

# TEST REPORT

## CERTIFICATE OF CONFORMITY

**Standard:** 47 CFR FCC Part 15, Subpart C (Section 15.247)  
**Report No.:** RFCFQC-WTW-P23080377-1  
**FCC ID:** 2A3ULMTW4  
**Product Name:** MOMENTUM True Wireless 4 (MTW4)  
**Brand Name:** SENNHEISER  
**Model No.:** MTW4 (refer to item 3.1 for more details)  
**Received Date:** 2023/8/15  
**Test Date:** 2023/9/14 ~ 2023/9/25  
**Issued Date:** 2023/10/23

**Applicant:** Sonova Consumer Hearing GmbH

**Address:** Am Labor 1, 30900 Wedemark, Germany

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Lin Kou Laboratories

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**Test Location:** No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kewi Shan Dist., Taoyuan City 33383, Taiwan

**FCC Registration /** 788550 / TW0003

**Designation Number:**

**Approved by:** \_\_\_\_\_

*Jeremy Lin*

**Date:** \_\_\_\_\_

2023/10/23

Jeremy Lin / Project Engineer

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Prepared by : Polly Chien / Specialist

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## Release Control Record

Issue No.	Description	Date Issued
RFCFQC-WTW-P23080377-1	Original release.	2023/10/23

## 1 Certificate

**Product Name:** MOMENTUM True Wireless 4 (MTW4)  
**Brand Name:** SENNHEISER  
**Model No.:** MTW4 (refer to item 3.1 for more details)  
**Sample Status:** Engineering sample  
**Applicant:** Sonova Consumer Hearing GmbH  
**Test Date:** 2023/9/14 ~ 2023/9/25  
**Standard:** 47 CFR FCC Part 15, Subpart C (Section 15.247)  
**Measurement procedure:** ANSI C63.10-2013  
KDB 558074 D01 15.247 Meas Guidance v05r02

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

## 2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
Standard / Clause	Test Item	Result	Remark
15.247(b)	RF Output Power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	Pass	Meet the requirement of limit.
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.
15.207	AC Power Conducted Emissions	Pass	Minimum passing margin is -22.90 dB at 0.30200 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -5.2 dB at 68.80 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -4.6 dB at 2483.50 MHz
15.203	Antenna Requirement	Pass	Antenna connector is Contact spring not a standard connector.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Specification	Expanded Uncertainty (k=2) (±)
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.99 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.59 dB
	30 MHz ~ 1 GHz	3.60 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	2.29 dB
	18 GHz ~ 40 GHz	2.29 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

### 2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

Test Item Description	True Wireless Earphones
Product Name	MOMENTUM True Wireless 4 (MTW4)
Brand Name	SENNHEISER
Model No.	MTW4 (refer to note for more details)
Status of EUT	Engineering sample
Power Ratings	Left earbud & Right earbud: 3.66Vdc, 75mAh or 3.8Vdc, 72mAh (from battery) Charging Case: 5Vdc, 1000mA (from Type-C USB interface) 3.6Vdc, 820mAh (from battery)
Power Supply (Nominal & Testing)	Left earbud & Right earbud: 3.8Vdc, 72mAh (from battery) Charging Case: 5Vdc, 1000 mA (from Type-C USB interface) 3.6Vdc, 820mAh (from battery)
Nominal Testing Voltage (Vnom)	3.66 - 3.8Vdc
Operating Temperature range	0~40°C
Modulation Type	GFSK
Transmission Technology	DSSS
Technology	Bluetooth
Operating Frequency	LE 4.0: 2402 - 2480MHz LE 5.3: 2404 - 2478MHz (excluding 2426MHz)
No. of channels	LE 4.0: 40 LE 5.3: 37
Channel Spacing	2MHz
Channel Bandwidth	LE 4.0: 80MHz LE 5.3: 74MHz
Data Transfer Rate	LE 4.0: 1Mbps LE 5.3: 2Mbps
Output Power	LE 4.0: 6.776 mW (8.31 dBm) LE 5.3: 6.730 mW (8.28 dBm)
HW Version	Earbuds: V02 Charging Case: V02
SW Version	Earbuds: V4.7.5 Charging Case: V010
Cable supplied	0.4m shielded USB-C cable without core

Note:

1. The EUT system MOMENTUM True Wireless 4 (MTW4) contain the following devices:

Device Name	Brand Name	Device Model No.
Right Earbud	SENNHEISER	MTW4 R
Left Earbud	SENNHEISER	MTW4 L
Charging Case	SENNHEISER	MTW4 C

\* MTW4 R and MTW4 L with BT & BT LE TX/RX function

\* Charging case is solely used for charging MTW4 R and MTW4 L only.

2. The device BT EDR and BT LE cannot transmit simultaneously.
3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

### 3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna No.	Gain (dBi)	Antenna Type	Connector Type
	2402~2480 MHz		
1 (Left Earbud)	-0.4	Monopole	Contact spring
2 (Right Earbud)	-0.2	Monopole	Contact spring

\*Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

- 4.

### 3.3 Channel List

40 channels are provided for LE 4.0:

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

37 channels are provided for LE 5.3:

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



### 3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis. Pre-scan these ways and find the worst case as a representative test condition.
Worst Case:	Worst Condition: Y-axis

Following channel(s) was (were) selected for the final test as listed below:

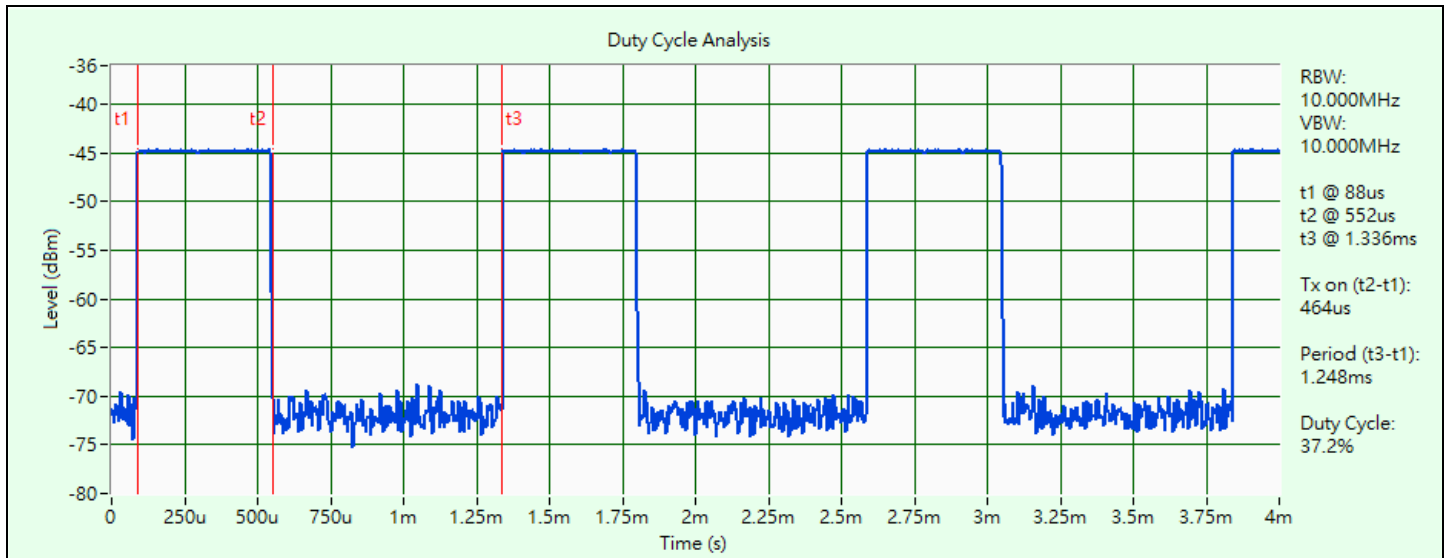
Test Item	EUT Configure Mode	Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	A, B	LE 4.0	0, 19, 39	GFSK	1Mb/s
		LE 5.3	1, 19, 38	GFSK	2Mb/s
Power Spectral Density / 6 dB Bandwidth / Conducted Out of Band Emissions	A, B	LE 4.0	0, 19, 39	GFSK	1Mb/s
		LE 5.3	1, 19, 38	GFSK	2Mb/s
AC Power Conducted Emissions	C, D	Charging Mode			
Unwanted Emissions below 1 GHz	A	LE 5.3	1	GFSK	2Mb/s
	B	LE 4.0	0	GFSK	1Mb/s
	C, D	Charging Mode			
Unwanted Emissions above 1 GHz	A, B	LE 4.0	0, 19, 39	GFSK	1Mb/s
		LE 5.3	1, 19, 38	GFSK	2Mb/s
EUT Configure Mode:	A	Right Earbuds			
	B	Left Earbuds			
	C	Right Earbuds+Left Earbuds+Charging case+Adapter			
	D	Right Earbuds+Left Earbuds+Charging case+WPT+Adapter			
	E	Right Earbuds+Left Earbuds+Charging case+NoteBook			
	F	Right Earbuds+Left Earbuds+Charging case+WPT+NoteBook			
Note: The EUT has been pre-test on Mode A-F. Therefore, Mode A-D was chosen for final test.					

### 3.5 Duty Cycle of Test Signal

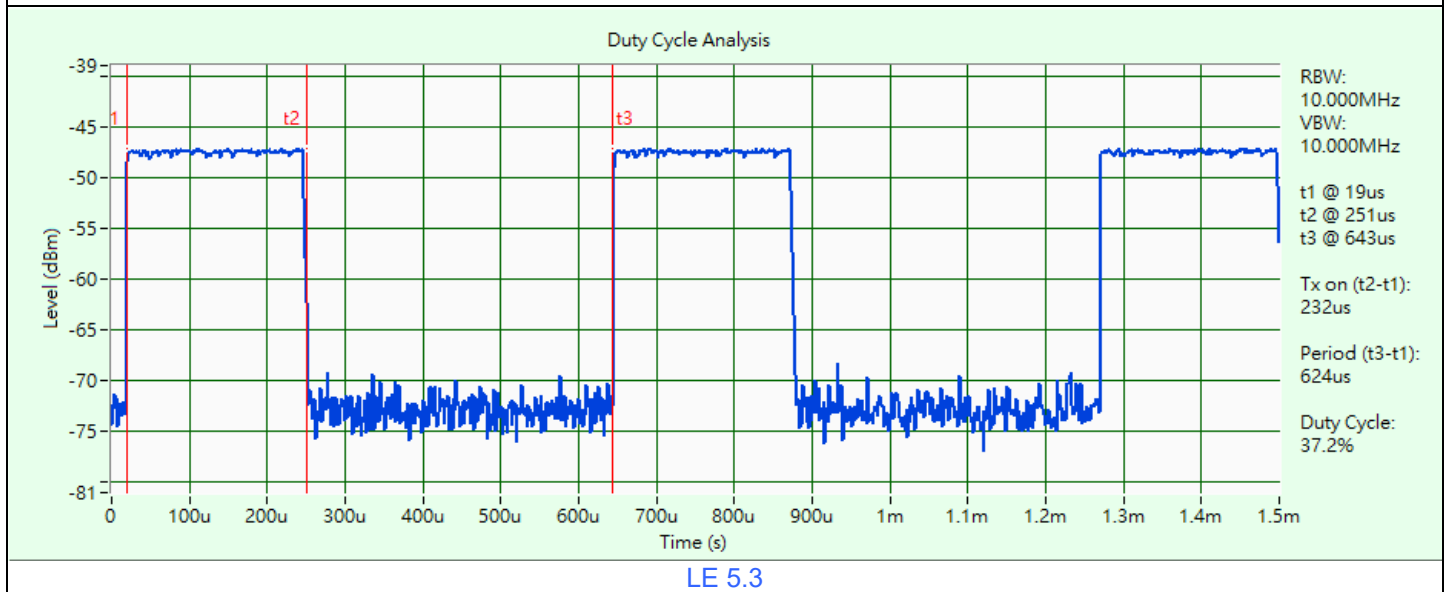
#### Mode A

**LE 4.0:** Duty cycle = 0.464 ms / 1.248 ms x 100% = 37.2%, duty factor = 10 \* log (1/Duty cycle) = 4.30 dB

**LE 5.3:** Duty cycle = 0.232 ms / 0.624 ms x 100% = 37.2%, duty factor = 10 \* log (1/Duty cycle) = 4.30 dB



LE 4.0



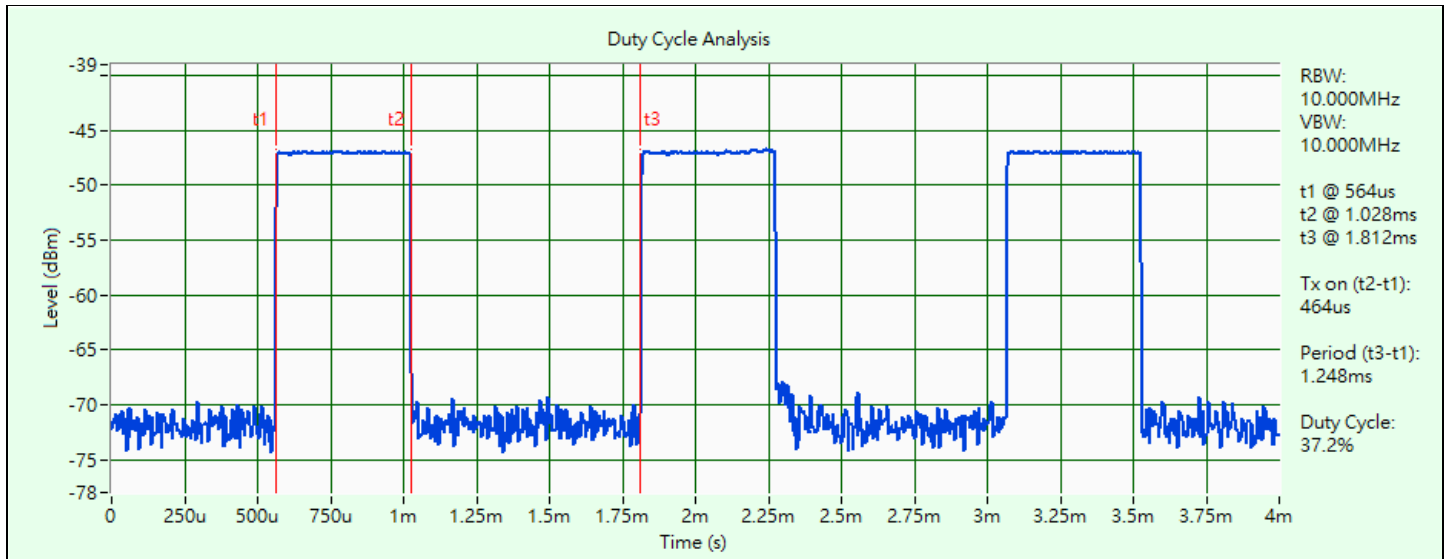
LE 5.3



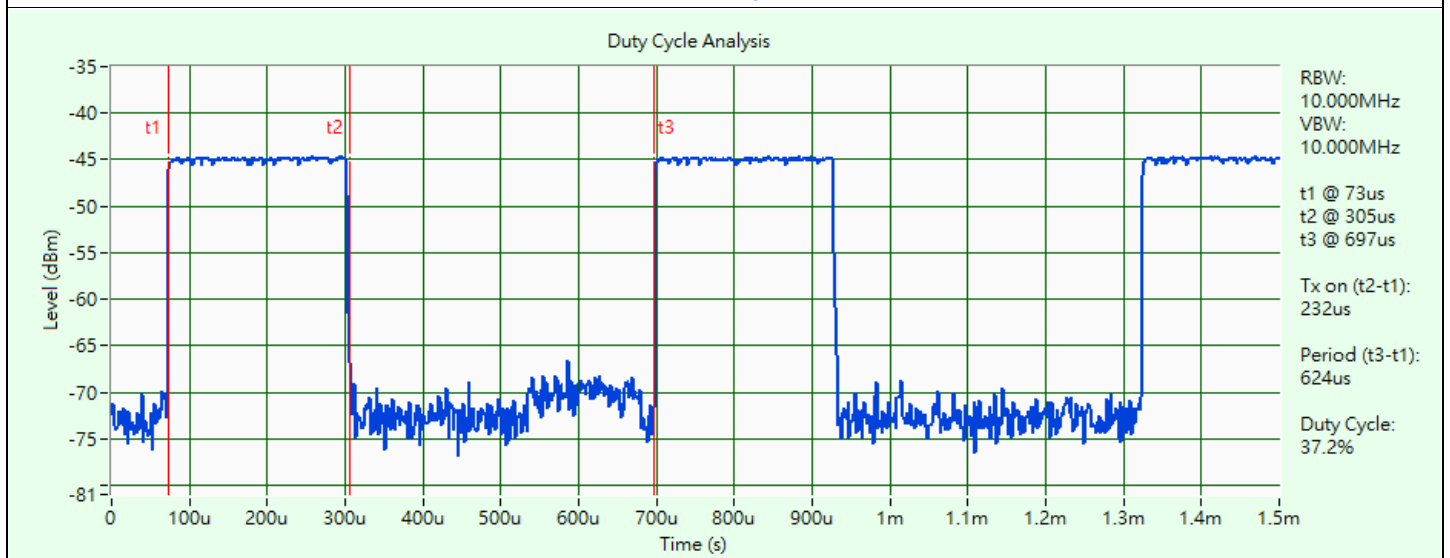
**Mode B**

**LE 4.0:** Duty cycle = 0.464 ms / 1.248 ms x 100% = 37.2%, duty factor = 10 \* log (1/Duty cycle) = 4.30 dB

**LE 5.3:** Duty cycle = 0.232 ms / 0.624 ms x 100% = 37.2%, duty factor = 10 \* log (1/Duty cycle) = 4.30 dB



LE 4.0



LE 5.3

### 3.6 Test Program Used and Operation Descriptions

Controlling software BlueSuiteCda V3.3.17 has been activated to set the EUT under transmission condition continuously at specific channel frequency.

### 3.7 Connection Diagram of EUT and Peripheral Devices

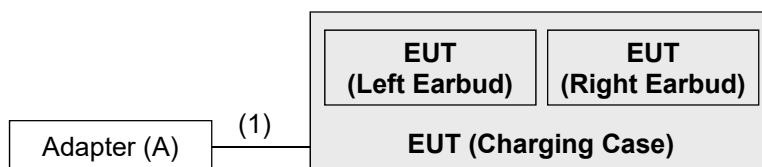
Test Mode A



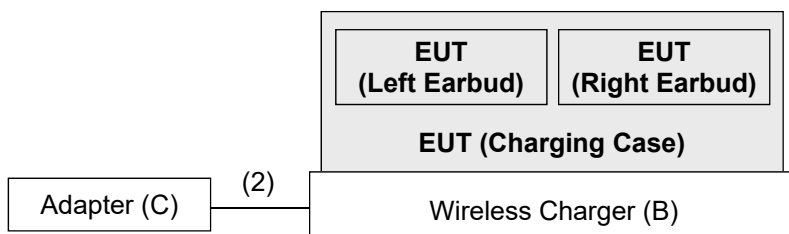
Test Mode B



Test Mode C



Test Mode D



### 3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Adapter	LITEON	PA-1050-39	NA	NA	Provided by Lab
B	Wireless Charger	Mi	MDY-10-EP	NA	NA	Provided by Lab
C	Adapter	Mi	MDY-10-EJ	NA	NA	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	USB Cable	1	0.4	Yes	0	Accessory of EUT
2	Type C cable	1	1	Yes	0	Provided by Lab

## 4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Peak Power Analyzer Keysight	8990B	MY51000485	2023/1/19	2024/1/18
Wideband Power Sensor Keysight	N1923A	MY58020002	2023/1/18	2024/1/17
		MY58140009	2023/1/18	2024/1/17

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/9/25

### 4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Signal & Spectrum Analyzer R&S	FSV3044	101105	2023/2/22	2024/2/21
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/9/25

### 4.3 6 dB Bandwidth

Refer to section 4.2 to get information of the instruments.

### 4.4 Conducted Out of Band Emissions

Refer to section 4.2 to get information of the instruments.

#### 4.5 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance HUBER+SUHNER	E1-011315	13	2022/11/17	2023/11/16
50 ohm terminal resistance	E1-011280	05	2022/11/21	2023/11/20
	E1-011311	09	2022/11/17	2023/11/16
DC-LISN Schwarzbeck	NNBM 8126G	8126G-069	2022/11/9	2023/11/8
EMI Test Receiver R&S	ESCI	100613	2022/12/5	2023/12/4
Fixed Attenuator Mini-Circuits	HAT-10+	PAD-COND1-01	2023/1/7	2024/1/6
LISN R&S	ENV216	101826	2023/3/23	2024/3/22
	ESH3-Z5	100116	2023/2/15	2024/2/14
LISN Schwarzbeck	NNLK 8121	8121-731	2023/6/9	2024/6/8
RF Coaxial Cable Woken	5D-FB	Cable-cond1-01	2023/1/7	2024/1/6
Software BVADT	BVADT_Cond_ V7.3.7.4	N/A	N/A	N/A

Notes:

1. The test was performed in HY - Conduction 1.
2. Tested Date: 2023/9/19

#### 4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn BV ADT	AT100	AT93021705	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-160	2022/10/20	2023/10/19
Loop Antenna TESEQ	HLA 6121	45745	2023/8/8	2024/8/7
MXE EMI Receiver Keysight	N9038A	MY55420137	2023/5/3	2024/5/2
Preamplifier Agilent	8447D	2944A10638	2023/5/7	2024/5/6
Preamplifier EMCI	EMC001340	980201	2022/9/23	2023/9/22
RF Coaxial Cable EMCI	5D-NM-BM	140903+140902	2023/1/7	2024/1/6
RF Coaxial Cable Woken	8D-FB	Cable-CH9-01	2023/5/7	2024/5/6
Signal & Spectrum Analyzer R&S	FSW43	101867	2022/12/30	2023/12/29
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2023/9/19

#### 4.7 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn BV ADT	AT100	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	5	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1169	2022/11/13	2023/11/12
	BBHA 9170	9170-480	2022/11/13	2023/11/12
		BBHA9170243	2022/11/13	2023/11/12
MXE EMI Receiver Keysight	N9038A	MY55420137	2023/5/3	2024/5/2
Notch Filter Micro-Tronics	BRM17690	004	2023/1/11	2024/1/10
	BRM50716	060	2023/1/11	2024/1/10
Preamplifier Agilent	8449B	3008A02367	2023/2/15	2024/2/14
Preamplifier EMCI	EMC 184045	980116	2022/10/1	2023/9/30
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2023/7/8	2024/7/7
	EMC102-KM-KM-3000	150929	2023/7/8	2024/7/7
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	2023/1/7	2024/1/6
RF Coaxial Cable HUBER+SUHNER&EMCI	SUCOFLEX 104& EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	2023/1/7	2024/1/6
Signal & Spectrum Analyzer R&S	FSW43	101867	2022/12/30	2023/12/29
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2023/9/14 ~ 2023/9/15



## 5 Limits of Test Items

### 5.1 RF Output Power

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30 dBm)

### 5.2 Power Spectral Density

The Maximum of Power Spectral Density Measurement is 8 dBm in any 3 kHz.

### 5.3 6 dB Bandwidth

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

### 5.4 Conducted Out of Band Emissions

Below 20 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

### 5.5 AC Power Conducted Emissions

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Notes:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

### 5.6 Unwanted Emissions below 1 GHz

Radiated emissions up to 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

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

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

## 5.7 Unwanted Emissions above 1 GHz

Radiated emissions above 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

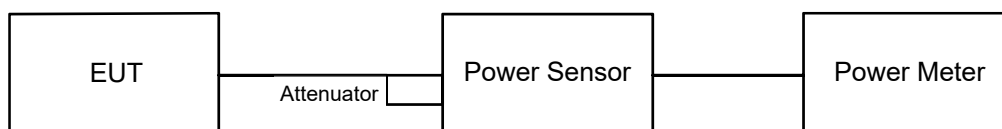
### Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

## 6 Test Arrangements

### 6.1 RF Output Power

#### 6.1.1 Test Setup



#### 6.1.2 Test Procedure

##### Peak Power:

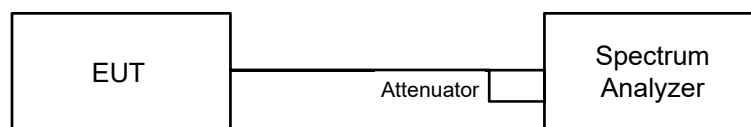
A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

##### Average Power:

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

### 6.2 Power Spectral Density

#### 6.2.1 Test Setup

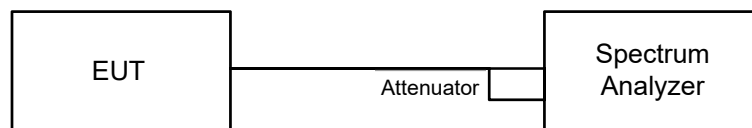


#### 6.2.2 Test Procedure

- a. Set analyzer center frequency to DTS channel center frequency.
- b. Set the span to 1.5 times the DTS bandwidth.
- c. Set the RBW to: 3 kHz.
- d. Set the VBW  $\geq 3 \times$  RBW.
- e. Detector = peak.
- f. Sweep time = auto couple.
- g. Trace mode = max hold.
- h. Allow trace to fully stabilize.
- i. Use the peak marker function to determine the maximum amplitude level within the RBW.

### 6.3 6 dB Bandwidth

#### 6.3.1 Test Setup

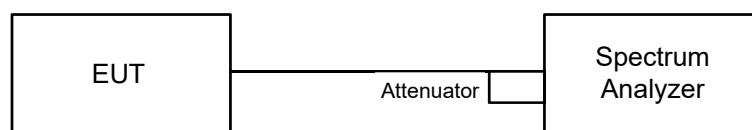


#### 6.3.2 Test Procedure

- Set resolution bandwidth (RBW) = 100 kHz.
- Set the video bandwidth (VBW)  $\geq 3 \times$  RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 6.4 Conducted Out of Band Emissions

#### 6.4.1 Test Setup



#### 6.4.2 Test Procedure

##### MEASUREMENT PROCEDURE REF

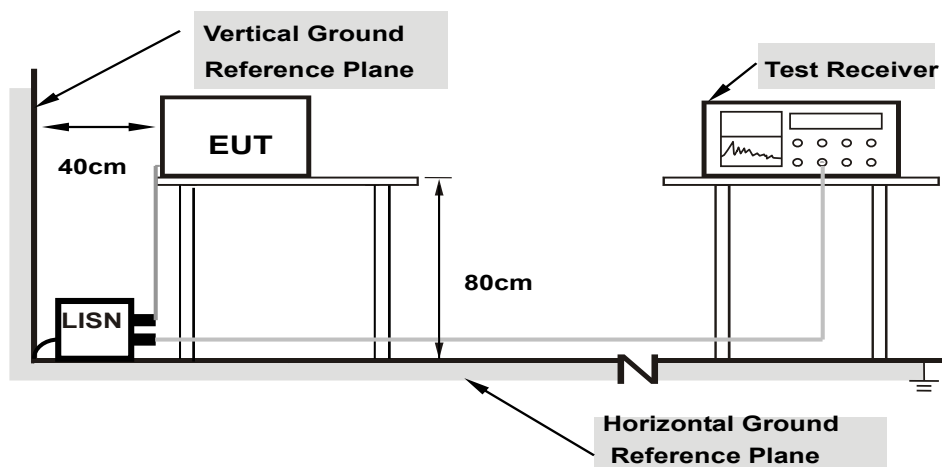
- Set the RBW = 100 kHz.
- Set the VBW  $\geq 300$  kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

##### MEASUREMENT PROCEDURE OOB

- Set RBW = 100 kHz.
- Set VBW  $\geq 300$  kHz.
- Detector = peak.
- Sweep = auto couple.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

## 6.5 AC Power Conducted Emissions

### 6.5.1 Test Setup



**Note: 1.Support units were connected to second LISN.**

For the actual test configuration, please refer to the attached file (Test Setup Photo).

### 6.5.2 Test Procedure

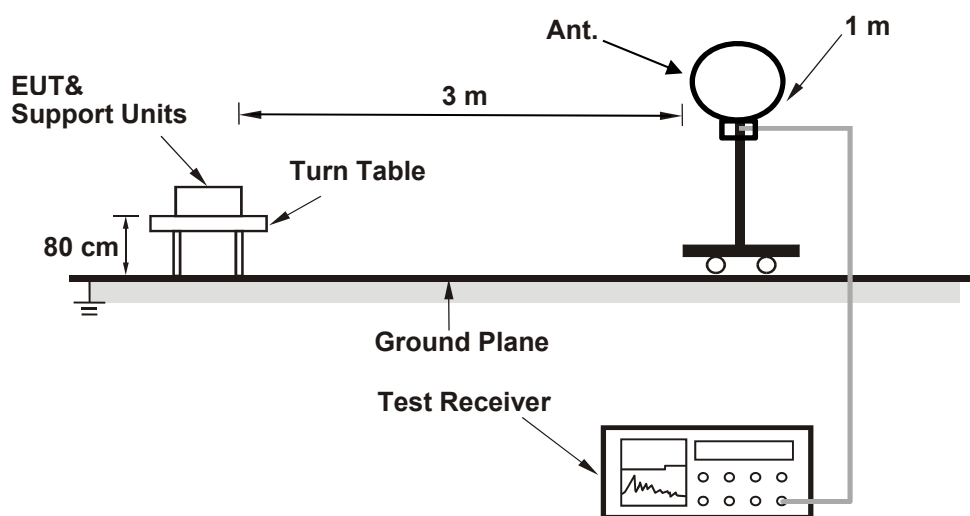
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz-30 MHz.

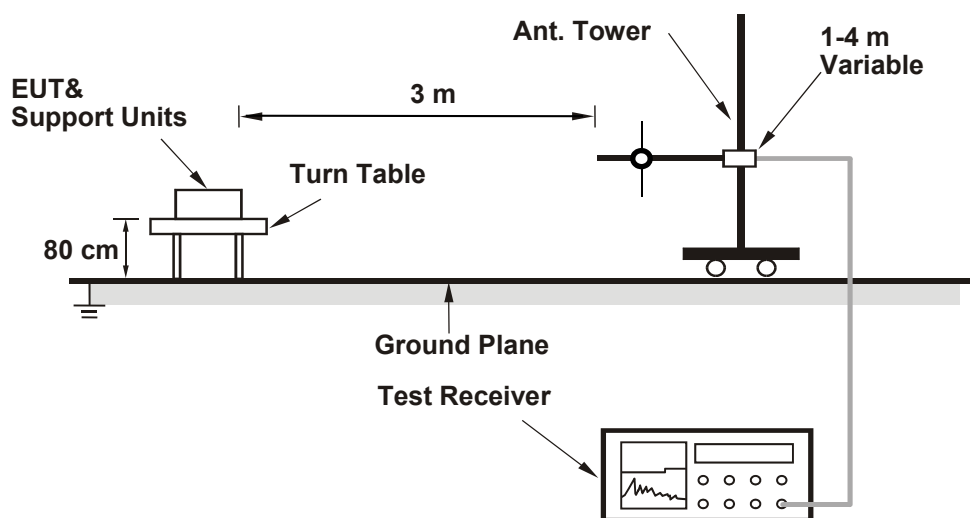
## 6.6 Unwanted Emissions below 1 GHz

### 6.6.1 Test Setup

#### For Radiated emission below 30 MHz



#### For Radiated emission above 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

## 6.6.2 Test Procedure

### For Radiated emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

#### Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

### For Radiated emission above 30 MHz

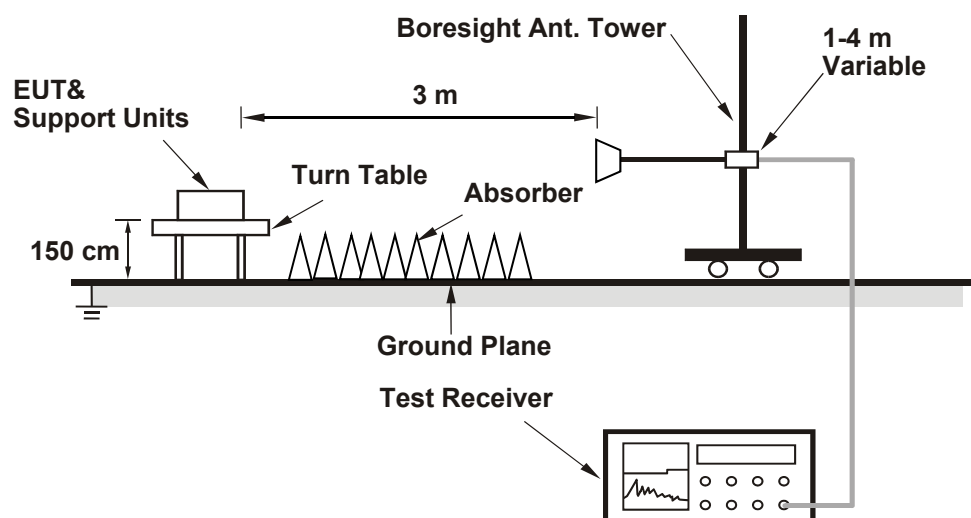
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

#### Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

## 6.7 Unwanted Emissions above 1 GHz

### 6.7.1 Test Setup



For the actual test configuration, please refer to the attached file (Test Setup Photo).

### 6.7.2 Test Procedure

- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver/spectrum analyzer was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

#### Notes:

- According to ANSI C63.10 section 6.6.4 and 4.1.4.2.2. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
- For harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle  $< 98\%$ ) or 10 Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1 GHz.
- All modes of operation were investigated and the worst-case emissions are reported.



## 7 Test Results of Test Item

### 7.1 RF Output Power

Input Power:	3.8 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Henry Hsu
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#### Mode A

#### For Peak Power

#### LE 4.0

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	6.653	8.23	30	Pass
19	2440	6.622	8.21	30	Pass
39	2480	6.012	7.79	30	Pass

Note: The antenna gain is -0.2 dBi < 6 dBi, so the output power limit shall not be reduced.

#### LE 5.3

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2404	6.730	8.28	30	Pass
19	2440	6.501	8.13	30	Pass
38	2478	5.957	7.75	30	Pass

Note: The antenna gain is -0.2 dBi < 6 dBi, so the output power limit shall not be reduced.

For Average Power

LE 4.0

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	6.546	8.16
19	2440	6.516	8.14
39	2480	5.902	7.71

LE 5.3

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2404	6.622	8.21
19	2440	6.412	8.07
38	2478	5.848	7.67

## Mode B

### For Peak Power

#### LE 4.0

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	6.776	8.31	30	Pass
19	2440	6.471	8.11	30	Pass
39	2480	6.194	7.92	30	Pass

Note: The antenna gain is -0.4 dBi < 6 dBi, so the output power limit shall not be reduced.

#### LE 5.3

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2404	6.683	8.25	30	Pass
19	2440	6.383	8.05	30	Pass
38	2478	6.124	7.87	30	Pass

Note: The antenna gain is -0.4 dBi < 6 dBi, so the output power limit shall not be reduced.

For Average Power

LE 4.0

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	6.637	8.22
19	2440	6.353	8.03
39	2480	6.081	7.84

LE 5.3

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2404	6.577	8.18
19	2440	6.281	7.98
38	2478	6.012	7.79

## 7.2 Power Spectral Density

Input Power:	3.8 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Henry Hsu
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### Mode A

#### LE 4.0

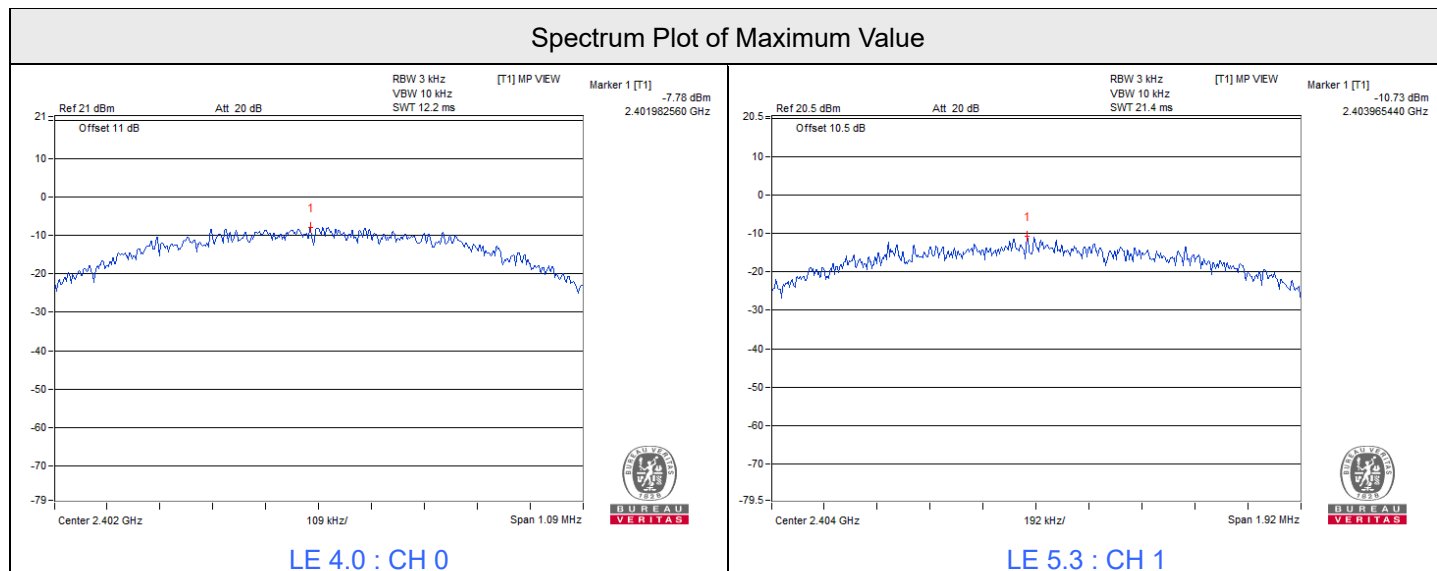
Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	-7.78	8	Pass
19	2440	-8.14	8	Pass
39	2480	-8.51	8	Pass

Note: The antenna gain is -0.2 dBi < 6 dBi, so the power density limit shall not be reduced.

#### LE 5.3

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2404	-10.73	8	Pass
19	2440	-10.94	8	Pass
38	2478	-11.44	8	Pass

Note: The antenna gain is -0.2 dBi < 6 dBi, so the power density limit shall not be reduced.



**Mode B**

**LE 4.0**

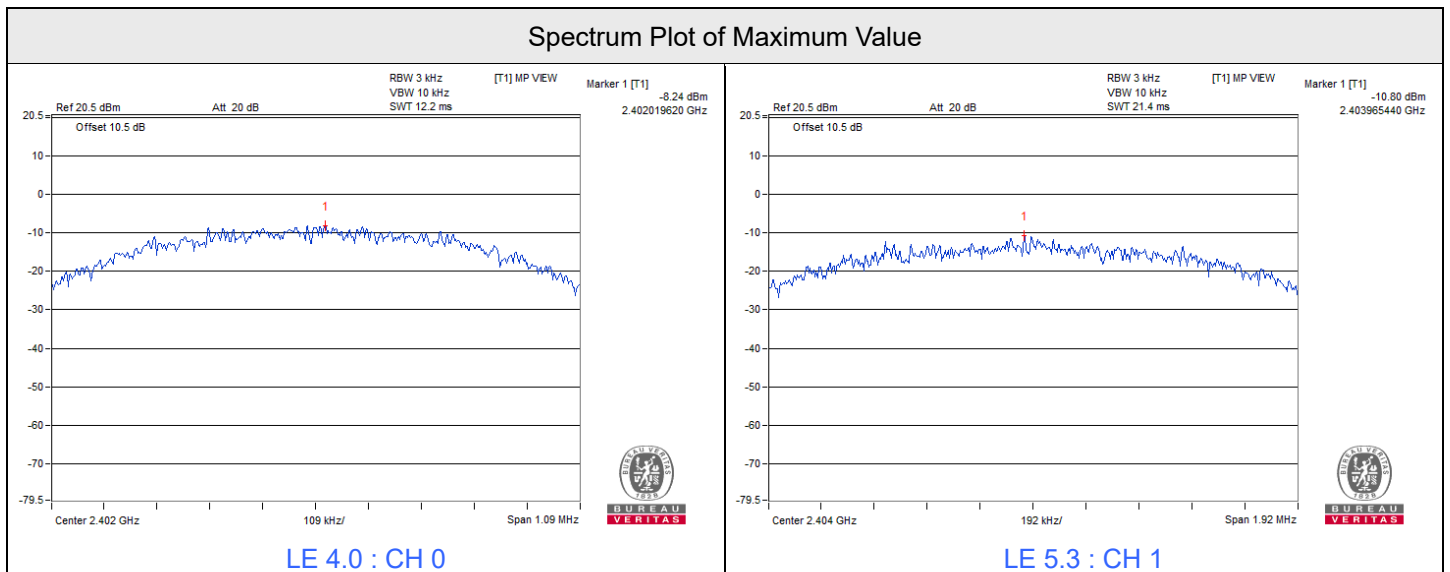
Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	-8.24	8	Pass
19	2440	-8.64	8	Pass
39	2480	-8.99	8	Pass

Note: The antenna gain is -0.4 dBi < 6 dBi, so the power density limit shall not be reduced.

**LE 5.3**

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2404	-10.80	8	Pass
19	2440	-10.97	8	Pass
38	2478	-11.44	8	Pass

Note: The antenna gain is -0.4 dBi < 6 dBi, so the power density limit shall not be reduced.



### 7.3 6 dB Bandwidth

Input Power:	3.8 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Henry Hsu
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#### Mode A

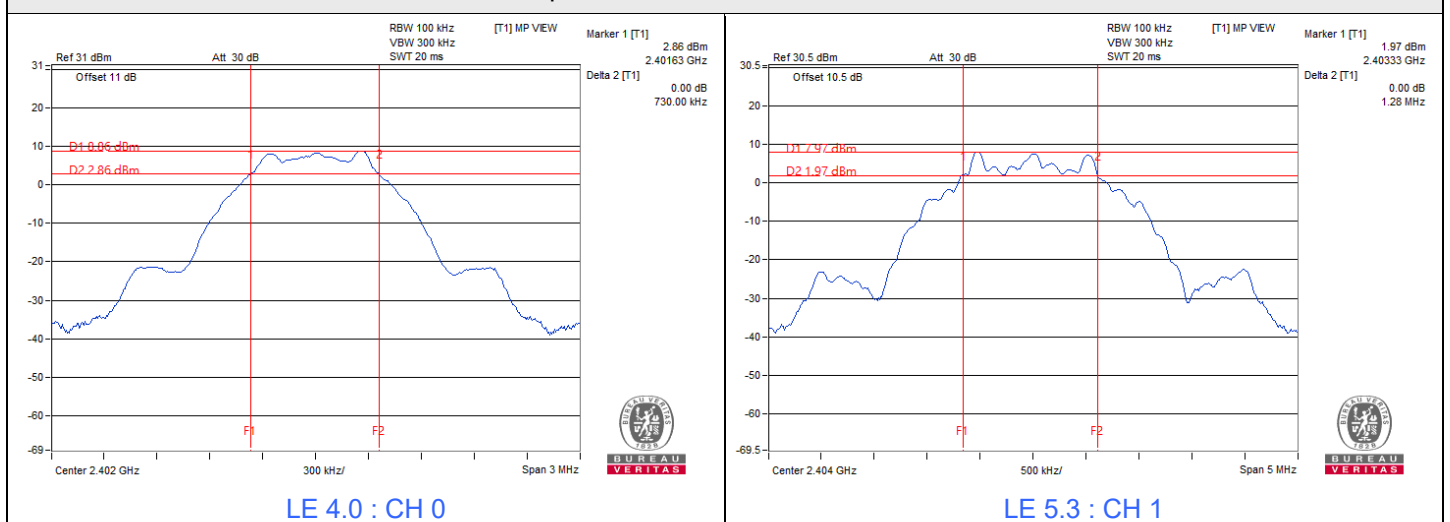
#### LE 4.0

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
0	2402	0.73	0.5	Pass
19	2440	0.73	0.5	Pass
39	2480	0.74	0.5	Pass

#### LE 5.3

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2404	1.28	0.5	Pass
19	2440	1.28	0.5	Pass
38	2478	1.28	0.5	Pass

Spectrum Plot of Minimum Value



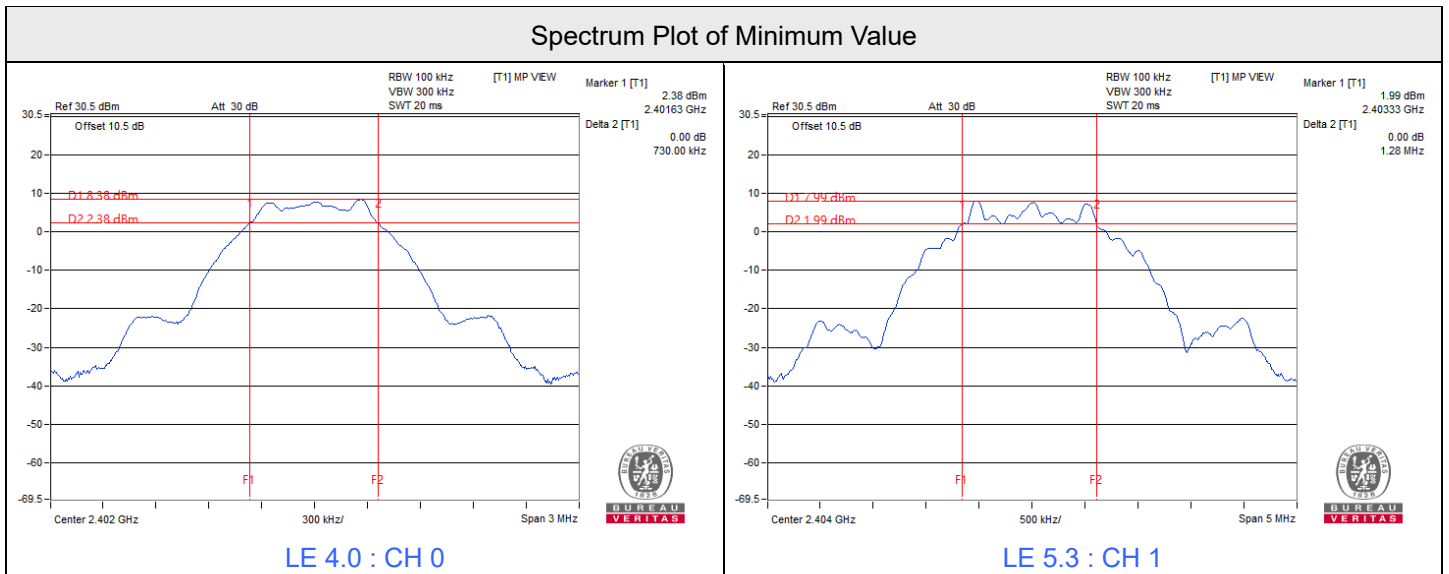
**Mode B**

**LE 4.0**

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
0	2402	0.73	0.5	Pass
19	2440	0.73	0.5	Pass
39	2480	0.73	0.5	Pass

**LE 5.3**

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2404	1.28	0.5	Pass
19	2440	1.28	0.5	Pass
38	2478	1.29	0.5	Pass







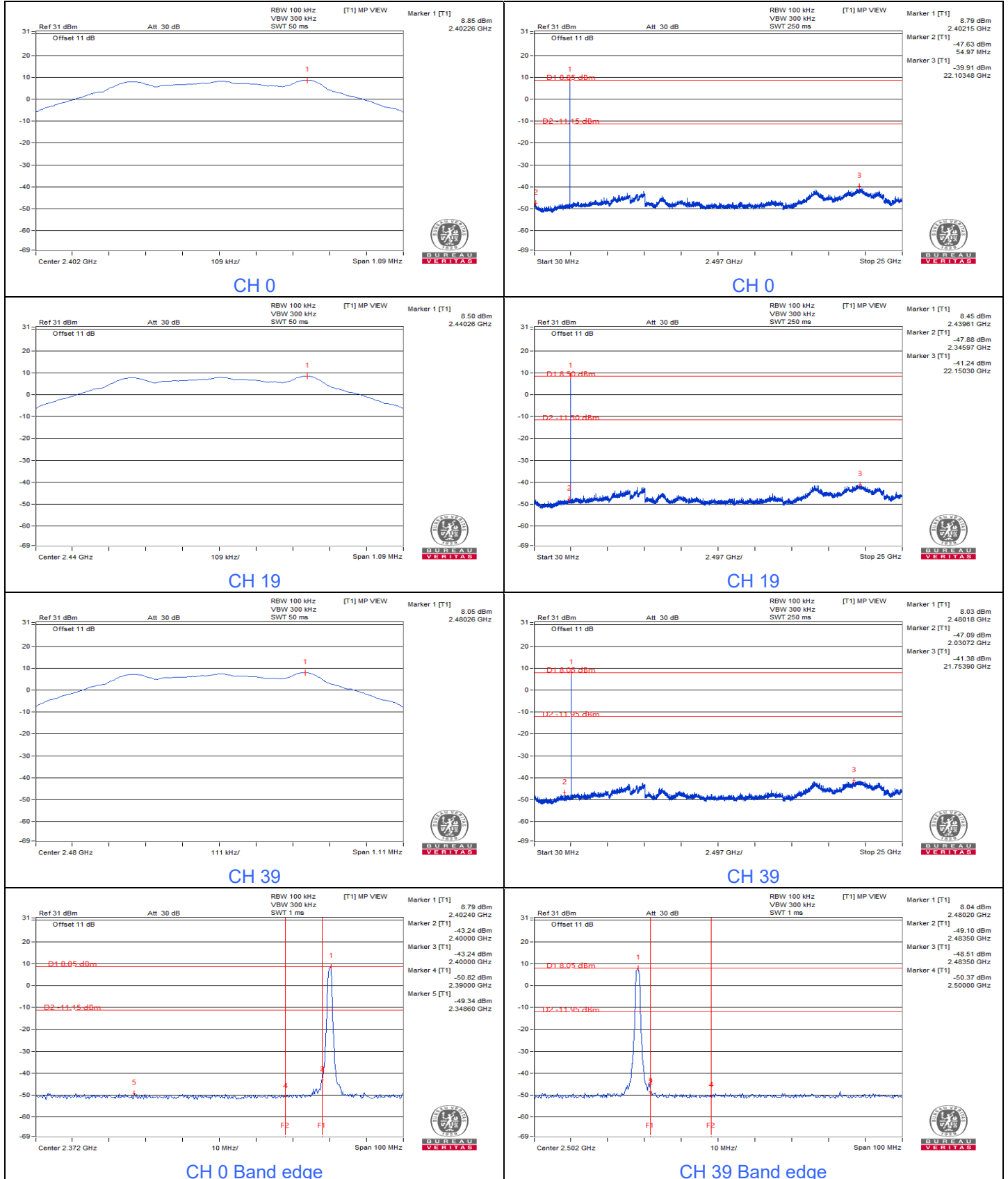
BUREAU VERITAS

### 7.4 Conducted Out of Band Emissions

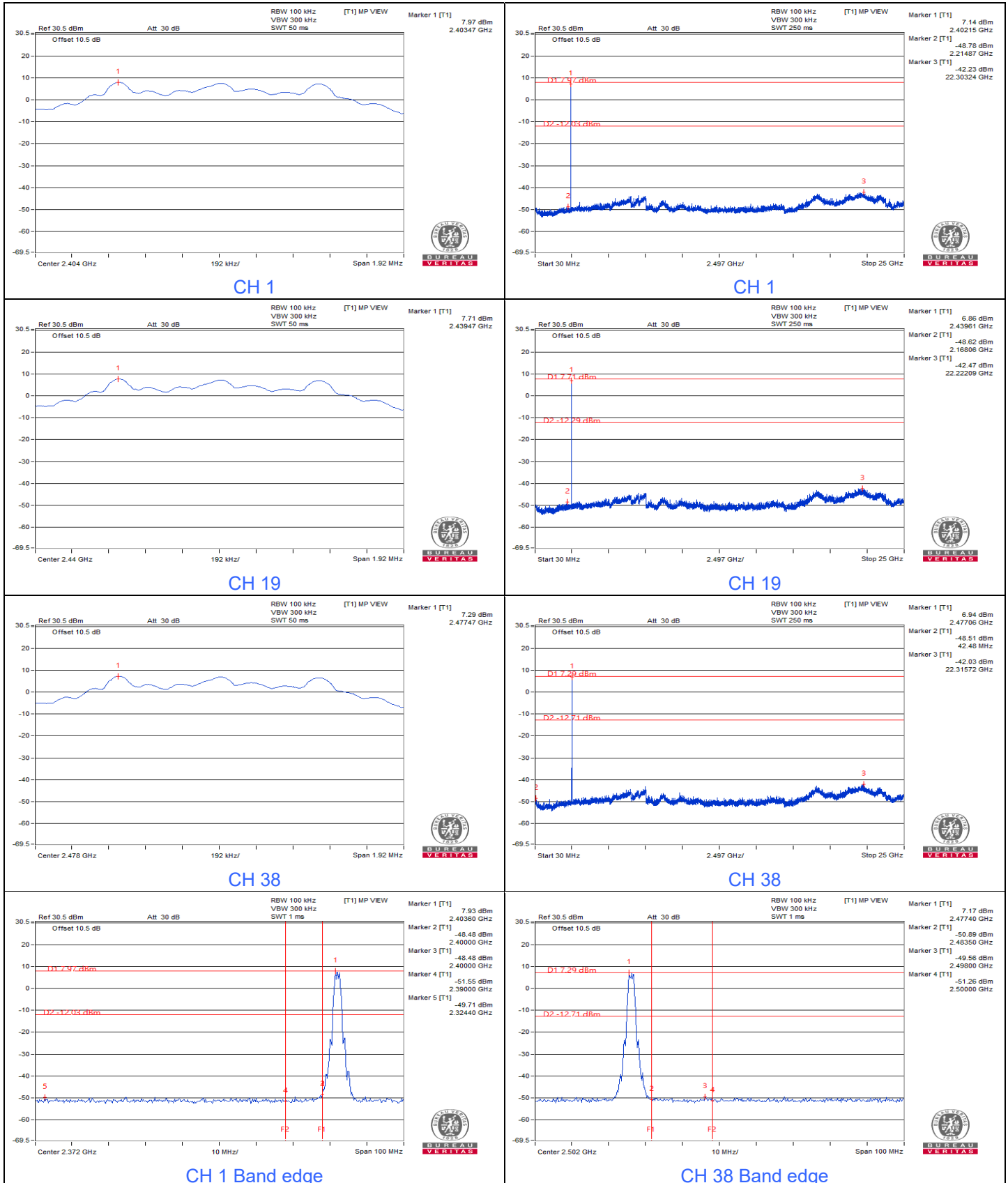
Input Power:	3.8 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Henry Hsu
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#### Mode A

#### LE 4.0



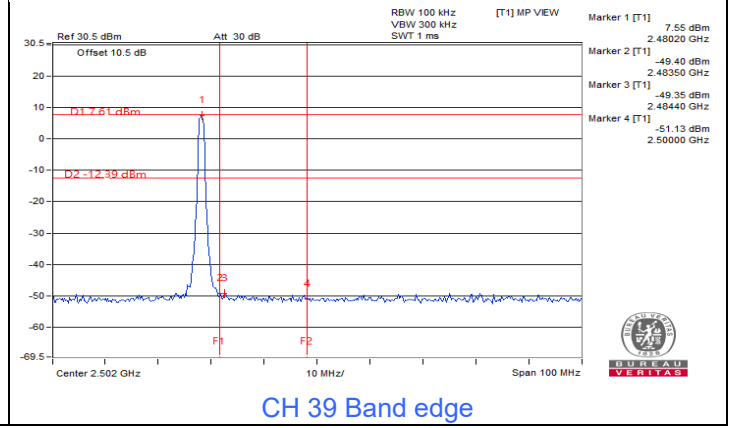
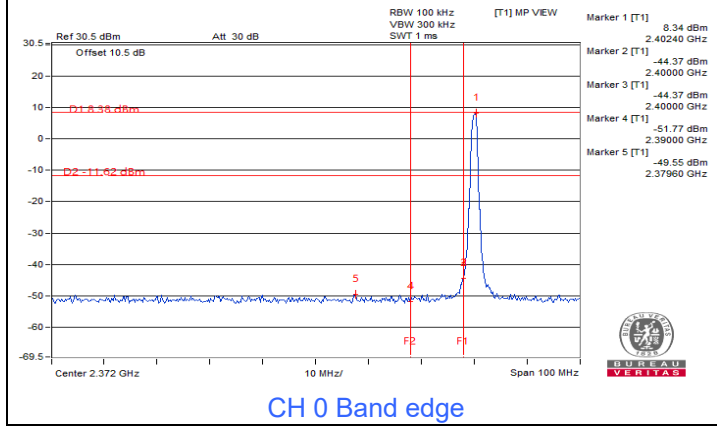
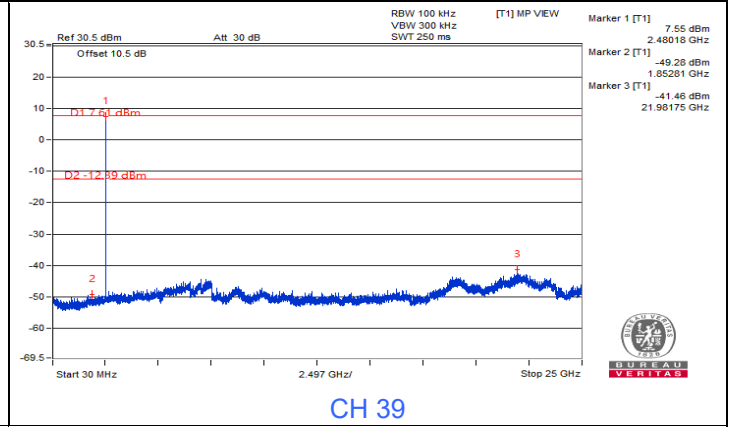
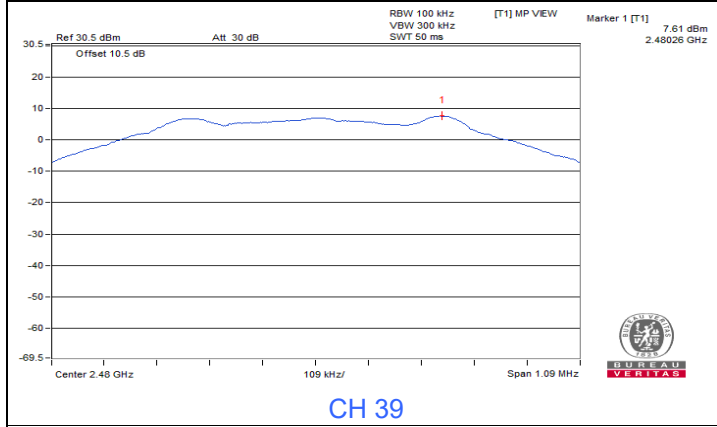
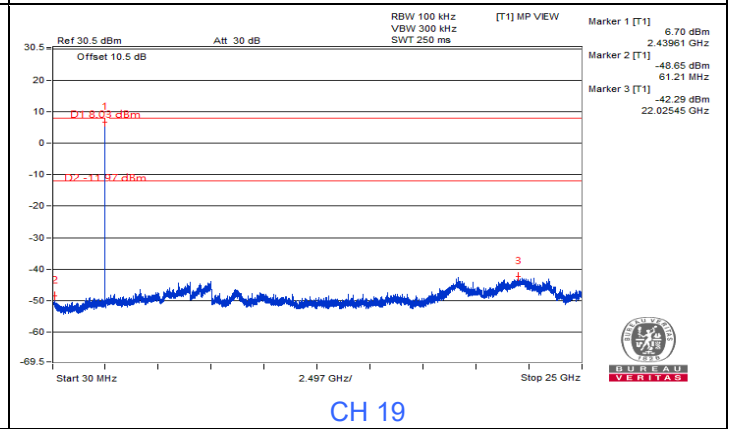
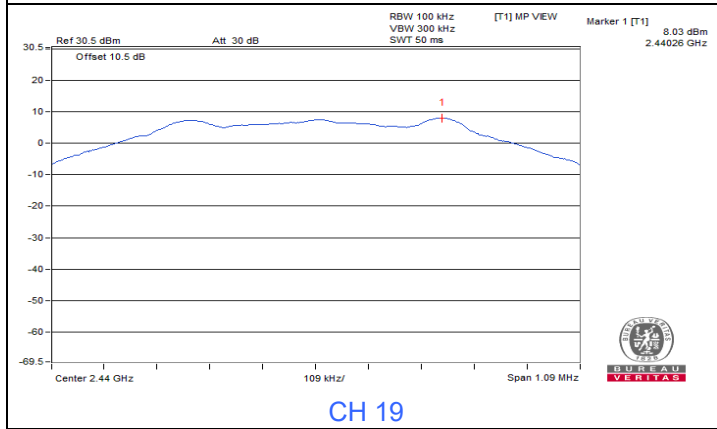
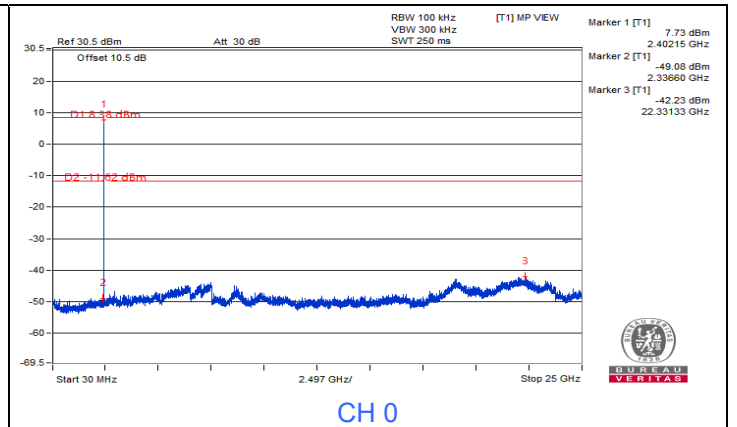
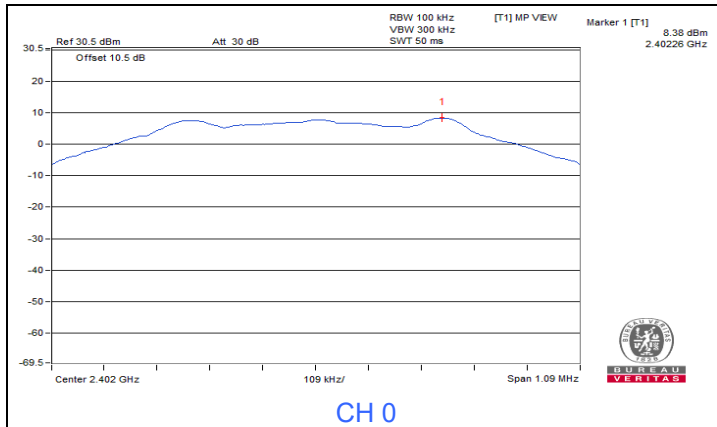
LE 5.3



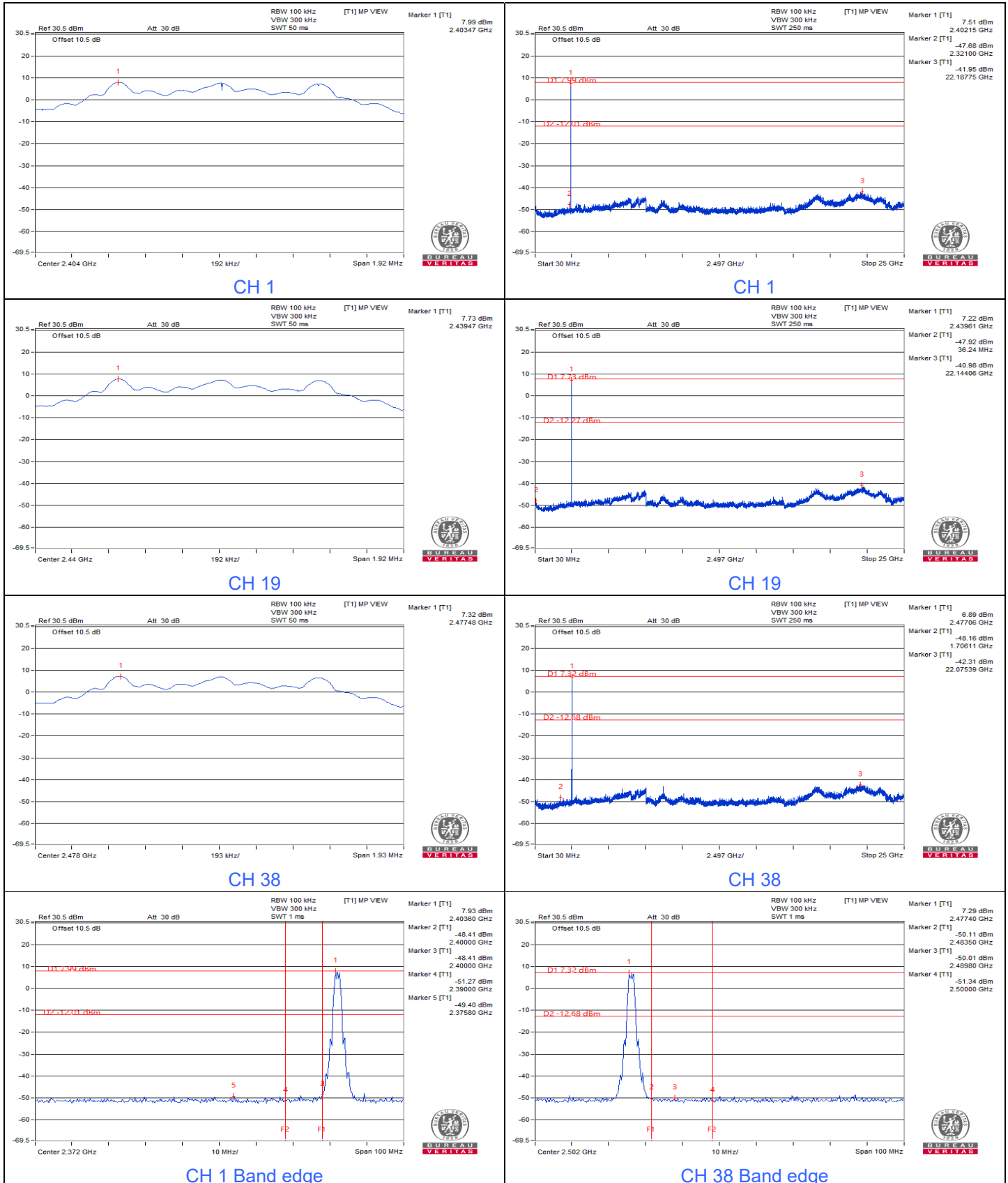


Mode B

LE 4.0



LE 5.3



## 7.5 AC Power Conducted Emissions

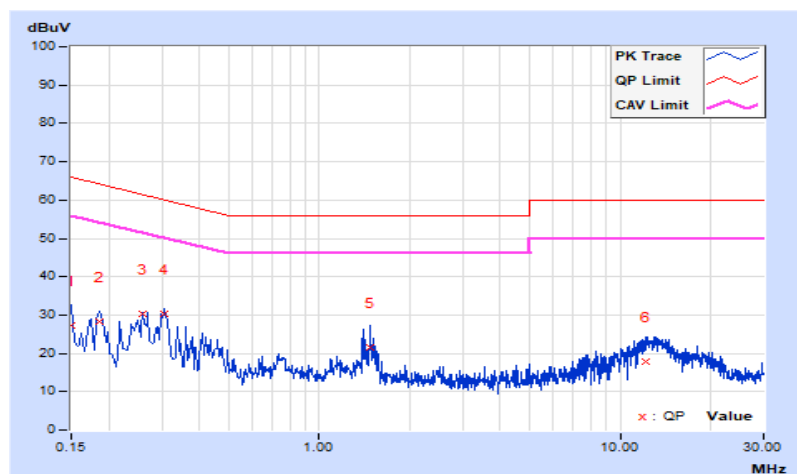
### Mode C

RF Mode	Charging Mode		
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Rex Wang		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.66	17.77	7.40	27.43	17.06	66.00	56.00	-38.57	-38.94
2	0.18568	9.69	18.58	11.79	28.27	21.48	64.23	54.23	-35.96	-32.75
3	0.25800	9.73	20.71	9.29	30.44	19.02	61.50	51.50	-31.06	-32.48
4	0.30600	9.75	20.45	8.82	30.20	18.57	60.08	50.08	-29.88	-31.51
5	1.47000	9.88	11.79	2.02	21.67	11.90	56.00	46.00	-34.33	-34.10
6	12.22200	10.04	7.70	4.32	17.74	14.36	60.00	50.00	-42.26	-35.64

#### Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

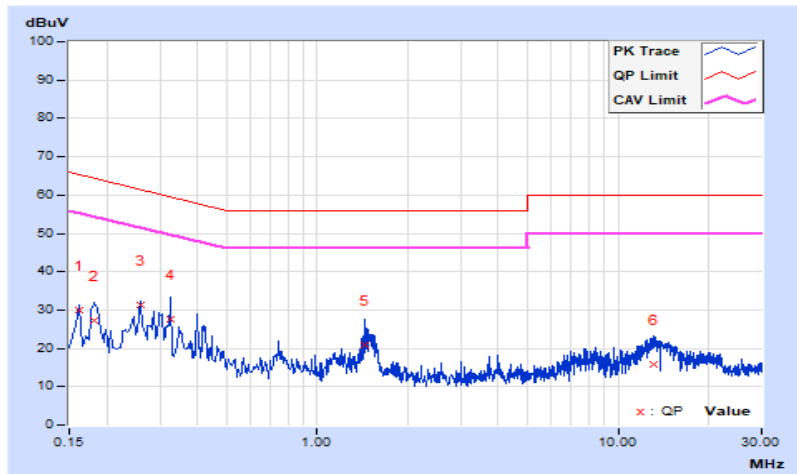


RF Mode	Charging Mode		
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Rex Wang		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16190	9.67	20.15	6.72	29.82	16.39	65.37	55.37	-35.55	-38.98
2	0.18180	9.69	17.69	12.93	27.38	22.62	64.40	54.40	-37.02	-31.78
3	0.25800	9.72	21.68	9.78	31.40	19.50	61.50	51.50	-30.10	-32.00
4	0.32600	9.74	17.92	3.64	27.66	13.38	59.55	49.55	-31.89	-36.17
5	1.43800	9.86	10.88	1.49	20.74	11.35	56.00	46.00	-35.26	-34.65
6	13.17800	10.09	5.61	1.32	15.70	11.41	60.00	50.00	-44.30	-38.59

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



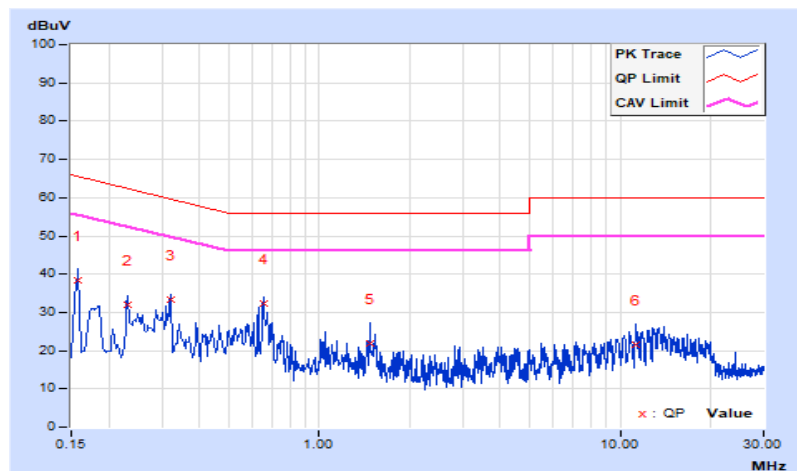
### Mode D

RF Mode	Charging Mode		
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Rex Wang		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15800	9.67	28.65	12.56	38.32	22.23	65.57	55.57	-27.25	-33.34
2	0.23000	9.71	22.32	9.36	32.03	19.07	62.45	52.45	-30.42	-33.38
3	0.32200	9.75	23.62	5.49	33.37	15.24	59.66	49.66	-26.29	-34.42
4	0.65400	9.82	22.39	7.57	32.21	17.39	56.00	46.00	-23.79	-28.61
5	1.47800	9.88	11.85	2.51	21.73	12.39	56.00	46.00	-34.27	-33.61
6	11.34600	10.03	11.41	1.35	21.44	11.38	60.00	50.00	-38.56	-38.62

#### Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

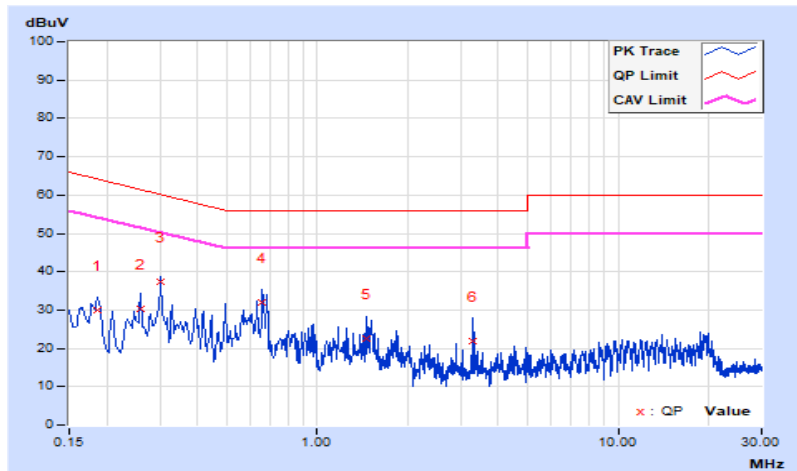


RF Mode	Charging Mode		
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Rex Wang		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18600	9.69	20.15	14.42	29.84	24.11	64.21	54.21	-34.37	-30.10
2	0.25800	9.72	20.66	11.20	30.38	20.92	61.50	51.50	-31.12	-30.58
<b>3</b>	<b>0.30200</b>	<b>9.74</b>	<b>27.55</b>	<b>9.93</b>	<b>37.29</b>	<b>19.67</b>	<b>60.19</b>	<b>50.19</b>	<b>-22.90</b>	<b>-30.52</b>
4	0.65800	9.80	22.35	7.38	32.15	17.18	56.00	46.00	-23.85	-28.82
5	1.45800	9.86	12.64	3.96	22.50	13.82	56.00	46.00	-33.50	-32.18
6	3.30600	9.94	11.82	4.33	21.76	14.27	56.00	46.00	-34.24	-31.73

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value





## 7.6 Unwanted Emissions below 1 GHz

### Mode A

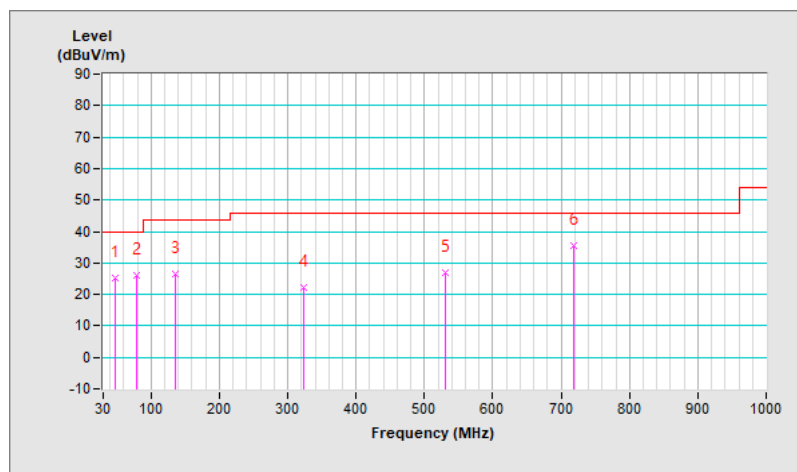
RF Mode	LE 5.3	Channel	CH 1 : 2404 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	3.8 Vdc	Environmental Conditions	23°C, 67% RH
Tested By	Adair Peng		

#### Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	47.46	25.3 QP	40.0	-14.7	1.50 H	256	34.8	-9.5
2	79.47	26.0 QP	40.0	-14.0	1.50 H	171	39.5	-13.5
3	135.73	26.4 QP	43.5	-17.1	1.00 H	356	36.2	-9.8
4	323.91	22.0 QP	46.0	-24.0	1.00 H	6	29.1	-7.1
5	531.49	27.1 QP	46.0	-18.9	1.50 H	275	30.6	-3.5
6	718.70	35.4 QP	46.0	-10.6	1.00 H	20	35.1	0.3

#### Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

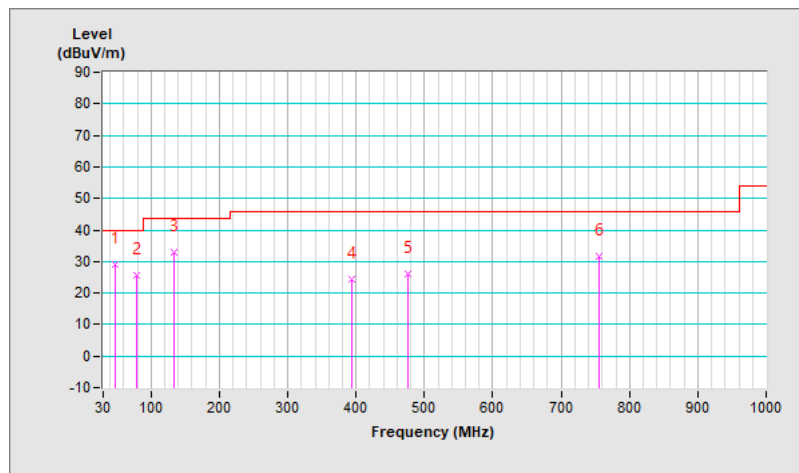


<b>RF Mode</b>	LE 5.3	<b>Channel</b>	CH 1 : 2404 MHz
<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	QP: RB=120kHz, DET=Quasi-Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	47.46	28.9 QP	40.0	-11.1	1.00 V	271	38.4	-9.5
2	79.47	25.7 QP	40.0	-14.3	1.00 V	221	39.2	-13.5
3	133.79	32.8 QP	43.5	-10.7	1.50 V	271	42.8	-10.0
4	393.75	24.4 QP	46.0	-21.6	1.00 V	302	30.5	-6.1
5	476.20	25.9 QP	46.0	-20.1	2.00 V	358	30.3	-4.4
6	754.59	31.7 QP	46.0	-14.3	1.00 V	235	30.3	1.4

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



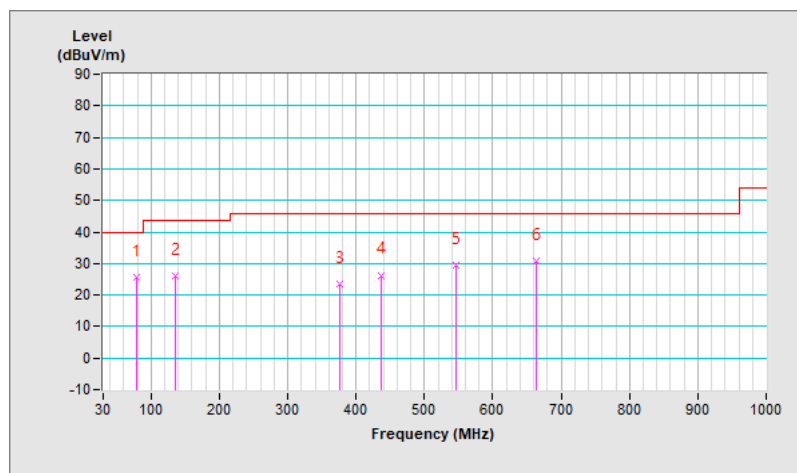
### Mode B

<b>RF Mode</b>	LE 4.0	<b>Channel</b>	CH 0 : 2402 MHz
<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	QP: RB=120kHz, DET=Quasi-Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	79.47	25.6 QP	40.0	-14.4	1.00 H	34	39.1	-13.5
2	135.73	25.9 QP	43.5	-17.6	1.00 H	15	35.7	-9.8
3	375.32	23.6 QP	46.0	-22.4	1.49 H	140	29.9	-6.3
4	436.43	26.3 QP	46.0	-19.7	1.00 H	170	31.3	-5.0
5	547.01	29.4 QP	46.0	-16.6	1.49 H	102	32.7	-3.3
6	663.41	30.6 QP	46.0	-15.4	1.00 H	140	31.2	-0.6

#### Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

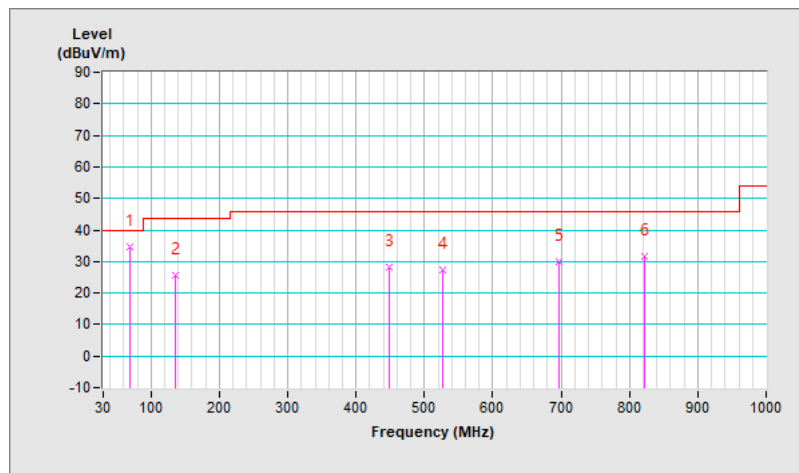


<b>RF Mode</b>	LE 4.0	<b>Channel</b>	CH 0 : 2402 MHz
<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	QP: RB=120kHz, DET=Quasi-Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	68.80	34.8 QP	40.0	-5.2	2.00 V	105	45.9	-11.1
2	135.73	25.8 QP	43.5	-17.7	1.01 V	353	35.6	-9.8
3	448.07	28.0 QP	46.0	-18.0	2.00 V	317	32.8	-4.8
4	527.61	27.3 QP	46.0	-18.7	1.51 V	271	30.9	-3.6
5	696.39	30.0 QP	46.0	-16.0	1.51 V	124	30.0	0.0
6	822.49	31.6 QP	46.0	-14.4	1.51 V	326	29.0	2.6

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



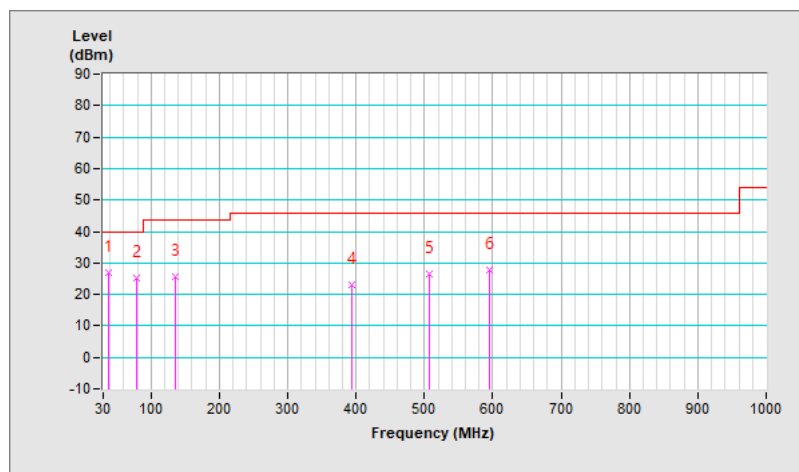
### Mode C

<b>RF Mode</b>	Charging Mode		
<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	QP: RB=120kHz, DET=Quasi-Peak
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	38.73	27.1 QP	40.0	-12.9	1.50 H	188	37.2	-10.1
2	79.47	25.4 QP	40.0	-14.6	2.00 H	204	38.9	-13.5
3	135.73	25.8 QP	43.5	-17.7	1.00 H	14	35.6	-9.8
4	393.75	23.2 QP	46.0	-22.8	1.00 H	133	29.3	-6.1
5	507.24	26.3 QP	46.0	-19.7	2.00 H	324	30.2	-3.9
6	595.51	27.7 QP	46.0	-18.3	1.00 H	192	29.6	-1.9

#### Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

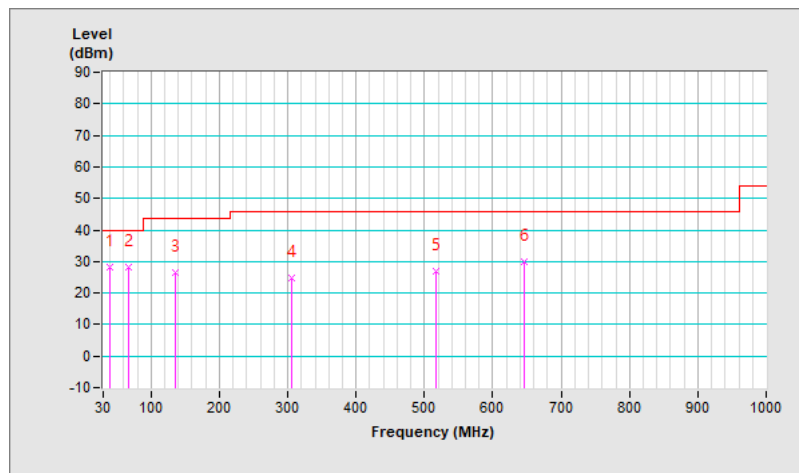


<b>RF Mode</b>	Charging Mode		
<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	QP: RB=120kHz, DET=Quasi-Peak
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	40.67	28.1 QP	40.0	-11.9	1.50 V	171	38.0	-9.9
2	66.86	28.0 QP	40.0	-12.0	1.00 V	171	38.6	-10.6
3	135.73	26.3 QP	43.5	-17.2	1.00 V	304	36.1	-9.8
4	306.45	24.6 QP	46.0	-21.4	1.00 V	177	32.1	-7.5
5	516.94	27.1 QP	46.0	-18.9	1.50 V	324	30.9	-3.8
6	645.95	29.8 QP	46.0	-16.2	1.00 V	238	30.5	-0.7

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



### Mode D

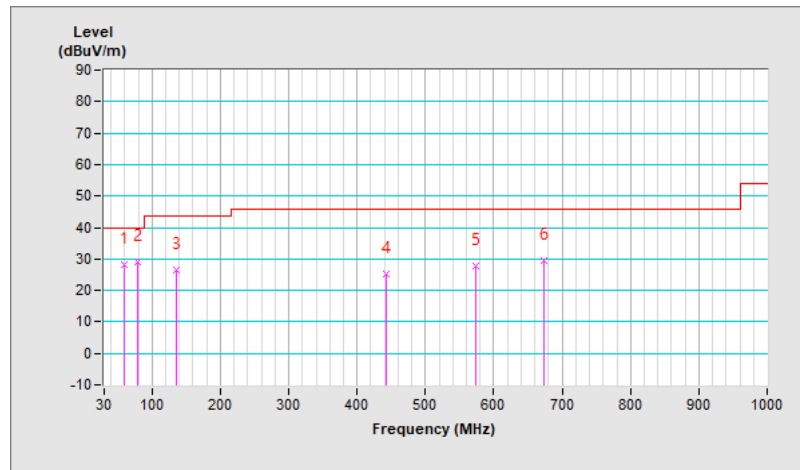
<b>RF Mode</b>	Charging Mode		
<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	QP: RB=120kHz, DET=Quasi-Peak
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

#### Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	60.07	28.3 QP	40.0	-11.7	1.00 H	144	38.1	-9.8
2	79.47	28.9 QP	40.0	-11.1	1.00 H	316	42.4	-13.5
3	135.73	26.5 QP	43.5	-17.0	1.50 H	347	36.3	-9.8
4	443.22	25.1 QP	46.0	-20.9	1.50 H	44	30.0	-4.9
5	573.20	27.9 QP	46.0	-18.1	1.00 H	158	30.5	-2.6
6	674.08	29.4 QP	46.0	-16.6	1.00 H	19	29.9	-0.5

#### Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

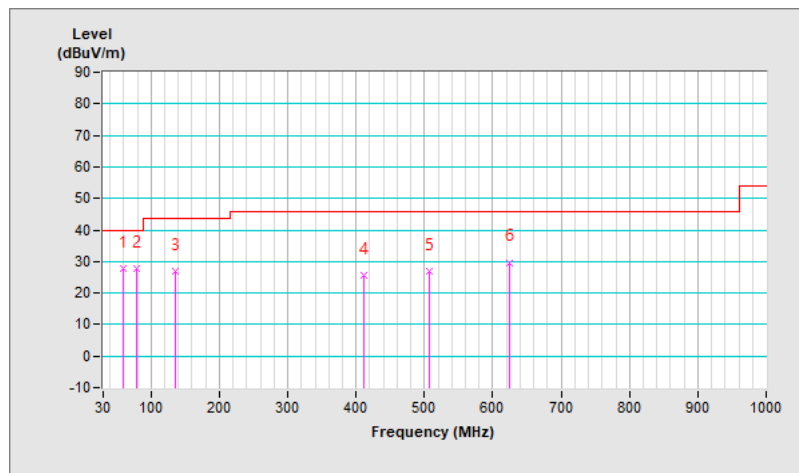


<b>RF Mode</b>	Charging Mode		
<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	QP: RB=120kHz, DET=Quasi-Peak
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	60.07	27.8 QP	40.0	-12.2	1.50 V	201	37.6	-9.8
2	79.47	27.6 QP	40.0	-12.4	1.50 V	164	41.1	-13.5
3	135.73	26.7 QP	43.5	-16.8	1.50 V	330	36.5	-9.8
4	412.18	25.7 QP	46.0	-20.3	1.00 V	251	31.6	-5.9
5	507.24	26.8 QP	46.0	-19.2	1.00 V	221	30.7	-3.9
6	623.64	29.7 QP	46.0	-16.3	1.00 V	153	30.9	-1.2

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.





## 7.7 Unwanted Emissions above 1 GHz

### Mode A

<b>RF Mode</b>	LE 4.0	<b>Channel</b>	CH 0 : 2402 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

#### Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	58.7 PK	74.0	-15.3	3.84 H	70	25.0	33.7
2	2390.00	46.9 AV	54.0	-7.1	3.84 H	70	13.2	33.7
3	*2402.00	99.5 PK			3.84 H	70	65.8	33.7
4	*2402.00	98.4 AV			3.84 H	70	64.7	33.7
5	4804.00	50.3 PK	74.0	-23.7	2.97 H	112	40.2	10.1
6	4804.00	37.7 AV	54.0	-16.3	2.97 H	112	27.6	10.1

#### Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	58.5 PK	74.0	-15.5	3.49 V	129	24.8	33.7
2	2390.00	46.8 AV	54.0	-7.2	3.49 V	129	13.1	33.7
3	*2402.00	97.9 PK			3.49 V	129	64.2	33.7
4	*2402.00	96.8 AV			3.49 V	129	63.1	33.7
5	4804.00	50.1 PK	74.0	-23.9	3.27 V	146	40.0	10.1
6	4804.00	37.6 AV	54.0	-16.4	3.27 V	146	27.5	10.1

#### Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency, the limit was restricted at the RF Output Power.



<b>RF Mode</b>	LE 4.0	<b>Channel</b>	CH 19 : 2440 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	101.9 PK			3.69 H	72	68.1	33.8
2	*2440.00	100.8 AV			3.69 H	72	67.0	33.8
3	4880.00	50.9 PK	74.0	-23.1	2.95 H	108	40.4	10.5
4	4880.00	38.2 AV	54.0	-15.8	2.95 H	108	27.7	10.5

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	100.3 PK			3.51 V	127	66.5	33.8
2	*2440.00	99.3 AV			3.51 V	127	65.5	33.8
3	4880.00	50.7 PK	74.0	-23.3	3.21 V	142	40.2	10.5
4	4880.00	38.0 AV	54.0	-16.0	3.21 V	142	27.5	10.5

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* " : Fundamental frequency, the limit was restricted at the RF Output Power.



<b>RF Mode</b>	LE 4.0	<b>Channel</b>	CH 39 : 2480 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	100.3 PK			3.12 H	81	66.5	33.8
2	*2480.00	99.2 AV			3.12 H	81	65.4	33.8
3	2483.50	61.0 PK	74.0	-13.0	3.12 H	81	27.2	33.8
4	2483.50	49.1 AV	54.0	-4.9	3.12 H	81	15.3	33.8
5	4960.00	50.8 PK	74.0	-23.2	2.90 H	101	40.3	10.5
6	4960.00	38.2 AV	54.0	-15.8	2.90 H	101	27.7	10.5

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	98.7 PK			3.47 V	123	64.9	33.8
2	*2480.00	97.6 AV			3.47 V	123	63.8	33.8
3	2483.50	60.8 PK	74.0	-13.2	3.47 V	123	27.0	33.8
4	2483.50	49.0 AV	54.0	-5.0	3.47 V	123	15.2	33.8
5	4960.00	50.6 PK	74.0	-23.4	3.29 V	142	40.1	10.5
6	4960.00	38.1 AV	54.0	-15.9	3.29 V	142	27.6	10.5

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency, the limit was restricted at the RF Output Power.

<b>RF Mode</b>	LE 5.3	<b>Channel</b>	CH 1 : 2404 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=5 kHz, DET=Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.2 PK	74.0	-14.8	2.77 H	53	25.5	33.7
2	2390.00	47.6 AV	54.0	-6.4	2.77 H	53	13.9	33.7
3	*2404.00	98.9 PK			2.77 H	53	65.2	33.7
4	*2404.00	96.0 AV			2.77 H	53	62.3	33.7
5	4808.00	50.5 PK	74.0	-23.5	3.03 H	108	40.4	10.1
6	4808.00	38.5 AV	54.0	-15.5	3.03 H	108	28.4	10.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.1 PK	74.0	-14.9	3.58 V	131	25.4	33.7
2	2390.00	47.4 AV	54.0	-6.6	3.58 V	131	13.7	33.7
3	*2404.00	97.2 PK			3.58 V	131	63.5	33.7
4	*2404.00	94.3 AV			3.58 V	131	60.6	33.7
5	4808.00	50.3 PK	74.0	-23.7	3.22 V	152	40.2	10.1
6	4808.00	38.3 AV	54.0	-15.7	3.22 V	152	28.2	10.1

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency, the limit was restricted at the RF Output Power.



<b>RF Mode</b>	LE 5.3	<b>Channel</b>	CH 19 : 2440 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=5 kHz, DET=Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	102.4 PK			3.68 H	69	68.6	33.8
2	*2440.00	99.5 AV			3.68 H	69	65.7	33.8
3	4880.00	51.0 PK	74.0	-23.0	3.15 H	117	40.5	10.5
4	4880.00	39.0 AV	54.0	-15.0	3.15 H	117	28.5	10.5

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	100.8 PK			3.46 V	125	67.0	33.8
2	*2440.00	97.9 AV			3.46 V	125	64.1	33.8
3	4880.00	50.8 PK	74.0	-23.2	3.31 V	150	40.3	10.5
4	4880.00	38.8 AV	54.0	-15.2	3.31 V	150	28.3	10.5

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* " : Fundamental frequency, the limit was restricted at the RF Output Power.

<b>RF Mode</b>	LE 5.3	<b>Channel</b>	CH 38 : 2478 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=5 kHz, DET=Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 67% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2478.00	100.3 PK			3.12 H	70	66.4	33.9
2	*2478.00	97.4 AV			3.12 H	70	63.5	33.9
3	2483.50	59.4 PK	74.0	-14.6	3.12 H	70	25.6	33.8
4	<b>2483.50</b>	<b>49.4 AV</b>	<b>54.0</b>	<b>-4.6</b>	<b>3.12 H</b>	<b>70</b>	<b>15.6</b>	<b>33.8</b>
5	4956.00	50.9 PK	74.0	-23.1	2.87 H	110	40.4	10.5
6	4956.00	38.9 AV	54.0	-15.1	2.87 H	110	28.4	10.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2478.00	98.6 PK			3.61 V	122	64.7	33.9
2	*2478.00	95.7 AV			3.61 V	122	61.8	33.9
3	2483.50	59.2 PK	74.0	-14.8	3.61 V	122	25.4	33.8
4	2483.50	49.2 AV	54.0	-4.8	3.61 V	122	15.4	33.8
5	4956.00	50.7 PK	74.0	-23.3	3.30 V	132	40.2	10.5
6	4956.00	38.8 AV	54.0	-15.2	3.30 V	132	28.3	10.5

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* " : Fundamental frequency, the limit was restricted at the RF Output Power.

**Mode B**

<b>RF Mode</b>	LE 4.0	<b>Channel</b>	CH 0 : 2402 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 73.8% RH
<b>Tested By</b>	Adair Peng		

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.4 PK	74.0	-14.6	2.27 H	298	25.7	33.7
2	2390.00	46.9 AV	54.0	-7.1	2.27 H	298	13.2	33.7
3	*2402.00	100.8 PK			2.27 H	298	67.1	33.7
4	*2402.00	99.6 AV			2.27 H	298	65.9	33.7
5	4804.00	50.2 PK	74.0	-23.8	1.84 H	267	40.1	10.1
6	4804.00	38.0 AV	54.0	-16.0	1.84 H	267	27.9	10.1

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.1 PK	74.0	-14.9	3.58 V	49	25.4	33.7
2	2390.00	46.7 AV	54.0	-7.3	3.58 V	49	13.0	33.7
3	*2402.00	99.8 PK			3.58 V	49	66.1	33.7
4	*2402.00	98.6 AV			3.58 V	49	64.9	33.7
5	4804.00	50.0 PK	74.0	-24.0	3.54 V	65	39.9	10.1
6	4804.00	37.9 AV	54.0	-16.1	3.54 V	65	27.8	10.1

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* " : Fundamental frequency, the limit was restricted at the RF Output Power.



<b>RF Mode</b>	LE 4.0	<b>Channel</b>	CH 19 : 2440 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 73.8% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	99.5 PK			2.24 H	303	65.7	33.8
2	*2440.00	98.3 AV			2.24 H	303	64.5	33.8
3	4880.00	50.6 PK	74.0	-23.4	1.85 H	264	40.1	10.5
4	4880.00	38.4 AV	54.0	-15.6	1.85 H	264	27.9	10.5

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	98.2 PK			3.46 V	57	64.4	33.8
2	*2440.00	97.0 AV			3.46 V	57	63.2	33.8
3	4880.00	50.4 PK	74.0	-23.6	3.65 V	70	39.9	10.5
4	4880.00	38.2 AV	54.0	-15.8	3.65 V	70	27.7	10.5

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* " : Fundamental frequency, the limit was restricted at the RF Output Power.





<b>RF Mode</b>	LE 4.0	<b>Channel</b>	CH 39 : 2480 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 73.8% RH
<b>Tested By</b>	Adair Peng		

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	98.4 PK			1.71 H	282	64.6	33.8
2	*2480.00	97.3 AV			1.71 H	282	63.5	33.8
3	2483.50	59.4 PK	74.0	-14.6	1.71 H	282	25.6	33.8
4	2483.50	48.7 AV	54.0	-5.3	1.71 H	282	14.9	33.8
5	4960.00	50.8 PK	74.0	-23.2	1.86 H	272	40.3	10.5
6	4960.00	38.6 AV	54.0	-15.4	1.86 H	272	28.1	10.5

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	97.0 PK			3.58 V	64	63.2	33.8
2	*2480.00	95.9 AV			3.58 V	64	62.1	33.8
3	2483.50	59.2 PK	74.0	-14.8	3.58 V	64	25.4	33.8
4	2483.50	48.5 AV	54.0	-5.5	3.58 V	64	14.7	33.8
5	4960.00	50.6 PK	74.0	-23.4	3.47 V	75	40.1	10.5
6	4960.00	38.2 AV	54.0	-15.8	3.47 V	75	27.7	10.5

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* " : Fundamental frequency, the limit was restricted at the RF Output Power.

<b>RF Mode</b>	LE 5.3	<b>Channel</b>	CH 1 : 2404 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=5 kHz, DET=Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 73.8% RH
<b>Tested By</b>	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.0 PK	74.0	-15.0	2.28 H	296	25.3	33.7
2	2390.00	47.7 AV	54.0	-6.3	2.28 H	296	14.0	33.7
3	*2404.00	100.8 PK			2.28 H	296	67.1	33.7
4	*2404.00	97.8 AV			2.28 H	296	64.1	33.7
5	4808.00	50.1 PK	74.0	-23.9	1.96 H	274	40.0	10.1
6	4808.00	38.7 AV	54.0	-15.3	1.96 H	274	28.6	10.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	58.8 PK	74.0	-15.2	3.57 V	50	25.1	33.7
2	2390.00	47.6 AV	54.0	-6.4	3.57 V	50	13.9	33.7
3	*2404.00	99.4 PK			3.57 V	50	65.7	33.7
4	*2404.00	96.4 AV			3.57 V	50	62.7	33.7
5	4808.00	49.9 PK	74.0	-24.1	3.45 V	62	39.8	10.1
6	4808.00	38.6 AV	54.0	-15.4	3.45 V	62	28.5	10.1

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* " : Fundamental frequency, the limit was restricted at the RF Output Power.



<b>RF Mode</b>	LE 5.3	<b>Channel</b>	CH 19 : 2440 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=5 kHz, DET=Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 73.8% RH
<b>Tested By</b>	Adair Peng		

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	98.9 PK			2.24 H	305	65.1	33.8
2	*2440.00	96.1 AV			2.24 H	305	62.3	33.8
3	4880.00	50.8 PK	74.0	-23.2	1.92 H	286	40.3	10.5
4	4880.00	39.4 AV	54.0	-14.6	1.92 H	286	28.9	10.5

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	97.8 PK			3.56 V	48	64.0	33.8
2	*2440.00	94.9 AV			3.56 V	48	61.1	33.8
3	4880.00	50.7 PK	74.0	-23.3	3.58 V	60	40.2	10.5
4	4880.00	39.2 AV	54.0	-14.8	3.58 V	60	28.7	10.5

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* " : Fundamental frequency, the limit was restricted at the RF Output Power.



<b>RF Mode</b>	LE 5.3	<b>Channel</b>	CH 38 : 2478 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=5 kHz, DET=Peak
<b>Input Power</b>	3.8 Vdc	<b>Environmental Conditions</b>	23°C, 73.8% RH
<b>Tested By</b>	Adair Peng		

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2478.00	97.8 PK			1.70 H	285	63.9	33.9
2	*2478.00	94.9 AV			1.70 H	285	61.0	33.9
3	2483.50	59.0 PK	74.0	-15.0	1.70 H	285	25.2	33.8
<b>4</b>	<b>2483.50</b>	<b>49.4 AV</b>	<b>54.0</b>	<b>-4.6</b>	<b>1.70 H</b>	<b>285</b>	<b>15.6</b>	<b>33.8</b>
5	4956.00	50.7 PK	74.0	-23.3	2.58 H	167	40.2	10.5
6	4956.00	39.5 AV	54.0	-14.5	2.58 H	167	29.0	10.5

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2478.00	96.7 PK			3.52 V	47	62.8	33.9
2	*2478.00	93.8 AV			3.52 V	47	59.9	33.9
3	2483.50	58.8 PK	74.0	-15.2	3.52 V	47	25.0	33.8
4	2483.50	49.3 AV	54.0	-4.7	3.52 V	47	15.5	33.8
5	4956.00	50.6 PK	74.0	-23.4	3.58 V	67	40.1	10.5
6	4956.00	39.0 AV	54.0	-15.0	3.58 V	67	28.5	10.5

**Remarks:**

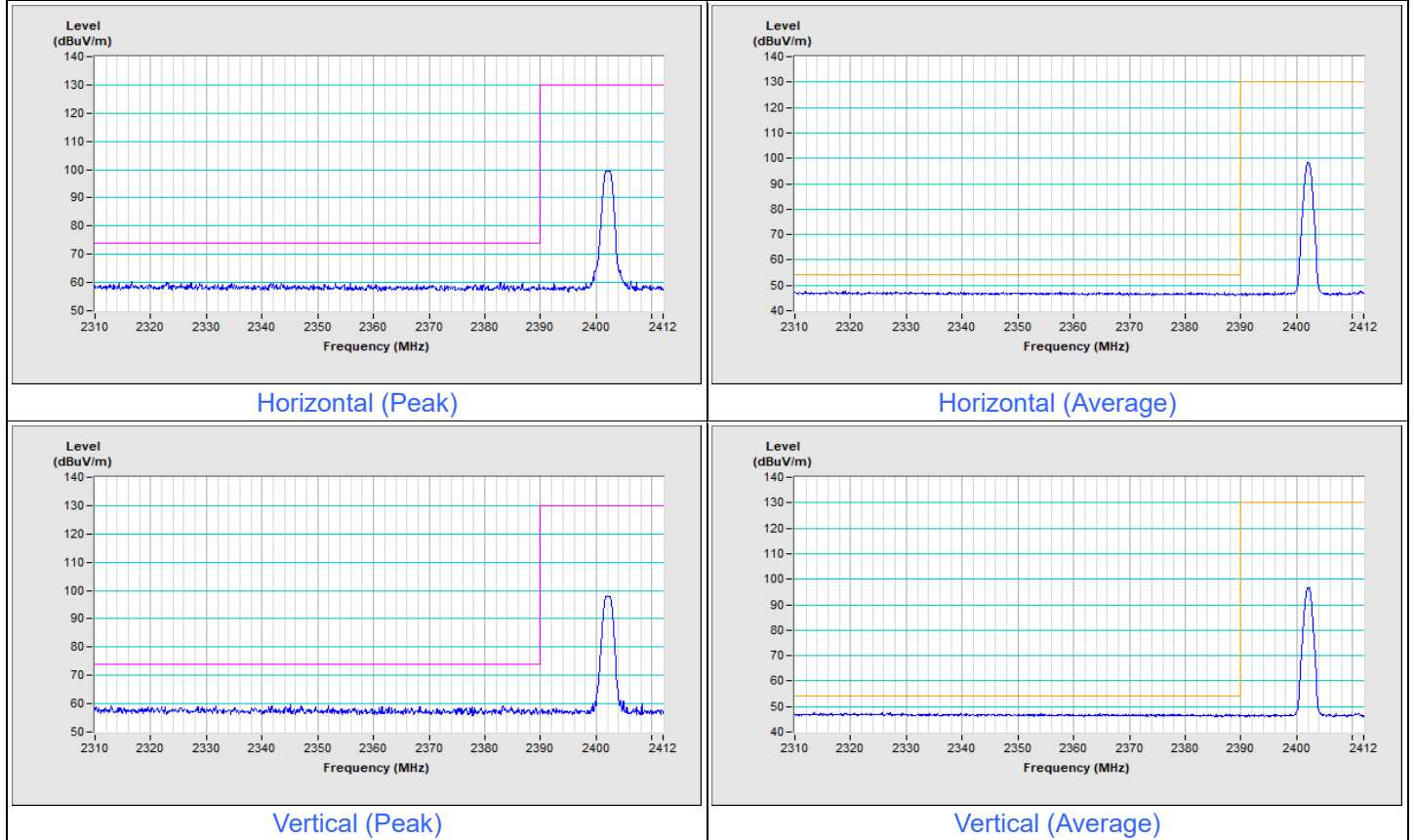
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* " : Fundamental frequency, the limit was restricted at the RF Output Power.

# Plot of Band Edge

## Mode A

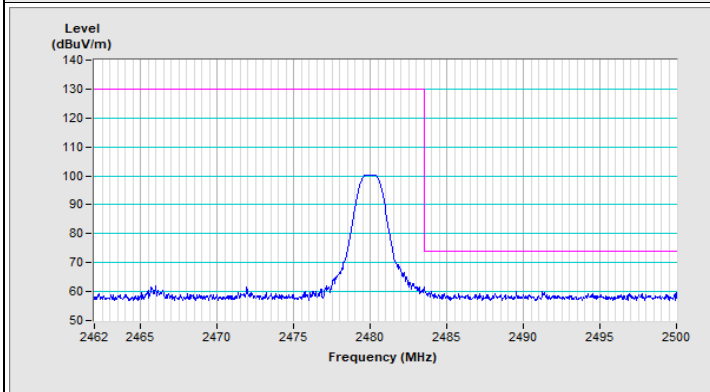
Frequency Range	2.31 GHz ~ 2.412 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
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### LE 4.0 Channel 0

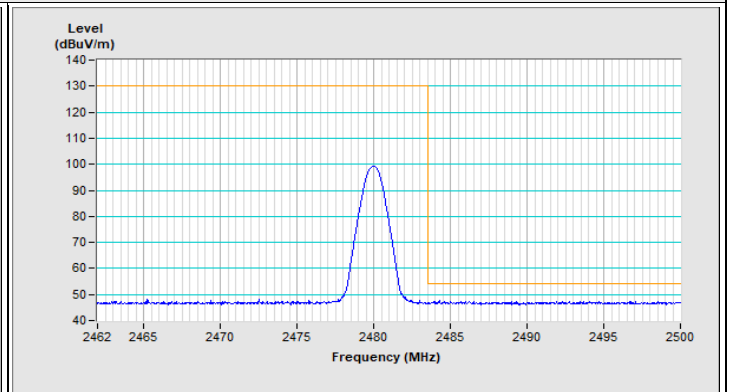


Frequency Range	2.462 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
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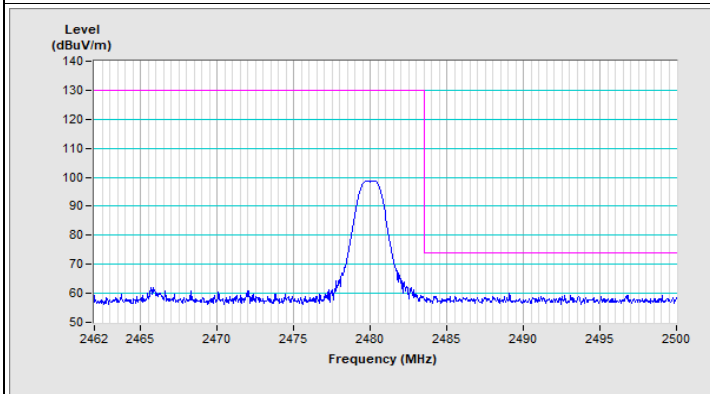
**LE 4.0 Channel 39**



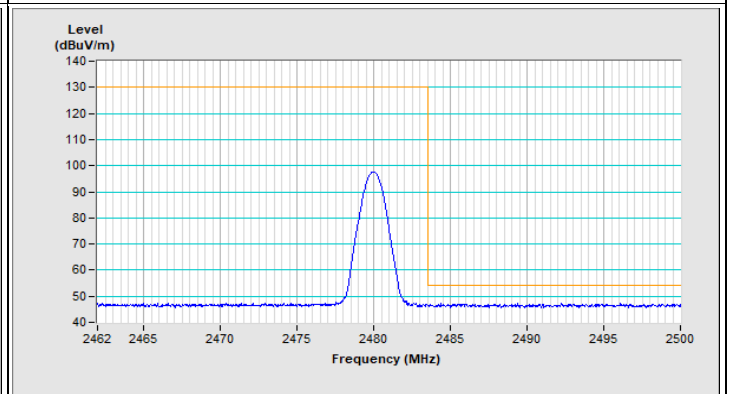
Horizontal (Peak)



Horizontal (Average)



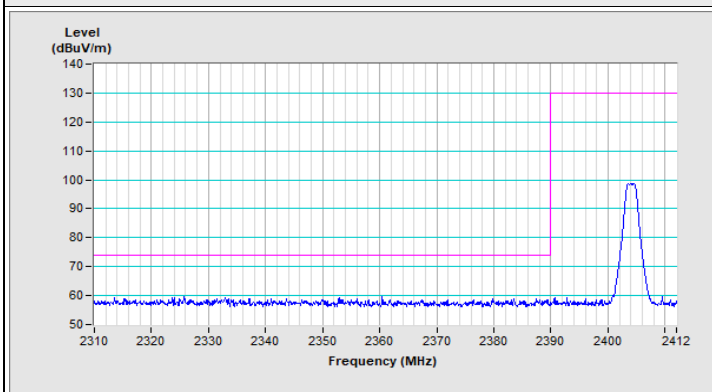
Vertical (Peak)



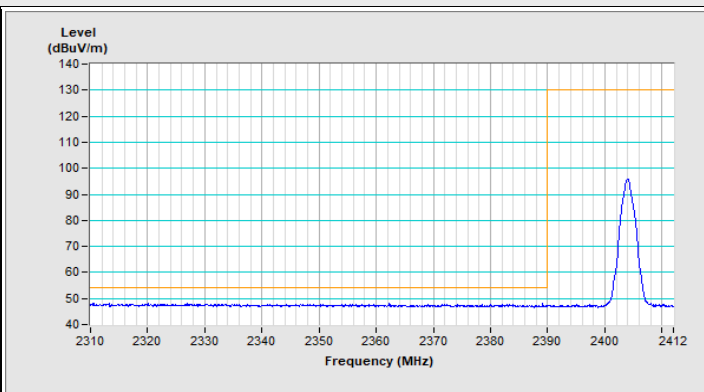
Vertical (Average)

Frequency Range	2.31 GHz ~ 2.412 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=5 kHz, DET=Peak
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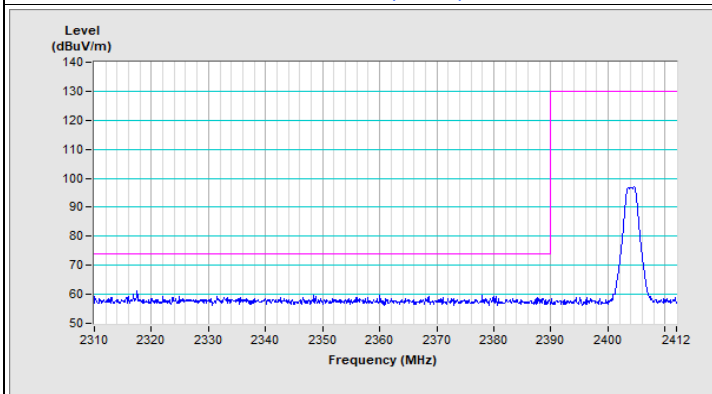
**LE 5.3 Channel 1**



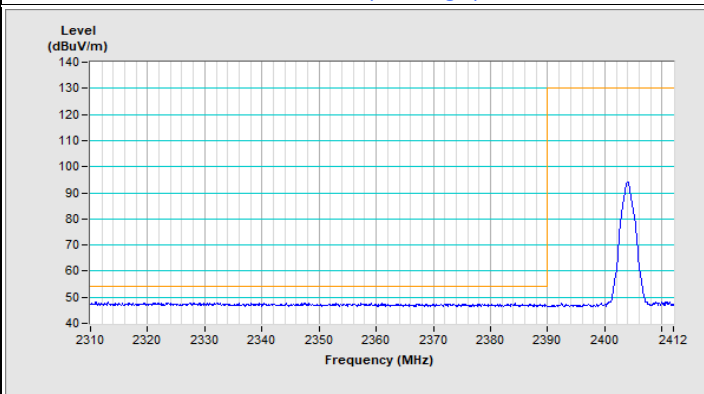
Horizontal (Peak)



Horizontal (Average)



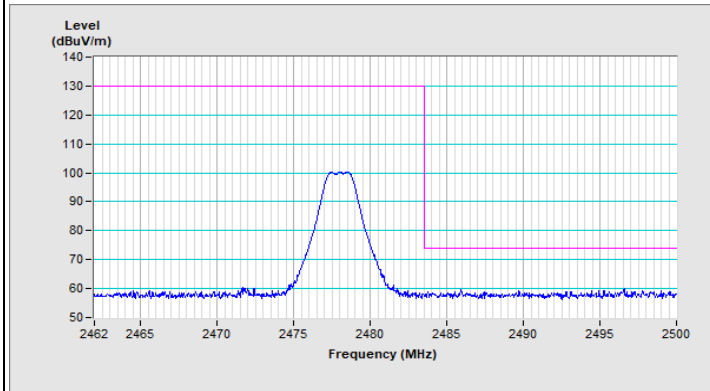
Vertical (Peak)



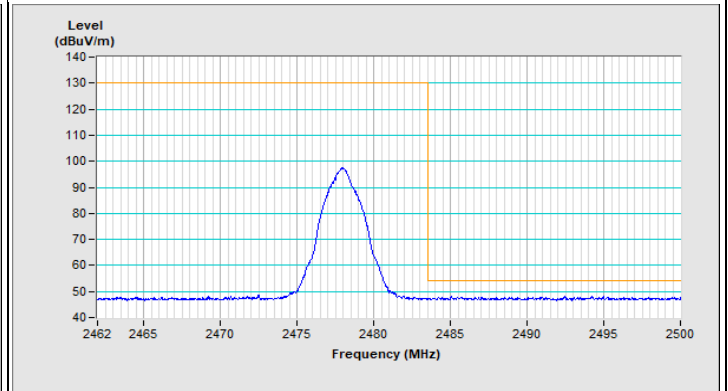
Vertical (Average)

Frequency Range	2.462 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=5 kHz, DET=Peak
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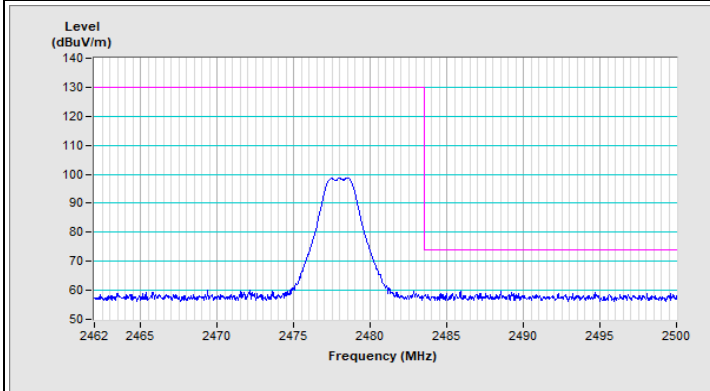
**LE 5.3 Channel 38**



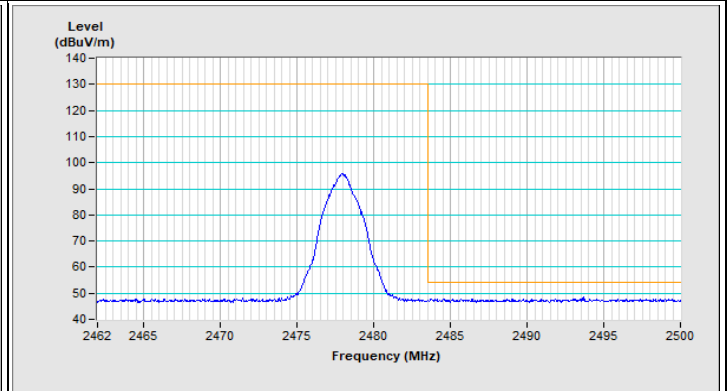
Horizontal (Peak)



Horizontal (Average)



Vertical (Peak)



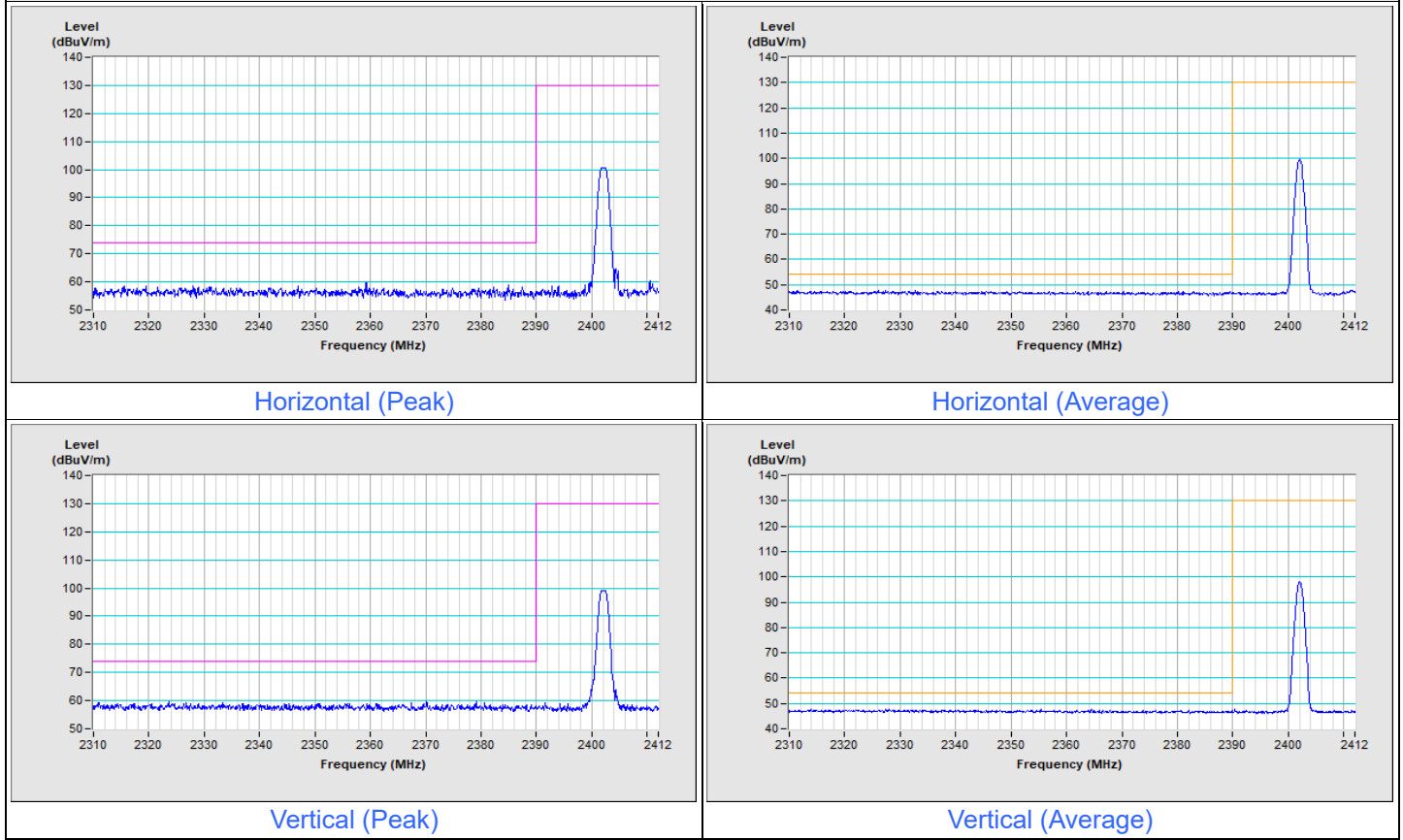
Vertical (Average)



**Mode B**

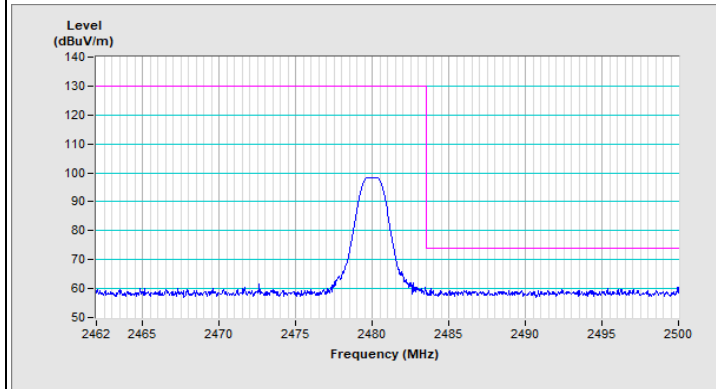
Frequency Range	2.31 GHz ~ 2.412 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
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**LE 4.0 Channel 0**

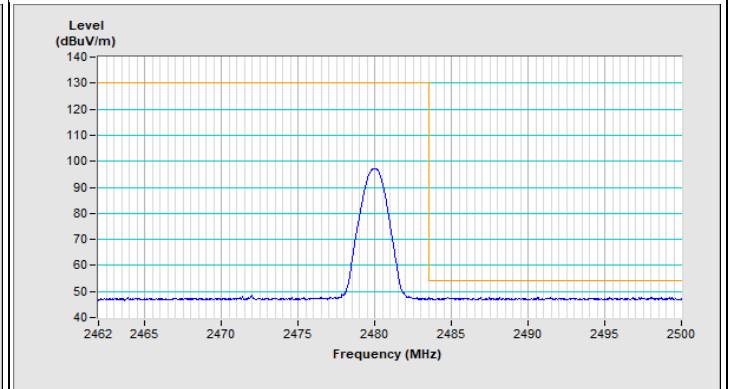


Frequency Range	2.462 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
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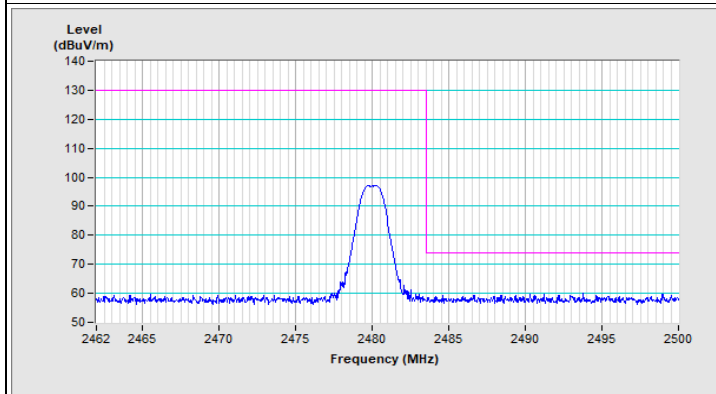
**LE 4.0 Channel 39**



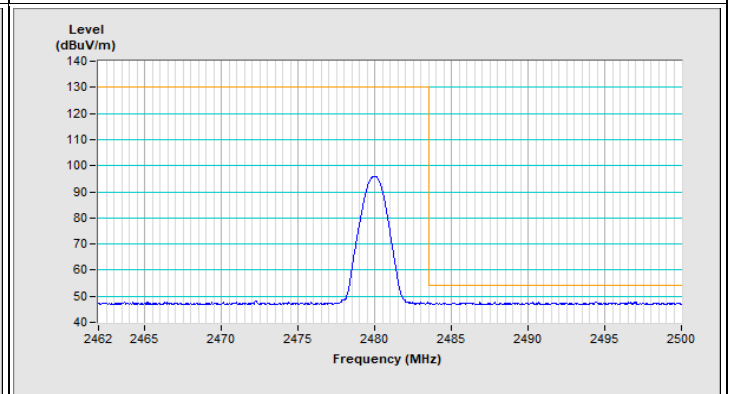
Horizontal (Peak)



Horizontal (Average)



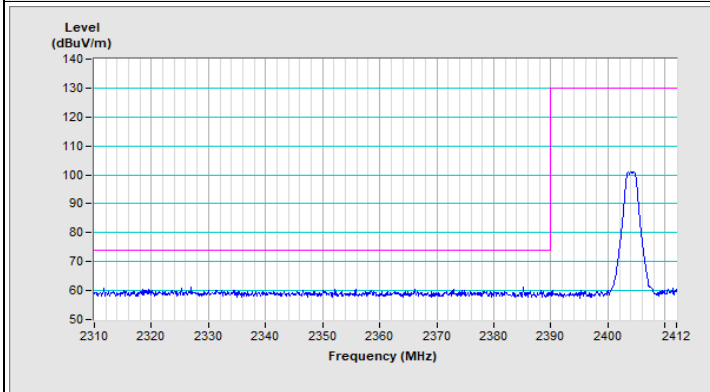
Vertical (Peak)



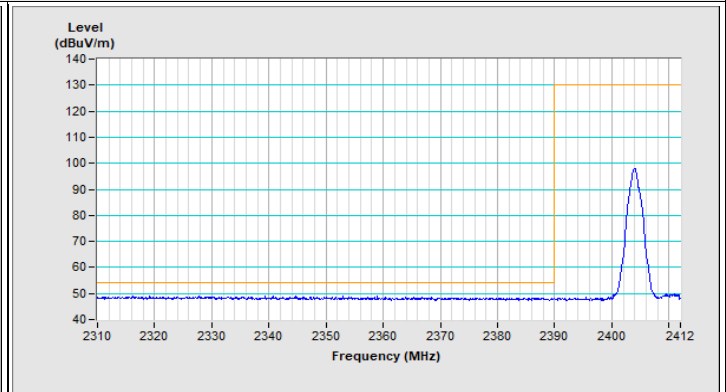
Vertical (Average)

Frequency Range	2.31 GHz ~ 2.412 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=5 kHz, DET=Peak
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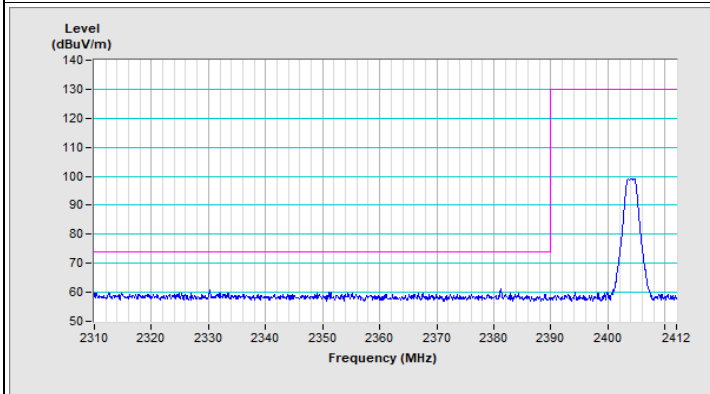
**LE 5.3 Channel 1**



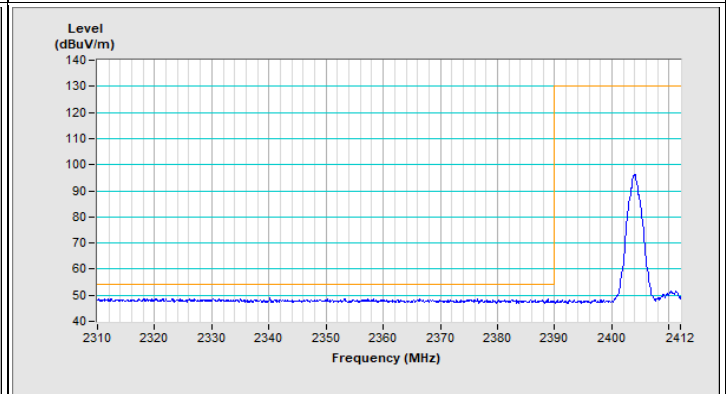
Horizontal (Peak)



Horizontal (Average)



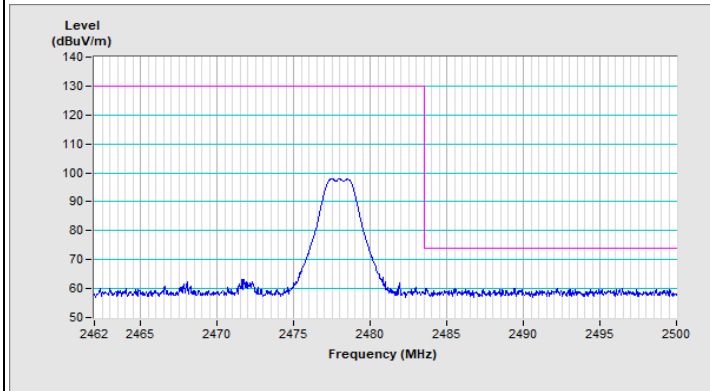
Vertical (Peak)



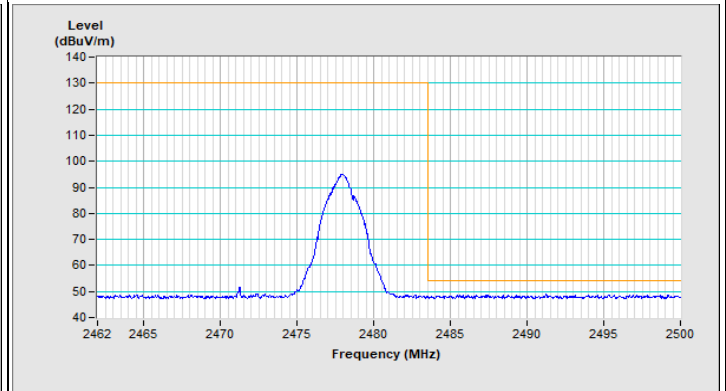
Vertical (Average)

Frequency Range	2.462 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=5 kHz, DET=Peak
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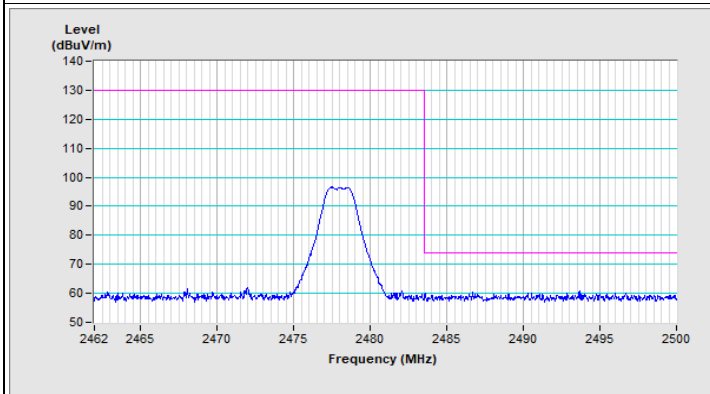
**LE 5.3 Channel 38**



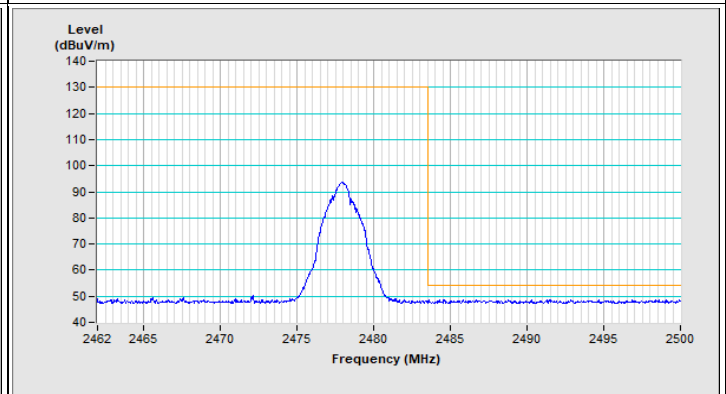
Horizontal (Peak)



Horizontal (Average)



Vertical (Peak)



Vertical (Average)

## 8 Pictures of Test Arrangements

Please refer to the attached file: Test Setup Photo (Reference No.: CFQC-WTW-P23080377\_TSup).

## 9 Construction Photos of EUT

Please refer to the attached file: CFQC-WTW-P23080377 External Photos & Internal Photo

## 10 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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The address and road map of all our labs can be found in our web site also.

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