



FCC Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT2225-1
FCC ID : IHDT56AE5
STANDARD : 47 CFR Part 15 Subpart B
CLASSIFICATION : Certification
TEST DATE(S) : Feb. 24, 2022 ~ Feb. 26, 2022

We, Sporton International Inc. (Kunshan), 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 Inc. (Kunshan), the test report shall not be reproduced except in full.

Reviewed by: Jason Jia / Supervisor

Approved by: Alex Wang / Manager



Sporton International Inc. (Kunshan)

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China**



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC212701	Rev. 01	Initial issue of report	Mar. 21, 2022



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.107	AC Conducted Emission	< 15.107 limits	PASS	Under limit 7.57 dB at 0.161 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 4.06 dB at 71.710 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.



1. General Description

1.1. Applicant

Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.2. Manufacturer

Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.3. Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2225-1
FCC ID	IHDT56AE5
EUT supports Radios application	GSM/WCDMA/LTE/NFC/5G NR WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE, GNSS, FM
IMEI Code	Conduction: 350714860022716/350714860022724 for Sample 1 350714860031519/350714860031527 for Sample 2 Radiation: 350714860030255/350714860030263 for Sample 1 350714860022617/350714860022625 for Sample 2
HW Version	DVT2
SW Version	S1SU32.41
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are two types of EUT, the sample 1 is 1st source + Battery 1 and the sample 2 is 2nd source + Battery 2. The differences could be referred to the XT2225-1_Operational Description of Product Equality Declaration which is exhibit separately. According to the difference, we choose sample 1 to full test and the sample 2 is verified for the difference.



1.4. Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	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 LTE Band 7 : 2500 MHz ~ 2570 MHz LTE Band 12 : 699 MHz ~ 716 MHz LTE Band 13 : 777 MHz ~ 787 MHz LTE Band 17 : 704 MHz ~ 716 MHz LTE Band 26 : 814 MHz ~ 849 MHz LTE Band 38 : 2570 MHz ~ 2620 MHz LTE Band 41 : 2496 MHz ~ 2690 MHz LTE Band 42 : 3450 MHz ~ 3550 MHz LTE Band 66 : 1710 MHz ~ 1780 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n77: 3450 MHz ~ 3550 MHz; 3700 MHz ~ 3980 MHz 5G NR n78: 3450 MHz ~ 3550 MHz; 3700 MHz ~ 3800 MHz 802.11b/g/n: 2400 MHz ~ 2483.5 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz 5745 MHz ~ 5825 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz NFC : 13.56 MHz
Rx Frequency	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 LTE Band 12 : 729 MHz ~ 746 MHz LTE Band 13 : 746 MHz ~ 756 MHz LTE Band 17 : 734 MHz ~ 746 MHz LTE Band 26 : 859 MHz ~ 894 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41 : 2496 MHz ~ 2690 MHz LTE Band 42 : 3450 MHz ~ 3550 MHz LTE Band 66 : 2110 MHz~ 2200 MHz 5G NR n2 : 1930 MHz ~ 1990 MHz 5G NR n5 : 869 MHz ~ 894 MHz 5G NR n7 : 2620 MHz ~ 2690 MHz 5G NR n66 : 2110 MHz~ 2200 MHz



	5G NR n77: 3450 MHz ~ 3550 MHz; 3700 MHz ~ 3980 MHz 5G NR n78: 3450 MHz ~ 3550 MHz; 3700 MHz ~ 3800 MHz 802.11b/g/n: 2400 MHz ~ 2483.5 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz 5745 MHz ~ 5825 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz NFC : 13.56 MHz GNSS : 1559 MHz ~ 1610 MHz FM : 88 MHz ~ 108 MHz
Antenna Type	WWAN : PIFA Antenna WLAN : PIFA Antenna Bluetooth : PIFA Antenna GNSS: PIFA Antenna NFC: Loop Antenna FM : External Earphone Antenna
Type of Modulation	GSM/GPRS: GMSK EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK WCDMA : BPSK HSDPA/DC-HSDPA : QPSK HSUPA : QPSK HSPA+ : 16QAM (16QAM uplink is not supported) DC-HSDPA : 64QAM LTE: QPSK / 16QAM / 64QAM / 256QAM 5G NR: DFT-s-OFDM (PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM) CP-OFDM (QPSK / 16QAM / 64QAM / 256QAM) 802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n/ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) Bluetooth LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : $\pi/4$ -DQPSK Bluetooth (3Mbps) : 8-DPSK GNSS : BPSK NFC: ASK FM

1.5. Modification of EUT

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



1.6. Test Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People’s Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CO01-KS 03CH02-KS	CN1257	314309

1.7. Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH02-KS	AUDIX	E3	6.2009-8-24a
2.	CO01-KS	AUDIX	E3	6.2009-8-24

1.8. 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

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



1.9. Specification of Accessory

Specification of Accessory				
AC Adapter 1(US)	Brand Name	Motorola (Salcomp)	Model Name	MC-331
AC Adapter 1(EU)	Brand Name	Motorola (Salcomp)	Model Name	MC-332
AC Adapter 1(UK)	Brand Name	Motorola (Salcomp)	Model Name	MC-333
AC Adapter 1(IN)	Brand Name	Motorola (Salcomp)	Model Name	MC-334
AC Adapter 1(AU)	Brand Name	Motorola (Salcomp)	Model Name	MC-335
AC Adapter 1(AR)	Brand Name	Motorola (Salcomp)	Model Name	MC-336
AC Adapter 1(BR)	Brand Name	Motorola (Salcomp)	Model Name	MC-337
AC Adapter 1(CHILE)	Brand Name	Motorola (Salcomp)	Model Name	MC-339
AC Adapter 2(US)	Brand Name	Motorola (Acbel)	Model Name	MC-331
AC Adapter 2(EU)	Brand Name	Motorola (Acbel)	Model Name	MC-332
AC Adapter 2(UK)	Brand Name	Motorola (Acbel)	Model Name	MC-333
AC Adapter 3(US)	Brand Name	Motorola (Aohai)	Model Name	MC-331
AC Adapter 3(EU)	Brand Name	Motorola (Aohai)	Model Name	MC-332
AC Adapter 3(UK)	Brand Name	Motorola (Aohai)	Model Name	MC-333
Battery 1	Brand Name	Motorola (Sunwoda)	Model Name	NE50
Battery 2	Brand Name	Motorola (ATL)	Model Name	NE50
Earphone 1	Brand Name	Motorola (NEW LEADER)	Model Name	NLD-EM313A-09SF
Earphone 2	Brand Name	Motorola (LYAND ACOUSTIC)	Model Name	LYM239-76C-006
Earphone 3	Brand Name	Motorola(LYAND ACOUSTIC)	Model Name	LYM528-76C-001
Earphone 4	Brand Name	Motorola(NEW LEADER)	Model Name	NLD-EM313A-19SF
Earphone 5	Brand Name	Motorola(LCHSE)	Model Name	MH191
Earphone 6	Brand Name	Motorola(LYAND)	Model Name	MH191
USB Cable 1	Brand Name	Motorola(Salbao)	Model Name	SHQ-A110A
USB Cable 2	Brand Name	Motorola(KINGPOWER)	Model Name	K235-07760-H0



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.

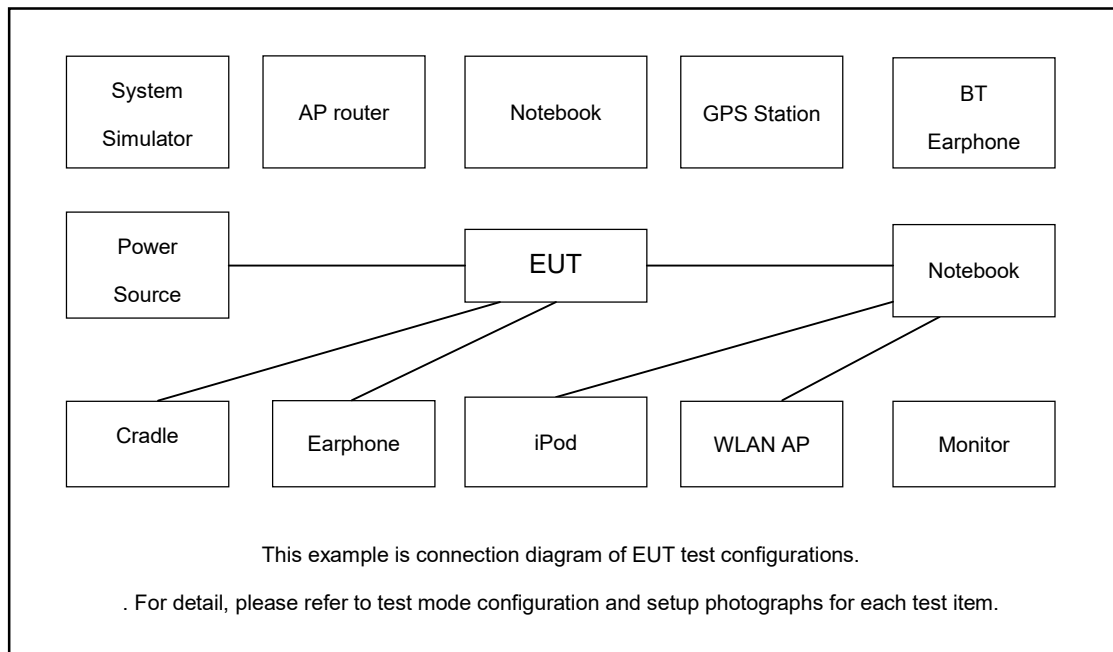
Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (30MHz to the 5th harmonic of the highest frequency or to 40 GHz, whichever is lower).

Test Items	Function Type
AC Conducted Emission	Mode 1: GSM 850 Rx(Middle) Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Earphone1 + Battery 1 + USB Cable 1(Charging from Adapter 1) + SIM 1 for Sample 1
	Mode 2: WCDMA 1900 Rx Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + Earphone2 + Battery 1 + USB Cable 2(Charging from Adapter 2) + SIM 2 for Sample 1
	Mode 3: LTE Band 12 Rx(High) Bluetooth Idle + WLAN (2.4G) Idle + MPEG4(Run Color Bar) + Earphone3 + Battery 1 + USB Cable1(Charging from Adapter3) + SIM 1 for Sample 1
	Mode 4: LTE Band 13 Rx(High) Bluetooth Idle + WLAN (5G) Idle + FM RX(98MHz) + Earphone4 + Battery + USB Cable 1(Data Link with Notebook) + SIM 2 for Sample 1 EUT (eMMC) USB Data Link to PC/NB
	Mode 5: LTE Band 26 Rx(Low) Bluetooth Idle + WLAN (2.4G) Idle + NFC On + Earphone5 + Battery + USB Cable 1(Data Link with Notebook) + SIM 1 for Sample 1 PC/NB USB Data Link to EUT (eMMC)
	Mode 6: LTE Band 17 Rx(Low) Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Earphone6 + Battery + USB Cable 1(Data Link with Notebook) + SIM 2 for Sample 1 EUT (SD) USB Data Link to NB
	Mode 7: DC_7A_n5 Rx(Middle) Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone4 + Battery + USB Cable 1(Data Link with Notebook) + SIM 1 for Sample 1 PC/NB USB Data Link to EUT (SD)
	Mode 8: DC_41A_n77 Rx Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Earphone4 + Battery + USB Cable 2(Data Link with Notebook) + SIM 2 for Sample 1 EUT (eMMC) USB Data Link to NB
	Mode 9: GSM 850 Rx(Middle) Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) or Camera(Front) + Earphone1 + Battery 2 + USB Cable 1(Charging from Adapter 1) + SIM 1 for Sample 2
	Mode 10 : LTE Band 13 Rx(High) Bluetooth Idle + WLAN (5G) Idle + FM RX(98) + Earphone4 + Battery 2 + USB Cable 1(Data Link with Notebook) + SIM 2 for Sample 2 EUT (eMMC) USB Data Link to PC/NB



Radiated Emissions	<p>Mode 1: GSM 850 Rx(Middle) Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Earphone1 + Battery 1 + USB Cable 1(Charging from Adapter 1) + SIM 1 for Sample 1</p> <p>Mode 2: WCDMA 1900 Rx Bluetooth Idle + WLAN (5G) Idle + Camera(Front) + Earphone2 + Battery 1 + USB Cable 2(Charging from Adapter 2) + SIM 2 for Sample 1</p> <p>Mode 3: LTE Band 12 Rx(High) Bluetooth Idle + WLAN (2.4G) Idle + MPEG4(Run Color Bar) + Earphone3 + Battery 1 + USB Cable1(Charging from Adapter3) + SIM 1 for Sample 1</p> <p>Mode 4: LTE Band 13 Rx(High) Bluetooth Idle + WLAN (5G) Idle + FM RX(88) + Earphone4 + Battery + USB Cable 1(Data Link with Notebook) + SIM 2 for Sample 1 EUT (eMMC) USB Data Link to PC/NB</p> <p>Mode 5: LTE Band 26 Rx(Low) Bluetooth Idle + WLAN (2.4G) Idle + NFC On + Earphone5 + Battery + USB Cable 1(Data Link with Notebook) + SIM 1 for Sample 1 PC/NB USB Data Link to EUT (eMMC)</p> <p>Mode 6: LTE Band 17 Rx(Low) Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Earphone6 + Battery + USB Cable 1(Data Link with Notebook) + SIM 2 for Sample 1 EUT (SD) USB Data Link to PC/NB</p> <p>Mode 7: DC_7A_n5 Rx(Middle) Bluetooth Idle + WLAN (2.4G) Idle + GNSS Rx + Earphone1 + Battery + USB Cable 1(Data Link with Notebook) + SIM 1 for Sample 1 PC/NB USB Data Link to EUT (SD)</p> <p>Mode 8: DC_41A_n77 Rx Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Earphone1 + Battery + USB Cable 2(Data Link with Notebook) + SIM 2 for Sample 1 EUT (SD) USB Data Link to PC/NB</p> <p>Mode 9: GSM 850 Rx(Middle) Bluetooth Idle + WLAN (2.4G) Idle + Camera(Rear) + Earphone1 + Battery 1 + USB Cable 1(Charging from Adapter 1) + SIM 1 for Sample 2</p> <p>Mode 10 : LTE Band 17 Rx(Low) Bluetooth Idle + WLAN (5G) Idle + GNSS Rx + Earphone6 + Battery + USB Cable 1(Data Link with Notebook) for Sample 2 EUT (SD) USB Data Link to PC/NB</p>
<p>Remark:</p> <ol style="list-style-type: none"> 1. The worst case of AC is mode 4; only the test data of this mode is reported. 2. The worst case of RE is mode 10; only the test data of this mode is reported. 3. 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. 	

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	MT8821C	N/A	N/A	Unshielded,1.8m
2.	Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded,1.8m
3.	Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded,1.8m
4.	Signal Generator	R&S	SMBV100A	N/A	N/A	Unshielded,1.8m
5.	WLAN AP	D-link	DIR-655	KA21R655B1	N/A	Unshielded,1.8m
6.	WLAN AP	TP-Link	TL-WDR5600	N/A	N/A	Unshielded,1.8m
7.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A
8.	Bluetooth Earphone	Xiaomi	LYEJ02LM	N/A	N/A	N/A
9.	Notebook	Lenovo	G480	QDS-BRCM1050I	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
	Notebook	Lenovo	S730-13IWL	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
10.	Hard Disk	Lenovo	F310	DoC	Shielded, 1.2m	N/A
11.	Hard disk	KINGSHARE	KSP6120G	Fcc DoC	Shielded, 1.2m	N/A
12.	SD Card	Kingston	8GB	N/A	N/A	N/A
13.	SD Card	SanDisk	Uitra	N/A	N/A	N/A

2.4. EUT Operation Test Setup

The EUT was in GSM or WCDMA or LTE or 5G NR 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 camera to capture images.
3. Turn on MPEG4 function.
4. Turn on FM function to make the EUT receive continuous signals from FM station.
5. Turn on GNSS function to make the EUT receive continuous signals from GNSS station.
6. Turn on NFC function



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

*Decreases with the 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.

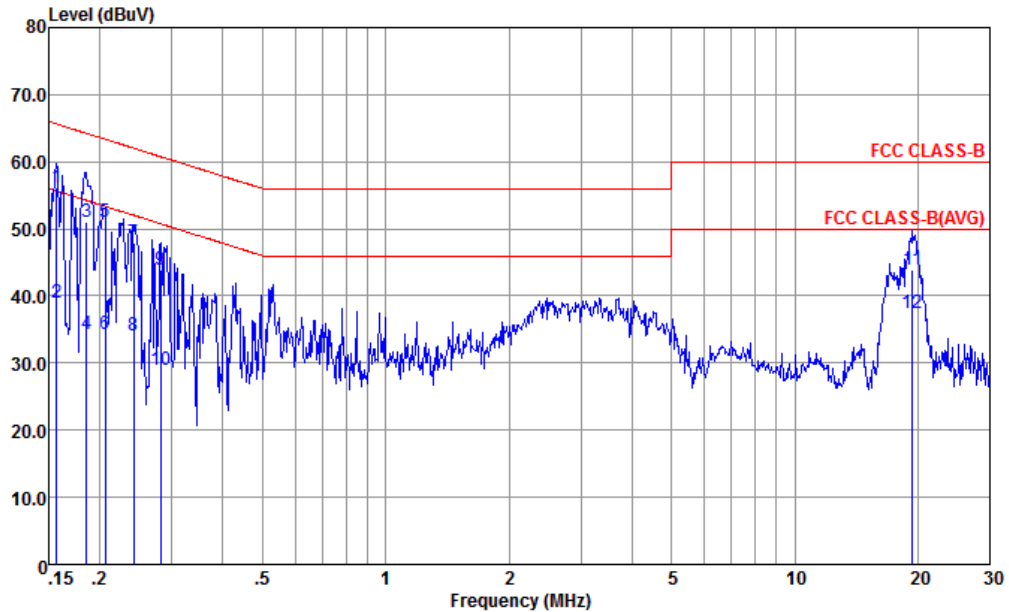
3.1.4 Test Setup





3.1.5 Test Result of AC Conducted Emission

Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

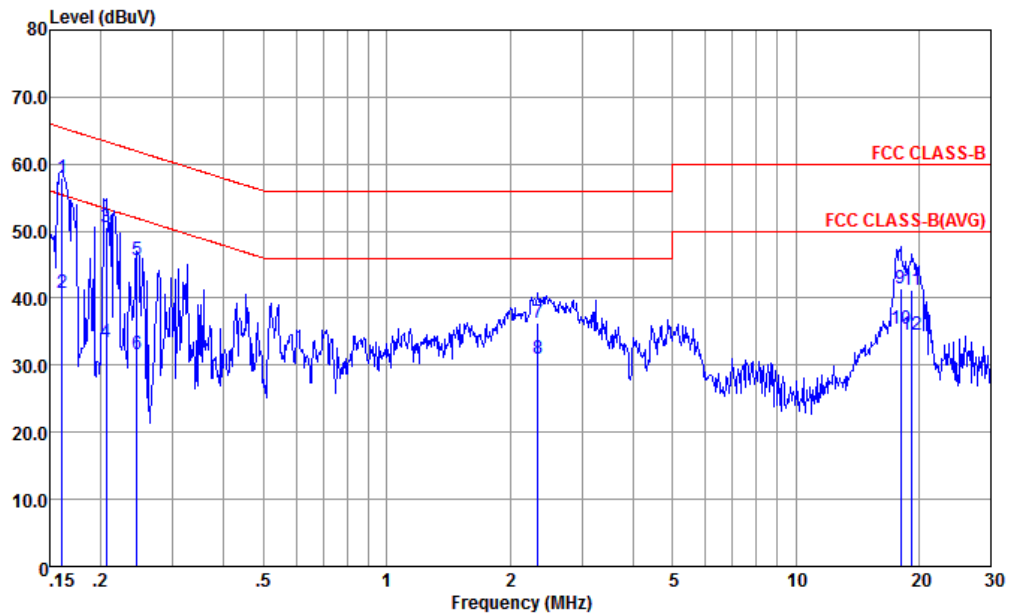


Site : CO01-KS
 Condition : FCC CLASS-B LISN-060105-L LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1 *	0.156	56.09	-9.56	65.65	45.61	0.02	10.46	QP
2	0.156	39.09	-16.56	55.65	28.61	0.02	10.46	Average
3	0.185	50.93	-13.31	64.24	40.51	0.03	10.39	QP
4	0.185	34.32	-19.92	54.24	23.90	0.03	10.39	Average
5	0.206	51.00	-12.36	63.36	40.60	0.04	10.36	QP
6	0.206	34.30	-19.06	53.36	23.90	0.04	10.36	Average
7	0.242	47.99	-14.05	62.04	37.60	0.05	10.34	QP
8	0.242	33.99	-18.05	52.04	23.60	0.05	10.34	Average
9	0.282	43.88	-16.88	60.76	33.49	0.07	10.32	QP
10	0.282	28.88	-21.88	50.76	18.49	0.07	10.32	Average
11	19.428	43.85	-16.15	60.00	32.90	0.47	10.48	QP
12	19.428	37.45	-12.55	50.00	26.50	0.47	10.48	Average



Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-KS
 Condition : FCC CLASS-B LISN-060105-N NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 *	0.161	57.86	-7.57	65.43	47.30	0.11	10.45	QP
2	0.161	40.76	-14.67	55.43	30.20	0.11	10.45	Average
3	0.206	50.66	-12.70	63.36	40.20	0.10	10.36	QP
4	0.206	33.36	-20.00	53.36	22.90	0.10	10.36	Average
5	0.246	45.64	-16.27	61.91	35.20	0.10	10.34	QP
6	0.246	31.64	-20.27	51.91	21.20	0.10	10.34	Average
7	2.346	36.28	-19.72	56.00	25.91	0.14	10.23	QP
8	2.346	30.98	-15.02	46.00	20.61	0.14	10.23	Average
9	18.039	41.50	-18.50	60.00	30.60	0.44	10.46	QP
10	18.039	35.50	-14.50	50.00	24.60	0.44	10.46	Average
11	19.224	41.17	-18.83	60.00	30.20	0.49	10.48	QP
12	19.224	34.57	-15.43	50.00	23.60	0.49	10.48	Average

Note:

- Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
- Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)



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 (MHz)	Field Strength (microvolts/meter)	Measurement Distance (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.

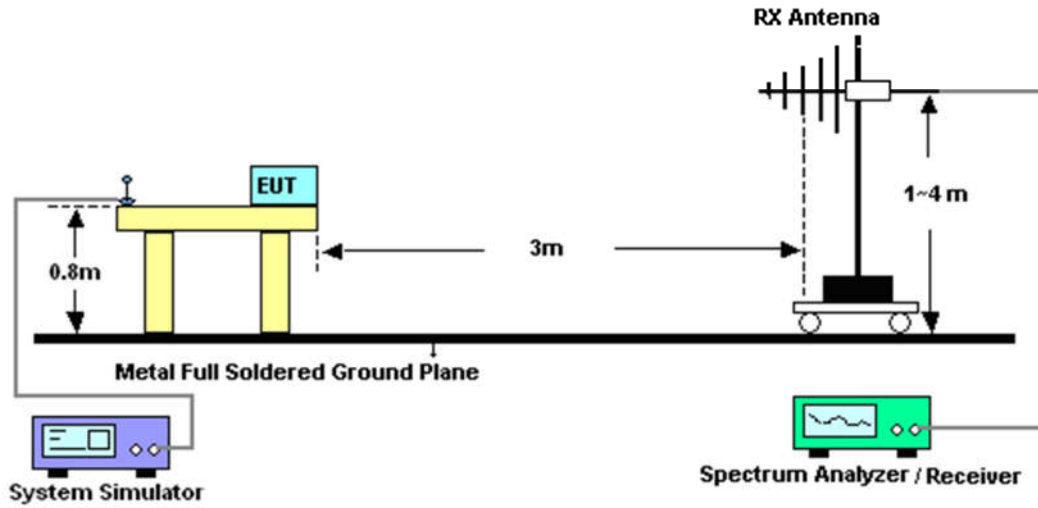


3.2.3. Test Procedures

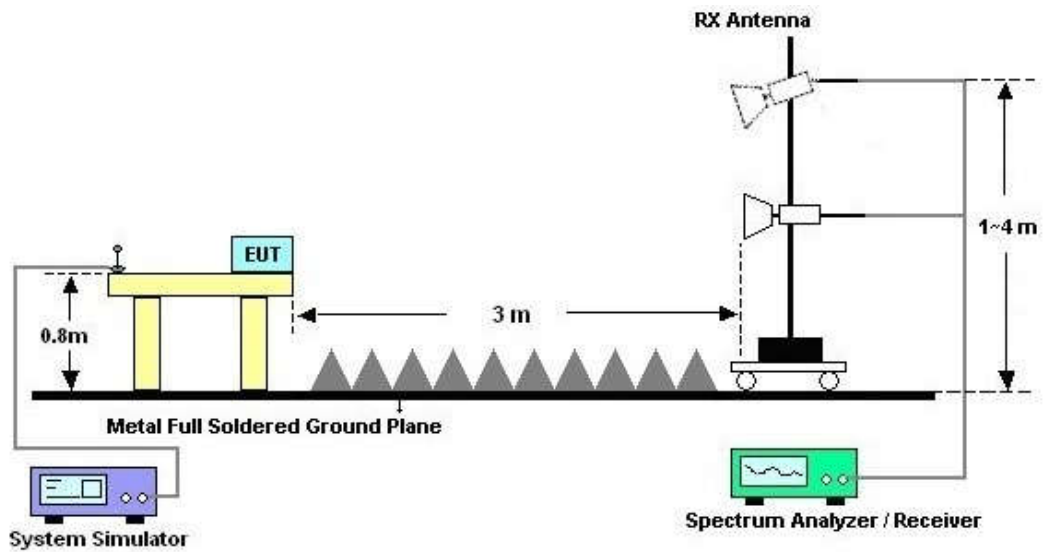
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna 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.
6. 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 μ V/m) = 20 log Emission level (μ V/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
10. Exploratory radiated emissions testing of handheld and/or body-worn devices shall include rotation of the EUT through three orthogonal axes (X/Y/Z Plane) to determine the orientation (attitude) that maximizes the emissions.

3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz



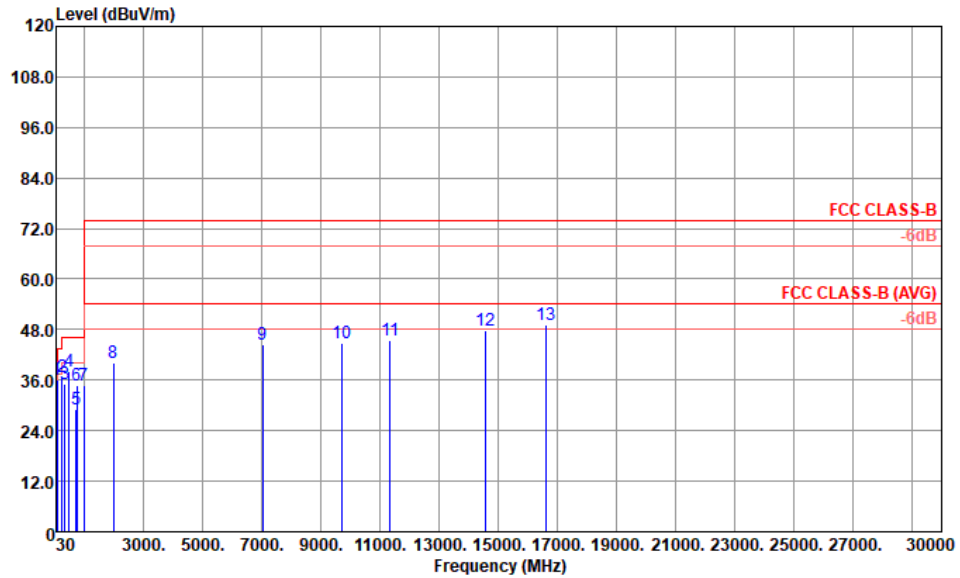
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

Test Engineer :	Yoke SI	Temperature :	21~22°C
		Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Horizontal
Remark :	#6 is system simulator signal which can be ignored.		

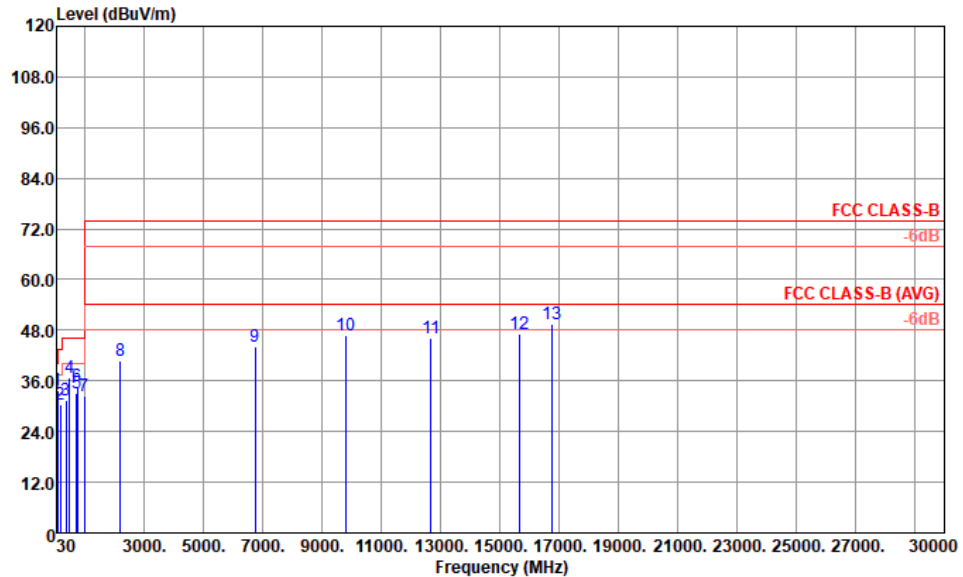


Site : 03CH02-KS
 Condition : FCC CLASS-B 3m CBL 6111D 59913 HORIZONTAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	71.710	35.94	-4.06	40.00	54.77	12.50	1.07	32.40	100	0	Peak
2	239.520	36.72	-9.28	46.00	49.67	17.20	2.25	32.40	---	---	Peak
3	320.030	35.07	-10.93	46.00	45.55	19.30	2.62	32.40	---	---	Peak
4	480.080	38.07	-7.93	46.00	43.88	23.40	3.19	32.40	---	---	Peak
5	719.670	29.10	-16.90	46.00	30.54	27.00	3.92	32.36	---	---	Peak
6	735.000	34.71			36.39	26.70	3.95	32.33	---	---	Peak
7	960.230	34.79	-19.21	54.00	30.15	31.10	4.51	30.97	---	---	Peak
8	1969.000	39.98	-34.02	74.00	65.74	31.30	6.66	63.72	---	---	Peak
9	7018.000	44.39	-29.61	74.00	58.86	36.00	13.14	63.61	---	---	Peak
10	9721.000	44.85	-29.15	74.00	55.42	36.97	15.82	63.36	---	---	Peak
11	11336.000	45.52	-28.48	74.00	52.83	38.10	16.94	62.35	---	---	Peak
12	14583.000	47.86	-26.14	74.00	53.68	39.67	19.28	64.77	---	---	Peak
13	16623.000	49.13	-24.87	74.00	51.94	42.14	20.77	65.72	---	---	Peak



Test Engineer :	Yoke Si	Temperature :	21~22°C
		Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Vertical
Remark :	#6 is system simulator signal which can be ignored.		



Site : 03CH02-KS
 Condition : FCC CLASS-B 3m CBL 6111D 59913 VERTICAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	A/Pos	T/Pos	Remark
	MHz	dBUV/m	dB	dBUV/m	dBuV	dB/m	dB	cm	deg	
1	71.710	33.80	-6.20	40.00	52.63	12.50	1.07	32.40	---	Peak
2	167.740	30.31	-13.19	43.50	45.33	15.50	1.88	32.40	---	Peak
3	347.190	31.46	-14.54	46.00	41.00	20.14	2.72	32.40	---	Peak
4	480.080	36.73	-9.27	46.00	42.54	23.40	3.19	32.40	---	Peak
5	719.670	33.23	-12.77	46.00	34.67	27.00	3.92	32.36	---	Peak
6	735.000	34.75			36.43	26.70	3.95	32.33	---	Peak
7	960.230	32.47	-21.53	54.00	27.83	31.10	4.51	30.97	---	Peak
8	2190.000	40.68	-33.32	74.00	65.85	31.68	7.03	63.88	---	Peak
9	6729.000	44.14	-29.86	74.00	59.56	35.89	12.77	64.08	---	Peak
10	9789.000	46.66	-27.34	74.00	57.26	37.05	15.68	63.33	---	Peak
11	12662.000	46.24	-27.76	74.00	51.75	39.23	17.97	62.71	---	Peak
12	15654.000	47.23	-26.77	74.00	52.22	40.38	20.04	65.41	---	Peak
13	16759.000	49.62	-24.38	74.00	52.13	42.31	20.87	65.69	---	Peak

Note:

- Level(dBμV/m) = Read Level(dBμV) + Antenna Factor(dB/m) + Cable Loss(dB) - Preamp Factor(dB)
- Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)



4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 21, 2021	Feb. 26, 2022	Apr. 20, 2022	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 14, 2021	Feb. 26, 2022	Oct. 13, 2022	Conduction (CO01-KS)
AC LISN	R&S	ENV216	100334	9kHz~30MHz	Oct. 14, 2021	Feb. 26, 2022	Oct. 13, 2022	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 14, 2021	Feb. 26, 2022	Oct. 13, 2022	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max x 30dBm	Oct. 16, 2021	Feb. 24, 2022	Oct. 15, 2022	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55370528	10Hz~44G,MAX 30dB	Oct. 16, 2021	Feb. 24, 2022	Oct. 15, 2022	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6111D	44483	30MHz-1GHz	Dec. 22, 2021	Feb. 24, 2022	Dec. 21, 2022	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Oct. 30, 2021	Feb. 24, 2022	Oct. 29, 2022	Radiation (03CH02-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2022	Feb. 24, 2022	Jan. 04, 2023	Radiation (03CH02-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 05, 2022	Feb. 24, 2022	Jan. 04, 2023	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Apr. 13, 2021	Feb. 24, 2022	Apr. 12, 2022	Radiation (03CH02-KS)
Amplifier	Keysight	83017A	MY53270316	500MHz~26.5G Hz	Oct. 16, 2021	Feb. 24, 2022	Oct. 15, 2022	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Feb. 24, 2022	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Feb. 24, 2022	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Feb. 24, 2022	NCR	Radiation (03CH02-KS)

NCR: No Calibration Required



5. Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.9dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.9dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1dB
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