Report No: CCISE190908002

FCC REPORT

(Bluetooth)

Applicant: General Procurement, Inc

Address of Applicant: 800 E Dyer Road Santa Ana, CA 92705 United States

Equipment Under Test (EUT)

Product Name: 6.0 inch smartphone

Model No.: Eternity G60

Trade mark: Hyundai

FCC ID: 2AIOHHT3G60

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

Date of sample receipt: 20 Aug., 2019

Date of Test: 21 Aug., to 17 Oct., 2019

Date of report issued: 22 Oct., 2019

Test Result: PASS *

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

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.

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2 Version

Version No.	Date	Description
00	22 Oct., 2019	Original

Tanet Wei
Test Engineer
Winner Thang Tested by: Date: 22 Oct., 2019

Reviewed by: 22 Oct., 2019

Project Engineer



3 Contents

	Page
1 COVER PAGE	1
2 VERSION	2
3 CONTENTS	3
4 TEST SUMMARY	
5 GENERAL INFORMATION	5
5.1 CLIENT INFORMATION	
5.2 GENERAL DESCRIPTION OF E.U.T.	
5.3 TEST ENVIRONMENT AND TEST MODE	
5.4 DESCRIPTION OF SUPPORT UNITS	
5.5 MEASUREMENT UNCERTAINTY	
5.7 LABORATORY FACILITY	
5.8 LABORATORY LOCATION	
5.9 Test Instruments List	
6 TEST RESULTS AND MEASUREMENT DATA	8
6.1 Antenna Requirement	8
6.2 CONDUCTED EMISSIONS	9
6.3 CONDUCTED OUTPUT POWER	
6.4 20DB OCCUPY BANDWIDTH	
6.5 CARRIER FREQUENCIES SEPARATION	
6.6 HOPPING CHANNEL NUMBER	
6.8 PSEUDORANDOM FREQUENCY HOPPING SEQUENCE	
6.9 BAND EDGE	
6.9.1 Conducted Emission Method	
6.9.2 Radiated Emission Method	32
6.10 Spurious Emission	
6.10.1 Conducted Emission Method	_
6.10.2 Radiated Emission Method	48
7 TEST SETUP PHOTO	53
8 EUT CONSTRUCTIONAL DETAILS	54





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)(1)	Pass
20dB Occupied Bandwidth	15.247 (a)(1)	Pass
Carrier Frequencies Separation	15.247 (a)(1)	Pass
Hopping Channel Number	15.247 (a)(1)	Pass
Dwell Time	15.247 (a)(1)	Pass
Spurious Emission	15.205 & 15.209	Pass
Band Edge	15.247(d)	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).

Test Method: A

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

KDB 558074 D01 15.247 Meas Guidance v05r02





5 General Information

5.1 Client Information

Applicant:	General Procurement, Inc
Address:	800 E Dyer Road Santa Ana, CA 92705 United States
Manufacturer/ Factory:	Shen Zhen Cheng Fong Digital-Tech Limited
Address:	Building A, ChengFong Industrial Area, Huaxing road, Dalang, Longhua, Shen Zhen, China

5.2 General Description of E.U.T.

J.Z General Description	0. 2.0
Product Name:	6.0 inch smartphone
Model No.:	Eternity G60
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 DC3.8V, 3000mAh
AC adapter:	Model: K-T100501500U Input: AC100-240V, 50/60Hz, 0.25A Output: DC 5.0V, 1500mA
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

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: Channel 0, 39 &78 selected for GFSK, π/4-DQPSK and 8DPSK.							

Report No: CCISE190908002

5.3 Test environment and test 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.

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

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

No

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 Page 6 of 54





5.9 Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
2m SAC	SAEMC	0m*6m*6m	966	(mm-dd-yy) 07-22-2017	(mm-dd-yy)
3m SAC		9m*6m*6m			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)
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	07-21-2019	07-20-2020
Cable	HP	10503A	N/A	03-18-2019	03-17-2020
EMI Test Software	AUDIX	E3	,	Version: 6.110919	b



6 Test results and measurement data

6.1 Antenna Requirement

Standard requirement:

FCC Part 15 C Section 15.203 & 247(b)

15.203 requirement:

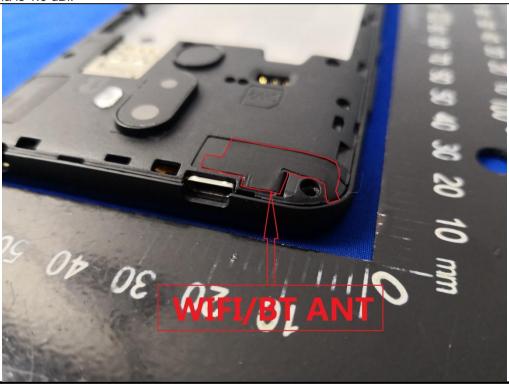
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit 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 Bluetooth antenna is an Internal antenna which permanently attached, and the best case gain of the antenna is 1.0 dBi.





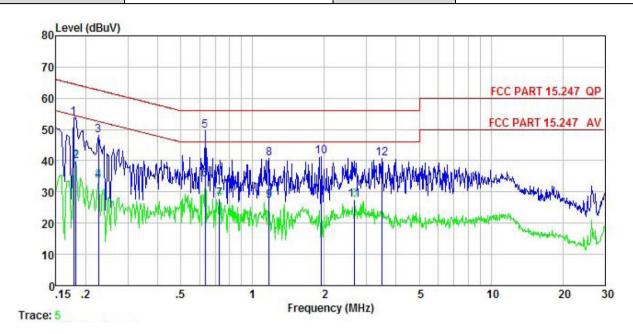
6.2 Conducted Emissions

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 k	Hz Sween time-auto	
Limit:	Frequency range	Limit (c	HRu\/\
Liffiit.	(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 log	arithm of the frequency.	
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 procedure:	 The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 500hm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 500hm/50uH coupling impedance with 500hm termination. (Please refer to the block diagram of the test setup and photographs). 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 C63.4-2014 on conducted measurement. 		
Test Instruments:	Refer to section 5.9 for details		
Test mode:	Hopping mode		
Test results:	Pass		
	•		



Measurement Data:

Product name:	6.0 inch smartphone	Product model:	Eternity G60
Test by:	Janet	Test mode:	BT Tx mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Huni: 55%



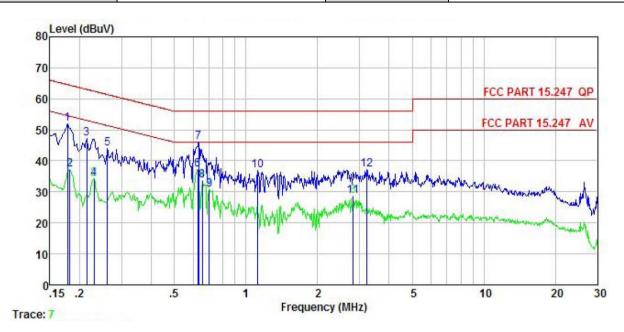
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBu√	₫B	₫B	dBu₹	dBu∀	<u>dB</u>	
1	0.178 0.182	43.52 29.63	-0.43 -0.42	10.77 10.77	53.86 39.98		-10.73	QP Average
3	0.226	37.77	-0.40	10.75	48.12	62.61	-14.49	QP
1 2 3 4 5 6 7 8 9	0.226 0.634	23.44 39.17	-0.40 -0.38	10.75 10.77	33.79 49.56	56.00	-6.44	
6 7	0.634 0.727	23.66 17.42	-0.38 -0.38	10.77 10.78	34.05 27.82			Average Average
8	1.172 1.172	30.14 16.65	-0.39 -0.39	10.89 10.89	40.64 27.15		-15.36 -18.85	QP Average
10 11	1.949 2.678	30.68 16.87	-0.41 -0.43	10.96 10.93	41.23		-14.77 -18.63	QP Average
12	3.491	30.39	-0.45	10.90	40.84		-15.16	

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.



Product name:	6.0 inch smartphone	Product model:	Eternity G60
Test by:	Janet	Test mode:	BT 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	₫₿u₹	₫B	dB	dBu₹	dBu∇	<u>d</u> B		-
1	0.178	41.74	-0.69	10.77	51.82	64.59	-12.77	QP	
2	0.182	27.14	-0.69	10.77	37.22	54.42	-17.20	Average	
3	0.214	37.23	-0.68	10.76	47.31	63.05	-15.74	QP	
2 3 4 5 6	0.230	24.21	-0.67	10.75	34.29	52.44	-18.15	Average	
5	0.262	33.95	-0.65	10.75	44.05	61.38	-17.33	QP	
	0.627	27.20	-0.64	10.77	37.33	46.00	-8.67	Average	
7	0.634	36.07	-0.64	10.77	46.20	56.00	-9.80	QP	
7 8 9	0.654	23.42	-0.64	10.77	33.55	46.00	-12.45	Average	
9	0.701	20.64	-0.64	10.77	30.77	46.00	-15.23	Average	
10	1.123	26.56	-0.64	10.88	36.80	56.00	-19.20	QP	
11	2.824	18.44	-0.67	10.93	28.70	46.00	-17.30	Average	
12	3.207	26.87	-0.68	10.91	37.10		-18.90		

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

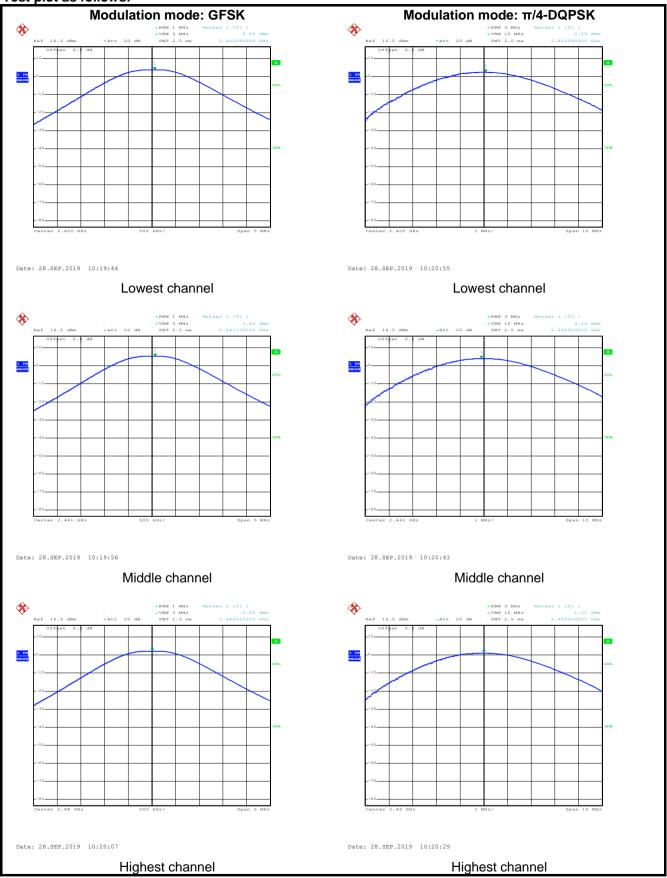
Test Requirement:	FCC Part 15 C Section 15.247 (b)(1)		
Receiver setup:	RBW=1MHz, VBW=3MHz, Detector=Peak (If 20dB BW ≤1 MHz) RBW=3MHz, VBW=10MHz, Detector=Peak (If 20dB BW > 1 MHz and < 3MHz)		
Limit:	For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.		
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane		
Test Instruments:	Refer to section 5.9 for details		
Test mode:	Non-hopping mode		
Test results:	Pass		

Measurement Data:

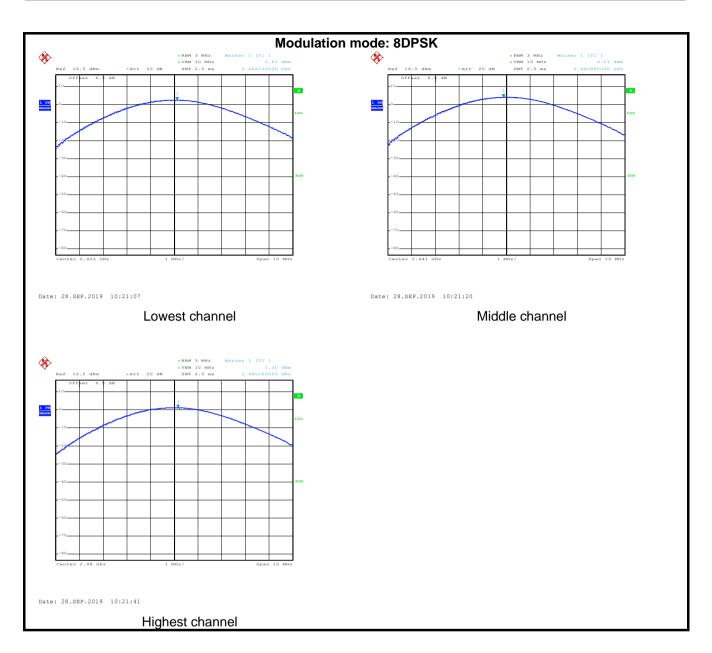
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result			
	GFSK mod	de				
Lowest channel	3.85	30.00	Pass			
Middle channel	5.42	30.00	Pass			
Highest channel	2.26	30.00	Pass			
	π/4-DQPSK mode					
Lowest channel	2.55	21.00	Pass			
Middle channel	4.14	21.00	Pass			
Highest channel	1.21	21.00	Pass			
	8DPSK mode					
Lowest channel	2.61	21.00	Pass			
Middle channel	4.23	21.00	Pass			
Highest channel	1.30	21.00	Pass			



Test plot as follows:









6.4 20dB Occupy Bandwidth

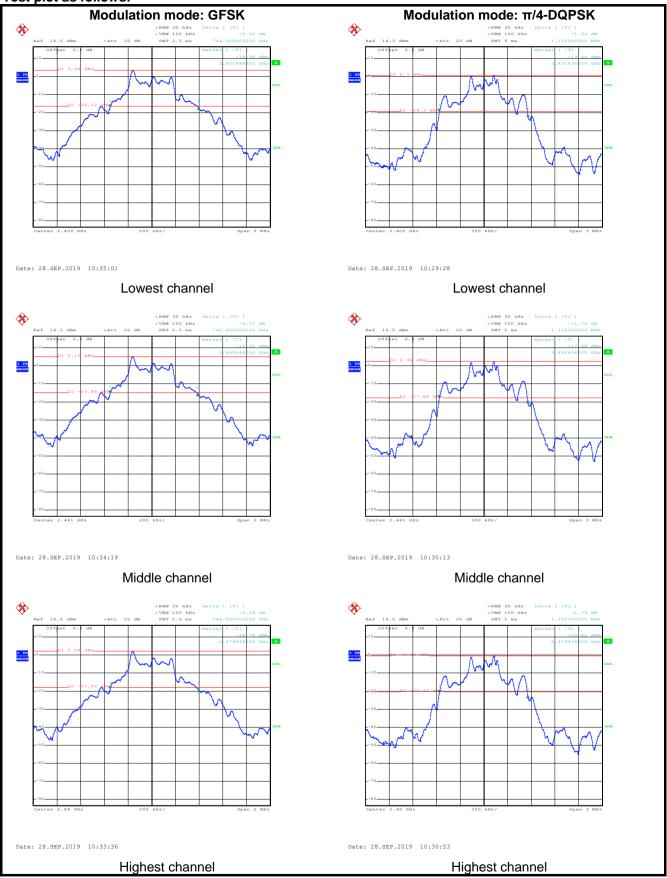
Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)			
Receiver setup:	RBW=30 kHz, VBW=100 kHz, detector=Peak			
Limit:	N/A			
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane			
Test Instruments:	Refer to section 5.9 for details			
Test mode:	Non-hopping mode			
Test results:	Pass			

Measurement Data:

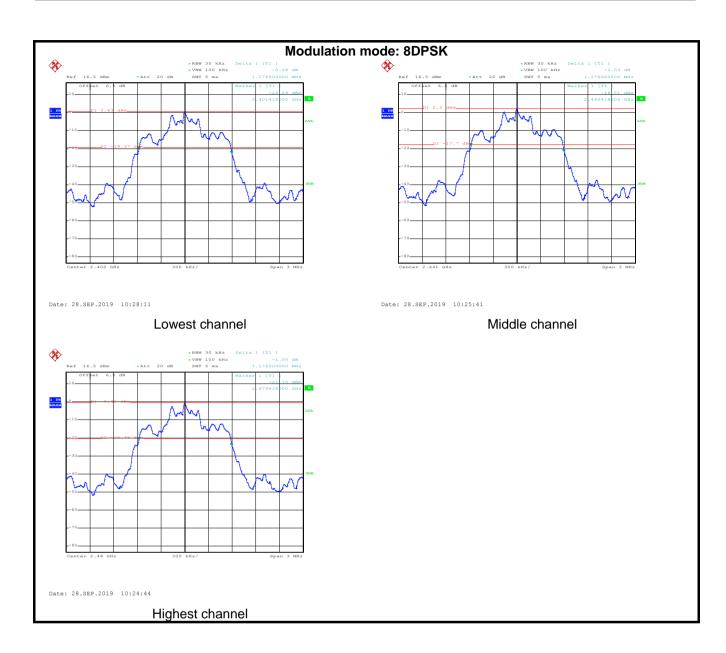
Toot channel		20dB Occupy Bandwidth (kHz)		
Test channel	GFSK	π/4-DQPSK	8DPSK	
Lowest	748	1122	1176	
Middle	740	1122	1176	
Highest	748	1122	1176	



Test plot as follows:









6.5 Carrier Frequencies Separation

io Garrior i roquoriolog Goparation					
Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)				
Receiver setup:	RBW=100 kHz, VBW=300 kHz, detector=Peak				
Limit:	 a) 0.025MHz or the 20dB bandwidth (whichever is greater) b) 0.025MHz or two-thirds of the 20dB bandwidth (whichever is greater) 				
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane				
Test Instruments:	Refer to section 5.9 for details				
Test mode:	Hopping mode				
Test results:	Pass				



Measurement Data:

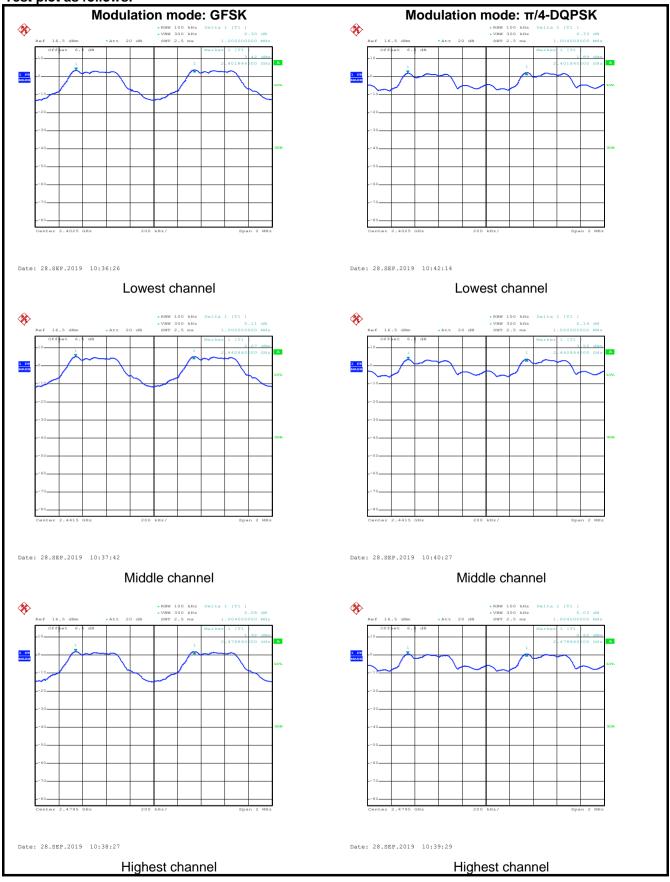
Test channel	Carrier Frequencies Separation (kHz)	Limit (kHz)	Result			
	GFSK					
Lowest	1000	748.00	Pass			
Middle	1000	748.00	Pass			
Highest	1004	748.00	Pass			
	π/4-DQPSK mode					
Lowest	1004	748.00	Pass			
Middle	1000	748.00	Pass			
Highest	1004	748.00	Pass			
	8DPSK mode					
Lowest	1000	784.00	Pass			
Middle	1004	784.00	Pass			
Highest	1000	784.00	Pass			

Note: According to section 6.4

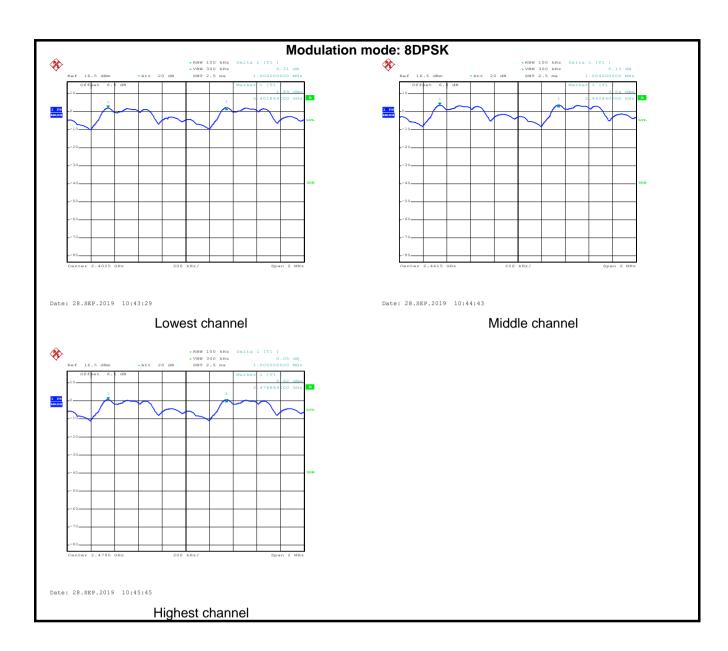
Mode	20dB bandwidth (kHz) (worse case)	Limit (kHz) (Carrier Frequencies Separation)
GFSK	748	748.00
π/4-DQPSK	1122	748.00
8DPSK	1176	784.00



Test plot as follows:









6.6 Hopping Channel Number

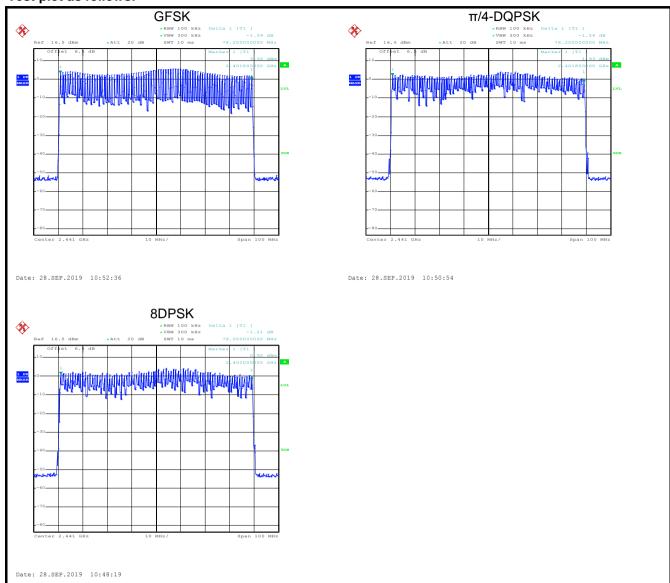
Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)			
Receiver setup:	RBW=100 kHz, VBW=300 kHz, Frequency range=2400MHz-2483.5MHz, Detector=Peak			
Limit:	15 channels			
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane			
Test Instruments:	Refer to section 5.9 for details			
Test mode:	Hopping mode			
Test results:	Pass			

Measurement Data:

Mode	Hopping channel numbers	Limit	Result
GFSK, π/4-DQPSK, 8DPSK	79	15	Pass



Test plot as follows:





6.7 Dwell Time

Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)				
Receiver setup:	RBW=1 MHz, VBW=1 MHz, Span=0 Hz, Detector=Peak				
Limit:	0.4 Second				
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane				
Test Instruments:	Refer to section 5.9 for details				
Test mode:	Hopping mode				
Test results:	Pass				

Measurement Data (Worse case):

Mode	Packet	Dwell time (second)	Limit (second)	Result	
	DH1	0.12544			
GFSK	DH3	0.26592	0.4	Pass	
	DH5	0.31147			
	2-DH1	0.12800			
π/4-DQPSK	2-DH3	0.26592	0.4	Pass	
	2-DH5	0.31147			
	3-DH1	0.12736			
8DPSK	3-DH3	0.26592	0.4	Pass	
	3-DH5	0.31147			

Note:

The test period = 0.4 Second/Channel x 79 Channel = 31.6 s

Calculation Formula: Dwell time = Ton time per hop * Hopping numbers * Period

For example:

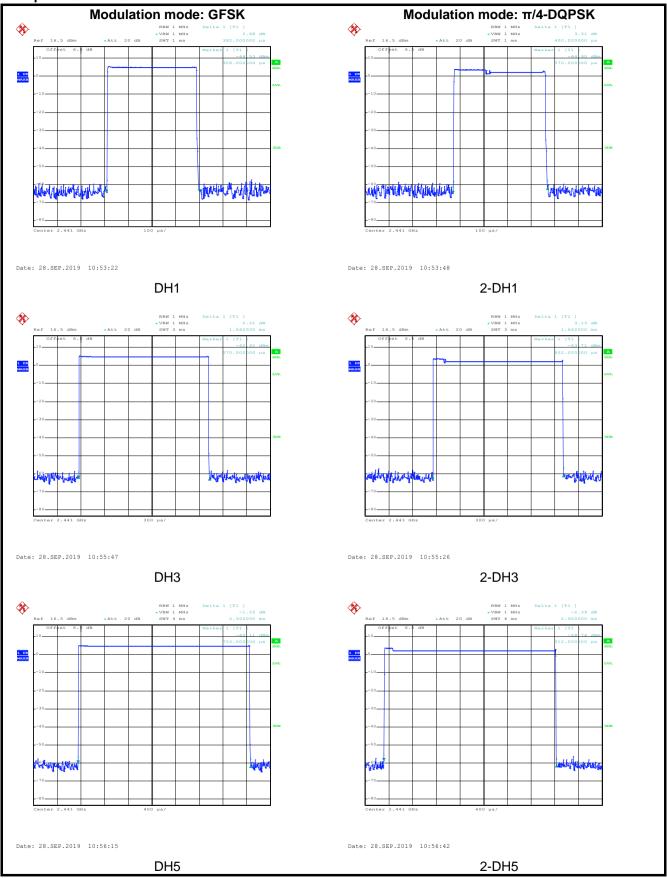
DH1 time slot=0.392*(1600/ (2*79)) * 31.6=125.44ms

DH3 time slot=1.662*(1600/ (4*79)) * 31.6=265.92ms

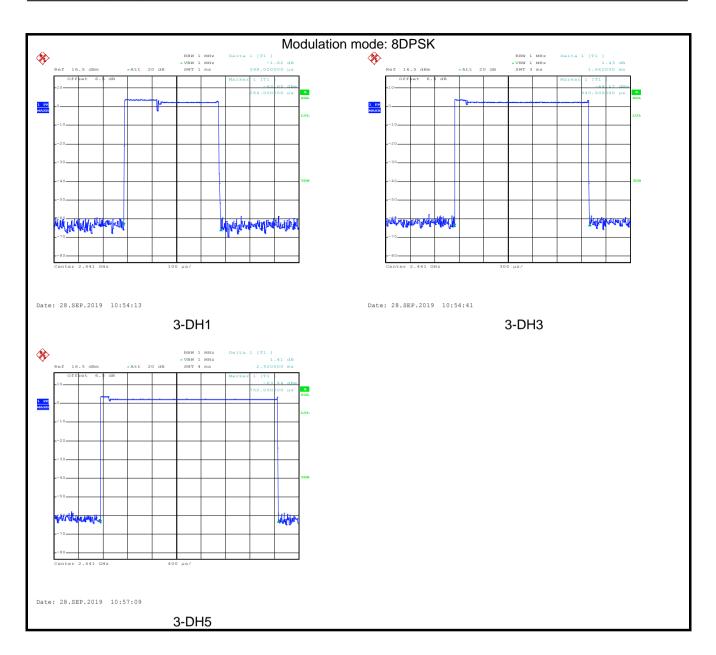
DH5 time slot=2.920*(1600/ (6*79)) * 31.6=311.47ms



Test plot as follows:









6.8 Pseudorandom Frequency Hopping Sequence

Test Requirement: FCC Part 15 C Section 15.247 (a)(1) requirement:

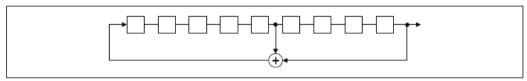
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Alternatively. Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

EUT Pseudorandom Frequency Hopping Sequence

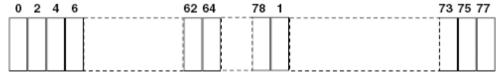
The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence: $2^9 1 = 511$ bits
- · Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



Each frequency used equally on the average by each transmitter.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.



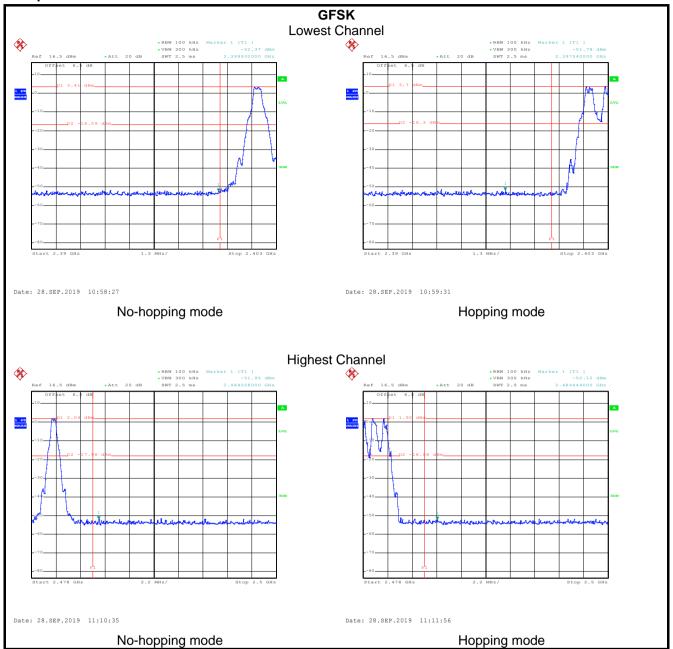
6.9 Band Edge

6.9.1 Conducted Emission Method

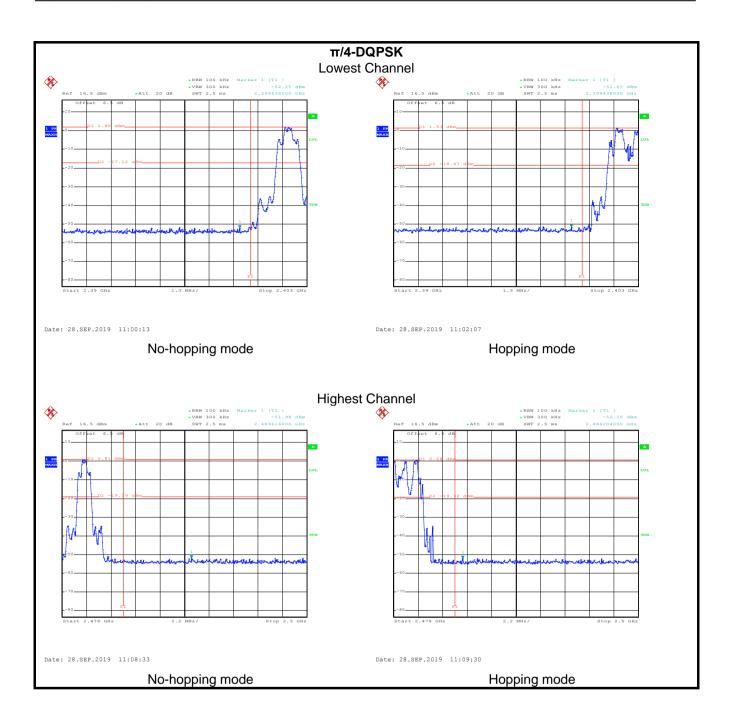
Test Requirement:	FCC Part 15 C Section 15.247 (d)				
Receiver setup:	RBW=100 kHz, VBW=300 kHz, Detector=Peak				
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator 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:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane				
Test Instruments:	Refer to section 5.9 for details				
Test mode:	Non-hopping mode and hopping mode				
Test results:	Pass				



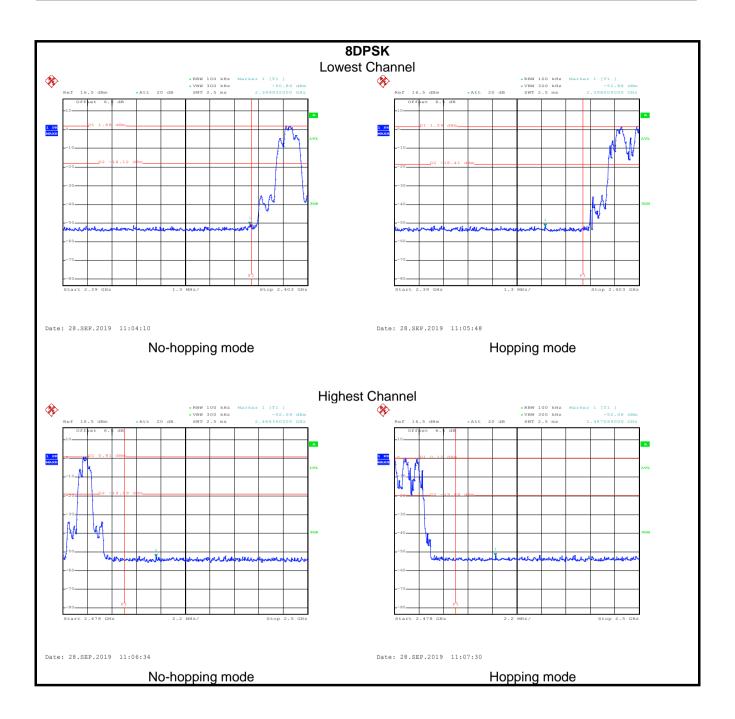
Test plot as follows:













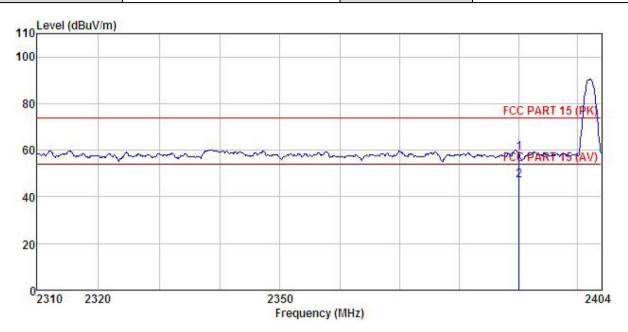
6.9.2 Radiated Emission Method

Test Requirement: Test Frequency Range: 2.3GHz to 2.5GHz Test Distance: 3m Receiver setup: Frequency Above 1GHz Frequency Antenna Tower Frequency Antenna Tower
Receiver setup: Frequency Detector RBW VBW Remark
Above 1GHz Peak 1MHz 3MHz Peak 1MHz 3MHz Average 1
Above 1GHz RMS
Limit: Frequency Above 1GHz RMS 1MHz 3MHz Average Remark 54.00 Average Va 74.00 Peak Valu Test setup:
Above 1GHz 54.00 Average Va 74.00 Peak Valu Test setup:
Above 1GHz 74.00 Peak Valu
Test setup:
Horn Antenna Tower
Ground Reference Plane Test Receiver Amplifer Controller
 Test Procedure: The EUT was placed on the top of a rotating table 1.5meters abord ground at a 3 meter camber. The table was rotated 360 degrees determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height ante tower. The antenna height is varied from one meter to four meters above ground to determine the maximum value of the field strength. Both orizontal and vertical polarizations of the antenna are set to material measurement. For each suspected emission, the EUT was arranged to its worst and then the antenna was turned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to 1 maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. If the emission level of the EUT in peak mode was 10dB lower the limit specified, then testing could be stopped and the peak valued the EUT would be reported. Otherwise the emissions that did not 10dB margin would be re-tested one by one using peak, quasi-piaverage 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: Passed



GFSK Mode:

Product Name:	6.0 inch smartphone	Product Model:	Eternity G60
Test By:	Janet	Test mode:	DH1 Tx mode
Test Channel:	Lowest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%



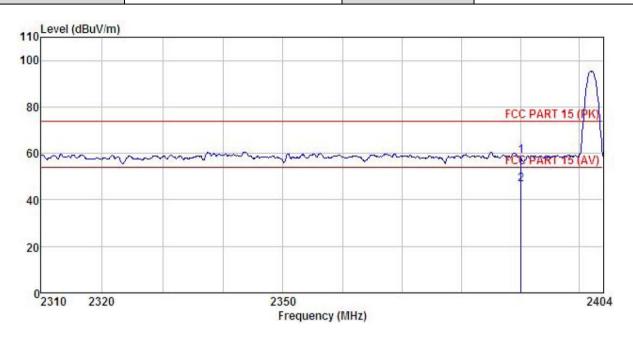
	Freq		Antenna Factor					
	MHz	dBu√	dB/m	dB	<u>d</u> B	$\overline{dBuV/m}$	dBuV/m	
1 2	2390.000 2390.000							

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:	6.0 inch smartphone	Product Model:	Eternity G60
Test By:	Janet	Test mode:	DH1 Tx mode
Test Channel:	Lowest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%



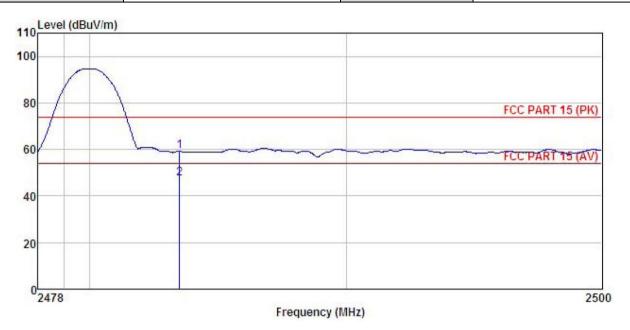
	Freq		Antenna Factor						Remark
	MHz	dBu₹		dB	dB	$\overline{dBuV/m}$	dBu√/m	<u>dB</u>	
1 2	2390,000 2390,000					58.69 46.49			

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:	6.0 inch smartphone	Product Model:	Eternity G60
Test By:	Janet	Test mode:	DH1 Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%



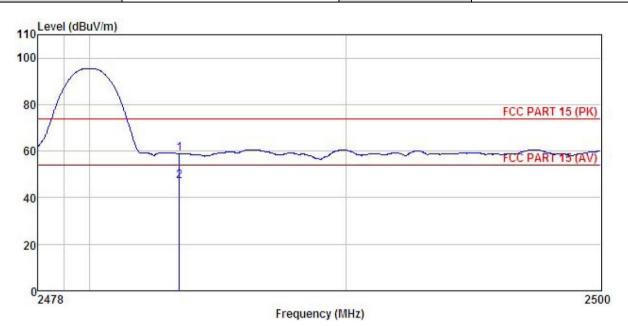
	Freq		Antenna Factor						
	MHz	dBu∜	<u>dB</u> /m	d <u>B</u>	dB	dBuV/m	dBuV/m	<u>dB</u>	
1 2	2483.500 2483.500								

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:	6.0 inch smartphone	Product Model:	Eternity G60
Test By:	Janet	Test mode:	DH1 Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%



	Freq		Antenna Factor					Over Limit	
	MHz	dBu∜	<u>dB</u> /m	d <u>B</u>	<u>d</u> B	dBuV/m	dBuV/m	<u>dB</u>	
2	2483,500 2483,500								

Remark:

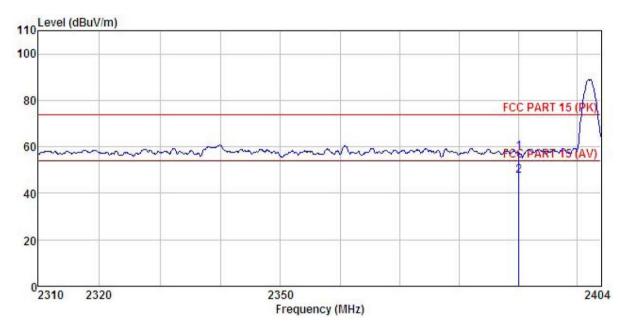
1 2

- 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.



π/4-DQPSK mode

Product Name:	6.0 inch smartphone	Product Model:	Eternity G60		
Test By:	Janet	Test mode:	2DH1 Tx mode		
Test Channel:	Lowest channel	Polarization:	Vertical		
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%		



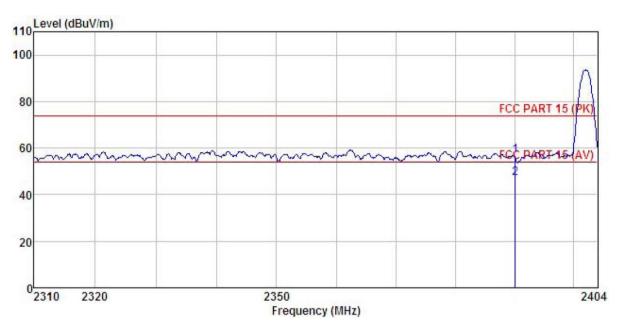
	Freq		Antenna Factor			Limit Line		
	MHz	₫₿uѶ	$\overline{dB}/\overline{m}$	 <u>dB</u>	$\overline{dBuV/m}$	$\overline{dBuV/m}$	<u>d</u> B	
2	2390.000 2390.000				57.65 47.40			

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:	6.0 inch smartphone	Product Model:	Eternity G60
Test By:	Janet	Test mode:	2DH1 Tx mode
Test Channel:	Lowest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%

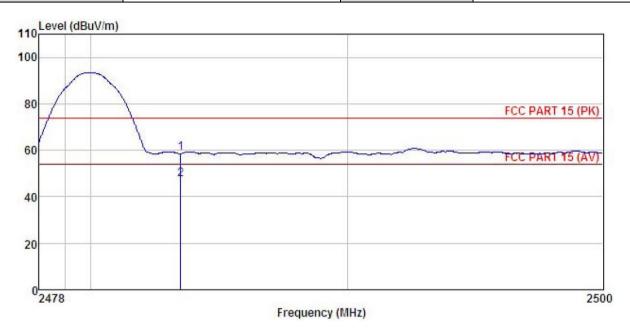


	Freq		Antenna Factor						
	MHz	−−dBuV		<u>dB</u>	<u>dB</u>	$\overline{dBuV/m}$	$\overline{dBuV/m}$	<u>dB</u>	
1 2	2390.000 2390.000								

- 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:	6.0 inch smartphone	Product Model:	Eternity G60		
Test By:	Janet	Test mode:	2DH1 Tx mode		
Test Channel:	Highest channel	Polarization:	Vertical		
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%		



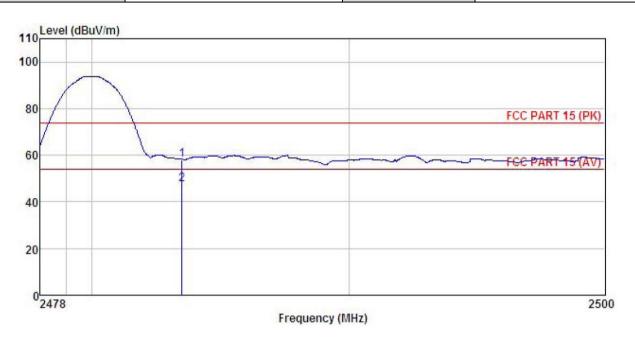
Freq		Antenna Factor						Remark
MHz	dBu∜		<u>d</u> B	<u>ab</u>	$\overline{dBuV/m}$	$\overline{dBuV/m}$	<u>dB</u>	
2483,500 2483,500								

1 2

- 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:	6.0 inch smartphone	Product Model:	Eternity G60
Test By:	Janet	Test mode:	2DH1 Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%



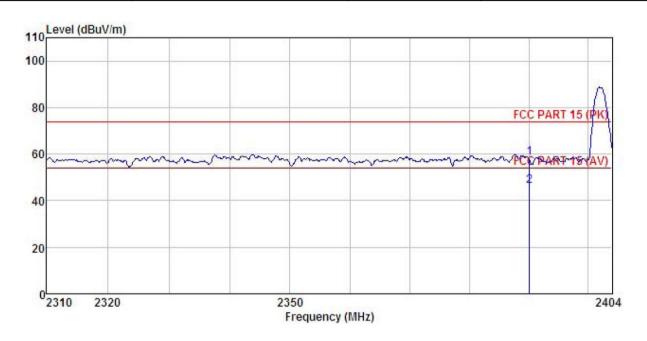
	Freq		ReadAntenna Cal Level Factor L							
	MHz	MHz dBuV	dB/m	<u>d</u> B	<u>Б</u> <u>а</u> Б	dBuV/m	dBuV/m	dB		
1	2483.500 2483.500									

- 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.



8DPSK mode

Product Name:	6.0 inch smartphone	Product Model:	Eternity G60
Test By:	Janet	Test mode:	3DH1 Tx mode
Test Channel:	Lowest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%



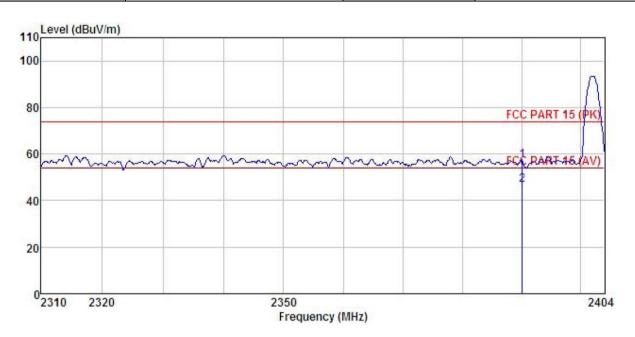
	Freq		Antenna Factor					
	MHz	dBu∜	dB/m	<u>dB</u>	<u>dB</u>	$\overline{\mathtt{dBuV/m}}$	dBu√/m	
1 2	2390.000 2390.000							

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:	6.0 inch smartphone	Product Model:	Eternity G60
Test By:	Janet	Test mode:	3DH1 Tx mode
Test Channel:	Lowest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%

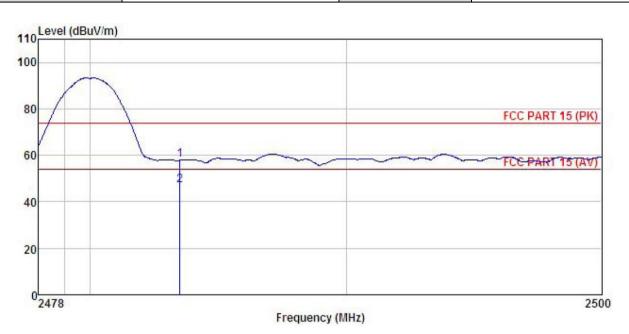


	Freq		Antenna Factor						
	MHz	dBu√		<u>d</u> B	<u>dB</u>	$\overline{dBuV/m}$	dBu√/m	<u>dB</u>	
1 2	2390.000 2390.000								

- 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:	6.0 inch smartphone	Product Model:	Eternity G60
Test By:	Janet	Test mode:	3DH1 Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%

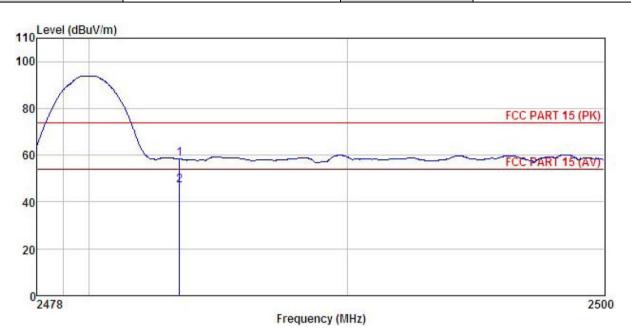


	Freq				Limit Level Line			
	MHz	−−dBuV	dB/m	 <u>dB</u>	$\overline{dBuV/m}$	$\overline{dBuV/m}$	<u>dB</u>	
1 2	2483,500 2483,500							

- 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:	6.0 inch smartphone	Product Model:	Eternity G60
Test By:	Janet	Test mode:	3DH1 Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%



		Read	Ant enna	Cable	Preamp		Limit	Over	
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBu∜	dB/m	<u>d</u> B	<u>ab</u>	$\overline{dBuV/m}$	$\overline{dBuV/m}$	<u>d</u> B	
1 2	2483,500 2483,500								

- 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.



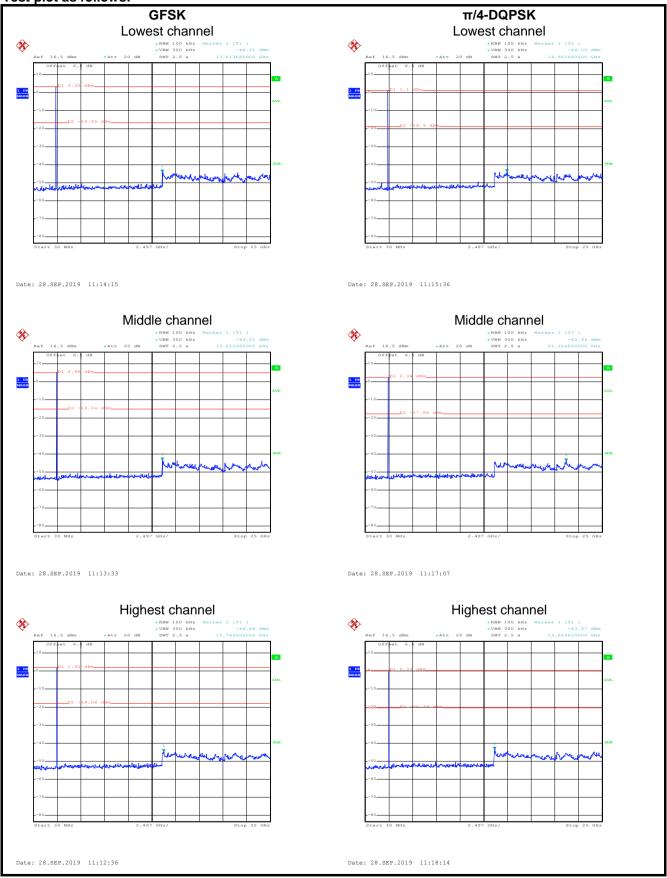
6.10 Spurious Emission

6.10.1 Conducted Emission Method

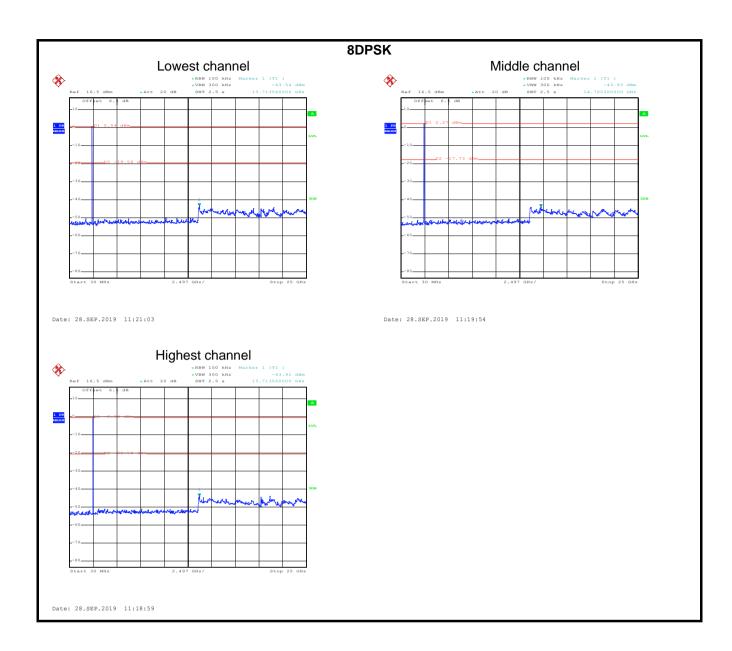
Test Requirement:	FCC Part 15 C Section 15.247 (d)					
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth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



Test plot as follows:









6.10.2 Radiated Emission Method

6.10.2 Radiated Emission Mo									
Test Requirement:	FCC Part 15 C	Section 15.20	9						
Test Frequency Range:	9 kHz to 25 GHz								
Test Distance:	3m			_					
Receiver setup:	Frequency	Detector	RBW	VBV					
	30MHz-1GHz	Quasi-peak	120kHz	300kl	Hz Quasi-peak \	/alue			
	Above 1GHz Peak 1MHz 3MHz Peak Value								
	715070 10112	RMS 1MHz 3MHz Average Value							
Limit:	Frequenc	y Li	mit (dBuV/m @	23m)	Remark				
	30MHz-88N	ИHz	40.0		Quasi-peak Val	lue			
	88MHz-216	MHz	43.5		Quasi-peak Val	lue			
	216MHz-960	MHz	46.0		Quasi-peak Val	lue			
	960MHz-10	GHz	54.0		Quasi-peak Val	lue			
	Above 1GI	H7	54.0		Average Valu	е			
	Above 101	12	74.0		Peak Value				
	Ta	3m 4m 4m 0.8m ble A			Antenna Tower Search Antenna RF Test Receiver				
	150cm	AE EUT (Turntable)	3m Ground Reference Plane	Horn Antenna Pre- Amptifier Con	Antenna Tower troller				
Test Procedure:	/1.5m(above was rotated 3 radiation.	1GHz) above 360 degrees t	the ground a o determine the	t a 3 me ne positi	te 0.8m(below 1GH ter chamber. The to on of the highest erence-receiving	,			



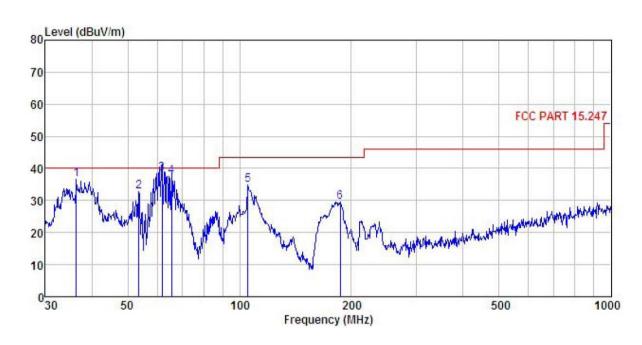
	 antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. 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. 5. 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, so only shows the data of above 30MHz in this report.



Measurement Data (worst case):

Below 1GHz:

Product Name:	6.0 inch smartphone	Product Model:	Eternity G60
Test By:	Janet	Test mode:	BT Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%



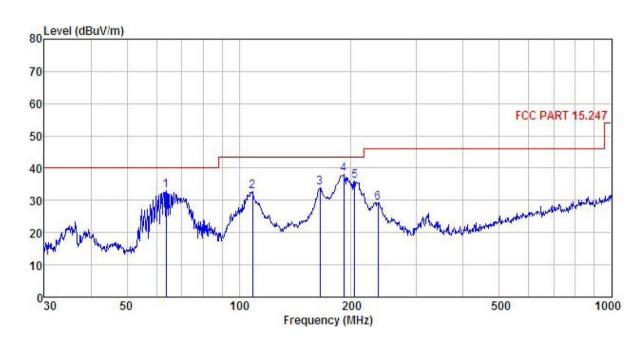
	Freq		Antenna Factor				Limit Line		
	MHz	dBu∀		dB	<u>dB</u>	$\overline{dBuV/m}$	dBuV/m	<u>d</u> B	
1	36.381	53.93	11.54	1.11	29.94	36.64	40.00	-3.36	QP
2	53.505	49.37	11.74	1.32	29.81	32.62	40.00	-7.38	QP
3	61.778	56.04	10.74	1.38	29.77	38.39	40.00	-1.61	QP
4	65.573	56.39	9.48	1.41	29.75	37.53	40.00	-2.47	QP
5	105.272	50.13	12.05	2.00	29.49	34.69	43.50	-8.81	QP
6	186.441	45.45	10.18	2.77	28.93	29.47	43.50	-14.03	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:	6.0 inch smartphone	Product Model:	Eternity G60
Test By:	Janet	Test mode:	BT Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%



	Freq		Intenna Factor				Limit Line		Remark
_	MHz	dBu∜	dB/m	₫B	₫B	$\overline{dBuV/m}$	dBuV/m	<u>dB</u>	
1	63.759	51.42	9.98	1.38	29.76	33.02	40.00	-6.98	QP
2	108.647	48.36	11.79	2.03	29.47	32.71	43.50	-10.79	QP
3	164.908	50.84	9.47	2.62	29.09	33.84	43.50	-9.66	QP
4	191.074	53.84	10.33	2.81	28.89	38.09	43.50	-5.41	QP
1 2 3 4 5	204.238	51.07	10.80	2.87	28.80	35.94	43.50	-7.56	QP
6	235.816	42.98	12.15	2.83	28.62	29.34	46.00	-16.66	QP

- 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.



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	48.84	30.85	6.80	41.81	44.68	74.00	-29.32	Vertical			
4804	48.26	30.85	6.80	41.81	44.10	74.00	-29.90	Horizontal			
			Dete	ector: Avera	ge Value						
Frequency (MHz) Read Antenna Cable Preamp Level (dBuV) (dB/m) Read Level (dBuV/m) Read Level (dBuV/m) Level (dBuV/m) Read Level (dBuV/m) Antenna Cable Preamp (dBuV/m) Read Level (dBuV/m) Polarization								Polarization			
4804.00	40.64	30.85	6.80	41.81	36.48	54	-17.52	Vertical			
4804.00 40.60 30.85 6.80 41.81 36.44 54 -17.56 Horizontal											

Test channel: Middle 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				
4882.00	49.16	31.20	6.86	41.84	45.38	74.00	-28.62	Vertical				
4882.00	49.05	31.20	6.86	41.84	45.27	74.00	-28.73	Horizontal				
Detector: Average 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				
4882.00	41.22	31.20	6.86	41.84	37.44	54.00	-16.56	Vertical				
4882.00	40.93	31.20	6.86	41.84	37.15	54.00	-16.85	Horizontal				

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	49.78	31.63	6.91	41.87	46.45	74.00	-27.55	Vertical				
4960.00	49.16	31.63	6.91	41.87	45.83	74.00	-28.17	Horizontal				
Detector: Average 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	41.09	31.63	6.91	41.87	37.76	54.00	-16.24	Vertical				
4960.00	40.76	31.63	6.91	41.87	37.43	54.00	-16.57	Horizontal				

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.