FCC/IC Class II Test Report

Report No.: AGC01110190510FE08

FCC ID	:	2AOKB-A3024
IC	:	23451-A3024
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Soundcore Life Q20
BRAND NAME	:	Soundcore
MODEL NAME	:	A3025
CLIENT	:	Anker Innovations Limited
DATE OF ISSUE	:	May 30, 2019
STANDARD(S)	:	FCC Part 15 Subpart C Section 15.247, ANSI C63.10: 2013 RSS-GEN: Issue 5,RSS-247: Issue 2
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	/	May 30, 2019	Valid	Initial release

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1. VERIFICATION OF COMPLIANCE

Applicant	Anker Innovations Limited
Address	Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hongkong
Manufacturer	Anker Innovations Limited
Address	Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hongkong
Factory	TCL Technoly Electronics(Huizhou) Co., Ltd
Address	Section 37, Zhongkai High-tech Development Zone, Huizhou City, Guangdong Province, P.R.China
Product Designation	Soundcore Life Q20
Brand Name	Soundcore
Test Model	A3025
Date of test	May 16, 2019 to May 28, 2019
Deviation	None
Condition of Test Sample	Normal
Report Template	AGCRT-US-BLE/RF (2013-03-01)

We hereby certify that:
The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, the energy emitted by the sample tested as described in this report is in compliance with the requirements of FCC Rules Part 15.247 and IC Rules RSS-247 The test results of this report relate only to the tested sample identified in this report.

Tested By John Zeng(Zeng Weiqiang) May 28, 2019

Reviewed By Max Zhang(Zhang Yi) May 30, 2019

Approved By Forrest Lei(Lei Yonggang) Authorized Officer May 30, 2019

2.GENERAL INFORMATION

2.1PRODUCT DESCRIPTION

The EUT is designed as a “Soundcore Life Q20”. It is designed by way of utilizing the FHSS technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.402 GHz to 2.480GHz
RF Output Power	0.973dBm(Max)
Bluetooth Version	V5.0
Modulation（BLE	GFSK for BLE
Number of channels	40 Channel(37 Hopping Channel,3 advertising Channel)
Antenna Designation	PCB Antenna
Antenna Gain	1.6dBi
Hardware Version	40-AK3024-MAE4G
Software Version	V1.06
Power Supply	DC 3.7V by battery
Note: 1. The USB port only used for charging and can’t be used to transfer data with PC. 2. The BT function of EUT didn’t work when charging.	

2.2TEST METHOD

All measurements contained in this report were conducted with ANSI C63.10-2013.

2.3 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2.4 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ±U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

- 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

3. SYSTEM TEST CONFIGURATION

3.1 CONFIGURATION OF TESTED SYSTEM

Configure:

3.2 EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Mfr/Brand	Model/Type No.	Remark
1	Soundcore Life Q20	Soundcore	A3025	EUT
2	battery	VDL	902532	Accessory
3	Control box	GZUT	USB_TTL	A.E
4	USB Cable	N/A	N/A	A.E

3.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.209 §15.247(d), §RSS-Gen 8.9	Radiated Emission	Compliant
§15.247(d), §RSS-Gen 8.10	Band Edges	Compliant

Note: Comparing the internal photos of the original with the modified device, the mainbord's PCB input current different. The conducted test data may refer to the AGC01110190219FE08. We retest radiated emission and band edges and recorded in the test report.

4. DESCRIPTION OF TEST MODES

The EUT has been operated in one modulation: GFSK.

NO.	TEST MODE DESCRIPTION
1	Low channel GFSK
2	Middle channel GFSK
3	High channel GFSK
4	BT Link

Note: 1. Only the result of the worst case was recorded in the report if no any records.
2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
3. Transmitting duty cycle >98%, The average correction factor is about -0.18
4. The EUT used fully-charged battery when tested.

5. 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

6. TEST EQUIPMENT LIST

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

7. ANTENNA REQUIREMENT

7.1. STANDARD APPLICABLE

According to FCC 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

7.2. TEST RESULT

This product has a permanent antenna, fulfill the requirement of this section.

8. RADIATED EMISSION

8.1 LIMITS

Frequency (MHz)	Distance Meters	Field Strengths Limit	
		μ V/m	dB(μV)/m
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	24000/F(kHz)	---
1.705 ~ 30	30	30	---
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 dBμ V = 20 log Emission level μ V/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

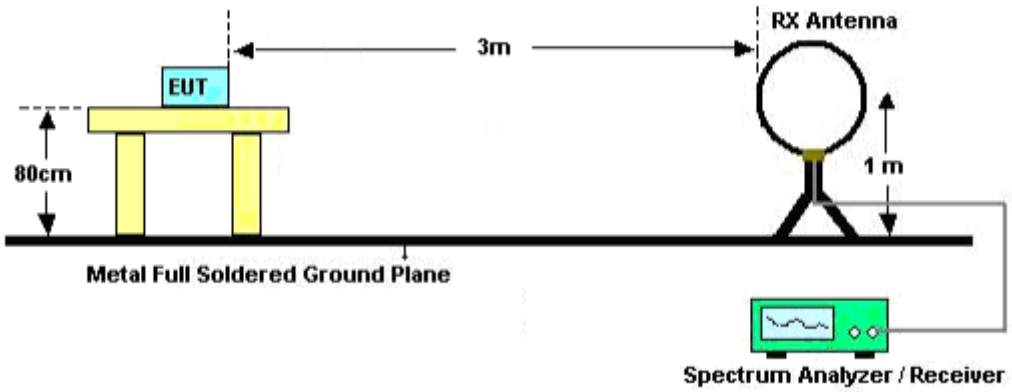
(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

8.2 MEASUREMENT PROCEDURE

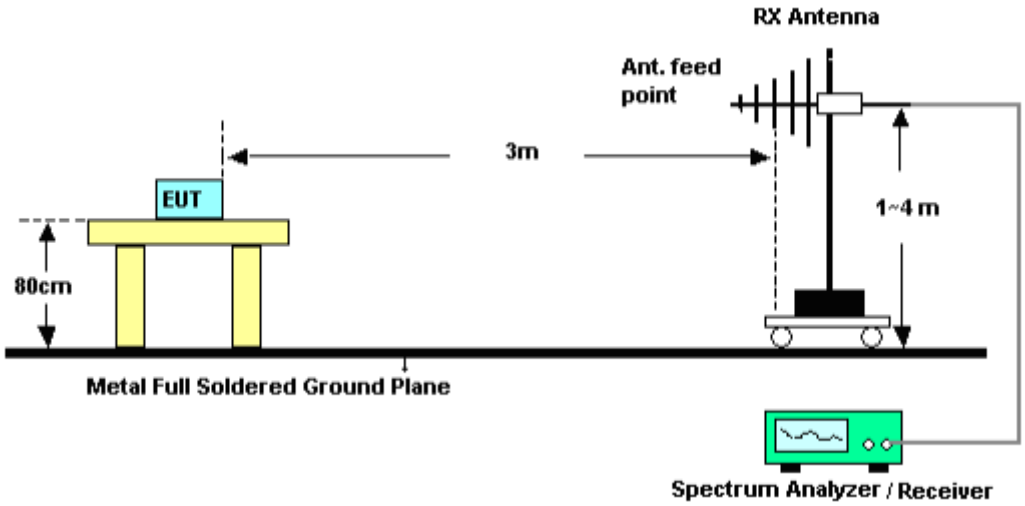
1. The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Below 1GHz)
2. The measuring distance of 3m shall used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Above 1GHz)
3. The height of the test antenna shall vary between 1m to 4m.Both horizontal and vertical polarization Of the antenna are set to make the measurement.
4. The initial step in collecting radiated emission data is a receive peak detector mode. Pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
5. All readings are peak unless otherwise stated QP in column of Note. Peak denoted that the Peak reading compliance with the QP limits and then QP Mode measurement didn't perform(Below 1GHz)
6. All readings are Peak mode value unless otherwise stated AVG in column of Note. If the Peak mode measured value compliance with the Peak limits and lower than AVG Limits, the EUT shall be deemed to meet Peak&AVG limits and then only Peak mode was measured, but AVG mode didn't perform.(Above 1GHz).

8.3 TEST SETUP

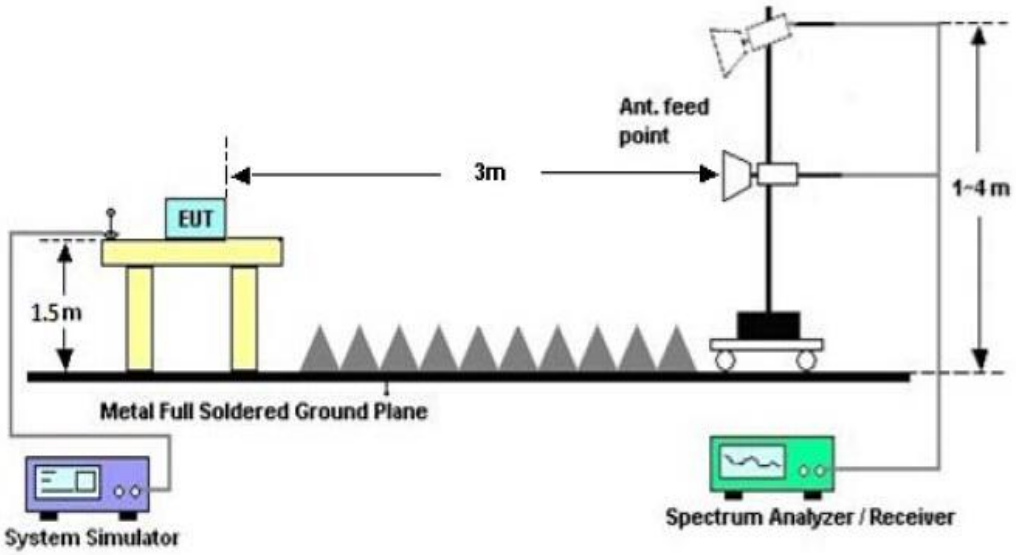
RADIATED EMISSION TEST SETUP BELOW 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



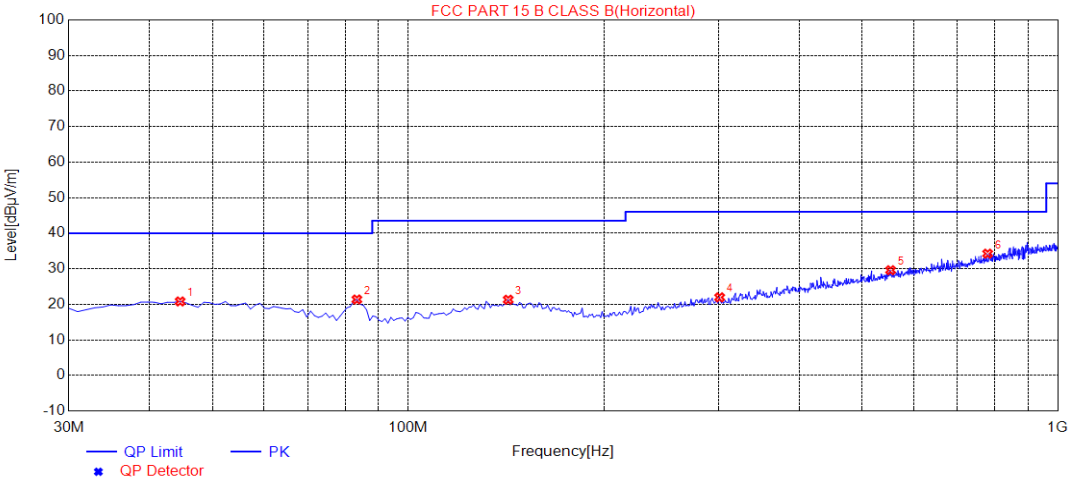
8.4 TEST RESULT

RADIATED EMISSION BELOW 30MHz

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

RADIATED EMISSION BELOW 1GHz

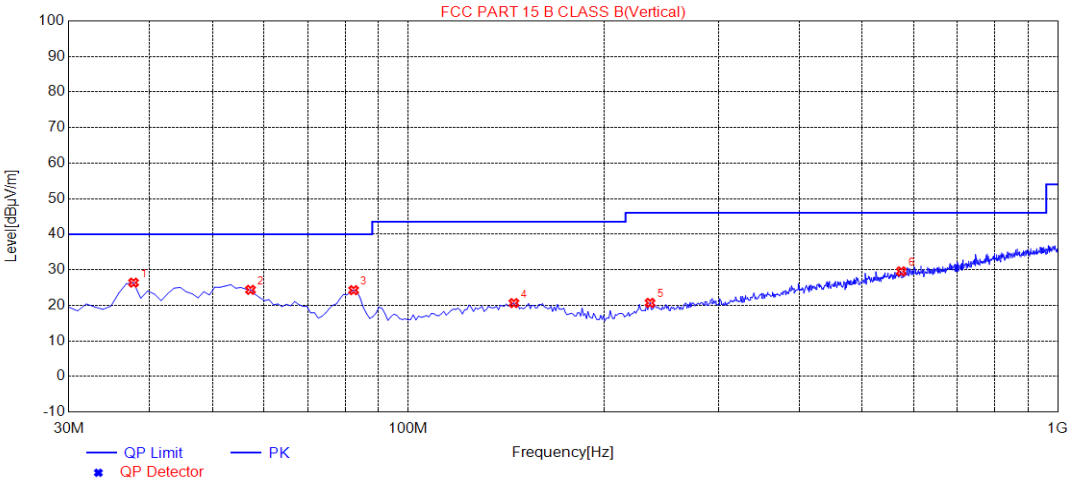
RADIATED EMISSION TEST- (30MHz-1GHz)-LOW CHANNEL-HORIZONTAL



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	44.5500	20.80	14.82	40.00	19.20	200	30	Horizontal
2	83.3500	21.36	10.18	40.00	18.64	200	360	Horizontal
3	142.5200	21.29	14.88	43.50	22.21	100	270	Horizontal
4	301.6000	21.95	15.96	46.00	24.05	100	10	Horizontal
5	552.8300	29.59	23.31	46.00	16.41	100	240	Horizontal
6	779.8100	34.25	27.94	46.00	11.75	150	350	Horizontal

RESULT: PASS

RADIATED EMISSION TEST- (30MHz-1GHz)-LOW CHANNEL -VERTICAL



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	37.7600	26.38	14.39	40.00	13.62	100	270	Vertical
2	57.1600	24.35	14.13	40.00	15.65	100	300	Vertical
3	82.3800	24.26	10.17	40.00	15.74	200	320	Vertical
4	145.4300	20.62	14.88	43.50	22.88	200	290	Vertical
5	235.6400	20.68	14.48	46.00	25.32	150	240	Vertical
6	574.1700	29.55	23.77	46.00	16.45	100	330	Vertical

RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

2. The “Factor” value can be calculated automatically by software of measurement system.

3. All modes were tested, and only the data of worst case mode 1 was recorded in this report.

RADIATED EMISSION ABOVE 1GHZ FOR BLE

EUT：	Soundcore Life Q20	Model Name. ：	A3025
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 1	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4804.026	48.58	3.76	52.32	74	-21.68	peak
4804.026	46.43	3.76	50.19	54	-3.81	AVG
7206.039	38.12	8.17	46.29	74	-27.71	peak
7206.039	43.78	8.17	51.85	54	-2.05	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Soundcore Life Q20	Model Name. ：	A3025
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 1	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4804.026	50.79	3.76	54.55	74	-19.45	peak
4804.026	46.23	3.76	49.99	54	-4.10	AVG
7206.039	46.30	8.17	54.47	74	-19.53	peak
7206.039	41.88	8.17	50.05	54	-3.95	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Soundcore Life Q20	Model Name. ：	A3025
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 2	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4880.032	47.97	3.78	51.75	74	-22.25	peak
4880.032	43.44	3.78	47.22	54	-6.78	AVG
7323.048	43.86	8.23	50.09	74	-21.91	peak
7323.048	40.29	8.23	48.52	54	-5.48	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Soundcore Life Q20	Model Name. ：	A3025
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 2	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4880.032	49.12	3.78	52.90	74	-21.10	peak
4880.032	43.77	3.78	47.55	54	-6.45	AVG
7323.048	45.35	8.23	53.58	74	-20.42	peak
7323.048	39.93	8.23	48.16	54	-5.84	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Soundcore Life Q20	Model Name. ：	A3025
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 3	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4960.042	47.62	3.81	51.43	74	-22.57	peak
4960.042	42.87	3.81	46.68	54	-7.32	AVG
7440.063	39.47	8.27	47.74	74	-26.26	peak
7440.063	36.34	8.27	44.57	54	-9.43	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT：	Soundcore Life Q20	Model Name. ：	A3025
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 3	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4960.042	46.55	3.81	50.36	74	-23.64	peak
4960.042	40.74	3.81	44.55	54	-9.45	AVG
7440.063	40.12	8.27	48.39	74	-25.61	peak
7440.063	38.18	8.27	46.45	54	-7.55	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

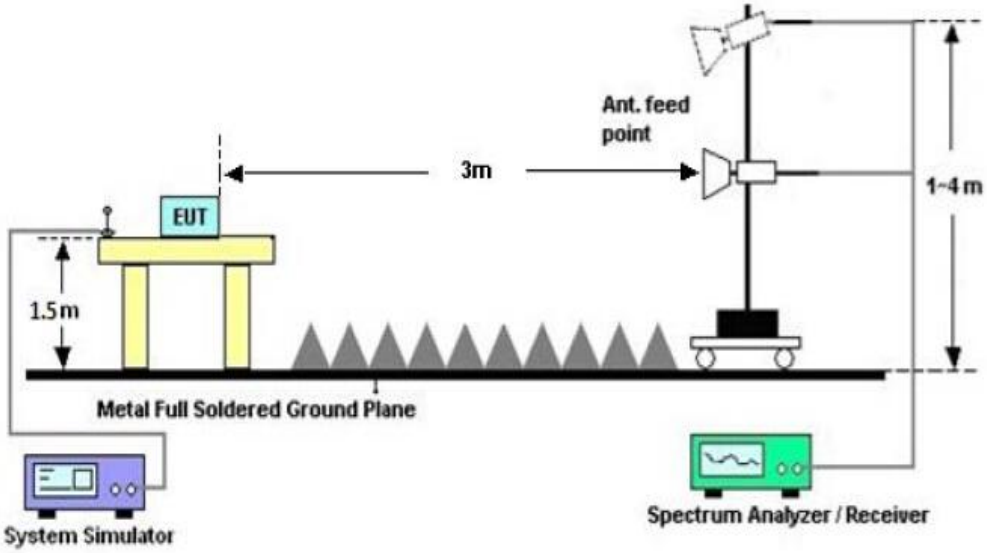
Note: Other emissions from 8G to 25 GHz are considered as ambient noise. No recording in the test report.
Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Measurement-Limit.
The “Factor” value can be calculated automatically by software of measurement system.
Only the data of worst recorded in this report.

9. BAND EDGE EMISSION

9.1. MEASUREMENT PROCEDURE

1. Set the EUT Work on the top, the bottom operation frequency individually.
2. Set SPA Start or Stop Frequency=Operation Frequency
   For unrestricted band: RBW=100kHz, VBW=300kHz
   For restricted band: RBW=1MHz, VBW=3*RBW
   Center frequency =Operation frequency
3. The band edges was measured and recorded.

9.2. TEST SET-UP

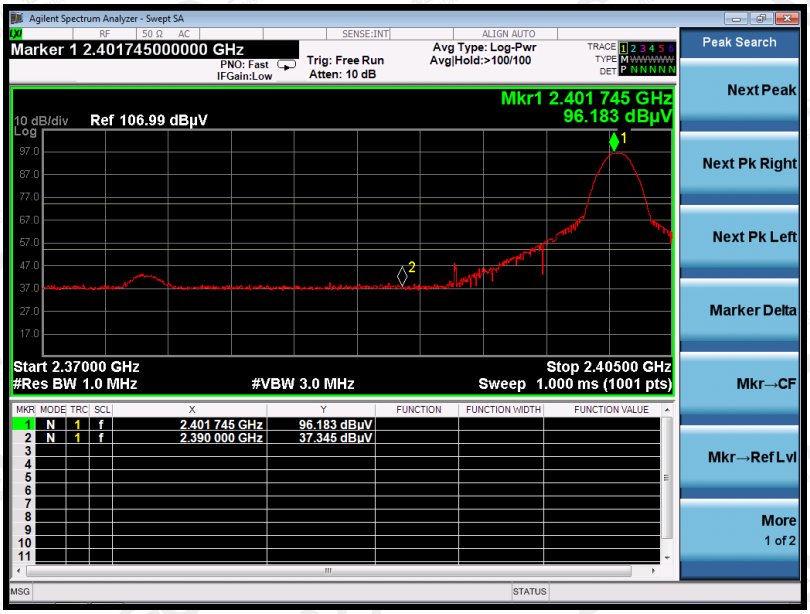


9.3. TEST RESULT

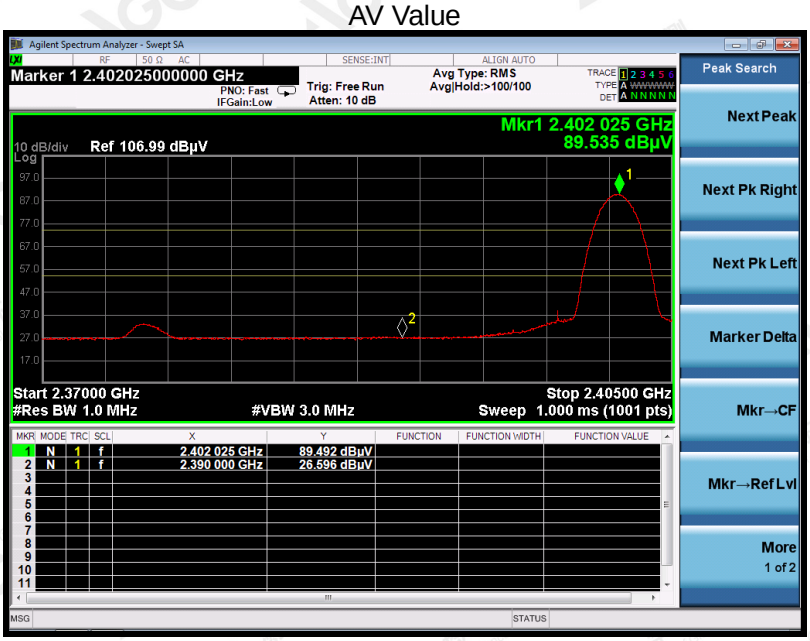
FOR BLE:

EUT:	Soundcore Life Q20	Model Name. :	A3025
Temperature:	20 ℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	Mode 1	Polarization :	Horizontal

PK Value

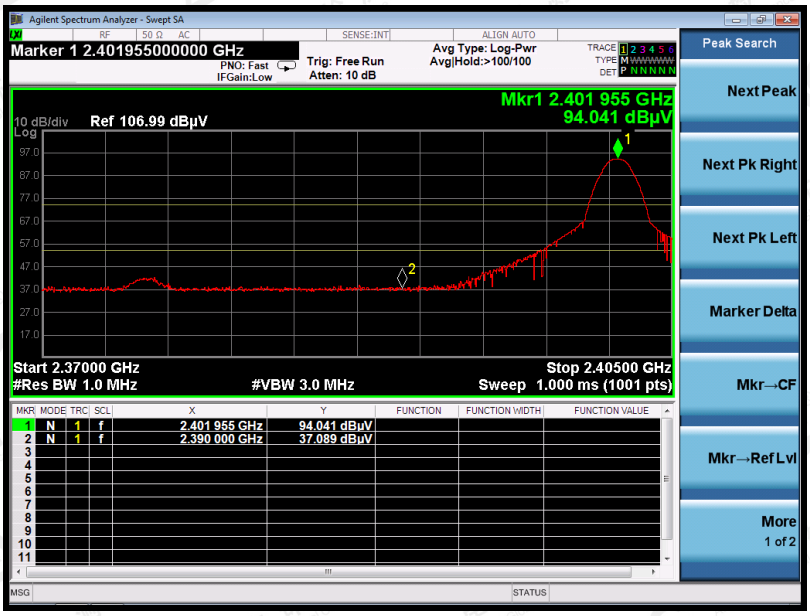


AV Value

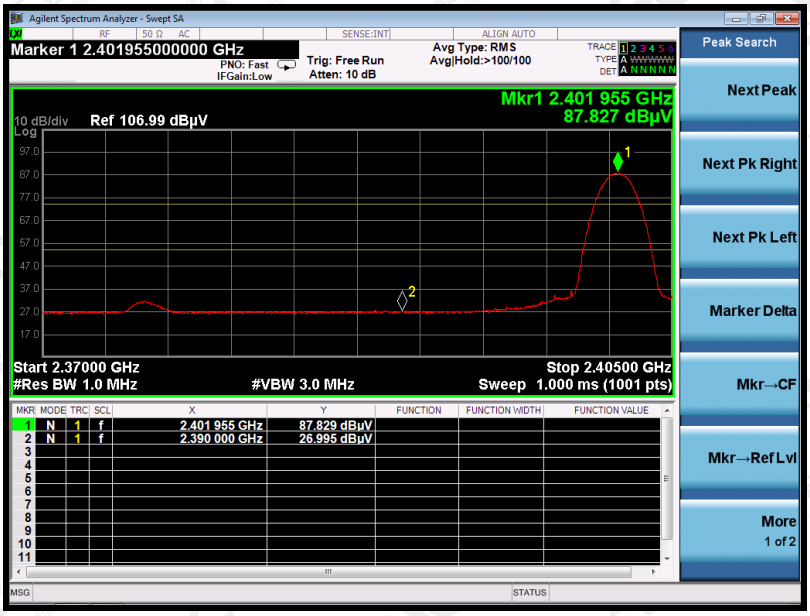


EUT：	Soundcore Life Q20	Model Name. ：	A3025
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 1	Polarization :	Vertical

PK Value



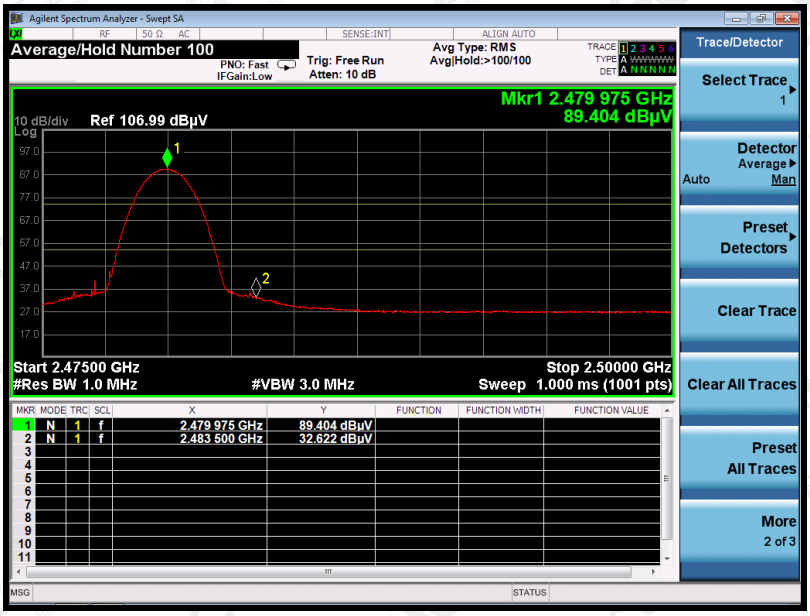
AV Value



EUT：	Soundcore Life Q20	Model Name. ：	A3025
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 3	Polarization :	Horizontal

PK Value

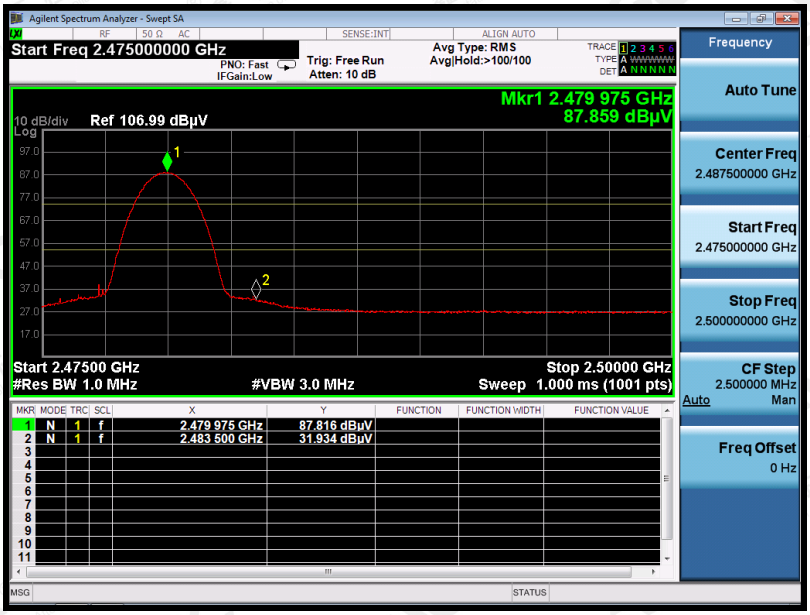
AV Value



EUT：	Soundcore Life Q20	Model Name. ：	A3025
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V
Test Mode ：	Mode 3	Polarization :	Vertical

PK Value

AV Value



Note: 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(µV) to represent the Amplitude. Use the F dB(µV/m) to represent the Field Strength. So A=F.

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to Attached file (Appendix I).

APPENDIX B: PHOTOGRAPHS OF EUT

Refer to Attached file (Appendix I).

----END OF REPORT----