

# Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Report No: CCISE190908604

# FCC REPORT

**Applicant:** Azumi S.A

Address of Applicant:

Avenida Aquilino de la Guardia con Calle 47, PH Ocean Plaza,

Diag 46 of 46 of

Piso 16 of. 16-01, Marbella, Ciudad de Panama, Panama

**Equipment Under Test (EUT)** 

Product Name: Mobile Phone

Model No.: V54

Trade mark: AZUMI

FCC ID: QRP-SP-012

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: 20 Sep., 2019

**Date of Test:** 21 Sep., to 17 Oct., 2019

Date of report issued: 18 Oct., 2019

Test Result: PASS \*

#### Authorized Signature:



Bruce Zhang Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

<sup>\*</sup> In the configuration tested, the EUT complied with the standards specified above.





# 2 Version

Version No.	Date	Description
00	18 Oct., 2019	Original

Tested by: 18 Oct., 2019

Test Engineer

Reviewed by: Date: 18 Oct., 2019

Project Engineer



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# 4 Test Summary

Test Items	Section in CFR 47	Result
Antenna requirement	15.203 & 15.247 (b)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(3)	Pass
6dB Emission Bandwidth 99% Occupied Bandwidth	15.247 (a)(2)	Pass
Power Spectral Density	15.247 (e)	Pass
Band Edge	15.247 (d)	Pass
Spurious Emission	15.205 & 15.209	Pass

#### Remark:

- 1. Pass: The EUT complies with the essential requirements in the standard.
- 2. N/A: Not Applicable.
- 3. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer).

ANSI C63.4-2014
ANSI C63.10-2013

KDB 558074 D01 15.247 Meas Guidance v05r02



## 5 General Information

## 5.1 Client Information

Applicant:	Azumi S.A
Address:	Avenida Aquilino de la Guardia con Calle 47, PH Ocean Plaza, Piso 16 of. 16-01, Marbella, Ciudad de Panama, Panama
Manufacturer:	AZUMI HK LTD
Address:	FLAT/RM 18 BLK 1 14/F GOLDEN INDUSTRIAL BUILDING 16-26 KWAI TAK STREET KWAI CHUNG, HK

# 5.2 General Description of E.U.T.

Product Name:	Mobile Phone
Model No.:	V54
Hardware version:	AZUMI_V54_HW_V1.0
Software version:	AZUMI_V54_SW_V01
Operation Frequency:	2402-2480 MHz
Channel numbers:	40
Channel separation:	2 MHz
Modulation technology:	GFSK
Data speed :	1Mbps
Antenna Type:	Internal Antenna
Antenna gain:	1.0 dBi
Power supply:	Rechargeable Li-ion Battery DC3.8V-2500mAh
AC adapter:	Input: AC100-240V, 50/60Hz, 0.2A Output: DC 5.0V, 1A
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

Operation	Operation Frequency each of channel						
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	10	2422MHz	20	2442MHz	30	2462MHz
1	2404MHz	11	2424MHz	21	2444MHz	31	2464MHz
2	2406MHz	12	2426MHz	22	2446MHz	32	2466MHz
3	2408MHz	13	2428MHz	23	2448MHz	33	2468MHz
4	2410MHz	14	2430MHz	24	2450MHz	34	2470MHz
5	2412MHz	15	2432MHz	25	2452MHz	35	2472MHz
6	2414MHz	16	2434MHz	26	2454MHz	36	2474MHz
7	2416MHz	17	2436MHz	27	2456MHz	37	2476MHz
8	2418MHz	18	2438MHz	28	2458MHz	38	2478MHz
9	2420MHz	19	2440MHz	29	2460MHz	39	2480MHz

Note

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test. Channel No. 0, 20 & 39 were selected as Lowest, Middle and Highest channel.

#### 5.3 Test environment and test mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Transmitting mode	Keep the EUT in continuous transmitting with modulation

The sample was placed 0.8m (below 1GHz)/1.5m (above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. Duty cycle setting during the transmission is 100% with maximum power setting for all modulations.

## 5.4 Description of Support Units

The EUT has been tested as an independent unit.

## 5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Conducted Emission (9kHz ~ 30MHz)	±1.60 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	±3.12 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.32 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.38 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±3.36 dB (k=2)

## 5.6 Additions to, deviations, or exclusions from the method

Νc

# 5.7 Laboratory Facility

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

#### • FCC - Designation No.: CN1211

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

#### ● ISED - CAB identifier.: CN0021

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

#### • CNAS - Registration No.: CNAS L6048

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

#### A2LA - Registration No.: 4346.01

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

# 5.8 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,

Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,

Bao'an District, Shenzhen, Guangdong, China

Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366

Project No.: CCISE1909086

Report No: CCISE190908604



# 5.9 Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
Loop Antenna	SCHWARZBECK	FMZB1519B	00044	03-18-2019	03-17-2020
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-18-2019	03-17-2020
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-18-2019	03-17-2020
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-22-2017	06-21-2020
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-21-2018	11-20-2019
EMI Test Software	AUDIX	E3	Version: 6.110919b		b
Pre-amplifier	HP	8447D	2944A09358	03-18-2019	03-17-2020
Pre-amplifier	CD	PAP-1G18	11804	03-18-2019	03-17-2020
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-18-2019	03-17-2020
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-21-2018	11-20-2019
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-18-2019	03-17-2020
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-18-2019	03-17-2020
Cable	MICRO-COAX	MFR64639	K10742-5	03-18-2019	03-17-2020
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-18-2019	03-17-2020
RF Switch Unit	MWRFTEST	MW200	N/A	N/A	N/A
Test Software	MWRFTEST	MTS8200	Version: 2.0.0.0		

Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI	101189	03-18-2019	03-17-2020
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-18-2019	03-17-2020
LISN	CHASE	MN2050D	1447	03-18-2019	03-17-2020
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2018	07-20-2021
Cable	HP	10503A	N/A	03-18-2019	03-17-2020
EMI Test Software	AUDIX	E3	Version: 6.110919b		



## 6 Test results and Measurement Data

## 6.1 Antenna requirement:

#### **Standard requirement:** FCC Part 15 C Section 15.203 /247(b)

15.203 requirement:

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, 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.

15.247(b) (4) requirement:

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### **E.U.T Antenna:**

The BLE antenna is an Internal antenna which cannot replace by end-user, the best-case gain of the antenna is 1.0 dBi.





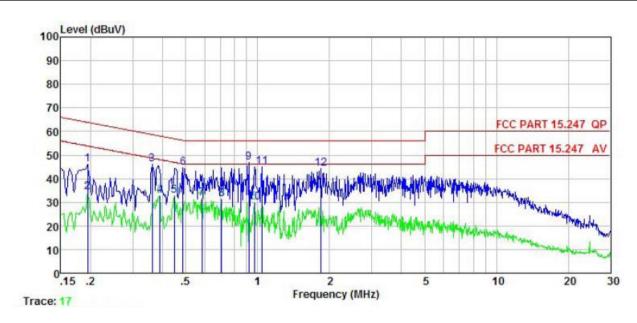
# 6.2 Conducted Emission

Test Requirement:	FCC Part 15 C Section 15.207			
Test Frequency Range:	150 kHz to 30 MHz			
Class / Severity:	Class B			
Receiver setup:	RBW=9kHz, VBW=30kHz			
Limit:			dBuV)	
Limit	Frequency range (MHz)	Frequency range (MHz)  Quasi-peak  Average		
	0.15-0.5	66 to 56*	56 to 46*	
	0.5-5	56	46	
	5-30	60	50	
	* Decreases with the logar	•		
Test procedure	<ol> <li>The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 50ohm/50uH coupling impedance for the measuring equipment.</li> <li>The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</li> <li>Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10-2013 on conducted measurement.</li> </ol>			
Test setup:	Reference Plane  LISN  40cm 80cm Filter AC power  Equipment  Test table/Insulation plane  Remark  E.U.T: Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m			
Test Instruments:	Refer to section 5.9 for de	tails		
Test mode:	Refer to section 5.3 for details			
Test results:	Passed			



#### **Measurement Data:**

Product name:	Mobile Phone	Product model:	V54
Test by:	Yaro	Test mode:	BLE Tx mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Huni: 55%



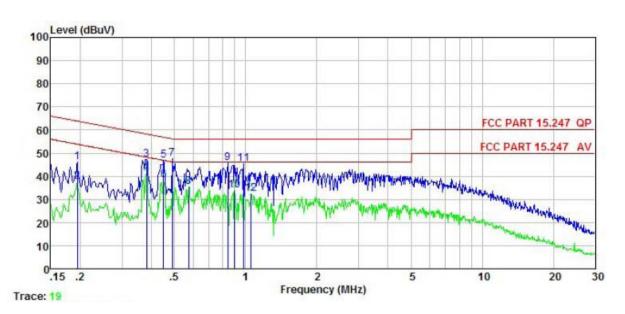
Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
MHz	dBu∀	₫B	<u>d</u> B	dBu₹	dBu∜	<u>dB</u>	
0.194	35.89	-0.41	10.76	46.24	63.84	-17.60	QP
0.194	23.99	-0.41	10.76	34.34	53.84	-19.50	Average
0.361	35.77	-0.38	10.73	46.12	58.69	-12.57	QP
0.389	22.38	-0.37	10.72	32.73	48.08	-15.35	Average
0.447	22.66	-0.38	10.74	33.02	46.93	-13.91	Average
0.486	34.14	-0.39	10.76	44.51	56.23	-11.72	QP
0.585	21.39	-0.39	10.76	31.76	46.00	-14.24	Average
0.708	20.99	-0.38	10.77	31.38	46.00	-14.62	Average
0.918	36.45	-0.38	10.84	46.91	56.00	-9.09	QP
0.968	19.43	-0.38	10.86	29.91	46.00	-16.09	Average
1.043	34.39	-0.38	10.88	44.89	56.00	-11.11	QP
1.839	33.65	-0.41	10.95	44.19	56.00	-11.81	QP
	MHz 0. 194 0. 194 0. 361 0. 389 0. 447 0. 486 0. 585 0. 708 0. 918 0. 968 1. 043	MHz dBuV  0.194 35.89 0.194 23.99 0.361 35.77 0.389 22.38 0.447 22.66 0.486 34.14 0.585 21.39 0.708 20.99 0.918 36.45 0.968 19.43 1.043 34.39	MHz dBuV dB  0.194 35.89 -0.41 0.194 23.99 -0.41 0.361 35.77 -0.38 0.389 22.38 -0.37 0.447 22.66 -0.38 0.486 34.14 -0.39 0.585 21.39 -0.39 0.708 20.99 -0.38 0.918 36.45 -0.38 0.968 19.43 -0.38 1.043 34.39 -0.38	Freq Level Factor Loss  MHz dBuV dB dB  0.194 35.89 -0.41 10.76 0.194 23.99 -0.41 10.76 0.361 35.77 -0.38 10.73 0.389 22.38 -0.37 10.72 0.447 22.66 -0.38 10.74 0.486 34.14 -0.39 10.76 0.585 21.39 -0.39 10.76 0.708 20.99 -0.38 10.77 0.918 36.45 -0.38 10.84 0.968 19.43 -0.38 10.86 1.043 34.39 -0.38 10.88	MHz         dBuV         dB         dB         dBuV           0.194         35.89         -0.41         10.76         46.24           0.194         23.99         -0.41         10.76         34.34           0.361         35.77         -0.38         10.73         46.12           0.389         22.38         -0.37         10.72         32.73           0.447         22.66         -0.38         10.74         33.02           0.486         34.14         -0.39         10.76         44.51           0.585         21.39         -0.39         10.76         31.76           0.708         20.99         -0.38         10.77         31.38           0.918         36.45         -0.38         10.84         46.91           0.968         19.43         -0.38         10.86         29.91           1.043         34.39         -0.38         10.88         44.89	MHz         dBuV         dB         dB         dBuV         dBuV           0.194         35.89         -0.41         10.76         46.24         63.84           0.194         23.99         -0.41         10.76         34.34         53.84           0.361         35.77         -0.38         10.73         46.12         58.69           0.389         22.38         -0.37         10.72         32.73         48.08           0.447         22.66         -0.38         10.74         33.02         46.93           0.486         34.14         -0.39         10.76         44.51         56.23           0.585         21.39         -0.39         10.76         31.76         46.00           0.708         20.99         -0.38         10.77         31.38         46.00           0.918         36.45         -0.38         10.84         46.91         56.00           0.968         19.43         -0.38         10.86         29.91         46.00           1.043         34.39         -0.38         10.88         44.89         56.00	Freq Level Factor Loss Level Line Limit   MHz   dBuV   dB   dB   dBuV   dBuV   dB   dB   dBuV   dB   dB   dB   dB   dB   dB   dB   d

#### Notes:

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- Final Level =Receiver Read level + LISN Factor + Cable Loss.



Product name:	Mobile Phone	Product model:	V54
Test by:	Yaro	Test mode:	BLE Tx mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Neutral
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Huni: 55%



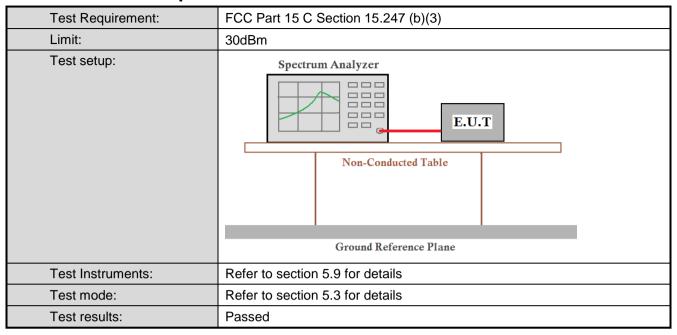
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBu∀	₫B	₫B	dBu₹	dBu∇	<u>dB</u>	
1	0.194	36.16	-0.69	10.76	46.23	63.84	-17.61	QP
2	0.194	27.47	-0.69	10.76	37.54	53.84	-16.30	Average
3	0.381	37.24	-0.64	10.72	47.32	58.25	-10.93	QP
4	0.381	31.14	-0.64	10.72	41.22	48.25	-7.03	Average
5	0.449	36.61	-0.65	10.74	46.70	56.89	-10.19	QP
6	0.449	28.45	-0.65	10.74	38.54	46.89	-8.35	Average
7	0.489	37.42	-0.65	10.76	47.53		-8.66	
8	0.573	25.43	-0.65	10.76	35.54	46.00	-10.46	Average
1 2 3 4 5 6 7 8 9 10	0.839	35.44	-0.63	10.82	45.63	56.00	-10.37	QP
10	0.899	23.85	-0.63	10.84	34.06	46.00	-11.94	Average
11	0.984	35.03	-0.63	10.87	45.27		-10.73	
12	1.054	22.33	-0.63	10.88	32.58			Average

#### Notes:

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss.



# **6.3 Conducted Output Power**

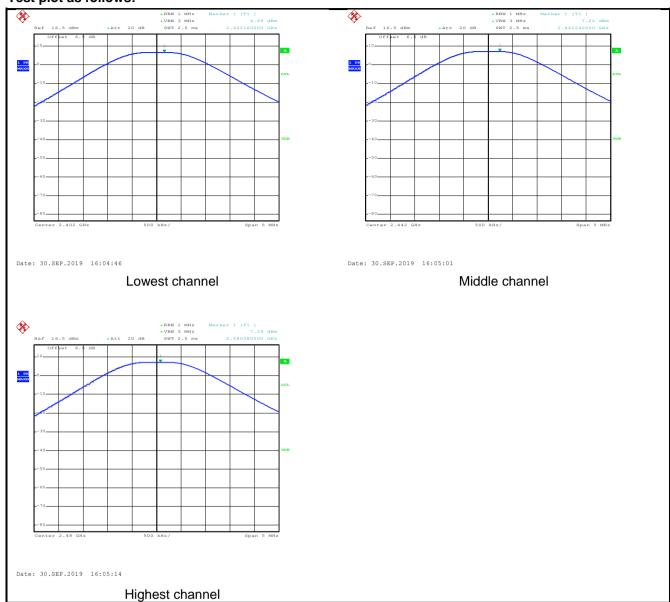


#### **Measurement Data:**

Test CH	Maximum Conducted Output Power (dBm)	Limit(dBm)	Result	
Lowest	6.69			
Middle	7.22	30.00	Pass	
Highest	7.29			

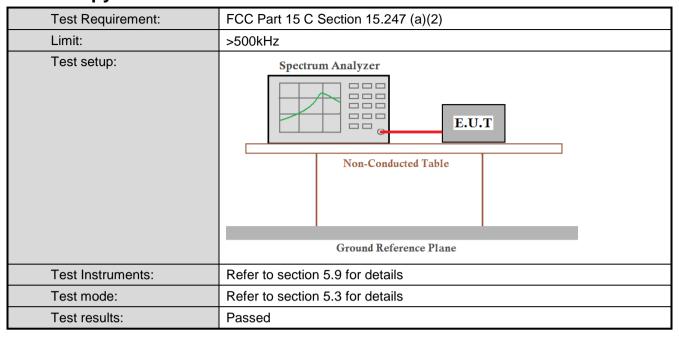


#### Test plot as follows:





# 6.4 Occupy Bandwidth

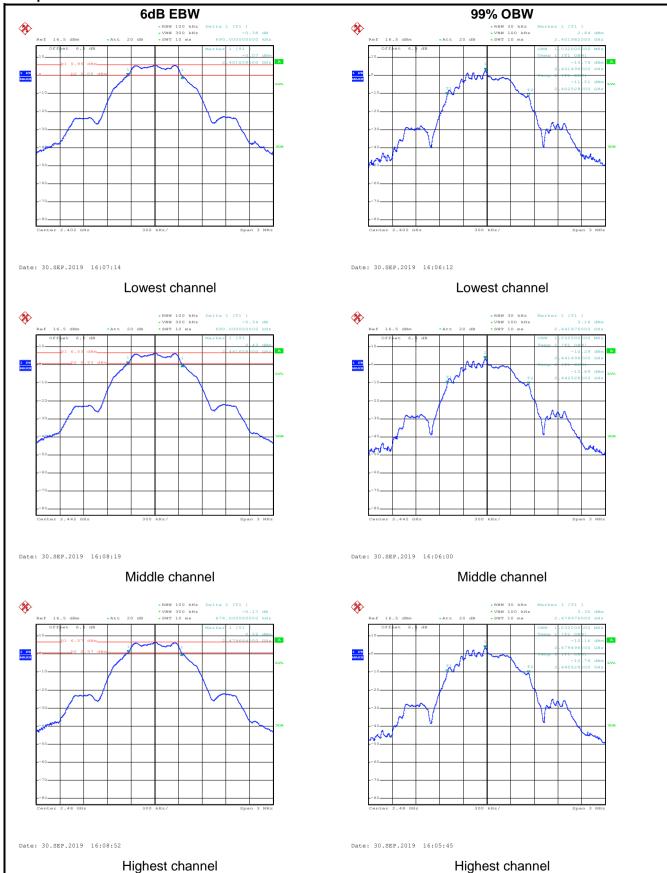


#### **Measurement Data:**

Test CH	6dB Emission Bandwidth (MHz)	Limit(kHz)	Result	
Lowest	0.690			
Middle	0.690	>500	Pass	
Highest	0.678			
Test CH	99% Occupy Bandwidth (MHz)	Limit(kHz)	Result	
Lowest	1.032			
Middle	Middle 1.032		N/A	
Highest	1.032			



#### Test plot as follows:





# 6.5 Power Spectral Density

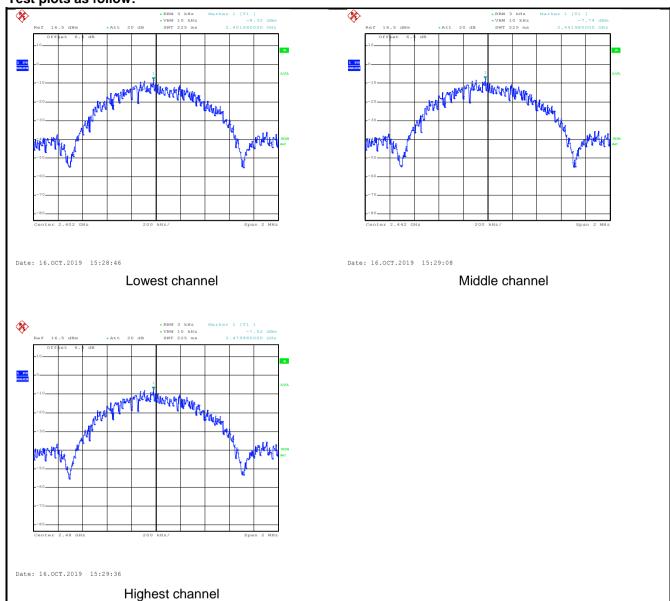
Test Requirement:	FCC Part 15 C Section 15.247 (e)				
Limit:	8 dBm/3KHz				
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane				
Test Instruments:	Refer to section 5.9 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				

#### **Measurement Data:**

Test CH	Power Spectral Density (dBm/3KHz)	Limit(dBm/3KHz)	Result	
Lowest	-8.32			
Middle	-7.74	8.00	Pass	
Highest	-7.52			



#### Test plots as follow:





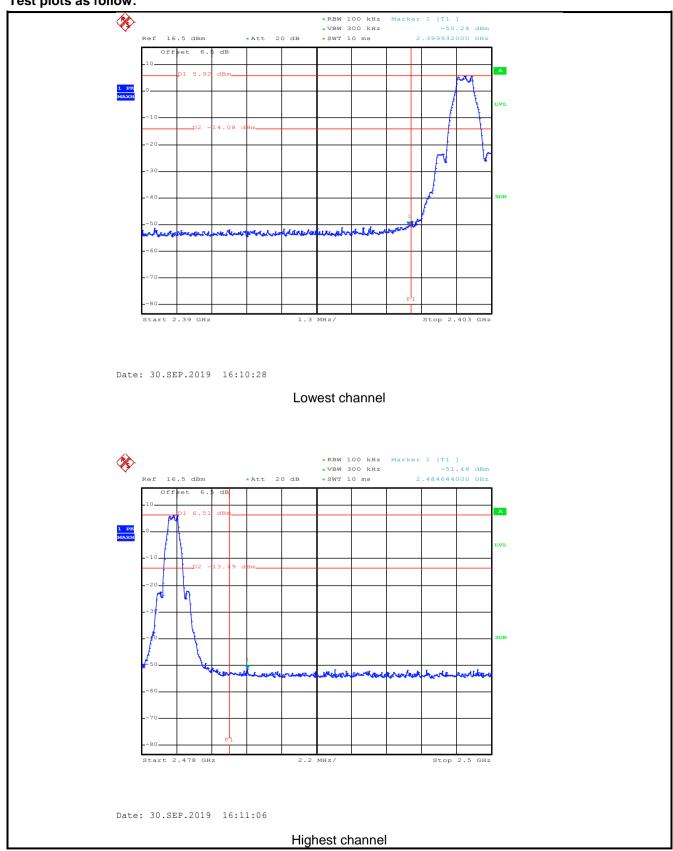
# 6.6 Band Edge

## 6.6.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d)					
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.					
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane					
Test Instruments:	Refer to section 5.9 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Passed					



#### Test plots as follow:





## 6.6.2 Radiated Emission Method

0.0.2	Radiated Ellission	rictilou						
Т	Test Requirement:	FCC Part 15 C Section 15.205 and 15.209						
Т	Test Frequency Range:	2.3GHz to 2.5	GHz					
Т	Test Distance:	3m						
F	Receiver setup:	Frequency	Detector	RBW	VBW	Remark		
		Above 1GHz	Peak	1MHz	3MHz	Peak Value		
_			RMS	1MHz	3MHz	Average Value		
L	₋imit:	Frequer	ncy L	mit (dBuV/m @3		Remark		
		Above 10	GHz —	54.00 74.00		verage Value Peak Value		
Ţ	Test Procedure:	<ol> <li>The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li> <li>For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasipeak or average method as specified and then reported in a data sheet.</li> </ol>						
Т	Fest setup:	AE (T	umtable)  Groun  Test Receiver	Horn Antenna 3m d Reference Plane Pre- Amptier Contr	Antenna Tower			
Т	Test Instruments:	Refer to section	n 5.9 for deta	ils				
Т	Test mode:	Refer to section	on 5.3 for deta	ils				
Т	Test results:	Passed						



Product Name:	Mobile Phone		Product Model: Test mode:		V54	
est By:	Yaro				BLE Tx mode	
est Channel:	Lowest channel		Polarization:	Polarization: Vertical		
est Voltage:	AC 120/60Hz		Environment:		Temp: 24℃	Huni: 57%
110 Level (dBuV/m	)					
100						
						$\wedge$
80					FCC PA	RT 15 (PK)
60	~~~~~~	many	munum	~~	FCCP2	RT T5 (AV)
					2	
40						
20						
02310 2320		2350 Frequency	(B/IHz)			2404

dB dBuV/m dBuV/m

0.00 58.80 74.00 -15.20 Peak

0.00 46.49 54.00 -7.51 Average

#### Remark:

MHz

2390,000

2390.000

dBuV

25.36

13.05

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor.

dB/m

27.07

27.07

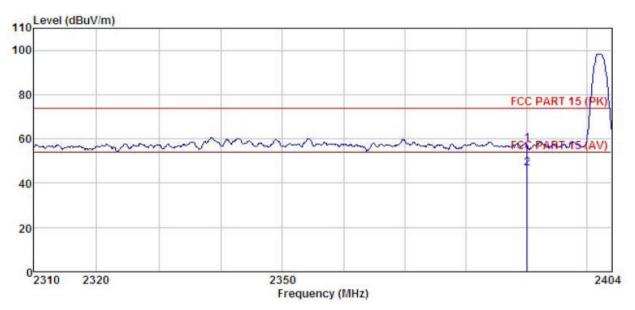
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

4.69

4.69



Product Name:	Mobile Phone	Product Model:	V54
Test By:	Yaro	Test mode:	BLE Tx mode
Test Channel:	Lowest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%



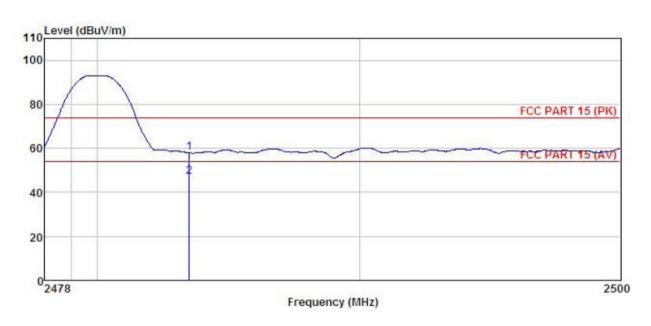
	Freq			Cable Preamp Loss Factor Le					Remark
	MHz	dBu∜	dB/m	dB	dB	dBu∀/m	dBuV/m	dB	
1 2	2390.000 2390.000					57.56 46.61			

#### Remark

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product Name:	Mobile Phone	Product Model:	V54
Test By:	Yaro	Test mode:	BLE Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%



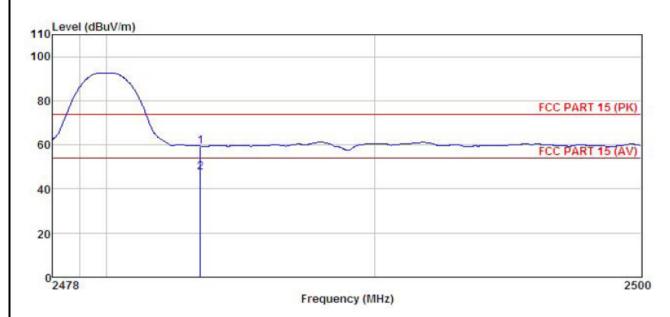
			ReadAntenna Cable Preamp Freq Level Factor Loss Factor I						
	MHz	dBu₹	dB/m	dB	dB	dBu√/m	$\overline{dBuV/m}$	dB	
1 2	2483.500 2483.500								

#### Remark:

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product Name:	Mobile Phone	Product Model:	V54
Test By:	Yaro	Test mode:	BLE Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%



Freq	Read Level	Antenna Factor	Cable Loss	Cable Preamp Lim Loss Factor Level Li		Limit Over Line Limit R		Remark
MHz	dBu∀	dB/m	<u>dB</u>	dB	dBuV/m	dBuV/m	dB	
2483.500 2483.500								

#### Remark:

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



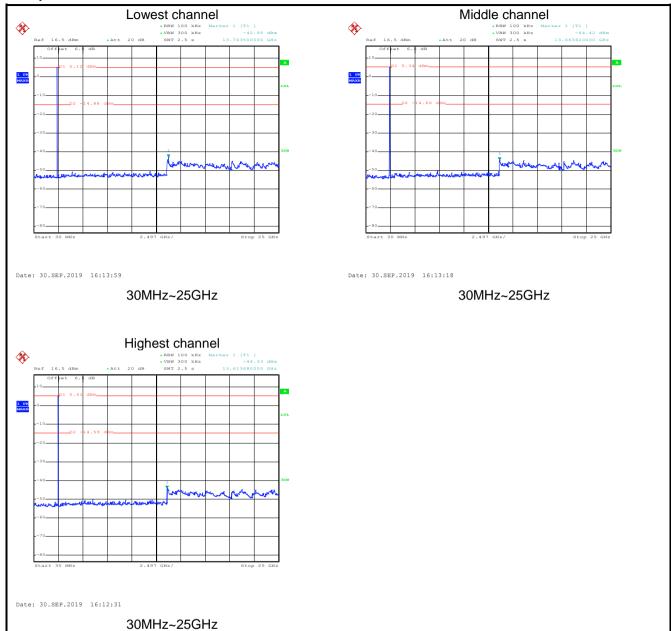
# 6.7 Spurious Emission

## 6.7.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d)						
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.						
Test setup:	Spectrum Analyzer  E.U.T  Non-Conducted Table  Ground Reference Plane						
Test Instruments:	Refer to section 5.9 for details						
Test mode:	Refer to section 5.3 for details						
Test results:	Passed						



### Test plot as follows:

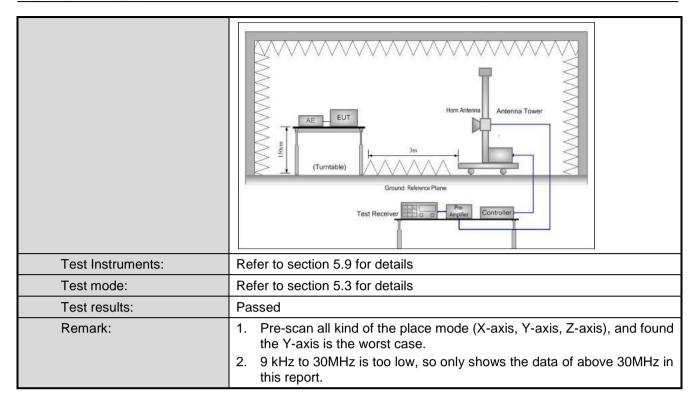




#### 6.7.2 Radiated Emission Method

9kHz to 25GHz 3m Frequency 30MHz-1GHz Above 1GHz Frequency	Detector Quasi-peak Peak	RBW							
Frequency 30MHz-1GHz Above 1GHz	Quasi-peak	RBW							
30MHz-1GHz Above 1GHz	Quasi-peak	RBW	3m						
Above 1GHz			VB	SW	Remark				
	Peak	120KHz	3001	KHz	Quasi-peak Value				
		1MHz	3M	Hz	Peak Value				
Frequency	RMS	1MHz	3M	Hz	Average Value				
1 Toquono,	/ Li	mit (dBuV/m @	3m)		Remark				
30MHz-88M	Hz	40.0		C	Quasi-peak Value				
88MHz-216M	1Hz	43.5		C	Quasi-peak Value				
		46.0			Quasi-peak Value				
960MHz-1G	Hz	54.0		C	Quasi-peak Value				
Above 1GF	lz				Average Value				
		74.0			Peak Value				
highest rad  2. The EUT antenna, w tower.  3. The antenn the ground Both horize make the n  4. For each s case and t meters and to find the n  5. The test-re Specified E  6. If the emiss the limit sp of the EUT have 10 dE	liation.  was set 3 m  which was mountained to determine the and very heasurement. Suspected em the antered the rota table maximum reaseceiver system of the certified, then the would be reposed to the maximum the certified, then the certified, then the maximum the certified, then the maximum the certified, then the certified, then the maximum the certified the cer	reters away funted on the framed from one the maximitical polarizations was tuned awas turned ding.  In Maximum Hone EUT in peresting could be corted. Other discretes the could be re-tested.	from the top of a me met um valutions of EUT was ed to he from 0 to Pea lold Modak modes stoppwise the done b	ne interior variation of the arms arranged arms degree arms ped arms y one	erference-receiving ble-height antenna four meters above the field strength. antenna are set to anged to its worst from 1 meter to 4 tes to 360 degrees tect Function and as 10 dB lower than and the peak values ssions that did not using peak, quasi-				
EUT	4m								
	960MHz-1G Above 1GH  1. The EUT 1GHz)/1.5r The table of highest rad 2. The EUT antenna, we tower. 3. The antennathe ground Both horized make the nate of the example of the EUT have 10 de peak or ave sheet.  Below 1GHz  Ground Plane	1GHz)/1.5m(above 1GH The table was rotated 3 highest radiation.  2. The EUT was set 3 m antenna, which was mode tower.  3. The antenna height is we the ground to determine Both horizontal and ver make the measurement.  4. For each suspected emedase and then the antenmeters and the rota table to find the maximum reacts. The test-receiver system Specified Bandwidth with 6. If the emission level of the limit specified, then the of the EUT would be rephave 10 dB margin would peak or average methodsheet.  Below 1GHz	Above 1GHz  Above 1GHz  1. The EUT was placed on the top of 1GHz)/1.5m(above 1GHz) above the The table was rotated 360 degrees thighest radiation.  2. The EUT was set 3 meters away antenna, which was mounted on the tower.  3. The antenna height is varied from of the ground to determine the maxim Both horizontal and vertical polarization make the measurement.  4. For each suspected emission, the Ecase and then the antenna was tuned meters and the rota table was turned to find the maximum reading.  5. The test-receiver system was set Specified Bandwidth with Maximum He. If the emission level of the EUT in perthe limit specified, then testing could be for the EUT would be reported. Other have 10 dB margin would be re-tested peak or average method as specified sheet.  Below 1GHz	Above 1GHz  Above 1GHz  Above 1GHz  T4.0  1. The EUT was placed on the top of a round 1GHz)/1.5m(above 1GHz) above the ground The table was rotated 360 degrees to detern highest radiation.  2. The EUT was set 3 meters away from the antenna, which was mounted on the top of a tower.  3. The antenna height is varied from one metern the ground to determine the maximum value Both horizontal and vertical polarizations of make the measurement.  4. For each suspected emission, the EUT was case and then the antenna was tuned to he meters and the rota table was turned from 0 to find the maximum reading.  5. The test-receiver system was set to Peas Specified Bandwidth with Maximum Hold Mo  6. If the emission level of the EUT in peak more than the limit specified, then testing could be stop of the EUT would be reported. Otherwise the have 10 dB margin would be re-tested one be peak or average method as specified and sheet.  Below 1GHz	Above 1GHz  Above 1GHz  Above 1GHz  T4.0  1. The EUT was placed on the top of a rotating 1GHz)/1.5m(above 1GHz) above the ground at a The table was rotated 360 degrees to determine highest radiation.  2. The EUT was set 3 meters away from the integration antenna, which was mounted on the top of a variat tower.  3. The antenna height is varied from one meter to the ground to determine the maximum value of Both horizontal and vertical polarizations of the amake the measurement.  4. For each suspected emission, the EUT was arracase and then the antenna was tuned to heights meters and the rota table was turned from 0 degree to find the maximum reading.  5. The test-receiver system was set to Peak Described Bandwidth with Maximum Hold Mode.  6. If the emission level of the EUT in peak mode was the limit specified, then testing could be stopped and of the EUT would be reported. Otherwise the emi have 10 dB margin would be re-tested one by one peak or average method as specified and then is sheet.  Below 1GHz				



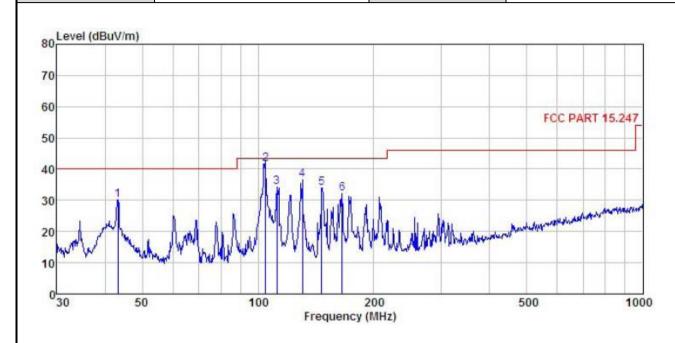




## Measurement Data (worst case):

#### **Below 1GHz:**

Product Name:	Mobile Phone	Product Model:	V54
Test By:	Yaro	Test mode:	BLE Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%



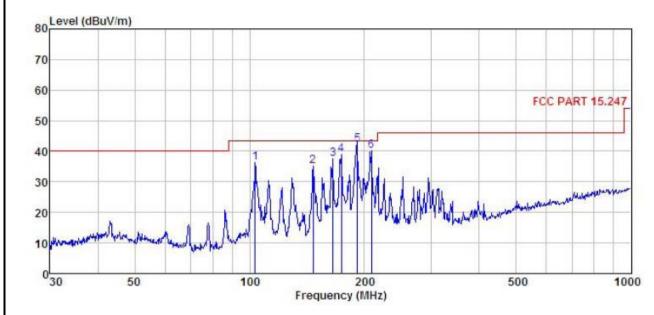
	Freq		Antenna Factor				Limit	Over Limit	
	MHz	dBu∜	dB/m	dB	<u>dB</u>	dBuV/m	dBuV/m	<u>dB</u>	
1	43.202	46.48	12.34	1.26	29.87	30.21	40.00	-9.79	QP
2	104.536	56.89	12.12	1.99	29.50	41.50	43.50	-2.00	QP
3	112.131	49.98	11.49	2.08	29.44	34.11	43.50	-9.39	QP
4	130.379	53.48	10.14	2.29	29.33	36.58	43.50	-6.92	QP
5	146.374	51.73	9.12	2.47	29.24	34.08	43.50	-9.42	QP
5 6	165.487	49.17	9.49	2.62	29.09	32.19	43.50	-11.31	QP

#### Remark

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product Name:	Mobile Phone	Product Model:	V54
Test By:	Yaro	Test mode:	BLE Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%



	Freq		Antenna Factor				Limit Line	Over Limit	Remark
=	MHz	dBu∜	$\overline{-}\overline{dB}/\overline{m}$	₫B	<u>d</u> B	dBuV/m	$\overline{dBuV/m}$	<u>dB</u>	
1	103.442	51.72	12.20	1.97	29.50	36.39	43.50	-7.11	QP
2	146.888	52.84	9.09	2.47	29.24	35.16	43.50	-8.34	QP
2 3 4 5	165.487	54.56	9.49	2.62	29.09	37.58	43.50	-5.92	QP
4	173.814	55.56	9.76	2.68	29.02	38.98	43.50	-4.52	QP
5	191.745	57.89	10.35	2.81	28.89	42.16	43.50	-1.34	QP
6	208.580	55.01	11.00	2.86	28.78	40.09	43.50	-3.41	QP

#### Remark:

<sup>1.</sup> Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor.

<sup>2.</sup> The emission levels of other frequencies are very lower than the limit and not show in test report.



#### **Above 1GHz**

Test channel: Lowest channel											
	Detector: Peak Value										
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
4804.00	46.26	30.85	6.80	41.81	42.10	74.00	-31.90	Vertical			
4804.00	47.85	30.85	6.80	41.81	43.69	74.00	-30.31	Horizontal			
			Dete	ector: Avera	ge Value						
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
4804.00	37.58	30.85	6.80	41.81	33.42	54.00	-20.58	Vertical			
4804.00	38.63	30.85	6.80	41.81	34.47	54.00	-19.53	Horizontal			
Test channel: Middle channel											
			De	tector: Peak	. Value						
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
4884.00	46.92	31.20	6.86	41.84	43.14	74.00	-30.86	Vertical			
4884.00	46.93	31.20	6.86	41.84	43.15	74.00	-30.85	Horizontal			
			Dete	ector: Avera	ge Value						
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization			
4884.00	38.52	31.20	6.86	41.84	34.74	54.00	-19.26	Vertical			
4884.00	38.47	31.20	6.86	41.84	34.69	54.00	-19.31	Horizontal			
			Test ch	annel: High	est channel						
			De	tector: Peak	. Value						

	Test channel: Highest channel											
Detector: Peak Value												
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization				
4960.00	46.19	31.63	6.91	41.87	42.86	74.00	-31.14	Vertical				
4960.00	47.23	31.63	6.91	41.87	43.90	74.00	-30.10	Horizontal				
			Dete	ector: Avera	ge Value							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization				
4960.00	38.67	31.63	6.91	41.87	35.34	54.00	-18.66	Vertical				
4960.00	38.14	31.63	6.91	41.87	34.81	54.00	-19.19	Horizontal				
4												

#### Remark.

<sup>1.</sup> Final Level = Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor.

<sup>2.</sup> The emission levels of other frequencies are very lower than the limit and not show in test report.