# **FCC Test Report**

APPLICANT : Bullitt Group

**EQUIPMENT**: Rugged Smart Phone

BRAND NAME : Motorola

MODEL NAME : XT2083-8

FCC ID : ZL5MDFL

STANDARD : 47 CFR Part 15 Subpart B

**CLASSIFICATION**: Certification

The product was received on Jan. 20, 2021 and testing was completed on Mar. 08, 2021. We, Sporton International (ShenZhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2014 and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (ShenZhen) Inc., the test report shall not be reproduced except in full.

Reviewed by: Derreck Chen / Supervisor

Fire Shih

Dogue Cher

Approved by: Eric Shih / Manager

### Sporton International (ShenZhen) Inc.

1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen, 518055
People's Republic of China

Sporton International (Shenzhen) Inc. TEL: 86-755-8637-9589

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## **REVISION HISTORY**

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC112011	Rev. 01	Initial issue of report	Apr. 20, 2021

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### **SUMMARY OF TEST RESULT**

Report Section	FCC Rule	Description	Limit	Result	Remark
					Under limit
3.1	15.107	AC Conducted Emission	< 15.107 limits	PASS	11.21 dB at
					0.160 MHz
					Under limit
3.2	15.109 Radiated Emission	< 15.109 limits	PASS	7.88 dB at	
					341.730 MHz

#### Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

#### **Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

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## 1. General Description

## 1.1. Applicant

#### **Bullitt Group**

One Valpy Valpy Street, Reading, United Kingdom, RG1 1AR

## 1.2. Product Feature of Equipment Under Test

	Product Feature
Equipment	Rugged Smart Phone
Brand Name	Motorola
Model Name	XT2083-8
FCC ID	ZL5MDFL
EUT supports Radios application	GSM/WCDMA/LTE/NFC WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE FM Receiver / GNSS
IMEI Code	Conduction: 356261340006996/356261340007002 Radiation: 356261340006954/356261340006962
HW Version	V1.0
SW Version	HA10_11.167.03.03R
EUT Stage	Production Unit

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

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## 1.3. Product Specification of Equipment Under Test

Standards-related Product Specification				
GSM850: 824 MHz ~ 849 MHz				
	GSM1900: 1850MHz ~ 1910MHz			
	WCDMA Band II: 1850 MHz ~ 1910 MHz			
	WCDMA Band IV : 1710 MHz ~ 1755 MHz			
	WCDMA Band V: 824 MHz ~ 849 MHz			
	LTE Band 2 : 1850 MHz ~ 1910 MHz			
	LTE Band 4 : 1710 MHz ~ 1755 MHz			
	LTE Band 5 : 824 MHz ~ 849 MHz			
Tx Frequency	LTE Band 7 : 2500 MHz ~ 2570 MHz			
1 x 1 requestoy	LTE Band 66 : 1710 MHz ~ 1780 MHz			
	802.11b/g/n: 2400 MHz ~ 2483.5 MHz			
	802.11a/n/ac: 5150 MHz ~ 5250 MHz;			
	5250 MHz ~ 5350 MHz;			
	5470 MHz ~ 5725 MHz			
	5725 MHz ~ 5850 MHz			
	Bluetooth: 2400 MHz ~ 2483.5 MHz			
	NFC : 13.56 MHz			
	GSM850: 869 MHz ~ 894 MHz			
	GSM1900: 1930 MHz ~ 1990 MHz			
	WCDMA Band II: 1930 MHz ~ 1990 MHz			
	WCDMA Band IV : 2110 MHz ~ 2155 MHz			
	WCDMA Band V: 869 MHz ~ 894 MHz			
	LTE Band 2: 1930 MHz ~ 1990 MHz			
	LTE Band 4 : 2110 MHz ~ 2155 MHz			
	LTE Band 5 : 869 MHz ~ 894 MHz			
	LTE Band 7 : 2620 MHz ~ 2690 MHz			
Rx Frequency	LTE Band 66 : 2110 MHz~ 2180 MHz			
l xx i requeitoy	802.11b/g/n: 2400 MHz ~ 2483.5 MHz			
	802.11a/n/ac: 5150 MHz ~ 5250 MHz;			
	5250 MHz ~ 5350 MHz;			
	5470 MHz ~ 5725 MHz			
	5725 MHz ~ 5850 MHz			
	Bluetooth: 2400 MHz ~ 2483.5 MHz			
	NFC : 13.56 MHz			
	GNSS: 1559 MHz ~ 1610 MHz			
	FM : 88 MHz ~ 108 MHz			
	WWAN : PIFA Antenna			
	WLAN : PIFA Antenna			
Autoura Torra	Bluetooth : PIFA Antenna			
Antenna Type	GNSS: PIFA Antenna			
	NFC : Loop Antenna			
	FM : PIFA Antenna			
	GSM/GPRS: GMSK			
	EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK			
	WCDMA: BPSK (Uplink)			
	HSDPA/DC-HSDPA : QPSK (Uplink)			
Type of Modulation	` ' /			
	HSUPA: QPSK (Uplink)			
	HSPA+ : 16QAM (16QAM uplink is not supported)			
	DC-HSDPA: 64QAM			
	LTE: QPSK / 16QAM / 64QAM			

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802.11b: DSSS (DBPSK / DQPSK / CCK)
802.11a/g/n/ac/ax: OFDM (BPSK / QPSK / 16QAM / 64QAM /
256QAM / 1024QAM)
Bluetooth LE : GFSK
Bluetooth (1Mbps) : GFSK
Bluetooth (2Mbps) :π/4-DQPSK
Bluetooth (3Mbps): 8-DPSK
GNSS: BPSK
NFC: ASK

### 1.4. Modification of EUT

No modifications are made to the EUT during all test items.

### 1.5. Test Location

Sporton International (Shenzhen) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International (Shenzhen) Inc.						
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595						
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.				
	CO01-SZ	CN1256	421272				

Test Firm	Sporton International (Shenzhen) Inc.				
	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang				
Test Site Location	Community, Fuyong Street, Baoan District, Shenzhen City Guangdong Province				
rest Site Location	China 518103				
	TEL: +86-755-33202398				
	On anton Oita Na	FCC Designation	FCC Test Firm		
Test Site No.	Sporton Site No.	No.	Registration No.		
	03CH01-SZ	CN1256	421272		

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#### 1.6. Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH01-SZ	AUDIX	E3	6.2009-8-24
2.	CO01-SZ	AUDIX	E3	6.120613b

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### 1.7. Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 15 Subpart B
- ANSI C63.4-2014
- ANSI C63.4a-2017

**Remark:** All test items were verified and recorded according to the standards and without any deviation during the test.

## 1.8. Specification of Accessory

Specification of Accessory					
AC Adapter Brand Name Motorola (Chenyang) Model Name MC-201					
Battery	Brand Name	Motorola (Sunwoda)	Model Name	JK50	
Earphone	Brand Name	Motorola (Ju wei)	Model Name	JWEP1123-T03	
USB Cable	Brand Name	Motorola (Yihuaxing)	Model Name	T365-008	

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## 2. Test Configuration of Equipment Under Test

#### 2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Test Items	Function Type
	Mode 1: GSM 850 Idle(Middle CH) + Earphone + Battery + Camera(Rear) + SD Card Load + USB Cable (Charging from Adapter) + SIM 1
	Mode 2: WCDMA Band V Idle(High CH) + Earphone + Battery + Camera(Front) + SD Card Load + USB Cable (Charging from Adapter) + SIM 2
AC Conducted Emission	Mode 3: LTE Band 2 Idle(Low CH) + Earphone + Battery + MPEG4(Colur bar) + SD Card Link + USB Cable (Charging from Adapter) + SIM 1
	Mode 4: LTE Band 5 Idle(Middle CH) + Earphone + Battery + FM Rx(98Mhz) + SD Card Load + USB Cable (Charging from Adapter) + SIM 2
	Mode 5: LTE Band 7 Idle(High CH) + Earphone + Battery + H-Pattern + SD Card Link + USB Cable (Data Link with Notebook) + SIM 1
	Mode 1: GSM 850 Idle(Middle CH) + Earphone + Battery + Camera(Rear) + SD Card Load + USB Cable (Charging from Adapter) + SIM 1
	Mode 2: WCDMA Band V Idle(High CH) + Earphone + Battery + Camera(Front) + SD Card Load + USB Cable (Charging from Adapter) + SIM 2
Radiated Emissions	Mode 3: LTE Band 2 Idle(Low CH) + Earphone + Battery + MPEG4(Colur bar) + SD Card Link + USB Cable (Charging from Adapter) + SIM 1
	Mode 4: LTE Band 5 Idle(Middle CH) + Earphone + Battery + FM Rx(98Mhz) + SD Card Load + USB Cable (Charging from Adapter) + SIM 2
	Mode 5: LTE Band 7 Idle(High CH) + Earphone + Battery + H-Pattern + SD Card Link + USB Cable (Data Link with Notebook) + SIM 1

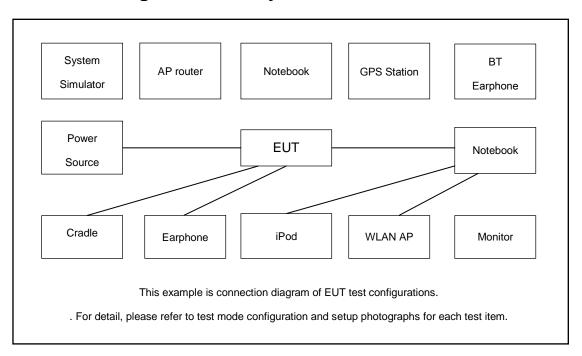
#### Remark:

- 1. The worst case of AC is mode 5; only the test data of this mode is reported.
- 2. The worst case of RE is mode 4; only the test data of this mode is reported.
- Data Link with Notebook means data application transferred mode between EUT and Notebook.
- **4.** Pre-scanned Low/Middle/High channel, the worst channel was recorded in this report.

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### 2.2. Connection Diagram of Test System



The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application

### 2.3. Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Base Station	Anritsu	MT8820C	Fcc DoC	N/A	Shielded, 1.5m
2.	FM Base Station	R&S	SMB100A	Fcc DoC	N/A	Shielded, 1.5m
3.	FM Station	R&S	SMB100A	N/A	N/A	Unshielded,1.8m
4.	WLAN AP	D-link	DIR-820L	KA2IR820LA1	N/A	Unshielded, 1.8 m
5.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded,1.8m
6.	Notebook	E540	FCC DoC	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
7.	iPod	Apple	MC69029/A	N/A	N/A	N/A
8.	iPod	Apple	MC525 ZP/A	DoC	Shielded, 1.0m	N/A
9.	SD Card	N/A	MicroSD HC	FCC DoC	N/A	N/A
10.	SD Card	Kingston	3300-10000-078	Fcc DoC	N/A	N/A

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### 2.4. EUT Operation Test Setup

The EUT was in GSM or WCDMA or LTE idle mode during the testing. The EUT was synchronized to the BCCH, and is in continuous receiving mode by setting system simulator's paging reorganization.

At the same time, the EUT was attached to the Bluetooth earphone or WLAN AP, and the following programs installed in the EUT were programmed during the test.

- 1. Data application is transferred between notebook and EUT via USB cable.
- 2. Turn on MPEG4 function.
- 3. Turn on camera to capture images.
- 4. Execute "H Pattern" to show H Pattern on the screen.
- 5. Turn on FM function to make the EUT receive continuous signals from FM station

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### 3. Test Result

#### 3.1. Test of AC Conducted Emission Measurement

#### 3.1.1 Limits of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

#### <Class B Limit>

Frequency of emission	Conducted limit (dBuV)				
(MHz)	Quasi-peak	Average			
0.15-0.5	66 to 56*	56 to 46*			
0.5-5	56	46			
5-30	60	50			

<sup>\*</sup>Decreases with the logarithm of the frequency.

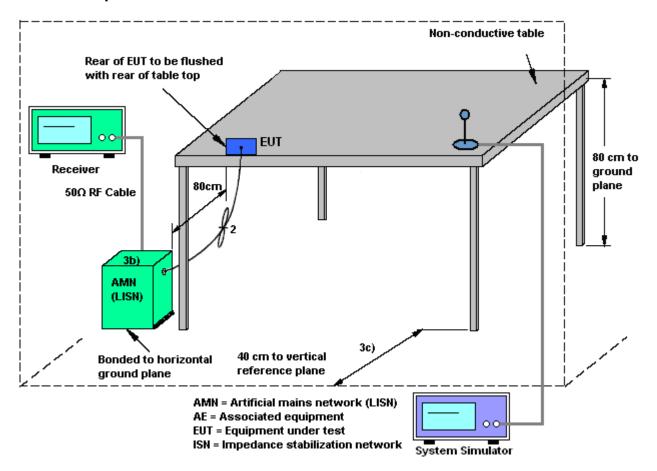
#### 3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

#### 3.1.3 Test Procedure

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other LISN.
- 4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- 6. Both sides of AC line were checked for maximum conducted interference.
- 7. The frequency range from 150 kHz to 30 MHz was searched.
- 8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

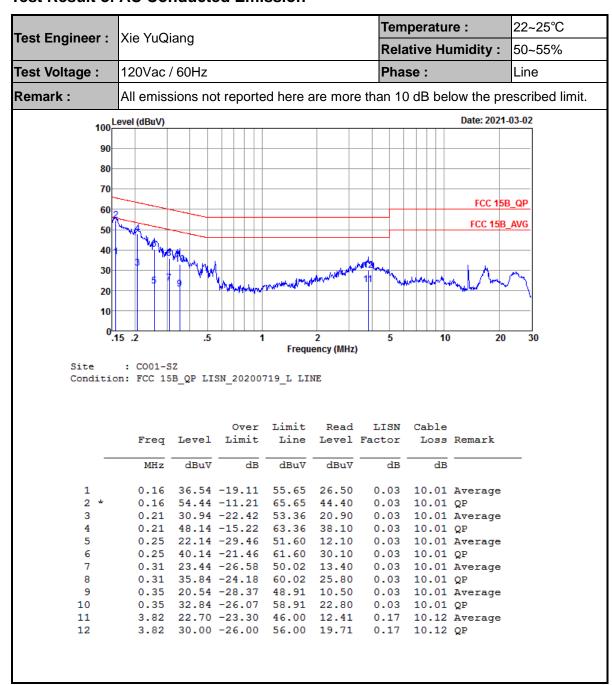
### 3.1.4 Test Setup



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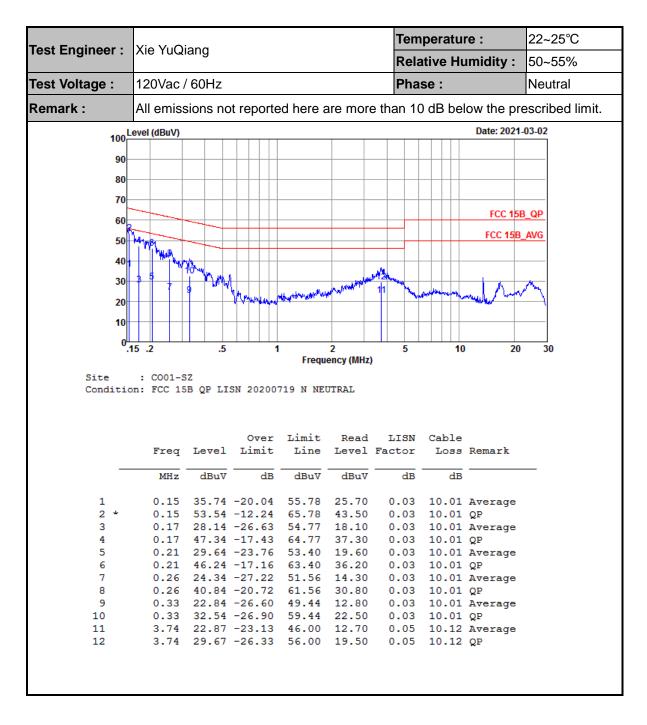
#### 3.1.5 Test Result of AC Conducted Emission



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#### Note:

- 1. Level(dB $\mu$ V) = Read Level(dB $\mu$ V) + LISN Factor(dB) + Cable Loss(dB)
- 2. Over Limit(dB) = Level(dB $\mu$ V) Limit Line(dB $\mu$ V)

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#### 3.2. Test of Radiated Emission Measurement

#### 3.2.1. Limit of Radiated Emission

The emissions from an unintentional radiator shall not exceed the field strength levels specified in the following table:

#### <Class B Limit>

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(meters)
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

#### 3.2.2. Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

#### 3.2.3. Test Procedures

- 1. The EUT was placed on a turntable with 0.8 meter above ground.
- 2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 3. The table was rotated 360 degrees to determine the position of the highest radiation.
- 4. The antenna is a Bi-Log antenna and its height is adjusted between one to four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
- 5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
- Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode (RBW=120kHz/VBW=300kHz for frequency below 1GHz; RBW=1MHz VBW=3MHz (Peak), RBW=1MHz/VBW=10Hz (Average) for frequency above 1GHz).
- 7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
- 8. Emission level  $(dB\mu V/m) = 20 \log Emission level (\mu V/m)$
- 9. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level

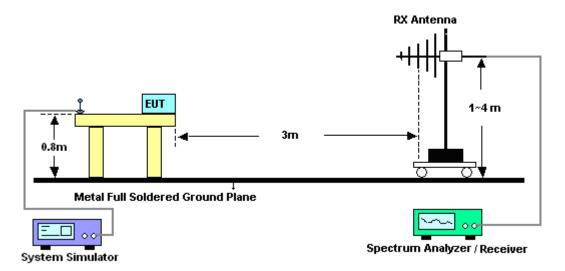
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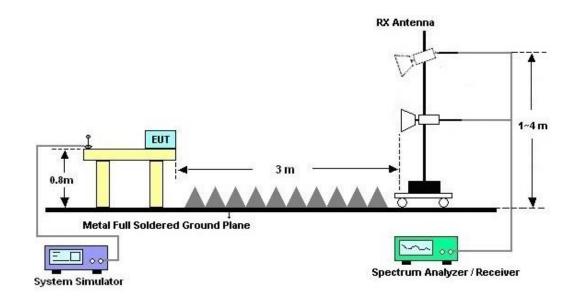
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### 3.2.4. Test Setup of Radiated Emission

#### For radiated emissions from 30MHz to 1GHz



#### For radiated emissions above 1GHz

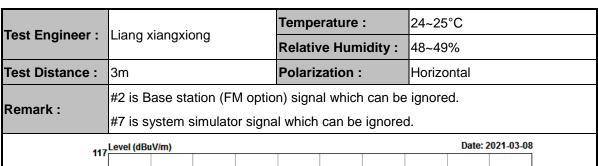


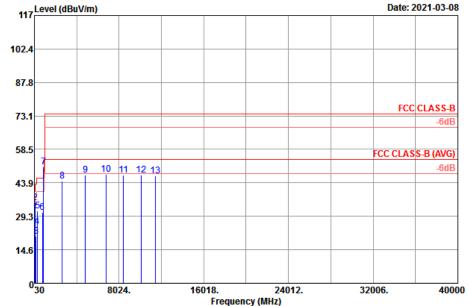
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#### 3.2.5. Test Result of Radiated Emission





Site : 03CH01-SZ

Condition : FCC CLASS-B 3m LF\_ANT(35408)\_2019 HORIZONTAL

Plane		: Y									
			0ver	Limit	Read/	Intenna	Cable	Preamp	A/Pos	T/Pos	
	Freq	Level	Limit	Line	Level	Factor	Loss	Factor			Remark
-	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	24.07	-15.93	40.00	29.46	24.90	1.01	31.30			Peak
2	98.00	35.08			48.17	16.70	1.81	31.60			Peak
3	194.90	20.44	-23.06	43.50	33.66	15.55	2.54	31.31			Peak
4	289.96	24.70	-21.30	46.00	33.88	19.20	3.07	31.45			Peak
5	339.43	31.63	-14.37	46.00	39.46	20.17	3.32	31.32	100	43	Peak
6	803.09	30.88	-15.12	46.00	30.69	26.41	5.09	31.31			Peak
7 *	881.66	50.93			50.36	26.70	5.33	31.46			Peak
8	2660.00	44.57	-29.43	74.00	39.35	27.85	9.98	32.61			Peak
9	4850.00	47.40	-26.60	74.00	36.64	31.23	12.03	32.50			Peak
10	6788.00	47.49	-26.51	74.00	32.01	34.68	13.65	32.85	100	142	Peak
11	8432.00	47.40	-26.60	74.00	29.03	37.07	14.90	33.60			Peak
12	10094.00	47.29	-26.71	74.00	24.90	39.35	15.30	32.26			Peak
13	11465.00	46.94	-27.06	74.00	21.99	40.51	16.53	32.09			Peak

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et Engineer	Lionas	Liang xiangxiong					Temperature :			25°C		
st Engineer :	Liang Mangalong					Relativ	e Hur	nidity	: 48~	48~49%		
est Distance :	3m					Polarization :			Ver	Vertical		
	#2 is B	ase	statio	n (FM	option	on) signal which can be ignored.						
emark :	#7 is system simulator signal which can be ignored.											
447	Level (dBı	ıV/m)				Date: 2021-03-08						1-03-08
117												
102.4												
87.8												
0710												
73.1											FCC CL	-6dB
58.5										FCC	CLASS-E	(AVG)
	<u> </u>	910	-11	12 1	3							-6dB
43.9	5											
20.2	ļe											
29.3												
14.6												
14.0												
0	30		0024		400	•••	-	4040		22000		4000
	30		8024.		160	6018. 24012. Frequency (MHz)				32006.		40000
Site		03CH0										
Site Condition				3m LF_A	NT(354	08)_2019	VERTIC	CAL				
				3m LF_A	NT (3546	98)_2 <b>01</b> 9	VERTIC	CAL				
		FCC C	LASS-B						A / D = =	T/D		
Condition	:	FCC C	CLASS-B Over	Limit	Read		Cable	Preamp Factor	A/Pos	T/Pos	Remark	
Condition	:	Y evel	Over Limit	Limit	Read	Antenna Factor	Cable	Preamp Factor	A/Pos cm	T/Pos deg	Remark	
Condition Plane 1	: Freq L MHz dB 30.97 2	Y evel uV/m 9.40	Over Limit ————	Limit Line dBuV/m	Read/ Level dBuV 35.32	Antenna Factor dB/m 24.35	Cable Loss dB	Preamp Factor dB	cm	deg	Peak	
Condition Plane 1 2	: Freq L MHz dB 30.97 2 98.00 3	Y evel uV/m 9.40 4.16	Over Limit dB	Limit Line dBuV/m	Read/ Level dBuV 35.32 47.25	Antenna Factor dB/m 24.35 16.70	Cable Loss dB 1.03 1.81	Preamp Factor dB 31.30 31.60		deg	Peak Peak	
Plane  1 2 3 1 4 2	: Freq L MHz dB 30.97 2 98.00 3 68.71 2 81.23 2	Y evel uV/m 9.40 4.16 5.05 8.33	Over Limit dB -10.60 -18.45 -17.67	Limit Line dBuV/m 40.00 43.50 46.00	Read/ Level dBuV 35.32 47.25 38.12 37.71	Antenna Factor dB/m 24.35 16.70 15.93 19.11	Cable Loss dB 1.03 1.81 2.36 3.02	Preamp Factor dB 31.30 31.60 31.36 31.51	Cm	deg	Peak Peak Peak Peak	
Plane  1 2 3 1 4 2 5 3	: Freq L MHz dB 30.97 2 98.00 3 68.71 2 81.23 2 41.37 3	Y evel uV/m 9.40 4.16 5.05 8.33 8.12	Over Limit dB -10.60 -18.45 -17.67 -7.88	Limit Line dBuV/m 40.00 43.50 46.00 46.00	Read/ Level dBuV 35.32 47.25 38.12 37.71 45.87	Antenna Factor dB/m 24.35 16.70 15.93 19.11 20.24	Cable Loss  dB  1.03 1.81 2.36 3.02 3.33	Preamp Factor dB 31.30 31.60 31.36 31.51 31.32	   100	deg	Peak Peak Peak Peak Peak	
Plane  1 2 3 1 4 2 5 3 6 7	: Freq L MHz dB 30.97 2 98.00 3 68.71 2 81.23 2 41.37 3 42.95 3	Y evel uV/m 9.40 4.16 5.05 8.33 8.12 1.42	Over Limit dB -10.60 -18.45 -17.67 -7.88	Limit Line dBuV/m 40.00 43.50 46.00 46.00	Read/, Level dBuV 35.32 47.25 38.12 37.71 45.87 31.50	Antenna Factor dB/m 24.35 16.70 15.93 19.11 20.24 26.20	Cable Loss dB 1.03 1.81 2.36 3.02 3.33 4.90	Preamp Factor  dB  31.30 31.60 31.36 31.51 31.32 31.18	  100	deg	Peak Peak Peak Peak Peak Peak	
Plane  1 2 3 1 4 2 5 3 6 7 7 * 8	: Freq L MHz dB 30.97 2 98.00 3 68.71 2 81.23 2 41.37 3 42.95 3 81.66 5	Y evel uV/m 9.40 4.16 5.05 8.33 8.12 1.42 4.84	Over Limit dB -10.60 -18.45 -17.67 -7.88 -14.58	Limit Line dBuV/m 40.00 43.50 46.00 46.00 46.00	Read/ Level dBuV 35.32 47.25 38.12 37.71 45.87 31.50 54.27	Antenna Factor dB/m 24.35 16.70 15.93 19.11 20.24 26.20 26.70	Cable Loss dB 1.03 1.81 2.36 3.02 3.33 4.90 5.33	Preamp Factor  dB  31.30 31.60 31.36 31.51 31.32 31.18 31.46	  100	deg	Peak Peak Peak Peak Peak Peak Peak	
Plane  1 2 3 1 4 2 5 3 6 7 7 * 8 8 29 9 48	: Freq L  MHZ dB  30.97 2  81.23 2  41.37 3  42.95 3  81.66 5  10.00 4	Y evel uV/m 9.40 4.16 5.05 8.33 8.12 1.42 4.84 7.06	Over Limit dB -10.60 -18.45 -17.67 -7.88 -14.58 -28.66 -26.94	Limit Line dBuV/m 40.00 43.50 46.00 46.00 74.00 74.00	Read/ Level dBuV 35.32 47.25 38.12 37.71 45.87 31.50 54.27 39.07 36.23	Antenna Factor dB/m 24.35 16.70 15.93 19.11 20.24 26.20 26.70 28.40 31.28	Cable Loss  dB  1.03 1.81 2.36 3.02 3.33 4.90 5.33 10.32 12.05	Preamp Factor  dB  31.30 31.60 31.51 31.32 31.18 31.46 32.45 32.50	  100	deg	Peak Peak Peak Peak Peak Peak	
Plane  1 2 3 1 4 2 5 3 6 7 7 * 8 8 29 9 48 10 54	: Freq L	Y evel uV/m 9.40 4.16 5.05 8.33 8.12 1.42 1.42 5.34 7.06 7.22	Over Limit dB -10.60 -18.45 -7.88 -14.58 -28.66 -26.94 -26.78	Limit Line dBuV/m 40.00 43.50 46.00 46.00 74.00 74.00 74.00	Read/ Leve1 35.32 47.25 38.12 37.71 45.87 31.50 54.27 39.07 36.07 36.03 35.69	Antenna Factor 	Cable Loss  dB  1.03 1.81 2.36 3.02 3.33 4.90 5.33 10.32 12.25 12.24	Preamp Factor  31.30 31.60 31.35 31.31 31.32 31.18 31.46 32.45 32.50 32.59	cm	deg	Peak Peak Peak Peak Peak Peak Peak Peak	
Plane  1 2 3 1 4 2 5 3 6 7 7 * 8 8 29 9 48 10 54 11 74	:: Freq L  MHz dB  30.97 2 98.00 3 68.71 2 81.23 2 41.23 2 41.23 3 81.66 5 10.00 4 86.00 4 86.00 4	Y evel	Over Limit dB -10.60 -18.45 -17.67 -7.88 -14.58 -28.66 -26.78 -27.74	Limit Line dBuV/m 40.00 43.50 46.00 46.00 46.00 74.00 74.00 74.00 74.00 74.00	Read/ Level 35.32 47.25 38.12 37.71 45.87 31.50 54.27 39.07 36.23 35.69 28.94	Antenna Factor dB/m 24.35 16.70 15.93 19.11 20.24 26.20 26.70 28.40 31.28 31.88 36.46	Cable Loss  dB  1.03 1.81 2.36 3.02 3.33 4.90 5.33 10.32 12.05 12.24 14.26	Preamp Factor  31.30 31.60 31.36 31.31 31.32 31.18 31.46 32.45 32.59 33.40	cm	deg	Peak Peak Peak Peak Peak Peak Peak Peak	
Plane  1 2 3 1 4 2 5 3 6 7 * 8 8 29 9 48 10 54 11 74 12 102	: Freq L	Y evel uV/m 9.40 4.16 5.05 8.33 8.12 1.42 4.84 5.34 7.02 6.26 6.25	Over Limit dB -10.60 -18.45 -17.67 -7.88 -14.58 -28.66 -26.94 -26.78 -27.74 -27.75	Limit Line dBuV/m 40.00 43.50 46.00 46.00 74.00 74.00 74.00 74.00 74.00 74.00	Read/ Level 35.32 47.25 38.12 37.71 45.87 31.50 54.27 39.07 36.23 35.69 28.94 23.50	Antenna Factor  dB/m  24.35 16.70 15.93 19.11 20.24 26.20 26.70 28.40 31.28 31.88 36.46 39.63	Cable Loss  dB  1.03 1.81 2.36 3.02 3.33 4.90 5.33 10.32 12.05 12.24 14.26 15.31	Preamp Factor  dB  31.30 31.60 31.36 31.51 31.32 31.18 31.46 32.45 32.50 32.59 33.40 32.19	cm	deg	Peak Peak Peak Peak Peak Peak Peak Peak	

#### Note:

- 1. Level( $dB\mu V/m$ ) = Read Level( $dB\mu V$ ) + Antenna Factor(dB/m) + Cable Loss(dB) Preamp Factor(dB)
- 2. Over Limit(dB) = Level(dB $\mu$ V/m) Limit Line(dB $\mu$ V/m)

Sporton International (Shenzhen) Inc.

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## 4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Jul. 21, 2020	Mar. 08, 2021	Jul. 20, 2021	Radiation (03CH01-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Jul. 21, 2020	Mar. 08, 2021	Jul. 20, 2021	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270104	0.5GHz~26.5Gh z	Dec. 27, 2020	Mar. 08, 2021	Dec. 26, 2021	Radiation (03CH01-SZ
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	Jul. 15, 2020	Mar. 08, 2021	Jul. 14, 2021	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 25, 2020	Mar. 08, 2021	Jul. 24, 2021	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 17, 2020	Mar. 08, 2021	Apr. 16, 2021	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P- R	1943528	1GHz~18GHz	Oct. 17, 2020	Mar. 08, 2021	Oct. 16, 2021	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35-H G	1871923	18GHz~40GHz	Jul. 21, 2020	Mar. 08, 2021	Jul. 20, 2021	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 23, 2020	Mar. 08, 2021	Apr. 22, 2021	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	61601000198 5	N/A	NCR	Mar. 08, 2021	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Mar. 08, 2021	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Mar. 08, 2021	NCR	Radiation (03CH01-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Dec. 25, 2020	Mar. 02, 2021	Dec. 24, 2021	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2 LISN	00103912	9kHz~30MHz	Dec. 25, 2020	Mar. 02, 2021	Dec. 24, 2021	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Oct. 15, 2020	Mar. 02, 2021	Oct. 14, 2021	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	61602000089 1	100Vac~250Vac	Jul. 21, 2020	Mar. 02, 2021	Jul. 20, 2021	Conduction (CO01-SZ)

NCR: No Calibration Required

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## 5. Uncertainty of Evaluation

#### **Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)**

Measuring Uncertainty for a Level of Confidence	2.7dB
of 95% (U = 2Uc(y))	2.7 UD

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#### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence	4.7dB
of 95% (U = 2Uc(y))	4.7ub

#### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence	5.0dB
of 95% (U = 2Uc(y))	3.0GB

#### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

ΙN	Measuring Uncertainty for a Level of Confidence	4.6.15
	<u> </u>	4.3dB
	of 95% (U = 2Uc(y))	

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