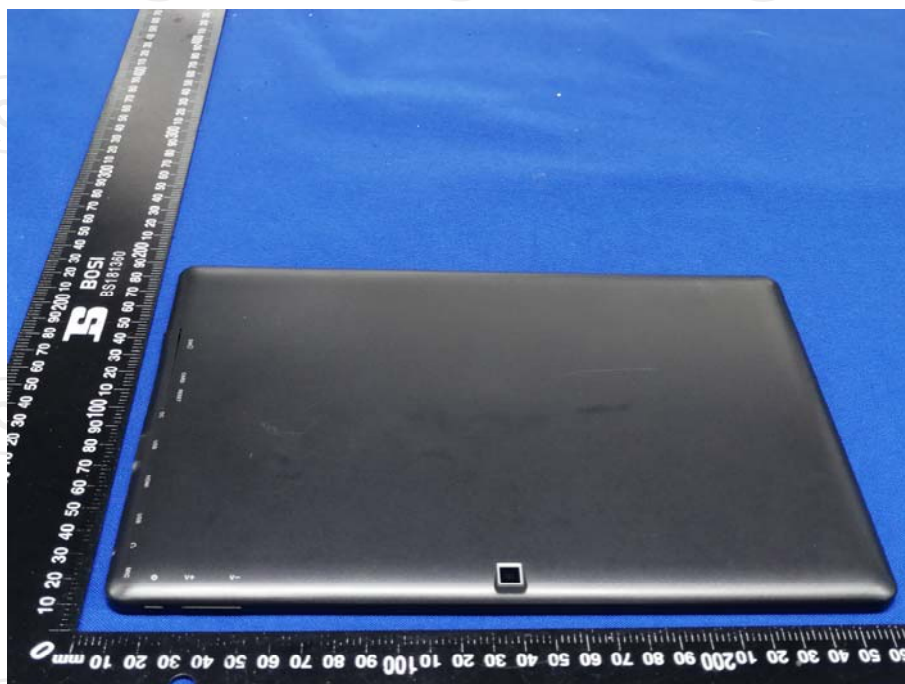






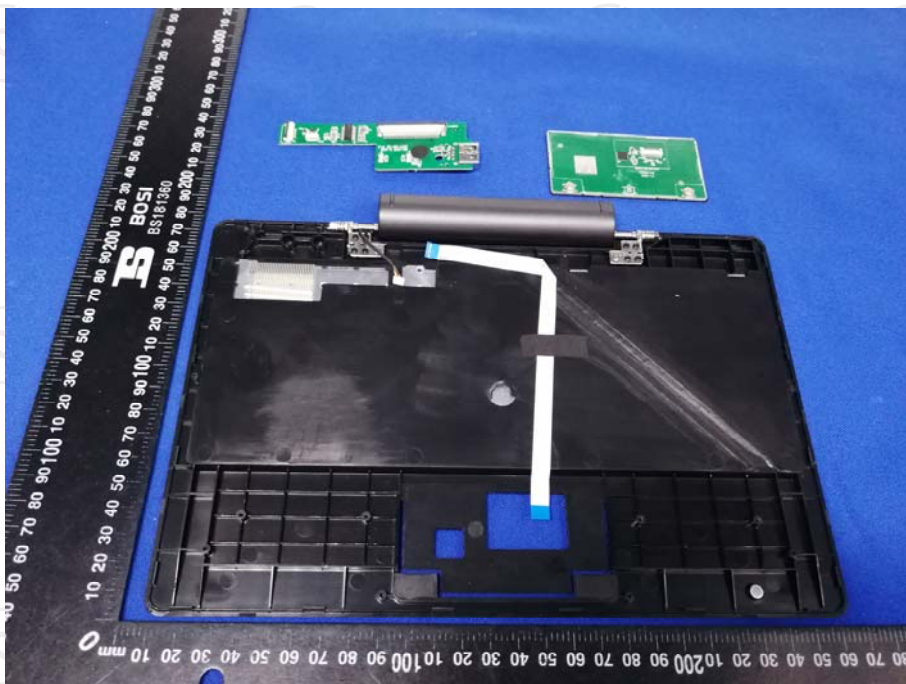


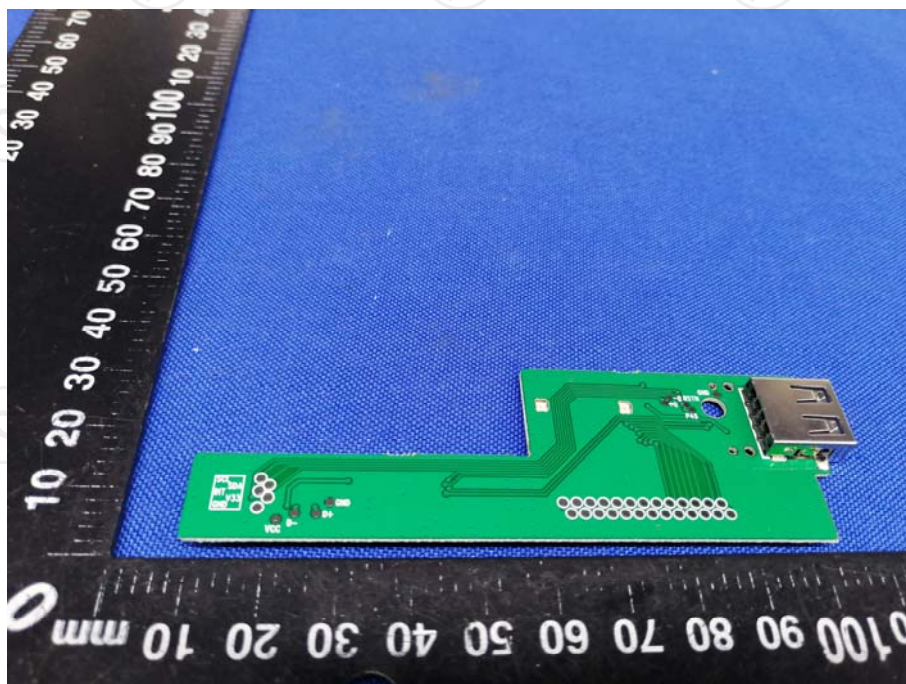
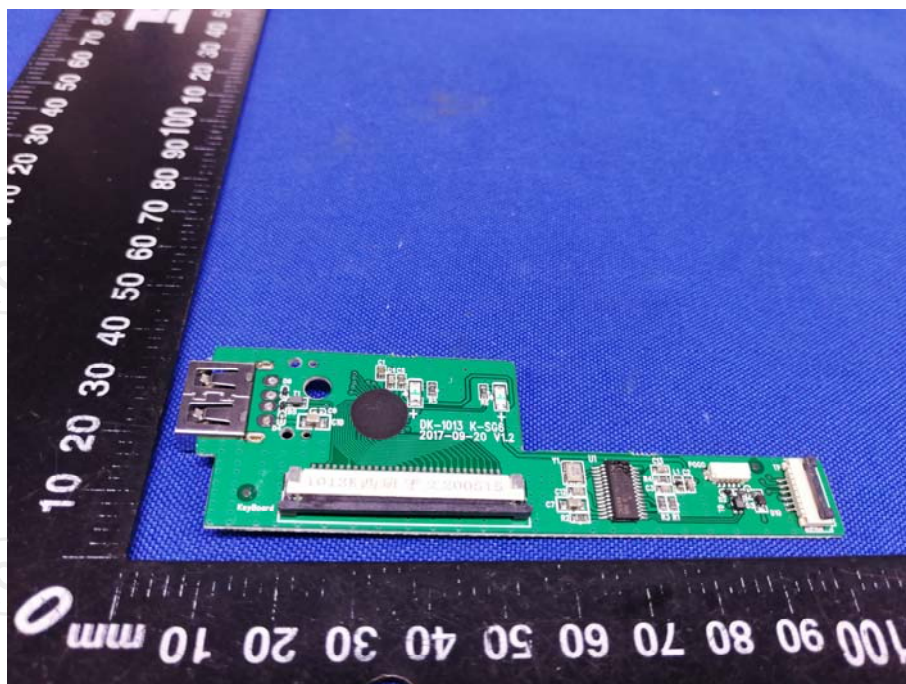


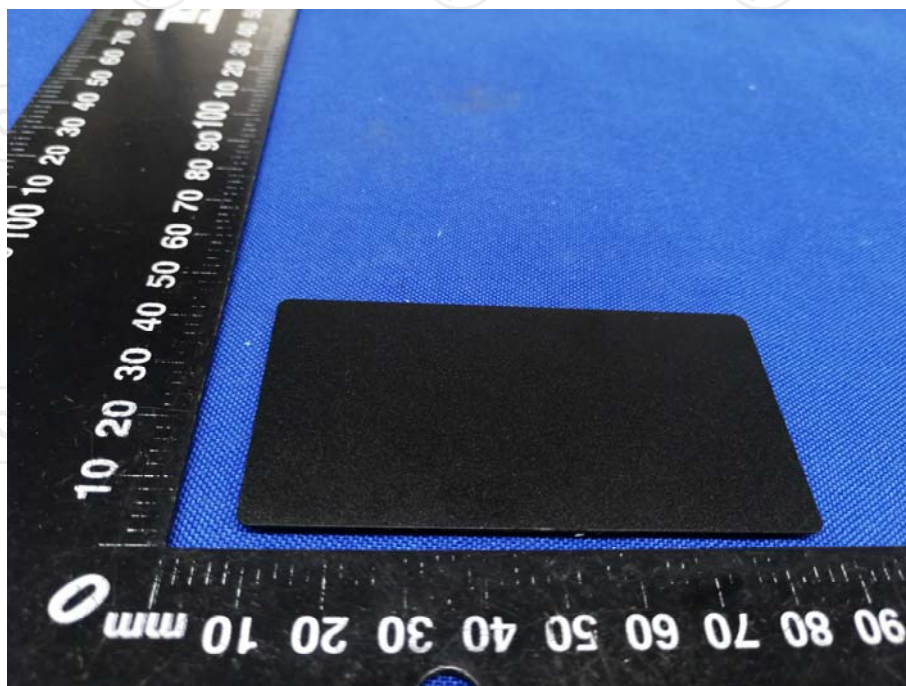
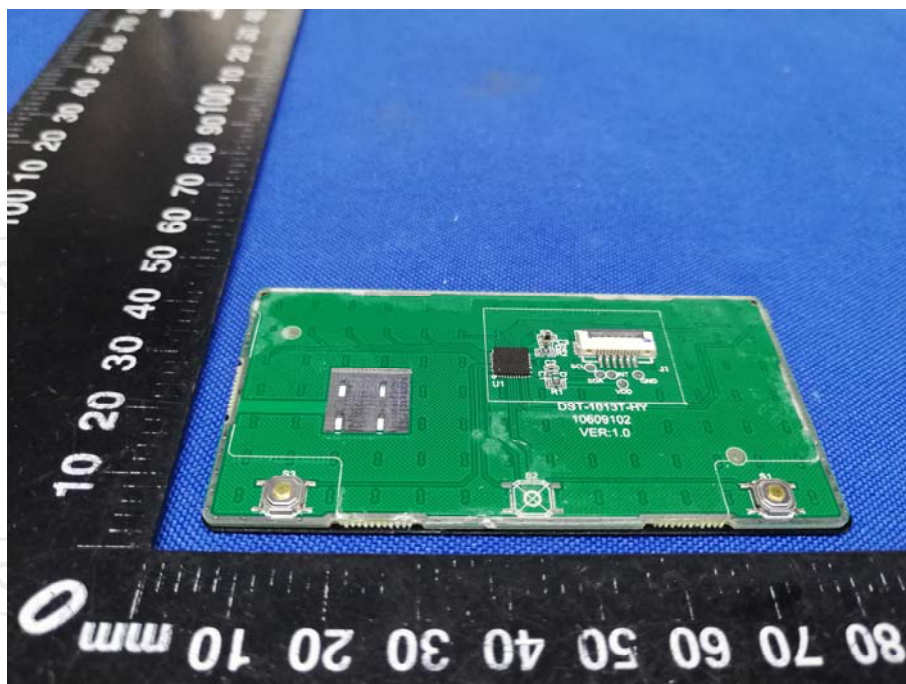


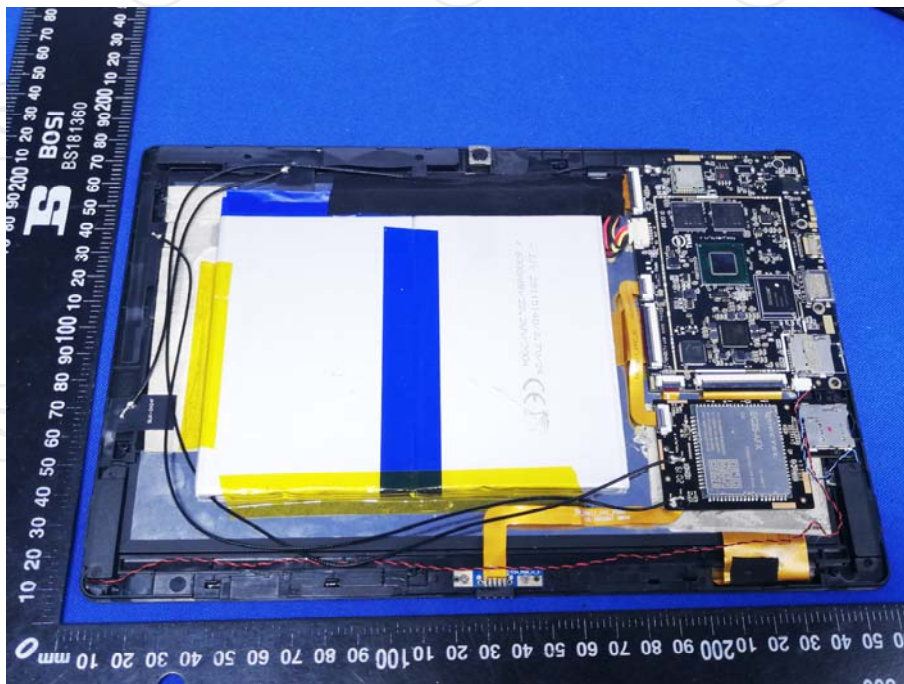
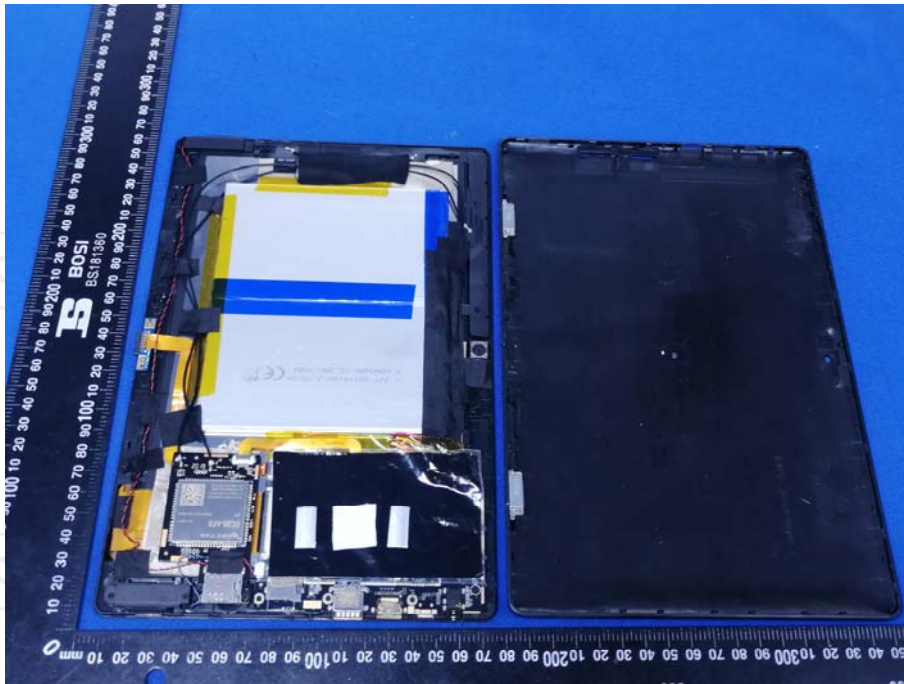


Product: 2 in 1 Tablet
Model: MAGNUS III
Internal Photos



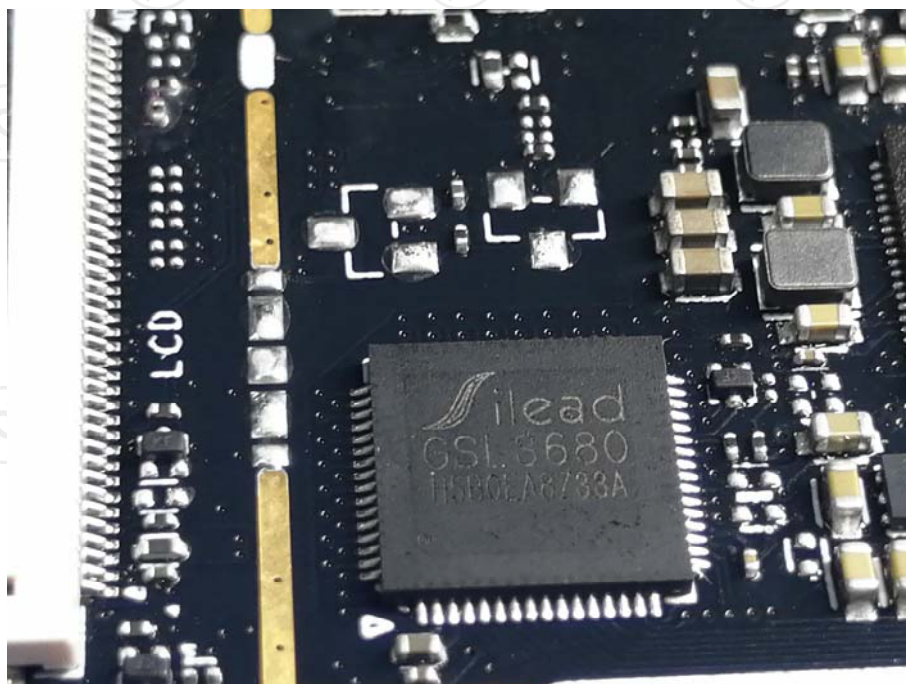




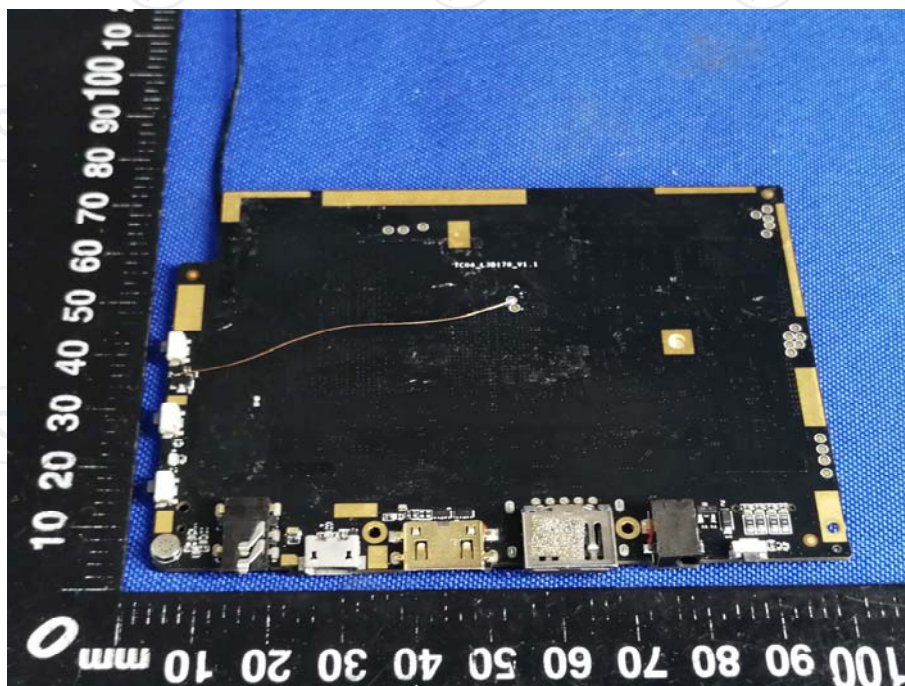
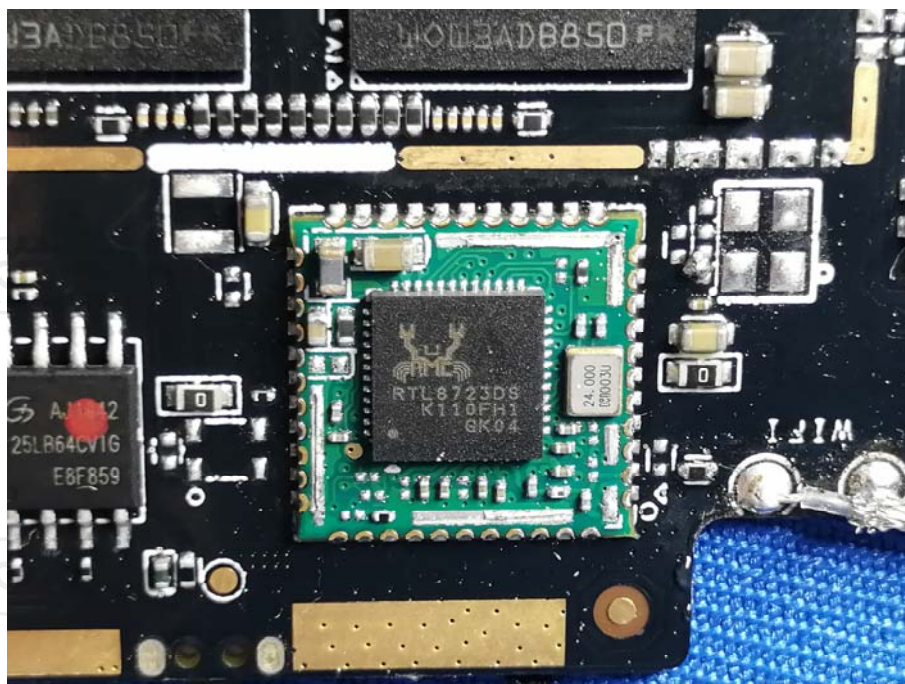




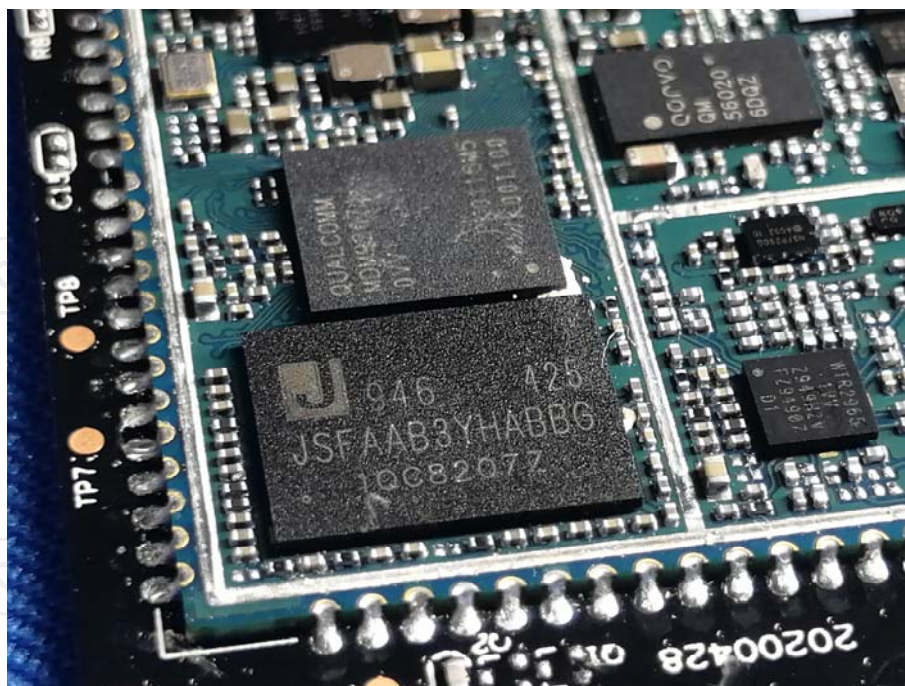


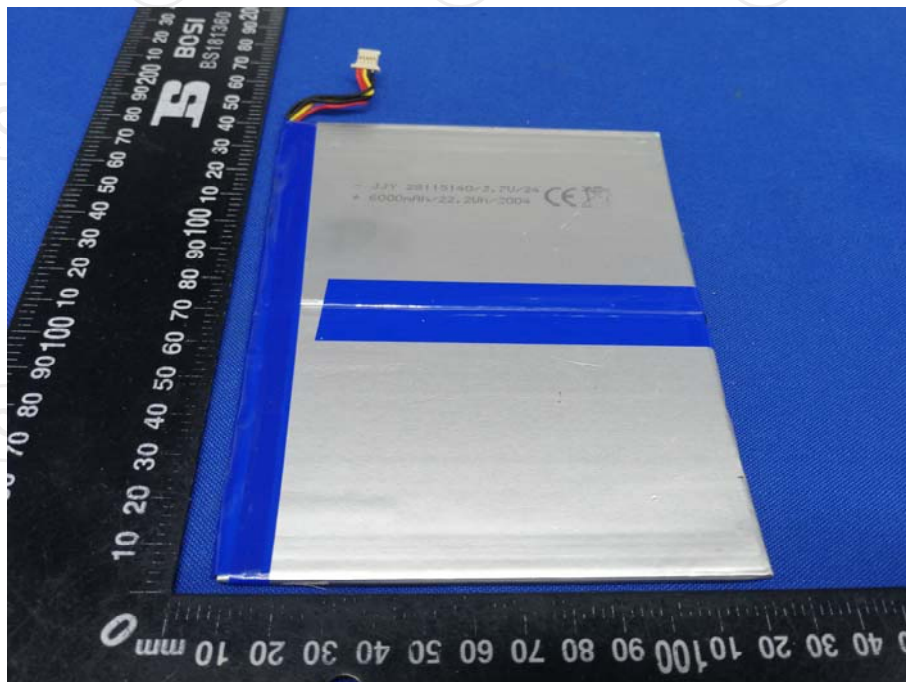
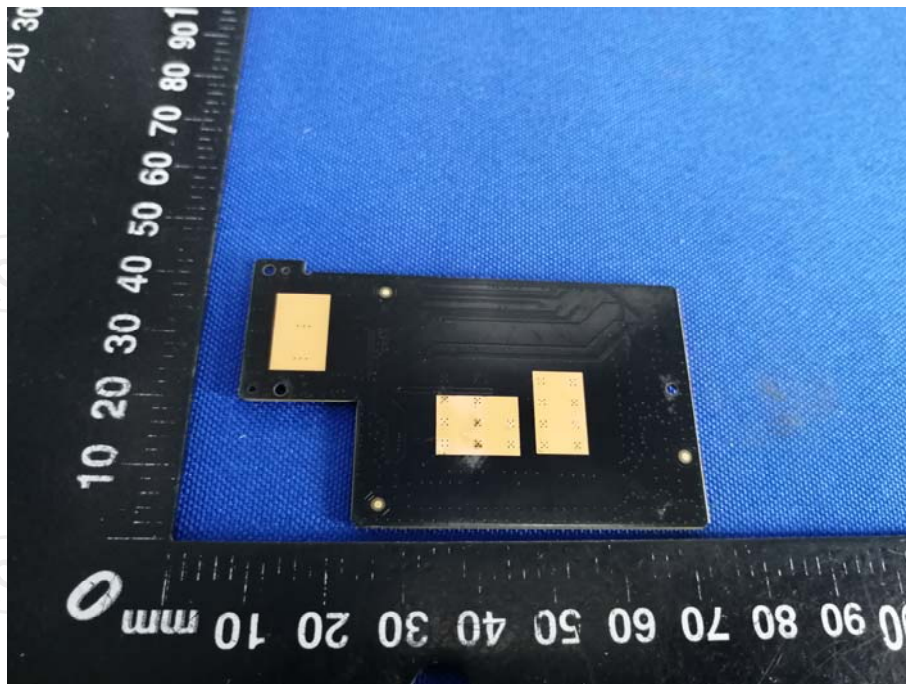


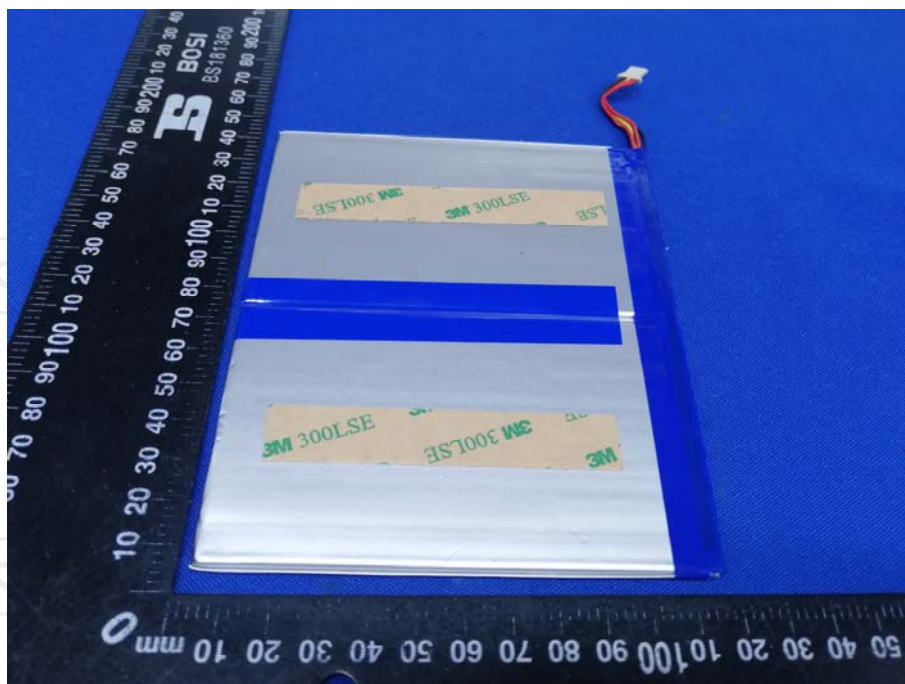












*******END OF REPORT*******