

# **FCC Test Report**

Report No.: AGC07102190301FE03

**FCC ID** : 2AAVD-9811USBV20

**APPLICATION PURPOSE**: Original Equipment

**PRODUCT DESIGNATION**: Wireless Dongle

**BRAND NAME** : N/A

MODEL NAME : 9811USB

CLIENT: SHENZHEN LOYAL ELECTRONICS CO., LTD.

**DATE OF ISSUE** : Mar. 13, 2019

STANDARD(S)

TEST PROCEDURE(S) : FCC Part 15 Rules

REPORT VERSION : V1.0

# Attestation of Global Compliance (Shenzhen) Co., Ltd

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#### REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0		Mar. 13, 2019	Valid	Initial Release

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# 1. VERIFICATION OF CONFORMITY

Applicant	SHENZHEN LOYAL ELECTRONICS CO., LTD.			
Address	No.5, 1ST INDUSTRIAL AREA OF SHANMEN, SONGGANG, BAOAN, SHENZHEN, CHINA			
Manufacturer	SHENZHEN LOYAL ELECTRONICS CO., LTD.			
Address	No.5, 1ST INDUSTRIAL AREA OF SHANMEN, SONGGANG, BAOAN, SHENZHEN, CHINA			
Factory	SHENZHEN LOYAL ELECTRONICS CO., LTD.			
Address	No.5, 1ST INDUSTRIAL AREA OF SHANMEN, SONGGANG, BAOAN, SHENZHEN, CHINA			
Product Designation	Wireless Dongle			
Brand Name	N/A			
Test Model	9811USB			
Date of test	Mar. 07, 2019 to Mar. 13, 2019			
Deviation	None Service S			
Condition of Test Sample	Normal			
Test Result	Pass San			
Report Template	AGCRT-US-BR/RF			

#### We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.249.

Tested By	Max Zhang		
The standard Company	Max Zhang(Zhang Yi)	Mar. 13, 2019	
Reviewed By	Bore xie		
O THE TANK OF THE PARTY OF THE	Bart Xie(Xie Xiaobin)	Mar. 13, 2019	
Approved By	Forversto ce		
To the state of th	Forrest Lei(Lei Yonggang) Authorized Officer	Mar. 13, 2019	

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# 2. GENERAL INFORMATION

# 2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

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Operation Frequency	2.402 GHz to 2.480GHz
Maximum field strength	86.87dBuV/m(average)@3m
Modulation	GFSK
Number of channels	40
Antenna Gain	2.08dBi
Antenna Designation	PCB Antenna (Met 15.203 Antenna requirement)
Hardware Version	V39
Software Version	V0
Power Supply	DC 5V

#### 2.2. TABLE OF CARRIER FREQUENCY

Frequency Band	Channel Number	Frequency
-C *** 100 10	1	2402MHZ
	12 to the state of	2404MHZ
T. Marine	- C	
2400~2483.5MHZ		- 1111 182 - 11110
2400~2463.3WITZ	The Market The The Committee	© Marianton Contraction (Contraction Contraction Contr
<b>五龙</b>	© Allegation of Carbonia	CO SO
O Marine Scientific Co. Marine Co.	39	2478MHZ
CC CC	40	2480MHZ

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#### 3. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in measurement" (GUM) published by CISPR and ANSI.

- Uncertainty of Conducted Emission, Uc = ±3.2 dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB

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# 4. DESCRIPTION OF TEST MODES

NO.	O. TEST MODE DESCRIPTION				
K 1 Julian	Low char	nnel GFSK	100		
2	Middle cha	annel GFSK	T Parines		
3	High cha	nnel GFSK	© Marinord Columbia		

#### Note:

- 1. Only the result of the worst case was recorded in the report, if no other cases.
- 2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

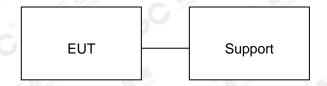
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# 5. SYSTEM TEST CONFIGURATION

#### 5.1. CONFIGURATION OF EUT SYSTEM



#### **5.2 EQUIPMENT USED IN TESTED SYSTEM**

Item	Equipment	Model No.	ID or Specification	Remark	
1 ⊗	Wireless Dongle	9811USB	2AAVD-9811USBV20	EUT	
2	PC	HP Pavilion 15	N/A	Support	
3	PC adapter	HP 4411SS G4	DC19V/4.74A	Support	

# **5.3. SUMMARY OF TEST RESULTS**

FCC RULES	DESCRIPTION OF TEST	RESULT	
§15.249&15.209	Radiated Emission	Compliant	
§15.249	Band Edges	Compliant	
§15.215	20dB bandwidth	Compliant	
§15.207	Conducted Emission	Compliant	

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# 6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd				
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China				
Designation Number	CN1259				
FCC Test Firm Registration Number	975832				
A2LA Cert. No.	5054.02				
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA				

#### **TEST EQUIPMENT OF CONDUCTED EMISSION TEST**

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	Jun. 12, 2018	Jun. 11, 2019
LISN	R&S	ESH2-Z5	100086	Aug. 28, 2018	Aug. 27, 2019

# **TEST EQUIPMENT OF RADIATED EMISSION TEST**

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Jun. 12, 2018	Jun. 11, 2019
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 20, 2018	Dec. 19, 2019
2.4GHz Fliter	Micro-tronics	087	N/A	Jun. 12, 2018	Jun. 11, 2019
Attenuator	Weinachel Corp	58-30-33	N/A	Jun. 12, 2018	Jun. 11, 2019
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep. 21, 2017	Sep. 20, 2020
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	Jun. 14, 2018	Jun. 13, 2020
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May. 26, 2018	May. 25, 2020
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Oct. 25, 2018	Oct. 24, 2019
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep. 28, 2017	Sep. 27, 2019

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# 7. RADIATED EMISSION

# 7.1TEST LIMIT

#### Standard FCC15.249

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
900-928MHz	50 Market Strategy Strategy	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

# Standard FCC 15.209

Frequency	Distance	Field	Strengths Limit	
(MHz)	Meters	μ <b>V/m</b>	dB(μV)/m	
0.009 ~ 0.490	300	2400/F(kHz)	<u></u>	
0.490 ~ 1.705	30	24000/F(kHz)		
1.705 ~ 30	30	30	The filming the filming	
30 ~ 88	3	100	40.0	
88 ~ 216	3	150	43.5	
216 ~ 960	3	200	46.0	
960 ~ 1000	3	500	54.0	
Above 1000	3	Other:74.0 dB(µV)/m (Peak) 54.0 dB(µV)/m (Average		

Remark:

- (1) Emission level dB  $\mu$  V = 20 log Emission level  $\mu$  V/m
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

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#### 7.2. MEASUREMENT PROCEDURE

- The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use minimum resolution bandwidth of 1 MHz. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8.If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.

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The following table is the setting of spectrum analyzer and receiver.

	Spectrum Parameter	Setting
The Till	Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
(S) (S)	Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
GC *	Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
	THE STATE OF THE S	1GHz~26.5GHz
不不	Start ~Stop Frequency	RBW 2.4MHz/ VBW 8MHz for Peak,
3 Figure of Gib	8 # Jane 1990 AGO AGO	RBW 2.4MHz/10Hz for Average

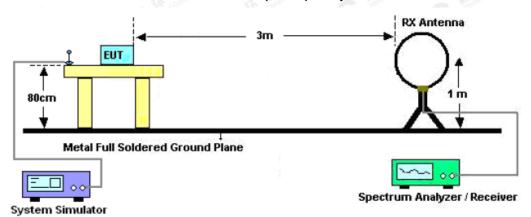
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

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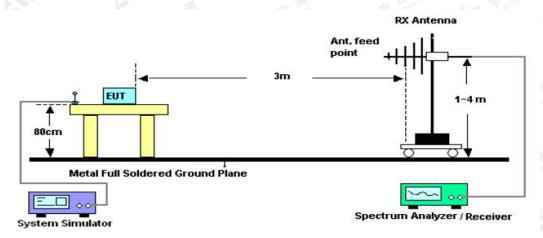


# 7.3. TEST SETUP

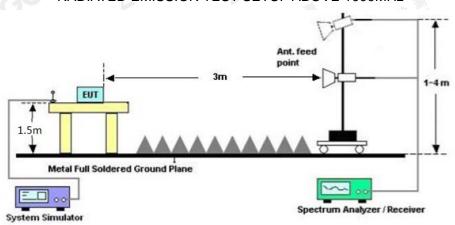
# Radiated Emission Test-Setup Frequency Below 30MHz



#### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



# RADIATED EMISSION TEST SETUP ABOVE 1000MHz



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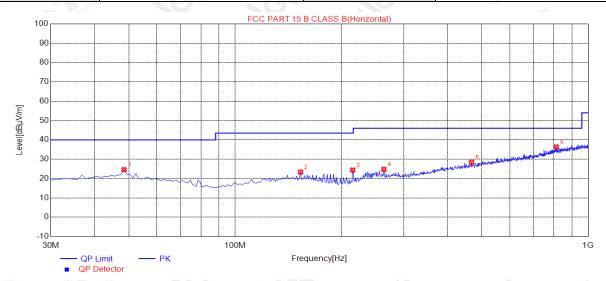
#### 7.4. TEST RESULT

#### **RADIATED EMISSION BELOW 30MHZ**

No emission found between lowest internal used/generated frequencies to 30MHz.

# **RADIATED EMISSION 30MHz-1GHZ**

EUT:	Wireless Dongle	Model Name. :	9811USB
Temperature :	20 ℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage :	DC5V
Test Mode :	Mode 1	Polarization :	Horizontal



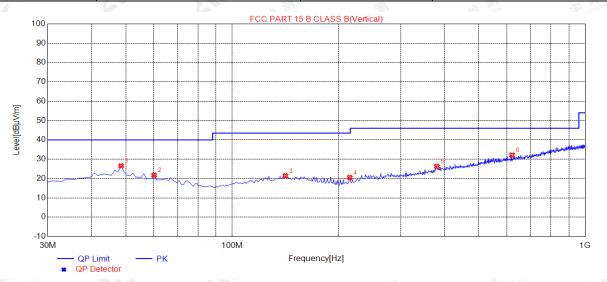
Suspe	Suspected Data List							
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	48.4300	24.60	14.71	40.00	15.40	100	121	Horizontal
2	153.1900	23.37	14.91	43.50	20.13	200	223	Horizontal
3	215.2700	24.40	12.98	43.50	19.10	100	99	Horizontal
4	263.7700	24.79	14.88	46.00	21.21	100	285	Horizontal
5	467.4700	28.42	21.36	46.00	17.58	150	251	Horizontal
6	812.7900	36.36	28.68	46.00	9.64	100	332	Horizontal

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EUT:	Wireless Dongle	Model Name. :	9811USB
Temperature:	20 ℃	Relative Humidtity:	48%
Pressure :	1010 hPa	Test Voltage :	DC5V
Test Mode :	Mode 1	Polarization :	Vertical



Suspe	Suspected Data List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	
1	48.4300	26.54	14.71	40.00	13.46	100	147	Vertical	
2	60.0700	21.74	13.90	40.00	18.26	100	230	Vertical	
3	141.5500	21.39	14.88	43.50	22.11	150	98	Vertical	
4	215.2700	20.53	12.98	43.50	22.97	200	226	Vertical	
5	380.1700	26.26	19.05	46.00	19.74	150	354	Vertical	
6	620.7300	32.13	24.67	46.00	13.87	150	2	Vertical	

#### **RESULT: PASS**

#### Note:

Factor=Antenna Factor + Cable loss, Margin=Result-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

The mode 1 is the worst case, and only the data of the worst case recorded in this test report.

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# FIELD STRENGTH OF FUNDAMENTAL

EUT:	Wireless Dongle	Model Name. :	9811USB
Temperature :	20 ℃	Relative Humidtity:	48%
Pressure :	1010 hPa	Test Voltage :	DC5V
Test Modulation :	GFSK	Polarization:	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	<b>9</b>
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
2402.031	98.15	-9.61	88.54	114.00	-25.46	peak
2402.031	95.86	-9.61	86.25	94.00	-7.75	AVG
2440.031	98.82	-9.61	89.21	114.00	-24.79	peak
2440.031	96.48	-9.61	86.87	94.00	-7.13	AVG
2480.031	98.35	-9.61	88.74	114.00	-25.26	peak
2480.031	95.86	-9.61	86.25	94.00	-7.75	AVG
Remark:	Alles	C			11172	The state of
Factor = Ante	enna Factor + Ca	ble Loss –	Pre-amplifier.		Kil nollance	The Complian

EUT:	Wireless Dongle	Model Name. :	9811USB
Temperature:	20 ℃	Relative Humidtity:	48%
Pressure :	1010 hPa	Test Voltage :	DC5V
Test Modulation :	GFSK	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
2402.031	97.26	-9.61	87.65	114.00	-26.35	peak
2402.031	95.03	-9.61	85.42	94.00	-8.58	AVG
2440.031	98.37	-9.61	88.76	114.00	-25.24	peak
2440.031	95.73	-9.61	86.12	94.00	-7.88	AVG
2480.031	98.08	-9.61	88.47	114.00	-25.53	peak
2480.031	95.64	-9.61	86.03	94.00	-7.97	AVG
Remark:	- 1	litte:	2.3	St poliance	The Compliant	® Tation of C.
Factor = Ante	enna Factor + Ca	ble Loss – F	Pre-amplifier.	® ##	ion of Globa	

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# **RADIATED EMISSION ABOVE 1GHZ**

EUT:	Wireless Dongle	Model Name. :	9811USB
Temperature:	20 ℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage :	DC5V
Test Mode :	Mode 1	Polarization:	Horizontal

Meter Reading	Factor	Emission Level	Limits	Margin	Value Ture
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
48.69	3.76	52.45	74.00	-21.55	peak
45.76	3.76	49.52	54.00	-4.48	AVG
43.08	8.17	51.25	74.00	-22.75	peak
40.25	8.17	48.42	54.00	-5.58	AVG
	48.69 45.76 43.08	48.69 3.76 45.76 3.76 43.08 8.17	48.69     3.76     52.45       45.76     3.76     49.52       43.08     8.17     51.25	48.69     3.76     52.45     74.00       45.76     3.76     49.52     54.00       43.08     8.17     51.25     74.00	48.69     3.76     52.45     74.00     -21.55       45.76     3.76     49.52     54.00     -4.48       43.08     8.17     51.25     74.00     -22.75

		and and	
EUT:	Wireless Dongle	Model Name. :	9811USB
Temperature :	20 ℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage :	DC5V
Test Mode :	Mode 1	Polarization:	Vertical

Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
47.98	3.76	51.74	74.00	-22.26	peak
44.49	3.76	48.25	54.00	-5.75	AVG
42.68	8.17	50.85	74.00	-23.15	peak
36.25	8.17	44.42	54.00	-9.58	AVG
ance The Com	(B)	and the station of the state of	Altestation	60	
enna Factor + Ca	ble Loss –	Pre-amplifier.			
	(dBµV) 47.98 44.49 42.68 36.25	(dBµV) (dB) 47.98 3.76 44.49 3.76 42.68 8.17 36.25 8.17	(dBμV)     (dB)     (dBμV/m)       47.98     3.76     51.74       44.49     3.76     48.25       42.68     8.17     50.85	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)       47.98     3.76     51.74     74.00       44.49     3.76     48.25     54.00       42.68     8.17     50.85     74.00       36.25     8.17     44.42     54.00	(dBμV)     (dB)     (dBμV/m)     (dBμV/m)     (dBμV/m)       47.98     3.76     51.74     74.00     -22.26       44.49     3.76     48.25     54.00     -5.75       42.68     8.17     50.85     74.00     -23.15       36.25     8.17     44.42     54.00     -9.58

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Report No.: AGC07102190301FE03 Page 19 of 39

EUT:	Wireless Dongle	Model Name. :	9811USB
Temperature:	20 ℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage :	DC5V
Test Mode :	Mode 2	Polarization:	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4880.062	47.74	3.78	51.52	74.00	-22.48	peak
4880.062	44.50	3.78	48.28	54.00	-5.72	♠ AVG
7320.093	43.51	8.23	51.74	74.00	-22.26	peak ©
7320.093	40.19	8.23	48.42	54.00	-5.58	AVG

EUT:	Wireless Dongle	Model Name. :	9811USB
Temperature:	20 ℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage :	DC5V
Test Mode :	Mode 2	Polarization :	Vertical

			Mark ACC	. No. "Oll."	NO 2882	
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4880.062	47.00	3.78	50.78	74.00	-23.22	peak
4880.062	41.76	3.78	45.54	54.00	-8.46	AVG
7320.093	43.45	8.23	51.68	74.00	-22.32	peak
7320.093	38.26	8.23	46.49	54.00	-7.51 🐔	AVG
Remark:	型	bliance	E Globa (S)	The station of the	a G Ame	
Factor = Ante	enna Factor + Ca	ble Loss -	Pre-amplifier.	Pro-		

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EUT:	Wireless Dongle	Model Name. :	9811USB
Temperature :	20 ℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage :	DC5V
Test Mode :	Mode 3	Polarization:	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4960.062	47.76	3.81	51.57	74.00	-22.43	peak
4960.062	44.97	3.81	48.78	54.00	-5.22	AVG
7440.093	42.47	8.27	50.74	74.00	-23.26	peak
7440.093	38.31	8.27	46.58	54.00	-7.42	AVG
Remark:	30.31	0.21	40.56	54.00	-1.42	AV

EUT:	Wireless Dongle	Model Name. :	9811USB
Temperature:	20 ℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage :	DC5V
Test Mode :	Mode 3	Polarization:	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Tons	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type	
4960.062	48.04	3.81	51.85	74.00	-22.15	peak	
4960.062	43.66	3.81	47.47	54.00	-6.53	AVG	
7440.093	42.58	8.27	50.85	74.00	-23.15	peak	
7440.093	38.15	8.27	46.42	54.00	-7.58	AVG	
Remark:	加加	pilance (B)	(S)	The station of the	a Ca All		
actor = Ante	enna Factor + Ca	able Loss -	Pre-amplifier.	pro-	10		

Note: Other emissions from 8G to 25 GHz are considered as ambient noise. No recording in the test report.

Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Measurement-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

The GFSK modulation was the worst case and only the data of worst recorded in this report

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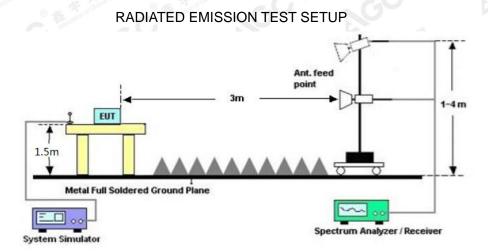
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#### 8. BAND EDGE EMISSION

# **8.1. MEASUREMENT PROCEDURE**

- 1. The EUT operates at transmitting mode. The operate channel is tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.
- 2. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission: (a) PEAK: RBW=1MHz, VBW=3MHz / Sweep=AUTO
- (b) AVERAGE: RBW=1MHz; VBW=1/on time(1KHz) / Sweep=AUTO
- 3. Other procedures refer to clause 7.2.

#### **8.2 TEST SETUP**



#### **8.3 RADIATED TEST RESULT**

#### Note:

- 1. Factor=Antenna Factor + Cable loss Amplifier gain. Field Strength=Factor + Reading level
- 2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB( $\mu$ V) to represent the Amplitude. Use the F dB( $\mu$ V/m) to represent the Field Strength. So A=F.

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EUT:	Wireless Dongle	Model Name. :	9811USB
Temperature :	20 ℃	Relative Humidtity:	48%
Pressure :	1010 hPa	Test Voltage :	DC5V
Test Mode :	Mode 1	Polarization :	Horizontal



#### Average Value



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IGC 8



EUT:	Wireless Dongle	Model Name. :	9811USB
Temperature :	20 ℃	Relative Humidtity:	48%
Pressure :	1010 hPa	Test Voltage :	DC5V
Test Mode :	Mode 1	Polarization :	Vertical



#### Average Value



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EUT:	Wireless Dongle	Model Name. :	9811USB
Temperature:	20 ℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage :	DC5V
Test Mode :	Mode 3	Polarization:	Horizontal



#### Average Value



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EUT:	Wireless Dongle	Model Name. :	9811USB
Temperature:	20 ℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage :	DC5V
Test Mode :	Mode 3	Polarization:	Vertical



#### Average Value



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IGC 8



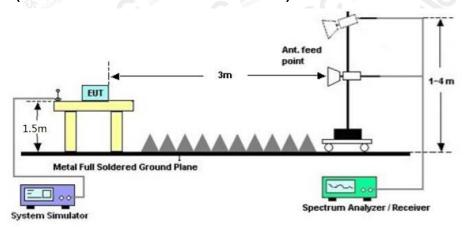
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#### 9. 20DB BANDWIDTH

#### 9.1. MEASUREMENT PROCEDURE

- 1. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 2. Set SPA Centre Frequency = Operation Frequency, RBW= 30 KHz, VBW≥3×RBW.
- 3. Set SPA Trace 1 Max hold, then View.

#### 9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



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#### 9.3. MEASUREMENT RESULTS

TEST ITEM	20DB BANDWIDTH	(S) Allestation of U.S.	(C) Altestation of Global	Allestation of Allest
TEST MODULATION	GFSK	10	3	

Test Data (MHz)	Criteria		
Low Channel	1.867	PASS	
Middle Channel	1.881	PASS	
High Channel	1.890	PASS	

#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



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#### TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



#### TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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# 10. FCC LINE CONDUCTED EMISSION TEST

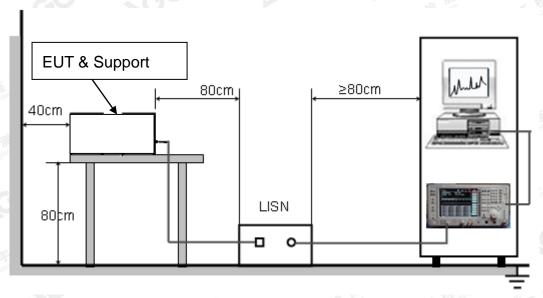
#### 10.1. LIMITS OF LINE CONDUCTED EMISSION TEST

F	Maximum RF Line Voltage					
Frequency	Q.P.( dBuV)	Average( dBuV)				
150kHz~500kHz	66-56	56-46				
500kHz~5MHz	56	46				
5MHz~30MHz	60	50				

#### Note:

- 1. The lower limit shall apply at the transition frequency.
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.

#### 10.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



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#### 10.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When 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 C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipments received AC120VV/60Hz power from a LISN, if any.
- 5. The EUT received charging voltage by adapter which received 120V/60Hzpower by a LISN...
- 6. The 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.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

#### 10.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

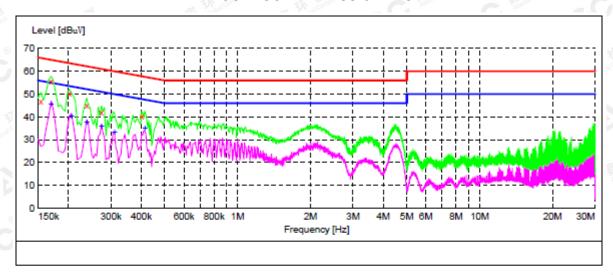
- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- 2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case condition(s) was reported on the Summary Data page.

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# 10.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

#### LINE CONDUCTED EMISSION TEST-L



#### MEASUREMENT RESULT: "TEST fin"

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.154000	46.90	10.0	66	18.9	QP	L1	FLO
0.170000	55.70	10.0	65	9.3	OP	L1	FLO
0.202000	50.20	10.1	64	13.3	OP	L1	FLO
0.238000	45.00	10.1	62	17.2	OP	L1	FLO
0.274000	42.20	10.1	61	18.8	OP	L1	FLO
0.402000	40.20	10.1	58	17.6	OP	L1	FLO

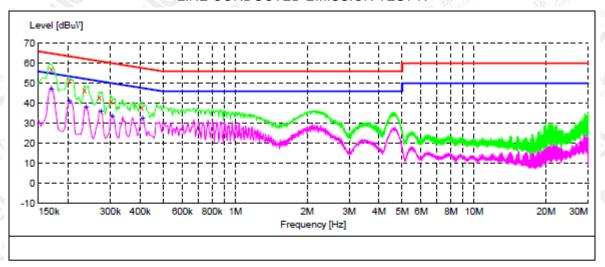
#### MEASUREMENT RESULT: "TEST fin2"

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.170000 0.206000 0.238000 0.274000 0.310000	45.70 40.30 37.60 36.00 33.30	10.0 10.1 10.1 10.1	52 51 50	13.1 14.6 15.0 16.7	AV AV AV AV	L1 L1 L1 L1	FLO FLO FLO FLO
0.414000	35.00	10.1	48	12.6	AV	$_{\rm L1}$	FLO

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# LINE CONDUCTED EMISSION TEST-N



#### MEASUREMENT RESULT: "TEST fin"

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.170000	57.20	10.0	65	7.8	QP	N	FLO
0.202000	51.60	10.1	64	11.9	QP	N	FLO
0.234000	46.30	10.1	62	16.0	QP	N	FLO
0.270000	42.80	10.1	61	18.3	QP	N	FLO
0.302000	40.90	10.1	60	19.3	QP	N	FLO
0.406000	38.20	10.1	58	19.5	QP	N	FLO

#### MEASUREMENT RESULT: "TEST fin2"

Frequency MHz	Level dBuV		Limit dBuV	Margin dB	Detector	Line	PE
0.170000 0.202000 0.238000 0.274000 0.306000 0.410000	47.10 40.90 37.90 35.80 33.70 32.30	10.0 10.1 10.1 10.1 10.1	55 54 52 51 50 48		AV AV AV AV	N N N N N	FLO FLO FLO FLO FLO

#### **RESULT: PASS**

Note: The mode 1 is the worst case, and only the data of the worst case recorded in this test report.

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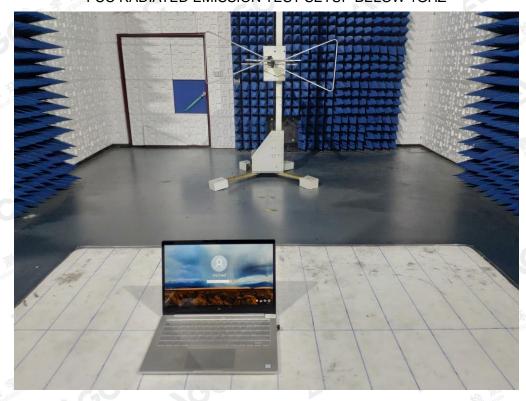


# **APPENDIX A: PHOTOGRAPHS OF TEST SETUP**

FCC LINE CONDUCTED EMISSION TEST SETUP



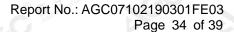
FCC RADIATED EMISSION TEST SETUP BELOW 1GHZ



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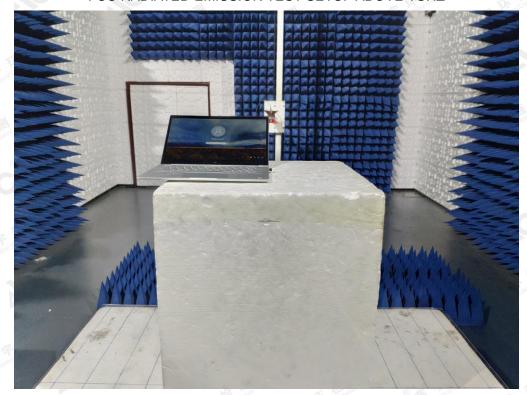
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# FCC RADIATED EMISSION TEST SETUP ABOVE 1GHZ



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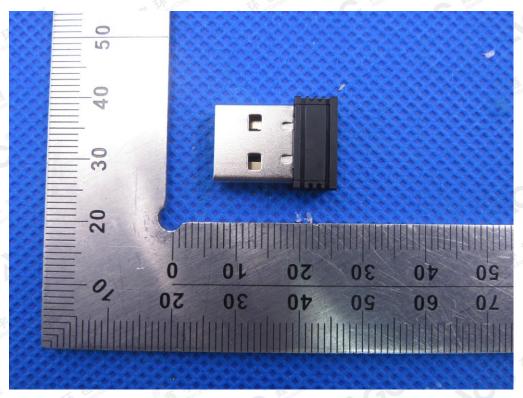
E-mail: agc@agc-cert.com

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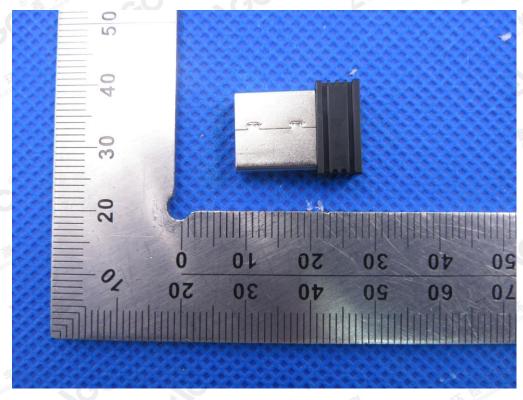


#### APPENDIX B: PHOTOGRAPHS OF THE EUT

TOP VIEW OF EUT



**BOTTOM VIEW OF EUT** 



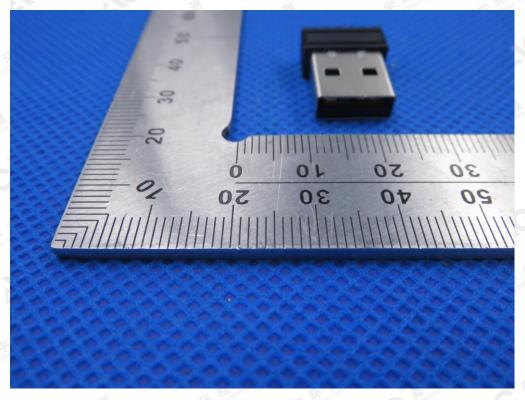
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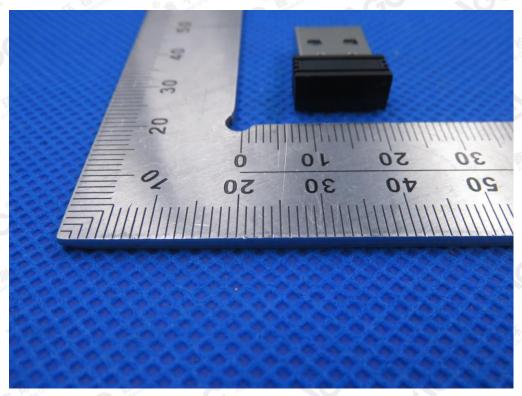
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# FRONT VIEW OF EUT



**BACK VIEW OF EUT** 



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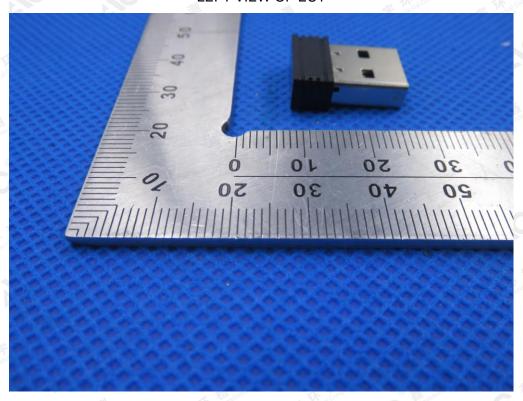
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E-mail: agc@agc-cert.com

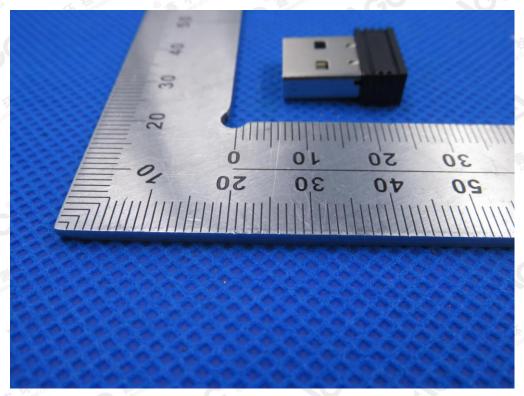
**6** 400 089 2118



# LEFT VIEW OF EUT



RIGHT VIEW OF EUT



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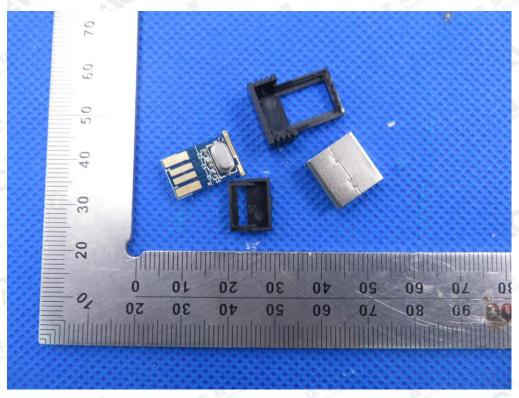
E-mail: agc@agc-cert.com

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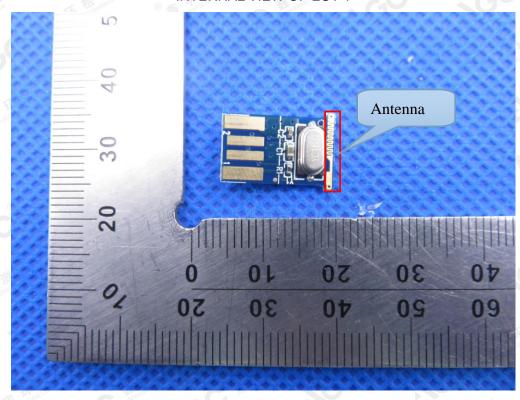
Add: 2/F. , Building 2, No.1-4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Baoan District, Shenzhen, Guangdong China



#### **OPEN VIEW OF EUT**



**INTERNAL VIEW OF EUT-1** 



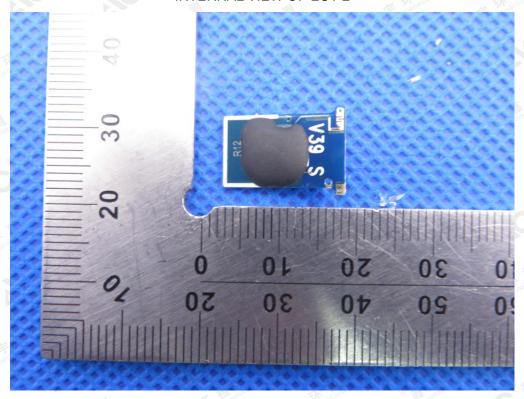
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# **INTERNAL VIEW OF EUT-2**



----END OF REPORT----

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