ETSI EN 301 908-1 V11.1.1 (2016-07)
ETSI EN 301 908-13 V11.1.2 (2017-07)

TEST REPORT

For

Quanshun Communication Technology Co., Ltd

Quanshun Bldg., Daxiamei, Nan'an, Quanzhou, Fujian, China 362302

Test Model:N56
Multiple Models: N2X, N3X, N4X, N5X, N50, N55, N57, N58, N59

Report Type: Original Report	**Product Type:** PTT Network Radio
Report Number:	RXM190410051-22B
Report Date:	2019-05-13
Reviewed By:	Dean Lau RF Supervisor
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	PTT Network Radio
EUT Model:	N56
Multiple Models:	N2X, N3X, N4X, N5X, N50, N55, N57, N58, N59
Rated Input Voltage:	DC7.4V from battery
External Dimension:	55mm(L)*30mm(W)*115mm(H)
Serial Number:	190410051
EUT Received Date:	2019.04.15

Notes: *Model N56 was selected for fully testing, the detailed information about the difference among N2X, N3X, N4X, N5X, N50, N55, N57, N58, N59 and model N56 can be referred to the declaration letter which was stated and guaranteed by the manufacturer.*

Objective

This report is prepared on behalf of *Quanshun Communication Technology Co., Ltd* in accordance with ETSI EN 301 908-1 V11.1.1 (2016-07) IMT cellular networks;Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU;Part 1: Introduction and common requirements; ETSI EN 301 908-13 V11.1.2 (2017-07) IMT cellular networks;Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU;Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE).

The objective is to determine the compliance of EUT with:
ETSI EN 301 908-1 V11.1.1 (2016-07)
ETSI EN 301 908-13 V11.1.2 (2017-07).

Test Methodology

All measurements contained in this report were conducted with ETSI EN 301 908-1 V11.1.1 (2016-07) IMT cellular networks;Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU;Part 1: Introduction and common requirements; ETSI EN 301 908-13 V11.1.2 (2017-07) IMT cellular networks;Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU;Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE).

Measurement Uncertainty

Parameter	Flab	Maximum allow uncertainty
Transmitter maximum output power	±0.6 dB	±0,7 dB
Transmitter spectrum emissions mask	±1,5 dB	±1,5 dB
Transmitter spurious emissions 9 kHz < f ≤ 4 GHz	±2.5 dB*	±2,0 dB
Transmitter spurious emissions 4 GHz < f ≤ 12,75 GHz	±2.5 dB	±4,0 dB
Transmitter Minimum output power	±0.6 dB	±1,0 dB
Receiver Adjacent Channel Selectivity (ACS)	±1.5 dB*	±1,1 dB
Receiver Blocking characteristics 1 MHz < finterferer ≤ 3 GHz	±1.5 dB*	±1,3 dB
Receiver Blocking characteristics 3 GHz < finterferer ≤ 12,75 GHz	±3.3 dB*	±3,2 dB
Receiver spurious response 1 MHz < finterferer ≤ 3 GHz	±1.5 dB*	±1,3 dB
Receiver spurious response 3 GHz < finterferer ≤ 12,75 GHz	±3.3 dB*	±3,2 dB
Receiver intermodulation characteristics	±1.3 dB	±1,4 dB
Receiver spurious emissions 9 kHz < f ≤ 4 GHz	±2.5 dB*	±2,0 dB
Receiver spurious emissions 4 GHz < f ≤ 12,75 GHz	±2.5 dB	±4,0 dB
Transmitter adjacent channel leakage power ratio	±0.8 dB	±0,8 dB

Note:
* Test system of laboratory have a measurement uncertainty greater than that specified in harmonized standard, this equipment can still be used provided that an adjustment is made follows:
any additional uncertainty in the test system over and above that specified in harmonized standard should be used to tighten the test requirements - making the test harder to pass (for some tests, e.g. receiver tests, this may require modification of stimulus signals). This procedure will ensure that a test system not compliant with harmonized standard does not increase the probability of passing an EUT that would otherwise have failed a test if a test system compliant with harmonized standard had been used.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing according to EN 301 908-1 and EN 301 908-13.

Equipment Modifications

No modification was made to the EUT.

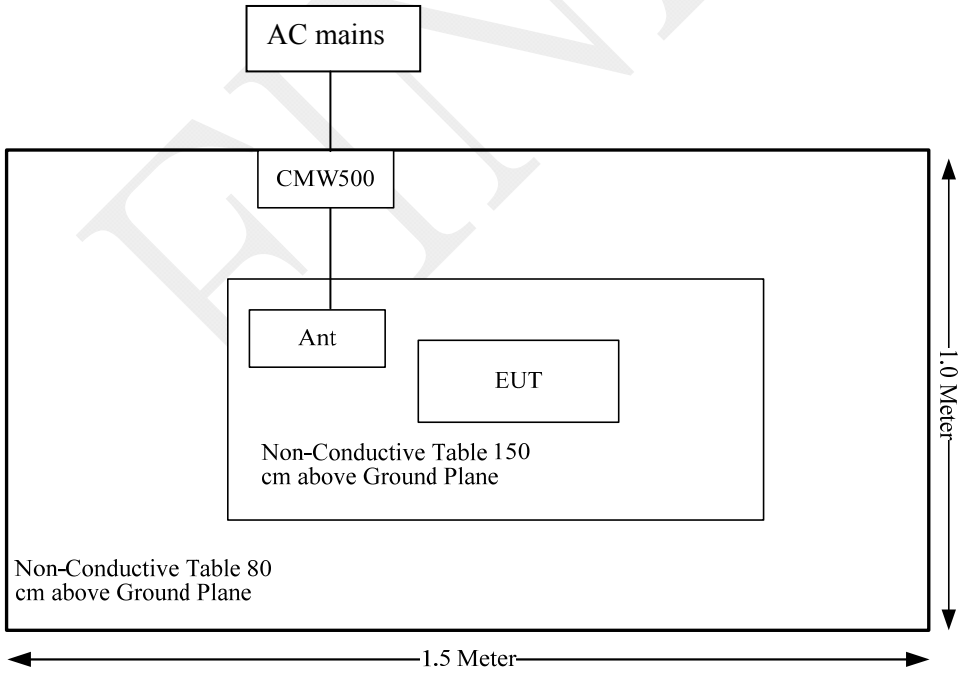
EUT Exercise Software

No software was used to testing.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Wideband Radio Communication Tester	CMW500	147473

Block Diagram of Test Setup



Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2018-12-10	2019-12-10
Sunol Sciences	Antenna	JB3	A060611-3	2017-07-21	2019-07-21
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2018-09-24	2019-09-24
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2018-09-05	2019-09-05
Sonoma	Amplifier	310N	185914	2018-10-13	2019-10-13
R&S	Spectrum Analyzer	FSP 38	100478	2018-12-10	2019-12-10
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2018-09-05	2019-09-05
MICRO-COAX	Coaxial Cable	UFA147-1-2362-100100	64639 231029-001	2019-02-24	2020-02-24
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2018-09-05	2019-09-05
Sinoscite	Band-stop filter	BSF1920-1980MS-0397-003	0397003	2018-06-16	2019-06-16
Sinoscite	Band-stop filter	BSF880-915MN-0382-003	0382003	2018-06-16	2019-06-16
R&S	Wideband Radio Communication Tester	CMW500	147473	2018-08-03	2019-08-03
Agilent	Signal Generator	E8247C	MY43321350	2018-12-10	2019-12-10

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Environmental Conditions

Temperature:	24.4~28 °C
Relative Humidity:	43~61%
ATM Pressure:	100.4~ 100.5kPa
Tester:	Vern Shen,Vito Chen
Test Date:	2019.04.19-2019.04.26

SUMMARY OF TEST RESULTS

SN	Rule and Clause	Description of Test	Test Result
1	EN 301 908-1 Clause 4.2.2	Radiated emissions (UE)	Compliance
2	EN 301 908-1 Clause 4.2.3	Radiated emissions (BS and repeater)	Not applicable*
3	EN 301 908-1 Clause 4.2.4	Control and monitoring functions (UE)	Compliance*
4	EN 301 908-13 Clause 4.2.2	Transmitter maximum output power	Compliance*
5	EN 301 908-13 Clause 4.2.3	Transmitter spectrum emission mask	Compliance*
6	EN 301 908-13 Clause 4.2.4	Transmitter spurious emissions	Compliance*
7	EN 301 908-13 Clause 4.2.5	Transmitter minimum output power	Compliance*
8	EN 301 908-13 Clause 4.2.6	Receiver adjacent channel selectivity (ACS)	Compliance*
9	EN 301 908-13 Clause 4.2.7	Receiver blocking characteristics	Compliance*
10	EN 301 908-13 Clause 4.2.8	Receiver spurious response	Compliance*
11	EN 301 908-13 Clause 4.2.9	Receiver intermodulation characteristics	Compliance*
12	EN 301 908-13 Clause 4.2.10	Receiver spurious emissions	Compliance*
13	EN 301 908-13 Clause 4.2.11	Transmitter adjacent channel leakage power ratio	Compliance*
14	EN 301 908-13 Clause 4.2.12	Receiver reference sensitivity level	Compliance*

Note:
Compliance*: This device contains module (model No.: SIM7600E-H), please refer to the module test report No.: UL15820170831CE035-3, which was issued on 2017-11-16 by Unilab(Shanghai) Co.,Ltd. .

Not applicable*: This product does not belong to BS and repeater.

1 – RADIATED EMISSIONS (UE)

Applicable Standard

This test assesses the ability of radio communications equipment and ancillary equipment to limit unwanted emissions from the enclosure port.

This test is applicable to radio communications equipment and ancillary equipment.

This test shall be performed on the radio communications equipment and/or a representative configuration of the ancillary equipment.

Limit

The frequency boundary and reference bandwidths for the detailed transitions of the limits between the requirements for out-of-band emissions and spurious emissions are based on Recommendations ITU-R SM.329-12 [1] and SM.1539-1 [i.6].

The requirements shown in table 4.2.2.2-1 are only applicable for frequencies in the spurious domain.

Table 4.2.2.2-1: Radiated spurious emissions requirements (UE)

Frequency	Minimum requirement (e.r.p.)/ reference bandwidth idle mode	Minimum requirement (e.r.p.)/ reference bandwidth traffic mode	Applicability
30 MHz ≤ f < 1 000 MHz	-57 dBm/100 kHz	-36 dBm/100 kHz	All
1 GHz ≤ f < 12,75 GHz	-47 dBm/1 MHz	-30 dBm/1 MHz	All
fc - 2,5 × 5 MHz < f < fc + 2,5 × 5 MHz		Not defined	UTRA FDD, UTRA TDD, 3,84 Mcps option, cdma2000, spreading rate 3
fc - 2,5 × $BW_{Channel}$ MHz < f < fc + 2,5 × $BW_{Channel}$ MHz		Not defined	E-UTRA FDD, E-UTRA TDD, Mobile WiMAX™
fc - 2,5 × 10 MHz < f < fc1 + 2,5 × 10 MHz		Not defined	UTRA TDD, 7,68 Mcps option
fc - 4 MHz < f < fc + 4 MHz		Not defined	UTRA TDD, 1,28 Mcps option cdma2000, spreading rate 1
NOTE: fc is the UE transmit centre frequency.			

Test Condition and Test Procedure

According to ETSI EN 301 908-1 V11.1.1 (2016-07) clause 5.3.1

Test Data

Pretest with low, middle, high channel, the worst case is middle channel.

Please refer to following table:

Band 1_traffic mode_middle channel 1950 MHz

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
3900.00	H	46.00	-53.84	12.28	1.48	-43.04	-30.00	13.04
3900.00	V	43.60	-56.58	12.28	1.48	-45.78	-30.00	15.78
5850.00	H	38.06	-56.86	13.29	1.35	-44.92	-30.00	14.92
5850.00	V	37.85	-57.16	13.29	1.35	-45.22	-30.00	15.22
802.12	H	42.28	-56.19	0.00	0.49	-56.68	-36.00	20.68
646.86	V	41.96	-56.89	0.00	0.37	-57.26	-36.00	21.26

Band 1_idle mode 1950 MHz

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1661.00	H	38.30	-66.09	10.48	1.28	-56.89	-47.00	9.89
1616.00	V	38.14	-66.23	10.35	1.30	-57.18	-47.00	10.18
745.86	H	39.37	-60.44	0.00	0.43	-60.87	-57.00	3.87
608.12	V	39.90	-59.91	0.00	0.36	-60.27	-57.00	3.27

Band 3_traffic mode_middle channel 1747.5 MHz

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
3495.00	H	54.23	-46.68	12.20	1.61	-36.09	-30.00	6.09
3495.00	V	55.70	-43.72	12.20	1.61	-33.13	-30.00	3.13
5242.50	H	41.90	-54.10	12.90	1.34	-42.54	-30.00	12.54
5242.50	V	43.10	-52.95	12.90	1.34	-41.39	-30.00	11.39
802.12	H	42.47	-56.00	0.00	0.49	-56.49	-36.00	20.49
802.12	V	43.25	-52.18	0.00	0.49	-52.67	-36.00	16.67

Band 3_idle mode **1747.5 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1168.00	H	38.54	-63.40	8.61	0.94	-55.73	-47.00	8.73
1422.00	V	37.54	-66.46	9.67	1.25	-58.04	-47.00	11.04
361.74	H	45.51	-61.99	0.00	0.35	-62.34	-57.00	5.34
650.80	V	38.88	-59.87	0.00	0.37	-60.24	-57.00	3.24

Band 7_traffic mode_middle channel **2535 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
5070.00	H	44.23	-52.08	12.97	1.41	-40.52	-30.00	10.52
5070.00	V	41.00	-55.08	12.97	1.41	-43.52	-30.00	13.52
7605.00	H	38.00	-53.38	12.84	1.40	-41.94	-30.00	11.94
7605.00	V	38.33	-53.72	12.84	1.40	-42.28	-30.00	12.28
802.12	H	43.54	-54.93	0.00	0.49	-55.42	-36.00	19.42
802.12	V	43.02	-52.41	0.00	0.49	-52.90	-36.00	16.90

Band 7_idle mode **2535 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1350.00	H	38.70	-64.68	9.37	1.17	-56.48	-47.00	9.48
2162.00	V	38.80	-65.25	11.73	1.17	-54.69	-47.00	7.69
640.50	H	38.60	-63.21	0.00	0.37	-63.58	-57.00	6.58
612.33	V	37.94	-61.76	0.00	0.36	-62.12	-57.00	5.12

Band 8_traffic mode_middle channel **897.5 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1795.00	H	42.38	-61.87	10.89	1.22	-52.20	-30.00	22.20
1795.00	V	47.90	-56.29	10.89	1.22	-46.62	-30.00	16.62
2692.50	H	37.65	-64.77	12.28	1.34	-53.83	-30.00	23.83
2692.50	V	39.44	-63.82	12.28	1.34	-52.88	-30.00	22.88
3590.00	H	38.40	-62.26	12.22	1.58	-51.62	-30.00	21.62
3590.00	V	40.50	-59.08	12.22	1.58	-48.44	-30.00	18.44
842.86	H	40.92	-56.35	0.00	0.50	-56.85	-36.00	20.85
879.72	V	41.34	-51.55	0.00	0.51	-52.06	-36.00	16.06

Band 8_idle mode **897.5 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1994.00	H	37.57	-66.48	11.48	1.13	-56.13	-47.00	9.13
1544.00	V	38.40	-66.05	10.13	1.33	-57.25	-47.00	10.25
734.22	H	38.17	-61.92	0.00	0.42	-62.34	-57.00	5.34
699.30	V	36.43	-61.12	0.00	0.38	-61.50	-57.00	4.50

Band 20_traffic mode_middle channel **847 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1694.00	H	41.14	-63.22	10.58	1.26	-53.90	-30.00	23.90
1694.00	V	40.80	-63.49	10.58	1.26	-54.17	-30.00	24.17
2541.00	H	40.00	-62.71	12.22	1.26	-51.75	-30.00	21.75
2541.00	V	38.07	-65.94	12.22	1.26	-54.98	-30.00	24.98
3388.00	H	38.68	-62.43	12.24	1.59	-51.78	-30.00	21.78
3388.00	V	38.90	-61.02	12.24	1.59	-50.37	-30.00	20.37
840.29	H	42.28	-55.07	0.00	0.50	-55.57	-36.00	19.57
802.12	V	43.15	-52.28	0.00	0.49	-52.77	-36.00	16.77

Band 20_idle mode **847 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1921.00	H	37.87	-66.25	11.26	1.16	-56.15	-47.00	9.15
2162.00	V	38.40	-65.65	11.73	1.17	-55.09	-47.00	8.09
608.12	H	40.41	-61.90	0.00	0.36	-62.26	-57.00	5.26
629.46	V	39.40	-59.88	0.00	0.37	-60.25	-57.00	3.25

Band 38_traffic mode_middle channel **2595 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
5190.00	H	38.04	-58.06	12.92	1.36	-46.50	-30.00	16.50
5190.00	V	40.00	-56.06	12.92	1.36	-44.50	-30.00	14.50
7785.00	H	39.99	-51.11	12.91	1.53	-39.73	-30.00	9.73
7785.00	V	40.21	-51.51	12.91	1.53	-40.13	-30.00	10.13
802.12	H	43.23	-55.24	0.00	0.49	-55.73	-36.00	19.73
802.12	V	42.96	-52.47	0.00	0.49	-52.96	-36.00	16.96

Band 38_idle mode **2595 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1507.00	H	38.40	-66.15	10.02	1.35	-57.48	-47.00	10.48
1454.00	V	37.97	-66.23	9.81	1.29	-57.71	-47.00	10.71
602.30	H	38.81	-63.59	0.00	0.36	-63.95	-57.00	6.95
589.74	V	38.60	-61.69	0.00	0.36	-62.05	-57.00	5.05

Band 40_traffic mode_middle channel **2350 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
4700.00	H	40.40	-57.01	13.24	1.50	-45.27	-30.00	15.27
4700.00	V	39.10	-58.39	13.24	1.50	-46.65	-30.00	16.65
7050.00	H	42.00	-49.75	13.34	1.78	-38.19	-30.00	8.19
7050.00	V	40.20	-51.80	13.34	1.78	-40.24	-30.00	10.24
802.12	H	43.02	-55.45	0.00	0.49	-55.94	-36.00	19.94
736.40	V	39.80	-56.99	0.00	0.42	-57.41	-36.00	21.41

Band 40_idle mode **2350 MHz**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1400.00	H	37.40	-66.37	9.58	1.23	-58.02	-47.00	11.02
1450.00	V	38.50	-65.68	9.79	1.29	-57.18	-47.00	10.18
751.41	H	37.87	-61.81	0.00	0.44	-62.25	-57.00	5.25
611.24	V	38.74	-60.99	0.00	0.36	-61.35	-57.00	4.35

Note 1:The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.
Note 2:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

EXHIBIT A – EUT PHOTOGRAPHS

ALL


Talkpod


Talkpod
P2
P1


N56


P1
P2


talkpod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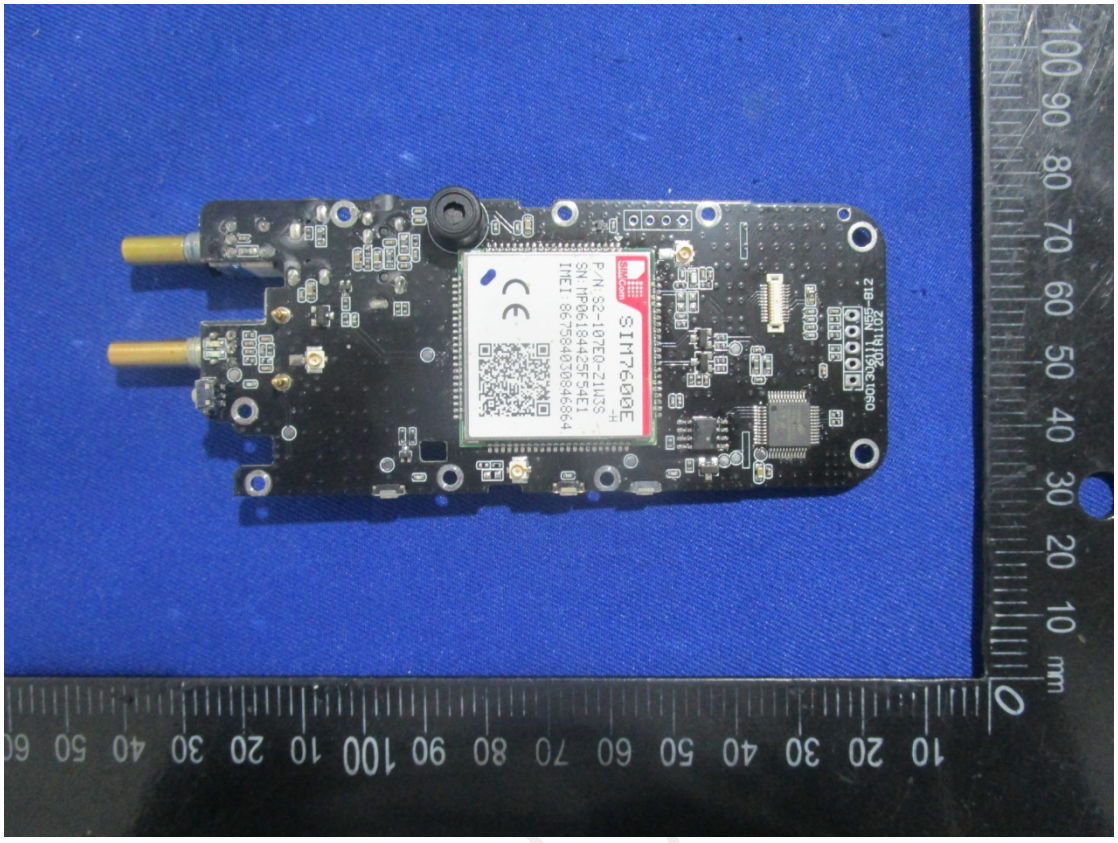
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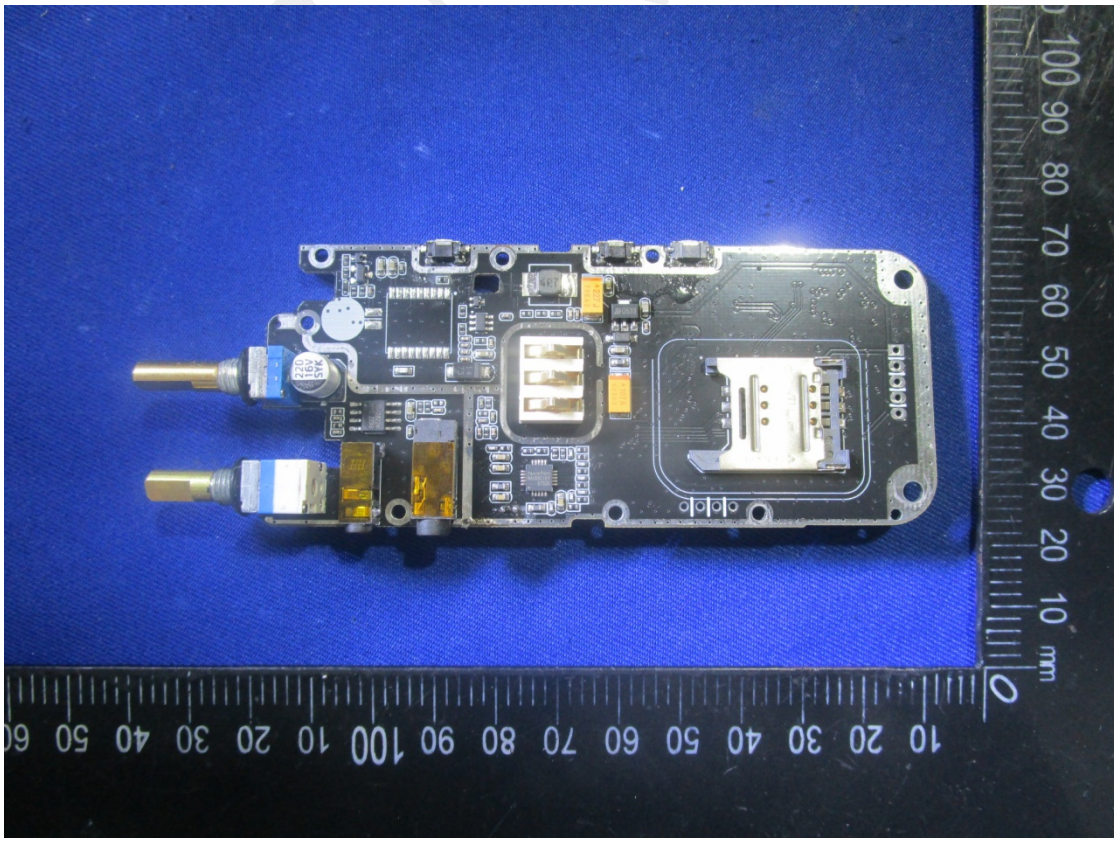
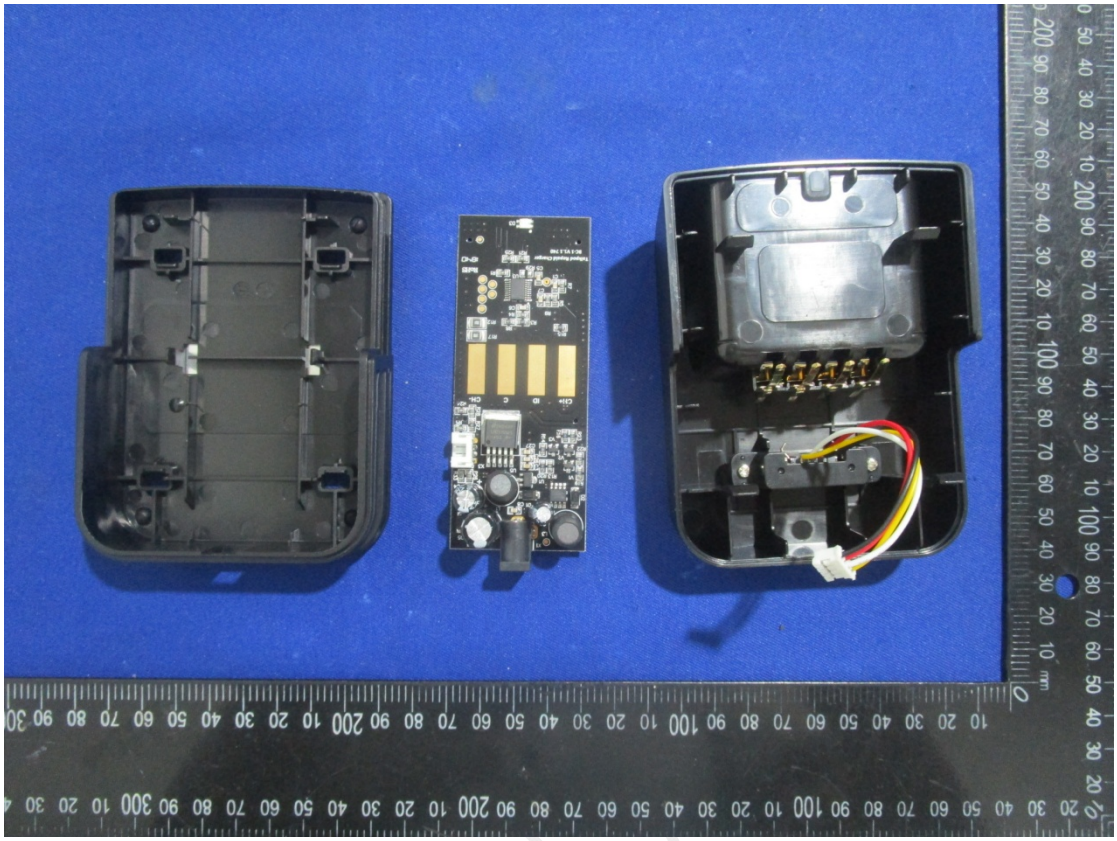
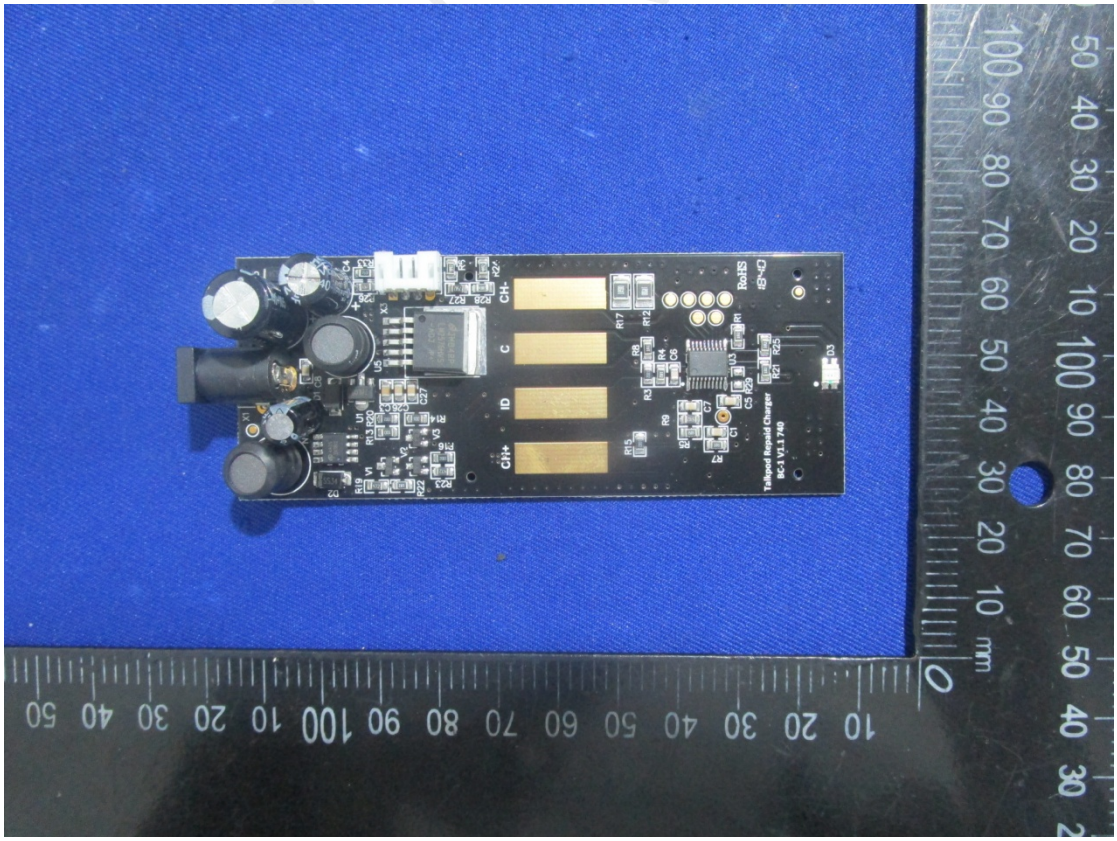
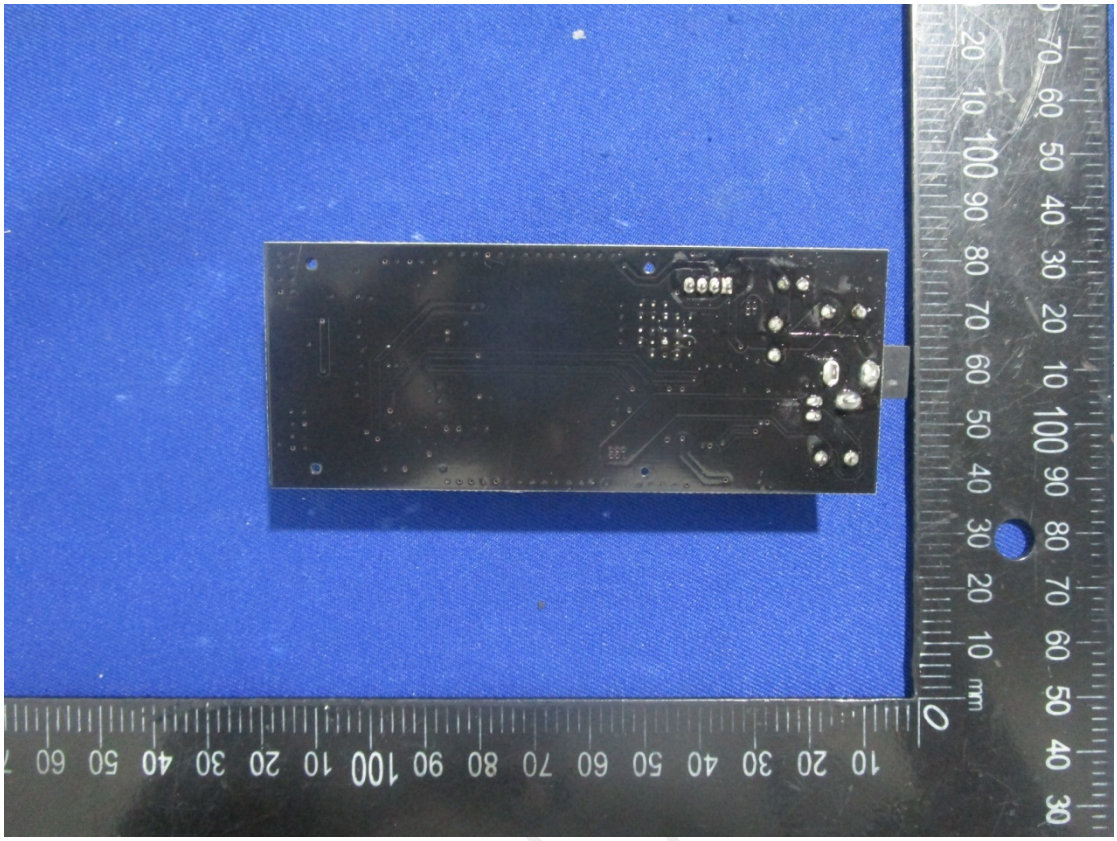



WARNING:
Talkpod


CAUTION:
RISK OF ELECTRIC SHOCK
DRY LOCATION USE ONLY
CHARGE INDICATION
MADE IN CHINA

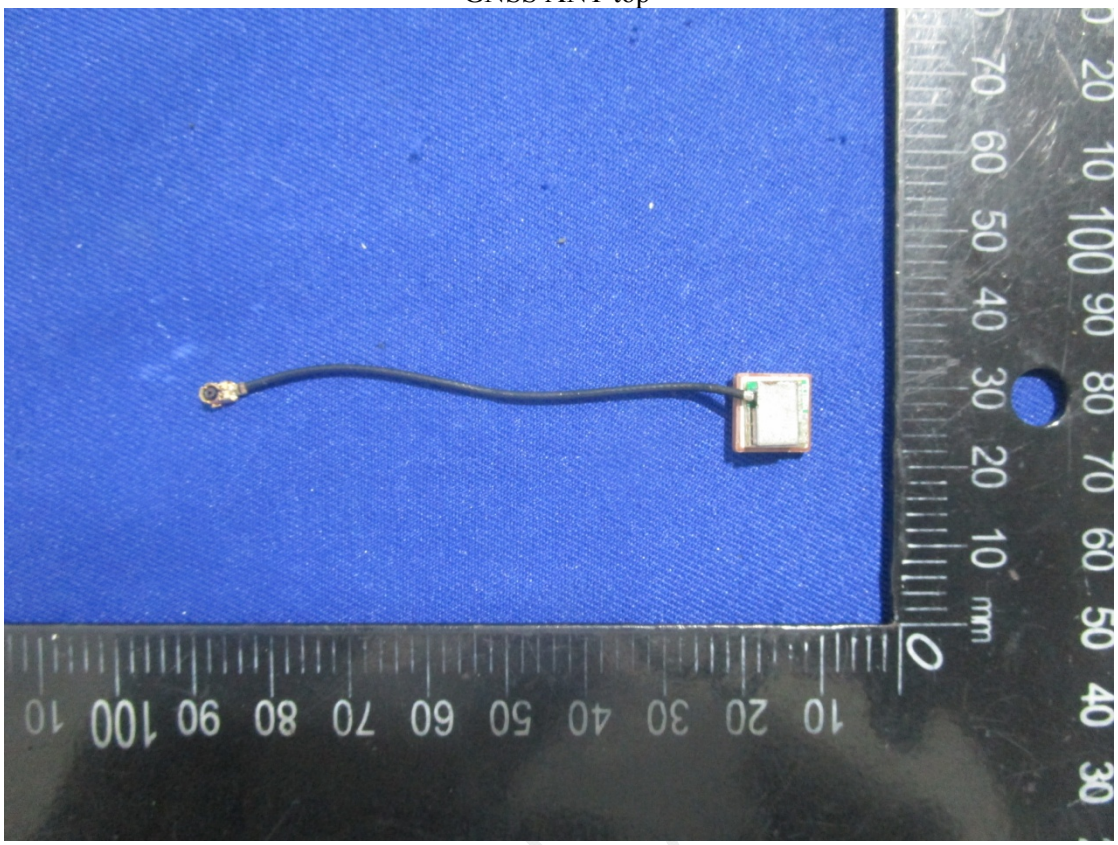




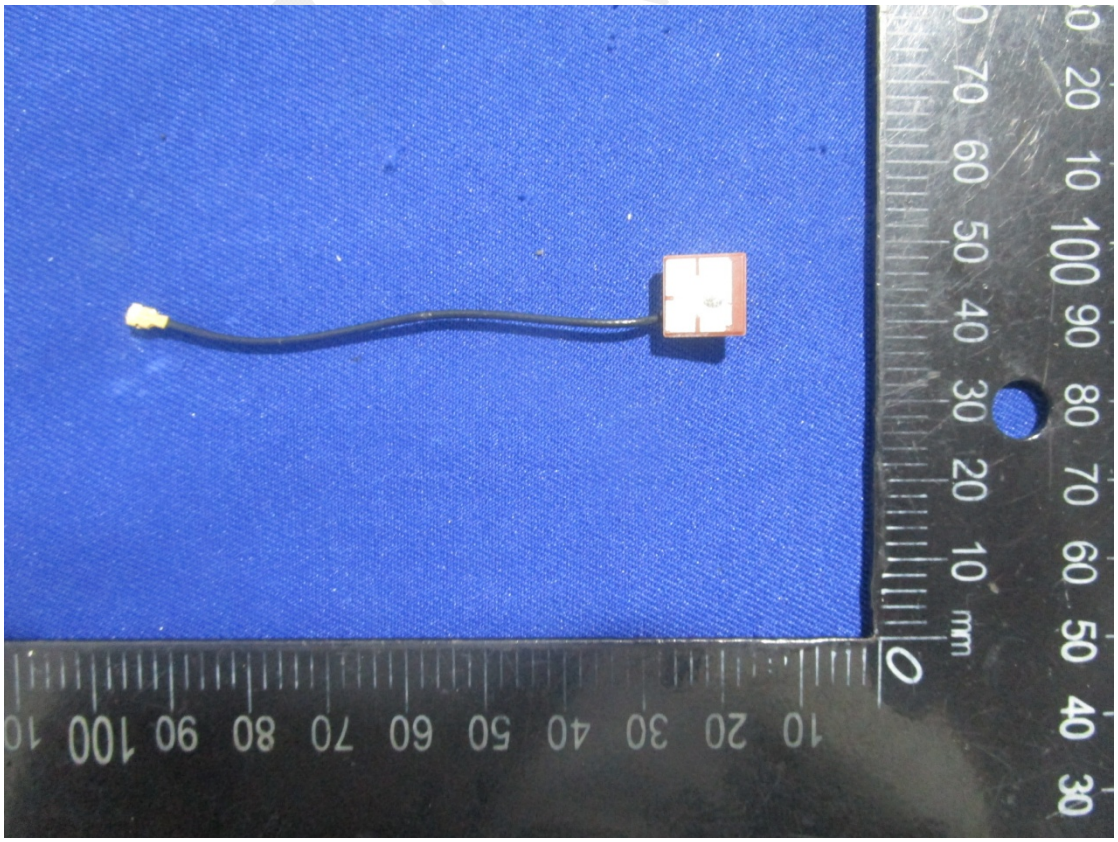


3G/4G ANT

GNSS ANT top



GNSS ANT bottom




Talkpod
TBL01 LI-ION BATTERY PACK
CAPACITY: 1650mAh/7.4V
CAUTION:
Never attempt to disassemble,
destroy or short circuit the battery
Never dispose of it in fire!
909A017
Made in China
Talkpod Technology Co., Ltd.


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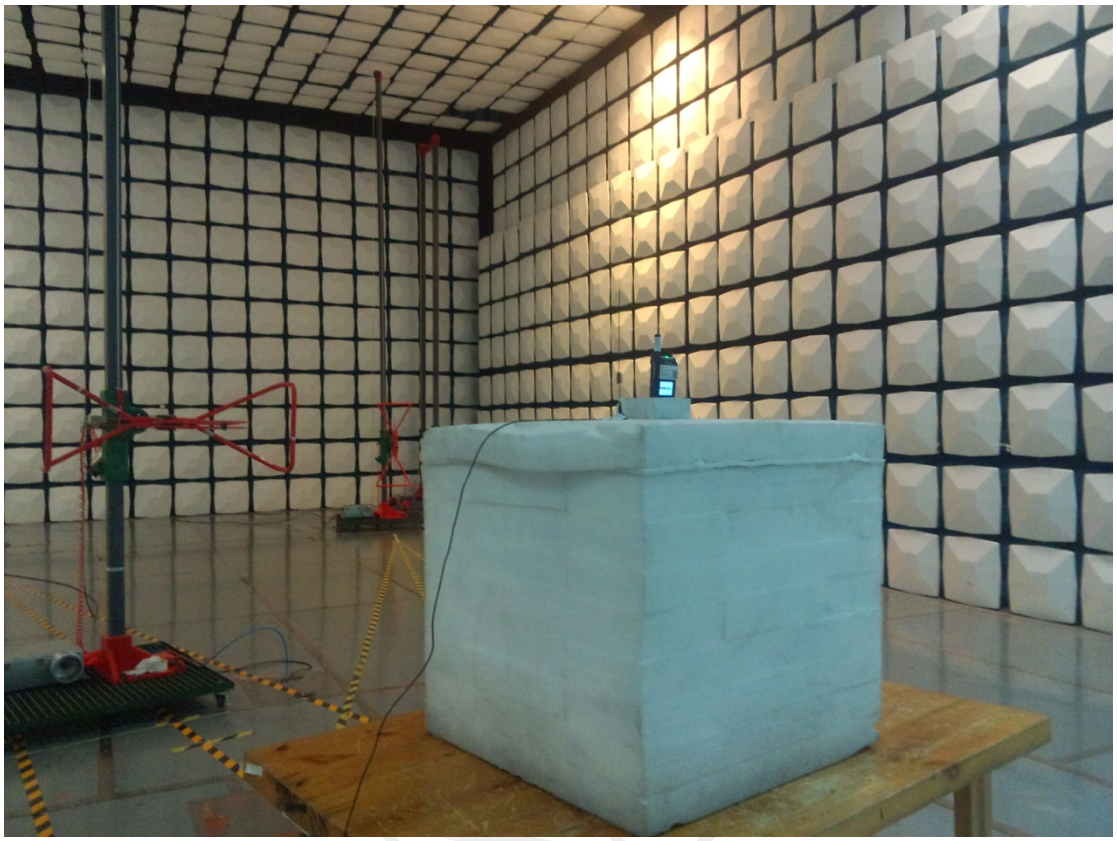
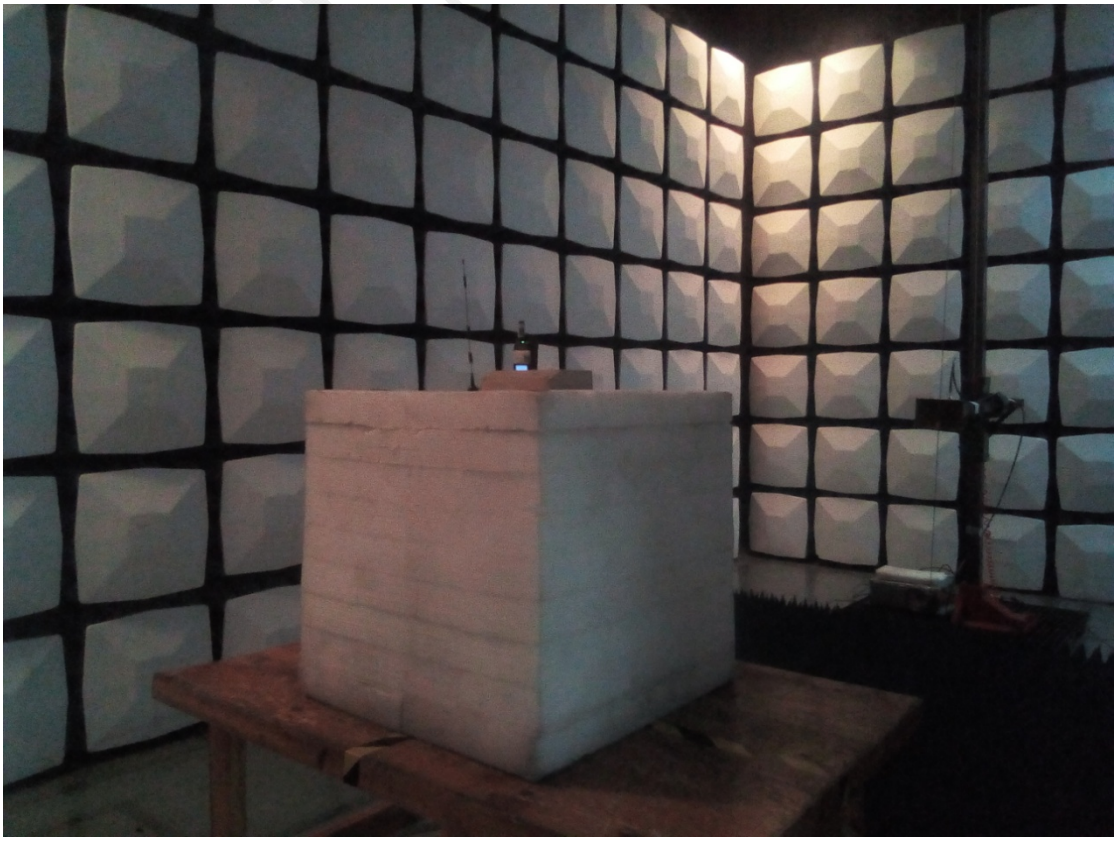
EXHIBIT B – TEST SETUP PHOTOGRAPHS

RE Below 1G View



RE above 1G View



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