

TECHNICAL REPORT



Report No.: TW2105034-02E  
File reference No.: 2021-06-18

Applicant: Roland Corporation

Product: TRUE WIRELESS EARBUDS

Model No.: HEXM-PR, HEXM-LITE

Brand Name: V-MODA

Test Standards: FCC Part 15.249

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10 & FCC Part 15 Subpart C, Paragraph 15.249 regulations for the evaluation of electromagnetic compatibility

Approved By

*Jack Chung*

---

Jack Chung

Manager

Dated: June 18, 2021

**Results appearing herein relate only to the sample tested**

**The technical reports is issued errors and omissions exempt and is subject to withdrawal at**

**SHENZHEN TIMEWAY TESTING LABORATORIES**

**Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China**

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com



### **Special Statement:**

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

#### **CNAS-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

#### **FCC-Registration No.: 744189**

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

#### **Industry Canada (IC) —Registration No.:5205A**

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

#### **A2LA (Certification Number:5013.01)**

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

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## 1.0 General Details

### 1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES.  
Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China  
Telephone: (755) 83448688  
Fax: (755) 83442996  
Site on File with the Federal Communications Commission – United States  
Registration Number: 744189  
For 3m Anechoic Chamber

### 1.2 Applicant Details

Applicant: Roland Corporation  
Address: 1-5-3 Shinmiyakoda, Kita-ku, Hamamatsu, Shizuoka 431-2103, Japan  
Telephone: --  
Fax: --

### 1.3 Description of EUT

Product: TRUE WIRELESS EARBUDS  
Manufacturer: WATA ELECTRONICS CO., LTD  
Address: Factory 1, No. 142, South Tanshen Road, Tanzhou Town, Zhongshan City, Guangdong Province, China  
Brand Name: V-MODA  
Model Number: HEXM-PR  
Additional Model Name: HEXM-LITE  
Hardware Version: GNT-AKHT2022-V1.5  
Software Version: V043  
Serial No.: 6F00000  
Rating: Built-in DC3.7V, 60mAh Li-ion battery  
Modulation Type: GFSK (Bluetooth Low Energy)  
Operation Frequency: 2402-2480MHz  
Channel Separate: 2MHz  
Channel Number: 40  
Data Speed: 1Mbps & 2Mbps  
Antenna Designation: FPC antenna with gain 1dBi Max for both right earbud and left earbud (Get from the antenna specification provided by the applicant)

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1.4 Submitted Sample: 8 pcs

1.5 Test Duration  
2021-05-07 to 2021-06-18

1.6 Test Uncertainty  
Conducted Emissions Uncertainty =3.6dB  
Radiated Emissions below 1GHz Uncertainty =4.7dB  
Radiated Emissions above 1GHz Uncertainty =6.0dB  
Conducted Power Uncertainty =6.0dB  
Occupied Channel Bandwidth Uncertainty =5%  
Conducted Emissions Uncertainty =3.6dB  
Note: The measurement uncertainty is for coverage factor of  $k=2$  and a level of confidence of 95%.

1.7 Test Engineer 

The sample tested by \_\_\_\_\_

Print Name: Terry Tang



2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2020-06-23	2021-06-22
LISN	R&S	EZH3-Z5	100294	2020-06-23	2021-06-22
LISN	R&S	EZH3-Z5	100253	2020-06-23	2021-06-22
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2020-06-23	2021-06-22
Loop Antenna	EMCO	6507	00078608	2018-06-25	2021-06-24
Spectrum	R&S	FSIQ26	100292	2020-06-23	2021-06-22
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2020-06-23	2021-06-22
Horn Antenna	R&S	BBHA 9120D	9120D-631	2018-07-09	2021-07-08
Power meter	Anritsu	ML2487A	6K00003613	2020-06-23	2021-06-22
Power sensor	Anritsu	MA2491A	32263	2020-06-23	2021-06-22
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2018-07-04	2021-07-03
9*6*6 Anechoic	--	--	N/A	2020-07-06	2021-07-05
EMI Test Receiver	RS	ESVB	826156/011	2020-06-23	2021-06-22
EMI Test Receiver	RS	ESH3	860904/006	2020-06-23	2021-06-22
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2020-06-23	2021-06-22
Spectrum	HP/Agilent	E4407B	MY50441392	2020-06-23	2021-06-22
Spectrum	RS	FSP	1164.4391.38	2021-01-16	2022-01-15
RF Cable	Zhengdi	ZT26-NJ-NJ-8M/FA	--	2020-06-23	2021-06-22
RF Cable	Zhengdi	7m	--	2020-06-23	2021-06-22
RF Switch	EM	EMSW18	060391	2020-06-23	2021-06-22
Pre-Amplifier	Schwarebeck	BBV9743	#218	2020-06-23	2021-06-22
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2020-06-23	2021-06-22
LISN	SCHAFFNER	NNB42	00012	2021-01-06	2022-01-05

## 2.2 Automation Test Software

### For Conducted Emission Test

Name	Version
EZ-EMC	Ver.EMC-CON 3A1.1

### For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

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### 3.0 Technical Details

#### 3.1 Summary of test results

<b>The EUT has been tested according to the following specifications:</b>			
<b>Standard</b>	<b>Test Type</b>	<b>Result</b>	<b>Notes</b>
<b>FCC Part 15, Paragraph 15.207</b>	<b>Conducted Emission Test</b>	<b>PASS</b>	<b>Complies</b>
<b>FCC Part 15 Subpart C Paragraph 15.249(a) &amp; 15.249(b) Limit</b>	<b>Field Strength of Fundamental</b>	<b>PASS</b>	<b>Complies</b>
<b>FCC Part 15, Paragraph 15.209</b>	<b>Radiated Emission Test</b>	<b>PASS</b>	<b>Complies</b>
<b>FCC Part 15 Subpart C Paragraph 15.249(d) Limit</b>	<b>Band Edge Test</b>	<b>PASS</b>	<b>Complies</b>

#### 3.2 Test Standards

**FCC Part 15 Subpart C, Paragraph 15.249 , ANSI C63.4 :2014 and ANSI C63.10 :2013**

#### 4.0 EUT Modification

**No modification by SHENZHEN TIMEWAY TESTING LABORATORIES**

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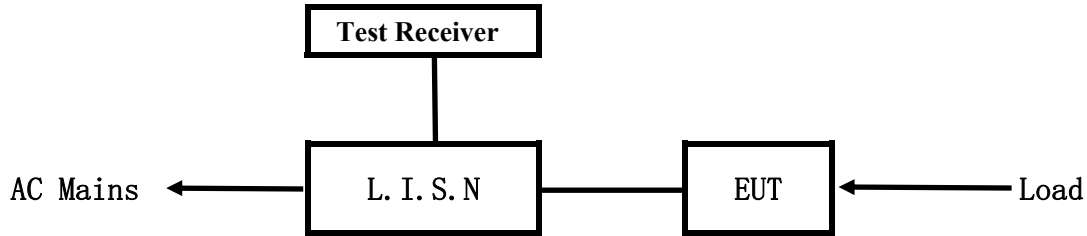
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**5. Power Line Conducted Emission Test**

5.1 Schematics of the test



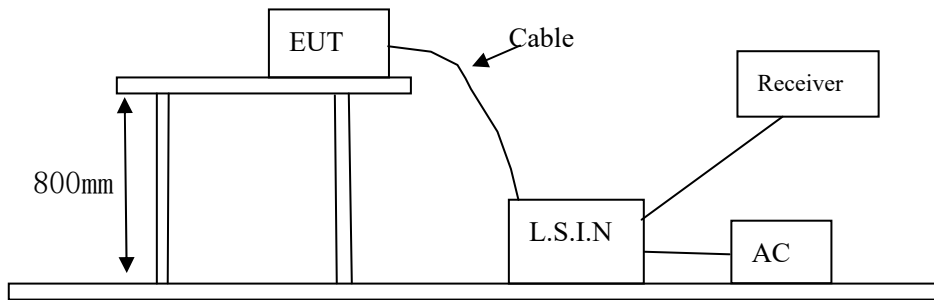
EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum from 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10 –2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

40 channels are provided to the EUT

A. EUT

Device	Manufacturer	Model	FCC ID
TRUE WIRELESS EARBUDS	WATA ELECTRONICS CO., LTD	HEXM-PR, HEXM-LITE	SOP422201A

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B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	Rating
Power Supply	KEYU	KA23-0502000DEU	Input: 100-240V~, 50/60Hz, 0.35A; Output: DC5V, 2A

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0~56.0*	56.0~46.0*
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0

- Notes: 1. \*Decreasing linearly with logarithm of frequency.  
 2. The tighter limit shall apply at the transition frequencies

5.6 Test Results:

Pass



**A: Conducted Emission on Live Terminal (150kHz to 30MHz)**

**EUT Operating Environment**

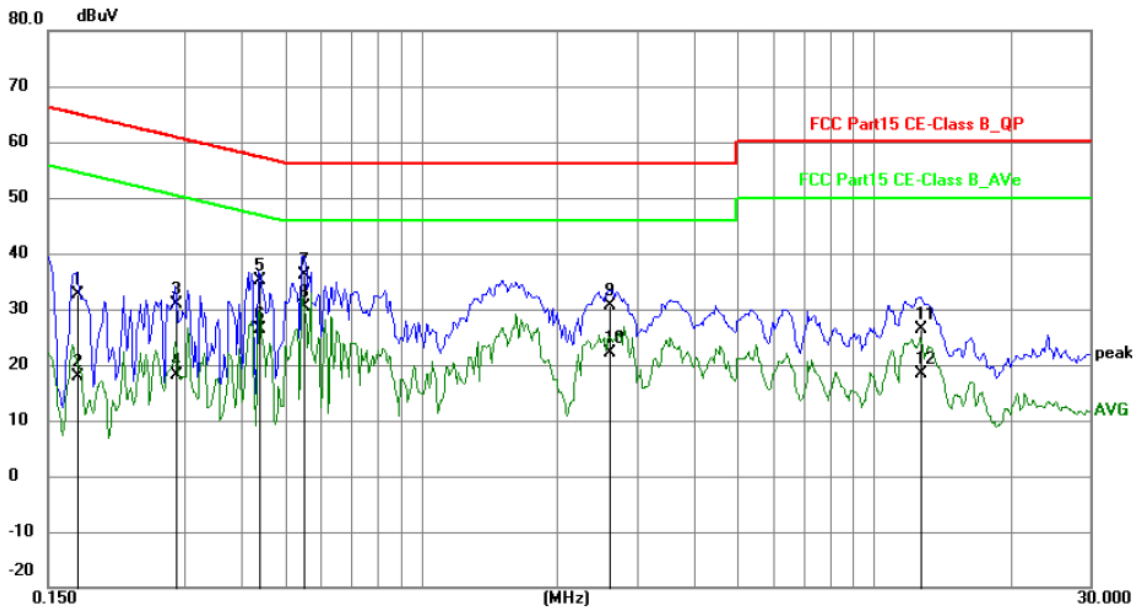
Temperature: 25°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

**EUT set Condition: Charging and Communication by BT**

**Model: HEXM-PR**

**Results: PASS**

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1734	22.94	9.77	32.71	64.80	-32.09	QP	P
2	0.1734	8.18	9.77	17.95	54.80	-36.85	AVG	P
3	0.2865	21.19	9.76	30.95	60.63	-29.68	QP	P
4	0.2865	8.47	9.76	18.23	50.63	-32.40	AVG	P
5	0.4386	25.24	9.77	35.01	57.09	-22.08	QP	P
6	0.4386	16.53	9.77	26.30	47.09	-20.79	AVG	P
7	0.5517	26.43	9.77	36.20	56.00	-19.80	QP	P
8	0.5517	20.63	9.77	30.40	46.00	-15.60	AVG	P
9	2.5953	20.77	9.83	30.60	56.00	-25.40	QP	P
10	2.5953	12.35	9.83	22.18	46.00	-23.82	AVG	P
11	12.6954	16.16	10.28	26.44	60.00	-33.56	QP	P
12	12.6954	8.13	10.28	18.41	50.00	-31.59	AVG	P

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**B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)**

**EUT Operating Environment**

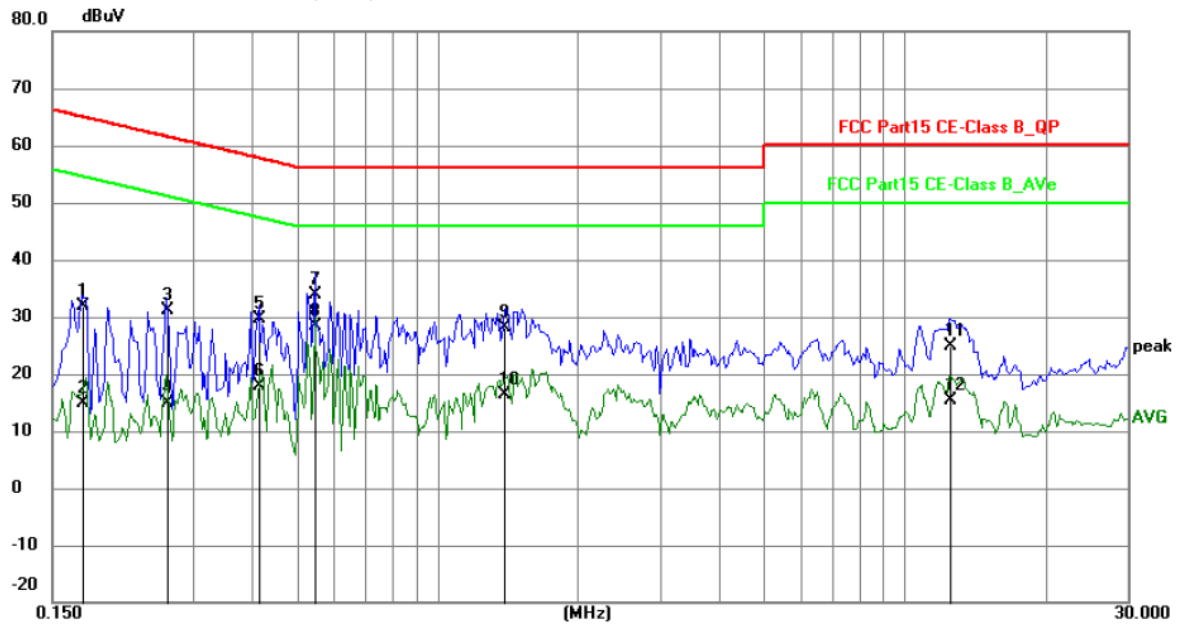
Temperature: 25°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

**EUT set Condition: Charging and Communication by BT**

**Model: HEXM-PR**

**Results: Pass**

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1734	22.17	9.77	31.94	64.80	-32.86	QP	P
2	0.1734	5.03	9.77	14.80	54.80	-40.00	AVG	P
3	0.2631	21.42	9.75	31.17	61.33	-30.16	QP	P
4	0.2631	5.15	9.75	14.90	51.33	-36.43	AVG	P
5	0.4152	19.93	9.76	29.69	57.54	-27.85	QP	P
6	0.4152	8.02	9.76	17.78	47.54	-29.76	AVG	P
7	0.5478	24.03	9.77	33.80	56.00	-22.20	QP	P
8	0.5478	18.49	9.77	28.26	46.00	-17.74	AVG	P
9	1.3941	18.36	9.79	28.15	56.00	-27.85	QP	P
10	1.3941	6.51	9.79	16.30	46.00	-29.70	AVG	P
11	12.5004	14.50	10.27	24.77	60.00	-35.23	QP	P
12	12.5004	5.07	10.27	15.34	50.00	-34.66	AVG	P

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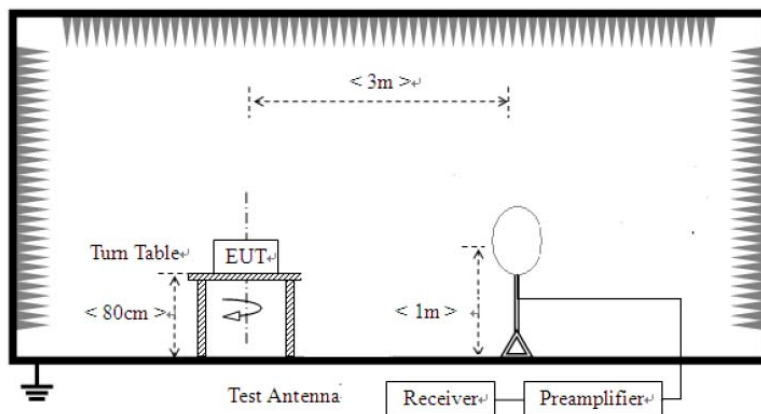
## 6 Radiated Emission Test

### 6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. All readings are above 1 GHz, peak values with a resolution bandwidth of 1 MHz (Note: for Fundamental frequency radiated emission measurement, RBW=3MHz, VBW=10MHz). Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) The antenna polarization: Vertical polarization and Horizontal polarization.

### Block diagram of Test setup

For radiated emissions from 9kHz to 30MHz



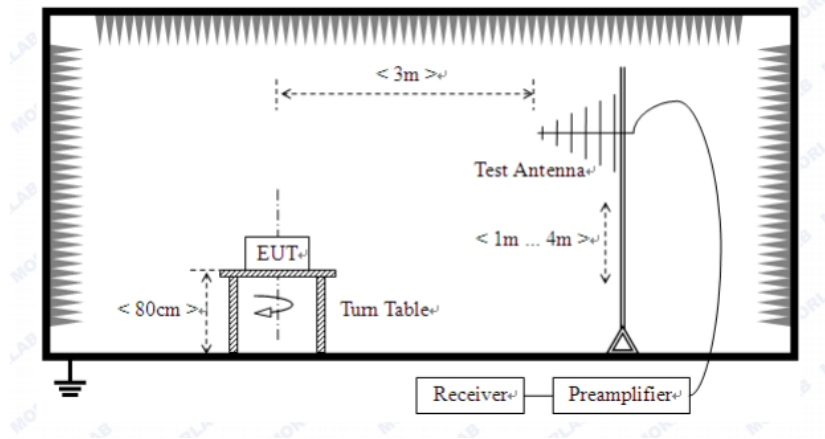
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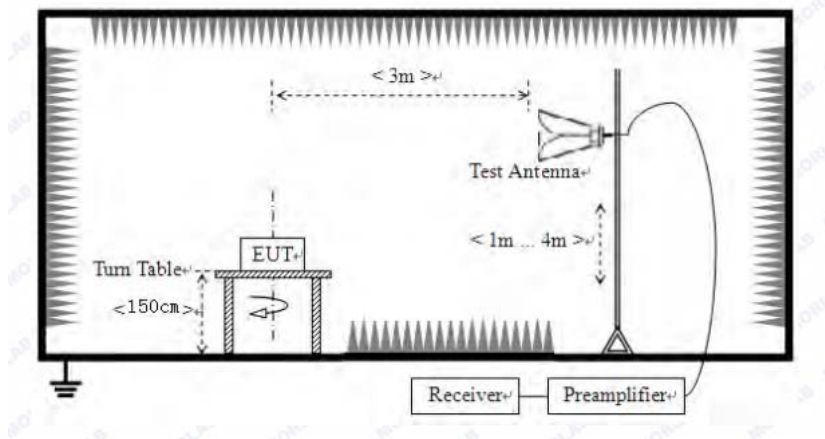
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For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



## 6.2 Configuration of The EUT

Same as section 5.3 of this report

## 6.3 EUT Operating Condition

Same as section 5.4 of this report.

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6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

**A FCC Part 15 Subpart C Paragraph 15.249(a) Limit**

Fundamental Frequency (MHz)	Field Strength of Fundamental (3m)		Field Strength of Harmonics (3m)		
	mV/m	dBuV/m	uV/m	dBuV/m	
2400-2483.5	50	94 (Average) 114 (Peak)	500	54 (Average)	74 (Peak)

- Note:
1. RF Field Strength (dBuV) = 20 log RF Voltage (uV)
  2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
  3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

**B. Frequencies in restricted band are complied to limit on Paragraph 15.209.**

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

- Note:
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
  2. In the Above Table, the tighter limit applies at the band edges.
  3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
  4. This is a handheld device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.
  5. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz.As to 1G-25G, the final emission level got using PK. For fundamental measurement, PK detector used.
  6. Battery full charged during tests.
  7. 1M and 2M data speed were tested and only the worst case recorded in the test report. 1M was the worst case.

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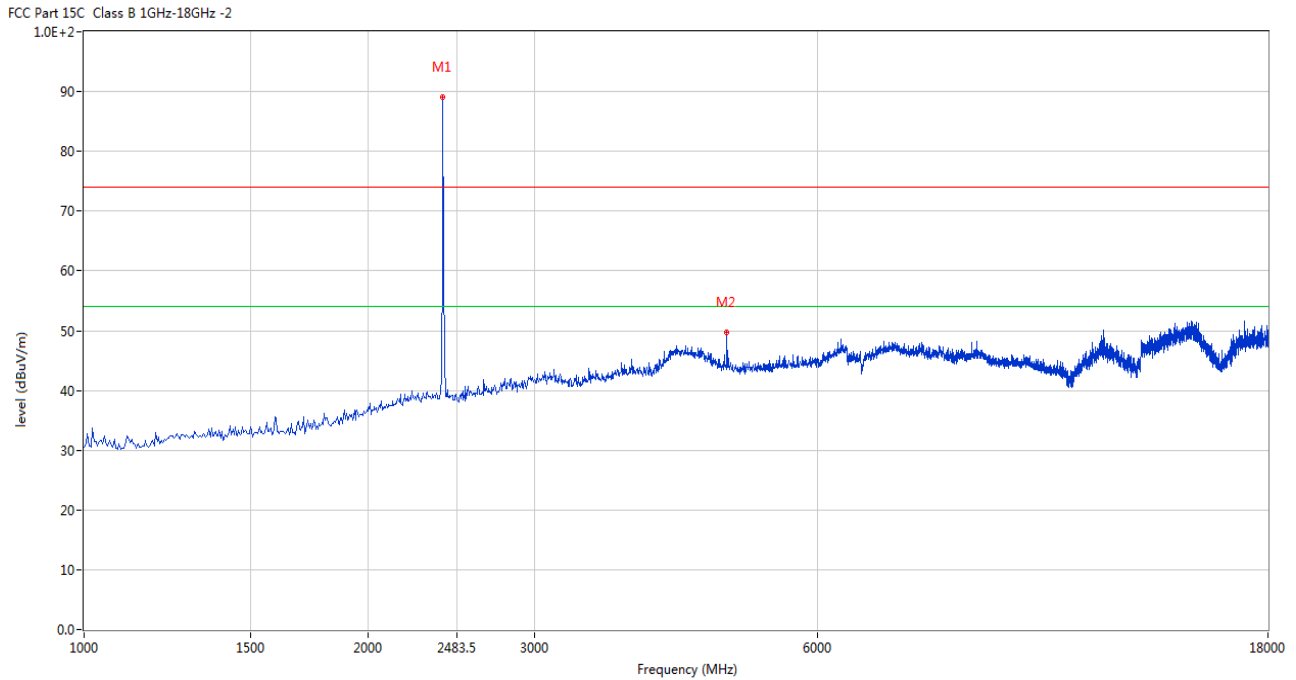


**6.5 Test result-Left Earphone**

**A Fundamental & Harmonics Radiated Emission Data**

Please refer to the following test plots for details: Low Channel-2402MHz

**Vertical**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402.149	89.10	-3.57	114.0	-24.9	Peak	155.00	100	Vertical	Pass
2	4802.799	49.78	3.12	74.0	-24.22	Peak	151.00	100	Vertical	Pass

The report refers only to the sample tested and does not apply to the bulk.

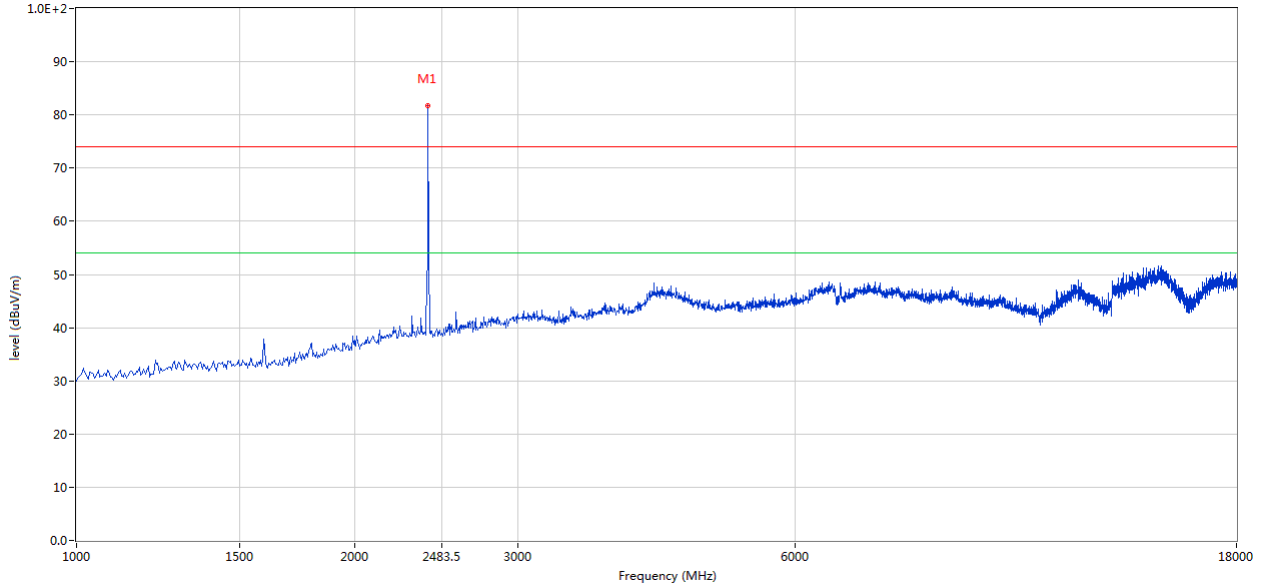
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**Horizontal**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402.149	81.76	-3.57	114.0	-32.24	Peak	41.00	100	Horizontal	Pass

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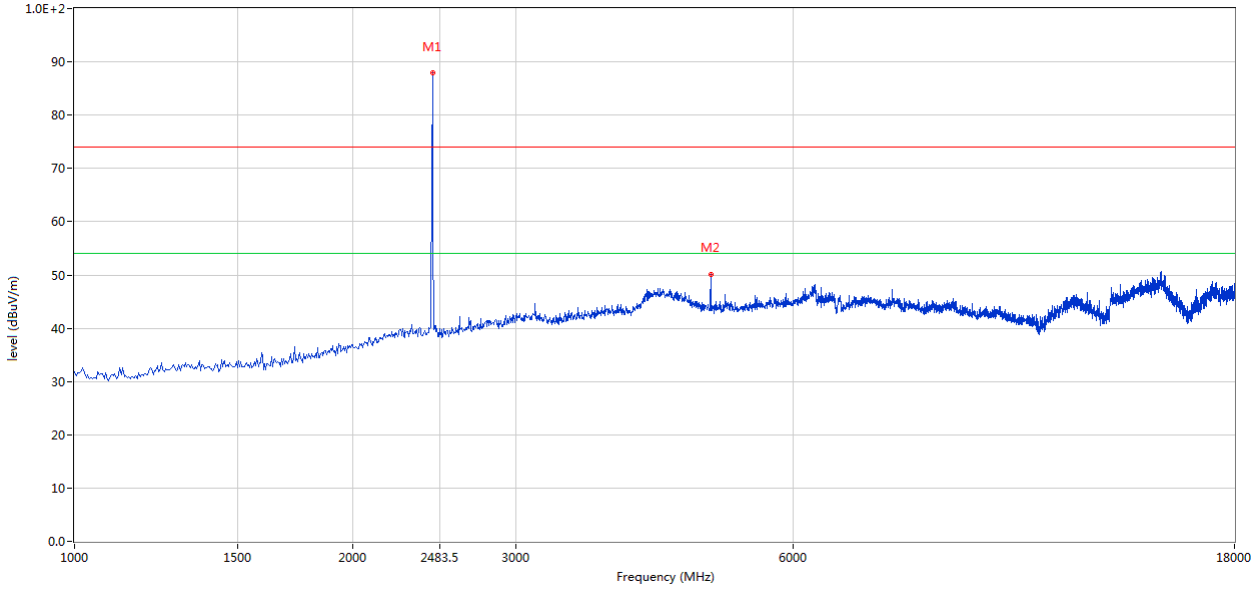




Please refer to the following test plots for details: Middle Channel-2440MHz

**Vertical**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2440.390	87.92	-3.57	114.0	-26.08	Peak	166.00	100	Vertical	Pass
2	4879.280	50.05	3.20	74.0	-23.95	Peak	157.00	100	Vertical	Pass

The report refers only to the sample tested and does not apply to the bulk.

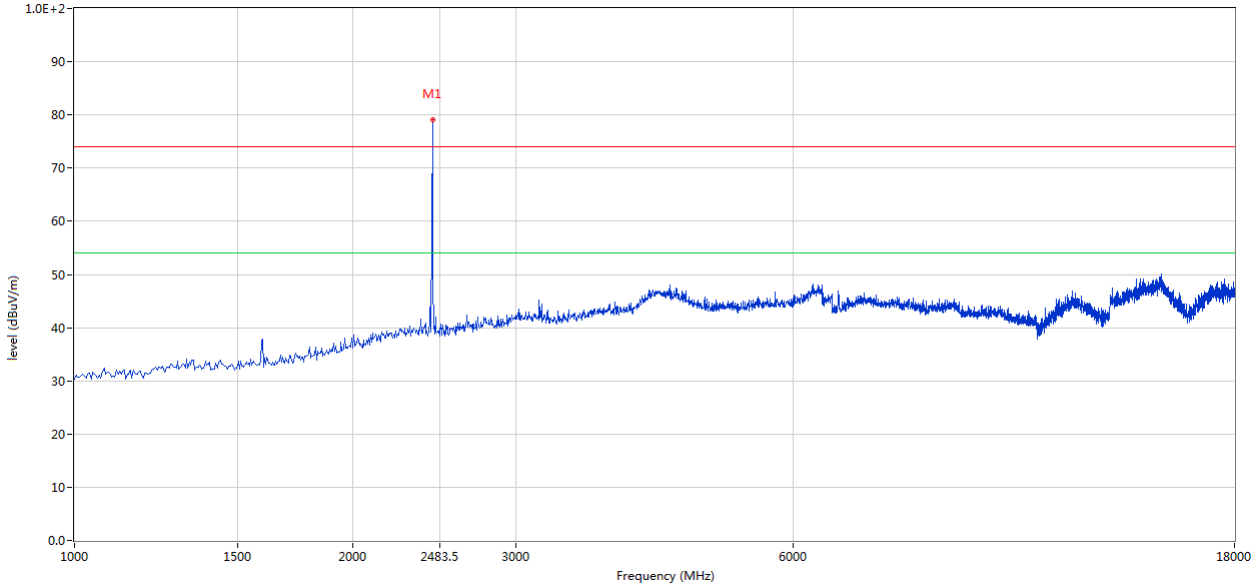
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**Horizontal**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2440.390	79.05	-3.57	114.0	-34.95	Peak	56.00	100	Horizontal	Pass

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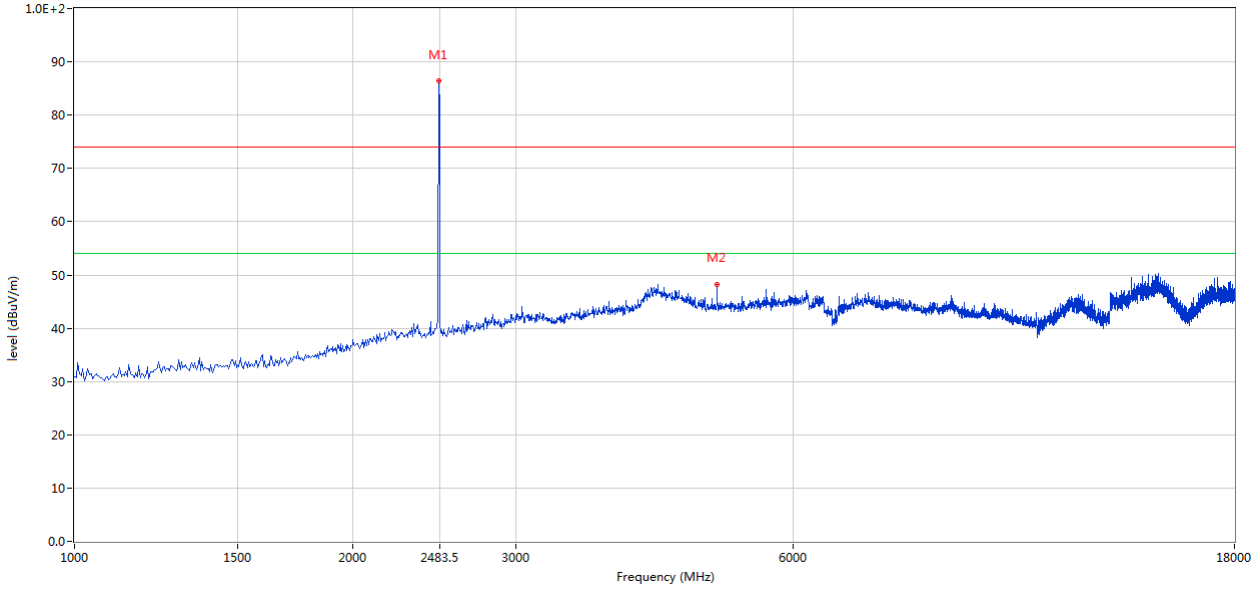
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Please refer to the following test plots for details: High Channel-2480MHz

**Vertical**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2479.630	86.39	-3.57	114.0	-27.61	Peak	98.00	100	Vertical	Pass
2	4960.010	48.25	3.36	74.0	-25.75	Peak	339.00	100	Vertical	Pass

The report refers only to the sample tested and does not apply to the bulk.

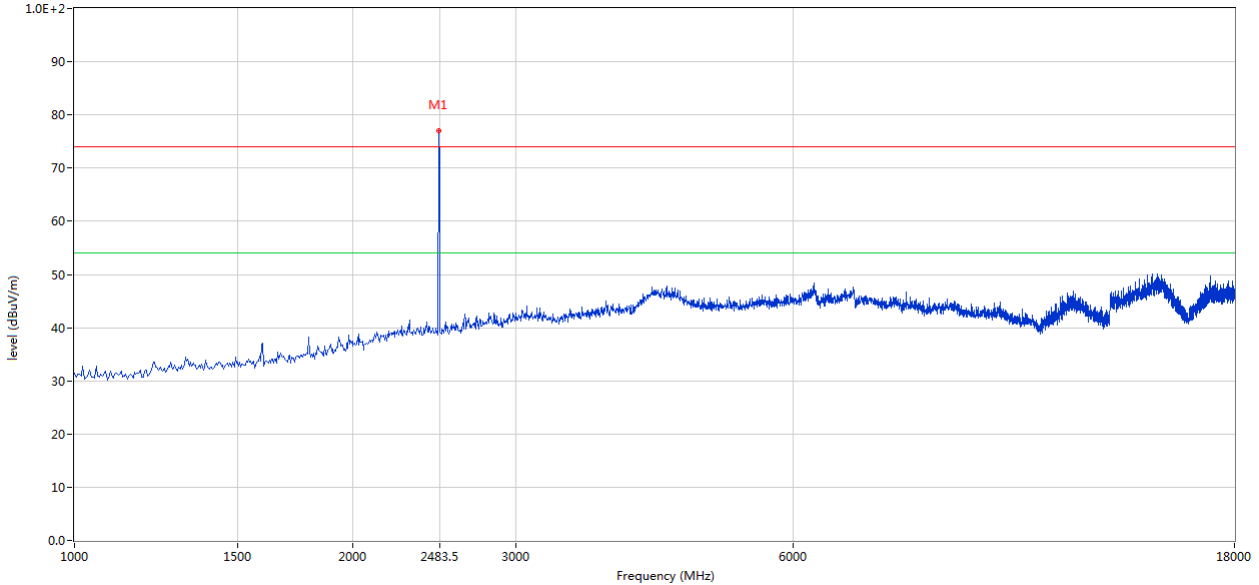
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**Horizontal**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2479.630	76.96	-3.57	114.0	-37.04	Peak	122.00	100	Horizontal	Pass

- Note:
- (2) Emission Level = Reading Level + Antenna Factor + Cable Loss-Amplifier
  - (3) Margin=Emission-Limits
  - (4) According to section 15.35(b), the peak limit is 20dB higher than the average limit
  - (5) For test purpose, keep EUT continuous transmitting
  - (5) For emission above 18GHz and Below 30MHz, It is only the floor noise. No necessary to take down.
  - (6) the measured PK value less than the AV limit.

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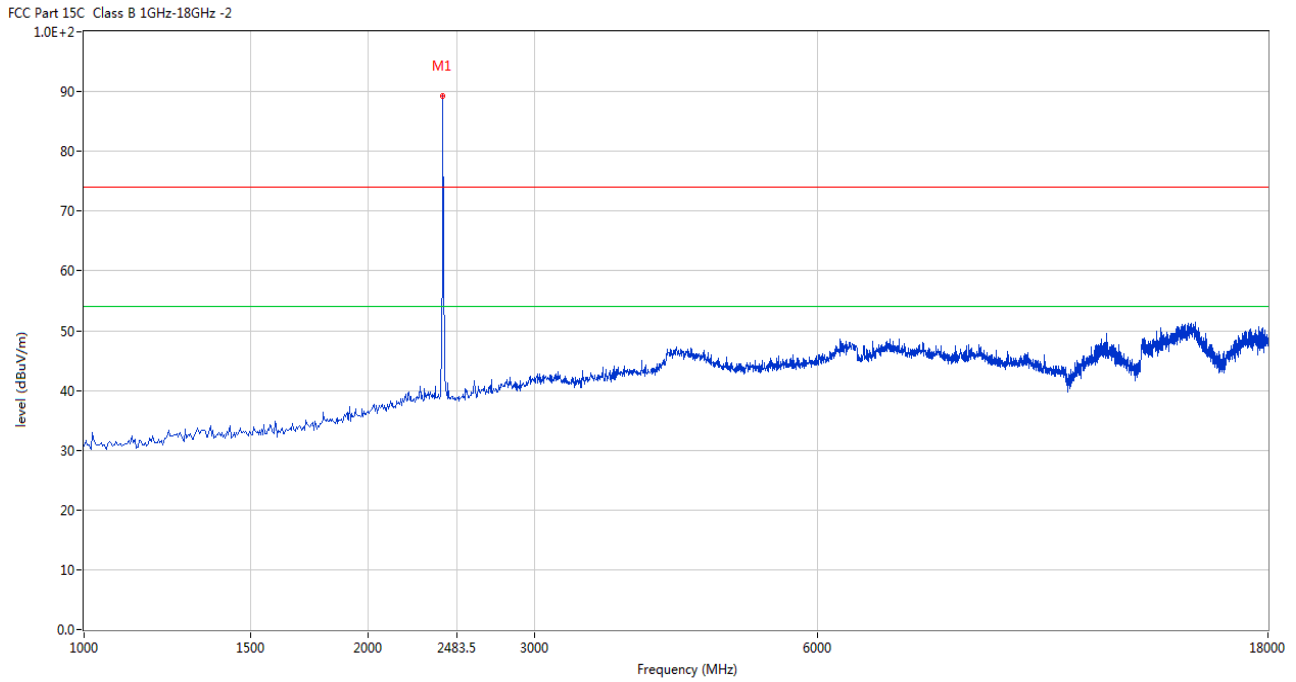


**Test result-Right Earphone**

**A Fundamental & Harmonics Radiated Emission Data**

Please refer to the following test plots for details: Low Channel-2402MHz

**Vertical**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402.149	89.31	-3.57	114.0	-24.69	Peak	159.00	100	Vertical	Pass

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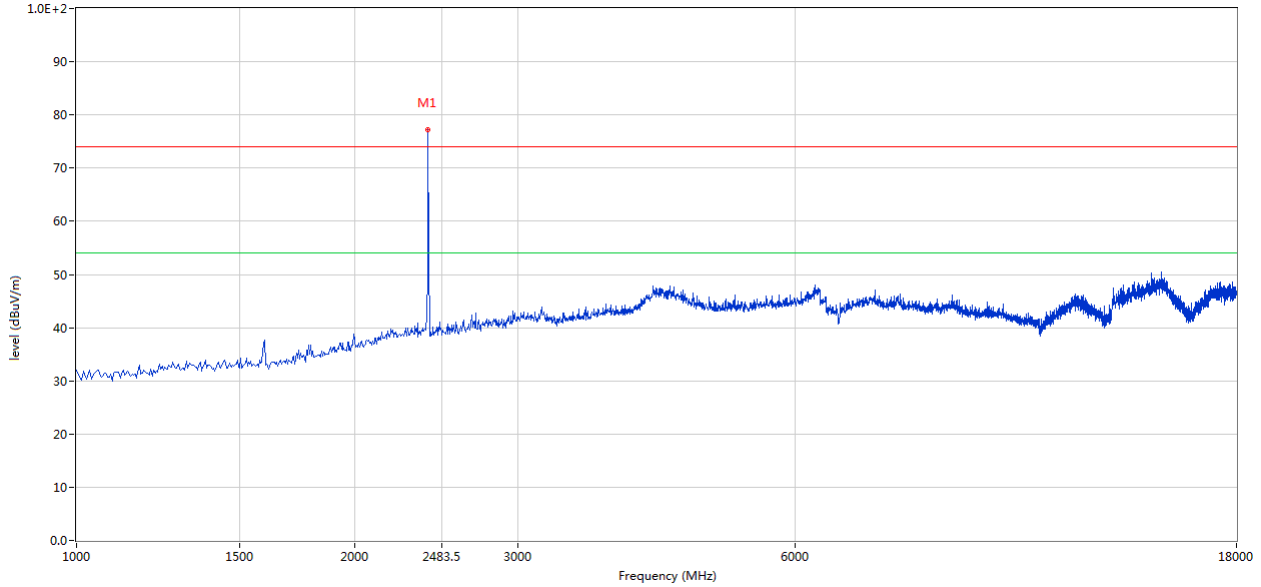
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**Horizontal**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2402.149	77.22	-3.57	114.0	-36.78	Peak	0.00	100	Horizontal	Pass

The report refers only to the sample tested and does not apply to the bulk.

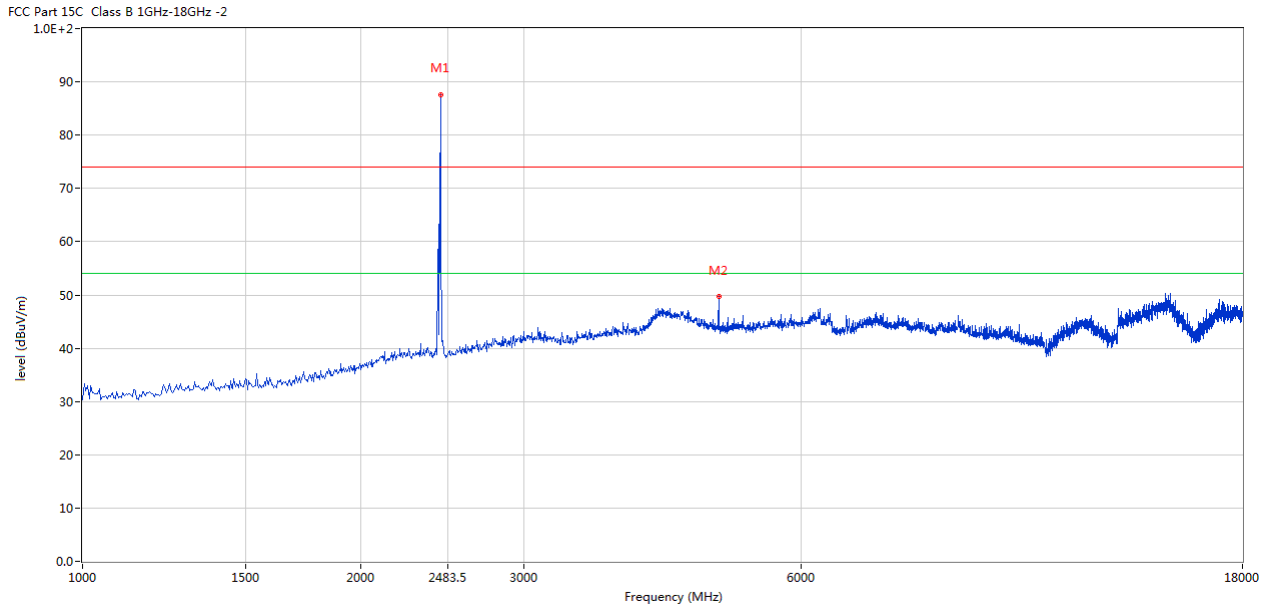
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Please refer to the following test plots for details: Middle Channel-2440MHz

**Vertical**



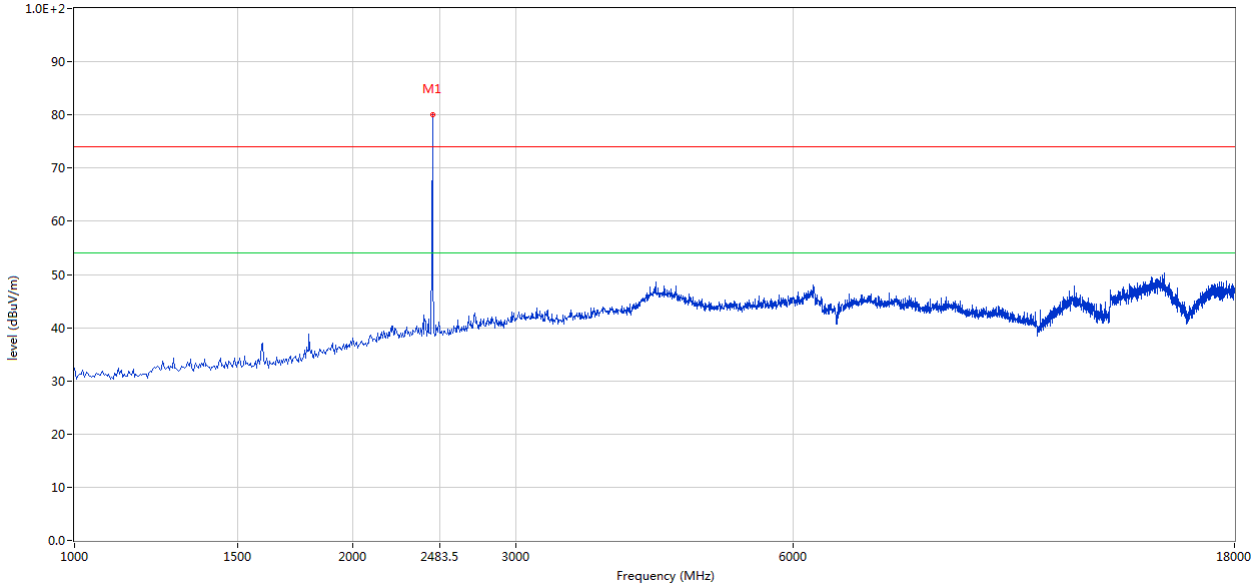
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2440.390	87.59	-3.57	114.0	-26.41	Peak	150.00	100	Vertical	Pass
2	4879.280	49.63	3.20	74.0	-24.37	Peak	150.00	100	Vertical	Pass

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**Horizontal**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2440.390	79.95	-3.57	114.0	-34.05	Peak	37.00	100	Horizontal	Pass

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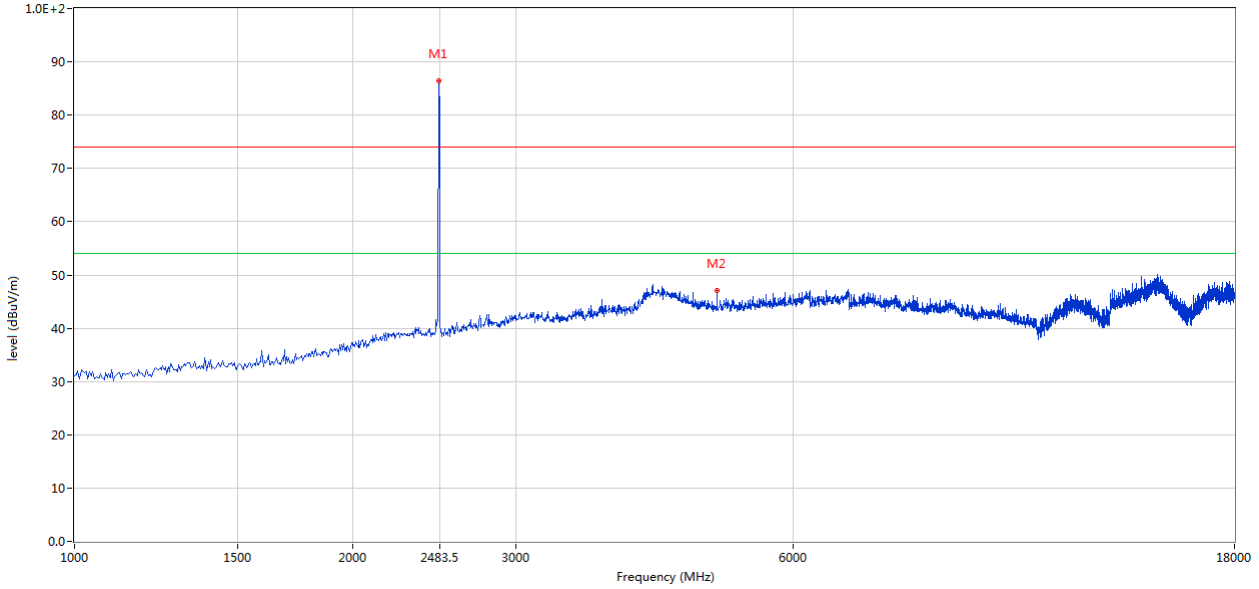




Please refer to the following test plots for details: High Channel-2480MHz

**Vertical**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2479.630	86.45	-3.57	114.0	-27.55	Peak	125.00	100	Vertical	Pass
2	4960.010	47.13	3.36	74.0	-26.87	Peak	360.00	100	Vertical	Pass

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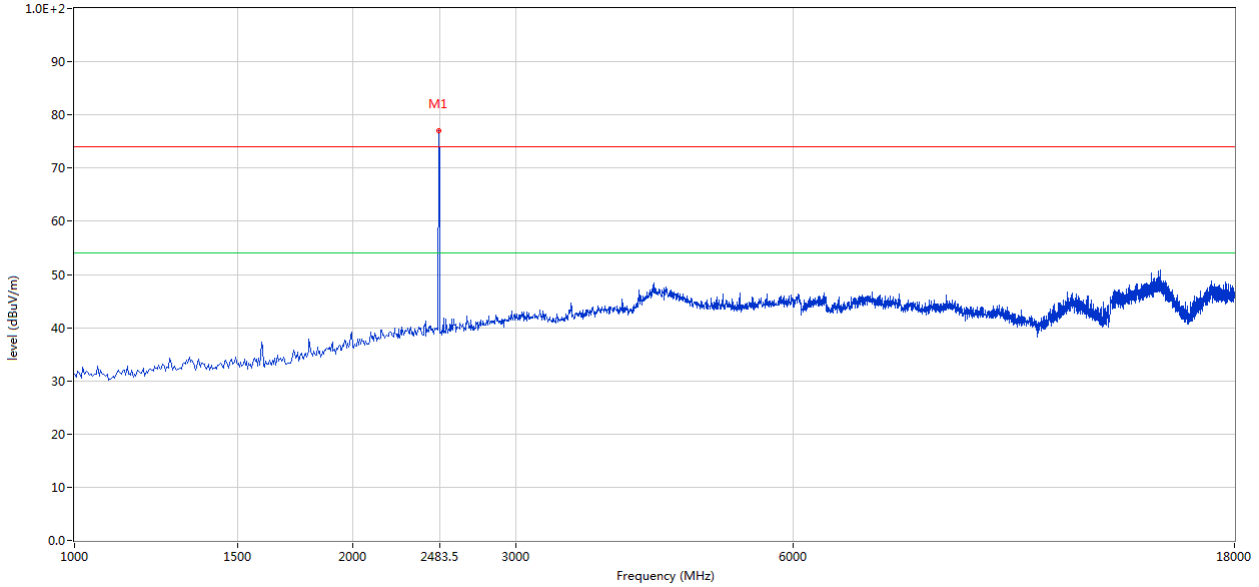
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**Horizontal**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2479.630	77.04	-3.57	114.0	-36.96	Peak	77.00	100	Horizontal	Pass

- Note:
- (2) Emission Level = Reading Level + Antenna Factor + Cable Loss-Amplifier
  - (3) Margin=Emission-Limits
  - (4) According to section 15.35(b), the peak limit is 20dB higher than the average limit
  - (5) For test purpose, keep EUT continuous transmitting
  - (5) For emission above 18GHz and Below 30MHz, It is only the floor noise. No necessary to take down.
  - (6) the measured PK value less than the AV limit.

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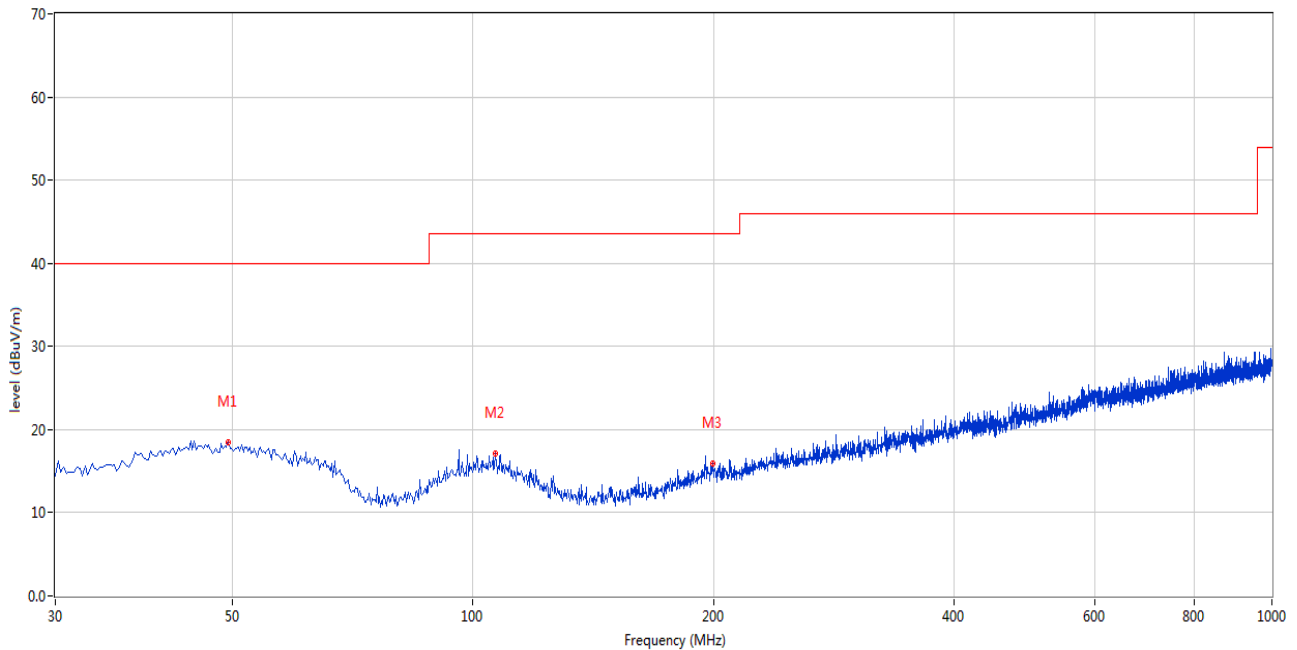
**B. General Radiated Emission Data - Left Earphone**  
**Radiated Emission In Horizontal (30MHz----1000MHz)**

EUT set Condition: Keep Tx transmitting

**Results: Pass**

Please refer to following diagram for individual

FCC\_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	49.395	18.43	-11.28	40.0	-21.57	Peak	0.00	200	H	Pass
2	106.611	17.12	-13.36	43.5	-26.38	Peak	302.00	200	H	Pass
3	199.708	15.89	-13.47	43.5	-27.61	Peak	0.00	200	H	Pass

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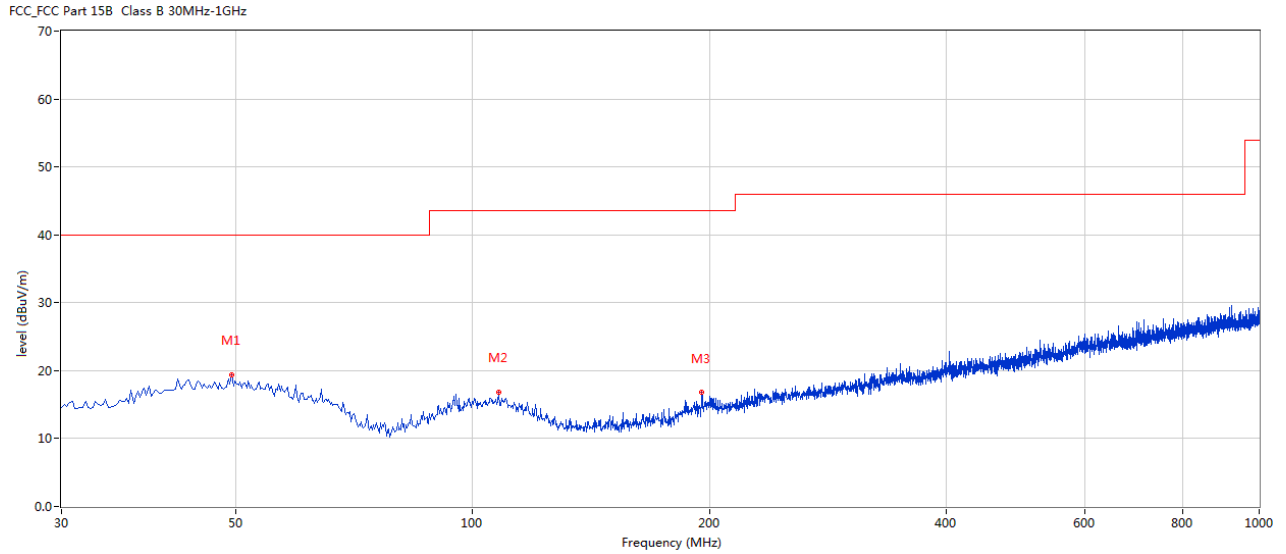


**Radiated Emission In Vertical (30MHz----1000MHz)**

EUT set Condition: Keep Tx transmitting

**Results: Pass**

Please refer to following diagram for individual



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	49.395	19.45	-11.28	40.0	-20.55	Peak	0.00	200	V	Pass
2	107.823	16.88	-13.41	43.5	-26.62	Peak	0.00	200	V	Pass
3	195.586	16.75	-13.70	43.5	-26.75	Peak	360.00	200	V	Pass

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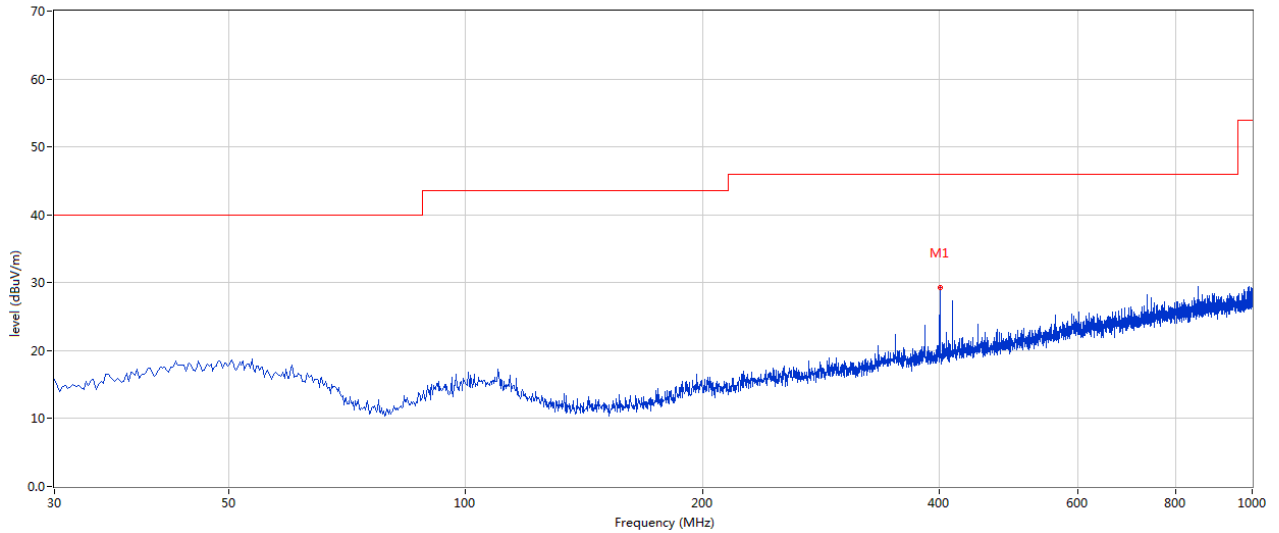
**B. General Radiated Emission Data - Right Earphone**  
**Radiated Emission In Horizontal (30MHz----1000MHz)**

EUT set Condition: Keep Tx transmitting

**Results: Pass**

Please refer to following diagram for individual

FCC\_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	400.690	29.29	-8.59	46.0	-16.71	Peak	253.00	100	H	Pass

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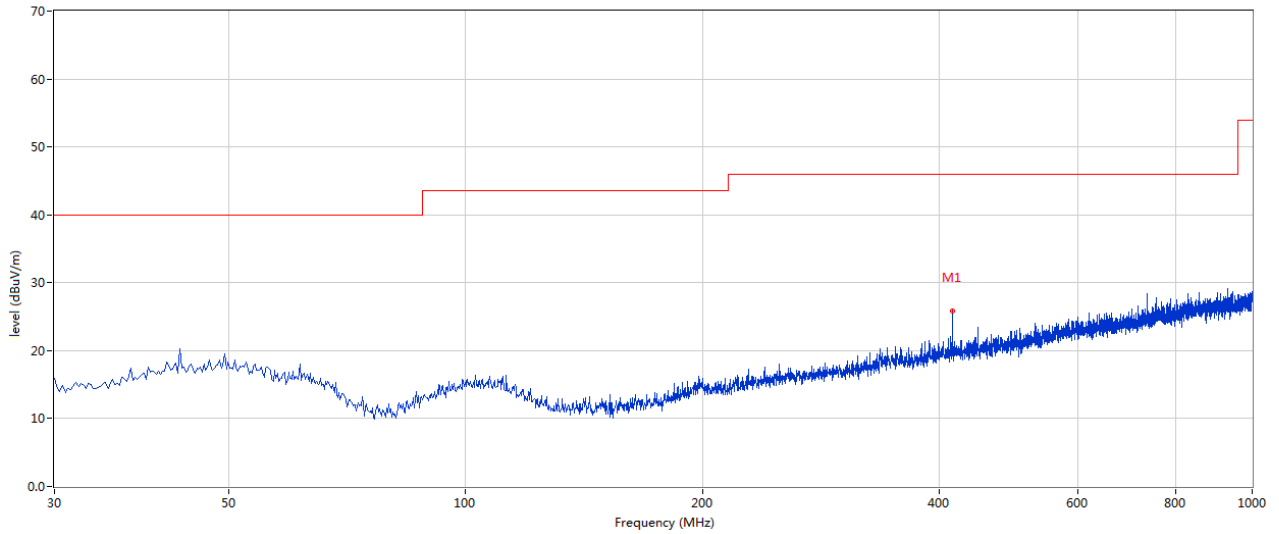
**Radiated Emission In Vertical (30MHz----1000MHz)**

EUT set Condition: Keep Tx transmitting

**Results: Pass**

Please refer to following diagram for individual

FCC\_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	415.964	25.79	-8.34	46.0	-20.21	Peak	91.00	100	V	Pass

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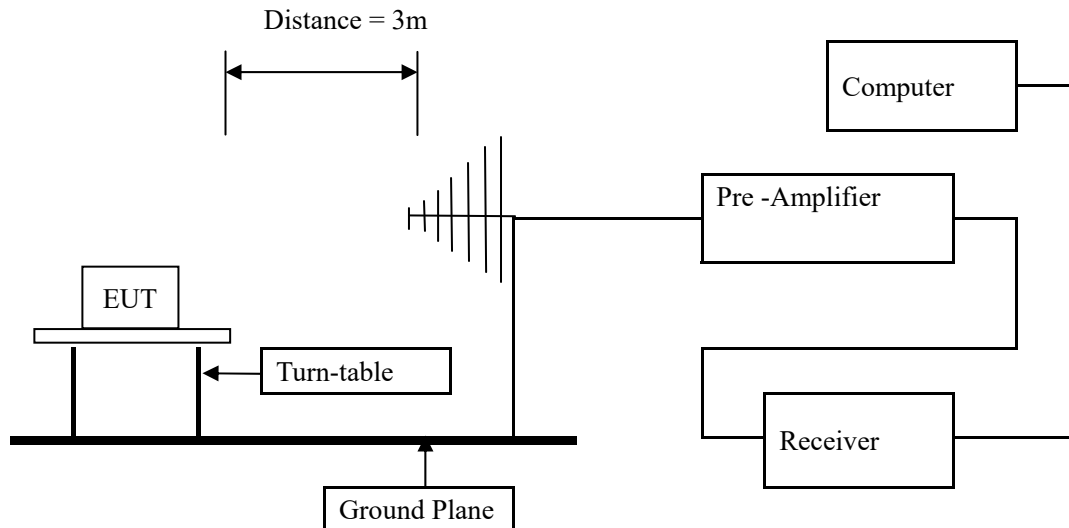


## 7. Band Edge

### 7.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.10–2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
- (2) Set Spectrum as RBW=1MHz, VBW=3MHz and Peak detector used for PK value. RBW=1MHz, VBW=10Hz and Peak detector used for AV value.
- (3) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (4) The antenna polarization: Vertical polarization and Horizontal polarization.

### 7.2 Radiated Test Setup



For the actual test configuration , please refer to the related items – Photos of Testing

### 7.3 Configuration of The EUT

Same as section 5.3 of this report

### 7.4 EUT Operating Condition

Same as section 5.4 of this report.

### 7.5 Band Edge Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

The report refers only to the sample tested and does not apply to the bulk.

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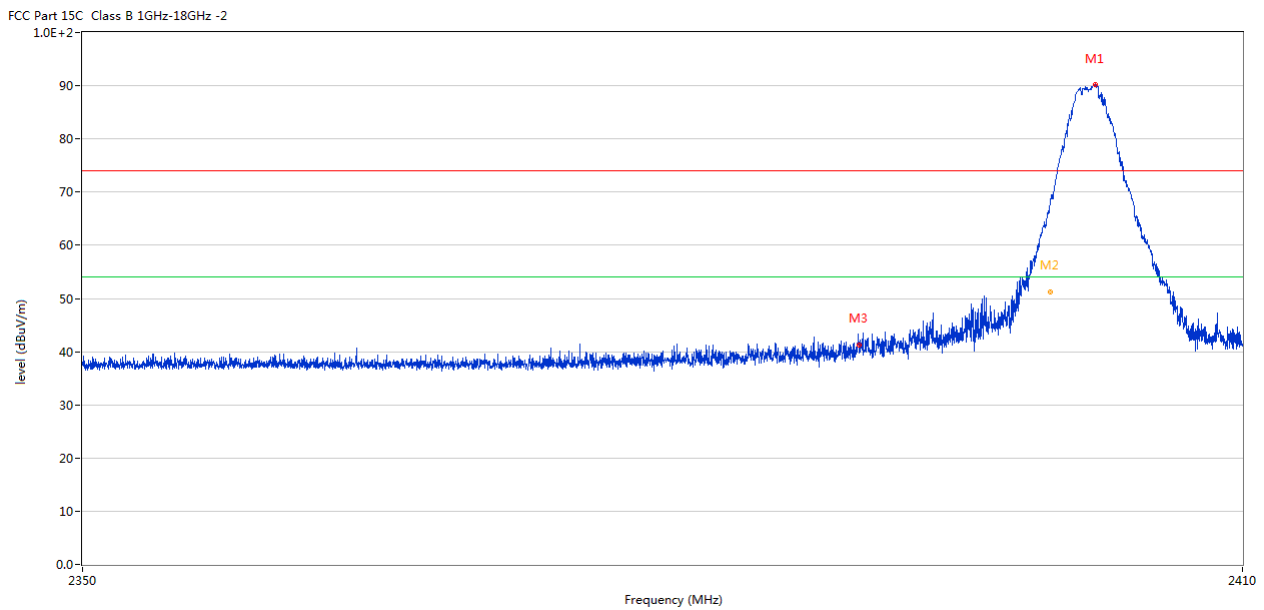
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**Note: 1M and 2M data speed were tested and only the worst case recorded in the test report. 2M was the worst case.**

**7.6 Test Result-Left Earphone**

Product:	TRUE WIRELESS EARBUDS	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	2399.938	67.96	-3.57	74.0	-6.04	Peak	148.00	100	Vertical	Pass
2**	2399.938	51.30	-3.57	54.0	-2.70	AV	148.00	100	Vertical	Pass
3	2390.025	41.32	-3.53	74.0	-32.68	Peak	161.00	100	Vertical	Pass

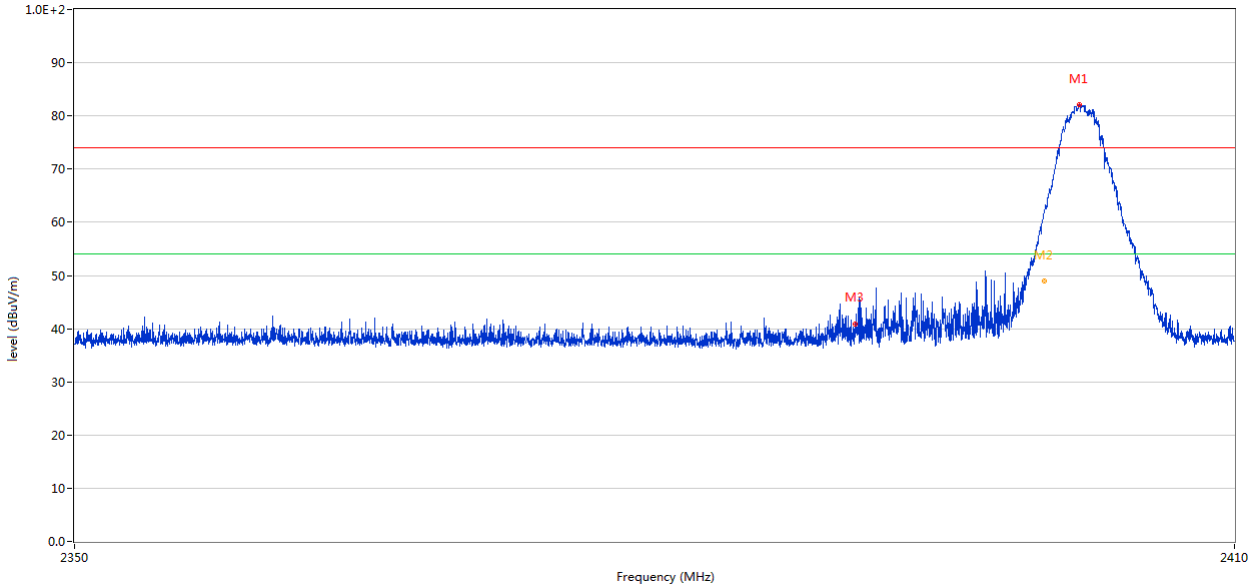
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Product:	TRUE WIRELESS EARBUDS	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	2400.042	61.84	-3.57	74.0	-12.16	Peak	36.00	100	Horizontal	Pass
2**	2400.042	49.04	-3.57	54.0	-4.96	AV	36.00	100	Horizontal	Pass
3	2390.220	40.93	-3.53	74.0	-33.07	Peak	103.00	100	Horizontal	Pass

The report refers only to the sample tested and does not apply to the bulk.

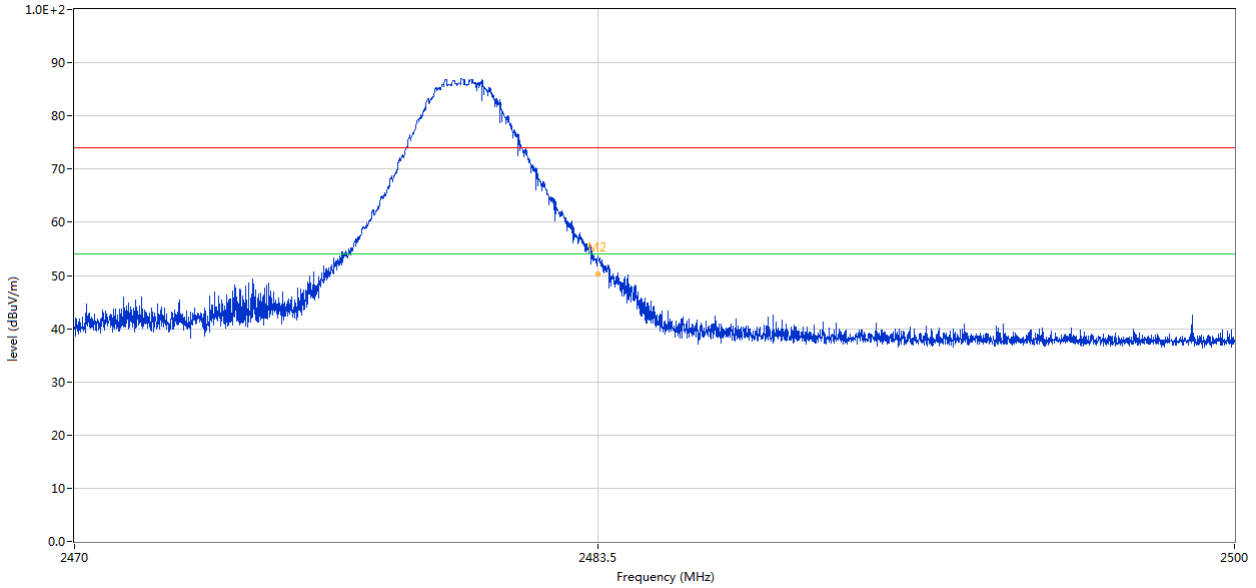
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Product:	TRUE WIRELESS EARBUDS	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	2483.504	53.76	-3.57	74.0	-20.24	Peak	280.00	100	Vertical	Pass
2**	2483.504	50.19	-3.57	54.0	-3.81	AV	280.00	100	Vertical	Pass

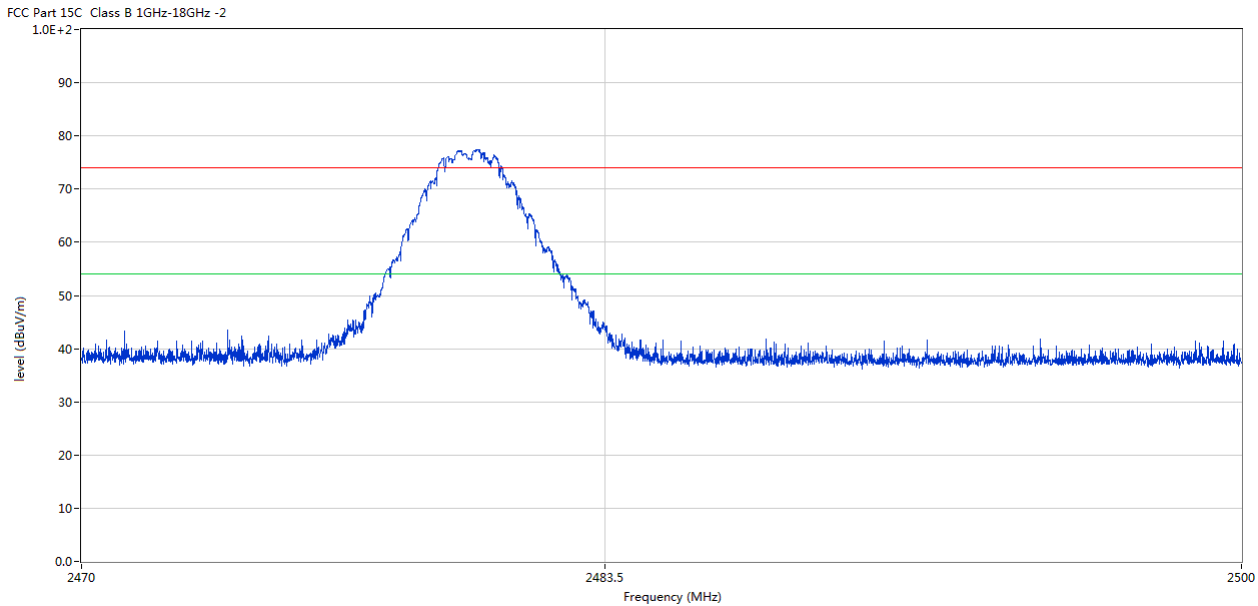
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Product:	TRUE WIRELESS EARBUDS	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	2483.444	44.96	-3.57	74.0	-29.04	Peak	143.00	100	Horizontal	Pass

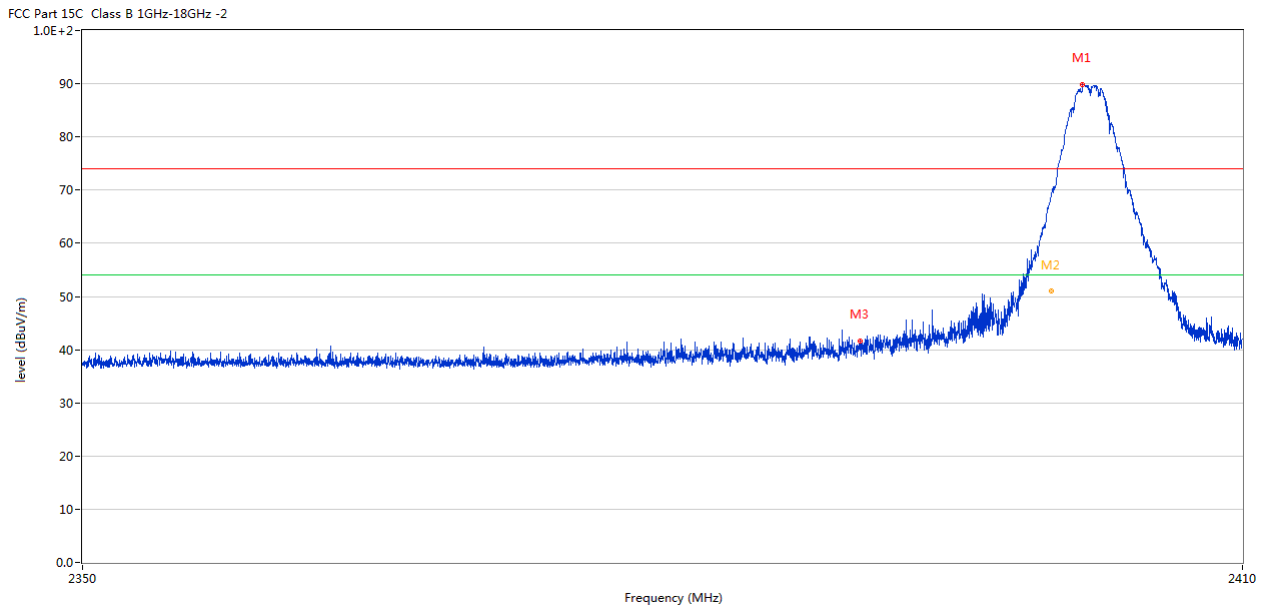
Note: 1. The PK emission level less than the AV limit. No necessary to record the AV emission level.  
 2. This is a handheld device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.

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**Test Result-Right Earphone**

Product:	TRUE WIRELESS EARBUDS	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--



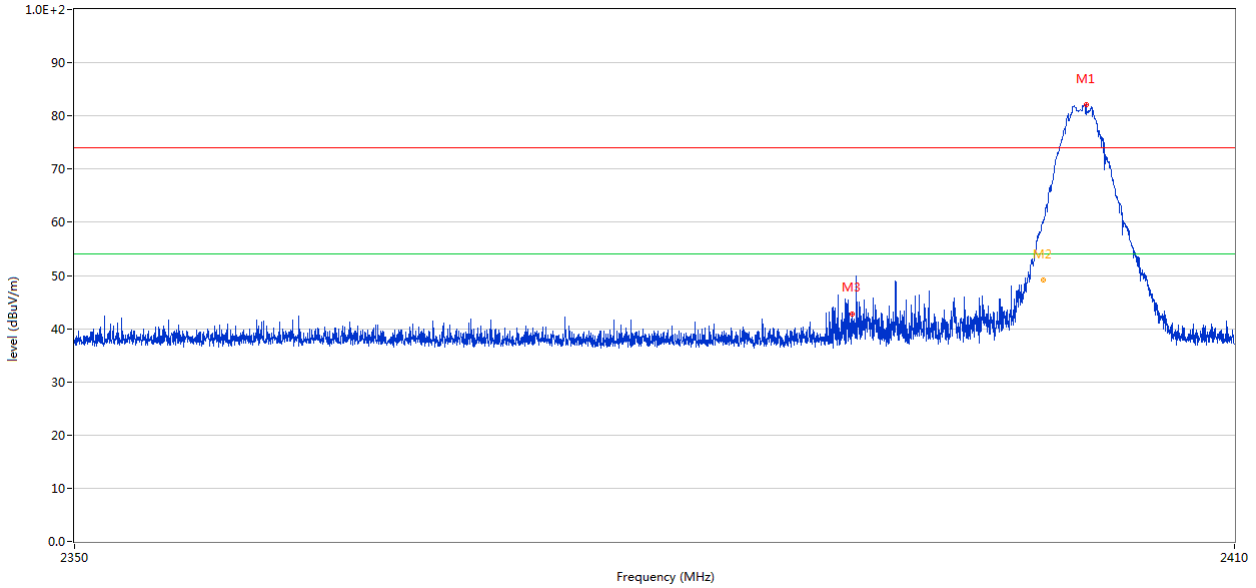
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	2399.998	68.98	-3.57	74.0	-5.02	Peak	146.00	100	Vertical	Pass
2**	2399.998	51.00	-3.57	54.0	-3.00	AV	146.00	100	Vertical	Pass
3	2390.070	41.67	-3.53	74.0	-32.33	Peak	159.00	100	Vertical	Pass

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Product:	TRUE WIRELESS EARBUDS	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	2400.027	59.96	-3.57	74.0	-14.04	Peak	150.00	100	Horizontal	Pass
2**	2400.027	49.10	-3.57	54.0	-4.90	AV	150.00	100	Horizontal	Pass
3	2390.055	42.83	-3.53	74.0	-31.17	Peak	98.00	100	Horizontal	Pass

The report refers only to the sample tested and does not apply to the bulk.

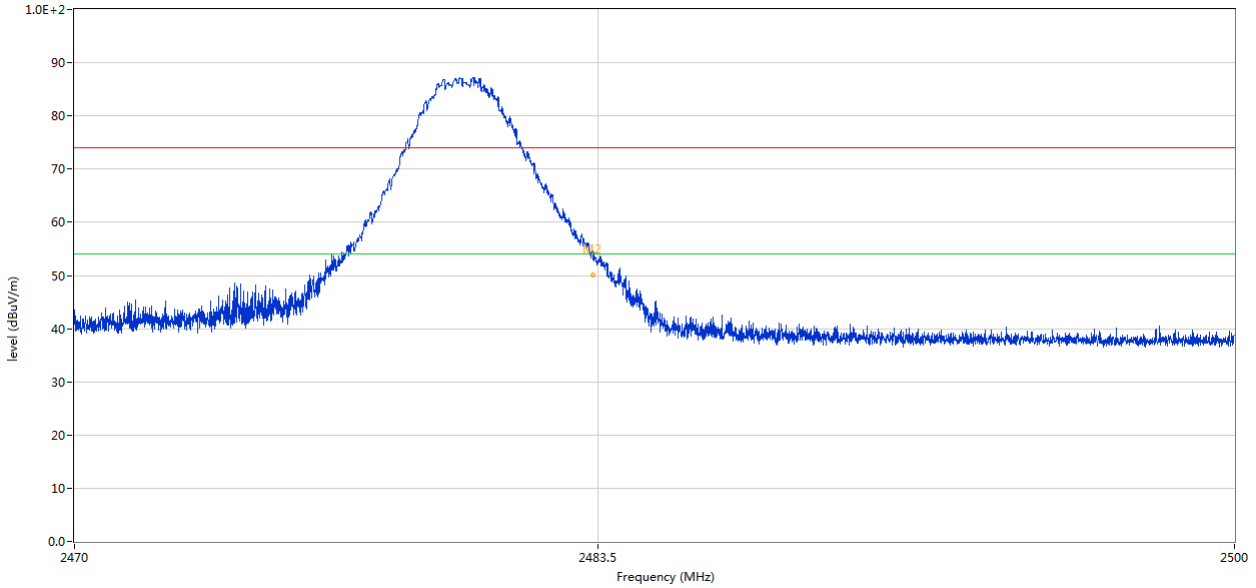
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Product:	TRUE WIRELESS EARBUDS	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	2483.369	54.77	-3.57	74.0	-19.23	Peak	128.00	100	Vertical	Pass
2**	2483.369	50.13	-3.57	54.0	-3.87	AV	128.00	100	Vertical	Pass

The report refers only to the sample tested and does not apply to the bulk.

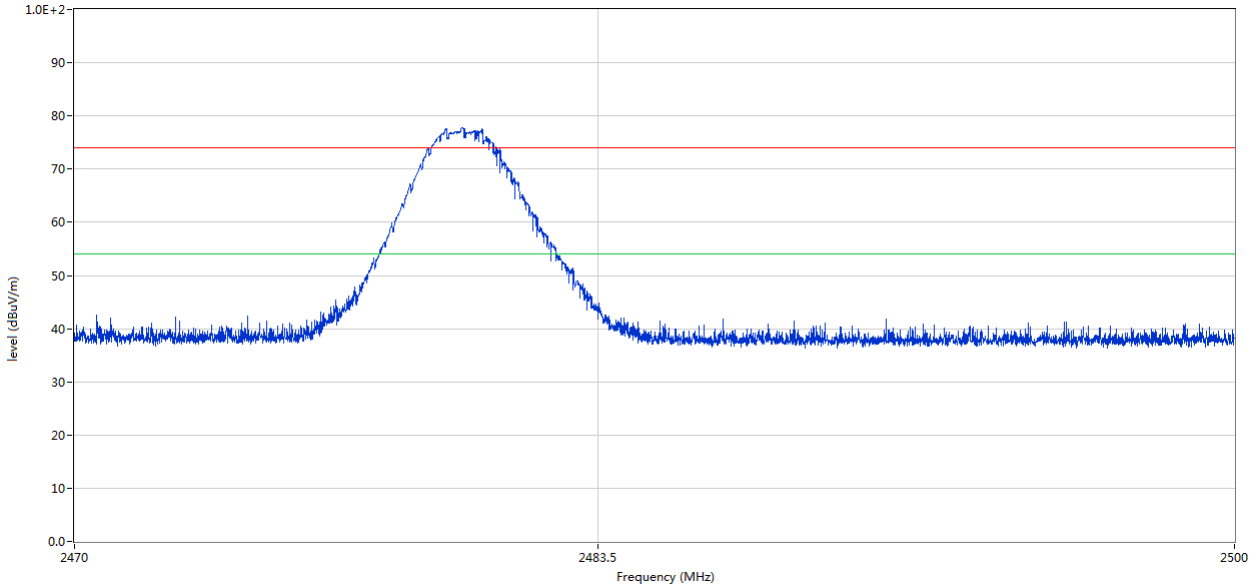
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Product:	TRUE WIRELESS EARBUDS	Detector	Vertical
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	--	--

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	2483.324	45.92	-3.57	74.0	-28.08	Peak	141.00	100	Horizontal	Pass

- Note: 1. The PK emission level less than the AV limit. No necessary to record the AV emission level.  
 2. This is a handheld device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.

The report refers only to the sample tested and does not apply to the bulk.

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## 8.0 Antenna Requirement

### Applicable Standard

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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 provisions of this section.

This product has a FPC antenna with gain 1.0dBi Max for both right earbud and left earbud. It fulfills the requirement of this section.

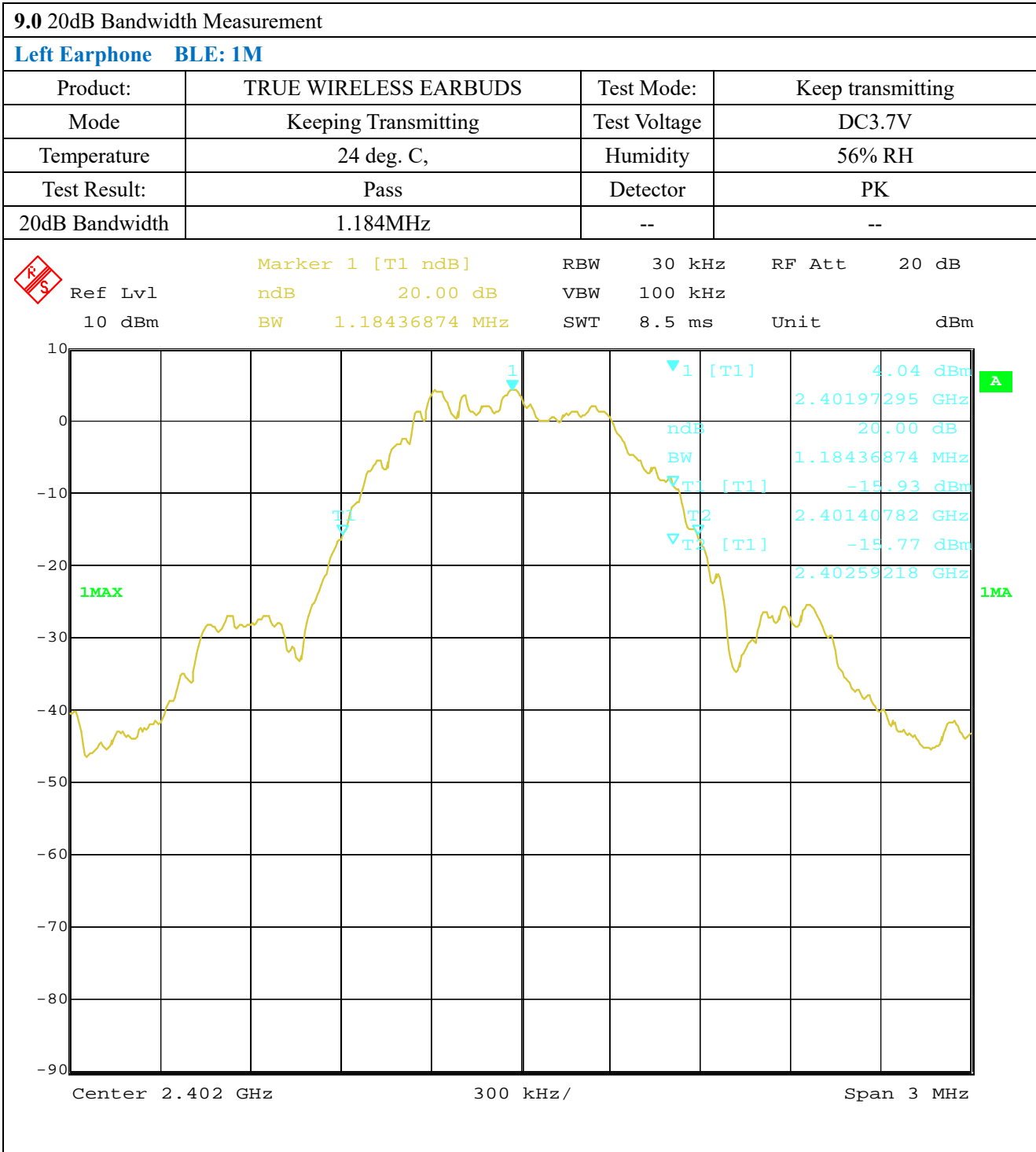
Test Result: Pass

The report refers only to the sample tested and does not apply to the bulk.

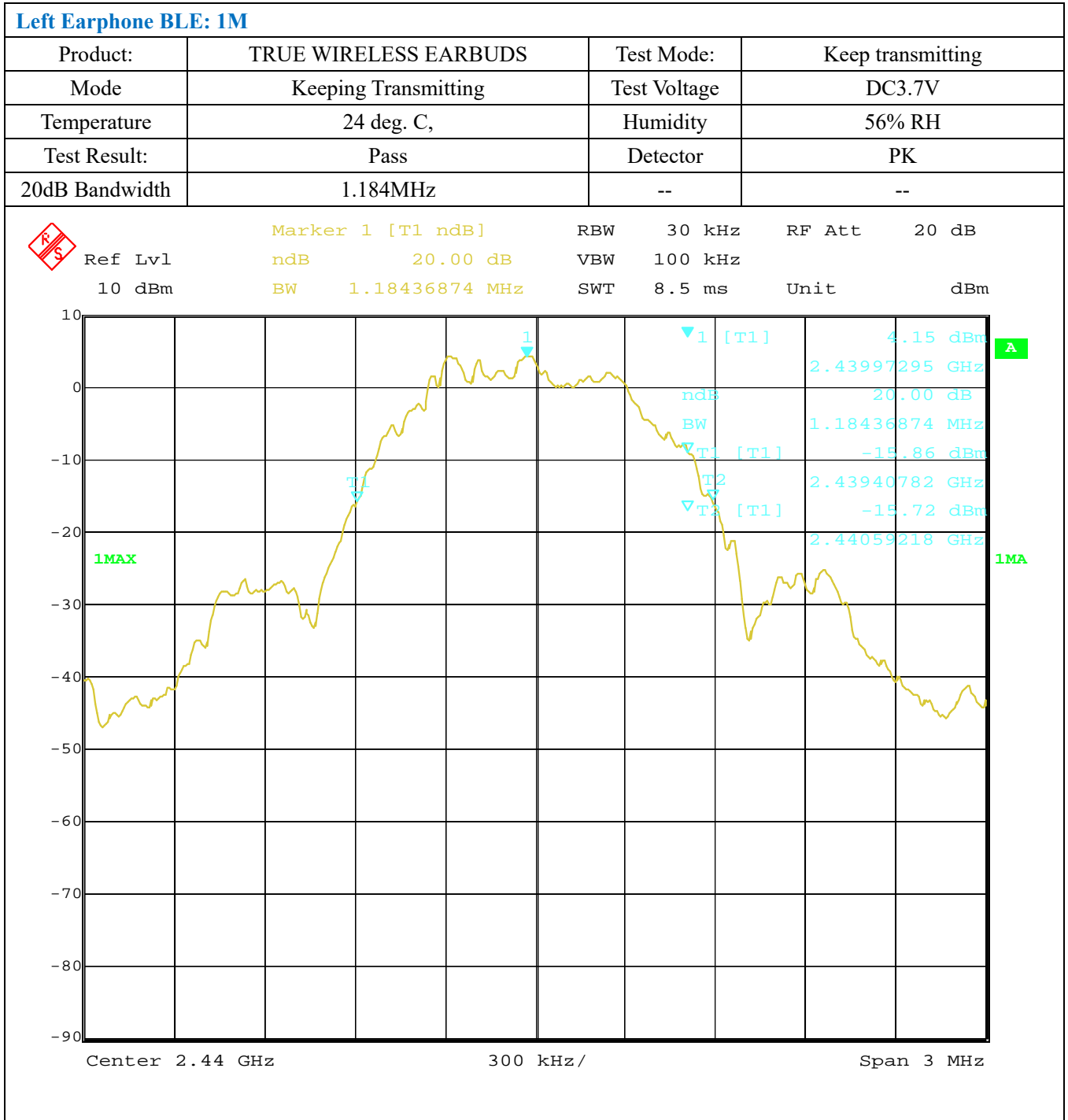
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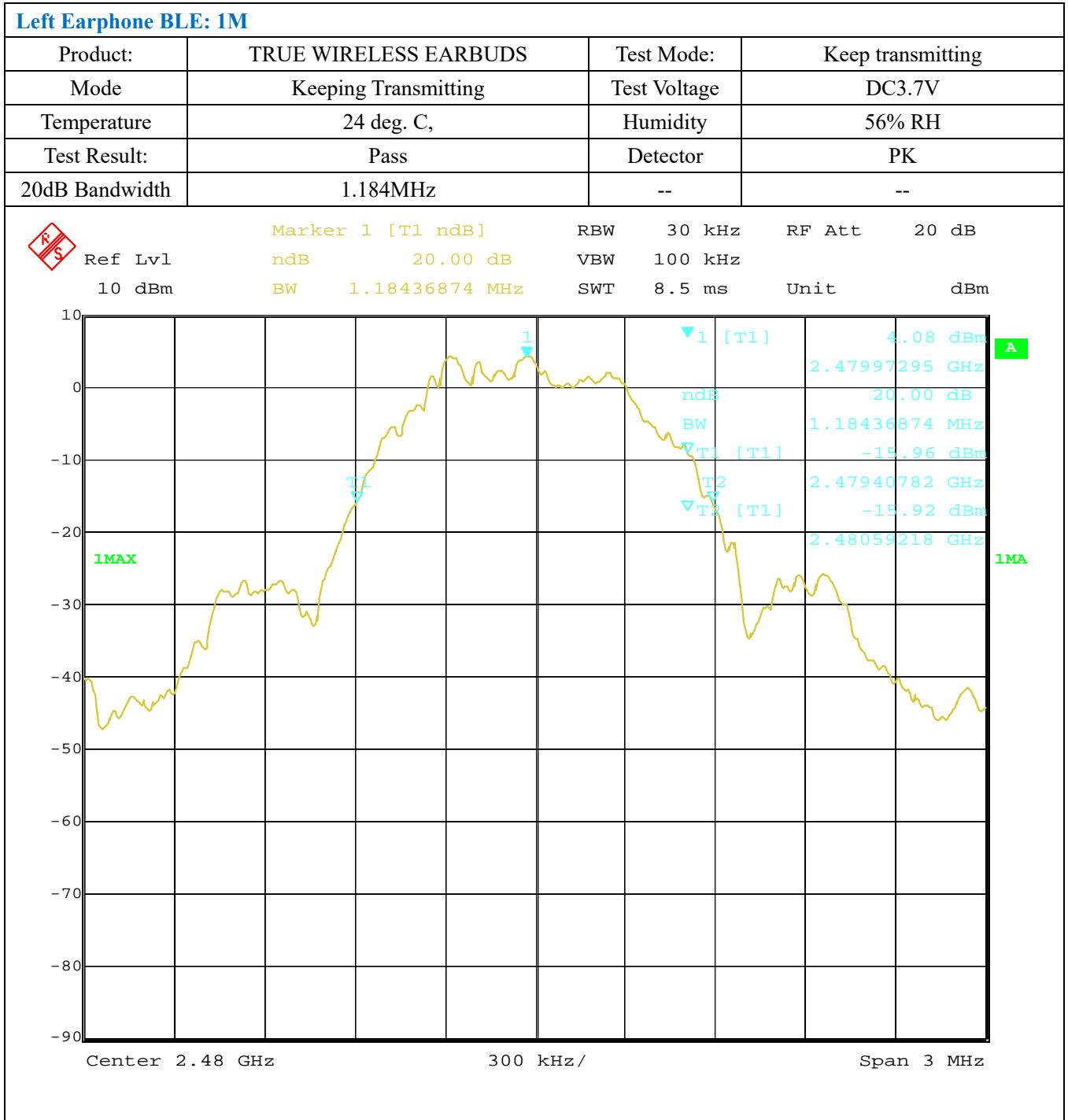




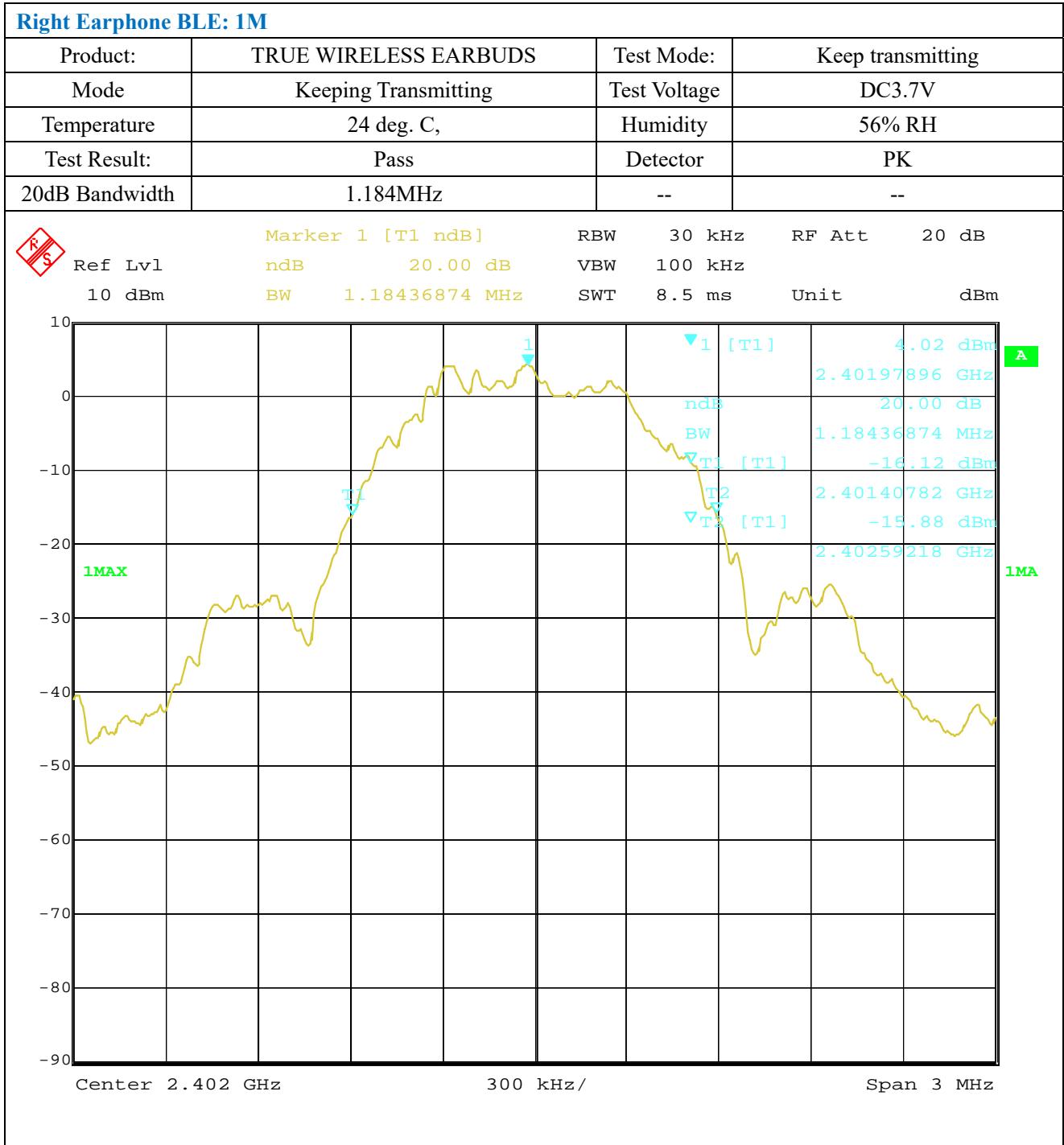
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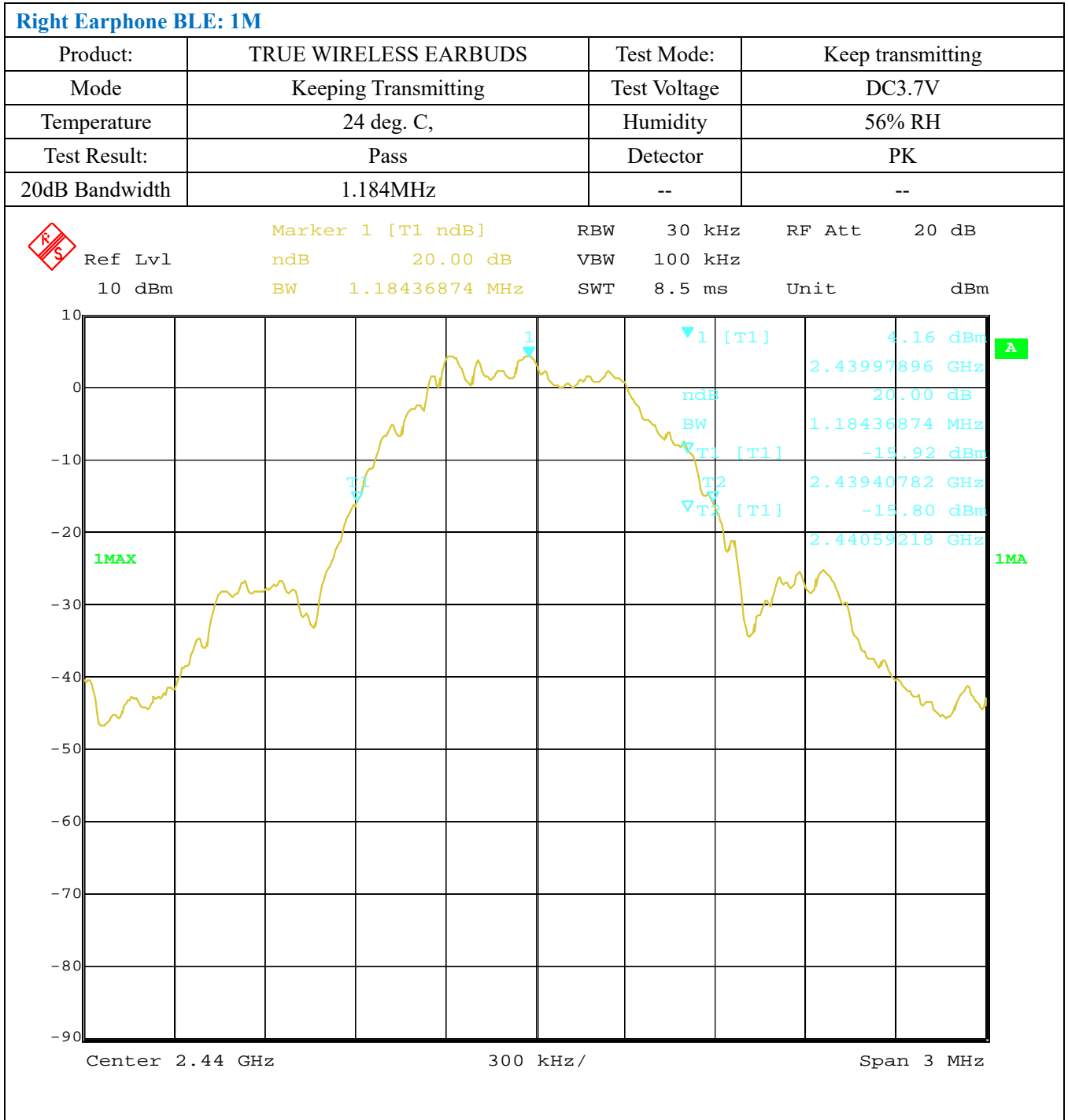
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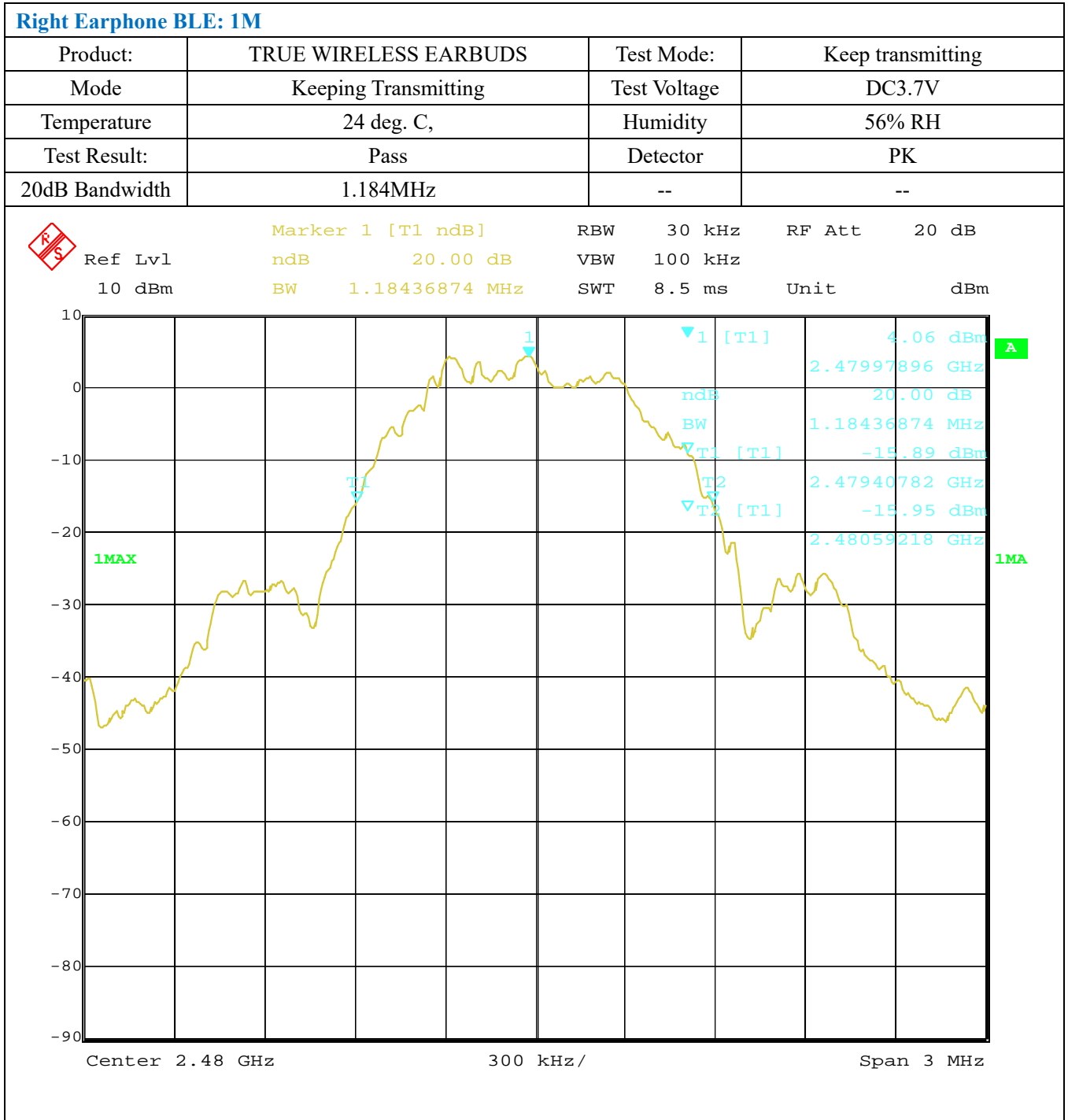
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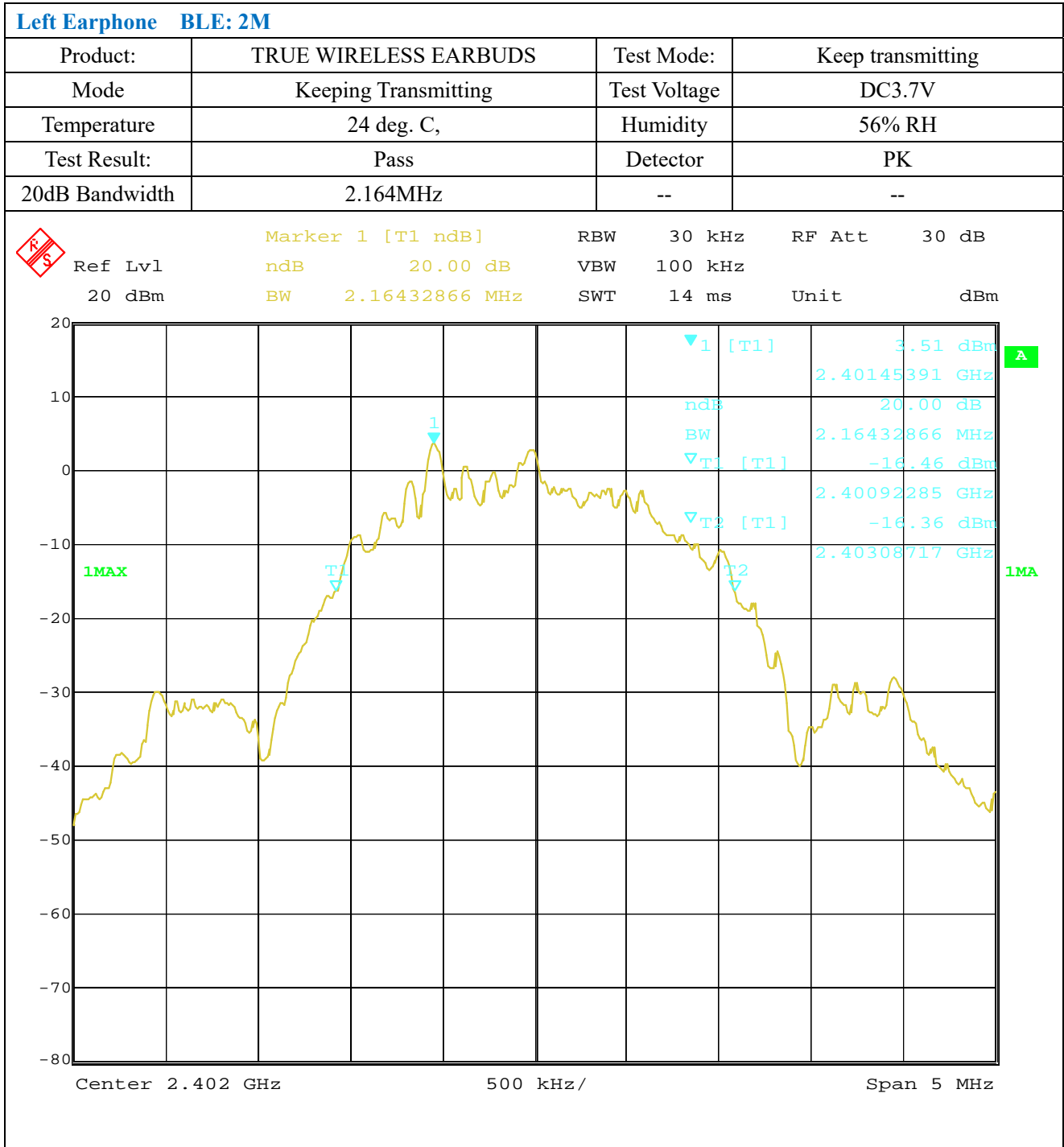
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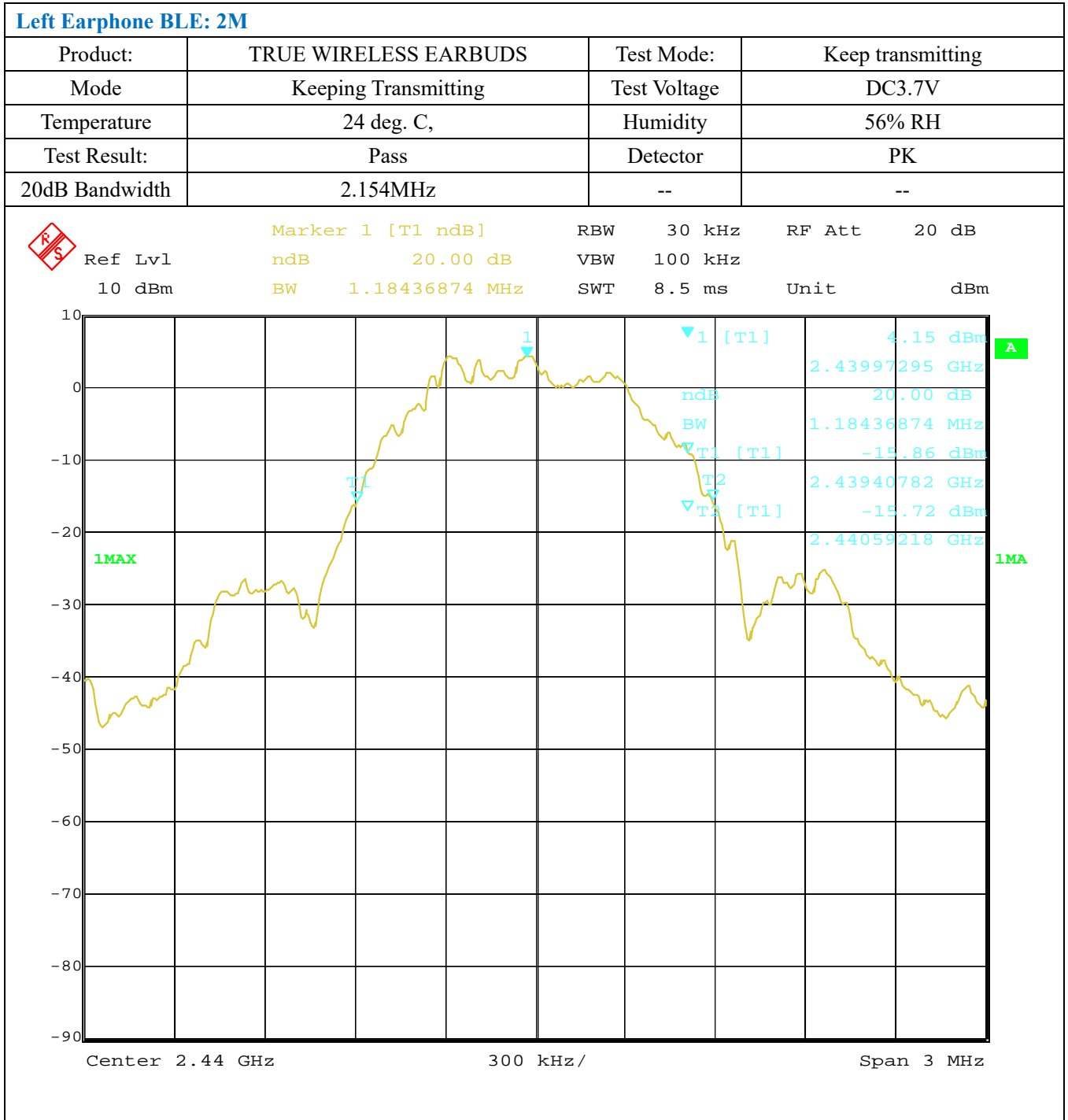
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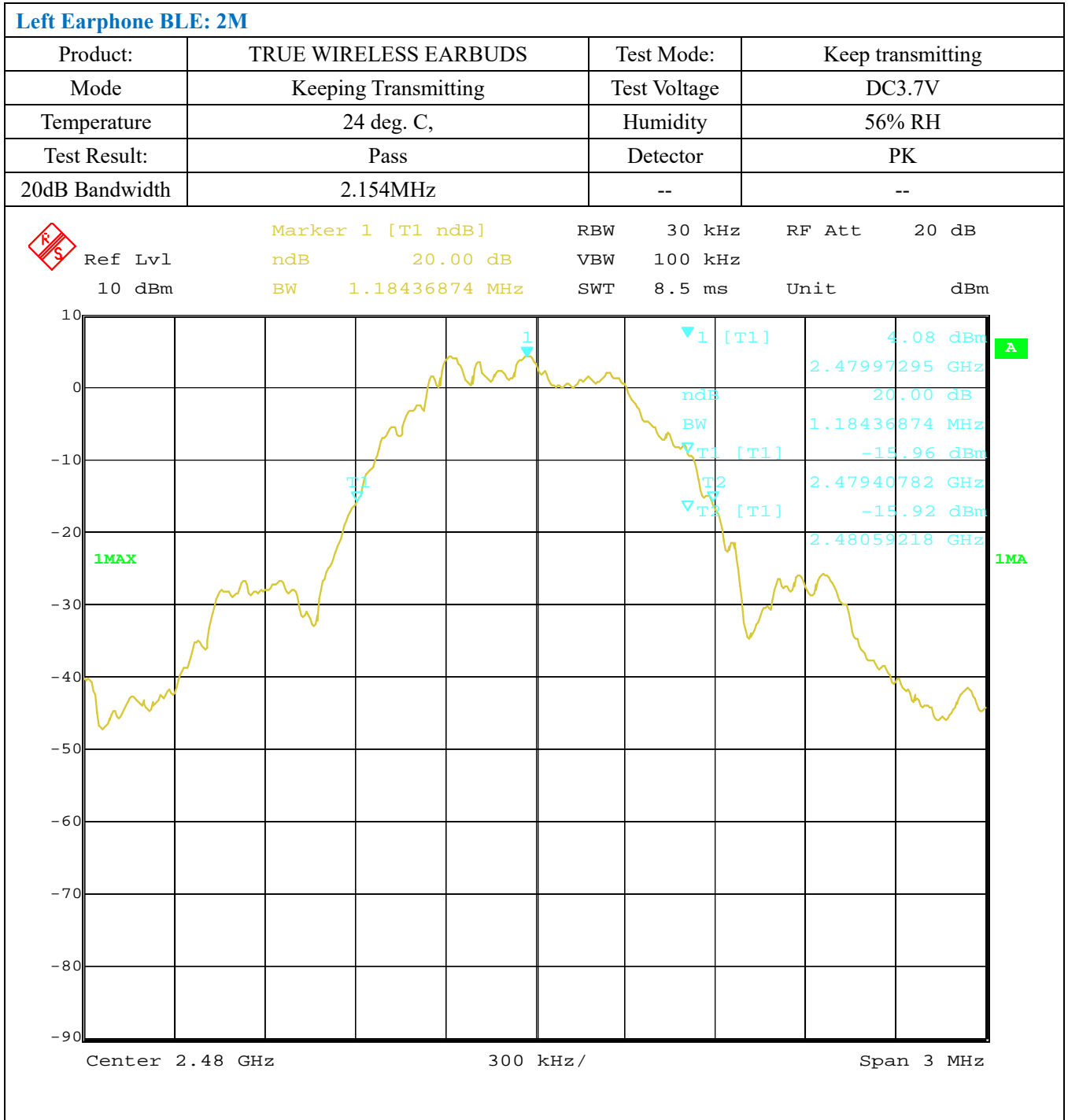


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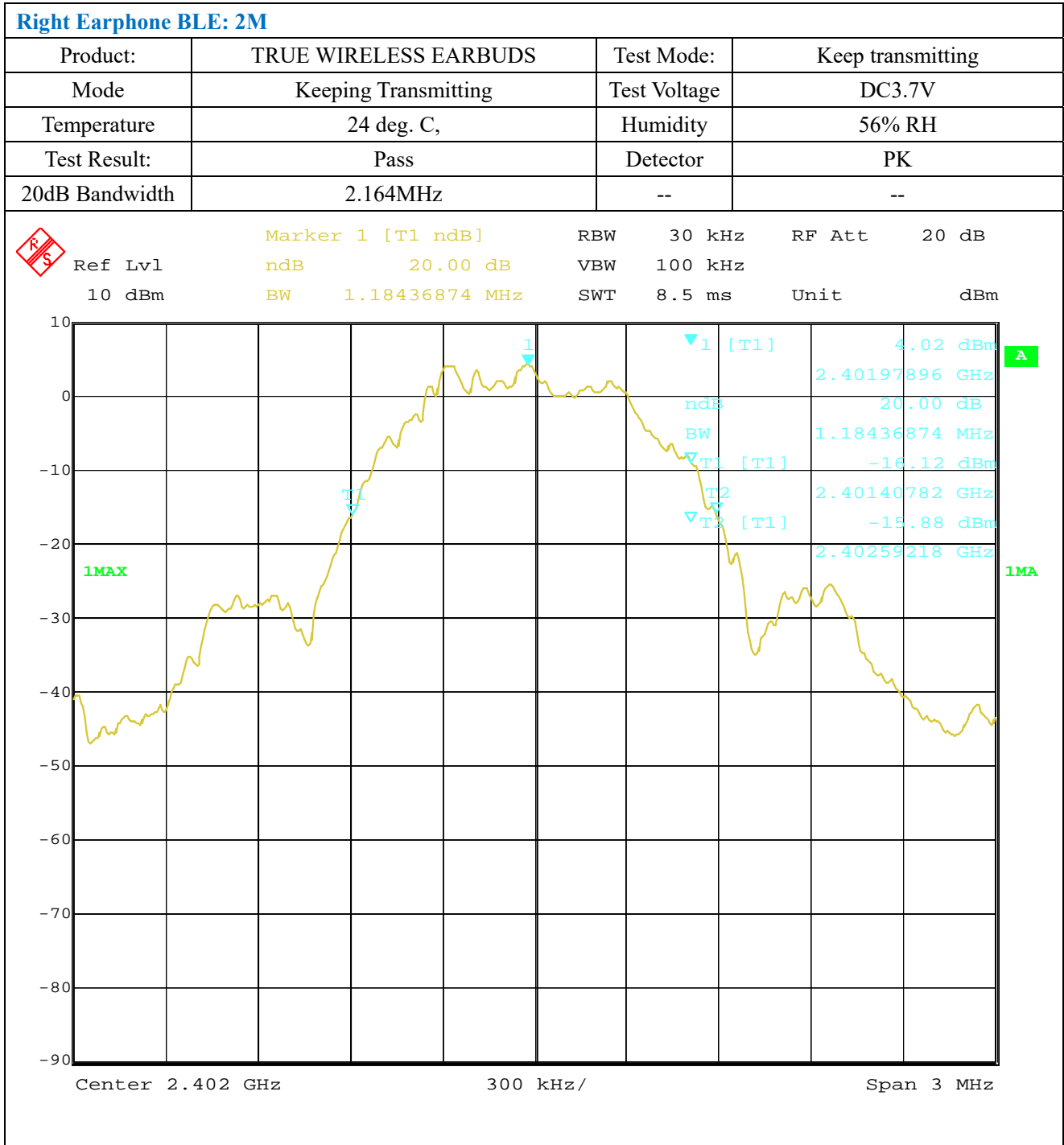


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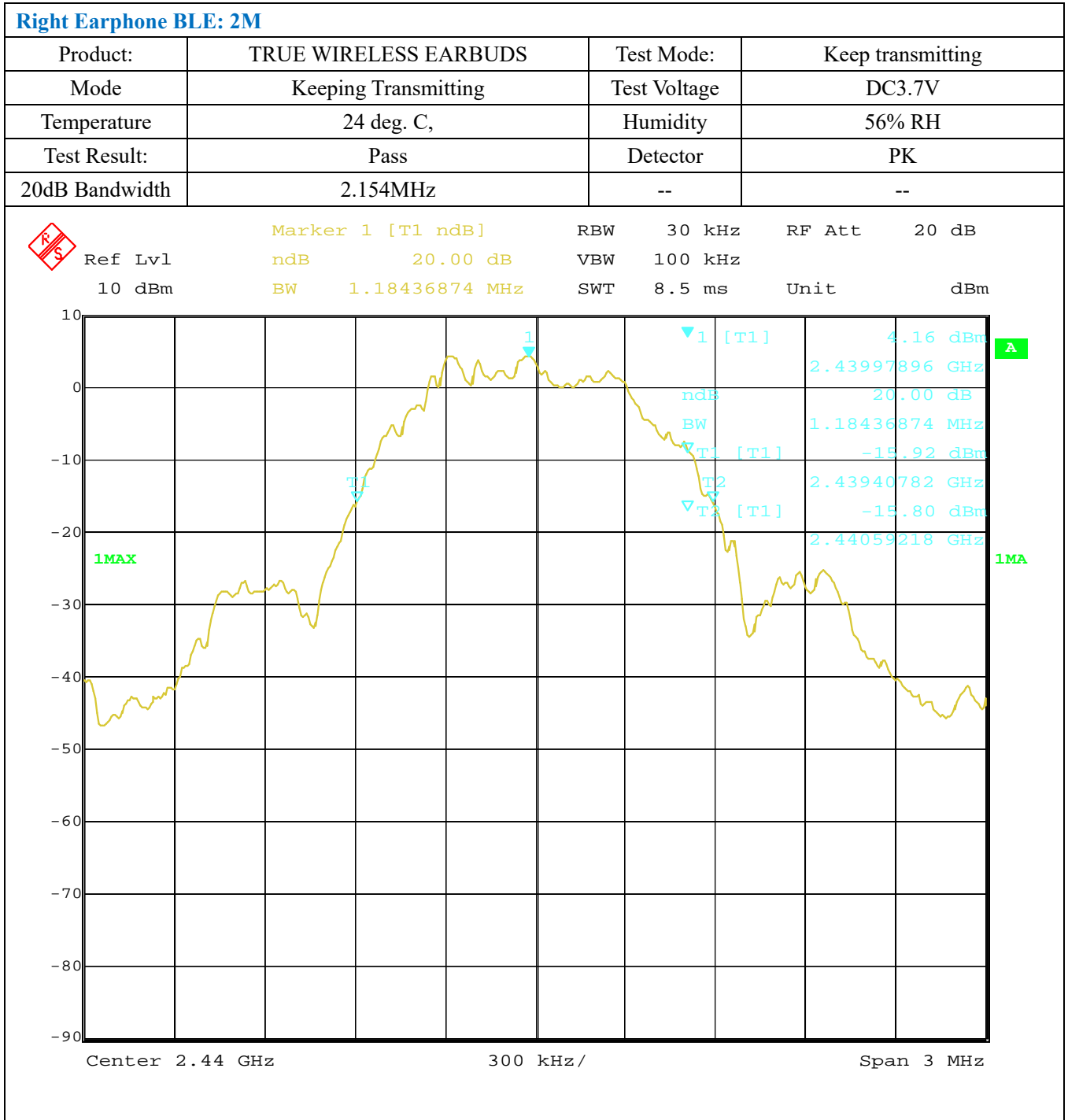




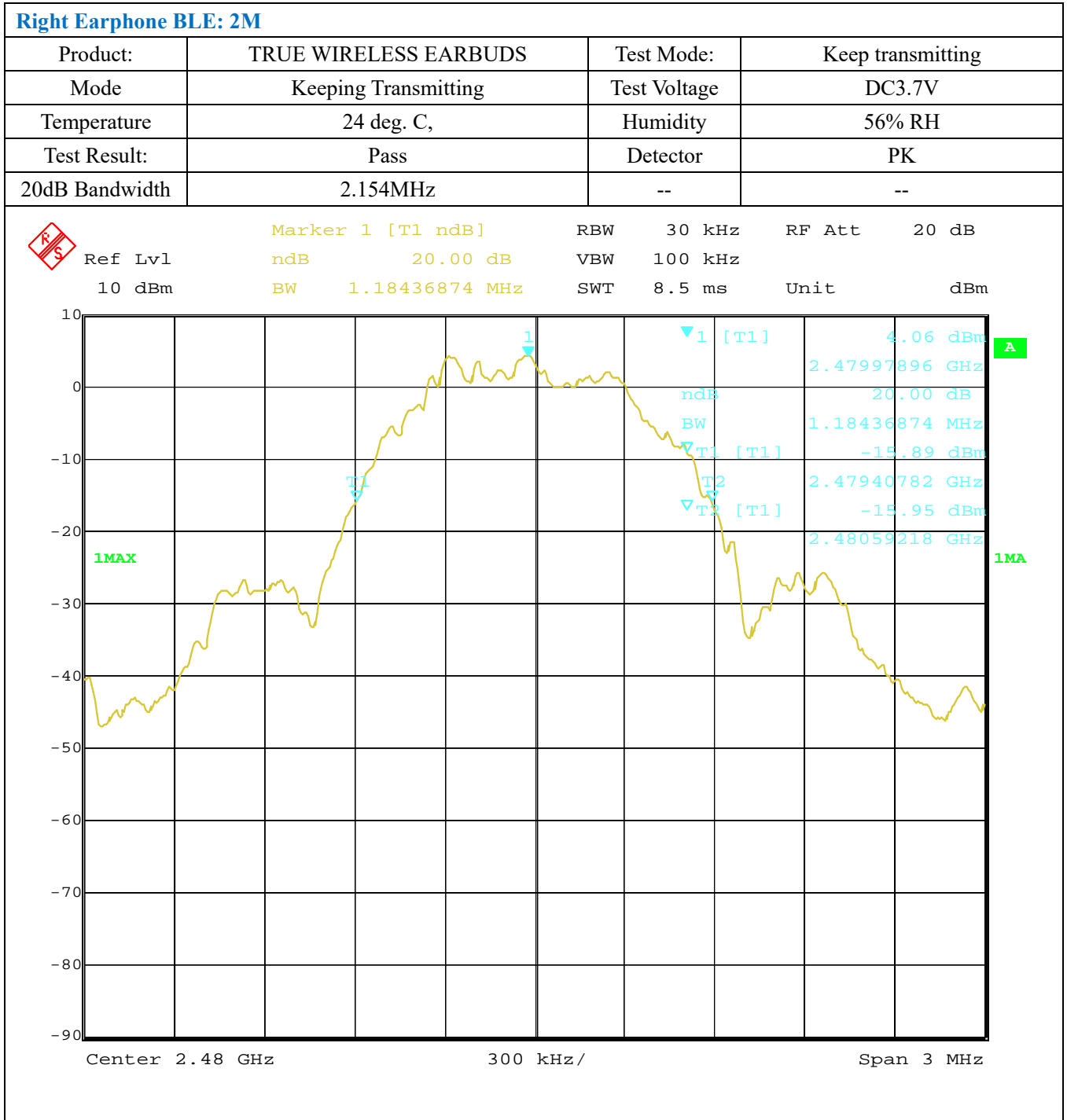
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