

Report No: JYTSZB-R12-2102487

FCC REPORT (Bluetooth)

Applicant:	PCD, LLC
Address of Applicant:	1500 Trade port Drive, Suite A, Orlando. Fl 32824
Equipment Under Test (E	EUT)
Product Name:	4G LTE smart phone
Model No.:	P50
Trade mark:	PCD
FCC ID:	2ALJJP50
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of sample receipt:	08 Nov., 2021
Date of Test:	09 Nov., to 13 Dec., 2021
Date of report issued:	16 Dec., 2021
Test Result:	PASS *

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

Authorized Signature:



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 JYT 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.

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2 Version

Version No.	Date	Description
00	16 Dec., 2021	Original

Tested by:

Mike.OU Test Engineer Winner Mang

Date: 16 Dec., 2021

Reviewed by:

Project Engineer

Date: 16 Dec., 2021

Project No.: JYTSZE2111028



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4 Test Summary

Test Items	Section in CFR 47	Test Data	Result	
Antenna Requirement	15.203 & 15.247 (b)	See Section 6.1	Pass	
AC Power Line Conducted Emission	15.207	See Section 6.2	Pass	
Conducted Peak Output Power	15.247 (b)(1)	Appendix A – BT	Pass	
20dB Occupied Bandwidth	15.247 (a)(1)	Appendix A – BT	Pass	
Carrier Frequencies Separation	15.247 (a)(1)	Appendix A – BT	Pass	
Hopping Channel Number	15.247 (a)(1)	Appendix A – BT	Pass	
Dwell Time	15.247 (a)(1)	Appendix A – BT	Pass	
Conducted Band Edge	15 205 8 15 200	Appendix A – BT	Pass	
Radiated Band Edge	15.205 & 15.209	See Section 6.9.2	Pass	
Conducted Spurious Emission		Appendix A – BT	Pass	
Radiated Spurious Emission	15.247(d)	See Section 6.10.2	Pass	

The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by 2. the customer).

Test Method:	ANSI C63.10-2013
rest method.	KDB 558074 D01 15.247 Meas Guidance v05r02



5 General Information

5.1 Client Information

Applicant:	PCD, LLC
Address:	1500 Trade port Drive, Suite A, Orlando. Fl 32824
Manufacturer:	SHENZHEN TOPWELL TECHNOLOGY CO., LTD.
Address:	15/F, Building A1, Qiaode Science & Technology Park, No.7 Road, Hi-Tech Industry Park ,Guangming new district, Shenzhen, China.

5.2 General Description of E.U.T.

Product Name:	4G LTE smart phone
Model No.:	P50
Operation Frequency:	2402MHz~2480MHz
Transfer rate:	1/2/3 Mbits/s
Number of channel:	79
Modulation type:	GFSK, π/4-DQPSK, 8DPSK
Modulation technology:	FHSS
Antenna Type:	Internal Antenna
Antenna gain:	1.0 dBi
Power supply:	Rechargeable Li-ion Battery DC3.7V, 2000mAh
AC adapter:	Model: P50
	Input: AC100-240V, 50/60Hz, 0.3A
	Output: DC 5.0V, 1.0A
Test Sample Condition:	The test samples provided were in good working order with no visible defects.

Operation	Operation Frequency each of channel for GFSK, π/4-DQPSK, 8DPSK							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency	
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz	
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz	
2	2404MHz	22	2424MHz	42	2444MHz	62	2464MHz	
3	2405MHz	23	2425MHz	43	2445MHz	63	2465MHz	
4	2406MHz	24	2426MHz	44	2446MHz	64	2466MHz	
5	2407MHz	25	2427MHz	45	2447MHz	65	2467MHz	
15	2417MHz	35	2437MHz	55	2457MHz	75	2477MHz	
16	2418MHz	36	2438MHz	56	2458MHz	76	2478MHz	
17	2419MHz	37	2439MHz	57	2459MHz	77	2479MHz	
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz	
19	2421MHz	39	2441MHz	59	2461MHz			
Remark: Cha	Remark: Channel 0, 39 &78 selected for GFSK, $\pi/4$ -DQPSK and 8DPSK.							



5.3 Test environment and mode

Operating Environment:					
Temperature:	24.0 °C				
Humidity:	54 % RH				
Atmospheric Pressure:	1010 mbar				
Test Modes:					
Non-hopping mode:	Keep the EUT in continuous transmitting mode with worst case data rate.				
Hopping mode:	Keep the EUT in hopping mode.				
Remark GFSK (1 Mbps) is the worst case mode.					
Radiated Emission: The same	Radiated Emission: The sample was placed 0.8m (below 1GHz)/1.5m (above 1GHz) above the ground plane				

Radiated Emission: 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.

5.4 Description of Support Units

The EUT has been tested as an independent unit.

5.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 150KHz) for V-AMN	3.11 dB
Conducted Emission (150kHz ~ 30MHz) for V-AMN	2.62 dB
Conducted Emission (150kHz ~ 30MHz) for AAN	3.54 dB
Radiated Emission (9kHz ~ 30MHz electric field) for 3m SAC	3.13 dB
Radiated Emission (9kHz ~ 30MHz magnetic field) for 3m SAC	3.13 dB
Radiated Emission (30MHz ~ 1GHz) for 3m SAC	4.45 dB
Radiated Emission (1GHz ~ 18GHz) for 3m SAC	5.34 dB
Radiated Emission (18GHz ~ 40GHz) for 3m SAC	5.34 dB
Radiated Emission (30MHz ~ 1GHz) for 10m SAC	4.32 dB

5.6 Additions to, deviations, or exclusions from the method

No

5.7 Laboratory Facility

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

• FCC - Designation No.: CN1211

JianYan Testing Group Shenzhen 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 and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen 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 L15527

JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.

• A2LA - Registration No.: 4346.01

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 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

JianYan Testing Group Shenzhen Co., Ltd.

Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China. Tel: +86-755-23118282, Fax: +86-755-23116366

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

5.9 Test Instruments list

Test Equipment	Manufacturer Model No.		Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)	
10m SAC	ETS-Lindgren	RFSD-100-F/A	Q2005	04-28-2021	04-27-2024	
BiConiLog Antenna	SCHWARZBECK	VULB 9168	1249	04-02-2021	04-01-2022	
BiConiLog Antenna	SCHWARZBECK	VULB 9168	1250	04-02-2021	04-01-2022	
EMI Test Receiver	R&S	ESR 3	102800	04-08-2021	04-07-2022	
EMI Test Receiver	R&S	ESR 3	102802	04-08-2021	04-07-2022	
Low Pre-amplifier	Bost	LNA 0920N	2016	04-06-2021	04-05-2022	
Low Pre-amplifier	Bost	LNA 0920N	2019	04-06-2021	04-05-2022	
Cable	Bost	JYT10M-1G-NN-10M	JYT10M-1	04-02-2021	04-01-2022	
Cable	Bost	JYT10M-1G-NN-10M	JYT10M-2	04-02-2021	04-01-2022	
Test Software	R&S	EMC32	Version: 10.50.40			

Radiated Emission (Above 1 GHz):							
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)		
3m SAC	ETS-Lindgren	RFD-100	Q1984	04-14-2021	04-13-2024		
BiConiLog Antenna	SCHWARZBECK	VULB9163	9163-1246	03-07-2021	03-06-2022		
Biconical Antenna	SCHWARZBECK	VUBA 9117	9117#359	06-17-2021	06-17-2022		
Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-916	03-07-2021	03-06-2022		
Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1805	06-26-2021	06-25-2022		
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9170	1067	04-02-2021	04-01-2022		
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9170	1068	04-02-2021	04-01-2022		
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-03-2021	03-02-2022		
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-03-2021	03-02-2022		
Spectrum analyzer	Keysight	N9010B	MY60240202	10-27-2021	10-26-2022		
Low Pre-amplifier	SCHWARZBECK	BBV9743B	00305	03-07-2021	03-06-2022		
High Pre-amplifier	SKET	LNPA_0118G-50	MF280208233	03-07-2021	03-06-2022		
Cable	Qualwave	JYT3M-1G-NN-8M	JYT3M-1	03-07-2021	03-06-2022		
Cable	Qualwave	JYT3M-18G-NN-8M	JYT3M-2	03-07-2021	03-06-2022		
Cable	Qualwave	JYT3M-1G-BB-5M	JYT3M-3	03-07-2021	03-06-2022		
Cable	Bost	JYT3M-40G-SS-8M	JYT3M-4	04-02-2021	04-01-2022		
EMI Test Software	Tonscend	TS+	TS+ Version:3.0.0.1				

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 3	101189	03-03-2021	03-02-2022
LISN	Rohde & Schwarz	ENV432	101602	04-06-2021	04-05-2022
LISN	Rohde & Schwarz	ESH3-Z5	843862/010	06-18-2020	06-17-2022
RF Switch	TOP PRECISION	RSU0301	N/A	03-03-2021	03-02-2022
Cable	Bost	JYTCE-1G-NN-2M	JYTCE-1	03-03-2021	03-02-2022
Cable	Bost	JYTCE-1G-BN-3M	JYTCE-2	03-03-2021	03-02-2022
EMI Test Software	AUDIX	E3	V	ersion: 6.110919	b

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Conducted method:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	Keysight	N9010B	MY60240202	10-27-2021	10-26-2022
Vector Signal Generator	Keysight	N5182B	MY59101009	10-27-2021	10-26-2022
Analog Signal Generator	Keysight	N5173B	MY59100765	10-27-2021	10-26-2022
Power Detector Box	MWRF-test	MW100-PSB	MW201020JYT	11-19-2021	11-18-2022
Simulated Station	Rohde & Schwarz	CMW270	102335	10-27-2021	10-26-2022
RF Control Box	MWRF-test	MW100-RFCB	MW200927JYT	N/A	N/A
PDU	MWRF-test	XY-G10	N/A	N/A	N/A
DC Power Supply	Keysight	E3642A	MY60296194	11-27-2020	11-26-2023
Temperature Humidity Chamber	Deli	8840	N/A	03-08-2021	03-07-2022
Test Software	MWRF-test	MTS 8310	N N	Version: 2.0.0.0	



6 Test results and measurement data

6.1 Antenna Requirement

Standard requirement:	FCC Part 15 C Section 15.203 & 247(b)
responsible party shall be antenna that uses a unique so that a broken antenna of electrical connector is prof 15.247(b) (4) requirement: (4) The conducted output p antennas with directional of section, if transmitting anten power from the intentional	
E.U.T Antenna:	
The Bluetooth antenna is a the antenna is 1.0 dBi.	Internal antenna which permanently attached, and the best case gain of



6.2 Conducted Emissions

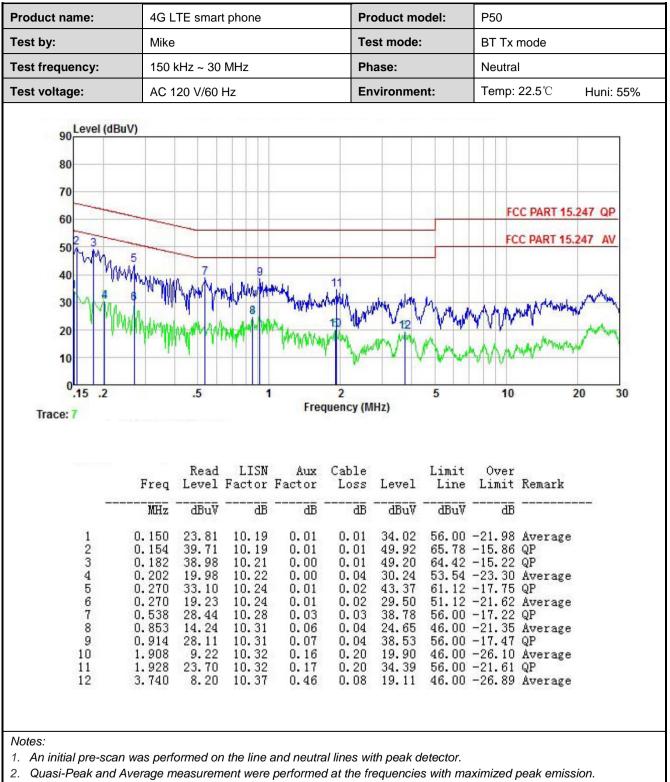
Test Requirement:	FCC Part 15 C Section 15.	207	
Test Frequency Range:	150 kHz to 30 MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9 kHz, VBW=30 kHz	z, Sweep time=auto	
Limit:	Frequency range (MHz)	Limit (c	dBuV)
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30 * Decreases with the logari	60 thm of the frequency	50
Test setup:	Reference Pl		
	AUX Equipment Test table/Insulation plane Remarkc E.U.T. E.U.T. Remarkc E.U.T. E.U.T. INN: Line Impedence Stabilization Network Test table height=0.8m		
Test procedure:	 50ohm/50uH coupling in The peripheral devices a LISN that provides a 500 termination. (Please reference photographs). Both sides of A.C. line a In order to find the maximation equipment and all of the 	tion network (L.I.S.N.). Th npedance for the measurin are also connected to the ohm/50uH coupling imped or to the block diagram of	is provides a ng equipment. main power through a lance with 500hm the test setup and conducted interference. e positions of changed according to
Test Instruments:	Refer to section 5.9 for det	ails	
Test mode:	Hopping mode		
Test results:	Pass		



Measurement Data:

Product name:	4G I	LTE sma	rt phone		Produc	t model:		P50		
Test by:	Mike	Э			Test m	ode:		BT Tx	mode	
Test frequency:	150	kHz ~ 30) MHz		Phase:			Line		
Test voltage:	AC	120 V/60	Hz		Enviro	nment:		Temp:	22.5 ℃	Huni: 55%
90 Level (dBuV) 80 70 60 50 4 40 30 4 40 30 20 10 0.15 .2 Trace: 5		.5		9 M M Free	2 quency (I		5		FCC PART	15.247 QP 15.247 AV 11 12 10 12 10 12 10 12 10 12 10 12 10 12 10 12 10 13 20 3
				Aux Factor	Cable	Level	Limit Line	Over Limit	Remark	
1 2 3 4 5 6	MHz 0.150 0.194	dBuV 23.43 39.80	dB 10.22 10.23	dB -0.05 -0.15 -0.16 -0.23 0.40 -0.36	<u>dB</u> 0.01 0.03	dBuV 33.61 49.91	dBuV 56.00 63.84 53.71 61.38 57.90	dB -22.39 -13.93 -21.71 -17.05 -15.49	Average QP	





3. Final Level =Receiver Read level + LISN Factor + Aux Factor + Cable Loss.



Test Requirement:	FCC Part 15 C Section 15.247 (b)(1)
Receiver setup:	RBW=1MHz, VBW=3MHz, Detector=Peak (If 20dB BW ≤1 MHz) RBW=2MHz, VBW=6MHz, Detector=Peak (If 20dB BW > 1 MHz and < 3MHz)
Limit:	For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Non-hopping mode
Test results:	Pass
Measurement Data:	Refer to Appendix A - BT

6.3 Conducted Output Power

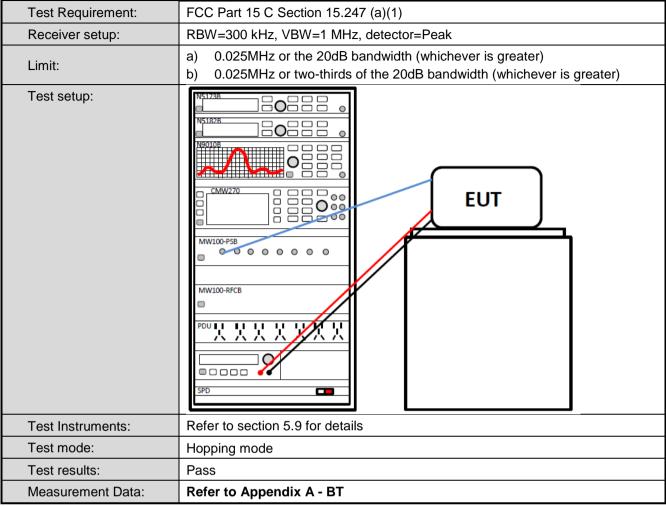


6.4 20dB Occupy Bandwidth

Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)
Receiver setup:	DH1: RBW=15 kHz, VBW=47 kHz, detector=Peak 2DH1&3DH: RBW=20 kHz, VBW=62 kHz, detector=Peak
Limit:	Within authorization band
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Non-hopping mode
Test results:	Pass
Measurement Data:	Refer to Appendix A - BT



6.5 Carrier Frequencies Separation



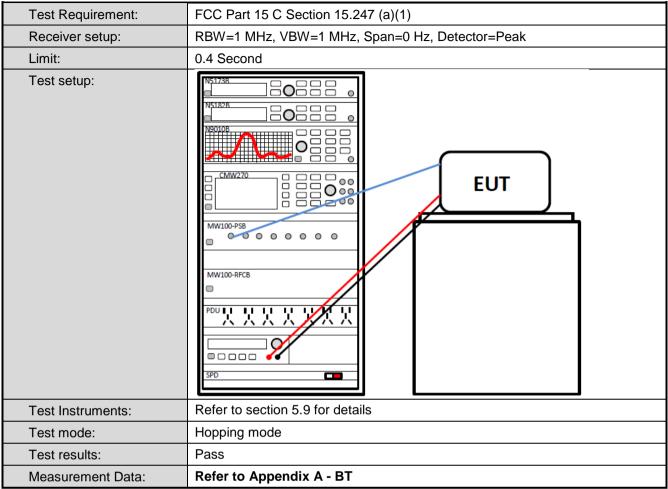


6.6 Hopping Channel Number

Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)
Receiver setup:	RBW=100 kHz, VBW=300 kHz, Center Frequency=2441MHz,
	Frequency Range: 2400MHz~2483.5MHz, Detector=Peak
Limit:	15 channels
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Hopping mode
Test results:	Pass
Measurement Data:	Refer to Appendix A - BT

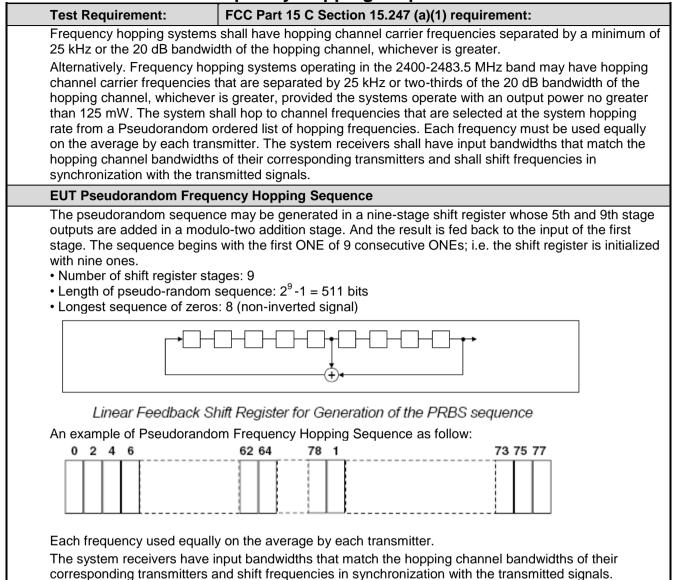


6.7 Dwell Time





6.8 Pseudorandom Frequency Hopping Sequence





6.9 Band Edge

6.9.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d)
Receiver setup:	RBW=100 kHz, VBW=300 kHz, Detector=Peak
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:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Non-hopping mode and hopping mode
Test results:	Pass
Measurement Data:	Refer to Appendix A - BT



6.9.2 Radiated Emission Method

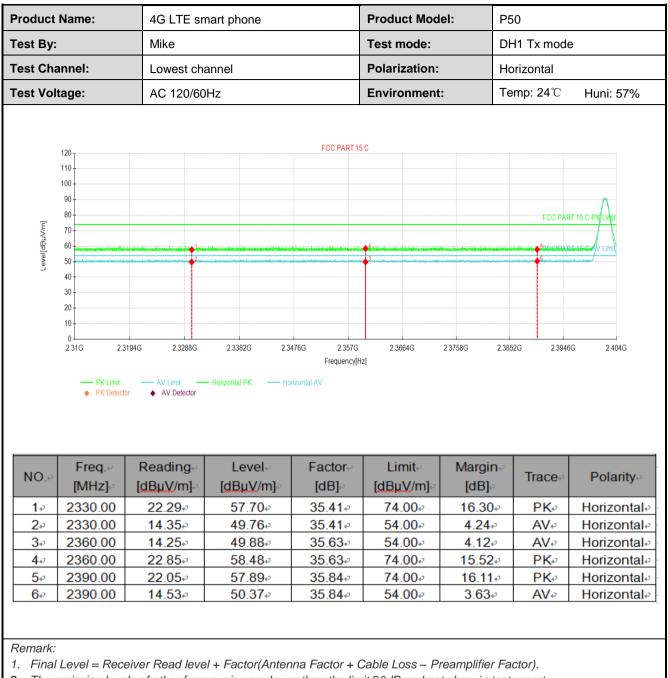
Test Requirement:	FCC Part 15 C	Section 15.2	209 a	and 15.205			
Test Frequency Range:	2310 MHz to 23	390 MHz and	1248	33.5 MHz to 2	500 M	lHz	
Test Distance:	3m						
Receiver setup:	Frequency	Detector	-	RBW	V	BW	Remark
	Above 1GHz	Peak		1MHz	31	MHz	Peak Value
	Above IGH2	RMS		1MHz	31	MHz	Average Value
Limit:	Frequence	су	Lim	it (dBuV/m @3	3m)		Remark
	Above 1G	H7		54.00		A۱	verage Value
	7,6070 10	112		74.00		I	Peak Value
Test setup:	AE ungsi (Turn	EUT ttable) Groun Test Receiver	3m		tenna Towe		
Test Procedure:	 determine the 2. The EUT was antenna, whi tower. 3. The antenna ground to de horizontal an measurement 4. For each sus and then the the rota table maximum reat 5. The test-rece Bandwidth w 6. If the emission limit specified EUT would b margin would 	a meter caml e position of s set 3 meter ch was mouth height is van termine the n id vertical point. spected emise antenna wa was turned ading. eiver system ith Maximum on level of the d, then testin be reported. (d	ber. the rrs aver ried max blariz ssior s tur from was n Ho e EL ng cc Othe	The table was highest radiation way from the in a on the top of from one meter imum value of cations of the a n, the EUT was ned to heights n 0 degrees to s set to Peak E old Mode. JT in peak mo- ould be stoppe	s rotation. Interfe a vari er to fo the fi antenr s arran from 0 360 o Detect de wa d and ssions g peal	ed 360 rence-re able-he our met eld stre ha are s nged to 1 meter degrees Function as 10dB I the pea s that dia k, quasi	degrees to eceiving ight antenna ers above the ngth. Both et to make the its worst case to 4 meters and to find the on and Specified lower than the ak values of the d not have 10dB -peak or
Test Instruments:	Refer to section	5.9 for deta	ails				
Test mode:	Non-hopping m	ode					
Test results:	Passed						



GFSK Mode:

	Name:		mart phone		Product Mod	el: PS	50		
est By:	:	Mike	Mike			DI	H1 Tx mode	e	
Fest Channel:		Lowest ch	annel		Polarization:	Ve	Vertical		
est Vol	ltage:	AC 120/60)Hz		Environment	:: Те	emp: 24℃	Huni: 57%	
Level[dBµV/m]	120 110 100 90 80 70 60 90 60 90 80 70 60 90 80 70 60 90 80 70 70 80 70 70 80 80 70 80 80 80 80 80 80 80 80 80 80 80 80 80			FCC PART 15	;C		FCC PAR	IT 15 C-PKLintit	
	30 20 10 0 2.316 2.316 2. PK Limit • PK Detec	3194G 2.3288G AV Limit - tor + AV Detector	2.3382G 2.3 — Vertical PK — Vertic	476G 2.357G Frequency[H al AV	2.3664G Z]	2.3758G 2.38	52G 2.3946	iG 2.404G	
NO.+ ²	20 10 2.31G 2.	AV Limit		Frequency[H		2.3758G 2.38 Margin⊮ [dB]₀	52G 2.3946	G 2.404G	
NO.* ² 1* ³	20 10 0 2.31G 2. → PK Limit ◆ PK Detec	AV Limit → AV Detector Reading*	– Vertical PK –– Vertic	Frequency[H al AV Factor	z] Limit+	Margin⊬			
	20 10 2316 2. → PKLimit → PKDetec Freq// [MHZ].// 2330.00 2330.00		– Vertical PK –– Vertic Level.↩ [dBµV/m].₂	Frequency[H al AV Factor ← [dB] ← 35.41 ← 35.41 ←	z] Limit⊮ [dBµV/m]₽	Margin⊮ [dB]∉	Trace	Polarity⊹	
1 ₽	20 10 2316 2. → PK Limit ◆ PK Detec Freq4 [MHZ]-9 2330.00 2330.00 2360.00	AV Limit AV Detector AV Limit AV Detector AV Limit AV Detector AV Limit AV Detector AV Detector AV Detector AV Detector AV Detector AV Detector	Level- [dBµV/m]- 57.77+ 49.97+ 49.87+	Frequency[H al AV Factor⊷ [dB]⊷ 35.41↔ 35.41↔ 35.63↔	z] Limit⊷ [dBµV/m]⊷ 74.00⊷ 54.00⊷ 54.00⊷	Margin/ [dB]-/ 16.23/ 4.03/ 4.13/	Trace PK AV AV	Polarity⊶ Vertical≁ Vertical≁ Vertical≁	
1∉ 2∉	20 10 0 231G 2. → PK Limit ◆ PK Detec Freq4 [MHz]-7 2330.00 2330.00 2360.00 2360.00	AV Limit AV Detector AV Detector AV Detector (dBµV/m] 22.36+ ³ 14.56+ ³ 14.24+ ³ 22.52+ ³	Vertical PK — Vertical Level→ [dBµV/m]→ 57.77+→ 49.97+→ 49.87+→ 58.15+→	Frequency[H al AV Factor [dB] 35.41 35.41 35.63 35.63 35.63 35.63 35.63	Limit- [dBµV/m]- 74.00+ 54.00+ 54.00+ 74.00+	Margin.√ [dB]↓ 16.23↓ 4.03↓ 4.13↓ 15.85↓	Trace. PK. AV. AV.	Polarity⊮ Vertical⊮ Vertical⊮ Vertical⊮ Vertical⊮	
1∉ 2∉ 3∉	20 10 2316 2. → PK Limit ◆ PK Detec Freq4 [MHZ]-9 2330.00 2330.00 2360.00	AV Limit AV Detector AV Limit AV Detector AV Limit AV Detector AV Limit AV Detector AV Detector AV Detector AV Detector AV Detector AV Detector	Level- [dBµV/m]- 57.77+ 49.97+ 49.87+	Frequency[H al AV Factor⊷ [dB]⊷ 35.41↔ 35.41↔ 35.63↔	z] Limit⊷ [dBµV/m]⊷ 74.00⊷ 54.00⊷ 54.00⊷	Margin/ [dB]-/ 16.23/ 4.03/ 4.13/	Trace PK AV AV	Polarity∝ Vertical∞ Vertical∞ Vertical	







	Name:	4G LTE sn	nart phone		Product Mod	el: P5	50	
Fest By:		Mike			Test mode:	Dł	H1 Tx mode)
Test Channel:		Highest ch	annel		Polarization:	Ve	ertical	
Fest Vol	tage:	AC 120/60	Hz		Environment	: Те	mp: 24 ℃	Huni: 57%
[mi/Juda]-	120 110 90 80 70 60 50			FCC PART 1	5C	n dere son en en el se Stelan n dere son en en el se Stelan	FCC PAR	T 15 C-PK Limit
Le	40 30 20 10 0 2.478G 2.44 PK Limit PK Detector		2.4846G 2.48 – Vertical PK – Vertic	168G 2.489G Frequency[F		2 4934G 2 495	6G 2.49780	G 2.5G
e_ NO.₽	30 20 10 0 2.478G 2.4 PK Limit • PK Detector	or → AV Limit → AV Detector	– Vertical PK –– Vertic	Frequency(H al AV Factore	z] Limit⊷	Margin⊬	6G 2.49780	G 256
	30 20 10 0 2.478G 2.44 → PK Lenit ◆ PK Detects Freq.et [MHz]+2	AV Limit AV Detector Reading (dB μ V/m) (dB μ V/m)	– Vertical PK –– Vertic Level⊷ [dBµV/m]⊷	Frequency[H al AV Factor J [dB] J	z] Limit.e [dBµV/m].e	Margin⊬ [dB]∉	Trace₽	Polarity₽
NO.43	30 20 10 0 2.478G 2.4 PK Limit • PK Detector	or → AV Limit → AV Detector	– Vertical PK –– Vertic	Frequency(H al AV Factore	z] Limit⊷	Margin⊬		
NO.₽ 1₽	30 20 10 0 2.478G 2.44 PK Limit • PK Detector [MHz] 2483.50	AV Limit → AV Detector Reading + [dBµV/m] + 21.47+3	– Vertical PK – Vertic Level [dBµV/m]⊷ 57.19⊷	Frequency[F al AV Factor⊮ [dB]⊮ 35.72⊮	Limit. [dBµV/m]↔ 74.00↔	Margin⊮ [dB]⊮ 16.81⊮	Trace. PK⊷	Polarity₀ Verticalℯ
NO 1.₽ 2.₽	30 20 10 0 2.478G 2.44 → PK Limit ◆ PK Detector [MHz]→ 2483.50 2483.50	AV Limit → AV Detector Reading	- Vertical PK Vertic Level [dBµV/m] 57.19+- 50.19+-	Frequency[H al AV Factor.e [dB].e 35.72.e 35.72.e	Limit [dBµV/m] 74.00 54.00	Margin⊮ [dB]∉ 16.81₽ 3.81₽	Trace PK AV	Polarity.₀ Vertical.₀ Vertical.₀
NO.@ 1.0 2.0 3.0	30 20 10 0 2.4786 2.44 → PK Limit → PK Detect Freq4 [MHz]-9 2483.50 2483.50 2489.00	AV Limit → AV Detector Reading [dBµV/m] 21.47 14.47 14.03	- Vertical PK	Frequency[F al AV Factor [dB]= 35.72+ 35.72+ 35.71+	Limit [dBµV/m] 74.00+ 54.00+ 54.00+	Margin⊷ [dB]₀ 16.81₊₃ 3.81₊₃ 4.26₊₃	Trace PK AV AV	Polarity₀ Vertical₀ Vertical₀ Vertical₀



roduct	Name:	4G LTE sr	nart phone		Product Mod	el: P5	50		
est By	:	Mike			Test mode:		DH1 Tx mode		
est Ch	annel:	Highest ch	Highest channel			Ho	Horizontal		
est Vo	Itage:	AC 120/60)Hz		Environment	: Те	Temp: 24°C Huni: 57%		
Level(dBJJV/m]	120 110 100 90 80 70 60 50 40 30 20 10 0 2.478G 2.4 PK Limit • PK Detect			FCC PART 1:	2.4912G	2.4934G 2.495	14.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9	T 15 C-PK Limit	
NO.₽	Freq.ℯ [MHz]ℯ	Reading⊬ [dBµV/m]∉	Level⊬ [dBµV/m]₽	Factor⊷ [dB]୶	Limit⊬ [dBµV/m]⊮	Margin√ [dB]∉	Trace	Polaritye	
						45.50	DIZ.	Horizontal	
1 ₽	2483.50	<mark>22.69</mark> ₽	58.41 ₽	35.72₽	74.00⊷	15.59₽	PK₽	Honzontar	
1∉ 2∉	2483.50 2483.50	22.69₽ 14.29₽	58.41₽ 50.01₽	35.72₽ 35.72₽	74.00₊ 54.00₊	15.59₽ 3.99₽	PK₽ AV₽	Horizontal	
								Horizontal	
2₽	2483.50	14.29₽	50.01₽	35.72₽	54.00₽	3.99₽	AV		
2₽ 3₽	2483.50 2489.00	14.29₽ 14.42₽	50.01₽ 50.13₽	35.72₽ 35.71₽	54.004 ³ 54.004 ³	3.99₊ 3.87₊	AV. AV.	Horizontal Horizontal	

Remark:

1. Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).



$\pi/4$ -DQPSK mode

roduct	Name:	4G LTE sn	nart phone		Product Mode	el: P5	0		
est By:	:	Mike	Mike			20	2DH1 Tx mode		
est Channel:		Lowest cha	Lowest channel			Polarization: V		/ertical	
est Vol	tage:	AC 120/60)Hz		Environment:	: Te	Temp: 24℃ Huni: 57%		
							•		
	120			FCC PART 15	C				
	110								
	100								
	90 - 80 -							Λ	
۲.	70						FCC PAR	T 15 C-PK Limit	
Level[dBµV/m]	60			an de la calencia de	▲ ⁴	a de la casa de la cas		GREEC V Limit	
Level	50	1	ระ อาหารระบับสายประการให้หรูปอาหารได้หรือเรือบไทยและไป (อาหารไป)	an a	3		6		
	40								
	30-								
20									
	10								
	10								
	0	194G 2.3288G	2.3382G 2.34	476G 2.357G Frequency[H		2.3758G 2.385	2G 2.3946	G 2.404G	
	0	— AV Limit —	2.3382G 2.34 – Vertical PK – Vertico	Frequency[H		2.3758G 2.385	2G 2 3946	G 2.404G	
	0 2.31G 2.3 PK Limit PK Detecto	AV Limit or	- Vertical PK Vertic	Frequency[H.	z]		2G 2.3946	G 2.404G	
NO.#	0 2.31G 2.3 — PK Limit	— AV Limit —		Frequency[H		2.3758G 2.385 Margin⊷ [dB].	2G 2.3946		
NO.₽ 1₽	0 2.31G 2.3 → PK Limit ◆ PK Detecto	AV Limit AV Detector Reading	– Vertical PK –– Vertic	Frequency[H al AV	z] Limite	Margin⊭		Polarity∉	
	0 2.31G 2.3 → PK Limit ◆ PK Detecto Freq.+* [MHz].*	AV Limit AV Detector Reading [dBuV/m]	– Vertical PK –– Vertic Level [dBµV/m]	Frequency[H al AV Factor⊷ [dB]⊷	z] Limit⊷ [dBµV/m]⊷	Margin⊭ [dB]∉	Trace₽	Polarity₊ Vertical₊	
1 ₽	0 2.31G 2.3 → PK Limit ◆ PK Detecto Freq.+2 [MHz],42 2330.00	AV Limit AV Detector Reading [dBµV/m] 22.15	– Vertical PK – Vertic Level [dBµ√/m] 57.56	Frequency[H al AV Factor [dB] 35.41	Limit.e [dBµV/m].e 74.00.e	Margin⊮ [dB]∉ 16.44⊮	Trace. PK.	Polarity Vertical₊ Vertical₊	
2 ₽	0 231G 23 → PK Limit ◆ PK Detecto Freq4 [MHz]-2 2330.00 2330.00	AV Limit	- Vertical PK Vertical Level [dBµV/m] 57.56+ 50.09+	Frequency[H al AV Factor+ [dB]+ 35.41+ 35.41+	Limit. [dBµV/m]. 74.00. 54.00.	Margin⊮ [dB]∛ 16.44∛ 3.91∛	Trace. PK. AV.	Polarity Vertical₊ Vertical₊ Vertical₊	
1₊ 2₊ 3₊	0 231G 23 → PK Limit ◆ PK Detector [MHz].Ø 2330.00 2330.00 2360.00	AV Limit	- Vertical PK Vertical Level	Frequency[H al AV Factor+- [dB]+- 35.41+- 35.41+- 35.63+-	Limit [dBµV/m] 74.00 54.00 54.00	Margin [dB].₀ 16.44.₀ 3.91.₀ 3.86.₀	Trace PK AV AV	G 2.404G Polarity Vertical Vertical Vertical Vertical Vertical	





Remark:

1. Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).



loadot	Name:	4G LTE smart phone			Product Model:		P50	
est By:		Mike	Mike			2D	H1 Tx mod	е
est Cha	annel:	Highest ch	annel		Polarization:		/ertical	
est Vol	tage:	AC 120/60)Hz		Environment:	Te	Temp: 24°C Huni: 579	
_evel(dBJ/V/m]	120 110 90 80 70 60 50 40			FCC PART 15	C		FCC PART	F 15 C-PK Limit
L	30 20 10 0		2.4846G 2.484 — Vertical PK — Vertica	Frequency[H		.4934G 2.4956	5G 2.4978C) 2.5G
NO.¢	30 20 10 2.478G 2.44 — PK Limit	AV Limit		Frequency[H		2.4934G 2.4956 Margin/ [dB]-∋	3G 2.4978G	s 2.5G Polarity≁
	30 20 10 2.476G 2.4 PK Limit • PK Detect		– Vertical PK – Vertica	Frequency[H al AV Factor+	z] Limit⇔	Margin		Polarity∉
NO.¢	30 20 10 0 2.478G 2.44 → PK Limit ◆ PK Detector [MHZ] ⊅	AV Limit AV Detector Reading ([dBuV/m] (– Vertical PK – Vertica Level⊷ [dBµV/m]⇔	Frequency[H al AV Factor⊷ [dB]⊷	Limit⊷ [dBµV/m]⊷	Margin⊮ [dB]₀	Trace	
NO.∉ 1₽	30 20 10 0 2.478G 2.44 PK Limit PK Detector [MHz] 2 2483.50	AV Limit → AV Detector Reading → [dBµV/m] → 22.08+	Vertical PK → Vertica Level [dBuV/m] 57.80	Frequency[H al AV Factor [dB] 35.72* ³	Limit⊮ [dBµV/m]∉ 74.00⊷	Margin⊮ [dB]⊮ 16.20⊮	Trace. PKe	Polarity⊷ Vertical₊ Vertical₊
NO.* 1* 2*	30 20 10 0 2.476G 2.44 → PK Limit → PK Detects Freq	AV Limit → AV Detector Reading	Level→ [dBµV/m]→ 57.80↔ 50.45↔	Frequency[H al AV Factor [dB] 35.72¢ 35.72¢	Limit↔ [dBµV/m]↔ 74.00↔ 54.00↔	Margin.⊮ [dB]↩ 16.20↩ 3.55↩	Trace. PK. AV.	Polarity Vertical₊ Vertical₊ Vertical₊
NO.* 1* 2* 3*	30 20 10 0 2.478G 2.4 PK Limit PK Detect [MHz] 2483.50 2483.50 2483.50 2489.00	AV Limit AV Detector Reading → [dBµV/m] → 22.08 → 14.73 → 14.14 →	- Vertical PK Vertica [dBµV/m]+ ³ 57.80+ ³ 50.45+ ³ 49.85+ ³	Frequency[H al AV Factor [dB] 35.72 35.72 35.71 35.71	Limit [dBµV/m] 74.00 54.00 54.00	Margin [dB]⊲ 16.20¢ 3.55↓ 4.15¢	Trace. PK. AV.	Polarity.₀ Vertical.₀



oduct Name:		40 LIL 31	4G LTE smart phone			el: P5	P50		
est By: est Channel:		Mike	Mike Highest channel			20	OH1 Tx mod	de	
		Highest ch				Ho	Horizontal		
est Vol	tage:	AC 120/60)Hz		Environment	:: Те	Temp: 24°C Huni: 579		
Level[dBµV/m]	120 110 90 80 70 60			FCC PART 15			FCC PAR	T 15 C-PK Limit	
Leve	50 40 30 20 10 0 2.478G 2.4 PK Limit ◆ PK Detect			368G 2.489G Frequency[H rizontal AV	2.4912G Z]	2.4934G 2.495		G 2.5G	
NO.¢	40 30 20 10 0 2.478G 2.4 — PK Limit	AV Limit		Frequency[H		2.4934G 2.495	6G 2.4978 Trace₀	G 256	
	40 30 20 10 0 2.478G 2.4 PK Limit • PK Detect	or AV Limit AV Detector Reading	– Horizontal PK –– Ho Level⊷	Frequency[H prizontal AV Factor+	z] Limit~	Margin⊭			
NO.₽	40 30 20 10 0 2.478G 2.4 → PK Limit ◆ PK Detect	AV Limit → AV Detector Reading → [dBµV/m] →	– Horizontal PK – Ho Level- [dBµV/m]-	Frequency[H arizontal AV Factor⊷ [dB]⇔	z] Limit↩ [dBµV/m]↩	Margin⊭ [dB]∉	Tracee	Polarity₀	
NO.@ 1@	40 30 20 10 0 2 478G 2.4 → PK Limit ◆ PK Detect	AV Limit AV Detector AV Detector Reading → [dBµV/m] → 21.53 →	- Horizontal PK Ho Level [dBµV/m] 57.25	Frequency[H rizontal AV Factor↔ [dB]↔ 35.72↔	Limit [dBµV/m] 74.00	Margin⊷ [dB]↩ 16.75↩	Trace. PK.	Polarity₀ Horizontal	
NO.¢ 1¢ 2¢	40 30 20 10 0 2.4786 2.4 → PK Limit ◆ PK Detect Freq.+ ¹ [MHZ]- ² 2483.50 2483.50	AV Limit → AV Detector Reading → [dBµV/m] → 21.53 → 14.05 →	– Horizontal PK – Ho Level⊷ [dBµV/m]⊷ 57.25⊷ 49.77⊷	Frequency(H prizontal AV Factor + [dB] + 35.72 + 35.72 +	Limit [dBµV/m] 74.00 54.003	Margin [dB]- 16.75- 4.23-	Trace₀ PK₀ AV₀	Polarity Horizontal Horizontal	
NO.* 1* 2* 3*	40 30 20 10 0 2.478G 2.4 → PK Limit ◆ PK Detect Freq.→ [MHz]→ 2483.50 2483.50 2483.50	AV Limit AV Detector AV Detector Reading → [dBµV/m] → 21.53+→ 14.05+→ 14.41+→	- Horizontal PK	Frequency(H prizontal AV Factor [dB] 2 35.72 2 35.72 2 35.71 2	Limit.↓ [dBµ\/m].↓ 74.00.↓ 54.00.↓ 54.00.↓	Margin [dB] 16.75 4.23 3.88	Trace. PK. AV.	Polarity∂ Horizontal Horizontal Horizontal	



8DPSK mode

roduct Name:		40 LIE SI	4G LTE smart phone			el: P5	P50	
est By:	:	Mike			Test mode:	3D	H1 Tx mod	е
est Ch	annel:	Lowest cha	annel		Polarization:	Ve	rtical	
est Vol	Itage:	AC 120/60	Hz		Environment:	Tei	Temp: 24°C Huni: 57%	
Level[dBµV/m]	120 110 100 90 80 70 60 50 40 30			FCC PART 15	C		FCC PART	T 15 C-PKLimit
	20 10 0 2 31G 2 PK Limit • PK Detect		2.3382G 2.34 – Vertical PK – Vertica	176G 2.357G Frequency[Hz		2.3758G 2.3852	2G 2.39460	G 2.404G
NO.* ³	10 0 2.31G 2 PK Limit	AV Limit		Frequency[Hz		2.3758G 2.3852 Margin⊷ [dB]⊷	2G 2.39460	
1 ₽	10 0 231G 2 → PK Limit ◆ PK Detec Freq.~ [MHz].~ 2330.00	AV Limit → AV Detector Reading → [dBµV/m] → 21.91 →	– Vertical PK – Vertica Level [dBµV/m]-∘ 57.32+∘	Frequency[Hz NAV Factor [dB] 35.41	Limit⊮ [dBµV/m]∉ 74.00₽	Margin⊷ [dB]⊷ 16.68⊷	Trace-	Polarity
1₽ 2₽	10 2.31G 2 → PK Limit ◆ PK Detec Freq* [MHz]-* 2330.00 2330.00	AV Limit → AV Detector Reading → [dBµV/m] → 21.91+→ 14.11+→	- Vertical PK Vertica Level	Frequency[Hz alAV Factor [dB] 35.41 35.41 4	Limit⊮ [dBµV/m]⊮ 74.00⊮ 54.00	Margin⊮ [dB]∛ 16.68⊷ 4.48⊷	Trace PK. AV.	Polarity Vertical Vertical
1⊷ 2⊷ 3⊷	10 231G 2 → PK Limit ◆ PK Detec Freq4 [MHz]2 2330.00 2330.00 2360.00	AV Limit	- Vertical PK → Vertica Level	Frequency[Hz	Elimit.e [dBµV/m].e 74.00.e 54.00.e 54.00.e	Margin- [dB]- 16.68- 4.48- 4.24-	PK ₄ 3 AV ₄ 3	Polarity Vertical Vertical
1.0 2.0 3.0 4.0	10 231G 2 → PK Limit ◆ PK Detec Freq [MHZ] 2330.00 2360.00 2360.00	AV Limit AV Detector Reading [dBµV/m] 21.91+- 14.11+- 14.13+- 22.47+-	- Vertical PK Vertical Level⊷ [dBµV/m]↔ 57.32↔ 49.52↔ 49.76↔ 58.10↔	Frequency[H2 AAV Factor [dB] 35.41¢ 35.41¢ 35.63¢ 35.63¢ 35.63¢	Limit [dBµV/m] 74.00 54.00 54.00 74.00	Margin [dB] 16.68 4.48 4.24 15.90	Trace≓ PK₂ AV₂ AV₂ PK₂	Polarity Vertical Vertical Vertical
1₊ 2₊ 3₊	10 231G 2 → PK Limit ◆ PK Detec Freq4 [MHz]2 2330.00 2330.00 2360.00	AV Limit	- Vertical PK → Vertica Level	Frequency[Hz	Elimit.e [dBµV/m].e 74.00.e 54.00.e 54.00.e	Margin- [dB]- 16.68- 4.48- 4.24-	PK ₄ 3 AV ₄ 3	 Polarity Vertical Vertical Vertical Vertical Vertical Vertical Vertical Vertical



roduct	Name:	4G LIE sn	4G LTE smart phone			el: P5	P50		
est By:	:	Mike	Mike			3D	3DH1 Tx mode		
est Channel: est Voltage:		Lowest cha	Lowest channel AC 120/60Hz			Polarization:HorEnvironment:Ter		rizontal	
		AC 120/60						Huni: 57%	
Level[dBJrV/m]	120 110 90 80 70 60 50 40			FCC PART 15 (FCC PART	15 C-PK-Linu Society Linu	
Le	30 20 10 0		2.3382G 2.34 – Horizontal PK — Hor	76G 2.357G Frequency[Hz izontal AV		2:3758G 2:385;	2G 2.3946G	2.404G	
NO.¢	30 20 10 231G 2. PK Limit	AV Limit		Frequency[Hz		23758G 23863 Margine [dB]	26 2.3946G	2.404G	
	30 20 10 0 2316 2. → PK Limit ♦ PK Detec	AV Limit → AV Detector Reading	– Horizontal PK – Hori	Frequency[Hz izontal AV	Limit	Margin⊬			
NO.¢	30 20 10 0 231G 2. → PK Limit ◆ PK Detec	AV Limit ◆ AV Detector Reading ⊮ [dBuV/m] ₽	Horizontal PK — Hori Level⊷ [dBuV/m]⊷	Frequency[Hz zontal AV Factor+ [dB]+2	Limit↩ [dBµV/m]↩	Margin⊬ [dB]∛	Trace	Polarity⊮ Horizontal	
NO.* 1*	30 20 10 0 231G 2. → PK Limit ◆ PK Detec Freq.≪ [MHz].∞ 2330.00	AV Limit → AV Detector Reading → [dBµV/m] → 23.23+	- Horizontal PK → Hori Level [dBµV/m]-2 58.64-2	Frequency[Hz zontal AV Factor⊷ [dB]⊷ 35.41⊷	Limit⊬ [dBµV/m]≁ 74.00₽	Margin⊮ [dB]∛ 15.36⊷	Trace.	Polarity⊮ Horizontal Horizontal	
NO.* 1* 2*	30 20 10 0 2316 2. → PK Limit ◆ PK Detec Freq4 [MHz]-2 2330.00 2330.00	AV Limit	- Horizontal PK Hori Level [dBµV/m]+ 58.64+ 49.73+	Frequency[Hz zontal AV Factor+- [dB]+- 35.41+- 35.41+-	Limit⊮ [dBµV/m]⊮ 74.00⊮ 54.00⊮	Margin⊮ [dB]⊮ 15.36⊮ 4.27⊮	Trace. PK. AV.	Polarity⊮ Horizontal Horizontal Horizontal	
NO.* 1* 2* 3*	30 20 10 0 2316 2 → PK Limit ◆ PK Detec Freq.40 [MHz].0 2330.00 2330.00 2330.00	AV Limit	- Horizontal PK → Hori Level [dBµV/m] 58.64 49.73 49.68	Frequency[Hz zontal AV Factor [dB] 35.41 35.41 35.63 2	Limit.↓ [dBµV/m].↓ 74.00.↓ 54.00.↓ 54.00.↓	Margin [dB] 15.36 4.27 4.32 √	Trace PK AV AV	Polarity.₀	



roduct	Name:	4G LTE sn	4G LTE smart phone			l: P5	P50			
est By:		Mike			Test mode:	3D	H1 Tx mode	Э		
est Cha	annel:	Highest ch	Highest channel			Polarization: Ve		ertical		
est Vol	tage:	AC 120/60	Hz		Environment:	Те	Temp: 24℃ Huni: 5			
[m///m]	120 110 100 90 80 70 60 50 40			FCC PART 15		φ. μ	FCC PART	15 C-PK Limit		
	30 20 10 0 2.478G 2.4 PK Limit PK Detect	802G 2.4824G AV Limit - or + AV Detector	2.4846G 2.48 – Vertical PK — Vertica	Frequency[Hz		4934G 2.4956	3G 2.4978G	2.5G		
NO.+?	20 10 0 2.478G 2.4 — PK Limit	AV Limit		Frequency[Hz		4934G 2.4956 Margine [dB]	3G 24978G Trace₽	2.5G		
NO.* 1*	20 10 0 2.478G 2.4 → PK Limit ◆ PK Detect	or AV Limit - AV Detector	– Vertical PK – Vertica	Frequency[Hz	: Limit⊷	Margin⊬				
	20 10 0 2.478G 2.4 → PK Limit ◆ PK Detect	AV Limit → AV Detector Reading → [dBuV/m] →	– Vertical PK – Vertica Level-∘ [dBuV/m]-∘	Frequency[Hz al AV Factor [dB]	Limite [dBµV/m]e	Margin. [dB]. 17.00. 4.32.	Trace	Polarity₀		
1 ₽	20 10 0 2478G 2.4 → PKLimit → PKDeted Freq.+ [MHz]-> 2483.50	AV Limit → AV Detector Reading → [dBµV/m] → 21.28+→	– Vertical PK – Vertica Level⊷ [dBµV/m]∞ 57.00⊷	Frequency[Hz al AV Factor [dB] 35.72+-	Limit.e [dBµV/m].e 74.00.e	Margin≓ [dB]≓ 17.00⊷	Trace.₀ PK.₀	Polarity₊ Vertical₊		
1⊬ 2⊬	20 10 0 2.478G 2.4 → PK Limit ◆ PK Detect Freq.+/ [MHz]-> 2483.50 2483.50	AV Limit → AV Detector Reading + [dBµV/m] + 21.28+ ³ 13.96+ ³	Level→ [dBµV/m]→ 57.00↔ 49.68↔	Frequency[Hz AAV Factor [dB] 35.72¢ 35.72¢	Limit.e [dBµV/m].e 74.00.e 54.00.e	Margin. [dB]. 17.00. 4.32.	Trace PK. AV.	Polarity⊣ Vertical₊ Vertical		
1₊ 2₊ 3₊	20 10 0 2.478G 2.4 → PK Limit ◆ PK Detect Freq.+ [MHz]- 2483.50 2483.50 2489.00	AV Limit AV Detector Reading [dBuV/m] 21.28 13.96 14.30 2	- Vertical PK → Vertical Level [dBµV/m] 57.00 49.68 50.01+	Frequency[Hz	Limite [dBµV/m]e 74.00e 54.00e 54.00e	Margin.₀ [dB].₀ 17.00.₀ 4.32.₀ 3.99.₀	Trace PK AV AV	Polarity Vertical₊ Vertical₊ Vertical₊		

Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preampliner Factor).
 The emission levels of other frequencies are lower than the limit 20dB and not show in test report.



	Name:	4G LTE sn	4G LTE smart phone			l: P50	P50		
est By:		Mike	Mike			3Dł	H1 Tx mode	e	
est Cha	annel:	Highest ch	annel		Polarization:	Hor	izontal		
est Vol	tage:	AC 120/60	Hz		Environment:	Ter	Temp: 24°C Huni: 57%		
[ɯ/ʃlˈdɒ]əʌəT	120 110 100 90 80 70 60 50			FCC PART 15 (2	144 4	FCC PART	15 C-PK Limit	
Le	40 30 20 10 0 2.478G 2.4 PK Limit PK Detect		2.4846G 2.486 – Horizontal PK — Hor	38G 2.489G Frequency[Hz izontal AV		4934G 2,49560	G 2.4978G	2.5G	
NO.+3	30 20 10 2.478G 2.4	AV Limit		Frequency[Hz		4934G 2.49560 Margine [dB]	3 2.4978G Trace₽	25G Polarity₊	
	30 20 10 0 2.478G 2.4 → PK Limit ◆ PK Detect	or AV Limit AV Detector	– Horizontal PK – Hor Level⊷	Frequency[Hz izontal AV Factor⊷	Limit⊷	Margin⊭		Polarity⇔	
NO.¢	30 20 10 0 2.478G 2.4 → PK Limit ◆ PK Detect Freq.+* [MHZ]+2	AV Limit AV Detector Reading [dBµV/m]	– Horizontal PK — Hor Level⊷ [dBµV/m].₀	Frequency[Hz izontal AV Factor↔ [dB]⊷	Limit⊮ [dBµV/m]⊮	Margin⊭ [dB]∉	Trace₀	Polarity⊮ Horizontal	
NO.₽ 1₽	30 20 10 0 2.478G 2.4 → PK Limit ◆ PK Detect [MHz] → 2483.50	AV Limit AV Detector Reading - [dBµV/m] ← 21.83+ ³	Horizontal PK — Hor Level [dBµV/m]+- 57.55+-	Frequency[Hz izontal AV Factor⊷ [dB]⊷ 35.72↔	Limit.₀ [dBuV/m].₀ 74.00.₀	Margin⊮ [dB]∉ 16.45₽	Trace. PK.	Polarity⊮ Horizontal Horizontal	
NO.* 1.* 2.* 3.* 4.*	30 20 10 2.4786 2.4 → PK Limit → PK Detect Freq.+* [MHz]-> 2483.50 2483.50	AV Limit AV Detector Reading [dBµV/m] 21.83+3 13.97+3	- Horizontal PK Hor Level [dBµV/m] 57.55+ 49.69+	Frequency[Hz zontal AV Factor ↔ [dB] ↔ 35.72 ↔ 35.72 ↔	Limit [dBµV/m] 74.00 54.00	Margin⊮ [dB]∛ 16.45⊷ 4.31√	Trace. PK. AV.	Polarity⊮ Horizontal Horizontal Horizontal	
NO.* 1* 2* 3*	30 20 10 0 2.4786 2.4 → PK Limit ◆ PK Detect Freq.+* [MHz]+2 2483.50 2483.50 2489.00	AV Limit AV Detector Reading [dBµV/m] 21.83 13.97 14.20 2	- Horizontal PK → Hor [dBµV/m]-> 57.55+> 49.69+> 49.91+>	Frequency[Hz izontal AV Factor [dB]. 35.72. 35.72. 35.71.	Limit. [dBµV/m]. 74.00. 54.00. 54.00.	Margin⊷ [dB].₀ 16.45.₀ 4.31.₀ 4.09.₀	Trace PK AV AV		



6.10 Spurious Emission

6.10.1 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:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Non-hopping mode
Test results:	Pass
Measurement Data:	Refer to Appendix A - BT



6.10.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C S	Section 15.2	209					
Test Frequency Range:	9 kHz to 25 GHz	2						
Test Distance:	10m for below 1	GHz, 3m f	or at	oove 1 GHz				
Receiver setup:	Frequency	Detecto	or	RBW VBV		Remark		
	30MHz-1GHz	Quasi-pe	ak	120kHz	300k⊦	lz Q	uasi-peak Value	
		Peak			3MH	z	Peak Value	
	Above 1GHz	RMS		1MHz	3MH	z	Average Value	
Limit:	Frequenc	;y	Lim	it (dBuV/m @	@10m)		Remark	
	30MHz-88N	ЛНz		30.0		Qua	asi-peak Value	
	88MHz-216	MHz		33.5		Qua	asi-peak Value	
	216MHz-960	MHz		36.0		Qua	asi-peak Value	
	960MHz-10	GHz		44.0		Qua	asi-peak Value	
	Frequenc	у	Lii	mit (dBuV/m @	@3m)		Remark	
	Above 1G	Н7 -		54.0		Av	verage Value	
	7.5070 10	112		74.0			Peak Value	
	EUT Tur Tal Ground Above 1GHz	rn 0.8m	4m			Search Antenn RF Test Receiver	la	
		(Turntable)	1000	3m Ground Reference Plane eccliver	Pre- Contr			
Test Procedure:	1GHz)/1.5m (below 1GH 360 degree	n(above 10 lz)or 3 met s to determ	GHz) er ch nine 1	above the namber(abov the position o	ground a ve 1GHz of the hig	at a 10). The t ghest ra	able 0.8m(below) meter chamber able was rotated adiation. ers(above 1GHz)	

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	away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
	3. 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.
	4. 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.
	 The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
	6. If the emission level of the EUT in peak mode was 10dB 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 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 5.9 for details
Test mode:	Non-hopping mode
Test results:	Pass
Remark:	 Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case. 9 kHz to 30 MHz is noise floor and lower than the limit 20dB, so only shows the data of above 30MHz in this report.



Measurement Data (worst case):

Below 1GHz:

Product Name:	4G LTE sr	nart phone		Product Mo	odel:	P50			
est By:	Mike	Mike			:	BT Tx mode	BT Tx mode		
est Frequency:	30 MHz ~ 1 GHz			Polarizatio	n:	Vertical & Horizontal			
est Voltage:	AC 120/60)Hz		Environme	nt:	Temp: 24 ℃	Huni: 57%		
g	1.0.120,00								
			Full Spect	rum					
							7.10		
45 T						FOC PART 15.24			
40 +									
_ 30-									
Pevel in dBr/									
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Nuel Nuel	Man MALL MAL			Mar Martin Martin	and the second sec				
			population and a second second						
0		and the		6 6 6 7			0		
30M	50 60	0 80 100	м	200 3	300 400	500 80	0 1G		
00101	50 0	00 100			-00	000 00			
			Frequer	ncy in Hz					
Frequency + (MHz).	MaxPeak ∔ (dB µ V/m).₁	Limit∔ (dB ⊭ V/m).₁	Margin ∔ (dB).₁	Height∔ (cm).₁	Pol.	Azimuth ↓ (deg).	Corr.↓ (dB/m)		
30.097000	24.50	30.00	5.50	100.0.1	V.1	61.0.1	-17.		
37.663000.	19.99.	30.00.1	10.01.	100.0.1	V.1	333.0.1	-16.		
50.661000.v	16.88 _{.1}	30.00.1	13.12.1	100.0.1	V .1	131.0.1	-15.		
130.007000.	14.82.	33.50.1	18.68.	100.0.1	V.1	287.0.	-16.		
233.991000. 441.959000.	21.73 a 19.92 a	36.00.1 36.00.1	14.27.1 16.08.1	100.0.1 100.0.1	V.1 H.1	337.0.1 222.0.1	-16. -10.		
	13.32	30.00.1	10.00.1	100.0.1	.1	222.0.1	-10.		



Above 1GHz:

		Test ch	annel: Lowest ch	nannel		
		De	tector: Peak Valu	Ie		
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarizatior
4804.00	56.31	-9.60	46.71	74.00	27.29	Vertical
4804.00	56.61	-9.60	47.01	74.00	26.99	Horizontal
		Dete	ctor: Average Va	llue		
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4804.00	48.25	-9.60	38.65	54.00	15.35	Vertical
4804.00	48.48	-9.60	38.88	54.00	15.12	Horizontal
		Test ch	annel: Middle ch	annel		
		Det	tector: Peak Valu	le		
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4882.00	56.37	-9.05	47.32	74.00	26.68	Vertical
4882.00	56.79	-9.05	47.74	74.00	26.26	Horizontal
		Dete	ctor: Average Va	llue		
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4882.00	47.87	-9.05	38.82	54.00	15.18	Vertical
4882.00	48.23	-9.05	39.18	54.00	14.82	Horizontal
		Test ch	annel: Highest cl	nannel		
			tector: Peak Valu			
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarizatio
4960.00	56.63	-8.45	48.18	74.00	25.82	Vertical
4960.00	57.04	-8.45	48.59	74.00	25.41	Horizonta
		Dete	ctor: Average Va	llue		
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarizatio
	48.41	-8.45	39.96	54.00	14.04	Vertical
4960.00						