

Report No: CCISE191005207V01

# FCC REPORT

Applicant:	Shenzhen Youmi Intelligent Technology Co., Ltd.	
Address of Applicant:	406-407 Jinqi Zhigu Building, 4/F, 1 Tangling Road, Nanshan District, Shenzhen City, China	
Equipment Under Test (E	EUT)	
Product Name:	Smart phone	
Model No.:	F2, F2 GT, Power 3, Power GT, S5 Pro, UMIDIGI X Pro	
Trade mark:	UMIDIGI	
FCC ID:	2ATZ4F2	
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.225	
Date of sample receipt:	18 Oct., 2019	
Date of Test:	18 Oct., to 27 Nov., 2019	
Date of report issue:	27 Nov., 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 theCCISproduct 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	18 Nov., 2019	Original
01	27 Nov., 2019	Retest Field Strength and Radiated Emission

Tested by:

*Qovery* (hen Date: Test Engineer Winner Mang Date:

27 Nov., 2019

Reviewed by:

27 Nov., 2019

**Project Engineer** 



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# 4 Test Summary

Test Item	Section in CFR 47	Result	
Antenna requirement	15.203	Pass	
Field strength of the fundamental signal	15.225 (a)	Pass	
Spurious emissions	15.225(d)& 15.209	Pass	
20dB Bandwidth	15.215(c)	Pass	
Frequency tolerance	15.225 (e)	Pass	
Conducted Emission 15.207 Pass			
Remark: 1. Pass: The EUT complies with the essential requirements in the standard. 2. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by			

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

Test Method:	ANSI C63.4-2014
Test Welliou.	ANSI C63.10-2013



# 5 General Information

### 5.1 Client Information

Applicant:	Shenzhen Youmi Intelligent Technology Co., Ltd.	
Address:	406-407 Jinqi Zhigu Building, 4/F, 1 Tangling Road, Nanshan District, Shenzhen City, China	
Manufacturer:	Shenzhen Youmi Electronic Digital Co., Ltd.	
Address:	406-407 Jinqi Zhigu Building, 4/F, 1 Tangling Road, Nanshan District, Shenzhen City, China	

### 5.2 General Description of E.U.T.

Product Name:	Smart phone
Model No.:	F2, F2 GT, Power 3, Power GT, S5 Pro, UMIDIGI X Pro
Operation Frequency:	13.56MHz
Channel numbers:	1
Modulation type:	ASK
Antenna Type:	Induction Coil Antenna
Power supply:	Rechargeable Li-polymer Battery DC3.85V-5150mAh
AC adapter:	Model: HJ-FC010K7-US
	Input: AC100-240V, 50/60Hz, 0.6A
	Output: DC 5.0V, 2A
	DC 9.0V, 2A
	DC 12.0V, 1.5A
Remark:	Model No.: F2, F2 GT, Power 3, Power GT, S5 Pro, UMIDIGI X Pro were
	identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name.
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

### 5.3 Test mode

Transmitting mode:	Keep the EUT in transmitting mode with modulation		
		gg	
Pre-Test Mode:			
CCIS has verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:			
Axis	Х	Y	Z
Field Strength(dBuV/m)	59.60	56.82	55.39
Final Test Mode:			
According to ANSI C63.4 standards, the test results are both the "worst case" and "worst setup": Y axis (see the test setup photo).			

# 5.4 Description of Support Units

N/A

# 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)





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

### 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: <u>http://www.ccis-cb.com</u>



# 5.9 Test Instrumentslist

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-18-2019	03-17-2020
Biconical Antenna	SCHWARZBECK	VUBA9117	359	06-22-2017	06-21-2020
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
Loop Antenna	SCHWARZBECK	FMZB 1519 B	00044	03-18-2019	03-17-2020
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	hwarz FSP40	100363	11-21-2018	11-20-2019
Spectrum analyzer	Ronde & Schwarz	F3F40		11-21-2019	11-20-2020
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-18-2019	03-17-2020
Signal Generator	Rohde & Schwarz	SMX	835454/016	03-18-2019	03-17-2020
Signal Generator	R&S	SMR20	1008100050	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

Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date	Cal.Due date
	Manulacturer	Woder No.		(mm-dd-yy)	(mm-dd-yy)
Shielding Room	ZhongShuo Electron	11.0(L)x4.0(W)x3.0(H)	CCIS0061	07-22-2017	07-21-2020
EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	03-18-2019	03-17-2020
LISN	CHASE	MN2050D	CCIS0074	03-18-2019	03-17-2020
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2018	07-20-2021
Coaxial Cable	CCIS	N/A	CCIS0086	03-18-2019	03-17-2020
EMI Test Software	AUDIX	E3	Version: 6.110919b		



# 6 Test results and Measurement Data

### 6.1 Antenna requirement

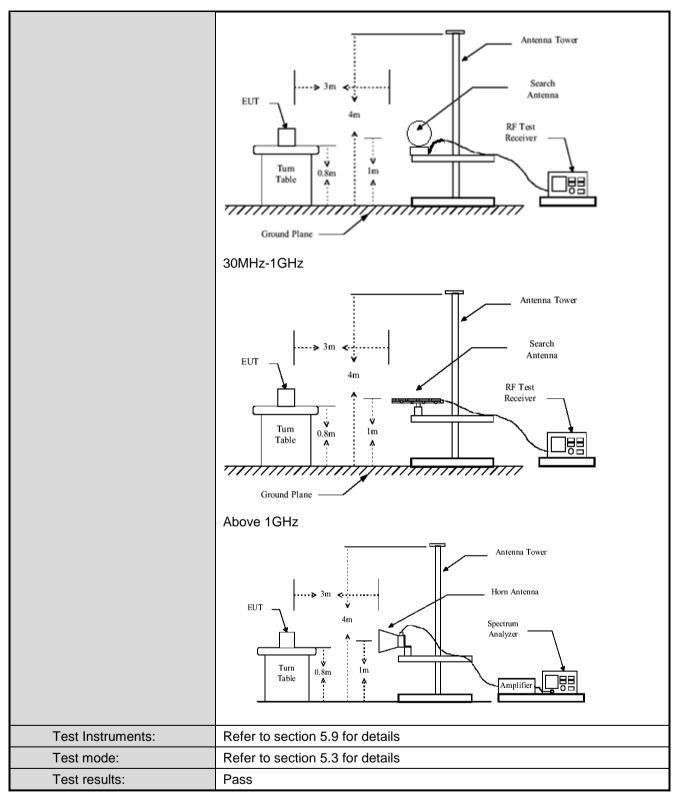
Standard requirement:	FCC Part15 C Section 15.203
responsible party shall be us antenna that uses a unique c	be designed to ensure that no antenna other than that furnished by the sed with the device. The use of a permanently attached antenna or of an soupling to the intentional radiator, the manufacturer may design the unit so a replaced by the user, but the use of a standard antenna jack or electrical
E.U.T Antenna:	
The EUT make use of an Inde	uction coil antenna.
	I E Doorsty ANT



### 6.2 Radiated Emission

TestFrequencyRange:         9 kHz to 1000MHz           Test site:         Measurement Distance: 3m(Semi-Anechoic Chamber)           Receiver setup:         9kHz-150kHz         Quasi-peak         200Hz         600Hz         Quasi-peak Value           150kHz-30MHz         Quasi-peak         200Hz         600Hz         Quasi-peak Value         30kHz         Quasi-peak Value           150kHz-30MHz         Quasi-peak         10kHz         30kHz         Quasi-peak Value         Above 10Hz         Peak Value           150kHz-30MHz         Quasi-peak         10kHz         30KHz         Quasi-peak Value         Above 10Hz         Quasi-peak Value           13.553MHz-31.557MHz         15848         124.0         13.557MHz-13.557MHz         106         80.5           13.110MHz-14.3410MHz         106         80.5         Remark:         Per FCC part 15.31, when performing measurements at a distance which is closer than specified, the field strength results shall be extrapolated to the specified distance by using the square of an inverse linear distance defined in §15.3(th) of this part.           Limit:         (Spurious Emissions)         Per FCC part 15.31, when performing measurements at a distance defined in §15.3(th) of this part.           Quadification         17.05-30         30         30         30           17.05-30         30         30         30	Test Requirement:	FCC Part15 C S	Section 15	5.225	(a) and 15.209				
Receiver setup:         Frequency         Detector         RBW         VBW         Remark 000Hz           SkHz-150Htz         Quasi-peak         200Hz         600Hz         Quasi-peak Value           150Htz-30MHz         Quasi-peak         120kHz         Quasi-peak Value           200Hz         GHz         Quasi-peak         120kHz         Quasi-peak Value           Limit:         Frequency         Limit (UV/n @ 300htz         Quasi-peak Value           13.653MHz-13.557MHz         15849         124.0           13.10MHz-13.557MHz         334         90.5           13.10MHz-13.571MHz         334         90.5           13.10MHz-13.571MHz         106         80.5           Remark:         Per FCC part 15.3, when performing measurements at a distance which is closer than specified, the field strength results shall be extrapolated to the specified distance by using the square of an inverse linear distance defined in §15.3/th) of this part.           Limit:         Frequency (MHz)         Limit (U/m @ 3m)         Distance (m)           (Spurious Emissions)         0.009-0.490         2400/F(kHz)         30           0.4090-1705         24000/F(kHz)         30         3           17.05-30         30         3         3           216-960         200         3	TestFrequencyRange:	9 kHz to 1000M	Hz						
9kHz-150kHz         Quasi-peak         200Hz         600Hz         Quasi-peak Value           300Hz         Quasi-peak         9kHz         300Hz         Quasi-peak Value         Quasi-peak Value           300Hz         Clussi-peak         120kHz         300Hz         Quasi-peak Value           Above 1GHz         Peak         1MHz         300Hz         Quasi-peak Value           (Field strength of the fundamental signal)         13.553MHz 43.567MHz         1334         90.5           13.553MHz-13.5677MHz         334         90.5         13.70MHz-13.00MHz         106         80.5           Remark:         Per FCC part 15.31, when performing measurements at a distance which is closer than specified, the field strength results shall be extrapolated to the specified distance by using the square of an inverse linear distance which is closer than specified, the field strength results shall be extrapolated to the specified distance by using the square of an inverse linear distance which is closer than specified, the field strength results shall be ware strapolated to the specified distance by using the square of an inverse linear distance which is closer than specified, the field strength results shall be ware strapolation factor (i.e., 40 dB/dceade) in conjunction with the slant-range distance defined in §15.3(ht) of this part.           Limit:         Frequency (MHz)         Limit (uV/m @3m)         Distance (m)           (Spurious Emissions)         Test Procedure:         Frequency (MHz)         2000F(kHz	Test site:	Measurement D	istance: 3	3m(S	emi-Anechoic	Charr	nber)		
Isolation         Isolation         Isolation         Isolation           150kHz:30kHz         Quasi-peak         120kHz         300kHz         Quasi-peak         Value           200Hz:16Hz         Quasi-peak         120kHz         300kHz         Quasi-peak         Value           (Field strength of the fundamental signal)         13.653MHz:13.567MHz         15848         124.0         13.410MHz:13.553MHz         334         90.5           13.10MHz:14.010MHz         106         80.5         13.710MHz:14.010MHz         106         80.5           13.110MHz:14.010MHz         106         80.5         13.710MHz:14.010MHz         106         80.5           13.110MHz:14.010MHz         106         80.5         13.710MHz:14.010MHz         106         80.5           13.110MHz:14.010MHz         106         80.5         13.710MHz:14.010MHz         10.6         10.705.70           13.110MHz:14.010MHz         10.0         30         30         30         30         30           13.110MHz:14.010MHz         10.0         13.70         2400/F(KHz)         300         30         30         30           13.100Mz:13.410MZ         10.0         3         30         30         30         30         30         30 <t< td=""><td>Receiver setup:</td><td colspan="2">Frequency Detect</td><td>or</td><td>RBW</td><td>V</td><td>BW</td><td>Remark</td></t<>	Receiver setup:	Frequency Detect		or	RBW	V	BW	Remark	
30MHz-1GHz         Quasi-peak         120kHz         300KHz         Quasi-peak Value Above 1GHz         Peak         11Mtz         3MHz         Peak Value           Limit         Frequency         Limit (UV/m @ 30m)		9kHz-150kHz	eak	200Hz	60	0Hz	Quasi-peak Value		
Above 1GHz         Peak         IMHz         3MHz         Peak Value           Limit (Field strength of the fundamental signal)         13.553MHz-13.557MHz & 1584         124.0         13.453MHz-13.557MHz & 1344         90.5           13.110MHz-13.553MHz & 134         90.5         13.110MHz-13.310MHz & 106         80.5           13.110MHz-13.310MHz & 106         80.5         80.5           Remark:         Per FCC part 15.31, when performing measurements at a distance which is closer than specified, the field strength results shall be extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance defined in §15.3(hh) of this part.           Limit:         Frequency (MHz)         Limit (UV/m @3m)         Distance (m)           (Spurious Emissions)         0.490-1.705         24000F(kHz)         30           0.490-1.705         24000F(kHz)         30         30           17.05-30         30         30         30           216-960         200         3         216-960         3           216-960         200         3         3         216-960         3           216-960         200         3         3         216-960         3           216-960         200         3         3         216-960         3           216-960         200<		150kHz-30MHz Quasi-p		eak	9kHz	30	)kHz	Quasi-peak Value	
Limit: (Field strength of the fundamental signal)         Frequency         Limit (uV/m @30m)         Limit (dBuV/m @3m)           13.557MHz-13.567MHz         15848         124.0           13.557MHz-13.567MHz         334         90.5           13.567MHz-13.710MHz         334         90.5           13.567MHz-13.710MHz         106         80.5           13.577MHz-13.710MHz/14.010MHz         106         80.5           13.710MHz-14.010MHz         106         80.5           13.710MHz-14.010MHz         106         80.5           13.710MHz-14.010MHz         106         80.5           Remark:         Per FCC part 15.31, when performing measurements at a distance which is closer than specified, the field strength results shall be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance defined in §15.3(ht) of this part.           Limit:         Frequency (MHz)         Limit (W/m @3m)         Distance (m)           (Spurious Emissions)         0.009-0.490         24000F(kHz)         300           0.490-1.705         24000F(kHz)         30         30           30-98         100         3         32           216-960         200         3         3           30-98         1000		30MHz-1GHz	Quasi-p	eak	120kHz	300	OKHz	Quasi-peak Value	
(Field strength of the fundamental signal)       13.553MHz-13.567MHz       15848       124.0         13.410MHz-13.533MHz & 334       90.5         13.10MHz-13.70MHz & 106       80.5         13.110MHz-13.410MHz & 106       80.5         Remark:       Per FCC part 15.31, when performing measurements at a distance which is closer than specified, the field strength results shall be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance defined in §15.3(th) of this part.         Limit:       Frequency (MHz)       Limit (uV/m @3m)       Distance (m)         (Spurious Emissions)       0.490-1.705       24000F(kHz)       300         0.490-1.705       24000F(kHz)       300       30         30-88       100       3       34         216-960       200       3       30         30-88       100       3       36         216-960       200       3       30       30         30-88       100       3       36       32         216-960       200       3       30       30       30         30-88       100       3       36       32       36       32       36       32       36       32       36		Above 1GHz	Peak	(	1MHz	31	ИНz	Peak Value	
fundamental signal)       13.410MHz-13.553MHz & 334       90.5         13.567MHz-13.710MHz       106       80.5         Remark:       Per FCC part 15.31, when performing measurements at a distance which is closer than specified, the field strength results shall be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (i.e., 40 dB/dcade) in conjunction with the slant-range distance defined in §15.3(h) of this part.         Limit:       Frequency (MHz)       Limit (uV/m @3m)       Distance (m)         (Spurious Emissions)       0.009-0.490       2400/F(kHz)       300         0.009-0.490       24000/F(kHz)       300       30         1.706-30       30       30       30         216-960       200       3       216-960       200         216-960       200       3       30       36         360 degrees todetermine the position of the highest radiation.       The EUT was set 3 meters saway from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.       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.         0. The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode.       The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode	Limit:					Lim	it (dBuV/m @3m)		
fundamental signal)     13.410MHz-13.553MHz & 334     90.5       13.110MHz-13.710MHz & 106     80.5       13.110MHz-13.410MHz & 106     80.5       Remark:     Per FCC part 15.31, when performing measurements at a distance which is closer than specified, the field strength results shall be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance defined in §15.3(ht) of this part.       Limit:     Frequency (MHz)     Limit (uV/m @3m)     Distance (m)       (Spurious Emissions)     0.009-0.490     2400/F(kHz)     30       0.490-1.705     24000/F(kHz)     30       1.705-30     30     30       3.0+88     100     3       88-216     150     3       216-960     200     3       Above 1GHz     500     4       Above 1GHz	(Field strength of the	13.553MHz-13.5	67MHz		15848			124.0	
13.567/Mtz-13.710Mtz         3.54         90.3           13.110Mtz-13.410Mtz & 13.710Mtz-14.010Mtz         106         80.5           Remark: Per FCC part 15.31, when performing measurements at a distance which is closer than specified, the field strength results shall be extrapolated to the specified distance by using the square of an inverse linear distance defined in §15.3(ht) of this part.           Limit: (Spurious Emissions)         Frequency (MHz)         Limit (uV/m @3m)         Distance (m)           0.009-0.490         2400/F(kHz)         30         30           3.0-88         100         3         3           1.705-30         30         30         30           3.0-88         100         3         3           216-960         200         3         3           216-960         200         3         3           216-960         200         3         3           216-960         200         3         3           216-960         200         3         3           3.0         The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.           b. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.		13.410MHz-13.55	3MHz &		224			00 F	
13.710MHz-14.010MHz         106         80.5           Remark:         Per FCC part 15.31, when performing measurements at a distance which is closer than specified, the field strength results shall be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance defined in \$15.3(th) of this part.           Limit:         Frequency (MHz)         Limit (UV/m @3m)         Distance (m)           (Spurious Emissions)         0.090-0.490         2400/F(kHz)         300           0.490-1.705         240000/F(kHz)         30         30           30-88         100         3         3           216-960         200         3         3           216-960         200         3         3           216-960         200         3         3           210 Test Procedure:         a. The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter semi-anechoic camber. The table was rotated 360 degrees todetermine the position of the highest radiation.           b. The EUT was placed on the top of a variable-height antenna tower.         b. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.           c. 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	Ç,	13.567MHz-13.7	10MHz		334			90.5	
13.7/DMH2-14.010MH2		13.110MHz-13.41	0MHz &		100			00 F	
Per FCC part 15.31, when performing measurements at a distance which is closer than specified, the field strength results shall be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance defined in §15.3(hh) of this part.           Limit: (Spurious Emissions)         Frequency (MHz)         Limit (uV/m @3m)         Distance (m)           0.009-0.490         2400/F(kHz)         300         30         30           1.705-30         30         30         30         30           30-688         100         3         3         32 <t< td=""><td></td><td>13.710MHz-14.0</td><td>10MHz</td><td></td><td>106</td><td></td><td></td><td>60.5</td></t<>		13.710MHz-14.0	10MHz		106			60.5	
than specified, the field strength results shall be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) for the polarization factor (i.e., 40 dB/decade) for the strapolation factor (i.e., 40 dB/decade) for the strapolated factor (i.e., 40 dB/decade) factor (i.e., 40 dB/decade) for the extrapolated factor (i.e., 40 dB/decade) factor factor (i.e., 40 dB/decade) factor (i.e., 40		Remark:							
than specified, the field strength results shall be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance extrapolation factor (i.e., 40 dB/decade) for the polarization factor (i.e., 40 dB/decade) for the strapolation factor (i.e., 40 dB/decade) for the strapolated factor (i.e., 40 dB/decade) factor (i.e., 40 dB/decade) for the extrapolated factor (i.e., 40 dB/decade) factor factor (i.e., 40 dB/decade) factor (i.e., 40		Per FCC part 15.3	31, when p	perforr	ming measureme	ents at	t a dista	nce which is closer	
distance by using the square of an inverse linear distance extrapolation factor (i.e., 40 dB/decade) in conjunction with the slant-range distance defined in §15.3(hh) of this part.         Limit:       Frequency (MHz)       Limit (UV/m @3m)       Distance (m)         (Spurious Emissions)					-				
40 dB/decade) in conjunction with the slant-range distance defined in §15.3(hh) of this part.         Limit: (Spurious Emissions)       Frequency (MHz)       Limit (uV/m @3m)       Distance (m)         0.009-0.490       2400/F(kHz)       300         0.490-1.705       24000/F(kHz)       30         1.705-30       30       30         30-88       100       3         216-960       200       3         216-960       200       3         Above 1GHz       50       3         8. The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter semi-anechoic camber. The table was rotated 360 degrees todetermine the position of the highest radiation.         b. The EUT was placed on the top of a variable-height antenna tower.       C. The antenna height is varied from one meter to four meters above the ground to a determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.         d. 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 rotatabletable was turned from 0 degrees to 360 degrees to find the maximum reading.         e. The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mdce.         f. If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwi				-		-		-	
this part.         Limit:       Frequency (MHz)       Limit (uV/m @3m)       Distance (m)         (Spurious Emissions)       0.009-0.490       2400/F(kHz)       300         0.490-1.705       24000/F(kHz)       30         1.705-30       30       30         30-88       100       3         88-216       150       3         216-960       200       3         Above 1GHz       500       3         Above 1GHz       500       3         Could a meter semi-anechoic camber. The table was rotated 360 degrees todetermine the position of the highest radiation.       b.         The EUT was placed on the top of a variable 0.8 meters above the groundat a 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.         C. 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.         d. For each suspected emission, the EUT was arranged to its worst case and therotabelabelabe was turned from 0 degrees to 360 degrees to find the maximum reading.         e. The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode.         f. If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EU									
(Spurious Emissions)       0.009-0.490       2400/F(kHz)       300         0.490-1.705       24000/F(kHz)       30         1.705-30       30       30         30-88       100       3         88-216       150       3         216-960       200       3         Above 1GHz       500       3         Above 1GHz       500       3         Constant a 3 meter semi-anechoic camber. The table was rotated 360 degrees todetermine the position of the highest radiation.       b.         b. The EUT was placed on the top of a variable-height antenna tower.       c.       The antenna height is varied from one meter to four meters above the ground ta 3 meter sature 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.         c. The antenna height is varied from 0 degrees to 360 degrees to find the maximum reading.       e. The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode.         f. If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwise the emissions that did not have 10dB margin would bere-tested one by one using peak, quasi-peak or average method as specified andthen reported in a data sheet.		this part.							
0.490-1.705       24000/F(kHz)       30         1.705-30       30       30         30-88       100       3         88-216       150       3         216-960       200       3         Above 1GHz       500       3         a.       The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter semi-anechoic camber. The table was rotated 360 degrees todetermine the position of the highest radiation.         b.       The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.         c.       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.         d.       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 rotatabletable was turned from 0 degrees to 360 degrees to find the maximum reading.         e.       The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode.         f.       If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwise the emissions that did not have 10dB margin would bere-tested one by one using peak, quasipeak or average method as specified andthen reported in a data sheet.	Limit:	Frequency (N	IHz)	L	.imit (uV/m @3m	ı)		Distance (m)	
0.490-1.705         24000/F(kHz)         30           1.705-30         30         30           30-88         100         3           88-216         150         3           216-960         200         3           Above 1GHz         500         3           6.         The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.           b.         The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.           c.         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.           d.         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 rotatabletable was turned from 0 degrees to 360 degrees to find the maximum reading.           e.         The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode.           f.         If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwise the emissions that did not have 10dB margin would bere-tested one by one using peak, quasipeak or average method as specified andthen reported	(Spurious Emissions)	0.009-0.49	0		2400/F(kHz)		300		
30-88       100       3         88-216       150       3         216-960       200       3         Above 1GHz       500       3         a.       The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter semi-anechoic camber. The table was rotated 360 degrees todetermine the position of the highest radiation.         b.       The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.         c.       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.         d.       For each suspected emission, the EUT was arranged to its worst case and thenthe antenna was tuned to heights from 1 meter to 4 meters and the rotatabletable was turned from 0 degrees to 360 degrees to find the maximum reading.         e.       The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode.         f.       If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwise the emissions that did not have 10dB margin would bere-tested one by one using peak, quasi- peak or average method as specified andthen reported in a data sheet.	(0) 4.10 40 2.1.100.01.0)	0.490-1.70	24000/F(kHz)			30			
88-216         150         3           216-960         200         3           Above 1GHz         500         3           Test Procedure:         a. The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter semi-anechoic camber. The table was rotated 360 degrees todetermine the position of the highest radiation.           b. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.           c. 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.           d. For each suspected emission, the EUT was arranged to its worst case and thenthe antenna was turned from 0 degrees to 360 degrees to find the maximum reading.           e. The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode.           f. If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, 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 bere-tested one by one using peak, quasi-peak or average method as specified andthen reported in a data sheet.		1.705-30	1.705-30				30		
88-216         150         3           216-960         200         3           Above 1GHz         500         3           Test Procedure:         a. The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter semi-anechoic camber. The table was rotated 360 degrees todetermine the position of the highest radiation.           b. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.           c. 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.           d. For each suspected emission, the EUT was arranged to its worst case and thenthe antenna was turned from 0 degrees to 360 degrees to find the maximum reading.           e. The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode.           f. If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, 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 bere-tested one by one using peak, quasi-peak or average method as specified andthen reported in a data sheet.		30-88		100		3			
216-960         200         3           Above 1GHz         500         3           Test Procedure:         a. The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter semi-anechoic camber. The table was rotated 360 degrees todetermine the position of the highest radiation.           b. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.         c. 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.           d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was turned from 0 degrees to 360 degrees to find the maximum reading.           e. The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode.           f. If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, 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 bere-tested one by one using peak, quasipeak or average method as specified andthen reported in a data sheet.				150			3		
Test Procedure:       a. The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter semi-anechoic camber. The table was rotated 360 degrees todetermine the position of the highest radiation.         b. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.         c. 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.         d. 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 rotatabletable was turned from 0 degrees to 360 degrees to find the maximum reading.         e. The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode.         f. If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwise the emissions that did not have 10dB margin would bere-tested one by one using peak, quasi-peak or average method as specified andthen reported in a data sheet.		216-960			200		3		
<ul> <li>the groundat a 3 meter semi-anechoic camber. The table was rotated 360 degrees todetermine the position of the highest radiation.</li> <li>b. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower.</li> <li>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li> <li>d. 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 rotatabletable was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>e. The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode.</li> <li>f. If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwise the emissions that did not have 10dB margin would bere-tested one by one using peak, quasipeak or average method as specified andthen reported in a data sheet.</li> </ul>		Above 1GF	lz		500			3	
Testestur	Test Procedure:	<ul> <li>a. The EUT was the grounda 360 degrees</li> <li>b. The EUT was antenna, what tower.</li> <li>c. The antenna ground to de horizontal and therizontal and the rota and thenthe and the rota find the maximum e. The test-rece SpecifiedBa f. If the emission the limitspect of the EUT was have 10dB maximum examples.</li> </ul>	as placed t a 3 met s todeterr as set 3 n ichwas n a height is etermine nd vertica nd vertica nt. spected e antenna tabletable kimum rea eiver sys ndwidth v ion level o cified, the wouldbe i margin we	er se nine f neters nount s vari the m al pola emiss was e was ading tem v with N of the en tes report ould b	ne top of a rota mi-anechoic ca the position of s away from th ted on the top of add from one m naximum value arizations of th sion, the EUT v tuned to heigh s turned from 0 was set to Pea Maximum Hold e EUT in peak r ting could be s ted. Otherwise bere-tested one	amber the hi e inte of a vante of the e ante vas ar ts from degr k Dete mode toppe the e e by c	r. The t ighest r rference ariable o four r e field s enna an rrangeo m 1 me ees to ect Fur e. was 10 ed and mission one usin	8 meters above able was rotated radiation. be-receiving -height antenna meters above the strength. Both re set to make the d to its worst case ster to 4 meters 360 degrees to action and DdB lower than the peak values ns that did not ng peak, quasi-	
	Test setup:								







### Measurement Data:

#### Field Strength of fundamental signal:

Product Name:	P	OS Termi	nal		F	Product M	odel:	IM30	IM30 NFC Tx mode		
Test By:	C	arey			т	Fest mode	:	NFC			
Test Voltage:	ge: AC 120/60Hz		Ηz		E	Environment:		Temp	:24℃ I	- Huni: 57%	
130 Level	(dBuV/m)					1)				<b>T</b> 1	
120								-			
100											
80							1	15.225	POWER LIM	п	
60					1				_		
40					A						
20		m				have	nn	m	m	~	
20											
0 13.11	13.2			13. Fre	5 quency (Mł	H7)			1	4.01	
					quenej (ini						
	Freq	Read/ Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark		
	MHz	dBuV		 3B	<u>d</u> B	dBuV/m	dBuV/m	<u>ab</u>			
1	13.560	33.93	-26.47	0.64	0.00	59.60	124.00	-64.40			



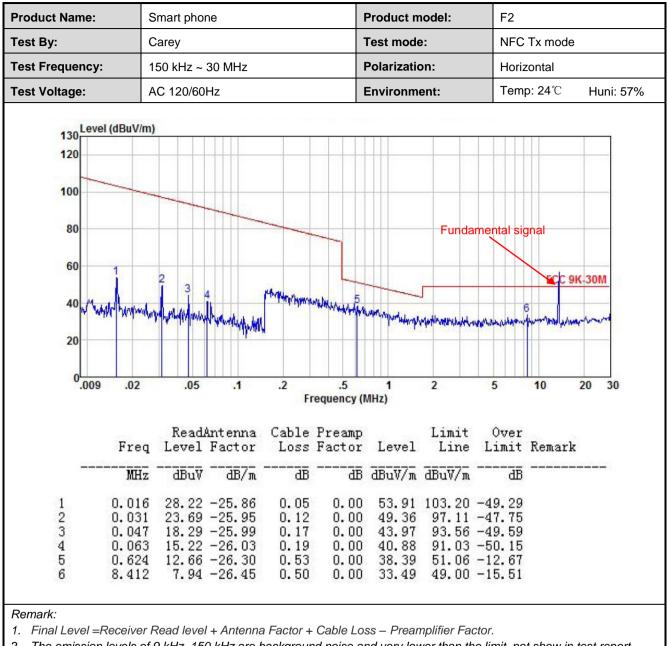
### Spurious Emissions: Test frequency range: 9 kHz- 30 MHz

Product Name:	S	mart phon	e		P	Product model: F2					2	
Fest By:	С	arey			Т	est mode	:	NCF	NCF Tx mode			
Test Frequency:	1:	50 kHz ~ 3	30 MHz		P	olarizatio	n:	Vertic	cal			
Test Voltage:	A	C 120/60H	20/60Hz Environment:			ent:	Temp	<b>: 24</b> ℃	Huni: 8	57%		
130 Level	(dBuV/m)											
120												
120										(-		
-												
100												
80							Fundam	ental sign	nal			
00				_								
601	2.48											
60	1	2							PEC 9K	30M		
		Contract Inc.	45 /	Marine .	L					-30M		
		Contract Inc.	45 /	maniphymau	Newman	6 6						
40 Mal.		Contract Inc.	45 M	mandalidadio	NHOUR AND AND	6 Walnuk, Willing	numer hallen mer	underwarter		-30M		
		Contract Inc.	45	Mandala	NH WHICH HAVE	6 Malayky, WAAPays	ana ang ang ang ang ang ang ang ang ang	underworter				
40 Mal.		Contract Inc.	45 M	Musiciplismation	NHR UM-AN HAVE AND	6 will by the start of a	an a	underwarter				
40 (Myel.) 20	Within	3 Maryddiwywlu							woodnaw	er rander		
40 Mul.		Contract Inc.	45 /	.2	.5	1	monyuphan 2		woodnaw			
40 (Myd.) 20	Within	3 Maryddiwywlu		.2		1			woodnaw	er rander		
40 Mul.	Within	3 Maryddiwywlu		.2	.5	1			woodnaw	er rander		
40 (Myd.) 20	.02	3 444444444444444444444444444444444444	.1 Antenna	.2 Fre Cable	.5 quency (Mi Preamp	1 Hz)	2 Limit	5 Over	10 2	20 30		
40 (Myd.) 20	.02	3 444444444444444444444444444444444444	.1	.2 Fre Cable	.5 quency (Mi Preamp	1 Hz)	2 Limit	5 Over	10 2	20 30		
40 Mul.	.02 Freq	3 .05 Read/ Level	.1 Antenna Factor	.2 Fre Cable Loss	.5 quency (Mi Preamp Factor	1 Hz) Level	2 Limit Line	5 Over Limit	10 2 Remark	20 30		
40 (Myd.) 20	.02	3 .05 Read/ Level	.1 Antenna	.2 Fre Cable	.5 quency (Mi Preamp Factor	1 Hz)	2 Limit Line	5 Over	10 2 Remark	20 30		
40 20 0.009	.02 Freq MHz	3 .05 Read/ Level dBuV	.1 Antenna Factor dB/m	.2 Fre Cable Loss dB	.5 quency (Mł Preamp Factor dB	1 Hz) Level dBuV/m	2 Limit Line dBuV/m	5 Over Limit dB	10 2 Remari	20 30		
40 20 0.009	.02 Freq MHz 0.016	.05 Read/ Level dBuV 26.20	.1 Antenna Factor 	.2 Fre Cable Loss dB 0.05	.5 quency (Mi Preamp Factor dB 0.00	1 Hz) Level dBuV/m 51.89	2 Limit Line dBuV/m 103.17	5 Over Limit -51.28	10 2 Remari	20 30		
40 20 0.009	.02 Freq 0.016 0.031	3 .05 Read/ Level dBuV 26.20 24.23	.1 Antenna Factor 	.2 Fre Cable Loss dB 0.05 0.12	.5 quency (MH Preamp Factor dB 0.00 0.00	1 Hz) Level dBuV/m 51.89 49.90	2 Limit Line dBuV/m 103.17 97.11	5 Over Limit -51.28 -47.21	10 2 Remari	20 30		
40 20 0.009	.02 Freq 0.016 0.031 0.047	3 .05 Read/ Level dBuV 26.20 24.23 14.91	.1 Antenna Factor -25.86 -25.95 -25.99	.2 Fre Cable Loss dB 0.05 0.12 0.17	.5 quency (MH Preamp Factor  dB 0.00 0.00 0.00 0.00	1 Hz) Level dBuV/m 51.89 49.90 40.59	2 Limit Line dBuV/m 103.17 97.11 93.56	5 Over Limit -51.28 -47.21 -52.97	10 2 Remari	20 30		
40 20 0.009	.02 .02 Freq .016 0.016 0.031 0.047 0.109	3 .05 Read/ Level dBuV 26.20 24.23 14.91 12.82	.1 Antenna Factor -25.86 -25.95 -25.99 -26.11	.2 Fre Cable Loss dB 0.05 0.12 0.17 0.20	.5 quency (MH Factor 	1 Hz) Level dBuV/m 51.89 49.90 40.59 38.41	2 Limit Line dBuV/m 103.17 97.11 93.56 86.12	5 Over Limit -51.28 -47.21 -52.97 -47.71	10 2 Remari	20 30		
40 20 0.009	.02 Freq 0.016 0.031 0.047	3 .05 Read/ Level dBuV 26.20 24.23 14.91 12.82 11.94	.1 Antenna Factor -25.86 -25.95 -25.99	.2 Fre Cable Loss dB 0.05 0.12 0.17	.5 quency (MH Preamp Factor  dB 0.00 0.00 0.00 0.00	1 Hz) Level dBuV/m 51.89 49.90 40.59 38.41 37.54	2 Limit Line dBuV/m 103.17 97.11 93.56 86.12 84.94	5 Over Limit -51.28 -47.21 -52.97	10 2 Remari	20 30		

2. The emission levels of 9 kHz~150 kHz are background noise and very lower than the limit, not show in test report.







The emission levels of 9 kHz~150 kHz are background noise and very lower than the limit, not show in test report. 2

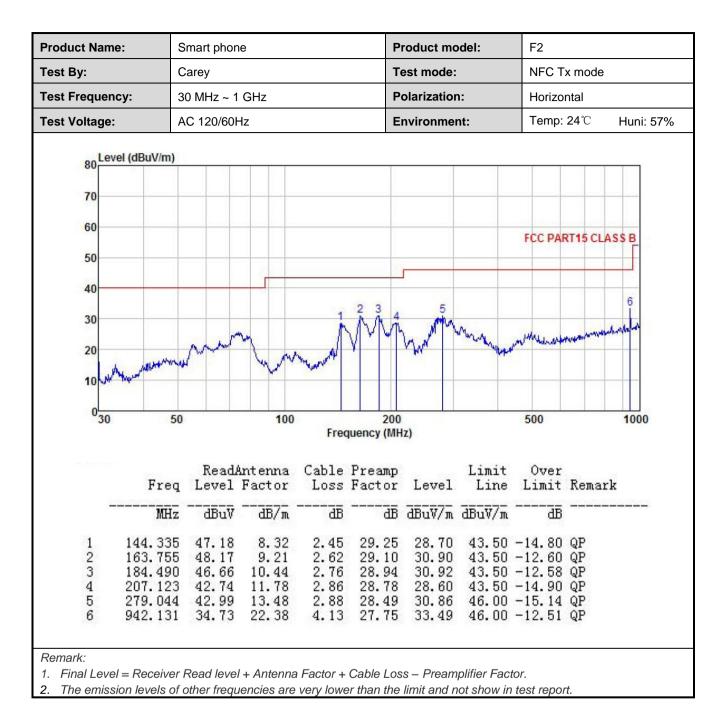


### Test frequency range: 30MHz-1000MHz

Product Name	e: 8	Smart pho	ne		F	Product model:			F2		
Test By:	(	Carey			1	Fest mode	):	NFC	NFC Tx mode Vertical		
Test Frequenc	;y:	30 MHz ~	1 GHz		F	Polarizatio	on:	Vertio			
Test Voltage:	1	AC 120/60Hz Environment:		Temp	o: 24℃	Huni: 57%					
80 Leve	el (dBuV/m)										
70											
60											
00								FCC PA	RT15 CLA	SSB	
50			8								
40			1	2		-					
30	w	2 met	m		1 4. 5	6 		_			
20	Manut	V	have	54	VVV	May h	mensional	-	When the hardwater	MARIN	
UP N	w		· · ·	$\vee$			ANERCAN	4			
10											
030	50		100	8	200	)		500		1000	
				Fre	quency (Mi	Hz)					
		Read	Antenna	Cable	Preamp		Limit	Over			
	Freq		Factor		Factor	Level		Limit	Remark		
	MHz	₫₿uѶ		dB	₫₿	dBuV/m	dBuV/m	<u>a</u> B			
1	73.617	53.84	8.72	1.61	29.69	34.48	40.00	-5.52			
2 3 4	144.335 163.755	55.17 50.53	8.32 9.21	2.45 2.62	29.25 29.10	36.69 33.26	43.50	-6.81			
4	184.490	47.08	10.44	2.76	28.94	31.34	43.50	-12.16	QP		
0	207.850 273.234	44.98 42.85	11.81 13.45	2.86 2.87	28.78 28.50	30.87 30.67		-12.63			
5 6											







### 6.3 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.215 (c)			
Receiver setup:	RBW=200Hz, VBW=300Hz, detector: Peak			
Limit:	The fundamental emission be kept within at least the central 80% of the permitted band			
Test Procedure:	<ol> <li>According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT.</li> <li>Set the EUT to proper test channel.</li> <li>Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points.</li> <li>Read 20dB bandwidth.</li> </ol>			
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane			
Test Instruments:	Refer to section 5.9 for details			
Test mode:	Refer to section 5.3 for details			
Test results:	Passed			

### Measurement Data

20dB bandwidth (kHz)	Limit (kHz)	Results					
0.527	11.2	Passed					
Note: For 13.56MHz, permitted Band is	Note: For 13.56MHz, permitted Band is 14 kHz, so the Limit is 11.2 kHz.						



### Test plot as follows:

Receiver	Spe	ctrum 2	×							
	el 15.00 dBm		5.00 dB 🧉							
Att	20 dE	SWT 🔍	9.5 ms 🖷	VBW 500	/ Hz	Mode	Auto FFT	Input AC		
⊖1Pk Max										
10 dBm						D	1[1]			-1.04 dB
10 dBm-										527.0 Hz
	-D1 5.430 d	Bm			7	M	1[1]			-16.45 dBm
0 dBm					+₩		I	1	13.55	96960 MHz
					$I \parallel$					
-10 dBm—					$( \parallel )$					
-10 0811				M	1					
	U2 -14	1.570 dBm			4	1				
-20 dBm—				-		<del>[</del>		-		
-30 dBm—				$- \gamma$	$\rightarrow$	<u>`</u> \				
			1 (	$1 \sim$			M			
			hr				$  \rangle \frown$			
-40 dBm—	7	$\sim$			-			· _	$\sim$	
~	$1 \lambda_{a}$							$  \rangle \sim$	$\sim$	$\sim$
,50 dBm-	V~	~			+				~	P >~
ſ										
-60 dBm—					$\square$					
50 abril										
-70 dBm—	1				-			-		1
-80 dBm										
CF 13.56	MHz			6	91 p	ts				n 14.0 kHz
						Mea	asuring		444	29.10.2019 07:53:10
										07:55:10
Date: 29.0	ост.2019 0	7:53:10								



# 6.4 Frequency Tolerance

Test Requirement:	FCC Part15 C Section 15.225 (e)
Receiver setup:	RBW=200Hz, VBW=300Hz, span=14kHz, detector: Peak
Limit:	±0.01% of the operating frequency
Test mode:	Transmitting mode
Test Procedure:	Frequency stability V.S. Temperature measurement
	<ol> <li>The equipment under test was powered by a fresh battery.</li> <li>RF output was connected to spectrum analyzer via feed through attenuators.</li> <li>The EUT was placed inside the temperature chamber.</li> <li>Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency.</li> <li>Turn EUT off and set the chamber temperature to -20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency.</li> <li>Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached</li> <li>Frequency stability V.S. Voltage measurement</li> <li>Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage.</li> <li>Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.</li> </ol>
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed



### Measurement Data:

#### a) Frequency stability V.S. Temperature measurement

Voltage (Vdc)	Temperature (℃)	Frequency Tolerance (MHz)	Frequency Error (%)	Limit (%)	Results
	-20	0.078	0.0058	±0.01	Pass
	-10	0.085	0.0063	±0.01	Pass
	0	-0.074	-0.0055	±0.01	Pass
3.85	+10	0.079	0.0058	±0.01	Pass
3.00	+20	-0.066	-0.0049	±0.01	Pass
	+30	0.084	0.0062	±0.01	Pass
	+40	0.067	0.0049	±0.01	Pass
	+50	-0.036	-0.0027	±0.01	Pass

### b) Frequency stability V.S. Voltage measurement

Temperature (℃)	Voltage (Vdc)	Frequency Tolerance (MHz)	Frequency Error (%)	Limit (%)	Results
	3.50	-0.085	-0.0063	±0.01	Pass
25.0	3.85	0.071	0.0052	±0.01	Pass
	4.40	0.092	0.0068	±0.01	Pass



# 6.5 Conducted Emission

Test Requirement:	FCC Part15 B Section 15	.207				
TestFrequencyRange:	150kHz to 30MHz					
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			
	0.5-30	60	50			
	* Decreases with the loga	rithm of the frequency.				
Test setup:	Reference	80cm Filter AC Filter AC EMI Receiver	power			
Test procedure	<ol> <li>50ohm/50uH coupling</li> <li>The peripheral devices a LISN that provides a termination. (Please re photographs).</li> <li>Both sides of A.C. line interference. In order to positions of equipment</li> </ol>	ation network (L.I.S.N.).I impedance for the meas are also connected to the 500hm/50uH coupling in fer to the block diagram	It provide a buring equipment. The main power through npedance with 500hm of the test setup and um conducted ssion, the relative cables must be changed			
Test Instruments:	Refer to section 5.9 for de	etails				
Test mode:	Refer to section 5.3 for de	etails				
Test results:	Pass					



### **Measurement Data:**

Product name:	Smart phone	Product model:	F2
Test by:	Test by: Carey		NFC Tx mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Huni: 55%
80 Level (0 70 60			FCC PART15-B QP
50 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		halferentrasterilletilletietentlevis untertaster Millerentrasterilletilletietentlevis untertasteri	12

	Freq	Read Level	LISN Factor	Cable Loss	Aux Factor	Level	Limit Line	Over Limit	Remark
-	MHz	dBu∛	dB		<u>ab</u>	dBu⊽		<u>d</u> B	
1	0.162	44.54	-0.44	10.77	-0.08	54.79	65.34	-10.55	QP
2	0.186	28.01	-0.42	10.76	-0.13	38.22	54.20	-15.98	Average
3	0.198	42.76	-0.41	10.76	-0.16	52.95	63.71	-10.76	QP
1 2 3 4 5 6 7 8 9	0.198	25.55	-0.41	10.76	-0.16	35.74	53.71	-17.97	Average
5	0.246	40.96	-0.40	10.75	-0.21	51.10	61.91	-10.81	QP
6	0.302	35.21	-0.39	10.74	-0.24	45.32	60.19	-14.87	QP
7	0.486	22.33	-0.39	10.76	-0.26	32.44	46.23	-13.79	Average
8	0.546	32.64	-0.39	10.76	-0.36	42.65	56.00	-13.35	QP
	0.555	24.18	-0.39	10.76	-0.37	34.18	46.00	-11.82	Average
10	0.614	23.67	-0.38	10.77	-0.38	33.68	46.00	-12.32	Average
11	0.668	20.58	-0.38	10.77	-0.39	30.58			Average
12	11.870	30.34	-0.64	10.92	2.65	43.27	60.00	-16.73	QP

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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.

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Product name	:	Smart pho	ne		Pr	oduct mo	del:	F2		
Test by:		Carey 150 kHz ~ 30 MHz AC 120 V/60 Hz				st mode:		NFC Tx mode		
Test frequenc	y:					Phase: Environment:		Neutral		
Test voltage:								Temp: 22.5℃ Huni: 55%		
80	Level (dBuV)									
70										
								FCC	PART15-B	QP
60	1							1 2/2		
50	Nh 3								C PART15-B	AV
40	- MM		6	8	10		14	13	6	
40	. K 4	My WILLAN	ALWALL A	hul	Nous AND	a Lookant en die	under worker	MMY 12	7	
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20 10		hult.							Theres	~
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10	15 .2		5	1	2	U7)	5	10	20	30
10			5		2 requency (M	Hz)	5	10	20	30
10 0-				F	requency (M	Hz)			20	30
10 0-	23	Read	LISN	Fi Cable	requency (M Aux		Limit	Over		30
10 0-		Read	LISN	Fi Cable	requency (M	Hz) Level		Over	20 Remark	30
10 0-	23	Read	LISN	Fi Cable	requency (M Aux		Limit	Over		30
10 O <sup>L</sup> Trace: 2	Freq MHz	Read Level dBuV	LISN Factor dB	Cable Loss dB	Aux Factor dB	Level dBuV	Limit Line dBuV	Over Limit dB	Remark	30
10 0 Trace: 2	Freq MHz 0.174 0.178	Read Level dBuV 46.19 26.73	LISN Factor dB _0.69 _0.69	Cable Loss 	Aux Factor 	Level 	Limit Line dBuV 64.77 54.59	Over Limit  dB -8.50 -17.78	Remark  QP Average	<u></u>
10 0' Trace: 2 1 2 3	Freq MHz 0.174 0.178 0.249	Read Level dBuV 46.19 26.73 37.78	LISN Factor dB _0.69 _0.69 _0.66	Cable Loss dB 10.77 10.77 10.75	Aux Factor 	Level 	Limit Line dBuV 64.77 54.59 61.78	Over Limit  dB -8.50 -17.78 -13.90	Remark  QP Average QP	
10 0' Trace: 2 1 2 3	Freq MHz 0.174 0.178 0.249 0.249	Read Level dBuV 46.19 26.73 37.78 22.50	LISN Factor 	Cable Loss dB 10.77 10.77 10.75 10.75	Aux Factor 	Level dBuV 56.27 36.81 47.88 32.60	Limit Line dBuV 64.77 54.59 61.78 51.78	Over Limit 	Remark  QP Average QP Average	
10 0' Trace: 2 1 2 3 4 5	Freq MHz 0.174 0.178 0.249 0.249 0.249 0.426	Read Level dBuV 46.19 26.73 37.78 22.50 21.01	LISN Factor 	Cable Loss dB 10.77 10.77 10.75 10.75 10.75	Aux Factor 	Level dBuV 56.27 36.81 47.88 32.60 31.07	Limit Line dBuV 64.77 54.59 61.78 51.78 47.33	Over Limit 	Remark  QP Average QP Average Average	
10 0 Trace: 2 1 2 3 4 5 6	Freq MHz 0.174 0.178 0.249 0.249 0.249 0.426 0.549	Read Level dBuV 46.19 26.73 37.78 22.50 21.01 31.92	LISN Factor 	Cable Loss dB 10.77 10.77 10.75 10.75 10.75 10.73 10.76	Aux Factor 0.00 0.00 0.01 0.01 -0.03 0.03	Level dBuV 56.27 36.81 47.88 32.60 31.07 42.06	Limit Line dBuV 64.77 54.59 61.78 51.78 47.33 56.00	Over Limit 	Remark  QP Average QP Average Average QP	
10 0 Trace: 2 1 2 3 4 5 6 7	Freq MHz 0.174 0.178 0.249 0.249 0.249 0.426 0.549 0.549	Read Level dBuV 46. 19 26. 73 37. 78 22. 50 21. 01 31. 92 22. 56	LISN Factor 	Cable Loss dB 10.77 10.75 10.75 10.75 10.73 10.76 10.76	Aux Factor 	Level dBuV 56.27 36.81 47.88 32.60 31.07 42.06 32.70	Limit Line dBuV 64.77 54.59 61.78 51.78 47.33 56.00 46.00	Over Limit 	Remark QP Average QP Average Average QP Average	
10 0 Trace: 2 1 2 3 4 5 6 7 8	Freq MHz 0.174 0.174 0.249 0.249 0.249 0.249 0.426 0.549 0.549 1.236	Read Level dBuV 46. 19 26. 73 37. 78 22. 50 21. 01 31. 92 22. 56 28. 01	LISN Factor 	Cable Loss dB 10.77 10.75 10.75 10.75 10.73 10.76 10.76 10.76 10.90	Aux Factor 	Level dBuV 56.27 36.81 47.88 32.60 31.07 42.06 32.70 38.38	Limit Line dBuV 64.77 54.59 61.78 51.78 51.78 47.33 56.00 46.00 56.00	Over Limit 	Remark  QP Average QP Average QP Average QP Average QP	
10 0 Trace: 2 1 2 3 4 5 6 7 8 9	Freq MHz 0.174 0.174 0.249 0.249 0.249 0.249 0.426 0.549 0.549 1.236 2.110	Read Level dBuV 46. 19 26. 73 37. 78 22. 50 21. 01 31. 92 22. 56 28. 01 16. 03	LISN Factor 	Cable Loss dB 10.77 10.75 10.75 10.75 10.75 10.76 10.76 10.76 10.90 10.95	Aux Factor 	Level dBuV 56.27 36.81 47.88 32.60 31.07 42.06 32.70 38.38 26.50	Limit Line dBuV 64.77 54.59 61.78 51.78 47.33 56.00 46.00 56.00 46.00	Over Limit 	Remark  QP Average QP Average QP Average QP Average QP	
10 0 Trace: 2 1 2 3 4 5 6 7 8 9 10	Freq MHz 0.174 0.174 0.249 0.249 0.249 0.426 0.549 0.549 1.236 2.110 2.448	Read Level dBuV 46. 19 26. 73 37. 78 22. 50 21. 01 31. 92 22. 56 28. 01 16. 03 28. 37	LISN Factor 	Cable Loss dB 10.77 10.75 10.75 10.75 10.75 10.76 10.76 10.76 10.90 10.95 10.94	Aux Factor dB 0.00 0.01 0.01 -0.03 0.03 0.03 0.03 0.11 0.19 0.24	Level dBuV 56.27 36.81 47.88 32.60 31.07 42.06 32.70 38.38 26.50 38.88	Limit Line dBuV 64.77 54.59 61.78 51.78 47.33 56.00 46.00 56.00 46.00 56.00	Over Limit -8.50 -17.78 -13.90 -19.18 -16.26 -13.94 -13.30 -17.62 -19.50 -17.12	Remark  QP Average QP Average QP Average QP Average QP	
10 0 Trace: 7 1 2 3 4 5 6 7 8 9	Freq MHz 0.174 0.174 0.249 0.249 0.249 0.249 0.426 0.549 0.549 1.236 2.110	Read Level dBuV 46. 19 26. 73 37. 78 22. 50 21. 01 31. 92 22. 56 28. 01 16. 03	LISN Factor 	Cable Loss dB 10.77 10.75 10.75 10.75 10.75 10.76 10.76 10.76 10.90 10.95	Aux Factor 	Level dBuV 56.27 36.81 47.88 32.60 31.07 42.06 32.70 38.38 26.50	Limit Line dBuV 64.77 54.59 61.78 51.78 47.33 56.00 46.00 56.00 46.00 56.00 60.00	Over Limit -8.50 -17.78 -13.90 -19.18 -16.26 -13.94 -13.30 -17.62 -19.50 -17.12 -22.40	Remark  QP Average QP Average QP Average QP Average QP	

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.