

Report No: JYTSZE200905202

FCC REPORT

Applicant:	Swagtek	
Address of Applicant:	10205 NW 19th St. Suite 101, Miami, FL, 33172	
Equipment Under Test (E	EUT)	
Product Name:	5.7 inch 4G smart phone	
Model No.:	L57, OMEGA, UN57	
Trade mark:	LOGIC, iSWAG, UNONU	
FCC ID:	O55573420	
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247	
Date of sample receipt:	18 Sep., 2020	
Date of Test:	18 Sep., to 10 Nov., 2020	
Date of report issued:	11 Nov., 2020	
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 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.

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Version 2

Version No.	Date	Description
00	11 Nov., 2020	Original

Tested by:

Janet Wei Test Engineer

Date: 11 Nov., 2020

Reviewed by:

Winner Thang

Project Engineer

Date:

11 Nov., 2020



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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 "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conduction measurement items is 0.5dB (provided by the cable insertion loss used by "RE Output Power" and other conducting "RE Output Power" and other conducting "RE Output P			

The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer).
 ANSI C63.10-2013

KDB 558074 D01 15.247 Meas Guidance v05r02

Test Method:



5 General Information

5.1 Client Information

Applicant:	Swagtek
Address:	10205 NW 19th St. Suite 101, Miami, FL, 33172
Manufacturer/ Factory:	Swagtek
Address:	10205 NW 19th St. Suite 101, Miami, FL, 33172

5.2 General Description of E.U.T.

Product Name:	5.7 inch 4G smart phone	
Model No.:	L57, OMEGA, UN57	
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-2350mAh	
AC adapter:	Model: A18A-050100U-US2	
	Input: AC100-240V, 50/60Hz, 0.2A	
	Output: DC 5.0V, 1000mA	
Remark:	Model No.: L57, OMEGA, UN57, were identical inside, the electrical	
	circuit design, layout, components used and internal wiring, with only difference being trademark. LOGIC is for L57. iSWAG is for OMEGA. UNONU is for UN57.	
Test Sample Condition:	The test samples were provided in good working order with no visible defects.	

		Operation Frequency each of channel						
Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency		
2402MHz	10	2422MHz	20	2442MHz	30	2462MHz		
2404MHz	11	2424MHz	21	2444MHz	31	2464MHz		
2406MHz	12	2426MHz	22	2446MHz	32	2466MHz		
2408MHz	13	2428MHz	23	2448MHz	33	2468MHz		
2410MHz	14	2430MHz	24	2450MHz	34	2470MHz		
2412MHz	15	2432MHz	25	2452MHz	35	2472MHz		
2414MHz	16	2434MHz	26	2454MHz	36	2474MHz		
2416MHz	17	2436MHz	27	2456MHz	37	2476MHz		
2418MHz	18	2438MHz	28	2458MHz	38	2478MHz		
2420MHz	19	2440MHz	29	2460MHz	39	2480MHz		
	2402MHz 2404MHz 2406MHz 2408MHz 2410MHz 2412MHz 2412MHz 2414MHz 2416MHz 2418MHz	2402MHz 10 2404MHz 11 2406MHz 12 2408MHz 13 2410MHz 14 2412MHz 15 2414MHz 16 2416MHz 17 2418MHz 18	2402MHz102422MHz2404MHz112424MHz2406MHz122426MHz2406MHz132428MHz2408MHz132428MHz2410MHz142430MHz2412MHz152432MHz2414MHz162434MHz2416MHz172436MHz2418MHz182438MHz	2402MHz102422MHz202404MHz112424MHz212406MHz122426MHz222408MHz132428MHz232410MHz142430MHz242412MHz152432MHz252414MHz162434MHz262416MHz172436MHz272418MHz182438MHz28	2402MHz102422MHz202442MHz2404MHz112424MHz212444MHz2406MHz122426MHz222446MHz2408MHz132428MHz232448MHz2410MHz142430MHz242450MHz2412MHz152432MHz252452MHz2414MHz162434MHz262454MHz2416MHz172436MHz272456MHz2418MHz182438MHz282458MHz	2402MHz102422MHz202442MHz302404MHz112424MHz212444MHz312406MHz122426MHz222446MHz322408MHz132428MHz232448MHz332410MHz142430MHz242450MHz342412MHz152432MHz252452MHz352414MHz162434MHz262454MHz362416MHz172436MHz272456MHz372418MHz182438MHz282458MHz38		

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 mode

Operating Environment:

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

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. 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)	±5.16 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±3.20 dB (k=2)

5.6 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 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.

• 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: <u>https://portal.a2la.org/scopepdf/4346-01.pdf</u>

5.7 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd. Address: No.110~116, Building B, Jinyuan Business Building, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China Tel: +86-755-23118282, Fax: +86-755-23116366 Email: info@ccis-cb.com, Website: <u>http://www.ccis-cb.com</u>



5.8 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	07-21-2020	07-20-2021
Loop Antenna	SCHWARZBECK	FMZB1519B	044	03-07-2020	03-06-2021
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-07-2020	03-06-2021
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-07-2020	03-06-2021
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-20-2020	06-19-2021
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-18-2019	11-17-2020
EMI Test Software	AUDIX	E3	V	ersion: 6.110919	0
Pre-amplifier	HP	8447D	2944A09358	03-07-2020	03-06-2021
Pre-amplifier	CD	PAP-1G18	11804	03-07-2020	03-06-2021
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-05-2020	03-04-2021
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-18-2019	11-17-2020
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-05-2020	03-04-2021
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-07-2020	03-06-2021
Cable	MICRO-COAX	MFR64639	K10742-5	03-07-2020	03-06-2021
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-07-2020	03-06-2021
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	03-05-2020	03-04-2021
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-05-2020	03-04-2021
LISN	CHASE	MN2050D	1447	03-05-2020	03-04-2021
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	06-18-2020	07-17-2021
Cable	HP	10503A	N/A	03-05-2020	03-04-2021
EMI Test Software	AUDIX	E3	V	ersion: 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	7		
Test Frequency Range:	150 kHz to 30 MHz			
Class / Severity:	Class B			
Receiver setup:	RBW=9kHz, VBW=30kHz			
Limit:	Frequency range (MHz)			
	Quasi-peak Average			
	0.15-0.5	66 to 56*	56 to 46*	
	0.5-5	56	46	
	5-30 * Decreases with the logarithm	60	50	
Test procedure:	 The E.U.T and simulators line impedance stabilizati 50ohm/50uH coupling im The peripheral devices an LISN that provides a 50ol termination. (Please refer photographs). Both sides of A.C. line are interference. In order to fi positions of equipment ar according to ANSI C63.10 	are connected to the ma on network (L.I.S.N.), wh pedance for the measurin re also connected to the hm/50uH coupling imped to the block diagram of the checked for maximum and the maximum emission of all of the interface cab	ich provides a ng equipment. main power through a ance with 500hm the test setup and conducted on, the relative les must be changed	
Test setup:	Reference	80cm Filter EMI Receiver	– AC power	
Test Instruments:	Refer to section 5.9 for details			
Test mode:	Refer to section 5.3 for details			
Test results:	Passed			



Measurement Data:

	5.7 inch 4G smartphone	Product model:	L57		
est by:	Janet	Test mode:	BLE Tx mode		
est frequency:	150 kHz ~ 30 MHz	Phase:	Line		
est voltage:	AC 120 V/60 Hz	Environment:	Temp:22.5℃ Huni:55%		
80 Level (dBuV) 70 60 50 40 40 30 20 10 0.15 .2		и и и и и и и и и и и и и и и и и и и	FCC PART 15.207 QP FCC PART 15.207 AV		
	ad LISN Aux Cable el Factor Factor Loss	Limit Over Level Line Limit 1	Remark		
MHz dB	uV dB dB dB dB	dBuV dBuV dB			
	47 -0.57 -0.21 10.75	43.44 51.91 -8.47	A		



Product name:	5.7 inch 4G smartp	hone	Produ	ct model:		L57 BLE Tx mode		
Test by:	Janet		Test m	ode:				
Test frequency:	150 kHz ~ 30 MHz	150 kHz ~ 30 MHz Phase: AC 120 V/60 Hz Environment:			Neutral			
Test voltage:	AC 120 V/60 Hz			Temp: 22.5 ℃	Huni: 55%			
80 Level (dBuV) 70 60 50 40 40 40 10 0.15 .2 30 40 10 0.15 .2	3 4 6 8 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	10	2 ency (MH	Hologon Law	414 / Mm//ull		15.207 QP 15.207 AV	
Freq Le MHz d 1 0.246 26 2 0.266 37 3 0.421 43 4 0.474 38 5 0.481 26 6 0.665 38 7 0.739 26 8 0.800 38 9 0.804 27	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Loss dB 10.75 10.75 10.75 10.75 10.75 10.75 10.77 10.79 10.81 10.81	Level dBuV 36.65 47.72 53.23 48.35 36.50 48.76 36.22 48.84 37.80	$\begin{array}{c} 61.25\\ 57.42\\ 56.45\\ 46.32\\ 56.00\\ 46.00\\ 56.00\\ 46.00\\ 56.00\\ 46.00\end{array}$	-13.53 -4.19 -8.10 -9.82 -7.24 -9.78 -7.16 -8.20	Average QP QP QP Average QP Average QP Average QP		
10 1.296 38 11 1.511 28 12 1.585 26 Notes: 1. An initial pre-scan wa	. 02 -0. 69 0. 11 . 13 -0. 70 0. 13 . 86 -0. 70 0. 14 s performed on the line rage measurement were	10. 90 10. 92 10. 93 and neutra	48. 34 38. 48 37. 23	56.00 46.00 46.00	-7.66 -7.52 -8.77	QP Average Average	ssion.	



6.3 Conducted Output Power

Test Requirement:	FCC Part 15 C Section 15.247 (b)(3)
Limit:	30dBm
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



6.4 Occupy Bandwidth

Test Requirement:	FCC Part 15 C Section 15.247 (a)(2)
Limit:	>500kHz
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



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



6.6 Band Edge

6.6.1 Conducted Emission Method

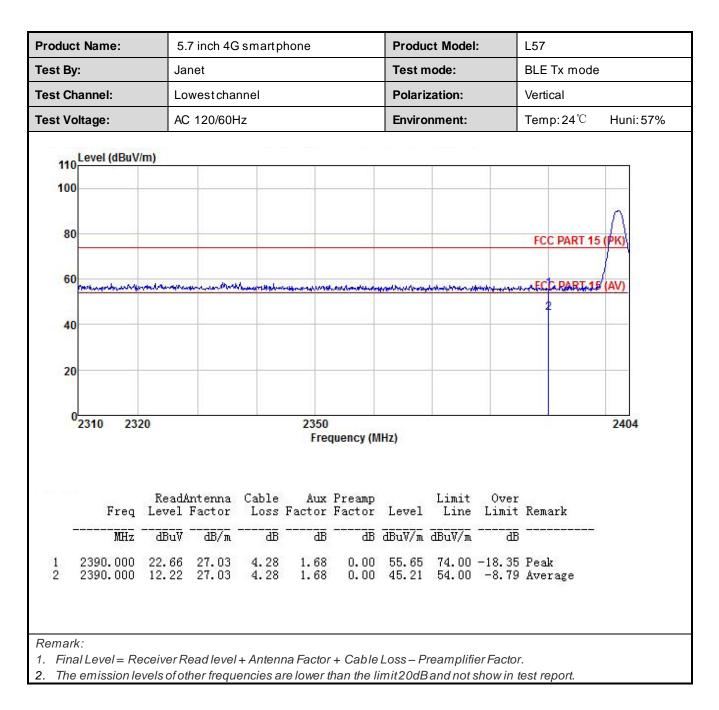
Test Requirement:	FCC Part 15 C Section 15.247 (d)			
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth 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			



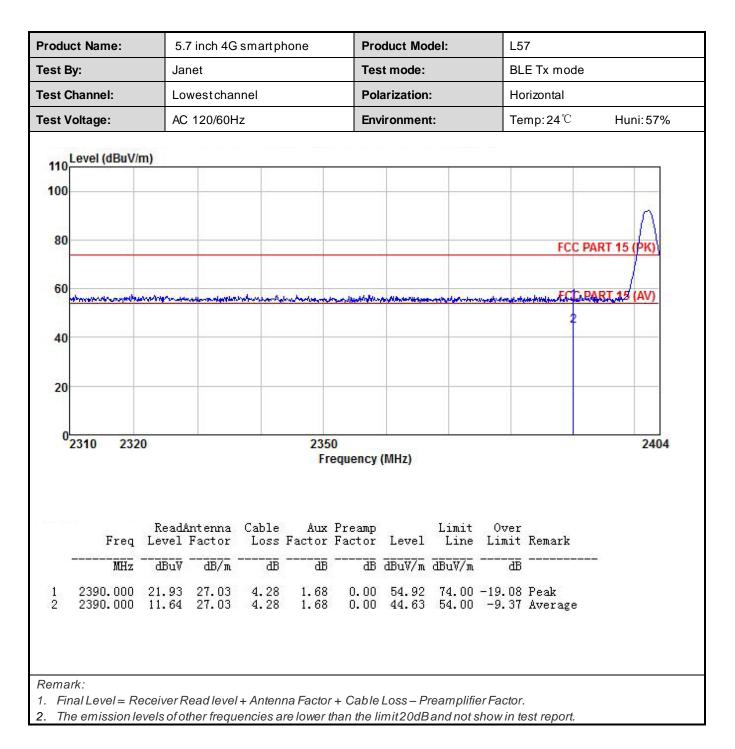
6.6.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C Section 15.205 and 15.209					
Test Frequency Range:	2310 MHz to 2	390 MHz and	2483.5MHz to 2	2500 MHz		
Test Distance:	3m					
Receiver setup:	Frequency	Detector			Remark	
·	Above 1GHz	Peak RMS	1MHz 1MHz	3MHz 3MHz	Peak Value	
		Average Value				
Limit:	Frequency Limit (dBuV/m @3m) Remark					
	Above 1GHz 54.00 /				Average Value Peak Value	
Test Procedure:	 the ground to determine the ground Both horizemake the determine the ground Both horizemake the determine to find the determine to find the determine the limit service of the EU have 10 cm 	d at a 3 meter ine the positic was set 3 meter which was meter which was meter and height is we to determine contal and ver measurement suspected em then the anter d the rota table maximum rea- receiver syste Bandwidth wi ssion level of pecified, then T would be re B margin wou	camber. The ta n of the highest ers away from t ounted on the top aried from one r the maximum v ical polarization ission, the EUT na was tuned to le was turned fro ading. m was set to Pe th Maximum Ho the EUT in peak testing could be ported. Otherwis	able was rotat radiation. the interference of a variable meter to four value of the f is of the ante was arrange o heights from om 0 degrees ak Detect Fu Id Mode. mode was 1 e stopped and se the emissione by one u	e-height antenna meters above ield strength. nna are set to d to its worst m 1 meter to 4 s to 360 degrees nction and 0 dB lower than d the peak values ions that did not ising peak, quasi-	
Test setup:		LEUT urmtable) Groun Test Receiver	Horn Antenna 3m d Reference Plane	Antenna Tower		
Test Instruments:	Refer to section	on 5.9 for deta	ils			
Test mode:	Refer to section	on 5.3 for deta	ls			
Test results:	Passed					





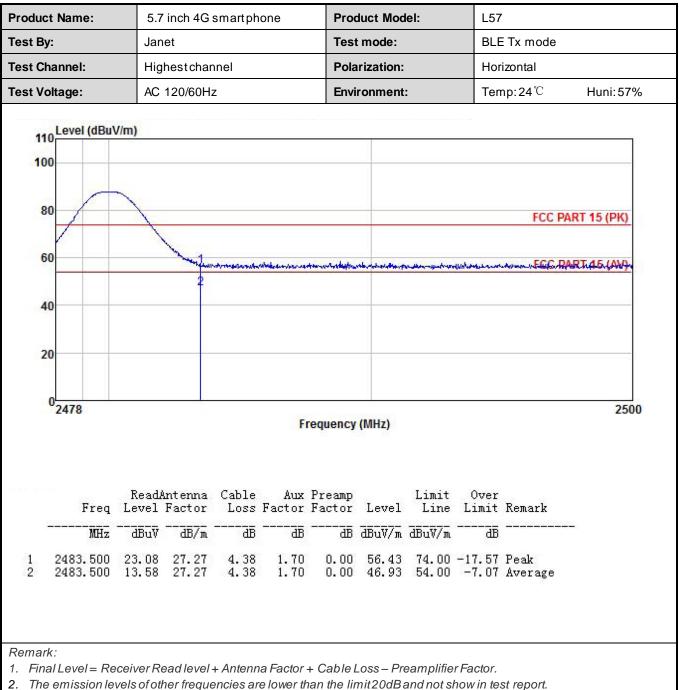






roduct Name:	5.7 inch 4G	Janet Highestchannel				L57		
est By:	Janet						BLE Tx mode	
est Channel:	Highestcha			Polarization:			Vertical	
est Voltage:	AC 120/60H			Enviror	ment:	-	Temp:24℃	Huni: 57%
110 100 80 60		-Ngangal get says and the same state states	mastronthe		ut and a state of the state of	Ampleopa	FCC PART	
40 20 0 2478		112.37						2500
20		Fre	quency (I	MHz)				2500
20 0 2478 Freq	Level Factor	Cable Aux Loss Factor	Preamp Factor	Level			Remark	2500
20 0 2478	ReadAntenna Level Factor - dBuV - dB/m	Cable Aux Loss Factor	Preamp Factor	2.4	Line		Remark	2500







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



6.7.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C Section 15.205 and 15.209						
Test Frequency Range:	9kHz to 25GHz						
Test Distance:	3m						
Receiver setup:	Frequency Detector RBW VBW			Remark			
· ·	30MHz-1GHz	Quasi-pe	eak	120KHz	300	KHz	Quasi-peak Value
	Above 1GHz	Peak		1MHz	3M	Hz	Peak Value
	RMS 1MHz 3MHz				Hz	Average Value	
Limit:	Frequency Limit (dBuV/m @3m) Remark					Remark	
	30MHz-88MHz 40.0 Quasi-pe					uasi-peak Value	
	88MHz-216MHz 43.5				43.5 Quasi-pea		uasi-peak Value
	216MHz-960	MHz		46.0		Q	uasi-peak Value
	960MHz-1G	Hz		54.0		Q	uasi-peak Value
	Above 1GH	17		54.0			Average Value
				74.0			Peak Value table 0.8m (below
Test Procedure:	 The table whighest rad The EUT antenna, wtower. The antenrative ground Both horized make the nates and to find the rest and the limit spot the limit spot the EUT have 10 dB 	was rotate iation. was set 3 hich was r ha height i to detern ontal and heasureme suspected hen the ar the rota t maximum eceiver sy andwidth sion level of ecified, the would be margin w	ed 36 3 mi mou is va mine verti ent. emi table read yster with of th en te e rep voulo	50 degrees t eters away nted on the t aried from or the maximu ical polarizat ission, the E na was turned was turned ing. m was set Maximum H be EUT in per sting could b ported. Other be re-tested	o deter from the op of a ne met um valuions of EUT water do to he from 0 to Pea old Mo ak moo be stop wise the d one b	mine e inte variat er to f the a s arra eights degre de was ped ar e emis y one	3 meter camber. the position of the rference-receiving ole-height antenna our meters above the field strength. Intenna are set to anged to its worst from 1 meter to 4 es to 360 degrees ect Function and 10 dB lower than and the peak values ssions that did not using peak, quasi- reported in a data
Test setup:	Below 1GHz	3m <				Antenna ⁷ Search Antenna Test eiver —	



	Horn Antenna Tower Horn Antenna Tower Ground Reference Plane Test Receiver
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
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 30MHz is lower than the limit 20dB, so only shows the data of above 30MHz in this report.



Measurement Data (worst case):

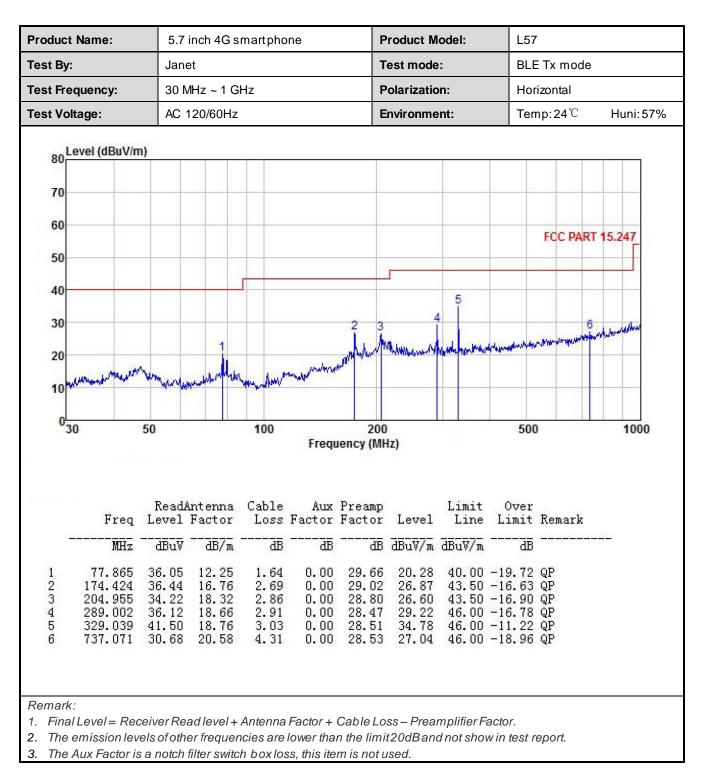
Below 1GHz:

oduct Name:	5.7 inch 4	Gsmartph	one	Produ	ict Mode	1:	L57		
st By:	Janet			Test r	node:		BLE Tx n	node	
st Frequency:	30 MHz ~ 1	1 GHz		Polari	ization:		Vertical		
est Voltage:	AC 120/60	Hz		Enviro	onment:		Temp:24	t℃	Huni: 57%
80 Level (dBuV/m)									
70									
60								_	
							FCC P/	ART 15.3	247
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10 How have been with the	www.hoursell	NH MAN	the fill makes					-	
0									
0 <mark>30 5</mark>	0	100	2 Frequency (00 MHz)			500		1000
Freq I	ReadAntenna .evel Factor		Aux Preamp actor Factor	Level	Limit Line	Over Limit	Remark		
Freq I MHz		Loss F	actor Factor	Level dBuV/m	Line		Remark		
MHz 1 79.800 (2 132.685 (3 149.486 (4 171.995 (Level Factor dBuV dB/m 35.85 12.73 36.72 12.73 11.84 14.26 10.89 16.61	Loss F 	actor Factor dBdB 0.00 29.64 0.00 29.31 0.00 29.22 0.00 29.03	Level dBuV/m 20.59 22.46 29.39 31.14	Line dBuV/m 40.00 43.50 43.50 43.50	Limit dB -19.41 -21.04 -14.11 -12.36	QP QP QP QP QP		
MHz 1 79.800 (2 132.685 (3 149.486 (4 171.995 (5 206.398 (.evel Factor dBuV dB/m 35.85 12.73 36.72 12.73 11.84 14.26	Loss F 	actor Factor dBdB 0.00 29.64 0.00 29.31 0.00 29.22 0.00 29.03	Level dBuV/m 20.59 22.46 29.39 31.14 24.62	Line dBuV/m 40.00 43.50 43.50 43.50 43.50 43.50	Limit -19.41 -21.04 -14.11 -12.36 -18.88	QP QP QP QP QP QP	<u></u>	
MHz 1 79.800 (2 132.685 (3 149.486 (4 171.995 (5 206.398 (.evel Factor dBuV dB/m 35.85 12.73 36.72 12.73 11.84 14.26 10.89 16.61 32.22 18.33	Loss F 	actor Factor 	Level dBuV/m 20.59 22.46 29.39 31.14 24.62	Line dBuV/m 40.00 43.50 43.50 43.50 43.50 43.50	Limit -19.41 -21.04 -14.11 -12.36 -18.88	QP QP QP QP QP QP		

3. The Aux Factor is a notch filter switch box loss, this item is not used.









Above 1GHz

			Te	est channe	el: Lowest c	hannel			
				Detecto	or: Peak Val	ue			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4804.00	47.22	30.78	6.80	2.44	41.81	45.43	74.00	-28.57	Vertical
4804.00	49.03	30.78	6.80	2.44	41.81	47.24	74.00	-26.76	Horizontal
				Detector	Average Va	alue			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4804.00	39.05	30.78	6.80	2.44	41.81	37.26	54.00	-16.74	Vertical
4804.00	41.45	30.78	6.80	2.44	41.81	39.66	54.00	-14.34	Horizontal
			Т		el: Middle cl				
			<u></u>	1	or: Peak Val	ue	1.1.14	<u> </u>	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4884.00	47.26	30.96	6.86	2.47	41.84	45.71	74.00	-28.29	Vertical
4884.00	49.15	30.96	6.86	2.47	41.84	47.60	74.00	-26.40	Horizontal
	•	•		Detector:	Average Va	alue			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4884.00	38.83	30.96	6.86	2.47	41.84	37.28	54.00	-16.72	Vertical
4884.00	41.32	30.96	6.86	2.47	41.84	39.77	54.00	-14.23	Horizontal
			Te		el: Highest c				
	<u> </u>		<u> </u>		or: Peak Val	ue			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4960.00	47.54	31.11	6.91	2.49	41.87	46.18	74.00	-27.82	Vertical
4960.00	49.20	31.11	6.91	2.49	41.87	47.84	74.00	-26.16	Horizontal
				Detector:	Average Va	alue			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4960.00	39.46	31.11	6.91	2.49	41.87	38.10	54.00	-15.90	Vertical
4960.00	41.27	31.11	6.91	2.49	41.87	39.91	54.00	-14.09	Horizontal
Remark: 1. FinalLe	vel=Receiv	/er Read lev	el + Anteni	na Factor +		+ Aux Factor	– Preamplifie		

2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.



Appendix A - BLE Test Data

Maximum Conducted Output Power

Condition	Mode	Frequency	Antenna	Conducted	Duty	Total	Limit	Verdict
		(MHz)	Power F		Factor	Power	(dBm)	
				(dBm)	(dB)	(dBm)		
NVNT	BLE	2402	Ant1	6.612	0	6.612	30	Pass
NVNT	BLE	2442	Ant1	7.785	0	7.785	30	Pass
NVNT	BLE	2480	Ant1	6.331	0	6.331	30	Pass

Power NVNT BLE 2402MHz Ant1







Power NVNT BLE 2442MHz Ant1

Power NVNT BLE 2480MHz Ant1



-6dB Bandwidth

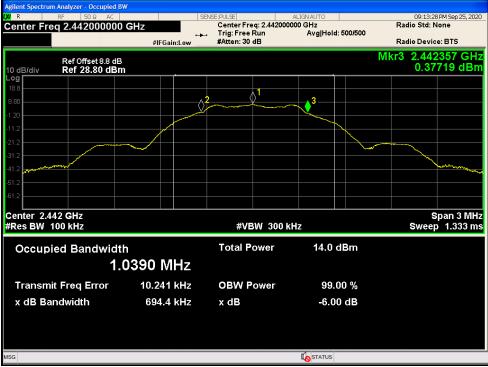
Condition	Mode	Frequency	Antenna	-6 dB Bandwidth	Limit -6 dB	Verdict
		(MHz)		(MHz)	Bandwidth (MHz)	
NVNT	BLE	2402	Ant1	0.681	0.5	Pass
NVNT	BLE	2442	Ant1	0.694	0.5	Pass
NVNT	BLE	2480	Ant1	0.695	0.5	Pass



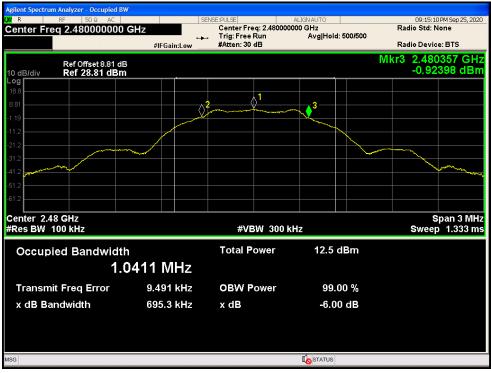


-6dB Bandwidth NVNT BLE 2402MHz Ant1

-6dB Bandwidth NVNT BLE 2442MHz Ant1







-6dB Bandwidth NVNT BLE 2480MHz Ant1

Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	BLE	2402	Ant1	1.03175256
NVNT	BLE	2442	Ant1	1.036450585
NVNT	BLE	2480	Ant1	1.033324517

OBW NVNT BLE 2402MHz Ant1







OBW NVNT BLE 2442MHz Ant1

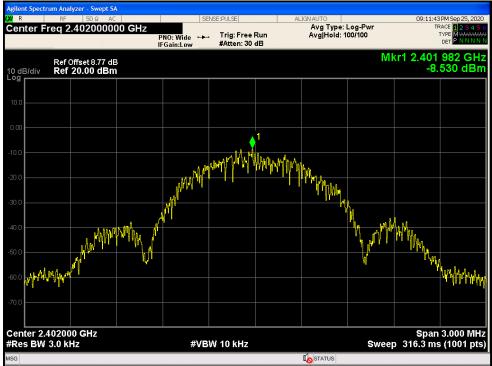
OBW NVNT BLE 2480MHz Ant1



Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm)	Limit (dBm)	Verdict
NVNT	BLE	2402	Ant1	-8.53	8	Pass
NVNT	BLE	2442	Ant1	-7.259	8	Pass
NVNT	BLE	2480	Ant1	-8.713	8	Pass





PSD NVNT BLE 2402MHz Ant1

PSD NVNT BLE 2442MHz Ant1





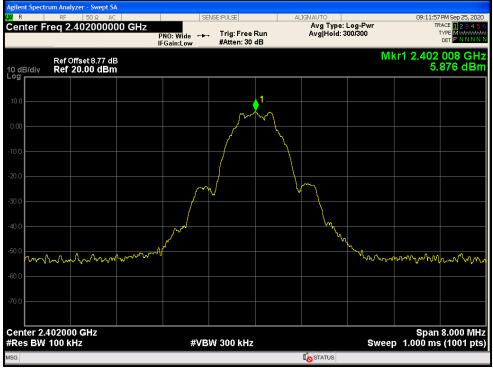


PSD NVNT BLE 2480MHz Ant1

Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE	2402	Ant1	-55.57	-20	Pass
NVNT	BLE	2480	Ant1	-55.91	-20	Pass

Band Edge NVNT BLE 2402MHz Ant1 Ref

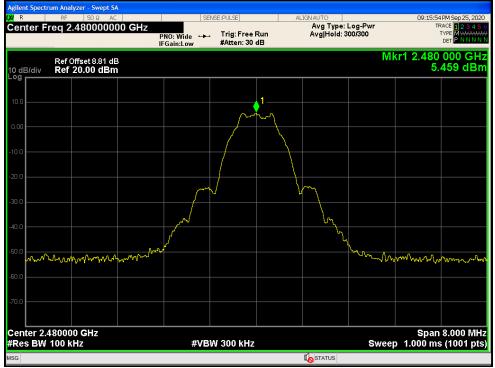




R	n Analyzer - Swe RF 50 Ω		SENSE:F		ALIGNAUTO		00:12:0	3 PM Sep 25, 202
	q 2.35600	0000 GHz	NO:East ++ 1	rig: Free Run Atten: 30 dB	Avg Ty	pe: Log-Pwr d: 300/300		RACE 12345 TYPE MWWW DET PNNNN
dB/div	Ref Offset 8.7 Ref 20.00 d						Mkr1 2.4 5.	02 3 GH 684 dBr
								1
0								<u> </u>
								-14.120
•		4					A 3	
milihand	/www.wander/jou	all and a second	- manharan	เป็นหารระระจาก	wannahananahana	habethan	an antiperformation	America 1
art 2.306 es BW 1			#VBW 3	300 kHz		Swee	stop 2. p 9.600 ms	40600 GH s (1001 pt
N 1	SCL f	× 2.402 3 GHz	۲ 5.684 dBı	FUNCTION	FUNCTION WIDTH		FUNCTION VALUE	
N 1	f	2.402 3 GHz 2.400 0 GHz 2.390 0 GHz	-51.448 dBr -53.186 dBr	n				
N 1	f	2.325 6 GHz	-49.699 dBr					

Band Edge NVNT BLE 2402MHz Ant1 Emission

Band Edge NVNT BLE 2480MHz Ant1 Ref





Agilent Spectrum Analyzer - Swept SA					
	SENSE:PUL	SE	ALIGN AUTO Avg Type: L		:00 PM Sep 25, 2020 TRACE 1 2 3 4 5 6
Center Freq 2.526000000 GHz		j: Free Run :en: 30 dB	Avg Hold: 30		
Ref Offset 8.81 dB				Mkr1 2.	479 8 GHz 5.537 dBm
10 dB/div Ref 20.00 dBm				`	
10.0					
0.00					
-10.0					-14.54 dBm
-20.0					-14.54 (4511)
-30.0					
-40.0					
-50.0 Can and a star	๛ ฿ฺ๚๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛	Low programmed with	Mar Taylor and an and a star of the	when the second when the	ml, manufacture and many prase
-60.0					
-70.0					_
Start 2.47600 GHz				Ston	2.57600 GHz
#Res BW 100 kHz	#VBW 30	0 kHz		Sweep 9.600 r	ns (1001 pts)
MKR MODE TRC SCL X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	· · · · · · · · · · · · · · · · · · ·
1 N 1 f 2.4798 GH					
3 N 1 f 2.500 0 GH	z -52.995 dBm				
4 N 1 f 2.484 1 GH	z -50.459 dBm				
6					
8					
9					
11					~
<			1		>
MSG			I STATUS		

Band Edge NVNT BLE 2480MHz Ant1 Emission

Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE	2402	Ant1	-43.67	-20	Pass
NVNT	BLE	2442	Ant1	-43.79	-20	Pass
NVNT	BLE	2480	Ant1	-42.8	-20	Pass

Tx. Spurious NVNT BLE 2402MHz Ant1 Ref





KU R	RF	lyzer - Swept SA 50 Ω AC 2.5150000	000 GHz	PNO: Fast ↔		Free Run		.IGN AUTO Avg Type Avg Hold:	: Log-Pwr 10/10		36 PM Sep 25, 2020 TRACE 1 2 3 4 5 TYPE MWWWWW DET P N N N N
10 dB/div		Offset 8.77 dE 20.00 dBm	3	Gain:Low	#Atte	n: 30 dB					2.402 GHz .593 dBm
10.0 0.00		1									
20.0 30.0											-14.33 dBr
40.0 50.0	and the second	mat ha Marana	34	5	yaan tarafi ka a	an martine	and a start and	a some the second and a second se	and a state of the	and the state of t	Constant Constant of Constant
70.0	Hz									Sto	o 25.00 GH
Res BW		Hz		#VB	W 300	kHz			Sv	veep 2.386	s (1001 pts
IKR MODE TR 1 N 1 2 N 1 3 N 1 4 N 1 5 N 1	C SCL f f f f	>	2.402 GHz 24.750 GHz 4.999 GHz 7.047 GHz 9.494 GHz	-38.007 -48.428 -48.046	dBm dBm dBm	FUNCTIO	N FUNC	TION WIDTH		FUNCTION VALUE	
6 7 8 9 0											
G								STATUS			>

Tx. Spurious NVNT BLE 2402MHz Ant1 Emission

Tx. Spurious NVNT BLE 2442MHz Ant1 Ref





Agilent Spectrum Analyzer - Swept SA	SENSE:PULSE	ALIGN AUTO	09:14:40 PM Sep 25, 2020
Center Freq 12.515000000 GHz	PNO: Fast +++ Trig: Free Run IFGain:Low #Atten: 30 dB	Avg Type: Log-Pwr Avg Hold: 10/10	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P N N N N N
Ref Offset 8.8 dB 10 dB/div Ref 20.00 dBm			Mkr1 2.452 GHz 5.583 dBm
-10.0			-13.00 dDm
-20.0			2
-40.0 -50.0	4 5 mm and more and	al with the property of the second	ward and a second and a second and
-60.0			
Start 30 MHz #Res BW 100 kHz	#VBW 300 kHz	Sw	Stop 25.00 GHz eep 2.386 s (1001 pts)
MKR MODE TRC SCL X 1 N 1 f 2.452 GH 2 N 1 f 24.925 GH		FUNCTION WIDTH	UNCTION VALUE
2 N 1 F 24.923 GH 3 N 1 F 4.774 GH 4 N 1 F 7.471 GH 5 N 1 F 9.569 GH	z -47.495 dBm z -48.829 dBm		=
9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9			
MSG		STATUS	

Tx. Spurious NVNT BLE 2442MHz Ant1 Emission

Tx. Spurious NVNT BLE 2480MHz Ant1 Ref





Agilent Spectrum Analyzer - Swept SA	SENSE:PULS	7 I I I	ALIGN AUTO	09:16:34 PM Sep (2E 2020
Center Freq 12.515000000 GH	PN0:East →→ Trig	: Free Run en: 30 dB	Avg Type: Log-Pwr Avg Hold: 10/10	TRACE	23456
Ref Offset 8.81 dB 10 dB/div Ref 20.00 dBm				Mkr1 2.477 4.134	
-10.0					4.52 dBm
-20.0					- 8
-40.0 -50.0	4 5 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	and the state of t	and and the second state of the second state o	Adapted of the state of the sta	- Andrew Mark
-60.0					_
Start 30 MHz Stop 25.00 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.386 s (1001 pts)					
MKR MODE TRC SCL X	Y Hz 4.134 dBm	FUNCTION FUN	CTION WIDTH	FUNCTION VALUE	^
2 N 1 f 24.700 3 N 1 f 24.949 4 N 1 f 7.421 5 N 1 f 10.018	Hz -37.322 dBm Hz -48.407 dBm Hz -48.237 dBm				
6 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9					
10 11 11					>
MSG			STATUS		

Tx. Spurious NVNT BLE 2480MHz Ant1 Emission

-----End of report-----