



Shenzhen GTI Technology Co., Ltd.

1F,2 Block, Jiaquan Building, Guanlan High-tech Park Baoan District,
Shenzhen, Guangdong, China.

Tel: +86-755-27559792

Fax: +86-755-86116468

Report No.: GTI20150585F-1

Page 1 of 21

FCC TEST REPORT

Product name.....: USB WIFI

Trademark: /

Model/Type reference: ZN-U9021

Listed Model(s): /

FCC ID.....: QISZN-U9021

Test Standards: **47 CFR FCC Part 15 Subpart B - Unintentional Radiators**
ANSI C63.4: 2014

Applicant: Huawei Technologies Co.,Ltd

Address of applicant: Administration Building, Headquarters of Huawei
Technologies Co., Ltd., Bantian, Longgang District,
Shenzhen, Guangdong, China

Date of Receipt: Oct. 25, 2015

Date of Test Date.....: Oct. 26, 2015 -Dec. 28, 2015

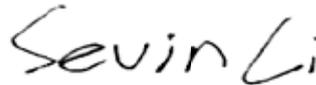
Data of issue.: Dec. 28, 2015

Test result	Pass *
--------------------	---------------

* In the configuration tested, the EUT complied with the standards specified above

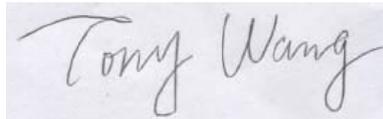
GENERAL DESCRIPTION OF EUT	
Equipment:	USB WIFI
Model Name:	ZN-U9021
Manufacturer:	Nanjing Z-Com Wireless Co., Ltd.
Manufacturer Address:	Z-Com Building, No.30 Jiangsu Software Park, No.699-22 Xuanwu Avenue, Nanjing, Jiangsu,China
Power Rating:	DC 5V via USB port

Compiled By:



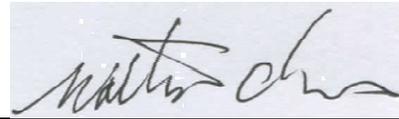
(Sevin Li)

Reviewed By:



(Tony Wang)

Approved By:



(Walter Chen)

This test report consists of 21 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by GTI. The test results in the report only apply to the tested sample. The test report shall be invalid without all the signatures of compiler, reviewer and approver. Any objections must be raised to GTI within 15 days since the date when the report is received. It will not be taken into consideration beyond this limit.



Table of Contents

Page

SUMMARY..... 4

TEST STANDARDS.....4

TEST DESCRIPTION.....4

TEST FACILITY4

MEASUREMENT UNCERTAINTY4

GENERAL INFORMATION..... 6

ENVIRONMENTAL CONDITIONS6

GENERAL DESCRIPTION OF EUT6

DESCRIPTION OF TEST MODES7

DESCRIPTION OF PERIPHERAL DURING TESTING7

MEASUREMENT INSTRUMENTS LIST8

EMC EMISSION TEST 9

CONDUCTED EMISSION MEASUREMENT.....9

RADIATED EMISSION12

EUT TEST PHOTO..... 16

SUMMARY

Test Standards

The tests were performed according to following standards:

[47 CFR FCC Part 15 Subpart B](#) - Unintentional Radiators

[ANSI C63.4: 2014](#) – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz

Test Description

Emission Measurement requirements		
Radiated Emission	Part15.109	PASS
Conducted Disturbance	Part15.107	PASS

Remark: The measurement uncertainty is not included in the test result.

Test Facility

1.3.1 Address of the test laboratory

Shenzhen General Testing & Inspection Technology Co., Ltd.

Add: 1F, 2 Block, Jiaquan Building, Guanlan High-tech Park Baoan District, Shenzhen, Guangdong, China.

1.3.2 Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

IC Registration No.: 9783A

The 3m alternate test site of Shenzhen GTI Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Aug, 2011.

FCC-Registration No.: 214666

Shenzhen GTI Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 214666, Sep 19, 2011

Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements and is documented in the Shenzhen General Testing & Inspection Technology Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.



Hereafter the best measurement capability for General Testing & Inspection laboratory is reported:

A. Conducted Measurement:

Test Site	Method	Measurement Frequency Range	U(dB)	NOTE
C01	ANSI	150 KHz ~ 30MHz	3.2	

B. Radiated Measurement:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.7 dB	(1)
Radiated Emission	1~18GHz	5.0 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

GENERAL INFORMATION

Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101KPa

General Description of EUT

Product Name:	USB WIFI
Model/Type reference:	ZN-U9021
Listed model:	/
Power supply:	DC 5V via USB port
Hardware version:	5.0.0.28
Software version:	v0.3

Note: For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

Description of Test Modes

Frequency range investigated: conduction 150 kHz to 30 MHz; according to 15.33(b), radiation 30MHz-7GHz(30MHz to the 5th harmonic of the highest fundamental frequency).

The Highest operation frequency is 1.28GHz

The device was a USB Dongle. As the function of the EUT, the operation mode selected to test as follow:

Test Mode	Function	Description
1	USB Data Transfer	Link PC+ WIFI Idle
Remark: Link with PC means data application transferred mode between EUT and PC		

Test Item	EUT Configure Mode
AC Conducted Emission	Mode 1
Radiated Emissions <1GHz	Mode 1
Radiated Emissions ≥1GHz	Mode 1

Description of Peripheral during Testing

No.	Product	Manufacturer	Serial No.	Certification
1	PC	Lenovo	H435	DOC
2	PC Power Supply	Bestec	ATX-250-12Z	DOC
3	Display	DELL	U2412M	DOC
4	Printer	HP	PJ1008	DOC
5	USB Flash	TRANSCEND	TS2GJFV30	DOC
6	Mouse	DELL	N889	DOC
7	Keyboard	DELL	SK-8185	DOC

Measurement Instruments List

Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	LISN	R&S	ENV216	101112	Jan. 07, 2016
2	LISN	R&S	ENV216	101113	Jan. 07, 2016
3	EMI Test Receiver	R&S	ESCI	100920	Jan. 07, 2016
4	Cable	Schwarzbeck	AK9515E	33156	Jan. 07, 2016

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Log-Bicon Antenna	Schwarzbeck	CBL6141A	4180	Jan. 07, 2016
2	Spectrum Analyzer	HP	8563E	02052	Jan. 07, 2016
3	Horn Antenna	Schwarzbeck	BBHA 9120D	648	Jan. 07, 2016
4	Pre-Amplifier	HP	8447D	1937A03050	Jan. 07, 2016
5	Pre-Amplifier	EMCI	EMC051835	980075	Jan. 07, 2016
6	EMI Test Receiver	R&S	ESCI	100658	Jan. 07, 2016
7	Antenna Mast	UC	UC3000	N/A	N/A
8	Turn Table	UC	UC3000	N/A	N/A
9	Cable Below 1GHz	Schwarzbeck	AK9515E	33155	Jan. 07, 2016
10	Cable Above 1GHz	Hubersuhner	SUCOFLEX1 02	DA1580	Jan. 07, 2016

Note: 1. The Cal. Interval was one year.

EMC EMISSION TEST

Conducted Emission Measurement

LIMIT

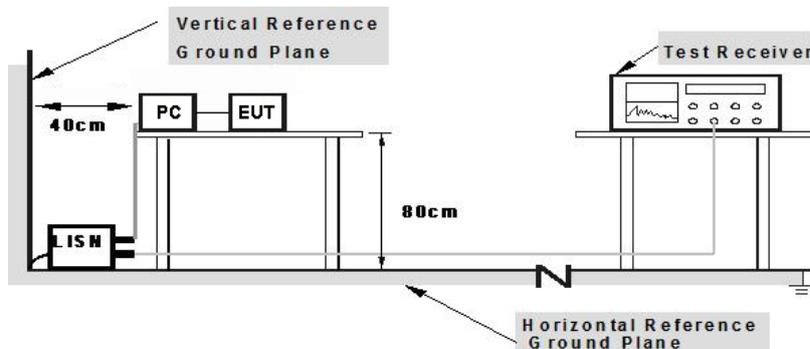
For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following :

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

TEST PROCEDURE

- a) The equipment was set up as per the test configuration to simulate typical actual usage per the user’s manual. 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 C63.4-2014.
- b) Support equipment, if needed, was placed as per ANSI C63.4-2014.
- c) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4-2014.
- d) An USB Line connection between the EUT and PC which received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- e) All support equipments received AC power from a second LISN, if any.
- f) The EUT 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.
- g) Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- h) During the above scans, the emissions were maximized by cable manipulation.

TEST SETUP



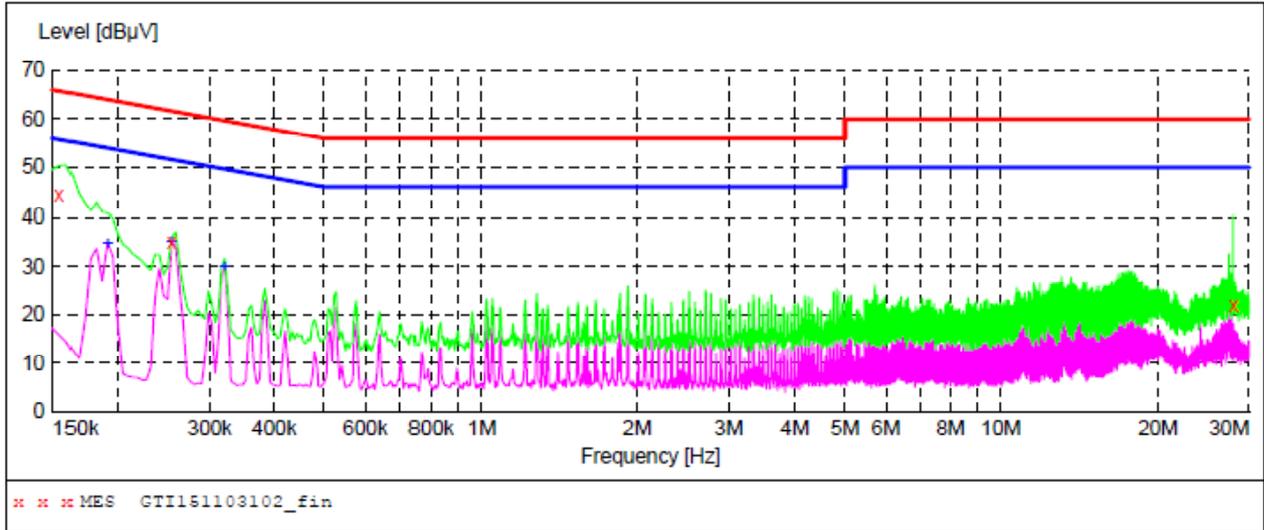
**Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

TEST RESULTS

Test mode:	Mode 1	Polarization:	L
-------------------	--------	----------------------	---

SCAN TABLE: "Vol (9K-30M) FIN-N"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "GTI151103102_fin"

11/3/2015 10:01AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.154500	44.50	9.8	66	21.3	QP	L1	GND
0.253500	34.80	9.7	62	26.8	QP	L1	GND
27.941000	21.70	11.0	60	38.3	QP	L1	GND

MEASUREMENT RESULT: "GTI151103102_fin2"

11/3/2015 10:01AM

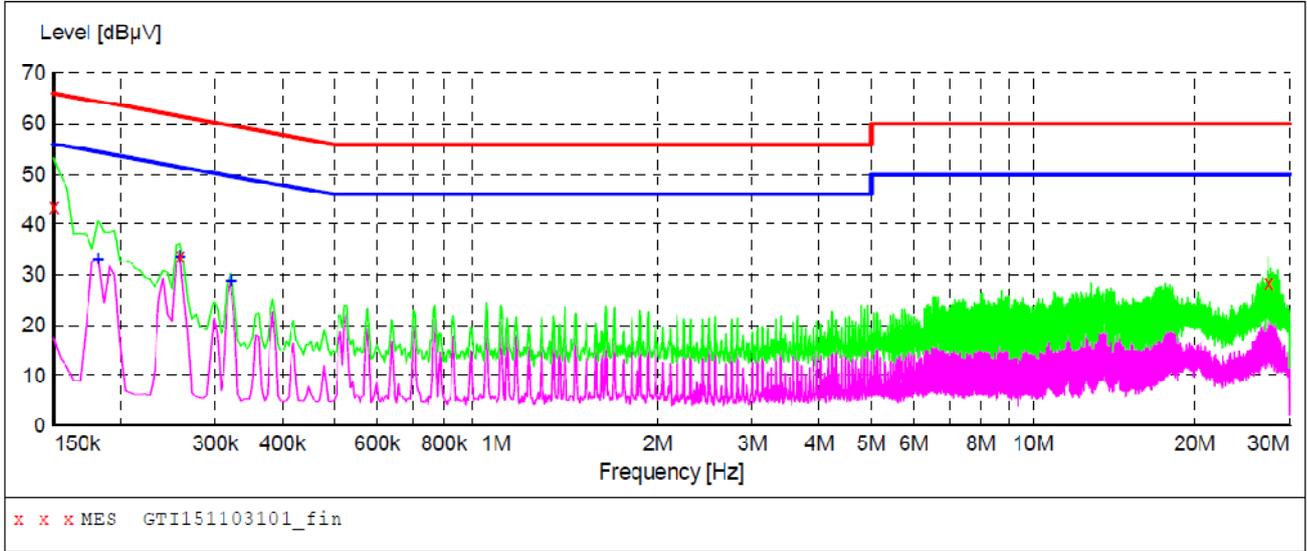
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.190500	34.70	9.7	54	19.3	AV	L1	GND
0.253500	34.90	9.7	52	16.7	AV	L1	GND
0.321000	30.00	9.8	50	19.7	AV	L1	GND



Test mode:	Mode 1	Polarization:	N
-------------------	--------	----------------------	---

SCAN TABLE: "Vol (9K-30M) FIN-N"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "GTI151103101_fin"

11/3/2015 9:56AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	43.50	9.5	66	22.5	QP	N	GND
0.258000	33.70	9.5	62	27.8	QP	N	GND
27.482000	28.50	10.8	60	31.5	QP	N	GND

MEASUREMENT RESULT: "GTI151103101_fin2"

11/3/2015 9:56AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.181500	33.30	9.5	54	21.1	AV	N	GND
0.258000	33.80	9.5	52	17.7	AV	N	GND
0.321000	28.80	9.5	50	20.9	AV	N	GND

Radiated Emission

LIMITS

LIMITS OF RADIATED EMISSION MEASUREMENT (Below 1000MHz)

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	39.0	40.0
88 ~ 216	43.5	43.5
216 ~ 960	46.5	46.0
Above 960	49.5	54.0

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (at 3m) dBuV/m		Class B (at 3m) dBuV/m	
	Peak	Avg	Peak	Avg
Above 1000	80	60	74	54

Notes:

- 1) The limit for radiated test was performed according to as following:
CISPR 22/ FCC PART 15B /ICES-003.
- 2) The tighter limit applies at the band edges.
- 3) Emission level (dBuV/m)=20log Emission level (uV/m).

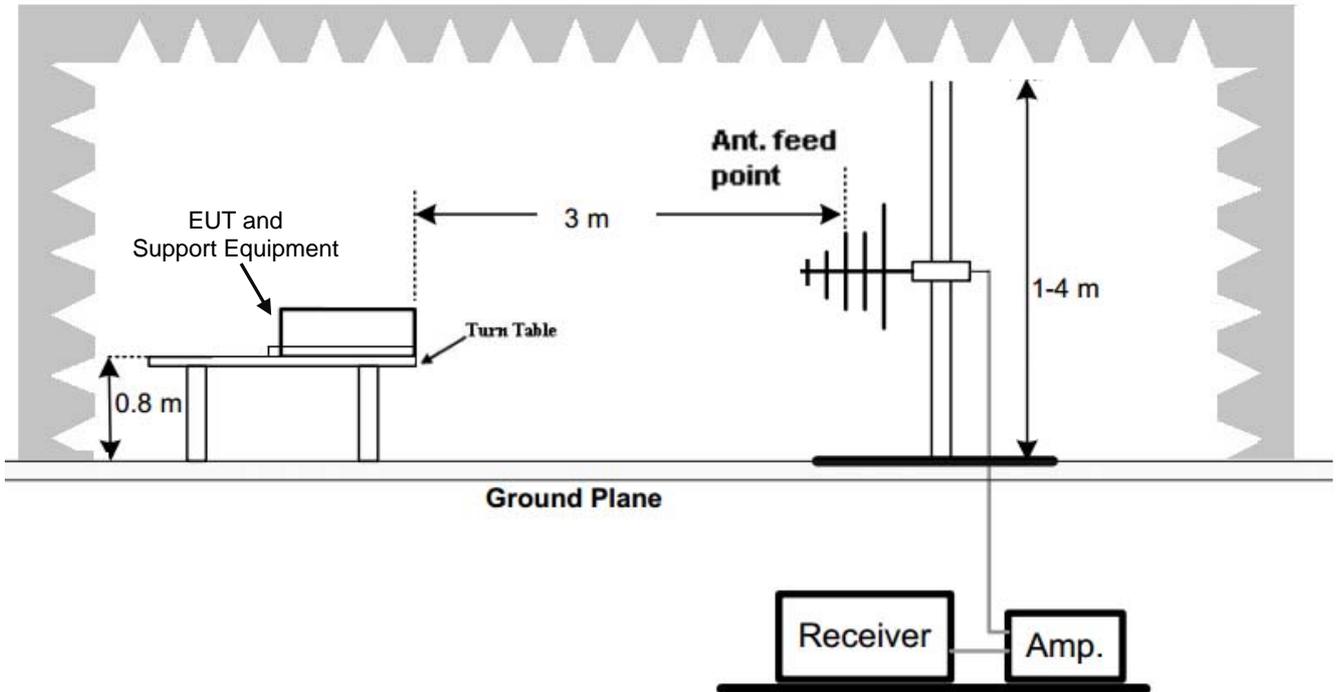
TEST PROCEDURE

- a) The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c) The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.
- e) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP (AV) Limits and then no additional QP Mode measurement performed.

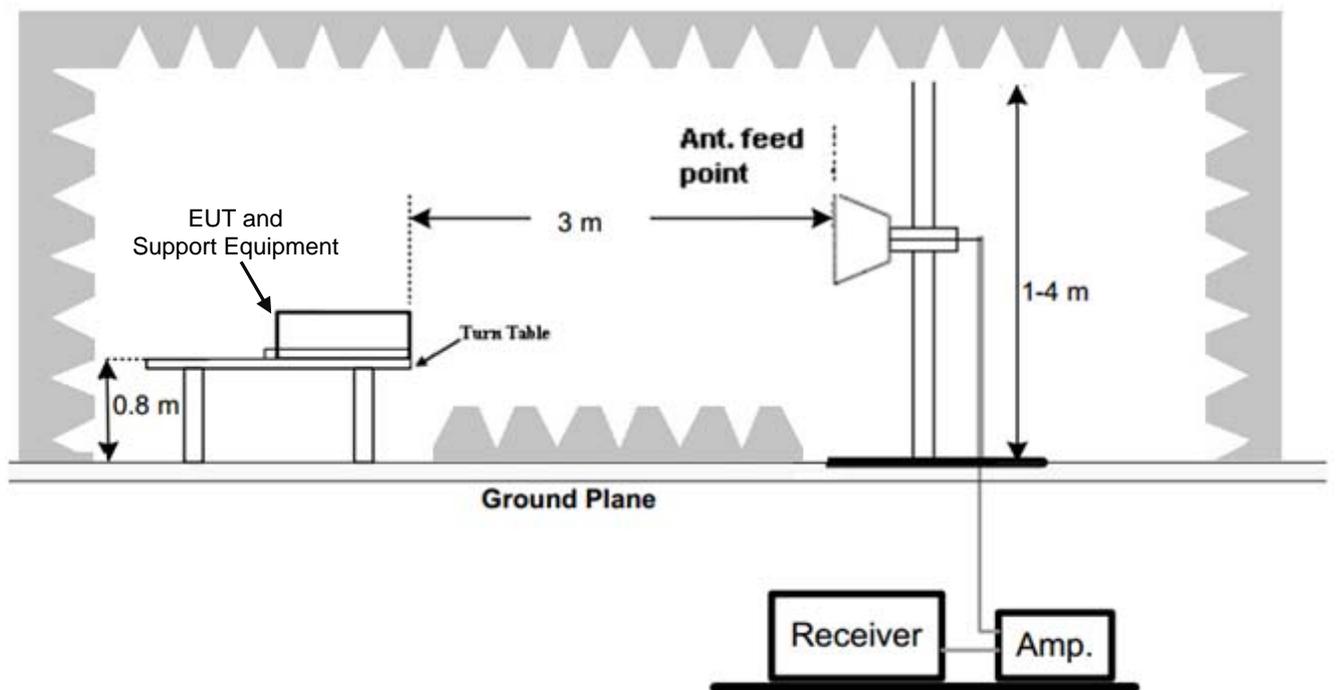
TEST SETUP

For the actual test configuration, please refer to the related Item –EUT Test Photos.

(A) Radiated Emission Test Set-Up Frequency below 1 GHz



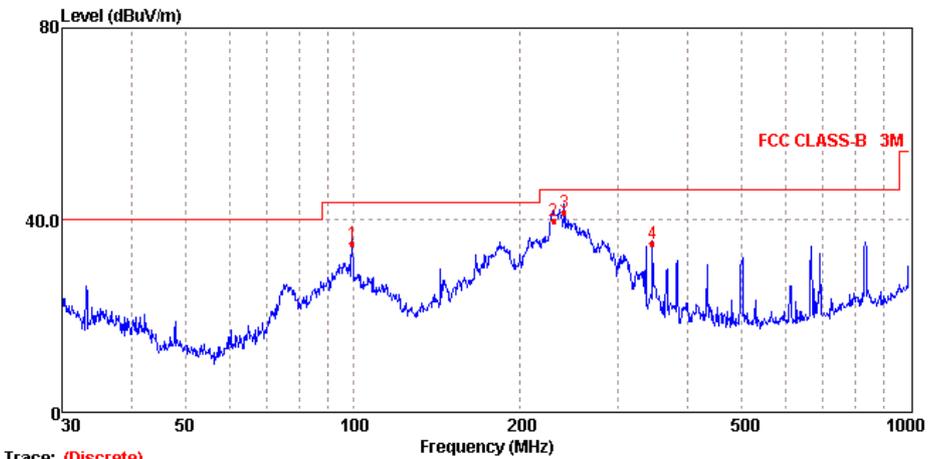
(B) Radiated Emission Test Set-UP Frequency above 1GHz



TEST RESULTS

Test mode:	Mode 1	Polarization:	Horizontal
-------------------	--------	----------------------	------------

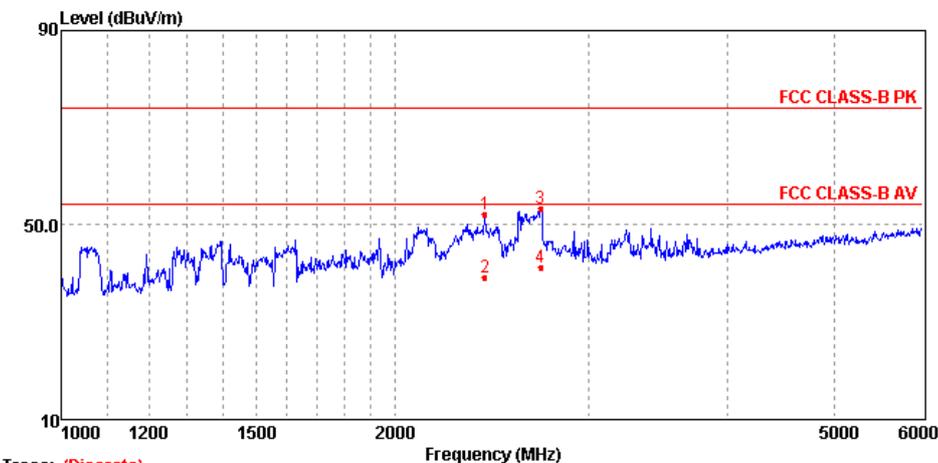
Data: 6



Trace: (Discrete)

Mark	Frequency MHz	Level dBuV/m	Factor dB/m	Reading dBuV	Limit dBuV/m	Margin dB	Polarization	Detector
1	99.88	34.70	-19.39	54.09	43.50	8.80	HORIZONTAL	QP
2	229.29	39.60	-17.70	57.30	46.00	6.40	HORIZONTAL	QP
3	239.99	41.20	-17.65	58.85	46.00	4.80	HORIZONTAL	QP
4	345.60	34.80	-15.44	50.24	46.00	11.20	HORIZONTAL	QP

Data: 5



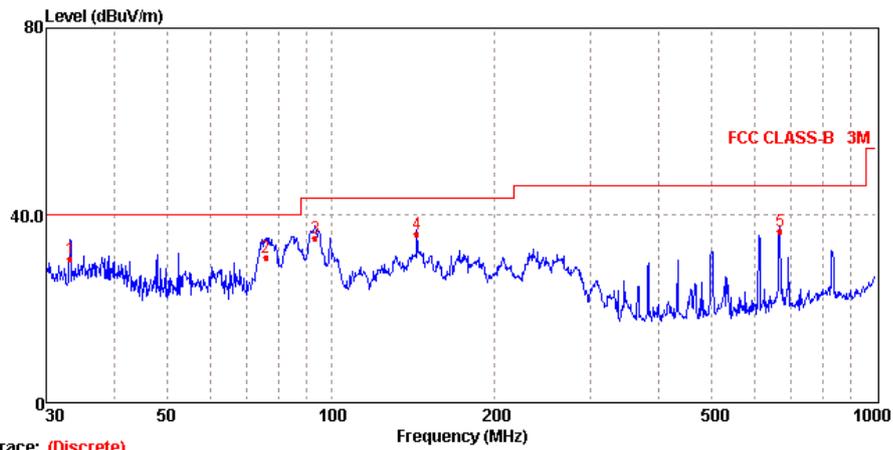
Trace: (Discrete)

Mark	Frequency MHz	Level dBuV/m	Factor dB/m	Reading dBuV	Limit dBuV/m	Margin dB	Polarization	Detector
1	2414.63	51.94	-10.11	62.05	74.00	22.06	HORIZONTAL	Peak
2	2414.63	38.99	-10.11	49.10	54.00	15.01	HORIZONTAL	Average
3	2712.88	53.14	-9.36	62.30	74.00	20.86	HORIZONTAL	Peak
4	2712.88	40.94	-9.36	50.30	54.00	13.06	HORIZONTAL	Average

Note: 6GHz-7GHz was not recorded for its signal was very low against the limit.

Test mode:	Mode 1	Polarization:	Vertical
-------------------	---------------	----------------------	-----------------

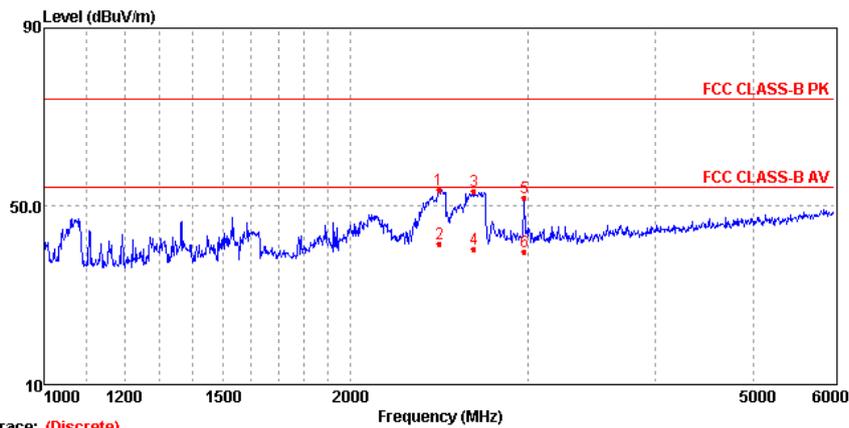
Data: 5



Trace: (Discrete)

Mark	Frequency MHz	Level dBuV/m	Factor dB/m	Reading dBuV	Limit dBuV/m	Margin dB	Polarization	Detector
1	33.21	30.41	-9.68	40.09	40.00	9.59	VERTICAL	QP
2	75.98	30.50	-22.38	52.88	40.00	9.50	VERTICAL	QP
3	93.44	34.70	-19.97	54.67	43.50	8.80	VERTICAL	QP
4	143.83	35.60	-19.29	54.89	43.50	7.90	VERTICAL	QP
5	668.14	36.40	-9.64	46.04	46.00	9.60	VERTICAL	QP

Data: 6



Trace: (Discrete)

Mark	Frequency MHz	Level dBuV/m	Factor dB/m	Reading dBuV	Limit dBuV/m	Margin dB	Polarization	Detector
1	2449.49	53.34	-9.98	63.32	74.00	20.66	VERTICAL	Peak
2	2449.49	41.22	-9.98	51.20	54.00	12.78	VERTICAL	Average
3	2650.42	53.00	-9.46	62.46	74.00	21.00	VERTICAL	Peak
4	2650.42	40.14	-9.46	49.60	54.00	13.86	VERTICAL	Average
5	2972.46	51.71	-8.76	60.47	74.00	22.29	VERTICAL	Peak
6	2972.46	39.44	-8.76	48.20	54.00	14.56	VERTICAL	Average

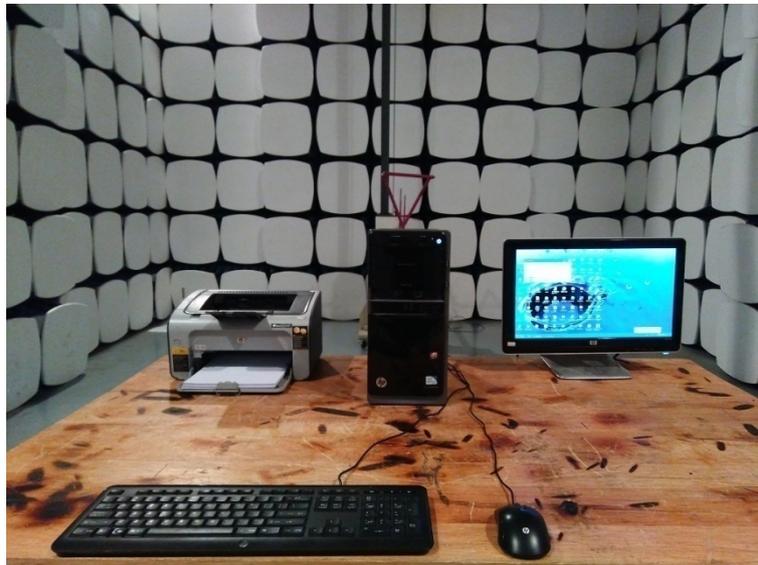
Note: 6GHz-7GHz was not recorded for its signal was very low against the limit.

EUT TEST PHOTO

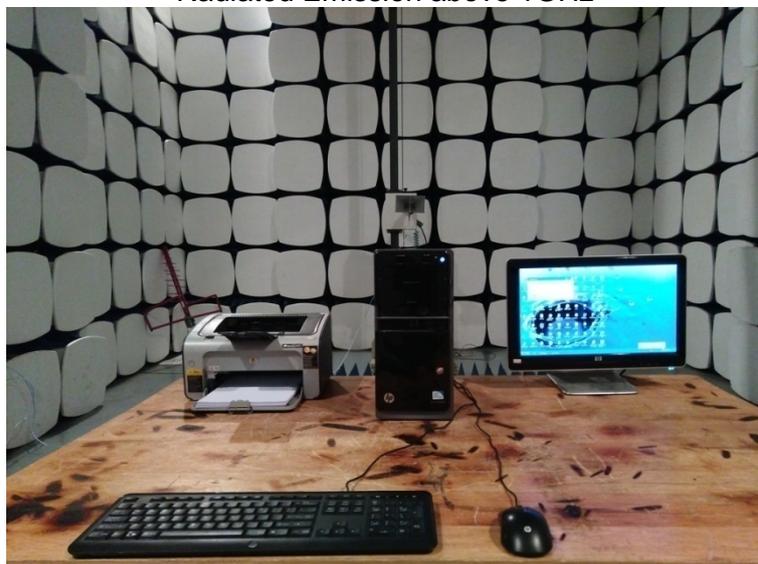
Conducted Emission



Radiated Emission below 1GHz

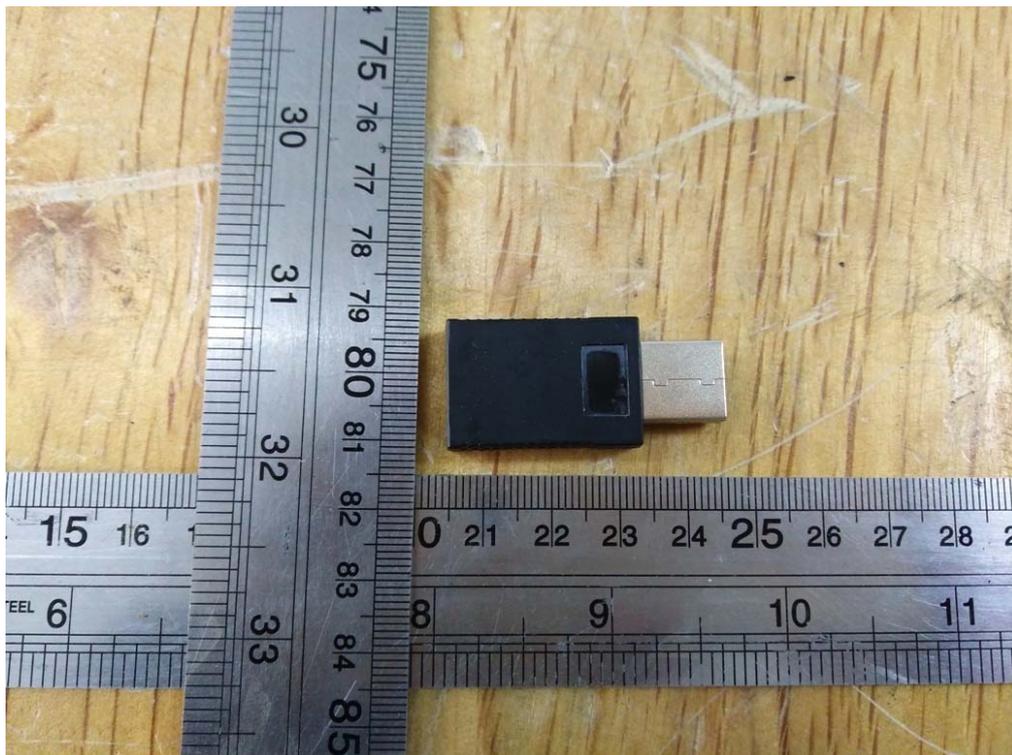


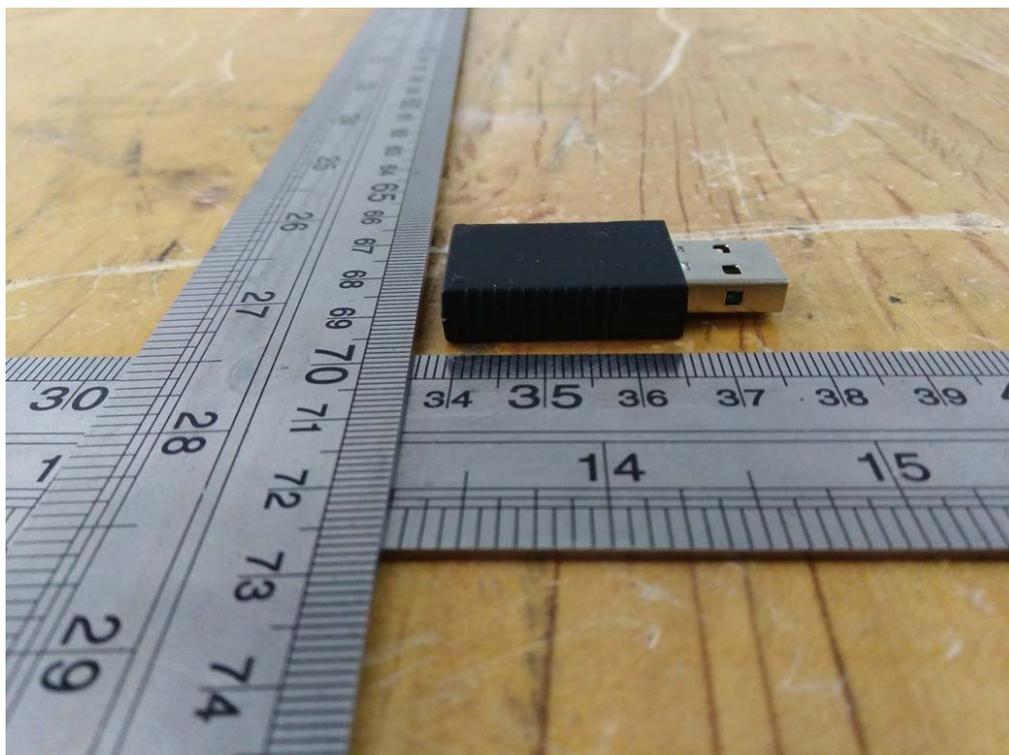
Radiated Emission above 1GHz

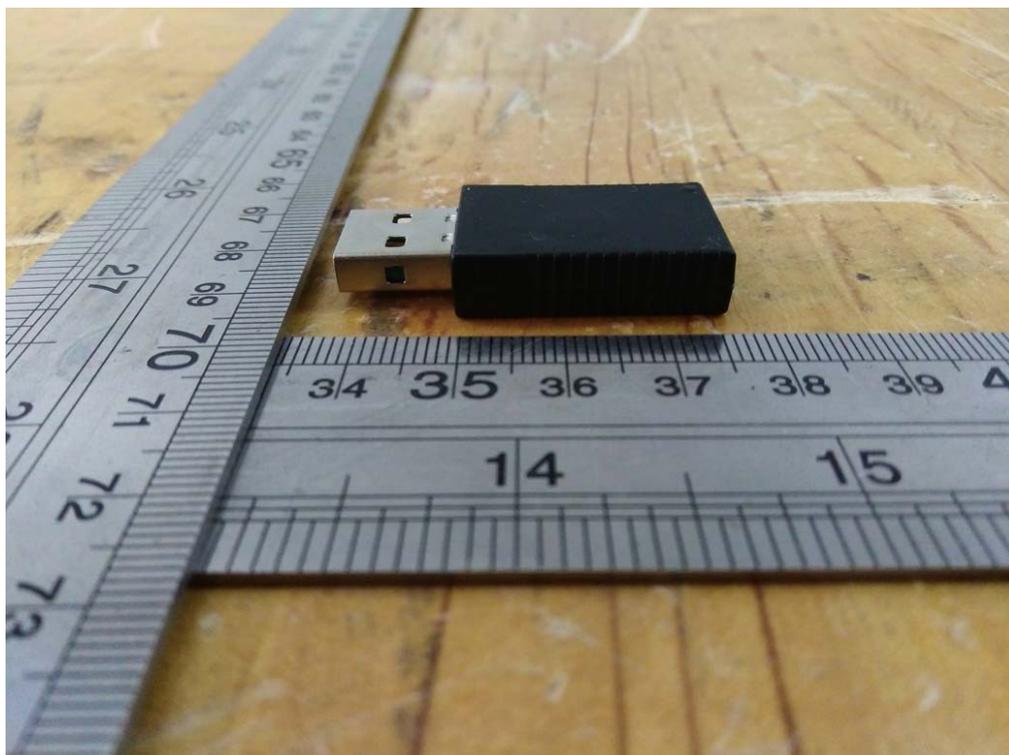


PHOTOGRAPHS OF EUT CONSTRUCTIONAL

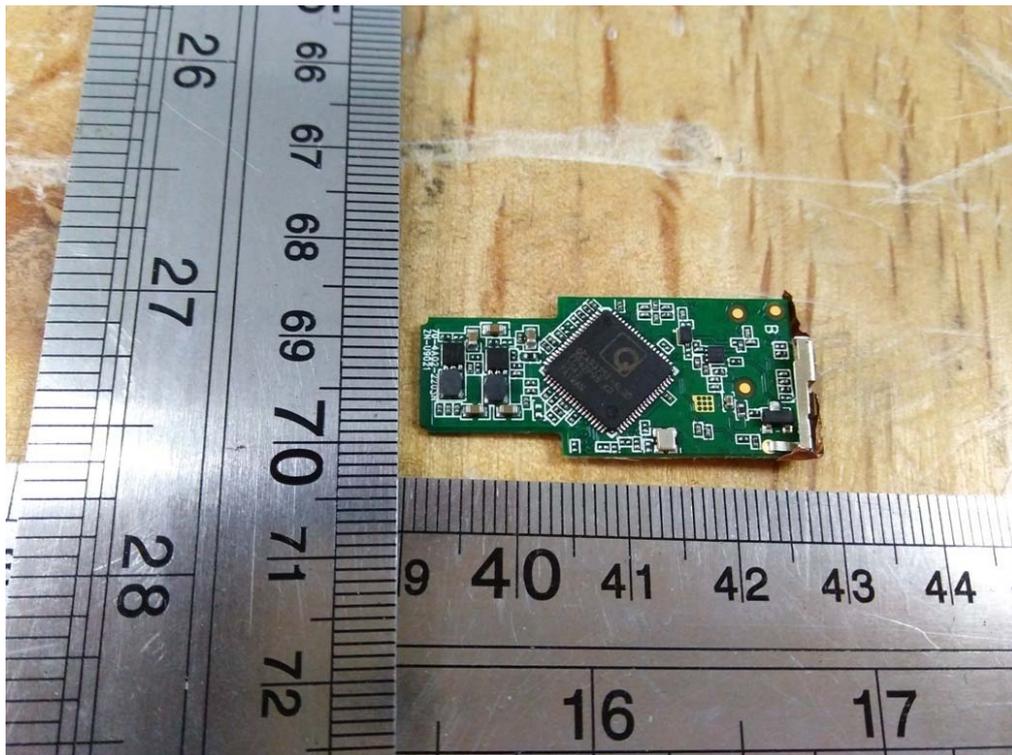
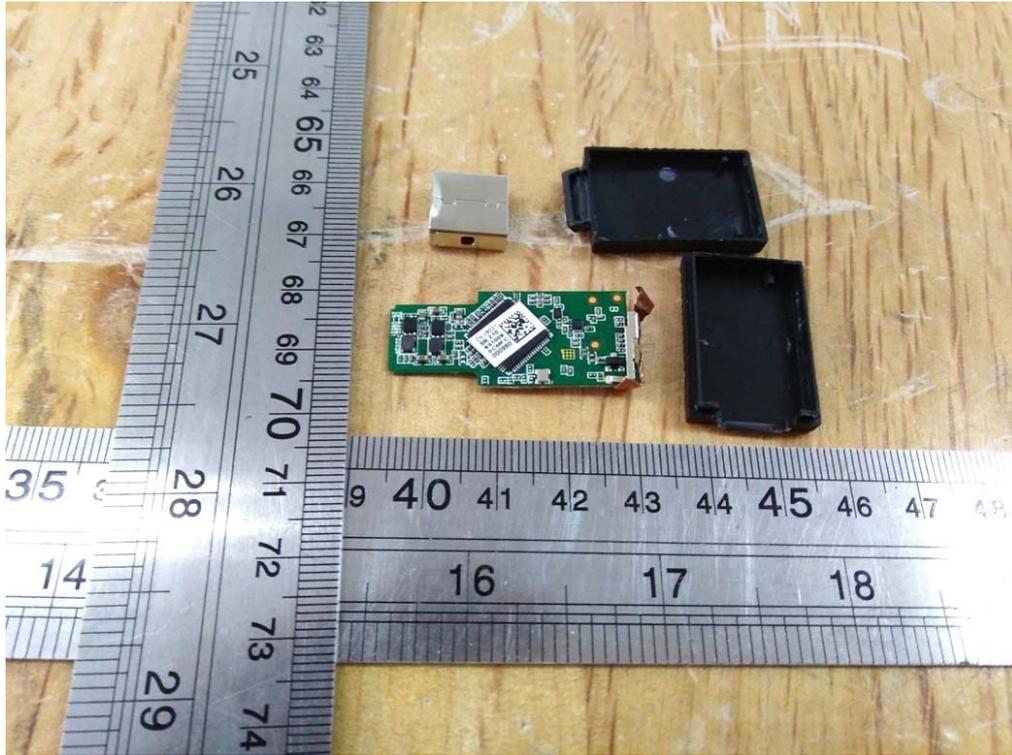
External photo

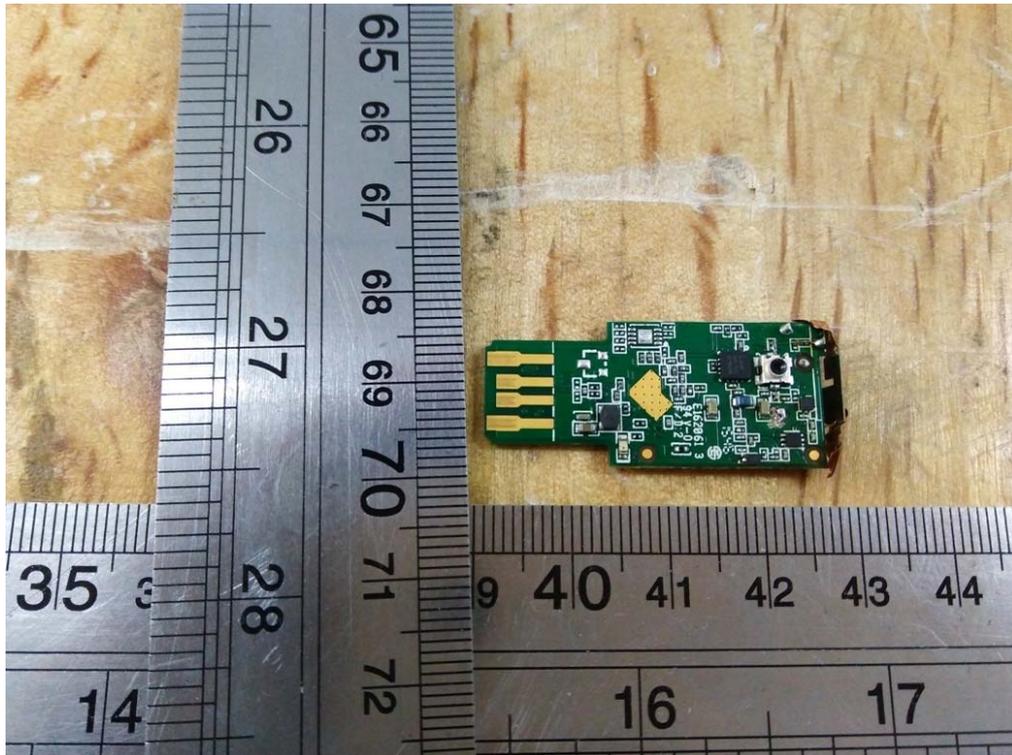






Internal Photo





*****THE END*****