# **FCC RF Test Report**

APPLICANT : Motorola Mobility LLC EQUIPMENT : Mobile Cellular Phone

BRAND NAME : Motorola

MODEL NAME : XT2421-5

FCC ID : IHDT56AR3

STANDARD : FCC Part 15 Subpart C §15.247

CLASSIFICATION : (DTS) Digital Transmission System

TEST DATE(S) : Nov. 02, 2023 ~ Nov. 28, 2023

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures 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.

JasonJia

Approved by: Jason Jia





Report No.: FR381720B

# 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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Report Version : Rev. 01

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# **REVISION HISTORY**

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR381720B	Rev. 01	Initial issue of report	Dec. 13, 2023

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## SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
4.1	15.247(b)(3)	Peak Output Power	≤ 30dBm	Pass	-
4.2	15.247(d)	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 10.32 dB at 53.28 MHz
4.3	15.203 & 15.247(b)	Antenna Requirement	15.203 & 15.247(b)	Pass	-

#### **Conformity Assessment Condition:**

- The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or
  in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of
  non-compliance that may potentially occur if measurement uncertainty is taken into account.
- 2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty"

#### Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

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# 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	XT2421-5			
FCC ID	IHDT56AR3			
IMEI Code	355031480008859			
HW Version	DVT2			
SW Version	ULA34.53			
EUT Stage	Identical Prototype			

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

# 1.4 Product Specification of Equipment Under Test

Standards-related Product Specification				
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz			
Number of Channels	40			
Carrier Frequency of Each Channel	40 Channel(37 hopping + 3 advertising channel)			
Antenna Type / Gain	PIFA Antenna type with gain -3.6 dBi			
Type of Modulation	Bluetooth LE : GFSK			

## 1.5 Modification of EUT

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

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# 1.6 Specification of Accessory

		Specification of Accessory		
AC Adapter 1(US)	Brand Name	Motorola (Salcomp)	Model Name	MC-101
AC Adapter 1(EU)	Brand Name	Motorola (Salcomp)	Model Name	MC-102
AC Adapter 1(UK)	Brand Name	Motorola (Salcomp)	Model Name	MC-103
AC Adapter 1(AU)	Brand Name	Motorola (Salcomp)	Model Name	MC-105
AC Adapter 1(CHILE)	Brand Name	Motorola (Salcomp)	Model Name	MC-109
AC Adapter 2(US)	Brand Name	Motorola (chenyang)	Model Name	MC-101
AC Adapter 2(EU)	Brand Name	Motorola (chenyang)	Model Name	MC-102
AC Adapter 2(UK)	Brand Name	Motorola (chenyang)	Model Name	MC-103
AC Adapter 2(AU)	Brand Name	Motorola (chenyang)	Model Name	MC-105
AC Adapter 3(US)	Brand Name	Motorola (aohai)	Model Name	MC-101
AC Adapter 3(EU)	<b>Brand Name</b>	Motorola (aohai)	Model Name	MC-102
AC Adapter 3(UK)	Brand Name	Motorola (aohai)	Model Name	MC-103
AC Adapter 3(AU)	Brand Name	Motorola (aohai)	Model Name	MC-105
Battery 1	Brand Name	Motorola (ATL)	Model Name	QF50
Battery 2	Brand Name	Motorola (Sunwoda)	Model Name	QF50
Earphone 1	Brand Name	Motorola (New leader)	Model Name	NLD-EM313A-20SF
Earphone 2	Brand Name	Motorola (JWELL)	Model Name	JWEP1205-L20H
USB Cable 1	Brand Name	Motorola (JWELL)	Model Name	JWUB1631-L20H
USB Cable 2	Brand Name	Motorola (Saibao)	Model Name	SLQ-A238A

# 1.7 Testing 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)				
	No. 1098, Pengxi North	n Road, Kunshan Econom	ic Development Zone		
Test Site Location	Jiangsu Province 2153	hina			
	TEL: +86-512-57900158				
	Snorton Sito No	ECC Decignation No.	FCC Test Firm		
Test Site No.	Sporton Site No.	FCC Designation No.	Registration No.		
	03CH07-KS TH01-KS	CN1257	314309		

## 1.8 Test Software

Item	Site	Manufacturer	Name	Version
1.	TH01-KS	Tonscend	JS1120-3 test system China_210602	3.3.10
2.	03CH07-KS	AUDIX	E3	210616

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# 1.9 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 C §15.247
- FCC KDB 558074 D01 15.247 Meas Guidance v05r02
- ANSI C63.10-2013

#### Remark:

- All test items were verified and recorded according to the standards and without any deviation during the test.
- 2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

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## 2 Re-use of Measured Data

#### 2.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: XT2421-5, FCC ID: IHDT56AR3) is electrically identical to the reference device (Model: XT2421-2, FCC ID: IHDT56AR1) for the portions of the circuitry corresponding to the data being re-used. Based on their similarity, the FCC Part 15C (equipment class: DTS) reuse the original model's result and do spot-check, following the FCC KDB 484596 D01 Referencing Test Data v02r01.

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID: IHDT56AR3 .

#### 2.2 Model Difference Information

The main difference between FCC ID: IHDT56AR1 and FCC ID: IHDT56AR3 is as below:

- Remove GSM1900, WCDMA Band II / IV and LTE Band 2/4/13/26/38/66.
- Add NFC function and LTE Band 20/41.

Other differences and all the details of similarity and difference can be found in the confidential documents (XT2421-5\_Operational Description of Product Equality Declaration).

#### 2.3 Reference detail Section:

Rule Part	Equipment Class	Frequency Band (MHz)	Reference FCC ID(Parent)	Type Grant/ Permissive Change	Reference Title	FCC ID Filling (Variant)	Report Title/Section
15C	DTS (BLE)	2400~2483.5	IHDT56AR1	Original Grant	FR381717B	IHDT56AR3	All sections applicable except for RSE

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## 2.4 Spot Check Verification Data Section

Conducted power test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

All test procedures follow the related section of parent report.

Spot-check measurements, while being always compliant with the applicable rule part(s) for the test under consideration, show a deviation d<sub>dB</sub> from the reference data no larger than 3 dB:

$$d_{dB} = |V_{dB} - R_{dB}| \le 3 dB$$
 (1)

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V<sub>dB</sub>, the variant spot-check level

R<sub>dB</sub>, the corresponding measurement level for the reference model

An alternative to the limit of eq. (1) is available, and is based on considering how far the reference data R<sub>dB</sub> is from the compliance threshold C<sub>dB</sub> (also expressed in dB), for the particular test under consideration. In this case, if  $M_{dB} = |C_{dB} - R_{dB}|$  is the margin in dB from the compliance limit, a spot check may be considered acceptable when the deviation ddB from the reference data satisfies the following condition:

$$d_{dB} = |V_{dB} - R_{dB}| \le (3 + M_{dB}/20) dB, \text{ for } 0 \le M_{dB} \le 60 dB$$
 (2)

where "| |" is the absolute value of the measured quantity.

When using the option in eq. (2), d<sub>dB</sub> increases linearly from 3 dB to 6 dB.

Summary for power spot check for each rule entry and technology is listed as below:

Test Item	Mode	IHDT56AR1 Parent Worst Result	IHDT56AR3 Variant Check Result	Deviation (dB)	Limit (dB)
Conducted	BLE 1M	1.05	0.75	0.3	3
Power (dBm)	BLE 2M	1.03	0.76	0.27	3

#### Conclusion:

Conducted Power test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

Based on the spot check test result, the test data from the original model is representative for the variant model. The power level spot check are shown within expected level compliant to limit line.

We are using power measurements from the original parent model reports to list on the grant.

We confirm that the test data reuse policy of FCC KDB 484596 D01 Referencing Test Data v02r01 has been followed and the test data as referenced from the parent model report represents compliance with new FCC ID.

# 3 Test Configuration of Equipment Under Test

# 3.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
	0	2402	21	2444
	1	2404	22	2446
	2	2406	23	2448
	3	2408	24	2450
	4	2410	25	2444 2446 2448
	5	2412	26	2454
	6	2414	27	2456
	7	2416	28	2458
	8	2418	29	2460
	9	2420 30 2462	2462	
2400-2483.5 MHz	10	2422	31	2464
	11	2424	32	2466
	12	2426	33	2468
	13	2428	34	(MHz)  2444  2446  2448  2450  2452  2454  2456  2458  2460  2462  2464  2466  2468  2470  2472  2474  2476
	14	2430	35	
	15	2432	36	2474
	16	2434	37	2476
	17	2436	38	2478
	18	2438	39	2480
	19	2440	-	-
	20	2442	-	-

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## 3.2 Test Mode

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

The following summary table is showing all test modes to demonstrate in compliance with the standard.

	Summary table of Test Cases					
Test Item	Data Rate / Modulation					
rest item	Bluetooth – LE / GFSK					
	Mode 1: Bluetooth Tx CH00_2402 MHz_BLE 1Mbps					
	Mode 2: Bluetooth Tx CH19_2440 MHz_BLE 1Mbps					
Radiated	Mode 3: Bluetooth Tx CH39_2480 MHz_BLE 1Mbps					
TCs	Mode 4: Bluetooth Tx CH00_2402 MHz_BLE 2Mbps					
	Mode 5: Bluetooth Tx CH19_2440 MHz_BLE 2Mbps					
	Mode 6: Bluetooth Tx CH39_2480 MHz_BLE 2Mbps					
Remark: For	Radiated Test Cases, The tests were performance with Adapter 1, Earphone 1 and USB					
Ca	ble1					

RSE Co-location
Bluetooth LE(1 Mbps) CH39_TX + GSM 850 link

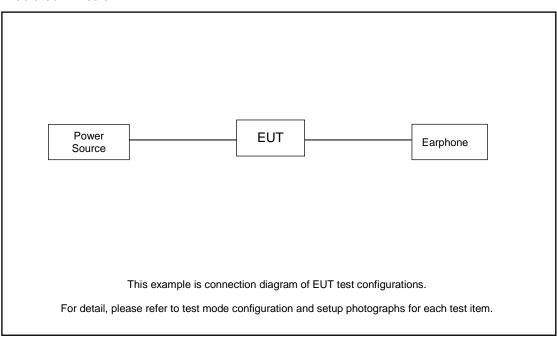
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# 3.3 Connection Diagram of Test System

Radiated Emission:



# 3.4 EUT Operation Test Setup

For BLE function, the engineering test program was provided and enabled to make EUT continuous transmit.

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## 4 Test Result

## 4.1 Output Power Measurement

#### 4.1.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

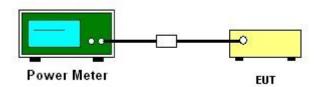
## 4.1.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

#### 4.1.3 Test Procedures

- The testing follows the Measurement Procedure of ANSI C63.10-2013 clause 11.9.1.3 PKPM1
   Peak power meter or ANSI C63.10-2013 clause 11.9.2.3.1 Method AVGPM method.
- 2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Measure the conducted output power and record the results in the test report.

#### 4.1.4 Test Setup



#### 4.1.5 Test Result of Peak Output Power

Please refer to Spot Check Verification Data Section.

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# 4.2 Radiated Band Edges and Spurious Emission Measurement

### 4.2.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

## 4.2.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

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#### 4.2.3 Test Procedures

- 1. The testing follows ANSI C63.10-2013 clause 11.11 & 11.12
- 2. 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. A pre-amp and a high pass filter are used for the test in order to get better signal level.
- 3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
- 4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 5. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level
- 6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
- 7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than peak limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 8. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \ge 1$  GHz for peak measurement. For average measurement:
    - VBW = 10 Hz, when duty cycle is no less than 98 percent.
    - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

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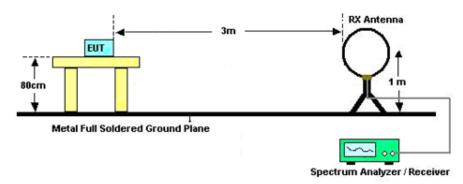
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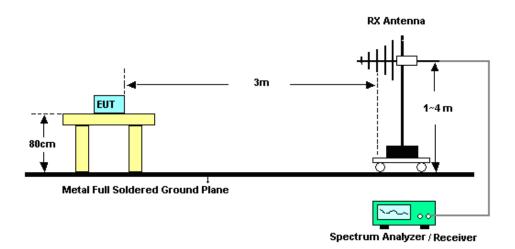
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# 4.2.4 Test Setup

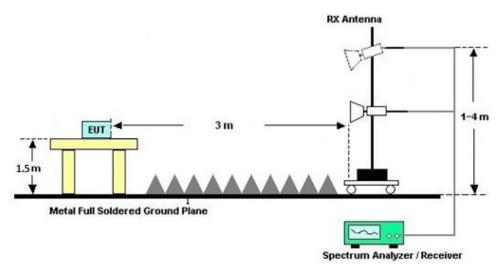
#### For radiated emissions below 30MHz



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



#### For radiated emissions above 1GHz



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### 4.2.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

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There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

### 4.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix A.

### 4.2.7 Duty Cycle

Please refer to Appendix B.

# 4.2.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic or 40GHz, whichever is lower)

Please refer to Appendix A.

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# 4.3 Antenna Requirements

### 4.3.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

## 4.3.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

#### 4.3.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

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# 5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GH z	Jan. 05, 2023	Nov. 02, 2023	Jan. 04, 2024	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 05, 2023	Nov. 02, 2023	Jan. 04, 2024	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Ma x 30dBm	Oct. 10, 2023	Nov. 28, 2023	Oct. 09, 2024	Radiation (03CH07-KS)
EXA Spectrum Analyzer	' I KAVSIANT I NIGITITA		MY553705 28	10Hz-44G,MAX 30dB	Oct. 10, 2023	Nov. 28, 2023	Oct. 09, 2024	Radiation (03CH07-KS)
Loop Antenna R&S HFH2-Z2E		HFH2-Z2E	101125	9kHz~30MHz	Oct. 10, 2023	Nov. 28, 2023	Oct. 09, 2024	Radiation (03CH07-KS)
Bilog Antenna	Bilog Antenna TeseQ CBL6111D		59913	30MHz-1GHz	Aug. 12, 2023	Nov. 28, 2023	Aug. 11, 2024	Radiation (03CH07-KS)
Double Ridge Horn Antenna	9   F   S   Indaren   311/		00218642	1GHz~18GHz	Apr. 06, 2023	Nov. 28, 2023	Apr. 05, 2024	Radiation (03CH07-KS)
SHF-EHF Horn	SHF-EHF Horn Com-power AH-840		101115	18GHz~40GHz	Oct. 10, 2023	Nov. 28, 2023	Oct. 09, 2024	Radiation (03CH07-KS)
Amplifier SONOMA 310N		310N	413740	9KHz-1GHz	Jan. 05, 2023	Nov. 28, 2023	Jan. 04, 2024	Radiation (03CH07-KS)
Amplifier	EM	EM01G18GA	060834	1Ghz-18Ghz	Oct. 10, 2023	Nov. 28, 2023	Oct. 09, 2024	Radiation (03CH07-KS)
high gain Amplifier	EM	EM01G18GA	060840	1Ghz-18Ghz	Oct. 10, 2023	Nov. 28, 2023	Oct. 09, 2024	Radiation (03CH07-KS)
Amplifier	EM	EM18G40GG A	060851	18~40GHz	Jan. 05, 2023	Nov. 28, 2023	Jan. 04, 2024	Radiation (03CH07-KS)
AC Power Source Chroma 61601 6160		616010002 473	N/A	NCR	Nov. 28, 2023	NCR	Radiation (03CH07-KS)	
Turn Table	EM	EM 1000-T	N/A	0~360 degree	NCR	Nov. 28, 2023	NCR	Radiation (03CH07-KS)
Antenna Mast	EM	EM 1000-A	N/A	1 m~4 m	NCR	Nov. 28, 2023	NCR	Radiation (03CH07-KS)

NCR: No Calibration Required

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# 6 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

#### **Uncertainty of Conducted Measurement**

Conducted Power ±0.46 dB
--------------------------

#### <u>Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)</u>

Measuring Uncertainty for a Level of Confidence	3.3 dB
of 95% (U = 2Uc(y))	3.3 UD

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

Measuring Uncertainty for a Level of Confidence	6.20 dB
of 95% (U = 2Uc(y))	0.20 GB

#### Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence	4.86 dB
of 95% (U = 2Uc(y))	4.00 UB

#### Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence	5.24 dB
of 95% (U = 2Uc(y))	5.24 UB

----- THE END -----

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 Report Issued Date
 : Dec. 13, 2023

 FCC ID: IHDT56AR3
 Report Version
 : Rev. 01

Report Template No.: BU5-FR15CBT4.0 Version 2.0

# **Appendix A. Radiated Spurious Emission**

Toot Engineer	Lovi zboo	Relative Humidity :	41~ 42%
Test Engineer :	Levi zhao	Temperature :	22 ~ 23℃

# **Radiated Spurious Emission Test Modes**

Mode	Band (MHz)	Modulation	Channel	Frequency	Data Rate	Remark
Mode 1	2400-2483.5	Bluetooth-LE_GSFK	00	2402	1Mbps	-
Mode 2	2400-2483.5	Bluetooth-LE_GSFK	19	2440	1Mbps	-
Mode 3	2400-2483.5	Bluetooth-LE_GSFK	39	2480	1Mbps	-
Mode 4	2400-2483.5	Bluetooth-LE_GSFK	00	2402	2Mbps	-
Mode 5	2400-2483.5	Bluetooth-LE_GSFK	19	2440	2Mbps	-
Mode 6	2400-2483.5	Bluetooth-LE_GSFK	39	2480	2Mbps	-

## Summary of each worse mode

Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	Remark
1	Bluetooth-LE	00	2383.91	38.77	54.00	-15.23	Н	AVERAGE	Pass	Band Edge
1	Bluetooth-LE	00	4804.00	42.27	74.00	-31.73	V	PEAK	Pass	Harmonic
2	Bluetooth-LE	19	=	=	-	-	-	=	-	Band Edge
2	Bluetooth-LE	19	7320.00	42.32	74.00	-31.68	Н	PEAK	Pass	Harmonic
3	Bluetooth-LE	39	2483.77	39.49	54.00	-14.51	Н	AVERAGE	Pass	Band Edge
3	Bluetooth-LE	39	7440.00	42.39	74.00	-31.61	Н	PEAK	Pass	Harmonic
4	Bluetooth-LE	00	2369.35	39.26	54.00	-14.74	V	AVERAGE	Pass	Band Edge
4	Bluetooth-LE	00	7206.00	42.40	74.00	-31.60	Н	PEAK	Pass	Harmonic
5	Bluetooth-LE	19	=	=	-	-	-	=	-	Band Edge
5	Bluetooth-LE	19	7320.00	41.85	74.00	-32.15	Н	PEAK	Pass	Harmonic
6	Bluetooth-LE	39	2483.59	40.98	54.00	-13.02	Н	AVERAGE	Pass	Band Edge
6	Bluetooth-LE	39	7440.00	42.69	74.00	-31.31	Н	PEAK	Pass	Harmonic
-	Bluetooth-LE	39	53.28	29.68	40.00	-10.32	>	PEAK	Pass	LF

## **Co-location**

# **Radiated Spurious Emission Test Modes**

Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 7	2400-2483.5	-	Bluetooth-LE	39	2480	1Mbps		-
Wode 7	Part 22H GSM 8	50						

# Summary of worse mode

Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	Remark
7	Bluetooth-LE	39	2488.92	39.22	54.00	-14.78	Н	AVERAGE	Pass	Band Edge
	Bluetooth-LE	39	7440.00	41.88	74.00	-32.12	V	PEAK	Pass	Harmonic

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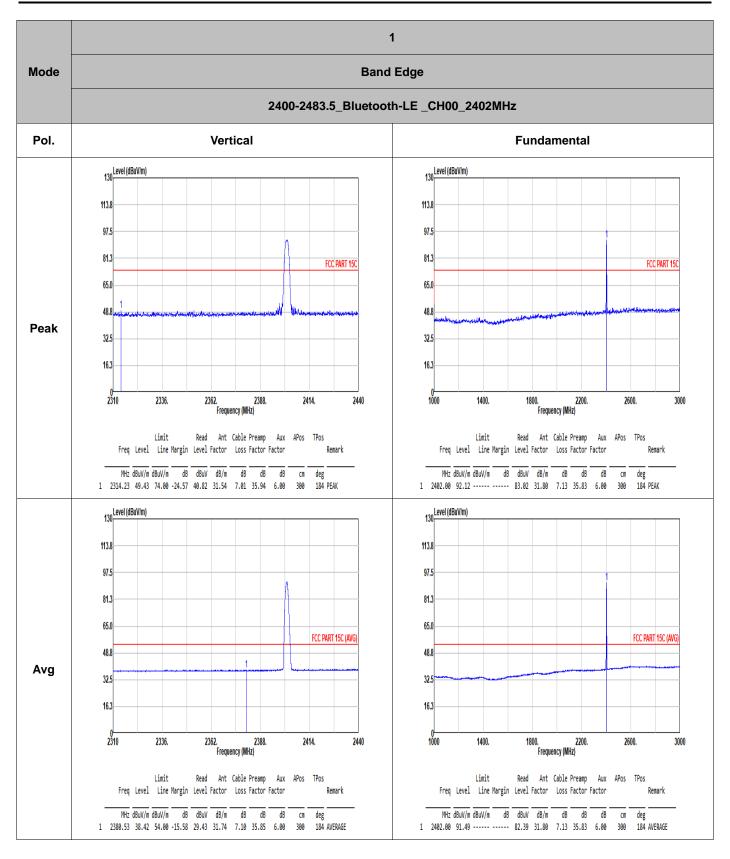
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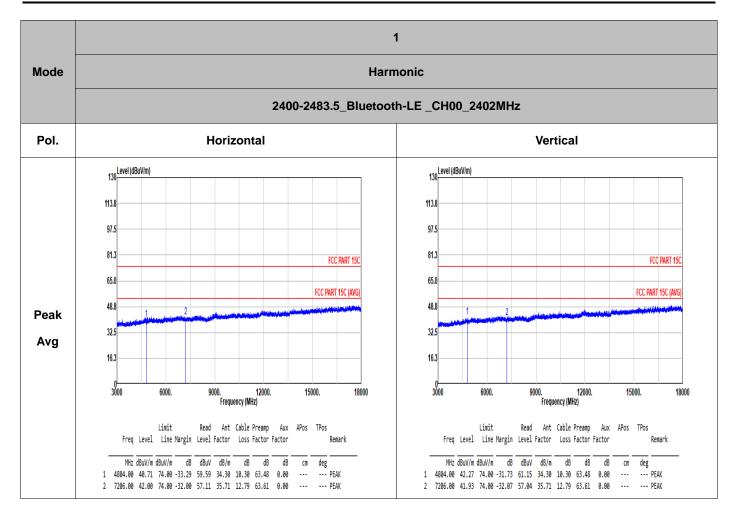


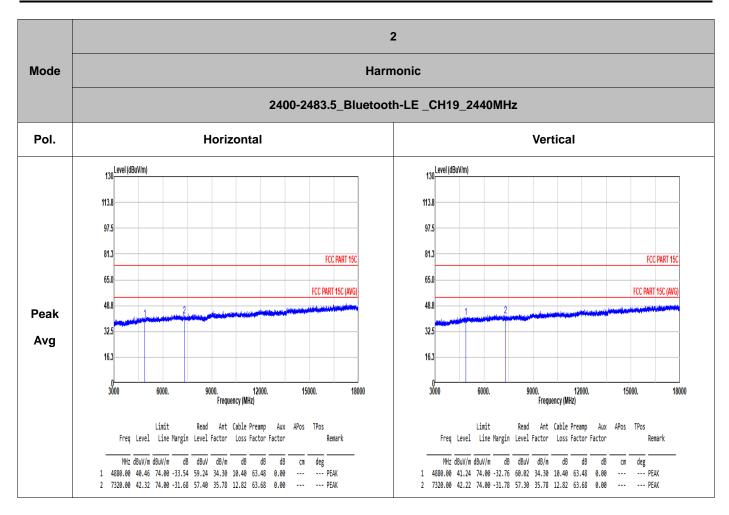
1 Mode **Band Edge** 2400-2483.5\_Bluetooth-LE \_CH00\_2402MHz Pol. Horizontal **Fundamental** 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 FCC PART 15C FCC PART 15C 65.0 65.0 48.8 48.8 **Peak** 32.5 32.5 16.3 16.3 2310 1000 2336. 2388. 2414. 2440 1400. 2600. 3000 2200. Frequency (MHz) Frequency (MHz) Read Ant Cable Preamp Aux APos TPos Limit Read Ant Cable Preamp Aux APos TPos Limit Freq Level Line Margin Level Factor Loss Factor Factor Freq Level Line Margin Level Factor Loss Factor Factor Remark Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB 1 2381.44 49.60 74.00 -24.40 40.61 31.74 7.10 35.85 6.00 1 2402.00 95.86 ----- 86.76 31.80 7.13 35.83 6.00 105 218 PEAK 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 813 81.3 65.0 65.0 FCC PART 15C (AVG FCC PART 15C (AVG 48.8 48.8 Avg 32.5 32.5 2310 1000 2336. 2362. 2440 1400. 3000 2388. 1800. 2200. Frequency (MHz) Frequency (MHz) Limit Limit Read Ant Cable Preamp Aux APos TPos Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Freq Level Line Margin Level Factor Loss Factor Factor MHz dBuV/m dBuV/m dB dBuV dB/m MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg dB deg 1 2383.91 38.77 54.00 -15.23 29.76 31.75 7.11 35.85 6.00 105 218 AVERAGE 1 2402.00 94.96 ----- 85.86 31.80 7.13 35.83 6.00 105 218 AVERAGE

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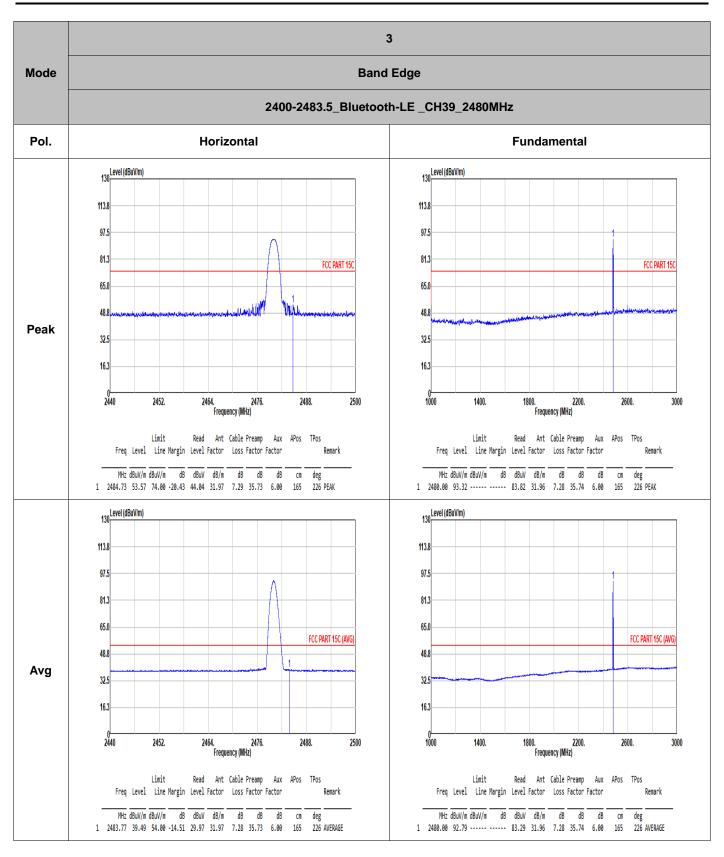




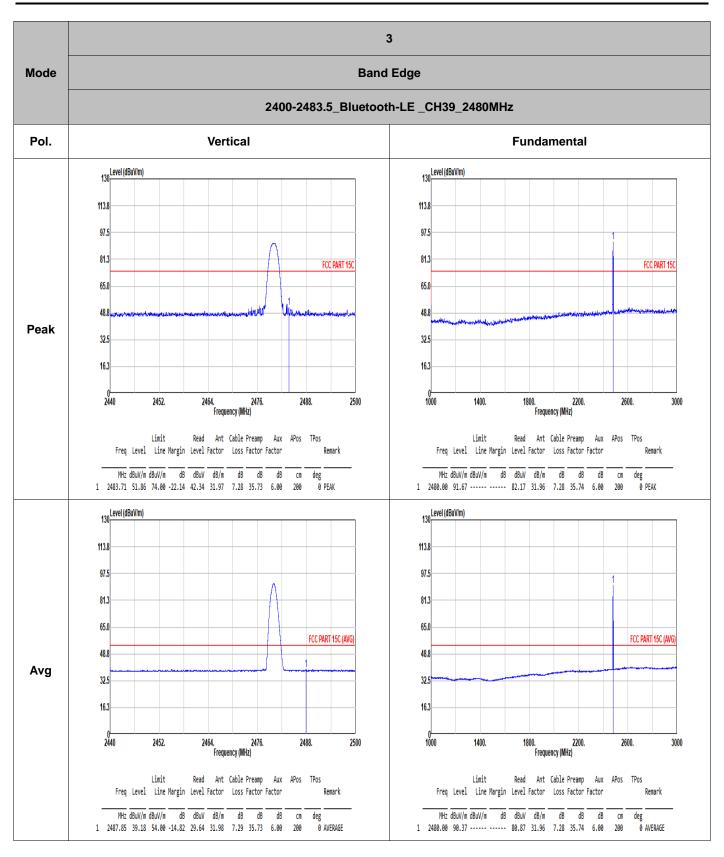


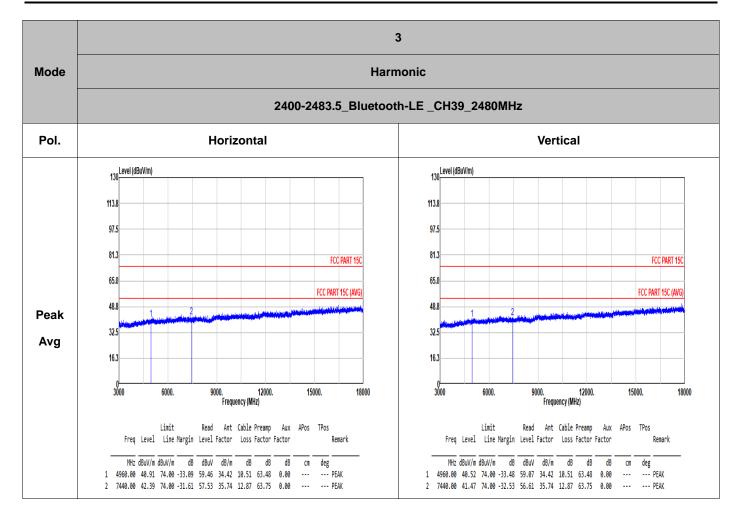




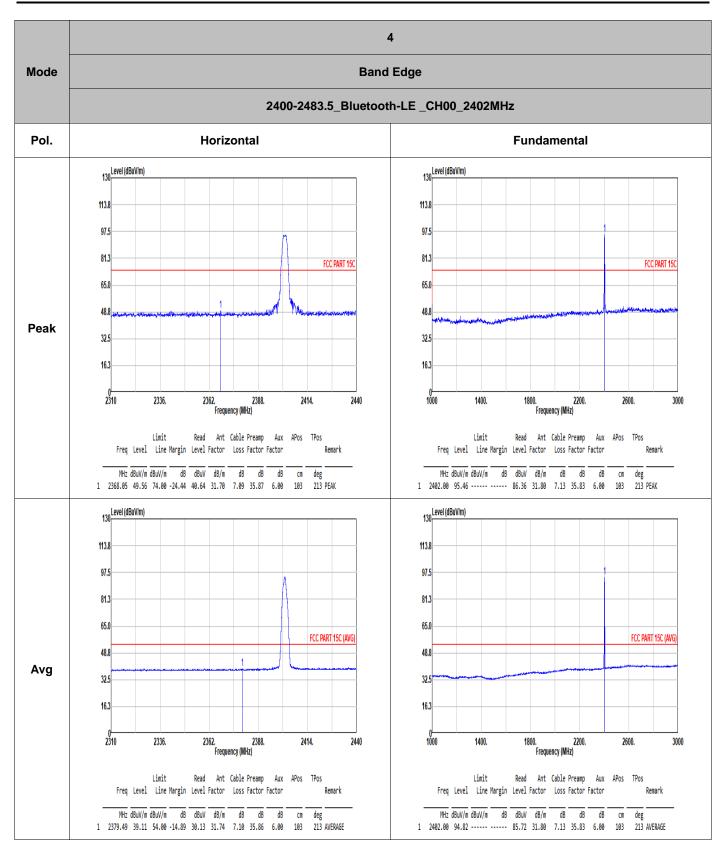




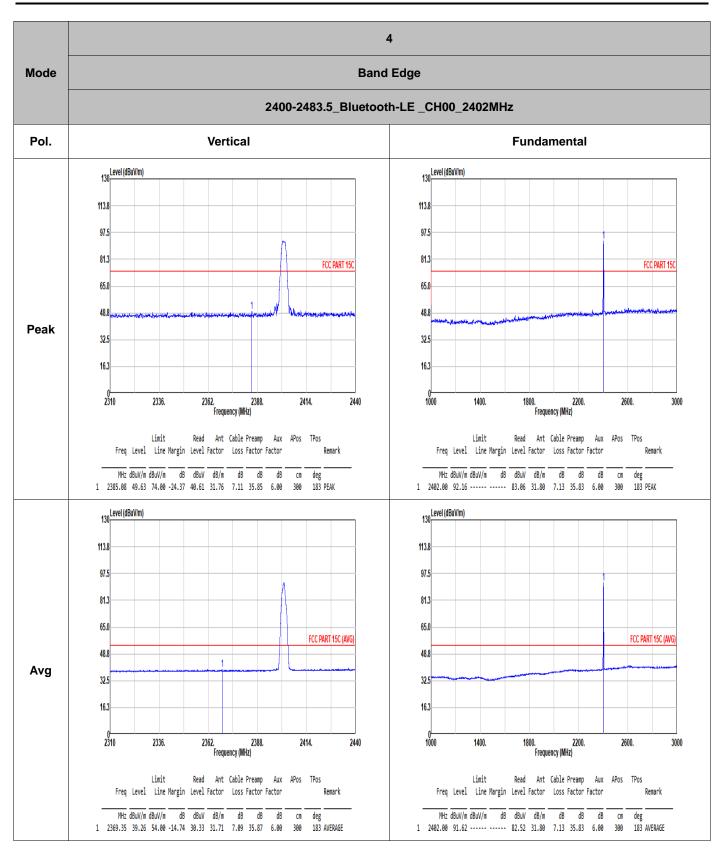


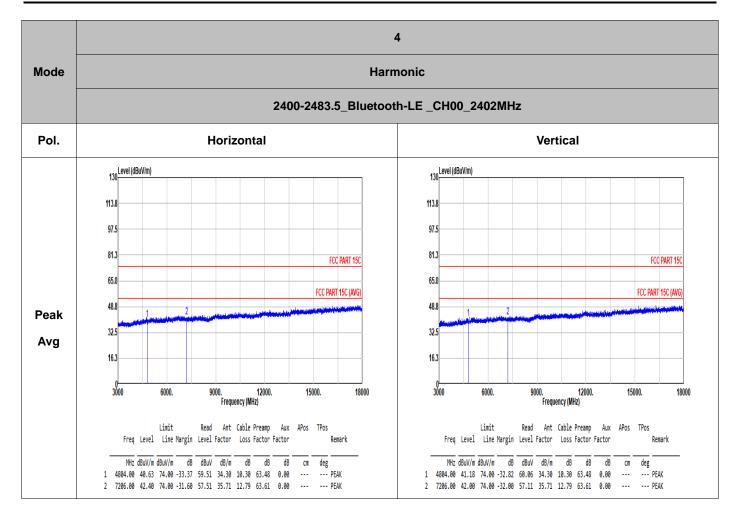


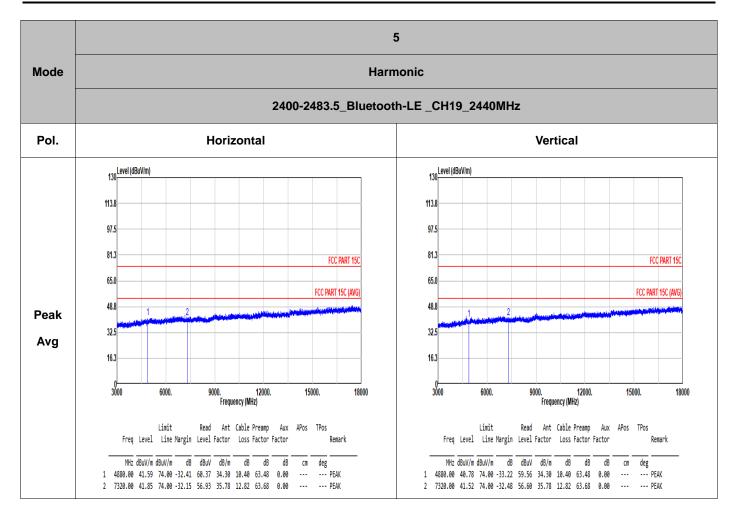




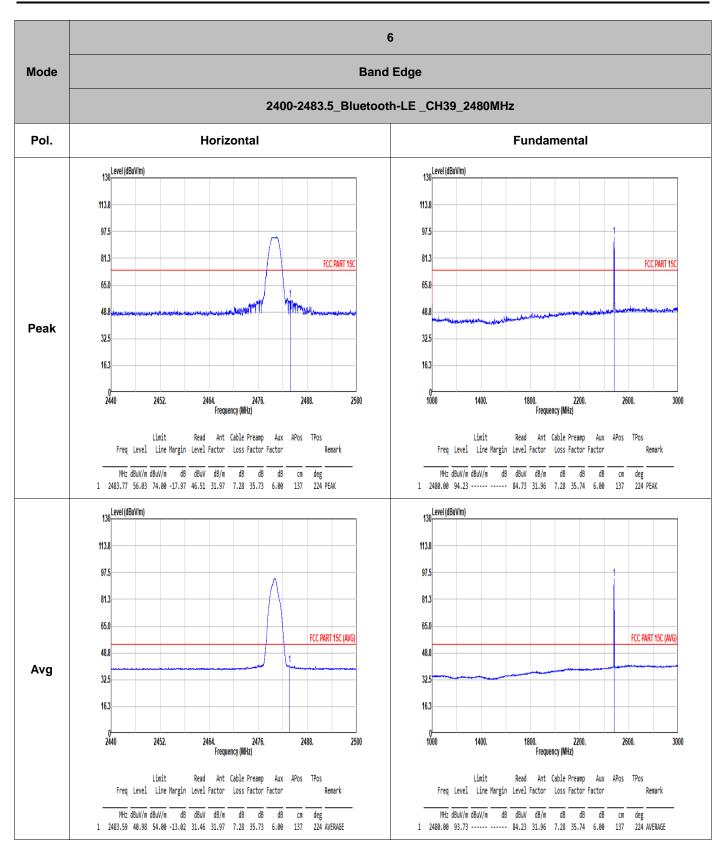




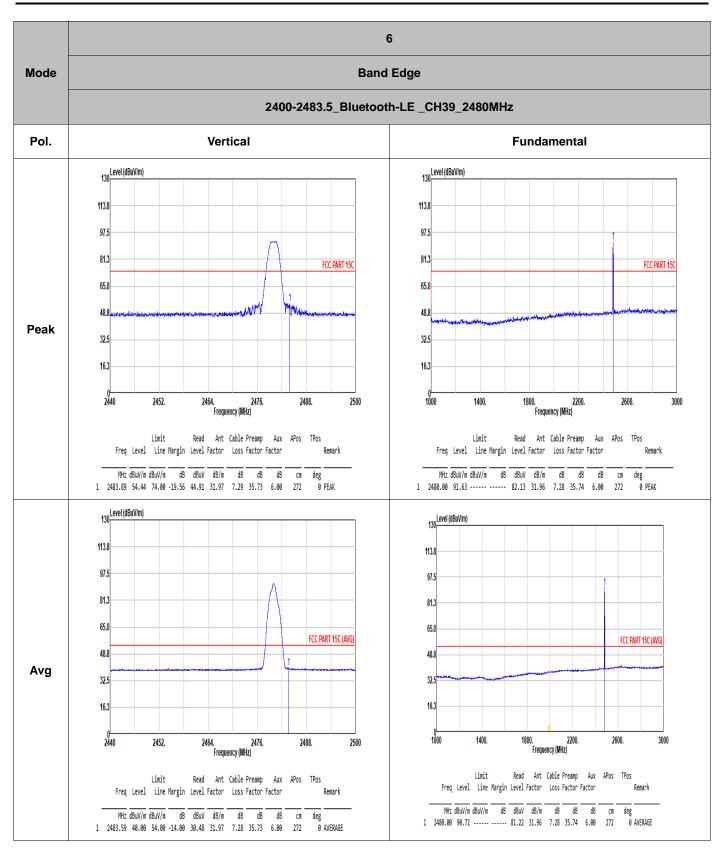




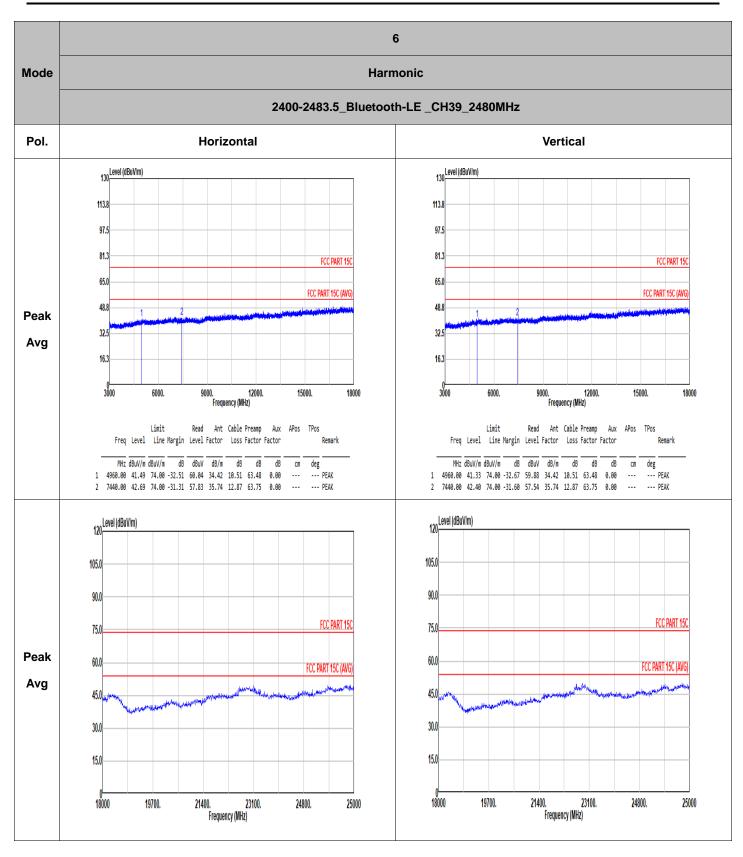


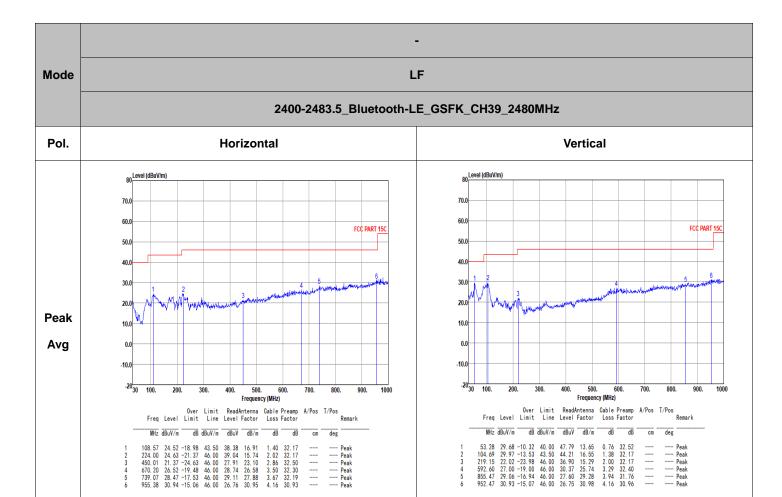




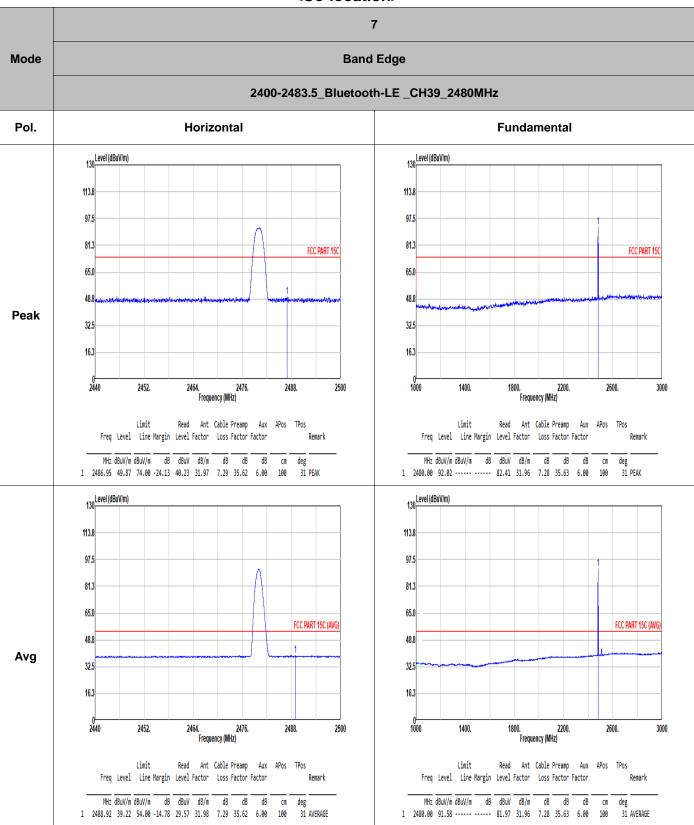






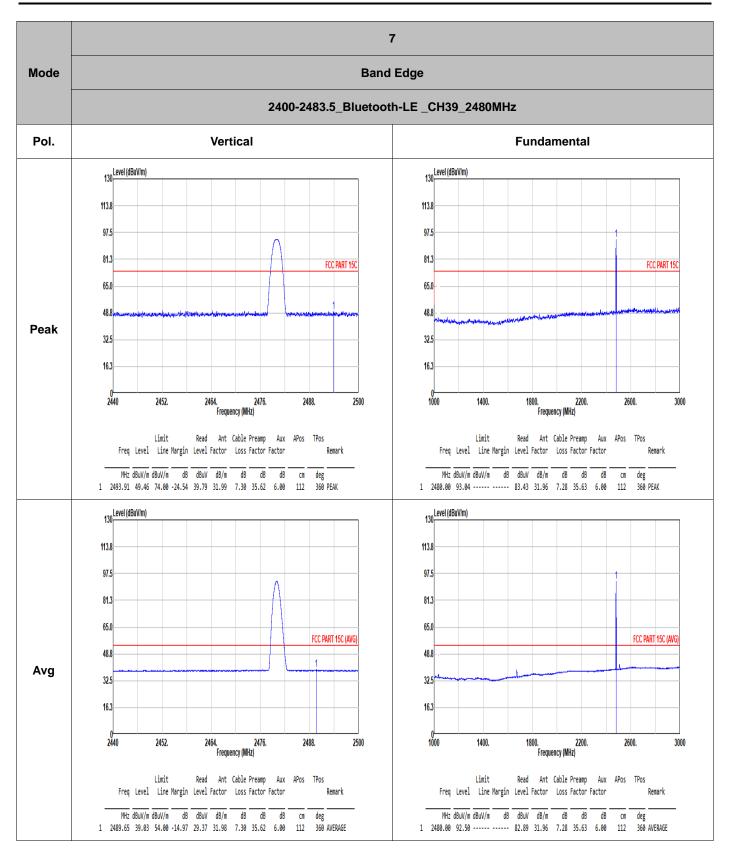


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 MHz
 dBuV/m
 dBuV/m
 dB
 dBuV
 dB/m
 dB
 dB
 dB

 1
 4960.00
 39.98
 74.00
 -34.02
 58.53
 34.42
 10.51
 63.48
 0.00

2 7440.00 41.57 74.00 -32.43 56.71 35.74 12.87 63.75 0.00

cm deg

--- PEAK

--- PEAK

7 Mode Harmonic 2400-2483.5\_Bluetooth-LE \_CH39\_2480MHz Vertical Pol. Horizontal 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 81.3 81.3 FCC PART 150 FCC PART 15C 65.0 65.0 FCC PART 15C (AVG) FCC PART 15C (AVG) 48.8 Peak 32.5 32.5 16.3 16.3 0 3000 3000 9000. 12000. Frequency (MHz) 9000. 12000. Frequency (MHz) 6000. 15000. 18000 6000. 15000. 18000 Read Ant Cable Preamp Aux APos TPos Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Freq Level Line Margin Level Factor Loss Factor Factor Remark

TEL: +86-512-57900158 FCC ID: IHDT56AR3 MHz dBuV/m dBuV/m dB dBuV dB/m

1 4960.00 40.10 74.00 -33.90 58.65 34.42 10.51 63.48 0.00 2 7440.00 41.88 74.00 -32.12 57.02 35.74 12.87 63.75 0.00

dB dB dB

deg

--- PEAK

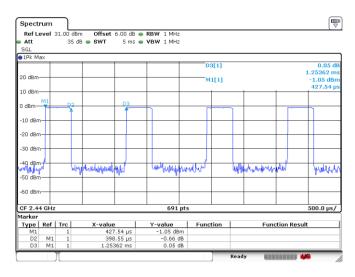
cm



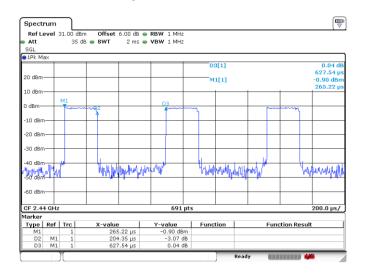
# Appendix B. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
Bluetooth LE 1Mbps	31.79	0.399	2.509	2.7kHz
Bluetooth LE 2Mbps	32.56	0.204	4.894	5.2kHz

## **Bluetooth LE 1Mbps**



#### **Bluetooth LE 2Mbps**



# **Appendix D. Reference Report**

Please refer to Sporton report number FR381717B which is issued separately.

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