EMC TEST REPORT

Report Number	BWTR-2249-NA15B
FCC ID	2AYY9FMP192
Applicant	FCNT LIMITED
Product Name	Smart Phone
Marketing Name	F-51C
Brand Name	FCNT
Model Name	F-51C
Serial Number	354676360010259
Test Standard	FCC 47 CFR Part 15 Subpart B
Tested Date	Sept. 14, 2022 - Sept. 15, 2022

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Revision History

Revision	Description	Issued Date
A	Initial issue of report	2022/10/12
B	Update the information of Li-Ion battery in section 2.4	2022/11/02

1 Summary of Test Result

Report Section	FCC Section	Description	Result
3.1	15.107	Conducted Emission	Pass
3.2	15.109	Radiated Emission	Pass

We, Beijing Boomwave Test Service Co. Ltd., would like to declare that the tested sample has been evaluated and in compliance with the requirements of applicable standards.

Prepared by:	鹿焕森	2022.11.02 17:12:37 +08'00'
Reviewed by:	陈毅	2022.11.02 17:24:20 +08'00'
Approved by:	赵炯	2022.11.02 17:27:50 +08'00'

Rationale:
The test results in this report apply exclusively to the tested model / sample.
The laboratory shall have no liability to authenticate the information of tested model / sample provided by applicant or manufacturer in the test report. And it should be aware that the information may affect the validity of test results.
The electrical copy of test report is invalid without the signatures. The hard copy is invalid without seal.
The test report shall not be modified, republished or copied without the written authorization of the laboratory.

2 General Information

2.1 Applicant

FCNT LIMITED
Chuorinkan 7-10-1 Yamato, Kanagawa 2420007, Japan

2.2 Manufacturer

FCNT LIMITED
Chuorinkan 7-10-1 Yamato, Kanagawa 2420007, Japan

2.3 Product Feature of Equipment Under Test

Product Name	Smart Phone
Marketing Name	F-51C
Model Name	F-51C
Sample Status	Production
Power Supply Rating	DC 3.9V
Supported Function	GSM850/PCS1900 WCDMA Band V LTE Band 5/12 2.4GHz Bluetooth 2.4GHz/5GHz WiFi 13.56MHz NFC Wired Charging
Antenna Type	Fixed Internal
Hardware Version	V1.2.0
Software Version	V00R028A-UD
Sample Received Date	2022/09/08

2.4 Ancillary Equipment

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following ancillary equipment were used to form a representative test configuration during the tests.

Accessory	Li-Ion Battery
Manufacturer	Ningde Amperex Technology Limited
Model Name	RA54310-0102
Capacity	4520mAh
Nominal Voltage	3.87V
Serial Number	---

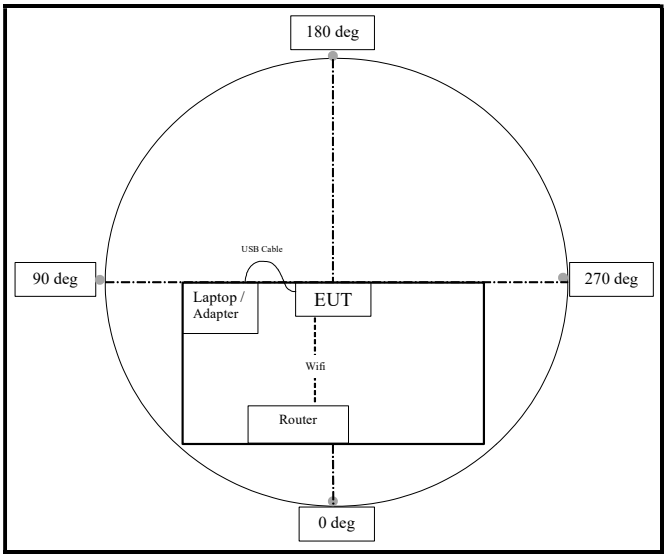
Support Unit	Power Adapter
Manufacturer	Sony
Model Name	AC-0060-TW
Input Power	AC100-240V~50/60Hz 0.2A
Output Power	DC5.0V, 1.5A
Serial Number	---

Support Unit	USB Cable
Manufacturer	---
Model Name	---
Serial Number	---

Support Unit	Wireless Router
Manufacturer	LINKSYS
Model Name	WRT3200ACM
Serial Number	19810609704032

Support Unit	Laptop
Manufacturer	Dell
Model Name	Inspiron 5493
Serial Number	NG4DK A00

2.5 Configuration and Peripherals



2.6 Applicable Standards

Standard	Version	Title
FCC 47 CFR Part 15 Subpart B	2020	Requirements for Un-intentional Radiators
ANSI C63.4	2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz

2.7 Test Facilities

Company Name: Beijing Boomwave Test Service Co. Ltd

Adress: EMC Building, No.1 Wang Jing East Road, Chao Yang District Beijing, P.R. China 100102

FCC Test Firm Registration Number: 613197

ISED Canada Registration No.: 24289 (CAB Identifier: CN0010)

VCCI Registration No.: R-20062, G-20063, C-20050, T-20049

Test Site	Description	Dimension	Ground Plane Size
☐ SAC10	10m semi-anechoic chamber	19.5m×12.9m×8.6m	9.6m×6.4m
☒ SAC3	3m semi-anechoic chamber	9.6m×6.4m×6.0m	4m×4m
☒ SR#1	Shielding Room for EMS test	8.1m×4.05m×2.755m	8.1m×4.05m
☐ SR#2	Shielding Room for RF test	8.1m×4.05m×2.755m	---

2.8 EUT Operation Mode

Mode No.	Mode	Description
Mode 1	GSM850/PCS1900 + BT + 5GHz WiFi + GPS + Playing MP4 (SD card) + USB Cable + Power Adapter	Multimedia Playing (EUT + Power Adapter)
Mode 2	WCDMA + BT + 5GHz WiFi + GPS + Playing MP4 (SD card) + USB Cable + Power Adapter	
Mode 3	LTE + BT + 5GHz WiFi + GPS + Playing MP4 (SD card) + USB Cable + Power Adapter	
Mode 4	GSM850/PCS1900 + BT + 5GHz WiFi + GPS + Camera + USB Cable connected with Laptop	Data Transferring (EUT + Laptop)
Mode 5	WCDMA + BT + 5GHz WiFi + GPS + Camera + USB Cable connected with Laptop	
Mode 6	LTE + BT + 5GHz WiFi + GPS + Camera + USB Cable connected with Laptop	

Note: Pre-Scan has been conducted to determine the worst-case mode: Mode 2 and Mode 5.

3 Test Result

3.1 Conducted Emission

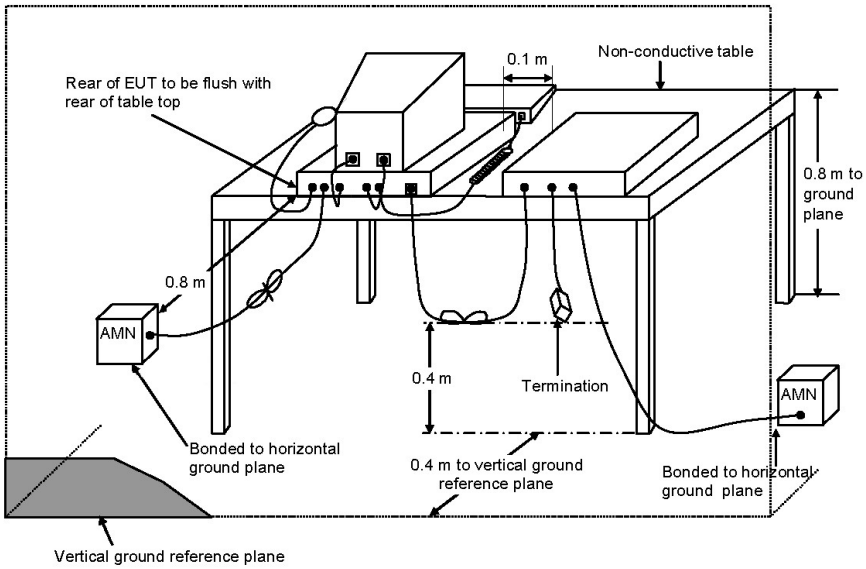
3.1.1. Limits

FCC 47 CFR Part 15 Subpart B - §15.107 (a)

Frequency Range (MHz)	Detector Type / Bandwidth	Class B limits (dBµV)
0.15 to 0.5	Quasi Peak / 9 kHz	66 to56
0.5 to 5		56
5 to 30		60
0.15 to 0.5	Average / 9 kHz	56 to46
0.5 to 5		46
5 to 30		50

Note: The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

3.1.2. Typical Test Setup Layout

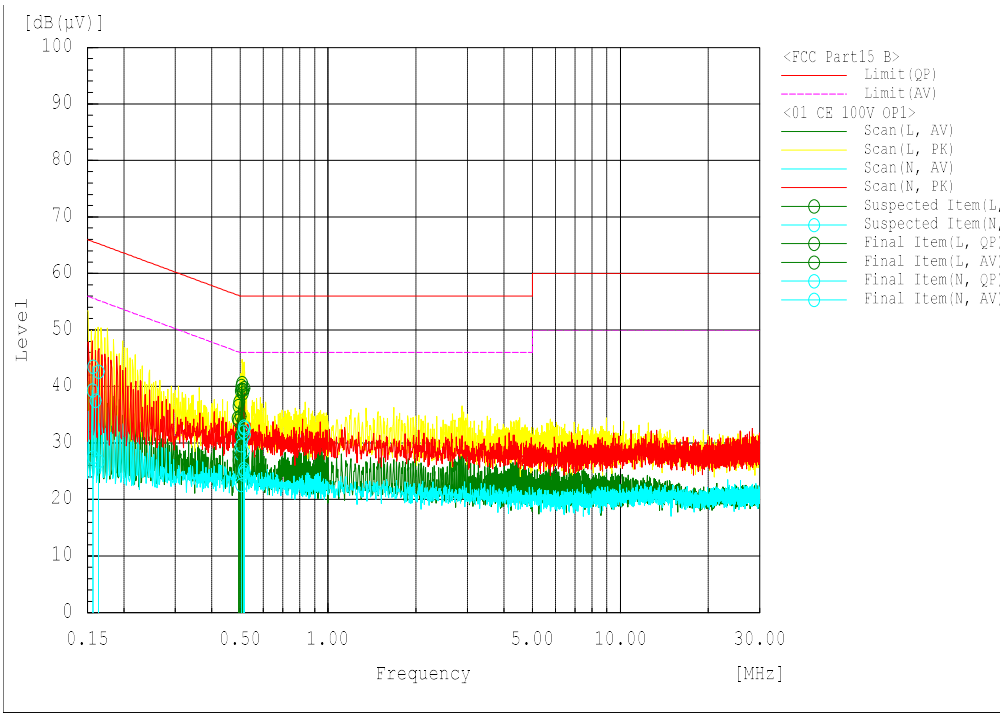


3.1.3. Test Procedures

1) The EUT was placed on a desk 0.8 meters height from the metal ground plane and 0.4 meter from the conducting wall of the shielding room and it was kept at least 0.8 meter 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 connected to the other LISN.
4) The frequency range from 150 kHz to 30 MHz was searched.
5) Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6) 6 frequency points closest to the limit of each line shall be performed the final measurement by Quasi Peak detector.

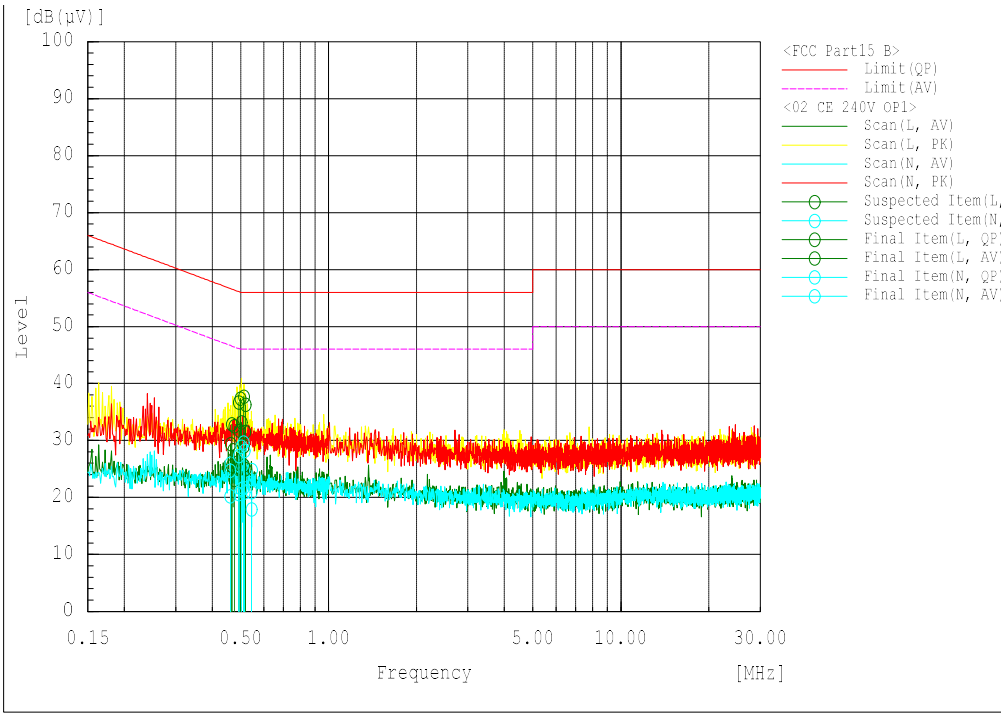
3.1.4. Test Result

Test Mode	Mode 2 - AC 100V	**Test Date**	2022/09/14
Test Frequency	0.15MHz ~ 30MHz	**Test Engineer**	Cai Zengchen
Serial Number	354676360010259	**Temp, Humidity**	23.4°C, 49.5%



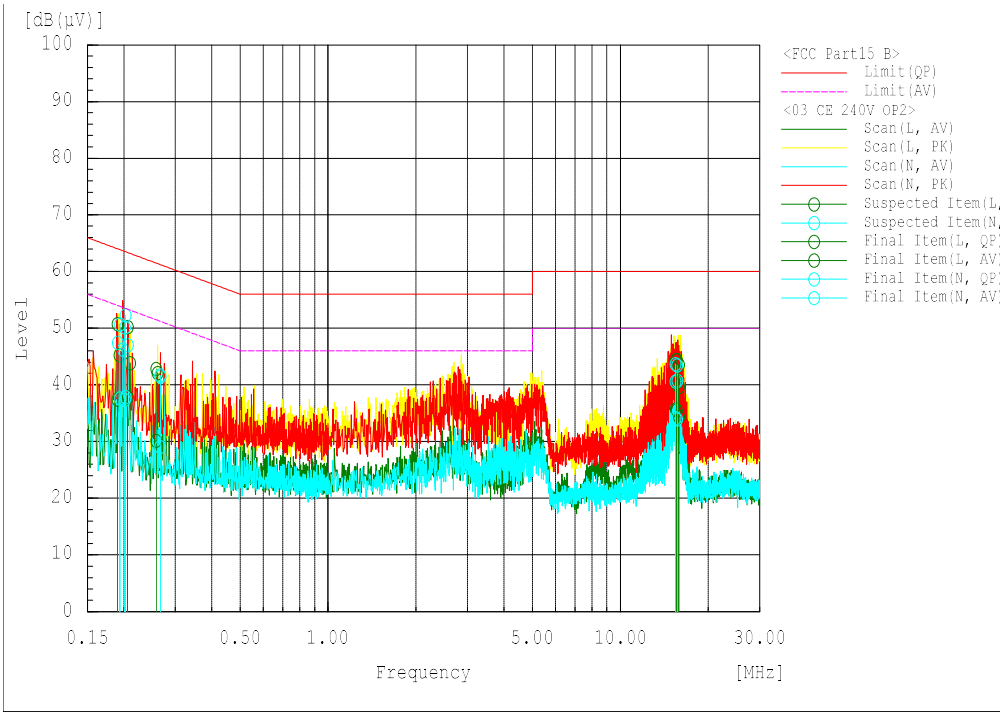
Frequency MHz	Line	Reading dB(µV)		Factor dB	Level dB(µV)		Limit dB(µV)		Margin dB		Pass/Fail
		QP	AV		QP	AV	QP	AV	QP	AV	
0.493	L	17.0	7.4	19.6	36.6	27.0	56.1	46.1	19.5	19.1	Pass
0.496	L	17.7	9.2	19.6	37.3	28.8	56.1	46.1	18.8	17.3	Pass
0.503	L	19.7	12.0	19.6	39.3	31.2	56.0	46.0	16.7	14.8	Pass
0.506	L	20.5	12.0	19.6	40.1	31.4	56.0	46.0	15.9	14.6	Pass
0.506	L	19.8	12.0	19.6	39.4	31.3	56.0	46.0	16.6	14.7	Pass
0.512	L	19.8	12.0	19.6	39.4	31.9	56.0	46.0	16.6	14.1	Pass
0.157	N	23.8	7.8	19.7	43.5	27.5	65.6	55.6	22.1	28.1	Pass
0.164	N	22.9	7.0	19.7	42.6	26.7	65.3	55.3	22.7	28.6	Pass
0.504	N	10.0	3.0	19.6	29.6	22.6	56.0	46.0	26.4	23.4	Pass
0.512	N	12.4	4.8	19.6	32.0	24.4	56.0	46.0	24.0	21.6	Pass
0.517	N	13.0	5.3	19.6	32.6	24.9	56.0	46.0	23.4	21.1	Pass
0.516	N	13.3	5.9	19.6	32.9	25.5	56.0	46.0	23.1	20.5	Pass

Test Mode	Mode 2 - AC 240V	**Test Date**	2022/09/14
Test Frequency	0.15MHz ~ 30MHz	**Test Engineer**	Cai Zengchen
Serial Number	354676360010259	**Temp, Humidity**	23.4°C, 49.5%



Frequency MHz	Line	Reading dB(µV)		Factor dB	Level dB(µV)		Limit dB(µV)		Margin dB		Pass/Fail
		QP	AV		QP	AV	QP	AV	QP	AV	
0.460	N	5.2	0.6	19.6	24.8	20.2	56.7	46.7	31.9	26.5	Pass
0.493	N	7.7	1.0	19.6	27.3	20.6	56.1	46.1	28.8	25.5	Pass
0.502	N	9.4	1.9	19.6	29.0	21.5	56.0	46.0	27.0	24.5	Pass
0.511	N	10.1	2.1	19.6	29.7	21.7	56.0	46.0	26.3	24.3	Pass
0.515	N	8.6	1.3	19.6	28.2	20.9	56.0	46.0	27.8	25.1	Pass
0.545	N	1.3	-1.7	19.6	20.9	17.9	56.0	46.0	35.1	28.1	Pass
0.466	L	13.3	5.9	19.6	32.9	25.5	56.6	46.6	23.7	21.1	Pass
0.475	L	12.9	3.5	19.6	32.5	23.1	56.4	46.4	23.9	23.3	Pass
0.493	L	17.1	5.4	19.6	36.7	25.0	56.1	46.1	19.4	21.1	Pass
0.499	L	17.8	5.6	19.6	37.4	25.2	56.0	46.0	18.6	20.8	Pass
0.512	L	18.1	6.0	19.6	37.7	25.6	56.0	46.0	18.3	20.4	Pass
0.520	L	16.7	5.4	19.6	36.3	25.0	56.0	46.0	19.7	21.0	Pass

Test Mode	Mode 5 - AC 240V	**Test Date**	2022/09/14
Test Frequency	0.15MHz ~ 30MHz	**Test Engineer**	Cai Zengchen
Serial Number	354676360010259	**Temp, Humidity**	23.4°C, 49.5%



Frequency MHz	Line	Reading dB(µV)		Factor dB	Level dB(µV)		Limit dB(µV)		Margin dB		Pass/Fail
		QP	AV		QP	AV	QP	AV	QP	AV	
0.190	L	30.9	18.0	19.8	50.7	37.4	64.0	54.0	13.3	16.6	Pass
0.206	L	30.4	18.0	19.8	50.2	37.8	63.4	53.4	13.2	15.6	Pass
0.258	L	23.2	10.0	19.7	42.9	30.1	61.5	51.5	18.6	21.4	Pass
15.477	L	24.8	16.0	19.6	44.4	35.7	60.0	50.0	15.6	14.3	Pass
15.605	L	24.8	16.0	19.6	44.4	35.5	60.0	50.0	15.6	14.5	Pass
15.862	L	24.0	15.0	19.6	43.6	34.3	60.0	50.0	16.4	15.7	Pass
0.194	N	31.0	18.0	19.7	50.7	37.6	63.9	53.9	13.2	16.3	Pass
0.201	N	30.4	18.0	19.7	50.1	37.4	63.6	53.6	13.5	16.2	Pass
0.203	N	32.6	18.0	19.7	52.3	37.9	63.5	53.5	11.2	15.6	Pass
0.266	N	22.0	9.3	19.7	41.7	29.0	61.2	51.2	19.5	22.2	Pass
15.458	N	24.1	15.0	19.6	43.7	34.1	60.0	50.0	16.3	15.9	Pass
15.619	N	23.9	14.0	19.6	43.5	33.9	60.0	50.0	16.5	16.1	Pass

3.1.5. Uncertainty

U_{lab}=3dB (U_{Cispr}=3.44dB)

The reported uncertainty is an expanded uncertainty calculated using a coverage factor of 2 which gives a level of confidence of approximately 95%.

3.2 Radiated Emission

3.2.1. Limit

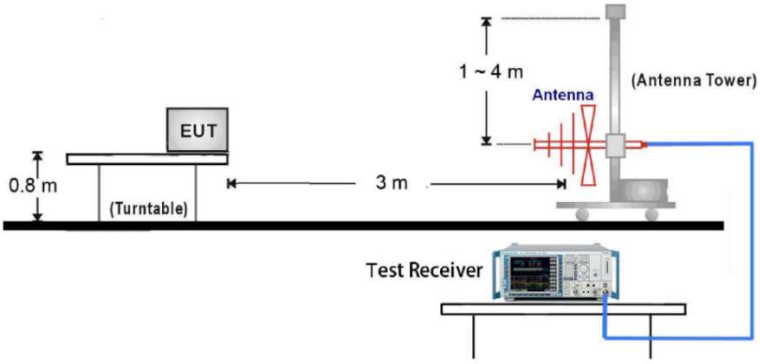
FCC 47 CFR Part 15 Subpart B - §15.109 (a)

Frequency (MHz)	Field Strength		Measurement Distance (meters)
	uV/m	dBuV/m	
30 - 88	100	40.0	3
88 - 216	150	43.5	3
216 - 960	200	46.0	3
Above 960	500	54.0	3

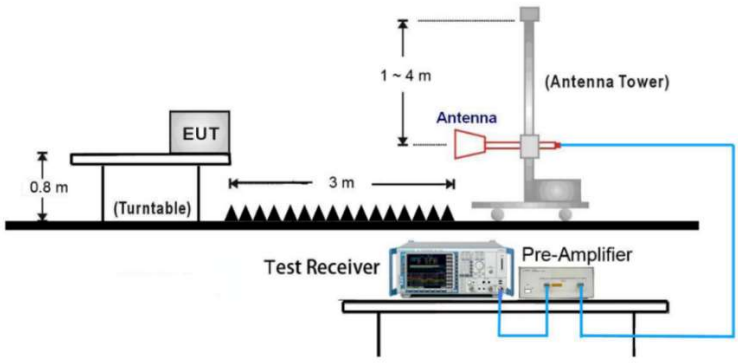
Frequency (MHz)	Class B Limits dBuV/m		Measurement Distance (meters)
	Peak	Average	
Above 1000	74	54	3

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705~108	1000
108~500	2000
500~1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

3.2.2. Typical Test Setup Layout and Connection



30MHz– 1GHz Test Setup



Above 1GHz Test Setup

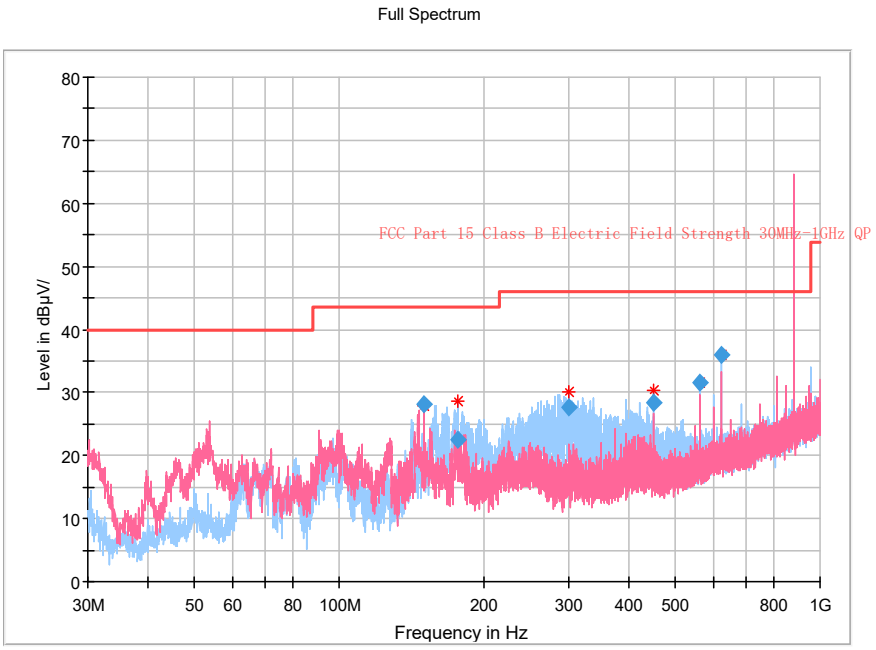
3.2.3. Test Procedures

30MHz - 1GHz & Above 1GHz:

1) The EUT was placed on a rotatable table top 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 elevation of the antenna varies from 1 m to 4 m above the ground to find the maximum field strength. The horizontal polarization and vertical polarization of the antenna are set for measurement.
5) For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 to 4 meters) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
6) Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode; Then the quasi-peak or average scan is carried out at points with relatively high peak value.
7) Reading(dBuV/m) = QuasiPeak(dBµV/m) or MaxPeak(dBµV/m) or Average(dBµV/m) - Corr.(dB)

3.2.4. Test Result

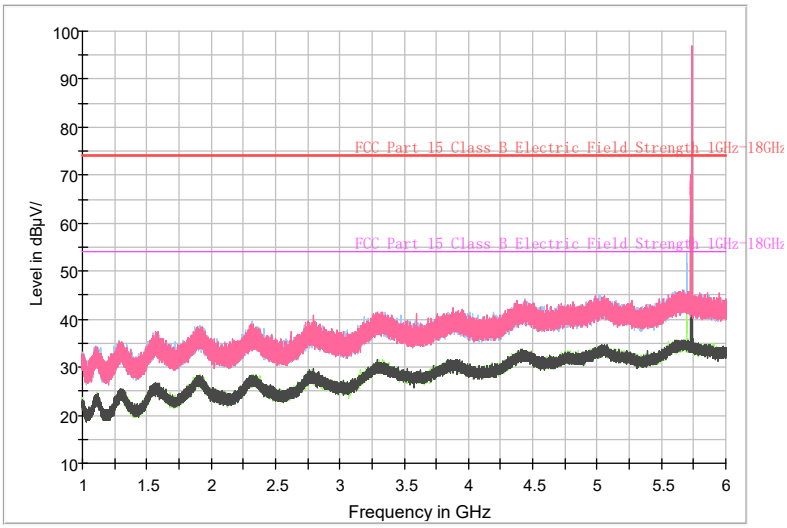
Test Mode	Mode 2	**Test Date**	2022/09/15
Test Frequency	30 MHz ~ 1000 MHz	**Test Engineer**	Tao Li
Serial Number	354676360010259	**Temp, Humidity**	25.3°C, 51.7%



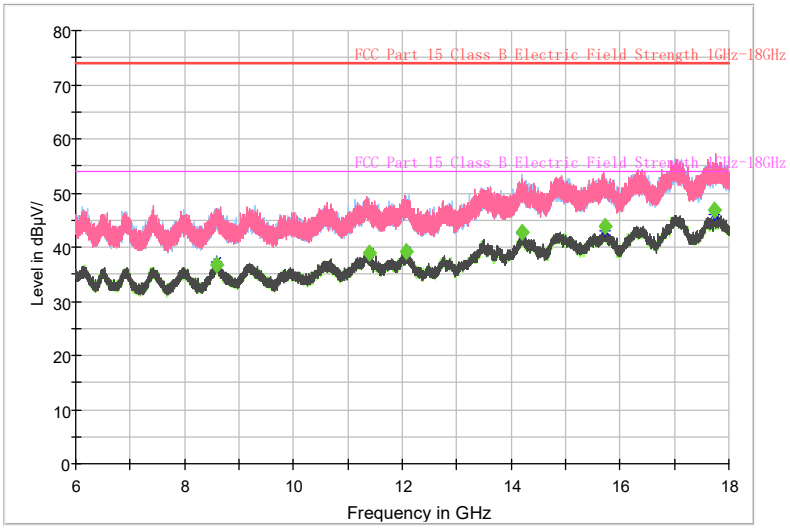
Frequency (MHz)	Reading (dBuV/m)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
149.989000	51.95	28.15	43.50	15.35	500.0	120.000	106.7	V	280.0	-23.8
176.130500	44.93	22.43	43.50	21.07	500.0	120.000	188.0	H	115.0	-22.5
300.048000	44.75	27.75	46.00	18.25	500.0	120.000	99.8	H	156.0	-17.0
449.961500	41.00	28.40	46.00	17.60	500.0	120.000	174.3	H	268.0	-12.6
562.481500	41.34	31.44	46.00	14.56	500.0	120.000	188.0	H	65.0	-9.9
624.949500	43.83	36.03	46.00	9.97	500.0	120.000	101.1	H	245.0	-7.8

Test Mode	Mode 2	**Test Date**	2022/09/15
Test Frequency	1000 MHz ~ 18000 MHz	**Test Engineer**	Tao Li
Serial Number	354676360010259	**Temp, Humidity**	25.3℃, 51.7%

Full Spectrum



Full Spectrum



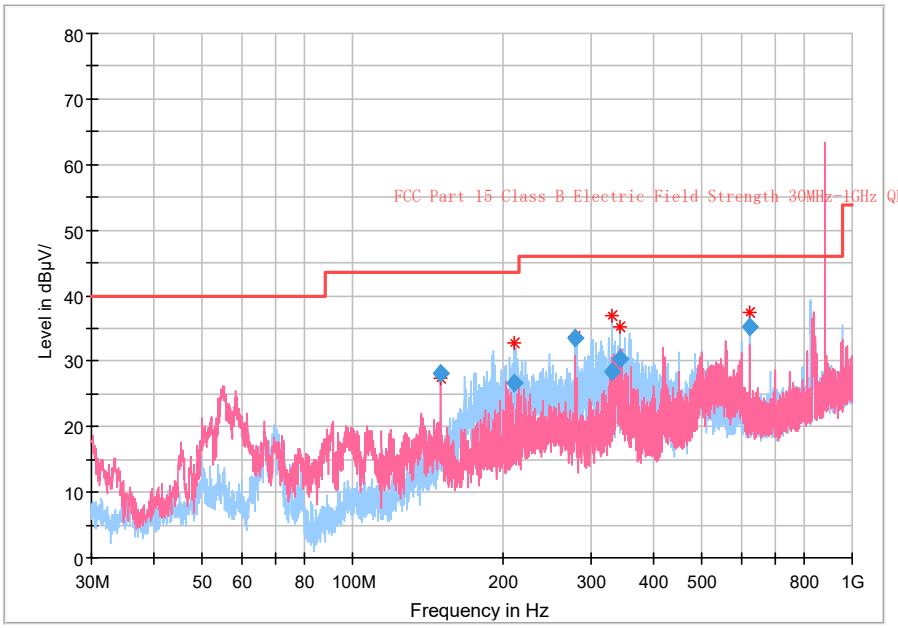
Frequency (MHz)	Reading MaxPeak (dBuV/m)	Reading Average (dBuV/m)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
8596.00	---	57.16	---	36.76	54.00	17.24	1000.0	1000.000	125.0	V	115.0	-20.4
11394.80	---	56.13	---	39.03	54.00	14.97	1000.0	1000.000	118.8	V	295.0	-17.1
12064.00	---	56.39	---	39.29	54.00	14.71	1000.0	1000.000	107.1	V	266.0	-17.1
14210.40	---	56.98	---	42.78	54.00	11.22	1000.0	1000.000	106.9	H	-25.0	-14.2
15722.80	---	58.29	---	43.89	54.00	10.11	1000.0	1000.000	225.0	H	295.0	-14.4
17736.00	---	58.37	---	46.87	54.00	7.13	1000.0	1000.000	125.0	V	75.0	-11.5

Test Mode	Mode 2	**Test Date**	2022/09/15
Test Frequency	18000 MHz ~ 40000 MHz	**Test Engineer**	Tao Li
Serial Number	354676360010259	**Temp, Humidity**	25.3℃, 51.7%

There were no emissions above 18GHz found within 20dB of the limit. Thus, the test result was not reported according to §15.31 (o)

Test Mode	Mode 5	**Test Date**	2022/09/15
Test Frequency	30 MHz ~ 1000 MHz	**Test Engineer**	Tao Li
Serial Number	354676360010259	**Temp, Humidity**	25.3℃, 51.7%

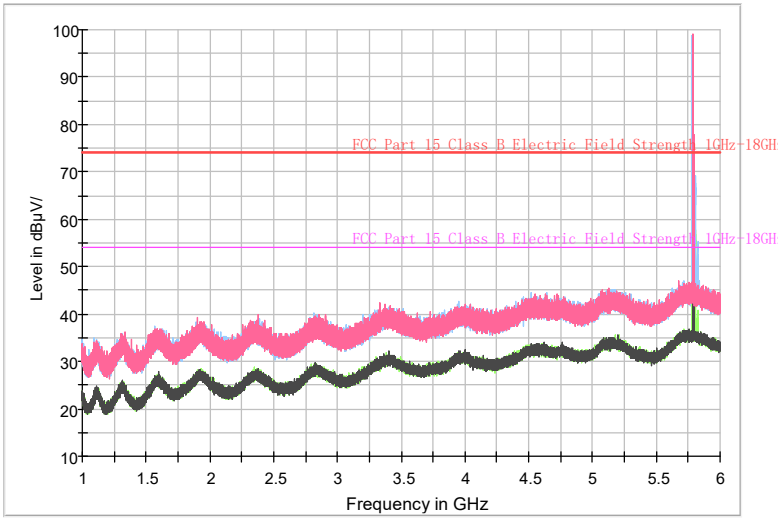
Full Spectrum



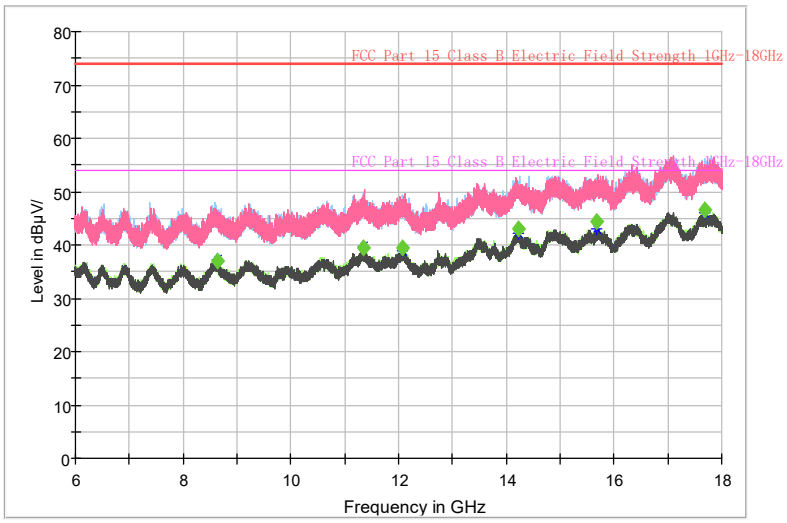
Frequency (MHz)	Reading (dBuV/m)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
149.989000	51.82	28.02	43.50	15.48	500.0	120.000	100.5	V	-25.0	-23.8
210.226000	46.99	26.59	43.50	16.91	500.0	120.000	124.0	H	157.0	-20.4
279.823500	51.24	33.54	46.00	12.46	500.0	120.000	124.7	H	18.0	-17.7
330.312000	44.38	28.48	46.00	17.52	500.0	120.000	107.2	H	268.0	-15.9
342.582500	45.53	30.43	46.00	15.57	500.0	120.000	100.7	H	87.0	-15.1
625.046500	43.05	35.25	46.00	10.75	500.0	120.000	100.7	H	256.0	-7.8

Test Mode	Mode 5	**Test Date**	2022/09/15
Test Frequency	1000 MHz ~ 18000 MHz	**Test Engineer**	Tao Li
Serial Number	354676360010259	**Temp, Humidity**	25.3°C, 51.7%

Full Spectrum



Full Spectrum



Frequency (MHz)	Reading MaxPeak (dBuV/m)	Reading Average (dBuV/m)	MaxPeak (dBµV/m	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
8630.00	---	57.36	---	36.96	54.00	17.04	1000.0	1000.000	176.4	V	290.0	-20.4
11340.80	---	56.62	---	39.32	54.00	14.68	1000.0	1000.000	107.6	H	115.0	-17.3
12079.20	---	56.43	---	39.33	54.00	14.67	1000.0	1000.000	124.9	H	25.0	-17.1
14233.20	---	57.18	---	42.98	54.00	11.02	1000.0	1000.000	224.9	H	10.0	-14.2
15687.20	---	58.61	---	44.31	54.00	9.69	1000.0	1000.000	225.0	V	157.0	-14.3
17687.20	---	58.26	---	46.66	54.00	7.34	1000.0	1000.000	124.9	H	25.0	-11.6

Test Mode	Mode 5	**Test Date**	2022/09/15
Test Frequency	18000 MHz ~ 40000 MHz	**Test Engineer**	Tao Li
Serial Number	354676360010259	**Temp, Humidity**	25.3°C, 51.7%

There were no emissions above 18GHz found within 20dB of the limit. Thus, the test result was not reported according to §15.31 (o)

3.2.5. Uncertainty

Radiated Test				
Frequency	**Antenna Polarization**	**Distance**	U_{lab}	***k***
30MHz-200MHz	Horizontal	3m	4.58 dB	2
	Vertical	3m	4.73 dB	2
200MHz-1GHz	Horizontal	3m	4.90 dB	2
	Vertical	3m	4.93 dB	2
1GHz-6GHz	---	3m	4.66 dB	2
6GHz-18GHz	---	3m	5.14dB	2
18GHz-40GHz	---	3m	4.80dB	2

Determining compliance with the limits shall be based on the results of the compliance measurements, taking into account the considerations on measurement instrumentation uncertainty.
Because U_{lab} is equal to U_{CISPR} (as specified in CISPR16-4-2), then:
−compliance is deemed to occur if no measured disturbance exceeds the disturbance limit;
-non-compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.

4 Test Instruments and Software

4.1 Test Instruments

Test Item	Description	Model Name	S / N	Manufacture	Next Cal Date
Radiated Emission	EMI TEST RECERVER	ESR26	101320	R&S	2023/01/11
	Spectrum Analyzer	FSV40	101403	R&S	2023/01/11
	Pre-amplifier	PE15A1009	V00140120181115E825	Pasternack Enterprises	2023/01/11
	Hybrid Antenna	VULB9163	01266	SCHWARZBECK	2023/07/03
	Pre-amplifier	TAP-011858	AP19L806047	TONSCEND	2023/04/01
	Horn Antenna	HF907	100096	R&S	2023/04/01
	Pre-amplifier	SCU40	2046336	R&S	2023/04/01
	Broad-Band Horn Antenna	BBHA9170	797	SCHWARZBECK	2023/04/01
Conducted Emission	EMI TEST RECERVER	ESR26	101320	R&S	2023/01/11
	16 A 2-Line V-Network	ENV216	102328	R&S	2023/01/11
	Pulse Limiter	ESH3-Z2	102457	R&S	2023/01/11
Other	Wireless comprehensive test instrument	CMW500	115895	R&S	2023/01/11

4.2 Test Software

Name	Model	Version
Conducted Emission Software	EP9/CE	4.0.070
Radiated Emission Software	EMC32	10.01

--- End of Test Report ---